HOW TO USE THIS MANUAL

IN00U–81

GENERAL INFORMATION

1. INDEX

An INDEX is provided on the first page of each section to guide you to the item to be repaired. To assist you in finding your way through the manual, the Section Title and major heading are given at the top of every page.

2. PRECAUTION

At the beginning of each section, a PRECAUTION is given that pertains to all repair operations contained in that section.

Read these precautions before starting any repair task.

3. TROUBLESHOOTING

TROUBLESHOOTING tables are included for each system to help you diagnose the problem and find the cause. The fundamentals of how to proceed with troubleshooting are described on page IN–27.

Be sure to read this before performing troubleshooting.

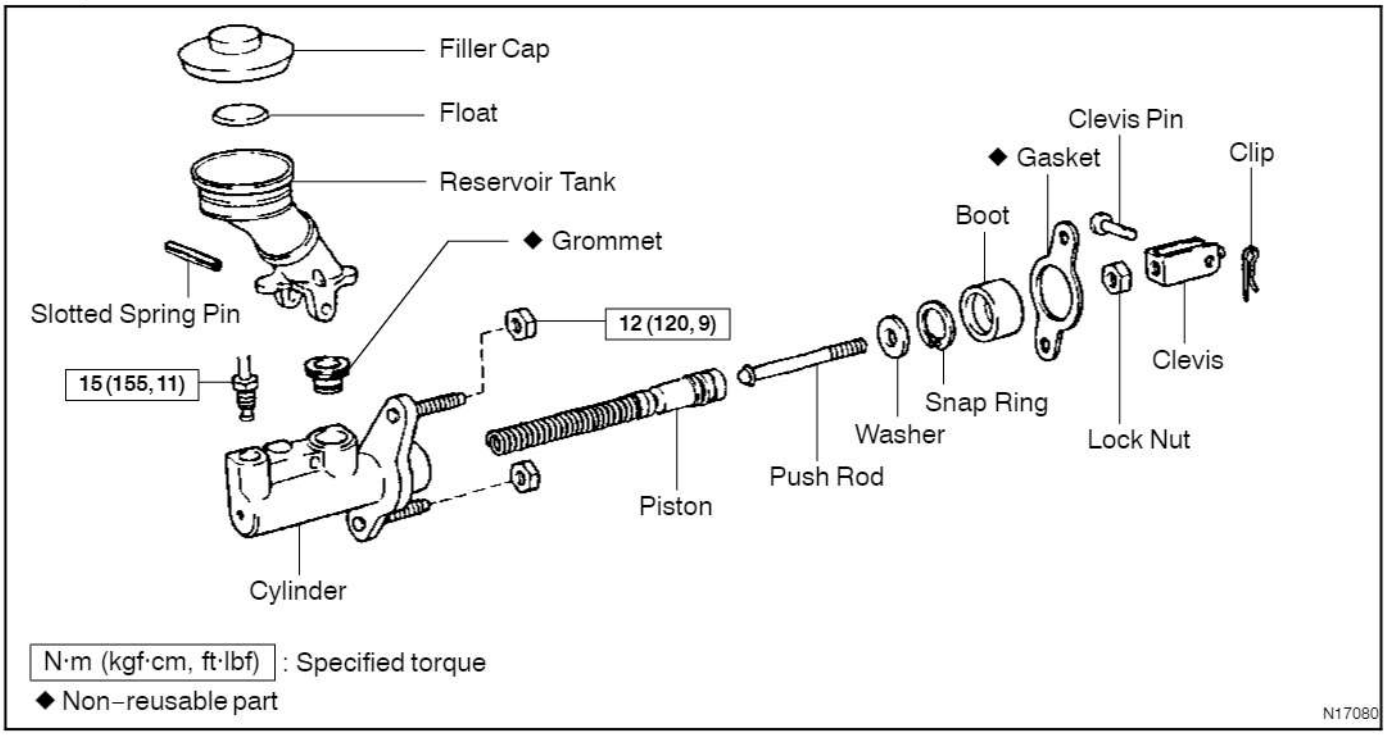
4. PREPARATION

Preparation lists the SST (Special Service Tools), recommended tools, equipment, lubricant and SSM (Special Service Materials) which should be prepared before beginning the operation and explains the purpose of each one.

5. REPAIR PROCEDURES

Most repair operations begin with an overview illustration. It identifies the components and shows how the parts fit together.

Example:



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The procedures are presented in a step–by–step format:

- The illustration shows what to do and where to do it.
- The task heading tells what to do.
- The detailed text tells how to perform the task and gives other information such as specifications and warnings.

Example:



Task heading : what to do

21. CHECK PISTON STROKE OF OVERDRIVE BRAKE

(a) Place SST and a dial indicator onto the overdrive brake piston as shown in the illustration.

SST 09350–30020 (09350–06120)

Set part No. *Component part No.*

Detailed text : how to do task

(b) Measure the stroke applying and releasing the compressed air (392 — 785 kPa, 4 — 8 kgf/cm^2 or 57 — 114 psi) as shown in the illustration.

Piston stroke: 1.40 — 1.70 mm (0.0551 — 0.0669 in.)

Specification

This format provides the experienced technician with a FAST TRACK to the information needed. The upper case task heading can be read at a glance when necessary, and the text below it provides detailed information. Important specifications and warnings always stand out in bold type.

6. REFERENCES

References have been kept to a minimum. However, when they are required you are given the page to refer to.

7. SPECIFICATIONS

Specifications are presented in bold type throughout the text where needed. You never have to leave the procedure to look up your specifications. They are also found in Service Specifications section for quick reference.

8. CAUTIONS, NOTICES, HINTS:

- CAUTIONS are presented in bold type, and indicate there is a possibility of injury to you or other people.
- NOTICES are also presented in bold type, and indicate the possibility of damage to the components being repaired.
- HINTS are separated from the text but do not appear in bold. They provide additional information to help you perform the repair efficiently.

9. SI UNIT

The UNITS given in this manual are primarily expressed according to the SI UNIT (International System of Unit), and alternately expressed in the metric system and in the English System.

Example:

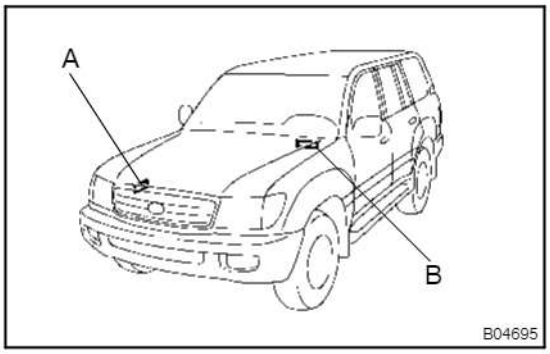
Torque: 30 N·m (310 kgf·cm, 22 ft·lbf)

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IDENTIFICATION INFORMATION

IN08Y–05

VEHICLE IDENTIFICATION AND ENGINE SERIAL NUMBER



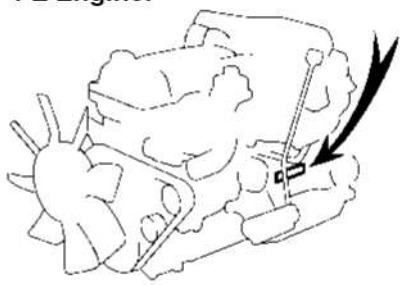
1. VEHICLE IDENTIFICATION NUMBER

The vehicle identification number is stamped on the outer surface of the front right side frame. This number is also stamped on the manufacture's plate.

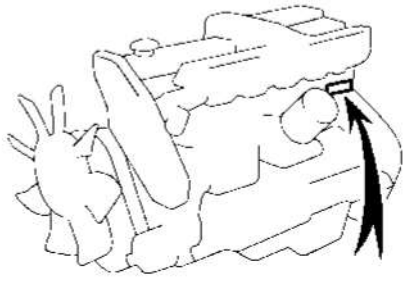
A: Vehicle Identification Number

B: Manufacture's Plate

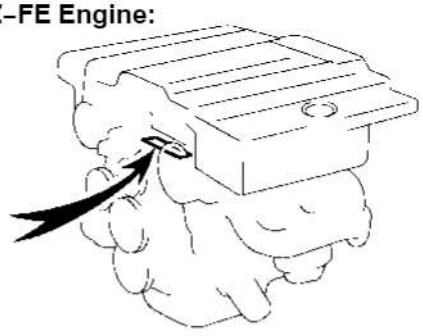
1FZ–FE Engine:



1HZ and 1HD–FTE Engine:



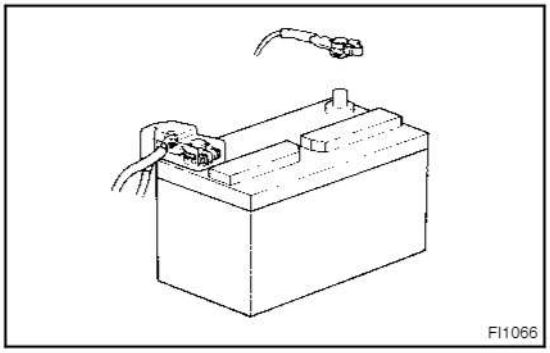
2UZ–FE Engine:



2. ENGINE SERIAL NUMBER

The engine serial number is stamped on the engine block, as shown in the illustration.

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FI1066

REPAIR INSTRUCTIONS

GENERAL INFORMATION

IN08T–05

BASIC REPAIR HINT

(a) Use fender, seat and floor covers to keep the vehicle clean and prevent damage.

(b) During disassembly, keep parts in the appropriate order to facilitate reassembly.

(c) Installation and removal of battery terminal:

(1) Before performing electrical work, disconnect the negative (–) terminal cable from the battery.

(2) If it is necessary to disconnect the battery for inspection or repair, first disconnect the negative (–) terminal cable.

(3) When disconnecting the terminal cable to prevent damage to battery terminal, loosen the cable nut and raise the cable straight up without twisting or prying it.

(4) Clean the battery terminals and cable ends with a clean shop rag. Do not scrape them with a file or other abrasive objects.

(5) Install the cable ends to the battery terminals after loosening the nut, and tighten the nut after installation. Do not use a hammer to tap the cable ends onto the terminals.

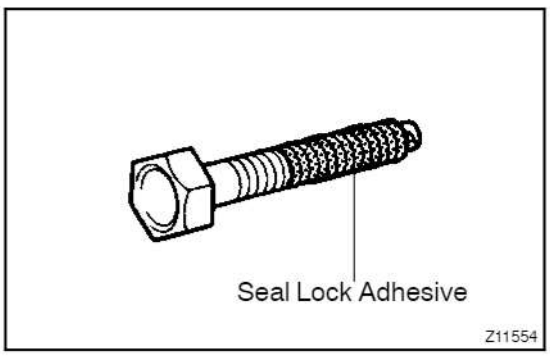
(6) Be sure the cover for the positive (+) terminal is properly in place.

(d) Check hose and wiring connectors to make sure that they are connected securely and correctly.

(e) Non–reusable parts

(1) Always replace cotter pins, gaskets, O–rings, oil seals, etc. with new ones.

(2) Non–reusable parts are indicated in the component illustrations by the "◆" symbol.



Z11554

(f) Precoated parts

Precoated parts are bolts, nuts, etc. that are coated with a seal lock adhesive at the factory.

(1) If a precoated part is retightened, loosened or caused to move in any way, it must be recoated with the specified adhesive.

(2) When reusing precoated parts, clean off the old adhesive and dry with compressed air. Then apply the specified seal lock adhesive to the bolt, nut or threads.

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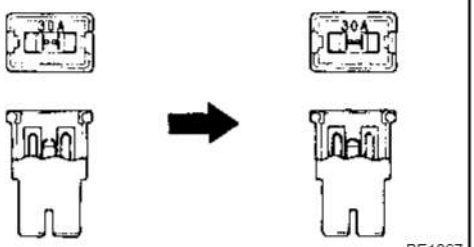
(3) Precoated parts are indicated in the component illustrations by the "★" symbol.

(g) When necessary, use a sealer on gaskets to prevent leaks.

(h) Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.

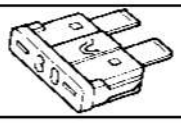
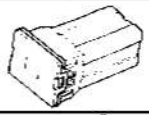
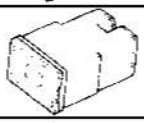
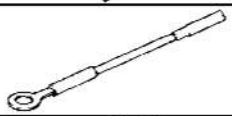
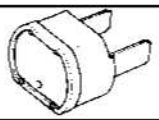
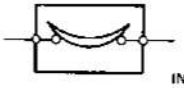
(i) Use of special service tools (SST) and special service materials (SSM) may be required, depending on the nature of the repair. Be sure to use SST and SSM where specified and follow the proper work procedure. A list of SST and SSM can be found in Preparation section in this manual.

Medium Current Fuse and High Current Fuse
Equal Amperage Rating



BE1367

(j) When replacing fuses, be sure the new fuse has the correct amperage rating. DO NOT exceed the rating or use one with a lower rating.

Illustration	Symbol	Part Name	Abbreviation
 BE5594	 IN0365	FUSE	FUSE
 BE5595	 IN0366	MEDIUM CURRENT FUSE	M–FUSE
 BE5596	 IN0367	HIGH CURRENT FUSE	H–FUSE
 BE5597	 IN0367	FUSIBLE LINK	FL
 BE5598	 IN0368	CIRCUIT BREAKER	CB

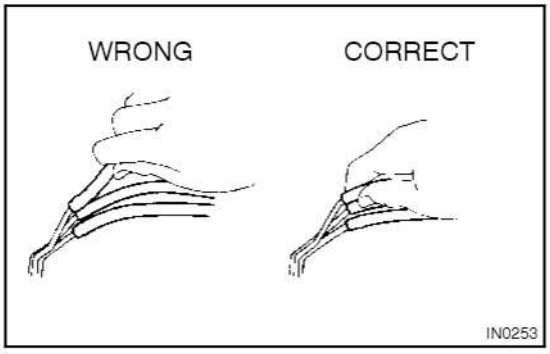
V00076

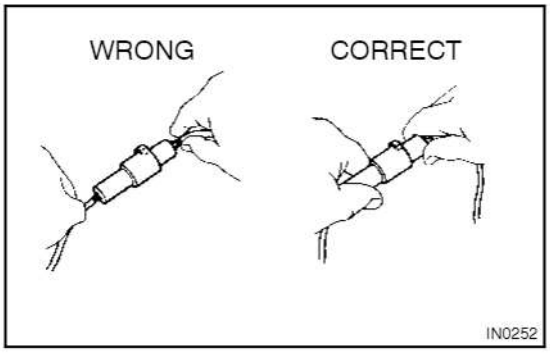
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(k) Care must be taken when jacking up and supporting the vehicle. Be sure to lift and support the vehicle at the proper locations (See page IN–8).
- Cancel the parking brake on the level place and shift the transmission in Neutral (or N range).
- When jacking up the front wheels of the vehicle, at first place stoppers behind the rear wheels.
- When jacking up the rear wheels of the vehicle, at first place stoppers before the front wheels.
- When either the front or rear wheels only should be jacked up, set rigid racks and place stoppers in front and behind the other wheels on the ground.
- After the vehicle is jacked up, be sure to support it on rigid racks. It is extremely dangerous to do any work on a vehicle raised on a jack alone, even for a small job that can be finished quickly.

(l) Observe the following precautions to avoid damage to the following parts:

(1) Do not open the cover or case of the ECU unless absolutely necessary. (If the IC terminals are touched, the IC may be destroyed by static electricity.)





(2) To disconnect vacuum hoses, pull off the end, not the middle of the hose.

(3) To pull apart electrical connectors, pull on the connector itself, not the wires.

(4) Be careful not to drop electrical components, such as sensors or relays. If they are dropped on a hard floor, they should be replaced and not reused.

(5) When steam cleaning an engine, protect the electronic components, air filter and emission–related components from water.

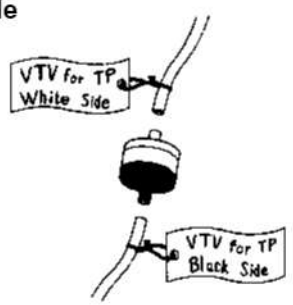
(6) Never use an impact wrench to remove or install temperature switches or temperature sensors.

(7) When checking continuity at the wire connector, insert the tester probe carefully to prevent terminals from bending.

(8) When using a vacuum gauge, never force the hose onto a connector that is too large. Use a step–down adapter for adjustment. Once the hose has been stretched, it may leak air.

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Example



IN0002

(m) Installation and removal of vacuum hose:
  (1) When disconnecting vacuum hoses, use tags to identify how they should be reconnected to.
  (2) After completing a job, double check that the vacuum hoses are properly connected. A label under the hood shows the proper layout.

(n) Bleeding of hydraulic brake booster system
When repairing the hydraulic brake booster or ABS, bleeding the air out of the hydraulic brake booster (See Pub No. RM731E, page BR–1.).

(o) Unless otherwise stated, all resistance is measured at an ambient temperature of 20°C (68°F). Because the resistance may be outside specifications if measured at high temperatures immediately after the vehicle has been running, measurement should be made when the engine has cooled down.

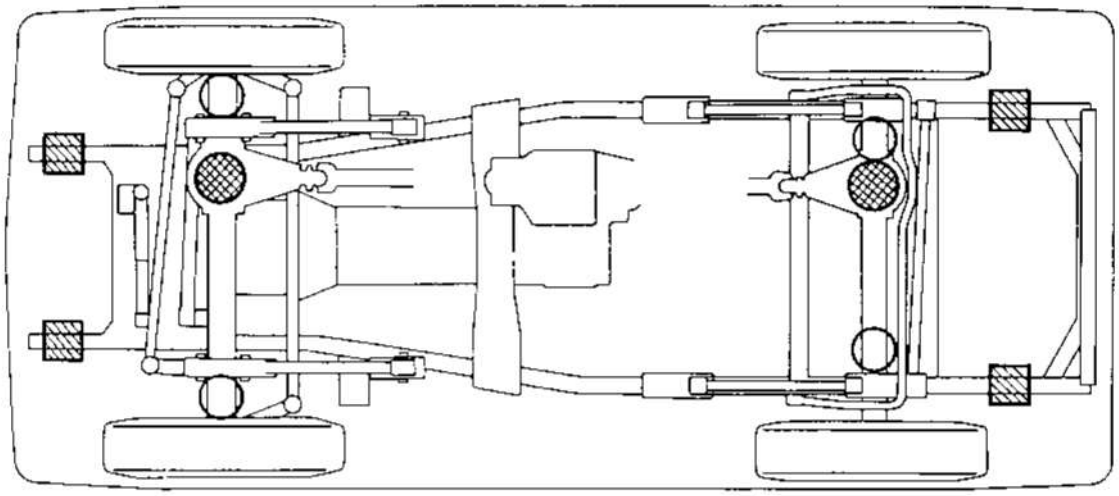
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IN08U–02

VEHICLE LIFT AND SUPPORT LOCATIONS

RIGID FRONT SUSPENSION (RFS)

FRONT



CAUTION : Do not use the swing arm type lift and plate type lift.

JACK POSITION

Front ..... Front differential carrier

Rear ..... Rear differential carrier

CAUTION : When jacking–up the front and rear, make sure the car is not carrying any extra weight.

SCREW TYPE JACK POSITION

SUPPORT POSITION

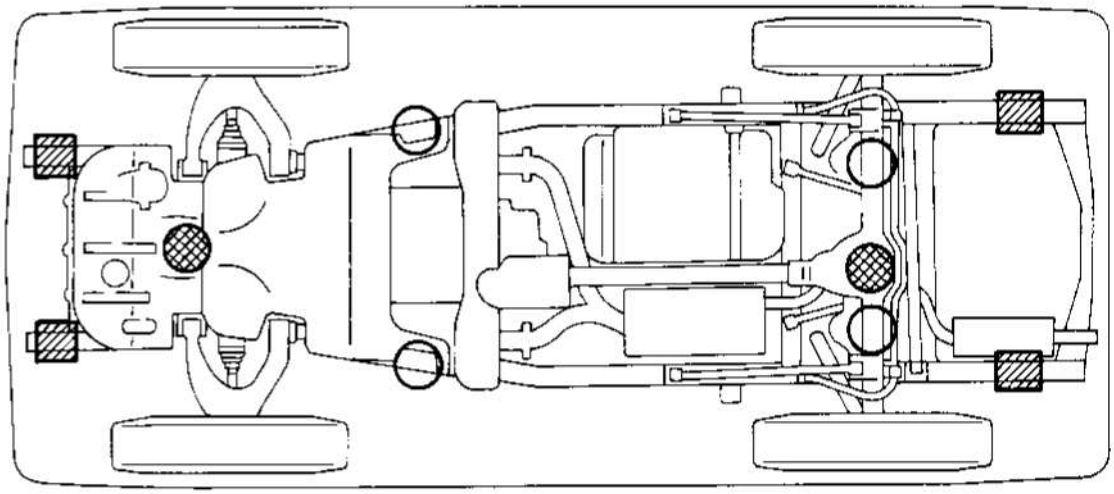
Safety stand .....

B04712

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INDEPENDENT FRONT SUSPENSION (IFS)

FRONT



JACK POSITION

Front ..... Engine under cover

Rear ..... Rear differential carrier

CAUTION : When jacking–up the front and rear, make sure the car is not carrying any extra weight.

SCREW TYPE JACK POSITION

SUPPORT POSITION

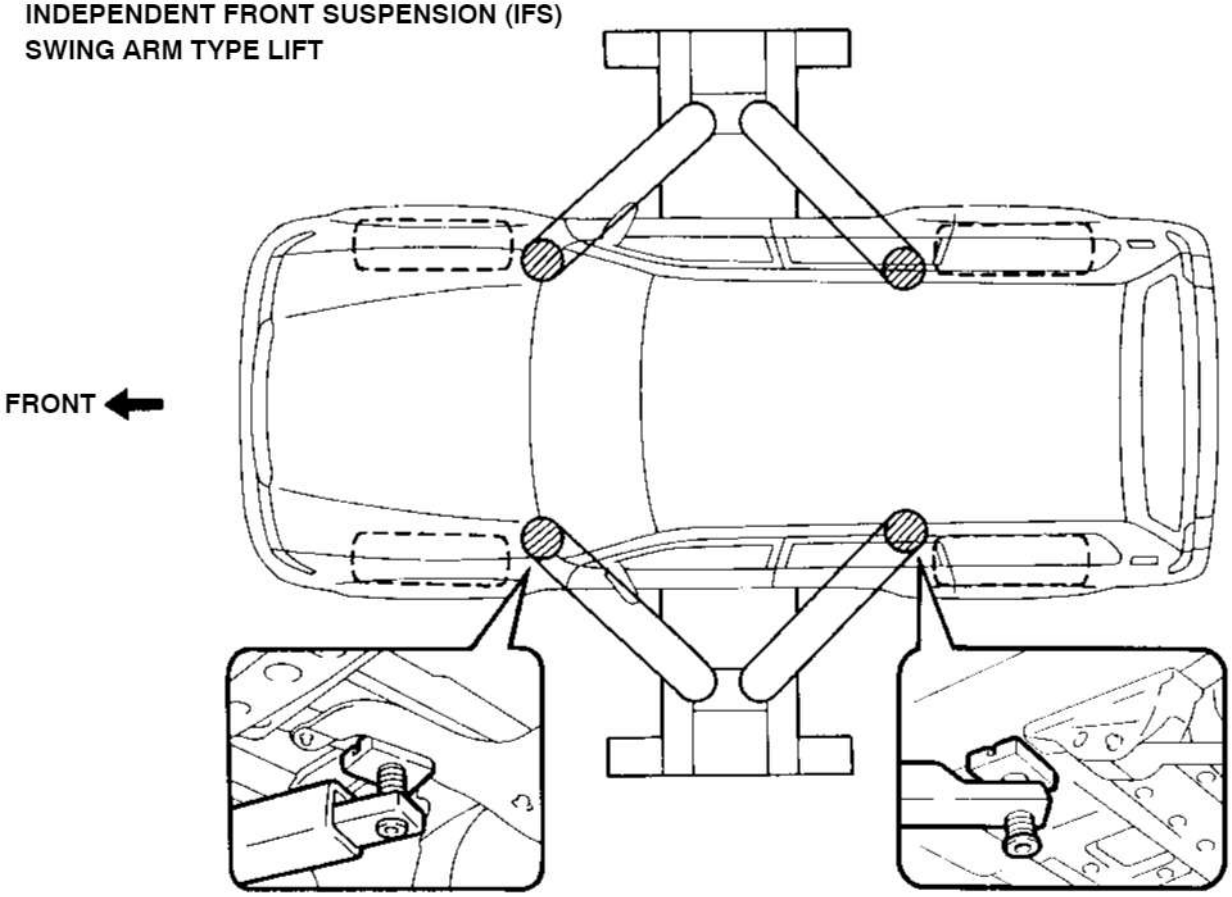
Safety stand .....

NOTICE: (w/ Active Height Control Suspension)
When jacking up the vehicle with the engine running, turn off the active height control suspension with the height control switch pushed.

B04208

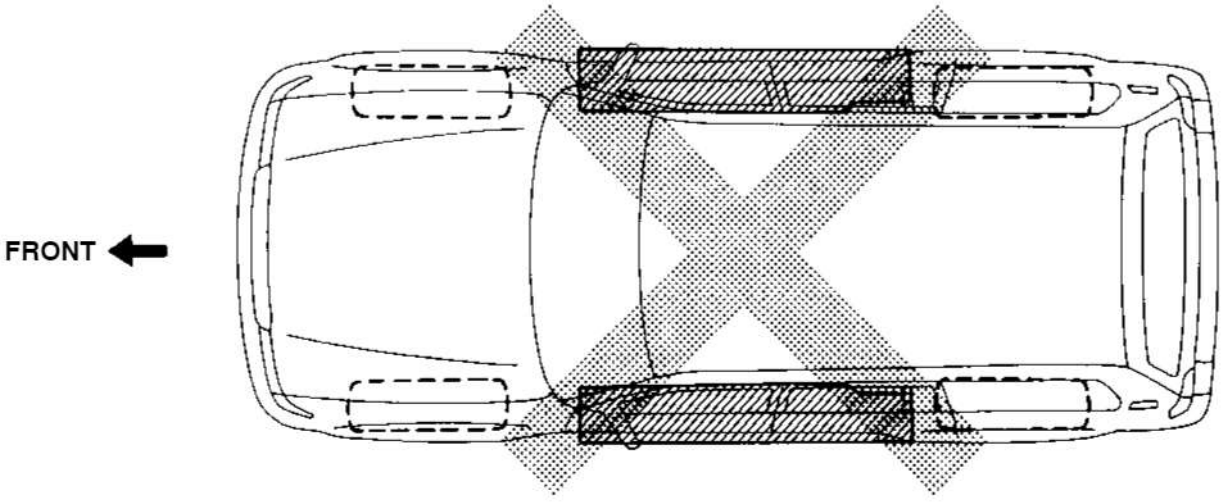
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INDEPENDENT FRONT SUSPENSION (IFS)
SWING ARM TYPE LIFT



NOTICE: **When lifting the vehicle, place the supports correctly at the positions shown above.**

PLATE TYPE LIFT (DO NOT USE.)



NOTICE: **Never use the plate type lift–using it to lift up the vehicle will cause the body shape to warp.**

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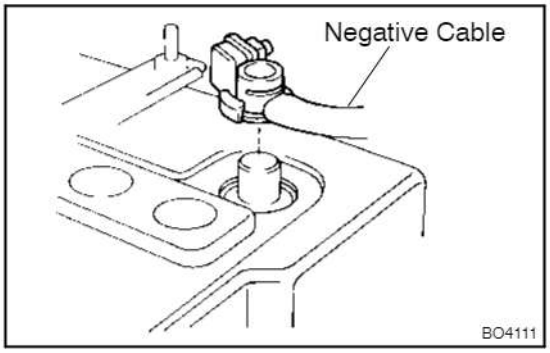
FOR ALL OF VEHICLES

PRECAUTION

IN0JH–01

1. FOR VEHICLES EQUIPPED WITH SRS AIRBAG AND SEAT BELT PRETENSIONER

(a) The LAND CRUISER is equipped with an SRS (Supplemental Restraint System), such as the driver airbag, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly and seat belt pretensioner.
Failure to carry out service operations in the correct sequence could cause the supplemental restraint system to unexpectedly deploy during servicing, possibly leading to a serious accident.
Further, if a mistake is made in servicing the supplemental restraint system, it is possible the SRS may fail to operate when required. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the following items carefully, then follow the correct procedure described in this manual.



(b) GENERAL NOTICE

(1) Malfunction symptoms of the supplemental restraint system are difficult to confirm, so the diagnostic trouble codes become the most important source of information when troubleshooting. When troubleshooting the supplemental restraint system, always inspect the diagnostic trouble codes before disconnecting the battery (See page DI–432).

(2) Work must be started after 90 seconds from the time the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery.
(The supplemental restraint system is equipped with a back–up power source so that if work is started within 90 seconds of disconnecting the negative (–) terminal cable from the battery, the SRS may deploy.)
When the negative (–) terminal cable is disconnected from the battery, memory of the clock and audio systems will be cancelled. So before starting work, make a record of the contents memorized by the each memory system. Then when work is finished, reset the clock and audio systems as before.
This vehicle has power tilt and power telescopic steering and power seat, which are all equipped with memory function, it is not possible to make a record of the memory contents. So when the work is finished, therefore it will be necessary to explain this fact to the customer, and ask the customer to adjust the features and reset the memory.

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To avoid erasing the memory of each memory system, never use a back–up power supply from another battery.

(3) Even in cases of a minor collision where the SRS does not deploy, the steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly and seat belt pretensioner should be inspected (See page RS–18, RS–33, RS–48, RS–63, RS–71 and See Pub. No. RM616E, page BO–213).

(4) Never use SRS parts from another vehicle. When replacing parts, replace them with new parts.

(5) Before repairs, remove the airbag sensor if shocks are likely to be applied to the sensor during repairs.

(6) Never disassemble and repair the airbag sensor assembly, steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly or seat belt pretensioner in order to reuse them.

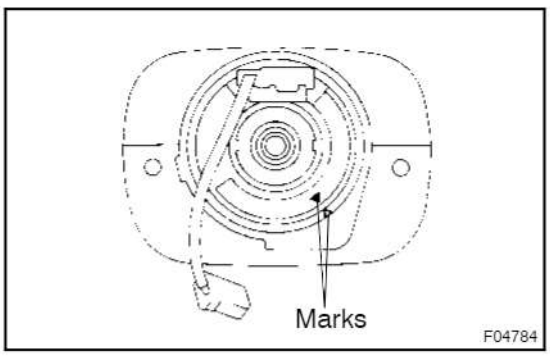
(7) If the airbag sensor assembly, steering wheel pad, front passenger airbag assembly or seat belt pretensioner have been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace them with new ones.

(8) Do not directly expose the airbag sensor assembly, steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly or seat belt pretensioner to hot air or flames.

(9) Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) for troubleshooting of the electrical circuit.

(10) Information labels are attached to the periphery of the SRS components. Follow the instructions on the notices.

(11) After work on the supplemental restraint system is completed, check the SRS warning light (See page DI–432).



(c) SPIRAL CABLE (in Combination Switch)
The steering wheel must be fitted correctly to the steering column with the spiral cable at the neutral position, otherwise cable disconnection and other troubles may result. Refer to SR–14 of this manual concerning correct steering wheel installation.

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(d) STEERING WHEEL PAD (with Airbag)

(1) When removing the steering wheel pad or handling a new steering wheel pad, it should be placed with the pad top surface facing up.
Storing the pad with its metallic surface facing upward may lead to a serious accident if the airbag inflates for some reason. In addition do not store a steering wheel pad on top of another one.

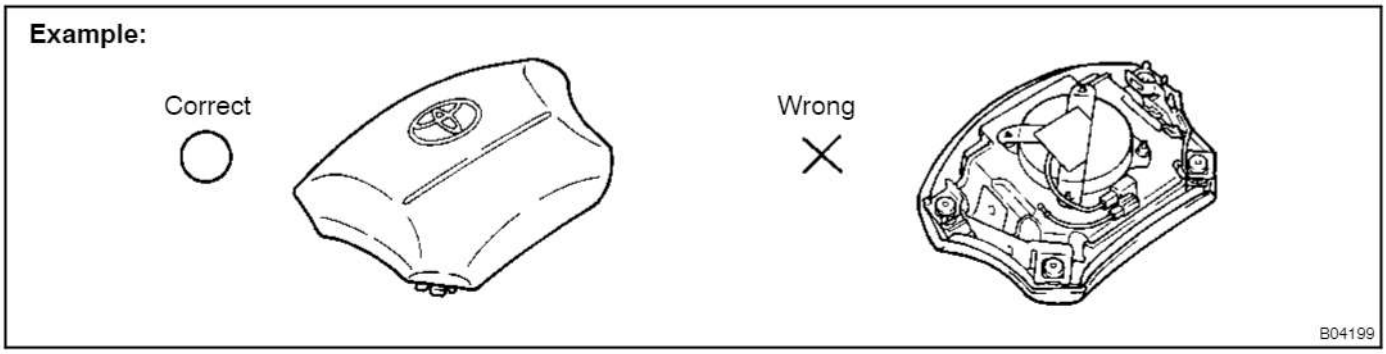
(2) Never measure the resistance of the airbag squib. (This may cause the airbag to deploy, which is very dangerous.)

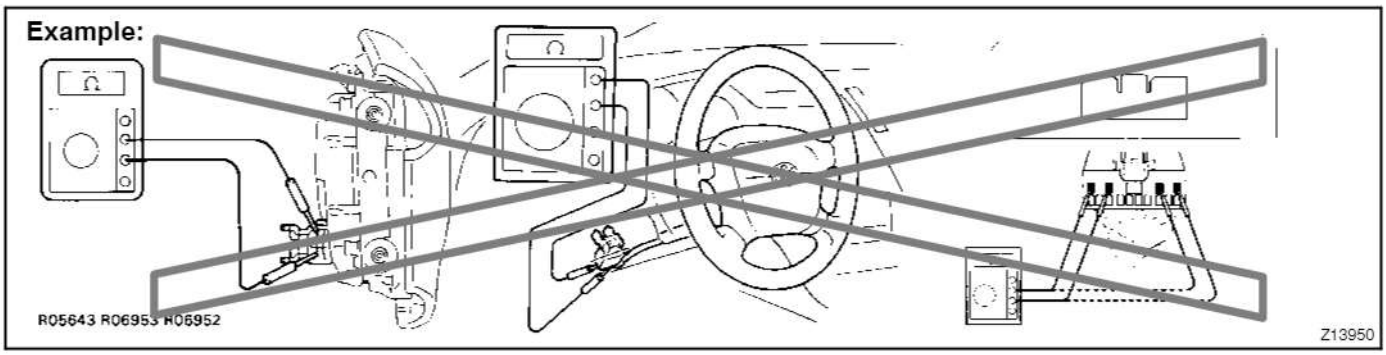
(3) Grease should not be applied to the steering wheel pad and the pad should not be cleaned with detergents of any kind.

(4) Store the steering wheel pad where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.

(5) When using electric welding, first disconnect the airbag connector (yellow color and 2 pins) under the steering column near the combination switch connector before starting work.

(6) When disposing of a vehicle or the steering wheel pad alone, the airbag should be deployed using an SST before disposal (See page RS–20).
Carry out the operation in a safe place away from electrical noise.





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(e) FRONT PASSENGER AIRBAG ASSEMBLY

(1) Always store a removed or new front passenger airbag assembly with the airbag deployment direction facing up.
Storing the airbag assembly with the airbag deployment direction facing down could cause a serious accident if the airbag inflates.

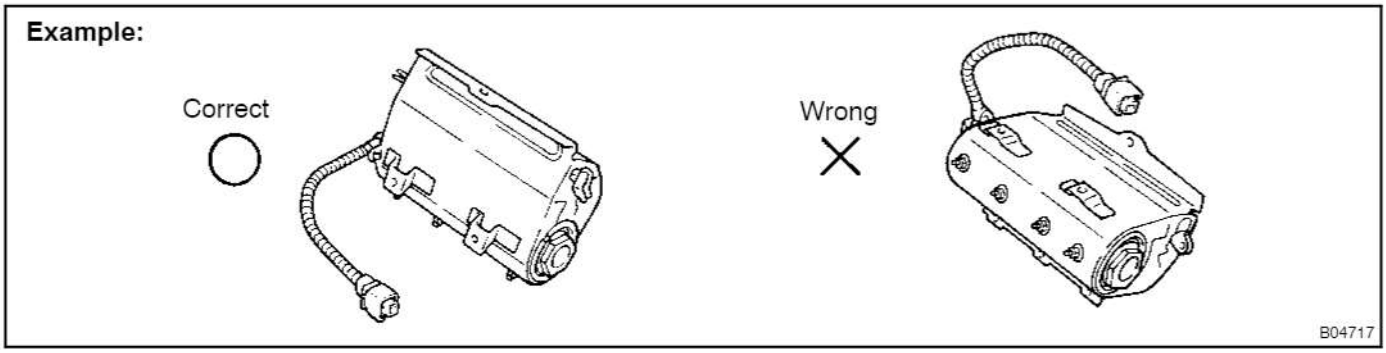
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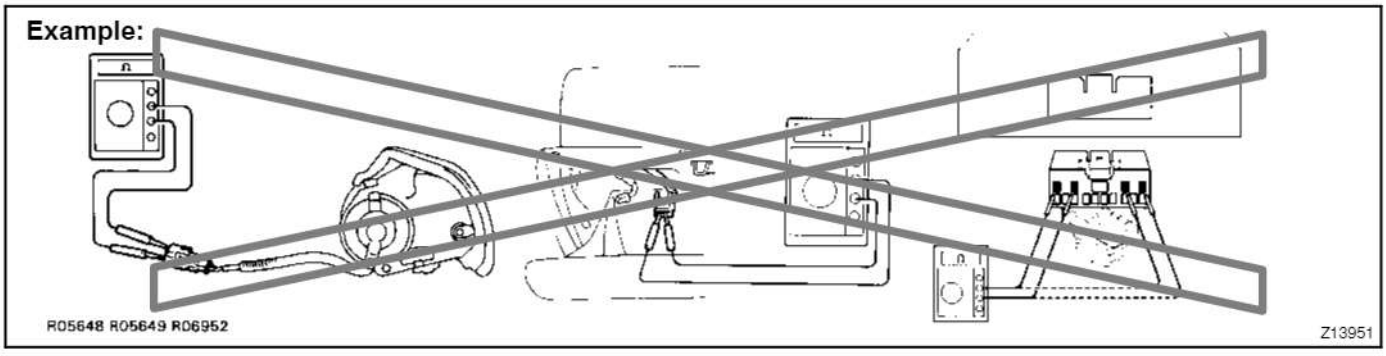
(3) Grease should not be applied to the front passenger airbag assembly and the airbag door should not be cleaned with detergents of any kind.

(4) Store the airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.

(5) When using electric welding, first disconnect the airbag connector (yellow color and 4 pins) installed on the assembly before starting work.

(6) When disposing of a vehicle or the airbag assembly alone, the airbag should be deployed using an SST before disposal (See page RS–35).
Perform the operation in a safe place away from electrical noise.





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(f) SIDE AIRBAG ASSEMBLY

(1) Always store a removed or new side airbag assembly with the airbag deployment direction facing up. Storing the airbag assembly with the airbag deployment direction facing downward may lead to a serious accident if the airbag deploys for some.

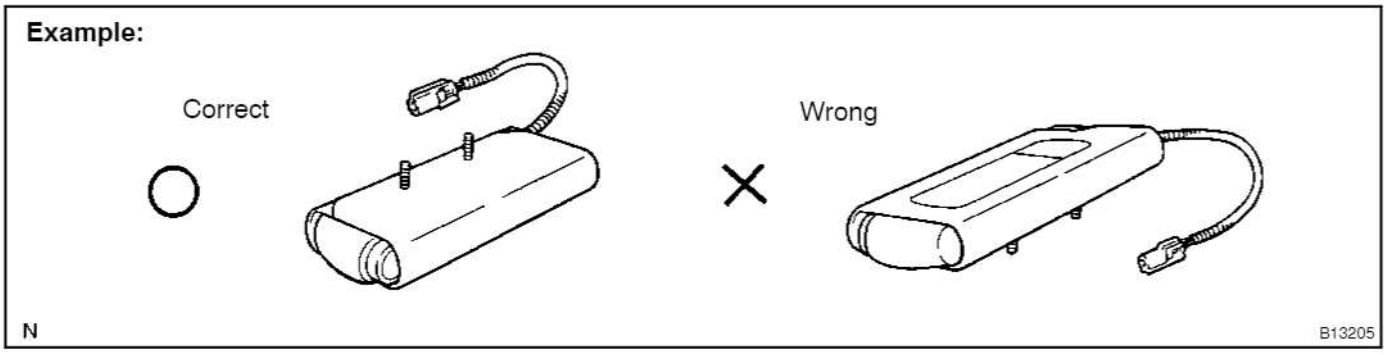
(2) Never measure the resistance of the airbag squib reason.
(This may cause the airbag to deploy, which is very dangerous.)

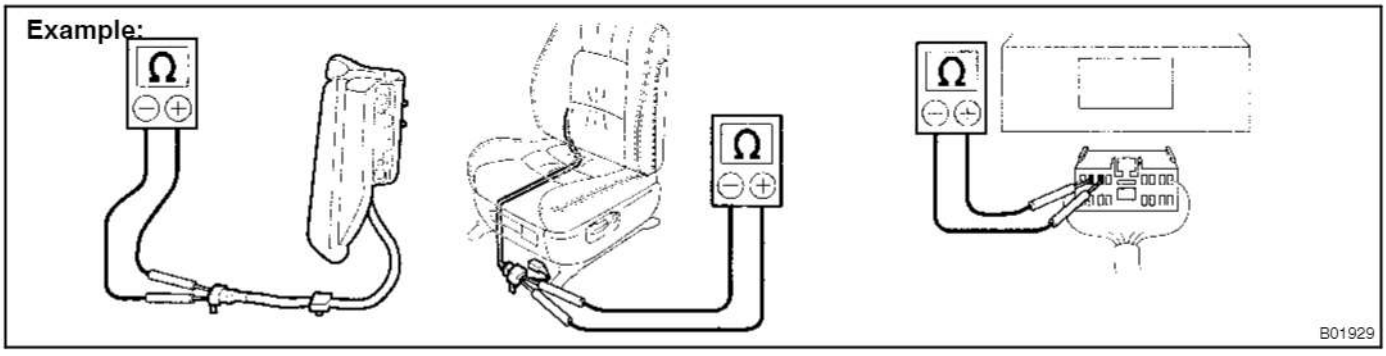
(3) Grease should not be applied to the side airbag assembly and the surface should not be cleaned with detergents of any kind.

(4) Store the airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.

(5) When using electric welding, first disconnect the air–bag connector (yellow color and 2 pins) under the seat before starting work.

(6) When disposing of a vehicle or the side airbag assembly alone, the airbag should be deployed using an SST before disposal (See page RS–49 or RS–64).
Perform the operation in a safe place away from electrical noise.





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(g) CURTAIN SHIELD AIRBAG ASSEMBLY

(1) Always store a removed or new curtain shield airbag assembly in a clear plastic bag, and keep it in a safe place.

NOTICE:
Protection bag is not reusable.
CAUTION:
Never disassemble the curtain shield airbag assembly.

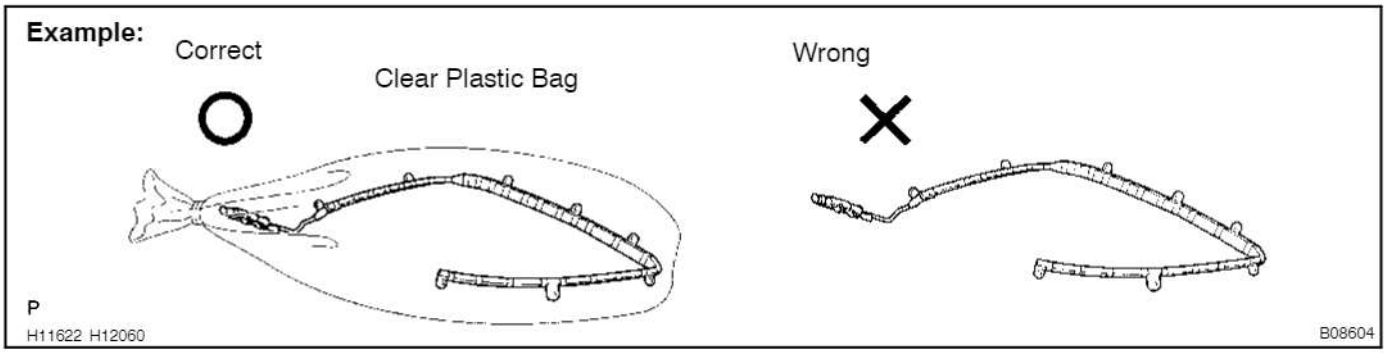
(2) Never measure the resistance of the airbag squib. (This may cause the airbag to deploy, which is very dangerous.)

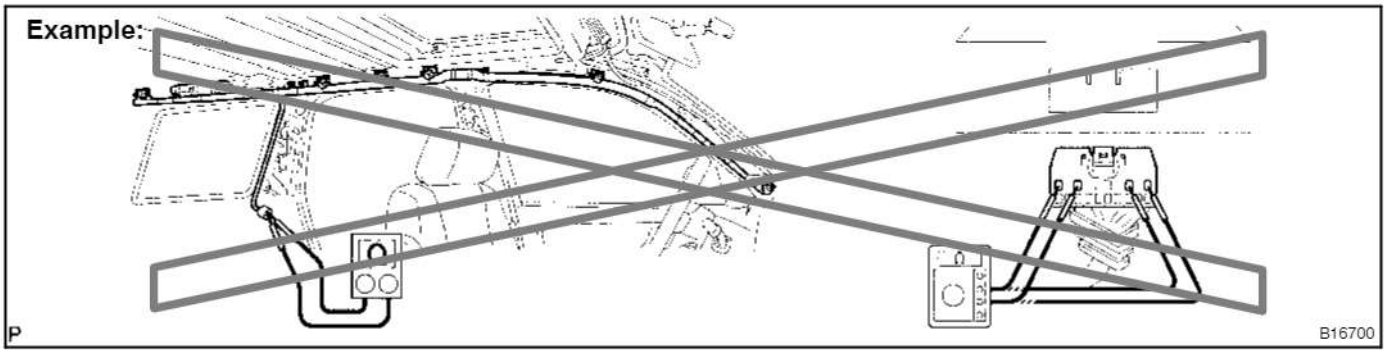
(3) Grease should not be attached to the curtain shield airbag assembly and the surface should not be cleaned with detergents of any kind.

(4) Store the airbag assembly where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise.

(5) When using electric welding, first disconnect the airbag connector (yellow color and 2 pins) into the instrument panel before starting work.

(6) When disposing of a vehicle or the curtain shield airbag assembly alone, the airbag should be deployed using an SST before disposal (See page RS–72). Perform the operation in a safe place away from electrical noise.





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(h) SEAT BELT PRETENSIONER

(1) Never measure the resistance of the seat belt pretensioner. (This may cause the seat belt pretensioner activation which is very dangerous.)

(2) Never disassemble the seat belt pretensioner.

(3) Never install the seat belt pretensioner in another vehicle.

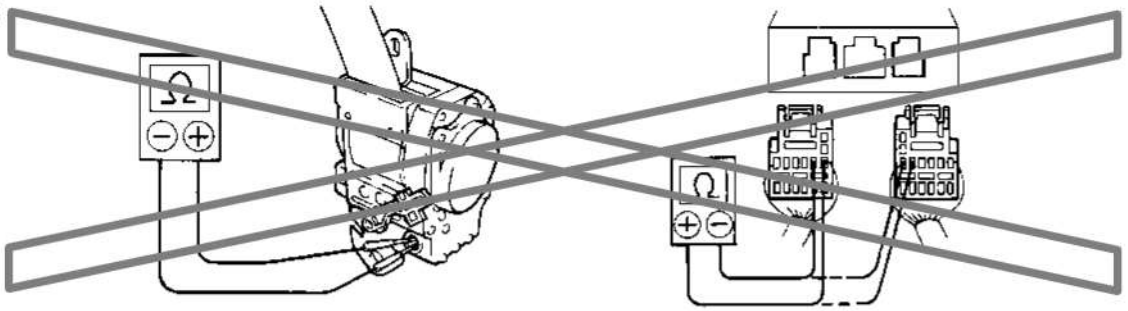
(4) Store the seat belt pretensioner where the ambient temperature remains below 80°C (176°F) and away from electrical noise without high humidity.

(5) When using electric welding, first disconnect the connector (yellow color and 2 pins) before starting work.

(6) When disposing of a vehicle or the seat belt pretensioner alone, the seat belt pretensioner should be activated before disposal (See Pub No. RM616E, page BO–214). Perform the operation in a safe place away from electrical noise.

(7) The seat belt pretensioner is hot after activation, so let it cool down sufficiently before the disposal. However never apply water to the seat belt pretensioner.

Example:



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(i) AIRBAG SENSOR ASSEMBLY

(1) Never reuse the airbag sensor assembly involved in a collision when the SRS has deployed.

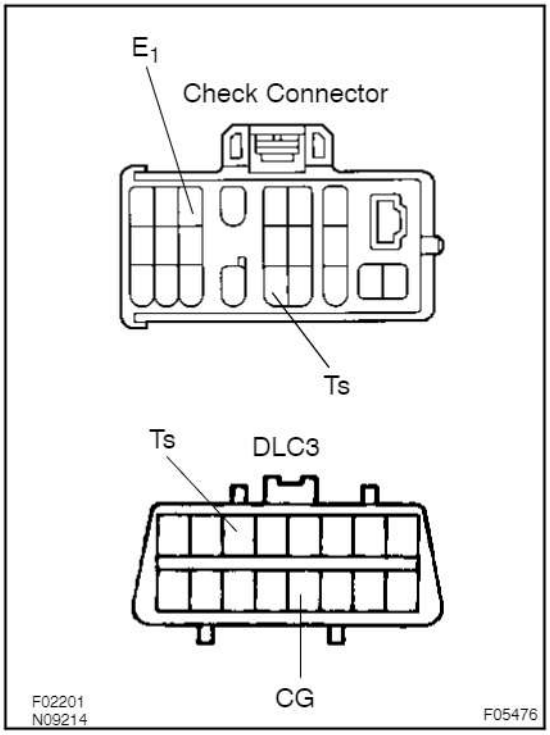
(2) The connectors to the airbag sensor assembly should be connected or disconnected with the sensor mounted on the floor. If the connectors are connected or disconnected while the airbag sensor assembly is not mounted to the floor, it could cause undesired ignition of the supplemental restraint system.

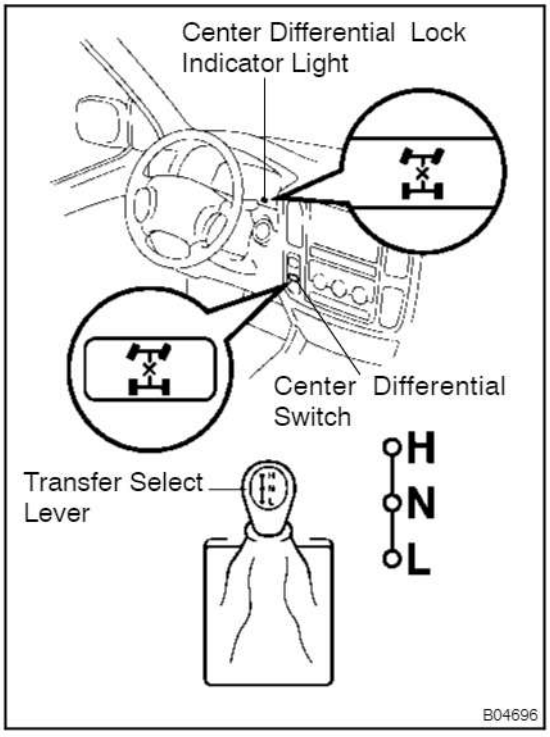
(3) Work must be started after 90 seconds from the time the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery, even if only loosing the set bolts of the airbag sensor assembly.

(j) WIRE HARNESS AND CONNECTOR

The SRS wire harness is integrated with the instrument panel wire harness assembly. The wires for the SRS wire harness are encased in a yellow corrugated tube and all the connectors in the system are a standard yellow color. If the SRS wire harness becomes disconnected or the connector becomes broken due to an accident, etc., repair or replace it.

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2. FOR VEHICLE EQUIPPED WITH VEHICLE STABILITY CONTROL (VSC) SYSTEM

(a) Precaution when using drum tester:
When using a drum tester, make sure that the ignition switch is OFF, start the engine with the diagnosis connector short–circuited between Ts and E_1 (CG) and take a measurement.

NOTICE:

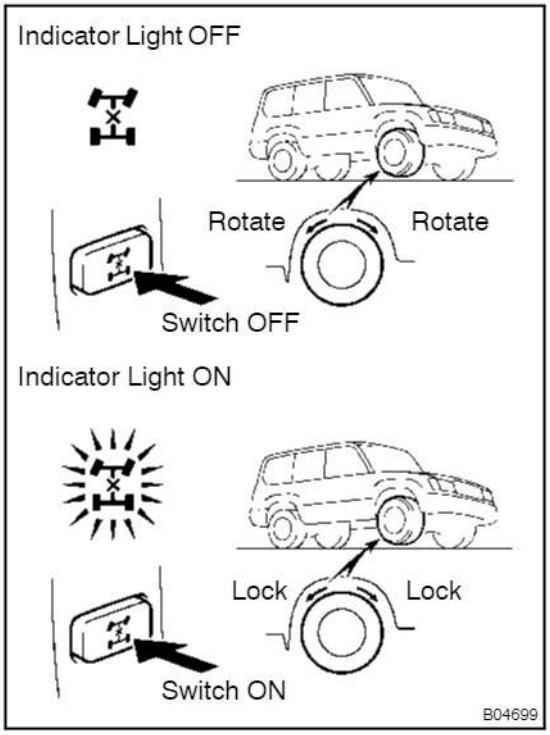
- **Check that VSC warning light is blinking.**
- **Ensure that the vehicle does not move using wires.**
- **After the measurement, disconnect the short circuit and check that the VSC warning light is turned off when restarting the engine.**

(b) Precaution during VSC operation:
(1) Since VSC may be affected by the removal/installation of the VSC–related parts, do not remove/install those parts unless absolutely necessary.
(2) When operating on VSC, follow the instructions in BR section in this manual to surely make preparations or check after operations.

3. WHEN SERVICING FULL–TIME 4WD VEHICLES

The Full–time 4WD LAND CRUISER is equipped with the mechanical lock type center differential system.
During tests using a brake tester or chassis dynamometer, such as braking force tests or speedometer tests, if only the front or rear wheels are to be rotated, it is necessary to set the position of the center differential to FREE or LOCK depending on the type of the test being performed.

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Center differential FREE condition:

	Condition	Wheel
Center differential switch	OFF	A lifted wheel cannot be rotated even if only one wheel is lifted up, as long as transmission is in Neutral (or N range).
Indicator light	OFF	
Transfer select lever (H/L)	w/ VSC: Either will do w/o VSC: H range only	

Center differential LOCK conditions (w/ VSC):

	Condition	Wheel
Center differential switch	ON	A lifted wheel cannot be rotated even if only one wheel is lifted up, as long as transmission is in Neutral (or N range).
Indicator light	ON	
Transfer select lever (H/L)	Either will do	

Center differential LOCK conditions (w/o VSC):

	Condition	Wheel
Center differential switch	ON	A lifted wheel cannot be rotated even if only one wheel is lifted up, as long as transmission is in Neutral (or N range).
Indicator light	ON	
Transfer select lever (H/L)	H position	

	Condition	Wheel
Center differential switch	ON or OFF	A lifted wheel cannot be rotated even if only one wheel is lifted up, as long as transmission is in Neutral (or N range).
Indicator light	ON	
Transfer select lever (H/L)	L position	

HINT:

w/o Vehicle stability control (VSC) system:

When the transfer select lever is put in "L" position, the center differential is put in LOCK condition regardless of the position of the center differential lock switch.

CAUTION:

Center differential "LOCK" ↔ "FREE" selecting procedure:

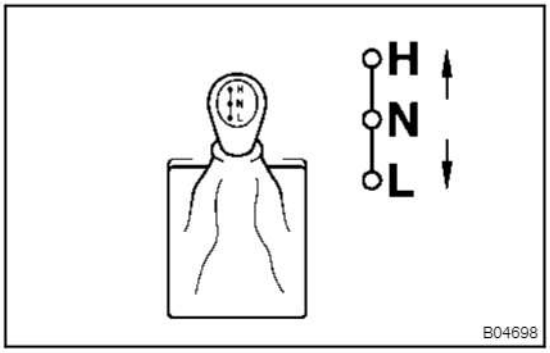
- **Operate the switch only when all of 4 wheels are stopped or driven in a straight line.**
- **Never operate the switch when any wheel is slipping.**
- **Never operate the switch when any wheel is spinning freely.**
- **Never operate the switch when swerving or cornering.**

HINT:

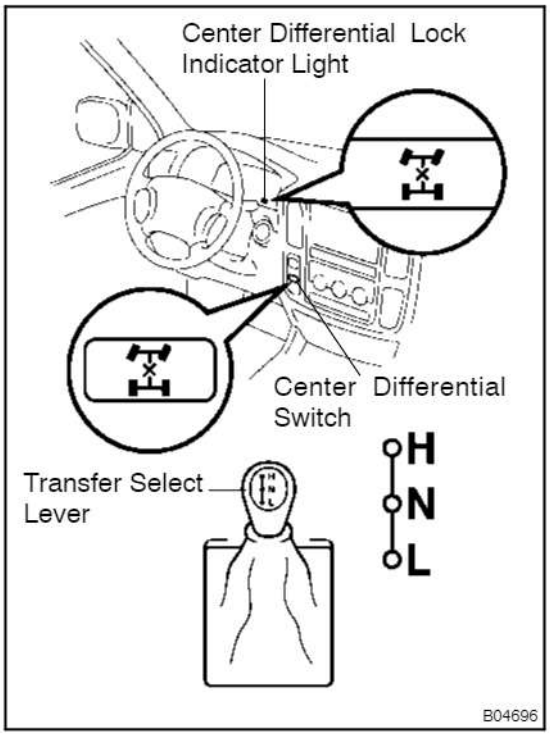
- Center differential "LOCK" ↔ "FREE" selecting procedure:

  Move the vehicle forward or backward slightly if the indicator light does not operate correctly when the center differential lock switch is turned ON or OFF.

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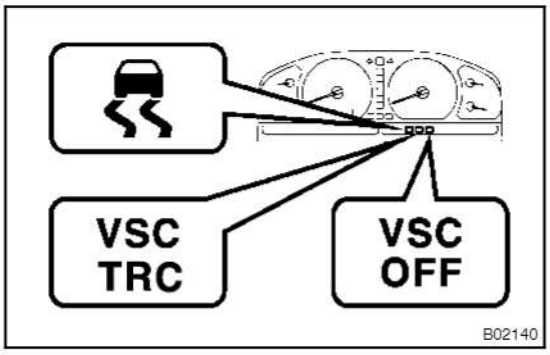
- Transfer gear "H" ↔ "L" gear shifting procedure:
  When shifting, always put the shift lever of the transmission in N position. In other positions, the gears of the transfer clash, and switching cannot be performed.



4. WHEN TESTING BRAKES, SPEEDOMETER, ETC.

(a) When carrying out any kind of servicing or testing on a Full–time 4WD in which the front or rear wheels are to be rotated (braking test, speedometer test), be sure to observe the precautions given below.
Incorrect preparations or test procedures may cause danger as well as unsuccessful test results.
Before starting any such servicing or test, be sure to check the following items:

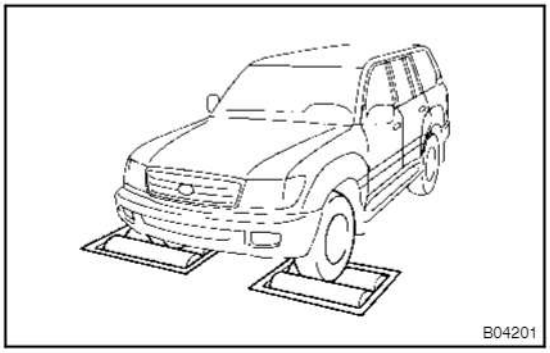
- Center differential mode position (FREE or LOCK)



- Vehicle stability control (VSC) system (with or without):
  If the vehicle is equipped with the system, the slip indicator light, the VSC/TRC indicator light and the VSC OFF indicator light come on with the ignition key turned to "ON". They will go off after about a few seconds.
- Whether wheels should be touching ground or jacked up
- Transmission gear position (N range)
- Transfer gear position (H or L position)
- Maximum testing vehicle speed
- Maximum testing time

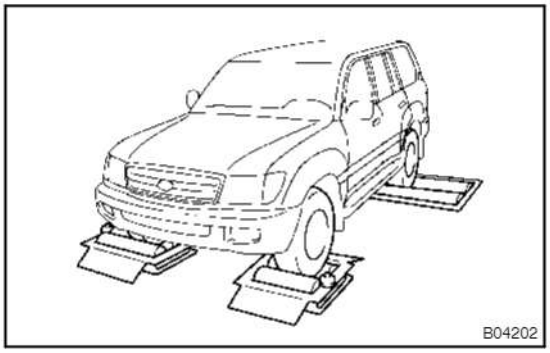
HINT:
w/o Vehicle stability control (VSC) system:
When the transfer select lever is put in "L" position, the center differential is put in LOCK condition regardless of the position of the center differential lock switch.

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(b) Using Braking Tester:
Measure by low–speed type (Vehicle Speed: Below 0.5 km/h or 0.3 mph) brake tester and observe the following instructions before performing the test.
(1) Position the wheels to be tested (front or rear) on the tester.
(2) Put the center differential in FREE position.
(3) If the vehicle is equipped with Vehicle Stability Control (VSC) system, prohibit the system from the activation (See step 2.).
(4) Shift the transmission shift lever to "N" range.

HINT:
Do not forget to change the Vehicle Stability Control (VSC) & Traction Control (TRC) system to operational condition after the test. Check that the VSC warning indicator light goes off when restarting the engine.

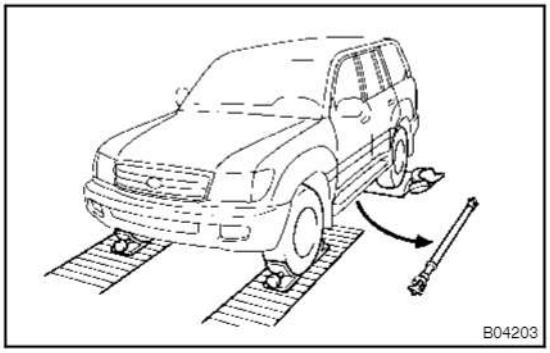

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(c) Using Speedometer Tester:
Observe the following instructions and then measure with the rear wheels.
(1) Position the rear wheels on the tester roller.
(2) Position the front wheels on the free roller or jack them up.
(3) Put the center differential in FREE position.
(4) If the vehicle is equipped with Vehicle Stability Control (VSC) & Traction Control (TRC) system, prohibit the system from the activation (See step 2.).
(5) Ensure that the vehicle does not move using wires.

CAUTION:
The maximum speed should be less than 60 km/h (37 mph) and maximum driving time should be 1 minute.

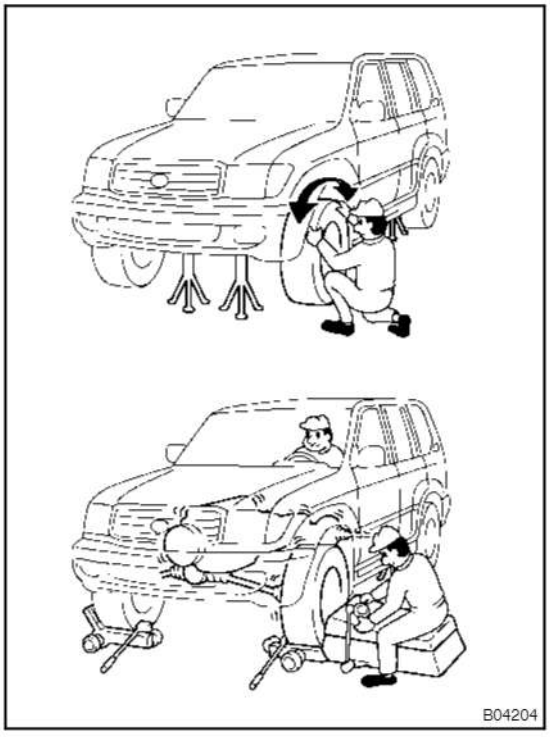
HINT:
- Sudden shifting, braking, acceleration or deceleration is not allowed.
- Do not forget to change the Vehicle Stability Control (VSC) & Traction Control (TRC) system to operational condition after the test. Check that the VSC warning indicator light goes off when restarting the engine.

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(d) Using Chassis Dynamometer:
Observe the following instructions and then measure with the rear wheels.
(1) Remove the front propeller shaft.
(2) Put the center differential in LOCK position.
(3) If the vehicle is equipped with Vehicle Stability Control (VSC) & Traction Control (TRC) system, prohibit the system from the activation (See step 2.).
(4) Ensure that the vehicle is securely fixed.

HINT:
- Sudden shifting, braking, acceleration or deceleration is not allowed.
- Do not forget to change the Vehicle Stability Control (VSC) & Traction Control (TRC) system to operational condition after the test. Check that the VSC warning indicator light goes off when restarting the engine.



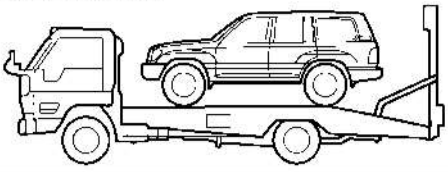
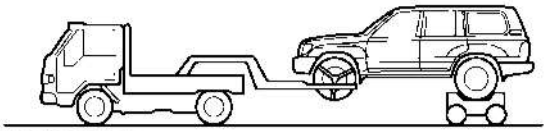
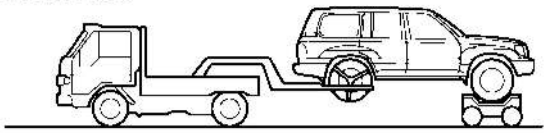
(e) On–Vehicle Wheel Balancing:
When doing on–vehicle wheel balancing on a full–time 4WD vehicle, to prevent each wheel from being rotated at different speed in different directions (which could damage the center differential), always be sure to observe the following precautions.
(1) All of 4 wheels should be jacked up, being apart from the ground completely.
(2) Put the center differential in LOCK position.
(3) If the vehicle is equipped with Vehicle Stability Control (VSC) & Traction Control (TRC) system, prohibit the system from the activation (See step 2.).
(4) The parking brake lever should be fully released.
(5) None of the brakes should be applied.
(6) The wheels should be driven on the wheel balancer with the engine running.
(7) Carry out the wheel balancing with the transmission position in D range.

HINT:
- When doing this balancing, pay attention to the other wheels rotating at the same time.
- Sudden acceleration, deceleration or braking is not allowed.
- Do not forget to change the Vehicle Stability Control (VSC) & Traction Control (TRC) system to operational condition after the test. Check that the VSC warning indicator light goes off when restarting the engine.

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5. WHEN TOWING FULL–TIME 4WD VEHICLES

- Use one of the methods shown below to tow the vehicle.
- If the vehicle has trouble in the chassis and drive train, use method 1 (flat bed truck).

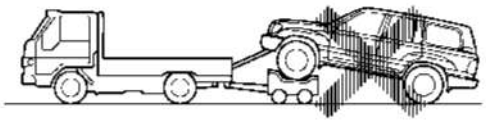
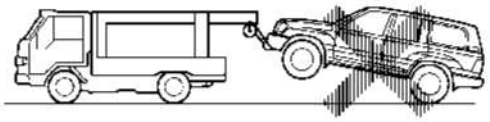
Towing Method \ Conditions	Parking Brake	Transmission Shift Lever Position
1. Flat Bed Truck 	Applied	Any Position
2. Wheel Lift Type Truck From Front  From Rear 	Applied	Any Position

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NOTICE:

Do not use any towing method other than those shown above.

- For example, the towing methods shown below are dangerous or damage the vehicle, so do not use them.

NO 	● Never tow the vehicle using a method where the lifted–up wheel cannot rotate. ● If this towing method is used, either from the front or rear: (a) There is a danger of the drive train heating up and causing breakdown, or of the wheels flying off the dolly. (b) In addition, if the vehicle is equipped with the Vehicle Stability Control (VSC) & Traction Control (TRC) system, the system will apply the rotating wheels brake unless the engine isn't shut off.
NO 	Do not use the sling type towing method, either from the front or rear, as this method causes damage to the body.

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6. FOR VEHICLES EQUIPPED WITH A CATALYTIC CONVERTER

CAUTION:

If large amount of unburned gasoline flows into the converter, it may overheat and create a fire hazard. To prevent this, observe the following precautions and explain them to your customer.

(a) Use only unleaded gasoline.

(b) Avoid prolonged idling.
Avoid running the engine at idle speed for more than 20 minutes.

(c) Avoid spark jump test.
(1) Perform spark jump test only when absolutely necessary. Perform this test as rapidly as possible.
(2) While testing, never race the engine.

(d) Avoid prolonged engine compression measurement.
Engine compression tests must be done as rapidly as possible.

(e) Do not run engine when fuel tank is nearly empty.
This may cause the engine to misfire and create an extra load on the converter.

(f) Avoid coasting with ignition turned off and prolonged braking.

(g) Do not dispose of used catalyst along with parts contaminated with gasoline or oil.

7. IF VEHICLE IS EQUIPPED WITH MOBILE COMMUNICATION SYSTEM

For vehicles with mobile communication systems such as two–way radios and cellular telephones, observe the following precautions.

(1) Install the antenna as far as possible away from the ECU and sensors of the vehicle's electronic system.

(2) Install the antenna feeder at least 20 cm (7.87 in.) away from the ECU and sensors of the vehicle's electronic systems. For details about ECU and sensors locations, refer to the section on the applicable component.

(3) Do not wind the antenna feeder together with the other wiring as much as possible, also avoid running the antenna feeder parallel with other wire harnesses.

(4) Check that the antenna and feeder are correctly adjusted.

(5) Do not install powerful mobile communications system.

8. FOR USING HAND–HELD TESTER

CAUTION:

Observe the following items for safety reasons:

- **Before using the hand–held tester, the hand–held tester's operator manual should be read thoroughly.**
- **Be sure to route all cables securely when driving with the hand–held tester connected to the vehicle. (i.e. Keep cables away from feet, pedals, steering wheel and shift lever.)**
- **Two persons are required when test driving with the hand–held tester, one person to drive the vehicle and the other person to operate the hand–held tester.**

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HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS

IN00Z–82

GENERAL INFORMATION

A large number of ECU controlled systems are used in the LAND CRUISER (Station Wagon). In general, the ECU controlled system is considered to be a very intricate system requiring a high level of technical knowledge and expert skill to troubleshoot. However, the fact is that if you proceed to inspect the circuits one by one, troubleshooting of these systems is not complex. If you have adequate understanding of the system and a basic knowledge of electricity, accurate diagnosis and necessary repair can be performed to locate and fix the problem. This manual is designed through emphasis of the above standpoint to help service technicians perform accurate and effective troubleshooting, and is compiled for the following major ECU controlled systems:

The troubleshooting procedure and how to make use of it are described on the following pages.

System	Page
1. Automatic Transmission (A750F for 2UZ–FE)	DI–1
2. Automatic Transmission (A750F for 1HD–FTE)	DI–99
3. ABS & Vehicle Stability Control (VSC) & Brake Assist (BA) System	DI–182
4. Variable Gear Ratio Steering	DI–345
5. Supplemental Restraint System	DI–430
6. Power Seat Control System	DI–777
7. Wireless Door Lock Control System	DI–808
8. Theft Deterrent System	DI–825
9. Cruise Control System	DI–852
10.Engine Immobiliser System	DI–880
11.Rain Sensor System	DI–923
12.Sliding Roof System	DI–960
13.Body Control System	DI–979
14.Driver Door Lock Control System	DI–1055
15.Multiplex Communication System	DI–1102
16.Navigation System	DI–1140
17.Air Conditioning System	DI–1224

FOR USING HAND–HELD TESTER

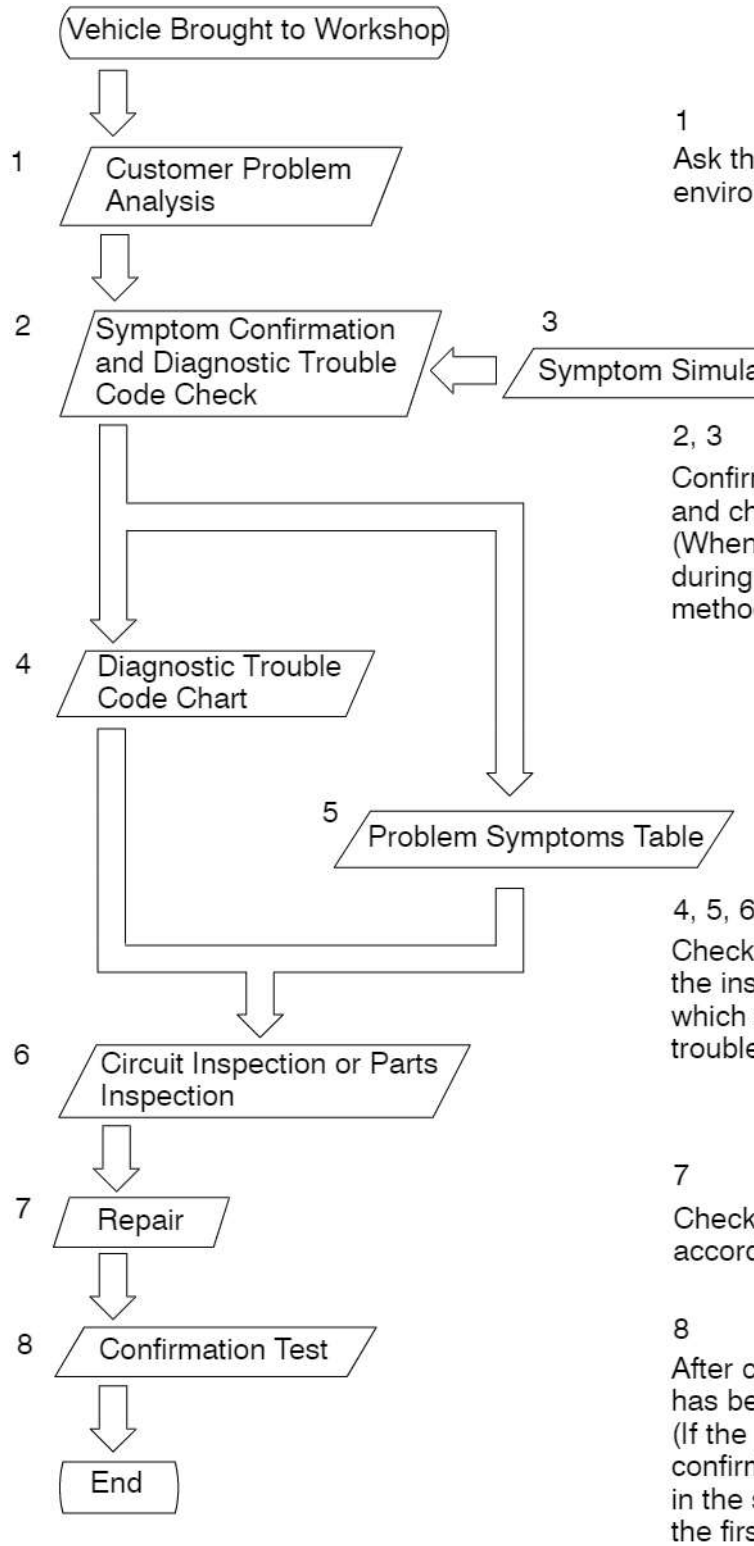
- Before using the tester, the tester's operator manual should be read thoroughly.
- If the tester cannot communicate with ECU controlled systems when you have connected the cable of the tester to DLC3, turned the ignition switch ON and operated the tester, there is a problem on the vehicle side or tester side.
  (1) If communication is normal when the tester is connected to another vehicle, inspect the diagnosis data link line (Bus⊕line) or ECU power circuit of the vehicle.
  (2) If communication is still not possible when the tester is connected to another vehicle, the problem is probably in the tester itself, so perform the Self Test procedures outline in the Tester Operator's Manual.

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IN0JI–01

HOW TO PROCEED WITH TROUBLESHOOTING

Carry out troubleshooting in accordance with the procedure on the following page. Here, only the basic procedure is shown. Details are provided in Diagnostics section, showing the most effective methods for each circuit. Confirm the troubleshooting procedures first for the relevant circuit before beginning troubleshooting of that circuit.



1

Ask the customer about the conditions and the environment when the problem occurred.

2, 3

Confirm the symptoms and the problem conditions, and check the diagnostic trouble codes.
(When the problem symptoms do not appear during confirmation, use the symptom simulation method described later on.)

4, 5, 6

Check the results obtained in Step 2, then confirm the inspection procedure for the system or the part which should be checked using the diagnostic trouble code chart or the problem symptoms table.

7

Check and repair the affected system or part in accordance with the instructions in Step 6.

8

After completing repairs, confirm that the problem has been eliminated.
(If the problem is not reproduced, perform the confirmation test under the same conditions and in the same environment as when it occurred for the first time.)

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1. CUSTOMER PROBLEM ANALYSIS

In troubleshooting, the problem symptoms must be confirmed accurately and all preconceptions must be cleared away in order to give an accurate judgement. To ascertain just what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time it occurred.
Important Point in the Problem Analysis:
The following 5 items are important points in the problem analysis. Past problems which are thought to be unrelated and the repair history, etc. may also help in some cases, so as much information as possible should be gathered and its relationship with the problem symptoms should be correctly ascertained for reference in troubleshooting. A customer problem analysis table is provided in Diagnostics section for each system for your use.

Important Points in the Customer Problem Analysis

- What ––––– Vehicle model, system name
- When ––––– Date, time, occurrence frequency
- Where ––––– Road conditions
- Under what conditions? ––––– Running conditions, driving conditions, weather conditions
- How did it happen? ––––– Problem symptoms

(Sample) Supplemental restraint system check sheet.

CUSTOMER PROBLEM ANALYSIS CHECK

Supplemental Restraint System Check Sheet Inspector's Name

Customer's Name		Registration No.	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	Odometer Reading	km miles

Date Problem First Occurred	/ /
Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Other
Temperature	Approx.

Vehicle Operation	☐ Starting ☐ Idling ☐ Driving [☐ Constant speed ☐ Acceleration ☐ Deceleration ☐ Other]

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2. SYMPTOM CONFIRMATION AND DIAGNOSTIC TROUBLE CODE CHECK

The diagnostic system in the LAND CRUISER Station Wagon fulfills various functions. The first function is the Diagnostic Trouble Code Check in which a malfunction in the signal circuits to the ECU is stored in code in the ECU memory at the time of occurrence, to be output by the technician during troubleshooting. Another function is the Input Signal Check which checks if the signals from various switches are sent to the ECU correctly.

By using these check functions, the problem areas can be narrowed down quickly and troubleshooting can be performed effectively. Diagnostic functions are incorporated in the following systems in the LAND CRUISER Station Wagon.

System	Diagnostic Trouble Code Check	Input Signal Check (Sensor Check)	Diagnosis Test Mode (Active Test)
Automatic Transmission (A750F for 2UZ–FE)	○(with Test Mode)	○	○
Automatic Transmission (A750F for 1HD–FTE)	○(with Test Mode)	○	○
ABS & Vehicle Stability Control (VSC) & Brake Assist (BA) System	○	○	○
Variable Gear Ratio Steering	○	○	
Supplemental Restraint System	○		
Power Seat Control System	○	○	○
Wireless Door Lock Control System	○		
Theft Deterrent System	○		
Cruise Control System	○	○	
Engine Immobiliser System	○	○	○
Rain Sensor System	○	○	○
Sliding Roof System	○	○	○
Body Control System	○	○	○
Driver Door Lock Control System	○	○	○
Multiplex Communication System	○		
Navigation System	○		
Air Conditioning System	○		○

In diagnostic trouble code check, it is very important to determine whether the problem indicated by the diagnostic trouble code is still occurring or occurred in the past but returned to normal at present. In addition, it must be checked in the problem symptom check whether the malfunction indicated by the diagnostic trouble code is directly related to the problem symptom or not. For this reason, the diagnostic trouble codes should be checked before and after the symptom confirmation to determine the current conditions, as shown in the table below. If this is not done, it may, depending on the case, result in unnecessary troubleshooting for normally operating systems, thus making it more difficult to locate the problem, or in repairs not pertinent to the problem. Therefore, always follow the procedure in correct order and perform the diagnostic trouble code check.

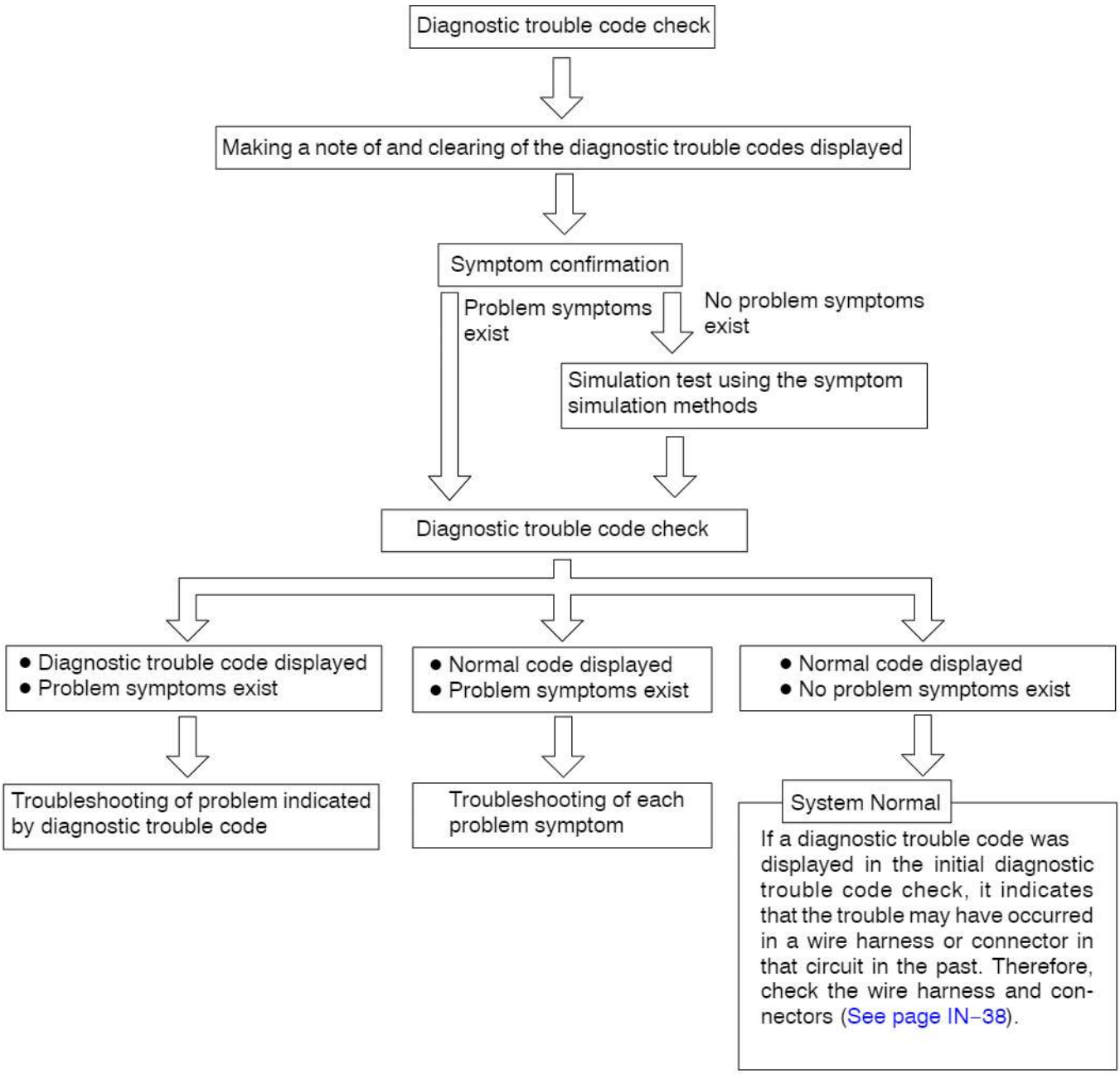
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DIAGNOSTIC TROUBLE CODE CHECK PROCEDURE

Diagnostic Trouble Code Check (Make a note of and then clear)	Confirmation of Symptoms	Diagnostic Trouble Code Check	Problem Condition
Diagnostic Trouble Code Display	Problem symptoms exist	Same diagnostic trouble code is displayed	Problem is still occurring in the diagnostic circuit
		Normal code is displayed	The problem is still occurring in a place other than in the diagnostic circuit (The diagnostic trouble code displayed first is either for a past problem or it is a secondary problem)
	No problem symptoms exist		The problem occurred in the diagnostic circuit in the past
Normal Code Display	Problem symptoms exist	Normal code is displayed	The problem is still occurring in a place other than in the diagnostic circuit
	No problem symptoms exist	Normal code is displayed	The problem occurred in a place other than in the diagnostic circuit in the past

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Taking into account the above points, a flow chart showing how to proceed with troubleshooting using the diagnostic trouble code check is shown below. This flow chart shows how to utilize the diagnostic trouble code check effectively, then by carefully checking the results, indicates how to proceed either to diagnostic trouble code troubleshooting or to troubleshooting of problem symptoms table.



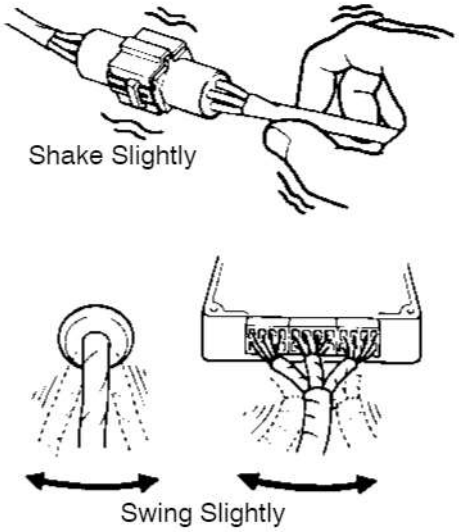
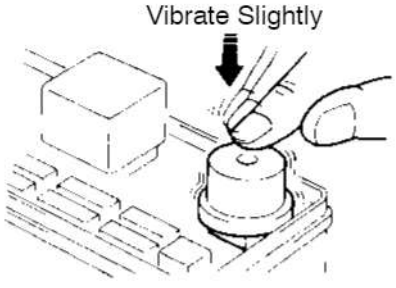
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3. SYMPTOM SIMULATION

The most difficult case in troubleshooting is when there are no problem symptoms occurring. In such cases, a thorough customer problem analysis must be carried out, then simulate the same or similar conditions and environment in which the problem occurred in the customer's vehicle. No matter how much experience a technician has, or how skilled he or she may be, if he or she proceeds to troubleshoot without confirming the problem symptoms he or she will tend to overlook something important in the repair operation and make a wrong guess somewhere, which will only lead to a standstill. For example, for a problem which only occurs when the engine is cold, or for a problem which occurs due to vibration caused by the road during driving, etc., the problem can never be determined so long as the symptoms are confirmed with the engine hot condition or the vehicle at a standstill. Since vibration, heat or water penetration (moisture) is likely cause for problem which is difficult to reproduce, the symptom simulation tests introduced here are effective measures in that the external causes are applied to the vehicle in a stopped condition.

Important Points in the Symptom Simulation Test:

In the symptom simulation test, the problem symptoms should of course be confirmed, but the problem area or parts must also be found out. To do this, narrow down the possible problem circuits according to the symptoms before starting this test and connect a tester beforehand. After that, carry out the symptom simulation test, judging whether the circuit being tested is defective or normal and also confirming the problem symptoms at the same time. Refer to the problem symptoms table for each system to narrow down the possible causes of the symptom.

1	**VIBRATION METHOD: When vibration seems to be the major cause.**
CONNECTORS Slightly shake the connector vertically and horizontally. **WIRE HARNESS** Slightly shake the wire harness vertically and horizontally. The connector joint, fulcrum of the vibration, and body through portion are the major areas to be checked thoroughly.	 F12335 F12332
PARTS AND SENSOR Apply slight vibration with a finger to the part of the sensor considered to be the problem cause and check that the malfunction occurs. HINT: Applying strong vibration to relays may result in open relays.	 F12334

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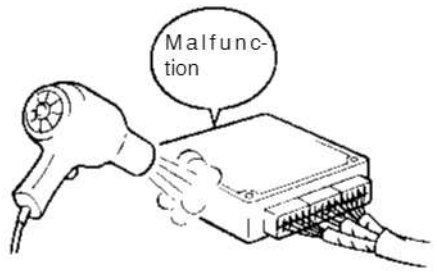
2	**HEAT METHOD: When the problem seems to occur when the suspect area is heated.**

Heat the component that is the likely cause of the malfunction with a hair dryer or similar object. Check to see if the malfunction occurs.

NOTICE:

(1) Do not heat to more than 60 °C (140 °F). (Temperature is limited not to damage the components.)

(2) Do not apply heat directly to parts in the ECU.



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3	**WATER SPRINKLING METHOD: When the malfunction seems to occur on a rainy day or in a high–humidity condition.**

Sprinkle water onto the vehicle and check to see if the malfunction occurs.

NOTICE:

(1) Never sprinkle water directly into the engine compartment, but indirectly change the temperature and humidity by applying water spray onto the radiator front surface.

(2) Never apply water directly onto the electronic components.

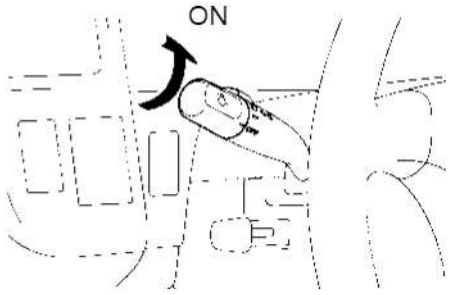
HINT:
If a vehicle is subject to water leakage, the leaked water may contaminate the ECU. When testing a vehicle with a water leakage problem, special caution must be taken.



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4	**OTHER: When a malfunction seems to occur when electrical load is excessive.**

Turn on all electrical loads including the heater blower, head lights, rear window defogger, etc. and check to see if the malfunction occurs.



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4. DIAGNOSTIC TROUBLE CODE CHART

The inspection procedure is shown in the table below. This table permits efficient and accurate troubleshooting using the diagnostic trouble codes displayed in the diagnostic trouble code check. Proceed with troubleshooting in accordance with the inspection procedure given in the diagnostic chart corresponding to the diagnostic trouble codes displayed. The Supplemental Restraint System diagnostic trouble code chart is shown below as an example.

- DTC No.
  Indicates the diagnostic trouble code.
- Page or Instructions
  Indicates the page where the inspection procedure for each circuit is to be found, or gives instructions for checking and repairs.

- Trouble Area
  Indicates the suspect area of the problem.

- Detection Item
  Indicates the system of the problem or contents of the problem.

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit for that code listed in the table below. (Proceed to the page given for that circuit).

DTC No. (See page)	Detection Item	Trouble Area	SRS Warming Light
B0100/13 (DI–119)	• Short in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0101/14 (DI–124)	• Open in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0102/11 (DI–128)	• Short in D squib circuit (to ground)	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0103/12 (DI–132)	• Short in D squib circuit (to B+)	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Wire harness	ON
B0105/53 (DI–136)	• Short in P squib circuit	• Front Passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B0106/54	• Open in P squib circuit	• Front Passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	
	b circuit (to Ground)	• Front Passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	

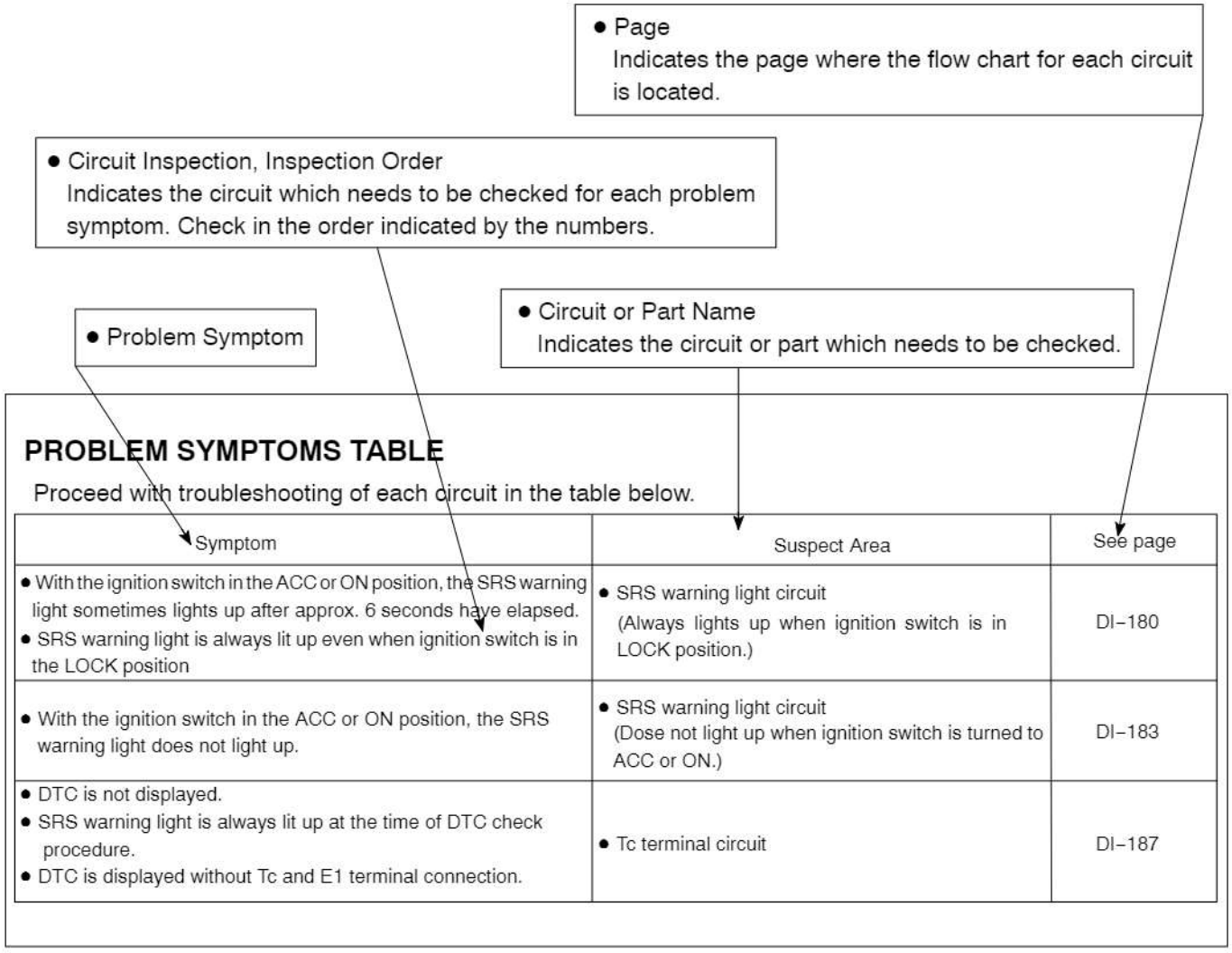
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5. PROBLEM SYMPTOMS TABLE

The suspected circuits or parts for each problem symptom are shown in the table below. Use this table to troubleshoot the problem when a "Normal" code is displayed in the diagnostic trouble code check but the problem is still occurring. Numbers in the table indicate the inspection order in which the circuits or parts should be checked.

HINT:

When the problem is not detected by the diagnostic system even though the problem symptom is present, it is considered that the problem is occurring outside the detection range of the diagnostic system, or that the problem is occurring in a system other than the diagnostic system.



PROBLEM SYMPTOMS TABLE

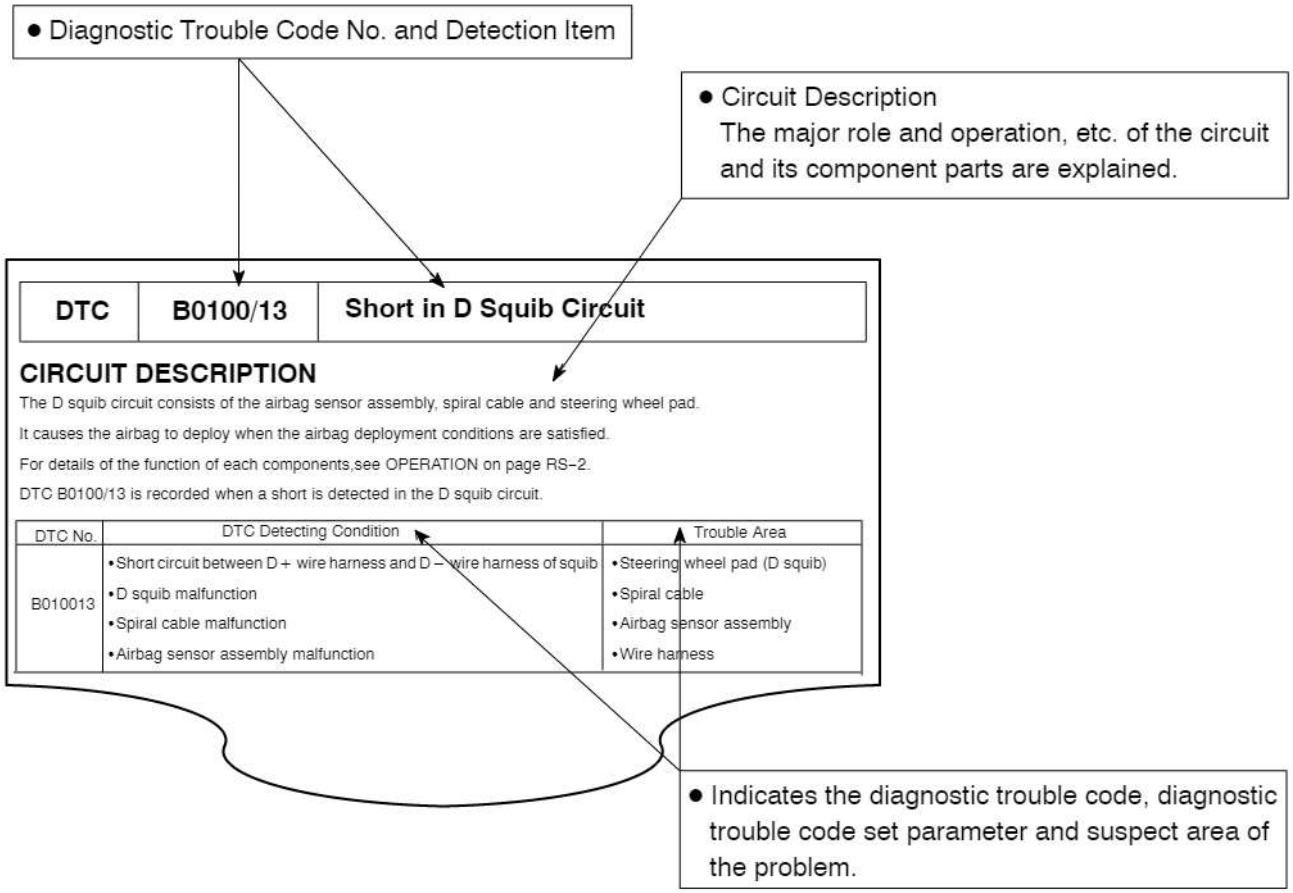
Proceed with troubleshooting of each circuit in the table below.

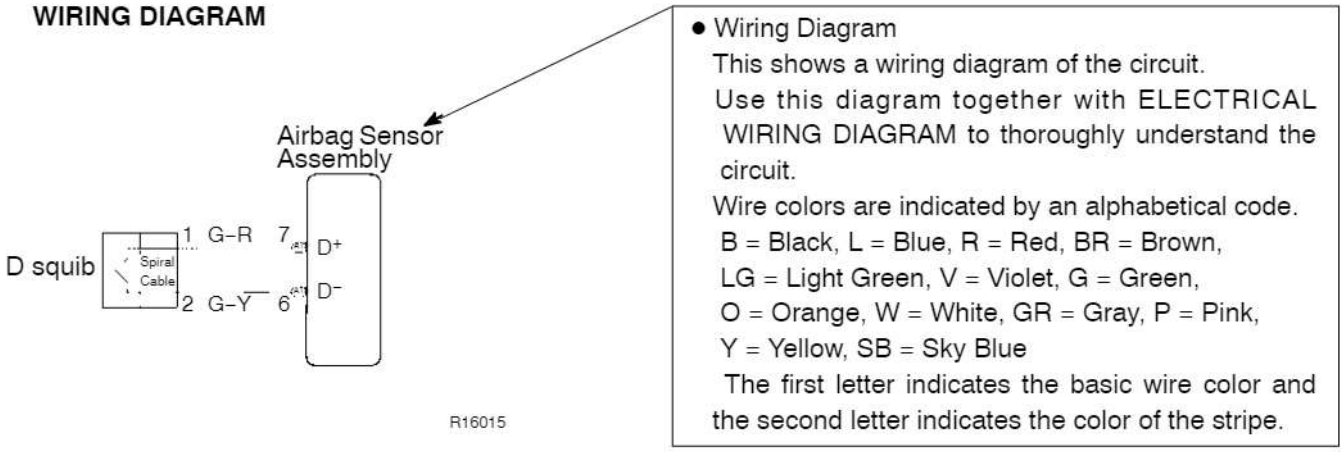
Symptom	Suspect Area	See page
● With the ignition switch in the ACC or ON position, the SRS warning light sometimes lights up after approx. 6 seconds have elapsed. ● SRS warning light is always lit up even when ignition switch is in the LOCK position	● SRS warning light circuit (Always lights up when ignition switch is in LOCK position.)	DI–180
● With the ignition switch in the ACC or ON position, the SRS warning light does not light up.	● SRS warning light circuit (Dose not light up when ignition switch is turned to ACC or ON.)	DI–183
● DTC is not displayed. ● SRS warning light is always lit up at the time of DTC check procedure. ● DTC is displayed without Tc and E1 terminal connection.	● Tc terminal circuit	DI–187

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6. CIRCUIT INSPECTION

How to read and use each page is shown below.





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● Indicates the position of the ignition switch during the check.

LOCK
Ignition Switch LOCK (OFF)

ON
Ignition Switch ON

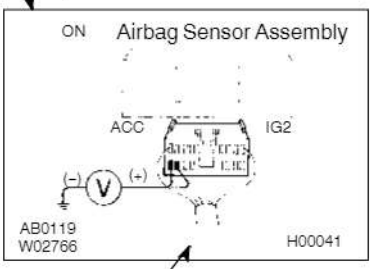
START
Ignition Switch START

ACC
Ignition Switch ACC

● Inspection Procedure
Use the inspection procedure to determine if the circuit is normal or abnormal, and if it is abnormal, use it to determine whether the problem is located in the sensors, actuators, wire harness or ECU.

INSPECTION PROCEDURE

2	**Check voltage at IG2 and ACC of airbag sensor assembly.**



PREPARATION:
Turn ignition switch ON.

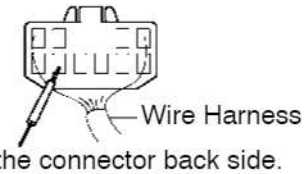
CHECK:
Measure voltage between terminals IG2 and ACC of airbag sensor assembly and body ground.

OK:
Voltage: Below 16 V

NG → **Check battery and charging system. (See charging system section)**

OK

● Indicates the place to check the voltage or resistance.
● Indicates the connector position to be checked, from the front or back side.

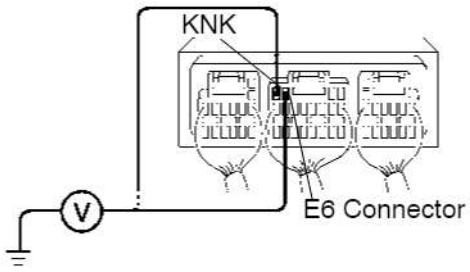


Check from the connector back side. (with harness)

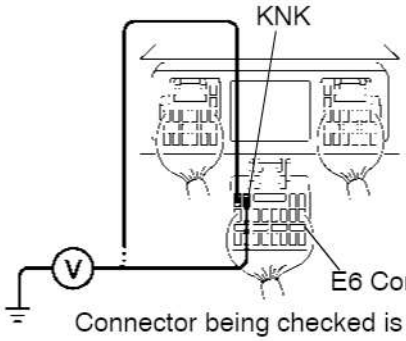


Check from the connector front side. (without harness)
In this case, care must be taken not to bend the terminals.

● Indicates the condition of the connector of ECU during the check.



Connector being checked is connected.

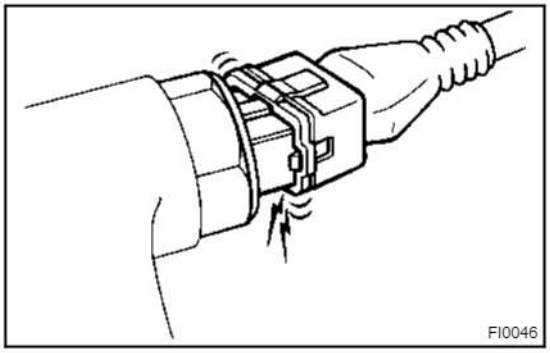


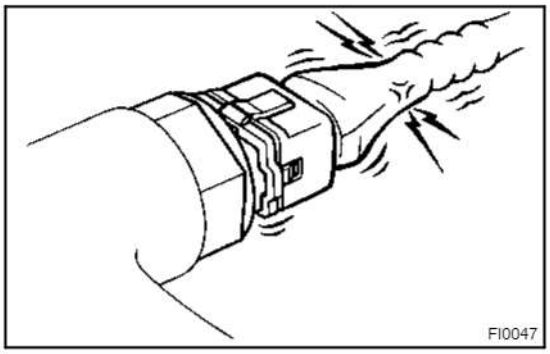
Connector being checked is disconnected.

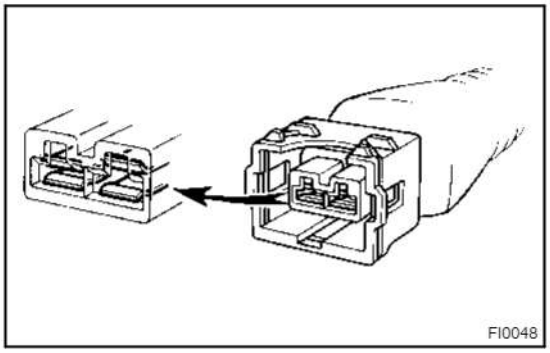
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HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE

1. CONNECTOR CONNECTION AND TERMINAL INSPECTION

- For troubleshooting, diagnostic trouble code charts or problem symptom table are provided for each circuit with detailed inspection procedures on the following pages.
- When all the component parts, wire harnesses and connectors of each circuit except the ECU are found to be normal in troubleshooting, then it is determined that the problem is in the ECU. Accordingly, if diagnosis is performed without the problem symptoms occurring, refer to Step 8 to replace the ECU. So always confirm that the problem symptoms are occurring, or proceed with inspection while using the symptom simulation method.
- The instructions "Check wire harness and connector" and "Check and replace ECU" which appear in the inspection procedure, are common and applicable to all diagnostic trouble codes. Follow the procedure outlined below whenever these instructions appear.

OPEN CIRCUIT:

This could be due to a disconnected wire harness, faulty contact in the connector, and a connector terminal pulled out, etc.

HINT:

- It is rarely the case that a wire is broken in the middle of it. Most cases occur at the connector. In particular, carefully check the connectors of sensors and actuators
- Faulty contact could be due to rusting of the connector terminals, to foreign materials entering terminals or a deformation of connector terminals. Simply disconnecting and reconnecting the connectors once changes the condition of the connection and may result in a return to normal operation. Therefore, in troubleshooting, if no abnormality is found in the wire harness and connector check, but the problem disappears after the check, then the cause is considered to be in the wire harness or connectors.

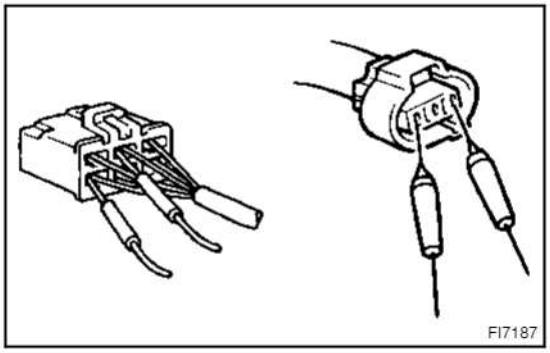
SHORT CIRCUIT:

This could be due to a contact between wire harness and the body ground or to a short circuit occurred inside the switch, etc.

HINT:

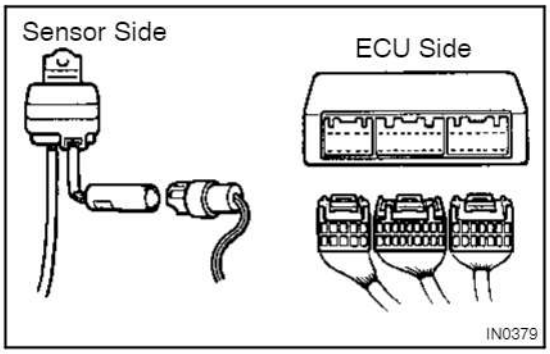
When there is a short circuit between the wire harness and body ground, check thoroughly whether the wire harness is caught in the body or is clamped properly.

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2. CONNECTOR HANDLING

When inserting tester probes into a connector, insert them from the rear of the connector. When necessary, use mini test leads. For water resistant connectors which cannot be accessed from behind, take good care not to deform the connector terminals.



3. CONTINUITY CHECK (OPEN CIRCUIT CHECK)

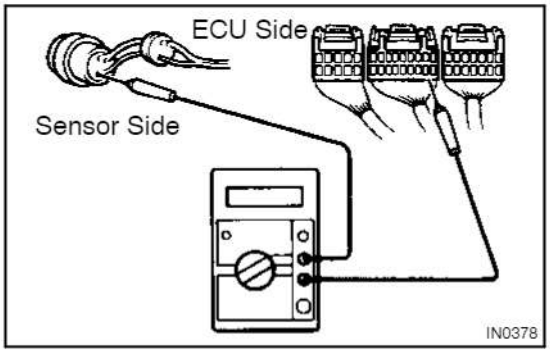
(a) Disconnect the connectors at both ECU and sensor sides.

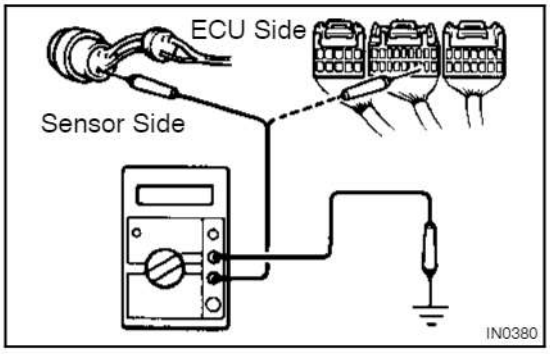
(b) Measure the resistance between the applicable terminals of the connectors.

Resistance: 1 Ω or less

HINT:

Measure the resistance while lightly shaking the wire harness vertically and horizontally.





4. RESISTANCE CHECK (SHORT CIRCUIT CHECK)

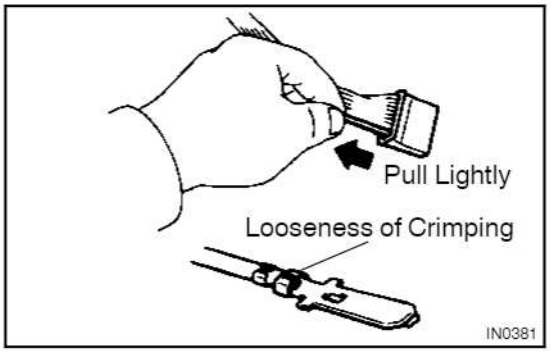
(a) Disconnect the connectors on both ends.

(b) Measure the resistance between the applicable terminals of the connectors and body ground. Be sure to carry out this check on the connectors on both ends.

Resistance: 1 MΩ or higher

HINT:

Measure the resistance while lightly shaking the wire harness vertically and horizontally.



5. VISUAL CHECK AND CONTACT PRESSURE CHECK

(a) Disconnect the connectors at both ends.

(b) Check for rust or foreign material, etc. in the terminals of the connectors.

(c) Check crimped portions for looseness or damage and check that the terminals are secured in lock portion.

HINT:

The terminals should not come out when pulled lightly from the back.

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(d) Prepare a test male terminal and insert it in the female terminal, then pull it out.

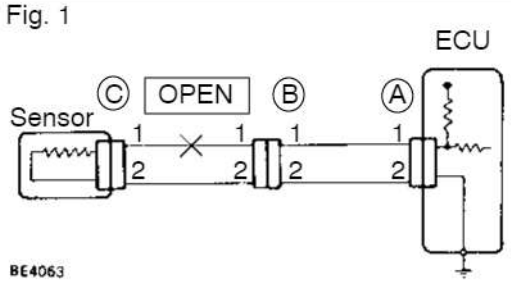
NOTICE:

When testing a gold–plated female terminal, always use a gold–plated male terminal.

HINT:

When the test terminal is pulled out more easily than others, there may be poor contact in that section.

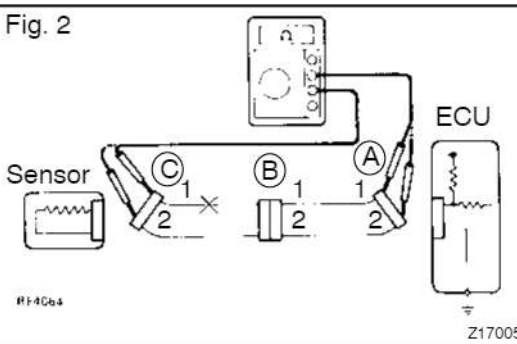
Fig. 1



6. CHECK OPEN CIRCUIT

For the open circuit in the wire harness in Fig. 1, perform "(a) Continuity Check" or "(b) Voltage Check" to locate the section.

Fig. 2



(a) Check the continuity.

(1) Disconnect connectors "A" and "C" and measure the resistance between them.

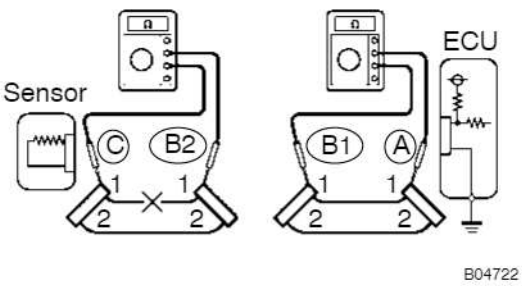
In the case of Fig. 2,

Between terminal 1 of connector "A" and terminal 1 of connector "C" → No continuity (open)

Between terminal 2 of connector "A" and terminal 2 of connector "C" → Continuity

Therefore, it is found out that there is an open circuit between terminal 1 of connector "A" and terminal 1 of connector "C".

Fig. 3



(2) Disconnect connector "B" and measure the resistance between the connectors.

In the case of Fig. 3,

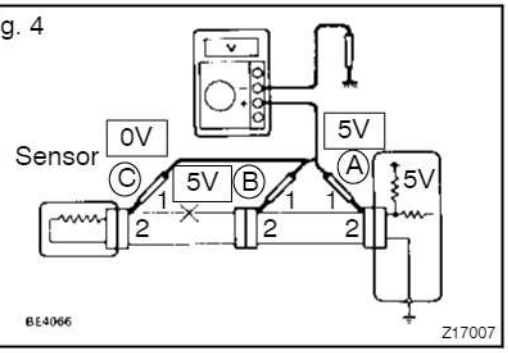
Between terminal 1 of connector "A" and terminal 1 of connector "B1" → Continuity

Between terminal 1 of connector "B2" and terminal 1 of connector "C" → No continuity (open)

Therefore, it is found out that there is an open circuit between terminal 1 of connector "B2" and terminal 1 of connector "C".

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Fig. 4



(b) Check the voltage.

In a circuit in which voltage is applied (to the ECU connector terminal), an open circuit can be checked for by conducting a voltage check.

As shown in Fig. 4, with each connector still connected, measure the voltage between body ground and terminal 1 of connector "A" at the ECU 5V output terminal, terminal 1 of connector "B", and terminal 1 of connector "C", in that order.

If the results are:

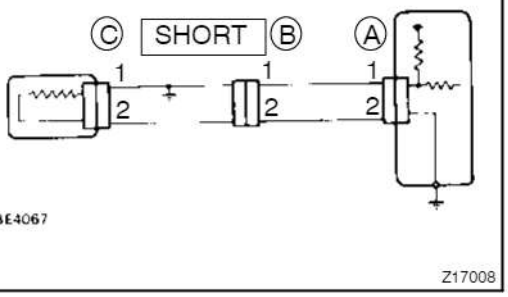
5V: Between Terminal 1 of connector "A" and Body Ground

5V: Between Terminal 1 of connector "B" and Body Ground

0V: Between Terminal 1 of connector "C" and Body Ground

Then it is found out that there is an open circuit in the wire harness between terminal 1 of "B" and terminal 1 of "C".

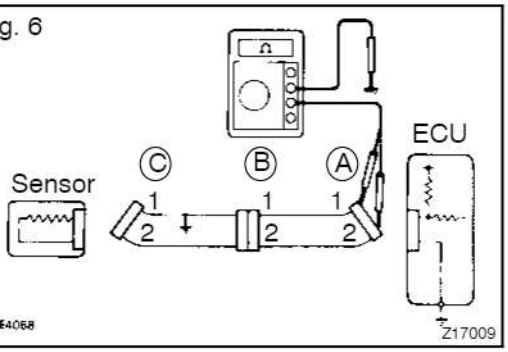
Fig. 5



7. CHECK SHORT CIRCUIT

If the wire harness is ground shorted as in Fig. 5, locate the section by conducting a "continuity check with ground".

Fig. 6



Check the continuity with ground.

(1) Disconnect connectors "A" and "C" and measure the resistance between terminal 1 and 2 of connector "A" and body ground.

In the case of Fig. 6

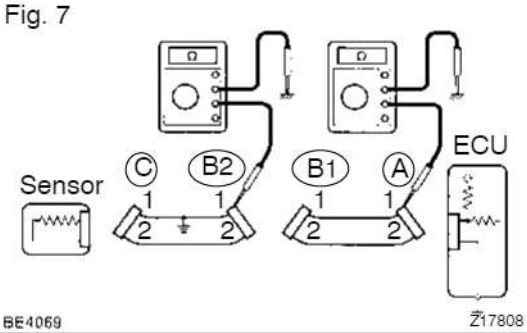
Between terminal 1 of connector "A" and body ground → Continuity (short)

Between terminal 2 of connector "A" and body ground → No continuity

Therefore, it is found out that there is a short circuit between terminal 1 of connector "A" and terminal 1 of connector "C".

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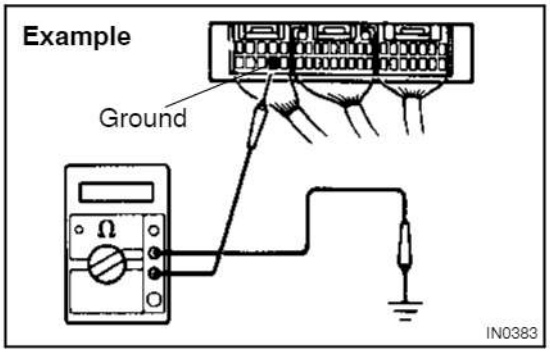
Fig. 7



(2) Disconnect connector "B" and measure the resistance between terminal 1 of connector "A" and body ground, and terminal 1 of connector "B2" and body ground.
Between terminal 1 of connector "A" and body ground → No continuity
Between terminal 1 of connector "B2" and body ground → Continuity (short)
Therefore, it is found out that there is a short circuit between terminal 1 of connector "B2" and terminal 1 of connector "C".

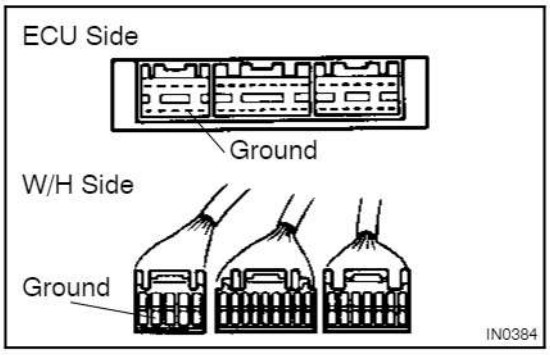
8. CHECK AND REPLACE ECU

First check the ECU ground circuit. If it is faulty, repair it. If it is normal, the ECU could be faulty, so replace the ECU with a normal functioning one and check that the symptoms appear.



(1) Measure the resistance between the ECU ground terminal and the body ground.

Resistance: 1 Ω or less



(2) Disconnect the ECU connector, check the ground terminals on the ECU side and the wire harness side for bend and check the contact pressure.

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TERMS

ABBREVIATIONS USED IN THIS MANUAL

IN08X-02

Abbreviations	Meaning
ABS	Anti-Lock Brake System
A/C	Air Conditioner
AC	Alternating Current
ACC	Accessory
ACIS	Acoustic Control Induction System
ACSD	Automatic Cold Start Device
A.D.D.	Automatic Disconnecting Differential
AHC	Active Height Control Suspension
ALR	Automatic Locking Retractor
ALT	Alternator
AMP	Amplifier
ANT	Antenna
APPROX.	Approximately
A/T	Automatic Transmission (Transaxle)
ATF	Automatic Transmission Fluid
AUTO	Automatic
BA	Brake Assist
BACS	Boost Altitude Compensation System
BAT	Battery
B/L	Bi-Level
BVSV	Bimetallic Vacuum Switching Valve
CB	Circuit Breaker
CD	Compact Disc
CH	Channel
CKD	Complete Knock Down
COMB.	Combination
CPE	Coupe
CRS	Child Restraint System
CTR	Center
DC	Direct Current
DIFF.	Differential
DIFF. LOCK	Differential Lock
DLC	Data Link Connector
DSP	Digital Signal Processor
DTC	Diagnostic Trouble Code
EBD	Electronic Brake Force Distribution
ECT	Electronic Control Transmission
ECU	Electronic Control Unit
EDU	Electronic Driving Unit
EFI	Electronic Fuel Injection
E/G	Engine
ELR	Emergency Locking Retractor

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FF	Front–Engine Front–Wheel–Drive
FIPG	Formed In Place Gasket
FL	Fusible Link
Fr	Front
FR	Front–Engine Rear–Wheel–Drive
FWD	Front–Wheel–Drive
GND	Ground
H/B	Hatchback
HI	High
HID	High Intensity Discharge (Head Lamp)
HT	Hard Top
HWS	Heated Windshield System
IAC	Idle Air Control
IFS	Independent Front Suspension
IG	Ignition
INT	Intermittent
I/P	Instrument Panel
IRS	Independent Rear Suspension
J/B	Junction Block
J/C	Junction Connector
LAN	Local Area Network
LB	Liftback
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LH	Left–Hand
LHD	Left–Hand Drive
LO	Low
LSD	Limited Slip Differential
LSP & PV	Load Sensing Proportioning And Bypass Valve
LSPV	Load Sensing Proportioning Valve
MAP	Manifold Absolute Pressure
MAX.	Maximum
MIC	Microphone
MIL	Malfunction Indicator Lamp
MIN.	Minimum
MP	Multipurpose
MPI	Multipoint Electronic Fuel Injection
MPX	Multiplex Communication System
MS	Manual Steering
M/T	Manual Transmission
N	Neutral
No.	Number
O2S	Oxygen Sensor
O/D	Overdrive
OPT	Option
P & BV	Proportioning And Bypass Valve

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PCS	Power Control System
PKB	Parking Brake
PPS	Progressive Power Steering
PS	Power Steering
PTO	Power Take–Off
RAM	Random Access Memory
R/B	Relay Block
RBS	Recirculating Ball Type Steering
R/F	Reinforcement
RFS	Rigid Front Suspension
RH	Right–Hand
RHD	Right–Hand Drive
RLY	Relay
ROM	Read Only Memory
Rr	Rear
RR	Rear–Engine Rear–Wheel Drive
RRS	Rigid Rear Suspension
RSCA	Rollover Sensing Curtain shield Airbag
RWD	Rear–Wheel Drive
SDN	Sedan
SEN	Sensor
SICS	Starting Injection Control System
SPEC	Specification
SRS	Supplemental Restraint System
SSM	Special Service Materials
SST	Special Service Tools
STD	Standard
SW	Switch
SYS	System
T/A	Transaxle
TACH	Tachometer
TDC	Top Dead Center
TEMP.	Temperature
TEMS	TOYOTA Electronic Modulated Suspension
TFT	Toyota Free–Tronic
T/M	Transmission
TMC	TOYOTA Motor Corporation
TRC	Traction Control System
U/D	Underdrive
VENT	Ventilator
VGRS	Variable Gear Ratio Steering
VIN	Vehicle Identification Number
VSC	Vehicle Stability Control
w/	With
WGN	Wagon
W/H	Wire Harness

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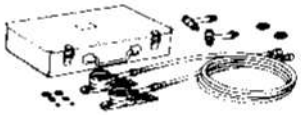
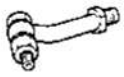
w/o	Without
1st	First
2nd	Second
2WD	Two Wheel Drive Vehicle (4x2)
4WD	Four Wheel Drive Vehicle (4x4)

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AUTOMATIC TRANSMISSION (A750F)

SST (Special Service Tools)

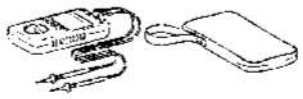
PP5YA–01

	09350–30020	TOYOTA Automatic Transmission Tool Set	
	(09351–32020)	Stator Stopper	
	09992–00095	Automatic Transmission Oil Pressure Gauge Set	
	(09992–00231)	Adaptor C	
	(09992–00271)	Gauge Assy	

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PP1GP-02

RECOMMENDED TOOLS

	09082–00040 TOYOTA Electrical Tester.	

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PP1GM–02

EQUIPMENT

Torque wrench	
Caliper	Check torque converter installation
Dial indicator	Drive plate runout
Straight edge	Check torque converter installation

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PP1GN–02

LUBRICANT

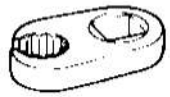
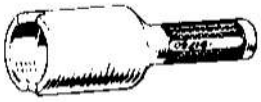
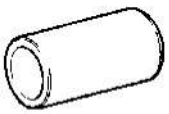
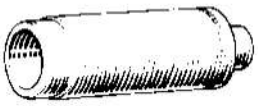
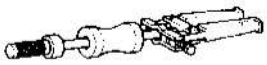
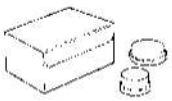
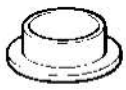
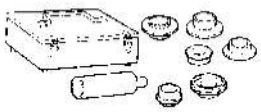
Item	Capacity	Classification
Automatic transmission fluid Dry fill Drain and refill	2UZ–FE: 10.8 liters (11.4 US qts, 9.5 Imp.qts) 3.2 liters (3.4 US qts, 2.8 Imp qts) 1HD–FTE: 11.4 liters (12.0 US qts, 10.0 Imp.qts) 3.2 liters (3.4 US qts, 2.8 Imp. qts)	ATF TYPE T–IV or equivalent

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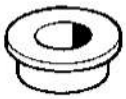
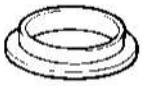
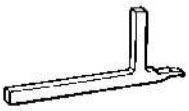
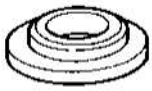
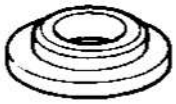
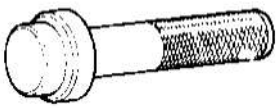
SUSPENSION AND AXLE

SST (Special Service Tools)

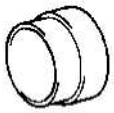
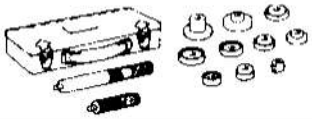
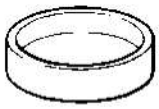
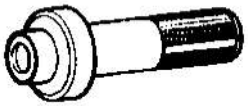
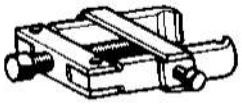
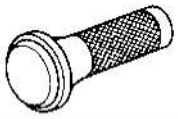
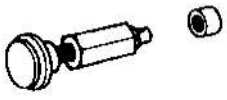
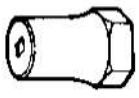
PP1SM–01

	09023–00100	Union Nut Wrench 10 mm	Rear axle (IFS) Rear differential (IFS) AHC pump & motor (IFS) Control valve assembly (IFS)
	09214–76011	Crankshaft Pulley Replacer	Front differential (RFS) Rear differential
	09223–00010	Cover & Seal Replacer	Front differential (IFS)
	09223–15020	Oil Seal & Bearing Replacer	Front differential (RFS) Rear axle (RFS)
	09226–10010	Crankshaft Front & Rear Bearing Replacer	Rear suspension (RFS)
	09240–00020	Wire Gauge Set	Front drive shaft (IFS)
	09308–00010	Oil Seal Puller	Front axle (RFS) Front differential (IFS) Rear axle Rear differential
	09308–10010	Oil Seal Puller	Front and rear differential
	09315–00022	Clutch Release Bearing Remover & Replacer	Front differential (IFS)
	09316–20011	Transfer Bearing Replacer	Front drive shaft (IFS) Front suspension (IFS) Rear suspension (RFS)
	09316–60011	Transmission & Transfer Bearing Replacer	Front and rear differential
	(09316–00011)	Replacer Pipe	

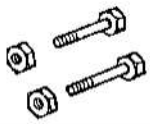
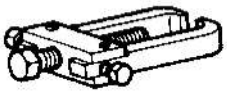
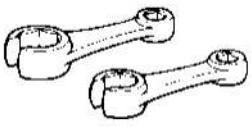
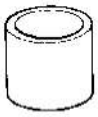
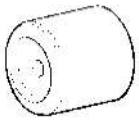
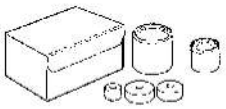
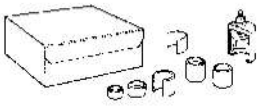
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	(09316–00021)	Replacer "A"	
	(09316–00051)	Replacer "D"	
	09330–00021	Companion Flange Holding Tool	Front and rear differential
	09350–30020	TOYOTA Automatic Transmission Tool Set	Front differential (IFS)
	(09350–07060)	No.1 Snap Ring Expander	
	09502–12010	Differential Bearing Replacer	Front differential (IFS)
	09504–00011	Differential Side Bearing Adjusting Nut Wrench	Front differential (RFS) Rear differential
	09504–22011	Differential Side Bearing Replacer	Front differential (IFS) Rear differential (w/ Diff. lock)
	09506–30012	Differential Drive Pinion Rear Bearing Cone Replacer	Front differential
	09506–35010	Differential Drive Pinion Rear Bearing Replacer	Front and rear differential Rear suspension (RFS)
	09509–25011	Rear Axle Bearing Lock Nut Wrench	Rear axle (RFS)
	09517–36010	Rear Axle Shaft Oil Seal Replacer–	Rear axle (RFS)
	09521–24010	Drive Shaft Boot Clamping Tool	Front drive shaft (IFS)

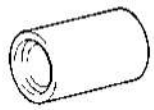
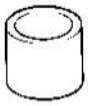
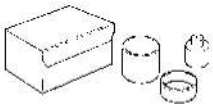
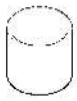
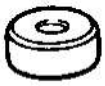
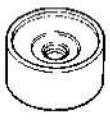
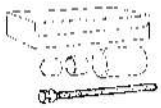
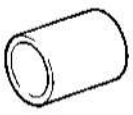
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	09521–25011	Rear Axle Shaft Puller	Rear axle (IFS)
	09521–25021	Rear Axle Shaft Puller Attachment	Rear axle (IFS)
	09527–17011	Rear Axle Shaft Bearing Remover	Front suspension (IFS)
	09550–00032	Replacer	Front differential (IFS)
	09550–10012	Replacer Set "B"	Rear suspension (RFS)
	(09553–10010)	Differential Side Bearing Replacer	
	09550–60010	Differential Side Bearing Replacer	Rear differential (w/ Diff. lock)
	09554–30011	Differential Oil Seal Replacer	Front differential (IFS)
	09556–22010	Drive Pinion Front Bearing Remover	Front and rear differential
	09605–60010	Steering Knuckle Bearing Cup Replacer–	Front axle (RFS)
	09606–60020	Steering Knuckle Bearing Remover	Front axle (RFS)
	09607–60020	Front Wheel Adjusting Nut Wrench	Front axle
	09612–65014	Steering Worm Bearing Puller	Front axle (RFS)

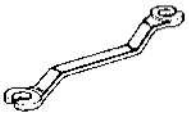
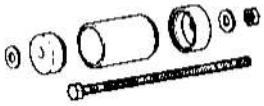
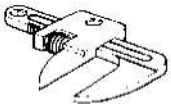
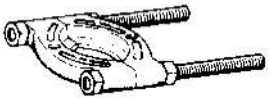
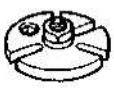
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	(09612–01010)	Claw "A"	
	(09612–01050)	Hanger Pin with Nut	
	09618–60010	Front Axle & Drive Shaft Bearing Replacer	Front axle (RFS)
	09628–62011	Ball Joint Puller	Front drive shaft (IFS) Front suspension (IFS)
	09631–12090	Seal Ring Tool	Rear axle (IFS)
	09631–22020	Power Steering Hose Nut 14 x 17 mm Wrench Set	Height control accumulator (IFS) Pump attenuator (IFS)
	09631–32020	Seal Ring Tool	Front suspension (IFS)
	09649–17010	Steering Knuckle Tool	Rear differential (w/ LSD)
	09709–29018	LSPV Gauge Set	AHC system (IFS)
	09710–14013	Rear Suspension Bushing Tool Set	Rear suspension (IFS)
	09710–22021	Front Suspension Bushing Tool Set	Front suspension (IFS)
	(09710–01071)	Lower Arm Bushing Remover	
	09710–22042	Rear Suspension Bushing Tool Set	Front suspension (RFS)

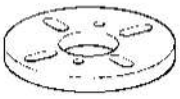
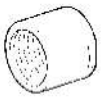
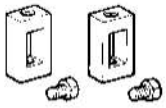
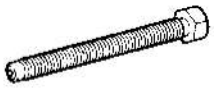
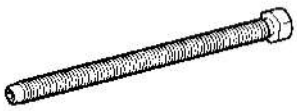
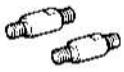
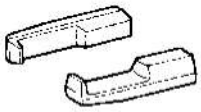
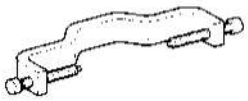
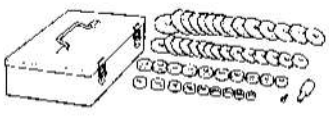
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	(09710–02051)	Base	
	(09710–02061)	Replacer	
	(09710–02071)	Bushing Remover & Replacer	
	09710–28012	Front Suspension Bushing Tool Set	Front suspension (IFS)
	(09710–07062)	Bushing Replacer	
	(09710–07031)	Bushing Replacer	
	09710–28021	Front Suspension Bushing Tool Set	Front suspension (IFS)
	(09710–08031)	Base	
	09710–30021	Suspension Bushing Tool Set	Front suspension (IFS)
	(09710–03101)	Bushing Replacer	
	09710–30050	Suspension Arm Bushing Replacer	Front suspension (RFS) Rear differential
	09726–35011	Front Lower Arm Bushing Remover & Replacer	Front suspension (IFS)
	(09726–05021)	Gate	

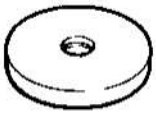
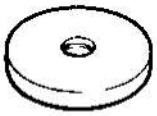
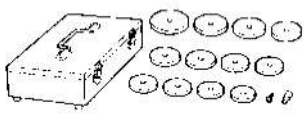
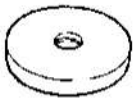
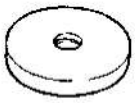
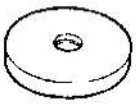
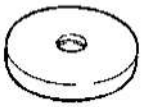
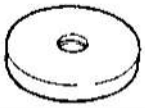
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	09726–36010	Lower Control Arm Bushing Replacer	Front suspension (IFS)
	09726–40010	Lower Control Shaft Bearing Replacer	Front differential (RFS) Rear differential
	09727–30021	Coil Spring Compressor	Front suspension (RFS)
	09751–36011	Brake Line Union Nut 10 x 12 mm Wrench	Height control accumulator (IFS) Pump attenuator (IFS)
	09830–36010	Front Mounting Cushion Remover & Replacer	Front suspension (IFS)
	09843–18040	Diagnosis Check Wire No.2	
	09922–10010	Variable Open Wrench	Damping force control actuator (IFS)
	09950–00020	Bearing Remover	Front drive shaft (IFS) Front and rear differential
	09950–00030	Bearing Remover Attachment	Front suspension (IFS) Rear differential
	09950–30010	Puller A Set	Front and rear differential
	(09951–03010)	Upper Plate	
	(09953–03010)	Center Bolt	
	(09954–03010)	Arm	

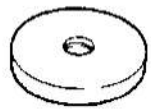
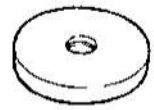
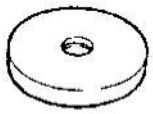
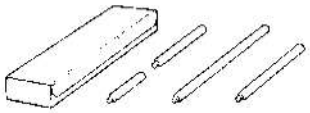
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	(09955–03030)	Lower Plate 130	
	(09956–03020)	Adapter 18	
	(09956–03040)	Adapter 22	
	09950–40011	Puller B Set	Front suspension Front and rear differential
	(09951–04010)	Hanger 150	
	(09952–04010)	Slide Arm	
	(09953–04020)	Center Bolt 150	
	(09953–04030)	Center Bolt 200	
	(09954–04010)	Arm 25	
	(09955–04060)	Claw No.6	
	(09957–04010)	Attachment	
	(09958–04010)	Holder	
	09950–60010	Replacer Set	Front suspension (IFS) Front differential (RFS) Rear suspension (RFS) Rear differential AHC pump & motor (IFS)

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	(09951–00310)	Replacer 31	
	(09951–00400)	Replacer 40	
	(09951–00410)	Replacer 41	
	(09951–00480)	Replacer 48	
	(09951–00490)	Replacer 49	
	(09951–00540)	Replacer 54	
	(09951–00580)	Replacer 58	
	09950–60020	Replacer Set No.2	Front and rear axle Front differential (IFS) Rear axle Rear differential
	(09951–00710)	Replacer 71	
	(09951–00720)	Replacer 72	
	(09951–00730)	Replacer 73	
	(09951–00780)	Replacer 78	
	(09951–00810)	Replacer 81	

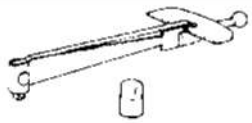
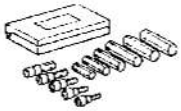
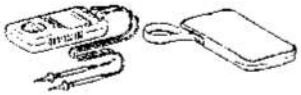
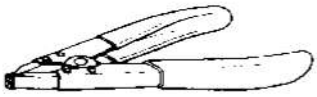
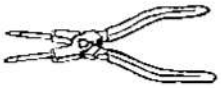
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	(09951–00890) Replacer 89	
	(09951–00910) Replacer 91	
	(09951–01030) Replacer 103	
	09950–70010 Handle Set	Front and rear axle Front suspension Rear differential AHC pump & motor (IFS)
	(09951–07100) Handle 100	
	(09951–07150) Handle 150	

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PP1SN–01

RECOMMENDED TOOLS

	09025–00010	Torque Wrench (30 kgf–cm)	
	09031–00030	Pin Punch .	
	09040–00010	Hexagon Wrench Set .	
	09044–00020	Torx Socket E10 .	
	09082–00040	TOYOTA Electrical Tester.	
	09905–00012	Snap Ring No.1 Expander .	
	09905–00013	Snap Ring Pliers .	

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PP1BC-02

EQUIPMENT

Dial indicator with magnetic base	
Drill	
Feeler gauge	
Micrometer	
Spring tension gauge	
Torque wrench	

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PP15D-02

LUBRICANT

FRONT DRIVE SHAFT (IFS)		
Item	Capacity	Classification
Outboard joint grease Inboard joint grease	368 – 378 g (13 – 13.3 oz.) 293 – 303 g (10.3 – 10.7 oz.)	
FRONT DIFFERENTIAL (RFS)		
Item	Capacity	Classification
Hypoid gear oil (w/o Diff. lock) (w/ Diff. lock)	2.80 liters (2.9 US qts, 2.5 Imp.qts) 2.65 liters (2.8 US qts, 2.3 Imp.qts)	Hypoid gear oil API GL–5 Above –18 °C (0°F) SAE 90 Below –18 °C (0°F) SAE 80W–90 or 80W
FRONT DIFFERENTIAL (IFS)		
Item	Capacity	Classification
Hypoid gear oil	1.70 liters (1.80 US qts, 1.50 Imp.qts)	Hypoid gear oil API GL–5 Above –18 °C (0°F) SAE 90 Below –18 °C (0°F) SAE 80W–90 or 80W
REAR DIFFERENTIAL		
Item	Capacity	Classification
Hypoid gear oil Normal w/ Diff. lock	3.30 liters (3.49 US qts, 2.90 Imp.qts) 3.20 liters (3.38 US qts, 2.82 Imp.qts)	Hypoid gear oil API GL–5 Above –18 °C (0°F) SAE 90 Below –18 °C (0°F) SAE 80W–90 or 80W
Hypoid gear oil LSD w/ LSD	3.30 liters (3.49 US qts, 2.90 Imp.qts)	Hypoid gear oil LSD API GL–5 Above –18 °C (0°F) SAE 90 Below –18 °C (0°F) SAE 80W–90 or 80W

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PP1SO–01

SSM (Special Service Materials)

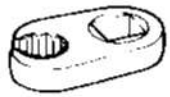
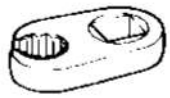
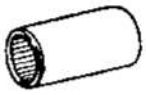
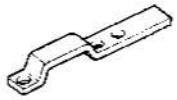
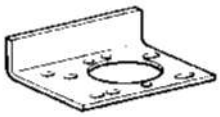
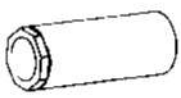
08826–00090	Seal Packing 1281, THREE BOND 1281 or equivalent (FIPG)	
08833–00070	Adhesive 1324, THREE BOND 1324 or equivalent	
08833–00080	Adhesive 1344 THREE BOND 1344 LOCTITE 242 or equivalent	
08833–00100	THREE BOND 1360K or equivalent	

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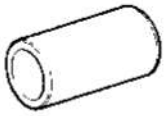
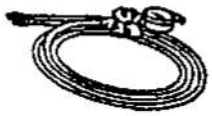
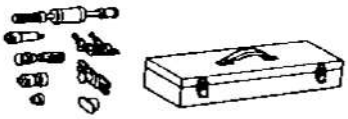
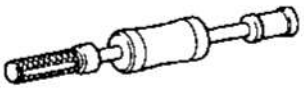
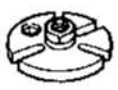
STEERING

SST (Special Service Tools)

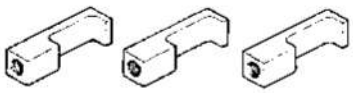
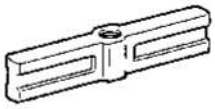
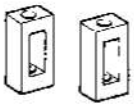
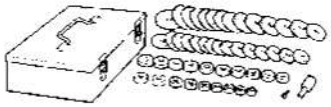
PP5Y0–01

	09023–38200	Union Nut Wrench 12mm	POWER STEERING GEAR
	09023–38400	Union Nut Wrench 14mm	POWER STEERING GEAR
	09527–10011	Rear Axle Shaft Bearing Remover	POWER STEERING VANE PUMP
	09612–22011	Tilt Handle Bearing Replacer	POWER STEERING VANE PUMP
	09616–00011	Steering Worm Bearing Adjusting Socket	POWER STEERING GEAR
	09630–00014	Power Steering Gear Housing Overhaul Tool Set	POWER STEERING GEAR POWER STEERING VANE PUMP
	(09631–00132)	Vane Pump Bracket	POWER STEERING VANE PUMP
	(09631–00142)	Overhaul Stand	POWER STEERING GEAR
	09631–00230	Rack Seal Guide No.5	POWER STEERING GEAR
	09631–00350	Steering Rack Cover 35	POWER STEERING GEAR
	09631–12071	Steering Rack Oil Seal Test Tool	POWER STEERING GEAR
	09631–20060	Bearing Guide Nut Wrench	POWER STEERING GEAR

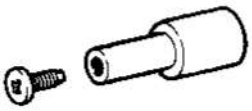
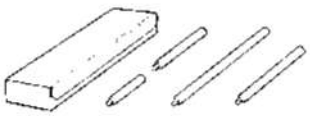
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	09631–20081	Seal Ring Tool	POWER STEERING GEAR
	09632–36010	Steering Vane Pump Bearing Replacer	POWER STEERING VANE PUMP
	09640–10010	Power Steering Pressure Gauge Set	POWER STEERING FLUID
	(09641–01010)	Gauge Assy	POWER STEERING FLUID
	(09641–01030)	Attachment B	POWER STEERING FLUID
	(09641–01060)	Attachment E	POWER STEERING FLUID
	09910–00015	Puller Set	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	(09911–00011)	Puller Clamp	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	(09912–00010)	Puller Slide Hammer	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	09922–10010	Variable Open Wrench	POWER STEERING GEAR
	09950–30012	Puller A Set	POWER STEERING VANE PUMP
	(09951–03010)	Upper Plate	POWER STEERING VANE PUMP
	(09953–03010)	Center Bolt	POWER STEERING VANE PUMP

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	(09954–03010)	Arm	POWER STEERING VANE PUMP
	(09955–03020)	Claw No.2	POWER STEERING VANE PUMP
	09950–40011	Puller B Set	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	(09958–04011)	Holder	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	09950–50013	Puller C Set	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	(09951–05010)	Hanger 150	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	(09952–05010)	Slide Arm	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	(09953–05020)	Center Bolt 150	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	(09954–05021)	Claw No.2	POWER TILT AND POWER TELESCOPIC STEERING COLUMN
	09950–60010	Replacer Set	POWER STEERING GEAR POWER STEERING VANE PUMP
	(09951–00180)	Replacer 18	POWER STEERING GEAR
	(09951–00260)	Replacer 26	POWER STEERING GEAR
	(09951–00280)	Replacer 28	POWER STEERING GEAR

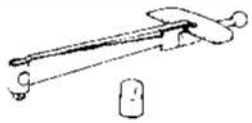
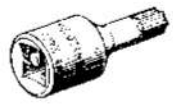
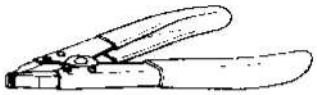
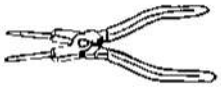
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	(09951–00320)	Replacer 32	POWER STEERING GEAR POWER STEERING VANE PUMP
	(09951–00330)	Replacer 33	POWER STEERING GEAR
	(09951–00360)	Replacer 36	POWER STEERING GEAR
	(09952–06010)	Adapter	POWER STEERING GEAR
	09950–70010	Handle Set	POWER STEERING GEAR POWER STEERING VANE PUMP
	(09951–07100)	Handle 100	POWER STEERING GEAR POWER STEERING VANE PUMP
	(09951–07150)	Handle 150	POWER STEERING GEAR
	(09951–07200)	Handle 200	POWER STEERING GEAR
	(09951–07360)	Handle 360	POWER STEERING GEAR

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PP18F–03

RECOMMENDED TOOLS

	09025–00010	Torque Wrench (30 kgf–cm)	PS vane pump PS gear
	09042–00010	Torx Socket T30 .	Steering column
	09904–00010	Expander Set .	
	(09904–00050)	No. 4 Claw	
	09905–00012	Snap Ring No.1 Expander .	
	09905–00013	Snap Ring Pliers .	

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PP18G–03

EQUIPMENT

Caliper gauge	PS vane pump
Calipers	PS vane pump
Dial indicator	PS gear
Feeler gauge	PS vane pump
Micrometer	PS vane pump
Torque wrench	

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PP18I–02

SSM (Special Service Materials)

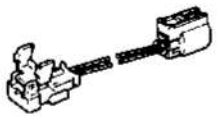
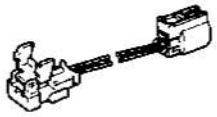
08833–00080	Adhesive 1344 THREE BOND 1344 LOCTITE 242 or equivalent	PS gear (IFS)

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SUPPLEMENTAL RESTRAINT SYSTEM

SST (Special Service Tools)

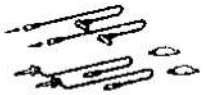
PP3Y6–01

	09082–00700	SRS Airbag Deployment Tool	
	09082–00750	Airbag Deployment Wire Sub–harness No.3	
	09082–00760	Airbag Deployment Wire Sub–harness No.4	
	09082–00780	Airbag Deployment Wire Sub–Harness No.6	
	09082–00802	Airbag Deployment Wire Sub–Harness No.8	
	(09082–10801)	Wire A	
	(09082–30801)	Wire C	
	09843–18040	Diagnosis Check Wire No.2	

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PP3Y7–01

RECOMMENDED TOOLS

	09082–00050	TOYOTA Electrical Tester Set.	
	09082–00040	TOYOTA Electrical Tester.	
	(09083–00150)	Test Lead Set	Seat belt pretensioner connector

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PP0MS-14

EQUIPMENT

Torque wrench	
Bolt: Length: 35 mm (1.387 in.) Pitch: 1.0 mm (0.039 in.) Diam.: 6.0 mm (0.236 in.)	Airbag disposal
Tire Width: 185 mm (7.28 in.) Inner diam.: 360 mm (14.17 in.)	Airbag disposal
Tire with disc wheel Width: 185 mm (7.28 in.) Inner diam.: 360 mm (14.17 in.)	Airbag disposal
Plastic bag	Airbag disposal

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PP5ZA–01

RECOMMENDED TOOLS

	09082–00040 TOYOTA Electrical Tester.	

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BODY

SST (Special Service Tools)

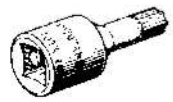
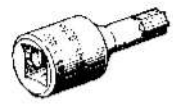
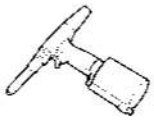
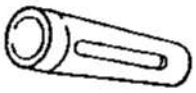
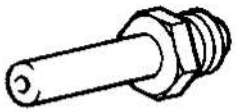
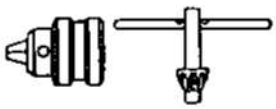
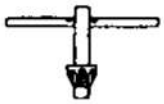
PP5YB-01

	09812–00010 Door Hinge Set Bolt Wrench	

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PP1SI–02

RECOMMENDED TOOLS

	09042–00010	Torx Socket T30 .	
	09042–00020	Torx Socket T40 .	
	09050–20010	Air Riveter.	
	(09050–02010)	Dust Cap.	
	09050–02050	Nose Piece No.4.	
	09050–00032	Air Drill	
	(09050–00210)	Chuck Set	
	(09050–00220)	Handle	
	09060–60350	Revet Cutter.	
	09070–20010	Moulding Remover .	

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PP1SJ–04

EQUIPMENT

Clip remover	
Torque wrench	
Hexagon wrench (6 mm)	
Torx driver	
Hog ring pliers	
Hand riveter	
Tape	To avoid surface damage
Adhesive tape	To avoid surface damage
Double–stick tape	
Adhesive	
Cleaner	
Shop rag	
Knife	
Sealer gun	
Brush	
Putty spatula	
Glass plate or similar object	
Wooden block or similar object	
Heat light	
Piano wire	
Plastic sheet	To avoid surface damage
Tacker	BANZAI 303XT
Tack pin	BANZAI UX–7

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PP1SK-01

LUBRICANT

Item	Capacity	Classification
MP grease	–	–

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PP1SL–01

SSM (Special Service Materials)

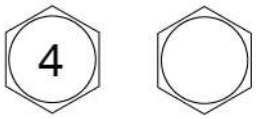
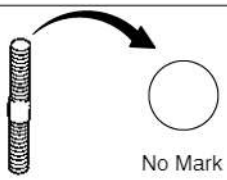
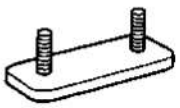
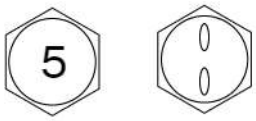
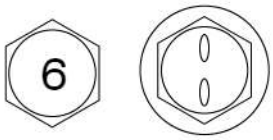
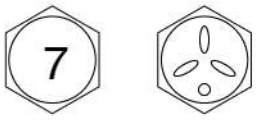
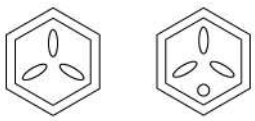
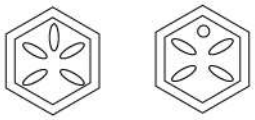
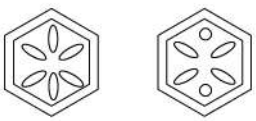
08833–00030	Three cement black or equivalent	
08833–00070	Adhesive 1324, THREE BOND 1324 or equivalent	
08850–00801	Windshield Glass Adhesive Set or equivalent	

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STANDARD BOLT

HOW TO DETERMINE BOLT STRENGTH

SS0ZS-01

Bolt Type				Class
Hexagon Head Bolt		Stud Bolt	Weld Bolt	
Normal Recess Bolt	Deep Recess Bolt			
 No Mark	 No Mark	 No Mark		4T
				5T
 w/ Washer	 w/ Washer			6T
				7T
				8T
				9T
				10T
				11T

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SS0ZT–01

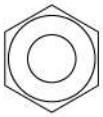
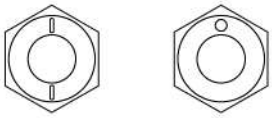
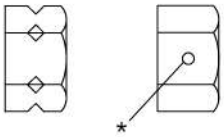
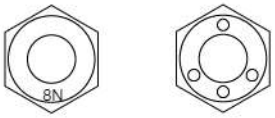
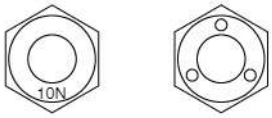
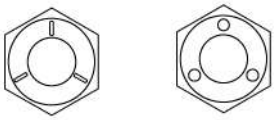
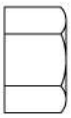
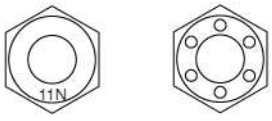
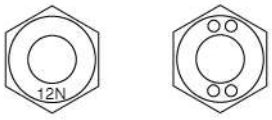
SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N·m	kgf·cm	ft·lbf	N·m	kgf·cm	ft·lbf
4T	6	1	5	55	48 in.·lbf	6	60	52 in.·lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	–	–	–
5T	6	1	6.5	65	56 in.·lbf	7.5	75	65 in.·lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	–	–	–
6T	6	1	8	80	69 in.·lbf	9	90	78 in.·lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	–	–	–
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	–	–	–
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

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HOW TO DETERMINE NUT STRENGTH

Nut Type			Class
Present Standard Hexagon Nut	Old Standard Hexagon Nut		
	Cold Forging Nut	Cutting Processed Nut	
 No Mark			4N
 No Mark (w/ Washer)	 No Mark (w/ Washer)	 No Mark	5N (4T)
 6N			6N
		 *	7N (5T)
 8N			8N
 10N		 No Mark	10N (7T)
 11N			11N
 12N			12N

*: Nut with 1 or more marks on one side surface of the nut.

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HINT:

Use the nut with the same number of the nut strength classification or the greater than the bolt strength classification number when tightening parts with a bolt and nut.

Example: Bolt = 4T

Nut = 4N or more

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AUTOMATIC TRANSMISSION (A750F)

SERVICE DATA

SS0Z5–02

A750F (2UZ)		
Line pressure (Wheel locked)		
	Engine idling	
	D range	362 – 420 kPa (3.7 – 4.3 kgf·cm^2, 53 – 61 psi)
	R range	500 – 580 kPa (5.1 – 5.9 kgf·cm^2, 73 – 84 psi)
	AT stall (Throttle valve fully opened)	
	D range	1,360 – 1,460kPa (13.9 – 14.9 kgf·cm^2, 197 – 212 psi)
	R range	1,295 – 1,415 kPa (13.2 – 14.4 kgf·cm^2, 188 – 205 psi)
Engine stall revolution	D and R range	2,150 ± 150 rpm
Time lag	N → D range	Less than 1.2 seconds
	N → R range	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N range	700 ± 50 rpm
Drive plate runout	Max.	0.20 mm (0.0079 in.)
Torque converter runout	Max.	0.30 mm (0.0118 in.)
Torque converter clutch installation distance		More than 17.1 mm (0.673 in.)
Shift schedule		
D range		
(Throttle valve fully opened)	1 → 2	45 – 57 km/h (28 – 35 mph)
	2 → 3	79 – 90 km/h (49 – 56 mph)
	3 → 4	113 – 128 km/h (70 – 80 mph)
	4 → 5	165 – 180 km/h (103 – 112 mph)
	5 → 4	158 – 173 km/h (98 – 108 mph)
	4 → 3	105 – 117 km/h (65 – 73 mph)
	3 → 2	70 – 78 km/h (43 – 48 mph)
	2 → 1	35 – 41 km/h (22 – 25 mph)
(Throttle valve fully closed)	4 → 5	32 – 38 km/h (20 – 24 mph)
	5 → 4	24 – 29 km/h (15 – 18 mph)
3 range		
(Throttle valve fully opened)	1 → 2	45 – 57 km/h (28 – 35 mph)
	2 → 3	79 – 90 km/h (49 – 56 mph)
	4 → 3	119 – 132 km/h (74 – 82 mph)
	3 → 2	70 – 78 km/h (43 – 48 mph)
	2 → 1	35 – 41 km/h (22 – 25 mph)
2 range		
(Throttle valve fully opened)	1 → 2	45 – 57 km/h (28 – 35 mph)
	3 → 2	80 – 88 km/h (50 – 55 mph)
	2 → 1	35 – 41 km/h (22 – 25 mph)
L range		
(Throttle valve fully opened)	2 → 1	41 – 47 km/h (25 – 29 mph)
Lock–up point	Throttle valve opening 5 %	
D range		
5th gear	Lock–up ON	67 – 74 km/h (42 – 46 mph)
	Lock–up OFF	60 – 67 km/h (37 – 42 mph)
4 range		
4th gear	Lock–up ON	61 – 68 km/h (38 – 42 mph)
	Lock–up OFF	54 – 61 km/h (34 – 38 mph)

A750F (1HD)		
Line pressure (Wheel locked)		
	Engine idling	
	D range	362 – 420 kPa (3.7 – 4.3 kgf·cm^2, 53 – 61 psi)
	R range	500 – 580 kPa (5.1 – 5.9 kgf·cm^2, 73 – 84 psi)
	AT stall (Throttle valve fully opened)	
	D range	1,360 – 1,460kPa (13.9 – 14.9 kgf·cm^2, 197 – 212 psi)
	R range	1,295 – 1,415 kPa (13.2 – 14.4 kgf·cm^2, 188 – 205 psi)
Engine stall revolution	D and R range	2,400 ± 150 rpm

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Time lag	N → D range N → R range	Less than 1.2 seconds Less than 1.5 seconds
Engine idle speed (A/C OFF)	N range	600 ± 50 rpm
Drive plate runout Torque converter runout Torque converter clutch installation distance	Max. Max.	0.20 mm (0.0079 in.) 0.30 mm (0.0118 in.) More than 17.1 mm (0.673 in.)
Shift schedule D range (Throttle valve fully opened)	1 → 2 2 → 3 3 → 4 4 → 5 5 → 4 4 → 3 3 → 2 2 → 1	34 – 46 km/h (21 – 29 mph) 60 – 71 km/h (37 – 44 mph) 90 – 100 km/h (56 – 62 mph) 125 – 140 km/h (78 – 87 mph) 117 – 130 km/h (73 – 81 mph) 83 – 91 km/h (52 – 57 mph) 51 – 58 km/h (32 – 36 mph) 25 – 31 km/h (16 – 19 mph)
(Throttle valve fully closed)	4 → 5 5 → 4	41 – 48 km/h (25 – 21 mph) 27 – 32 km/h (17 – 20 mph)
3 range (Throttle valve fully opened)	1 → 2 2 → 3 4 → 3 3 → 2 2 → 1	34 – 46 km/h (21 – 29 mph) 60 – 71 km/h (37 – 44 mph) 97 – 106 km/h (60 – 66 mph) 51 – 58 km/h (32 – 36 mph) 25 – 31 km/h (16 – 19 mph)
2 range (Throttle valve fully opened)	1 → 2 3 → 2 2 → 1	34 – 46 km/h (21 – 29 mph) 64 – 72 km/h (40 – 45 mph) 25 – 31 km/h (16 – 19 mph)
L range (Throttle valve fully opened)	2 → 1	32 – 38 km/h (20 – 24 mph)
Lock–up point D range 5th gear (Normal mode)	Throttle valve opening 5 % Lock–up ON Lock–up OFF	 62 – 69 km/h (39 – 43 mph) 56 – 63 km/h (35 – 39 mph)
5th gear (Power mode)	Lock–up ON Lock–up OFF	70 – 78 km/h (44 – 48 mph) 64 – 71 km/h (40 – 44 mph)
4 range 4th gear	Lock–up ON Lock–up OFF	58 – 65 km/h (36 – 40 mph) 52 – 59 km/h (32 – 37 mph)

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TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
No.1 vehicle speed sensor x Transfer case		16	160	12
No.2 vehicle speed sensor x Transmission case	NT	5.4	55	48 in.·lbf
	SP2	5.4	55	48 in.·lbf
ATF temperature sensor (for linear control) x Valve body		11	112	8
ATF temperature sensor (for oil temp warning lamp) x Valve body		10	100	7
ATF temperature sensor x Transmission case		5.4	55	48 in.·lbf
Park/neutral position switch	Bolt	13	130	9
	Nut	3.9	40	35 in.·lbf
Transmission control shaft lever x Transmission control rod		13	130	9
Shift solenoid lock plate x Valve body		6.4	65	57 in.·lbf
Shift solenoid S1 S2 x Valve body		10	102	7
Shift solenoid SR x Valve body		6.4	65	57 in.·lbf
Valve body x Transmission case		11	110	8
Oil stainer x Valve body		10	100	7
Oil pan x Transmission case		4.4	55	39 in.·lbf
Drain plug x Oil pan		20	205	15
Parking lock pawl bracket x Transmission case		7.4	75	65 in.·lbf
Shift lever assembly x Body		8.3	85	73 in.·lbf
Control lever x Shift lever plate		13	130	9
Transmission control rod x Shift lever assembly		13	130	9
Shift lever guide housing x Shift lever plate		4.9	50	43 in.·lbf
Power steering oil cooler sub–assy x Body		7.5	76	66 in.·lbf
Oil cooler bracket x Body		12	117	8
Oil cooler bracket x Oil cooler		5.0	51	44 in.·lbf
Oil cooler pipe x Body		5.0	51	44 in.·lbf
Oil filler pipe		12	122	9
Engine No. 1 and No. 2 under cover x Body		29	296	21
Transfer shift lever x Transfer shift lever rod assembly		12	122	9
Transfer shift lever boot x Body		5.4	55	48 in.·lbf
Hole plug x Transmission housing		18	185	13
Drive plate x Torque converter clutch		48	490	35
Oil cooler pipe union nut		34	347	25
Crossmember	Bolt	50	510	37
	Nut	74	750	54
Engine mounting insulator rear x Transmission case		59	600	43
Transmission housing x Engine	Bolt A	71	724	52
	Bolt B	37	377	27
Drive plate x Crankshaft	1st	49	500	36
	2nd	Turn 90°	Turn 90°	Turn 90°
Starter x Engine block	(1HD Only)	37	380	27
Front exhaust pipe x Exhaust manifold	(1HD Only)	62	630	46
Front exhaust pipe x Center exhaust pipe	(1HD Only)	40	408	29
Stiffener plate x Engine block	(1HD Only)	68	693	50
Oil cooler tube clamp x Clamp	(1HD Only)	12	122	9

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LH and RH front exhaust pipe x Exhaust manifold	(2UZ Only)	62	630	46
LH and RH front exhaust pipe x Center exhaust pipe	(2UZ Only)	40	408	29

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SUSPENSION AND AXLE

SERVICE DATA

SS0OJ-19

Front wheel alignment (RFS)	Vehicle height		Clearance*1
	G.C.C.	Front	36.8 mm (1.45 in.)
		Rear	86.7 mm (3.41 in.)
	AUSTRALIA	Front	47.1 mm (1.85 in.)
		Rear	110.0 mm (4.33 in.)
	OTHERS	Front	34.8 mm (1.37 in.)
		Rear	113.0 mm (4.45 in.)
	Camber		1° ± 45' (1° ± 0.75°)
		Left–right error	45' (0.75°) or less
	Caster (G.C.C.)		2°30' ± 45' (2.5° ± 0.75°)
		Left–right error	45' (0.75°) or less
	Caster (AUSTRALIA)		1°40' ± 45' (1.67° ± 0.75°)
		Left–right error	45' (0.75°) or less
	Caster (OTHERS)		2°10' ± 45' (2.17° ± 0.75°)
		Left–right error	45' (0.75°) or less
	Steering axis inclination		13° ± 45' (13° ± 0.75°)
		Left–right error	45' (0.75°) or less
	Toe–in (total)		0°12' ± 12' (0.2° ± 0.2°, 2 ± 2 mm, 0.08 ± 0.08 in.)
	Wheel angle	Inside wheel	32° – 35°
		Outside wheel: Reference	31°

*Clearance:
Front: Distance from the front axle housing to the following spring
Rear: Distance from the rear axle housing to the bumper stopper

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Front wheel alignment (IFS)	Vehicle height (EUROPE)		
	Engine: 2UZ–FE		
	Front	A – B	75.0 mm (2.953 in.)
	Rear	C – D	40.0 mm (1.575 in.)
	Engine: 1HD–FT		
	Front	A – B	76.0 mm (2.992 in.)
	Rear	C – D	41.0 mm (1.614 in.)
	Vehicle height (GENERAL)		
	Engine: 2UZ–FE		
	Front	A – B	76.0 mm (2.992 in.)
	Rear	C – D	31.0 mm (1.220 in.)
	Engine: 1HD–T		
	Front	A – B	76.0 mm (2.992 in.)
	Rear	C – D	34.0 mm (1.339 in.)
	Vehicle height (G.C.C.)		
	Engine: 2UZ–FE		
	Front	A – B	72.0 mm (2.835 in.)
	Rear	C – D	53.0 mm (2.087 in.)
	Engine: 1FZ–FE		
	Front	A – B	71.0 mm (2.795 in.)
	Rear	C – D	64.0 mm (2.520 in.)
	Vehicle height (AUSTRALIA)		
	Front	A – B	75.0 mm (2.953 in.)
	Rear	C – D	39.0 mm (1.535 in.)
	Vehicle height (w/ AHC System)		
	Front	A – B	83.0 mm (3.268 in.)
	Rear	C – D	71.0 mm (2.795 in.)

A: Ground clearance of spindle center
B: Ground clearance of lower suspension arm front bolt center
C: Ground clearance of rear axle shaft center
D: Ground clearance of lower control arm front bolt center

	EUROPE AND GENRAL (2UZ–FE)		
	Camber		0°05' ± 45' (0.08° ± 0.75°)
		Left–right error	30' (0.5°) or less
	Caster		2°10' ± 45' (2.17° ± 0.75°)
		Left–right error	30' (0.5°) or less
	Steering axis inclination		12°10' ± 45' (12.17° ± 0.75°)
		Left–right error	30' (0.5°) or less
	GENRAL (1HD–T)		
	Camber		0°05' ± 45' (0.08° ± 0.75°)
		Left–right error	30' (0.5°) or less
	Caster		2°25' ± 45' (2.42° ± 0.75°)
		Left–right error	30' (0.5°) or less
	Steering axis inclination		12°10' ± 45' (12.17° ± 0.75°)
		Left–right error	30' (0.5°) or less
	G.C.C. (2UZ–FE)		
	Camber		0°05' ± 45' (0.08° ± 0.75°)
		Left–right error	30' (0.5°) or less
	Caster		2°15' ± 45' (2.25° ± 0.75°)
		Left–right error	30' (0.5°) or less

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Front wheel alignment (IFS)	Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less
	G.C.C. (1FZ–FE)	
	Camber Left–right error	0°05' ± 45' (0.08° ± 0.75°) 30' (0.5°) or less
	Caster Left–right error	2°50' ± 45' (2.83° ± 0.75°) 30' (0.5°) or less
	Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less
	AUSTRALIA	
	Camber Left–right error	0°05' ± 45' (0.08° ± 0.75°) 30' (0.5°) or less
	Caster Left–right error	2°10' ± 45' (2.17° ± 0.75°) 30' (0.5°) or less
	Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less
	w/ AHC System	
	Camber Left–right error	0°00' ± 45' (0° ± 0.75°) 30' (0.5°) or less
	Caster Left–right error	3°05' ± 45' (3.08° ± 0.75°) 30' (0.5°) or less
	Steering axis inclination Left–right error	12°15' ± 45' (12.25° ± 0.75°) 30' (0.5°) or less
	w/ AHC System	
	Toe–in (total) Rack end length difference	0°00' ± 12' (0° ± 0.2°, 0 ± 2 mm, 0 ± 0.08 in.) 3.0 mm (0.118 in.) or less
	OTHERS	
	Toe–in (total) Rack end length difference	0°06' ± 12' (0.1° ± 0.2°, 1 ± 2 mm, 0.04 ± 0.08 in.) 3.0 mm (0.118 in.) or less
Front wheel alignment (IFS)	Wheel angle Inside wheel Outside wheel: Reference	36°42' (33°42' – 36°42') 36.7° (33.7° – 36.7°) 32°36' 32.6°

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STEERING

SERVICE DATA

SS0Z0-02

POWER STEERING FLUID (IFS)		
Oil level rise	Maximum	5 mm (0.20 in.)
Oil pressure at idle speed with valve closed	Minimum	10,000 kPa (102 kgf/cm^2, 1,451 psi)
POWER STEERING VANE PUMP		
Pump shaft and front housing bushing oil clearance	STD	0.021 – 0.043 mm (0.00083 – 0.00169 in.)
	Maximum	0.070 mm (0.00276 in.)
Pump shaft and rear housing bushing oil clearance	STD	0.020 – 0.077 mm (0.00079 – 0.00303 in.)
	Maximum	0.080 mm (0.00315 in.)
Vane plate thickness	Minimum	1.405 mm (0.0531 in.)
Vane plate and pump rotor groove clearance	Maximum	0.03 mm (0.0012 in.)
Flow control valve spring length	Minimum	31.3 mm (1.2323 in.)
Pump rotating torque	Maximum	0.28 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less
POWER STEERING GEAR (IFS)		
Steering rack runout	Maximum	0.30 mm (0.0118 in.)
Total preload	Center area	1.8 – 2.2 N·m (18.4 – 22.4 kgf·cm, 16.0 – 19.5 in.·lbf)
	End area	1.3 – 1.7 N·m (13.3 – 17.3 kgf·cm, 11.5 – 15.0 in.·lbf)

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SS0Z1–02

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
POWER TILT AND POWER TELESCOPIC STEERING COLUMN			
Steering column protector No. 1 set bolt	15	150	11
Power tilt motor set bolt	20	210	15
Power telescopic motor set bolt	8.8	90	78 in.·lbf
Column tube stopper	19	190	14
Tube attachment x Column tube	15	150	11
Telescopic steering slider support set bolt	11	110	8
Telescopic steering screw set nut	2.0	20	17 in.·lbf
No. 2 lower cover set nut	25	260	19
Column upper tube sub–assembly x Column upper tube assembly	20	210	15
Telesco lever lock bolt	10	100	7
POWER STEERING VANE PUMP (1FZ–FE)			
Pressure port union	69	700	51
Vane pump drive gear set nut	74	750	54
Suction port union set bolt	12	125	9
Vane pump assembly set nut	36	370	27
Pressure feed tube x Vane pump assembly	50	510	37
POWER STEERING VANE PUMP (2UZ–FE)			
Pressure feed tube x Vane pump assembly	56	575	42
PS vane pump assembly set bolt	17	175	13
Suction port union set bolt	12	120	9
Pressure port union	69	700	51
Rear housing set bolt	22	225	16
POWER STEERING VANE PUMP (1HD–FTE)			
Pressure port union	69	700	51
Suction port union set bolt	12	125	9
Vane pump assembly set nut	36	370	27
Pressure feed tube x Vane pump assembly	50	510	37
POWER STEERING GEAR (IFS)			
Cylinder end stopper	110 (145)	1,122 (1,480)	81 (107)
Bearing guide nut	24.5	250	19
Control valve housing set bolt	18	180	13
Rack guide spring cap	25	250	18
Rack guide spring cap lock nut	51 (70)	520 (700)	38 (51)
Rack x Rack end	99 (132)	1,014 (1,350)	74 (98)
Tie rod end lock nut	55	560	41
Turn pressure tube union nut	23 (24.5)	230 (250)	17 (18)
PS gear assembly set bolt and nut	120	1,250	89
Return tube x Control valve housing	40 (44)	409 (450)	29 (29)
Pressure feed tube x Control valve housing	42	430	31
Tube clamp set bolt	18	180	13

( ): For use without SST

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SUPPLEMENTAL RESTRAINT SYSTEM

TORQUE SPECIFICATION

SS061-88

Part tightened		N·m	kgf·cm	ft·lbf
Steering wheel set nut		50	510	37
Steering wheel pad set screw (Torx screw)		8.8	90	78 in.·lbf
Front passenger airbag assembly x Instrument panel		6.0	61	53 in.·lbf
Front passenger airbag assembly x Instrument panel reinforcement		20	205	15
Front seat x Body		42	430	31
Seat cushion assembly x Seat adjuster assembly		21	210	15
Seatback cover with pad x Seatback frame		4.7	48	42 in.·lbf
Armrest x Seatback frame		37	380	27
Seatback frame x Seat adjuster assembly		43	440	32
Curtain shield airbag assembly x Body		9.8	100	86 in.·lbf
Airbag sensor assembly x Body		17.5	178	13
Front airbag sensor x Body		7.5	76	66 in.·lbf
Side and curtain shield airbag sensor assembly x Body		20	205	15
Front seat outer belt x Body	Upper bolt:	8.0	81	71 in.·lbf
	Lower bolt:	42	428	31
Curtain shield airbag sensor assembly x Body		17.5	178	13
Rear seat belt anchor x Body		42	428	31
Seat position sensor assembly x Seat adjuster assembly		8.0	82	71 in.·lbf

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BODY

TORQUE SPECIFICATION

SS0Z2–03

Part tightened		N·m	kgf·cm	ft·lbf
FRONT BUMPER		–	–	–
Front bumper cover x Body	Bolt:	8.5	87	76 in.·lbf
Front bumper cover x Body	Screw:	3.0	31	27 in.·lbf
Fog light x Front bumper cover		4.9	50	43 in.·lbf
Front bumper guard x Front bumper cover		4.9	50	43 in.·lbf
Front bumper reinforcement x Body		58	590	43
Winch roller bracket x Front base member	Upper Side:	22	220	16
Winch roller bracket x Front base member	Lower Side:	28	290	21
Front bumper reinforcement x Front base member		28	290	21
Front base member x Winch assembly		22	220	16
Front base member x Body		99	1,010	73
Winch base bracket x Winch assembly		16	160	12
REAR BUMPER		–	–	–
Rear bumper cover x Body		20	200	14
Reflex reflector x Rear bumper cover		4.9	50	43 in.·lbf
Rear bumper reinforcement x Extension mounting bracket		12.5	127	11
Extension mounting bracket x Body		19	195	14
FRONT DOOR		–	–	–
Door glass x Window regulator		8.0	82	71 in.·lbf
Window regulator x Door panel		8.0	82	71 in.·lbf
Door lock x Door panel		5.0	51	44 in.·lbf
Outside handle x Door panel		5.0	51	44 in.·lbf
Door lock cylinder x Outside handle		5.0	51	44 in.·lbf
Door hinge x Body		23	235	17
Door hinge x Door panel		26	265	19
Door lock striker x Body		11	115	8
Door check x Door panel		5.0	51	44 in.·lbf
Door check x Body		27	275	20
REAR DOOR		–	–	–
Door glass x Window regulator		8.0	82	71 in.·lbf
Window regulator x Door panel		8.0	82	71 in.·lbf
Door lock x Door panel		5.0	51	44 in.·lbf
Outside handle x Door panel		5.0	51	44 in.·lbf
Door hinge x Body		23	235	17
Door hinge x Door panel		26	265	19
Door lock striker x Body		11	115	8
Door check x Door panel		5.0	51	44 in.·lbf
Door check x Body		27	275	20
BACK DOOR (Liftgate Type: Upper Side)		–	–	–
Back door hinge x Body		28	286	21
Back door hinge x Door panel		31	316	23
Door lock striker x Door panel		11.5	117	8

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Back door control x Door panel	5.0	51	44 in.·lbf
Back door lock x Door panel	7.0	71	62 in.·lbf
BACK DOOR (Liftgate Type: Lower Side)	–	–	–
Back door lock x Door panel	5.0	51	44 in.·lbf
Tail gate stay x Door panel	18.5	189	14
Tail gate stay x Body	18.5	189	14
Door hinge x Body	28	286	21
Door hinge x Door panel	31	316	23
Door lock striker x Body	11.5	117	8
Back door lock control x Door panel	5.0	51	44 in.·lbf
Upper back door striker x Door panel	11.5	117	8
BACK DOOR (Swing Type LH)	–	–	–
Door lock x Door panel	5.0	51	44in.·lbf
Door hinge x Body	42	430	31
Door hinge x Door panel	42	430	31
Door lock striker x Door panel	11	115	8
BACK DOOR (Swing Type RH)	–	–	–
Back door upper lock x Door panel	18	185	13
Door lock control x Door panel	12	120	9
Back door lower lock x Door panel	18	185	13
Door hinge x Body	42	430	31
Door hinge x Door panel	42	430	31
Door upper lock striker x Body	12	122	19
Door lower lock striker x Body	12	122	19
Back door stopper bracket x Body	18	185	13
BACK DOOR STAY	–	–	–
Back door stay x Body	17.5	178	13
Back door stay x Door panel	13	133	10
REAR WIPER AND WASHER (Liftgate Type)	–	–	–
Wiper motor and link assembly x Door panel	5.4	55	48 in.·lbf
Wiper arm x Wiper link	5.4	55	48 in.·lbf
INSTRUMENT PANEL	–	–	–
Front passenger airbag assembly x Reinforcement	20	204	15
Steering wheel set nut	50	510	37
Front passenger airbag assembly x Instrument panel	6.0	61	53 in.·lbf
SIDE STEP	–	–	–
No.1 side step bracket x Side step	5.0	51	44 in.·lbf
No.1 side step bracket x Body	18	185	13
No.2 side step bracket x Side step	5.0	51	44 in.·lbf
No.2 side step bracket x Body Bolt:	18	185	13
No.2 side step bracket x Body Nut:	12	120	9
No.3 side step bracket x Side step	5.0	51	44 in.·lbf
No.3 side step bracket x Body	18	185	13
FRONT SEAT (Separate Type: Power Adjuster)	–	–	–
Front seat adjuster x Body	42	430	31

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Seatback assembly x Seat adjuster	43	440	32
Seat cushion assembly x Seat adjuster	21	210	15
Seat position control relay x Seat adjuster	8.5	87	76 in.·lbf
Seatback cover x Seatback frame w/ Side airbag:	4.7	48	42in.·lbf
Seat position sensor x Seat adjuster w/ Dual stage airbag type (Driver's side):	8.0	82	71in.·lbf
FRONT SEAT (Separate Type: Manual Adjuster)	–	–	–
Rear seat track retainer x Seat adjuster	20	200	14
Seatback assembly x Seat adjuster	43	440	32
Seat cushion assembly x Seat adjuster	21	210	15
Front seat adjuster x Body	42	430	31
Seatback cover x Seatback frame w/ Side airbag:	4.7	48	42in.·lbf
Seat position sensor x Seat adjuster w/ Dual stage airbag type (Driver's side):	8.0	82	71in.·lbf
SEAT BELT	–	–	–
Outer belt shoulder anchor x Adjustable anchor	42	430	31
Adjustable anchor x Body	42	430	31
Outer belt shoulder anchor x Body	42	430	31
Seat belt reclining detecting part x Seat back assembly	3.9	40	35 in.·lbf
Seat belt floor anchor x Body	42	430	31
Retractor x Body Upper Side:	5.0	51	44 in.·lbf
Retractor x Body Lower Side:	42	430	31
Retractor x Seatback frame	42	430	31
Inner belt x seat cushion frame	42	430	31
Inner belt x Rear seat lock	42	430	31
Lap type center with inner belt x Seat cushion frame	42	430	31
Rear seat shoulder belt guide x Seatback frame	42	430	31
CRS tether anchor bracket x Body	27	275	20

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AIR CONDITIONING

SERVICE DATA

SS0YJ–04

Drive belt deflection (Apply load of 98 N)		–
1HD–FTE	New belt	10.0 – 14.0 mm (0.39 – 0.55 in.)
	Used belt	13.0 – 18.0 mm (0.51 – 0.71 in.)
Drive belt tension		–
1HD–FTE	New belt	520 – 755 N (53 – 77 kgf)
	Used belt	343 – 539 N (35 – 55 kgf)

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SS0YK-03

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
REFRIGERANT LINE			
Liquid line (Nut)	14	140	10
Liquid line (Bolt)	10	100	7
Discharge line (Nut)	22	225	16
Discharge line (Bolt)	10	100	7
Suction line (Nut)	32	330	24
Suction line (Bolt)	10	100	7

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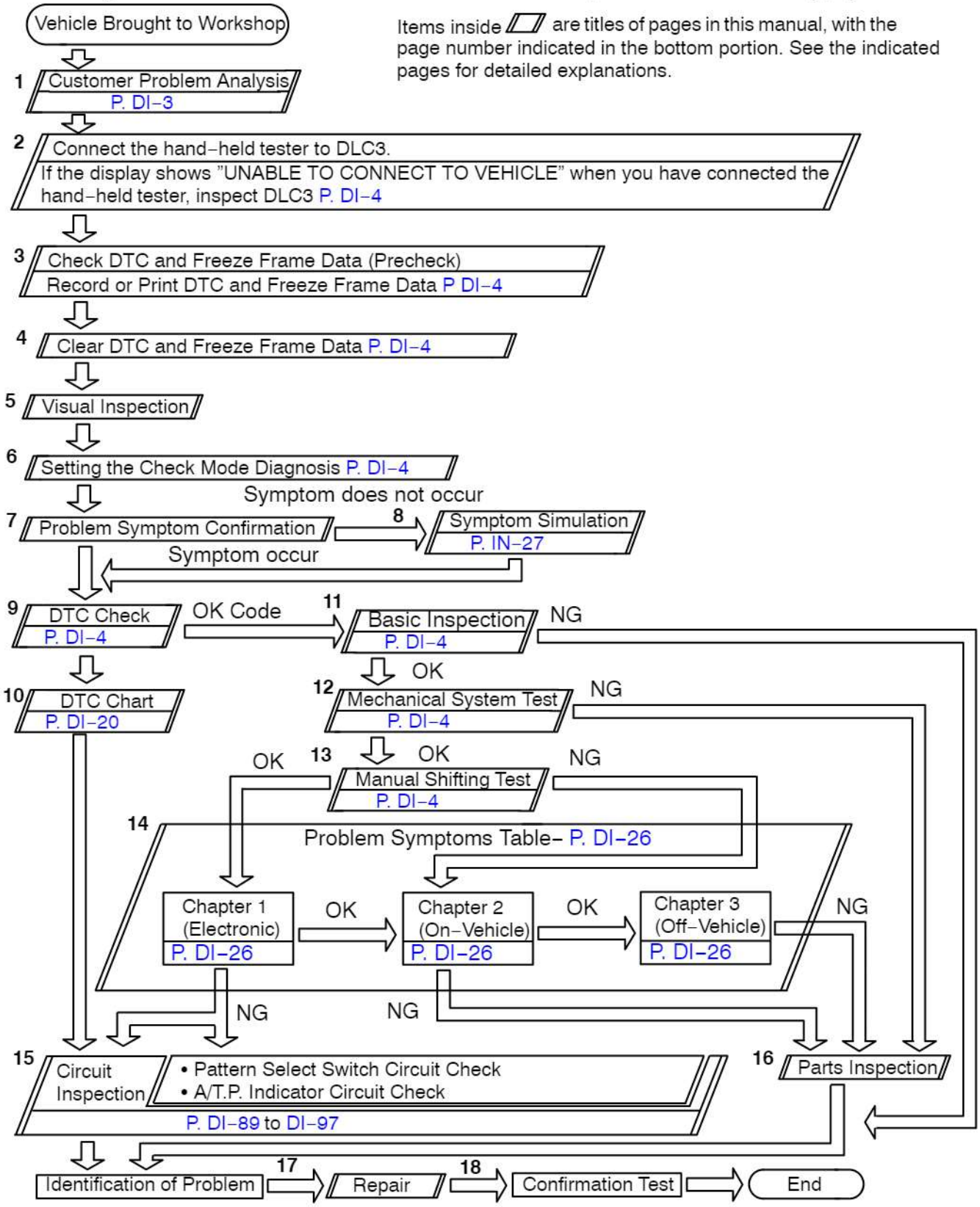
AUTOMATIC TRANSMISSION (A750F for 2UZ–FE)

DIAUB–01

HOW TO PROCEED WITH TROUBLESHOOTING

When using hand–held tester, troubleshoot in accordance with the procedure on the following pages.

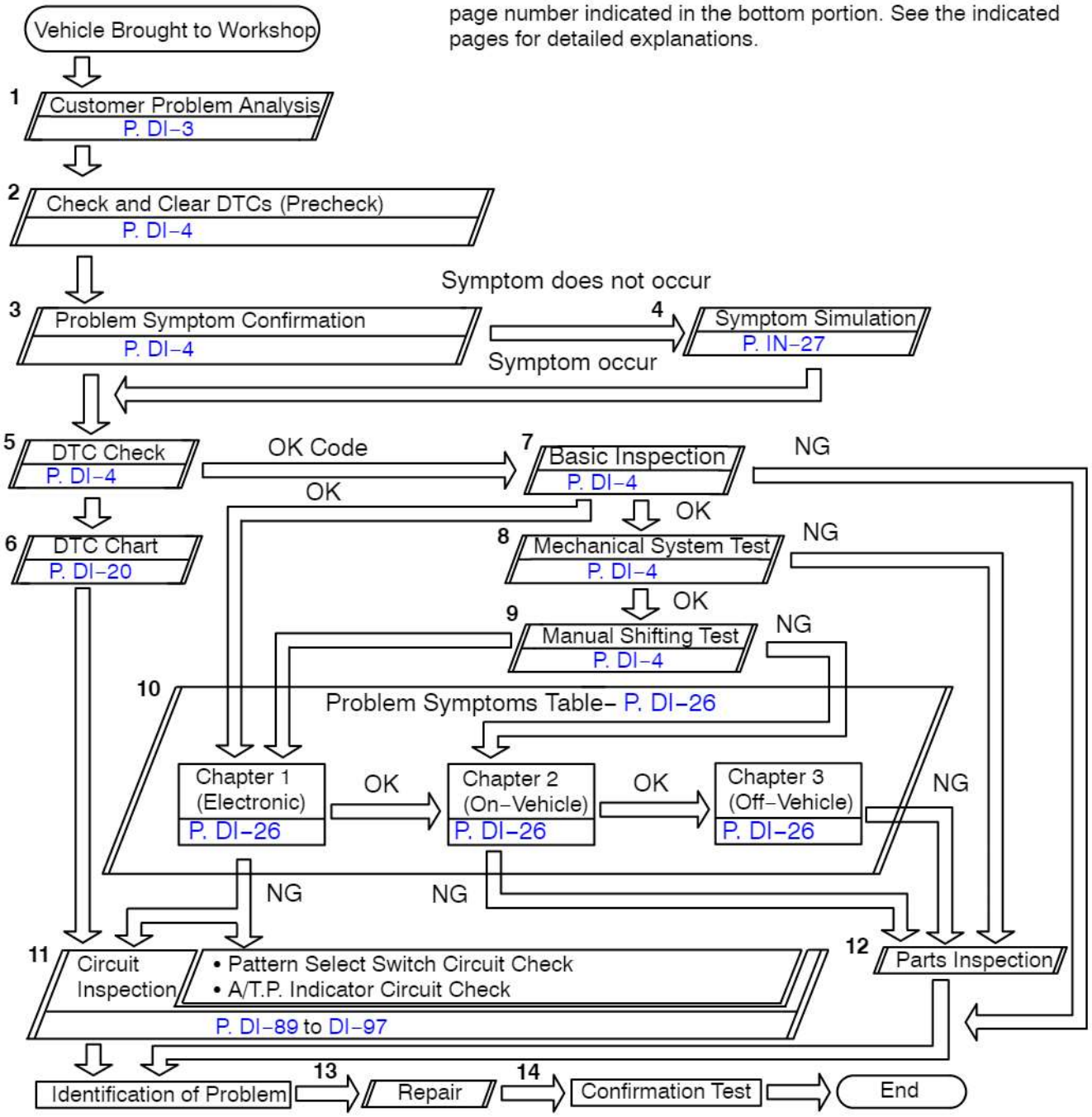
Items inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



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When using hand–held tester, troubleshoot in accordance with the procedure on the following pages.

Items inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



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DIAUC–01

CUSTOMER PROBLEM ANALYSIS CHECK

Automatic Transmission System Check Sheet	Inspector's Name :

Customer's Name		Registration No.	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	Odometer Reading	km mile

Date Problem Occurred	/ /
How Often Does Problem Occur?	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ Vehicle does not move (☐ Any range ☐ particular range)
	☐ No up–shift (☐ 1st → 2nd ☐ 2nd → 3rd ☐ 3rd → 4th ☐ 4th → 5th)
	☐ No down–shift (☐ 5th → 4th ☐ 4th → 3rd ☐ 3rd → 2nd ☐ 2nd → 1st)
	☐ Lock–up malfunction
	☐ Shift point too high or too low
	☐ Harsh engagement (☐ N → D ☐ Lock–up ☐ Any drive range)
	☐ Slip or shudder
	☐ No kick–down
	☐ Others ( )

Check Item	Malfunction Indicator Lamp	☐ Normal ☐ Remains ON

DTC Check	1st Time	☐ Normal code ☐ Malfunction code (DTC)
	2nd Time	☐ Normal code ☐ Malfunction code (DTC)

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DIAUD–01

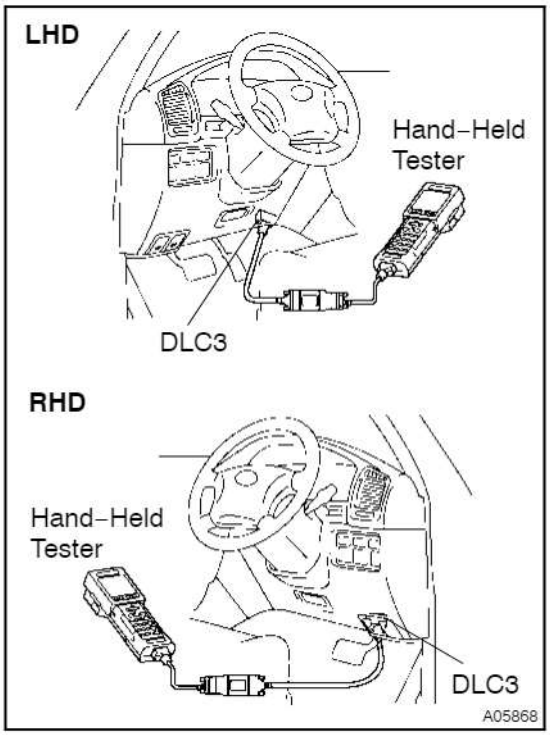
PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Description for Euro–OBD

- When troubleshooting Euro–OBD vehicles, the only difference from the usual troubleshooting procedure is that you connect the vehicle to the OBD scan tool complying with ISO 15031–4 or hand–held tester, and read off various data output from the vehicle's Engine and ECT ECU.
- Euro–OBD regulations require that the vehicle's on–board computer lights up the Check Engine Warning Light (Malfunction Indicator Lamp)/CHK ENG (MIL) on the instrument panel when the computer detects a malfunction in the emission control system/components or in the powertrain control components which affect vehicle emissions, or a malfunction in the computer. In addition to CHK ENG (MIL) lighting up when a malfunction is detected, the applicable Diagnostic Trouble Codes (DTCs) prescribed by ISO15031–6 are recorded in the Engine and ECT ECU memory (See page DI–20).

If the malfunction code is not detected in 3 consecutive trips, CHK ENG (MIL) goes off automatically but the DTCs remain recorded in the Engine and ECT ECU memory.



- To check the DTCs, connect the OBD scan tool or hand–held tester to the Data Link Connector 3 (DLC3) on the vehicle. The OBD scan tool or hand–held tester also enables you to erase the DTCs and check freezed frame data and various forms of engine data (For operating instructions, see the OBD scan tool's instruction book.).
- DTCs include ISO controlled codes and manufacturer controlled codes. ISO controlled codes must be set as prescribed by the ISO, while manufacturer controlled codes can be set freely by the manufacturer within the prescribed limits (See DTC chart on page DI–20).

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- The diagnosis system operates in normal mode during normal vehicle use. It also has a check mode for technicians to simulate malfunction symptoms and troubleshoot. Most DTCs use 2 trip detection logic* to prevent erroneous detection, and ensure thorough malfunction detection. By switching the Engine and ECT ECU to check mode when troubleshooting, the technician can cause the CHK ENG (MIL) to light up for a malfunction that is only detected once or momentarily (Hand–held tester only) (See step 2).
- *2 trip detection logic:
  When a malfunction is first detected, the malfunction code is temporarily stored in the Engine and ECT ECU memory (1st trip). If the same malfunction is detected again during the second drive test, this second detection causes the CHK ENG (MIL) to light up (2nd trip) (However, the ignition switch must be turned OFF between the 1st trip and the 2nd trip.).

(b) Description for M–OBD

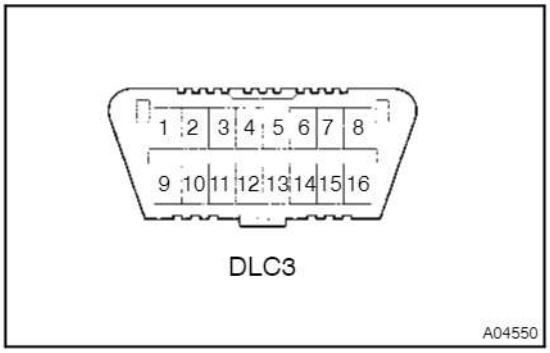
- When troubleshoot Multiplex OBD (M–OBD) vehicles, the only difference from the usual troubleshooting procedure is that you connect the vehicle to the hand–held tester, and read off various data output from the vehicle's Engine and ECT ECU.
- The vehicle's on–board computer indicates the check engine light (CHK ENG) on the instrument panel when the computer detects a malfunction in the computer itself or in drive system components. In addition to an indication of the CHK ENG when a malfunction is detected, the applicable Diagnostic Trouble Codes (DTCs) are recorded in the Engine and ECT ECU memory (See page DI–20).

If the malfunction code is not detected in 3 consecutive trips, CHK ENG (MIL) goes off automatically but the DTCs remain recorded in the Engine and ECT ECU memory.

- To check the DTCs, connect the hand–held tester to Data Link Connector 3 (DLC3) on the vehicle. or read the number of blinks of the check engine warning light when TC and CG terminals on the DLC3 are connected. The hand–held tester also enables you to erase the DTCs and activate the several actuators and check freezed frame data and various forms of engine data. (For operating instructions, see the hand–held tester instruction book.)

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- The diagnosis system operates in the normal mode during normal vehicle use. It also has a check (test) mode for technicians to simulate malfunction symptoms and troubleshoot. Most DTCs use 2 trip detection logic* to prevent erroneous detection, and ensure thorough malfunction detection. By switching the Engine and ECT ECU to the check (test) mode using hand–held tester when troubleshooting, the technician can cause the CHK ENG on the light up for a malfunction that is only detected once or momentarily (Hand–held tester only) (See step 2).
- * 2 trip detection logic
  When a logic malfunction is fist detected, the malfunction is temporally stored in the Engine and ECT ECU memory. If the same malfunction is detected again during the second drive test, this second detection cases the CHK ENG to light up.
  The 2 trip repeats the same mode for 2 times (However, the ignition switch must be turned OFF between the 1st trip and 2nd trip).



(c) Check the DLC3.
The vehicle's Engine and ECT ECU uses the ISO 9141–2 (Euro–OBD)/ISO 14230 (M–OBD) communication protocol. The terminal arrangement of DLC3 complies with ISO 15031–3 and matches the ISO 9141–2/ISO 14230 format.

Terminal No.	Connection/Voltage or Resistance	Condition
7	Bus + Line/Pulse generation	During communication
4	Chassis Ground ⇔ Body Ground/1 Ω or less	Always
5	Signal Ground – Body Ground/1 Ω or less	Always
16	Battery Positive ⇔ Body Ground/9 – 14 V	Always

HINT:
If your display shows UNABLE TO CONNECT TO VEHICLE when you have connected the cable of the hand–held tester to the DLC3, turned the ignition switch ON and operated the scan tool, there is a problem on the vehicle side or tool side.
If communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

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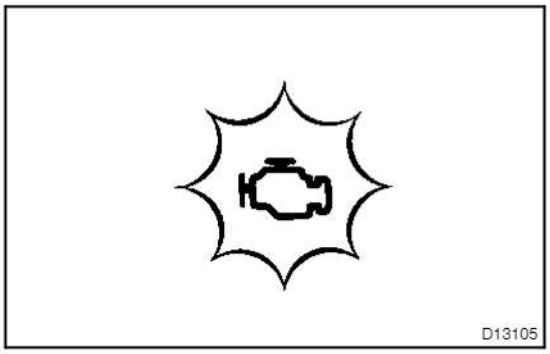
2. INSPECT DIAGNOSIS (Normal Mode)

(a) Check the DTC using hand–held tester.

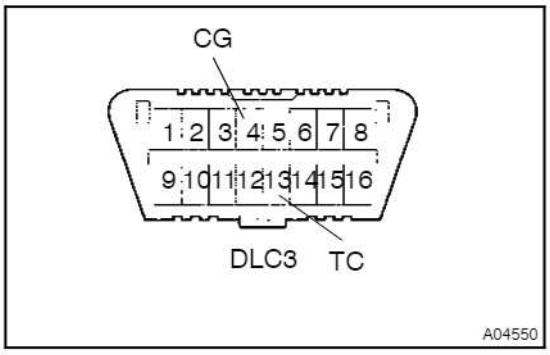
NOTICE:

Hand–held tester only:

When the diagnosis system is switched from the normal mode to the check mode, it erases all DTCs and freezed frame data recorded in the normal mode. So before switching modes, always check the DTCs and freezed frame data, and note them down.



(1) The CHK ENG (MIL) comes on when the ignition switch is turned ON and the engine is not running.
(2) Prepare the hand–held tester.
(3) Connect the hand–held tester to the DLC3.
(4) Turn the ignition switch ON and push the hand–held tester main switch ON.
(5) Use the hand–held tester to check the DTCs and freezed frame data, note them down (For operating instructions, see the hand–held tester instruction book.).
(6) See page DI–20 to confirm the details of the DTCs.



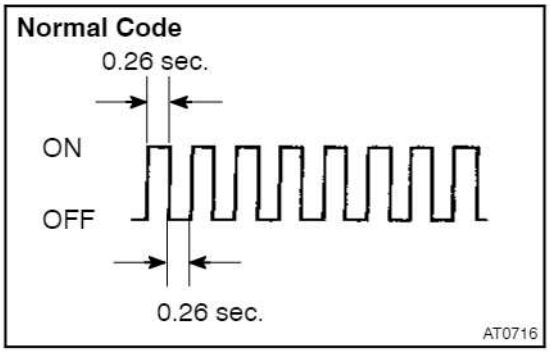
(b) Check the DTC when not using hand–held tester (M–OBD).

HINT:

Middle East leaded gasoline type only

(1) Turn the ignition switch ON, but do not start the engine.
(2) Using SST, connect terminals 13 (TC) and 4 (CG) of DLC3.

SST 09843–18040

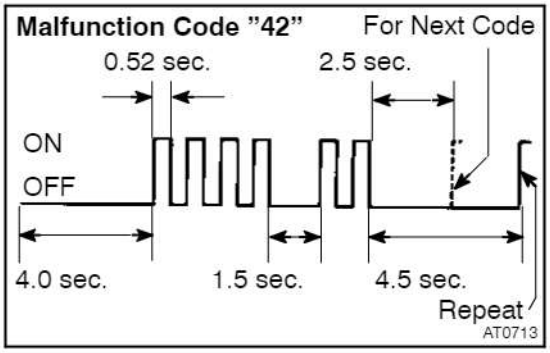


(3) Read the DTC indicated by the number of times the MIL blinks.

HINT:

If the system is operating normally, the light will blink 2 times per second.

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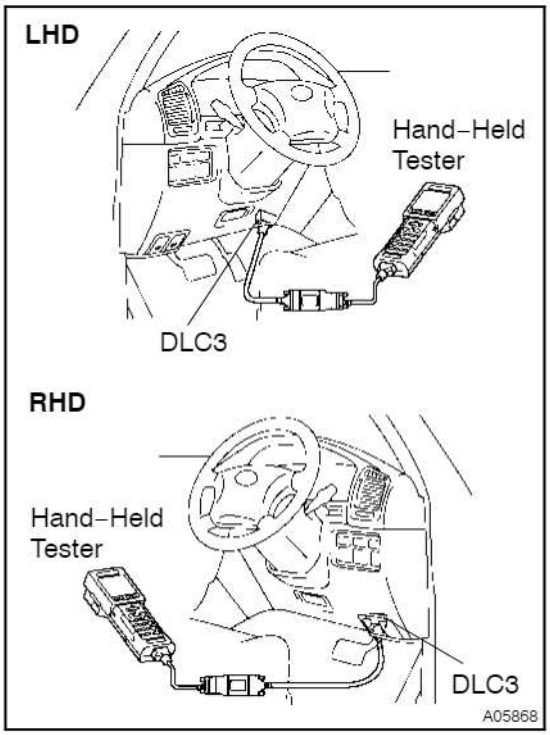
(4) The malfunction code is indicated, as shown in the chart on the left (DTC "42" is shown as an example).

HINT:
When 2 or more malfunction codes are stored in memory, the lower–numbered code is displayed first.

3. INSPECT DIAGNOSIS (Check (Test) Mode)

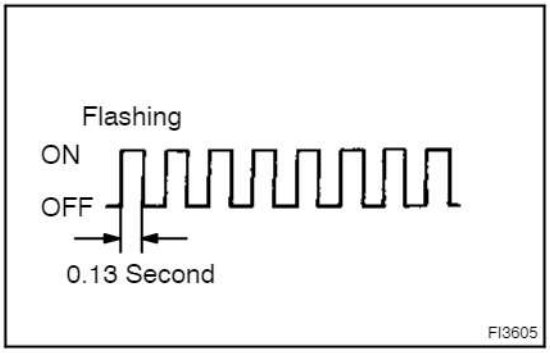
HINT:
Hand–held tester only:
Compared to the normal mode, the check mode has an increased sensitivity to detect malfunctions.
Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the check (test) mode.

(a) Check the DTC.
  (1) Initial conditions
    - Battery voltage 11 V or more
    - Throttle valve fully closed
    - Transmission in P or N range
    - A/C switched OFF
  (2) Turn the ignition switch OFF.
  (3) Prepare the hand–held tester.



  (4) Connect the hand–held tester to the DLC3.
  (5) Turn the ignition switch ON and push the hand–held tester main switch ON.

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(6) Switch the hand–held tester from the normal mode to the check (test) mode.
(7) Check if the CHK ENG (MIL) blinks.

NOTICE:
If the hand–held tester switches the Engine and ECT ECU from the normal mode to the check mode or vice–versa, or if the ignition switch is turned from ON to ACC or OFF during the check mode, the DTCs and freezed frame data will be erased.

(8) Start the engine (MIL goes out after the engine starts).
(9) Simulate the conditions of the malfunction described by the customer.

NOTICE:
Leave the ignition switch ON until you have checked the DTCs, etc.

(10) After simulating the malfunction conditions, use the hand–held tester diagnosis selector to check the DTCs and freezed frame data, etc.

HINT:
Take care not to turn the ignition switch OFF. Turning the ignition switch OFF switches the diagnosis system from the check (test) mode to the normal mode. so all DTCs, etc. are erased.

(11) After checking the DTC, inspect the applicable circuit.

(b) Clear the DTC.
The DTCs and freeze frame data will be erased by either actions.
(1) Operating the hand–held tester to erase the codes. (See the hand–held tester's instruction book for operating instructions.)
(2) Disconnecting the battery terminals or EFI fuse and ETCS fuse more than 60 second.

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4. DATA LIST

HINT:

According to the DATA LIST displayed by the Hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Warm up the engine.
(b) Turn the ignition switch OFF.
(c) Connect the Hand–held tester to the DLC3.
(d) Turn the ignition switch ON.
(e) Push the "ON" button of Hand–held tester.
(f) Select the item "/DIAGNOSIS/ENHANCED OBD II/DATA LIST/ALL (or ATM)".
(g) According to the display on tester, read the "DATA LIST".

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
STOP LIGHT SW	Stop light SW Status/ ON or OFF	• Brake Pedal is depressed: ON • Brake Pedal is released: OFF	←
SHIFT	Actual Gear range/ 1st, 2nd, 3rd, 4th or 5th	Shift Lever range is; • L: 1st • 2: 1st or 2nd • 3: 1st, 2nd or 3rd • 4: 1st, 2nd, 3rd or 4th • D: 1st, 2nd, 3rd, 4th or 5th	←
PNP SW [NSW]	PNP SW Status/ ON or OFF	Shift lever range is; P or N: ON Except P or N: OFF	The shift lever range and these values are different, there are failures of the PNP switch or shift cable adjustment.
REVERSE	PNP SW Status/ ON or OFF	Shift lever range is; R: ON Except R: OFF	
DRIVE	PNP SW Status/ ON or OFF	Shift lever range is; D and 4: ON Except D and 4: OFF	
4th/DRIVE	PNP SW Status/ ON or OFF	Shift lever range is; 4: ON Except 4: OFF	
3RD	PNP SW Status/ ON or OFF	Shift lever range is; 3: ON Except 3: OFF	
2ND	PNP SW Status/ ON or OFF	Shift lever range is; 2 and L: ON Except 2 and L: OFF	
LOW	PNP SW Status/ ON or OFF	Shift lever range is; L: ON Except L: OFF	
LOCK UP SOL	Lock Up Solenoid Status/ ON or OFF	• Lock Up: ON • Except Lock Up: OFF	←
PATTERN SW (M)	Pattern SW (PWR) Status/ ON or OFF	Pattern SW (PWR) is; Pushed in: ON Pushed once again: OFF	←
SNOW SW	Pattern SW (2nd) Status/ ON or OFF	• IG SW ON: OFF ↓ • Pattern SW (2nd) Push: ON ↓ • Pattern SW (2nd) Push: OFF	←
SOLENOID (SLT)	Shift Solenoid SLT Status/ ON or OFF	IG SW ON: ON	←

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SOLENOID (SLU)	Shift Solenoid SLU Status/ ON or OFF	• Lock Up: ON • Except Lock Up: OFF	←
SPD (SP2)	Counter Gear Speed display/ min.: 0 km/h (0 mph) max.: 255 km/h (158 mph)	Vehicle stopped: 0 km/h (0 mph)	←
AT FLUID TEMP	ATF Temp. Sensor No. 1 Value/ min.: –40°C (–40°F) max.: 215°C (419°F)	80°C (176°F) (After Stall Test)	If the value is "–40°C (–40°F)" or "215°C (419°F)", ATF temp. sensor No. 1 circuit is opened or shorted.

5. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the Hand–held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Warm up the engine.
(b) Turn the ignition switch OFF.
(c) Connect the Hand–held tester to the DLC3.
(d) Turn the ignition switch ON.
(e) Push the "ON" button of Hand–held tester.
(f) Select the item "/DIAGNOSIS/ENHANCED OBD II/ACTIVE TEST".
(g) According to the display on tester, perform the "ACTIVE TEST".

Item	Test Details	Diagnostic Note
SHIFT	[Test Details] Operate the shift solenoid valve and set the each shift range by yourself. [Vehicle Condition] Less than 50 km/h (31 mph) [Others] • Press → button: Shift up • Press ← button: Shift down	Possible to check the operation of the shift solenoid values. HINT: Shifting to the 5th gear is possible only when the vehicle stops or idle is ON.
LOCK UP	[Test Details] Control the shift solenoid SLU to set the ATM to the lock–up condition. [Vehicle Condition] Vehicle Speed: 58 km/h (36 mph) or more	Possible to check the SLU operation.
LINE PRESS UP	[Test Details] Operate the shift solenoid SLT and raise the line pressure. [Vehicle Condition] • Vehicle Stopped. • IDL: ON [Others] ON: Line pressure up. OFF: No action (normal operation)	–

6. PROBLEM SYMPTOM CONFIRMATION

Taking into consideration the results of the customer problem analysis, try to reproduce the symptoms of the trouble. If the problem is that the transmission does not up–shift, down–shift, or the shift point is too high or too low, conduct the following road test to confirm the automatic shift schedule and simulate the problem symptoms.

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7. ROAD TEST

NOTICE:

Perform the test at normal operating ATF temperature 50 – 80°C (122 – 176°F).

(a) D range test (NORM and PWR pattern):

Shift into the D range and fully depress the accelerator pedal and check the following points.

(1) Check up–shift operation.

Check that 1 → 2, 2 → 3, 3 → 4 and 4 → 5th up–shifts take place, and that the shift points conform to the automatic shift schedule (See page SS–4).

HINT:

- 5th Gear Up–shift Prohibition Control (1. Coolant temp. is 55°C (131°F) or less. 2. Vehicle speed is 51 km/h (32 mph) or less.)
- 4th Gear Up–shift Prohibition Control (1. Coolant temp. is 40°C (104°F) or less. 2. Vehicle speed is 45 km/h (28 mph) or less.)
- 5th Gear Lock–up Prohibition Control (1. Brake pedal is depressed. 2. Coolant temp. is 60°C (140°F) or less.)
- When the 2nd start switch is on, there is no 1→2 up–shift and 2→1 down–shift.

(2) Check for shift shock and slip.

Check for shock and slip at the 1 → 2, 2 → 3, 3 → 4 and 4 → 5th up–shifts.

(3) Check for abnormal noises and vibration.

Drive in the D range lock–up or 5th gear and check for abnormal noises and vibration.

HINT:

The check for the cause of abnormal noises and vibration must be done very thoroughly as it could also be due to loss of balance in the differential, torque converter clutch, etc.

(4) Check kick–down operation.

While running in the D range, 2nd, 3rd, 4th and 5th gears, check that the possible kick–down vehicle speed limits for 2 → 1, 3 → 2, 4 → 3 and 5th → 4 kick–downs conform to those indicated on the automatic shift schedule (See page SS–4).

(5) Check abnormal shock and slip at kick–down.

(6) Check the lock–up mechanism.

- Drive in D range 5th gear, at a steady speed (lock–up ON) of about 70 km/h (43 mph).
- Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.

If there is a big jump in engine speed, there is no lock–up.

(b) 4 range test:

Shift into the 4 range and fully depress the accelerator pedal and check the following points.

(1) Check up–shift operation.

Check that the 1 → 2, 2 → 3 and 3 → 4 up–shift takes place and that the shift point conforms to the automatic shift schedule (See page SS–4).

HINT:

- There is no 5th up–shift in the 4 range.
- 4th Gear Lock–up Prohibition Control (1. Brake pedal is depressed. 2. Coolant temp. is 60°C (140°F) or less.)

(2) Check engine braking.

While driving in the 4 range and 4th gear, release the accelerator pedal and check the engine braking effect.

(3) Check for abnormal noises during acceleration and deceleration, and for shock at up–shift and down–shift.

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(4) Check the lock–up mechanism.
- Drive in 4 range 4th gear, at a steady speed (lock–up ON) of about 64 km/h (40 mph).
- Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.

If there is a big jump in engine speed, there is no lock–up.

(c) 3 range test:
Shift into the 3 range and fully depress the accelerator pedal and check the following points.
(1) Check up–shift operation.
Check that the 1 → 2 and 2 → 3 up–shift takes place and that the shift point conforms to the automatic shift schedule (See page SS–4).
(2) Check engine braking.
While running in the 3 range and 3rd gear, release the accelerator pedal and check the engine braking effect.
(3) Check for abnormal noises during acceleration and deceleration, and for shock at up–shift and down–shift.

(d) 2 range test:
Shift into the 2 range and fully depress the accelerator pedal and check the following points.
(1) Check up–shift operation.
Check that the 1 → 2 up–shift takes place and that the shift point conforms to the automatic shift schedule (See page SS–4).

HINT:
When the 2nd start switch is ON, there is no 1 → 2 up–shift and 2 → 1 down–shift.

(2) Check engine braking.
While running in the 2 range and 2nd gear, release the accelerator pedal and check the engine braking effect.
(3) Check for abnormal noises during acceleration and deceleration, and for shock at up–shift and down–shift.

(e) L range test:
Shift into the L range and fully depress the accelerator pedal and check the following points.
(1) Check no up–shift.
While running in the L range, check that there is no up–shift to 2nd gear.
(2) Check engine braking.
While running in the L range, release the accelerator pedal and check the engine braking effect.
(3) Check for abnormal noises during acceleration and deceleration.

(f) R range test:
Shift into the R range and fully depress the accelerator pedal and check for slipping.

CAUTION:
Before conducting this test ensure that the test area is free from people and obstruction.

(g) P range test:
Stop the vehicle on a grade (more than 5°) and after shifting into the P range, release the parking brake. Then, check that the parking lock pawl holds the vehicle in place.

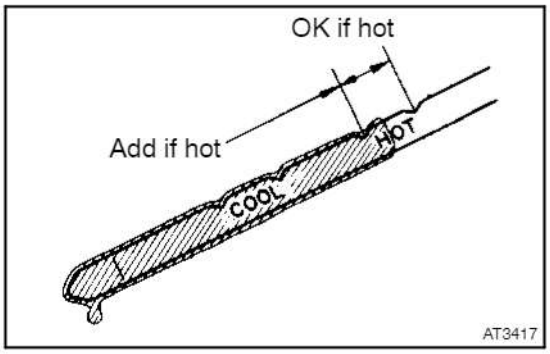
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8. BASIC INSPECTION

(a) Check the fluid level.

HINT:

- Drive the vehicle so that the engine and transmission are at normal operating temperature.
  Fluid temp.: 70 – 80°C (158 – 176°F)
- Only use the COOL range on the dipstick as a rough reference when the fluid is replaced or the engine does not run.



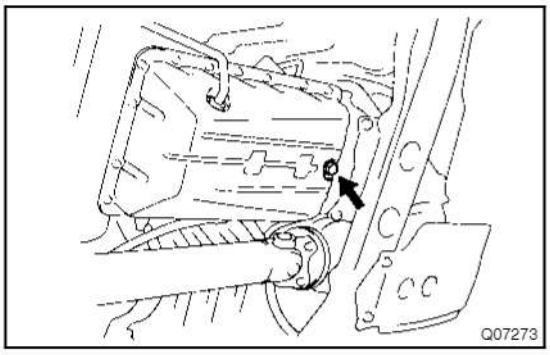
(1) Park the vehicle on a level surface and set the parking brake.
(2) With the engine idling and the brake pedal depressed, shift the shift lever into all ranges from P to L range and return to P range.
(3) Pull out the dipstick and wipe it clean.
(4) Push it back fully into the pipe.
(5) Pull it out and check that the fluid level is in the HOT range.
If the level is at the low side, add new fluid.

Fluid type: ATF Type T–IV

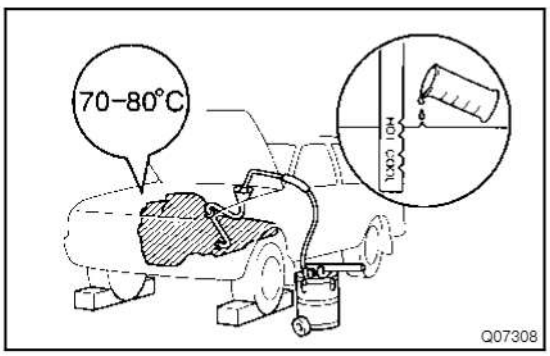
NOTICE:

Do not overfill.

(b) Check the fluid condition.
If the fluid smells burnt or is black, replace it.



(c) Replace the ATF.
(1) Remove the drain plug and drain the fluid.
(2) Reinstall the drain plug securely.



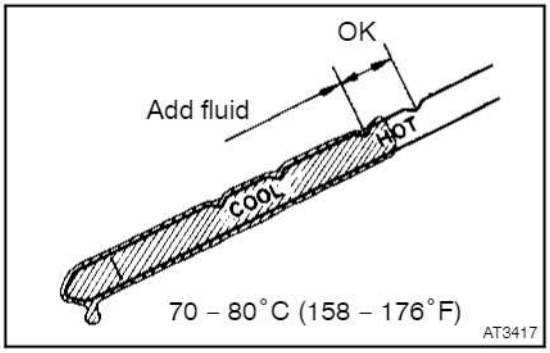
(3) With the engine OFF add new fluid through the oil filler pipe.

Fluid type: ATF Type T–IV

Capacity: 3.0 liters (3.2 US qts, 2.6 Imp. qts)

(4) Start the engine and shift the shift lever into all ranges from P to L range and then shift into P range.
(5) With the engine idling, check the fluid level. Add fluid up to the COOL level on the dipstick.

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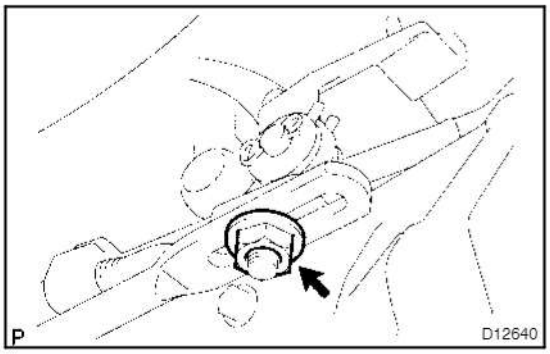


(6) Check the fluid level at the normal operating temperature, 70 – 80°C (158 – 176°F), and add as necessary.

NOTICE:
Do not overfill.

(d) Check the fluid leaks.
Check for leaks in the transmission.

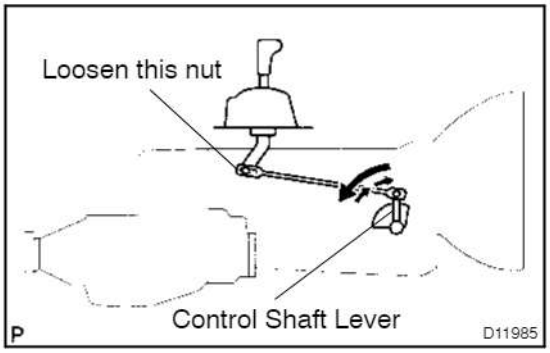
If there are leaks, it is necessary to repair or replace O–rings, FIPGs, oil seals, plugs or other parts.



(e) Inspect and adjust the shift lever range.
When shifting the shift lever from the N range to other ranges, check that the lever can be shifted smoothly and accurately to each range and that the range indicator is not aligned with the correct range.

If the indicator is not aligned with the correct range, carry out the following adjustment procedures.

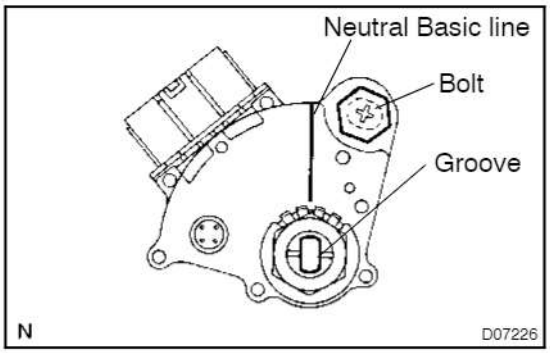
(1) Loosen the nut on the shift lever.
(2) Push the control shaft fully rearward.



(3) Return the control shaft lever 2 notches to N range.
(4) Set the shift lever to N range.
(5) While holding the shift lever lightly toward the R range side, tighten the shift lever nut.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(6) Start the engine and make sure that the vehicle moves forward when shifting the lever from the N to D range and reverses when shifting it to the R range.



(f) Inspect and adjust the neutral start switch.

- Check that the engine can be started with the shift lever only in the N or P range, but not in other ranges.

If it is not as stated above, carry out the following adjustment procedures.

- Loosen the neutral start switch bolt and set the shift lever to the N range.
- Align the groove with neutral basic line.
- Hold in range and tighten the bolt.

Torque:13 N·m (130 kgf·cm, 9 ft·lbf)

- For continuity inspection of the neutral start switch, see page DI–32.

(g) Check the idle speed.
Idle speed (In N range and air conditioner OFF):
700 ± 50 rpm

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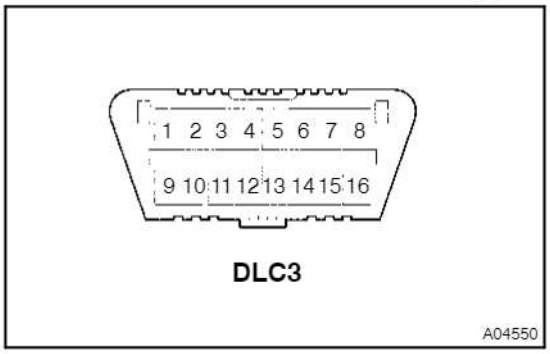
9. MECHANICAL SYSTEM TESTS

(a) Measure the stall speed.

The object of this test is to check the overall performance of the transmission and engine by measuring the stall speeds in the D and R ranges.

NOTICE:

- **Do the test at normal operating fluid temperature 70 – 80°C (158 – 176°F).**
- **Do not continuously run this test longer than 5 seconds.**
- **To ensure safety, conduct this test in a wide, clear level area which provides good traction.**
- **The stall test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is doing the test.**



DLC3

(1) Chock the 4 wheels.

(2) Connect a hand–held tester to DLC3 or tachometer to terminal TAC (9) of DLC3 with SST.

SST 09843–18030

(3) Fully apply the parking brake.

(4) Keep your left foot pressing firmly on the brake pedal.

(5) Start the engine.

(6) Shift into the D range. Press all the way down on the accelerator pedal with your right foot. Quickly read the stall speed at this time.

Stall speed: 2,150 ± 150 rpm

(7) Do the same test in R range.

Stall speed: 2,150 ± 150 rpm

Evaluation:

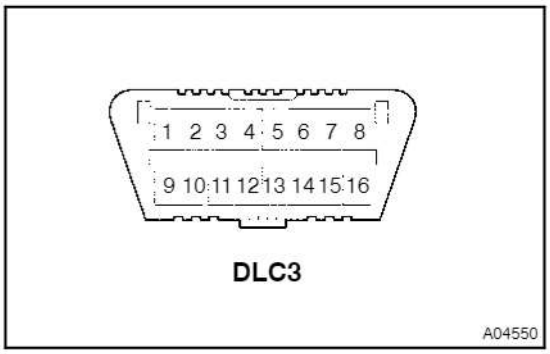
Problem	Possible cause
(a) Stall speed low in D and R ranges	• Engine output may be insufficient • Stator one–way clutch is not operating properly HINT: If the value is larger or smaller than the specified value by 600 rpm or more, the torque converter could be faulty.
(b) Stall speed high in D range	• Line pressure too low • Clutch No. 1 (C_1) slipping • One–way clutch No.3 (F_3) not operating properly
(c) Stall speed high in R range	• Line pressure too low • Brake No. 4 (B_4) slipping • Clutch No. 3 (C_3) slipping • One–way clutch No.1 (F_1) not operating properly
(d) Stall speed high in D and R ranges	• Line pressure too low • Improper fluid level

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(b) Measure the time lag.
When the shift lever is shifted while the engine is idling, there will be a certain time lapse or lag before the shock can be felt. This is used for checking the condition of the clutch and brake.

NOTICE:

- **Do the test at normal operating fluid temperature 70 – 80°C (158 – 176°F).**
- **Be sure to allow 1 minute interval between tests.**
- **Take 3 measurements and take the average value.**



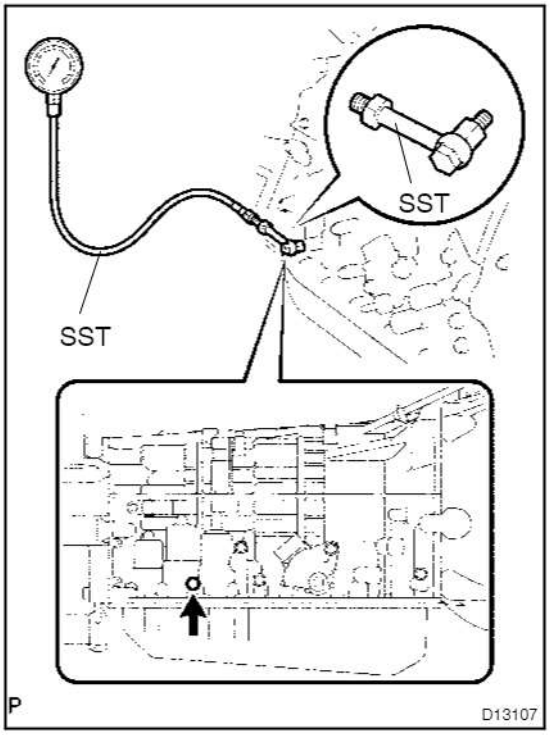
DLC3

(1) Fully apply the parking brake.
(2) Connect a hand–held tester to DLC3 or tachometer to terminal TAC (9) of DLC3 with SST.
SST 09843–18030
(3) Start the engine and check idle speed.
Idle speed (In N range and air conditioner OFF): 700 ± 50 rpm.
(4) Shift the shift lever from N to D range. Using a stop watch, measure the time from when the lever is shifted until the shock is felt.
Time lag:
N → D Less than 1.2 seconds
(5) In the same manner, measure the time lag for N → R.
Time lag:
N → R Less than 1.5 seconds

Evaluation (If N → D time or N → R time lag is longer than the specified):

Problem	Possible cause
N → D time lag is longer	• Line pressure too low • Clutch No. 1 (C_1) worn • One–way clutch No.3 (F_3) not operating properly
N → R time lag is longer	• Line pressure too low • Clutch No. 3 (C_3) worn • Brake No. 4 (B_4) worn • One–way clutch No.1 (F_1) not operating properly

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10. HYDRAULIC TEST

Measure the line pressure.

NOTICE:

- **Do the test at normal operation fluid temperature 70 – 80°C (158 – 176°F).**
- **The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is doing the test.**
- **Be careful to prevent SST's hose from interfering with the exhaust pipe.**

(1) Warm up the ATF.

(2) Remove the test plug on the transmission case center right side and connect SST.

SST 09992–00095 (09992–00231, 09992–00271)

(3) Fully apply the parking brake and chock the 4 wheels.

(4) Start the engine and check idling speed.

(5) Keep your left foot pressing firmly on the brake pedal and shift into D range.

(6) Measure the line pressure when the engine is idling.

(7) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(8) In the same manner, do the test in R range.

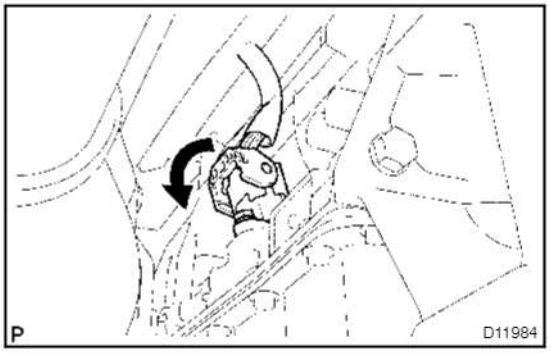
Specified line pressure:

Condition	D range kPa (kgf/cm^2, psi)	R range kPa (kgf/cm^2, psi)
Idling	362 – 420 (3.7 – 4.2, 53 – 59)	500 – 580 (5.1 – 5.9, 73 – 84)
Stall	1,360 – 1,460 (13.8 – 14.9, 196 – 212)	1,295 – 1,415 (13.2 – 14.4, 188 – 205)

Evaluation

Problem	Possible cause
If the measured value at all ranges are higher	• Shift solenoid valve SLT defective • Regulator valve defective
If the measured value at all ranges are lower	• Shift solenoid valve SLT defective • Regulator valve defective • Oil pump defective
If pressure is low in the D range only	• D range circuit fluid leakage • Clutch No. 1 (C_1) defective
If pressure is low in the R range only	• R range circuit fluid leakage • Clutch No. 3 (C_3) defective • Brake No. 4 (B_4) defective

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11. MANUAL SHIFTING TEST

HINT:

By this test, it can be determined whether the trouble is within the electrical circuit or is a mechanical problem in the transmission.

(a) Disconnect the solenoid wire.

(b) Inspect the manual driving operation.

Check that the shift and gear ranges correspond with the table below.

While driving, shift through the L, 2, 3, 4 and D ranges. Check that the gear change corresponds to the shift range.

Shift range	Gear range
D	4th
4	4th
3	3rd
2	1st
L	1st
R	Reverse
P	Pawl Lock

HINT:

If the gear ranges of the L, 2, 3, 4 and D are difficult to distinguish, do the following road test.

If any abnormality is found in the above test, the problem is in the transmission itself.

(c) Connect the solenoid wire.

(d) Cancel out DTC.

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DIAUE–01

DIAGNOSTIC TROUBLE CODE CHART

If a DTC is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the page given.

*1: "●" Check Engine Warning Light light up

*2: "○" mark means the Engine & ECT ECU memorizes the malfunction code if the Engine & ECT ECU detects the DTC detection condition.

*3: Europe only

*4: Two–digit code is used only in the leaded gasoline type vehicles produced for Middle East.

DTC No. (See Page)	Detection Item	Trouble Area	Check Engine Warning Light*1	Memory *2
P0705 (DI–32)	Transmission Range Sensor Circuit Malfunction (PRNDL Input)	• Short in neutral start switch circuit • Neutral start switch • Engine and ECT ECU	●	○
P0710/38 *4 (DI–37)	Transmission Fluid Temperature Sensor "A" Circuit	• Open or short in ATF temperature sensor No. 1 circuit • ATF temperature sensor No. 1 • Engine and ECT ECU	●	○
P0711 *3 (DI–40)	Transmission Fluid Temperature Sensor "A" Performance		●	○
P0712/38 *4 (DI–37)	Transmission Fluid Temperature Sensor "A" Circuit Low Input		●	○
P0713/38 *4 (DI–37)	Transmission Fluid Temperature Sensor "A" Circuit High Input		●	○
P0717/37 *4 (DI–42)	Input Speed Sensor Circuit No Signal	• Open or short in speed sensor NT circuit • Speed sensor NT • Engine and ECT ECU	●	○
P0722/61 *4 (DI–44)	Output Speed Sensor	• Open or short in speed sensor SP2 circuit • Speed sensor SP2 • Engine and ECT ECU	●	○
P0724 (DI–46)	Brake Switch "B" Circuit High	• Short in stop light switch circuit • Stop light switch • Engine and ECT ECU	●	○
P0748/62 *4 (DI–49)	Pressure Control Solenoid "A" Electrical (Shift Solenoid Valve SL1)	• Open or short in shift solenoid valve SL1 circuit • Shift solenoid valve SL1 • Engine and ECT ECU	●	○
P0751 *3 (DI–55)	Shift Solenoid "A" Performance (Shift Solenoid Valve S1)	• Shift solenoid valve S1 is stuck open or closed • Valve body is blocked up or stuck • Shift solenoid valve S1 • Automatic transmission assembly • Engine and ECT ECU	●	○
P0756 *3 (DI–55)	Shift Solenoid "B" Performance (Shift Solenoid Valve S2)	• Shift solenoid valve S2 is stuck open or closed • Valve body is blocked up or stuck • Shift solenoid valve S2 • Automatic transmission assembly • Engine and ECT ECU	●	○
P0771 *3 (DI–57)	Shift Solenoid "E" Performance (Shift Solenoid Valve SR)	• Shift solenoid valve SR is stuck open or closed • Shift solenoid valve SL1 is stuck open or closed • Valve body is blocked up or stuck • Shift solenoid valve SR • Shift solenoid valve SL1 • Automatic transmission assembly • Engine and ECT ECU	●	○

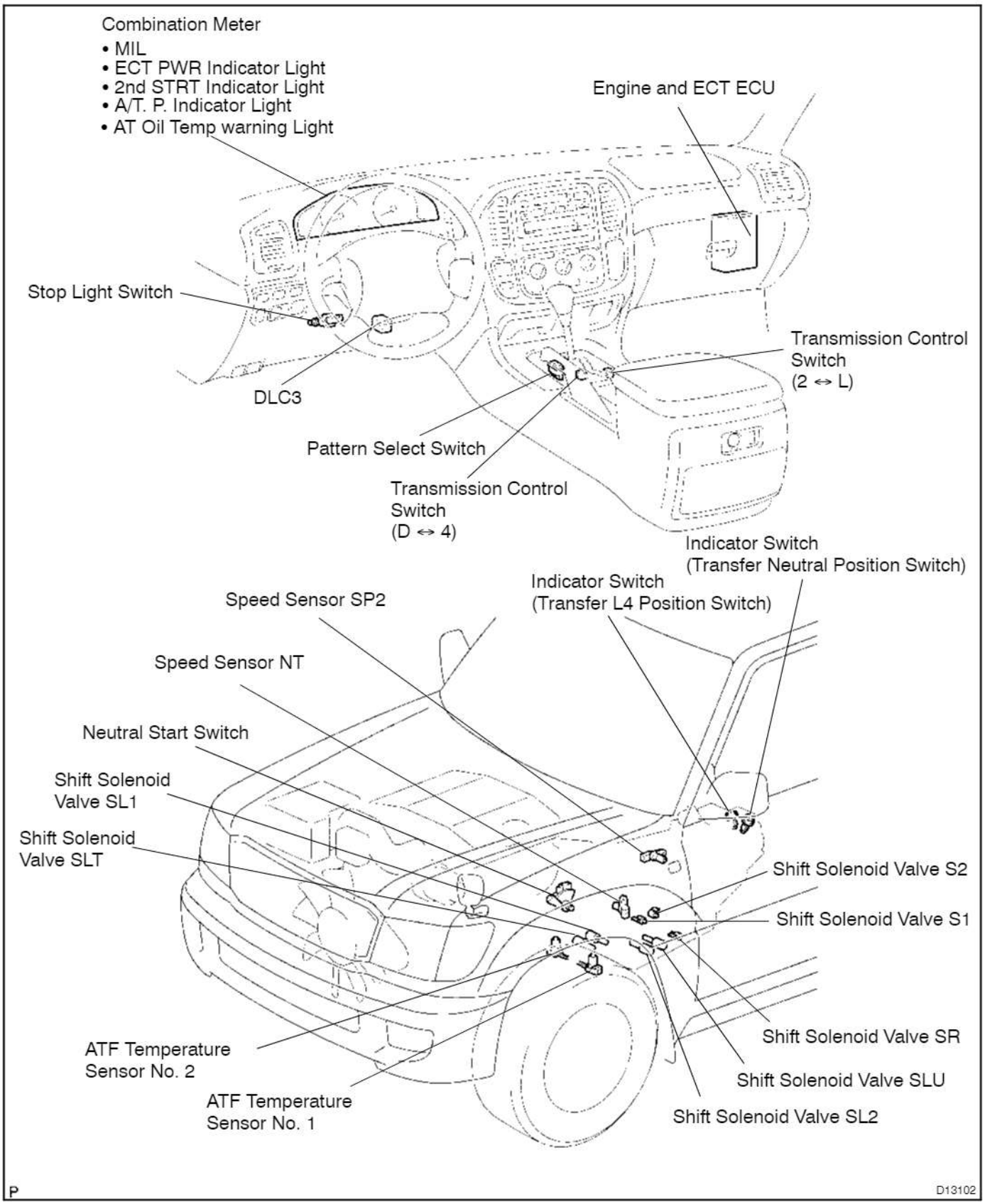
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P0776/63 *3, *4 (DI–59)	Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2)	• Shift solenoid valve SL2 is stuck open or closed • Valve body is blocked up or stuck • Shift solenoid valve SL2 • Automatic transmission assembly • Engine and ECT ECU	●	○
P0778/63 *4 (DI–61)	Pressure Control Solenoid "B" Electrical (Shift Solenoid Valve SL2)	• Open or short in shift solenoid valve SL2 circuit • Shift solenoid valve SL2 • Engine and ECT ECU	●	○
P0781 *3 (DI–64)	1–2 Shift	• Valve body is blocked up or stuck (1–2 shift valve) • Automatic transmission assembly • Engine and ECT ECU	●	○
P0818 (DI–65)	Driveline Disconnect Switch Input Circuit	• Short in transfer neutral position switch circuit • Transfer neutral position switch • Engine and ECT ECU	●	○
P0850 (DI–32)	Park/Neutral Switch Input Circuit	• Short in neutral start switch circuit • Neutral start switch • Engine and ECT ECU	●	○
P0973/62 *4 (DI–67)	Shift Solenoid "A" Control Circuit Low (Shift Solenoid Valve S1)	• Open or short in shift solenoid valve S1 circuit • Shift solenoid valve S1 • Engine and ECT ECU	●	○
P0974/62 *4 (DI–67)	Shift Solenoid "A" Control Circuit High (Shift Solenoid Valve S1)		●	○
P0976/63 *4 (DI–70)	Shift Solenoid "B" Control Circuit Low (Shift Solenoid Valve S2)	• Open or short in shift solenoid valve S2 circuit • Shift solenoid valve S2 • Engine and ECT ECU	●	○
P0977/63 *4 (DI–70)	Shift Solenoid "B" Control Circuit High (Shift Solenoid Valve S2)		●	○
P0985/74 *4 (DI–73)	Shift Solenoid "E" Control Circuit Low (Shift Solenoid Valve SR)	• Open or short in shift solenoid valve SR circuit • Shift solenoid valve SR • Engine and ECT ECU	●	○
P0986/74 *4 (DI–73)	Shift Solenoid "E" Control Circuit High (Shift Solenoid Valve SR)		●	○
P1782 (DI–76)	T/F L4 Range Position Switch Performance	• Short in transfer L4 position switch circuit • Transfer L4 position switch • Engine and ECT ECU	●	○
P2714 *3 (DI–79)	Pressure Control Solenoid "D" Performance (Shift Solenoid Valve SLT)	• Shift solenoid valve SLT is stuck open or closed • Valve body is blocked up or stuck • Shift solenoid valve SLT • Automatic transmission assembly • Engine and ECT ECU	●	○
P2716/77 *4 (DI–81)	Pressure Control Solenoid "D" Electrical (Shift Solenoid Valve SLT)	• Open or short in shift solenoid valve SLT circuit • Shift solenoid valve SLT • Engine and ECT ECU	●	○
P2743/38 *4 (DI–37)	Transmission Fluid Temperature Sensor "B" Circuit High	• Open in ATF temperature sensor No. 2 circuit • ATF temperature sensor No. 2 • Engine and ECT ECU	●	○
P2757 *3 (DI–84)	Torque Converter Clutch Pressure Control Solenoid Performance (Shift Solenoid Valve SLU)	• Shift solenoid valve SLU is stuck open or closed • Valve body is blocked up or stuck • Shift solenoid valve SLU • Automatic transmission assembly • Engine and ECT ECU	●	○
P2759/68 *4 (DI–86)	Torque Converter Clutch Pressure Control Solenoid Control Circuit Electrical (Shift Solenoid Valve SLU)	• Open or short in shift solenoid valve SLU circuit • Shift solenoid valve SLU • Engine and ECT ECU	●	○

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DIAUF–01

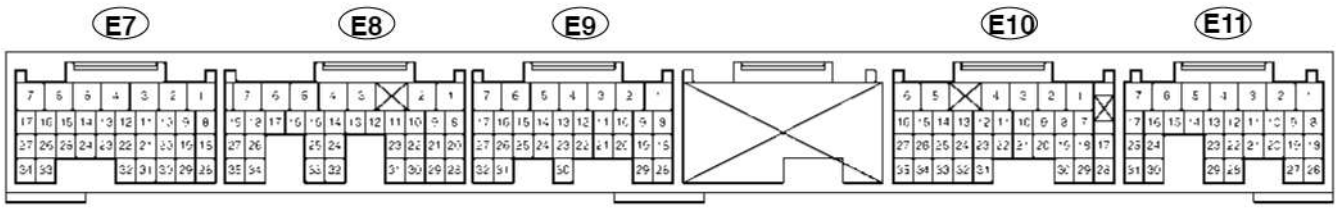
PARTS LOCATION



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DIAUG–01

TERMINALS OF ECU



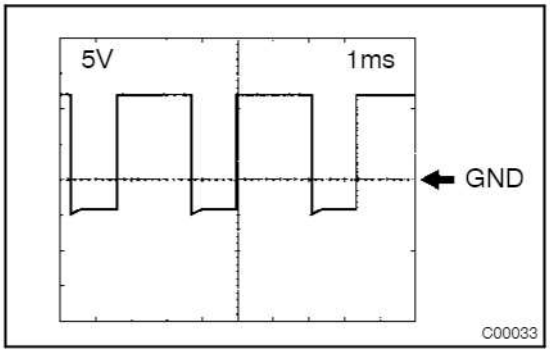
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Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
P (E11–6) – E1 (E9–1)	G–W – BR	IG switch ON and shift lever P range	10 – 14
		IG switch ON and shift lever other than P range	Below 1
N (E11–7) – E1 (E9–1)	G–R – BR	IG switch ON and shift lever N range	10 – 14
		IG switch ON and shift lever other than N range	Below 1
L4 (E10–4) – E1 (E9–1)	B–L ↔ BR	IG switch ON and Transfer shift lever L range	Below 1.5
		IG switch ON and Transfer shift lever other than L range	9 – 14
SNWI (E10–5) – E1 (E9–1)	L–R ↔ BR	IG switch ON	9 – 14
		IG switch ON and Press continuously 2nd start switch	Below 1
L (E10–8) – E1 (E9–1)	R–L ↔ BR	IG switch ON and shift lever L range	9 – 14
		IG switch ON and shift lever other than L range	Below 1.5
2 (E10–9) – E1 (E9–1)	G–B ↔ BR	IG switch ON and shift lever 2 and L range	9 – 14
		IG switch ON and shift lever other than 2 and L range	Below 1.5
D (E10–10) – E1 (E9–1)	G–Y ↔ BR	IG switch ON and shift lever D and 4 range	9 – 14
		IG switch ON and shift lever other than D and 4 range	Below 1.5
R (E10–11) – E1 (E9–1)	R–B ↔ BR	IG switch ON and shift lever R range	9 – 14
		IG switch ON and shift lever other than R range	Below 1.5
STP (E10–19) – E1 (E9–1)	G–W ↔ BR	Brake pedal is depressed	7.5 – 14
		Brake pedal is released	Below 1.5
3 (E10–20) – E1 (E9–1)	G ↔ BR	IG switch ON and shift lever 3 range	9 – 14
		IG switch ON and shift lever other than 3 range	Below 1.5
4 (E10–23) – E1 (E9–1)	G–R ↔ BR	IG switch ON and shift lever 4 range	9 – 14
		IG switch ON and shift lever other than 4 range	Below 1.5
PWR (E10–28) – E1 (E9–1)	L–W ↔ BR	IG switch ON and Pattern select switch " PWR" OFF	9 – 14
		IG switch ON and Pattern select switch "PWR" ON	Below 1
TFN (E9–11) – E1 (E9–1)	Y–G ↔ BR	IG switch ON and Transfer shift lever N range	Below 1.5
		IG switch ON and Transfer shift lever other than N range	9 – 14
SLU+ (E9–16) – SLU– (E9–15)	P–G ↔ B	Engine idle speed	Pulse generation 2 reference
S2 (E8–10) – E1 (E9–1)	W ↔ BR	IG switch ON	Below 1.5
		2nd or 3rd gear	9 – 14
		1st, 4th or 5th gear	Below 1.5
S1 (E8–11) – E1 (E9–1)	R ↔ BR	IG switch ON	9 – 14
		1st or 2nd gear	9 – 14
		3rd, 4th or 5th gear	Below 1.5

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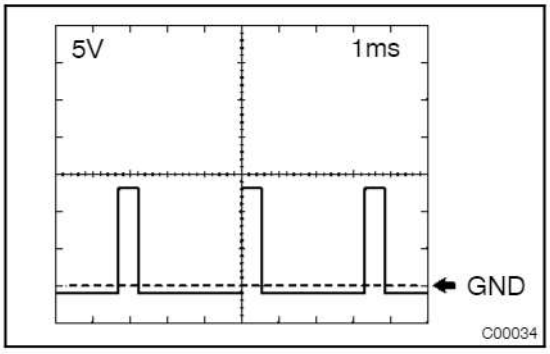
SLT+ (E8–13) – SLT– (E8–12)	G–W ↔ G–B	Engine is idling	Pulse generation 1 reference
SR (E8–15) – E1 (E9–1)	G ↔ BR	IG switch ON	Below 1.5
		5th gear	9 – 14
		1st gear	Below 1
SL2+ (E8–17) – SL2– (E8–16)	P–B ↔ P–L	Engine idle speed	Pulse generation 3 reference
SL1+ (E8–19) – SL1– (E8–18)	R–L ↔ R–W	Engine idle speed	Pulse generation 4 reference
THO2 (E8–24) – E2 (E7–28)	L ↔ BR–W	ATF temperature: 115°C (239°F) or more	Below 1.5
SP2+ (E8–26) – SP2– (E8–34)	R ↔ G	Engine is running	Pulse generation 6 reference
NT+ (E8–27) – NT– (E8–35)	L ↔ W	Engine is idling	Pulse generation 5 reference
THO1 (E8–32) – E2 (E7–28)	G–Y ↔ BR–W	ATF temperature: 115°C (239°F) or more	Below 1.5
NSW (E7–16) – E1 (E9–1)	B–W ↔ BR	IG switch ON and shift lever P and N range	Below 1.5
		IG switch ON and shift lever other than P and N range	9 – 14



Pulse generation 1

Reference:

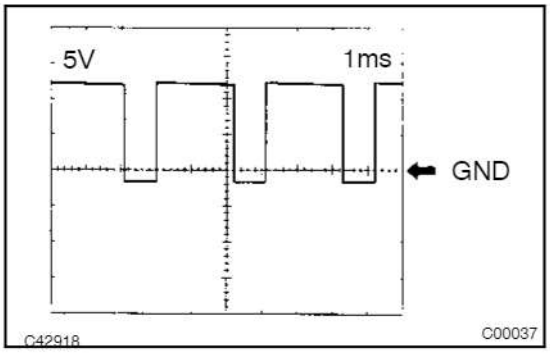
Item	Condition
Terminal	SLT+ – SLT–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed



Pulse generation 2

Reference:

Item	Condition
Terminal	SLU+ – SLU–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed

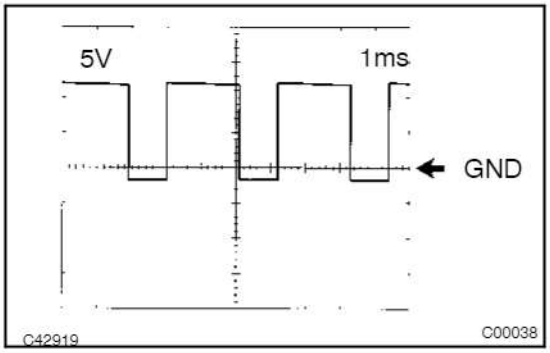


Pulse generation 3

Reference:

Item	Condition
Terminal	SL2+ – SL2–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed

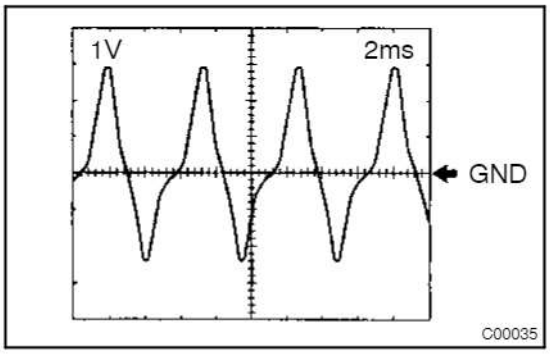
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Pulse generation 4

Reference:

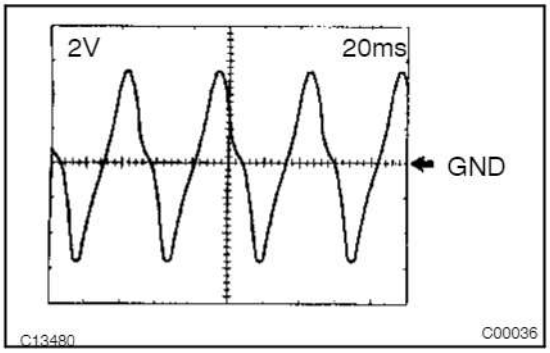
Item	Condition
Terminal	SL1+ – SL1–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed



Pulse generation 5

Reference:

Item	Condition
Terminal	NT+ – NT–
Tool setting	1V/DIV, 2ms/DIV
Vehicle condition	Engine idle speed



Pulse generation 6

Reference:

Item	Condition
Terminal	SP2+ – SP2–
Tool setting	2V/DIV, 20ms/DIV
Vehicle condition	Vehicle speed 20 km/h (12 mph)

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DIAUH–01

PROBLEM SYMPTOMS TABLE

If a normal code is displayed during the diagnostic trouble code check but the trouble still occurs, check the circuits for each symptom in the order given in the charts on the following pages and proceed to the page given for troubleshooting.

The Matrix Chart is divided into 3 chapters.

Chapter 1: Electronic Circuit Matrix Chart

Chapter 2: On–vehicle Repair Matrix Chart

Chapter 3: Off–vehicle Repair Matrix Chart

- If the instruction "Proceed to next circuit inspection shown on matrix chart" is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
- If the trouble still occurs even though there are no abnormalities in any of the other circuits, then check and replace the Engine and ECT ECU.

Chapter 1: Electronic Circuit Matrix Chart

HINT:

*1: When a malfunction is on the circuit *1 mark is attached, DTC is output.

Symptom	Suspect Area	See page
No up–shift (A particular gear, from 1st to 4th gear, is not up–shifted)	1. Shift solenoid valve (S1) circuit *1 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–67 DI–70 IN–38
No up–shift (4th → 5th)	1. Transmission control switch circuit (D – 4) *1 2. Speed sensor NT circuit *1 3. Shift solenoid valve (SL1) circuit *1 4. Shift solenoid valve (SL2) circuit *1 5. Shift solenoid valve (SR) circuit *1 6. Engine and ECT ECU	DI–32 DI–42 DI–49 DI–61 DI–73 IN–38
No up–shift (3th → 4th)	1. Shift solenoid valve (S2) circuit *1 2. Engine and ECT ECU	DI–70 IN–38
No up–shift (1st → 2nd)	1. Transmission control switch circuit (2 – L) *1 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–32 DI–70 IN–38
No down–shift (5th → 4th)	1. Transmission control switch circuit (D – 4) *1 2. Shift solenoid valve (SL1) circuit *1 3. Shift solenoid valve (SL2) circuit *1 4. Shift solenoid valve (SR) circuit *1 5. Engine and ECT ECU	DI–32 DI–49 DI–61 DI–73 IN–38
No down–shift (2nd → 1st)	1. Transmission control switch circuit (2 – L) *1 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–32 DI–70 IN–38
No down–shift (A particular gear, from 1st to 4th gear, is not down–shifted)	1. Shift solenoid valve (S1) circuit *1 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–67 DI–70 IN–38
No lock–up	1. ATF temperature sensor circuit *1 2. Transfer L4 position switch circuit *1 3. Stop light switch circuit *1 4. Speed sensor NT circuit *1 5. Shift solenoid valve (SLU) circuit *1 6. Engine and ECT ECU	DI–37 DI–76 DI–46 DI–42 DI–86 IN–38
No lock–up off	Engine and ECT ECU	IN–38

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Shift point too high or too low	1. Shift solenoid valve (SLT) circuit *1 2. Speed sensor NT circuit *1 3. Speed sensor SP2 circuit *1 4. ATF temperature sensor circuit *1 5. Pattern select switch circuit (PWR mode switch) 6. Transfer L4 position switch circuit *1 7. Engine and ECT ECU	DI–81 DI–42 DI–44 DI–37 DI–89 DI–76 IN–38
Up–shift to 5th from 4th while shift lever is 4 range	1. Transmission control switch circuit (D – 4) *1 2. Engine and ECT ECU	DI–32 IN–38
Up–shift to 5th from 4th while engine is cold	Engine and ECT ECU	IN–38
Up–shift to 4th from 3rd while shift lever is 3 range	1. Neutral start switch circuit *1 2. Engine and ECT ECU	DI–32 IN–38
Up–shift to 3rd from 2nd while shift lever is 2 range	1. Neutral start switch circuit *1 2. Engine and ECT ECU	DI–32 IN–38
Up–shift to 2nd from 1st while shift lever is L range	1. Transmission control switch circuit (2 – L) *1 2. Engine and ECT ECU	DI–32 IN–38
Harsh engagement (N → D)	1. Speed sensor NT circuit *1 2. Shift solenoid valve (SL1) circuit *1 3. Shift solenoid valve (SLT) circuit *1 4. Engine and ECT ECU	DI–42 DI–49 DI–81 IN–38
Harsh engagement (Lock–up)	1. Speed sensor NT circuit *1 1. Speed sensor SP2 circuit *1 3. Shift solenoid valve (SLU) circuit *1 4. Engine and ECT ECU	DI–42 DI–44 DI–86 IN–38
Harsh engagement (Any driving range)	Engine and ECT ECU	IN–38
Poor acceleration	Engine and ECT ECU	IN–38
No engine braking	Engine and ECT ECU	IN–38
No kick–down	Engine and ECT ECU	IN–38
Engine stalls when starting off or stopping	Engine and ECT ECU	IN–38
No pattern select (PWR)	1. Pattern select switch circuit (PWR mode switch) 2. Engine and ECT ECU	DI–89 IN–38
No 2nd start	1. Pattern select switch circuit (2nd start switch) 2. Transmission control switch circuit (2 – L) *1 3. Engine and ECT ECU	DI–91 DI–32 IN–38
AT Oil Temp. warning light remains on Shift point too high	1. ATF temperature sensor No.2 circuit 2. Engine and ECT ECU	DI–94 IN–38
A/T.P. indicator light does not light up	1. A/T.P. indicator light circuit 2. Combination meter circuit 3. Engine and ECT ECU	DI–97 BE–33 IN–38

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Chapter 2: On–Vehicle Repair
(★: A750E, A750F AUTOMATIC TRANSMISSION Repair Manual Pub. No. RM999U)

Symptom	Suspect Area	See page
Vehicle does not move in any forward range and reverse ranges	1. Transmission control rod 2. Manual valve 3. Parking lock pawl 4. Off–vehicle repair matrix chart	DI–4 ★ ★ –
Vehicle does not move in R range	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (1st → 2nd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (2nd → 3rd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (3rd → 4th)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (4th → 5th)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (5th → 4th)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (4th → 3rd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (3rd → 2nd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (2nd → 1st)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No lock–up or No lock–up off	1. Shift solenoid valve (SLU) 2. Valve body assy 3. Off–vehicle repair matrix chart	DI–84 AT–8 –
Harsh engagement (N → D)	1. Shift solenoid valve (SL1) 2. Valve body assy 3. C_1 accumulator 4. Off–vehicle repair matrix chart	DI–57 AT–8 ★ –
Harsh engagement (Lock–up)	1. Shift solenoid valve (SLU) 2. Valve body assy 3. Off–vehicle repair matrix chart	DI–84 AT–8 –
Harsh engagement (N → R)	1. Shift solenoid valve (SLT) 2. Shift solenoid valve (SLU) 3. Valve body assy 4. C_3 accumulator 5. Off–vehicle repair matrix chart	DI–79 DI–84 AT–8 ★ –
Harsh engagement (1st →2nd → 3rd → 4th → 5th)	1. Shift solenoid valve (SLT) 2. Shift solenoid valve (SL1) 3. Valve body assy	DI–79 DI–57 AT–8
Harsh engagement (1st → 2nd)	1. Valve body assy 2. B_3 accumulator 3. Off–vehicle repair matrix chart	AT–8 ★ –
Harsh engagement (2nd → 3rd)	1. Valve body assy 2. C_3 accumulator 3. Off–vehicle repair matrix chart	AT–8 ★ –
Harsh engagement (3rd → 4th)	1. Valve body assy 2. C_2 accumulator 3. Off–vehicle repair matrix chart	AT–8 ★ –

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Harsh engagement (4th → 5th)	1. Shift solenoid valve (SL1) 2. Shift solenoid valve (SL2) 3. Valve body assy 4. Off–vehicle repair matrix chart	DI–57 DI–59 AT–8 –
Harsh engagement (5th → 4th)	1. Shift solenoid valve (SL1) 2. Shift solenoid valve (SL2) 3. Valve body assy 4. Off–vehicle repair matrix chart	DI–57 DI–59 AT–8 –
Slip or shudder (Forward and reverse)	1. Transmission control rod 2. Valve body assy 3. Oil strainer 4. Off–vehicle repair matrix chart	DI–4 AT–8 AT–8 –
No engine braking (1st: L range)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No engine braking (2nd: 2 range)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No kick–down	Valve body assy	AT–8
Shift point too high or too low	1. Shift solenoid valve (SLT) 2. Shift solenoid valve (SL1) 3. Valve body assy	DI–79 DI–57 AT–8
Poor acceleration	1. Shift solenoid valve (SLT) 2. Valve body assy	DI–79 AT–8
Engine stalls when starting off or stopping	1. Shift solenoid valve (SLU) 2. Valve body assy	DI–84 AT–8

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Chapter 3: Off–Vehicle Repair
(★: A750E, A750F AUTOMATIC TRANSMISSION Repair Manual Pub. No. RM999U)

Symptom	Suspect Area	See page
Vehicle does not move in any forward range and reverse ranges	1. Rear planetary gear unit 2. Torque converter	★ AT–43
Vehicle does not move in R range	Brake No. 4 (B_4)	★
No up–shift (1st → 2nd)	1. Brake No. 3 (B_3) 2. One–way clutch No.1 (F_1) 3. One–way clutch No. 2 (F_2)	★ ★ ★
No up–shift (2nd → 3rd)	Clutch No. 3 (C_3)	★
No up–shift (3rd → 4th)	Clutch No. 2 (C_2)	★
No up–shift (4th → 5th)	1. Brake No. 1 (B_1) 2. Clutch No. 1 (C_1)	★ ★
No lock–up or No lock–up off	Torque converter	AT–43
Harsh engagement (N → D)	1. Clutch No. 1 (C_1) 2. One–way clutch No.3 (F_3)	★ ★
Harsh engagement (N → R)	1. Clutch No. 3 (C_3) 2. Brake No. 4 (B_4) 3. One–way clutch No.1 (F_1)	★ ★ ★
Harsh engagement (1 → 2)	1. Brake No. 3 (B_3) 2. One–way clutch No.1 (F_1) 3. One–way clutch No. 2 (F_2)	★ ★ ★
Harsh engagement (2 → 3)	Clutch No. 3 (C_3)	★
Harsh engagement (3 → 4)	Clutch No. 2 (C_2)	★
Harsh engagement (4 → 5th)	1. Brake No. 1 (B_1) 2. Clutch No. 1 (C_1)	★ ★
Harsh engagement (Lock–up)	Torque converter	AT–43
Slip or shudder (Forward and reverse: After warm–up)	1. One–way clutch No.1 (F_1) 2. Clutch No. 3 (C_3) 3. Torque converter clutch	★ ★ ★
Slip or shudder (Particular range: Just after engine starts)	Torque converter	AT–43
Slip or shudder (R range)	1. Brake No. 4 (B_4) 2. One–way clutch No.1 (F_1) 3. Clutch No. 3 (C_3)	★ ★ ★
Slip or shudder (1st)	1. Clutch No. 1 (C_1) 2. One–way clutch No.3 (F_3)	★ ★
Slip or shudder (2nd)	1. Clutch No. 1 (C_1) 2. Brake No. 3 (B_3) 3. One–way clutch No.1 (F_1) 4. One–way clutch No.2 (F_2)	★ ★ ★ ★
Slip or shudder (3rd)	1. Clutch No. 1 (C_1) 2. Clutch No. 3 (C_3) 3. One–way clutch No.1 (F_1)	★ ★ ★
Slip or shudder (4th)	1. Clutch No. 1 (C_1) 2. Clutch No. 2 (C_2)	★ ★
Slip or shudder (5th)	1. Clutch No. 2 (C_2) 2. Clutch No. 3 (C_3) 3. Brake No. 1 (B_1)	★ ★ ★
No engine braking (1st – 4th: D range)	Clutch No. 1 (C_1)	★
No engine braking (1st: L range)	Brake No. 4 (B_4)	★
No engine braking (2nd: 2 range)	Brake No. 2 (B_2)	★

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No engine braking (3rd: 3 range)	Brake No. 1 (B_1)	★
Poor acceleration (All ranges)	Torque converter	AT–43
Poor acceleration (5th)	1. Clutch No. 1 (C_1) 2. Clutch No. 3 (C_3) 3. Brake No. 1 (B_1) 4. Front planetary gear unit	★ ★ ★ ★
Engine stalls when starting off or stopping	Torque converter	AT–43

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DIAUI–01

CIRCUIT INSPECTION

DTC	P0705	Transmission Range Sensor Circuit Malfunction (PRNDL Input)

DTC	P0850	Park/Neutral Switch Input Circuit

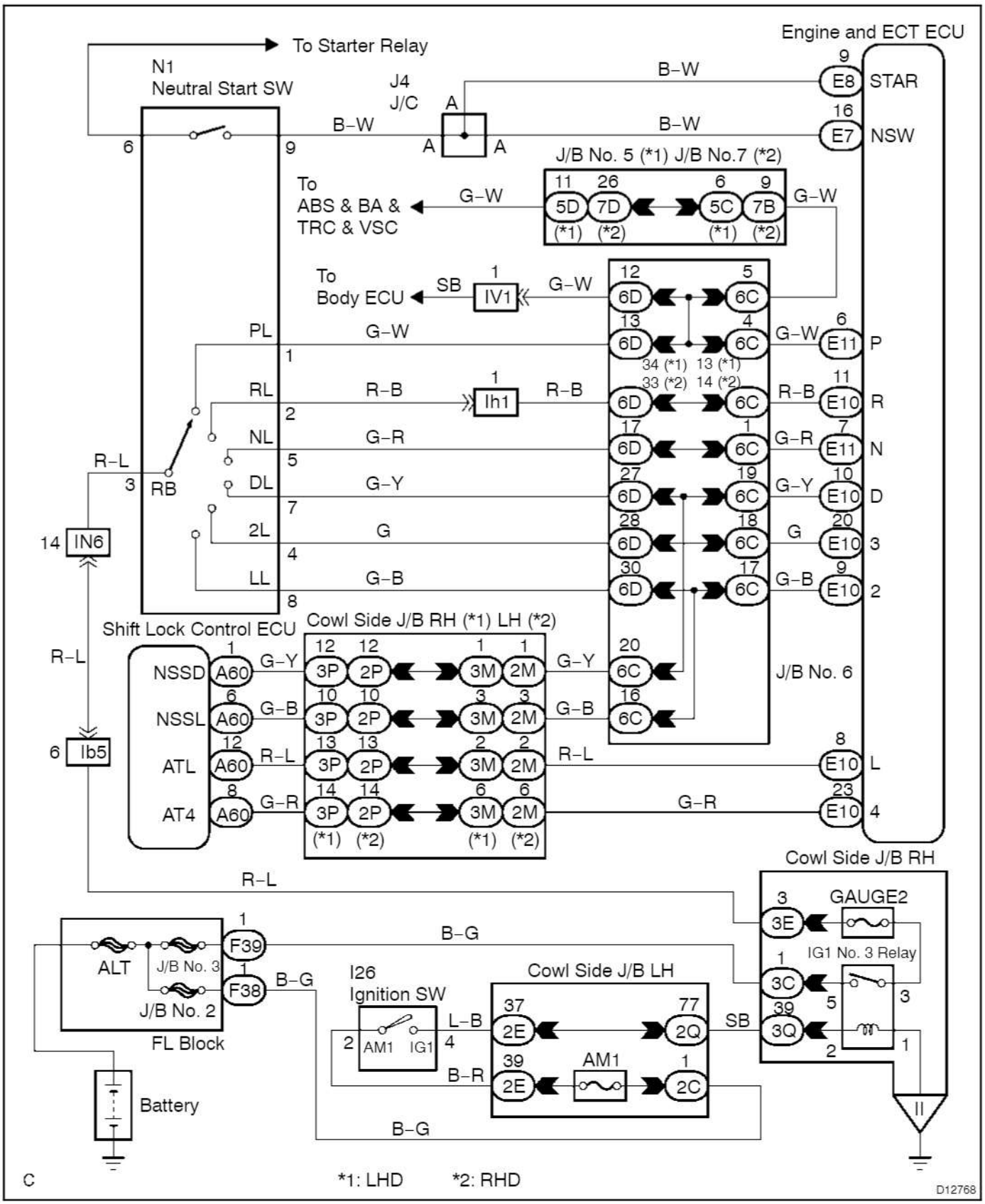
CIRCUIT DESCRIPTION

The neutral start switch detects the shift lever range and sends signals to the Engine and ECT ECU.

DTC No.	DTC Detection Condition	Trouble Area
P0705	(2–trip detection logic) • All switches are OFF simultaneously for P, R, N, D, 3 and 2 ranges. • 2 or more switches are ON simultaneously for P, R, N, (D 4), 3 and (2 L) ranges.	• Short in neutral start switch circuit • Neutral start switch • Engine and ECT ECU
P0850	Neutral start switch remaines ON (P, N range) during driving under conditions (a) and (b) for 30 sec. (2–trip detection logic) (a) Vehicle speed: 70 km/h (44 mph) or more (b) Engine speed: 1,500 – 2,500 rpm	

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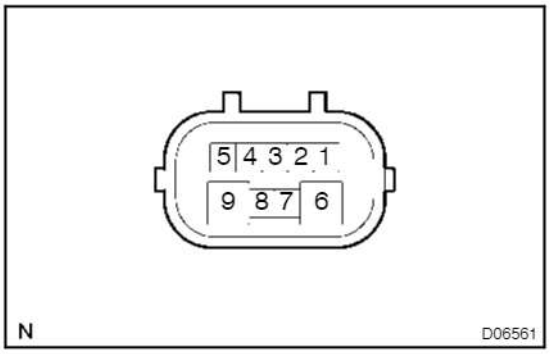
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check neutral start switch.**



PREPARATION:

(a) Jack up the vehicle.

(b) Disconnect the neutral start switch connector.

CHECK:

Check continuity between each terminal shown below when the shift lever is moved to each range.

OK:

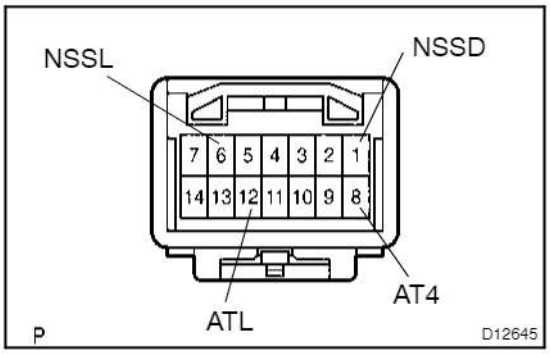
Shift range	Terminal No. to continuity	Terminal No. to continuity
P	1 – 3	6 – 9
R	2 – 3	–
N	3 – 5	6 – 9
D, 4	3 – 7	–
3	3 – 4	–
2, L	3 – 8	–

NG → **Replace neutral start switch (See page AT–7).**

OK

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2	Check transmission control switch.



PREPARATION:

(a) Connect the neutral start switch connector.

(b) Disconnect the shift lock control computer connector (transmission control switch).

CHECK:

Check continuity between each terminal of shift lock control computer (transmission control switch).

OK:

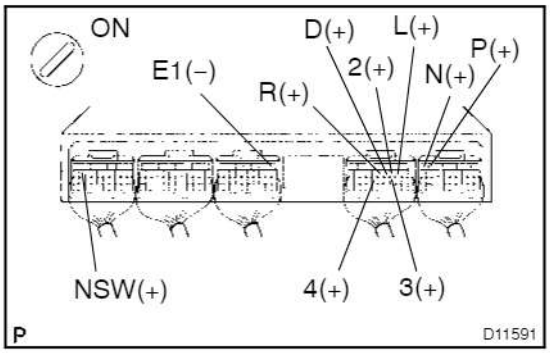
Shift range	Tester connection	Specified valve
D	1 – 8 (NSSD – AT4)	No continuity
4		Continuity
2	6 – 12 (NSSL – ATL)	No continuity
L		Continuity

NG → **Replace the transmission control switch (See page AT–21).**

OK →

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3	**Measure voltage between each terminals of NSW, P, R, N, D, 4, 3, 2, L and E1 of Engine and ECT ECU.**



PREPARATION:

(a) Connect the shift lock control computer connector (transmission control switch).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between each terminals NSW, P, R, N, D, 4, 3, 2, L and E1 of Engine and ECT ECU when the shift lever is shifted to the following ranges.

OK:

Tester connection	Condition	Specified condition
NSW – Body ground	Shift lever range: P and N	Below 1 V
	Shift lever range: Except P and N	Battery voltage
P– Body ground	Shift lever range: P	Battery voltage
R – Body ground	Shift lever range: R	Battery voltage*
N – Body ground	Shift lever range: N	Battery voltage
D – Body ground	Shift lever range: D and 4	Battery voltage
4 – Body ground	Shift lever range: 4	Battery voltage
3 – Body ground	Shift lever range: 3	Battery voltage
2 – Body ground	Shift lever range: 2 and L	Battery voltage
L – Body ground	Shift lever range: L	Battery voltage

HINT:

*: The voltage will drop slightly due to lighting up of the back up light.

OK → **Check and replace the Engine and ECT ECU (See page IN–38).**

NG

Repair or replace the harness or connector (See page IN–38).

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DIAUU–01

DTC	P0710/38	Transmission Fluid Temperature Sensor "A" Circuit

DTC	P0712/38	Transmission Fluid Temperature Sensor "A" Circuit Low Input

DTC	P0713/38	Transmission Fluid Temperature Sensor "A" Circuit High Input

DTC	P2743/38	Transmission Fluid Temperature Sensor "B" Circuit High Input

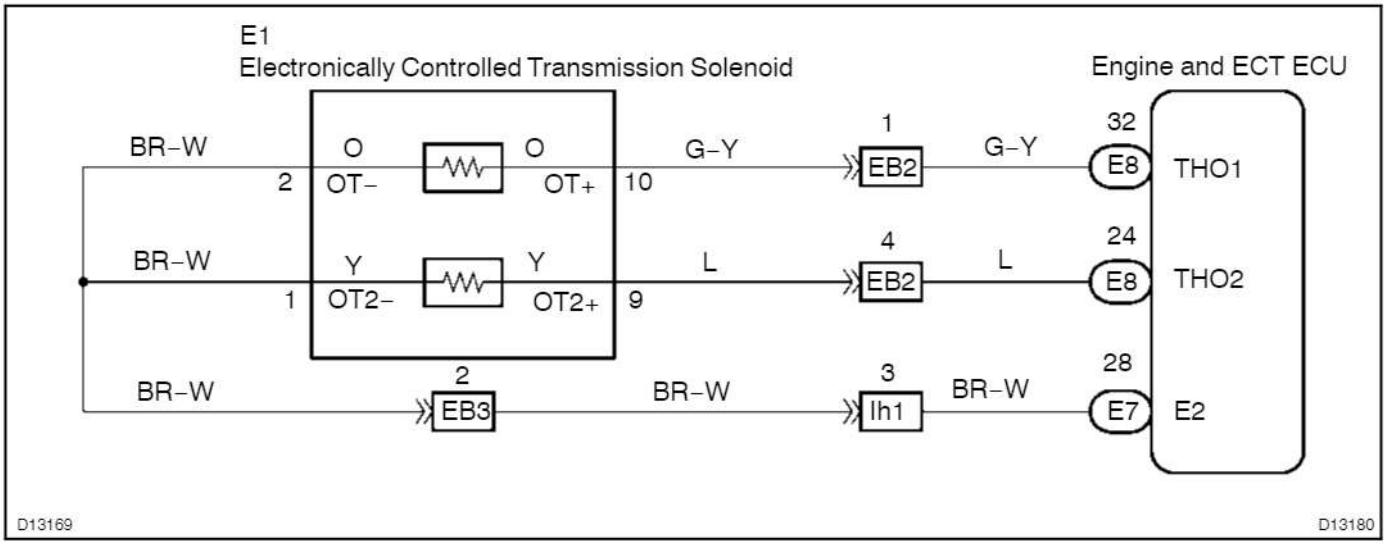
CIRCUIT DESCRIPTION

The ATF temperature sensor converts fluid temperature into a resistance value which is input into the Engine and ECT ECU.

DTC No.	DTC Detecting Condition	Trouble Area
P0710/38	(a) and (b) is detected momentary within 0.5 sec. when neither P0712 or P0713 is not detected (1–trip detection logic) (a) ATF temperature sensor resistance is less than 79 Ω. (b) ATF temperature sensor resistance is more than 156 kΩ. HINT: Wthin 0.5 sec. the malfunction switches from (a) to (b) or from (b) to (a)	• Open or short in ATF temperature sensor No. 1 circuit • ATF temperature sensor No. 1 • Engine and ECT ECU
P0712/38	ATF temperature sensor resistance is less than 79 Ω. for 0.5 sec. or more (1–trip detection logic)	
P0713/38	DTC is detected for 0.5 sec. or more (1–trip detection logic) ATF temperature sensor resistance is more than 156 kΩ. after started engine for 15 minutes or more	
P2743/38	DTC is detected for 0.5 sec. or more (1–trip detection logic) ATF temperature sensor resistance is more than 156 kΩ. after started engine for 15 minutes or more	• Open in ATF temperature sensor No. 2 circuit • ATF temperature sensor No. 2 • Engine and ECT ECU

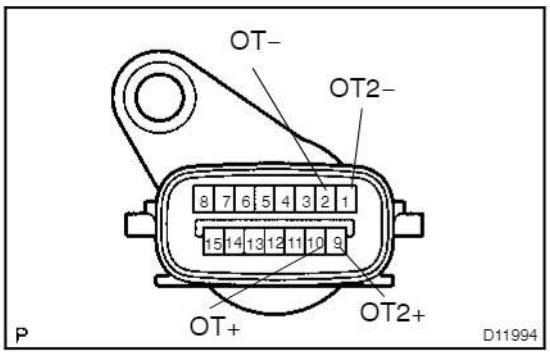
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WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check transmission wire.**



PREPARATION:

Disconnect the transmission wire connector from the transmission.

CHECK:

(a) Measure the resistance between terminals OT+ and OT–.

(b) Measure the resistance between terminals OT2+ and OT2–.

OK:

79 Ω – 156 kΩ

CHECK:

(a) Measure resistance between terminals OT+ and OT– of the transmission wire connector and body ground.

(b) Measure resistance between terminals OT2+ and OT2– of the transmission wire connector and body ground.

OK:

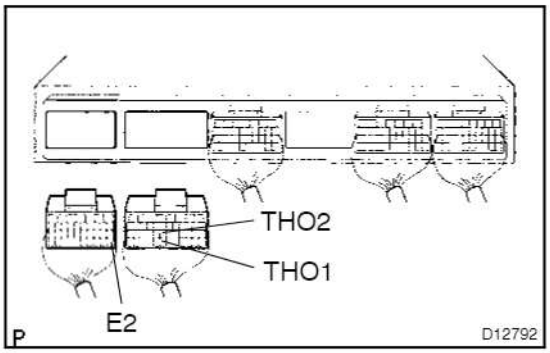
Resistance: 1 MΩ or higher

NG	**Replace the transmission wire (ATF temperature sensor).**

OK

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2	**Measure resistance between terminal THO1, THO2 and E2 of Engine and ECT ECU connector.**



PREPARATION:

(a) Connect the transmission wire connector.

(b) Disconnect the connector of the Engine and ECT ECU.

CHECK:

(a) Measure the resistance between terminals THO1 and E2.

(b) Measure the resistance between terminals THO2 and E2.

OK:

79 Ω – 156 kΩ

CHECK:

Measure resistance between terminals THO1, THO2 and E2 of the Engine and ECT ECU connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG → **Repair or replace the harness or connector (See page IN–38).**

OK →

Check and replace the Engine and ECT ECU (See page IN–38).

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DIAUK–01

DTC	P0711	Transmission Fluid Temperature Sensor "A" Performance

CIRCUIT DESCRIPTION

The ATF temperature sensor converts fluid temperature into a resistance value which is input into the Engine and ECT ECU.

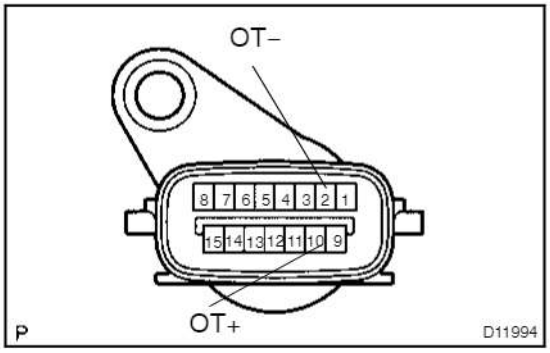
DTC No.	DTC Detecting Condition	Trouble Area
P0711	Both (a) and (b) are detected: (2–trip detection logic) (a) After 12 sec. of engine start, temp. of atmosphere and that of engine coolant is more than –10°C (b) After normal driving for over 20 min. and 10 km, ATF temp. is less than 10°C	• Open or short in ATF temperature sensor No. 1 circuit • ATF temperature sensor No. 1 • Engine and ECT ECU

WIRING DIAGRAM

See page DI–37.

INSPECTION PROCEDURE

1	Check transmission wire.



PREPARATION:

Disconnect the transmission wire connector from the transmission.

CHECK:

Measure resistance between terminals OT+ and OT– of the transmission wire connector and body ground.

OK:

Resistance: 1 MΩ or higher

CHECK:

Measure the resistance between terminals OT+ and OT–.

OK:

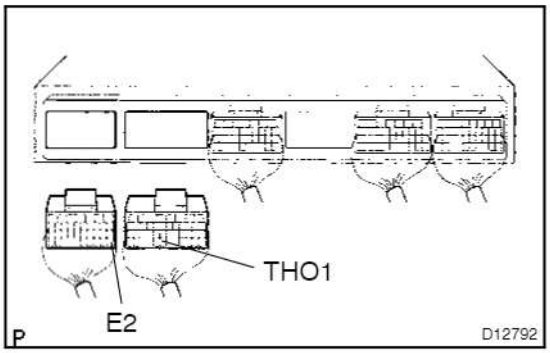
Temperature: °C (°F)	Resistance: kΩ
10 (50)	6.4
110 (230)	0.2

NG → **Replace the transmission wire (ATF temperature sensor).**

OK

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2	**Measure resistance between terminal THO1 and E2 of Engine and ECT ECU connector.**



PREPARATION:

(a) Connect the transmission wire connector.

(b) Disconnect the connector of the Engine and ECT ECU.

CHECK:

Measure the resistance between terminals THO1 and E2.

OK:

Temperature: °C (°F)	Resistance: kΩ
10 (50)	6.4
110 (230)	0.2

CHECK:

Measure resistance between terminals THO1 and E2 of the Engine and ECT ECU connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG → **Repair or replace the harness or connector (See page IN–38).**

OK →

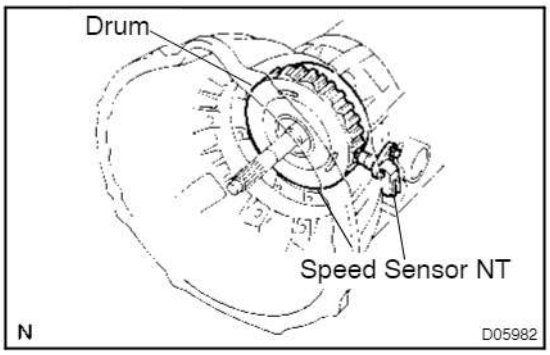
Check and replace the Engine and ECT ECU (See page IN–38).

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DIAUL–01

DTC	P0717/37	Input Speed Sensor Circuit No Signal

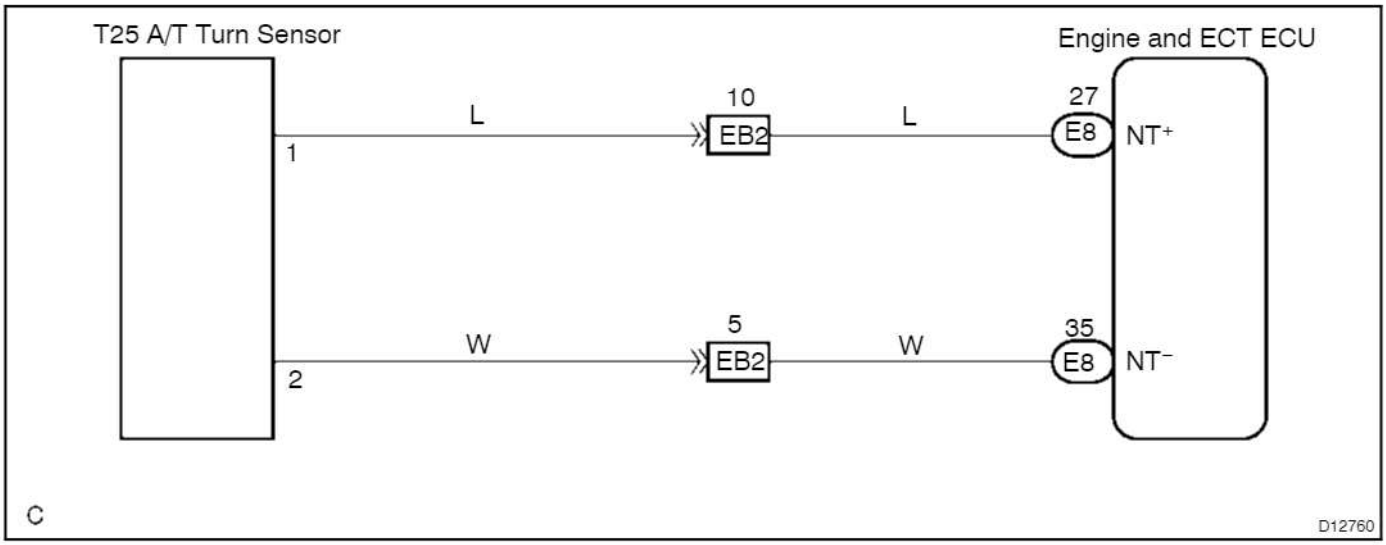
CIRCUIT DESCRIPTION



The speed sensor NT detects the rotation speed of the input shaft from the rotation of the drum. Its construction is the same as that of the speed sensor SP2.
By comparing the speed sensor NT signal and speed sensor SP2 signal, the Engine and ECT ECU detects the shift timing of the gears and appropriately controls the engine torque and hydraulic pressure in response to various conditions, thus doing smooth gear shift.

DTC No.	DTC Detection Condition	Trouble Area
P0717/37	All conditions below are detected for 5 secs. or more (1–trip detection logic) (a) Gear change not being performed (b) Gear range: 1st, 2nd, 3rd, 4th or 5th (c) T/M input shaft rpm: 300 rpm or less (d) T/M output shaft rpm: 1,000 rpm or more (e) Neutral start switch: OFF (f) Shift solenoid valves, park/neutral posotion switch and vehicle speed sensor are in normal operation	• Open or short in speed sensor NT circuit • Speed sensor NT • Engine and ECT ECU • Automatic transmission assembly

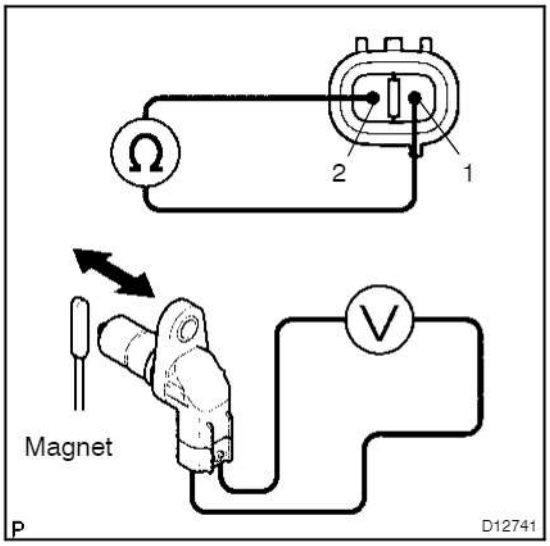
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check speed sensor NT.



PREPARATION:
Remove the speed sensor NT.
CHECK:
(a) Measure the resistance between the sensor terminals.
Standard: 560 – 680 Ω at 20°C (68 °F)
(b) Measure the voltage between the sensor terminals when a magnet is put close to the front end of the sensor then kept away quickly.
Standard: Sensor generates voltage intermittently
HINT:
The generated voltage is extremely low.
OK:
Standard.

NG → **Replace speed sensor NT.**

OK

2	Check harness and connector between Engine and ECT ECU and speed sensor NT (See page IN–38).

NG → **Repair or replace harness and connector.**

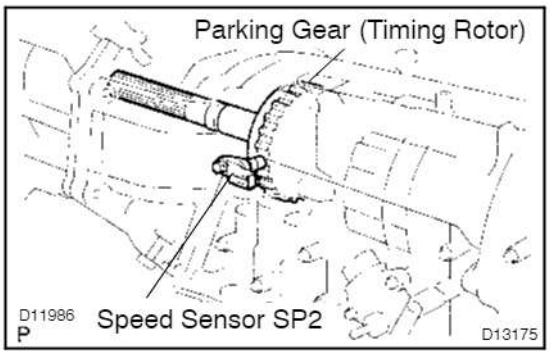
OK

Check and replace the Engine and ECT ECU (See page IN–38).

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DTC	P0722/61	Output Speed Sensor Circuit No Signal

CIRCUIT DESCRIPTION

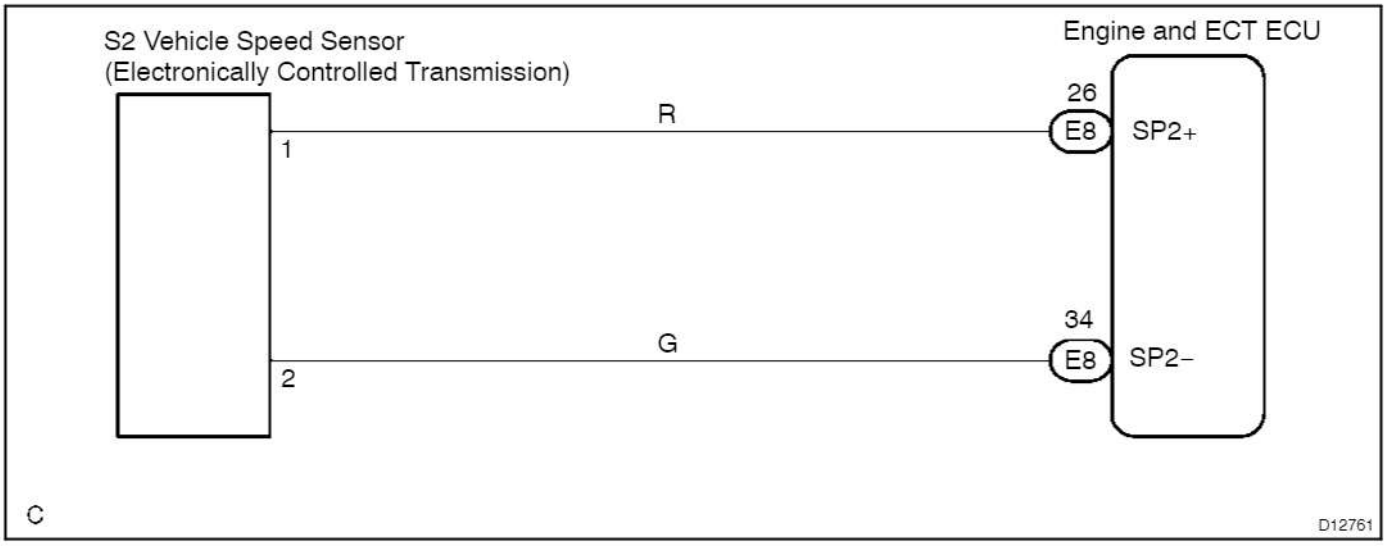


The speed sensor SP2 detects the rotation speed of the transmission output shaft and sends signals to the Engine and ECT ECU. The Engine and ECT ECU determines the vehicle speed based on these signals. An AC voltage is generated in the speed sensor SP2 coil as the parking gear mounted on the rear planetary gear assy rotates, and this voltage is sent to the Engine and ECT ECU. The parking gear on the rear planetary gear is used as the timing rotor for this sensor.

The gear shift point and lock–up timing are controlled by the Engine and ECT ECU based on the signals from this vehicle speed sensor and the throttle position sensor signal. If the speed sensor SP2 malfunctions, the Engine and ECT ECU uses input signals from the speed sensor NT as a back–up signal.

DTC No.	DTC Detection Condition	Trouble Area
P0722/61	All conditions below are detected 500 times or more continuously (1–trip detection logic) (a) No signal from speed sensor SP2 is input to Engine and ECT ECU while 4 pulses of No. 1 vehicle speed sensor signal are sent (b) Vehicle speed is 9 km/h (6 mph) or more for at least 4 sec. (c) Neutral start switch is OFF. (d) Transfer range is except neutral (4WD).	• Open or short in speed sensor SP2 circuit • Speed sensor SP2 • Engine and ECT ECU

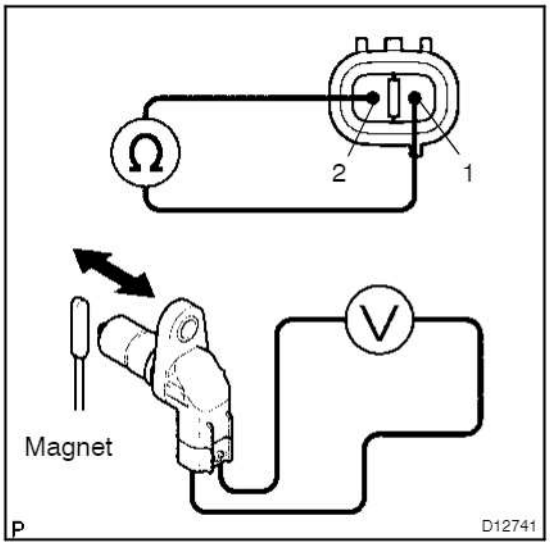
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check speed sensor SP2.**



PREPARATION:
Remove the speed sensor SP2.
CHECK:
(a) Measure the resistance between the sensor terminals.
Standard: 560 – 680 Ω at 20 °C (68 °F)
(b) Measure the voltage between the sensor terminals when a magnet is put close to the front end of the sensor then taken away quickly.
Standard: Sensor generates voltage intermittently.
HINT:
The generated voltage is extremely low.
OK:
Standard.

NG → **Replace speed sensor SP2.**

OK

2	**Check harness and connector between Engine and ECT ECU and speed sensor SP2 (See page IN–38).**

NG → **Repair or replace harness and connector.**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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DIAUN–01

DTC	P0724	Brake Switch "B" Circuit High

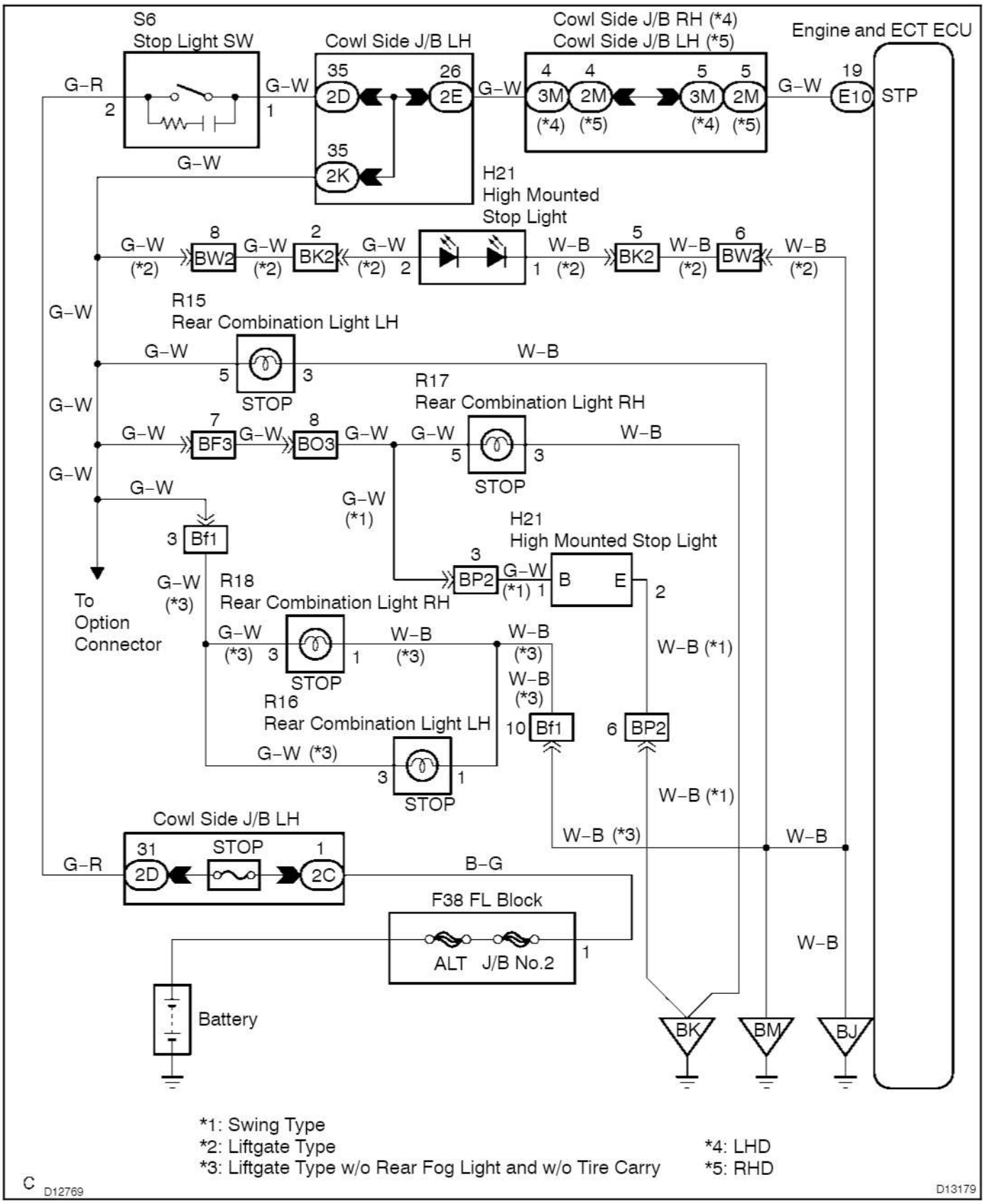
CIRCUIT DESCRIPTION

The purpose of this circuit is to prevent the engine from stalling, while driving in lock–up condition, when brakes are suddenly applied.
When the brake pedal is operated, this switch sends a signal to Engine and ECT ECU. Then the Engine and ECT ECU cancels operation of the lock–up clutch while braking is in progress.

DTC No.	DTC Detection Condition	Trouble Area
P0724	Stop light switch remains ON while vehicle running (2–trip detection logic)	• Short in stop light switch signal circuit • Stop light switch • Engine and ECT ECU

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WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check stop light switch (See Pub. No. RM616E, page BE–58).

NG → Replace stop light switch.

OK

2	Check harness and connector between Engine and ECT ECU and stop light switch (See page IN–38).

NG → Repair or replace harness or connector.

OK

Check and replace Engine and ECT ECU (See page IN–38).

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DTC	P0748/62	Pressure Control Solenoid "A" Electrical (Shift Solenoid Valve SL1)

CIRCUIT DESCRIPTION

Shifting from 1st to 5th is performed in combination with ON and OFF of the shift solenoid valves S1, S2, SR, SL1 and SL2, controlled by Engine and ECT ECU. If an open or short circuit occurs in either of the shift solenoid valves, the Engine and ECT ECU controls the remaining normal shift solenoid valve to allow the vehicle to be operated smoothly (Fail safe function).

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Fail Safe Function:

If either of the shift solenoid valve circuits develops an open or short, the Engine and ECT ECU turns the other shift solenoid ON and OFF to shift to the gear ranges shown in the table below.

Manual shifting as shown in the following table must be done (In the case of a short circuit, the Engine and ECT ECU stops sending current to the short circuited solenoid).

○: ON X: OFF

range	NORMAL						S1 OFF						S2 OFF						SR OFF					
	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2
"R"	R	○	×	×	×	○	R	×	×	×	×	○	R	○	×	×	×	○	R	○	×	×	×	○
"D"	1 st	○	×	×	×	○	4 th ↓ 3 rd	×	×↓○	×	×	○	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd	○	○	×	×	○	3 rd	×	○	×	×	○	1 st ↓ 4 th	○↓×	×	×	×	○	2 nd	○	○	×	×	○
	3 rd	×	○	×	×	○	3 rd	×	○	×	×	○	4 th	×	×	×	×	○	3 rd	×	○	×	×	○
	4 th	×	×	×	×	○	4 th	×	×	×	×	○	4 th	×	×	×	×	○	4 th	×	×	×	×	○
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	4 th	×	×	×	○	×
"3"	1 st	○	×	×	×	○	3 rd ↓ 3 rd E/B	×	×↓○	×	×	○↓×	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd	○	○	×	×	○	3 rd ↓ 3 rd E/B	×	○	×	×	○↓×	1 st ↓ 3 rd E/B	○↓×	×	×	×	○↓×	2 nd	○	○	×	×	○
	3 rd E/B	×	○	×	×	×	3 rd E/B	×	○	×	×	×	3 rd E/B	×	×	×	×	×	3 rd E/B ↓ 3 rd	×	○	×	×	×↓○
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	3 rd	×	×↓○	×	×	○↓○
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	3 rd E/B ↓ 3 rd	×	×↓○	×	○↓×	×↓○
"2"	1 st	○	×	×	×	○	1 st	×	×	×	×	○	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd E/B	○	○	○	×	×	3 rd E/B	×	○	○	×	×	2 st E/B ↓ 4 th	○↓×	×	○	×	×↓○	2 nd	○	○	×	×	×
	3 rd E/B	×	○	○	×	×	3 rd E/B	×	○	○	×	×	Fail 4th	×	×	○	×	×↓○	2 nd	×↓○	○	×	×	×
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	1 st ↓ 2 nd	×↓○	×↓○	×	×	○↓×
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	1 st E/B ↓ 2 nd	×↓○	○	×	○↓×	×
"L"	1 st E/B	○	×	×	×	×	1 st E/B	×	×	×	×	×	1 st E/B	○	×	×	×	×	1 st E/B	○	×	×	×	×
	2 nd E/B	○	○	○	×	×	3 rd E/B	×	○	○	×	×	2 st E/B ↓ 4 th	○↓×	×	○	×	×↓○	2 nd	○	○	×	×	×
	3 rd E/B	×	○	○	×	×	3 rd E/B	×	○	○	×	×	Fail 4 th	×	×	○	×	×↓○	2 nd	×↓○	○	×	×	×
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	1 st ↓ 2 nd	×↓○	×↓○	×	×	○↓×
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	1 st E/B ↓ 2 nd	×↓○	×↓○	×	○↓×	×

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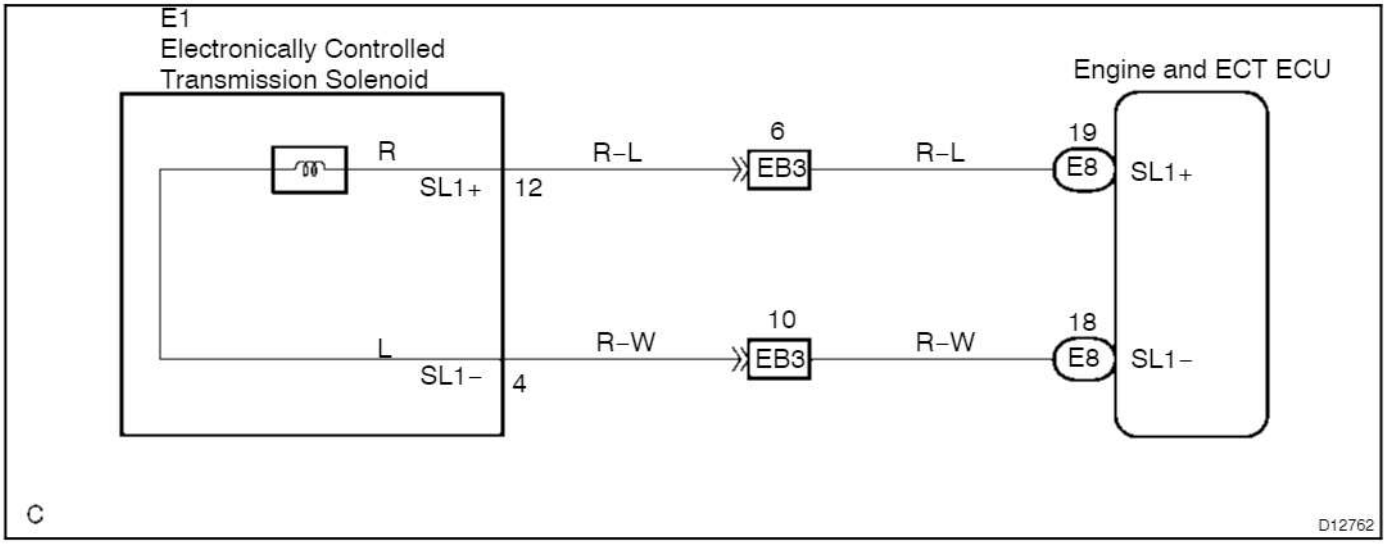
○: ON X: OFF

range	S1 S2 OFF						S2 SR OFF						S1 SR OFF						S1 S2 SR OFF					
	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2
"R"	R	X	X	X	X	○	R	○	X	X	X	○	R	X	X	X	X	○	R	X	X	X	X	○
"D"	4 th	X	X	X	X	○	1 st	○	X	X	X	○	4 th ↓ 3 rd	X	X→○	X	X	○	4 th	X	X	X	X	○
	4 th	X	X	X	X	○	1 st ↓ 4 th	○→X	X	X	X	○	3 rd	X	○	X	X	○	4 th	X	X	X	X	○
	4 th	X	X	X	X	○	4 th	X	X	X	X	○	3 rd	X	○	X	X	○	4 th	X	X	X	X	○
	4 th	X	X	X	X	○	4 th	X	X	X	X	○	4 th	X	X	X	X	○	4 th	X	X	X	X	○
	5 th	X	X	○	○	X	4 th	X	X	X	○→X	X→○	4 th	X	X	X	○→X	X→○	4 th	X	X	X	○→X	X→○
"3"	3 rd ↓ 3 rd E/B	X	X	X	X	○→X	1 st	○	X	X	X	○	3 rd	X	X→○	X	X	○→○	3 rd	X	X	X	X	○→○
	3 rd ↓ 3 rd E/B	X	X	X	X	○→X	1 st ↓ 3 rd	○→X	X	X	X	○→○	3 rd	X	○	X	X	○→○	3 rd	X	X	X	X	○→○
	3 rd E/B	X	X	X	X	X	3 rd E/B ↓ 3 rd	X	X	X	X	X→○	3 rd E/B ↓ 3 rd	X	○	X	X	X→○	3 rd E/B ↓ 3 rd	X	X	X	X	X→○
	4 th	X	X	○	X	○	3 rd	X	X	X	X	○→○	3 rd	X	X→○	X	X	○→○	3 rd	X	X	X	X	○→○
	5 th	X	X	○	○	X	1 st E/B ↓ 3 rd	X	X	X	○→X	X→○	3 rd E/B ↓ 3 rd	X	X→○	X	○→X	X→○	3 rd E/B ↓ 3 rd	X	X	X	○→X	X→○
"2"	1 st	X	X	X	X	○	1 st	○	X	X	X	○	1 st	X	X	X	X	○	1 st	X	X	X	X	○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	X→○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	4 th	X	X	○	X	○	1 st	X→○	X	X	X	○	1 st ↓ 2nd	X	X→○	X	X	○→X	1 st	X	X	X	X	○
	5 th	X	X	○	○	X	1 st E/B ↓ 1 st	X→○	X	X	○→X	X→○	1 st E/B ↓ 2nd	X	X→○	X	○→X	X	1 st E/B ↓ 1 st	X	X	X	○→X	X→○
"L"	1 st E/B	X	X	X	X	X	1 st E/B	○	X	X	X	X	1 st E/B	X	X	X	X	X	1 st E/B	X	X	X	X	X
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	X→○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	4 th	X	X	○	X	○	1 st	X→○	X	X	X	○	1 st ↓ 2nd	X	X→○	X	X	○→X	1 st	X	X	X	X	○
	5 th	X	X	○	○	X	1 st E/B ↓ 1 st	X→○	X	X	○→X	X→○	1 st E/B ↓ 2nd	X	X→○	X	○→X	X	1 st E/B ↓ 1 st	X	X	X	○→X	X→○

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DTC No.	DTC Detection Condition	Trouble Area
P0748/62	Engine and ECT ECU checks for an open or short circuit in shift solenoid valves SL1 (1–trip detection logic) (a) When solenoid is energized, duty ratio exceed 75% (b) When solenoid is not energized, duty ratio is less than 3%	• Open or short in shift solenoid valve SL1 circuit • Shift solenoid valve SL1 • Engine and ECT ECU

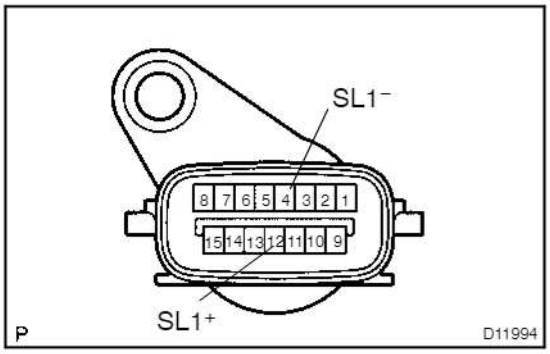
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

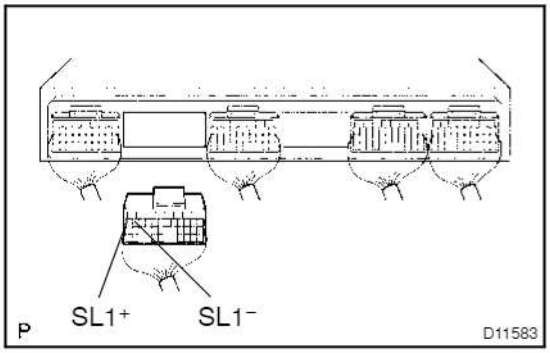


PREPARATION:
Disconnect the trasmission wire connector.
CHECK:
Measure resistance between SL1+ and SL1− of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SL1+ and SL1− of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal SL1+ and SL1− of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SL1+ and SL1− of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SL1+ and SL1− of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

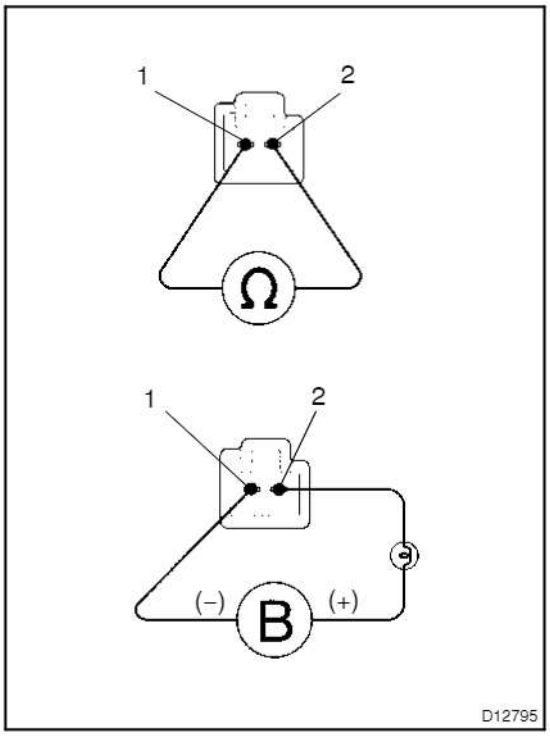
NG	**Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SL1.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SL1.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SL1 (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DIAUF–01

DTC	P0751	Shift Solenoid "A" Performance (Shift Solenoid Valve S1)

DTC	P0756	Shift Solenoid "B" Performance (Shift Solenoid Valve S2)

SYSTEM DESCRIPTION

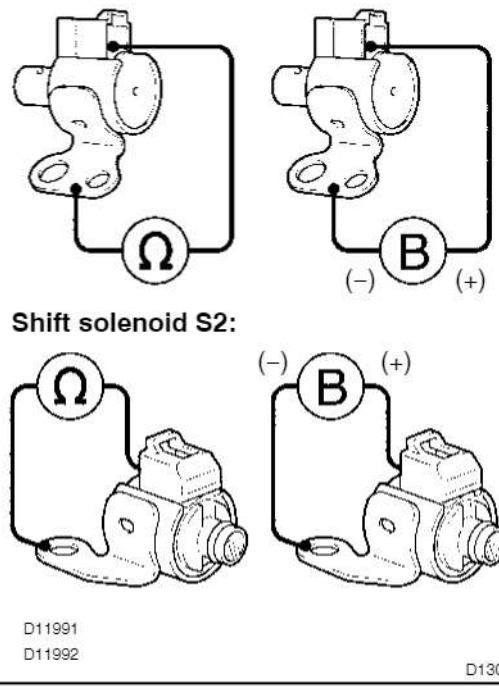
The Engine and ECT ECU uses signals from the vehicle speed sensor and direct clutch speed sensor to detect the actual gear range (1st, 2nd, 3rd, 4th or 5th gear). Then the Engine and ECT ECU compares the actual gear with the shift schedule in the Engine and ECT ECU memory to detect mechanical troubles of the shift solenoid valves, valve body or automatic transmission (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0751	The gear required by the Engine and ECT ECU does not match the actual gear when driving (2–trip detection logic)	• Shift solenoid valve S1 is stuck open or closed • Valve body is blocked up or stuck • Automatic transmission (clutch, brake or gear etc.)
P0756		• Shift solenoid valve S2 is stuck open or closed • Valve body is blocked up or stuck • Automatic transmission (clutch, brake or gear etc.)

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INSPECTION PROCEDURE

1	Check shift solenoid valve S1 or S2 operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve S1 or S2.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

NG → **Replace shift solenoid valve S1 or S2 (See page AT–8).**

OK

2	Check valve body (See page DI–26).

NG → **Repair or replace valve body (See page AT–8).**

OK

Repair or replace transmission (See page AT–31).

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DTC	P0771	Shift Solenoid "E" Performance (Shift Solenoid Valve SR)

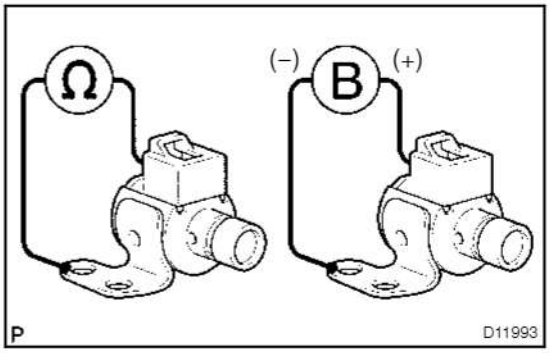
SYSTEM DESCRIPTION

The Engine and ECT ECU uses signals from the vehicle speed sensor and direct clutch speed sensor to detect the actual gear range(1st, 2nd, 3rd, 4th or 5th gear). Then the Engine and ECT ECU compares the actual gear with the shift schedule in the Engine and ECT ECU memory to detect mechanical troubles of the shift solenoid valves, valve body or automatic transmission (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0771	The gear required by the Engine and ECT ECU does not match the actual gear when driving (2–trip detection logic)	• Shift solenoid valve SR is stuck open or closed • Shift solenoid valve SL1 is stuck open or closed • Valve body is blocked up or stuck • Automatic transmission (clutch, brake or gear etc.)

INSPECTION PROCEDURE

1	Check shift solenoid valve SR operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SR.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

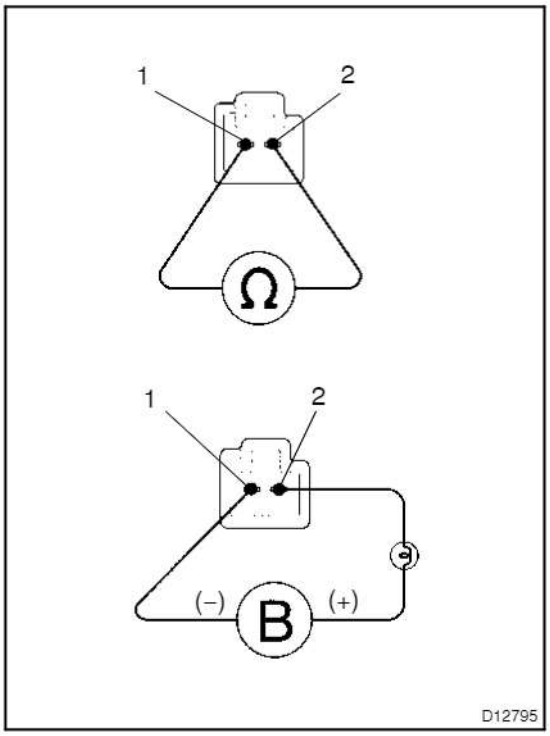
Solenoid sounds operation noise.

NG → **Replace shift solenoid valve SR (See page AT–8).**

OK

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2	Check shift solenoid valve SL1 operation.



PREPARATION:

Remove the shift solenoid valve SL1.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)

(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace shift solenoid valve SL1 (See page AT–8).**

OK

3	Check valve body (See page DI–26).

NG → **Repair or replace valve body (See page AT–8).**

OK

Repair or replace transmission (See page AT–31).

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DTC	P0776/63	Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2)

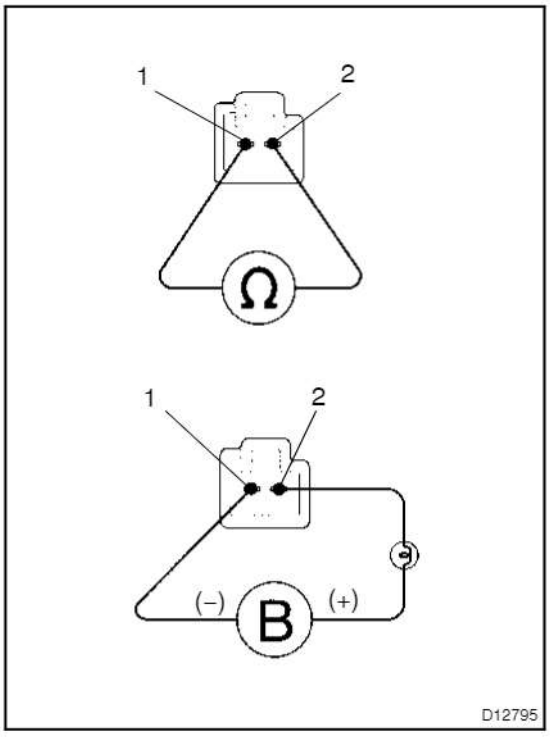
SYSTEM DESCRIPTION

The Engine and ECT ECU uses signals from the vehicle speed sensor and direct clutch speed sensor to detect the actual gear range(1st, 2nd, 3rd, 4th or 5th gear). Then the Engine and ECT ECU compares the actual gear with the shift schedule in the Engine and ECT ECU memory to detect mechanical troubles of the shift solenoid valves, valve body or automatic transmission (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0776/63	The gear required by the Engine and ECT ECU does not match the actual gear when driving (2–trip detection logic)	• Shift solenoid valve SL2 is stuck open or closed • Valve body is blocked up or stuck • Automatic transmission (clutch, brake or gear etc.)

INSPECTION PROCEDURE

1	Check shift solenoid valve SL2 operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SL2.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace shift solenoid valve SL2 (See page AT–8).**

OK

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2	Check valve body (See page DI–26).

NG → Repair or replace valve body (See page AT–8).

OK →

Repair or replace transmission (See page AT–31).

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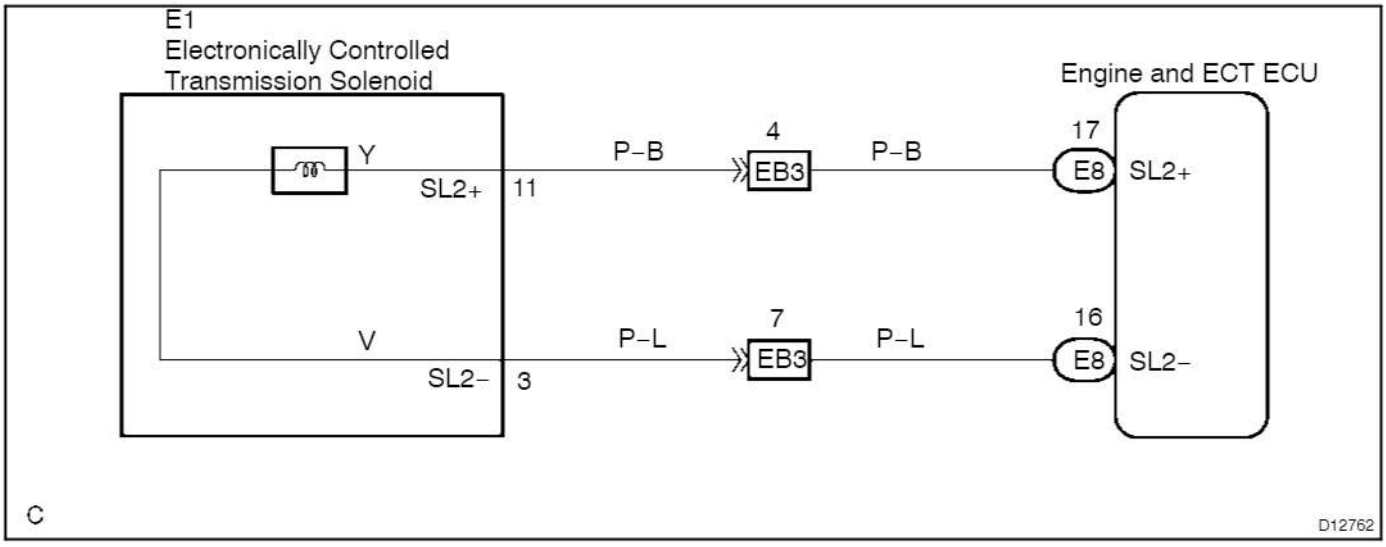
DTC	P0778/63	Pressure Control Solenoid "B" Electrical (Shift Solenoid Valve SL2)

CIRCUIT DESCRIPTION

See page DI–49.

DTC No.	DTC Detection Condition	Trouble Area
P0778/63	Engine and ECT ECU checks for an open or short circuit in shift solenoid valves SL2 (1–trip detection logic) (a) When solenoid is energized, duty ratio exceed 75% (b) When solenoid is not energized, duty ratio is less than 3%	• Open or short in shift solenoid valve SL2 circuit • Shift solenoid valve SL2 • Engine and ECT ECU

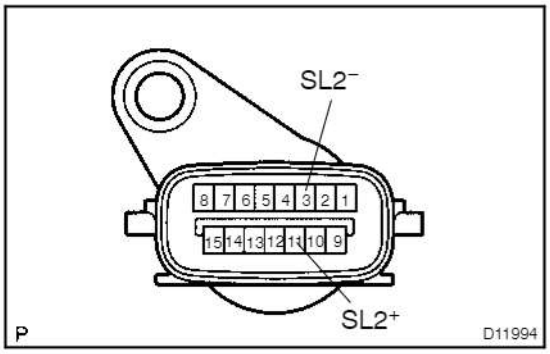
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

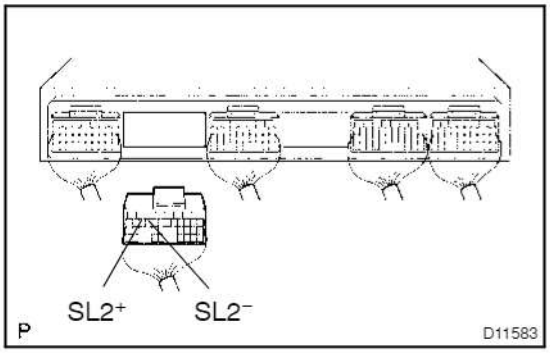


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between $SL2^+$ and $SL2^-$ of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals $SL2^+$ and $SL2^-$ of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal $SL2^+$ and $SL2^-$ of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals $SL2^+$ and $SL2^-$ of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals $SL2^+$ and $SL2^-$ of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

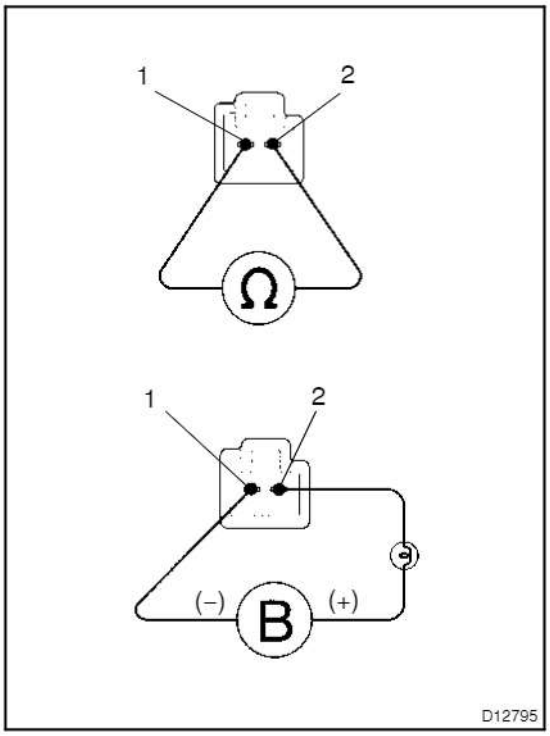
NG	**Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SL2.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SL2.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SL2 (See page AT–8).**

OK

Repair or replace the transmission wire (See page AT–6).

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DIAUT–01

DTC	P0781	1–2 Shift

SYSTEM DESCRIPTION

The Engine and ECT ECU uses signals from the vehicle speed sensor and direct clutch speed sensor to detect the actual gear range (1st, 2nd, 3rd, 4th or 5th gear). Then the Engine and ECT ECU compares the actual gear with the shift schedule in the Engine and ECT ECU memory to detect mechanical troubles of the shift solenoid valves, valve body or automatic transmission (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0781	The gear required by the Engine and ECT ECU does not match the actual gear when driving (2–trip detection logic)	• Valve body is blocked up or stuck (1–2 shift) • Automatic transmission assembly • Engine and ECT ECU

INSPECTION PROCEDURE

1	**Check if the other DTCs are recorded (See page DI–4).**

YES → **Repair circuit indicated by output code (See page DI–20).**

NO

2	**Clear the DTC and running test (See page DI–4).**

CHECK:

Clear the DTC again, and check DTC again after conducting the running test.

OK:

Normal code

OK → **END**

NG

Repair or replace valve body (See page AT–8).

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DIAUU–01

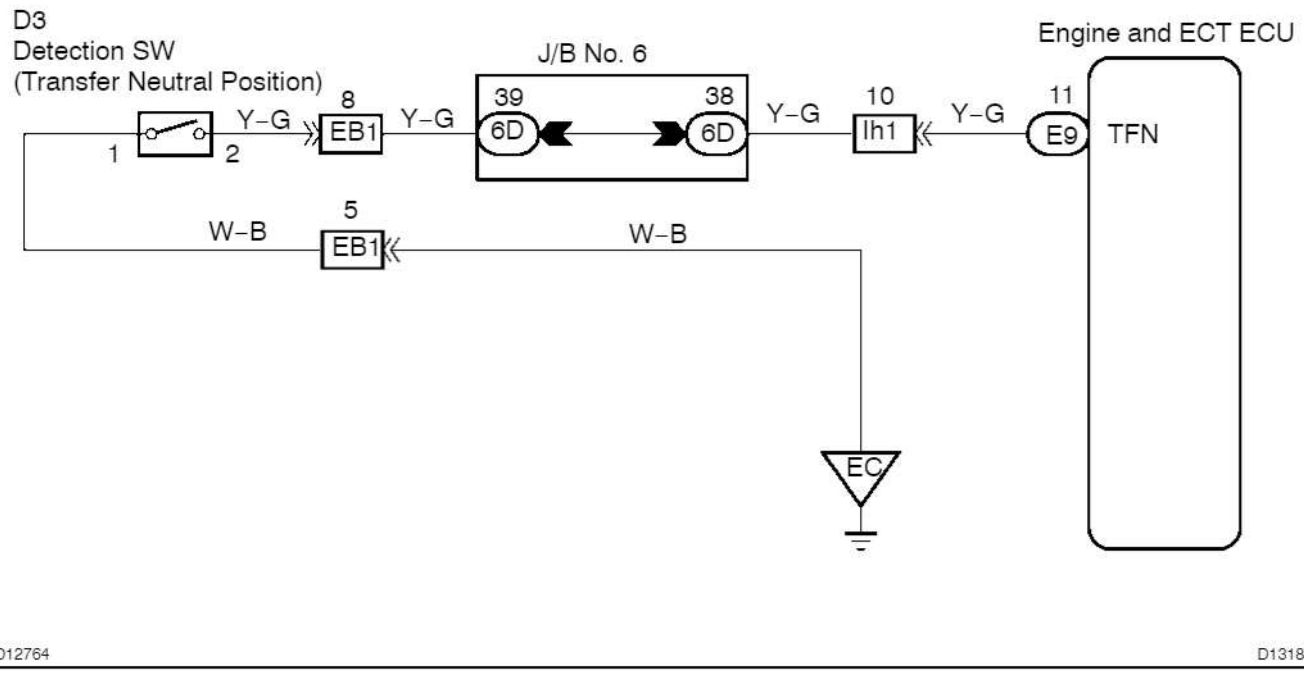
DTC	P0818	Driveline Disconnect Switch Input Circuit

CIRCUIT DESCRIPTION

The Engine and ECT ECU detects the signal from the transfer neutral position switch.
This DTC indicates that the transfer neutral position switch remains ON.

DTC No.	DTC Detecting Condition	Trouble Area
P0818	Transfer neutral position switch remains ON while vehicle running under conditions for 30 sec. (2–trip detection logic) • Vehicle speed is 25 km/h or more • Transfer shift position is H	• Short in transfer neutral position switch circuit • Transfer neutral position switch • Engine and ECT ECU

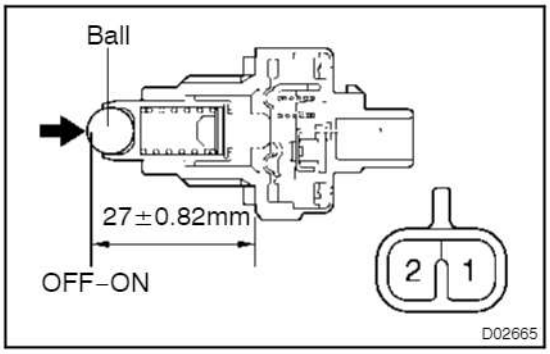
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transfer neutral position switch.**



PREPARATION:
Remove the transfer neutral position switch.
CHECK:
Check the continuity between the switch terminals when pushing the ball at the tip of the switch.
OK:

Switch	Specified condition
Push	Continuity
Free	No continuity

NG → **Replace transfer neutral position switch.**

OK

2	**Check harness and connector between Engine and ECT ECU and transfer neutral position switch, transfer neutral position switch and body ground (See page IN–38).**

NG → **Repair or replace the harness or connector.**

OK

Check and replace the Engine and ECT ECU(See page IN–38).

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DTC	P0973/62	Shift Solenoid "A" Control Circuit Low (Shift Solenoid Valve S1)

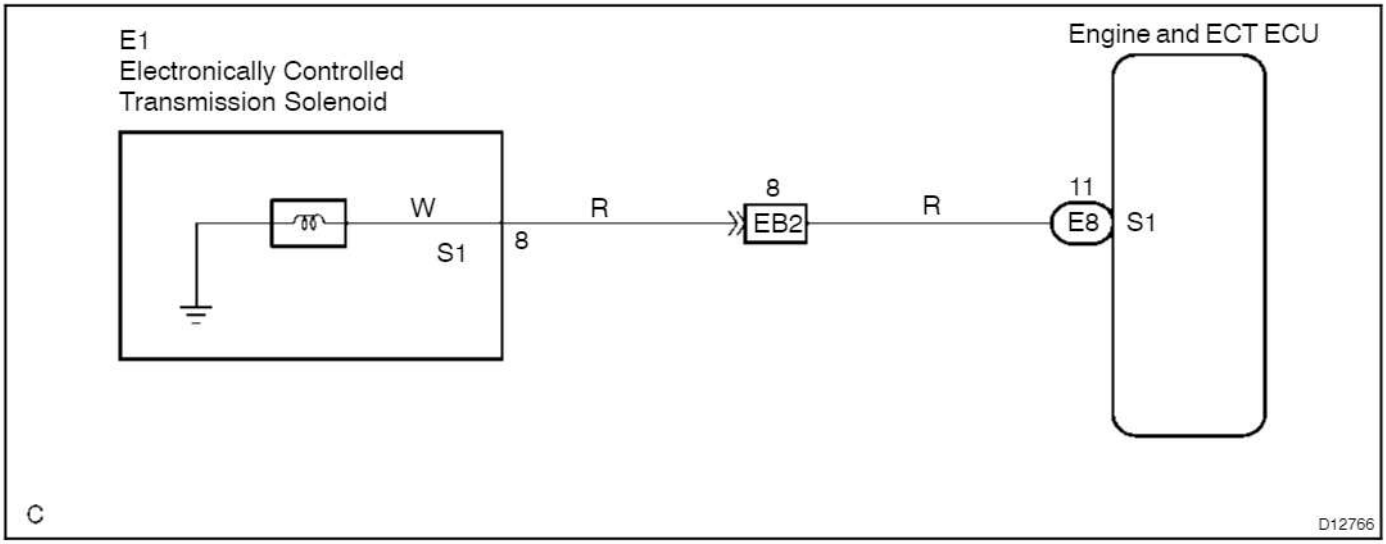
DTC	P0974/62	Shift Solenoid "A" Control Circuit High (Shift Solenoid Valve S1)

CIRCUIT DESCRIPTION

See page DI–49.

DTC No.	DTC Detection Condition	Trouble Area
P0973/62	Engine and ECT ECU detects short in solenoid valve S1 circuit 4 times when solenoid valve S1 is operated (1–trip detection logic)	• Short in shift solenoid valve S1 circuit • Shift solenoid valve S1 • Engine and ECT ECU
P0974/62	Engine and ECT ECU detects open in solenoid valve S1 circuit 4 times when solenoid valve S1 is not operated (1–trip detection logic)	• Open in shift solenoid valve S1 circuit • Shift solenoid valve S1 • Engine and ECT ECU

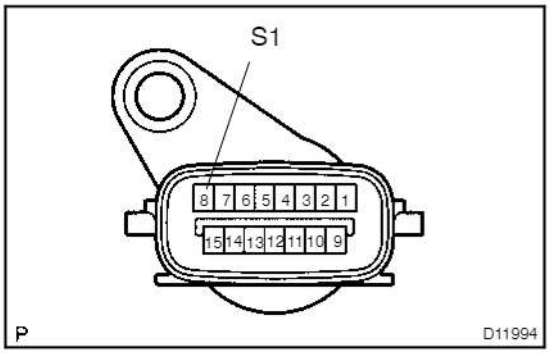
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

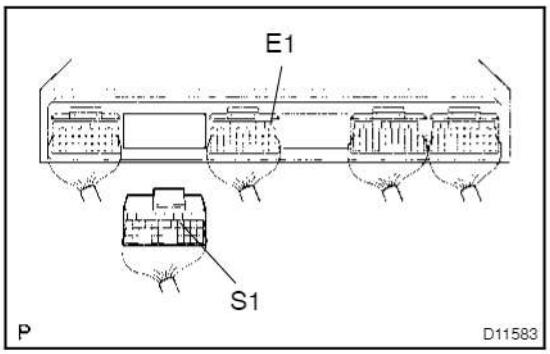


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between S1 of transmission wire connector and body ground.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal S1 and E1 of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals S1 and E1 of Engine and ECT ECU connector.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

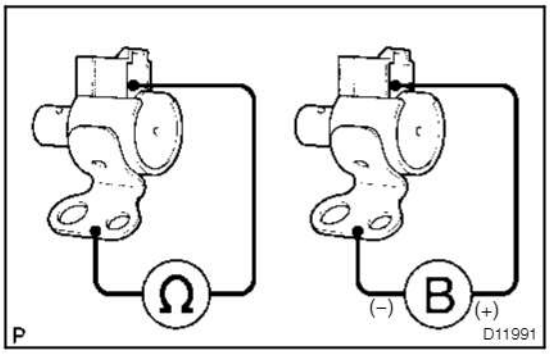
NG	**Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve S1.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve S1.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

NG → **Replace the shift solenoid valve S1 (See page AT–8).**

OK

Repair or replace the transmission wire (See page AT–6).

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DIAUW–01

DTC	P0976/63	Shift Solenoid "B" Control Circuit Low (Shift Solenoid Valve S2)

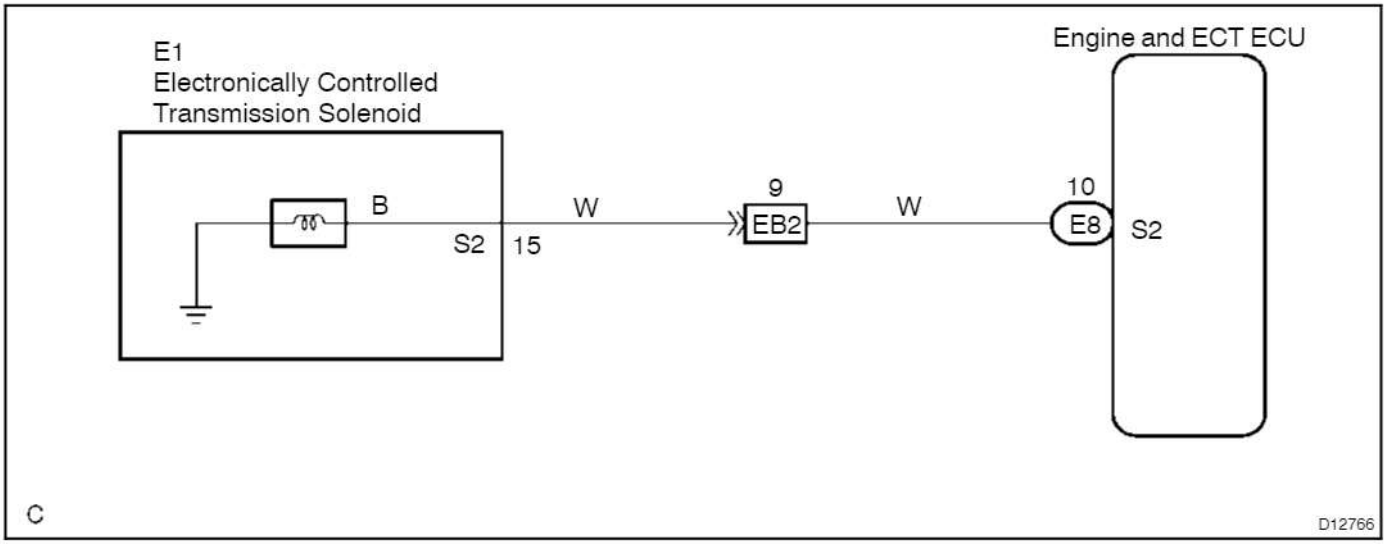
DTC	P0977/63	Shift Solenoid "B" Control Circuit High (Shift Solenoid Valve S2)

CIRCUIT DESCRIPTION

See page DI–49.

DTC No.	DTC Detection Condition	Trouble Area
P0976/63	Engine and ECT ECU detects short in solenoid valve S2 circuit 4 times when solenoid valve S2 is operated (1–trip detection logic)	• Short in shift solenoid valve S2 circuit • Shift solenoid valve S2 • Engine and ECT ECU
P0977/63	Engine and ECT ECU detects open in solenoid valve S2 circuit 4 times when solenoid valve S2 is not operated (1–trip detection logic)	• Open in shift solenoid valve S2 circuit • Shift solenoid valve S2 • Engine and ECT ECU

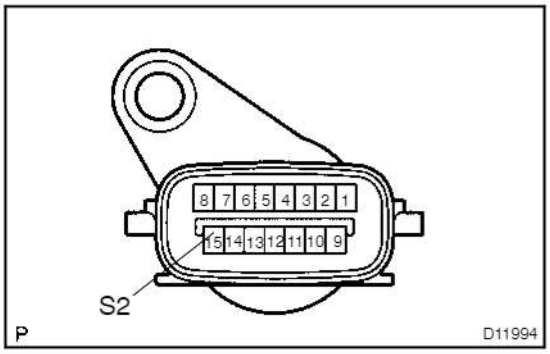
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

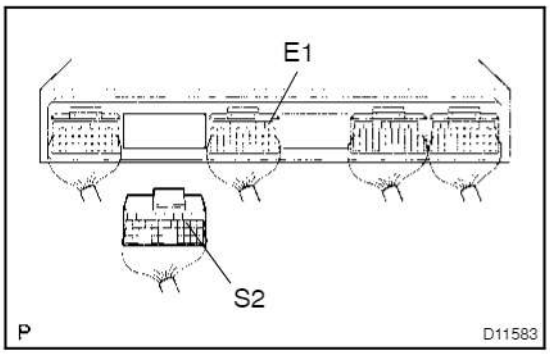


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between S2 of transmission wire connector and body ground.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

NG → **Go to step 3.**

OK

2	**Measure resistance between terminal S2 and E1 of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals S2 and E1 of Engine and ECT ECU connector.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

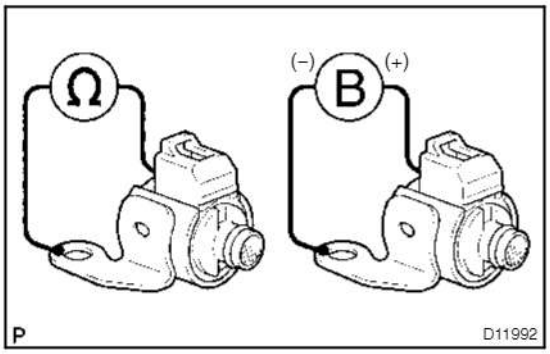
NG → **Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve S2.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve S2.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

NG → **Replace the shift solenoid valve S2 (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DTC	P0985/74	Shift Solenoid "E" Control Circuit Low (Shift Solenoid Valve SR)

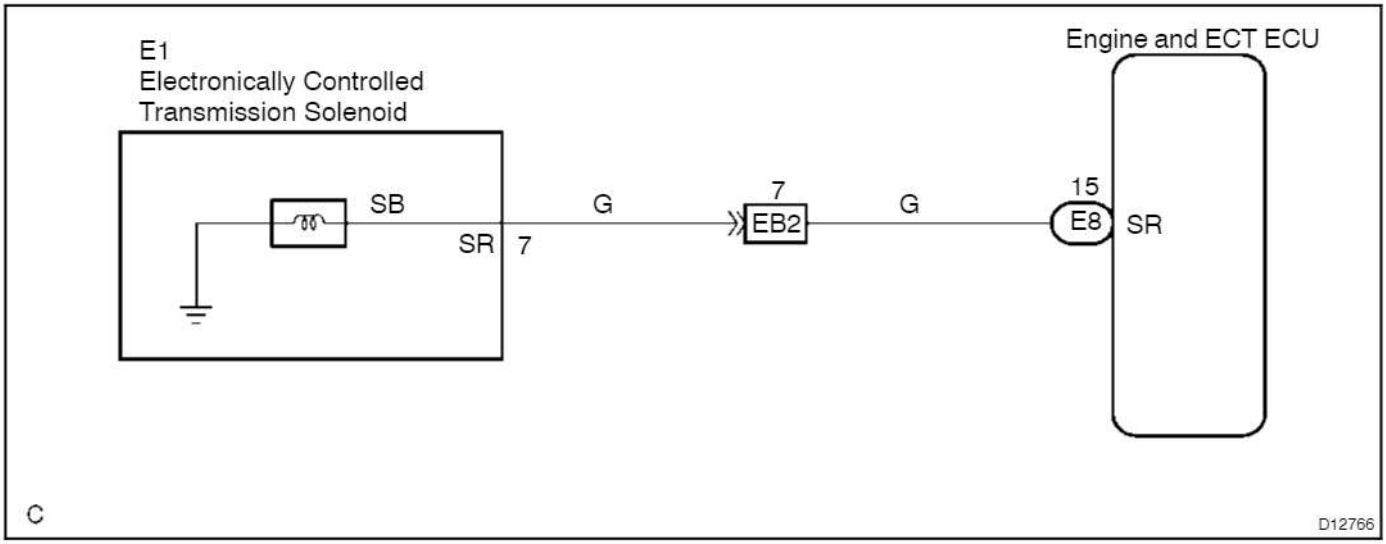
DTC	P0986/74	Shift Solenoid "E" Control Circuit High (Shift Solenoid Valve SR)

CIRCUIT DESCRIPTION

See page DI–49.

DTC No.	DTC Detection Condition	Trouble Area
P0985/74	Engine and ECT ECU detects short in solenoid valve SR circuit 4 times when solenoid valve SR is operated (1–trip detection logic)	• Short in shift solenoid valve SR circuit • Shift solenoid valve SR • Engine and ECT ECU
P0986/74	Engine and ECT ECU detects open in solenoid valve SR circuit 4 times when solenoid valve SR is not operated (1–trip detection logic)	• Open in shift solenoid valve SR circuit • Shift solenoid valve SR • Engine and ECT ECU

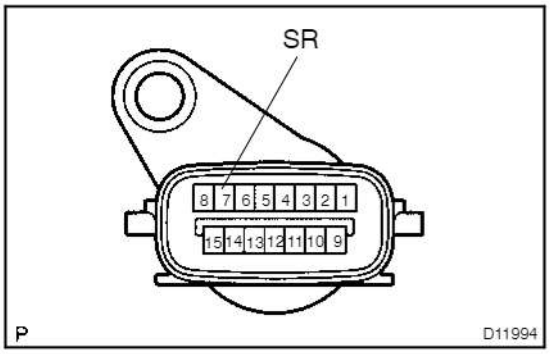
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

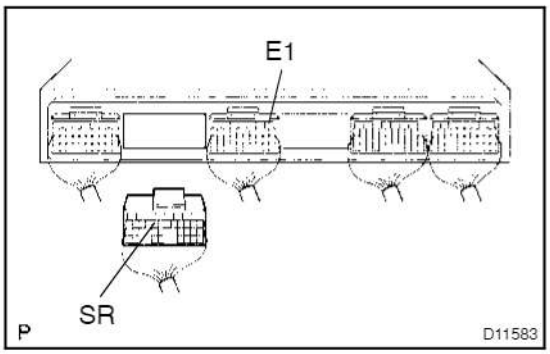


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between SR of transmission wire connector and body ground.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

NG → **Go to step 3.**

OK

2	**Measure resistance between terminal SR and E1 of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SR and E1 of Engine and ECT ECU connector.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

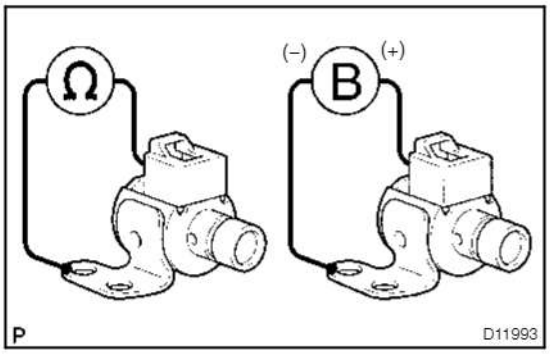
NG → **Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SR.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SR.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

NG → **Replace the shift solenoid valve SR (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DIAUY–01

DTC	P1782	T/F L4 Range position Switch Performance

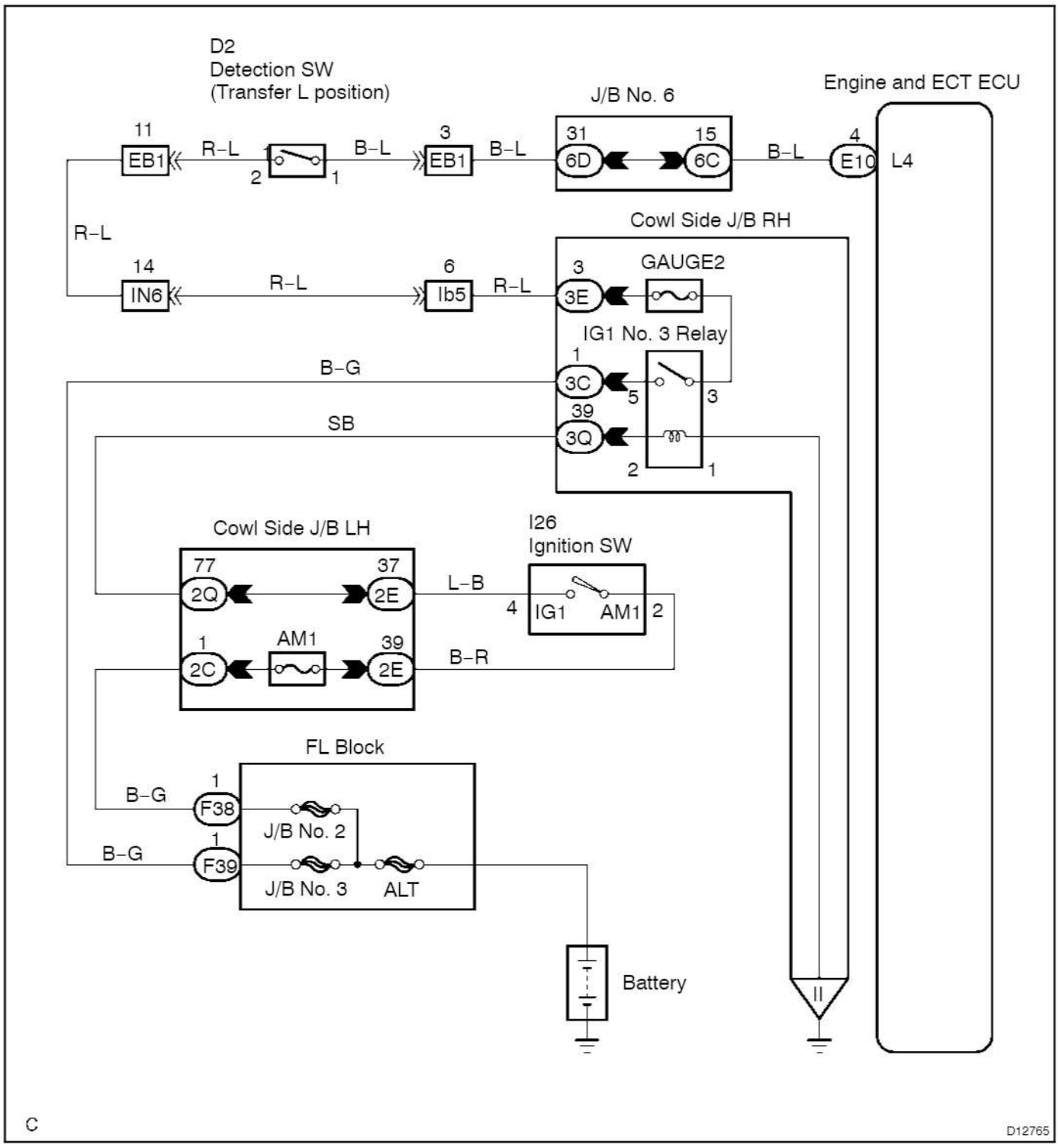
CIRCUIT DESCRIPTION

The Engine and ECT ECU detects the signal from the transfer L4 position switch.
This DTC indicates that the transfer L4 position switch remains ON.

DTC No.	DTC Detecting Condition	Trouble Area
P1782	Transfer L4 position switch remains ON while vehicle running under conditions for 18 seconds or more (1–trip detection logic) (a) Output shaft speed 3000 rpm or less (b) Transfer shift range is H	• Short in transfer L4 position switch circuit • Transfer L4 position switch • Engine and ECT ECU

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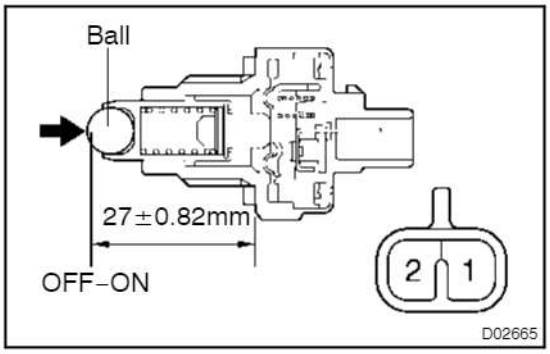
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transfer L4 position switch.**



PREPARATION:
Remove the transfer L4 position switch.
CHECK:
Check the continuity between the switch terminals when pushing the ball at the tip of the switch.
OK:

Switch	Specified condition
Push	Continuity
Free	No continuity

NG → **Replace transfer L4 position switch.**

OK

2	**Check harness and connector between battery and transfer L4 position switch, transfer L4 position switch and Engine and ECT ECU (See page IN–38).**

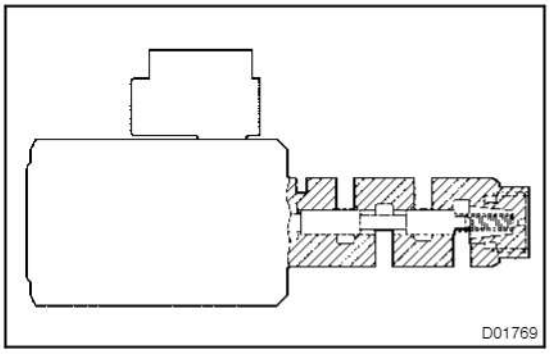
NG → **Repair or replace the harness or connector.**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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DTC	P2714	Pressure Control Solenoid "D" Performance (Shift Solenoid Valve SLT)



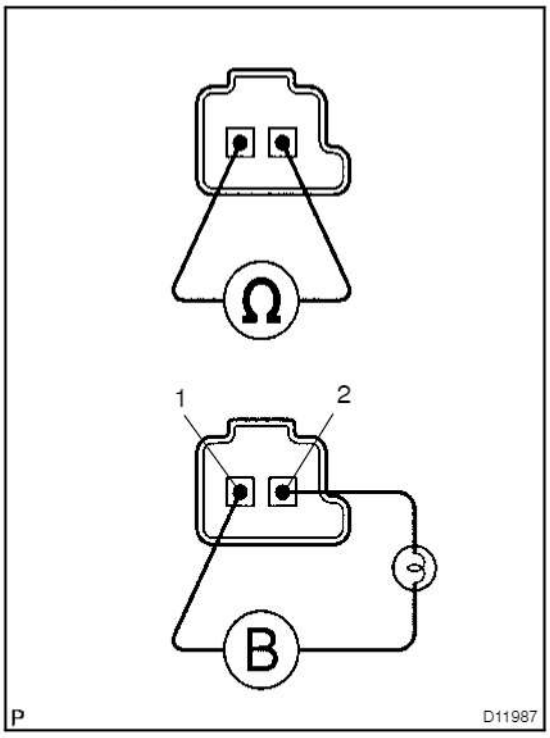
SYSTEM DESCRIPTION

The Engine and ECT ECU calculates the shifting condition by using the signals from the vehicle speed sensor, throttle position sensor, etc.. And compares this result with the signal that Engine and ECT ECU sends to SLT to detect mechanical trouble of the shift solenoid valve SLT, valve body, torque converter and automatic transmission assembly (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P2714	Engine and ECT ECU detects a malfunction on SLT (ON side) according to the revolution difference of the turbine and the output shaft, and also by the oil pressure. (2–trip detection logic)	• Shift solenoid valve SLT is stuck open or closed • Valve body blocked up or stuck • Automatic transmission assembly

INSPECTION PROCEDURE

1	Check shift solenoid valve SLT operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLT.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SLT (See page AT–8).**

OK

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2	Check valve body (See page DI–26).

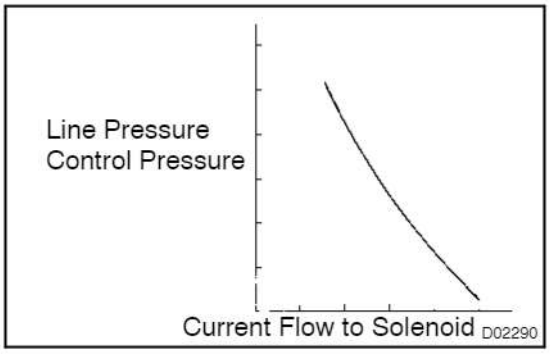
NG → Replace the valve body (See page AT–8).

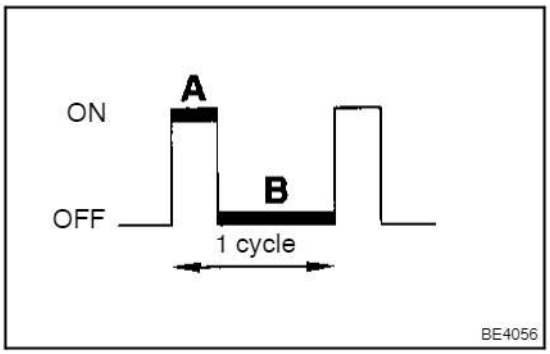
OK →

Repair or replace transmission (See page AT–31).

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DTC	P2716/77	Pressure Control Solenoid "D" Electrical (Shift Solenoid Valve SLT)





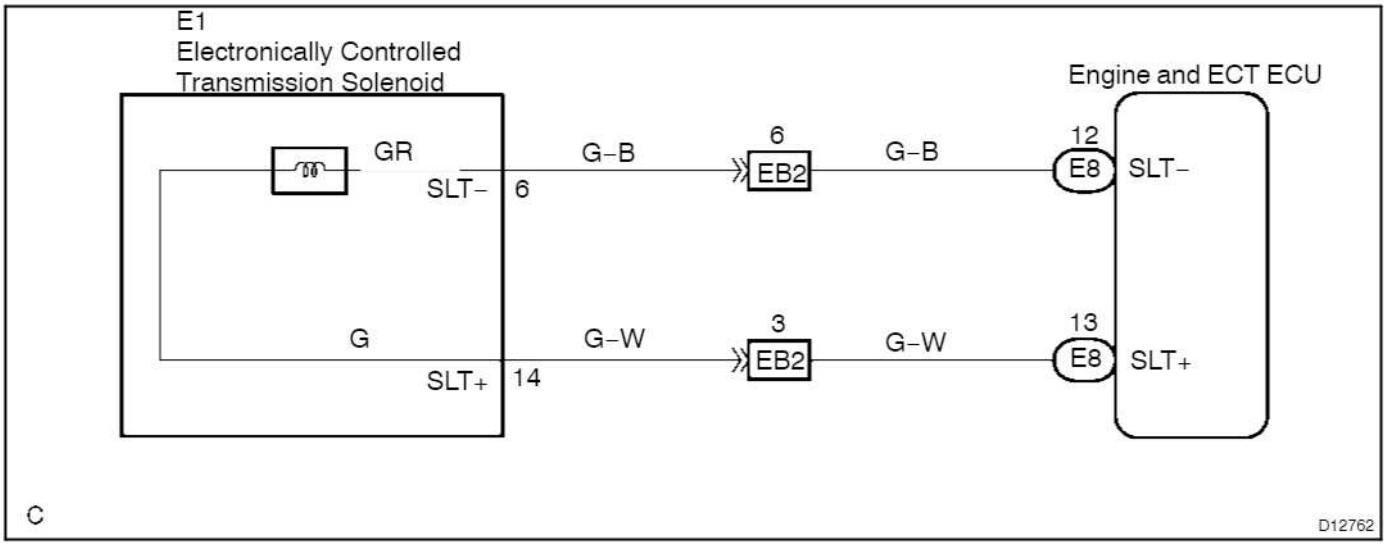
CIRCUIT DESCRIPTION

The throttle pressure that is applied to the primary regulator valve (which modulates line pressure) causes the solenoid valve SLT, under electronic control, to precisely and minutely modulate and generate line pressure according to the accelerator pedal effort, or the detected engine power output.
This controls the line pressure and provides smooth shifting characteristics.
Upon receiving the throttle valve opening angle signal, Engine and ECT ECU controls the line pressure by sending a predetermined (*) duty ratio to the solenoid valve, modulating the line pressure, and generating throttle pressure.
(*) Duty Ratio
The duty ratio is the ratio of the period of continuity in one cycle.
For example, if A is the period of continuity in one cycle, and B is the period of non–continuity, then

$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$

DTC No.	DTC Detection Condition	Trouble Area
P2716/77	Engine and ECT ECU detects solenoid SLT circuit malfunction for 1 sec. or more (1–trip detection logic)	• Open or short in shift solenoid valve SLT circuit • Shift solenoid valve SLT • Engine and ECT ECU

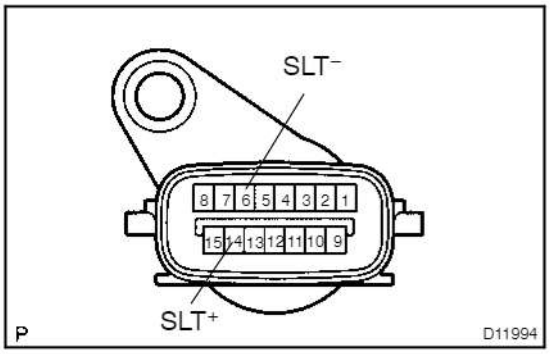
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check transmission wire.

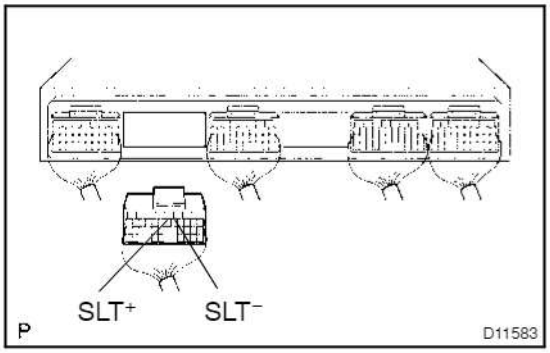


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between SLT^+ and SLT^- of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SLT^+ and SLT^- of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	Go to step 3.

OK

2	Measure resistance between terminal SLT^+ and SLT^- of Engine and ECT ECU connector.



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SLT^+ and SLT^- of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SLT^+ and SLT^- of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

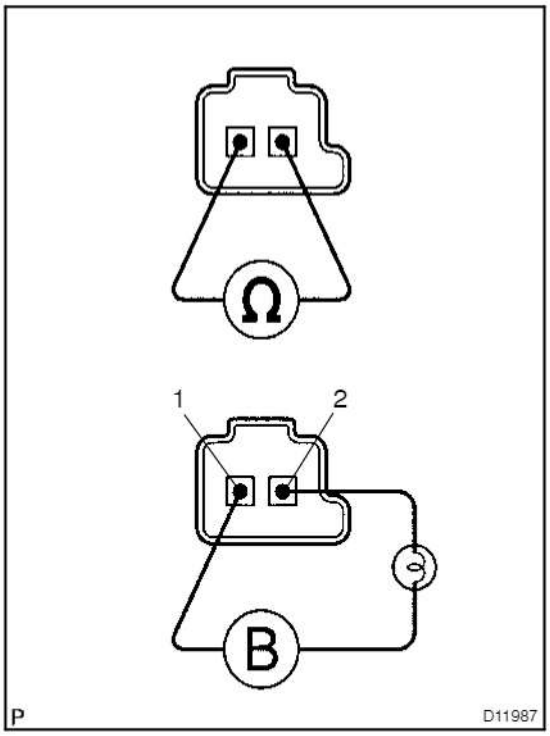
NG	Repair or replace the harness or connector (See page IN–38).

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SLT.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLT.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

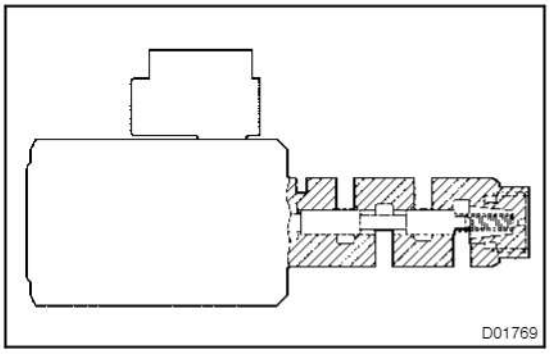
NG → **Replace the shift solenoid valve SLT (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DTC	P2757	Torque Converter Clutch Pressure Control Solenoid Performance(Shift Solenoid Valve SLU)



SYSTEM DESCRIPTION

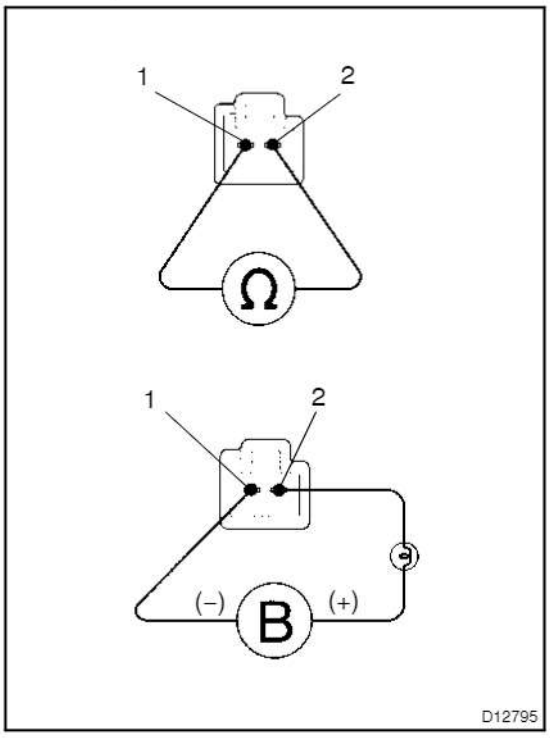
The Engine and ECT ECU uses the signals from the Throttle position Sensor and Air–flow Meter to monitor the engagement condition of the lock–up clutch.

Then the Engine and ECT ECU compares the engagement condition of the lock–up clutch with the lock–up schedule in the Engine and ECT ECU memory to detect mechanical trouble of the shift solenoid valve SLU, valve body, torque converter and automatic transmission assembly (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P2757	Lock–up does not occur when driving in the lock–up range (normal driving at 80 km/h [50 mph]), or lock–up remains ON in the lock–up OFF range. (2–trip detection logic)	• Shift solenoid valve SLU is stuck open or closed • Valve body blocked up or stuck • Lock–up clutch • Automatic transmission assembly

INSPECTION PROCEDURE

1	Check shift solenoid valve SLU operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLU.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SLU (See page AT–8).**

OK

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2	Check valve body (See page DI–26).

NG → Replace the valve body (See page AT–8).

OK

3	Check torque converter (See page AT–43).

OK → Repair or replace transmission (See page AT–31).

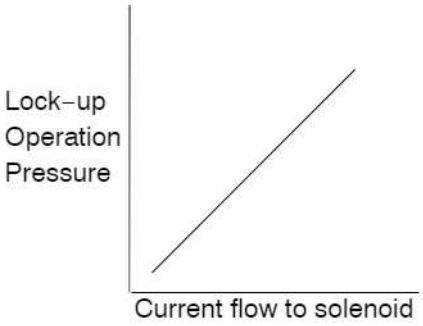
NG

Replace the torque converter (See page AT–31).

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DIAV2–01

DTC	P2759/68	Torque Converter Clutch Pressure Control Solenoid Control Circuit Electrical(Shift Solenoid Valve SLU)

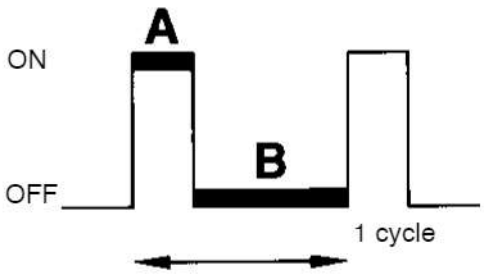


CIRCUIT DESCRIPTION

The amount of current flow to the solenoid is controlled by the (*) duty ratio of the Engine and ECT ECU output signal. The higher the duty ratio becomes, the higher the lock–up hydraulic pressure becomes during the lock–up operation.

(*) Duty Ratio

The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non–continuity, then



BE4056

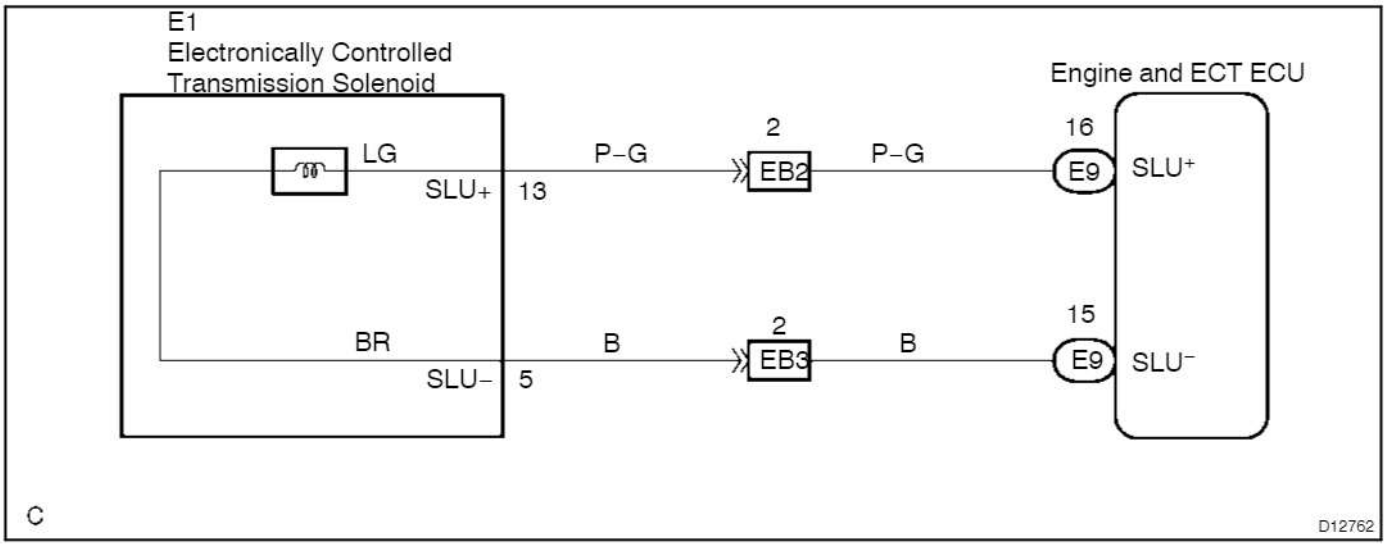
(*)

$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$

D00160

DTC No.	DTC detection condition	Trouble Area
P2759/68	The following condition is detected. (1–trip detection logic) SLU output signal's duty ON of 3.3 msec. or more with duty ratio of least 95% lasts for 1 second.	• Open or short in shift solenoid valve SLU circuit • Shift solenoid valve SLU • Engine and ECT ECU

WIRING DIAGRAM

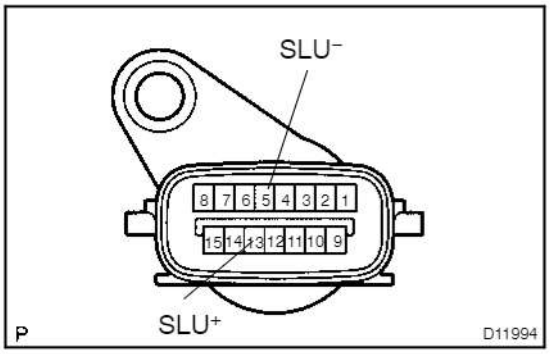


D12762

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INSPECTION PROCEDURE

1	Check transmission wire.

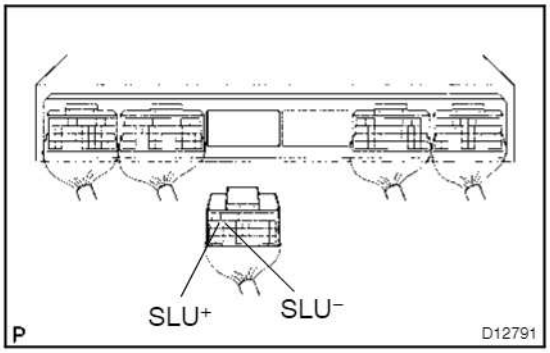


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between SLU+ and SLU– of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68 °F)
CHECK:
Measure resistance between terminals SLU+ and SLU– of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	Go to step 3.

OK

2	Measure resistance between terminal SLU+ and SLU– of Engine and ECT ECU connector.



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SLU+ and SLU– of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68 °F)
CHECK:
Measure resistance between terminals SLU+ and SLU– of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

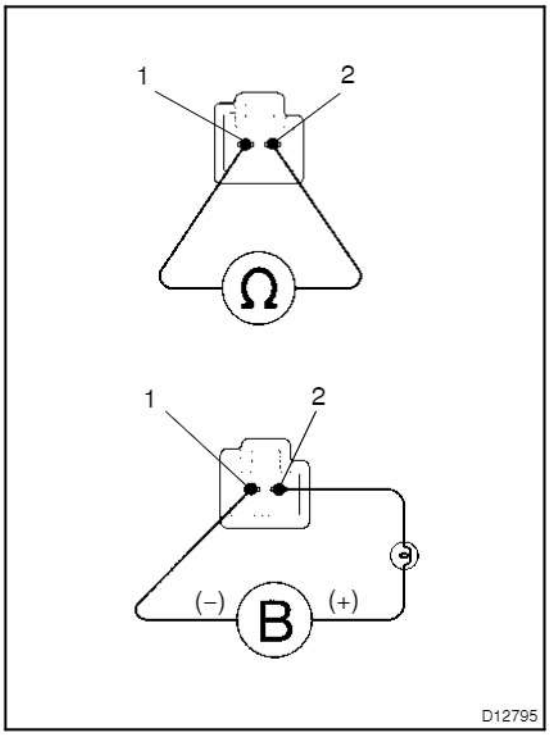
NG	Repair or replace the harness or connector (See page IN–38).

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SLU.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLU.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SLU (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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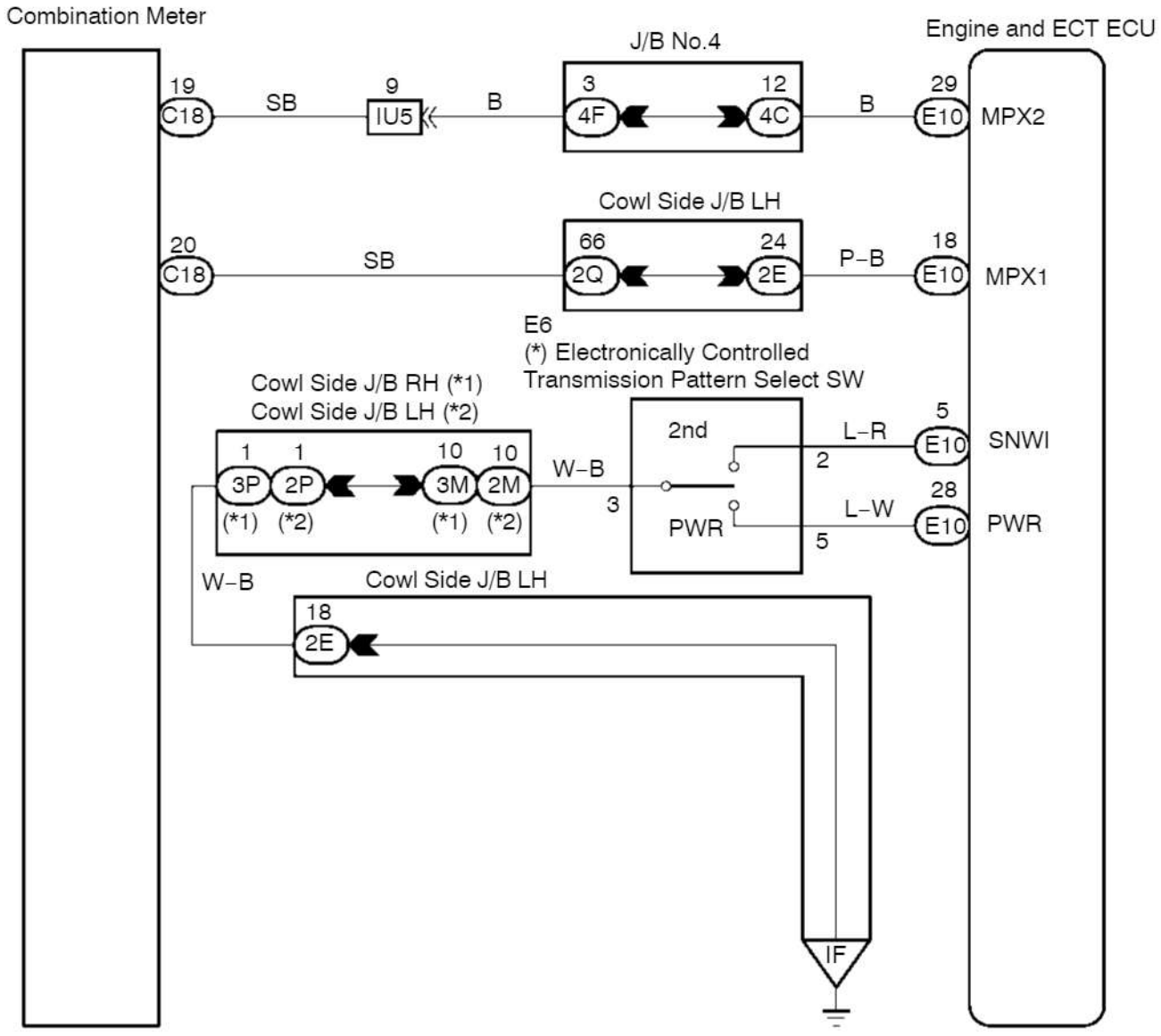
DIAV3–01

Pattern Select Switch Circuit (PWR Mode Switch)

CIRCUIT DESCRIPTION

The Engine and ECT ECU memory contains the shift programs for the NORMAL and POWER patterns, 2 range, L range and the lock–up patterns. Following the programs corresponding to the signals from the pattern select switch, the Neutral startand other various sensors, the Engine and ECT ECU switches the solenoid valves ON and OFF, and controls the transmission gear change and the lock–up clutch operation.

WIRING DIAGRAM



(*) Pattern Select Switch (PWR Mode Switch)
When the PWR mode switch is pushed in, the switch contact is made and the PWR mode is selected.
To cancel the PWR mode, push the PWR mode switch once again.

*1: LHD *2: RHD

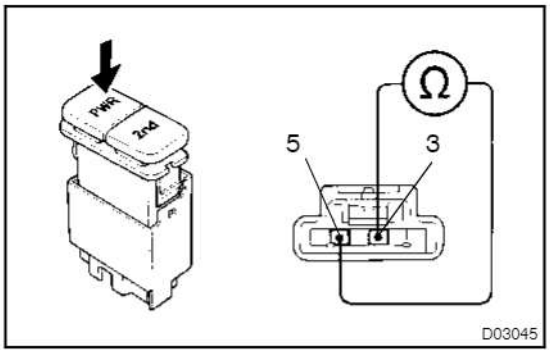
C

D13168

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INSPECTION PROCEDURE

1	Check pattern select switch (PWR mode switch).



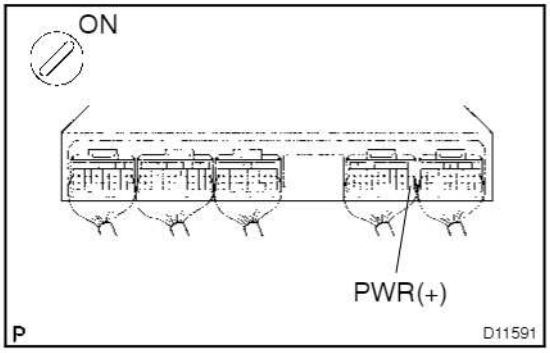
PREPARATION:
Disconnect the pattern select switch connector.
CHECK:
Check continuity between terminals 3 and 5 of pattern select switch connector when the select switch is set to PWR and NORM ranges.
OK:

Pattern select switch	Specified condition
PWR	Continuity
NORM	No continuity

NG → **Replace the pattern select switch.**

OK

2	Check PATTERN SEL SW signal.



PREPARATION:
(a) Connect the pattern select switch connector.
(b) Turn the ignition switch ON.
CHECK:
Measure voltage between terminal PWR of Engine and ECT ECU and body ground when the pattern select switch is set to the PWR (POWER) range and NORM (NORMAL) range.
OK:

Pattern select switch	Voltage
PWR	Below 1.5 V
NORM	10 – 14 V

HINT:
The Engine and ECT ECU uses the normal pattern signal if the PWR signal is not input.

OK → **Proceed to next circuit inspection shown on matrix chart (See page DI–26).**

NG

Repair or replace harness or connector (See page IN–38).

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DIAV4–01

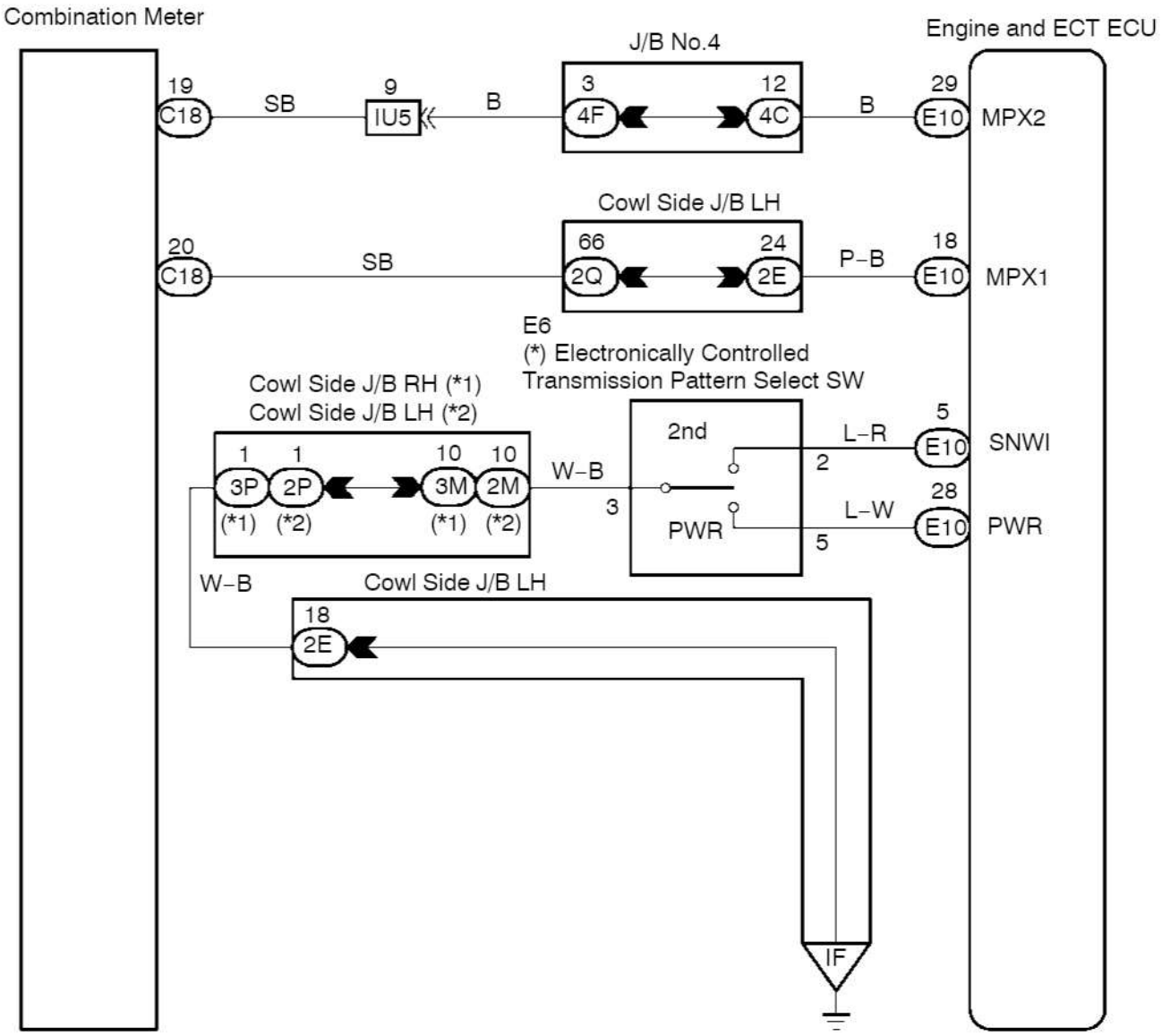
Pattern Select Switch Circuit (2nd Start Switch)

CIRCUIT DESCRIPTION

When 2nd start mode is selected with the pattern select switch, the Engine and ECT ECU controls the solenoid valves and the transmission starts from 2nd gear.
In D range, the transmission automatically shifts up through 3rd to 5th as usual.
In 2nd range, the transmission is held in 2nd gear.

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WIRING DIAGRAM



(*) Pattern Select Switch (2nd Start Switch)
When the 2nd start switch is pushed, the switch contact is made and the 2nd mode is selected.
To cancel the 2nd start, push the 2nd start switch once again. The 2nd start is automatically cancelled out when the ignition switch is turned OFF.

*1: LHD *2: RHD

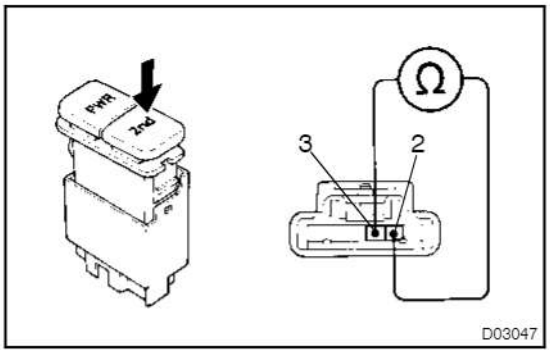
C

D13168

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INSPECTION PROCEDURE

1	Check pattern select switch (2nd start switch).



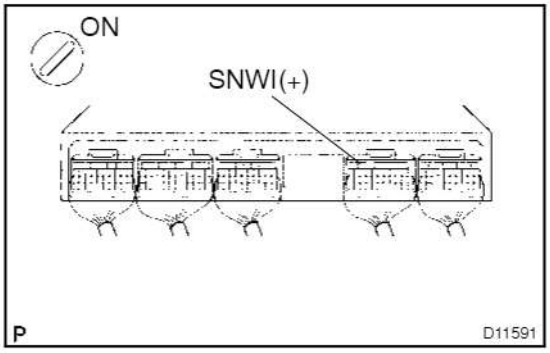
PREPARATION:
Disconnect the pattern select switch connector.
CHECK:
Check continuity between terminals 2 and 3 of pattern select switch connector when pattern select switch is set to 2nd start switch ON and OFF.
OK:

2nd start switch	Specified condition
Press continuously "2nd" switch	Continuity
Release "2nd" switch	No continuity

NG → **Replace the pattern select switch.**

OK ↓

2	Check voltage between terminal SNWI of Engine and ECT ECU and body ground.



PREPARATION:
(a) Connect the pattern select switch connector.
(b) Turn the ignition switch ON.
CHECK:
Check voltage between terminal SNWI of Engine and ECT ECU and body ground when the select switch is set to 2nd start switch ON and OFF.
OK:

2nd start switch	Voltage
Press contnuously "2nd" switch	Below 1.5 V
Release "2nd" switch	7.5 – 14 V

OK → **Proceed to next circuit inspection shown on matrix chart (See page DI–26).**

NG ↓

Repair or replace harness or connector (See page IN–38).

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DIAV8–01

ATF Temperature Sensor No.2 Circuit

CIRCUIT DESCRIPTION

ATF temperature sensor No.2 is on the transmission and just before the oil cooler inlet pipeline.
If Engine and ECT ECU detects the abnormally high temperature of ATF by this sensor, it draws driver's attention by turning the warning lamp up.
HINT:

- The temperature of ATF easily raises when toeing, climbing hills and in stack, etc.
- If the ATF temperature sensor No.2 shorts, the signal that indicates the ATF temperature is 150°C (302°F) or higher is input in Engine and ECT ECU.

Vehicle conditions when sensor is in normal and when the vehicle is in short are indicated in the table below.

ATF temperature No.2 Sensor State	Detection Condition	Symptom	Recovery Condition
Sensor is normal	• AT fluid temp. more than 150°C (302°F).	• AT Oil Temp. warning light remains on	• AT fluid temp. less than 135°C (275°F). *1
	• AT fluid temp. more than 130°C (266°F).	• Shift point too high.	• AT fluid temp. less than 110°C (230°F).
Sensor is in short	• Any conditions.	• AT Oil Temp. warning light remains on • Shift point too high.	• Symptoms still occur

HINT:
*1: When AT fluid temperature is in normal range, it decreases to less than 135°C within 5 minutes with the shift lever in P or N range in a idling state.

WIRING DIAGRAM

See page DI–37.

INSPECTION PROCEDURE

1	**Check A/T oil warning light.**

CHECK:
When parking the vehicle with the shift lever in P or N range, check that the AT oil warning light goes off within 5 minutes.
OK:

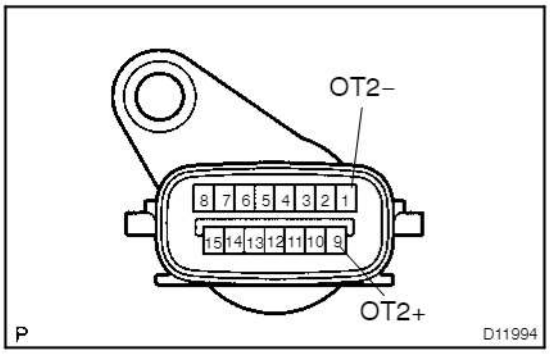
AT oil warning light goes off

OK → **END**

NG

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2	Check transmission wire.



PREPARATION:

Disconnect the transmission wire connector from the transmission.

CHECK:

Measure resistance between terminals OT2+ and OT2– of the transmission wire connector and body ground.

OK:

Resistance: 1 MΩ or higher

CHECK:

Measure the resistance between terminals OT2+ and OT2–.

OK:

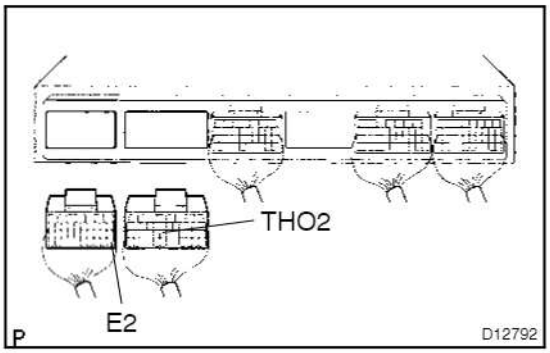
Temperature: °C (°F)	Resistance: kΩ
10 (50)	6.4
110 (230)	0.2

NG → **Replace the transmission wire (ATF temperature sensor).**

OK →

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3	**Measure resistance between terminal THO2 and E2 of Engine and ECT ECU connector.**



PREPARATION:

(a) Connect the transmission wire connector.

(b) Disconnect the connector of the Engine and ECT ECU.

CHECK:

Measure the resistance between terminals THO2 and E2.

OK:

Temperature: °C (°F)	Resistance: kΩ
10 (50)	6.4
110 (230)	0.2

CHECK:

Measure resistance between terminals THO2 and E2 of the Engine and ECT ECU connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG → **Repair or replace the harness or connector (See page IN–38).**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–26).

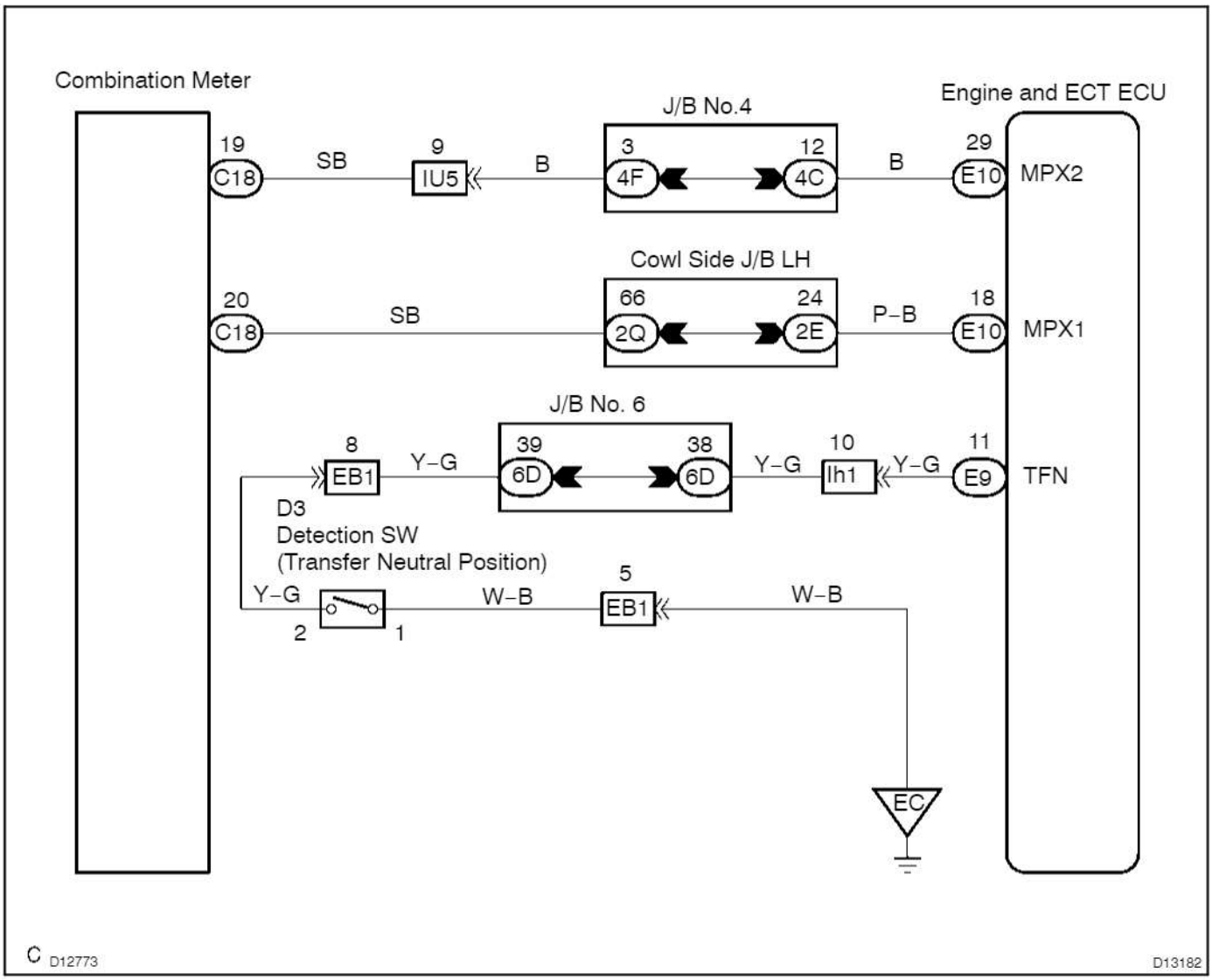
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A/T. P. (Automatic Transmission Parking) Indicator Circuit

CIRCUIT DESCRIPTION

The propeller shaft and wheels are free even when the transmission shift lever is set to P as long as the transfer shift lever is in Neutral range. The A/T.P. indicator light lights up to warn the driver that the propeller shaft and wheels are not locked.
If the A/T.P. indicator light goes on, the transfer shift lever should be shifted to the ranges other than N range.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check Neutral start switch (See page DI–32).

NG → Replace the Neutral start switch.

OK

2	Check transfer neutral position switch (See page DI–65).

NG → Replace the transfer neutral position switch.

OK

3	Check harness and connector between Engine and ECT ECU and transfer neutral position switch, transfer neutral position switch and body ground (See page IN–38).

NG → Repair or replace the harness or connector.

OK

Proceed to next circuit inspection shown on matrix chart (See page DI–26).

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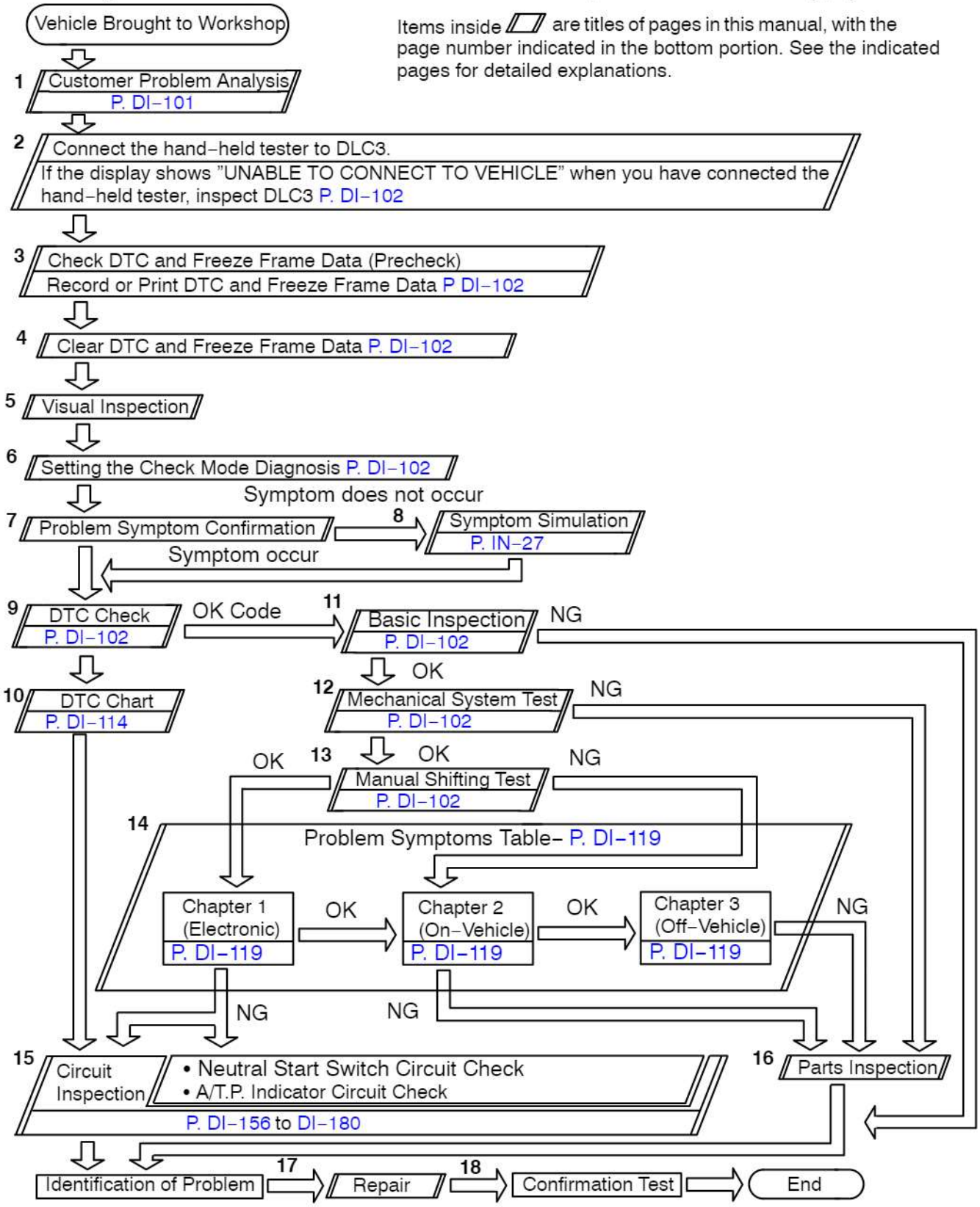
AUTOMATIC TRANSMISSION (A750F for 1HD–FTE)

HOW TO PROCEED WITH TROUBLESHOOTING

DIAV7–01

When using hand–held tester, troubleshoot in accordance with the procedure on the following pages.

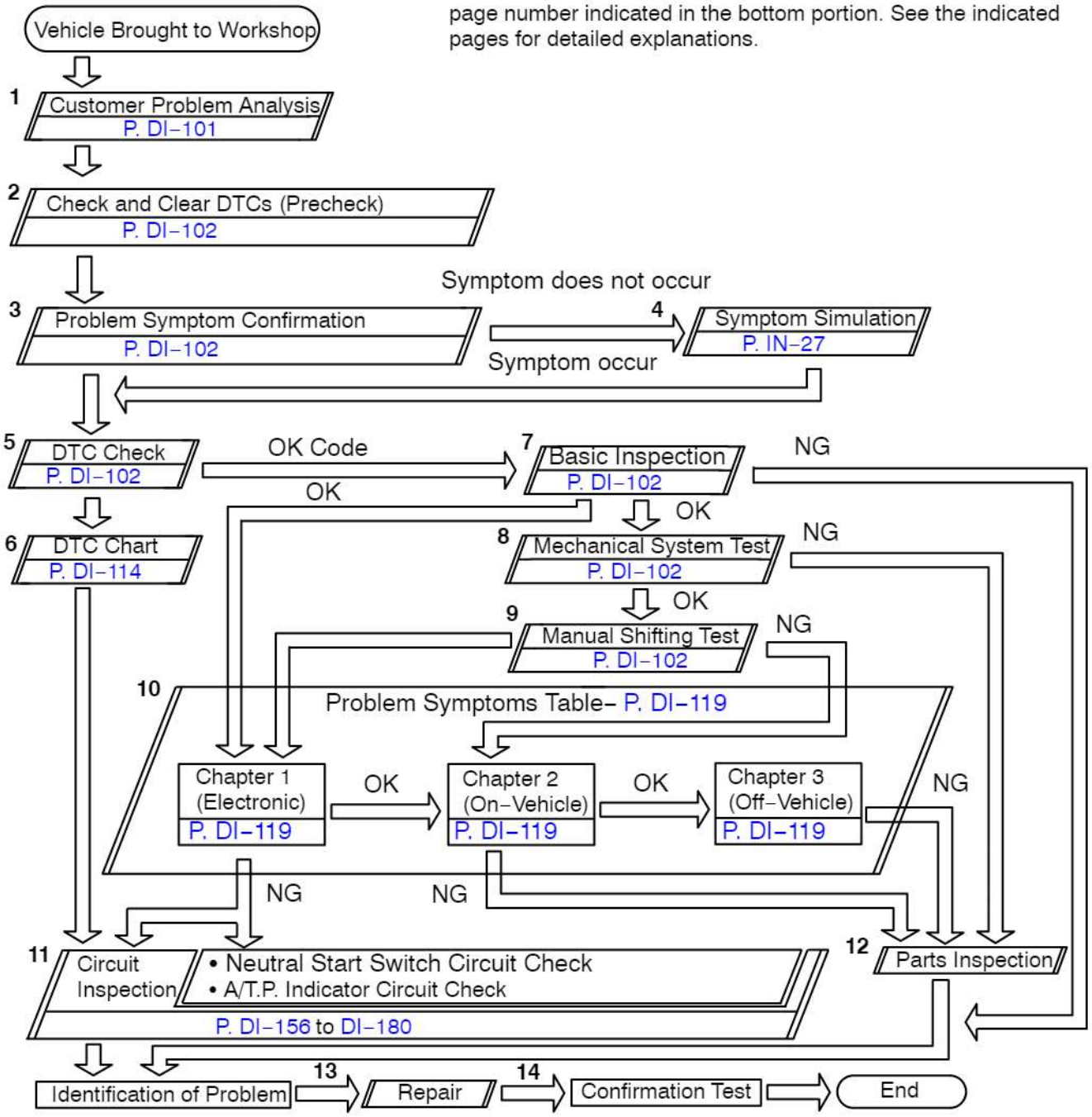
Items inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



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When using hand–held tester, troubleshoot in accordance with the procedure on the following pages.

Items inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



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DIAV5–01

CUSTOMER PROBLEM ANALYSIS CHECK

Automatic Transmission System Check Sheet	Inspector's Name :

Customer's Name		Registration No.	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	Odometer Reading	km mile

Date Problem Occurred	/ /
How Often Does Problem Occur?	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ Vehicle does not move (☐ Any range ☐ particular range)
	☐ No up–shift (☐ 1st → 2nd ☐ 2nd → 3rd ☐ 3rd → 4th ☐ 4th → 5th)
	☐ No down–shift (☐ 5th → 4th ☐ 4th → 3rd ☐ 3rd → 2nd ☐ 2nd → 1st)
	☐ Lock–up malfunction
	☐ Shift point too high or too low
	☐ Harsh engagement (☐ N → D ☐ Lock–up ☐ Any drive range)
	☐ Slip or shudder
	☐ No kick–down
	☐ Others ( )

Check Item	Malfunction Indicator Lamp	☐ Normal ☐ Remains ON

DTC Check	1st Time	☐ Normal code ☐ Malfunction code (DTC)
	2nd Time	☐ Normal code ☐ Malfunction code (DTC)

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DIAV9–01

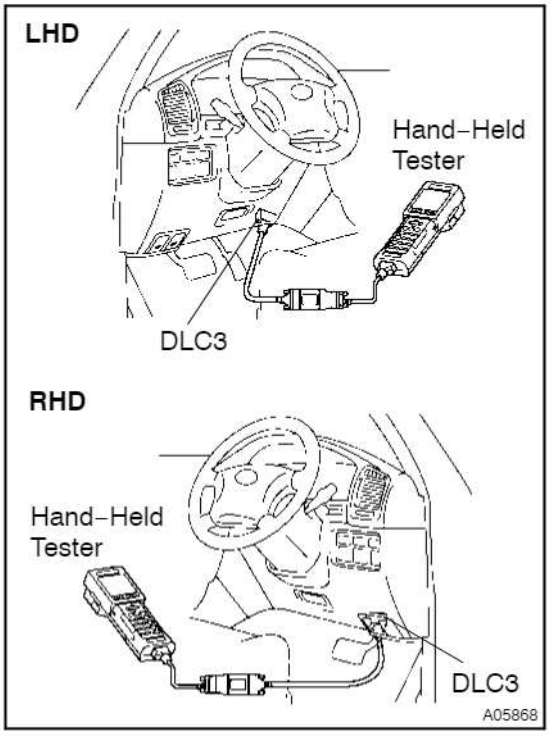
PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Description for M–OBD

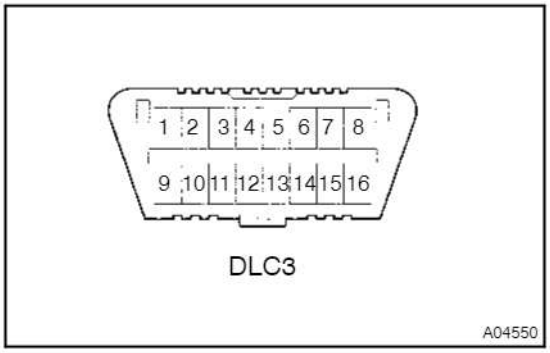
- When troubleshoot Multiplex OBD (M–OBD) vehicles, the only difference from the usual troubleshooting procedure is that you connect the vehicle to the hand–held tester, and read off various data output from the vehicle's Engine and ECT ECU.
- The vehicle's on–board computer indicates the check engine light (CHK ENG) on the instrument panel when the computer detects a malfunction in the computer itself or in drive system components. In addition to an indication of the CHK ENG when a malfunction is detected, the applicable Diagnostic Trouble Codes (DTCs) are recorded in the Engine and ECT ECU memory (See page DI–114).

If the malfunction code is not detected in 3 consecutive trips, CHK ENG (MIL) goes off automatically but the DTCs remain recorded in the Engine and ECT ECU memory.



- To check the DTCs, connect the hand–held tester to Data Link Connector 3 (DLC3) on the vehicle. or read the number of blinks of the check engine warning light when TC and CG terminals on the DLC3 are connected. The hand–held tester also enables you to erase the DTCs and activate the several actuators and check freezed frame data and various forms of engine data. (For operating instructions, see the hand–held tester instruction book.)
- The diagnosis system operates in the normal mode during normal vehicle use. It also has a check (test) mode for technicians to simulate malfunction symptoms and troubleshoot. Most DTCs use 2 trip detection logic* to prevent erroneous detection, and ensure thorough malfunction detection. By switching the Engine and ECT ECU to the check (test) mode using hand–held tester when troubleshooting, the technician can cause the CHK ENG on the light up for a malfunction that is only detected once or momentarily (Hand–held tester only) (See step 2).
- * 2 trip detection logic
  When a logic malfunction is fist detected, the malfunction is temporally stored in the Engine and ECT ECU memory. If the same malfunction is detected again during the second drive test, this second detection cases the CHK ENG to light up.
  The 2 trip repeats the same mode for 2 times (However, the ignition switch must be turned OFF between the 1st trip and 2nd trip).

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(b) Check the DLC3.
The vehicle's Engine and ECT ECU uses the ISO 14230 (M–OBD) communication protocol. The terminal arrangement of DLC3 complies with ISO 15031–3 and matches the ISO 14230 format.

Terminal No.	Connection/Voltage or Resistance	Condition
7	Bus + Line/Pulse generation	During communication
4	Chassis Ground ⇔ Body Ground/1 Ω or less	Always
5	Signal Ground – Body Ground/1 Ω or less	Always
16	Battery Positive ⇔ Body Ground/9 – 14 V	Always

HINT:
If your display shows UNABLE TO CONNECT TO VEHICLE when you have connected the cable of the hand–held tester to the DLC3, turned the ignition switch ON and operated the scan tool, there is a problem on the vehicle side or tool side.
If communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

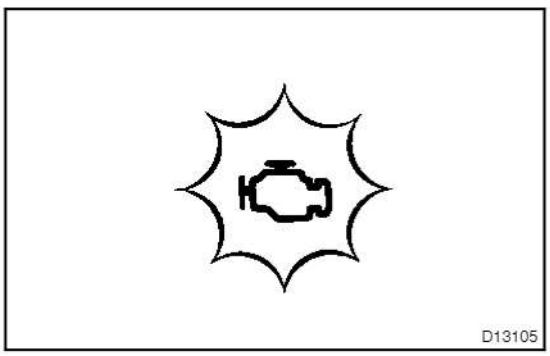
2. INSPECT DIAGNOSIS (Normal Mode)

(a) Check the DTC using hand–held tester.

NOTICE:

Hand–held tester only:

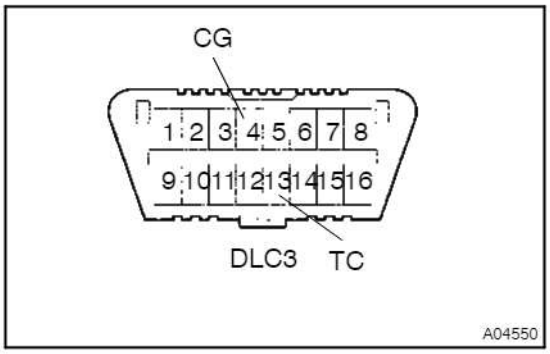
When the diagnosis system is switched from the normal mode to the check mode, it erases all DTCs and freezed frame data recorded in the normal mode. So before switching modes, always check the DTCs and freezed frame data, and note them down.



(1) The CHK ENG (MIL) comes on when the ignition switch is turned ON and the engine is not running.
(2) Prepare the hand–held tester.
(3) Connect the hand–held tester to the DLC3.
(4) Turn the ignition switch ON and push the hand–held tester main switch ON.
(5) Use the hand–held tester to check the DTCs and freezed frame data, note them down (For operating instructions, see the hand–held tester instruction book.).

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(6) See page DI–114 to confirm the details of the DTCs.

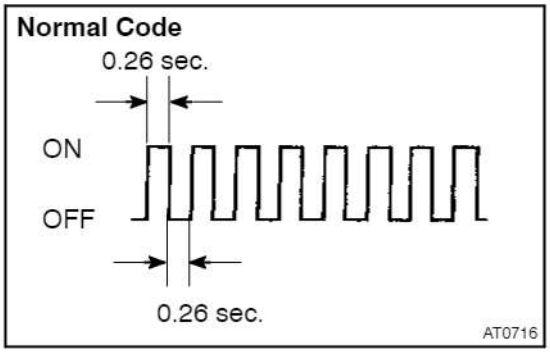


(b) Check the DTC when not using hand–held tester (M–OBD).

(1) Turn the ignition switch ON, but do not start the engine.

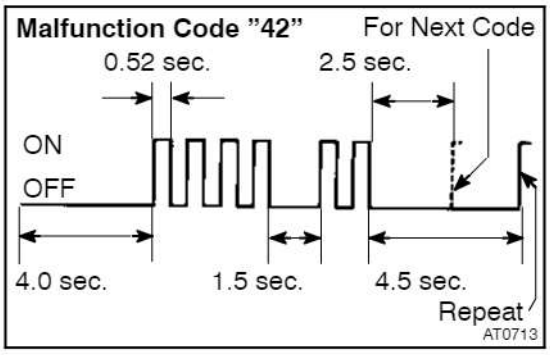
(2) Using SST, connect terminals 13 (TC) and 4 (CG) of DLC3.

SST 09843–18040



(3) Read the DTC indicated by the number of times the MIL blinks.

HINT:
If the system is operating normally, the light will blink 2 times per second.



(4) The malfunction code is indicated, as shown in the chart on the left (DTC "42" is shown as an example).

HINT:
When 2 or more malfunction codes are stored in memory, the lower–numbered code is displayed first.

3. INSPECT DIAGNOSIS (Check (Test) Mode)

HINT:
Hand–held tester only:
Compared to the normal mode, the check mode has an increased sensitivity to detect malfunctions.
Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the check (test) mode.

(a) Check the DTC.

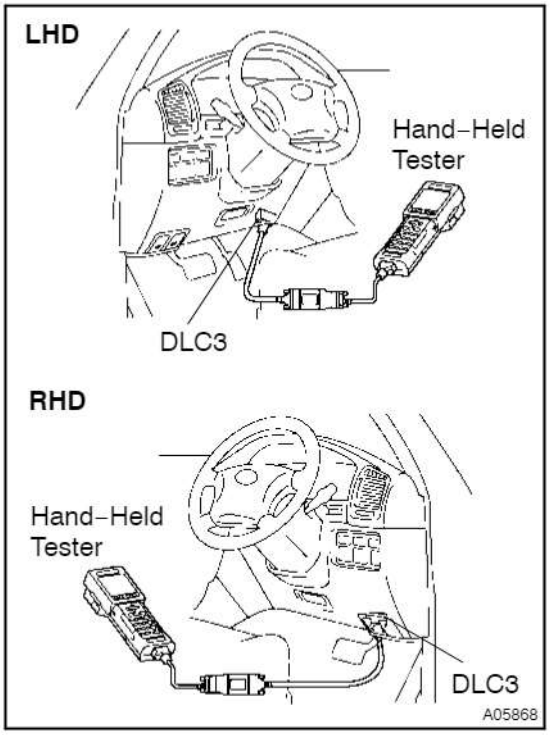
(1) Initial conditions

- Battery voltage 11 V or more
- Throttle valve fully closed
- Transmission in P or N range
- A/C switched OFF

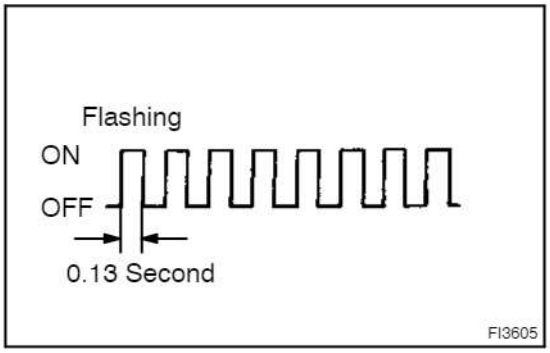
(2) Turn the ignition switch OFF.

(3) Prepare the hand–held tester.

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(4) Connect the hand–held tester to the DLC3.
(5) Turn the ignition switch ON and push the hand–held tester main switch ON.



(6) Switch the hand–held tester from the normal mode to the check (test) mode.
(7) Check if the CHK ENG (MIL) blinks.

NOTICE:

If the hand–held tester switches the Engine and ECT ECU from the normal mode to the check mode or vice–versa, or if the ignition switch is turned from ON to ACC or OFF during the check mode, the DTCs and freezed frame data will be erased.

(8) Start the engine (MIL goes out after the engine starts).
(9) Simulate the conditions of the malfunction described by the customer.

NOTICE:

Leave the ignition switch ON until you have checked the DTCs, etc.

(10) After simulating the malfunction conditions, use the hand–held tester diagnosis selector to check the DTCs and freezed frame data, etc.

HINT:

Take care not to turn the ignition switch OFF. Turning the ignition switch OFF switches the diagnosis system from the check (test) mode to the normal mode. so all DTCs, etc. are erased.

(11) After checking the DTC, inspect the applicable circuit.

(b) Clear the DTC.

The DTCs and freeze frame data will be erased by either actions.

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(1) Operating the hand–held tester to erase the codes. (See the hand–held tester's instruction book for operating instructions.)
(2) Disconnecting the battery terminals or (EFI OR ECD No.1 fuse) and (EFI OR ECD No.2 fuse) fuse more than 60 second.

4. PROBLEM SYMPTOM CONFIRMATION

Taking into consideration the results of the customer problem analysis, try to reproduce the symptoms of the trouble. If the problem is that the transmission does not up–shift, down–shift, or the shift point is too high or too low, conduct the following road test to confirm the automatic shift schedule and simulate the problem symptoms.

5. ROAD TEST

NOTICE:

Perform the test at normal operating ATF temperature 50 – 80°C (122 – 176°F).

(a) D range test (NORM and PWR pattern):
Shift into the D range and fully depress the accelerator pedal and check the following points.
(1) Check up–shift operation.
Check that 1 → 2, 2 → 3, 3 → 4 and 4 → 5th up–shifts take place, and that the shift points conform to the automatic shift schedule (See page SS–4).

HINT:

When the 2nd start switch is on, there is no 1→2 up–shift and 2→1 down–shift.

(2) Check for shift shock and slip.
Check for shock and slip at the 1 → 2, 2 → 3, 3 → 4 and 4 → 5th up–shifts.
(3) Check for abnormal noises and vibration.
Drive in the D range lock–up or 5th gear and check for abnormal noises and vibration.

HINT:

The check for the cause of abnormal noises and vibration must be done very thoroughly as it could also be due to loss of balance in the differential, torque converter clutch, etc.

(4) Check kick–down operation.
While running in the D range, 2nd, 3rd, 4th and 5th gears, check that the possible kick–down vehicle speed limits for 2 → 1, 3 → 2, 4 → 3 and 5th → 4 kick–downs conform to those indicated on the automatic shift schedule (See page SS–4).
(5) Check abnormal shock and slip at kick–down.
(6) Check the lock–up mechanism.
- Drive in D range 5th gear, at a steady speed (lock–up ON) of about 70 km/h (43 mph).
- Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.

If there is a big jump in engine speed, there is no lock–up.

(b) 4 range test:
Shift into the 4 range and fully depress the accelerator pedal and check the following points.
(1) Check up–shift operation.
Check that the 1 → 2, 2 → 3 and 3 → 4 up–shift takes place and that the shift point conforms to the automatic shift schedule (See page SS–4).

HINT:

- There is no 5th up–shift in the 4 range.
- 4th Gear Lock–up Prohibition Control (1. Brake pedal is depressed. 2. Coolant temp. is 60°C (140°F) or less.)

(2) Check engine braking.
While driving in the 4 range and 4th gear, release the accelerator pedal and check the engine braking effect.

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(3) Check for abnormal noises during acceleration and deceleration, and for shock at up–shift and down–shift.

(4) Check the lock–up mechanism.

- Drive in 4 range 4th gear, at a steady speed (lock–up ON) of about 61 km/h (38 mph).
- Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.

If there is a big jump in engine speed, there is no lock–up.

(c) 3 range test:

Shift into the 3 range and fully depress the accelerator pedal and check the following points.

(1) Check up–shift operation.
Check that the 1 → 2 and 2 → 3 up–shift takes place and that the shift point conforms to the automatic shift schedule (See page SS–4).

(2) Check engine braking.
While running in the 3 range and 3rd gear, release the accelerator pedal and check the engine braking effect.

(3) Check for abnormal noises during acceleration and deceleration, and for shock at up–shift and down–shift.

(d) 2 range test:

Shift into the 2 range and fully depress the accelerator pedal and check the following points.

(1) Check up–shift operation.
Check that the 1 → 2 up–shift takes place and that the shift point conforms to the automatic shift schedule (See page SS–4).

HINT:

When the 2nd start switch is ON, there is no 1 → 2 up–shift and 2 → 1 down–shift.

(2) Check engine braking.
While running in the 2 range and 2nd gear, release the accelerator pedal and check the engine braking effect.

(3) Check for abnormal noises during acceleration and deceleration, and for shock at up–shift and down–shift.

(e) L range test:

Shift into the L range and fully depress the accelerator pedal and check the following points.

(1) Check no up–shift.
While running in the L range, check that there is no up–shift to 2nd gear.

(2) Check engine braking.
While running in the L range, release the accelerator pedal and check the engine braking effect.

(3) Check for abnormal noises during acceleration and deceleration.

(f) R range test:

Shift into the R range and fully depress the accelerator pedal and check for slipping.

CAUTION:

Before conducting this test ensure that the test area is free from people and obstruction.

(g) P range test:

Stop the vehicle on a grade (more than 5°) and after shifting into the P range, release the parking brake. Then, check that the parking lock pawl holds the vehicle in place.

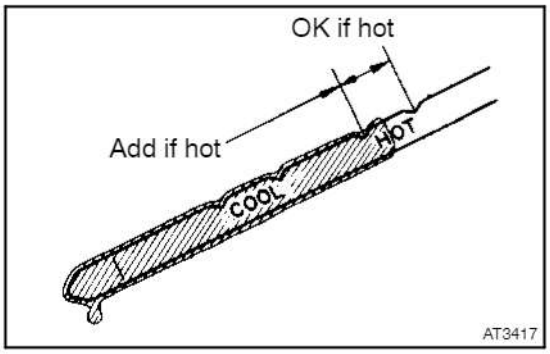
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6. BASIC INSPECTION

(a) Check the fluid level.

HINT:

- Drive the vehicle so that the engine and transmission are at normal operating temperature.
  Fluid temp.: 70 – 80 °C (158 – 176 °F)
- Only use the COOL range on the dipstick as a rough reference when the fluid is replaced or the engine does not run.



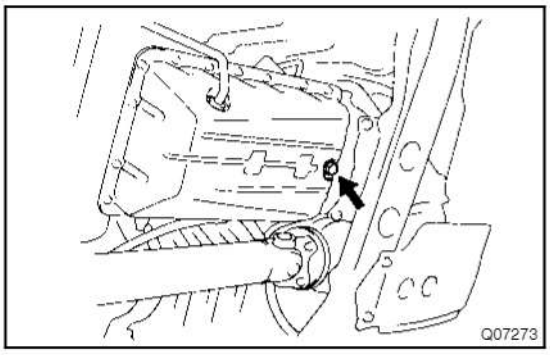
(1) Park the vehicle on a level surface and set the parking brake.
(2) With the engine idling and the brake pedal depressed, shift the shift lever into all ranges from P to L range and return to P range.
(3) Pull out the dipstick and wipe it clean.
(4) Push it back fully into the pipe.
(5) Pull it out and check that the fluid level is in the HOT range.
If the level is at the low side, add new fluid.

Fluid type: ATF Type T–IV

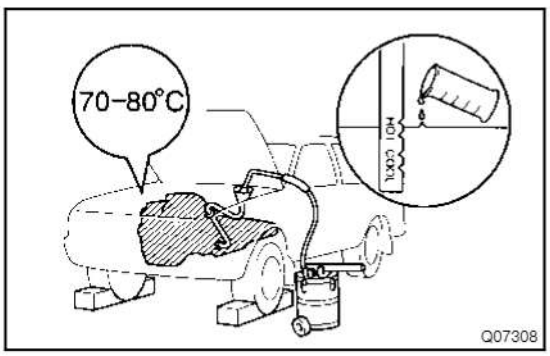
NOTICE:

Do not overfill.

(b) Check the fluid condition.
If the fluid smells burnt or is black, replace it.



(c) Replace the ATF.
(1) Remove the drain plug and drain the fluid.
(2) Reinstall the drain plug securely.



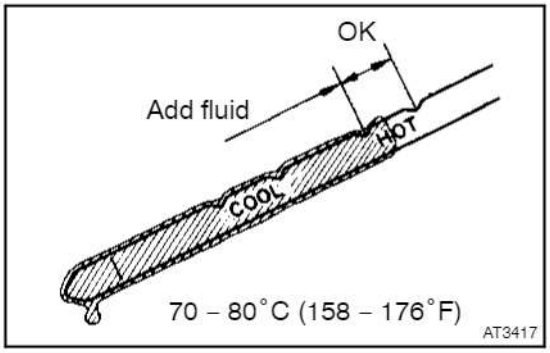
(3) With the engine OFF add new fluid through the oil filler pipe.

Fluid type: ATF Type T–IV

Capacity: 3.0 liters (3.2 US qts, 2.6 Imp. qts)

(4) Start the engine and shift the shift lever into all ranges from P to L range and then shift into P range.
(5) With the engine idling, check the fluid level. Add fluid up to the COOL level on the dipstick.

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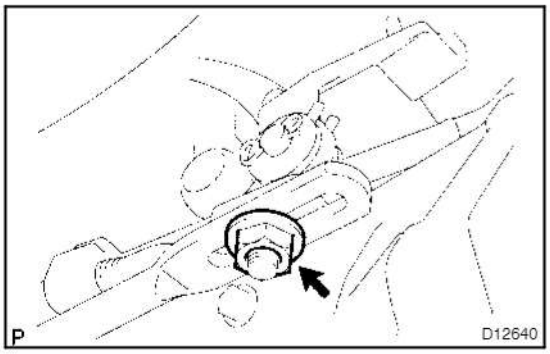


(6) Check the fluid level at the normal operating temperature, 70 – 80 °C (158 – 176 °F), and add as necessary.

NOTICE:
Do not overfill.

(d) Check the fluid leaks.
Check for leaks in the transmission.

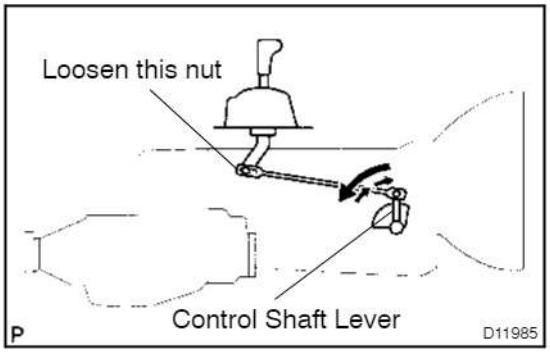
If there are leaks, it is necessary to repair or replace O–rings, FIPGs, oil seals, plugs or other parts.



(e) Inspect and adjust the shift lever range.
When shifting the shift lever from the N range to other ranges, check that the lever can be shifted smoothly and accurately to each range and that the range indicator is not aligned with the correct range.

If the indicator is not aligned with the correct range, carry out the following adjustment procedures.

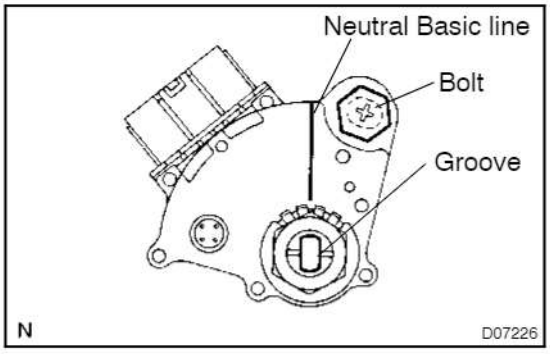
(1) Loosen the nut on the shift lever.
(2) Push the control shaft fully rearward.



(3) Return the control shaft lever 2 notches to N range.
(4) Set the shift lever to N range.
(5) While holding the shift lever lightly toward the R range side, tighten the shift lever nut.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(6) Start the engine and make sure that the vehicle moves forward when shifting the lever from the N to D range and reverses when shifting it to the R range.



(f) Inspect and adjust the neutral start switch.

- Check that the engine can be started with the shift lever only in the N or P range, but not in other ranges.

If it is not as stated above, carry out the following adjustment procedures.

- Loosen the neutral start switch bolt and set the shift lever to the N range.
- Align the groove with neutral basic line.
- Hold in range and tighten the bolt.

Torque:13 N·m (130 kgf·cm, 9 ft·lbf)

- For continuity inspection of the neutral start switch, see page DI–156.

(g) Check the idle speed.
Idle speed (In N range and air conditioner OFF):
700 ± 50 rpm

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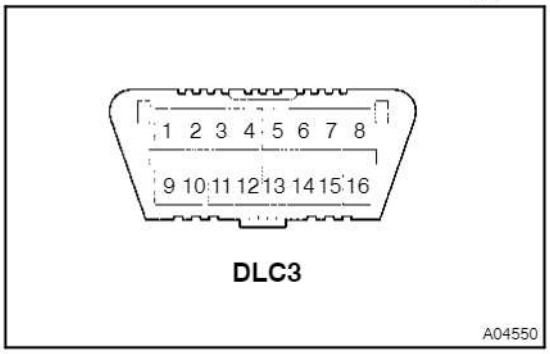
7. MECHANICAL SYSTEM TESTS

(a) Measure the stall speed.

The object of this test is to check the overall performance of the transmission and engine by measuring the stall speeds in the D and R ranges.

NOTICE:

- **Do the test at normal operating fluid temperature 70 – 80 °C (158 – 176 °F).**
- **Do not continuously run this test longer than 5 seconds.**
- **To ensure safety, conduct this test in a wide, clear level area which provides good traction.**
- **The stall test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is doing the test.**



(1) Chock the 4 wheels.

(2) Connect a hand–held tester to DLC3 or tachometer to terminal TAC (9) of DLC3 with SST.

SST 09843–18030

(3) Fully apply the parking brake.

(4) Keep your left foot pressing firmly on the brake pedal.

(5) Start the engine.

(6) Shift into the D range. Press all the way down on the accelerator pedal with your right foot. Quickly read the stall speed at this time.

Stall speed: 2,400 ± 150 rpm

(7) Do the same test in R range.

Stall speed: 2,400 ± 150 rpm

Evaluation:

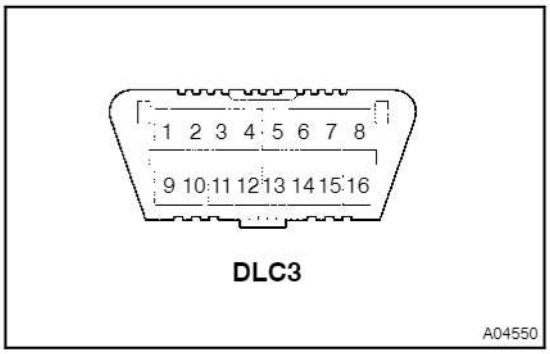
Problem	Possible cause
(a) Stall speed low in D and R ranges	• Engine output may be insufficient • Stator one–way clutch is not operating properly HINT: If the value is larger or smaller than the specified value by 600 rpm or more, the torque converter could be faulty.
(b) Stall speed high in D range	• Line pressure too low • Clutch No. 1 (C_1) slipping • One–way clutch No.3 (F_3) not operating properly
(c) Stall speed high in R range	• Line pressure too low • Brake No. 4 (B_4) slipping • Clutch No. 3 (C_3) slipping • One–way clutch No.1 (F_1) not operating properly
(d) Stall speed high in D and R ranges	• Line pressure too low • Improper fluid level

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(b) Measure the time lag.
When the shift lever is shifted while the engine is idling, there will be a certain time lapse or lag before the shock can be felt. This is used for checking the condition of the clutch and brake.

NOTICE:

- **Do the test at normal operating fluid temperature 70 – 80 °C (158 – 176 °F).**
- **Be sure to allow 1 minute interval between tests.**
- **Take 3 measurements and take the average value.**



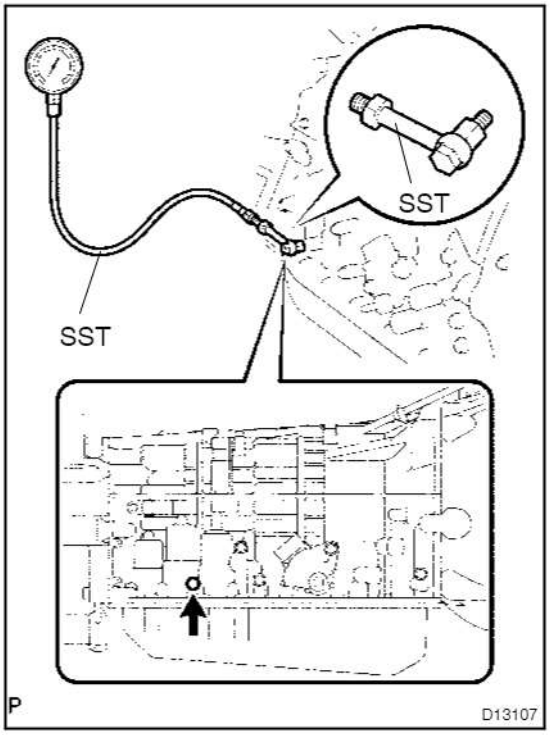
DLC3

(1) Fully apply the parking brake.
(2) Connect a hand–held tester to DLC3 or tachometer to terminal TAC (9) of DLC3 with SST.
SST 09843–18030
(3) Start the engine and check idle speed.
Idle speed (In N range and air conditioner OFF): 700 ± 50 rpm.
(4) Shift the shift lever from N to D range. Using a stop watch, measure the time from when the lever is shifted until the shock is felt.
Time lag:
N → D Less than 1.2 seconds
(5) In the same manner, measure the time lag for N → R.
Time lag:
N → R Less than 1.5 seconds

Evaluation (If N → D time or N → R time lag is longer than the specified):

Problem	Possible cause
N → D time lag is longer	• Line pressure too low • Clutch No. 1 (C_1) worn • One–way clutch No.3 (F_3) not operating properly
N → R time lag is longer	• Line pressure too low • Clutch No. 3 (C_3) worn • Brake No. 4 (B_4) worn • One–way clutch No.1 (F_1) not operating properly

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8. HYDRAULIC TEST

Measure the line pressure.

NOTICE:

- **Do the test at normal operation fluid temperature 70 – 80 °C (158 – 176 °F).**
- **The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is doing the test.**
- **Be careful to prevent SST's hose from interfering with the exhaust pipe.**

(1) Warm up the ATF.

(2) Remove the test plug on the transmission case center right side and connect SST.

SST 09992–00095 (09992–00231, 09992–00271)

(3) Fully apply the parking brake and chock the 4 wheels.

(4) Start the engine and check idling speed.

(5) Keep your left foot pressing firmly on the brake pedal and shift into D range.

(6) Measure the line pressure when the engine is idling.

(7) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(8) In the same manner, do the test in R range.

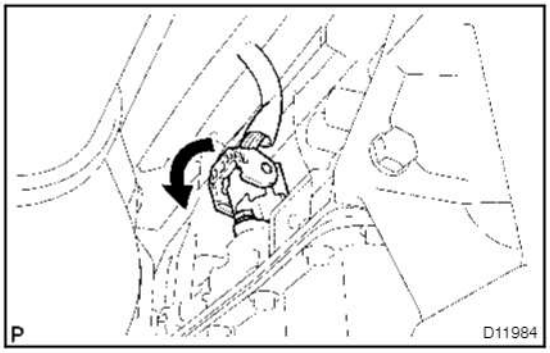
Specified line pressure:

Condition	D range kPa (kgf/cm^2, psi)	R range kPa (kgf/cm^2, psi)
Idling	362 – 420 (3.7 – 4.2, 53 – 59)	500 – 580 (5.1 – 5.9, 73 – 84)
Stall	1,360 – 1,460 (13.8 – 14.9, 196 – 212)	1,295 – 1,415 (13.2 – 14.4, 188 – 205)

Evaluation

Problem	Possible cause
If the measured value at all ranges are higher	• Shift solenoid valve SLT defective • Regulator valve defective
If the measured value at all ranges are lower	• Shift solenoid valve SLT defective • Regulator valve defective • Oil pump defective
If pressure is low in the D range only	• D range circuit fluid leakage • Clutch No. 1 (C_1) defective
If pressure is low in the R range only	• R range circuit fluid leakage • Clutch No. 3 (C_3) defective • Brake No. 4 (B_4) defective

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9. MANUAL SHIFTING TEST

HINT:

By this test, it can be determined whether the trouble is within the electrical circuit or is a mechanical problem in the transmission.

(a) Disconnect the solenoid wire.

(b) Inspect the manual driving operation.

Check that the shift and gear ranges correspond with the table below.

While driving, shift through the L, 2, 3, 4 and D ranges. Check that the gear change corresponds to the shift range.

Shift range	Gear range
D	4th
4	4th
3	3rd
2	1st
L	1st
R	Reverse
P	Pawl Lock

HINT:

If the gear ranges of the L, 2, 3, 4 and D are difficult to distinguish, do the following road test.

If any abnormality is found in the above test, the problem is in the transmission itself.

(c) Connect the solenoid wire.

(d) Cancel out DTC.

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DIAGNOSTIC TROUBLE CODE CHART

If a DTC is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the page given.

*1: "●" Check Engine Warning Light light up

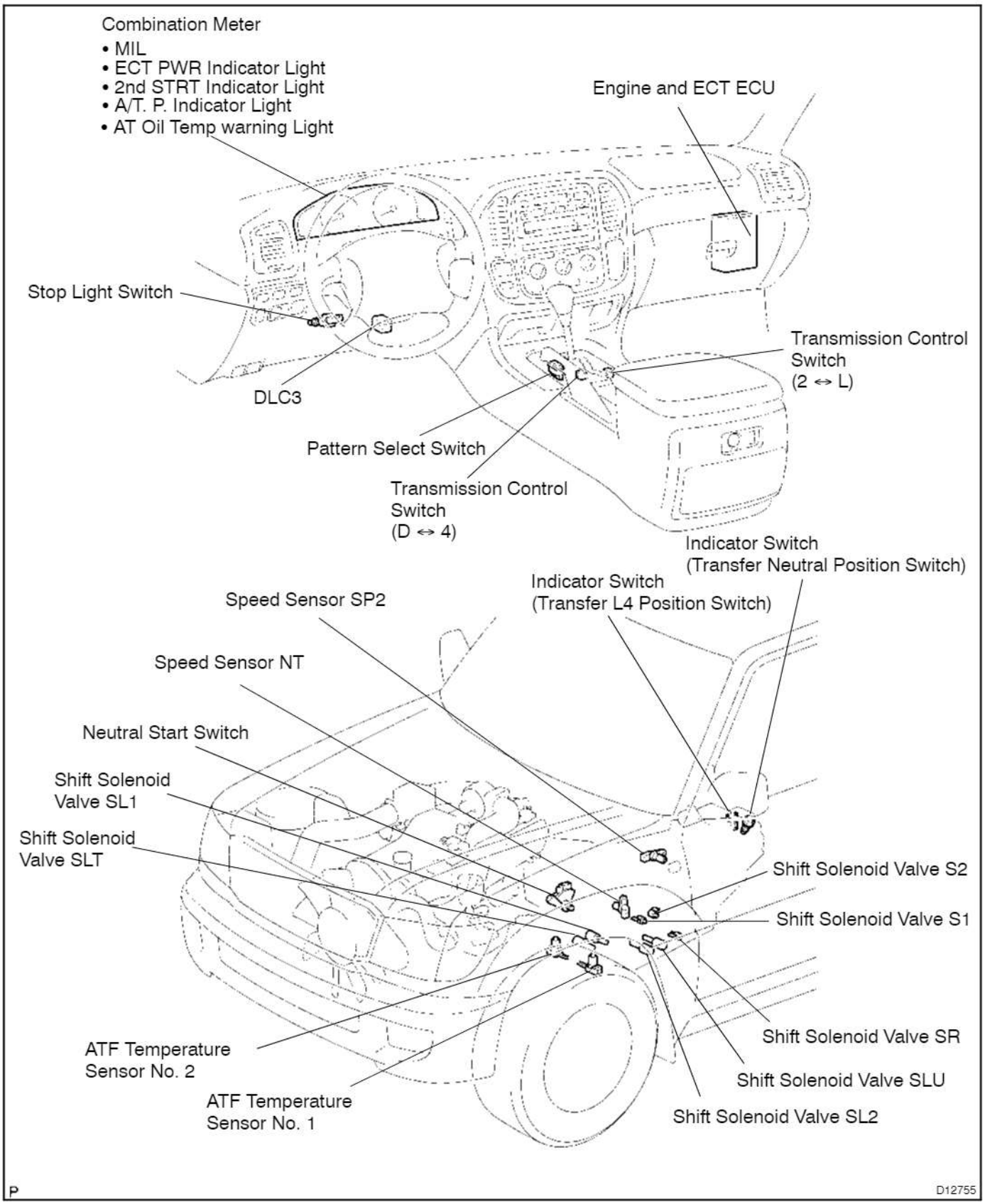
*2: "○" mark means the Engine & ECT ECU memorizes the malfunction code if the Engine & ECT ECU detects the DTC detection condition.

DTC No. (See Page)	Detection Item	Trouble Area	Check Engine Warning Light*1	Memory *2
37 (DI–125)	NT Revolution Sensor Circuit Malfunction (Speed Sensor NT)	• Open or short in speed sensor (NT) circuit • Speed sensor (NT) • Engine and ECT ECU	●	○
38(1) (DI–127)	Transmission Fluid Temperature Sensor Circuit Malfunction (ATF Temperature Sensor No. 1)	• Open or short in ATF temperature sensor No. 1 circuit • ATF temperature sensor No. 1 • Engine and ECT ECU	●	○
38(2) (DI–127)	Transmission Fluid Temperature Sensor No.2 Circuit Malfunction (ATF Temperature Sensor No. 2)	• Open in ATF temperature sensor No. 2 circuit • ATF temperature sensor No. 2 • Engine and ECT ECU	●	○
61(2) (DI–130)	Speed Sensor No. 2 Malfunction (Speed Sensor SP2)	• Open or short in speed sensor (SP2) circuit • Speed sensor (SP2) • Engine & ECT ECU	●	○
62(1) (DI–132)	Shift Solenoid A Electrical (S1)	• Open or short in shift solenoid valve S1 circuit • Shift solenoid valve S1 • Engine and ECT ECU	●	○
62(3) (DI–135)	Pressure Control Solenoid "A" Electrical (Shift Solenoid Valve SL1)	• Open or short in shift solenoid valve SL1 circuit • Shift solenoid valve SL1 • Engine and ECT ECU	●	○
63(2) (DI–141)	Shift Solenoid B Electrical (S2)	• Open or short in shift solenoid valve S2 circuit • Shift solenoid valve S2 • Engine and ECT ECU	●	○
63(3) (DI–144)	Pressure Control Solenoid "B" Electrical (Shift Solenoid Valve SL2)	• Open or short in shift solenoid valve SL2 circuit • Shift solenoid valve SL2 • Engine and ECT ECU	●	○
68 (DI–147)	Linear Solenoid for Lock Up Ctrl Cir Malfunction (Shift Solenoid Valve SLU)	• Open or short in shift solenoid valve SLU circuit • Shift solenoid valve SLU • Engine and ECT ECU	–	○
74 (DI–150)	Shift Solenoid "E" Electrical (SR)	• Open or short in shift solenoid valve SR circuit • Shift solenoid valve SR • Engine and ECT ECU	●	○
77(1) (DI–153)	Linear Solenoid for Line Pressure Control Circuit Malfunction (Shift Solenoid Valve SLT)	• Open or short in shift solenoid valve SLT circuit • Shift solenoid valve SLT • Engine and ECT ECU	–	○

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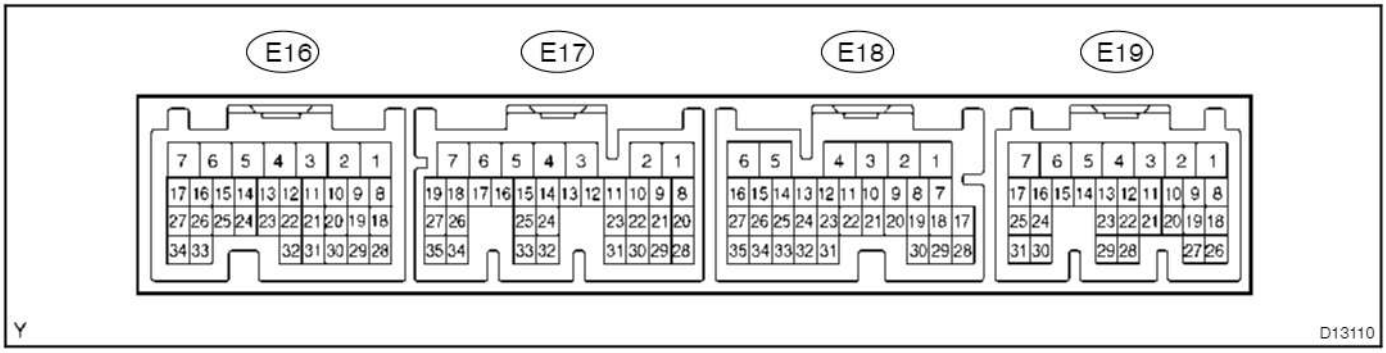
PARTS LOCATION



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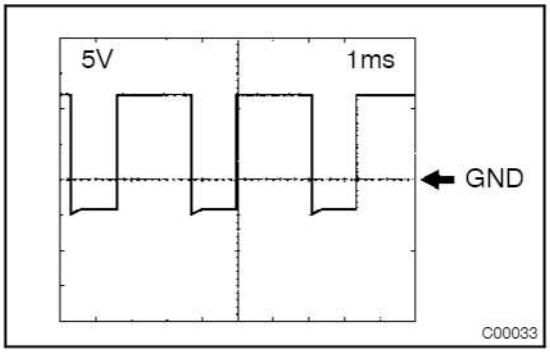
TERMINALS OF ECU



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
P (E18–7) – E1 (E16–1)	G–W – BR	IG switch ON and shift lever P range	10 – 14
		IG switch ON and shift lever other than P range	Below 1
N (E18–13) – E1 (E16–1)	G–R – BR	IG switch ON and shift lever N range	10 – 14
		IG switch ON and shift lever other than N range	Below 1
L4 (E19–16) – E1 (E16–1)	B–L ↔ BR	IG switch ON and Transfer shift lever L range	Below 1.5
		IG switch ON and Transfer shift lever other than L range	9 – 14
SNWI (E19–2) – E1 (E16–1)	L–R ↔ BR	IG switch ON	9 – 14
		IG switch ON and Press continuously 2nd start switch	Below 1
L (E18–8) – E1 (E16–1)	R–L ↔ BR	IG switch ON and shift lever L range	9 – 14
		IG switch ON and shift lever other than L range	Below 1.5
2 (E18–9) – E1 (E16–1)	G–B ↔ BR	IG switch ON and shift lever 2 and L range	9 – 14
		IG switch ON and shift lever other than 2 and L range	Below 1.5
D (E18–10) – E1 (E16–1)	G–Y ↔ BR	IG switch ON and shift lever D and 4 range	9 – 14
		IG switch ON and shift lever other than D and 4 range	Below 1.5
R (E18–11) – E1 (E16–1)	R–B ↔ BR	IG switch ON and shift lever R range	9 – 14
		IG switch ON and shift lever other than R range	Below 1.5
STP (E18–19) – E1 (E16–1)	G–W ↔ BR	Brake pedal is depressed	7.5 – 14
		Brake pedal is released	Below 1.5
3 (E18–20) – E1 (E16–1)	G ↔ BR	IG switch ON and shift lever 3 range	9 – 14
		IG switch ON and shift lever other than 3 range	Below 1.5
4 (E18–23) – E1 (E16–1)	G–R ↔ BR	IG switch ON and shift lever 4 range	9 – 14
		IG switch ON and shift lever other than 4 range	Below 1.5
PWR (E19–13) – E1 (E16–1)	L–W ↔ BR	IG switch ON and Pattern select switch " PWR" OFF	9 – 14
		IG switch ON and Pattern select switch "PWR" ON	Below 1
TFN (E19–14) – E1 (E16–1)	Y–G ↔ BR	IG switch ON and Transfer shift lever N range	Below 1.5
		IG switch ON and Transfer shift lever other than N range	9 – 14
SLU+ (E17–15) – SLU– (E17–14)	P–G ↔ B	Engine idle speed	Pulse generation 2 reference
S2 (E17–12) – E1 (E16–1)	W ↔ BR	IG switch ON	Below 1.5
		2nd or 3rd gear	9 – 14
		1st, 4th or 5th gear	Below 1.5
S1 (E17–13) – E1 (E16–1)	R ↔ BR	IG switch ON	9 – 14
		1st or 2nd gear	9 – 14
		3rd, 4th or 5th gear	Below 1.5

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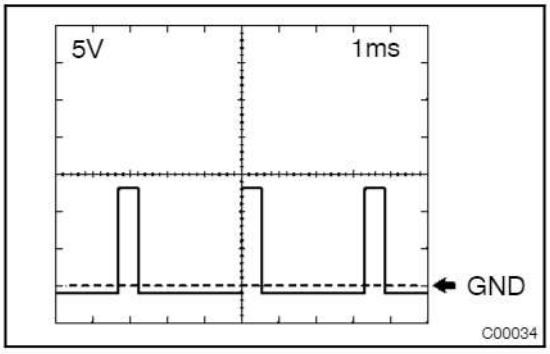
SLT+ (E16–17) – SLT– (E16–16)	G–W ↔ G–B	Engine is idling	Pulse generation 1 reference
SR (E17–11) – E1 (E6–1)	G ↔ BR	IG switch ON	Below 1.5
		5th gear	9 – 14
		1st gear	Below 1
SL2+ (E17–17) – SL2– (E17–16)	P–B ↔ P–L	Engine idle speed	Pulse generation 3 reference
SL1+ (E17–19) – SL1– (E17–18)	R–L ↔ R–W	Engine idle speed	Pulse generation 4 reference
OIL2 (E16–32) – E2 (E16–28)	L ↔ BR–W	ATF temperature: 115°C (239°F) or more	Below 1.5
SP2+ (E17–27) – SP2– (E17–35)	R ↔ G	Engine is running	Pulse generation 6 reference
NT+ (E17–26) – NT– (E17–34)	L ↔ W	Engine is idling	Pulse generation 5 reference
OIL (E16–30) – E2 (E16–28)	G–Y ↔ BR–W	ATF temperature: 115°C (239°F) or more	Below 1.5
NSW (E17–8) – E1 (E16–1)	B–W ↔ BR	IG switch ON and shift lever P and N range	Below 1.5
		IG switch ON and shift lever other than P and N range	9 – 14



Pulse generation 1

Reference:

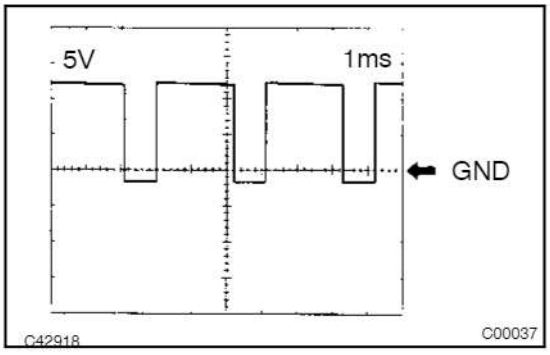
Item	Condition
Terminal	SLT+ – SLT–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed



Pulse generation 2

Reference:

Item	Condition
Terminal	SLU+ – SLU–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed

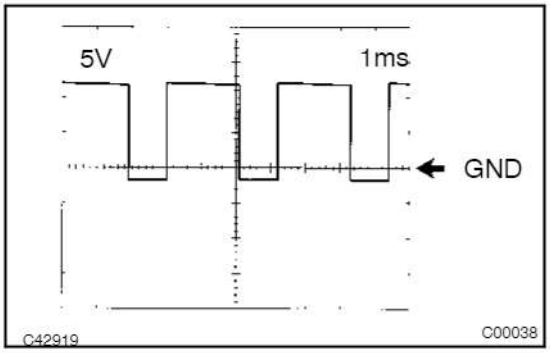


Pulse generation 3

Reference:

Item	Condition
Terminal	SL2+ – SL2–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed

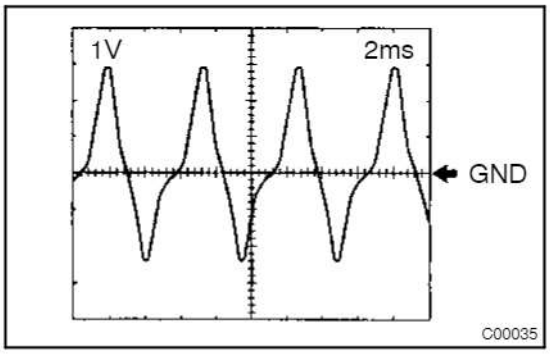
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Pulse generation 4

Reference:

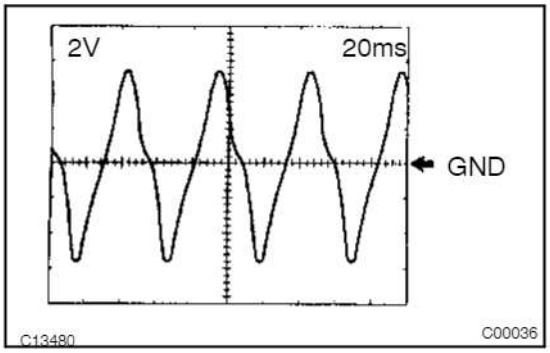
Item	Condition
Terminal	SL1+ – SL1–
Tool setting	5V/DIV, 1ms/DIV
Vehicle condition	Engine idle speed



Pulse generation 5

Reference:

Item	Condition
Terminal	NT+ – NT–
Tool setting	1V/DIV, 2ms/DIV
Vehicle condition	Engine idle speed



Pulse generation 6

Reference:

Item	Condition
Terminal	SP2+ – SP2–
Tool setting	2V/DIV, 20ms/DIV
Vehicle condition	Vehicle speed 20 km/h (12 mph)

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PROBLEM SYMPTOMS TABLE

If a normal code is displayed during the diagnostic trouble code check but the trouble still occurs, check the circuits for each symptom in the order given in the charts on the following pages and proceed to the page given for troubleshooting.

The Matrix Chart is divided into 3 chapters.

Chapter 1: Electronic Circuit Matrix Chart

Chapter 2: On–vehicle Repair Matrix Chart

Chapter 3: Off–vehicle Repair Matrix Chart

- If the instruction "Proceed to next circuit inspection shown on matrix chart" is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
- If the trouble still occurs even though there are no abnormalities in any of the other circuits, then check and replace the Engine and ECT ECU.

Chapter 1: Electronic Circuit Matrix Chart

HINT:

*1: When a malfunction is on the circuit *1 mark is attached, DTC is output.

Symptom	Suspect Area	See page
No up–shift (A particular gear, from 1st to 4th gear, is not up–shifted)	1. Shift solenoid valve (S1) circuit *1 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–132 DI–141 IN–38
No up–shift (4th → 5th)	1. Transmission control switch circuit (D – 4) 2. Speed sensor NT circuit *1 3. Shift solenoid valve (SL1) circuit *1 4. Shift solenoid valve (SL2) circuit *1 5. Shift solenoid valve (SR) circuit *1 6. Engine and ECT ECU	DI–156 DI–125 DI–135 DI–144 DI–150 IN–38
No up–shift (3th → 4th)	1. Shift solenoid valve (S2) circuit *1 2. Engine and ECT ECU	DI–141 IN–38
No up–shift (1st → 2nd)	1. Transmission control switch circuit (2 – L) 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–156 DI–141 IN–38
No down–shift (5th → 4th)	1. Transmission control switch circuit (D – 4) 2. Shift solenoid valve (SL1) circuit *1 3. Shift solenoid valve (SL2) circuit *1 4. Shift solenoid valve (SR) circuit *1 5. Engine and ECT ECU	DI–156 DI–135 DI–144 DI–150 IN–38
No down–shift (2nd → 1st)	1. Transmission control switch circuit (2 – L) 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–156 DI–141 IN–38
No down–shift (A particular gear, from 1st to 4th gear, is not down–shifted)	1. Shift solenoid valve (S1) circuit *1 2. Shift solenoid valve (S2) circuit *1 3. Engine and ECT ECU	DI–132 DI–141 IN–38
No lock–up	1. Transfer L4 position switch circuit 2. Stop light switch circuit 3. Speed sensor NT circuit *1 4. Shift solenoid valve (SLU) circuit *1 5. Engine and ECT ECU	DI–169 DI–161 DI–125 DI–147 IN–38
No lock–up off	Engine and ECT ECU	IN–38

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Shift point too high or too low	1. Shift solenoid valve (SLT) circuit *1 2. Speed sensor NT circuit *1 3. Speed sensor SP2 circuit *1 4. ATF temperature sensor circuit *1 5. Pattern select switch circuit (PWR mode switch) 6. Transfer L4 position switch circuit 7. Engine and ECT ECU	DI–153 DI–125 DI–130 DI–127 DI–164 DI–169 IN–38
Up–shift to 5th from 4th while shift lever is 4 range	1. Transmission control switch circuit (D – 4) 2. Engine and ECT ECU	DI–156 IN–38
Up–shift to 5th from 4th while engine is cold	Engine and ECT ECU	IN–38
Up–shift to 4th from 3rd while shift lever is 3 range	1. Neutral start switch circuit 2. Engine and ECT ECU	DI–156 IN–38
Up–shift to 3rd from 2nd while shift lever is 2 range	1. Neutral start switch circuit 2. Engine and ECT ECU	DI–156 IN–38
Up–shift to 2nd from 1st while shift lever is L range	1. Transmission control switch circuit (2 – L) 2. Engine and ECT ECU	DI–156 IN–38
Harsh engagement (N → D)	1. Speed sensor NT circuit *1 2. Shift solenoid valve (SL1) circuit *1 3. Shift solenoid valve (SLT) circuit *1 4. Engine and ECT ECU	DI–125 DI–135 DI–153 IN–38
Harsh engagement (Lock–up)	1. Speed sensor NT circuit *1 1. Speed sensor SP2 circuit *1 3. Shift solenoid valve (SLU) circuit *1 4. Engine and ECT ECU	DI–125 DI–130 DI–147 IN–38
Harsh engagement (Any driving range)	Engine and ECT ECU	IN–38
Poor acceleration	Engine and ECT ECU	IN–38
No engine braking	Engine and ECT ECU	IN–38
No kick–down	Engine and ECT ECU	IN–38
Engine stalls when starting off or stopping	Engine and ECT ECU	IN–38
No pattern select (PWR)	1. Pattern select switch circuit (PWR mode switch) 2. Engine and ECT ECU	DI–164 IN–38
No 2nd start	1. Pattern select switch circuit (2nd start switch) 2. Transmission control switch circuit (2 – L) 3. Engine and ECT ECU	DI–166 DI–156 IN–38
AT Oil Temp. warning light remains on	1. ATF temperature sensor No.2 circuit 2. Engine and ECT ECU	DI–171 IN–38
A/T.P. indicator light does not light up	1. A/T.P. indicator light circuit 2. Combination meter circuit 3. Engine and ECT ECU	DI–180 BE–33 IN–38

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Chapter 2: On–Vehicle Repair
(★: A750E, A750F AUTOMATIC TRANSMISSION Repair Manual Pub. No. RM999U)

Symptom	Suspect Area	See page
Vehicle does not move in any forward range and reverse ranges	1. Transmission control rod 2. Manual valve 3. Parking lock pawl 4. Off–vehicle repair matrix chart	DI–102 ★ ★ –
Vehicle does not move in R range	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (1st → 2nd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (2nd → 3rd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (3rd → 4th)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No up–shift (4th → 5th)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (5th → 4th)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (4th → 3rd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (3rd → 2nd)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No down–shift (2nd → 1st)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No lock–up or No lock–up off	1. Shift solenoid valve (SLU) 2. Valve body assy 3. Off–vehicle repair matrix chart	DI–174 AT–8 –
Harsh engagement (N → D)	1. Shift solenoid valve (SL1) 2. Valve body assy 3. C_1 accumulator 4. Off–vehicle repair matrix chart	DI–174 AT–8 ★ –
Harsh engagement (Lock–up)	1. Shift solenoid valve (SLU) 2. Valve body assy 3. Off–vehicle repair matrix chart	DI–174 AT–8 –
Harsh engagement (N → R)	1. Shift solenoid valve (SLT) 2. Shift solenoid valve (SLU) 3. Valve body assy 4. C_3 accumulator 5. Off–vehicle repair matrix chart	DI–174 DI–174 AT–8 ★ –
Harsh engagement (1st →2nd → 3rd → 4th → 5th)	1. Shift solenoid valve (SLT) 2. Shift solenoid valve (SL1) 3. Valve body assy	DI–174 DI–174 AT–8
Harsh engagement (1st → 2nd)	1. Valve body assy 2. B_3 accumulator 3. Off–vehicle repair matrix chart	AT–8 ★ –
Harsh engagement (2nd → 3rd)	1. Valve body assy 2. C_3 accumulator 3. Off–vehicle repair matrix chart	AT–8 ★ –
Harsh engagement (3rd → 4th)	1. Valve body assy 2. C_2 accumulator 3. Off–vehicle repair matrix chart	AT–8 ★ –

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Harsh engagement (4th → 5th)	1. Shift solenoid valve (SL1) 2. Shift solenoid valve (SL2) 3. Valve body assy 4. Off–vehicle repair matrix chart	DI–174 DI–174 AT–8 –
Harsh engagement (5th → 4th)	1. Shift solenoid valve (SL1) 2. Shift solenoid valve (SL2) 3. Valve body assy 4. Off–vehicle repair matrix chart	DI–174 DI–174 AT–8 –
Slip or shudder (Forward and reverse)	1. Transmission control rod 2. Valve body assy 3. Oil strainer 4. Off–vehicle repair matrix chart	DI–102 AT–8 AT–8 –
No engine braking (1st: L range)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No engine braking (2nd: 2 range)	1. Valve body assy 2. Off–vehicle repair matrix chart	AT–8 –
No kick–down	Valve body assy	AT–8
Shift point too high or too low	1. Shift solenoid valve (SLT) 2. Shift solenoid valve (SL1) 3. Valve body assy	DI–174 DI–174 AT–8
Poor acceleration	1. Shift solenoid valve (SLT) 2. Valve body assy	DI–174 AT–8
Engine stalls when starting off or stopping	1. Shift solenoid valve (SLU) 2. Valve body assy	DI–174 AT–8

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Chapter 3: Off–Vehicle Repair
(★: A750E, A750F AUTOMATIC TRANSMISSION Repair Manual Pub. No. RM999U)

Symptom	Suspect Area	See page
Vehicle does not move in any forward range and reverse ranges	1. Rear planetary gear unit 2. Torque converter	★ AT–43
Vehicle does not move in R range	Brake No. 4 (B_4)	★
No up–shift (1st → 2nd)	1. Brake No. 3 (B_3) 2. One–way clutch No.1 (F_1) 3. One–way clutch No. 2 (F_2)	★ ★ ★
No up–shift (2nd → 3rd)	Clutch No. 3 (C_3)	★
No up–shift (3rd → 4th)	Clutch No. 2 (C_2)	★
No up–shift (4th → 5th)	1. Brake No. 1 (B_1) 2. Clutch No. 1 (C_1)	★ ★
No lock–up or No lock–up off	Torque converter	AT–43
Harsh engagement (N → D)	1. Clutch No. 1 (C_1) 2. One–way clutch No.3 (F_3)	★ ★
Harsh engagement (N → R)	1. Clutch No. 3 (C_3) 2. Brake No. 4 (B_4) 3. One–way clutch No.1 (F_1)	★ ★ ★
Harsh engagement (1 → 2)	1. Brake No. 3 (B_3) 2. One–way clutch No.1 (F_1) 3. One–way clutch No. 2 (F_2)	★ ★ ★
Harsh engagement (2 → 3)	Clutch No. 3 (C_3)	★
Harsh engagement (3 → 4)	Clutch No. 2 (C_2)	★
Harsh engagement (4 → 5th)	1. Brake No. 1 (B_1) 2. Clutch No. 1 (C_1)	★ ★
Harsh engagement (Lock–up)	Torque converter	AT–43
Slip or shudder (Forward and reverse: After warm–up)	1. One–way clutch No.1 (F_1) 2. Clutch No. 3 (C_3) 3. Torque converter clutch	★ ★ ★
Slip or shudder (Particular range: Just after engine starts)	Torque converter	AT–43
Slip or shudder (R range)	1. Brake No. 4 (B_4) 2. One–way clutch No.1 (F_1) 3. Clutch No. 3 (C_3)	★ ★ ★
Slip or shudder (1st)	1. Clutch No. 1 (C_1) 2. One–way clutch No.3 (F_3)	★ ★
Slip or shudder (2nd)	1. Clutch No. 1 (C_1) 2. Brake No. 3 (B_3) 3. One–way clutch No.1 (F_1) 4. One–way clutch No.2 (F_2)	★ ★ ★ ★
Slip or shudder (3rd)	1. Clutch No. 1 (C_1) 2. Clutch No. 3 (C_3) 3. One–way clutch No.1 (F_1)	★ ★ ★
Slip or shudder (4th)	1. Clutch No. 1 (C_1) 2. Clutch No. 2 (C_2)	★ ★
Slip or shudder (5th)	1. Clutch No. 2 (C_2) 2. Clutch No. 3 (C_3) 3. Brake No. 1 (B_1)	★ ★ ★
No engine braking (1st – 4th: D range)	Clutch No. 1 (C_1)	★
No engine braking (1st: L range)	Brake No. 4 (B_4)	★
No engine braking (2nd: 2 range)	Brake No. 2 (B_2)	★

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No engine braking (3rd: 3 range)	Brake No. 1 (B_1)	★
Poor acceleration (All ranges)	Torque converter	AT–43
Poor acceleration (5th)	1. Clutch No. 1 (C_1) 2. Clutch No. 3 (C_3) 3. Brake No. 1 (B_1) 4. Front planetary gear unit	★ ★ ★ ★
Engine stalls when starting off or stopping	Torque converter	AT–43

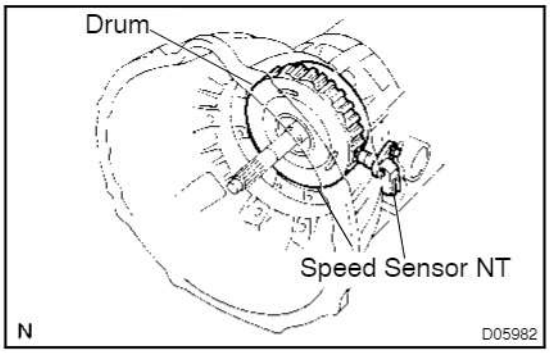
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DIAVE-01

CIRCUIT INSPECTION

DTC	37	NT Revolution Sensor Circuit Malfunction (Speed Sensor NT)

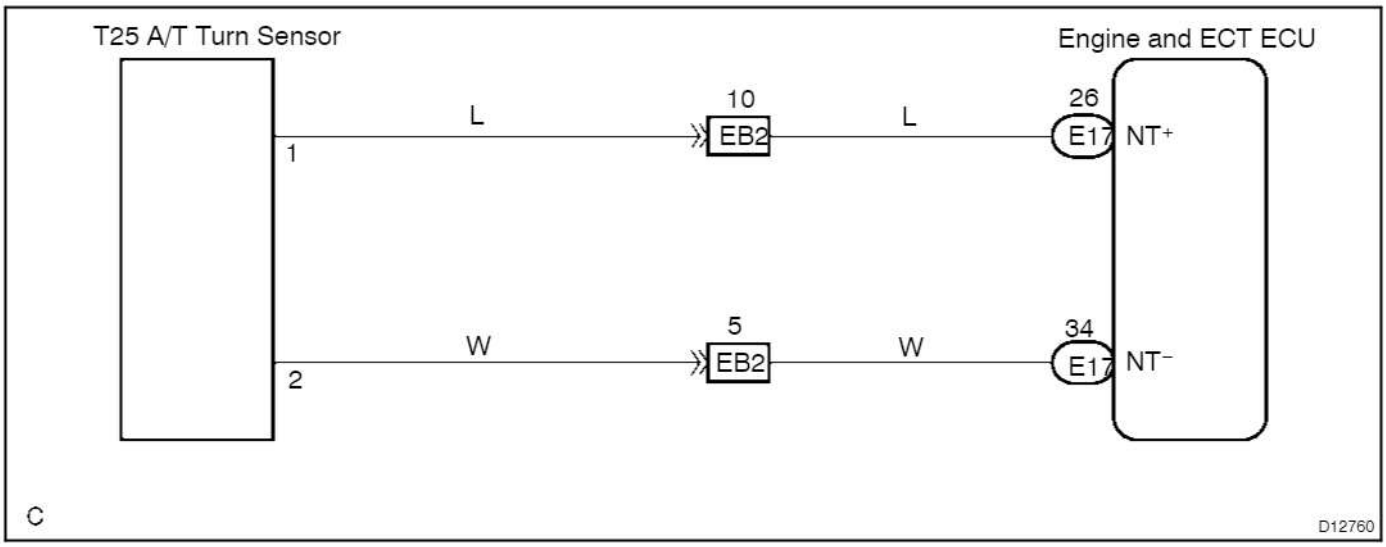
CIRCUIT DESCRIPTION



The speed sensor NT detects the rotation speed of the input shaft from the rotation of the drum. Its construction is the same as that of the speed sensor SP2.
By comparing the speed sensor NT signal and speed sensor SP2 signal, the Engine and ECT ECU detects the shift timing of the gears and appropriately controls the engine torque and hydraulic pressure in response to various conditions, thus doing smooth gear shift.

DTC No.	DTC Detection Condition	Trouble Area
37	All conditions below are detected for 5 secs. or more (2–trip detection logic) (a) Gear change not being performed (b) Gear range: 1st, 2nd, 3rd, 4th or 5th (c) T/M input shaft rpm: 300 rpm or less (d) T/M output shaft rpm: 1,000 rpm or more (e) Neutral start switch: OFF (f) Shift solenoid valves, park/neutral posotion switch and vehicle speed sensor are in normal operation	• Open or short in speed sensor NT circuit • Speed sensor NT • Engine and ECT ECU • Automatic transmission assembly

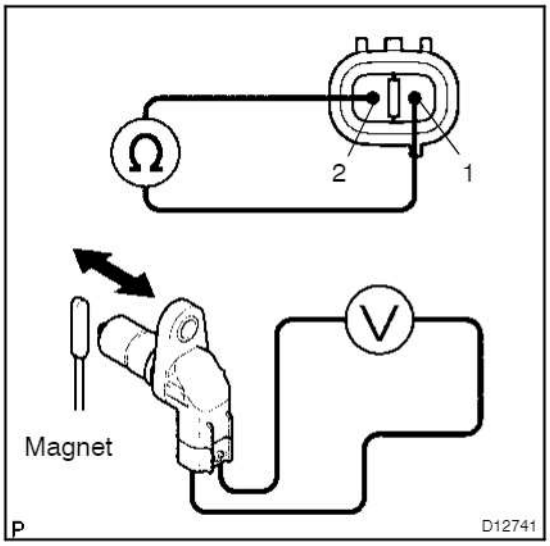
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check speed sensor NT.**



PREPARATION:
Remove the speed sensor NT.
CHECK:
(a) Measure the resistance between the sensor terminals.
Standard: 560 – 680 Ω at 20°C (68 °F)
(b) Measure the voltage between the sensor terminals when a magnet is put close to the front end of the sensor then kept away quickly.
Standard: Sensor generates voltage intermittently
HINT:
The generated voltage is extremely low.
OK:
Standard.

NG	**Replace speed sensor NT.**

OK

2	**Check harness and connector between Engine and ECT ECU and speed sensor NT (See page IN–38).**

NG	**Repair or replace harness and connector.**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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DTC	38(1)	Transmission Fluid Temperature Sensor Circuit Malfunction (ATF Temperature Sensor No. 1)

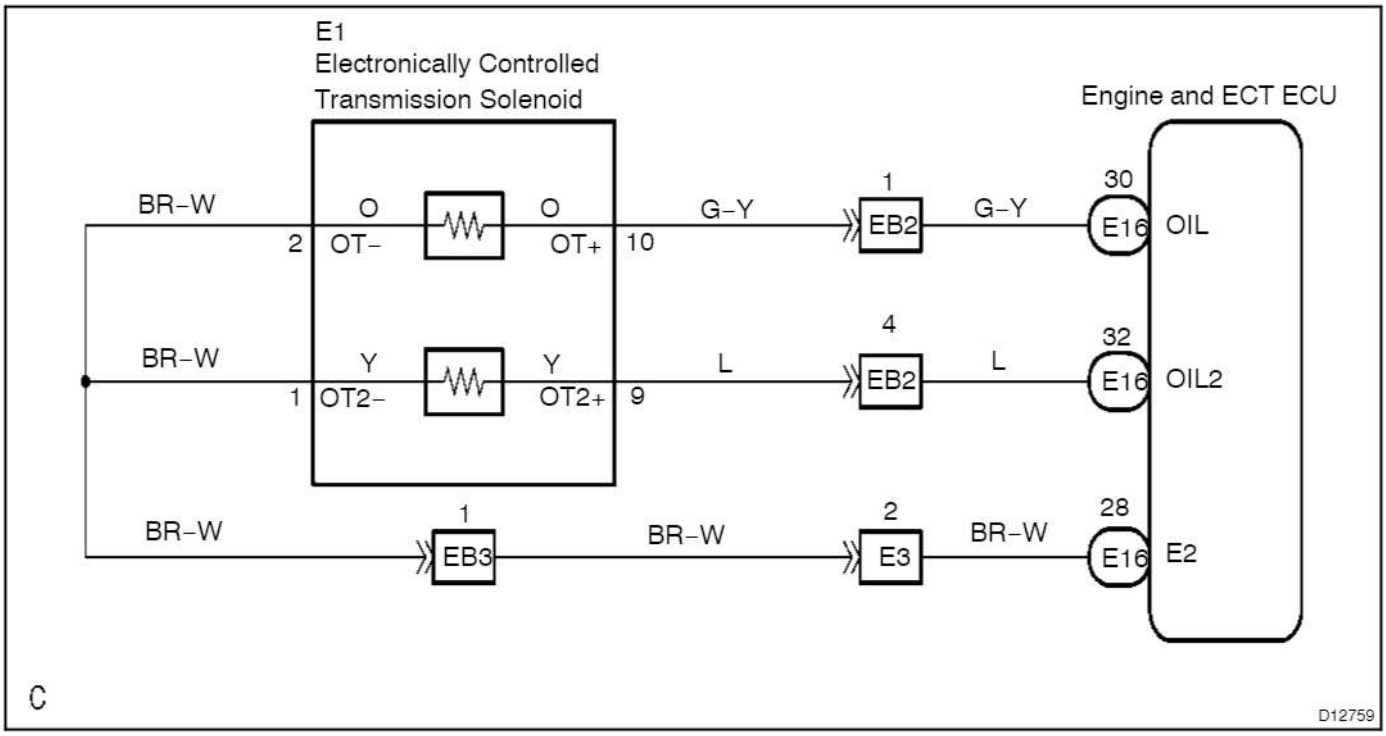
DTC	38(2)	Transmission Fluid Temperature Sensor No. 2 Circuit Malfunction (ATF Temperature Sensor No. 2)

CIRCUIT DESCRIPTION

The ATF temperature sensor converts fluid temperature into a resistance value which is input into the Engine & ECT ECU.

DTC No.	DTC Detecting Condition	Trouble Area
38(1)	Either (a) or (b) is detected for 0.5 sec. or more. (1–trip detection logic) (a) Temp. sensor resistance is less than 79 Ω (b) After the engine has been operating for 15 minutes or more, the resistance at the temp. sensor is more than 156 kΩ	• Open or short in ATF temperature sensor No. 1 circuit • ATF temperature sensor No. 1 • Engine & ECT ECU
38(2)	DTC is detected for 0.5 sec. or more (1–trip detection logic) ATF temperature sensor resistance is more than 156 kΩ. after started engine for 15 minutes or more	• Open in ATF temperature sensor No. 2 circuit • ATF temperature sensor No. 2 • Engine and ECT ECU

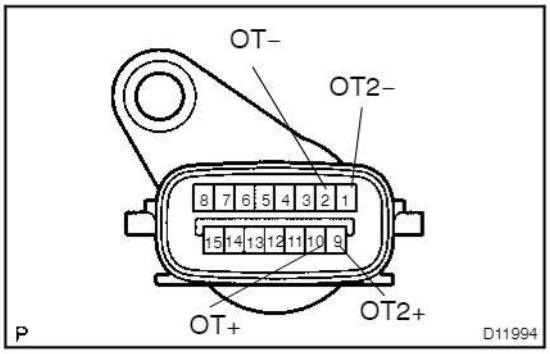
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**



PREPARATION:

Disconnect the transmission wire connector from the transmission.

CHECK:

(a) Measure the resistance between terminals OT+ and OT–.

(b) Measure the resistance between terminals OT2+ and OT2–.

OK:

79 Ω – 156 kΩ

CHECK:

(a) Measure resistance between terminals OT+ and OT– of the transmission wire connector and body ground.

(b) Measure resistance between terminals OT2+ and OT2– of the transmission wire connector and body ground.

OK:

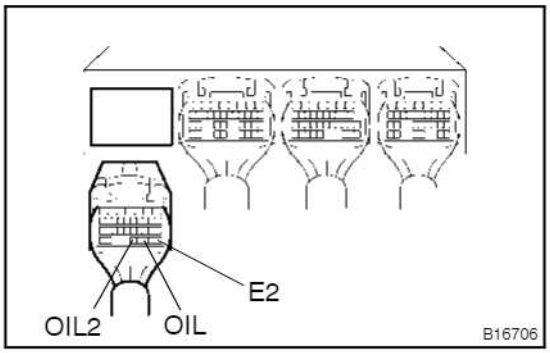
Resistance: 1 MΩ or higher

NG	**Replace the transmission wire (ATF temperature sensor).**

OK

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2	**Measure resistance between terminal OIL, OIL2 and E2 of Engine and ECT ECU connector.**



PREPARATION:

(a) Connect the transmission wire connector.

(b) Disconnect the connector of the Engine and ECT ECU.

CHECK:

(a) Measure the resistance between terminals OIL and E2.

(b) Measure the resistance between terminals OIL2 and E2.

OK:

79 Ω – 156 kΩ

CHECK:

Measure resistance between terminals OIL, OIL2 and E2 of the Engine and ECT ECU connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG → **Repair or replace the harness or connector (See page IN–38).**

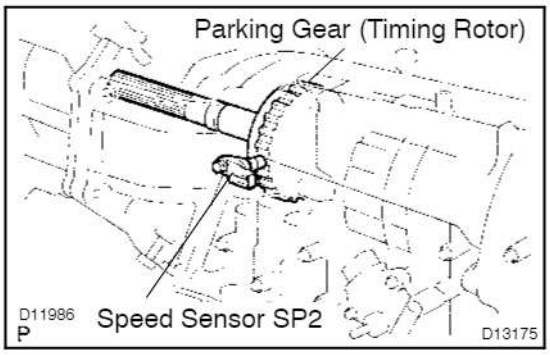
OK →

Check and replace the Engine and ECT ECU (See page IN–38).

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DTC	61(2)	Speed Sensor No.2 Malfunction (Speed Sensor SP2)

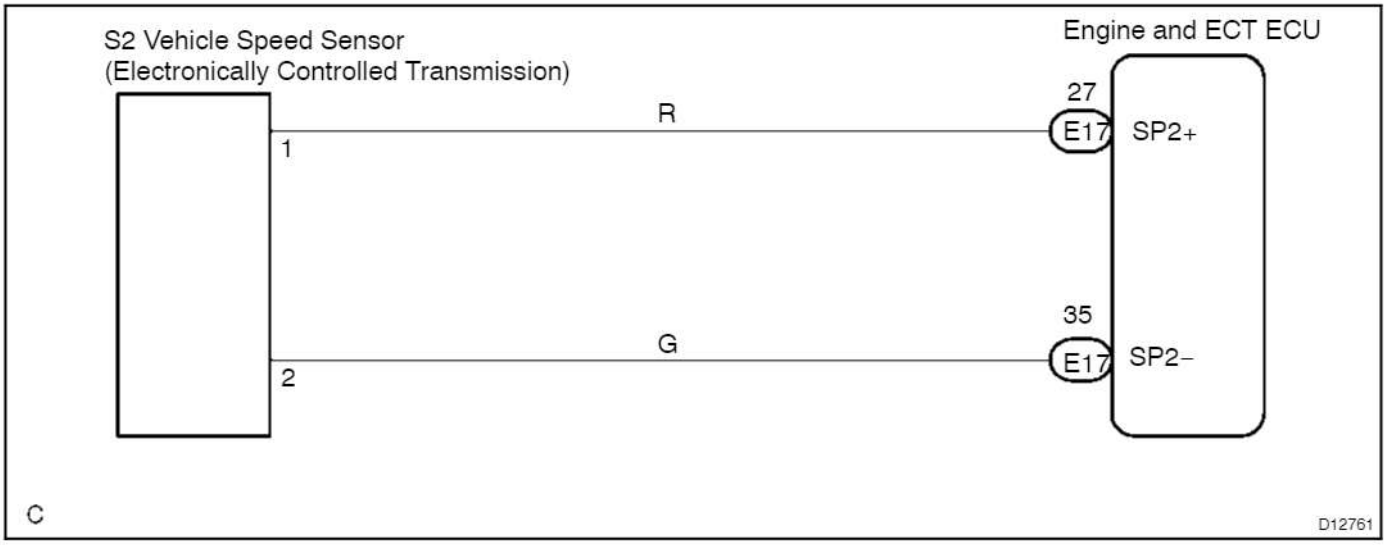
CIRCUIT DESCRIPTION



The speed sensor SP2 detects the rotation speed of the transmission output shaft and sends signals to the Engine and ECT ECU. The Engine and ECT ECU determines the vehicle speed based on these signals. An AC voltage is generated in the speed sensor SP2 coil as the parking gear mounted on the rear planetary gear assy rotates, and this voltage is sent to the Engine and ECT ECU. The parking gear on the rear planetary gear is used as the timing rotor for this sensor.
The gear shift point and lock–up timing are controlled by the Engine and ECT ECU based on the signals from this vehicle speed sensor and the throttle position sensor signal. If the speed sensor SP2 malfunctions, the Engine and ECT ECU uses input signals from the speed sensor NT as a back–up signal.

DTC No.	DTC Detection Condition	Trouble Area
61(2)	All conditions below are detected 500 times or more continuously (1–trip detection logic) (a) No signal from speed sensor SP2 is input to Engine and ECT ECU while 4 pulses of speed sensor NT signal are sent (b) Vehicle speed is 9 km/h (6 mph) or more for at least 4 sec. (c) Neutral start switch is OFF. (d) Transfer range is except neutral (4WD).	• Open or short in speed sensor SP2 circuit • Speed sensor SP2 • Engine and ECT ECU

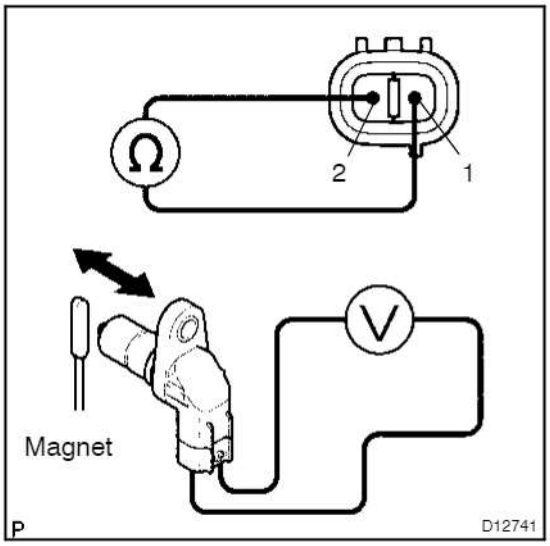
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check speed sensor SP2.**



PREPARATION:
Remove the speed sensor SP2.
CHECK:
(a) Measure the resistance between the sensor terminals.
Standard: 560 – 680 Ω at 20 °C (68 °F)
(b) Measure the voltage between the sensor terminals when a magnet is put close to the front end of the sensor then taken away quickly.
Standard: Sensor generates voltage intermittently.
HINT:
The generated voltage is extremely low.
OK:
Standard.

NG → **Replace speed sensor SP2.**

OK

2	**Check harness and connector between Engine and ECT ECU and speed sensor SP2 (See page IN–38).**

NG → **Repair or replace harness and connector.**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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DIAVH–01

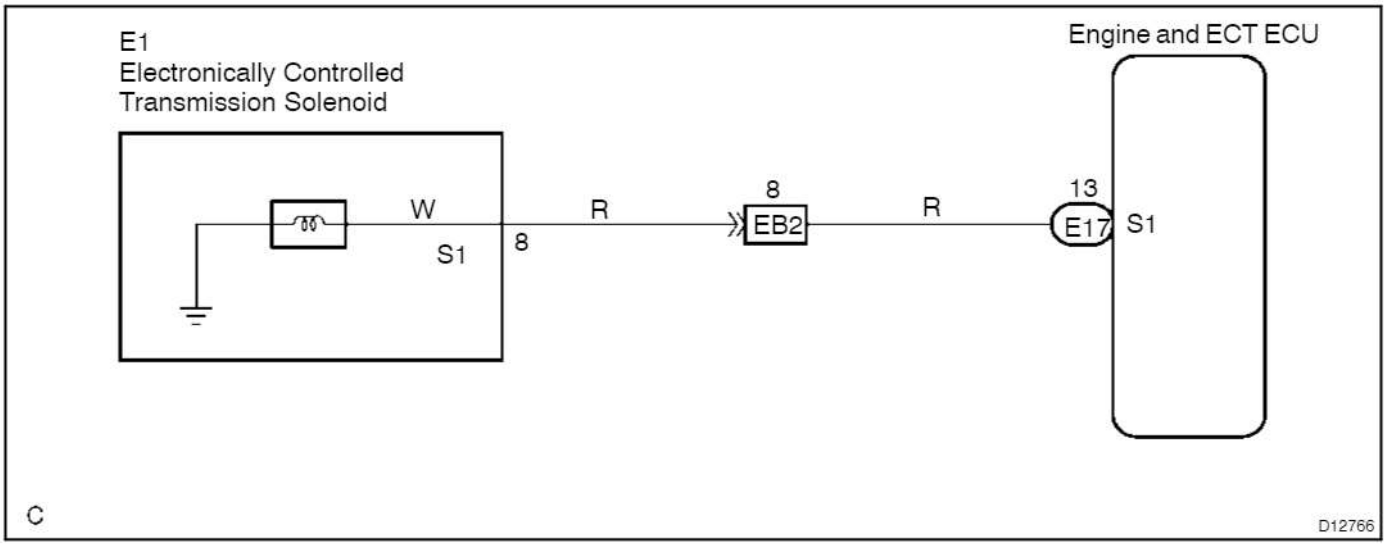
DTC	62(1)	Shift Solenoid A Electrical (S1)

CIRCUIT DESCRIPTION

See page DI–135.

DTC No.	DTC Detecting Condition	Trouble Area
62(1)	The Engine & ECT ECU checks for an open or short circuit in the shift solenoid valve S1 circuit when it changes. (1–trip detection logic) The Engine & ECT ECU records DTC 62(1) if condition (a) or (b) is detected once, but it does not light up check engine warning light. After Engine & ECT ECU detects condition (a) or (b) continuously 8 times or more in one–trip, it causes the check engine warning light light up until condition (a) or (b) disappears. After that, if the Engine & ECT ECU detects condition (a) or (b) once, it starts lighting up check engine warning light again. (a) Solenoid resistance is 8 Ω or less (short circuit) when the solenoid is energized. (b) Solenoid resistance is 100 kΩ or more (open circuit) when the solenoid is not energized.	• Open or short in shift solenoid valve S1 circuit • Shift solenoid valve S1 • Engine and ECT ECU

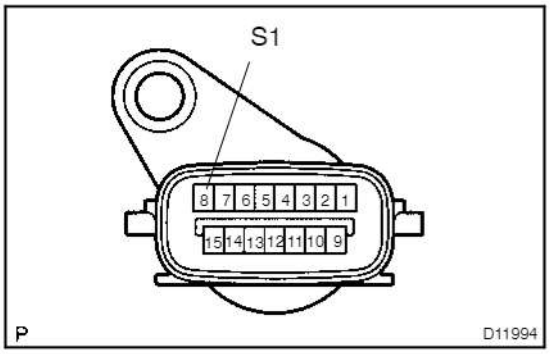
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

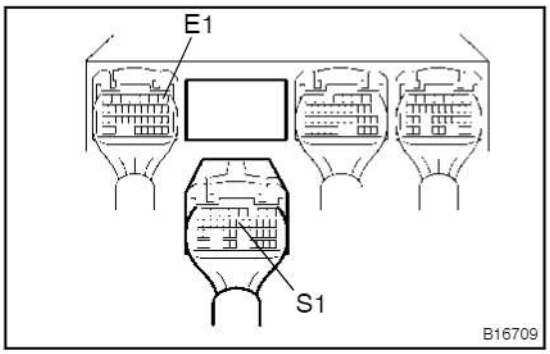


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between S1 of transmission wire connector and body ground.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

NG → **Go to step 3.**

OK

2	**Measure resistance between terminal S1 and E1 of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals S1 and E1 of Engine and ECT ECU connector.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

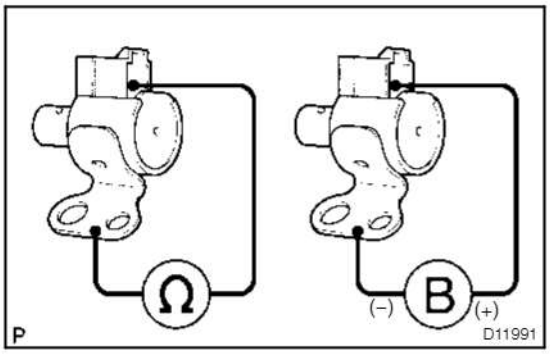
NG → **Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve S1.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve S1.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

NG → **Replace the shift solenoid valve S1 (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DTC	62(3)	Pressure Control Solenoid ”A” Electrical (Shift Solenoid Valve SL1)

CIRCUIT DESCRIPTION

Shifting from 1st to 5th is performed in combination with ON and OFF of the shift solenoid valves S1, S2, SR, SL1 and SL2, controlled by Engine and ECT ECU. If an open or short circuit occurs in either of the shift solenoid valves, the Engine and ECT ECU controls the remaining normal shift solenoid valve to allow the vehicle to be operated smoothly (Fail safe function).

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Fail Safe Function:

If either of the shift solenoid valve circuits develops an open or short, the Engine and ECT ECU turns the other shift solenoid ON and OFF to shift to the gear ranges shown in the table below.

Manual shifting as shown in the following table must be done (In the case of a short circuit, the Engine and ECT ECU stops sending current to the short circuited solenoid).

○: ON X: OFF

range	NORMAL						S1 OFF						S2 OFF						SR OFF					
	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2
"R"	R	○	×	×	×	○	R	×	×	×	×	○	R	○	×	×	×	○	R	○	×	×	×	○
"D"	1 st	○	×	×	×	○	4 th ↓ 3 rd	×	×↓○	×	×	○	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd	○	○	×	×	○	3 rd	×	○	×	×	○	1 st ↓ 4 th	○↓×	×	×	×	○	2 nd	○	○	×	×	○
	3 rd	×	○	×	×	○	3 rd	×	○	×	×	○	4 th	×	×	×	×	○	3 rd	×	○	×	×	○
	4 th	×	×	×	×	○	4 th	×	×	×	×	○	4 th	×	×	×	×	○	4 th	×	×	×	×	○
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	4 th	×	×	×	○	×
"3"	1 st	○	×	×	×	○	3 rd ↓ 3 rd E/B	×	×↓○	×	×	○↓×	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd	○	○	×	×	○	3 rd ↓ 3 rd E/B	×	○	×	×	○↓×	1 st ↓ 3 rd E/B	○↓×	×	×	×	○↓×	2 nd	○	○	×	×	○
	3 rd E/B	×	○	×	×	×	3 rd E/B	×	○	×	×	×	3 rd E/B	×	×	×	×	×	3 rd E/B ↓ 3 rd	×	○	×	×	×↓○
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	3 rd	×	×↓○	×	×	○↓○
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	3 rd E/B ↓ 3 rd	×	×↓○	×	○↓×	×↓○
"2"	1 st	○	×	×	×	○	1 st	×	×	×	×	○	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd E/B	○	○	○	×	×	3 rd E/B	×	○	○	×	×	2 st E/B ↓ 4 th	○↓×	×	○	×	×↓○	2 nd	○	○	×	×	×
	3 rd E/B	×	○	○	×	×	3 rd E/B	×	○	○	×	×	Fail 4th	×	×	○	×	×↓○	2 nd	×↓○	○	×	×	×
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	1 st ↓ 2 nd	×↓○	×↓○	×	×	○↓×
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	1 st E/B ↓ 2 nd	×↓○	○	×	○↓×	×
"L"	1 st E/B	○	×	×	×	×	1 st E/B	×	×	×	×	×	1 st E/B	○	×	×	×	×	1 st E/B	○	×	×	×	×
	2 nd E/B	○	○	○	×	×	3 rd E/B	×	○	○	×	×	2 st E/B ↓ 4 th	○↓×	×	○	×	×↓○	2 nd	○	○	×	×	×
	3 rd E/B	×	○	○	×	×	3 rd E/B	×	○	○	×	×	Fail 4 th	×	×	○	×	×↓○	2 nd	×↓○	○	×	×	×
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	1 st ↓ 2 nd	×↓○	×↓○	×	×	○↓×
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	1 st E/B ↓ 2 nd	×↓○	×↓○	×	○↓×	×

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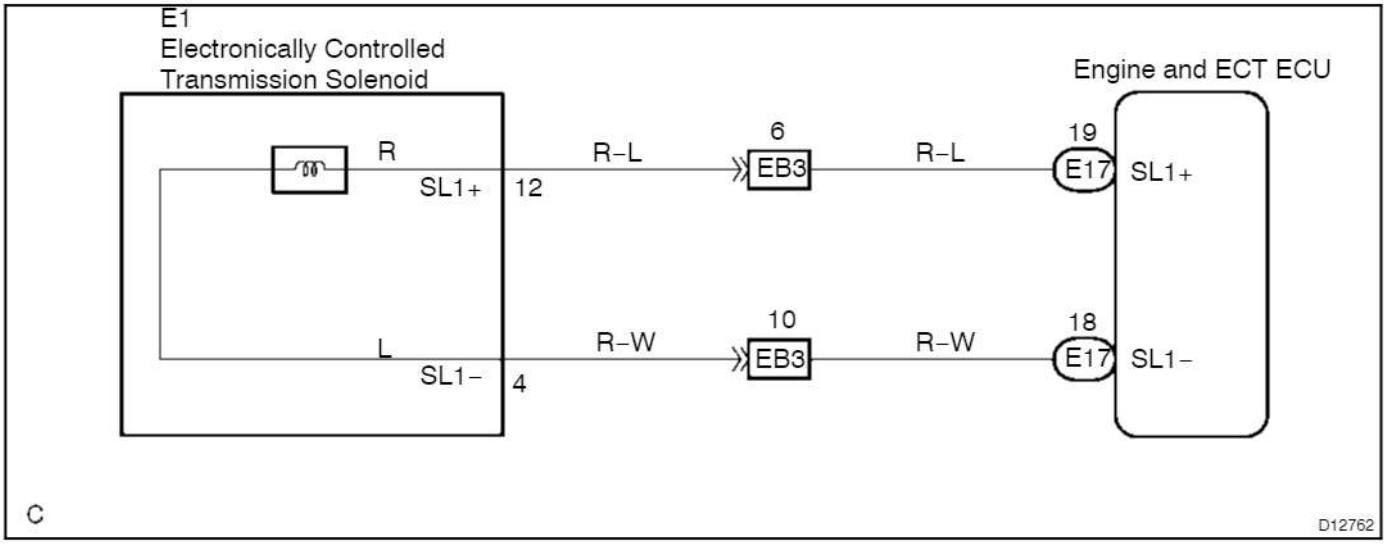
○: ON X: OFF

range	S1 S2 OFF						S2 SR OFF						S1 SR OFF						S1 S2 SR OFF					
	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2	Gear	S1	S2	SR	SL1	SL2
"R"	R	X	X	X	X	○	R	○	X	X	X	○	R	X	X	X	X	○	R	X	X	X	X	○
"D"	4 th	X	X	X	X	○	1 st	○	X	X	X	○	4 th ↓ 3 rd	X	X→○	X	X	○	4 th	X	X	X	X	○
	4 th	X	X	X	X	○	1 st ↓ 4 th	○→X	X	X	X	○	3 rd	X	○	X	X	○	4 th	X	X	X	X	○
	4 th	X	X	X	X	○	4 th	X	X	X	X	○	3 rd	X	○	X	X	○	4 th	X	X	X	X	○
	4 th	X	X	X	X	○	4 th	X	X	X	X	○	4 th	X	X	X	X	○	4 th	X	X	X	X	○
	5 th	X	X	○	○	X	4 th	X	X	X	○→X	X→○	4 th	X	X	X	○→X	X→○	4 th	X	X	X	○→X	X→○
"3"	3 rd ↓ 3 rd E/B	X	X	X	X	○→X	1 st	○	X	X	X	○	3 rd	X	X→○	X	X	○→○	3 rd	X	X	X	X	○→○
	3 rd ↓ 3 rd E/B	X	X	X	X	○→X	1 st ↓ 3 rd	○→X	X	X	X	○→○	3 rd	X	○	X	X	○→○	3 rd	X	X	X	X	○→○
	3 rd E/B	X	X	X	X	X	3 rd E/B ↓ 3 rd	X	X	X	X	X→○	3 rd E/B ↓ 3 rd	X	○	X	X	X→○	3 rd E/B ↓ 3 rd	X	X	X	X	X→○
	4 th	X	X	○	X	○	3 rd	X	X	X	X	○→○	3 rd	X	X→○	X	X	○→○	3 rd	X	X	X	X	○→○
	5 th	X	X	○	○	X	1 st E/B ↓ 3 rd	X	X	X	○→X	X→○	3 rd E/B ↓ 3 rd	X	X→○	X	○→X	X→○	3 rd E/B ↓ 3 rd	X	X	X	○→X	X→○
"2"	1 st	X	X	X	X	○	1 st	○	X	X	X	○	1 st	X	X	X	X	○	1 st	X	X	X	X	○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	X→○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	4 th	X	X	○	X	○	1 st	X→○	X	X	X	○	1 st ↓ 2nd	X	X→○	X	X	○→X	1 st	X	X	X	X	○
	5 th	X	X	○	○	X	1 st E/B ↓ 1 st	X→○	X	X	○→X	X→○	1 st E/B ↓ 2nd	X	X→○	X	○→X	X	1 st E/B ↓ 1 st	X	X	X	○→X	X→○
"L"	1 st E/B	X	X	X	X	X	1 st E/B	○	X	X	X	X	1 st E/B	X	X	X	X	X	1 st E/B	X	X	X	X	X
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	X→○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	4 th	X	X	○	X	○	1 st	X→○	X	X	X	○	1 st ↓ 2nd	X	X→○	X	X	○→X	1 st	X	X	X	X	○
	5 th	X	X	○	○	X	1 st E/B ↓ 1 st	X→○	X	X	○→X	X→○	1 st E/B ↓ 2nd	X	X→○	X	○→X	X	1 st E/B ↓ 1 st	X	X	X	○→X	X→○

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DTC No.	DTC Detection Condition	Trouble Area
62(3)	Engine and ECT ECU checks for an open or short circuit in shift solenoid valves SL1 (1–trip detection logic) (a) When solenoid is energized, duty ratio exceed 75% (b) When solenoid is not energized, duty ratio is less than 3%	• Open or short in shift solenoid valve SL1 circuit • Shift solenoid valve SL1 • Engine and ECT ECU

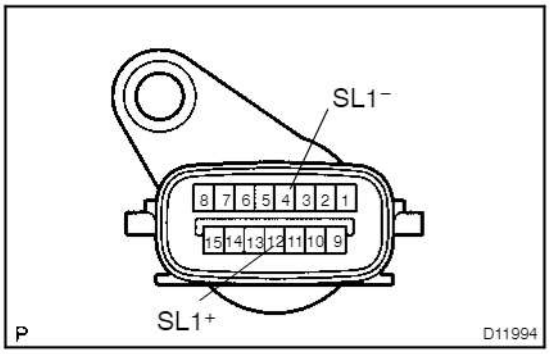
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

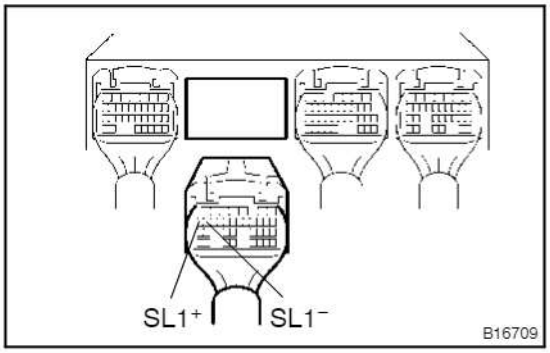


PREPARATION:
Disconnect the trasmission wire connector.
CHECK:
Measure resistance between SL1+ and SL1− of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SL1+ and SL1− of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal SL1+ and SL1− of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SL1+ and SL1− of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SL1+ and SL1− of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

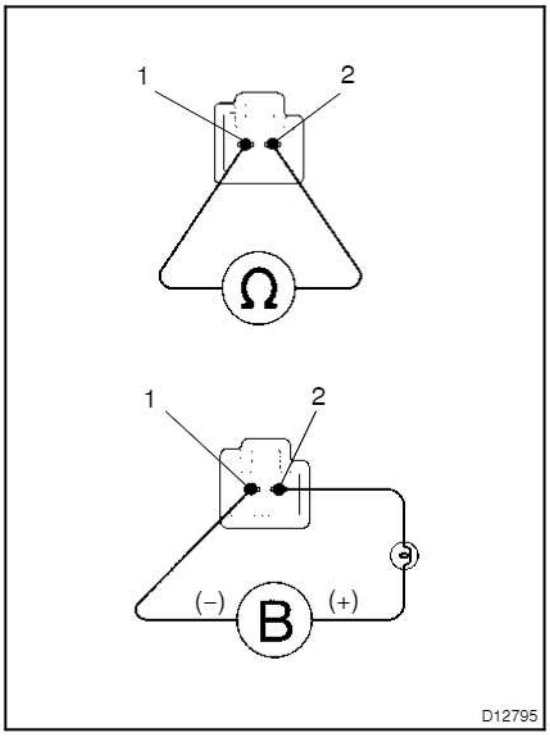
NG	**Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SL1.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SL1.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SL1 (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DIAVJ–01

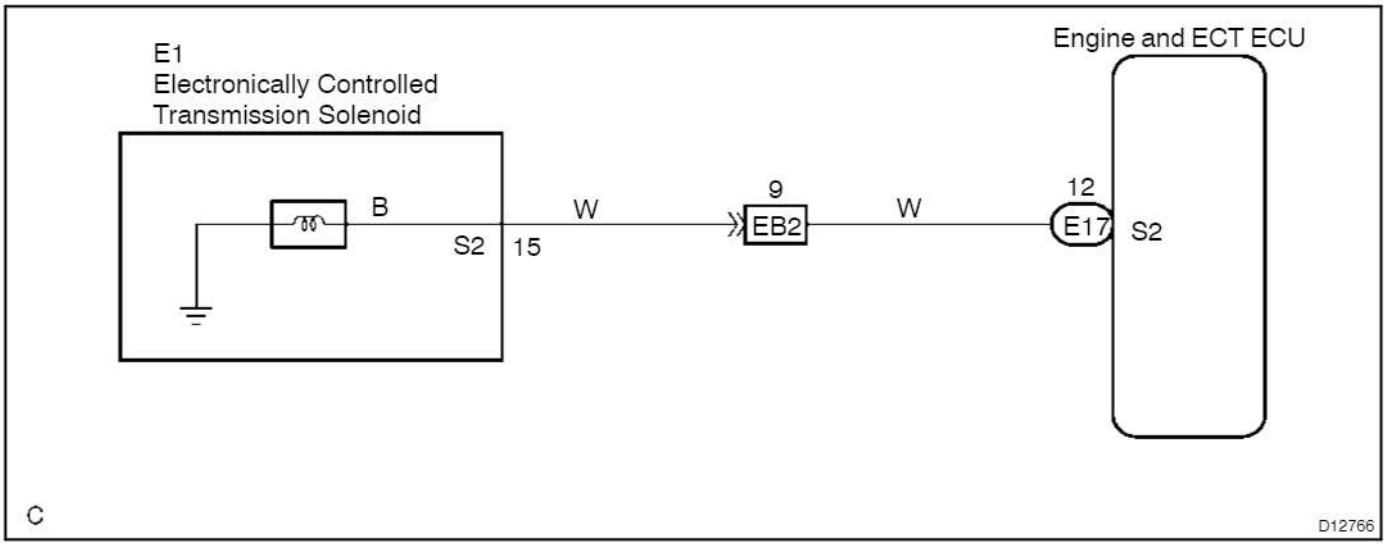
DTC	63(2)	Shift Solenoid B Electrical (S2)

CIRCUIT DESCRIPTION

See page DI–135.

DTC No.	DTC Detecting Condition	Trouble Area
63(2)	The Engine & ECT ECU checks for an open or short circuit in the shift solenoid valve S2 circuit when it changes. (1–trip detection logic) The Engine & ECT ECU records DTC 63(2) if condition (a) or (b) is detected once, but it does not light up check engine warning light. After Engine & ECT ECU detects condition (a) or (b) continuously 8 times or more in one–trip, it causes the check engine warning light light up until condition (a) or (b) disappears. After that, if the Engine & ECT ECU detects condition (a) or (b) once, it starts lighting up check engine warning light again. (a) Solenoid resistance is 8 Ω or less (short circuit) when the solenoid is energized. (b) Solenoid resistance is 100 kΩ or more (open circuit) when the solenoid is not energized.	• Open or short in shift solenoid valve S2 circuit • Shift solenoid valve S2 • Engine and ECT ECU

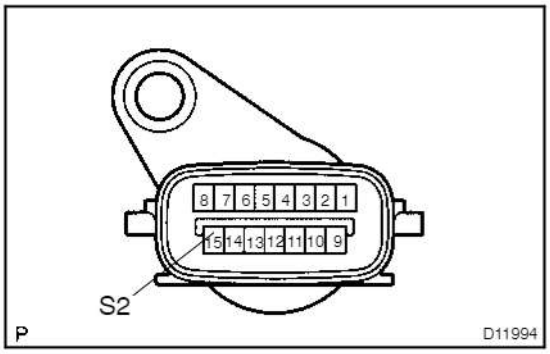
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

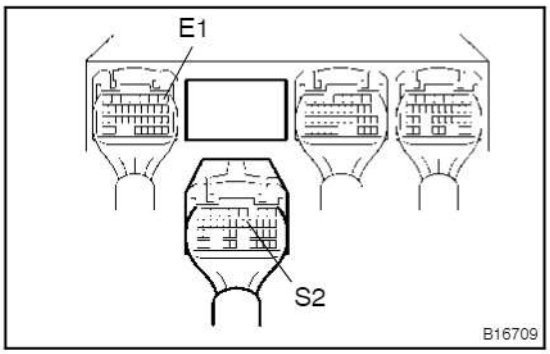


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between S2 of transmission wire connector and body ground.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal S2 and E1 of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals S2 and E1 of Engine and ECT ECU connector.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

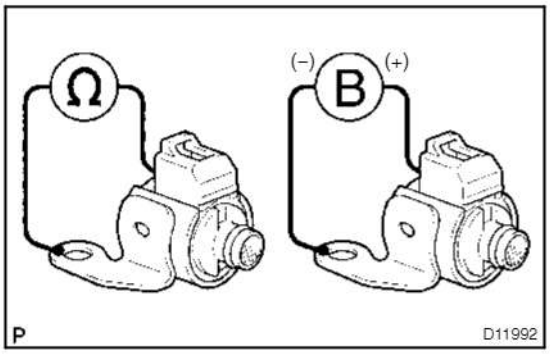
NG	**Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve S2.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve S2.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

NG → **Replace the shift solenoid valve S2 (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DIAVK–01

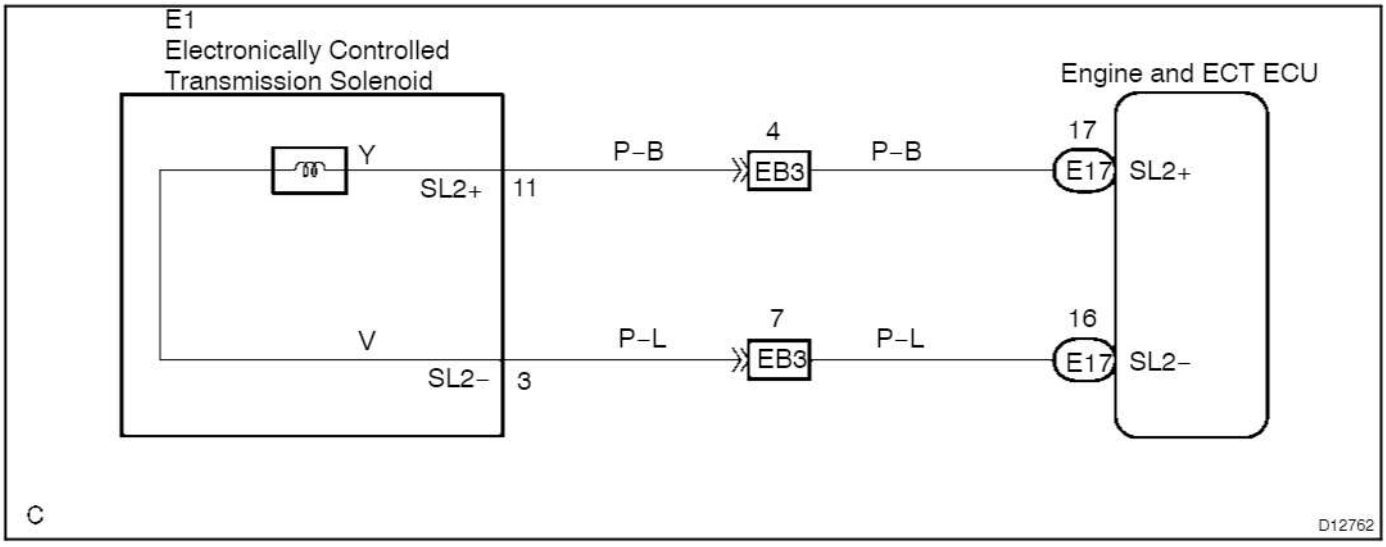
DTC	63(3)	Pressure Control Solenoid "B" Electrical (Shift Solenoid Valve SL2)

CIRCUIT DESCRIPTION

See page DI–135.

DTC No.	DTC Detection Condition	Trouble Area
63(3)	Engine and ECT ECU checks for an open or short circuit in shift solenoid valves SL2 (1–trip detection logic) (a) When solenoid is energized, duty ratio exceed 75% (b) When solenoid is not energized, duty ratio is less than 3%	• Open or short in shift solenoid valve SL2 circuit • Shift solenoid valve SL2 • Engine and ECT ECU

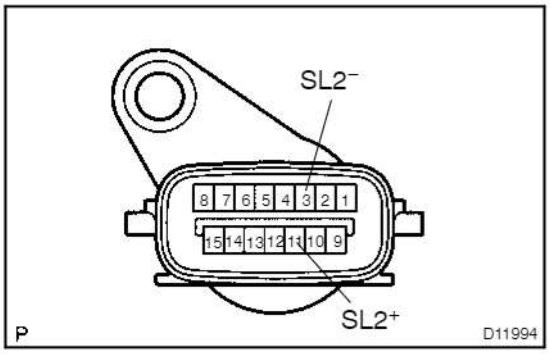
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

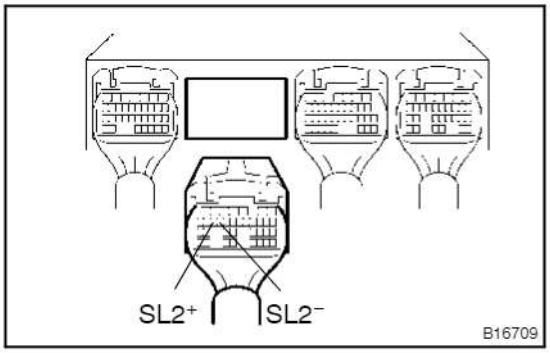


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between $SL2^+$ and $SL2^-$ of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68°F)
CHECK:
Measure resistance between terminals $SL2^+$ and $SL2^-$ of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal $SL2^+$ and $SL2^-$ of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals $SL2^+$ and $SL2^-$ of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68°F)
CHECK:
Measure resistance between terminals $SL2^+$ and $SL2^-$ of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

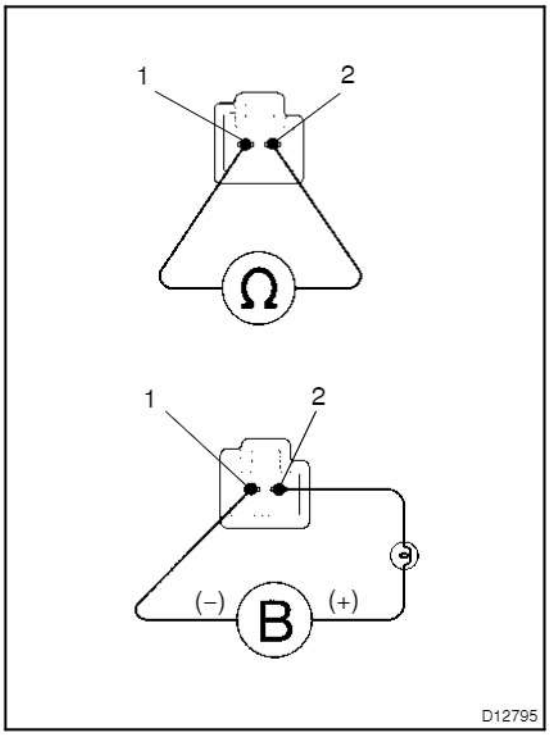
NG	**Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SL2.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SL2.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SL2 (See page AT–8).**

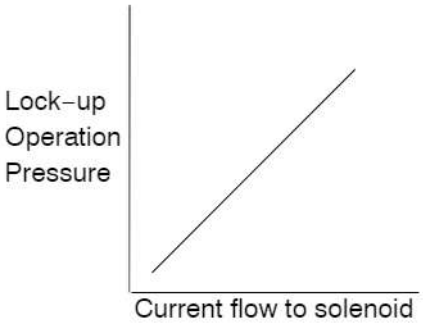
OK

Repair or replace the transmission wire (See page AT–6).

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DIAVM–01

DTC	68	Liner Solenoid for Lock Up Ctrl Cir Malfunction (Shift Solenoid Valve SLU)

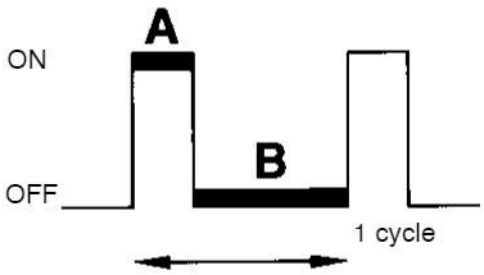


CIRCUIT DESCRIPTION

The amount of current flow to the solenoid is controlled by the (*) duty ratio of the Engine and ECT ECU output signal. The higher the duty ratio becomes, the higher the lock–up hydraulic pressure becomes during the lock–up operation.

(*) Duty Ratio

The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non–continuity, then



BE4056

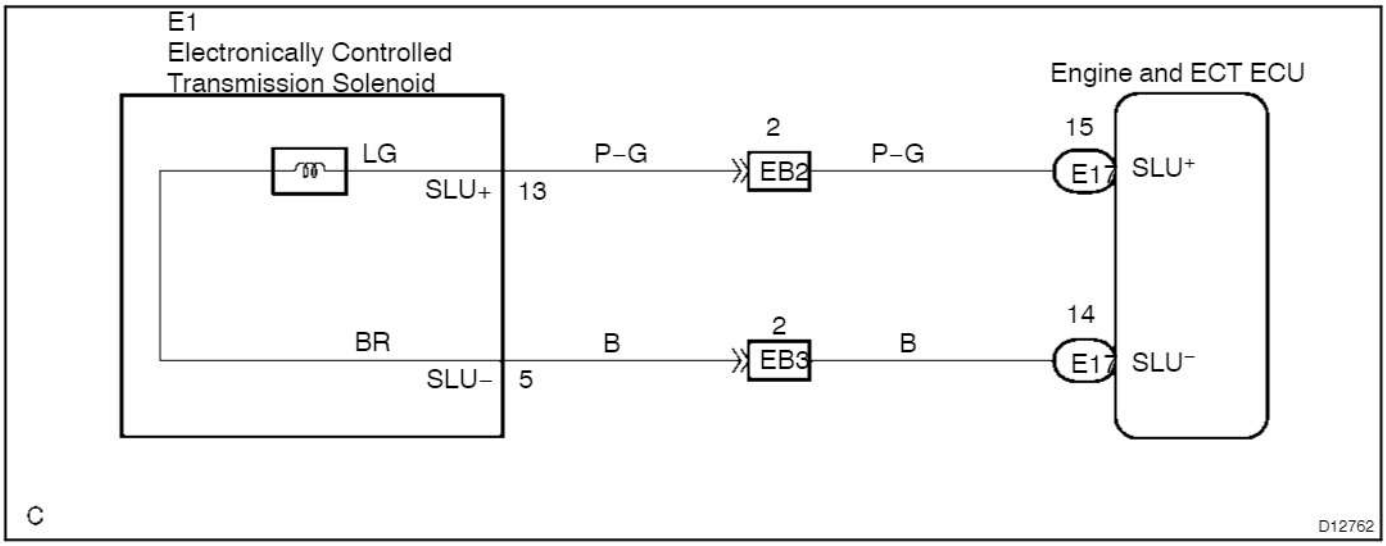
(*)

$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$

D00160

DTC No.	DTC detection condition	Trouble Area
68	The following condition is detected. (1–trip detection logic) SLU output signal's duty ON of 3.3 msec. or more with duty ratio of least 95% lasts for 1 second.	• Open or short in shift solenoid valve SLU circuit • Shift solenoid valve SLU • Engine and ECT ECU

WIRING DIAGRAM

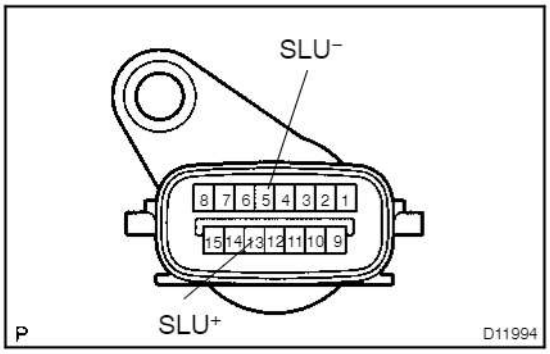


D12762

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INSPECTION PROCEDURE

1	Check transmission wire.

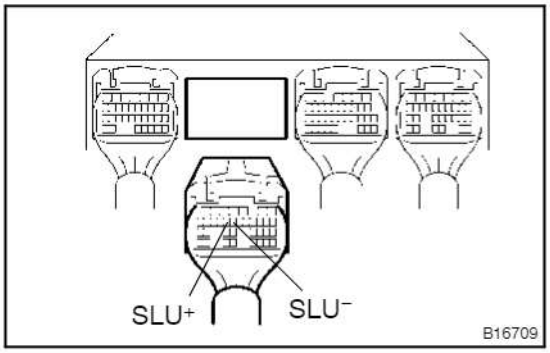


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between SLU+ and SLU– of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68 °F)
CHECK:
Measure resistance between terminals SLU+ and SLU– of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	Go to step 3.

OK

2	Measure resistance between terminal SLU+ and SLU– of Engine and ECT ECU connector.



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SLU+ and SLU– of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68 °F)
CHECK:
Measure resistance between terminals SLU+ and SLU– of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

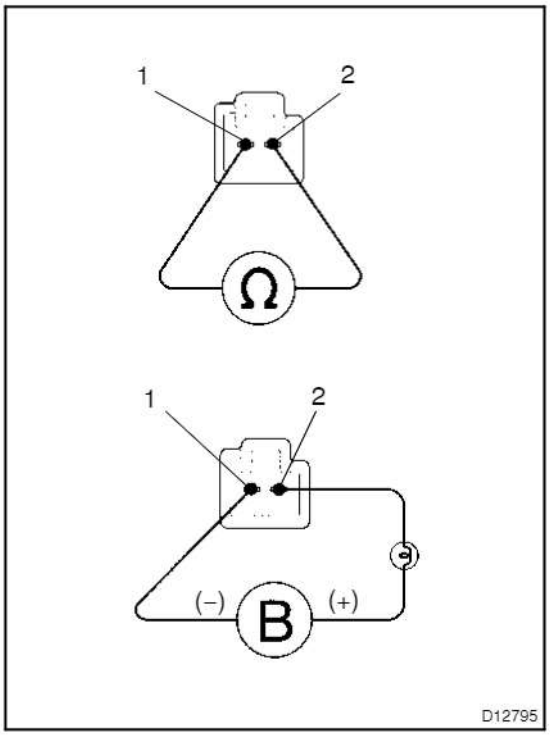
NG	Repair or replace the harness or connector (See page IN–38).

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SLU.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLU.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SLU (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DIAVL–01

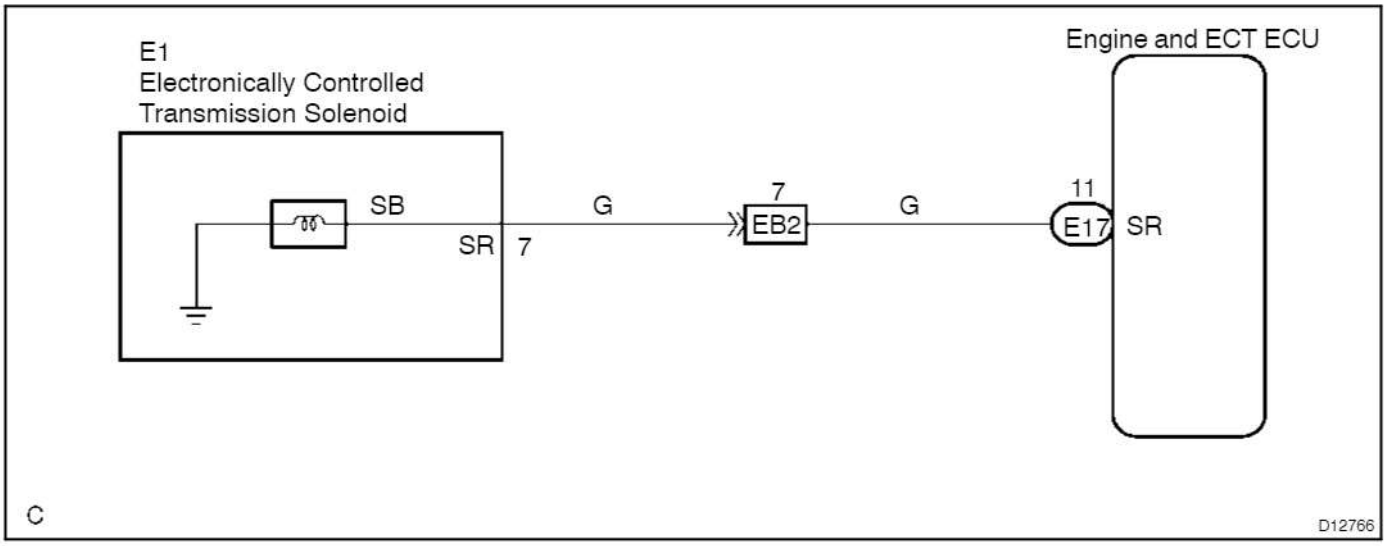
DTC	74	Shift Solenoid "E" Electrical (SR)

CIRCUIT DESCRIPTION

See page DI–135.

DTC No.	DTC Detection Condition	Trouble Area
74	Engine and ECT ECU detects open or short in shift solenoid valve SR circuit 2 times when solenoid valve SR is not operated (1–trip detection logic)	• Open or short in shift solenoid valve SR circuit • Shift solenoid valve SR • Engine and ECT ECU

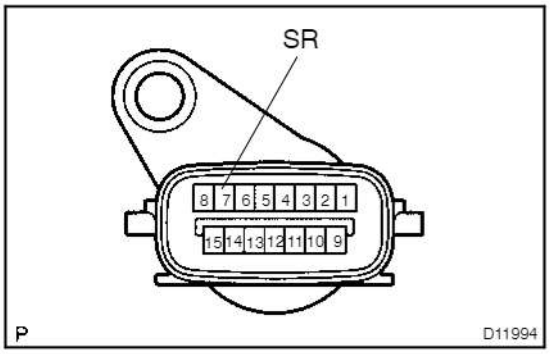
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

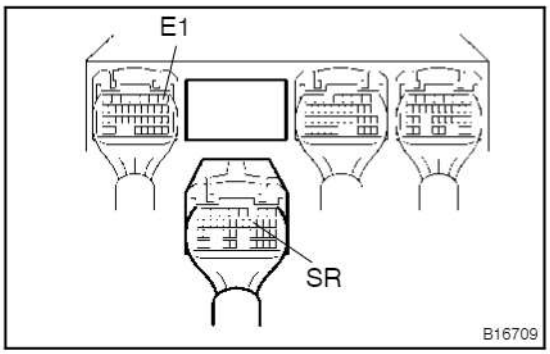


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between SR of transmission wire connector and body ground.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

NG → **Go to step 3.**

OK

2	**Measure resistance between terminal SR and E1 of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SR and E1 of Engine and ECT ECU connector.
OK:
Resistance: 11 – 15 Ω at 20°C (68°F)

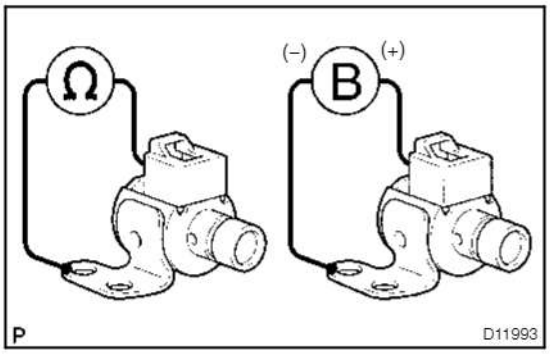
NG → **Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SR.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SR.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

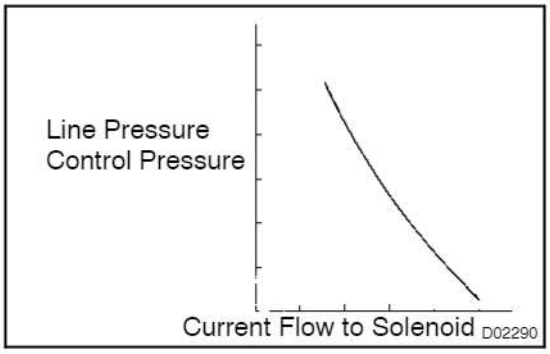
NG → **Replace the shift solenoid valve SR (See page AT–8).**

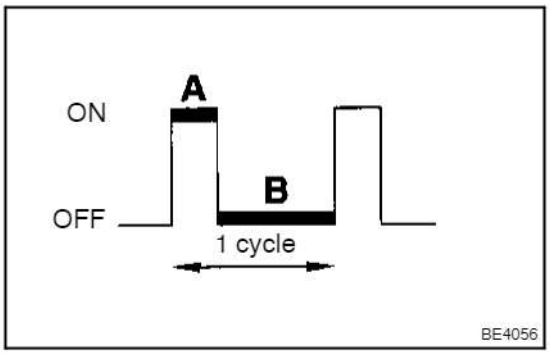
OK →

Repair or replace the transmission wire (See page AT–6).

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DTC	77(1)	Linear Solenoid for Line Pressure Control Circuit Malfunction (Shift Solenoid Valve SLT)





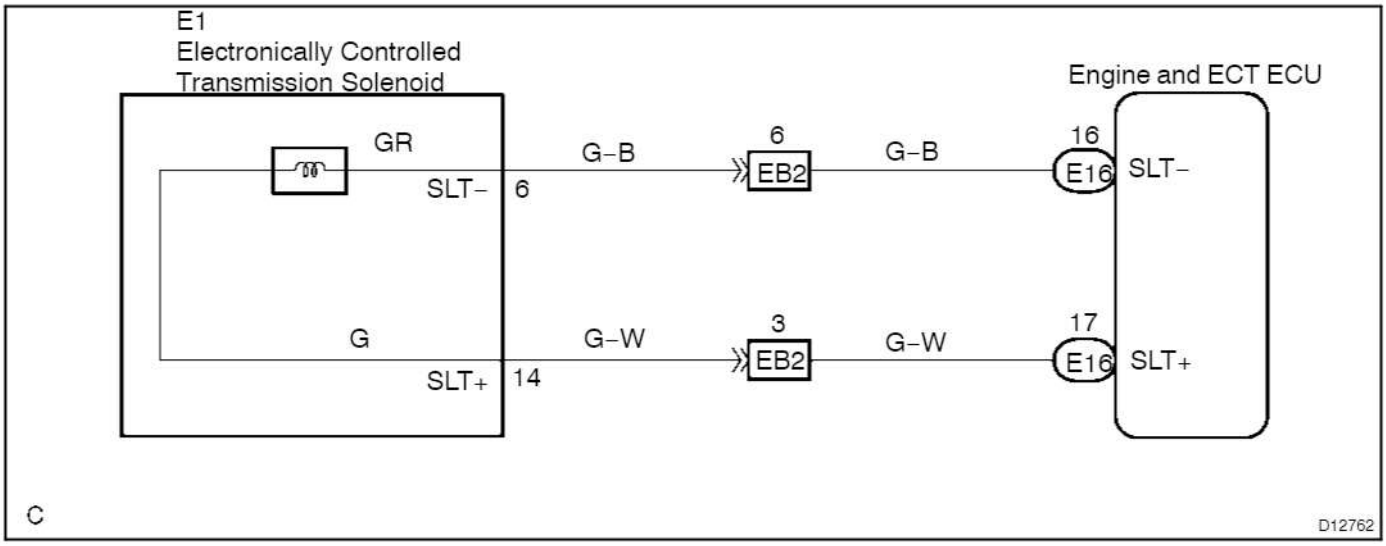
CIRCUIT DESCRIPTION

The throttle pressure that is applied to the primary regulator valve (which modulates line pressure) causes the solenoid valve SLT, under electronic control, to precisely and minutely modulate and generate line pressure according to the accelerator pedal effort, or the detected engine power output.
This controls the line pressure and provides smooth shifting characteristics.
Upon receiving the throttle valve opening angle signal, Engine and ECT ECU controls the line pressure by sending a predetermined (*) duty ratio to the solenoid valve, modulating the line pressure, and generating throttle pressure.
(*) Duty Ratio
The duty ratio is the ratio of the period of continuity in one cycle.
For example, if A is the period of continuity in one cycle, and B is the period of non–continuity, then

$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$

DTC No.	DTC Detection Condition	Trouble Area
77(1)	Engine and ECT ECU detects solenoid SLT circuit malfunction for 1 sec. or more (1–trip detection logic)	• Open or short in shift solenoid valve SLT circuit • Shift solenoid valve SLT • Engine and ECT ECU

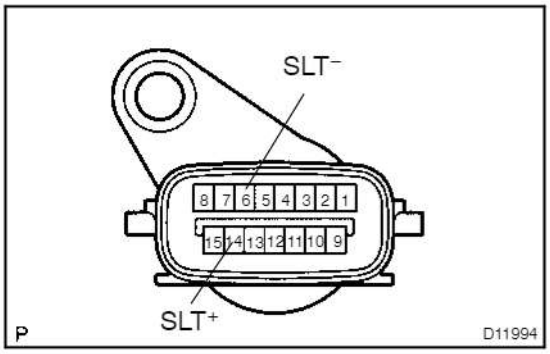
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transmission wire.**

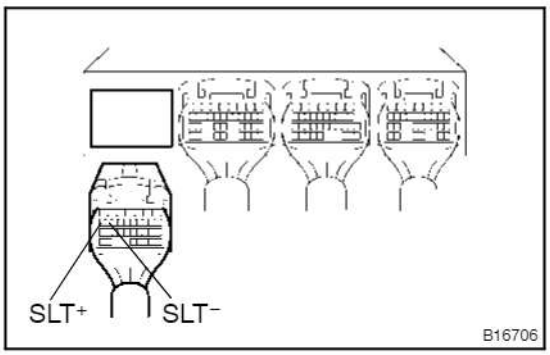


PREPARATION:
Disconnect the transmission wire connector.
CHECK:
Measure resistance between SLT^+ and SLT^- of transmission wire.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68°F)
CHECK:
Measure resistance between terminals SLT^+ and SLT^- of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal SLT^+ and SLT^- of Engine and ECT ECU connector.**



PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the Engine and ECT ECU.
CHECK:
Measure resistance between terminals SLT^+ and SLT^- of Engine and ECT ECU connector.
OK:
Resistance: 5.0 – 5.6 Ω at 20 °C (68°F)
CHECK:
Measure resistance between terminals SLT^+ and SLT^- of the Engine and ECT ECU connector and body ground.
OK:
Resistance: 1 MΩ or higher

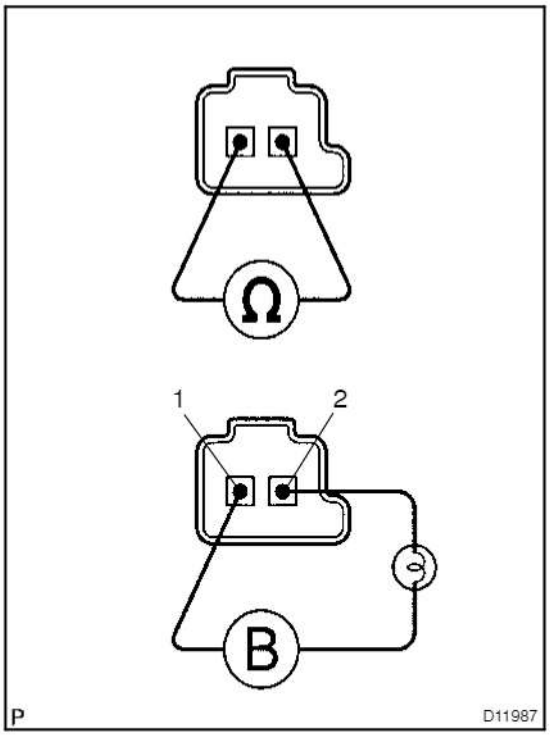
NG	**Repair or replace the harness or connector (See page IN–38).**

OK

Check and replace the Engine and ECT ECU (See page IN–38).

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3	Check shift solenoid valve SLT.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLT.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

NG → **Replace the shift solenoid valve SLT (See page AT–8).**

OK →

Repair or replace the transmission wire (See page AT–6).

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DIAVC–01

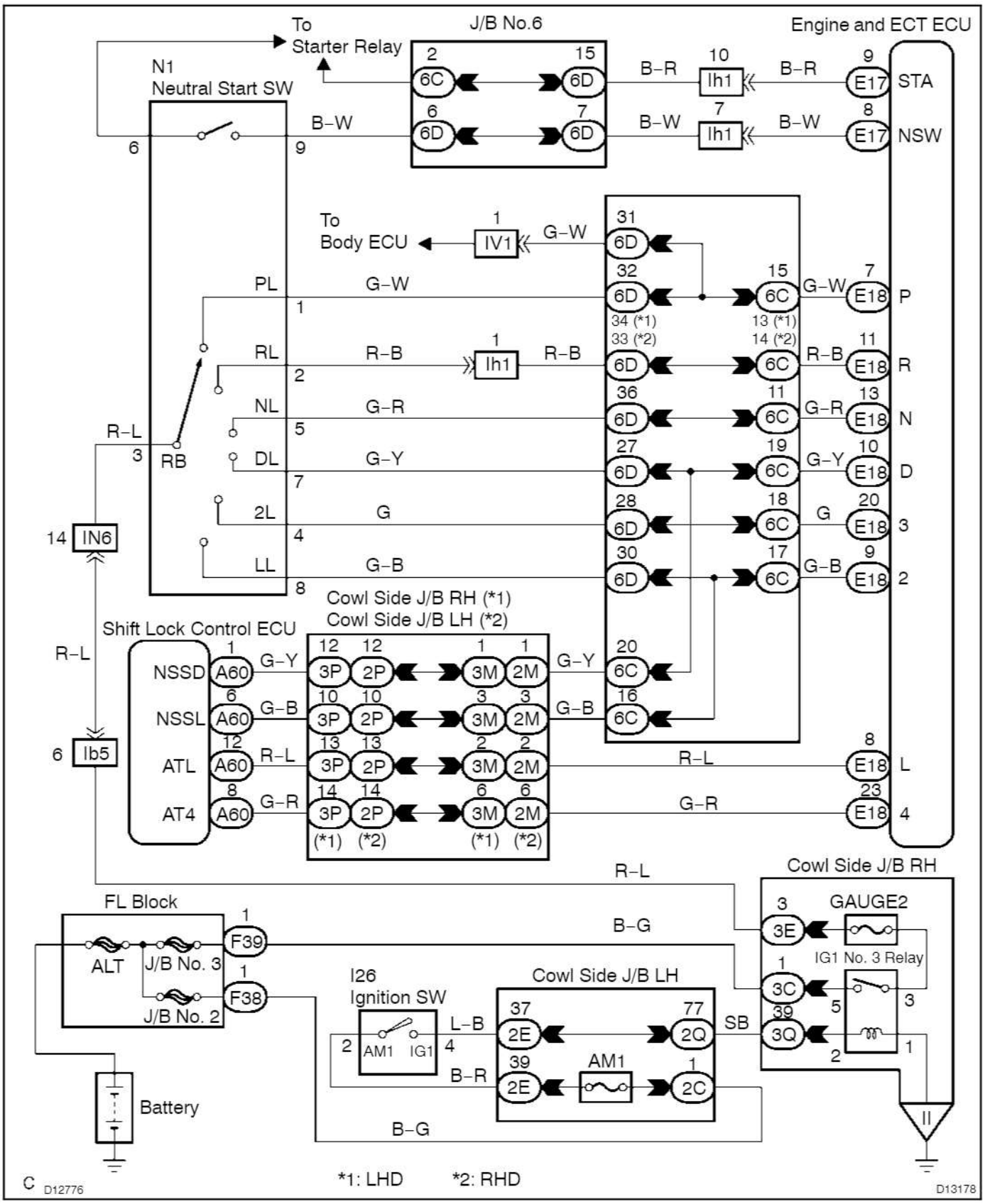
Neutral Start Switch Malfunction

CIRCUIT DESCRIPTION

The neutral start switch detects the shift lever position and sends signals to the Engine & ECT ECU.
The Engine & ECT ECU receives signals (NSW, P, R, N, D, 4, 3, 2 and L) from the neutral start switch.

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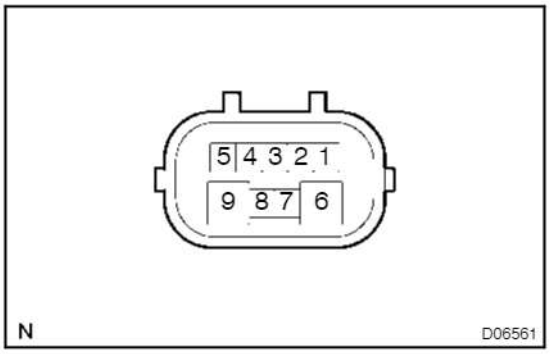
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check neutral start switch.**



PREPARATION:

(a) Jack up the vehicle.

(b) Disconnect the neutral start switch connector.

CHECK:

Check continuity between each terminal shown below when the shift lever is moved to each range.

OK:

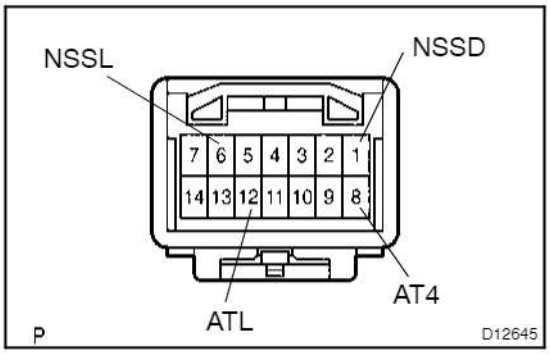
Shift range	Terminal No. to continuity	Terminal No. to continuity
P	1 – 3	6 – 9
R	2 – 3	–
N	3 – 5	6 – 9
D, 4	3 – 7	–
3	3 – 4	–
2, L	3 – 8	–

NG → **Replace neutral start switch (See page AT–7).**

OK

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2	Check transmission control switch.



PREPARATION:

(a) Connect the neutral start switch connector.

(b) Disconnect the shift lock control computer connector (transmission control switch).

CHECK:

Check continuity between each terminal of shift lock control computer (transmission control switch).

OK:

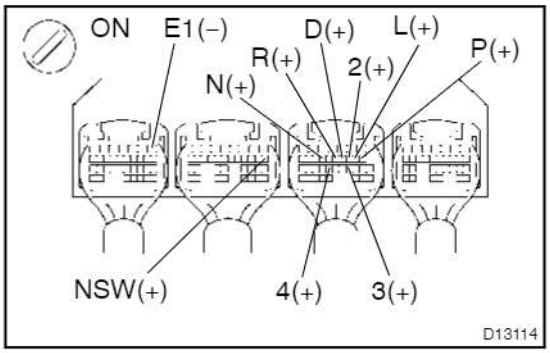
Shift range	Tester connection	Specified valve
D	1 – 8 (NSSD – AT4)	No continuity
4		Continuity
2	6 – 12 (NSSL – ATL)	No continuity
L		Continuity

NG → **Replace the transmission control switch (See page AT–21).**

OK →

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3	**Measure voltage between each terminals of NSW, P, R, N, D, 4, 3, 2, L and E1 of Engine and ECT ECU.**



PREPARATION:

(a) Connect the shift lock control computer connector (transmission control switch).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between each terminals NSW, P, R, N, D, 4, 3, 2, L and E1 of Engine and ECT ECU when the shift lever is shifted to the following ranges.

OK:

Tester connection	Condition	Specified condition
NSW – Body ground	Shift lever range: P and N	Below 1 V
	Shift lever range: Except P and N	Battery voltage
P– Body ground	Shift lever range: P	Battery voltage
R – Body ground	Shift lever range: R	Battery voltage*
N – Body ground	Shift lever range: N	Battery voltage
D – Body ground	Shift lever range: D and 4	Battery voltage
4 – Body ground	Shift lever range: 4	Battery voltage
3 – Body ground	Shift lever range: 3	Battery voltage
2 – Body ground	Shift lever range: 2 and L	Battery voltage
L – Body ground	Shift lever range: L	Battery voltage

HINT:

*: The voltage will drop slightly due to lighting up of the back up light.

NG → **Repair or replace the harness or connector (See page IN–38).**

OK →

Proceed to next circuit inspection shown on problem symptoms table (See page DI–119).

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DIAVF–01

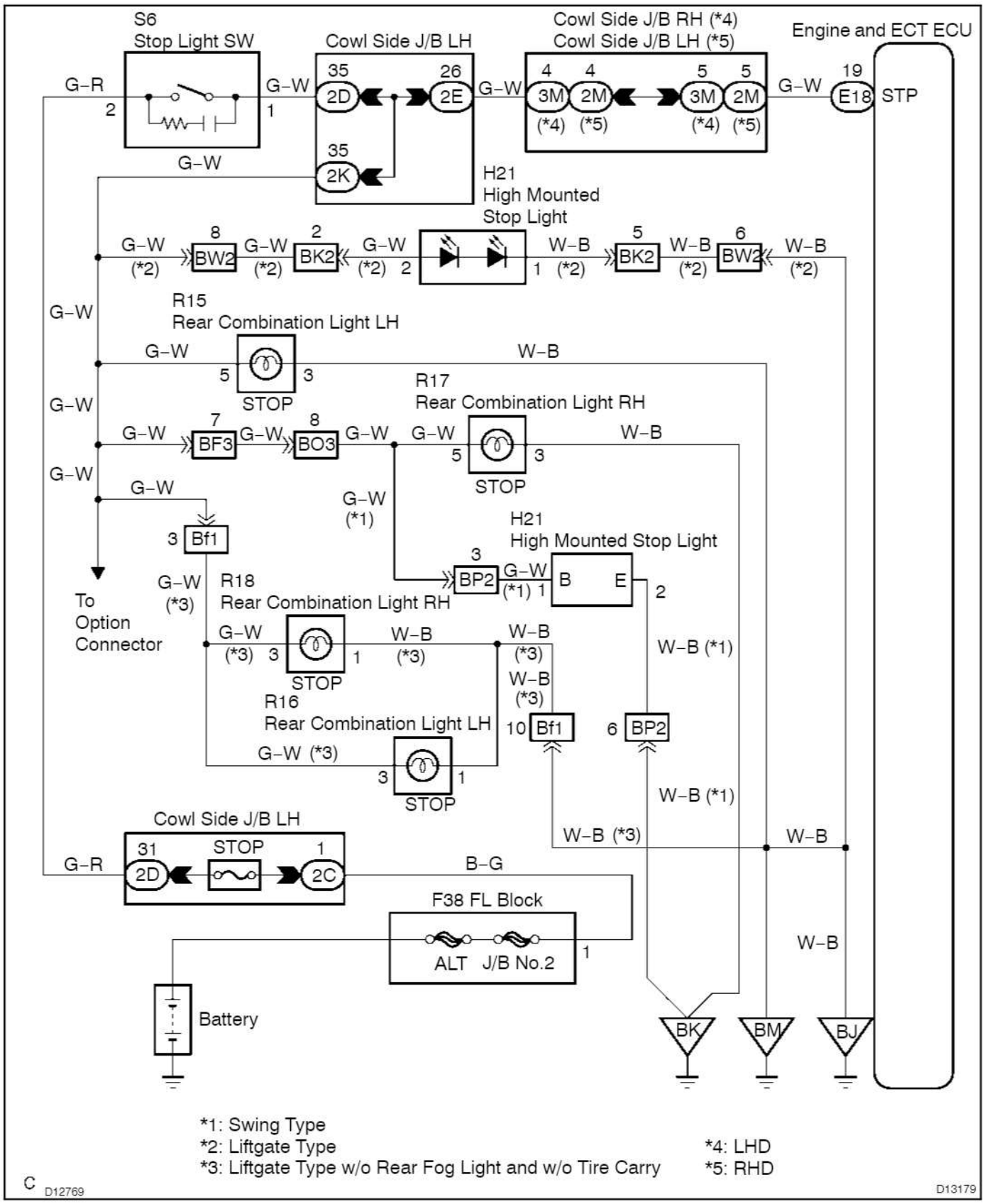
Stop Light Switch Signal Malfunction

CIRCUIT DESCRIPTION

The purpose of this circuit is to prevent the engine from stalling, while driving in lock–up condition, when brakes are suddenly applied.
When the brake pedal is operated, this switch sends a signal to Engine and ECT ECU. Then the Engine and ECT ECU cancels operation of the lock–up clutch while braking is in progress.

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WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check stop light switch (See Pub. No. RM616E, page BE–58).

NG → Replace stop light switch.

OK

2	Check harness and connector between Engine and ECT ECU and stop light switch (See page IN–38).

NG → Repair or replace harness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–119).

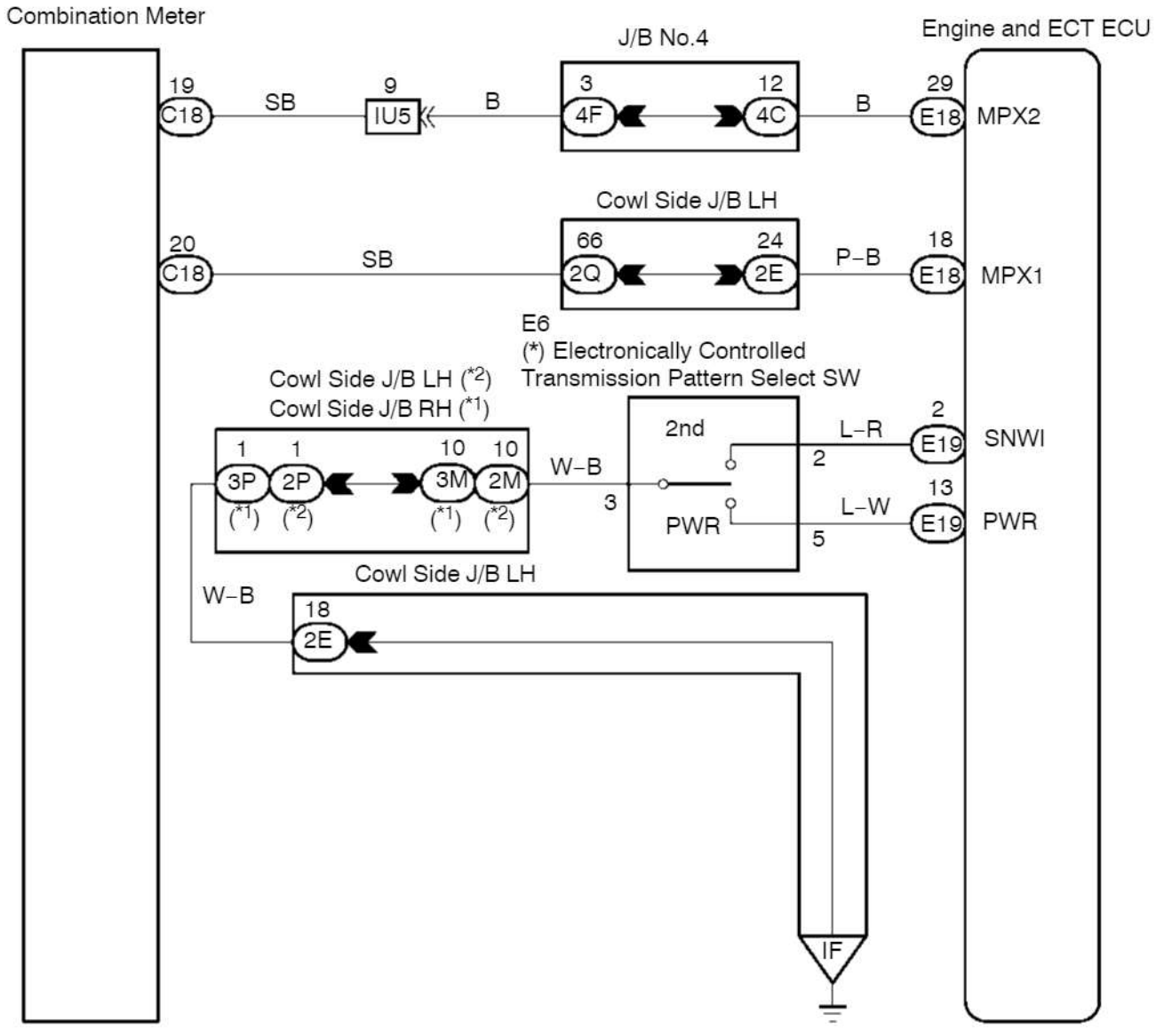
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Pattern Select Switch Circuit (PWR Mode Switch)

CIRCUIT DESCRIPTION

The Engine and ECT ECU memory contains the shift programs for the NORMAL and POWER patterns, 2 range, L range and the lock–up patterns. Following the programs corresponding to the signals from the pattern select switch, the Neutral startand other various sensors, the Engine and ECT ECU switches the solenoid valves ON and OFF, and controls the transmission gear change and the lock–up clutch operation.

WIRING DIAGRAM



*1: LHD
*2: RHD

(*) Pattern Select Switch (PWR Mode Switch)
When the PWR mode switch is pushed in, the switch contact is made and the PWR mode is selected.
To cancel the PWR mode, push the PWR mode switch once again.

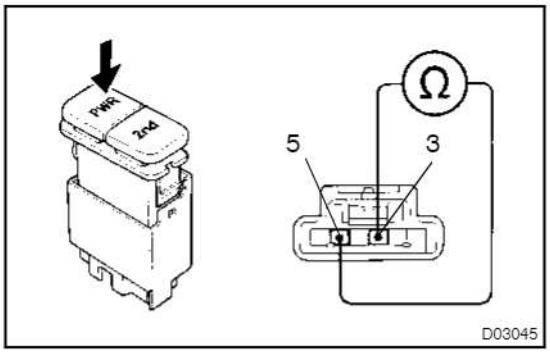
C

D13168

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INSPECTION PROCEDURE

1	Check pattern select switch (PWR mode switch).



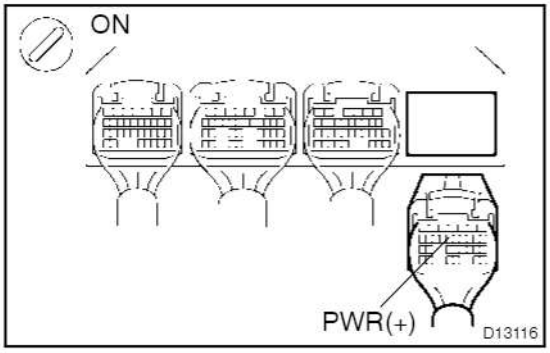
PREPARATION:
Disconnect the pattern select switch connector.
CHECK:
Check continuity between terminals 3 and 5 of pattern select switch connector when the select switch is set to PWR and NORM ranges.
OK:

Pattern select switch	Specified condition
PWR	Continuity
NORM	No continuity

NG → **Replace the pattern select switch.**

OK

2	Check PATTERN SEL SW signal.



PREPARATION:
(a) Connect the pattern select switch connector.
(b) Turn the ignition switch ON.
CHECK:
Measure voltage between terminal PWR of Engine and ECT ECU and body ground when the pattern select switch is set to the PWR (POWER) range and NORM (NORMAL) range.
OK:

Pattern select switch	Voltage
PWR	Below 1.5 V
NORM	10 – 14 V

HINT:
The Engine and ECT ECU uses the normal pattern signal if the PWR signal is not input.

OK → **Proceed to next circuit inspection shown on matrix chart (See page DI–119).**

NG

Repair or replace harness or connector (See page IN–38).

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DIAVR–01

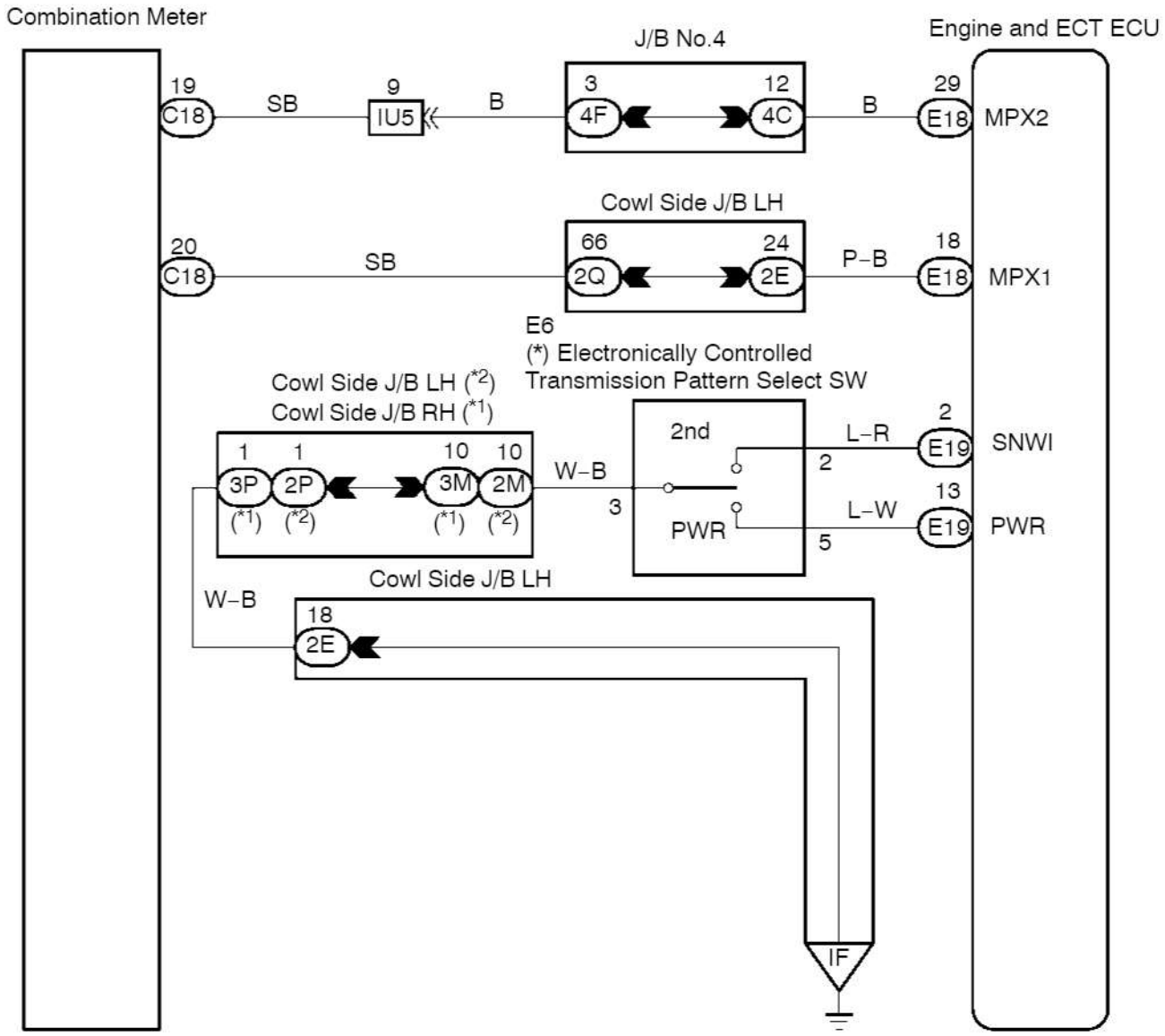
Pattern Select Switch Circuit (2nd Start Switch)

CIRCUIT DESCRIPTION

When 2nd start mode is selected with the pattern select switch, the Engine and ECT ECU controls the solenoid valves and the transmission starts from 2nd gear.
In D range, the transmission automatically shifts up through 3rd to 5th as usual.
In 2nd range, the transmission is held in 2nd gear.

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WIRING DIAGRAM



*1: LHD
*2: RHD

(*) Pattern Select Switch (2nd Start Switch)
When the 2nd start switch is pushed, the switch contact is made and the 2nd mode is selected.
To cancel the 2nd start, push the 2nd start switch once again. The 2nd start is automatically cancelled out when the ignition switch is turned OFF.

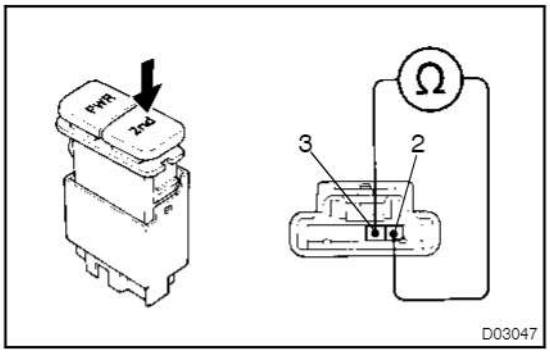
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INSPECTION PROCEDURE

1	Check pattern select switch (2nd start switch).



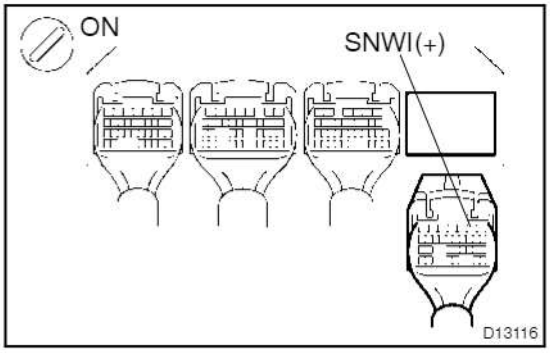
PREPARATION:
Disconnect the pattern select switch connector.
CHECK:
Check continuity between terminals 2 and 3 of pattern select switch connector when pattern select switch is set to 2nd start switch ON and OFF.
OK:

2nd start switch	Specified condition
Press continuously "2nd" switch	Continuity
Release "2nd" switch	No continuity

NG → **Replace the pattern select switch.**

OK ↓

2	Check voltage between terminal SNWI of Engine and ECT ECU and body ground.



PREPARATION:
(a) Connect the pattern select switch connector.
(b) Turn the ignition switch ON.
CHECK:
Check voltage between terminal SNWI of Engine and ECT ECU and body ground when the select switch is set to 2nd start switch ON and OFF.
OK:

2nd start switch	Voltage
Press contnuously "2nd" switch	Below 1.5 V
Release "2nd" switch	7.5 – 14 V

OK → **Proceed to next circuit inspection shown on matrix chart (See page DI–119).**

NG ↓

Repair or replace harness or connector (See page IN–38).

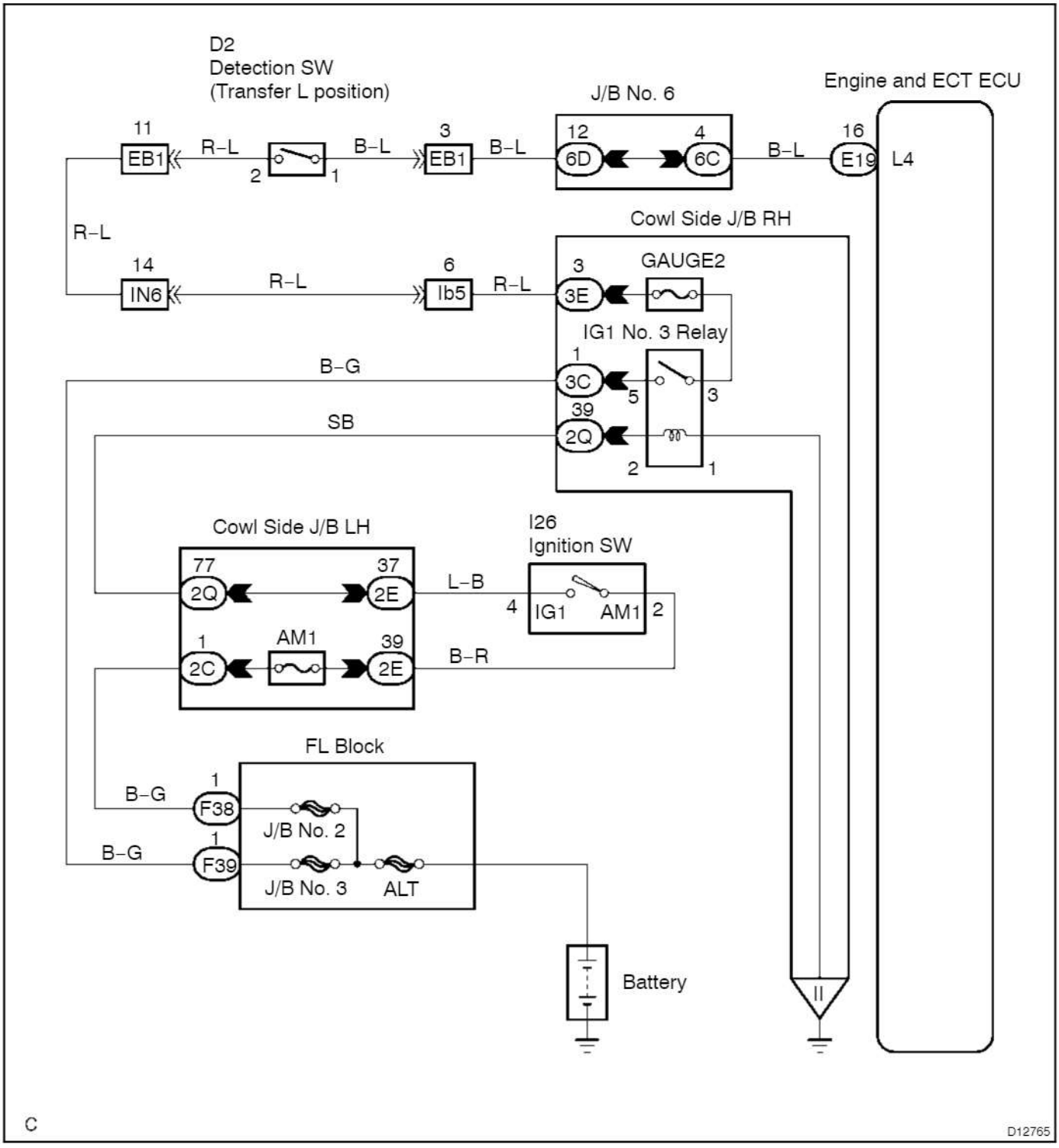
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L4 Position Switch Circuit

CIRCUIT DESCRIPTION

The L4 position switch detects the gear position of the transfer. Shifting the transfer shift lever into L4 turns L4 position switch ON. Then the Engine & ECT ECU cancels operation of the lock–up clutch.

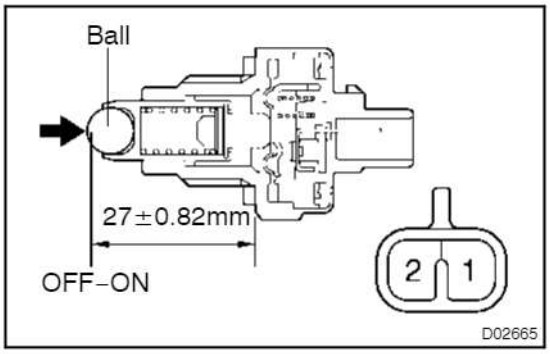
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check transfer L4 position switch.**



PREPARATION:
Remove the transfer L4 position switch.
CHECK:
Check the continuity between the switch terminals when pushing the ball at the tip of the switch.
OK:

Switch	Specified condition
Push	Continuity
Free	No continuity

NG → **Replace transfer L4 position switch.**

OK

2	**Check harness and connector between battery and transfer L4 position switch, transfer L4 position switch and Engine and ECT ECU (See page IN–38).**

NG → **Repair or replace the harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–119).

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DIAVW–01

ATF Temperature Sensor No.2 Circuit

CIRCUIT DESCRIPTION

ATF temperature sensor No.2 is on the transmission and just before the oil cooler inlet pipeline.
If Engine and ECT ECU detects the abnormally high temperature of ATF by this sensor, it draws driver's attention by turning the warning lamp up.
HINT:

- The temperature of ATF easily raises when toeing, climbing hills and in stack, etc.
- If the ATF temperature sensor No.2 shorts, the signal that indicates the ATF temperature is 150°C (302°F) or higher is input in Engine and ECT ECU.

Vehicle conditions when sensor is in normal and when the vehicle is in short are indicated in the table below.

ATF temperature No.2 Sensor State	Detection Condition	Symptom	Recovery Condition
Sensor is normal	• AT fluid temp. more than 150°C (302°F).	• AT Oil Temp. warning light remains on	• AT fluid temp. less than 135°C (275°F). *1
Sensor is in short	• Any conditions.	• AT Oil Temp. warning light remains on	• Symptoms still occur

HINT:
*1: When AT fluid temperature is in normal range, it decreases to less than 135°C within 5 minutes with the shift lever in P or N range in a idling state.

WIRING DIAGRAM

See page DI–127.

INSPECTION PROCEDURE

1	**Check A/T oil warning light.**

CHECK:
When parking the vehicle with the shift lever in P or N range, check that the AT oil warning light goes off within 5 minutes.
OK:

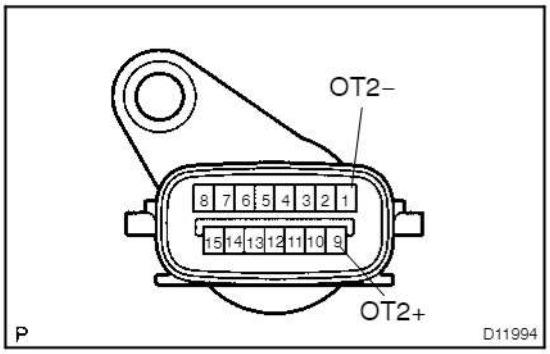
AT oil warning light goes off

OK → **END**

NG

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2	Check transmission wire.



PREPARATION:

Disconnect the transmission wire connector from the transmission.

CHECK:

Measure resistance between terminals OT2+ and OT2– of the transmission wire connector and body ground.

OK:

Resistance: 1 MΩ or higher

CHECK:

Measure the resistance between terminals OT2+ and OT2–.

OK:

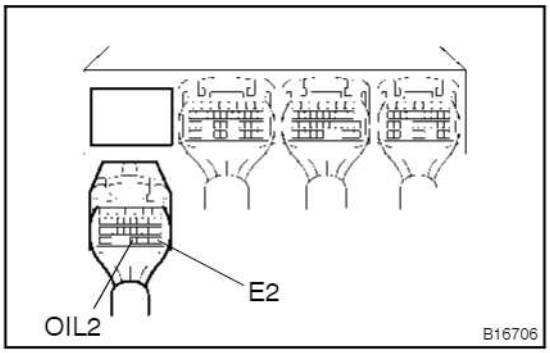
Temperature: °C (°F)	Resistance: kΩ
10 (50)	6.4
110 (230)	0.2

NG → **Replace the transmission wire (ATF temperature sensor).**

OK →

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3	**Measure resistance between terminal OIL2 and E2 of Engine and ECT ECU connector.**



PREPARATION:

(a) Connect the transmission wire connector.

(b) Disconnect the connector of the Engine and ECT ECU.

CHECK:

Measure the resistance between terminals OIL2 and E2.

OK:

Temperature: °C (°F)	Resistance: kΩ
10 (50)	6.4
110 (230)	0.2

CHECK:

Measure resistance between terminals OIL2 and E2 of the Engine and ECT ECU connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG → **Repair or replace the harness or connector (See page IN–38).**

OK →

Proceed to next circuit inspection shown on problem symptoms table (See page DI–119).

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Shift Solenoid Malfunction

SYSTEM DESCRIPTION

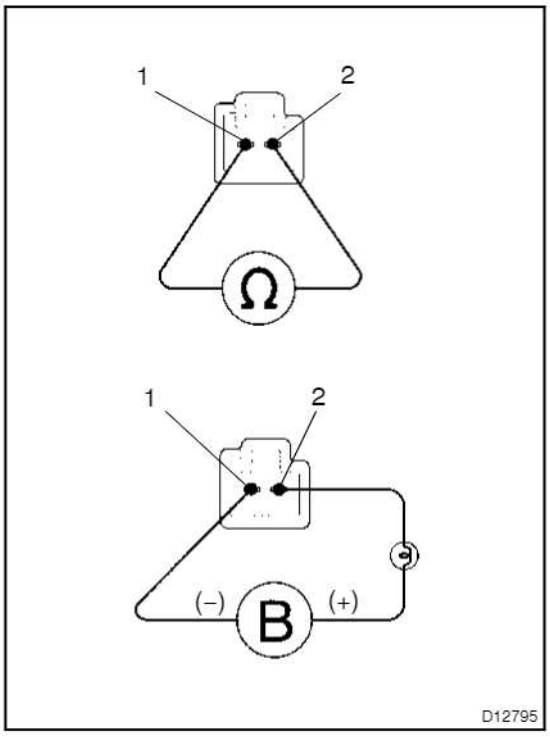
See page DI–135.

HINT:

- Start the inspection from step 1 when shift solenoid valve SL1.
- Start the inspection from step 2 when shift solenoid valve SL2.
- Start the inspection from step 3 when shift solenoid valve SLT.
- Start the inspection from step 4 when shift solenoid valve SLU.
- Start the inspection from step 5 when shift solenoid valve S1.
- Start the inspection from step 5 when shift solenoid valve S2.
- Start the inspection from step 6 when shift solenoid valve SR.

INSPECTION PROCEDURE

1	**Check shift solenoid valve SL1 operation.**



PREPARATION:

Remove the shift solenoid valve SL1.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.

Standard: 5.0 – 5.6 Ω at 20°C (68°F)

(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.

Standard: Solenoid sounds operation noise.

OK:

Standard

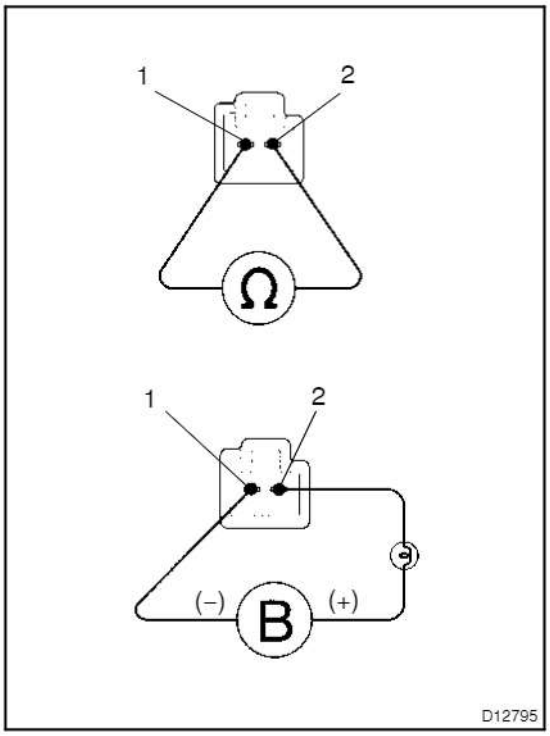
OK	**Go to step 7.**

NG

Replace shift solenoid valve SL1 (See page AT–8).

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2	Check shift solenoid valve SL2 operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SL2.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

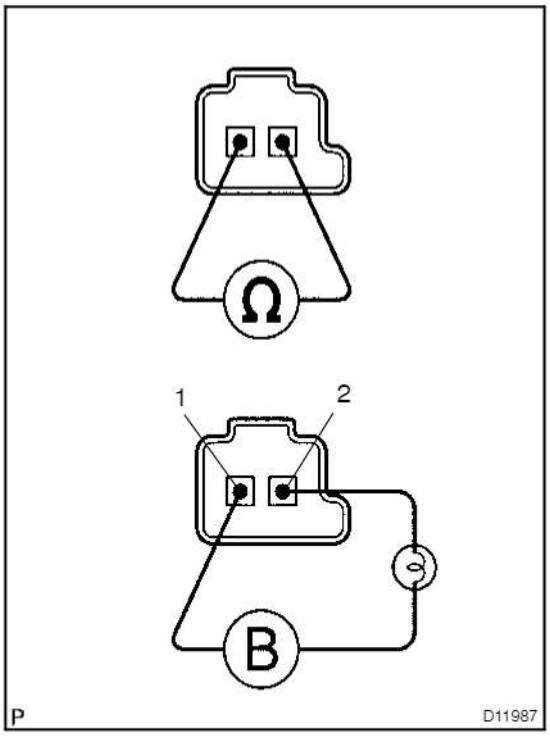
OK	Go to step 7.

NG

Replace shift solenoid valve SL2
(See page AT–8).

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3	Check shift solenoid valve SLT operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLT.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

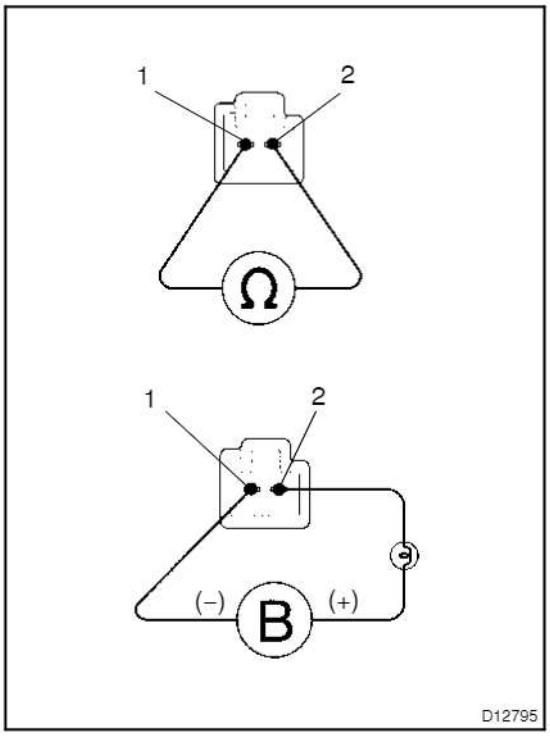
OK	Go to step 7.

NG

Replace shift solenoid valve SLT
(See page AT–8).

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4	Check shift solenoid valve SLU operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SLU.

CHECK:

(a) Measure the resistance between terminals 1 and 2 of solenoid connector.
Standard: 5.0 – 5.6 Ω at 20°C (68°F)
(b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.
Standard: Solenoid sounds operation noise.

OK:

Standard

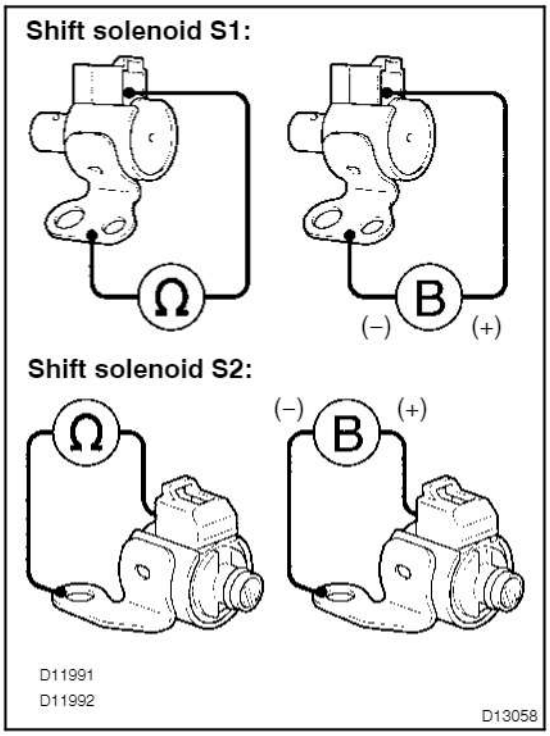
OK	Go to step 7.

NG

Replace shift solenoid valve SLU (See page AT–8).

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5	Check shift solenoid valve S1 or S2 operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve S1 or S2.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

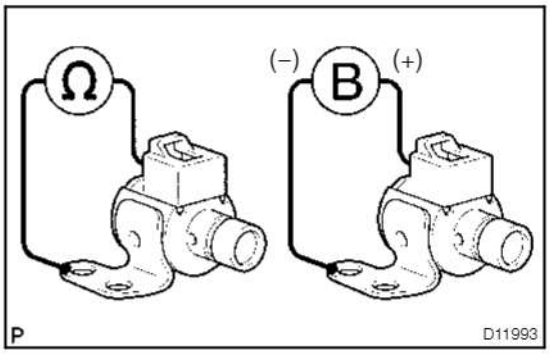
OK	Go to step 7.

NG

Replace shift solenoid valve S1 or S2 (See page AT–8).

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6	Check shift solenoid valve SR operation.



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve SR.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 – 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

OK → **Go to step 7.**

NG

Replace shift solenoid valve SR (See page AT–8).

7	Check valve body.

NG → **Repair or replace valve body (See page AT–8).**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–119).

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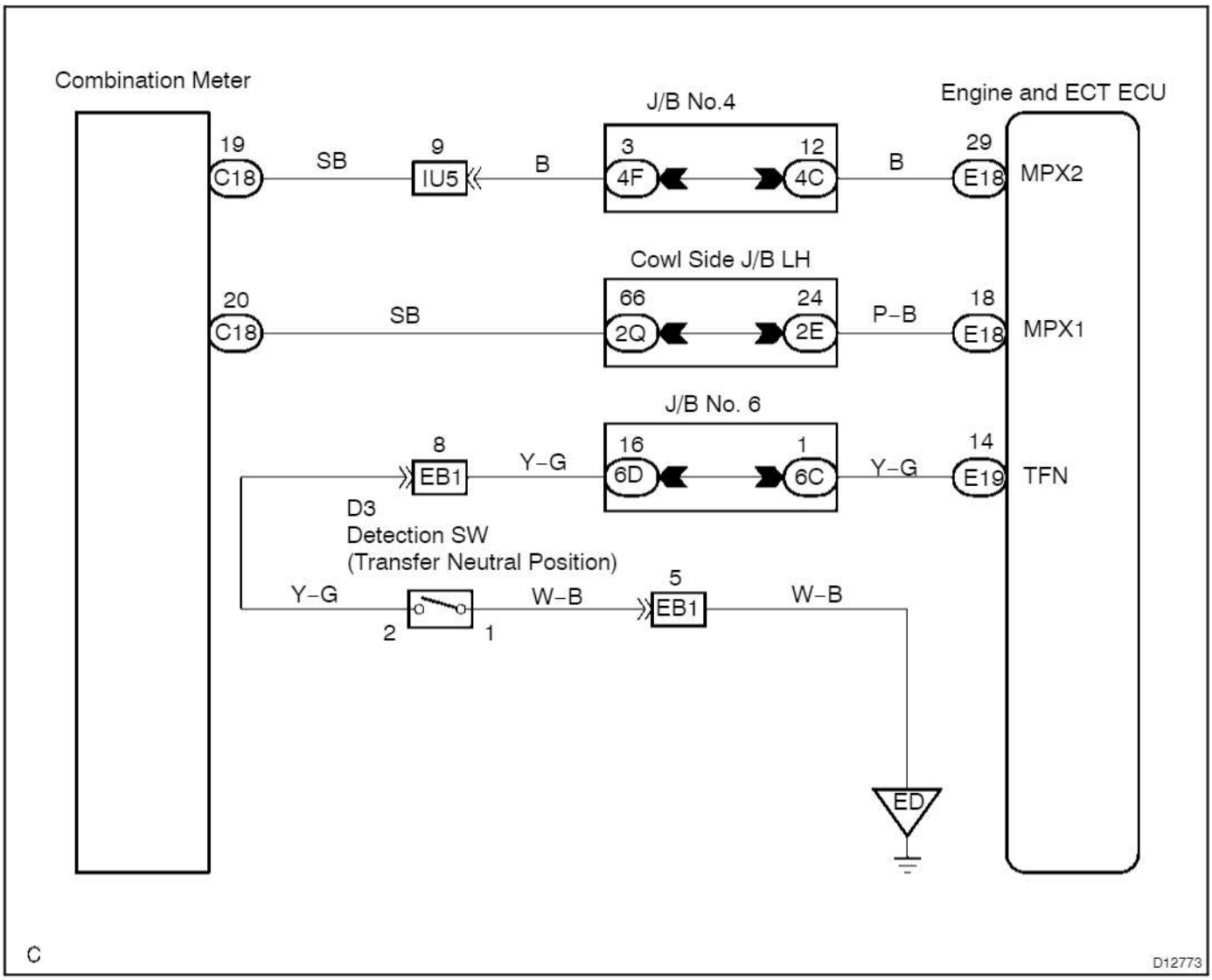
DIAVS–01

A/T. P. (Automatic Transmission Parking) Indicator Circuit

CIRCUIT DESCRIPTION

The propeller shaft and wheels are free even when the transmission shift lever is set to P as long as the transfer shift lever is in Neutral range. The A/T.P. indicator light lights up to warn the driver that the propeller shaft and wheels are not locked.
If the A/T.P. indicator light goes on, the transfer shift lever should be shifted to the ranges other than N range.

WIRING DIAGRAM



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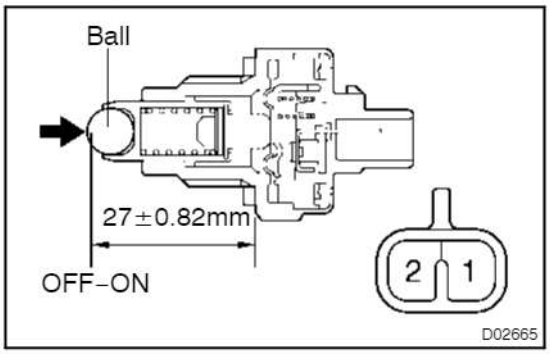
INSPECTION PROCEDURE

1	Check Neutral start switch (See page DI–156).

NG → Replace the Neutral start switch.

OK

2	Check transfer neutral position switch.



PREPARATION:
Remove the transfer neutral position switch.
CHECK:
Check the continuity between the switch terminals when pushing the ball at the tip of the switch.
OK:

Switch	Specified condition
Push	Continuity
Free	No continuity

NG → Replace the transfer neutral position switch.

OK

3	Check harness and connector between Engine and ECT ECU and transfer neutral position switch, transfer neutral position switch and body ground (See page IN–38).

NG → Repair or replace the harness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–119).

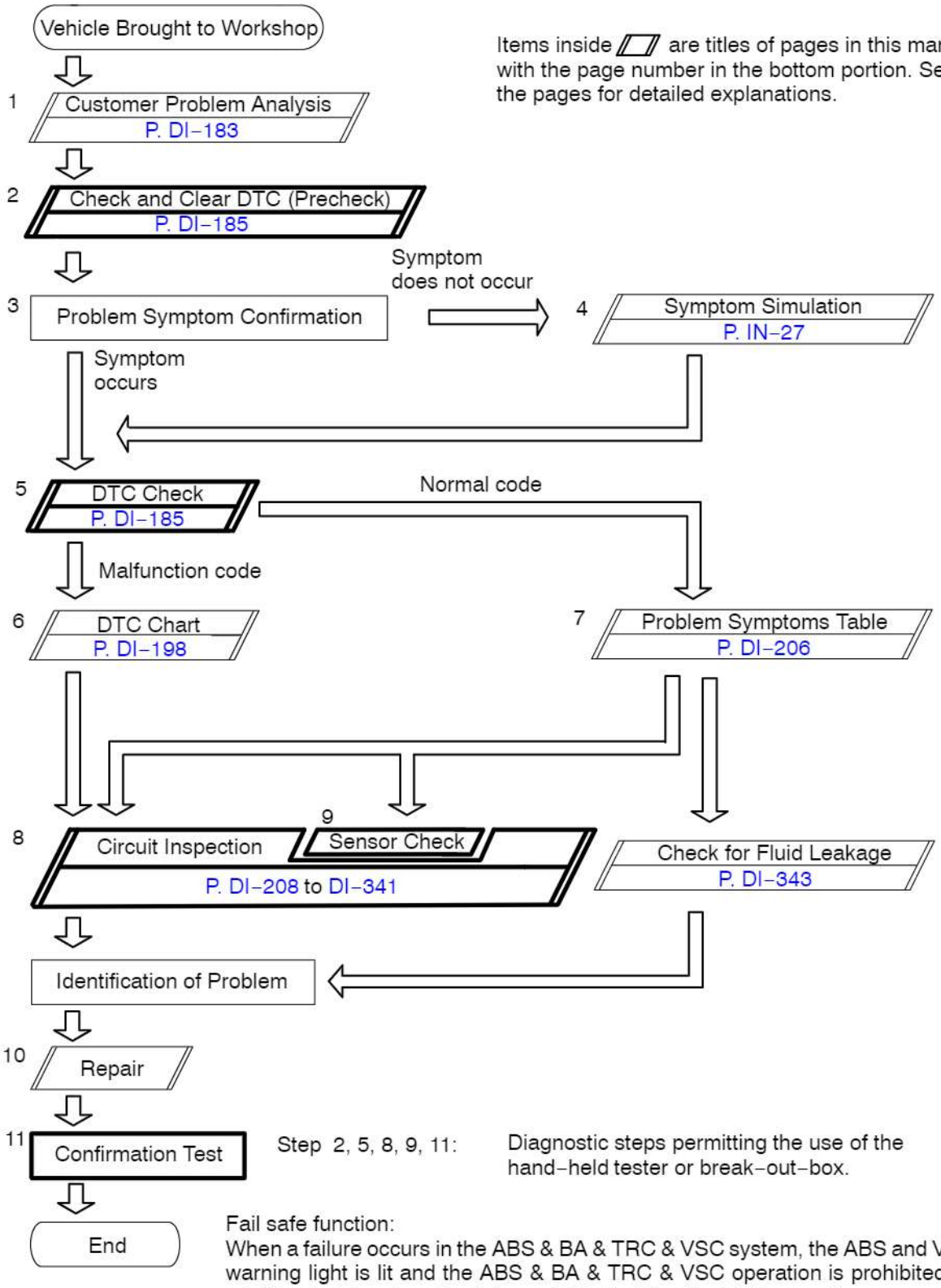
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ABS & VEHICLE STABILITY CONTROL (VSC) & BRAKE ASSIST (BA) SYSTEM

DI6WY–03

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshooting in accordance with the procedure on the following pages.



Items inside ▱ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.

Step 2, 5, 8, 9, 11: Diagnostic steps permitting the use of the hand–held tester or break–out–box.

Fail safe function:
When a failure occurs in the ABS & BA & TRC & VSC system, the ABS and VSC warning light is lit and the ABS & BA & TRC & VSC operation is prohibited. In addition to this, when the failure which disables the EBD operation occurs, the BRAKE warning light is lit as well and the EBD operation is prohibited.

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DI6WZ-02

CUSTOMER PROBLEM ANALYSIS CHECK

ABS & EBD & BA Check Sheet

Inspector's Name :

Customer's Name		**Registration No.**	
		Registration Date	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Continuously ☐ Intermittently (times a day)

Symptoms	☐ ABS does not operate.	
	☐ ABS does not operate efficiently.	
	☐ BA does not operate.	
	☐ EBD does not operate.	
	ABS Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up
	Brake Warning Light Abnormal (PKB released)	☐ Remains ON ☐ Does not Light Up

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

Freeze Frame Data	STOP LIGHT SW	☐ ON ☐ OFF
	SYSTEM	☐ NO SYS ☐ ABS ☐ BA ☐ FAIL SF
	#IG ON	
	VEHICLE SPD	km/h MPH

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TRC & VSC Check Sheet

Inspector's Name :

Customer's Name		**Registration No.**	
		Registration Date	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ TRC does not operate. (Wheels spin when starting rapidly.)	
	☐ VSC does not operate. (Wheels sideslip at the time of sharp turning.)	
	VSC OFF Indicator Light Abnormal	☐ Remains ON ☐ Does not Light Up
	VSC TRCWarning Indicator Abnormal	☐ Displays ☐ Does not Display
	SLIP Indicator Light Abnormal	☐ Remains ON ☐ Does not Light Up
	Skid Control Buzzer Abnormal	☐ Sounds ☐ Does not Sound

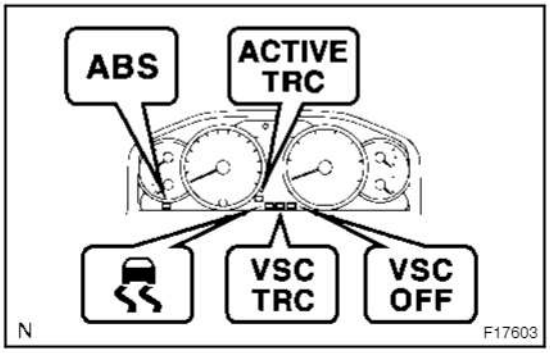
Check Item	**ABS Warning Light**	☐ Normal ☐ Malfunction Code (Code)
	Malfunction Indicator Light	☐ Normal ☐ Malfunction Code (Code)

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

Freeze Frame Data	VSC/TRC OFF SW	☐ ON ☐ OFF
	SYSTEM	☐ VSC/TRC
	SHIFT POSITION	☐ P,N ☐ 2 ☐ R ☐ 3 ☐ D ☐ 4 ☐ L ☐ FAIL
	STEERING ANG	deg
	YAW RAT	deg/s
	MAS CYL PRESS	V
	THROTTLE	deg
	MAS PRESS GRADE	MPa/s
	G (RIGHT&LEFT)	G
	G (BACK&FORTH)	G

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DIARF–01



PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Check the warning lights and buzzer.

(1) Release parking brake lever.

(2) When the ignition switch is turned ON, check that the ABS, VSC TRC and BRAKE warning lights, VSC OFF, SLIP and ACTIVE TRC indicator lights goes on for 3 sec.

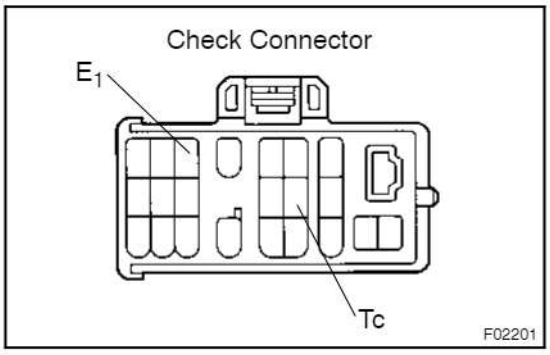
(3) When depressing the brake pedal repeatedly it may turn on the warning lights and buzzer.

HINT:

- If the ECU stores DTC, VSC TRC warning light and VSC OFF indicator light is ON.
- If the indicator check result is not normal, proceed to troubleshooting for the ABS warning light circuit, VSC TRC warning light circuit, BRAKE warning light circuit, VSC OFF indicator light circuit, SLIP indicator light circuit and ACTIVE TRC indicator light circuit.

Trouble Area	See Page
ABS warning light circuit	DI–313
VSC TRC warning light circuit	DI–317
BRAKE warning light circuit	DI–322
VSC OFF indicator light circuit	DI–332
SLIP indicator light circuit	DI–326
ACTIVE TRC indicator light circuit	DI–329

(b) In case of not using hand–held tester:
Check the DTC.



(1) Using SST, connect terminals Tc and E_1 of check connector.

SST 09843–18020

(2) Turn the ignition switch ON.

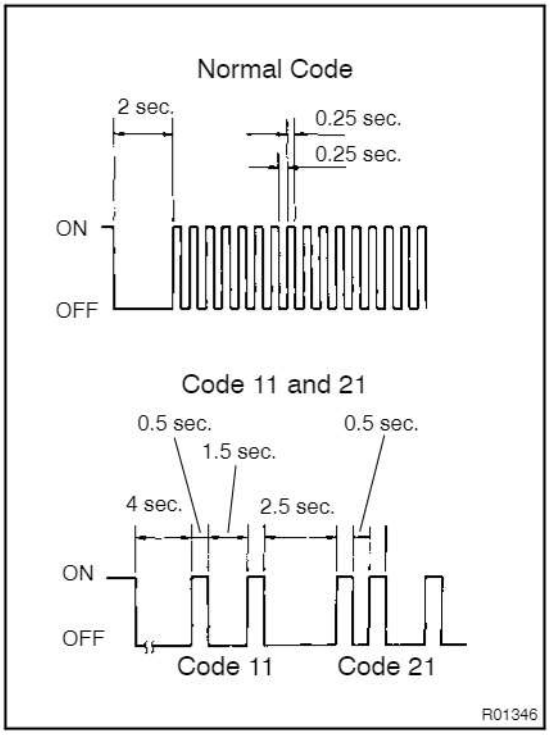
(3) Read the DTC from the ABS or VSC TRC warning light on the combination meter.

HINT:

- If no code appears, inspect the Tc circuit, ABS or VSC TRC warning light circuit.

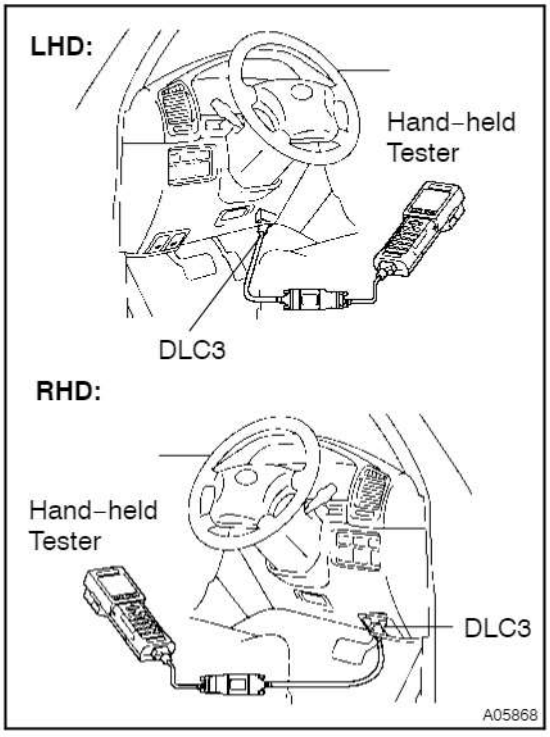
Trouble Area	See page
Tc circuit	DI–339
ABS warning light circuit	DI–313
VSC TRC warning light circuit	DI–317

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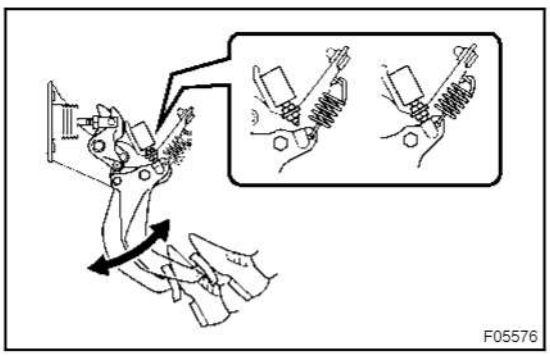
- As an example, the blinking patterns for normal code and codes 11 and 21 are shown on the left.
  (4) Codes are explained in the code table on page DI–198.
  (5) After completing the check, disconnect terminals Tc and E_1 of check connector and turn off the display.

If 2 or more malfunctions are indicated at the same time the lowest numbered DTC will be displayed 1st.



(c) In case of using hand–held tester:
Check the DTC.
(1) Hook up the hand–held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Read the DTC by following the prompts on the tester screen.

HINT:
Please refer to the hand–held tester operator's manual for further details.

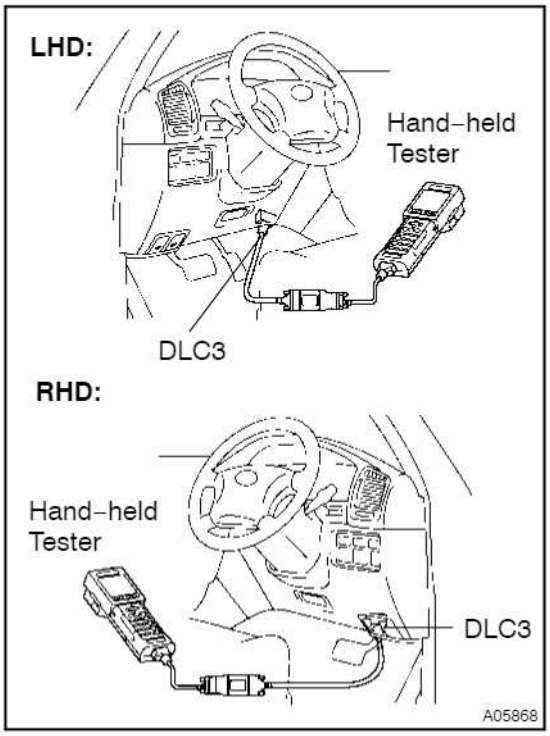


(d) In case of not using hand–held tester:
Clear the DTC.
(1) Using SST, connect terminals Tc and E_1 of check connector.
SST 09843–18020
(2) Turn the ignition switch ON.
(3) Clear the DTC stored in ECU by depressing the brake pedal 8 or more times within 5 sec.

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(4) Check that the warning light shows the normal code.
(5) Remove the SST from the terminals of check connector.

SST 09843–18020



(e) In case of using hand–held tester:
Clear the DTC.
(1) Hook up the hand–held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Operate the hand–held tester to erase the codes. (See hand–held tester operator's manual.)

2. DATA LIST

HINT:
According to the DATA LIST displayed by the hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON.
(c) According to the display on tester, read the "DATA LIST".

Item	Measurement Item/Range (Display)	Normal Condition*	Diagnostic Note
HB MOT RELAY	HB Motor relay status/ ON or OFF	–	–
ABS MOT RELAY	Motor relay status/ ON or OFF	–	–
SOL RELAY	Solenoid relay status/ ON or OFF	–	–
PRESS HIGH	HIGH Hydraulic brake boost pressure/ ON or OFF	–	–
PRESS LOW	LOW Hydraulic brake boost pressure/ ON or OFF	–	–

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VSC/TRC OFF SW	VSC OFF switch/ ON or OFF	–	–
IDLE SW	Main idle switch/ ON or OFF	ON: Accelerator pedal released OFF: Accelerator pedal depressed	–
STOP LIGHT SW	Stop light switch/ ON or OFF	ON: Brake pedal released OFF: Brake pedal depressed	–
PKB SW	PKB sw/ ON or OFF	ON: Parking brake applied OFF: Parking brake released	–
ABS OPERT FR	Front Right wheel operation/ BEFORE or OPERATE	BEFORE: No ABS operation (FR) OPERATE: During ABS operation (FR)	–
ABS OPERT FL	Front Left wheel operation/ BEFORE or OPERATE	BEFORE: No ABS operation (FL) OPERATE: During ABS operation (FL)	–
ABS OPERT RR	Rear Right wheel operation/ BEFORE or OPERATE	BEFORE: No ABS operation (RR) OPERATE: During ABS operation (RR)	–
ABS OPRET RL	Rear Left wheel operation/ BEFORE or OPERATE	BEFORE: No ABS operation (RL) OPERATE: During ABS operation (RL)	–
WHEEL SPD FR	Front Right wheel speed / Min.: 0km/h, Max.: 326.4 km/h	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD FL	Front Left wheel speed/ Min.: 0km/h, Max.: 326.4 km/h	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RR	Rear Right wheel speed/ Min.: 0km/h, Max.: 326.4 km/h	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RL	Rear Left wheel speed/ Min.: 0km/h, Max.: 326.4 km/h	Actual wheel speed	Speed indicated on speedometer
DECELERAT SENS	G sensor (GL1 filter)/ Min.: –1.869 G, Max.: 1.869	Approximately 0 ± 0.13 G at still condition	Reading changes when vehicle is bounced
DECELERAT SENS2	G sensor (GL2 filter)/ Min.: –1.869 G, Max.: 1.869	Approximately 0 ± 0.13 G at still condition	Reading changes when vehicle is bounced
IG VOLTAGE	ECU IG power voltage/ UNDER or NORMAL or OVER	–	–
SFRR	SFRR/ ON or OFF	–	–
SFRH	SFRH/ ON or OFF	–	–
SFLR	SFLR/ ON or OFF	–	–
SFLH	SFLH/ ON or OFF	–	–
SRRR (SRR)	SRRR (SRR)/ ON or OFF	–	–
SRRH (SRH)	SRRH (SRH)/ ON or OFF	–	–
SRLR	SRLR/ ON or OFF	–	–
SRLH	SRLH/ ON or OFF	–	–
SRCF (SA1)	SRCF (SA1)/ ON or OFF	–	–
SRCR (SA2)	SRCR (SA2)/ ON or OFF	–	–
SRMF (SMCF, SA3)	SRMF (SMCF, SA3)/ ON or OFF	–	–
SRMR (SMCR, STR)	SRMR (SMCR, STR)/ ON or OFF	–	–
THROTTLE	Throttle position sensor/ Min.: 0 deg, Max.: 125 deg	–	–
ENGINE SPD	Engine Speed/ Min.: 0 rpm, Max.: 6000 rpm	Actual engine speed	–

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YAW RATE	Yaw rate sensor/ Min.: –128 deg/s, Max.: 128 deg/s	–	–
YAW ZERO VALUE	Memorized zero value/ Min.: –128 deg/s, Max.: 128 deg/s	–	–
STEERING ANG	Steering sensor/ Min.: –1682 deg, Max.: 1877 deg	–1682 to 1877 deg	Turn the steering wheel changes the value
MAS CYL PRS 1	Master cylinder pressure 1/ Min.: 0 V, Max.: 5 V	When brake pedal is released: 0.3 – 0.9 V	Reading increases when brake pedal is depressed
AIR BLD SUPPORT	Air bleed availability/ NOT SUP or SUPPORT	w/ BA: Supported w/ VSC: Not supported	–
TEST MODE	Test mode operation/ NORMAL or TEST	NORMAL: Normal mode TEST: During test mode	–
#CODES	Number of Trouble Code/ Min.: 0, Max.: 255	MIn.: 0, Max.: 48	–

3. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the hand–held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, perform the "ACTIVE TEST".

HINT:

IG must be turned ON to proceed Active Test using a hand–held tester.

*1: For VSC equipped vehicles only

Item	Test Details	Diagnostic Note
SFRR	Turns ABS solenoid (SFRR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFRH	Turns ABS solenoid (SFRH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLR	Turns ABS solenoid (SFLR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLH	Turns ABS solenoid (SFLH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRRR	Turns ABS solenoid (SRRR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRRH	Turns ABS solenoid (SRRH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRLR	Turns ABS solenoid (SRLR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRLH	Turns ABS solenoid (SRLH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRCF (SA1)	Turns ABS solenoid (SRCF (SA1)) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRCR (SA2)	Turns ABS solenoid (SRCR (SA2)) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRMF (SMCF, SA3)	Turns ABS solenoid (SMCF, SA3)) ON / OFF	Operation of solenoid (clicking sound) can be heard

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SRMR (SMCR, STR)	Turns ABS solenoid (SRMR (SMCR, STR)) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFRR & SFRH	Turns ABS solenoid SFRR & SFRH ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLR & SFLH	Turns ABS solenoid SFLR & SFLH ON / OFF	Operation of solenoid (clicking sound) can be heard
SRH & SRR	Turns ABS solenoid SRRR & SRRH ON / OFF	Operation of solenoid (clicking sound) can be heard
SRLR & SRLH	Turns ABS solenoid SRLR & SRLH ON / OFF	Operation of solenoid (clicking sound) can be heard
SFRH & SFLH	Turns ABS solenoid SFRH & SFLH ON / OFF	Operation of solenoid (clicking sound) can be heard
SRCF & SRCR	Turns ABS solenoid SRCF & SRCR ON / OFF	Operation of solenoid (clicking sound) can be heard
SRMF & SRMR	Turns ABS solenoid SRMF & SRMR ON / OFF	Operation of solenoid (clicking sound) can be heard
SOL RELAY	Turns ABS solenoid relay ON/OFF	Operation of solenoid (clicking sound) can be heard
ABS MOT RELAY	Turns ABS motor relay ON/OFF	Operation of motor (clicking sound) can be heard
TRAC MOT RELAY	Turns TRC motor relay ON/OFF	Operation of motor (clicking sound) can be heard
ABS WARN LIGHT	Turns ABS warning light ON / OFF	Observe combination meter
VSC WARN LIGHT	Turns VSC warning light ON / OFF	Observe combination meter
VSC/ TRC OFF IND	Turns VSC / TRC OFF indicator ON / OFF	Observe combination meter
SLIP INDI LIGHT	Turns SLIP indicator light ON / OFF	Observe combination meter
BRAKE WRN LIGHT	Turns BRAKE warning light ON / OFF	Observe combination meter
VSC/BR WARN BUZ	Turns VSC / BRAKE warning buzzer ON / OFF	Buzzer can be heard

4. FREEZE FRAME DATA

(a) The vehicle (sensor) status memorized during ABS and/or VSC operation or at the time of error code detection can be displayed by the hand–held tester.

(b) Only one record of freeze frame data is stored and the freeze frame data generated during ABS and/or VSC operation are constantly updated. Also, the number of the ignition switch's "ON" after the freeze frame data is stored can be memorized up to 31 and it can be displayed.

HINT:

If the ignition switch "ON" operation exceeds 31 times, "31" appears on the display.

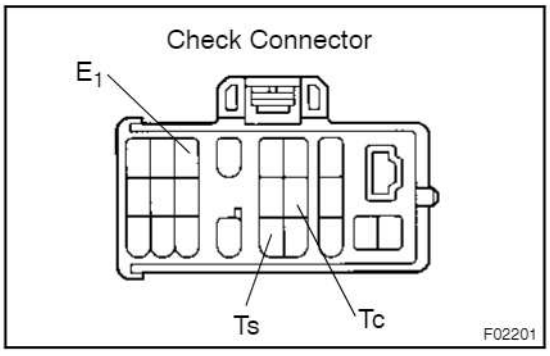
(c) If the diagnosis code abnormality occurs, the freeze frame data at the occurrence of the abnormality is stored but the ABS actuation data is deleted.

Hand–held tester display	Measurement Item	Reference Value*
VEHICLE SPD	Wheel speed sensor reading	Speed indicated on speedometer
STOP LIGHT SW	Stop light switch signal	Stop light switch ON: ON, OFF: OFF
# IG ON	Number of operations of ignition switch ON after memorizing freeze frame data	0 – 31
MAS CYL PRESS	Master cylinder pressure sensor reading	Brake pedal release : 0.3 – 0.9 V Brake pedal depress: 0.8 – 4.5 V
MASS PRESS GRADE	Master cylinder pressure sensor change	–30 – 200 MPa/s

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Hand–held tester display	Measurement Item	Reference Value*
SYSTEM	System status	ABS activated: ABS VSC/TRC activated: VSC/TRC BA activated: BA Fail safe mode activated: FAIL SF No system activated: NO SYS
YAW RATE	Yaw rate angle sensor reading	–100 – 100
STEERING ANG	Steering sensor reading	Left turn: Increase Right turn: Drop
THROTTLE	Throttle position sensor reading	Release accelerator pedal: Approx. 0 deg. Depress accelerator pedal: Approx. 90 deg.
G (RIGHT & LEFT)	Right and left G	–1.869 – 1.869
G (BACK & FORTH)	Back and forth G	–1.869 – 1.869
VSC (TRC) OFF SW	VSC OFF switch signal	TRAC OFF SW ON: ON OFF: OFF
SHIFT POSITION	Shift lever position	FAIL P,N R D 4 3 2 L
THROTTLE	Throttle sensor reading	0 – 125 deg.

*: If no conditions are specifically stated for "Idling", it means the shift lever is at N or P position, the A/C switch is OFF and all accessory switches are OFF.



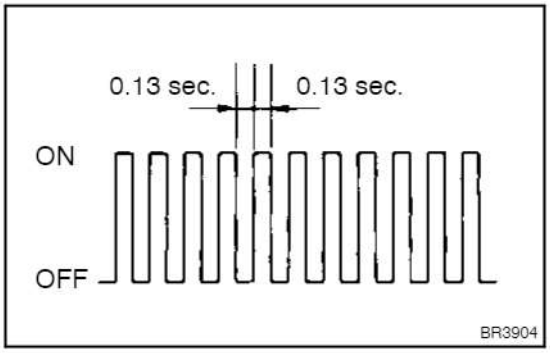
5. SPEED SENSOR SIGNAL CHECK (TEST MODE)

HINT:

- When replacing the yaw rate sensor or ECU, make sure to perform yaw rate sensor zero point calibration.
- If the ignition switch is turned from ON to ACC or LOCK during test mode, DTC will be erased.

(a) In case of not using hand–held tester:
Check the speed sensor signal.
(1) Turn the ignition switch OFF.
(2) Using SST, connect terminals Ts and E_1 of check connector.
SST 09843–18020
(3) Start the engine.

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(4) Check that the ABS warning light blinks.

HINT:

If the ABS warning light does not blink, inspect the ABS warning light circuit and Ts circuit (See page DI–313 and DI–341).

(5) Keep the vehicle in the stationary condition on the flat place for 6 sec. or more.

(6) Shift the transfer lever in L4 position and turn the center diff. lock switch ON.

(7) Leaving the vehicle in the stationary condition and the brake pedal in free condition for 1 sec. or more, continue to depress the brake pedal with 98 N (10 kgf, 22 lbf) of force or more for 1 sec. or more.

(8) Leaving the vehicle in the stationary condition, depress the brake pedal with 98 N (10 kgf, 22 lbf) of force or more for 1 sec. or more.

HINT:

At this time, the ABS warning light comes on for 3 sec.

(9) Drive vehicle straight forward.
When driving the vehicle with the speed faster than 45 km/h (28 mph) for several seconds, check that the ABS warning light comes off.

HINT:

There is a case that the sensor check is not completed if the vehicle has its rear wheels spun or its steering wheel steered during this check.

(10) Stop the vehicle.

(11) Using SST, connect terminals Tc and E_1 of check connector.

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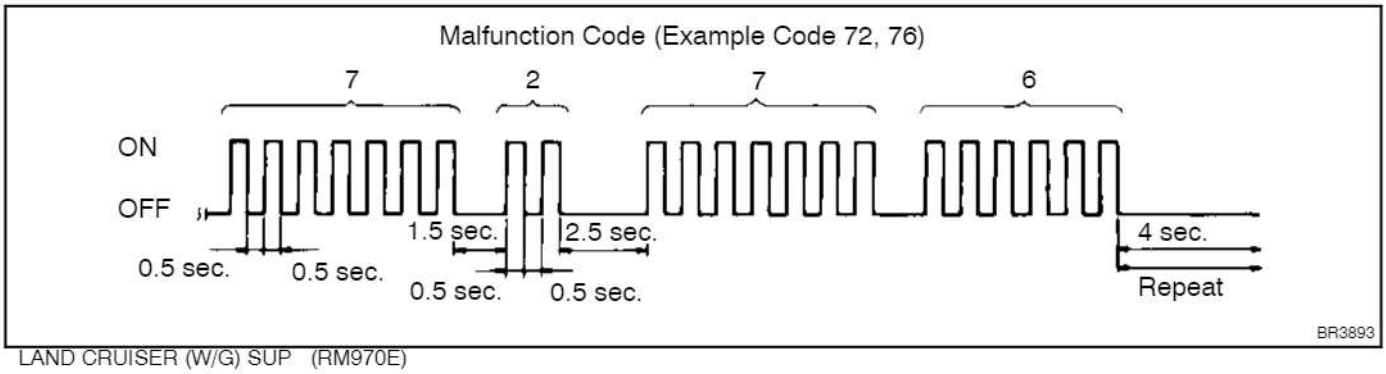
(12) Read the number of blinks of the ABS warning light.

HINT:

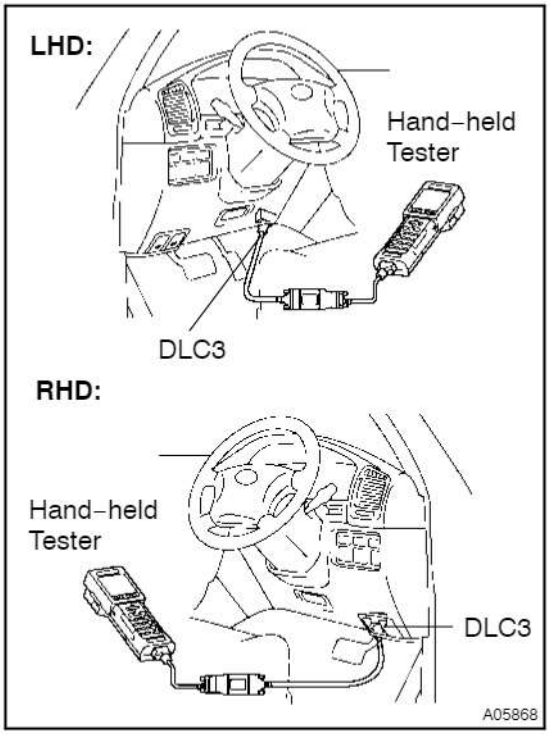
- See the list of DTC shown on the next page.
- If every sensor is normal, a normal code is output (A cycle of 0.25 sec. ON and 0.25 sec. OFF is repeated).
- If 2 or more malfunctions are indicated at the same time, the lowest numbered code will be displayed 1st.

(13) After doing the check, disconnect the SST from terminals Ts and E_1, Tc and E_1 of check connector and turn ignition switch OFF.

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(b) In case of using hand–held tester:
Check the sensor signal.
(1) Hook up the hand–held tester to the DLC3.
(2) Do step (3) and (4) to (10) on the previous page.
(3) Read the DTC by following the prompts on the tester screen.

HINT:
Please refer to the hand–held tester operator's manual for further details.

DTC of speed sensor check function:

Code No.	Diagnosis	Trouble Area
C1271 / 71	Low output voltage of right front speed sensor	• Right front speed sensor • Sensor installation • Sensor rotor
C1272 / 72	Low output voltage of left front speed sensor	• Left front speed sensor • Sensor installation • Sensor rotor
C1273 / 73	Low output voltage of right rear speed sensor	• Right rear speed sensor • Sensor installation • Sensor rotor
C1274 / 74	Low output voltage of left rear speed sensor	• Left rear speed sensor • Sensor installation • Sensor rotor
C1275 / 75	Abnormal change in output voltage of right front speed sensor	Right front speed sensor rotor
C1276 / 76	Abnormal change in output voltage of left front speed sensor	Left front speed sensor rotor
C1277 / 77	Abnormal change in output voltage of right rear speed sensor	Right rear speed sensor rotor
C1278 / 78	Abnormal change in output voltage of left rear speed sensor	Left rear speed sensor rotor
C1279 / 79	Deceleration sensor is faulty	• Deceleration sensor • Sensor installation
C1281 / 81	Master cylinder pressure sensor output signal is faulty	Master cylinder pressure sensor
C1282 / 82	Transfer indicator (center diff. lock) switch malfunction	Transfer indicator (center diff. lock) switch
C1283 / 83	Transfer L4 position switch malfunction	Transfer L4 position switch

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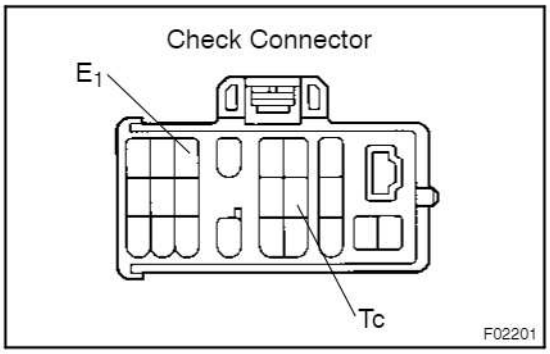
6. In case of not using hand–held tester: VSC SENSOR CHECK (TEST MODE)

NOTICE:

When having replaced the yaw rate sensor, deceleration sensor and/or ECU, perform zero point calibration of the yaw rate and deceleration sensors (See step 7.).

HINT:

If the ignition switch is turned from ON to ACC or LOCK during test mode, DTC will be erased.



(a) Procedures for test mode:

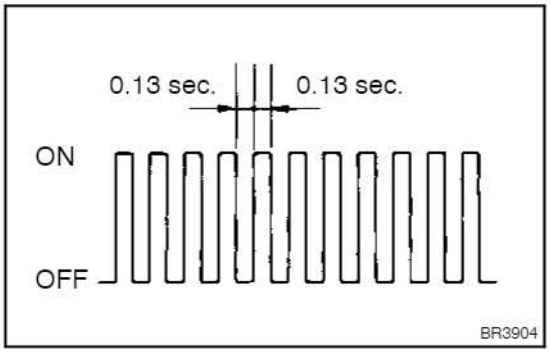
(1) Turn the ignition switch OFF.

(2) Check that the shift lever position is at P range, turn the steering wheel to the neutral range.

(3) Using SST, connect terminals Ts and E_1 of check connector.

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(4) Start the engine.



(5) Check that the VSC TRC warning light blinks.

HINT:

If the VSC TRC warning light does not blink, inspect the VSC TRC warning light circuit and Ts terminal circuit (See page DI–317 and DI–341).

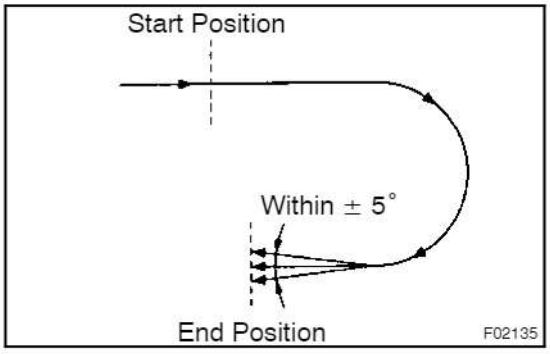
Turn the steering wheel either to left or right for 450° or more from the vehicle stationary condition, and turn back the steering wheel to the straight ahead position.

(b) Keep the vehicle in a stationary on a level place for 1 sec. or more.

(c) Check the yaw rate sensor.

Shift the shift lever to the D range and drive the vehicle at the vehicle speed of approx. 5 km/h (3 mph), turn the steering wheel either to left or right for 90° or more, and maintain 180° circular drive for the vehicle.

Stop the vehicle and shift the shift lever to the P range, check that the VSC buzzer sounds for 3 sec.



If the VSC buzzer sounded, the sensor check is in normal completion.

If the VSC buzzer does not sound, do the sensor check again.

If the VSC buzzer still won't sound, check the VSC buzzer circuit, then do the sensor check again.

Trouble Area	See page
VSC buzzer circuit	DI–337

HINT:

- Drive the vehicle circularly by 180°. At the end of the turn, the direction of the vehicle should be within 180° ± 5° of its start position.
- Do not spin the rear wheels.

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- Do not shift the shift lever to P range during the turn.
- Do not stop the vehicle during the turn.

(d) Read the DTC.

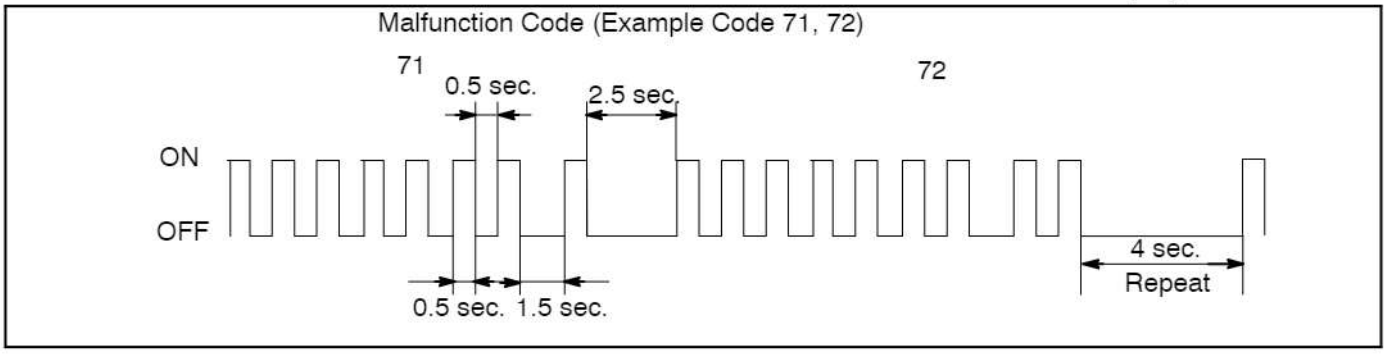
(1) Using SST, connect terminals Tc and E_1 of check connector.

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(2) Read the number of blinks of the VSC TRC warning light.

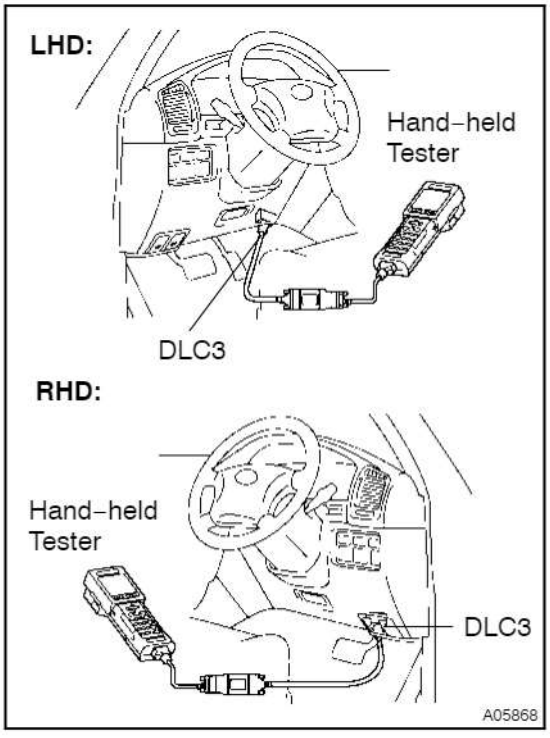
HINT:

- See the list of DTC shown on the next page.
- If every sensor is normal, a normal code is output. (A cycle of 0.25 sec. ON and 0.25 sec. OFF is repeated.)
- If 2 or more malfunctions are indicated at the same time, the lowest numbered code will be displayed 1st.



(3) After doing the check, disconnect the SST from terminals Ts and E_1, Tc and E_1 of check connector and turn ignition switch OFF.

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7. In case of using hand–held tester:
CHECK VSC SENSOR SIGNAL

(a) Hook up the hand–held tester to the DLC3.

(b) Do steps (a) – (2), (a) – (4) and (b) to (e) on the previous pages.

(c) Read the DTC by following the prompts on the tester screen.

HINT:

Please refer to the hand–held tester operator's manual for further details.

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DTC of the VSC sensor check function:

Code No.	Diagnosis	Trouble Area
C0371 / 71	Yaw rate sensor output signal malfunction	• Yaw rate sensor • Yaw rate sensor circuit

8. IF NECESSARY, PERFORM ZERO POINT CALIBRATION OF YAW RATE AND DECELERATION SENSORS

HINT:

- When having replaced the yaw rate sensor, deceleration sensor or/and the ECU, make sure to perform yaw rate and deceleration sensors zero point calibration.
- This operation is also required when the deceleration sensor or yaw rate sensor has been replaced since the calibrated zero point of both sensors will be erased.

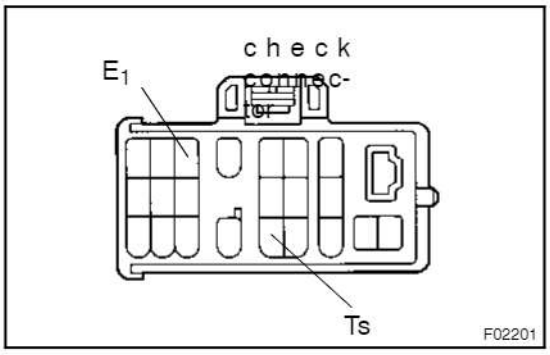
NOTICE:

- **While obtaining the zero point, do not give any vibration to the vehicle by tilting, moving or shaking it and keep it in a stationary condition. (Do not start the engine.)**
- **Be sure to do this on a level surface (within an inclination of 1 %).**

(a) Clear the zero point of the yaw rate and deceleration sensors.

(1) Shift the shift lever to P range.

(2) Turn the ignition switch ON in a stationary condition.



(3) With the ignition switch ON, using SST, repeat a cycle of short and open between terminals Ts and E_1 of check connector 4 times or more within 8 sec. Check that the VSC warning light is lit indicating the recorded zero point is erased.

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(4) Turn the ignition switch OFF.

(b) Obtain zero point of the yaw rate sensor.

(1) Make the terminals Ts and E_1 of check connector disconnected.

(2) Turn the ignition switch ON.

HINT:

The vehicle should be in a stationary condition with the shift lever in P range.

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(3) Check that the lighted VSC warning light goes off about 15 sec. after the ignition switch is turned ON.

HINT:

Even if the ignition is not turned OFF in step (a)–(4) and remains ON, the yaw rate sensor zero point calibration can be completed. In this case, the VSC warning light is lit about 15 sec. and starts blinking. (Normal code)

(4) After ensuring that the VSC warning light remains OFF for 2 sec., turn the ignition switch OFF.

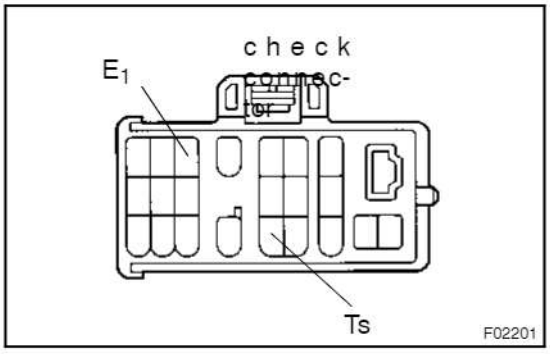
HINT:

If the ignition switch is not turned OFF in step (a)–(4), ensure the blinking light for 2 sec. and turn the ignition switch OFF.

(c) Perform deceleration sensor zero point calibration.

NOTICE:

After step (b) (the yaw rate sensor zero point calibration), the VSC warning light goes off. At this time, if the vehicle is driven without performing step (c) (deceleration sensor zero point calibration), deceleration sensor zero point calibration malfunction will be detected and the VSC warning light will light up. Therefore, perform step (c) right after step (b).



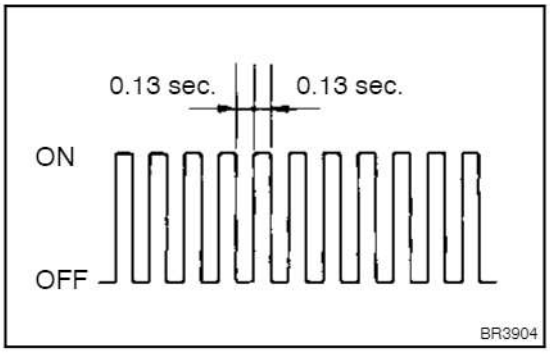
(1) Using SST, connect the terminals Ts and E_1 of check connector.

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(2) Turn the ignition switch ON.

HINT:

Make the vehicle in a stationary condition with the shift lever in P range.



(3) After turning the ignition switch ON, check that the VSC warning light is lit for about 4 sec. and then starts quick blinking at 0.13 sec. intervals.

(4) After ensuring the blinking of the VSC warning light for 2 sec., turn the ignition switch OFF.

(5) Remove the SST and make the terminals Ts and E1 of check connector disconnected.

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DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

When removing the part, turn the ignition switch OFF.

HINT:

- Using SST 09843–18020, connect the terminals Tc and E_1 of check connector.
- If any abnormality is not found when inspecting parts, inspect the ECU.
- If a malfunction code is displayed during the DTC check, check the circuit listed that code. For details of each code, turn to the page referred to under the "See page" for respective "DTC No." in the DTC chart.

DTC chart of ABS:

DTC No. (See Page)	Detection Item	Trouble Area
C0278 / 11 (DI–218)	Open or short circuit in ABS solenoid relay circuit	• ABS solenoid relay • ABS solenoid relay circuit
C0279 / 12 (DI–218)	B+ short circuit in ABS solenoid relay circuit	
C0226 / 21 (DI–215)	Open or short circuit in hydraulic brake booster solenoid circuit (SFR circuit)	• Hydraulic brake booster • SFRR or SFRH circuit
C0236 / 22 (DI–215)	Open or short circuit in hydraulic brake booster solenoid circuit (SFL circuit)	• Hydraulic brake booster • SFLR or SFLH circuit
C0246 / 23 (DI–215)	Open or short circuit in hydraulic brake booster solenoid circuit (SRR circuit)	• Hydraulic brake booster • SRRR or SRRH circuit
C0256 / 24 (DI–215)	Open or short circuit in hydraulic brake booster solenoid circuit (SRL circuit)	• Hydraulic brake booster • SRLR or SRLH circuit
C1225 / 25 (DI–233)	Open or short circuit in hydraulic brake booster solenoid circuit (SA1 circuit)	• Hydraulic brake booster • SA1 circuit
C1226 / 26 (DI–233)	Open or short circuit in hydraulic brake booster solenoid circuit (SA2 circuit)	• Hydraulic brake booster • SA2 circuit
C1227 / 27 (DI–233)	Open or short circuit in hydraulic brake booster solenoid circuit (SA3 circuit)	• Hydraulic brake booster • SA3 circuit
C1228 / 28 (DI–233)	Open or short circuit in hydraulic brake booster solenoid circuit (STR circuit)	• Hydraulic brake booster • STR circuit
C0200 / 31*1 (DI–208)	Right front wheel speed sensor signal malfunction	• Right front, left front, right rear and left rear speed sensor • Each speed sensor circuit • Sensor rotor
C0205 / 32*1 (DI–208)	Left front wheel speed sensor signal malfunction	
C0210 / 33*1 (DI–208)	Right rear wheel speed sensor signal malfunction	
C0215 / 34*1 (DI–208)	Left rear wheel speed sensor signal malfunction	
C1235 / 35 (DI–208)	Foreign matter is attached on the tip of the right front sensor	• Right front, left front, right rear, left rear speed sensor • Speed sensor rotor
C1236 / 36 (DI–208)	Foreign matter is attached on the tip of the left front sensor	
C1237 / 37 (DI–247)	Some tire is different size from the other tires	Tire size
C1238 / 38 (DI–208)	Foreign matter is attached on the tip of the right rear sensor	• Right front, left front, right rear, left rear speed sensor • Speed sensor rotor
C1239 / 39 (DI–208)	Foreign matter is attached on the tip of the left rear sensor	

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C1241 / 41 (DI–248)	Low battery voltage or abnormally high battery voltage	• Battery • IC regulator • Power source circuit
C1242 / 42*2 (DI–251)	Open circuit in IG2 circuit	• Battery • IC regulator • Power source circuit
C1243 / 43 (DI–254)	Malfunction in deceleration sensor (constant output)	• Deceleration sensor • Wire harness for deceleration sensor system
C1244 / 44 (DI–258)	Open or short circuit in deceleration sensor circuit	• Deceleration sensor • Deceleration sensor circuit
C1245 / 45 (DI–254)	Malfunction in deceleration sensor	• Deceleration sensor • Wire harness for deceleration sensor system
C1246 / 46 (DI–261)	Malfunction in master cylinder pressure sensor	• Master cylinder pressure sensor • Master cylinder pressure sensor circuit
C1249 / 49 (DI–264)	Open circuit in stop light switch circuit	Stop light switch circuit
C1251 / 51*2 (DI–268)	Pump motor is locked Open circuit in pump motor ground	Hydraulic brake booster pump motor
C1252 / 52*2 (DI–271)	Hydraulic brake booster pump motor malfunction	• Hydraulic brake booster pump motor • Hydraulic brake booster pump motor circuit • Pressure switch (PH or PL)
C1253 / 53*2 (DI–277)	Hydraulic brake booster pump motor relay malfunction	• ABS motor 1 or ABS motor 2 relay • ABS motor 1 or ABS motor 2 relay circuit • Hydraulic brake booster pump motor circuit
C1254 / 54*2 (DI–282)	Pressure switch malfunction	• Pressure switch (PH or PL) • Pressure switch circuit
C1256 / 56*2 (DI–285)	Accumulator low pressure malfunction	• Accumulator • Pressure switch (PH or PL) • Hydraulic brake booster pump motor
C1257 / 57*2 (DI–291)	Power supply drive circuit malfunction	• Battery • Power source circuit • Skid control ECU
C1203 / 59 (DI–225)	Engine and ECT ECU communication circuit malfunction	• TRC+ or TRC– circuit • ENG+ or ENG– circuit • Engine and ECT ECU
C1268 / 68 (DI–294)	Transfer L4 position signal transmission failure	• Transfer L4 position switch • Transfer L4 position switch circuit
Always ON (DI–307)	Malfunction in skid control ECU	• Battery • IC regulator • Power source circuit • Skid control ECU

*1: As the DTC cannot be erased by replacing parts alone do either of the following operations.
Clear DTC (See page DI–185).
At the vehicle speed of 20 km/h (12 mph), drive the vehicle for 30 sec. or more.

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*2: Using the following table, troubled parts can be specified.

DTC		42		51		52		53		54		56		57	
BRAKE warning light and buzzer		Light	Buzzer	Light	Buzzer	Light	Buzzer	Light	Buzzer	Light	Buzzer	Light	Buzzer	Light	Buzzer
Pressure switch	PH					○	○			○		○	○		
	PL					○	○			○		○	○		
Pump motor circuit	Pump motor			○	○	○	○					○	○		
	MTT wire harness					○	○	○							
	MT+ wire harness			○											
	MT– wire harness			○											
Accumulator malfunction												○	○		
Motor relay circuit	MR1 open circuit							○							
	MR2 open circuit							○							
	MR1 welded contact					○	○	○							
	MR2 welded contact					○	○	○							
Hydraulic brake booster	Pressure leaks					○	○					○	○		
Power source*	IG2 open circuit	○													
ECU	Power supply circuit													○	

*: When IG1 circuit is open, ABS warning light and BRAKE warning light come on.

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DTC chart of VSC:

DTC No. (See Page)	Detection Item	Trouble Area
C1231 / 31 (DI–236)	Malfunction in steering angle sensor	• Steering angle sensor • Steering angle sensor circuit
C1232 / 32 (DI–241)	Malfunction in deceleration sensor	• Deceleration sensor • Deceleration sensor circuit
C1233 / 33 (DI–244)	Open or short circuit in yaw rate sensor circuit	• Yaw rate sensor • Yaw rate sensor circuit
C1234 / 34 (DI–244)	Malfunction in yaw rate sensor	• Yaw rate sensor • Yaw rate sensor circuit
C1335 / 35 (DI–236)	Malfunction in steering angle sensor communication circuit	• Steering angle sensor • Steering angle sensor circuit
C1210 / 36 (DI–300)	Zero point calibration of yaw rate sensor undone	• Yaw rate sensor • Yaw rate sensor circuit • Neutral start switch circuit (P range)
C1336 / 39 (DI–300)	Zero point calibration of deceleration sensor	• Deceleration sensor • Deceleration sensor circuit • Neutral start switch (P range) circuit
C1289 / 41* (DI–230)	Malfunction in VGRS control system	VGRS control system
C1223 / 43 (DI–230)	Malfunction in ABS control system	ABS control system
C1224 / 44 (DI–231)	Open or short circuit in NE signal circuit	• NEO circuit • Engine and ECT ECU • Skid control ECU
C1340 / 47 (DI–303)	Open circuit in center differential lock signal	• Center differential lock system • Center differential lock circuit
C1291 / 48* (DI–225)	VGRS ECU communication circuit malfunction	• VSC+ or VSC– circuit • AFS+ or AFS– circuit • Engine and ECT ECU
C1201 / 51 (DI–224)	Engine and ECT ECU system malfunction	Engine control system
C1203 / 53 (DI–225)	Engine and ECT ECU communication circuit malfunction	• TRC+ or TRC– circuit • ENG+ or ENG– circuit • Engine and ECT ECU
Always ON (DI–310)	Malfunction in skid control ECU Open circuit in VSC TRC warning light circuit	• Power source circuit • VSC TRC warning light circuit

*: w/ VGRS only

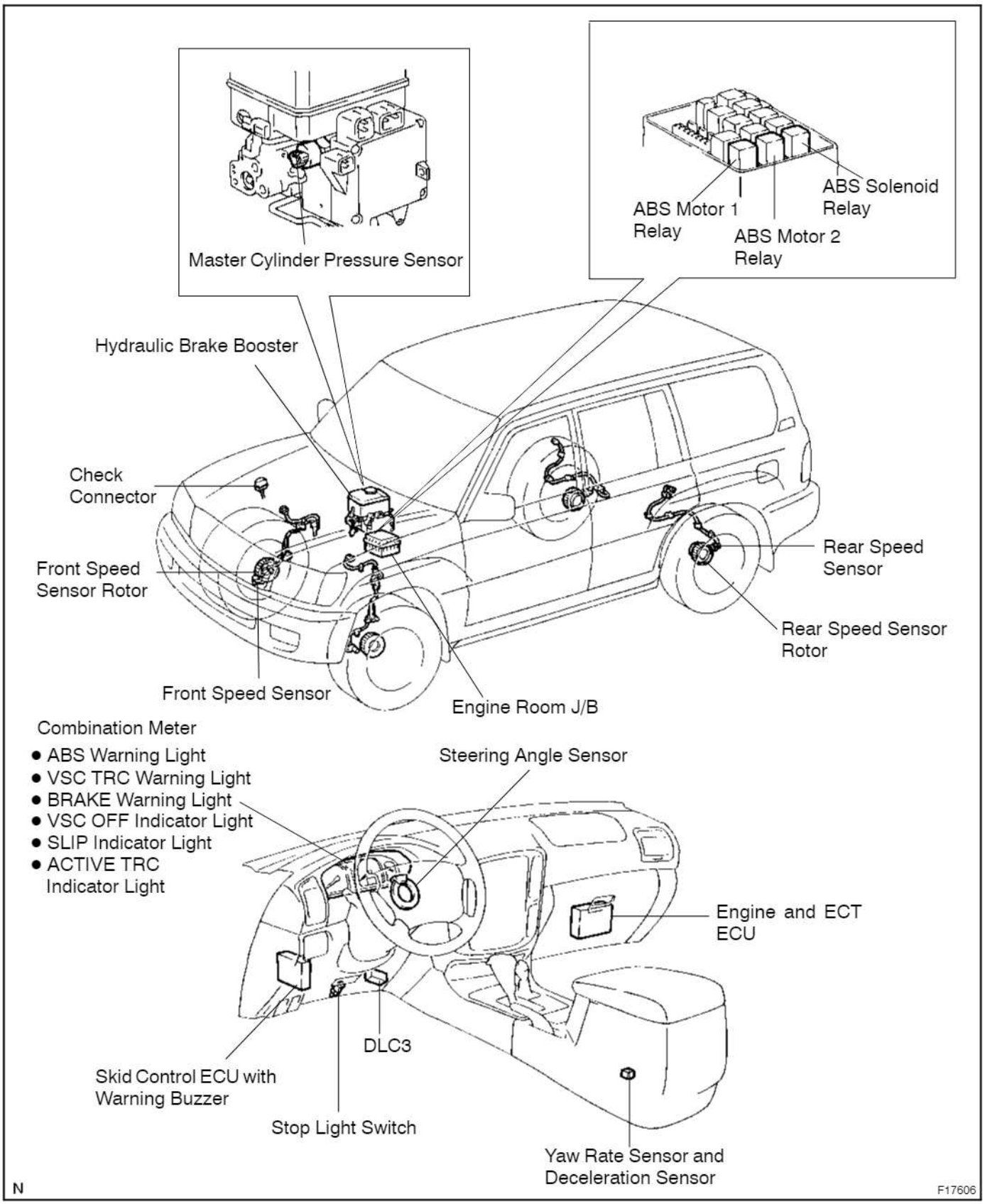
HINT:

There is a case that hand–held tester cannot be used when VSC TRC warning light is always on.

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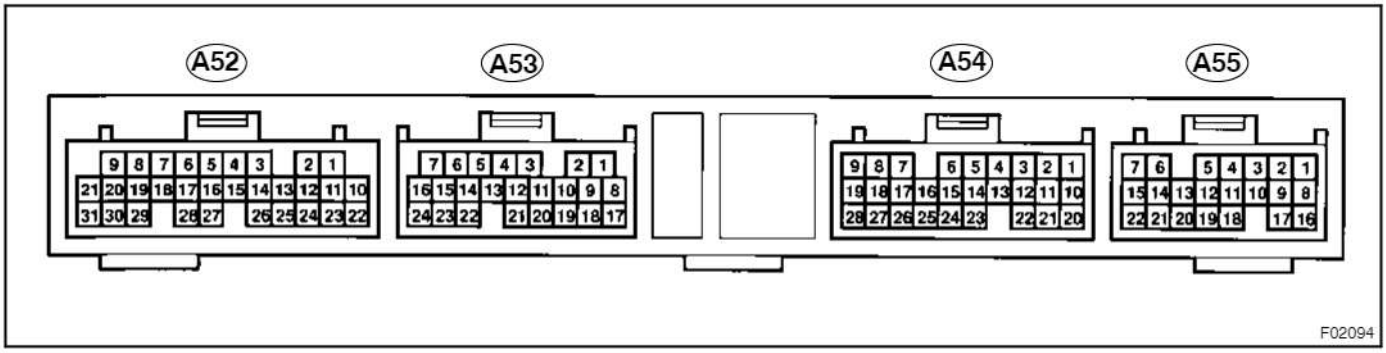
PARTS LOCATION



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DI6X3–04

TERMINALS OF ECU



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
SA1 (A52 – 2) – GND (A52 – 6, 31, A53 – 8, 17)	G ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
SA2 (A52 – 3) – GND (A52 – 6, 31, A53 – 8, 17)	B ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
SA3 (A52 – 4) – GND (A52 – 6, 31, A53 – 8, 17)	G–W ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
STR (A52 – 5) – GND (A52 – 6, 31, A53 – 8, 17)	G–Y ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
SFLR (A52 – 7) – GND (A52 – 6, 31, A53 – 8, 17)	B–Y ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
SRRH (A52 – 8) – GND (A52 – 6, 31, A53 – 8, 17)	W ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
SRRR (A52 – 9) – GND (A52 – 6, 31, A53 – 8, 17)	B–O ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
VCM (A52 – 10) – GND (A52 – 6, 31, A53 – 8, 17)	B ↔ W–B	IG switch ON	4.5 – 5.5
PH (A52 – 11) – GND (A52 – 6, 31, A53 – 8, 17)	O ↔ W–B	IG switch ON, pressure switch (PH) ON	Below 0.9
		IG switch ON, pressure switch (PH) OFF	5 – 8
FR+ (A52 – 14) – FR– (A52 – 13)	L ↔ P	IG switch ON, slowly turn right front wheel	AC generation
FL+ (A52 – 16) – FL– (A52 – 15)	R ↔ G	IG switch ON, slowly turn left front wheel	AC generation
SR (A52 – 19) – R1+ (A52 – 1)	G–Y ↔ P	IG switch ON, ABS warning light OFF	10 – 14
SFLH (A52 – 21) – GND (A52 – 6, 31, A53 – 8, 17)	Y ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
PMC (A52 – 22) – E2 (A52 – 12)	R ↔ W	IG switch ON, stop light switch OFF	0.3 – 0.7
E2 (A52 – 12) – GND (A52 – 6, 31, A53 – 8)	W ↔ W–B	IG switch OFF	Continuity
MTT (A52 – 27) – GND (A52 – 6, 31, A53 – 8, 17)	B–R ↔ W–B	IG switch ON (Motor relay is OFF)	Below 1.5
MT+ (A52 – 28) – MT– (A52 – 18)	L ↔ GR	IG switch ON	Pulse generation
MR1 (A52 – 29) – R1+ (A52 – 1)	R ↔ P	IG switch ON, hydraulic brake booster pump motor stops	Below 1.0
WA (A53 – 1) – GND (A52 – 6, 31, A53 – 8, 17)	P–L ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14

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BZ (A53 – 2) – GND (A52 – 6, 31, A53 – 8, 17)	L ↔ W–B	IG switch ON, VSC buzzer is not sounded	10 – 14
D/G (A53 – 3) – GND (A52 – 6, 31, A53 – 8, 17)	V–W ↔ W–B	IG switch ON	10 – 14
P (A53 – 5) – GND (A52 – 6, 31, A53 – 8, 17)	G–W ↔ W–B	IG switch ON, transmission shift lever is in P range	10 – 14
IG1 (A53 – 6) – GND (A52 – 6, 31, A53 – 8, 17)	B–W ↔ W–B	IG switch ON	10 – 14
NEO (A53 – 7) – GND (A52 – 6, 31, A53 – 8, 17)	W ↔ W–B	Engine idling	Pulse generation
STP (A53 – 10) – GND (A52 – 6, 31, A53 – 8)	G–W ↔ W–B	Stop light switch pushed in	Below 1.5
		Stop light switch released	2 – 5
Tc (A53 – 11) – GND (A52 – 6, 31, A53 – 8, 17)	P–B ↔ W–B	IG switch ON and terminals Tc–E_1 of check connector connected	Below 1.0
		IG switch ON and terminals Tc–E_1 of check connector not connected	10 – 14
Ts (A53 – 12) – GND (A52 – 6, 31, A53 – 8, 17)	W ↔ W–B	IG switch ON and terminals Ts–E_1 of check connector connected	Below 1.0
		IG switch ON and terminals Ts–E_1 of check connector not connected	10 – 14
PKB (A53 – 13) – GND (A52 – 6, 31, A53 – 8, 17)	R–W ↔ W–B	IG switch ON, parking brake switch ON	Below 1.5
		IG switch ON, parking brake switch OFF	10 – 14
ENG+ (A53 – 14) – ENG – (A53 – 22)	R ↔ G	IG switch ON	Pulse generation
RL+ (A53 – 18) – RL– (A53 – 19)	R ↔ G	IG switch ON, slowly turn left rear wheel	AC generation
RR+ (A53 – 20) – RR– (A53 – 21)	B ↔ W	IG switch ON, slowly turn right rear wheel	AC generation
TRC+ (A53 – 24) – TRC– (A53 – 16)	Y ↔ L	IG switch ON	Pulse generation
EXI2 (A54 – 2) – GND (A52 – 6, 31, A53 – 8, 17)	B–L ↔ W–B	IG switch ON, transfer in L4 position	8 – 14
		IG switch ON, transfer in any range except L4 position	Below 1.5
EXI (A54 –3) – GND (A52 – 6, 31, A53 – 8, 17)	P–B ↔ W–B	IG switch ON, center diff. lock switch ON	Below 2.0
		IG switch ON, center diff. lock switch OFF	10 – 14
VSCW (A54 –4) – GND (A52 – 6, 31, A53 – 8, 17)	L–W ↔ W–B	IG switch ON, VSC TRC warning light ON	Below 2.0
		IG switch ON, VSC TRC warning light OFF	10 – 14
BRL (A54 –5) – GND (A52 – 6, 31, A53 – 8, 17)	Y–G ↔ W–B	IG switch ON, BRAKE warning light ON	10 – 14
		IG switch ON, BRAKE warning light OFF	Below 2.0
IND (A54 –6) – GND (A52 – 6, 31, A53 – 8, 17)	L–B ↔ W–B	IG switch ON, SLIP indicator light ON	Below 2.0
		IG switch ON, SLIP indicator light OFF	10 – 14
WT (A54 –7) – GND (A52 – 6, 31, A53 – 8, 17)	L–R ↔ W–B	IG switch ON, VSC OFF indicator light ON	Below 2.0
		IG switch ON, VSC OFF indicator light OFF	10 – 14
VYS (A54 –9) – GYAW (A54 –27)	W–L ↔ W–R	IG switch ON	4.5 – 5.5
GL2 (A54 –10) – GYAW (A54 –27)	Y ↔ P	IG switch ON, vehicle is placed on the horizontal surface	2.0 – 3.0
SS1+ (A54 –14) – SS1– (A54 –23)	W ↔ G	Engine idling, slowly turn steering wheel	Pulse generation

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INFR (A54 –15) – GND (A52 – 6, 31, A53 – 8, 17)	B–R ↔ W–B	IG switch ON, ACTIVE TRC indicator light ON	Below 1.5
		IG switch ON, ACTIVE TRC indicator light OFF	10 – 14
YD (A54 –19) – GND (A52 – 6, 31, A53 – 8, 17)	L ↔ W–B	Approx. 1 sec. after IG switch ON	4.5 – 5.3
GL1 (A54 –22) – GYAW (A54 –27)	V ↔ P	IG switch ON, vehicle is placed on the horizontal surface	2.0 – 3.0
FLO (A54 –24) – GND (A52 – 6, 31, A53 – 8, 17)	R–Y ↔ W–B	Vehicle driving at about 20 km/h (12 mph)	Pulse generation
GYAW (A54 –27) – GND (A52 – 6, 31, A53 – 8, 17)	W–R ↔ W–B	IG switch OFF	Continuity
YAW (A54 –28) – GYAW (A54 –27)	W ↔ W–R	IG switch ON, vehicle is in stationary condition	2 – 3
SRLR (A55 – 1) – GND (A52 – 6, 31, A53 – 8, 17)	R–G ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
MR2 (A55 – 2) – R2+ (A55 – 3)	Y–B ↔ W–L	IG switch ON, hydraulic brake booster pump motor stops	Below 1.0
AFS+ (A55 – 5) – AFS – (A53 – 13)	R ↔ G	IG switch ON	Pulse generation
AST (A55 – 6) – GND (A52 – 6, 31, A53 – 8, 17)	R–Y ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
SRLH (A55 – 7) – GND (A52 – 6, 31, A53 – 8, 17)	R–W ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
SFRR (A55 – 8) – GND (A52 – 6, 31, A53 – 8, 17)	B–W ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
PL (A55 – 9) – GND (A52 – 6, 31, A53 – 8, 17)	W ↔ W–B	IG switch ON, pressure switch ON	3 – 5
		IG switch ON, pressure switch OFF	7 – 11
SFRH (A55 – 16) – GND (A52 – 6, 31, A53 – 8, 17)	LG ↔ W–B	IG switch ON, ABS warning light OFF	10 – 14
VSC+ (A55 – 17) – VSC– (A55 – 18)	Y ↔ L	IG switch ON	Pulse generation
TRIG (A55 – 20) – GND (A52 – 6, 31, A53 – 8, 17)	Y ↔ L	IG switch ON, ABS warning light OFF	10 – 14
+BO (A55 – 21) – GND (A52 – 6, 31, A53 – 8, 17)	Y ↔ L	IG switch ON	10 – 14
IG2 (A55 – 22) – GND (A52 – 6, 31, A53 – 8, 17)	*1 B–W ↔ W–B *2 B–R ↔ W–B	IG switch ON	10 – 14

*1: LHD

*2: RHD

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DI6X4–03

PROBLEM SYMPTOMS TABLE

If a normal code is displayed during the DTC check but the problem still occurs, check the circuits for each problem symptom in the order given in the table below and proceed to the relevant troubleshooting page.

NOTICE:

When replacing skid control ECU, sensor or etc., turn the ignition switch OFF.

Symptom	Suspect Area	See page
ABS does not operate. BA does not operate.	Only when 1. to 4. are all normal and the problem is still occurring, replace the skid control ECU. 1. Reconfirm the DTC and check that the normal code is output. 2. IG power source circuit 3. Speed sensor circuit 4. Check the hydraulic brake booster with a checker or hand–held tester. If abnormal, check the hydraulic circuit for leakage (See page DI–343).	 DI–185 DI–248 DI–208 –
ABS does not operate efficiently. BA does not operate.	Only when 1. to 4. are all normal and the problem is still occurring, replace the skid control ECU. 1. Reconfirm the DTC and check that the normal code is output. 2. Speed sensor circuit 3. Stop light switch circuit 4. Check the hydraulic brake booster with a checker or hand–held tester. If abnormal, check the hydraulic circuit for leakage (See page DI–343).	 DI–185 DI–208 DI–264 –
ABS warning light abnormal.	1. ABS warning light circuit 2. Skid control ECU	DI–313 IN–38
DTC check cannot be done.	Only when 1. to 3. are all normal and the problem is still occurring, replace the skid control ECU. 1. ABS warning light circuit 2. VSC OFF indicator light, center diff. lock indicator switch circuit 3. Tc terminal circuit	 DI–313 DI–332 DI–339
Speed sensor signal check cannot be done.	1. Ts terminal circuit 2. Skid control ECU	DI–341 IN–38
TRC does not operate.	Only when 1. to 4. are all normal and the problem is still occurring, replace the skid control ECU. 1. Check the DTC, reconfirming that the normal code is output. 2. IG power source circuit 3. Check the hydraulic circuit for leakage. 4. Speed sensor circuit	 DI–185 DI–248 DI–343 DI–208
VSC does not operate.	Only when 1. to 7. are all normal and the problem is still occurring, replace the skid control ECU. 1. Check the DTC, reconfirming that the normal code is output. 2. IG power source circuit 3. Check the hydraulic circuit for leakage. 4. Speed sensor circuit 5. Deceleration sensor circuit 6. Yaw rate sensor circuit 7. Steering angle sensor circuit	 DI–185 DI–251 DI–343 DI–208 DI–258 DI–244 DI–236
VSC TRC warning light abnormal.	1. VSC TRC warning light circuit 2. Skid control ECU	DI–317 IN–38

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BRAKE warning light abnormal	1. BRAKE warning light circuit 2. Skid control ECU	DI–322 IN–38
SLIP indicator light abnormal.	1. SLIP indicator light circuit 2. Skid control ECU	DI–326 IN–38
VSC OFF indicator abnormal.	1. VSC OFF indicator light, center diff. lock switch circuit 2. Skid control ECU	DI–332 IN–38
ACTIVE TRC indicator light abnormal.	1. ACTIVE TRC indicator light circuit 2. Skid control ECU	DI–329 IN–38

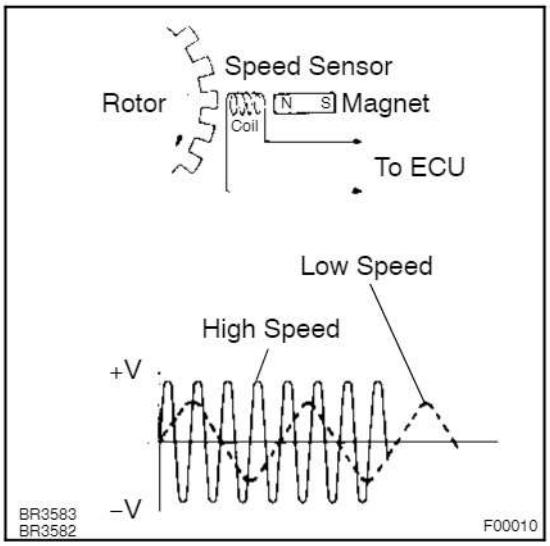
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DI6X5-03

CIRCUIT INSPECTION

DTC	C0200 / 31 – C1239 / 39	Speed Sensor Circuit

CIRCUIT DESCRIPTION



The speed sensor detects wheel speed and sends the appropriate signals to the ECU. These signals are used for control of both the ABS & BA & TRC & VSC control system. The front and rear rotors each have 48 serrations.
When the rotors rotate, the magnetic field emitted by the permanent magnet in the speed sensor generates an AC voltage. Since the frequency of this AC voltage changes in direct proportion to the speed of the rotor, the frequency is used by the ECU to detect the speed of each wheel.

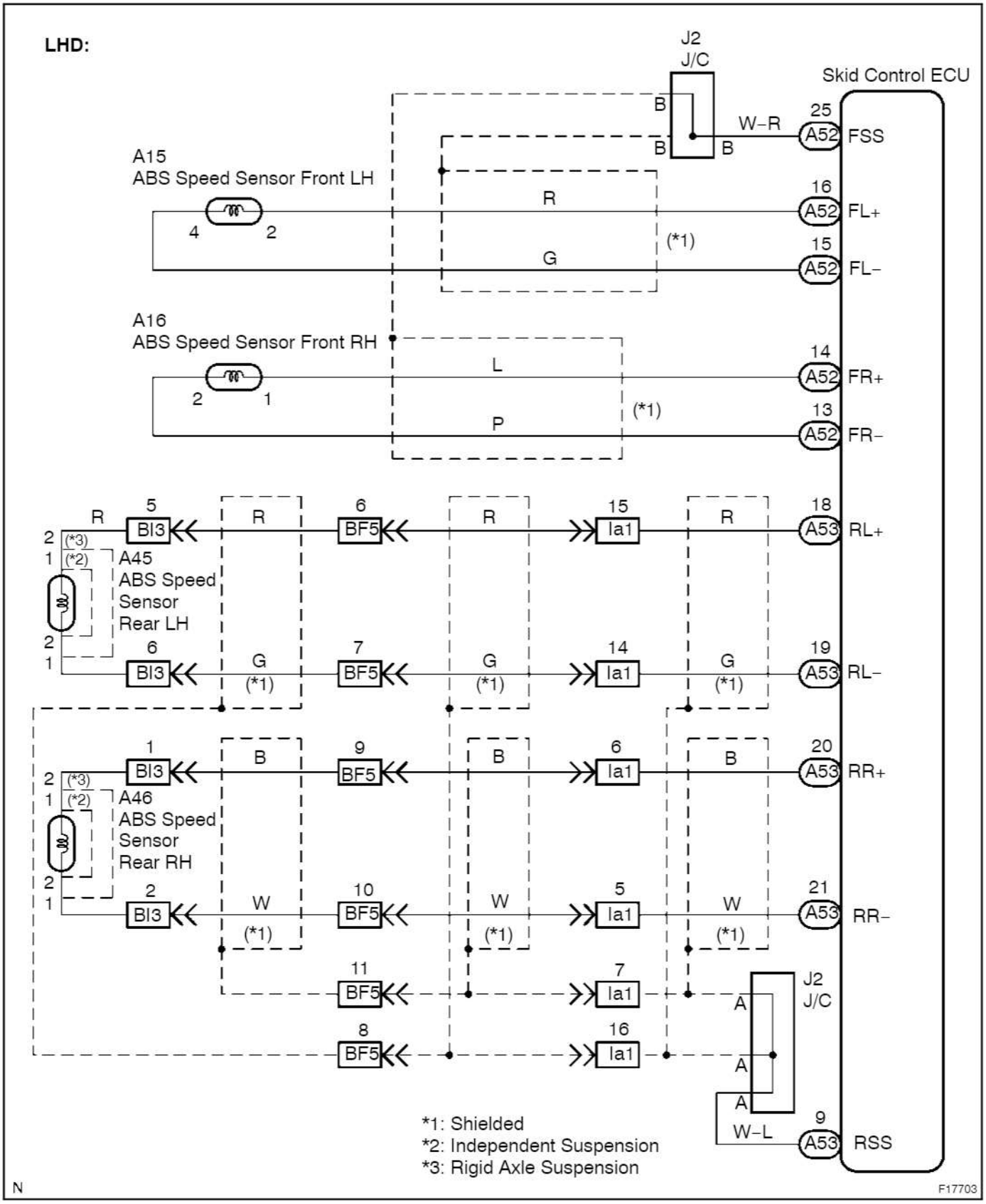
DTC No.	DTC Detecting Condition	Trouble Area
C0200 / 31 C0205 / 32 C0210 / 33 C0215 / 34	Detection of any of conditions 1. through 4.: 1. At vehicle speed of 10 km/h (6 mph) or more, pulses are not input for 15 sec. 2. Momentary interruption of the speed sensor signal occurs at least 7 times in the time between switching the ignition switch ON and switching it OFF. 3. Continuous noise occurs into the speed sensor signals with the vehicle speed at 20 km/h (12 mph) or more. 4. The condition that the speed sensor signal circuit is open continues for 0.12 sec. or more.	• Right front, left front, right rear and left rear speed sensor • Each speed sensor circuit • Sensor rotor
C1235 / 35 C1236 / 36 C1238 / 38 C1239 / 39	Continuous noise occurs in to the speed sensor signals with the vehicle speed at 20 km/h (12 mph) or more continues for 5 sec or more.	• Right front, left front, right rear, left rear speed sensor • Speed sensor rotor

HINT:

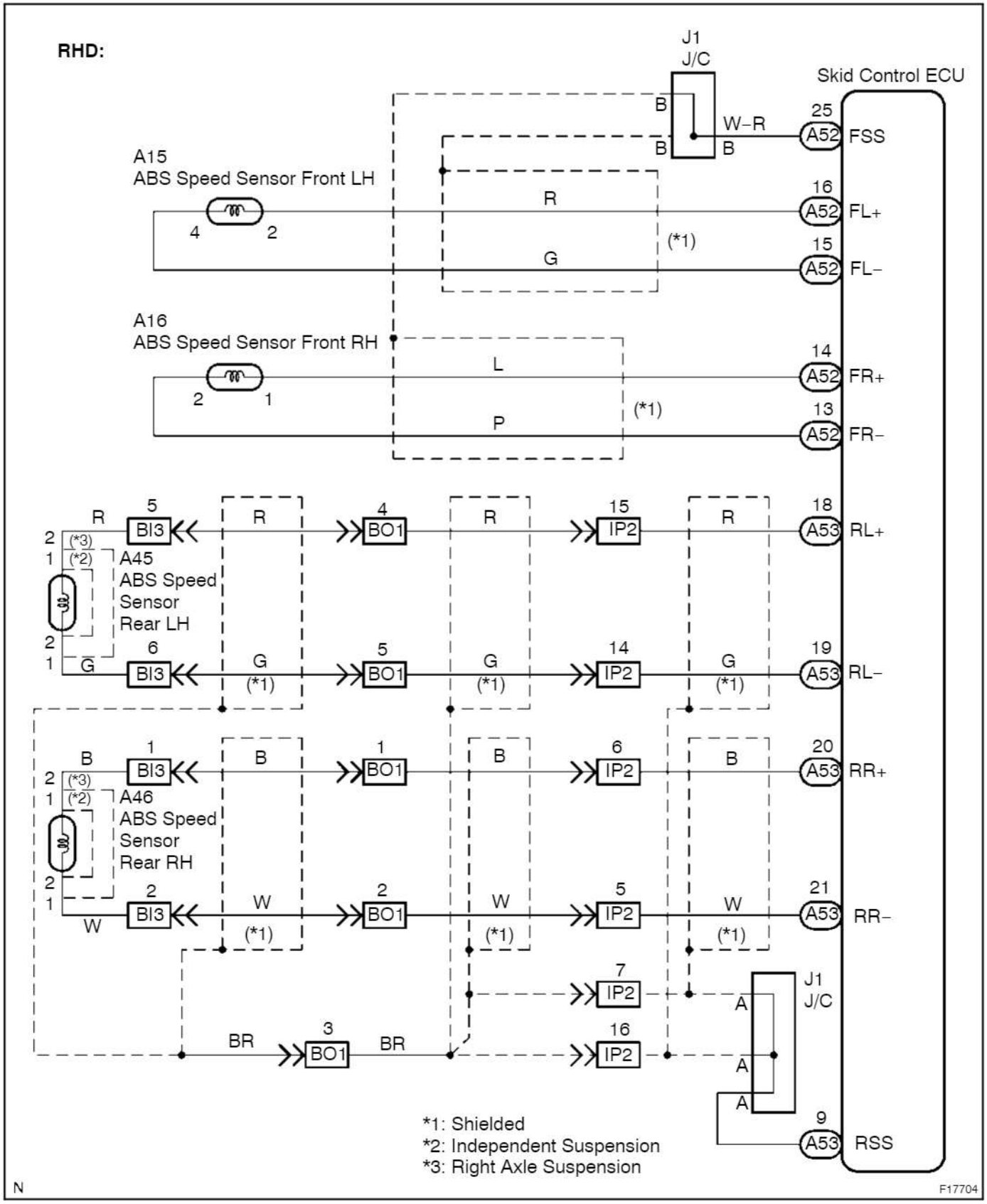
- DTC No. C0200 / 31 and C1235 / 35 is for the right front speed sensor.
- DTC No. C0205 / 32 and C1236 / 36 is for the left front speed sensor.
- DTC No. C0210 / 33 and C1238 / 38 is for the right rear speed sensor.
- DTC No. C0215 / 34 and C1239 / 39 is for the left rear speed sensor.

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WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	**Check output value of speed sensor.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the DATALIST mode on the hand–held tester.

CHECK:

Check that there is no difference between the speed value output from the speed sensor displayed on the hand–held tester and the speed value displayed on the speedometer when driving the vehicle.

OK:

There is almost no difference from the displayed speed value.

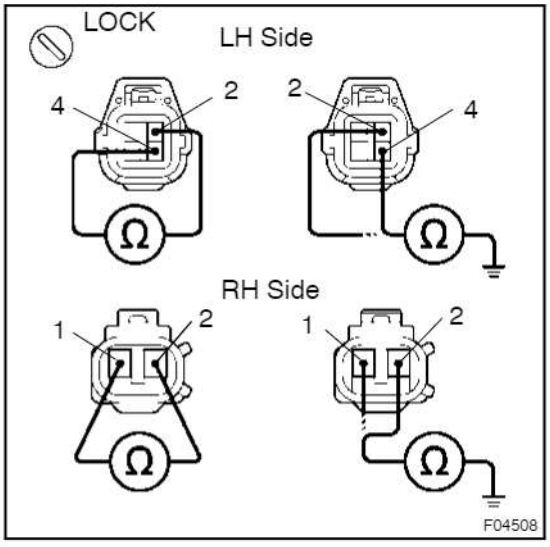
HINT:

There is tolerance of ± 10 % in the speedometer indication.

OK → **Check and replace skid control ECU.**

NG

2	**Check speed sensor.**



Front:

PREPARATION:

(a) Make sure that there is no looseness at the connector lock part and connecting part of the connector.

(b) Disconnect speed sensor connector.

CHECK:

- LH side:
  Measure resistance between terminals 2 and 4 of speed sensor connector.
- RH side:
  Measure resistance between terminals 1 and 2 of speed sensor connector.

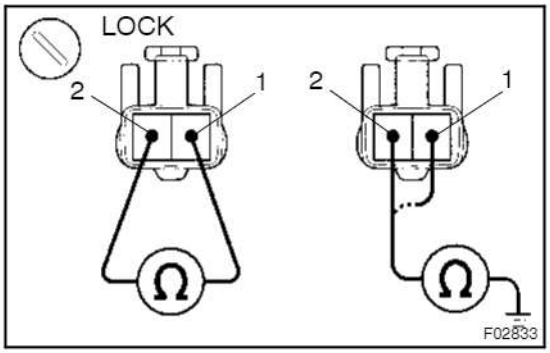
OK:

Resistance: 0.92 – 1.22 kΩ

CHECK:

- LH side:
  Measure resistance between terminals 2 and 4 of speed sensor connector and body ground.
- RH side:
  Measure resistance between terminals 1 and 2 of speed sensor connector and body ground.

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OK:

Resistance: 1 MΩ or higher

Rear:

PREPARATION:

(a) Make sure that there is no looseness at the connector lock part and connecting part of the connector.

(b) Disconnect speed sensor connector.

CHECK:

Measure resistance between terminals 1 and 2 of speed sensor connector.

OK:

Resistance: 1.0 – 1.4 kΩ

CHECK:

Measure resistance between terminal 1 or 2 of speed sensor connector and body ground.

OK:

Resistance: 1 MΩ or higher

NG	**Replace speed sensor.**

NOTICE:

Check the speed sensor signal last (See page DI–185).

OK

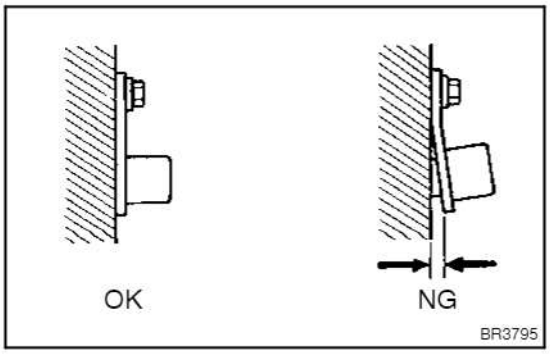
3	**Check for open and short circuit in harness and connector between each speed sensor and ECU (See page IN–38).**

NG	**Repair or replace harness or connector.**

OK

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4	Check sensor installation.



CHECK:

Check the speed sensor installation.

OK:

The installation bolt is tightened properly and there is no clearance between the sensor and front steering knuckle or rear axle shaft.

NG	Replace speed sensor.

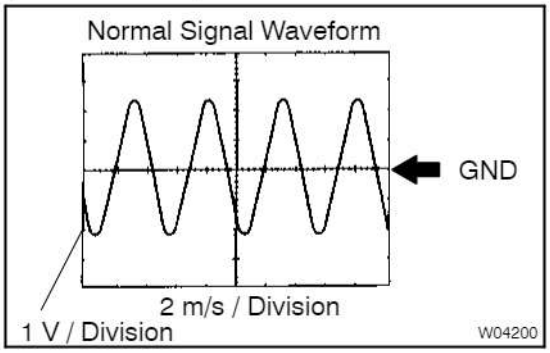
NOTICE:

Check the speed sensor signal last (See page DI–185).

OK

5	Check speed sensor and sensor rotor serrations.

(REFERENCE) INSPECTION USING OSCILLOSCOPE



PREPARATION:

(a) Remove the skid control ECU.

(b) Connect the oscilloscope to the each of terminals FR+, FL+, RR+ or RL+ and GND of the skid control ECU.

CHECK:

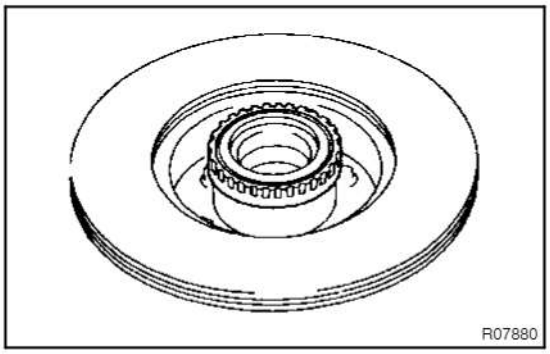
Drive the vehicle at about 20 km/h (12 mph), and check the signal waveform.

OK	Check and replace skid control ECU.

NG

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6	Check sensor rotor and sensor tip.



Front:

PREPARATION:

Remove front axle hub (See Pub No. RM616E on page SA–21).

CHECK:

Check the sensor rotor serrations.

OK:

No scratches, missing teeth or foreign objects.

PREPARATION:

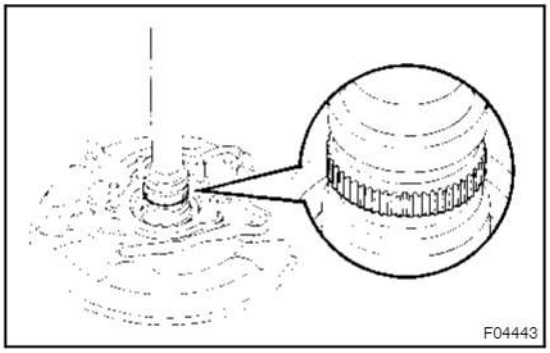
Remove front speed sensor (See Pub No. RM616E on page BR–89).

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.



Rear:

PREPARATION:

Remove the rear axle shaft (See Pub No. RM616E on page SA–161).

CHECK:

Check the sensor rotor serrations.

OK:

No scratches, missing teeth or foreign objects.

PREPARATION:

Remove rear speed sensor (See Pub No. RM616E on page BR–92).

CHECK:

Check the sensor tip.

OK:

No scratches or foreign objects on the sensor tip.

NG → **Replace speed sensor or rotor.**

NOTICE:

Check the speed sensor signal last (See page DI–185).

OK

Check and replace skid control ECU.

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DI6X8-03

DTC	C0226 / 21 to C0256 / 24	ABS Solenoid Circuit

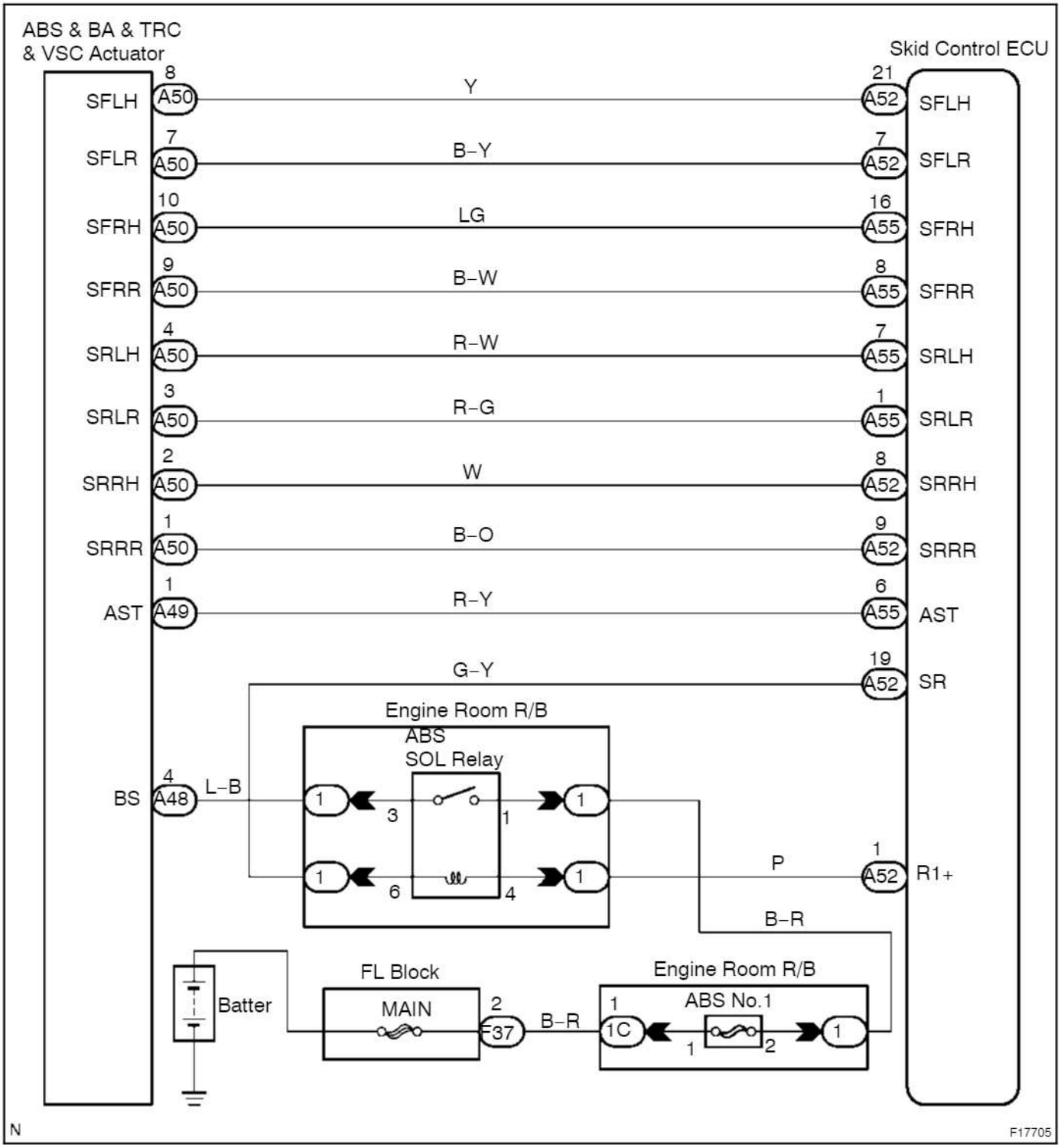
CIRCUIT DESCRIPTION

This solenoid goes on when signals are received from the ECU and controls the pressure acting on the wheel cylinders thus controlling the braking force.

DTC No.	DTC Detecting Condition	Trouble Area
C0226 / 21	Open or short circuit in SFRH or SFRR circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • SFRH or SFRR circuit
C0236 / 22	Open or short circuit in SFLH or SFLR circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • SFLH or SFLR circuit
C0246 / 23	Open or short circuit in SRRH or SRRR circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • SRRH or SRRR circuit
C0256 / 24	Open or short circuit in SRLH or SRLR circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • SRLH or SRLR circuit

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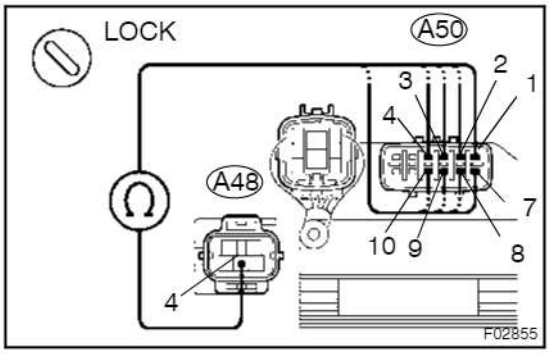
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check hydraulic brake booster solenoid.**



PREPARATION:

Disconnect the 2 connectors from hydraulic brake booster.

CHECK:

Check continuity between each of terminals A48 – 4 and A50 – 1, 2, 3, 4, 7, 8, 9 and 10 of hydraulic brake booster connector.

OK:

Continuity

HINT:

Resistance of each solenoid at 20 °C (68 °F)

SFRH, SFLH, SRRH, SRLH: 6.95 – 7.45 Ω

SFRR, SFLR, SRRR, SRLR: 2.00 – 2.40 Ω

NG	**Replace hydraulic brake booster.**

OK

2	**Check for open and short circuit in harness and connector between skid control ECU and actuator (See page IN–38).**

NG	**Repair or replace harness or connector.**

OK

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connections are normal, the ECU may be defective.

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DI6X7-03

DTC	C0278 / 11, C0279 / 12	ABS Solenoid Relay Circuit

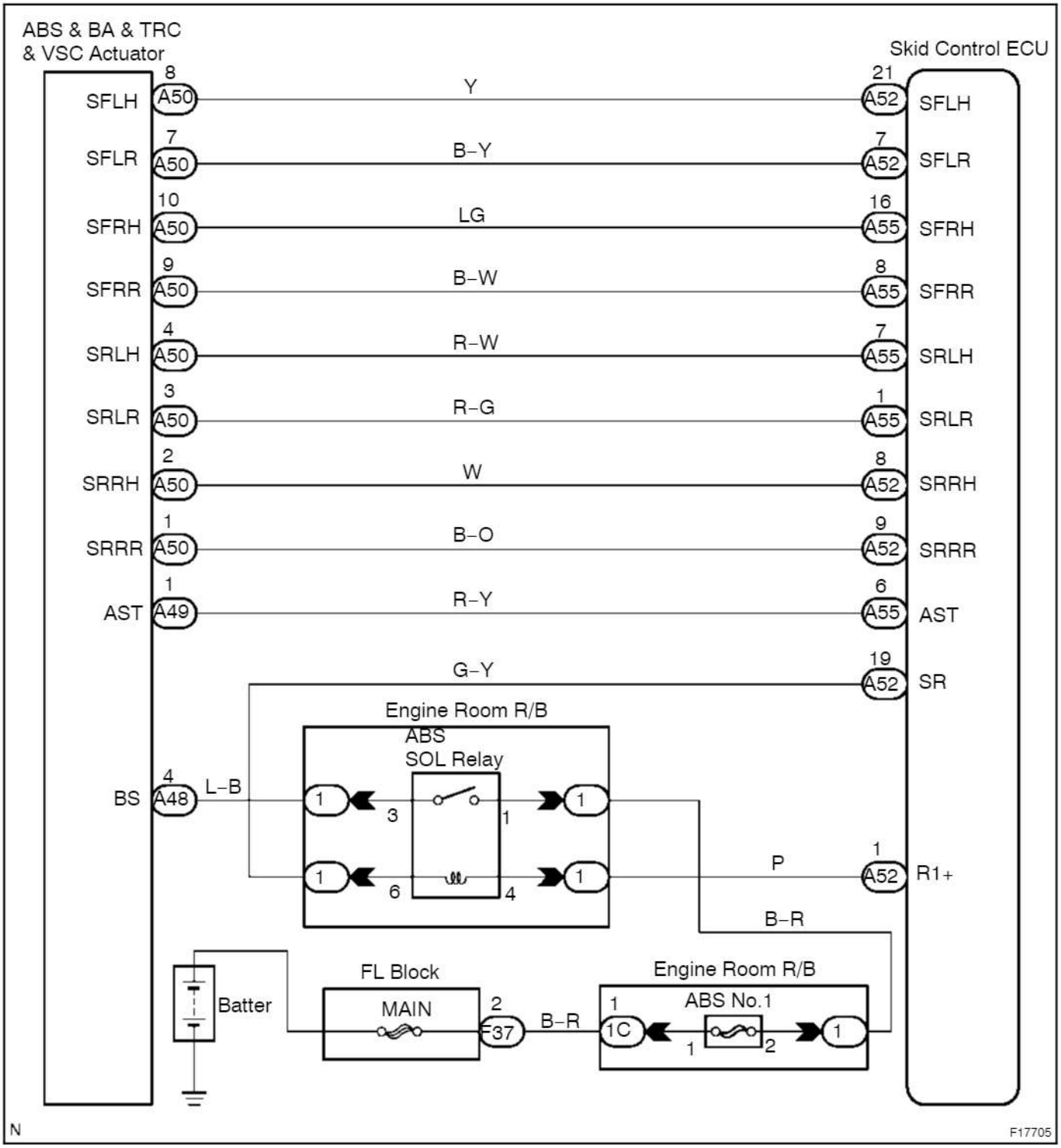
CIRCUIT DESCRIPTION

This relay supplies power to each ABS solenoid. After the ignition switch is turned ON, if the initial check is OK, the relay goes on.

DTC No.	DTC Detecting Condition	Trouble Area
C0278 / 11	Conditions 1. and 2. continue for 0.2 sec. or more: 1. ECU terminal IG1 voltage is 9.5 V to 17.0 V and the solenoid relay is ON, however, the contact point of the solenoid relay is OFF. 2. With solenoid relay ON, ECU terminal IG1 voltage becomes 9.5 V or less and the contact point of the solenoid relay does not become ON.	• ABS solenoid relay • ABS solenoid relay circuit
C0279 / 12	Immediately after ECU terminal IG1 becomes ON, and solenoid relay is OFF, however, when the condition that the solenoid relay due to the contact point is ON continues for 0.2 sec. or more.	

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WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	**Check ABS solenoid relay operation.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check the operation sound of the ABS solenoid relay when operating it with the hand–held tester.

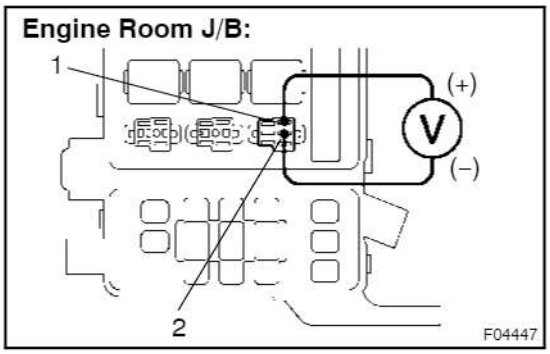
OK:

The operation sound of the ABS solenoid relay should be heard.

OK → **Go to step 6.**

NG

2	**Check voltage between terminals 1 and 2 of engine room J/B (for ABS solenoid relay).**



PREPARATION:

Remove ABS solenoid relay from engine room J/B.

CHECK:

Measure the voltage between terminals 1 and 2 of engine room J/B (for ABS solenoid relay).

OK:

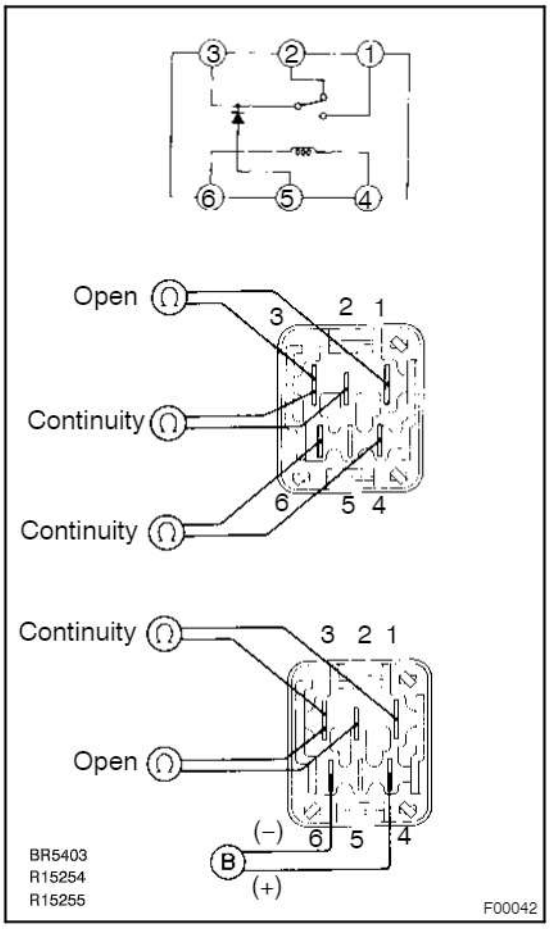
Voltage: 10 – 14 V

NG → **Check and repair harness or connector.**

OK

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3	**Check ABS solenoid relay.**



PREPARATION:

Remove ABS solenoid relay from engine room J/B.

CHECK:

Check continuity between each terminal of ABS solenoid relay.

OK:

Terminals 4 and 6	Continuity (Reference value 80 Ω)
Terminals 2 and 3	Continuity
Terminals 1 and 3	Open

CHECK:

(a) Apply battery voltage between terminals 4 and 6.

(b) Check continuity between each terminal of ABS solenoid relay.

OK:

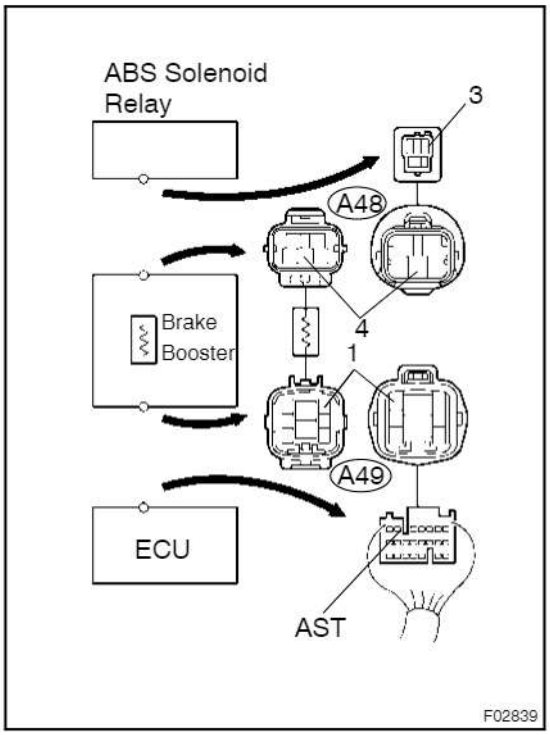
Terminals 2 and 3	Open
Terminals 1 and 3	Continuity

NG → **Replace ABS solenoid relay.**

OK

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4	Check continuity between terminals 3 of ABS solenoid relay and terminal AST of skid control ECU.



CHECK:

Check continuity between terminal 3 of ABS solenoid relay and terminal AST of skid control ECU.

OK:

Continuity

HINT:

There is a resistance of 33 ± 3 Ω between terminals 4 of connector A48 and terminal 1 of connector A49.

NG → **Repair or replace harness, connector or hydraulic brake booster.**

OK

5	Check for open and short circuit in harness and connector between ABS solenoid relay and skid control ECU (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connections are normal, the ECU may be defective.

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6	**Check for open circuit in harness and connector between AST of hydraulic brake booster and AST of skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Replace hydraulic brake booster or skid control ECU.

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DI6X8-01

DTC	C1201 / 51	Engine Control System Malfunction

CIRCUIT DESCRIPTION

If trouble occurs in the engine control system, the ECU prohibits TRC and VSC control.

DTC No.	DTC Detecting Condition	Trouble Area
C1201 / 51	Conditions 1. and 2. continue for 5 sec.: 1. Engine speed: 500 rpm or more. 2. A trouble signal in the engine control system is input.	Engine control system

INSPECTION PROCEDURE

1	**Check the DTC for the engine.**

*1

Repair engine control system according to the output code.

*2

Check for engine and ECT ECU connected to malfunction indicator light.

*1: Output NG code

*2: Malfunction indicator light remains ON

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DTC	C1203 / 53, 59	Engine and ECT ECU Communication Circuit Malfunction

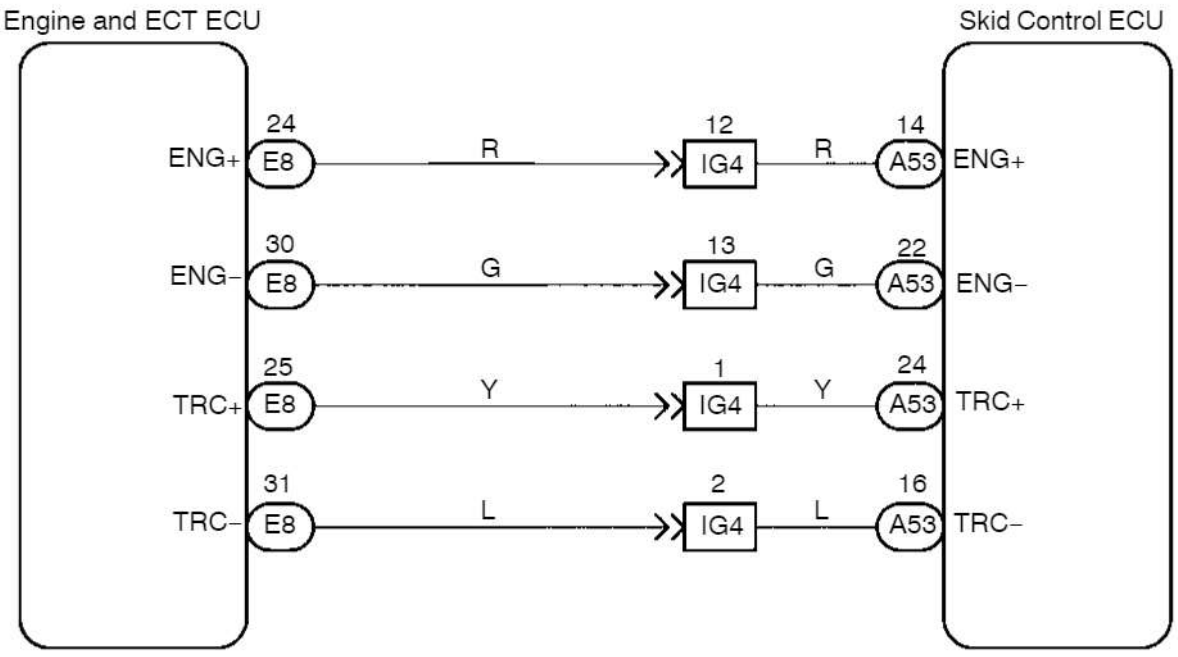
CIRCUIT DESCRIPTION

The circuit is used to send TRC & VSC control information from the skid control ECU to the engine and ECT ECU (TRC+, TRC–), and engine control information from the engine and ECT ECU to the skid control ECU (ENG+, ENG–).

DTC No.	DTC Detecting Condition	Trouble Area
C1203 / 53, 59	Either of the following 1. or 2. continues for 5 sec.: 1. ECU IG1 terminal voltage is 9.5 V to 17.0 V and data transmission to the engine and ECT ECU is impossible. 2. ECU IG1 terminal voltage is 9.5 V to 17.0 V, engine speed is 500 rpm or more or vehicle speed is 60 km/h (36 mph) or more and data receiving from the engine and ECT ECU is impossible.	• TRC+ or TRC– circuit • ENG+ or ENG– circuit • Engine and ECT ECU

WIRING DIAGRAM

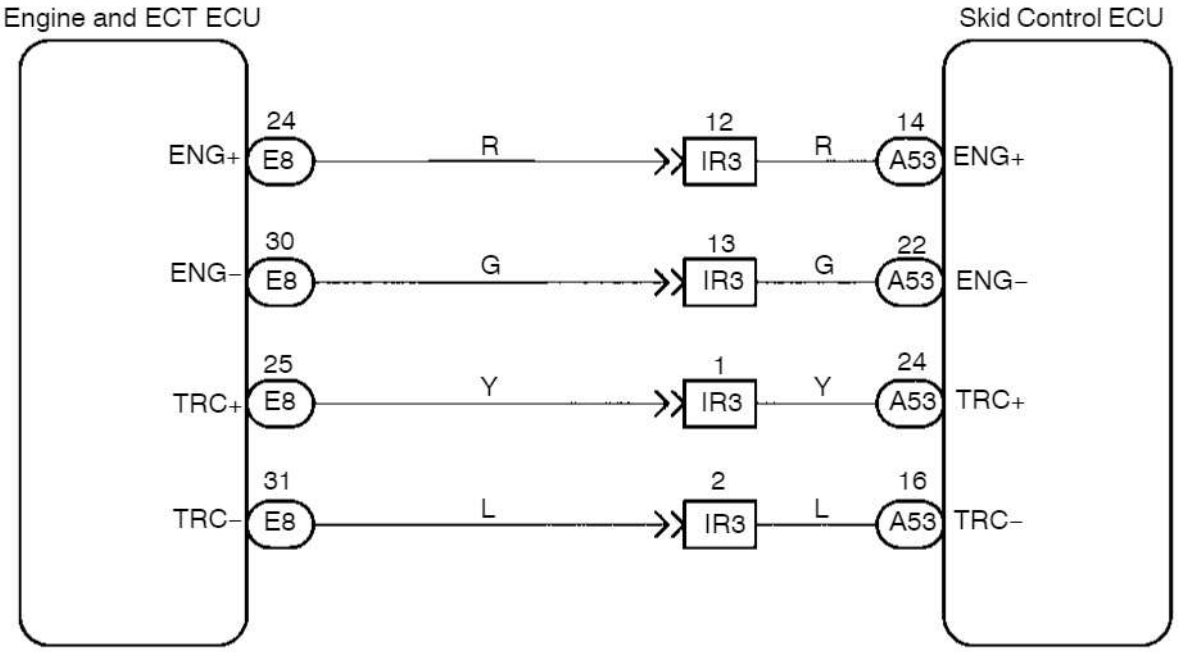
LHD:



F13732

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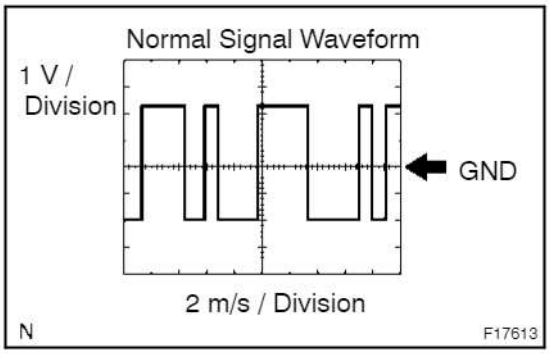
LHD:



INSPECTION PROCEDURE

1	**Check skid control ECU communication.**

(REFERENCE) INSPECTION USING OSCILLOSCOPE



PREPARATION:

(a) Remove the skid control ECU.

(b) Connect the oscilloscope to the each of terminals ENG+ or TRC+ and GND of the skid control ECU.

CHECK:

Start the engine, and check the signal waveform.

NG	**Check and replace skid control ECU.**

OK

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2	**Check for open and short circuit in harness and connector between each of terminals ENG+, ENG–, TRC+, TRC– of skid control ECU and engine and ECT ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace engine and ECT ECU.

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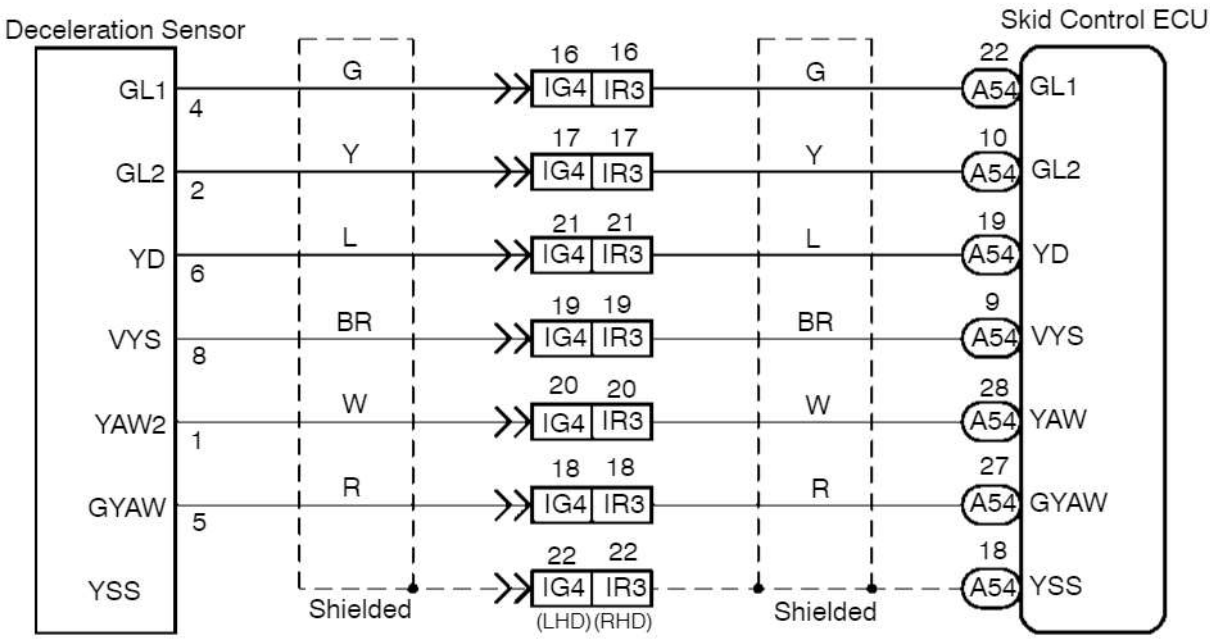
DI6XB-03

DTC	C1210 / 36	Zero Point Calibration of Yaw Rate Sensor Undone

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1210 / 36	When any of following 1. through 2. is detected: 1. After battery terminal was connected, when the shift lever was moved other than to P range within 15 sec. soon after ECU terminal IG1 become ON for the first time. 2. When the yaw rate sensor zero point recorded in ECU is deleted.	• Yaw rate sensor • Yaw rate sensor circuit • Neutral start switch circuit (P range)

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check whether zero point calibration of yaw rate sensor has been done or not.**

PREPARATION:

Shift the shift lever in P range and turn the ignition switch ON, repeat connecting and releasing Ts and E_1 terminals of check connector 4 times or more for 8 sec. After that do not move the vehicle for 15 sec. or more.

CHECK:

Check that the"VSC TRC" warning light and "VSC OFF" indicator light up for 15 sec.

YES → **No problem.**

NO

2	**Check for open and short circuit in harness and connector between neutral start switch (P range) and skid control ECU and engine and ECT ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

3	**Check for open and short circuit in harness and connector between yaw rate sensor and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

4	**Check yaw rate sensor (See page DI–244).**

NG → **Replace yaw rate sensor.**

OK

Check and replace skid control ECU.

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DI6XC–01

DTC	C1223 / 43	ABS Control System Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1223 / 43	ABS control system is abnormal.	ABS control system

INSPECTION PROCEDURE

1	**Check the DTC for the ABS (See page DI–185).**

*1 → **Repair ABS control system according to the code output.**

*2 → **Check for ECU connected to malfunction indicator light.**

*1: Output NG code
*2: Malfunction indicator light remains ON

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DI6XD–03

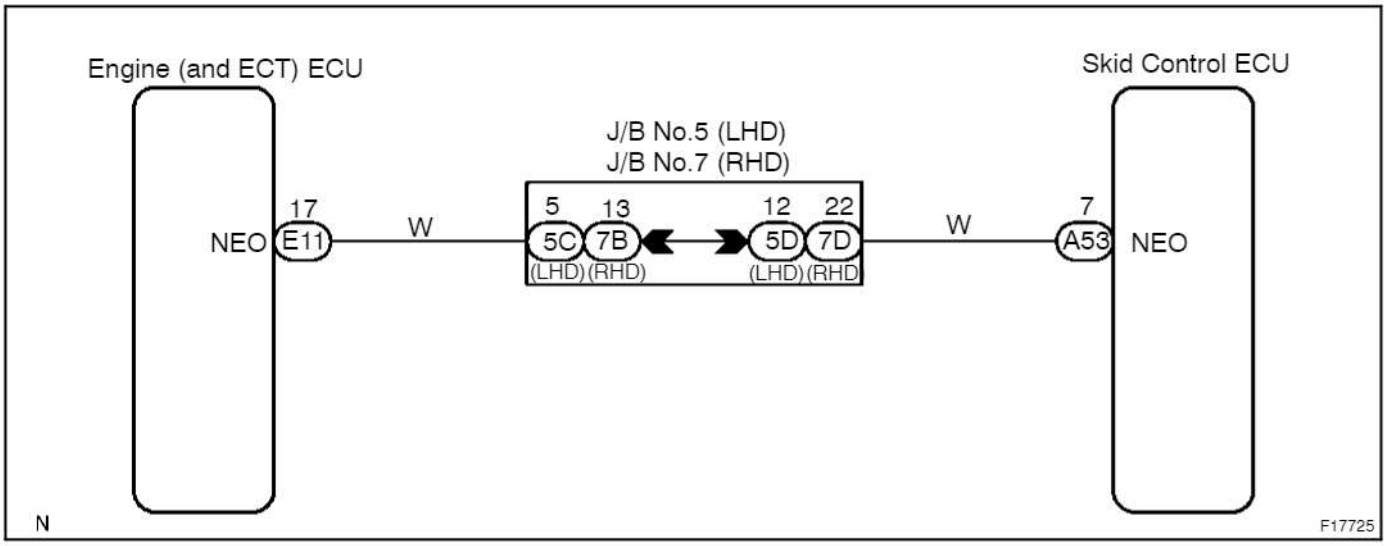
DTC	C1224 / 44	NE Signal Circuit

CIRCUIT DESCRIPTION

The skid control ECU receives engine revolution speed signals (NE signals) from the engine and ECT ECU.

DTC No.	DTC Detecting Condition	Trouble Area
C1224 / 44	When any of the following 1. through 2. is detected: 1. At vehicle speed of 30 km/h (19 mph) or more, and when data received from the engine and ECT ECU is in normal condition, and open or short circuit for engine revolution signal circuit continues for 10 sec. or more. 2. While TRC is operating, the conditions that open or short circuit in engine revolution signal circuit is detected, main throttle opening degree is 0 and IDL switch is OFF continue for 0.24 sec. or more.	• NEO circuit • Engine and ECT ECU • Skid control ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

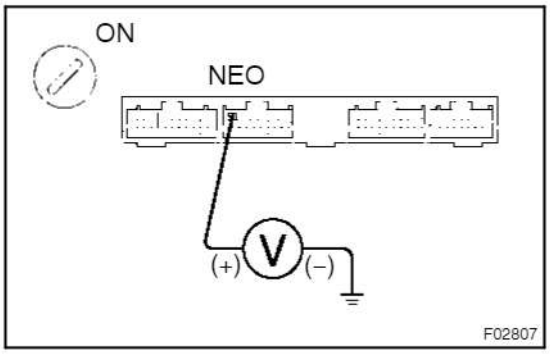
1	**Check for open and short circuit in harness and connector between terminal NEO of skid control ECU and terminal NEO of engine and ECT ECU (See page IN–38).**

NG → **Repair or replace harness and connector.**

OK

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2	**Check voltage between terminal NEO of skid control ECU and body ground.**



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

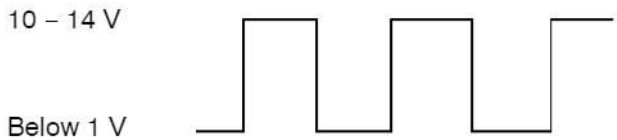
(a) Turn the ignition switch ON.

(b) Measure voltage between terminal NEO of skid control ECU and body ground for the engine conditions below.

OK:

Engine condition	Voltage
OFF (IG ON)	10 – 14 V or below 1 V
ON (Idling)	10 – 14 V ↔ below 1 V (Pulse)

(Reference)



NG → **Check and replace skid control ECU or engine and ECT ECU.**

OK

If the same codes is still output after the DTC is deleted, check the contact condition of each connection.

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DI6XE–03

DTC	C1225 / 25 to C1228 / 28	TRC & VSC Solenoid Circuit

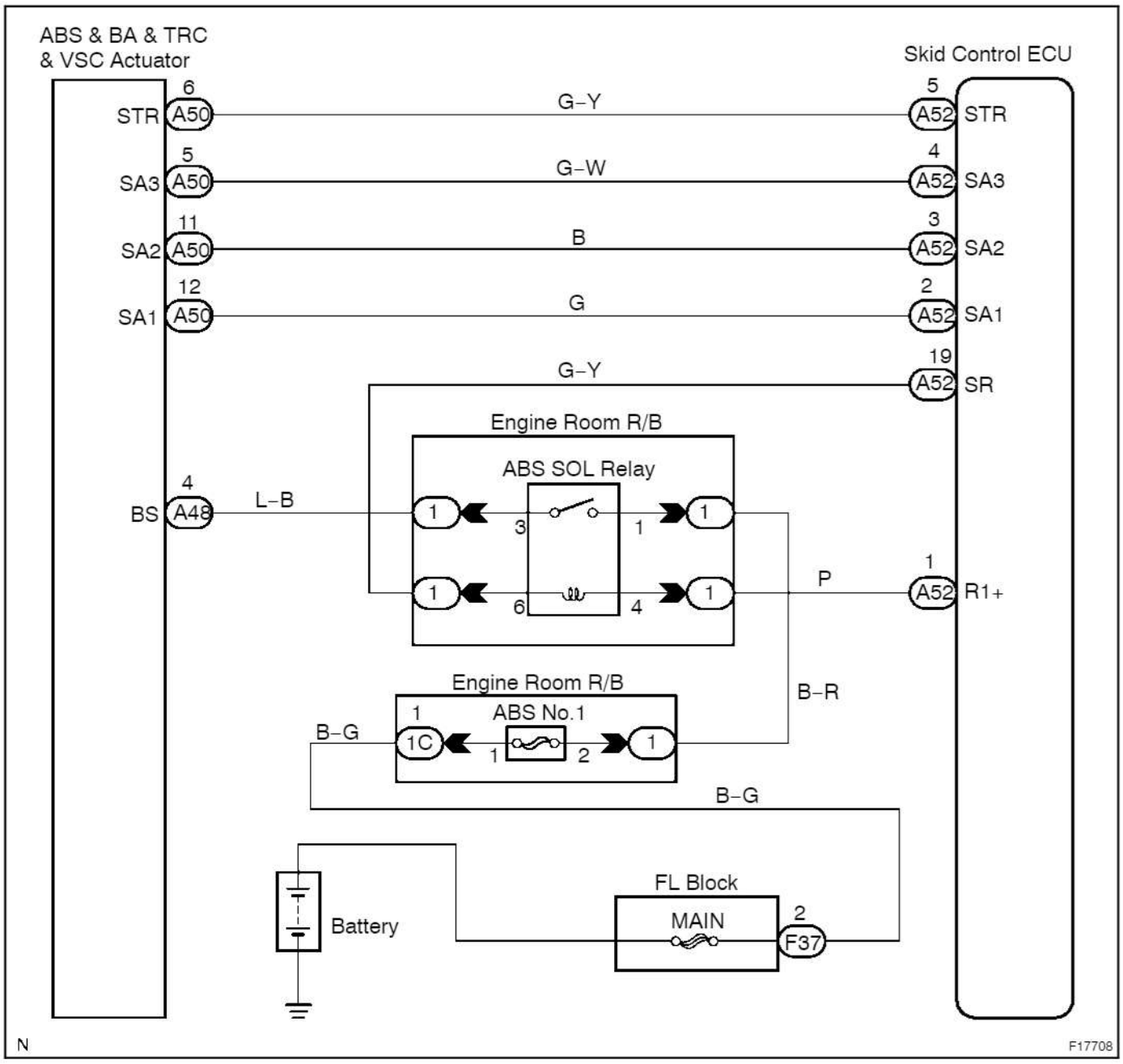
CIRCUIT DESCRIPTION

The TRC & VSC solenoid operates in accordance with signals from the ECU and raises the fluid pressure in and releases it from the brake cylinders.

DTC No.	DTC Detecting Condition	Trouble Area
C1225 / 25	Open or short circuit for SA1 circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • SA1 circuit
C1226 / 26	Open or short circuit for SA2 circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • SA2 circuit
C1227 / 27	Open or short circuit for SA3 circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • SA3 circuit
C1228 / 28	Open or short circuit for STR circuit continues for 0.015 sec. or more.	• Hydraulic brake booster • STR circuit

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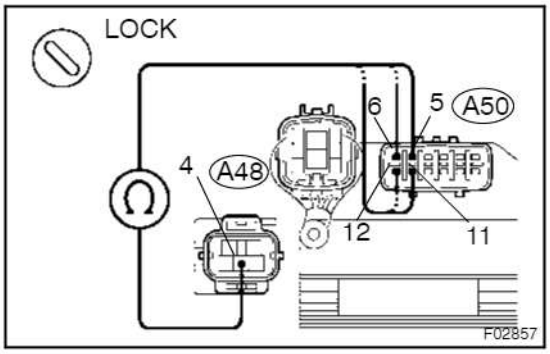
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check TRC & VSC solenoid.**



PREPARATION:

Disconnect the 2 connectors from hydraulic brake booster.

CHECK:

Check continuity between terminals A48 – 4 and A50 – 5, 6, 11 and 12 of hydraulic brake booster.

OK:

Continuity

HINT:

Resistance of each solenoid at 20 °C (68 °F)

SA1, SA2, STR: 4.05 – 4.55 Ω

SA3: 6.95 – 7.45 Ω

NG → **Replace hydraulic brake booster.**

OK ↓

2	**Check for open and short circuit in harness and connector between skid control ECU and hydraulic brake booster (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK ↓

If the same code is still output after the DTC is deleted, check the contact condition of each connection. If the connections are normal, the ECU may be defective.

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DIARH–01

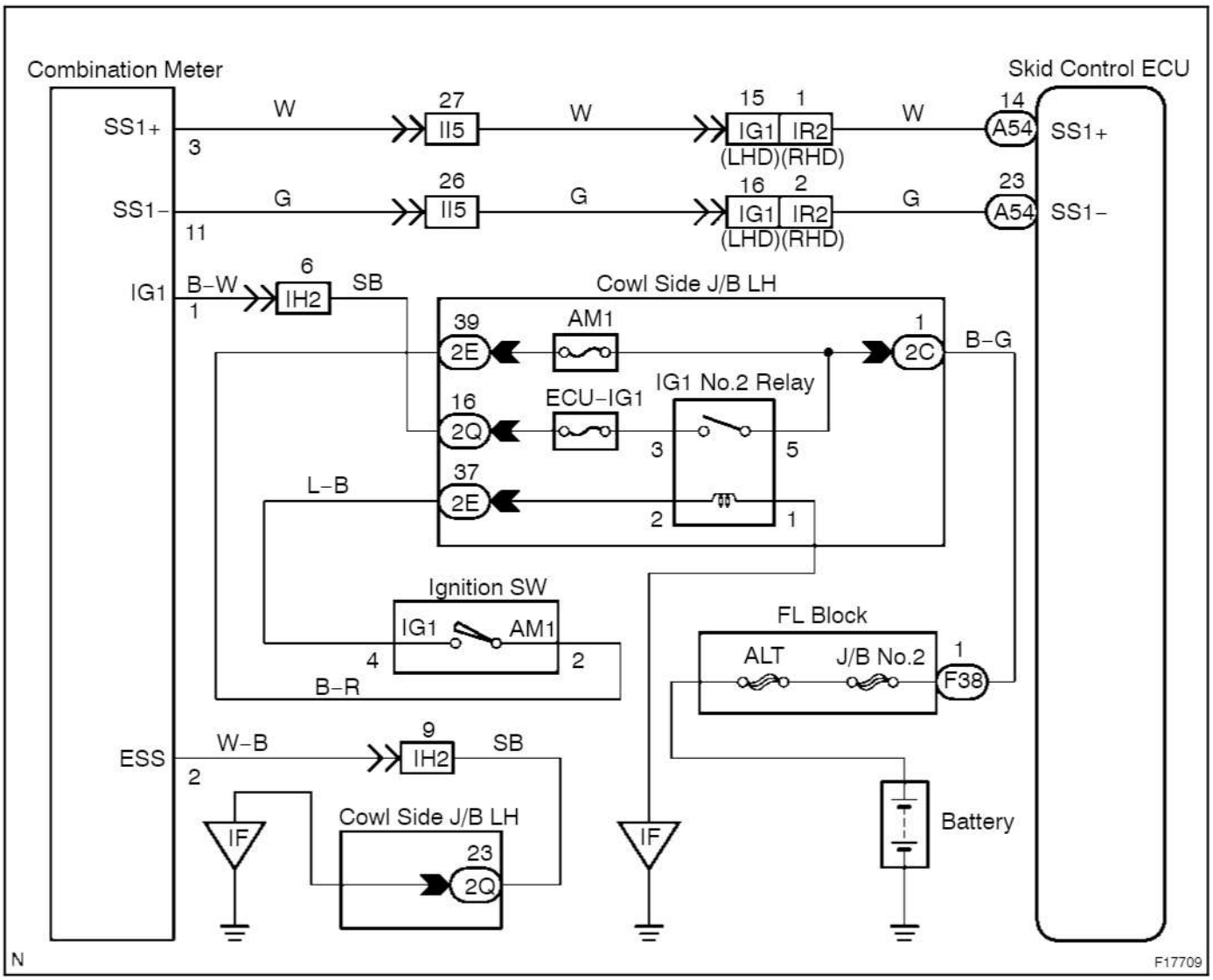
DTC	C1231 / 31, C1335 / 35	Steering Angle Sensor Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1231 / 31	Detection of any of conditions 1. through 3.: 1. When the condition that ECU terminal IG1 voltage is 9.5 V or more, and does not receive a data from steering angle sensor continues for 1 sec. or more. 2. When the steering angle sensor value changes by 360° or more with SSC signal from steering angle sensor remaining ON or OFF. 3. When the condition that difference between the steering angle value at edge occurring in SSC signal and the value at edge occurring in SSC signal after turning the steering wheel one–turn is out of the range from 355.5° – 364.5° occurs 10 times or more.	• Steering angle sensor • Steering angle sensor circuit
C1335 / 35	When the ECU IG1 terminal voltage is 9.5 V or more, data transmission from the steering angle sensor is impossible for 1 sec. or more.	• Steering angle sensor • Steering angle sensor circuit

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WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	**Check output value of the steering angle sensor.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

CHECK:

Check that the steering wheel turning angle value of the steering angle position sensor displayed on the hand–held tester is changing when turning the steering wheel.

HINT:

After certifying "Zero" point of the steering angle sensor (Speed: 35 km/h, driving straight ahead for 10 sec. or more), the value will change.

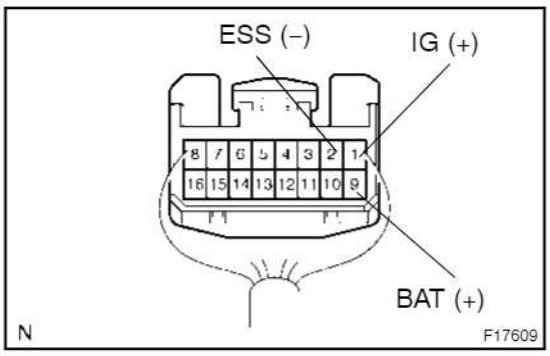
OK:

Steering wheel turning angle value must be changing.

OK	**Go to step 5.**

NG

2	**Check input voltage of the steering angle sensor.**



PREPARATION:

Remove the column lower cover.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure voltage between terminal 1 and 2, 2 and 9 of the combination switch wire harness side connector.

OK:

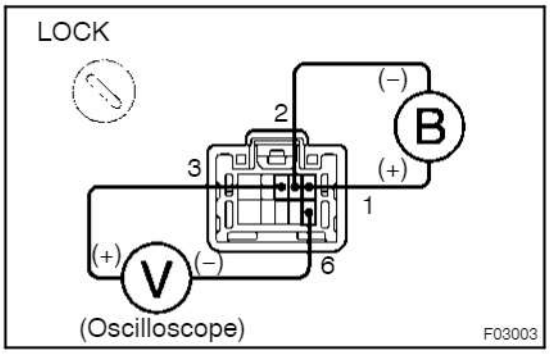
Voltage: 10 – 14 V

NG	**Check and replace harness and connector.**

OK

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3	Check steering angle sensor.



PREPARATION:

(a) Remove the steering wheel lower No. 2 and No. 3 covers, steering wheel pad, steering wheel column upper and lower covers (See Pub. No. RM616E on page SR–13 or SR–29).

(b) Disconnect the combination switch connector (for steering angle sensor).

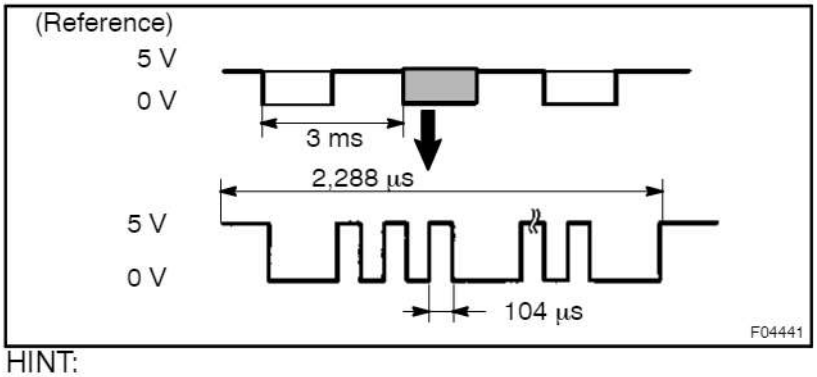
(c) Connect the oscilloscope to the terminals 3 and 6 of the combination switch connector (for steering angle sensor).

(d) Apply battery voltage between terminals 1 and 2.

CHECK:

Turns the steering wheel slowly and check the signal waveform.

OK:



HINT:

The above signal waveform does not repeat ON and OFF regularly and this combination changes case by case according to the data.

NG	Replace steering angle sensor.

OK

4	Check that slits of the steering sensor disc are clogged up.

NG	Repair or replace steering sensor disc.

OK

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5	**Check for open and short circuit in harness and connector between steering position sensor and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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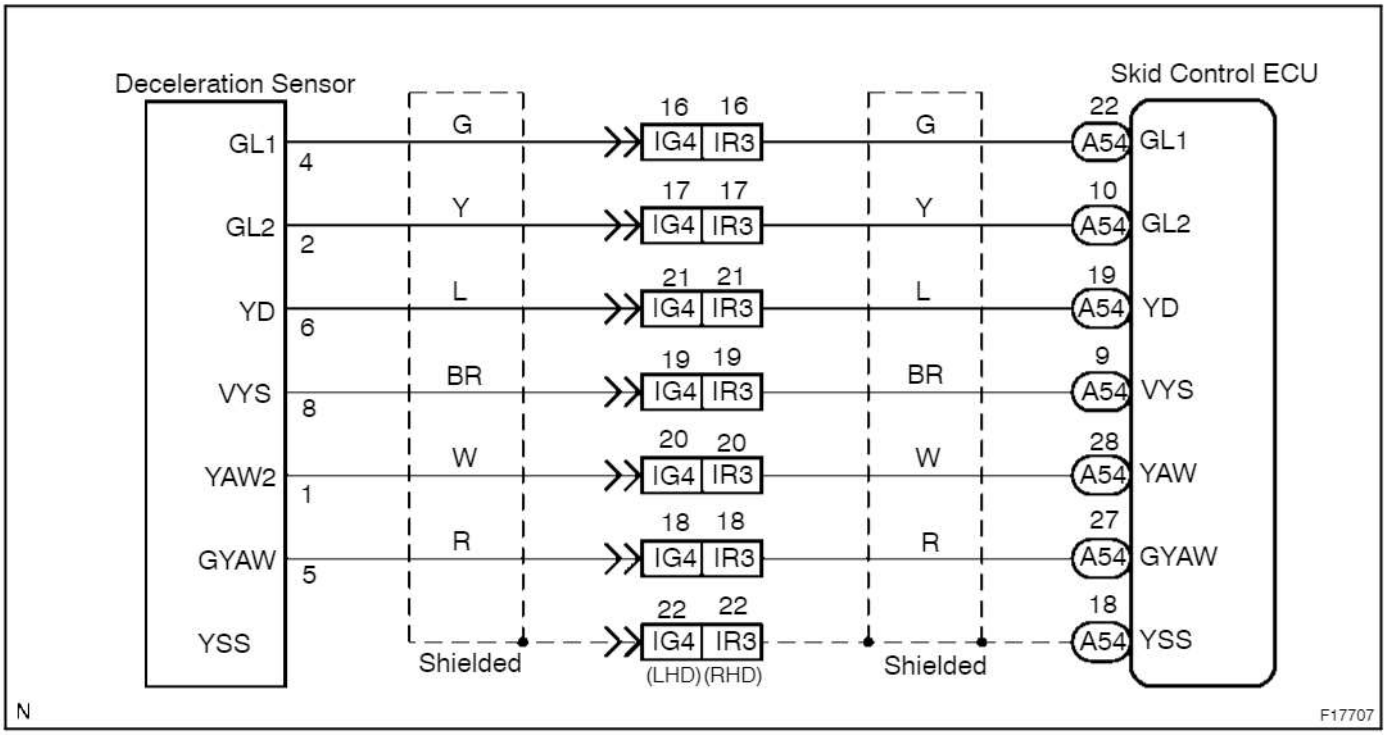
DIAR1-01

DTC	C1232 / 32	Deceleration Sensor Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1232 / 32	Detection of either of conditions 1. and 2.: 1. At the vehicle speed of 10 km/h (6 mph) or more, when the condition that ECU terminal GL1 signal change range is less than 20 mV, and ECU terminal GL2 signal change range swings by 468 mV or more occurs for 30 sec. or more. 2. At the vehicle speed of 10 km/h (6 mph) or more, when the condition that ECU terminal GL2 signal change range is less than 20 mV, and ECU terminal GL1 signal change range swings by 468 mV or more occurs for 30 sec. or more.	• Deceleration sensor • Deceleration sensor circuit

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:
Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	**Check output value of the yaw rate (deceleration) sensor.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

CHECK:

Check that the deceleration value of the deceleration sensor displayed on the hand–held tester is changing when tilting the vehicle.

OK:

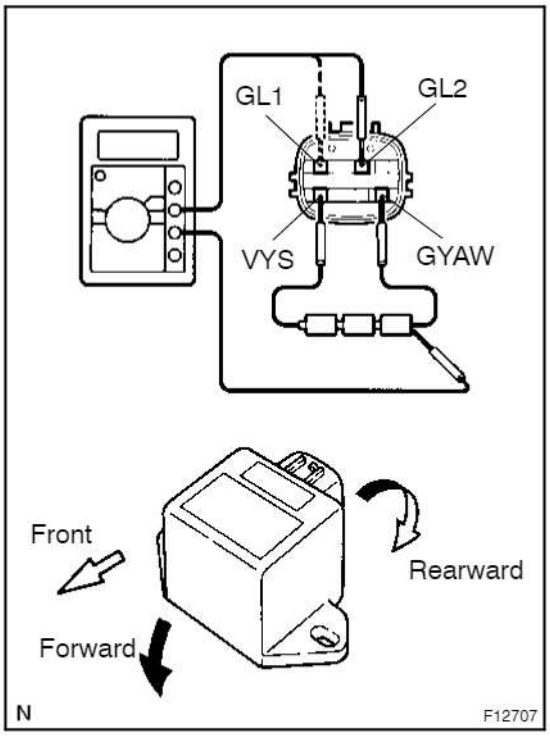
Deceleration value must be changing.

OK → **Check and replace skid control ECU.**

NG

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2	Check yaw rate (deceleration) sensor.



PREPARATION:

(a) Connect 3 dry batteries of 1.5 V in series.

(b) Connect VYS terminal to the batteries' positive (+) terminal, and GYAW terminal to the batteries' negative (–) terminal. Apply about 4.5 V between VYS and GYAW terminals.

NOTICE:

Do not apply voltage of 6 V or more to terminals VYS and GYAW.

CHECK:

Check the output voltage of GL1 and GL2 terminals when the sensor is tilted forward and rearward.

OK:

Symbols	Condition	Standard Value
GL1	Horizontal	About 2.3 V
GL1	Lean rearward	1.0 V – about 2.3 V
GL1	Lean forward	About 2.3 V – 3.5 V
GL2	Horizontal	About 2.3 V
GL2	Lean rearward	About 2.3 V – 3.5 V
GL2	Lean forward	1.0 V – about 2.3 V

HINT:

- If the sensor is tilted too much it may show the wrong value.
- If dropped, the sensor should be replaced with a new one.
- The sensor removed from the vehicle should not be placed upside down.

NG	Replace yaw rate sensor.

OK

3	Check for open or short circuit in harness and connector between yaw rate (deceleration) sensor and skid control ECU (See page IN–38).

NG	Repair or replace harness and connector.

OK

Check and replace skid control ECU.

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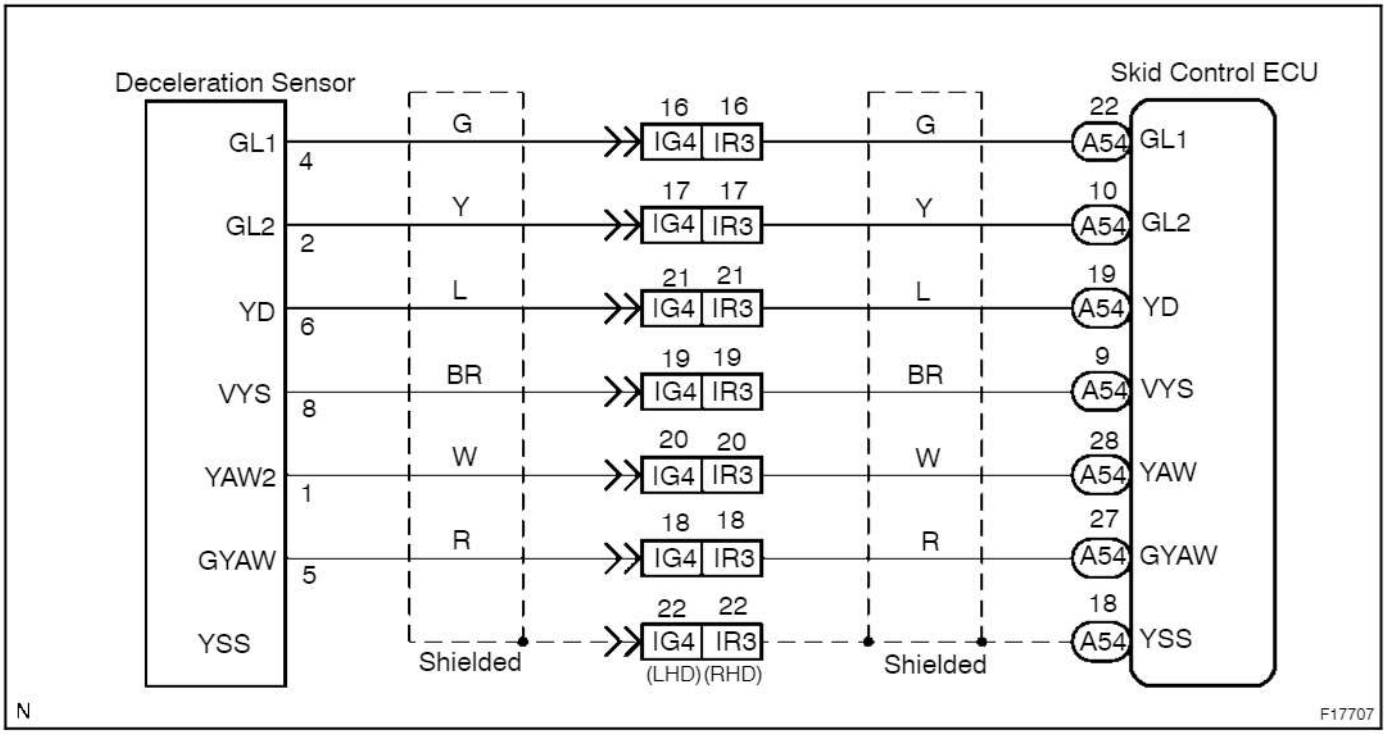
DI6XH–03

DTC	C1233 / 33, C1234 / 34	Yaw Rate Sensor Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1233 / 33	When any of the following 1. through 4. is detected: 1. ECU terminal IG1 voltage is 9.5 V to 17.0 V, and the condition that yaw rate sensor voltage is out of the range from 0.25 V to 4.75 V continued for 1 sec. or more. 2. The conditions that yaw rate sensor open detect circuit signal is ON and the voltage of ECU terminal IG1 is 9.5 V to 17 V continued for 1 sec. or more. 3. The conditions that yaw rate sensor power source voltage is out of the range from 4.4 V to 5.6 V and the voltage of ECU terminal IG1 is 9.5 V to 17 V continued for 1 sec. or more. 4. When the condition that yaw rate sensor signal is momentarily open occurs 10 times or more and the voltage of ECU terminal IG1 is 9.5 V to 17 V.	• Yaw rate sensor • Yaw rate sensor circuit
C1234 / 34	Condition 1. or 2. is detected: 1. When the condition that yaw rate sensor VYS terminal voltage is 4.75 V to 5.25 V and YD malfunction signal of yaw rate sensor is ON continued for 5 sec. or more. 2. Shift lever position is in P range and output voltage of yaw rate sensor is out of the range from 2.4 V to 2.6 V or after the difference from zero point calibration voltage of yaw rate sensor has become 0.08 V or more and when the condition that the vehicle speed exceeds more than 15 km/h (9 mph) while output condition of yaw rate sensor has been repeated more than 3 times.	

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Perform zero point calibration of the yaw rate sensor (See page DI–185).**

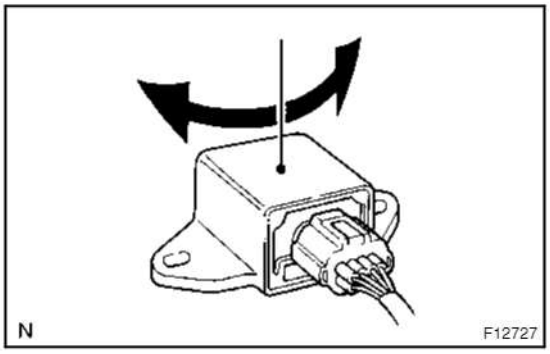
2	**Is DTC still output?**

Check DTC on page DI–185.

NO → **No problem.**

YES

3	**Check output value of the yaw rate sensor.**



In case of using the hand–held tester:

PREPARATION:

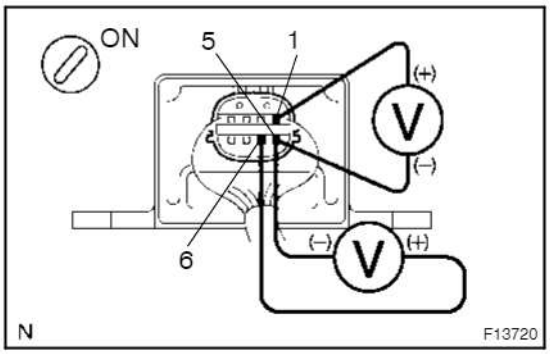
(a) Remove the 2 bolts and yaw rate sensor with connector still connected.
(b) Connect the hand–held tester to the DLC3.
(c) Turn the ignition switch to ON and push the hand–held tester main switch to ON.
(d) Select the DATALIST mode on the hand–held tester.

CHECK:

Check that the yaw rate value of the yaw rate sensor displayed on the hand–held tester changes. Place the yaw rate sensor vertically to the ground and turn the sensor pivoted on its center.

OK:

Yaw rate value must be changing.



In case of not using the hand–held tester:

PREPARATION:

(a) Remove the yaw rate sensor with the connector still connected to it.
(b) Turn the ignition switch to ON.

CHECK:

Measure voltage between terminals YAW2 (1) – GYAW (5), and terminals YD (6) – GYAW (5) of the yaw rate sensor.

OK:

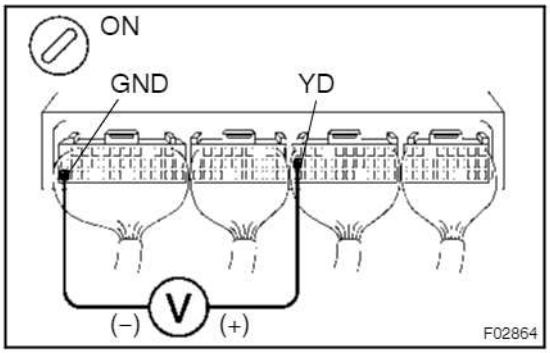
Terminals 1 and 5 (YAW2 – GYAW)	About 2.42 V – 2.58 V
Terminals 6 and 5 (YD – GYAW)	About 4.5 V – 5.3 V

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NG → **Replace yaw rate sensor.**

OK

4	**Check voltage between terminals YD and GND of skid control ECU.**



PREPARATION:

Remove the skid control ECU with the connector still connected.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure voltage between terminals YD and GND of skid control ECU.

OK:

Voltage: 4.5 – 5.3 V

OK → **Check and replace skid control ECU.**

NG

5	**Check for open and short circuit in harness and connector between yaw rate sensor and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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DI6XI-02

DTC	C1237 / 37	Tires of Different Size

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1237 / 37	Driving at more than 30 km/h (19 mph) for more than 20 seconds with 1 or 2 tires of different size for 3 times continuously.	Tire size

INSPECTION PROCEDURE

1	**Check tire size.**

NG → **Replace tires so that all 4 tires are of the same size.**

OK

Check and replace skid control ECU.

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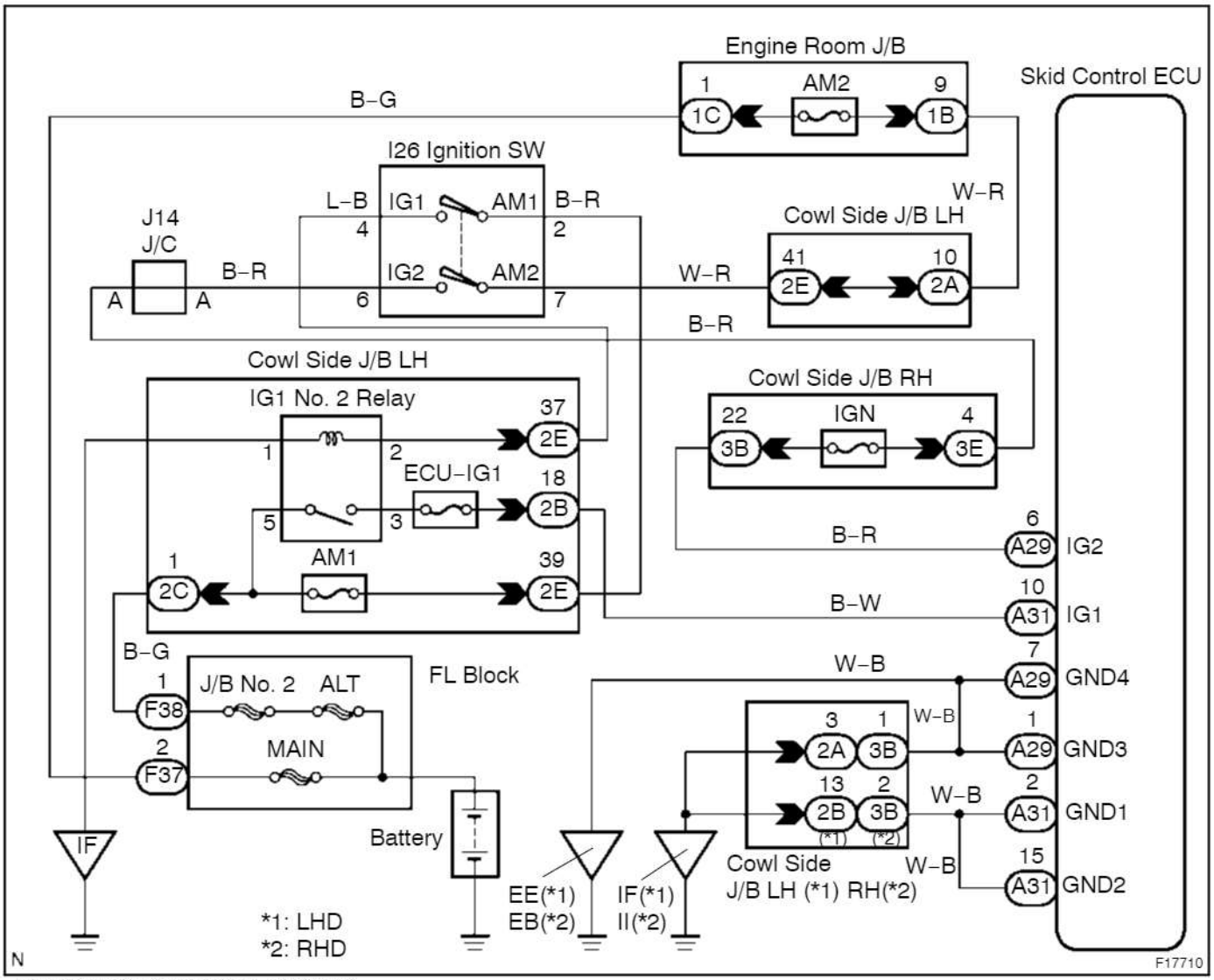
DIARJ–01

DTC	C1241 / 41	IG Power Source Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1241 / 41	Detection of any of conditions 1. through 4.: 1. Vehicle speed is 3 km/h (1.9 mph) or more and voltage of ECU terminal IG remains at below 9.5 V for more than 10 sec. 2. While the condition that the solenoid relay is ON continues, ECU terminal IG1 voltage becomes 9.5 V or less, and the condition that the contact point of the solenoid relay is OFF continues for 0.2 sec. or more. 3. The condition that ECU terminal IG1 voltage is more than 17.0 V continues for 1.2 sec. or more. 4. While the solenoid relay outputs ON signal, ECU terminal IG1 voltage becomes more than 17.0 V, and the condition that the contact point of the solenoid relay is OFF continues for 0.2 sec. or more.	• Battery • IC regulator • Power source circuit

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check battery voltage.**

OK:

Voltage: 10 – 14 V

NG → **Check and repair the charging system.**

OK

2	**Check voltage of the ECU IG power source.**

In case of using the hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

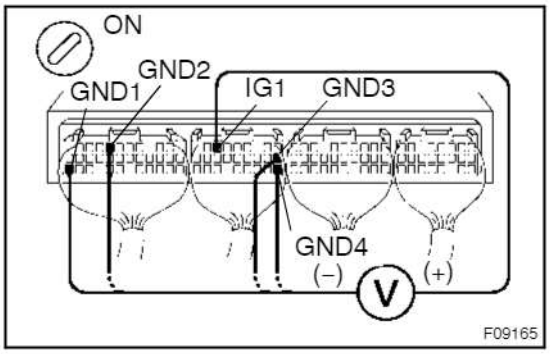
CHECK:

Check the voltage condition output from the ECU displayed on the hand–held tester.

OK:

"Normal" is displayed.

In case of not using the hand–held tester:



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure voltage between terminals IG1 and GND of skid control ECU connector.

OK:

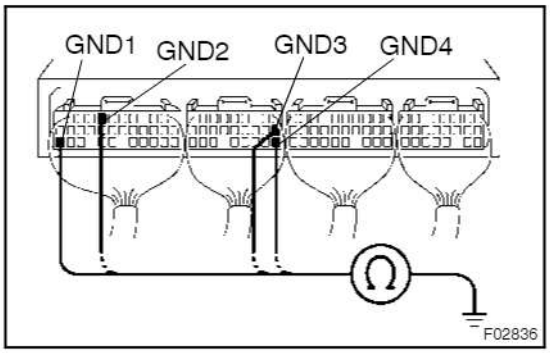
Voltage: 10 – 14 V

OK → **Turn ignition switch OFF, check and replace skid control ECU.**

NG

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3	Check continuity between terminal GND of skid control ECU connector and body ground.



CHECK:

Measure resistance between terminal GND of skid control ECU connector and body ground.

OK:

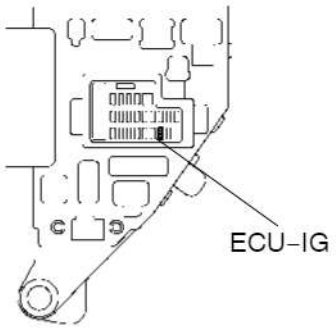
Resistance: 1 Ω or less

NG → **Repair or replace harness or connector.**

OK →

4	Check ECU–IG fuse.

Cowl Side J/B LH:



PREPARATION:

Remove ECU–IG fuse from cowl side J/B LH.

CHECK:

Check continuity of ECU–IG fuse.

OK:

Continuity

NG → **Check for short circuit in all the harness and components connected to ECU–IG fuse (See attached wiring diagram).**

OK →

Check for open circuit in harness and connector between skid control ECU and battery (See page IN–38).

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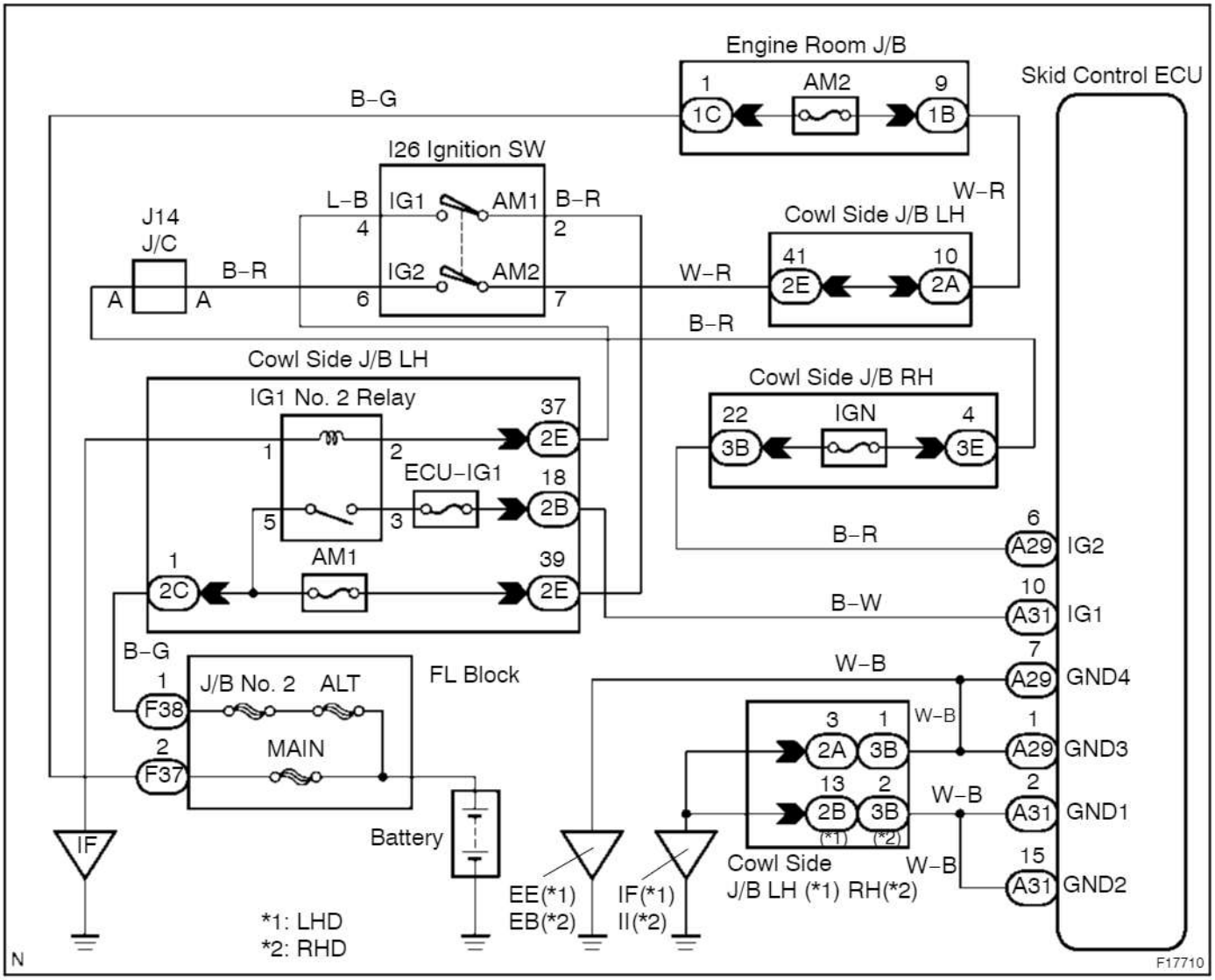
DIARK-01

DTC	C1242 / 42	IG2 Power Source Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1242 / 42	With the vehicle running, open circuit in IG2 is detected for more than 7 sec.	• Battery • IC regulator • Power source circuit

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check battery voltage.**

OK:

Voltage: 10 – 14 V

NG → **Check and repair the charging system.**

OK

2	**Check voltage of the ECU IG power source.**

In case of using the hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

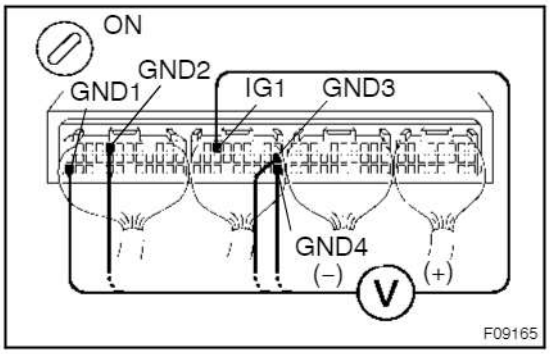
CHECK:

Check the voltage condition output from the ECU displayed on the hand–held tester.

OK:

"Normal" is displayed.

In case of not using the hand–held tester:



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure voltage between terminals IG2 and GND of skid control ECU connector.

OK:

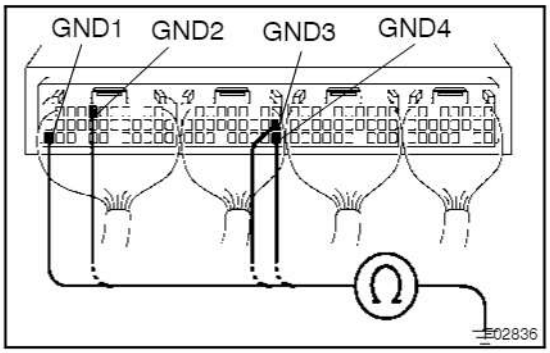
Voltage: 10 – 14 V

OK → **Turn ignition switch OFF, check and replace skid control ECU.**

NG

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3	**Check continuity between terminal GND of skid control ECU connector and body ground.**



CHECK:

Measure resistance between terminal GND of skid control ECU connector and body ground.

OK:

Resistance: 1 Ω or less

NG → **Repair or replace harness or connector.**

OK

Check for open circuit in harness and connector between skid control ECU and battery (See page IN–38).

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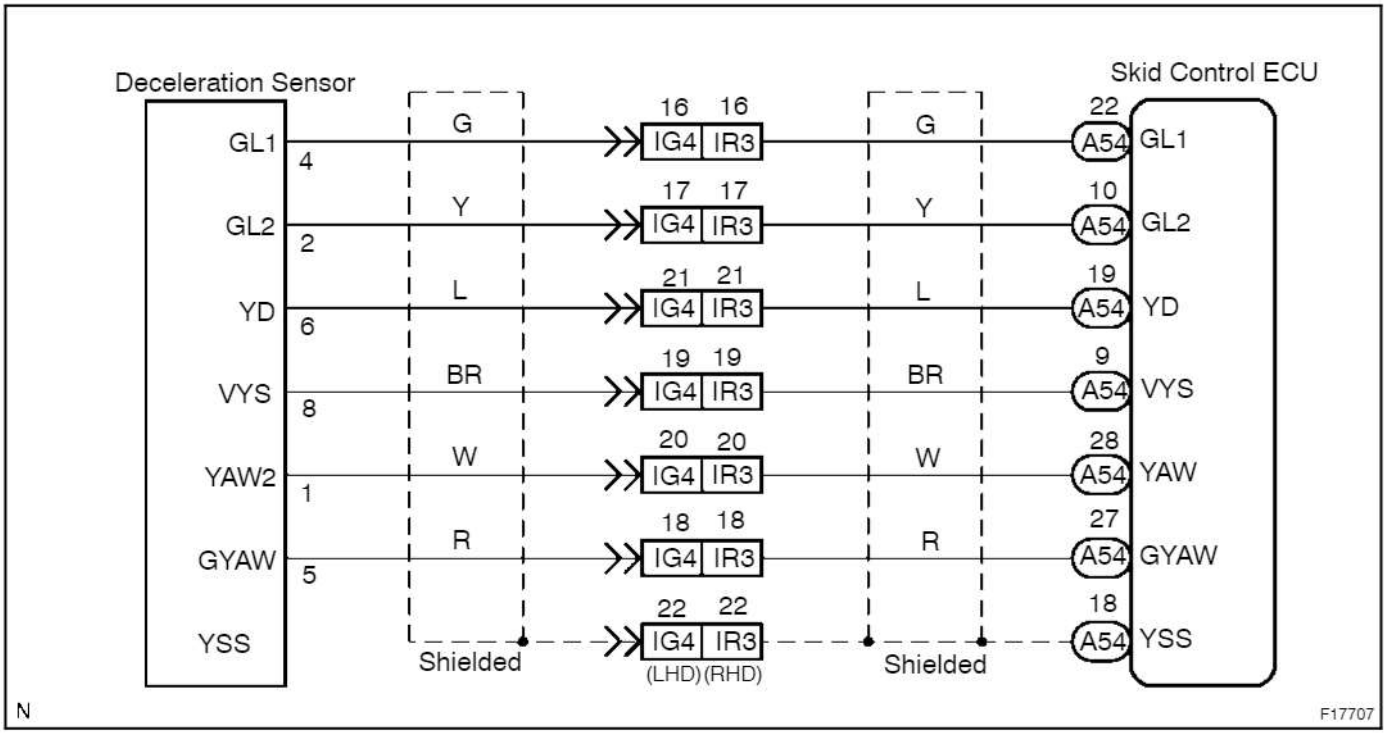
DIARL-01

DTC	C1243 / 43, C1245 / 45	Malfunction in Deceleration Sensor

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1243 / 43	While vehicle speed becomes 0 km/h (0 mph) from 30 km/h (18 mph), and the condition that GL1 and GL2 signals of ECU terminals did not change 40 mV or less continued in a sequence 16 times.	• Deceleration sensor • Wire harness for deceleration sensor system
C1245 / 45	At the vehicle speed of 30 km/h (18 mph) or more, and the condition that the difference between acceleration and deceleration values of computation from deceleration sensor and vehicle speed becomes more than 0.35 G continues for 60 sec. or more.	

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 3 in case of not using the hand–held tester.

1	**Check output value of the yaw rate (deceleration) sensor.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch to ON and turn the hand–held tester main switch to ON.

(c) Select the DATALIST mode on the hand–held tester.

CHECK:

Check that the deceleration value of the deceleration sensor observed in the hand–held tester changes when the vehicle is tilted.

OK:

Deceleration value must be changing.

OK → **Go to step 3.**

NG

2	**Check for open or short circuit in harness and connector between yaw rate (deceleration) sensor and skid control ECU (See page IN–38).**

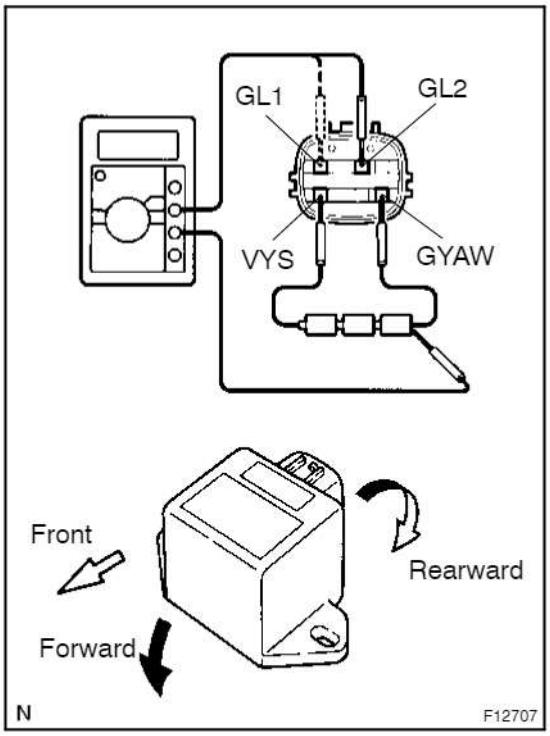
NG → **Repair or replace harness or connector.**

OK

Replace yaw rate sensor.

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3	Check yaw rate (deceleration) sensor.



PREPARATION:

(a) Connect 3 dry batteries of 1.5 V in series.

(b) Connect VYS terminal to the batteries' positive (+) terminal, and GYAW terminal to the batteries' negative (–) terminal. Apply about 4.5 V between VYS and GYAW terminals.

NOTICE:

Do not apply voltage of 6 V or more to terminals VYS and GYAW.

CHECK:

Check the output voltage of GL1 and GL2 terminals when the sensor is tilted forward and rearward.

OK:

Symbols	Condition	Standard Value
GL1	Horizontal	About 2.3 V
GL1	Lean rearward	1.0 V – about 2.3 V
GL1	Lean forward	About 2.3 V – 3.5 V
GL2	Horizontal	About 2.3 V
GL2	Lean rearward	About 2.3 V – 3.5 V
GL2	Lean forward	1.0 V – about 2.3 V

HINT:

- If the sensor is tilted too much it may show the wrong value.
- If dropped, the sensor should be replaced with a new one.
- The sensor removed from the vehicle should not be placed upside down.

NG	Replace yaw rate sensor.

OK

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4	**Check for open or short circuit in harness and connector between yaw rate (deceleration) sensor and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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DIARM–01

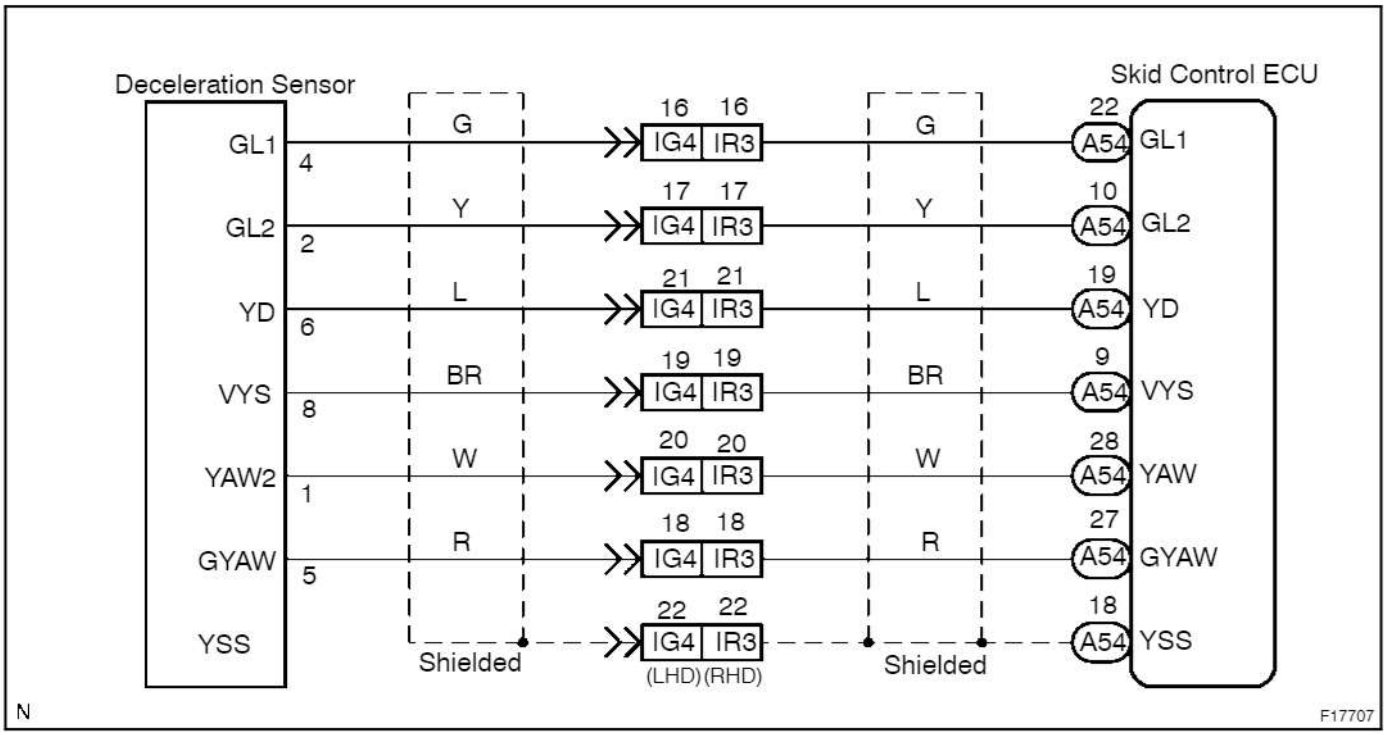
DTC	C1244 / 44	Deceleration Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects deceleration on the vehicle. The sensor signal is used in ABS & BA & TRC & VSC control. If the sensor functions abnormally, the ABS warning light comes on.

DTC No.	DTC Detecting Condition	Trouble Area
C1244 / 44	Either of the following 1., 2., 3. or 4. is detected: 1. The condition that ECU terminals GL1 and GL2 values are −1.5 G or less or 1.5 G or more continues for 1.2 sec. or more. 2. The condition that the deceleration sensor terminal VGS voltage is 4.4 V or less or 5.6 V or more continues for 1.2 sec. or more. 3. At the vehicle speed of 0 km/h (0 mph), after the difference of output value between deceleration sensor terminals GL1 and GL2 becomes 0.6 G or more, and the condition that does not become 0.4 G or less continues for 60 sec. or more. 4. Deceleration sensor signal momentary open occurs for 7 times or more.	• Deceleration sensor • Deceleration sensor circuit

WIRING DIAGRAM



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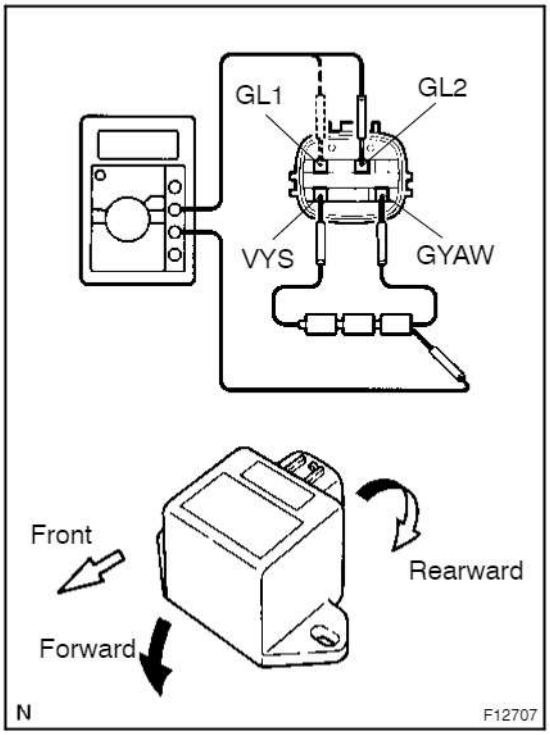
INSPECTION PROCEDURE

1	**Check for open and short circuit in harness and connector between deceleration sensor and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

2	**Check deceleration sensor.**



PREPARATION:

(a) Connect 3 dry batteries of 1.5 V in series.

(b) Connect VYS terminal to the batteries' positive (+) terminal, and GYAW terminal to the batteries' negative (–) terminal. Apply about 4.5 V between VYS and GYAW terminals.

NOTICE:

Do not apply voltage of 6 V or more to terminals VYS and GYAW.

CHECK:

Check the output voltage of GL1 and GL2 terminals when the sensor is tilted forward and rearward.

OK:

Symbols	Condition	Standard Value
GL1	Horizontal	About 2.3 V
GL1	Lean rearward	1.0 V – about 2.3 V
GL1	Lean forward	About 2.3 V – 3.5 V
GL2	Horizontal	About 2.3 V
GL2	Lean rearward	About 2.3 V – 3.5 V
GL2	Lean forward	1.0 V – about 2.3 V

HINT:

- If the sensor is tilted too much it may show the wrong value.
- If dropped, the sensor should be replaced with a new one.
- The sensor removed from the vehicle should not be placed upside down.

NG → **Replace deceleration sensor.**

OK

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Check and replace skid control ECU.

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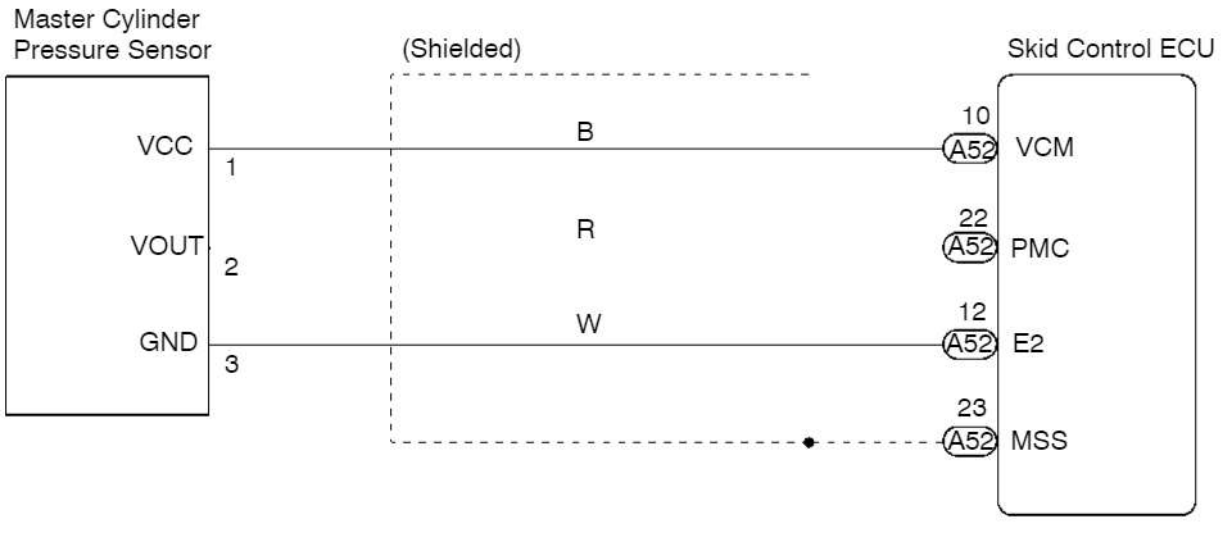
DI6XN–03

DTC	C1246 / 46	Master Cylinder Pressure Sensor Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1246 / 46	Either of the following 1., 2., 3., 4. or 5. is detected: 1. At the vehicle speed of 7 km/h (4 mph) or more, ECU terminal PMC voltage becomes more than 0.86 V and the condition that 0.01 V or less does not change continues for 30 sec. 2. Interference occurs to ECU terminal PMC 7 times or more for 5 sec. 3. ECU terminal STP is OFF, and the condition that terminal PMC voltage becomes more than 0.86 V or less than 0.3 V continues for 5 sec. or more. 4. The condition that ECU terminal IG1 voltage is 9.5 V to 17.0 V, and terminal VCM voltage other than the range from 4.4 V to 5.6 V continues for 1.2 sec. or more. 5. The condition that ECU terminal VCM voltage is 4.4 V to 5.6 V, and terminal PMC voltage other than the range from 0.14 V to 4.85 V continues for 1.2 sec. or more.	• Master cylinder pressure sensor • Master cylinder pressure sensor circuit

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	**Check output value of the master cylinder pressure sensor.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

CHECK:

Check that the brake fluid pressure value of the master cylinder pressure sensor displayed on the hand–held tester is changing when depressing the brake pedal.

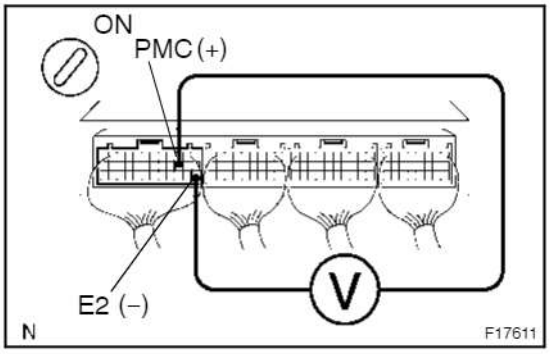
OK:

Brake fluid pressure value must be changing.

OK → **Go to step 4.**

NG

2	**Check master cylinder pressure sensor.**



PREPARATION:

(a) Install LSPV gauge to the front caliper bleeder plug portion, and bleed LSPV gauge.
SST 09709–29018
(b) Remove air cleaner inlet and battery clamp cover.

CHECK:

Start the engine and depress the brake pedal, then check the relation between the fluid pressure and voltage of PMC and E2 terminals of the skid control ECU with connector still connected.

OK:

Front brake caliper fluid pressure	Voltage
0 kPa (0 Kgf/cm^2, 0 psi)	0.37 – 0.63 V
5,883 kPa (60 kgf/cm^2, 853 psi)	1.57 – 1.83 V
11,768 kPa (120 kgf/cm^2, 1,706 psi)	2.77 – 3.03 V

HINT:

Voltage of between terminals VCM and E2: 4.7 – 5.3 V

OK → **Go to step 4.**

NG

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3	Check for open and short circuit in harness and connector between master cylinder pressure sensor and skid control ECU (See page IN–38).

NG → Repair or replace harness or connector.

OK →

Replace master cylinder pressure sensor.

4	Check whether or not the ECU terminal STP input voltage is changed when the stop light switch is turned on and off.

NO → Check the stop light switch circuit (See page DI–264).

YES →

Check and replace skid control ECU.

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DIARN–01

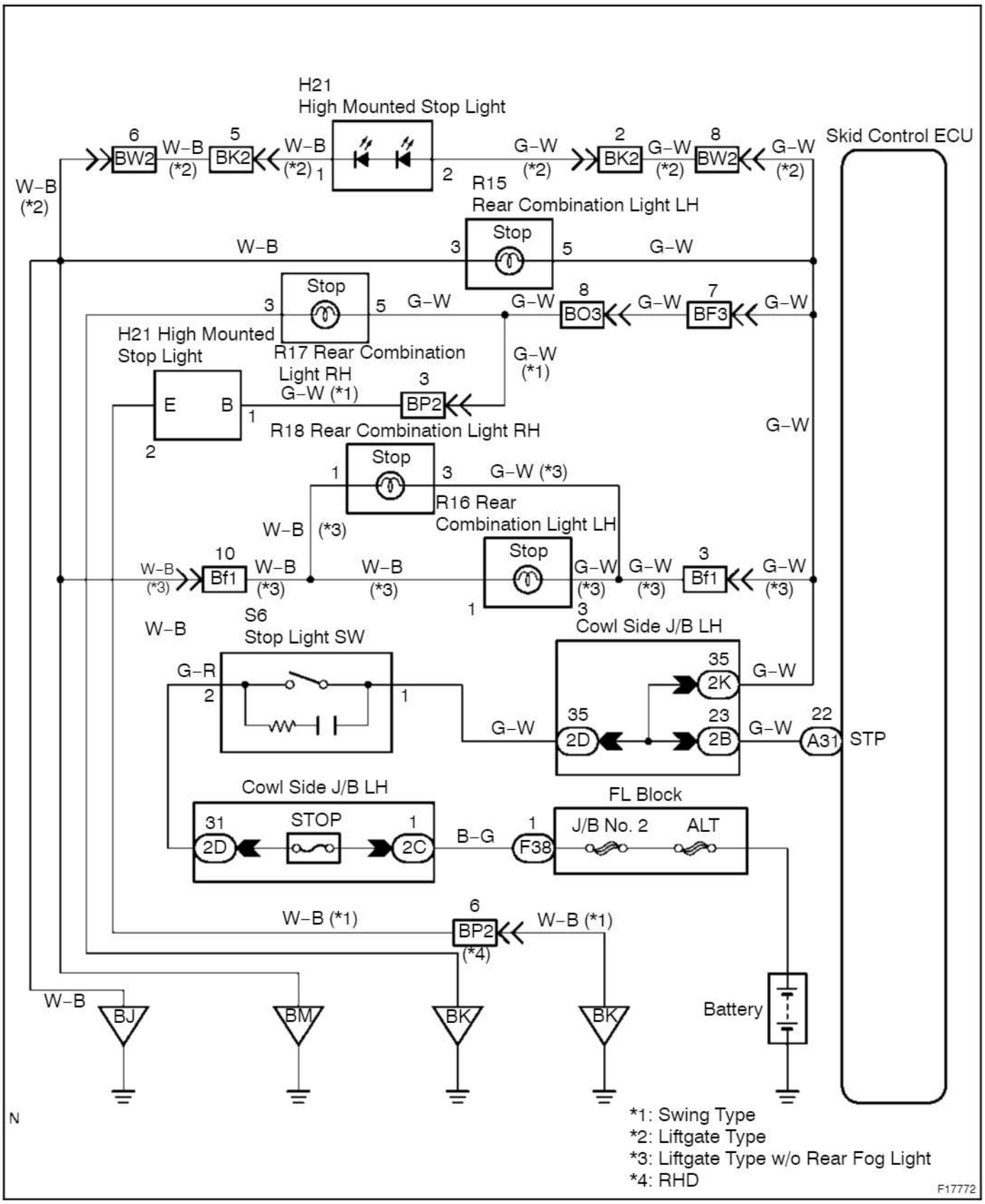
DTC	C1249 / 49	Stop Light Switch Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1249 / 49	ECU terminal IG1 voltage is 9.5 to 17.2 V and ABS is in non–operation, the open circuit in stop light switch circuit continues for 0.3 sec. or more.	Stop light switch circuit

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WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check operation of the stop light switch.**

CHECK:

Check that the stop light lights up when brake pedal is depressed and turns OFF when the brake pedal is released.

OK → **Go to step 3.**

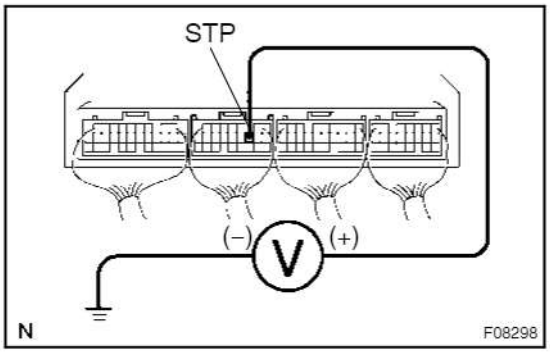
NG

2	**Check stop light circuit (See Pub. No. RM616E on page BE–58).**

NG → **Repair or replace stop light circuit.**

OK

3	**Check voltage between terminal STP of skid control ECU and body ground.**



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

Measure voltage between terminal STP of skid control ECU and body ground when brake pedal is depressed.

OK:

Voltage: 10 – 14 V

OK → **Proceed to next circuit inspection shown in problem symptoms chart (See page DI–206).**

NG

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4	**Check for open circuit in harness and connector between skid control ECU and stop light switch (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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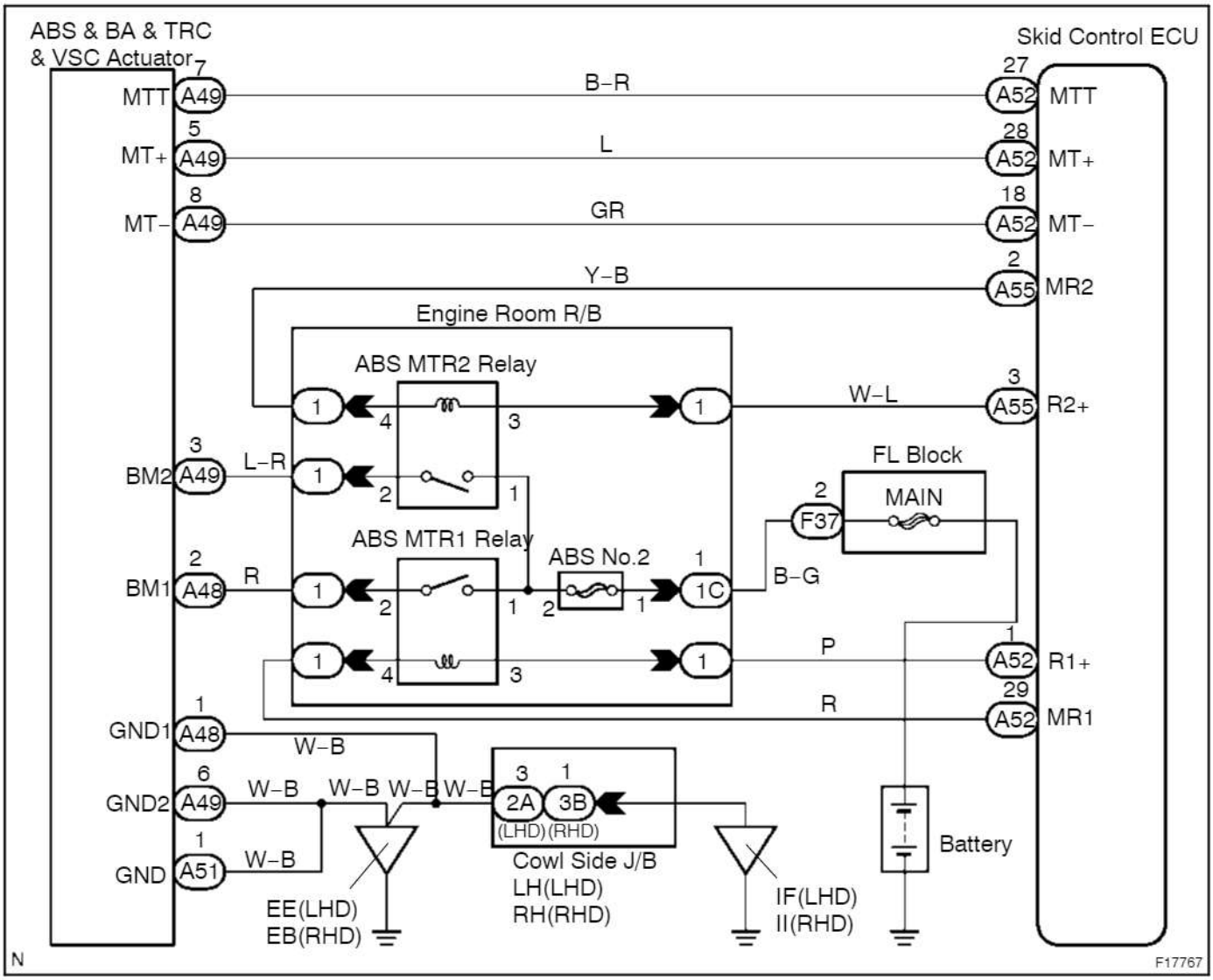
DI6XP–03

DTC	C1251 / 51	Hydraulic Brake Booster Pump Motor Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1251 / 51	Either of the following 1. or 2. is detected: 1. After turning the ignition switch ON, the current of more than 30 A flows to the motor for more than 1 sec. 2. After turning the ignition switch ON, less than 7 A change in current is detected more than 3 times in a low when the motor is ON.	Hydraulic brake booster pump motor

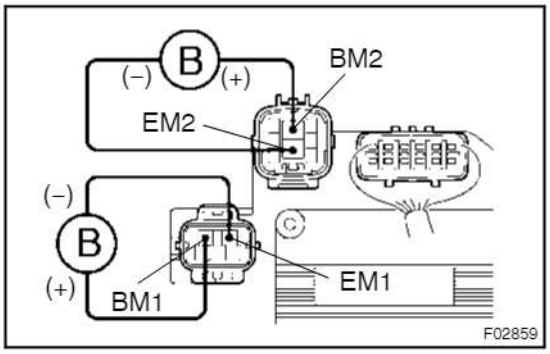
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check operation of hydraulic brake booster pump motor.**



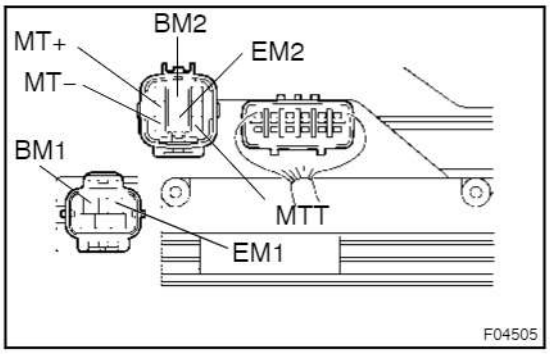
PREPARATION:
Disconnect the 2 connectors from the hydraulic brake booster.
CHECK:
Connect battery positive ⊕ lead to BM1 or BM2 terminal and battery negative ⊖ lead to EM1 or EM2 terminal of the hydraulic brake booster (pump motor) connector.
OK:

The operation sound of the pump motor should be heard.

NG	**Go to step 4.**

OK

2	**Check hydraulic brake booster resistance.**



PREPARATION:
Disconnect the 2 connectors from the hydraulic brake booster.
CHECK:
Check resistance between terminals MT+ and MT–, BM1 and MT, BM2 and MTT, EM1 and MT+, EM2 and MT+ of the hydraulic brake booster connector.
OK:

30 – 36 Ω

NG	**Replace the hydraulic brake booster assembly.**

OK

3	**Check for open circuit in harness and connector between hydraulic brake booster (MT+, MT–) and skid control ECU (See page IN–38).**

NG	**Repair or replace harness or connector.**

OK

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Check and replace skid control ECU.

4	**Check for open or short circuit in harness and connector between hydraulic brake booster and skid control ECU (See page IN–38).**

NG → **Replace wire harness.**

OK

5	**Check hydraulic brake booster pump motor (See Pub. No. RM793E on page BR–7).**

NG → **Replace hydraulic brake booster pump motor.**

OK

Replace hydraulic brake booster.

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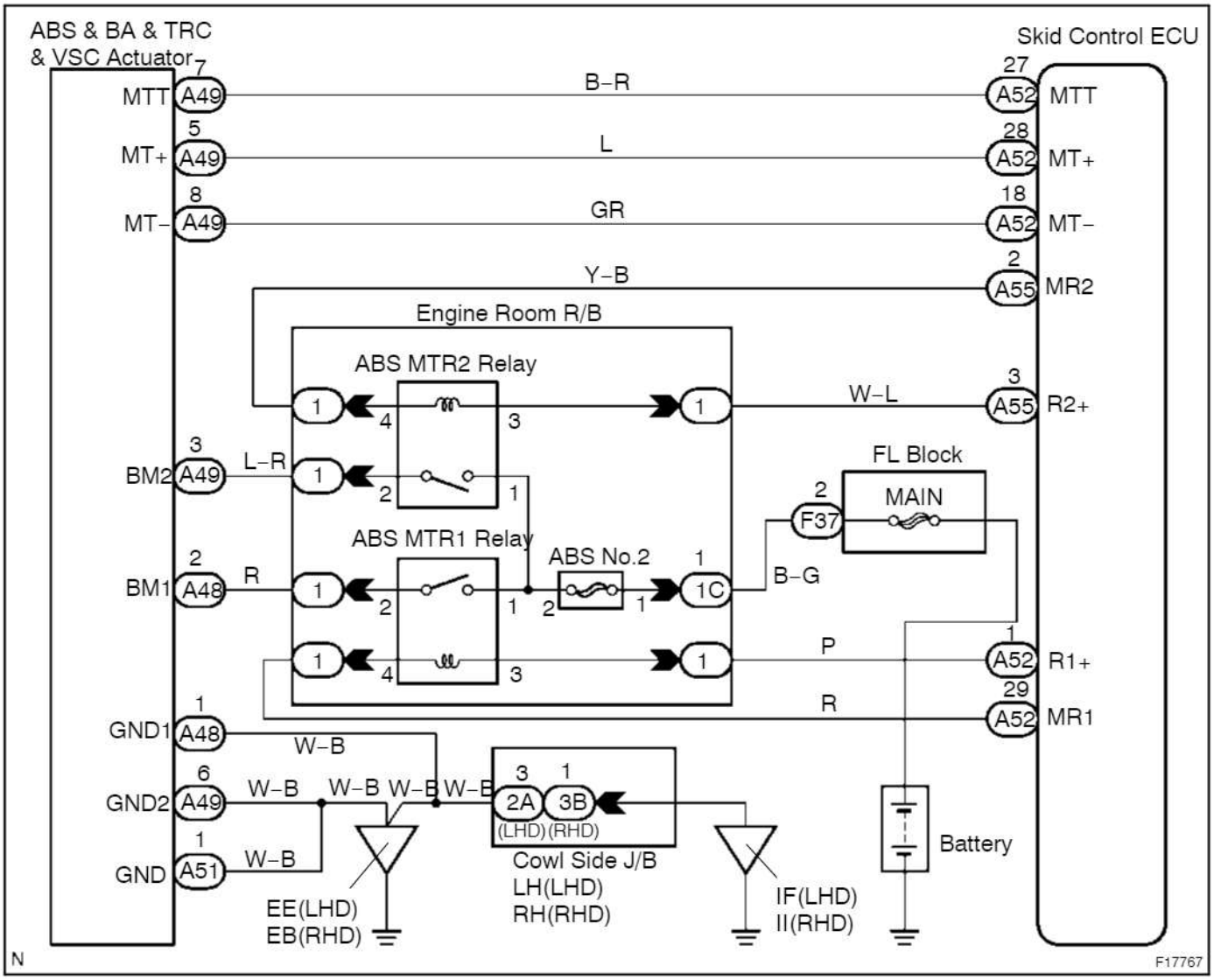
DI6XQ–03

DTC	C1252 / 52	Hydraulic Brake Booster Pump Motor ON Time Abnormally Long

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1252 / 52	After the ignition switch has been turned ON, when the power is supplied to the pump motor for more than 5 minutes.	• Hydraulic brake booster pump motor • Hydraulic brake booster pump motor circuit • Pressure switch (PH or PL)

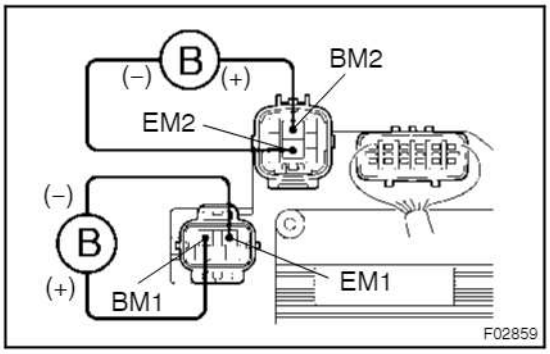
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check operation of hydraulic brake booster pump motor.**



PREPARATION:
Disconnect the 2 connectors from the hydraulic brake booster.
CHECK:
Connect battery positive ⊕ lead to BM1 or BM2 terminal and battery negative ⊖ lead to EM1 or EM2 terminal of the hydraulic brake booster (pump motor) connector.
OK:

The operation sound of the pump motor should be heard.

NG → **Go to step 9.**

OK

2	**Check for short circuit (to B+) in harness and connector between BM1 or BM2 of hydraulic brake booster and ABS motor 1 or ABS motor 2 relay (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

3	**Check for short circuit (to B+) in harness and connector between MTT of hydraulic brake booster and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

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4	Check pressure switch (PH).

In case of using the hand–held tester.

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the DATALIST mode on the hand–held tester.

CHECK:

Depress the brake pedal more than 40 times with the ignition switch OFF then turn the ignition switch ON and check the pressure switch (PH) condition.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

OK:

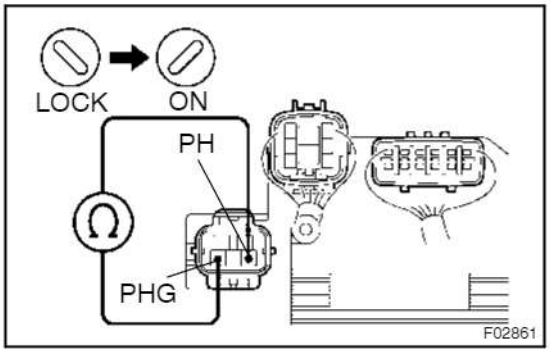
"OFF" turns to "ON".

HINT:

OFF: Low pressure

ON: High pressure

In case of not using the hand–held tester.



PREPARATION:

(a) Disconnect the connector (5P) from the hydraulic brake booster.

(b) With the ignition switch OFF, depress the brake pedal more than 40 times to decrease the accumulator pressure.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

CHECK:

Measure resistance between terminals PH and PHG of hydraulic brake booster connector.

OK:

Resistance: 1.0 kΩ

PREPARATION:

(a) Connect the connector (5P) to the hydraulic brake booster.

(b) Disconnect the connector (5P) after ignition switch has been ON and the pump motor has stopped.

CHECK:

Measure resistance between terminals PH and PHG of hydraulic brake booster connector.

OK:

Resistance: 0 Ω

HINT:

After inspection, connect the connector and clear the DTC (See page DI–185).

NG	Replace hydraulic brake booster assembly.

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OK

5	**Check pressure switch (PL).**

In case of using hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the DATALIST mode on the hand–held tester.

CHECK:

Depress the brake pedal more than 40 times with the ignition switch OFF then turn the ignition switch ON and check the pressure switch (PL) condition.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

OK:

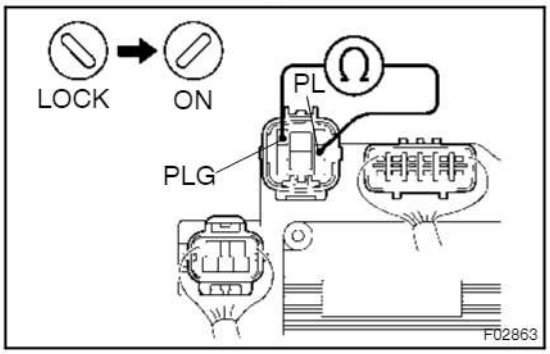
"OFF" turns to "ON".

HINT:

OFF: Low pressure

ON: High pressure

In case of not using hand–held tester:



PREPARATION:

(a) Disconnect the connector (8P) from the hydraulic brake booster.

(b) With the ignition switch OFF, depress the brake pedal more than 40 times to decrease the accumulator pressure.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

CHECK:

Measure resistance between terminals PL and PLG of hydraulic brake booster connector.

OK:

Resistance: 5.7 kΩ

PREPARATION:

(a) Connect the connector (8P) to the hydraulic brake booster.

(b) Disconnect the connector (8P) after ignition switch has been ON and the pump motor has stopped.

CHECK:

Measure resistance between terminals PL and PLG of hydraulic brake booster connector.

OK:

Resistance: 1.0 kΩ

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HINT:
After inspection, connect the connector and clear the DTC (See page DI–185).

NG → **Replace hydraulic brake booster assembly.**

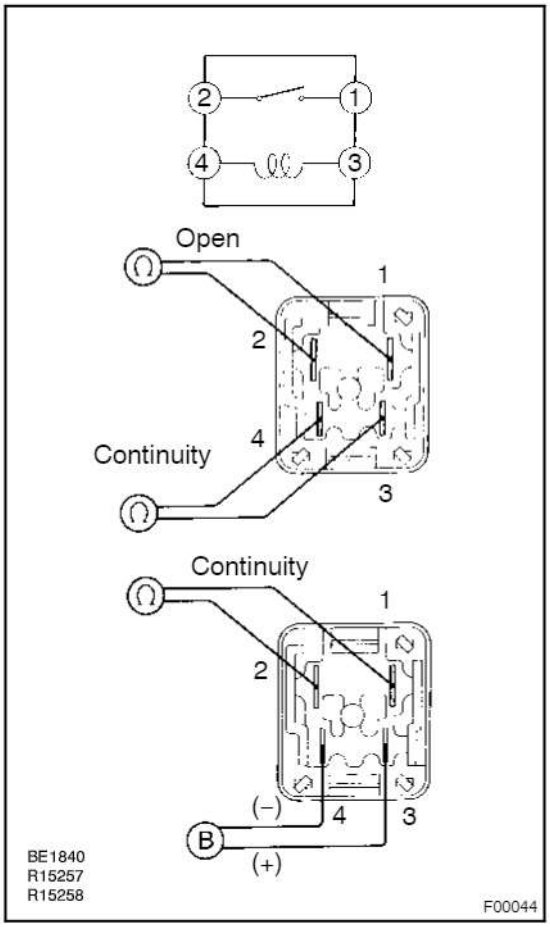
OK

6	**Check for short circuit (to B+) in harness and connector between pressure switch and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

7	**Check ABS motor 1 and ABS motor 2 relay.**



PREPARATION:
Remove ABS motor 1 and ABS motor 2 relay from engine room J/B.

CHECK:
Check continuity between each pair of terminal of motor relay.

OK:

Terminals 3 and 4	Continuity (Reference value *1)
Terminals 1 and 2	Open

*1: ABS motor 1 relay 54 Ω
ABS motor 2 relay 62 Ω

CHECK:
(a) Apply battery voltage between terminals 3 and 4.
(b) Check continuity between terminals.

OK:

Terminals 1 and 2	Continuity

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NG → Replace ABS motor 1 or ABS motor 2 relay.

OK

8	Check for short circuit in harness and connector between ABS motor 1 or ABS motor 2 relay and skid control ECU (See page IN–38).

NG → Repair or replace harness or connector.

OK

Check and replace skid control ECU.

9	Check for open or short circuit in harness and connector between hydraulic brake booster and skid control ECU (See page IN–38).

NG → Replace wire harness.

OK

10	Check hydraulic brake booster pump motor (See Pub. No. RM731E on page BR–8).

NG → Replace hydraulic brake booster pump motor.

OK

Replace hydraulic brake booster.

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DI6XR–03

DTC	C1253 / 53	Motor Relay Circuit

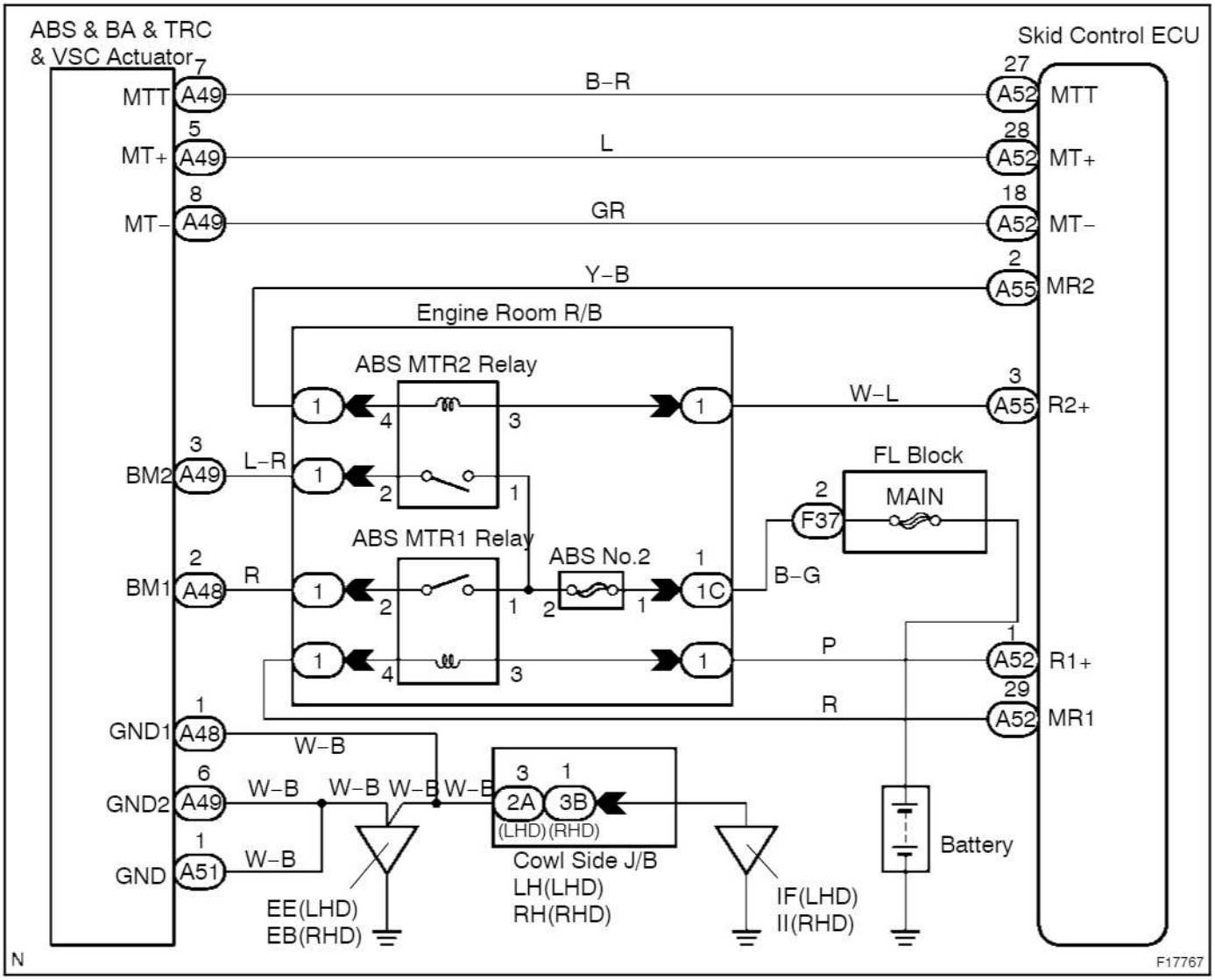
CIRCUIT DESCRIPTION

The ABS motor 1 and ABS motor 2 relay supplies power to the hydraulic brake booster pump motor. While the ABS & BA & TRC & VSC are activated, the ECU switches the motor relay ON and operates the hydraulic brake booster pump motor.

DTC No.	DTC Detecting Condition	Trouble Area
C1253 / 53	When any of the following 1. through 4. is detected: 1. After turning the ignition switch ON, open in the relay coil is detected for more than 1 sec. 2. When the pressure switch does not control motor driving, the status that the motor relay is always ON continues for more than 1 sec. due to short circuit. 3. When the pressure switch (PH) detects the low pressure or while the pump motor operates to increase the pressure, the status that the motor relay does not turn ON continues for more than 0.2 sec. 4. When pressure switch does not control motor driving, the status that the motor relay is always ON due to the welded contact continues for more than 2 sec.	• ABS motor 1 or ABS motor 2 relay • ABS motor 1 or ABS motor 2 relay circuit • Hydraulic brake booster pump motor circuit

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WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1, in case of using the hand–held tester and start from step 3, in case of not using hand–held tester.

1	**Check ABS motor 1 and ABS motor 2 relay operation.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check the operation sound of the ABS motor relays individually when operating it with the hand–held tester.

OK:

The operation sound of the ABS motor 1 and ABS motor 2 relay should be heard.

NG	**Go to step 3.**

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OK

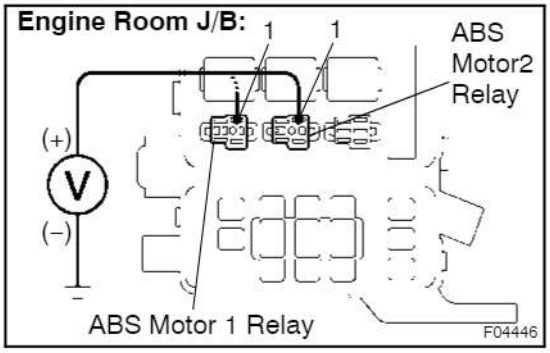
2	**Check for short circuit (to B+) in harness and connector between MTT of hydraulic brake booster and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

3	**Check voltage between terminal 1 of engine room J/B (for ABS motor 1 and ABS motor 2 relay) and body ground.**



PREPARATION:

Remove ABS motor 1 and ABS motor 2 relay from engine room J/B.

CHECK:

Measure voltage between terminal 1 of engine room J/B (for ABS motor 1 and ABS motor 2 relay) and body ground.

OK:

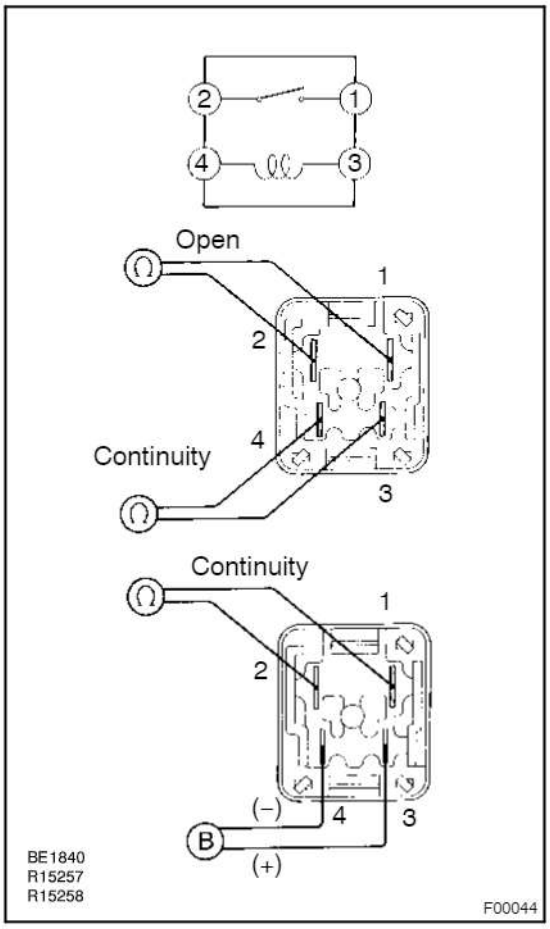
Voltage: 10 – 14 V

NG → **Check and repair harness or connector.**

OK

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4	Check ABS motor 1 and ABS motor 2 relay.



PREPARATION:

Remove ABS motor 1 and ABS motor 2 relay from engine room J/B.

CHECK:

Check continuity between each pair of terminal of motor relay.

OK:

Terminals 3 and 4	Continuity (Reference value *1)
Terminals 1 and 2	Open

*1: ABS motor 1 relay 54 Ω
ABS motor 2 relay 62 Ω

CHECK:

(a) Apply battery voltage between terminals 3 and 4.
(b) Check continuity between terminals.

OK:

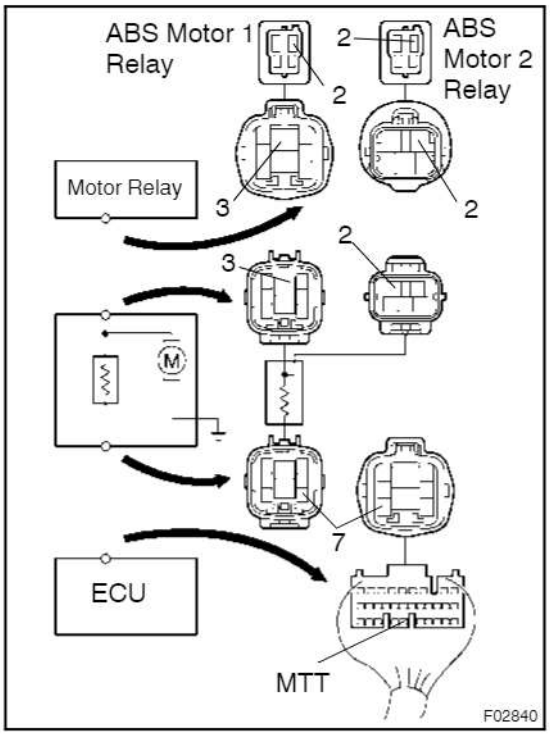
Terminals 1 and 2	Continuity

NG → **Replace ABS motor 1 or ABS motor 2 relay.**

OK

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5	Check continuity between each terminal BM1 and BM2 and terminal MTT of skid control ECU.



PREPARATION:

Disconnect the 2 connectors from the hydraulic brake booster.

CHECK:

(a) Check continuity between terminal BM1 of ABS motor 2 relay and terminal MTT of skid control ECU.

(b) Check continuity between terminal BM2 of ABS motor 1 relay and terminal MTT of skid control ECU.

OK:

Continuity

HINT:

There is resistance of 33 ± 3 Ω between terminal BM1or BM2 and MTT of the hydraulic brake booster.

NG → **Repair or replace harness, connector or hydraulic brake booster.**

OK

6	Check for open and short circuit in harness and connector between ABS motor 1 and ABS motor 2 relay and skid control ECU (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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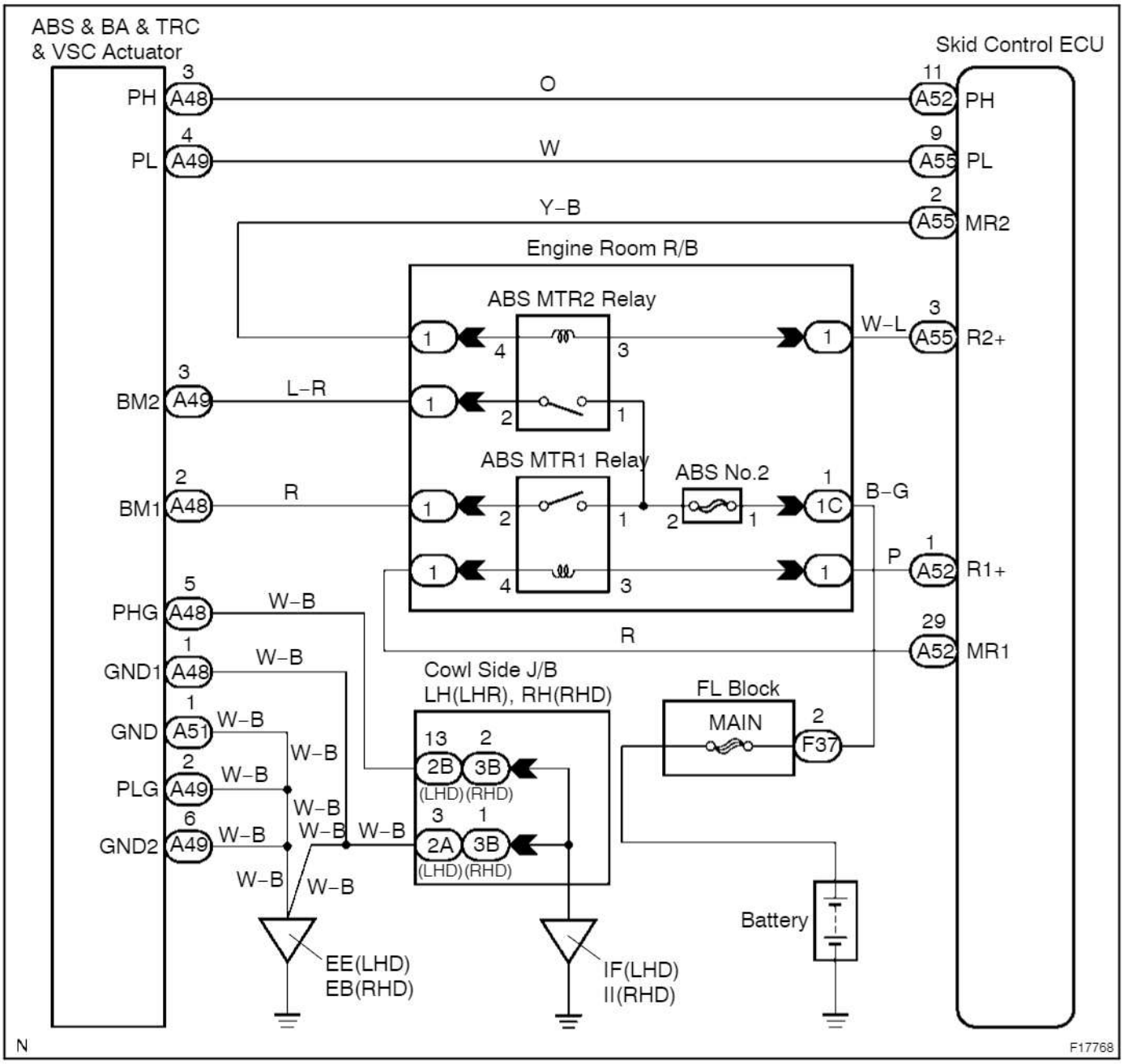
DI6XS–03

DTC	C1254 / 54	Pressure Switch Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1254 / 54	Either of the following 1. or 2. is detected: 1. After turning the ignition switch ON, short or open circuit in pressure switch (PL) continued for more than 1 sec. 2. After turning the ignition switch ON open in pressure switch (PH) continued for more than 1 sec.	• Pressure switch (PH or PL) • Pressure switch circuit

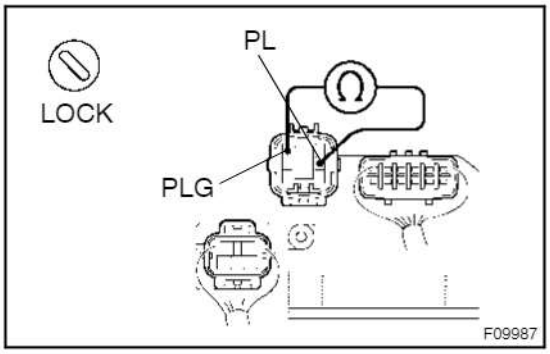
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check pressure switch (PL) resistance.



PREPARATION:

(a) Disconnect the connector (8P) from the hydraulic brake booster.

(b) With ignition switch OFF, depress the brake pedal more than 40 times to decrease the accumulator pressure.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

CHECK:

Measure resistance between terminals PL and PLG of hydraulic brake booster connector.

OK:

Resistance: 5.1 – 6.3 kΩ

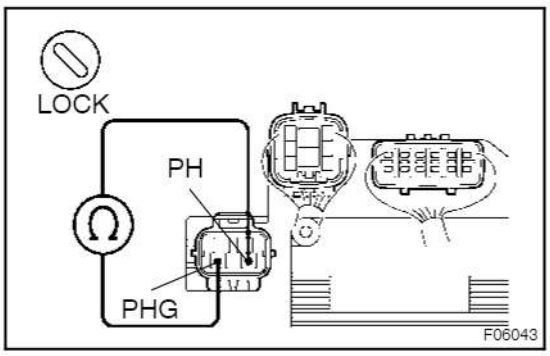
HINT:

After inspection, connect the connector and clear the DTC (See page DI–185).

NG	Replace hydraulic brake booster assembly.

OK

2	Check pressure switch (PH) resistance.



PREPARATION:

(a) Disconnect the connector (5P) from the hydraulic brake booster.

(b) With ignition switch OFF, depress the brake pedal more than 40 times to decrease the accumulator pressure.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

CHECK:

Measure resistance between terminals PH and PHG of hydraulic brake booster connector.

OK:

Resistance: 0.9 – 1.1 kΩ

HINT:

After inspection, connect the connector and clear the DTC (See page DI–185).

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NG → Replace hydraulic brake booster assembly.

OK

3	Check for open and short circuit in harness and connector between pressure switch and skid control ECU (See page IN–38).

NG → Repair or replace harness or connector.

OK

Check and replace skid control ECU.

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DI6XT–03

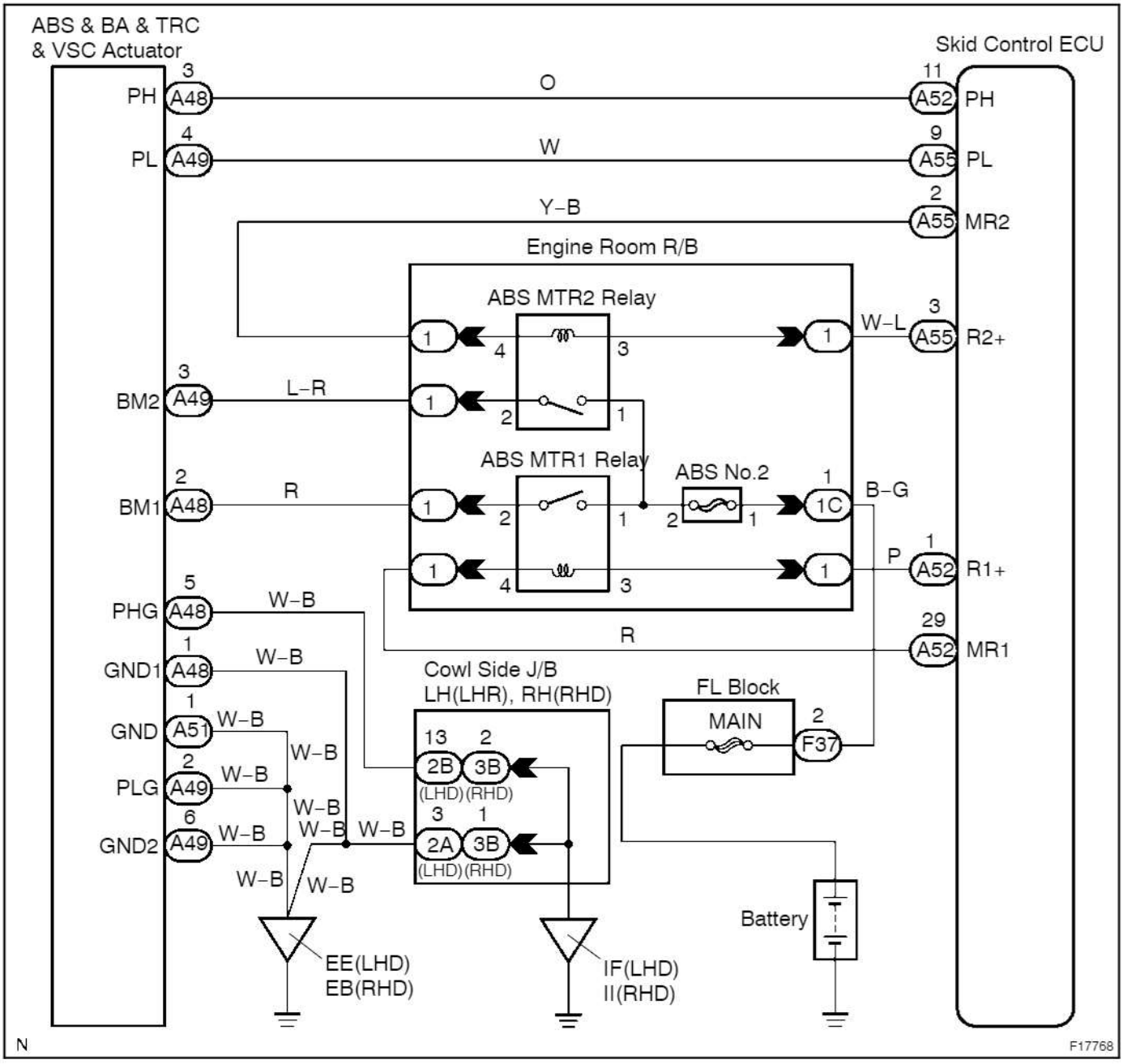
DTC	C1256 / 56	Accumulator Low Pressure Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1256 / 56	Either of the following 1. through 7. is detected: 1. With the vehicle running, when the pressure switch (PL) detects high pressure, although ABS, TRC or VSC does not control, the pressure switch (PL) detects low pressure for more than 1.4 sec. 2. With the vehicle running, when the pressure switch (PL) detects high pressure, although ABS, TRC or VSC controls, the pressure switch (PL) detects low pressure for more than 0.2 sec. 3. After the ignition switch is turned ON, the pressure switch (PL) detects low pressure for more than 64 sec. 4. With the vehicle running, after ignition switch has been ON, the pressure switch (PL) detects low pressure for more than 0.2 sec. although ABS, TRC, or VSC does not control and when the pressure switch is ON and stuck under high pressure. 5. With the vehicle running, after ignition switch is ON, the pressure switch (PL) detects low pressure for more than 0.2 sec. when ABS, TRC or VSC controls, the pressure switch is ON and stuck under high pressure. 6. With the vehicle running, after ignition switch is ON, the pressure switch (PL) is stuck to under low pressure although ABS, TRC or VSC does not control for more than 1.4 sec. 7. With the vehicle running, after ignition switch is ON, the pressure switch (PL) is stuck under low pressure when ABS, TRC or VSC controls for more than 0.2 sec.	• Accumulator • Pressure switch (PH or PL) • Hydraulic brake booster pump motor

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WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check accumulator operation.**

PREPARATION:

(a) Turn the ignition switch OFF, and depress the brake pedal 40 times or more.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(b) Install the LSPV gauge (SST) to rear brake caliper and bleed air.
SST 09709–29018

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CHECK:

Depress the brake pedal with force of more than 343 N (35 kgf, 77 lbf) and turn the ignition switch ON, then check the rear brake caliper pressure when an increase of pressure changes from acutely to mildly.

OK:

5,099 – 8,924 kPa (52 – 91 kgf/cm^2, 740 – 1,294 psi) at 20°C (68°F)

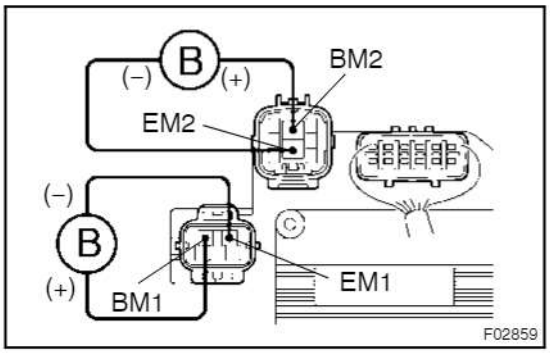
HINT:

If the value is not within the standard, cool the engine room and check it again.

NG	**Replace accumulator.**

OK

2	**Check operation of hydraulic brake booster pump motor.**



PREPARATION:

Disconnect the 2 connectors from the hydraulic brake booster.

CHECK:

Connect battery positive ⊕ lead to BM1 or BM2 terminal and battery negative ⊖ lead to EM1 or EM2 terminal of the hydraulic brake booster (pump motor) connector.

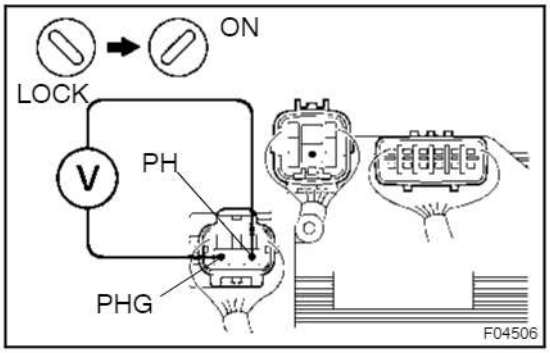
OK:

The operation sound of the pump motor should be heard.

NG	**Go to step 7.**

OK

3	**Check pressure switch (PH) operation.**



PREPARATION:

(a) Turn the ignition switch OFF, and depress the brake pedal 40 times or more.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(b) Install the LSPV gauge (SST) to the rear brake caliper and bleed air.

SST 09709–29018

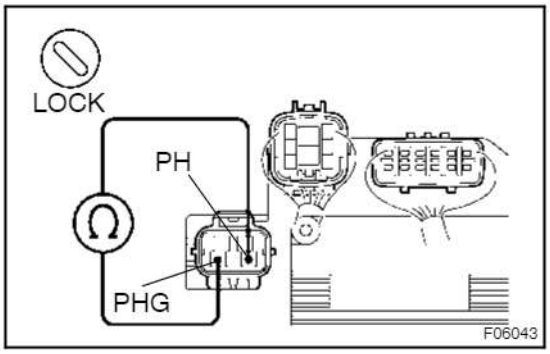
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CHECK:

While checking the voltage between terminals PH and PHG of hydraulic brake booster, depress the brake pedal with force of more than 343 N (35 kgf, 77 lbf) and turn the ignition switch ON, then check the rear wheel cylinder pressure when voltage changes from 6 V to 0 V.

OK:

12,553 – 20,104 kpa (128 – 205 kgf·cm^2, 1,820 – 2,916 psi)



PREPARATION:

Turn the ignition switch OFF and disconnect the connector (5P) from the hydraulic brake booster.

CHECK:

While checking the resistance between terminals PH and PHG, depress the brake pedal changing the force in the range of 197 N (20 kgf, 44 lbf) to 343 N (35 kgf, 77 lbf) and check the rear wheel cylinder pressure when resistance changes from 0 kΩ to 1 kΩ between PH and PHG.

OK:

11,964 – 18,240 kpa (122 – 186 kgf·cm^2, 1,735 – 2,645 psi)

HINT:

After inspection, connect the connector, fill brake reservoir with brake fluid and clear the DTC (See page DI–185).

OK	**Go to step 5.**

NG

4	**Check for open circuit in harness and connector between pressure switch (PH) and ABS & BA & TRC & VSC ECU (See page IN–38).**

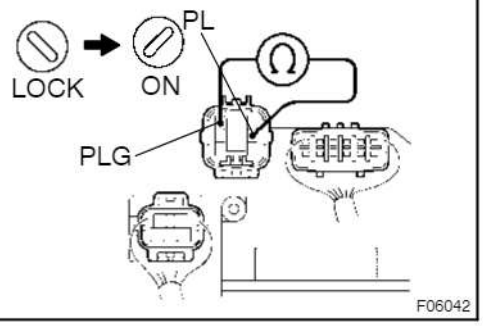
NG	**Repair or replace harness or connector.**

OK

Replace hydraulic brake booster assembly.

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5	Check pressure switch (PL) operation.



PREPARATION:

(a) Turn the motor switch OFF, and depress the brake pedal 40 times or more.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(b) Install the LSPV gauge (SST) to the rear brake caliper and bleed air.

SST 09709 –29018

(c) Disconnect the connector (8P) from the hydraulic brake booster.

CHECK:

While checking the resistance between terminals PL and PLG of hydraulic brake booster, depress the brake pedal with force of more than 343 N (35 kgf, 77 lbf) and turn the ignition switch ON, then check the rear wheel cylinder pressure when the resistance changes from 5.7 kΩ to 1.0 kΩ.

OK:

9,022 – 15,102 kpa (92 – 154 kgf·cm^2, 1,308 – 2,190 psi)

PREPARATION:

Turn the ignition switch OFF and disconnect the connector (8P) from the hydraulic brake booster.

CHECK:

While checking the resistance between terminals PL and PLG of hydraulic brake booster, depress the brake pedal changing the force in the range of 197 N (20 kgf, 44 lbf) to 343 N (35 kgf, 77 lbf) and check the rear wheel cylinder pressure when resistance changes from 1.0 kΩ to 5.7 kΩ.

OK:

8,532 – 13,337 kpa (87 – 136 kgf·cm^2, 1,237 – 1,934 psi)

HINT:

After inspection, connect the connector, fill brake reservoir with brake fluid and clear the DTC (See page DI–185).

NG	Replace hydraulic brake booster assembly.

OK

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6	**Check pressure switch (PH) and pressure switch (PL)**

CHECK:

Compare the pressure value of the rear wheel cylinder measured in check pressure switch (PL) operation with the one measured in check pressure switch (PH) operation.

OK:

- **Pressure when the voltage between PH and PHG becomes 6 to 0 V > pressure when the resistance between PL and PLG becomes 5.7 kΩ to 1.0 kΩ.**
- **Pressure when the resistance between PH and PHG becomes 0 kΩ to 1 kΩ > pressure when the resistance between PL and PLG becomes 1.0 kΩ to 5.7 kΩ.**

NG → **Replace hydraulic brake booster assembly.**

OK

Check and replace ABS & BA & TRC & VSC ECU.

7	**Check for open or short circuit in harness and connector between hydraulic brake booster pump motor and hydraulic brake booster (See page IN–38).**

NG → **Replace wire harness.**

OK

8	**Check hydraulic brake booster pump motor (See Pub. No. RM731E on page BR–8).**

NG → **Replace hydraulic brake booster pump motor.**

OK

Replace hydraulic brake booster.

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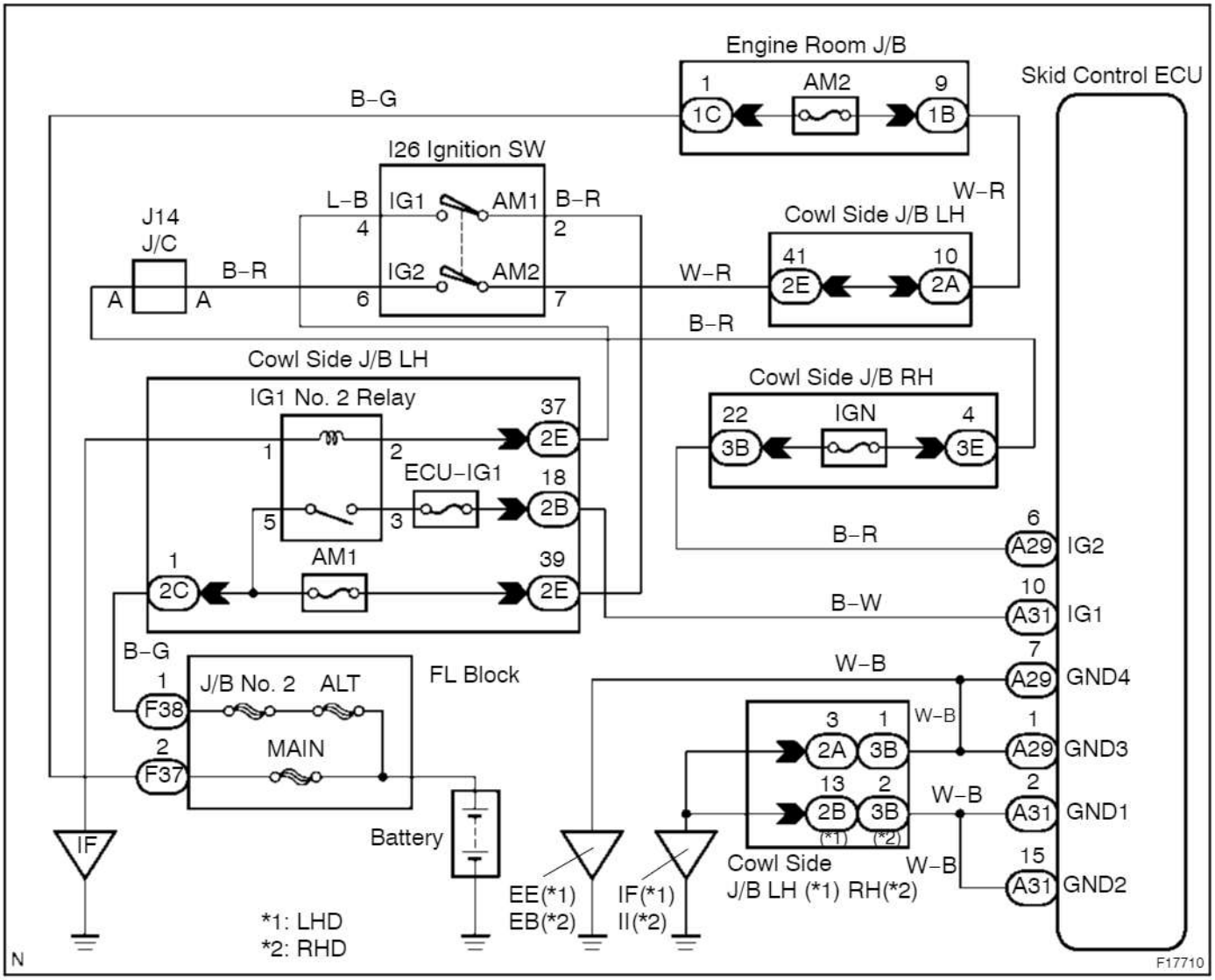
DIAR0–01

DTC	C1257 / 57	Power Supply Drive Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1257 / 57	When malfunction inside ECU is detected.	• Battery • Power source circuit • Skid control ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check battery voltage.**

OK:

Voltage: 10 – 14 V

NG → **Check and repair the charging system.**

OK

2	**Check voltage of the ECU IG power source.**

In case of using the hand–held tester.

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

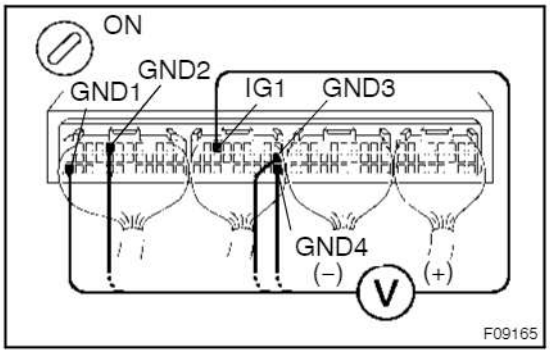
CHECK:

Check the voltage condition output from the ECU displayed on the hand–held tester.

OK:

"Normal" is displayed.

In case of not using the hand–held tester:



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure voltage between terminals IG1 and GND of skid control ECU connector.

OK:

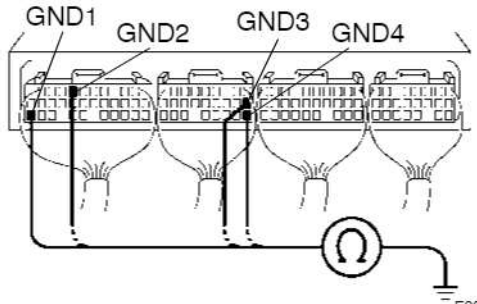
Voltage: 10 – 14 V

OK → **Turn ignition switch OFF, check and replace skid control ECU.**

NG

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3	Check continuity between terminal GND of skid control ECU connector and body ground.



CHECK:

Measure resistance between terminal GND of skid control ECU connector and body ground.

OK:

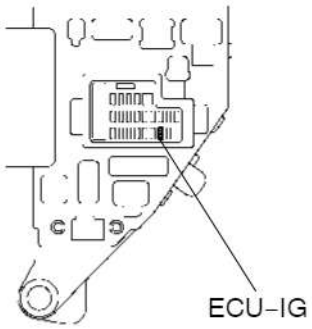
Resistance: 1 Ω or less

NG	Repair or replace harness or connector.

OK

4	Check ECU–IG fuse.

Cowl Side J/B LH:



PREPARATION:

Remove ECU–IG fuse from the cowl side J/B LH.

CHECK:

Check continuity of ECU–IG fuse.

OK:

Continuity

NG	Check for short circuit in all the harness and components connected to ECU–IG fuse (See attached wiring diagram).

OK

Check for open circuit in harness and connector between skid control ECU and battery (See page IN–38).

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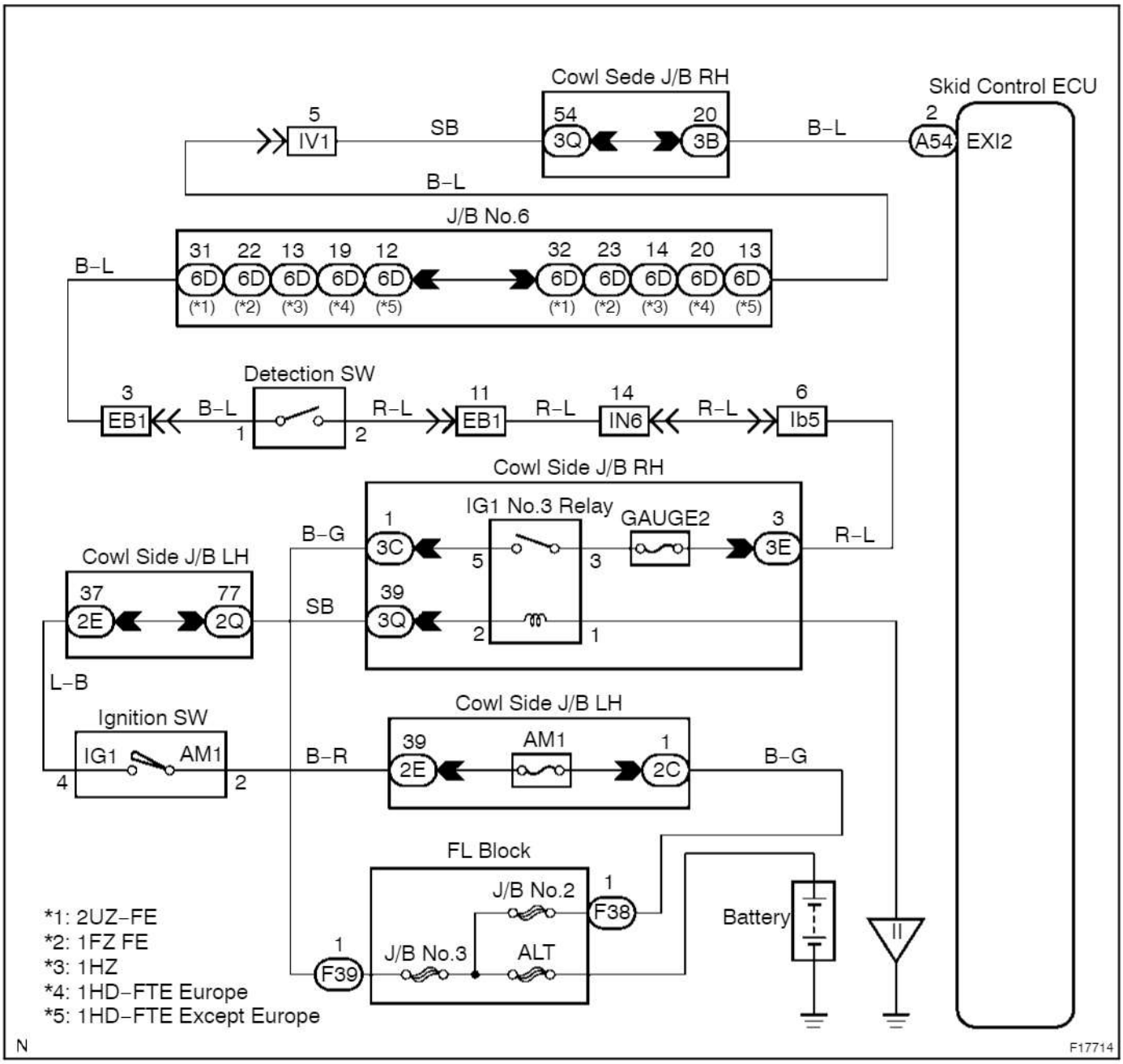
DI6XV–03

DTC	C1268 / 68	Transfer L4 Position Switch Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1268 / 68	Open or short circuit in transfer L4 position switch.	• Transfer L4 position switch • Transfer L4 position switch circuit

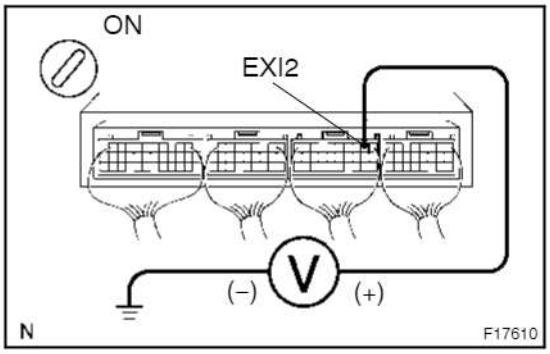
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminal EXI2 of skid control ECU and body ground.**



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminal EXI2 of skid control ECU and body ground when transfer in L4 position.

OK:

Voltage: 10 – 14 V

OK	**Proceed to next circuit inspection shown in problem symptoms chart (See page DI–206).**

NG

2	**Check transfer L4 position switch (Full–time 4WD type: See Pub. No. RM616E on page TR–53).**

NG	**Replace transfer L4 position switch.**

OK

3	**Check for open or short circuit in harness and connector between transfer L4 position switch and skid control ECU (See page IN–38).**

NG	**Repair or replace harness or connector.**

OK

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4	**Check for open or short circuit in harness and connector between skid control ECU and engine and ECT ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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DI6XC–02

DTC	C1289 / 41	VGRS Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1289 / 41	VGRS control system is abnormal.	VGRS control system

INSPECTION PROCEDURE

1	**Check the DTC for the VGRS (See page DI–185).**

*1 → **Repair VGRS control system according to the code output.**

*2 → **Check for ECU connected to malfunction indicator light.**

*1: Output NG code
*2: Malfunction indicator light remains ON

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DI6X9–03

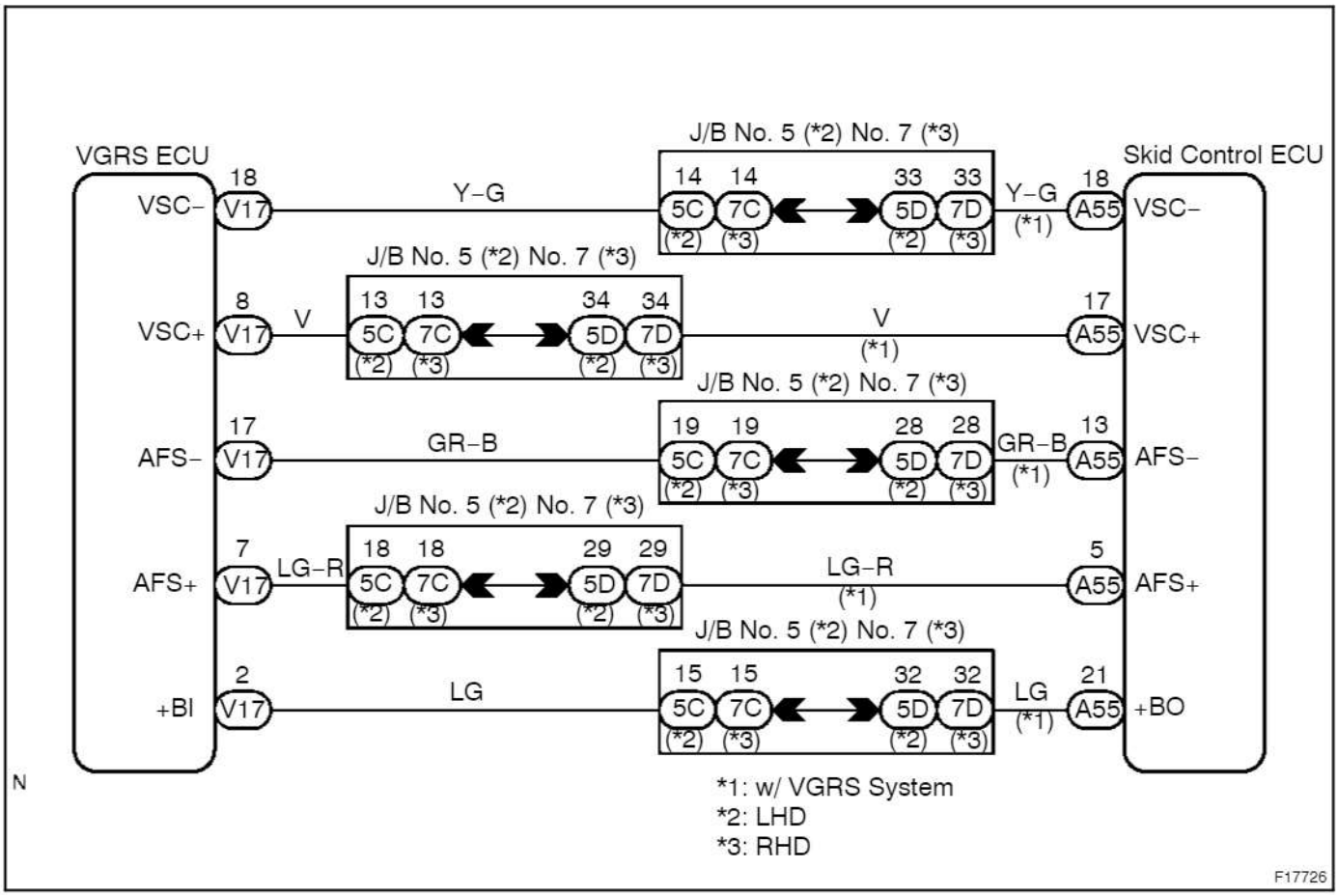
DTC	C1291 / 48	VGRS ECU Communication Circuit Malfunction

CIRCUIT DESCRIPTION

The circuit is used to send TRC & VSC control information from the skid control ECU to the VGRS ECU (VSC+, VSC–), and VGRS control information from the VGRS ECU to the skid control ECU (AFS+, AFS–).

DTC No.	DTC Detecting Condition	Trouble Area
C1291 / 48	Either of the following 1. or 2. continues for 5 sec.: 1. ECU IG1 terminal voltage is 9.5 V to 17.0 V and data transmission to the VGRS ECU is impossible. 2. ECU IG1 terminal voltage is 9.5 V to 17.0 V and data receiving from theVGRS ECU is impossible.	• AFS+ or AFS – circuit • VSC+ or VSC– circuit • VGRS ECU

WIRING DIAGRAM

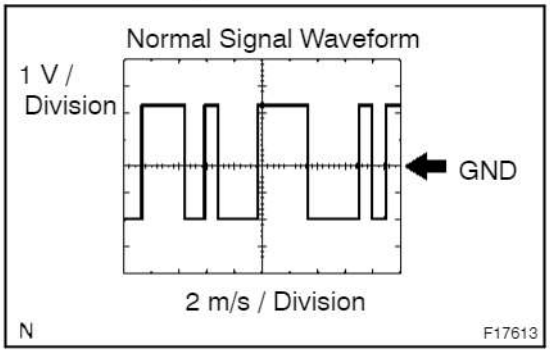


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INSPECTION PROCEDURE

1	**Check skid control ECU communication.**

(REFERENCE) INSPECTION USING OSCILLOSCOPE



PREPARATION:

(a) Remove the skid control ECU.

(b) Connect the oscilloscope to the each of terminals AFS+ or VSC+ and GND of the skid control ECU.

CHECK:

Start the engine, and check the signal waveform.

NG → **Check and replace skid control ECU.**

OK ↓

2	**Check for open and short circuit in harness and connector between each of terminals AFS+, AFS–, VSC+, VSC– of skid control ECU and VGRS ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace VGRS ECU.

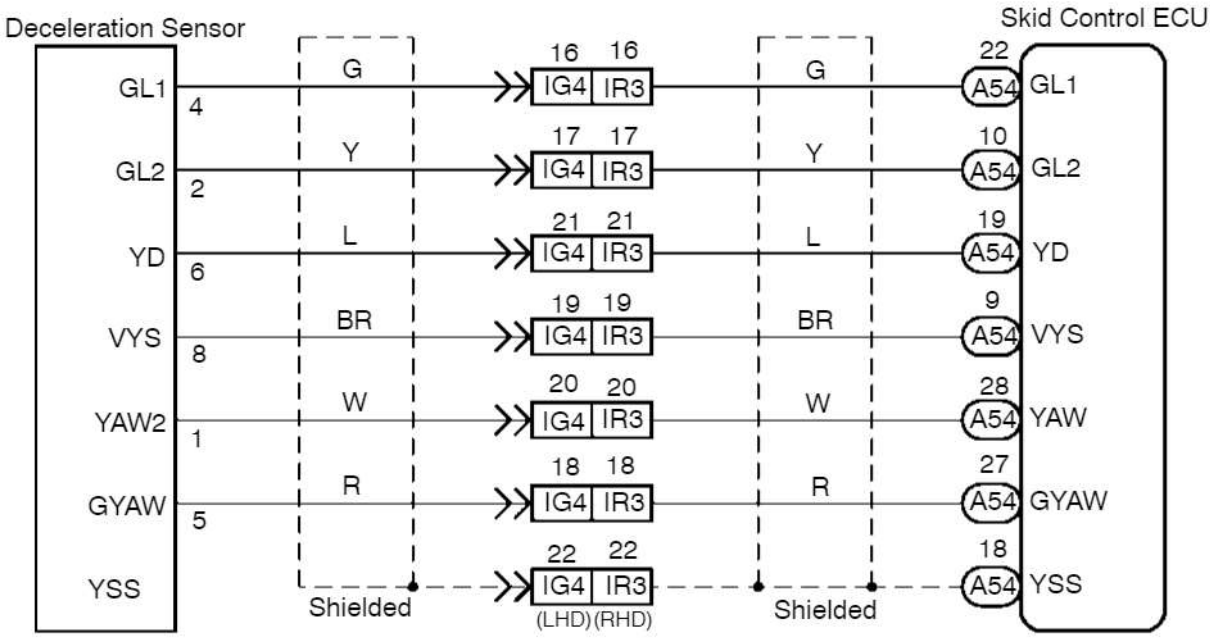
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DTC	C1336 / 39	Zero Point Calibration of Deceleration Sensor Undone

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1236 / 39	When any of following 1. through 2. is detected: 1. In TEST mode, the shift lever is shifted to other then P range with 2 sec. after ECU terminal IG1 is turned ON for the first time. 2. When the deceleration sensor zero point recorded in ECU is deleted.	• Deceleration sensor • Deceleration sensor circuit • Neutral start switch circuit (R range)

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Perform zero point calibration of the yaw rate (deceleration) sensor (See page DI–185).**

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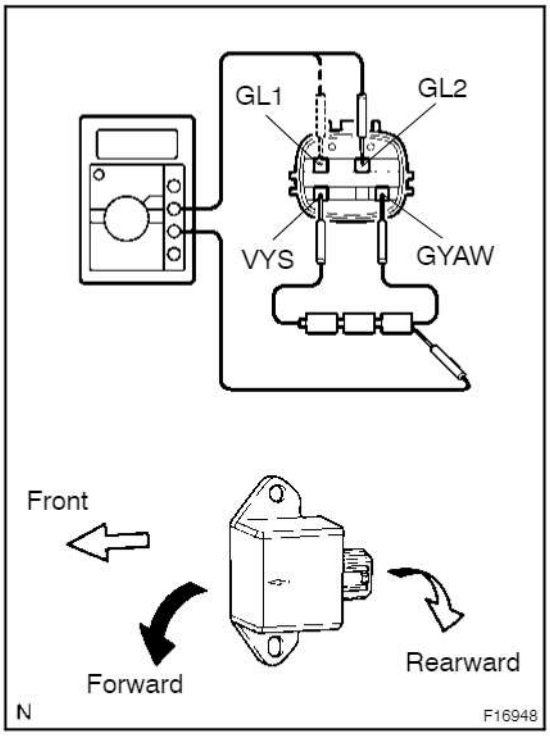
2	Is DTC still output?

Check DTC on page DI–185.

NO → End.

YES

3	Check yaw rate (deceleration) sensor.



PREPARATION:

(a) Connect 3 dry batteries of 1.5 V in series.

(b) Connect VYS terminal to the batteries' positive (+) terminal, and GYAW terminal to the batteries' negative (–) terminal. Apply about 4.5 V between VYS and GYAW terminals.

NOTICE:

Do not apply voltage of 6 V or more to terminals VYS and GYAW.

CHECK:

Check the output voltage of GL1 and GL2 terminals when the sensor is tilted forward and rearward.

OK:

Symbols	Condition	Standard Value
GL1	Horizontal	About 2.3 V
GL1	Lean rearward	1.0 V – about 2.3 V
GL1	Lean forward	About 2.3 V – 3.5 V
GL2	Horizontal	About 2.3 V
GL2	Lean rearward	About 2.3 V – 3.5 V
GL2	Lean forward	1.0 V – about 2.3 V

HINT:

- If the sensor is tilted too much it may show the wrong value.
- If dropped, the sensor should be replaced with a new one.
- The sensor removed from the vehicle should not be placed upside down.

NG → Replace yaw rate sensor.

OK

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4	**Check for open or short circuit in harness and connector between yaw rate (deceleration) sensor and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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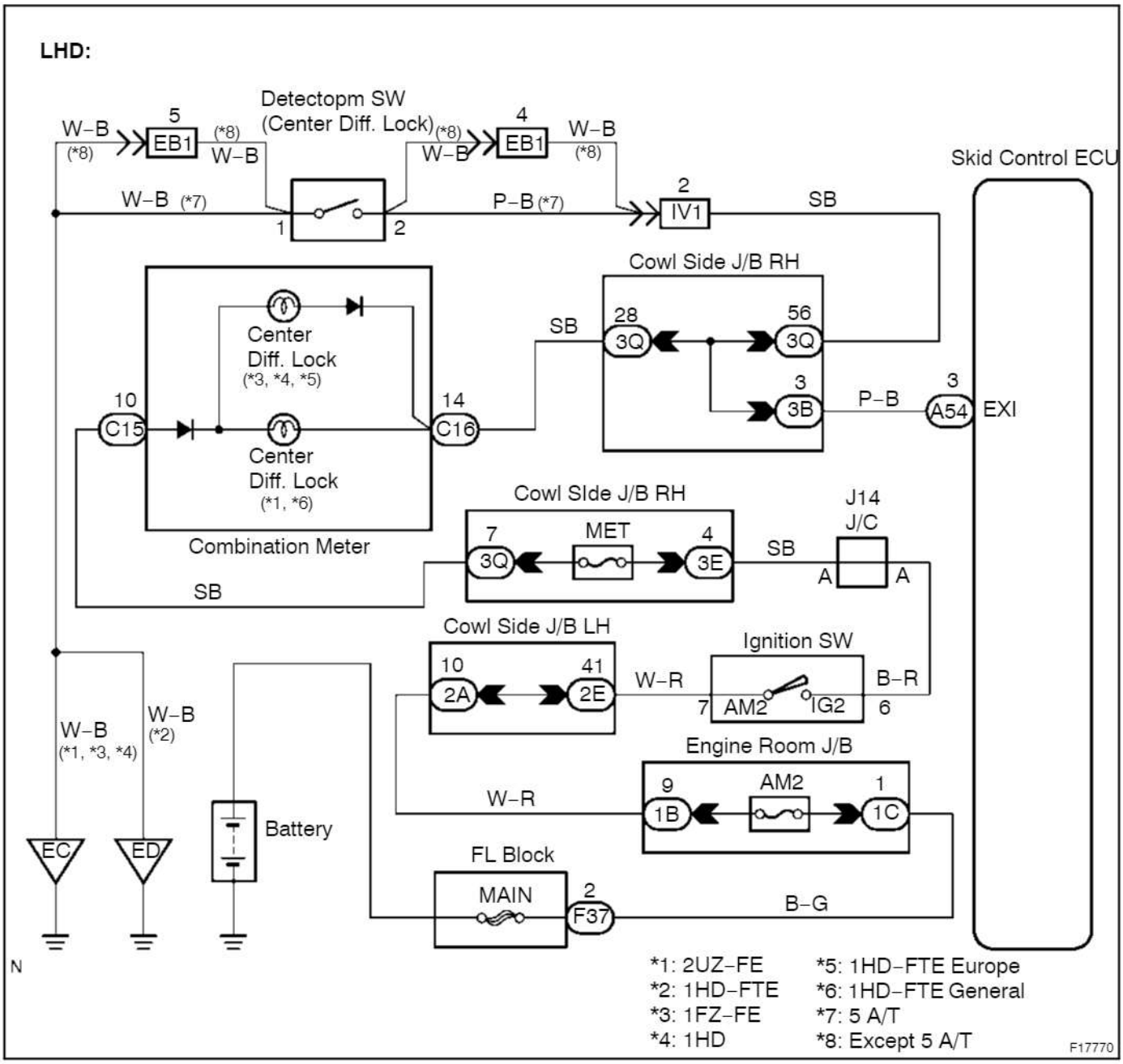
DTC	C1340 / 47	Center Differential Lock Circuit

CIRCUIT DESCRIPTION

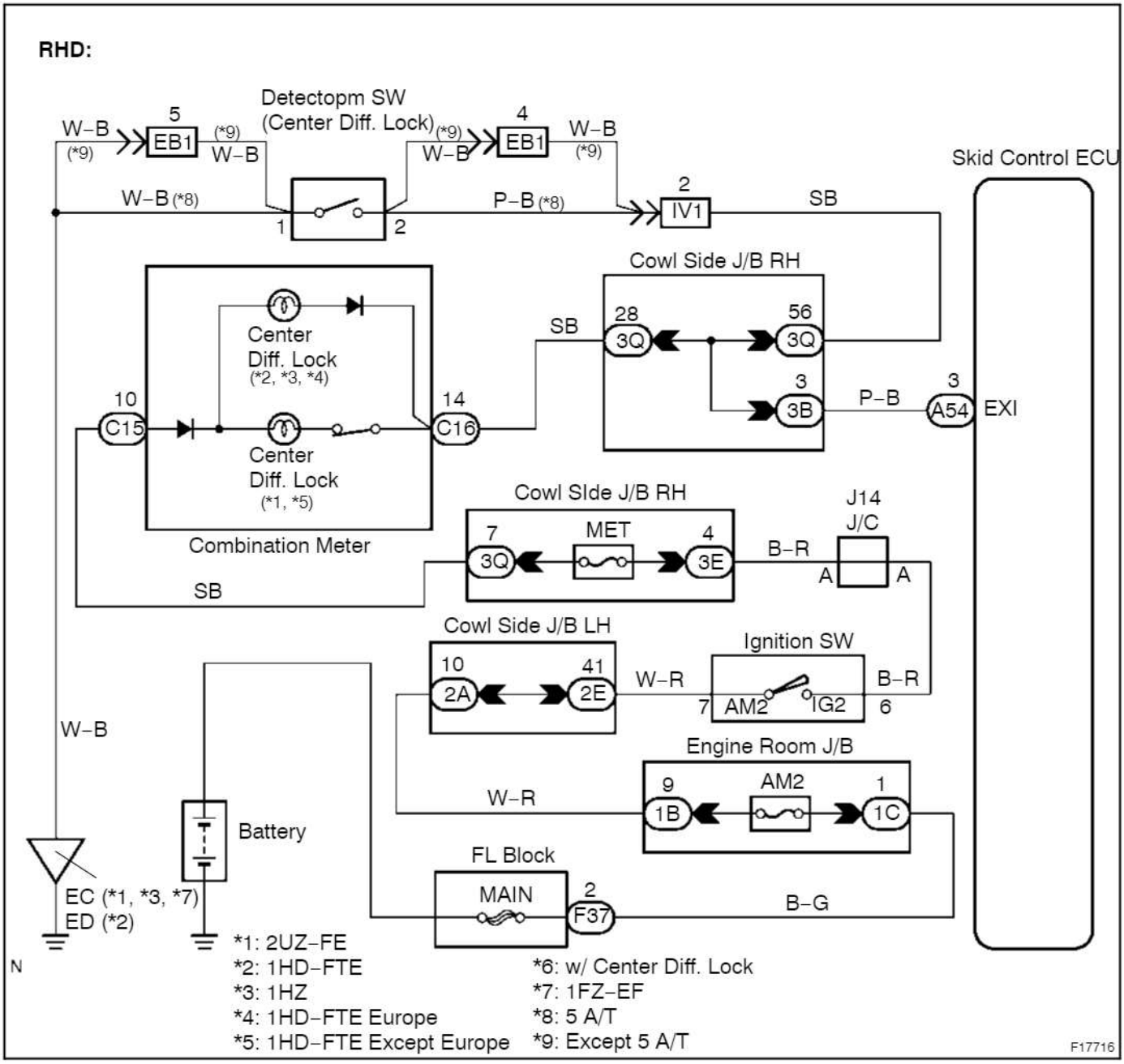
DTC No.	DTC Detecting Condition	Trouble Area
C1240 / 47	Open or short circuit in center differential lock circuit.	• Center differential lock system • Center differential lock circuit

WIRING DIAGRAM

LHD:



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INSPECTION PROCEDURE

1	**Check the center differential is free and center diff. lock switch is OFF.**

NG → **Repair the center differential lock system.**

OK

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2	**Is DTC output?**

Check DTC on page DI–185.

NO → **END**

YES

3	**Check that bulb for center diff. lock indicator light is not burnt out.**

NG → **Replace indicator light.**

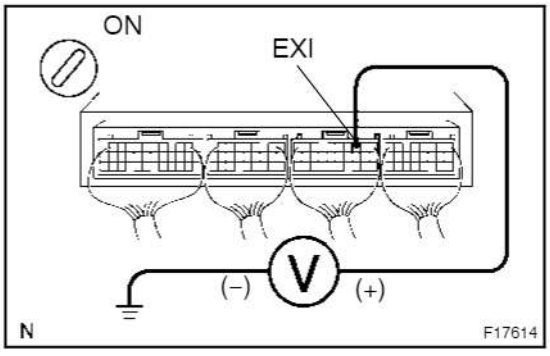
OK

4	**Check for open circuit in harness and connector between battery and center diff. lock indicator light, center diff. lock indicator light and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

5	**Check voltage between terminal EXI of skid control ECU and body ground.**



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminal EXI of skid control ECU and body ground when transfer in L4 position.

OK:

Voltage: 10 – 14 V

NG → **Repair or replace harness or connector.**

OK

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6	**Check center diff. lock indicator switch (Full–time 4WD type: See Pub. No. RM616E on page TR–53).**

NG → **Replace center diff. lock indicator switch.**

OK

Check and replace skid control ECU.

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DIARR-01

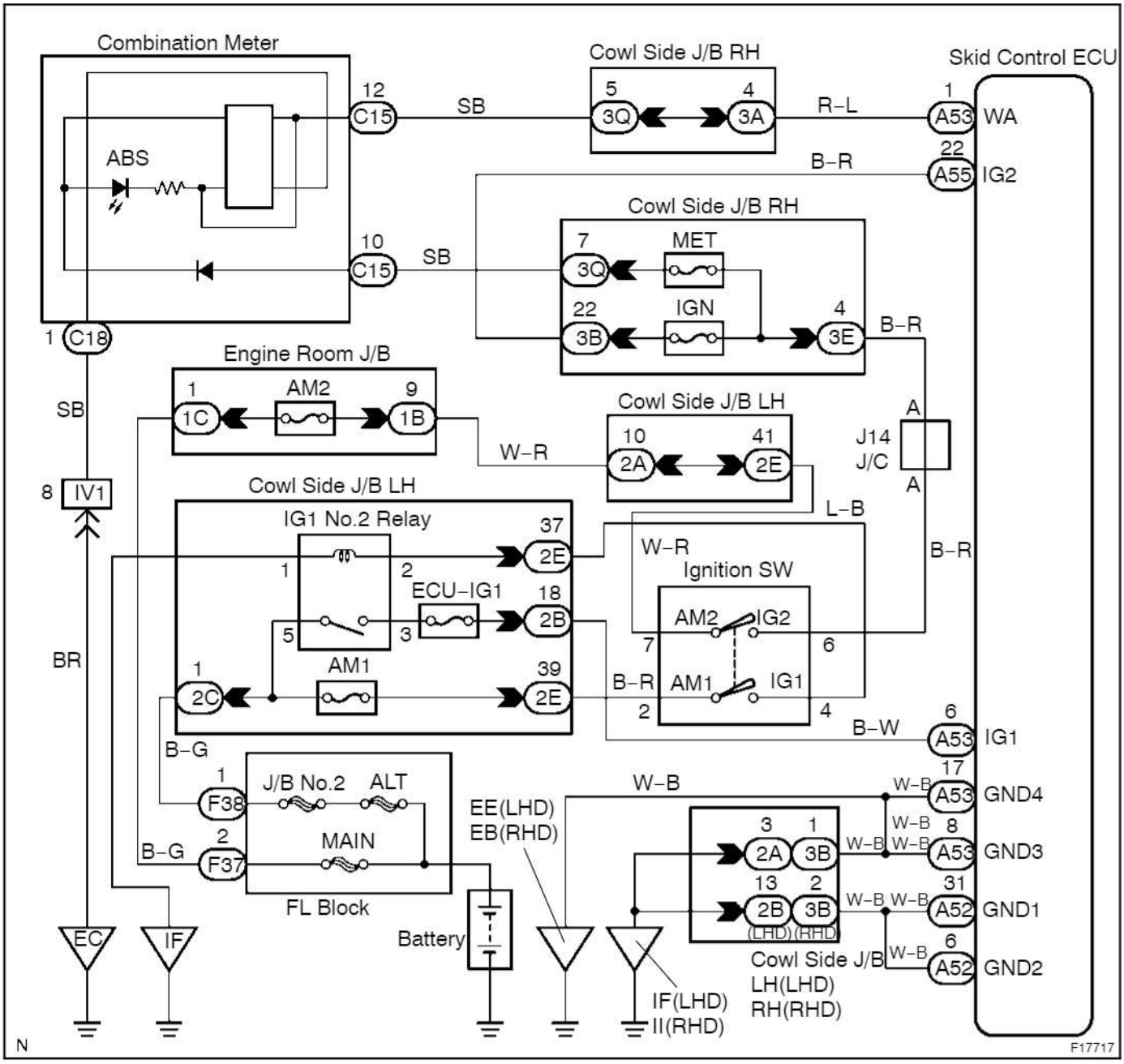
DTC	Always ON	Malfunction in ECU

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	Either of the following 1. or 2. is detected: 1. The ECU connectors are OFF from the ECU. 2. There is a malfunction in the ECU internal circuit.	• Battery • IC regulator • Power source circuit • Skid control ECU

HINT:
There is a case that hand–held tester cannot be used when ECU is abnormal.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check that the ECU connectors are securely connected to the ECU.**

NO → **Connect the connector to the ECU.**

YES

2	**Is DTC output?**

Check DTC on page DI–185.

YES → **Repair circuit indicated by the output code.**

NO

3	**Does ABS warning light go off?**

YES → **Check for open or short circuit in harness and connector between ECU–IG fuse and ECU (See page IN–38).**

NO

4	**Check battery voltage.**

PREPARATION:
Start the engine.
CHECK:
Check the battery voltage.
OK:
Voltage: 10 – 14 V

NG → **Check and repair the charging system.**

OK

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5	**Check operation of the ABS warning light.**

In case of using the hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check that "ON" and "OFF" of the ABS warning light can be shown on the combination meter by the hand–held tester.

In case of not using the hand–held tester:

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the connector from the skid control ECU.
(c) Turn the ignition switch ON.

CHECK:

Check the ABS warning goes off.

OK → **Check and replace combination meter (See page BE–33).**

NG

6	**Check for short circuit in harness and connector between combination meter and skic control ECU, combination meter and check connector (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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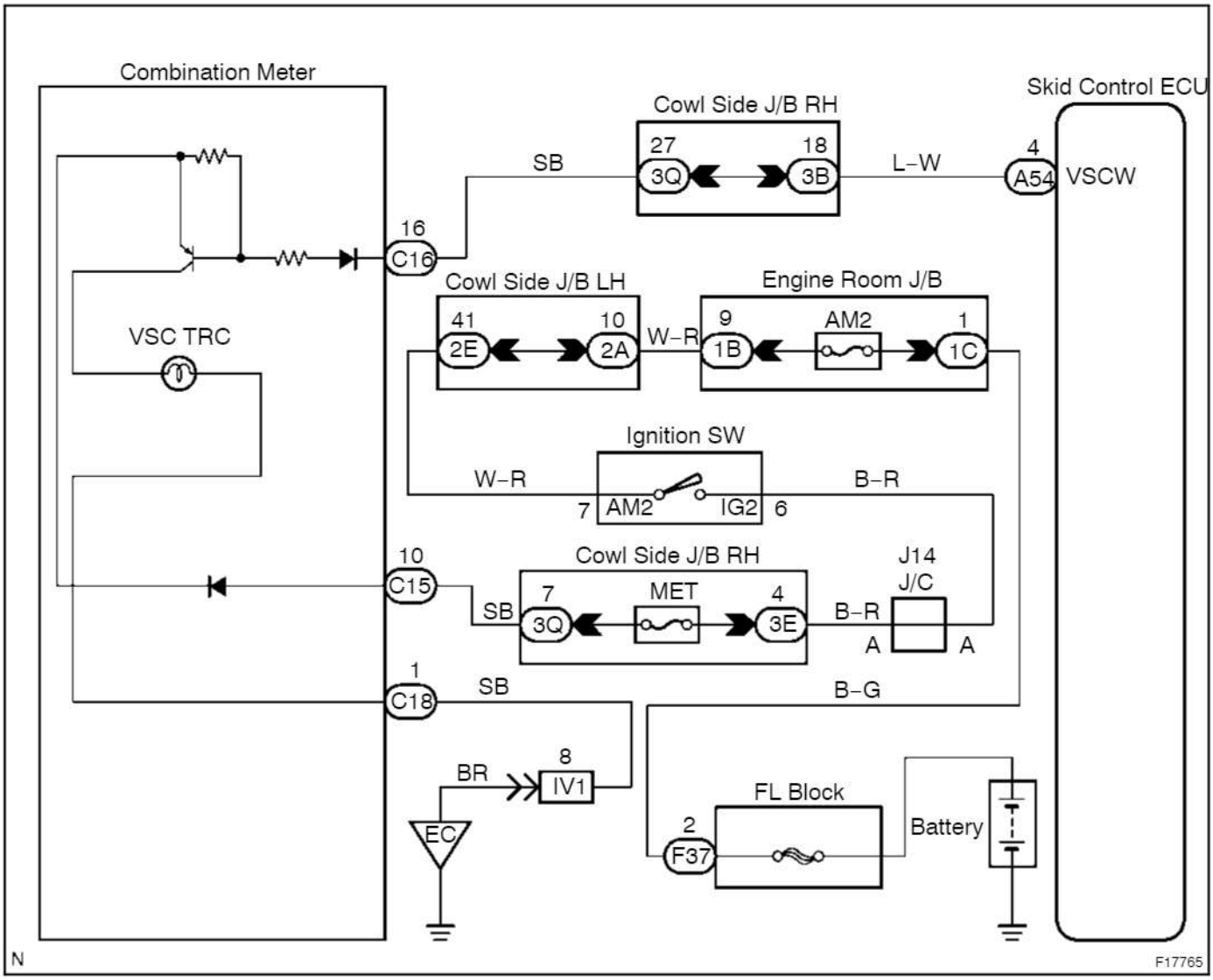
DI6Y0-03

DTC	Always ON	Malfunction in ECU VSC TRC Warning Light Circuit

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
Always ON	There is a malfunction in the ECU internal circuit.	• Power source circuit • Skid control ECU • VSC TRC warning light circuit

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check that the ECU connectors are securely connected to the ECU.**

NO → **Connect the connector to the ECU.**

YES

2	**Is DTC output for VSC?**

Check DTC on page DI–185.

YES → **Repair circuit indicated by the output code.**

NO

3	**Does VSC TRC warning light go off?**

YES → **Check for open or short circuit in harness and connector between ECU–IG fuse and ECU (See page IN–38).**

NO

4	**Check battery voltage.**

PREPARATION:
Start the engine.
CHECK:
Check the battery voltage.
OK:
Voltage: 10 – 16 V

NG → **Check and repair the charging system.**

OK

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5	**Check operation of the VSC TRC warning light.**

In case of using the hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check that "ON" and "OFF" of the VSC TRC warning light can be shown on the combination meter on the hand–held tester.

In case of not using the hand–held tester:

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the connector from the skid control ECU.
(c) Turn the ignition switch ON.

CHECK:

Check the VSC TRC warning light goes off.

NG → **Check and replace combination meter (See page BE–33).**

OK

Check and replace skid control ECU.

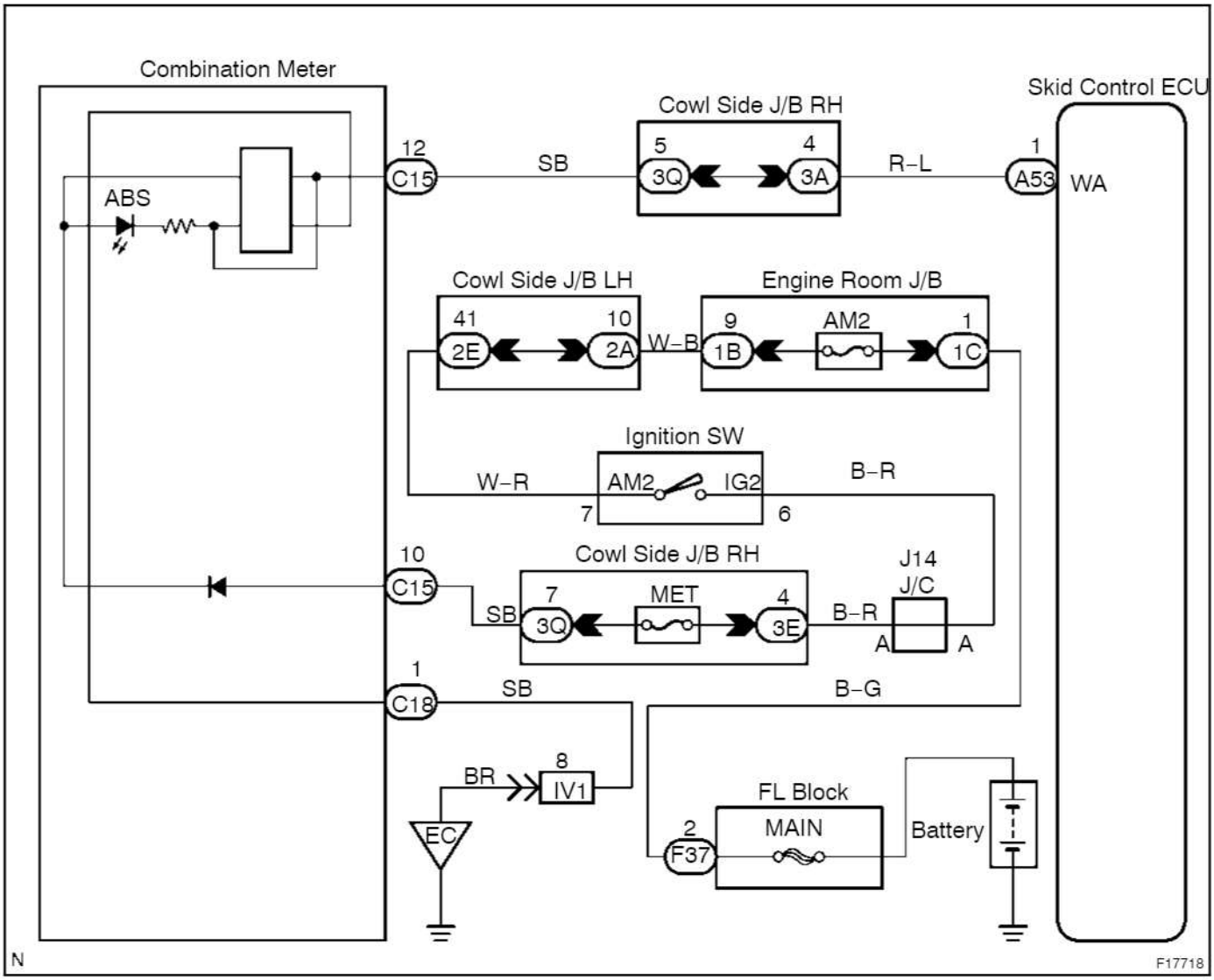
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ABS Warning Light Circuit

CIRCUIT DESCRIPTION

If the ECU detects trouble, it lights the ABS warning light while at the same time prohibiting ABS control. At this time, the ECU records a DTC in memory.
Connect terminals Tc and E_1 of the check connector to make the ABS warning light blink and output the DTC.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Troubleshoot in accordance with the chart below for each trouble symptom.

ABS warning light does not light up	*1
ABS warning light remains on	*2

*1: Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using hand–held tester.

*2: After inspection with step 4, start the inspection from step 5 in case of using the hand–held tester and start from step 6 in case of not using hand–held tester.

1	**Check operation of the ABS warning light.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check that "ON" and "OFF" of the ABS warning light can be shown on the combination meter on the hand–held tester.

OK → **Check and replace skid control ECU.**

NG

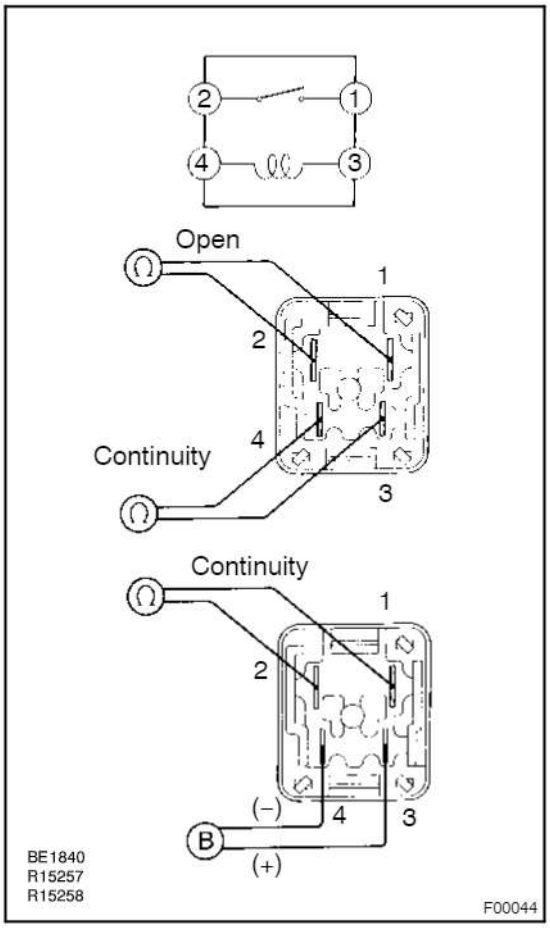
2	**Does the warning lights other than ABS warning lights up?**

YES → **Repair ABS warning light bulb or combination meter assembly.**

NO

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3	Check IG1 No. 1 relay.



PREPARATION:

Remove IG1 No. 1 relay from engine room J/B.

CHECK:

Check continuity between each pair of terminal of IG1 No. 1 relay.

OK:

Terminals 3 and 4	Continuity
Terminals 1 and 2	Open

CHECK:

(a) Apply battery voltage between terminals 3 and 4.

(b) Check continuity between terminals.

OK:

Terminals 1 and 2	Continuity

NG → **Replace IG1 No. 1 relay.**

OK →

Check for open circuit in harness and connector between IG1 No. 1 relay and combination meter (See page IN–38).

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4	**Check that the ECU connectors are securely connected to the ECU.**

NO → **Connect the connector to the ECU.**

YES

5	**Check operation of the ABS warning light (See step 1).**

OK → **Check and replace skid control ECU.**

NG

6	**Is DTC output?**

Check DTC on page DI–185.

YES → **Repair circuit indicated by the output code.**

NO

7	**Check for short circuit in harness and connector between ABS warning light and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and repair skid control ECU.

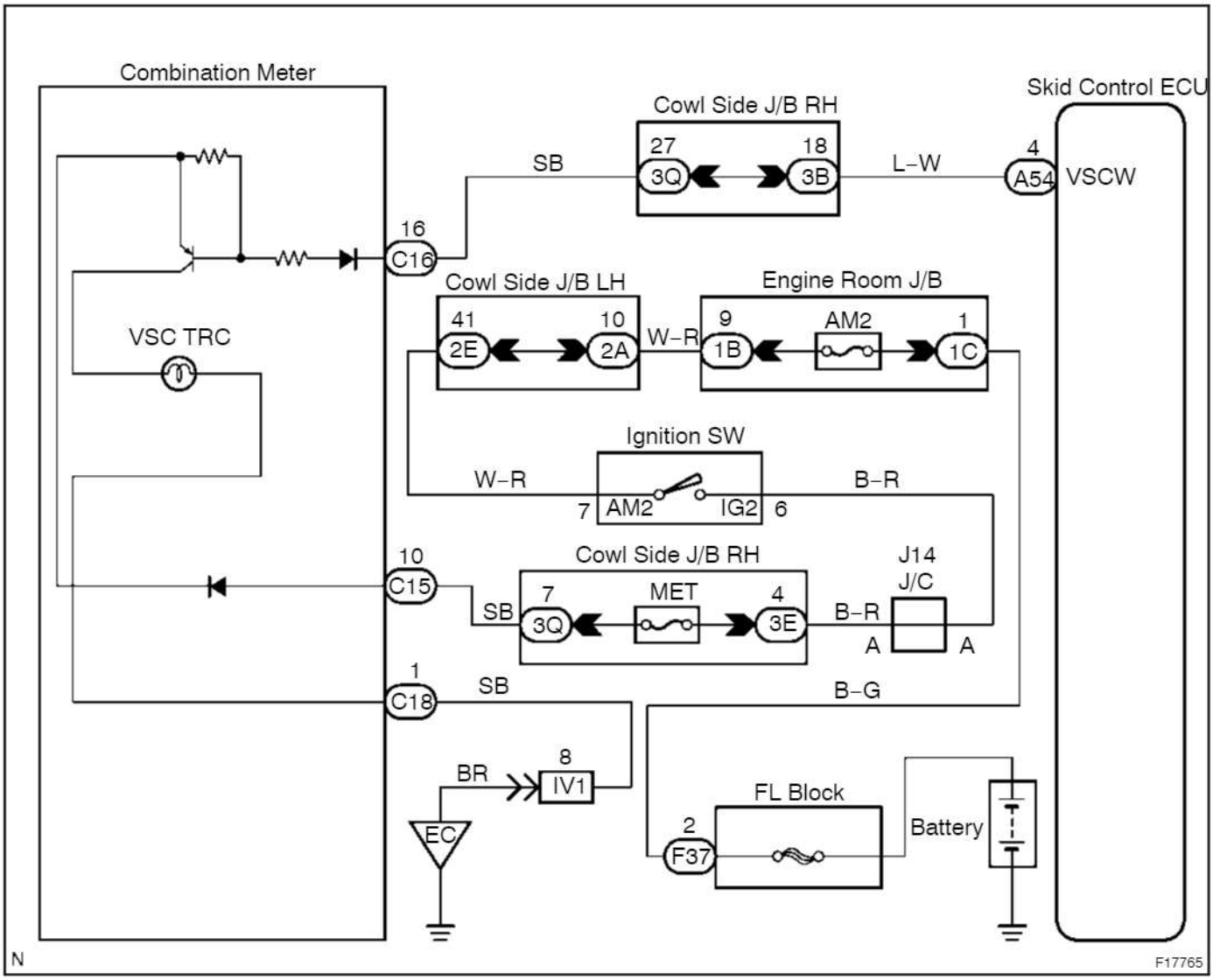
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VSC TRC Warning Light Circuit

CIRCUIT DESCRIPTION

If the ECU stores DTC, the VSC TRC warning light lights on the combination meter.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Troubleshoot in accordance with the chart below for each trouble symptom.

VSC TRC warning light does not light up	*1
VSC TRC warning light remains on	*2

*1: Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using hand–held tester.

*2: After inspection with step 4, start the inspection from step 5 in case of using the hand–held tester and start from step 6 in case of not using hand–held tester.

1	**Check operation of the VSC TRC warning light.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check that "ON" and "OFF" of the VSC TRC warning light can be shown on the combination meter on the hand–held tester.

OK → **Check and replace skid control ECU.**

NG

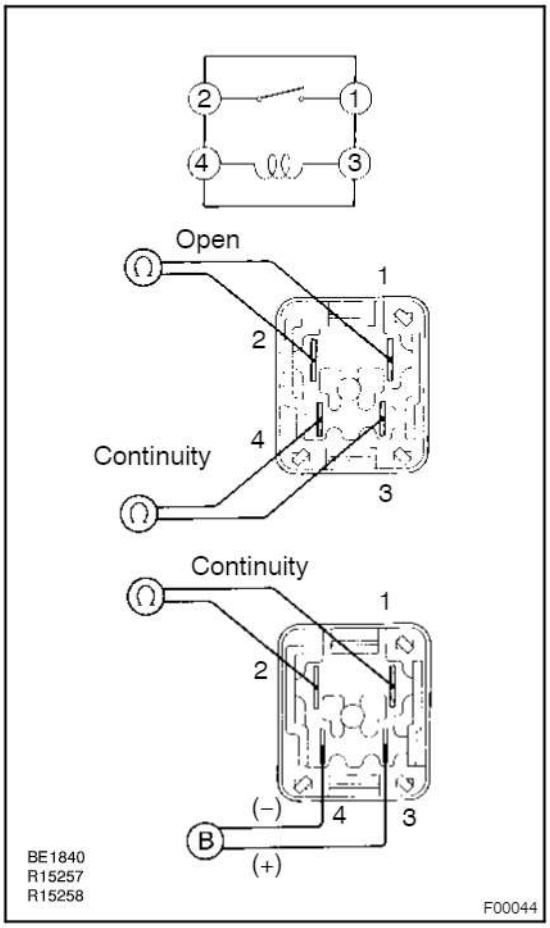
2	**Does the warning lights other than VSC TRC warning lights up?**

YES → **Repair VSC TRC warning light bulb or combination meter assembly.**

NO

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3	Check IG1 No. 1 relay.



PREPARATION:

Remove IG1 No. 1 relay from engine room J/B.

CHECK:

Check continuity between each pair of terminal of IG1 No. 1 relay.

OK:

Terminals 3 and 4	Continuity
Terminals 1 and 2	Open

CHECK:

(a) Apply battery voltage between terminals 3 and 4.

(b) Check continuity between terminals.

OK:

Terminals 1 and 2	Continuity

NG → **Replace IG1 No. 1 relay.**

OK →

Check for open circuit in harness and connector between IG1 No. 1 relay and combination meter (See page IN–38).

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4	**Check that the ECU connectors are securely connected to the ECU.**

NO → **Connect the connector to the ECU.**

YES

5	**Check operation of the VSC TRC warning light (See step 1).**

OK → **Check and replace skid control ECU.**

NG

6	**Is DTC output?**

Check DTC on page DI–185.

YES → **Repair circuit indicated by the output code.**

NO

7	**Check for short circuit in harness and connector between VSC TRC warning light and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

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8	Check voltage of the ECU–IG power source.

In case of using the hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main switch ON.

(c) Select the DATALIST mode on the hand–held tester.

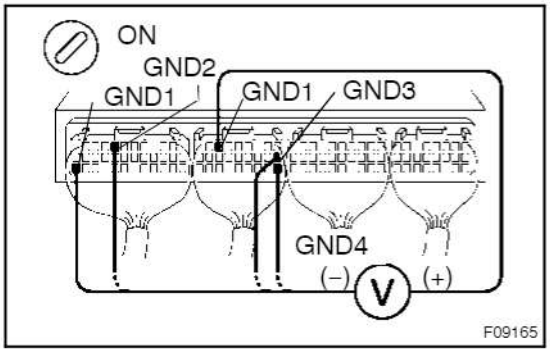
CHECK:

Check the voltage condition output from the ECU displayed on the hand–held tester.

OK:

"Normal" is displayed.

In case of not using the hand–held tester:



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminals IG1 and GND of skid control ECU connector.

OK:

Voltage: 10 – 14 V

NG → **Check and replace harness or connector.**

OK

Check and repair skid control ECU.

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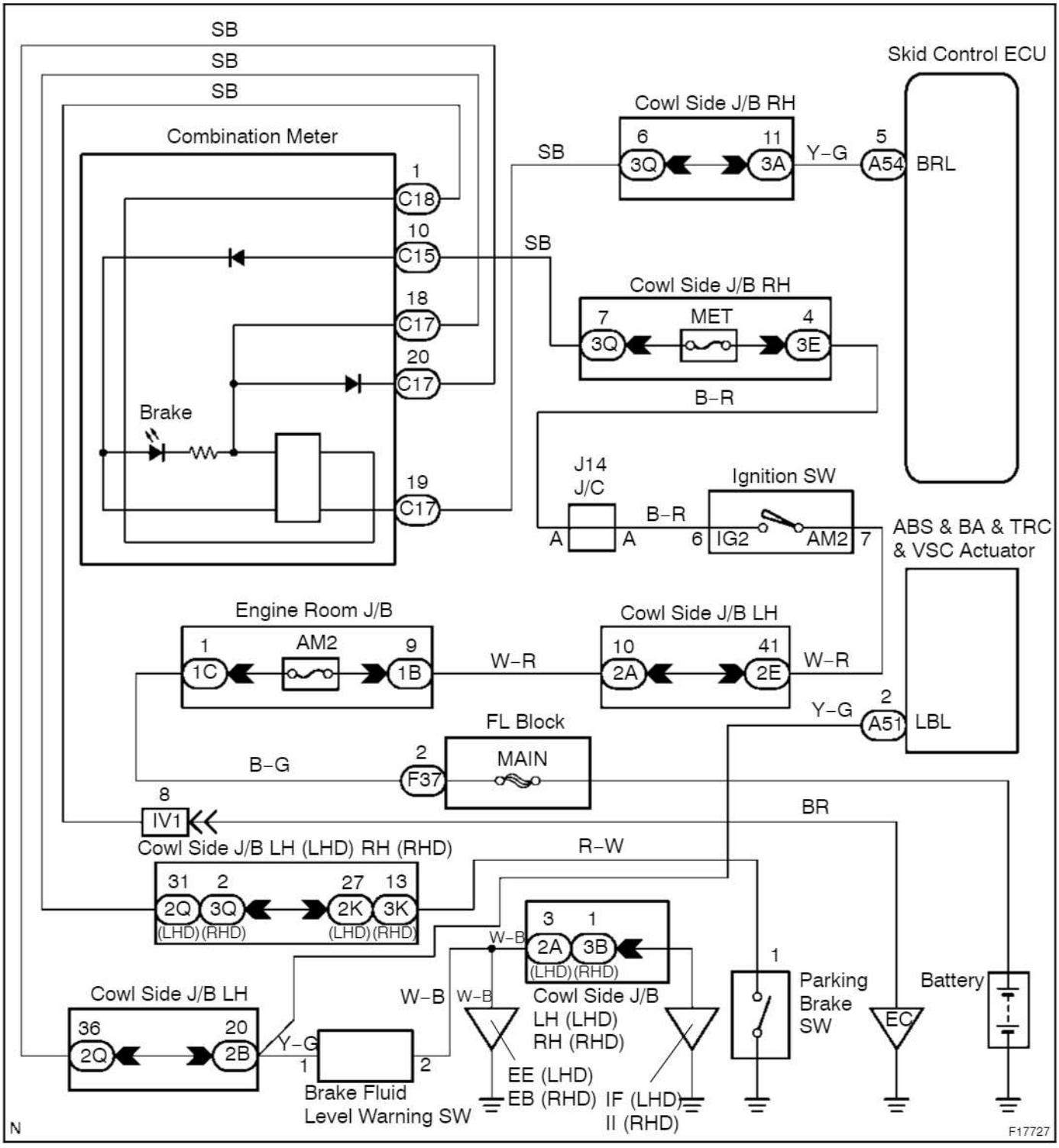
DIARU–01

BRAKE Warning Light Circuit

CIRCUIT DESCRIPTION

The BRAKE warning light lights up while the brake fluid is insufficient or an abnormality occurs in the hydraulic brake booster and EBD is abnormally.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check parking brake switch circuit (See page BE–41).

NG → Repair or replace parking brake switch circuit.

OK

2	Check brake fluid level warning switch circuit (See page BE–41).

NG → Repair or replace brake fluid level warning switch circuit.

OK

3	Is DTC output for ABS?

YES → Repair circuit indicated by the output code.

NO

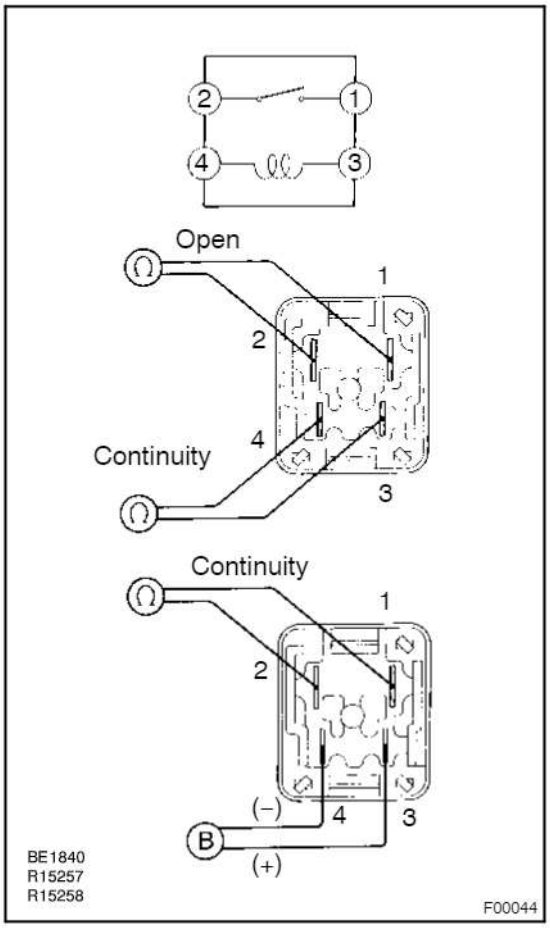
4	Does the warning lights other than BRAKE warning lights up?

YES → Go to step 6.

NO

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5	Check IG1 No. 1 relay.



PREPARATION:

Remove IG1 No. 1 relay from engine room J/B.

CHECK:

Check continuity between each pair of terminal of IG1 No. 1 relay.

OK:

Terminals 3 and 4	Continuity
Terminals 1 and 2	Open

CHECK:

(a) Apply battery voltage between terminals 3 and 4.

(b) Check continuity between terminals.

OK:

Terminals 1 and 2	Continuity

NG → **Replace IG1 No. 1 relay.**

OK

Check for open circuit in harness and connector between IG1 No. 1 relay and combination meter (See page IN–38).

6	Check BRAKE warning light.

Open circuit in the combination meter (See page BE–33).

NG → **Repair brake warning light bulb or combination meter assembly.**

OK

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7	**Check for short circuit in harness and connector between brake warning light and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

8	**Check voltage of the ECU–IG power source.**

In case of using the hand–held tester:

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the DATALIST mode on the hand–held tester.

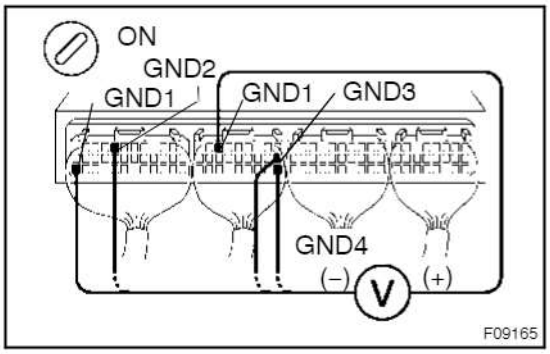
CHECK:

Check the voltage condition output from the ECU displayed on the hand–held tester.

OK:

"Normal" is displayed.

In case of not using the hand–held tester:



PREPARATION:

Remove skid control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure voltage between terminals IG1 and GND of skid control ECU connector.

OK:

Voltage: 10 – 14 V

NG → **Check and replace harness or connector.**

OK

Check and repair skid control ECU.

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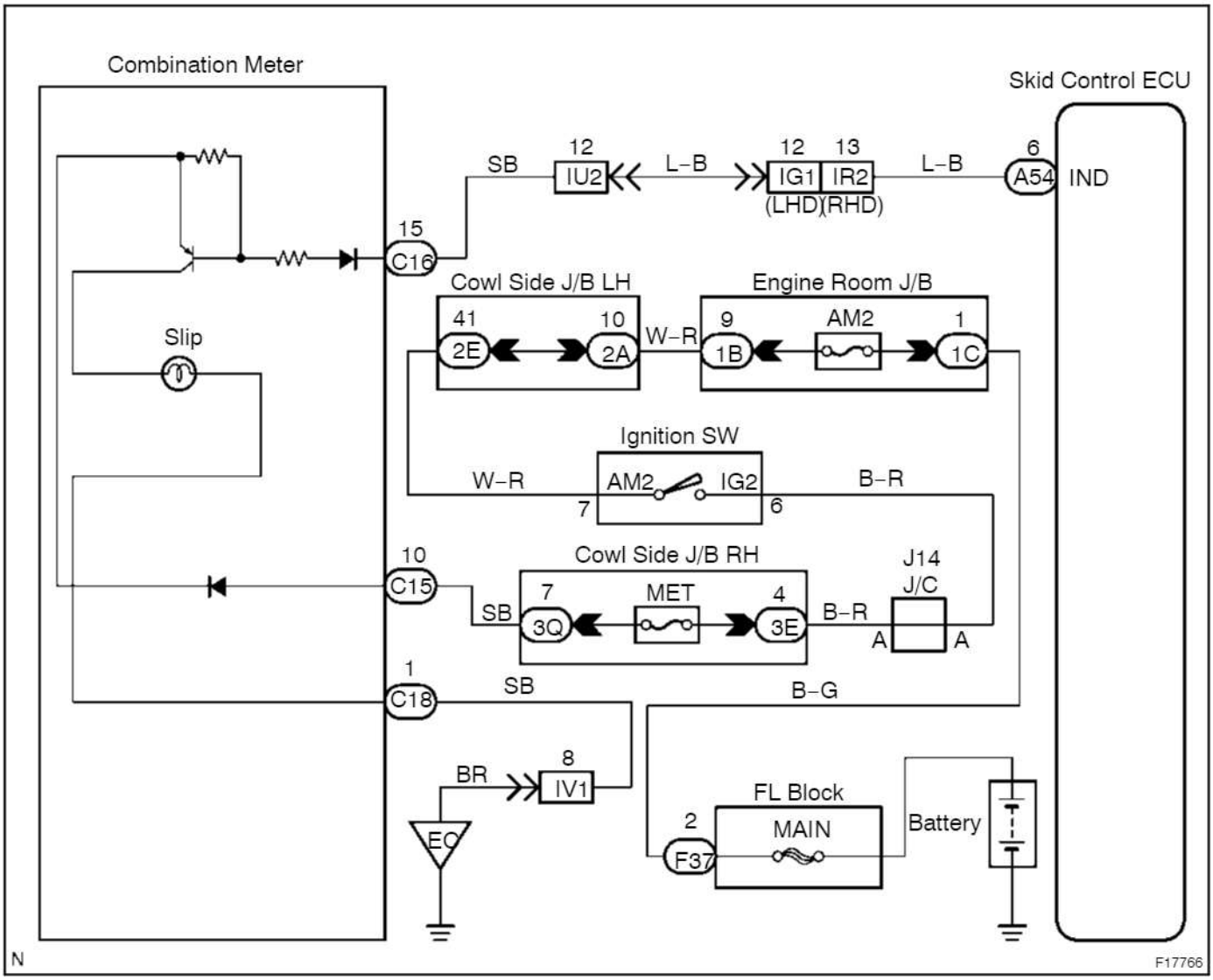
DIARV–01

SLIP Indicator Light Circuit

CIRCUIT DESCRIPTION

The SLIP indicator blinks during VSC operation.

WIRING DIAGRAM



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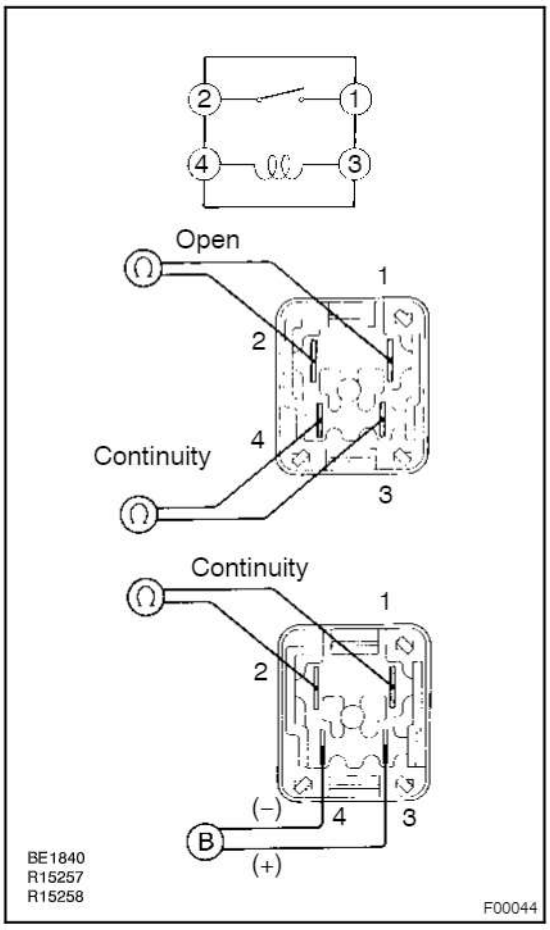
INSPECTION PROCEDURE

1	**Does the warning lights other than SLIP indicator lights up?**

YES → **Go to step 3.**

NO

2	**Check IG1 No. 1 relay.**



PREPARATION:

Remove IG1 No. 1 relay from engine room J/B.

CHECK:

Check continuity between each pair of terminal of IG1 No. 1 relay.

OK:

Terminals 3 and 4	Continuity
Terminals 1 and 2	Open

CHECK:

(a) Apply battery voltage between terminals 3 and 4.

(b) Check continuity between terminals.

OK:

Terminals 1 and 2	Continuity

NG → **Replace IG1 No. 1 relay.**

OK

Check for open circuit in harness and connector between IG1 No. 1 relay and combination meter (See page IN–38).

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3	**Check SLIP indicator light.**

Open circuit in the combination meter (See page BE–33).

NG → **Repair SLIP indicator light bulb or combination meter assembly.**

OK

4	**Check for short circuit in harness and connector between SLIP indicator light and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and repair skid control ECU.

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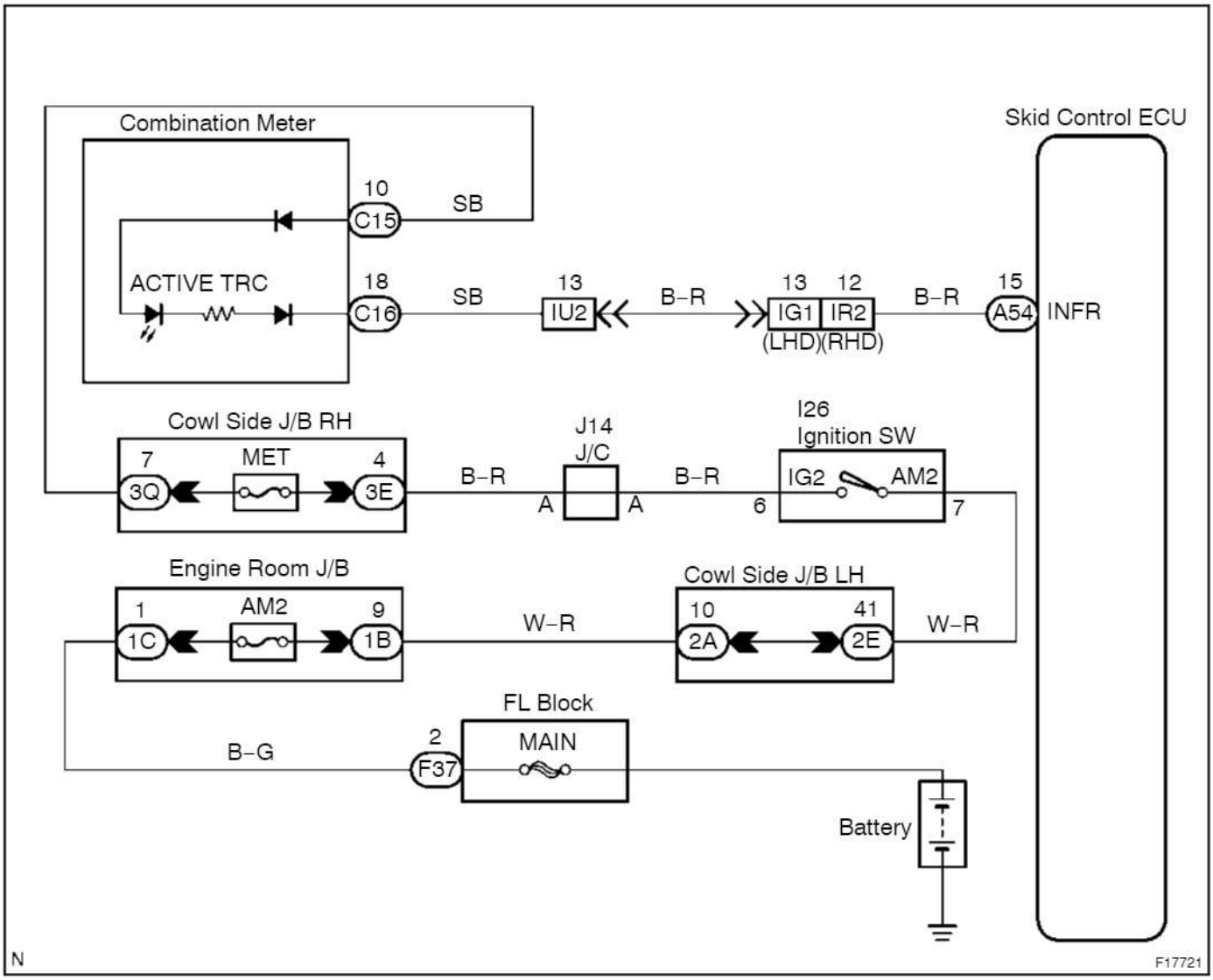
DI6Y5-03

ACTIVE TRC Indicator Light Circuit

CIRCUIT DESCRIPTION

The ACTIVE TRC indicator blinks during TRC operation.

WIRING DIAGRAM



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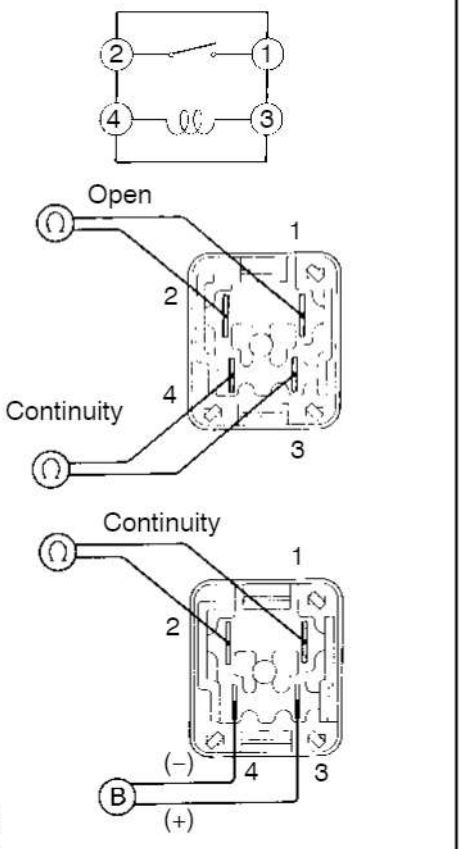
INSPECTION PROCEDURE

1	**Does the warning lights other than ACTIVE TRC indicator lights up?**

YES → **Go to step 3.**

NO

2	**Check IG1 No. 1 relay.**



PREPARATION:

Remove IG1 No. 1 relay from engine room J/B.

CHECK:

Check continuity between each pair of terminal of IG1 No. 1 relay.

OK:

Terminals 3 and 4	Continuity
Terminals 1 and 2	Open

CHECK:

(a) Apply battery voltage between terminals 3 and 4.

(b) Check continuity between terminals.

OK:

Terminals 1 and 2	Continuity

NG → **Replace IG1 No. 1 relay.**

OK

Check for open circuit in harness and connector between IG1 No. 1 relay and combination meter (See page IN–38).

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3	**Check ACTIVE TRC indicator light.**

Open circuit in the combination meter (See page BE–33).

NG → **Repair ACTIVE TRC indicator light bulb or combination meter assembly.**

OK

4	**Check for short circuit in harness and connector between ACTIVE TRC indicator light and skid control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and repair skid control ECU.

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DIARW–01

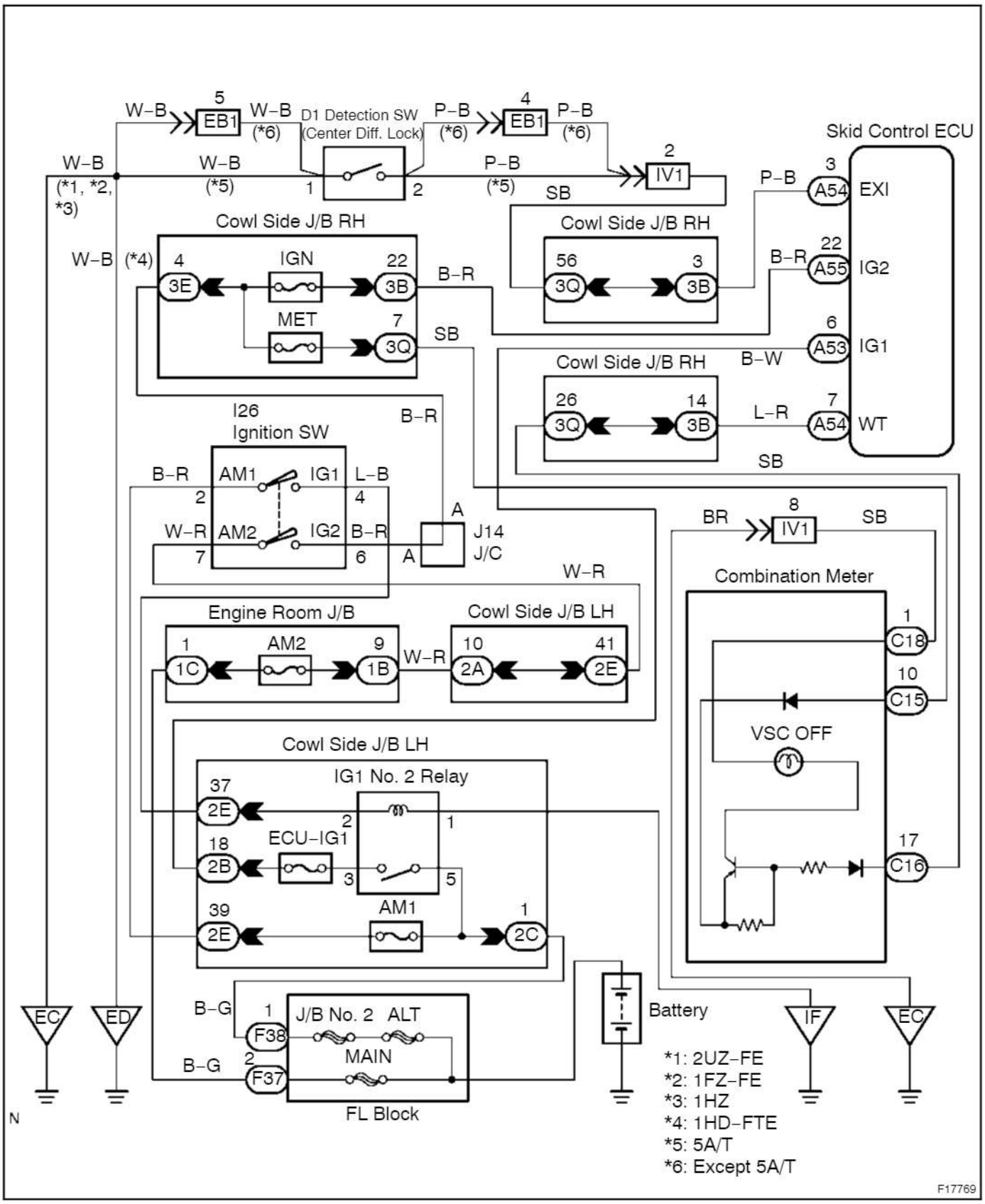
VSC OFF Indicator Light, Center Diff Lock Switch Circuit

CIRCUIT DESCRIPTION

This is the VSC control main switch. When the center differential is locked, VSC control goes off and the VSC OFF indicator lights up. Also, light the VSC OFF indicator light is "ON" when the VSC system is at the fail safe control.

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WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	**Check operation of the VSC OFF indicator light.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

Check that "ON" and "OFF" of the VSC OFF indicator light can be shown on the combination meter with the hand–held tester.

NG → **Go to step 3.**

OK

2	**Is DTC output for VSC?**

YES → **Repair circuit indicated by the output code.**

NO

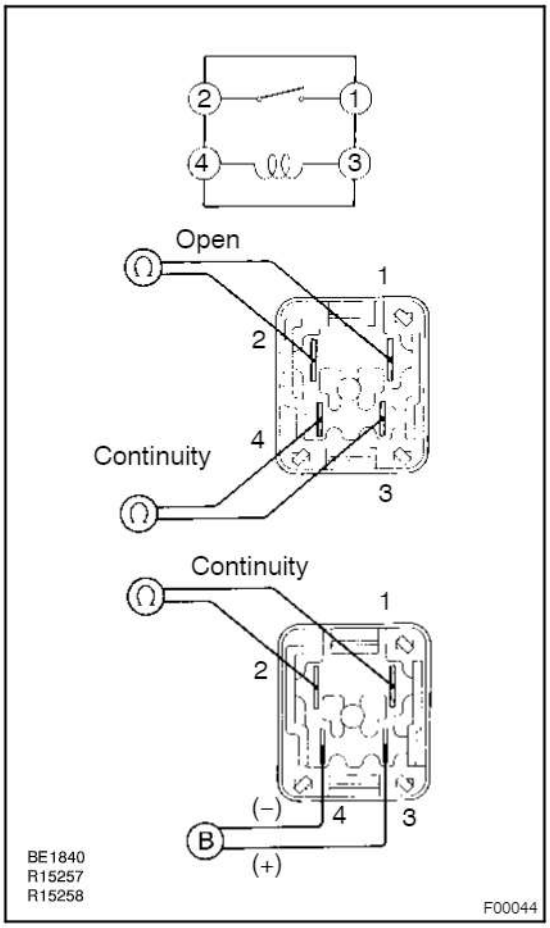
3	**Does the warning lights other than VSC OFF indicator lights up?**

YES → **Go to step 5.**

NO

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4	Check IG1 No. 1 relay.



PREPARATION:

Remove IG1 No. 1 relay from engine room J/B.

CHECK:

Check continuity between each pair of terminal of IG1 No. 1 relay.

OK:

Terminals 3 and 4	Continuity
Terminals 1 and 2	Open

CHECK:

(a) Apply battery voltage between terminals 3 and 4.

(b) Check continuity between terminals.

OK:

Terminals 1 and 2	Continuity

NG → **Replace IG1 No. 1 relay.**

OK

Check for open circuit in harness and connector between IG1 No. 1 relay and combination meter (See page IN–38).

5	Check VSC OFF indicator light.

Open circuit in the combination meter (See page BE–33).

NG → **Repair VSC OFF indicator light bulb or combination meter assembly.**

OK

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6	Check for short circuit in harness and connector between VSC OFF indicator light and skid control ECU (See page IN–38).

NG → Repair or replace harness or connector.

OK ↓

7	Check for open and short circuit in harness and connector between detection switch and skid control ECU (See page IN–38).

NG → Repair or replace harness or connector.

OK ↓

8	Check detection switch (detection switch remains on).

NG → Check and repair detection switch (See Pub No. RM616E on page TR–55).

OK ↓

Check and repair skid control ECU.

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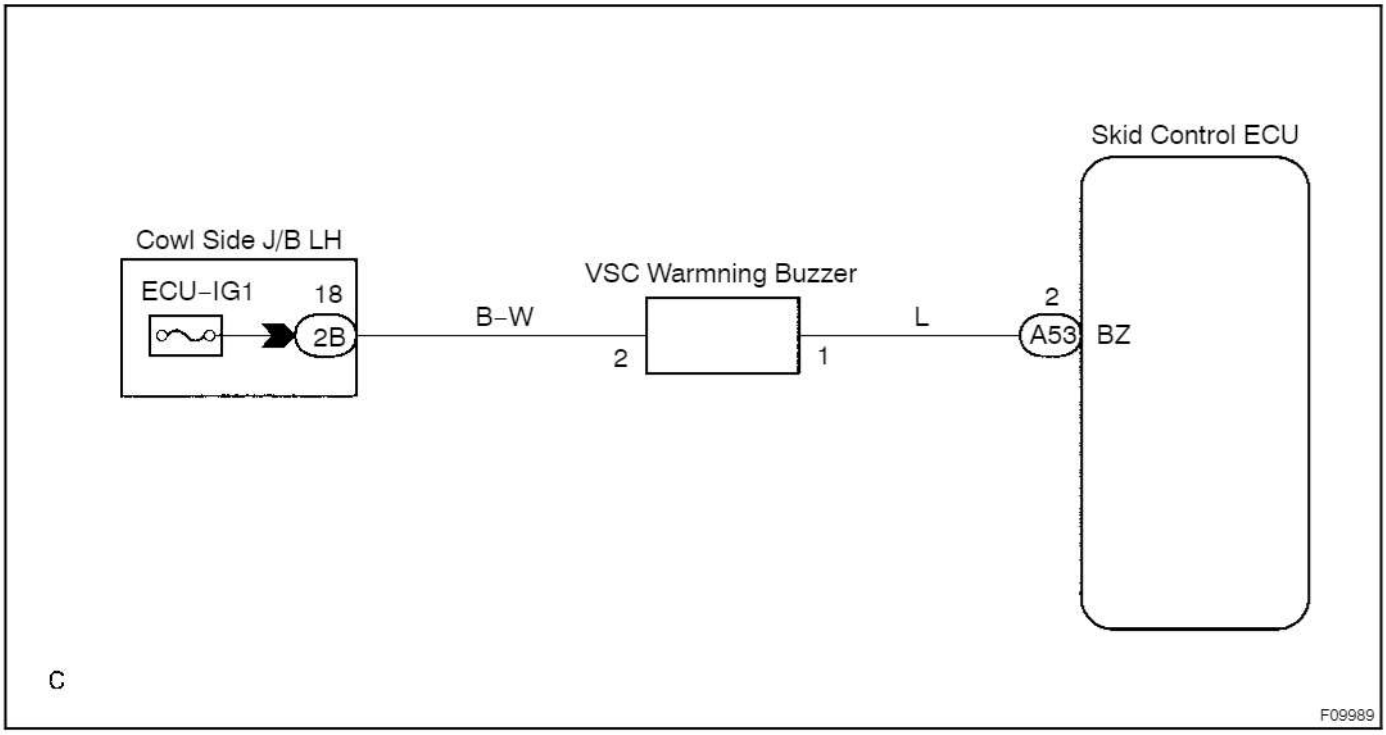
DIARX–01

Brake Warning, VSC Buzzer Circuit

CIRCUIT DESCRIPTION

The brake warning, VSC buzzer sounds while the accumulator pressure is abnormally low or an abnormality casing low fluid pressure occurs VSC is activated.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 in case of using the hand–held tester and start from step 2 in case of not using the hand–held tester.

1	**Check operation of the brake warning, VSC buzzer.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main switch ON.
(c) Select the ACTIVE TEST mode on the hand–held tester.

CHECK:

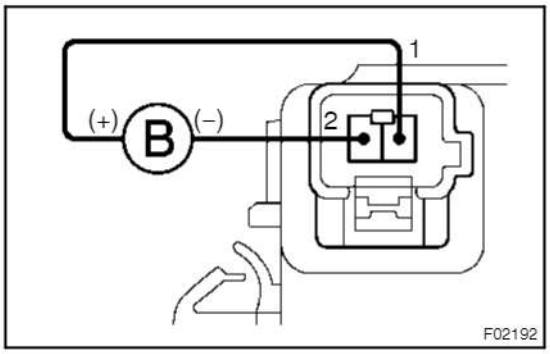
Check that brake warning, VSC buzzer sounds "ON" and "OFF" with the hand–held tester.

OK → **Check and replace skid control ECU.**

NG

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2	**Check brake warning, VSC buzzer.**



PREPARATION:
Disconnect the brake warning, VSC buzzer connector.
CHECK:
Apply battery voltage to the terminals 1 and 2 of brake warning, VSC buzzer connector, check that the brake warning, VSC buzzer sounds.

NG → **Replace brake warning, VSC buzzer.**

OK

3	**Check for open and short circuit in harness and connector between skid control ECU and brake warning, VSC buzzer (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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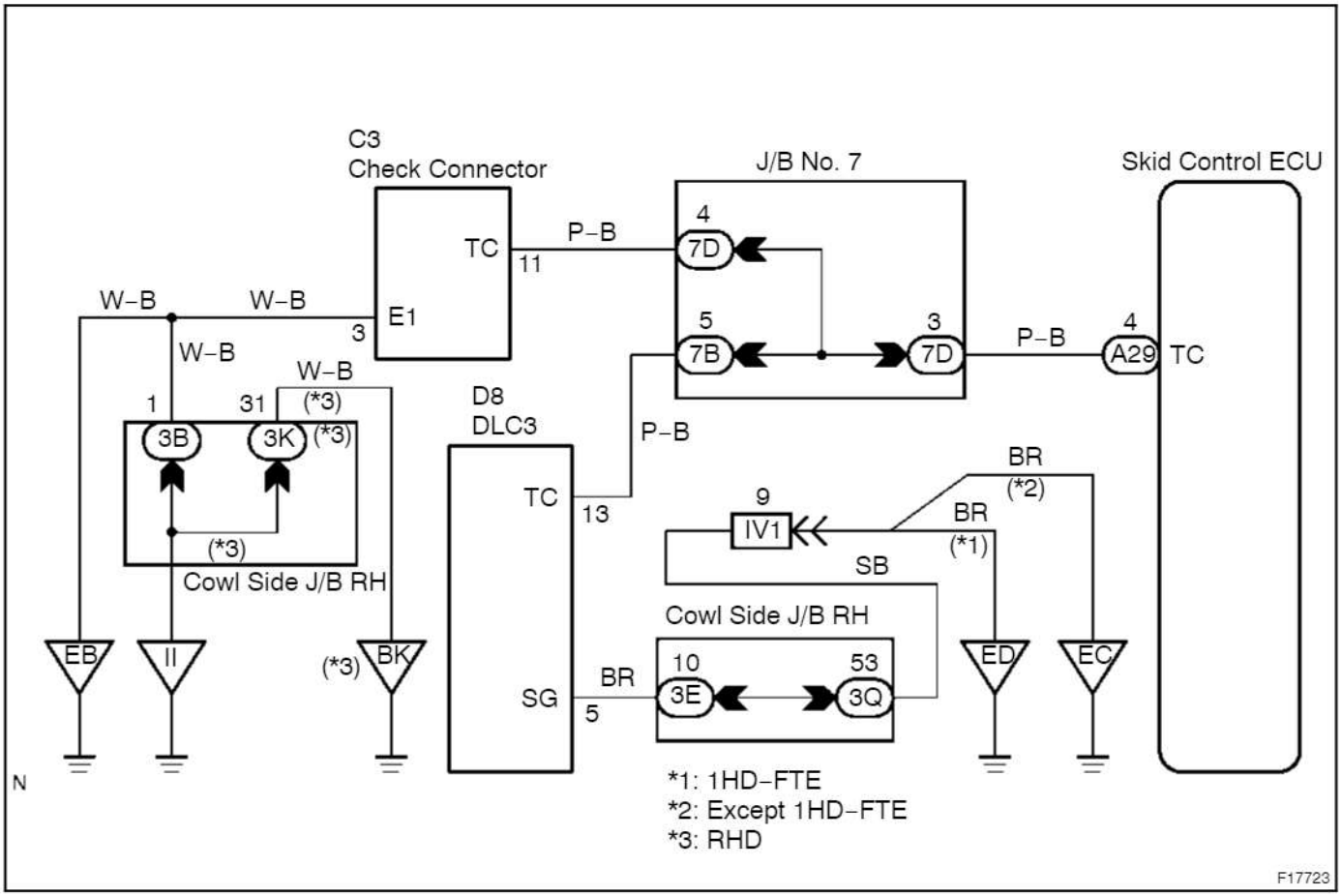
DI6Y8-04

Tc Terminal Circuit

CIRCUIT DESCRIPTION

Connecting terminals Tc and E_1 of the check connector causes the ECU to display the DTC by flashing the ABS warning light and VSC TRC warning light.

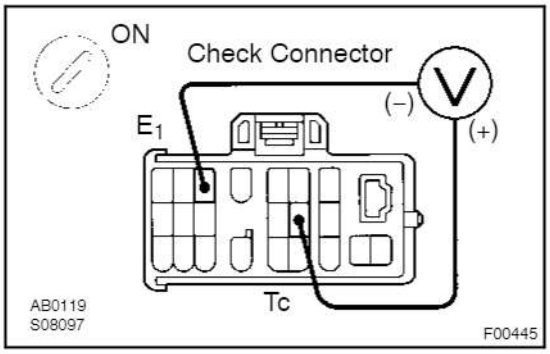
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals Tc and E_1 of check connector.**



CHECK:

(a) Turn ignition switch ON.

(b) Measure voltage between terminals Tc and E1 of check connector.

OK:

Voltage: 10 – 14 V

OK → **If ABS warning light does not blink even after Tc and E_1 have been connected, the ECU may be defective.**

NG

2	**IG switch OFF, and check for open and short circuit in harness and connector between skid control ECU and check connector, check connector and body ground (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

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DI6Y9–03

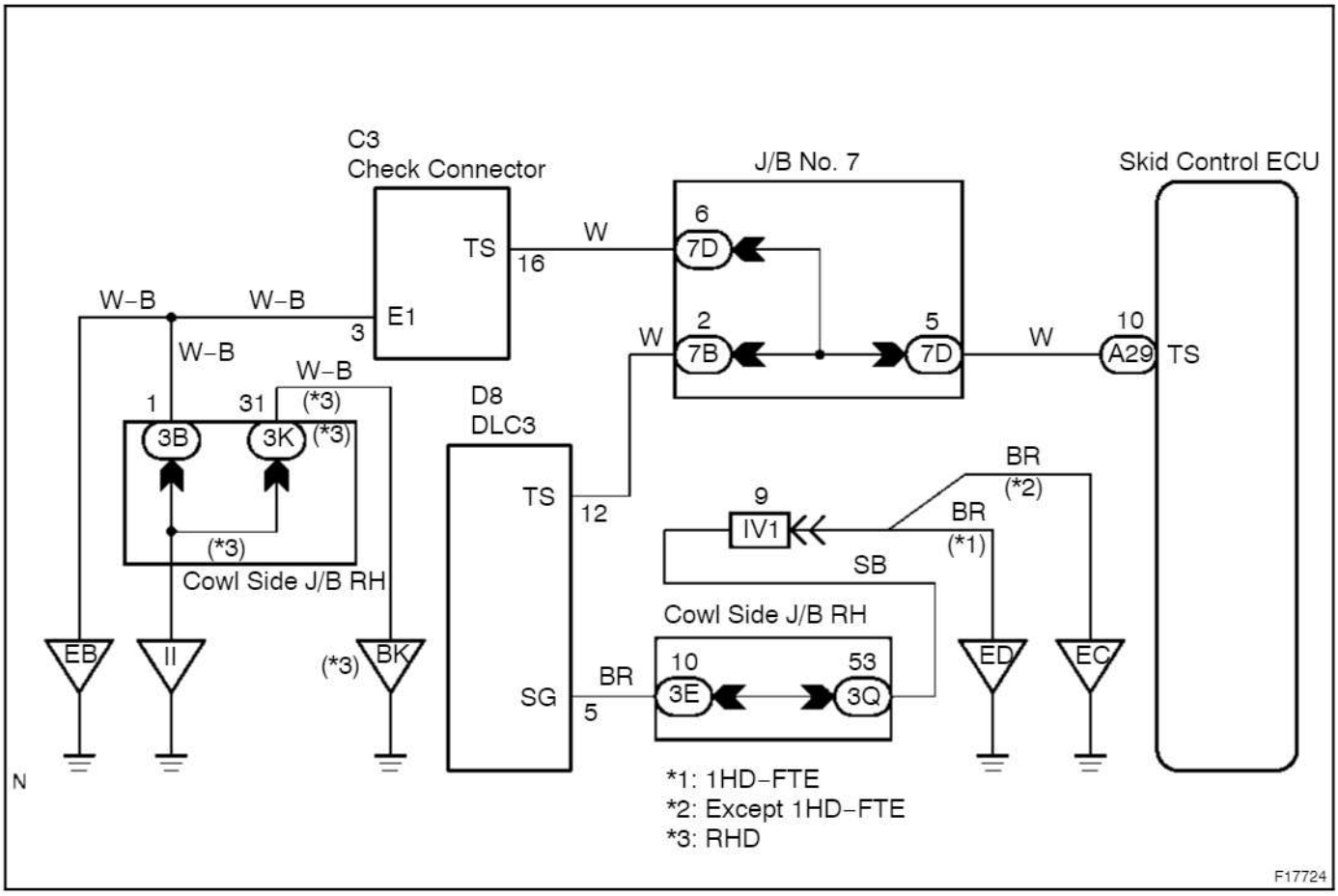
Ts Terminal Circuit

CIRCUIT DESCRIPTION

The sensor check circuit detects abnormalities in the speed sensor signal which cannot be detected by the DTC check.

Connecting terminals Ts and E_1 of the check connector or Tc starts the check.

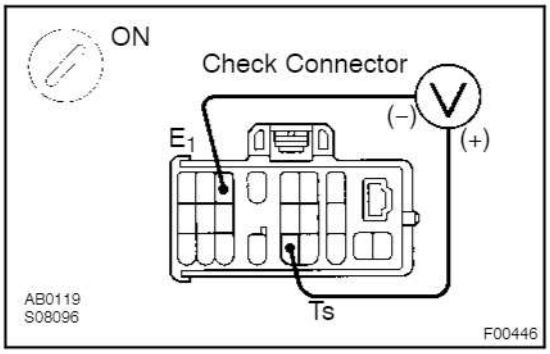
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals Ts and E_1 of check connector.**



CHECK:

(a) Turn the ignition switch ON.

(b) Measure voltage between terminals Ts and E_1 of check connector.

OK:

Voltage: 10 – 14 V

OK → **If ABS warning light does not blink even after Ts and E_1 have been connected, the ECU may be defective.**

NG

2	**IG switch OFF, and check for open and short circuit in harness and connector between skid control ECU and check connector, check connector and body ground (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace skid control ECU.

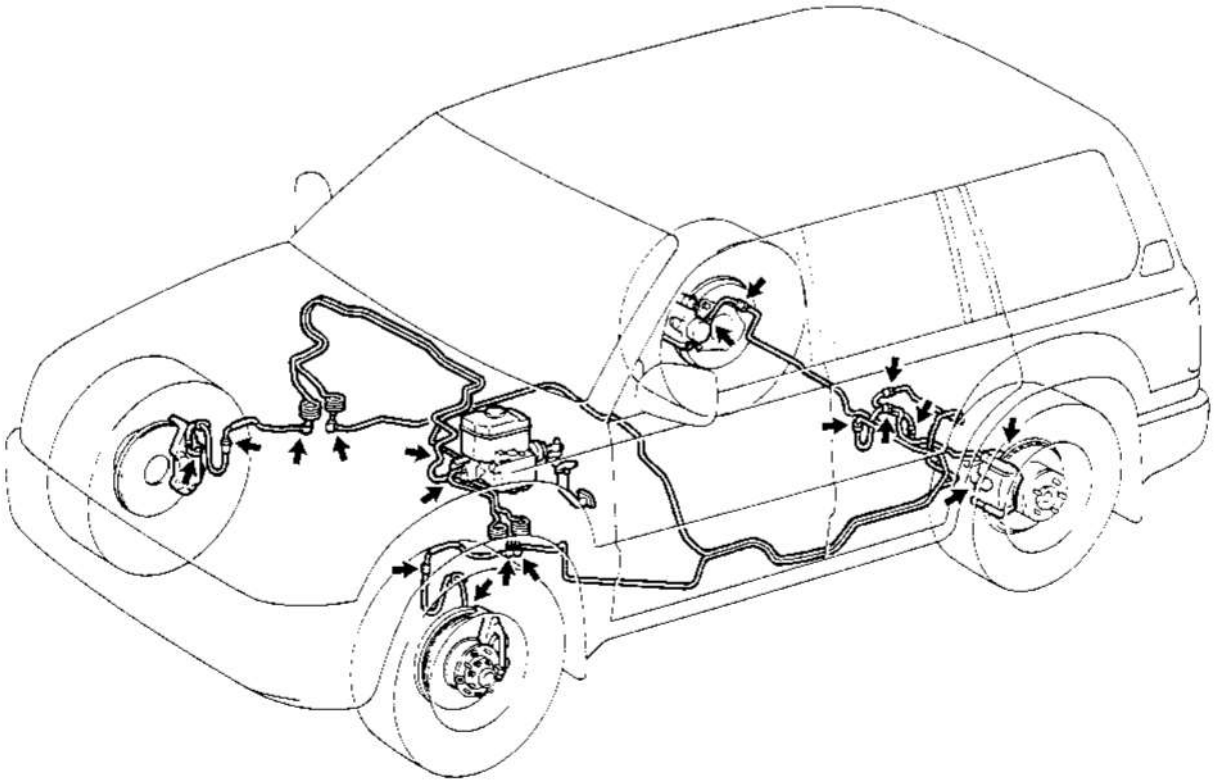
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DI6YA-03

Check for Fluid Leakage

Check for fluid leakage from actuator or hydraulic lines.

LHD:

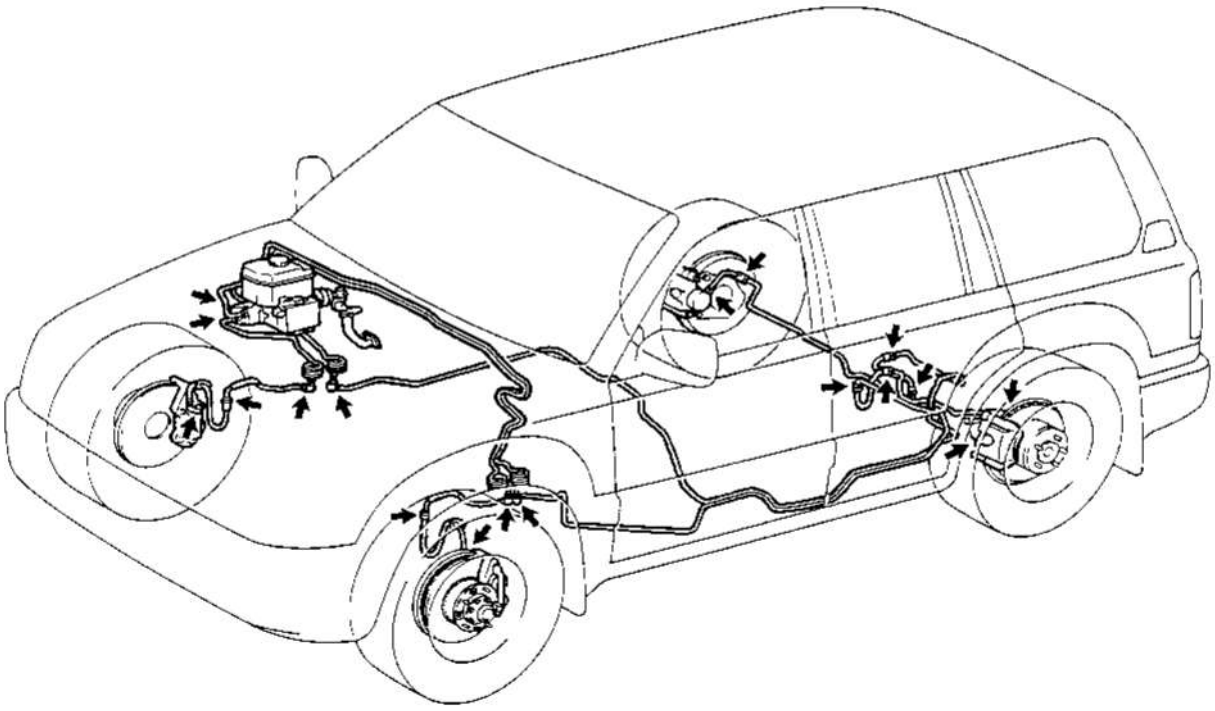


N

F09992

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RHD:



N

F10041

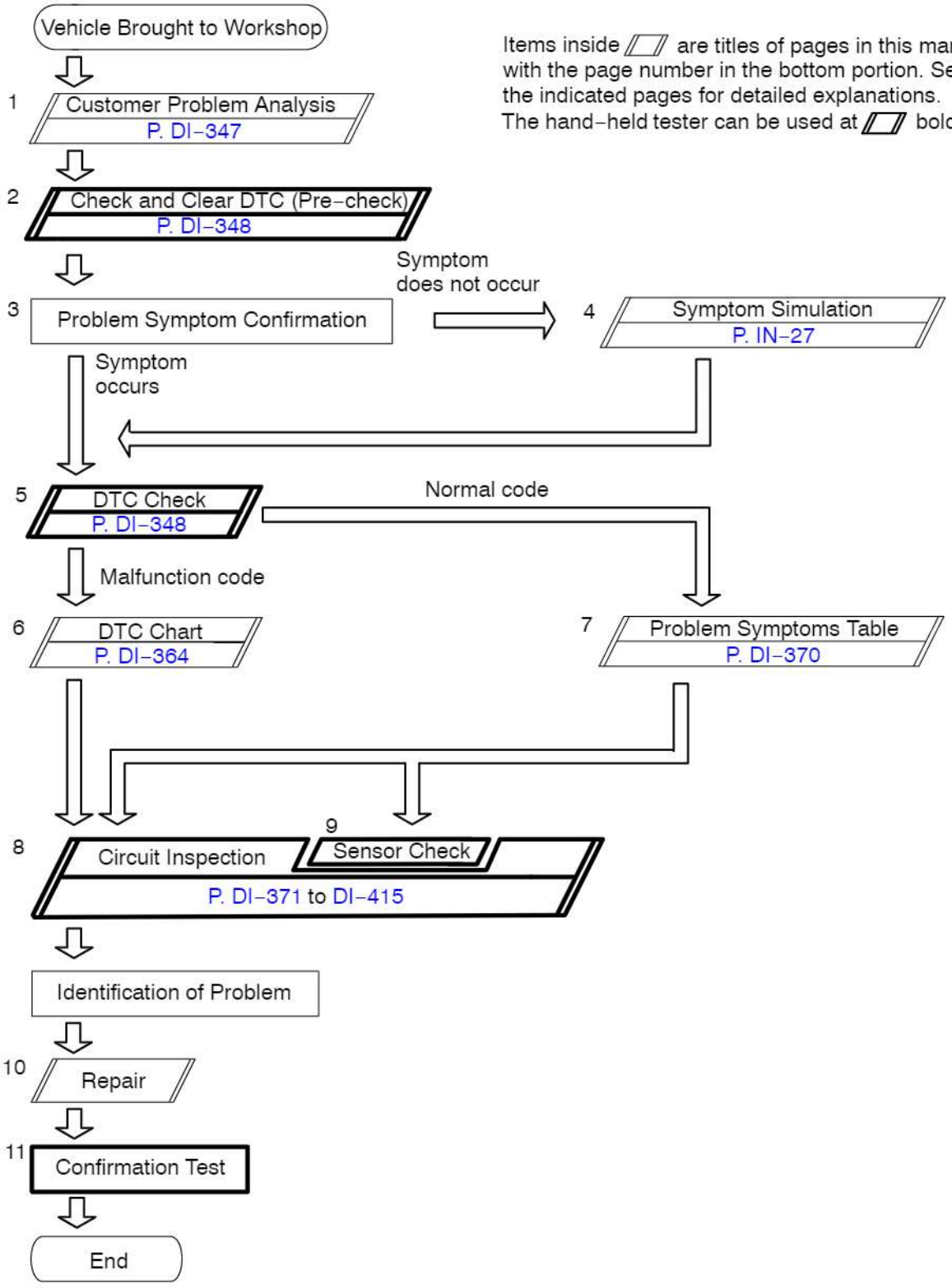
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VARIABLE GEAR RATIO STEERING

DIARY–01

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshooting in accordance with the procedure on the following pages.



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DIBJY–02

PRECAUTION

CAUTION:

1. After replacing VGRS ECU or VGRS actuator or repairing steering system parts, proceed with the following operations in the order listed.

(a) Perform VGRS system calibration

(b) Perform VGRS system initialization by driving vehicle

(c) Confirm steering angle flag is VALID

(d) Test drive vehicle to confirm steering is centered

2. When the steering wheel is still off–center after completing the steering angle sensor initialization, perform the VGRS system calibration (See page DI–357).

3. When each of the following procedures is completed, be sure to perform the steering angle initialization.

- **Reconnect the battery terminal**
- **Replace the battery**
- **Reconnect the connectors (steering angle sensor, VGRS ECU, VGRS actuator, skid control ECU)**

4. The inspection of the VGRS system may detect the DTC in the VSC and AHC system. After the inspection of the VGRS system, check the DTC in the VSC and AHC system and clear the DTC.

5. Conditions for the VGRS system suspension

(a) When the power supply voltage is too low or too high.

(b) When protecting the VGRS system from heat. (The system is suspended to prevent the VGRS actuator motor or ECU from heating up. The system returns to a normal condition when the temperature of the VGRS actuator motor returns to the operating range.)

(c) When the temperature is extremely low. (When the temperature is approx. –30°C, the system control will be suspended.)

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DIARZ-01

CUSTOMER PROBLEM ANALYSIS CHECK

VGRS Check Sheet

Inspector's Name :

Customer's Name		**VIN**	
		Production Date	/ /
		Licence No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ Steering wheel off–center.	
	☐ VGRS stops and does not operate.	
	☐ Steering angle is different from right to left.	
	☐ Abnormal noise and vibration is produced in the steering wheel	
	VGRS Warning Light Abnormal	☐ Remains ON ☐ Does not Light Up

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

Just before the VGRS warning light comes on, was the engine stalled or the battery terminal removed?	☐ YES ☐ NO
Within the past month, have any parts relating to VGRS been replaced?	☐ YES ☐ NO

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DIAS0-01

PRE–CHECK

1. VGRS SYSTEM DESCRIPTION

The VGRS (Variable Gear Ratio Steering) system controls the steering angle in accordance with the vehicle speed. The system is controlled by the VGRS ECU which operates the VGRS actuator mounted on the steering intermediate shaft. The operating angle of the actuator is added to the steering angle of the intermediate shaft in order to vary the turning angle of the front wheels in accordance with the vehicle speed.

When the VGRS system is operating normally, the steering wheel can be turned approximately 2.4 turns from lock to lock, with the engine running and the vehicle stopped.

When the system detects a fault, the VGRS ECU illuminates the VGRS warning light to inform the driver that the system is not operating.

CAUTION:

There may be conditions that will cause the steering wheel to be off center.
Refer to page DI–356 for further details.

2. DIAGNOSIS SYSTEM

(a) Inspect the battery voltage.

Battery voltage: 11 to 14 V

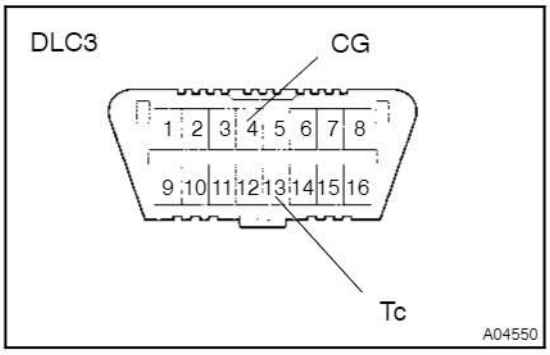
If voltage is below 11 V, recharge the battery before proceeding.

(b) Check the warning light.

With the ignition switch ON, the light should illuminate for 2 seconds and then go out. If the light remains on after 2 seconds, check for DTCs.

HINT:

If the light does not illuminate, proceed to troubleshooting for the VGRS warning light circuit (See page DI–424).



3. DTC CHECK (USING SST CHECK WIRE)

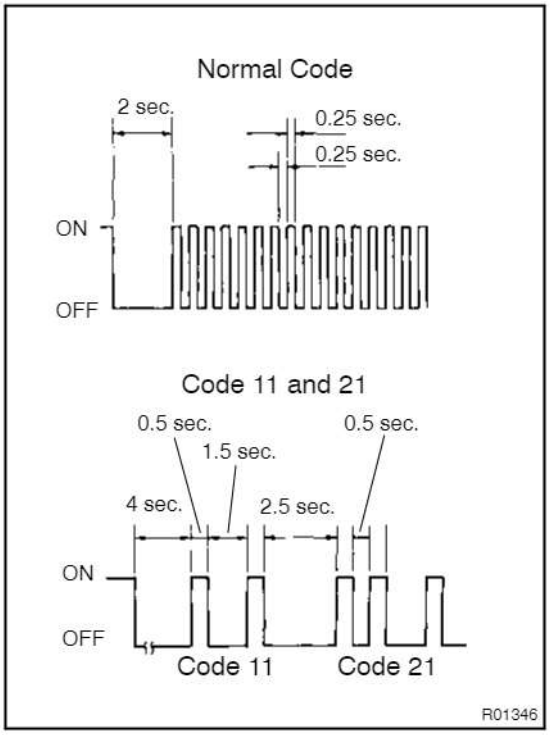
(a) Checking DTCs using a SST check wire.

SST 09843–18040

(1) Using the SST, connect terminals Tc and CG of DLC3.

(2) Turn the ignition switch ON.

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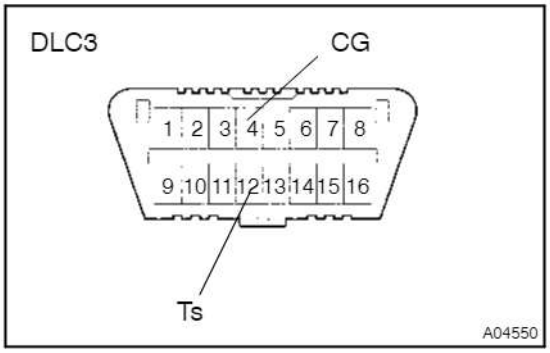


(3) Read and record any DTCs from the VGRS warning light on the combination meter. Refer to the chart on the left for examples of a normal code and codes 11 and 21.

HINT:
If the VGRS warning light does not blink any DTC codes or the normal code, inspect the warning light circuit.

Trouble Area	See page
Tc and CG terminal circuit	DI–426
VGRS warning light circuit	DI–424

(4) Refer to the Diagnostic Trouble Code Chart (See page DI–364) for DTC information.



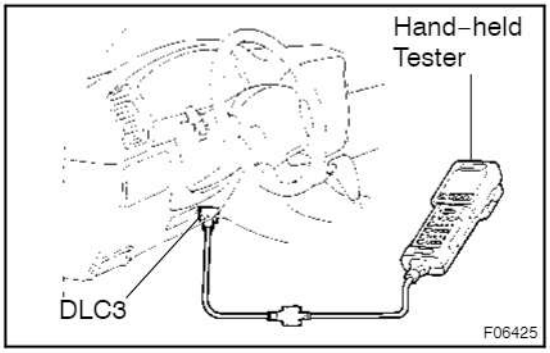
(b) Clearing the DTCs using the SST check wire.
(1) Turn the ignition switch ON.
(2) Using the SST, connect terminals Ts and CG of DLC3.
SST 09843–18040
(3) Disconnect and connect the SST check wire from the CG terminal 4 times or more in 8 seconds.
(4) Check that the VGRS warning light blinks a normal code.

HINT:
If the fault has not been repaired, the code may still be displayed.

(5) Turn the ignition switch OFF.
(6) Remove the SST check wire from DLC3.
(7) Perform the zero point calibration for the deceleration sensor and yaw rate sensor (See page DI–185).

HINT:
When clearing the VGRS codes, the deceleration sensor and yaw rate sensor memory is also cleared. Therefore it is necessary to complete the zero point calibration (See page DI–185).

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4. DTC CHECK (USING HAND–HELD TESTER)

(a) Checking DTCs using the Hand–held tester.
  (1) Connect the hand–held tester to DLC3.
  (2) Turn the ignition switch ON.
  (3) Read the DTCs following the prompts on the tester screen.

HINT:
Refer to the hand–held tester operator's manual for further details.

(b) Clearing the DTCs using the hand–held tester.
  (1) Connect the hand–held tester to DLC3.
  (2) Turn the ignition switch ON.
  (3) Erase the DTCs following the prompts on the tester screen.

HINT:
Refer to the hand–held tester operator's manual for further details.

5. DATA LIST

With the hand–held tester connected to DLC3 and the ignition turned ON, the VGRS data list can be displayed. Follow the prompts on the tester screen to access the Data List.

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
STEERING POS1	Steering sensor 1 reading / min.: –1862 deg, 1877deg	–1682 to 1877 deg	Turn the steering wheel changes the value
STEERING POS2	Steering sensor 2 reading / min.: –1862 deg, 1877deg	–1682 to 1877 deg	Turn the steering wheel changes the value
STR SENS1	Steering sensor 1 / HIGH or LOW	High or Low	Turn the steering wheel switches high or low
STR SENS2	Steering sensor 2 / HIGH or LOW	High or Low	Turn the steering wheel switches high or low
STR SENS3	Steering sensor 3 / HIGH or LOW	High or Low	Turn the steering wheel switches high or low
SPD (VSC)	Speed sensor reading / min.: 0 km/h, max.: 255 km/h	Actual vehicle speed	Speed indicated on speedometer
WHEEL SPD RR	Wheel speed sensor (RR) reading / min.: 0 km/h, max.: 255 km/h	Actual vehicle speed	Speed indicated on speedometer
WHEEL SPD RL	Wheel speed sensor (RL) reading / min.: 0 km/h, max.: 255 km/h	Actual vehicle speed	Speed indicated on speedometer
ENGINE REV (RPM)	Revolution sensor / LESS 300 or MORE 300	Less than 300	Engine stop
		More than 300	Engine running
MTR SOU CUR	Motor power source actual current / min.: 0 A, max.: 127.5 A	Less than 10 A	When not turning the steering wheel
		Less than 60 A	When turning the steering wheel
MTR SOU CUR EST	Estimated motor power source actual current / min.: 0 A, max.: 127.5 A	Less than 10 A	When not turning the steering wheel
		Less than 60 A	When turning the steering wheel
PIG SOURCE VOL	PIG source voltage / min.: 0 V, max.: 22.5 V	9 to 16 V	IG switch ON (Engine stop)
IG SOURCE VOL	IG source voltage / min.: 0 V, max.: 22.5 V	9 to 16 V	IG switch ON (Engine stop)

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MTR CUR EST	Motor estimation current / min.: 0 A, max.: 127.5 V	Less than 10 A	When not turning the steering wheel
		Less than 60 A	When turning the steering wheel
TERMINAL VOL U	Terminal voltage U / min.: 0 V, max.: 25.5 V	0 to 16 V	Turn the steering wheel changes the value (When the engine running and VGRS system operates)
TERMINAL VOL V	Terminal voltage V / min.: 0 V, max.: 25.5 V	0 to 16 V	Turn the steering wheel changes the value (When the engine running and VGRS system operates)
TERMINAL VOL W	Terminal voltage W / min.: 0 V, max.: 25.5 V	0 to 16 V	Turn the steering wheel changes the value (When the engine running and VGRS system operates)
ACTUATOR POS	Actuator position / min.: −286 deg, max.: 288 deg	−286 to 288 deg	Turn the steering wheel changes the value (When the engine running and VGRS warning light goes off)
MTR REV ANG U	Motor revolution angle sensor output U HIGH or LOW	High or Low	Turn the steering wheel changes the value (When the engine running and VGRS warning light goes off)
MTR REV ANG V	Motor revolution angle sensor output V HIGH or LOW	High or Low	Turn the steering wheel changes the value (When the engine running and VGRS warning light goes off)
MTR REV ANG W	Motor revolution angle sensor output W HIGH or LOW	High or Low	Turn the steering wheel changes the value (When the engine running and VGRS warning light goes off)
STR ANG VEL	Steering wheel angle velocity / min.: −1862 deg, max.: 1877 deg / sec.	−1862 to 1877 deg / sec.	Turn the steering wheel changes the value (When the engine running and VGRS warning light goes off)
LOCK OUTPUT VOL	Lock motor output voltage / min.: 0 V, max.: 22.5V	9 to 16 V	IG switch ON (Engine stop)
THERMISTOR TEMP	Thermistor temperature / min.: −50 °C, max.: 205 °C	−50 to 205 °C	When the VGRS system operates
ACT TARGET ANGL	Actuator target angle / min.: −286 deg, max.: 288 deg	−286 to 288 deg	When the VGRS system operates
ACT REV SPD	Actuator revolution speed / min.: −1862 deg, max.: 1877 deg / sec.	−1862 to 1877 deg / sec.	When the VGRS system operates
DUTY VAL	Command value DUTY / min.: 0 %, max.: 100 %	0 to 100%	When the VGRS system operates
LOCK DUTY VAL	Command value DUTY for actuator lock control / min.: 0 %, max.: 100 %	Less than 10%	IG switch ON
STRAIGHT ANG FLG *1	Straight steering angle valid flag / INVALID or VALID	VALID or INVALID	Immediately after connecting the battery terminal
ACT DEV ANGL	Actuator deviation angle / min.: −286 deg, max.: 288 deg	−286 to 288 deg	When the VGRS system operates

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ACT TEMP EST	Actuator estimation temperature / min.: –50 °C, max.: 205 °C	–50 to 205 °C	When the VGRS system operates
MTR OVERHEAT *2	Record of continuous overheat preventive control / Rec or Unrec	Rec or Unrec	–
MTR LOW POWER *2	Record of low motor power source voltage / Rec or Unrec	Rec or Unrec	–
MTR HIGH POWER *2	Record of high motor power source voltage / Rec or Unrec	Rec or Unrec	–
FLO MALFUNCTION *2	Record of wheel speed malfunction (left) / Rec or Unrec	Rec or Unrec	–
FRO MALFUNCTION *2	Record of wheel speed malfunction (right) / Rec or Unrec	Rec or Unrec	–
TEST MODE	Test mode / NORMAL or TEST	NORMAL : Normal mode TEST : During test mode	–
#CODES	Number of DTC recorded / min.: 0, max.: 255	Min.: 0, max.: 39	–

*1: **NOTICE:**

This data must read valid before proceeding with any steering adjustments. If invalid, perform steering angle sensor initialization procedure, or if VGRS actuator or VGRS ECU has been replaced, perform VGRS system calibration (steering angle adjust).

*2: HINT:

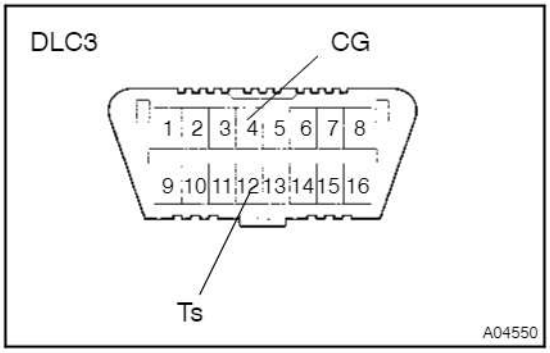
When Rec is listed, reset to Unrec by going to the VGRS menu on the hand–held tester, select records clearance, and follow the prompts.

6. FREEZE FRAME DATA

The VGRS ECU stores memorized data when a trouble code is set and can be viewed using the hand–held tester.

Hand–held tester display	Measurement Item	Value
STEERING POS 1	Steering position 1 (parallel)	–1862 to 1877
SPD (VSC)	Vehicle speed (VSC ECU)	Speed indicated on speedometer
ENGINE REV (RPM)	Engine revolution	Less than 300 or More than 300
MTR SOURCE CUR	Motor power source actual current	0 to 127.5
MTR SOU CUR EST	The estimated motor current	0 to 127.5
PIG SOURCE VOL	PIG–power source voltage	0 to 22.5
IG SOURCE VOL	IG–power source voltage	0 to 22.5
ACTUATOR POS	Actuator position	–286 to 288
STR ANGLE VEL	Steering wheel angle velocity	–1862 to 1877
LOCK OUTPUT VOL	Lock motor output voltage	0 to 22.5
ACT TARGET ANGLE	Actuator target angle	–286 to 288
ACT REV SPD	Actuator revolution speed	–1862 to 1877
DUTY VAL	Command value DUTY	0 to 100
LOCK DUTY VAL	Command value DUTY for actuator lock control	0 to 100

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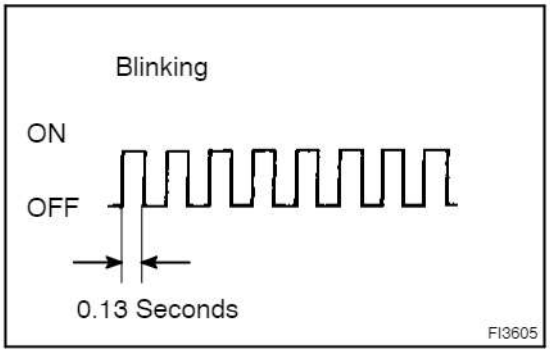
7. VGRS SENSOR SIGNAL CHECK (TEST MODE)

HINT:

- Before entering Test Mode, check and repair any current VGRS DTCs.
- When entering test mode, the 4 sensor check DTCs are recorded at once. When the ECU judges the sensor normal during the test procedure, the DTC will be eliminated.

(a) Procedure for Sensor Test Mode using a SST check wire.
SST 09843–18040

(1) Make sure the ignition switch is OFF.
(2) Using the SST check wire, connect terminals Ts and CG of DLC3.
(3) Turn the ignition switch ON.



(4) Check that the VGRS warning light is blinking.

HINT:

If the VGRS warning light does not blink, inspect the warning light or Ts terminal circuits.

Trouble Area	See page
Ts and CG terminal circuit	DI–428
VGRS warning light circuit	DI–424

(5) Start the engine.
(6) Turn the steering wheel lock to lock.

NOTICE:

- **Check for any unusual feeling in the steering wheel operation.**
- **Slowly turn the steering wheel from lock to lock. check that it rotates approximately 2.4 turns.**

HINT:

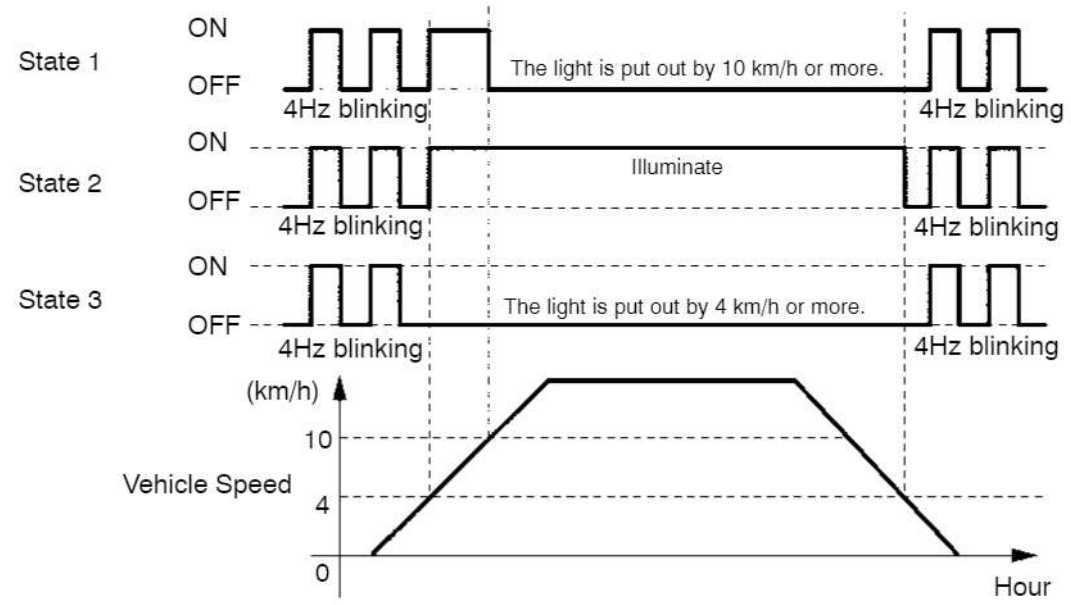
- The warning light display has no change.
- If the actuator moving amount is correctly checked, the diagnostic codes C1575/75 and C1576/76 in the test mode are cleared.

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(7) Drive the vehicle at more than 10 km/h (6 mph) for 15 to 30 seconds.

HINT:
If the vehicle speed sensor is correctly checked, the diagnostic codes C1571/71 and C1572/72 in the test mode are cleared.

HINT: The situation of VGRS warning light when driving.

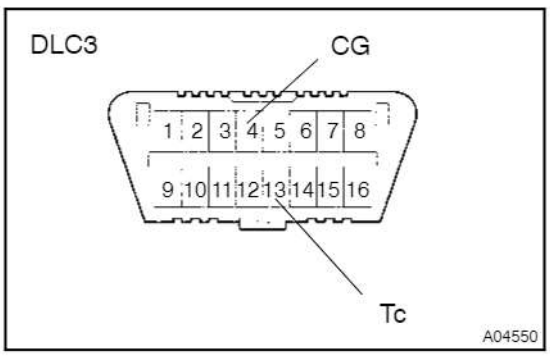


State 1: If either DTC C1575/75 or C1576/76 is abnormal, the warning light remains on between 4 and 10 km/h after first starting.
State 2: If a speed sensor DTC is detected at 10 km/h or above, the warning light will remain on until vehicle speed is less than 4 km/h.
State 3: Warning light pattern when all sensors are normal.

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P

(8) Stop the vehicle. Leave the engine running.



(9) Using the SST check wire, connect the 3rd terminal of the SST check wire to terminal Tc of DLC3.

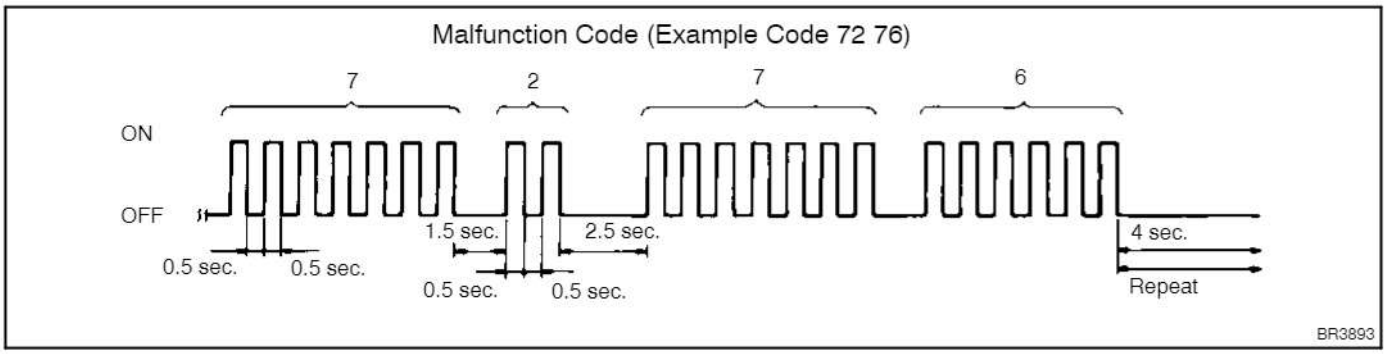
SST 09843–18040

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(10) Read the number of blinks of the VGRS warning light. (Refer to the chart below)

HINT:

- If all wheel speed sensors are normal, the normal blinking code is output. (A repeating cycle of 0.25 sec. ON and 0.25 sec. OFF)
- If 2 or more faults are detected at the same time, the lowest number will be displayed first.



(11) After completing the check, disconnect the SST from DLC3 and turn the ignition OFF.

(b) Procedure for Sensor Test Mode using the hand–held tester.

(1) Connect the hand–held tester.
(2) Turn the ignition switch ON.
(3) Complete the VGRS Test Mode following the prompts on the tester screen.

HINT:

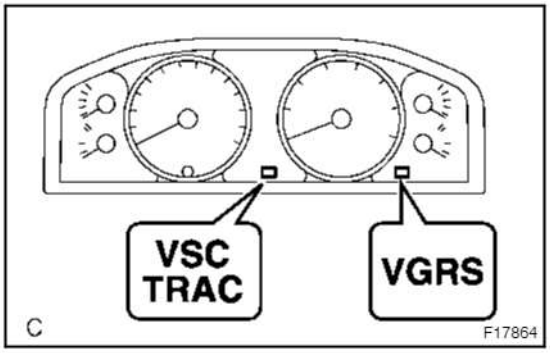
Refer to the hand–held tester operator's manual for further details.

(4) Read the DTCs.
(5) After completing the test, disconnect the tester and turn the ignition switch OFF.

DTC of VGRS sensor check function:

Code No.	Diagnosis	Trouble Area
C1571 / 71	Vehicle speed sensor malfunction (FLO)	• Left front speed sensor • Sensor installation • Sensor rotor
C1572 / 72	Vehicle speed sensor malfunction (FRO)	• Right front speed sensor • Sensor installation • Sensor rotor
C1575 / 75	Steering angle sensor malfunction	• Steering sensor • Sensor installation
C1576 / 76	DC motor revolution sensor malfunction	• VGRS actuator

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DI8QR-01

INITIALIZATION

1. STEERING ANGLE SENSOR INITIALIZATION

(a) Turn the ignition switch to the "ON" position and check that the VGRS and VSC/TRAC warning lights illuminate for a few seconds.

NOTICE:

If the warning lights remain on or blink, repair the applicable system.

(b) Drive the vehicle on a straight road at 35 km/h (22 mph) or more for 5 seconds or longer. At this point, the steering wheel will still remain off–center by 5 to 10 degrees.

HINT:

In this step, the neutral position of the steering wheel is restored from the VGRS ECU memory.

(c) After performing normal cornering 2 to 3 times, the steering wheel position is automatically corrected.

NOTICE:

If the steering wheel remains off–center after the above procedure, repair the applicable system.

(d) Confirm the steering angle sensor initialization is completed.

WHEN USING HAND–HELD TESTER:

Use this procedure to center the steering wheel when the STRAIGHT ANG FLG from the VGRS DATA LIST reads VALID.

WHEN NOT USING HAND–HELD TESTER:

(1) Drive the vehicle on a road at 60 km/h (37 mph) or more for 30 seconds or longer.

HINT:

At this time, if steering angle initialization is not completed, VGRS system is stopped.

(2) Stop the vehicle. (Engine running)

(3) Slowly turn the steering wheel from lock to lock.

HINT:

2 seconds or more for 1 turn.

(4) If it rotates approximately 2.4 turns, the steering angle sensor initialization is completed. If it rotates approximately 3.5 turns, the steering angle sensor initialization is not completed.

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DIBQS-01

CALIBRATION

1. VGRS SYSTEM CALIBRATION PROCEDURE (USING SST CHECK WIRE)

NOTICE:

Use this procedure to center the steering wheel position if:

- **VGRS actuator has been replaced**
- **VGRS ECU has been replaced**
- **Steering column or gear has been disconnected**
- **Steering wheel is still off–center after completing the steering angle sensor initialization in step 6.**

Actuator angle initialization:

1	**Face the tires straight ahead.**

NOTICE:

Drive the vehicle to confirm steering wheel is centered.

NEXT

2	**Check for DTCs**

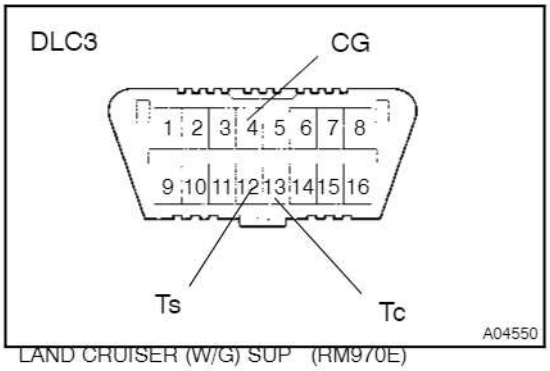
Is DTC C1515/15 output?

A	DTC C1515/15 is not output
B	DTC C1515/15 is output

B → **Go to step 4**

A

3	**Actuator angle initialization**



NOTICE:

Complete steps (e) to (g) within 1 minute.

(a) Turn the ignition switch ON.
(b) Start the engine.
(c) Turn the steering wheel to the center.
(d) Using SST check wire, connect the terminals Ts and CG of DLC3.
(e) Connect and disconnect the SST check wire to the terminal Tc of DLC3 10 times or more within 20 sec.
(f) Turn the steering wheel to the left 180° or more and then return to the center position.
(g) Connect and disconnect the SST check wire to the terminal Tc of DLC3 10 times or more within 20 sec.

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(h) Check that the VGRS warning light is ON.

HINT:

When the VGRS warning light illuminates, DTC 1515/15 is memorized.

(i) Disconnect the SST check wire from the DLC3.

(j) Turn the ignition switch OFF.

NEXT

Go to step 1

Steering angle adjustment:

4	**Confirm steering center**

Confirm that the steering wheel is centered when facing the tires straight ahead.

NOTICE:

Drive the vehicle to confirm steering wheels centered.

A	Steering wheel is off–center
B	Steering wheel is center

B **Go to step 8**

A

5	**Unlock the VGRS actuator**

NOTICE:

Do not start the engine.

(a) Turn the ignition switch OFF. (Engine stop)

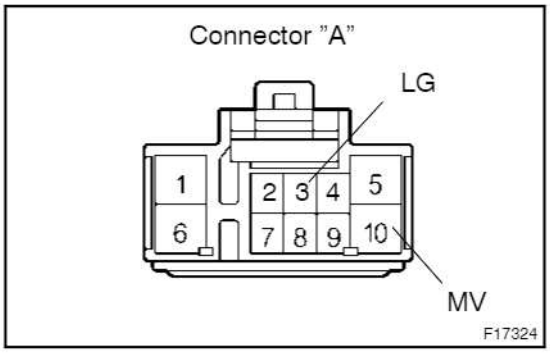
(b) Disconnect the negative battery terminal.

(c) Disconnect the VGRS ECU connector "A".

(d) Connect the jumper wire from terminal MV to Battery (+) and another jumper wire from terminal LG to ground(–).

NOTICE:

Do not apply the voltage for more than 3 minutes.



NEXT

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6	Steering center adjustment

(a) Turn the steering wheel to the center.

NOTICE:

If the spiral cable for the airbag is not centered when installing the steering wheel, adjust the spiral cable to the center (See page SR–19).

NEXT

7	Lock the VGRS actuator

(a) Confirm the ignition switch is turned OFF.
(b) Reconnect the VGRS ECU connector "A".
(c) Reconnect the battery terminal.
(d) Turn the steering wheel to the right and left by about 5 degrees and check that the steering wheel is level.

NOTICE:

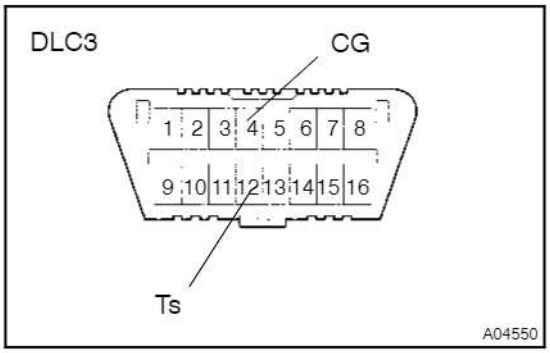
The DTC will be detected later on when not turning the steering wheel to the right and left by about 5 degrees.

NEXT

Go to step 1

Actuator angle adjustment:

8	Adjust the actuator angle



HINT:

Actuator angle adjustment is completed by turning the Test Mode ON and OFF.

(a) Make sure the ignition switch is OFF.
(b) Using the SST check wire, connect the terminals Ts and CG of DLC3.
(c) Turn the ignition switch ON.
(d) Check that the VGRS waring light is blinking.
(e) Turn the ignition switch OFF and disconnect the SST check wire from the DLC3.
(f) Actuator angle sensor learning confirmation procedure:
  (1) Start the engine.
  (2) Turn the steering wheel from center to the left 90° and then back to center.
  (3) Turn the steering wheel from center to the right 90° and then back to center.
  (4) Confirm that the steering wheel is centered.

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(5) Hold the steering wheel in the centered position for 3 seconds.

(6) Perform the following check procedure;

- Turn the steering wheel slowly to the left.
- While turning the steering wheel to the left, turn off the engine.
- Continue to turn the steering wheel slowly to the left for 3 seconds.

(7) Repeat steps (1) to (6) 15 times.

NOTICE:

DTC C1568/68 requires that the fault occurs 5 consecutive times to set. The confirmation procedure must be performed multiple times to ensure the condition does not repeat.

(8) Recheck for DTCs

- If C1568/68 is set, repeat the procedure for a second time. If C1568/68 is set again, replace the VGRS actuator.

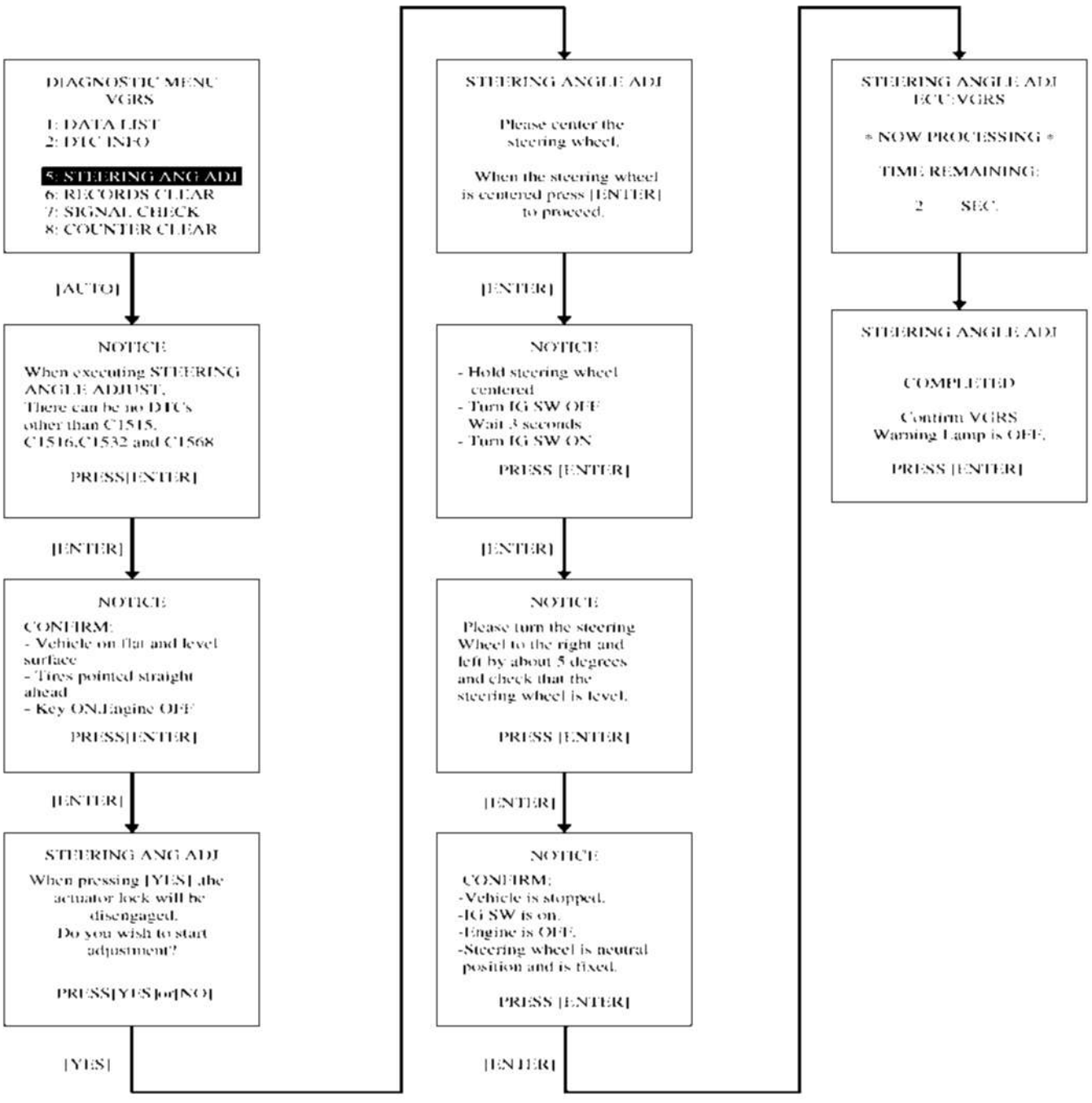
END

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2. VGRS SYSTEM CALIBRATION PROCEDURE (USING HAND–HELD TESTER)

(a) Stop the vehicle and face the tires straight ahead.
(b) Connect the hand–held tester to DLC3.
(c) Turn the ignition switch ON.
(d) Perform the steering angle adjust procedure from the VGRS menu.

Tester menu flow:



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(e) Follow the tester prompts to complete procedure.
(f) Confirm that the VGRS warning light OFF.
(g) Turn the ignition switch OFF.
(h) Disconnect the hand–held tester.
(i) Confirm normal VGRS light operation.
(j) Start the engine.
(k) Turn the steering wheel from lock to lock to check that it rotates approximately 2.4 turns.
(l) Actuator angle sensor learning confirmation procedure:
  (1) Start the engine.
  (2) Turn the steering wheel from center to the left 90° and then back to center.
  (3) Turn the steering wheel from center to the right 90° and then back to center.
  (4) Confirm that the steering wheel is centered.
  (5) Hold the steering wheel in the centered position for 3 seconds.
  (6) Perform the following check procedure;
    • Turn the steering wheel slowly to the left.
    • While turning the steering wheel to the left, turn off the engine.
    • Continue to turn the steering wheel slowly to the left for 3 seconds.
  (7) Repeat steps (1) to (6) 15 times.

NOTICE:
DTC C1568/68 requires that the fault occurs 5 consecutive times to set. The confirmation procedure must be performed multiple times to ensure the condition does not repeat.

  (8) Recheck for DTCs
    • If C1568/68 is set, repeat the procedure for a second time. If C1568/68 is set again, replace the VGRS actuator.
(m) Drive vehicle to confirm steering wheel is centered.

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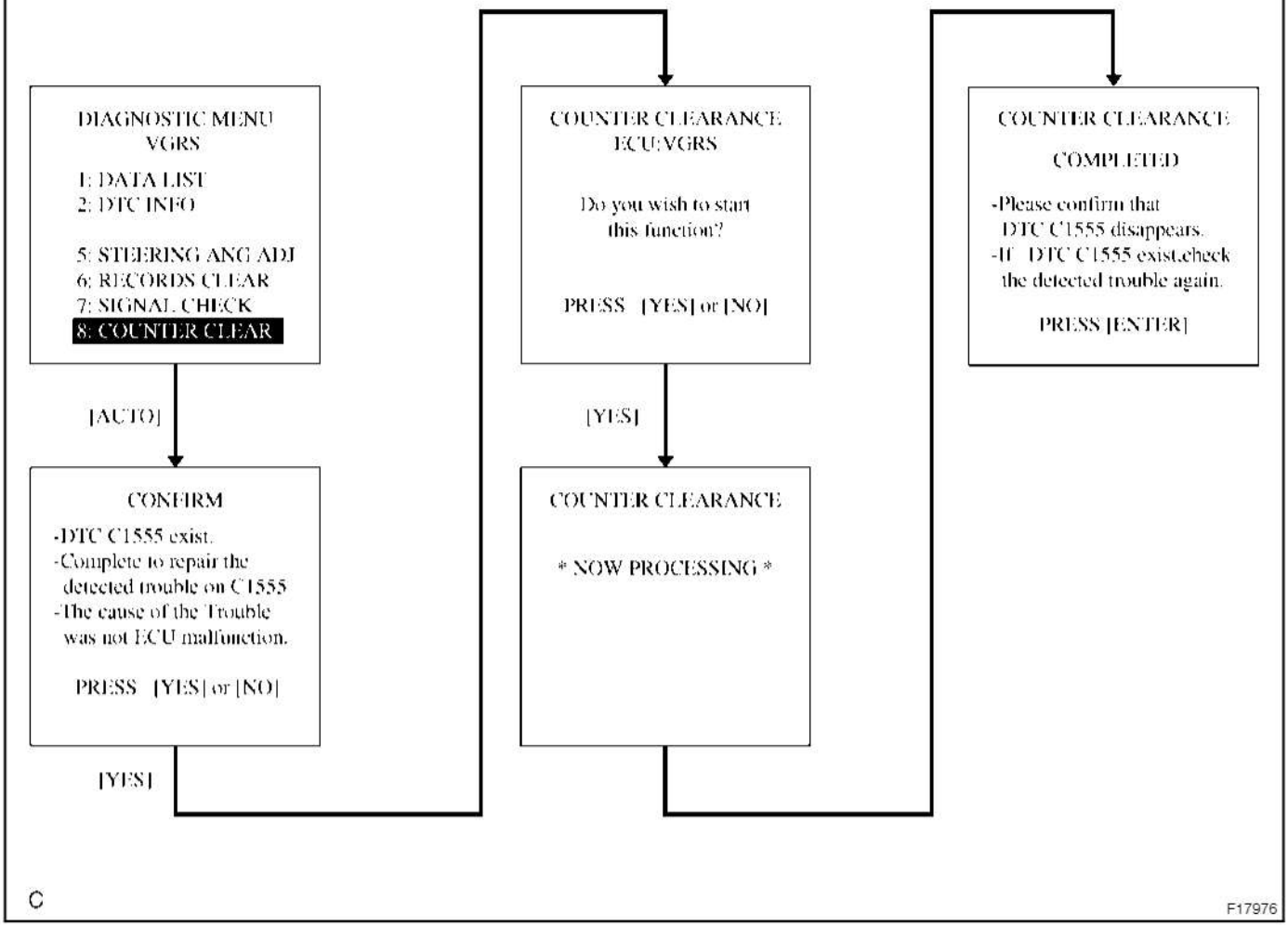
COUNTER CLEARANCE

HINT:

- Perform the following procedure to clear the DTC C1555/55.
- When clearing the DTCs in DTC clear menu of the hand–held tester or SST check wire, DTC C1555/55 connot be cleared.
- When clearing DTCs using the SST check wire, perform the VGRS system calibration.

1. **Connect the hand–held tester to DLC3.**
2. **Turn the ignition switch ON.**
3. **Perform the counter clearance procedure from the VGRS menu.**

Tester menu flow:



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DIAS1–01

DIAGNOSTIC TROUBLE CODE CHART

HINT:

If a malfunction code is displayed during the DTC check, check the circuit indicated by the DTC. For details of each code, turn to the page for the respective "DTC No." in the DTC chart.

DTC chart of VGRS system:

DTC No. (See Page)	Detection Item	Trouble Area
C1511/11 (DI–371)	Steering angle sensor malfunction	• Steering angle sensor • Steering angle sensor circuit • VGRS ECU • Skid control ECU
C1515/15 (DI–380)	VGRS actuator neutral position is not initialized	• VGRS actuator • VGRS ECU
C1516/16 (DI–381)	VGRS actuator neutral position incomplete	• VGRS actuator • VGRS ECU
C1521/21 (DI–383)	VGRS actuator malfunction	• VGRS actuator • VGRS ECU
C1522/22 (DI–385)		
C1527/27 (DI–387)		
C1528/28 (DI–387)		
C1531/31 (DI–390)	VGRS ECU malfunction	• VGRS ECU
C1532/32 (DI–391)		
C1533/33 (DI–392)		
C1541/41 (DI–394)	Vehicle skid control system malfunction	• VSC system • VGRS ECU • Skid control ECU
C1549/49 (DI–397)	Vehicle skid control system communication malfunction	• Wire harness and connector • VGRS ECU • Skid control ECU
C1551/51 (DI–401)	IG power source voltage malfunction	• ECU–IG fuse • IG circuit • Charging system • VGRS ECU
C1552/52 (DI–403)	DC motor power source voltage	• VGRS fuse • Power source circuit • VGRS ECU
C1554/54 (DI–405)	Power source relay failure	• VGRS fuse • VGRS ECU
C1555/55 (DI–407)	Predriver malfunction	• Power source circuit • VGRS ECU
C1561/61 (DI–409)	Lock mechanism malfunction	• VGRS actuator • VGRS ECU
C1567/67 (DI–411)	Lock mechanism insertion malfunction	• VGRS actuator • VGRS ECU

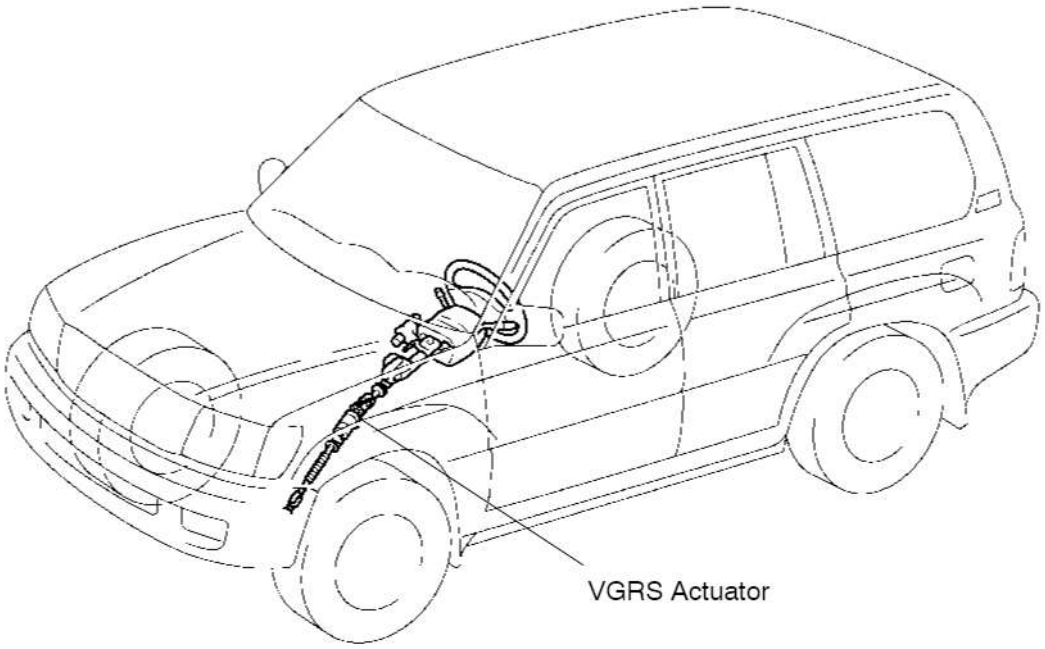
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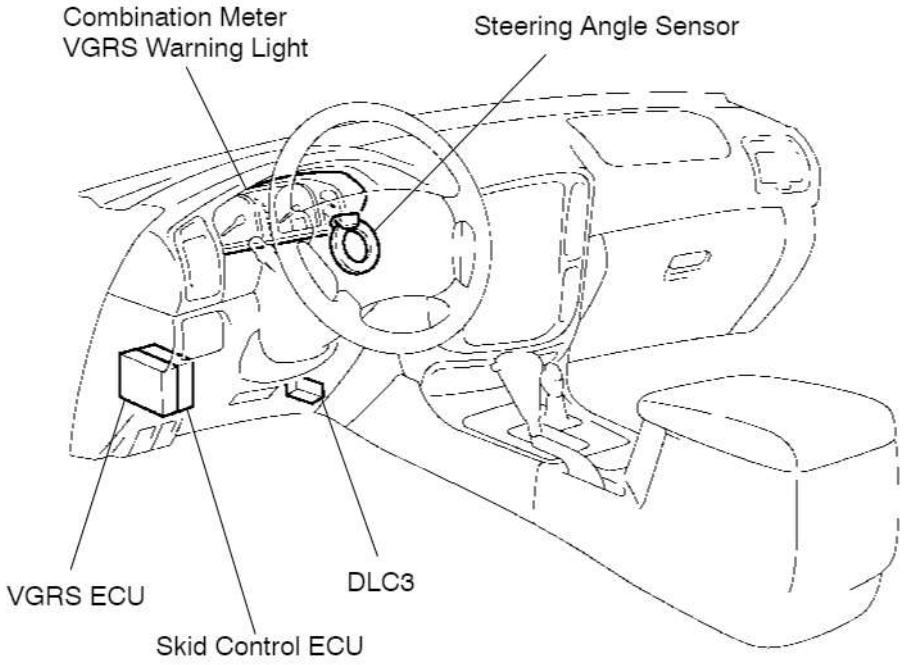
C1568/68 (DI–413)	Lock holder deviation detection	• VGRS actuator
C1569/69 (DI–415)	Lock mechanism release incomplete	• VGRS actuator

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DIAS2-01

PARTS LOCATION

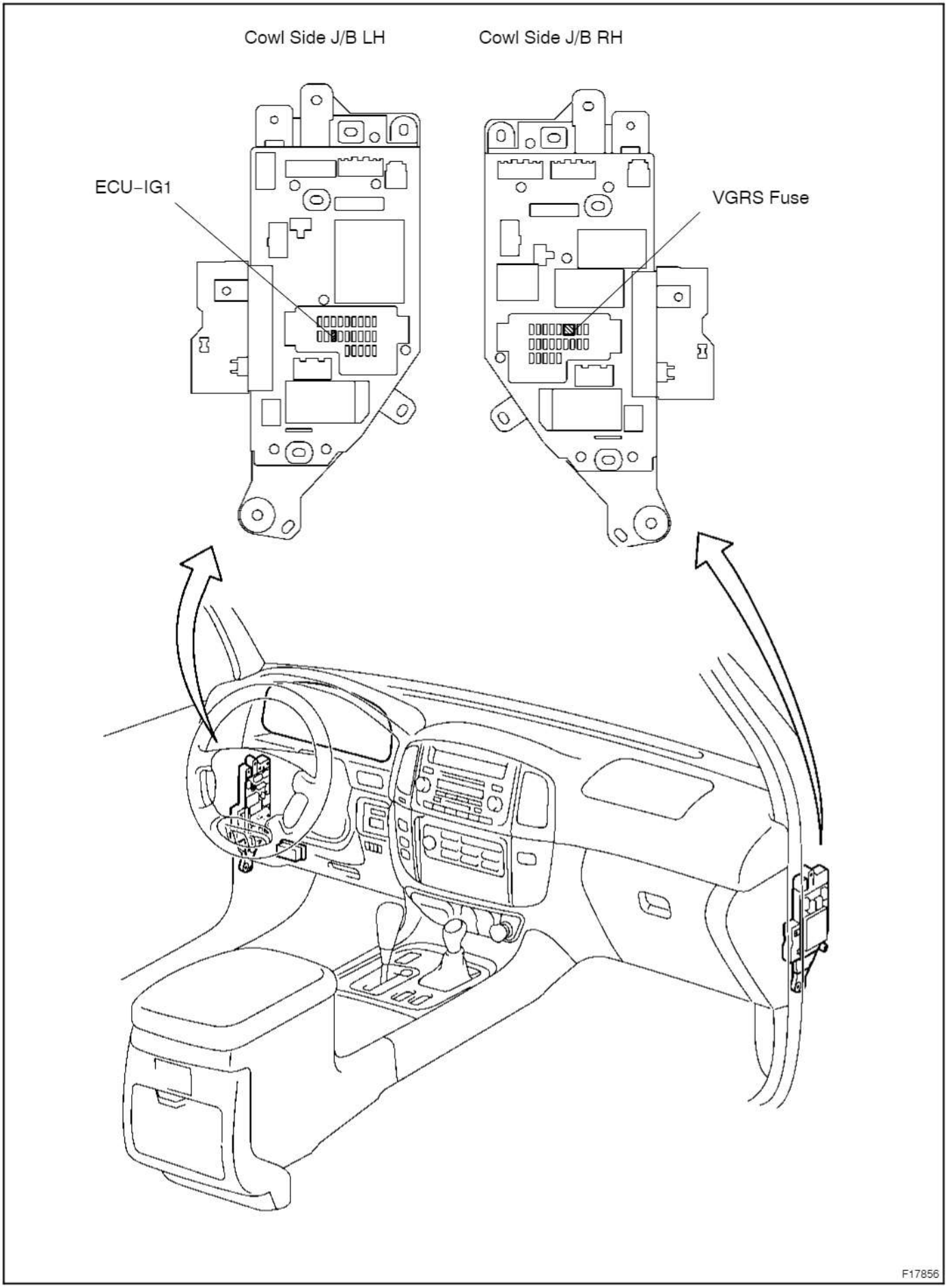




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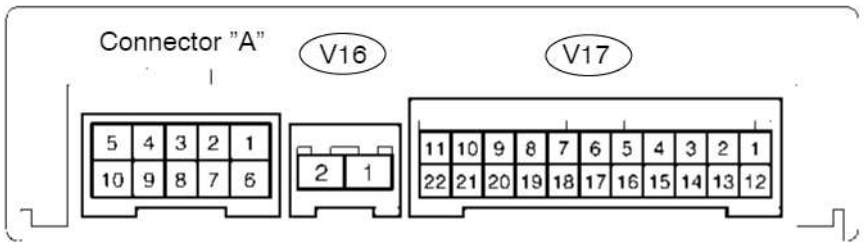
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DIAS3–01

TERMINALS OF ECU



N

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Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
BMV (A1) – BMW (A6)	G – BL	IG switch ON	0.1 to 1 Ω
MSW (A2) – MG (A7)	W – GR	Turn the steering wheel	Repeat below 1 kΩ or Above 100 kΩ
LG (A3) – Body ground	B – Body ground	IG switch ON	Below 1.0 V
MSU (A4) – MG (A7)	Y – GR	Turn the steering wheel	Repeat below 1 kΩ or Above 100 kΩ
BMU (A5) – BMW (A6)	BR – BL	IG switch OFF	0.1 to 1 Ω
BMW (A6) – BMV (A1)	BL – G	IG switch OFF	0.1 to 1 Ω
MG (A7) – Body ground	GR – Body ground	Always	Continuity
MSV (A8) – MG (A7)	G–R – GR	Turn the steering wheel	Repeat below 1 kΩ or Above 100 kΩ
MV (A10) – Body ground	R – Body ground	Always	Continuity
MSW (A2) – GND (V17 – 6 or 22)	W – W–B	Turn the steering wheel	Repeat below 1 or Above 4 V
LG (A3) – GND (V17 – 6 or 22)	B – W–B	IG switch ON	Below 1.0 V
MSU (A4) – GND (V17 – 6 or 22)	Y – W–B	Turn the steering wheel	Repeat below 1 or Above 4 V
MG (A7) – GND (V17 – 6 or 22)	GR – W–B	Always	Below 1 V
MSV (A8) – GND (V17 – 6 or 22)	G–R – W–B	Turn the steering wheel	Repeat below 1 or Above 4 V
PIG (V16 – 1) – PGND (V16 – 2)	W – W–B	Idling	9 to 16 V
PGND (V16 – 2) – Body ground	W–B – Body ground	Always	Below 1 V
TS (V17 – 1) – GND (V17 – 6 or 22)	W – W–B	IG switch ON	10 to 14 V
+BI (V17 – 2) – GND (V17 – 6 or 22)	LG – W–B	IG switch ON	10 to 14 V
IG (V17 – 3) – GND (V17 – 6 or 22)	B–W – W–B	IG switch ON	10 to 14 V
SS1 (V17 – 4) – GND (V17 – 6 or 22)	B–Y – W–B	Turn the steering wheel	Repeat below 1 or Above 4 V
SS3 (V17 – 5) – GND (V17 – 6 or 22)	B–L – W–B	Turn the steering wheel	Repeat below 1 or Above 4 V

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GND (V17 – 6) – Body ground	W–B – Body ground	Always	Below 1.0 V
AFS+ (V17 – 7) – AFS– (V17 – 17)	LG–R – GR–B	IG switch ON	Pulse generation
VSC+ (V17 – 8) – VSC– (V17 – 18)	V – Y–G	IG switch ON	Pulse generation
TA+ (V17 – 9) – TA– (V17 – 21)	R–B – G–W	IG switch ON	Pulse generation
FRO (V17 – 11) – GND (V17 – 6 or 22)	R–W – W–B	Vehicle driving at about 20 km/h (12 mph)	Pulse generation
TC (V17 – 12) – GND (V17 – 6 or 22)	P–B – W–B	IG switch ON	10 to 14 V
+BO (V17 – 13) – GND (V17 – 6 or 22)	L–W – W–B	Always	10 to 14 V
SIL (V17 – 14) – GND (V17 – 6 or 22)	V–W – W–B	IG switch ON	10 to 14 V
SS2 (V17 – 15) – GND (V17 – 6 or 22)	G–W – W–B	Turn the steering wheel	Repeat below 1 or Above 4 V
WL (V17 – 16) – GND (V17 – 6 or 22)	R–B – W–B	After IG switch ON and VGRS warning light turns on for 1.5 sec. then it goes off	Below 1.0 V
FLO (V17 – 20) – GND (V17 – 6 or 22)	R–Y – W–B	Vehicle driving at about 20 km/h (12 mph)	Pulse generation
GND2 (V17 – 22) – Body ground	W–B – Body ground	Always	Below 1.0 V

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DIAS4–01

PROBLEM SYMPTOMS TABLE

If a normal code is displayed during the DTC check but the problem still occurs, check the circuits for each problem symptom in the order given in the table below and proceed to the relevant troubleshooting page.

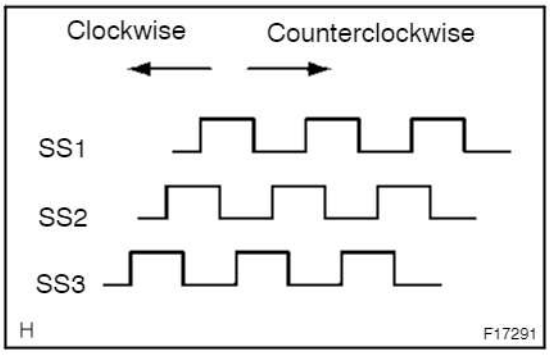
Symptom	Suspected Area	See page
Steering wheel off–center	Steering wheel off–center	DI–419
VGRS stops and does not operate	1. Actuator temperature above –30°C 2. IG power source circuit 3. Skid control ECU 4. IG, PIG power supply system 5. Power steering system 6. Only when 1. to 5. are all normal and the problem is still occurring, replace the VGRS ECU.	– DI–401 – DI–403 SR–5 SR–51 –
Steering angle is different from right to left	Check by following operation	DI–422
Abnormal noise and vibration is produced in the steering wheel	VGRS actuator	DI–423
VGRS warning light abnormal	1. VGRS warning light circuit 2. Tc and CG terminal circuit 3. VGRS ECU	DI–424 DI–426 –

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DIAS5-01

CIRCUIT INSPECTION

DTC	C1511 / 11	Steering Angle Sensor Malfunction



CIRCUIT DESCRIPTION

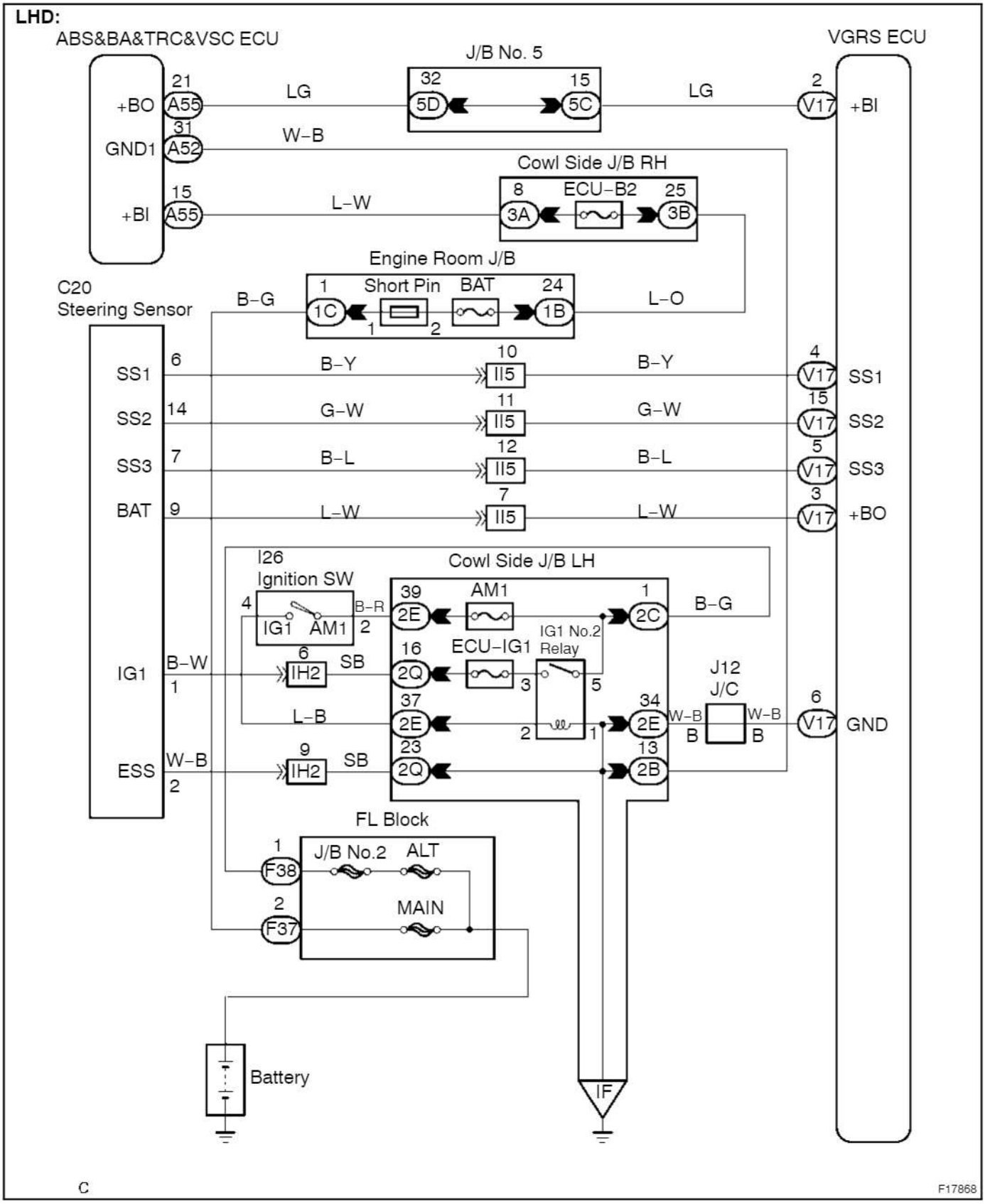
The VGRS ECU receives the steering sensor signals (SS1, SS2, SS3), and judges the steering condition to drive the VGRS actuator.

When the steering sensor signal is abnormal, the VGRS ECU records the DTC and illuminates the VGRS warning light.

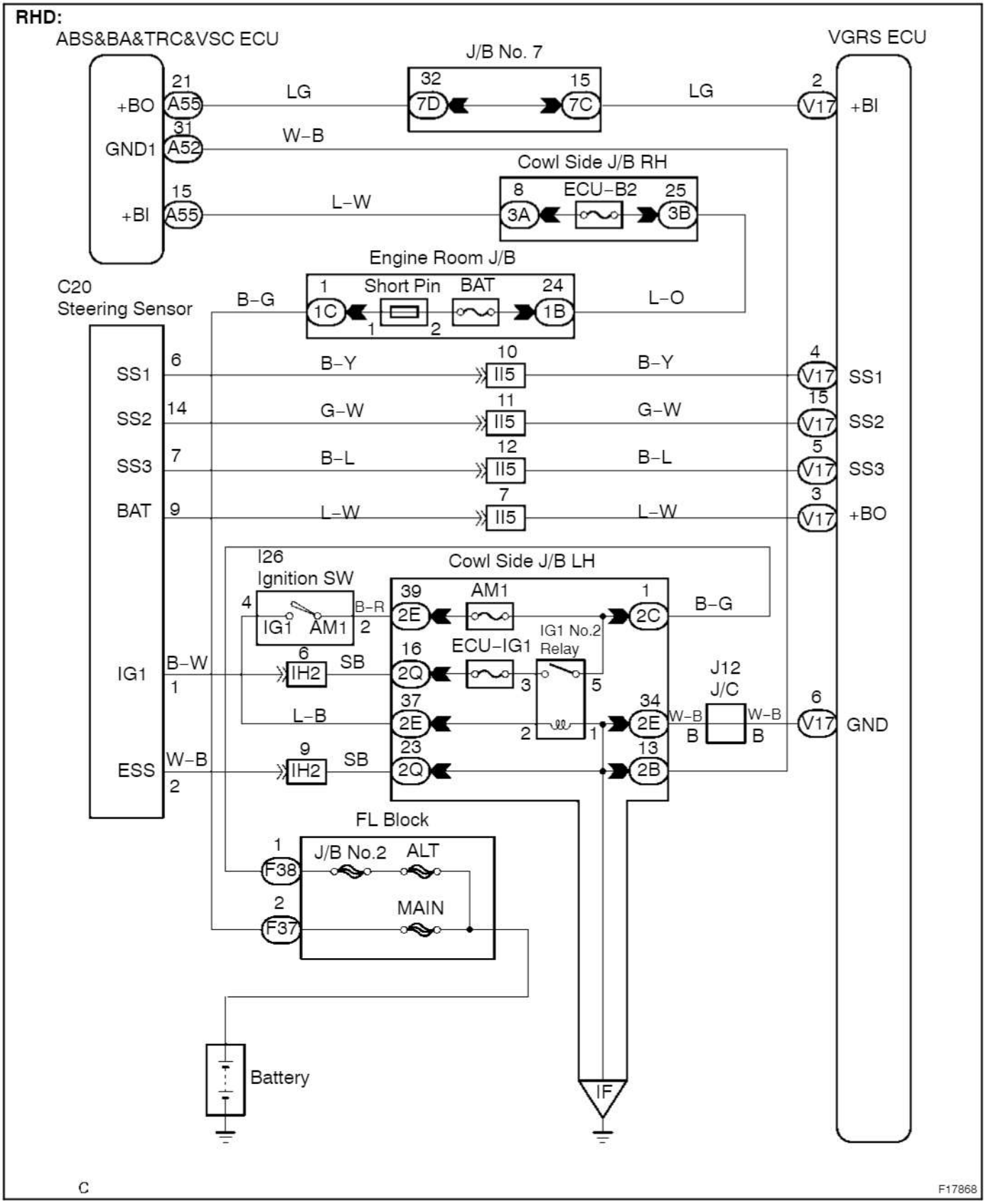
DTC No.	DTC Detecting Condition	Trouble Area
C1511/11	The system detects a momentary interruption of the steering angle sensor signal (SS1, SS2, SS3) 10 times, or an open circuit for more than 0.12 sec.	• Steering angle sensor • Steering angle sensor circuit • VGRS ECU • Skid control ECU

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WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

- Determine the trouble area by checking the steering sensor signal using hand–held tester.
- When not using hand–held tester, go to step 3.

1	**Observe the data for SS1, SS2, SS3 on the hand–held tester.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Start the engine.

CHECK:

Check each steering sensor signal (SS1, SS2, SS3) while slowly turning the steering wheel.

OK:

STR SENS1: High or Low
STR SENS2: High or Low
STR SENS3: High or Low

All OK	A
All NG	B
Other	C

A → **Replace VGRS ECU.**

C → **Go to step 3.**

B

Proceed to step 2.

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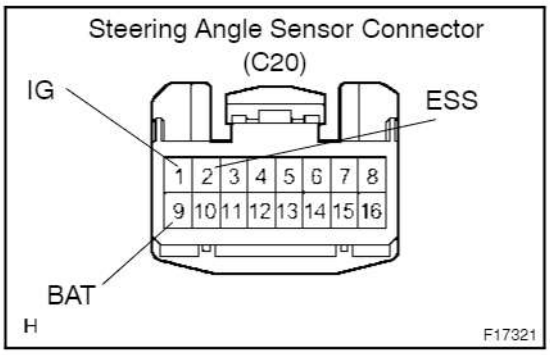
2	**Inspect power supply voltage of steering angle sensor.**

HINT:

- When a malfunction is found in the power supply voltage of the steering angle sensor, the sensor outputs become abnormal.
- The power supply has 2 systems, IG and BAT.

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the steering angle sensor connector (C20).
(c) Turn the ignition switch ON.



CHECK:

(a) Measure voltage between terminals 1 and 2 of the steering angle sensor harness side connector.

OK:

10 to 14 V

(b) Measure voltage between terminals 9 and 2 of the steering angle sensor harness side connector.

OK:

10 to 14 V

OK	A
NG (IG power supply terminals 1 and 2)	B
NG (BAT power supply terminals 9 and 2)	C

B	**Check or replace harness or connector.**
C	**Go to step 4.**

A

Proceed to step 3.

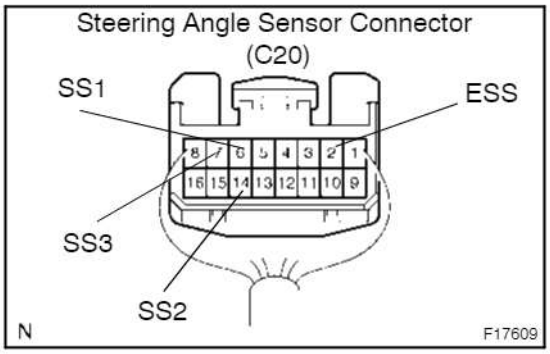
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3	**Inspect output of steering angle sensor.**

HINT:
Check the output when slowly turning the steering wheel to judge whether the sensor is good.

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Disconnect the VGRS ECU connector (V17).
(c) Turn the ignition switch ON.



CHECK:

When slowly turning the steering wheel, measure the resistance between terminals of the steering angle sensor connector (C20).

OK:

Symbols (Terminals No.)	Resistance
SS1 – ESS (6) – (2)	Alternates below 1 kΩ and above 100 kΩ
SS2 – ESS (14) – (2)	
SS3 – ESS (7) – (2)	

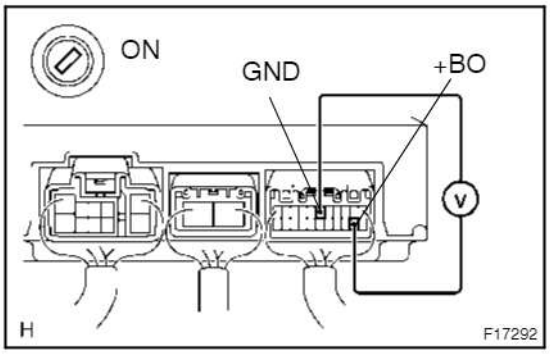
OK	**Go to step 8.**

NG

Replace steering angle sensor.

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4	Check voltage between terminal +BO and GND of VGRS ECU.

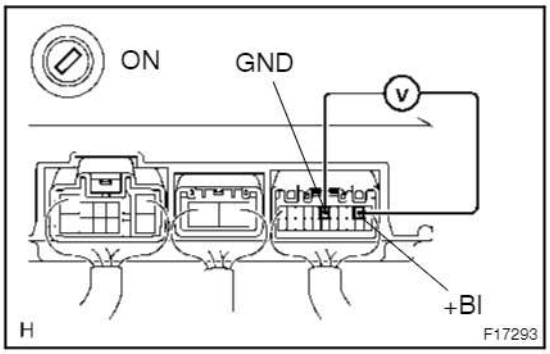


PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure the voltage between terminal +BO and GND of the VGRS ECU.
OK:
10 to 14V

OK	Check and repair the wire harness and connector between steering angle sensor and VGRS ECU.

NG

5	Check voltage between terminal +BI and GND of VGRS ECU.



PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure the voltage between terminal +BI and GND of the VGRS ECU.
OK:
10 to 14 V

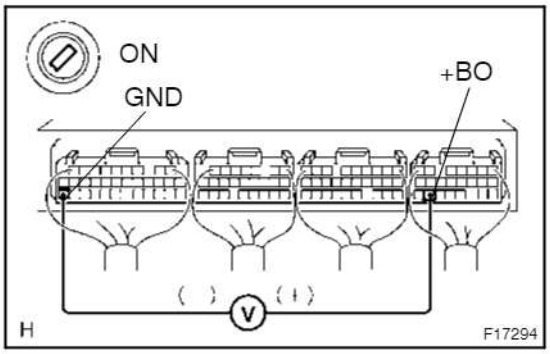
OK	Replace VGRS ECU.

NG

Proceed to step 6.

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6	Check voltage between terminal +BO and GND of skid control ECU.

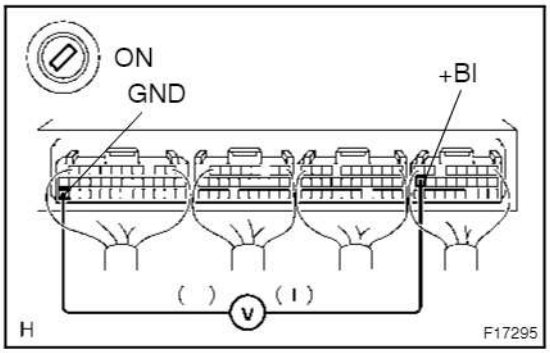


PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure the voltage between terminal +BO and GND of the skid control ECU.
OK:
10 to 14 V

OK	Check and repair the wire harness and connector between skid control ECU and VGRS ECU.

NG

7	Check voltage between terminal +BI and GND of skid control ECU.



PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure the voltage between terminal +BI and GND of the skid control ECU.
OK:
10 to 14 V

OK	Replace skid control ECU.

NG

Repair or replace +BI circuit.

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8	**Check for open or short circuit in harness and connector between steering angle sensor and VGRS ECU (See page IN–38).**

PREPARATION:

(a) Turn the ignition switch OFF.

(b) Disconnect the steering angle sensor connector and VGRS ECU connector.

CHECK:

Check the continuity between each terminal SS1, SS2 and SS3 of the steering angle sensor connector and the VGRS ECU connector.

OK:

Continuity

CHECK:

Check the continuity between each terminal SS1, SS2 and SS3 of the VGRS ECU connector and body ground.

OK:

No continuity

NG → **Repair or replace harness and connector.**

OK

Replace VGRS ECU.

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DIAS6–01

DTC	C1515 / 15	VGRS Actuator Neutral Position Not Initialized

CIRCUIT DESCRIPTION

This code is set when the VGRS ECU or actuator has been replaced.

DTC No.	DTC Detecting Condition	Trouble Area
C1515/15	When the VGRS actuator angle adjustment has not been performed.	• VGRS actuator • VGRS ECU

INSPECTION PROCEDURE

1	**Are any other VGRS codes present?**

YES → **Repair circuit indicated by DTC output.**

NO

2	**Perform VGRS system calibration (See page DI–348).**

NEXT

3	**Is DTC C1516/16 output? (VGRS actuator angle adjustment did not complete normally)**

NO → **VGRS system calibration is completed.**

YES

(See page DI–381)

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DIAS7–01

DTC	C1516 / 16	VGRS Actuator Neutral Position Incomplete

CIRCUIT DESCRIPTION

This code is set when the VGRS system calibration procedure does not complete normally.

DTC No.	DTC Detecting Condition	Trouble Area
C1516/16	The VGRS actuator angle adjustment did not complete normally.	• VGRS actuator • VGRS ECU

INSPECTION PROCEDURE

1	Clear DTC (See page DI–348).

NEXT

2	Perform VGRS system calibration (See page DI–357).

NEXT

3	Is DTC C1516/16 output?

NO → VGRS system calibration is completed.

YES

4	Is DTC C1532/32 output?

YES → Replace VGRS ECU.

NO

Proceed to step 5.

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5	**Is DTC C1516/16 output after 3 or more attempts?**

YES → **Replace VGRS actuator.**

NO

Go to step 1

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DIAGS–01

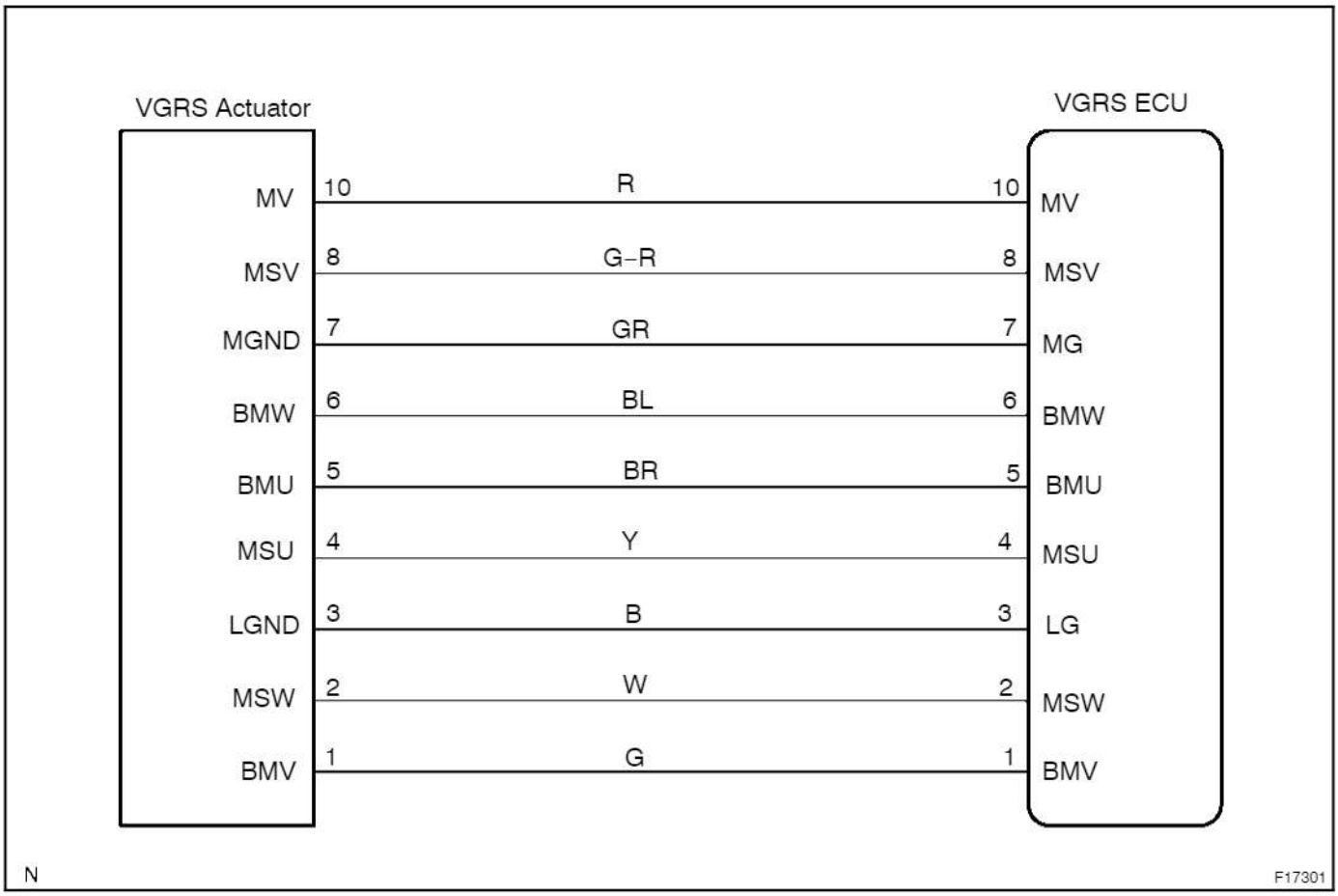
DTC	C1521 / 21	VGRS Actuator Malfunction

CIRCUIT DESCRIPTION

The VGRS ECU drives the actuator while turning the steering wheel to set the gear ratio.
It detects the current flowing into the actuator motor driving circuit. When the VGRS ECU detects excessive current, it records the DTC, turns on the VGRS warning light, and stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1521/21	More than 60 A of current flows in the motor power source circuit for 0.1 sec or more.	• VGRS actuator • VGRS ECU

WIRING DIAGRAM



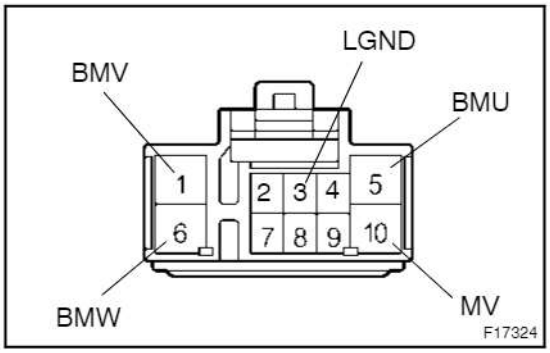
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INSPECTION PROCEDURE

HINT:

When DTC C1521/21 is output, a short circuit inside the actuator or inside the ECU is suspected.

1	**Inspect the VGRS actuator.**



PREPARATION:

(a) Turn the ignition switch OFF.

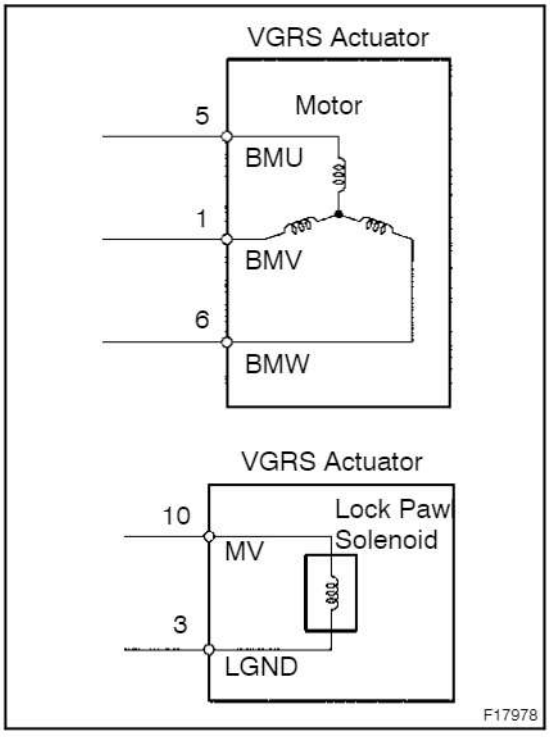
(b) Disconnect the actuator connector from the VGRS ECU.

CHECK:

(a) Measure resistance between terminals.

OK:

Symbols (Terminals)	Resistance
BMV (1) – BMU (5)	0.1 Ω to 1 Ω
BMV (1) – BMW (6)	
BMU (5) – BMW (6)	
MV (10) – LGND (3)	1 Ω to 100 Ω



(b) Check continuity between terminals of actuator connector and body ground.

OK:

Symbols (Terminals)	Specified condition
BMV (1) – Body ground	No Continuity
BMU (5) – Body ground	
BMW (6) – Body ground	
MV (10) – Body ground	
LGND (3) – Body ground	

NG → **Replace VGRS actuator.**

OK

Replace VGRS ECU.

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DIAS9-01

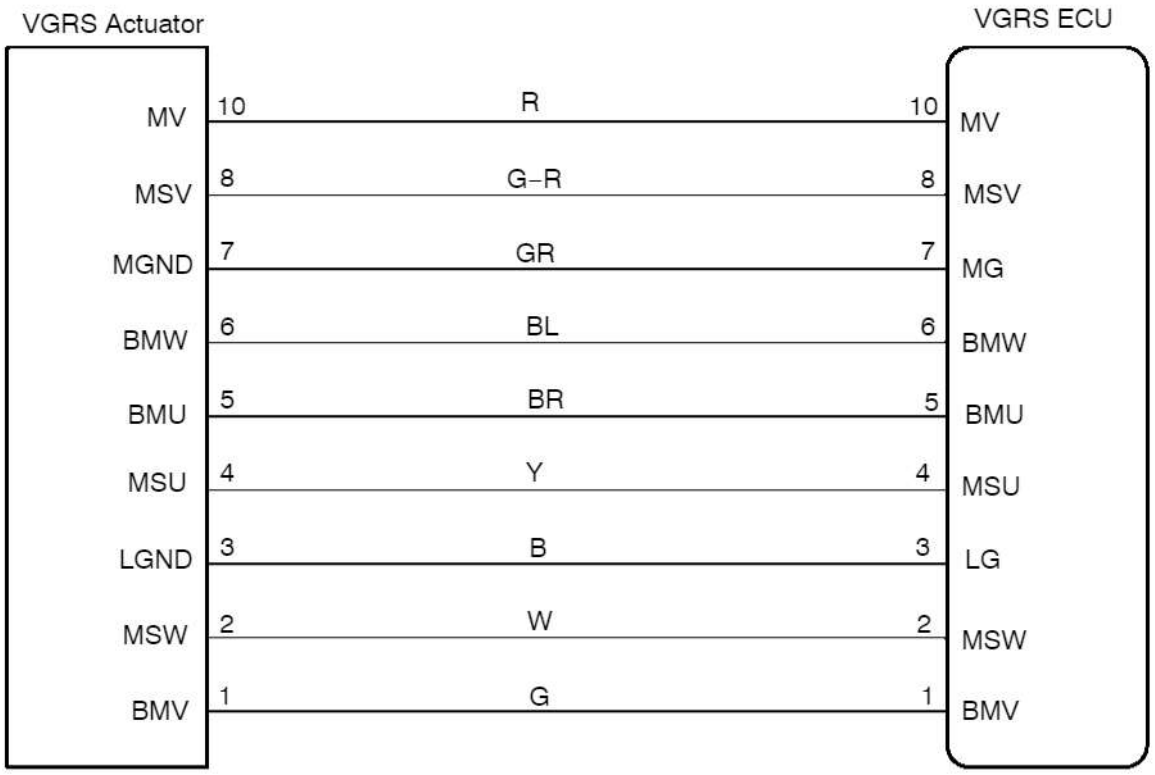
DTC	C1522 / 22	VGRS Actuator Malfunction

CIRCUIT DESCRIPTION

The VGRS ECU drives the actuator based on the steering angle sensor signal and the vehicle speed signal. If the VGRS ECU detects excessive current flowing into the actuator, or a malfunction inside the ECU, it turns on the warning light, records the DTC, and stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1522/22	The system detects a malfunction in the motor drive circuit.	• VGRS actuator • VGRS ECU

WIRING DIAGRAM



N

F17301

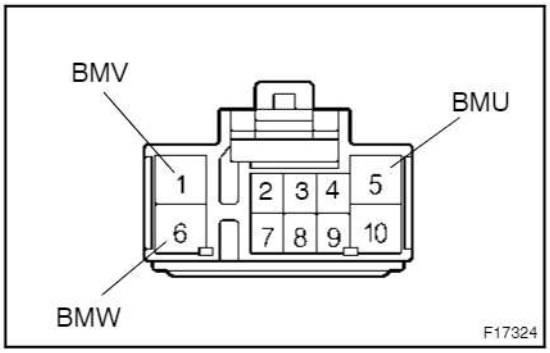
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INSPECTION PROCEDURE

HINT:

Since only the actuator can be checked in this procedure, if it is normal, the VGRS ECU is faulty.

1	**Inspect the VGRS actuator for an open circuit.**



PREPARATION:

(a) Turn the ignition switch OFF.

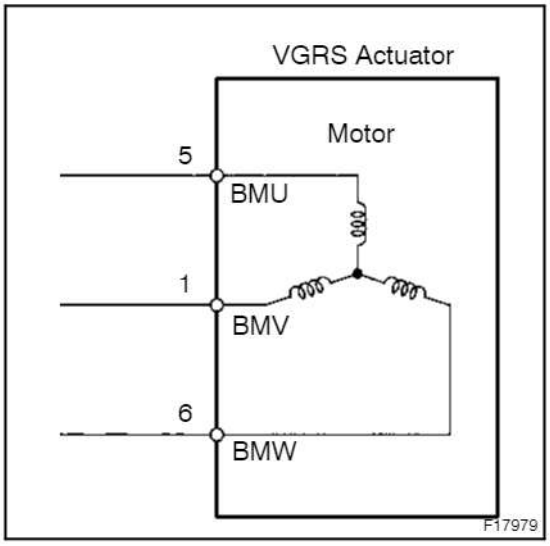
(b) Disconnect the actuator connector from the VGRS ECU.

CHECK:

(a) Check resistance between terminals of the actuator connector.

OK:

Symbols (Terminals)	Resistance
BMV (1) – BMU (5)	0.1 Ω to 1 Ω
BMU (5) – BMW (6)	



(b) Check continuity between terminals of the actuator connector and body ground.

OK:

Symbols (Terminals)	Specified condition
BMV (1) – Body ground	No Continuity
BMU (5) – Body ground	
BMW (6) – Body ground	

OK → **Replace VGRS ECU.**

NG

Replace VGRS actuator.

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DIASA-01

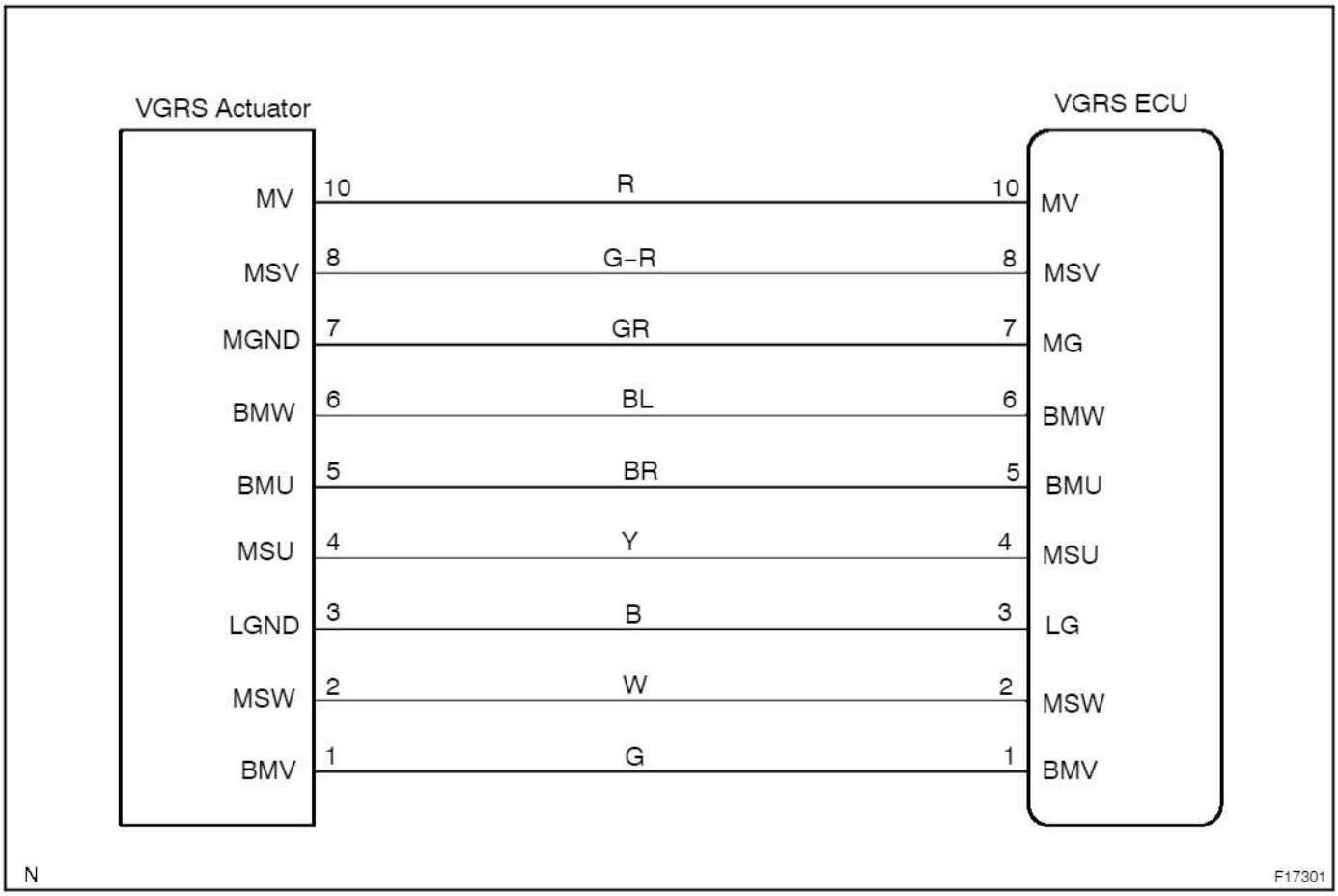
DTC	C1527 / 27, C1528 / 28	VGRS Actuator Malfunction

CIRCUIT DESCRIPTION

The VGRS ECU detects the actuator operation with the turning angle sensor. If a malfunction in the turning angle sensor is found, the VGRS ECU turns on the warning light and records the DTC.

DTC No.	DTC Detecting Condition	Trouble Area
C1527/27	The system detects that the difference between the actuator target angle and the actuator position is approx. 30° or more for 1 sec.	• VGRS actuator • VGRS ECU
C1528/28	The system detects a momentary interruption of the motor rotating angle sensor signal (MSU, MSV and MSW) 10 times or an open circuit for 0.12 sec. minimum.	

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check MV wire for open circuit.**

PREPARATION:
Turn the ignition switch ON.
CHECK:
Check DTC (See page DI–348).
OK:
DTC C1561/61 is output

OK → **Go to DTC C1561/61.**

NG

2	**Observe the data for MTR REV ANG U, V, W on the hand–held tester.**

HINT:
Determine the trouble area by checking the motor revolution angle sensor signal with hand–held tester. When not using hand–held tester, go to step 3.
PREPARATION:
(a) Connect the hand–held tester to DLC3.
(b) Start the engine.
(c) Using the hand–held tester, display the data list.
CHECK:
Check the motor revolution angle sensor signal when slowly turning the steering wheel referring to the data list.
OK:
MTR REV ANG U: High or Low
MTR REV ANG V: High or Low
MTR REV ANG W: High or Low

All OK	A
All NG	B
Others	C

A → **Replace VGRS ECU.**

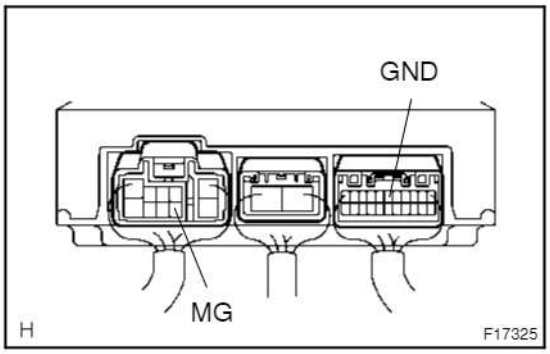
C → **Go to step 4.**

B

Proceed to step 3.

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3	Check GND circuit of motor revolution angle sensor.



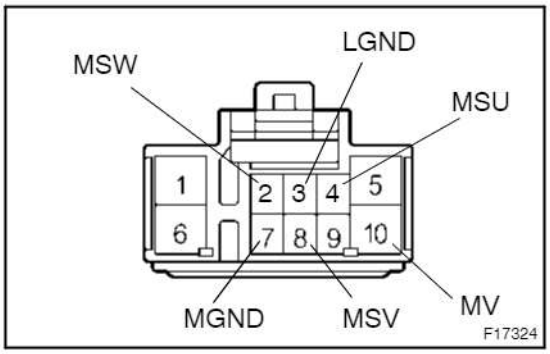
PREPARATION:
Turn the ignition switch OFF.
CHECK:
Check continuity between terminal MG and GND of the VGRS ECU.
OK:

Continuity

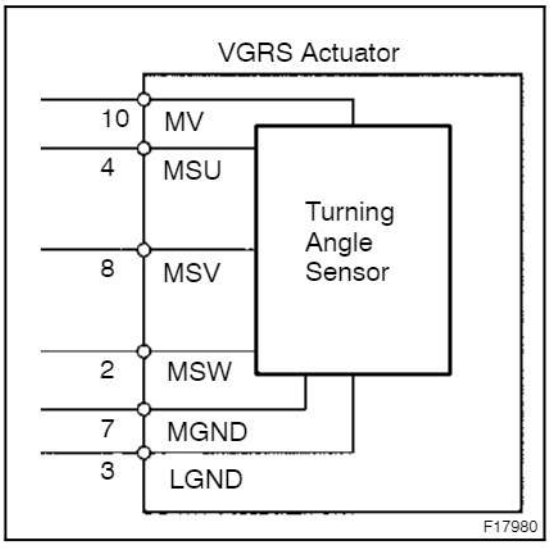
NG → **Replace VGRS ECU.**

OK

4	Check motor revolution angle sensor signal.



PREPARATION:
Disconnect the VGRS actuator connector.
NOTICE:
Do not apply 12 V to MV for more than 3 minutes.



CHECK:
(a) Connect a jumper wire from Batt (+) to MV, and another jumper wire from body ground to LGND.
(b) Measure the resistance between terminals while slowly turning the steering wheel. The steering wheel must be turned a maximum of ± 10° from center.
OK:

Symbols (Terminals)	Resistance
MSW (2) – MGND (7)	Below 1 kΩ to above 100 kΩ
MSU (4) – MGND (7)	
MSV (8) – MGND (7)	

NG → **Replace VGRS actuator.**

OK

Replace the VGRS ECU.
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DIAS8–01

DTC	C1531 / 31	VGRS ECU Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1531/31	The system detects a malfunction inside the ECU.	• VGRS ECU

INSPECTION PROCEDURE

1	Check vehicle conditions when the warning light comes on.

CHECK:

Just before the light comes on, was the engine stalled, or the battery dead or the terminal disconnected?

NO → **Replace VGRS ECU.**

YES

2	Record and clear the DTCs. Perform the steering angle sensor initialization.

Did the DTC C1531/31 reappear?

YES → **Replace VGRS ECU.**

NO

Condition corrected by the steering angle initialization.

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DIASC–01

DTC	C1532 / 32	VGRS ECU Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1532/32	The system detects a malfunction inside the ECU.	• VGRS ECU

INSPECTION PROCEDURE

1	Check for other VGRS DTCs.

CHECK:
Are there any other VGRS DTCs?

NO → **Replace VGRS ECU.**

YES

2	Perform troubleshooting for remaining DTCs.

NEXT

After repairing other DTCs, if C1532/32 still exists, replace VGRS ECU.

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DIASD–01

DTC	C1533 / 33	VGRS ECU Malfunction

CIRCUIT DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
C1533/33	The system detects a temperature malfunction inside of the ECU.	• VGRS ECU

INSPECTION PROCEDURE

HINT:

- Check the VGRS thermistor temperature using hand–held tester.
- When not using hand–held tester, go to step 3.

1	**Read value of the hand–held tester.**

PREPARATION:

(a) Connect the hand–held tester to DLC3.
(b) Start the engine.
(c) Display the VGRS data list.

CHECK:

Is the thermistor temperature below –40°C or above 130°C.

YES → **Replace VGRS ECU.**

NO

2	**With the vehicle stopped, perform the steering operation of lock to lock 10 times.**

Did the thermistor temperature change by less than 3°C?

NO → **Replace VGRS ECU.**

YES

This is not a malfunction, because C1533/33 may be set by the sudden change in the thermistor temperature due to extreme VGRS operation.

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3	**Thermistor temperature sensor check.**

PREPARATION:

(a) Record and clear the VGRS DTCs.
(b) Start the engine.
(c) With the vehicle stopped, perform steering operation of lock to lock about 15 times.
(d) After steering operation, leave the vehicle for about 10 minutes with the engine ON.
(e) After leaving the vehicle for 10 minutes, perform steering operation 10 times again.
(f) Leave the vehicle for 1 minute with the engine ON.

CHECK:

Check that DTC C1533/33 reappears.

YES → **Replace VGRS ECU.**

NO

This is not a malfunction, because C1533/33 may be set by the sudden change in the thermistor temperature due to extreme VGRS operation.

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DIASE–01

DTC	C1541 / 41	Vehicle Skid Control System Malfunction

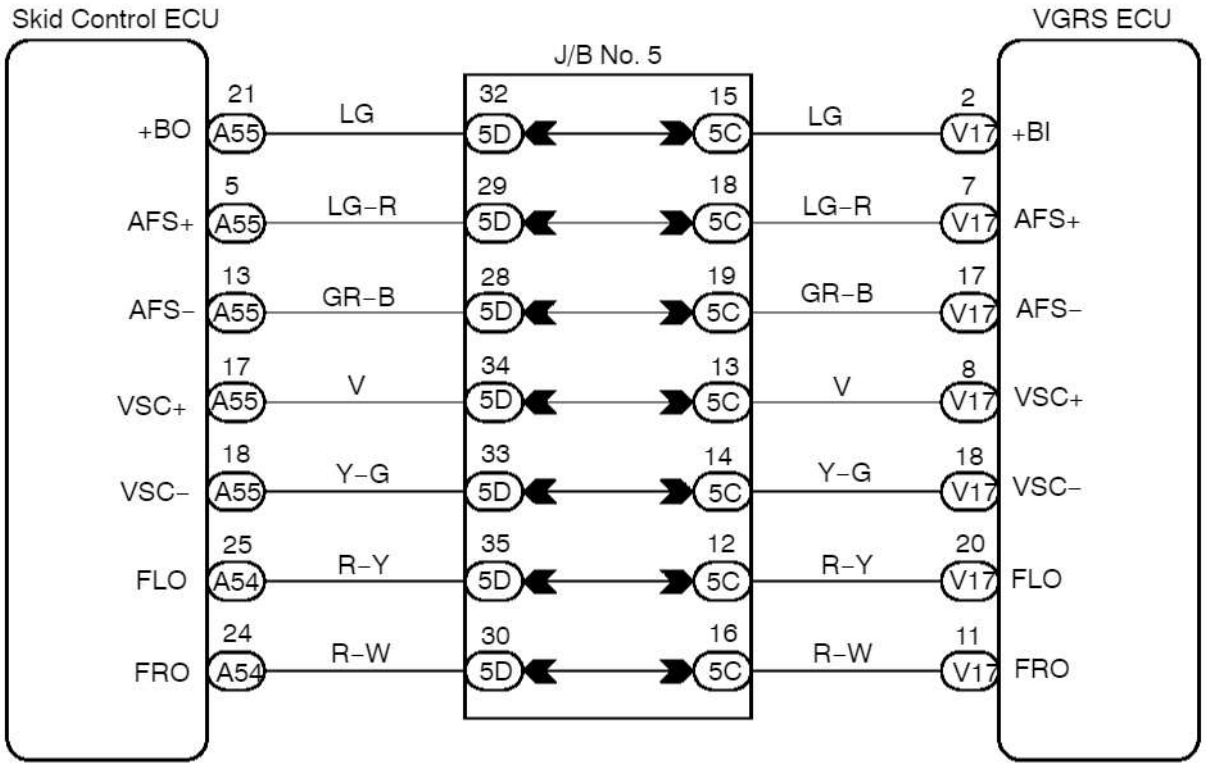
CIRCUIT DESCRIPTION

The VGRS system will illuminate the warning light and this DTC will be recorded when some ABS/VSC system DTCs are set.

DTC No.	DTC Detecting Condition	Trouble Area
C1541/41	The system receives the information about a malfunction in the steering sensor signal or in the vehicle speed signal from ABS/VSC.	• VSC system • VGRS ECU • Skid control ECU

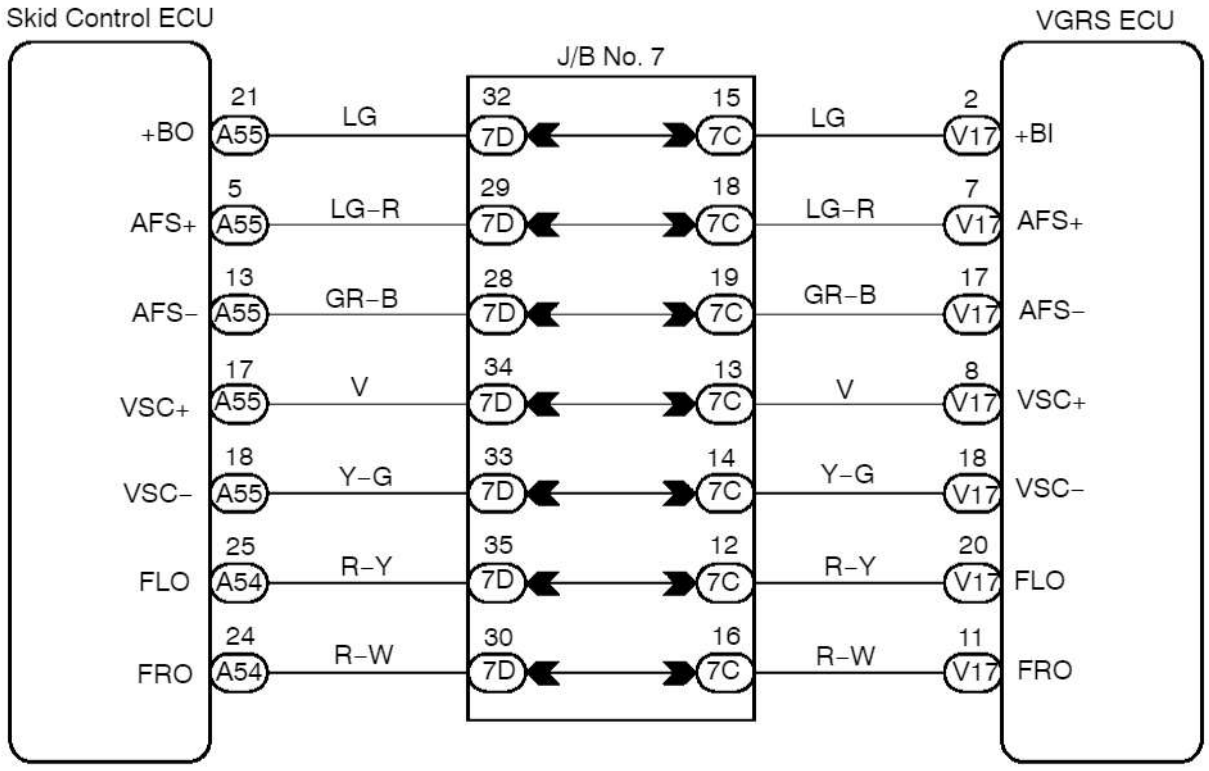
WIRING DIAGRAM

LHD:



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RHD:



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INSPECTION PROCEDURE

1	**Check the ABS/VSC for DTCs (See page DI–185).**

Are any ABS/VSC DTCs present?

YES → **Repair the ABS/VSC system according to the DTC output.**

NO

Replace VGRS ECU.

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DIASF–01

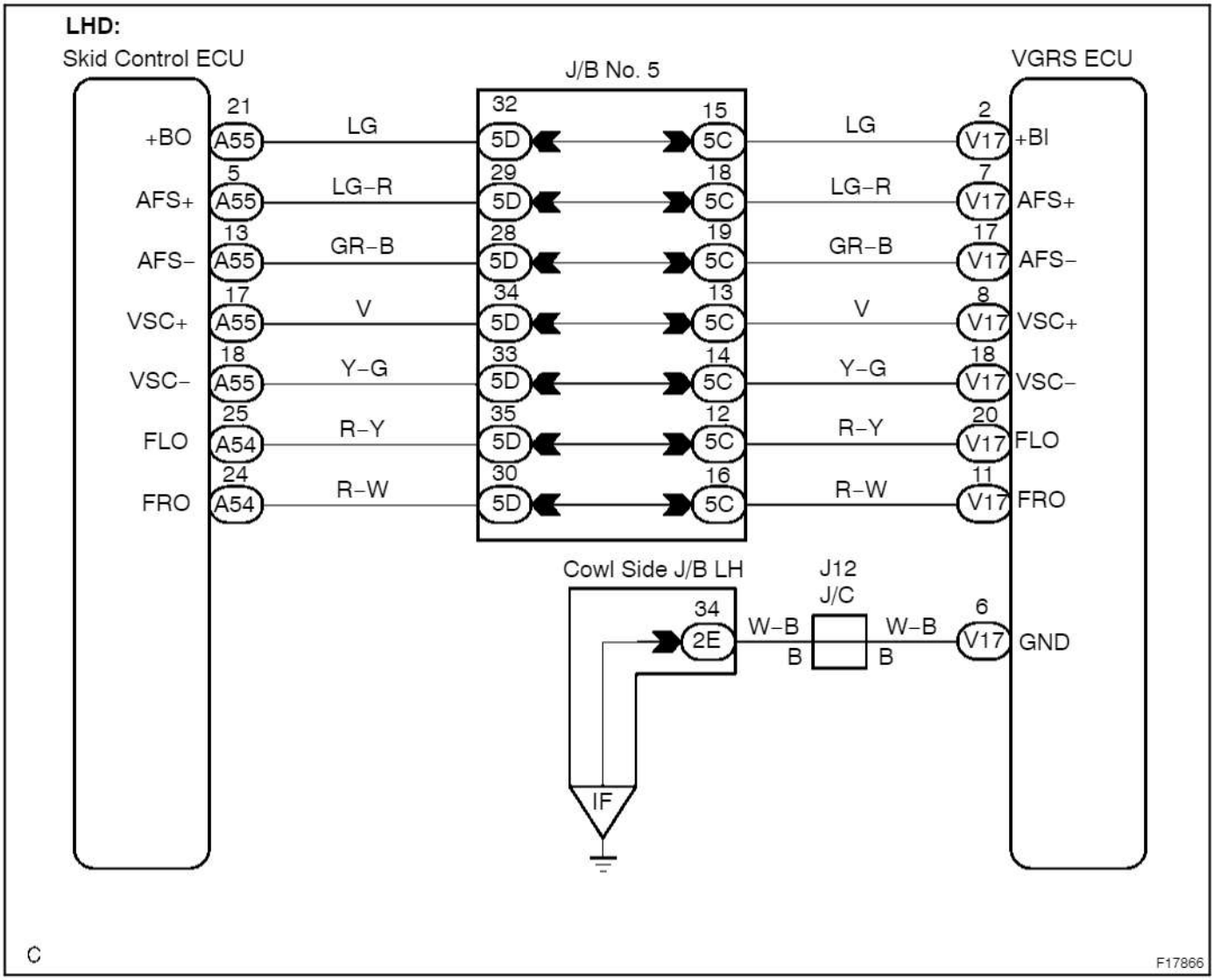
DTC	C1549 / 49	Vehicle Skid Control System Communication Malfunction

CIRCUIT DESCRIPTION

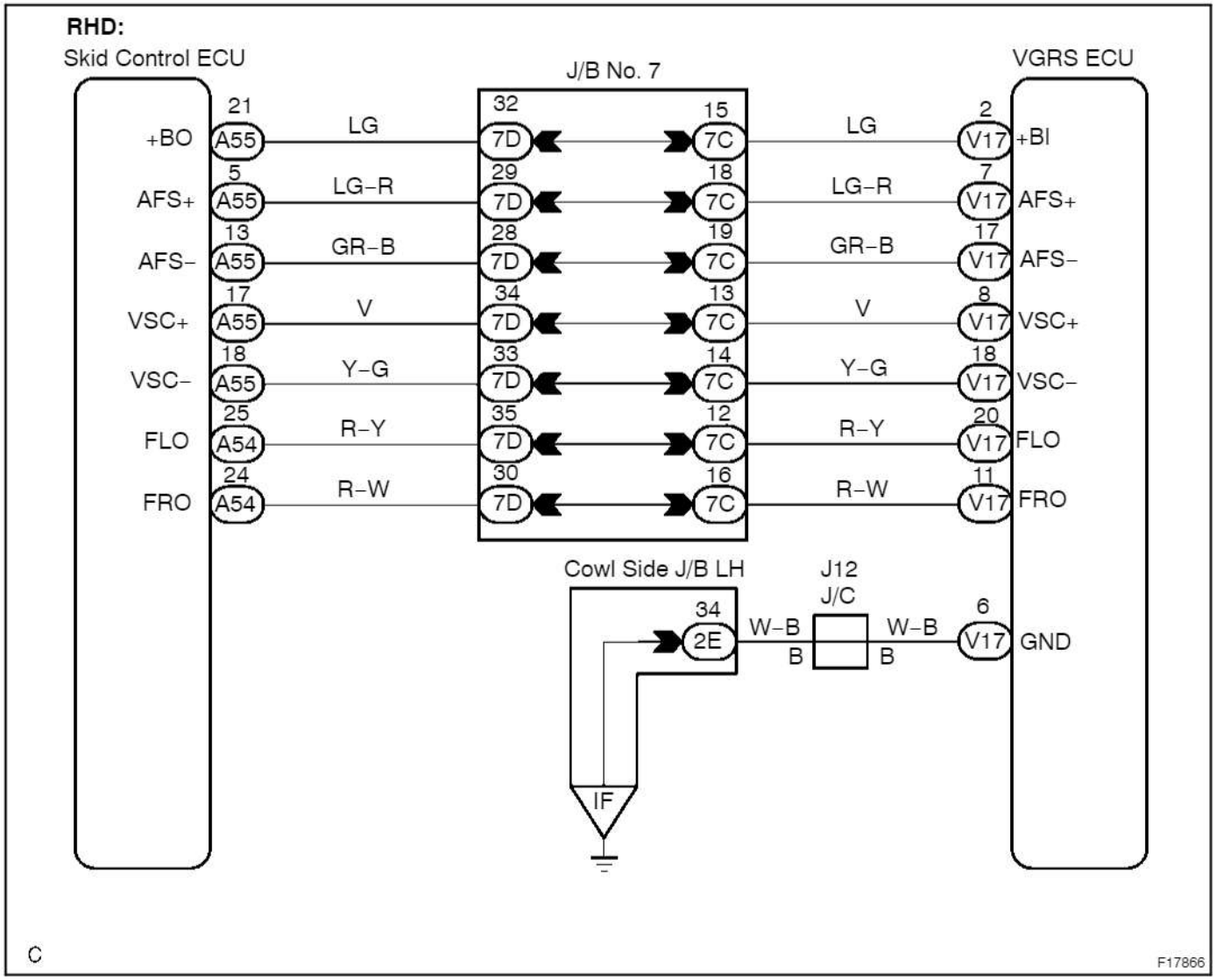
The VGRS ECU communicates with the skid control ECU. However, if any problems in this communication occur, the VGRS ECU turns on the warning light, records the DTC and stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1549/49	The system detects a communication malfunction from the skid control ECU for 3 seconds.	• Wire harness and connector • VGRS ECU • Skid control ECU

WIRING DIAGRAM



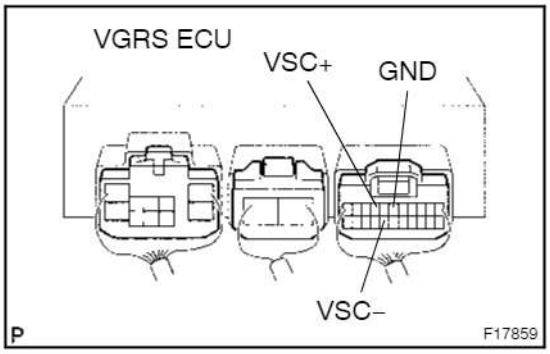
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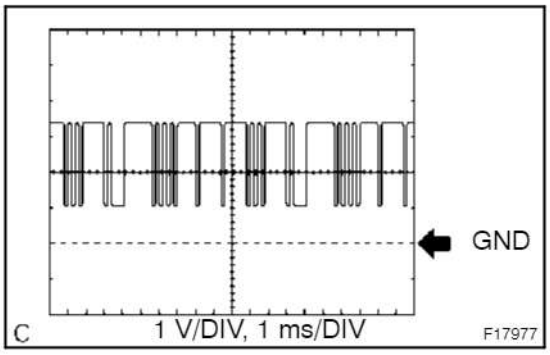


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INSPECTION PROCEDURE

1	**Check the signal waveform.**





PREPARATION:

Start the engine.

CHECK:

(a) Using an oscilloscope, check the waveform between VSC+ and GND of the VGRS ECU.

OK:

High and Low

(b) Using an oscilloscope, check the waveform between VSC– and GND of the VGRS ECU.

OK:

High and Low

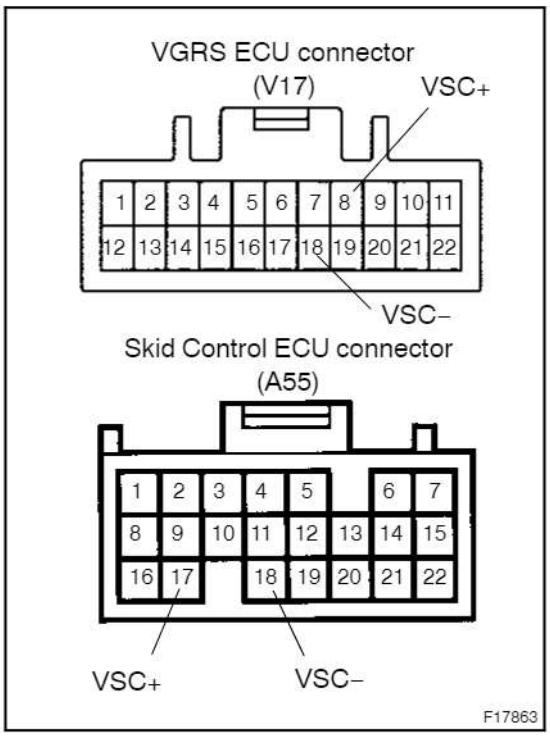
OK	**Replace VGRS ECU.**

NG

Proceed to step 2

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2	**Check for an open or short circuit in the harness and connector between terminals VSC+ and VSC– of the VGRS ECU, and between terminals VSC+ and VSC– of the skid control ECU (See page IN–38).**



PREPARATION:

(a) Turn the ignition switch OFF.

(b) Disconnect the VGRS ECU connector (V17) and the skid control ECU connector (A55).

CHECK:

Check continuity between terminal VSC+ and VSC– of the VGRS ECU and skid control ECU.

OK:

Continuity

NG → **Repair or replace harness and connector.**

OK

3	**Check for a short to ground in the VSC+ and VSC– circuit.**

OK:

No short to ground.

NG → **Repair or replace harness and connector.**

OK

Replace skid control ECU.

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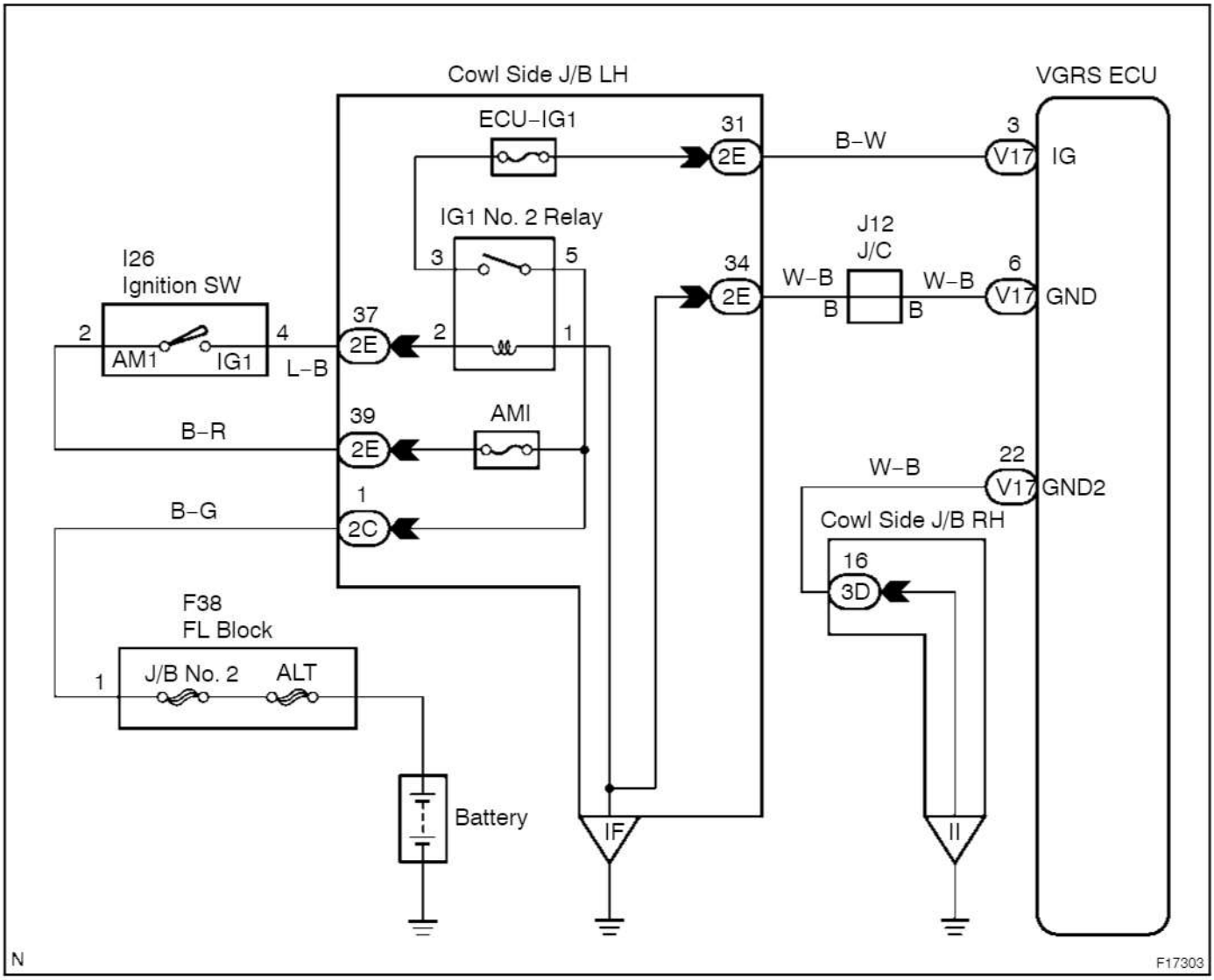
DTC	C1551 / 51	IG Power Source Voltage Malfunction

CIRCUIT DESCRIPTION

The VGRS ECU monitors IG power supply voltage. If the ECU detects a malfunction, it turns on the warning light, records the DTC, and stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1551/51	The system checks that the battery voltage is normal and the IG terminal voltage is less than 9 V for 6 sec.	• ECU–IG1 fuse • IG circuit • Charging system • VGRS ECU

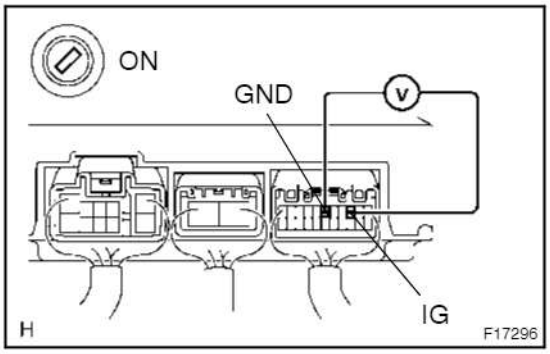
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check voltage between terminals IG and GND of the VGRS ECU connector.



PREPARATION:
Record and clear VGRS DTCs.
CHECK:
Start the engine and measure the voltage between terminals IG and GND of the VGRS ECU.

A	9 to 16 V
B	Below 9 V
C	Above 16 V

B	**Check or repair harness and ECU–IG1 fuse.**
C	**Check and repair charging system.**

A

2	Check VGRS for DTC C1551/51.

Is DTC C1551/51 present?

YES	**Replace VGRS ECU.**

NG

No fault detected.

NOTICE:
Fault may be intermittent. Check harness and connectors carefully and retest.

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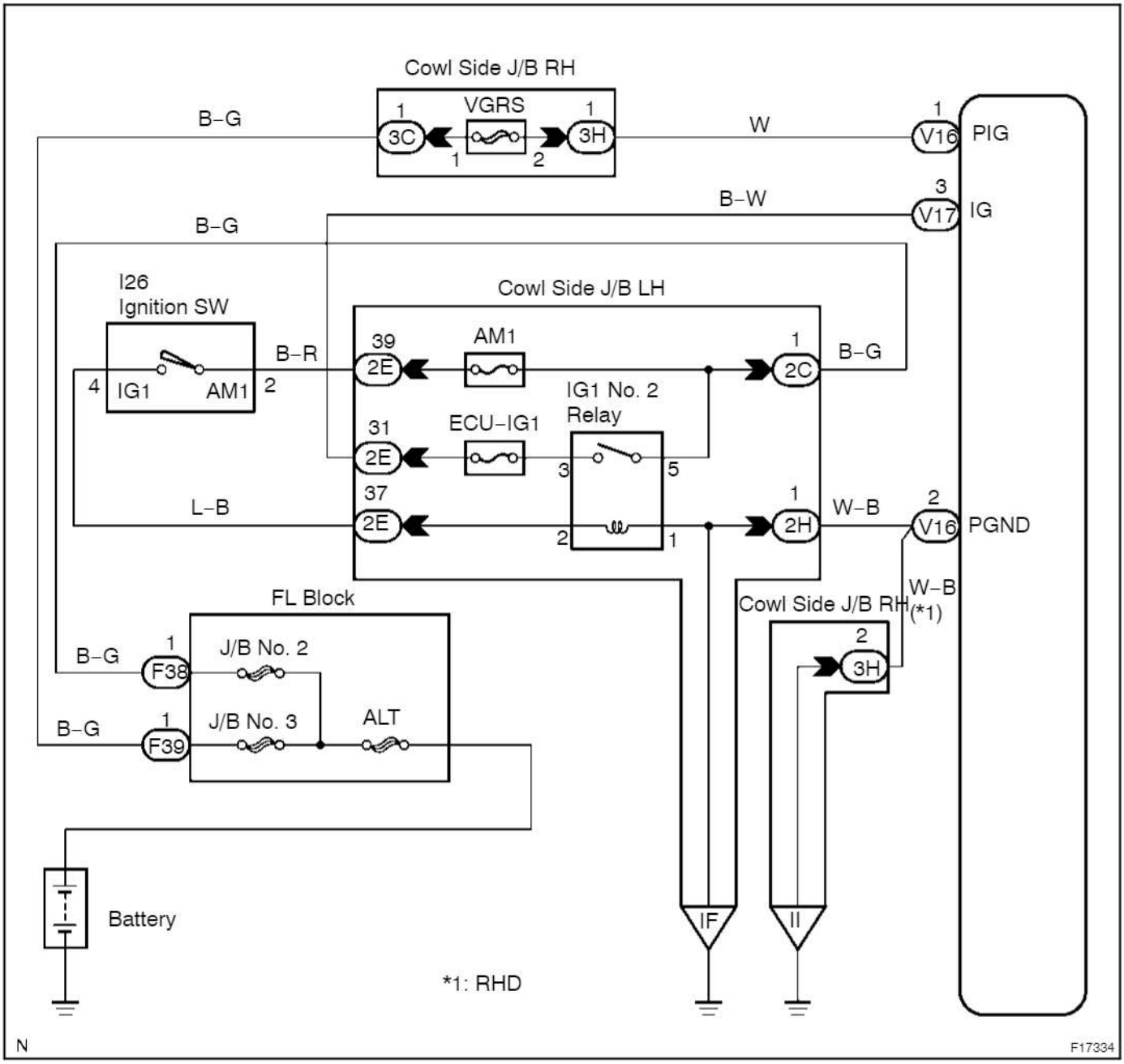
DTC	C1552 / 52	DC Motor Power Source Voltage Malfunction

CIRCUIT DESCRIPTION

The VGRS ECU monitors PIG (motor power source voltage). If the ECU detects a malfunction, it turns on the warning light, records the DTC and stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1552/52	The system checks that the IG voltage is 9 to 16 V, and the PIG terminal voltage is less than 6 V for 2.4 sec.	• VGRS Fuse • Power source circuit • VGRS ECU

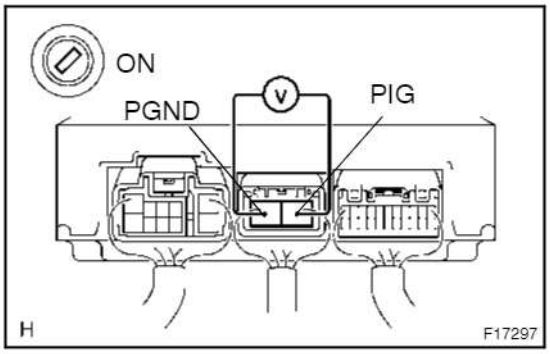
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check motor power source voltage (PIG).



PREPARATION:
Record and clear VGRS DTCs.
CHECK:
Start the engine and measure the voltage between terminals PIG and PGND of the VGRS ECU.

A	9 to 16 V
B	Below 9 V
C	Above 16 V

B → **Check or repair harness and VGRS fuse.**

C → **Check and repair charging system.**

A

2	Check VGRS for DTC C1552/52.

Is DTC C1552/52 present?

YES → **Replace VGRS ECU.**

NO

No fault detected.

NOTICE:
Fault may be intermittent. Check harness and connectors carefully and retest.

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DIAGI-01

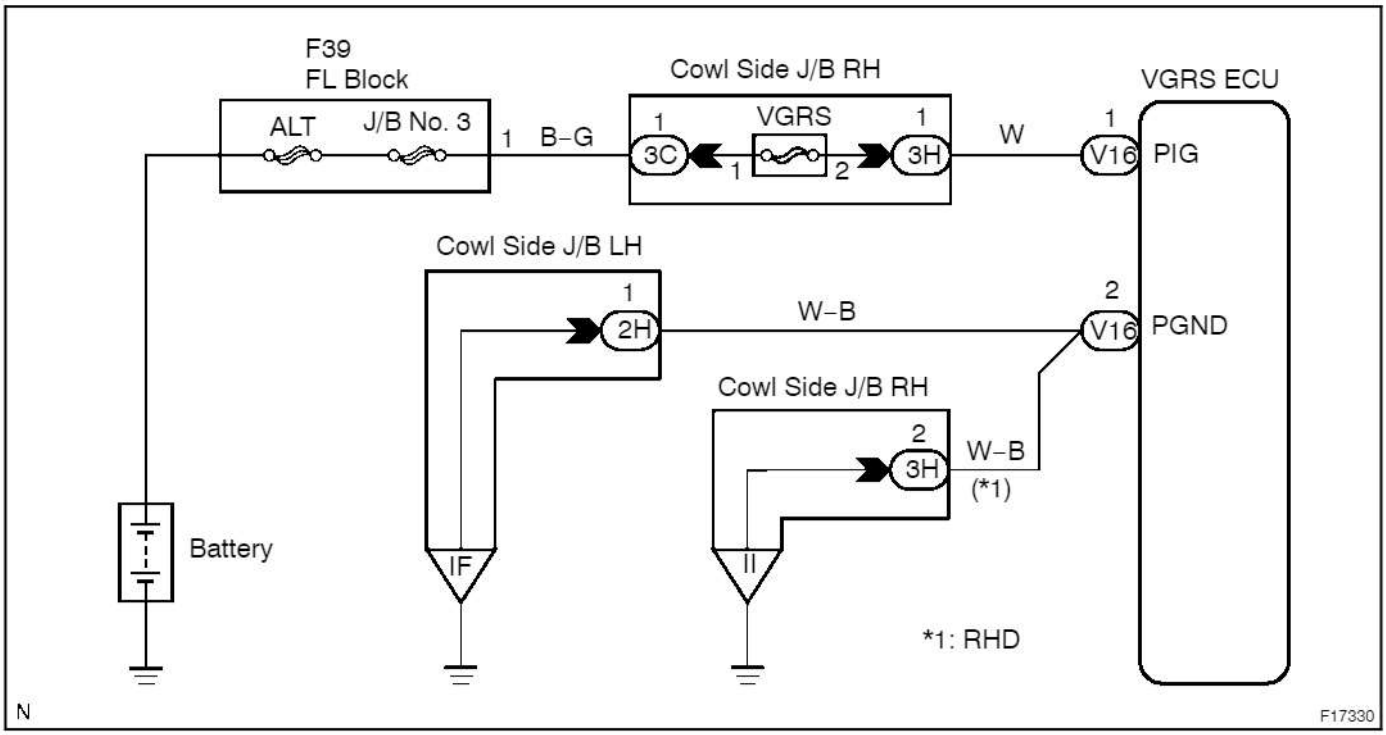
DTC	C1554 / 54	Power Source Relay Failure

CIRCUIT DESCRIPTION

When the VGRS ECU detects a malfunction in the power supply relay (located inside the VGRS ECU), the ECU turns on the warning light, records the DTC, and stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1554/54	The system detects a malfunction of the power source relay or an open circuit.	• VGRS Fuse • VGRS ECU

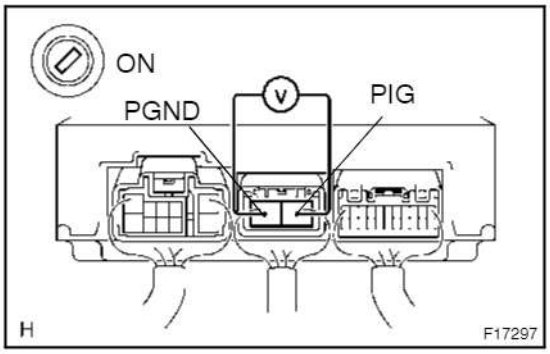
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check the voltage between terminals PIG and PGND of the VGRS ECU connector.**



PREPARATION:
Record and clear VGRS DTCs.
CHECK:
Start the engine and measure the voltage between terminals PIG and PGND of VGRS ECU.

A	9 to 16 V
B	Below 9 V
C	Above 16 V

B → **Check and repair harness and VGRS fuse.**

C → **Check and repair charging system.**

A

2	**Check VGRS for DTC C1554/54.**

Is DTC C1551/54 present?

YES → **Replace VGRS ECU.**

NG

No fault detected.

NOTICE:
Fault may be intermittent. Check harness and connectors carefully and retest.

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DIASJ–01

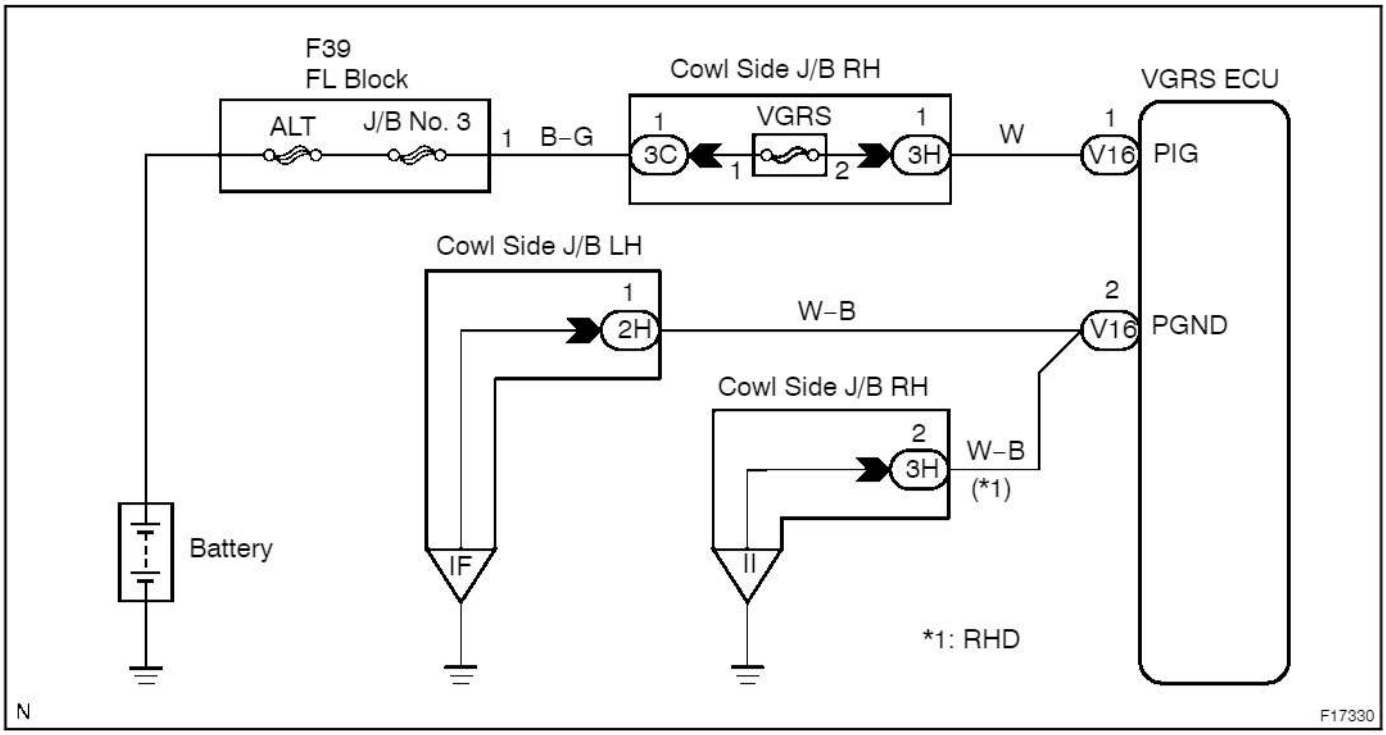
DTC	C1555 / 55	Predriver Malfuncion

CIRCUIT DESCRIPTION

When the VGRS ECU detects a malfunction in the predriver, it turns the warning light on and records the DTC at the same time, and then stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1555/55	Even when the estimated value of the motor power source current is at least 10 A, the system detects that the actual motor power source current is less than 3 A for 0.1 sec.	• Power source circuit • VGRS ECU

WIRING DIAGRAM

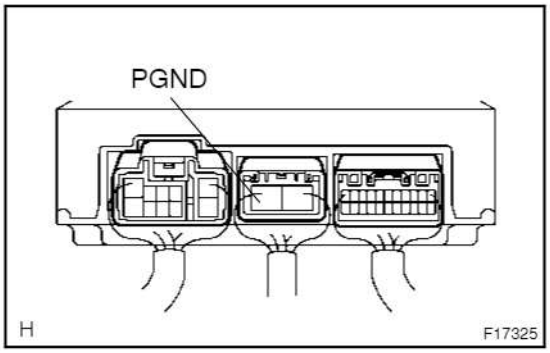


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INSPECTION PROCEDURE

HINT:
After the procedure, perform the counter clearance (See page DI–363).

1	**Check for an open or short circuit in the harness and connector between terminal PGND of VGRS ECU and body ground.**



PREPARATION:
Turn the ignition switch OFF.
CHECK:
Check continuity between terminal PGND of VGRS ECU and body ground.
OK:
Less than 1 Ω

NG → **Repair or replace harness and connector.**

OK

2	**Check output of DTC C1522/22.**

CHECK:
Turn the ignition switch ON and check the DTC (See page DI–348).
OK:
DTC C1522/22 is present

OK → **Flow of DTC C1522/22.**

NG

Replace VGRS ECU.

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DIASK-01

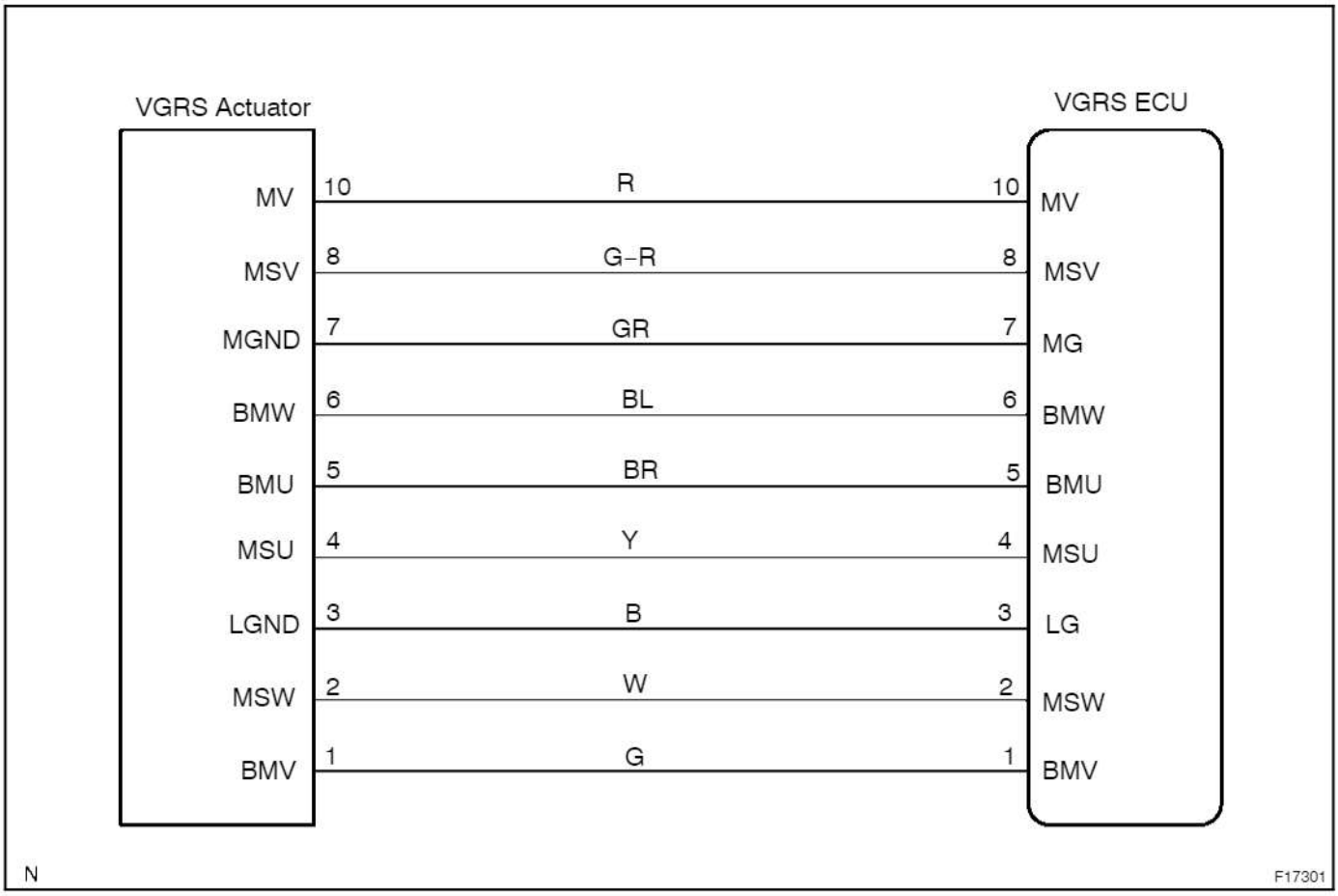
DTC	C1561 / 61	Lock Mechanism Malfunction

CIRCUIT DESCRIPTION

When the VGRS ECU detects a malfunction in the lock mechanism, it turns the warning light on, records the DTC, and stops VGRS operation.

DTC No.	DTC Detecting Condition	Trouble Area
C1561/61	The system detects that the LG terminal voltage is equal to battery voltage x 0.4 ± 3 V, or that the LG terminal voltage is outside the range of battery voltage x 0.6 ± 3 V for 1.2 sec.	• VGRS actuator • VGRS ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

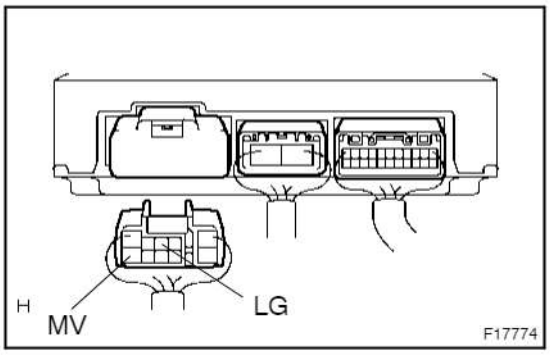
1	**Check the position of the VGRS ECU connectors.**

CHECK:
Check that VGRS ECU connectors are properly connected to the ECU.
OK:
Connection is good.

NG → **DTC C1561/61 is detected because the connector is disconnected or is likely to be disconnected. Connect the connector correctly.**

OK

2	**Check for an open or short circuit in the harness and connector (See page IN–38).**



PREPARATION:
(a) Turn the ignition switch OFF.
(b) Disconnect the VGRS ECU connector.
CHECK:
Measure resistance between terminals MV and LG of the VGRS ECU connector.
OK:
1 to 100 Ω
CHECK:
Check continuity between terminals MV and LG of the VGRS ECU and body ground.
OK:
No continuity

NG → **Replace VGRS actuator.**

OK

Replace VGRS ECU.

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DIASL-01

DTC	C1567 / 67	Lock Mechanism Insertion Malfunction

CIRCUIT DESCRIPTION

The VGRS actuator contains a lock mechanism that mechanically locks the DC motor so the motor will not rotate if a failure occurs or when the engine is not running. The VGRS ECU supplies current to the lock solenoid to release the lock lever for VGRS operation.
When the VGRS ECU detects a malfunction in the lock mechanism, it turns the warning light on and records the DTC.

DTC No.	DTC Detecting Condition	Trouble Area
C1567 / 67	The system detects a malfunction in the actuator system.	• VGRS actuator • VGRS ECU

INSPECTION PROCEDURE

When DTC C1567/67 is output, the VGRS is faulty. Replace the VGRS actuator.

1	**Record and clear VGRS DTCs.**

NEXT

2	**Observe VGRS warning light.**

PREPARATION:

(a) Turn the ignition switch OFF.
(b) Start the engine.

CHECK:

Is the VGRS warning light ON?

NO → **No fault detected.**

YES

Proceed to step 3.

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3	**Check VGRS for DTC C1567/67.**

CHECK:

Is VGRS DTC C1567/67 present?

NO → **Check other recorded DTCs.**

YES

Replace VGRS actuator.

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DIASM–01

DTC	C1568 / 68	Lock Holder Deviation Detection

CIRCUIT DESCRIPTION

The VGRS actuator contains a lock mechanism that mechanically locks the DC motor so the motor will not rotate if a failure occurs or when the engine is not running. The VGRS ECU supplies current to the lock solenoid to release the lock lever for VGRS operation.
When the VGRS ECU detects a malfunction in the lock holder, it turns the warning light on and records the DTC.

DTC No.	DTC Detecting Condition	Trouble Area
C1568/68	The system detects a malfunction in the actuator lock system.	• VGRS actuator

INSPECTION PROCEDURE

HINT:
Determine the trouble area by checking the motor revolution angle sensor signal with hand–held tester.
When not using hand–held tester, go to step 2.

1	**Observe the data for MTR REV ANG U, V, W on the hand–held tester.**

PREPARATION:

(a) Connect the hand–held tester to DLC3.
(b) Turn the ignition switch ON. (Engine stop)
(c) Turn the steering wheel to the right and left.
(d) Using the hand–held tester, display the data list.

CHECK:

Check the motor revolution angle sensor signal when slowly turning the steering wheel referring to the data list.

OK:

A, B or C as shown below

	A		B		C	
	turn to left	turn to right	turn to left	turn to right	turn to left	turn to right
MTR REV ANG U	High	High	High	High	High	High
MTR REV ANG V	Low	Low	Low	Low	High	Low
MTR REV ANG W	Low	Low	Low	High	Low	Low

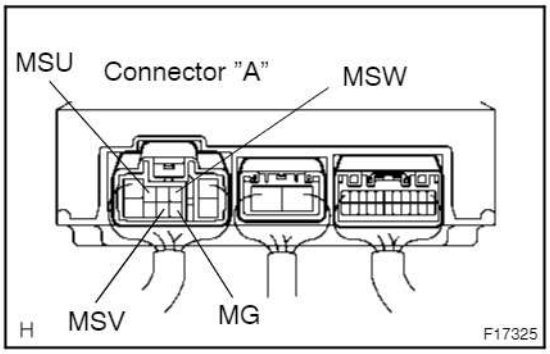
NG → **Replace VGRS actuator.**

OK →

Perform VGRS system calibration (See page DI–357).

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2	Check the voltage motor revolution angle sensor signal.



PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure the voltage between terminals in the VGRS ECU while slowly turning the steering wheel.

OK:

A, B or C as shown below

	A		B		C	
	turn to left	turn to right	turn to left	turn to right	turn to left	turn to right
MSU (A4) – MG (A7)	Above 3.5 V	Above 3.5 V	Above 3.5 V	Above 3.5 V	Above 3.5 V	Above 3.5 V
MSV (A8) – MG (A7)	Below 1 V	Below 1 V	Below 1 V	Below 1 V	Above 3.5 V	Below 1 V
MSW (A2) – MG (A7)	Below 1 V	Below 1 V	Below 1 V	Above 3.5 V	Below 1 V	Below 1 V

NG → **Replace VGRS actuator.**

OK →

PerformVGRS system calibration (See page DI–357).

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DIASN–01

DTC	C1569 / 69	Lock Mechanism Release Incomplete

CIRCUIT DESCRIPTION

The VGRS actuator contains a lock mechanism that mechanically locks the DC motor so the motor will not rotate if a failure occurs or when the engine is not running. The VGRS ECU supplies current to the lock solenoid to release the lock lever for VGRS operation.
When the VGRS ECU detects a malfunction in the lock mechanism, it turns the warning light on and records the DTC.

DTC No.	DTC Detecting Condition	Trouble Area
C1569/69	The system cannot start controlling because the actuator lock is not released.	• VGRS actuator

INSPECTION PROCEDURE

1	**Is the power steering operating normally? (The steering effort is not heavy.)**

NO → **Perform power steering check, because DTC may have occured due to a faulty power steering system (See page SR–5).**

YES

2	**Check VGRS operation.**

PREPARATION:
Start the engine.
CHECK:
Check the number of turns of the steering wheel from lock to lock.

A: Approx. 2.4 turns
B: More than 2.4 turns

B → **Replace the VGRS actuator.**

A

Proceed to step 3.

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3	**Check VGRS for DTC C1569/69.**

PREPARATION:

(a) Record and clear DTCs.
(b) Turn the ignition switch OFF.
(c) Start the engine.

CHECK:

Is DTC C1569/69 present?

YES → **Replace the VGRS actuator.**

NO

No problem.
(Power steering may have caused the fault.)

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VGRS stops and does not operate. (It does not operate even when turning the ignition switch ON again)

INSPECTION PROCEDURE

After checking that the DTC of VGRS is normal, preform the following procedure.

1	**Check MTR overheat on the VGRS Data List.**

A: Rec (Record motor overheating)
B: Unrec (No record of motor overheating)

B	**Go to step 3.**

HINT:
Clear MTR overheat. Refer to Data List (See page DI–348).

A

2	**Check heat protection of actuator.**

PREPARATION:
(a) Turn the ignition switch ON for 15 min.
(b) After 15 min., start the engine and perform lock to lock steering slowly (Approx. 90°/sec.) 3 times.

CHECK:
Check number of turns from lock to lock.

A: 2.4 turns
B: 3.3 turns

A	**VGRS is normal.**

B

Proceed to step 3.

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3	**Check the steering effort.**

PREPARATION:

(a) Turn the ignition switch ON and start the engine.

(b) Perform the steering.

CHECK:

Check the steering effort.

OK:

Below 4.9 N·m (50 kgf·cm, 43 ft·lbf)

NG → **Check and repair power steering system.**

OK

4	**Check for any abnormal noise and vibration in VGRS actuator.**

NG → **Replace VGRS actuator.**

OK

5	**Check power and ground circuits to VGRS ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Replace VGRS ECU.

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DIASP–01

Steering wheel off–center

INSPECTION PROCEDURE

1	Check that there are no DTCs in VGRS, VSC and ABS.

A: No code is present
B: Code is present

B → Repair DTCs.

A

2	Perform the steering angle sensor initialization (See page DI–356).

Is the steering wheel centered?

YES → END

NO

3	Check the vehicle pull.

YES → Vehicle pulling diagnosis.

NO

4	Are the tires all the specified size?

NO → Install specified size tires.

YES

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5	**Check the air pressure of the tires.**

NG → **Adjust air pressure of the tires to the specified pressure.**

OK

6	**Check the wheel alignment.**

Is the wheel alignment correct?

NO → **Perform wheel alignment adjustment.**

YES

7	**Perform the VGRS system calibration (See page DI–357).**

(a) Is the steering off center?

NO → **END**

YES

8	**Perform the actuator angle initialization (See page DI–357).**

(a) Is the steering off center?

NO → **END**

YES

9	**Adjust the tie rod–end.**

NEXT

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10	**Perform the actuator angle adjustment (See page DI–357).**

NEXT

END

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DIAGQ–01

Steering angle is different from right to left

INSPECTION PROCEDURE

After checking that the DTC of VGRS is normal, perform the following procedure.

1	**Check the steering wheel is in the center position.**

NG → **Go to other troubleshooting "Steering wheel off–center" (See page DI–419)**

OK

2	**Check the steering angle.**

PREPARATION:

(a) Place the steering wheel straight ahead.
(b) Turn the ignition switch OFF.
(c) Disconnect the VGRS actuator connector from the VGRS ECU.
(d) Start the engine.

CHECK:

Check the rotating angle in the right and left direction when turning the steering wheel from lock to lock.

OK:

No difference

NOTICE:

When the ignition switch is ON with the steering actuator connector disconnected, DTC C1561/61 is stored. Clear this code after this check.

NG → **Repair or replace power steering system (See page SR–5 and SR–51).**

NOTICE:

After repairing or replacing the power steering system, perform VGRS system calibration.

OK

Go to other troubleshooting (See page DI–419 and DI–423).

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DIASR-01

Abnormal noise and vibration in the steering wheel

INSPECTION PROCEDURE

Check that the DTCs of VGRS, VSC and ABS are normal.

1	**Check for abnormal noise and vibration when turning the steering wheel.**

PREPARATION:

(a) Turn the ignition switch OFF.

(b) Disconnect the VGRS actuator connector from VGRS ECU.

CHECK:

Check for abnormal noise and vibration, after starting the engine and turning the steering wheel.

OK:

No abnormal noise and vibration

NOTICE:

When the ignition switch is ON with the steering actuator connector disconnected, DTC C1561/61 is stored. Clear this code after this check.

NG → **Check and repair power steering system.**

OK

Replace VGRS actuator.

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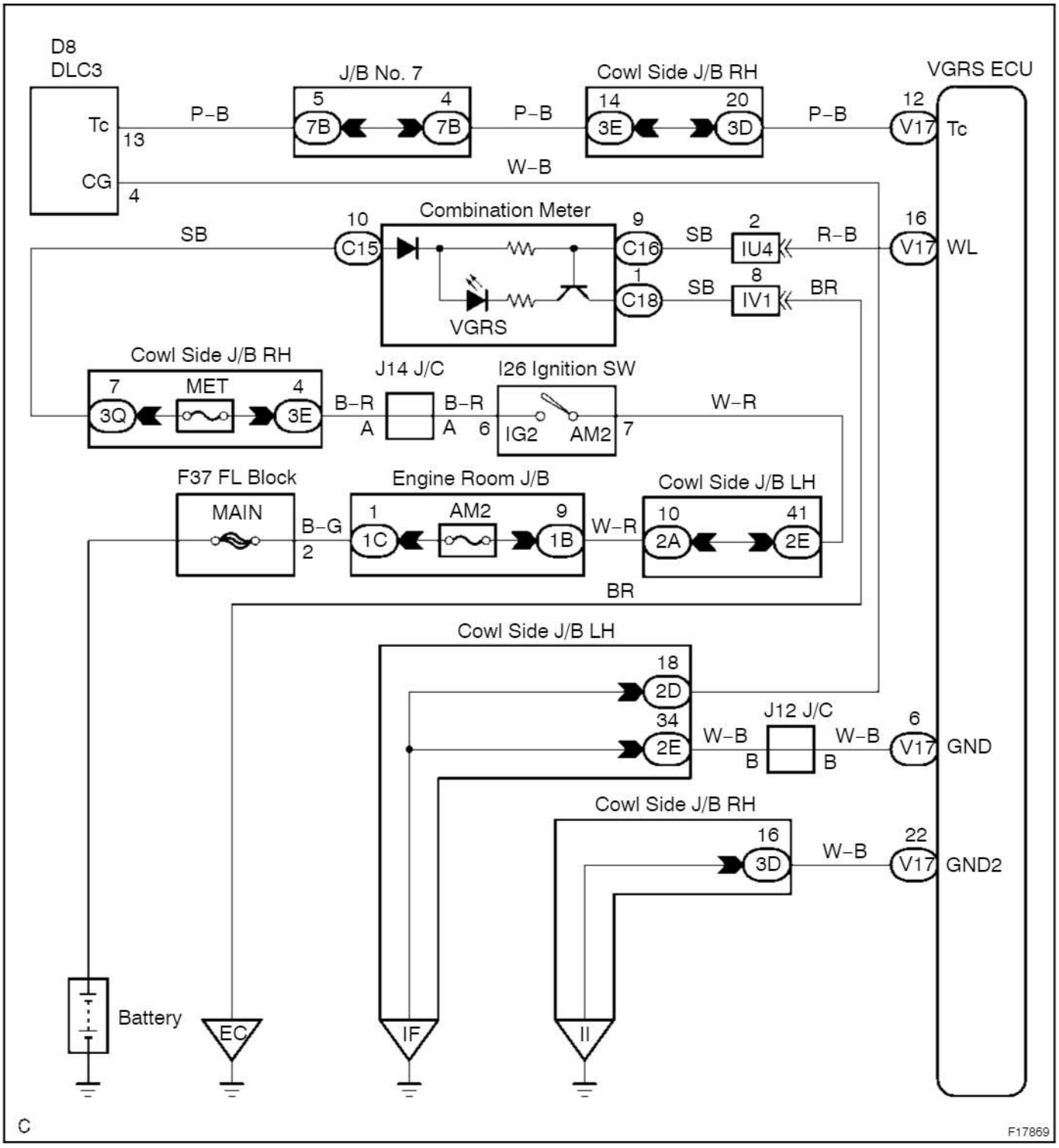
DIAST–01

VGRS Warning Light Circuit

CIRCUIT DESCRIPTION

If the ECU detects a problem in the VGRS system, the VGRS warning light will illuminate, while at the same time prohibiting VGRS control and recording the DTC in memory.
Connect terminals Tc and CG of the DLC3 to make the VGRS warning light blink and output the DTC.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Troubleshoot in accordance with the chart below for each trouble symptom.

VGRS warning light does not light up	Go to step 1
VGRS warning light remains on	Go to step 2

1	**Connect terminals Tc and CG of DLC3 to make the warning light blink and output a DTC or normal code.**

A: VGRS warning light does not illuminate.
B: VGRS warning light remains on.

B → **Go to step 2.**

A →

Check and repair circuit fuse, bulb, wire harness or combination meter.

2	**Check for an open circuit between combination meter and VGRS ECU.**

A: Open circuit
B: No open circuit

B → **Replace VGRS ECU and retest.**

A →

Repair circuit.

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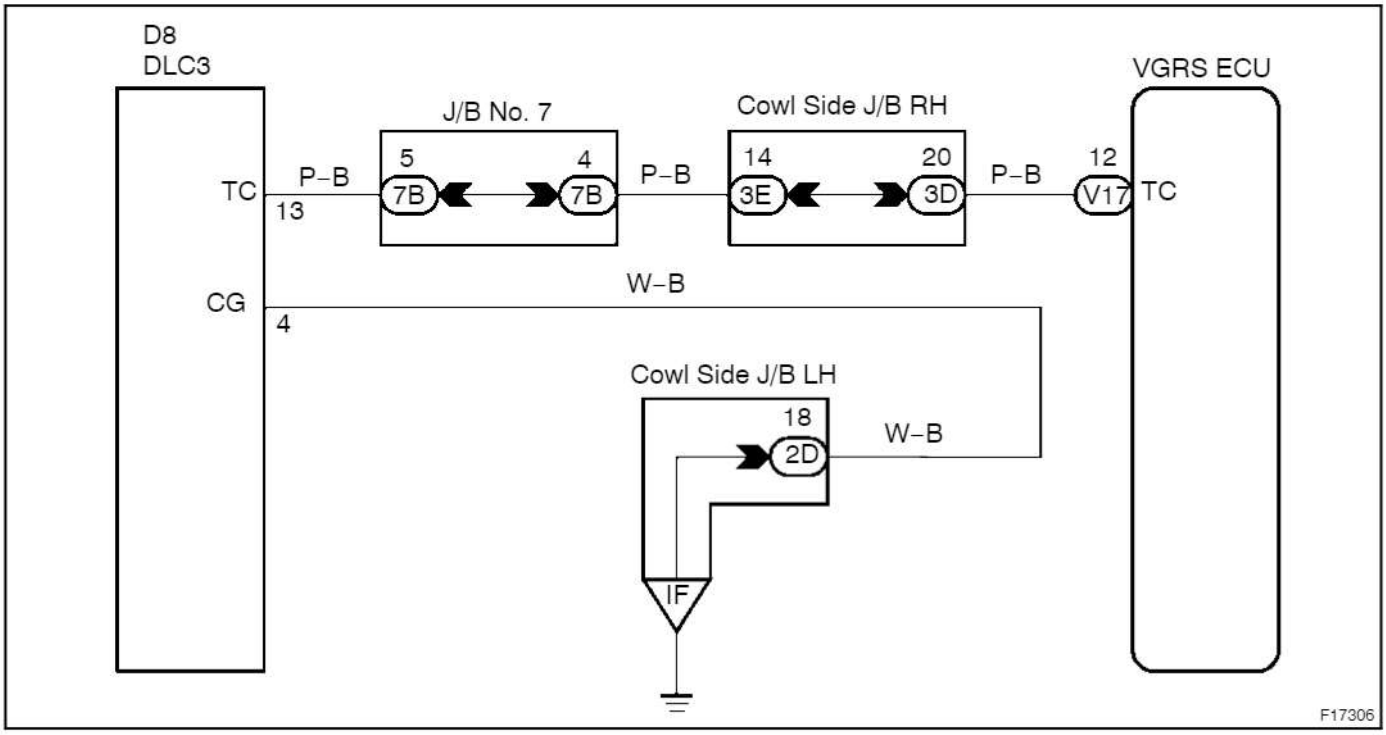
DIASU–01

Tc and CG Terminal Circuit

CIRCUIT DESCRIPTION

Connecting terminals Tc and CG of the DLC3 causes the VGRS ECU to display the DTC by blinking the VGRS warning light.

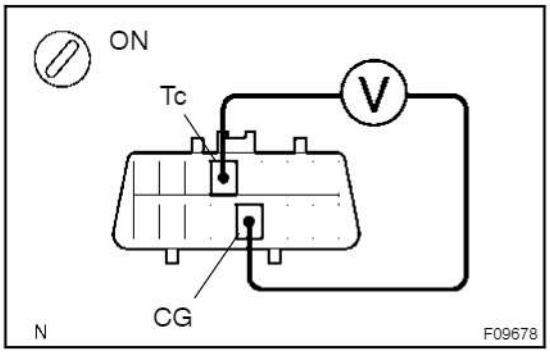
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals Tc and CG of DLC3.**



CHECK:
Turn the ignition switch ON and measure the voltage between terminals Tc and CG of the DLC3.
OK:
Voltage: 10 to 14 V

OK	**If VGRS warning light does not blink even after Tc and CG are connected, check VGRS warning light circuit.**

NG

2	**Check for an open or short circuit in harness and connector between VGRS ECU and DLC3 (Tc), and DLC3 (CG) and body ground (See page IN–38).**

NG	**Repair or replace harness or connector.**

OK

Replace VGRS ECU.

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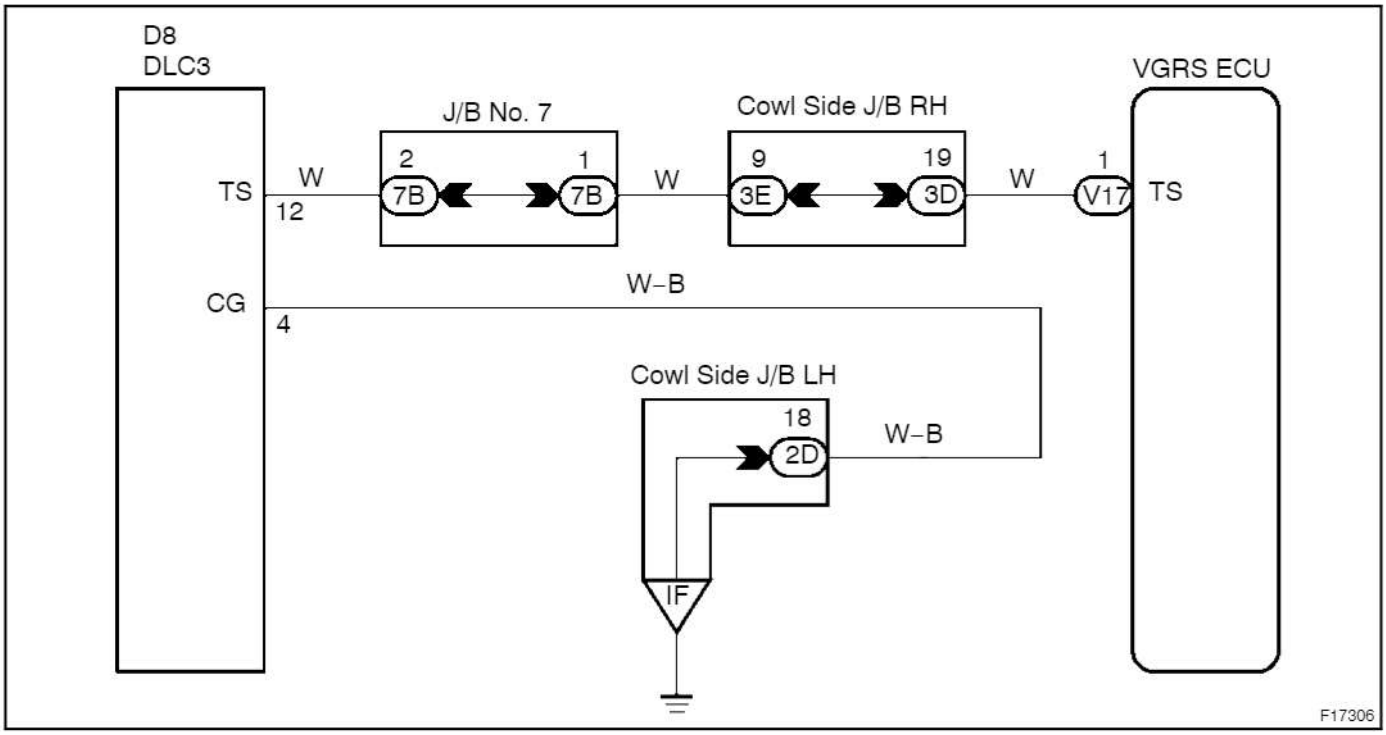
DIASV–01

Ts and CG Terminal Circuit

CIRCUIT DESCRIPTION

The sensor signal check detects faults in VGRS sensor signal, which cannot be detected by the DTC check.
HINT:
If a current DTC exists when connecting Ts and CG, the warning light will remain on.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

Troubleshoot in accordance with the chart below for each trouble symptom.

VGRS warning light does not light up	Go to step 1
VGRS warning light remains on	Go to step 2

1	**Connect terminals Ts and CG of DLC3.**

A: VGRS warning light does not illuminate.
B: VGRS warning light remains on.

B → **Go to step 2.**

A

Check and repair circuit fuse, bulb, wire harness or combination meter.

2	**Check for an open circuit between DLC3 (Ts) and VGRS ECU.**

A: Open circuit
B: No open circuit

B → **Replace VGRS ECU and retest.**

A

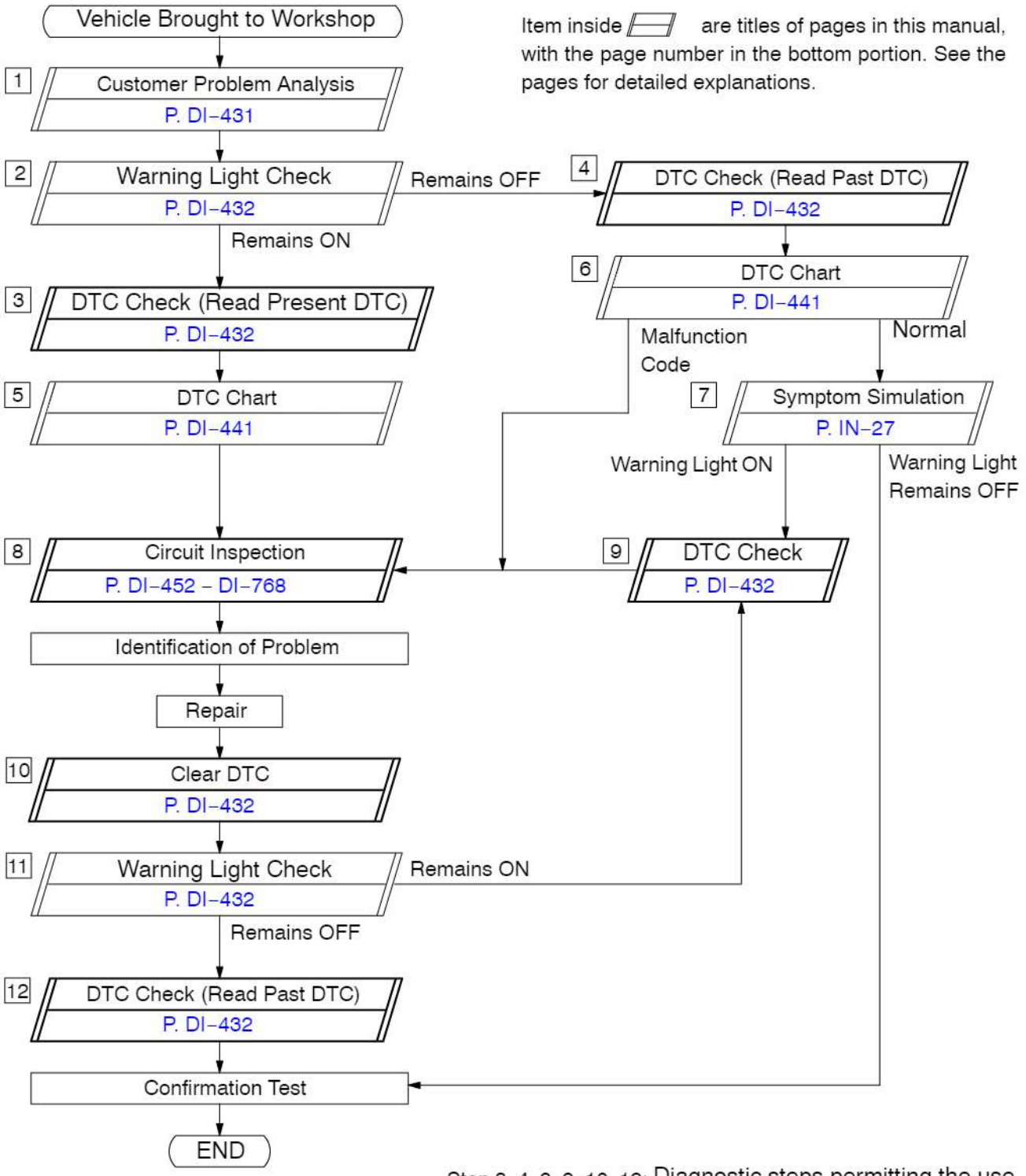
Repair circuit.

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SUPPLEMENTAL RESTRAINT SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DI16J–23



Step 3, 4, 8, 9, 10, 12: Diagnostic steps permitting the use of the hand–held tester.

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DI18K–07

CUSTOMER PROBLEM ANALYSIS CHECK

Supplemental Restraint System Check Sheet

Inspector's Name _____

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Miles

Date Problem Occurred	/ /
Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Other
Temperature	Approx.

Vehicle Operation	☐ Starting ☐ Idling ☐ Driving [☐ Constant speed ☐ Acceleration ☐ Deceleration ☐ Other]
Road Conditions	
Details of Problem	

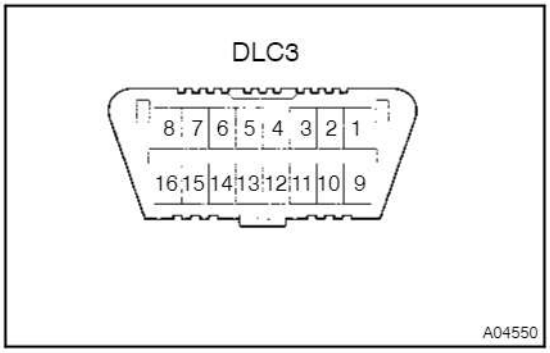
Vehicle Inspection and Repair History Prior to Occurrence of Malfunction (Including Supplemental Restraint System)	

Diagnosis System Inspection

SRS Warning Light Inspection	**1st Time**	☐ Remains ON ☐ Sometimes Lights Up ☐ Does Not Light Up
	2nd Time	☐ Remains ON ☐ Sometimes Lights Up ☐ Does Not Light Up
DTC Inspection	**1st Time**	☐ Normal Code ☐ Malfunction Code [Code.]
	2nd Time	☐ Normal Code ☐ Malfunction Code [Code.]

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DIASW–01



PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Check the DLC3.

HINT:

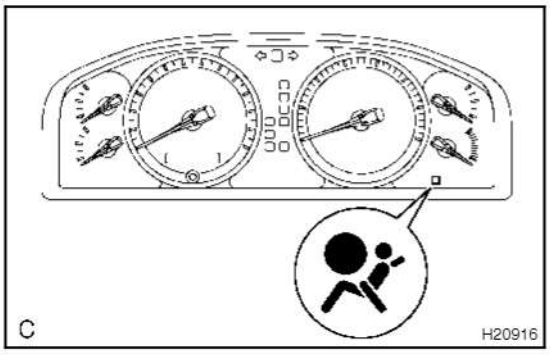
The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of the DLC3 complies with ISO 15031–3 and matches the ISO 9141–2 format.

Terminal No.	Connection/Voltage or Resistance	Condition
7	Bus ⊕ Line/Pulse generation	During Transmission
4	Chassis Ground ↔ Body Ground/1 Ω or less	Always
16	Battery Positive ↔ Body Ground/ 9 – 14 V	Always

HINT:

If your display shows UNABLE TO CONNECT TO VEHICLE when you have connected the cable of the hand–held tester to the DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.



2. SRS WARNING LIGHT CHECK

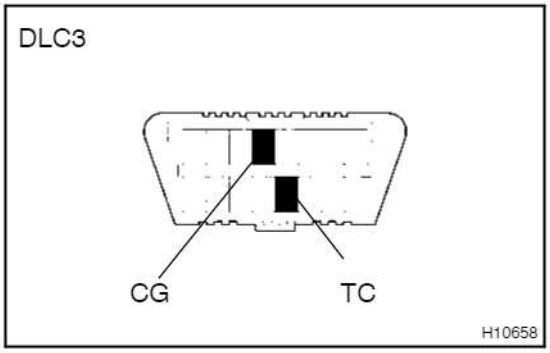
(a) Turn the ignition switch to ON, and check that the SRS warning light comes on.

(b) Check that the SRS warning light goes out after approx. 6 seconds.

HINT:

- When the ignition switch is at ON and the SRS warning light remains on or flashes, the airbag sensor assembly has detected a malfunction code.
- If, after approx. 6 seconds have elapsed, the SRS warning light sometimes comes on even when the ignition switch is OFF. In this case, a short in the SRS warning light circuit is possible. Proceed to "SRS warning light circuit malfunction" on page DI–768.

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3. DTC CHECK (Using diagnosis check wire)

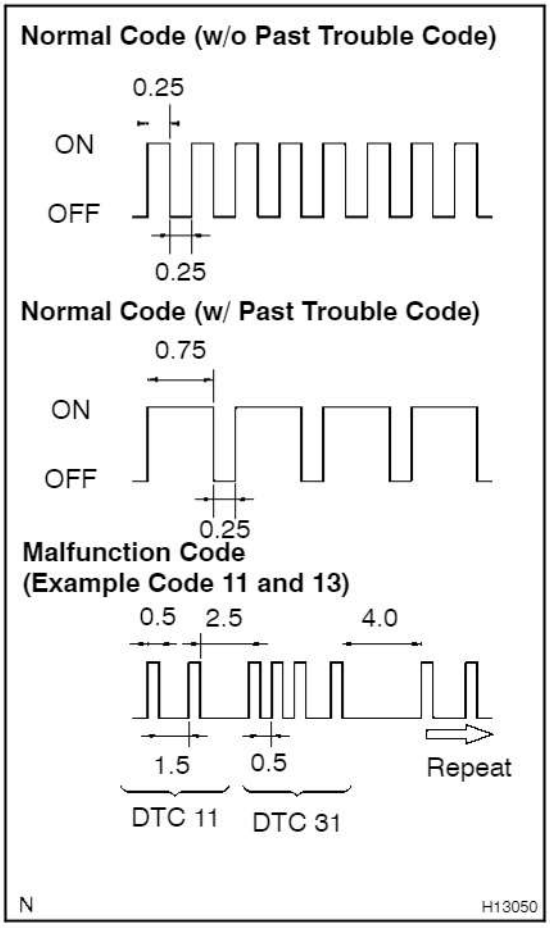
(a) Present troubles codes:
Output the DTC.
(1) Turn the ignition switch to ON, and wait for approx. 10 seconds.
(2) Using SST, connect terminal TC and CG of the DLC3.
SST 09843–18040

NOTICE:
Pay attention to the terminal connecting position to avoid a malfunction.

(b) Past troubles codes:
Output the DTC.
(1) Using SST, connect terminal TC and CG of the DLC3.
SST 09843–18040
(2) Turn the ignition switch to ON, and wait for approx. 10 seconds.

NOTICE:
Pay attention to the terminal connecting position to avoid a malfunction.

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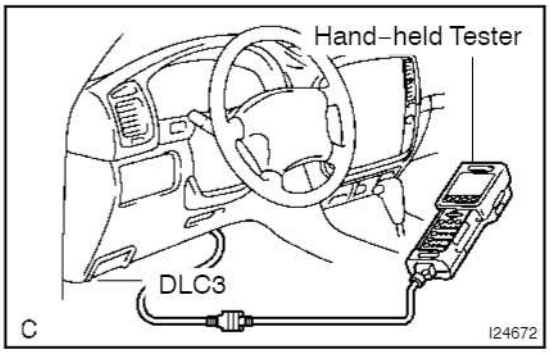


(c) Read the DTC.
Read the DTC by counting the blinking times. As an example, the blinking patterns of normal, 11 and 31 are shown in the illustration.

- Normal code indication (w/o past trouble code)
  The light blinks 2 times per seconds.
- Normal code indication (w/ past trouble code)
  When the past troubles code is stored in the airbag sensor assembly, the light blinks only ones a second.
- Malfunction code indication
  The first blinking indicates the first DTC. Second blinking occurs after 1.5–second of pausing.

If there are 2 or more codes, there will be a 2.5–second pause between each code. After all the codes are shown, there will be a 4.0–second pausing, and they will all be repeated.
HINT:

- If 2 or more malfunctions are found, the indication starts from the smaller numbered code.
- If the light does not blink or comes out at all, or if DTCs are indicated without a connection of the terminals, proceed to the TC terminal circuit inspection on page DI–773.



4. DTC CHECK (Using hand–held tester)

(a) Hook up the hand–held tester to the DLC3.
(b) Read the DTCs by following the prompts on the tester screen.

HINT:
Please refer to the hand–held tester operator's manual for further details.

5. DTC CLEARANCE (Not using service wire)

When the ignition switch is turned OFF, the diagnostic trouble code is cleared.
HINT:
Depending on the DTC, the code might not be cleared by turning the ignition switch OFF.
In this case, proceed to the next step.

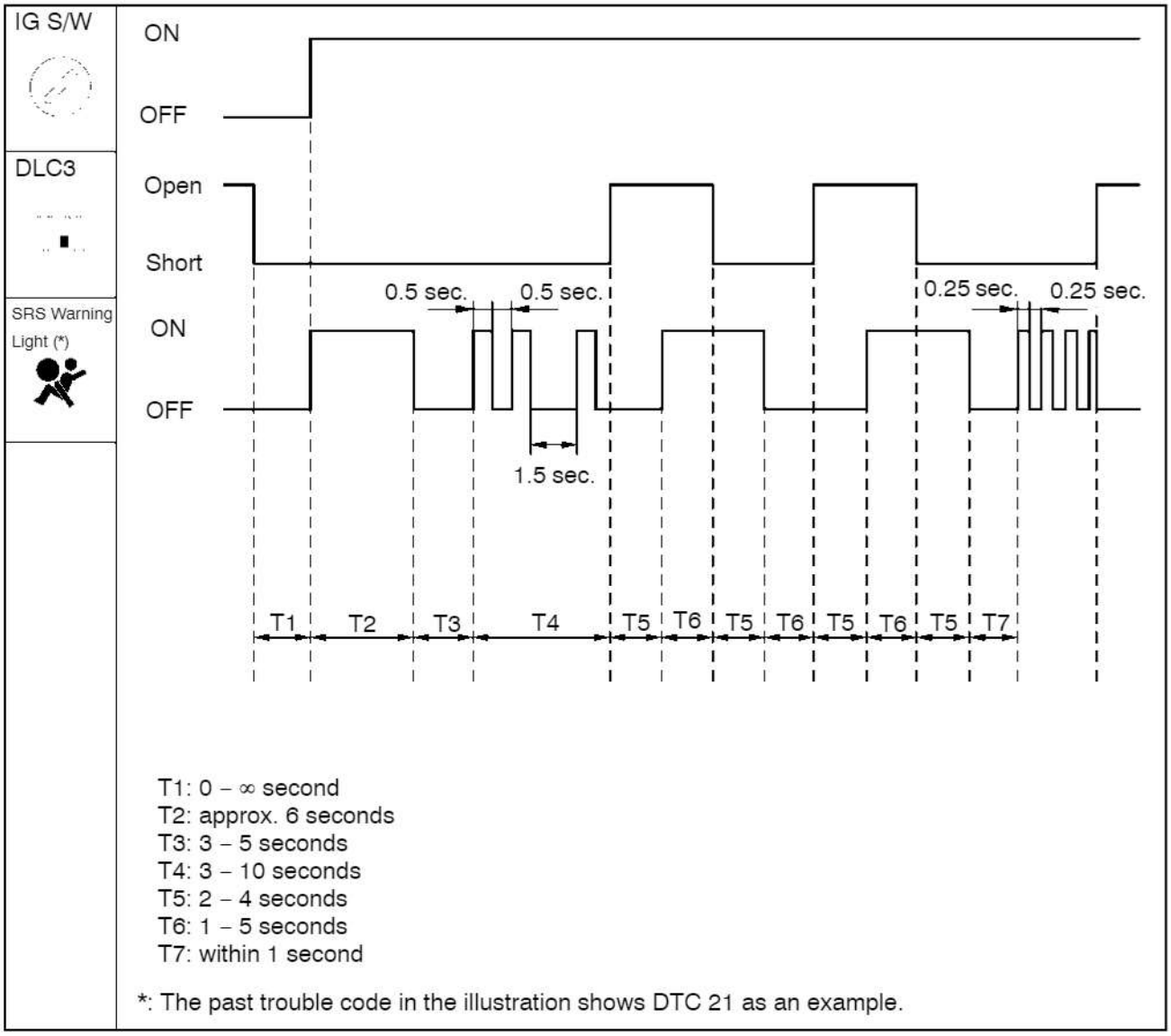
6. DTC CLEARANCE (Using service wire)

(a) Using SST, connect terminal TC and CG.
SST 09843–18040
(b) Disconnect terminal TC of DLC3 within 10 seconds after the DTCs appear, and check if the warning light come on within 3.0 seconds.
(c) Within 2.0 seconds to 4.0 seconds after the SRS warning light come on, re–connect the terminals TC and CG of DLC3.

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(d) SRS warning light goes off 3.0 seconds after re–connecting the terminal TC and CG. Then disconnect the terminal TC of DLC3within 2.0 to 4.0 seconds after the SRS warning light goes off.
(e) Warning light comes on within 3.0 seconds after re–disconnecting the terminal TC and CG.
(f) Within 2.0 seconds to 4.0 seconds after the SRS warning light come on, re–connect the terminals TC and CG of DLC3.
(g) SRS warning light goes off 3 seconds after re–connecting the terminal TC and CG.
(h) Normal code appears 1.0 seconds after the SRS warning light goes off.

If DTCs are not cleared, repeat the above procedure until the codes are cleared.



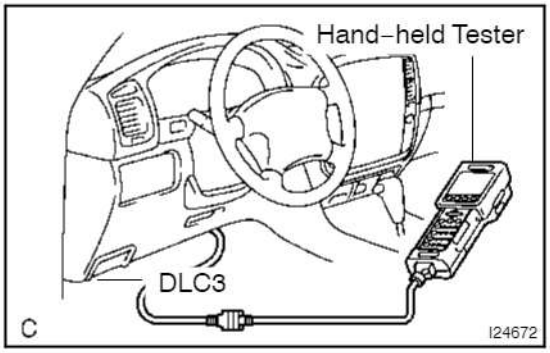
T1: 0 – ∞ second
T2: approx. 6 seconds
T3: 3 – 5 seconds
T4: 3 – 10 seconds
T5: 2 – 4 seconds
T6: 1 – 5 seconds
T7: within 1 second

*: The past trouble code in the illustration shows DTC 21 as an example.

N

H13049

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7. DTC CLEARANCE (Using hand–held tester)

(a) Hook up the hand–held tester to the DLC3.

(b) Clear the DTCs by following the prompts on the tester screen.

HINT:

Please refer to the hand–held tester operation's manual for further details.

8. RELEASE METHOD OF AIRBAG ACTIVATION PREVENTION MECHANISM

An airbag activation prevention mechanism is built into the connector for the squib circuit of the SRS.

As explained in the troubleshooting later, insert a paper with the same thickness as the male terminal between the terminal and the short spring to release it (Refer to illustrations on next 4 pages).

CAUTION:

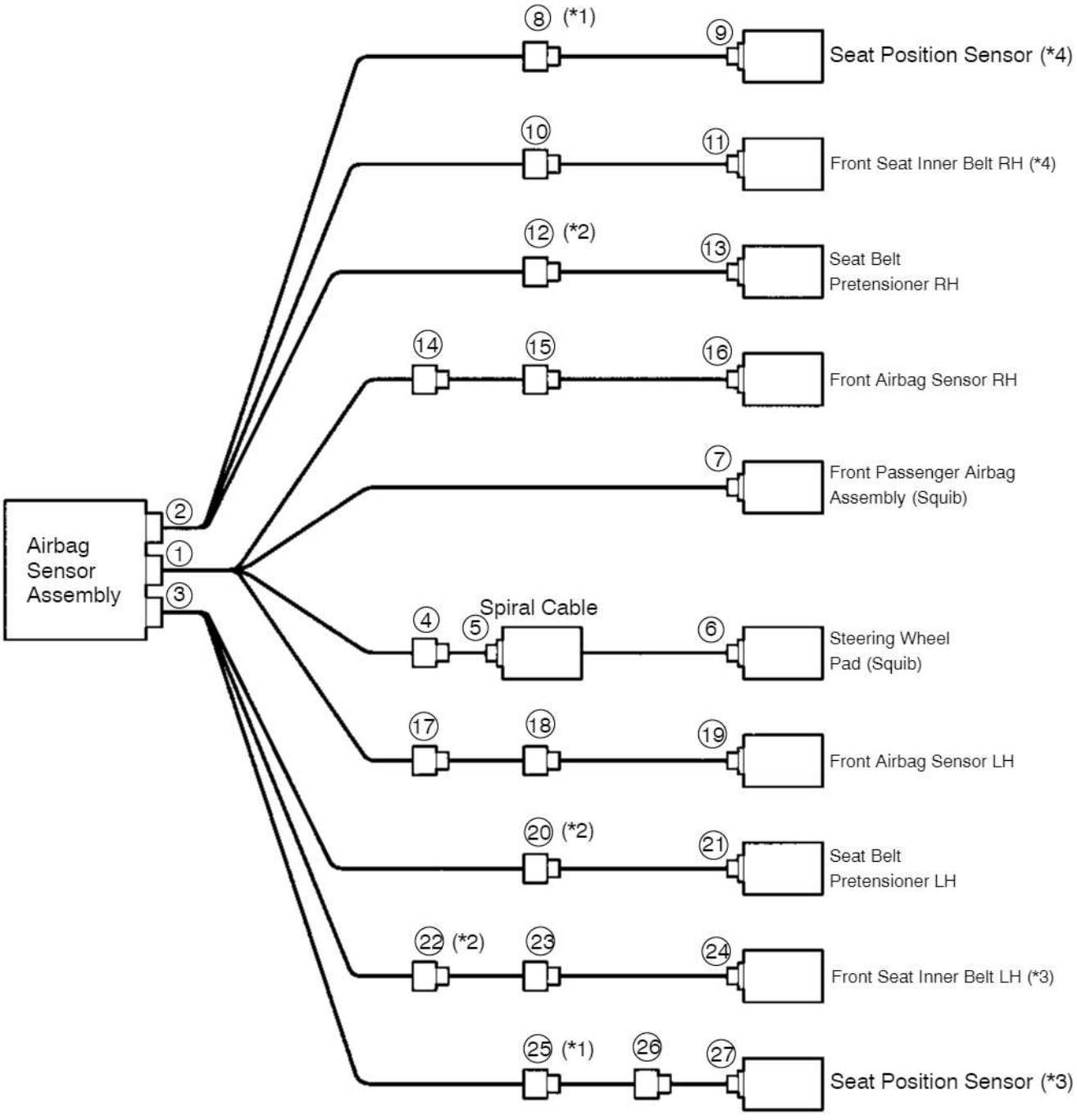
Never release the airbag activation prevention mechanism on the squib connector.

NOTICE:

- **Do not release the airbag activation prevention mechanism unless specifically directed by the troubleshooting procedure.**
- **To prevent the terminal and the short spring to be damaged, always use a paper with the same thickness as the male terminals.**

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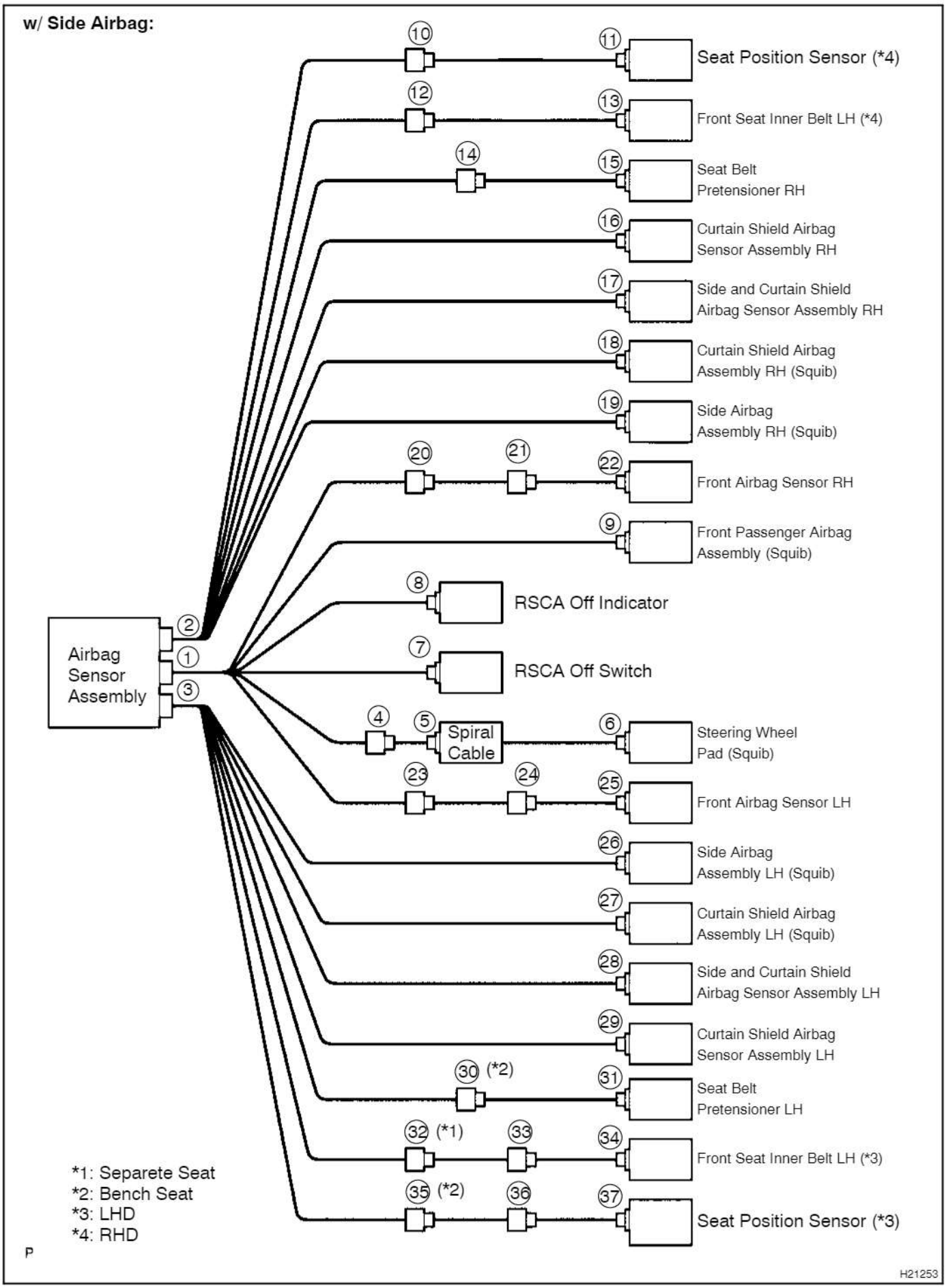
w/o Side Airbag:



*1: Separate Seat
*2: Bench Seat
*3: LHD, Dual Stage Airbag
*4: RHD, Dual Stage Airbag

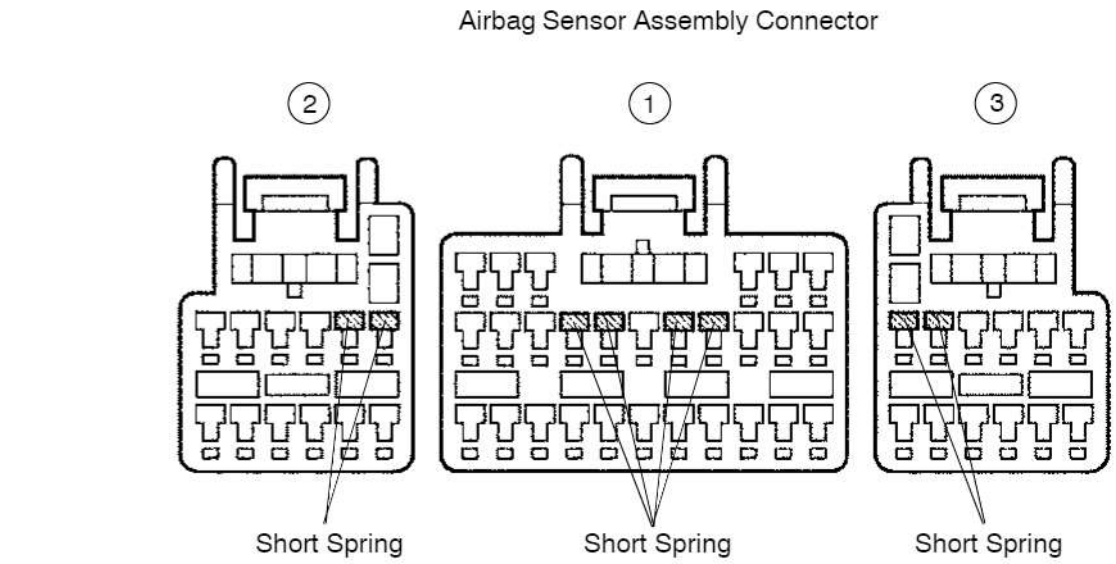
P H21252

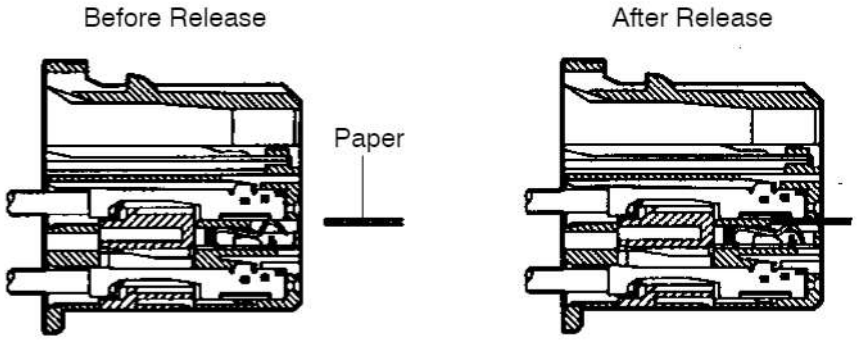
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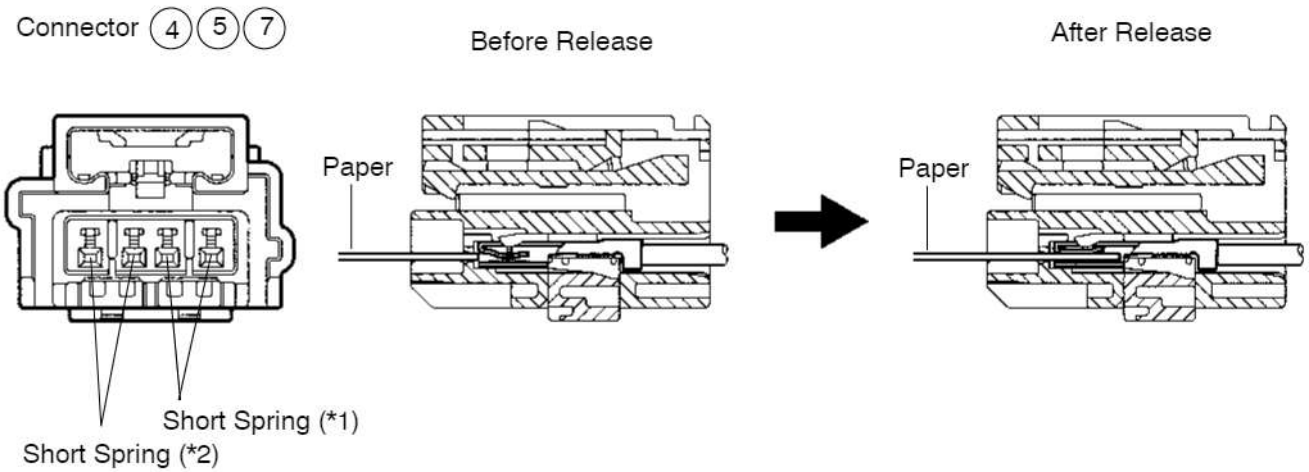


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w/o Side Airbag:







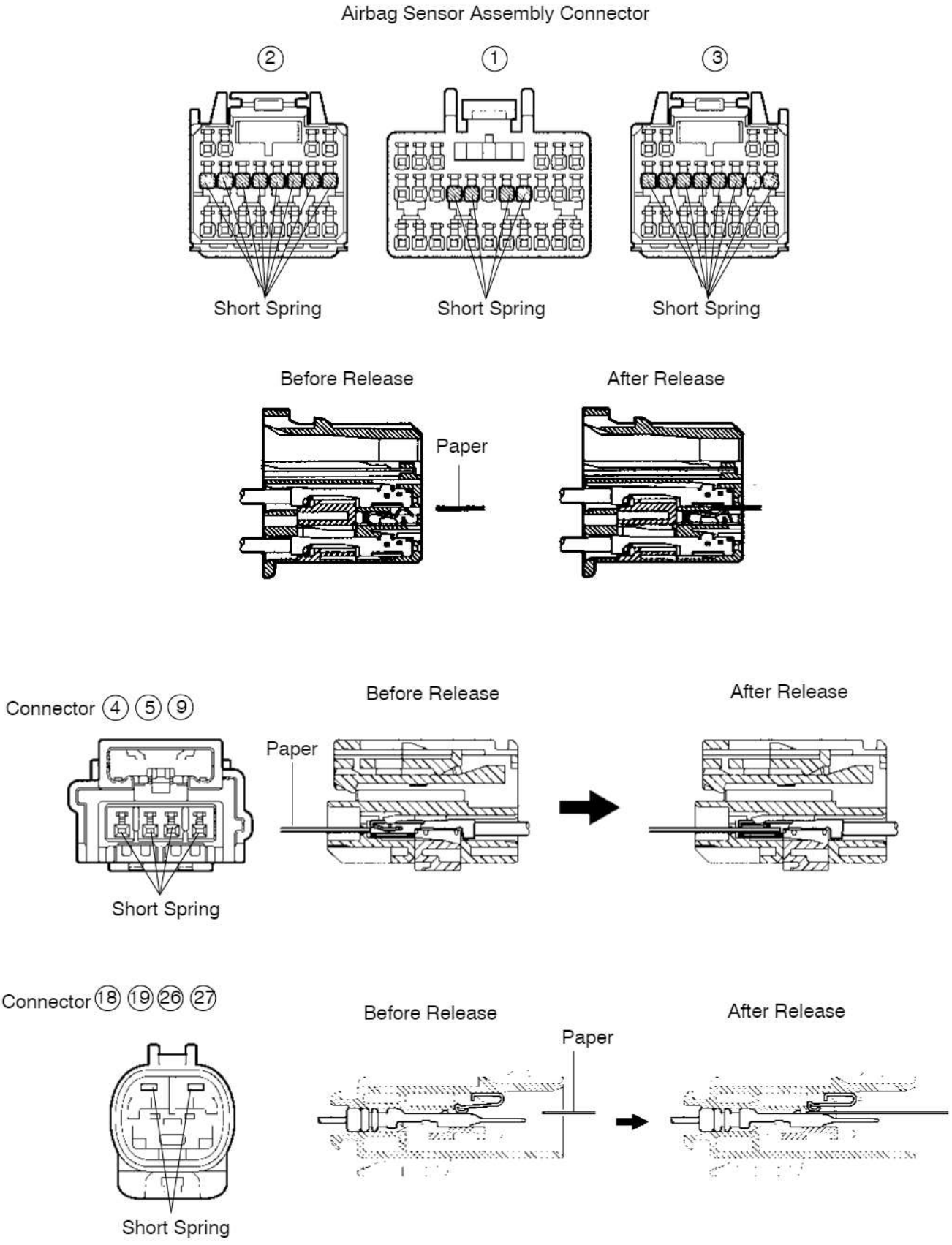
*1: Single Stage Airbag
*2: Dual Stage Airbag

H02297
H01233
H16883

H21585

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w/ Side Airbag:



H16882 H01233
H16883
H09672 H09658

H21759

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DI161-40

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below (Proceed to the page given for that circuit.).

DTC No. (See Page)	Detection Item	Trouble Area	SRS Warning Light
B0100/13 (DI–452)	• Short in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B0101/14 (DI–458)	• Open in D squib circuit	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B0102/11 (DI–463)	• Short in D squib circuit (to ground)	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B0103/12 (DI–468)	• Short in D squib circuit (to B+)	• Steering wheel pad (squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B0105/53 (DI–473)	• Short in P squib circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Dash wire	ON
B0106/54 (DI–477)	• Open in P squib circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Dash wire	ON
B0107/51 (DI–480)	• Short in P squib circuit (to ground)	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Dash wire	ON
B0108/52 (DI–483)	• Short in P squib circuit (to B+)	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Dash wire	ON
B0110/43 (*1) (DI–486)	• Short in side squib RH circuit	• Side airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink
B0111/44 (*1) (DI–490)	• Open in side squib RH circuit	• Side airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink
B0112/41 (*1) (DI–493)	• Short in side squib RH circuit (to ground)	• Side airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink
B0113/42 (*1) (DI–496)	• Short in side squib RH circuit (to B+)	• Side airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink
B0115/47 (*1) (DI–499)	• Short in side squib LH circuit	• Side airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink

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B0116/48 (*1) (DI–503)	• Open in side squib LH circuit	• Side airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink
B0117/45 (*1) (DI–506)	• Short in side squib LH circuit (to ground)	• Side airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink
B0118/46 (*1) (DI–509)	• Short in side squib LH circuit (to B+)	• Side airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink
B0121/B0122/ 26 (*2) (DI–522)	• Seat belt buckle switch RH malfunction	• Front seat inner belt RH • Airbag sensor assembly • Floor No. 2 wire • Front seat wire RH	ON
B0126/B0127/ 27 (*3) (DI–522)	• Seat belt buckle switch LH malfunction	• Front seat inner belt LH • Airbag sensor assembly • Floor No. 1 wire • Front seat wire LH • Dash wire (Bench seat)	ON
B0130/63 (DI–539)	• Short in P/T squib RH circuit	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)	Blink
B0131/64 (DI–547)	• Open in P/T squib RH circuit	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)	Blink
B0132/61 (DI–555)	• Short in P/T squib RH circuit (to ground)	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)	Blink
B0133/62 (DI–563)	• Short in P/T squib RH circuit (to B+)	• Seat belt pretensioner RH (squib) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)	Blink
B0135/73 (DI–571)	• Short in P/T squib LH circuit	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)	Blink
B0136/74 (DI–579)	• Open in P/T squib LH circuit	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)	Blink
B0137/71 (DI–587)	• Short in P/T squib LH circuit (to ground)	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)	Blink
B0138/72 (DI–595)	• Short in P/T squib LH circuit (to B+)	• Seat belt pretensioner LH (squib) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)	Blink
B1100/31 (DI–603)	• Airbag sensor assembly malfunction	• Airbag sensor assembly	ON

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B1135/24 (DI–605)	• Half connection in airbag sensor assembly connector	• Airbag sensor assembly • Dash wire • Floor No. 1 wire • Floor No. 2 wire	ON
B1140/32 (*1) (DI–607)	• Side and curtain shield airbag sensor assembly RH malfunction	• Side and curtain shield airbag sensor assembly RH • Airbag sensor assembly • Floor No. 2 wire	Blink
B1141/33 (*1) (DI–613)	• Side and curtain shield airbag sensor assembly LH malfunction	• Side and curtain shield airbag sensor assembly LH • Airbag sensor assembly • Floor No. 1 wire	Blink
B1148/36 (*1) (DI–619)	• Front airbag sensor RH malfunction	• Front airbag sensor RH • Airbag sensor assembly • Dash wire • Engine room No. 2 wire • Engine room main wire	ON
B1149/37 (*1) (DI–628)	• Front airbag sensor LH malfunction	• Front airbag sensor LH • Airbag sensor assembly • Dash wire • Engine room No. 2 wire • Engine room main wire	ON
B1153/25 (DI–636)	• Seat position sensor malfunction	• Seat position sensor assembly • Airbag sensor assembly • Floor No. 1 wire (LHD) • Floor No. 2 wire (RHD) • Front seat wire LH (LHD) • Front seat wire RH (RHD) • Dash wire (Bench seat)	ON
B1154/38 (*1) (DI–667)	• Curtain shield airbag sensor assembly RH malfunction	• Curtain shield airbag sensor assembly RH • Airbag sensor assembly • Floor No. 2 wire	Blink
B1155/39 (*1) (DI–673)	• Curtain shield airbag sensor assembly LH malfunction	• Curtain shield airbag sensor assembly LH • Airbag sensor assembly • Floor No. 1 wire	Blink
B1156/B1157/15 (*4) (DI–679)	• Front airbag sensor RH malfunction	• Front airbag sensor RH • Airbag sensor assemby • Dash wire • Engine room No. 2 wire • Engine room main wire	ON
B1158/B1159/16 (*4) (DI–686)	• Front airbag sensor LH malfunction	• Front airbag sensor LH • Airbag sensor assembly • Dash wire • Engine room No. 2 wire • Engine room main wire	ON
B1160/83 (*1) (DI–693)	• Short in curtain shield squib RH circuit	• Curtain shield airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink
B1161/84 (*1) (DI–697)	• Open in curtain shield squib RH circuit	• Curtain shield airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink
B1162/81 (*1) (DI–700)	• Short in curtain shield squib RH circuit (to ground)	• Curtain shield airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink
B1163/82 (*1) (DI–703)	• Short in curtain shield squib RH circuit (to B+)	• Curtain shield airbag assembly RH (squib) • Airbag sensor assembly • Floor No. 2 wire	Blink

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B1165/87 (*1) (DI–706)	• Short in curtain shield squib LH circuit	• Curtain shield airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink
B1166/88 (*1) (DI–710)	• Open in curtain shield squib LH circuit	• Curtain shield airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink
B1167/85 (*1) (DI–713)	• Short in curtain shield squib LH circuit (to ground)	• Curtain shield airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink
B1168/86 (*1) (DI–716)	• Short in curtain shield squib LH circuit (to B+)	• Curtain shield airbag assembly LH (squib) • Airbag sensor assembly • Floor No. 1 wire	Blink
B1180/17 (*5) (DI–719)	• Short in D squib (2nd step) circuit	• Steering wheel pad (D squib, 2nd step) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B1181/18 (*5) (DI–725)	• Open in D squib (2nd step) circuit	• Steering wheel pad (D squib, 2nd step) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B1182/19 (*5) (DI–730)	• Short in D squib (2nd step) circuit (to ground)	• Steering wheel pad (D squib, 2nd step) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B1183/22 (*5) (DI–736)	• Short in D squib (2nd step) circuit (to B+)	• Steering wheel pad (D squib, 2nd step) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire	ON
B1185/57 (*5) (DI–742)	• Short in P squib (2nd step) circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B1186/58 (*5) (DI–746)	• Open in P squib (2nd step) circuit	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B1187/55 (*5) (DI–749)	• Short in P squib (2nd step) circuit (to ground)	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B1188/56 (*5) (DI–753)	• Short in P squib (2nd step) circuit (to B+)	• Front passenger airbag assembly (squib) • Airbag sensor assembly • Wire harness	ON
B1628/29 (*1) (DI–753)	• RSCA cutoff switch indicator	• RSCA cutoff switch • Airbag sensor assembly • Dash wire • Instrument panel wire	Blink
Normal (DI–764)	System normal	–	OFF
	Voltage source drop	• Battery • Airbag sensor assembly	ON

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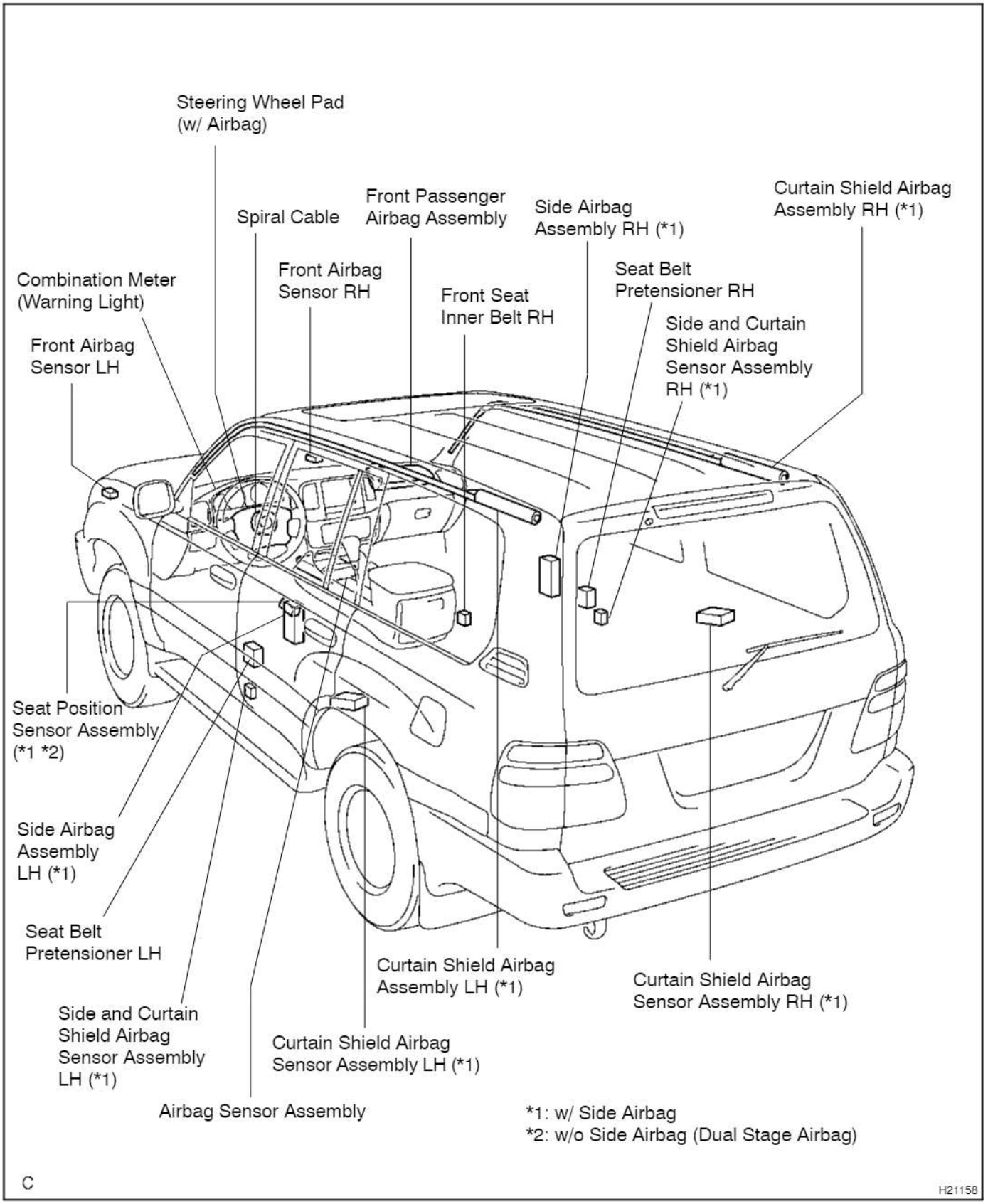
*1: w/ Side Airbag
*2: RHD
*3: LHD
*4: w/o Side Airbag (Single Stage Airbag)
*5: w/ Side Airbag and w/o Side Airbag (Dual Stage Airbag)
HINT:

- When the SRS warning light remains lit up and the DTC is the normal code, a voltage source drop is possible.
  This malfunction is not stored in memory by the airbag sensor assembly and if the power source voltage returns to normal, the SRS warning light will automatically go out.
- When 2 or more codes are indicated, smaller numbered code will be shown first.
- If a code not listed on the chart is displayed, the airbag sensor assembly is at fault.
- In the case of any malfunction concerning any open circuit, ground short, or B+ short due to any squib, another malfunction code may not be detected. In this case, correct the malfunction currently indicated and then perform malfunction diagnosis again. Another malfunction code may then be detected.

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DI1HD-22

PARTS LOCATION

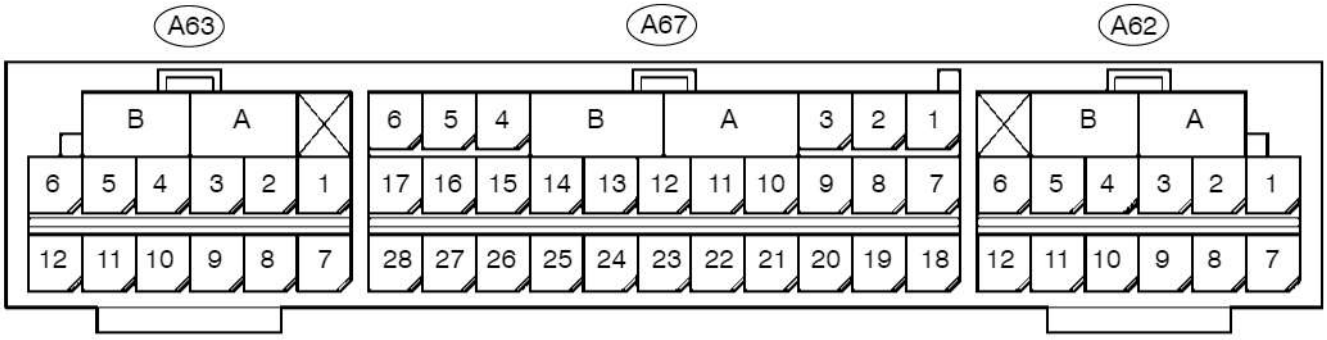


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DIASX–01

TERMINALS OF ECU

1. w/o Side Airbag:



H01357

No.	Symbol	Terminal Name
A	–	Electrical Connector Check Mechanism
B	–	Electrical Connector Check Mechanism
A67 – 3	LA	SRS Warning Light
A67 – 5	IG2	Power Source
A67 – 7 (*1)	P2–	Squib (Passenger, 2nd step)
A67 – 8 (*1)	P2+	Squib (Passenger, 2nd step)
A67 – 9	+SR	Front Airbag Sensor RH
A67 – 10	P+	Squib (Passenger)
A67 – 11	P–	Squib (Passenger)
A67 – 12	SIL	Diagnosis
A67 – 13	D–	Squib (Driver)
A67 – 14	D+	Squib (Driver)
A67 – 15	+SL	Front Airbag Sensor LH
A67 – 16 (*1)	D2+	Squib (Driver, 2nd step)
A67 – 17 (*1)	D2–	Squib (Driver, 2nd step)
A67 – 19	TC	Diagnosis
A67 – 20	–SR	Front Airbag Sensor RH
A67 – 23	GSW2	Engine ECU
A67 – 26	–SL	Front Airbag Sensor LH
A67 – 27	E1	Ground
A67 – 28	E2	Ground
A63 – 1	PL–	Squib (Seat Belt Pretensioner, LH)
A63 – 2	PL+	Squib (Seat Belt Pretensioner, LH)
A63 – 3 (*1)	LSP+	Seat Position Sensor Assembly (LHD)

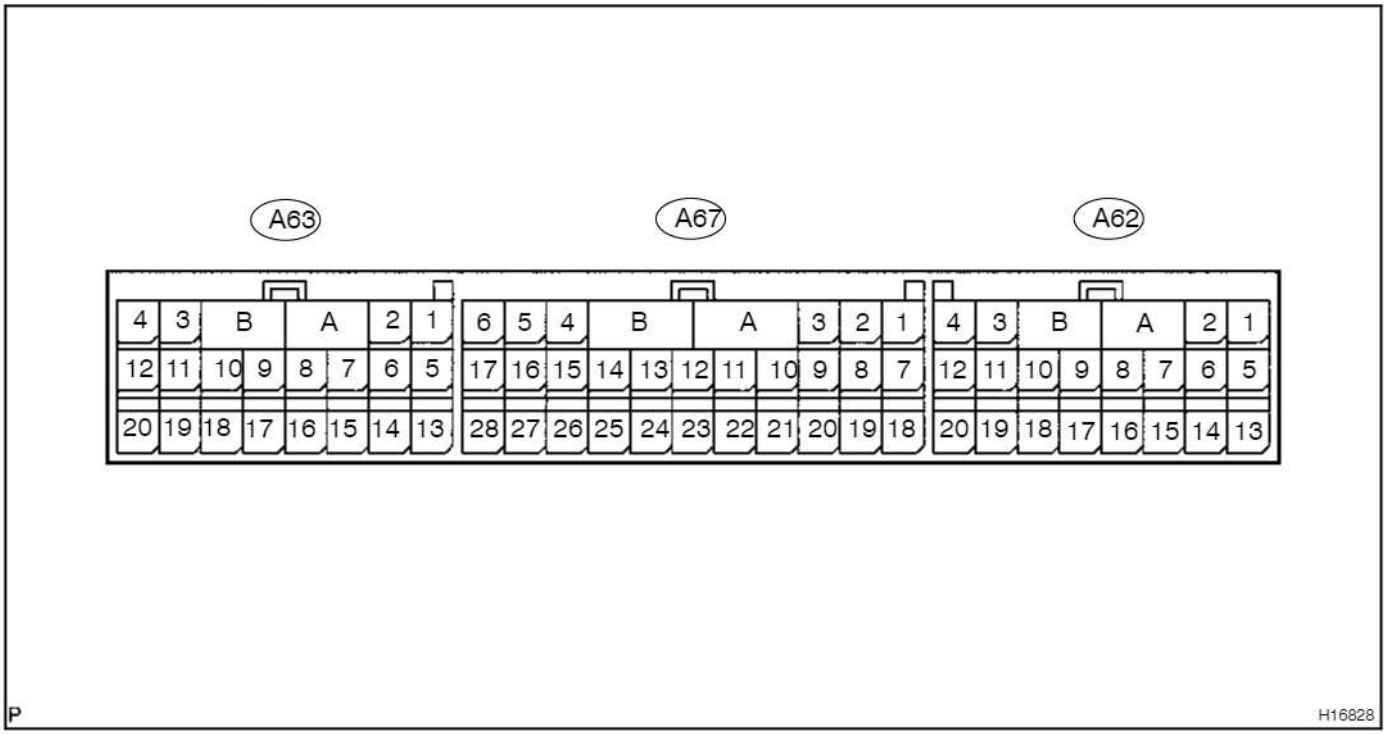
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No.	Symbol	Terminal Name
A63 – 8 (*1)	LSP–	Seat Position Sensor Assembly (LHD)
A63 – 11 (*1)	LBE+	Seat Belt Buckle Switch LH (LHD)
A62 – 4 (*1)	RSP+	Seat Posistion Sensor Assembly (RHD)
A62 – 5	PR+	Squib (Seat Belt Pretensioner, RH)
A62 – 6	PR–	Squib (Seat Belt Pretensioner, RH)
A62 – 8 (*1)	RBE+	Seat Belt Buckle Switch RH (RHD)
A62 – 11 (*1)	RSP–	Seat Position Sensor Assembly (RHD)

*1: Dual Stage Airbag

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2. w/ Side Airbag:



No.	Symbol	Terminal Name
A	–	Electrical Connector Check Mechanism
B	–	Electrical Connector Check Mechanism
A67 – 3	LA	SRS Warning Light
A67 – 5	IG2	Power Source
A67 – 7	P2–	Squib (Passenger, 2nd step)
A67 – 8	P2+	Squib (Passenger, 2nd step)
A67 – 9	+SR	Front Airbag Sensor RH
A67 – 10	P+	Squib (Passenger)
A67 – 11	P–	Squib (Passenger)
A67 – 12	SIL	Diagnosis
A67 – 13	D–	Squib (Driver)
A67 – 14	D+	Squib (Driver)
A67 – 15	+SL	Front Airbag Sensor LH
A67 – 16	D2+	Squib (Driver, 2nd step)
A67 – 17	D2–	Squib (Driver, 2nd step)
A67 – 19	TC	Diagnosis
A67 – 20	–SR	Front Airbag Sensor RH
A67 – 21	RMSW	RSCA Off Switch
A67 – 22	MPX2	Body ECU
A67 – 23	GSW2	Diagnosis
A67 – 25	RMIL	RSCA Off Switch Indicator
A67 – 26	–SL	Front Airbag Sensor LH
A67 – 27	E1	Ground
A67 – 28	E2	Ground

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No.	Symbol	Terminal Name
A63 – 1	CSL–	Curtain Shield Airbag Sensor Assembly LH
A63 – 3	LSP–	Seat Position Sensor Assembly (LHD)
A63 – 4	LSP+	Seat Position Sensor Assembly (LHD)
A63 – 7	PL–	Squib (Seat Belt Pretensioner, LH)
A63 – 8	PL+	Squib (Seat Belt Pretensioner, LH)
A63 – 9	ICL+	Squib (Curtain Shield, LH)
A63 – 10	ICL–	Squib (Curtain Shield, LH)
A63 – 11	SFL–	Squib (Side, LH)
A63 – 12	SFL+	Squib (Side, LH)
A63 – 13	ESCL	Curtain Shield Airbag Sensor Assembly LH
A63 – 14	VUCL	Curtain Shield Airbag Sensor Assembly LH
A63 – 15	CSL+	Curtain Shield Airbag Sensor Assembly LH
A63 – 16	VUPL	Side and Curtain Shield Airbag Sensor Assembly LH
A63 – 17	SSL+	Side and Curtain Shield Airbag Sensor Assembly LH
A63 – 18	ESL	Side and Curtain Shield Airbag Sensor Assembly LH
A63 – 19	LBE+	Seat Belt Buckle Switch LH (LHD)
A63 – 20	SSL–	Side and Curtain Shield Airbag Sensor Assembly LH
A62 – 1	RSP+	Seat Position Sensor Assembly (RHD)
A62 – 2	RSP–	Seat Position Sensor Assembly (RHD)
A62 – 4	CSR–	Curtain Shield Airbag Sensor Assembly RH
A62 – 5	SFR+	Squib (Side, RH)
A62 – 6	SFR–	Squib (Side, RH)
A62 – 7	ICR–	Squib (Curtain Shield, RH)
A62 – 8	ICR+	Squib (Curtain Shield, RH)
A62 – 9	PR+	Squib (Seat Belt Pretensioner, RH)
A62 – 10	PR–	Squib (Seat Belt Pretensioner, RH)
A62 – 13	SSR–	Side and Curtain Shield Airbag Sensor Assembly RH
A62 – 14	RBE+	Seat Belt Buckle Switch RH (RHD)
A62 – 15	ESR	Side and Curtain Shield Airbag Sensor Assembly RH
A62 – 16	SSR+	Side and Curtain Shield Airbag Sensor Assembly RH
A62 – 17	VUPR	Side and Curtain Shield Airbag Sensor Assembly RH
A62 – 18	CSR+	Curtain Shield Airbag Sensor Assembly RH
A62 – 19	VUCR	Curtain Shield Airbag Sensor Assembly RH
A62 – 20	ESCR	Curtain Shield Airbag Sensor Assembly RH

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DI18P-14

PROBLEM SYMPTOMS TABLE

Proceed with troubleshooting of each circuit in the table below.

Symptom	Suspected Area	See page
• With the ignition switch in ON position, the SRS warning light sometimes lights up after approx. 6 seconds have elapsed.	• SRS warning light circuit	DI–768
• SRS warning light is always lit up even when ignition switch is in the LOCK position.		
• With the ignition switch in ON position, the SRS warning light does not light up.		
• DTC is not displayed.	• TC terminal circuit	DI–773
• SRS warning light is always lit up at the time of DTC check procedure.		
• DTC is displayed without TC and CG terminal connection.		

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DI3QG-02

CIRCUIT INSPECTION

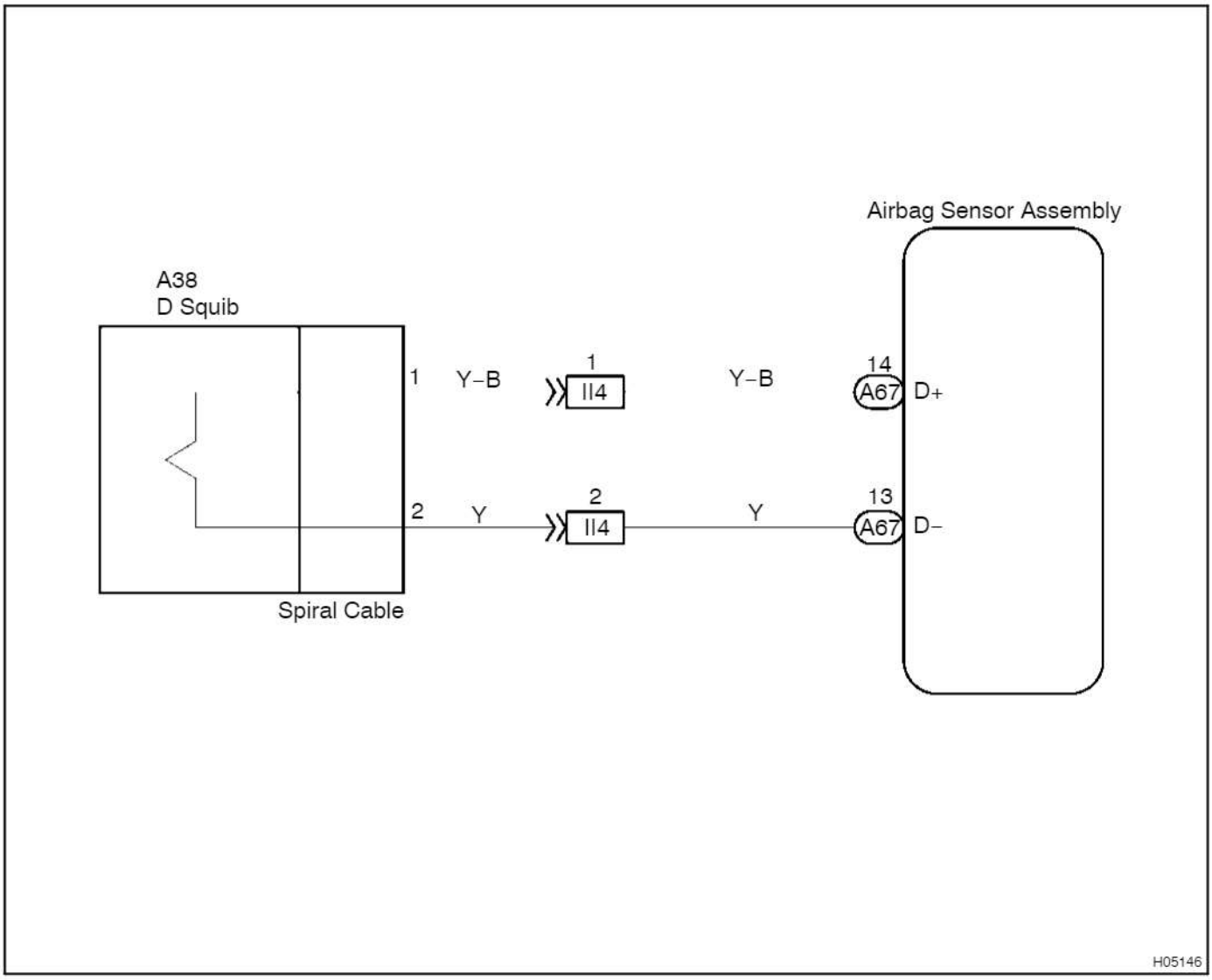
DTC	B0100/13	Short in D Squib Circuit

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad. It causes the airbag to deploy when the airbag deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0100/13 is recorded when a short is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0100/13	• Short in D squib circuit • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

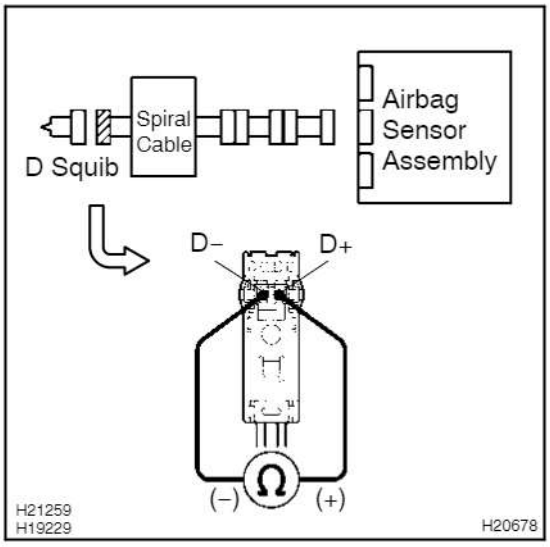
2	**Check connector.**

CHECK:
Make sure that the orange spiral cable connector is not damaged.
OK:
The lock button is not disengaged, or the claw of the lock is not deformed or damaged.

NG → **Replace spiral cable.**

OK

3	**Check D squib circuit.**



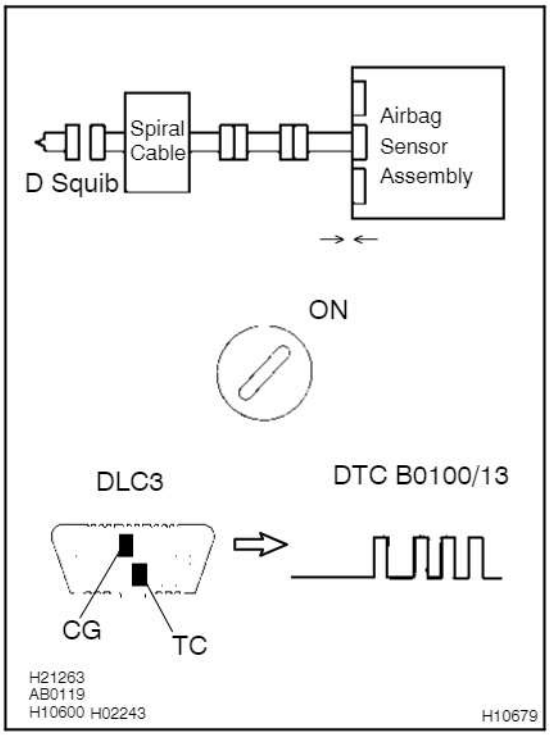
PREPARATION:
Release the airbag activation prevention mechanism built in the connector on the airbag sensor assembly side between the steering wheel pad (D squib) and the airbag sensor assembly (See page DI–432).
CHECK:
Measure the resistance between D+ and D– of the orange connector on the steering wheel pad (D squib) side between the airbag sensor assembly and the steering wheel pad (D squib).
OK:
Resistance: 1 MΩ or Higher

NG → **Go to step 6.**

OK

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4	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0100/13 is not output.

HINT:

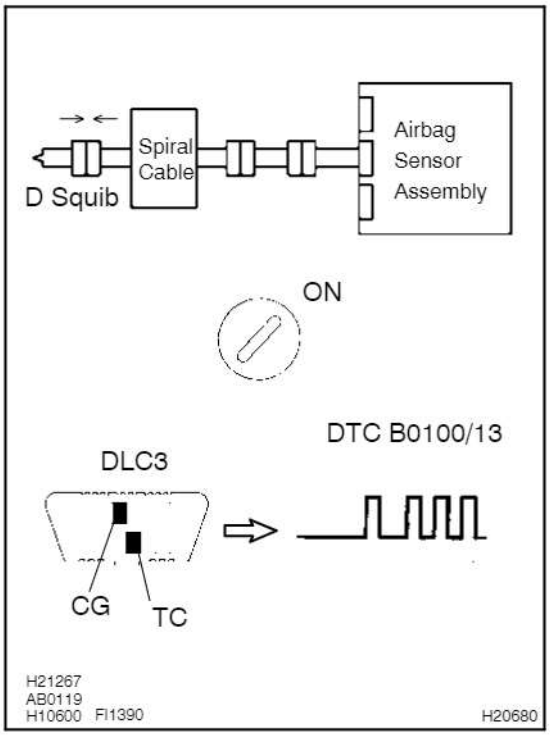
Codes other than code B0100/13 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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5	Check D squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0100/13 is not output.

HINT:

Codes other than code B0100/13 may be output at this time, but they are not relevant to this check.

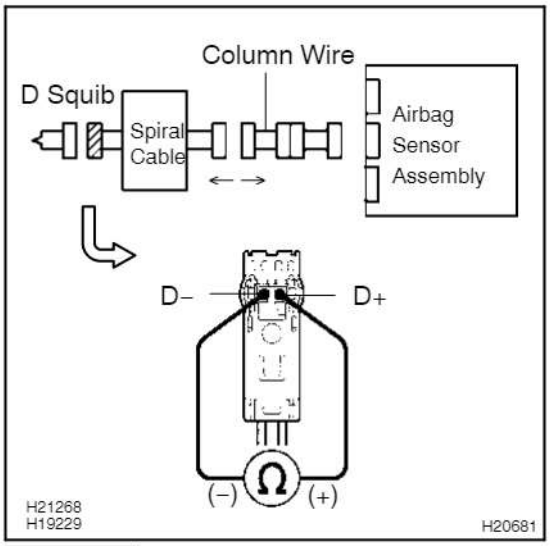
NG	Replace steering wheel pad (D squib).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	Check spiral cable.



PREPARATION:

(a) Disconnect the spiral cable connector from the column wire.

(b) Release the airbag activation prevention mechanism built in the connector of the spiral cable on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between D+ and D– of the orange spiral cable connector on the steering wheel pad (D squib) side.

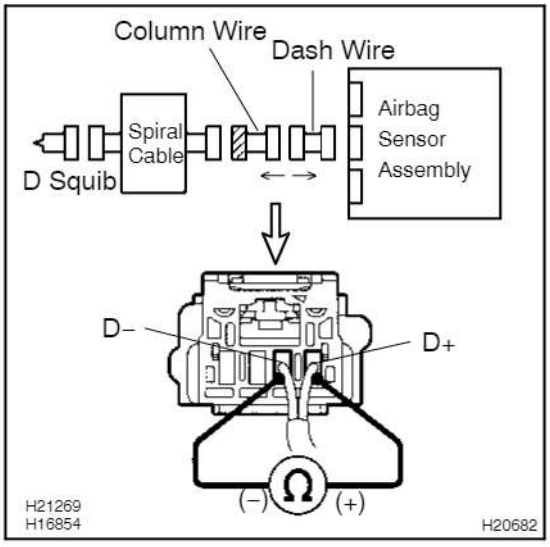
OK:

Resistance: 1 MΩ or Higher

NG	Replace spiral cable.

OK

7	Check column wire.



PREPARATION:

(a) Disconnect the column wire connector from the dash wire.

(b) Release the airbag activation prevention mechanism built in the connector of the column wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between D+ and D– of the column wire connector on the spiral cable side.

OK:

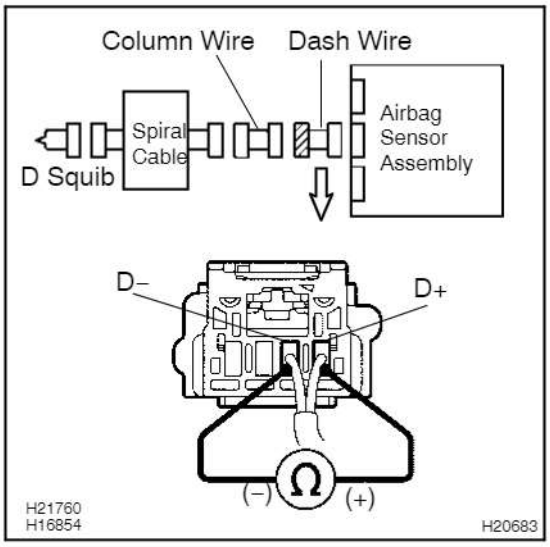
Resistance: 1 MΩ or Higher

NG	Repair or replace column wire.

OK

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8	Check dash wire.



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the dash wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between D+ and D– of the dash wire connector on the column wire side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DI3QH-02

DTC	B0101/14	Open in D Squib Circuit

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad. It causes the airbag to deploy when the airbag deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0101/14 is recorded when an open is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0101/14	• Open in D squib circuit • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

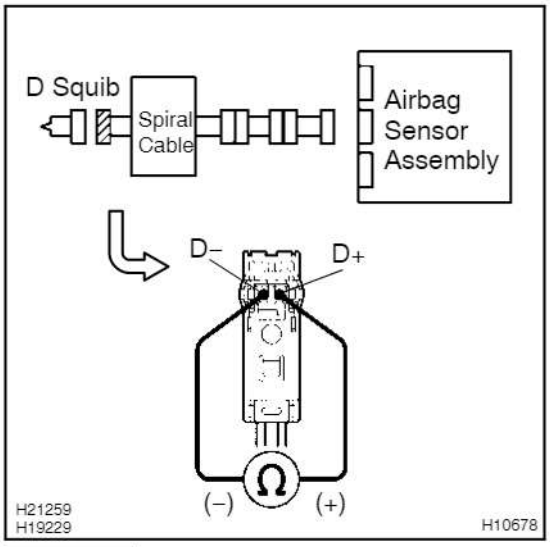
WIRING DIAGRAM

See page DI–452.

INSPECTION PROCEDURE

1	Prepare for inspection (See step 1 on page DI–764).

2	Check D squib circuit.



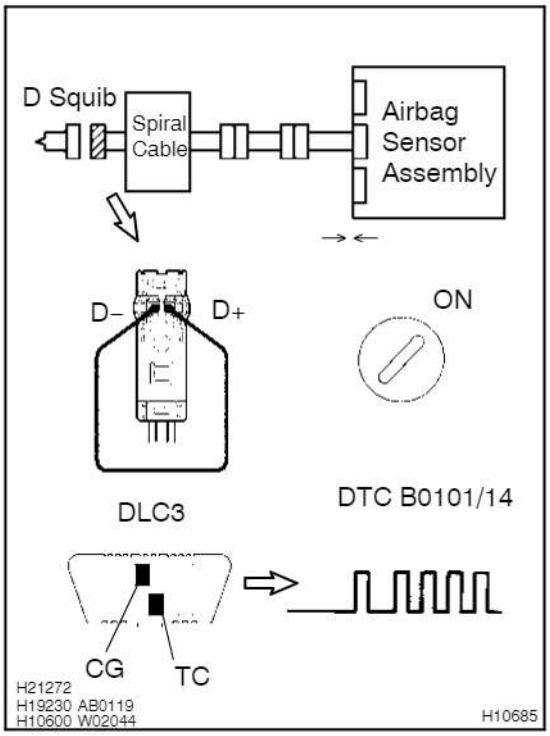
CHECK:
Measure the resistance between D+ and D– of the orange connector on the steering wheel pad (D squib) side between the airbag sensor assembly and the steering wheel pad (D squib).
OK:
Resistance: Below 1 Ω

NG → **Go to step 5.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect D+ and D– of the orange connector on the steering wheel pad (D squib) side between the airbag sensor assembly and the steering wheel pad (D squib).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0101/14 is not output.

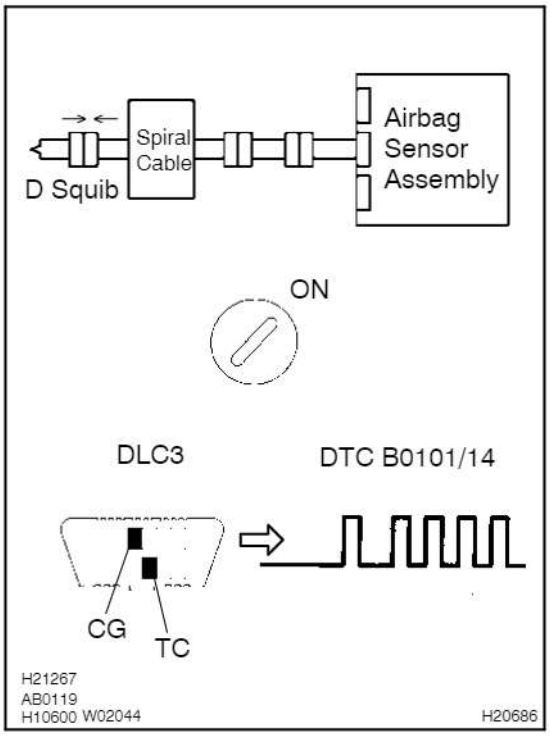
HINT:
Codes other than code B0101/14 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check D squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0101/14 is not output.

HINT:

Codes other than code B0101/14 may be output at this time, but they are not relevant to this check.

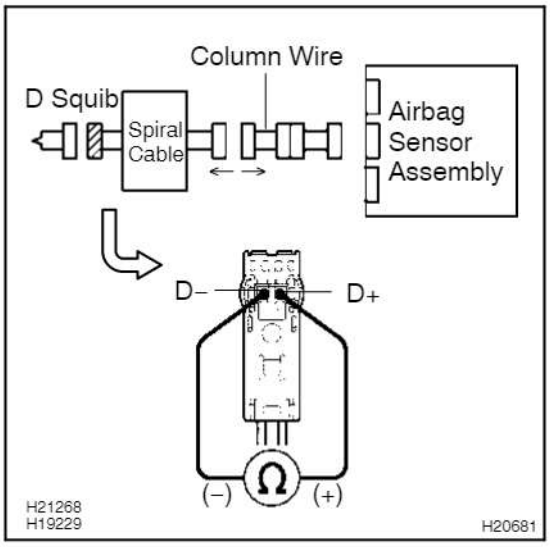
NG	Replace steering wheel pad (D squib).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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5	Check spiral cable.

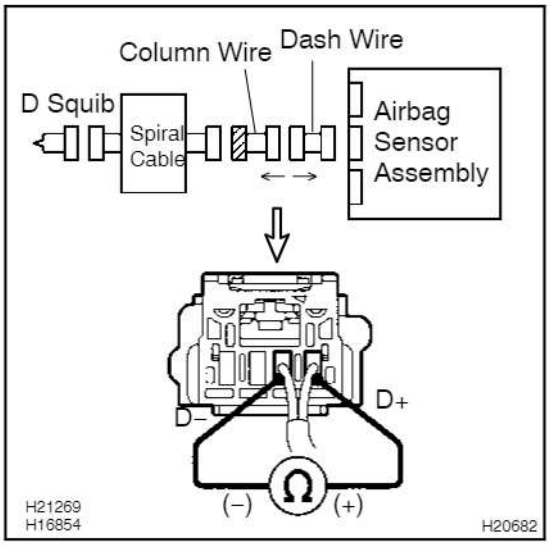


PREPARATION:
Disconnect the spiral cable connector from the column wire.
CHECK:
Measure the resistance between D+ and D– of the orange spiral cable connector on the steering wheel pad (D squib) side.
OK:
Resistance: Below 1 Ω

NG → **Replace spiral cable.**

OK

6	Check column wire.



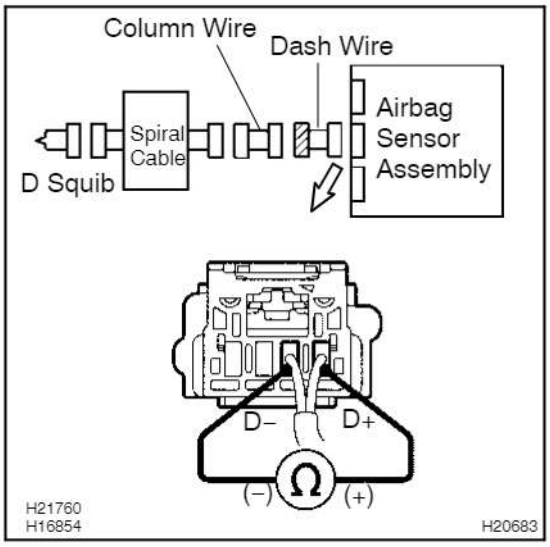
PREPARATION:
Disconnect the column wire connector from the dash wire.
CHECK:
Measure the resistance between D+ and D– of the column wire connector on the spiral cable side.
OK:
Resistance: Below 1 Ω

NG → **Repair or replace column wire.**

OK

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7	Check dash wire.



CHECK:

Measure the resistance between D+ and D– of the dash wire connector on the column wire side.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DI3QI-02

DTC	B0102/11	Short in D Squib Circuit (to Ground)

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad. It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0102/11 is recorded when a ground short is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0102/11	• Short in D squib circuit (to ground) • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

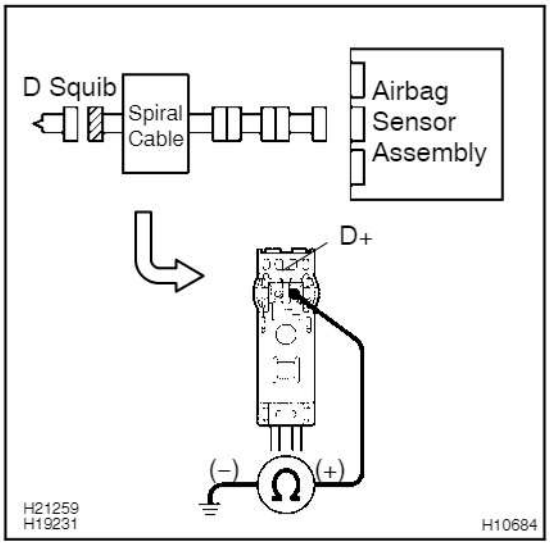
WIRING DIAGRAM

See page DI–452.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check D squib circuit.**



CHECK:

Measure the resistance between the body ground and D+ of the orange connector on the steering wheel pad (D squib) side between the airbag sensor assembly and the steering wheel pad (D squib) side.

OK:

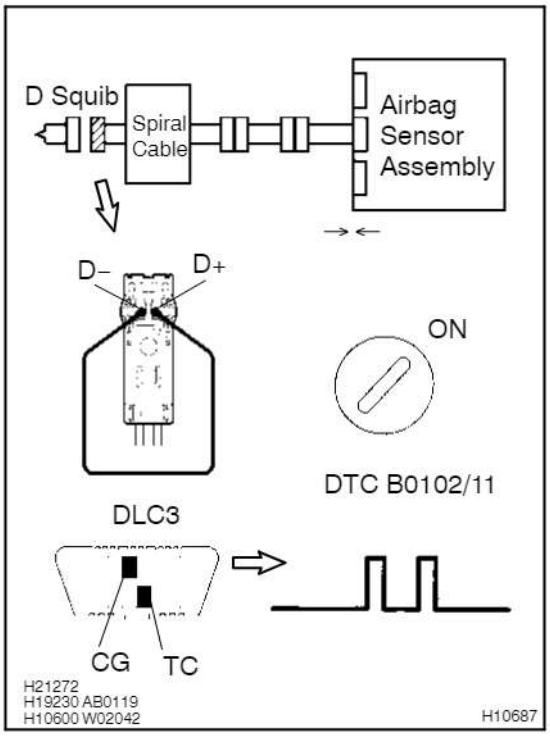
Resistance: 1 MΩ or Higher

NG → **Go to step 5.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect D+ and D– of the orange connector on the steering wheel pad (D squib) side between the airbag sensor assembly and the steering wheel pad (D squib).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check DTC (See page DI–432).

OK:

DTC B0102/11 is not output.

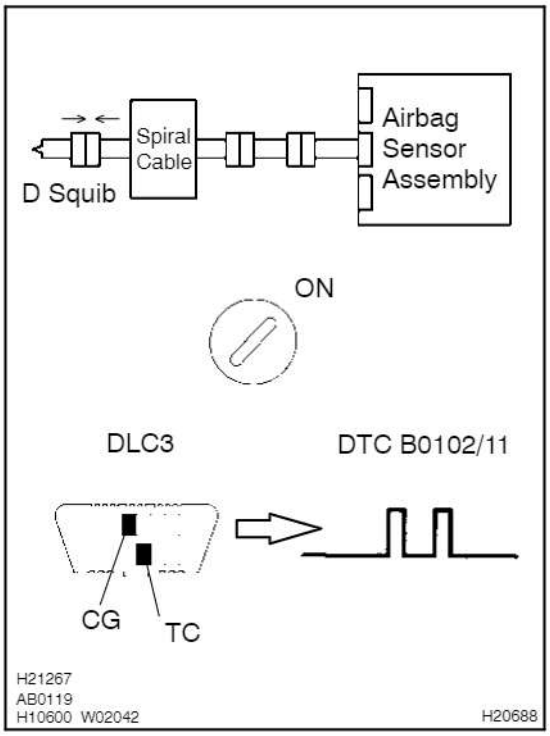
HINT:
Codes other than code B0102/11 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check D squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0102/11 is not output.

HINT:

Codes other than code B0102/11 may be output at this time, but they are not relevant to this check.

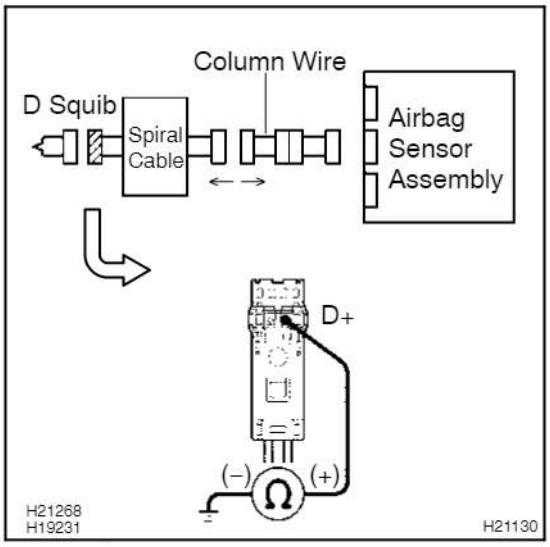
NG	Replace steering wheel pad (D squib).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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5	Check spiral cable.

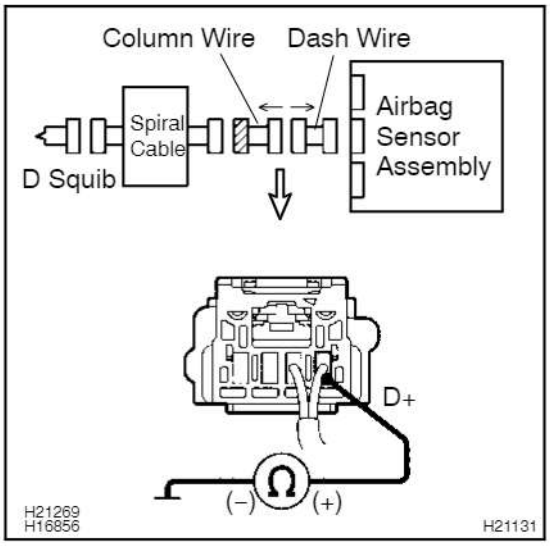


PREPARATION:
Disconnect the spiral cable connector from the column wire.
CHECK:
Measure the resistance between the body ground and D+ of the orange spiral cable connector on the steering wheel pad (D squib) side.
OK:
Resistance: 1 MΩ or Higher

NG → **Replace spiral cable.**

OK

6	Check column wire.



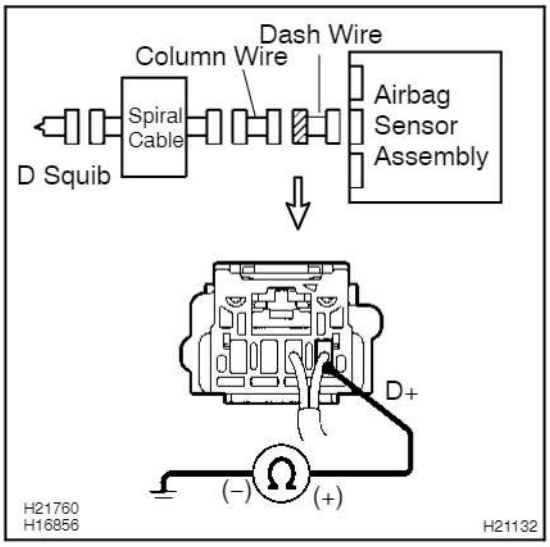
PREPARATION:
Disconnect the column wire connector from the dash wire.
CHECK:
Measure the resistance between the body ground and D+ of the column wire connector on the spiral cable side.
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace column wire.**

OK

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7	Check dash wire.



CHECK:

Measure the resistance between the body ground and D+ of the dash wire connector on the column wire side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning par can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DI3QJ–02

DTC	B0103/12	Short in D Squib Circuit (to B+)

CIRCUIT DESCRIPTION

The D squib circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad. It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each components, see page OPERATION on page RS–3.
DTC B0103/12 is recorded when a B+ short is detected in the D squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0103/12	• Short circuit in D squib circuit (to B+) • D squib malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

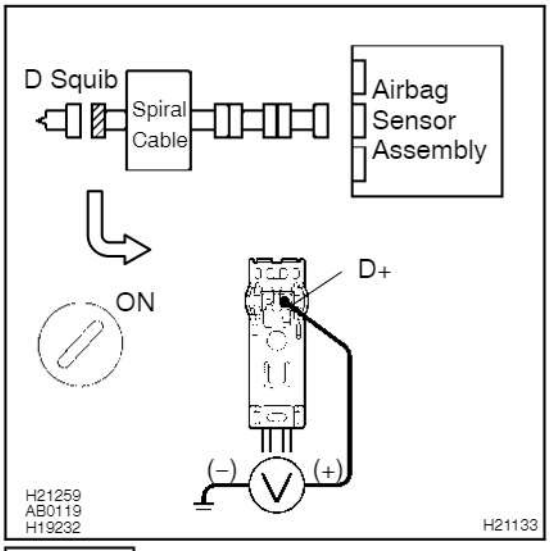
WIRING DIAGRAM

See page DI–452.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check D squib circuit.**



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and D+ of the orange connector on the steering wheel pad (D squib) side between the airbag sensor assembly and the steering wheel pad (D squib).

OK:

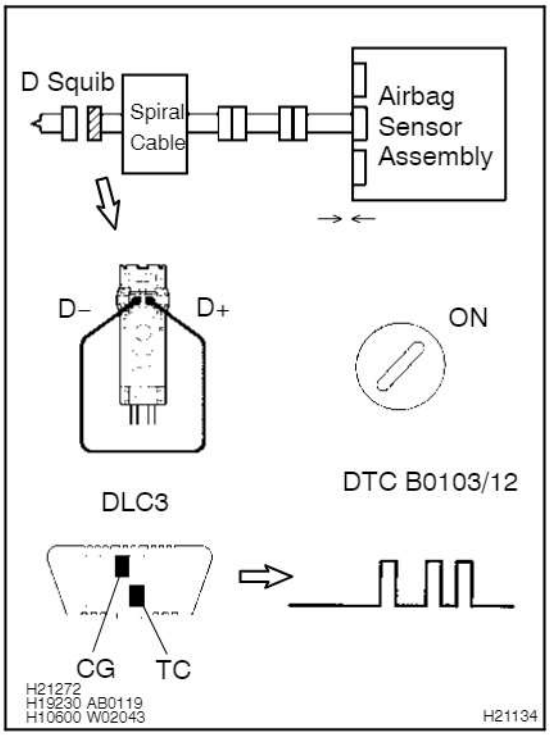
Voltage: Below 1 V

NG	**Go to step 5.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect D+ and D– of the orange connector on the steering wheel pad (D squib) side between the airbag sensor assembly and the steering wheel pad (D squib).
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0103/12 is not output.

HINT:

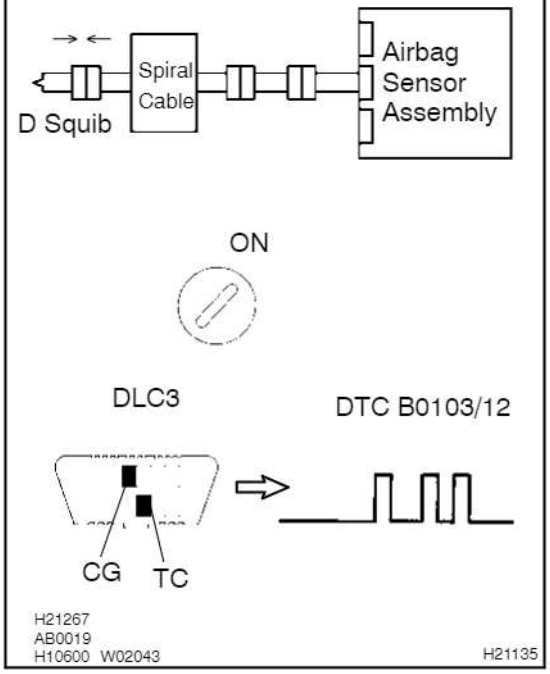
Codes other than code B0103/12 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	Check D squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0103/12 is not output.

HINT:

Codes other than code B0103/12 may be output at this time, but they are not relevant to this check.

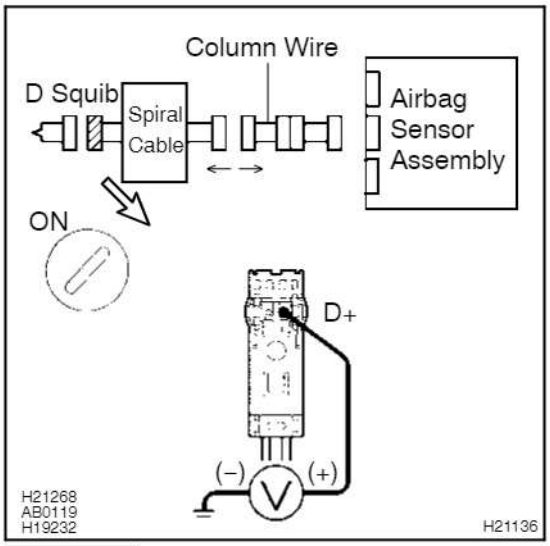
NG	Replace steering wheel pad (D squib).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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5	Check spiral cable.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the spiral cable connector from the column wire.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and D+ of the orange spiral cable connector on the steering wheel pad (D squib) side.

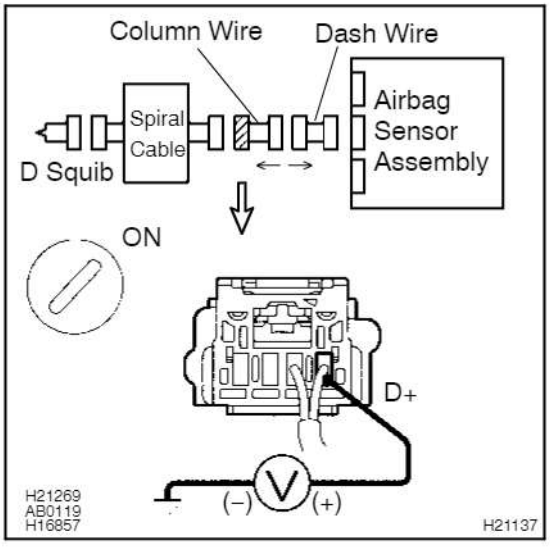
OK:

Voltage: Below 1 V

NG	Replace spiral cable.

OK

6	Check column wire.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the column wire connector from the dash wire.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and D+ of the column wire connector on the spiral cable side.

OK:

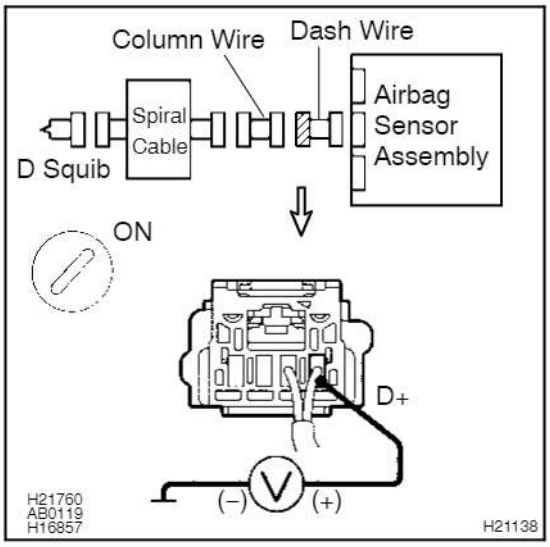
Voltage: Below 1 V

NG	Repair or replace column wire.

OK

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7	**Check dash wire.**



CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and D+ of the dash wire connector on the column wire side.

OK:

Voltage: Below 1 V

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DI1B6-42

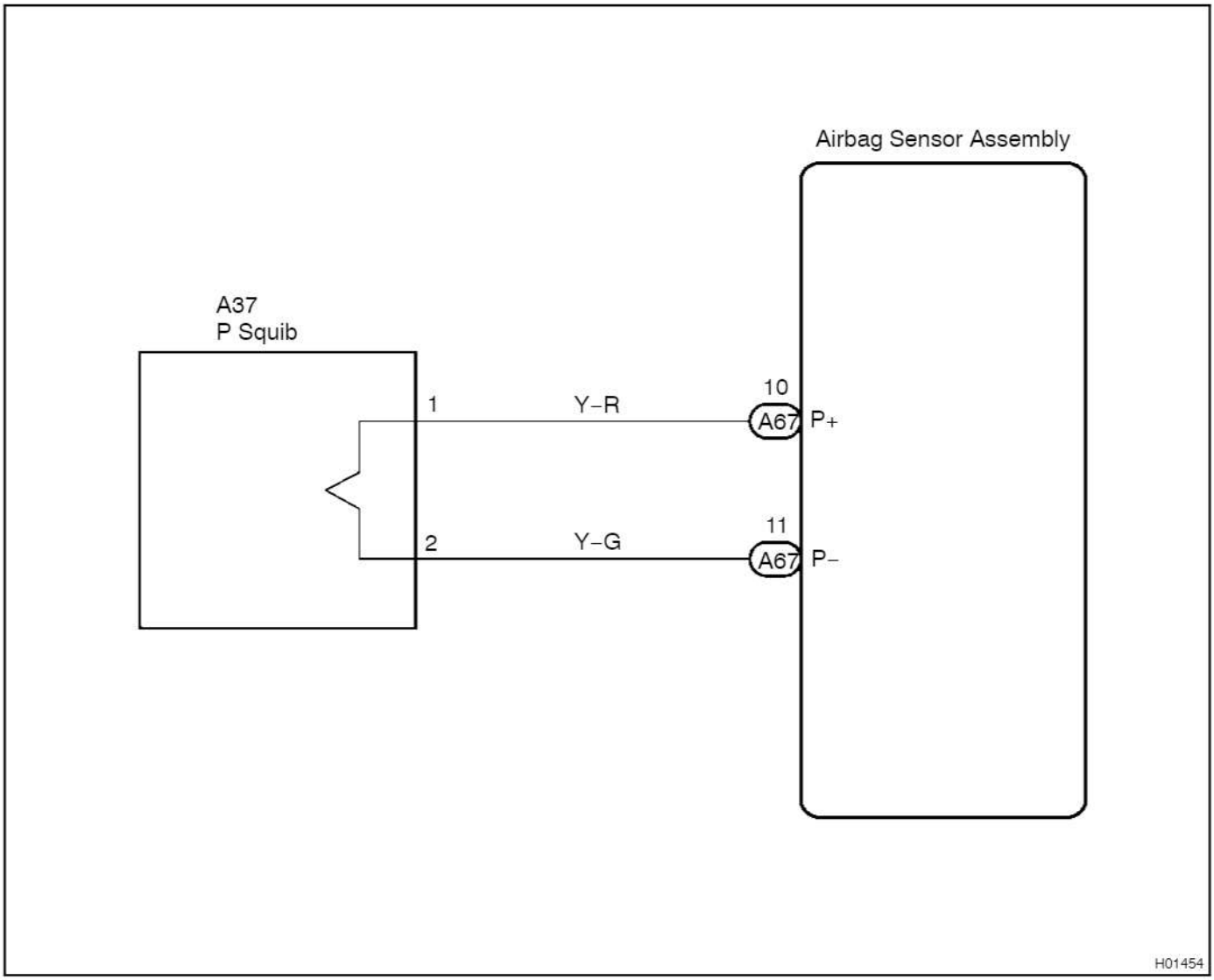
DTC	B0105/53	Short in P Squib Circuit

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and the front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0105/53 is recorded when a short is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0105/53	• Short in P squib circuit • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Dash wire

WIRING DIAGRAM

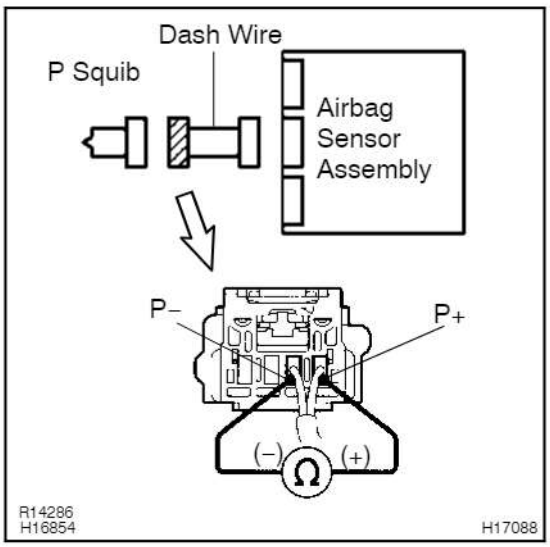


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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check dash wire (P squib circuit).**



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the dash wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between P+ and P– of the dash wire connector on the front passenger airbag assembly (P squib) side.

OK:

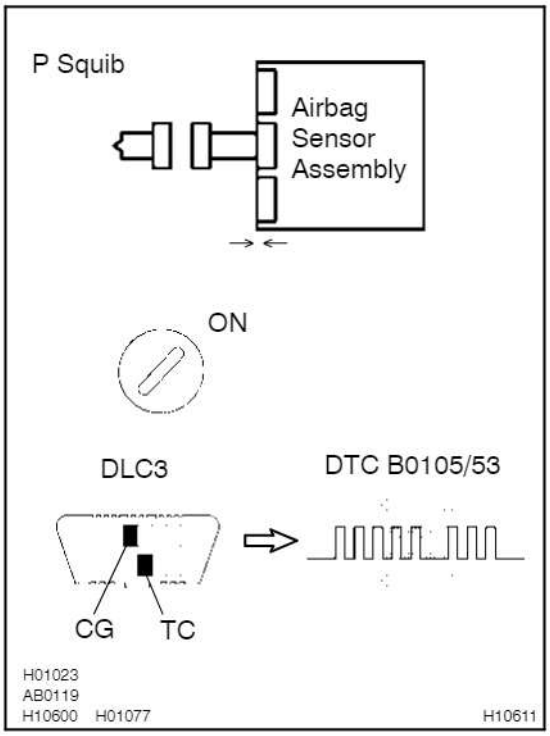
Resistance: 1 MΩ or Higher

NG → **Repair or replace dash wire.**

OK

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3	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0105/53 is not output.

HINT:

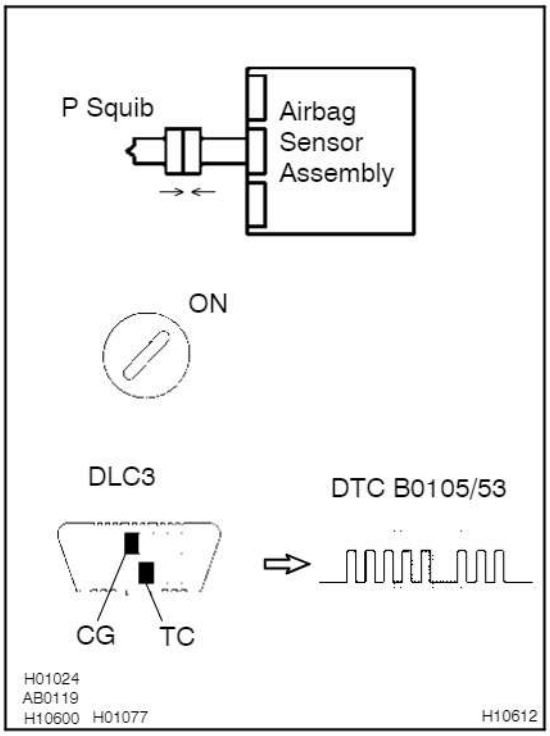
Codes other than code B0105/53 may be output at this time, but they are not relevant to this check.

NG	**Replace airbag sensor assembly.**

OK

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4	Check P squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0105/53 is not output.

HINT:

Codes other than code B0105/53 may be output at this time, but they are not relevant to this check.

NG	Replace front passenger airbag assembly (P squib).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DI1B7-39

DTC	B0106/54	Open in P Squib Circuit

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and the front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0106/54 is recorded when an open is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0106/54	• Open in P squib circuit • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Dash wire

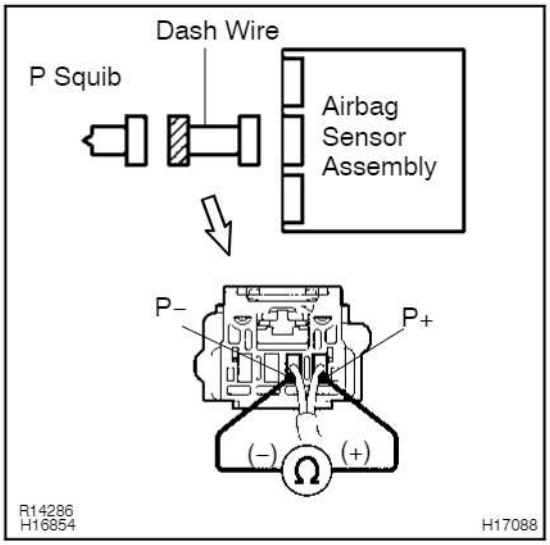
WIRING DIAGRAM

See page DI–473.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check dash wire (P squib circuit).**



CHECK:
Measure the resistance between P+ and P– of the dash wire connector on the front passenger airbag assembly (P squib) side.

OK:

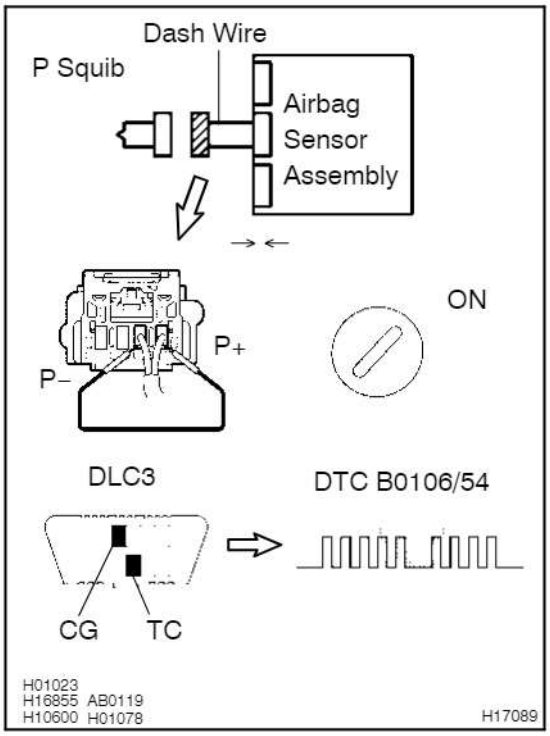
Resistance: Below 1 Ω

NG → **Repair or replace dash wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect P+ and P– of the dash wire connector on the front passenger airbag assembly (P squib) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0106/54 is not output.

HINT:

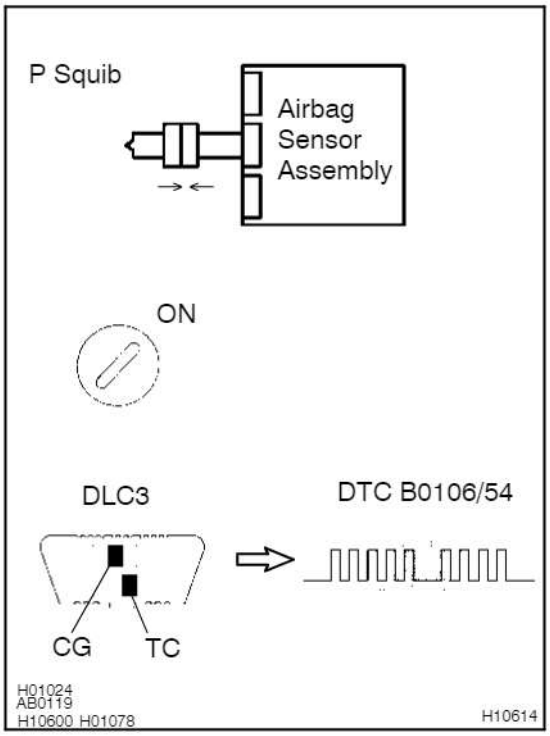
Codes other than code B0106/54 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	Check P squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0106/54 is not output.

HINT:
Codes other than code B0106/54 may be output at this time, but they are not relevant to this check.

NG	Replace front passenger airbag assembly (P squib).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DI1S8-28

DTC	B0107/51	Short in P Squib Circuit (to Ground)

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and the front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0107/51 is recorded when ground short is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0107/51	• Short in P squib circuit (to ground) • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Dash wire

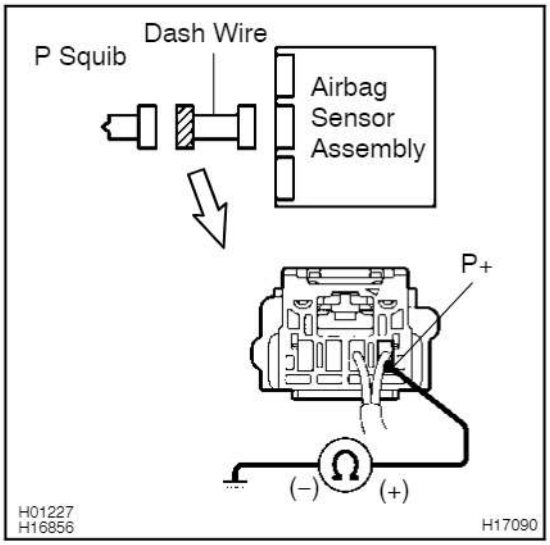
WIRING DIAGRAM

See page DI–473.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check dash wire (P squib circuit).**



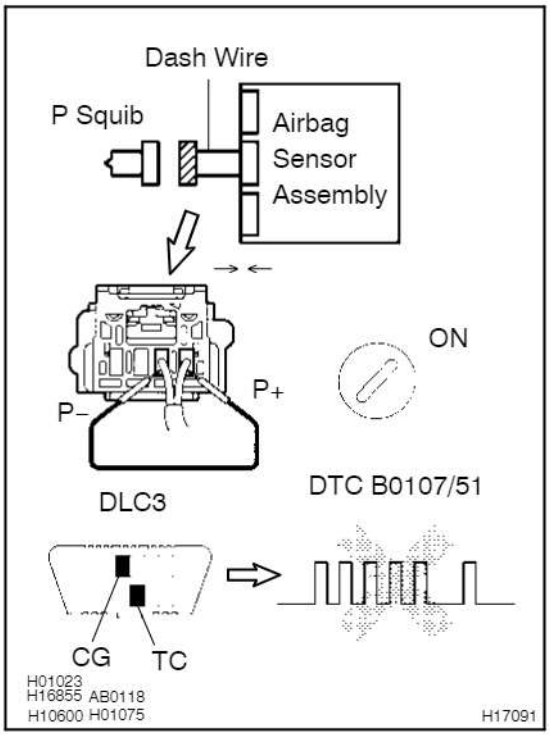
CHECK:
Measure the resistance between the body ground and P+ of the dash wire connector on the front passenger airbag assembly (P squib) side.
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace dash wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect P+ and P– of the dash wire connector on the front passenger airbag assembly (P squib) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0107/51 is not output.

HINT:

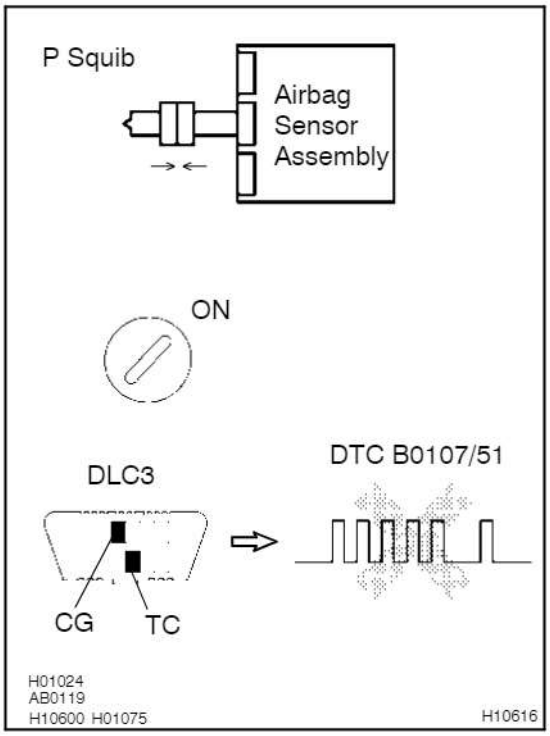
Codes other than code B0107/51 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	Check P squib.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0107/51 is not output.

HINT:

Codes other than code B0107/51 may be output at this time, but they are not relevant to this check.

NG → **Replace front passenger airbag assembly (P squib).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DI1B9-35

DTC	B0108/52	Short in P Squib Circuit (to B+)

CIRCUIT DESCRIPTION

The P squib circuit consists of the airbag sensor assembly and the front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0108/52 is recorded when a B+ short is detected in the P squib circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0108/52	• Short in P squib circuit (to B+) • P squib malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib) • Airbag sensor assembly • Dash wire

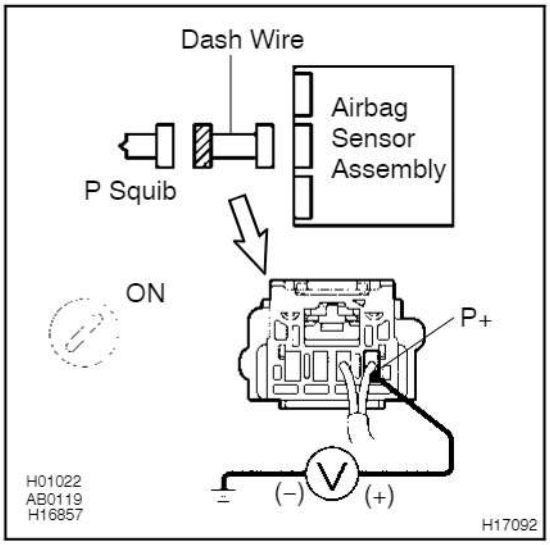
WIRING DIAGRAM

See page DI–473.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check dash wire (P squib circuit).**



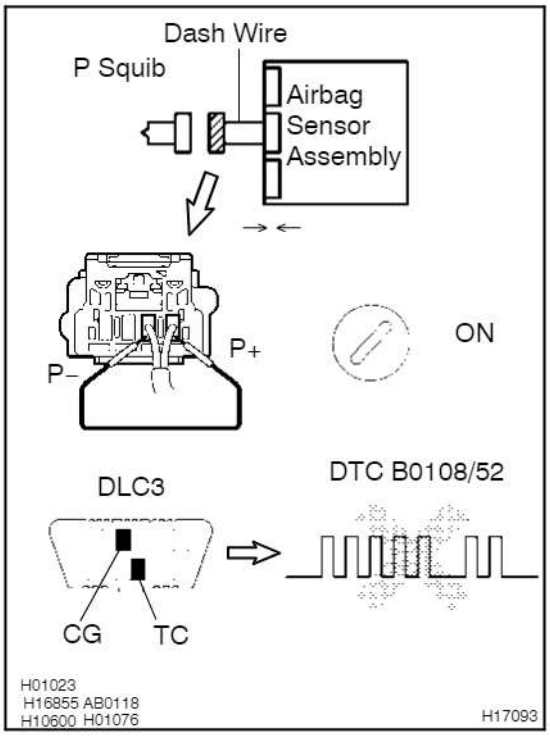
PREPARATION:
Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.
CHECK:
(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and P+ of the dash wire connector on the front passenger airbag assembly (P squib) side.
OK:
Voltage: Below 1 V

NG → **Repair or replace dash wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect P+ and P– of the dash wire connector on the front passenger airbag assembly (P squib) side.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0108/52 is not output.

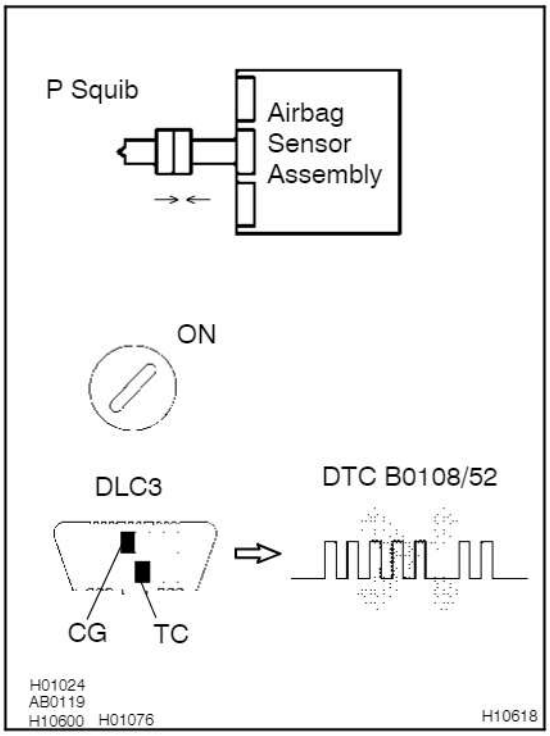
HINT:
Codes other than code B0108/52 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	**Check P squib.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0108/52 is not output.

HINT:
Codes other than code B0108/52 may be output at this time, but they are not relevant to this check.

NG → **Replace front passenger airbag assembly (P squib).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIASY–01

DTC	B0110/43	Short in Side Squib RH Circuit

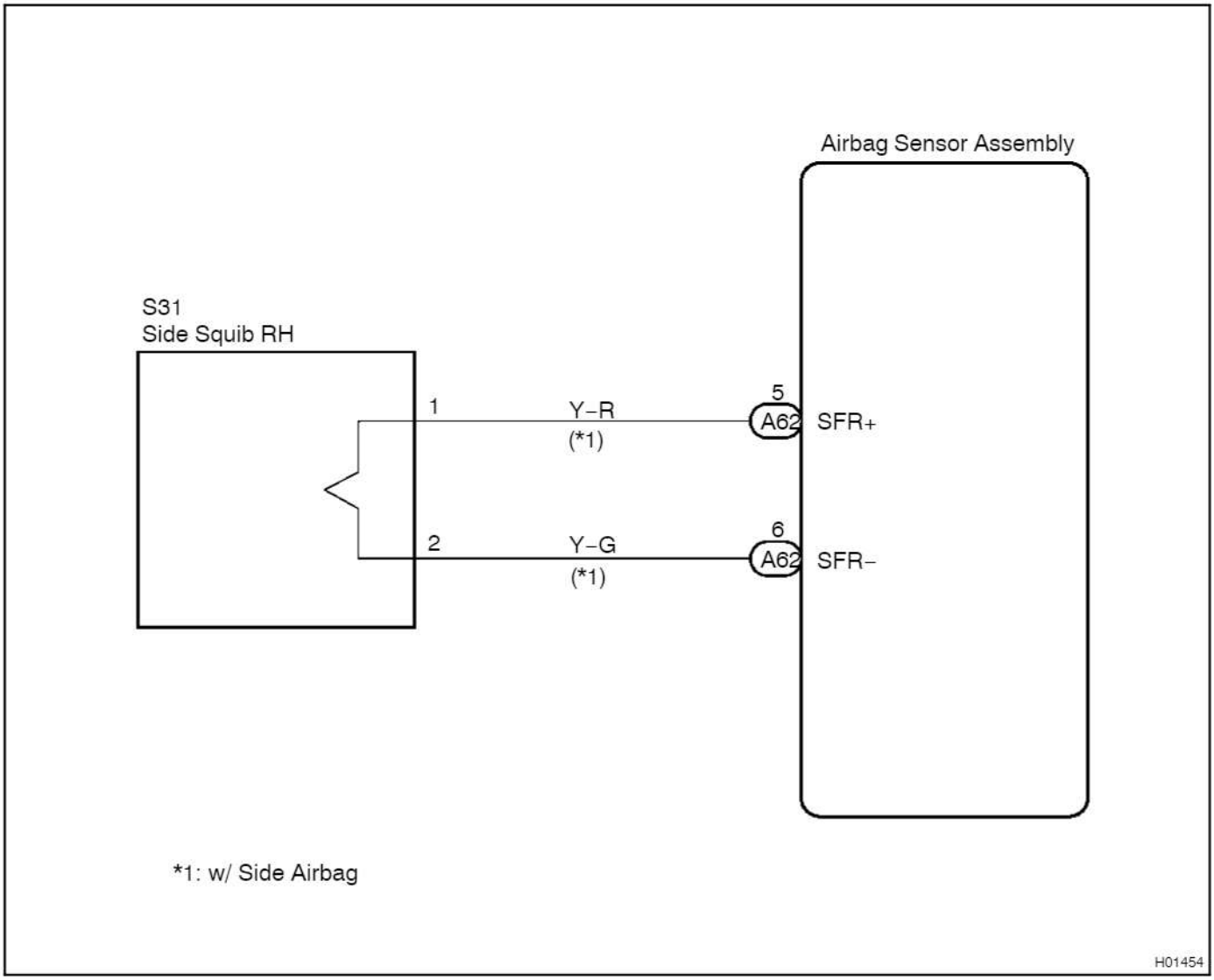
CIRCUIT DESCRIPTION

The side squib RH circuit consists of the airbag sensor assembly and the side airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0110/43 is recorded when a short is detected in the side squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0110/43	• Short in side squib RH circuit • Side squib RH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly RH (Side squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B0110/43 is indicated only for the vehicle equipped with the side airbag.

WIRING DIAGRAM

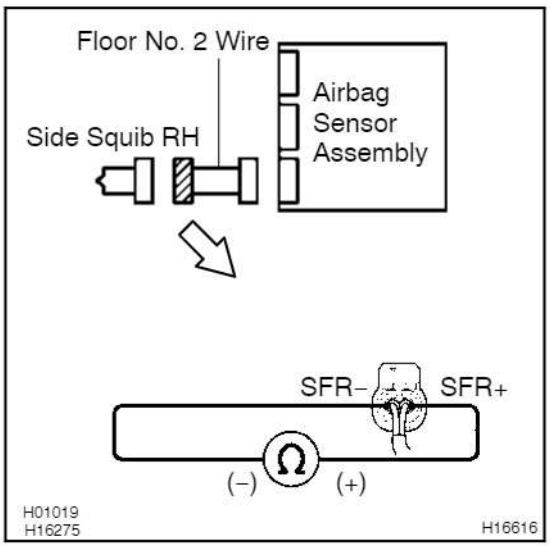


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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 2 wire (side squib RH circuit).**



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the floor No. 2 wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between SFR+ and SFR– of the floor No. 2 wire connector on the side airbag assembly RH (side squib RH) side.

OK:

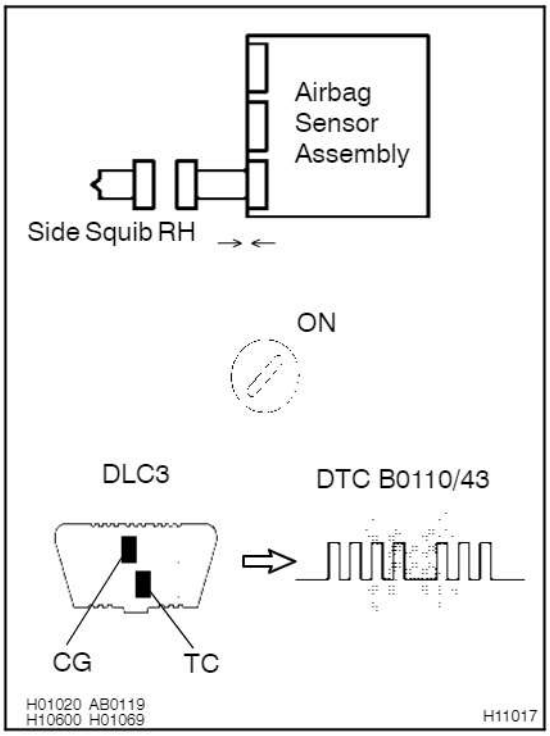
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0110/43 is not output.

HINT:

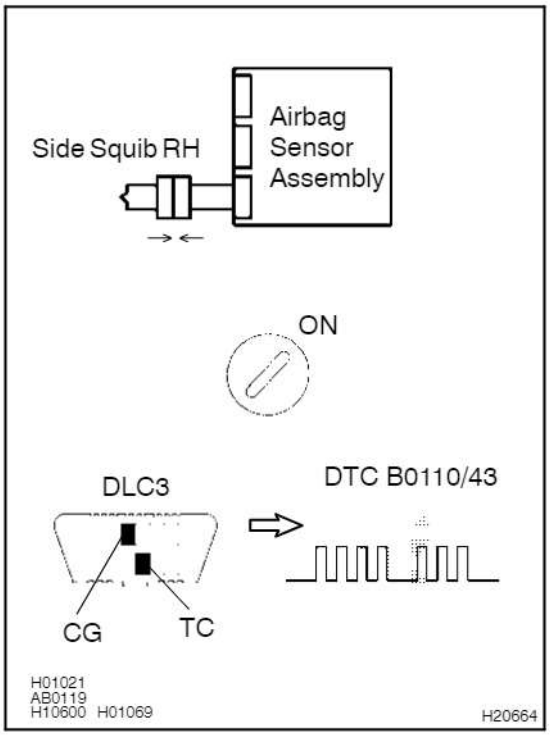
Codes other than code B0110/43 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	**Check side squib RH.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly RH (side squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0110/43 is not output.

HINT:
Codes other than code B0110/43 may be output at this time, but they are not relevant to this check.

NG → **Replace side airbag assembly RH (side squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIASZ–01

DTC	B0111/44	Open in Side Squib RH Circuit

CIRCUIT DESCRIPTION

The side squib RH circuit consists of the airbag sensor assembly and the side airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0111/44 is recorded when an open is detected in the side squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0111/44	• Open in side squib RH circuit • Side squib RH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly RH (Side squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B0111/44 is indicated only for the vehicle equipped with the side airbag.

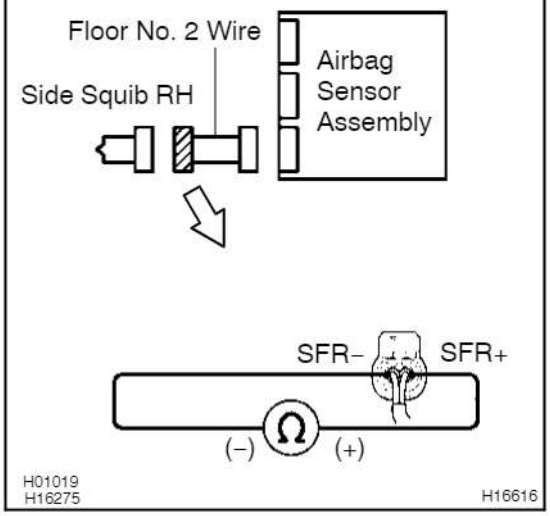
WIRING DIAGRAM

See page DI–486.

INSPECTION PROCEDURE

1	Prepare for inspection (See step 1 on page DI–764).

2	Check floor No. 2 wire (side squib RH circuit).



CHECK:
Measure the resistance between SFR+ and SFR– of the floor No. 2 wire connector on the side airbag assembly RH (side squib RH) side.

OK:

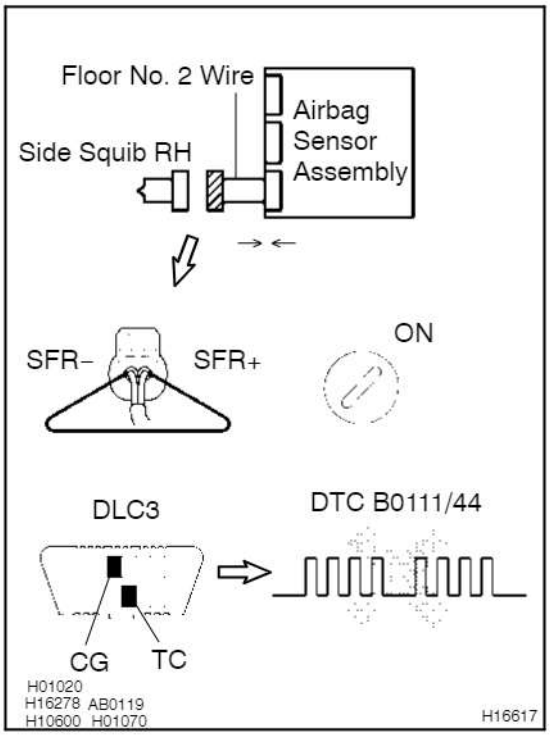
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 2 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect SFR+ and SFR– of the floor No. 2 wire connector on the side airbag assembly RH (side squib RH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0111/44 is not output.

HINT:

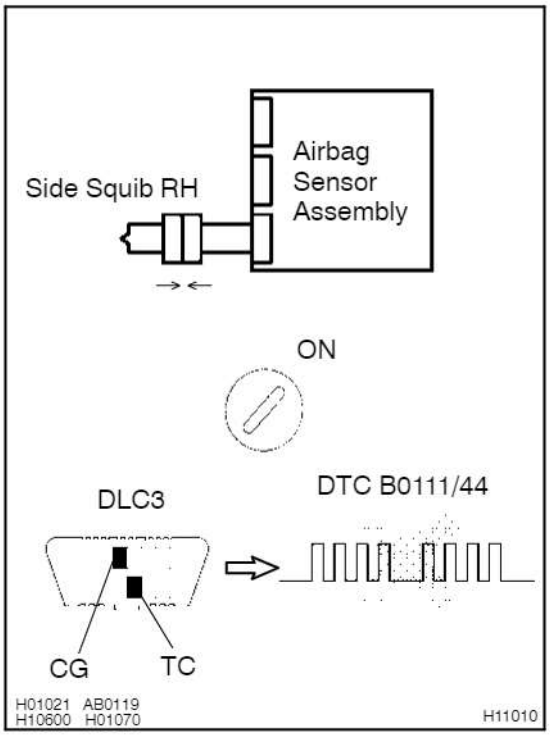
Codes other than code B0111/44 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check side squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly RH (side squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0111/44 is not output.

HINT:
Codes other than code B0111/44 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly RH (side squib RH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DTC	B0112/41	Short in Side Squib RH Circuit (to Ground)

CIRCUIT DESCRIPTION

The side squib RH circuit consists of the airbag sensor assembly and the side airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0112/41 is recorded when ground short is detected in the side squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0112/41	• Short in side squib RH circuit (to ground) • Side squib RH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly RH (Side squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B0112/41 is indicated only for the vehicle equipped with the side airbag.

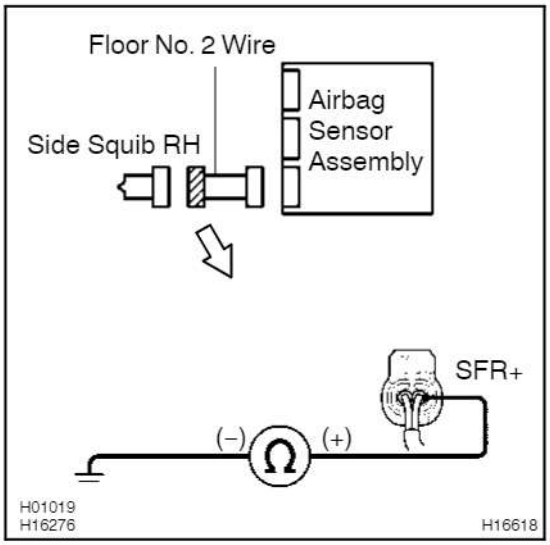
WIRING DIAGRAM

See page DI–486.

INSPECTION PROCEDURE

1	Prepare for inspection (See step 1 on page DI–764).

2	Check floor No. 2 wire (side squib RH circuit).



CHECK:
Measure the resistance between the body ground and SFR+ of the floor No. 2 wire connector on the side airbag assembly RH (side squib RH) side.

OK:

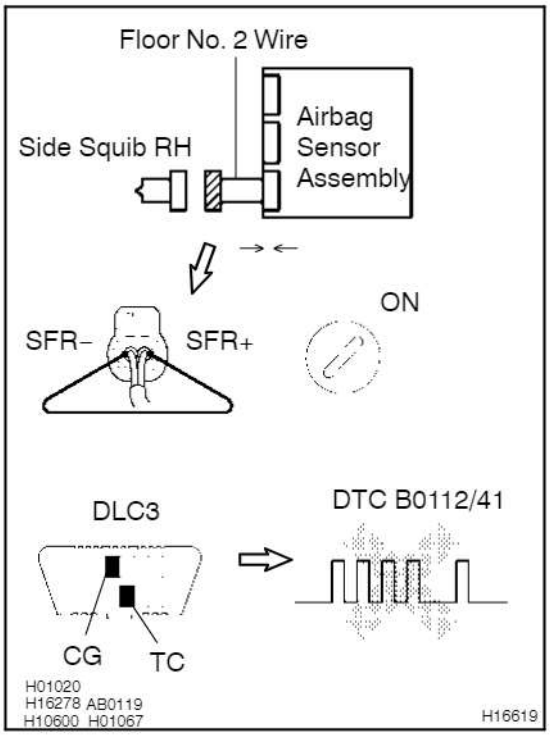
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect SFR+ and SFR– of the floor No. 2 wire connector on the side airbag assembly RH (side squib RH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0112/41 is not output.

HINT:

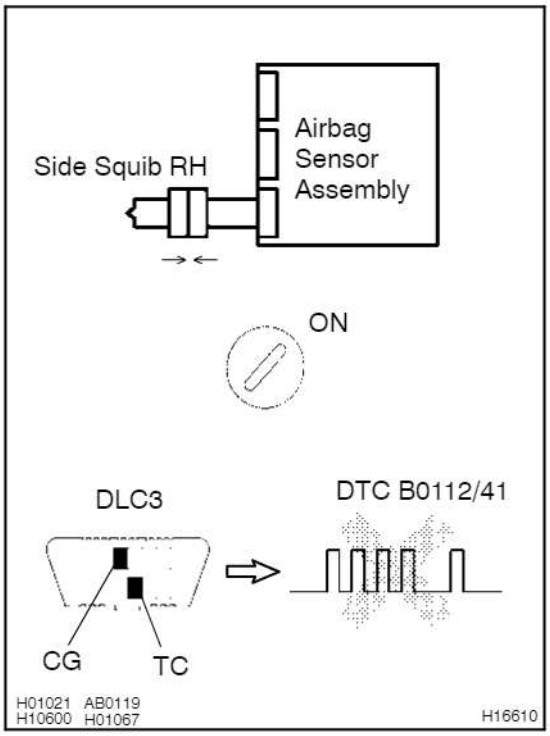
Codes other than code B0112/41 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	**Check side squib RH.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly RH (side squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0112/41 is not output.

HINT:
Codes other than code B0112/41 may be output at this time, but they are not relevant to this check.

NG	**Replace side airbag assembly RH (side squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAT1–01

DTC	B0113/42	Short in Side Squib RH Circuit (to B+)

CIRCUIT DESCRIPTION

The side squib RH circuit consists of the airbag sensor assembly and the side airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0113/42 is recorded when a B+ short is detected in the side squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0113/42	• Short in side squib RH circuit (to B+) • Side squib RH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly RH (Side squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B0113/42 is indicated only for the vehicle equipped with the side airbag.

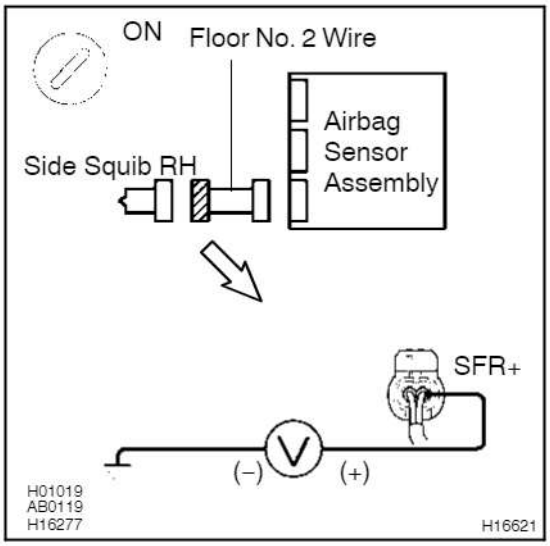
WIRING DIAGRAM

See page DI–486.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 2 wire (side squib RH circuit).**



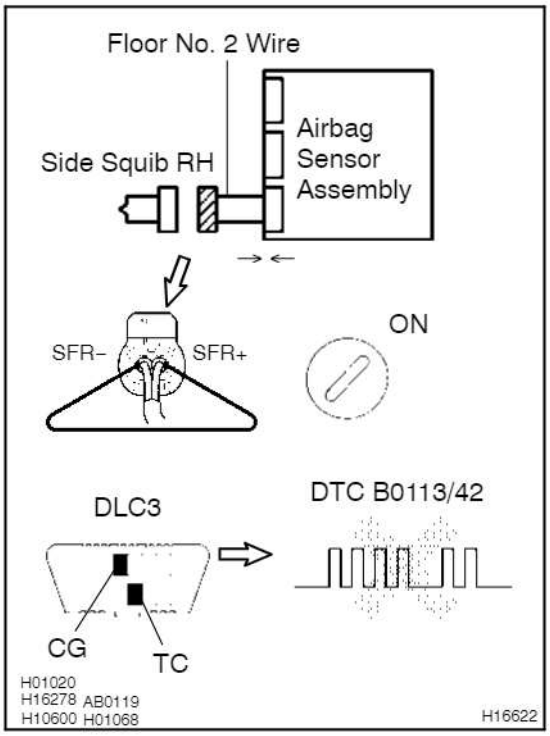
PREPARATION:
Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.
CHECK:
(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and SFR+ of the floor No. 2 wire connector on the side airbag assembly RH (side squib RH) side.
OK:
Voltage: Below 1 V

NG	**Repair or replace floor No. 2 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect SFR+ and SFR– of the floor No. 2 wire connector on the side airbag assembly RH (side squib RH) side.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0113/42 is not output.

HINT:

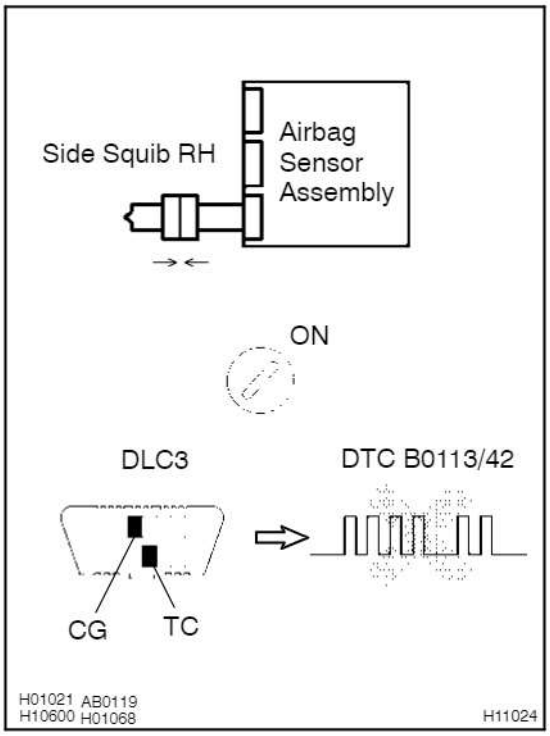
Codes other than code B0113/42 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	Check side squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly RH (side squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0113/42 is not output.

HINT:

Codes other than code B0113/42 may be output at this time, but they are not relevant to this check.

NG → **Replace side airbag assembly RH (side squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAT2-01

DTC	B0115/47	Short in Side Squib LH Circuit

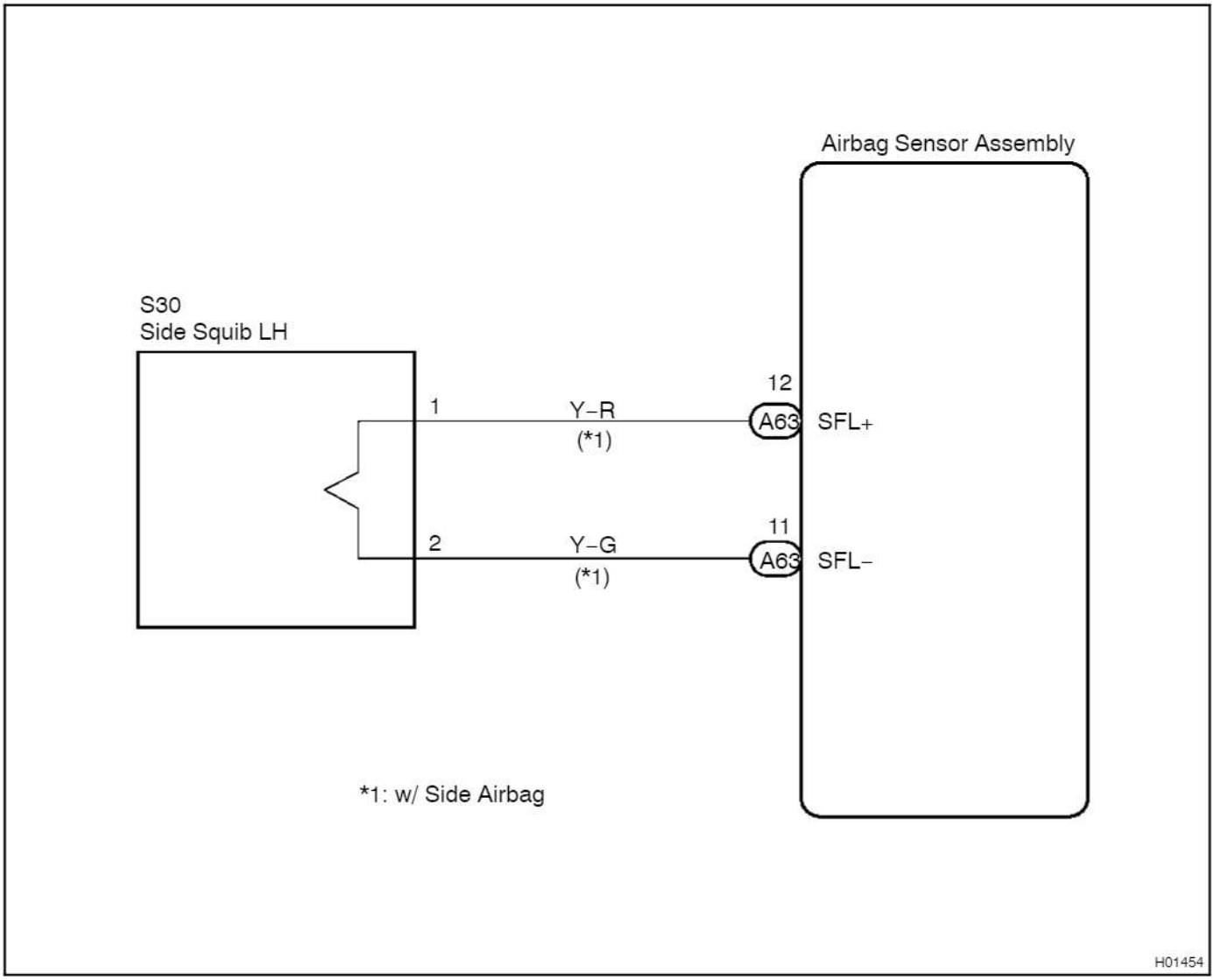
CIRCUIT DESCRIPTION

The side squib LH circuit consists of the airbag sensor assembly and the side airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0115/47 is recorded when a short is detected in the side squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0115/47	• Short in side squib LH circuit • Side squib LH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly LH (Side squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B0115/47 is indicated only for the vehicle equipped with the side airbag.

WIRING DIAGRAM

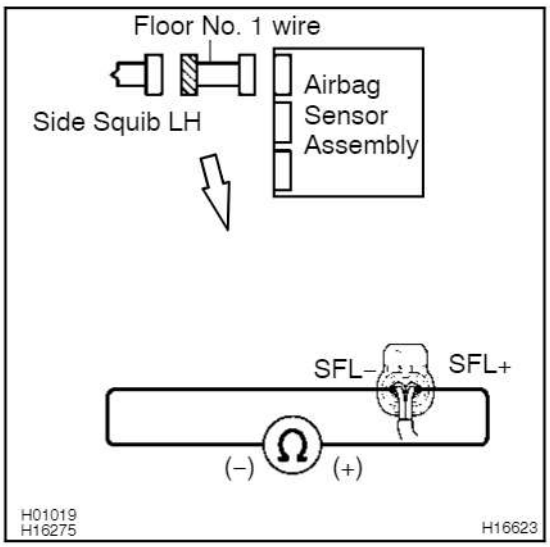


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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 1 wire (side squib LH circuit).**



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the floor No. 1 wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between SFL+ and SFL– of the floor No. 1 wire connector on the side airbag assembly LH (side squib LH) side.

OK:

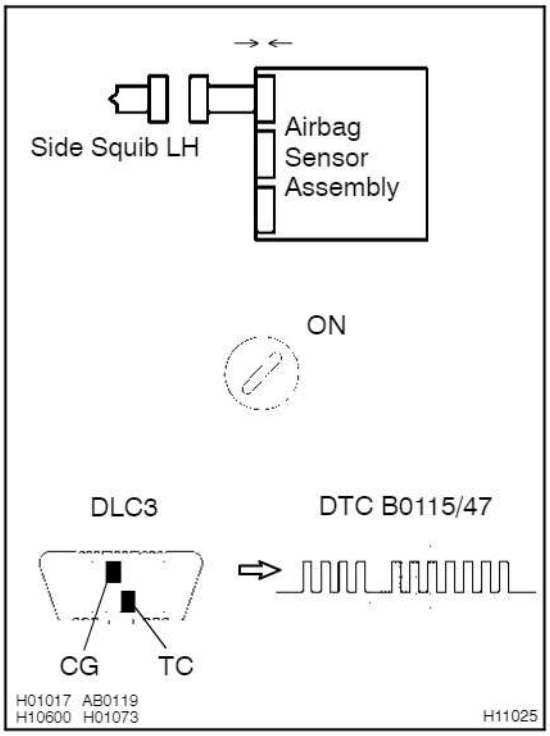
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0115/47 is not output.

HINT:

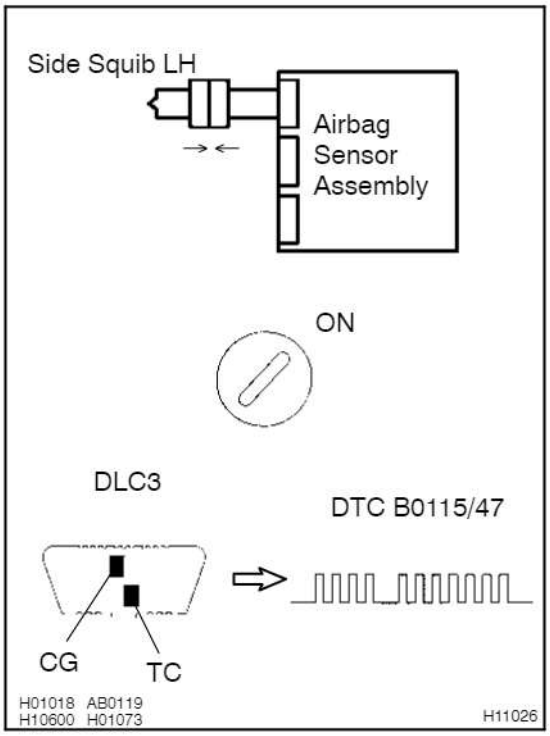
Codes other than code B0115/47 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check side squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly LH (side squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0115/47 is not output.

HINT:
Codes other than code B0115/47 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly LH (side squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIAT3–01

DTC	B0116/48	Open in Side Squib LH Circuit

CIRCUIT DESCRIPTION

The side squib LH circuit consists of the airbag sensor assembly and the side airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0116/48 is recorded when an open is detected in the side squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0116/48	• Open in side squib LH circuit • Side squib LH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly LH (Side squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B0116/48 is indicated only for the vehicle equipped with the side airbag.

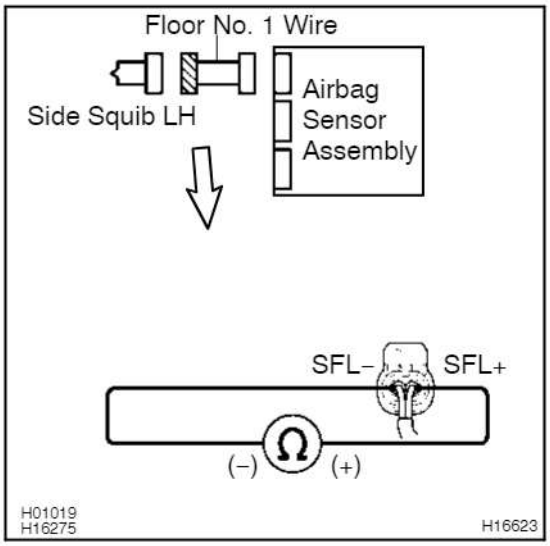
WIRING DIAGRAM

See page DI–499.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 1 wire (side squib LH circuit).**



CHECK:
Measure the resistance between SFL+ and SFL– of the floor No. 1 wire connector on the side airbag assembly LH (side squib LH) side.

OK:

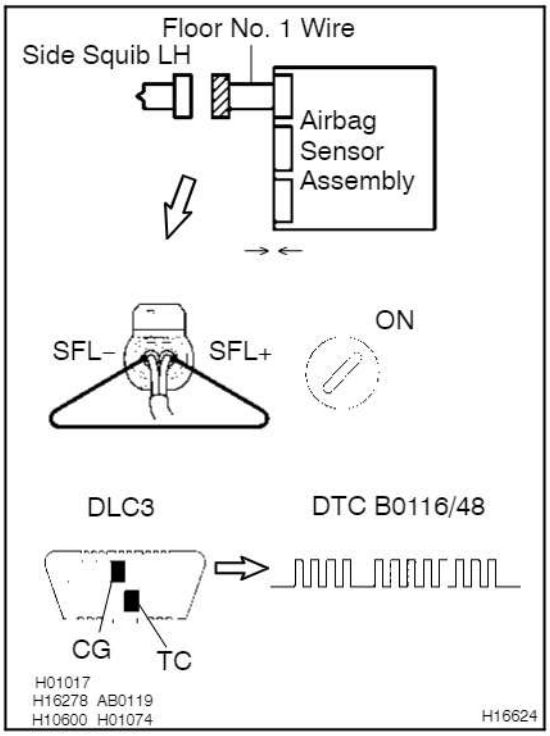
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect SFL+ and SFL– of the floor No. 1 wire connector on the side airbag assembly LH (side squib LH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0116/48 is not output.

HINT:

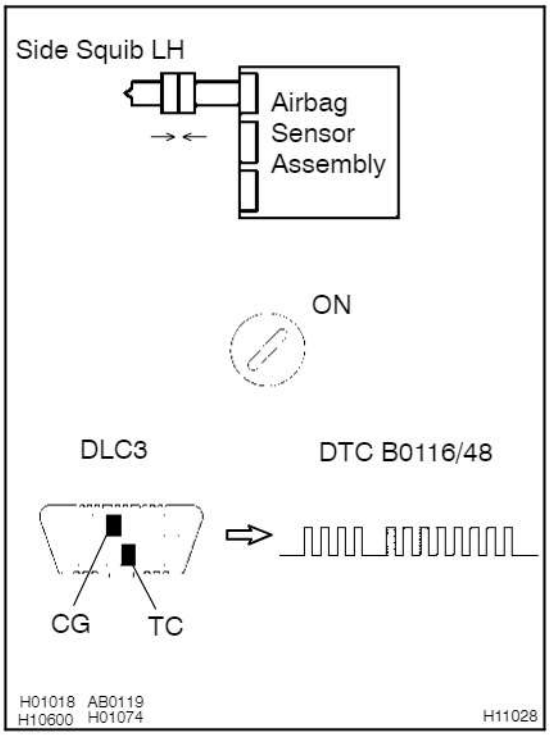
Codes other than code B0116/48 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	**Check side squib LH.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly LH (side squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0116/48 is not output.

HINT:
Codes other than code B0116/48 may be output at this time, but they are not relevant to this check.

NG	**Replace side airbag assembly LH (side squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIAT4–01

DTC	B0117/45	Short in Side Squib LH Circuit (to Ground)

CIRCUIT DESCRIPTION

The side squib LH circuit consists of the airbag sensor assembly and the side airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0117/45 is recorded when ground short is detected in the side squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0117/45	• Short in side squib LH circuit (to ground) • Side squib LH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly LH (Side squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B0117/45 is indicated only for the vehicle equipped with the side airbag.

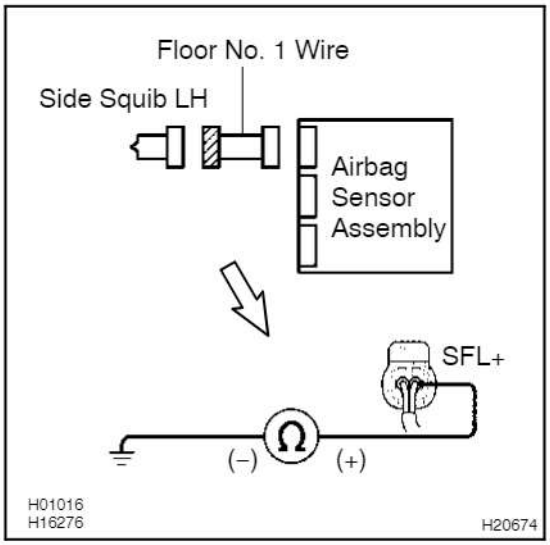
WIRING DIAGRAM

See page DI–499.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 1 wire (side squib LH circuit).**



CHECK:
Measure the resistance between the body ground and SFL+ of the floor No. 1 wire connector on the side airbag assembly LH (side squib LH) side.

OK:

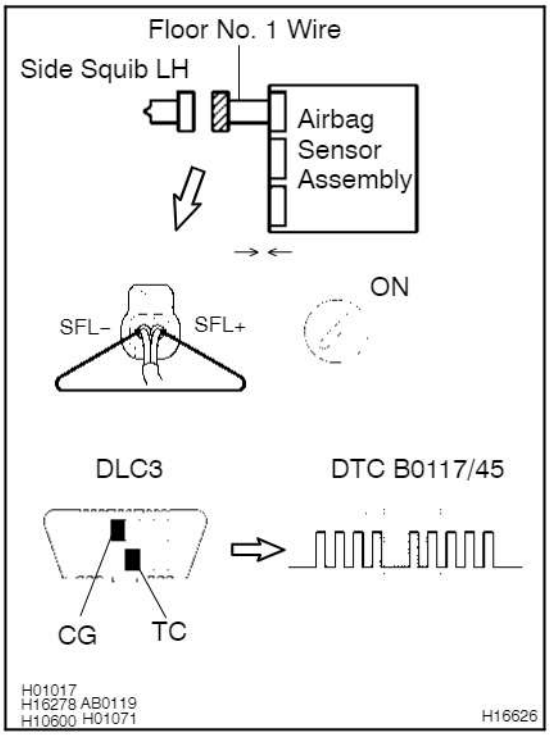
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect SFL+ and SFL– of the floor No. 1 wire connector on the side airbag assembly LH (side squib LH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0117/45 is not output.

HINT:

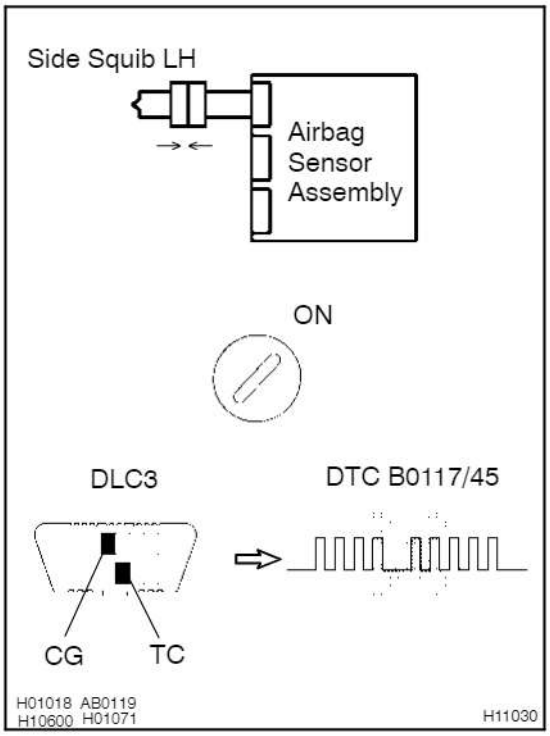
Codes other than code B0117/45 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	Check side squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly LH (side squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0117/45 is not output.

HINT:

Codes other than code B0117/45 may be output at this time, but they are not relevant to this check.

NG	Replace side airbag assembly LH (side squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAT5-01

DTC	B0118/46	Short in Side Squib LH Circuit (to B+)

CIRCUIT DESCRIPTION

The side squib LH circuit consists of the airbag sensor assembly and the side airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0118/46 is recorded when a B+ short is detected in the side squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0118/46	• Short in side squib LH circuit (to B+) • Side squib LH malfunction • Airbag sensor assembly malfunction	• Side airbag assembly LH (Side squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B0118/46 is indicated only for the vehicle equipped with the side airbag.

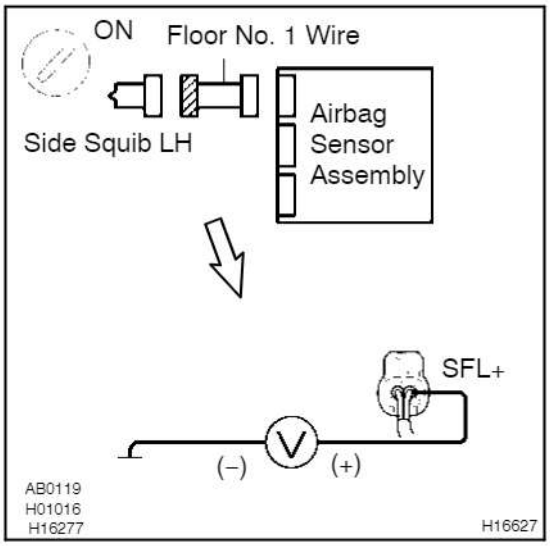
WIRING DIAGRAM

See page DI–432.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–432).**

2	**Check floor No. 1 wire (side squib LH circuit).**



CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and SFL+ of the floor No. 1 wire connector on the side airbag assembly LH (side squib LH) side.

OK:

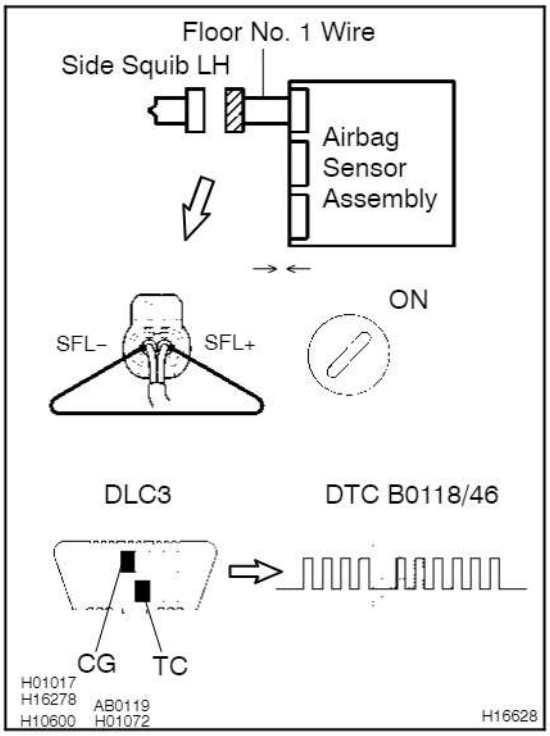
Voltage: Below 1 V

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect SFL+ and SFL– of the floor No. 1 wire connector on the side airbag assembly LH (side squib LH) side.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0118/46 is not output.

HINT:

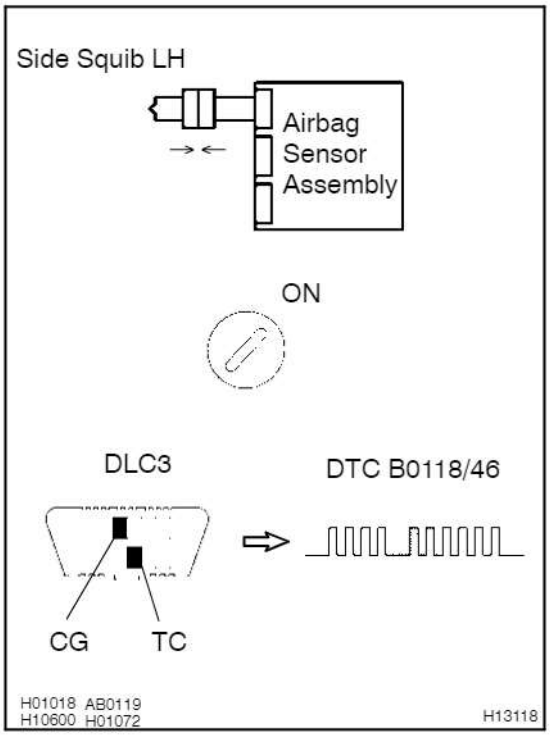
Codes other than code B0118/46 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	**Check side squib LH.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the side airbag assembly LH (side squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0118/46 is not output.

HINT:

Codes other than code B0118/46 may be output at this time, but they are not relevant to this check.

NG	**Replace side airbag assembly LH (side squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAT6-01

DTC	B0121/B0122/26	Seat Belt Buckle Switch RH Malfunction

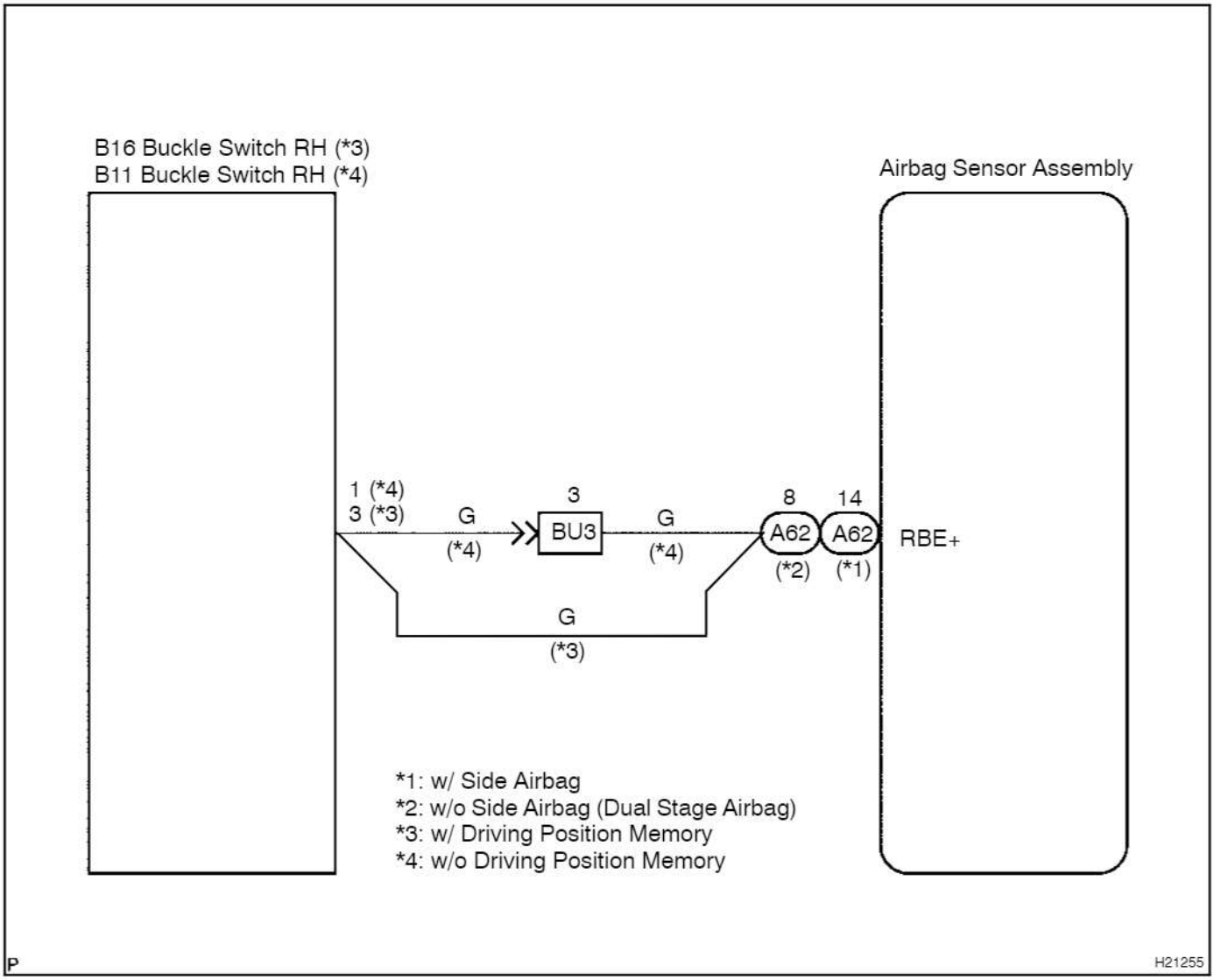
CIRCUIT DESCRIPTION

The seat belt buckle switch RH malfunction circuit consists of the airbag sensor assembly and the front seat inner belt RH (seat belt buckle switch RH).
For details of the function of each component, see OPERATION on page RS–3.
DTC B0121/B0122/26 is recorded when a malfunction is detected in the seat belt buckle switch RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0121/B0122/26	• Seat belt buckle switch RH circuit malfunction	• Front seat inner belt RH (Seat belt buckle switch RH) • Airbag sensor assembly • Floor No. 2 wire • Front seat wire RH

HINT:
DTC B0121/B0122/26 is indicated only for the RHD vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–432).**

2	**Check vehicle condition.**

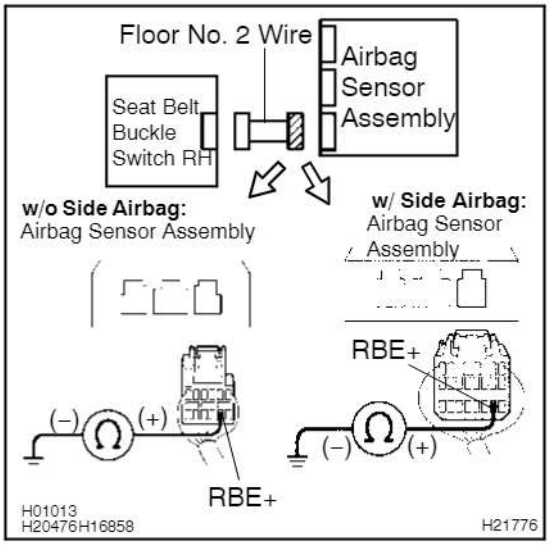
CHECK:
Check the buckle switch type.
OK:

A: w/ Driving Position Memory buckle switch
B: w/o Driving Position Memory buckle switch

B → **Go to step 13.**

A

3	**Check floor No. 2 wire (to ground).**



CHECK:
Measure the resistance between the the body ground and RBE+ of the floor No. 2 wire connector on the airbag sensor assembly side.
OK:

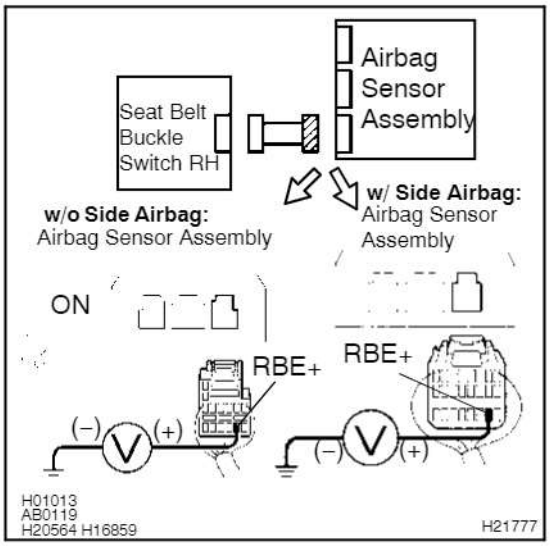
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

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4	Check floor No. 2 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and RBE+ of the floor No. 2 wire connector on the airbag sensor assembly side.

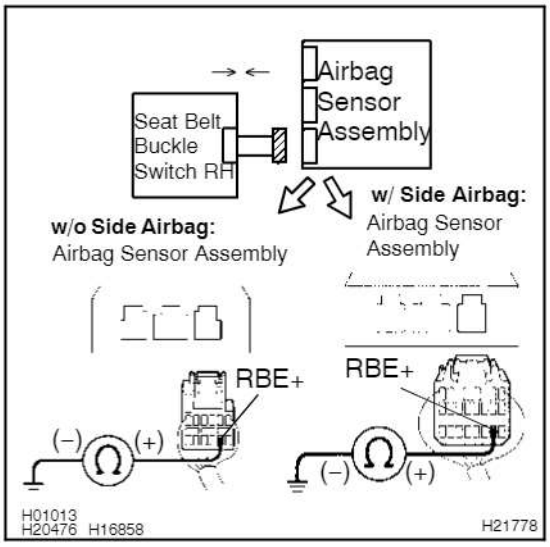
OK:

Voltage: Below 1 V

NG	Repair or replace floor No. 2 wire.

OK

5	Check front seat inner belt RH.



PREPARATION:

(a) Connect the connector of the front seat inner belt RH (seat belt buckle switch RH).

(b) Unlock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and RBE+ of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

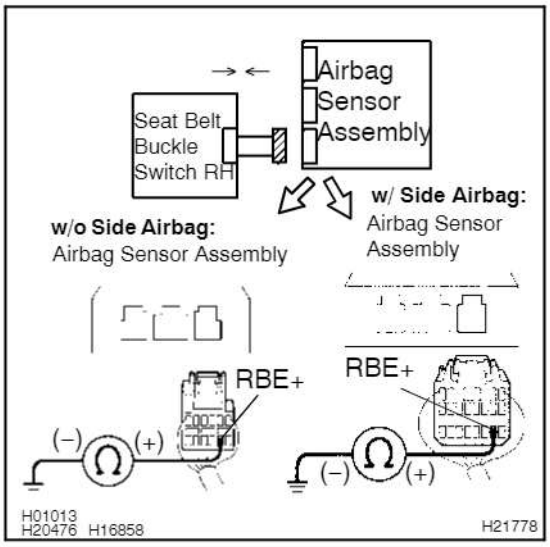
Resistance: 1 kΩ – 1.6 kΩ

NG	Replace front seat inner belt RH.

OK

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6	Check front seat inner belt RH.



PREPARATION:

Lock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and RBE+ of the floor No. 2 wir connector on the airbag sensor assembly side.

OK:

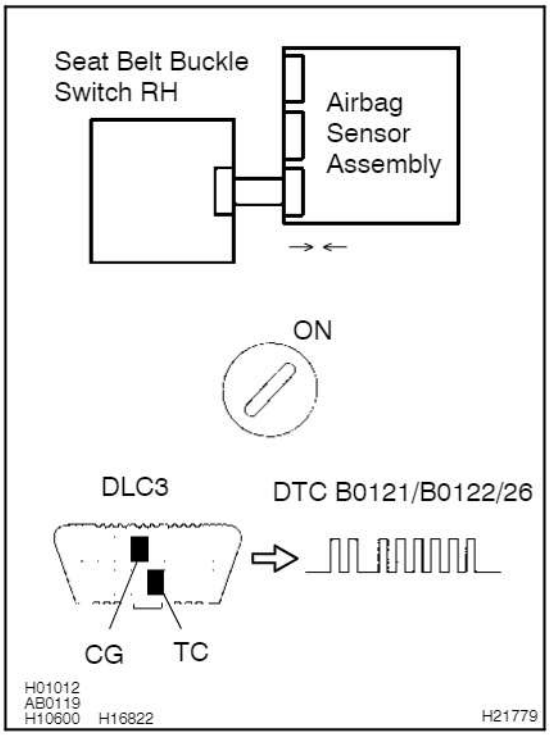
Resistance: 100 Ω – 500 Ω

NG → **Replace front seat inner belt RH.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0121/B0122/26 is not output.

HINT:

Codes other than code B0121/B0122/26 may be output at this time, but they are not relevant to this check.

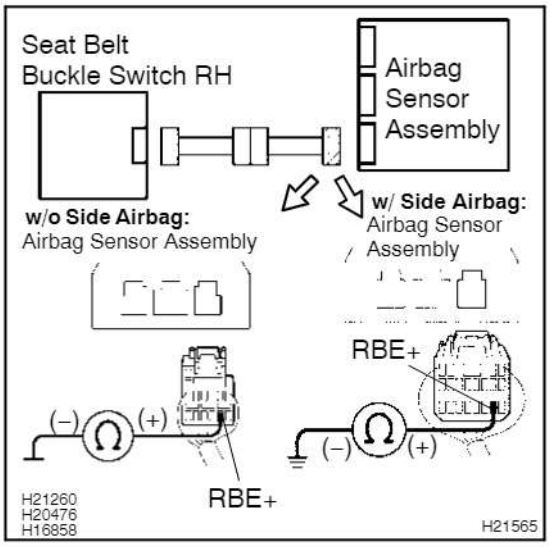
NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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8	Check wire harness (to ground).



CHECK:

Measure the resistance between the the body ground and RBE+ connector on the airbag sensor assembly side between the front seat inner belt RH (seat belt buckle switch RH) and the airbag sensor assembly.

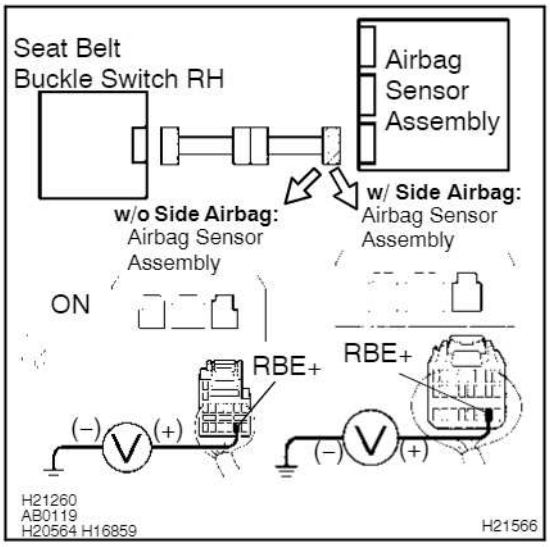
OK:

Resistance: 1 MΩ or Higher

NG	Go to step 13.

OK

9	Check wire harness (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and RBE+ of the connector on the airbag sensor assembly side between the front seat inner belt RH (seat belt buckle switch RH) and the airbag sensor assembly.

OK:

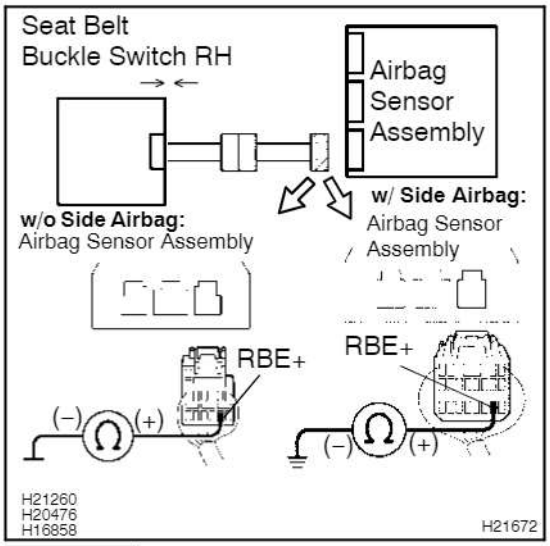
Voltage: Below 1 V

NG	Go to step 14.

OK

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10	Check front seat inner belt RH.



PREPARATION:

(a) Connect the connector of the front seat inner belt RH (seat belt buckle switch RH).

(b) Unlock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and RBE+ of the connector on the airbag sensor assembly side between the front seat inner belt RH (seat belt buckle switch RH) and the airbag sensor assembly.

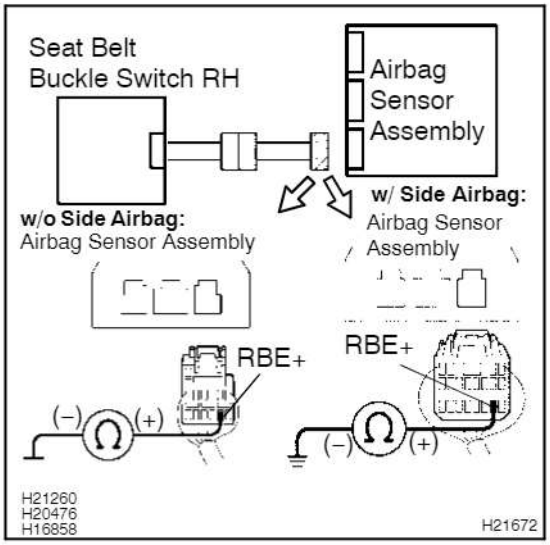
OK:

Resistance: 1 kΩ – 1.6 kΩ

NG	Replace front seat inner belt RH.

OK

11	Check front seat inner belt RH.



PREPARATION:

Lock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and RBE+ of the connector on the airbag sensor assembly side between the front seat inner belt RH (seat belt buckle switch RH) and the airbag sensor assembly.

OK:

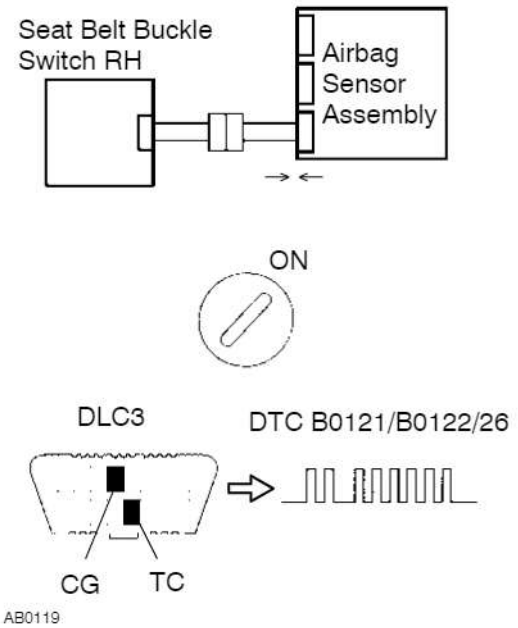
Resistance: 100 Ω – 500 Ω

NG	Replace front seat inner belt RH.

OK

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12	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0121/B0122/26 is not output.

HINT:

Codes other than code B0121/B0122/26 may be output at this time, but they are not relevant to this check.

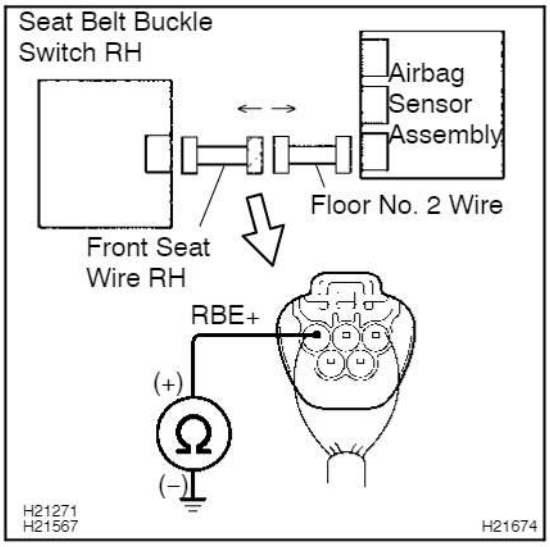
NG → **Replace airbag sensor assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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13	Check front seat wire RH (to ground).



PREPARATION:

Disconnect the front seeat wire RH connector from the floor NO. 2 wire.

CHECK:

Measure the resistanscse between the body ground and the RBE+ of the front seat wire RH connector on the floor No. 2 wire side.

OK:

Resistance : 1 MΩ or Higher

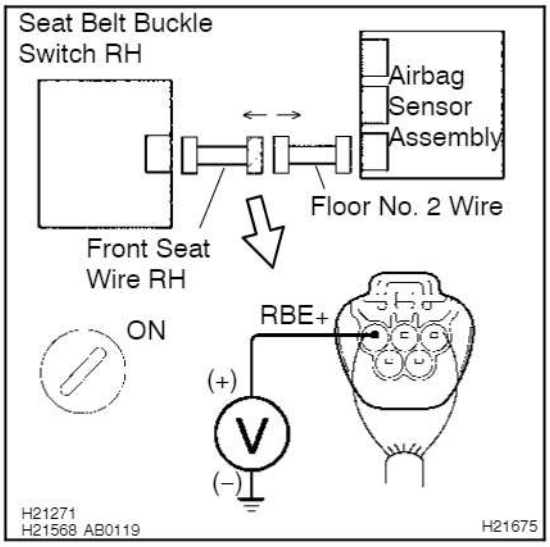
NG → **Repair or replace floor No. 2 wire.**

OK

Repair or replace floor No. 2 wire.

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14	Check front seat wire RH (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the front seat wire RH connector from the floor No. 2 wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and RBE+ of the front seat wire RH connector on the floor No. 2 wire side.

OK:

Voltage: Below 1 V

NG	Repair or replace front seat wire RH.

OK

Repair or replace floor No. 2 wire.

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DIAT7-01

DTC	B0126/B0127/27	Seat Belt Buckle Switch LH Malfunction

CIRCUIT DESCRIPTION

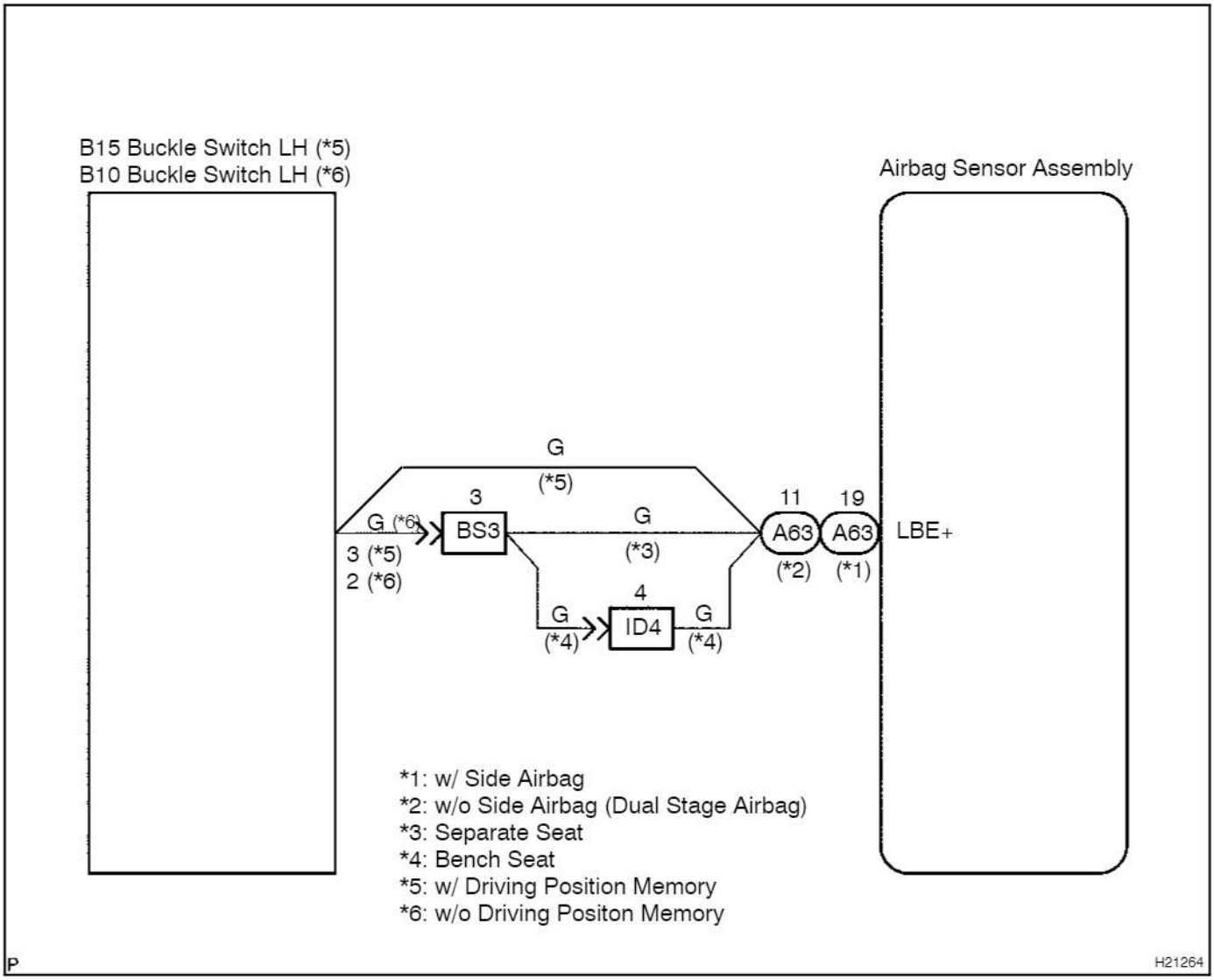
The seat belt buckle switch LH malfunction circuit consists of the airbag sensor assembly and the front seat inner belt LH (seat belt buckle switch LH).
For details of the function of each component, see OPERATION on page RS–3.
DTC B0126/B0127/27 is recorded when a malfunction is detected in the seat belt buckle switch LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0126/B0127/27	• Seat belt buckle switch LH circuit malfunction	• Front seat inner belt LH (Seat belt buckle switch LH) • Airbag sensor assembly • Floor No. 1 wire • dash wire • Front seat wire LH • Dash wire (Bench seat)

HINT:
DTC B0126/B0127/27 is indicated only for the LHD vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

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WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–432).**

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2	Check vehicle condition.

CHECK:

Confirm that the type of the vehicle.

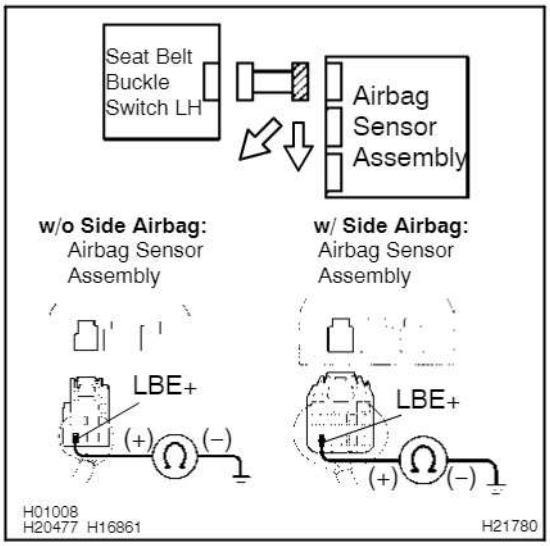
OK:

A: w/ Driving Position Memory buckle switch
B: Separate seat
C: Bench seat

B	Go to step 8.
C	Go to step 15.

A

3	Check floor No. 1 wire (to ground).



CHECK:

Measure the resistance between the body ground and LBE+ of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

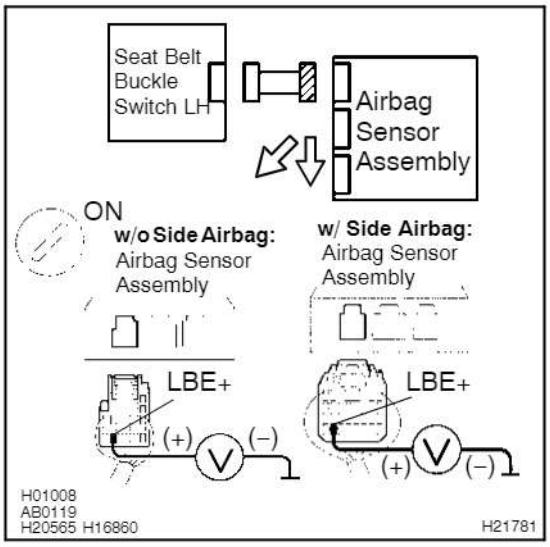
Resistance: 1 MΩ or Higher

NG	Repair or replace floor No. 1 wire.

OK

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4	Check floor No. 1 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and LBE+ of the floor No. 1 wire connector on the airbag sensor assembly side.

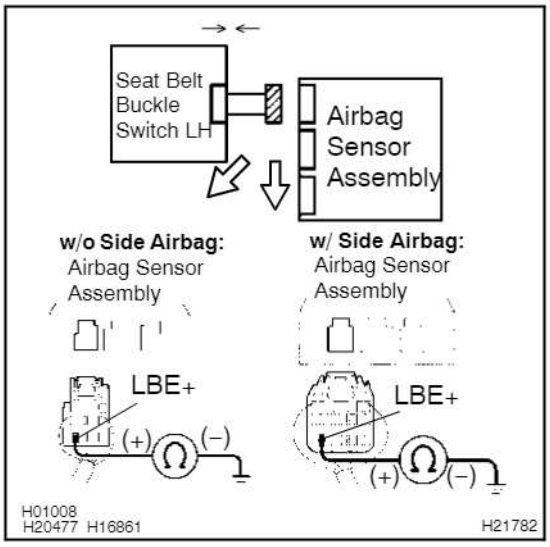
OK:

Voltage: Below 1 V

NG	Repair or replace floor No. 1 wire.

OK

5	Check front seat inner belt LH.



PREPARATION:

(a) Connect the connector of the front seat inner belt LH (seat belt buckle switch LH).

(b) Unlock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and LBE+ of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

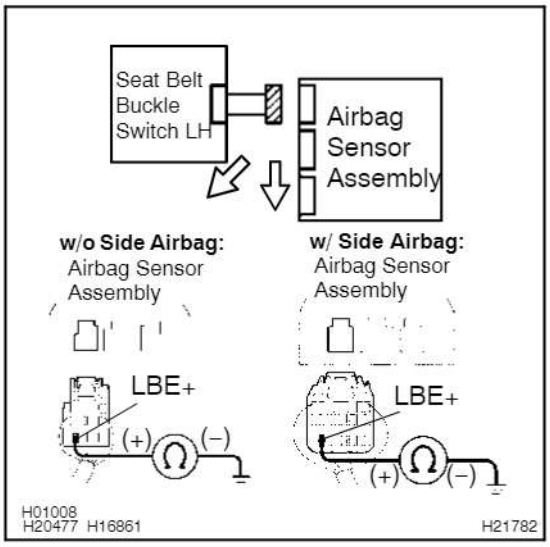
Resistance: 1 kΩ – 1.6 kΩ

NG	Replace front seat inner belt LH.

OK

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6	Check front seat inner belt LH.



PREPARATION:

Lock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and LBE+ of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

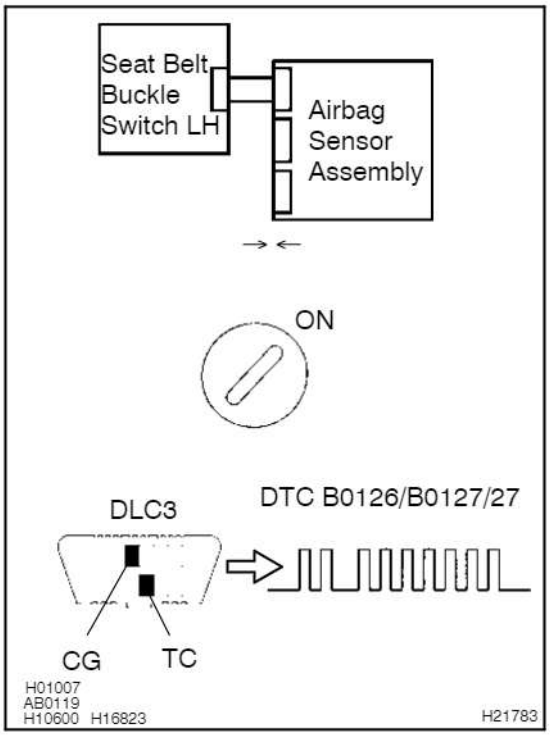
Resistance: 100 Ω – 500 Ω

NG → **Replace front seat inner belt LH.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0126/B0127/27 is not output.

HINT:

Codes other than code B0126/B0127/27 may be output at this time, but they are not relevant to this check.

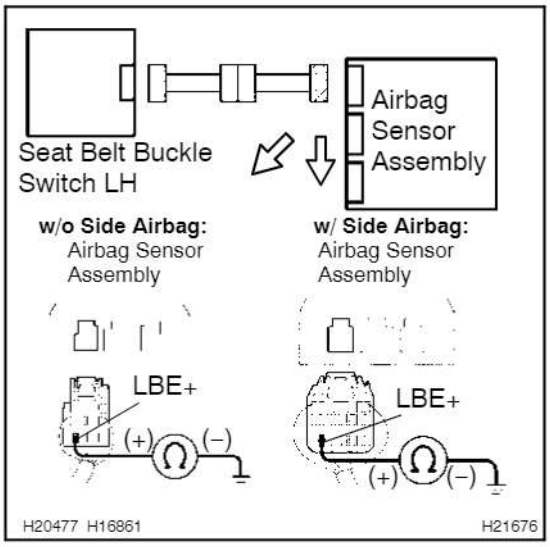
NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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8	Check wire harness (to ground).



CHECK:

Measure the resistance between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

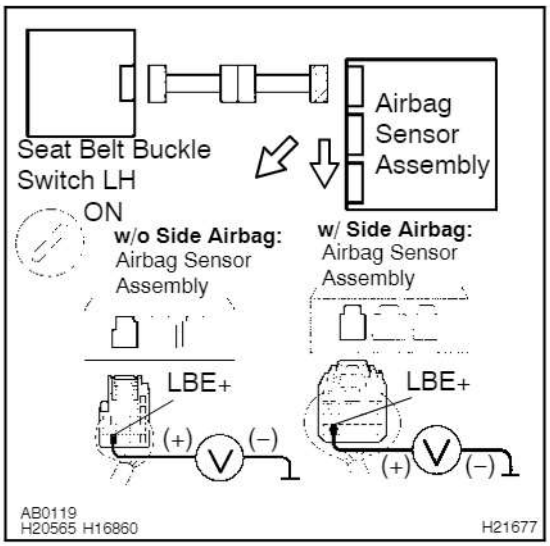
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 13.**

OK

9	Check wire harness (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

OK:

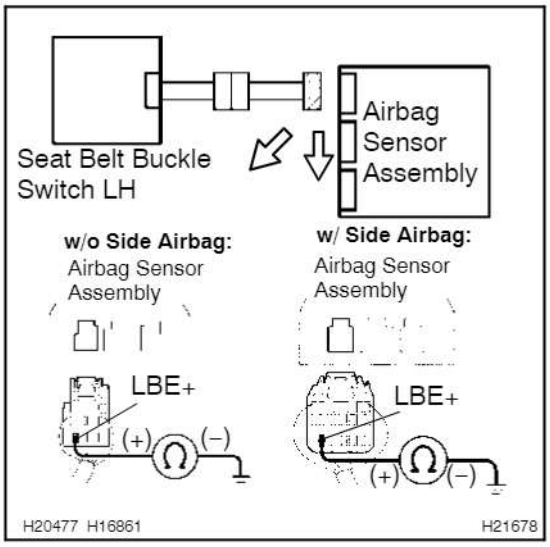
Voltage: Below 1 V

NG → **Go to step 14.**

OK

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10	Check front seat inner belt LH.



PREPARATION:

(a) Connect the connector of the front seat inner belt LH (seat belt buckle switch LH).

(b) Unlock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

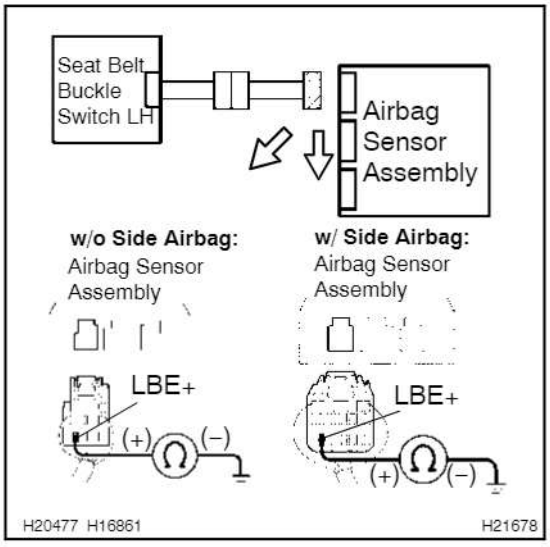
OK:

Resistance: 1 kΩ – 1.6 kΩ

NG	Replace front seat inner belt LH.

OK

11	Check front seat inner belt LH.



PREPARATION:

Lock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

OK:

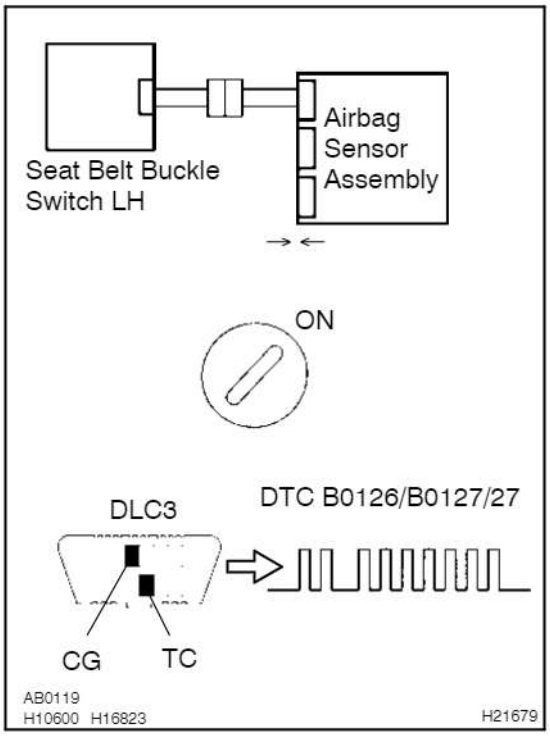
Resistance: 100 Ω – 500 Ω

NG	Replace front seat inner belt LH.

OK

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12	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0126/B0127/27 is not output.

HINT:

Codes other than code B0126/B0127/27 may be output at this time, but they are not relevant to this check.

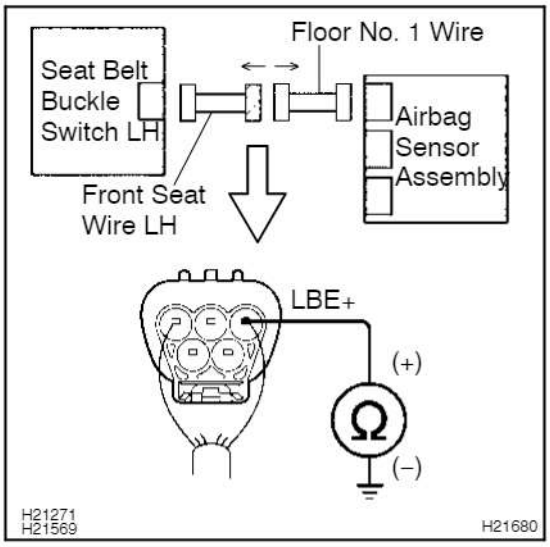
NG → **Replace airbag sensor assembly.**

OK →

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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13	Check front seat wire LH (to ground).



PREPARATION:

Disconnect the front seat wire LH connector from the floor No. 1 wire.

CHECK:

Measure the resistance between the body ground and LBE+ of the front seat wire LH connector on the floor No. 1 wire side.

OK:

Resistance: 1 MΩ or Higher

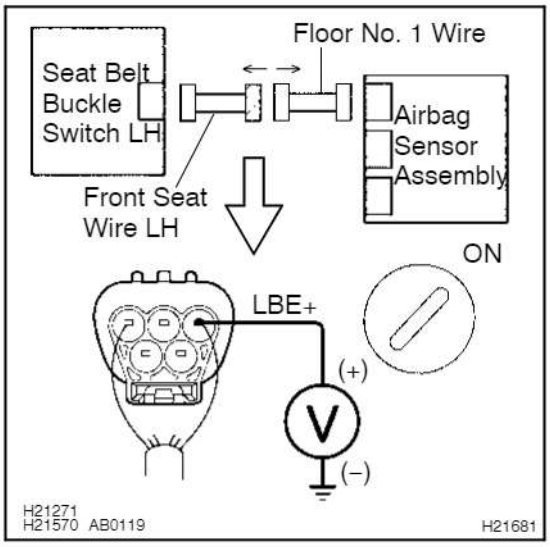
NG → **Repair or replace front seat wire LH.**

OK

Repair or replace floor No. 1 wire.

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14	Check front seat wire LH (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the front seat wire LH connector from the floor No. 1 wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and LBE+ of the front seat wire LH connector on the floor No. 1 wire side.

OK:

Voltage: Below 1 V

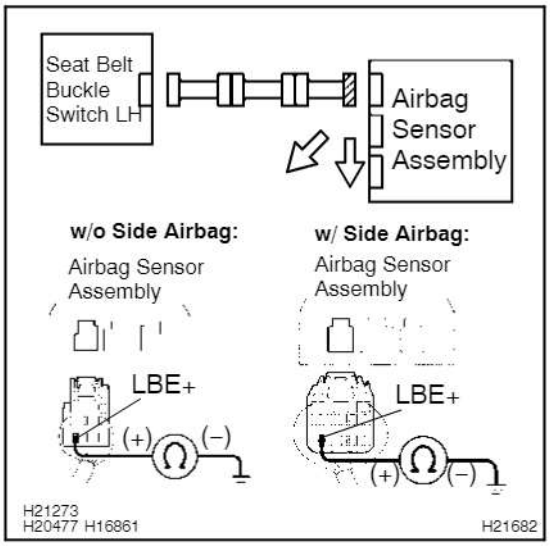
NG	Repair or replace front seat wire LH.

OK

Repair or replace floor No. 1 wire.

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15	Check wire harness (to ground).



CHECK:

Measure the resistance between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

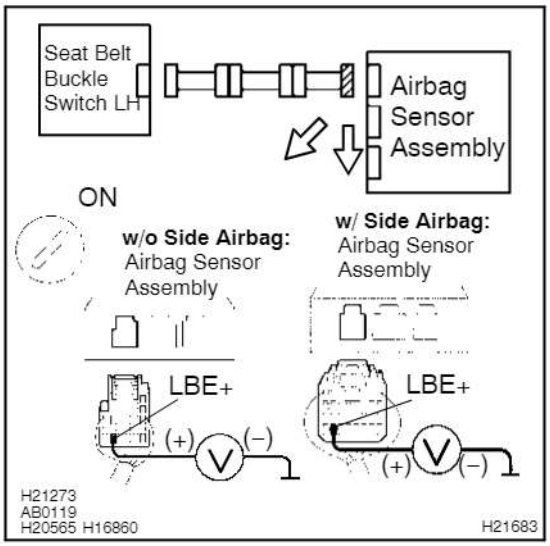
OK:

Resistance: 1 MΩ or Higher

NG	Go to step 20.

OK

16	Check wire harness (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

OK:

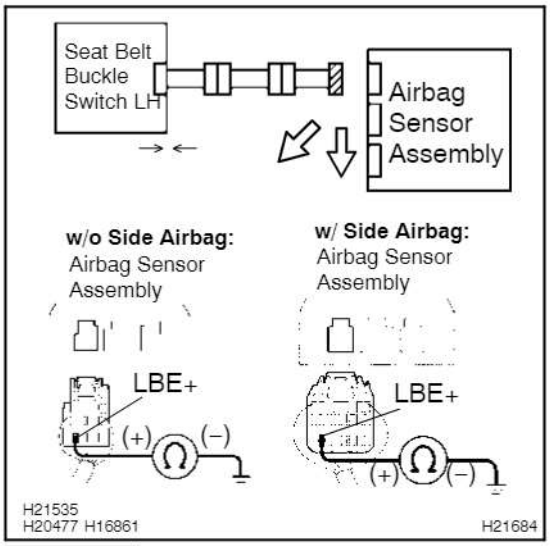
Voltage: Below 1 V

NG	Go to step 22.

OK

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17	Check front seat inner belt LH.



PREPARATION:

(a) Connect the connector of the front seat inner belt LH (seat belt buckle switch LH).

(b) Unlock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

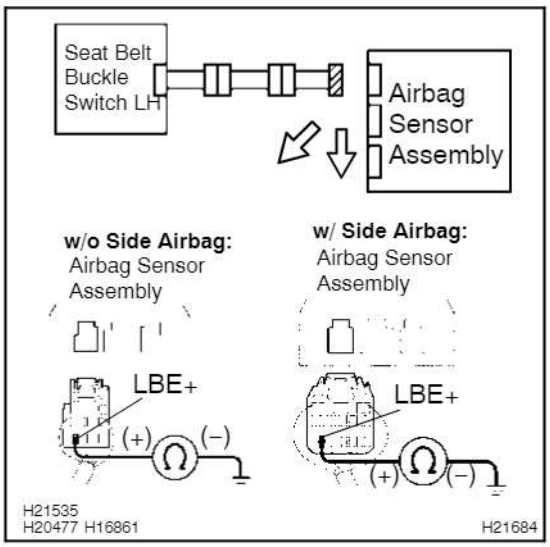
OK:

Resistance: 1 kΩ – 1.6 kΩ

NG → **Replace front seat inner belt LH.**

OK

18	Check front seat inner belt LH.



PREPARATION:

Lock the seat belt for the driver's seat.

CHECK:

Measure the resistance between the body ground and LBE+ of the connector on the airbag sensor assembly side between the front seat inner belt LH (seat belt buckle switch LH) and the airbag sensor assembly.

OK:

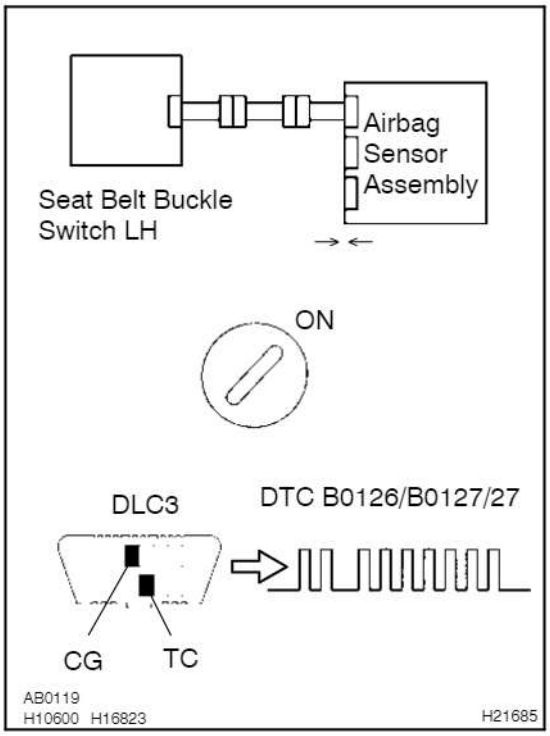
Resistance: 100 Ω – 500 Ω

NG → **Replace front seat inner belt LH.**

OK

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19	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0126/B0127/27 is not output.

HINT:

Codes other than code B0126/B0127/27 may be output at this time, but they are not relevant to this check.

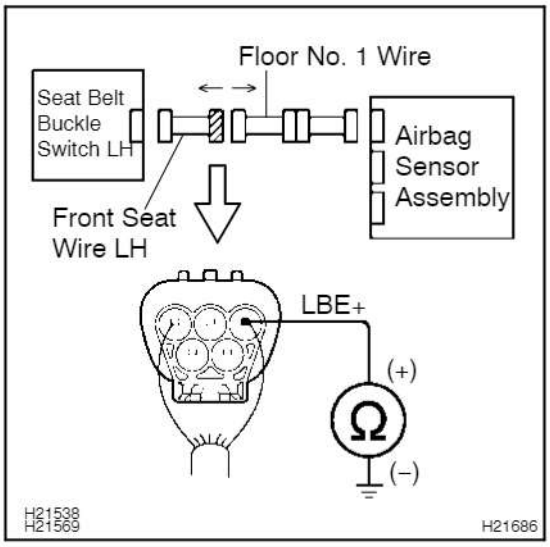
NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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20	Check front seat wire LH (to ground).

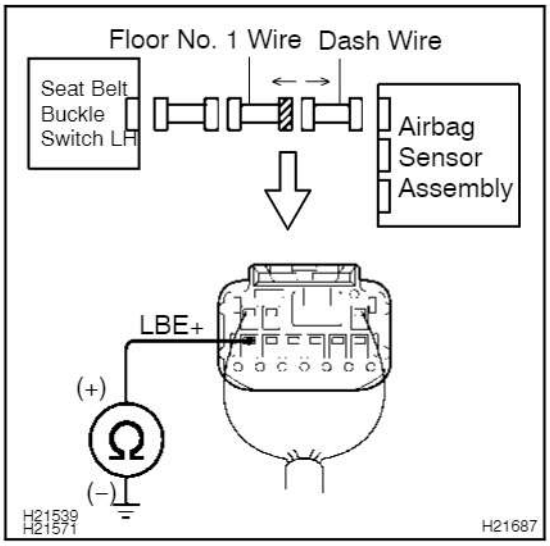


PREPARATION:
Disconnect the front seat wire LH connector from the floor No. 1 wire.
CHECK:
Measure the resistance between the body ground and LBE+ of the front seat wire LH connector on the airbag sensor assembly side.
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace front seat wire LH.**

OK

21	Check floor No. 1 wire (to ground).



PREPARATION:
Disconnect the floor No. 1 wire connector from the dash wire.
CHECK:
Measure the resistance between the body ground and LBE+ of the floor No. 1 wire connector on the dash wire side.
OK:
Resistance: 1 MΩ or Higher

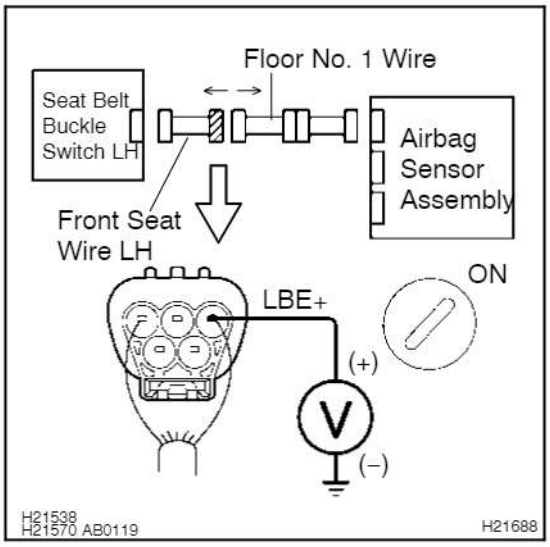
NG → **Repair or replace floor No. 1 wire.**

OK

Repair or replace dash wire.

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22	Check front seat wire LH (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the front seat wire LH connector from the floor No. 1 wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and LBE+ of the front seat wire LH connector on the airbag sensor assembly side.

OK:

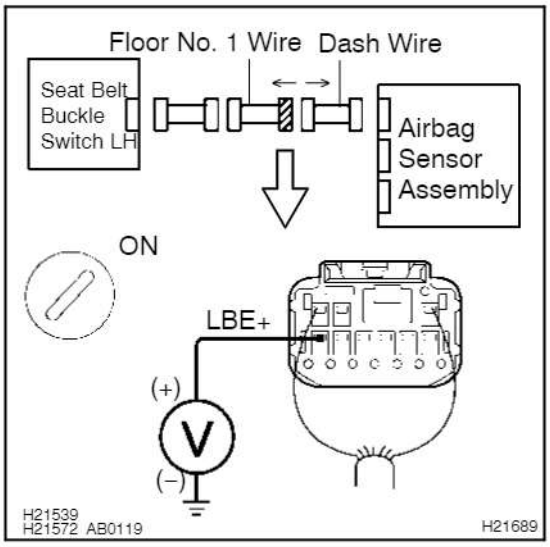
Voltage: Below 1 V

NG	Repair or replace front seat wire LH.

OK

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23	Check floor No. 1 wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the floor No. 1 wire connector from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and LBE+ of the floor No. 1 wire connector on the dash wire side.

OK:

Voltage: Below 1 V

NG	Repair or replace floor No. 1 wire.

OK

Repair or replace dash wire.

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DIAT8-01

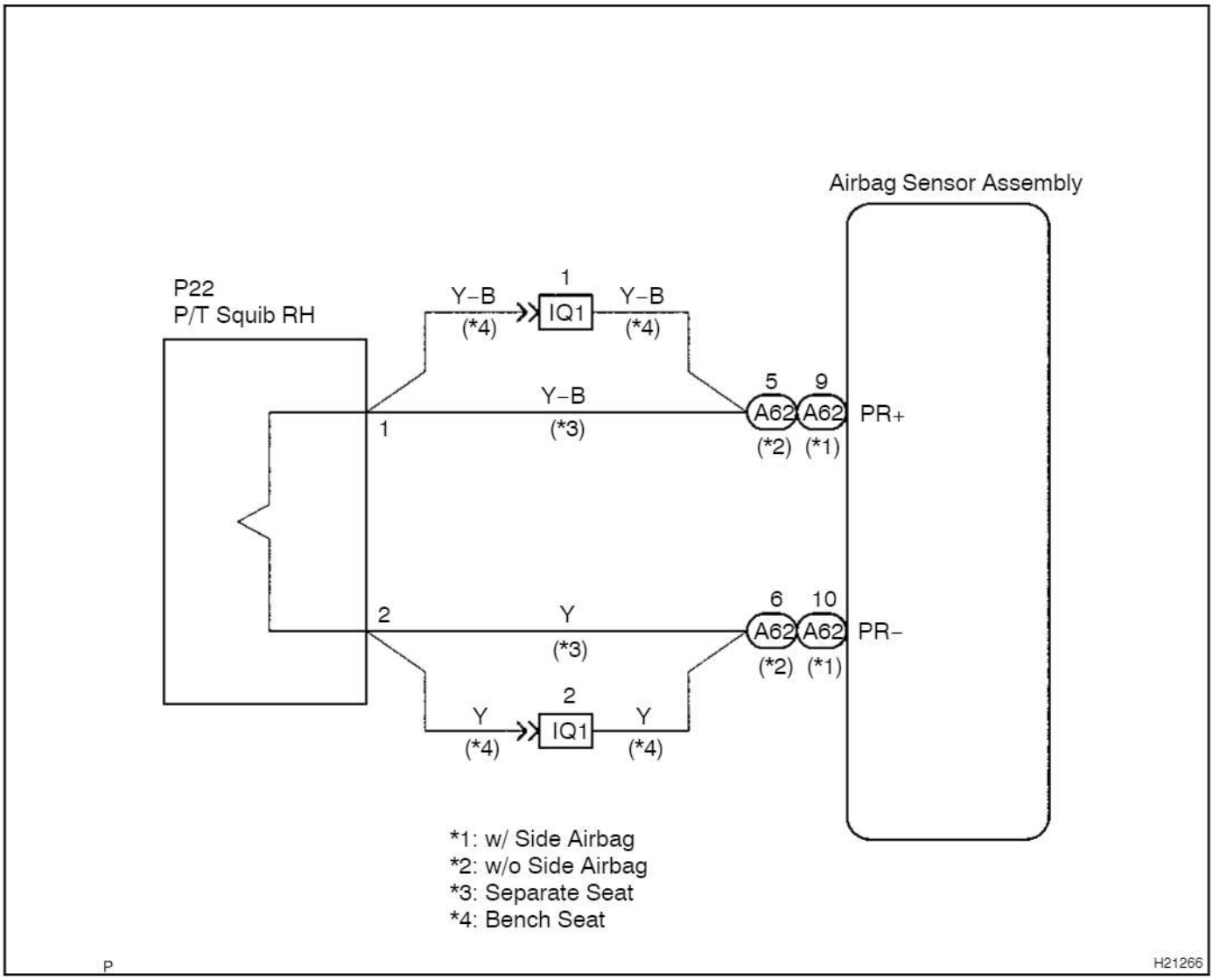
DTC	B0130/63	Short in P/T Squib RH Circuit

CIRCUIT DESCRIPTION

The P/T squib RH circuit consists of the airbag sensor assembly and the seat belt pretensioner RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0130/63 is recorded when a short is detected in the P/T squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0130/63	• Short in P/T squib RH circuit • P/T squib RH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner RH (P/T squib RH) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check seat type.**

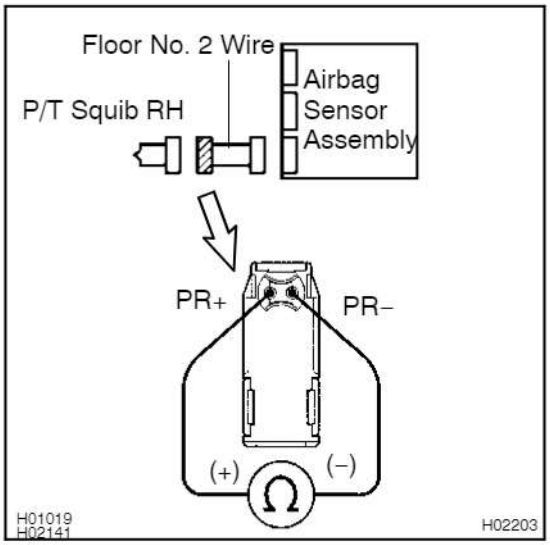
CHECK:
Confirm that the type of the front seat.
OK:

A: Separate seat
B: Bench seat

B	**Go to step 6.**

A

3	**Check floor No. 2 wire (P/T squib RH circuit).**



PREPARATION:
Release the airbag activation prevention mechanism built in the connector of the floor No. 2 wire on the airbag sensor assembly side (See page DI–432).
CHECK:
Measure the resistance between PR+ and PR– of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.
OK:

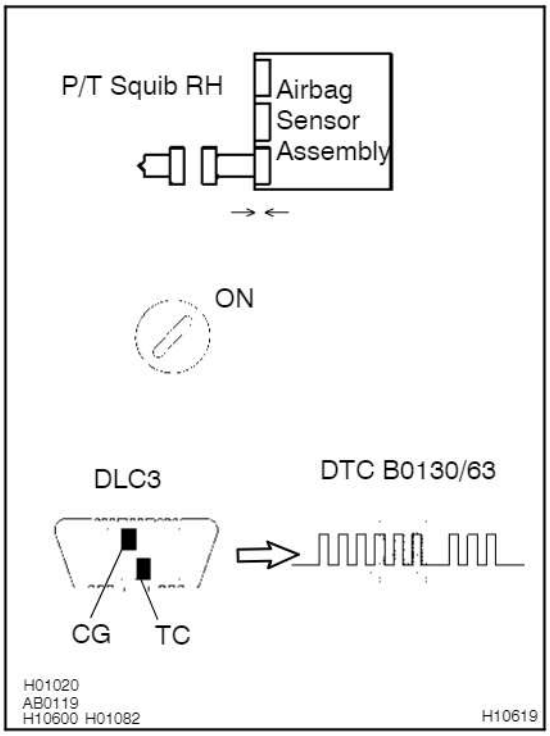
Resistance: 1 MΩ or Higher

NG	**Repair or replace floor No. 2 wire.**

OK

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4	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0130/63 is not output.

HINT:

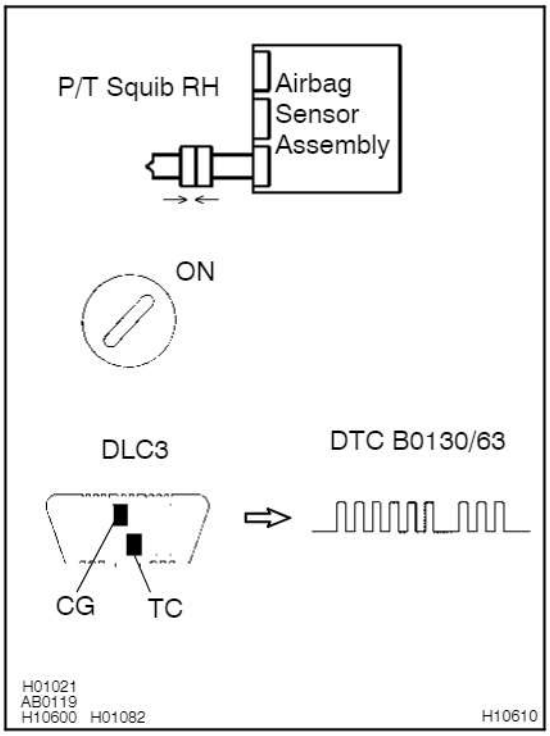
Codes other than code B0130/63 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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5	Check P/T squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0130/63 is not output.

HINT:
Codes other than code B0130/63 may be output at this time, but they are not relevant to this check.

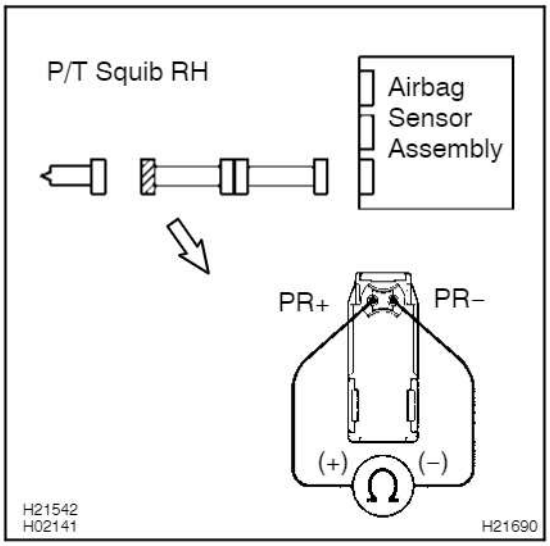
NG	**Replace seat belt pretensioner RH (P/T squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	Check P/T squib RH circuit.



PREPARATION:

Release airbag activation prevention mechanism built in the connector on the airbag sensor assembly side between the seat belt pretensioner RH (P/T squib RH) and the airbag sensor assembly (See page DI–432).

CHECK:

Measure the resistance between PR+ and PR– of the connector on the seat belt pretensioner RH (P/T squib RH) side between the airbag sensor assembly and the seat belt pretensioner RH (P/T squib RH).

OK:

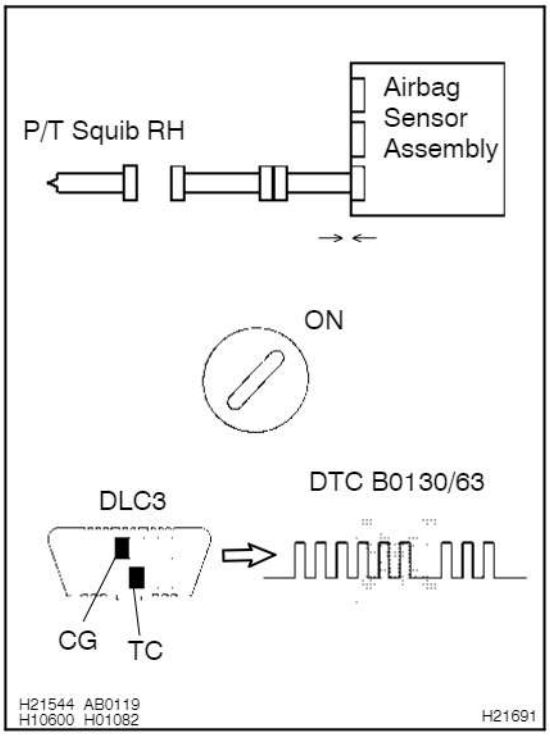
Resistance: 1 MΩ or Higher

NG	Go to step 9.

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0130/63 is not output.

HINT:

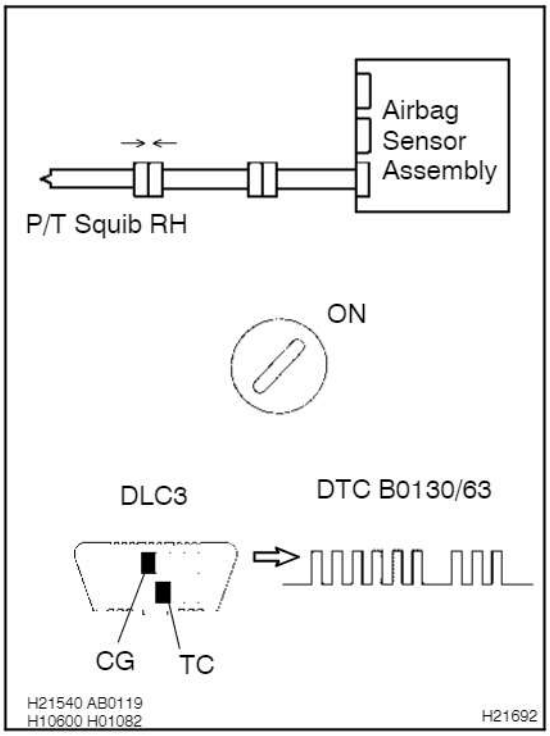
Codes other than code B0130/63 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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8	Check P/T squib RH.



PREPARATION:

(a) Turn ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0130/63 is not output.

HINT:
Codes other than code B0130/63 may be output at this time, but they are not relevant to this check.

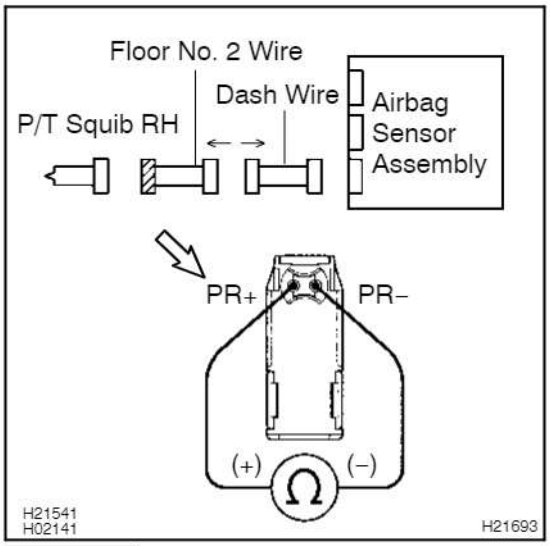
NG	**Replace seat belt pretensioner RH (P/T squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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9	Check floor No. 2 wire.



PREPARATION:

(a) Disconnect floor No. 2 wire connector from the dash wire.
(b) Release airbag activation prevention mechanism built in the connector of the floor No. 2 wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between PR+ and PR– of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

Repair or replace dash wire.

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DIAT9–01

DTC	B0131/64	Open in P/T Squib RH Circuit

CIRCUIT DESCRIPTION

The P/T squib RH circuit consists of the airbag sensor assembly and the seat belt pretensioner RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0131/64 is recorded when an open is detected in the P/T squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0131/64	• Open in P/T squib RH circuit • P/T squib RH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner RH (P/T squib RH) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)

WIRING DIAGRAM

See page DI–539.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check seat type.**

CHECK:

Confirm that the type of the front seat.

OK:

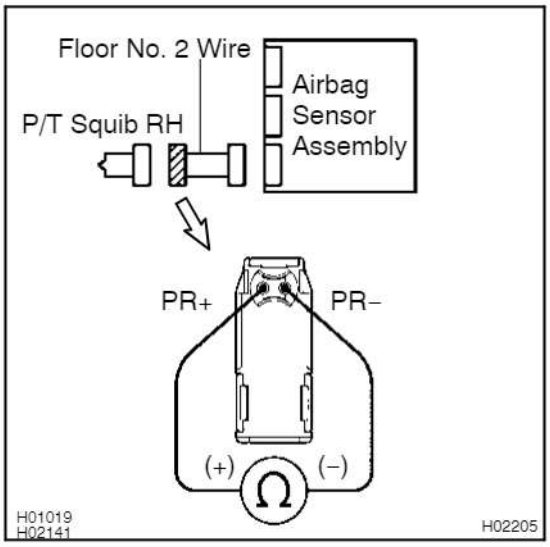
A: Separate seat
B: Bench seat

NG → **Go to step 6.**

OK

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3	Check floor No. 2 wire (P/T squib RH circuit).



CHECK:

Measure the resistance between PR+ and PR– of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.

OK:

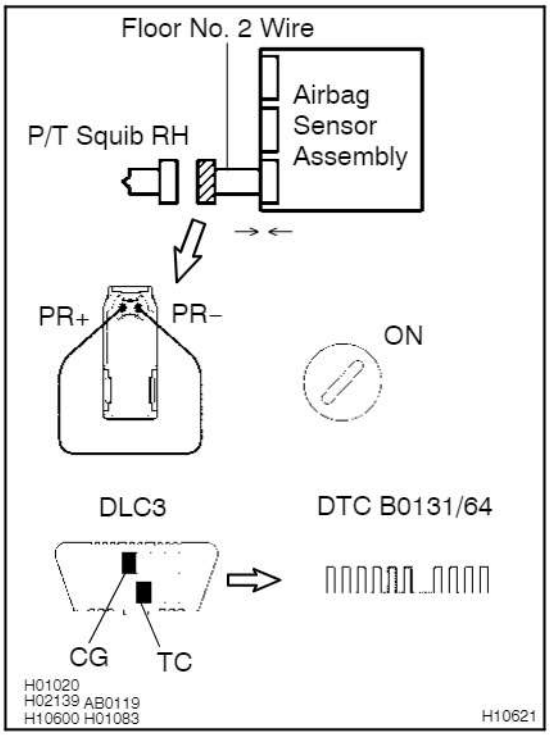
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 2 wire.**

OK

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4	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PR+ and PR– of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0131/64 is not output.

HINT:

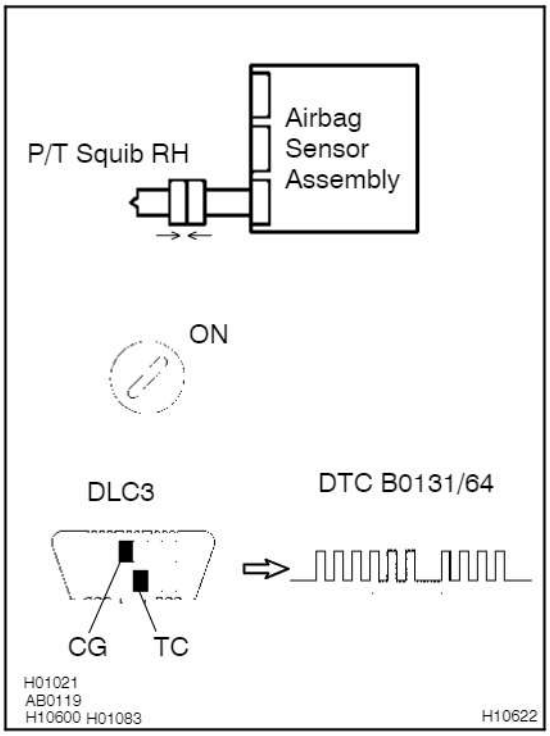
Codes other than code B0131/64 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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5	Check P/T squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0131/64 is not output.

HINT:
Codes other than code B0131/64 may be output at this time, but they are not relevant to this check.

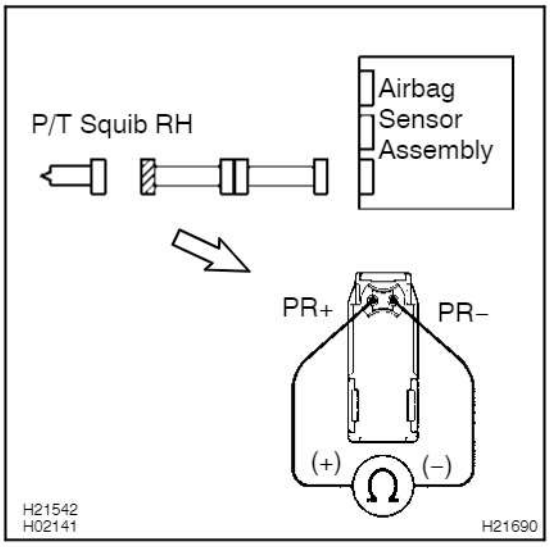
NG	**Replace seat belt pretensioner RH (P/T squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	**Check P/T squib RH circuit.**



CHECK:

Measure the resistance between PR+ and PR– of the connector on the seat belt pretensioner RH (P/T squib RH) side between the airbag sensor assembly and the seat belt pretensioner RH (P/T squib RH).

OK:

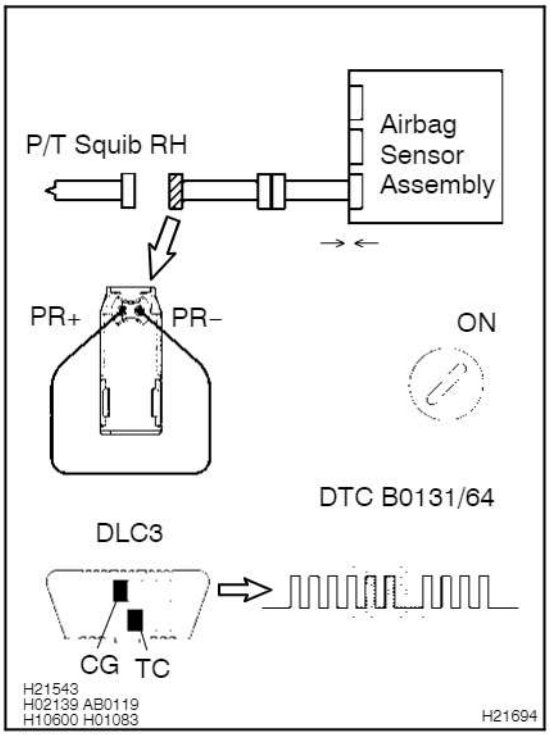
Resistance: Below 1 Ω

NG → **Go to step 9.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PR+ and PR– of the connector on the seat belt pretensioner RH (P/T squib RH) side between the seat belt pretensioner RH (P/T squib RH) and the airbag sensor assembly.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0131/64 is not output.

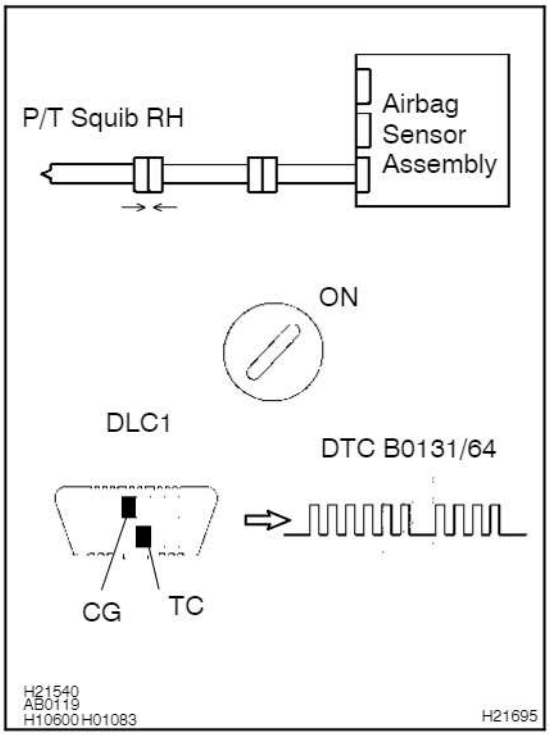
HINT:
Codes other than code B0131/64 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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8	Check P/T squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0131/64 is not output.

HINT:
Codes other than code B0131/64 may be output at this time, but they are not relevant to this check.

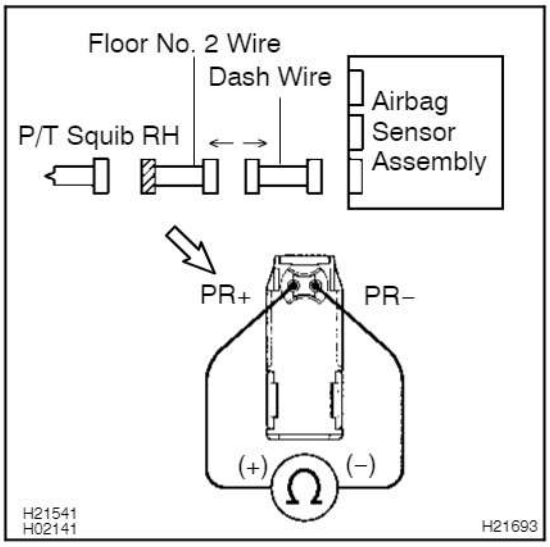
NG → **Replace seat belt pretensioner RH (P/T squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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9	**Check floor No. 2 wire.**



PREPARATION:

Disconnect the floor No. 2 wire from the dash wire.

CHECK:

Measure the resistance between PR+ and PR– of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace floor No. 2 wire.**

OK

Repair or replace dash wire.

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DTC	B0132/61	Short in P/T Squib RH Circuit (to Ground)

CIRCUIT DESCRIPTION

The P/T squib RH circuit consists of the airbag sensor assembly and the seat belt pretensioner RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0132/61 is recorded when a ground short is detected in the P/T squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0132/61	• Short in front P/T squib RH circuit (to ground) • P/T squib RH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner RH (P/T squib RH) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)

WIRING DIAGRAM

See page DI–432.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–432).**

2	**Check seat type.**

CHECK:
Confirm that the type of the front seat.
OK:

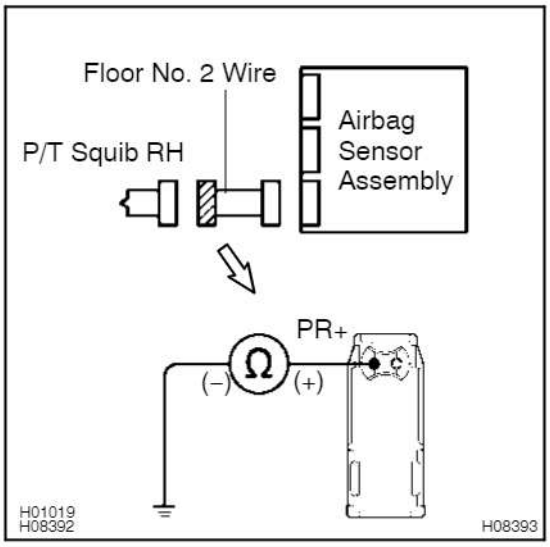
A: Separate seat
B: Bench seat

B	**Go to step 6.**

A

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3	Check floor No. 2 wire (P/T squib RH circuit).



CHECK:

Measure the resistance between the body ground and PR+ of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.

OK:

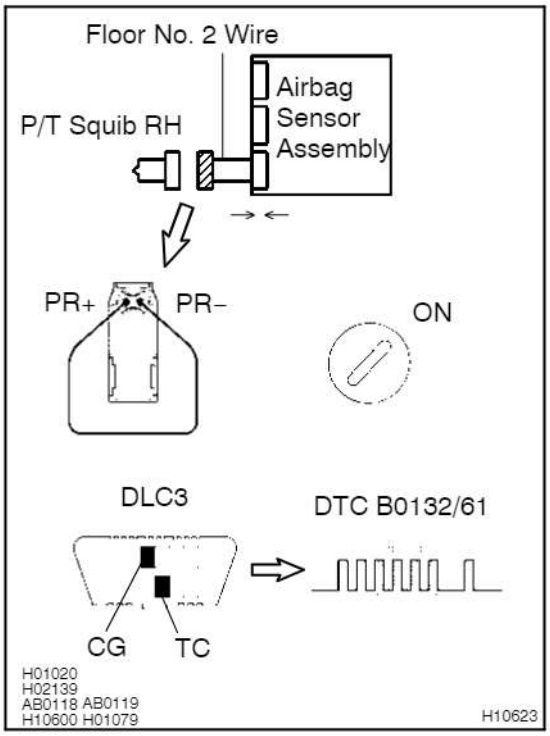
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

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4	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PR+ and PR– of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0132/61 is not output.

HINT:

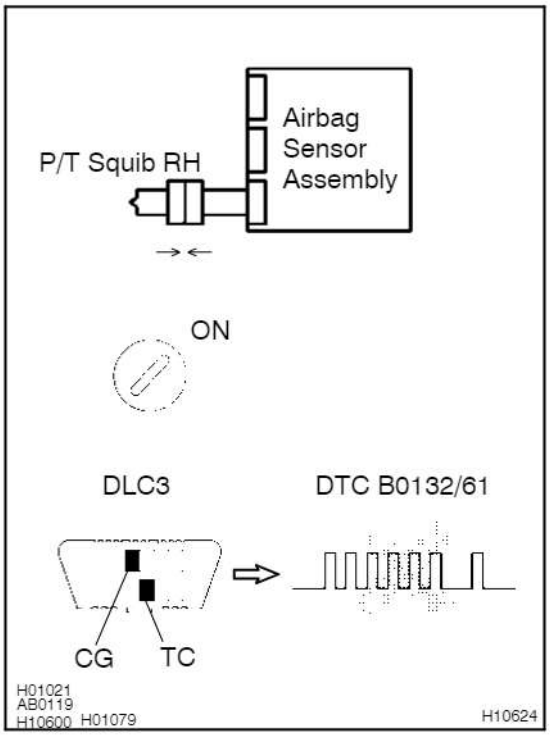
Codes other than code B0132/61 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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5	Check P/T squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0132/61 is not output.

HINT:
Codes other than code B0132/61 may be output at this time, but they are not relevant to this check.

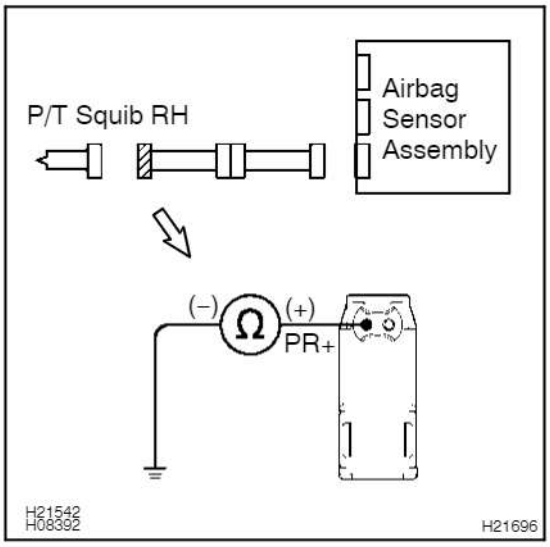
NG	**Replace seat belt pretensioner RH (P/T squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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6	**Check P/T squib RH circuit.**



CHECK:

Measure the resistance between the body ground and PR+ of the connector on the seat belt pretensioner RH (P/T squib RH) side between the airbag sensor assembly and the seat belt pretensioner RH (P/T squib RH).

OK:

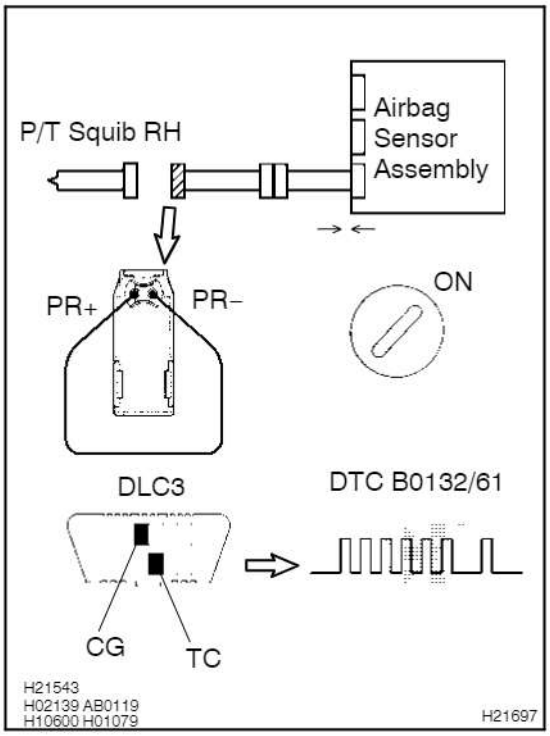
Resistance: 1 MΩ or Higher

NG → **Go to step 9.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PR+ and PR– of the connector on the seat belt pretensioner RH (P/T squib RH) side between the seat belt pretensioner RH (P/T squib RH) and the airbag sensor assembly.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0132/61 is not output.

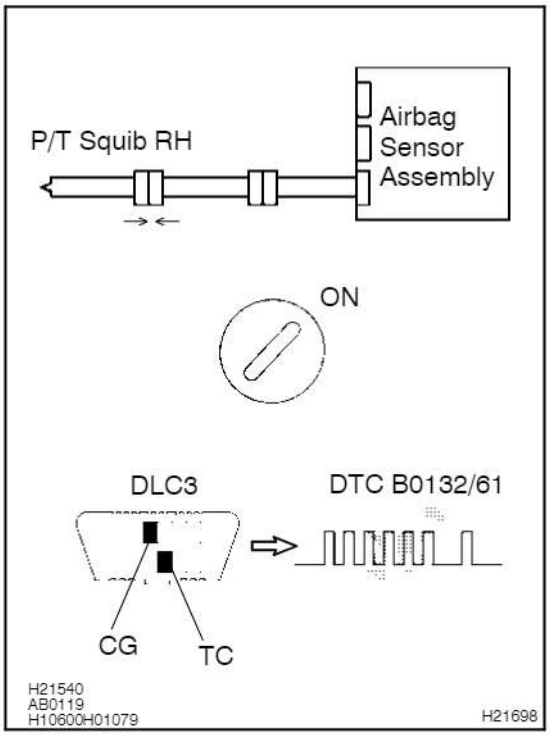
HINT:
Codes other than code B0132/61 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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8	Check P/T squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0132/61 is not output.

HINT:
Codes other than code B0132/61 may be output at this time, but they are not relevant to this check.

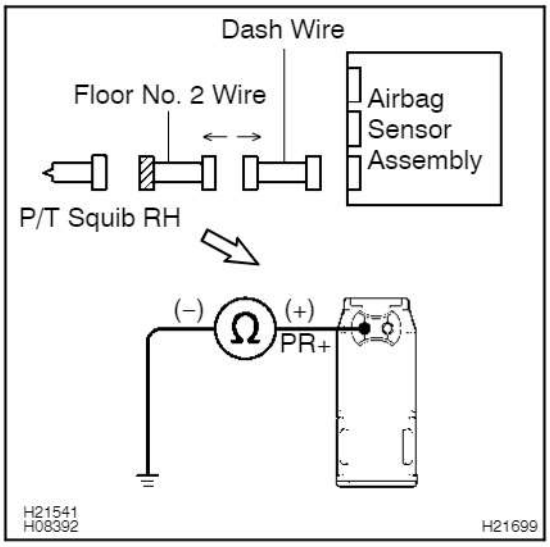
NG → **Replace seat belt pretensioner RH (P/T squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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9	Check floor No. 2 wire.



PREPARATION:

Disconnect the floor No. 2 wire connector from the dash wire.

CHECK:

Measure the resistance between the body ground and PR+ of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

Repair or replace dash wire.

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DIATB–01

DTC	B0133/62	Short in P/T Squib RH Circuit (to B+)

CIRCUIT DESCRIPTION

The P/T squib RH circuit consists of the airbag sensor assembly and the seat belt pretensioner RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0133/62 is recorded when a B+ short is detected in the P/T squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0133/62	• Short in P/T squib RH circuit (to B+) • P/T squib RH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner RH (P/T squib RH) • Airbag sensor assembly • Floor No. 2 wire • Dash wire (Bench seat)

WIRING DIAGRAM

See page DI–539.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check seat type.**

CHECK:

Confirm that the type of the front seat.

OK:

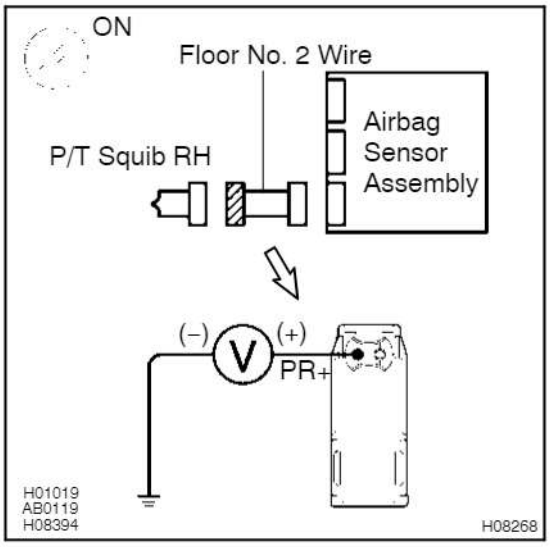
A: Separate seat
B: Bench seat

A	**Go to step 6.**

A

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3	Check floor No. 2 wire (P/T squib RH circuit).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and PR+ of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.

OK:

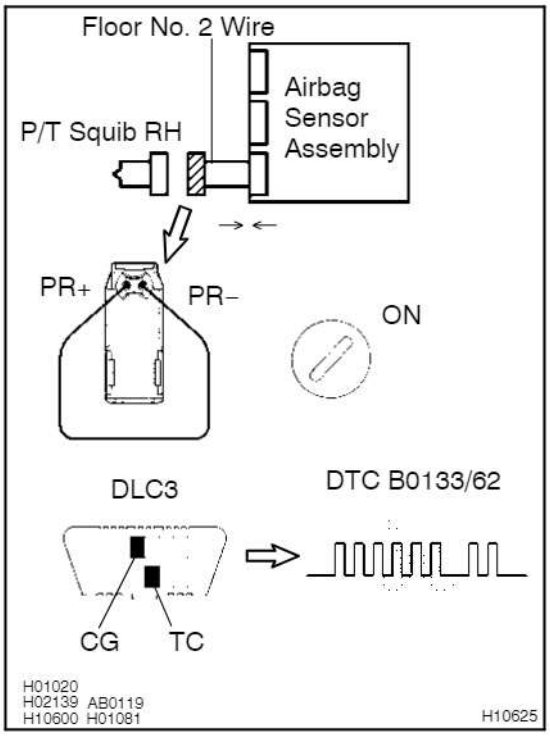
Voltage: Below 1 V

NG → **Repair or replace floor No. 2 wire.**

OK

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4	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PR+ and PR– of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0133/62 is not output.

HINT:

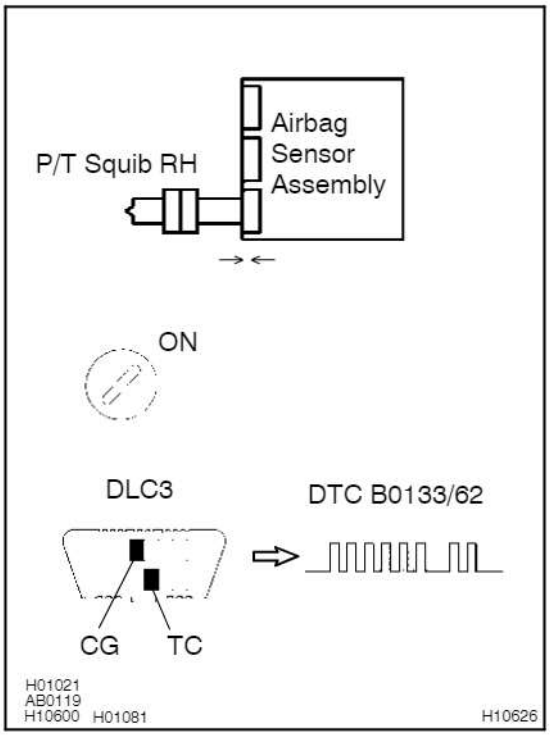
Codes other than code B0133/62 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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5	Check P/T squib RH.



PREPARATION:

(a) Turn ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0133/62 is not output.

HINT:
Codes other than code B0133/62 may be output at this time, but they are not relevant to this check.

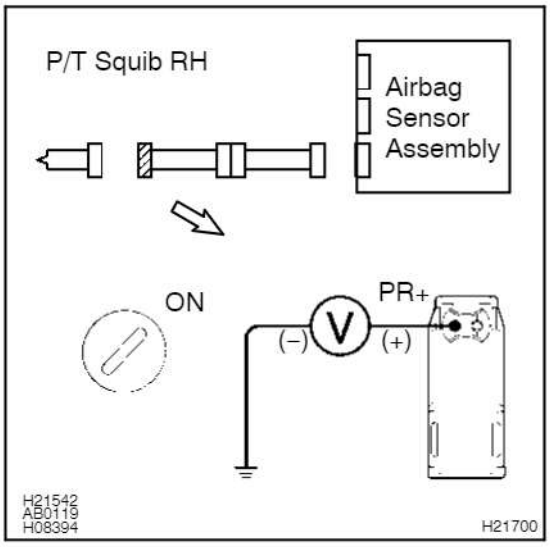
NG → **Replace seat belt pretensioner RH (P/T squib RH).**

OK →

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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6	**Check P/T squib RH circuit.**



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and PR+ of the seat belt pretensioner RH (P/T squib RH) side between the airbag sensor assembly and the seat belt pretensioner RH (P/T squib RH).

OK:

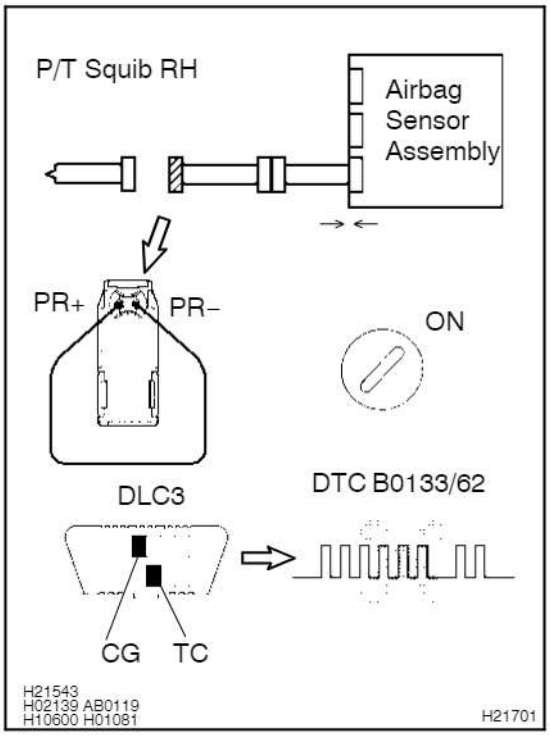
Voltage: Below 1 V

NG	**Go to step 9.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect PR+ and PR– of the connector on the seat belt pretensioner RH (P/T squib RH) side between the seat belt pretensioner RH (P/T squib RH) and the airbag sensor assembly.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0133/62 is not output.

HINT:

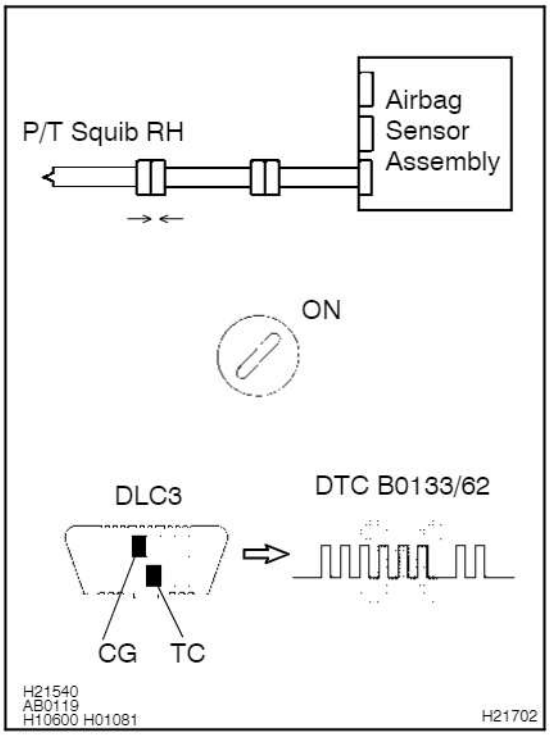
Codes other than code B0133/62 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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8	Check P/T squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner RH (P/T squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0133/62 is not output.

HINT:
Codes other than code B0133/62 may be output at this time, but they are not relevant to this check.

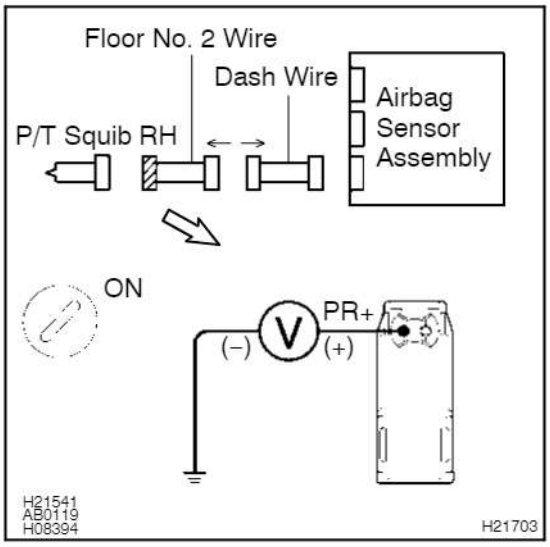
NG	**Replace seat belt pretensioner RH (P/T squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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9	**Check floor No. 2 wire.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the floor No. 2 wire from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and PR+ of the floor No. 2 wire connector on the seat belt pretensioner RH (P/T squib RH) side.

OK:

Voltage: Below 1 V

NG → **Repair or replace floor No. 2 wire.**

OK

Repair or replace dash wire.

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DIATC-01

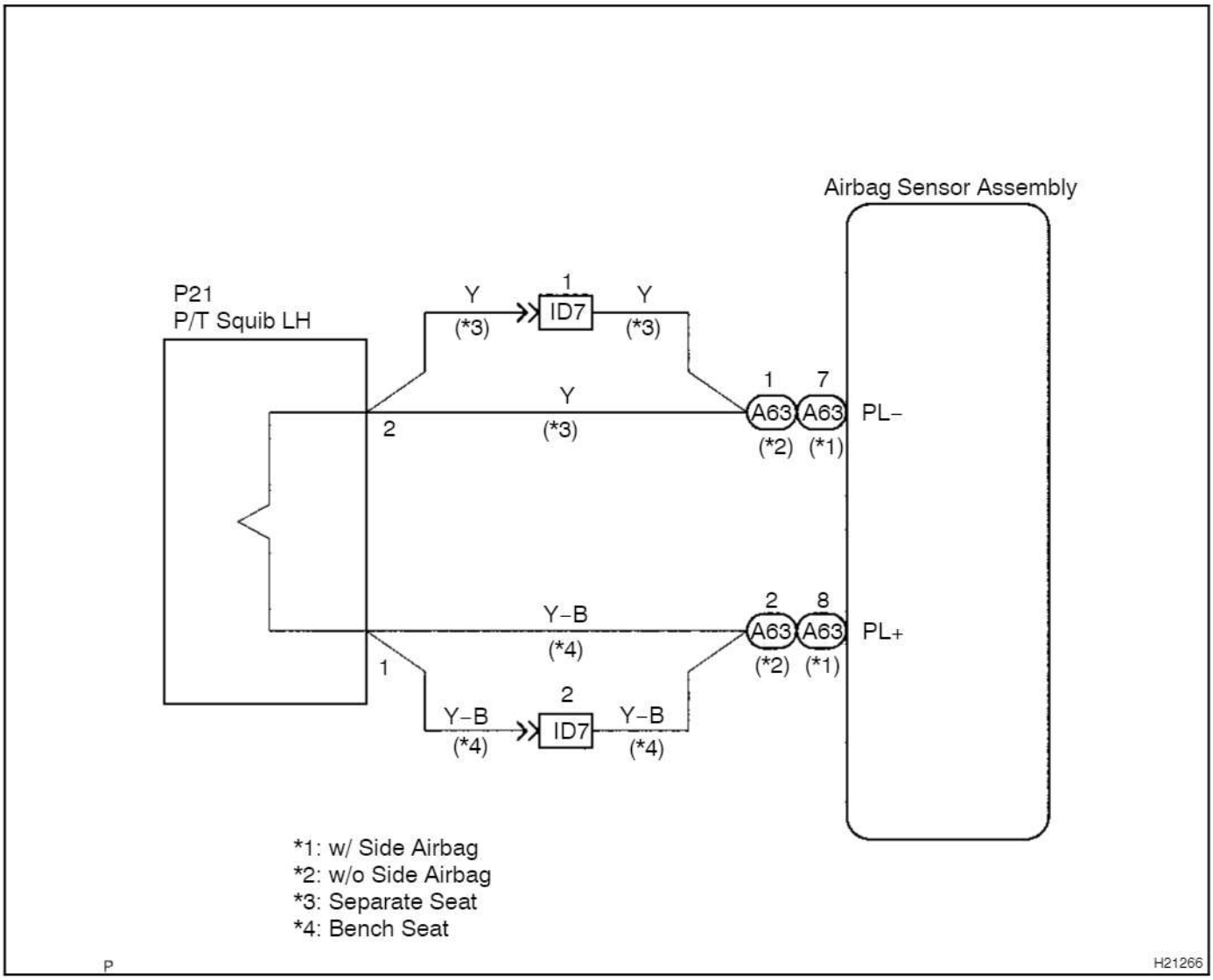
DTC	B0135/73	Short in P/T Squib LH Circuit

CIRCUIT DESCRIPTION

The P/T squib LH circuit consists of the airbag sensor assembly and the seat belt pretensioner LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0135/73 is recorded when a short is detected in the P/T squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0135/73	• Short in P/T squib LH circuit • P/T squib LH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner LH (P/T squib LH) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check seat type.**

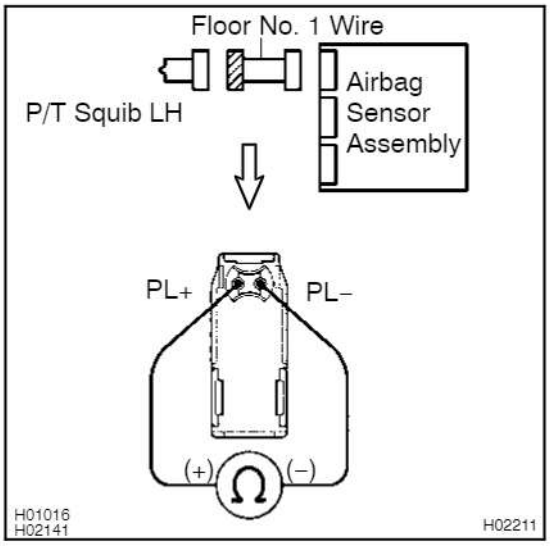
CHECK:
Confirm that the type of the front seat.
OK:

A: Separate seat
B: Bench seat

B	**Go to step 6.**

A

3	**Check floor No. 1 wire (P/T squib LH circuit).**



PREPARATION:
Release the airbag activation prevention mechanism built in the connector of the floor No. 1 wire on the airbag sensor assembly side (See page DI–432).
CHECK:
Measure the resistance between PL+ and PL– of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.
OK:

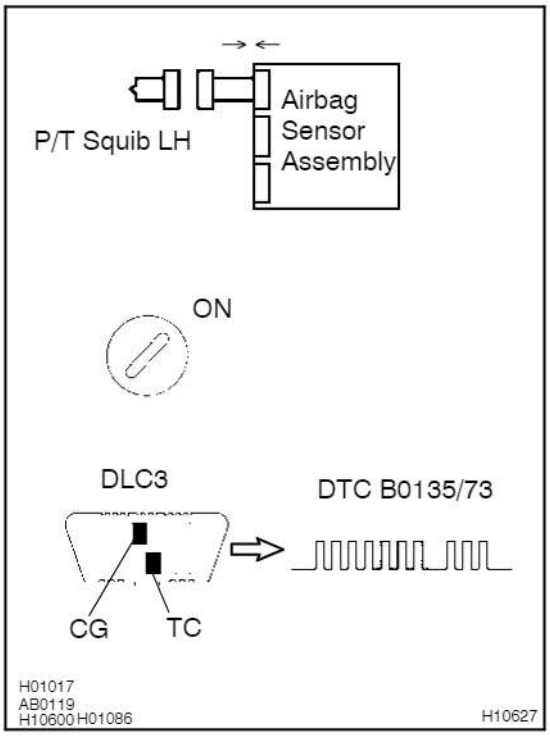
Resistance: 1 MΩ or Higher

NG	**Repair or replace floor No. 1 wire.**

OK

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4	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0135/73 is not output.

HINT:

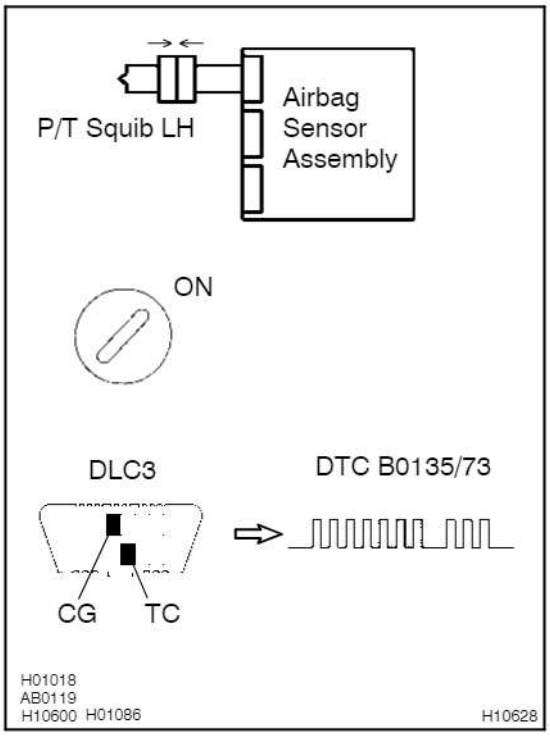
Codes other than code B0135/73 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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5	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0135/73 is not output.

HINT:
Codes other than code B0135/73 may be output at this time, but they are not relevant to this check.

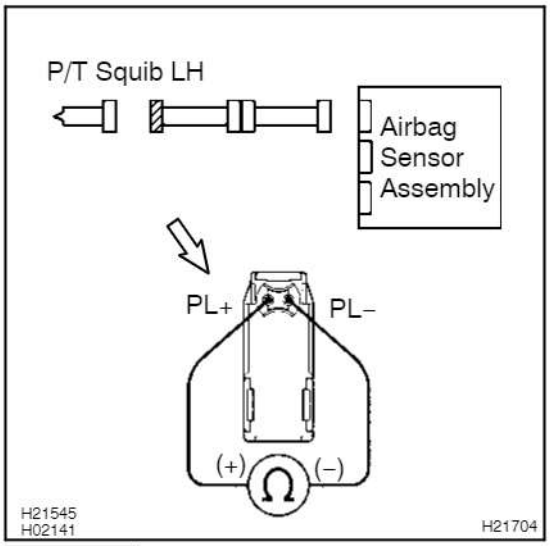
NG → **Replace seat belt pretensioner LH (P/T squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	Check P/T squib LH circuit.



PREPARATION:

Release airbag activation prevention mechanism built in the connector on the airbag sensor assembly side between the seat belt pretensioner LH (P/T squib LH) and the airbag sensor assembly (See page DI–432).

CHECK:

Measure the resistance between PL+ and PL– of the connector on the seat belt pretensioner LH (P/T squib LH) and the airbag sensor assembly.

OK:

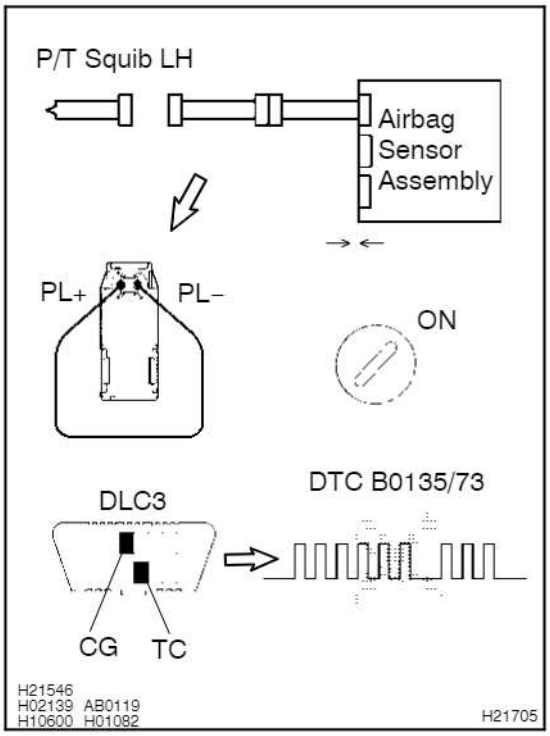
Resistance: 1 MΩ or Higher

NG	Go to step 9.

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PL+ and PL– of the connector on the seat belt pretensioner LH (P/T squib LH) side between the airbag sensor assembly and the seat belt pretensioner LH (P/T squib LH).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0135/73 is not output.

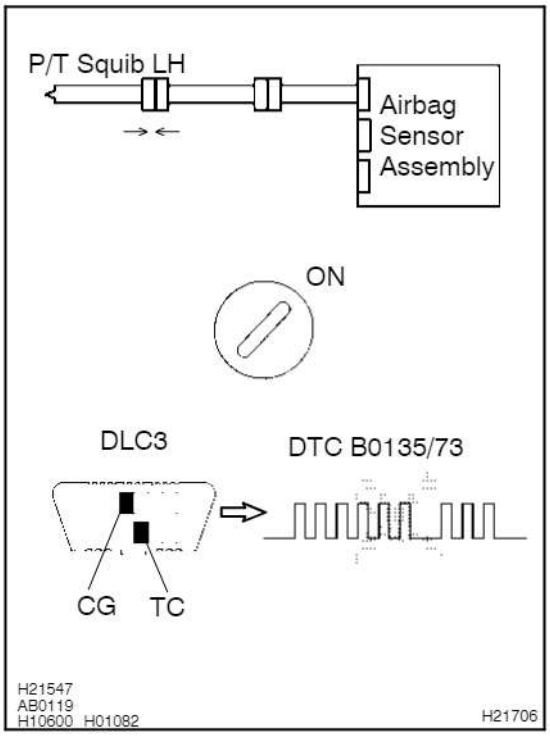
HINT:
Codes other than code B0135/73 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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8	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0135/73 is not output.

HINT:
Codes other than code B0135/73 may be output at this time, but they are not relevant to this check.

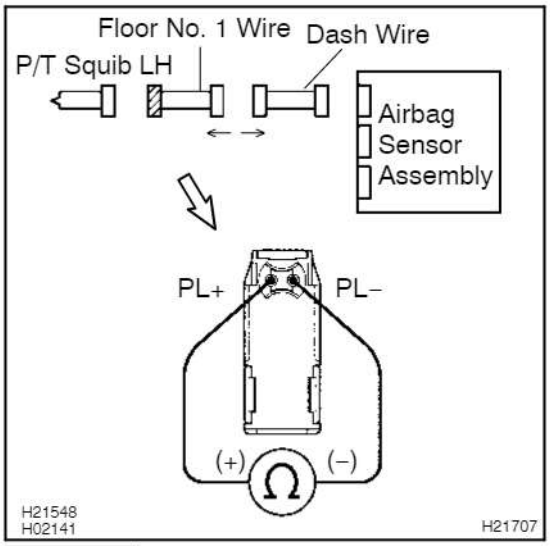
NG	Replace seat belt pretensioner LH (P/T squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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9	Check floor No. 1 wire.



PREPARATION:

(a) Disconnect floor No. 1 wire connector from the dash wire.
(b) Release airbag activation prevention mechanism built in the floor No. 1 wire connector on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between PL+ and PL– of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

Repair or replace dash wire.

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DIATD–01

DTC	B0136/74	Open in P/T Squib LH Circuit

CIRCUIT DESCRIPTION

The P/T squib LH circuit consists of the airbag sensor assembly and the seat belt pretensioner LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0136/74 is recorded when an open is detected in the P/T squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0136/74	• Open in P/T squib LH circuit • P/T squib LH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner LH (P/T squib LH) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)

WIRING DIAGRAM

See page DI–571.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check seat type.**

CHECK:

Confirm that the type of the front seat.

OK:

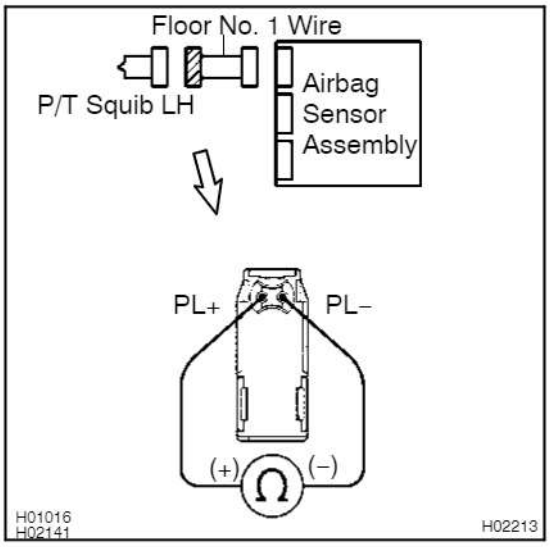
A: Separate seat
B: Bench seat

B → **Go to step 6.**

A

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3	**Check floor No. 1 wire (P/T squib LH circuit).**



CHECK:

Measure the resistance between PL+ and PL– of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.

OK:

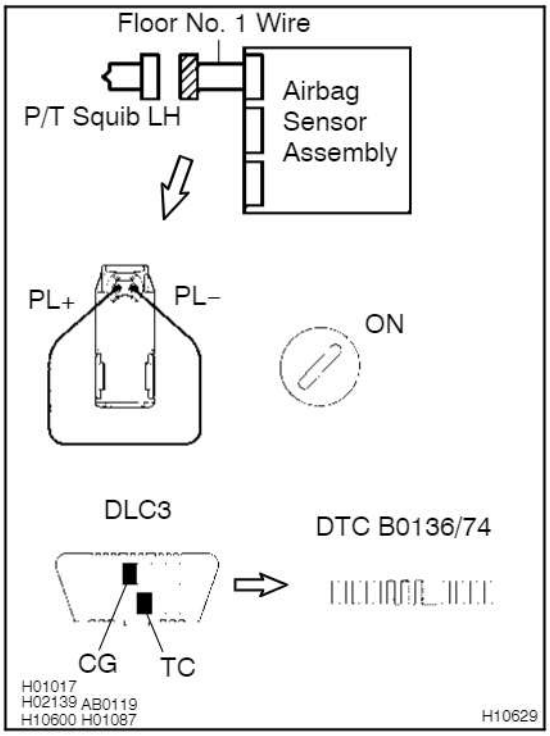
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

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4	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PL+ and PL– of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0136/74 is not output.

HINT:

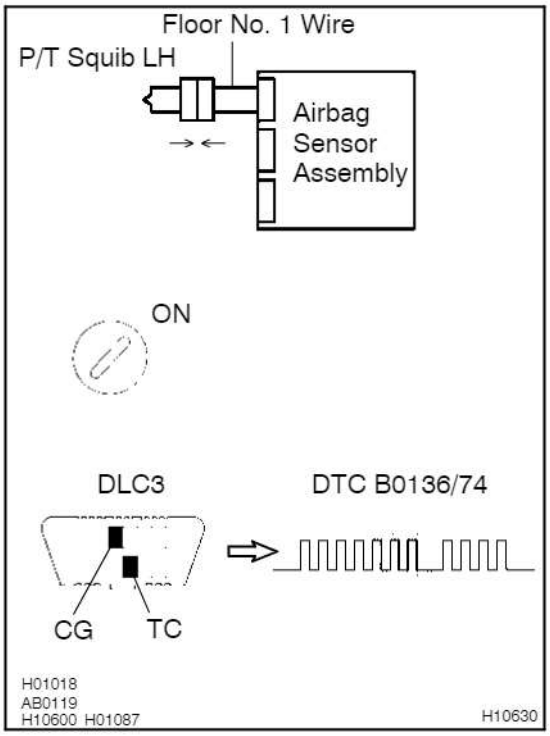
Codes other than code B0136/74 may be output at this time, but they are not relevant to this check.

NG	**Replace airbag sensor assembly.**

OK

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5	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0136/74 is not output.

HINT:
Codes other than code B0136/74 may be output at this time, but they are not relevant to this check.

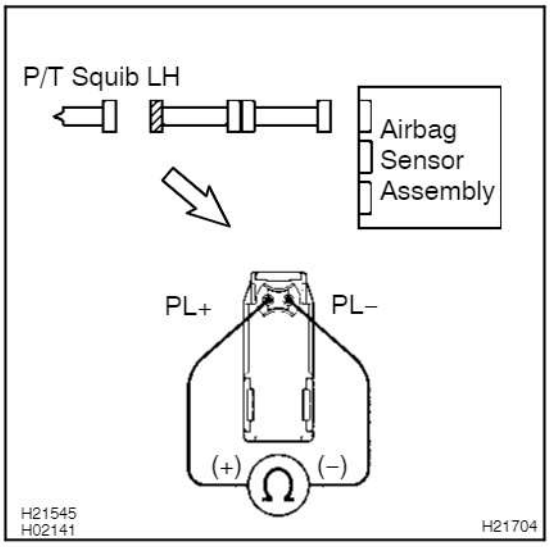
NG	Replace seat belt pretensioner LH (P/T squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	**Check P/T squib LH circuit.**



CHECK:

Measure the resistance between PL+ and PL– of the connector on the seat belt pretensioner LH (P/T squib LH) side between the airbag sensor assembly and the seat belt pretensioner LH (P/T squib LH).

OK:

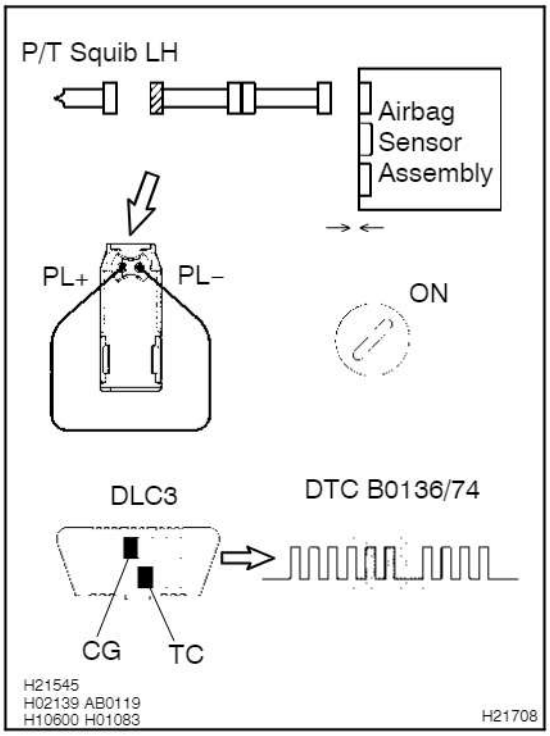
Resistance: Below 1 Ω

NG → **Go to step 9.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PL+ and PL– of the connector on the seat belt pretensioner LH (P/T squib LH) side between the airbag sensor assembly and the seat belt pretensioner LH (P/T squib LH).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0136/74 is not output.

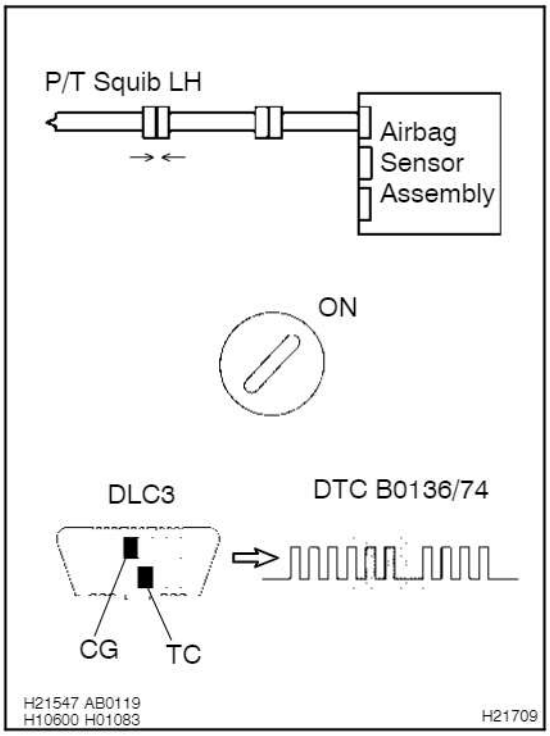
HINT:
Codes other than code B0136/74 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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8	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0136/74 is not output.

HINT:
Codes other than code B0136/74 may be output at this time, but they are not relevant to this check.

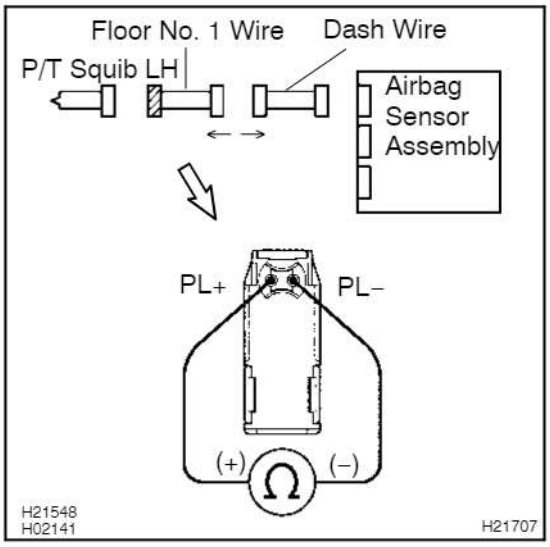
NG	Replace seat belt pretensioner LH (P/T squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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9	**Check floor No. 1 wire.**



PREPARATION:

Disconnect the floor No. 1 wire connector from the dash wire.

CHECK:

Measure the resistance between PL+ and PL– of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

Repair or replace dash wire.

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DTC	B0137/71	Short in P/T Squib LH Circuit (to Ground)

CIRCUIT DESCRIPTION

The P/T squib LH circuit consists of the airbag sensor assembly and the seat belt pretensioner LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0137/71 is recorded when a ground short is detected in the P/T squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0137/71	• Short in P/T squib LH circuit (to ground) • P/T squib LH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner LH (P/T squib LH) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)

WIRING DIAGRAM

See page DI–571.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check seat type.**

CHECK:
Confirm that the type of the front seat.
OK:

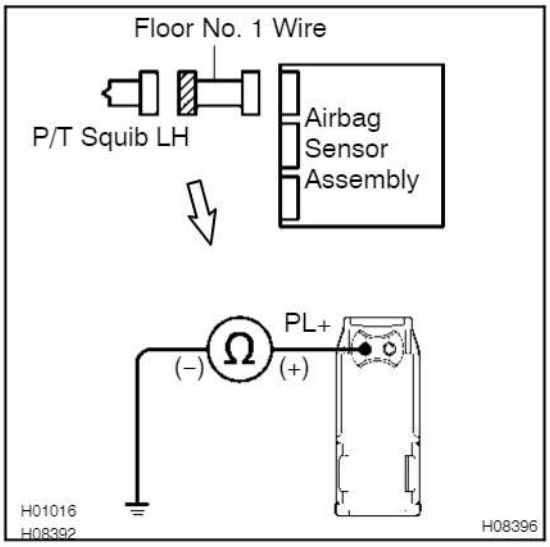
A: Separate seat
B: Bench seat

B	**Go to step 6.**

A

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3	Check floor No. 1 wire (P/T squib LH circuit).



CHECK:

Measure the resistance between the body ground and PL+ of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.

OK:

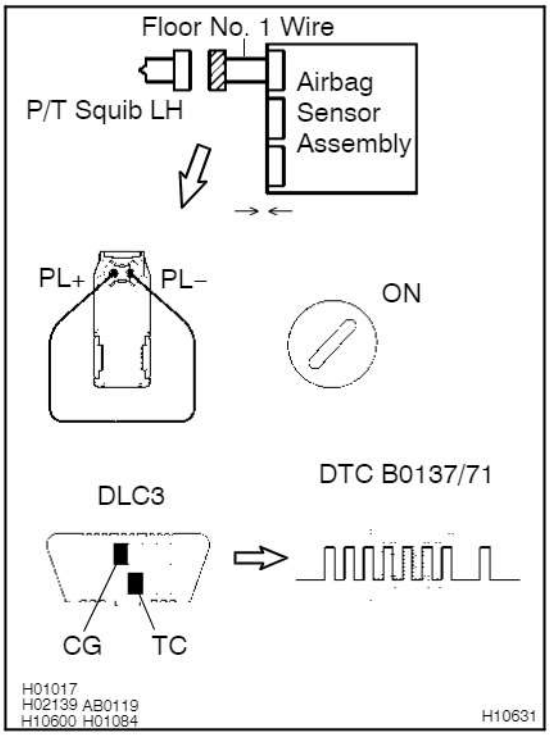
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

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4	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PL+ and PL– of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0137/71 is not output.

HINT:

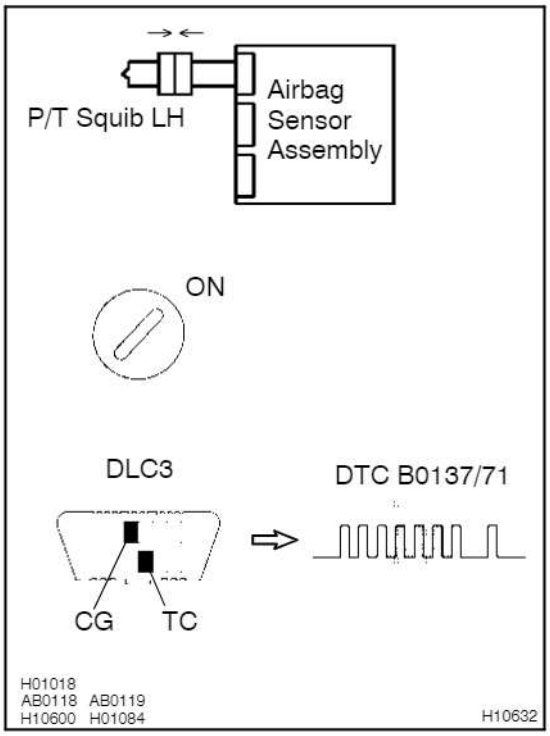
Codes other than code B0137/71 may be output at this time, but they are not relevant to this check.

NG	**Replace airbag sensor assembly.**

OK

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5	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0137/71 is not output.

HINT:
Codes other than code B0137/71 may be output at this time, but they are not relevant to this check.

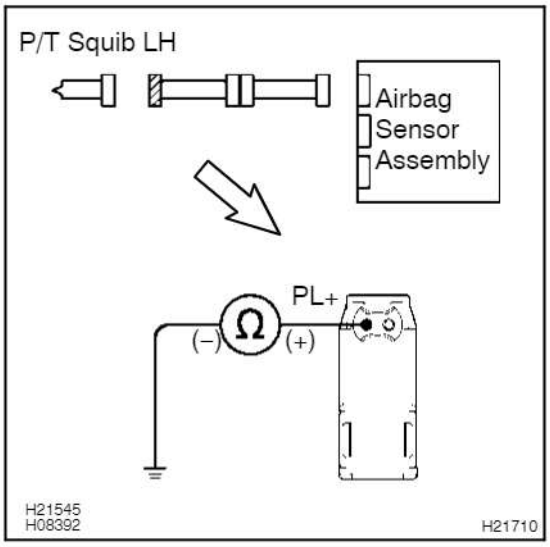
NG	Replace seat belt pretensioner LH (P/T squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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6	**Check P/T squib LH circuit.**



CHECK:

Measure the resistance between the body ground and PL+ of the connector on the seat belt pretensioner LH (P/T squib LH) side between the airbag sensor assembly and the seat belt pretensioner LH (P/T squib LH).

OK:

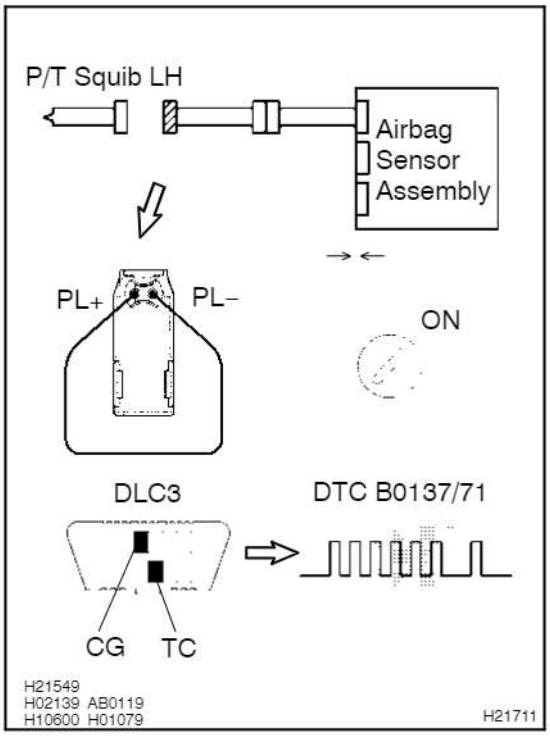
Resistance: 1 MΩ or Higher

NG → **Go to step 9.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PL+ and PL– of the connector on the seat belt pretensioner LH (P/T squib LH) side between the airbag sensor assembly and the seat belt pretensioner LH (P/T squib LH).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0137/71 is not output.

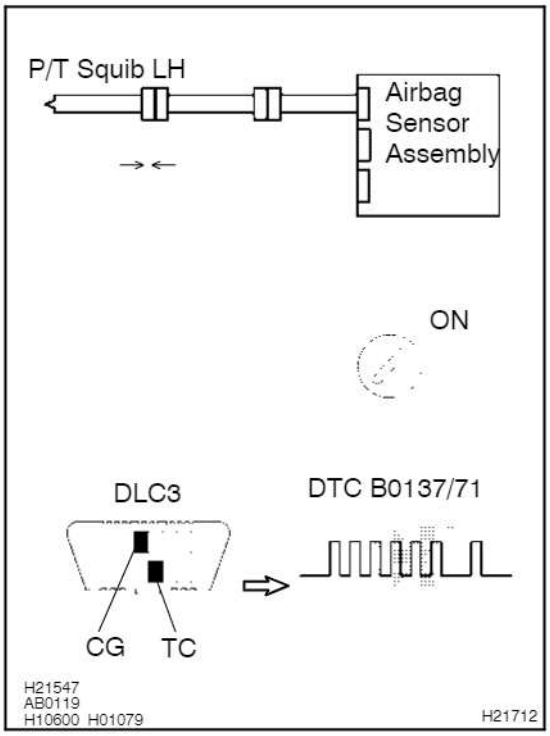
HINT:
Codes other than code B0137/71 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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8	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0137/71 is not output.

HINT:
Codes other than code B0137/71 may be output at this time, but they are not relevant to this check.

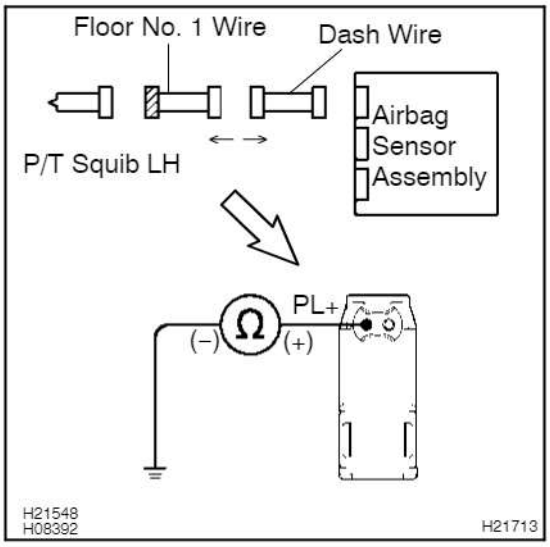
NG	Replace seat belt pretensioner LH (P/T squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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9	**Check floor No. 1 wire.**



PREPARATION:

Disconnect the floor No. 1 wire connector from the dash wire.

CHECK:

Measure the resistance between the body ground and PL+ of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

Repair or replace dash wire.

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DIATF-01

DTC	B0138/72	Short in P/T Squib LH Circuit (to B+)

CIRCUIT DESCRIPTION

The P/T squib LH circuit consists of the airbag sensor assembly and seat belt pretensioner LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0138/72 is recorded when a B+ short is detected in the P/T squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B0138/72	• Short in P/T squib LH circuit (to B+) • P/T squib LH malfunction • Airbag sensor assembly malfunction	• Seat belt pretensioner LH (P/T squib LH) • Airbag sensor assembly • Floor No. 1 wire • Dash wire (Bench seat)

WIRING DIAGRAM

See page DI–571.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check seat type.**

CHECK:

Confirm that the type of the front seat.

OK:

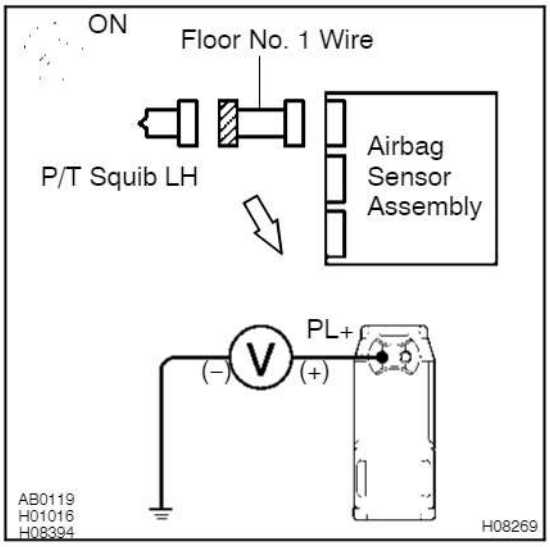
A: Separate seat
B: Bench seat

B	**Go to step 6.**

A

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3	Check floor No. 1 wire (P/T squib LH circuit).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and PL+ of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.

OK:

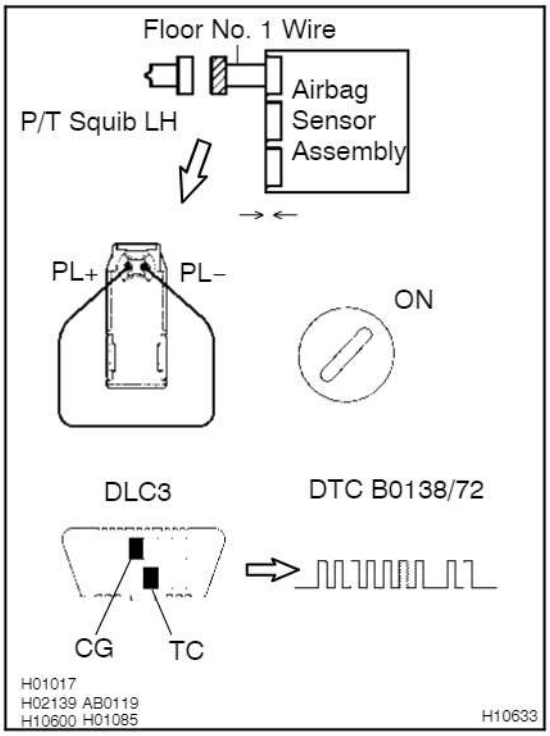
Voltage: Below 1 V

NG → **Repair or replace floor No. 1 wire.**

OK

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4	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect PL+ and PL– of the floor No. 1 wire connector on the seat belt pretensioner LH (P/T squib LH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0138/72 is not output.

HINT:

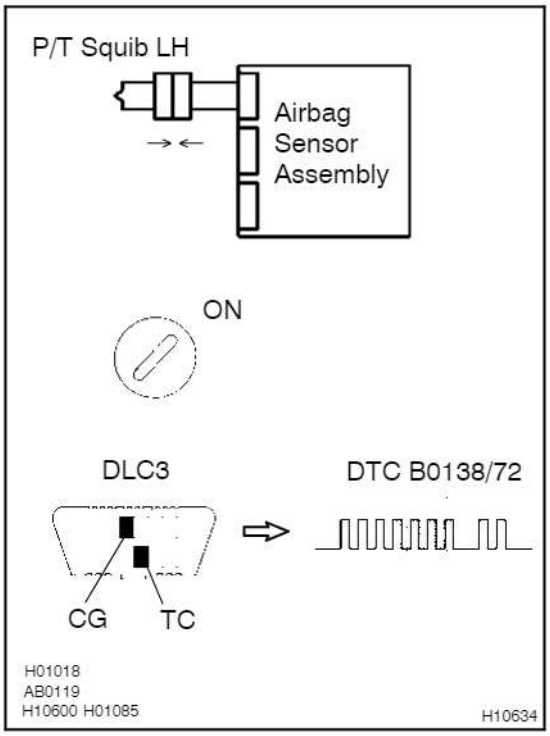
Codes other than code B0138/72 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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5	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0138/72 is not output.

HINT:
Codes other than code B0138/72 may be output at this time, but they are not relevant to this check.

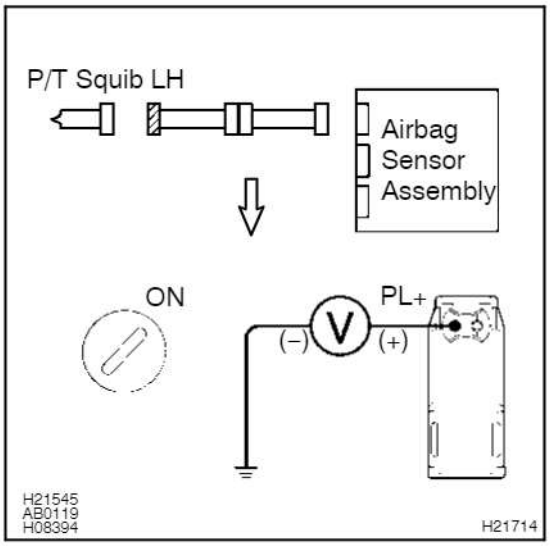
NG	**Replace seat belt pretensioner LH (P/T squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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6	**Check P/T squib LH circuit.**



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and PL+ of the connector on the seat belt pretensioner LH (P/T squib LH) side between the airbag sensor assembly and the seat belt pretensioner LH (P/T squib LH).

OK:

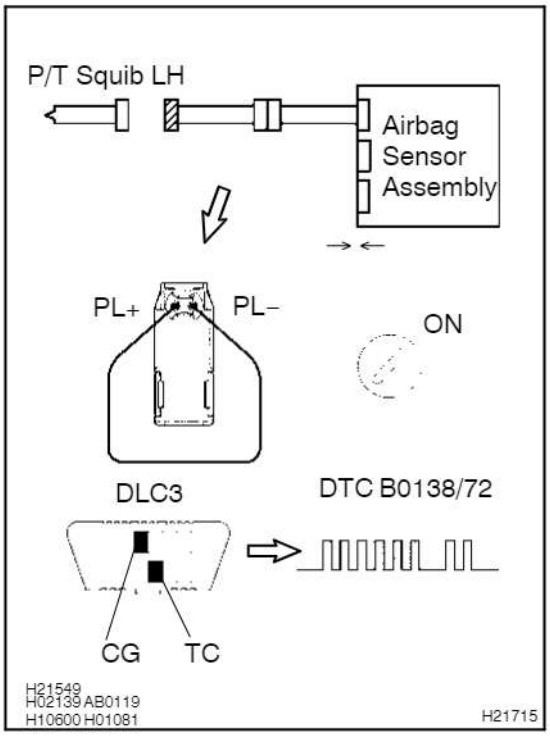
Voltage: Below 1 V

NG → **Go to step 9.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect PL+ and PL– of the connector on the seat belt pretensioner LH (P/T squib LH) side between the airbag sensor assembly and the seat belt pretensioner LH (P/T squib LH).
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0138/72 is not output.

HINT:

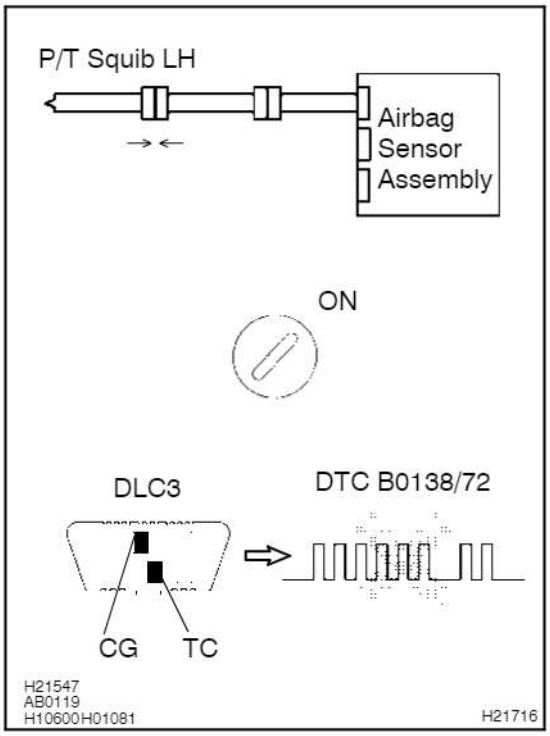
Codes other than code B0138/72 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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8	Check P/T squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the seat belt pretensioner LH (P/T squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B0138/72 is not output.

HINT:
Codes other than code B0138/72 may be output at this time, but they are not relevant to this check.

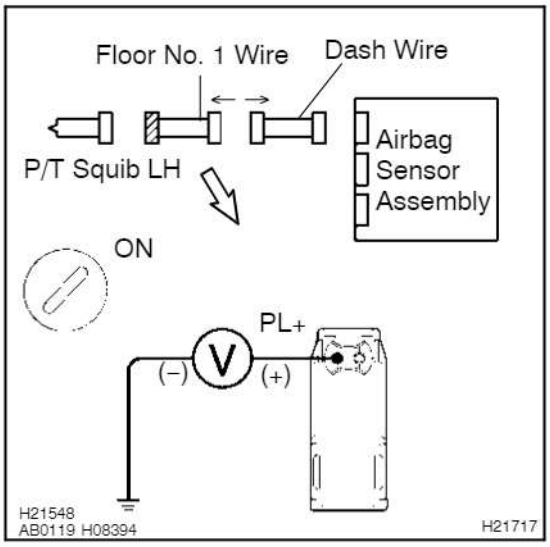
NG	**Replace seat belt pretensioner LH (P/T squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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9	**Check floor No. 1 wire.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, wait at least for 90 seconds.
(c) Disconnect the floor No. 1 wire connector from the dash wire.
(d) Connect the negative (–) terminal to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and PL+ of the floor No. 1wire connector on the seat belt pretensioner LH (P/T squib LH) side.

OK:

Voltage: Below 1 V

NG → **Repair or replace floor No. 1 wire.**

OK ↓

Repair or replace dash wire.

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DI1BM-44

DTC	B1100/31	Airbag Sensor Assembly Malfunction

CIRCUIT DESCRIPTION

The airbag sensor assembly consists of the airbag sensor, safing sensor, drive circuit, diagnosis circuit and ignition control, etc.
It receives signals from the airbag sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1100/31 is recorded when occurrence of a malfunction in the airbag sensor assembly is detected.

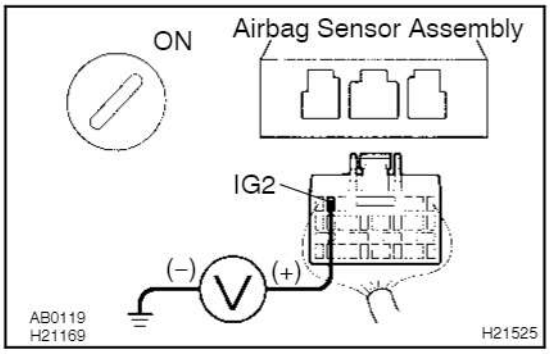
DTC No.	DTC Detecting Condition	Trouble Area
B1100/31	• Airbag sensor assembly malfunction	• Airbag sensor assembly

INSPECTION PROCEDURE

HINT:
When a malfunction code other than code B1100/31 is displayed at the same time, first repair the malfunction indicated by the malfunction code other than code B1100/31.

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check airbag sensor assembly.**



PREPARATION:
Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:
(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and IG2 of the dash wire connector on the airbag sensor assembly side.

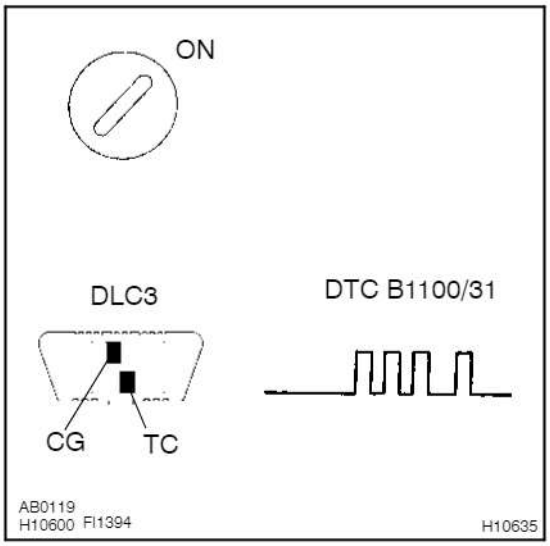
OK:
Voltage: 10 – 14 V

NG	**Check that an abnormality occurs on the battery and charging system.**

OK

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3	Is DTC B1100/31 output again?



PREPARATION:

Clear the DTC (See page DI–432).

CHECK:

(a) Turn the ignition switch to LOCK, and wait at least for 10 seconds.

(b) Turn the ignition switch to ON, and wait at least for 10 seconds.

(c) Repeat operation in step (a) and (b) at least 5 times.

(d) Check the DTC (See page DI–432).

OK:

DTC B1100/31 is output.

HINT:

Codes other than code B1100/31 may be output at this time, but they are not relevant to this check.

NO → **Using simulation method, reproduce malfunction symptoms (See page IN–27).**

YES

Replace airbag sensor assembly.

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DTC	B1135/24	Half Connection in Airbag Sensor Assembly Connector

CIRCUIT DESCRIPTION

The airbag sensor assembly detects partial connection of connector.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1135/24 is recorded when the airbag sensor assembly detects an open in the electrical connection check mechanism of the airbag sensor connector or in the airbag sensor circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1135/24	• Malfunction of electrical connection check mechanism of airbag sensor assembly connector • Airbag sensor assembly malfunction	• Electrical connection check mechanism • Airbag sensor assembly

INSPECTION PROCEDURE

1	**Are connectors of airbag sensor assembly properly connected?**

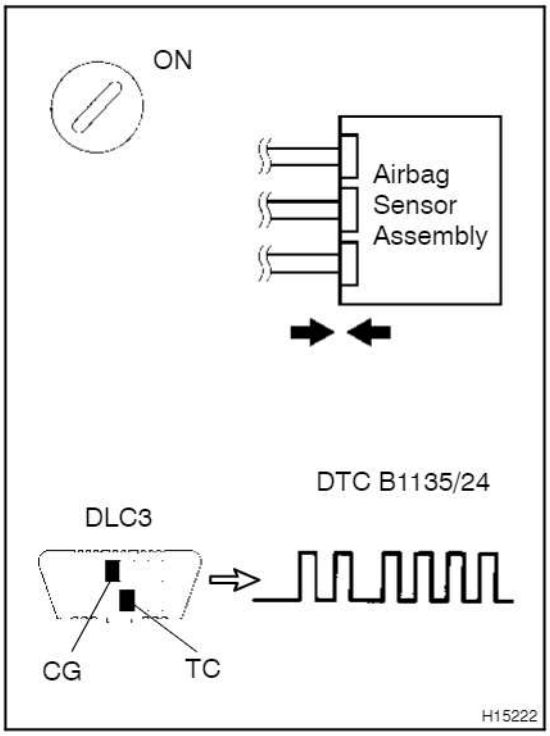
NO → **Connect connectors.**

YES

2	**Prepare for inspection (See step 1 on page DI–764).**

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connectors to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1135/24 is not output.

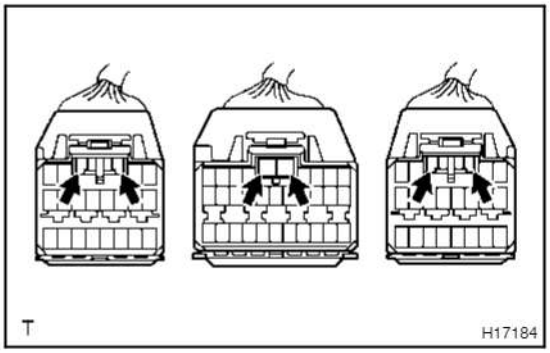
HINT:

Codes other than code B1135/24 may be output at this time, but they are not relevant to this check.

OK	Complete.

NG

4	Perform a visual check of the disconnection detection pin.



OK:

No deformation is identified.

HINT:

Compare it with the other 2 connector pins.

NG	Repair or replace wire harness.

OK

Replace airbag sensor assembly.

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DIATI-01

DTC	B1140/32	Side and Curtain Shield Airbag Sensor Assembly RH Malfunction

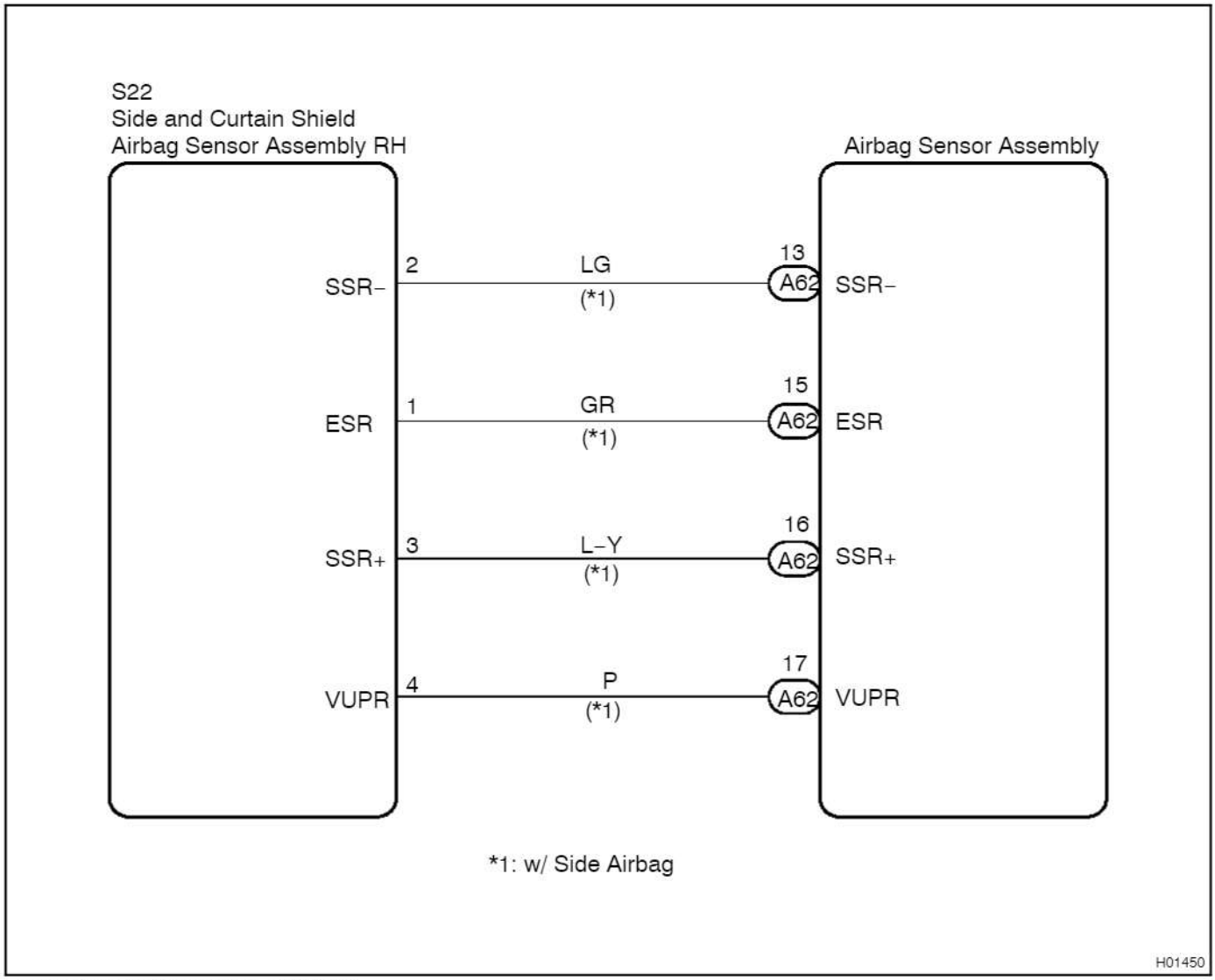
CIRCUIT DESCRIPTION

The side and curtain shield airbag sensor assembly RH consists of the safing sensor, diagnosis circuit and lateral deceleration sensor, etc.
It receives signals from the lateral deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1140/32 is recorded when occurrence of a malfunction in the side and curtain shield airbag sensor assembly RH is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1140/32	• Side and curtain shield airbag sensor assembly RH malfunction	• Side and curtain shield airbag sensor assembly RH • Floor No. 2 wire • Airbag sensor assembly

HINT:
DTC B1140/32 is indicated only for the vehicle equipped with the side airbag.

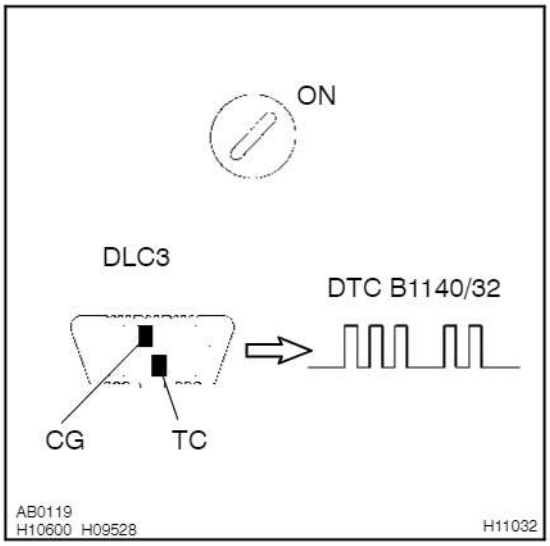
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Is DTC B1140/32 output?



CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1140/32 is output.

HINT:

Codes other than code B1140/32 may be output at this time, but they are not relevant to this check.

NO → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

YES

2	Is connector of side and curtain shield airbag sensor assembly RH properly connected?

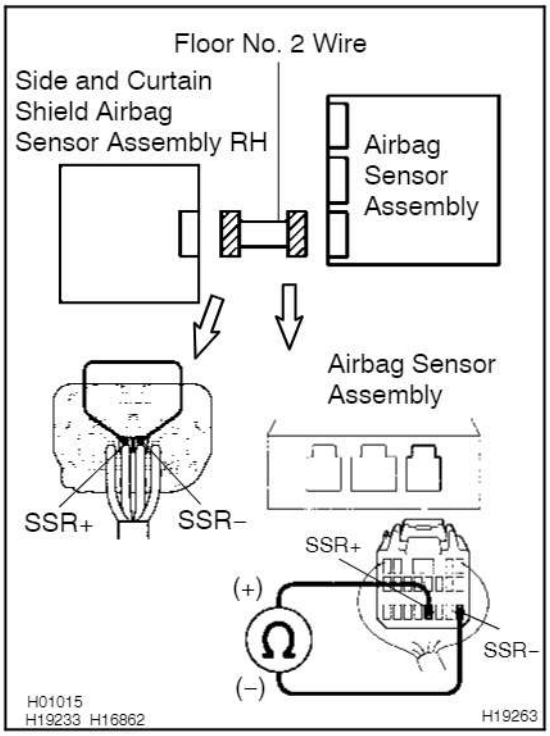
NO → **Connect connector.**

YES

3	Prepare for inspection (See step 1 on DI–764).

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4	**Check floor No. 2 wire.**



PREPARATION:

Using a service wire, connect SSR+ and SSR– of the floor No. 2 wire connector on the side and curtain shield airbag sensor assembly RH side.

CHECK:

Measure the resistance between SSR+ and SSR– of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

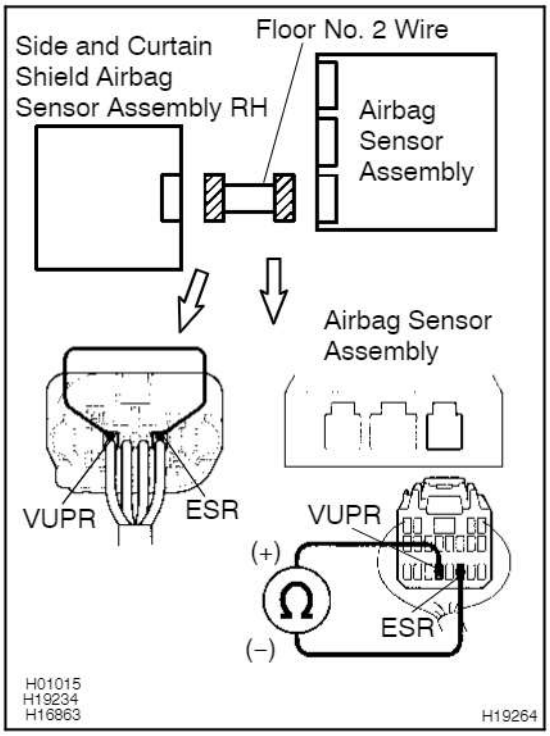
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 2 wire.**

OK

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5	Check floor No. 2 wire.



PREPARATION:

Using a service wire, connect VUPR and ESR of the floor No. 2 wire connector on the side and curtain shield airbag sensor assembly RH side.

CHECK:

Measure the resistance between VUPR and ESR of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

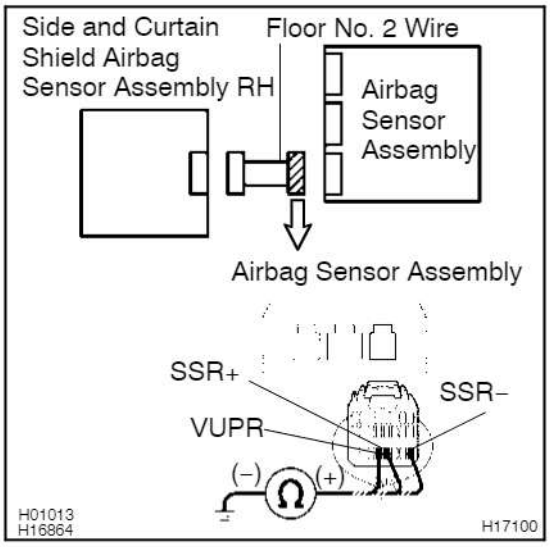
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 2 wire.**

OK

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6	Check floor No. 2 wire (to ground).



CHECK:

Measure the resistance between the body ground and each of VUPR, SSR+ and SSR– of the floor No. 2 wire connector on the airbag sensor assembly side.

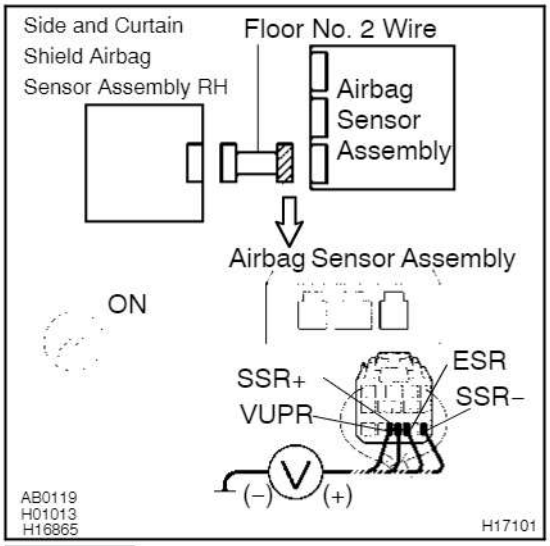
OK:

Resistance: 1 MΩ or Higher

NG	Repair or replace floor No. 2 wire.

OK

7	Check floor No. 2 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of VUPR, SSR+, SSR– and ESR of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

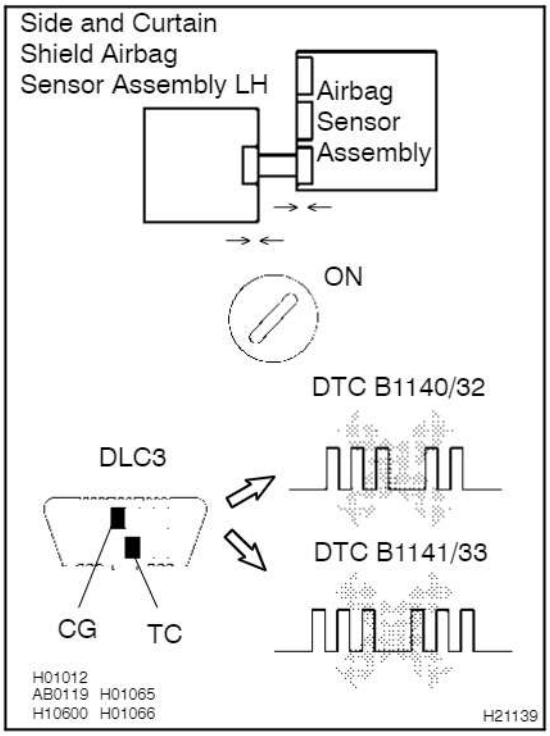
Voltage: Below 1 V

NG	Repair or replace floor No. 2 wire.

OK

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8	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Change the side and curtain shield airbag sensor assembly LH position with RH position.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

Neither DTC B1140/32 nor B1141/33 are not output.

HINT:

Codes other than code B1140/32 or B1141/33 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly (DTC B1140/32 is output).**

NG → **Replace side and curtain shield airbag sensor assembly RH (DTC B1141/33 is output).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIATJ–01

DTC	B1141/33	Side and Curtain Shield Airbag Sensor Assembly LH Malfunction

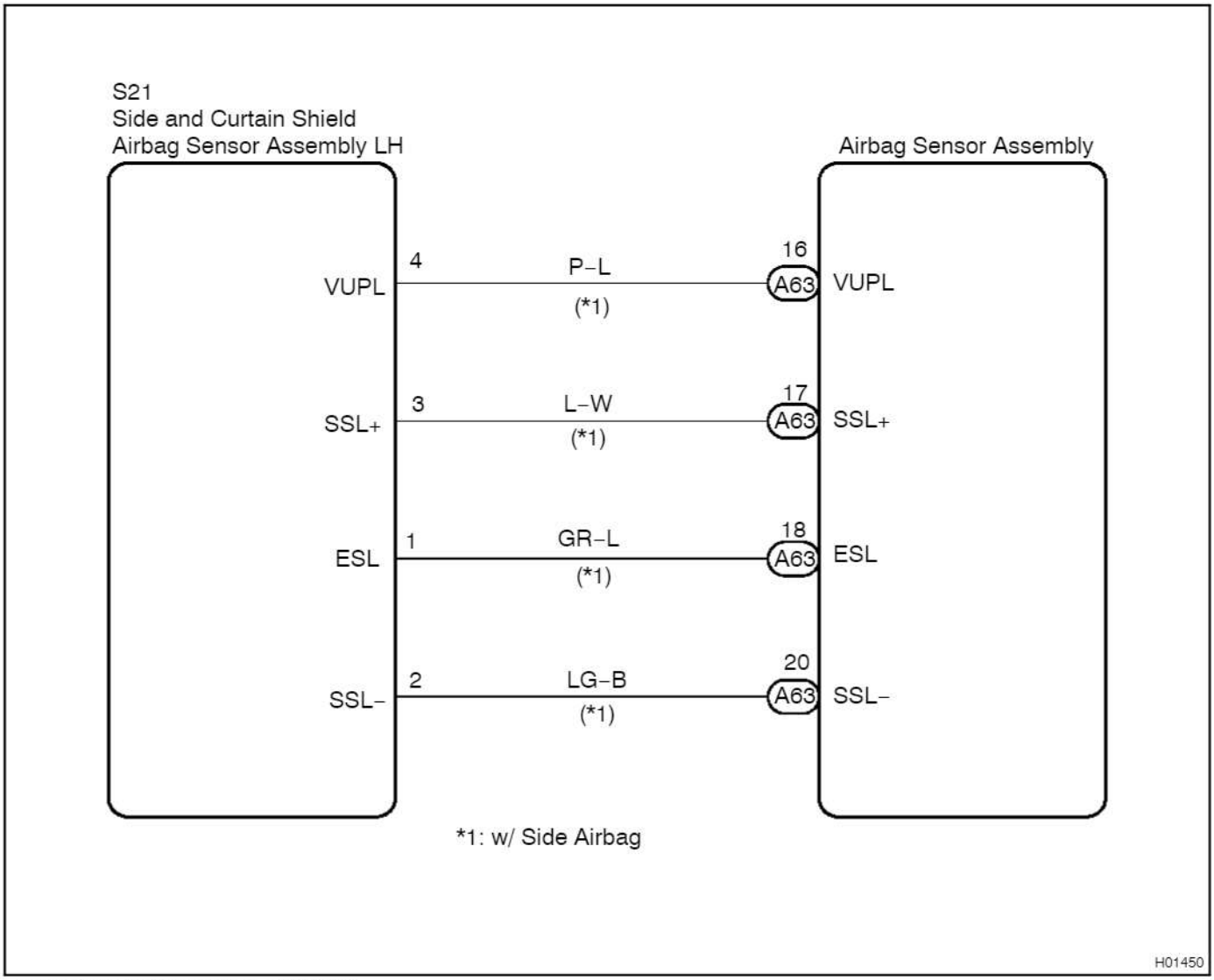
CIRCUIT DESCRIPTION

The side and curtain shield airbag sensor assembly LH consists of the safing sensor, diagnosis circuit and lateral deceleration sensor, etc.
It receives signals from the lateral deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1141/33 is recorded when occurrence of a malfunction in the side and curtain shield airbag sensor assembly LH is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1141/33	• Side and curtain shield airbag sensor assembly LH malfunction	• Side and curtain shield airbag sensor assembly LH • Floor No. 1 wire • Airbag sensor assembly

HINT:
DTC B1141/33 is indicated only for the vehicle equipped with the side airbag.

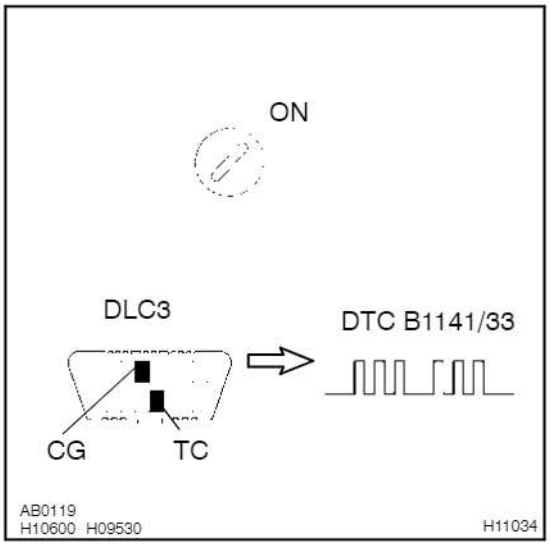
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Is DTC B1141/33 output?



CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1141/33 is output.

HINT:

Codes other than code B1141/33 may be output at this time, but they are not relevant to this check.

YES → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

NO

2	Is connector of side and curtain shield airbag sensor assembly LH properly connected?

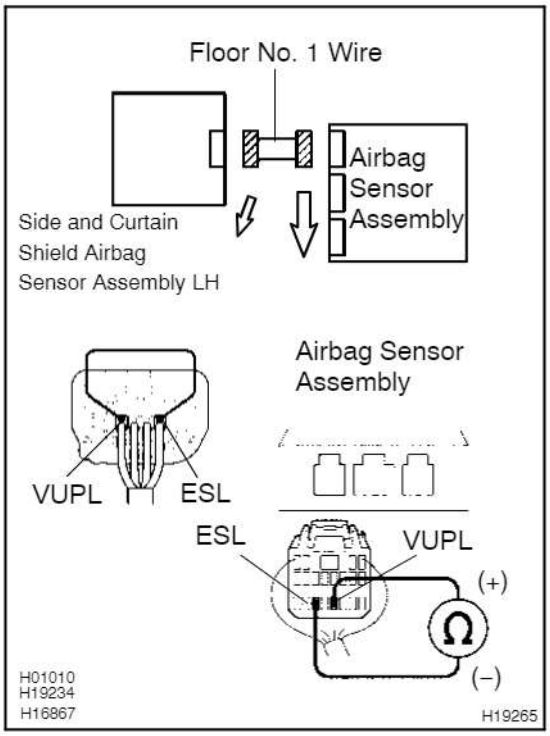
NO → **Connect connector.**

YES

3	Prepare for inspection (See step 1 on page DI–764).

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4	**Check floor No. 1 wire.**



PREPARATION:

Using a service wire, connect VUPL and ESL of the floor No. 1 wire connector on the side and curtain shield airbag sensor assembly LH side.

CHECK:

Measure the resistance between VUPL and ESL of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

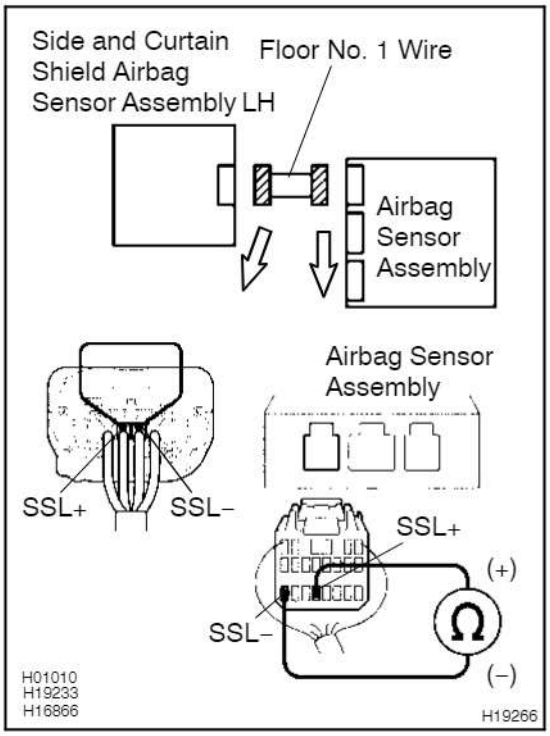
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

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5	Check floor No. 1 wire.



PREPARATION:

Using a service wire, connect SSL+ and SSL– of the floor No. 1 wire connector on the side and curtain shield airbag sensor assembly LH side.

CHECK:

Measure the resistance between SSL+ and SSL– of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

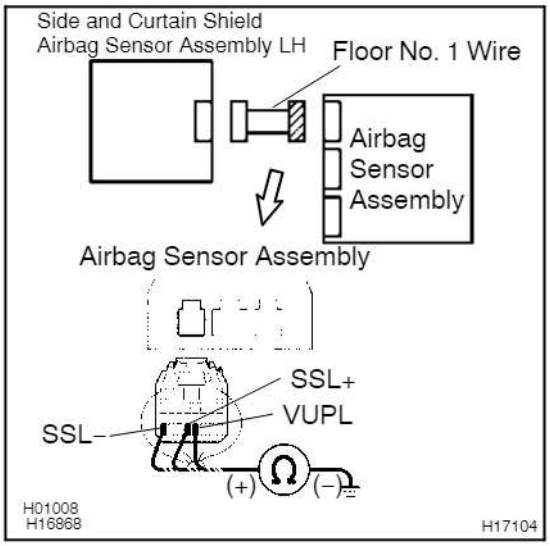
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

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6	Check floor No. 1 wire (to ground).



CHECK:

Measure the resistance between the body ground and each of VUPL, SSL+ and SSL– of the floor No. 1 wire connector on the airbag sensor assembly side.

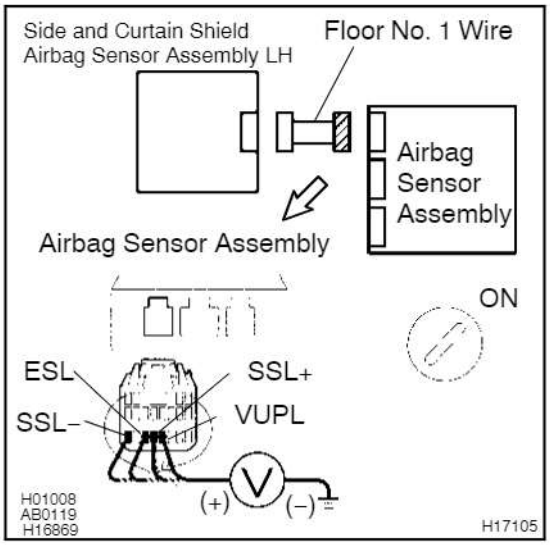
OK:

Resistance: 10 kΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

7	Check floor No. 1 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of VUPL, SSL+, SSL– and ESL of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

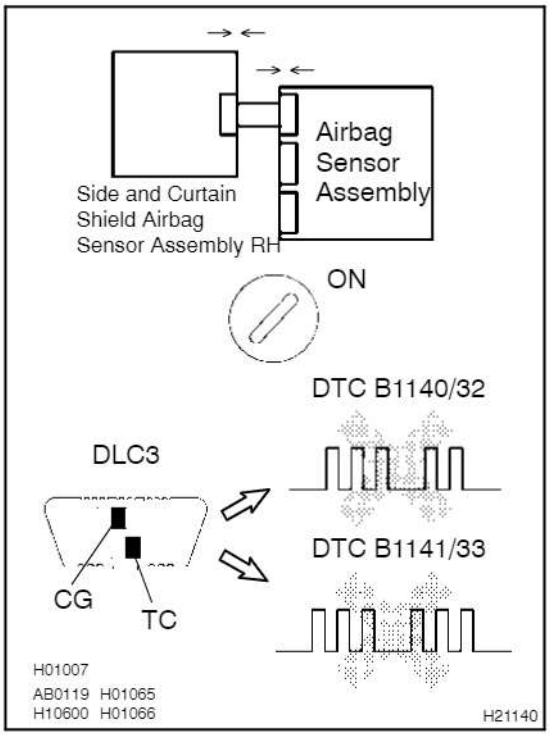
Voltage: Below 1 V

NG → **Repair or replace floor No. 1 wire.**

OK

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8	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Change the side and curtain shield airbag sensor assembly RH position with LH position.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

Neither DTC B1141/33 nor B1140/32 are not output.

HINT:

Codes other than code B1141/33 or B1140/32 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly (DTC B1141/33 is output).**

NG → **Replace side and curtain shield airbag sensor assembly LH (DTC B1140/32 is output).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIATK-01

DTC	B1148/36	Front Airbag Sensor RH Malfunction

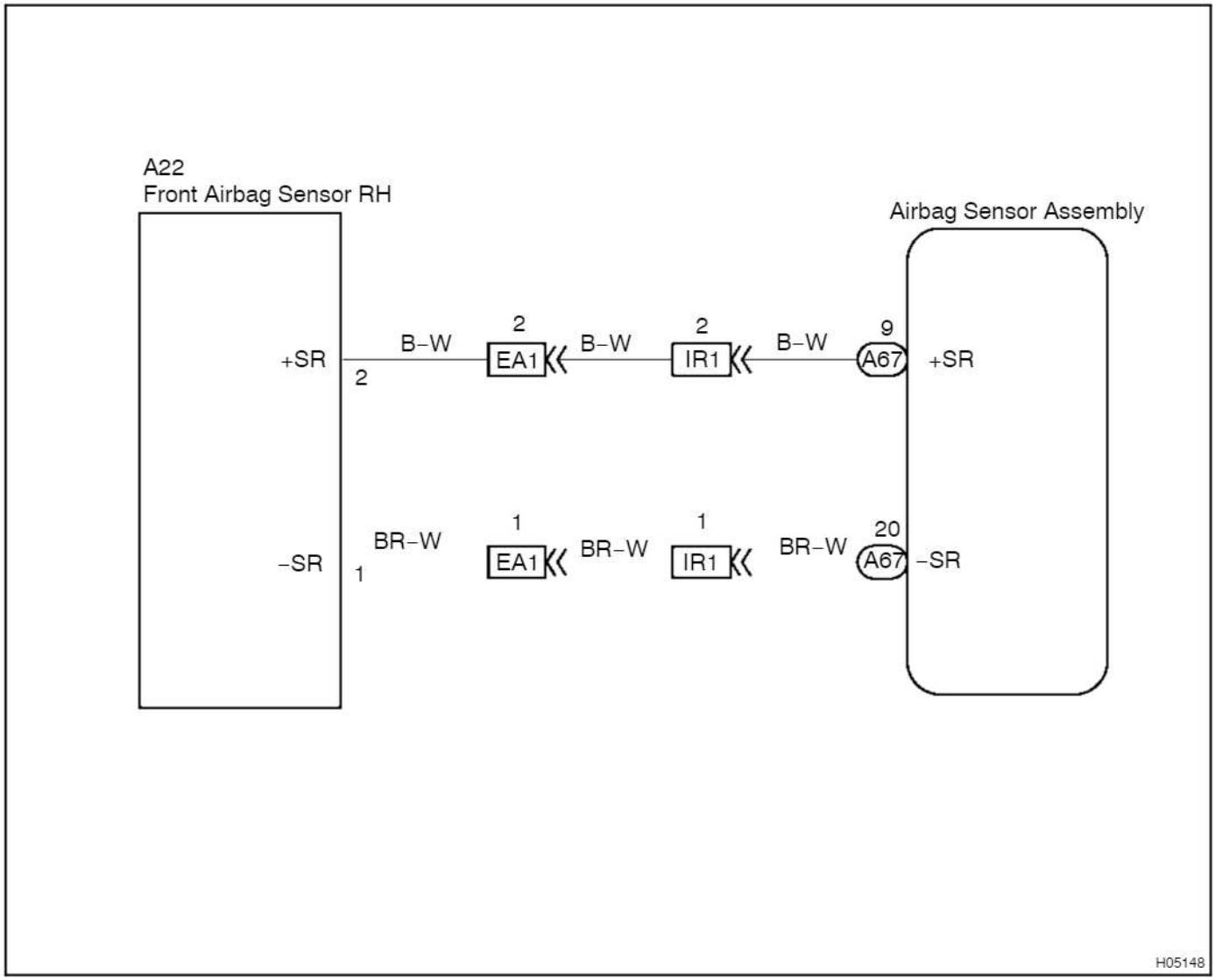
CIRCUIT DESCRIPTION

The front airbag sensor RH circuit consists of the diagnosis circuit and frontal deceleration sensor, etc.
If receives signals from the frontal deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1148/36 is recorded when occurrence of a malfunction in the front airbag sensor RH is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1148/36	• Front airbag sensor RH malfunction	• Front airbag sensor RH • Airbag sensor assembly • Dash wire • Engine room No. 2 wire • Engine room main wire

HINT:
DTC B1148/36 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stege airbag).

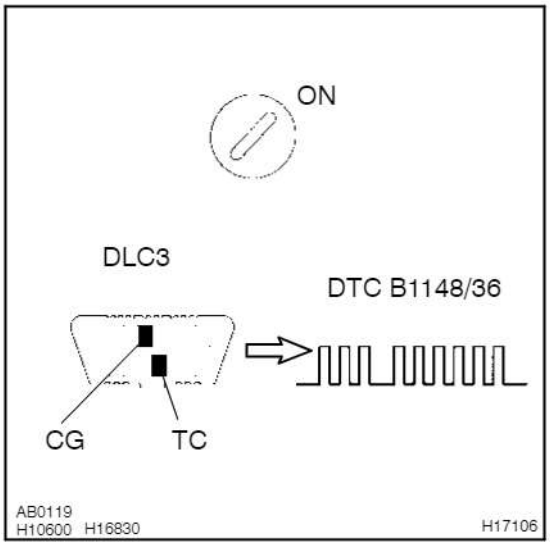
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Is DTC B1148/36 output?



CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1148/36 is output.

HINT:

Codes other than code B1148/36 may be output at this time, but they are not relevant to this check.

NO → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

YES

2	Is connector of front airbag sensor RH properly connected?

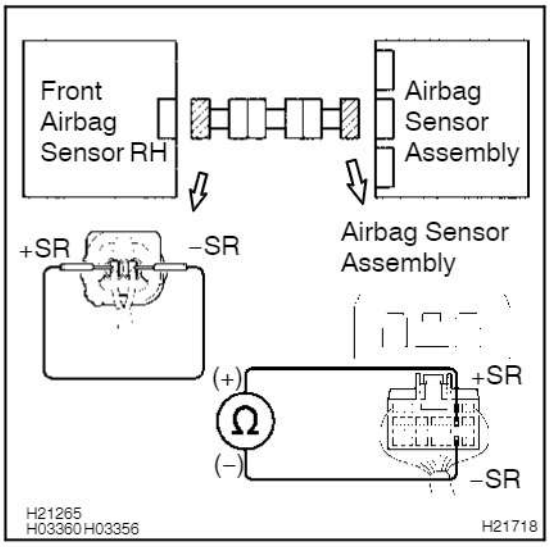
No → **Connect connector.**

YES

3	Prepare for inspection (See step 1 on DI–764).

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4	Check wire harness.



PREPARATION:

Using a service wire, connect +SR and –SR on the front airbag sensor RH side between the front airbag sensor RH and the airbag sensor assembly.

CHECK:

Measure the resistance between +SR and –SR on the airbag sensor assembly side between the front airbag sensor RH and the airbag sensor assembly.

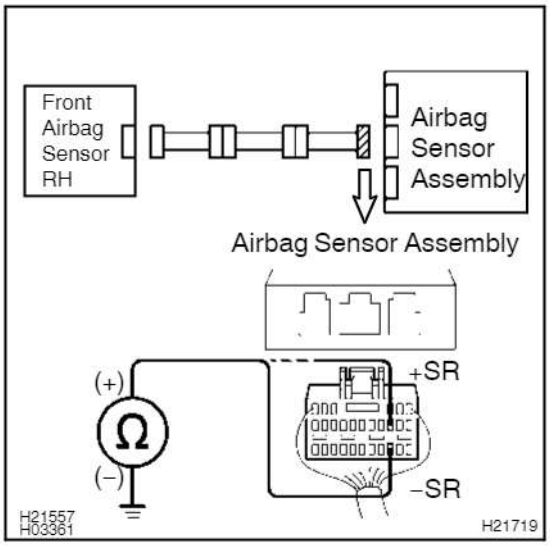
OK:

Resistance: Below 1 Ω

NG	Go to step 8.

OK

5	Check wire harness (to ground).



CHECK:

Measure the resistance between the body ground and each of +SR and –SR on the airbag sensor assembly side between the front airbag sensor RH and the airbag sensor assembly.

OK:

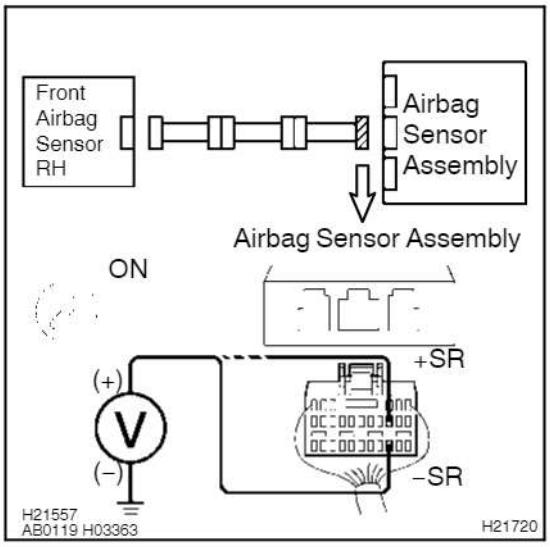
Resistance: 1 MΩ or Higher

NG	Go to step 10.

OK

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6	Check wire harness (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of +SR and –SR on the airbag sensor assembly side between the front airbag sensor RH and the airbag sensor assembly.

OK:

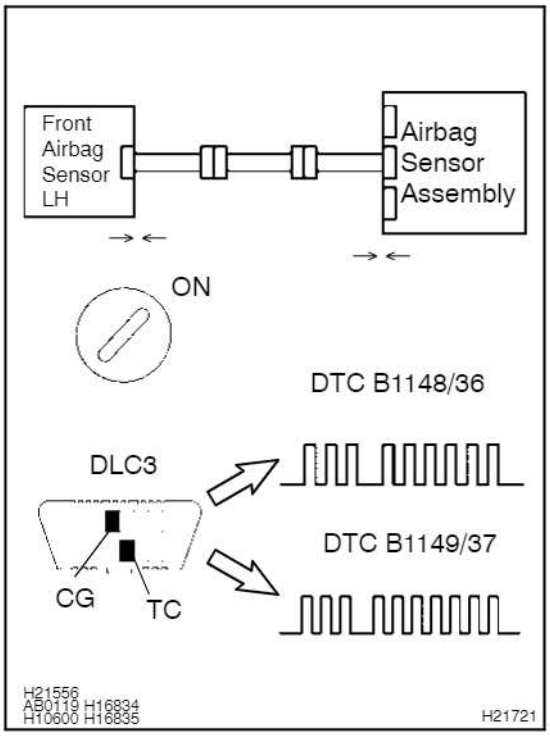
Voltage: Below 1 V

NG → **Go to step 12.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Change the front airbag sensor LH position with RH position.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

Neither DTC B1148/36 nor B1149/37 are not output.

HINT:

Codes other than code B1148/36 or B1149/37 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly (DTC B1148/36 is output).**

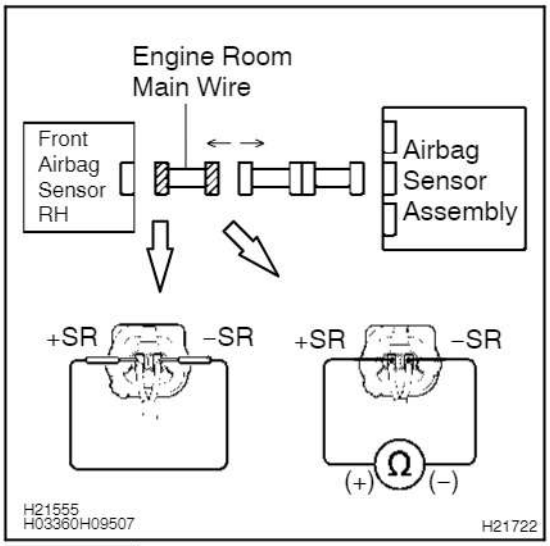
NG → **Replace front airbag sensor RH (DTC B1149/37 is output).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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8	Check engine room main wire.



PREPARATION:

(a) Disconnect the engine room main wire connector on the airbag sensor assembly side.

(b) Using a service wire, connect +SR and –SR of the engine room main wire connector on the front airbag sensor RH side.

CHECK:

Measure the resistance between +SR and –SR of the engine room main wire connector on the airbag sensor assembly side.

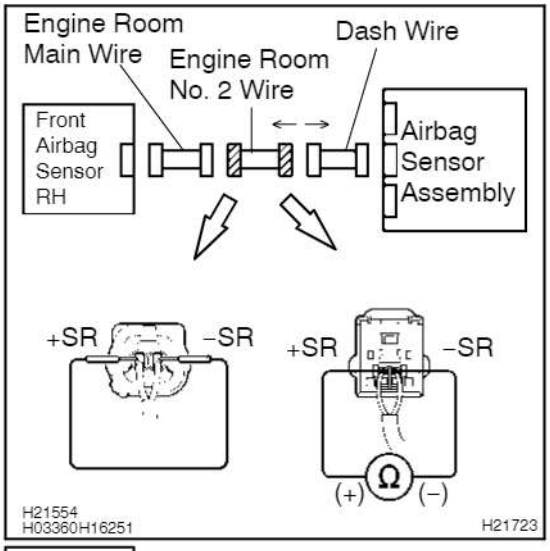
OK:

Resistance: Below 1 Ω

NG	Repair or replace engine room main wire.

OK

9	Check engine room No. 2 wire.



PREPARATION:

(a) Disconnect the engine room No. 2 wire connector from the dash wire.

(b) Using a service wire, connect +SR and –SR of the engine room No. 2 wire connector on the engine room main wire side.

CHECK:

Measure the resistance between +SR and –SR of the engine room No. 2 wire connector on the dash wire side.

OK:

Resistance: Below 1 Ω

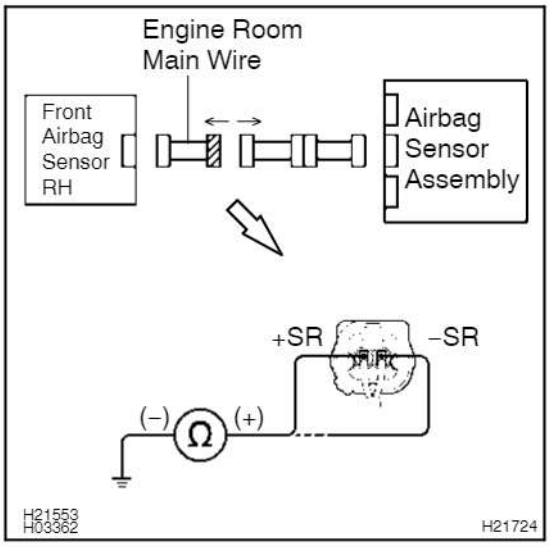
NG	Repair or replace engine room No. 2 wire.

OK

Repair or replace dash wire.

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10	Check engine room main wire (to ground).



PREPARATION:
Disconnect the engine room main wire connector on the airbag sensor assembly side.

CHECK:
Measure the resistance between the body ground and each of +SR and –SR of the engine room main wire connector on the airbag sensor assembly side.

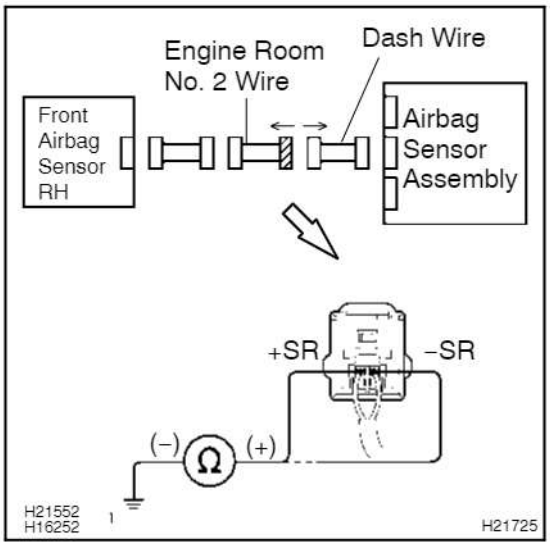
OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room main wire.**

OK

11	Check engine room No. 2 wire (to ground).



PREPARATION:
Disconnect the engine room No. 2 wire conector from the dash wire.

CHECK:
Measure the resistance between the body ground and each of +SR and –SR of the engine room No. 2 wire connector on the dash wire side.

OK:

Resistance: 1 MΩ or Higher

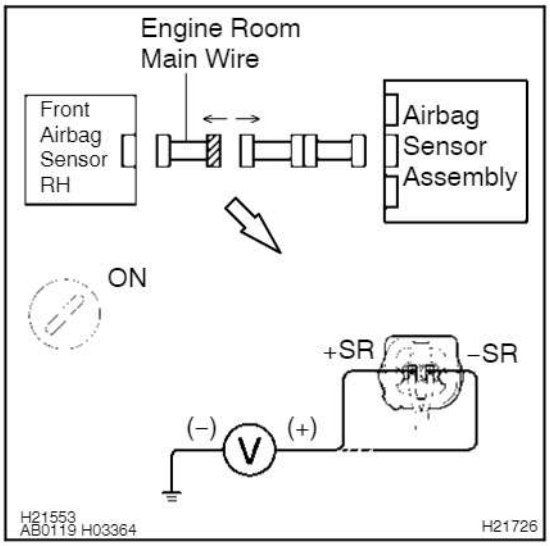
NG → **Repair or replace engine room No. 2 wire.**

OK

Repair or replace dash wire.

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12	Check engine room main wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room main wire connector on the airbag sensor assembly side.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SR and –SR of the engine room main wire connector on the airbag sensor assembly side.

OK:

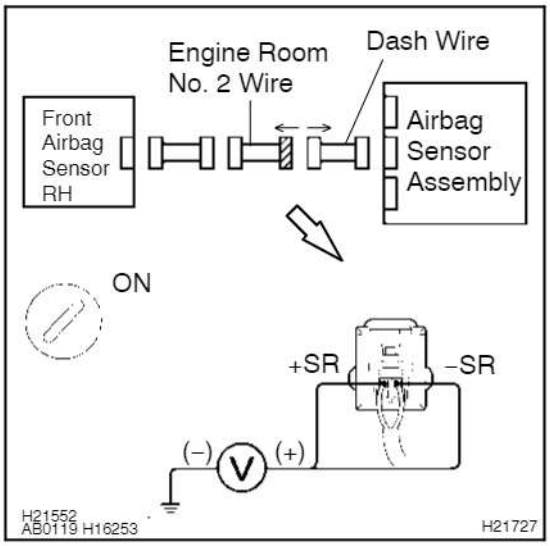
Voltage: Below 1 V

NG	Repair or replace engine room main wire.

OK

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13	Check engine room No. 2 wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room No. 2 wire connector from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SR and –SR of the engine room No. 2 wire connector on the dash wire side.

OK:

Voltage: Below 1 V

NG	Repair or replace engine room No. 2 wire.

OK

Repair or replace dash wire.

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DIATL-01

DTC	B1149/37	Front Airbag Sensor LH Malfunction

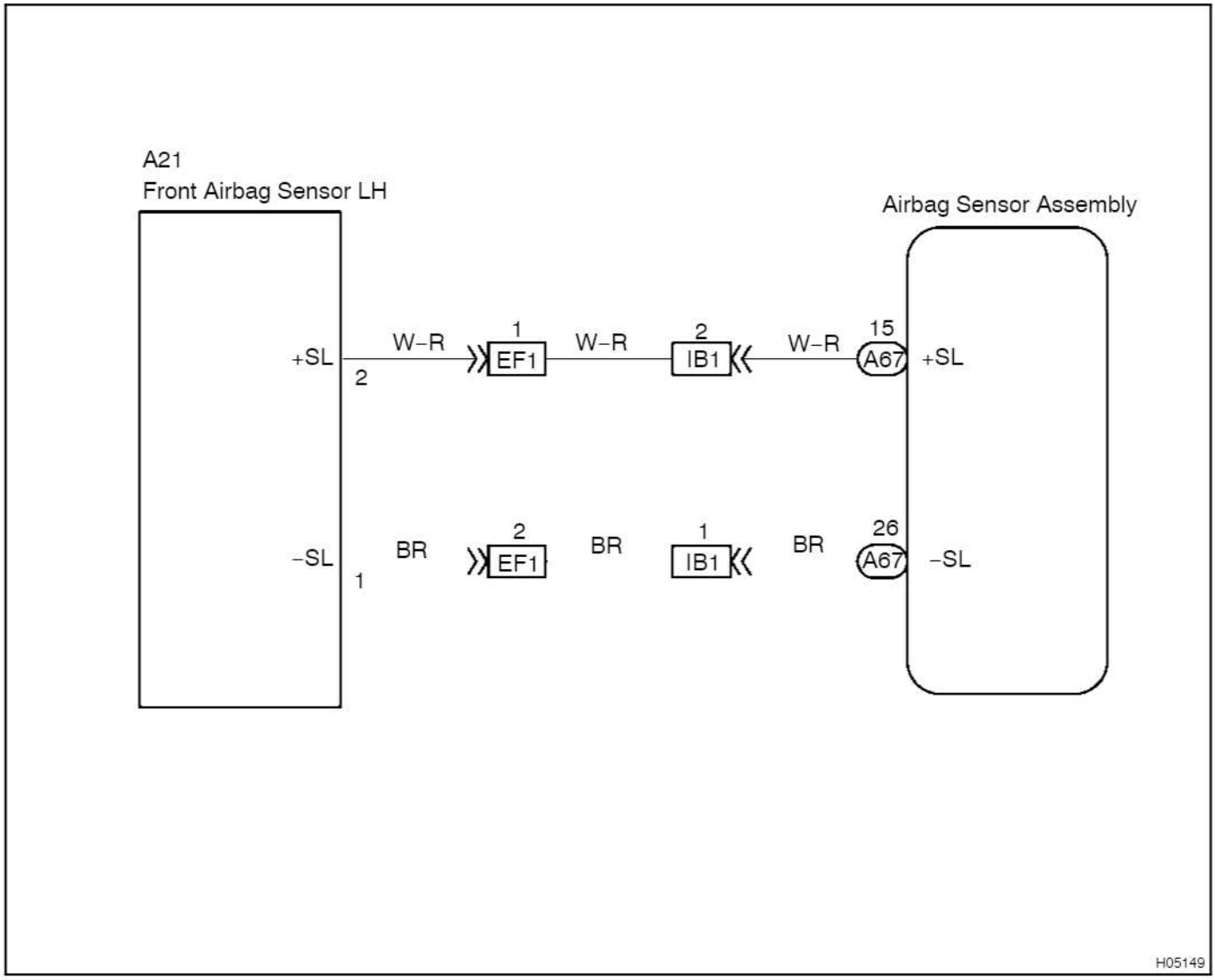
CIRCUIT DESCRIPTION

The front airbag sensor LH circuit consists of the diagnosis circuit and frontal deceleration sensor, etc.
If receives signals from the frontal deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1149/37 is recorded when malfunction is detected in the front airbag sensor LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1149/37	• Front airbag sensor LH malfunction	• Front airbag sensor LH • Airbag sensor assembly • Dash wire • Engine room No. 2 wire • Engine room main wire

HINT:
DTC B1149/37 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

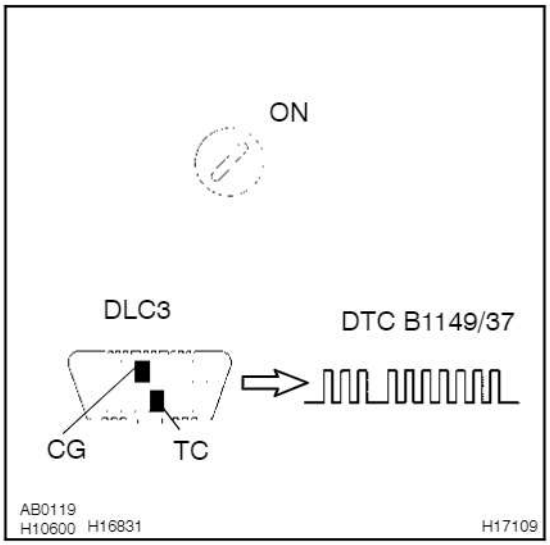
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Is DTC B1149/37 output?



CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1149/37 is output.

HINT:

Codes other than code B1149/37 may be output at this time, but they are not relevant to this check.

NO → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

YES

2	Is connector of front airbag sensor LH properly connected?

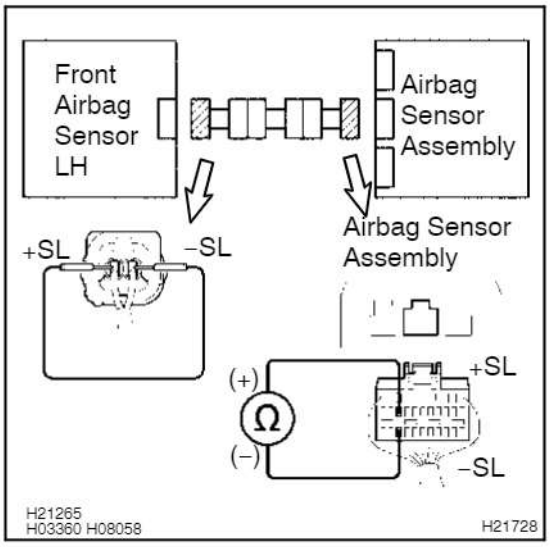
NO → **Connect connector.**

YES

3	Prepare for inspection (See step 1 on page DI–764).

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4	Check wire harness.



PREPARATION:

Using a service wire, connect +SL and –SL on the front airbag sensor LH side between the airbag sensor assembly and the front airbag sensor LH.

CHECK:

Measure the resistance between +SL and – SL on the airbag sensor assembly side between the front airbag sensor LH and the airbag sensor assembly.

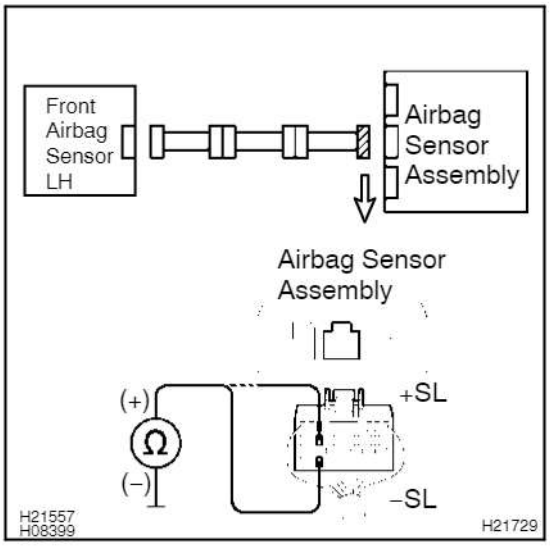
OK:

Resistance: Below 1 Ω

NG → **Go to step 8.**

OK

5	Check wire harness (to ground).



CHECK:

Measure the resistance between the body ground and each of +SL and –SL on the airbag sensor assembly side between the front airbag sensor LH and the airbag sensor assembly.

OK:

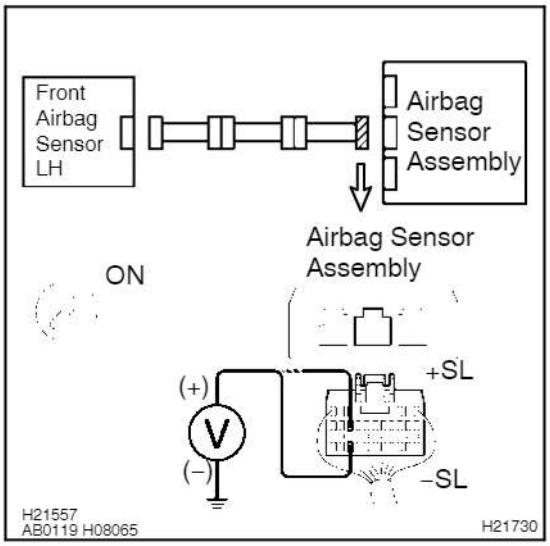
Resistance: 1 MΩ or Higher

NG → **Go to step 10.**

OK

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6	**Check wire harness (to B+).**



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of +SL and –SL on the airbag sensor assembly side between the front airbag sensor LH and the airbag sensor assembly.

OK:

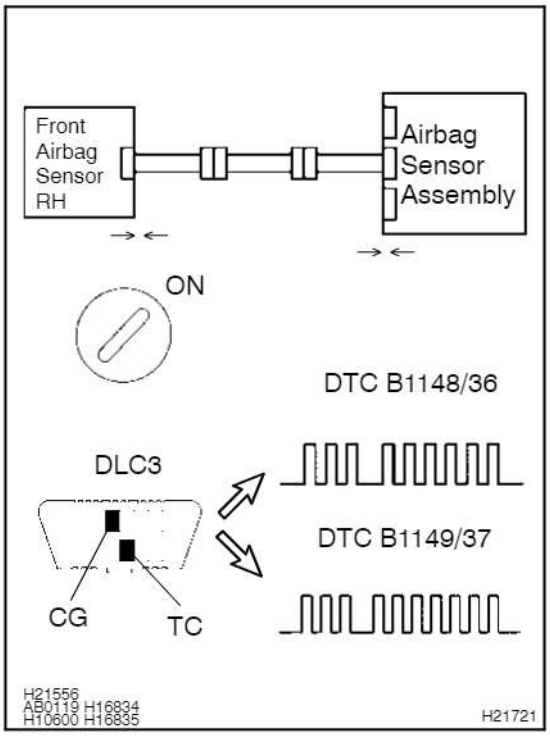
Voltage: Below 1 V

NG → **Go to step 12.**

OK

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7	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Change the front airbag sensor RH position with LH position.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

Neither DTC B1148/36 nor B1149/37 not output.

HINT:

Codes other than code B1149/37 or B1148/36 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly (DTC B1149/37 is output).**

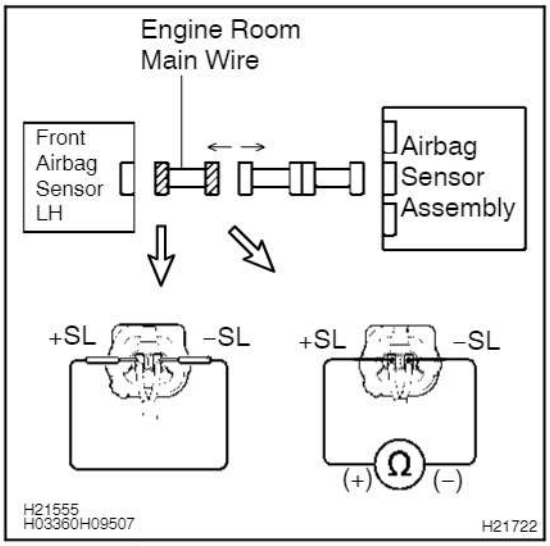
NG → **Replace front airbag sensor LH (DTC B1148/36 is output).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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8	Check engine room main wire.



PREPARATION:

(a) Disconnect the engine room main wire connector on the airbag sensor assembly side.

(b) Using a service wire, connect +SL and –SL of the engine room main wire on the front airbag sensor LH side.

CHECK:

Measure the resistance between +SL and –SL of the engine room main wire connector on the airbag sensor assembly side.

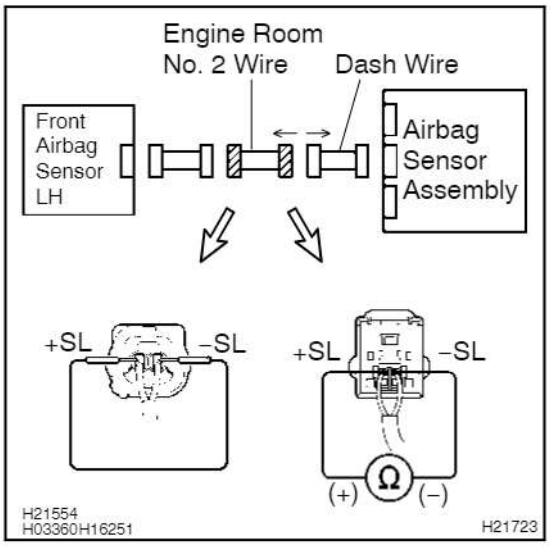
OK:

Resistance: Below 1 Ω

NG → **Repair or replace engine room main wire.**

OK

9	Check engine room No. 2 wire.



PREPARATION:

(a) Disconnect the engine room No. 2 wire connector from the dash wire.

(b) Using a service wire, connect +SL and –SL of the engine room No. 2 wire on the engine room main wire side.

CHECK:

Measure the resistance between +SL and –SL of the engine room No. 2 wire connector on the dash wire side.

OK:

Resistance: Below 1 Ω

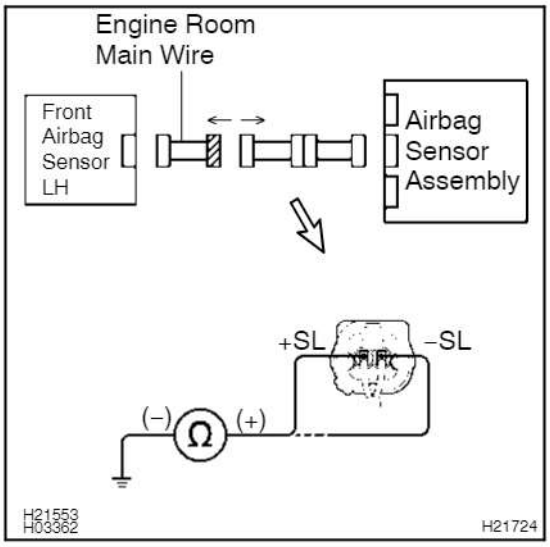
NG → **Repair or replace engine room No. 2 wire.**

OK

Repair or replace dash wire.

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10	Check engine room main wire (to ground).



PREPARATION:
Disconnect the engine room main wire connector on the airbag sensor assembly side.

CHECK:
Measure the resistance between the body ground and each of +SL and –SL of the engine room main wire connector on the airbag sensor assembly side.

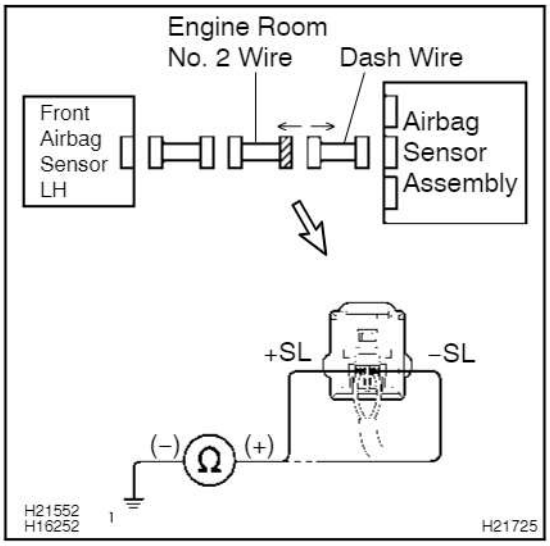
OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room main wire.**

OK

11	Check engine room No. 2 wire (to ground).



PREPARATION:
Disconnect the engine room No. 2 wire connector from the dash wire.

CHECK:
Measure the resistance between the body ground and each of +SL and –SL of the engine room No. 2 wire connector on the dash wire side.

OK:

Resistance: 1 MΩ or Higher

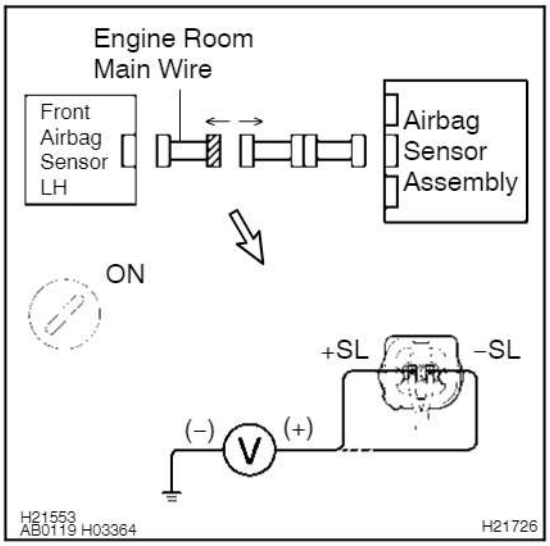
NG → **Repair or replace engine room No. 2 wire.**

OK

Repair or replace dash wire.

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12	Check engine room main wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room main wire connector on the airbag sensor assembly side.
(d) Connec the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SL and –SL of the engine room main wire connector on the airbag sensor assembly side.

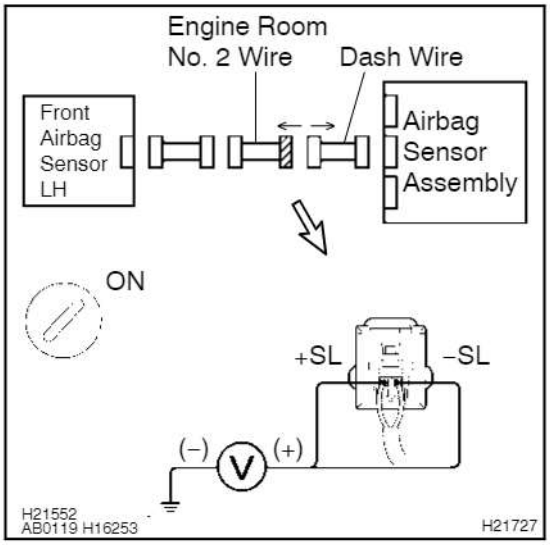
OK:

Voltage: Below 1 V

NG	Repair or replace engine room main wire.

OK

13	Check engine room No. 2 wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room No. 2 wire connector from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SL and –SL of the engine room No. 2 wire connector on the dash wire side.

OK:

Voltage: Below 1 V

NG	Repair or replace engine room No. 2 wire.

OK

Repair or replace dash wire.

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DTC	B1153/25	Seat Position Sensor Assembly Malfunction

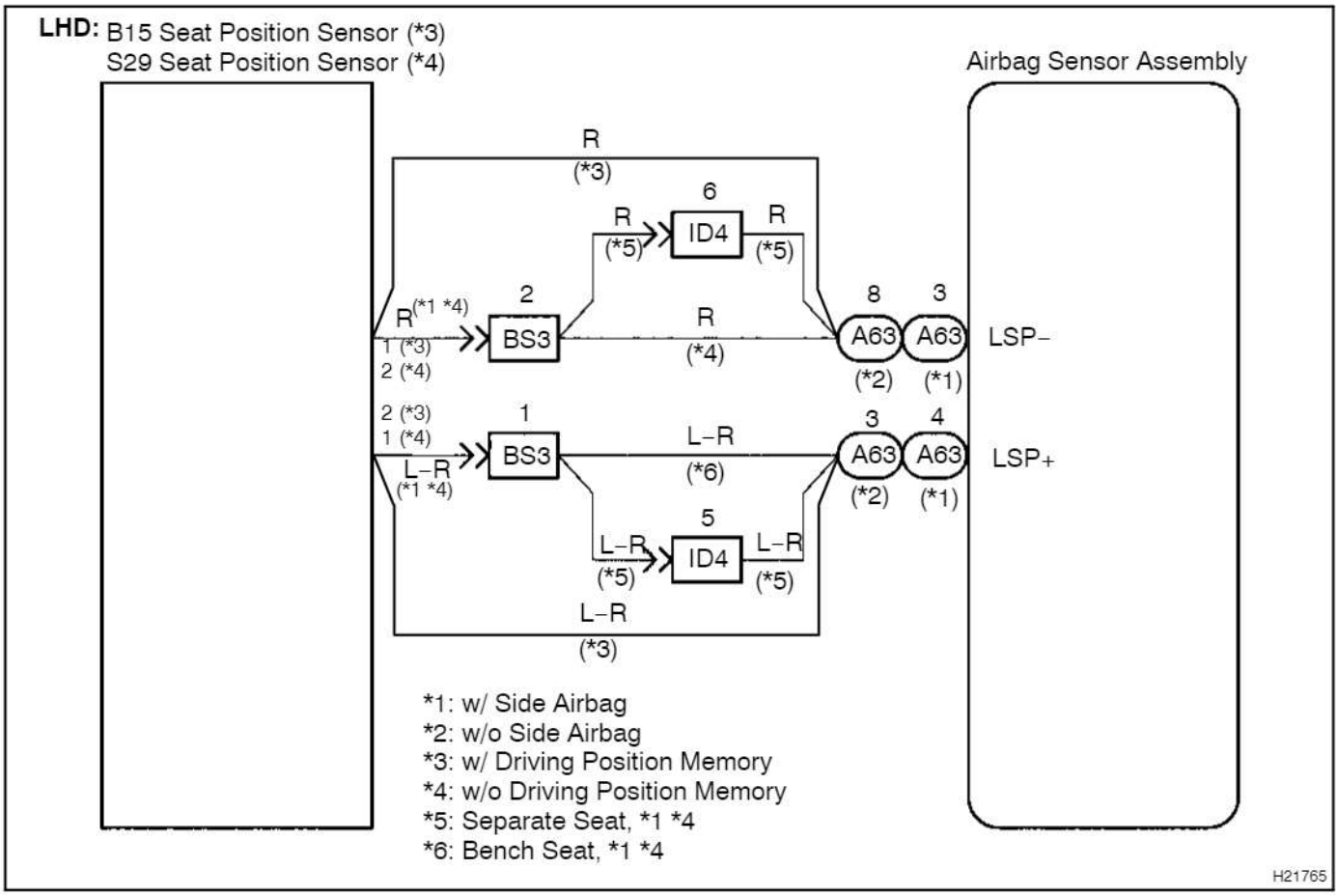
CIRCUIT DESCRIPTION

The seat position sensor circuit consists of the airbag sensor assembly and the seat position sensor assembly.
For details of the function of each components, see OPERATION on page RS–3.
B1153/25 is recorded when a malfunction is detected in the seat position sensor circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1153/25	• Seat position sensor assembly malfunction	• Seat position sensor assembly • Airbag sensor assembly • Floor No. 1 wire (LHD) • Floor No. 2 wire (RHD) • Front seat wire LH (LHD) • Front seat wire RH (RHD) • Dash wire (Bench seat)

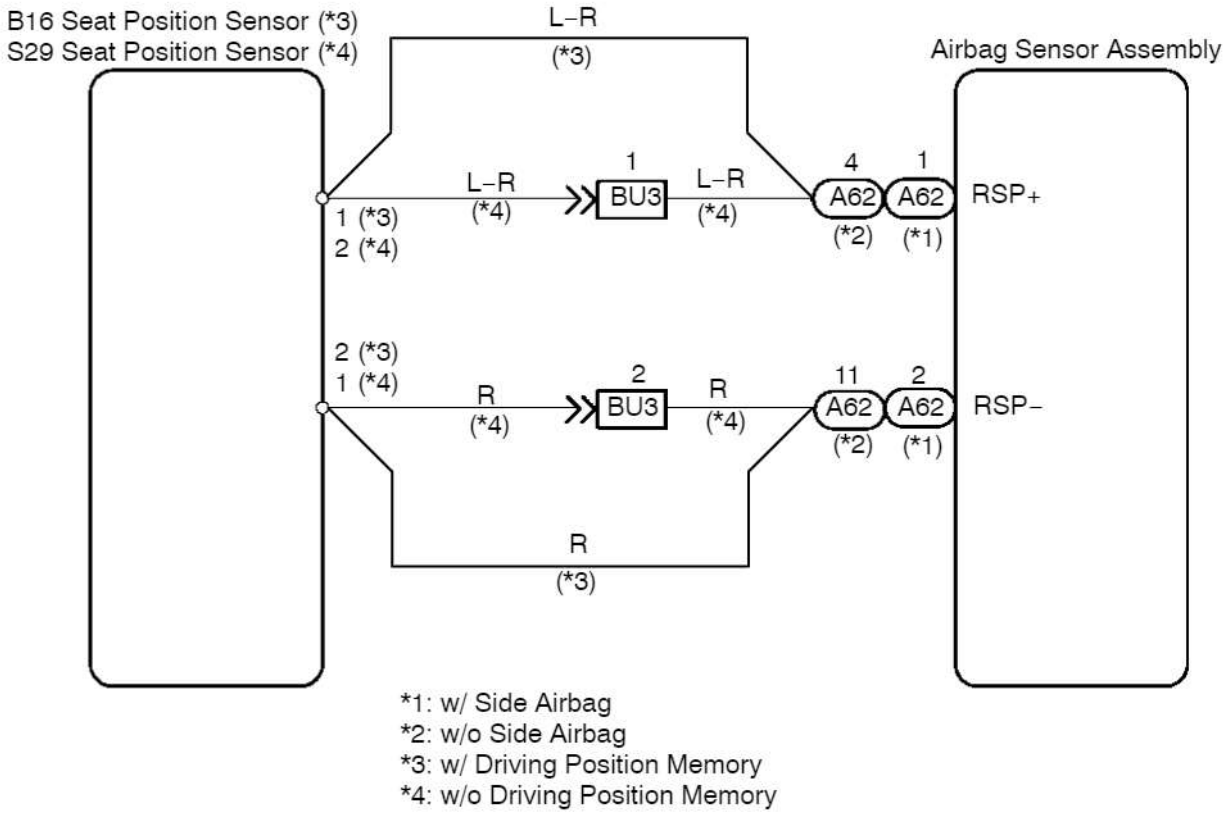
HINT:
DTC B1153/25 is indicated only for the vehicl equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM



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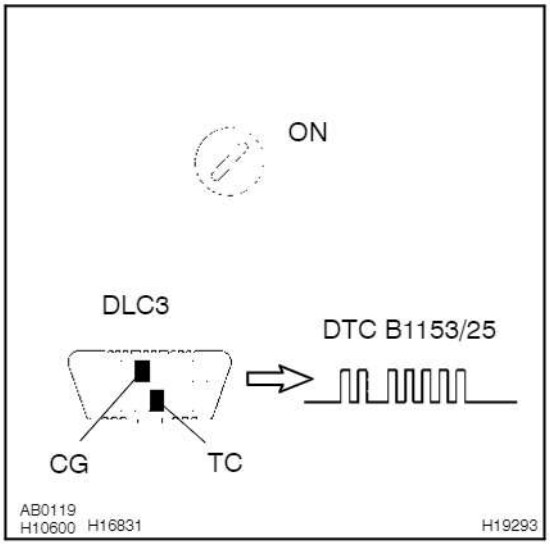
RHD:



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INSPECTION PROCEDURE

1	**Is DTC B1153/25 output ?**



CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is output.

HINT:

Codes other than code B1153/25 may be output at this time, but they are not relevant to this check.

NO → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

YES

2	**Is connector of the seat position sensor assembly properly connected ?**

NO → **Connect connector.**

YES

3	**Prepare for inspection (See step 1 on DI–764).**

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4	**Check vehicle type.**

CHECK:

Confirm that the type of the vehicle.

OK:

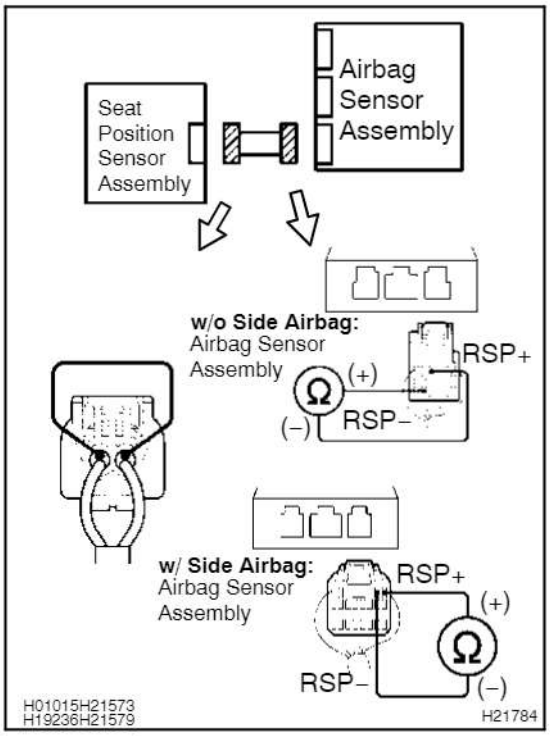
A: RHD (w/ Driving Position Memory)
B: RHD (w/o Driving Position Memory)
C: LHD (w/ Driving Position Memory)
D: LHD (Bench seat (w/ Driving Position Memory))
E: LHD (Separate seat (w/ Driving Position Memory))

B	**Go to step 10.**
C	**Go to step 18.**
D	**Go to step 23.**
E	**Go to step 31.**

A

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5	Check floor No. 2 wire.



PREPARATION:

Using a service wire, connect RSP+ and RSP– of the floor No.. 2 wire connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between RSP+ and RSP– of the floor No. 2 wire connector on the airbag sensor assembly side.

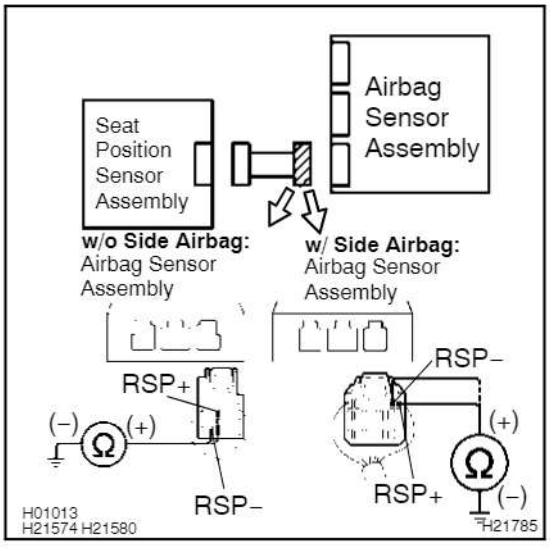
OK:

Resistance: Below 1 Ω

NG	Repair or replace floor No. 2 wire.

OK

6	Check floor No. 2 wire (to ground).



PREPARATION:

Release the service wire from the floor No. 2 wire connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of RSP+ and RSP– of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

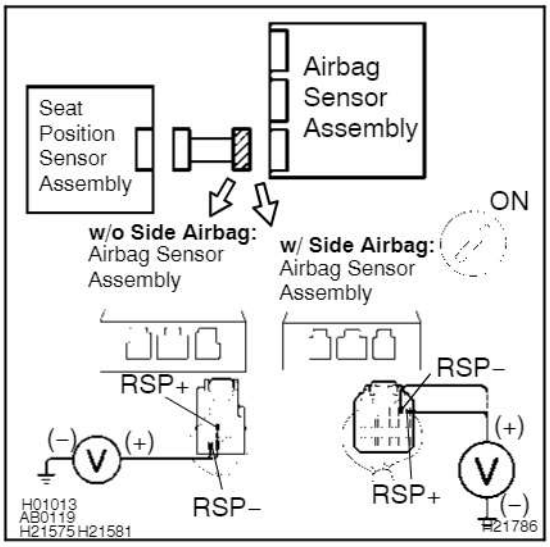
Resistance: 10 kΩ or Higher

NG	Repair or replace floor No. 2 wire.

OK

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7	Check floor No. 2 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of RSP+ and RSP– of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

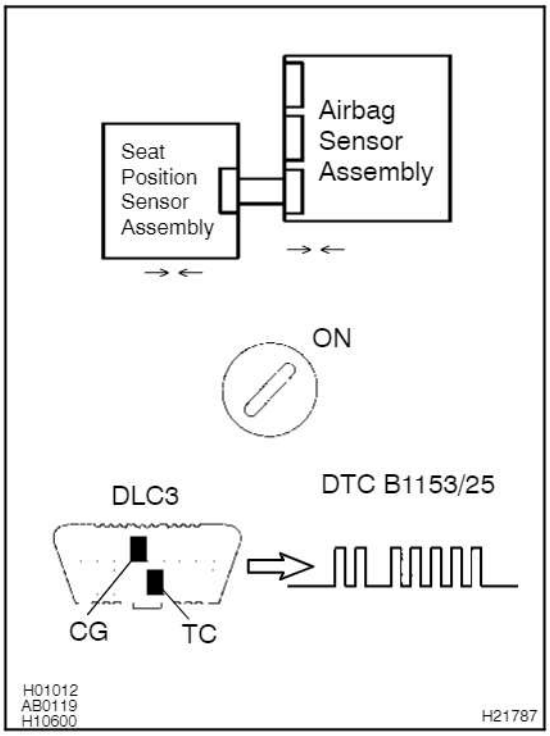
Voltage: Below 1 V

NG → **Repair or replace floor No. 2 wire.**

OK

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8	Check seat position sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connectors of the seat position sensor assembly and the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:
Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

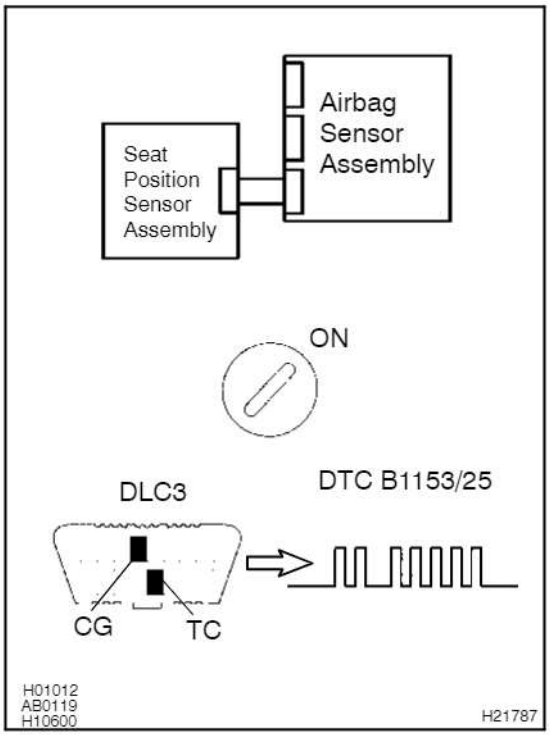
NG	Replace seat position sensor assembly, then go to next step.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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9	Is DTC B1153/25 output again ?



PREPARATION:

(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.

(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.

(b) Clear the DTC stored in memory (See page DI–432).

(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.

(d) Turn the ignition switch to ON, and wait at least for 10 seconds.

(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:

Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

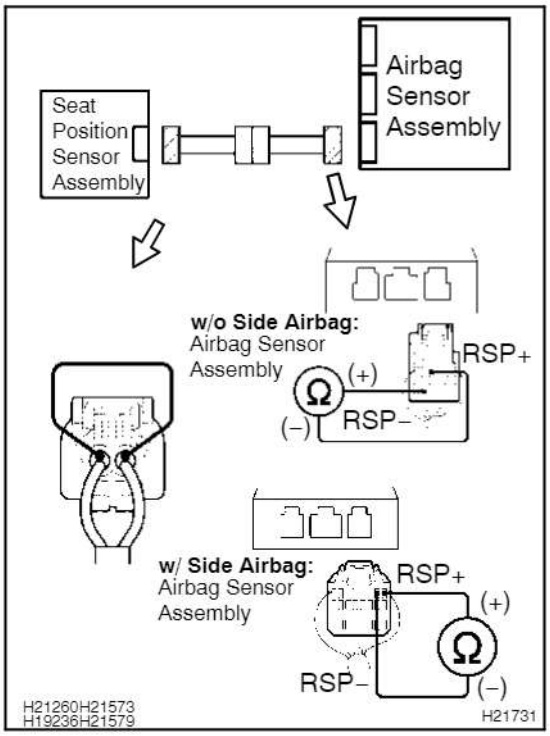
NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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10	Check wire harness.



PREPARATION:

Using a service wire, connect RSP+ and RSP– of the connector on the seat position sensor assembly side between the airbag sensor assembly and the seat position sensor assembly.

CHECK:

Measure the resistance between RSP+ and RSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

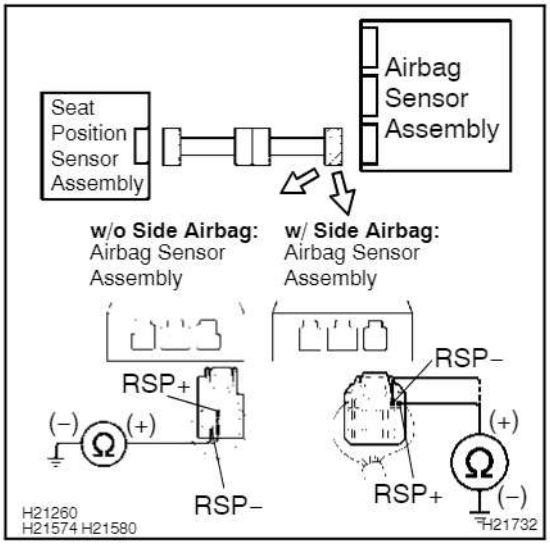
OK:

Resistance: Below 1 Ω

NG	Go to step 10.

OK

11	Check wire harness (to ground).



PREPARATION:

Release the service wire from the connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of RSP+ and RSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

OK:

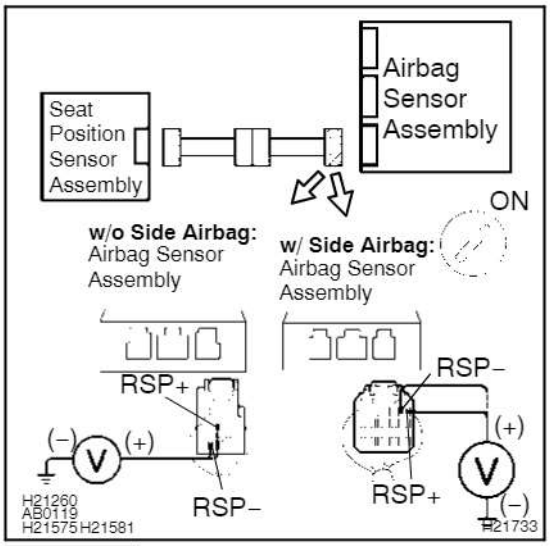
Resistance: 10 kΩ or Higher

NG	Go to step 11.

OK

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12	Check wire harness (to B+).



OK

PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of RSP+ and RSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

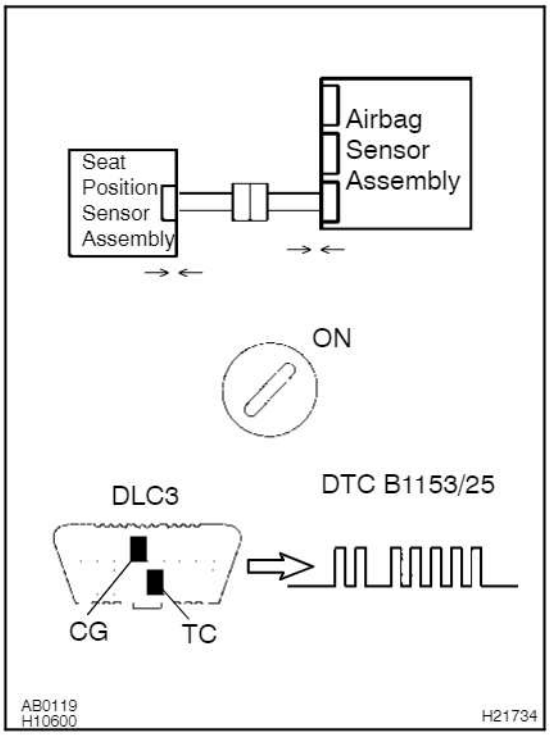
OK:

Voltage: Below 1 V

NG	Go to step 12.

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13	Check seat position sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connectors of the seat position sensor assembly and the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:
Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

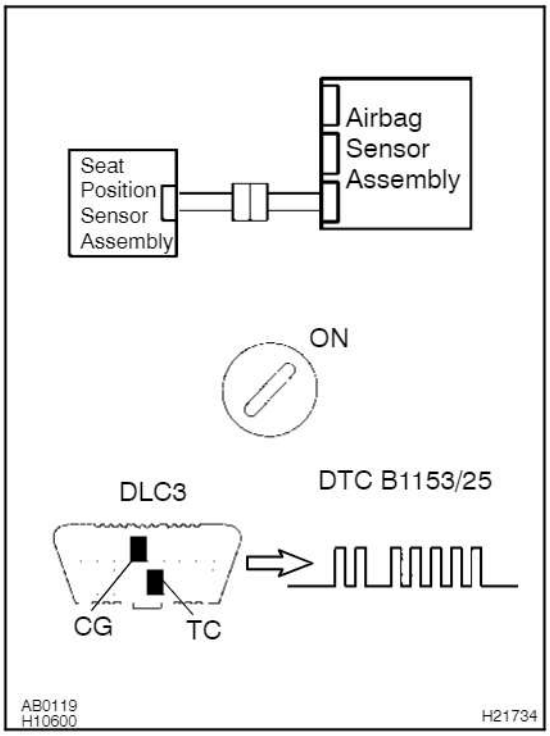
NG	Replace seat position sensor assembly, then go to next step.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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14	Is DTC B1153/25 output again ?



PREPARATION:

(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:

Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

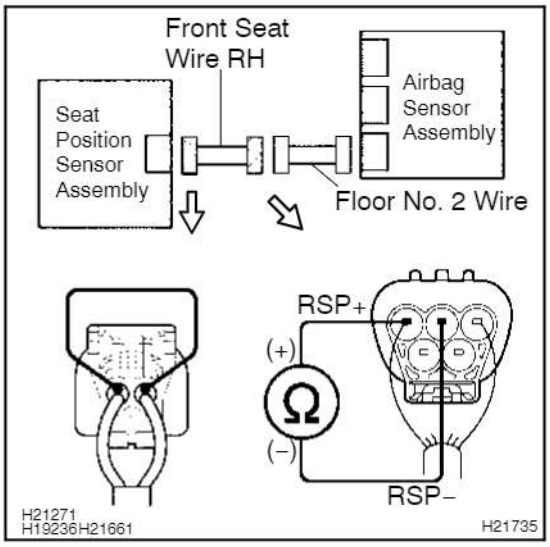
NG → **Replace airbag sensor assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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15	Check front seat wire RH.



PREPARATION:

(a) Disconnect the front seat wire RH connector from the floor No. 2 wire.

Airbag
Sensor
Assembly

(b) Using a service wire, connect RSP+ and RSP– of the front seat wire RH connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between RSP+ and RSP– of the front seat wire RH connector on the floor No. 2 wire side.

OK:

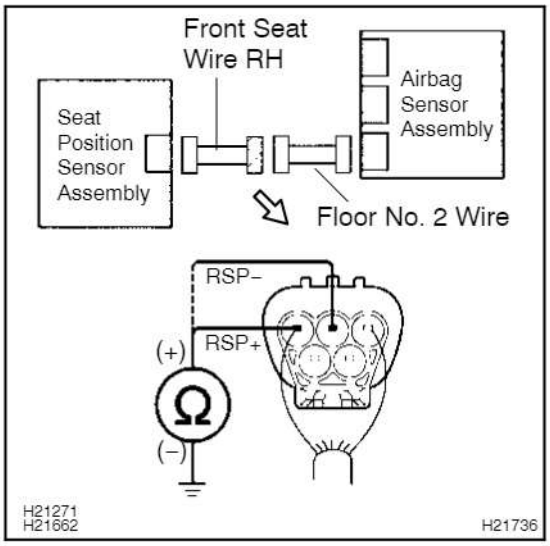
Resistance: Below 1 Ω

NG	Repair or replace front seat wire RH.

OK

Repair or replace floor No. 2 wire.

16	Check front seat wire RH (to ground).



CHECK:

Measure the resistance between the body ground and each of RSP+ and RSP– of the front seat wire RH connector on the floor No. 2 wire side.

OK:

Resistance: 10 kΩ or Higher

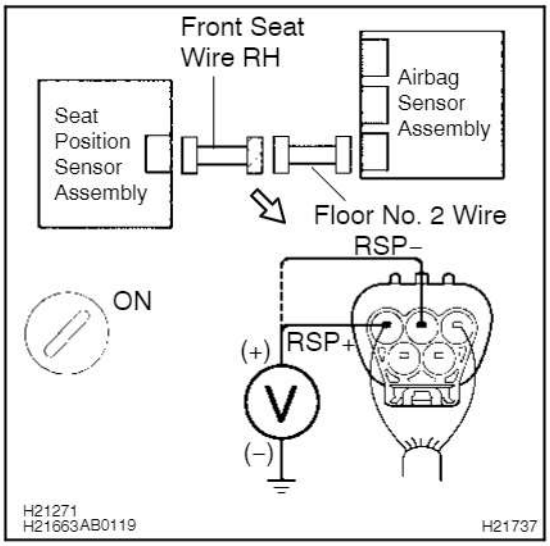
NG	Repair and replace front seat wire RH.

OK

Repair or replace floor No. 2 wire.

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17	Check front seat wire RH (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the front seat wire RH connector from the floor No. 2 wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of RSP+ and RSP– of the front seat wire RH connector on the floor No. 2 wire side.

OK:

Voltage: Below 1 V

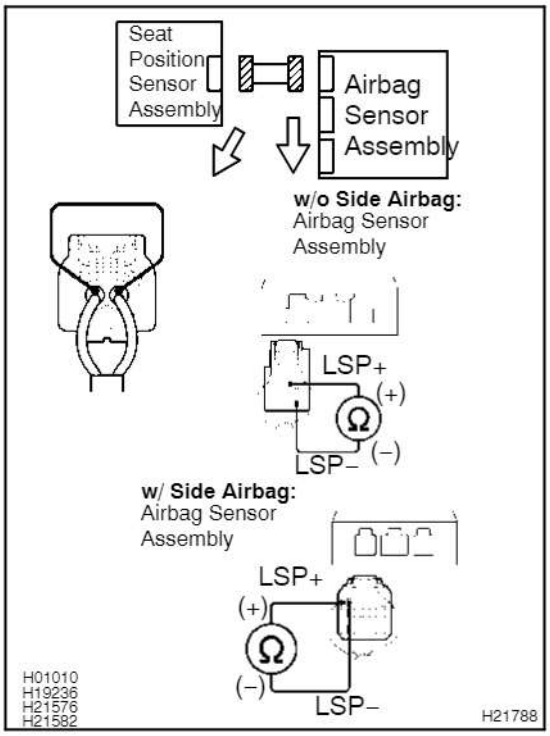
NG	Repair and replace front seat wire RH.

OK

Repair or replace floor No. 2 wire.

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18	Check floor No. 1 wire.



PREPARATION:

Using a service wire, connect LSP+ and LSP– of the floor No. 1 wire connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between LSP+ and LSP– of the floor No. 1 wire connector on the airbag sensor assembly side.

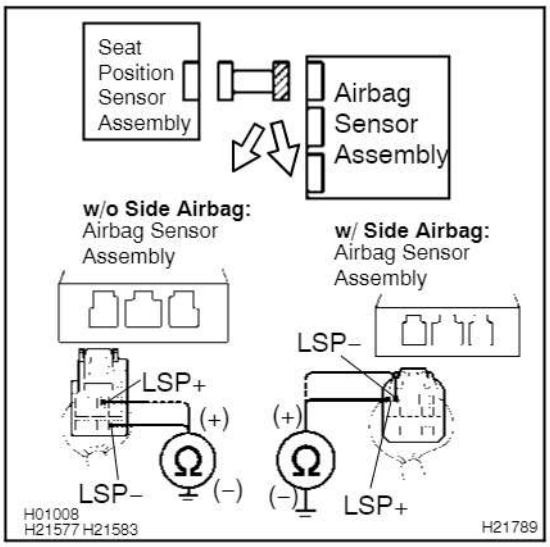
OK:

Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

19	Check floor No. 1 wire (to ground).



PREPARATION:

Release the service wire from the floor No. 1 wire connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of LSP+ and LSP– of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

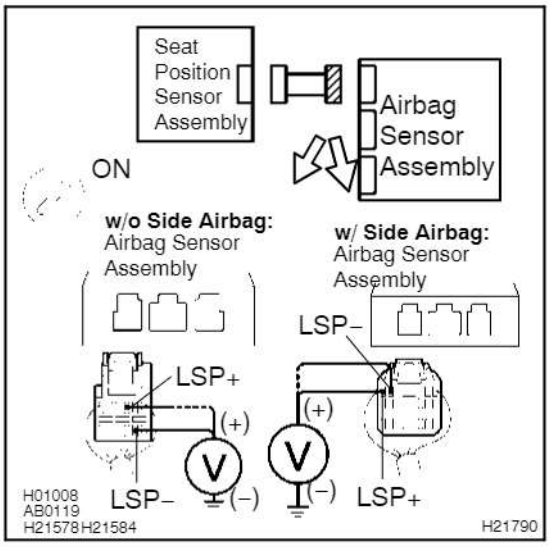
Resistance: 10 kΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

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20	Check floor No. 1 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of LSP+ and LSP– of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

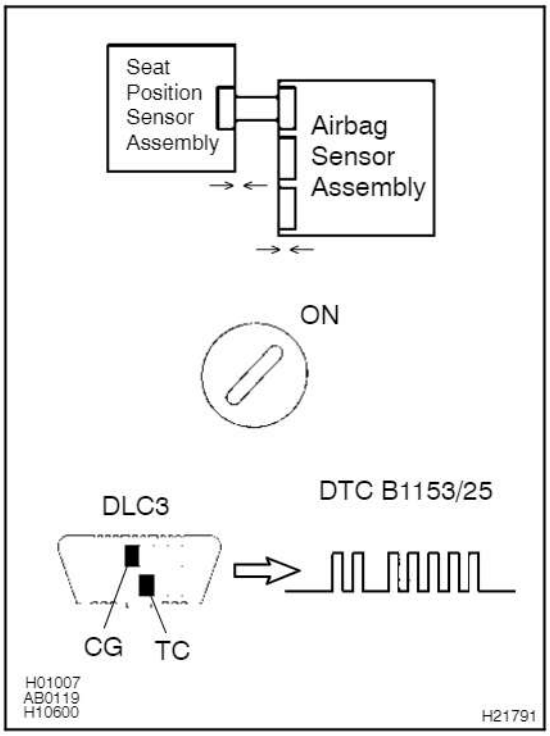
Voltage: Below 1 V

NG	Repair or replace floor No. 1 wire.

OK

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21	Check seat position sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connectors of the seat position sensor assembly and the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:
Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

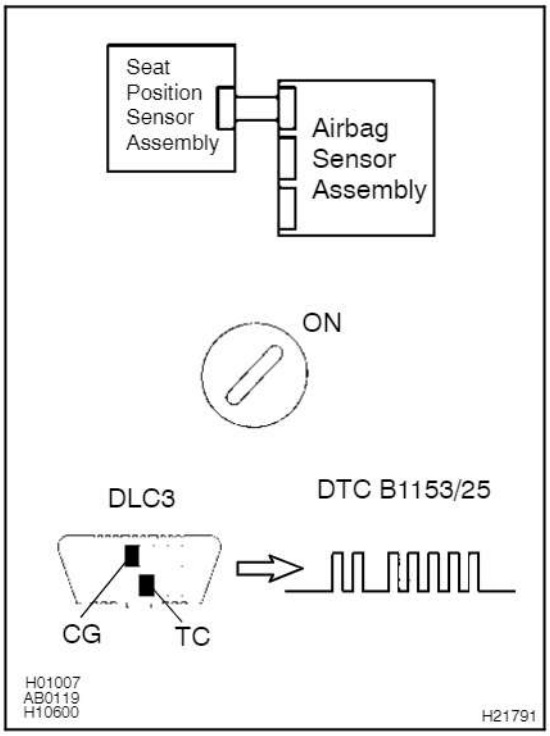
NG	Replace seat position sensor assembly, then go to next step.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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22	Is DTC B1153/25 output again ?



PREPARATION:

(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.

(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.

(b) Clear the DTC stored in memory (See page DI–432).

(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.

(d) Turn the ignition switch to ON, and wait at least for 10 seconds.

(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:

Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

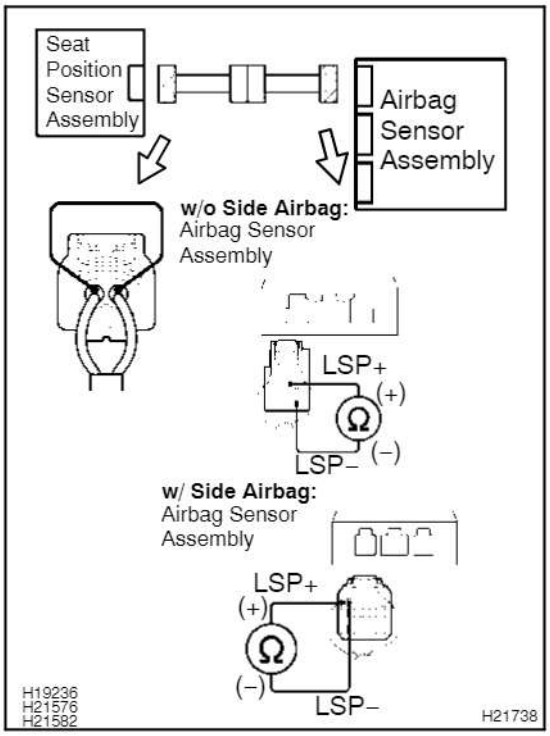
NG → **Replace airbag sensor assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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23	Check wire harness.



PREPARATION:

Using a service wire, connect LSP+ and LSP– of the connector on the seat position sensor assembly side between the airbag sensor assembly and the seat position sensor assembly.

CHECK:

Measure the resistance between LSP+ and LSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

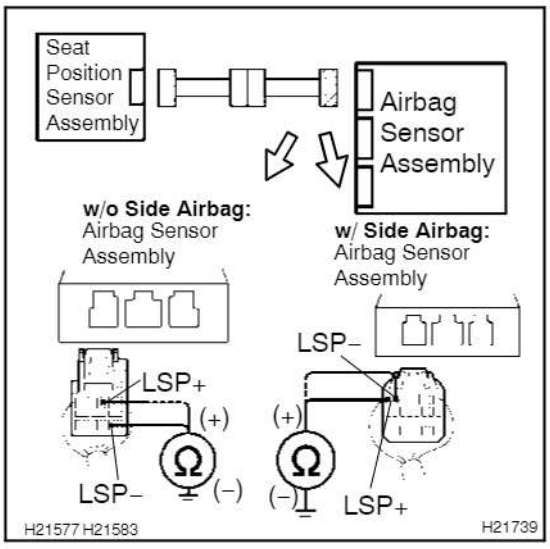
OK:

Resistance: Below 1 Ω

NG	Go to step 18.

OK

24	Check wire harness (to ground).



PREPARATION:

Release the service wire from the connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of LSP+ and LSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

OK:

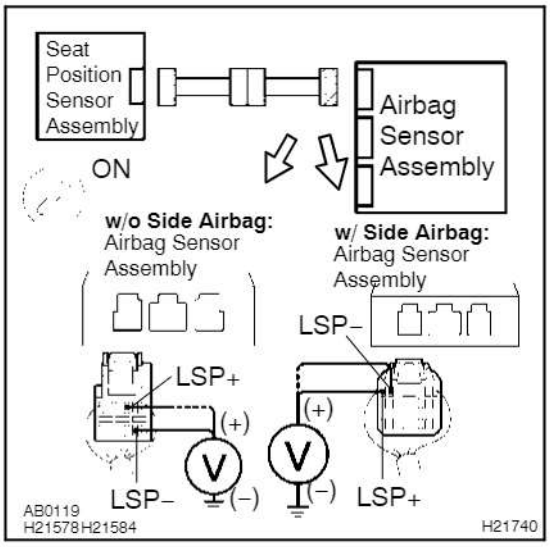
Resistance: 10 kΩ or Higher

NG	Go to step 19.

OK

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25	Check wire harness (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of LSP+ and LSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

OK:

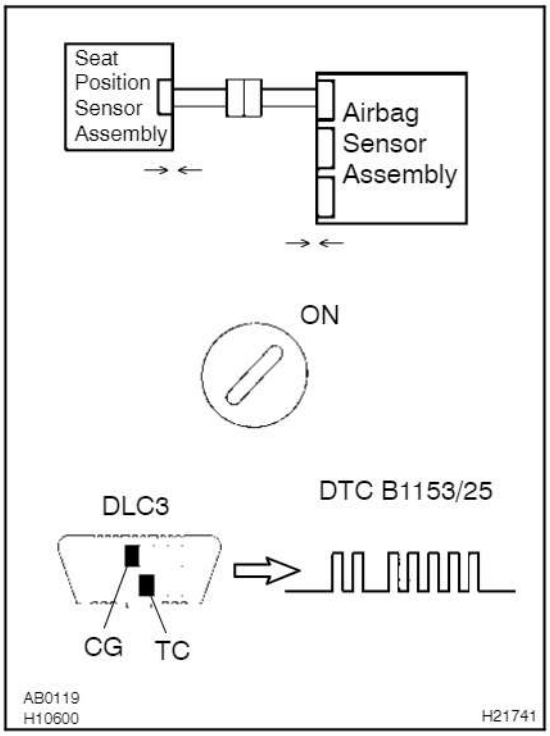
Voltage: Below 1 V

NG → **Go to step 20.**

OK

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26	Check seat position sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connectors of the seat position sensor assembly and the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:
Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

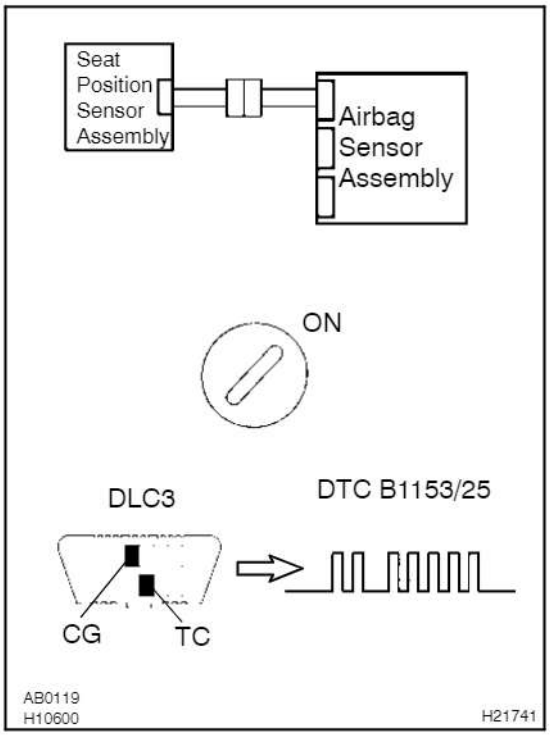
NG	Replace seat position sensor assembly, then go to next step.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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27	Is DTC B1153/25 output again ?



PREPARATION:

(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:

Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

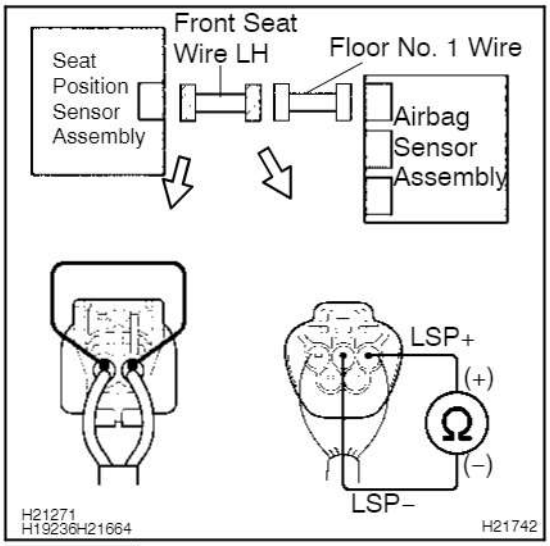
NG → **Replace airbag sensor assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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28	Check front seat wire LH.



PREPARATION:

(a) Disconnect the front seat wire LH connector from the floor No. 1 wire.

(b) Using a service wire, connect LSP+ and LSP– of the front seat wire LH connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between LSP+ and LSP– of the front seat wire LH connector on the floor No. 1 wire side.

OK:

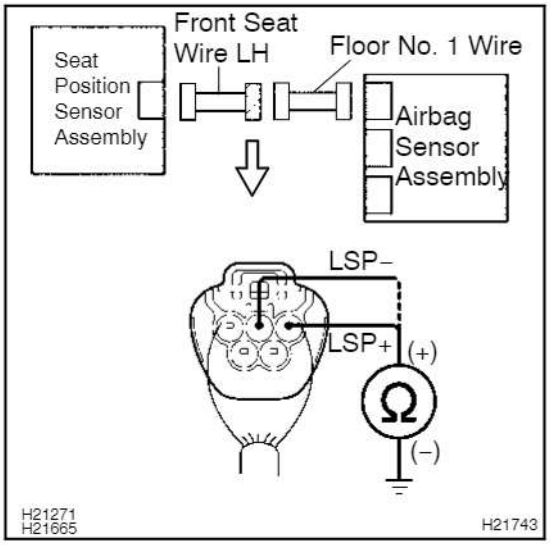
Resistance: Below 1 Ω

NG	Repair or replace front seat wire LH.

OK

Repair or replace floor No. 1 wire.

29	Check front seat wire LH (to ground).



PREPARATION:

(a) Disconnect the front seat wire LH connector from the floor No. 1 wire.

(b) Release the service wire from the front seat wire LH connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of LSP+ and LSP– of the front seat wire LH connector on the floor No. 1 wire side.

OK:

Resistance: 10 kΩ or Higher

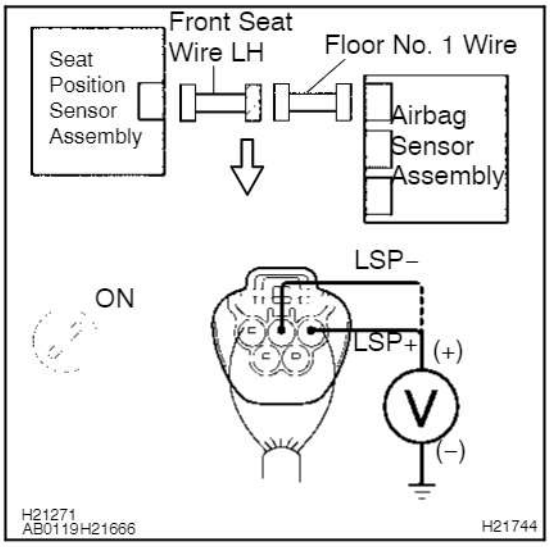
NG	Repair and replace floor No. 1 wire.

OK

Repair and replace floor No. 1 wire.

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30	Check front seat wire LH (to B+).



PREPARATION:

Disconnect the front seat wire LH connector from the floor No. 1 wire.

CHECK:

Measure the voltage between the body ground and each of LSP+ and LSP– of the front seat wire LH connector on the floor No. 1 wire side.

OK:

Voltage: Below 1 V

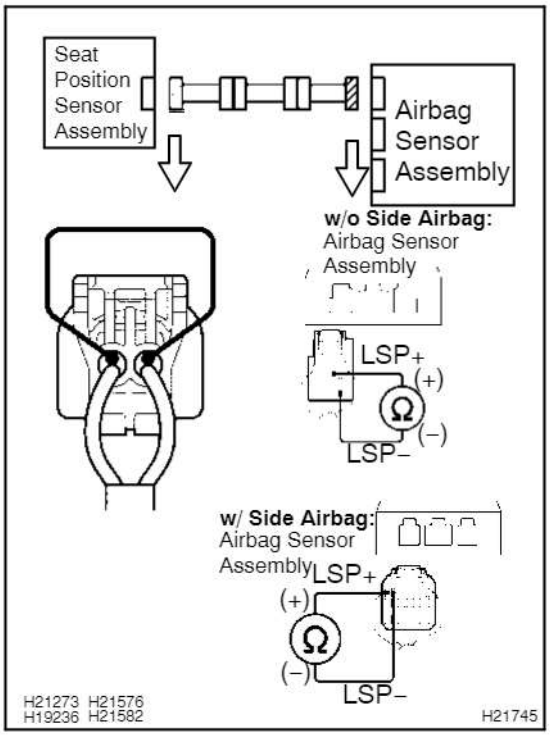
NG → **Repair or replace front seat wire LH.**

OK

Repair or replace floor No. 1 wire.

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31	Check wire harness.



PREPARATION:

Using a service wire, connect LSP+ and LSP– of the connector on the seat position sensor assembly side between the airbag sensor assembly and the seat position sensor assembly.

CHECK:

Measure the resistance between LSP+ and LSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

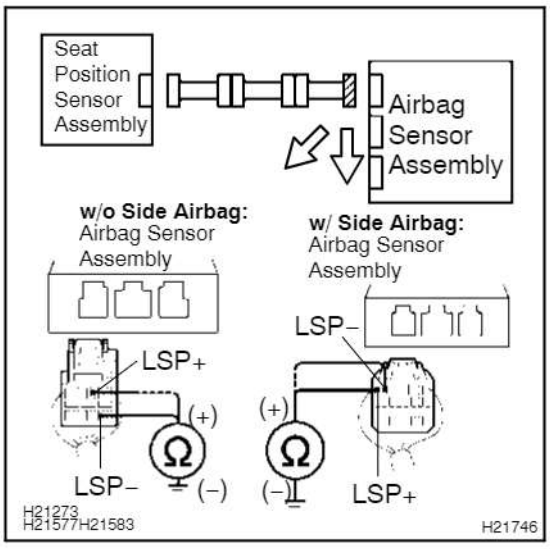
OK:

Resistance: Below 1 Ω

NG	Go to step 26.

OK

32	Check wire harness (to ground).



PREPARATION:

Release the service wire from the connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of LSP+ and LSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

OK:

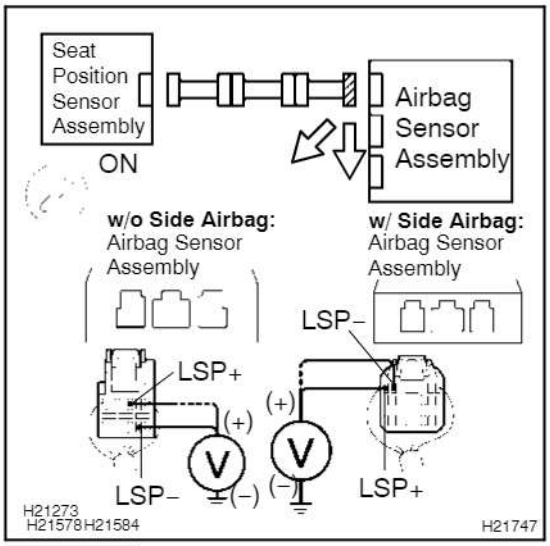
Resistance: 10 kΩ or Higher

NG	Go to step 28.

OK

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33	Check wire harness (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of LSP+ and LSP– of the connector on the airbag sensor assembly side between the seat position sensor assembly and the airbag sensor assembly.

OK:

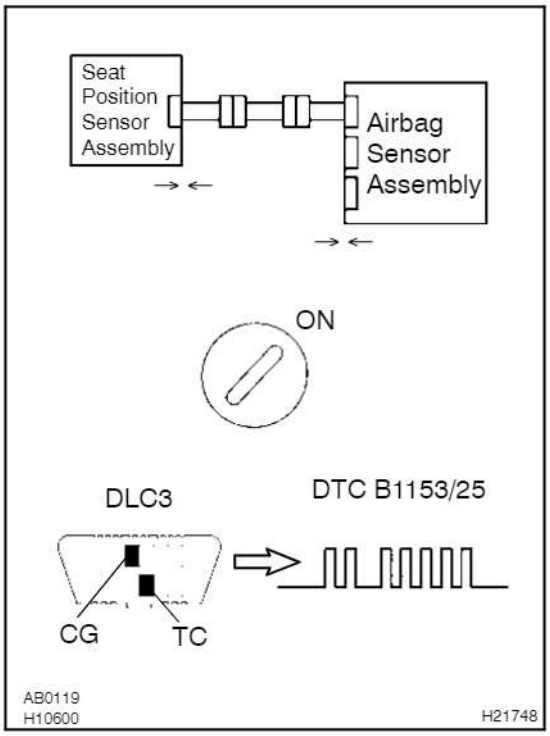
Voltage: Below 1 V

NG	Go to step 30.

OK

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34	Check seat position sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connectors of the seat position sensor assembly and the airbag sensor assembly.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:
Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

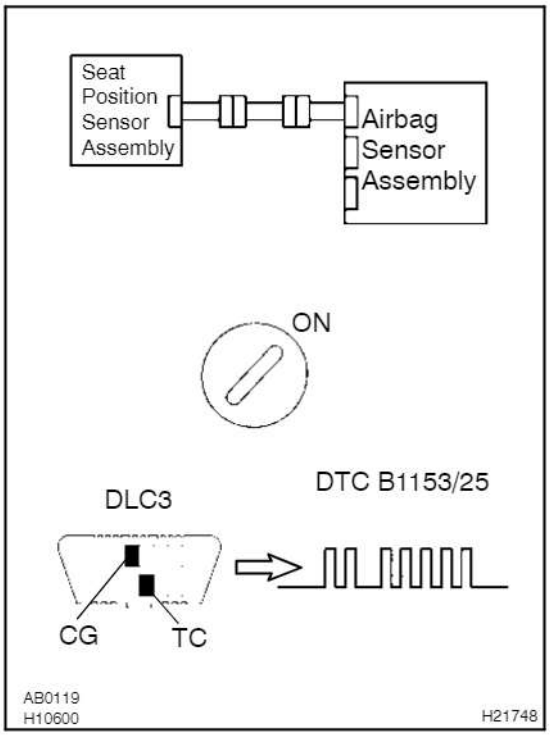
NG	Replace seat position sensor assembly, then go to next step.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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35	Is DTC B1153/25 output again ?



PREPARATION:

(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1153/25 is not output.

HINT:
Codes other that code B1153/25 may be output at this time, but they are not relevant to this check.

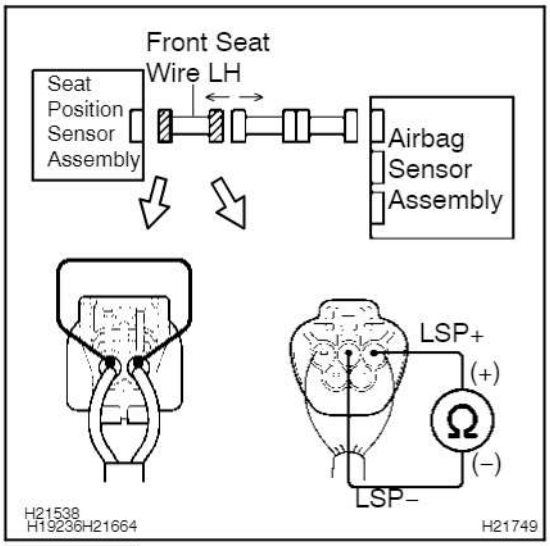
NG → **Replace airbag sensor assembly.**

OK →

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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36	Check front seat wire LH.



PREPARATION:

(a) Disconnect the front seat wire LH connector on the airbag sensor assembly side.

(b) Using a service wire, connect LSP+ and LSP– of the front seat wire LH connector on the seat position sensor assembly side.

CHECK:

Measure the resistance between LSP+ and LSP– of the front seat wire LH connector on the airbag sensor assembly side.

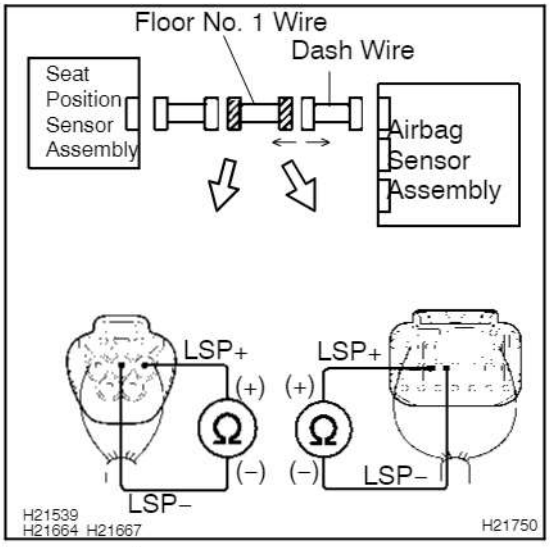
OK:

Resistance: Below 1 Ω

NG	Repair or replace front seat wire LH.

OK

37	Check floor No. 1 wire.



PREPARATION:

(a) Disconnect the floor No. 1 wire connector from the dash wire.

(b) Using a service wire, connect LSP+ and LSP– of the floor No. 1 wire connector on the front seat wire LH side.

CHECK:

Measure the resistance between LSP+ and LSP– of the floor No. 1 wire connector on the dash wire side.

OK:

Resistance: Below 1 Ω

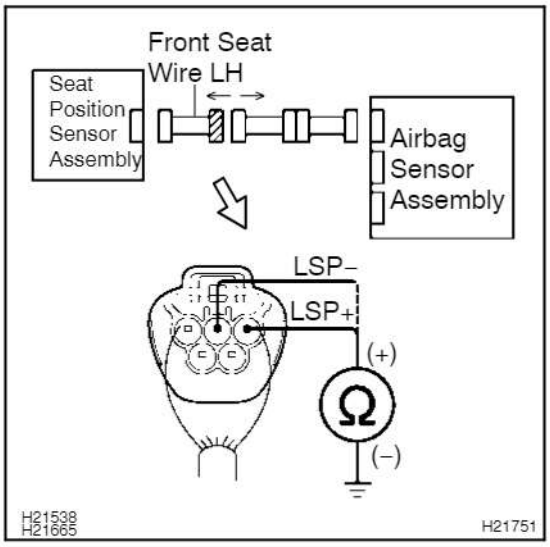
NG	Repair or replace floor No. 1 wire.

OK

Repair or replace dash wire.

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38	Check front seat wire LH (to ground).



PREPARATION:
Disconnect the front seat wire LH connector from the airbag sensor assembly side.

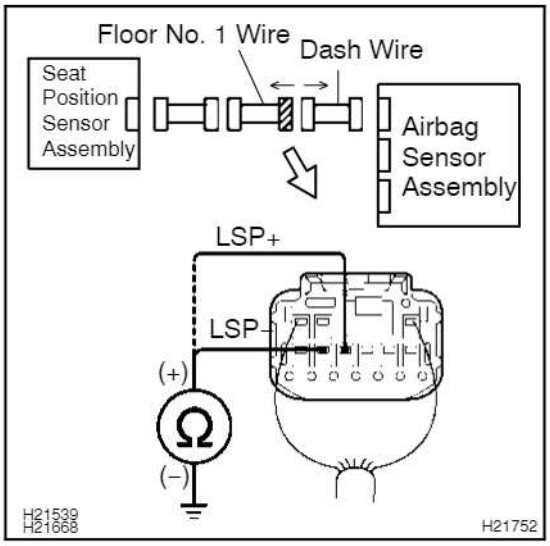
CHECK:
Measure the resistance between the body ground and each of LSP+ and LSP– of the front seat wire LH connector on the airbag sensor assembly side.

OK:
Resistance: 10 kΩ or Higher

NG	Repair and replace front seat wire LH.

OK

39	Check floor No. 1 wire (to ground).



PREPARATION:
Disconnect the floor No. 1 wire connector from the dash wire.

CHECK:
Measure the resistance between the body ground and each of LSP+ and LSP– of the floor No. 1 wire connector on the dash wire side.

OK:
Resistance: 10 kΩ or Higher

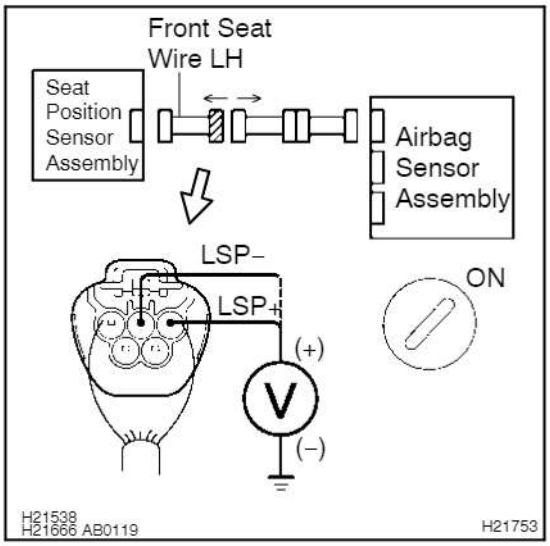
NG	Repair and replace floor No. 1 wire.

OK

Repair or replace dash wire.

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40	Check front seat wire LH (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the front seat wire LH connector on the airbag sensor assembly side.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

Measure the voltage between the body ground and each of LSP+ and LSP– of the front seat wire LH connector on the airbag sensor assembly side.

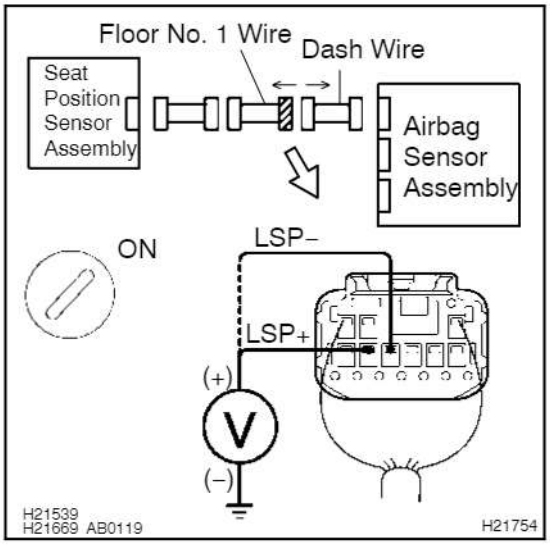
OK:

Voltage: Below 1 V

NG	Repair and replace front seat wire LH.

OK

41	Check floor No. 1 wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the floor No. 1 wire connector from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

Measure the voltage between the body ground and each of LSP+ and LSP– of the floor No. 1 wire connector on the dash wire side.

OK:

Voltage: Below 1 V

NG	Repair and replace floor No. 1 wire.

OK

Repair or replace dash wire.

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DTC	B1154/38	Curtain Shield Airbag Sensor Assembly RH Malfunction

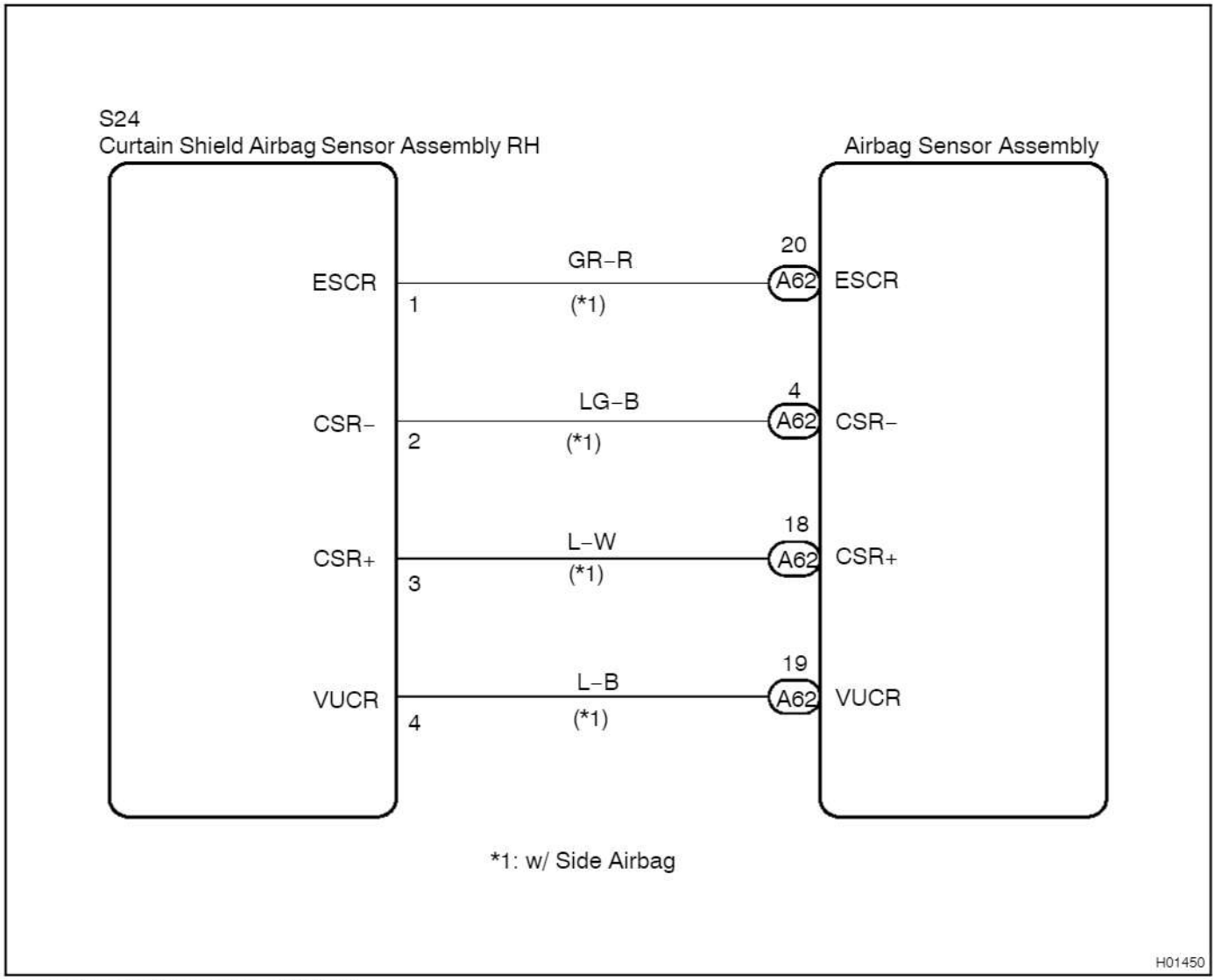
CIRCUIT DESCRIPTION

The curtain shield airbag sensor assembly RH consists of the safing sensor, diagnosis circuit and lateral deceleration sensor, etc.
It receives signals from the lateral deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1154/38 is recorded when occurrence of a malfunction in the curtain shield airbag sensor assembly RH is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1154/38	• Curtain shield airbag sensor assembly RH malfunction	• Curtain shield airbag sensor assembly RH • Floor No. 2 wire • Airbag sensor assembly

HINT:
DTC B1154/38 is indicated only for the vehicle equipped with the side airbag.

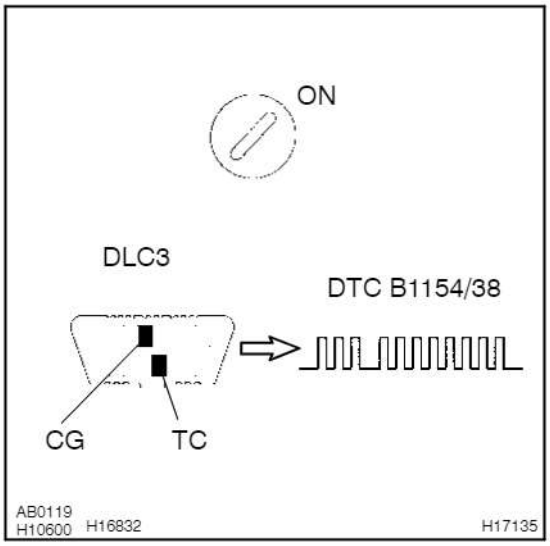
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Is DTC B1154/38 output?**



CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1154/38 is output.

HINT:

Codes other than code B1154/38 may be output at this time, but they are not relevant to this check.

NO → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

YES

2	**Is connector of curtain shield airbag sensor assembly RH properly connected?**

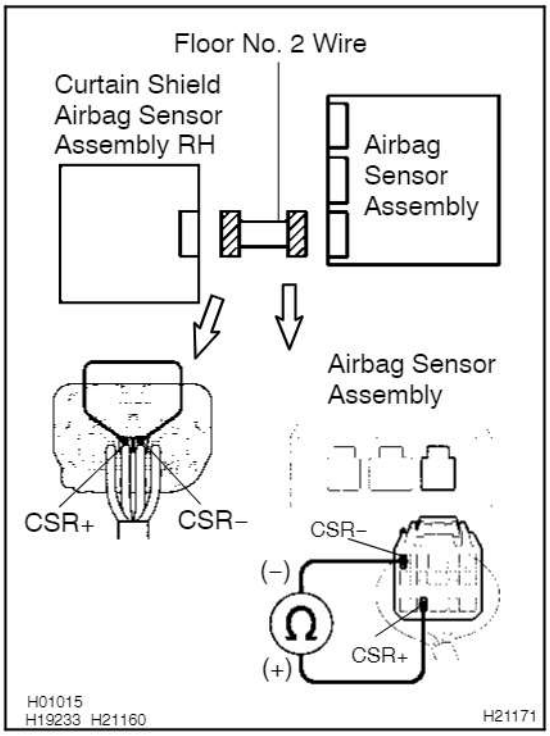
NO → **Connect connector.**

YES

3	**Prepare for inspection (See step 1 on DI–764).**

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4	**Check floor No. 2 wire.**



PREPARATION:

Using a service wire, connect CSR+ and CSR– of the floor No. 2 wire connector on the curtain shield airbag sensor assembly RH side.

CHECK:

Measure the resistance between CSR+ and CSR– of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

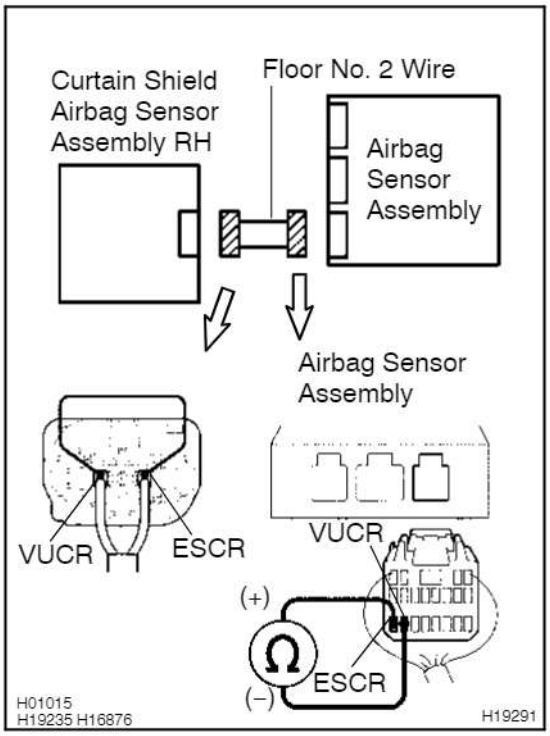
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 2 wire.**

OK

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5	Check floor No. 2 wire.



PREPARATION:

Using a service wire, connect VUCR and ESCR of the floor No. 2 wire connector on the curtain shield airbag sensor assembly RH side.

CHECK:

Measure the resistance between VUCR and ESCR of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

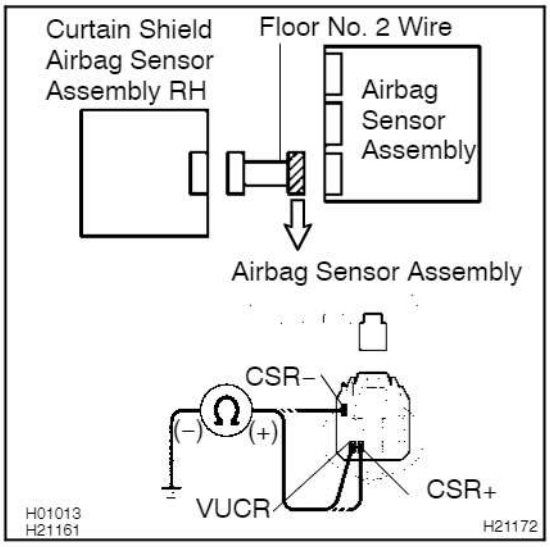
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 2 wire.**

OK

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6	Check floor No. 2 wire (to ground).



CHECK:

Measure the resistance between the body ground and each of VUCR, CSR+ and CSR– of the floor No. 2 wire connector on the airbag sensor assembly side.

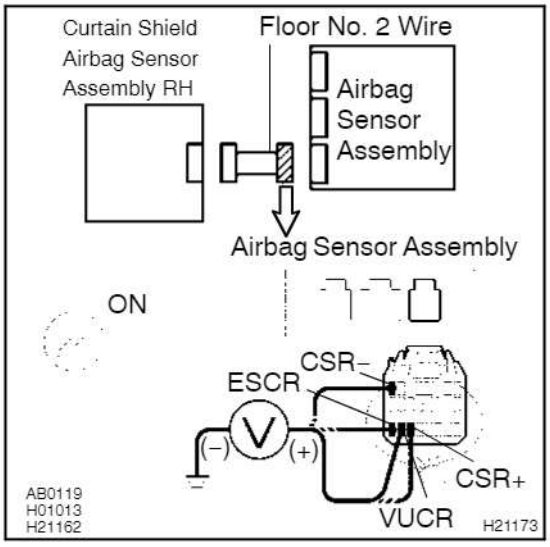
OK:

Resistance: 10 kΩ or Higher

NG	Repair or replace floor No. 2 wire.

OK

7	Check floor No. 2 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of VUCR, CSR+, CSR– and ESCR of the floor No. 2 wire connector on the airbag sensor assembly side.

OK:

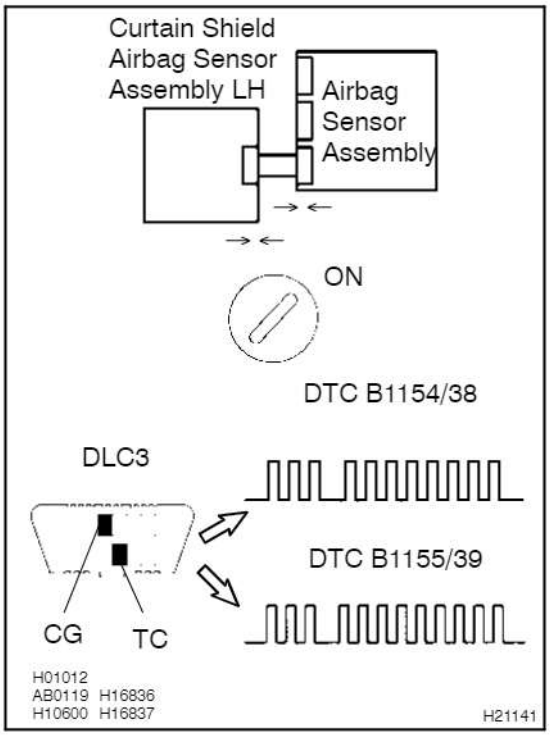
Voltage: Below 1 V

NG	Repair or replace floor No. 2 wire.

OK

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8	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Change the curtain shield airbag sensor assembly LH position with RH position.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

Neither DTC B1154/38 nor B1155/39 are not output.

HINT:

Codes other than code B1154/38 or B1155/39 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly (DTC B1154/38 is output).**

NG → **Replace curtain shield airbag sensor assembly RH (DTC B1155/39 is output).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DTC	B1155/39	Curtain Shield Airbag Sensor Assembly LH Malfunction

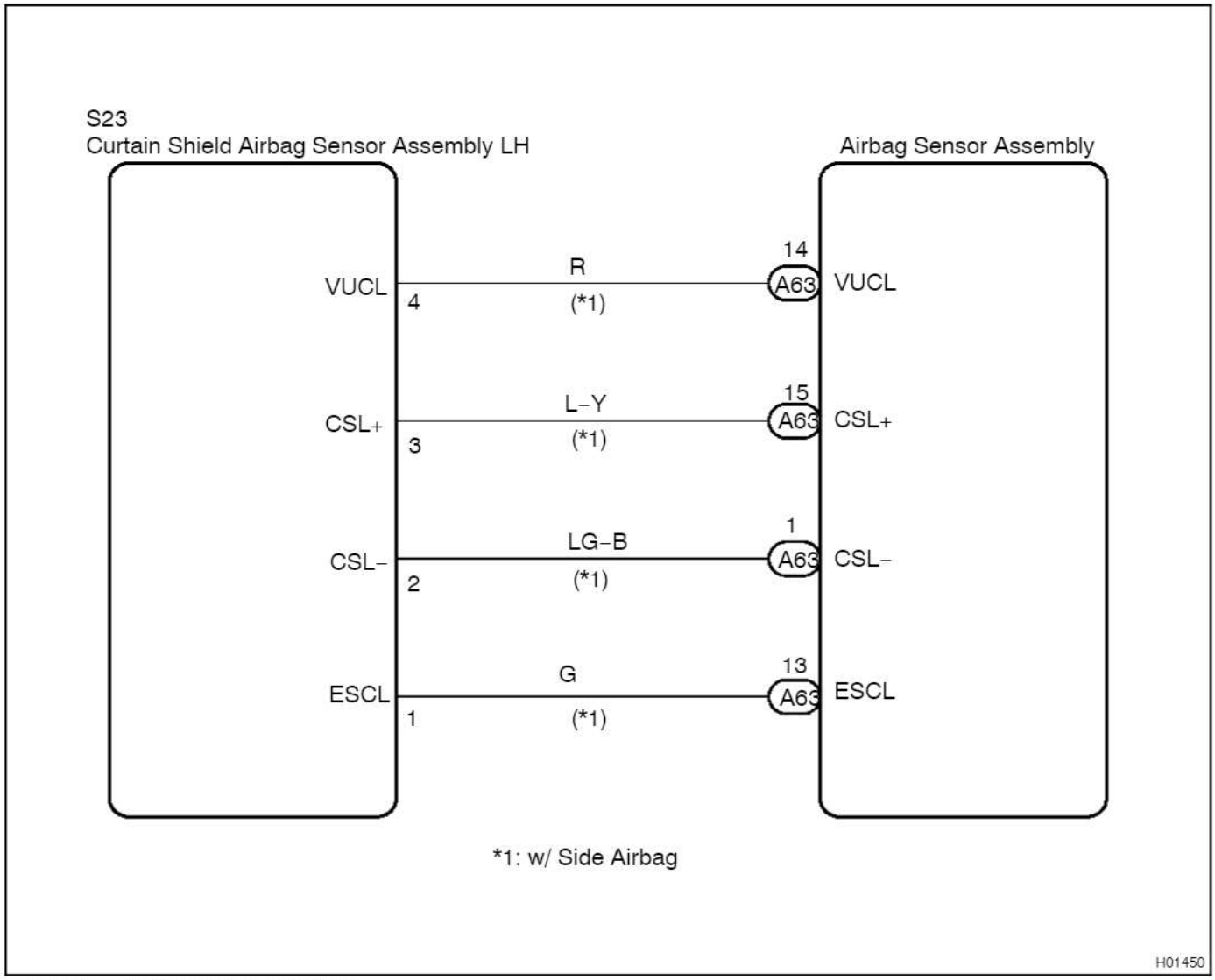
CIRCUIT DESCRIPTION

The curtain shield airbag sensor assembly LH consists of the safing sensor, diagnosis circuit and lateral deceleration sensor, etc.
It receives signals from the lateral deceleration sensor, judges whether or not the SRS must be activated, and detects diagnosis system malfunction.
DTC B1155/39 is recorded when occurrence of a malfunction in the curtain shield airbag sensor assembly LH is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1155/39	• Curtain shield airbag sensor assembly LH malfunction	• Curtain shield airbag sensor assembly LH • Floor No. 1 wire • Airbag sensor assembly

HINT:
DTC B1155/39 is indicated only for the vehicle equipped with the side airbag.

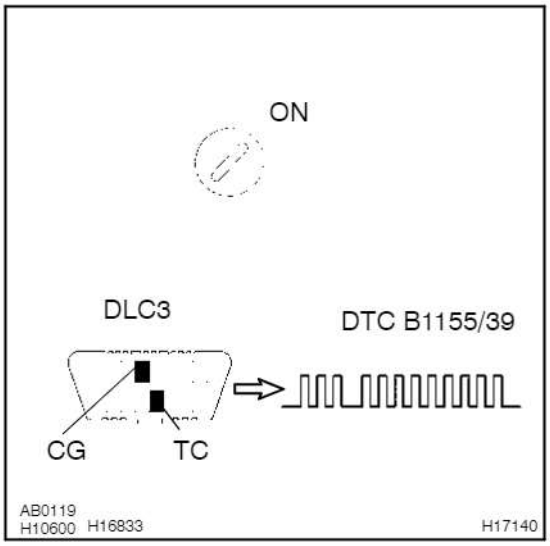
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Is DTC B1155/39 output?**



CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1155/39 is output.

HINT:

Codes other than code B1155/39 may be output at this time, but they are not relevant to this check.

YES → **The malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.**

NO

2	**Is connector of curtain shield airbag sensor assembly LH properly connected?**

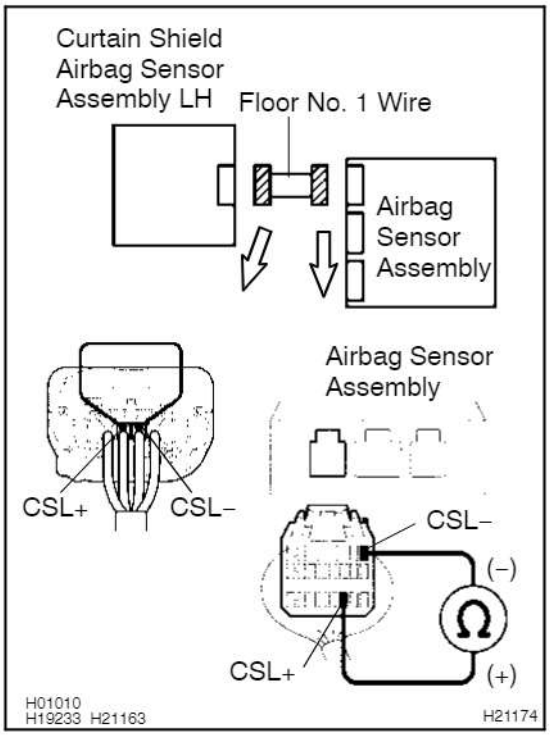
NO → **Connect connector.**

YES

3	**Prepare for inspection (See step 1 on page DI–764).**

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4	**Check floor No. 1 wire.**



PREPARATION:

Using a service wire, connect CSL+ and CSL– of the floor No. 1 wire connector on the curtain shield airbag sensor assembly LH side.

CHECK:

Measure the resistance between CSL+ and CSL– of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

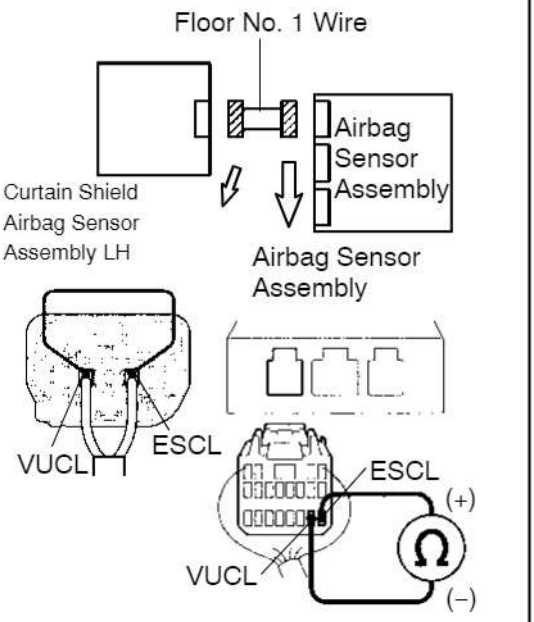
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

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5	Check floor No. 1 wire.



PREPARATION:

Using a service wire, connect VUCL and ESCL of the floor No. 1 wire connector on the curtain shield airbag sensor assembly LH side.

CHECK:

Measure the resistance between VUCL and ESCL of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

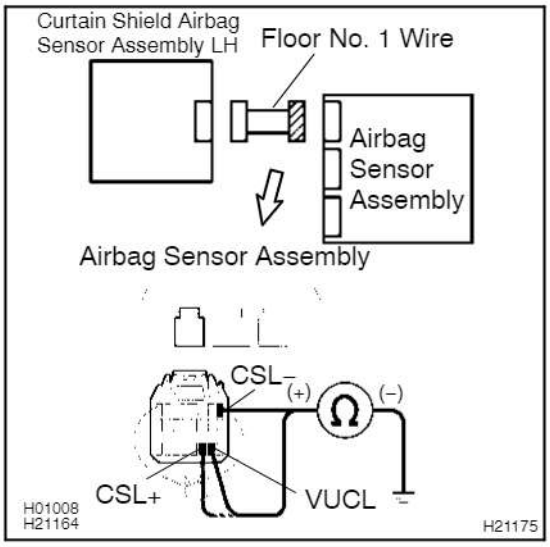
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

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6	Check floor No. 1 wire (to ground).



CHECK:

Measure the resistance between the body ground and each of VUCL, CSL+ and CSL– of the floor No. 1 wire connector on the airbag sensor assembly side.

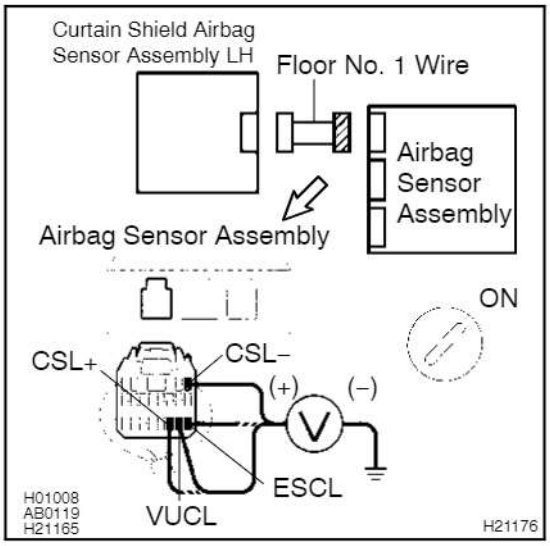
OK:

Resistance: 10 kΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

7	Check floor No. 1 wire (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of VUCL, CSL+, CSL– and ESCL of the floor No. 1 wire connector on the airbag sensor assembly side.

OK:

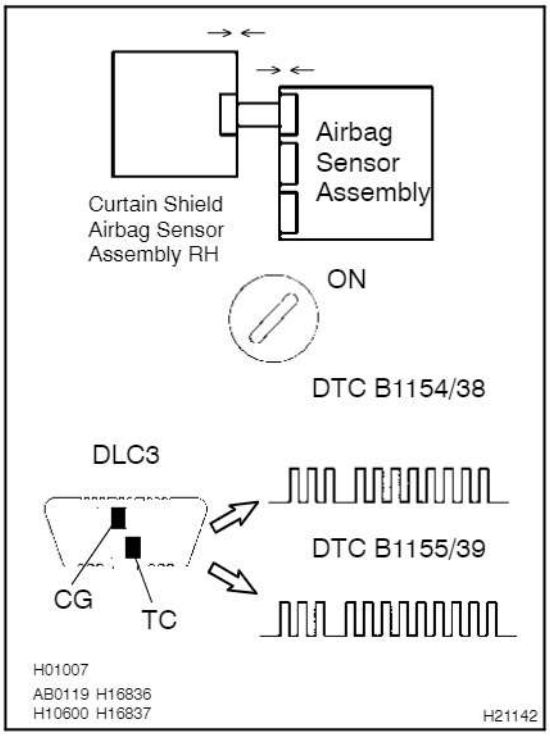
Voltage: Below 1 V

NG → **Repair or replace floor No. 1 wire.**

OK

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8	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Change the curtain shield airbag sensor assembly RH position with LH position.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

Neither DTC B1155/39 nor B1154/38 are not output.

HINT:

Codes other than code B1155/39 B1154/38 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly (DTC B1155/39 is output).**

NG → **Replace curtain shield airbag sensor assembly LH (DTC B1154/38 is output).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIATP–01

DTC	B1156/B1157/15	Front Airbag Sensor RH Malfunction

CIRCUIT DESCRIPTION

The front airbag sensor RH circuit consists of the airbag sensor assembly and the front airbag sensor RH.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1156/B1157/15 is recorded when malfunction is detected in the front airbag sensor RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1156/B1157/15	• Front airbag sensor RH malfunction	• Front airbag sensor RH • Airbag sensor assembly • Dash wire • Engine room No. 2 wire • Engine room main wire

HINT:
DTC B1156/B1157/15 is indicated only for the vehicle equipped without the side airbag (single stage airbag).

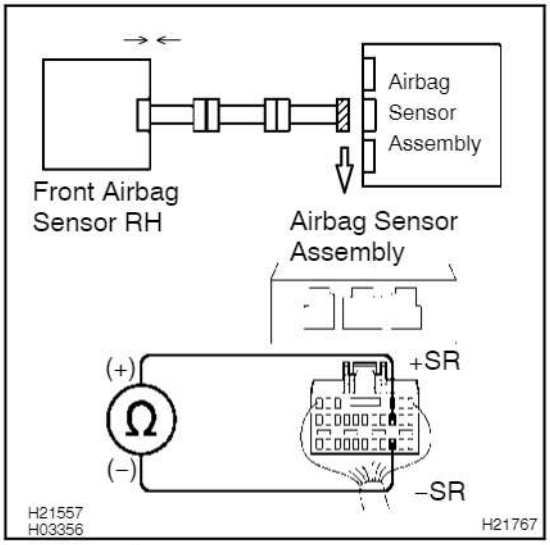
WIRING DIAGRAM

See page DI–619.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check front airbag sensor RH circuit.**



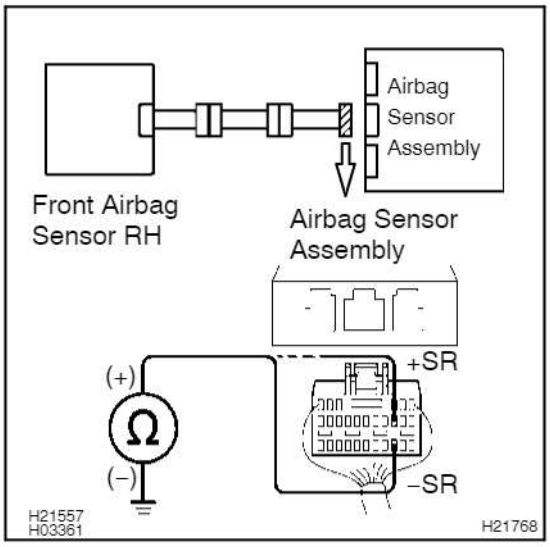
PREPARATION:
Connect the connector to the front airbag sensor RH.
CHECK:
Measure the resistance between +SR and –SR of the connector on the airbag sensor assembly side between the front airbag sensor RH and the airbag sensor assembly.
OK:
Resistance: 754 – 886 Ω

NG → **Go to step 7.**

OK

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3	Check front airbag sensor RH circuit (to ground).



CHECK:

Measure the resistance between the body ground and each of +SR and –SR of the connector on the airbag sensor assembly side between the front airbag sensor RH and the airbag sensor assembly.

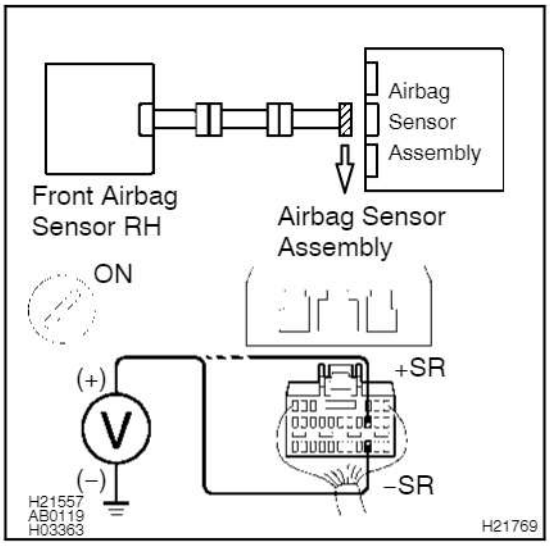
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 9.**

OK

4	Check front airbag sensor RH circuit (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of +SR and –SR of the connector on the airbag sensor assembly side between the front airbag sensor RH and the airbag sensor assembly.

OK:

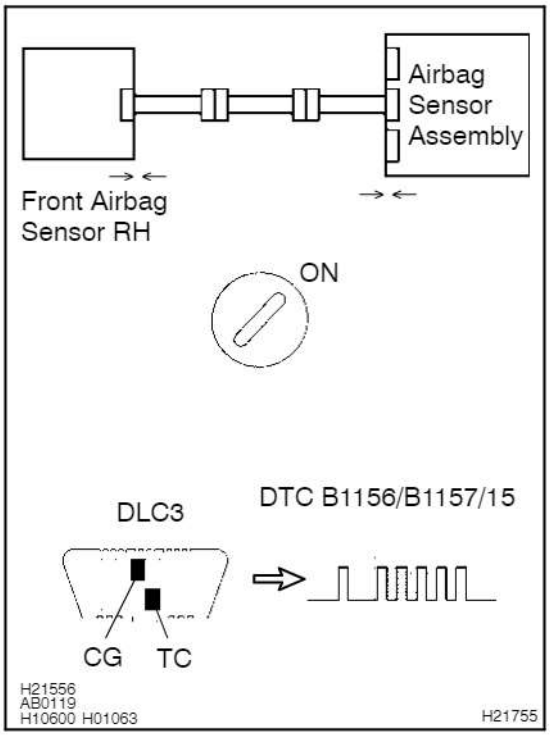
Voltage: Below 1 V

NG → **Go to step 11.**

OK

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5	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the airbag sensor assembly connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1156/B1157/15 is not output.

HINT:

Codes other than DTC B1156/B1157/15 may be output at this time, but they are not relevant to this check.

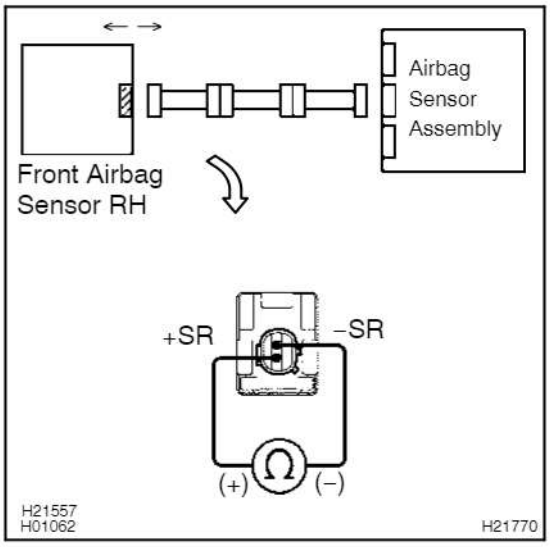
NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	Check front airbag sensor RH.



PREPARATION:

Disconnect the front airbag sensor RH connector.

CHECK:

Measure the resistance between +SR and –SR of the front airbag sensor RH.

OK:

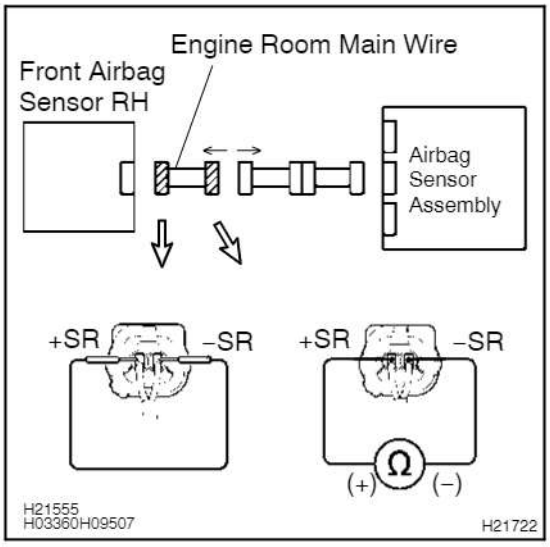
Resistance: 754 – 886 Ω

NG	Replace front airbag sensor RH.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

7	Check engine room main wire.



PREPARATION:

(a) Disconnect the engine room main wire connector from the airbag sensor assembly side.

(b) Using a service wire, connect the +SR and –SR of the engine room main wire connector on the front airbag sensor RH side.

CHECK:

Measure the resistance between +SR and –SR of the engien room main wire connector on the airbag sensor assembly side.

OK:

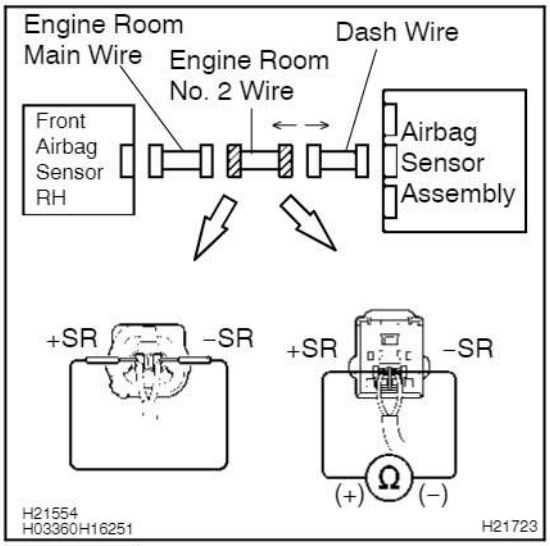
Resistance: Below 1 Ω

NG	Repair or replace engine room main wire.

OK

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8	Check engine room No. 2 wire.



PREPARATION:

(a) Disconnect the engine room No. 2 wire connector from the dash wire.

(b) Using a service wire, connect +SR and –SR of the engine room No. 2 wire connector on the engine room main wire side.

CHECK:

Measure the resistance between +SR and –SR of the engine room No. 2 wire connector on the dash wire side.

OK:

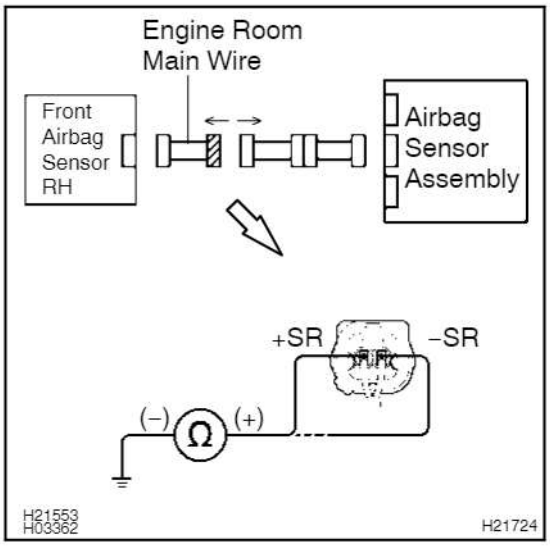
Resistance: Below 1 Ω

NG	Repair or replace engine room No. 2 wire.

OK

Repair or replace dash wire.

9	Check engine room main wire (to ground).



PREPARATION:

Disconnect the engine room main wire connector on the airbag sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of +SR and –SR of the engine room main wire connector on the airbag sensor assembly side.

OK:

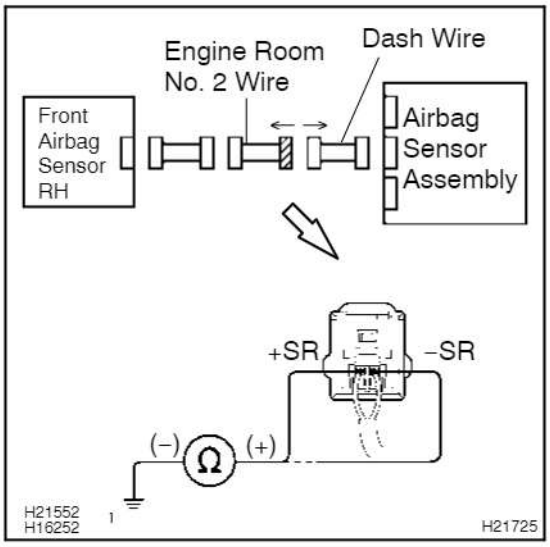
Resistance: 1 MΩ or Higher

NG	Repair or replace engine room main wire.

OK

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10	Check engine room No. 2 wire (to ground).



PREPARATION:

Disconnect the engine room No. 2 wire conector from the dash wire.

CHECK:

Measure the resistance between the body ground and each of +SR and –SR of the engine room No. 2 wire connector on the dash wire side.

OK:

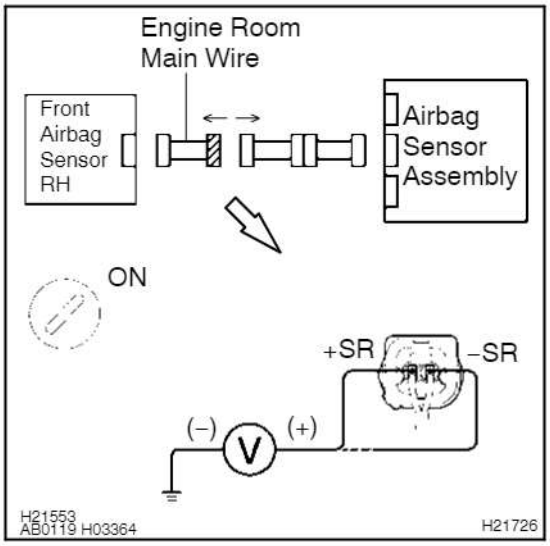
Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room No. 2 wire.**

OK

Repair or replace dash wire.

11	Check engine room main wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room main wire connector on the airbag sensor assembly side.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SR and –SR of the engine room main wire connector on the airbag sensor assembly side.

OK:

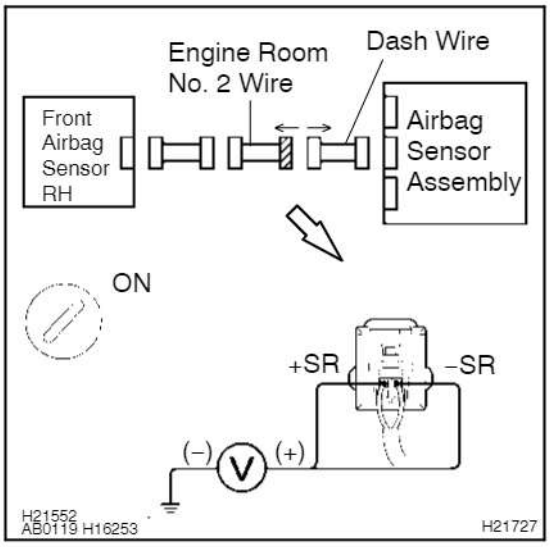
Voltage: Below 1 V

NG → **Repair or replace engine room main wire.**

OK

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12	Check engine room No. 2 wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room No. 2 wire connector from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SR and –SR of the engine room No. 2 wire connector on the dash wire side.

OK:

Voltage: Below 1 V

NG	Repair or replace engine room No. 2 wire.

OK

Repair or replace dash wire.

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DIATQ–01

DTC	B1158/B1159/16	Front Airbag Sensor LH Malfunction

CIRCUIT DESCRIPTION

The front airbag sensor LH circuit consists of the airbag sensor assembly and the front airbag sensor LH.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1158/B1159/16 is recorded when malfunction is detected in the front airbag sensor LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1158/B1159/16	• Front airbag sensor LH malfunction	• Front airbag sensor LH • Airbag sensor assembly • Dash wire • Engine room No. 2 wire • Engine room main wire

HINT:
DTC B1158/B1159/16 is indicated only for the vehicle equipped with the mechanical type front airbag sensor.

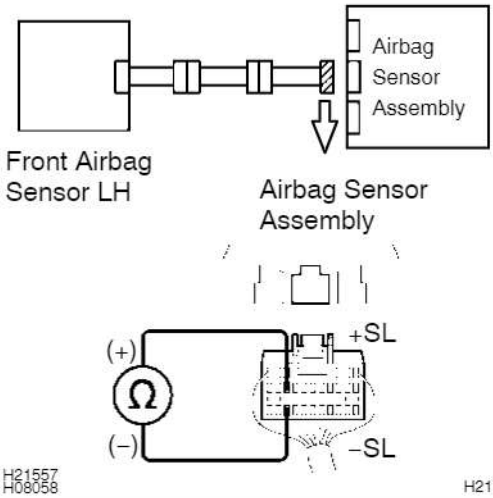
WIRING DIAGRAM

See page DI–628.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check front airbag sensor LH circuit.**



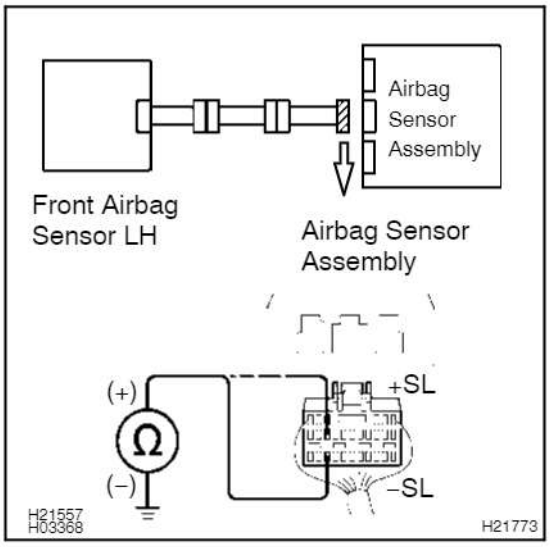
PREPARATION:
Connect the connector to the front airbag sensor LH.
CHECK:
Measure the resistance between +SL and –SL of the connector on the airbag sensor assembly side between the front airbag sensor LH and the airbag sensor assembly.
OK:
Resistance: 754 – 886 Ω

NG → **Go to step 7.**

OK

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3	Check front airbag sensor LH circuit (to ground).



CHECK:

Measure the resistance between the body ground and each of +SL and –SL of the connector on the airbag sensor assembly side between the front airbag sensor LH and the airbag sensor assembly.

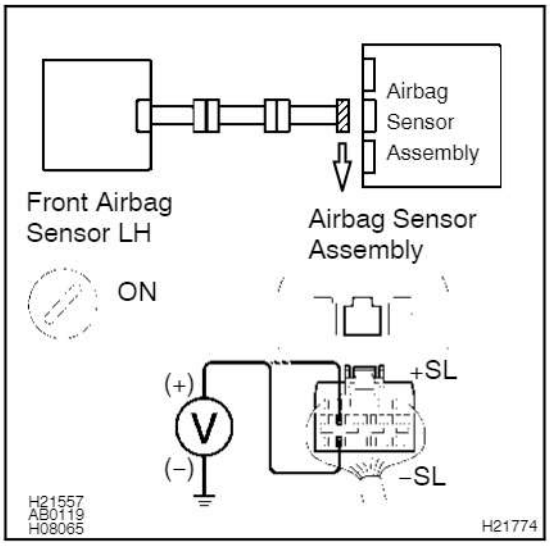
OK:

Resistance: 1 MΩ or Higher

NG → **Go to step 9.**

OK

4	Check front airbag sensor LH circuit (to B+).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and each of +SL and –SL of the connector on the aribag sensor assembly side between the front airbag sensor LH and the airbag sensor assembly.

OK:

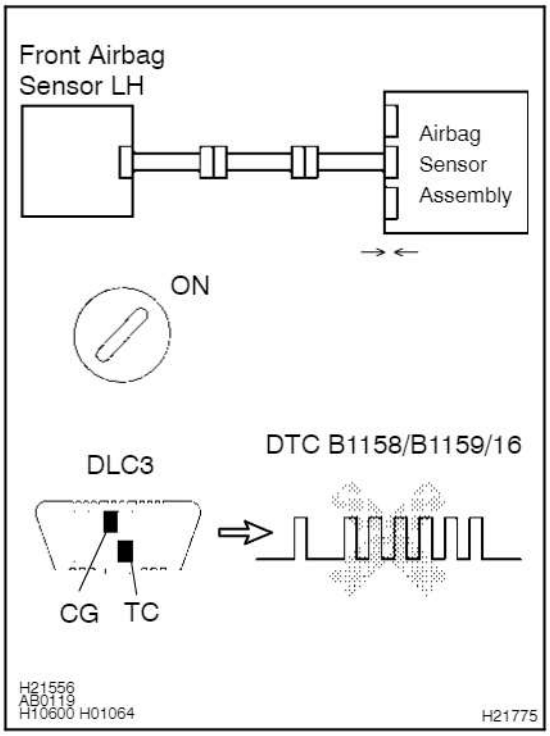
Voltage: Below 1 V

NG → **Go to step 11.**

OK

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5	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the airbag sensor assembly connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1158/B1159/16 is not output.

HINT:

Codes other than DTC B1158/B1159/16 may be output at this time, but they are not relevant to this check.

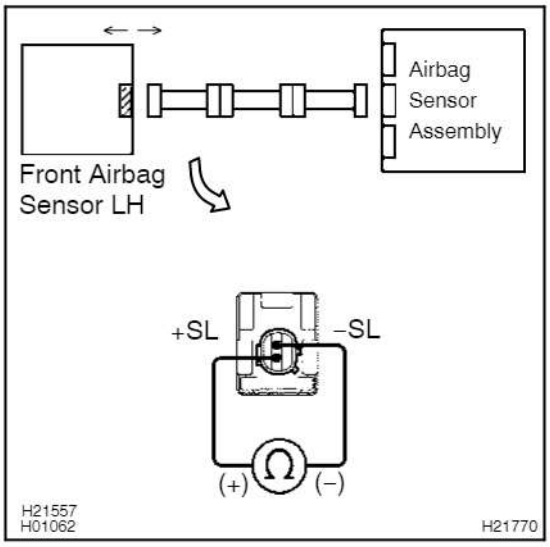
NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	Check front airbag sensor LH.



PREPARATION:

Disconnect the front airbag sensor LH connector.

CHECK:

Measure the resistance between +SL and –SL of the front airbag sensor LH.

OK:

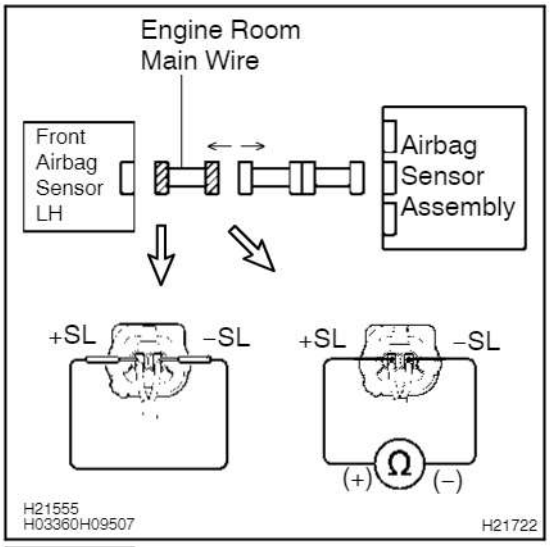
Resistance: 754 – 886 Ω

NG	Replace front airbag sensor LH.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

7	Check engine room main wire.



PREPARATION:

(a) Disconnect the engine room main wire connector on the airbag sensor assembly side.

(b) Using a service wire, connect +SL and –SL of the engine room main wire on the front airbag sensor LH side.

CHECK:

Measure the resistance between +SL and –SL of the engine room main wire connector on the airbag sensor assembly side.

OK:

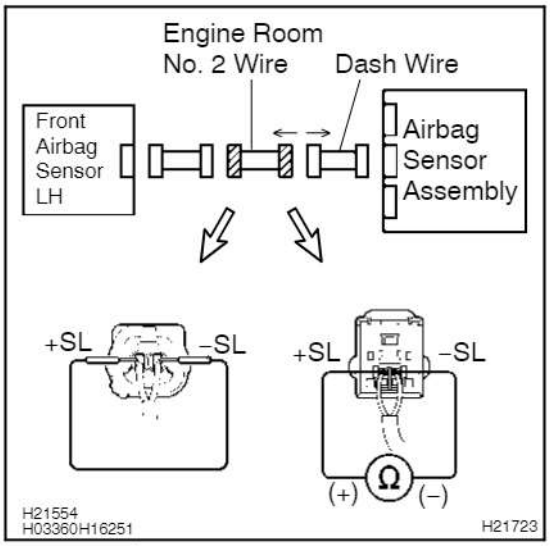
Resistance: Below 1 Ω

NG	Repair or replace engine room main wire.

OK

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8	Check engine room No. 2 wire.



PREPARATION:

(a) Disconnect the engine room No. 2 wire connector from the dash wire.

(b) Using a service wire, connect +SL and –SL of the engine room No. 2 wire on the engine room main wire side.

CHECK:

Measure the resistance between +SL and –SL of the engine room No. 2 wire connector on the dash wire side.

OK:

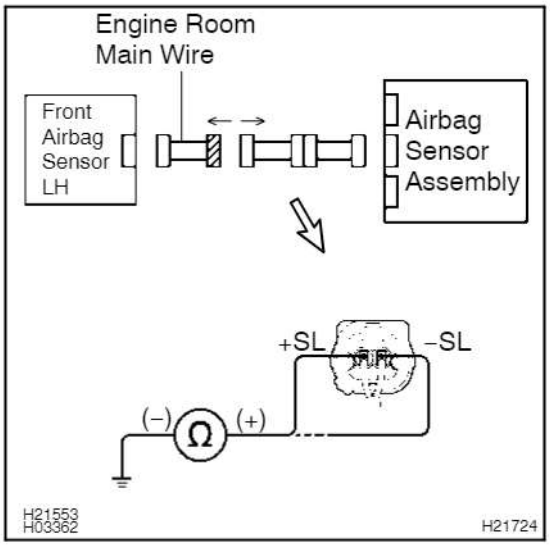
Resistance: Below 1 Ω

NG → **Repair or replace engine room No. 2 wire.**

OK

Repair or replace dash wire.

9	Check engine room main wire (to ground).



PREPARATION:

Disconnect the engine room main wire connector on the airbag sensor assembly side.

CHECK:

Measure the resistance between the body ground and each of +SL and –SL of the engine room main wire connector on the airbag sensor assembly side.

OK:

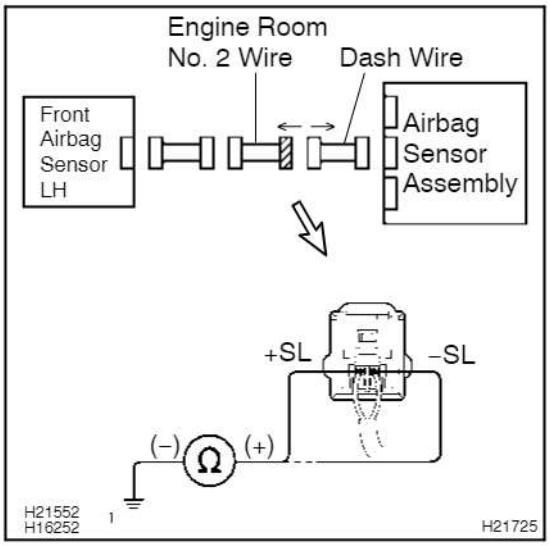
Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room main wire.**

OK

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10	Check engine room No. 2 wire (to ground).



PREPARATION:

Disconnect the engine room No. 2 wire connector from the dash wire.

CHECK:

Measure the resistance between the body ground and each of +SL and –SL of the engine room No. 2 wire connector on the dash wire side.

OK:

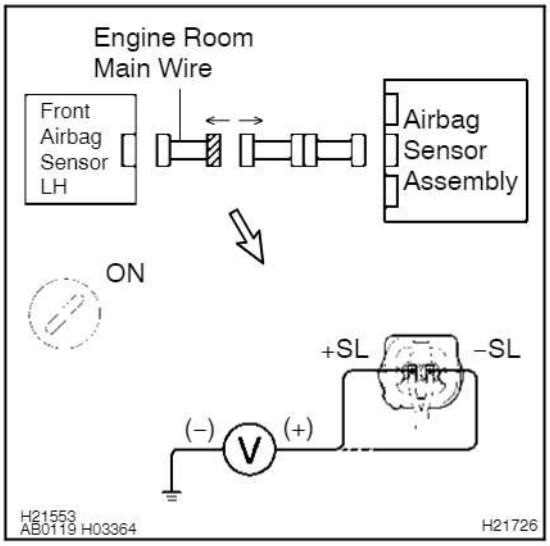
Resistance: 1 MΩ or Higher

NG → **Repair or replace engine room No. 2 wire.**

OK

Repair or replace dash wire.

11	Check engine room main wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room main wire connector on the airbag sensor assembly side.
(d) Connec the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SL and –SL of the engine room main wire connector on the airbag sensor assembly side.

OK:

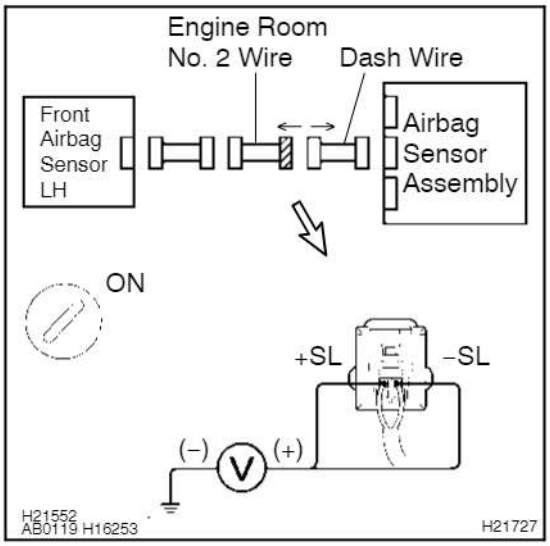
Voltage: Below 1 V

NG → **Repair or replace engine room main wire.**

OK

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12	Check engine room No. 2 wire (to B+).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the engine room No. 2 wire connector from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and each of +SL and –SL of the engine room No. 2 wire connector on the dash wire side.

OK:

Voltage: Below 1 V

NG	Repair or replace engine room No. 2 wire.

OK

Repair or replace dash wire.

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DIATR–01

DTC	B1160/83	Short in Curtain Shield Squib RH Circuit

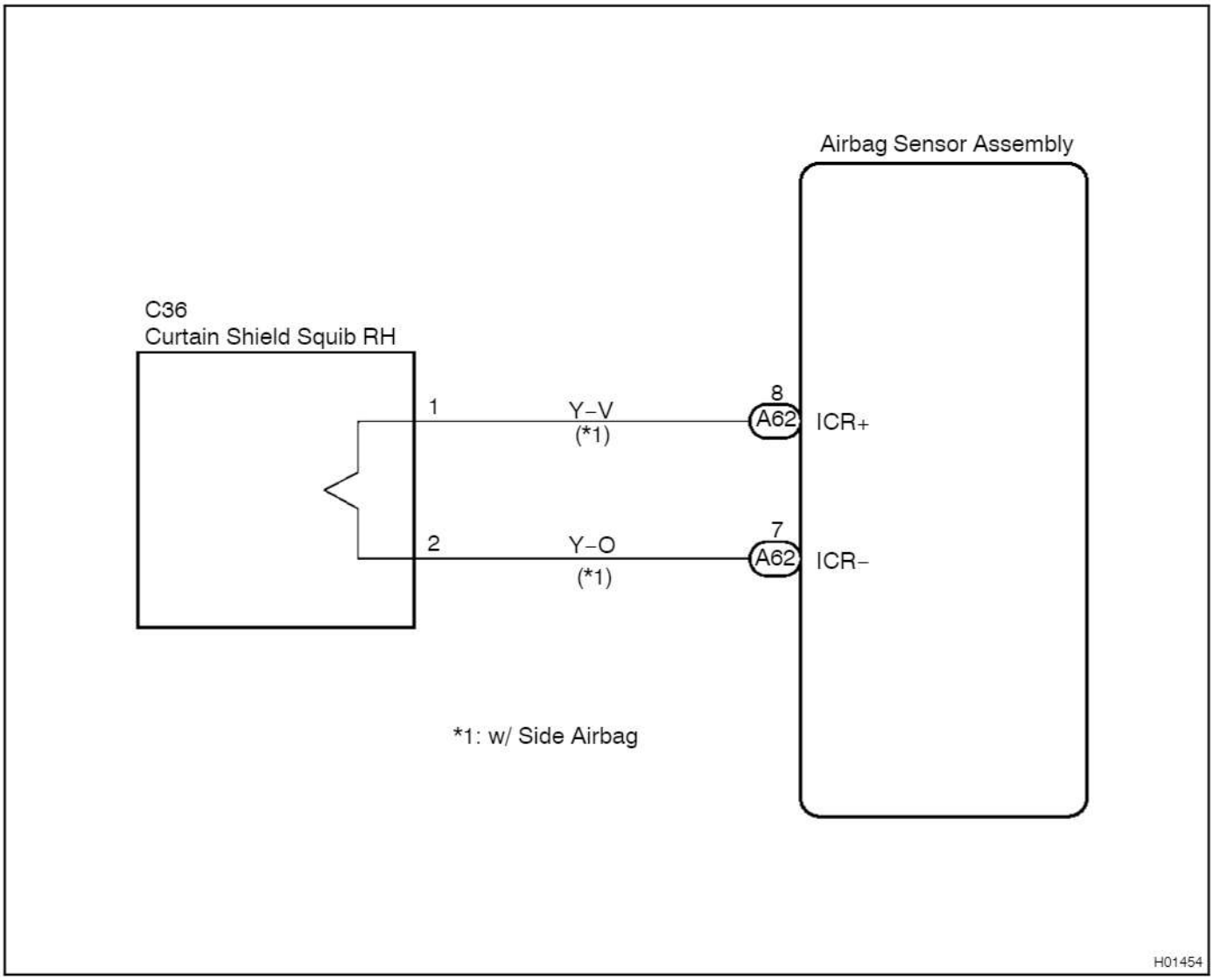
CIRCUIT DESCRIPTION

The curtain shield squib RH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1110/83 is recorded when a short is detected in the curtain shield squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1110/83	• Short in curtain shield squib RH circuit • Curtain shield squib RH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly RH (Curtain shield squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B1160/83 is indicated only for the vehicle equipped with the side airbag.

WIRING DIAGRAM

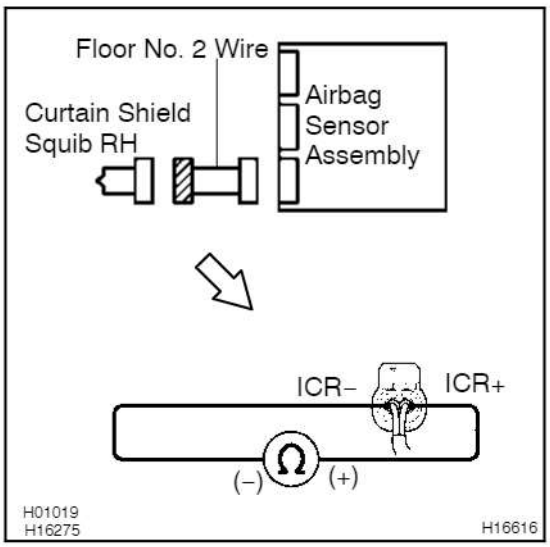


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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 2 wire (curtain shield squib RH circuit).**



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the floor No. 2 wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between ICR+ and ICR– of the floor No. 2 wire connector on the curtain shield airbag assembly RH (curtain shield squib RH) side.

OK:

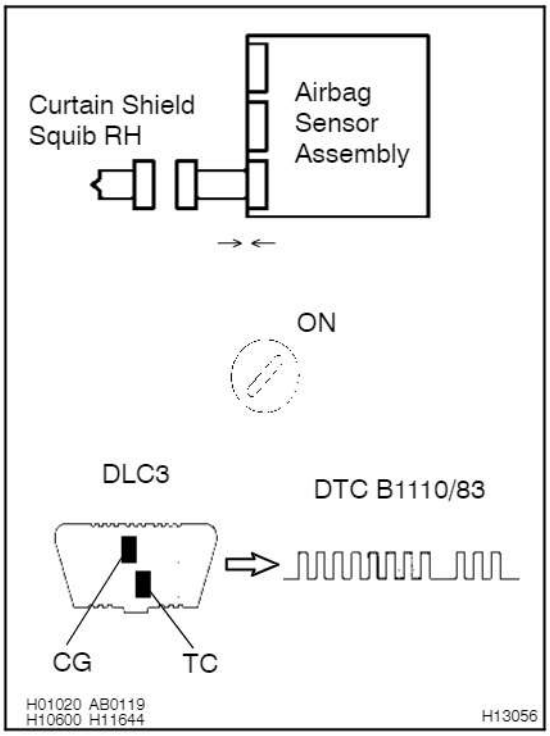
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

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3	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1110/83 is not output.

HINT:

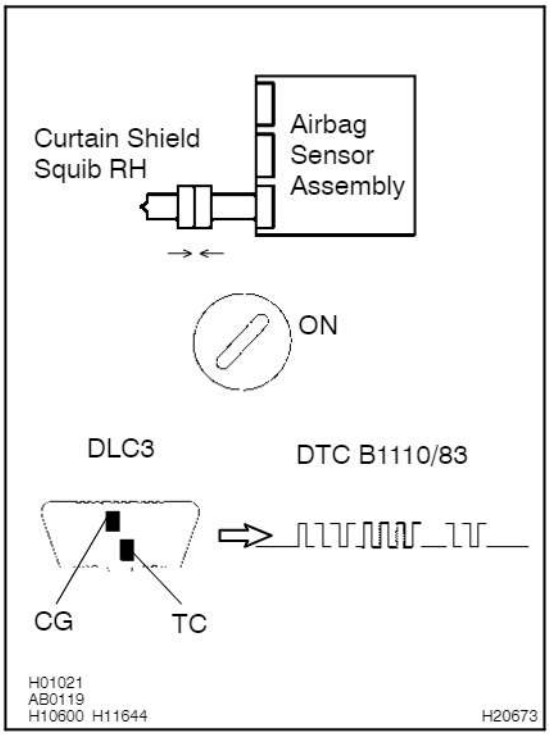
Codes other than code B1110/83 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check curtain shield squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly RH (curtain shield squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1110/83 is not output.

HINT:
Codes other than code B1110/83 may be output at this time, but they are not relevant to this check.

NG	Replace curtain shield airbag assembly RH (curtain shield squib RH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DTC	B1161/84	Open in Curtain Shield Squib RH Circuit

CIRCUIT DESCRIPTION

The curtain shield squib RH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1161/84 is recorded when an open is detected in the curtain shield squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1161/84	• Open in curtain shield squib RH circuit • Curtain shield squib RH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly RH (Curtain shield squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B1161/84 is indicated only for the vehicle equipped with the side airbag.

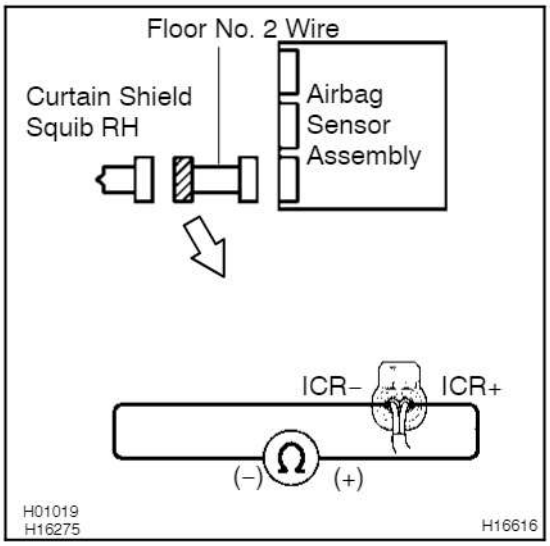
WIRING DIAGRAM

See page DI–693.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 2 wire (curtain shield squib RH circuit).**



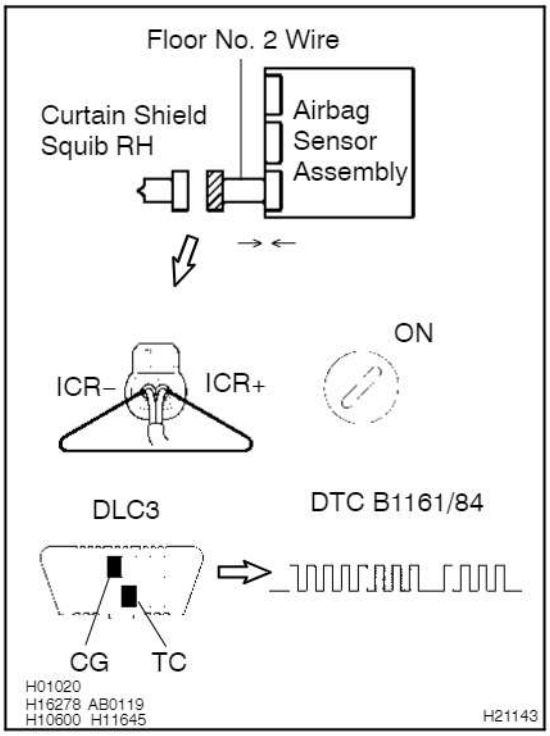
CHECK:
Measure the resistance between ICR+ and ICR– of the floor No. 2 wire connector on the curtain shield airbag assembly RH (curtain shield squib RH) side.
OK:
Resistance: Below 1 Ω

NG	**Repair or replace floor No. 2 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect ICR+ and ICR– of the floor No. 2 wire connector on the curtain shield airbag assembly RH (curtain shield squib RH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1161/84 is not output.

HINT:

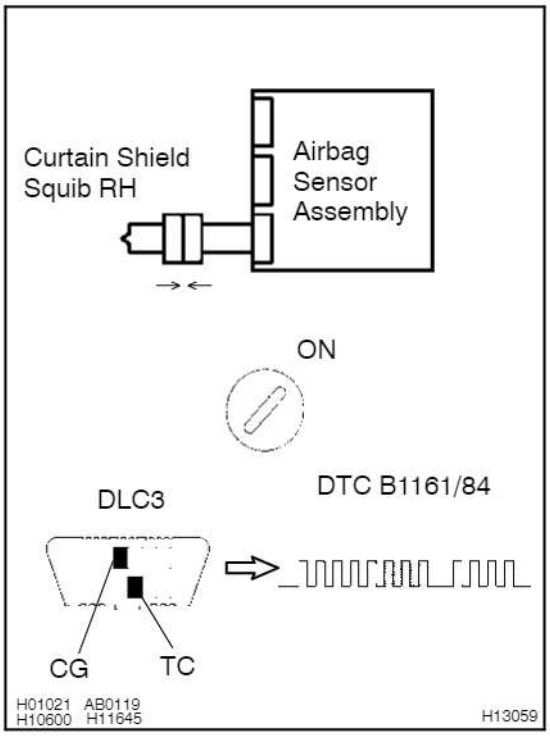
Codes other than code B1161/84 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	**Check curtain shield squib RH.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly RH (curtain shield squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1161/84 is not output.

HINT:
Codes other than code B1161/84 may be output at this time, but they are not relevant to this check.

NG	**Replace curtain shield airbag assembly RH (curtain shield squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIATT–01

DTC	B1162/81	Short in Curtain Shield Squib RH Circuit (to Ground)

CIRCUIT DESCRIPTION

The curtain shield squib RH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1162/81 is recorded when ground short is detected in the curtain shield squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1162/81	• Short in curtain shield squib RH circuit (to ground) • Curtain shield squib RH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly RH (Curtain shield squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B1162/81 is indicated only for the vehicle equipped with the side airbag.

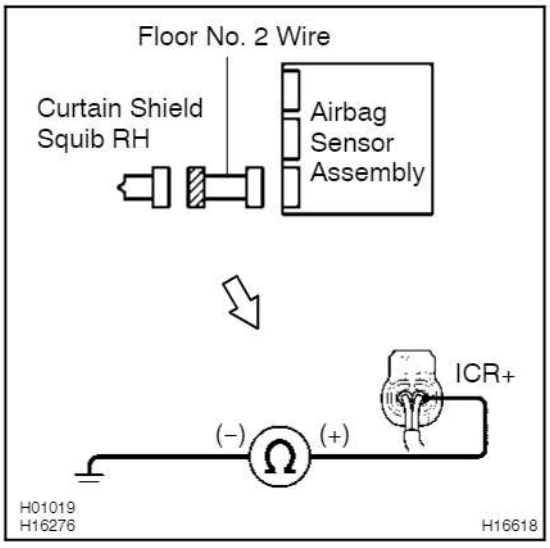
WIRING DIAGRAM

See page DI–693.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 2 wire(curtain shield squib RH circuit).**



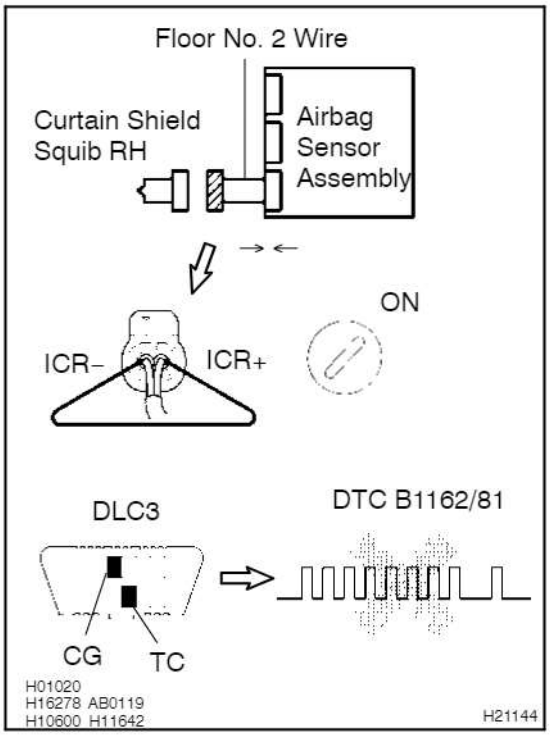
CHECK:
Measure the resistance between the body ground and ICR+ of the floor No. 2 wire connector on the curtain shield airbag assembly RH (curtain shield squib RH) side.
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 2 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect ICR+ and ICR– of the floor No. 2 wire connector on the curtain shield airbag assembly RH (curtain shield squib RH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1162/81 is not output.

HINT:

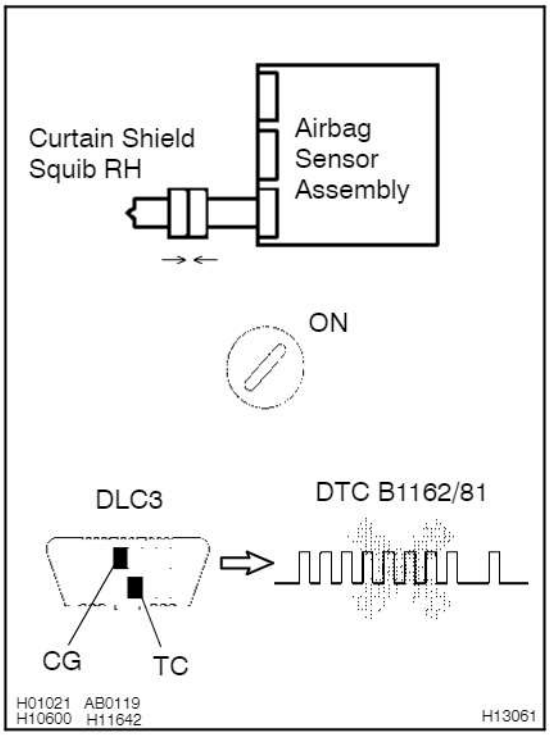
Codes other than code B1162/81 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check curtain shield squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly RH (curtain shield squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1162/81 is not output.

HINT:
Codes other than code B1162/81 may be output at this time, but they are not relevant to this check.

NG	Replace curtain shield airbag assembly RH (curtain shield squib RH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DTC	B1163/82	Short in Curtain Shield Squib RH Circuit (to B+)

CIRCUIT DESCRIPTION

The curtain shield squib RH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly RH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1163/82 is recorded when a B+ short is detected in the curtain shield squib RH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1163/82	• Short in curtain shield squib RH circuit (to B+) • Curtain shield squib RH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly RH (Curtain shield squib RH) • Airbag sensor assembly • Floor No. 2 wire

HINT:
DTC B1163/82 is indicated only for the vehicle equipped with the side airbag.

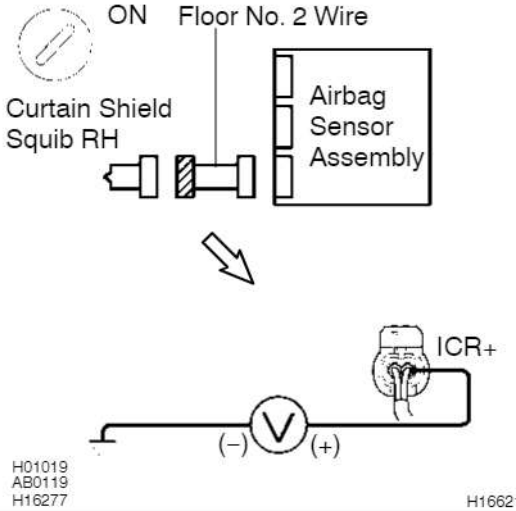
WIRING DIAGRAM

See page DI–693.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 2 wire (curtain shield squib RH circuit).**



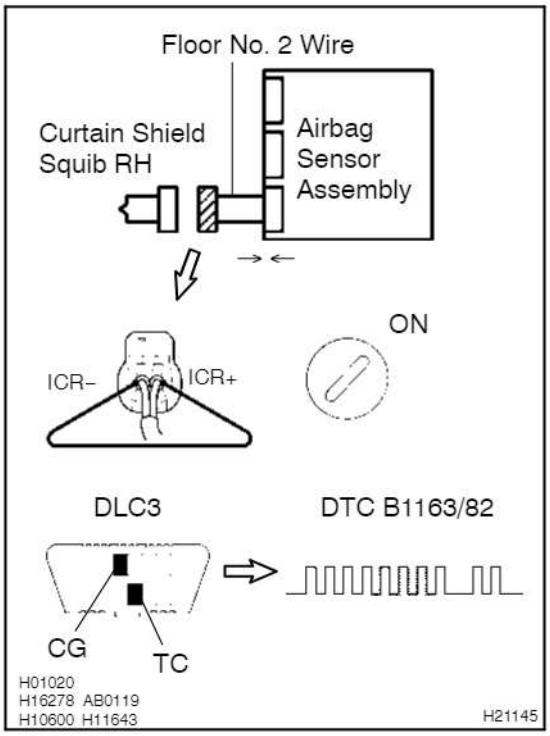
PREPARATION:
Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.
CHECK:
(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and ICR+ of the floor No. 2 wire connector on the curtain shield airbag assembly RH (curtain shield squib RH) side.
OK:
Voltage: Below 1 V

NG	**Repair or replace floor No. 2 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect ICR+ and ICR– of the floor No. 2 wire connector on the curtain shield airbag assembly RH (curtain shield squib RH) side.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1163/82 is not output.

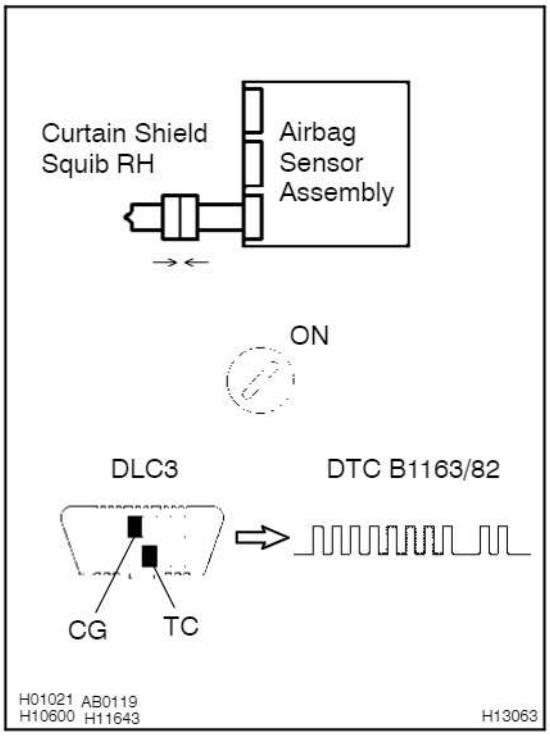
HINT:
Codes other than code B1163/82 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check curtain shield squib RH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly RH (curtain shield squib RH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1163/82 is not output.

HINT:

Codes other than code B1163/82 may be output at this time, but they are not relevant to this check.

NG	**Replace curtain shield airbag assembly RH (curtain shield squib RH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIATV–01

DTC	B1165/87	Short in Curtain Shield Squib LH Circuit

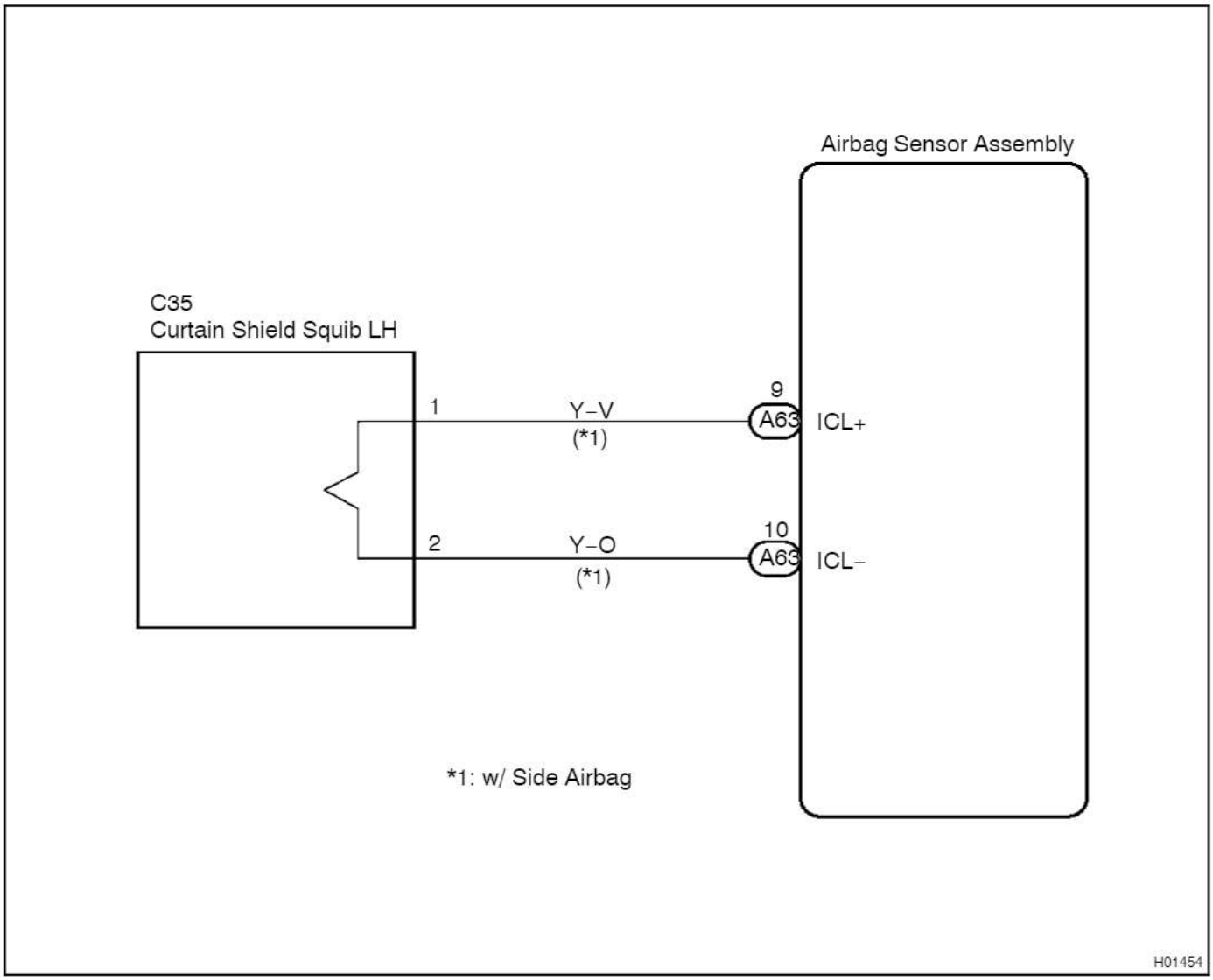
CIRCUIT DESCRIPTION

The curtain shield squib LH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1165/87 is recorded when a short is detected in the curtain shield squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1165/87	• Short in curtain shield squib LH circuit • Curtain shield squib LH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly LH (Curtain shield squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B1165/87 is indicated only for the vehicle equipped with the side airbag.

WIRING DIAGRAM

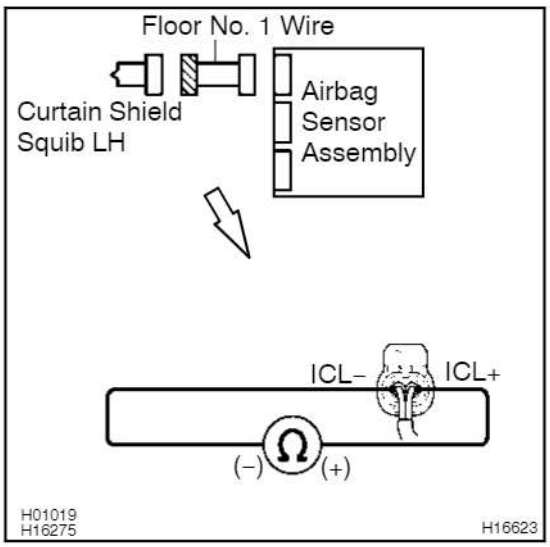


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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 1 wire (curtain shield squib LH circuit).**



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the floor No. 1 wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between ICL+ and ICL– of the floor No. 1 wire connector on the curtain shield airbag assembly LH (curtain shield squib LH) side.

OK:

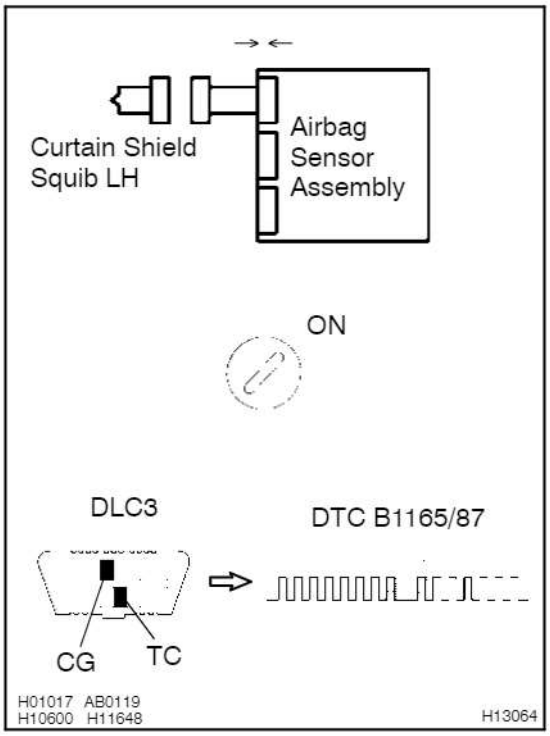
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch or ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1165/87 is not output.

HINT:

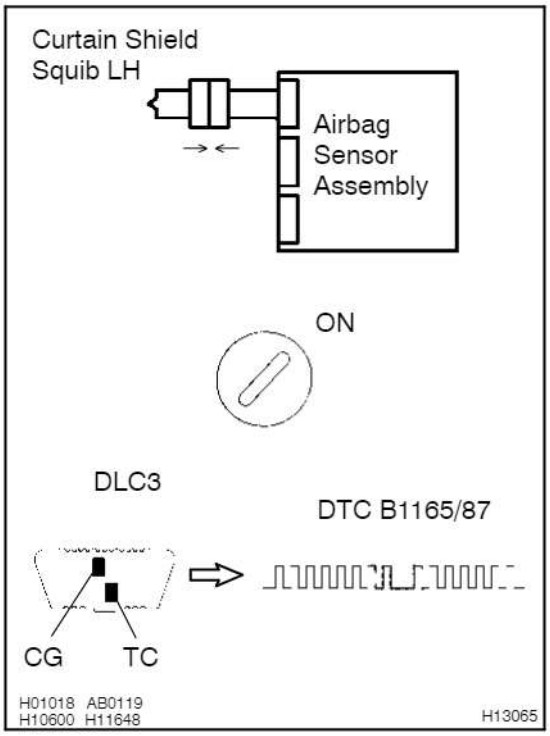
Codes other than code B1165/87 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	**Check curtain shield squib LH.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly LH (curtain shield squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1165/87 is not output.

HINT:

Codes other than code B1165/87 may be output at this time, but they are not relevant to this check.

NG	**Replace curtain shield airbag assembly LH (curtain shield squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIATW–01

DTC	B1166/88	Open in Curtain Shield Squib LH Circuit

CIRCUIT DESCRIPTION

The curtain shield squib LH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1166/88 is recorded when an open is detected in the curtain shield squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1166/88	• Open in curtain shield squib LH circuit • Curtain shield squib LH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly LH (Curtain shield squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B1166/88 is indicated only for the vehicle equipped with the side airbag.

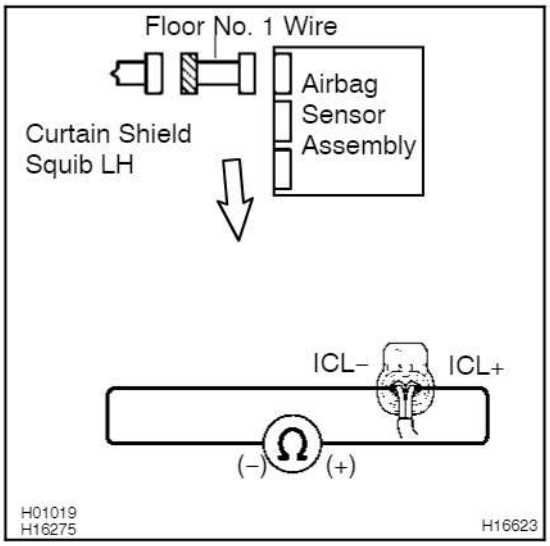
WIRING DIAGRAM

See page DI–706.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 1 wire (curtain shield squib LH circuit).**



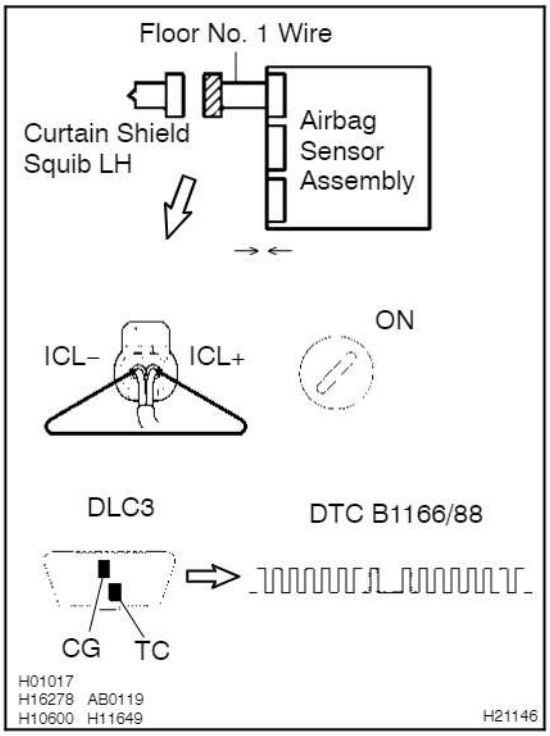
CHECK:
Measure the resistance between ICL+ and ICL– of the floor No. 1 wire connector on the curtain shield airbag assembly LH (curtain shield squib LH) side.
OK:
Resistance: Below 1 Ω

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect ICL+ and ICL– of the floor No. 1 wire connector on the curtain shield airbag assembly LH (curtain shield squib LH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1166/88 is not output.

HINT:

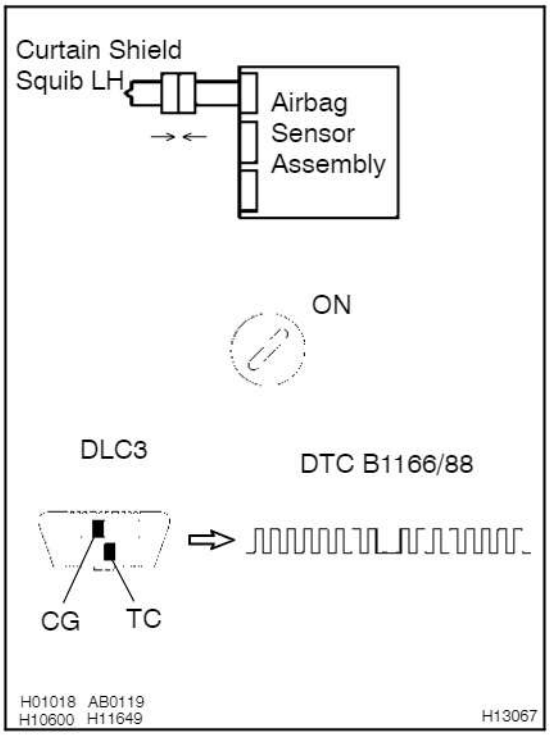
Codes other than code B1166/88 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check curtain shield squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly LH (curtain shield squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1166/88 is not output.

HINT:
Codes other than code B1166/88 may be output at this time, but they are not relevant to this check.

NG	Replace curtain shield airbag assembly LH (curtain shield squib LH).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DTC	B1167/85	Short in Curtain Shield Squib LH Circuit (to Ground)

CIRCUIT DESCRIPTION

The curtain shield squib LH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1167/85 is recorded when ground short is detected in the curtain shield squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1167/85	• Short in curtain shield squib LH circuit (to ground) • Curtain shield squib LH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly LH (Curtain shield squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B1167/85 is indicated only for the vehicle equipped with the side airbag.

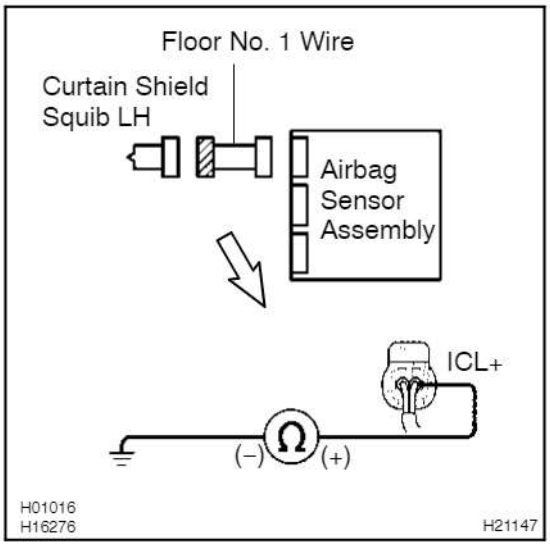
WIRING DIAGRAM

See page DI–693.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check floor No. 1 wire (curtain shield squib LH circuit).**



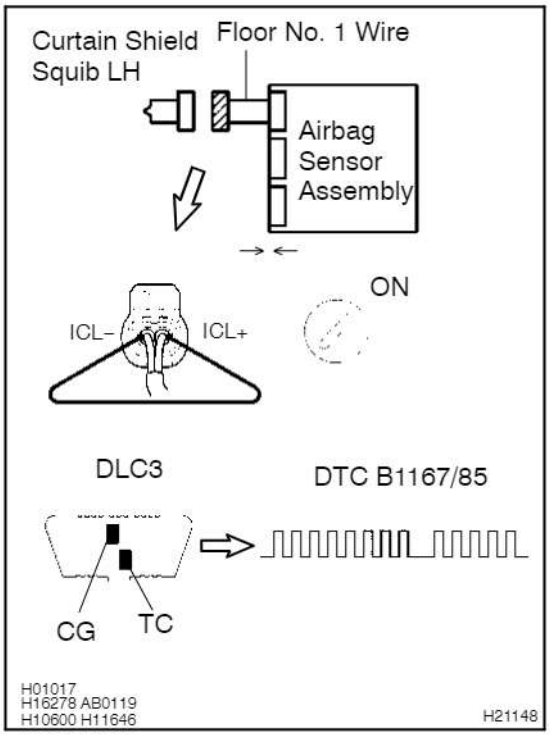
CHECK:
Measure the resistance between the body ground and ICL+ of the floor No. 1 wire connector on the curtain shield airbag assembly LH (curtain shield squib LH) side.
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect ICL+ and ICL– of the floor No. 1 wire connector on the curtain shield airbag assembly LH (curtain shield squib LH) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1167/85 is not output.

HINT:

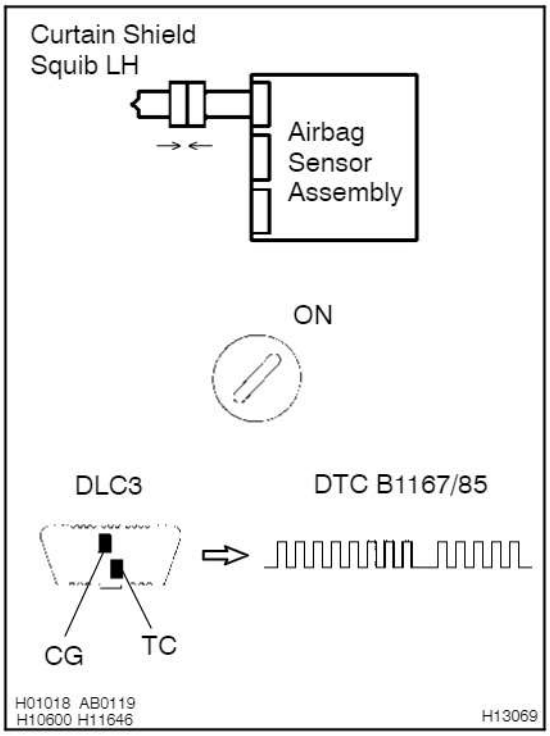
Codes other than code B1167/85 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	**Check curtain shield squib LH.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly LH (curtain shield squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1167/85 is not output.

HINT:

Codes other than code B1167/85 may be output at this time, but they are not relevant to this check.

NG	**Replace curtain shield airbag assembly LH (curtain shield squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIATY–01

DTC	B1168/86	Short in Curtain Shield Squib LH Circuit (to B+)

CIRCUIT DESCRIPTION

The curtain shield squib LH circuit consists of the airbag sensor assembly and the curtain shield airbag assembly LH.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1168/86 is recorded when a B+ short is detected in the curtain shield squib LH circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1168/86	• Short in curtain shield squib LH circuit (to B+) • Curtain shield squib LH malfunction • Airbag sensor assembly malfunction	• Curtain shield airbag assembly LH (Curtain shield squib LH) • Airbag sensor assembly • Floor No. 1 wire

HINT:
DTC B1168/86 is indicated only for the vehicle equipped with the side airbag.

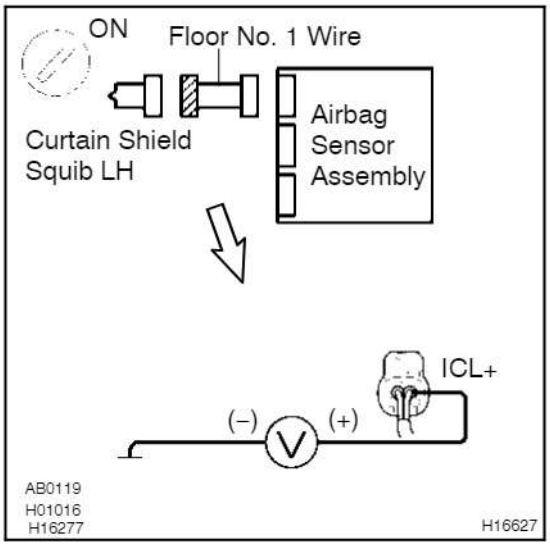
WIRING DIAGRAM

See page DI–706.

INSPECTION PROCEDURE

1	Prepare for inspection (See step 1 on page DI–764).

2	Check floor No. 1 wire (curtain shield squib LH circuit).



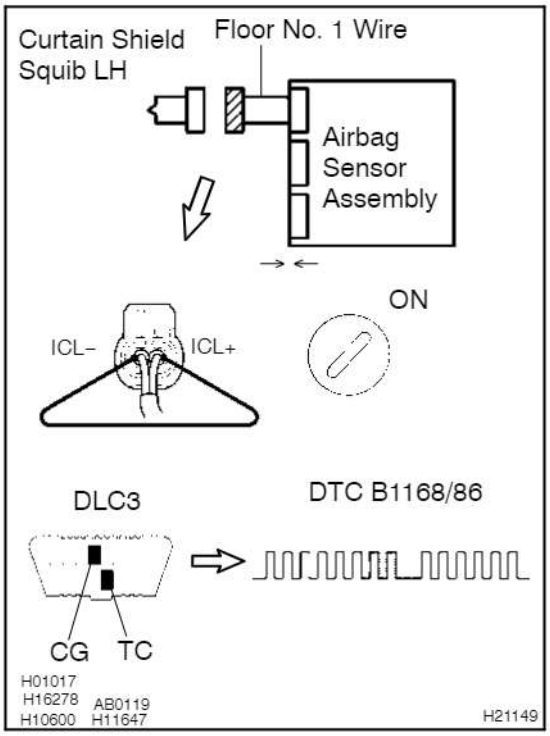
PREPARATION:
Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.
CHECK:
(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and ICL+ of the floor No. 1 wire connector on the curtain shield airbag assembly LH (curtain shield squib LH) side.
OK:
Voltage: Below 1 V

NG → **Repair or replace floor No. 1 wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the connector to the airbag sensor assembly.
(d) Using a service wire, connect ICL+ and ICL– of the floor No. 1 wire connector on the curtain shield airbag assembly LH (curtain shield squib LH) side.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1168/86 is not output.

HINT:

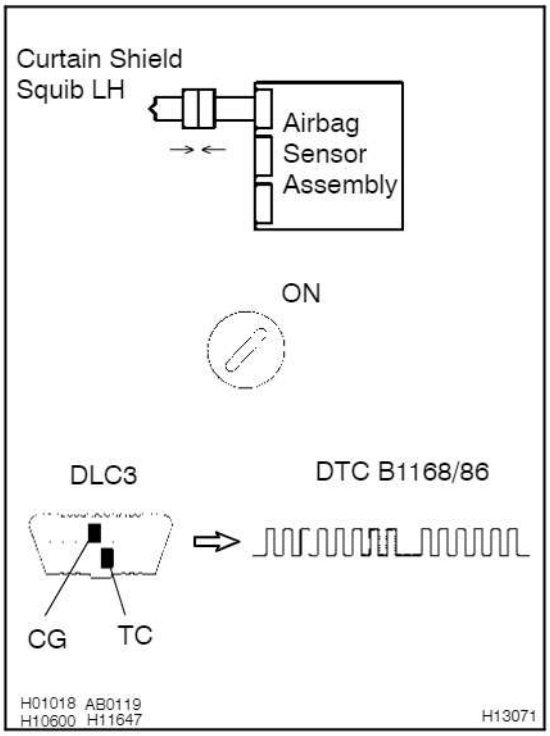
Codes other than code B1168/86 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check curtain shield squib LH.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the curtain shield airbag assembly LH (curtain shield squib LH) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1168/86 is not output.

HINT:
Codes other than code B1168/86 may be output at this time, but they are not relevant to this check.

NG → **Replace curtain shield airbag assembly LH (curtain shield squib LH).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIATZ-01

DTC	B1180/17	Short in D Squib (2nd step) Circuit

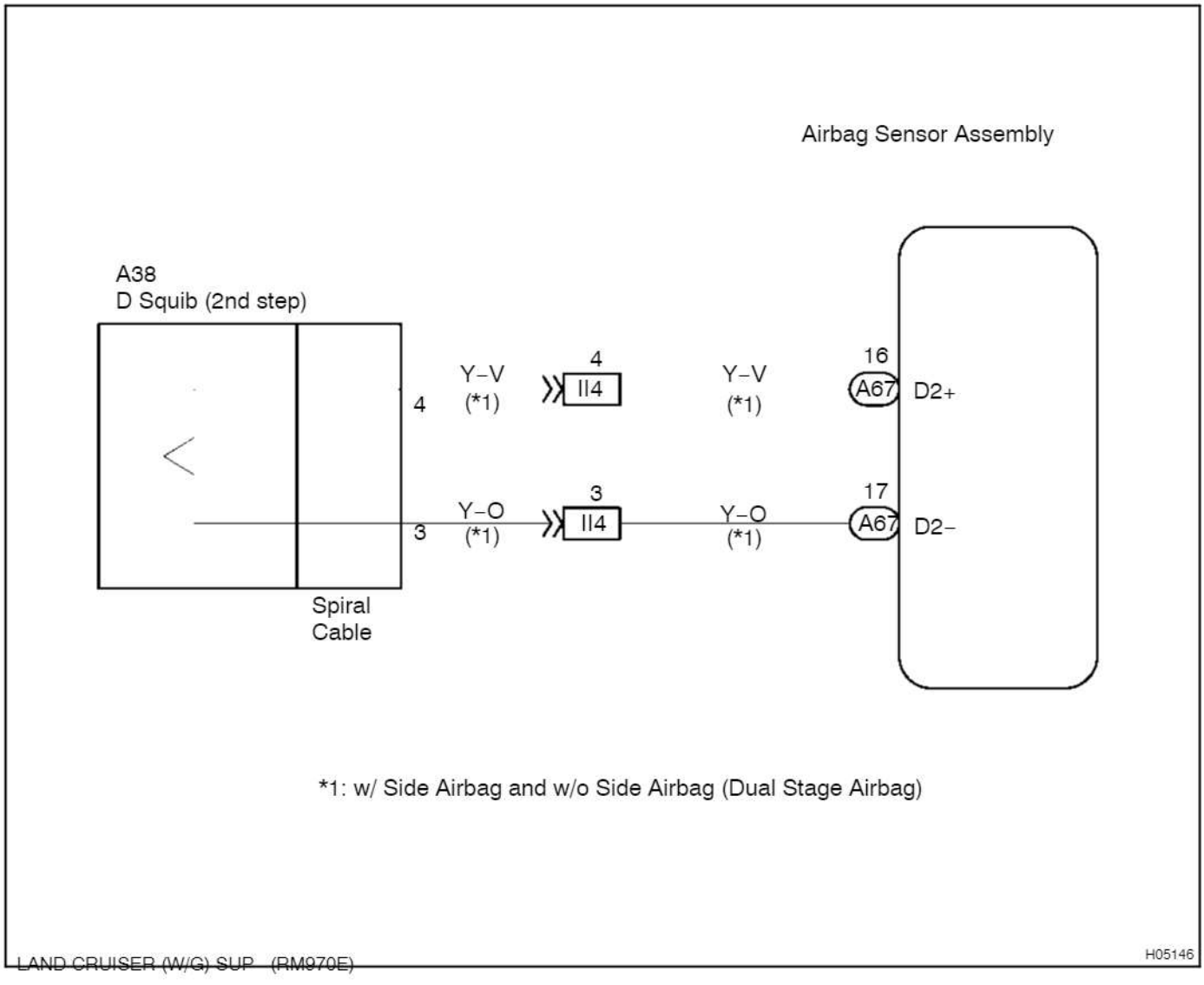
CIRCUIT DESCRIPTION

The D squib (2nd step) circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad.
It causes the airbag to deploy when the airbag deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1180/17 is recorded when a short is detected in the D squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1180/17	• Short in D squib (2nd step) circuit • D squib (2nd step) malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib (2nd step)) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

HINT:
DTC B1180/17 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM



*1: w/ Side Airbag and w/o Side Airbag (Dual Stage Airbag)

H05146

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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

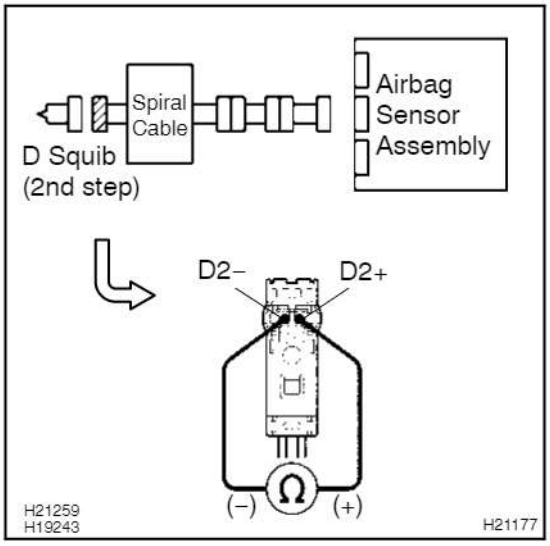
2	**Check connector.**

CHECK:
Make sure that the black spiral cable connector is not damaged.
OK:
The lock button is not disengaged, or the claw of the lock is not deformed or damaged.

NG → **Replace spiral cable.**

OK

3	**Check D squib (2nd step) circuit.**



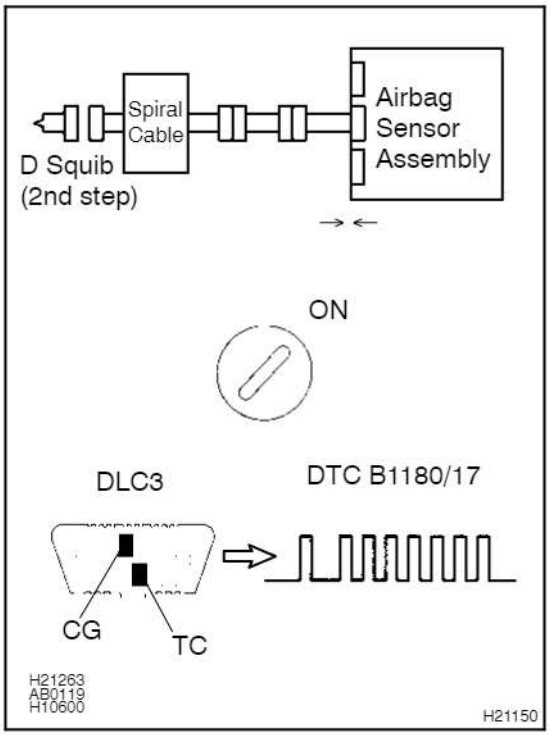
PREPARATION:
Release the airbag activation prevention mechanism built in the connector on the airbag sensor assembly side between the air bag sensor assembly and the steering wheel pad (D squib (2nd step)) (See page DI–432).
CHECK:
Measure the resistance between D2+ and D2– of the black connector on the steering wheel pad (D squib (2nd step)) side between the airbag sensor assembly and the steering wheel pad (D squib (2nd step)).
OK:
Resistance: 1 MΩ or Higher

NG → **Go to step 6.**

OK

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4	**Check airbag sensor assembly.**



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1180/17 is not output.

HINT:

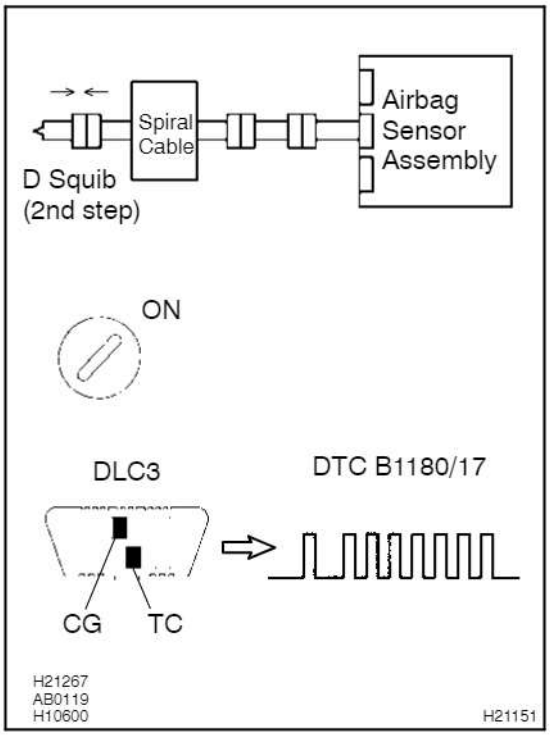
Codes other than code B1180/17 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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5	Check D squib (2nd step).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib (2nd step)) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1180/17 is not output.

HINT:
Codes other than code B1180/17 may be output at this time, but they are not relevant to this check.

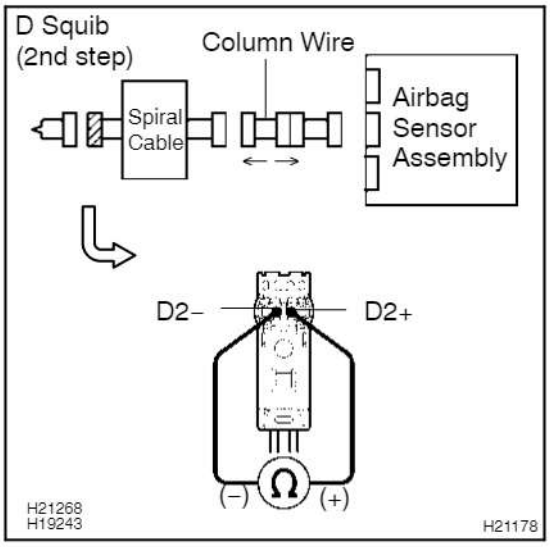
NG	Replace steering wheel pad (D squib (2nd step)).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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6	Check spiral cable.



PREPARATION:

(a) Disconnect the spiral cable connector from the column wire.

(b) Release the airbag activation prevention mechanism built in the spiral cable connector on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between D2+ and D2– of the black spiral cable connector on the steering wheel pad (D squib (2nd step)) side.

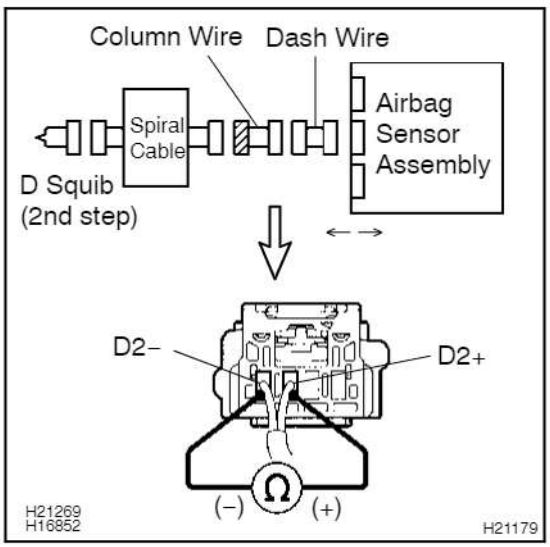
OK:

Resistance: 1 MΩ or Higher

NG	Replace spiral cable.

OK

7	Check column wire.



PREPARATION:

Release the airbag activation prevention mechanism built in the column wire connector on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between D2+ and D2– of the column wire connector on the spiral cable side.

OK:

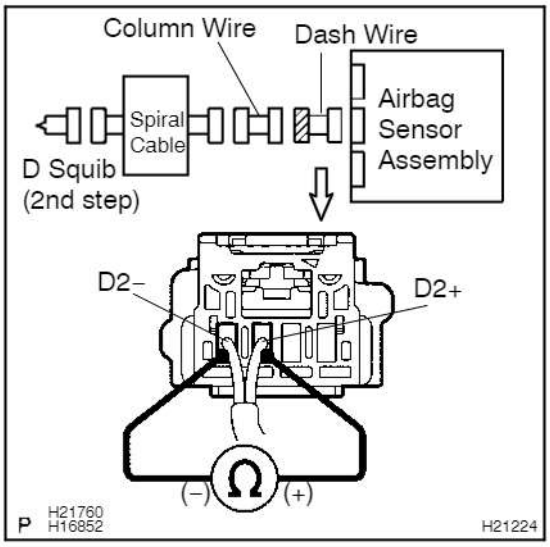
Resistance: 1 MΩ or Higher

NG	Repair or replace column wire.

OK

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8	Check dash wire.



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the dash wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between D2+ and D2– of the dash wire connector on the column wire side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIAU0-01

DTC	B1181/18	Open in D Squib (2nd step) Circuit

CIRCUIT DESCRIPTION

The D squib (2nd step) circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad. It causes the airbag to deploy when the airbag deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1181/18 is recorded when an open is detected in the D squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1181/18	• Open in D squib (2nd step) circuit • D squib (2nd step) malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib (2nd step)) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

HINT:
DTC B1181/18 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

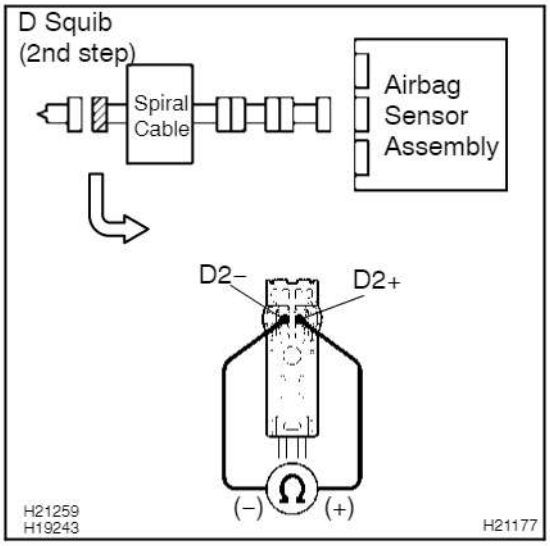
WIRING DIAGRAM

See page DI–719.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check D squib (2nd step) circuit.**



CHECK:
Measure the resistance between D2+ and D2– of the black connector on the steering wheel pad (D squib (2nd step)) side between the airbag sensor assembly and the steering wheel pad (D squib (2nd step)).

OK:

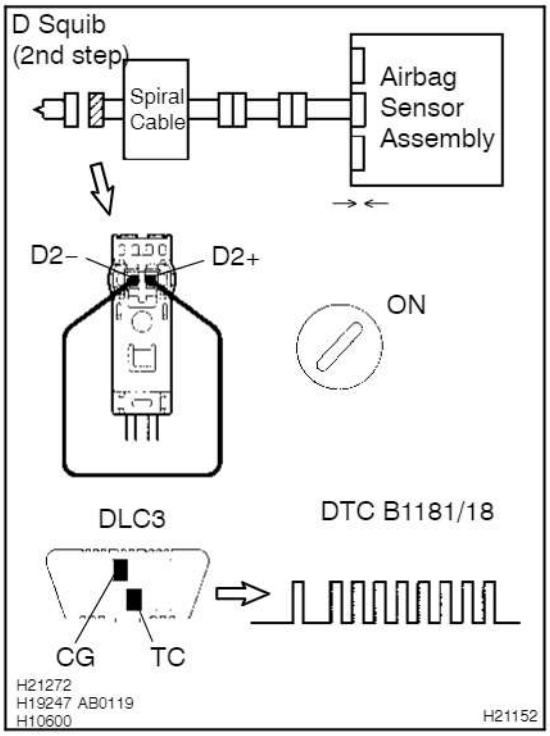
Resistance: Below 1 Ω

NG	**Go to step 6.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect D2+ and D2– of the black connector on the steering wheel pad (D squib (2nd step)) side between the airbag sensor assembly and the steering wheel pad (D squib (2nd step)).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1181/18 is not output.

HINT:

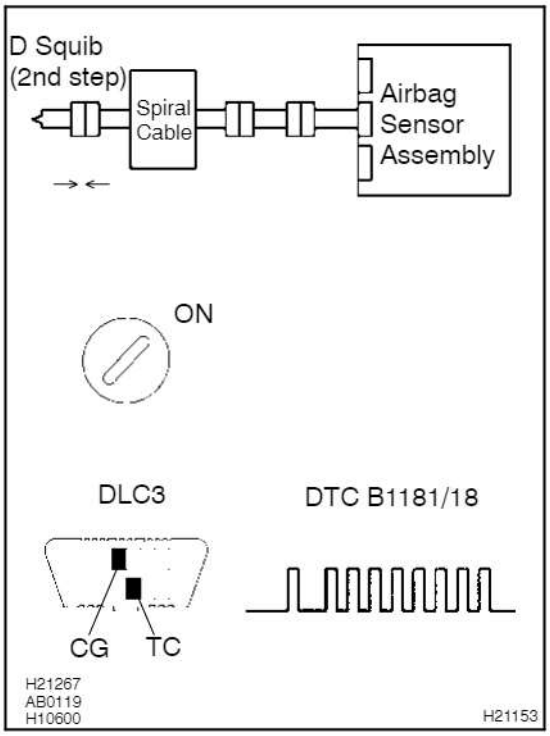
Codes other than code B1181/18 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	**Check D squib (2nd step).**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib (2nd step)) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1181/18 is not output.

HINT:
Codes other than code B1181/18 may be output at this time, but they are not relevant to this check.

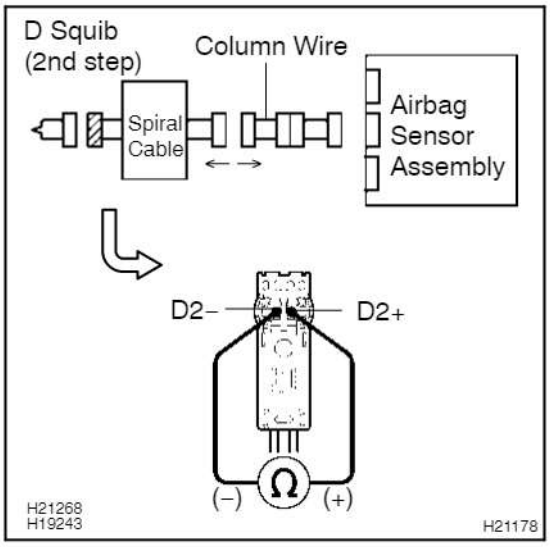
NG → **Replace steering wheel pad (D squib (2nd step)).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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5	Check spiral cable.

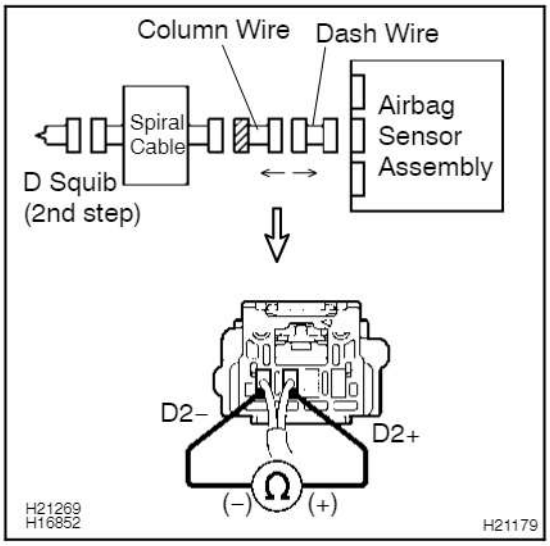


PREPARATION:
Disconnect the spiral cable connector from the column wire.
CHECK:
Measure the resistance between D2+ and D2– of the black spiral cable connector on the steering wheel pad (D squib (2nd step)) side.
OK:
Resistance: Below 1 Ω

NG → **Replace spiral cable.**

OK

6	Check column wire.



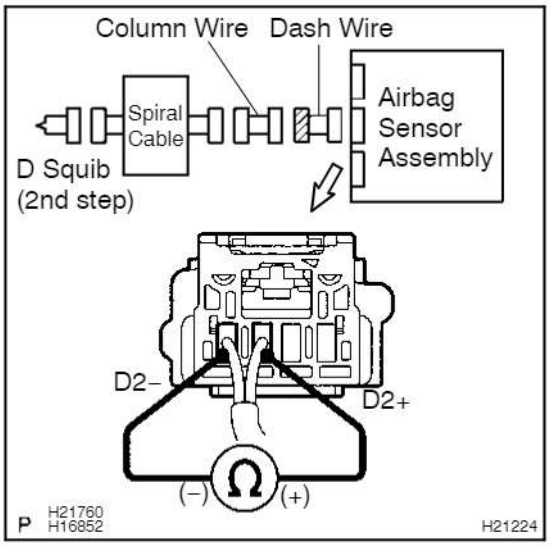
PREPARATION:
Disconnect the column wire connector from the dash wire.
CHECK:
Measure the resistance between D2+ and D2– of the column wire connector on the spiral cable side.
OK:
Resistance: Below 1 Ω

NG → **Repair or replace column wire.**

OK

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7	**Check dash wire.**



CHECK:

Measure the resistance between D2+ and D2– of the dash wire connector on the column wire side.

OK:

Resistance: Below 1 Ω

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIAU1–01

DTC	B1182/19	Short in D Squib (2nd step) Circuit (to Ground)

CIRCUIT DESCRIPTION

The D squib (2nd step) circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B0102/11 is recorded when a ground short is detected in the D squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1182/19	• Short in D squib (2nd step) circuit (to ground) • D squib (2nd step) malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib (2nd step)) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

HINT:
DTC B1182/19 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM

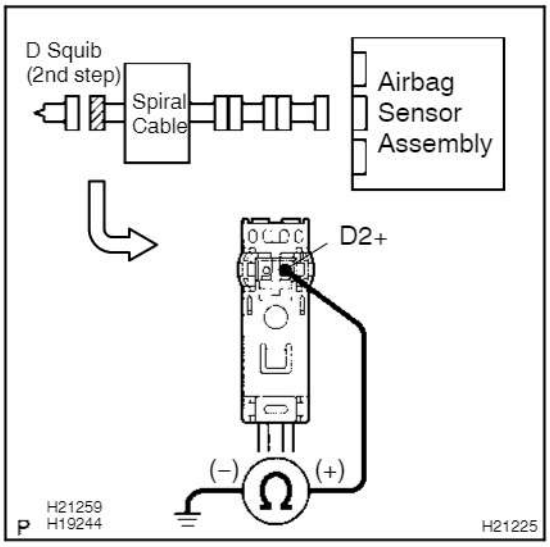
See page DI–719.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–432).**

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2	**Check D squib (2nd step) circuit.**



CHECK:

Measure the resistance between the body ground and D2+ of the black connector on the steering wheel pad (D squib (2nd step)) side between the airbag sensor assembly and the steering wheel pad (D squib (2nd step)).

OK:

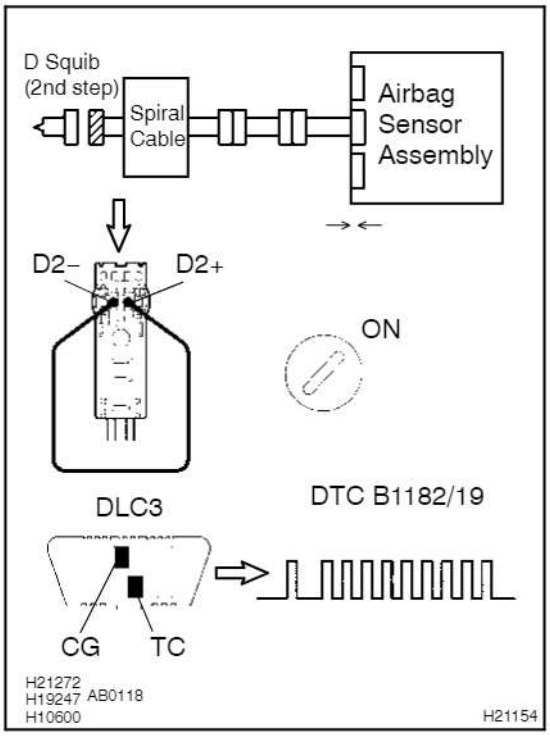
Resistance: 1 MΩ or Higher

NG → **Go to step 5.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect D2+ and D2– of the black connector on the steering wheel pad (D squib (2nd step)) side between the airbag sensor assembly and the steering wheel pad (D squib (2nd step)).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1182/19 is not output.

HINT:

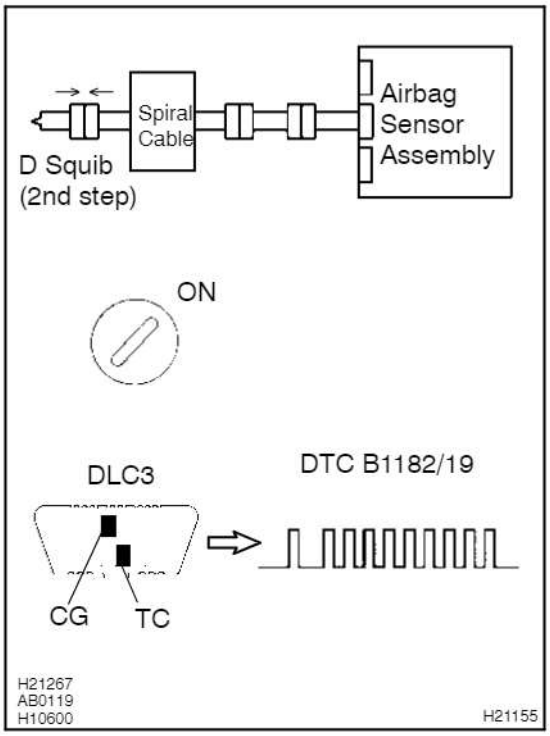
Codes other than code B1182/19 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check D squib (2nd step).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib (2nd step)) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1182/19 is not output.

HINT:
Codes other than code B1182/19 may be output at this time, but they are not relevant to this check.

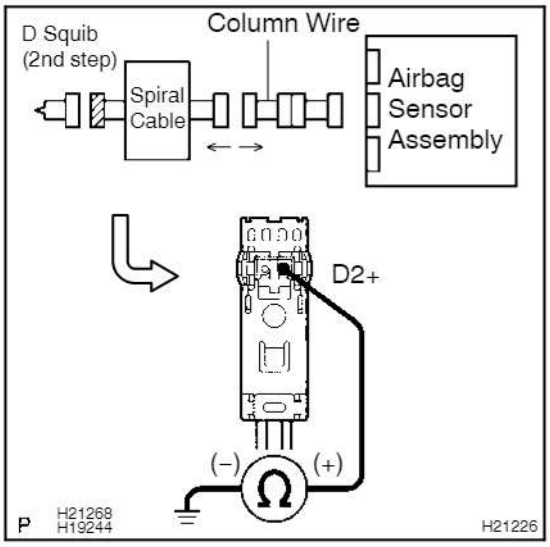
NG → **Replace steering wheel pad (D squib (2nd step)).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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5	Check spiral cable.

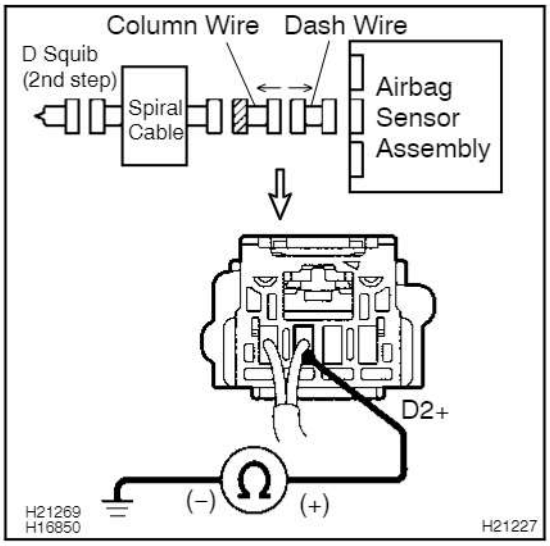


PREPARATION:
Disconnect the spiral cable connector from the column wire.
CHECK:
Measure the resistance between the body ground and D2+ of the black spiral cable connector on the steering wheel pad (D squib (2nd step)) side.
OK:
Resistance: 1 MΩ or Higher

NG → **Replace spiral cable.**

OK

6	Check column wire.



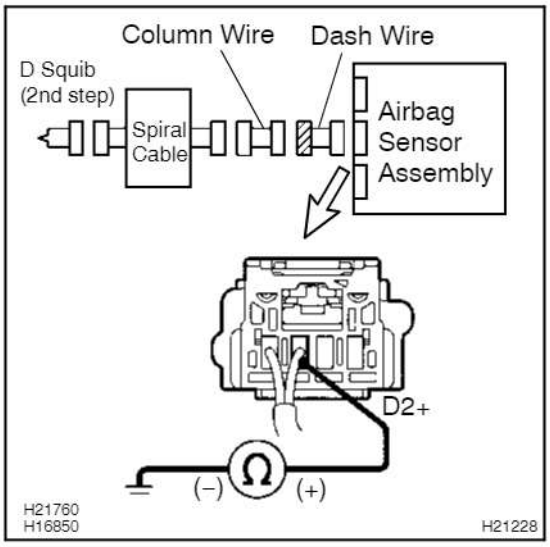
PREPARATION:
Disconnect the column wire connector from the dash wire.
CHECK:
Measure the resistance between the body ground and D2+ of the column wire connector on the spiral cable side.
OK:
Resistance: 1 MΩ or Higher

NG → **Repair or replace column wire.**

OK

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7	**Check dash wire.**



CHECK:

Measure the resistance between the body ground and D2+ of the dash wire connector on the column wire side.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAU2-01

DTC	B1183/22	Short in D Squib (2nd step) Circuit (to B+)

CIRCUIT DESCRIPTION

The D squib (2nd step)circuit consists of the airbag sensor assembly, the spiral cable and the steering wheel pad.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1183/22 is recorded when a B+ short is detected in the D squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1183/22	• Short in D squib (2nd step) circuit (to B+) • D squib (2nd step) malfunction • Spiral cable malfunction • Airbag sensor assembly malfunction	• Steering wheel pad (D squib (2nd step)) • Spiral cable • Airbag sensor assembly • Dash wire • Column wire

HINT:
DTC B1183/22 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM

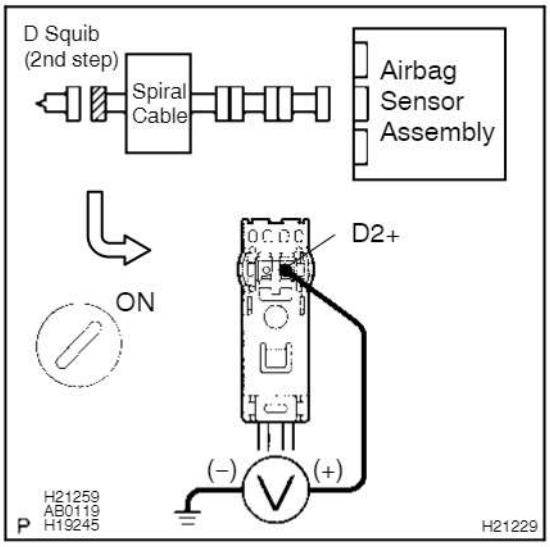
See page DI–719.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

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2	Check D squib (2nd step) circuit.



PREPARATION:

Connect the negative (–) terminal cable to the battery and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and D2+ of the black connector on the steering wheel pad (D squib (2nd step)) side between the airbag sensor assembly and the steering wheel pad (D squib (2nd step)).

OK:

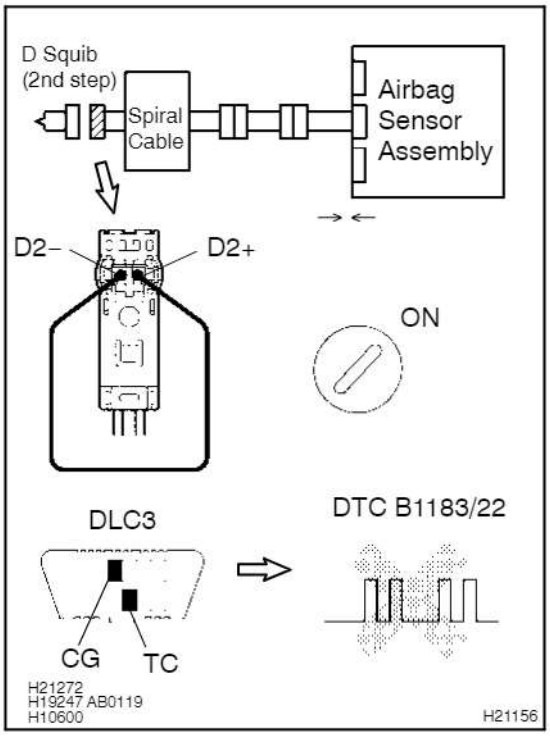
Voltage: Below 1 V

NG	Go to step 5.

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect D2+ and D2– of the black connector on the steering wheel pad (D squib (2nd step)) side between the airbag sensor assembly and the steering wheel pad (D squib (2nd step)).
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1183/22 is not output.

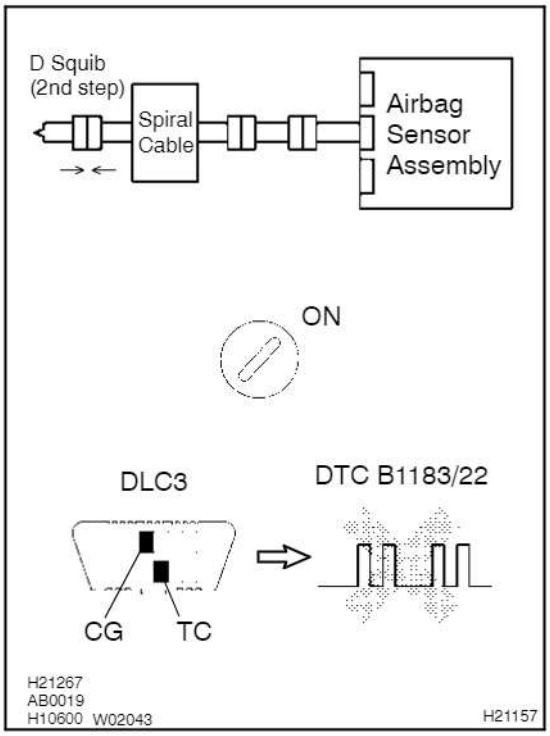
HINT:
Codes other than code B1183/22 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check D squib (2nd step).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the steering wheel pad (D squib (2nd step)) to the spiral cable.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1183/22 is not output.

HINT:
Codes other than code B1183/22 may be output at this time, but they are not relevant to this check.

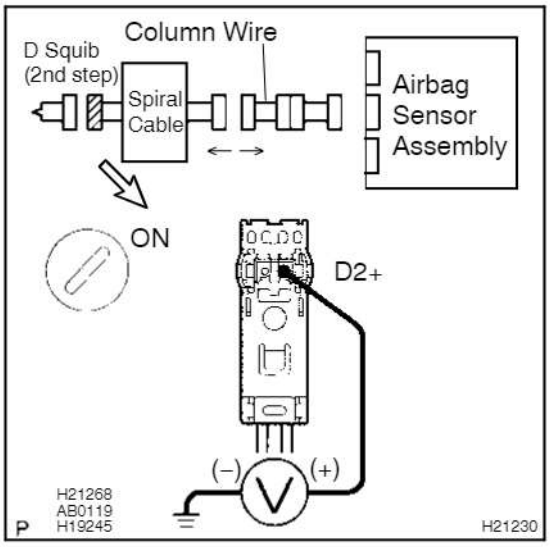
NG	Replace steering wheel pad (D squib (2nd step)).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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5	Check spiral cable.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the spiral cable connector from the column wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and D2+ of the black spiral cable connector on the steering wheel pad (D squib (2nd step)) side.

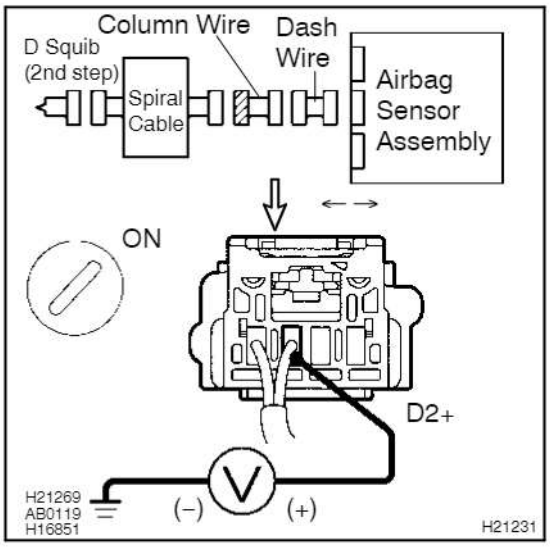
OK:

Voltage: Below 1 V

NG	Replace spiral cable.

OK

6	Check column wire.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the column wire connector from the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and D2+ of the column wire connector on the spiral cable side.

OK:

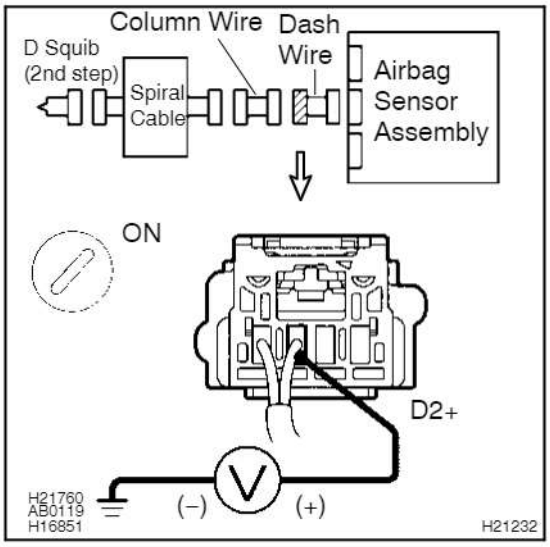
Voltage: Below 1 V

NG	Repair or replace column wire.

OK

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7	**Check dash wire.**



CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and D2+ of the dash wire connector on the column wire side.

OK:

Voltage: Below 1 V

NG → **Repair or replace dash wire.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAUS–01

DTC	B1185/57	Short in P Squib (2nd step) Circuit

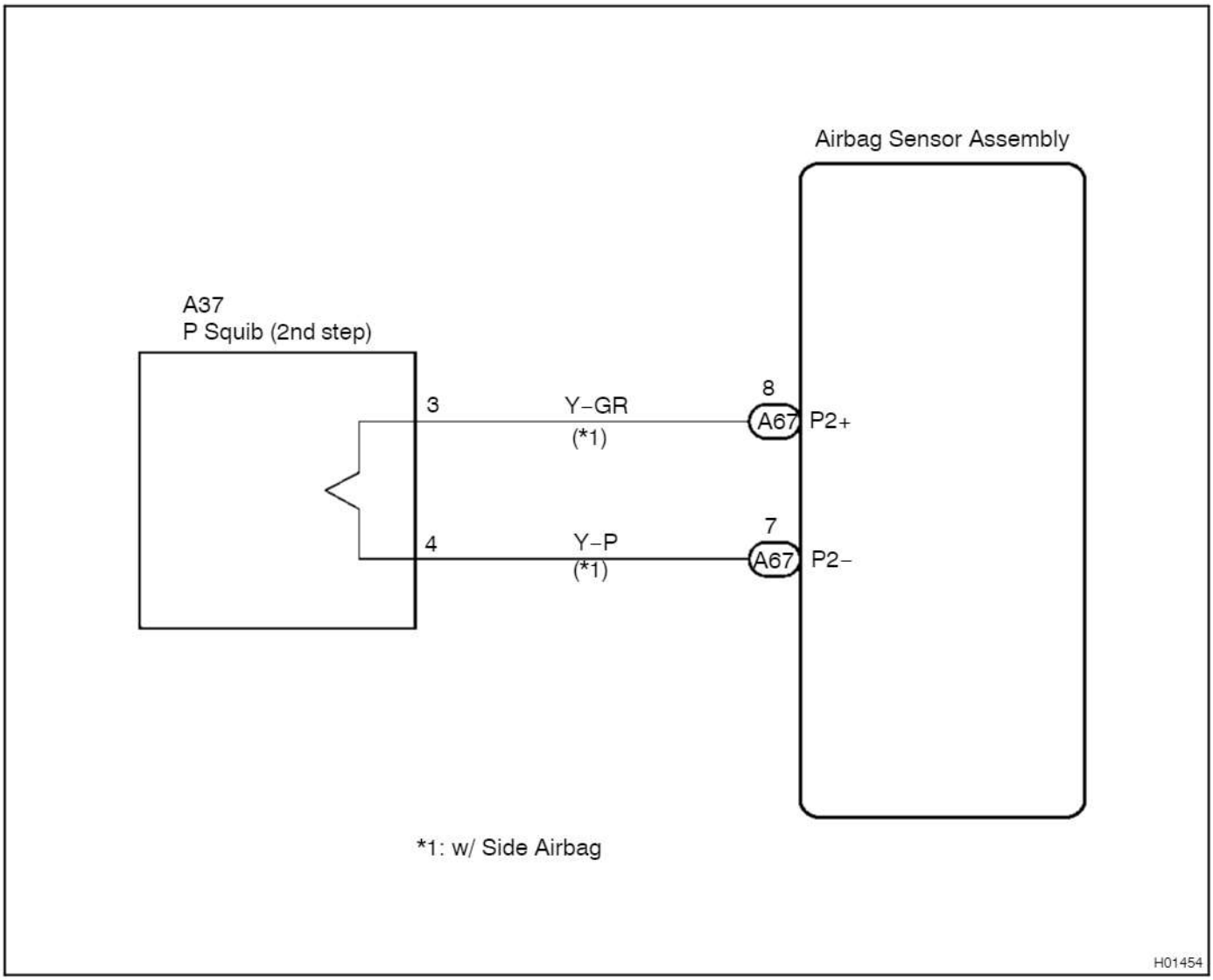
CIRCUIT DESCRIPTION

The P squib (2nd step) circuit consists of the airbag sensor assembly and the front passenger airbag assembly. It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1185/57 is recorded when a short is detected in the P squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1185/57	• Short in P squib (2nd step) circuit • P squib (2nd step) malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib (2nd step)) • Airbag sensor assembly • Dash wire

HINT:
DTC B1185/57 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM

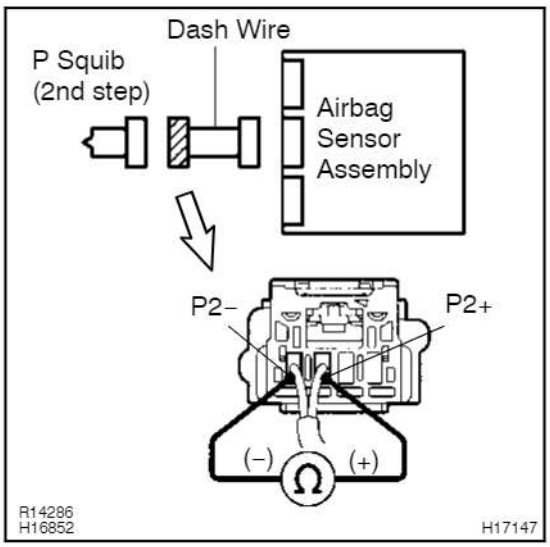


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INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check dash wire (P squib (2nd step) circuit).**



PREPARATION:

Release the airbag activation prevention mechanism built in the connector of the dash wire on the airbag sensor assembly side (See page DI–432).

CHECK:

Measure the resistance between P2+ and P2– of the dash wire connector on the front passenger airbag assembly (P squib (2nd step)) side.

OK:

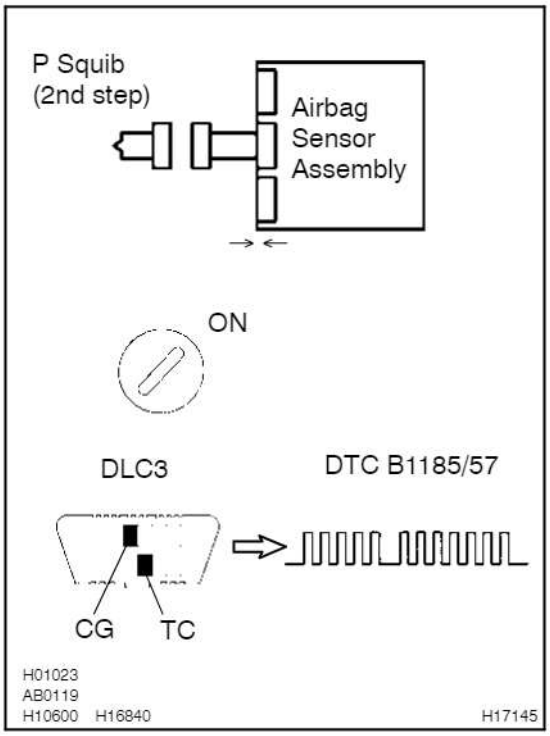
Resistance: 1 MΩ or Higher

NG	**Repair or replace dash wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1185/57 is not output.

HINT:

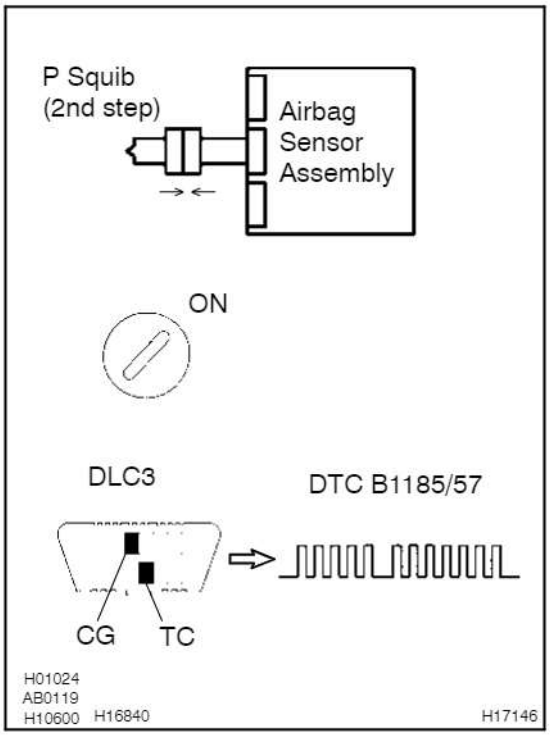
Codes other than code B1185/57 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	**Check P squib (2nd step).**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib (2nd step)) connector.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1185/57 is not output.

HINT:

Codes other than code B1185/57 may be output at this time, but they are not relevant to this check.

NG → **Replace front passenger airbag assembly (P squib (2nd step)).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIAU4–01

DTC	B1186/58	Open in P Squib (2nd step) Circuit

CIRCUIT DESCRIPTION

The P squib (2nd step) circuit consists of the airbag sensor assembly and the front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1186/58 is recorded when an open is detected in the P squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1186/58	• Open in P squib (2nd step) circuit • P squib (2nd step) malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib (2nd step)) • Airbag sensor assembly • Dash wire

HINT:
DTC B1186/58 is indicated only for the vehicle equipped with the side airbag and without the side airbag (daul stage airbag).

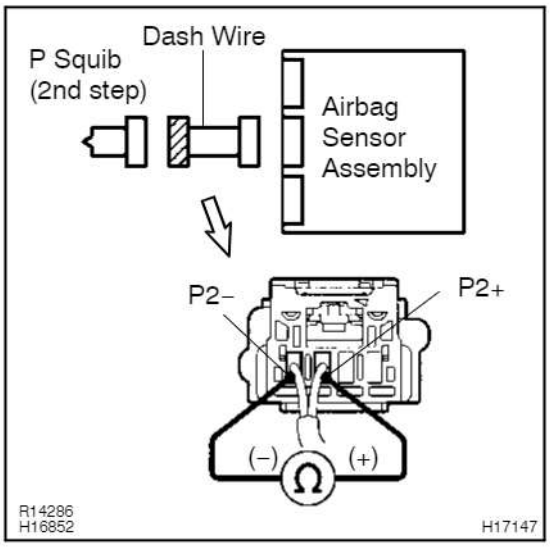
WIRING DIAGRAM

See page DI–742.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Check dash wire (P squib (2nd step) circuit).**



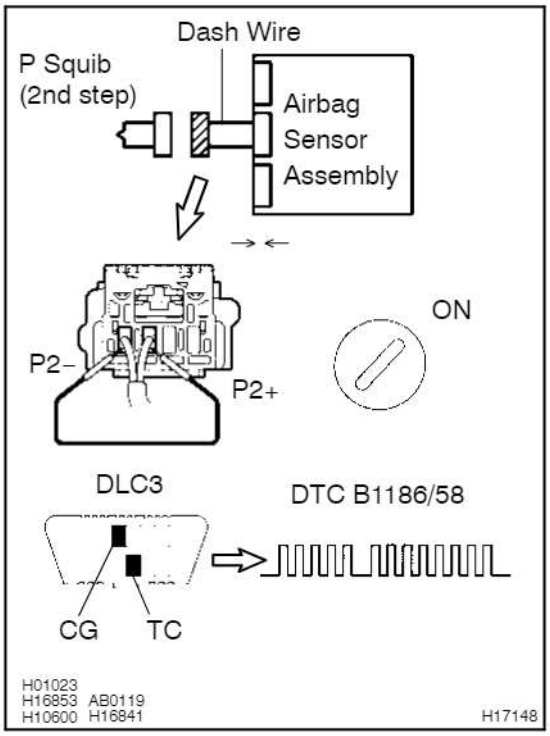
CHECK:
Measure the resistance between P2+ and P2– of the dash wire connector on the front passenger airbag assembly (P squib (2nd step)) side.
OK:
Resistance: Below 1 Ω

NG → **Repair or replace dash wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect P2+ and P2– of the dash wire connector on the front passenger airbag assembly (P squib (2nd step)) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1186/58 is not output.

HINT:

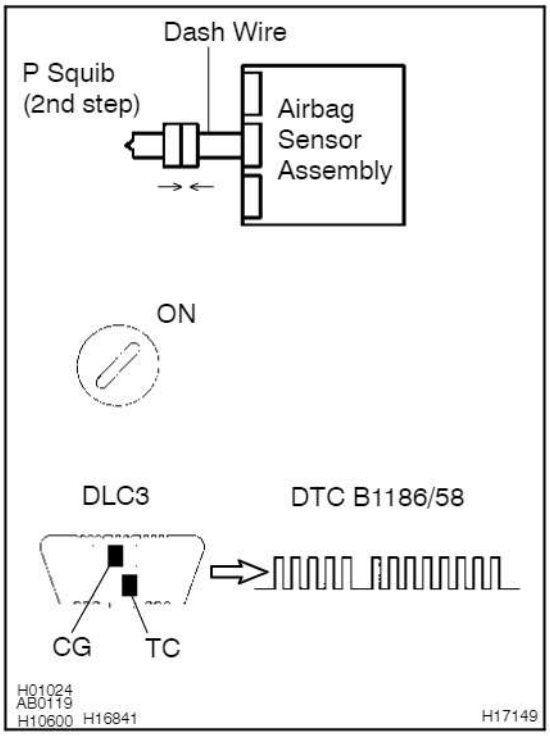
Codes other than code B1186/58 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	Check P squib (2nd step).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib (2nd step)) to the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1186/58 is not output.

HINT:

Codes other than code B1186/58 may be output at this time, but they are not relevant to this check.

NG	Replace front passenger airbag assembly (P squib (2nd step)).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DTC	B1187/55	Short in P Squib (2nd step) Circuit (to Ground)

CIRCUIT DESCRIPTION

The P squib (2nd step) circuit consists of the airbag sensor assembly and the front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1187/55 is recorded when ground short is detected in the P squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1187/55	• Short in P squib (2nd step) circuit (to ground) • P squib (2nd step) malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib (2nd step)) • Airbag sensor assembly • Dash wire

HINT:
DTC B1187/55 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM

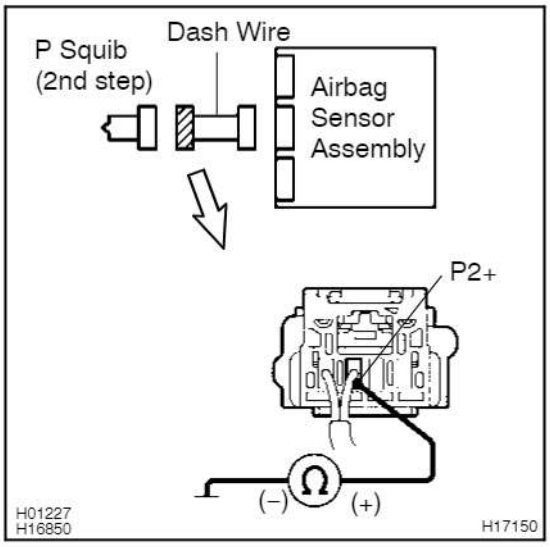
See page DI–742.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

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2	Check dash wire(P squib (2nd step) circuit).



CHECK:

Measure the resistance between the body ground and P2+ of the dash wire connector on the front passenger airbag assembly (P squib (2nd step)) side.

OK:

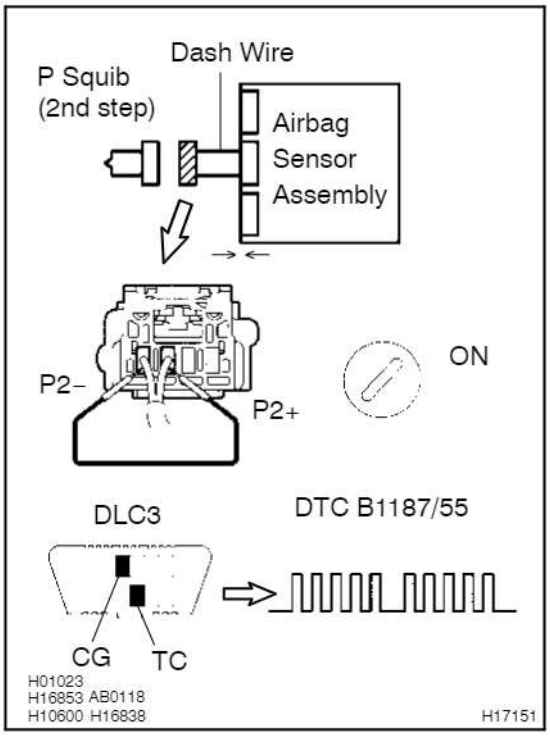
Resistance: 1 MΩ or Higher

NG → **Repair or replace dash wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect P2+ and P2– of the dash wire connector on the front passenger airbag assembly (P squib (2nd step)) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1187/55 is not output.

HINT:

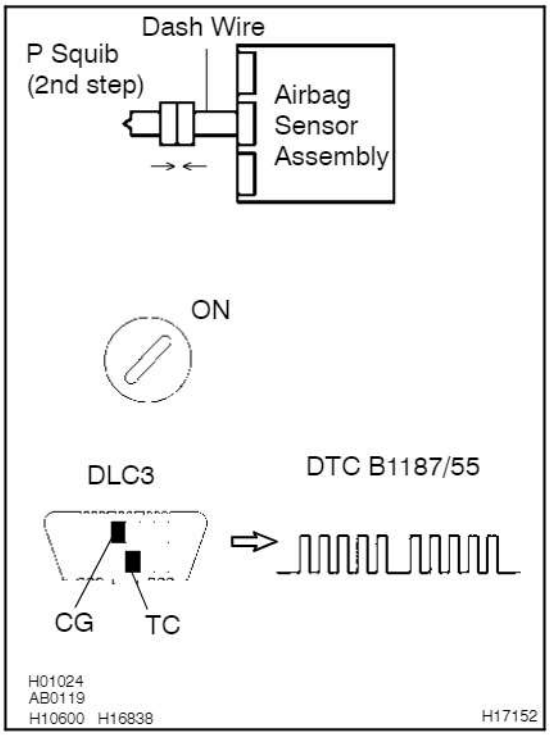
Codes other than code B1187/55 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

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4	Check P squib (2nd step).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib (2nd step)) to the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1187/55 is not output.

HINT:
Codes other than code B1187/55 may be output at this time, but they are not relevant to this check.

NG → **Replace front passenger airbag assembly (P squib (2nd step)).**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAU6–01

DTC	B1188/56	Short in P Squib (2nd step) Circuit (to B+)

CIRCUIT DESCRIPTION

The P squib (2nd step) circuit consists of the airbag sensor assembly and the front passenger airbag assembly.
It causes the SRS to deploy when the SRS deployment conditions are satisfied.
For details of the function of each component, see OPERATION on page RS–3.
DTC B1188/56 is recorded when a B+ short is detected in the P squib (2nd step) circuit.

DTC No.	DTC Detecting Condition	Trouble Area
B1188/56	• Short in P squib (2nd step) circuit (to B+) • P squib (2nd step) malfunction • Airbag sensor assembly malfunction	• Front passenger airbag assembly (P squib (2nd step)) • Airbag sensor assembly • Dash wire

HINT:
DTC B1188/56 is indicated only for the vehicle equipped with the side airbag and without the side airbag (dual stage airbag).

WIRING DIAGRAM

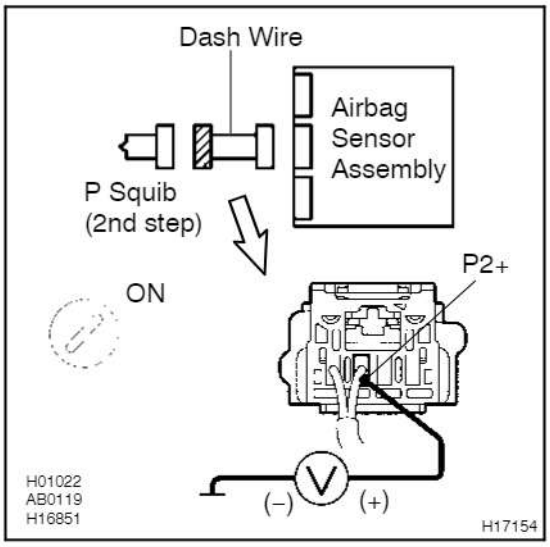
See page DI–742.

INSPECTION PROCEDURE

1	**Prepare for inspection (See step 1 on page DI–764).**

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2	Check dash wire (P squib (2nd step) circuit).



PREPARATION:

Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and P2+ of the dash wire connector on the front passenger airbag assembly (P squib (2nd step)) side.

OK:

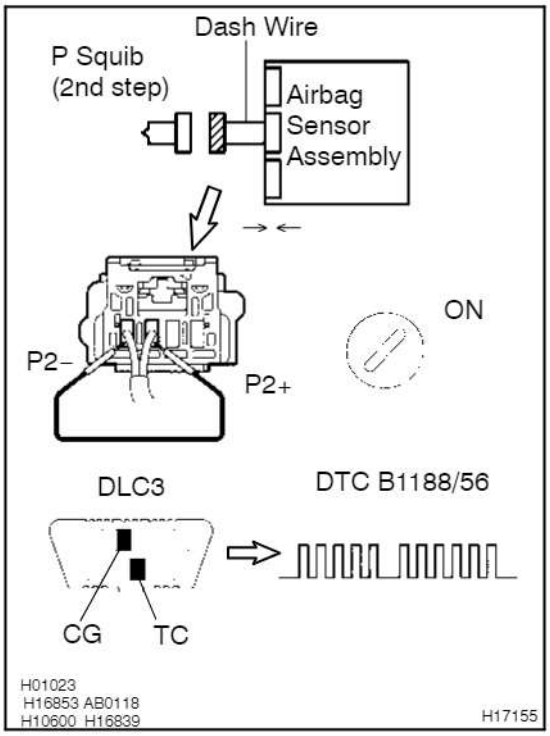
Voltage: Below 1 V

NG → **Repair or replace dash wire.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the connector to the airbag sensor assembly.
(b) Using a service wire, connect P2+ and P2– of the dash wire connector on the front passenger airbag assembly (P squib (2nd step)) side.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1188/56 is not output.

HINT:

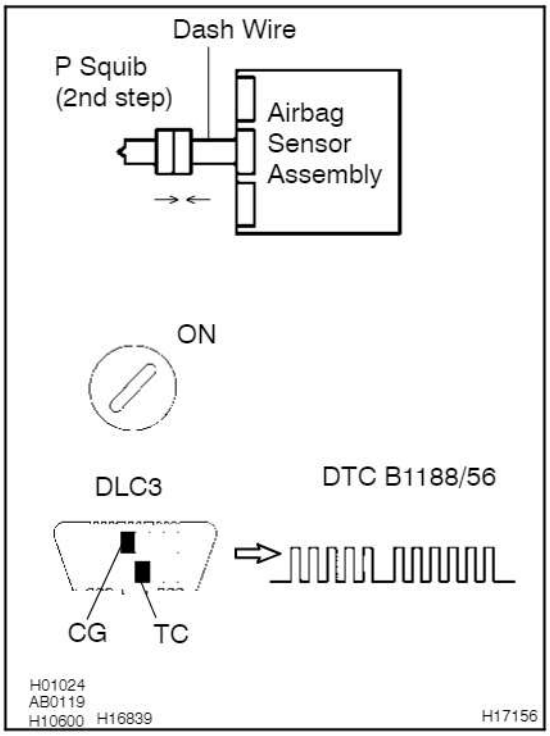
Codes other than code B1188/56 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

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4	Check P squib (2nd step).



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Connect the front passenger airbag assembly (P squib (2nd step)) to the dash wire.
(d) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B1188/56 is not output.

HINT:

Codes other than code B1188/56 may be output at this time, but they are not relevant to this check.

NG	Replace front passenger airbag assembly (P squib (2nd step)).

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check. If the malfunctioning part can not be detected by the simulation method, replace all SRS components including the wire harness.

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DIAU7–01

DTC	B1628/29	RSCA Off Switch Indicator Malfunction

CIRCUIT DESCRIPTION

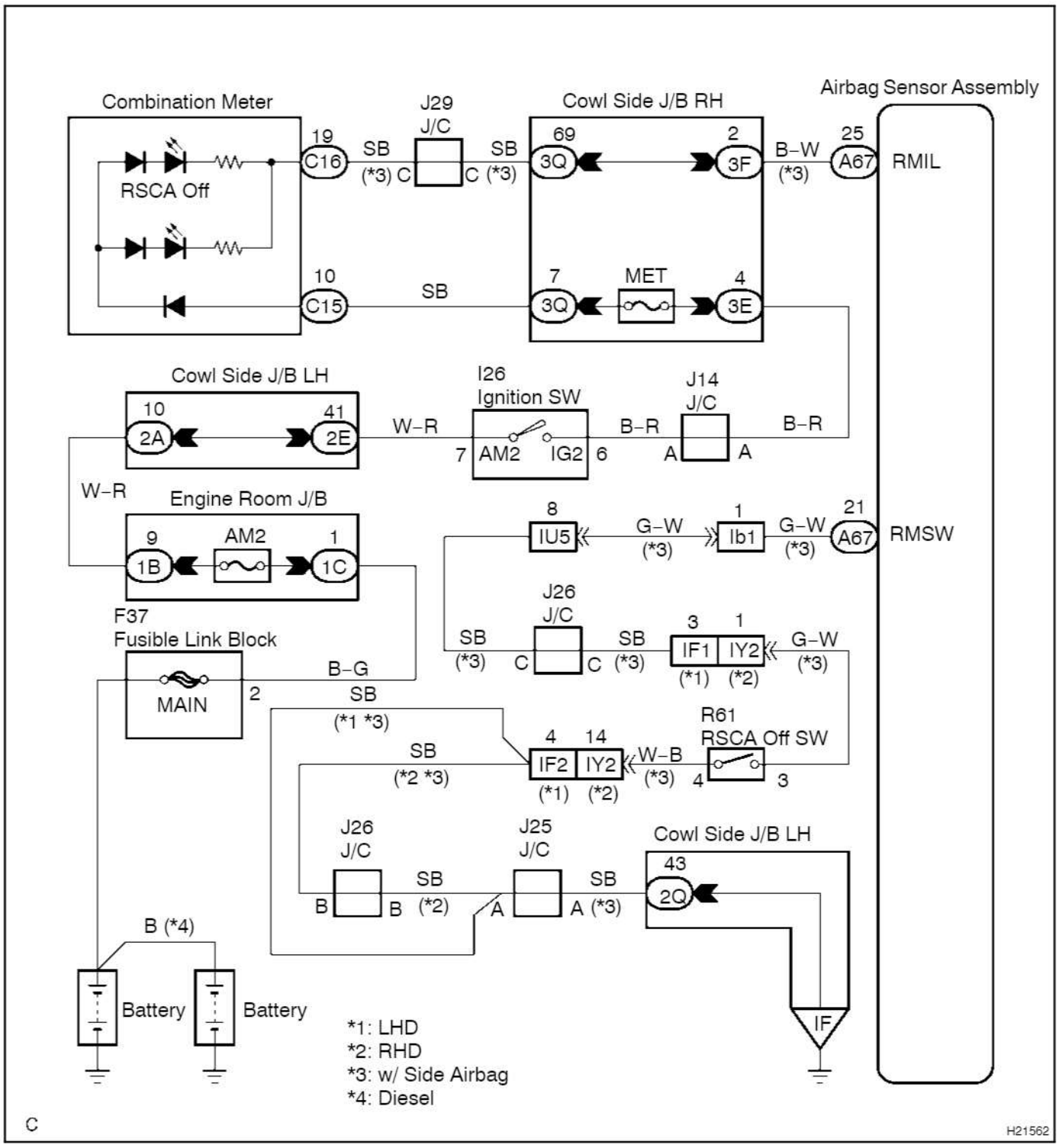
The RSCA switch is a mechanism that operates both right and left side of the curtain shield airbag assembly and the seat belt pretensioner when the airbag sensor assembly detects a roll–over.
The RSCA off switch indicator light is installed in the combination meter.
As operating the RSCA off switch, the indicator light comes on to inform the driver that the roll–over detection system is not working.
The initial setting of the roll–over detection system is on. It automatically operates every time the ignition switch is turned on.

DTC No.	DTC Detecting Condition	Trouble Area
B1628/29	• RSCA off indicator circuit malfunction	• RSCA off switch • Airbag sensor assembly • Dash wire • Instrument panel wire

HINT:
DTC B1628/29 is indicated only for the vehicle equipped with the side airbag.

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WIRING DIAGRAM



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INSPECTION PROCEDURE

The RSCA off indicator light remains on when the RSCA off switch is not operating (Remains ON).

1	**Does indicator light turn off?**

PREPARATION:

Disconnect the combination meter connector.

CHECK:

(a) Turn the ignition switch to ON.

(b) Check operation of RSCA off indicator light.

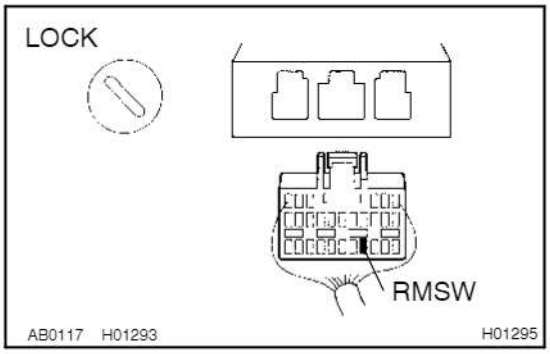
OK:

The indicator light does not light up.

NO → **Check combination meter (See page BE–33).**

YES

2	**Check wire harness.**



PREPARATION:

(a) Turn the ignition switch to LOCK.

(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.

(c) Disconnect the airbag sensor assembly connector.

CHECK:

Measure the resistance between the body ground and RMSW on the airbag sensor assembly side between the combination meter and airbag sensor assembly.

OK:

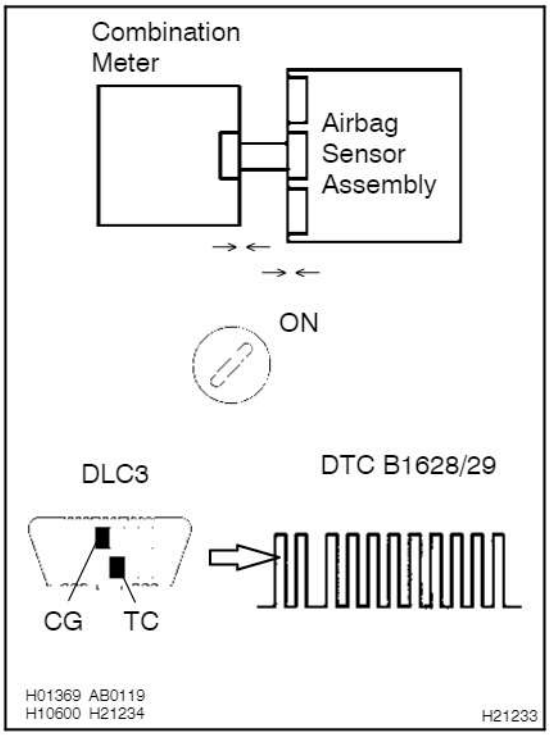
Resistance: 1 MΩ or Higher

NG → **Repair or replace wire harness.**

OK

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3	Check airbag sensor assembly.



PREPARATION:

(a) Connect the airbag sensor assembly connector.
(b) Connect the combination meter connector.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.
(b) Clear the DTC stored in memory (See page DI–432).
(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.
(d) Turn the ignition switch to ON, and wait at least for 10 seconds.
(e) Check the DTC (See page DI–432).

OK:

DTC B2628/29 is not output.

HINT:

Codes other than code B1628/29 may be output at this time, but they are not relevant to this check.

NG	Replace airbag sensor assembly.

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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The RSCA off indicator light does not come on when the RSCA off switch is operating (Remains OFF).

1	**Check voltage of combination meter.**

PREPARATION:
Disconnect the combination meter connector.
CHECK:
Measure the voltage of the combination meter.
OK:
Voltage: 10 – 14 V

NG → **Check combination meter (See page BE–33).**

OK

2	**Check wire harness.**

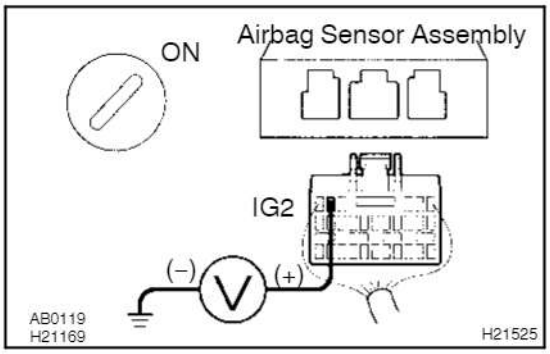
PREPARATION:
Disconnect the combination meter connector.
CHECK:
Measure the voltage between the body ground and RMSW on the combination meter side between the air-bag sensor assembly and the combination meter.
OK:
Voltage: Below 1 V

NG → **Repair or replace wire harness.**

OK

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3	Check wire harness.



PREPARATION:

(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(b) Connect the combination meter connector.
(c) Turn the ignition switch to LOCK, and wait at least for 90 seconds.
(d) Disconnect the airbag sensor assembly connector.
(e) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and IG2 on the airbag sensor assembly side.

OK:

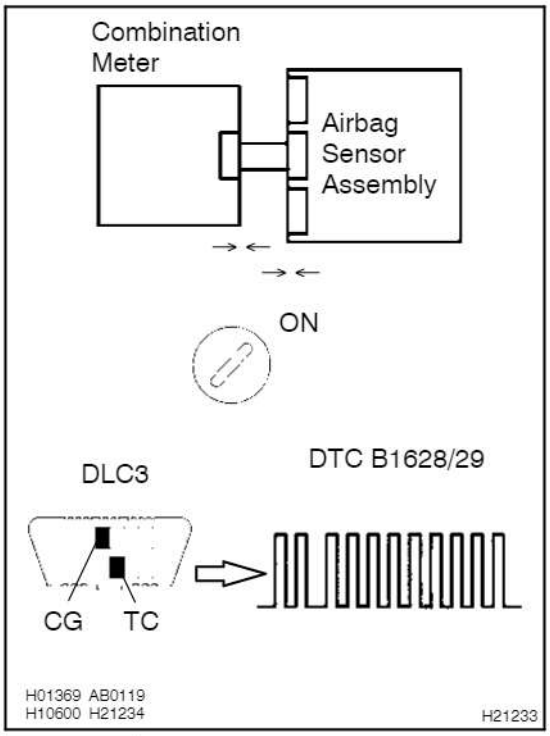
Voltage: 10 – 14 V

NG	Repair or replace wire harness.

OK

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4	**Check airbag sensor assembly.**



PREPARATION:

Connect the airbag sensor assembly connector.

CHECK:

(a) Turn the ignition switch to ON, and wait at least for 10 seconds.

(b) Clear the DTC stored in memory (See page DI–432).

(c) Turn the ignition switch to LOCK, and wait at least for 10 seconds.

(d) Turn the ignition switch to ON, and wait at least for 10 seconds.

(e) Check the DTC (See page DI–432).

OK:

DTC B1628/29 is not output.

HINT:

Codes other than code B1628/29 may be output at this time, but they are not relevant to this check.

NG → **Replace airbag sensor assembly.**

OK

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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DIAU8–01

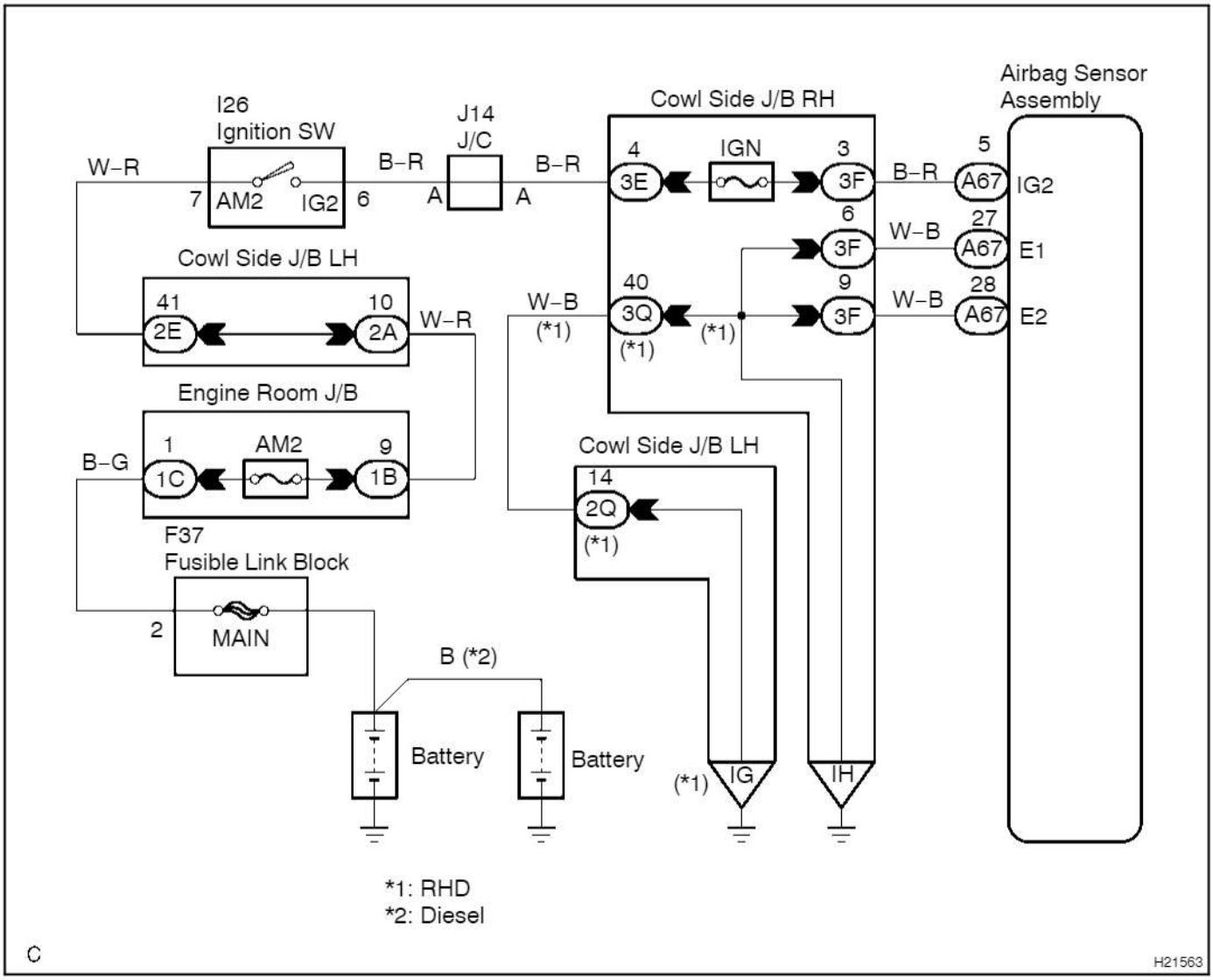
DTC	Normal	Source Voltage Drop

CIRCUIT DESCRIPTION

The SRS is equipped with a voltage–increase circuit (DC–DC converter) in the airbag sensor assembly in case the source voltage drops.
When the battery voltage drops, the voltage–increase circuit (DC–DC converter) functions to increase the voltage of the SRS to normal voltage.
The diagnosis system malfunction display for this circuit is differ from the other circuits in that when the SRS warning light remains on and the DTC shows a normal code, source voltage drop is indicated.
Malfunction in this circuit is not recorded in the airbag sensor assembly, and when the source voltage returns to normal, the SRS warning light automatically goes off.

DTC No.	Diagnosis
(Normal)	Source voltage drop

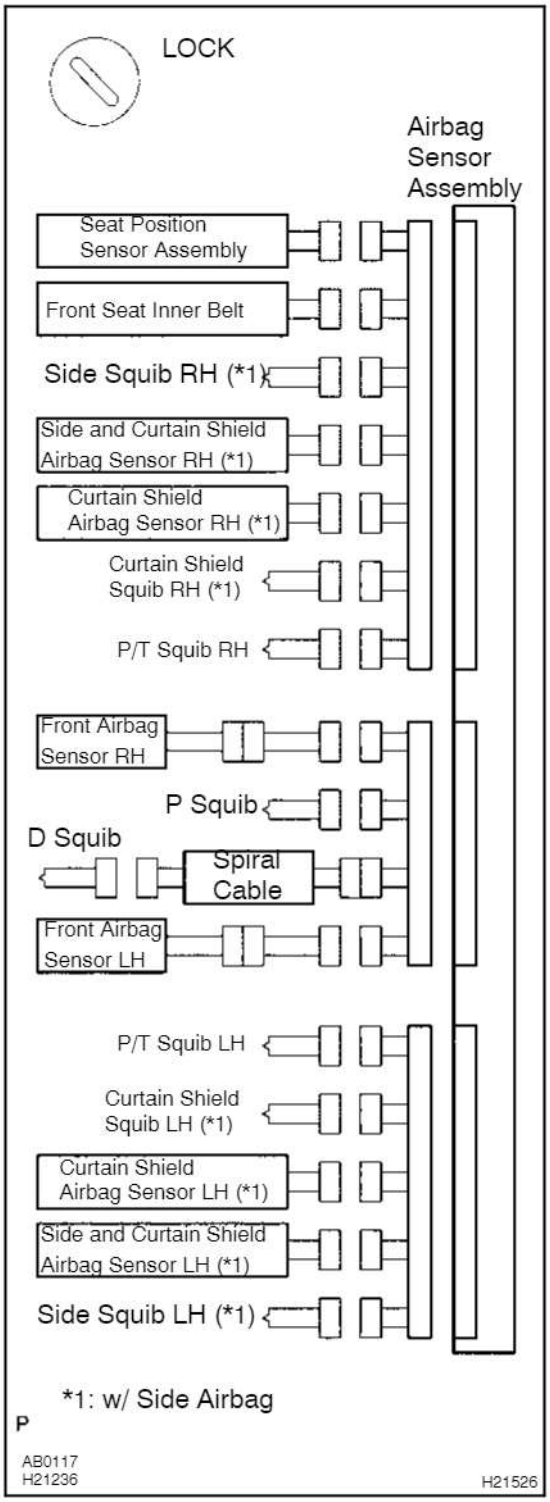
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Prepare for inspection.**



PREPARATION:

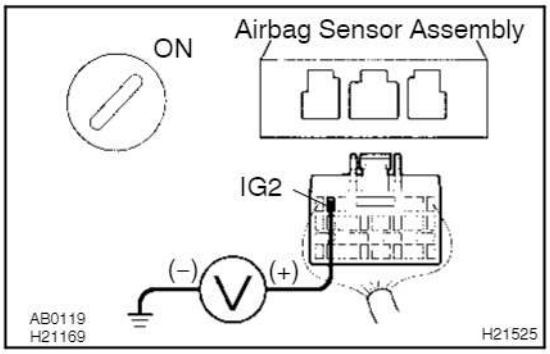
(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(b) Remove the steering wheel pad (See page SR–7).
(c) Disconnect the connector of the front passenger airbag assembly (See page RS–32).
(d) w/ Side airbag:
Disconnect the connector of the side airbag assembly RH and LH (See page RS–45 and RS–60).
(e) w/ Side airbag:
Disconnect the connector of the curtain shield airbag assembly RH and LH (See page RS–70).
(f) Disconnect the connector of the seat belt pretensioner RH and LH (See Pub. No. RM616E on page BO–212).
(g) Disconnect the connectors of the airbag sensor assembly (See page RS–81).
(h) Disconnect the connector of the front airbag sensor RH and LH (See page RS–86).
(i) w/ Side airbag:
Disconnect the connector of the side and curtain shield airbag sensor assembly RH and LH (See page RS–91).
(j) w/ Side airbag:
Disconnect the connector of the curtain shield airbag sensor assembly RH and LH (See page RS–97).
(k) Disconnect the connector of the seat position sensor assembly (See page RS–102).
(l) Disconnect the front seat inner belt LH connector (See page BO–131).

CAUTION:

Store the steering wheel pad, front passenger airbag assembly, side airbag assembly and curtain shield airbag assembly with the front surface facing upward.

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2	Check source voltage.



PREPARATION:

Connect the negative (–) terminal cable to the battery.

CHECK:

(a) Turn the ignition switch to ON.

(b) Measure the voltage between the body ground and IG2 on the airbag sensor assembly and operate electric system (defogger, wiper, headlight, heater blower, etc.).

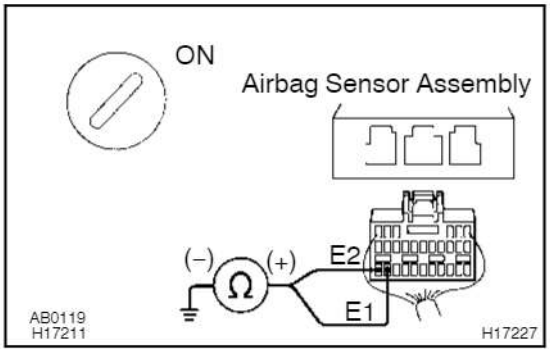
OK:

Voltage: 10 – 14 V

NG	Check harness between battery and airbag sensor assembly, and check battery and charging system.

OK

3	Check airbag sensor assembly connector.



CHECK:

Measure the resistance between the body ground and each of E1 and E2 of the airbag sensor assembly connector.

OK:

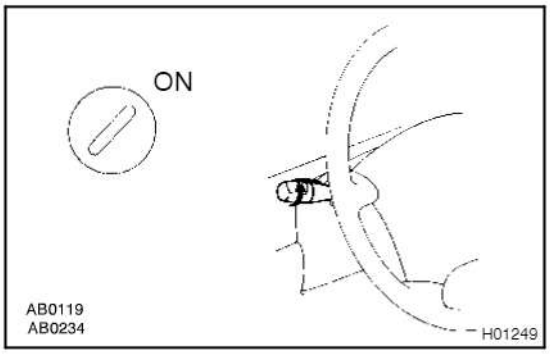
Resistance: 0 Ω (Continuity)

NG	Repair or replace airbag sensor assembly connector.

OK

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4	Does SRS warning light turn off?



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Connect the steering wheel pad connector.
(c) Connect the front passenger airbag assembly connector.
(d) w/ Side airbag:
Connect the side airbag assembly connectors.
(e) Connect the seat belt pretensioner connectors.
(f) Connect the airbag sensor assembly connectors.
(g) Connect the front airbag sensor connectors.
(h) w/ Side airbag:
Connect the side and curtain shield airbag sensor assembly connectors.
(i) w/ Side airbag:
Connect the curtain shield airbag assembly connectors.
(j) w/ Side airbag:
Connect the curtain shield airbag sensor assembly connectors.
(k) Connect the seat position sensor assembly connector.
(l) Connect the front seat inner belt LH connector.

CHECK:

(a) Turn the ignition switch to ON.
(b) Operate electric system (defogger, wiper, headlight, heater blower, etc.) and check that SRS warning light goes off.

NO → **Check for DTCs. If a DTC is output, perform troubleshooting for the DTC. If a normal code is output, replace airbag sensor assembly.**

YES

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use the simulation method to check.

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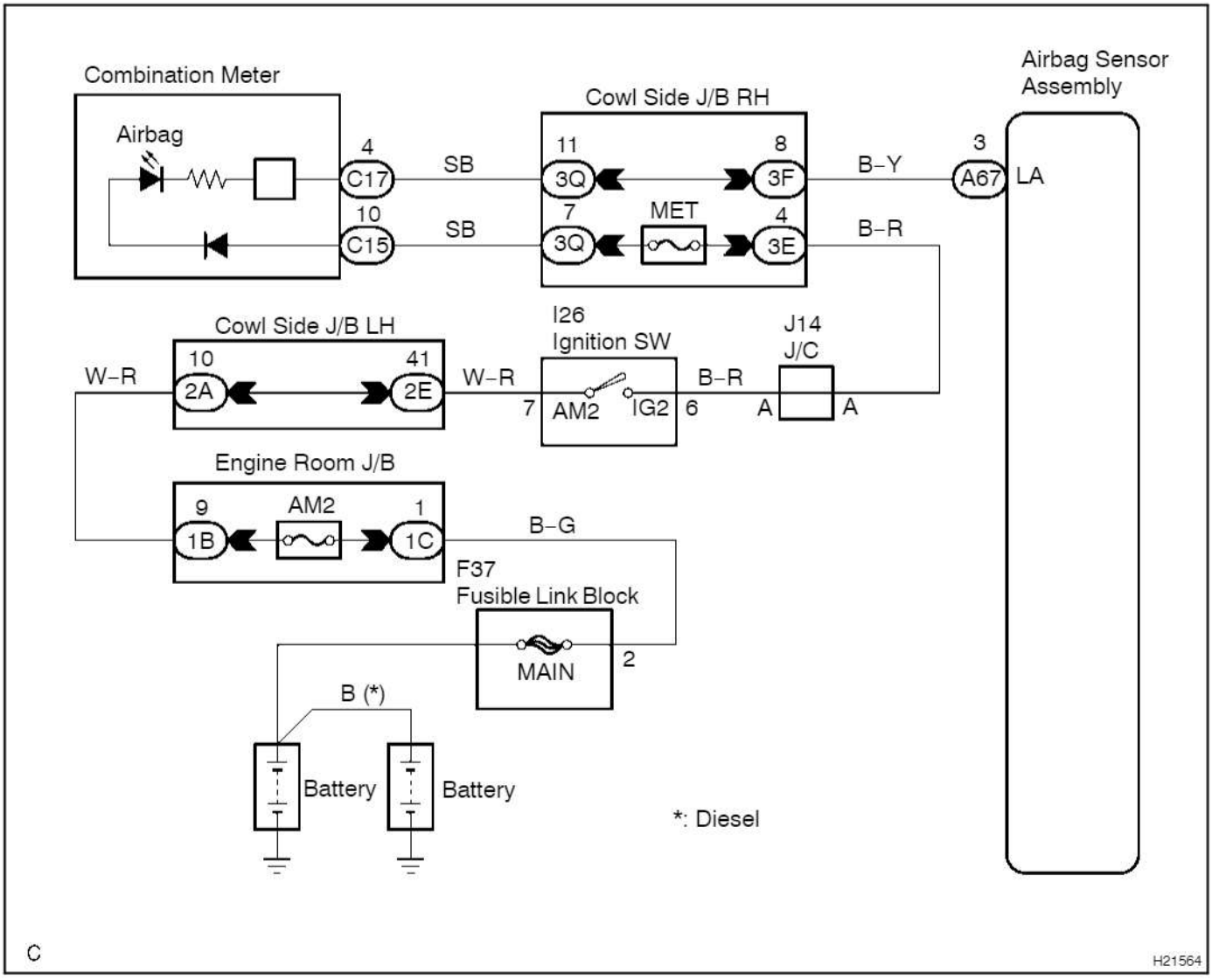
DIAUS–01

SRS Warning Light Circuit Malfunction

CIRCUIT DESCRIPTION

The SRS warning light is located on the combination meter.
When the SRS is normal, the SRS warning light comes on for approx. 6 seconds after the ignition switch is turned from the LOCK position to ON position, and then turns off automatically.
If there is a malfunction in the SRS, the SRS warning light lights up to inform the driver of the abnormality. When terminal TC and CG of the DLC3 are connected, the DTC is indicated by blinking the SRS warning light.

WIRING DIAGRAM



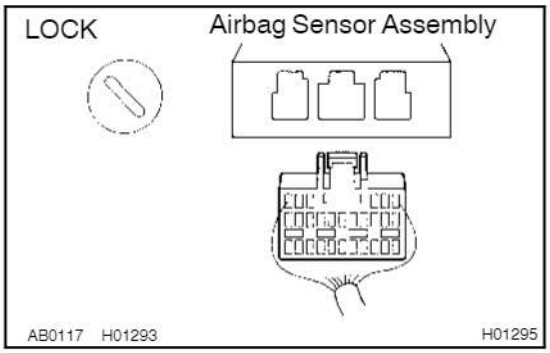
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INSPECTION PROCEDURE

Always lights up, when ignition switch is in LOCK position.

1	**Prepare for inspection (See step 1 on page DI–764).**

2	**Does SRS warning light turn off?**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the airbag sensor assembly connector.
(d) Connect the negative (–) terminal cable to the battery.

CHECK:

Check operation of SRS warning light.

NO → **Check combination mater (See page BE–1).**

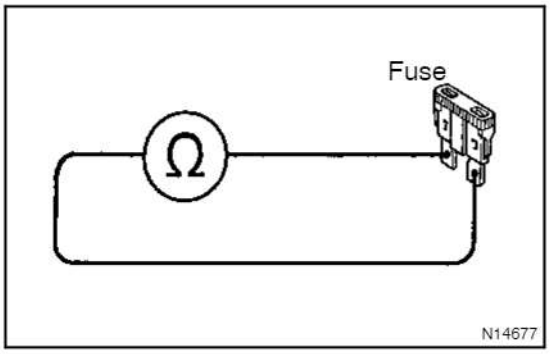
YES

Replace airbag sensor assembly.

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Does not light up, when ignition switch is turned to ON.

1	**Check AM2 Fuse.**



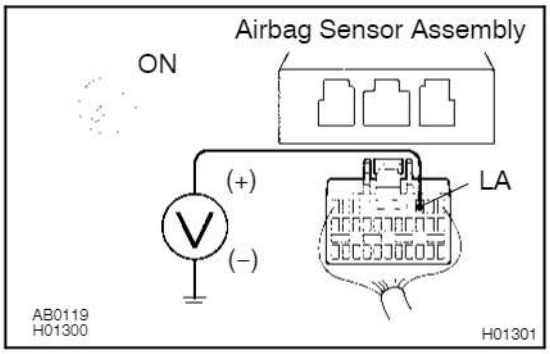
PREPARATION:
Remove the AM2 fuse.
CHECK:
Check continuity of the AM2 fuse.
OK:
Continuity
HINT:
- Fuse may be burnt out even if it appears to be OK during visual inspection.
- If fuse is OK, install it.

NG	**Go to step 5.**

OK

2	**Prepare for inspection (See step 1 on page DI–764).**

3	**Check SRS warning light circuit.**



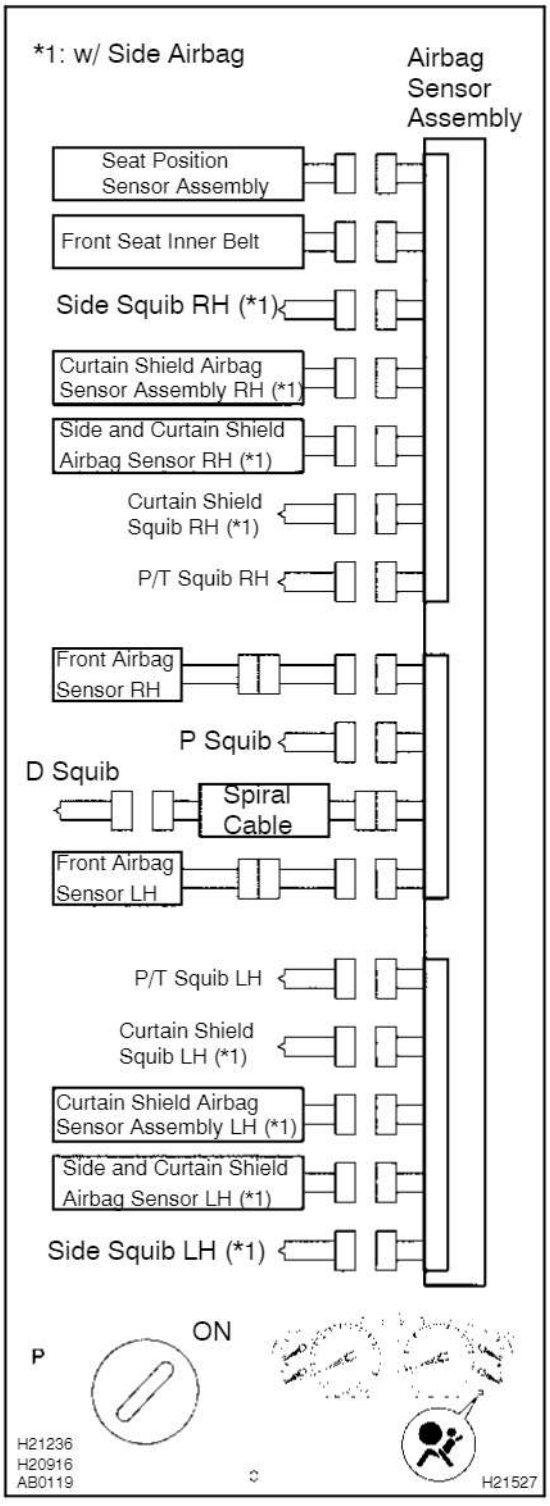
PREPARATION:
Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.
CHECK:
(a) Turn the ignition switch to ON.
(b) Measure the voltage between the body ground and LA of the airbag sensor assembly connector.
OK:
Voltage: 10 – 14 V

NG	**Check SRS warning light bulb or repair SRS warning light circuit.**

OK

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4	Does SRS warning light come on?



PREPARATION:

(a) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(b) Connect the airbag sensor assembly connector.
(c) Connect the negative (–) terminal cable to the battery, and wait at least for 2 seconds.

CHECK:

(a) Turn the ignition switch to ON.
(b) Check operation of the SRS warning light.

NO → **Replace airbag sensor assembly.**

YES

From the results of the above inspection, the malfunctioning part can now be considered normal. To make sure of this, use simulation method to check.

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5	Is new AM2 fuse burnt out again?

NO → Using simulation method, reproduce malfunction symptoms (See page IN–27).

YES

Check harness between AM2 fuse and SRS warning light.

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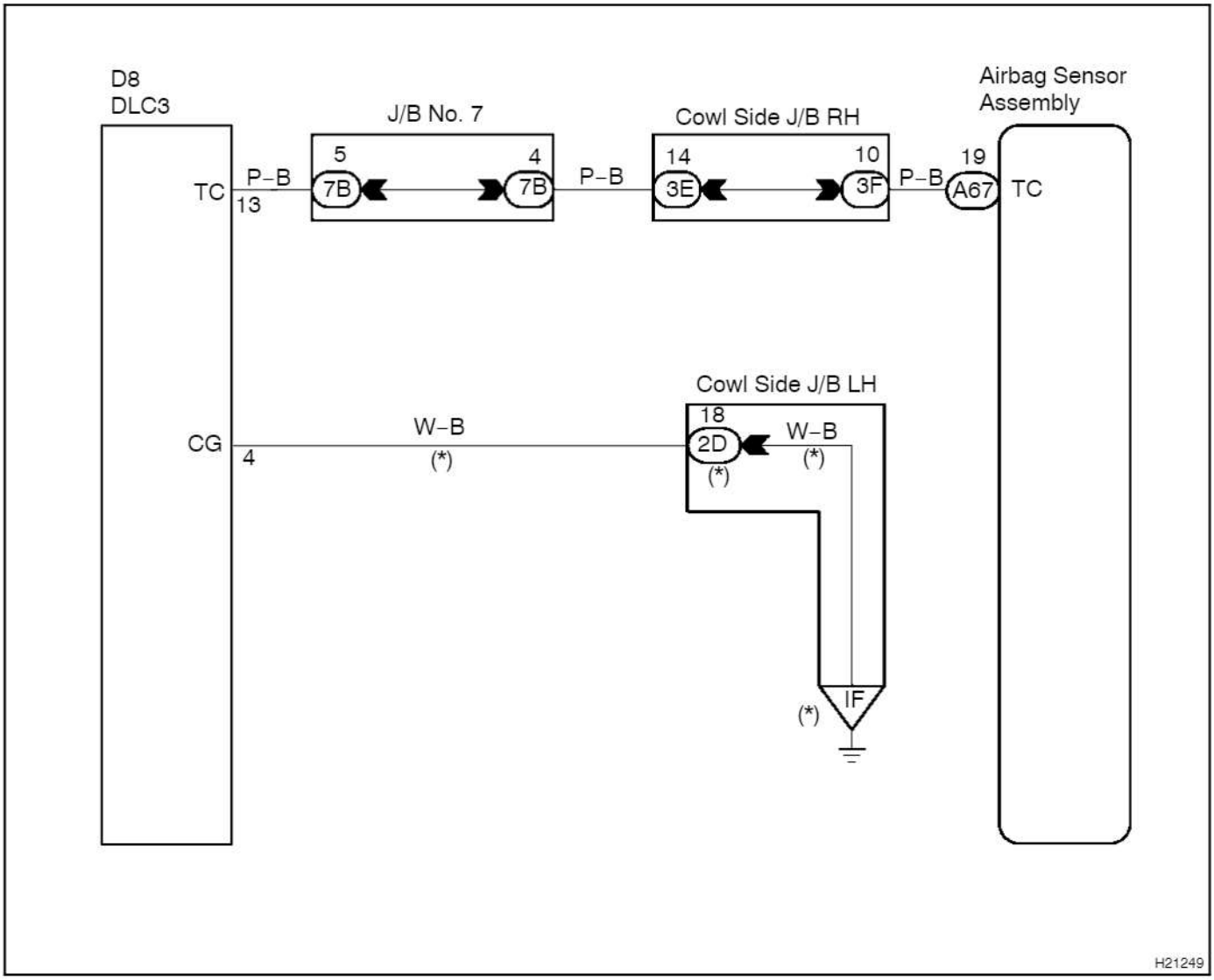
DI192-37

TC Terminal Circuit

CIRCUIT DESCRIPTION

DTC output mode is set by connecting terminal TC and CG of the DLC3 the airbag sensor assembly. The DTCs are displayed by blinking the SRS warning light.

WIRING DIAGRAM

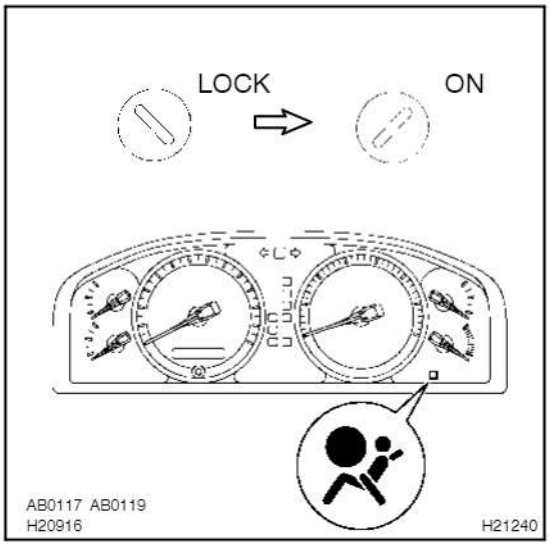


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INSPECTION PROCEDURE

If the DTC is not displayed, do the following troubleshooting.

1	**Does SRS warning light light up for approx. 6 seconds?**

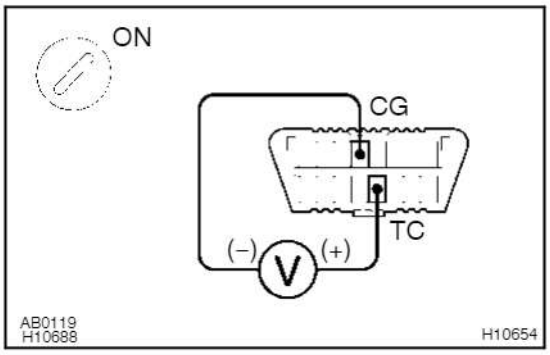


CHECK:
Check operation of the SRS warning light after ignition switch is turned from LOCK position to ON position.

NO → **Check SRS warning light system.** (See page DI–768)

YES

2	**Check voltage between terminal TC and CG of DLC3.**



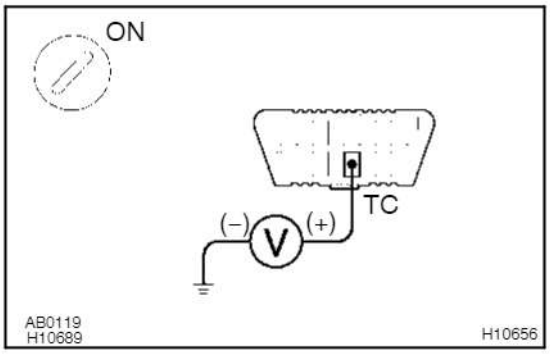
PREPARATION:
Turn the ignition switch to ON.
CHECK:
Measure the voltage between terminal TC and CG of DLC3.
OK:
Voltage: 4 – 14 V

OK → **Go to step 4.**

NG

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3	Check voltage between terminal TC of DLC3 and body ground.



CHECK:

Measure the voltage between the body ground and terminal TC of DLC3.

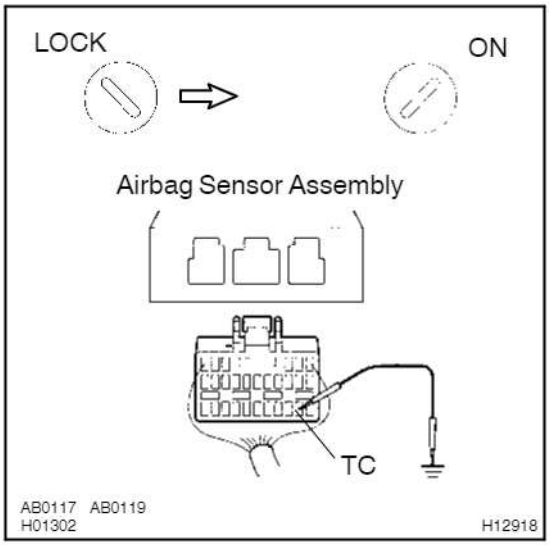
OK:

Voltage: 4 – 14 V

OK	Check harness between terminal CG of DLC3 and body ground.

NG

4	Check airbag sensor assembly.



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect the negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the airbag sensor assembly connector.
(d) Insert the service wire into terminal TC from back side as shown in the illustration.
(e) Connect the airbag sensor assembly connector with service wire.
(f) Connect the negative (–) terminal cable to the battery.
(g) Turn the ignition switch to ON and wait at least for 20 seconds.
(h) Connect the service wire of terminal TC to body ground.

CHECK:

Check operation of SRS warning light.

OK:

SRS waning light comes on.

NOTICE:

Pay due attention to the terminal connecting position to avoid a malfunction.

OK	Check harness between the airbag sensor assembly and DLC3.

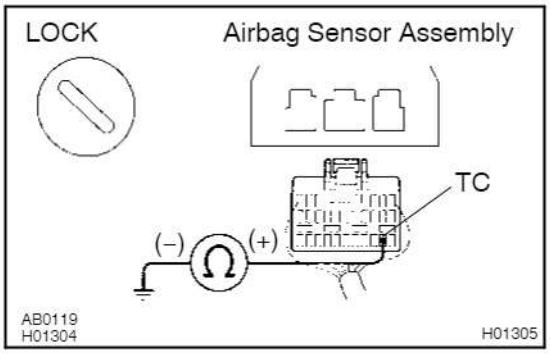
NG

Replace airbag sensor assembly.

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If the DTC is displayed without a DTC check procedure, perform the following troubleshooting.

1	**Check resistance between terminal TC of airbag sensor assembly and body ground.**



PREPARATION:

(a) Turn the ignition switch to LOCK.
(b) Disconnect negative (–) terminal cable from the battery, and wait at least for 90 seconds.
(c) Disconnect the airbag sensor assembly connector.

CHECK:

Check resistance between terminal TC of the airbag sensor assembly connector and body ground.

OK:

Resistance: 1 MΩ or Higher

NG → **Repair or replace harness or connector.**

OK ↓

Replace airbag sensor assembly.

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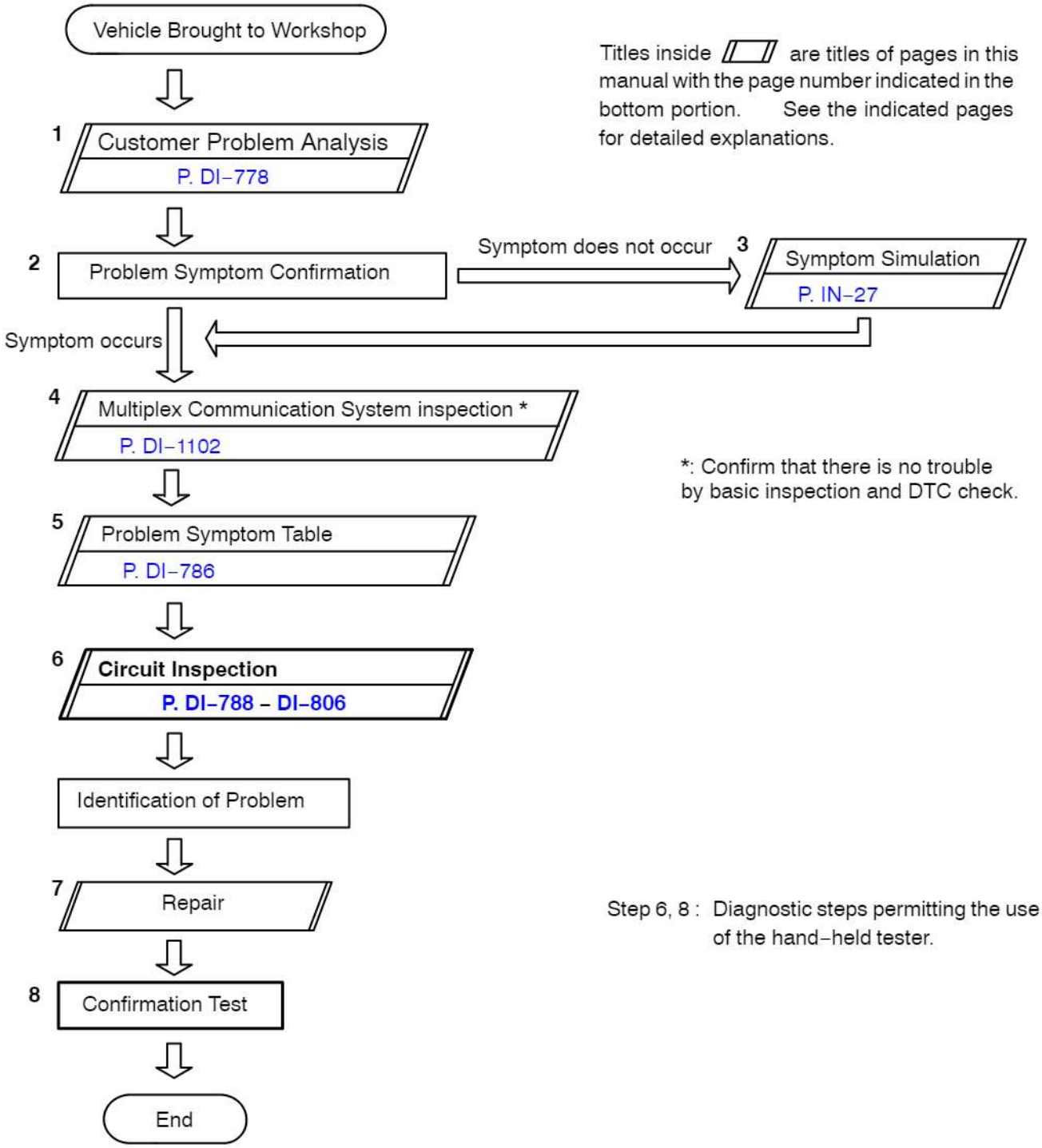
POWER SEAT CONTROL SYSTEM

DIAZM–01

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

The ECU of this system is connected to the multiplex communication system. Therefore, before starting troubleshooting, make sure to check that there is no trouble in the multiplex communication system.



Titles inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

*: Confirm that there is no trouble by basic inspection and DTC check.

Step 6, 8 : Diagnostic steps permitting the use of the hand–held tester.

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CUSTOMER PROBLEM ANALYSIS CHECK

POWER SEAT CONTROL SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date of Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred	/ /
How Often Problem Occurs	☐ Continuous ☐ Intermittent (Times a day)

Problem Symptom	☐ Manual Function does not operate.	☐ Slide ☐ Front Vertical ☐ Lifter ☐ Reclining
	☐ Return Function does not operate.	☐ Slide ☐ Front Vertical ☐ Lifter ☐ Does not operate in any conditions ☐ Only with key inserted ☐ Only with key not inserted ☐ Only with memory & return switch 1 or 2
	☐ Memory function does not operate.	
	☐ Position return function does not stop when brake pedal is depressed.	

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PRE–CHECK

1. POWER SEAT CONTROL SYSTEM FOR DRIVER'S SEAT

(a) Description

This system sends a signal from the driver's seat control switch to the power seat control ECU when manual operation for seat position.

HINT:

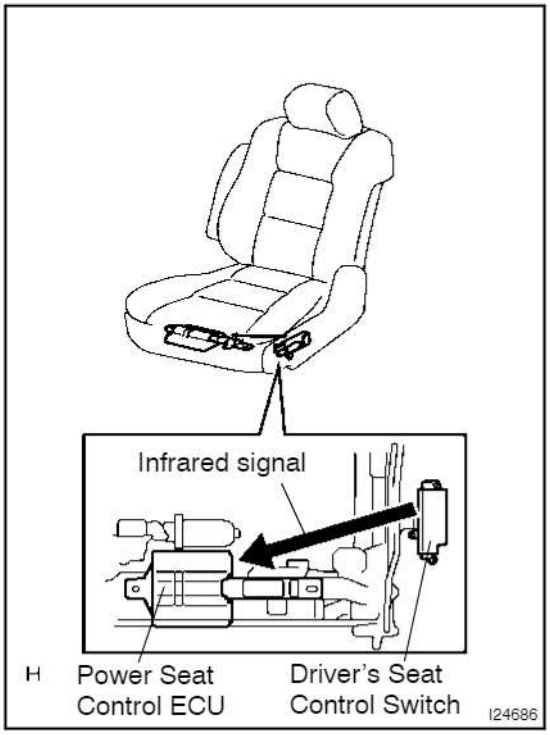
Indicator, etc. that indicates such as operating conditions does not exist at the infrared signal transmission and reception part.

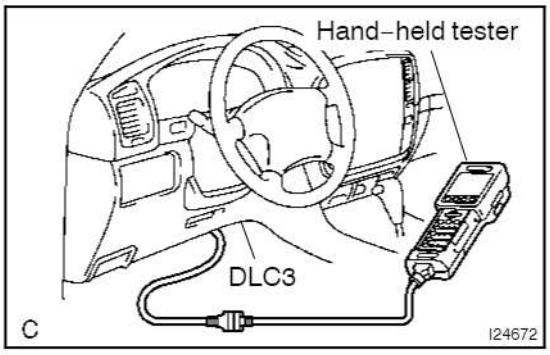
(b) Fail–safe function

When infrared data communication is blocked by an object placed under the seat, etc. or the driver's seat control switch has an abnormality, the system enters fail–safe functions and only slide operation (back and forward) can be operated.

(c) Clean the infrared light reception and emission part

Extreme dirt on the power seat control ECU and on the reception and emission part of the infrared signal of the driver's seat control switch does not allow to send and to receive the signal. In this case, wipe the lens with a soft cloth.



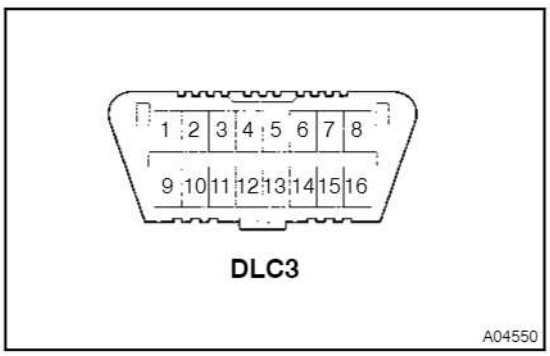


2. DIAGNOSIS SYSTEM

(a) Description

ECU data of this system can be read from DLC3 of the vehicle.

Therefore when there seems to be a trouble on this system, use hand–held tester to check and troubleshoot it.



(b) Check the DLC3.

The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141–2 format.

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Terminal No.	Connection/Specified Condition	Condition
4	Chassis Ground ↔ Body Ground/1 or less	Always
13	TC ↔ Body Ground/9 – 14 V	Always

HINT:
If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of the hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

3. DATA LIST

HINT:
According to the DATA LIST displayed by the Hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Turn the ignition switch OFF.
(b) Connect the hand–held tester to the DLC3.
(c) Turn the ignition switch ON.
(d) According to the display on tester, read the "DATA LIST".

POWER SEAT CONTROL ECU:

Item	Condition	Normal Condition	Diagnostic Note
RECLIN SW REAR	Reclining rear switch free → ON	OFF → ON	–
RECLIN SW FRONT	Reclining front switch free → ON	OFF → ON	–
F VTCL SW DOWN	Front vertical switch free → DOWN	OFF → ON	–
F VTCL SW UP	Front vertical switch free → UP	OFF → ON	–
R VTCL SW DOWN	Rear vertical switch free → DOWN	OFF → ON	–
R VTCL SW UP	Rear vertical switch free → UP	OFF → ON	–
SLIDE SW REAR	Slide switch free → REAR	OFF → ON	–
SLIDE SW FRONT	Slide switch free → FRONT	OFF → ON	–
SLIDE SW RR (W/H)	Slide switch free → REAR	OFF → ON	–
SLIDE SW FR (W/H)	Slide switch free → FRONT	OFF → ON	–
POWER VOLTAGE	Ignition switch ON	Battery positive voltage	–
MOTOR STATUS	–	STANDBY/MOVING/LOCK	–
IG SW	Ignition switch ON	OFF → ON	–
KEY UNLOCK SW	Ignition switch ON	OFF → ON	–

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D–DOOR WARN SW	Door (door courtesy switch) CLOSE → OPEN	OFF → ON	–
PNP SW	PNP switch except P → P	OFF → ON	–
PKBS SW	Perking brake switch OFF → ON	OFF → ON	–
M2 SW	Memory switch (M2) free → ON	OFF → ON	–
M1 SW	Memory switch (M1) free → ON	OFF → ON	–
SET SW	Memory switch (SET) free → ON	OFF → ON	–
SLIDE POS	–	–4096 – 4096	–
RECLIN POS	–	–4096 – 4096	–
F VTCL POS	–	–4096 – 4096	–
R VTCL POS	–	–4096 – 4096	–
MEM M1 SW	Memorize (M1) None → Exist	NOT MEM → MEM	–
MEM M2 SW	Memorize (M2) None → Exist	NOT MEM → MEM	–
SEAT MEM M1	Memorize seat position (M1) None → Exist	NOT MEM → MEM	–
SEAT MEM M2	Memorize seat position (M2) None → Exist	NOT MEM → MEM	–
D–MIRR MEM M1	Memorize driver side mirror position (M1) None → Exist	NOT MEM → MEM	–
D–MIRR MEM M2	Memorize driver side mirror position (M2) None → Exist	NOT MEM → MEM	–
P–MIRR MEM M1	Memorize front passenger side mirror position (M1) None → Exist	NOT MEM → MEM	–
P–MIRR MEM M2	Memorize front passenger side mirror position (M2) None → Exist	NOT MEM → MEM	–
SLIDE MEM POS 1	Memorized slide position (M1)	–4096 – 4096	–
RECLN MEM POS 1	Memorized reclining position (M1)	–4096 – 4096	–
F VTCL MEM POS1	Memorized front vertical position (M1)	–4096 – 4096	–
R VTCL MEM POS1	Memorized rear vertical position (M1)	–4096 – 4096	–
SLIDE MEM POS 2	Memorized slide position (M2)	–4096 – 4096	–
RECLN MEM POS 2	Memorized reclining position (M2)	–4096 – 4096	–
F VTCL MEM POS2	Memorized front vertical position (M2)	–4096 – 4096	–
R VTCL MEM POS2	Memorized rear vertical position (M2)	–4096 – 4096	–
D–MIR MEM POS 1	Memorized driver side outer mirror position (M1)	0 – 65535	–
P–MIR MEM POS 1	Memorized front passenger side outer mirror position (M1)	0 – 65535	–

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D–MIR MEM POS 2	Memorized driver side outer mirror position (M2)	0 – 65535	–
P–MIR MEM POS 2	Memorized front passenger side outer mirror position (M2)	0 – 65535	–

MIRROR CONTROL ECU:

Item	Condition	Normal Condition	Diagnostic Note
MIRR POS SW R	Mirror switch position RIGHT OFF → ON	OFF → ON	–
MIRR POS SW L	Mirror switch position LEFT OFF → ON	OFF → ON	–
MIRR POS SW DWN	Mirror switch DOWN OFF → ON	OFF → ON	–
MIRR POS SW UP	Mirror switch UP OFF → ON	OFF → ON	–
MIRR SEL SW	Mirror switch select direction	MID (P)/D (P)	–
REV POS SW	Shift lever position except R → R	OFF → ON	–
ACC	Ignition switch ON (ACC)	ON	–
IG (MPX)	Ignition switch ON	ON	BEAN signal
D MIR POS SEN V	Driver side outer mirror VERTICAL position (LSB 0.01953 V)	0 – 5	–
D MIR POS SEN H	Driver side outer mirror HORIZON position (LSB 0.01953 V)	0 – 5	–
P MIR POS SEN V	Passenger side outer mirror VERTICAL position (LSB 0.01953 V)	0 – 5	–
P MIR POS SEN H	Passenger side outer mirror HORIZON position (LSB 0.01953 V)	0 – 5	–

4. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the Hand–held tester allows the relay, and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Turn the ignition switch OFF.
(b) Connect the hand–held tester to the DLC3.
(c) Turn the ignition switch ON.
(d) According to the display on tester, perform the "ACTIVE TEST".

POWER SEAT CONTROL ECU:

Tester Display	Item (Condition)	Parameter	Parameter (Min. – Max.)	Step (Unit)	Diagnostic Note
RECLINING	Seat reclining operation	FRONT/REAR	–	–	Confirm that the vehicle is stopped./Caution: This test cases vehicle parts to move. Please watch your hands and feet.

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F VERTICAL	Front vertical operation	UP/DOWN	–	–	Confirm that the vehicle is stopped./Caution: This test cases vehicle parts to move. Please watch your hands and feet.
R VERTICAL	Rear vertical operation	UP/DOWN	–	–	Confirm that the vehicle is stopped./Caution: This test cases vehicle parts to move. Please watch your hands and feet.
SLIDE	Seat slide operation	FRONT/REAR	–	–	Confirm that the vehicle is stopped./Caution: This test cases vehicle parts to move. Please watch your hands and feet.

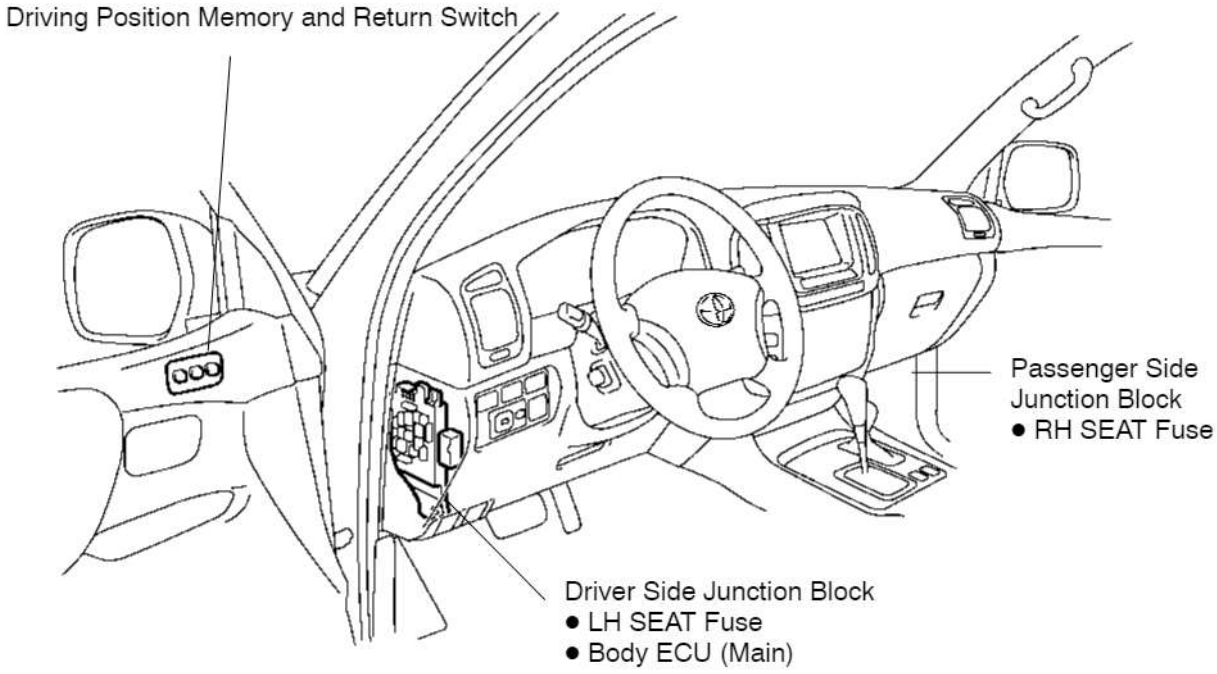
MIRROR CONTROL ECU:

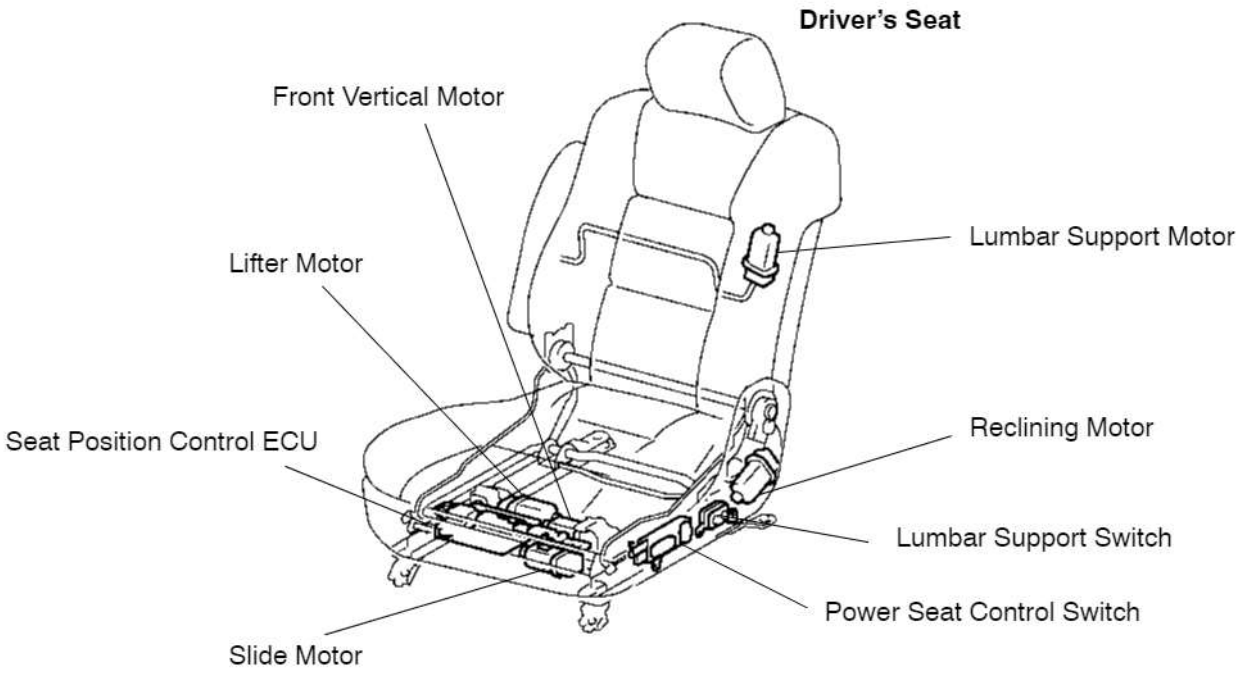
Tester Display	Item (Condition)	Parameter	Parameter (Min. – Max.)	Step (Unit)	Diagnostic Note
D MIRR UP/DN	Driver side outer mirror UP or DOWN operation	UP/DOWN	–	–	–
D MIRR R/L	Driver side outer mirror RIGHT or LEFT operation	LEFT/RIGHT	–	–	–
P MIRR UP/DN	Passenger side outer mirror UP or DOWN operation	UP/DOWN	–	–	–
P MIRR R/L	Driver side outer mirror RIGHT or LEFT operation	LEFT/RIGHT	–	–	–

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PARTS LOCATION





H

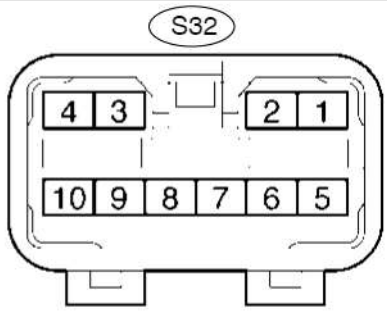
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TERMINALS OF ECU

POWER SEAT CONTROL ECU



I26292

Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
SYSB ↔ Body Ground (S32–1 ↔ Body Ground)	L–W ↔ Body Ground	Constant	10 – 14 V
IG ↔ Body Ground (S32–2 ↔ Body Ground)	B–W ↔ Body Ground	Ignition switch OFF → ON	0 V ↔ 10 – 14 V
SGND ↔ Body Ground (S32–3 ↔ Body Ground)	BR ↔ Body Ground	Constant	Below 1 V
MPX1 ↔ Body Ground (S32–4 ↔ Body Ground)	B ↔ Body Ground	Multiplex communication circuit signals	–
		Others	Resistance (Approx. 2.5 kΩ)
H IN ↔ Body Ground (S32–5 ↔ Body Ground)	R–G (LHD), R–L (RHD) ↔ Body Ground	Seat heater switch OFF → HI	0 V ↔ 10 – 14 V
L IN ↔ Body Ground (S32–6 ↔ Body Ground)	B–R (LHD), B (RHD) ↔ Body Ground	Seat heater switch OFF → LO	0 V ↔ 10 – 14 V
GND ↔ Body Ground (S32–8 ↔ Body Ground)	W–B ↔ Body Ground	Constant	Below 1 V
MPX2 ↔ Body Ground (S32–9 ↔ Body Ground)	B ↔ Body Ground	Multiplex communication circuit signals	–
+B ↔ Body Ground (S32–10 ↔ Body Ground)	Y–R ↔ Body Ground	Constant	10 – 14 V

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PROBLEM SYMPTOMS TABLE

Perform troubleshooting of the circuits for the applicable problem symptom in the order given in the chart below. Proceed to the page located for each circuit.

HINT:

- If the instruction "Proceed to next circuit inspection shown on problem symptoms table" is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
- If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check and replace the Power Seat Control ECU as the last step.

Symptom	Suspect Area	See page
All the motors do not function when manual operation.	1. There is an object that blocks the inflared signal under the seat. 2. Dirt of the signal reception and emission part in the power seat control ECU or in the driver's seat control switch. 3. ECU power source circuit 4. +B power source circuit 5. Power seat control switch circuit 6. Power seat control ECU and Driver's seat control switch	– DI–779 DI–791 DI–788 DI–797 IN–38
All the motors do not function by manual operation (except for slide operation).	1. There is an object that blocks the inflared signal under the seat. 2. Affected by the parts installed later (ornamental neon tube). 3. Dirt of the signal reception and emission part in the power seat control ECU or in the driver's seat control switch. 4. Power seat control ECU and Driver's seat control switch	– – DI–779 IN–38
One function do not operate for manual operation only.	1. Motor circuit 2. Power seat control ECU	DI–799 IN–38
The movement is intermittent (all the motors) when manual operation.	1. ECU power source circuit 2. +B power source circuit 3. Power seat control switch circuit 4. Power seat control ECU and Driver's seat control switch	DI–791 DI–788 DI–797 IN–38
The movement is intermittent (all the motors except for slide operation) when manual operation.	1. Affected by the parts installed later (remote controller using infrared light). 2. Power seat control ECU and Driver's seat control switch	– IN–38
The movement is intermittent (a pert of motors) when manual operation.	1. Position sensor power source circuit 2. Position sensor circuit 3. Motor circuit 4. Power seat control ECU and Driver's seat control switch	DI–804 DI–806 DI–799 IN–38
The movement is different from the switch operation when manual operation.	1. There is an object that blocks the inflared signal under the seat. 2. Dirt on the power seat control ECU and on the reception and emission part of the infrared signal of the driver's seat control switch. 3. Power seat control ECU and Driver's seat control switch	– – IN–38
Motors move without any switch operation.	1. Driver's seat control switch 2. Power seat control ECU	IN–38 IN–38

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The motors that move when manual operation do not stop.	1. There is an object that blocks the inflared signal under the seat. 2. Switch nob 3. Driver's seat control switch 4. Power seat control ECU	– – IN–38 IN–38
Return function does not operate or operates a little, then stops (ALL return functions).	1. ECU power source circuit 2. +B power source circuit 3. Ignition switch circuit 4. Position sensor power source circuit 5. Position sensor circuit 6. Power seat control ECU 7. Body ECU (Main)	DI–791 DI–788 DI–794 DI–804 DI–806 IN–38 IN–38

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CIRCUIT INSPECTION

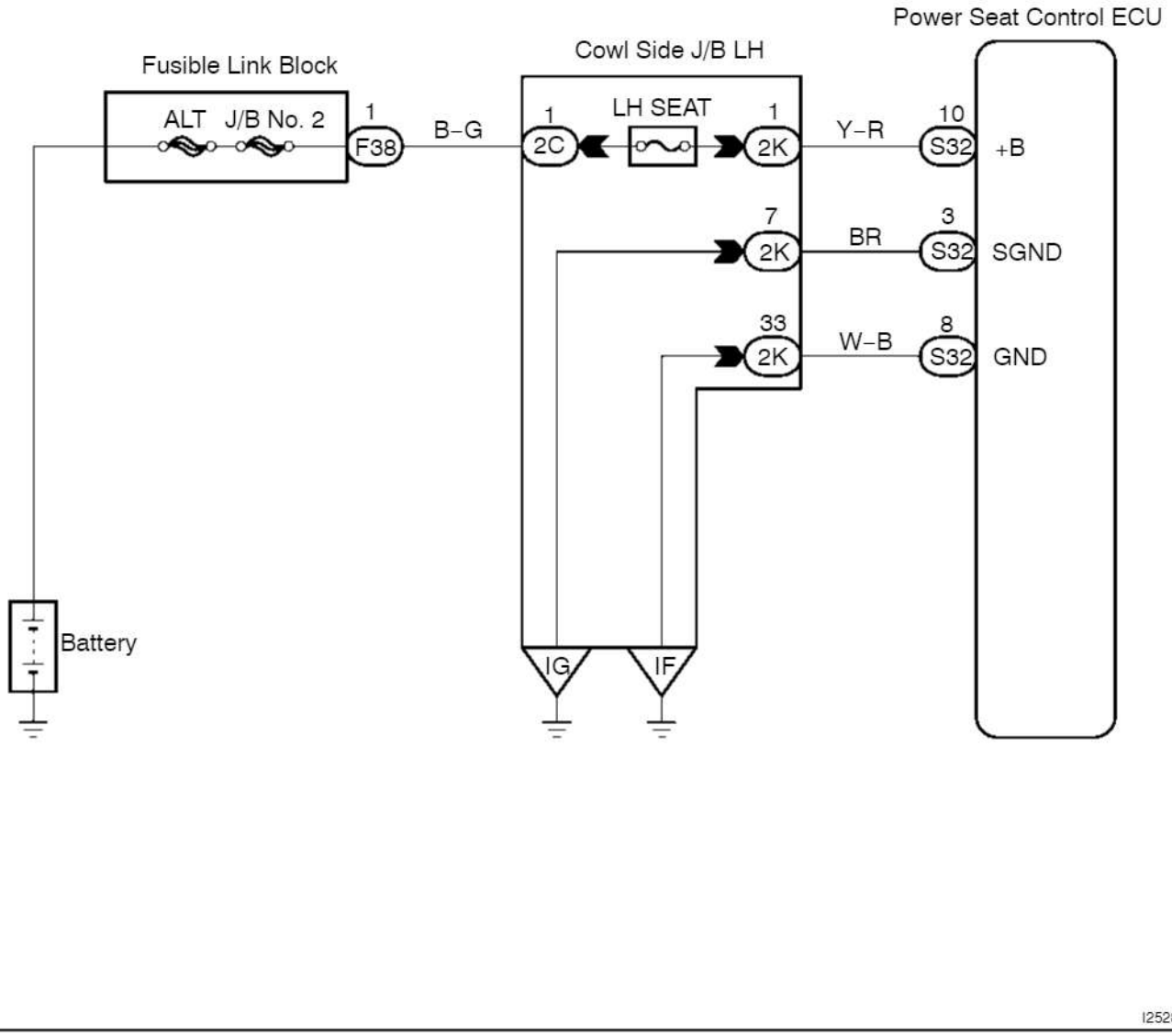
+B Power Source Circuit

CIRCUIT DESCRIPTION

This is the power source for motors such as the slide motor, reclining motor, front vertical motor and lifter motor.

WIRING DIAGRAM

LHD Models:

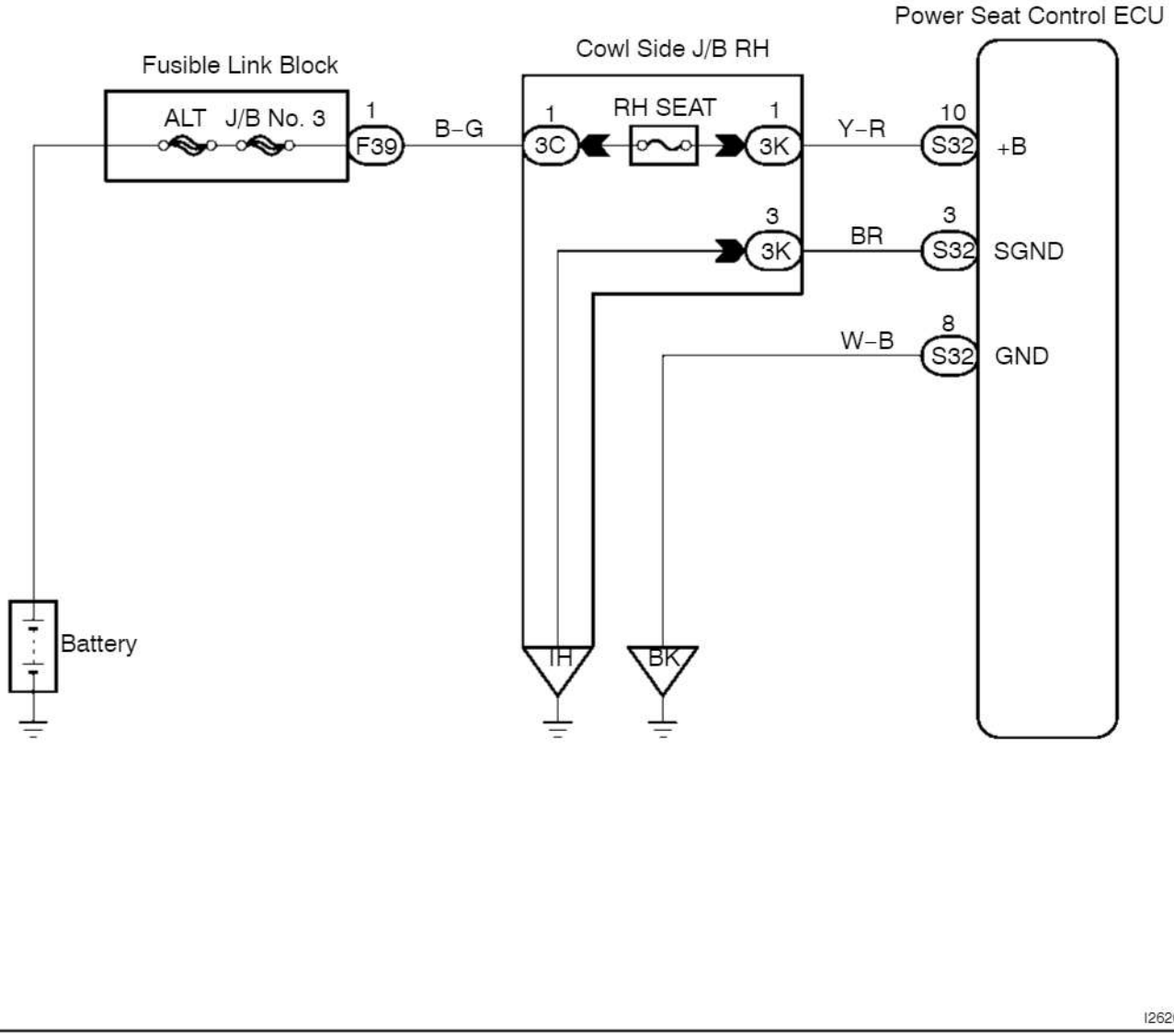


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RHD Models:



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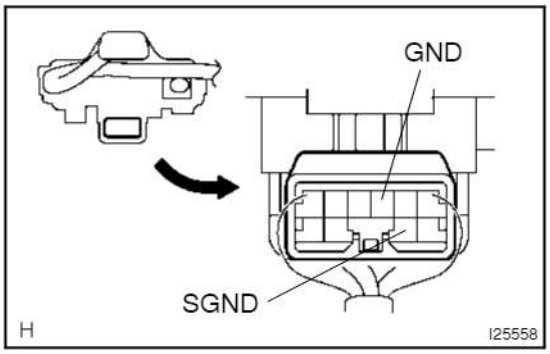
INSPECTION PROCEDURE

1	**Check LH SEAT fuse.**

NG → **Check for short in all the harness and components connected to the LH SEAT fuse, and repair them .**

OK

2	**Check continuity between terminals GND, SGND of Power Seat Control ECU connector and body ground.**

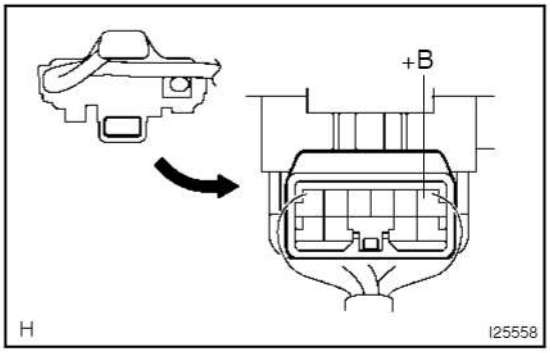


CHECK:
Measure resistance between terminals GND, SGND of Power Seat Control ECU connector and body ground with connector being connected.
OK:
Resistance: Continuity (below 1 Ω)

NG → **Repair or replace harness or connector.**

OK

3	**Check voltage between terminals +B of Power Seat Control ECU connector and body ground.**



CHECK:
Measure voltage between terminals +B of Power Seat Control ECU connector and body ground with connector being connected.
OK:
Voltage: 10 – 14 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI–786).**

NG

Repair or replace harness or connector.

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DIAZT–01

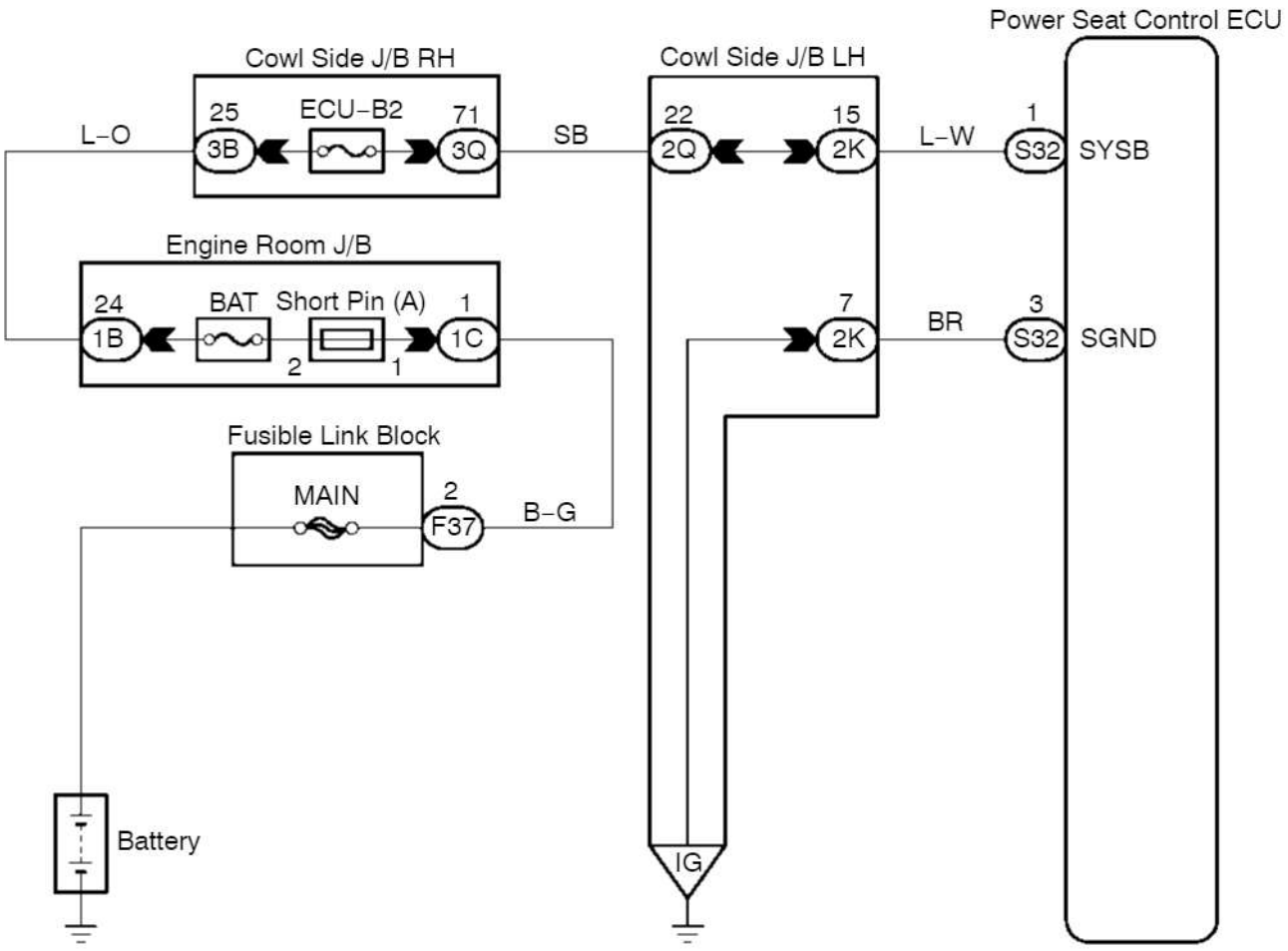
ECU Power Source Circuit

CIRCUIT DESCRIPTION

This circuit provides power for ECU operation and is also the power source for the sensor.

WIRING DIAGRAM

LHD Models:

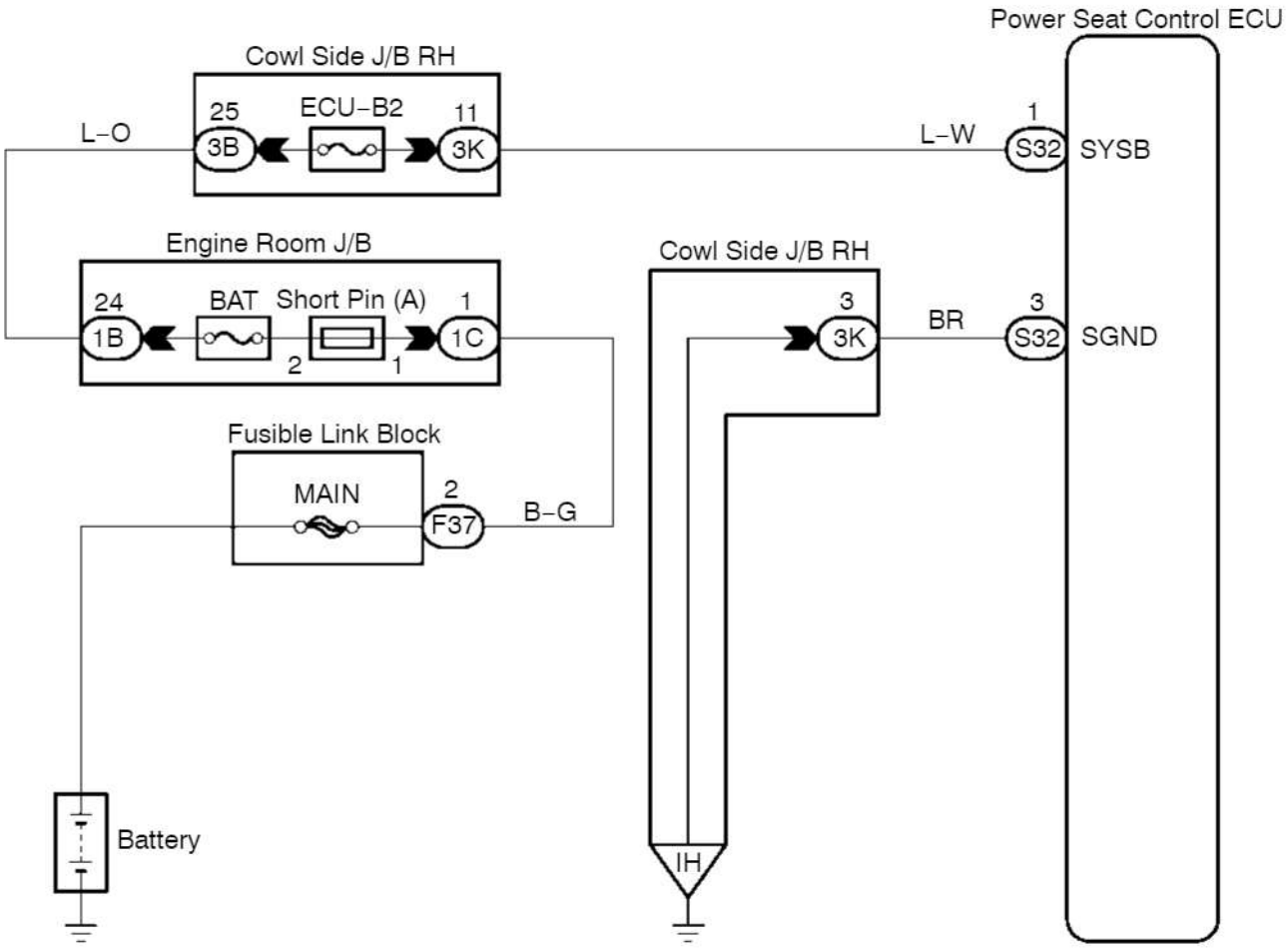


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RHD Models:



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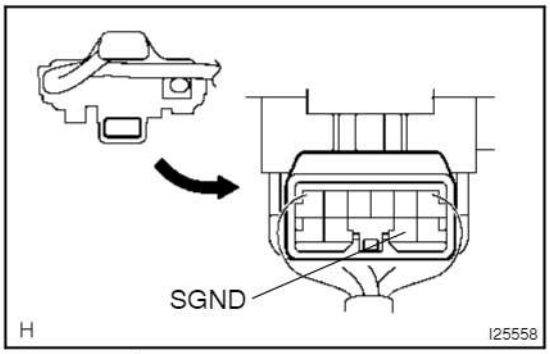
INSPECTION PROCEDURE

1	**Check ECU–B2 fuse.**

NG → **Check for short in all the harness and components connected to the ECU–B2 fuse, and repair them .**

OK

2	**Check continuity between terminals SGND of Power Seat Control ECU connector and body ground.**

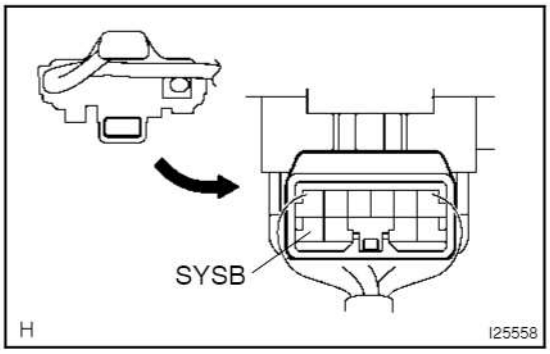


CHECK:
Measure resistance between terminals SGND of Power Seat Control ECU connector and body ground.
OK:
Resistance: Continuity (below 1 Ω)

NG → **Repair or replace harness or connector.**

OK

3	**Check voltage between terminals SYSB of Power Seat Control ECU connector and body ground.**



CHECK:
Measure voltage between terminals SYSB of Power Seat Control ECU connector and body ground.
OK:
Voltage: 10 – 14 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI–786).**

NG

Repair or replace harness or connector.

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DIAZU-01

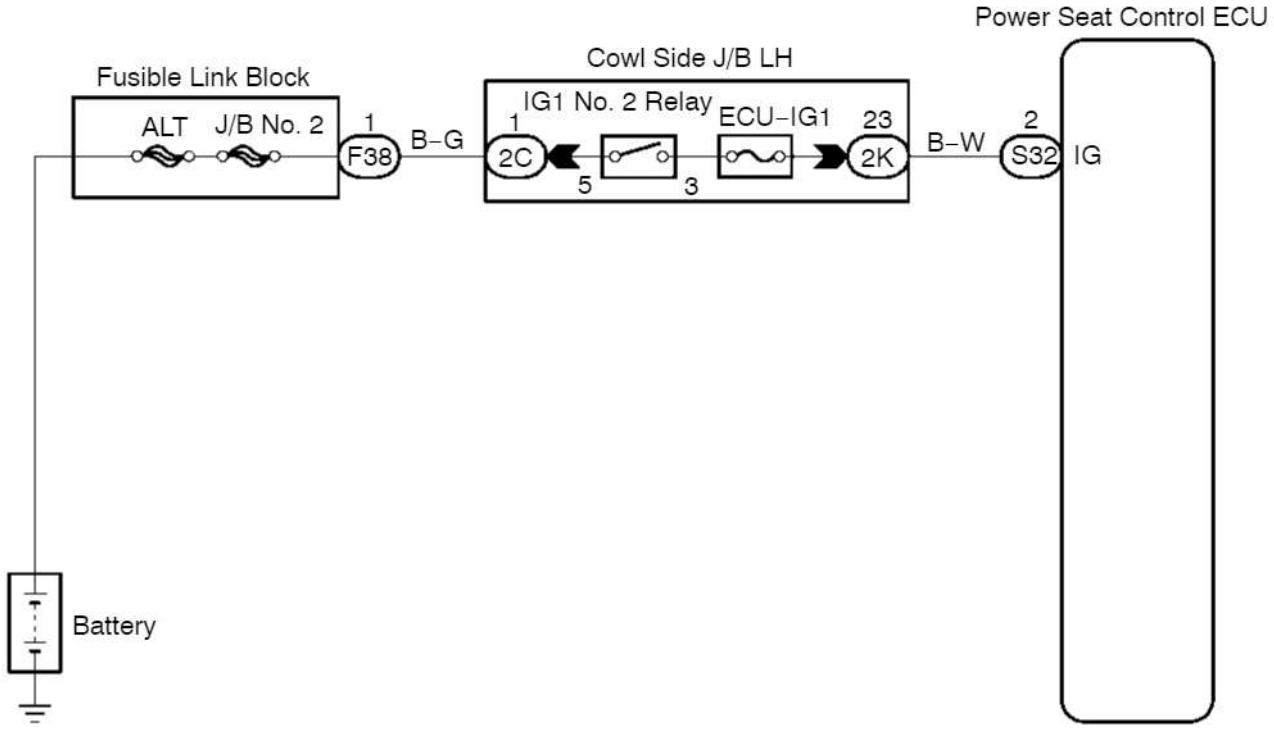
Ignition Switch Circuit

CIRCUIT DESCRIPTION

This circuit sends an ignition switch ON or OFF signal to the ECU.

WIRING DIAGRAM

LHD Models:

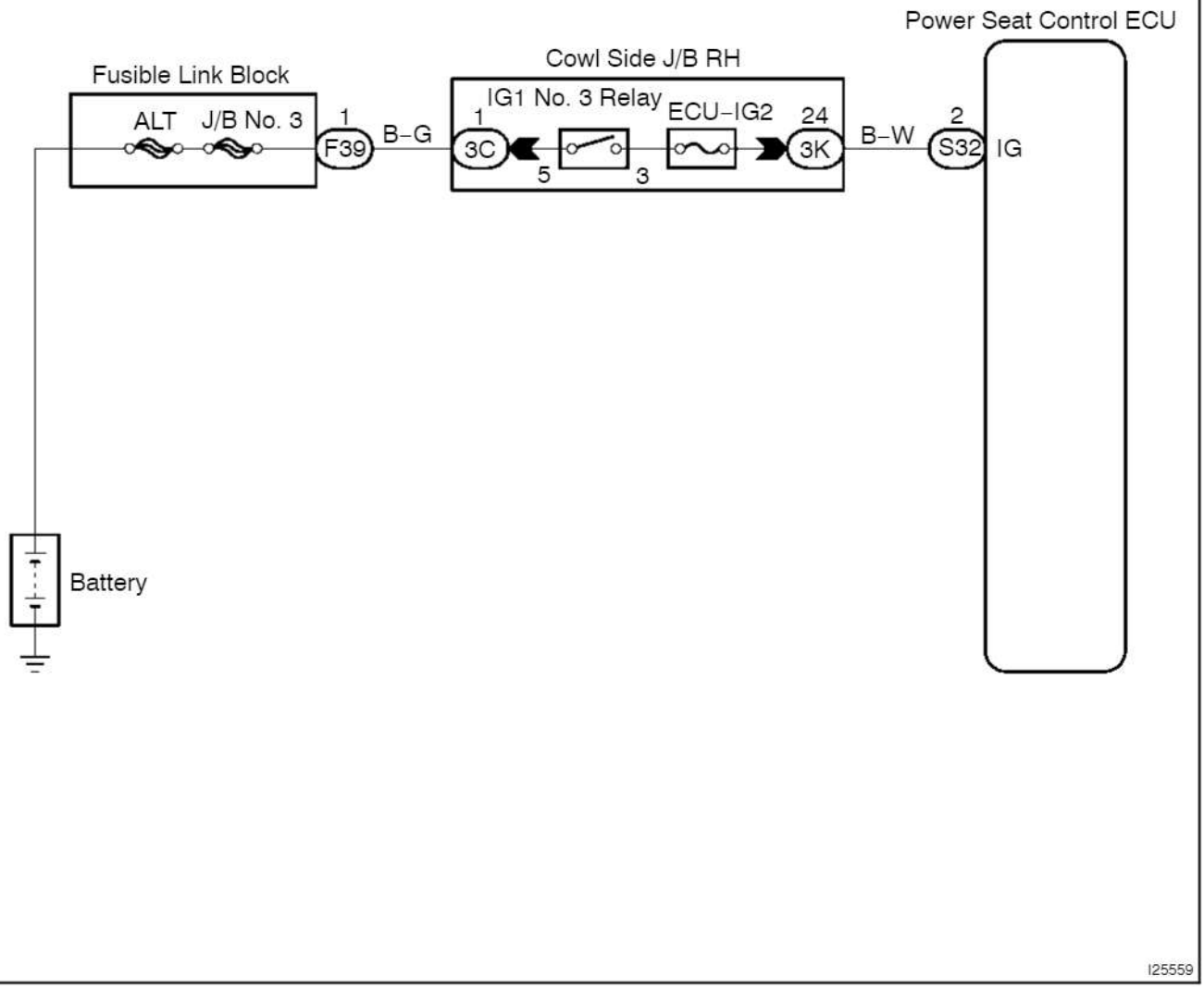


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RHD Models:



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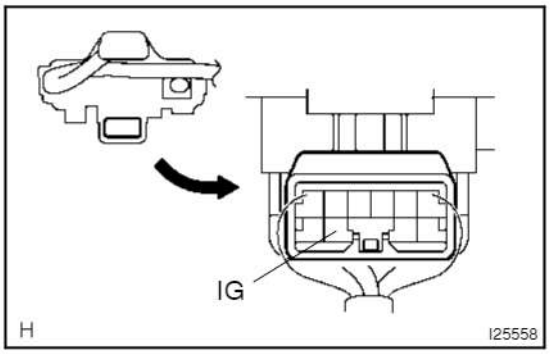
INSPECTION PROCEDURE

1	**Check ECU–IG1 fuse.**

NG → **Check for short in all the harness and components connected to ECU–IG1 fuse, and repair them.**

OK

2	**Check voltage between terminal IG of Power Seat Control ECU connector and body ground.**



PREPARATION:
Remove Power Seat Control ECU with connectors still connected.

CHECK:
Measure voltage between terminal IG of Power Seat Control ECU connector and body ground when ignition switch is ON and OFF.

OK:

Ignition switch	Voltage
ON	10 ~ 14 V
OFF	0 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI–786).**

NG

Check and repair harness or connector between Power Seat Control ECU and battery.

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DIAZV–01

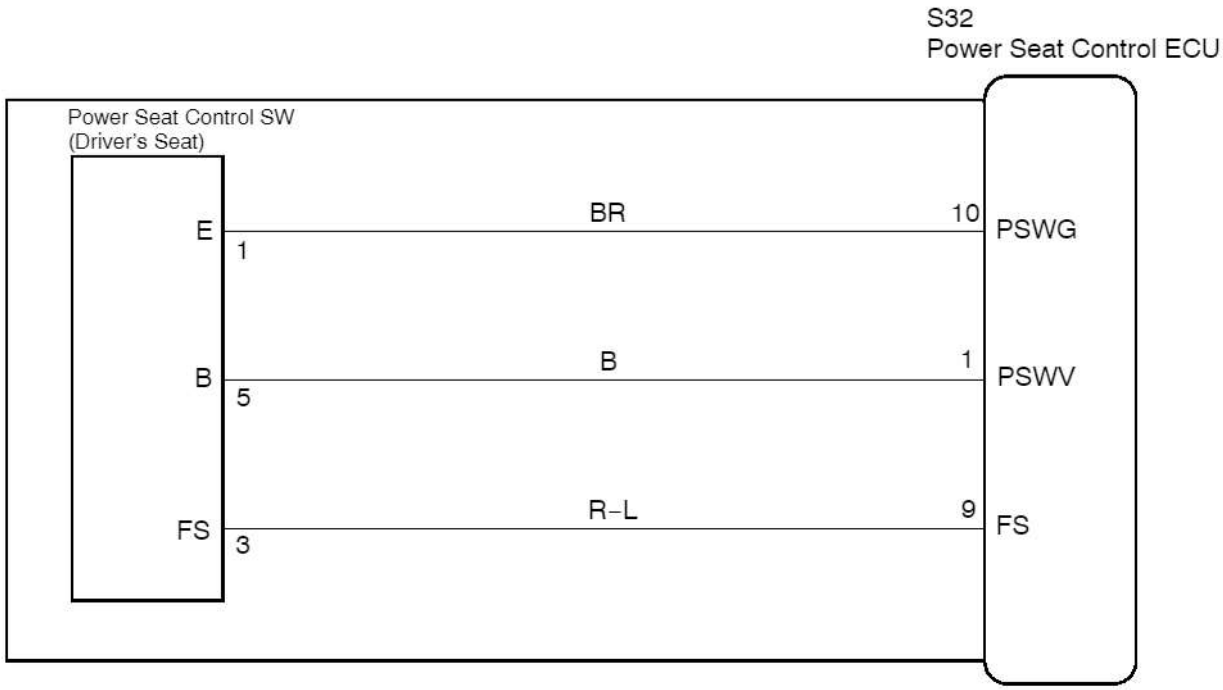
Power Seat Control Switch Circuit

CIRCUIT DESCRIPTION

This circuit provides power for Power Seat Control Switch (Driver's seat Control Switch) from Power Seat Control ECU.

Also, Switch sends "SLIDE" signal as multiplexed voltage signal so that seat slide can be operated even if the CPU for the Switch fails or infrared ray is cut off.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check wire harness and connector between Power Seat Control Switch and Power Seat Control ECU (See page IN–38).

NG → Repair or replace wire harness or connector.

OK →

Proceed to next circuit inspection shown in problem symptom table (See page DI–786).

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DIAZW–01

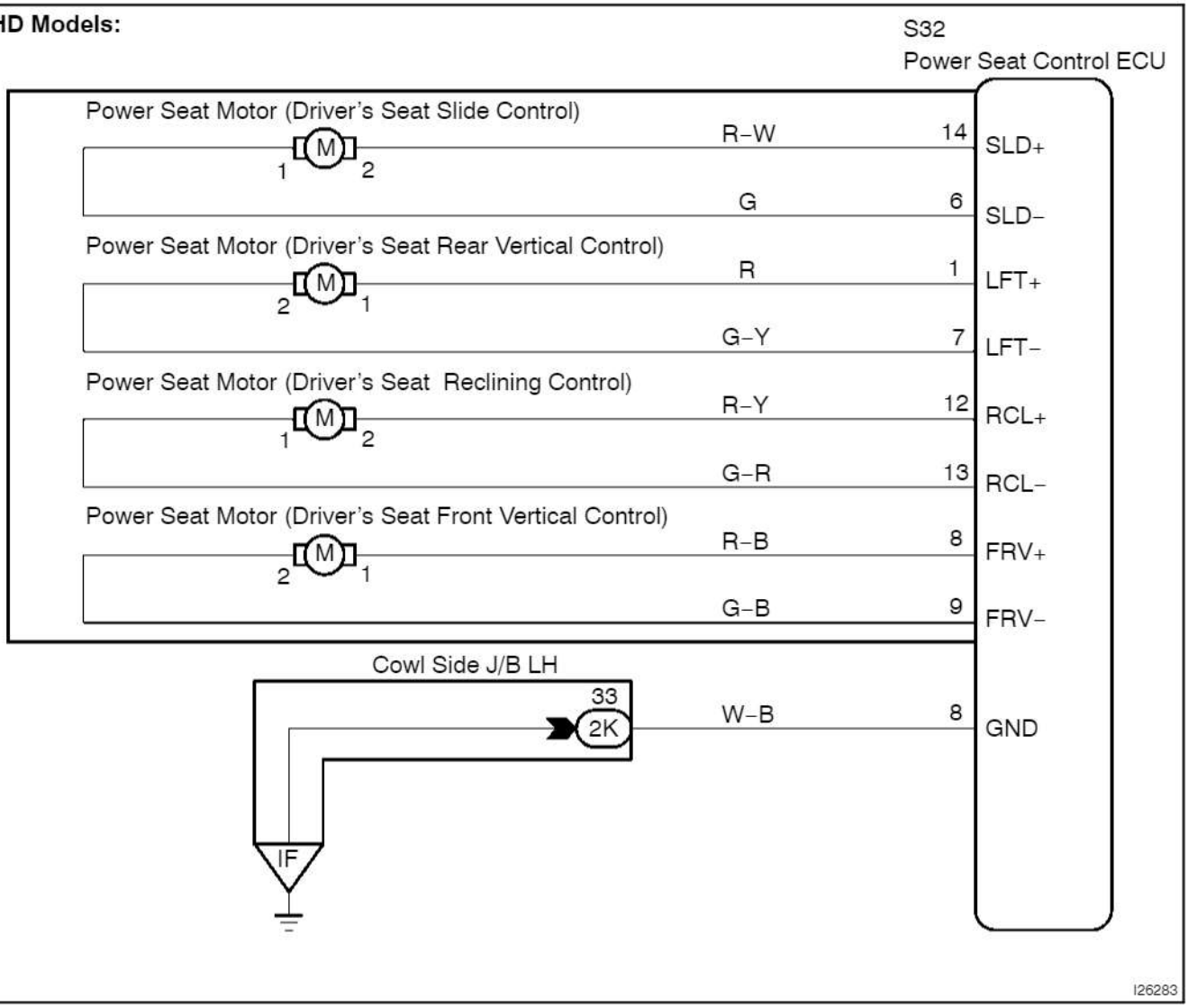
Motor Circuit

CIRCUIT DESCRIPTION

The Seat Position Control ECU controls the 4 motors for slide, front vertical, rear vertical and reclining.

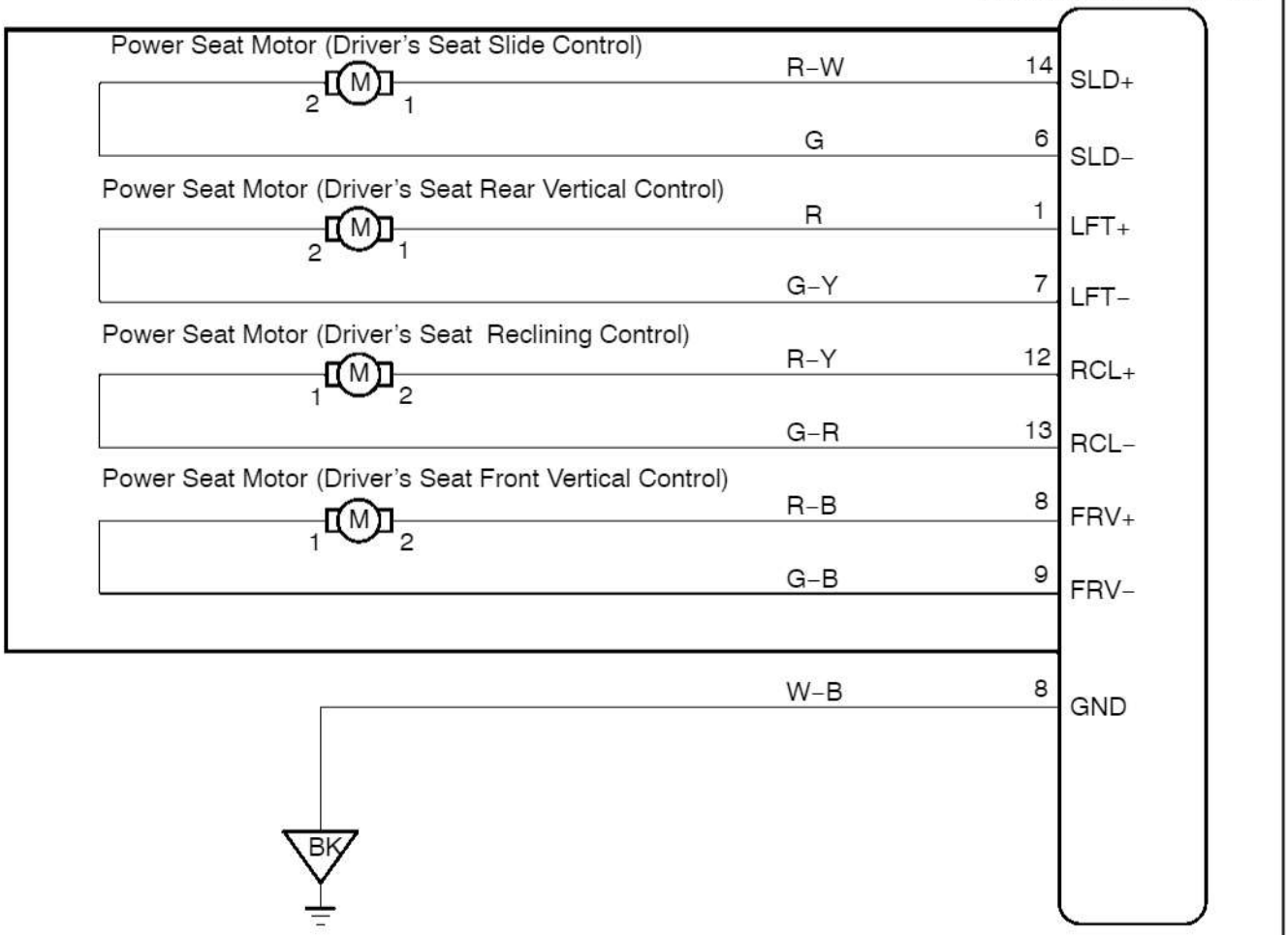
WIRING DIAGRAM

LHD Models:



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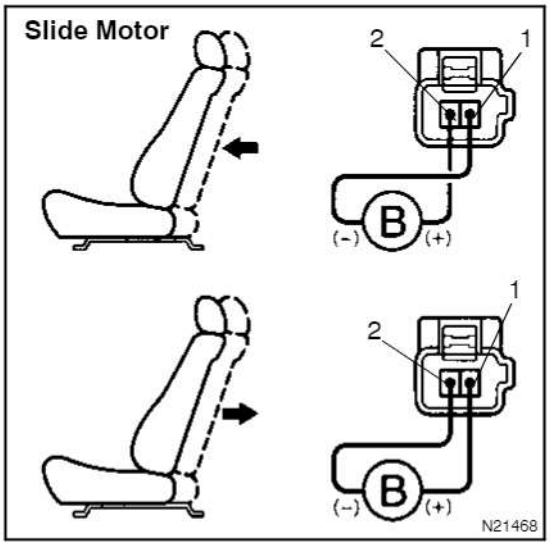
RHD Models:



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INSPECTION PROCEDURE

1	**Check motor.**



PREPARATION:

(a) Remove seat.

(b) Disconnect each motor connector.

CHECK:

Check seat movement when battery positive voltage is applied to each motor.

Slide Motor

CHECK:

Connect battery ⊕ to terminal 2 and battery ⊖ to terminal 1 of the slide motor connector.

OK:

The seat moves forward.

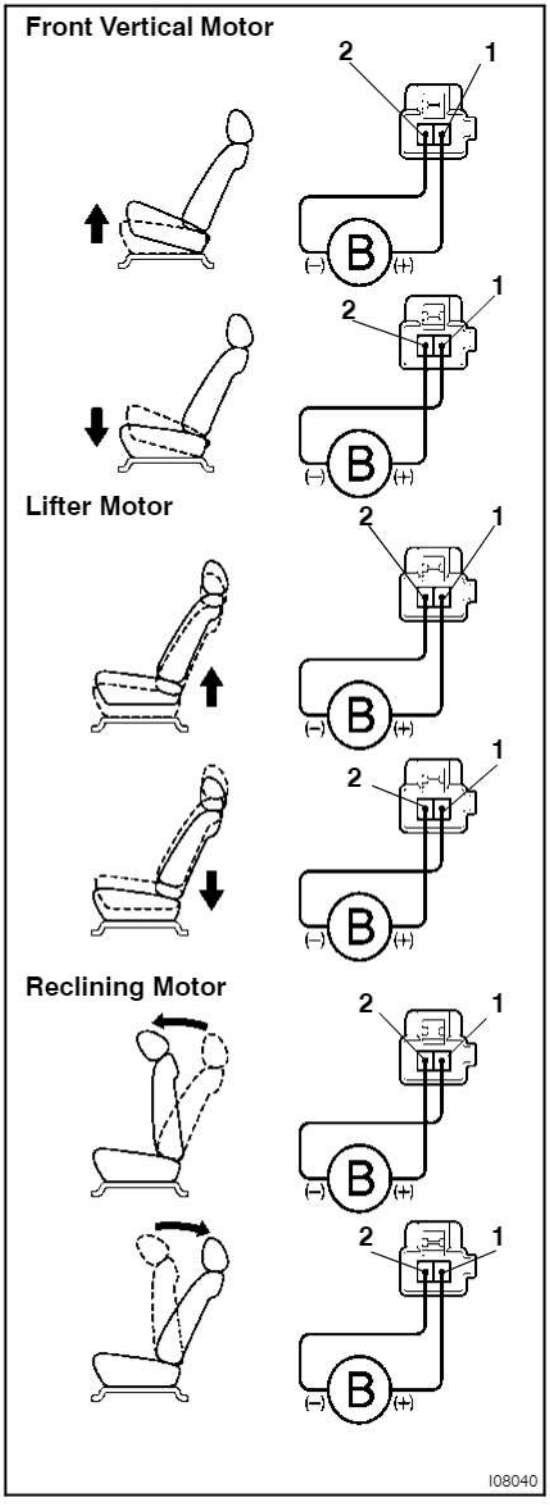
CHECK:

Connect battery ⊖ to terminal 2 and battery ⊕ to terminal 1 of the slide motor connector.

OK:

The seat moves backward.

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Front Vertical Motor

CHECK:

Connect battery ⊕ to terminal 1 and battery ⊖ to terminal 2 of the front vertical motor connector.

OK:

The front of the seat cushion rises.

CHECK:

Connect battery ⊖ to terminal 1 and battery ⊕ to terminal 2 of the front vertical motor connector.

OK:

The front of the seat cushion lowers.

Lifter Motor

CHECK:

Connect battery ⊕ to terminal 1 and battery ⊖ to terminal 2 of the rear vertical motor connector.

OK:

The front of the seat cushion rises.

CHECK:

Connect battery ⊖ to terminal 1 and battery ⊕ to terminal 2 of the rear vertical motor connector.

OK:

The front of the seat cushion lowers.

Reclining Motor

CHECK:

Connect battery ⊕ to terminal 2 and battery ⊖ to terminal 1 of the reclining motor connector.

OK:

The seat back returns to up right.

CHECK:

Connect battery ⊖ to terminal 2 and battery ⊕ to terminal 1 of the reclining motor connector.

OK:

The seat back is reclining.

NG → **Replace motor.**

OK

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2	Check harness and connector between Power Seat ECU and motor (See page IN–38).

NG → Repair or replace harness or connector.

OK →

Proceed to next circuit inspection shown on problem symptom table (See page DI–786).

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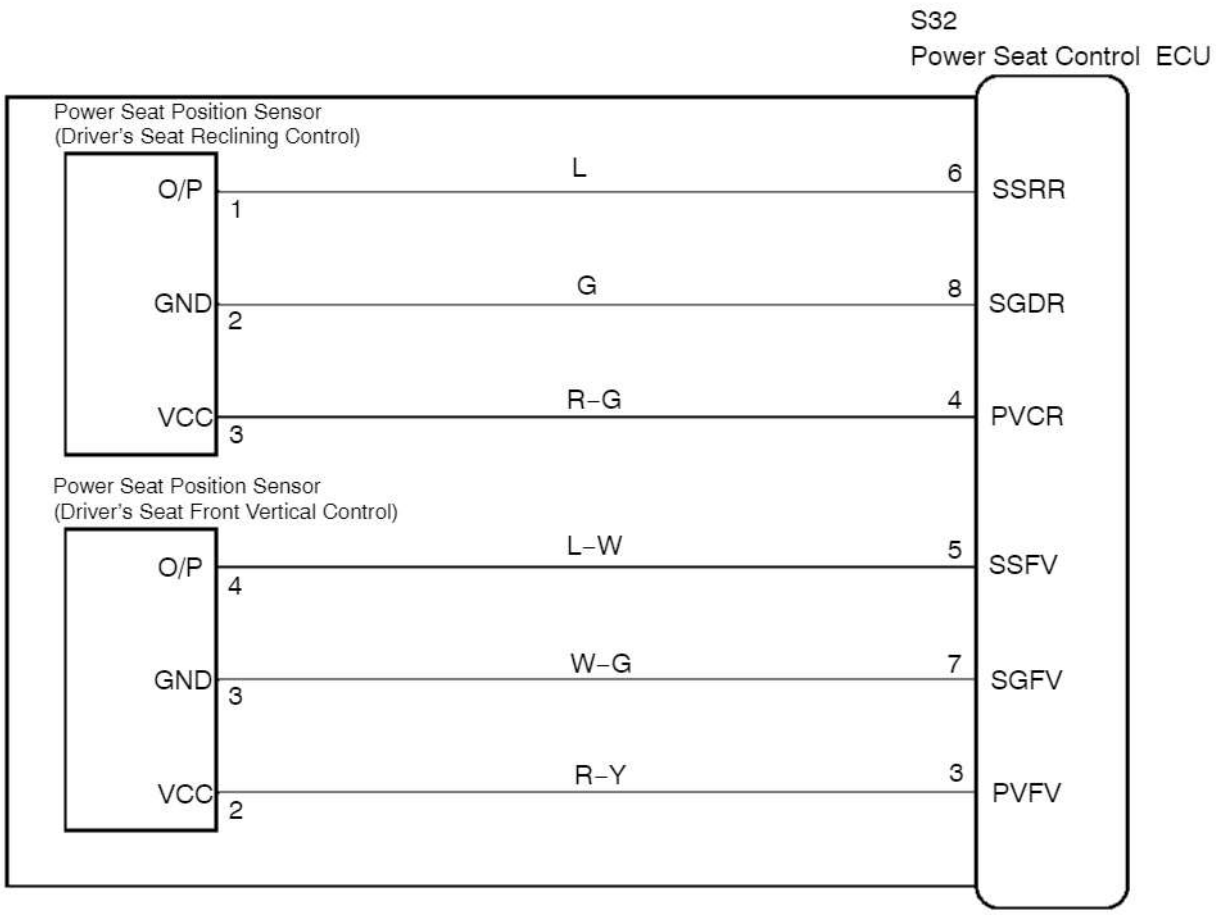
DIAZX–01

Position Sensor Power Source Circuit

CIRCUIT DESCRIPTION

This circuit provides power to the slide, front vertical and reclining position sensors.

WIRING DIAGRAM

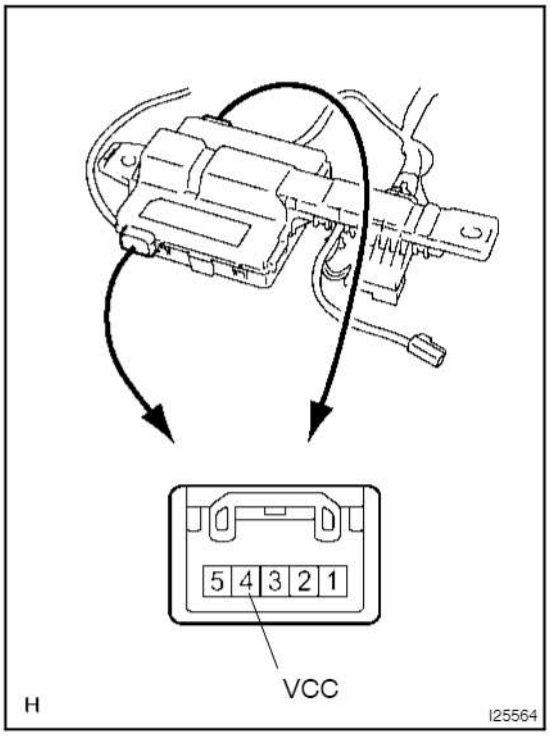


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INSPECTION PROCEDURE

1	**Check voltage between terminal VCC of Power Seat Control ECU connector and body ground.**



PREPARATION:
Remove Power Seat Control ECU with connectors connector being connected.

CHECK:
While operating the Power Seat Control Switch and moving the seat, check voltage between terminal VCC of Power Seat Control ECU connector and body ground.

OK:

Voltage: 7.2 – 8.8 V

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI–786).**

NG

2	**Check harness and connector connected to terminal VCC of Power Seat Control ECU (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

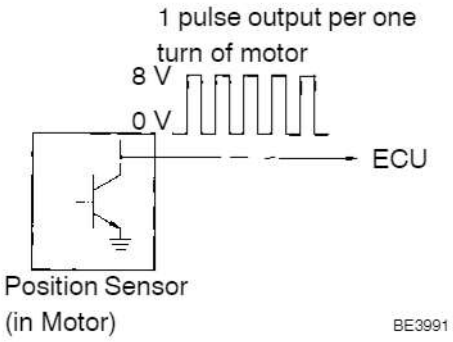
Check and replace Power Seat Control ECU (See page IN–38).

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DIAZY–01

Position Sensor Circuit

CIRCUIT DESCRIPTION



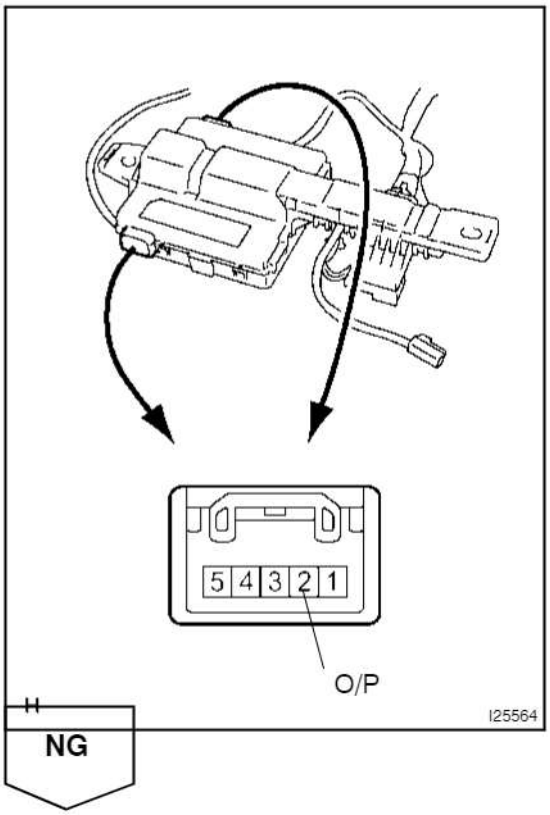
The position sensor senses movement of the seat and send pulse signals to the ECU. The position sensor sends pulse to the ECU in proportion to the amount of seat movement, as shown in the diagram on the left.
The ECU uses the number of pulses to constantly calculate the position relative to the memory position and returns the seat to the memorized position.
If a malfunction occurs in a position sensor and a sensor signal is not input to the ECU even when the motor operates, the ECU prohibits return operation.

WIRING DIAGRAM

See page DI–804.

INSPECTION PROCEDURE

1	**Check position sensor.**



NG

CHECK:

Measure voltage between terminal O/P of Power Seat Control ECU and body ground with connector being connected.

OK:

Tester Connection	Condition	Voltage
O/P ↔ body ground	Motor stopped (Check several times with the motor in a different position each time.)	0 V or 8 V voltage according to stop position.
	with motor turning	half of 8 V voltage

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI–786).**

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2	**Check harness and connectors between Power Seat Control ECU and position sensors (See page IN–38).**

NG → **Repair or replace harness or connectors.**

OK

Proceed to next circuit inspection shown on problem symptom table (See page DI–786).

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WIRELESS DOOR LOCK CONTROL SYSTEM

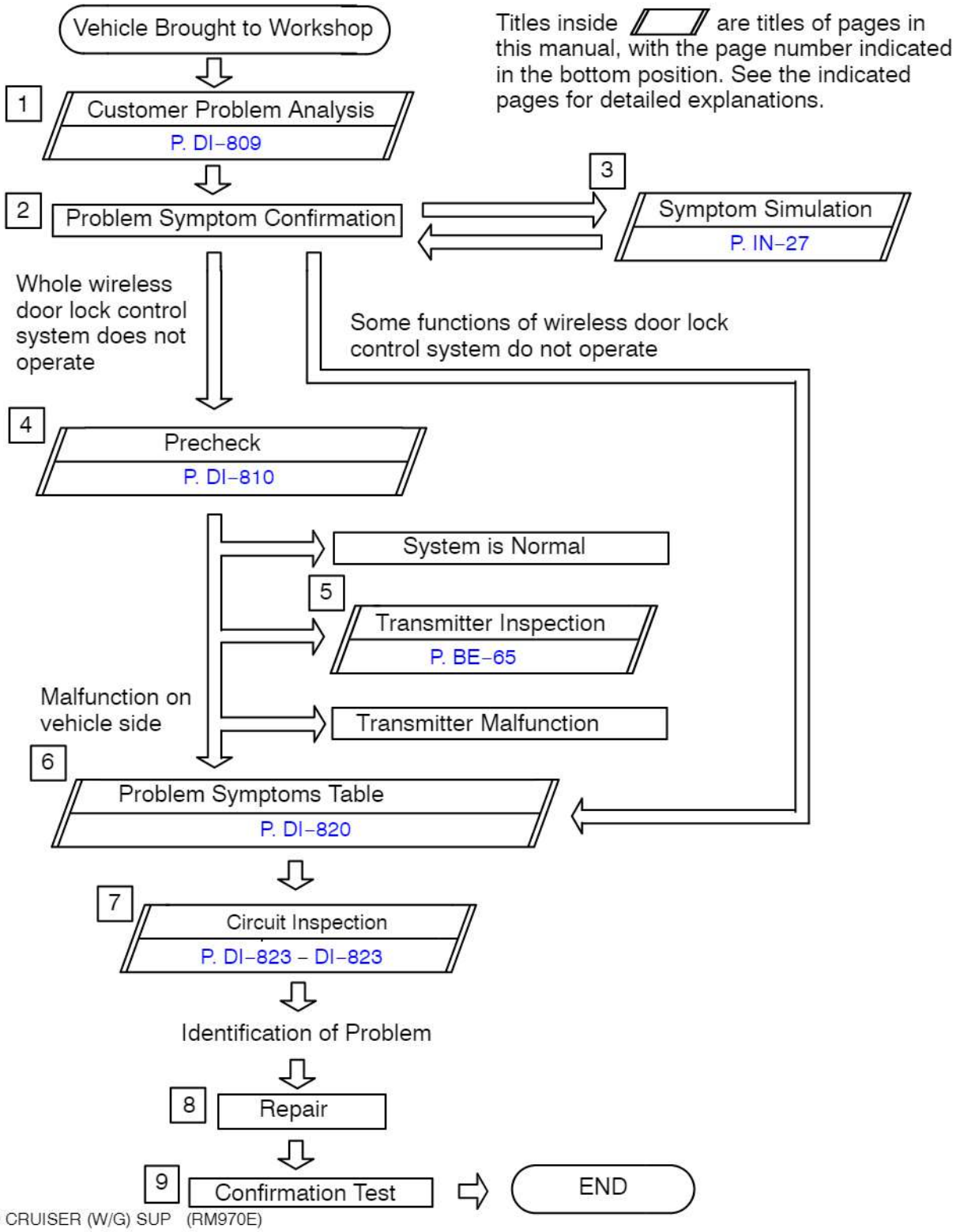
HOW TO PROCEED WITH TROUBLESHOOTING

DIAZZ–01

HINT:

Troubleshooting of the wireless door lock control system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the wireless door lock control system, first make certain that the door lock control system is operating normally.

Perform troubleshooting in accodnce with procedure on the following page.



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DI5G0–01

CUSTOMER PROBLEM ANALYSIS CHECK

WIRELESS DOOR LOCK CONTROL System Check Sheet

Inspector's Name _____

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	**km Miles**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Sometimes (times/per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))
	Place	☐ Everywhere ☐ Specific Locality( )
Date Transmitter Battery Last Replaced		/ /

Problem Symptom	☐ Whole wireless door lock control system does not operate.	
	☐ Only door unlock operation is not possible.	
	☐ Only door lock operation is not possible.	
	☐ Only key confinement prevention function is not possible.	
	☐ Wireless door lock function operates even when each door is opened.	
	☐ Wireless door lock functions incorrectly. (Although one door is unlocked, when the transmitter switch is pressed, all doors become unlocked.)	☐ When RH door is unlocked ☐ When LH door is unlocked
	☐ Others	

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DIB01-01

PRE–CHECK

1. CHARACTERS OF WIRELESS DOOR LOCK

(a) The operation distance changes according to how customers hold the transmitter or where it is used.

(b) Because of using the very weak radio wave, if there is a strong wave or noise on the frequency being used, the operation distance may become shorter.

2. WIRELESS DOOR LOCK BASIC FUNCTION

(a) Stand on the driver's side. Stay 1 m away from the vehicle.

(b) Turn the transmitter toward the vehicle and press any one of the transmission switched for 1 sec.

3. INSPECT WIRELESS DOOR LOCK DIAGNOSIS MODE

(a) Start up diagnosis mode.

HINT:

Follow the method below.

(1) Insert the ignition key into the ignition key cylinder.

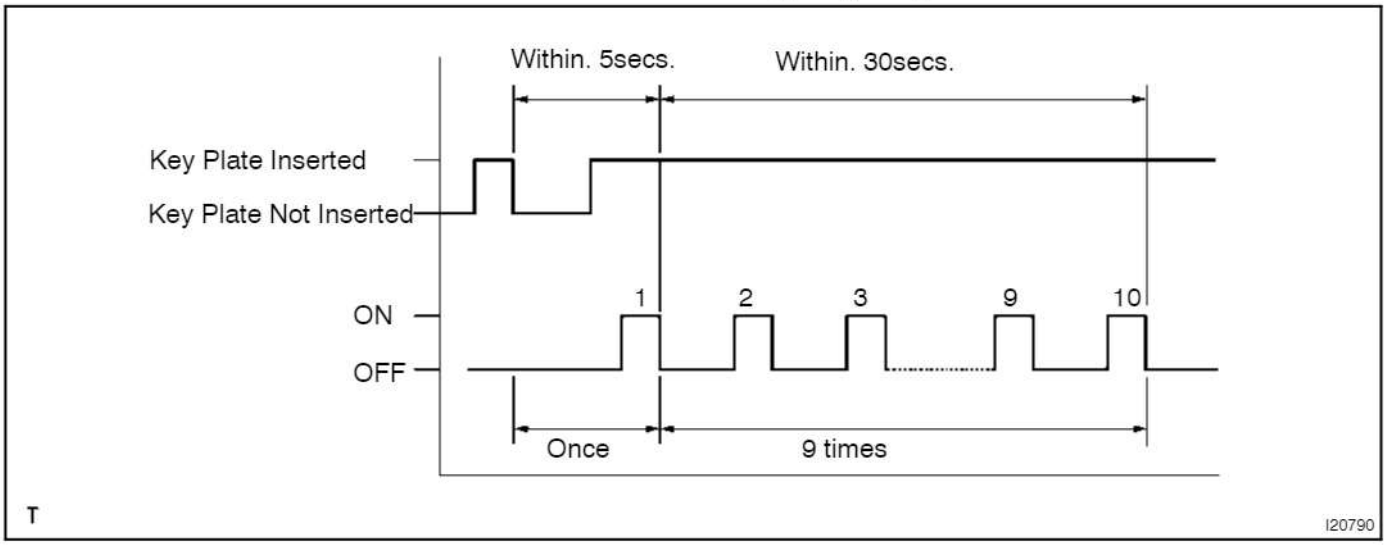
(2) Remove the ignition key from the ignition key cylinder.

(3) Insert the key into the ignition switch.

(4) Turn the ignition switch ON once within 5 sec.

(5) Repeat turnning the ignition switch OFF → ON 9 times within 30 sec.

(6) Enter the diagnosis mode, and make sure that the taillight lights up.

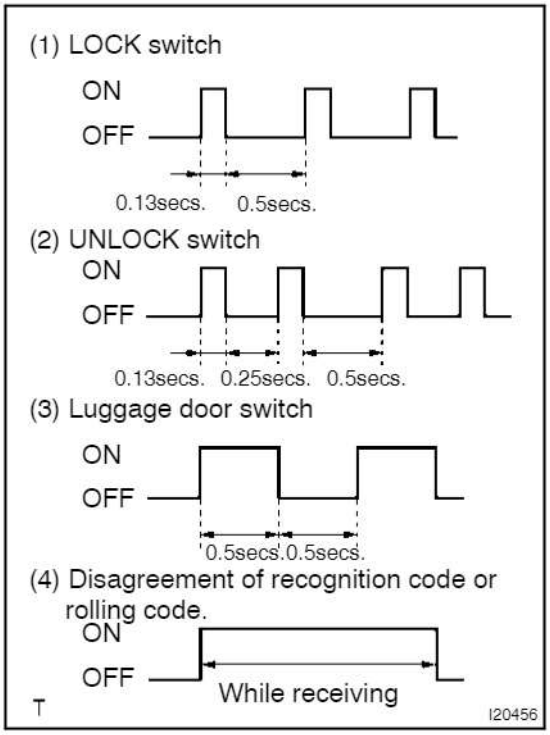


(b) Finishing the Diagnosis Mode.

During the Diagnosis mode, turn the ignition switch OFF → ON to go back to the normal mode.

At this time make sure that the taillight lights up.

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(c) Diagnosis Mode Check.

HINT:

Check how the taillight lights up when pressing each transmitter switch.

(1) LOCK switch
(2) UNLOCK switch
(3) Luggage door switch
(4) Disagreement of recognition code or rolling code.

HINT:

If (4) is detected in the Diagnosis Check, conduct the recognition code registration.

(5) No response from the taillight.

HINT:

Conduct the following checks.

- Wireless door lock transmitter.
- Wireless door lock receiver.

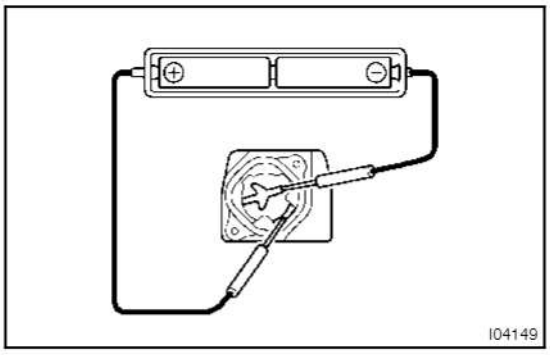
4. INSPECT WIRELESS DOOR LOCK TRANSMITTER OPERATION

HINT:

Refer to "3. REPLACE TRANSMITTER (LITHIUM) BATTERY".

(a) Using a screwdriver, remove the 2 screws and cover.

(b) Remove the battery (lithium battery).



(c) Install a new or normal battery (lithium battery).

HINT:

When a new or normal battery can not be obtained, connect 2 new 1.5 V batteries in series, connect the battery (+) to the battery receptacle side terminal and battery (–) to the bottom terminal, then apply 3 V voltage to the transmitter.

(d) In the location where is approx. 1 m away from driver's outside handle in the right direction, face the key plate of the transmitter to the vehicle, and check the transmitter operation when pressing transmission switch of the transmitter body.

Standard:

- Remote control of vehicle door lock can be operated.
- LED lights up more than once.

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HINT:

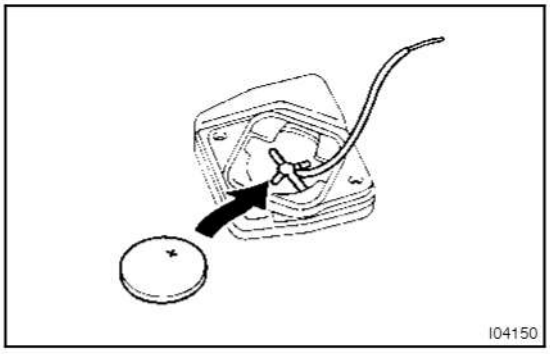
- The minimum operation distance differs according to operator, the way of holding the transmitter, and location.
- As weak wave is used, operation distance might be shortened when noise is detected in strong wave or used frequency.

(e) Install the battery (lithium battery).
(f) Install a cover so that O–ring is not distorted or slipped off.
(g) Using a screwdriver, tighten the 2 screws.

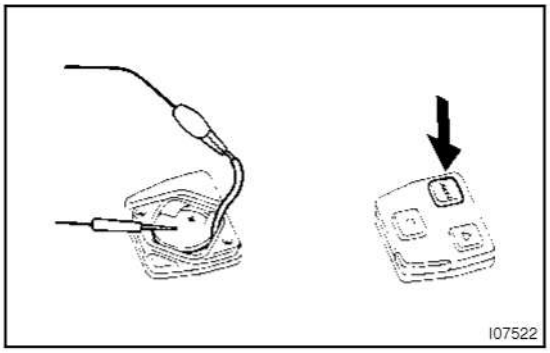
5. CHECK BATTERY CAPACITY

HINT:

- Make sure to use the TOYOTA electrical tester.
- With the battery unloaded, judge can not be made whether the battery is available or not on the test.
- When the transmitter is faulty, the energy amount left in the battery might not be checked correctly.
- On the lithium battery used for the transmitter, the voltage more than 2.5 V with the battery unloaded is shown on the tester until the energy is completely consumed.
  Accordingly when inspecting the energy amount left in the battery, it is necessary to measure the voltage when the battery is loaded. (1.2 kΩ).



(a) Remove the 2 screws and cover using a (–) driver.
(b) Remove the battery (lithium battery) from the transmitter.
(c) Connect the lead to the (–) terminal of the transmitter and install the battery.



(d) Connect the (+) tester to the (+) battery (lithium battery), and (–) tester to the lead respectively.
(e) Press one of the transmitting switches on the transmitter for approx. 1 second.
(f) Press the transmitting switch on the transmitter again to check the voltage.
Standard: 2.1 V or more

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HINT:

- When the temperature of the battery is low, the judge can not be made correctly.
  When the outcome of the test is less than 2.1 V, conduct the test again after leaving the battery in the place at 18 °C for more than 30 minutes.
- By auto power off function, the voltage becomes no load voltage (more than 2.5 V) condition 20 seconds after the switch was pressed.
  Make sure to read the voltage before of it.
- High voltage might be shown 1 to 2 times after leaving the battery, judge should be made with the voltage shown at the 3rd time or later.

(g) Disconnect the lead.
(h) Set the battery (lithium battery) in the transmitter.
(i) Install the cover, so that the O–ring is not distorted or slipped off.
(j) Using a screwdriver, tighten the 2 screws.

6. REPLACE TRANSMITTER (LITHIUM) BATTERY

NOTICE:

Special caution should be taken for handling each component as they are precision electronic components.

(a) Using a screwdriver, remove the screw and cover.

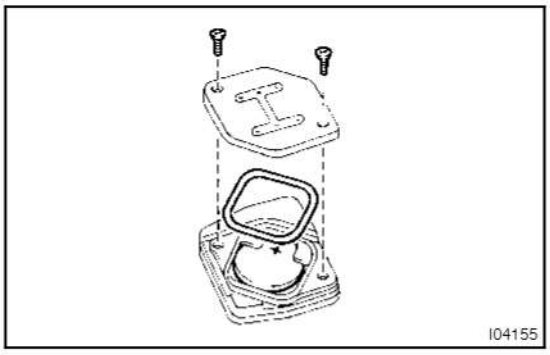
NOTICE:

Do not pry out the cover forcibly.

HINT:

Push the cover with a finger so that there becomes clearance, then pry out the cover from that clearance.

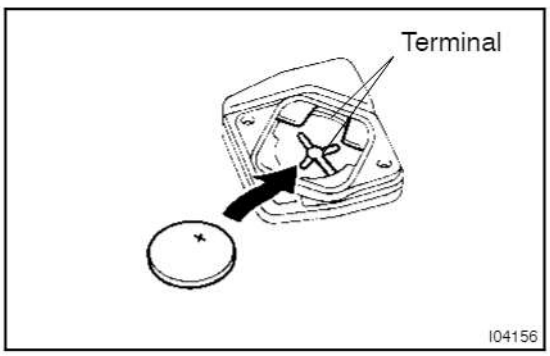
(b) Remove the transmitter.


I04155

(c) Using a screwdriver, remove the 2 screws and cover.
(d) Remove the battery (lithium battery).

NOTICE:

- **Do not push the terminals with a finger.**
- **If prying up the battery (lithium battery) forcibly to remove, the terminals are deformed.**



I04156

(e) Install a battery (lithium battery) as shown in the illustration.

NOTICE:

Face the battery upward. Take care not to deform the terminals.

(f) Check that O–ring is not distorted or slipped off, and install the cover.
(g) Using a screwdriver, tighten the 2 screws.

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NOTICE:

When the shrews are tightened loosely, it might cause faulty contact of battery (lithium battery) and terminals.

(h) Assemble the transmitter to the key plate and the cover.

(i) Using a screwdriver, tighten the screw.

7. REPLACE DOOR CONTROL RECEIVER AND TRANSMITTER

NOTICE:

When replacing the door control receiver and transmitter, registration of recongnition code is necessary because they are provided as single components.

(a) Select which operation mode should be performed from the following modes.

- Add mode
- Rewrite mode
- Prohibition mode
- Confirmation mode

HINT:

- The add mode is used to retain codes already registered while you register new recongnition codes. This mode is used when adding a transmitter. However, if the number of registered codes exceeds 4 codes, previously registered codes are correspondingly erased in order, starting from the first registered code.
- The rewrite mode is used to erase all previously registered codes and register only new recognition codes.
- The prohibition mode is used to erase all registered codes and cancels the wireless door lock function. Use this mode when the transmitter is lost.
- The confirmation mode is for confirming how many recongnition codes are already registered before you register additional recognition codes.

(b) Follow the chart on the following pages to register the transmitter recongnition code at the wireless door lock conrol receiver.

HINT:

- When procedure is out of the specified, the operation returns to normal operation.
- Maximum 4 recognition codes can be registered.

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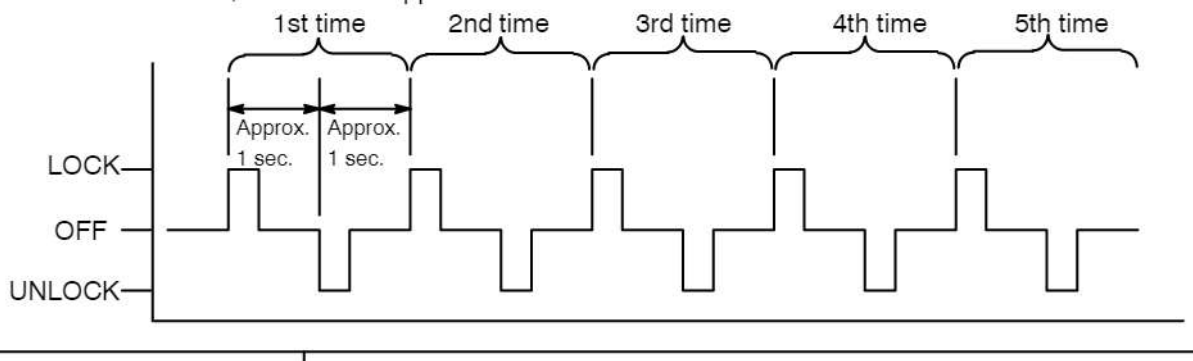
Start registration of recognition code

The vehicle should be in the following conditions.
- The key is not inserted in the ignition key cylinder.
- Driver's door is OPEN. (Other doors are CLOSED)
- Driver's door is UNLOCKED.

Insert the key into the ignition key cylinder, then pull it out.

Within 40 secs.

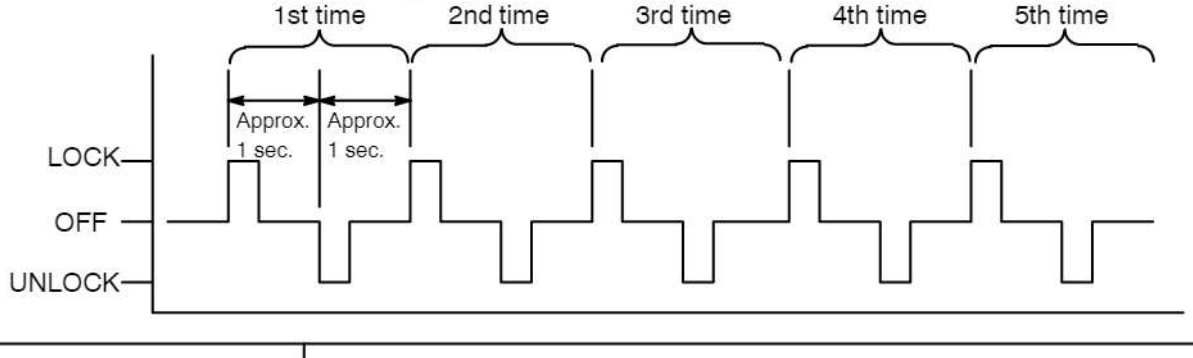
Press the door lock control switch (for manual operation) 5 times to LOCK/UNLOCK at approx. 1 sec. interval.



Close the driver's door, then open it.

Within 40 secs.

Again press the door lock control switch (for manual operation) 5 times to LOCK/UNLOCK at approx. 1 sec. interval.



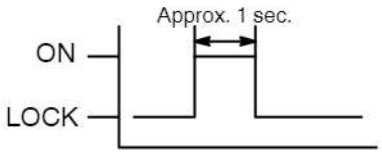
Insert the key into the ignition key cylinder.

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Turn the ignition switch from ON to LOCK at approx. 1 sec. interval 1 to 5 times to select the mode.

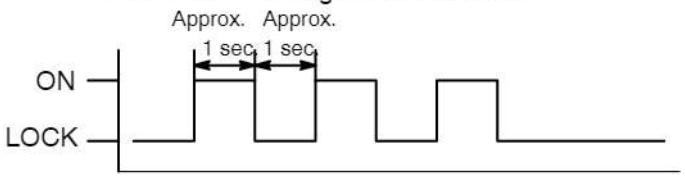
Add mode

ON – LOCK change occurs 1 time



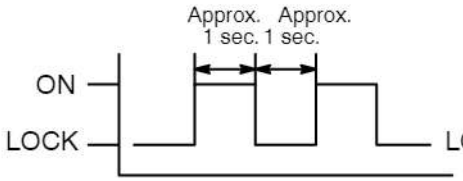
Confirmation mode

ON – LOCK change occurs 3 times



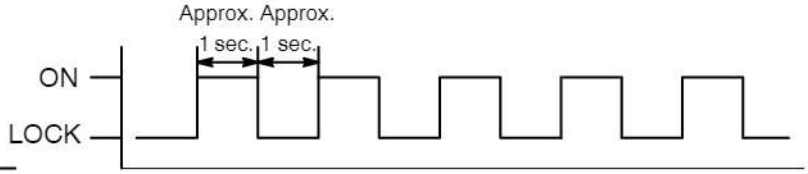
Rewrite mode

ON – LOCK change occurs 2 times



Prohibition mode

ON – LOCK change occurs 5 times



Pull out the key plate from the ignition key cylinder.

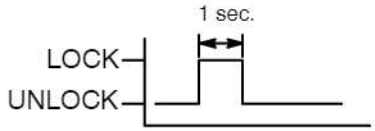
Within 3 secs.

When add mode or rewrite mode is selected.

MPX body ECU automatically performs the LOCK–UNLOCK operation once or twice at 1 sec. interval to iniform the operator that either the add mode or rewrite mode has been selected.

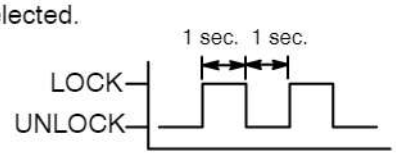
LOCK–UNLOCK occurs once

Indicates that add mode has been selected.



LOCK–UNLOCK occurs twice

Indicates that rewrite mode has been selected.

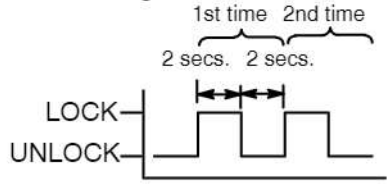


When prohibition mode is selected.

When confirmation mode is selected.

MPX body ECU automatically performs the LOCK–UNLOCK operation 1 to 4 times at 2 secs. interval to inform the operator of the number of the registered codes.
HINT:
When the number of the registered code is 0, the operation is automatically performed 5 times.

Example:
When the operation is performed twice, it directs that 2 types of recognition code have been registered.



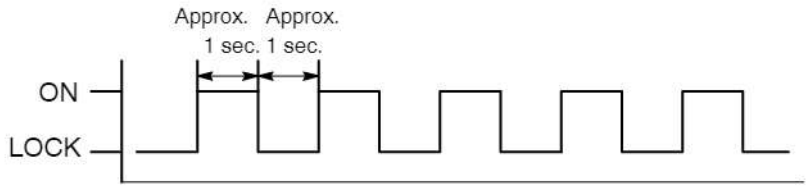
Registration of recognition code (Confirmation mode and prohibition mode) is completed.

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When prohibition mode is selected.

Within 40 secs.

MPX body performs LOCK–UNLOCK operation 5 times at a 1 sec. interval to inform the operator that prohibition mode has been selected.



Press the lock and unlock switches on the transmitter simultaneously within 1.5 sec.

Within 3 secs.

Press again either of switches on the transmitter for more than 1 sec.

Within 3 secs.

MPX body ECU automatically performs LOCK–UNLOCK operation once or twice at a 1 sec. interval to inform the operator that the receiver has received the signal from the transmitter.

LOCK–UNLOCK occurs once

Registration of recognition code is completed

LOCK–UNLOCK occurs twice

Registration of recognition code has not been completed.

- Recognition code received first time and second time did not match.

If LOCK–UNLOCK operation can not be performed at all, the mode returns to the normal mode, then start with "Start registration of recognition code".

Proceed to finish registration

Proceed to continue registration

Within 40 secs.

If even one of the following conditions is satisfied, registration of recognition codes is completed.

- 40 secs. elapses since the MPX body ECU response.
- The driver's door is closed.
- The key plate is inserted in the ignition key cylinder.
- 4 type recognition codes are registration at one time.

Registration of recognition codes (add mode or rewrite mode) is completed.

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DIAGNOSTIC TROUBLE CODE CHART

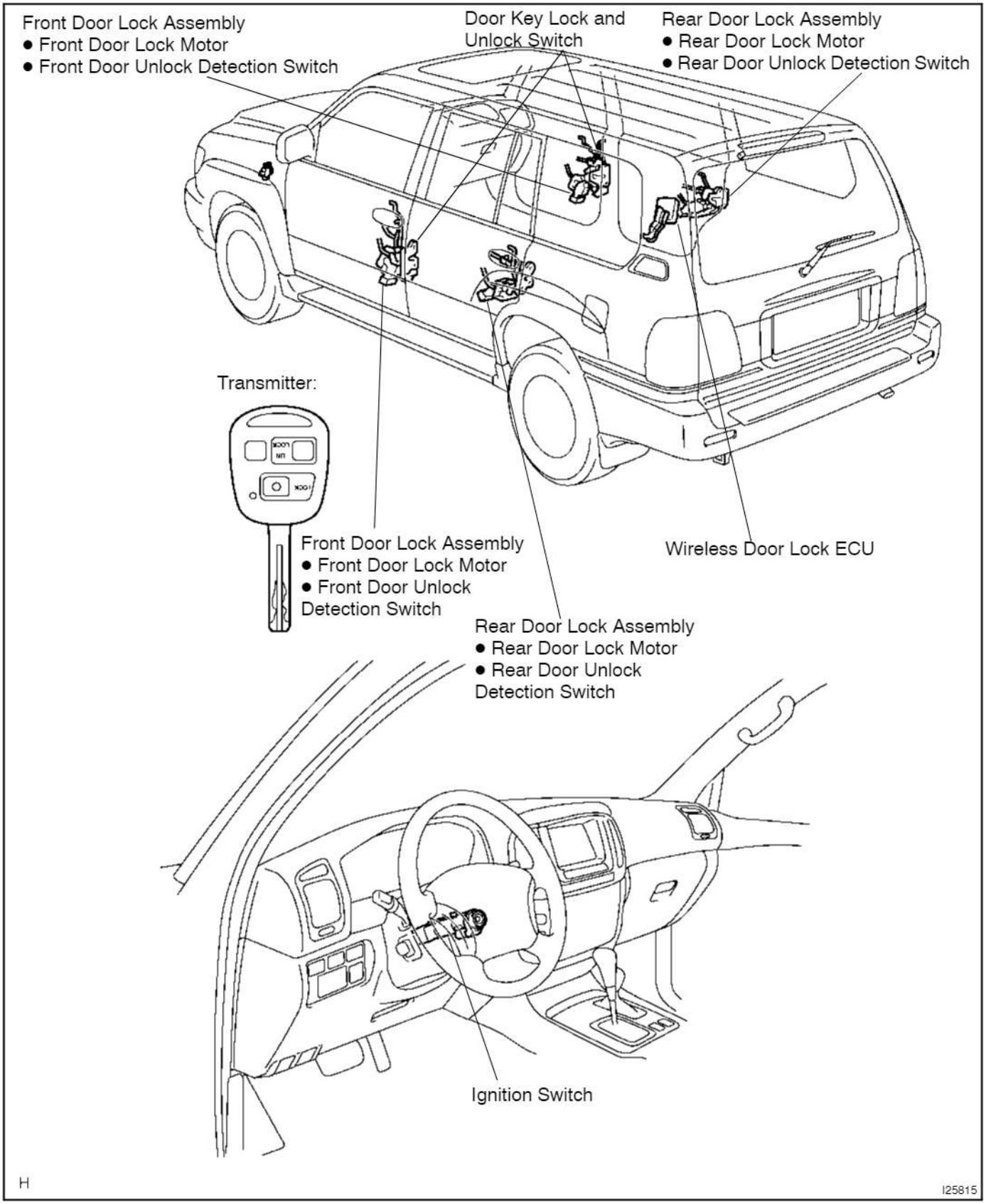
If a malfunction code is displayed during DTC check, check the circuit corresponding to the code in the table below (Proceed to the page given for the circuit).

B1242 (DI–821)	Wireless door lock tuner circuit malfunction	• Wire harness • Wireless door lock tuner (door control receiver) • Theft deterrent ECU

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PARTS LOCATION



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DIB04–01

PROBLEM SYMPTOMS TABLE

Perform troubleshooting of the circuit for the applicable problem symptom in the order given in the chart below. Proceed to the page located for each circuit.

HINT:

- Troubleshooting of the wireless door lock control system is based on the premise that the door lock control system and theft deterrent system are operating normally. Accordingly, before troubleshooting the wireless door lock control system, first make certain that the door lock control system and theft deterrent system are operating normally.
- If the instruction "Proceed to next circuit inspection shown on matrix chart" is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
- If the trouble still reappears even through there are no abnormalities in any of the other circuits, check and replace the Wireless Door Lock ECU as the last step.

Symptom	Suspect Area	See page
All function of wireless door lock control system do no operate.	1. ECU Power Source Circuit. 2. Door Courtesy Switch Circuit. 3. Door Key Lock and Unlock Switch Circuit. 4. Key Unlock Warning Switch Circuit. 5. Wireless Door Lock ECU. 6. Body ECU.	DI–823 DI–1008 DI–1073 DI–1006 IN–38 IN–38
Only door unlock operation is not possible (Lock operation is possible).	1. Door Key Lock and Unlock Switch Circuit 2. Door Unlock Detection Switch Circuit 3. Wireless Door Lock ECU. 4. Body ECU.	DI–1073 DI–1081 IN–38 IN–38
Only door lock operation is not possible (Unlock operation is possible).	1. Door Key Lock and Unlock Switch Circuit 2. Wireless Door Lock ECU 3. Body ECU.	DI–1073 IN–38 IN–38
Only transmitter misoperation prevention function is not possible.	1. Key Unlock Warning Switch Circuit 2. Wireless Door Lock ECU 3. Body ECU.	DI–1006 IN–38 IN–38
Wireless door lock function operates even when each door is opened.	1. Door Courtesy Switch Circuit 2. Wireless Door Lock ECU 3. Body ECU.	DI–1008 IN–38 IN–38
Wireless door lock functions incorrectly. (Although one door is unlocked, when the transmitter switch is pressed, all doors unlock.)	1. Door Unlock Detection Switch Circuit 2. Wireless Door Lock ECU 3. Body ECU.	DI–1081 IN–38 IN–38
Wireless door lock operates, but the taillight does not respond.	1. Taillight Relay Circuit 2. Wireless Door Lock ECU 3. Body ECU.	DI–1035 IN–38 IN–38

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CIRCUIT INSPECTION

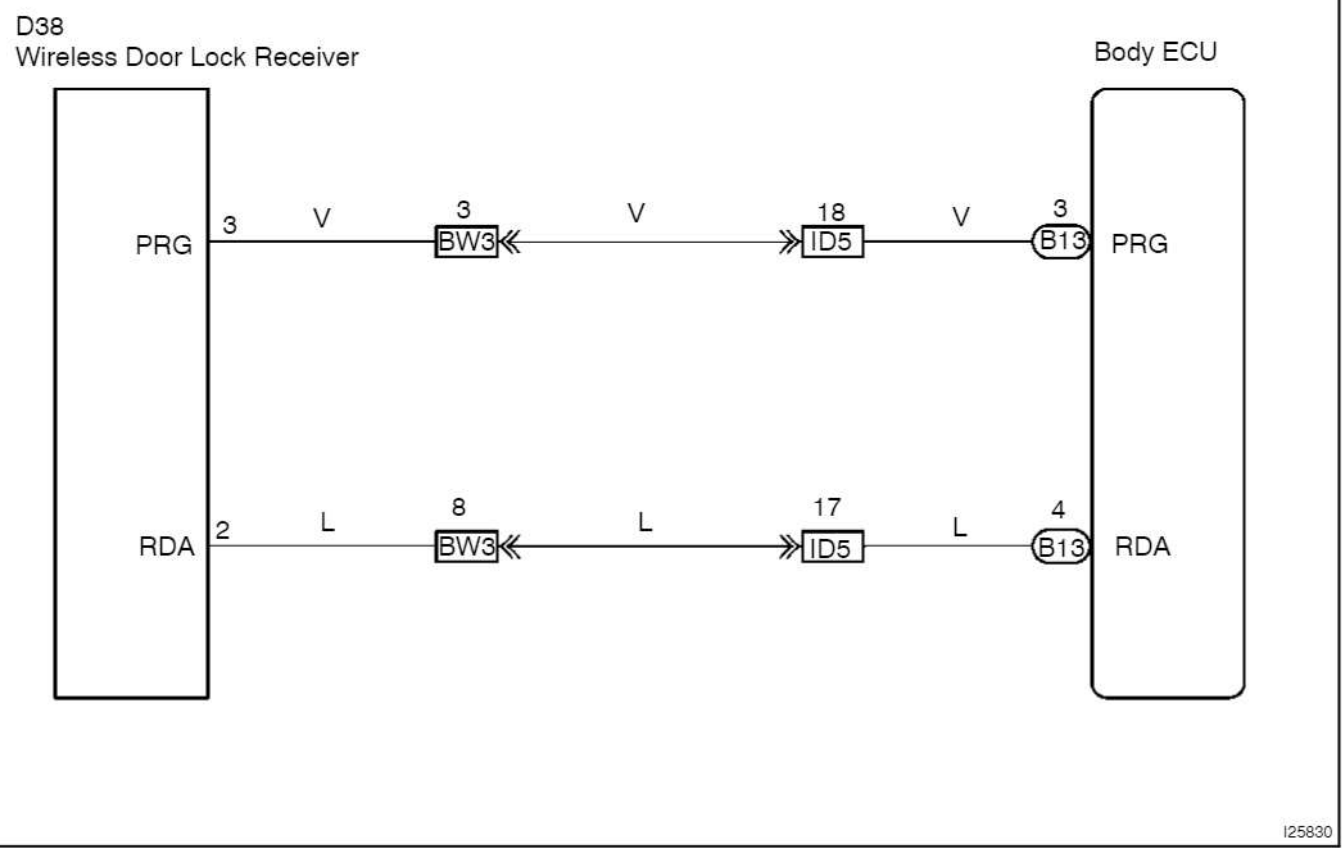
DTC	B1242	Wireless door lock receiver circuit malfunction

CIRCUIT DESCRIPTION

This DTC is output when GND short of RDA terminal is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B1242/42	GND short of RDA terminal	• Wire harness • Wireless door lock receiver • Body ECU (Main)

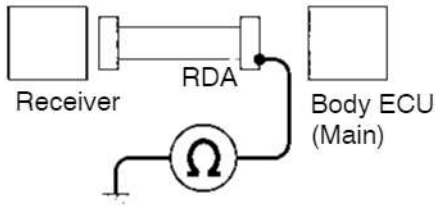
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check wire harness.**

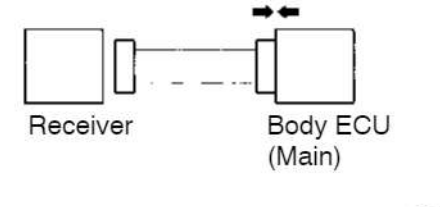


PREPARATION:
Disconnect the connector of receiver and body ECU (Main).
CHECK:
Check the continuity between wireharness and body ground.
OK:
No continuity.

NG → **Repair or replace the wire harness.**

OK ↓

2	**Check body ECU (Main.)**



PREPARATION:
Connect the connector of body ECU (Main).
CHECK:
Check the DTC.
OK:
B1242 is not output.

NG → **Replace the body ECU (Main).**

OK ↓

Replace the receiver.

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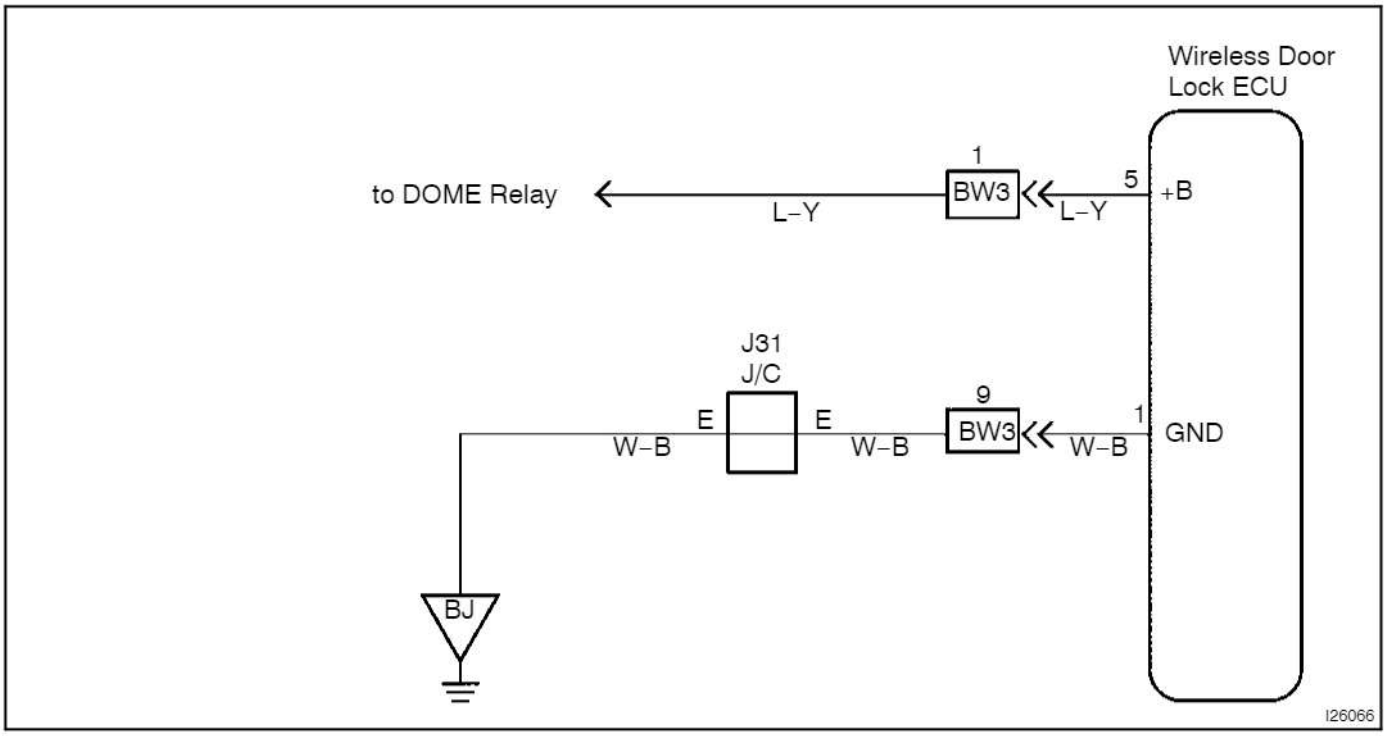
DI5O8-01

ECU Power Source Circuit

CIRCUIT DESCRIPTION

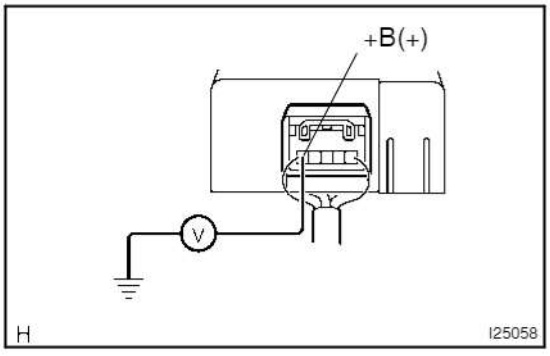
Battery positive voltage is always applied to the terminal +B of the wireless door lock ECU.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check voltage between terminal +B of ECU connector and ground.**



PREPARATION:

Remove the wireless door lock ECU.

CHECK:

Measure voltage between terminal +B of ECU connector and ground.

OK:

Voltage: 10 – 14 V

OK

Proceed to next circuit inspection shown in problem symptom table (See page DI–820).

NG

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2	Check wire harness and connector between wireless door lock ECU and body ECU (Main) (See page IN–38).

NG → Repair or replace harness or connector.

OK

Proceed to next circuit inspection shown in problem symptom table (See page DI–820).

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THEFT DETERRENT SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DIB07–01

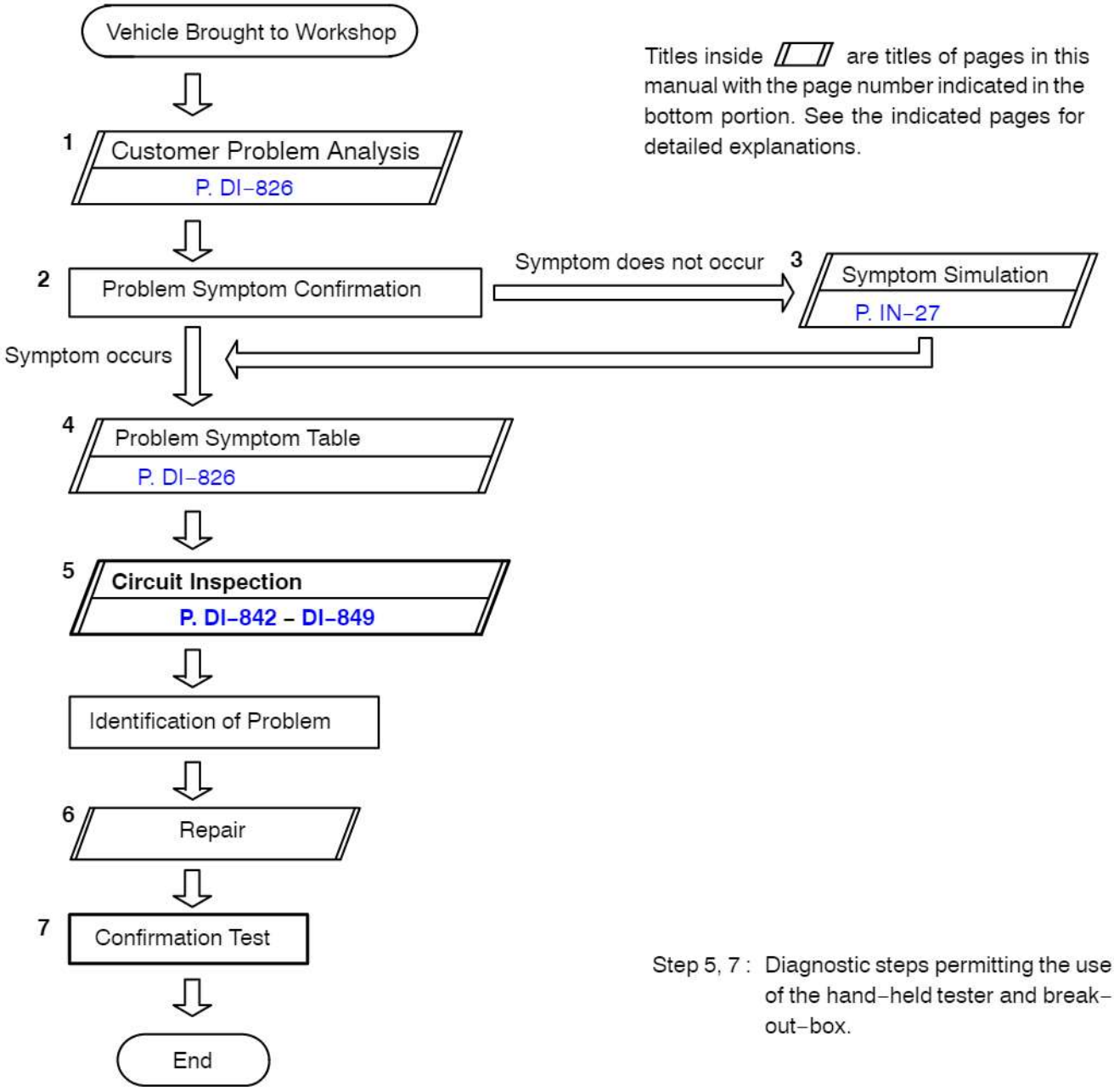
HINT:

Troubleshooting of the theft deterrent system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system is operating normally.

For troubleshooting use a volt/ohm meter.

Be sure to use troubleshooting procedure appropriate to the diagnostic tool being used.

Perform troubleshooting in accordance with the procedure on the following page.



Titles inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

Step 5, 7 : Diagnostic steps permitting the use of the hand–held tester and break–out–box.

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DI5O8-01

CUSTOMER PROBLEM ANALYSIS CHECK

THEFT DETERRENT SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constantly ☐ Sometimes (Times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))

Problem Symptom			
☐ Theft deterrent system cannot be set.			
☐ Indicator light does not flash when the theft deterrent system is set. (It stays ON or does not light at all.)			
☐ Theft deterrent system does not operate.	☐ When unlocked using the door lock knob. ☐ When the engine hood is opened.	Malfunction ☐ Horns only ☐ Theft deterrent horn only ☐ Headlights only ☐ Taillights only ☐ Starter cut only ☐ Door lock operation only	
☐ Once set system cannot be canceled.	☐ When door is unlocked using key or wireless door lock control system. ☐ When the key is inserted in the ignition key cylinder and turned to ACC or ON position. (However, only when the system has never operated) ☐ When the luggage compartment door is opened with the key.		
☐ System cannot be canceled during warning operation.	☐ When door is unlocked using key or wireless door lock control system. ☐ When the key is inserted in the ignition key cylinder and turned to ACC or ON position.		
☐ Warning operation starts when the system is set and the door or luggage compartment door is opened with the key.			
☐ Others.			

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DI509-01

PRE–CHECK

1. OUTLINE OF THEFT DETERRENT SYSTEM

The security has an "Alarm Control" and the control consists of 2 modes.

- Active mode
  This mode begins "Alarm Control" as the user locks the vehicle by intention (See the reference step 2).
- Passive mode
  This mode begins "Alarm Control" even if the user forgets locking the vehicle (See the reference step 5). (This mode begins "Alarm Control" when the user closed all doors and the engine hood.)

HINT:

- "Alarm Control" refers to the function that detects intrusion into the vehicle and sounds an alarm.
- Even when the "Alarm Control" operates in the passive mode, it works as in the active mode if a condition to begin the active mode is met.

2. ACTIVE ARMING MODE

There are 4 modes in active mode.

(1) Disarmed state
- The alarm system is not set (theft detection is impossible), and the alarm does not sound. The system does not detect any theft.

(2) Arming preparation (for 30 seconds)
- The waiting period when the alarm set requirements are met to when the system is actually set.

(3) Armed state
The state the alarm is set (operation is possible). The system can detect theft.

(4) Alarm sounding:
The system detects theft and informs using sounds and lights.
- The state of waiting to switch to armed state again to have alarming interval after finishing alarming time.

- Perform forced door lock when the door is unlocked.

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Disarmed state (Key not inserted in ignition.)

Perform any of the followings, and the system will go no to "Arming preparation":
- With all the doors, engine hood and luggage compartment door closed, lock all doors with the key (**Except Europe**).
- With all the doors, engine hood and luggage compartment door closed, lock all doors with the wireless remote.
- With all the doors, engine hood and luggage compartment door closed, open and close any of doors, engine hood or luggage compartment door, then close and lock all doors, engine hood and luggage compartment door.

Arming preparation

Perform any of the followings, and the system will return to "Disarmed state":
- Open any of the doors, engine hood or luggage compartment door.
- Unlock any of the doors.
- Insert the key in the ignition.
- Reconnect the battery.
- Turn the ignition from OFF to ON.

Perform the following, and the system will go on to "Armed state":
- Let 30 seconds elapse with all the doors, engine hood and luggage compartment door closed and locked.

Armed state

Perform any of the followings, and the system will return to "Disarmed state":
- Run the engine at 550 rpm for more than 10 seconds (**Europe**) (★).
- Unlock any of the doors or open the luggage compartment door with the wireless remote (★).
- Unlock the doors or open the luggage compartment door with the key (**Europe**) (★).
- Put the key in the ignition and turn it to ON (**Except Europe**).

Perform any of the followings, and the system will go on to "Alarm sounding":
- Open any of the doors.
- Unlock any of the doors in any way other than with a key or the wireless remote (**Except Europe**).
- Unlock any of the doors in any way other than with a key (**Europe**).
- Open the luggage compartment door in any way other than with a key or the wireless remote (**Except Europe**).
- Open the luggage compartment door in any way other than with a key (**Except Europe**).
- Open the engine hood.
- Reconnect the battery.
- Turn the ignition from OFF to ON.
- Unlock the doors or open the luggage compartment door with the key (**Europe**) (★).

Alarm sounding

Perform any of the followings, and the system will return to "Disarmed state":
- Unlock any of the doors or open the luggage compartment door with the wireless remote.
- Unlock the doors or open the luggage compartment door with the key (**Except Europe**).
- Put the key in the ignition and turn it to ON (**Except Europe**).
- Run the engine at 550 rpm for more than 10 seconds (**Europe**).

- The vehicle's horn and security horn will sound, and the hazard,Tail and Head lights flash for 30 seconds (**Except Europe**).
- The vehicle's horn and self–power siren will sound, and the hazard, flash for 30 seconds (**Europe**).

After the alarm has ended, the system will return to "Armed state".

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3. PASSIVE ARMING MODE

There are 4 modes in active mode.

(1) Disarmed state (1)
- The state is same as the disarmed state in active mode.

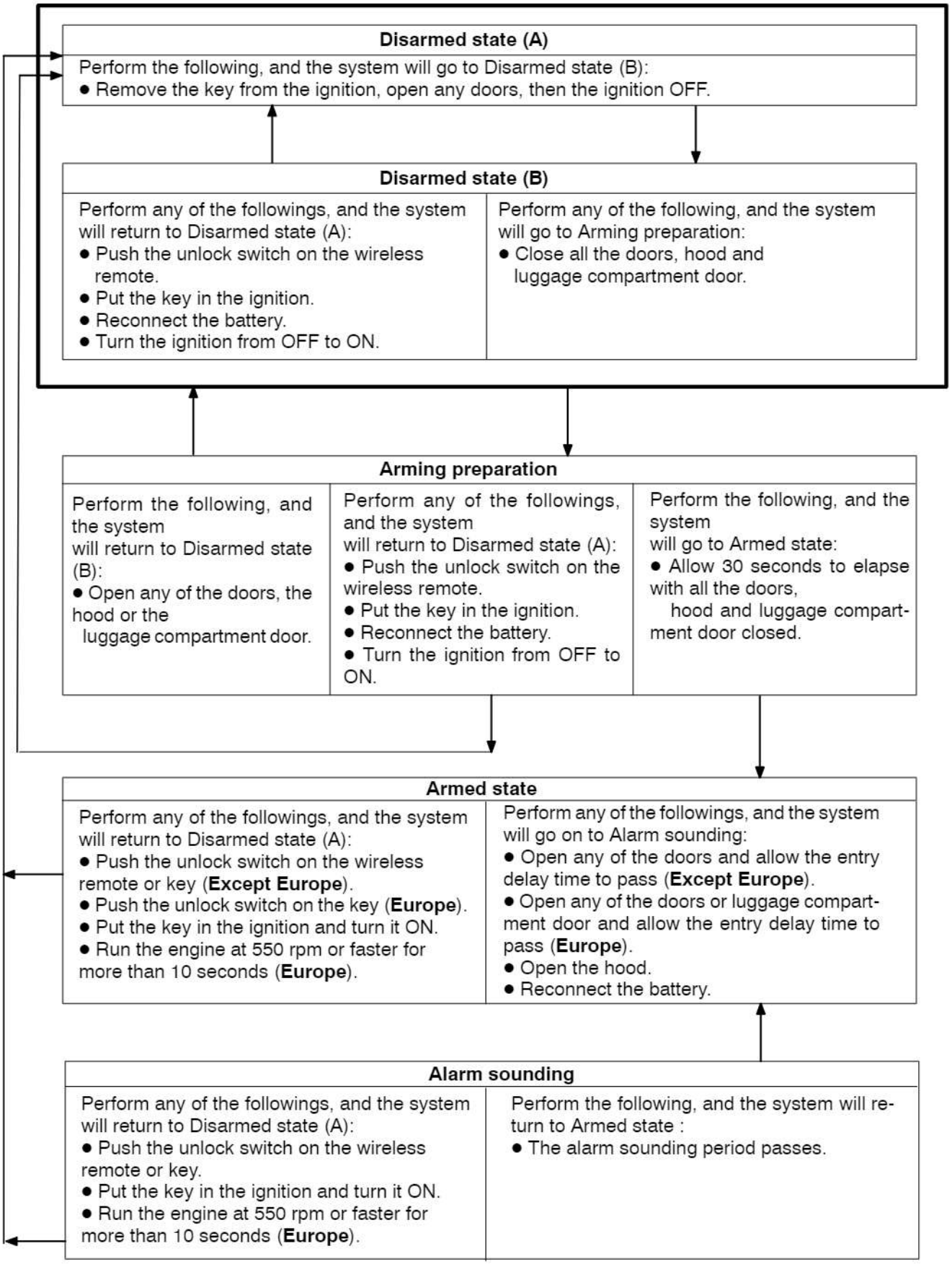
(2) Disarmed state (2)
- The alarm is not set. Pulling out the key and any of the doors is/are opened. (= the state if the opened door(s) and the engine hood are closed, the alarm is set.)

(3) Arming preparation (for 30 seconds)
The state is same as the arming preparation in active mode.

(4) Armed state
The state is same as the armed state in the active mode (However, it does not performs the theft deterrent by unlock operation).

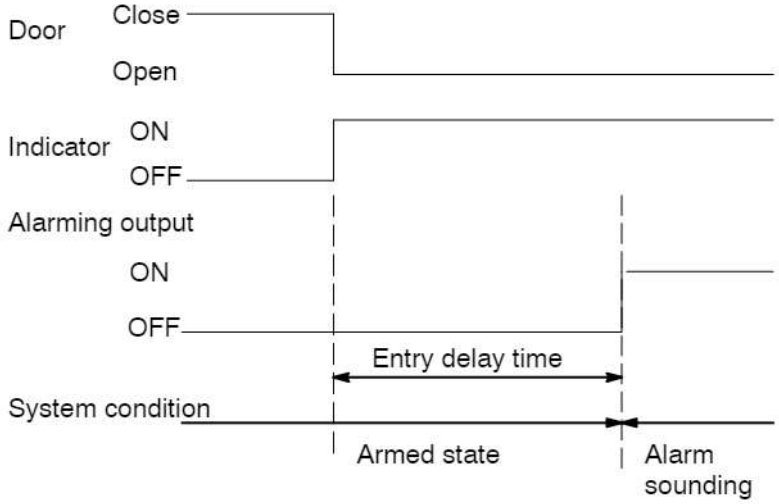
(5) Alarm sounding:
The system detects theft and informs using sounds and lights.
- The state is same as the alarming sounding in the active mode (However, it does not performs forced door lock output).

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HINT:
In the armed state, if one of the doors is opened, entry delay occurs. (14 secs.)
During this time, the mode transfers to the disarmed state when the condition described on the previous page (★) is met.
When the condition is not met, the system judges as a theft occurred, and the mode transfers to alarm sounding.



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4. INDICATOR LIGHT OUTPUT

The indicator output the condition of the alarm control and the intrusion sensor control as shown below.

Condition	Indicator light
Disarmed state	OFF
Arming preparation	ON
Armed state (Entry delay time)	OFF (ON)
Alarm sounding	ON

HINT:

Even in disarmed state, the indicator light flashes. (Due to the signal output from immobiliser system). The indicator always flashes by receiving the signal from the immobiliser system at any time in the arming condition.

Flashing frequency:

0.2 seconds (ON)

1.8 seconds (OFF)

Response:

The hazard lights flash under the following conditions.

(1) When the system is set.
When arming preparation is set from disarmed state using the wireless door lock, the hazard lights flash once.

(2) When the system is released.
When disarmed state is set from either arming preparation, armed state or alarm sounding using the wireless door lock, the hazard lights flash twice.

5. SWITCH TO ACTIVE MODE

In each passive mode, when "disarmed state of active mode → arming preparation switch condition" is met, the active mode switch to each condition. In this case, active mode continues till disarmed state.

Passive mode when transfer condition is met.	Active mode transfer condition
Disarmed state	Arming preparation condition
Arming preparation condition	Arming preparation condition
Armed state (During entry delay time)	Arming condition (After alarming time has elapsed, arming condition if all the doors, engine hood and luggage compartment door is closed, all the doors are locked.)
Alarm sounding	After alarming time has elapsed, arming condition if all the doors, engine hood and luggage compartment door is closed, all the doors are locked.

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6. FORCED DOOR LOCK CONTROL

While detecting intrusion into the vehicle and sounding alarm, alarm control outputs the door lock at the moment the door is unlocked, and prevents intrusion into the vehicle.

(1) Condition for Starting Forced Door Lock
Detecting any of the following conditions activates the forced door lock.
- Alarm system is in alarm status in active mode.
- Except for the case that the key unlock/luggage unlock switch is turned on.
- No key is in the ignition key cylinder.
- Some of the doors are unlocked.
- Since the start of the last forced lock, 0.38 sec. or more has been elapsed.

(2) Conditions for Stopping Forced Door Lock
Detecting any of the following conditions stops the forced door lock.
- All doors are locked.
- An alarm is stopped.
- A key is inserted into the key cylinder.

7. PANIC CONTROL

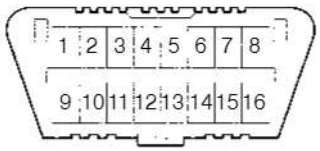
The function to sound the alarm when the user presses the panic switch of the wireless key.

8. ALARM MEMORY CONTROL

If an alarm is activated while a user leaves the vehicle, when the user comes back to the vehicle and reset the security system, the tail lights will come on for 2 sec. to show the alarm occurrence.

9. INTRUSION SENSOR CONTROL

This sensor is built in the cabin and detects intrusion into the vehicle. Theft deterrent ECU controls detection handling such as whether intrusion occurs, supplies power, turns the sensor off.



DLC3

A04550

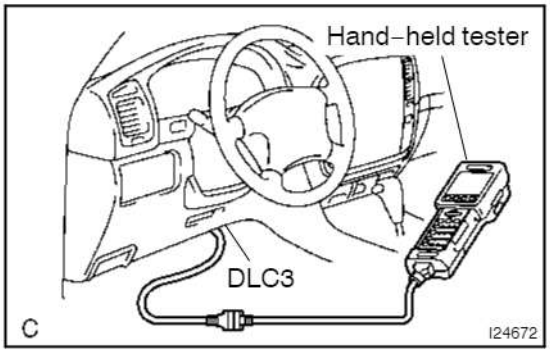
10. DTC CHECK (Using hand–held tester)

(a) Inspect the DLC3.
The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of DLC3 complies with SAEJ1962 and matches the ISO 9141–2 format.

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HINT:
If the display shows "UNABLE TO CONNECT TO VEHICLE" when the cable of hand–held tester is connected to DLC3, the ignition switch is turned ON and the scan tool is operated, there is a problem either on the vehicle side or the tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication does not function when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.



(b) Prepare the hand–held tester.
(c) Connect the hand–held to DLC3.
(d) Turn the ignition switch ON and the hand–held tester main switch ON.
(e) Use the hand–held tester to check the DTCs, note them down. (For opening instructions, see the hand–held tester's intrusion book).

11. DATA LIST

HINT:
By the DATA LIST displayed on the Hand–held tester, you can read the value of the switch, sensor, actuator and so on without removing any parts. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Turn the ignition switch OFF.
(b) Connect the hand–held tester to DLC3.
(c) Turn the ignition switch ON.
(d) According to the display on the tester, read the "DATA LIST".

THEFT DETERRENT ECU:

Item	Condition	Specified Condition
HOOD COURTSY SW	Engine hood Close → Open	OFF/ON
INTRS DETECT	Intrusion sensor detection OFF → ON	OFF/ON
GLS BRK DETECT	Glass broken sensor detection OFF → ON	OFF/ON
KEY UNLK WRN SW	Insert key	OFF/ON
IG SW	IG switch ON or other	OFF/ON
PASSIVE MODE	Passive mode → other mode	OFF/ON
WARN BY GLS SEN	Warning by glass broken sensor OFF → ON	OFF/ON
INTRUSION SEN	Intrusion sensor OFF → ON	OFF/ON

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WARNING (HORN)	Warning by Horn OFF → ON	OFF/ON
ENTRY DELAY	Entry delay time	0 s/14 s /30 s

12. ACTIVE TEST

HINT:

Performing ACTIVE TEST using the Hand–held tester allows the relay, and so on to operate without removing any parts. Performing ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

DATA LIST can be displayed during ACTIVE TEST.

(a) Turn the ignition switch OFF.
(b) Connect the Hand–held tester to DLC3.
(c) Turn the ignition switch ON.
(d) According to the display on tester, perform the "ACTIVE TEST".

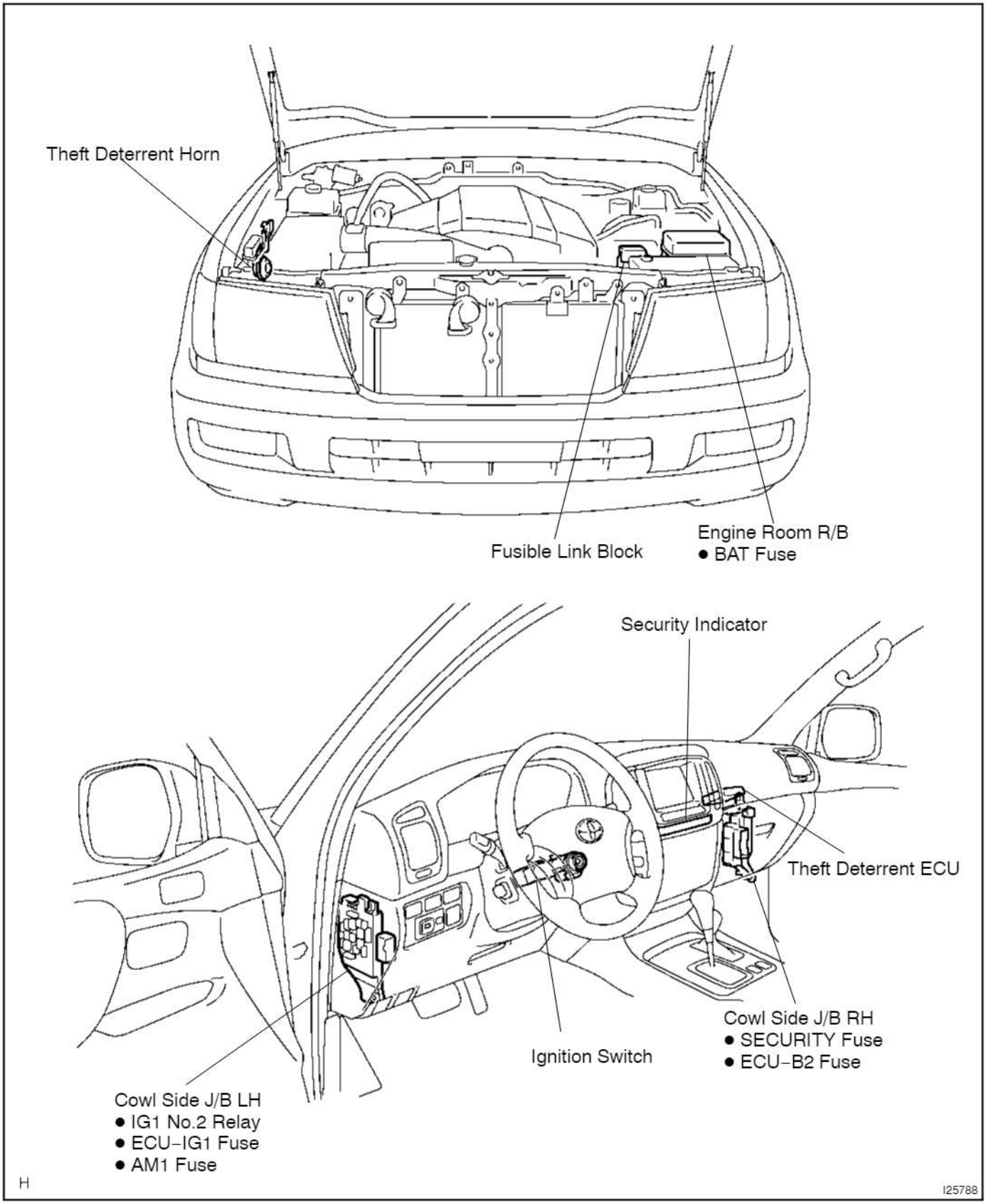
THEFT DETERRENT ECU:

Item	Test details	Diagnostic note
SECURITY INDIC	Turns security indicator ON/OFF	Connect terminals TC and E1 of DLC1
SECURITY HORN2	Turns security horn2 ON/OFF	–

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DI50A–01

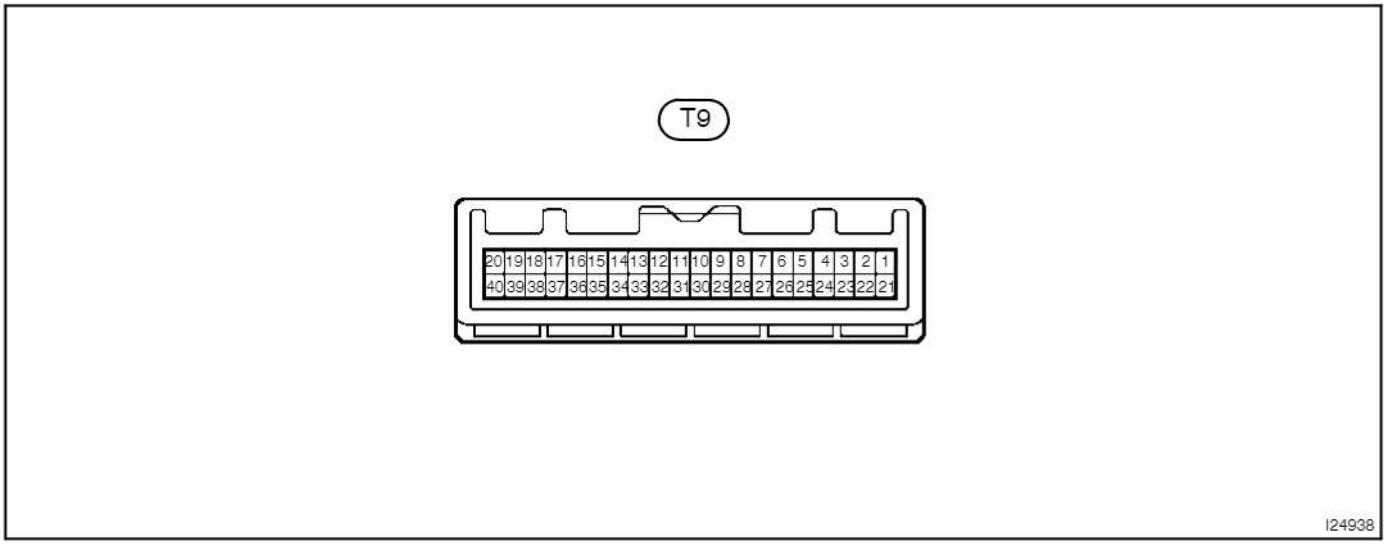
PARTS LOCATION



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DI5OB–01

TERMINALS OF ECU



Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
SH– ↔ Body Ground (T9–1 ↔ Body Ground)	W ↔ W–B	Always	10 – 14 V
+B1 ↔ Body ground (T9–2 ↔ Body ground)	LG ↔ Body Ground	Always	10 – 14 V
+B2 ↔ Body Ground (T9–3 ↔ Body Ground)	L–W ↔ Body Ground	Always	10 – 14 V
HORN ↔ E (T9–5 ↔ T9–29)	G–O ↔ W–B	Horn switch "OFF"	10 – 14 V
IG ↔ E (T9–10 ↔ T9–29)	B–W ↔ W–B	Ignition switch is turned to "ON" position	10 – 14 V
GBS ↔ E (T9–11 ↔ T9–29)	Y–G ↔ W–B	Glass sensor is "ON"	10 – 14 V
		Glass sensor is "OFF"	Below 1 Ω
KSW ↔ E (T9–12 ↔ T9–29)	R–B ↔ W–B	Key unlock warning switch "ON" (Key inserted)	Below 1 Ω
		Key unlock warning switch "OFF" (Key removed)	1 MΩ or higher
IND ↔ E (T9–25 ↔ T9–29)	G–R ↔ W–B	During set preparation	3 – 5 V
E ↔ Body ground (T9–29 ↔ Body Ground)	W–B ↔ Body Ground	Always	10 – 14 V
MPX1 (T9–31)	–	Multiplex communication circuit	–
DSWH ↔ E (T9–34 ↔ T9–29)	L–B ↔ W–B	Engine hood courtesy switch "ON" (Engine hood opened)	Below 1 Ω
		Engine hood courtesy switch "OFF" (Engine hood closed)	1 MΩ or higher

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DI8OC–01

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Theft deterrent system is not set.	1. Security indicator circuit 2. Key unlock warning switch circuit 3. Door courtesy switch circuit 4. Door unlock detection switch circuit 5. Engine hood courtesy switch circuit 6. Power source circuit 7. Theft deterrent ECU	DI–842 DI–847 DI–1008 DI–1081 DI–849 DI–839 –
Security indicator does not light up or blink.	1. Security indicator circuit 2. Theft deterrent ECU	DI–842 –
Theft deterrent system cannot be unset even if ignition switch is ON.	1. Key unlock warning switch circuit 2. Power source circuit 3. Theft deterrent ECU	DI–847 DI–839 –
During warning condition, horn does not operate.	1. Horn circuit 2. Theft deterrent ECU	DI–845 –

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DI50D-01

CIRCUIT INSPECTION

Power source circuit

CIRCUIT DESCRIPTION

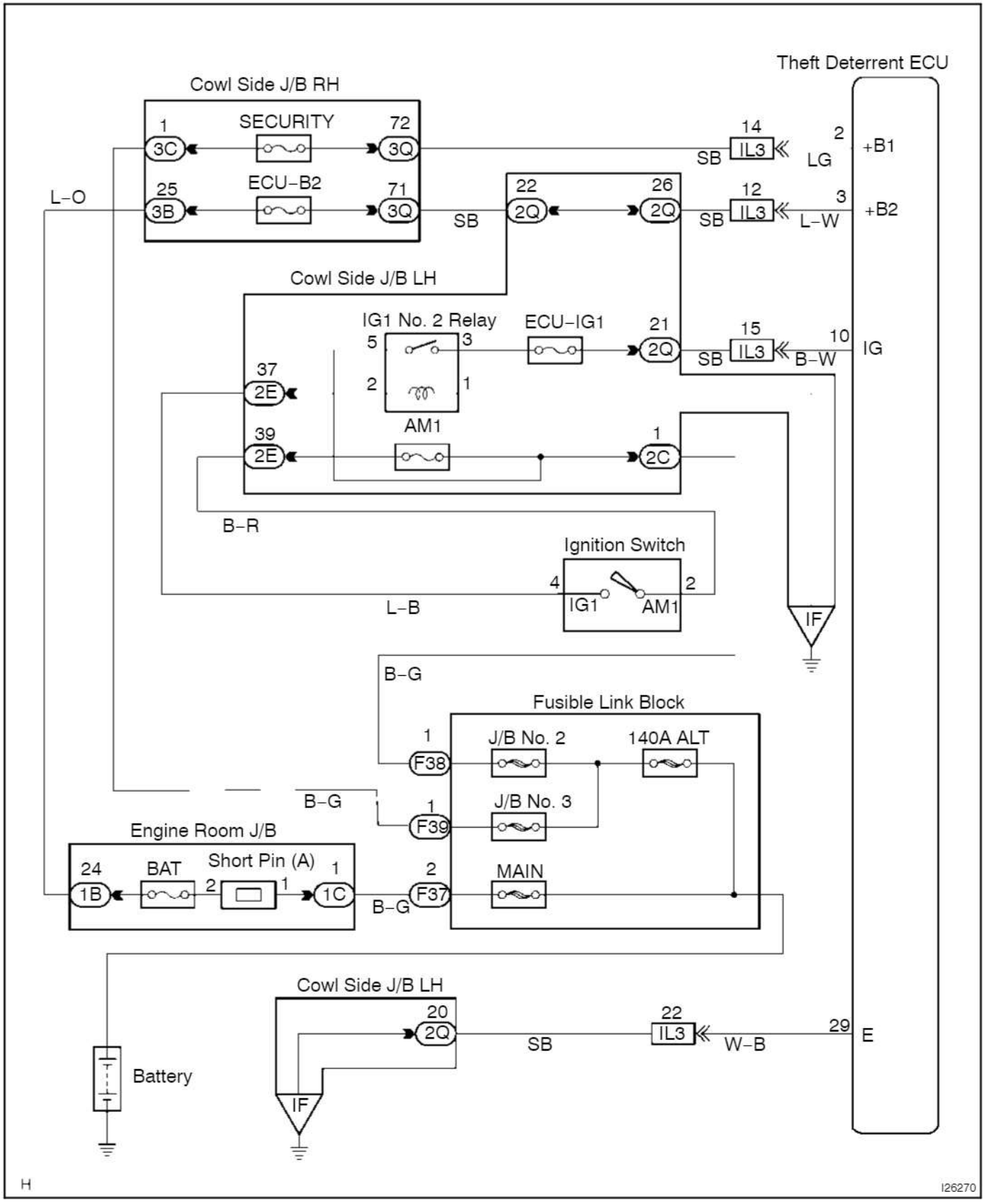
When the ignition switch is turned to the ACC position, battery positive voltage is applied to the terminal ACC of the ECU.

Also, if the ignition switch is turned to the ON position, battery positive voltage is applied to the terminals ACC and IG of the ECU.

When the battery positive voltage is applied to the terminal IG of the ECU while the theft deterrent system is activated, the warning stops.

Furthermore, power supplied from the terminals ACC and IG of the ECU is used as power for the door courtesy switch, position switch, etc.

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INSPECTION PROCEDURE

1	**Check ECU–B2 and SECURITY fuse.**

CHECK:
Check continuity of ECU–B2 and SECURITY fuse.
OK:
Continuity

NG → **Replace faulty fuse.**

OK

2	**Check voltage between terminals +B1, +B2 and E of theft deterrent ECU connector.**

PREPARATION:
(a) Turn the ignition switch OFF.
(b) Disconnect the theft deterrent ECU connector.
CHECK:
Measure the voltage between terminals +B1, +B2 and E.
OK:
Voltage: 10 – 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).**

NG

3	**Check wire harness and connector between theft deterrent ECU and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).

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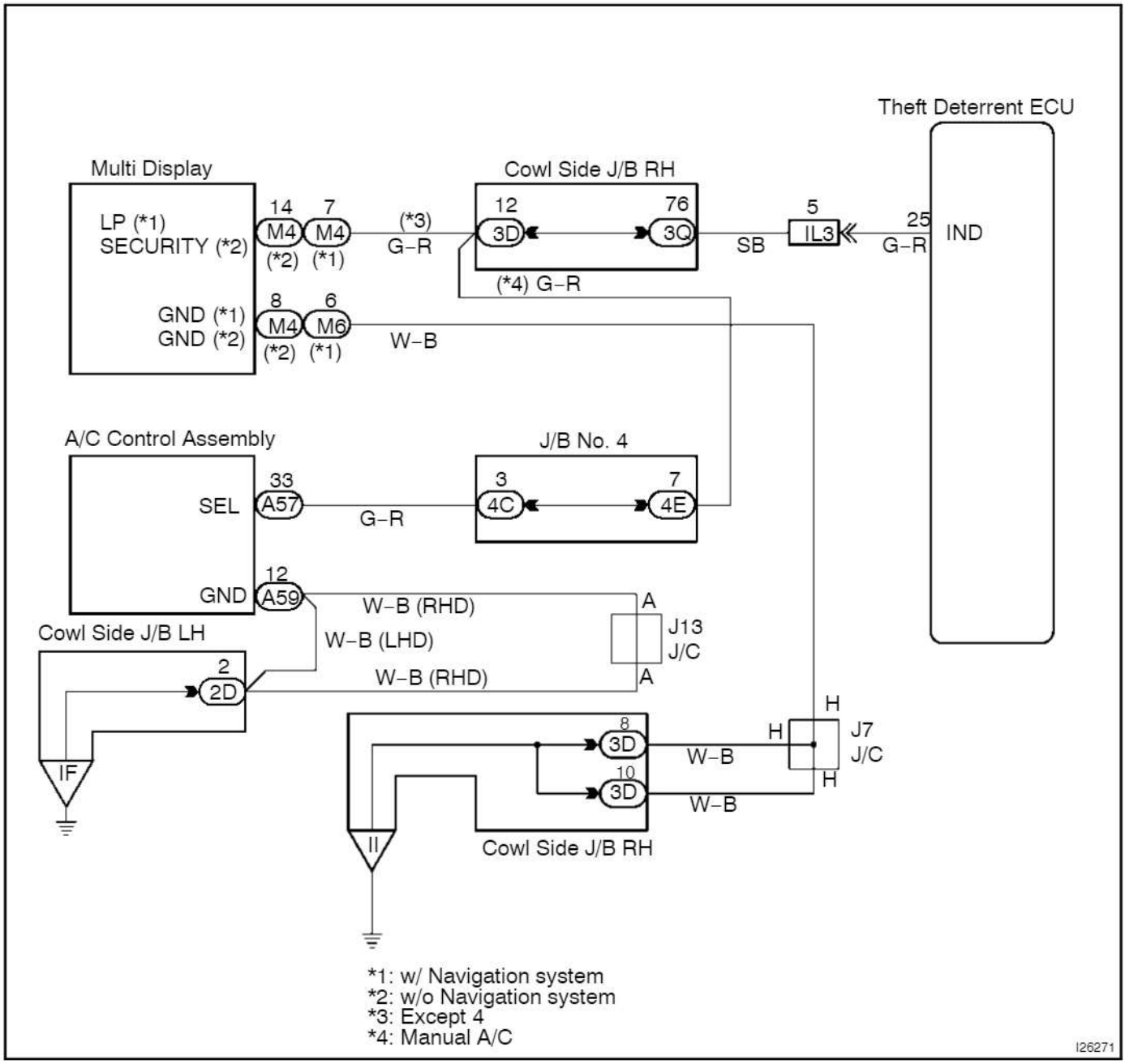
DI50E-01

Security indicator circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is preparing to be set, this circuit lights up the indicator.
When the system is set, the indicator blinks.
It also indicates the condition of the immobiliser system according to the request from the Transponder Key ECU.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check security indicator using hand–held tester.**

PREPARATION:

Connect the hand–held tester to the DLC 3.

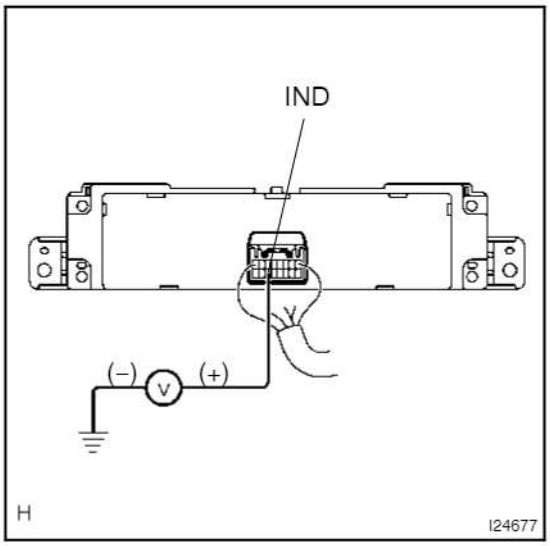
CHECK:

Check that the theft deterrent in the indicator lights in ACTIVE TEST (See page DI–827).

OK → **Proceed to next circuit inspection shown in problem symptoms table (See page DI–838).**

NG

2	**Check security indicator.**



CHECK:

Connect the positive lead from the battery to terminal 7 (14) and negative lead to terminal 6 (8), and check that the warning light lights up.

( ): w/o Navigation system

OK:

Indicator light lights up.

NG → **Replace multi–display.**

OK

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3	Check wire harness and connector between theft deterrent ECU and indicator, indicator and body ground (See page IN–38).

NG → Repair or replace wire harness or connector.

OK →

Proceed to next circuit inspection shown in problem symptoms table (See page DI–838).

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DI50F-01

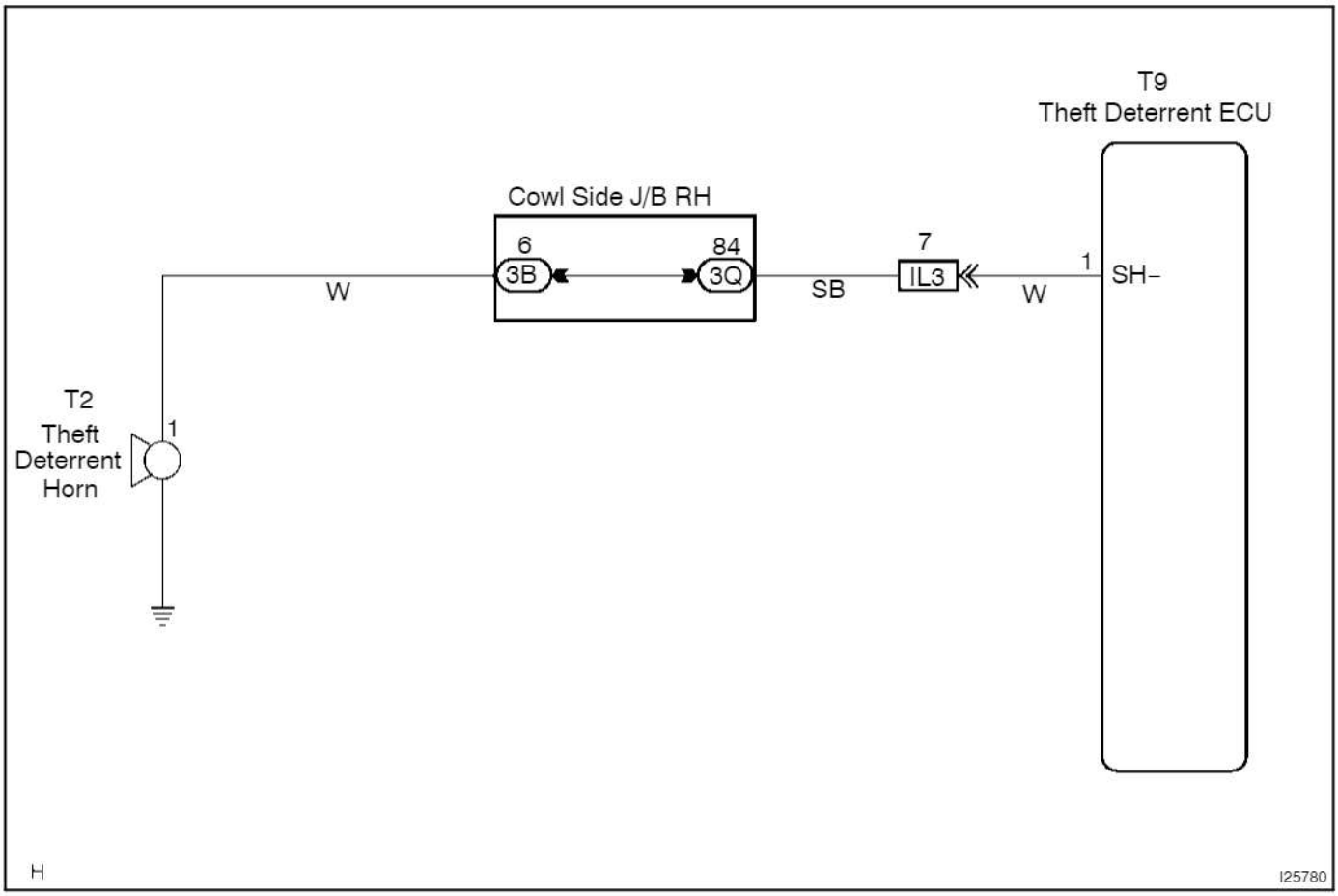
Theft deterrent horn circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is activated, the relay in the ECU is turned ON and OFF at of approximately 0.2 sec. interval, causing the theft deterrent horn to sound (See the wiring diagram below).
In this condition, if any of the following operations is done, the relay in the ECU is turned OFF, thus stopping the theft deterrent horn from sounding:

(1) Unlock the driver door with key.
(2) Turn the ignition switch to ON position.
(3) Unlock the doors with the wireless door lock control system.
(4) Wait for approximately 60 seconds.
(5) Press the panic switch of the wireless door lock control system.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check theft deterrent horn using hand–held tester.**

PREPARATION:

Connect the hand–held tester to the DLC 3.

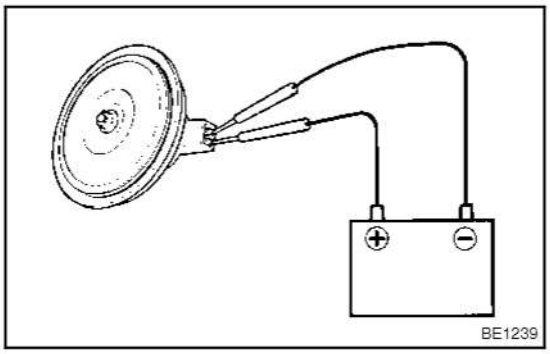
CHECK:

Check that the theft deterrent horn sounds in ACTIVE TEST (See page DI–827).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).**

NG

2	**Check theft deterrent horn.**



CHECK:

Connect positive (+) lead to terminal 1 and negative (–) lead to body ground of theft deterrent horn connector, and that the theft deterrent horn blows.

OK:

Horn sounding.

NG → **Replace theft deterrent horn.**

OK

3	**Check wire harness and connector between theft deterrent ECU and theft deterrent horn (See page IN–27).**

NG → **Check and repair wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).

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DI50G-01

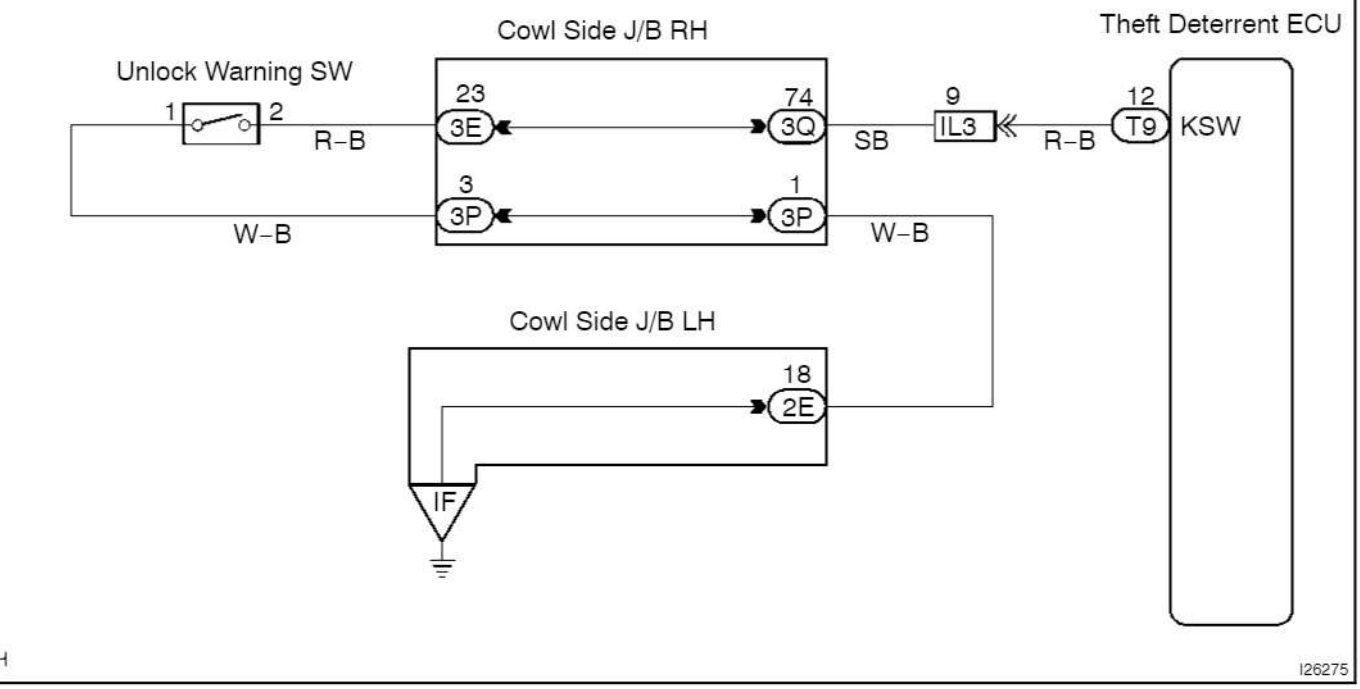
Key unlock warning switch circuit

CIRCUIT DESCRIPTION

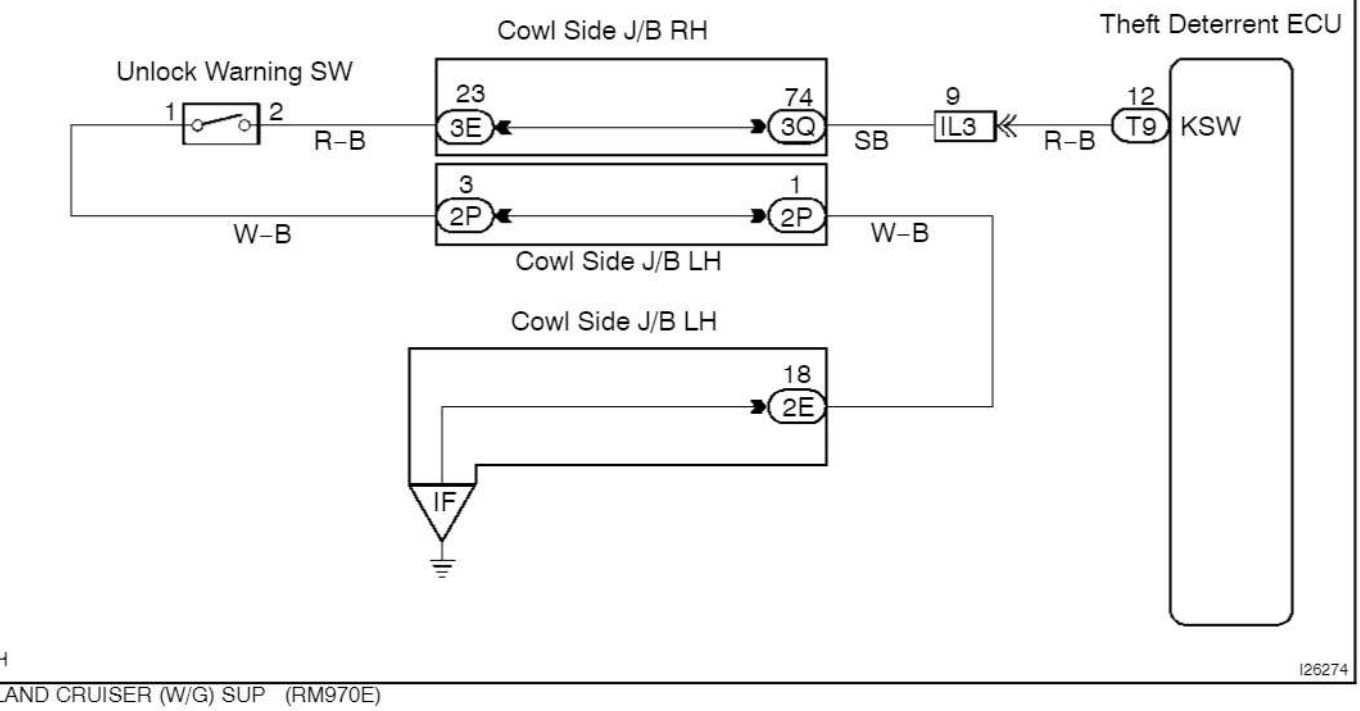
The key unlock warning switch goes on when the ignition key is inserted the key cylinder and goes off when the ignition key is removed.
The ECU operates the key confinement prevention function while the key unlock warning switch is ON.

WIRING DIAGRAM

LHD:



RHD:



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check unlock warning switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the unlock warning switch operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).**

NG

2	**Check key unlock warning switch.**

NG → **Replace the key unlock warning switch.**

OK

3	**Check wireharness and connector between key unlock warning switch and theft deterrent ECU (See page IN–27).**

OK → **Repair or replace wireharness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).

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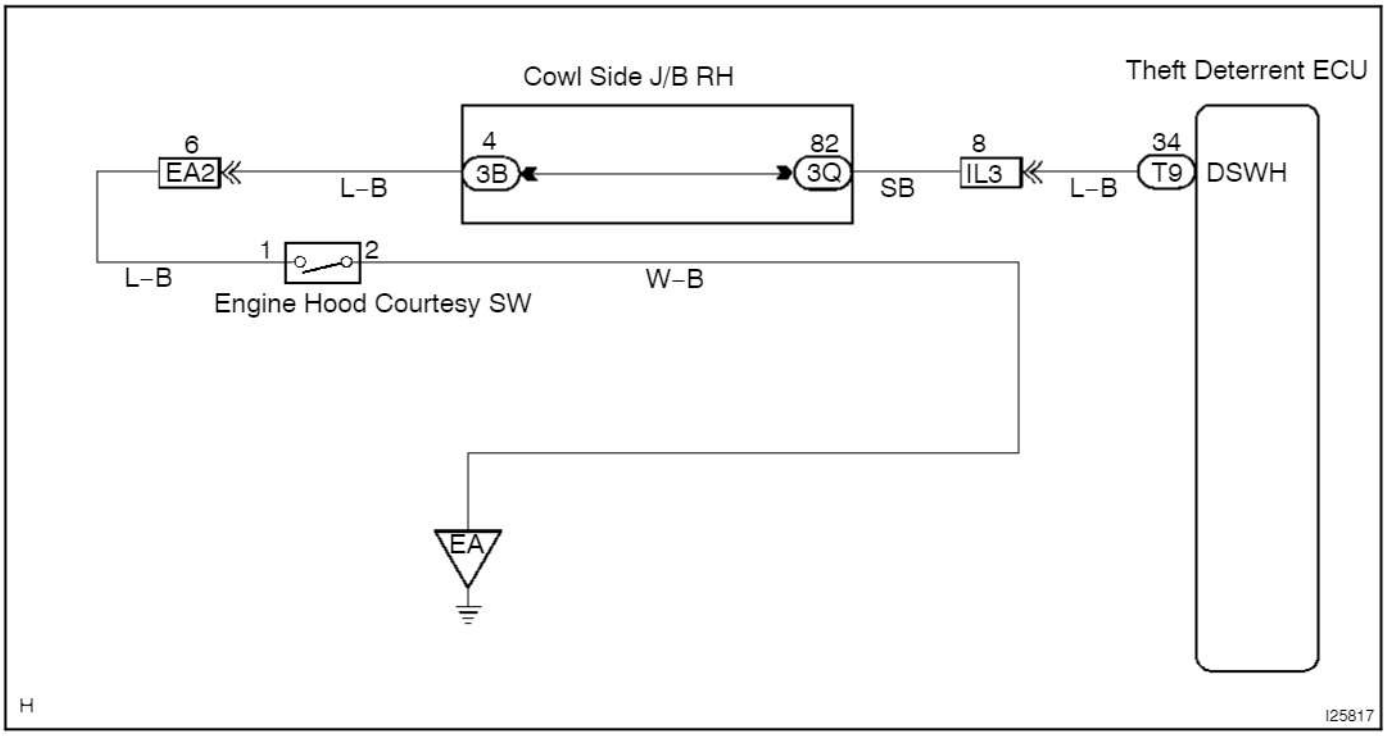
DI50H–01

Engine hood courtesy switch circuit

CIRCUIT DESCRIPTION

The door courtesy light goes on when the door is opened and goes off when closed.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:
In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

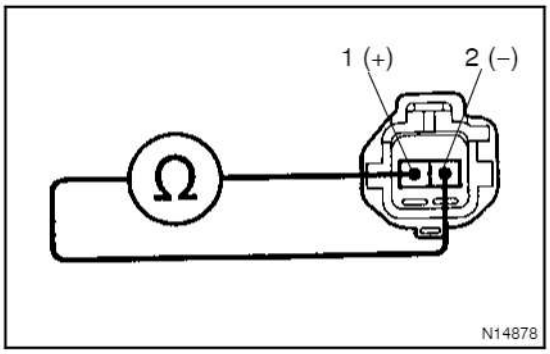
1	**Check engine hood courtesy switch using hand–held tester.**

PREPARATION:
Connect the hand–held tester to DLC 3.
CHECK:
Check that the engine hood courtesy switch operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).**

NG

2	**Check the engine hood courtesy switch.**



PREPARATION:
(a) Remove engine hood lock assembly.
(b) Disconnect engine hoood courtesy switch connector.
CHECK:
Check continuity between terminals 1 and 2 when engine hood lock is locked and inlocked.

Engine hood lock	Tester connection	Specified condition
LOCK	–	No continuity
UNLOCK	1 – 2	Continuity

NG → **Replace the engine hood courtesy switch.**

OK

3	**Check wireharness and connector between courtesy switch and theft deterrent ECU (See page IN–27).**

NG → **Repair or replace wireharness or connector.**

OK

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Proceed to next circuit inspection shown on problem symptoms table (See page DI–838).

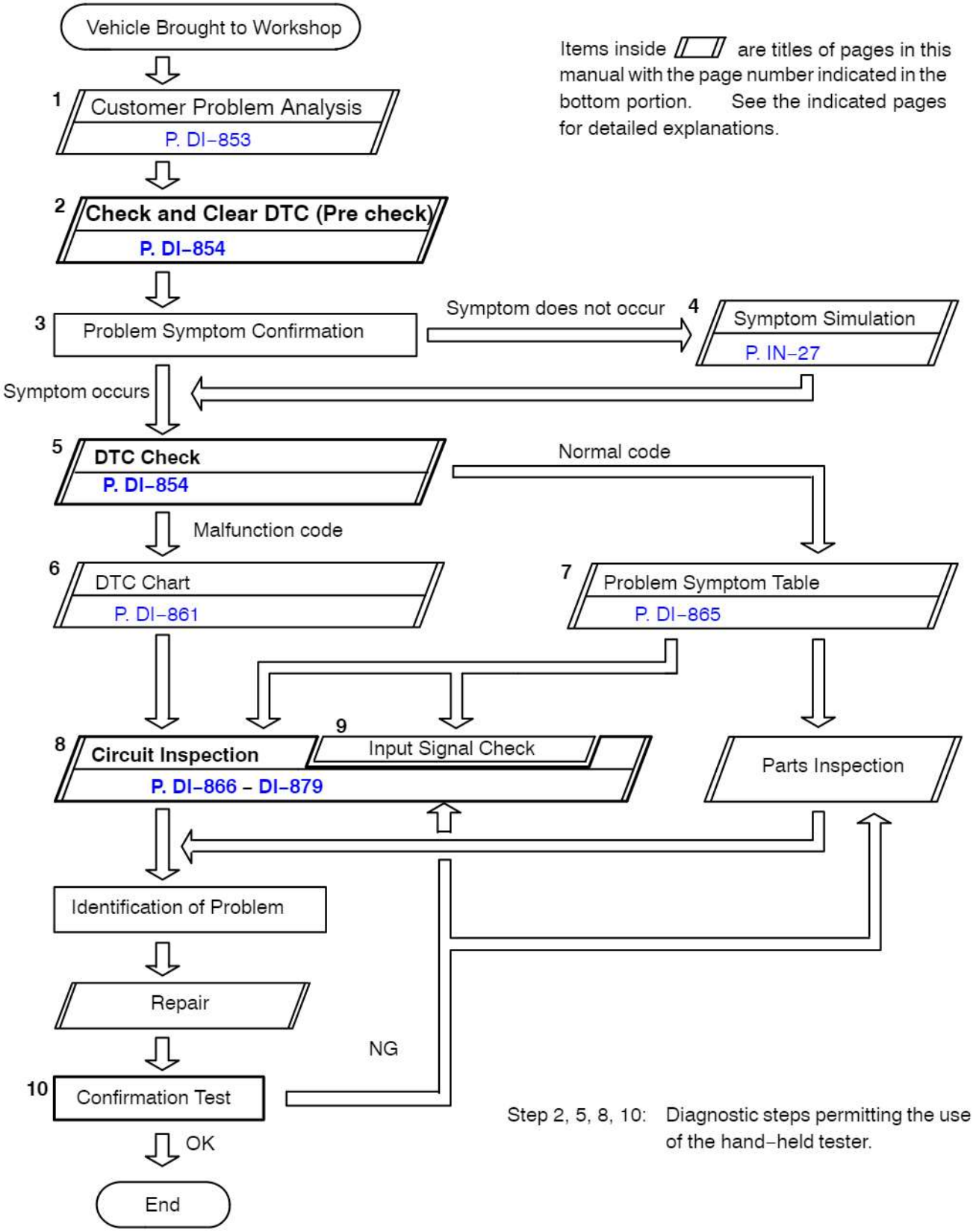
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CRUISE CONTROL SYSTEM

DIAZA–01

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshoot in accordance with the procedure on the following page.



Items inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

Step 2, 5, 8, 10: Diagnostic steps permitting the use of the hand–held tester.

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DIAZB-01

CUSTOMER PROBLEM ANALYSIS CHECK

CRUISE CONTROL SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date of Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

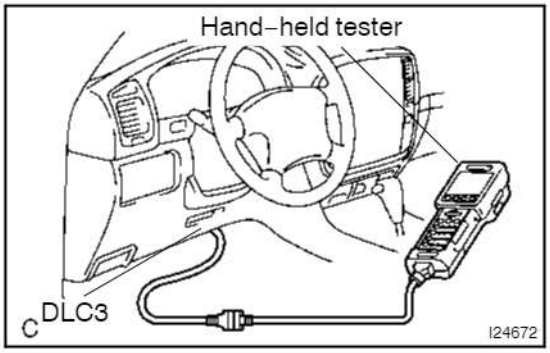
Condition of Problem Occurrence	**Date of Problem Occurrence**	/ /
	Frequency Problem Occurs?	☐ Continuous ☐ Intermittent (Times a day)
	Vehicle Speed when Problem Occurred	**km Mile**

Symptoms	☐ Auto cancel occurs	● Driving condition ☐ City driving ☐ Freeway ☐ Up hill ☐ Down hill ● After cancel occurred, did the driver activate cruise control again? ☐ Yes ☐ No
	☐ Cancel does not occur	☐ With brake ON ☐ Except D position shift ☐ When control SW turns to CANCEL position
	☐ Cruise control malfunction	☐ Slip to acceleration side ☐ Slip to deceleration side ☐ Hunting occurs ☐ O/D cut off does not occur ☐ O/D does not return
	☐ Switch malfunction	☐ SET ☐ ACCEL ☐ COAST ☐ RESUME ☐ CANCEL
	☐ Cruise main indicator light	☐ Remains ON ☐ Does not light up ☐ Blinks

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

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DIAZC–01



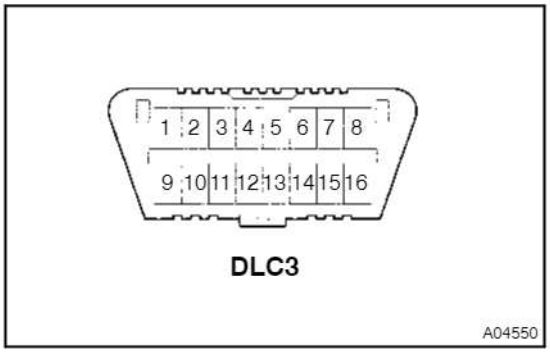
PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Description

ECM controls the function of cruise control on this vehicle. Data of the cruise control or DTC can be read from DLC3 of the vehicle. When a trouble occurs on cruise control, Check CRUISE MAIN indicator does not light up but DTC inspection is performed.

Therefore when there seems to be a trouble on cruise control, use hand–held tester or SST to check and troubleshoot it.



(b) Check the DLC3.

The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141–2 format.

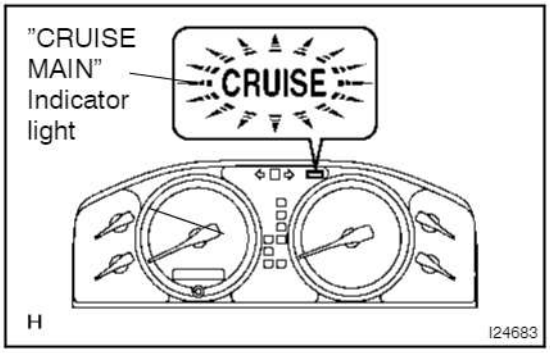
Terminal No.	Connection/Specified Condition	Condition
4	Chassis Ground ↔ Body Ground/1 or less	Always
13	TC ↔ Body Ground/9 – 14 V	Always

HINT:

If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of the hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

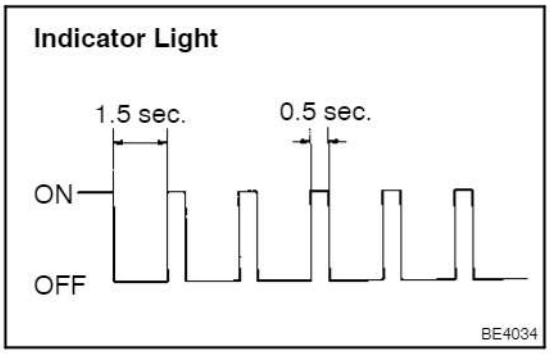
- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

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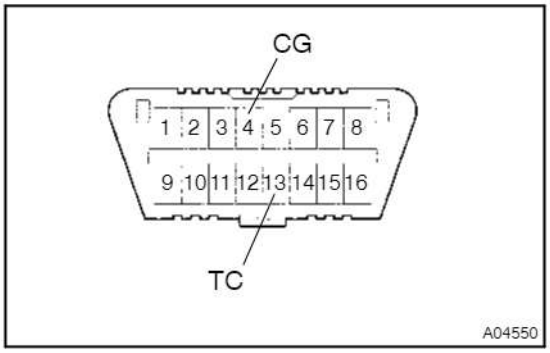
(c) Check the indicator.
(1) Turn the ignition switch to ON.
(2) Check that the CRUISE MAIN indicator light comes on when the cruise control main switch is turned ON, and that the indicator light goes off when the main switch is turned OFF.

HINT:
If the indicator check result is not normal, proceed to trouble-shooting (See page BE–1) for the combination meter section.

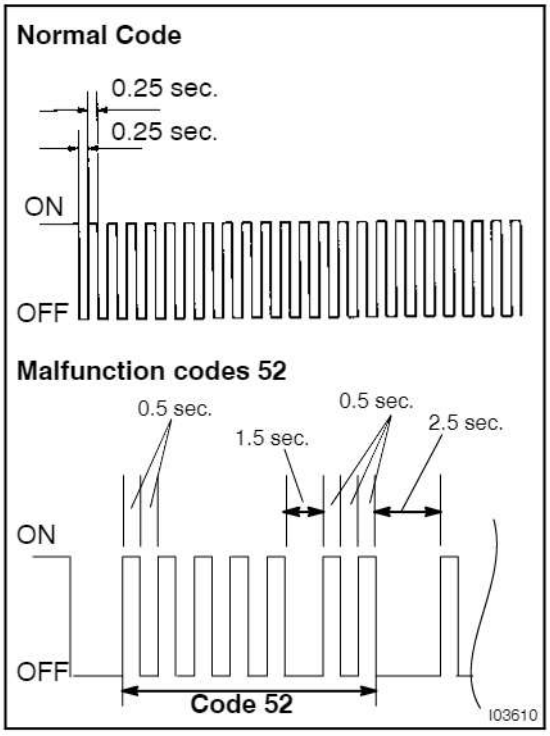


(d) Check the DTC.

HINT:
If a malfunction occurs in the speed sensor or stop light switch, etc. during cruise control driving, the ECM actuates AUTO CANCEL of the cruise control and turns ON and OFF the CRUISE MAIN indicator light to inform the driver of a malfunction. At the same time, the malfunction is stored in memory as a diagnostic trouble code.

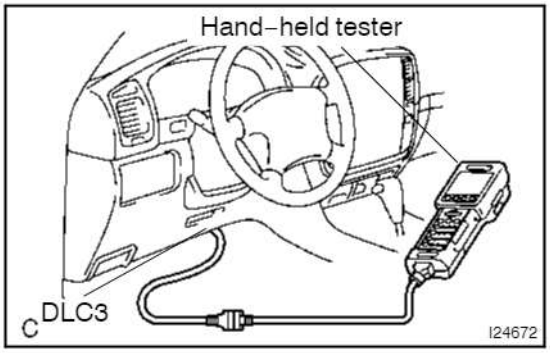


(e) Output DTC using diagnosis check wire.
(1) Turn the ignition switch ON.
(2) Using SST, connect terminals Tc and CG of DLC3.
SST 09843–18040
(3) Read the DTC on the CRUISE MAIN indicator light.



HINT:
- If the DTC is not output, inspect the diagnosis circuit.
- As an example, the blinking patterns for codes; normal 52 are shown in the illustration.

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2. USING HAND–HELD TESTER

(a) Hook up the hand–held tester to the DLC3.
(b) Monitor the ECU data by following the prompts on the tester screen.

HINT:
Hand–held tester has a "Snapshot" function which records the monitored data.
Please refer to the hand–held tester operator's manual for further details.

3. DTC CLEARANCE

(a) The following actions will erase the DTCs and freeze frame data.
  (1) Operating the hand–held tester to erase the codes (See the hand–held tester instruction book for operating instructions.).
  (2) Disconnecting the battery terminals or EFI fuse.
(b) After completing repairs, the DTC retained in memory can be cleared by removing the EFI fuse for 10 seconds or more with the ignition switch off.
(c) Check that the normal code is displayed after connecting the fuse.

4. DATA LIST

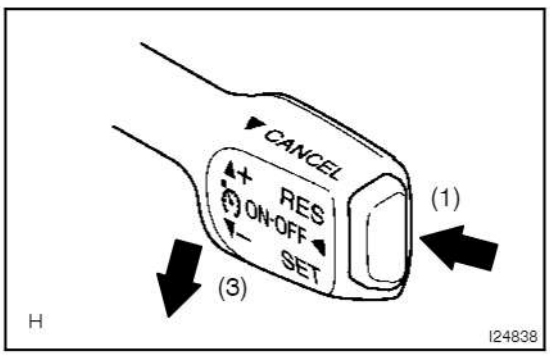
HINT:
According to the DATA LIST displayed by the hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON.
(c) According to the display on tester, read the "DATA LIST".

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
VEHICLE SPD	Vehicle speed/ min.: 0 km/h (0 mph)max.: 255 km/h (158 mph)	Actual vehicle speed	–
MEMORY SPD	Vehicle speed/ min.: 0 km/h (0 mph)max.: 255 km/h (158 mph)	Actual vehicle speed	–
THROTTLE	Throttle operating angle/ min.: 0 km/h (0 mph)max.: 125 km/h (mph)	Actual vehicle speed	–
CRUISE CONTROL	Cruise control	ON: Cruise control is SET OFF: Cruise control is UNSET	–
MAIN SW (MAIN)	Main switch (Main CPU)	ON: Main switch (Main CPU) is SET OFF: Main switch (Main CPU) is UNSET	–

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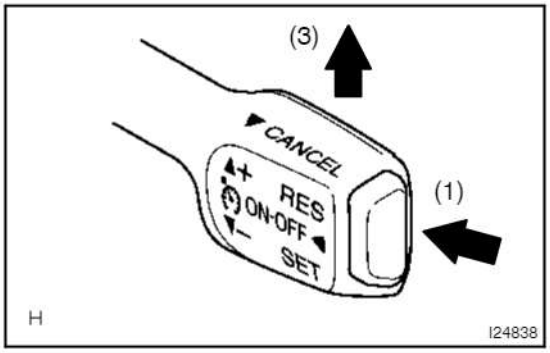
MAIN SW (SUB)	Main switch (Sub CPU)	ON: Main switch (Sub CPU) is SET OFF: Main switch (Sub CPU) is UNSET	–
CCS READY M	Switch ready (Main CPU)	ON: Switch ready (Main CPU) is SET OFF: Switch ready (Main CPU) is UNSET	–
CCS READY S	Switch ready (Sub CPU)	ON: Switch ready (Sub CPU) is SET OFF: Switch ready (Sub CPU) is UNSET	–
CCS INDICATOR M	Switch indicator (Main CPU)	ON: Switch indicator (Main CPU) is ON OFF: Switch indicator (Main CPU) is OFF	–
CCS INDICATOR S	Switch indicator (Sub CPU)	ON: Switch indicator (Sub CPU) is ON OFF: Switch indicator (Sub CPU) is OFF	–
CANCEL SW	CANCEL switch	ON: CANCEL switch is SET OFF: CANCEL switch is UNSET	–
SET/COAST SW	SET/COAST switch	ON: SET/COAST switch is SET OFF: SET/COAST switch is UNSET	–
RES/ACC SW	RES/ACC switch	ON: RES/ACC switch is SET OFF: RES/ACC switch is UNSET	–
STP LIGHT SW2–M	Stop light SW signal (Main CPU)	ON: Brake pedal depressed OFF: Brake pedal released	–
STP LIGHT SW2–S	Stop light SW signal (Sub CPU)	ON: Brake pedal depressed OFF: Brake pedal released	–
STP LIGHT SW1–M	Stop light SW signal (Sub CPU)	ON: Brake pedal depressed OFF: Brake pedal released	–
SHIFT D POS	Shift D position	ON: Shift is D position OFF: Shift is except D position	–



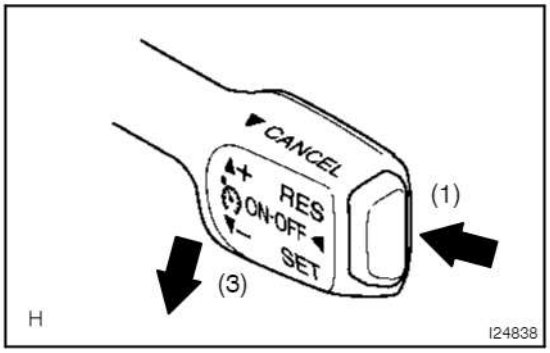
5. PROBLEM SYMPTOM CONFIRMATION (ROAD TEST)

(a) Inspect the SET switch.
- (1) Push the main switch ON.
- (2) Drive at a desired speed [40 km/h (25 mph) or higher].
- (3) Press the control switch to the –/SET.
- (4) After releasing the switch, check that the vehicle cruises at the desired speed.

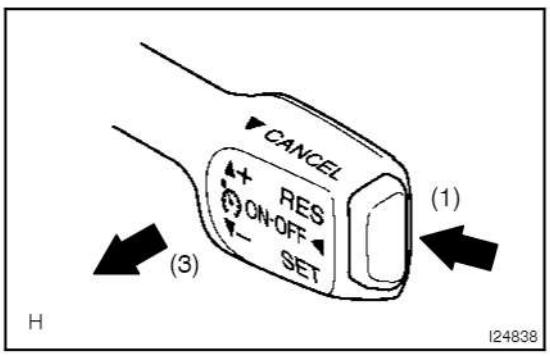
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(b) Inspect the ACCEL switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) Check that the vehicle speed increases while the control switch is pulled up to +/RES, and that the vehicle cruises at the set speed when the switch is released.
(4) Momentarily press the control switch upward to the +/RES and then immediately release it. Check that the vehicle speed increases by about 1.5 km/h (Tap–up function).



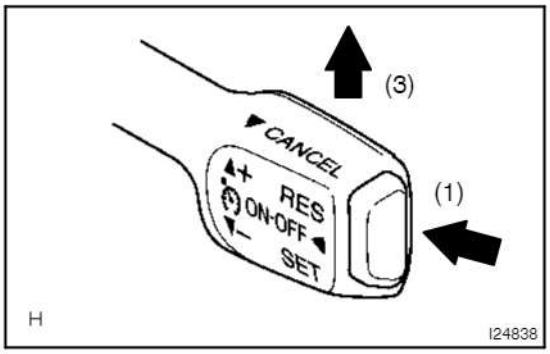
(c) Inspect the COAST switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) Check that the vehicle speed decreases while the control switch is push down to –/SET, and the vehicle cruises at the set speed when the switch is released.
(4) Momentarily press the control switch downward to –/SET, and then immediately release it. Check that the vehicle speed decreases by about 1.5 km/h (Tap–down function).



(d) Inspect the CANCEL switch.
(1) Push the main button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal
- Shift to except D position
- Push the main switch button to OFF

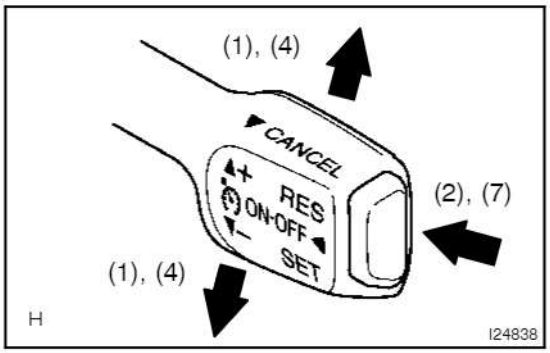
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- Pull the cruise control switch to CANCEL



(e) Inspect the RESUME switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed [40 km/h (25 mph) or higher].
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal
- Shift to except D position
- Press the main switch button to OFF

(4) After the control switch is pulled up to +/RES at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed before the cancellation.



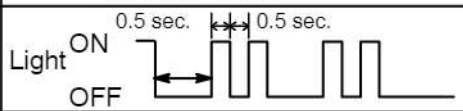
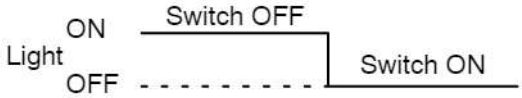
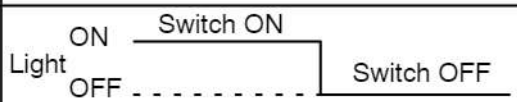
6. INPUT SIGNAL CHECK

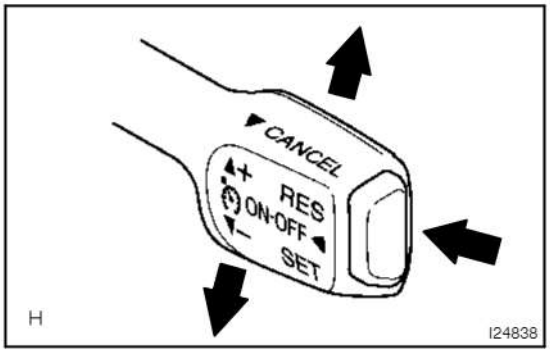
HINT:
- For check No.1 – No. 3
  Turn the ignition switch to ON.
- For check No. 4
  Jack up the vehicle.
  Start the engine.
  Shift to D position

(a) Check the input signal
(1) Keep the main switch to –/SET or +/RES position and hold it down or hold it up.
(2) Press the switch button to ON.
(3) Check that the CRUISE mainindicator light blinks twice or 3 times repeatedly after 3 seconds.
(4) Turn the –/SET or +/RES switch to OFF.
(5) Operate each switch as listed in the table below.
(6) Read the blinking pattern of the CRUISE main indicator light.
(7) After performing the check, turn the main switch button to OFF.

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HINT:
When 2 or more signals are input to the ECM, the lowest numbered code will be displayed first.

No.	Operation Method	CRUISE Main Indicator Light Blinking Pattern	Diagnosis
1	Turn –/SET switch ON		–/SET switch circuit is normal
2	Turn +/RES switch ON		+/RES switch circuit is normal
3	Turn CANCEL switch ON		CANCEL switch circuit is normal
	Depress brake pedal (Turn stop lamp switch assy ON)		Stop light switch circuit is normal
	Shift to except D position (Turn PNP switch OFF)		PNP switch circuit is normal



7. INPUT SIGNAL CHECK
(Using hand–held tester)

(a) Connect the hand–held tester to DLC3.
(b) Check the control switch (MAIN, CANCEL, SET/COAST, RES/ACC).

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DIAGNOSTIC TROUBLE CODE CHART

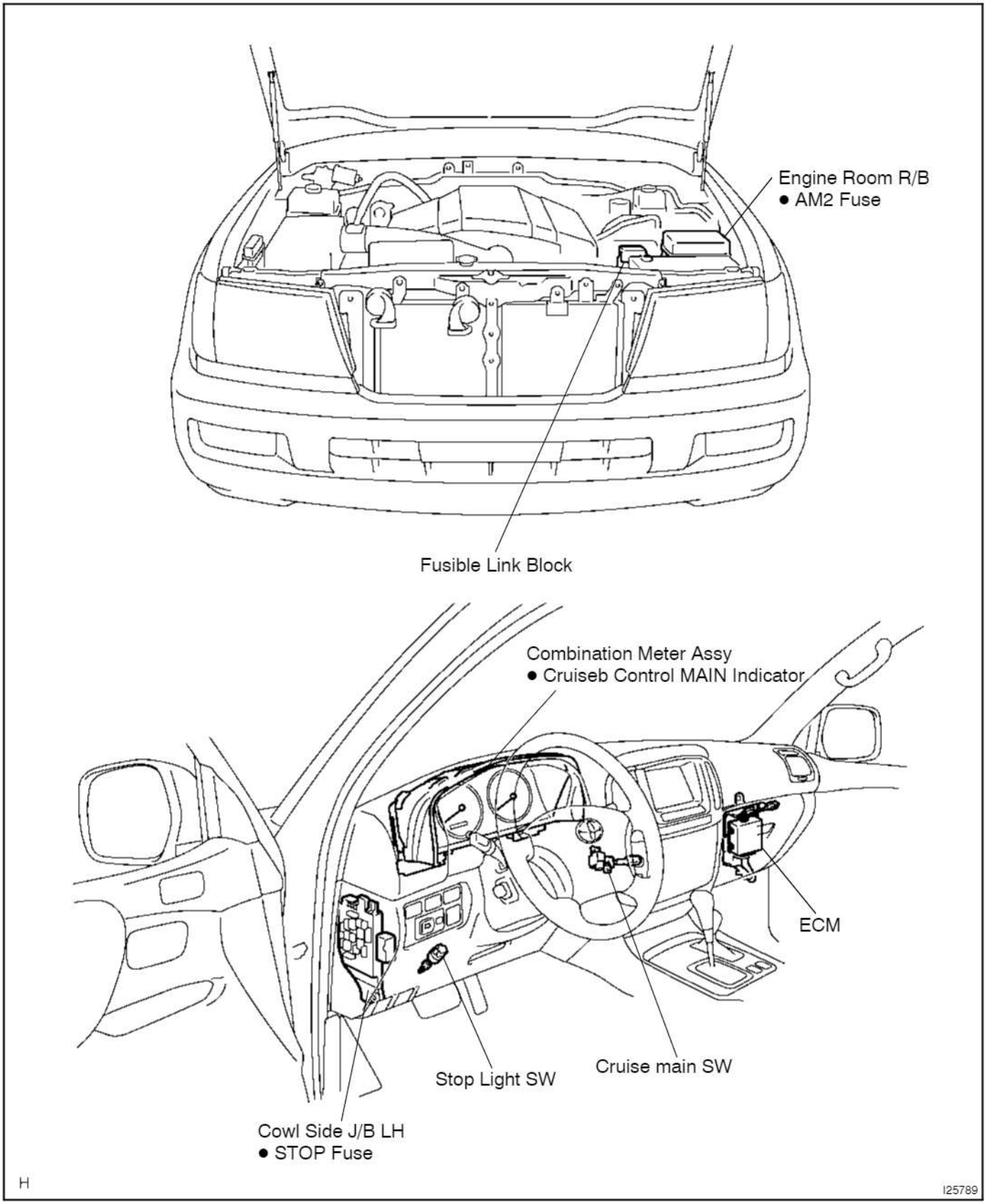
If a malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the appropriate page.

DTC No. (See Page)	Circuit Inspection	Trouble Area
P0500/21 P0503/23 (DI–866)	• Vehicle Speed Sensor "A" • Vehicle Speed Sensor "A" Intermittent/Erratic/High	• Combination meter • Open or short in vehicle speed sensor circuit • Vehicle speed sensor • ECM
P0571/52 (DI–867)	Brake Switch "A" Circuit	• Short in stop light switch circuit • Stop light switch • ECM
P0607/54 (DI–874)	Control Module Performance	• ECM

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PARTS LOCATION

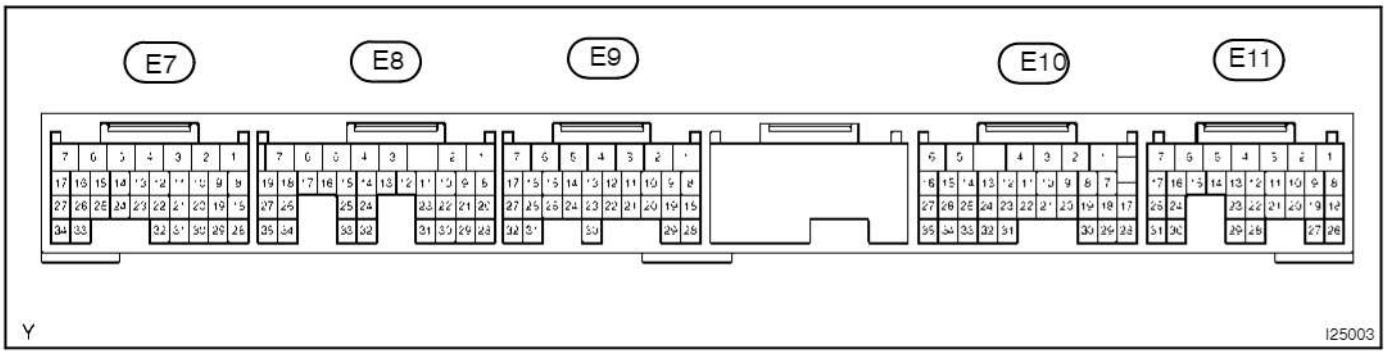


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TERMINALS OF ECM

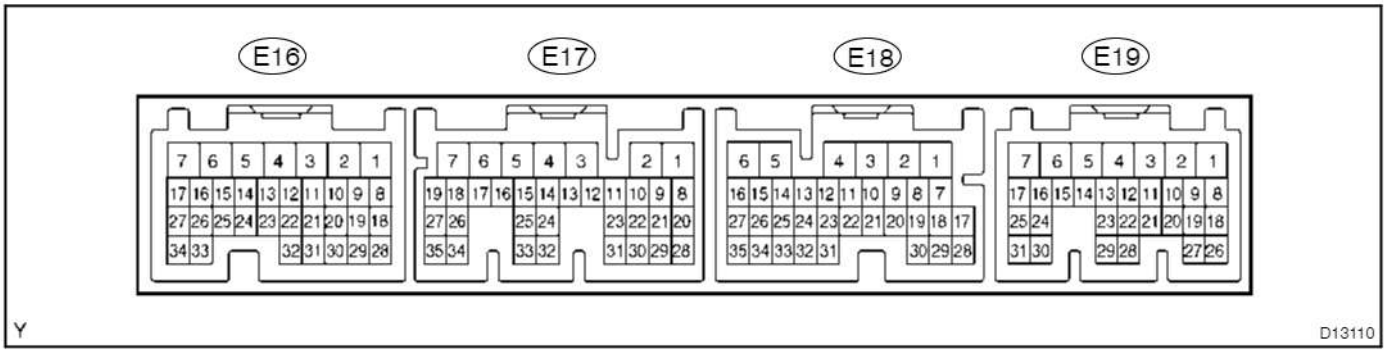
2UZ–FE:



Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
STP ↔ E1 (E10–19 ↔ E9–1)	G–W ↔ BR	Depress brake pedal	10 – 16 V
		Release brake pedal	Below 1 V
CCS ↔ E1 (E10–24 ↔ E9–1)	L ↔ BR	Ignition switch ON	10 – 16 V
		Ignition switch ON CANCEL switch hold ON	3.6 – 7.2 V
		Ignition switch ON –/SET switch hold ON	2.1 – 4.9 V
		Ignition switch ON +/RES switch hold ON	0.7 – 2.6 V
		Ignition switch ON Main switch OFF	Below 1 V
		Ignition switch ON Main switch ON	10 – 14 V
ST1– ↔ E1 (E10–12 ↔ E9–1)	R–G ↔ BR	Depress brake pedal	Below 1 V
		Release brake pedal	10 – 14 V

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1HD–FTE:



Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
STP ↔ E1 (E17–21 ↔ E17–14) *1 (E18–19 ↔ E16–1) *2	G–W ↔ BR	Depress brake pedal	10 – 16 V
		Release brake pedal	Below 1 V
CCS ↔ E1 (E16–13 ↔ E17–14) *1 (E18–24 ↔ E16–1) *2	L ↔ BR	Ignition switch ON	10 – 16 V
		Ignition switch ON CANCEL switch hold ON	3.6 – 7.2 V
		Ignition switch ON –/SET switch hold ON	2.1 – 4.9 V
		Ignition switch ON +/RES switch hold ON	0.7 – 2.6 V
		Ignition switch ON Main switch OFF	Below 1 V
		Ignition switch ON Main switch ON	10 – 14 V
ST1– ↔ E1 (E19–19 ↔ E17–14) *1 (E18–12 ↔ E16–1) *2	R–G ↔ BR	Depress brake pedal	Below 1 V
		Release brake pedal	10 – 14 V

*1: Europe

*2: Except Europe

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PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
SET not occurring or CANCEL occurring. (DTC is Normal)	1. Input Signal Circuit 2. Vehicle Speed Sensor Circuit 3. Stop Light Switch Circuit 4. Park/Neutral Position Switch Circuit 5. ECM	DI–874 DI–866 DI–867 IN–38
SET not occurring or CANCEL occurring. (DTC is not output)	1. ECM	IN–38
Actual vehicle speed deviates above or below the set speed.	1. Input Signal Circuit 2. ECM	DI–874 IN–38
Gear shifting occurs frequently between 3rd and O/D when driving on uphill road. (Hurting)	1. ECM	IN–38
Cruise control not cancelled, even when brake pedal is depressed.	1. Stop Light Switch Circuit 2. ECM	DI–867 IN–38
Cruise control not cancelled, even when transmission is shifted to "N" position.	1. Park/Neutral Position Switch Circuit 2. ECM	 IN–38
Control switch does not operate. (+/SET, +/RES, CANCEL not possible)	1. Cruise Control Switch Circuit 2. ECM	DI–875 IN–38
SET possible at 40 km/h (25 mph) or less, or CANCEL does not operate at 40 km/h (25 mph) or less.	1. Input Signal Circuit 2. ECM	DI–874 IN–38
Poor response is ACCEL and RESUME modes.	1. ECM	IN–38
O/D does not resume, even though the road is not uphill.	1. ECM	IN–38
DTC memory is erased.	1. ECM	IN–38
DTC is not output, or is output when should not be.	1. Diagnosis Circuit 2. ECM	– IN–38
Cruise MAIN indicator light remains ON or falls to light up.	1. Input Signal Circuit 2. ECM	DI–874 IN–38
Cruise MAIN indicator light does not light up.	1. Cruise MAIN indicator Light Circuit	DI–879

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CIRCUIT INSPECTION

DTC	P0500/21	Vehicle Speed Sensor ”A”

DTC	P0503/23	Vehicle Speed Sensor ”A” Intermittent/Erratic/High

CIRCUIT DESCRIPTION

See Pub. No. RM630E, page DI–77 (2UZ–FE Engine Repair Manual).
See Pub. No. RM617E, page DI–69 (IHZ, 1HD–T, 1HD–FTE Engine Repair Manual) .

DTC No.	DTC Detection Condition	Trouble Area
P0500/21 P0503/23	No vehicle speed sensor signal to ECM under following conditions (a) and (b): (2 trip detection logic) (a) Park/neutral position switch is OFF (b) Vehicle is being driven	• Combination meter • Open or short in vehicle speed sensor circuit • Vehicle speed sensor • ECM

WIRING DIAGRAM

See Pub. No. RM630E, page DI–77 (2UZ–FE Engine Repair Manual).
See Pub. No. RM617E, page DI–69 (IHZ, 1HD–T, 1HD–FTE Engine Repair Manual) .

INSPECTION PROCEDURE

See Pub. No. RM630E, page DI–77 (2UZ–FE Engine Repair Manual).
See Pub. No. RM617E, page DI–69 (IHZ, 1HD–T, 1HD–FTE Engine Repair Manual) .

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DTC	P0571/52	Brake Switch "A" Circuit

CIRCUIT DESCRIPTION

When the brake pedal is depressed, the stop light switch sends a signal to the ECM. When the ECM receives this signal, it cancels the cruise control.

A fail–safe function is provided so that the cancel functions normally, even if there is a malfunction in the stop light signal circuit.

The cancel condition is that battery positive voltage is supplied to terminal STP.

When the brake is on, battery positive voltage is normally applied through the STOP fuse and stop light switch to terminal STP of the ECM, and the ECM turns the cruise control OFF.

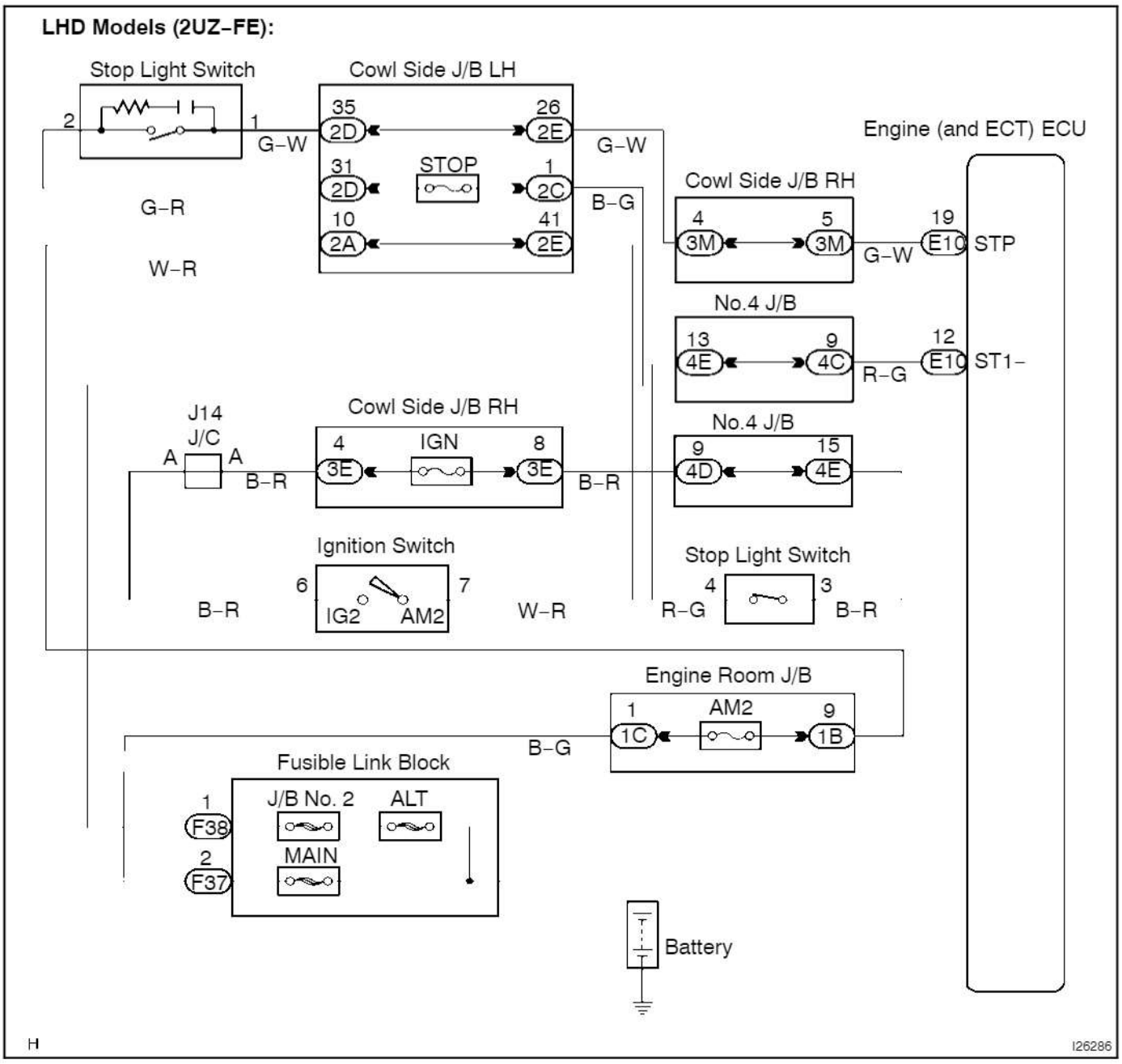
If the harness connected to terminal STP has an open circuit, terminal STP will have battery positive voltage and the cruise control will be turned OFF.

DTC No.	Detection Item	Trouble Area
P0571/52	Stop light switch circuit.	• Stop light switch • Harness or connector between ECM and stop light switch circuit • ECM

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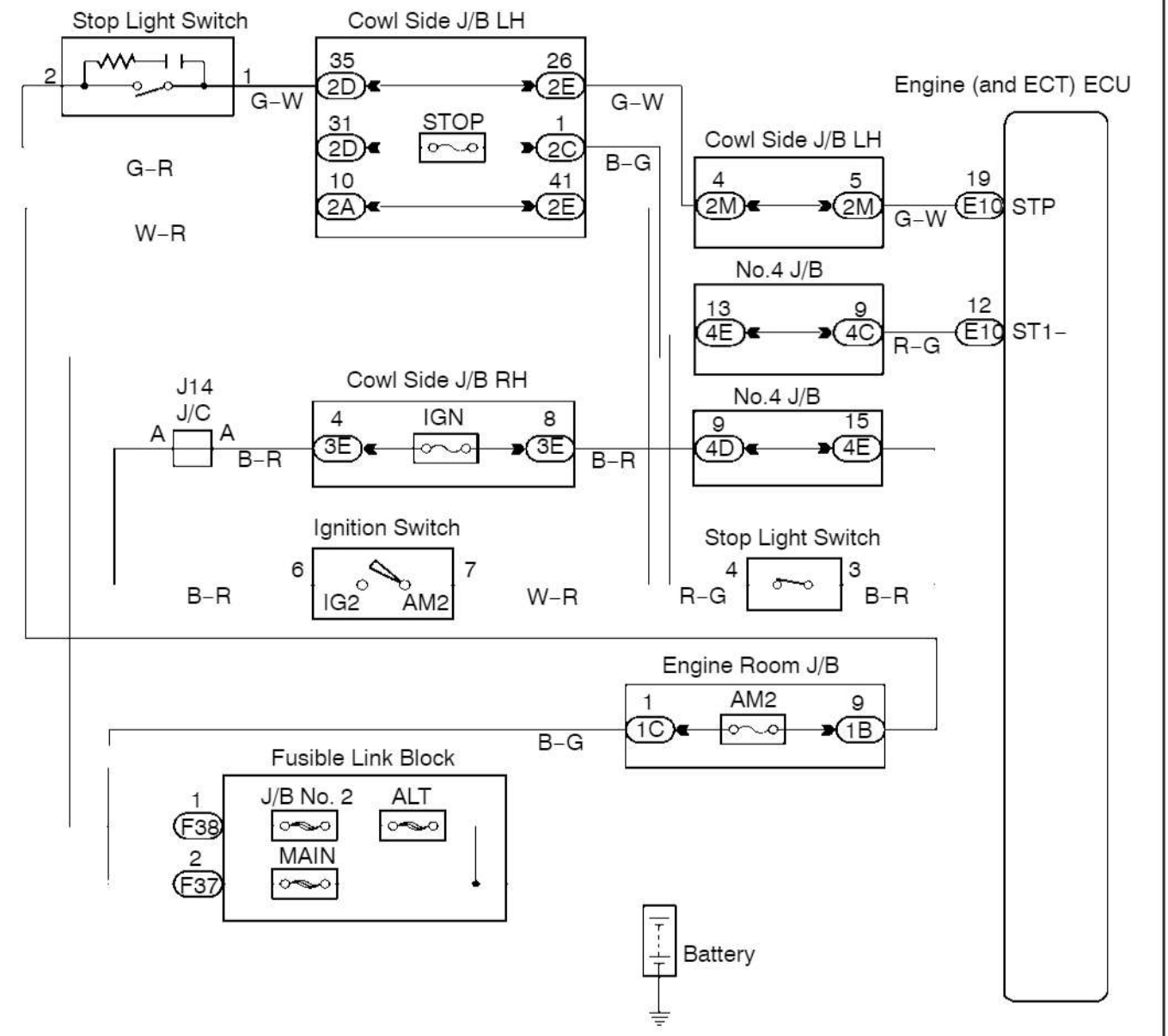
WIRING DIAGRAM

LHD Models (2UZ–FE):



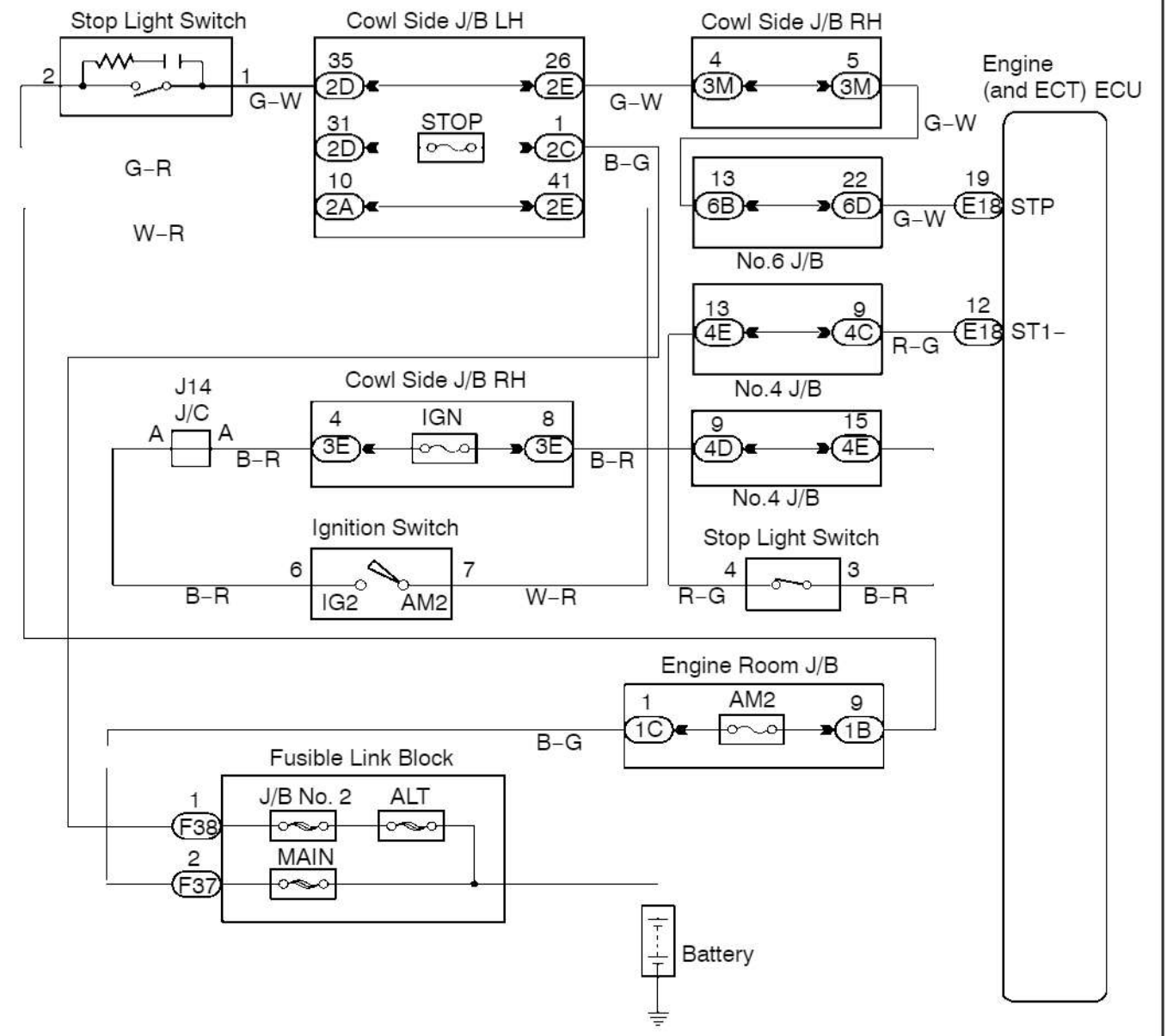
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RHD Models (2UZ–FE):



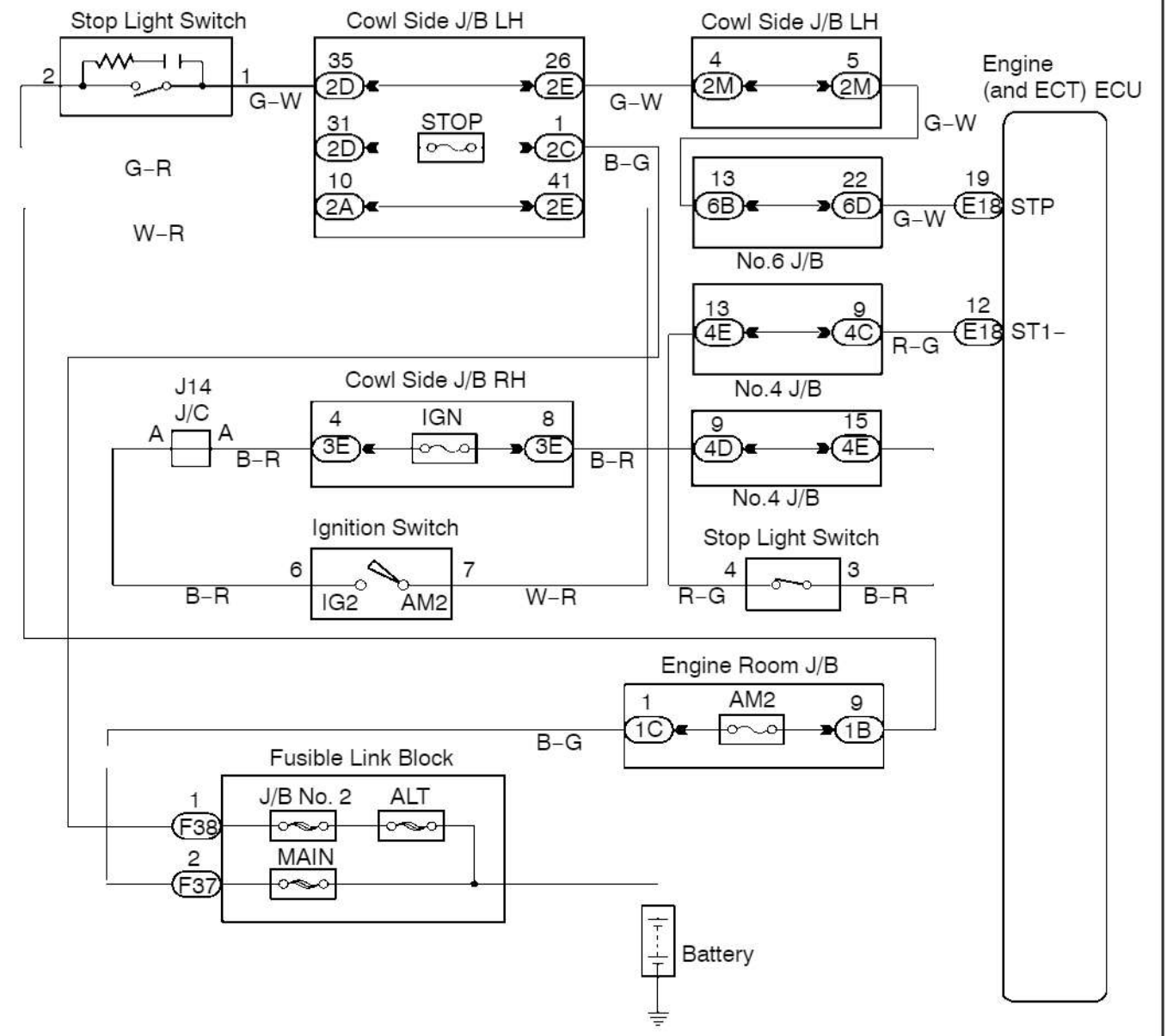
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LHD Models (Except Europe) / LHD Models (Europe 1HD–FTE):



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RHD Models (Except Europe) / RHD Models (Europe 1HD–FTE):



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check stop light switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to the DLC3.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main SW ON.

CHECK:

Select the item "STOP LIGHT SW" in the DATA LIST and read its valve displayed.

OK:

Brake pedal depressed: ON
Brake pedal released: OFF

OK → **Proceed to next circuit inspection shown in problem symptom table (See page DI–865).**

NG

2	**Check operation of stop light.**

CHECK:

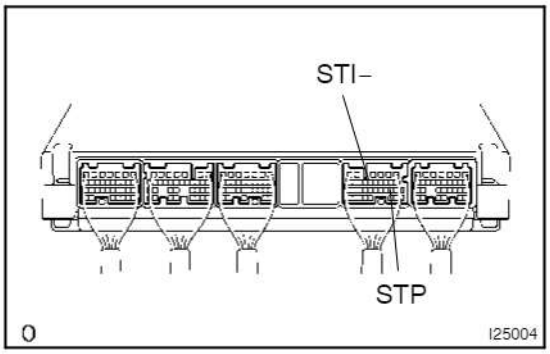
Check that stop light comes on when brake pedal is depressed, and turns off when brake pedal is released.

NG → **Check stop light system.**

OK

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3	Check voltage between terminal STP/STI– of ECM connector and body ground.



PREPARATION:

(a) Remove the ECM with connectors still connected.
(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal STP/STI– of ECM connector and body ground when the brake pedal is depressed and released.

OK:

Depressed	10 – 14 V
Released	Below 1 V

OK → **Proceed to next circuit inspection shown in problem symptom table (See page DI–865).**

NG

4	Check wire harness and connector between terminal STP of ECM and stop light switch, and terminal STI– of ECM and stop light switch (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

Check and replace ECM (See page IN–38).

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DIAZJ–01

DTC	P0607/54	Control Module Performance

CIRCUIT INSPECTION

This DTC expresses the internal abnormalities of ECM.

DTC No.	Detection Item	Trouble Area
P0607/54	• Cruise control input signal abnormal. • Stop light switch input signal abnormal.	• ECM

INSPECTION PROCEDURE

Check and replace ECM (See page IN–38).

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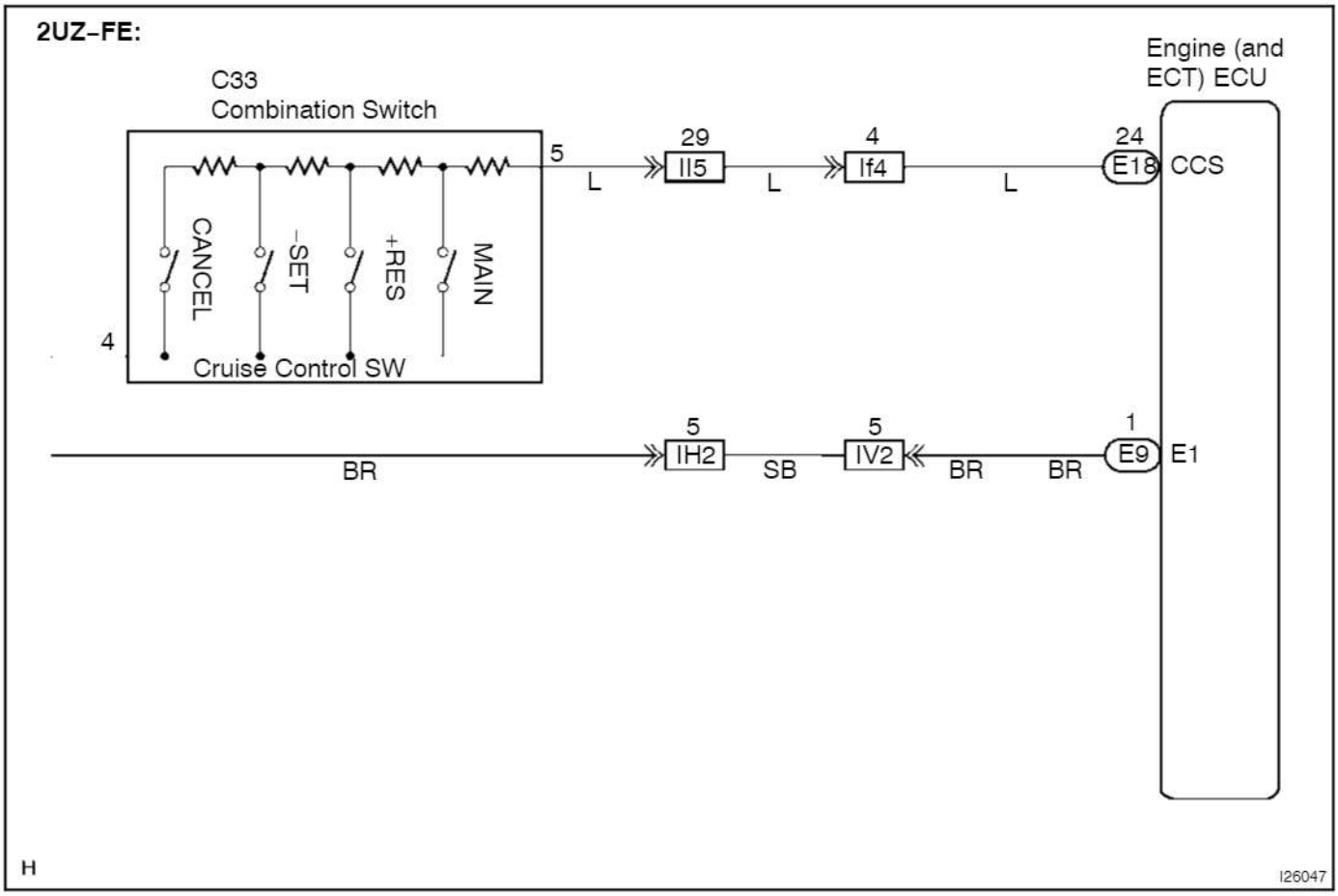
DIAZK-01

Main Switch Circuit (Cruise Control Switch)

CIRCUIT DESCRIPTION

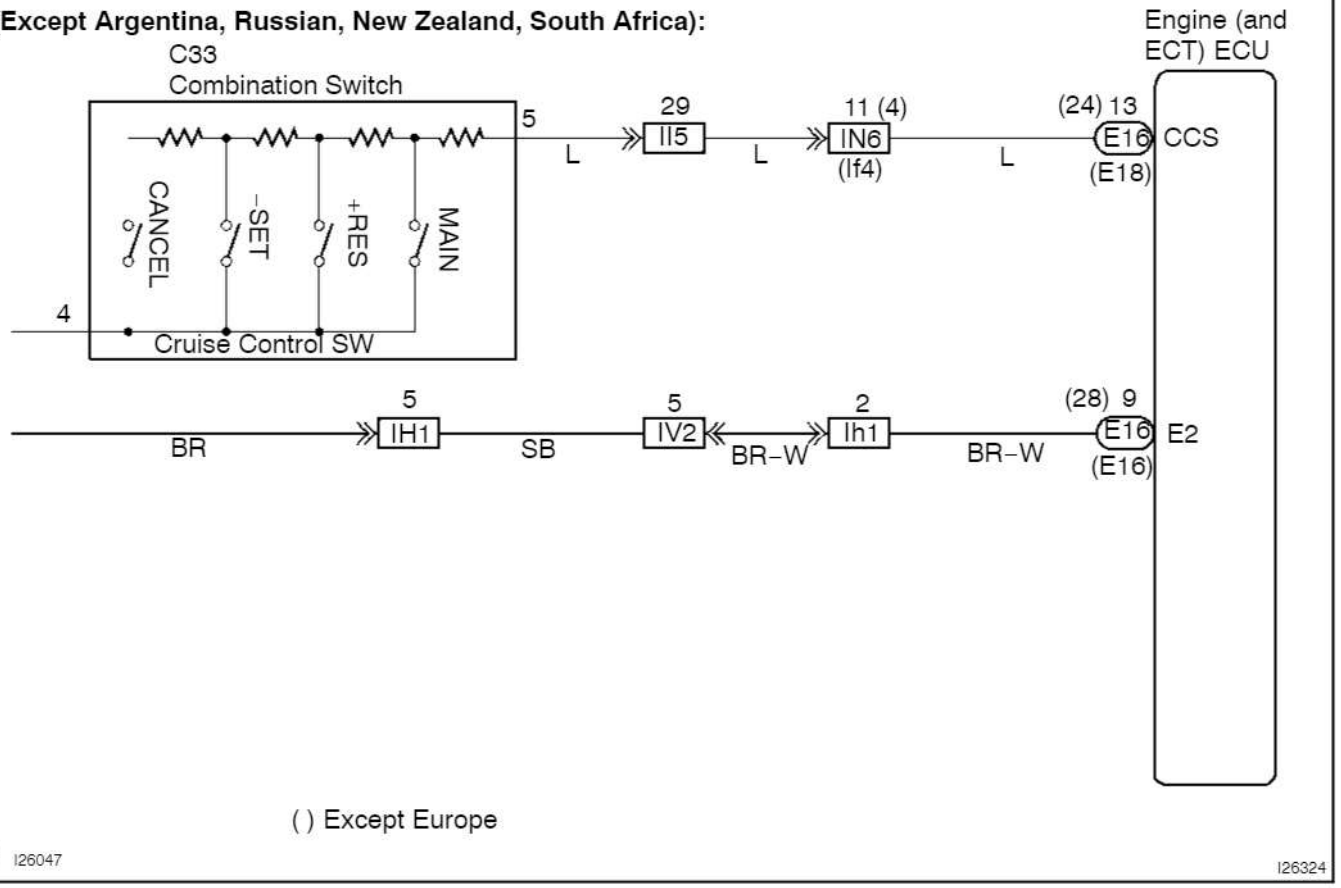
This circuit carries the –/SET, +/RESUME and Cancel signals (each voltage) to the ECM.

WIRING DIAGRAM

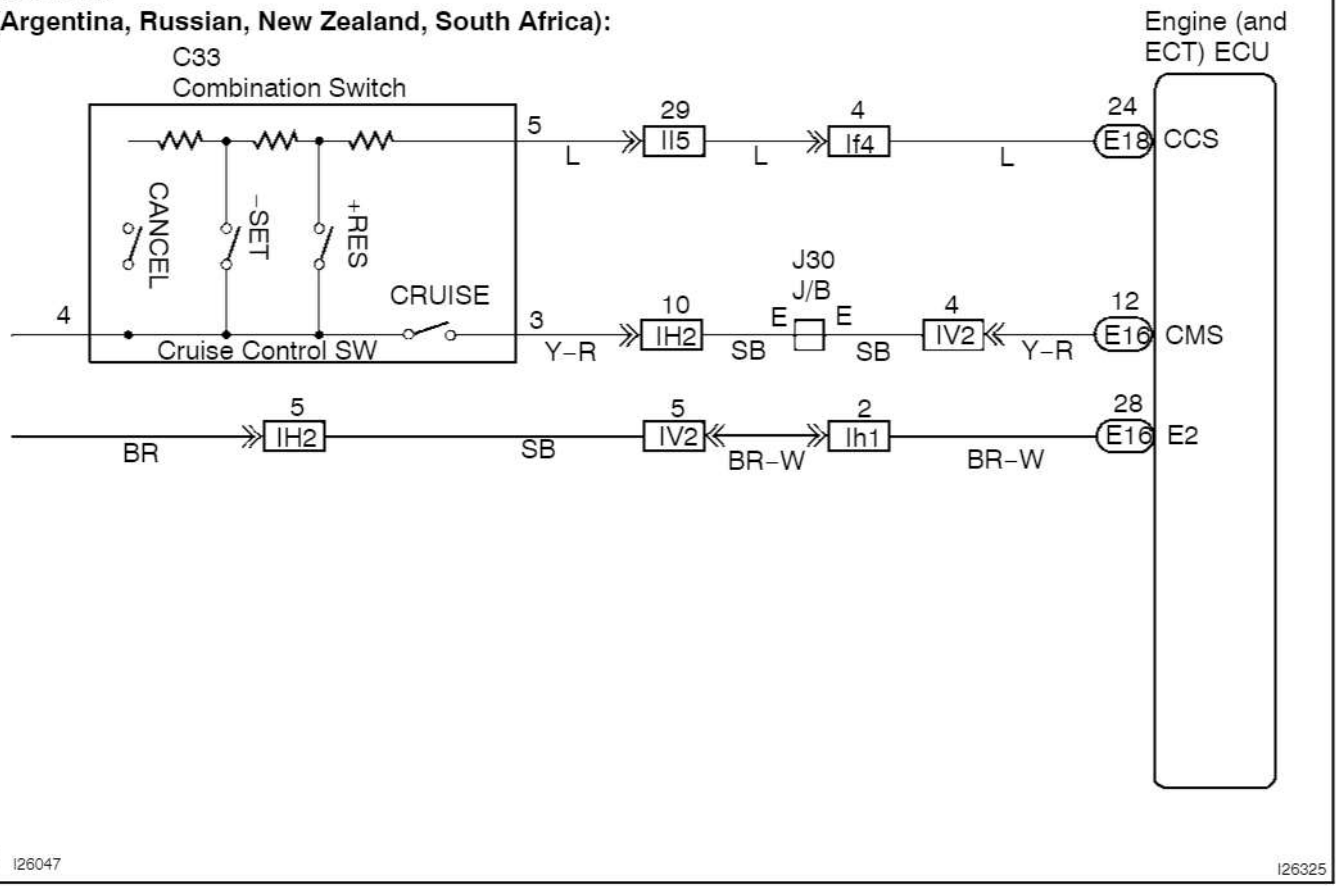


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1HD–FTE
(Except Argentina, Russian, New Zealand, South Africa):



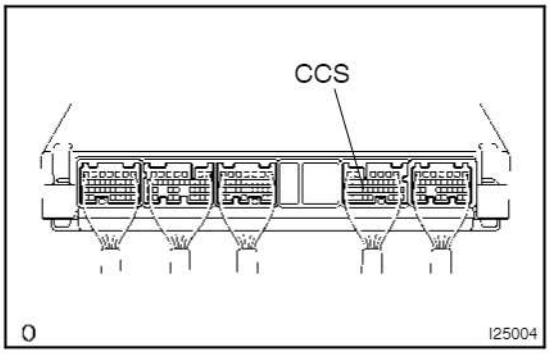
1HD–FTE
(Argentina, Russian, New Zealand, South Africa):



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INSPECTION PROCEDURE

1	Check voltage between terminal CCS of ECM connector and body ground.



PREPARATION:

(a) Remove the ECM with connector still connected.

(b) Turn ignition switch ON.

CHECK:

Measure voltage between terminal CCS of ECM connector and body ground, when each of the –/SET, +RES and CANCEL is turned ON.

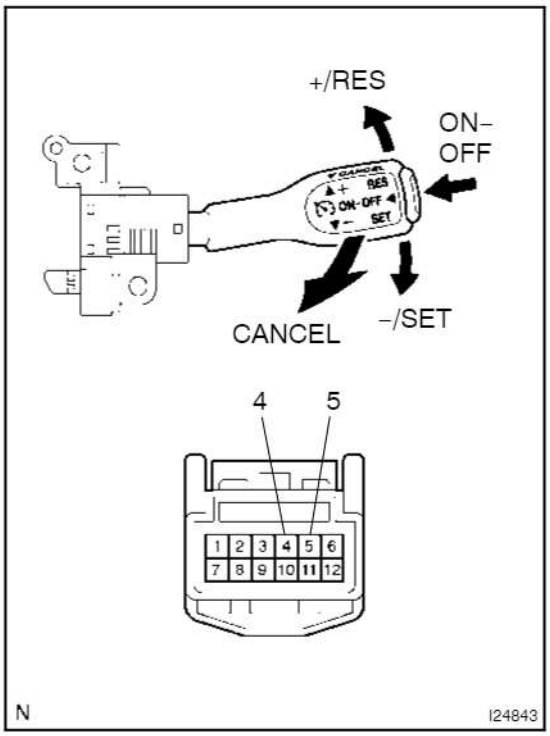
OK:

Switch Position	Voltage
Neutral	9 – 14 V
+/RES	2.1 – 4 V
–/SET	4 – 7.1 V
CANCEL	6 – 10.1 V

OK	Proceed to next circuit inspection shown on problem symptom table (See page DI–865).

NG

2	Check main switch continuity.



PREPARATION:

(a) Remove steering wheel center pad.

(b) Disconnect the control switch connector.

CHECK:

(a) Measure resistance between terminals 4 and 5 of cruise control switch connector when control switch is operated.

Switch position	Resistance (Ω)
Neutral	∞ (No continuity)
+/RES	210 – 270
–/SET	560 – 700
CANCEL	1380 – 1700

(b) Check continuity between terminals 4 and 5 of control switch connector when main switch is held on and off.

OK:

Switch position	Tester connection	Specified condition
OFF	4 – 5	No continuity
ON	4 – 5	Continuity

NG	Replace control switch.

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OK

3	Check harness and connector between ECM and cruise control switch, cruise control switch and body ground (See page IN–27).

NG → Repair or replace harness or connector.

OK

4	Check cruise control indicator light (See combination meter.)

NG → Replace combination meter.

OK

Check and replace ECM (See page IN–38).

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DIAZL–01

CRUISE MAIN Indicator Light Circuit

CIRCUIT DESCRIPTION

When the cruise control main switch is turned ON, CRUISE MAIN indicator light lights up.

INSPECTION PROCEDURE

1	**Perform Active Test of hand–held tester.**

PREPARATION:

Connect the hand–held tester to the DLC3.

CHECK:

Check the cruise indicator of the combination meter using Active Test.

OK:

Description	Tester display	Check condition
CRUISE Indicator light	CRUISE INDIC	ON/OFF

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI–865).**

NG →

Check and replace combination meter. (See page IN–38).

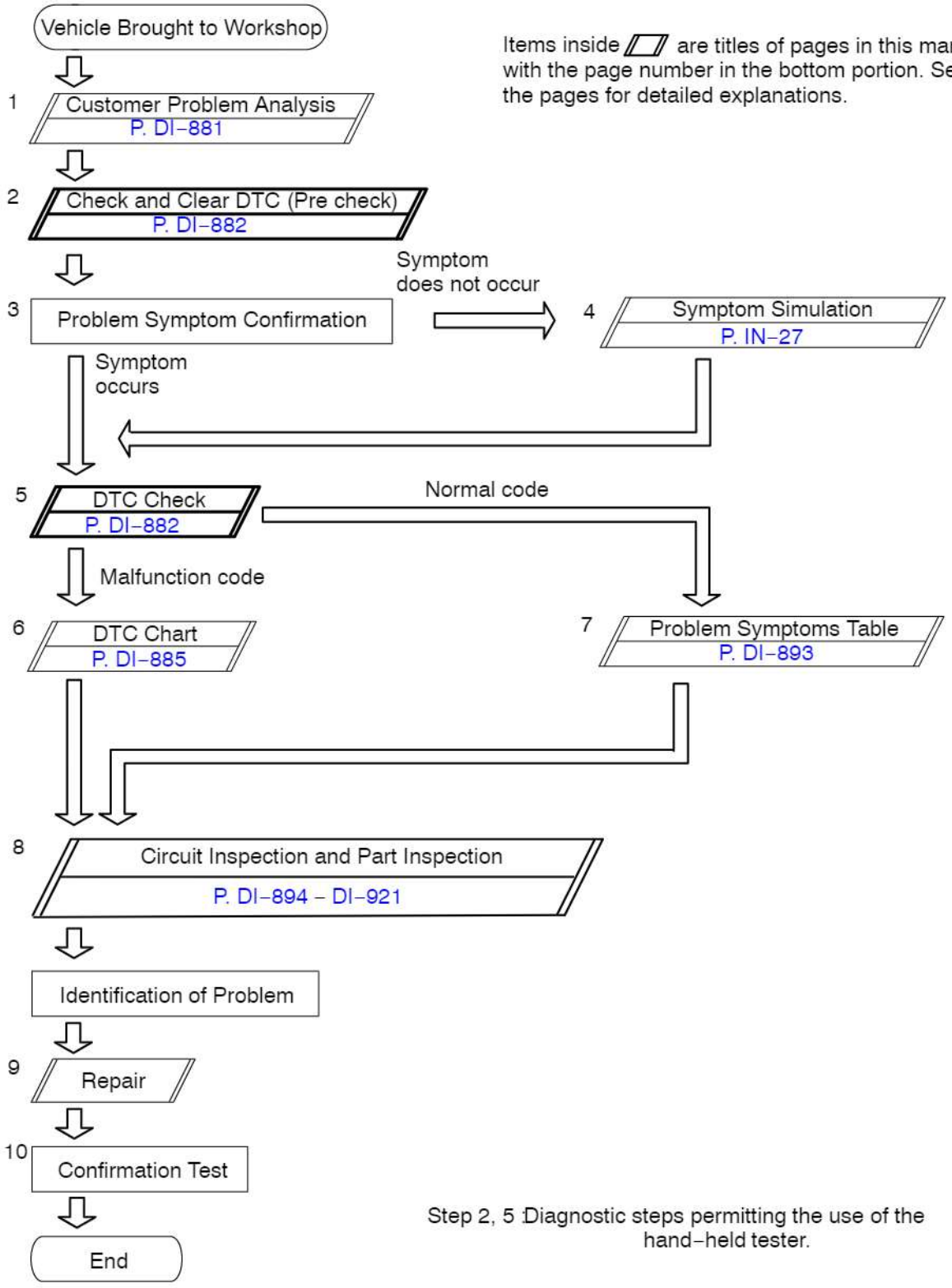
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ENGINE IMMOBILISER SYSTEM

DIB0I–01

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshoot in accordance with the procedure on the following pages.



Items inside ▱ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.

Step 2, 5 : Diagnostic steps permitting the use of the hand–held tester.

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CUSTOMER PROBLEM ANALYSIS CHECK

ENGINE IMMOBILISER Check Sheet

Inspector's Name :

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

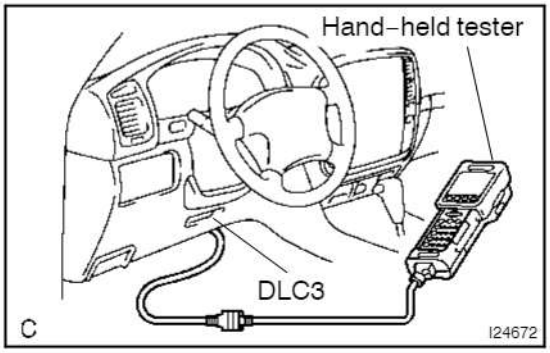
Symptoms	☐ Immobiliser is not set. (Engine starts with key codes other than the registered key code.)
	☐ Engine does not start.

Check Item	**Malfunction Indicator Lamp**	☐ Normal ☐ Remains ON ☐ Does not Light Up

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

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DIB0K-01



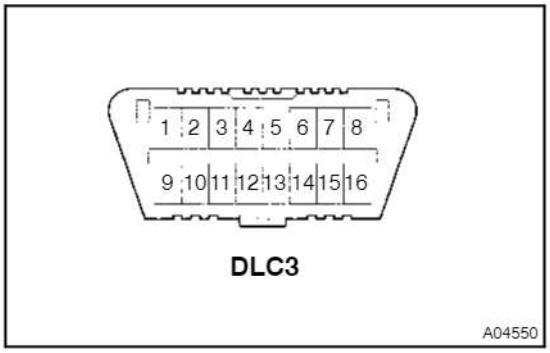
PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Description

ECM controls the function of immobiliser on this vehicle. Data of the immobiliser or DTC can be read from DLC3 of the vehicle. When a trouble occurs on immobiliser, MIL does not light up but DTC inspection is performed.

Therefore when there seems to be a trouble on immobiliser, use hand–held tester or SST to check and troubleshoot it.



(b) Inspect the DLC3.

The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of DLC3 complies with SAEJ1962 and matches the ISO 9141–2 format.

Tester connection	condition	Specified condition
7 (Bus ⊕ Line) – 5 (Signal ground)	During communication	Pulse generation
4 (Chassis Ground) – Body	Always	1 Ω or less
5 (Signal Ground) – Body	Always	1 Ω or less
16 (B+) – Body	Always	9 – 14 V

HINT:

If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

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2. INSPECT DIAGNOSIS

(a) Check the DTC (Using hand–held tester).

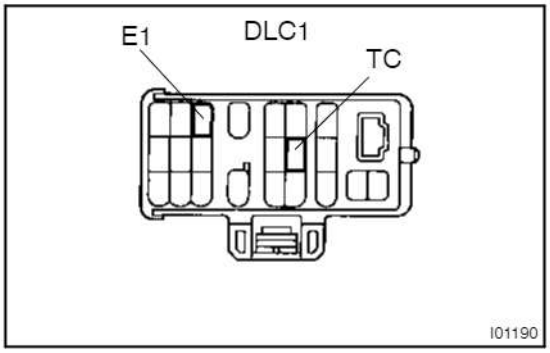
(1) Prepare hand–held tester.

(2) Connect hand–held tester to DLC3 under the instrument panel lower pad.

(3) Turn the ignition switch ON and turn hand–held tester switch ON.

(4) Use hand–held tester to check the DTCs. and "Snap–shot function" which records the monitor data (For operating instructions, see the hand–held tester instruction book.).

(5) See page DI–885 to confirm the details of the DTCs.



(b) Check the DTC (Using diagnosis check wire).

(1) Turn ignition switch ON.

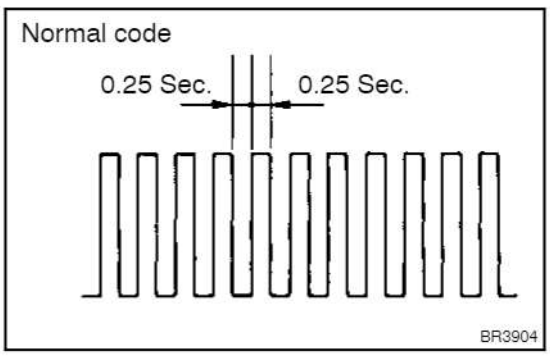
(2) Using SST, connect between terminals 11 (TC) and 3 (E1) of DLC1.

SST 09843–18020

(3) Read the diagnostic trouble code from malfunction indicator lamp.

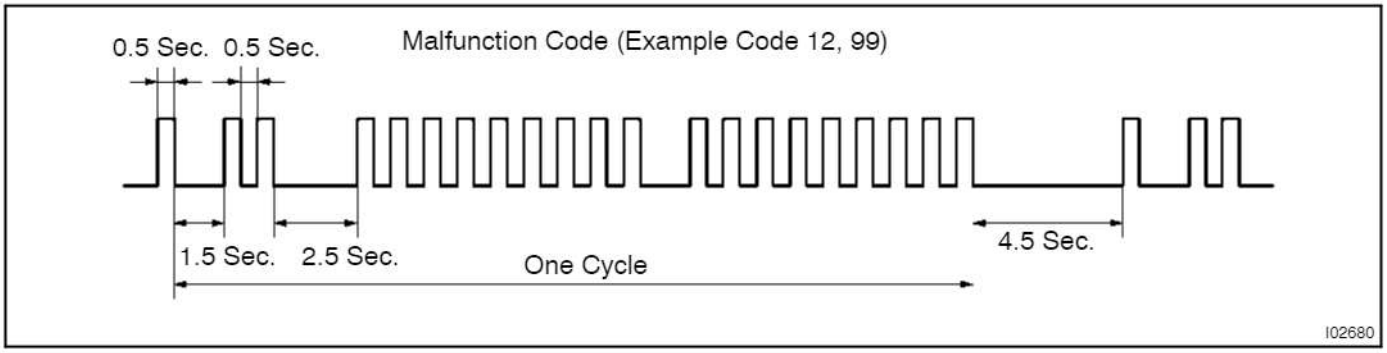
HINT:

- If a diagnostic trouble code is not output, check the TC terminal circuit.
- ECM controls the immobiliser function on this vehicle, DTC is out put with engine data.



- As an example, the blinking patterns for codes; normal, 12 and 99 are shown in the charts.

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(4) When DTC "99" is output, there is a trouble of immobiliser. Start troubleshooting referring to PROBLEM SYMPTOMS TABLE.

(5) After completing the check, disconnect terminals 11 (TC) and 3 (E1) and turn off the display.

HINT:

In the event of 2 or more malfunction codes, indication will begin from the smaller numbered code and continue in order to the larger.

(c) Clear the DTC.

The following operations will erase the DTCs and freeze frame data.

(1) Operating the hand–held tester to erase the codes (See the hand–held tester instruction book for operating instructions.).

(2) Disconnecting the battery terminals or EFI fuse.

3. CHECK HAND–HELD TESTER

(a) ECU DATA MONITOR

(1) Make a judgement of good or bad and find out a malfunctioning part by the data monitor.

Standard:

TRANSPONDER KEY ECU

Item	Condition	Specified Condition
IMMOBILISER	Ignition switch ON → When key is not inserted in the ignition switch cylinder	UNSET/SET
MASTER KEY	Ignition switch ON with master key → Pull out key from ignition switch cylinder	CORRESP/WRONG
SUB KEY	Ignition switch ON with sub–key → Pull out key from ignition switch cylinder	CORRESP/WRONG
REGIST MAS CODE	–	0 – 3
REGIST SUB CODE	–	0 – 1
KEY SW	Ignition switch ON → Without key	ON/OFF
IG SW	Ignition switch ON → OFF	ON/OFF

(b) ACTIVE TEST

(1) Make a judgement of good or bad and find out a malfunctioning part by the active test.

Standard:

TRANSPONDER KEY ECU

Item	Operation
SECURITY INDIC	ON / OFF

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DI50L-01

DIAGNOSTIC TROUBLE CODE CHART

DTC No. (SEE PAGE)	Circuit Inspection	Trouble Area
B2780 (DI–894)	Key unlock warning switch malfunction	• Key unlock warning switch • Wire harness
B2784 (DI–897)	Transponder key coil malfunction	Transponder key amplifier with coil
B2793 (DI–898)	Transponder chip malfunction	Key
B2794 (DI–899)	Unmatched encryption code	• Key • Transponder key amplifier
B2795 (DI–900)	Unmatched key code	• Key • Unregistered key inserted before
B2796 (DI–901)	No communication in immobiliser system	• Key • Transponder key amplifier with coil • Wire harness • Transponder key ECU
B2797 (DI–903)	Communication malfunction No.1	• Key • Wire harness • Transponder key amplifier with coil • Transponder key ECU
B2798 (DI–906)	Communication malfunction No.2	• Key • Transponder key amplifier with coil • Wire harness • Transponder key ECU
B2799/99 (DI–906)	Engine immobiliser system malfunction	• Wire harness • Transponder key ECU • ECM

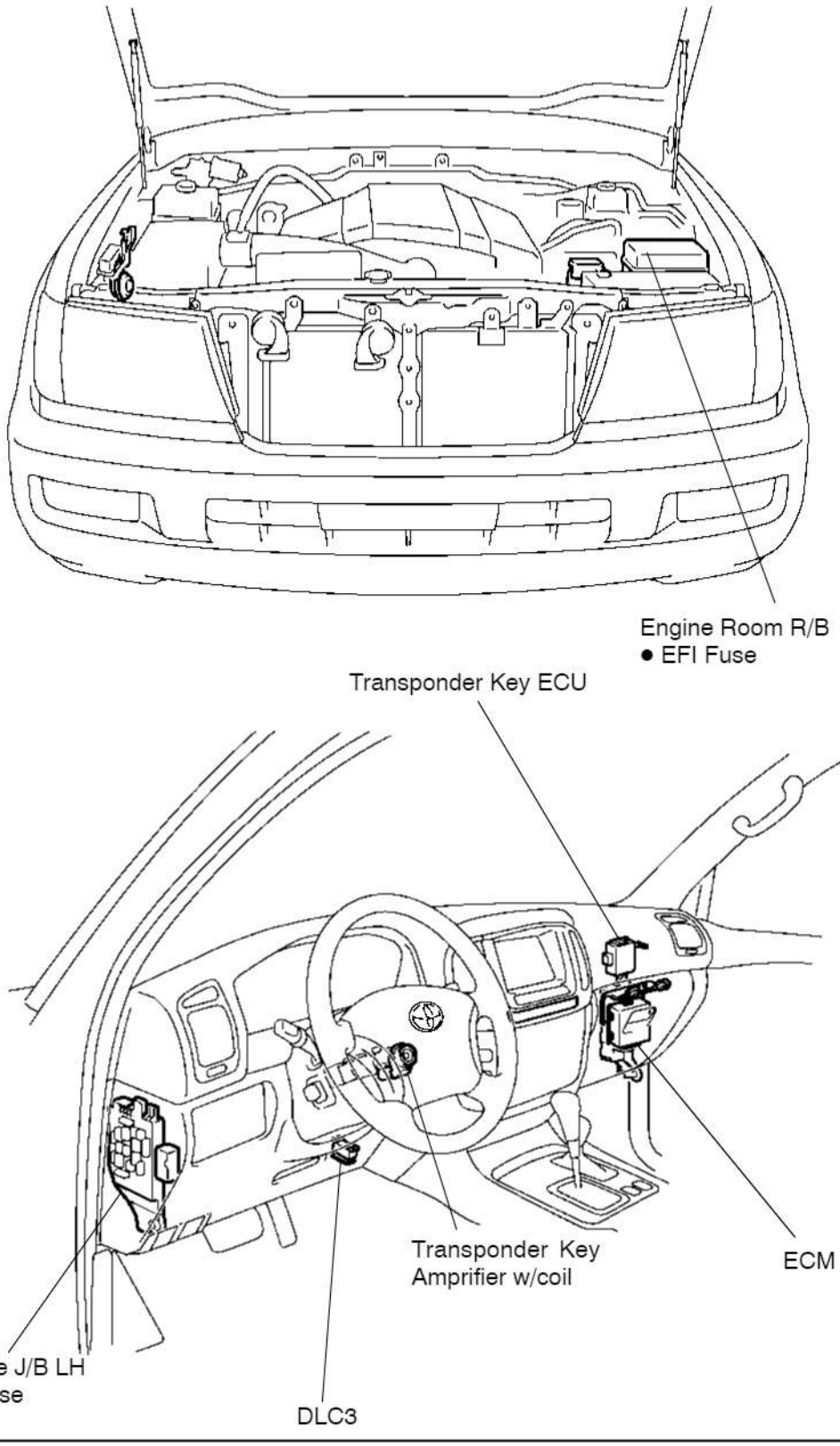
HINT:

To reduce the unnecessary exchange of Transponder key ECU, check that a trouble occurs with the original Transponder key ECU at the time of exchanging Transponder key ECU and the trouble will disappear with a new Transponder key ECU.

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DIB0M–01

PARTS LOCATION

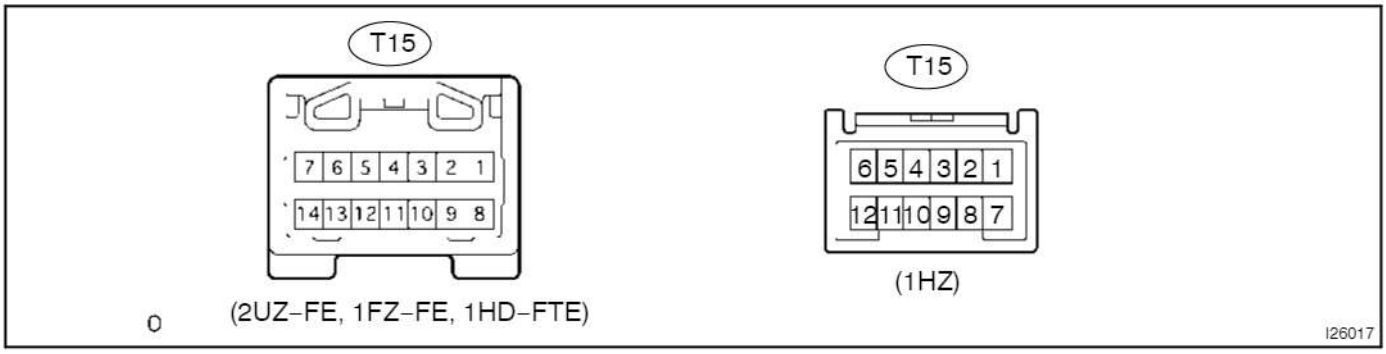


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DIB0N–01

TERMINALS OF ECM

1. TRANSPONDER KEY ECU



(a) Disconnect the transponder key ECU connector.

Standard:

Symbols (Terminal No.)	Wiring Color	Condition	Specified condition
GND ⇔ Body ground (T15–6 ⇔ Body ground) *1 (T15–14 ⇔ Body ground) *2	W–B ↔ Body ground	Constant	Continuity
+B⇔GND (T15–1 ⇔ T15–6) *1 (T15–1 ⇔ T15–14) *2	L–W ↔ W–B	Constant	10 – 14 V
IG ⇔ GND (T15–2 ⇔ T15–6) *1 (T15–2 ⇔ T15–14) *2	B–R ↔ W–B	Ignition switch OFF → ON	0 V → 10 – 14 V
KSW ⇔ GND (T15–9 ⇔ T15–6) *1 (T15–10 ⇔ T15–14) *2	R–B ↔ W–B	No key in the ignition key cylinder → With key	No Continuity → Continuity
CTY ⇔ GND (T15–4 ⇔ T15–6) *1 (T15–4 ⇔ T15–14) *2	R–Y ↔ W–B *3 R–B ↔ W–B *4	Driver's door close → open	No Continuity → Continuity
KSW ⇔ GND (T15–9 ⇔ T15–6) *1 (T15–10 ⇔ T15–14) *2	R–B ↔ W–B	No key in the ignition key cylinder → With key	10 – 14 V → 0 V
VC5 ⇔ GND (T15–7 ⇔ T15–6) *1 (T15–8 ⇔ T15–14) *2	Y ↔ W–B	Ignition switch OFF → ON	0 V → 5 V
TXCT ⇔ GND (T15–11 ⇔ T15–6) *1 (T15–12 ⇔ T15–14) *2	V–G ↔ W–B	Ignition switch OFF → ON	Waveform 1
CODE ⇔ GND (T15–10 ⇔ T15–6) *1 (T15–11 ⇔ T15–14) *2	L–B ↔ W–B	Ignition switch OFF → ON	Waveform 2
EFIO ⇔ GND (T15–6 ⇔ T15–14) *2	W ↔ W–B	Ignition switch OFF → ON	Waveform 3
EFII ⇔ GND (T15–7 ⇔ T15–14) *2	Y ↔ W–B	Ignition switch OFF → ON	Waveform 4

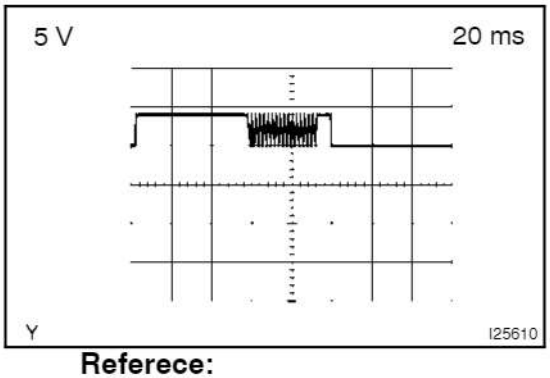
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IND ⇔ GND (T15–3 ⇔ T15–6) *1 (T15–3 ⇔ T15–14) *2	G–R ↔ W–B	Immobiliser system unset → set	0 V → 10 – 14 V ↔ 0 V
CTY ⇔ GND (T15–4 ⇔ T15–6) *1 (T15–4 ⇔ T15–14) *2	R–Y ↔ W–B *3 R–B ↔ W–B *4	Driver's door close → open	10 – 14 V → 0 V

*1: 1HZ
*2: Except 1HZ
*3: LHD
*4: RHD

(b) Inspection using osilloscope.

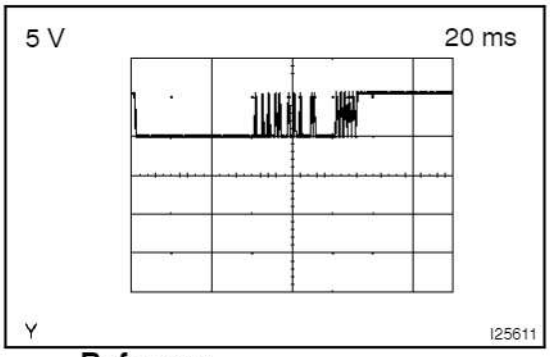
Referece:



(c) Waveform 1

Item	Condition
Terminal	TXCT – GND
Tool setting	5 V/DIV, 20 ms/DIV
Vehicle condition	Ignition switch ON

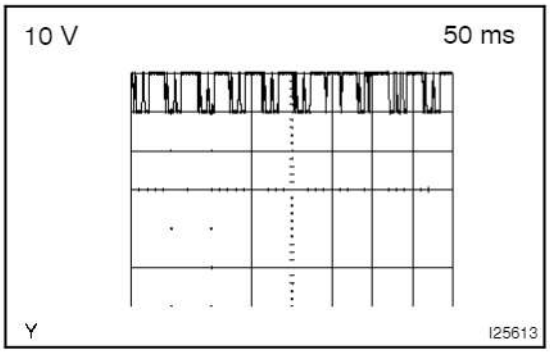
Referece:



(d) Waveform 2

Item	Condition
Terminal	CODE – GND
Tool setting	5 V/DIV, 20 ms/DIV
Vehicle condition	Ignition switch ON

Referece:

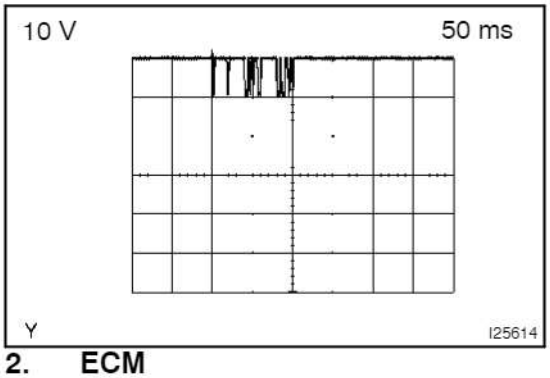


(e) Waveform 3

Item	Condition
Terminal	EFIO – GND
Tool setting	10 V/DIV, 50 ms/DIV
Vehicle condition	Ignition switch ON

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Referece:

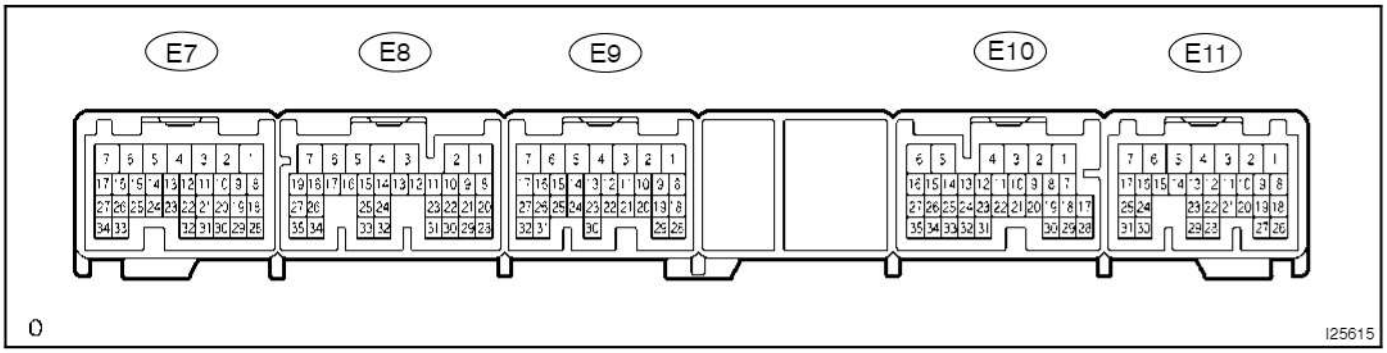


(f) Waveform 4

Item	Condition
Terminal	EFII – GND
Tool setting	10 V/DIV, 50 ms/DIV
Vehicle condition	Constant

2. ECM

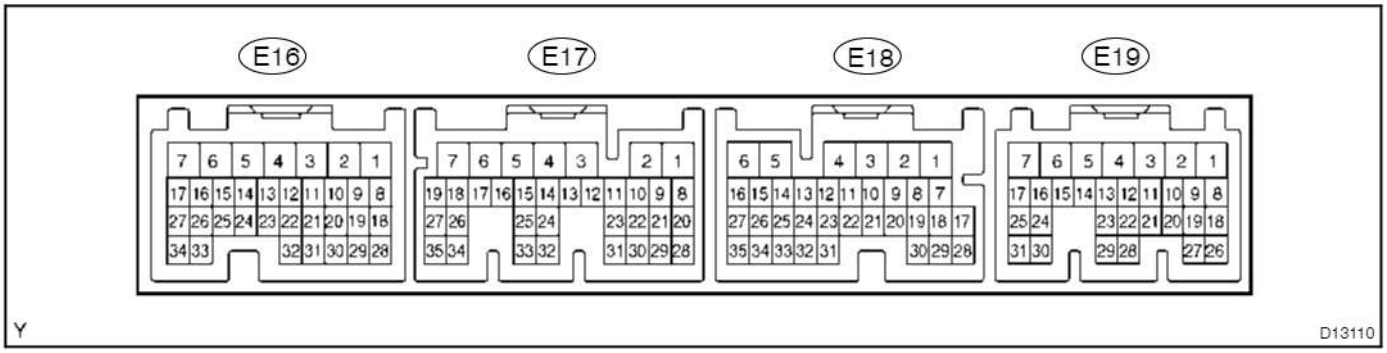
2UZ–FE:



Symbols (Terminal No.)	Wiring Color	Condition	Specified condition
BATT ↔ E1 (E11–3 ↔ E9–1)	B–R ↔ BR	Constant	9 – 14 V
+B ↔ E1 (E11–1 ↔ E9–1)	B–Y ↔ BR	Ignition switch OFF → ON	9 – 14 V
+B2 ↔ E1 (E11–2 ↔ E9–1)	B–Y ↔ BR	Ignition switch OFF → ON	9 – 14 V
IGSW ↔ E1 (E11–9 ↔ E9–1)	B–R ↔ BR	Ignition switch OFF → ON	9 – 14 V
IMI ↔ E1 (E10–27 ↔ E9–1)	W ↔ BR	No key in the ignition key cylinder → With key	Waveform 1
IMO ↔ E1 (E10–26 ↔ E9–1)	Y ↔ BR	No key in the ignition key cylinder → With key	Waveform 2
E1 ↔ Body ground (E9–1 ↔ Body ground)	BR ↔ Body ground	Constant	Continuity

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1HD–FTE:



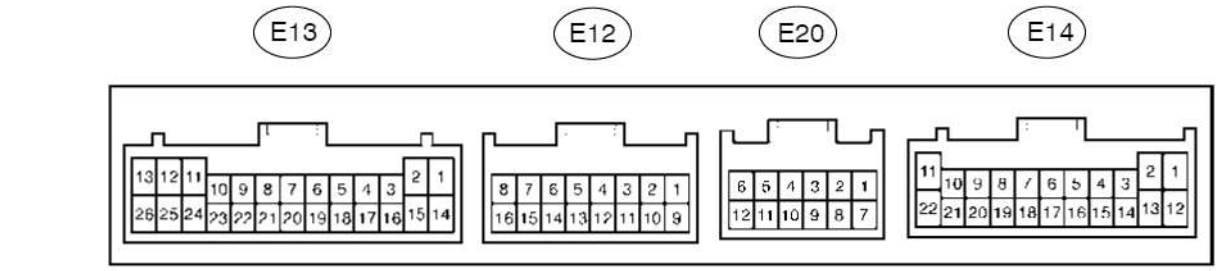
Symbols (Terminal No.)	Wiring Color	Condition	Specified condition
BATT ↔ E1 (E19–1 ↔ E17–14) *1 (E19–6 ↔ E16–1) *2	B–R ↔ BR	Constant	9 – 14 V
+B ↔ E1 (E19–12 ↔ E17–14) *1 (E19–1 ↔ E16–1) *2	B–Y ↔ BR	Ignition switch OFF → ON	9 – 14 V
IGSW ↔ E1 (E19–14 ↔ E17–14) *1 (E19–9 ↔ E16–1) *2	B–R ↔ BR	Ignition switch OFF → ON	9 – 14 V
IMI ↔ E1 (E19–17 ↔ E17–14) *1 (E19–23 ↔ E16–1) *2	W ↔ BR	No key in the ignition key cylinder → With key	Waveform 1
IMO ↔ E1 (E19–6 ↔ E17–14) *1 (E19–29 ↔ E16–1) *2	Y ↔ BR	No key in the ignition key cylinder → With key	Waveform 2
E1 ↔ Body ground (E17–14 ↔ Body ground) *1 (E16–1 ↔ Body ground) *2	BR ↔ Body ground	Constant	Continuity

*1: Europe
*2: Except Europe

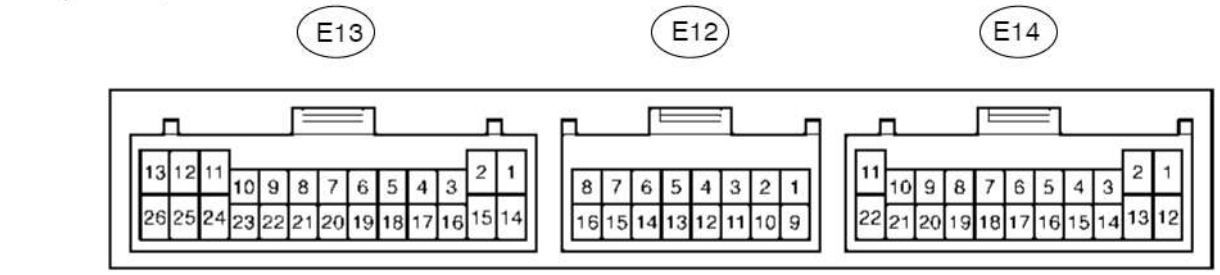
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1FZ–FE:

China, Saudi Arabia, Peru:



Except China, Saudi Arabia, Peru:



I26326

Symbols (Terminal No.)	Wiring Color	Condition	Specified condition
BATT ↔ E1 (E14–1 ↔ E13–14)	B–R ↔ BR	Constant	9 – 14 V
+B ↔ E1 (E14–12 ↔ E13–14)	B–Y ↔ BR	Ignition switch OFF → ON	9 – 14 V
IMI ↔ E1 (E14–17 ↔ E13–14) *1 (E12–12 ↔ E13–14) *2	W ↔ BR	No key in the ignition key cylinder → With key	Waveform 1
IMO ↔ E1 (E14–6 ↔ E13–14) *1 (E13–23 ↔ E13–14) *2	Y ↔ BR	No key in the ignition key cylinder → With key	Waveform 2
E1 ↔ Body ground (E13–14 ↔ Body ground)	BR ↔ Body ground	Constant	Continuity

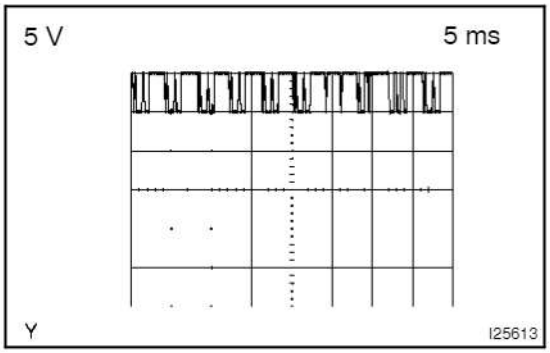
*1: China, Sudi Arabia, Peru

*2: Except *1

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(a) Inspection using osilloscope.

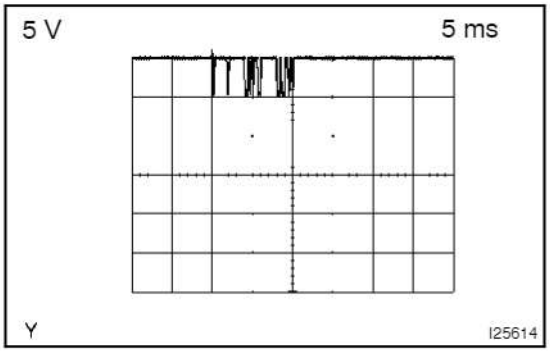
Referece:



(b) Waveform 1

Item	Condition
Terminal	IMI – GND
Tool setting	5 V/DIV, 5 ms/DIV
Vehicle condition	Ignition switch ON

Referece:



(c) Waveform 2

Item	Condition
Terminal	IMO – GND
Tool setting	5 V/DIV, 5 ms/DIV
Vehicle condition	Constant

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DI5OO–01

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Immobiliser is not set. (Engine starts with key codes other than the registered key code.)	1. Transponder key ECU	IN–38
Engine does not start.	1. Key 2. Wire harness 3. Transponder key coil 4. Amplifier 5. Transponder key ECU 6. ECM	*1 IN–38 BE–103 IN–38
Security indicator is always ON.	1. Multi–display (security indicator) 2. Wire harness 3. Transponder key ECU	*2 IN–38 IN–38
Security indicator is always ON. (Although code has been registered in the automatic registration mode, indicator is not OFF.)	1. Wire harness 2. Transponder key amplifier with coil 3. Transponder key ECU	IN–38 BE–103 IN–38
Security indicator is OFF. (When DTC of immobiliser is output)	1. Wire harness 2. Transponder key amplifier with coil 3. Transponder key ECU	IN–38 BE–103 IN–38
Security indicator is OFF. (When DTC of immobiliser is not output)	1. Multi–display (security indicator) 2. Diagnosis circuit 3. Wire harness 4. Transponder key ECU	 IN–38 IN–38
Security indicator is abnormally blinking.	1. Wire harness 2. Transponder key ECU	IN–38 IN–38
No code is output.	1. Power source circuit 2. Transponder key ECU	DI–913 IN–38

*1 : Check that the key which did not start the engine has been registered and that it is possible to start with other already registered key.

*2 : Finish the automatic registration mode because the mode might still remain.

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DIB0P-01

CIRCUIT INSPECTION

DTC	B2780	Key Unlock Warning Switch Malfunction

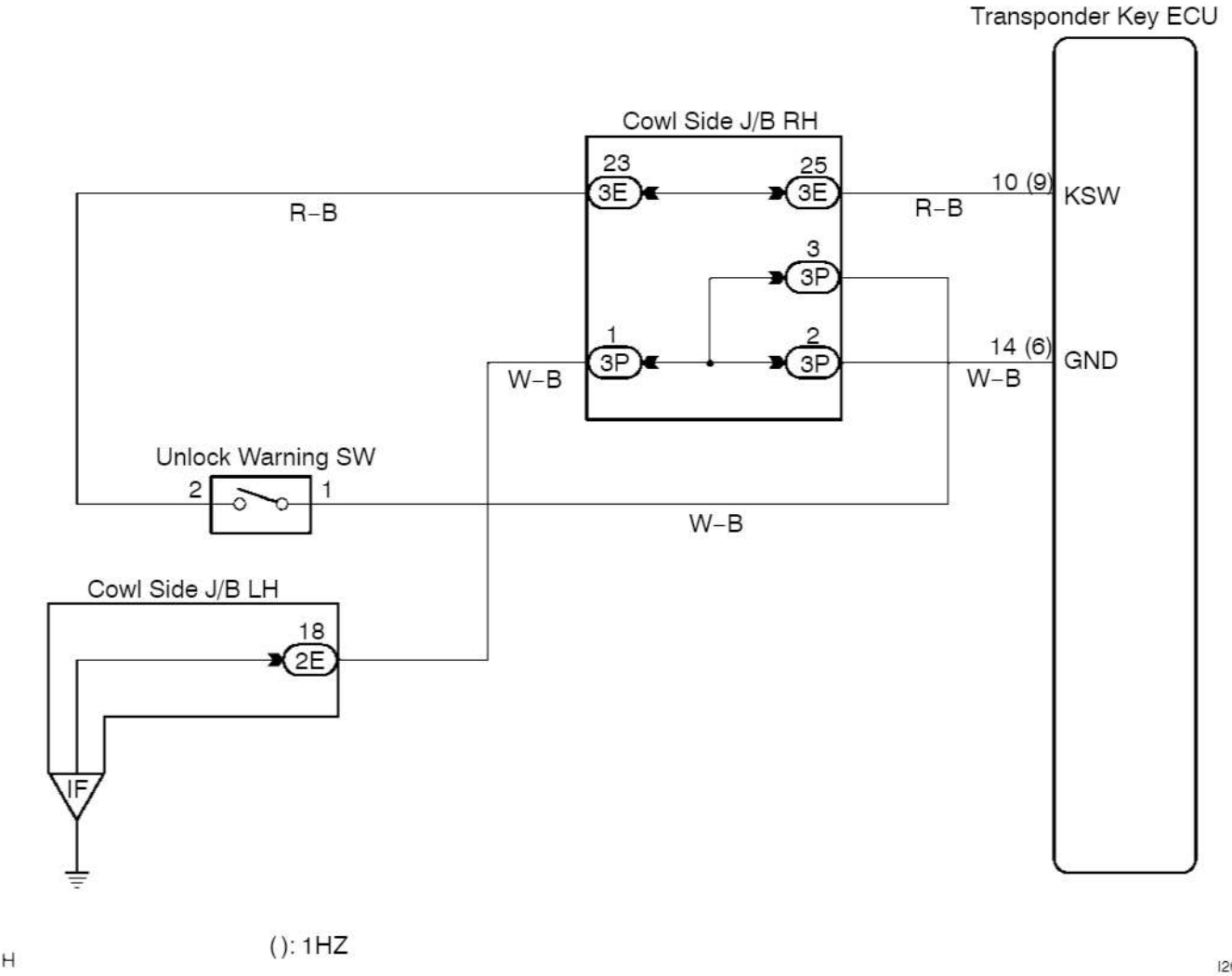
CIRCUIT DESCRIPTION

This DTC is detected when the Transponder key ECU does not detect the key unlock warning switch ON even with the ignition switch ON. (In normal condition, the key unlock warning switch should be ON when the ignition switch is ON.)

DTC No.	DTC Detecting Condition	Trouble Area
B2780	The key unlock warning switch On is not detected when the ignition switch is ON.	• Key unlock warning switch • Wire harness

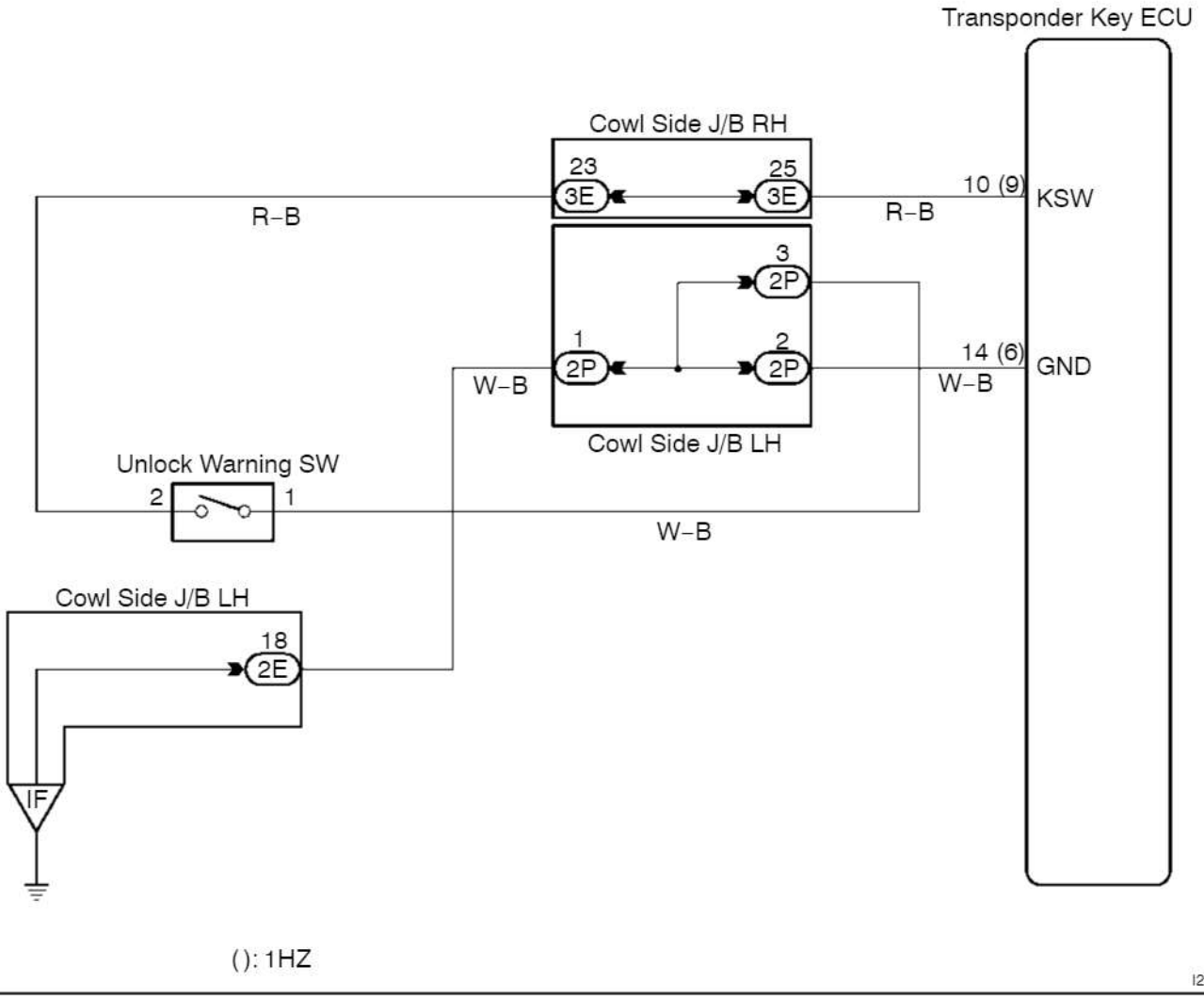
WIRING DIAGRAM

LHD Models:



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RHD Models:



INSPECTION PROCEDURE

HINT:
In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check key unlock warning switch using hand–held tester.**

PREPARATION:
Connect the hand–held tester to the DLC3.
CHECK:
Check the key unlock warning switch using DATA LIST.

OK → **Go to step 4.**

NG

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2	Check key unlock warning switch.

NG → Replace the key unlock warning switch.

OK

3	Check wire harness and connector between key unlock warning switch and transponder key ECU (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

Replace transponder key ECU.

4	Check whether or not DTC is detected when DTC is cleared, key is inserted into ignition key cylinder and IG SW is turned ON. (See page DI–882).

RESULT:

OK	B2780 is not output.
NG	B2780 is output.

NG → Replace Transponder Key ECU).

OK

No problem at this time.
It is suspected that DTC was detected for some reason in the past.

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DI50Q-01

DTC	B2784	TRANSPONDER KEY COIL MALFUNCTION

CIRCUIT DESCRIPTION

This DTC is output when short or open of the key coil built in the transponder key amplifier is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B2784	Transponder key coil malfunction	Transponder key amplifier with coil

INSPECTION PROCEDURE

Replace key.

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DI50R–01

DTC	B2793	Transponder Chip Malfunction

CIRCUIT DESCRIPTION

This DTC is detected when trouble is found in the key during the key code registraion. If the key code is not registered normally, this DTC can be detected. Replace the key when the key code registraiton is not performed normally and this DTC is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B2793	• Transponder chip malfunction	• Key

INSPECTION PROCEDURE

Replace key.

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DI5OS-01

DTC	B2794	Unmatched Encryption Code

CIRCUIT DESCRIPTION

This DTC is detected when the code, which is decoded in the Transponder Key ECU, and the code received from the key are not matched during the key code varificaiton. Replace the key when this DTC is detected.

DTC No.	DTC Detecting Condition	Trouble Area
B2794	• Transponder chip malfunction	• Key

INSPECTION PROCEDURE

Replace key.

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DI8OT–01

DTC	B2795	Unmatched Key Code

This DTC is output when an unregistered key is inserted. When this DTC is output, delete DTC and insert the key that a customer keeps to check whether or not B2795 is output.
When a key that outputs B2795 is found, register this key. when B2795 is not output, there is a possibility that the unregistered key has been inserted before. (Transponder key ECU is normal.)
Inquire a customer the condition of using the system to find the cause of the trouble.
(Example: Another key has been inserted, etc..)

DTC No.	DTC Detecting Condition	Trouble Area
B2795	Key is not registered to ECU	• Key

INSPECTION PROCEDURE

1	**Delete DTC and insert all the presently available keys to check whether the engine starts or not.**

HINT:
When inserting the key that does not start the engine, DTC (B 2795) is stored in memory.

RESULT:

OK	All keys starts the engine.
NG	A specific key does not start the engine.

OK → **No problem.**

HINT:
If the result is "OK", please confirm whether or not customers have ever inserted the unregistered key or the immobiliser key (with transponder chip) of other vehicle in the ignition key cylinder, and find out the cause of detecting DTC.

NG

Resister the key that does not start the engine.

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DI50U–01

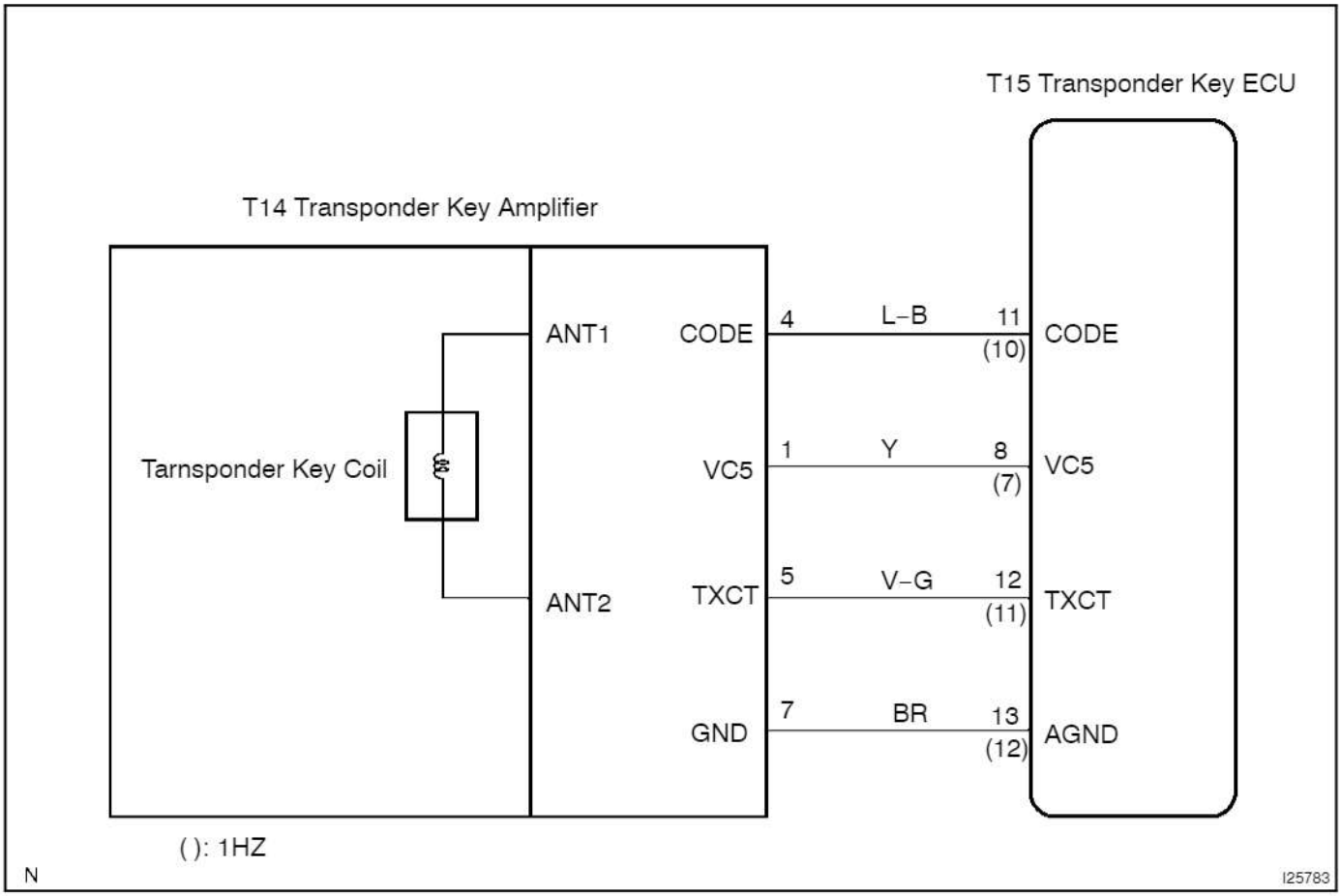
DTC	B2796	No Communication in Immobiliser system

CIRCUIT DESCRIPTION

This DTC is stored in memory when the key that does not have a transponder chip is inserted or if communication between the key and transponder key ECU is impossible.

DTC No.	DTC Detecting Condition	Trouble Area
B2796	No communication	• Key • Transponder Key Amplifier with coil • Wire harness • Transponder Key ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Delete DTC and insert all the presently available keys to check whether the engine starts or not.**

RESULT:

A	All keys start the engine.
B	A specific key does not start the engine. In this case, DTC (B 2796) is stored in memory.
C	All keys do not start the engine. In this case, DTC (B 2796) is stored in memory.

A → **No problem at this time.**

HINT:
If the result is "A", please confirm whether or not customers have ever inserted the key (without transponder chip) of other vehicles in the ignition key cylinder, and find out the cause of detecting DTC.

B → **The transponder chip of a specific key is defective. Replace the key.**

C

2	**Check wire harness and connector between transponder key amplifier and transponder key ECU (See page IN–38).**

NG → **Repair or replace wire harness and connector.**

OK

3	**Does it operate normally after replacement of transponder key amplifier?**

Yes → **Replace transponder key amplifier.**

No

Replace the transponder key ECU.

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DI50V–01

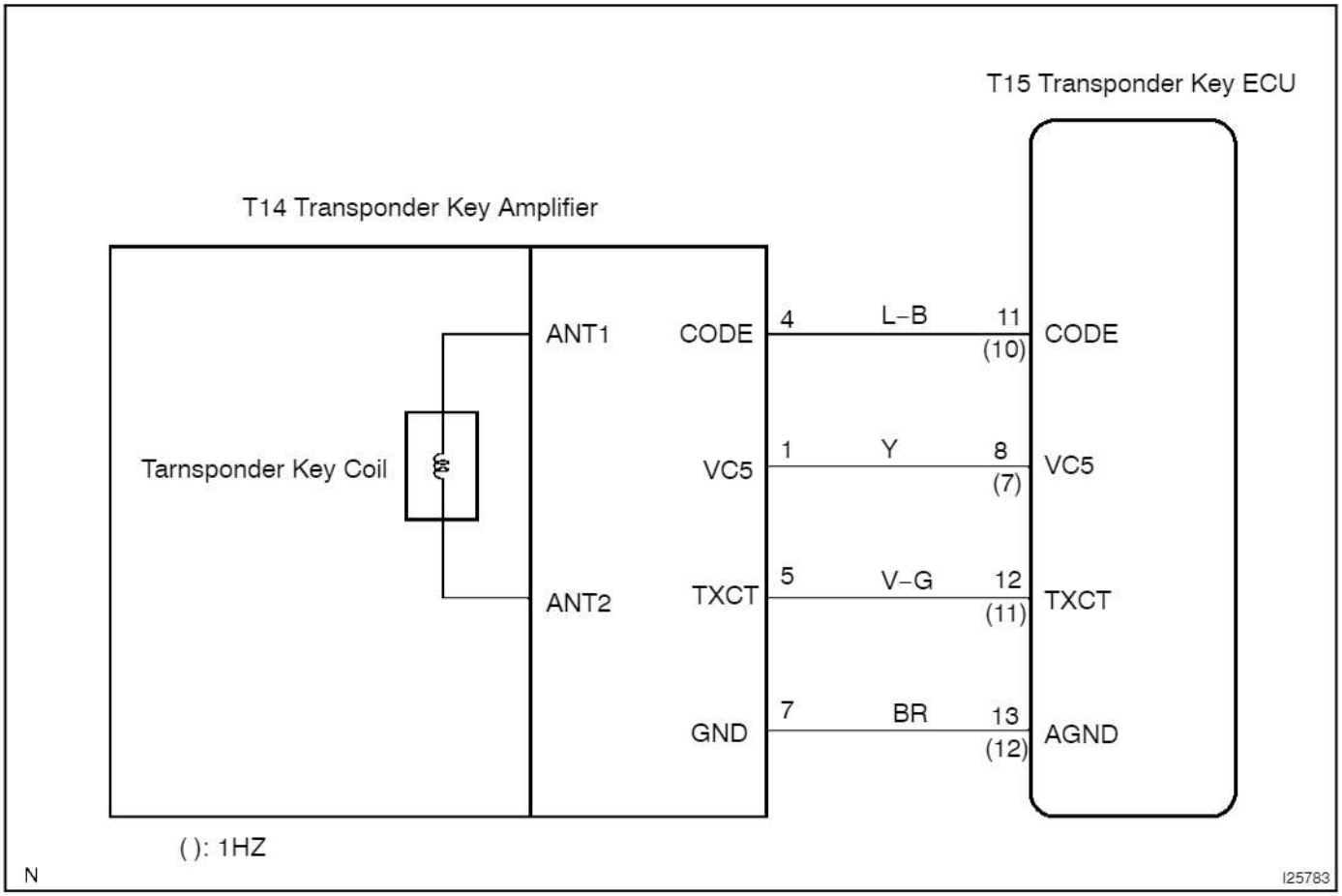
DTC	B2797	Communication Malfunction No.1

CIRCUIT DESCRIPTION

This DTC is detected when an error occurs, although the communication has been performed normally (Example. Some noise is included in communication line.).

DTC No.	DTC Detecting Condition	Trouble Area
B2797	Communication error	• Key • Wire harness • Transponder Key Amplifier with coil • Transponder Key ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Delete DTC and insert all the presently available keys to check whether the engine starts or not.**

RESULT:

A	All keys start the engine.
B	A specific key does not start the engine. In this case, DTC (B 2797) is stored in memory.
C	All keys do not start the engine. In this case, DTC (B2797) is stored in memory.

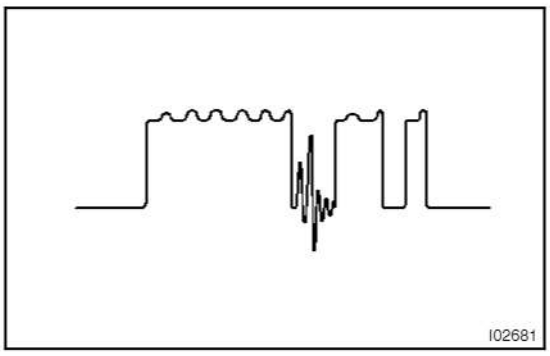
A → **No problem at this time.**

HINT:
If the result is "A", please confirm whether or not customers have ever inserted the key (without transponder chip) of other vehicles in the ignition key cylinder, and find out the cause of detecting DTC.

B → **The transponder chip of a specific key is detecdtive. Replace the key.**

C

2	**Noise check**



PREPARATION:
Insert the already registered master key in the ignition key cylinder.

CHECK:
Using oscilloscope or the hand–held tester, check that noise is included in the signals sent to the CODE terminal of the Transponder key ECU.

OK:
No noise is detected.

NG → **Try to find the cause of the noise nad remove it.**

OK

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3	Check wire harness and connector between transponder key amplifier and transponder key ECU (See page IN–38).

NG → Repair or replace wire harnesss and connector.

OK

4	Does it operate normally after replacement of transponder key amplifier?

Yes → Replace transponder key amplifier.

No

Replace transponder key ECU.

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DI5OW–01

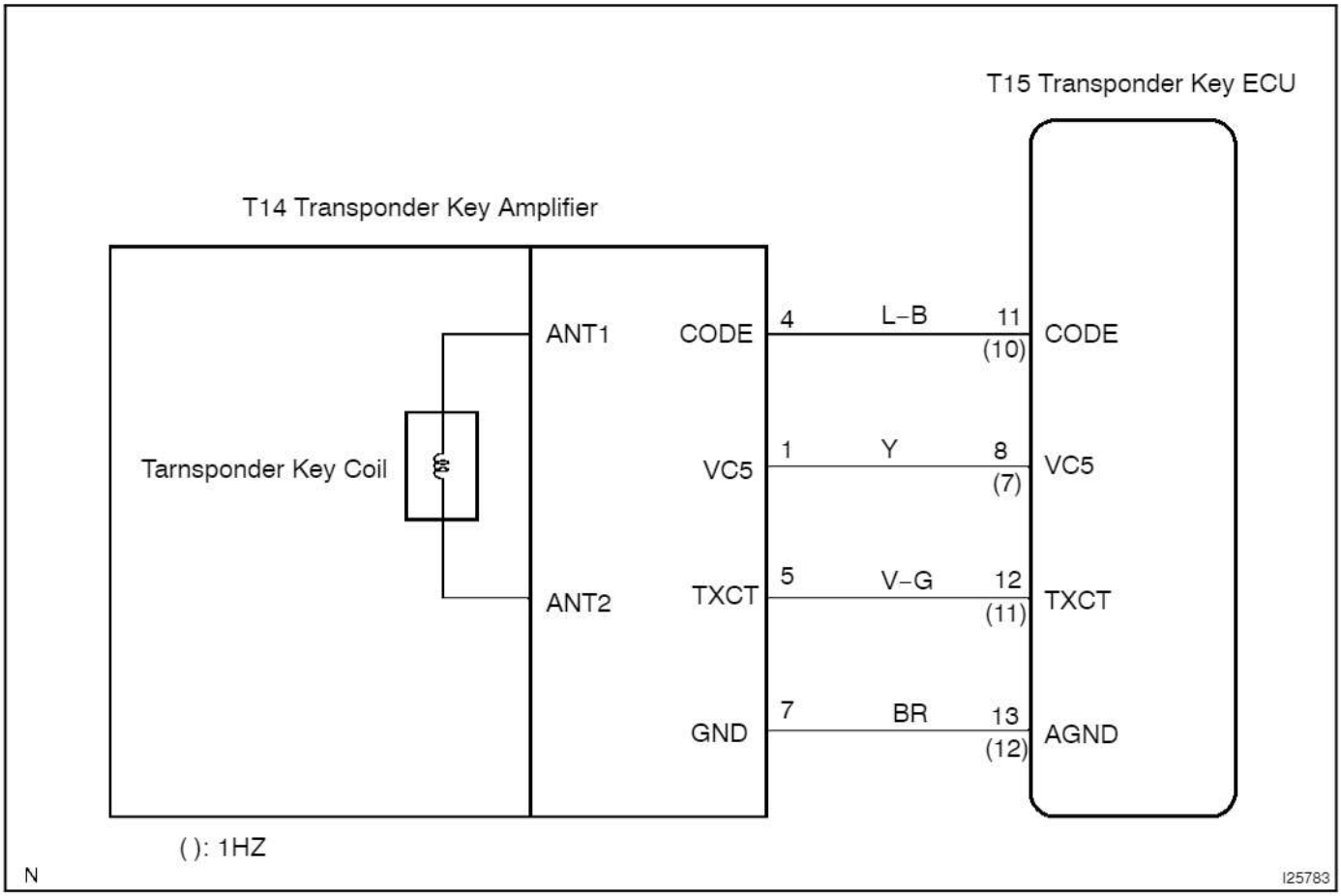
DTC	B2798	Communication malfunction No.2

CIRCUIT DESCRIPTION

This code is detected when an error occurs, although the communication has been performed normally. (Example. Some noise is included in communication line.)

DTC No.	DTC Detecting Condition	Trouble Area
B2798	Communication error	• Key • Transponder Key Amplifier with coil • Wire harness • Transponder key ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Delete DTC and insert all the presently available keys to check whether the engine starts or not.**

RESULT:

A	All keys start the engine.
B	A specific key does not start the engine. In this case, DTC (B 2796) is stored in memory.
C	All keys do not start the engine. In this case, DTC (B2796) is stored in memory.

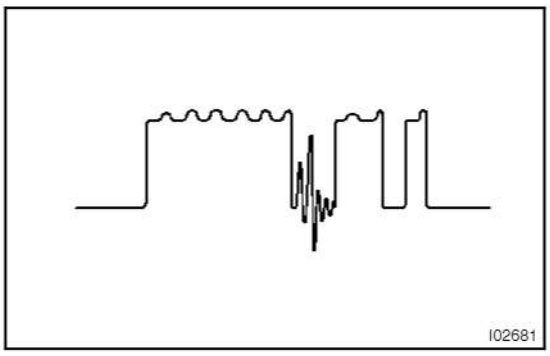
A → **No problem at this time.**

HINT:
If the result is "A", please confirm whether or not customers have ever inserted the key (without transponder chip) of other vehicles in the ignition key cylinder, and find out the cause of detecting DTC.

B → **The transponder chip of a specific key is detecdtive. Replace the key.**

C

2	**Noise check**



PREPARATION:
Insert the already registered master key in the ignition key cylinder.

CHECK:
Using oscilloscope or the hand–held tester, check that noise is included in the signals sent to the CODE terminal of the Transponder key ECU.

OK:
No noise is detected.

NG → **Try to find the cause of the noise nad remove it.**

OK

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3	Check wire harness and connector between transponder key amplifier and transponder key ECU (See page IN–38).

NG → Repair or replace wire harnesss and connector.

OK

4	Does it operate normally after replacement of transponder key amplifier?

Yes → Replace transponder key amplifier.

No

Replace transponder key ECU.

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DI5QX–01

DTC	B2799/99	Engine Immobileser System Malfunction

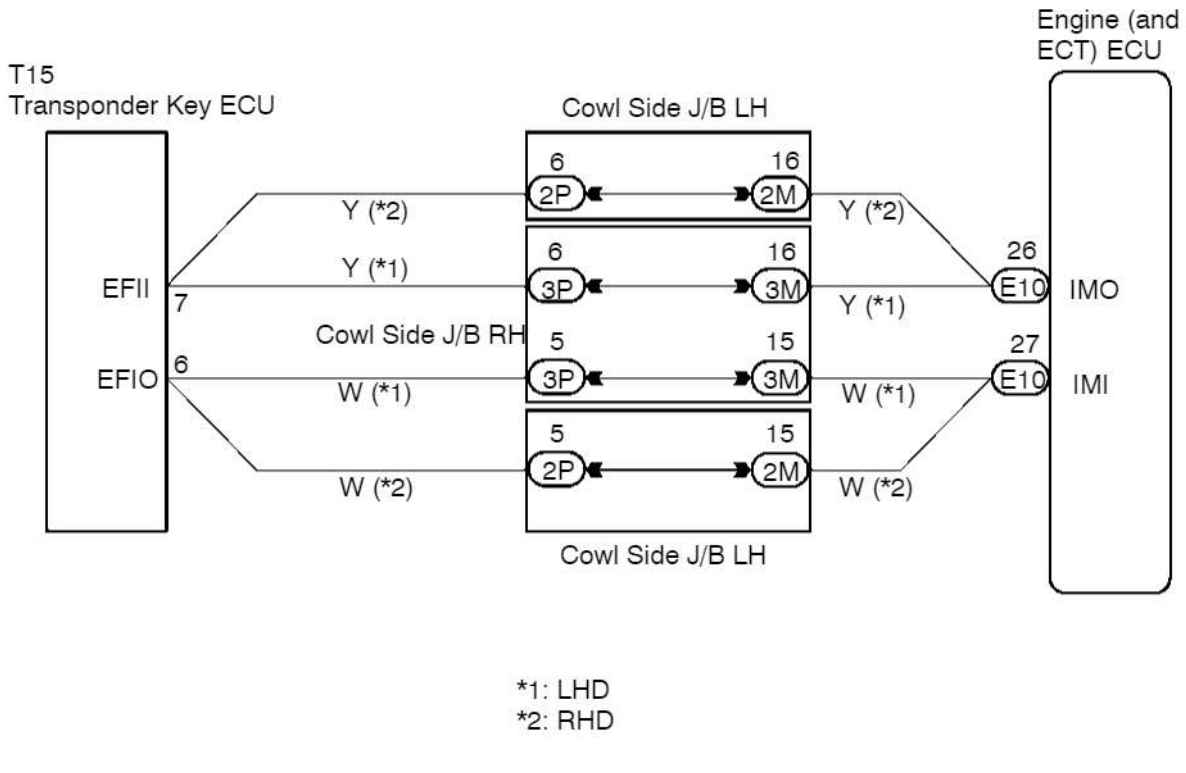
CIRCUIT DESCRIPTION

This DTC is output when the ECM detects errors in the communication between the Transponder Key ECU and the ECM, and in the communication lines.
This DTC is also output when the engine start is attempted with the COMMUNICATION ID between the Transponder key ECU and the ECM is different.
Before troubleshooting for this DTC, make sure that there is no DTC detected in the Transponder Key ECU. If there is Key code–related DTC (B279X) detected in the Transponder Key ECU, repair it first.

DTC No. (See Page)	Detection Item	Trouble Area
B2799	• Error in communication between ECM and Transponder Key ECU, and in communication line. • COMMUNICATION ID is different in communication with Transponder Key ECU.	• Wire harness • Transponder Key ECU • ECM

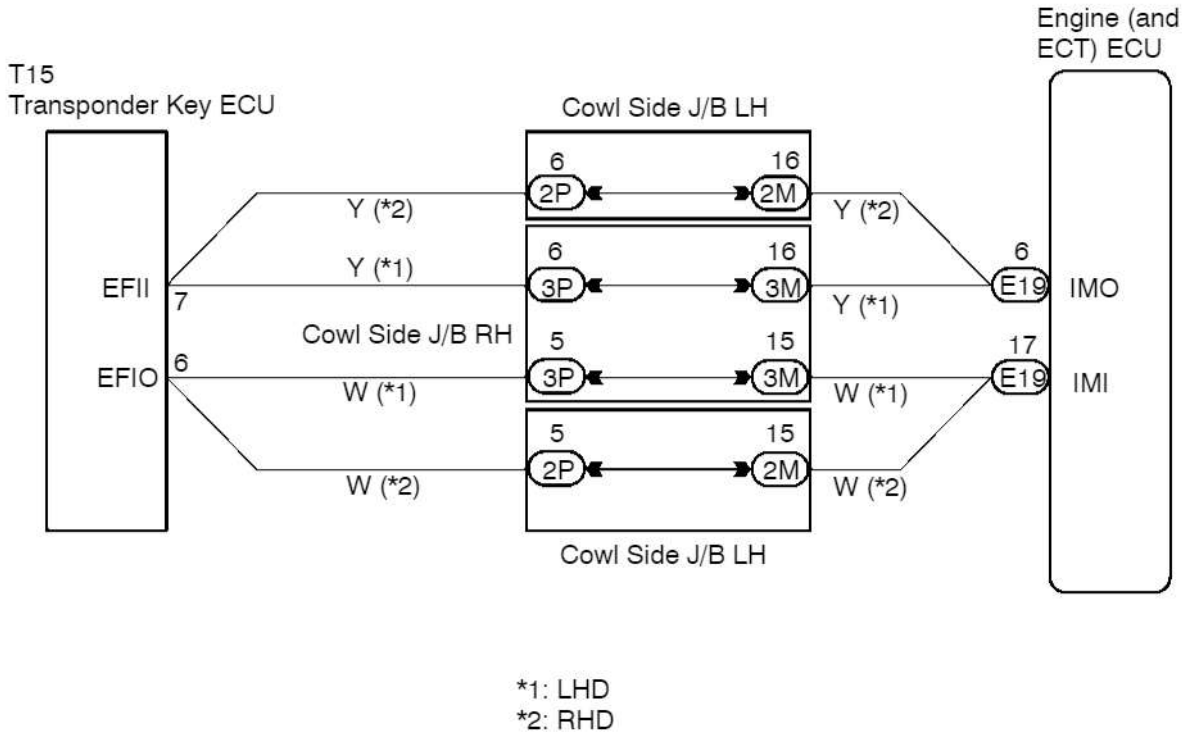
WIRING DIAGRAM

2UZ–FE:



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1HD–FTE (Europe):

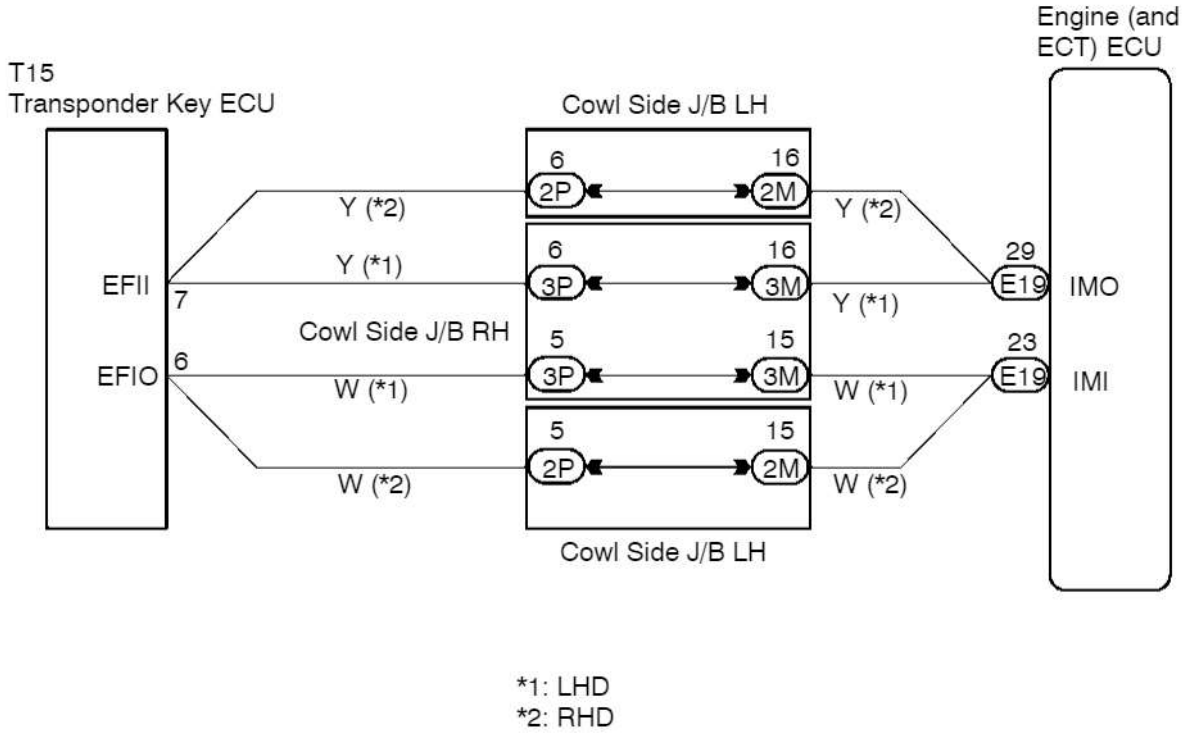


*1: LHD
*2: RHD

H

I26061

1HD–FTE (Except Europe):



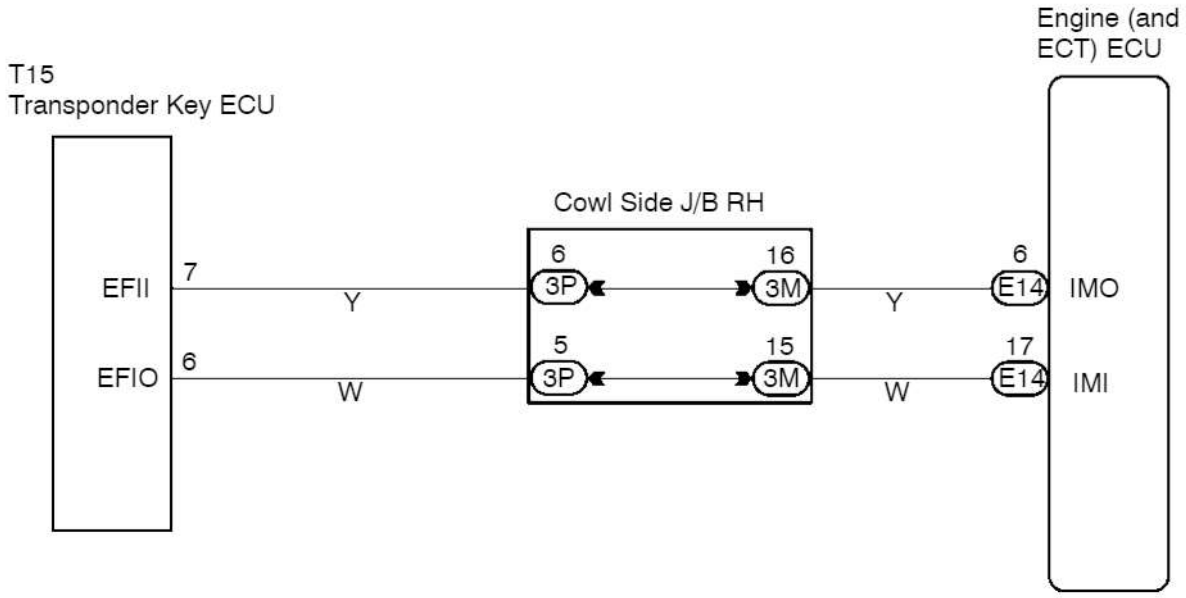
*1: LHD
*2: RHD

H

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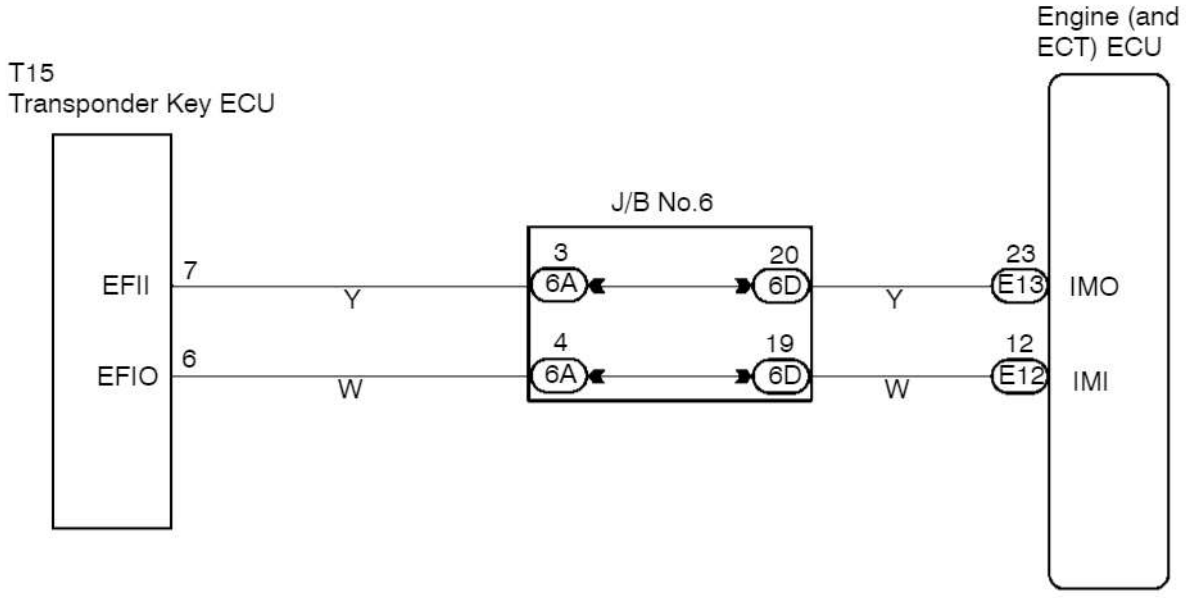
1FZ–FE (China, Saudi Arabia, Peru):



H I26061

I26327

1FZ–FE (Except China, Saudi Arabia, Peru):



H I26061

I26327

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INSPECTION PROCEDURE

1	**Check wire harness and connector between Transponder Key ECU and ECM (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Replace the ECM

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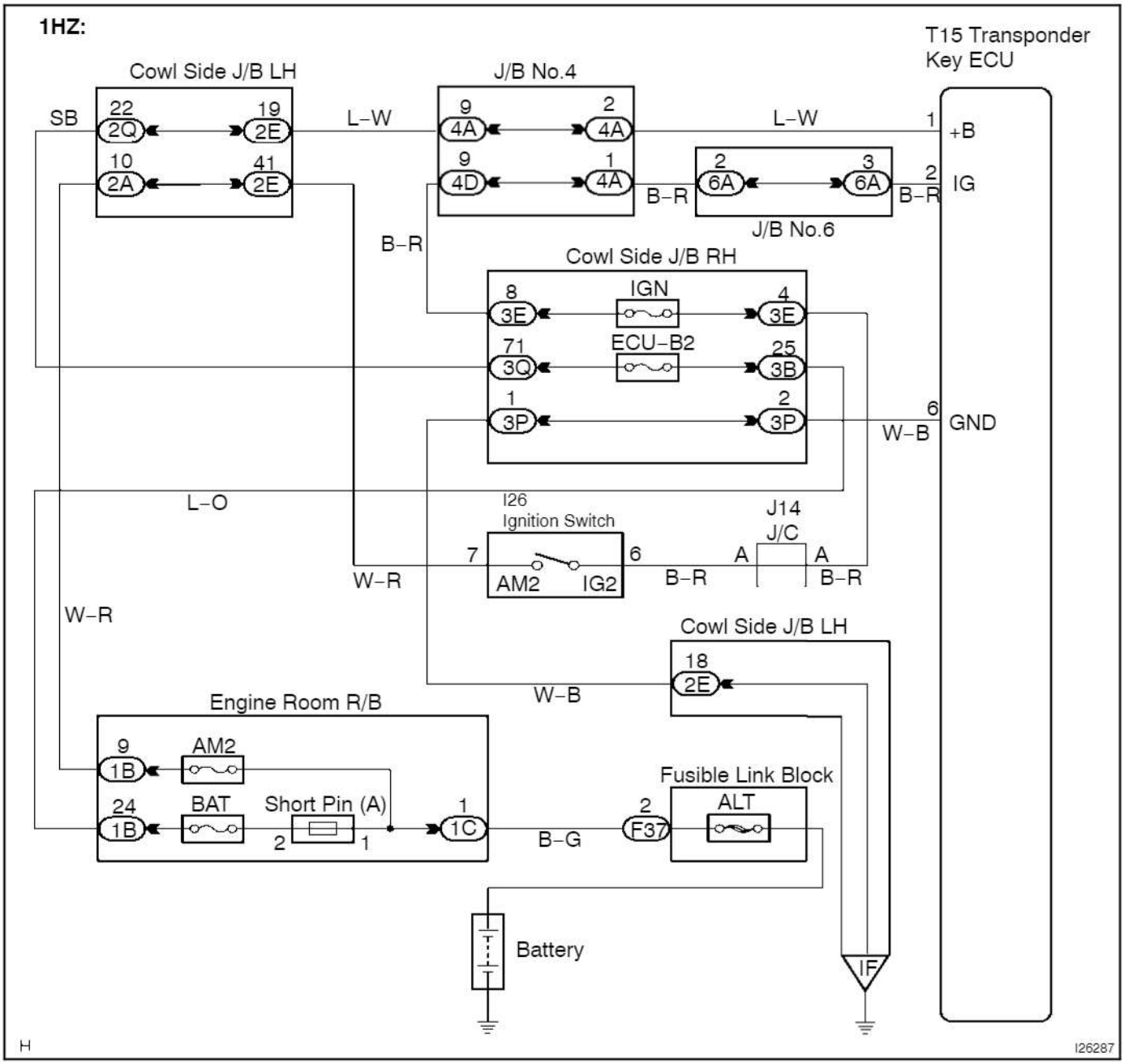
DI50Y–01

Power source circuit

CIRCUIT DESCRIPTION

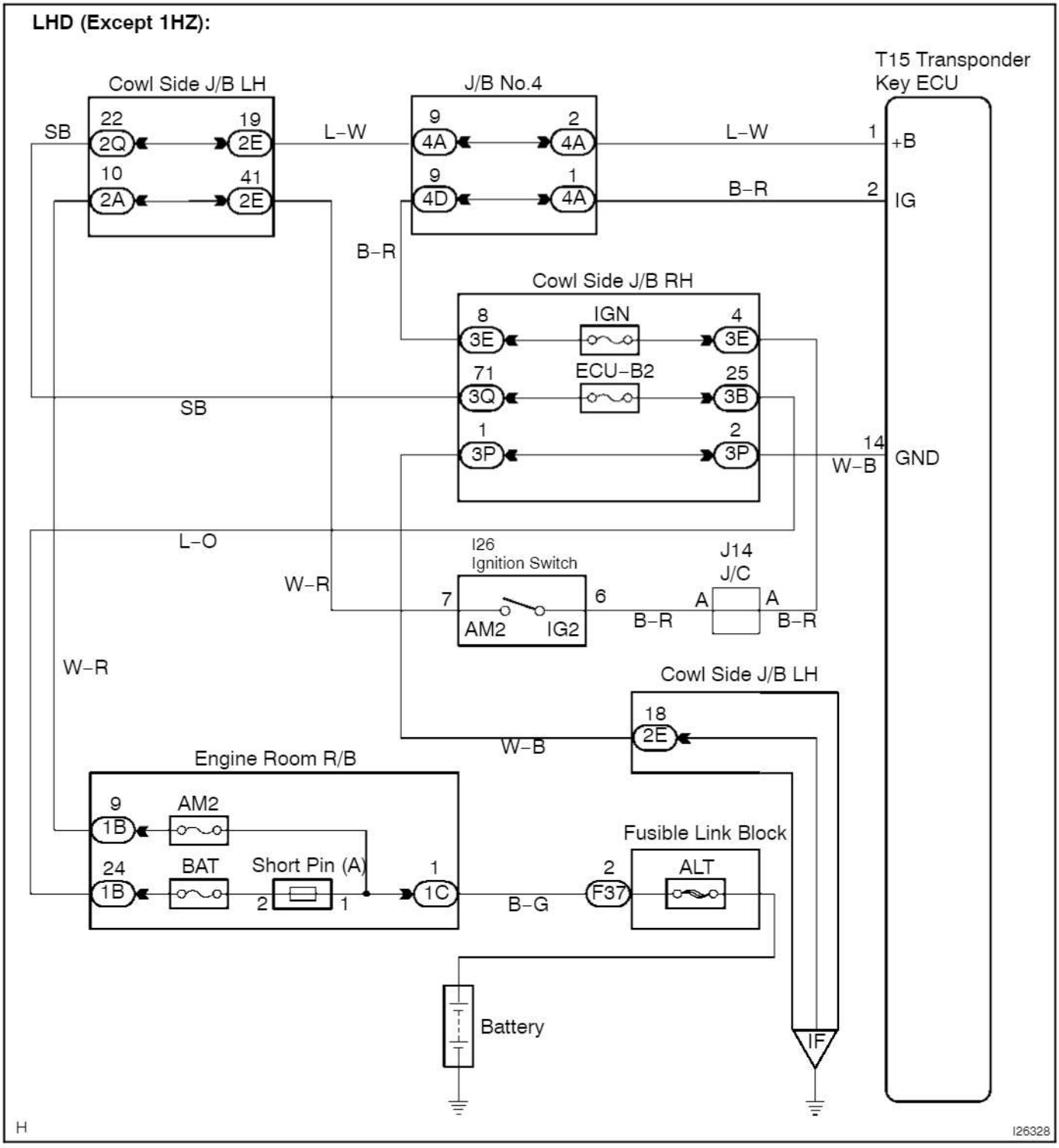
This circuit provides power to operate the Transponder Key ECU.

WIRING DIAGRAM



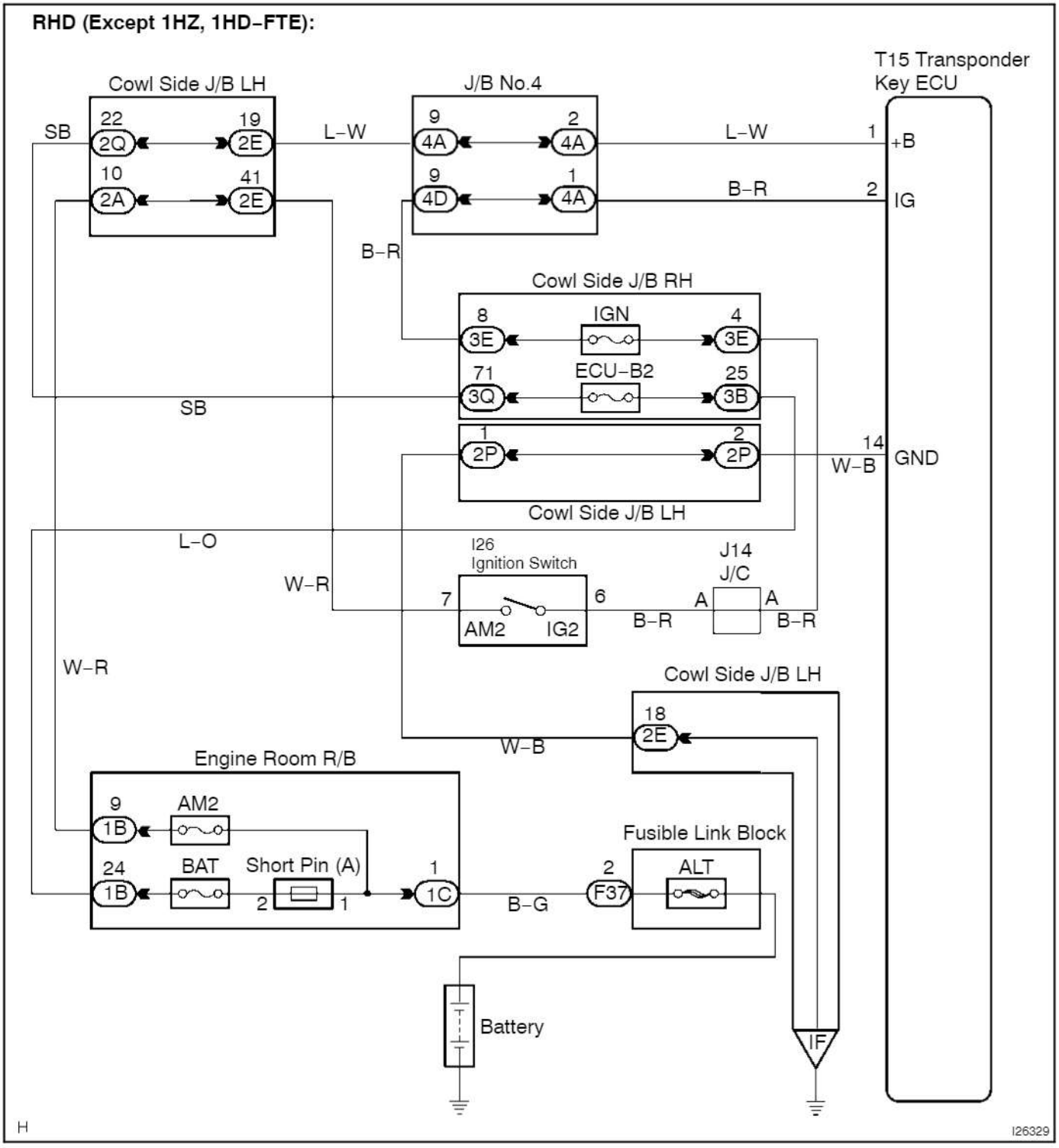
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LHD (Except 1HZ):



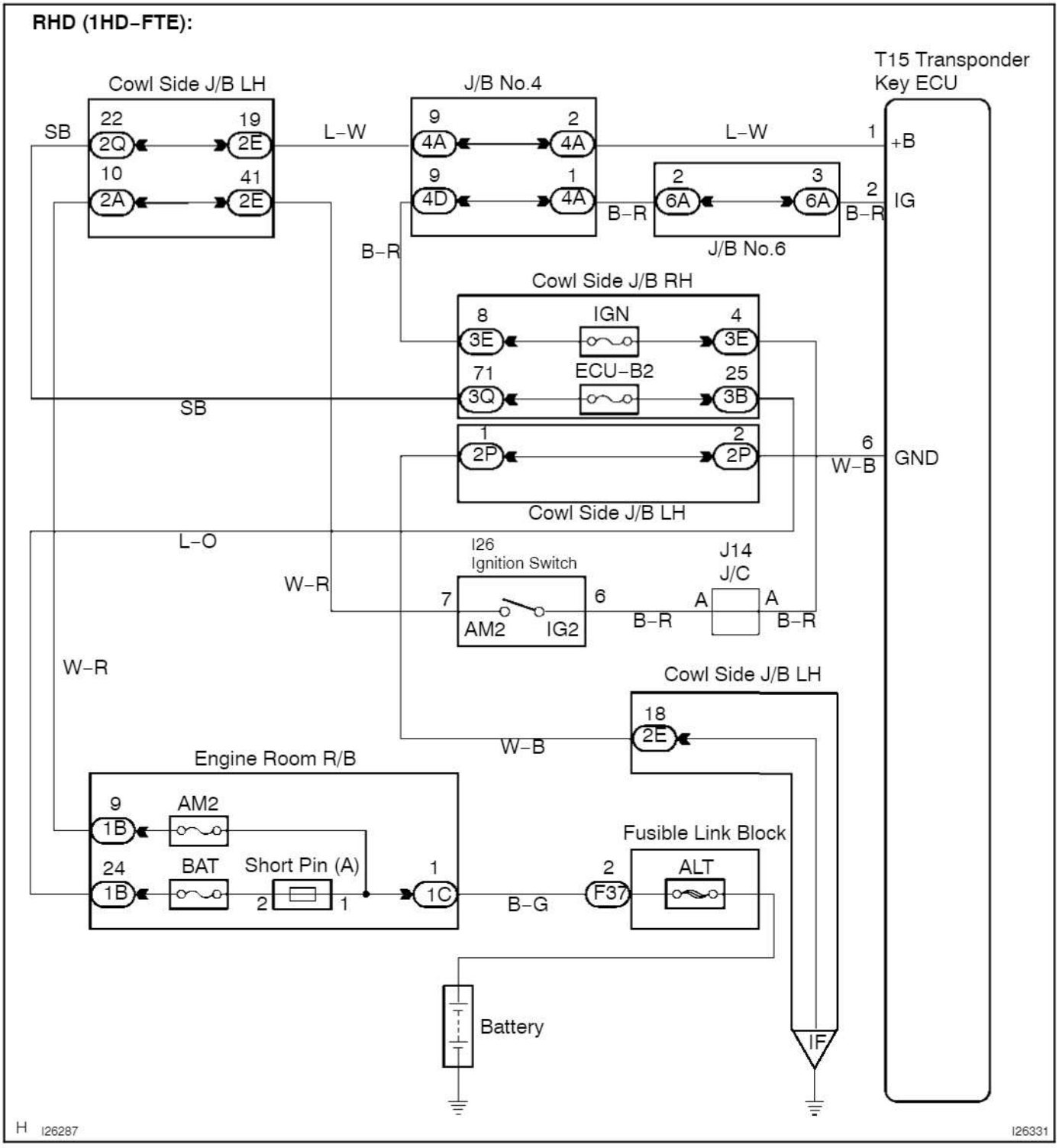
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RHD (Except 1HZ, 1HD–FTE):



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RHD (1HD–FTE):



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INSPECTION PROCEDURE

1	**Check fuse.**

CHECK:
Check continuity of fuse.
OK:
Continuity

NG → **Replace the failure fuse.**

OK

2	**Check voltage between terminals IG, +B and GND of transponder key ECU connector.**

PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure voltage between terminals IG and GND.
OK:
Voltage: 10 – 14 V
PREPARATION:
(a) Turn the ignition switch OFF.
(b) Disconnect the transponder key ECU connector.
CHECK:
Measure voltage between terminals +B and GND.
OK:
Voltage: 10 – 14 V

OK → **Proceed to next circuit inspection shown in problem symptoms table (See page DI–893).**

NG

3	**Check wire harness and connector between transponder key ECU and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

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Proceed to next circuit inspection shown on problem symptom table (See page DI–893).

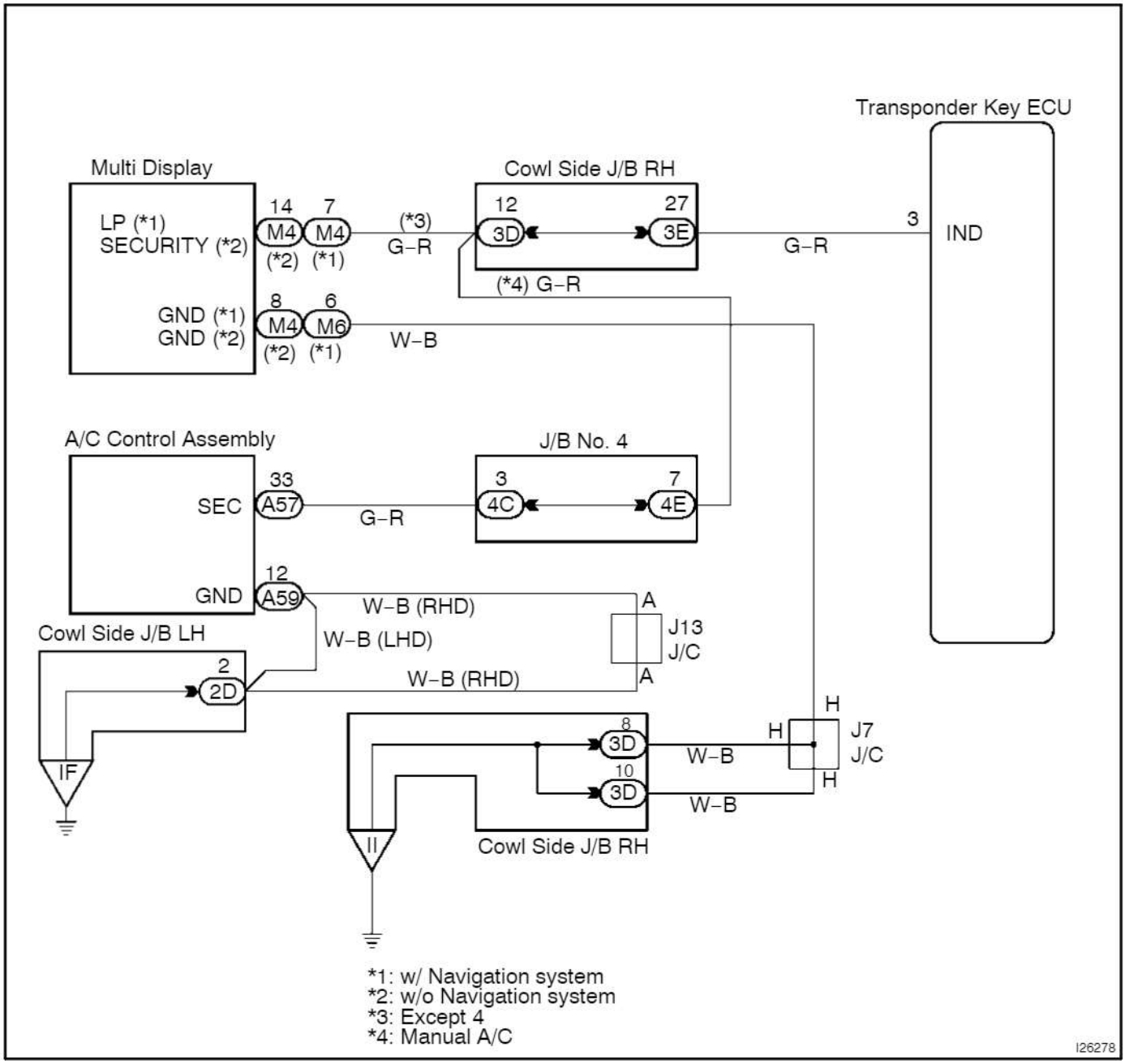
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DI50Z-01

Security Indicator Light Circuit

CIRCUIT DESCRIPTION

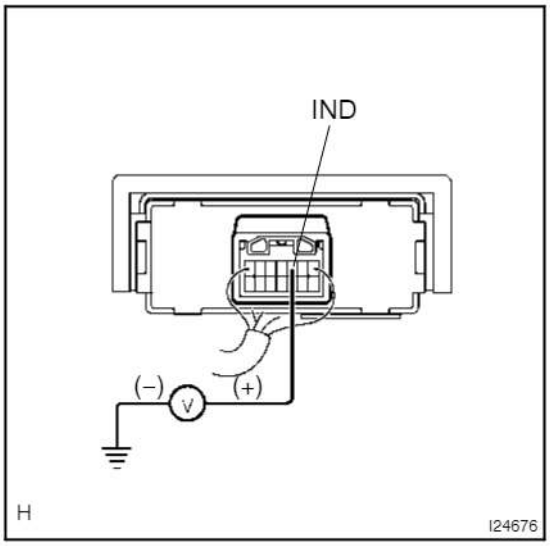
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals IND of transponder key ECU connector and body ground.**



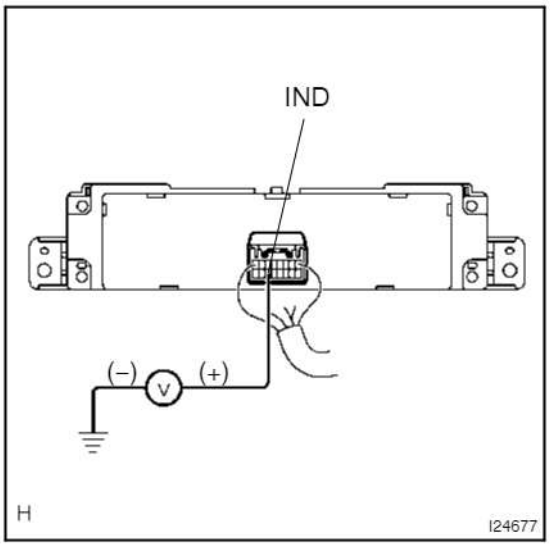
PREPARATION:
Turn ignition switch ON and do diagnosis mode.
CHECK:
Measure voltage between terminals IND of transponder key ECU connector and body ground when security indicator light light up and does not light up.
OK:

Indicator light	Voltage
Light up	3 – 6 V
Does not light up	Below 1 V

NG → **Proceed to next circuit inspection shown in problem symptom table (See page DI–893).**

OK

2	**Check multi–information display.**



PREPARATION:
Turn ignition switch ON and do diagnosis mode.
CHECK:
Measure voltage between terminals IND of transponder key ECU connector and body ground when security indicator light light up and does not light up.
OK:

Indicator light	Voltage
Light up	8 – 10 V
Does not light up	Below 1 V

NG → **Repair or Replace wire harness or connector.**

OK

Check and replace multi–information display.

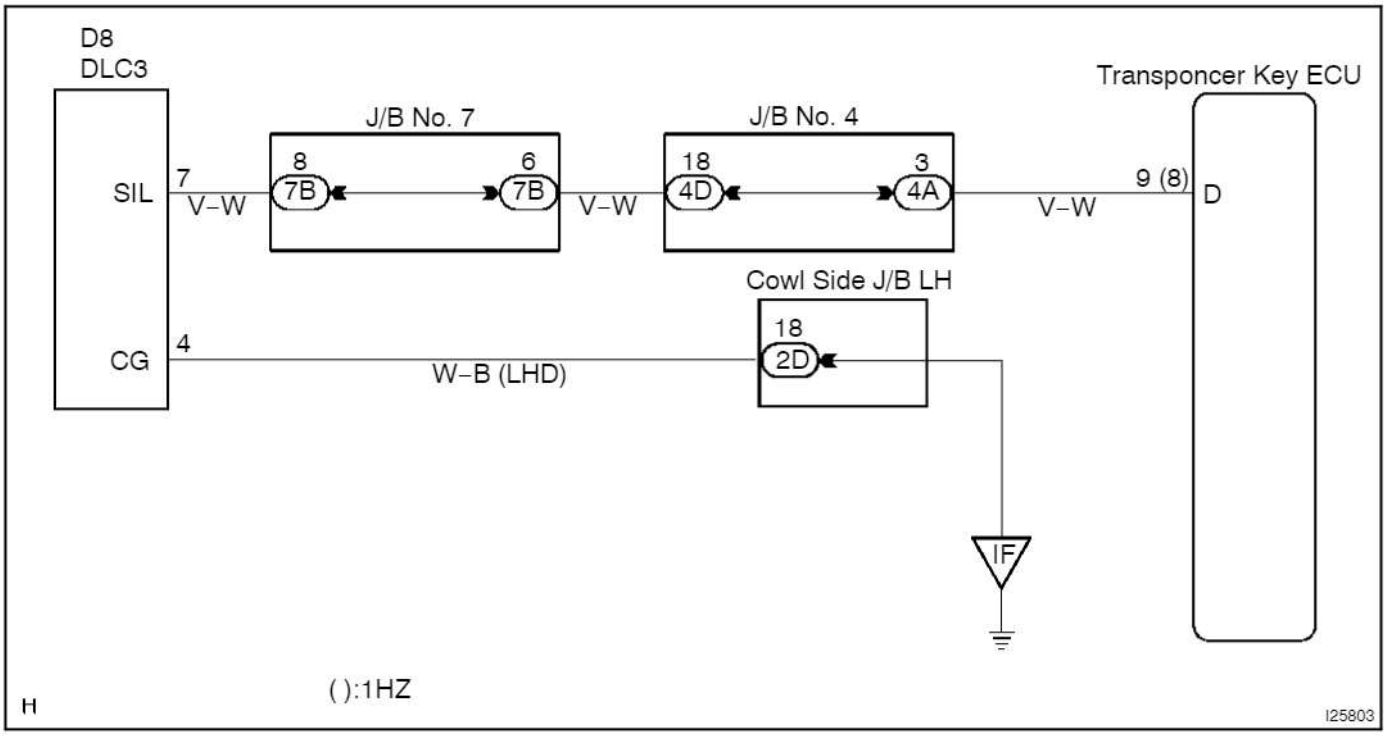
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Diagnosisi Circuit

CIRCUIT DESCRIPTION

This circuit sends an signal to the ECU that outputs DTC.

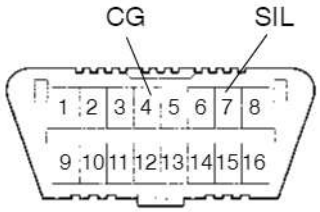
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals SIL and CG of DLC3.**



DLC3

PREPARATION:
Turn ignition switch ON.
CHECK:
Measure voltage between terminals SIL and CG of DLC3.
OK:
Voltage: 10 – 14 V

OK	**Proceed to next circuit inspection shown in problem symptom table (See page DI–893).**

NG

2	**Check harness and connector between transponder key ECU and DLC3, SIL and body ground (See page IN–38).**

NG	**Pepair or replace harness or connector.**

OK

Check and replace transponder key ECU.

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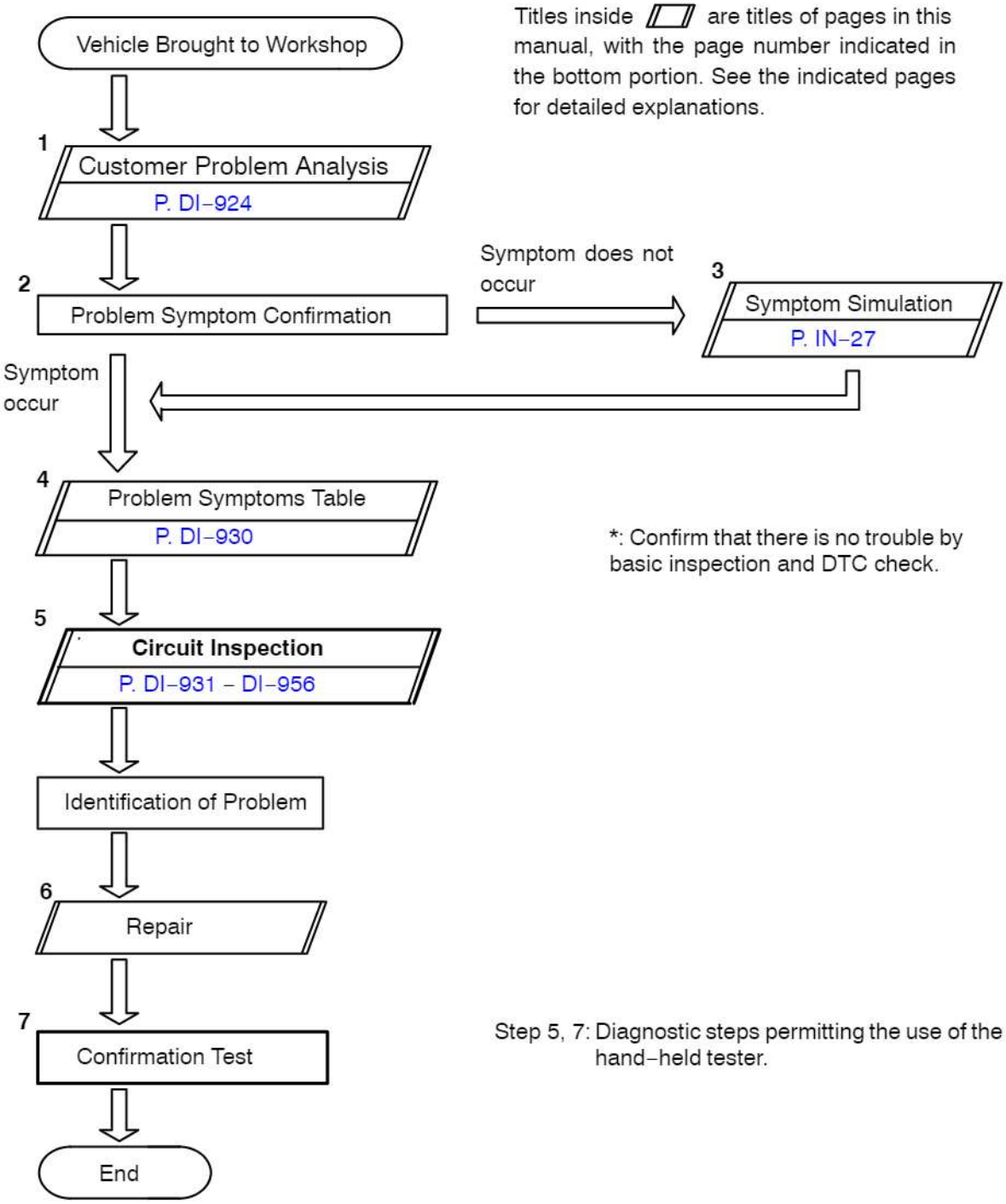
RAIN SENSOR SYSTEM

DIAYV–01

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

This ECU is connected to the multiplex communication system. Therefore, be sure to check that there is no trouble in the multiplex communication system before performing the troubleshooting.



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DIAYW–01

CUSTOMER PROBLEM ANALYSIS CHECK

RAIN SENSOR SYSTEM Check Sheet

Inspector's name: _____

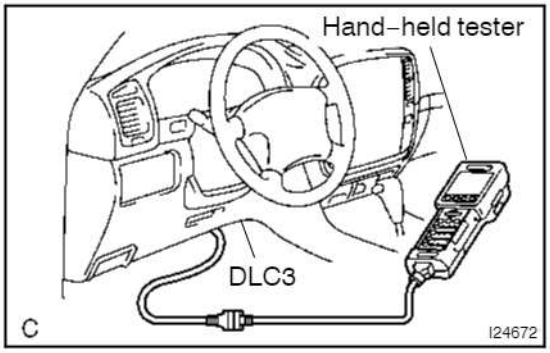
Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Sometimes (times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/ Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))

Malfunction System	☐ Automatic wiper system
	☐ Others

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DIAYX–01



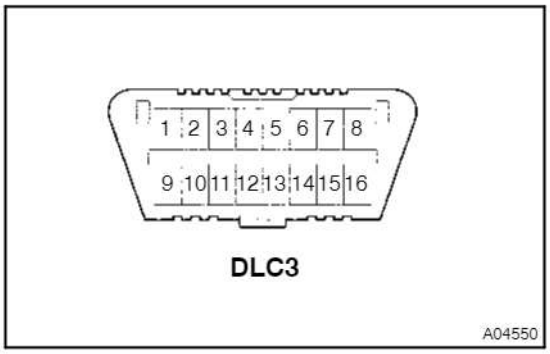
PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Description

ECU data of this system can be read from DLC3 of the vehicle.

Therefore when there seems to be a trouble on this system, use hand–held tester to check and troubleshoot it.



(b) Check the DLC3.

The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141–2 format.

Terminal No.	Connection/Specified Condition	Condition
4	Chassis Ground ↔ Body Ground/1 or less	Always
13	TC ↔ Body Ground/9 – 14 V	Always

HINT:

If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of the hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

2. DATA LIST

HINT:

According to the DATA LIST displayed by the Hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Turn the ignition switch OFF.

(b) Connect the hand–held tester to the DLC3.

(c) Turn the ignition switch ON.

(d) According to the display on tester, read the "DATA LIST".

Rain Sensor

Item	Condition	Specified Condition
SEN COND INF	IG switch ON and front wiper switch except AUTO → AUTO	OK/NG
SEN REACT CONDE	IG switch ON and front wiper switch except AUTO → AUTO	OK/NG

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SEN HI TEMP INF	IG switch ON and front wiper switch except AUTO → AUTO	OK/NG
SEN LO TEMP INF	IG switch ON and front wiper switch except AUTO → AUTO	OK/NG
WIP SW LO SIG	IG switch ON and front wiper switch except LO → LO	OFF/ON
WIP SW HI SIG	IG switch ON and front wiper switch except HI → HI	OFF/ON
WIP SW AUTO SIG	IG switch ON and front wiper switch except AUTO → AUTO	OFF/ON
WASH SW SIG	IG switch ON and front washer switch OFF → ON	OFF/ON
KEY SW SIG	IG switch ON OFF → Without key	OFF/ON

Wiper Control ECU

Item	Condition	Specified Condition
F WIPER SW	IG switch ON and front wiper switch OFF → LO, HI, AUTO	OFF/ON
WIPER LO SW	IG switch ON and front wiper switch except LO → LO	OFF/ON
WIPER HI SW	IG switch ON and front wiper switch except HI → HI	OFF/ON
WIPER AUTO SW	IG switch ON and front wiper switch except AUTO → AUTO	OFF/ON
WASHER SW	IG switch ON and front washer switch OFF → ON	OFF/ON
BRAKE PEDAL SW	IG switch ON and brake pedal released → depressed	OFF/ON
NSW SW	IG switch ON and PNP switch except N → N	OFF/ON
TIME CTL SW	IG switch ON and front wiper INT switch fully clockwise → fully counterclockwise	deg
SPEED MODE	–	NOT AVL/AVIL
REWIPE CONTROL	–	OFF/3 s/ SPD MOD

3. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the Hand–held tester allows the relay, and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Turn the ignition switch OFF.
(b) Connect the hand–held tester to the DLC3.
(c) Turn the ignition switch ON.
(d) According to the display on tester, perform the "ACTIVE TEST".

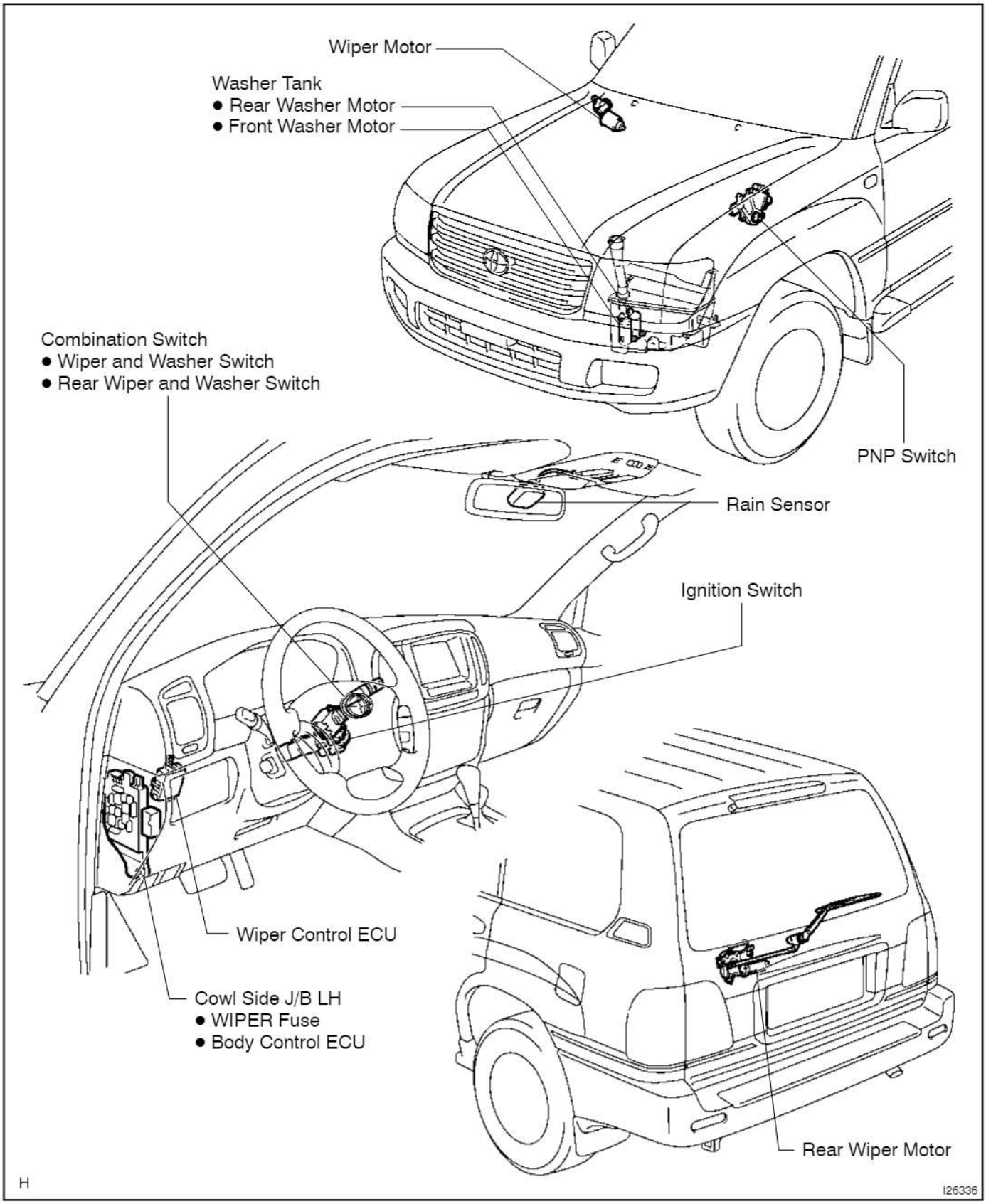
Wiper Control ECU

Item	Check Item	Operation
WIPER MOT (HI)	Front wiper motor HI operation	OFF/ON
WIPER MOT (LO)	Front wiper motor LO operation	OFF/ON

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DIAYY-01

PARTS LOCATION

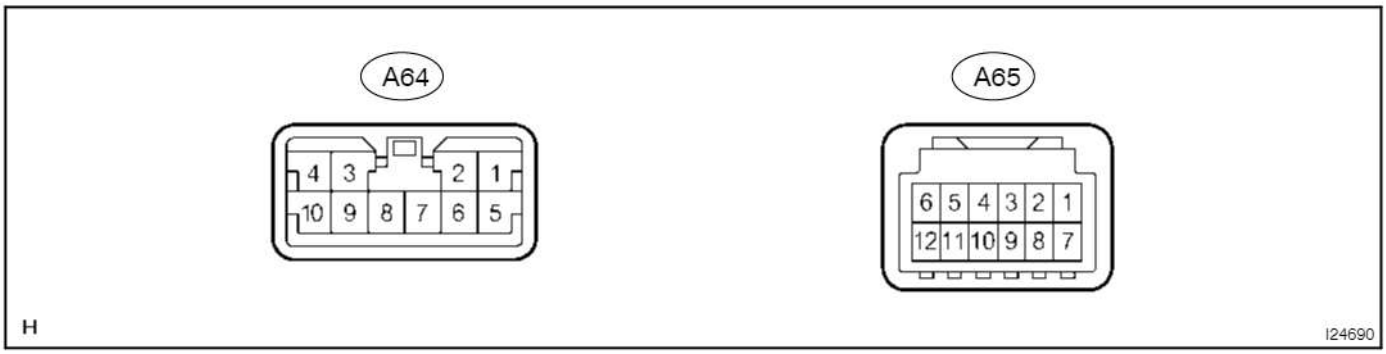


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DIAYZ–01

TERMINALS OF ECU

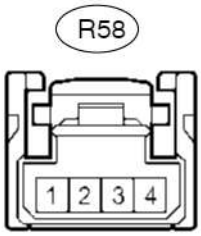
WIPER CONTROL ECU



Symbols (Terminal No.)	Wiring Color	Condition	STD Voltage (V)
S/S ⇔ Body ground (A64–1 ⇔ Body ground)	L–B ⇔ Body ground	Ignition switch ON and front wiper switch except LO → LO	Below 1 V → 10 – 14 V
+2 ⇔ Body ground (A64–2 ⇔ Body ground)	L–R ⇔ Body ground	Ignition switch ON and front wiper switch except HI → HI	Below 1 V → 10 – 14 V
S/M ⇔ Body ground (A64–5 ⇔ Body ground)	L–W ⇔ Body ground	Ignition switch ON and front wiper stop position → Except stop	Below 2 V → 10 – 14 V
WSHI ⇔ Body ground (A64–6 ⇔ Body ground)	L–R ⇔ Body ground	Ignition switch ON and front wiper switch except HI → HI	10 – 14 V → Below 1 V
WSLO ⇔ Body ground (A64–7 ⇔ Body ground)	L–B ⇔ Body ground	Ignition switch ON and front wiper switch except LO → LO	10 – 14 V → Below 1 V
WSE ⇔ Body ground (A64–8 ⇔ Body ground)	L ⇔ Body ground	Constant	Below 1 V
WIG ⇔ Body ground (A64–10 ⇔ Body ground)	L ⇔ Body ground	Ignition switch OFF → ON	0 V → 10 – 14 V
MPX1 (A65–1)	R–Y	Multiplex communication circuit signals	–
MPX2 (A65–2)	B	Multiplex communication circuit signals	–
VR ⇔ Body ground (A65–3 ⇔ Body ground)	L–W ⇔ Body ground	Ignition switch ON and sensitivity volume "FAST" → "SLOW"	Below 1 V → 4.4 V
N ⇔ Body ground (A65–4 ⇔ Body ground)	G–R ⇔ Body ground	Ignition switch ON and PNP switch except N → N	Below 1 V → 10 – 14 V
WASH ⇔ Body ground (A65–6 ⇔ Body ground)	L–Y ⇔ Body ground	Ignition switch ON and front washer switch OFF → ON	10 – 14 V → Below 1 V
WSAU ⇔ Body ground (A65–7 ⇔ Body ground)	R–L ⇔ Body ground	Ignition switch ON and front wiper switch except AUTO → AUTO	10 – 14 V → Below 1 V
+B ⇔ Body ground (A65–8 ⇔ Body ground)	L–W ⇔ Body ground	Constant	10 – 14 V
EVR ⇔ Body ground (A65–9 ⇔ Body ground)	R–W ⇔ Body ground	Constant	Below 1 V
STP ⇔ Body ground (A65–10 ⇔ Body ground)	G–W ⇔ Body ground	Ignition switch ON and stop light switch OFF → ON	Below 1 V → 10 – 14 V
GND ⇔ Body ground (A65–12 ⇔ Body ground)	W–B ⇔ Body ground	Constant	Below 1 V

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RAIN SENSOR



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I24691

Symbols (Terminal No.)	Wiring Color	Condition	STD Voltage (V)
SIG ⇔ Body ground (R58–2 ⇔ Body ground)	B–W ⇔ Body ground	Ignition switch OFF or ACC → ON	Below 1 V → 10 – 14 V
MPX ⇔ Body ground (R58–3 ⇔ Body ground)	R–Y ⇔ Body ground	Multiplex communication circuit signals	–
ES ⇔ Body ground (R58–4 ⇔ Body ground)	W–B ⇔ Body ground	Constant	Below 1 V

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DIAZ0–01

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Auto wiper system does not operate (All functions).	1. Front wiper switch 2. Front wiper switch circuit 3. Wiper control ECU power source circuit 4. IG switch circuit 5. Front wiper motor circuit 6. Front wiper position circuit 7. Front wiper motor 8. Wiper control ECU	BE–30 DI–953 DI–933 DI–935 DI–956 DI–937 BE–30 IN–38
Raindrop Sensing Function does not operate (When the position is in "Auto", the system becomes vehicle speed–sensing adjustable interval INT function).	1. Rain sensor circuit 2. Rain sensor 3. Wiper control ECU	DI–931 IN–38 IN–38
Vehicle Speed Switching Function Function does not operate.	1. Neutral signal circuit 2. Stop light switch circuit 3. Wiper control ECU	DI–940 DI–947 IN–38
Washer–Linked Wiper with Drip–Preventive Function does not operate.	1. Front wiper switch (front washer switch) 2. Front washer switch circuit 3. Wiper control ECU	BE–30 DI–950 IN–38

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DIAZ1–01

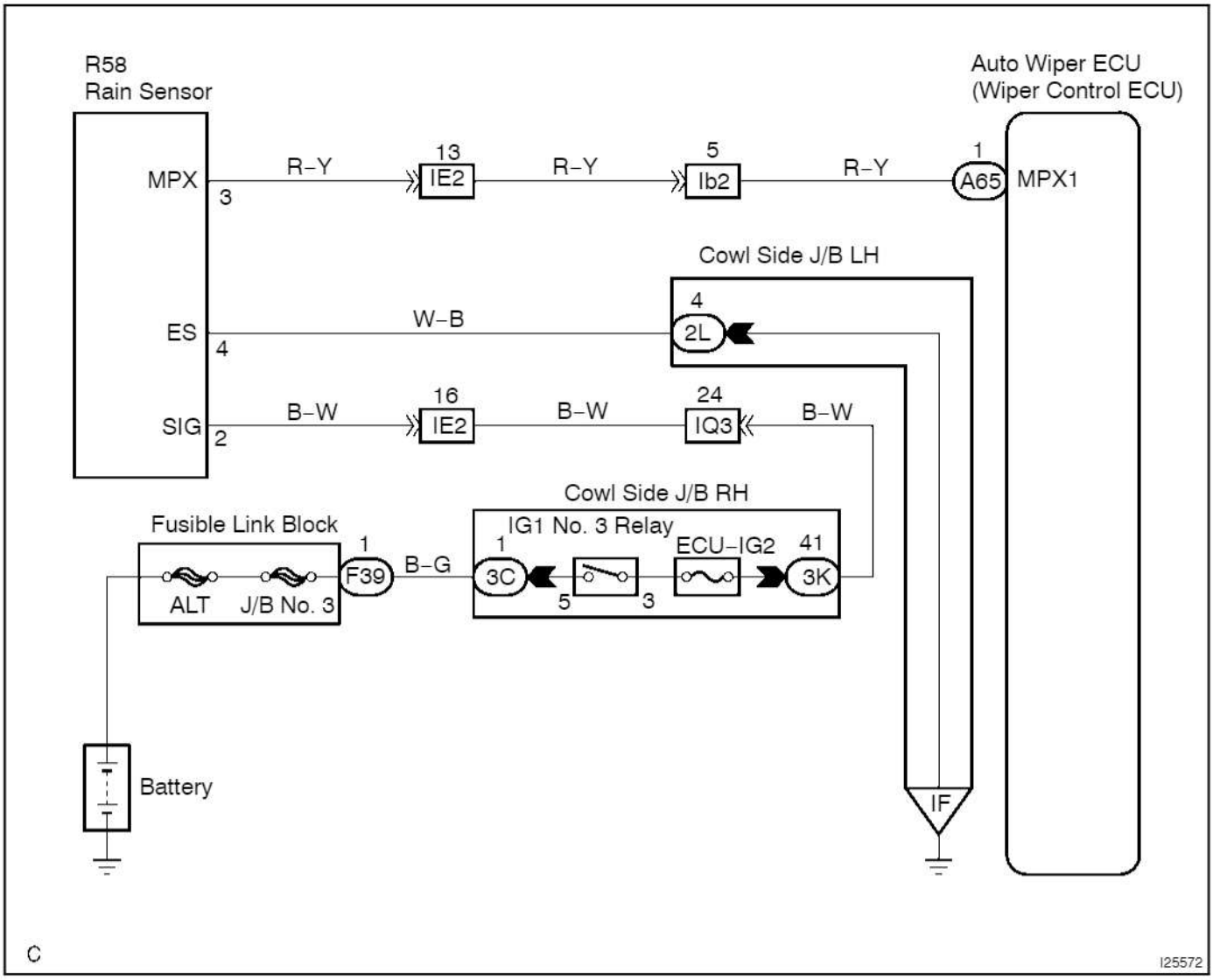
CIRCUIT INSPECTION

Rain Sensor Circuit

CIRCUIT DESCRIPTION

This circuit provides power to operate the rain sensor.
The auto wiper system is operated the wiper switch being in the auto position.
The rain sensor is connected to each ECU at the multiplex communication circuit.
When it detects raindrops that are stuck to the detection area of the windshield glass, it sends the wiper control signal according to the amount of raindrops to the Wiper Control ECU.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check ECU–IG2 fuse.**

CHECK:
Check continuity of ECU–IG2 fuse.
OK:
Continuity

NG → **Replace the failure fuse.**

OK

2	**Check voltage between terminal SIG and ES of rain sensor.**

PREPARATION:
Turn ignition switch ON.
CHECK:
Measure voltage between terminals SIG and ES of rain sensor with connector being connected.
OK:
Voltage: 10 – 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–930).**

NG

3	**Check wire harness and connector between rain sensor and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Check and repair wire harness and connector between ECU and battery.

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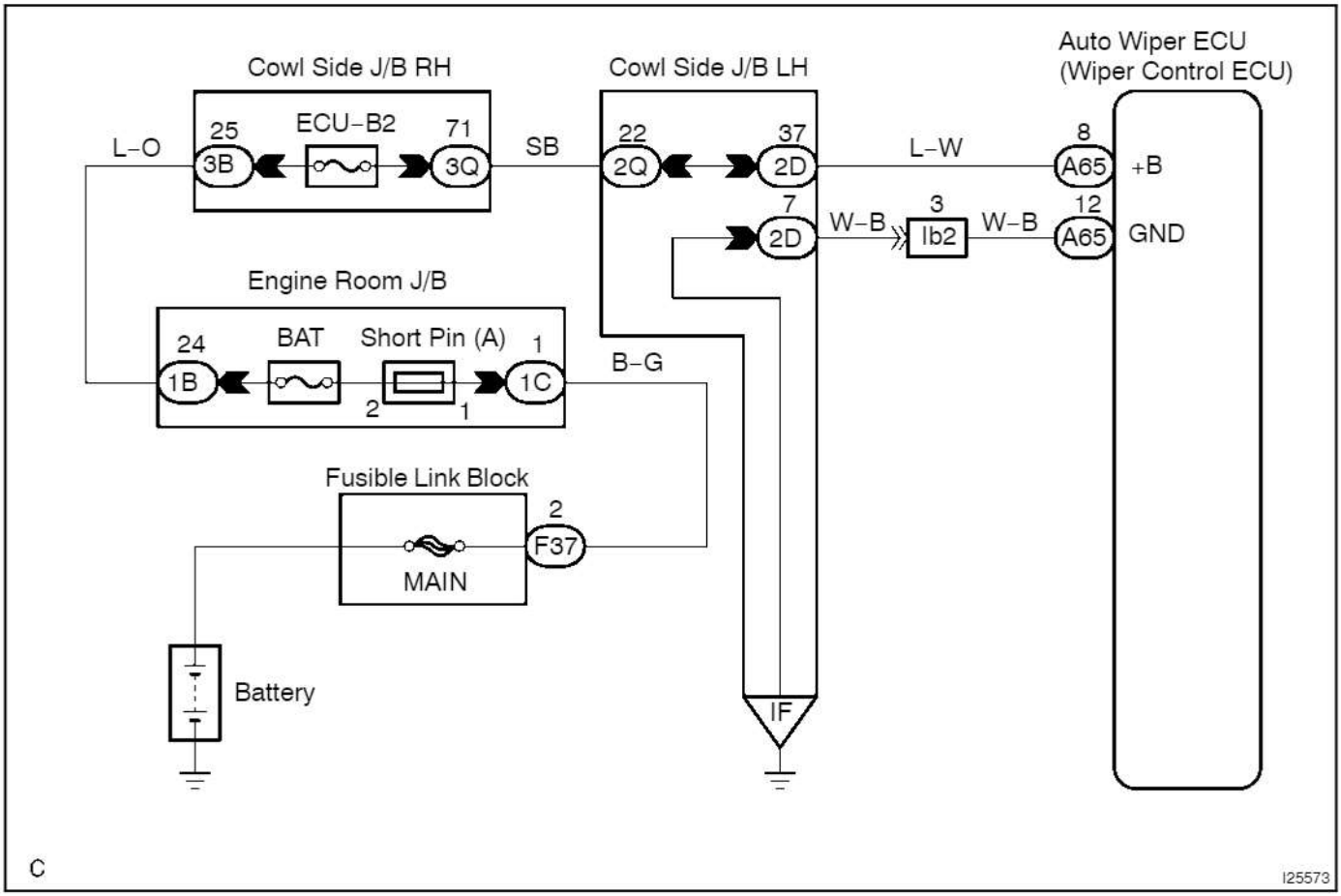
DIAZ2-01

Wiper Control ECU Power Source Circuit

CIRCUIT DESCRIPTION

This circuit provides power to operate the Wiper Control ECU.
This circuit is the power supply for the BEAN drive circuit.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check ECU–B2 fuse.**

CHECK:
Check continuity of ECU–B2 fuse.
OK:
Continuity

NG → **Replace the failure fuse.**

OK

2	**Check voltage between terminal +B and GND of Wiper Control ECU.**

CHECK:
Measure voltage between terminals +B and GND of Wiper Control ECU with connector being connected.
OK:
Voltage: 10 – 14 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–930).**

NG

3	**Check wire harness and connector between Wiper Control ECU and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Check and repair wire harness and connector between ECU and battery.

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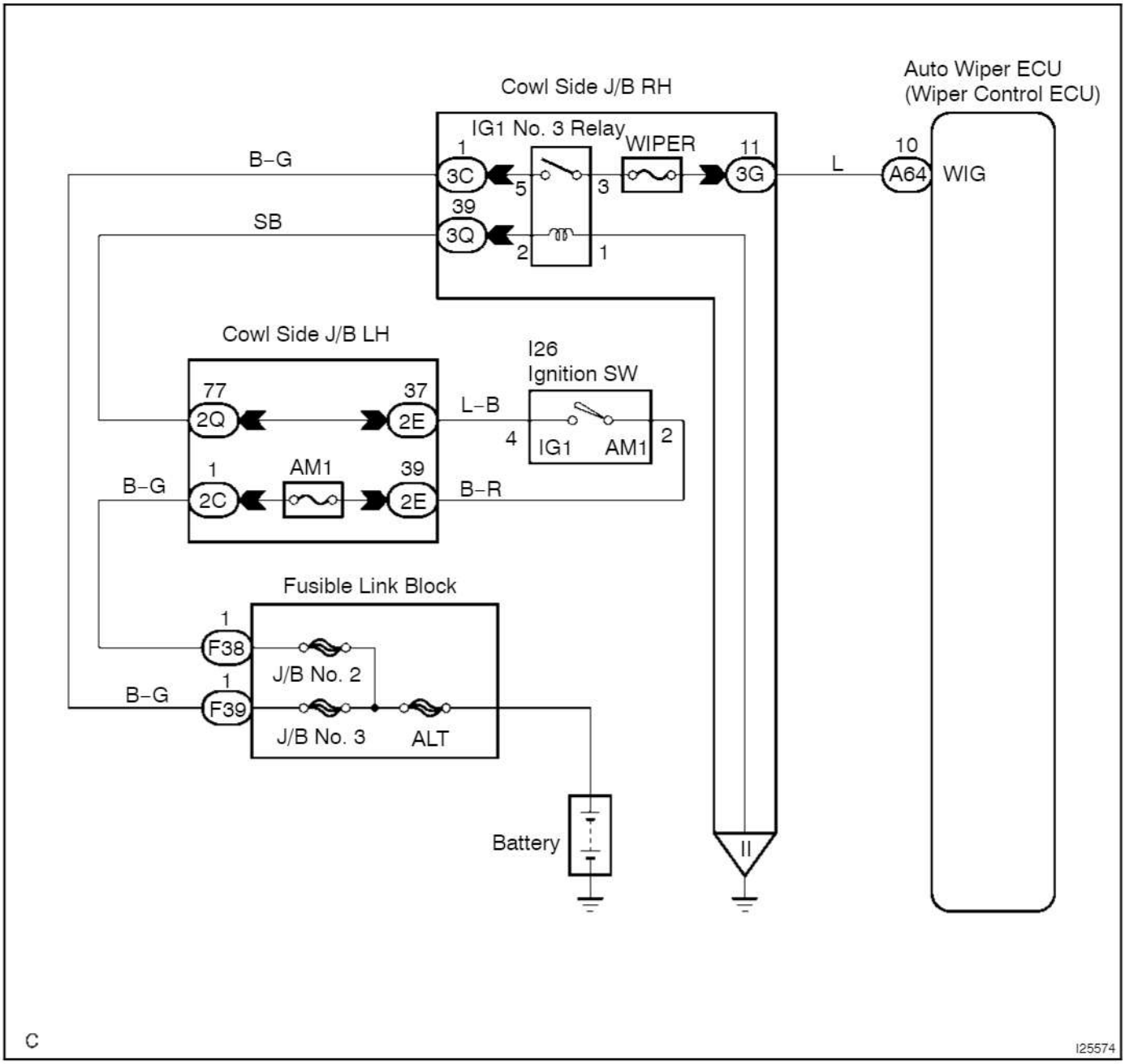
DIAZ3–01

Ignition Switch Circuit

CIRCUIT DESCRIPTION

This circuit is the power supply for the wiper motor, the surrounding circuits, the CPU circuits and the input signal pull–up.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check WIPER and AM1 fuse.**

CHECK:
Check continuity of AM1 fuse.
OK:
Continuity

NG → **Check for short in all the harness and components connected to WIPER and AM1 fuse.**

NG

2	**Check voltage between terminal WIG of Wiper Control ECU connector and body ground (See page IN–38).**

PREPARATION:
Remove wiper control ECU with connectors being connected.
CHECK:
Measure voltage between terminal IG of wiper control ECU connector and body ground when ignition switch is ON and OFF.
OK:
Voltage:

Ignition switch	Voltage
ON	10 ~ 14 V
OFF	0 V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–930).**

NG

Check and repair harness or connector between Wiper Control ECU and battery.

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DIAZ4–01

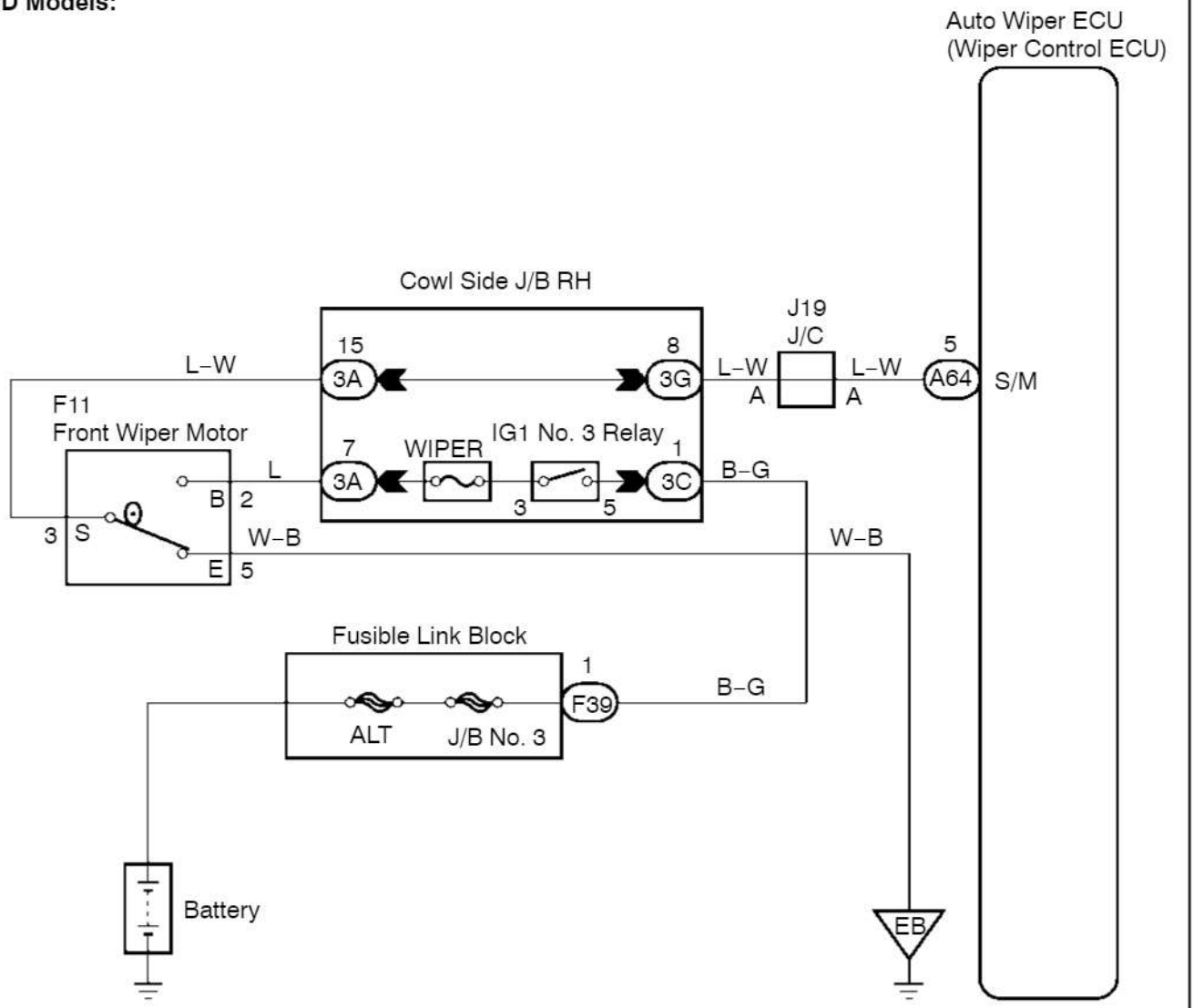
Front Wiper Position Circuit

CIRCUIT DESCRIPTION

This signal is taken into Body ECU. If this signal cannot be received, Body ECU does not perform reverse linked function control.

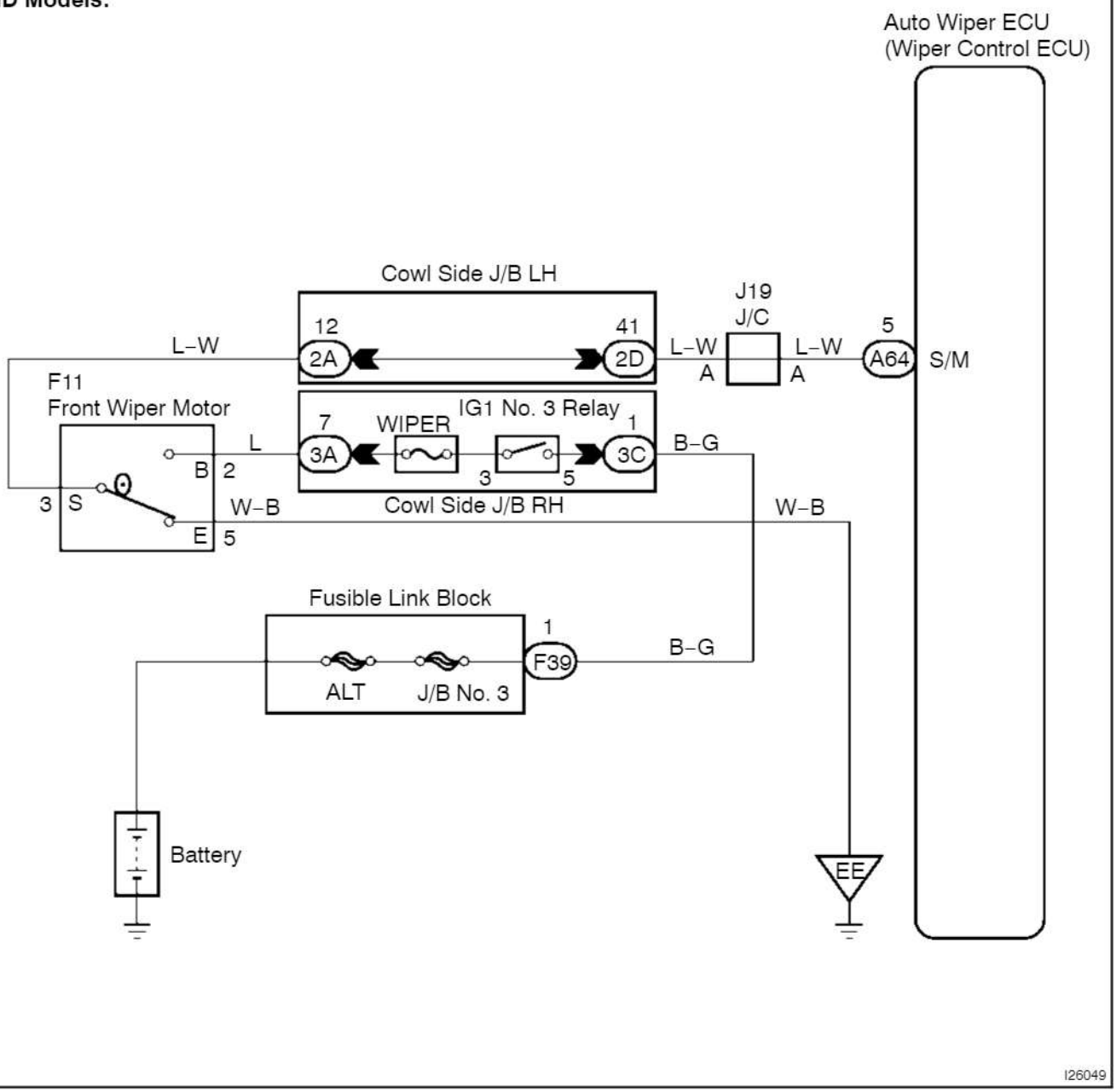
WIRING DIAGRAM

LHD Models:



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RHD Models:



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INSPECTION PROCEDURE

1	Check wire harness between wiper control ECU and front wiper motor (See page IN–38).

NG → Repair or replace wire harness.

OK

2	Check wire harness between wiper control ECU and body ECU (See page IN–38).

NG → Repair or replace wire harness.

OK

Proceed to next circuit inspection shown on problem symptom table (See page DI–930).

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DIAZ5–01

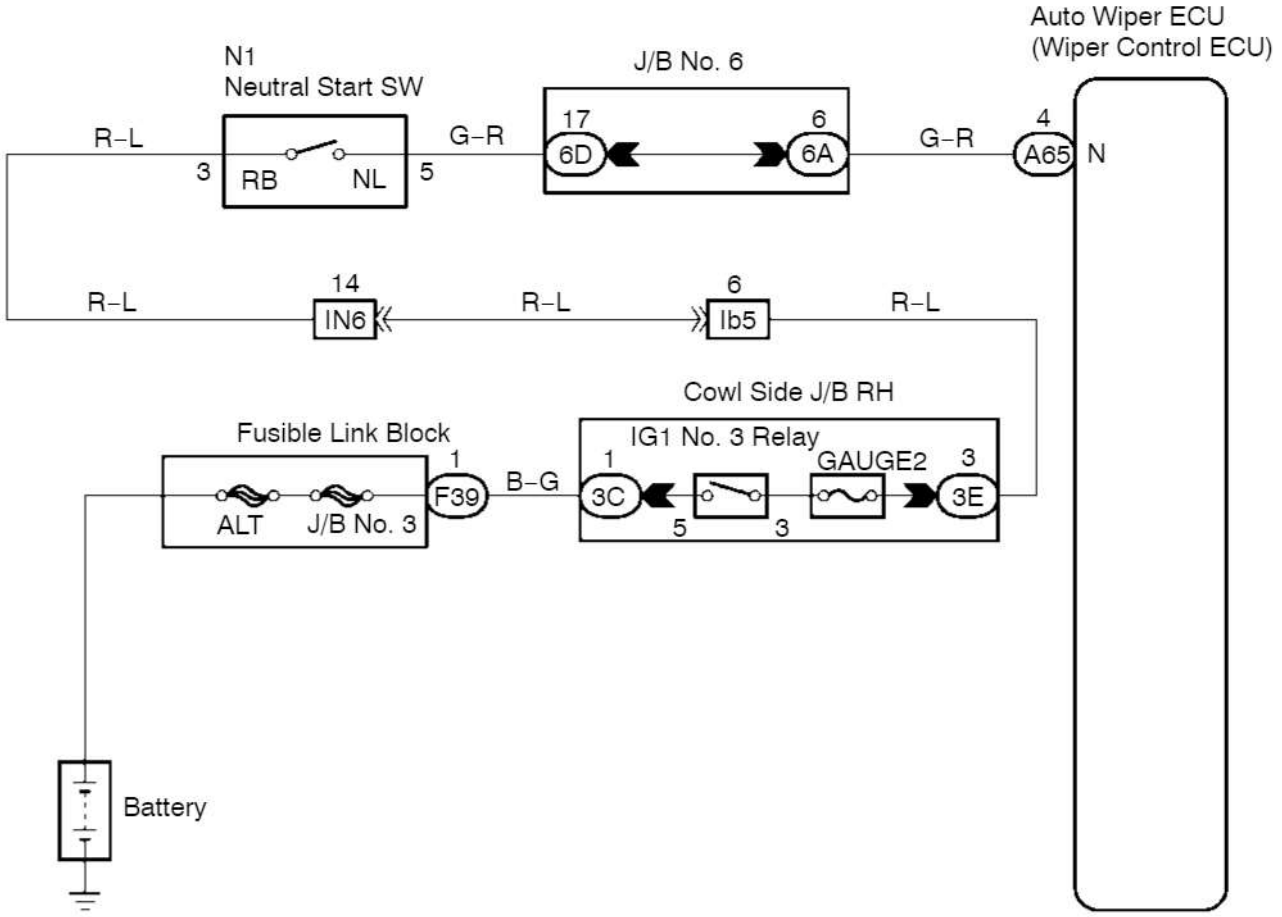
Neutral Signal Circuit

CIRCUIT DESCRIPTION

This circuit sends the Neutral start switch Neutral or other to the wiper control ECU.
HINT:
Refer to the Automatic Transmission section for the Neutral start switch check.

WIRING DIAGRAM

RHD Models (2UZ–FE):

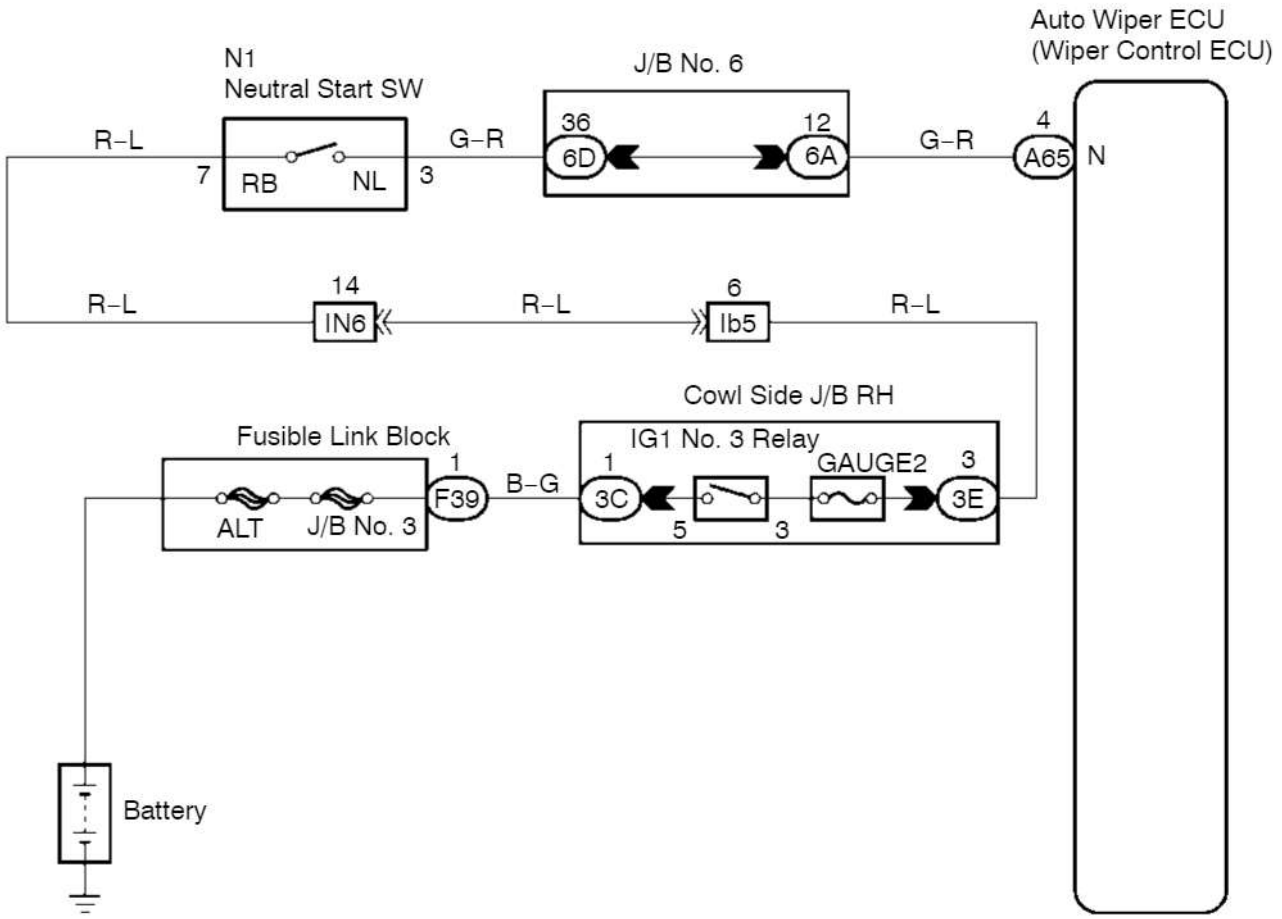


C

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RHD Models (1HD–FTE Europe):

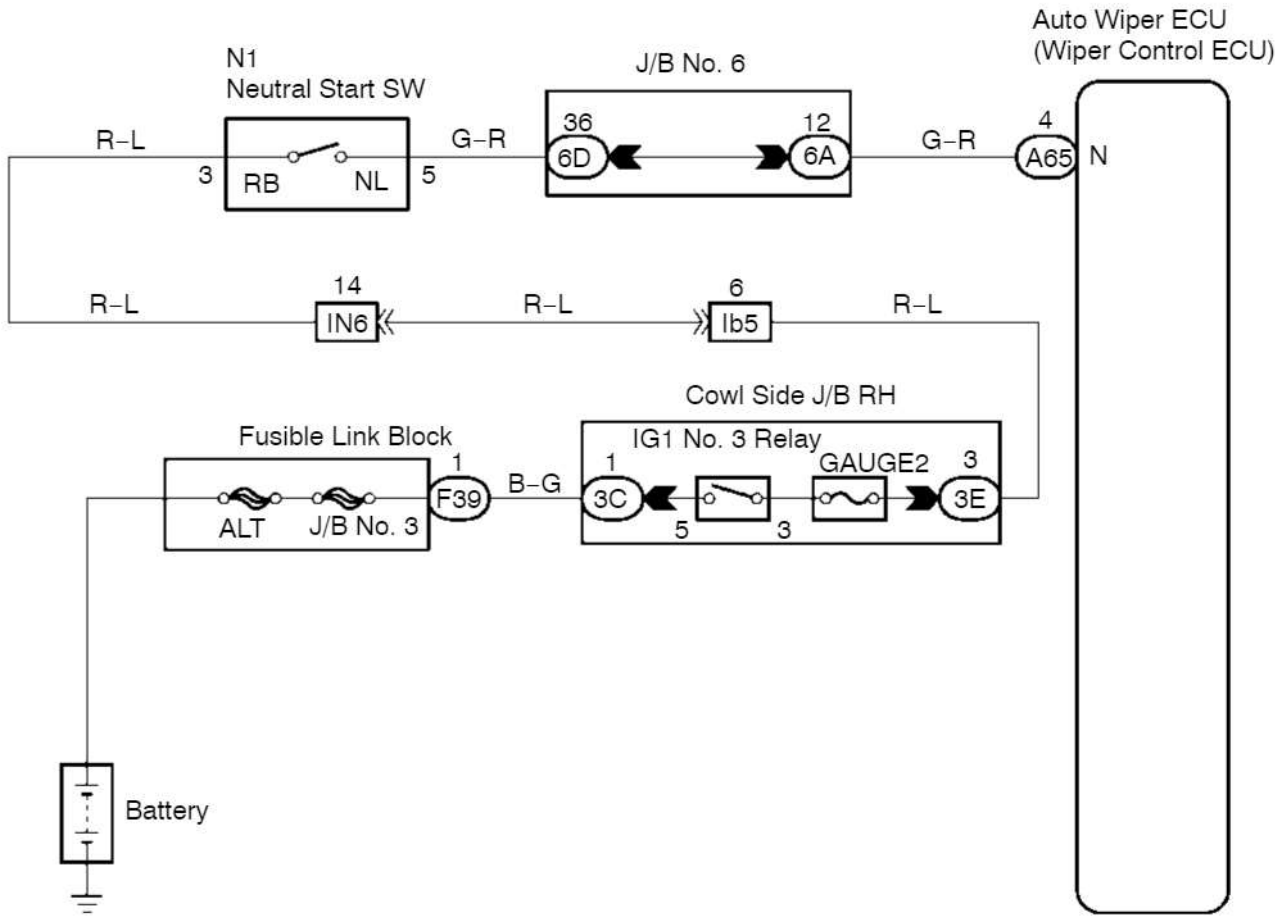


C

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RHD Models (1HD–FTE Australia):

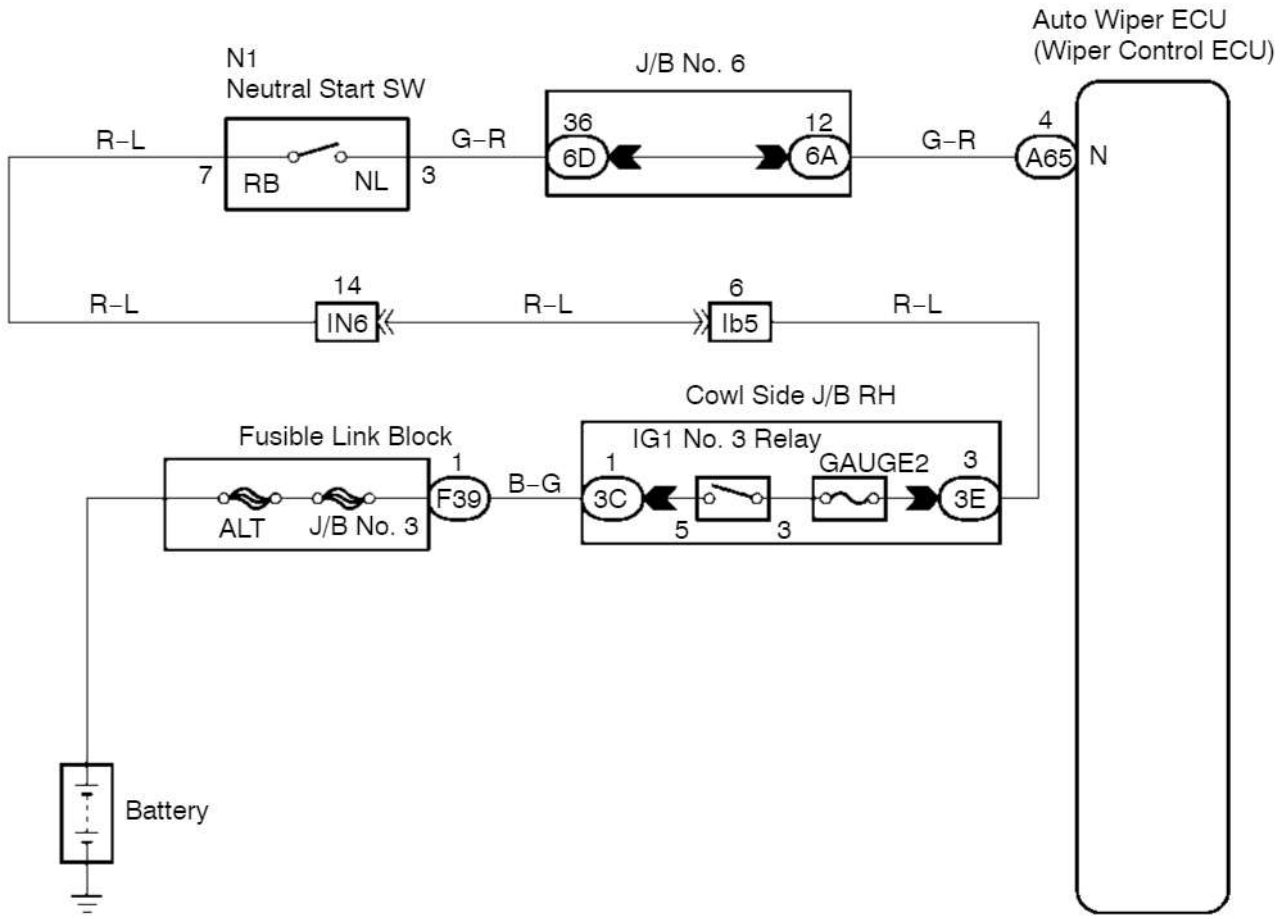


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LHD Models (1HD–FTE Europe):

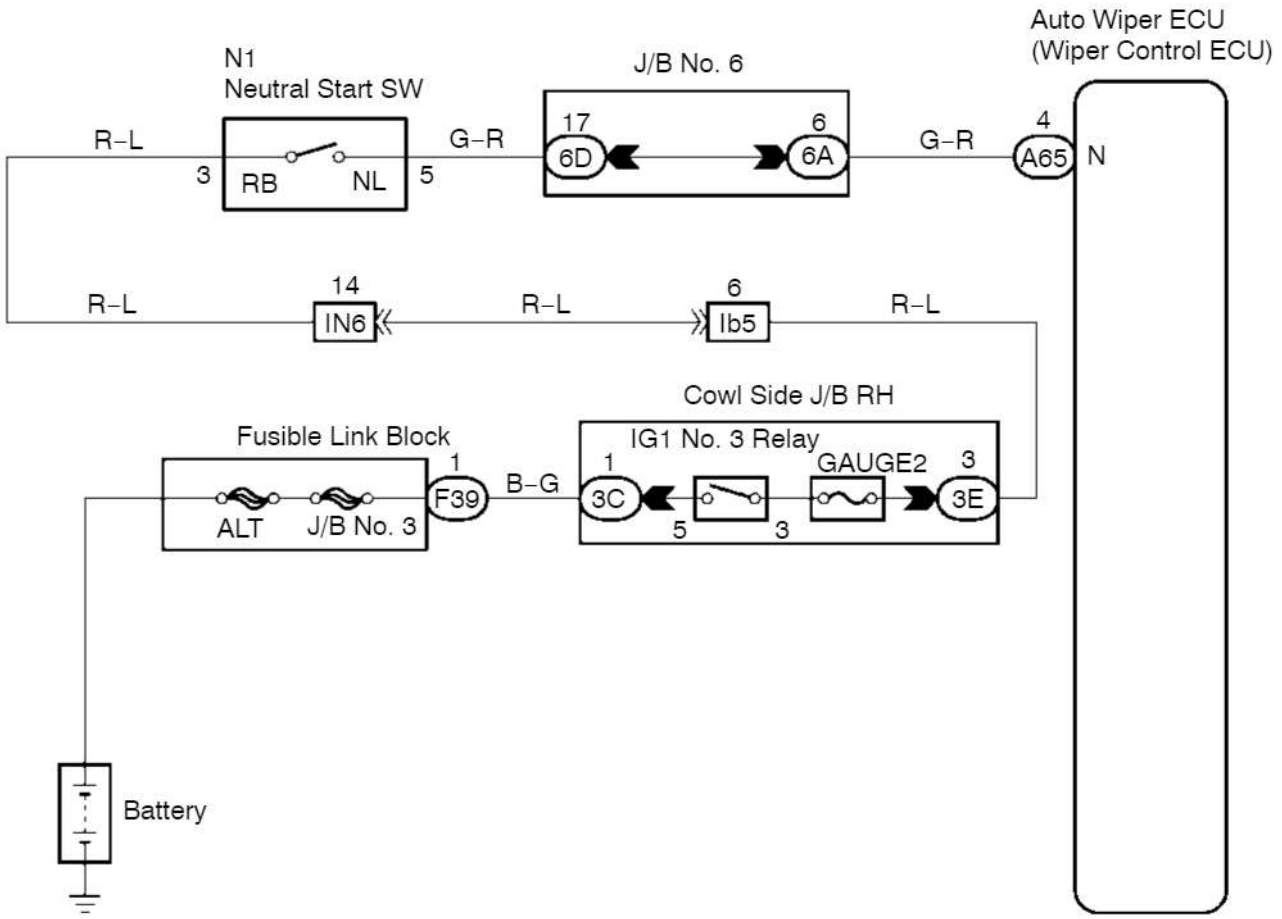


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LHD Models (2UZ–FE):

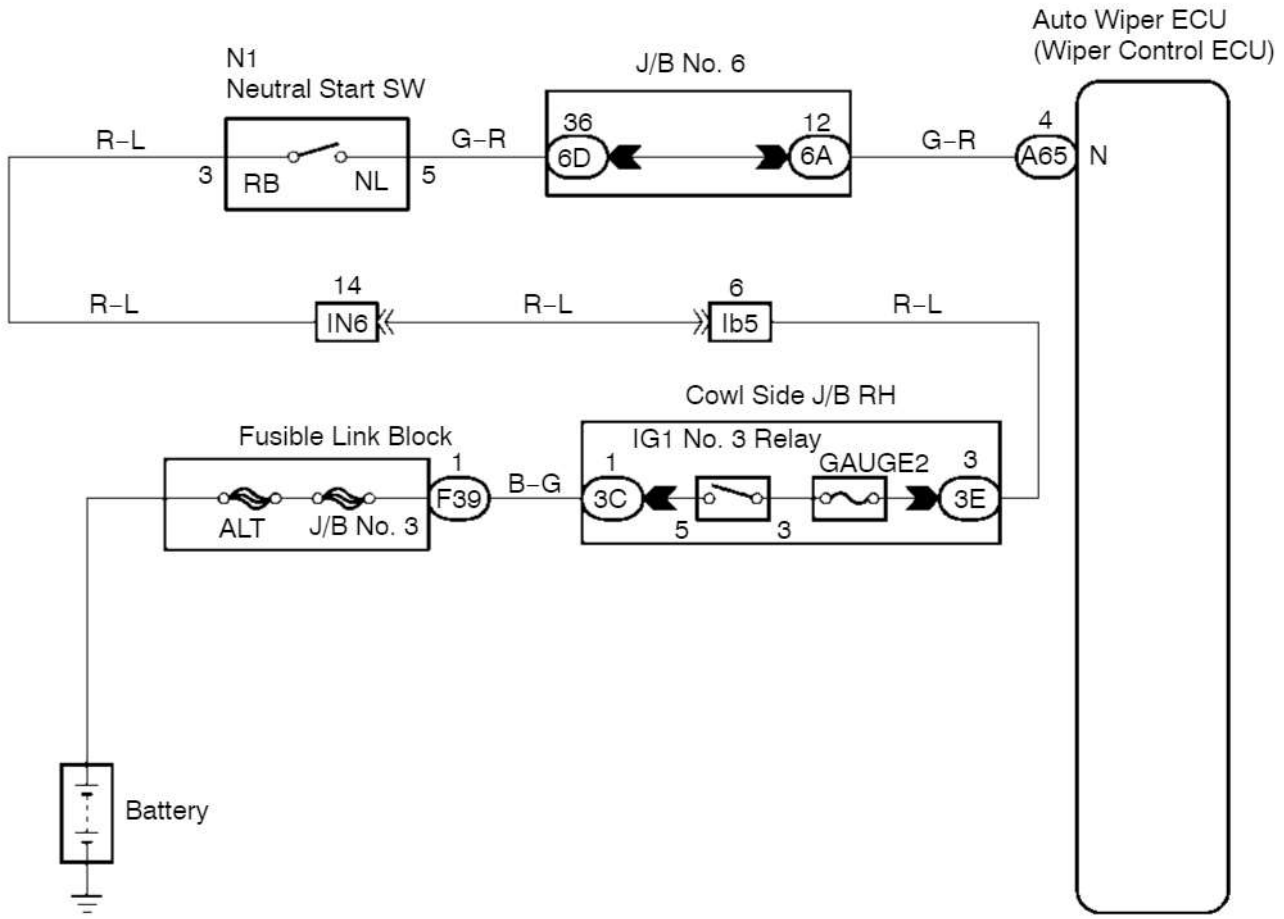


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LHD Models (1HD–FTE General):



C

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INSPECTION PROCEDURE

1	**Check PNP signals using hand–held tester.**

PREPARATION:

Connect the hand–held tester to the DLC3.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON and push the hand–held tester main SW ON.

CHECK:

Select the item "NSW SW" in the DATA LIST and read its valve displayed.

OK:

PNP switch position N: ON

PNP switch position except N: OFF

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–930).**

NG

Repair or replace harness and connector between park/neutral position switch and wiper control ECU (See page IN–38).

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DIAZ8–01

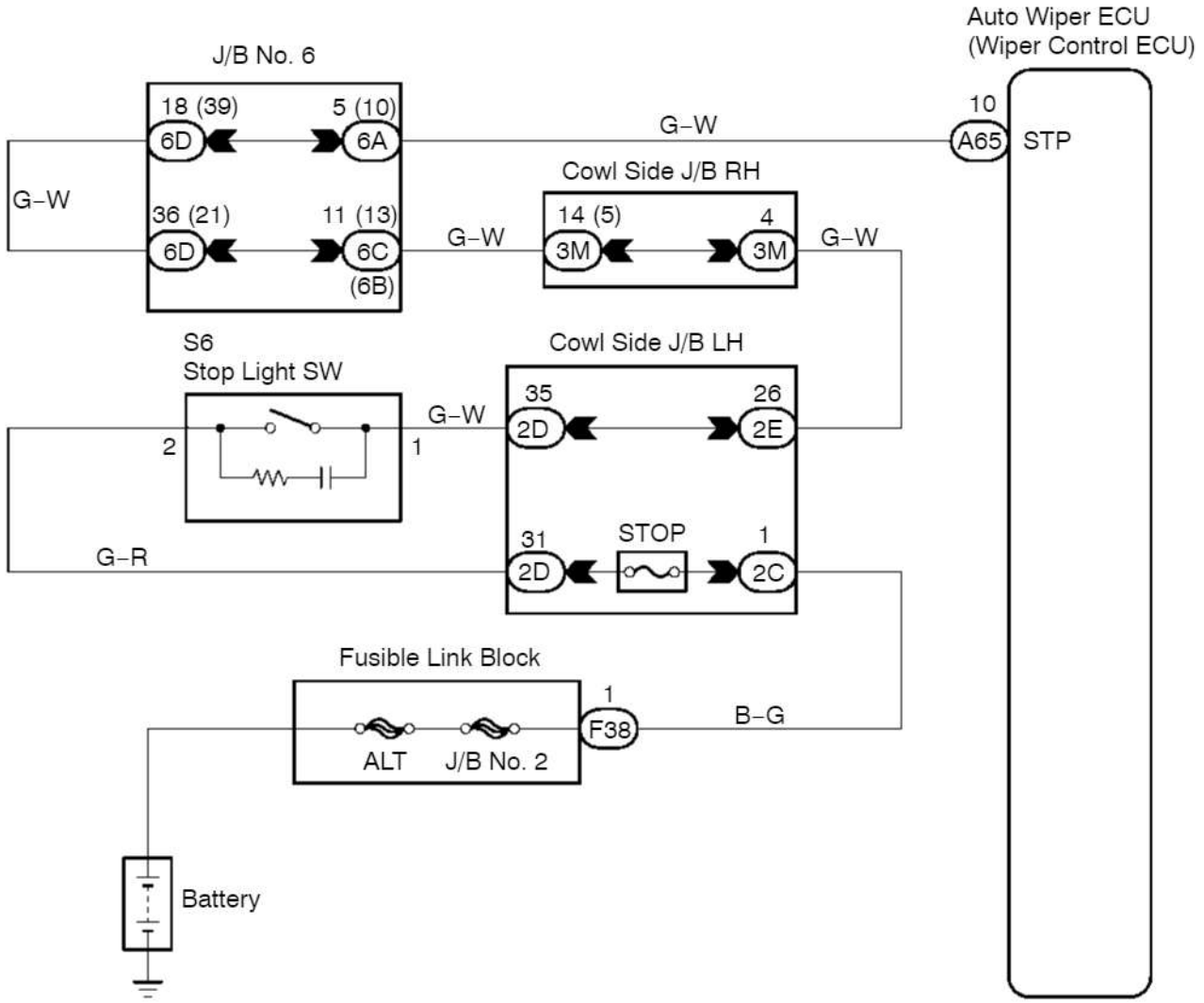
Stop Light Switch Circuit

CIRCUIT DESCRIPTION

This circuit sends a stop light switch ON or OFF signal to ECU.

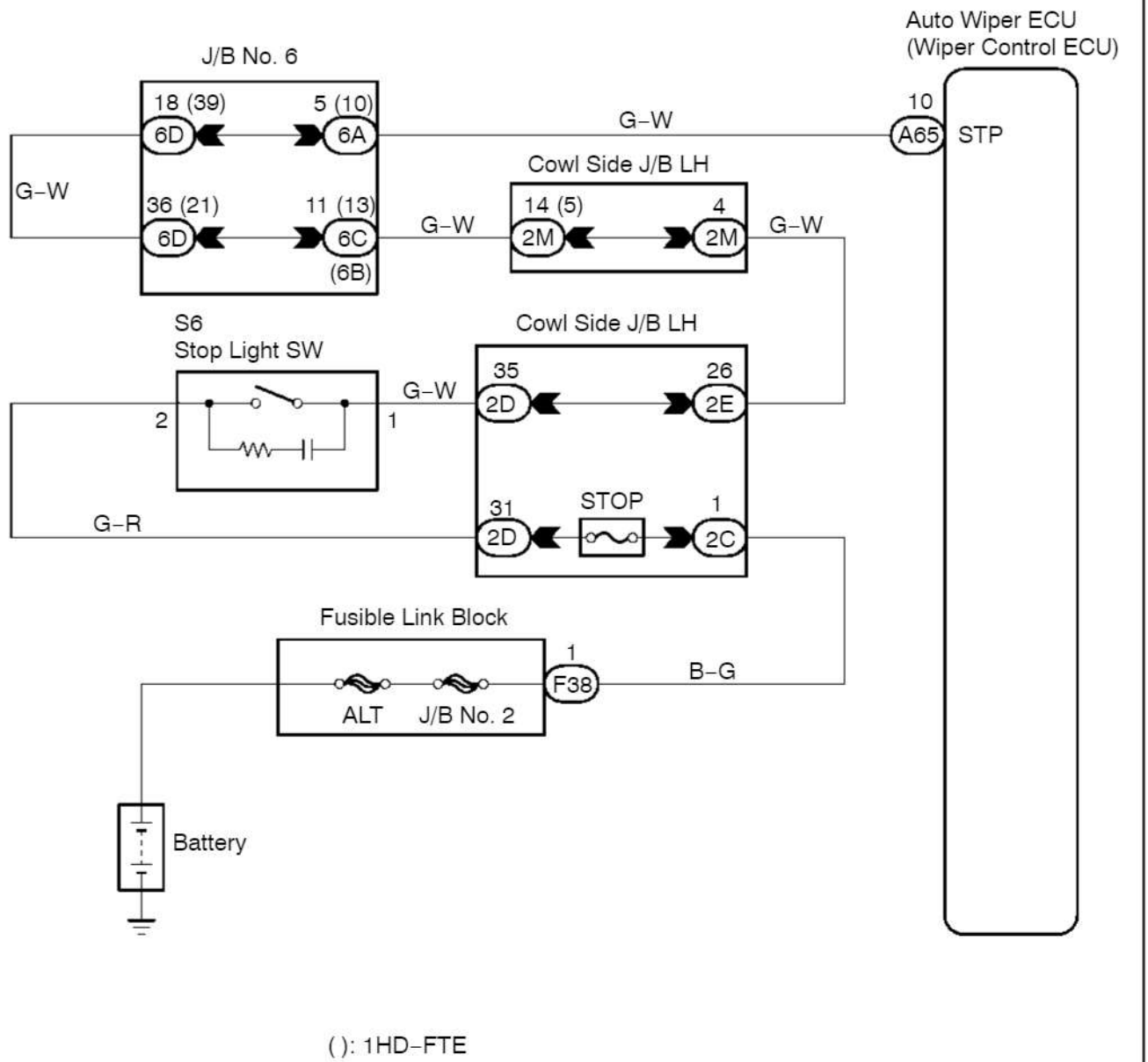
WIRING DIAGRAM

LHD Models:



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RHD Models:



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INSPECTION PROCEDURE

1	Check stop light switch .

NG → Replace stop light switch.

OK

2	Check wire harness between stop light switch and wiper control ECU (See page IN–38).

NG → Repair or replace wire harness.

OK

Proceed next circuit inspection shown on problem symptom table. (See page DI–930)

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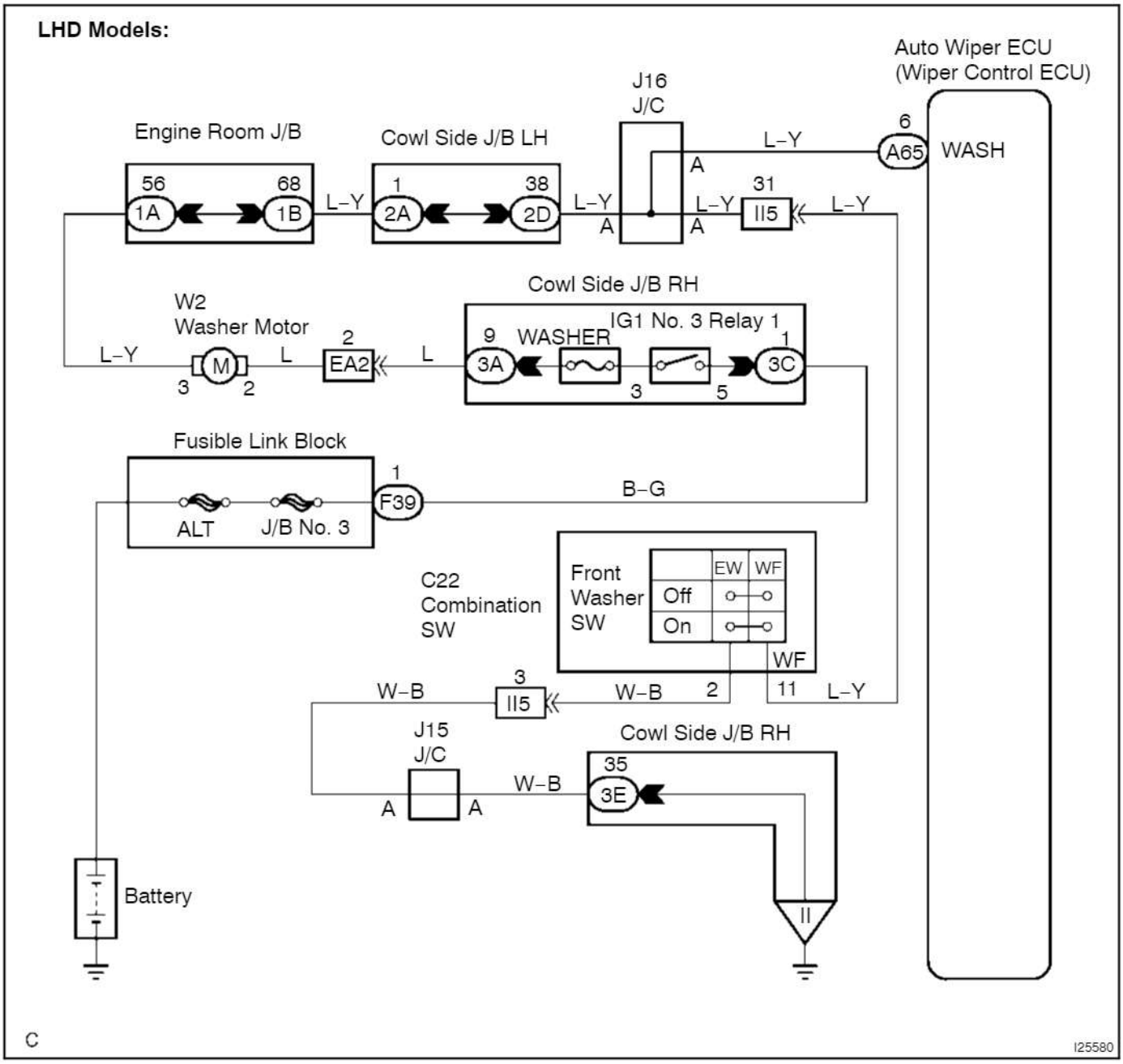
DIAZ7–01

Front Washer Switch Circuit

CIRCUIT DESCRIPTION

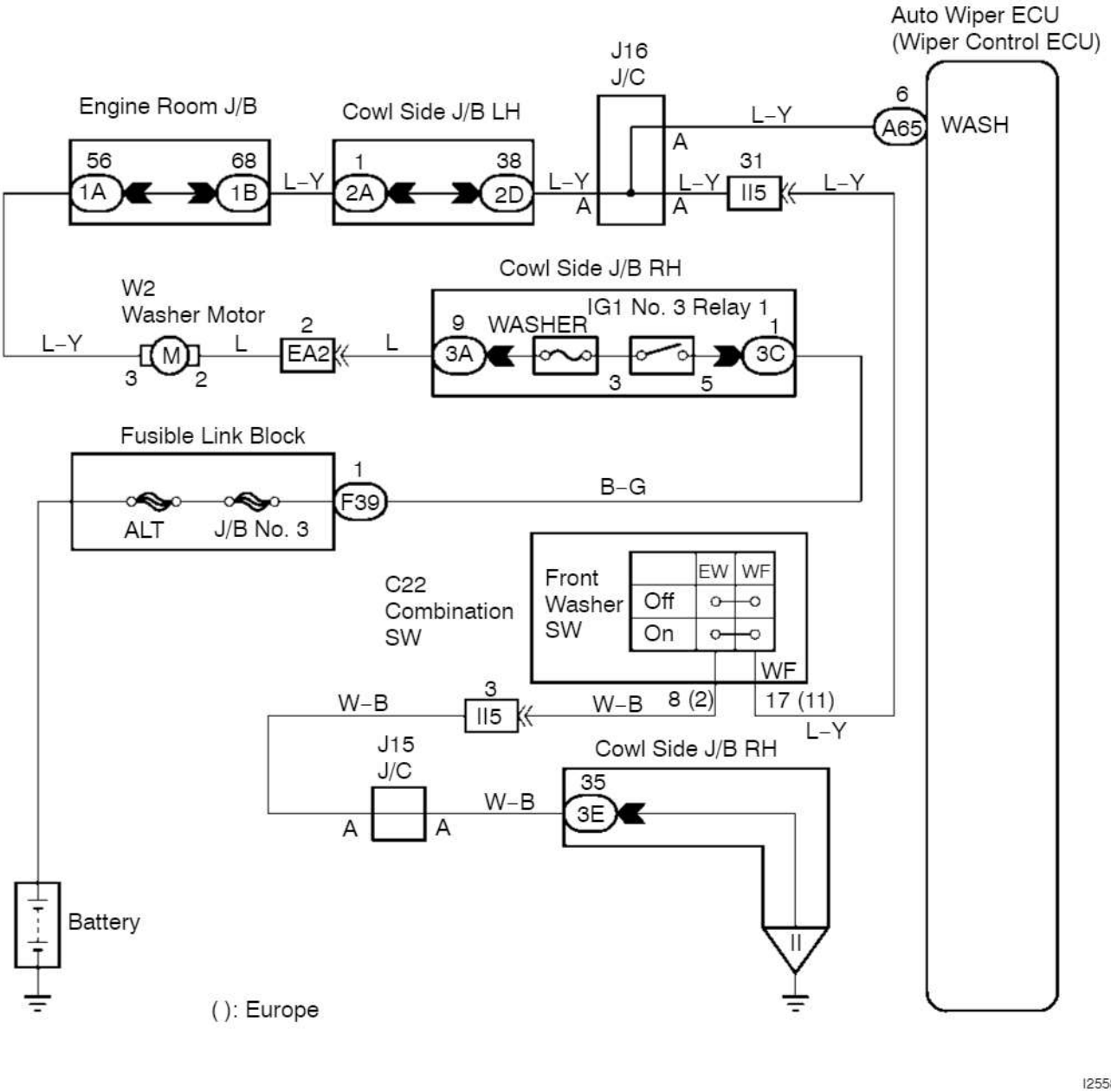
This circuit sends a front washer switch ON or OFF signal to ECU.

WIRING DIAGRAM



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RHD Models:



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INSPECTION PROCEDURE

1	**Check WASHER fuse.**

CHECK:

Check continuity of WASHER fuse.

OK:

Continuity

NG → **Replace WASHER fuse.**

OK

2	**Check wire harness between combination switch and wiper control ECU (See page IN–38).**

NG → **Repair or Replace wire harness.**

OK

Proceed next circuit inspection shown on problem symptom table (See page DI–930).

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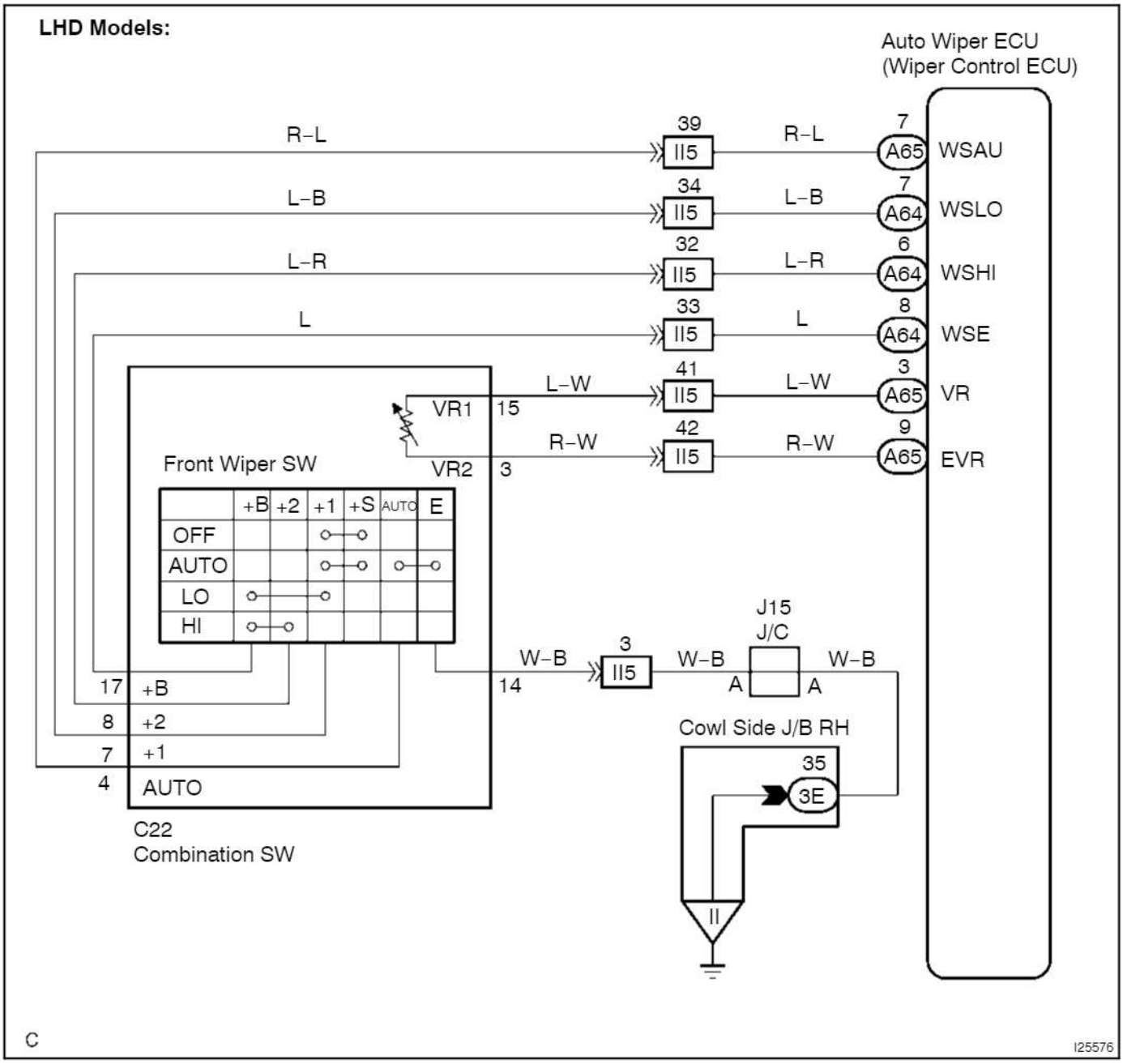
DIAZ8–01

Front Wiper Switch Circuit

CIRCUIT DESCRIPTION

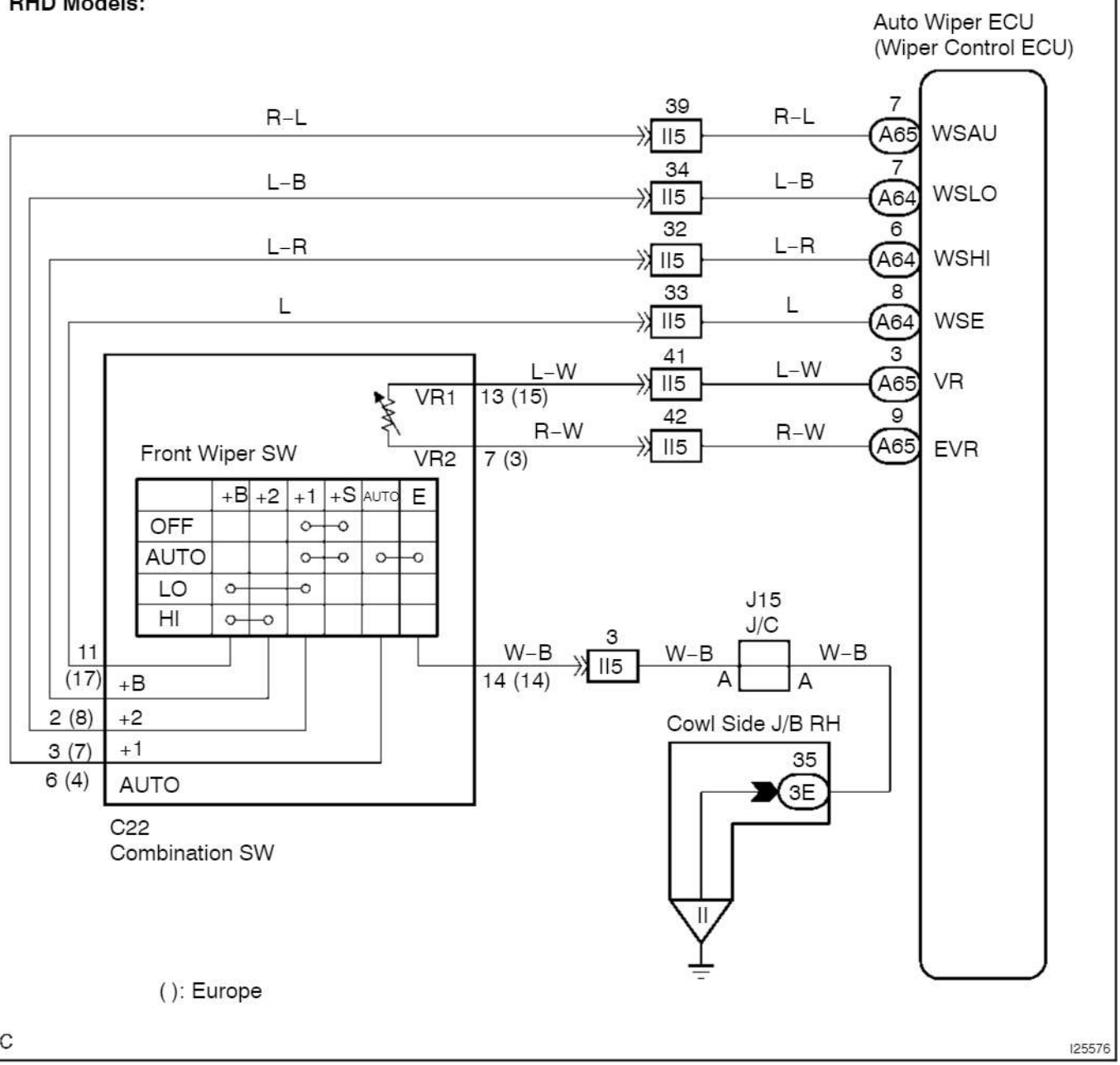
This circuit detects the state of the wiper switch and send it to the Wiper Control ECU.

WIRING DIAGRAM



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RHD Models:



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INSPECTION PROCEDURE

1	Check wire harness between combination switch and Wiper Control ECU (See page IN–38).

NG → Repair or replace wire harness.

OK

2	Check wire harness between combination switch and body ground (See page IN–38).

NG → Repair or replace wire harness.

OK

Proceed next circuit inspection shown on problem symptom table. (See page DI–930)

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DIAZ9–01

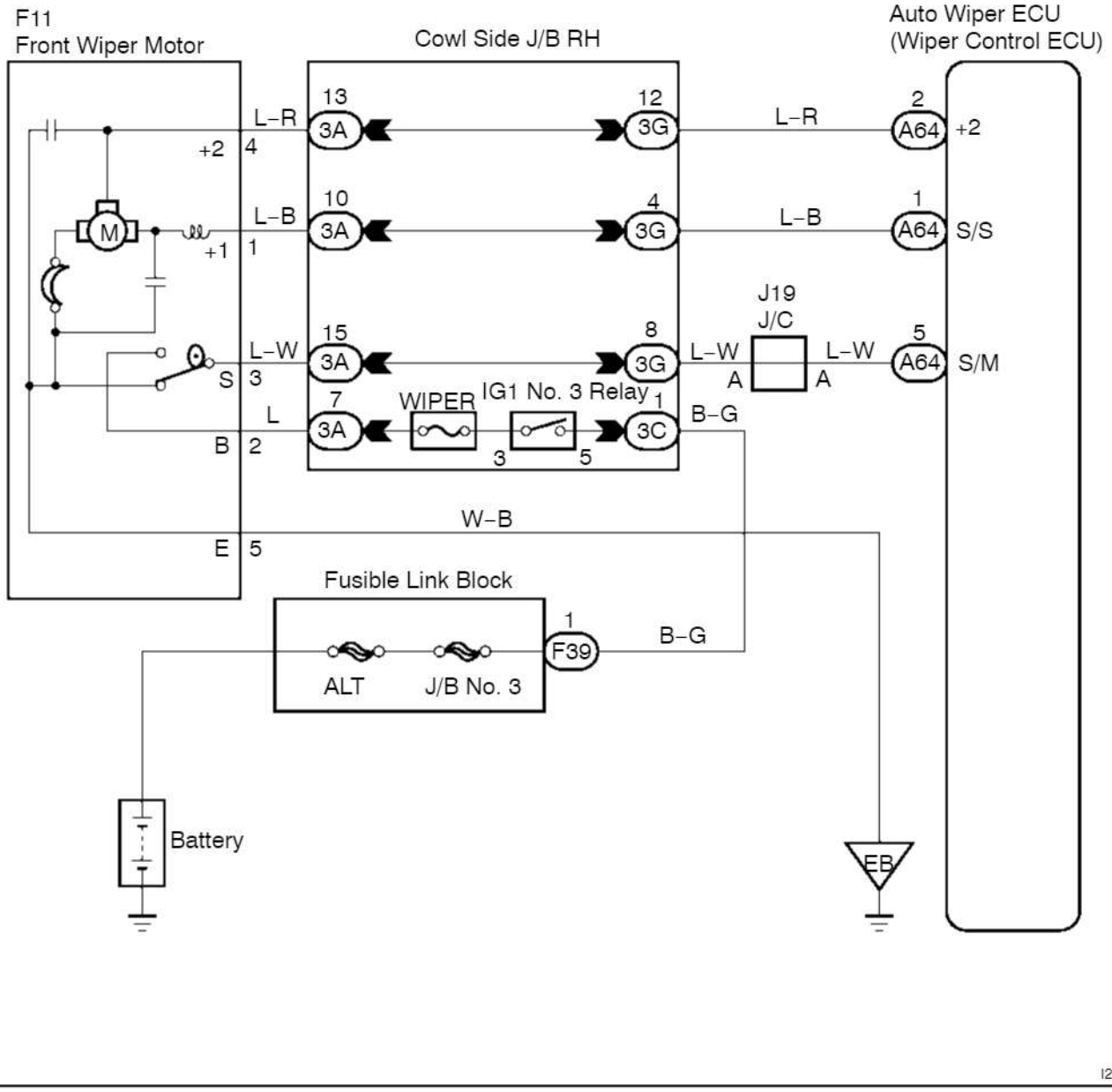
Front Wiper Motor Circuit

CIRCUIT DESCRIPTION

The Wiper Control ECU controls the front wiper motor.

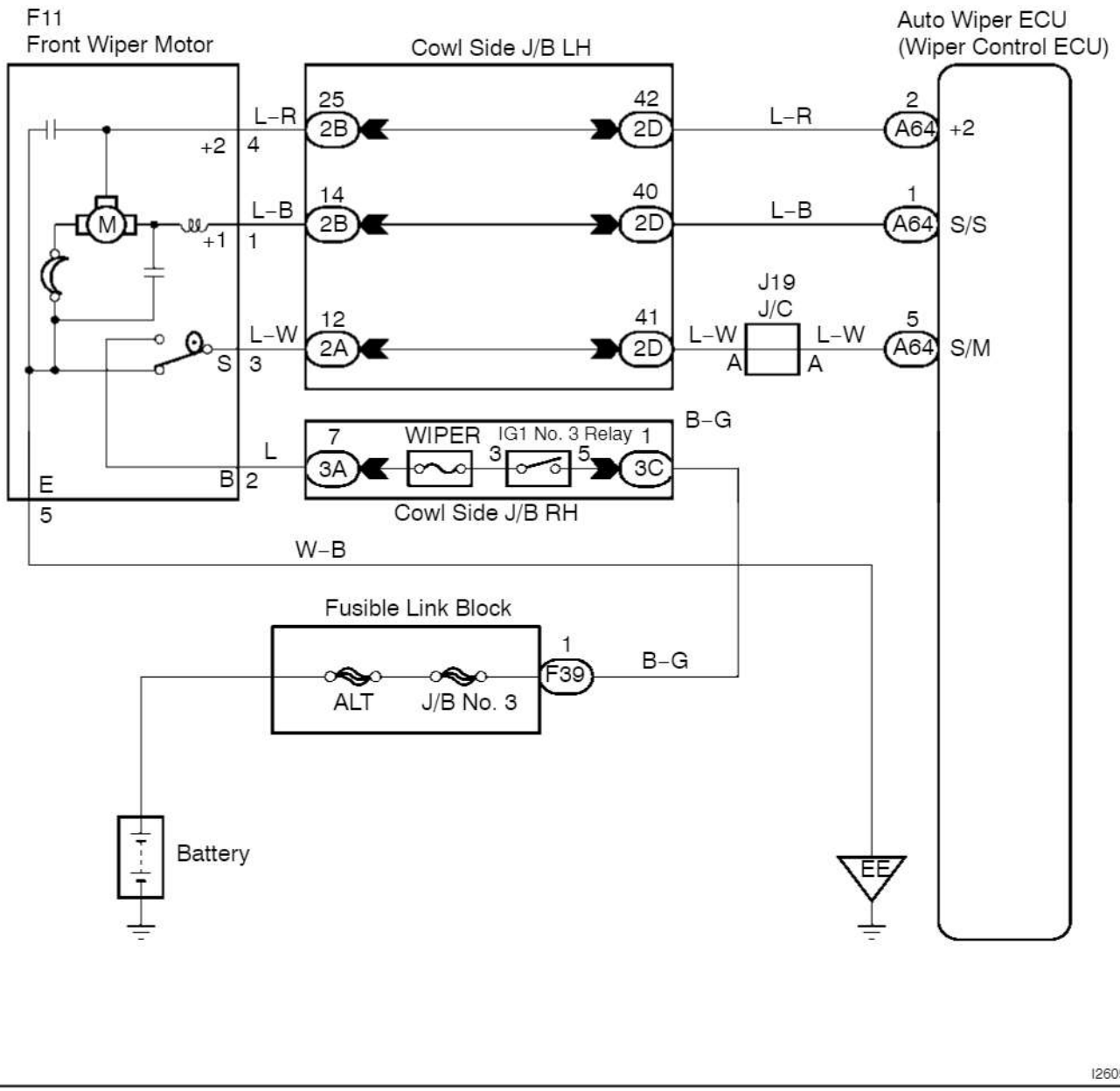
WIRING DIAGRAM

LHD Models:



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RHD Models:



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INSPECTION PROCEDURE

HINT:
In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check the wiper motor using hand–held tester.**

PREPARATION:
Connect the hand–held tester to the DLC3.
CHECK:
Check that the wiper motor can operate in an ACTIVE TEST.
HINT:
LOW and HIGH can be checked with test separately.
Therefore, check a HIGH side at the time of the problem that HIGH does not operate properly and LOW side at the time of the problem that LOW does not operate properly.

OK → **Proceed to next circuit inspection shown on problem symptom table (See page DI–930).**

NG

2	**Check WIPER fuse.**

CHECK:
Check continuity of WIPER fuse.
OK:
Continuity

NG → **Replace WIPER fuse.**

OK

3	**Check the wiper motor (See page BE–30).**

NG → **Replace the wiper motor.**

OK

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4	Check wire harness and connector between wiper motor and Wiper Control ECU (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

Proceed next circuit inspection shown on problem symptom table (See page DI–930).

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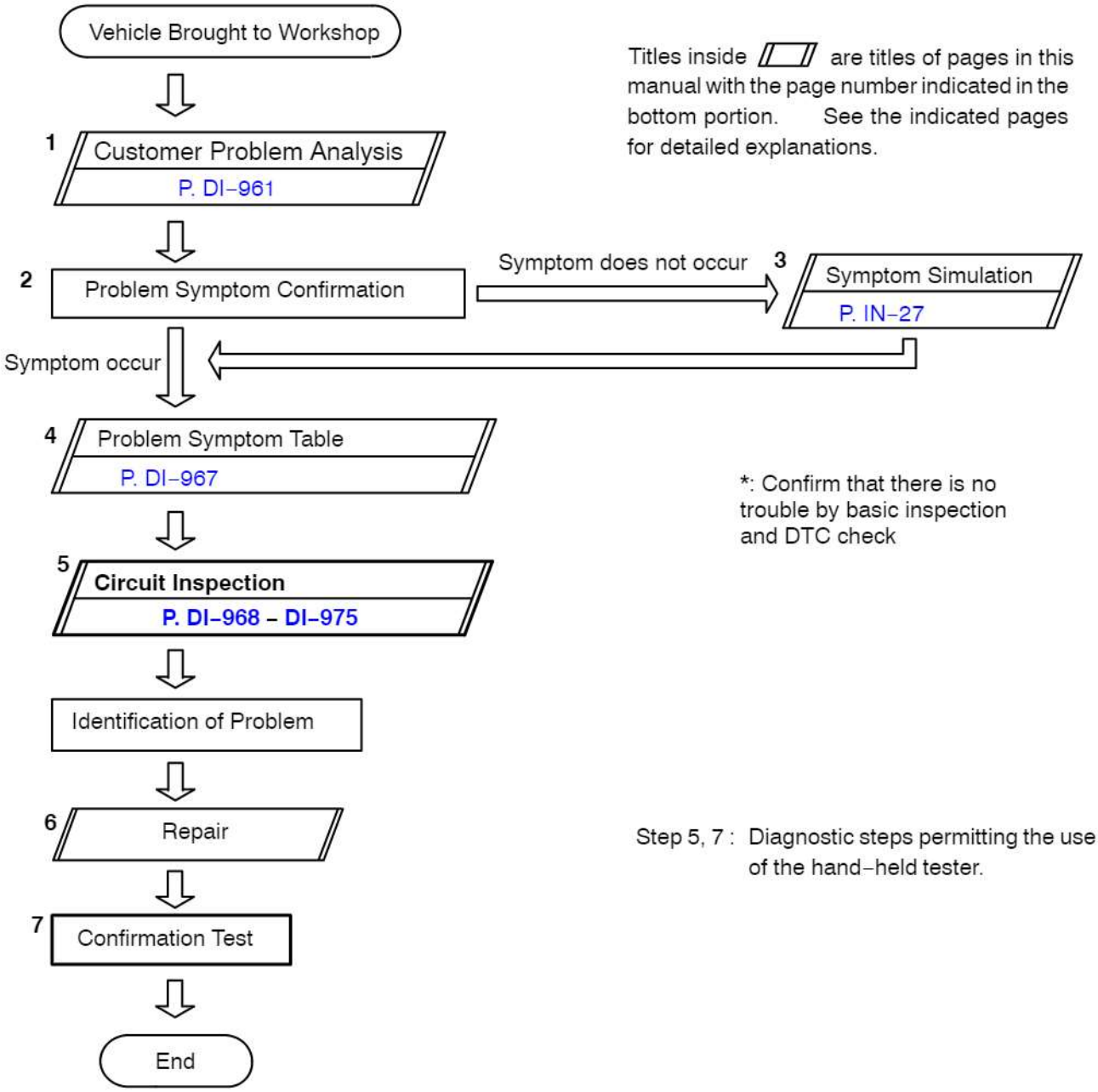
SLIDING ROOF SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DIAYL–01

HINT:

The ECU of this system is connected to the multiplex communication system. Therefore, before starting troubleshooting, be sure to check that there is no trouble in the multiplex communication system.



Titles inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

*: Confirm that there is no trouble by basic inspection and DTC check

Step 5, 7 : Diagnostic steps permitting the use of the hand–held tester.

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DIAYM–01

CUSTOMER PROBLEM ANALYSIS CHECK

SLIDING ROOF CONTROL SYSTEM Check Sheet

Inspector's name: _____

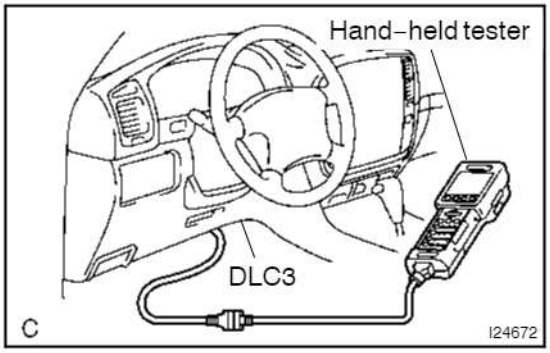
Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date of Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Sometimes (Times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))

Problem Symptom	☐ Sliding roof control system does not operate.
	☐ Sliding roof operates abnormally or stops half way.
	☐ Jam protection system does not operate.

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DIAYN–01



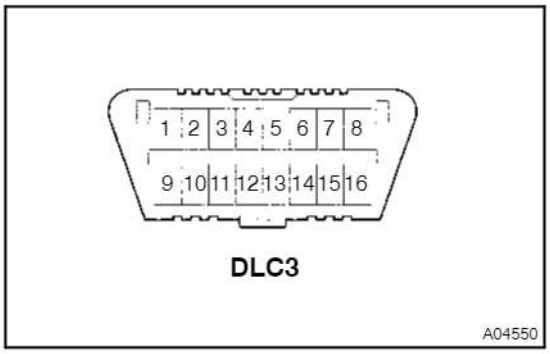
PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Description

ECU data of this system can be read from DLC3 of the vehicle.

Therefore when there seems to be a trouble on this system, use hand–held tester to check and troubleshoot it.



(b) Check the DLC3.

The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141–2 format.

Terminal No.	Connection/Specified Condition	Condition
4	Chassis Ground ↔ Body Ground/1 or less	Always
13	TC ↔ Body Ground/9 – 14 V	Always

HINT:

If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of the hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

2. DATA LIST

HINT:

According to the DATA LIST displayed by the Hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Turn the ignition switch OFF.

(b) Connect the hand–held tester to the DLC3.

(c) Turn the ignition switch ON.

(d) According to the display on tester, read the "DATA LIST".

Item	Condition (Parameter)	Normal Condition	Diagnostic Note
OPEN SW	Sliding roof switch free → OPEN (OFF/ON)	OFF → ON	–

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CLOSE SW	Sliding roof switch free → CLOSE (OFF/ON)	OFF → ON	–
UP SW	Sliding roof switch free → UP (OFF/ON)	OFF → ON	–
DOWN SW	Sliding roof switch free → DOWN (OFF/ON)	OFF → ON	–
LIMIT SW1	Sliding roof operation (OFF/ON)	OFF → ON → OFF	–
LIMIT SW2	Sliding roof operation (OFF/ON)	OFF → ON → OFF	–
MOTOR PULSE	Sliding roof motor stop → moving (HI/LO)	HI ↔ LO	–
MOTOR STATUS	Sliding roof motor stop → moving (LOCK/NORMAL)	NORMAL	–
IG (DIRCT SIG)	IG switch ON (OFF/ON)	ON	–
IG (MPX)	IG switch ON (OFF/ON)	ON	–
KEY OPEN OPERT	Door key operation free → OPEN (OFF/ON)	OFF → ON	–
KEY CLOSE OPERT	Door key operation free → CLOSE (OFF/ON)	OFF → ON	–
WIRLES OPN OPRT	Wireless key operation free → OPEN (OFF/ON)	OFF → ON	–
WIRLES CL OPRT	Wireless key operation free → CLOSE (OFF/ON)	OFF → ON	–
CLOSE SIGNAL	Sliding roof close signal (CLOSE/OPEN)	CLOSE	–
KEY OFF PERMS	Key OFF permission (OFF/ON)	–	–
OPEN /DOOR KEY	Door key related OPEN operation (NOT AVL/AVAIL)	–	–
CLOSE /DOOR KEY	Door key related CLOSE operation (NOT AVL/AVAIL)	–	–
OPEN /WIRELESS	Wireless key related CLOSE operation (NOT AVL/AVAIL)	–	–
DOOR KEY OPER	Door key related operation (SLIDE/TILT)	–	–

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WIRELESS OPER	Wireless key related operation (SLIDE/TILT)	–	–
D–DOOR WARN SW	Driver's door courtesy (OFF/ON)	–	–

3. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the Hand–held tester allows the relay, and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Turn the ignition switch OFF.

(b) Connect the hand–held tester to the DLC3.

(c) Turn the ignition switch ON.

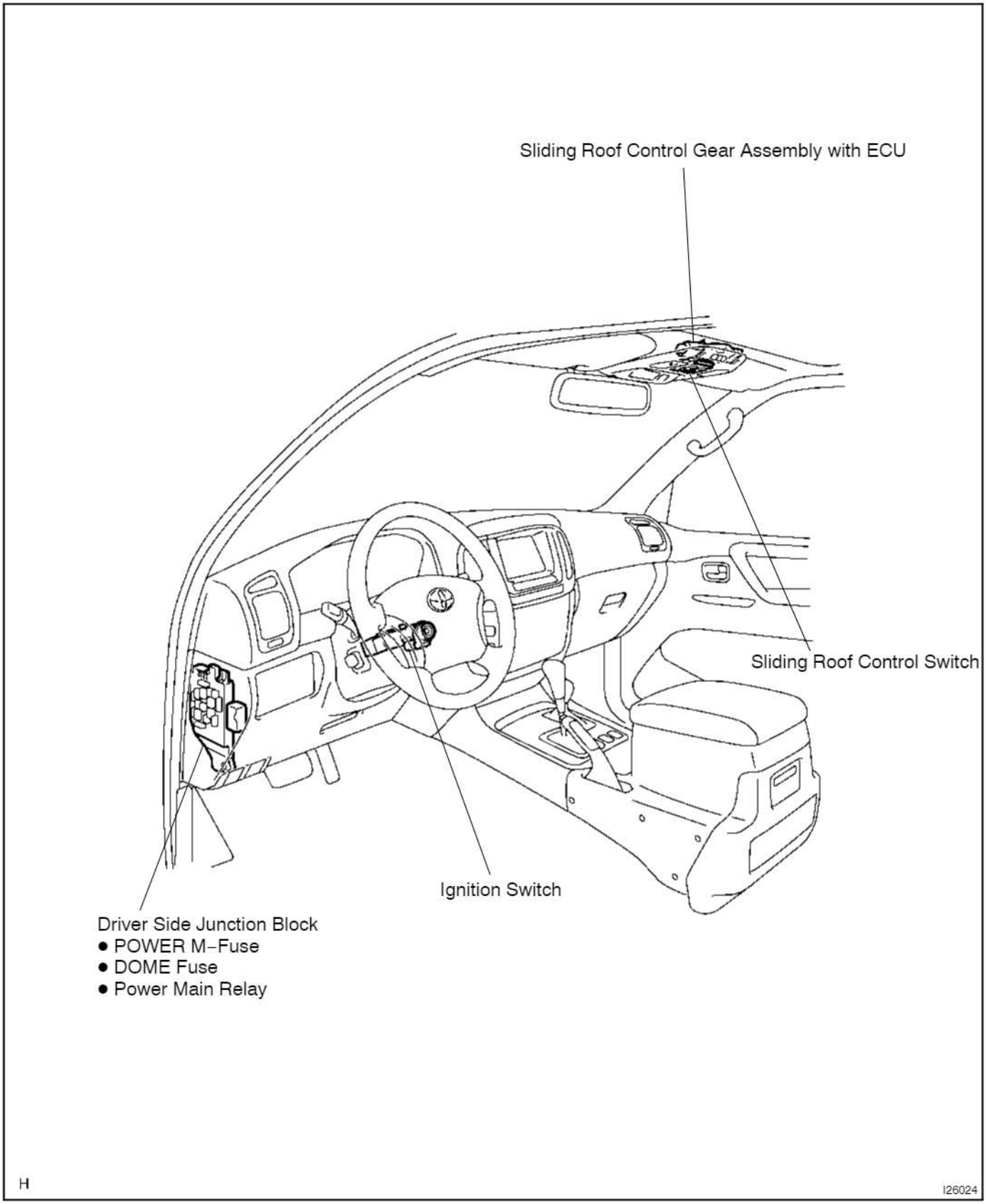
(d) According to the display on tester, perform the "ACTIVE TEST".

Item	Condition	Parameter	Diagnostic Note
SLIDE ROOF	Sliding roof operation	CLOS/UP – OPN/DWN	Confirm that the vehicle is stopped./Caution: this test causes vehicle parts to move. Please watch your hands and feet.

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DIAYO–01

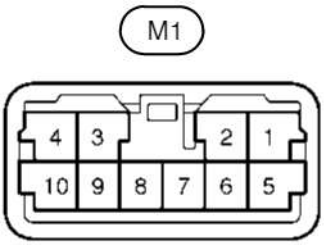
PARTS LOCATION



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DIAYF–01

TERMINALS OF ECU



I04611

Symbols (Terminals No.)	Wiring Color	Condition	Specified Condition
BUS *1, PWR *2 (M1–2)	L	Multiplex communication circuit signals	–
DOWN ↔ E (M1–3 ↔ M1–7)	R–W ↔ W–B	Sliding roof control switch TILT DOWN	10 – 14 V
		Others	Below 1 V
UP ↔ E (M1–4 ↔ M1–7)	R–Y ↔ W–B	Sliding roof control switch TILT UP	10 – 14 V
		Others	Below 1 V
+B ↔ E (M1–5 ↔ M1–7)	B ↔ W–B	Always	10 – 14 V
E ↔ Body ground (M1–7 ↔ Body ground)	W–B ↔ Body Ground	Always	10 – 14 V
IG ↔ E (M1–8 ↔ M1–7)	B–W ↔ W–B	Ignition switch ON	10 – 14 V
		Ignition switch OFF or ACC	Below 1 V
OPEN ↔ E (M1–9 ↔ M1–7)	R ↔ W–B	Sliding roof control switch OPEN	10 – 14 V
		Others	Below 1 V
CLOSE ↔ E (M1–10 ↔ M1–7)	G–Y ↔ W–B	Sliding roof control switch CLOSE	10 – 14 V
		Others	Below 1 V

*1: 2UZFE, 1HD–FTE Except Europe

*2: Except *1

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DIAYQ–01

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Sliding roof control system does not operate.	1. Power Source Circuit 2. IG Switch Circuit 3. Sliding Roof Control Switch Circuit 4. Sliding Roof Control Gear Assembly with ECU	DI–968 DI–971 DI–973 IN–38
Sliding roof operates abnormally or stops half way.	1. Pulse Plate (Sliding Roof Limit Switch) Circuit	DI–975
Jam protection system does not operate.	1. Power Source Circuit 2. Sliding Roof Control Gear Assembly with ECU	DI–968 IN–38

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DIAYR–01

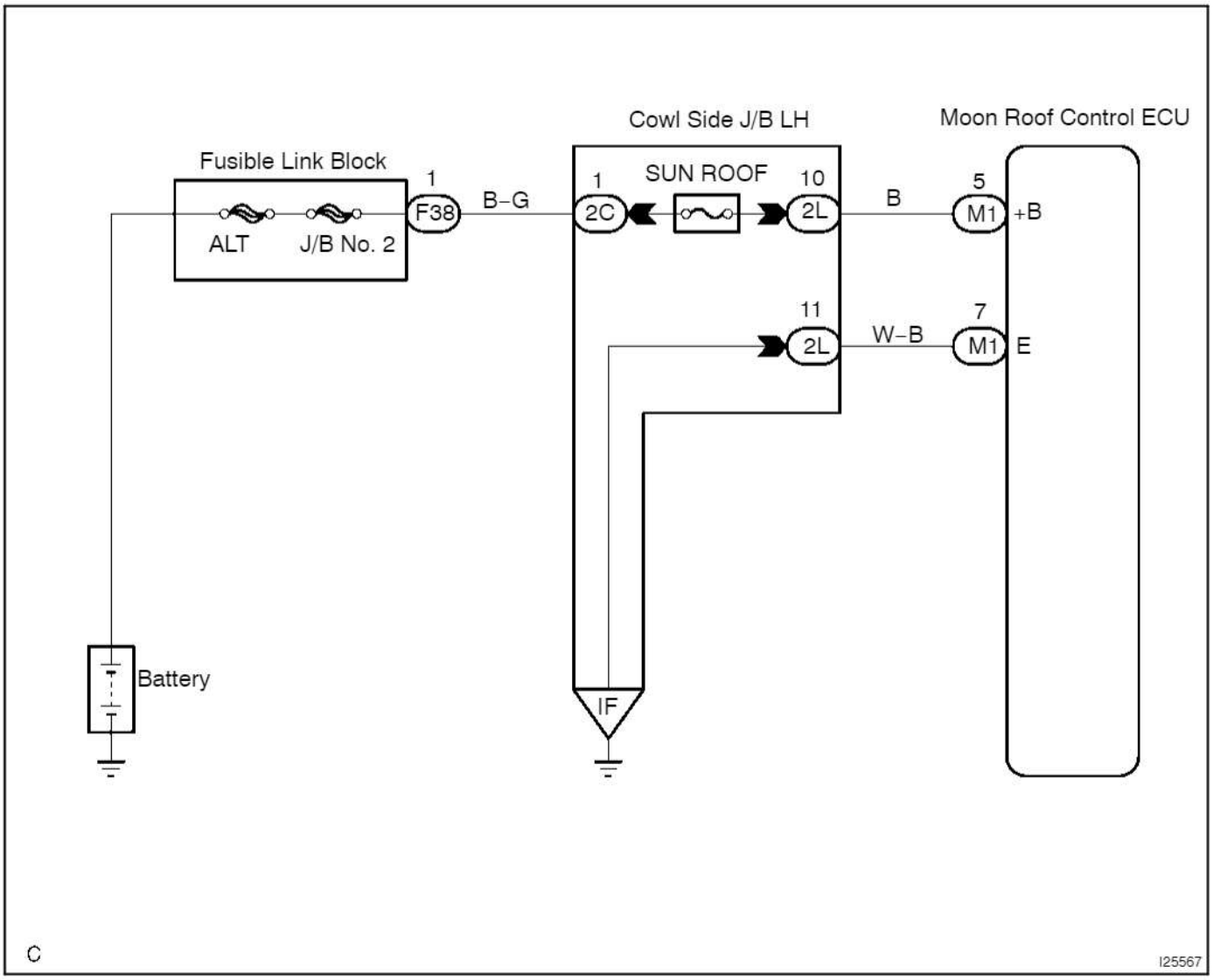
CIRCUIT INSPECTION

Power Source Circuit

CIRCUIT DESCRIPTION

This is power source for ECU and Sliding Roof Gear.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Perform active test.**

PREPARATION:

Connect the hand–held tester to the DLC3.

CHECK:

(a) Enter into ACTIVE TEST function of hand–held tester.

(b) Check that "Slide roof motor" operates as the hand–held tester directs.

NOTICE:

Caution is necessary not to be caught in the roof glass because the jam protection system does not operate during conducting ACTIVE TEST.

HINT:

With one ACTIVE direction, the sliding roof can be slid and tilted continuously.

OK:

The slide roof operates normally.

OK → **Proceed to next circuit inspection shown in problem symptoms table (See page DI–967).**

NG

2	**Check SUN ROOF fuse.**

CHECK:

Check continuity of SUN ROOF fuse.

OK:

Continuity

NG → **Replace the failure fuse.**

OK

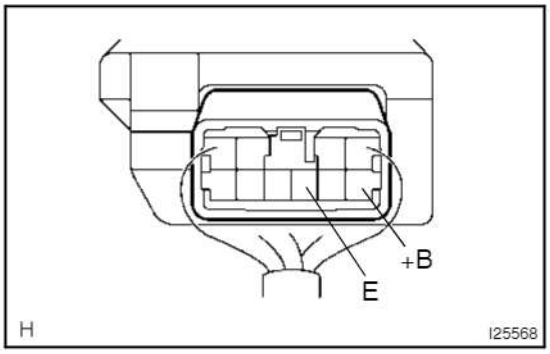
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3	**Check harness and connector between terminal E of sliding roof gear assembly with ECU and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

4	**Check voltage between terminals +B and E of sliding roof gear assembly with ECU connector.**



PREPARATION:
Turn the ignition switch OFF.
CHECK:
Measure voltage between terminals +B and GND of the sliding gear assembly with ECU with connector being connected.
OK:
Voltage: 10 – 14 V

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection show on problem symptom table (See page DI–967).

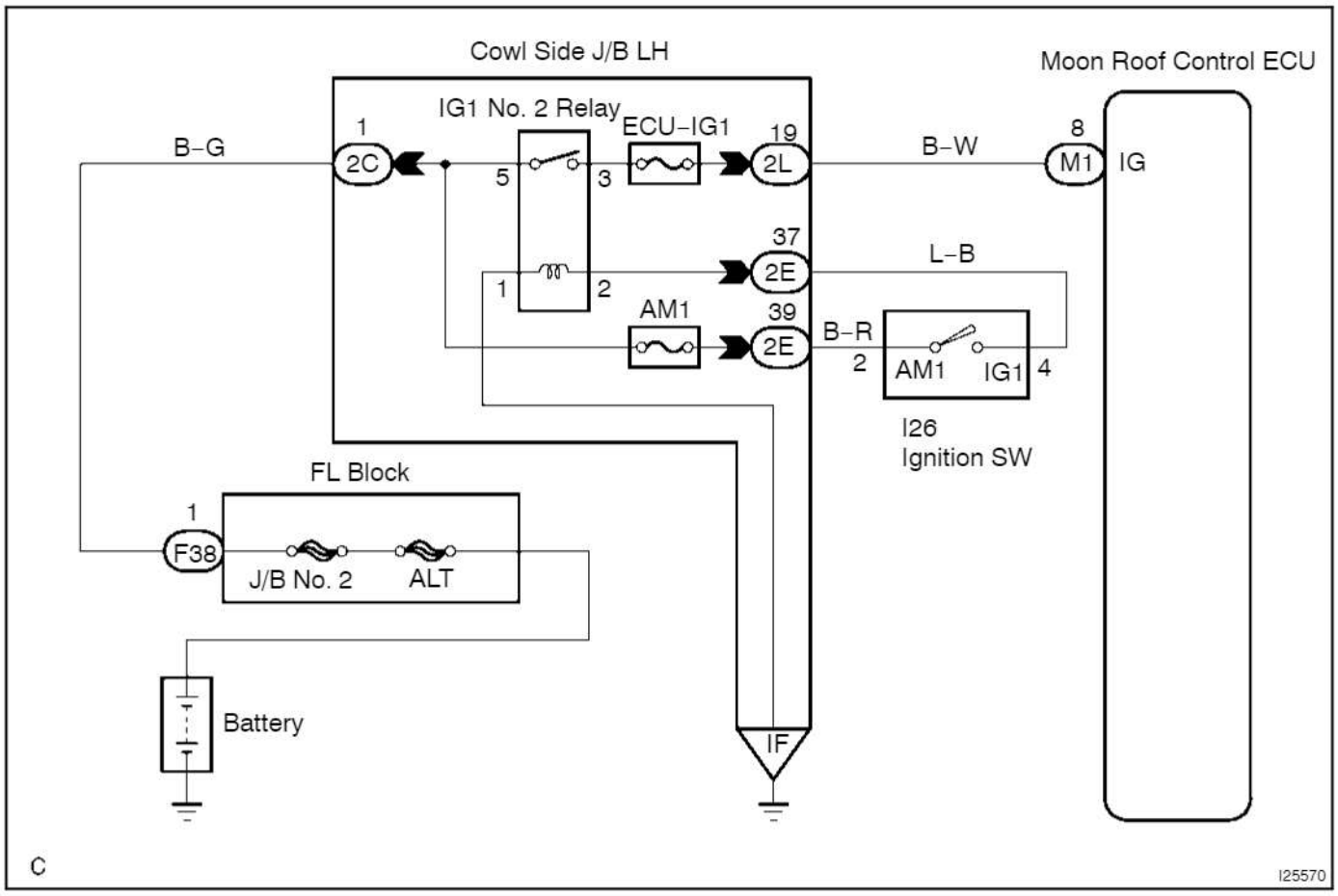
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Ignition Switch Circuit

CIRCUIT DESCRIPTION

This circuit sends an ignition switch ON or OFF signal to the ECU.

WIRING DIAGRAM



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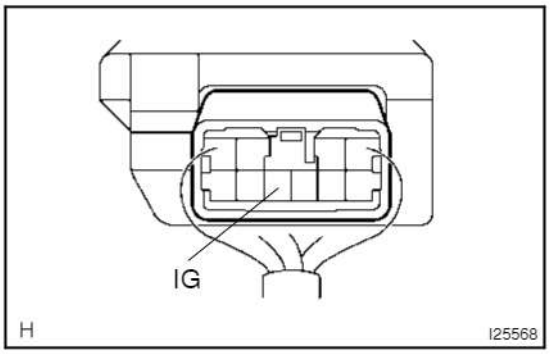
INSPECTION PROCEDURE

1	**Check ECU–IG1 and AM1 fuse.**

NG → **Check for short in all the harness and components connected to ECU–IG1 and AM1 fuse, and repair them.**

OK

2	**Check voltage between terminal IG of sliding roof gear assembly with ECU connector and body ground.**



PREPARATION:
Remove Power Seat Control ECU with connectors still connected.

CHECK:
Measure voltage between terminal IG of Power Seat Control ECU connector and body ground when ignition switch is ON and OFF.

OK:

Ignition switch	Voltage
ON	10 ~ 14 V
OFF	0 V

OK → **Proceed to next circuit inspection shown in problem symptom table (See page DI–967).**

NG

Repair or replace harness or connector between sliding roof gear assembly with ECU and battery.

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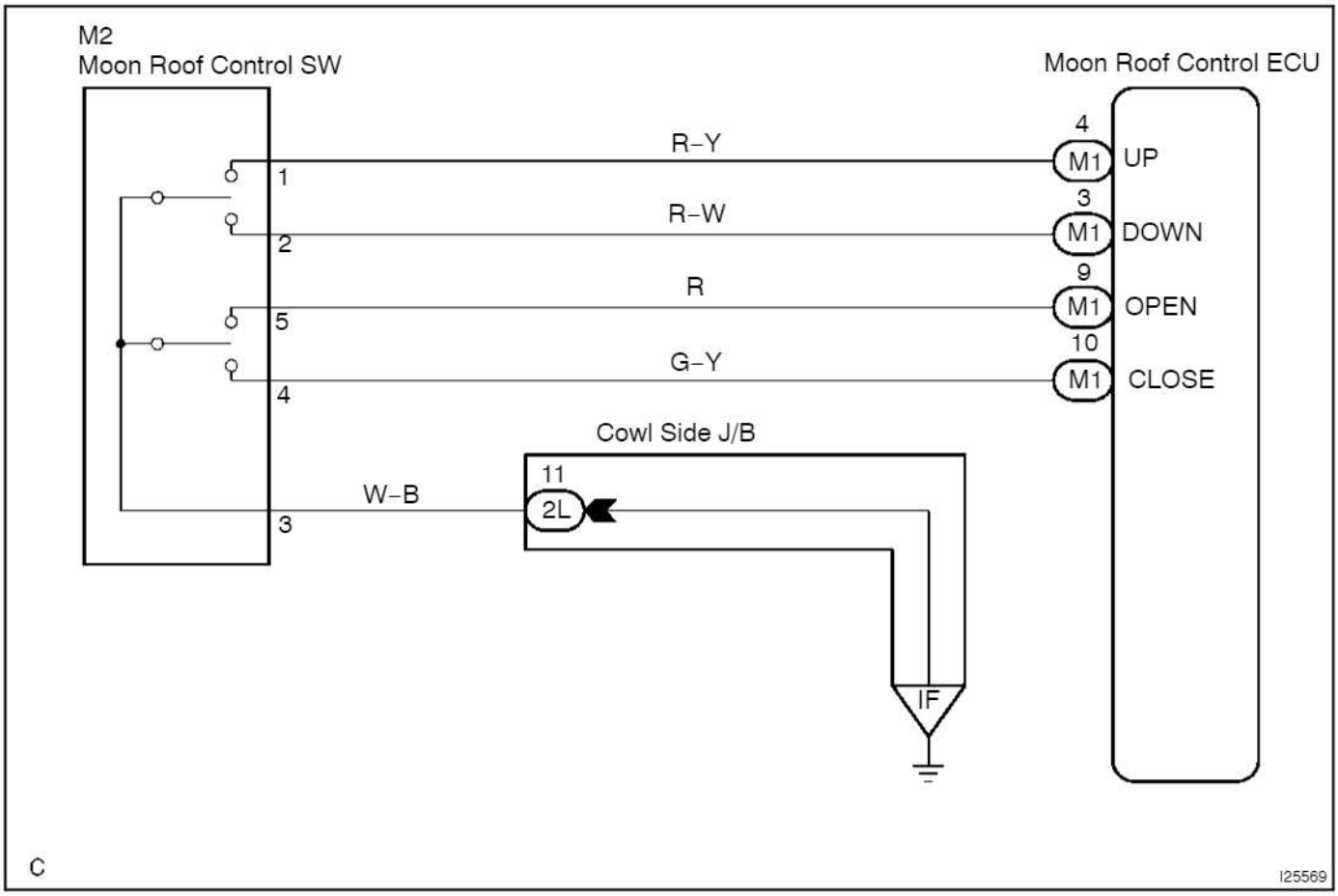
DIAYT-01

Sliding Roof Control Switch Circuit

CIRCUIT DISCRIPTION

This circuit sends the sliding roof control switch operation signal to the ECU.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

If there is not the hand–held tester, begin with STEP 2.

1	**Check sliding roof control switch operation.**

PREPARATION:

Connect the hand–held tester to the DLC3.

CHECK:

(a) Enter DATA LIST function of hand–held tester.

(b) Check that switch status (ON/OFF) changes on the screen of hand–held tester as the sliding roof control switch of the vehicle is turned.

OK:

The switch status normally.

OK → **Replace sliding roof gear assembly with ECU (See page IN–38).**

NG

2	**Check sliding roof control switch.**

NG → **Replace sliding roof switch.**

OK

3	**Check wire harness and connectors between sliding roof gear assembly with ECU and overhead J/B assembly (See page IN–38).**

NG → **Repair and replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptom table (See page DI–967).

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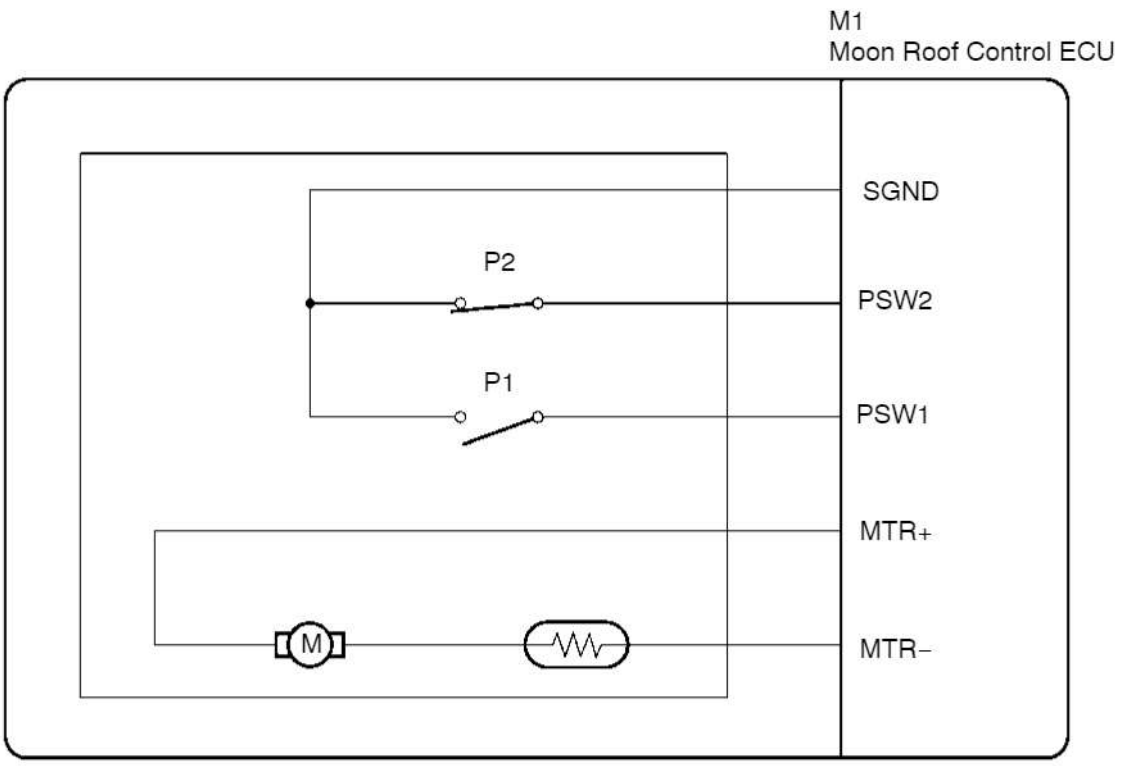
DIAYU-01

Sliding Roof Pulse Plate Circuit

CIRCUIT DESCRIPTION

This circuit is inner circuit of sliding roof gear assembly with ECU.

WIRING DIAGRAM



C

I25571

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INSPECTION PROCEDURE

HINT:

If there is not the hand–held tester, begin with STEP 3.

1	**Check sliding roof pulse plate operation.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.
(b) Turn ignition switch ON and hand–held tester main switch ON.
(c) Select the DATA LIST mode on the hand–held tester.

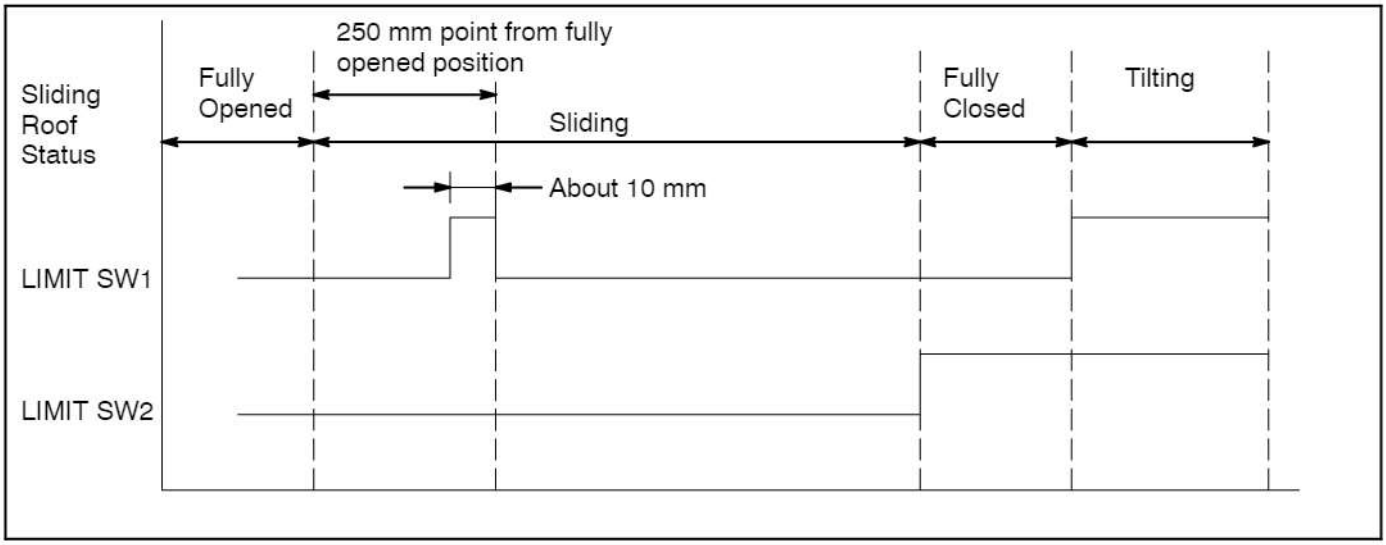
CHECK:

(a) Operate the slide roof as the hand–held tester directs.
(b) At this time, check that status (ON/OFF) of LIMIT SW1 and LIMIT SW2 changes on the hand–held tester screen as shown in the chart below.

NOTICE:

Caution is necessary for a part of body not to be caught in as the jam protection system does not operate during conducting ACTIVE TEST.

OK:



NG → **Replace sliding roof gear assembly with ECU.**

OK

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2	Check sliding roof motor status.

PREPARATION:

Connect the hand–held tester to the DLC3.

CHECK:

(a) Enter into ACTIVE TEST mode of hand–held tester.

(b) Check that "Sliding Roof" operates as the hand–held tester directs.

(c) At this time, check that motor status changes on the screen of hand–held tester as the sliding roof switch of the vehicle is turned.

OK:

The motor status normally.

NG → **Replace sliding roof gear assembly with ECU.**

OK →

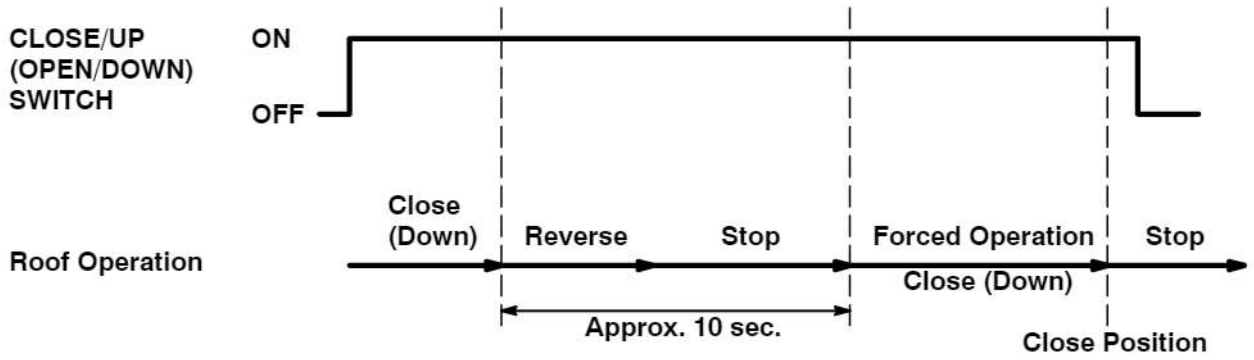
Go to step 4.

3	Perform forced operation.

Holding the CLOSE/UP (OPEN/DOWN) switch pressed inhibits the jam protection function at approx. 10 sec. after starting the reverse operation. If the switch remains pressed any longer, the sliding door starts close operation and it stops when detecting the fully closed position.

HINT:

At approx. 10 sec. after starting the reverse operation, it is switched to the forced close (down) operation.



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4	Check sliding roof glass alignment. (Mechanical malfunction).

NG → Adjust sliding roof.

OK

Replace sliding roof gear assembly with ECU (See page IN–38).

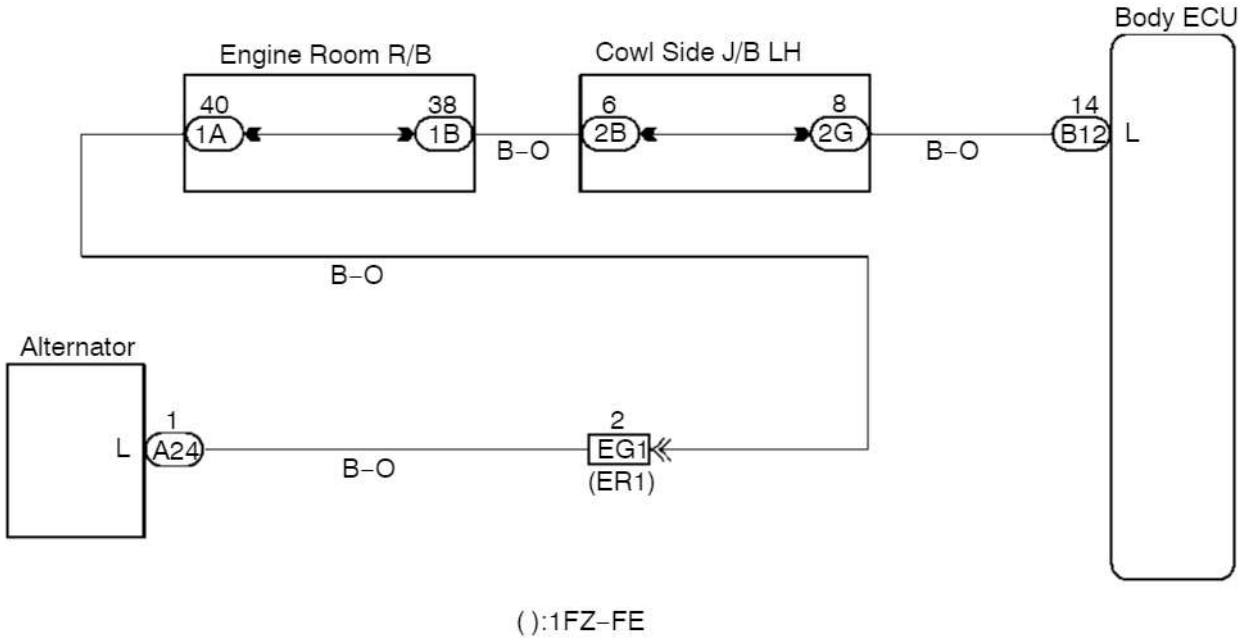
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DIAYK–01

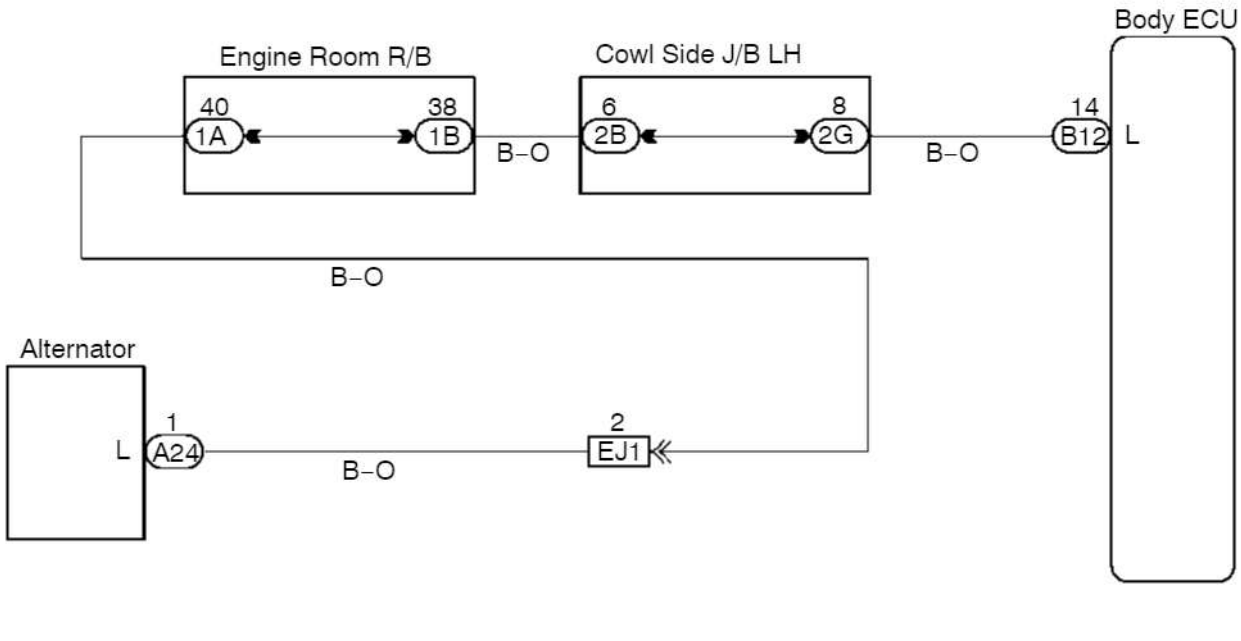
Alternator signal circuit

WIRING DIAGRAM

LHD Models (Gasoline):



LHD Models (Diesel):



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INSPECTION PROCEDURE

HINT:
In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check alternator signal using hand–held tester.**

PREPARATION:
Connect the hand–held tester to DLC 3.
CHECK:
Check that the alternator signal operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check alternator.**

NG → **Replace the alternator.**

OK

3	**Check wire harness and connector between alternator and Body ECU (See page IN–38).**

OK → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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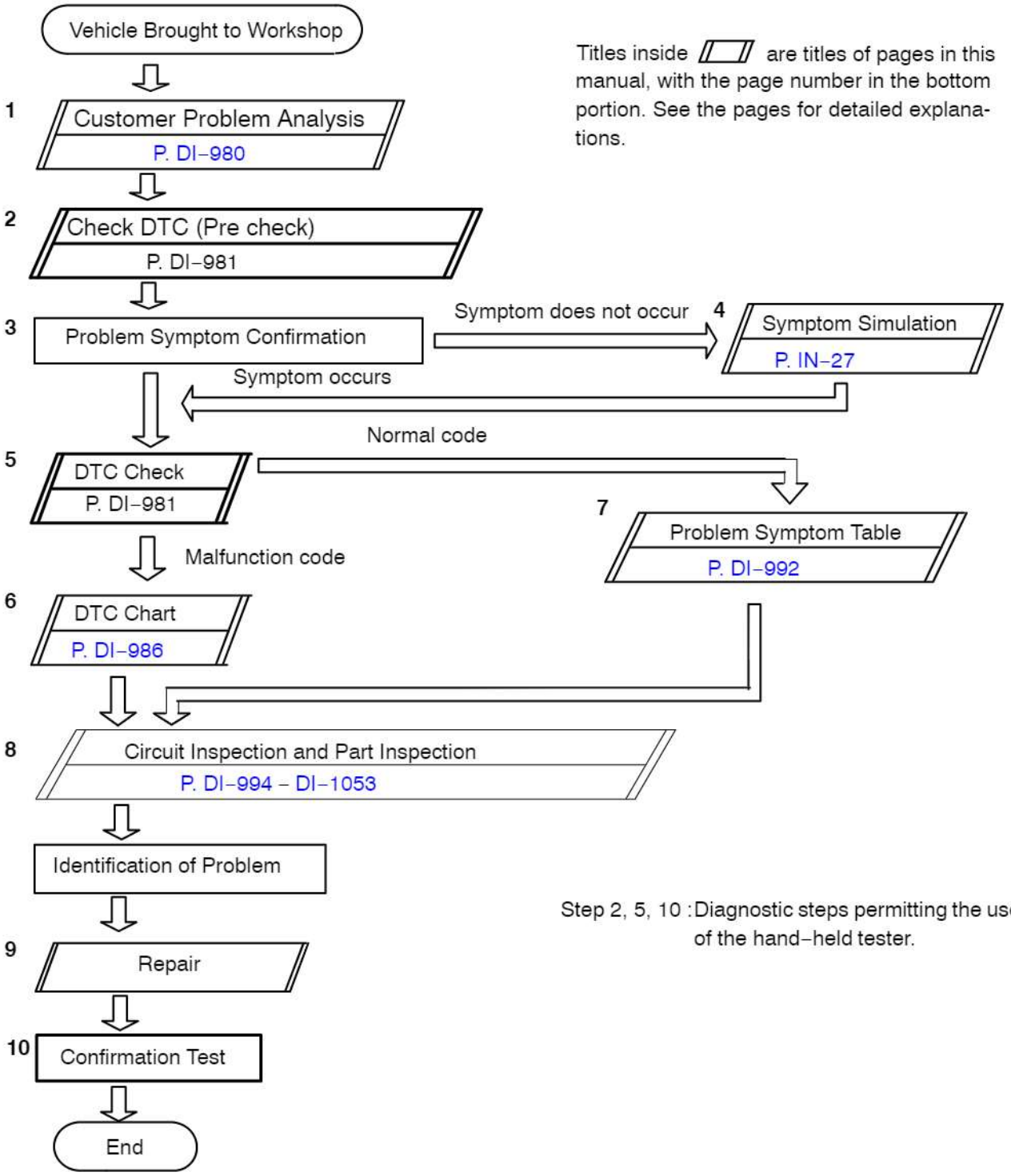
BODY CONTROL SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DIAXV–01

HINT:

This ECU is connected to the multiplex communication system. Therefore, be sure to check that there is no troubles in the multiplex communication system before performing the troubleshooting.



Titles inside ▱ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.

Step 2, 5, 10 : Diagnostic steps permitting the use of the hand–held tester.

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CUSTOMER PROBLEM ANALYSIS CHECK

DIAXW–01

BODY CONTROL SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		□ Constantly □ Sometimes (times per day, month) □ Once only
Weather Conditions When Problem Occurred	**Weather**	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/ Others
	Outdoor Temperature	□ Hot □ Warm □ Cool □ Cold (Approx. °F (°C))

DTC Check	**1st Time**	□ Normal Code □ Malfunction Code (Code)
	2nd Time	□ Normal Code □ Malfunction Code (Code)

Malfunction System	□ Key Reminder System
	□ Light Control System
	□ Illuminated Entry System
	□ Seat Belt Warning
	□ Wireless Door Lock Control System
	□ Others

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DIAXX–01

PRE–CHECK

1. USING HAND–HELD TESTER

(a) Hook up the hand–held tester to the DLC3.

(b) Monitor the ECU data by following the prompts on the tester screen.

HINT:

Hand–held tester has a "Snapshot" function which records the monitored data.

Please refer to the hand–held tester operator's manual for further details.

2. DTC CLEAR

(a) The DTCs and freezed frame data will be erased by either action.
Operate the hand–held tester to erase the codes.

3. DATA LIST

HINT:

According to the DATA LIST displayed by the hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, read the "DATA LIST".

Power source & ignition switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
ACC SW	ACC SW signal	ON: IG key is in ACC, ON or START position OFF: IG key is in OFF position	–
IG SW	IG SW signal	ON: IG key is in ON or START position OFF: IG key is in OFF or ACC position	–

Key unlock warning switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
KEY UNLOCK WRN SW	Key unlock warning SW signal	ON: Key is IG key cylinder OFF: Key is not in IG key cylinder	–

Door courtesy switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
LUGG COURTSY SW	Luggage compartment door's courtesy SW signal	ON: Luggage door is open OFF: Luggage door is close	–
D DOR CTY SW	Driver's door courtesy SW signal	ON: Driver's door is open OFF: Driver's door is close	–
P DOR CYT SW	Passenger's door courtesy SW signal	ON: Passenger's door is open OFF: Passenger's door is close	–
Rr DOR CTY SW	Rear door courtesy SW signal	ON: Either right or left rear door is open OFF: Both the right and left doors and closed.	–

Headlight dimmer switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
DIMMER SW	Dimmer SW signal	ON: Dimmer SW is on (High Beam) or High flasher SW is on OFF: Dimmer SW is OFF (Low Beam) and High flasher SW is off	–
HIGH FLASHER SW	High flasher SW signal	ON: High flasher SW is on OFF: High flasher SW is off	–

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Light control switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
AUTO LIGHT SW	Auto light SW signal	ON: Light control SW is in Auto position OFF: Light control SW is in except Auto position	–
HEAD LIGHT SW	Head light SW signal	ON: Light control SW is in HEAD position OFF: Light control SW is in except HEAD position	–
TAIL LIGHT SW	Taillight SW signal/ON	ON: Light control SW is in TAIL or HEAD position OFF: Light control SW is in OFF or AUTO position	–
LIGHTING TIME	Taillight SW signal/ON	7.5 s/15 s/30 s	–
TAIL CANCEL SW	Tail cancel switch	ON: Tail cancel switch is ON position OFF: Tail cancel switch is OFF position	–

Door key lock and unlock switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
DOR KEY SW–LOCK	Door key switch lock side	ON: Door key switch is lock position OFF: Door key switch is unlock position	–
D DOR KEY SW–UL	Driver door key switch unlock side	ON: Driver door key switch is unlock position OFF: Driver door key switch is lock position	–

Door key lock and unlock switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
P LOCK POS SW	Passenger lock position switch	ON: Passenger lock position switch is lock position OFF: Passenger lock position switch is unlock position	–
D/L SW–LOCK	Door lock switch lock side	ON: Door lock switch is lock position OFF: Door lock switch is unlock position	–
D/L SW–UNLOCK	Door lock switch unlock side	ON: Door lock switch is unlock position OFF: Door lock switch is lock position	–

Parking brake switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
PARKING BRAKE SW	Parking brake switch	ON: Parking brake switch is ON position OFF: Parking brake switch is OFF position	–

Driver seat buckle switch :

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
D SEAT BUCKL SW	Driver seat buckle switch	ON: Driver seat buckle switch is ON position OFF: Driver seat buckle switch is OFF position	–

Seat memory switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
SEAT M1 SW	Sear memory switch 1	ON: Seat memory switch 1 is ON position OFF: Seat memory switch 1 is OFF position	–
SEAT M2 SW	Sear memory switch 2	ON: Seat memory switch 2 is ON position OFF: Seat memory switch 2 is OFF position	–
SEAT SET SW	Sear set switch	ON: Seat set switch is ON position OFF: Seat set switch is OFF position	–

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Wireless door lock control:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
WIRELESS OPER	Wireless door lock control function	ON: Wireless door lock control function OFF: Wireless door lock control does not function	–
HAZARD ANS BACK	Hazard anser back of the wireless	ON: Hazard anser back of the wireless is ON position OFF: Hazard anser back of the wireless is OFF position	–

Wireless door lock buzzer:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
WIRELESS BUZZ VOL	Wireless door lock buzzer volume	OFF/MIN/MID3/MID2/MID1/MAX	–
DOWN/WIRELESS	P/W DOWN W/ transmitter	ON: P/W DOWN W/ transmitter ON position OFF: P/W DOWN W/ transmitter OFF position	–
AUTO LOCK DELAY	Auto lock time	30 s / 60 sec	–
UNLOCK/2 OPER	2 times operation wireless unlock	ON: 2 times operation wireless unlock is ON position OFF: 2 times operation wireless unlock is OFF position	–
ALARM FUNCTION	Panic function	ON: Panic function is ON position OFF: Panic function is OFF position	–
AUTO LOCK	Auto lock	ON: Auto lock is ON position OFF: Auto lock is OFF position	–
UNLK/KEY TWICE	Unlock w/ 2 times D key operation	ON: Unlock w/ 2 times D key operation is ON position OFF: Unlock w/ 2 times D key operation is OFF position	–
ALL UNLK/OPN–CL	All Unlock w/ D door open–close	ON: All Unlock w/ D door open–close is ON position OFF: All Unlock w/ D door open–close is OFF position	–
UNLOCK/PARK	Unlock w/ IG ON, shift P, speed 0	ON: Unlock w/ IG ON, shift P, speed is ON position OFF: Unlock w/ IG ON, shift P, speed is OFF position	–
AUTO LOCK/SHIFT	Auto Lock/shift not P	ON: Auto Lock/shift not P is ON position OFF: Auto Lock/shift not P is OFF position	–

Light control sensor:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
LIGHTING TIME	Lighting time	7.5 s/15 s/30 s	–

Open door warning light:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
OPEN DOOR WARN	Open door warning	ON: Open door warning is ON OFF: Open door warning is OFF	–

Illumination:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
ILLUMI SYSTEM	Operation of illumination	ON: Illumination is ON position OFF: Illumination is OFF position	–
ILLUMINATION RATE	Illumination rate infomation	–	–
I/L ON/ACC OFF	Light the I/L when ACC OFF	ON: Light the I/L when ACC OFF is ON position OFF: Light the I/L when ACC OFF is OFF position	–
I/L ON/UNLOCK	Interior light ON w/unlock	ON: Interior light ON w/unlock is ON position OFF: Interior light ON w/unlock is OFF position	–
RESPONSE TIME	Response time	0.1 s/1.0 s	–

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Park / Neutral position switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
P/N POS SW	P/N position switch	ON: Sift is P position OFF: Sift is except P position	–

Alternator signal:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
ALT L SIG	Alternator L terminal	ON: Input voltage is 2.0 or 6.0 V OFF: No voltage	–

Others:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
SENSITIVITY	Turn on iuminous intensity	DARK2/DARK1/NORMAL/LIGHT1/LIGHT2	–
LIGHT OFF DELAY	Light auto OFF delay	OFF/30 s/60 s/90 s	–
DISP EX ON SEN	Display extinction luminous intensity	DARK2/DARK1/NORMAL/LIGHT1/LIGHT2	–
DISP EX OFF SEN	Display extinction release luminous intensity	DARK2/DARK1/NORMAL/LIGHT1/LIGHT2	–

4. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the hand–held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, perform the "ACTIVE TEST".

Item	Test Details	Diagnostic Note
HAZARD	Turns Hazard light flasher relay ON/OFF	–
BUZZ CONT SOUND	Wireless buzzer ON/OFF	–
BUZZ RESP SOUND	Wireless buzzer ON/OFF	–
HEAD LIGHT	Turns Head light relay ON/OFF	–
HEAD LIGHT (HI)	Turns Head light relay ON/OFF	–
TAIL LIGHT	Turns Tail light relay ON/OFF	–
DRL RLY	(Test Details) Turns DRL relay ON/OFF (Vehicle Condition) IG SW is ON, Engine is stopped and Light control SW is in OFF position.	–
DIMMER SIG	Turns Head light dimmer relay ON/OFF	–
ILLUMI OUTPUT	(Test Details) Turns Interior light and Key illumination ON/OFF (Vehicle Condition) Interior light SW is in Door position	–
OPN DOR WRN LGT	Open door warning light ON/OFF	–
P P/W UP/DOWN	Passenger power window UP/DOWN	–
RL P/W UP/DOWN	RL power window UP/DOWN	–
RR P/W UP/DOWN	RR power window UP/DOWN	–
R ROOM LIGHT	Rear room light ON/OFF	–

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DOOM RLY CUT	Doom light ON/OFF	–
DOOR LOCK	Drive the Door lock motor at all doors LOCK/UN-LOCK	–

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DIAXY–01

DIAGNOSTIC TROUBLE CODE CHART

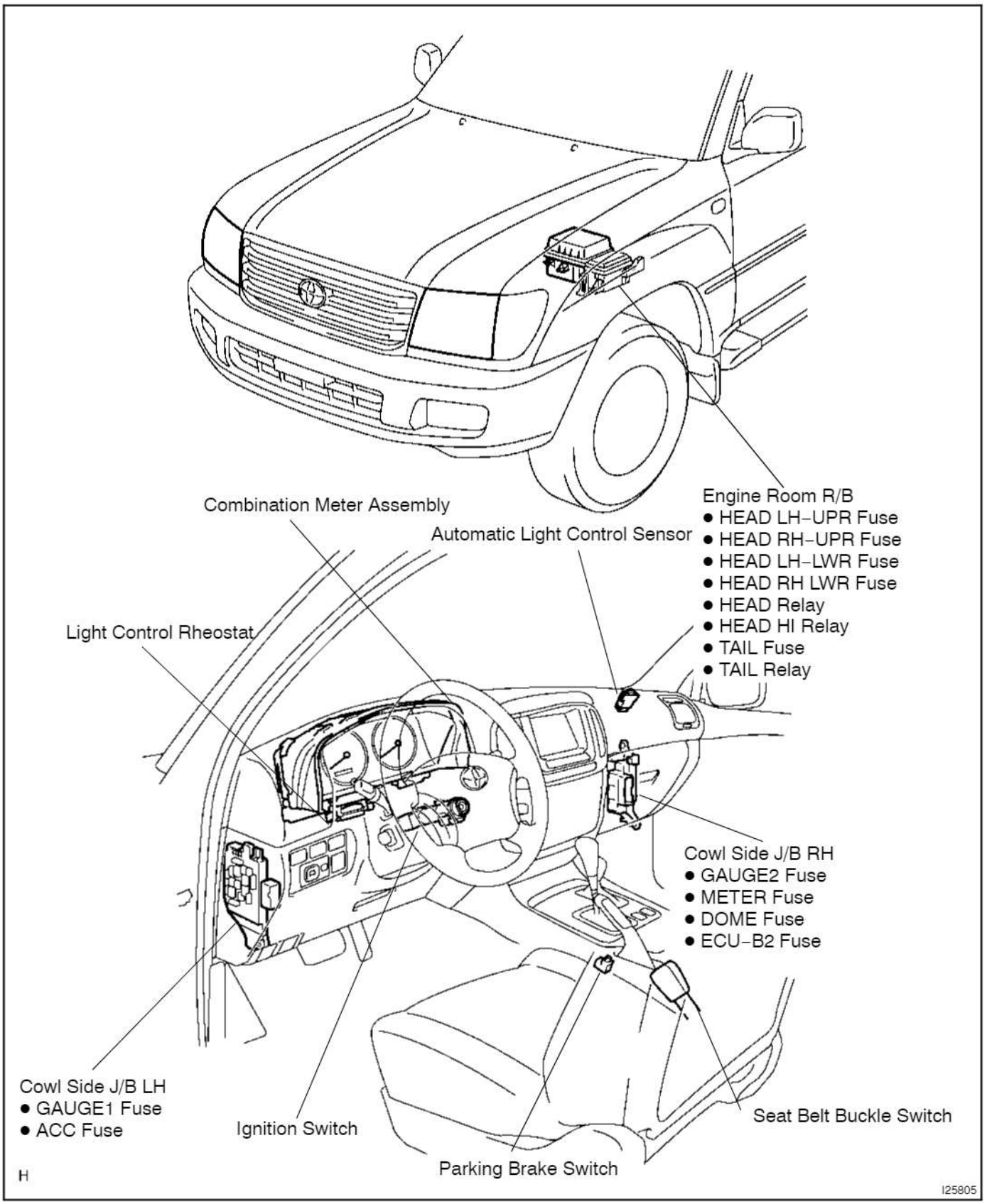
If a malfunction code is displayed during DTC check, find the circuit corresponding to the code in the table below and proceed to the appropriate page.

DTC No. (See Page)	Circuit Inspection	Trouble Area
B1244 (DI–994)	Malfunction of light sensor.	• Light sensor • Wire harness • Body ECU

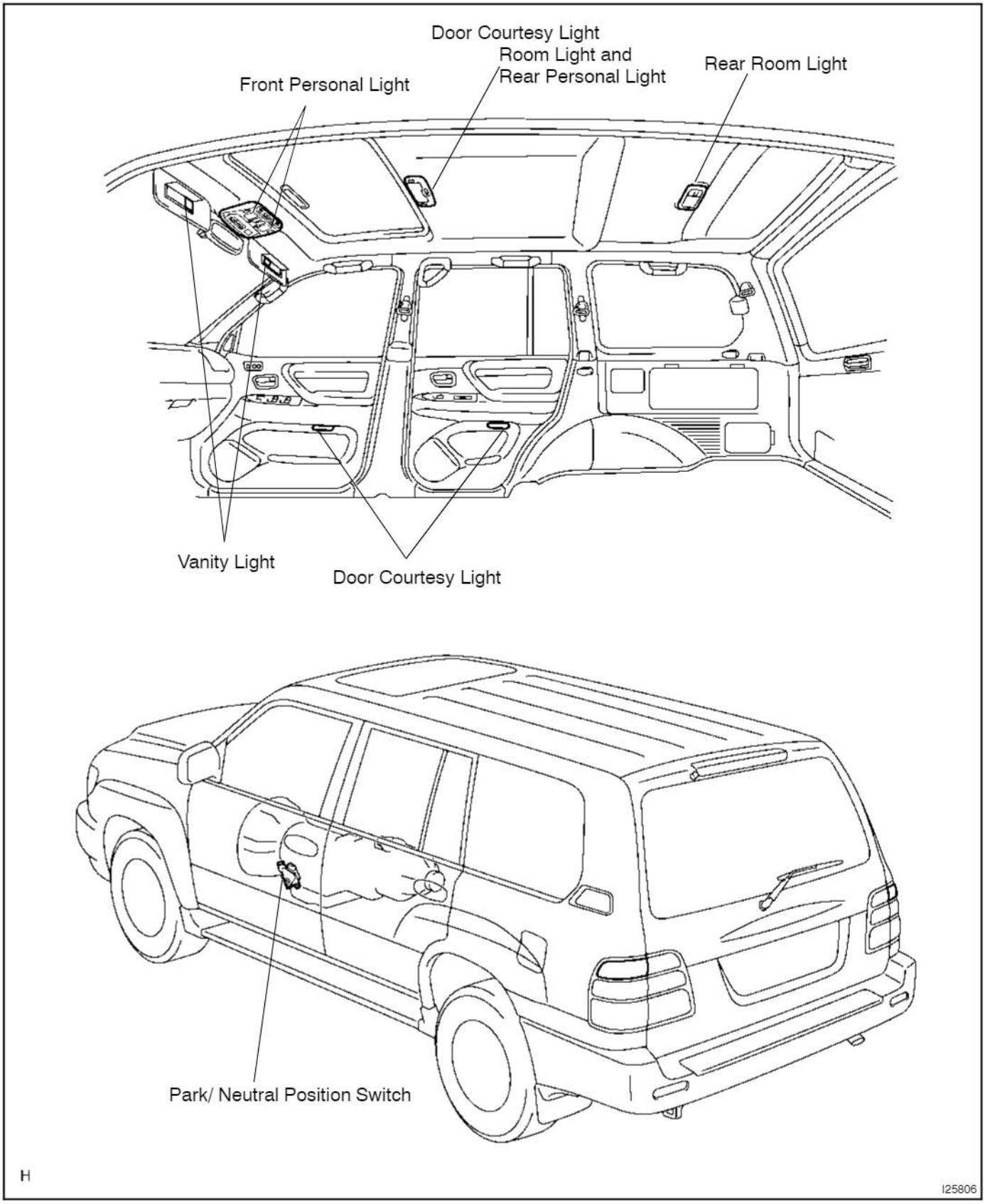
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DIAXZ-01

PARTS LOCATION



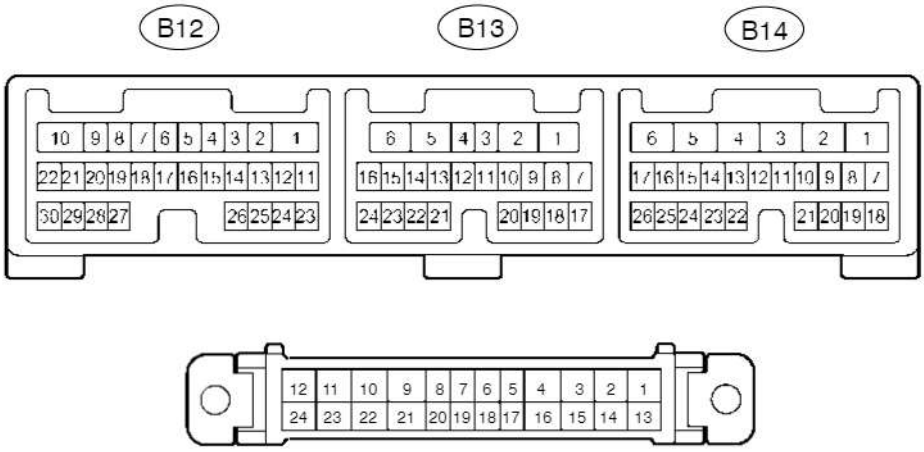
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DIAY0–01

TERMINALS OF ECU



I25776

Symbols (Terminals No.)	Wiring Color	Condition	Spesifeid Condition
GND1 ↔ Body ground (4 ↔ Body ground)	– ↔ Body ground	Constant	Below 1 V
LSR ↔ GND1, 2 (5 ↔ 4, 16)	–	RR / RL / Back door lock switch is unlock position	Below 1 V
SIG ↔ GND1, 2 (10 ↔ 4, 16)	–	Ignition switch is ON	10 – 14 V
BECU ↔ GND1, 2 (11 ↔ 4, 16)	–	Constant	10 – 14 V
BDR1 ↔ GND1, 2 (12 ↔ 4, 16)	–	Constant	10 – 14 V
ILE ↔ GND1, 2 (13 ↔ 4, 16)	–	Key cylinder illumination is ON	Below 1 V
SPD ↔ GND1, 2 (14 ↔ 4, 16)	–		Below 1 V
UL1 ↔ GND1, 2 (15 ↔ 4, 16)	–	Driver door lock control switch is UNLOCK position	Below 1 V
GND2 ↔ Body ground (16 ↔ Body ground)	–	Constant	Below 1 V
HRLY ↔ GND1, 2 (17 ↔ 4, 16)	–	Ignition switch is ON	10 – 14 V
TRLY ↔ GND1, 2 (18 ↔ 4, 16)	–	Ignition switch is ON	10 – 14 V
L1 ↔ GND1, 2 (19 ↔ 4, 16)	–	Driver door lock control switch is LOCK position	Below 1 V
L2 ↔ GND1, 2 (20 ↔ 4, 16)	–	Driver door key lock and unlock switch is LOCK position	Below 1 V
PSW ↔ GND1, 2 (21 ↔ 4, 16)	–	Constant	10 – 14 V
ACC ↔ GND1,2 (22 ↔ 4, 16)	–	Ignition switch is ACC	10 – 14 V
ACT+ ↔ ACT– (23 ↔ 24)	–	Door lock motor is operated	10 – 14 V

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LMRY ↔ GND1, 2 (B12–3 ↔ 4, 16)	R–W ↔ –	Ignition switch is ON	10 – 14 V
DRL ↔ GND1, 2 (B12–7 ↔ 4, 16)	R–Y ↔ –	Ignition switch is ON	10 – 14 V
ACTD ↔ GND1, 2 (B12–10 ↔ 4, 16)	L–B ↔ –	Driver door lock motor is operated	10 – 14 V
MPX4 (B12–11)	W ↔ –	Multiplex communication circuit	–
DBKL ↔ GND1, 2 (B12–13 ↔ 4, 16)	G ↔ –	Driver seat buckle switch is ON (Seat belt is fastend)	Below 1 V
L ↔ GND1, 2 (B12–14 ↔ 4, 16)	B–O ↔ –	Engine is running	6.0 – 14 V
		Engine is stoped	Below 2 V
UL2 ↔ GND1, 2 (B12–22 ↔ 4, 16)	G–B ↔ –	Door key lock and unlock switch is LOCK position	Below 1 V
MPX1 (B12–24)	B ↔ –	Multiplex communication circuit	–
PCYL ↔ GND1, 2 (B12–25 ↔ 4, 16)	G–B (LHD), G–W (RHD) ↔ –	Ignition switch is ON	10 – 14 V
DCYL ↔ GND1, 2 (B12–26 ↔ 4, 16)	G–W (LHD) G–B (RHD) ↔ –	Ignition switch is ON	10 – 14 V
LSWP ↔ GND1, 2 (B12–30 ↔ 4, 16)	L–O (LHD), L–B (RHD) ↔ –	Passenger door lock switch is UNLOCK position	Below 1 V
PKB ↔ GND1, 2 (B13–2 ↔ 4, 16)	R–W ↔ –	Parking brake switch is ON	Below 1 V
PRG ↔ GND1, 2 (B13–3 ↔ 4, 16)	V ↔ –	Communication circuit (Wireless door lock receiver)	–
RDA ↔ GND1, 2 (B13–4 ↔ 4, 16)	L ↔ –	Communication circuit (Wireless door lock receiver)	–
LP ↔ GND1, 2 (B13–6 ↔ 4, 16)	G–Y ↔ –	Rear room light position is DOOR	10 – 14 V
BCTY ↔ GND1, 2 (B13–7 ↔ 4, 16)	R–L ↔ –	Back door courtesy switch is ON (Door is opened)	Below 1 V
RLCY ↔ GND1, 2 (B13–11 ↔ 4, 16)	R–L ↔ –	RL door courtesy switch is ON (Door is opened)	Below 1 V
RRCY ↔ GND1, 2 (B13–12 ↔ 4, 16)	R–G ↔ –	RR door courtesy switch is ON (Door is opened)	Below 1 V
MPX5 (B13–14)	W ↔ –	Multiplex communication circuit	–
MPX6 (B13–16)	W ↔ –	Multiplex communication circuit	–
P ↔ GND1, 2 (B13–17 ↔ 4, 16)	G–W ↔ –	Park / Neutral position switch is P position	10 – 14 V
LCYL ↔ GND1, 2 (B13–21 ↔ 4, 16)	G–Y ↔ –	Ignition switch is ON	10 – 14 V
RCYL ↔ GND1, 2 (B13–22 ↔ 4, 16)	G–R ↔ –	Ignition switch is ON	10 – 14 V
DCTY ↔ GND1, 2 (B13–23 ↔ 4, 16)	R–Y (LHD), R–B (RHD) ↔ –	Driver door courtesy switch is ON (Door is opened)	Below 1 V
PCTY ↔ GND1, 2 (B13–24 ↔ 4, 16)	R–B (LHD), R–Y (RHD) ↔ –	Passenger door courtesy switch is ON (Door is opened)	Below 1 V

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HEAD ↔ GND1, 2 (B14–1 ↔ 4, 16)	R–W ↔ –	Headlight control switch position is HEAD	Below 1 V
HU ↔ GND1, 2 (B14–2 ↔ 4, 16)	R–Y ↔ –	Headlight dimmer switch position is Hi–Beam	Below 1 V
A ↔ GND1, 2 (B14–3 ↔ 4, 16)	G–O ↔ –	Headlight control switch position is AUTO	Below 1 V
CLTS ↔ GND1, 2 (B14–4 ↔ 4, 16)	Y ↔ –	Automatic light communication circuit is ON	Below 1 V
CLTB ↔ GND1, 2 (B14–6 ↔ 4, 16)	R ↔ –	Ignition switch is ON	10 – 14 V
HF ↔ GND1, 2 (B14–7 ↔ 4, 16)	R–B ↔ –	Headlight dimmer switch position is Hi–Flasher	Below 1 V
TAIL ↔ GND1, 2 (B14–8 ↔ 4, 16)	G–B ↔ –	Headlight control switch position is TAIL	Below 1 V
DRLP ↔ GND1, 2 (B14–12 ↔ 4, 16)	G–Y ↔ –	Ignition switch is ON, Open door warning light is ON	Below 1.2 V
KSW ↔ GND1, 2 (B14–14 ↔ 4, 16)	R–B ↔ –	Key is inserted in key cylinder	Below 1 V
HR– ↔ GND1, 2 (B14–20 ↔ 4, 16)	R–W ↔ –	Ignition switch is ON	10 – 14 V
CLTE ↔ GND1, 2 (B14–21 ↔ 4, 16)	BR ↔ –	Constant	Below 1 V

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DIAY1–01

PROBLEM SYMPTOMS TABLE

LIGHTING SYSTEM:

Symptom	Suspect Area	See page
Headlight does not light up. (Low beam)	1. Light control switch circuit 2. Headlight relay circuit 3. Combination switch 4. Body ECU	DI–1019 DI–1030 BE–23 –
Headlight system does not operate. (HI beam or Flash)	1. Headlight dimmer switch circuit 2. Light control switch circuit 3. Combination switch 4. Body ECU	DI–1022 DI–1019 BE–23 –
Taillight system does not light up.	1. Taillight relay circuit 2. Light control switch circuit 3. Combination switch 4. Body ECU	DI–1035 DI–1019 BE–23 –

ILLUMINATION LIGHT SYSTEM:

Symptom	Suspect Area	See page
All switch illumination light does not light up.	1. Power source circuit 2. Light control rheostat 3. Body ECU	DI–996 BE–41 –
Each switch illumination light does not light up.	1. Illumination light circuit 2. Body ECU	DI–1042 –
Brightness does not change even when rheostat turned. (All)	1. Light control rheostat 2. Body ECU	BE–41 –
Door courtesy light does not light up.	1. Door courtesy switch circuit 2. Body ECU	DI–1008 –

DRIVER SEAT BELT SYSTEM:

Symptom	Suspect Area	See page
Driver seat belt warning does not light up.	1. Driver buckle switch circuit 2. Body ECU	DI–1027 –

WIRELESS DOOR LOCK CONTROL SYSTEM:

Symptom	Suspect Area	See page
Wireless door lock does not operate.	1. Wireless door lock control circuit 2. Body ECU	DI–1038 –

DOUBLE LOCKING SYSTEM

Symptom	Suspect Area	See page
Double locking system does not operate.	1. Double lock switch circuit 2. Double lock motor circuit 3. Double locking system 4. Body ECU	DI–1013 DI–1016 BE–1 DI–979

OTHERS:

Symptom	Suspect Area	See page
Key unlock warning system does not operate.	1. Key unlock warning switch circuit 2. Body ECU	DI–1006 –

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Parking brake indicator does not light up.	1. Parking brake switch circuit 2. Combination meter 3. Body ECU	DI–1025 BE–33 –
Open door warning light does not light up.	1. Open door warning light circuit 2. Door courtesy switch 3. Body ECU	DI–1040 DI–1008 –

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DIAY2-01

CIRCUIT INSPECTION

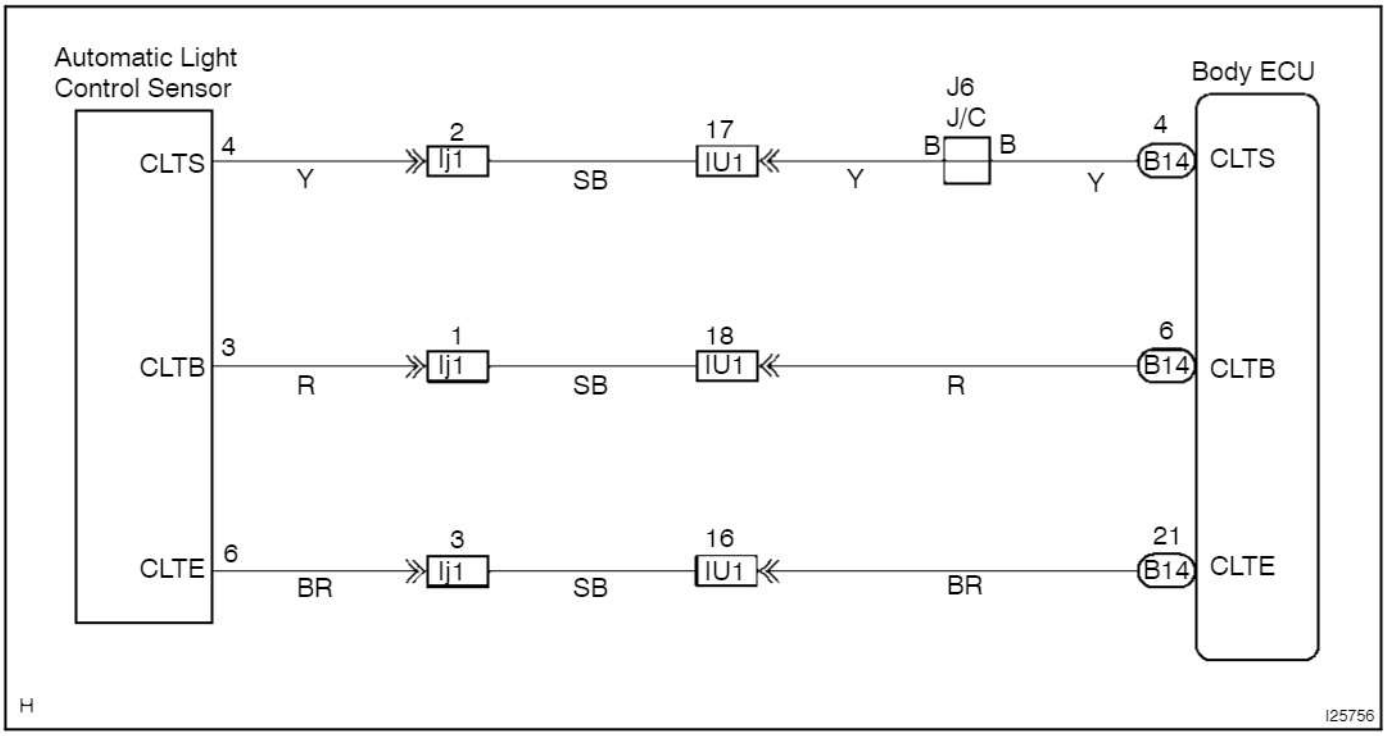
DTC	B1244	Light sensor circuit malfunction

CIRCUIT DESCRIPTION

These DTC notify how switch works as follows:
If DTC is not output when operating switch, it means failure of switch contact. If DTC is output when not operating switch, it means stick of switch. When something wrong is found by this diagnosis, inspect each switch. Then, replace the switch if there is a problem, or check the wire harness if there is no problem.

DTC No.	DTC Detecting Condition	Trouble Area
B1244	• Malfunction of light sensor • Open or short light sensor sircuit	• Light sensor • Body ECU • Wire harness

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check light control sensor using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the light control sensor can operate in DATA LIST (See page DI–981).

OK → **Replace Body ECU.**

NG

2	**Check light control sensor (See page BE–23).**

CHECK:

The value of the illumination rate should change in the following range when the light sensor is put in the light or covered by a hand.

OK:

0.8 ms – 22.0 ms

HINT:

This is the time to be taken for the light sensor to generate one circle of frequency according to the brightness.

NG → **Replace the light sensor.**

OK

3	**Check wire harness and connector between light sensor and Body ECU (See page IN–38).**

NG → **Repair or replace wire harness.**

OK

Replace Body ECU.

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DIAY3–01

Power source circuit (Body ECU)

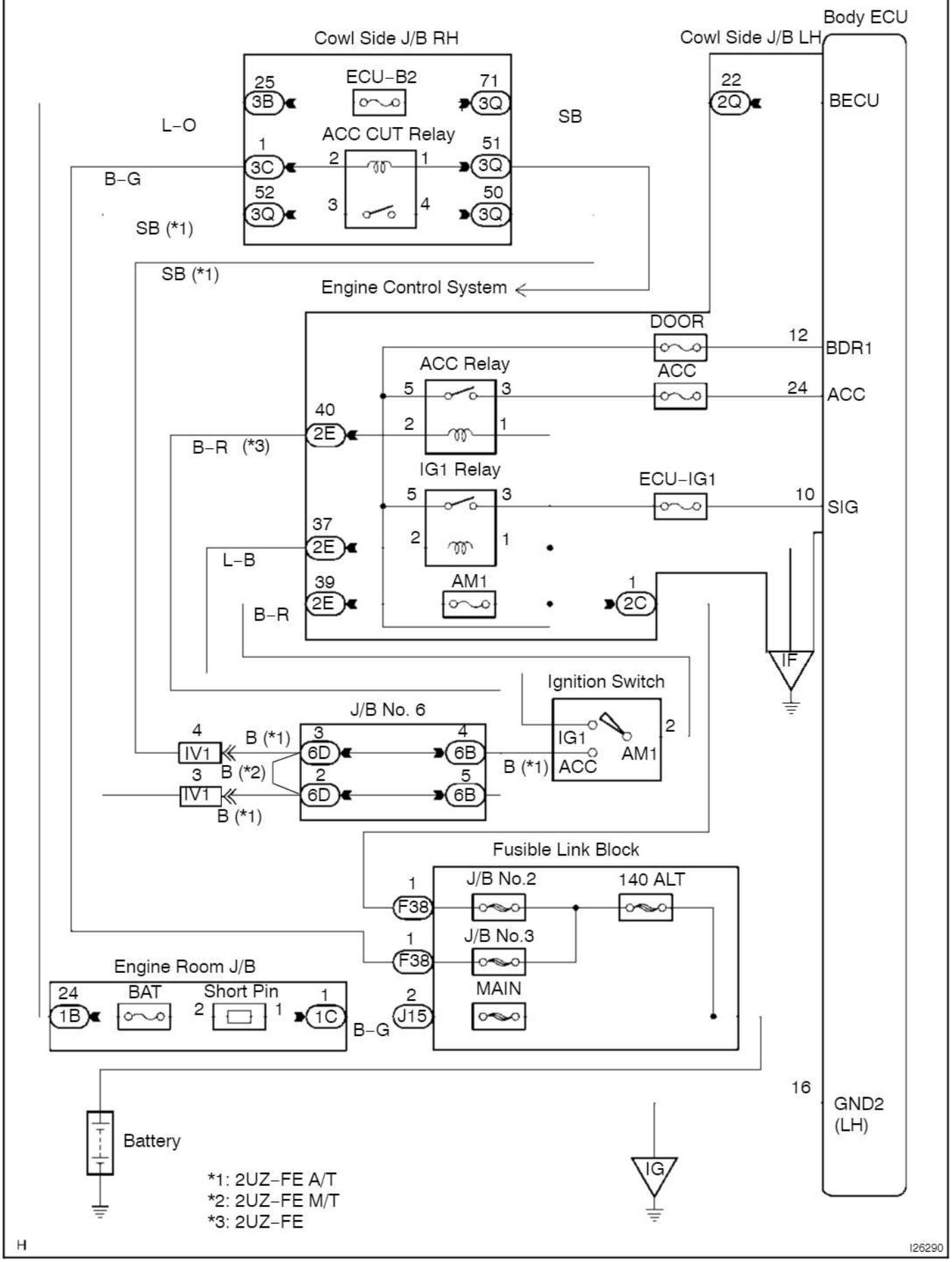
CIRCUIT DESCRIPTION

This circuit supplies power to operate the Body ECU.

WIRING DIAGRAM

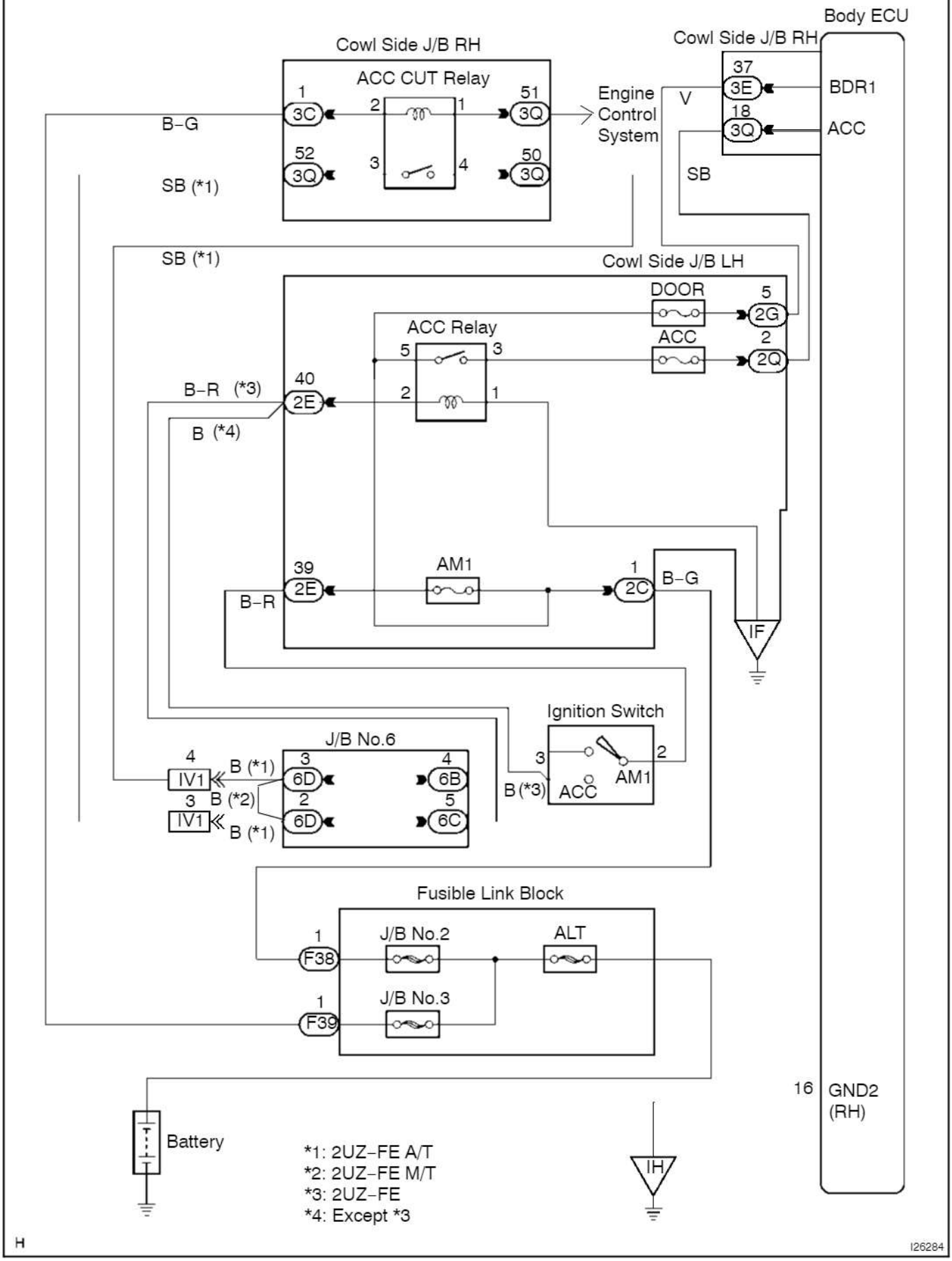
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LHD Models:



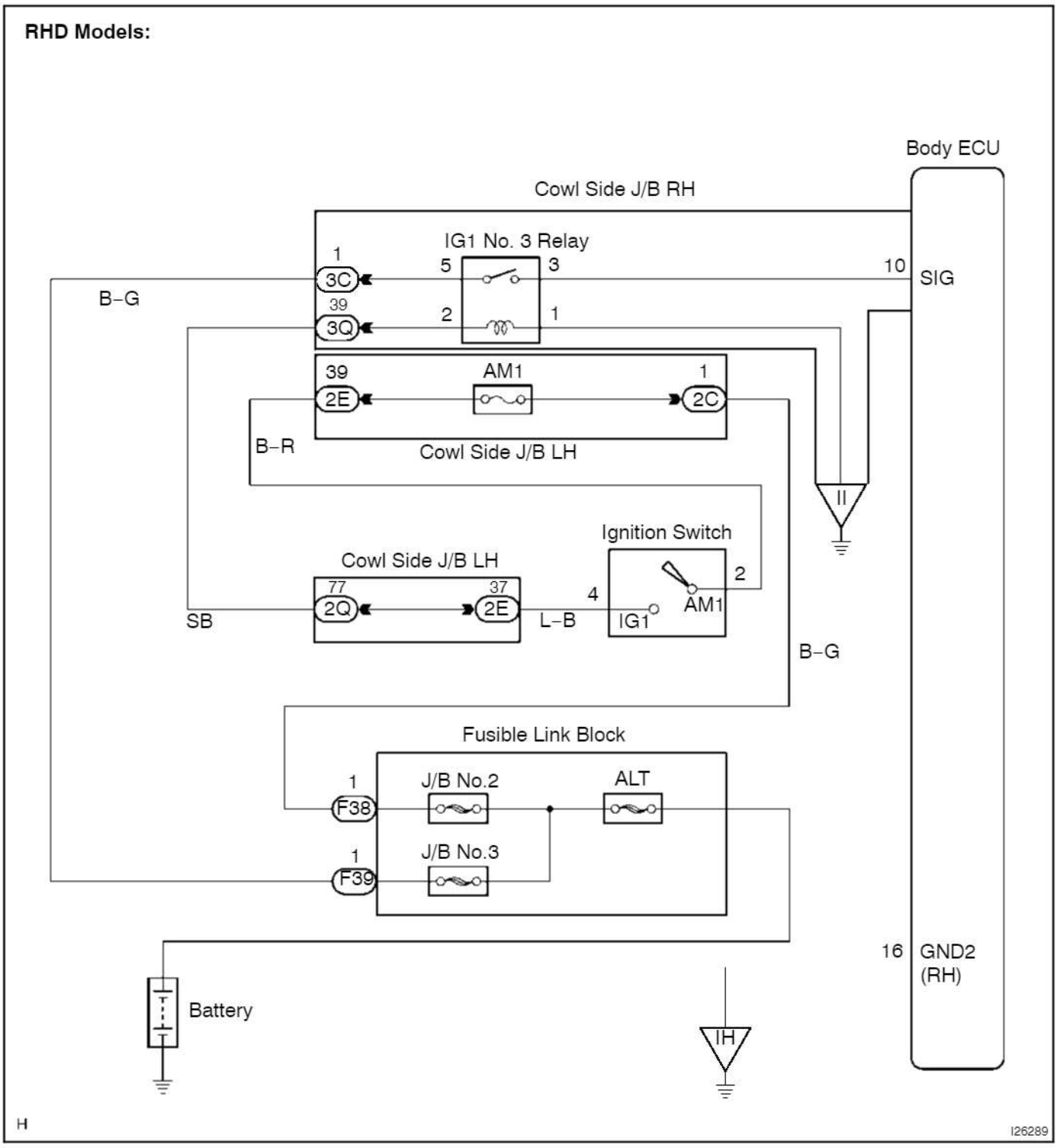
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RHD Models:



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RHD Models:



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INSPECTION PROCEDURE

1	**Check ECU–B2, DOOR fuse.**

CHECK:
Check continuity of ECU–B2, DOOR fuse.
OK:
Continuity

NG → **Replace faulty fuse.**

OK

2	**Check voltage between terminals BDR1, BECU and GND1, 2 of Body ECU connector.**

PREPARATION:
(a) Turn the ignition switch OFF.
(b) Disconnect the Body ECU connector.
CHECK:
Measure the voltage between terminals BDR1, BECU and GND1, 2.
OK:
Voltage: 10 – 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

3	**Check wire harness and connector between Body ECU and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAY4–01

Ignition switch power source circuit (Body ECU)

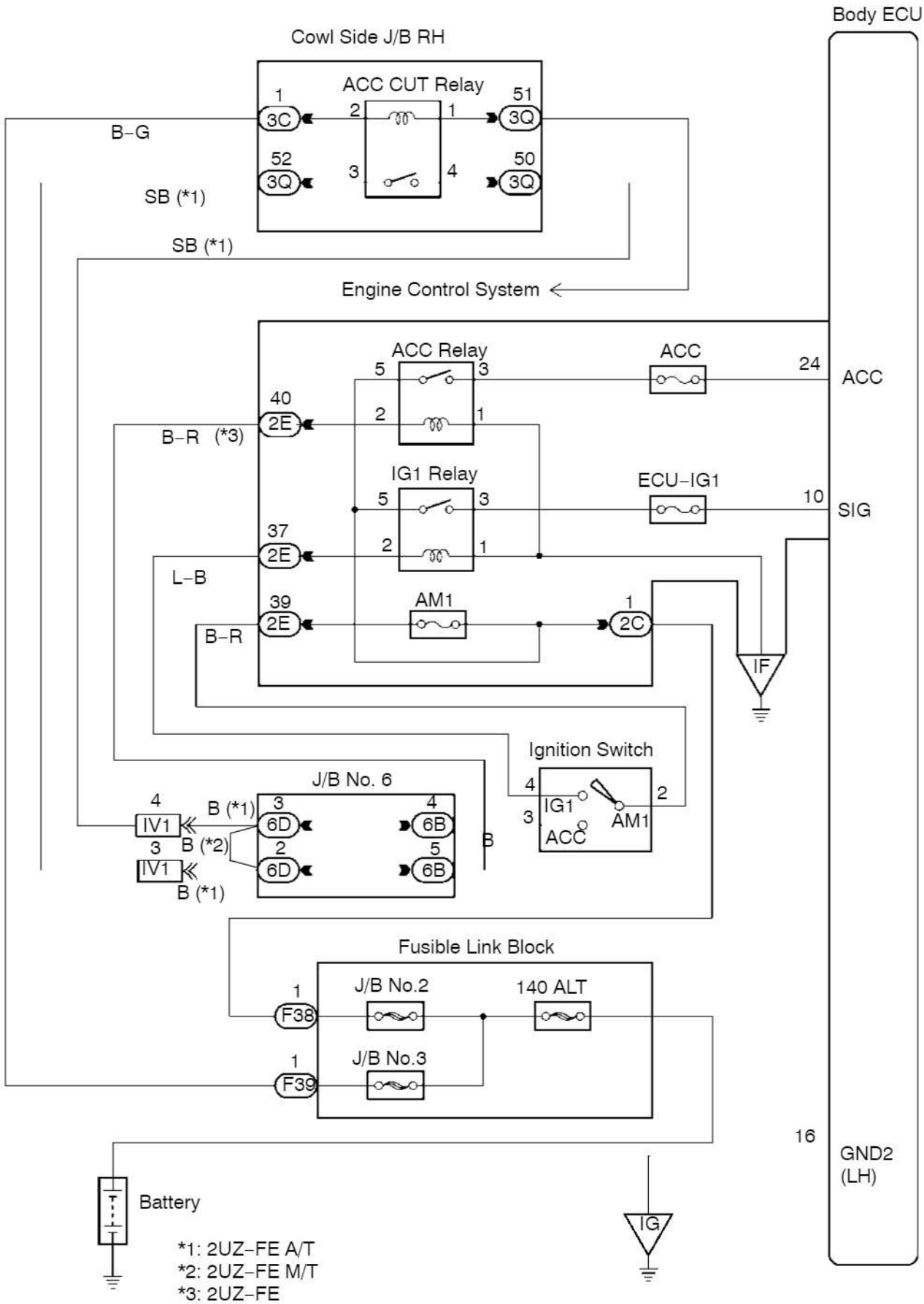
CIRCUIT DESCRIPTION

When the ignition switch is turned to the ACC position, battery voltage is applied to the terminal ACC of ECU and when the ignition switch is turned to the ON position, battery positive voltage is applied to the terminal SIG of the ECU.

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WIRING DIAGRAM

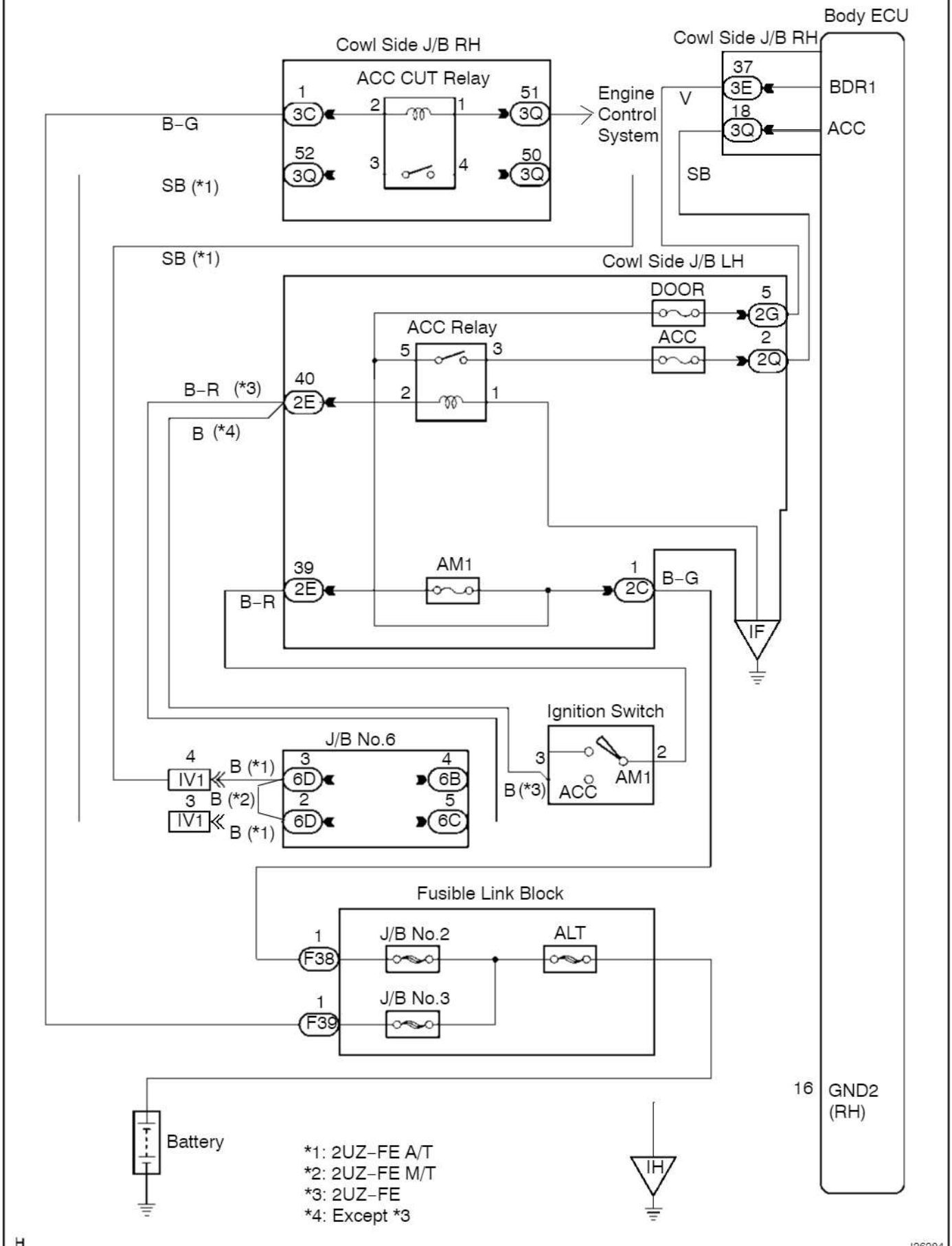
LHD Models:



I26291

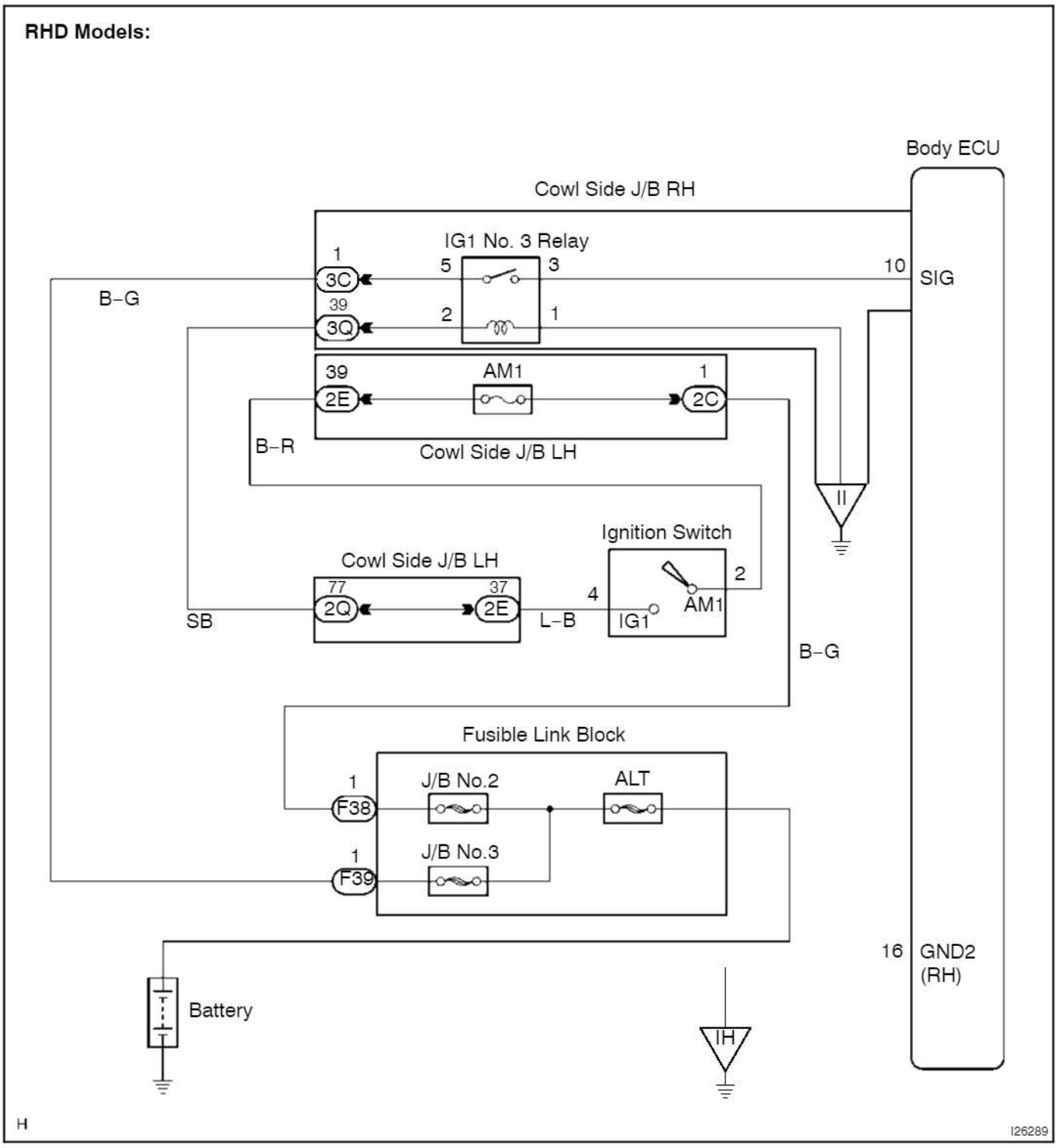
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RHD Models:



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RHD Models:



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INSPECTION PROCEDURE

1	**Check ACC, ECU–IG1 fuse.**

CHECK:
Check continuity of ACC, ECU–IG1 fuse.
OK:
Continuity

NG → **Replace faulty fuse.**

OK

2	**Check voltage between terminals ACC, SIG and GND1, 2 of Body ECU connector.**

PREPARATION:
Turn the ignition switch ON.
CHECK:
Measure the voltage between terminals ACC, SIG and GND1, 2.
OK:
Voltage: 10 – 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

3	**Check wire harness and connector between Body ECU and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAY5–01

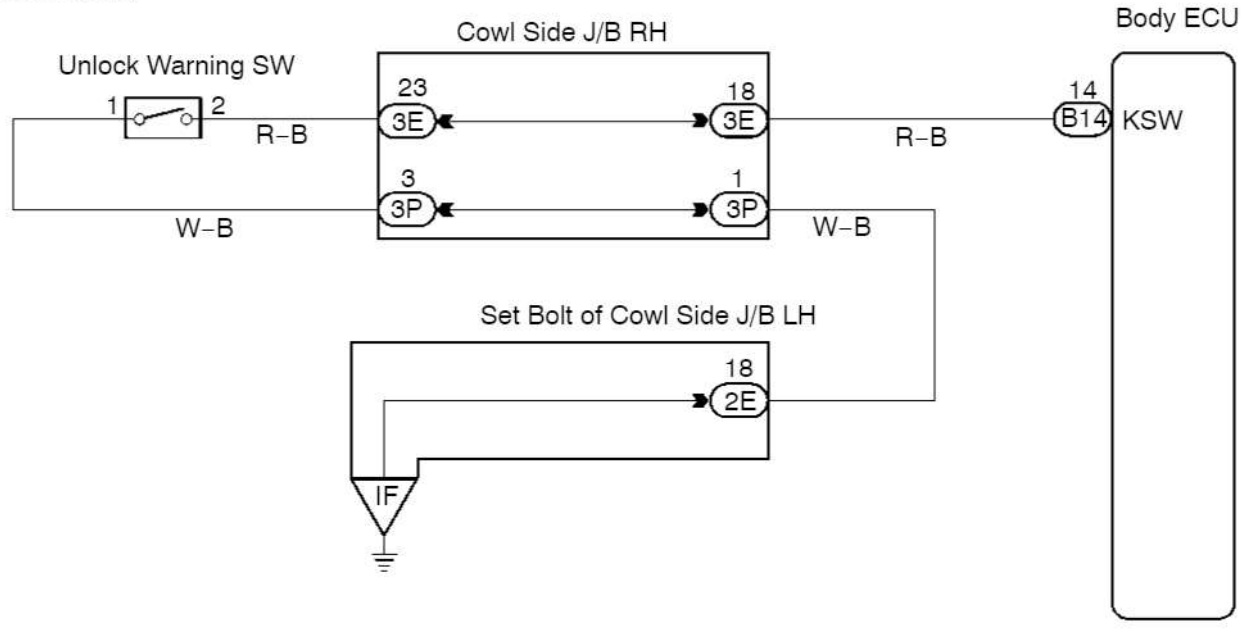
Key unlock warning switch circuit

CIRCUIT DESCRIPTION

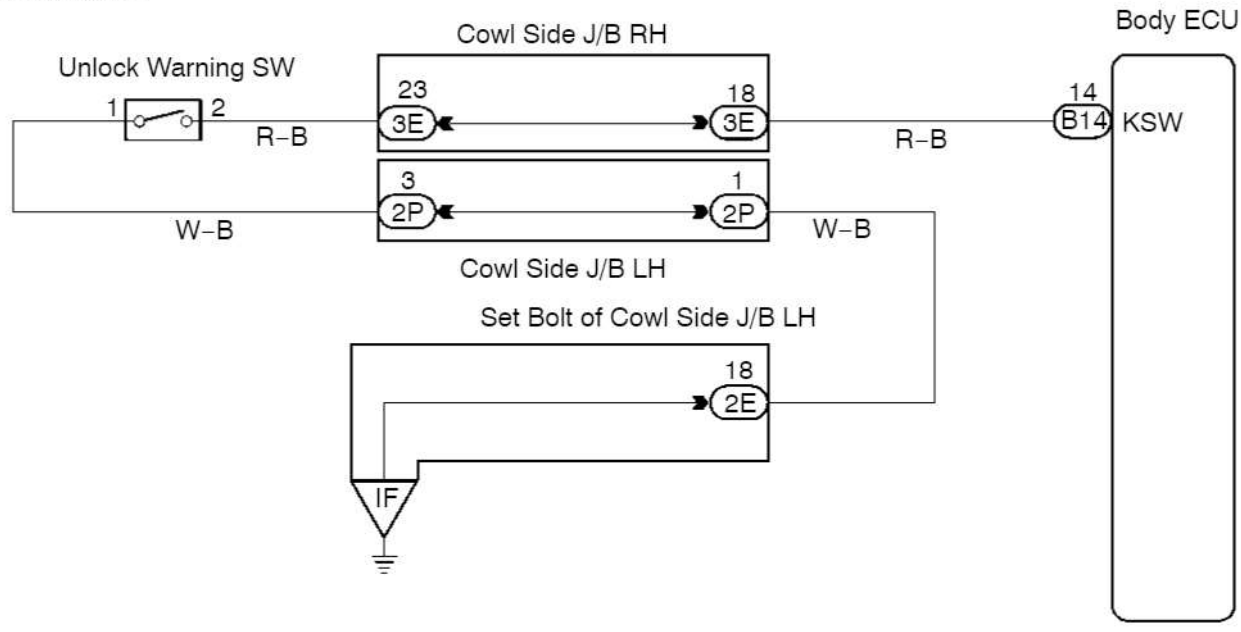
The key unlock warning switch goes on when the ignition key is inserted the key cylinder and goes off when the ignition key is removed.
The ECU operates the key confinement prevention function while the key unlock warning switch is ON.

WIRING DIAGRAM

LHD Models:



RHD Models:



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check key unlock warning switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the key unlock warning switch operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check key unlock warning switch.**

NG → **Replace the key unlock warning switch.**

OK

3	**Check wire harness and connector between key unlock warning switch and Body ECU (See page IN–38).**

OK → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAY8–01

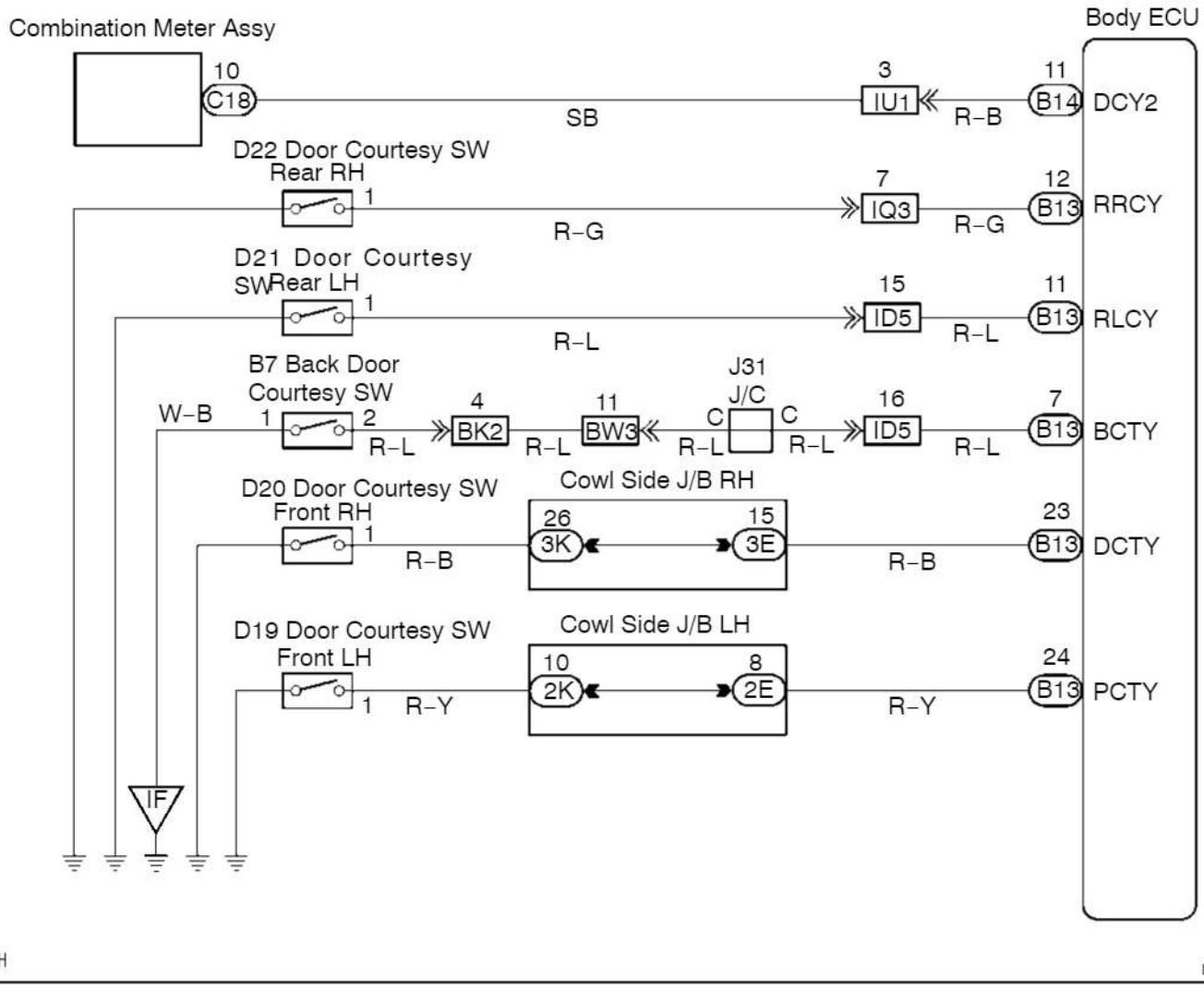
Door courtesy switch circuit

CIRCUIT DESCRIPTION

The door courtesy light goes on when the door is opened and goes off when closed.

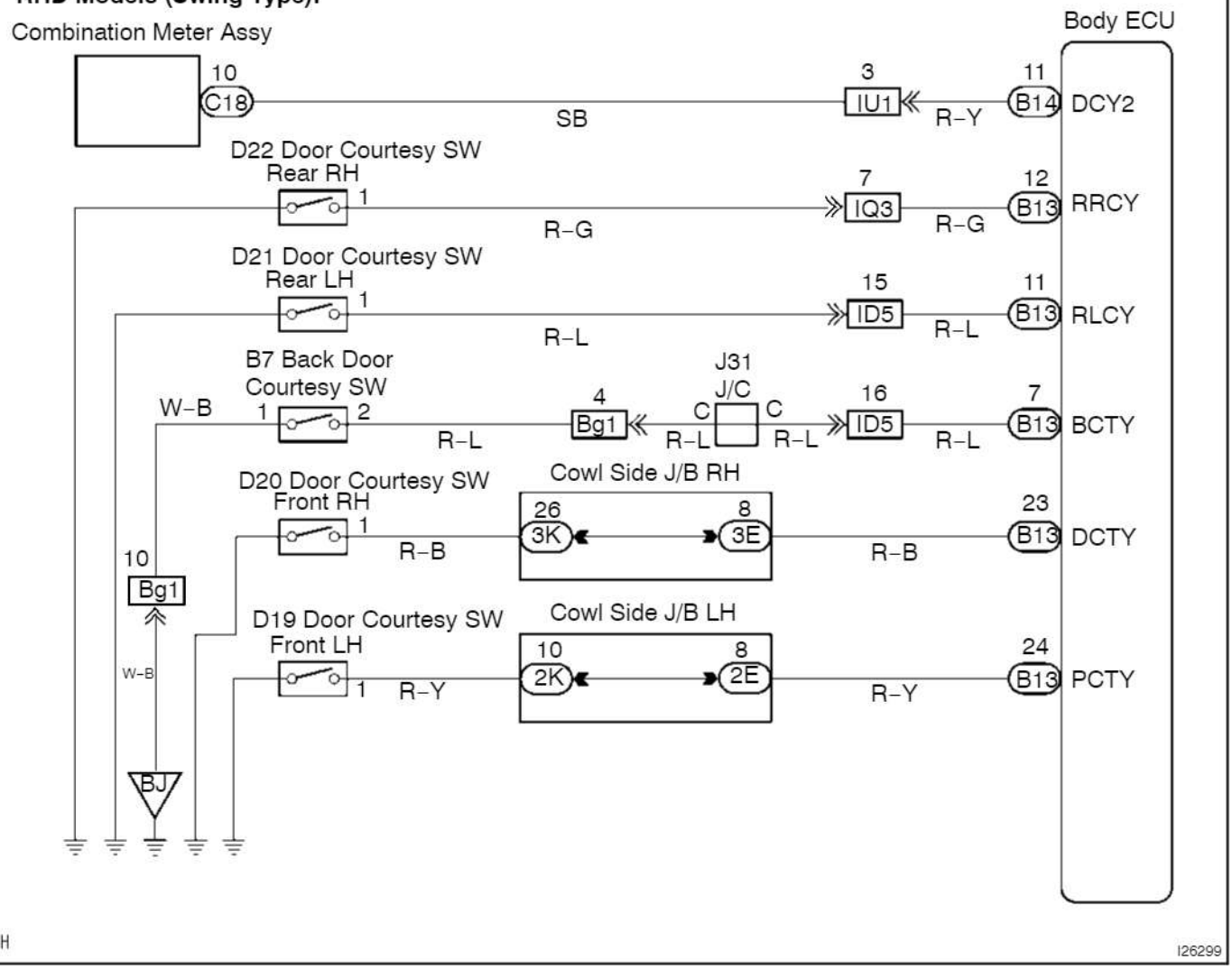
WIRING DIAGRAM

RHD Models (Liftgate Type):



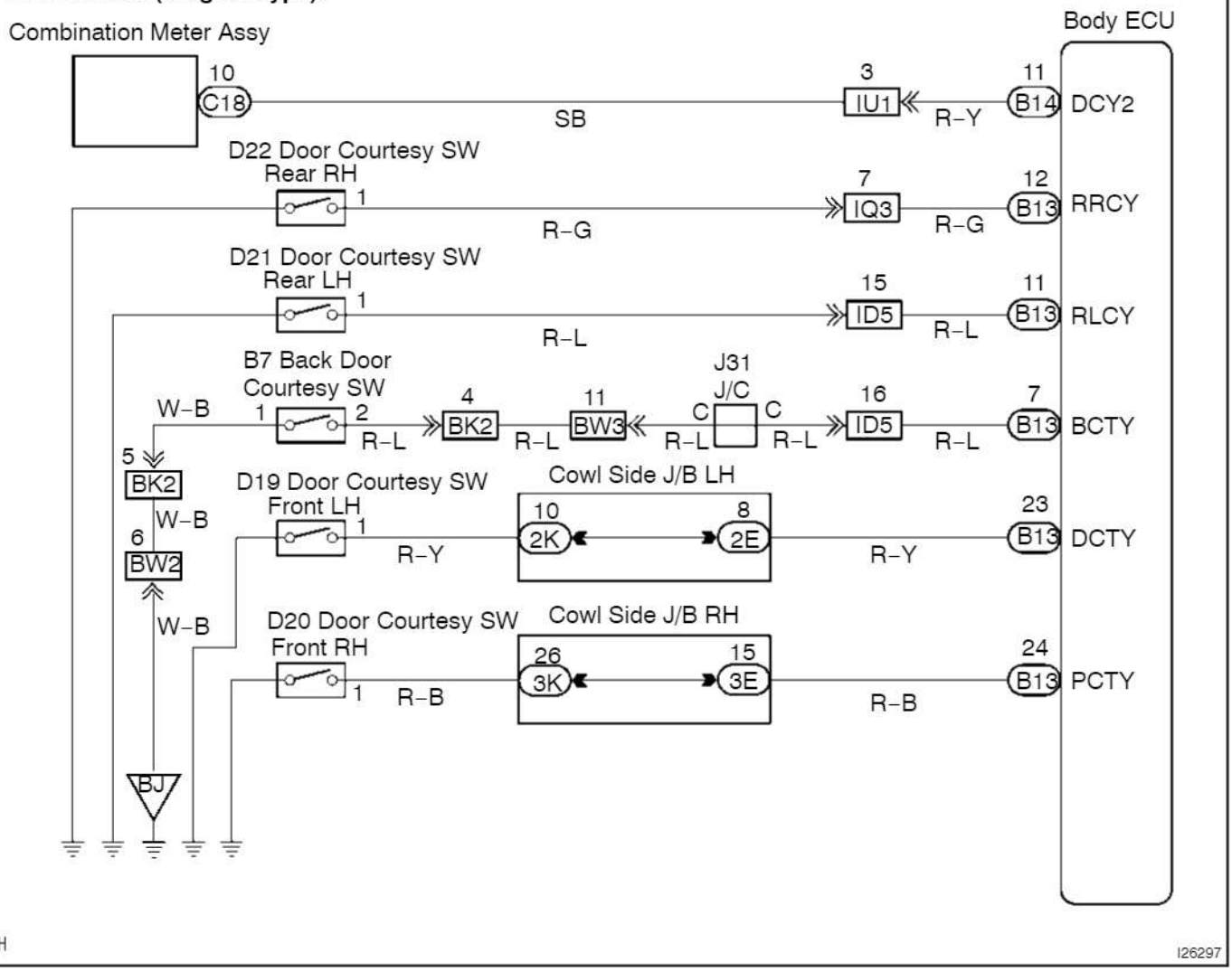
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RHD Models (Swing Type):

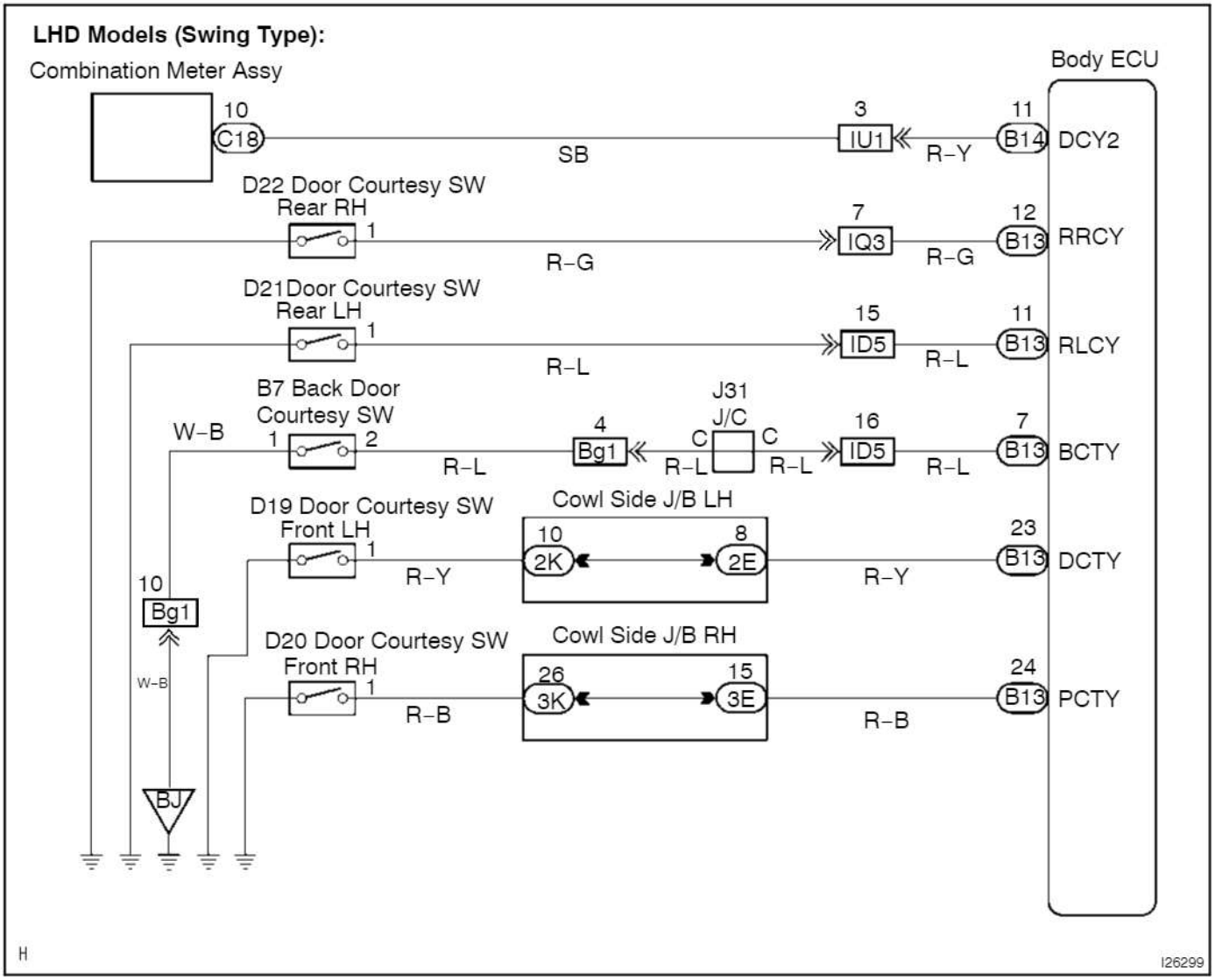


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LHD Models (Liftgate Type):



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check door courtesy switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the door courtesy switch operate in DATA LIST (See page DI–981).

OK	**Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

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2	Check the door courtesy switch.

NG → Replace the door courtesy switch.

OK

3	Check wire harness and connector between door courtesy switch and Body ECU (IN–38).

NG → Repair or replace wire harness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table
(See page DI–992).

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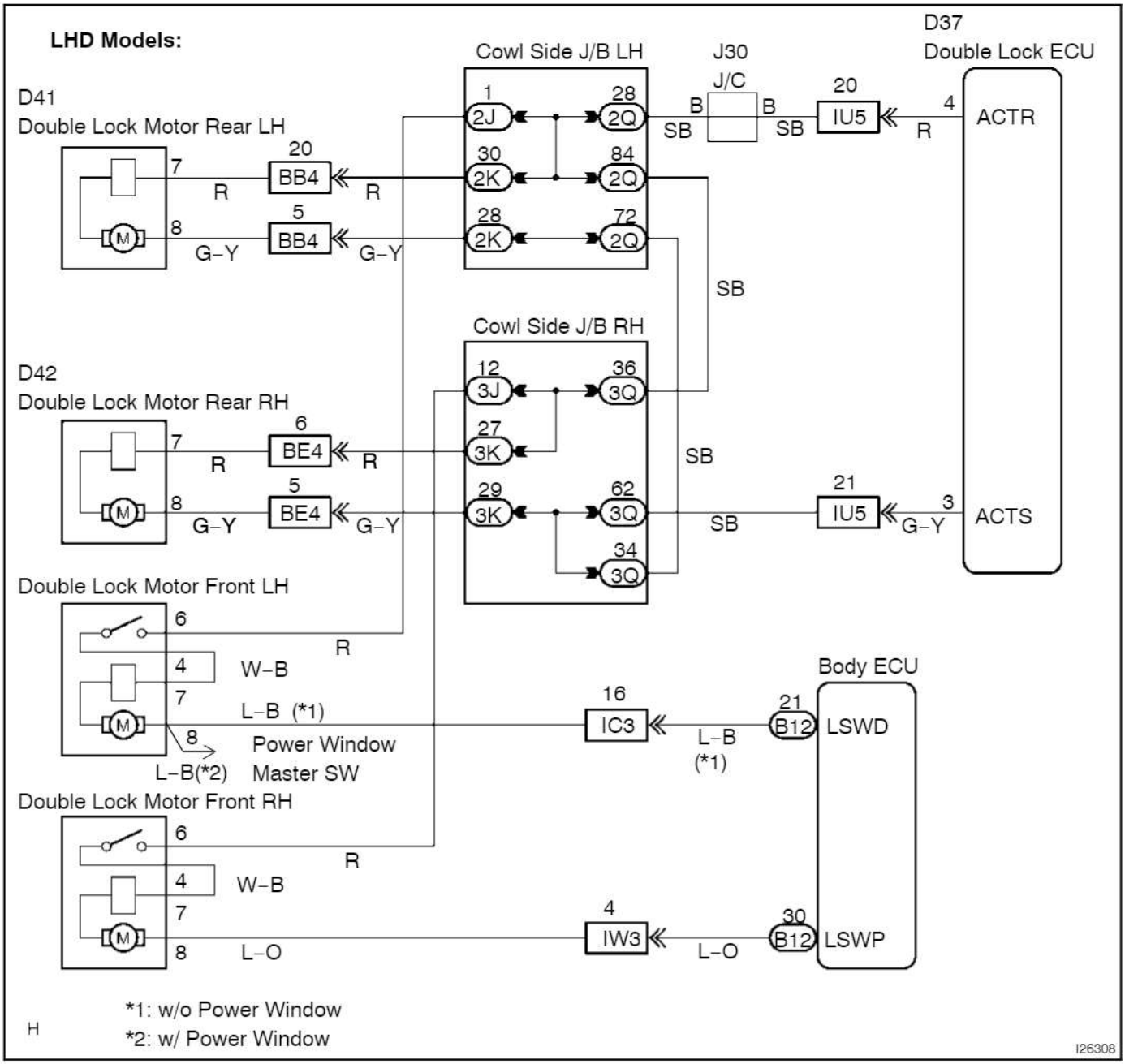
DIAY7-01

Double lock position switch circuit

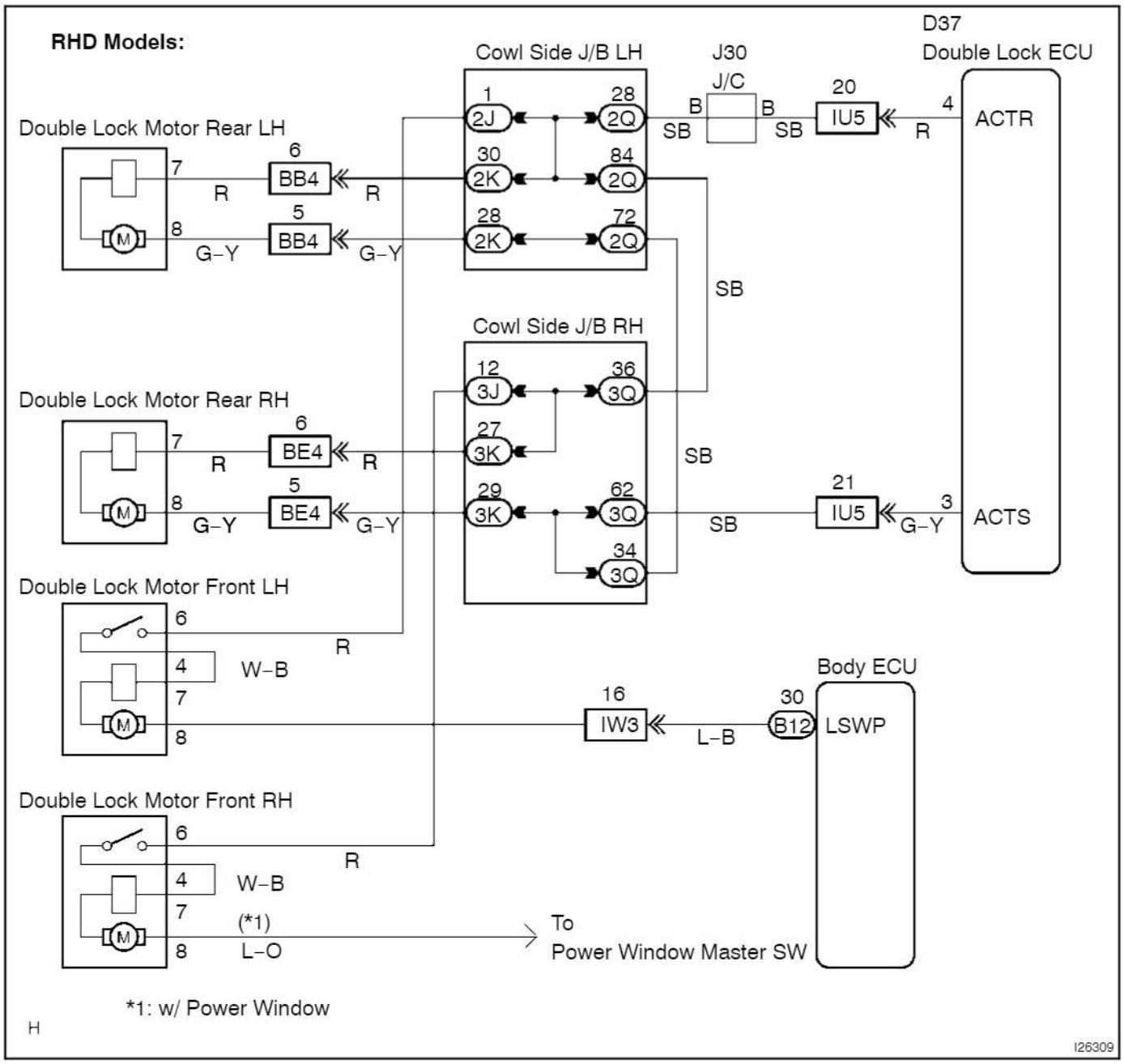
CIRCUIT DESCRIPTION

The double lock detection switch is built in the door lock motor assembly. This switch is ON when the double lock is in the unlock position and OFF when the double lock is in the double lock position. The ECU detects the double lock conditions is this circuit.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check double lock switch (See page BE–56).

NG → Replace the double lock switch.

OK

2	Check wireharness and connector between double lock switch and body ECU (See page IN–38).

NG → Repair or replace wireharness or connector.

OK

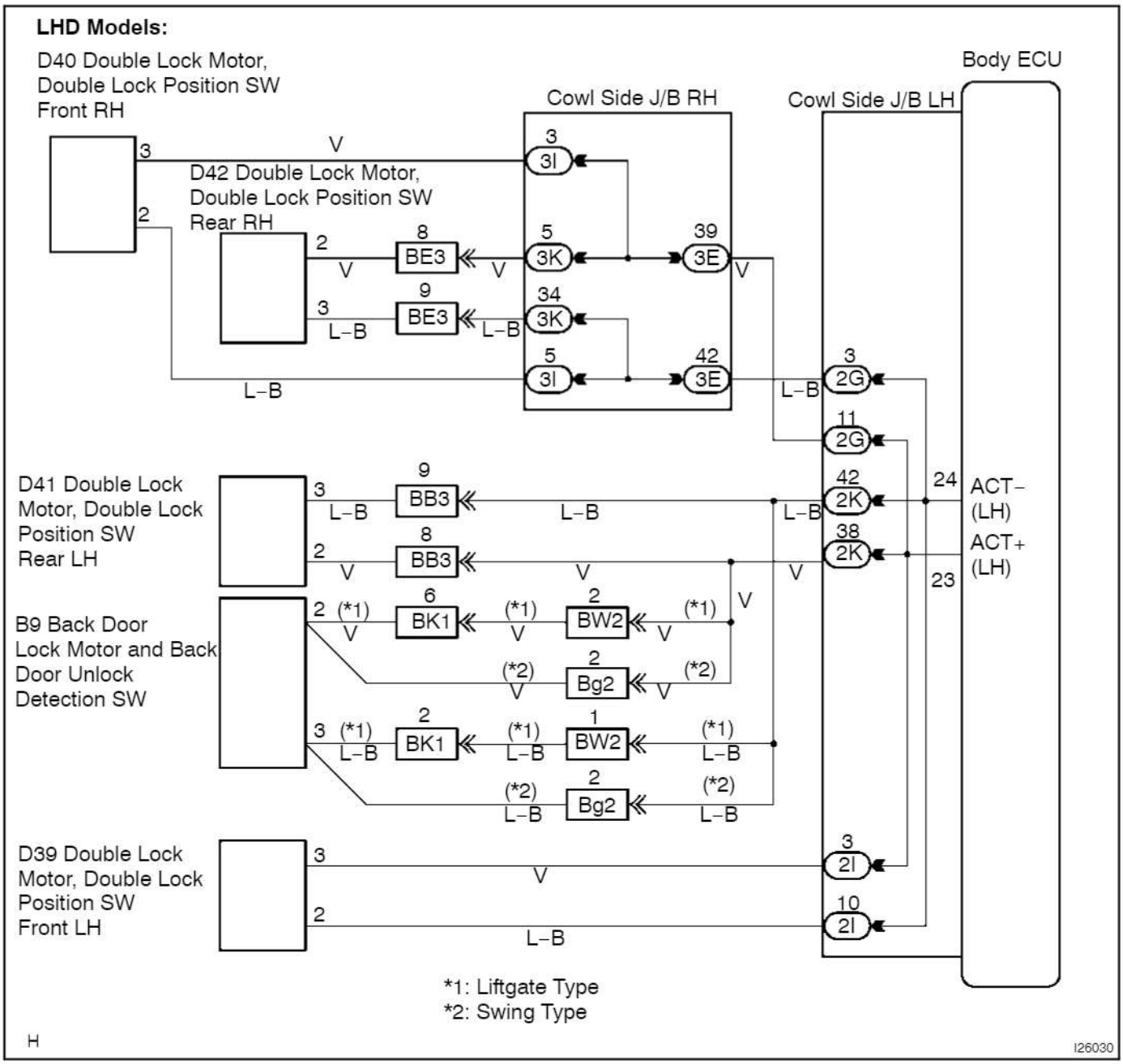
Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAY8–01

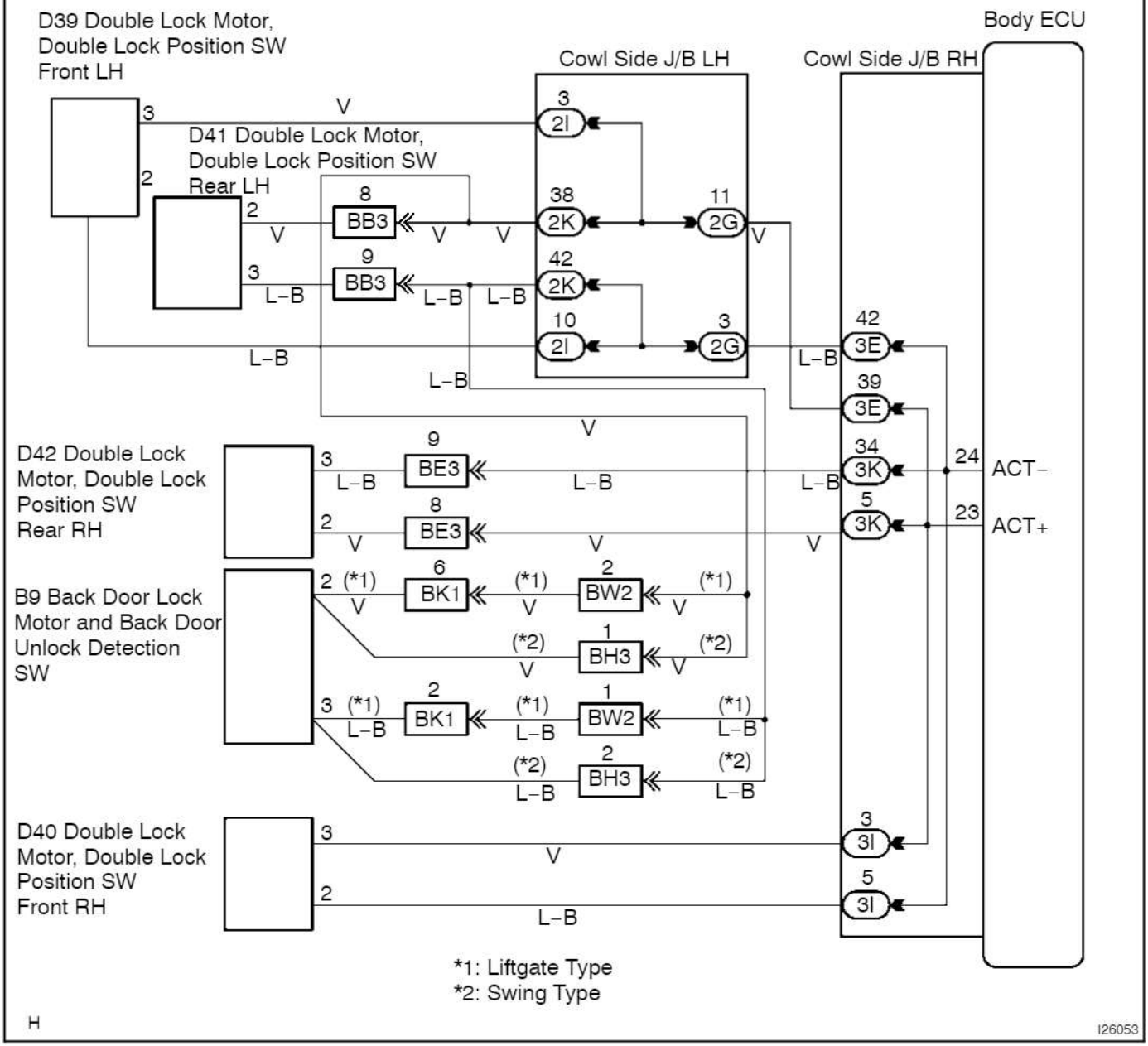
Double lock motor circuit

WIRING DIAGRAM



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RHD Models:



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INSPECTION PROCEDURE

1	Check double lock motor (See page BE–56).

NG → Replace the double lock motor.

OK

2	Check wireharness and connector between double lock motor and body ECU (See page IN–38).

NG → Repair or replace wireharness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

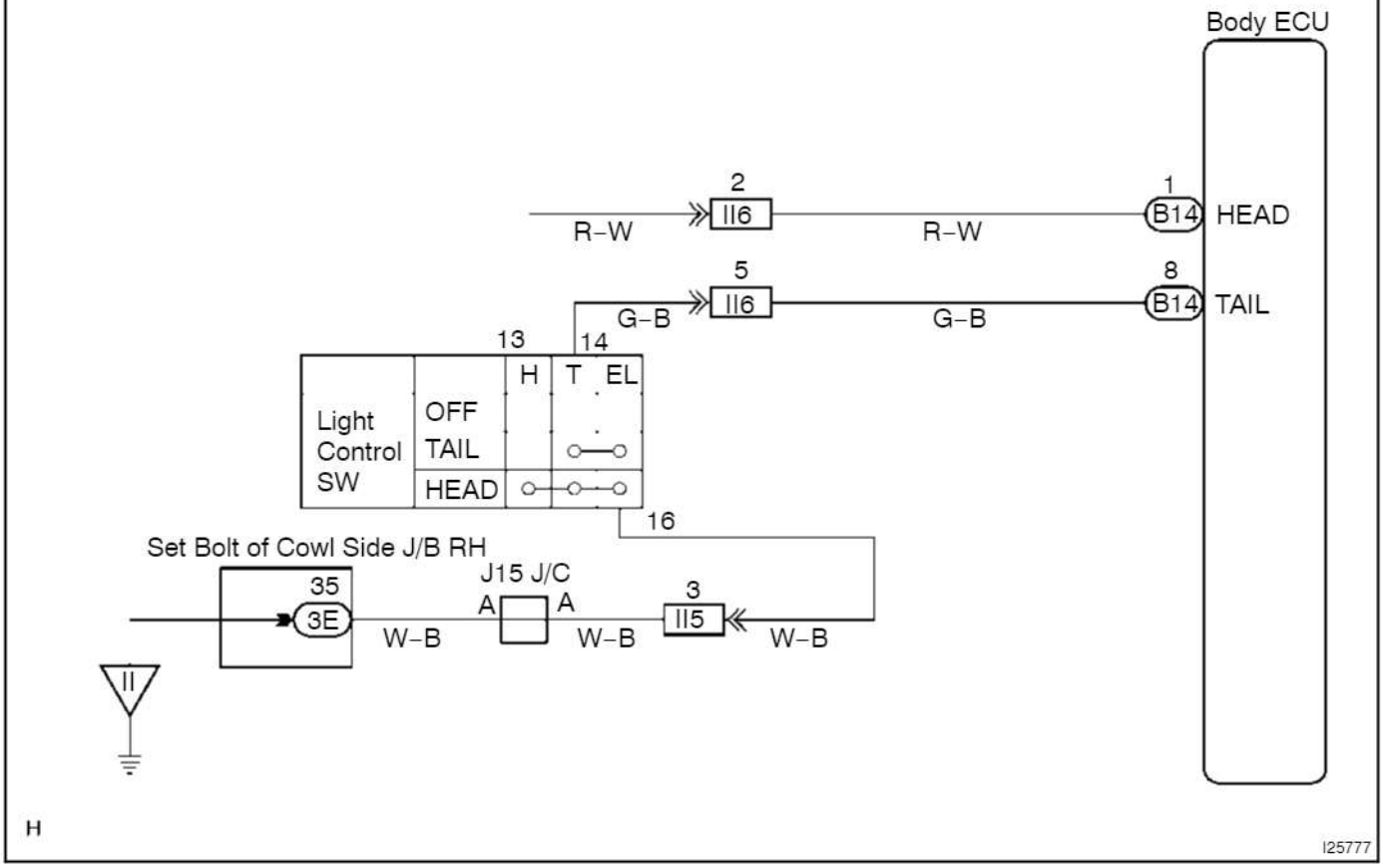
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DIAY9–01

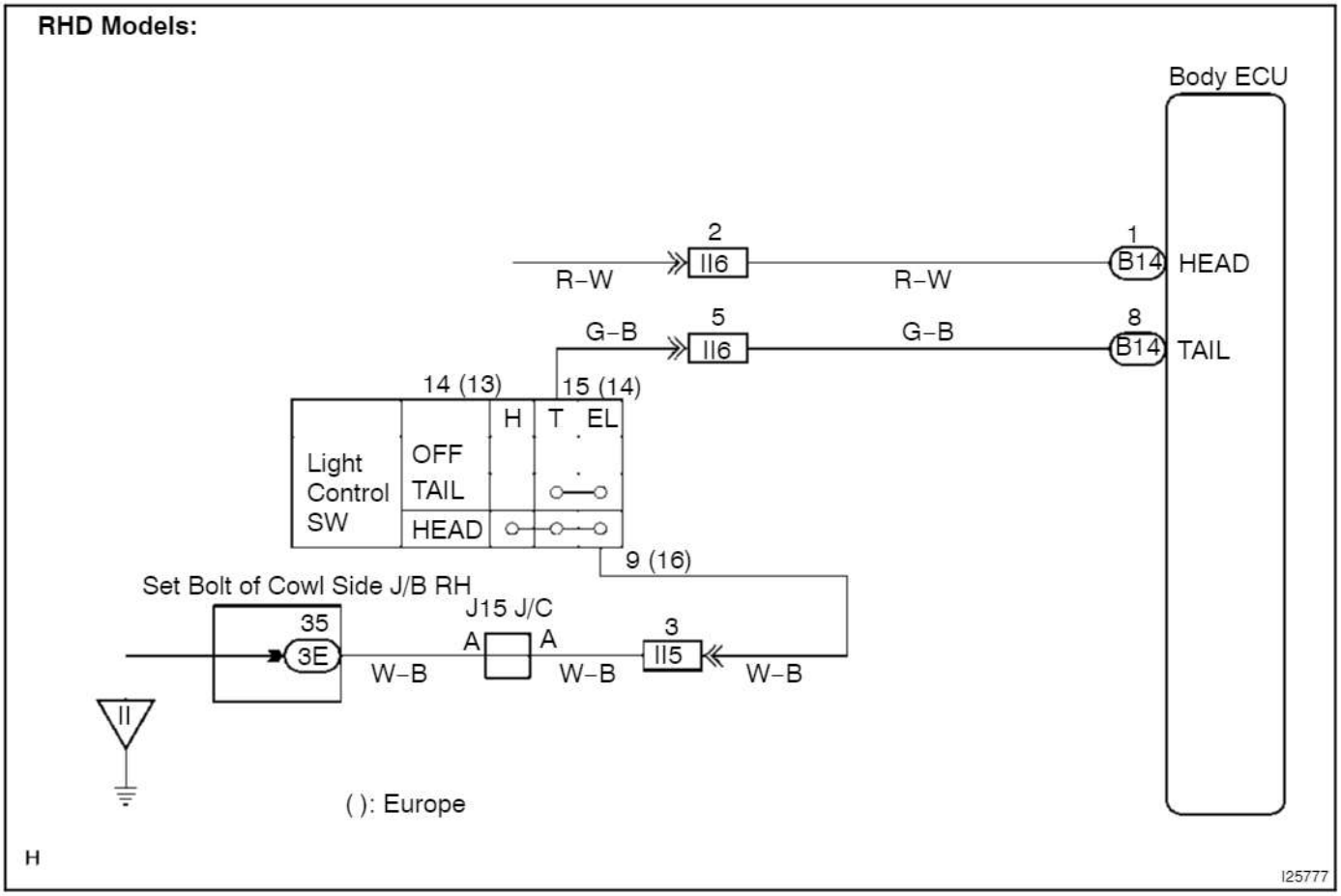
Light control switch circuit

WIRING DIAGRAM

LHD Models:



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check light control switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the light control switch operate in ACTIVE LIST (See page DI–981).

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

NG

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2	Check headlight control switch (See page BE–23).

NG → Replace the headlight control switch.

OK

3	Check wire harness and connector between headlight control switch and Body ECU (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

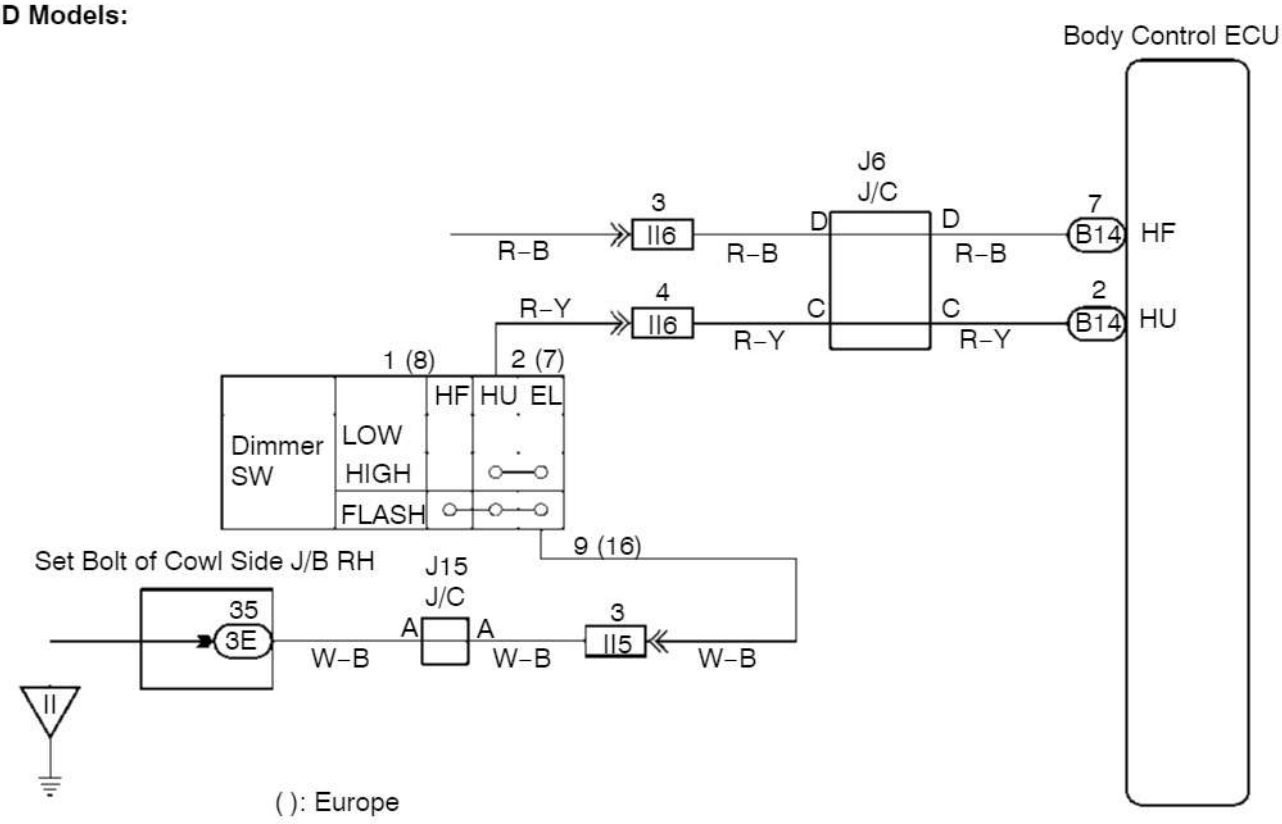
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DIAYA–01

Headlight dimmer switch circuit

WIRING DIAGRAM

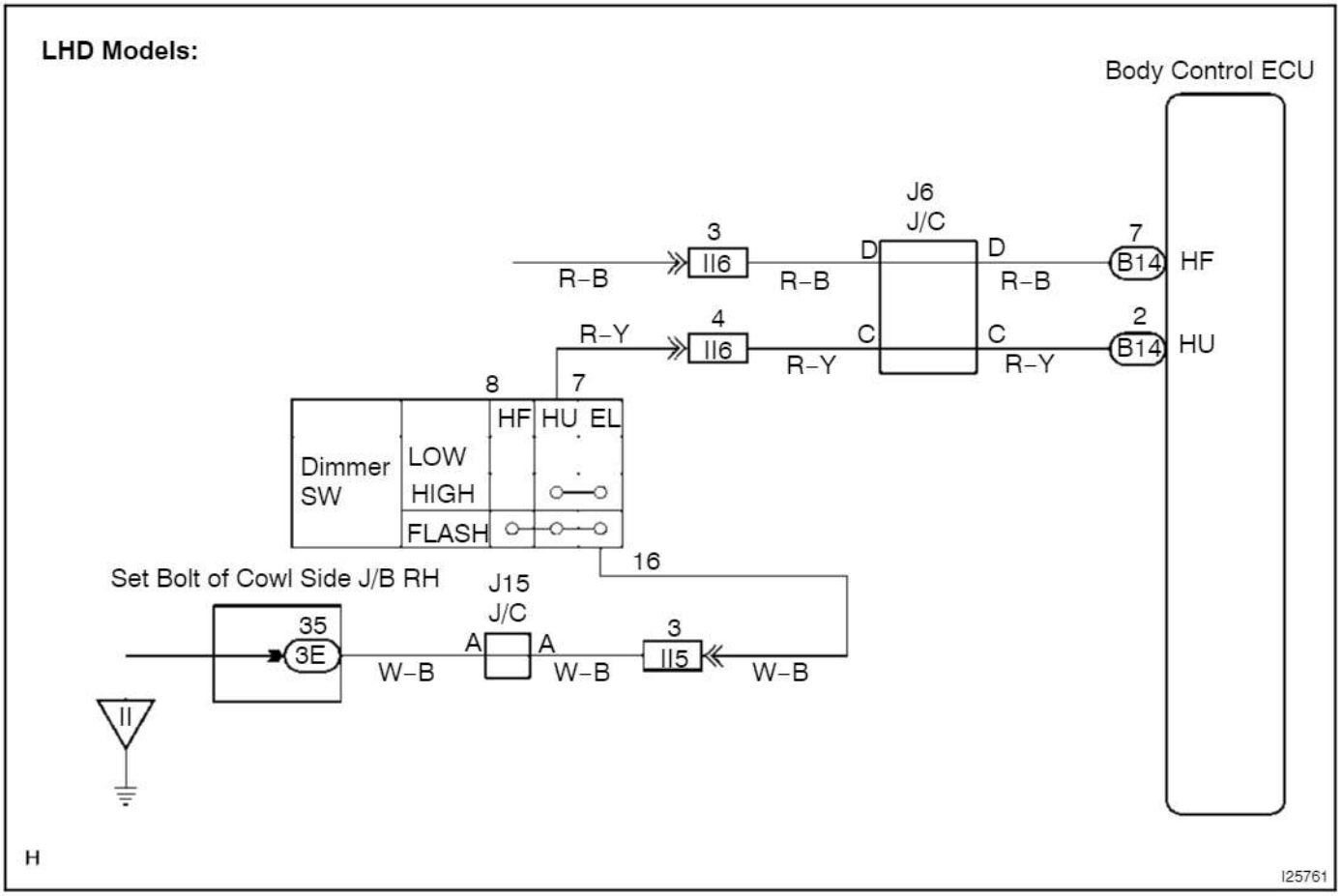
RHD Models:



H

I25761

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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check light control switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the light control switch operate in ACTIVE TEST (See page DI–981).

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

NG

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2	Check headlight control switch (See page BE–23).

NG → Replace the headlight control switch.

OK

3	Check wire harness and connector between headlight control switch and Body ECU (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

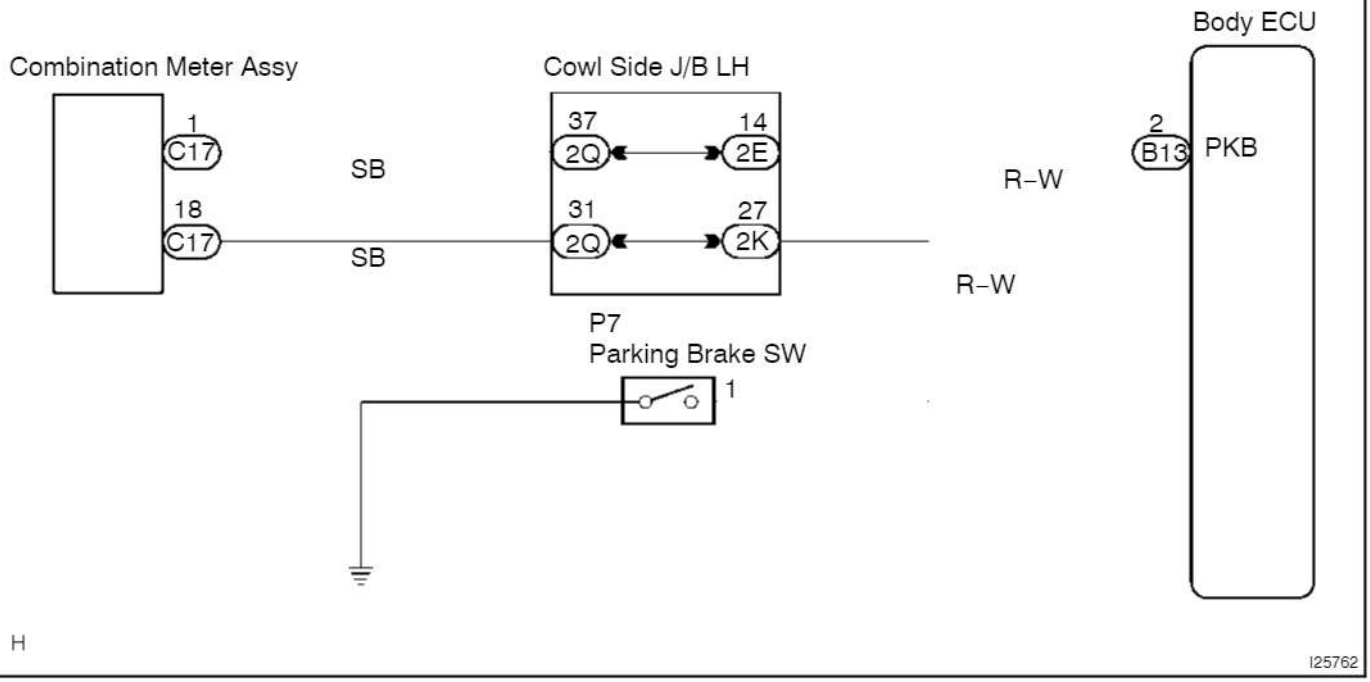
Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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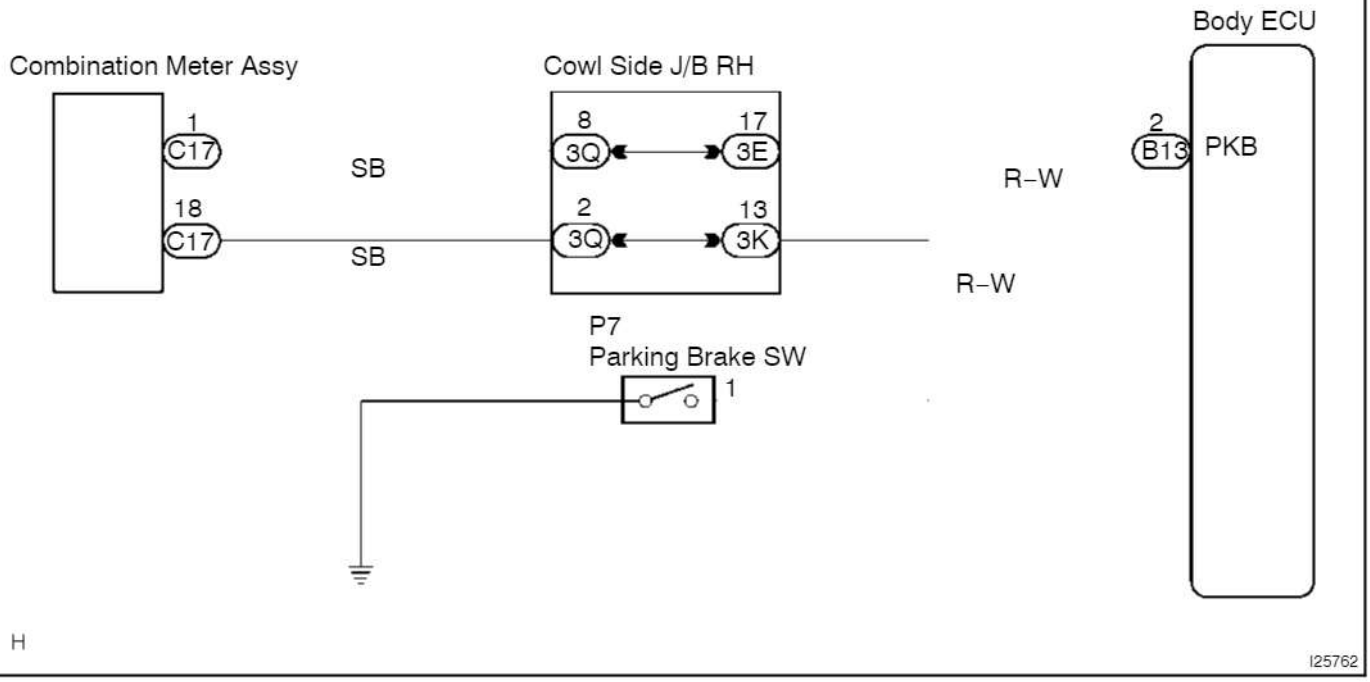
Parking brake switch circuit

WIRING DIAGRAM

LHD Models:



RHD Models:



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check parking brake switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the parking brake switch operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check parking brake switch.**

NG → **Replace the parking brake switch.**

OK

3	**Check wire harness and connector between parking brake switch and Body ECU(See page IN–38).**

OK → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

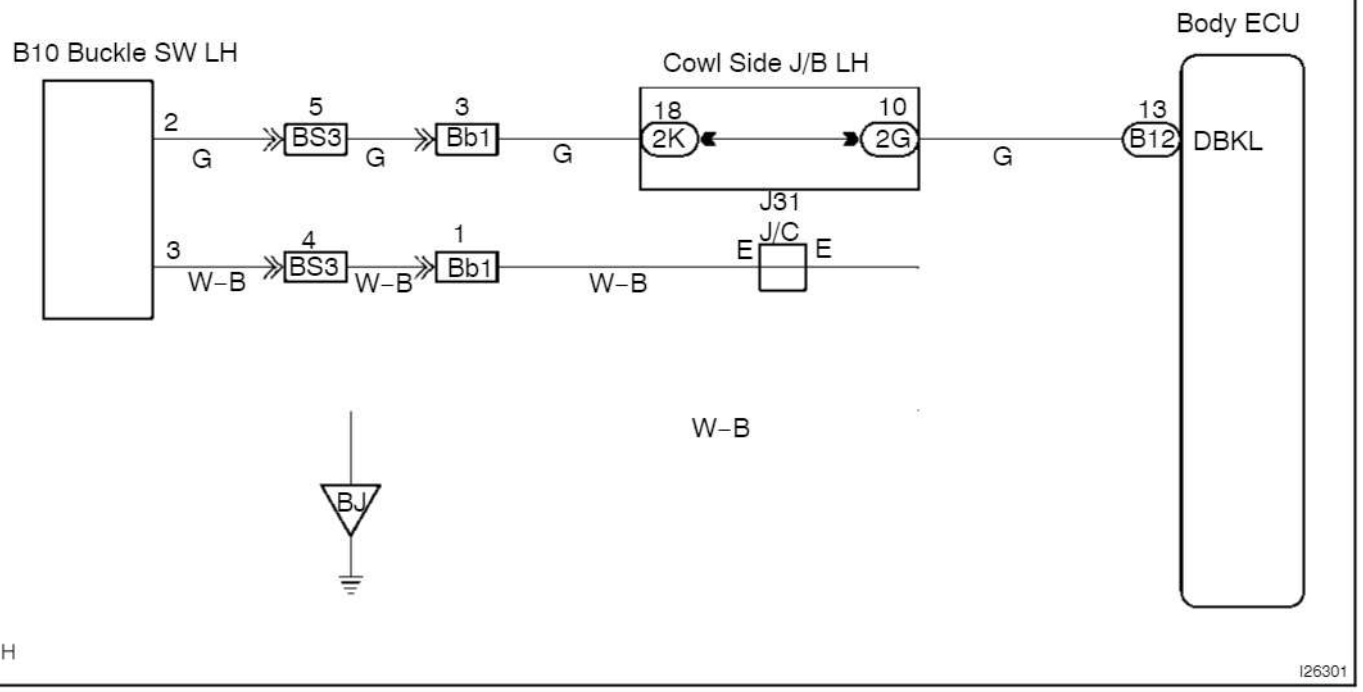
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DIAYC-01

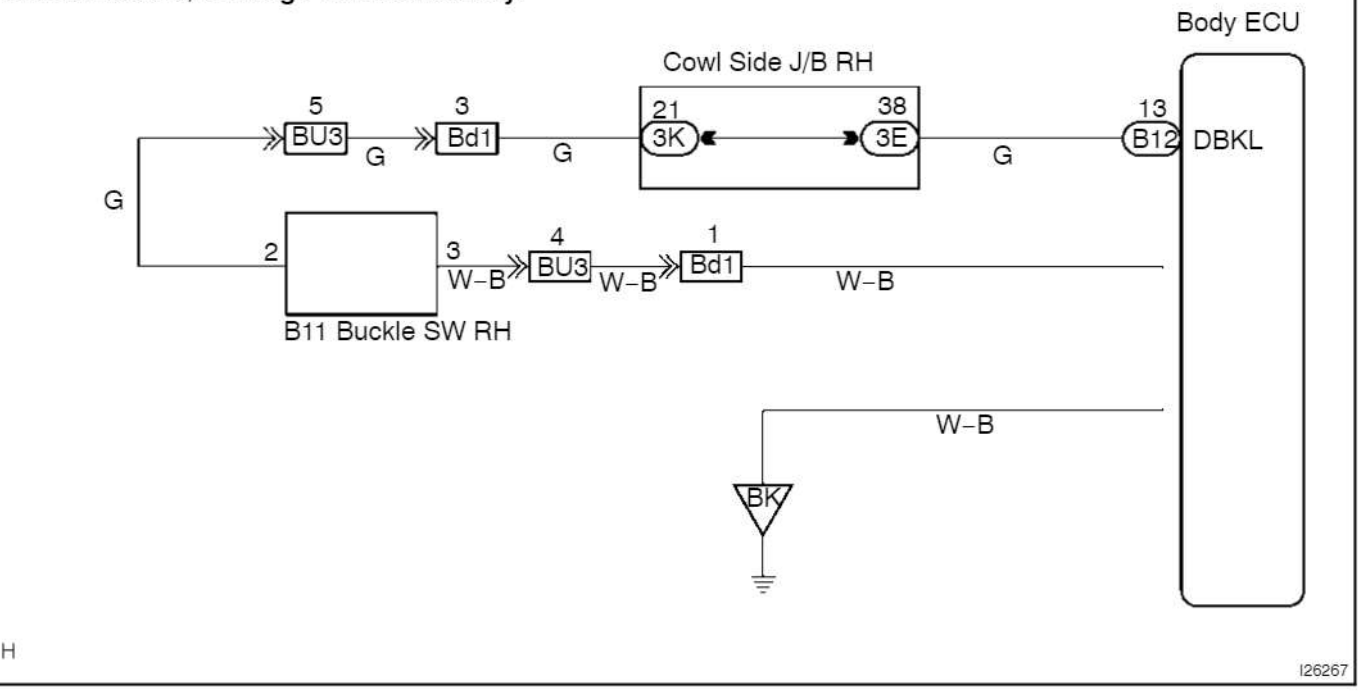
Driver seat buckle switch circuit

WIRING DIAGRAM

LHD Models w/ Driving Position Memory:

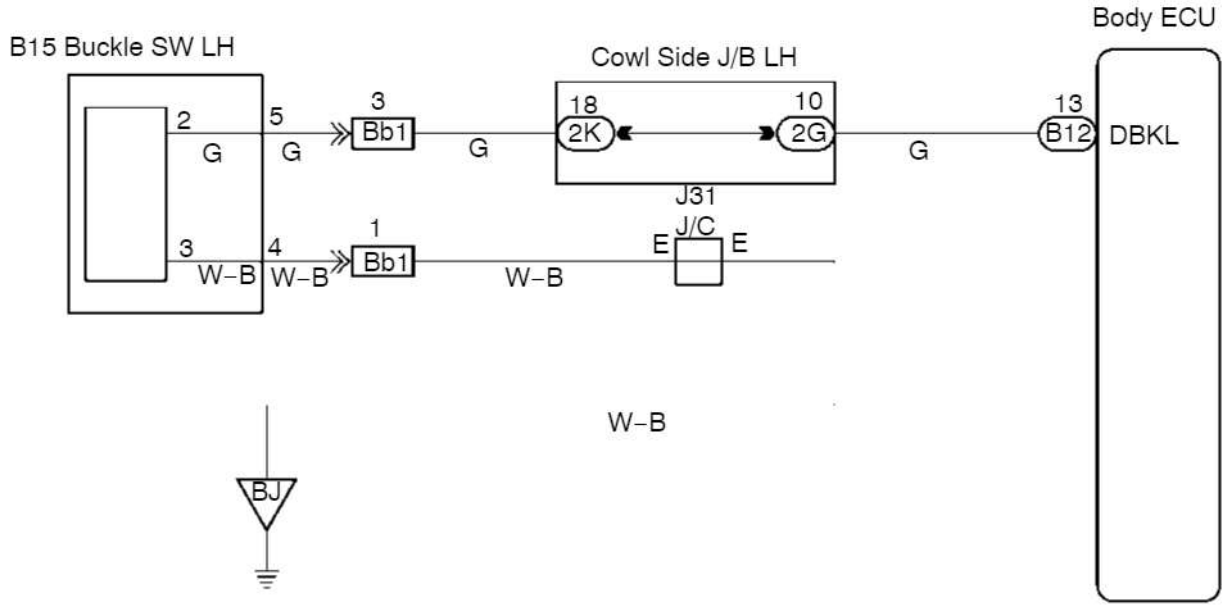


RHD Models w/ Driving Position Memory:



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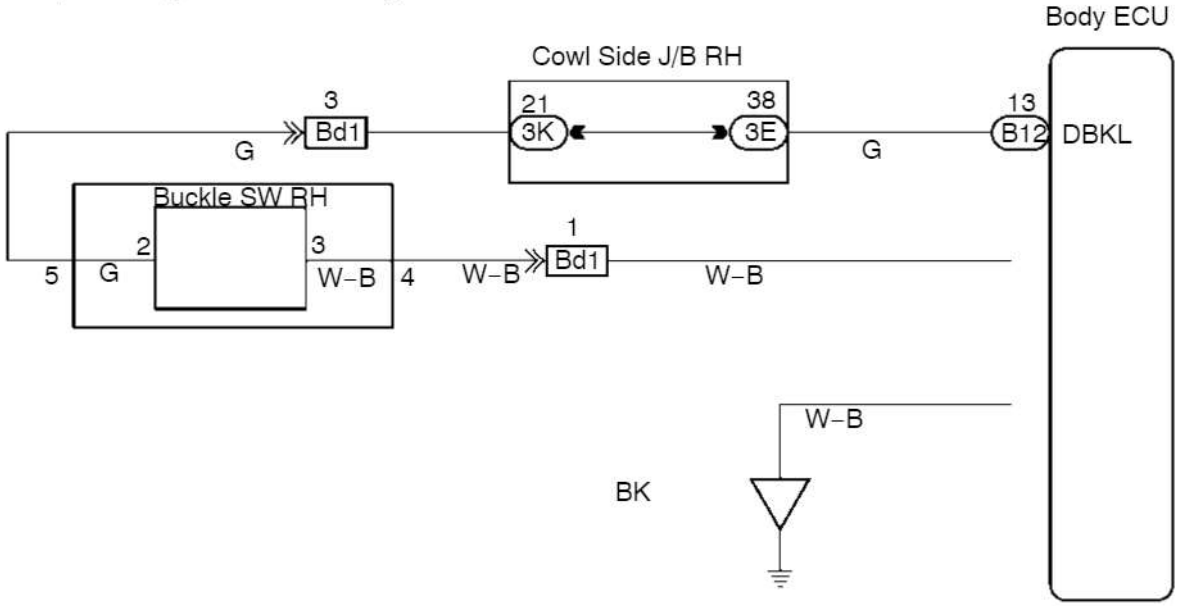
LHD Models w/o Driving Position Memory:



H

I26303

RHD Models w/o Driving Position Memory:



H

I26302

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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check driver seat buckle switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the driver seat buckle switch operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check driver seat buckle switch (See page BE–41).**

NG → **Replace the driver seat buckle switch.**

OK

3	**Check wire harness and connector between driver seat buckle switch and Body ECU (See page IN–38).**

OK → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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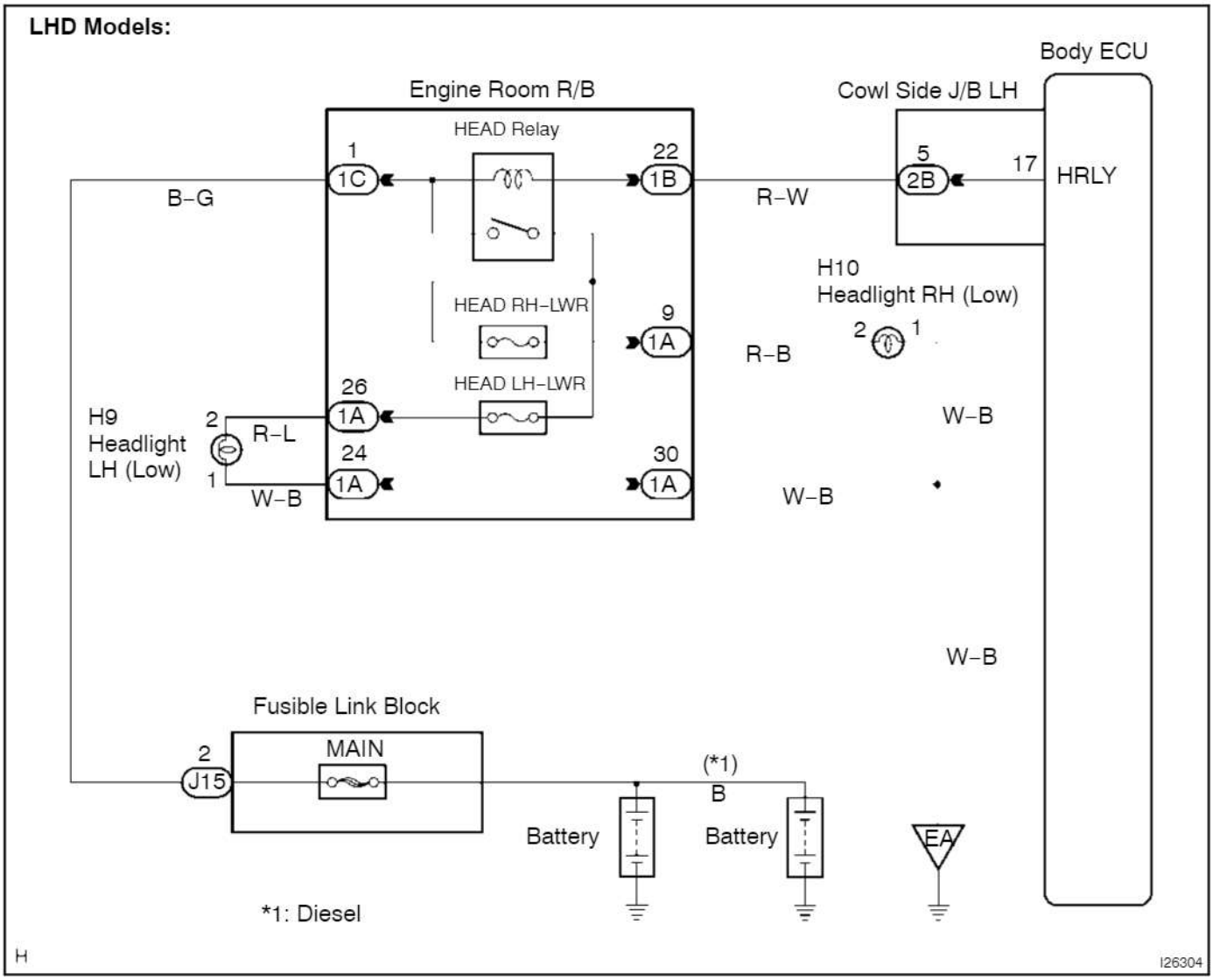
DIAYD–01

Headlight relay circuit

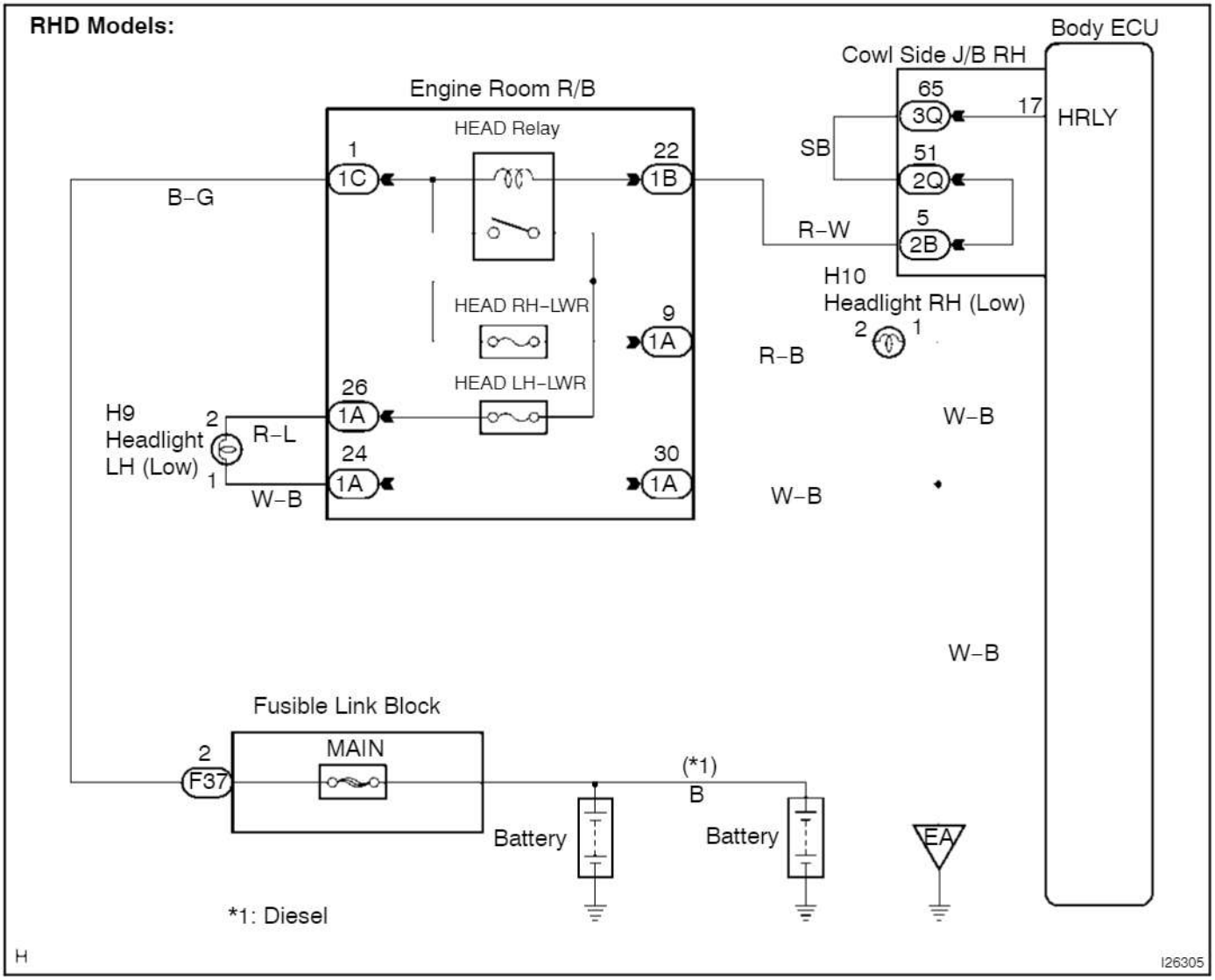
CIRCUIT DESCRIPTION

The headlight dimmer switch sends a signal to the Body ECU.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check headlight relay using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the headlight relay operate in ACTIVE TEST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check headlight relay circuit (See page BE–23).**

NG → **Replace engine room J/B assy with wire harness.**

OK

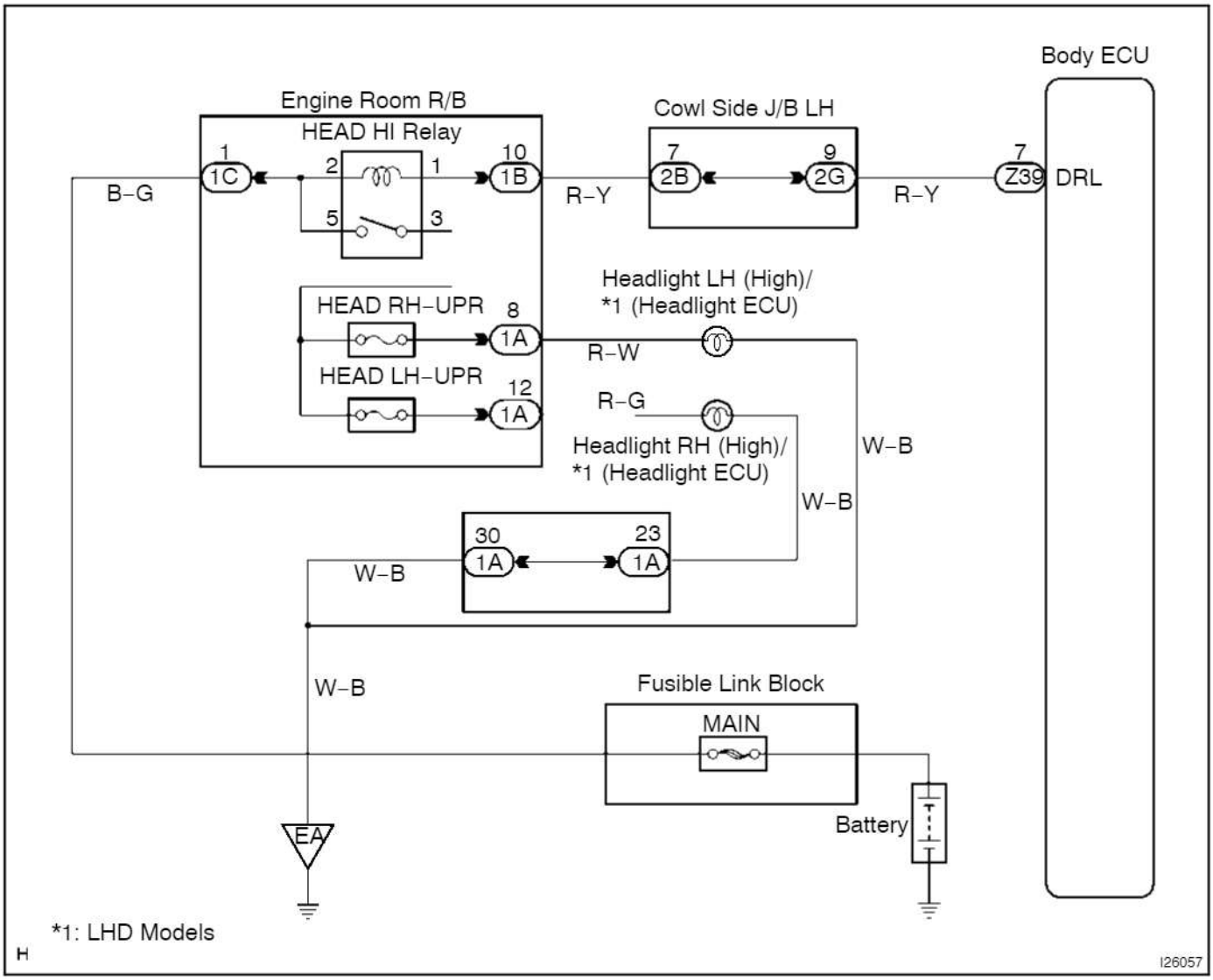
Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAYE–01

DRL relay circuit

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check DRL relay using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the DRL relay operate in ACTIVE TEST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check DRL relay (See page BE–23).**

NG → **Replace the DRL relay.**

OK

3	**Check wire harness and connector between DRL relay and Body ECU (See page IN–38).**

OK → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAYF-01

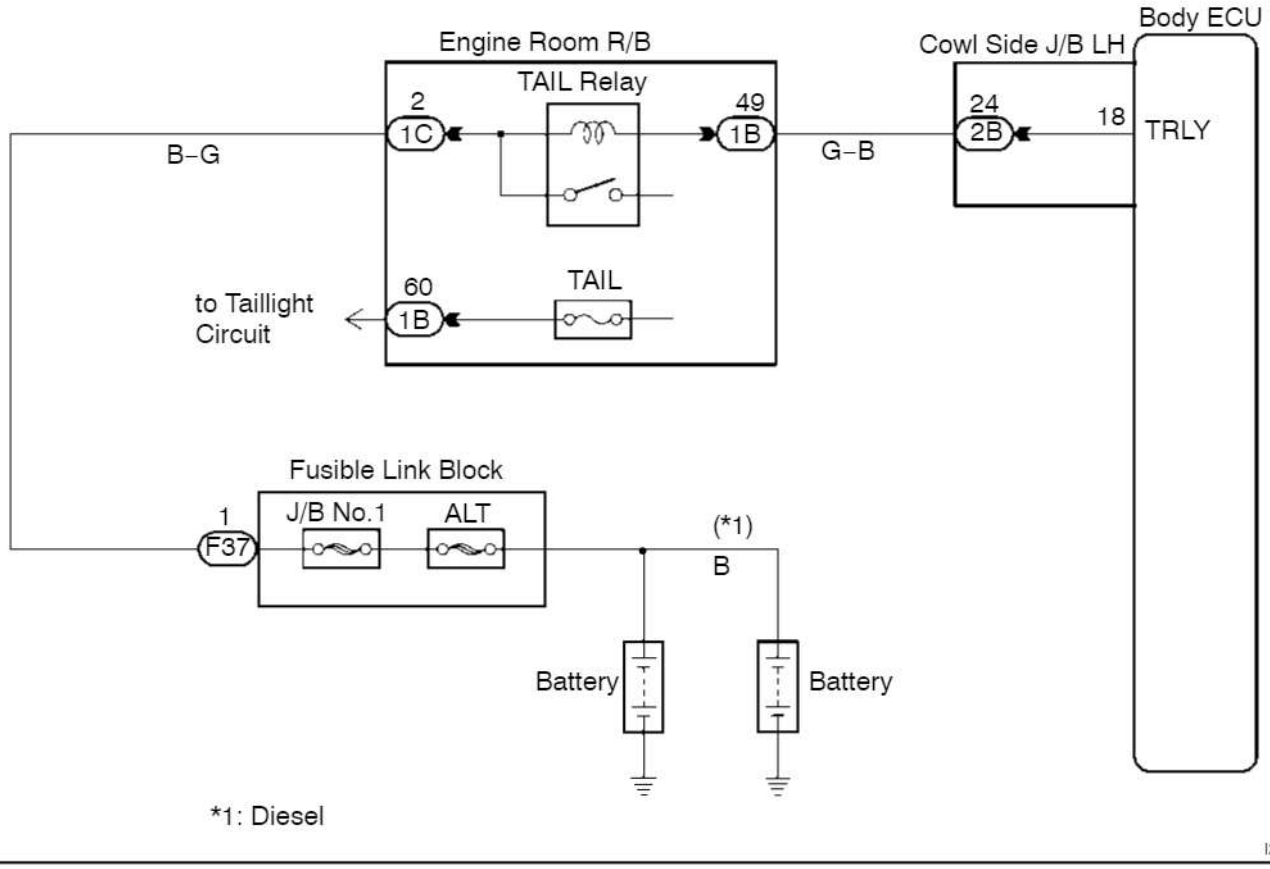
Taillight relay circuit

CIRCUIT DESCRIPTION

The Headlight dimmer switch sends a signal to the Body ECU.

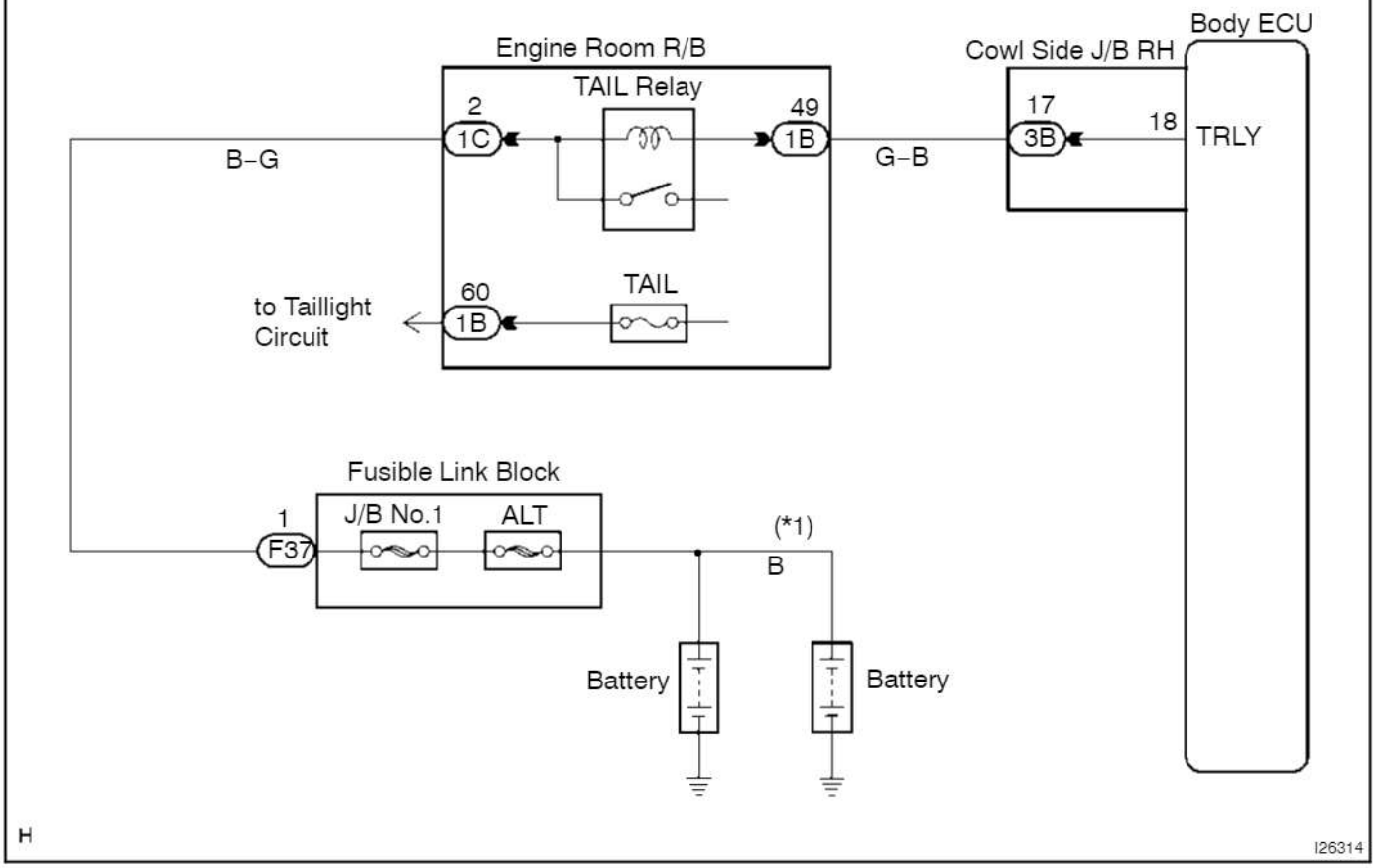
WIRING DIAGRAM

LHD Models:



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RHD Models:



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check taillight relay using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the taillight relay can operate in ACTIVE TEST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check Taillight relay (See page BE–23).**

NG → **Replace engine room J/B assy with wire harness.**

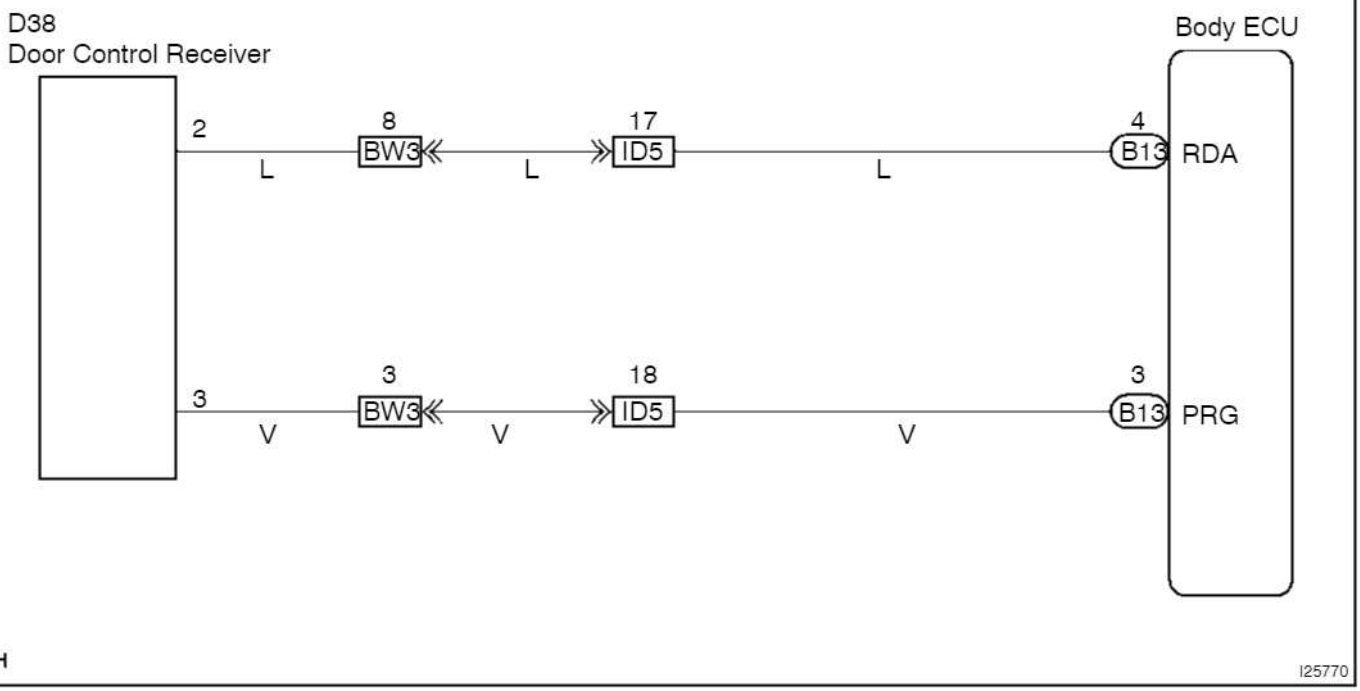
OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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Wireless door lock control circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check door control receive using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the door control receiver operate in ACTIVE TEST (See page DI–981).

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

NG

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2	Check the door control receiver (See page BE–65).

NG → Replace the door control receiver.

OK

3	Check wire harness and connector between wireless door lock ECU and Body ECU (IN–38).

NG → Repair or replace wire harness or connector.

OK

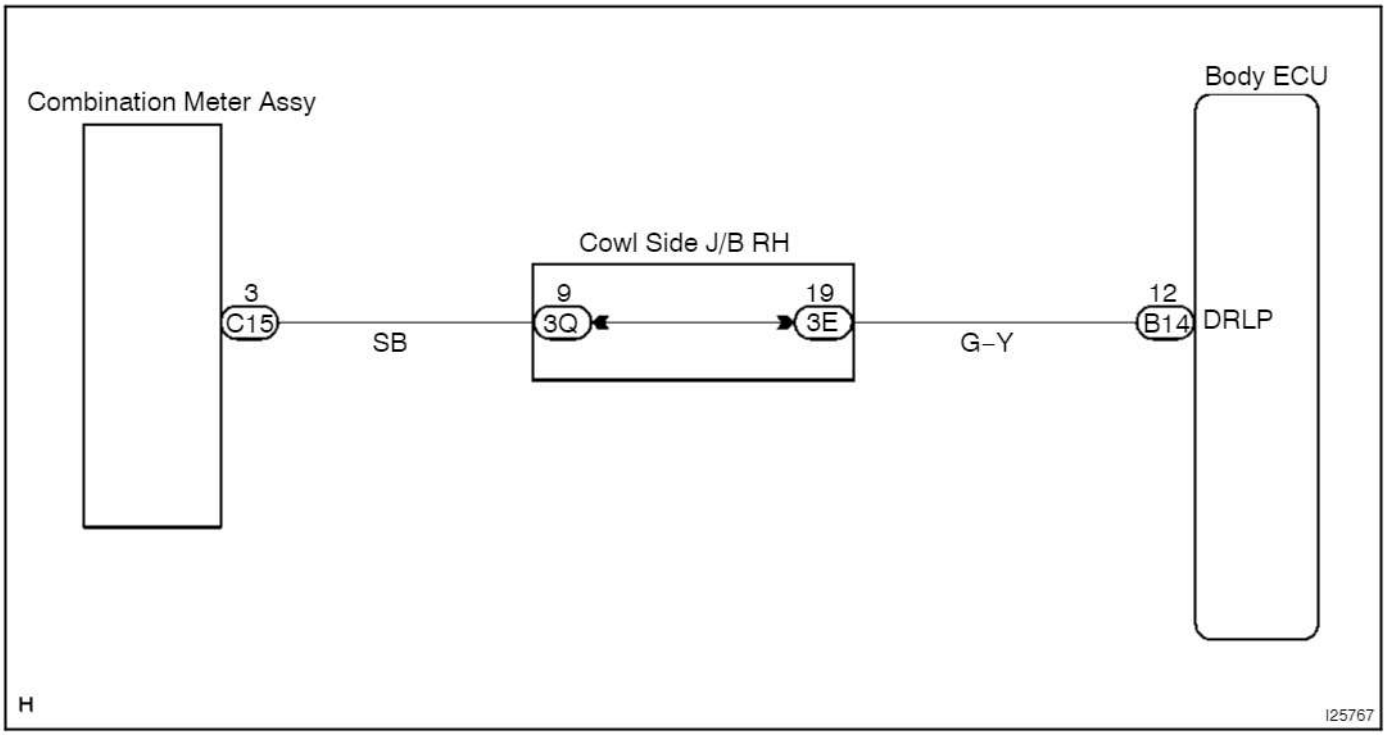
Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAYH–01

Open door warning light circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check open door warning light using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the open door warning light operate in ACTIVE TEST (See page DI–981).

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

NG

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2	Check the combination meter circuit (See page BE–41).

NG → Replace the combination meter.

OK

3	Check wire harness and connector between combination meter and Body ECU (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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DIAYI–01

Illumination circuit

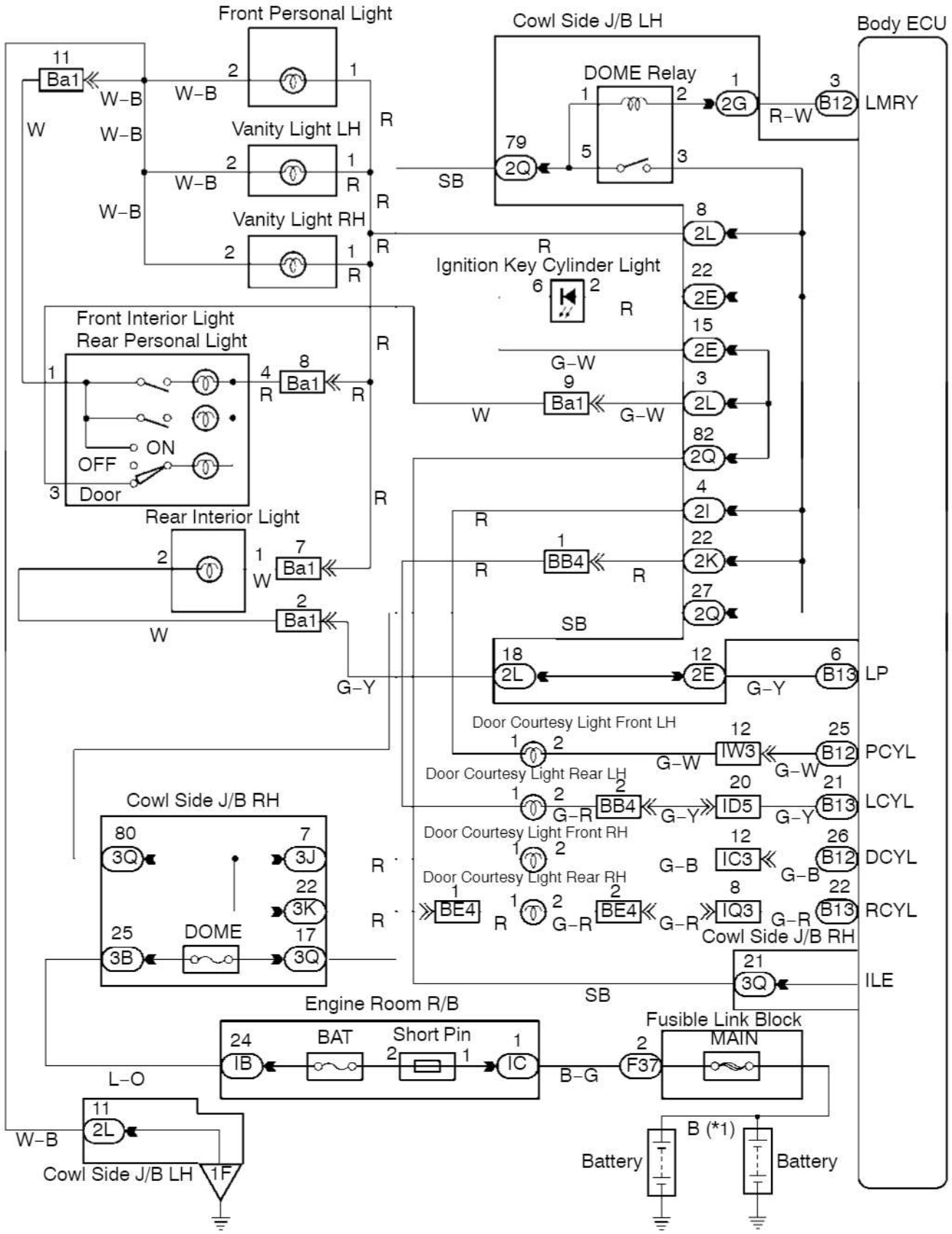
CIRCUIT DESCRIPTION

Receiving the courtesy signal from the Body ECU, the Body ECU makes the switch illuminations come on.

WIRING DIAGRAM

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RHD Models (w/ Moon roof):

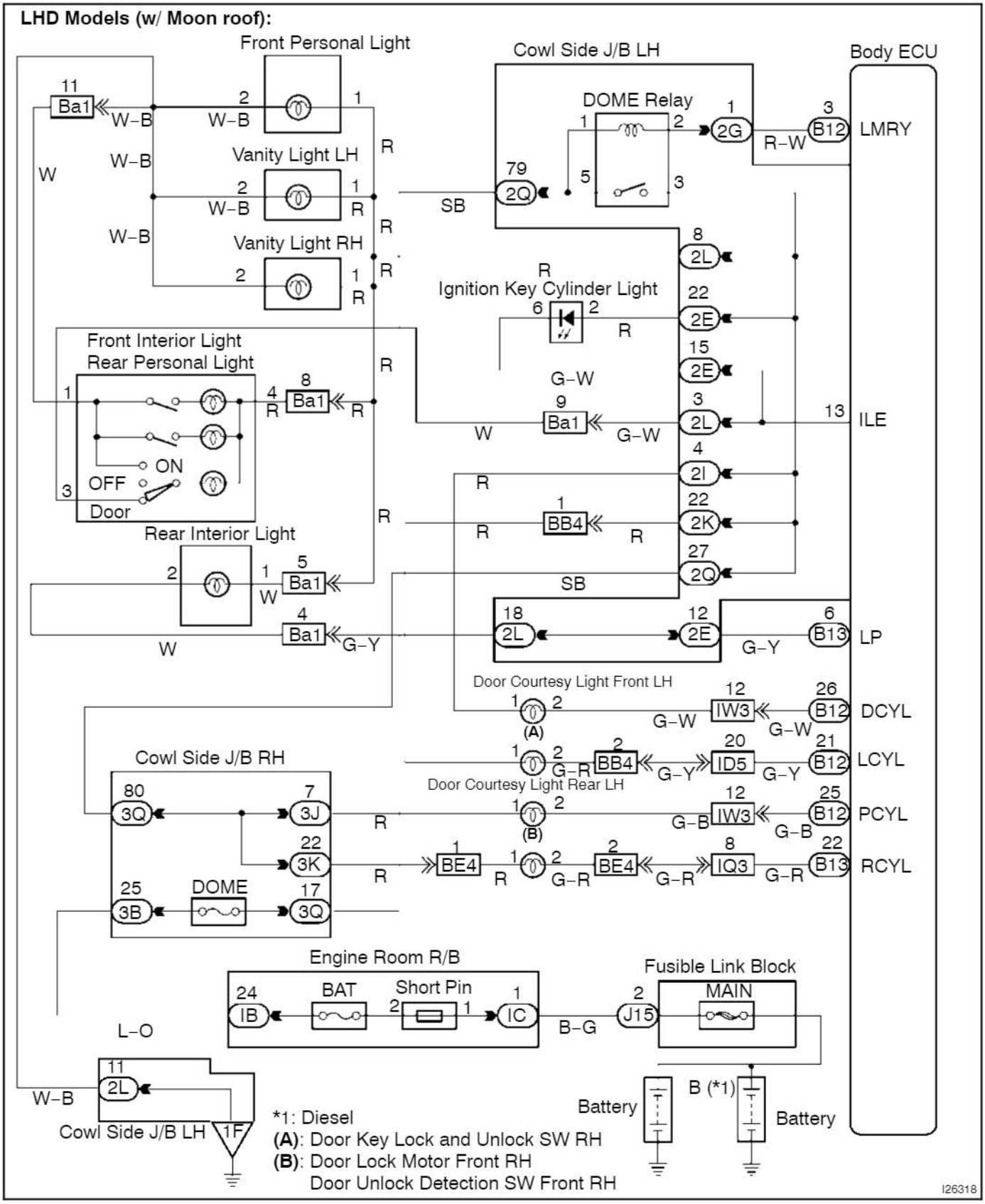


*1: Diesel

I26313

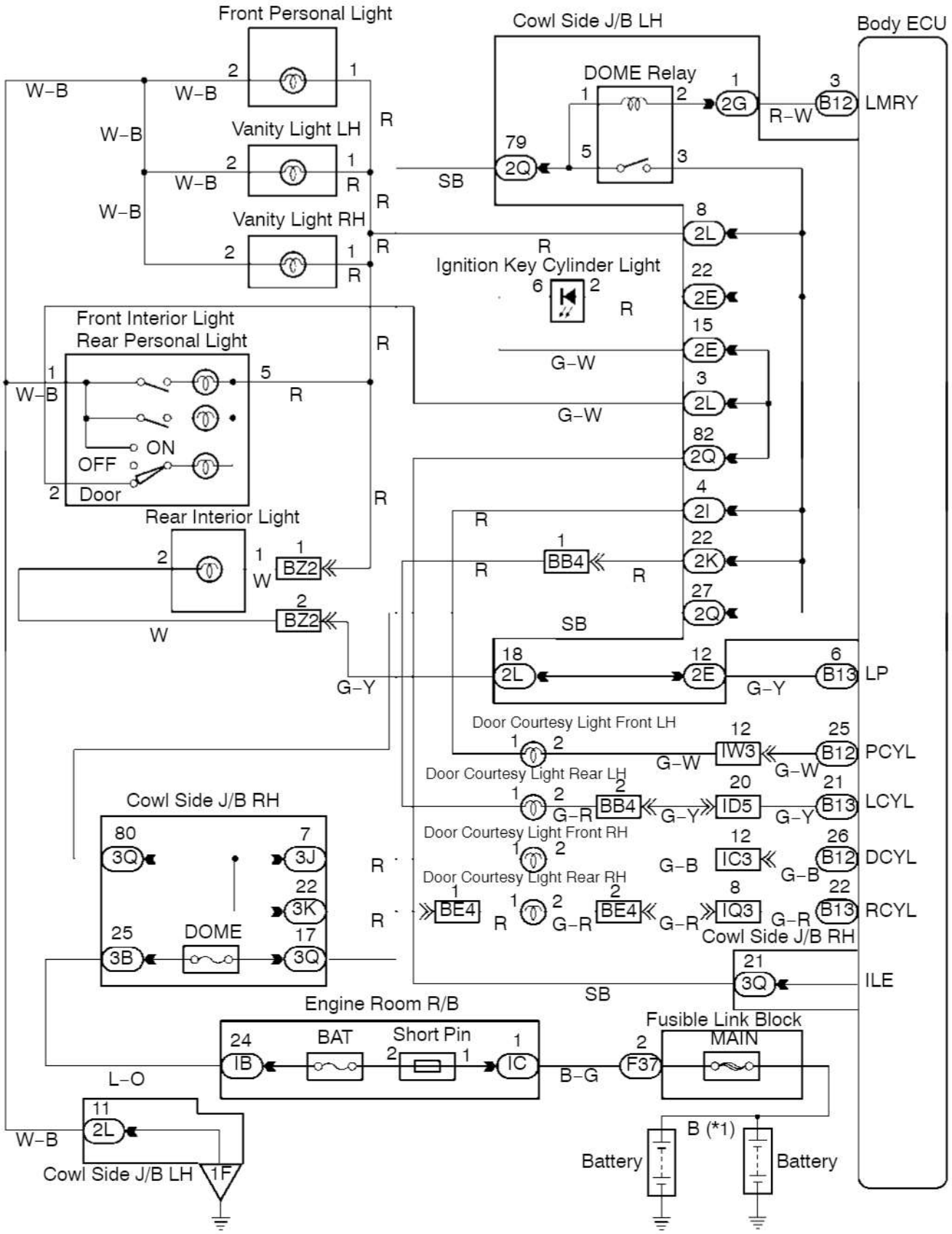
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LHD Models (w/ Moon roof):



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RHD Models (w/o Moon roof and w/ overhead console):

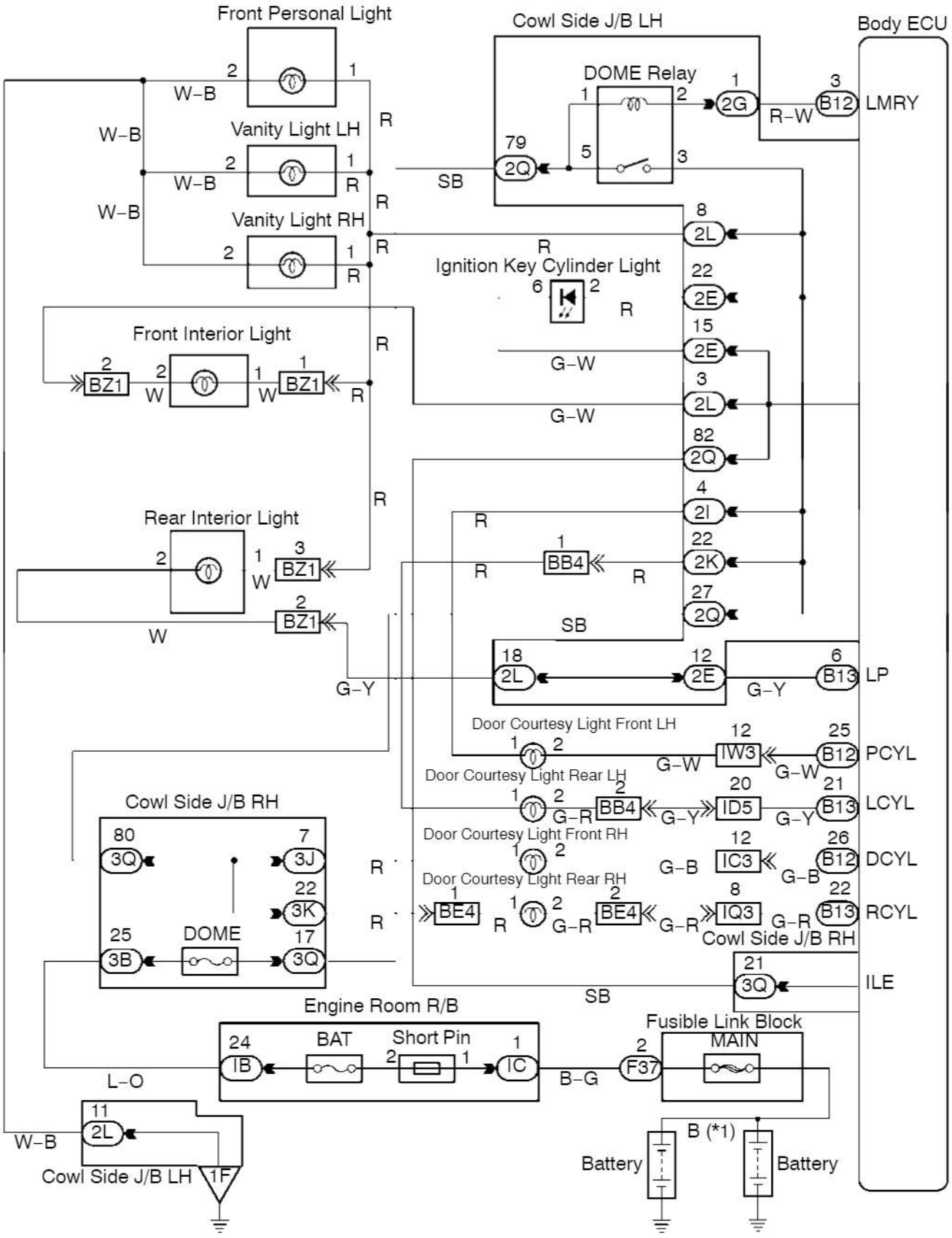


*1: Diesel

I26333

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RHD Models (w/o Moon roof and w/o overhead console):

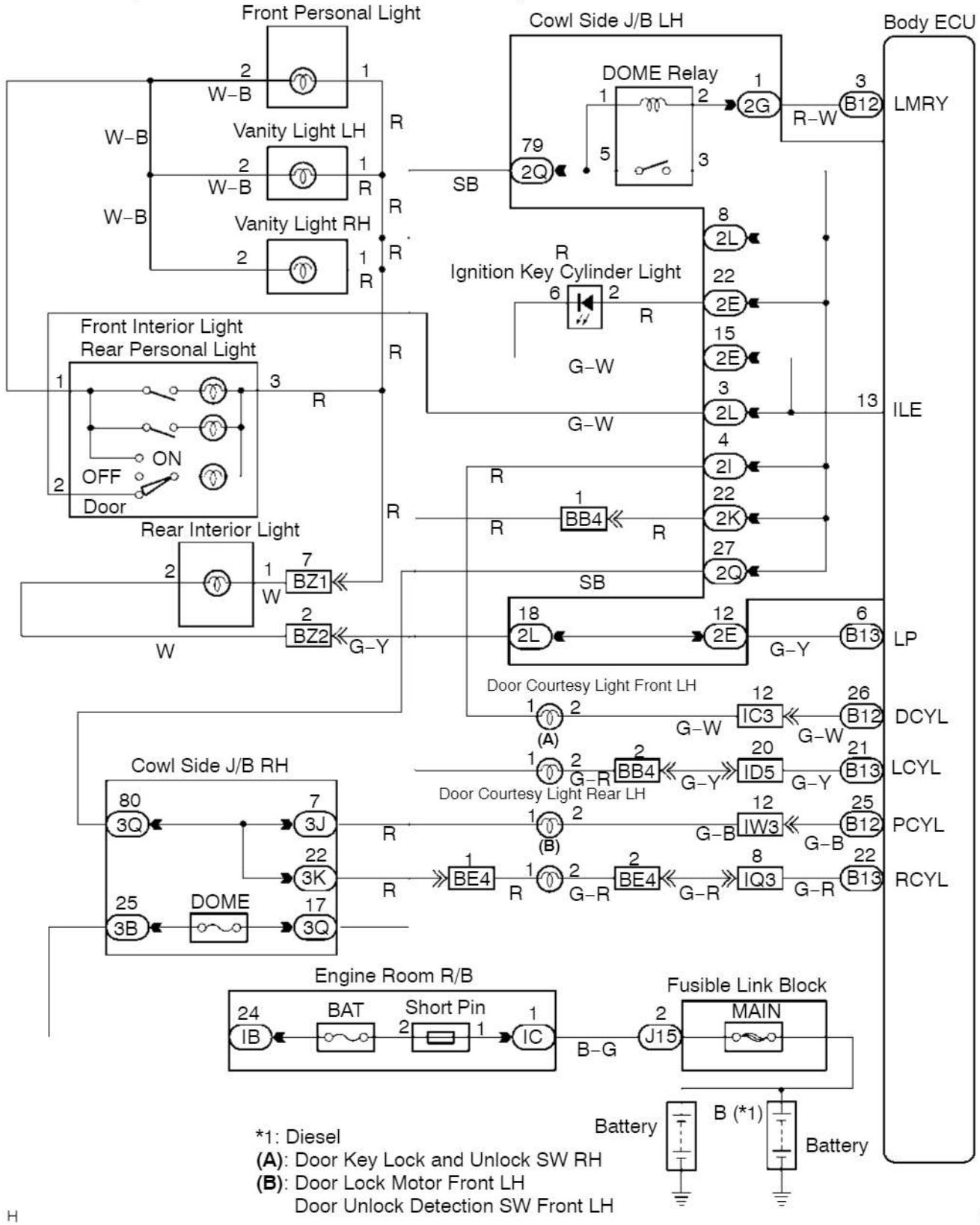


*1: Diesel

I26319

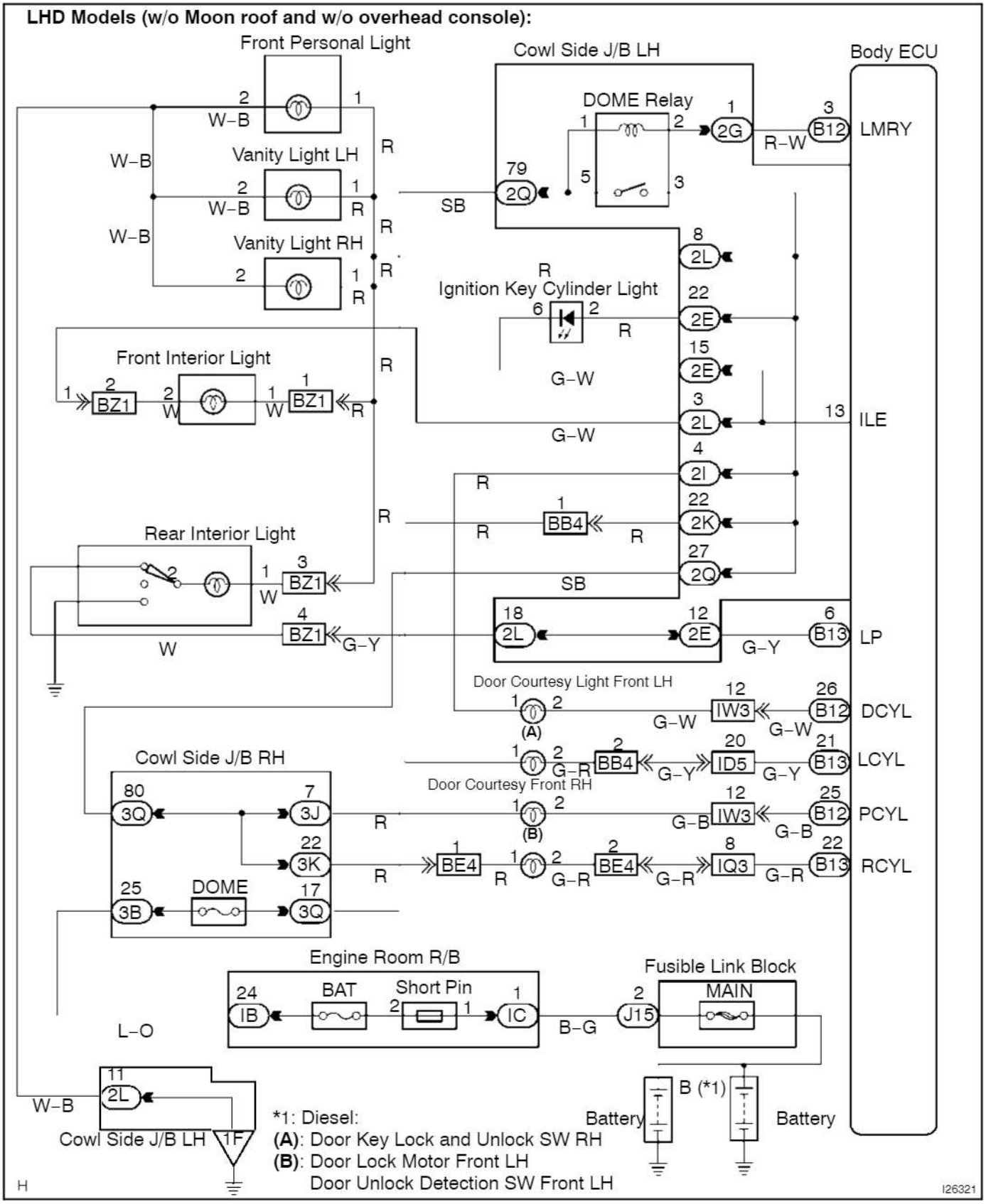
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LHD Models (w/o Moon roof and w/ overhead console):



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LHD Models (w/o Moon roof and w/o overhead console):



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check illumination using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the illumination operate in ACTIVE TEST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check illumination light.**

NG → **Replace illumination light.**

OK

3	**Check wire harness and connector between illumination light and Body ECU (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

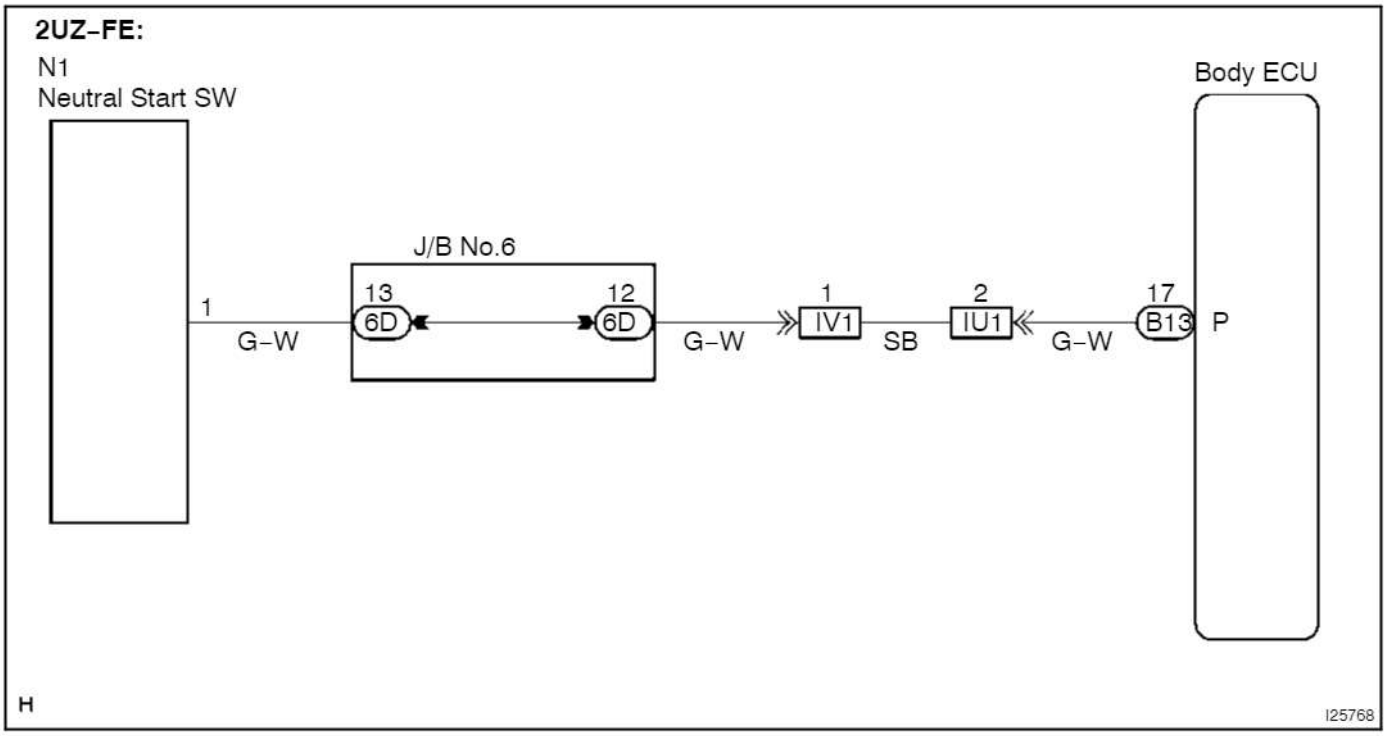
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DIAYJ–01

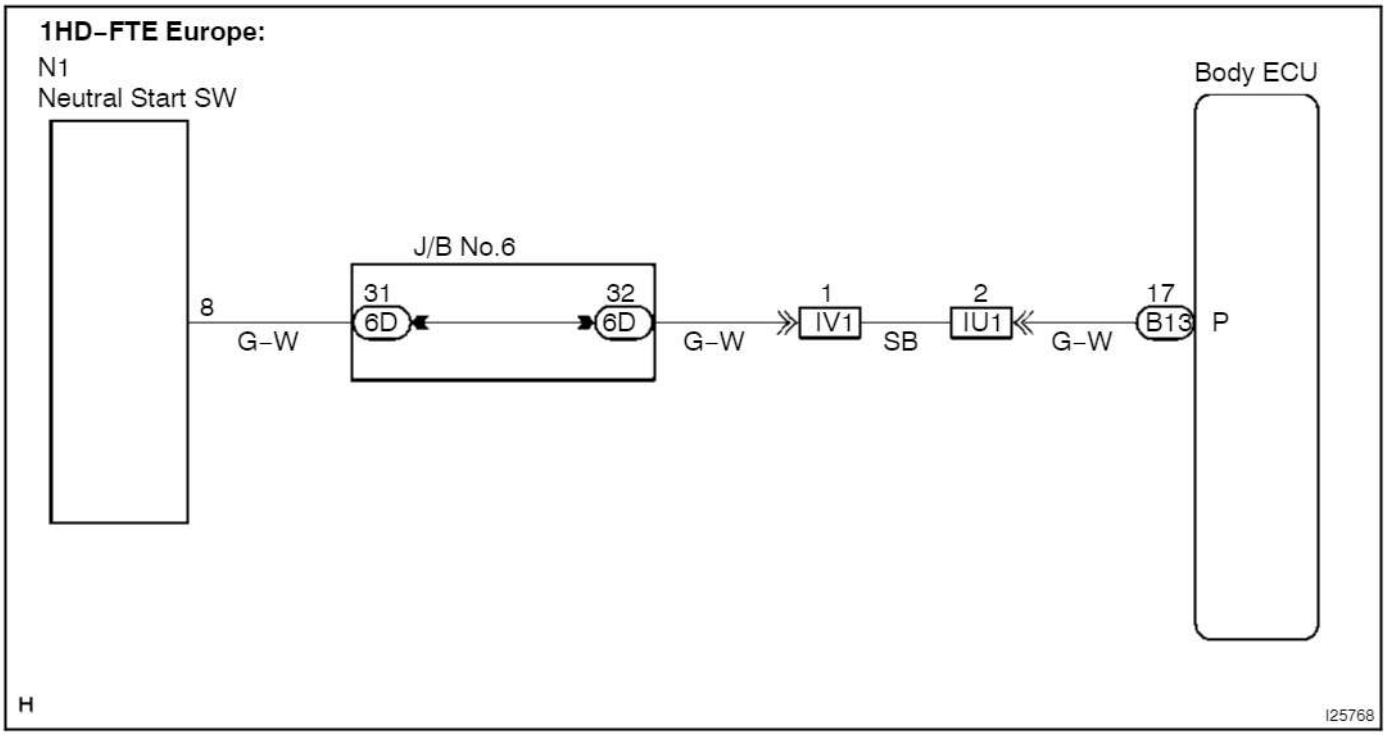
Neutral start switch circuit

WIRING DIAGRAM

2UZ–FE:

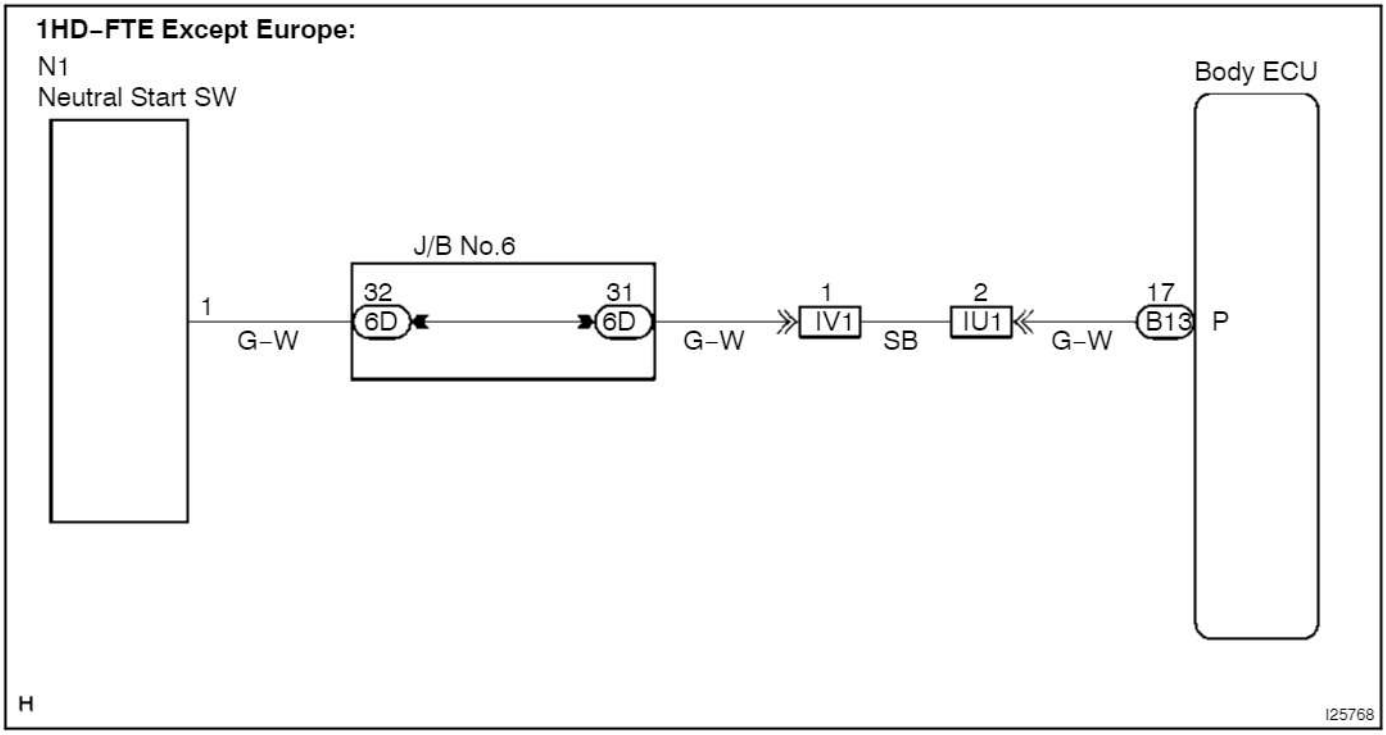


1HD–FTE Europe:

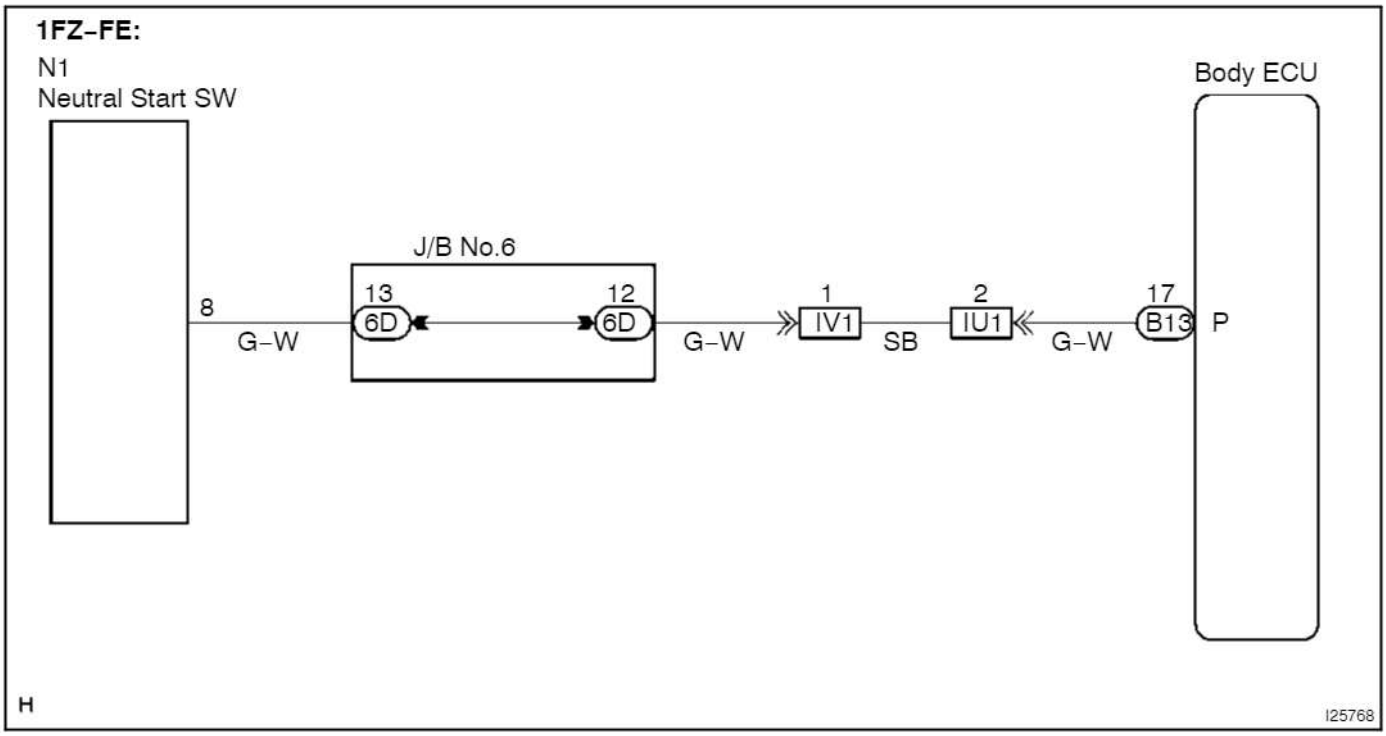


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1HD–FTE Except Europe:



1FZ–FE:



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check neutral start switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the neutral start switch operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).**

NG

2	**Check neutral start switch.**

NG → **Replace the neutral start switch.**

OK

3	**Check wire harness and connector between neutral start switch and Body ECU (See page IN–38).**

OK → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–992).

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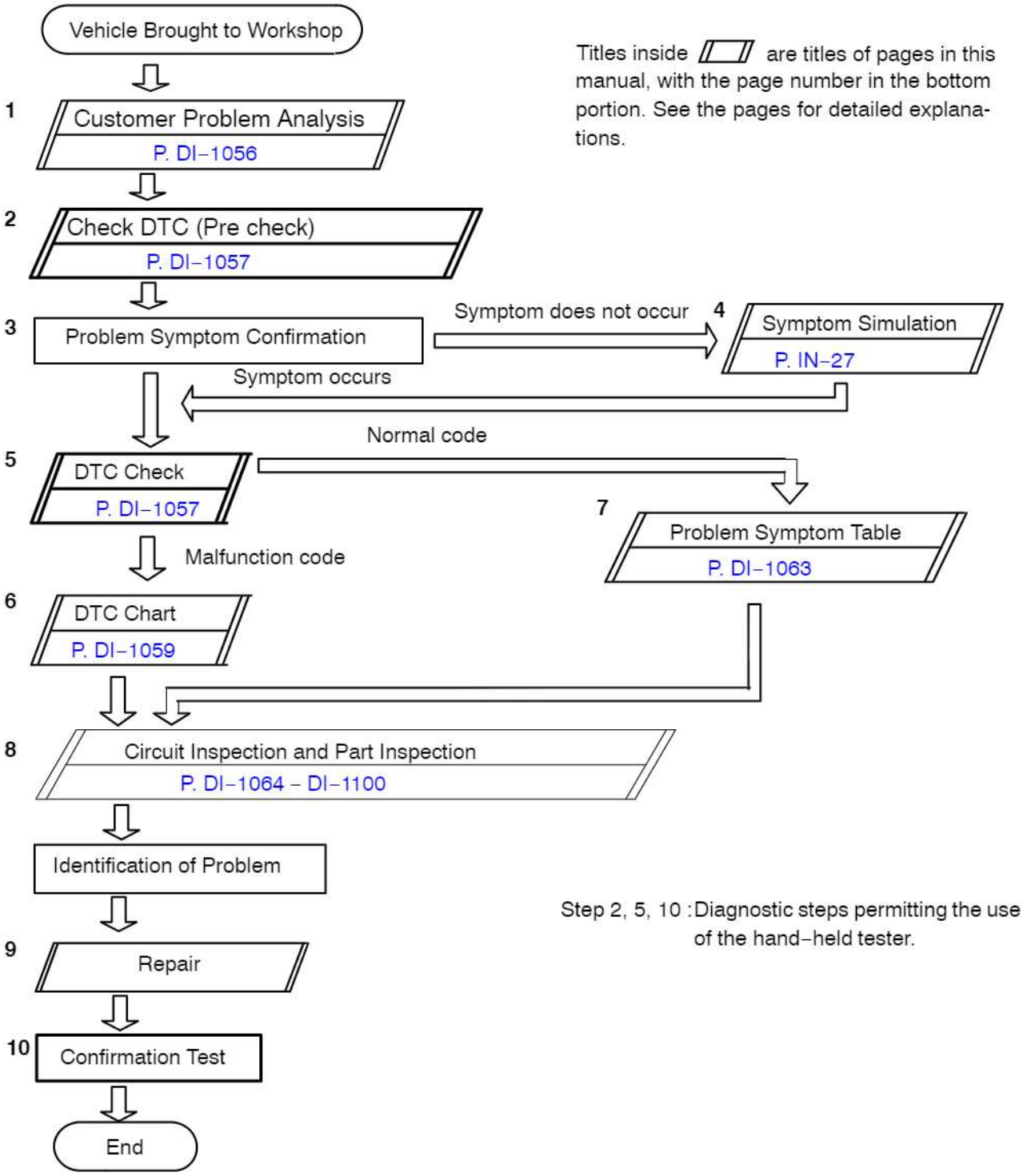
DRIVER DOOR CONTROL SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DIAX9–01

HINT:

The ECU is connected to the multiplex communication system. Therefore, be sure to check that there is no troubles in the the multiplex communication system before performing the troubleshooting.



Titles inside ▱ are titles of pages in this manual, with the page number in the bottom portion. See the pages for detailed explanations.

Step 2, 5, 10 : Diagnostic steps permitting the use of the hand–held tester.

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DIAXA–01

CUSTOMER PROBLEM ANALYSIS CHECK

DRIVER DOOR CONTROL SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Sometimes (times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/ Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))

Malfunction System	☐ Power Window Control System
	☐ Power Door Lock Control System

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

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DIAXB–01

PRE–CHECK

1. USING HAND–HELD TESTER

(a) Hook up the hand–held tester to the DLC3.

(b) Monitor the ECU data by following the prompts on the tester screen.

HINT:

Hand–held tester has a "Snapshot" function which records the monitored data.

Please refer to the hand–held tester operator's manual for further details.

2. DTC CLEAR

The DTCs and freezed frame data will be erased by either action.

Operate the hand–held tester to erase the codes.

3. DATA LIST

HINT:

According to the DATA LIST displayed by the hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, read the "DATA LIST".

Power window master switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
P/W AUTO SW	D door P/W auto switch	ON: D door P/W auto switch is ON position OFF: D door P/W auto switch is OFF position	–
P P/W AUTO SW	P door remote P/W auto switch	ON: P door remote P/W auto switch is ON position OFF: P door remote P/W auto switch is OFF position	–
RR P/W AUTO SW	RR door remote P/W auto switch	ON: RR door remote P/W auto switch is ON position OFF: RR door remote P/W auto switch is OFF position	–
RL P/W AUTO SW	RL door P/W auto switch	ON: RL door P/W auto switch is ON position OFF: RL door P/W auto switch is OFF position	–
LIMIT SW	Jam protection limit switch	ON: Jam protection limit switch is ON position OFF: Jam protection limit switch is OFF position	–
GLASS POS–1/4	Glass position (Fully close – 1/4open)	OK: CAUTION:	–
GLASS POS–2/4	Glass position (1/4 – 2/4open)	OK: CAUTION:	–
GLASS POS–3/4	Glass position (2/4 – 3/4open)	OK: CAUTION:	–
GLASS POS–OPEN	Glass position (3/4 – Fully open)	OK: CAUTION:	–
UP/DOOR KEY	Door key linked P/W UP	NOT AVL: AVAIL:	–
DOWN/DOOR KEY	Door key linked P/W DOWN	NOT AVL: AVAIL:	–
LOCK POS SW	Door unlock detection switch	ON: Door unlock detection switch is ON position OFF: Door unlock detection switch is OFF position	–

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Body control ECU:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
KEY UNLOCK WRN SW	Key unlock warning SW signal	ON: Key is IG key cylinder OFF: Key is not in IG key cylinder	–
LUGG COURTSY SW	Luggage compartment door's courtesy SW signal	ON: Luggage door is open OFF: Luggage door is close	–
D DOR CTY SW	Driver's door courtesy SW signal	ON: Driver's door is open OFF: Driver's door is close	–
P DOR CYT SW	Passenger's door courtesy SW signal	ON: Passenger's door is open OFF: Passenger's door is close	–
Rr DOR CTY SW	Rear door courtesy SW signal	ON: Either right or left rear door is open OFF: Both the right and left doors and closed.	–
DOR KEY SW–LOCK	Door key switch lock side	ON: Door key switch is lock position OFF: Door key switch is unlock position	–
P DOR KEY SW–UL	Passenger door key switch unlock side	ON: Passenger door key switch is unlock position OFF: Passenger door key switch is lock position	–
P LOCK POS SW	Passenger lock position switch	ON: Passenger lock position switch is lock position OFF: Passenger lock position switch is unlock position	–
D/L SW–LOCK	Door lock switch lock side	ON: Door lock switch is lock position OFF: Door lock switch is unlock position	–
D/L SW–UNLOCK	Door lock switch unlock side	ON: Door lock switch is unlock position OFF: Door lock switch is lock position	–

4. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the hand–held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, perform the "ACTIVE TEST".

Power window master switch:

Item	Test Details	Diagnostic Note
P/W UP/DOWN	Driver power window UP/DOWN	–

Body control ECU:

Item	Test Details	Diagnostic Note
P P/W UP/DOWN	Passenger power window UP/DOWN	–
RL P/W UP/DOWN	RL power window UP/DOWN	–
RR P/W UP/DOWN	RR power window UP/DOWN	–
DOOR LOCK	Drive the Door lock motor at all doors LOCK/UNLOCK	–

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DIAXC–01

DIAGNOSTIC TROUBLE CODE CHART

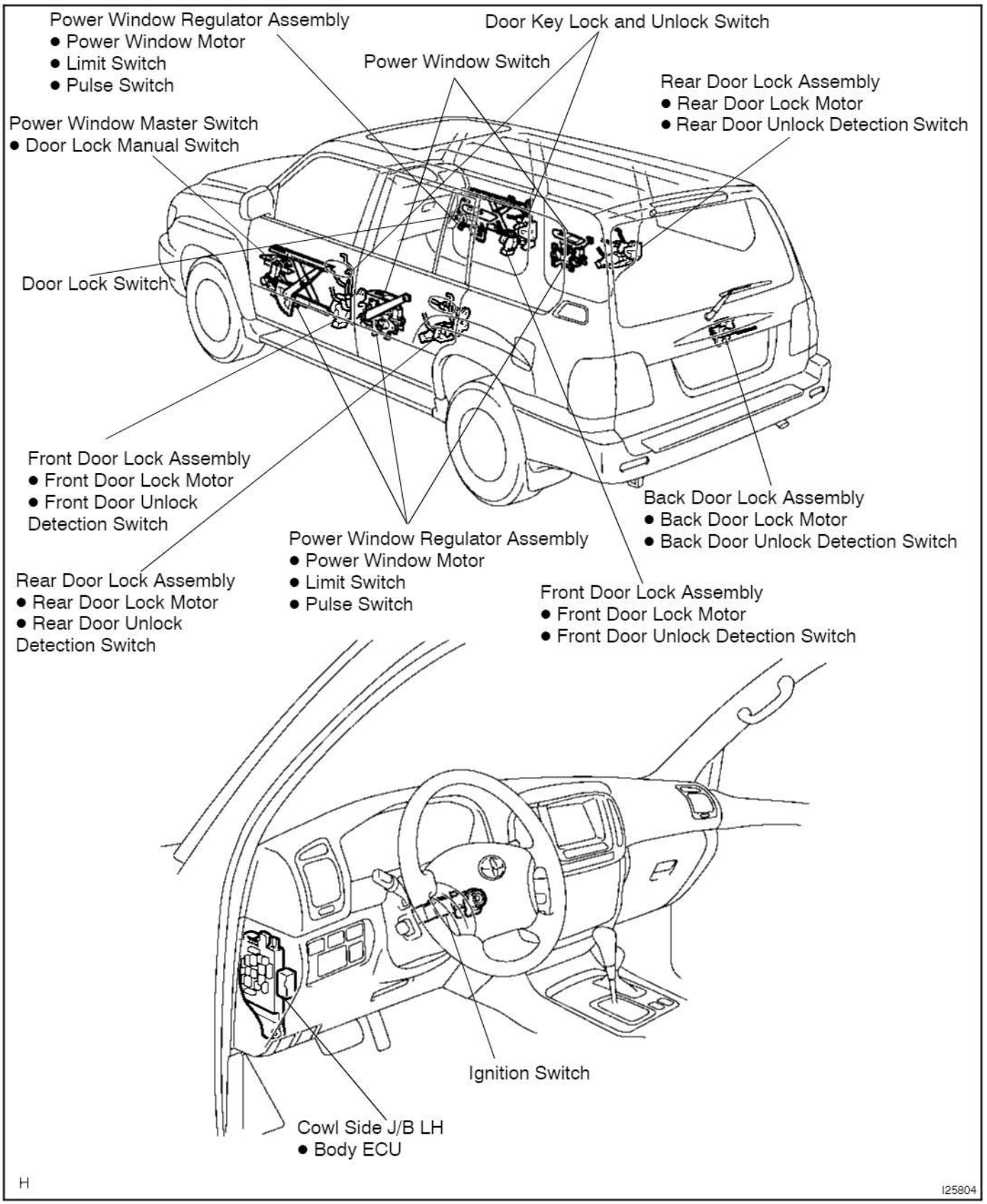
If a malfunction code is displayed during DTC check, find the circuit corresponding to the code in the table below and proceed to the appropriate page.

DTC No. (See Page)	Circuit Inspection	Trouble Area
B1221 (DI–1064)	Power Window Switch Circuit on Driver Door	• Wire harness • Power Window Master Switch (Driver door ECU)
B1222 (DI–1064)	Door Lock Switch Circuit on Driver Door	• Door lock switch • Door key lock and unlock switch • Wire harness • Power Window Master Switch (Driver door ECU)
B1231 (DI–1066)	Jam Protection Limit Switch Circuit on Driver Door	• Jam protection limit switch • Wire harness • Power Window Master Switch (Driver door ECU)
B1232 (DI–1068)	Jam Protection Pulse Switch Circuit on Driver Door	• Jam protection pulse switch • Wire harness • Power Window Master Switch (Driver door ECU)

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DIAXD–01

PARTS LOCATION

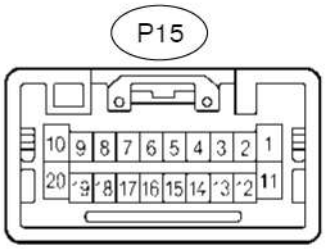


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DIAXE–01

TERMINALS OF ECU

POWER WINDOW MASTER SWITCH:



I24955

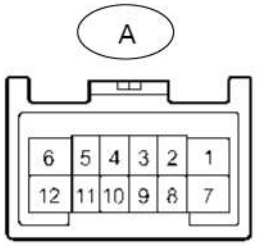
Terminal No. (Symbols)	Wiring Color	Condition	Specified condition
P15–1 ↔ P15–2 (UP ↔ GND)	Y ↔ W–B	Driver side power window is not operating	Below 1 V
		Driver side power window is moving upward	10 – 14 V
P15–2 ↔ Body ground (GND ↔ Body ground)	W–B ↔ Body ground	Constantly	Below 1 V
P15–4 ↔ P15–3 (KL ↔ KEYE)	L–W ↔ W–B	Door key lock and unlock switch LOCK	Below 1 V
		Door key lock and unlock switch OFF	10 – 14 V
P15–5 ↔ P15–13 (LMT ↔ SGND)	L–Y ↔ BR–B	Except window full–close position	Below 1 V
		Window full–close position	10 – 14 V
P15–6 ↔ P15–2 (WLSW ↔ GND)	Y–B ↔ W–B	Window lock switch OFF	10 – 14 V
		Window lock switch ON	Below 1 V
P15–7 (MPX1)	B	Multiplex communication circuit	–
P15–9 ↔ P15–2 (CPUB ↔ GND)	L–W ↔ W–B	Constantly	10 – 14 V
P15–10 ↔ P15–2 (BDR ↔ GND)	L ↔ W–B	Constantly	10 – 14 V
P15–11 ↔ P15–2 (DN ↔ GND)	G ↔ W–B	Driver side power window is not operating	Below 1 V
		Driver side power window is moving downward	10 – 14 V
P15–13 ↔ Body ground (SGND ↔ Body ground)	BR–B ↔ Body ground	Constantly	Below 1 V
P15–14 ↔ P15–3 (KUL ↔ KEYE)	G–B ↔ W–B	Door key lock and unlock switch OFF	10 – 14 V
		Door key lock and unlock switch UNLOCK	Below 1 V
P15–15 ↔ P15–13 (PLS ↔ SGND)	L–W ↔ BR–B	During the power window is in operation	Pulse generation
		Power window is not operated (pulse switch ON)	Below 1 V
		Power window is not operated (pulse switch OFF)	10 – 14 V
P15–16 ↔ P15–3 (LSWD ↔ KEYE)	L–B (*2), L–O (*1) ↔ W–B	Driver door lock position switch ON	10 – 14 V
		Driver door lock position switch OFF	Below 1 V
P15–20 ↔ P15–2 (SIG ↔ GND)	B–W ↔ W–B	Ignition switch ON	10 – 14 V

*1: RHD *2: LHD

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EXCEPT POWER WINDOW MASTER SWITCH:

Ⓐ: Front RH Switch (P12)
: Rear RH Switch (P14)
: Rear LH Switch (P13)



I26016

Terminal No. (Symbols)	Wiring Color	Condition	Specified condition
A–1 ↔ A–7 (DN ↔ GND)	G ↔ W–B	Driver side power window is not operating	Below 1 V
		Driver side power window is moving downward	10 – 14 V
A–3 ↔ A–5 (LMT ↔ SGND)	L–Y ↔ BR–B	Except window full–close position	Below 1 V
		Window full–close position	10 – 14 V
A–4 ↔ A–5 (PLS ↔ SGND)	L–W ↔ BR–B	During the power window is in operation	Pulse generation
		Power window is not operated (pulse switch ON)	Below 1 V
		Power window is not operated (pulse switch OFF)	10 – 14 V
A–6 ↔ A–7 (UP ↔ GND)	Y ↔ W–B	Driver side power window is not operating	Below 1 V
		Driver side power window is moving upward	10 – 14 V
A–7 ↔ Body ground (GND ↔ Body ground)	W–B ↔ Body ground	Constantly	Below 1 V
A–8 (MPX1)	W	Multiplex communication circuit	–
A–9 (*1) ↔ A–7 (SEL1 ↔ GND)	W–B ↔ W–B	Constantly	Below 1 V
A–10 (*2) ↔ A–7 (SEL2 ↔ GND)	W–B ↔ W–B	Constantly	Below 1 V
A–11 (*1) ↔ A–7 (PCT ↔ GND)	Y–B ↔ W–B	Ignition switch ON, power window lock switch OFF	Below 1 V
		Ignition switch ON, power window lock switch ON	10 – 14 V
A–11 (*3) ↔ A7 (PCT1 ↔ GND)	Y–B ↔ W–B	Ignition switch ON, power window lock switch OFF	
		Ignition switch ON, power window lock switch ON	
A–12 ↔ A–7 (BDR ↔ GND)	L ↔ W–B	Constantly	10 – 14 V

*1: RHD (Front LH Switch), LHD (Front RH Switch)
*2: RHD (Rear LH Switch), LHD (Rear LH Switch)
*3: RHD (Rear LH Switch, Rear RH Switch), LHD (Rear LH Switch, Rear RH Switch)

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DIAXF–01

PROBLEM SYMPTOMS TABLE

POWER DOOR LOCK CONTROL SYSTEM:

Symptom	Suspect Area	See page
All the doors can not be locked or unlocked.	1. Power source circuit 2. Theft deterrent ECU 3. Power window master switch (Driver door ECU)	DI–1070 DI–825 BE–51
Driver side door lock does not operate.	1. Door lock motor circuit 2. Power window master switch (Driver door ECU) 3. Theft deterrent ECU	DI–1086 BE–51 DI–825
Door key related function cannot be done.	1. Door key lock and unlock switch circuit 2. Door courtesy light and courtesy switch circuit 3. Theft deterrent ECU 4. Power window master switch (Driver door ECU)	DI–1073 DI–1008 DI–825 BE–51
Key confinement prevention function does not operate.	1. Door courtesy light and courtesy switch circuit 2. Door unlock detection switch circuit 3. Theft deterrent ECU 4. Power window master switch (Driver door ECU)	DI–1008 DI–1081 DI–825 BE–51

POWER WINDOW CONTROL SYSTEM:

Symptom	Suspect Area	See page
All the power window does not operate.	1. Power source circuit 2. Power window master switch (Driver door ECU)	DI–1070 BE–51
Driver side power window does not operate.	1. Power window motor circuit 2. Power window master switch (Driver door ECU)	DI–1086 BE–51
Jam protection function and auto up or down function does not operate.	1. Jam protection limit and pulse switch circuit (Master switch) 2. Jam protection limit and pulse switch circuit (Front RH) 3. Jam protection limit and pulse switch circuit (Rear RL / RR) 4. Power window master switch (Driver door ECU) 5. Theft deterrent ECU	DI–1066 DI–1068 DI–1091 DI–1100 DI–1096 BE–51 DI–825
Window lock function does not operate.	1. Power window master switch (Driver door ECU)	BE–51
Remote control of all windows (Except driver side) does not operate with master switch. (Window operates normally with each of master switch.)	1. Power window master switch circuit (Driver door ECU)	BE–51
The key related power window operations cannot be done with driver door key cylinder. (Master switch operation is normal.)	1. Door key lock and unlock switch circuit 2. Door courtesy light and courtesy switch circuit 3. Power window master switch (Driver door ECU)	DI–1073 DI–1008 BE–51
Power window does not operate with keyless entry transmitter. (Windows operate normally with master switch.)	1. Inspect wireless door lock control system 2. Replace Power window master switch (Driver door ECU) 3. Theft deterrent ECU	DI–808 – DI–825

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DIAXG–01

CIRCUIT INSPECTION

DTC	B1221	Power window switch circuit on driver door

CIRCUIT DESCRIPTION

These DTC notify how switch works as follows:
If DTC is not output when operating switch, it means failure of switch contact. If DTC is output when not operating switch, it means stick of switch. When something wrong is found by this diagnosis, inspect each switch. Then, replace the switch if there is a problem, or check the wire harness if there is no problem.

DTC No.	DTC Detecting Condition	Trouble Area
B1221	Stick of either of the power window master switch (except window lock switch)	• Power window master switch (Driver door ECU) • Wire harness

HINT:
Please refer to BE section for switch inspection.

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DTC	B1222	Door lock switsh circuit on driver door

CIRCUIT DESCRIPTION

These DTC notify how switch works as follows:
If DTC is not output when operating switch, it means failure of switch contact. If DTC is output when not operating switch, it means stick of switch. When something wrong is found by this diagnosis, inspect each switch. Then, replace the switch if there is a problem, or check the wire harness if there is no problem.

DTC No.	DTC Detecting Condition	Trouble Area
B1222	Stick of door key lock and unlock switch	• Door lock control switch • Door key lock and unlock switch • Wire harness

HINT:
Please refer to BE section for switch inspection.

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DTC	B1231	Jam protection limit switch circuit on driver door

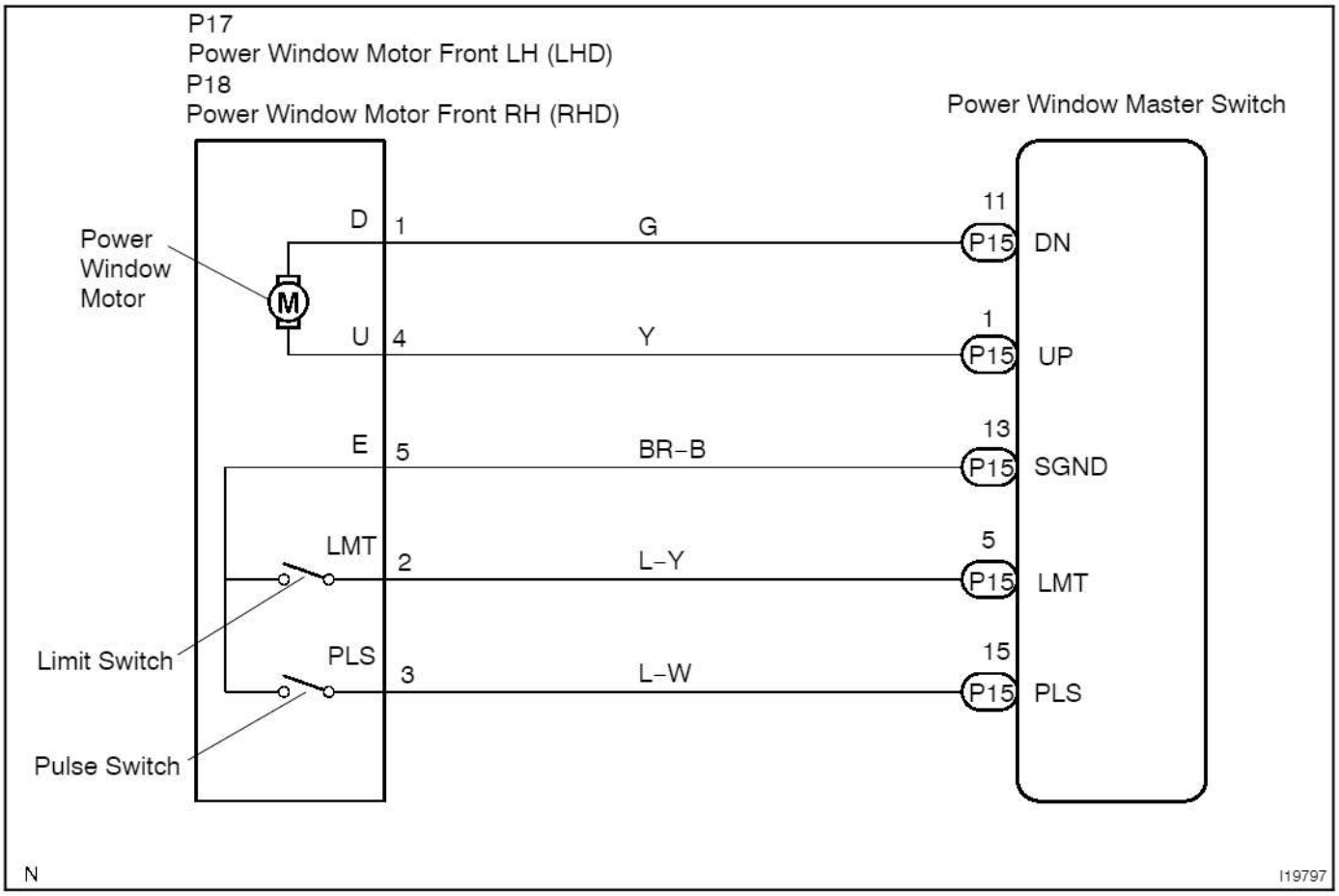
CIRCUIT DESCRIPTION

This DTC is output when failure of the jam protection limit switch circuit is detected.
The jam protection limit switch is built in the power window motor.
This switch is OFF when the window stays between the fully closed position and 4 mm under the full–closed position, and power window master switch reads this signal.

DTC No.	DTC Detection Condition	Trouble Area
B1231	No change in limit switch more than 2.0 seconds even if operating glass down when limit switch is OFF (window glass is fully closed)	• Jam protection limit switch • Wire harness • Power window master switch (Driver door ECU)

HINT:
When the power window master switch detects the condition that the power window is lowered to turn the limit switch from OFF to ON, this DTC is cleared.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of not using the hand–held tester, start from step 3.

1	**Whether or not this DTC is cleared when the power window is lowered from fully close condition to half opened condition.**

Yes → **It is suspected that the DTC was detected by ECU with any failure in the past.**

No

2	**Check jam protection limit switch (See page BE–51).**

NG → **Replace power window motor.**

OK

3	**Check wire harness and connector between power window motor and power window master switch (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Replace Power window master switch.

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DIAXJ–01

DTC	B1232	Jam protection pulse switch circuit on driver door

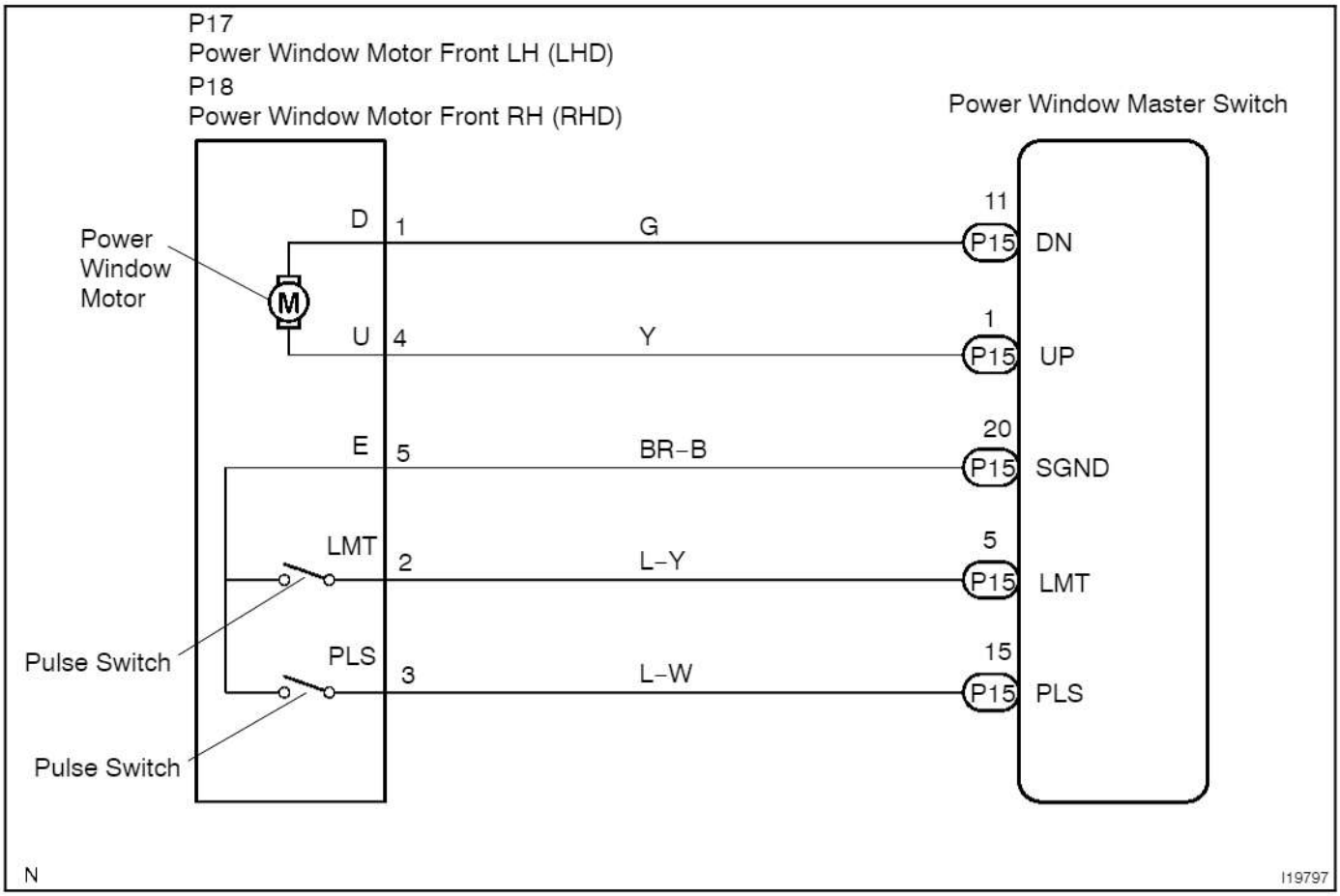
CIRCUIT DESCRIPTION

This DTC is output when failure of the jam protection pulse switch circuit is detected.
The jam protection pulse switch is built in the power window motor.
The pulse switch outputs ON/OFF pulse when the motor rotates.

DTC No.	DTC Detecting Condition	Trouble Area
B1232	No change in pulse switch more than 2.0 seconds even if opening glass down when limit switch is OFF (window glass is fully closed).	• Jam protection pulse switch • Wire harness

HINT:
When the power window is operated UP or DOWN to detect the 30 cycle or more of the ON–OFF pulse, this DTC is cleared.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of not using the hand–held tester, start from step 3.

1	**Whether or not this DTC is cleared when the power window is lowered from fully close condition to half opened condition.**

Yes → **It is suspected that the DTC was detected by ECU with any failure in the past.**

No

2	**Check jam protection pulse switch (See page BE–51).**

NG → **Replace power window motor.**

OK

3	**Check wire harness and connector between power window motor and power window switch (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Replace Power window master switch.

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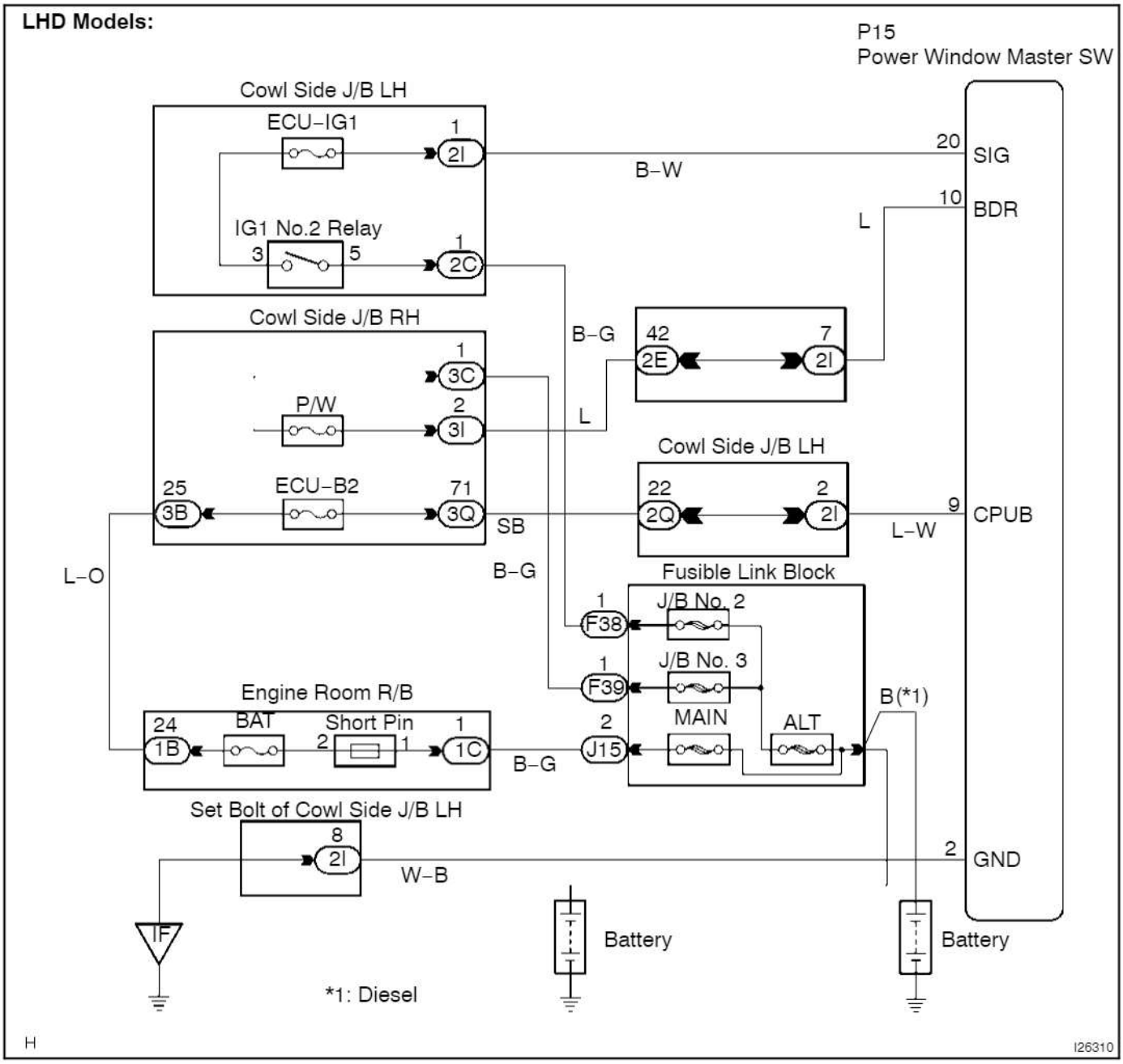
DIAXK-01

Power source circuit

CIRCUIT DESCRIPTION

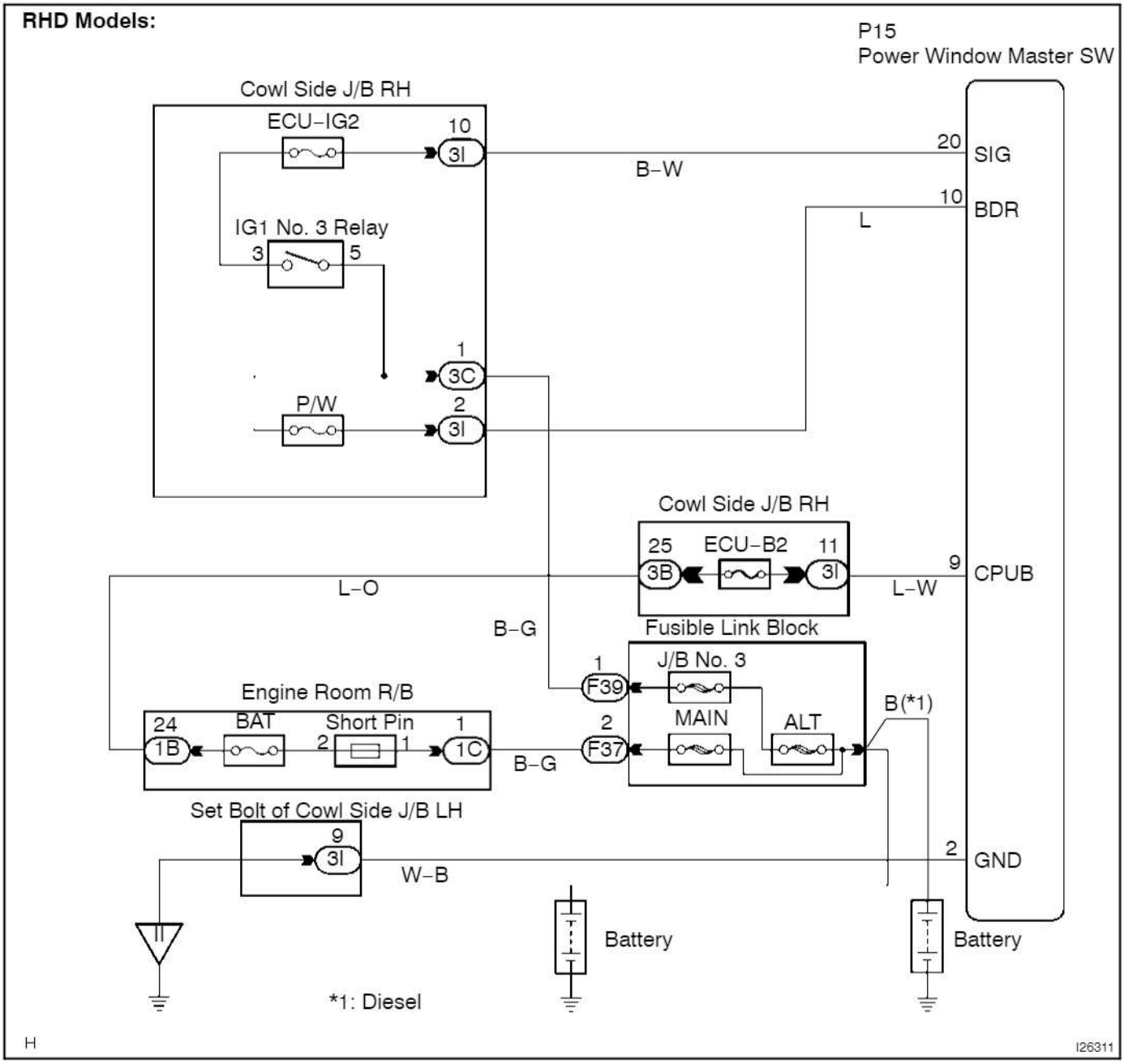
This circuit supplies power to operate the power window master switch.

WIRING DIAGRAM



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RHD Models:



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INSPECTION PROCEDURE

1	**Check ECU–IG1 and AM1 fuse.**

CHECK:
Check continuity of ECU–IG1 and AM1 fuse.
OK:
Continuity

NG → **Replace faulty fuse.**

OK

2	**Check voltage between terminals CPUB, SIG, BDR and GND of power window master switch connector.**

PREPARATION:
Turn the ignition switch OFF.
CHECK:
Measure the voltage between terminals CPUB, SIG, BDR and GND.
OK:
Voltage: 10 – 14V

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

3	**Check wire harness and connector between power window master switch and body ground (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

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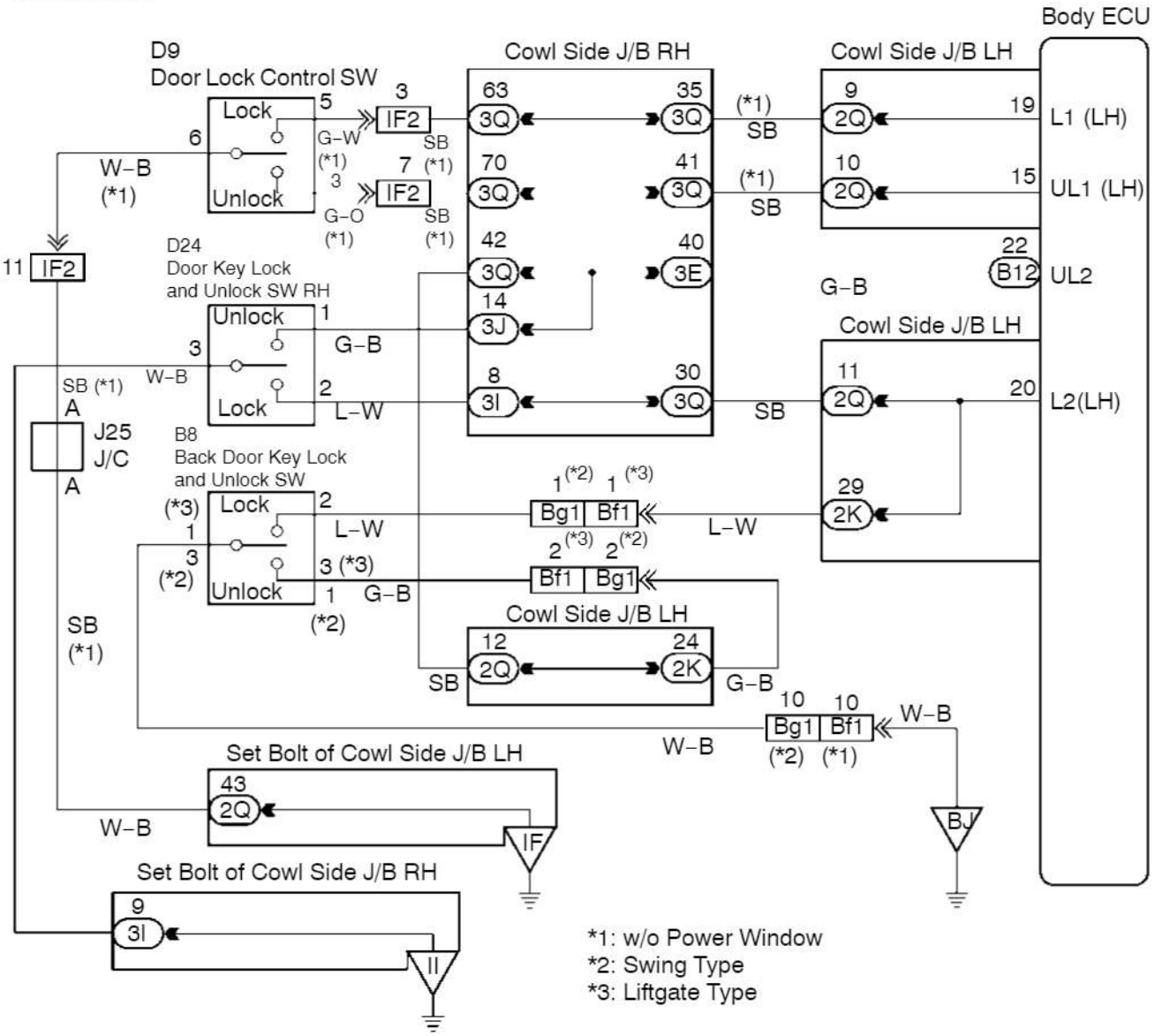
Door key lock and unlock switch circuit

CIRCUIT DESCRIPTION

The door key lock and unlock switch is built in the door key cylinder. When the key is turned to the lock side, terminai 3 of the switch is grounded and when the key is turned to the unlock side, terminal 2 of the switch is grounded.

WIRING DIAGRAM

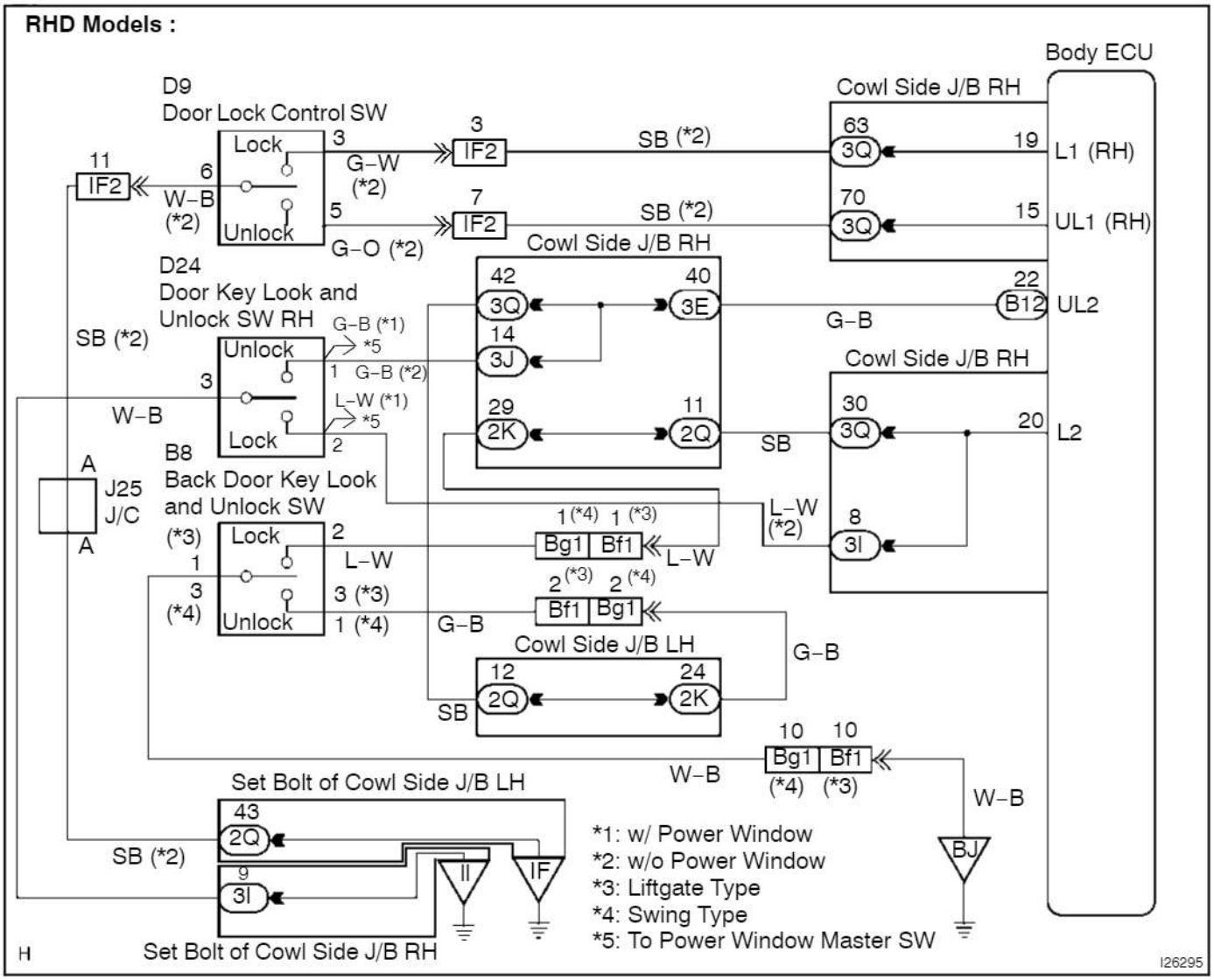
LHD Models:



I26300

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RHD Models :



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check door key lock and unlock switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the door key lock and unlock operate in DATA LIST (See page DI–1057).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

2	**Check the door key lock and unlock switch (See page BE–53).**

NG → **Replace the door key lock and unlock switch.**

OK

3	**Check wireharness and connector between door key lock and unlock switch and Body ECU.**

NG → **Repair or replace wireharness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

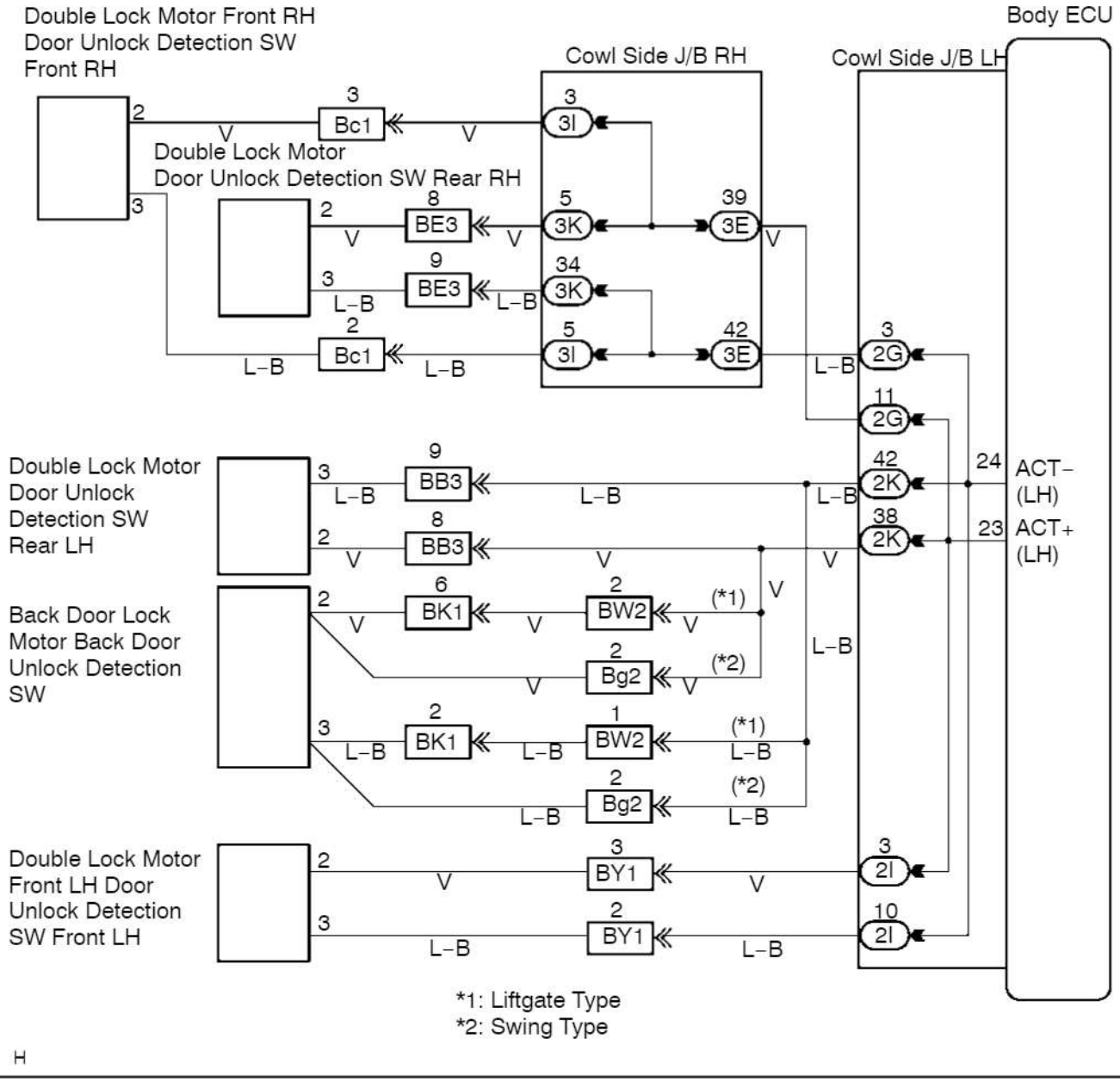
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DIAXM–01

Door lock motor circuit

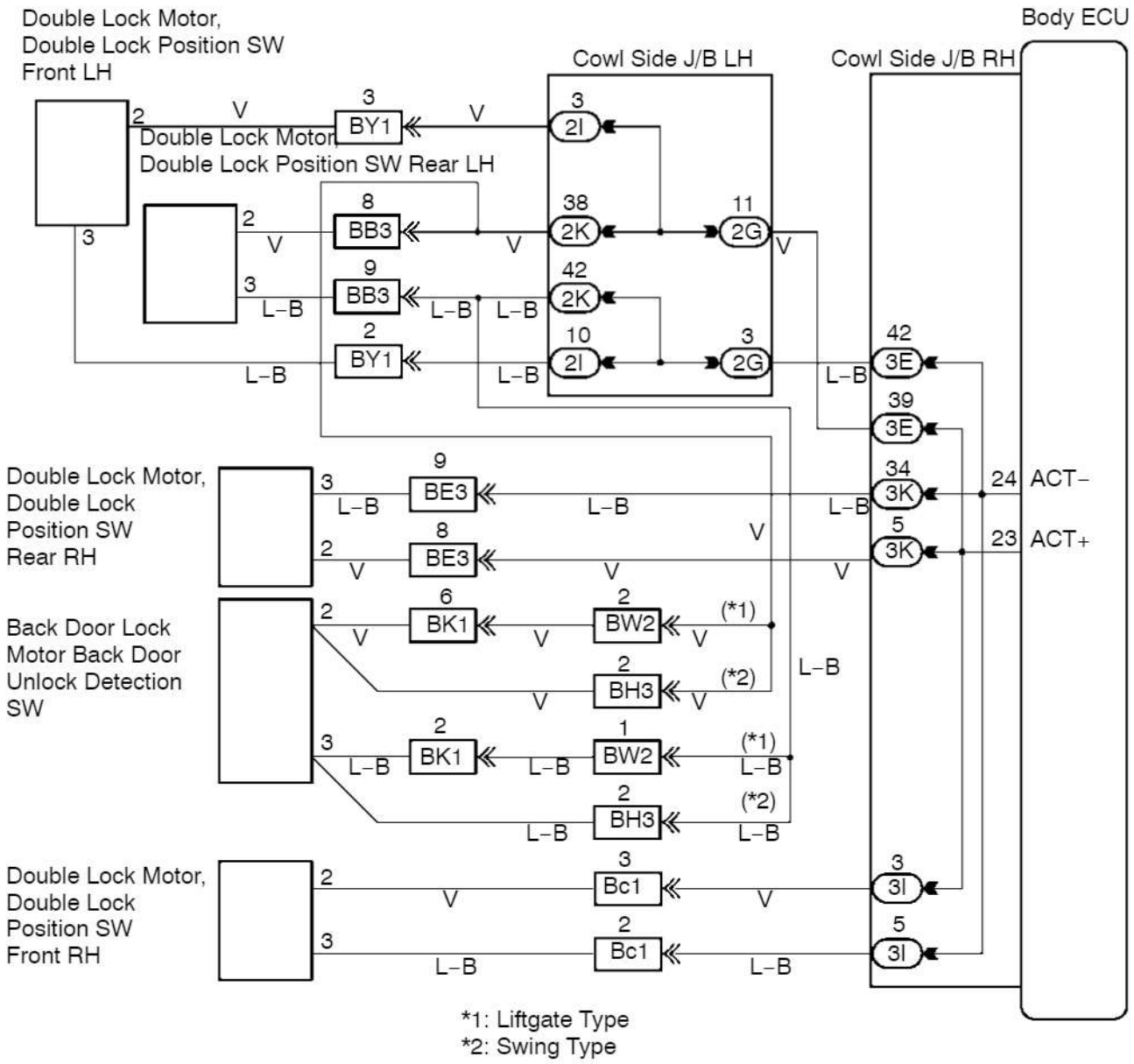
WIRING DIAGRAM

LHD Models (w/o Double Lock):



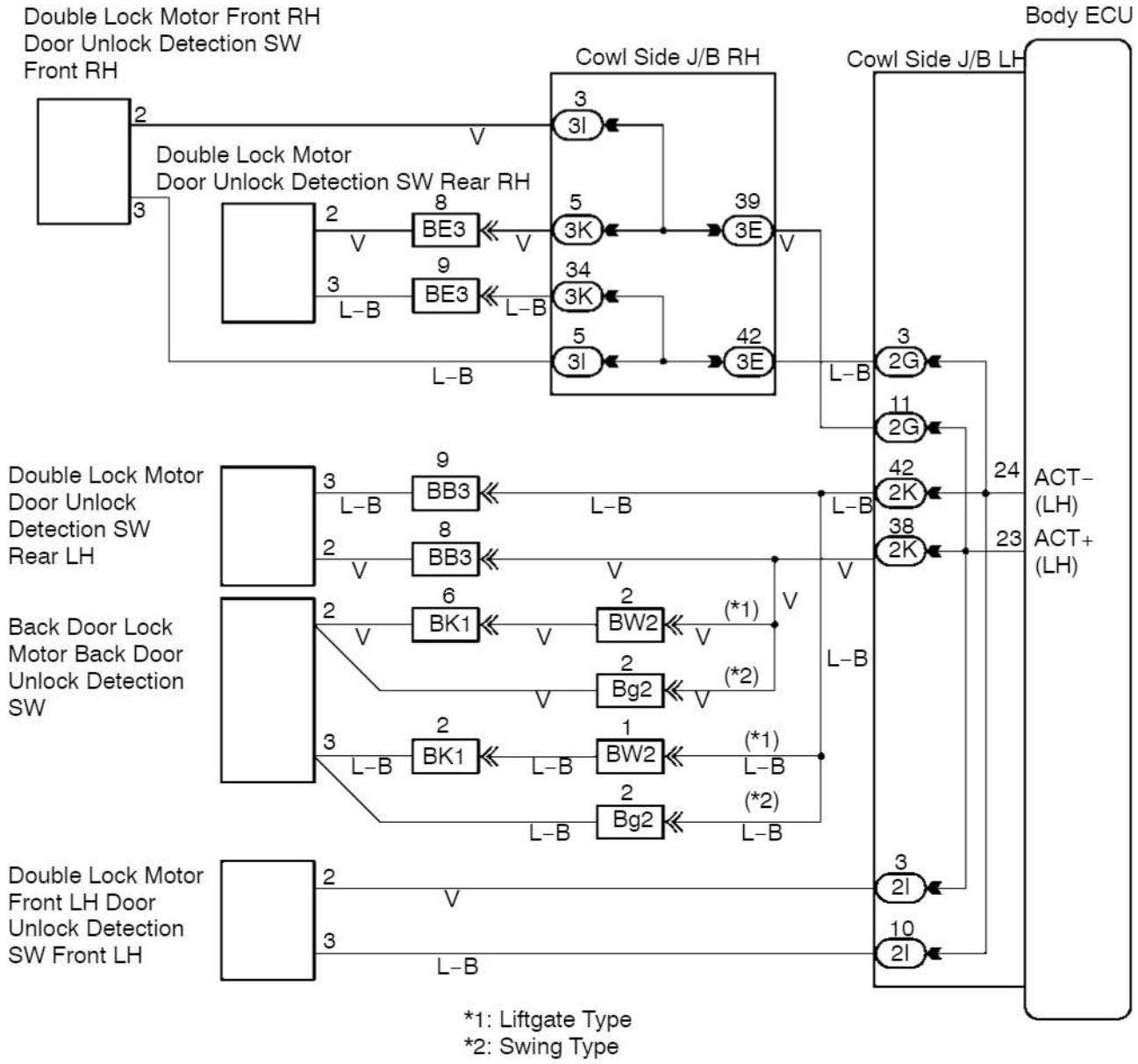
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RHD Models (w/o Double Lock):



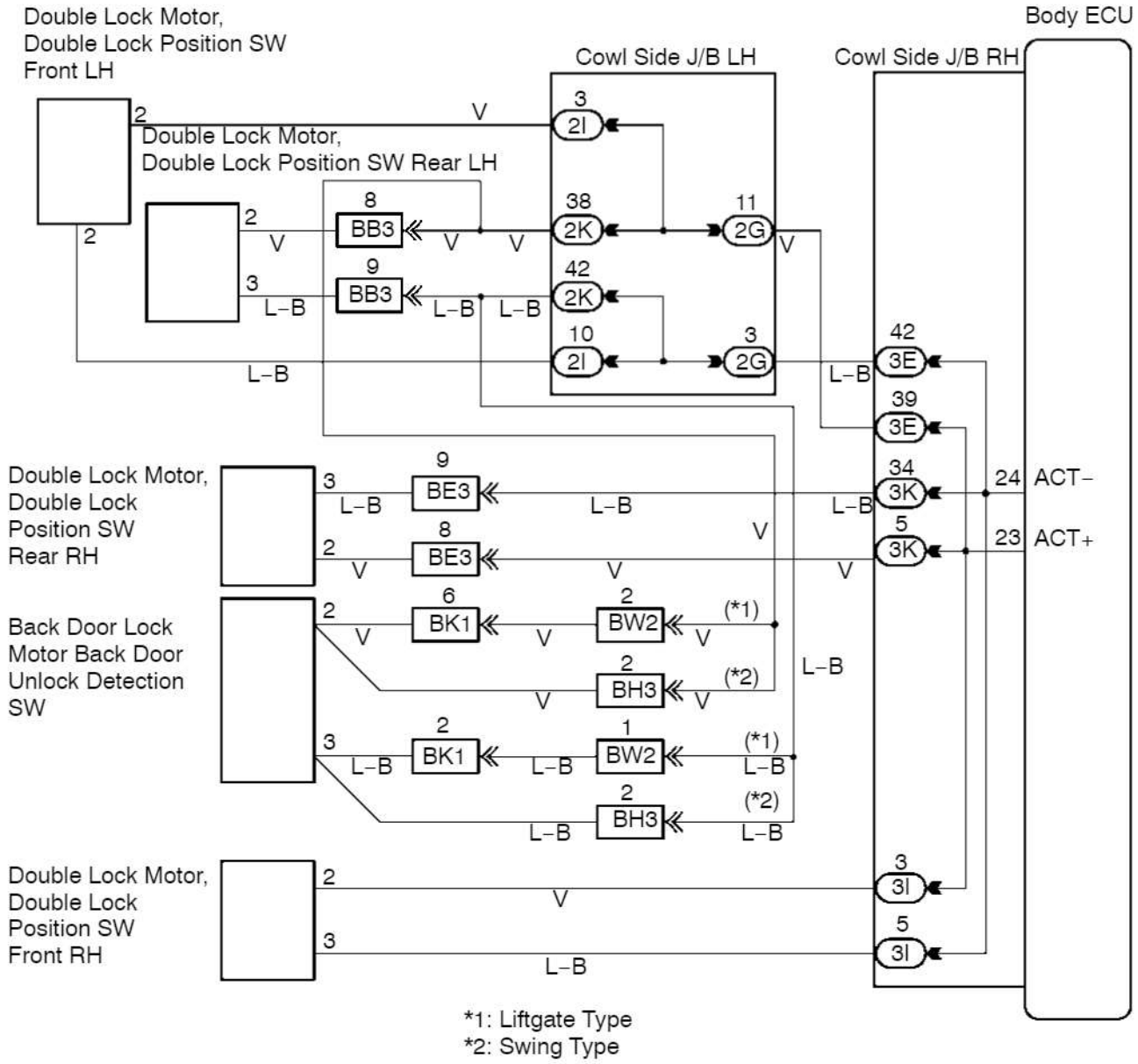
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LHD Models (w/ Double Lock):



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RHD Models (w/ Double Lock):



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check door lock motor using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the door lock motor operate in ACTIVE TEST (See page DI–1057).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

2	**Check the door lock motor (See page BE–53).**

NG → **Replace the door lock motor.**

OK

3	**Check wireharness and connector between door lock motor and Body ECU.**

NG → **Repair or replace wireharness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

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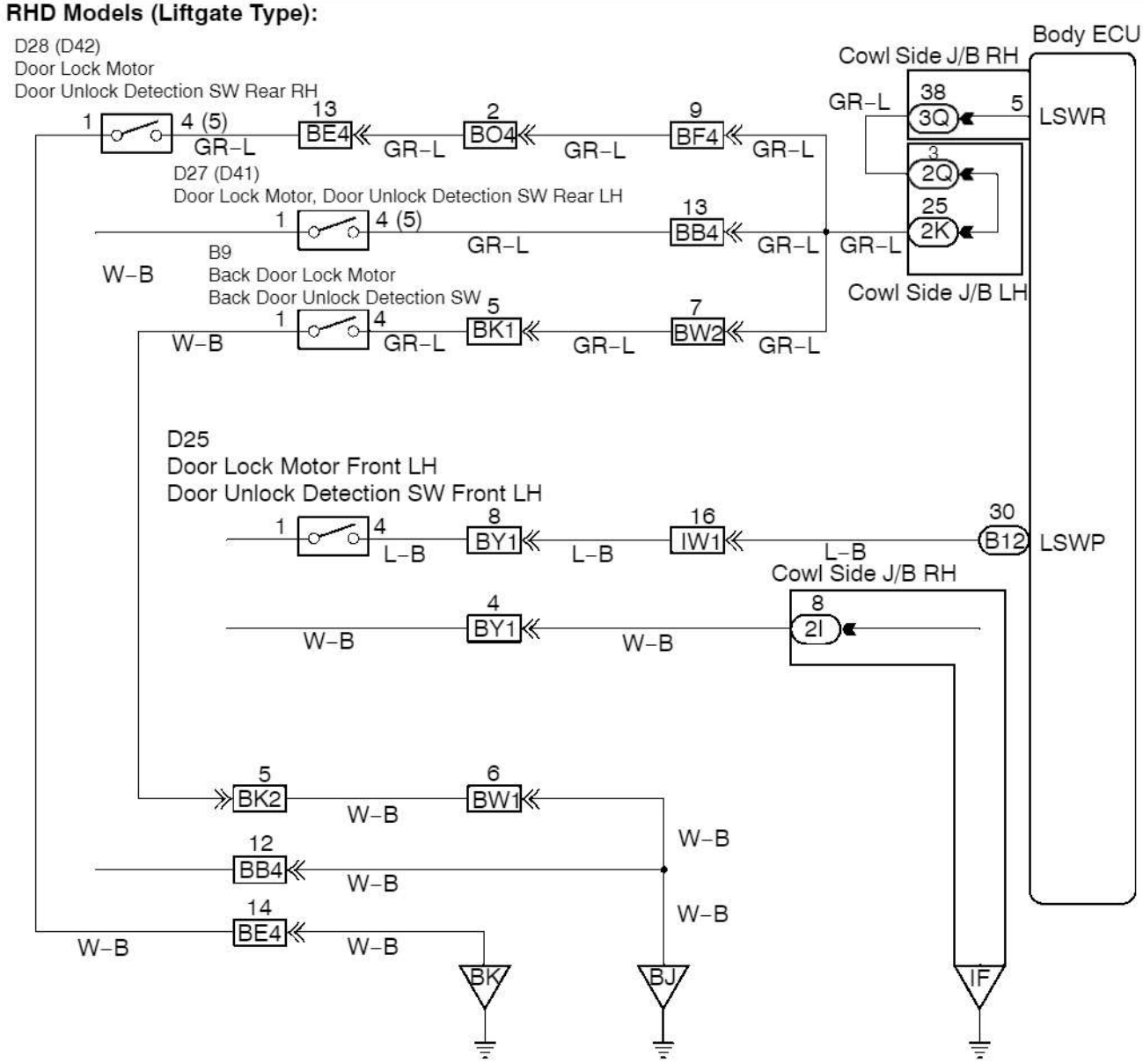
Door unlock detection switch circuit

CIRCUIT DESCRIPTION

The door unlock detection switch is built in the door lock motor assembly. This switch is ON when the door lock knob is in the unlock position and OFF when the lock knob is in the lock position. The ECU detects the door lock knob conditions is this circuit. It is used as one of the operating conditions for the key confinement prevention function.

WIRING DIAGRAM

RHD Models (Liftgate Type):



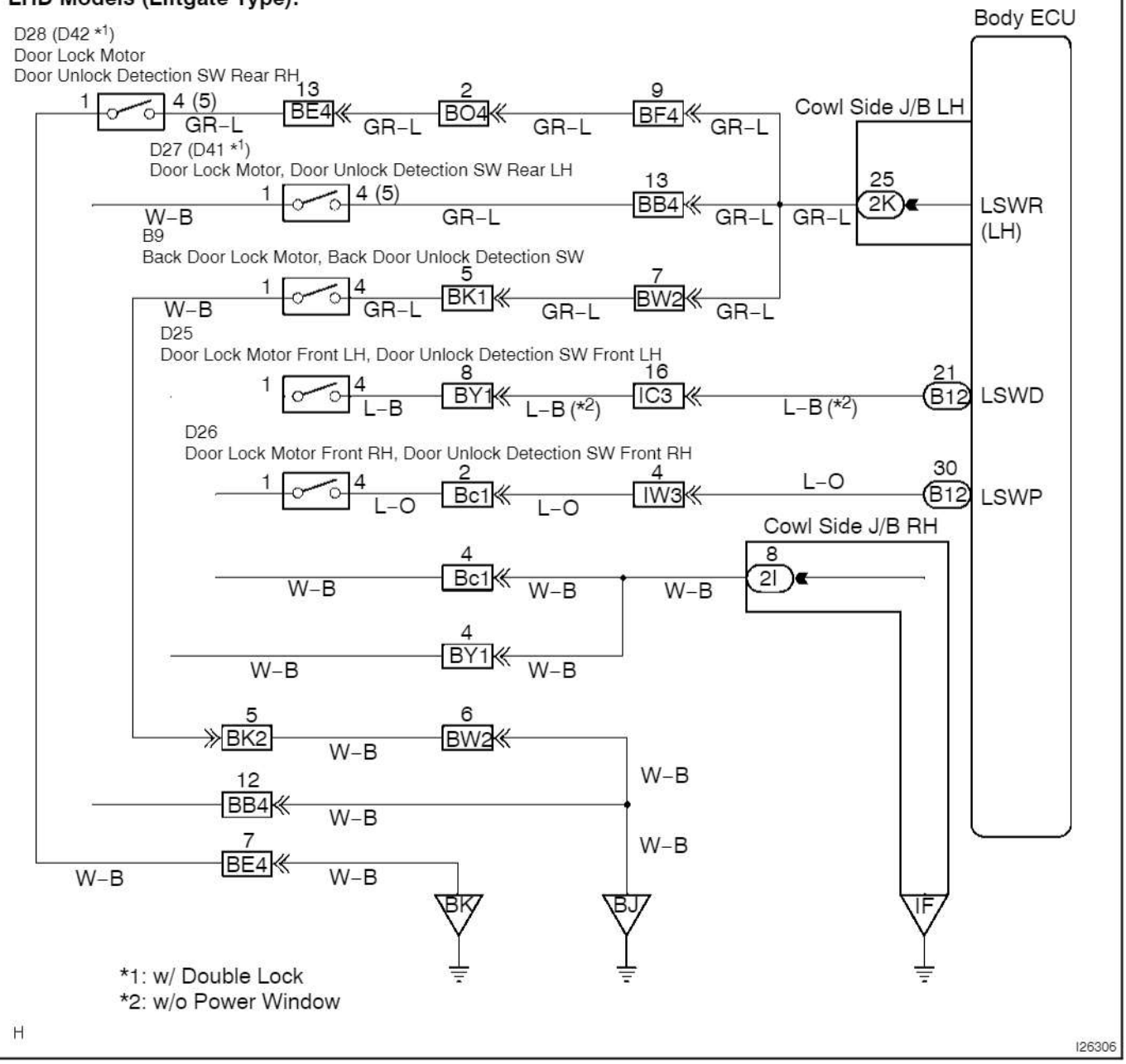
( ): w/ Double Lock

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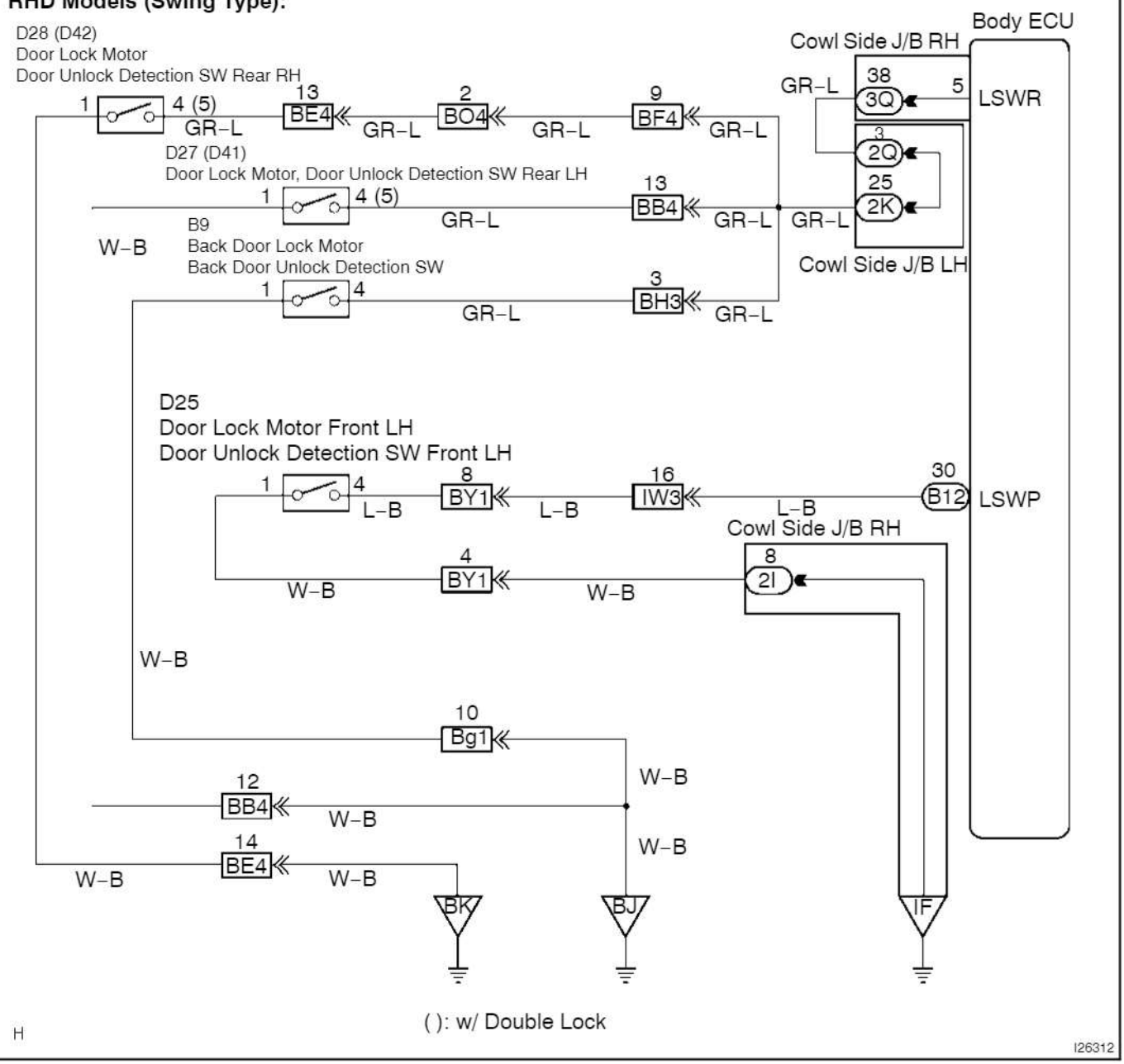
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LHD Models (Liftgate Type):



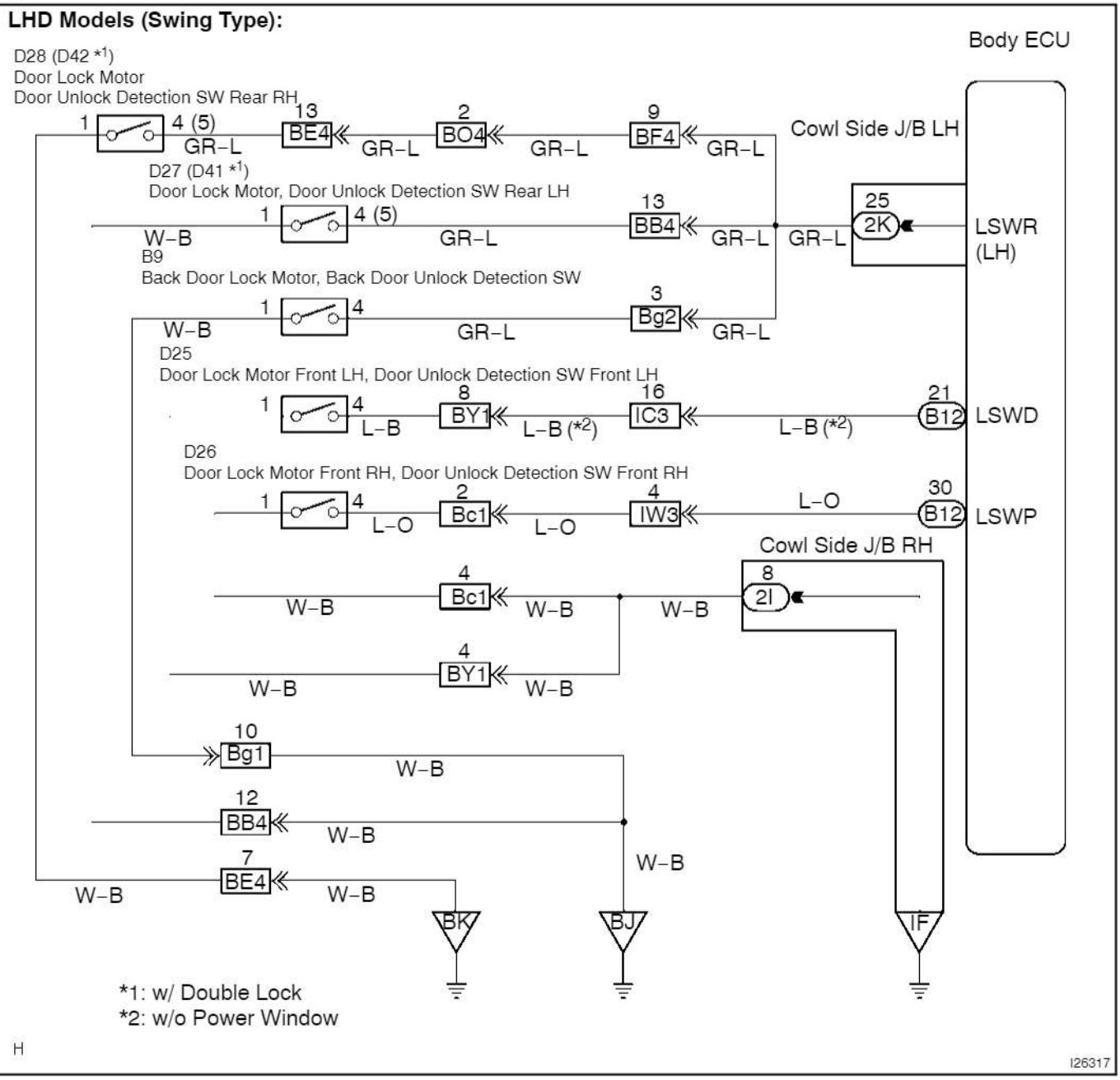
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RHD Models (Swing Type):



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LHD Models (Swing Type):



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check unlock detection switch using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the unlock detection switch operate in DATA LIST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

2	**Check the door unlock detection switch (See page BE–53).**

NG → **Replace the door lock motor.**

OK

3	**Check wireharness and connector between unlock detection switch and Body ECU.**

NG → **Repair or replace wireharness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

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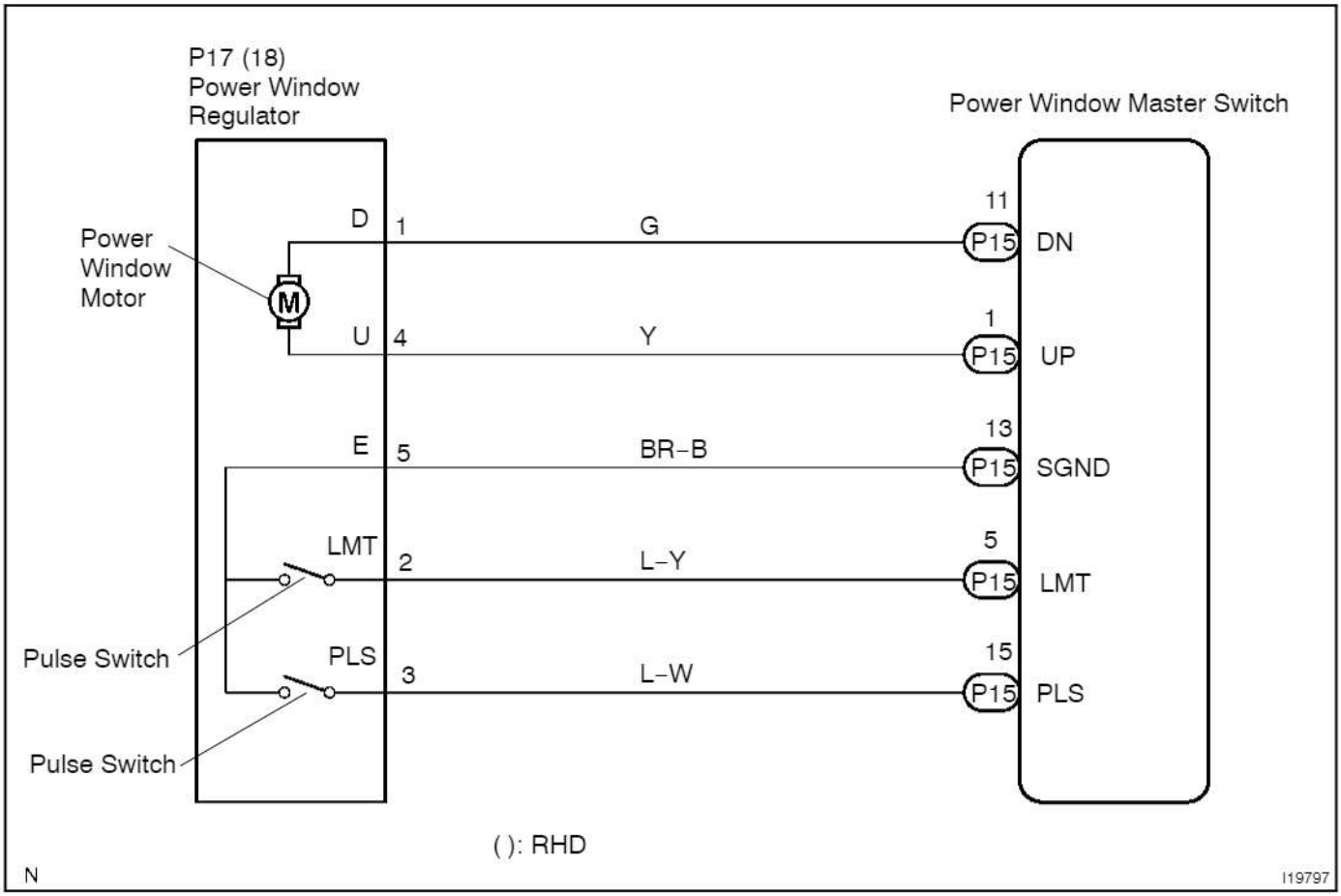
DIAXO–01

Power window motor circuit on driver door

CIRCUIT DESCRIPTION

The power window master switch receives the power window switch signal from the master switch to operate the power window motor.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check power window motor using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the power window motor can operate in ACTIVE TEST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

2	**Check power window motor (See page BE–51).**

NG → **Replace power window motor.**

OK

3	**Check wire harness and connector between power window motor and power window master switch (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

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DIAXP–01

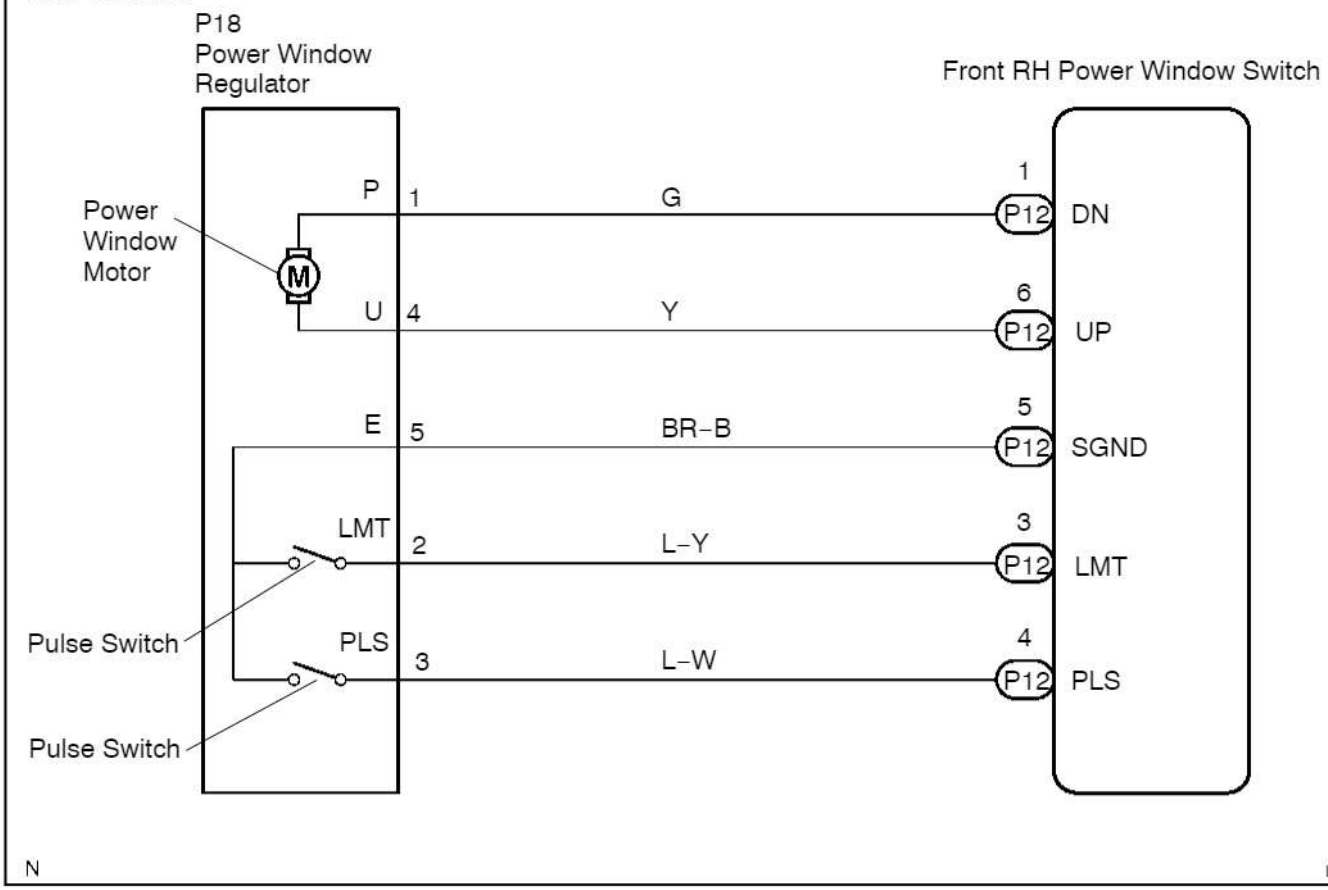
Power window motor circuit on front RH door

CIRCUIT DESCRIPTION

The front RH power window switch receives the power window switch signal from the switch to operate the power window motor.

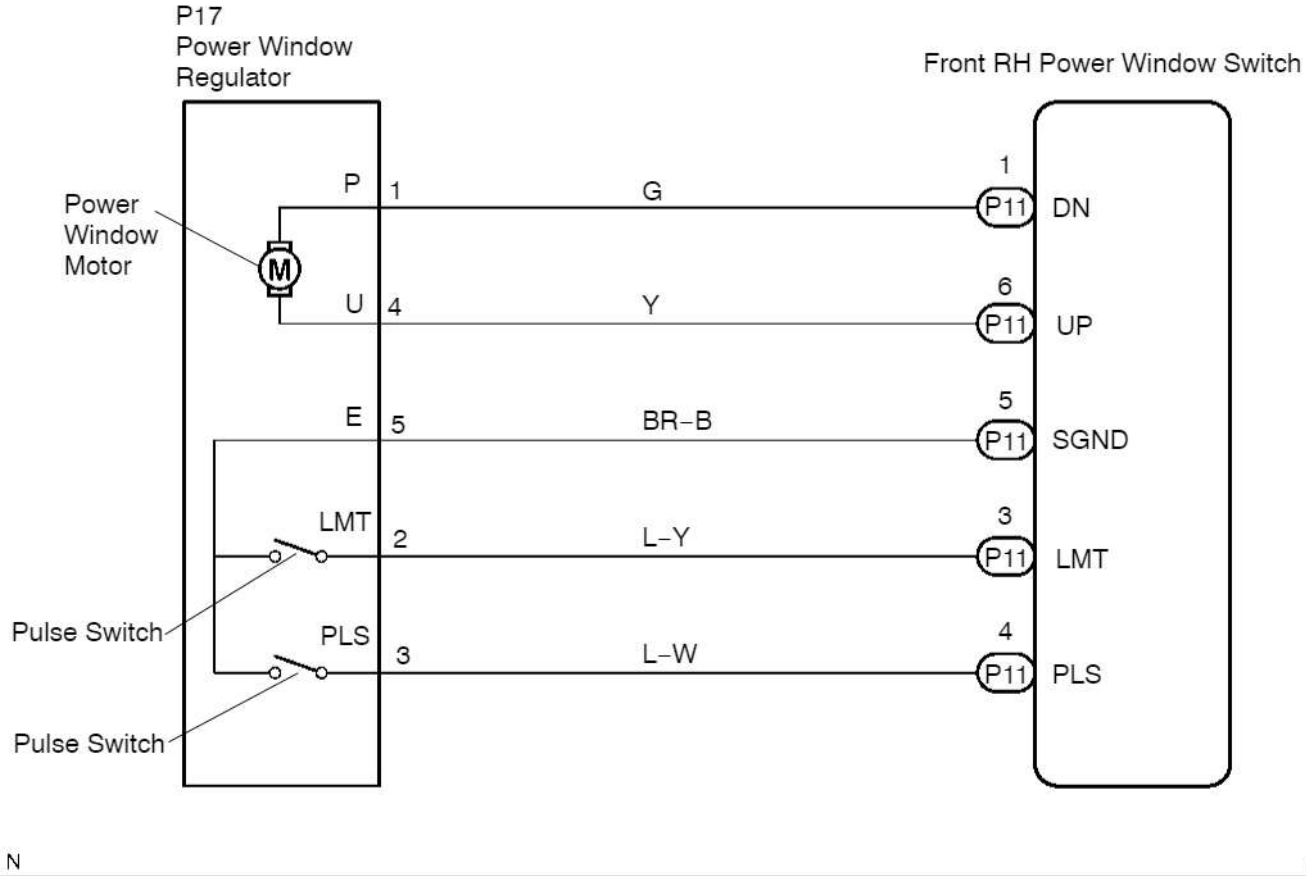
WIRING DIAGRAM

LHD Models:



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RHD Models:



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check power window motor using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the power window motor can operate in ACTIVE TEST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

2	**Check power window motor (See page BE–51).**

NG → **Replace power window motor.**

OK

3	**Check wire harness and connector between power window motor and front RH power window switch (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

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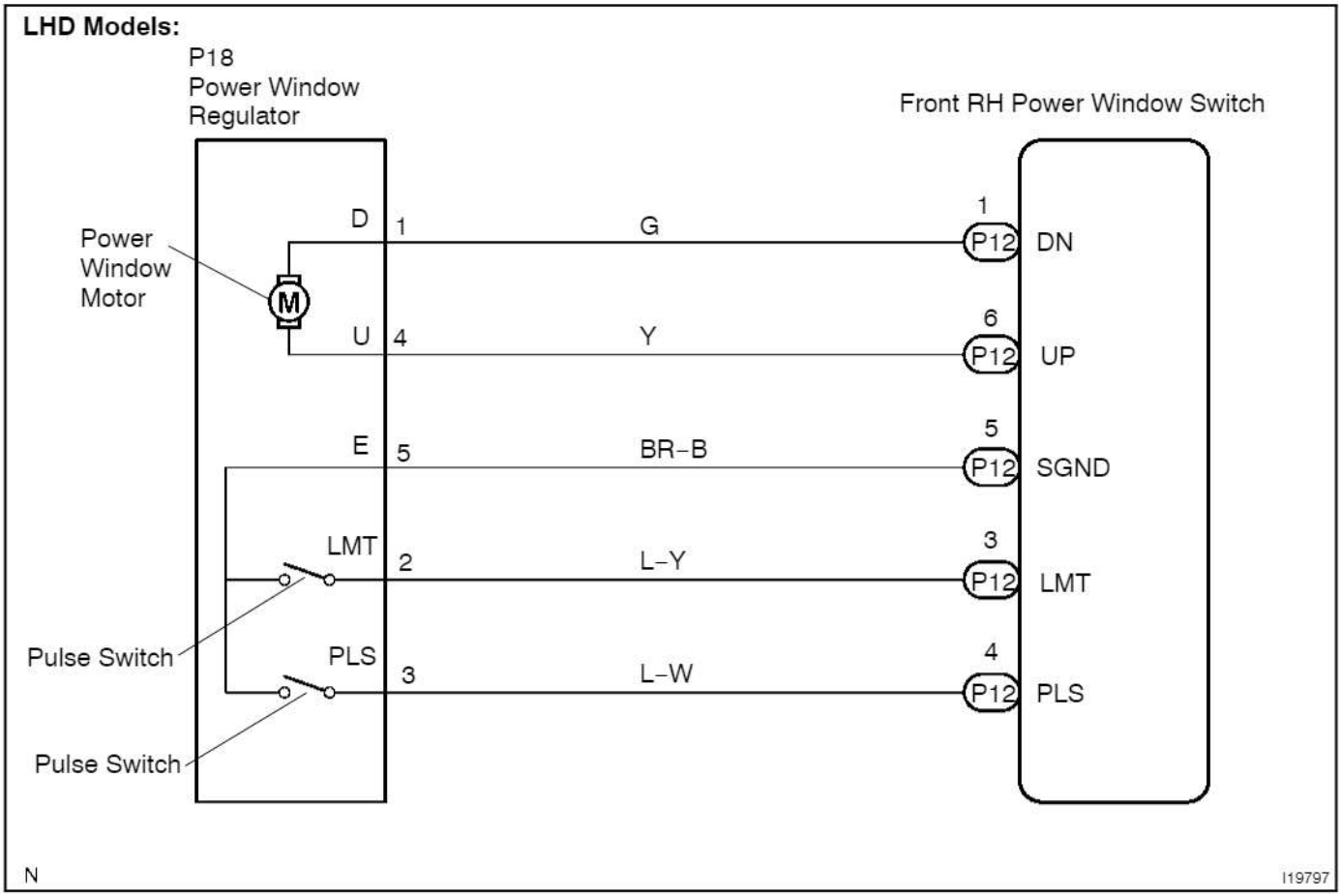
DIAXQ–01

Jam protection limit / pulse switch circuit on front RH door

CIRCUIT DESCRIPTION

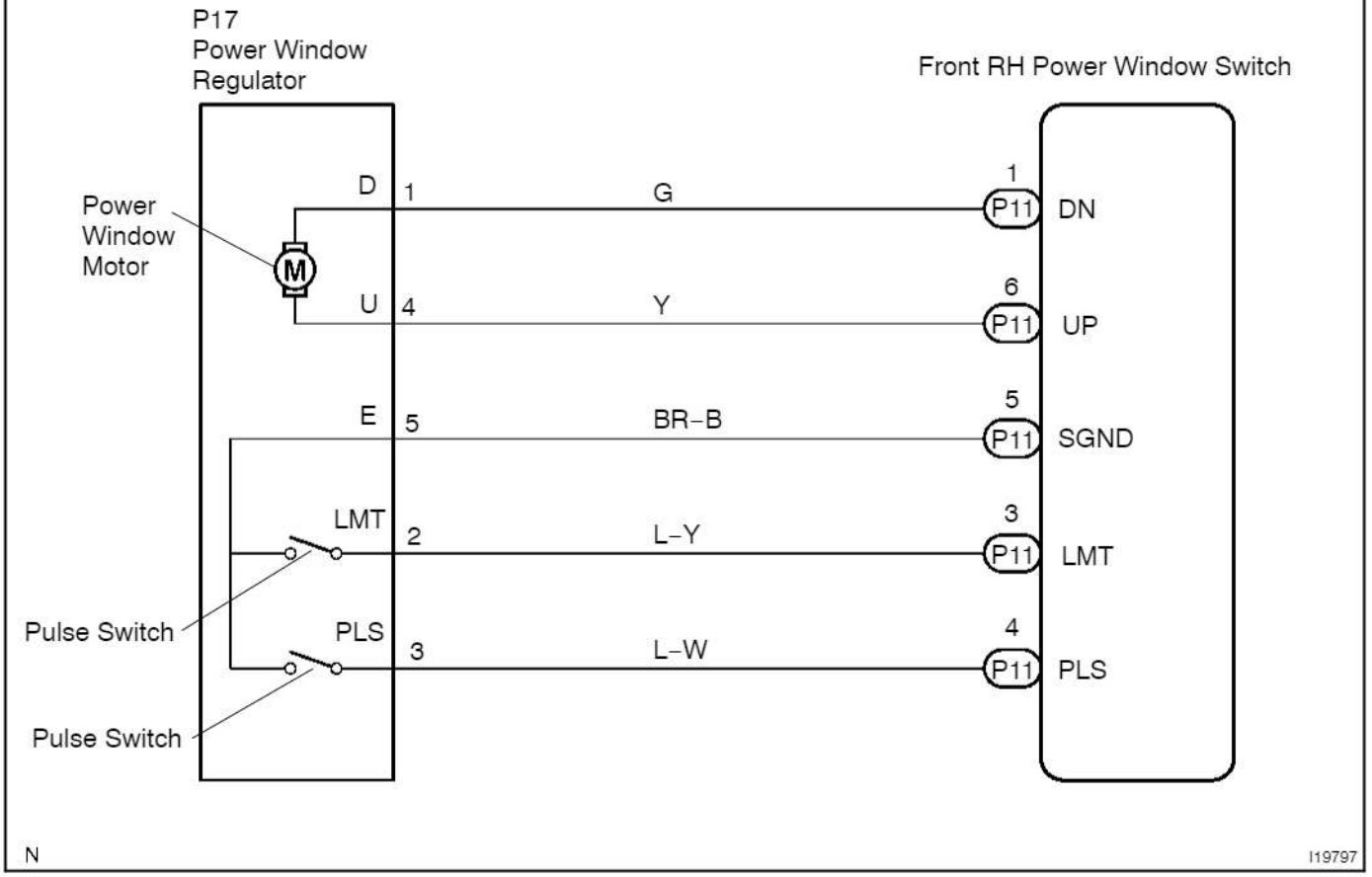
The front RH power window switch receives the power window switch signal from the switch to operate the power window motor.

WIRING DIAGRAM



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RHD Models:



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INSPECTION PROCEDURE

1	Check jam protection limit / pulse switch (See page BE–51).

NG → Replace power window motor.

OK

2	Check wire harness and connector between power window motor and power window switch (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

Replace Power window switch.

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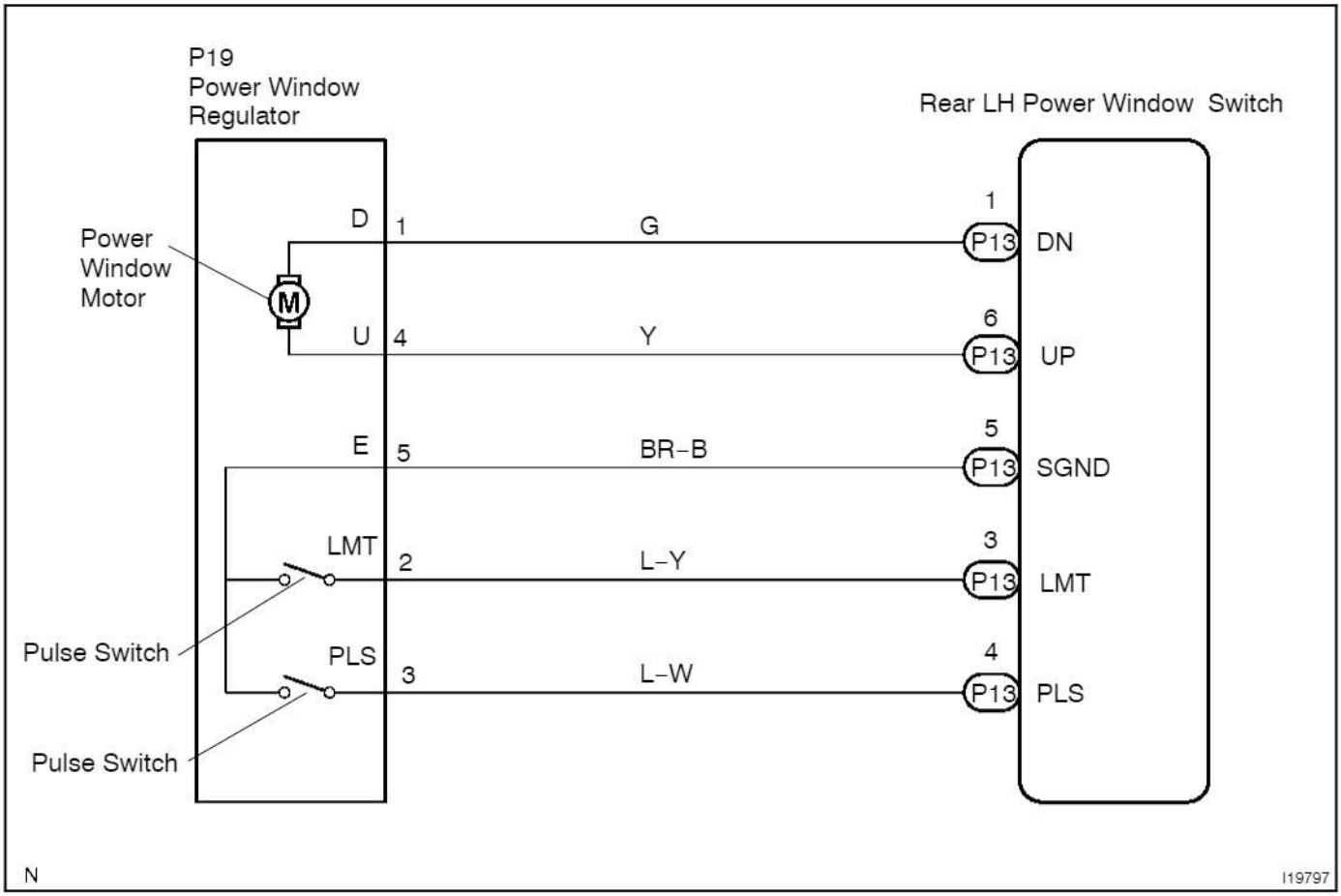
DIAXR–01

Power window motor circuit on rear left door

CIRCUIT DESCRIPTION

The rear LH power window switch receives the power window switch signal from the switch to operate the power window motor.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check power window motor using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the power window motor can operate in ACTIVE TEST (See page DI–981).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

2	**Check power window motor (See page BE–51).**

NG → **Replace power window motor.**

OK

3	**Check wire harness and connector between power window motor and rear LH power window switch (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

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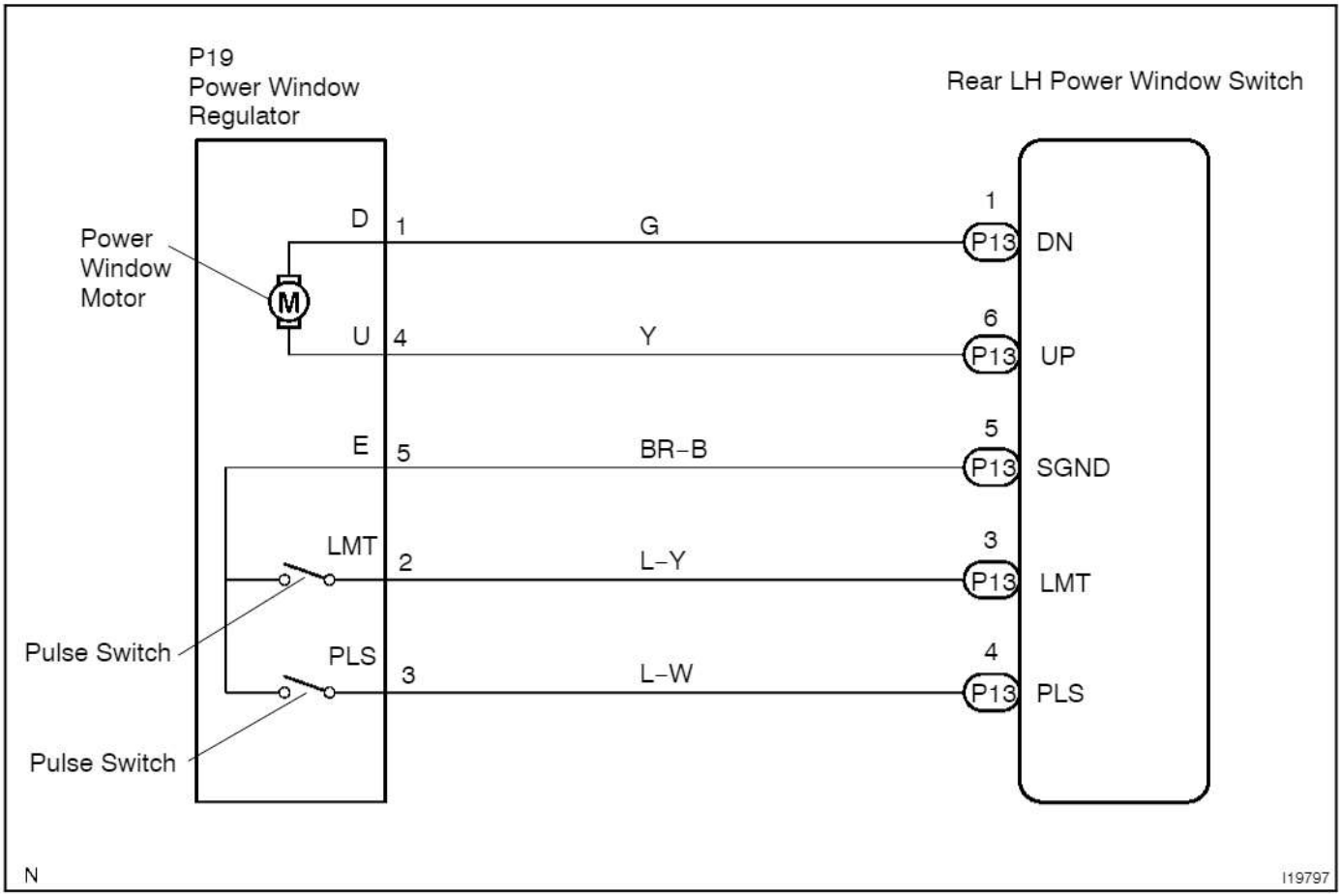
DIAXS–01

Jam protection limit / pulse switch circuit on rear left door

CIRCUIT DESCRIPTION

The rear LH power window switch receives the power window switch signal from the switch to operate the power window motor.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check jam protection limit / pulse switch (See page BE–51).

NG → Replace power window motor.

OK

2	Check wire harness and connector between power window motor and power window switch (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

Replace Power window switch.

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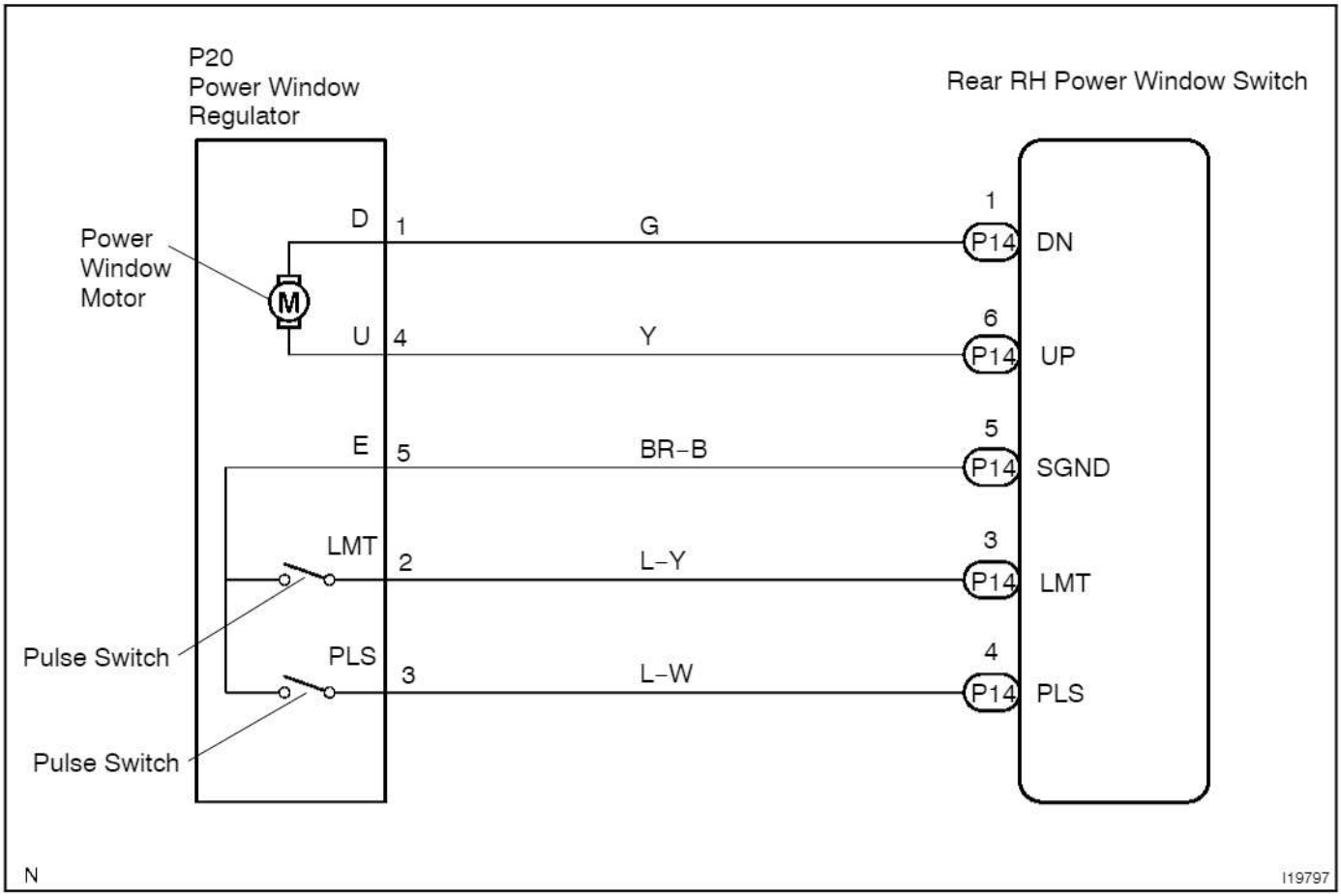
DIAXT-01

Power window motor circuit on rear right door

CIRCUIT DESCRIPTION

The rear RH power window switch receives the power window switch signal from the switch to operate the power window motor.

WIRING DIAGRAM



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INSPECTION PROCEDURE

HINT:

In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester, start from step 2.

1	**Check power window motor using hand–held tester.**

PREPARATION:

Connect the hand–held tester to DLC 3.

CHECK:

Check that the power window motor can operate in ACTIVE TEST.

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

NG

2	**Check power window motor (See page BE–51).**

NG → **Replace power window motor.**

OK

3	**Check wire harness and connector between power window motor and rear RH power window switch (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).

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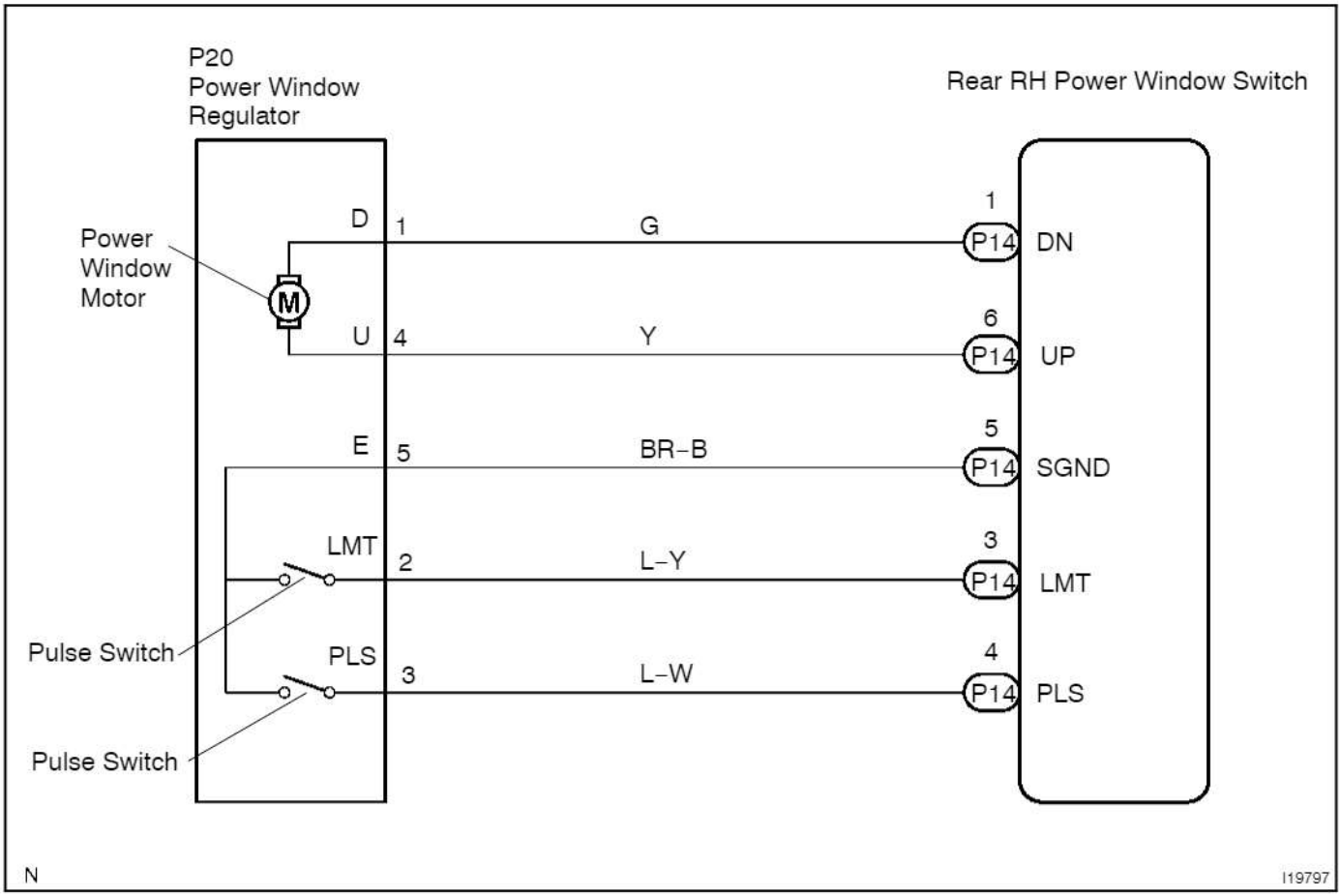
DIAXU–01

Jam protection limit / pulse switch circuit on rear right door

CIRCUIT DESCRIPTION

The rear RH power window switch receives the driver door power window switch signal from the master switch to operate the power window motor.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check jam protection limit / pulse switch (See page BE–51).

NG → Replace power window motor.

OK

2	Check wire harness and connector between power window motor and power window switch (See page IN–38).

NG → Repair or replace wire harness or connector.

OK

Replace Power window switch.

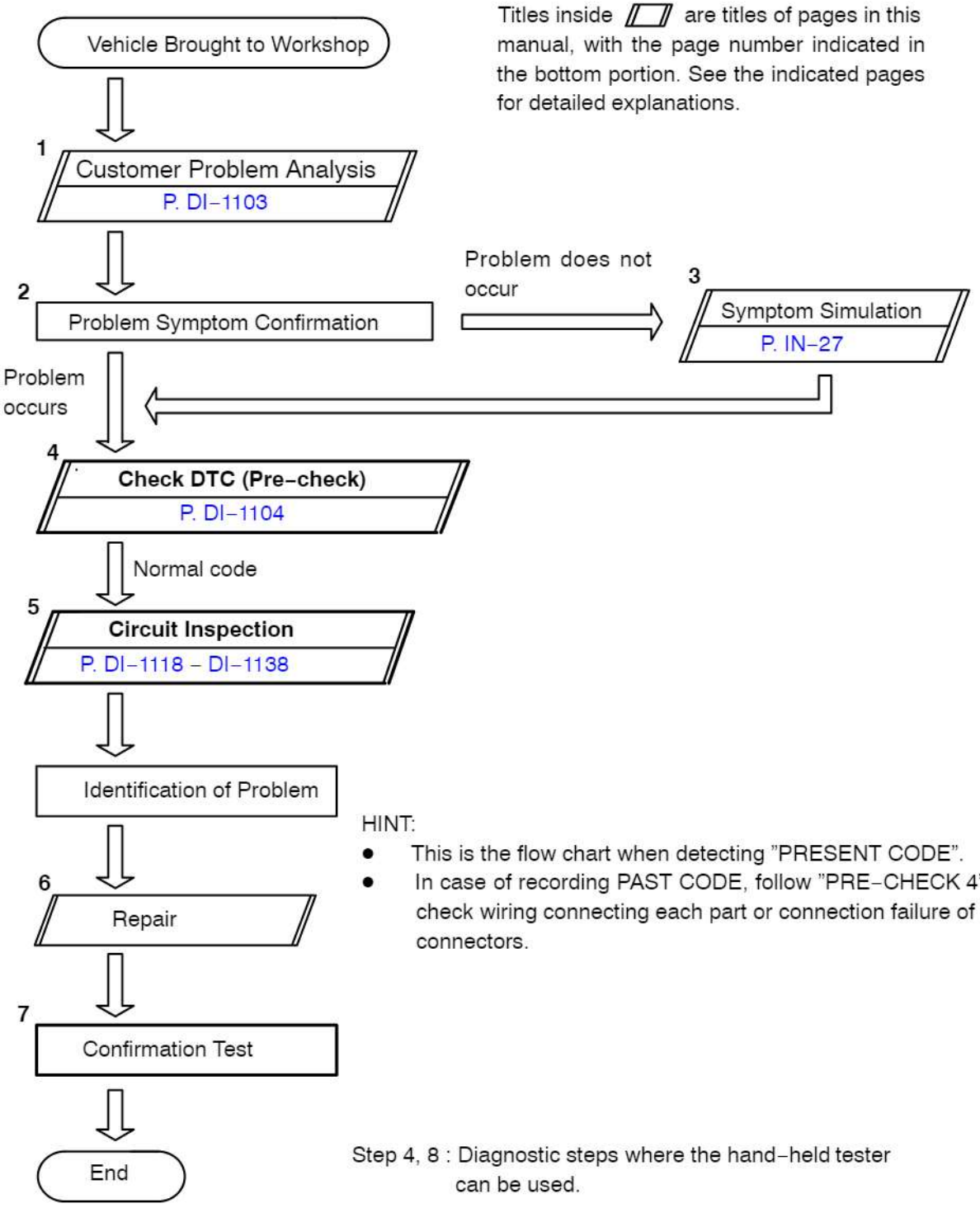
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MULTIPLEX COMMUNICATION SYSTEM

DIAWU-01

HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.



Titles inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

HINT:

- This is the flow chart when detecting "PRESENT CODE".
- In case of recording PAST CODE, follow "PRE–CHECK 4" and check wiring connecting each part or connection failure of the connectors.

Step 4, 8 : Diagnostic steps where the hand–held tester can be used.

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DIAWV-01

CUSTOMER PROBLEM ANALYSIS CHECK

MULTIPLEX COMMUNICATION SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Sometimes (times per day, month) ☐ Once only
Weather Conditions When Problem Occurred	**Weather**	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F (°C))

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

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DIAWW–01

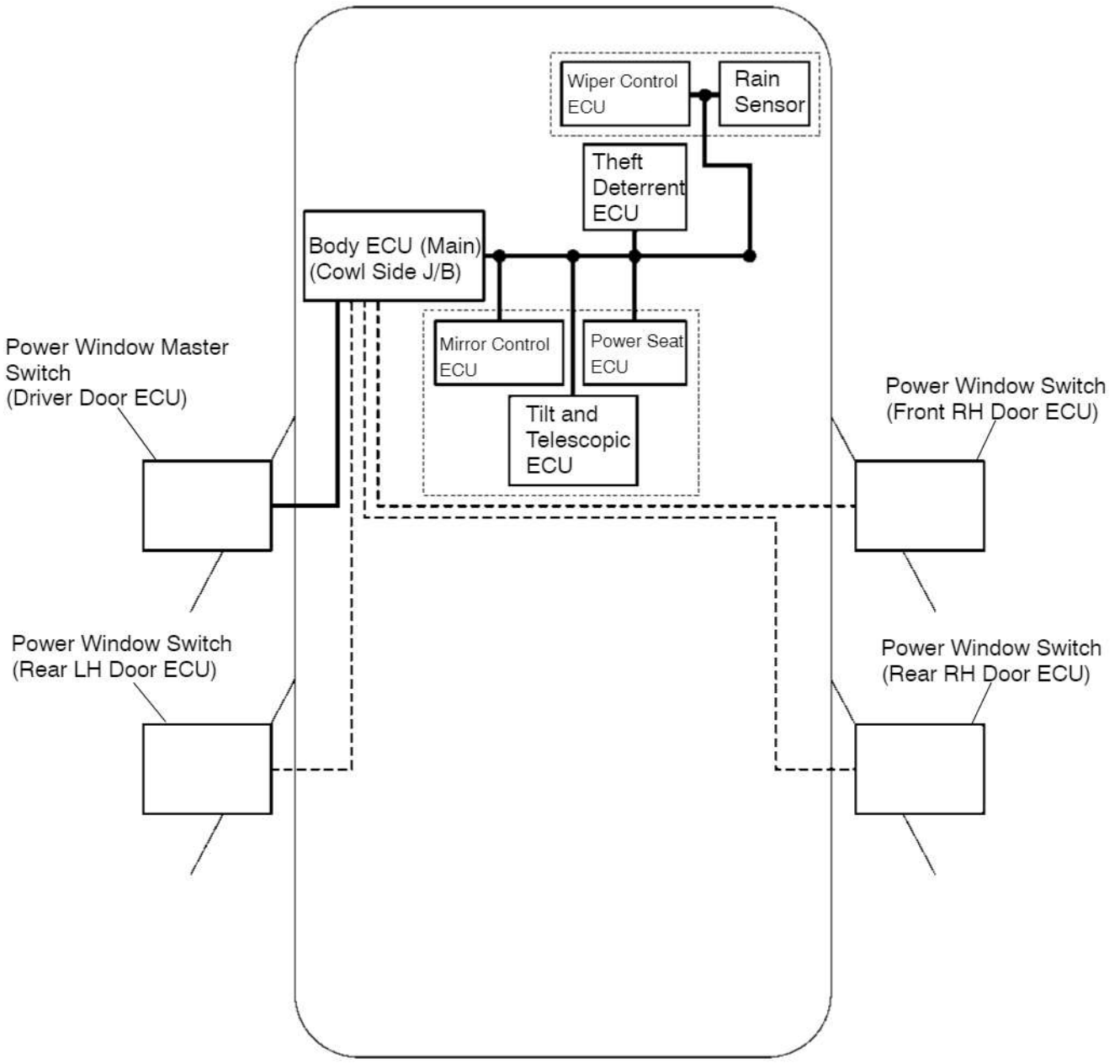
PRE–CHECK

1. DIAGNOSIS SYSTEM

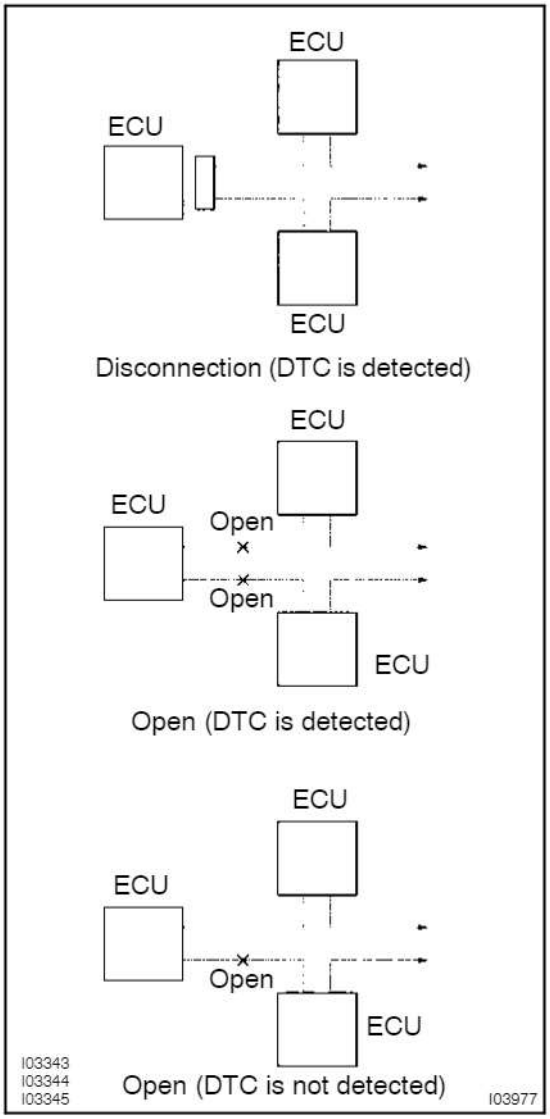
(a) As shown in the following diagram, ECUs of this vehicle are connected each other by communication buses through which various signals are transmitted. These communication buses are diagnosed by the Body ECU. When the Body ECU detects a communication error between ECUs, or B+ short or GND short of a communication bus, a DTC is output and memorized. The Body ECU cannot diagnose accurately unless it can function normally. Therefore, first confirm the normal condition by performing a "BASIC INSPECTION" described later and then, troubleshoot against each DTC.

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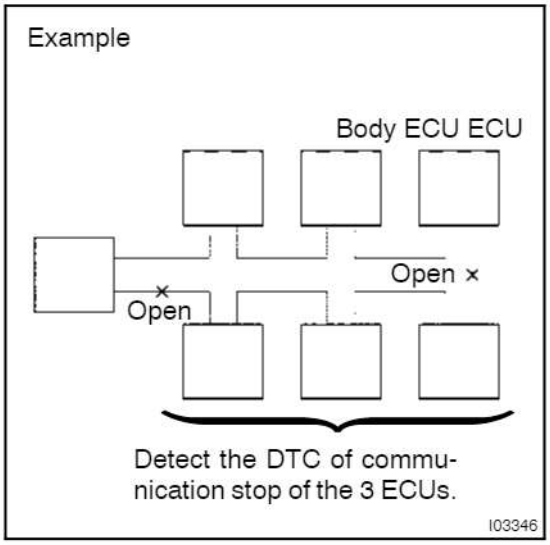
Connection between each terminal and bus



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(b) If DTC of ECU communication stop is output, connectors may be disconnected, or communication buses may be open at 2 points. It will not become abnormal with only 1 communication bus open.

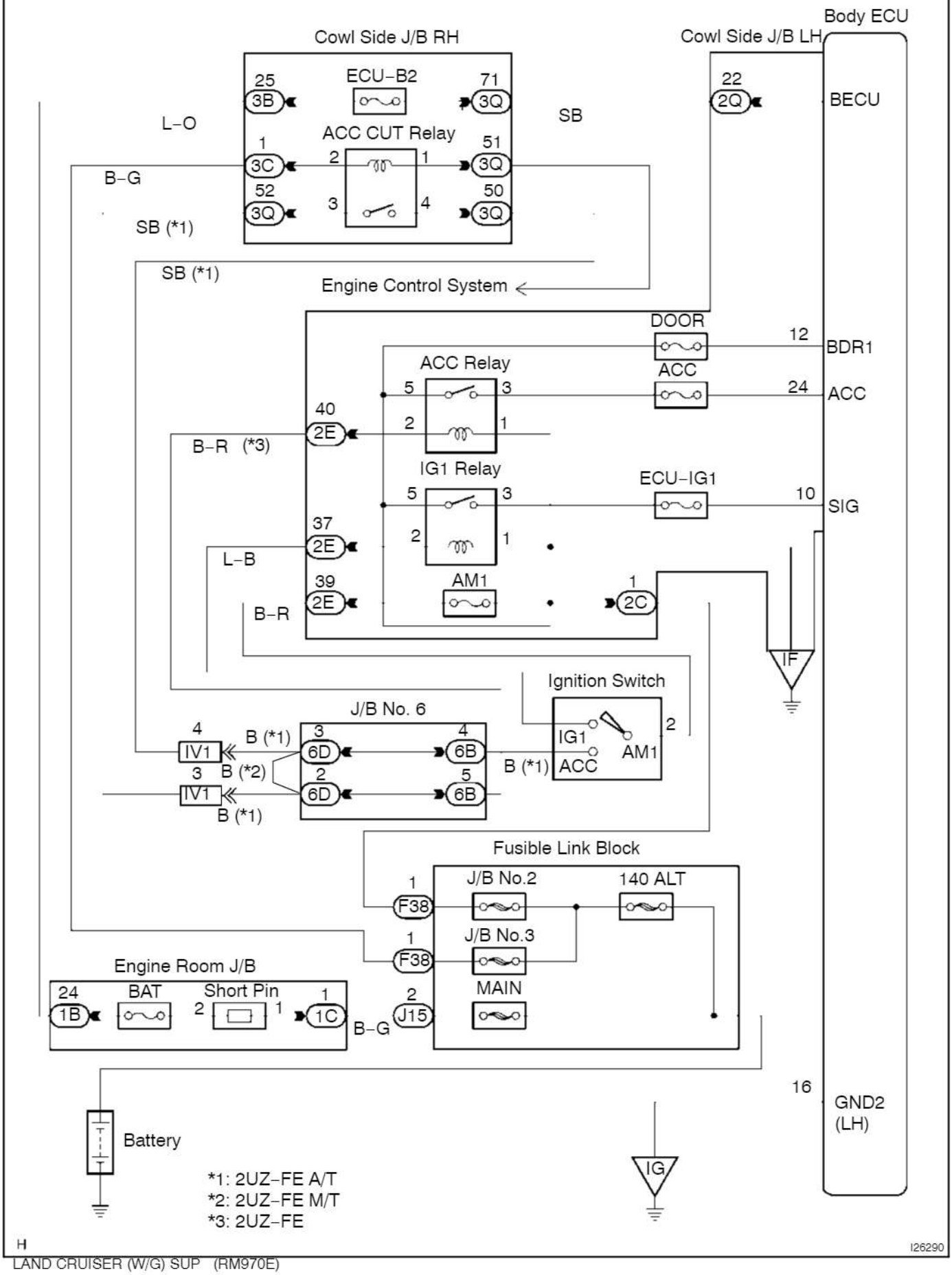


(c) If 2 communication buses are open at the position as shown in the illustration, DTC of ECU communication stop between those 2 buses is output.

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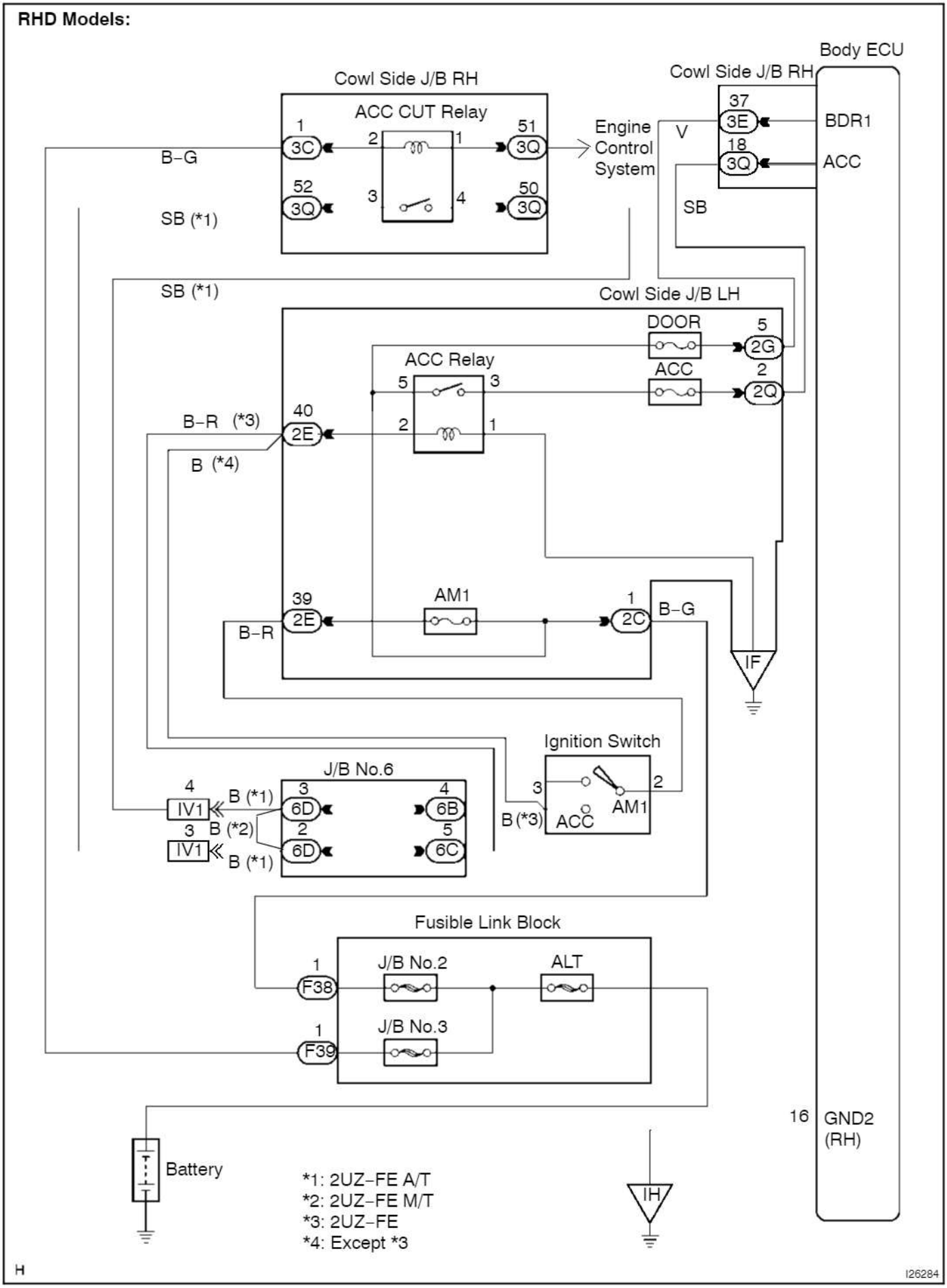
2. BASIC INSPECTION

LHD Models:



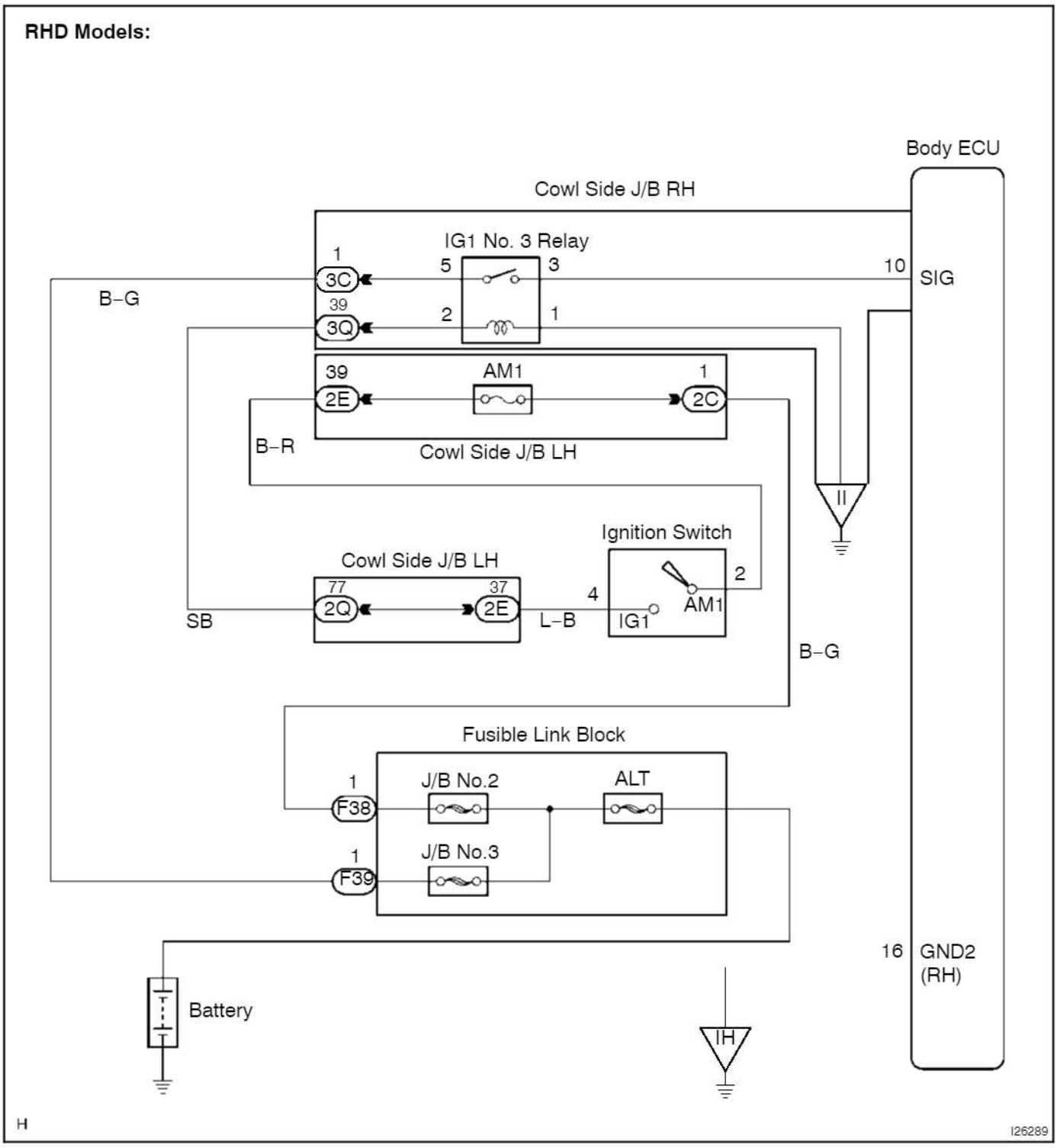
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RHD Models:



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RHD Models:



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Inspect Body ECU.

1	**Check that the DTC can be read from Body ECU using hand–held tester.**

OK → **Go to step 3 "DTC check".**

NG

2	**Check the Body ECU power source circuit.**

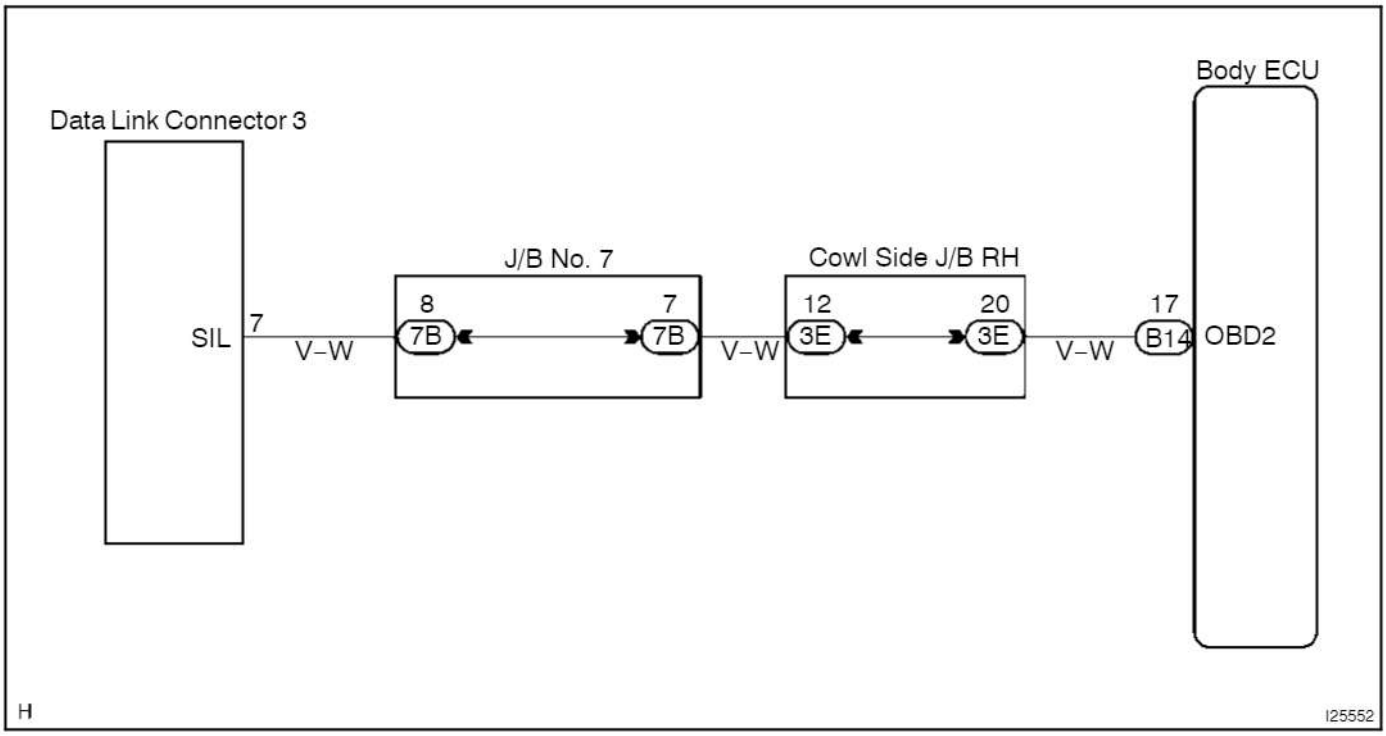
PREPARATION:
Disconnect the Body ECU connector.
CHECK:
Check voltage terminal BECU, BDR1 SIG and GND.
OK:
Voltage: 10 – 14 V
CHECK:
Check continuity terminal GND1, 2 and body ground.
OK:
Continuity
PREPARATION:
Turn the ignition switch ON.
CHECK:
Check voltage terminal ACC and GND1, 2.
OK:
Voltage: 10 – 14 V

NG → **Replace or repair wire harness or connector.**

OK

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3	Check wire harness between Body ECU and DLC3.



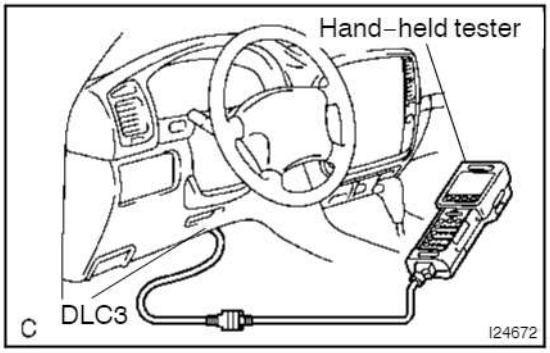
HINT:
If there is a failure on SIL line, hand–held tester cannot communicate with ECM or Airbag sensor assembly also.

NG → **Replace or repair wire harness or connector.**

OK

Replace the Body ECU.

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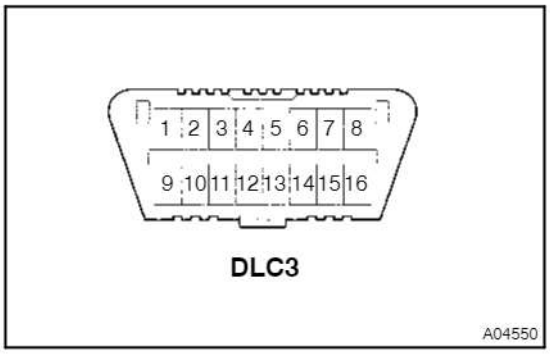
3. DTC CHECK (Using hand–held tester)

(a) Prepare a hand–held tester.

(b) Connect the hand–held tester to DLC3.

(c) Turn the ignition switch ON and switch the hand–held tester main switch ON.

(d) Use the hand–held tester to check the DTCs, and note them down. (For opening instructions, see the hand–held tester's instruction book.)



(e) Check the DLC3.
The vehicle's ECM uses ISO 9141–2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141–2 format.

Terminal No.	Connection/Specified Condition	Condition
4 (CG)	Chassis Ground ↔ Body Ground/1 or less	Always
13 (TC)	TC ↔ Body Ground/9 – 14 V	Always

HINT:
If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of the hand–held tester to DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

4. DTC CLEARANCE

- PRESENT CODE:
  DTC will be cleared when the trouble output as DTC is recovered normally.
- PAST CODE:
  Clear it using the hand–held tester.

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DIAWX-01

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during DTC check, check the circuit corresponding to the code in the table below (Proceed to the page given for the circuit).

DTC No. (See Page)	Detection Item	Trouble Area
B1211 (DI–1118)	Driver door ECU communication stop	• Wire harness • Driver door ECU
B1213 (DI–1123)	Tilt and telescopic ECU communication stop	• Wire harness • Tilt and telescopic ECU
B1214 B1215 (DI–1125)	Door system communication bus malfunction (+B short)	• Wire harness • Door ECU
	Door system communication bus malfunction (GND short)	
B1221 (DI–1064)	Power window switch circuit on driver's door	• Power window master switch • Wire harness
B1222 (DI–1065)	Door lock switch circuit on driver's door	• Power window master switch • Front door lock assembly LH • Wire harness
B1231 (DI–1066)	Driver's side jam protection sensor limit switch malfunctions	Power window regulator motor assembly LH open in limit switch system
B1232 (DI–1068)	Driver's side jam protection sensor malfunctions	Power window regulator motor assembly LH open or short in pulse sensor system
B1242 (DI–821)	Wireless door lock tuner circuit malfunction	• Wire harness • Wireless door lock tuner (door control receiver) • Body ECU
B1244 (DI–994)	Light sensor circuit mulfunction	• Light sensor • Wire harness
B1245 (DI–1128)	Auto wiper ECU communication stop	• Auto wiper ECU • Wire harness
B1249 (DI–1130)	Double Lock ECU communication stop	• Double Lock ECU • Wire harness
B1269 (DI–1132)	Theft deterrent ECU communication stop	• Theft deterrent ECU • Wire harness
B1272 (DI–1134)	Power seat ECU communication stop	• Power seat ECU • Wire harness
B1276 (DI–1136)	Mirror ECU communication stop	• Mirror ECU • Wire harness
B1279 (DI–1138)	Rain sensor communication stop	• Rain sensor • Wire harness

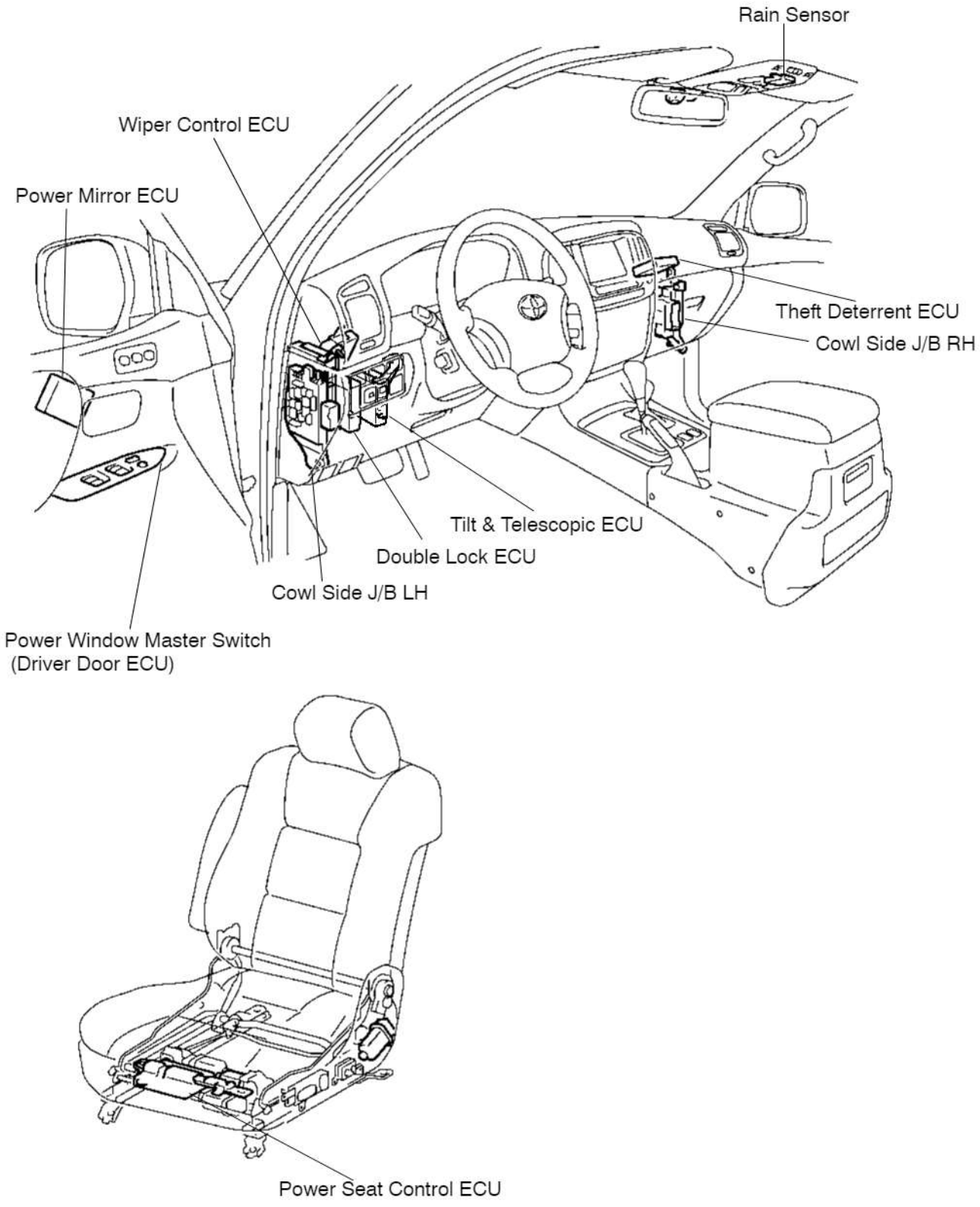
HINT:

- *: Optional setting
- When DTC of "+B or GND short malfunction of communication bus (such as B1214, B1215 etc.)" and "communication stop (such as B1211 etc.)" is detected simultaneously, please repair DTC of "+B or GND short malfunction of communication bus first.

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DIAWY-01

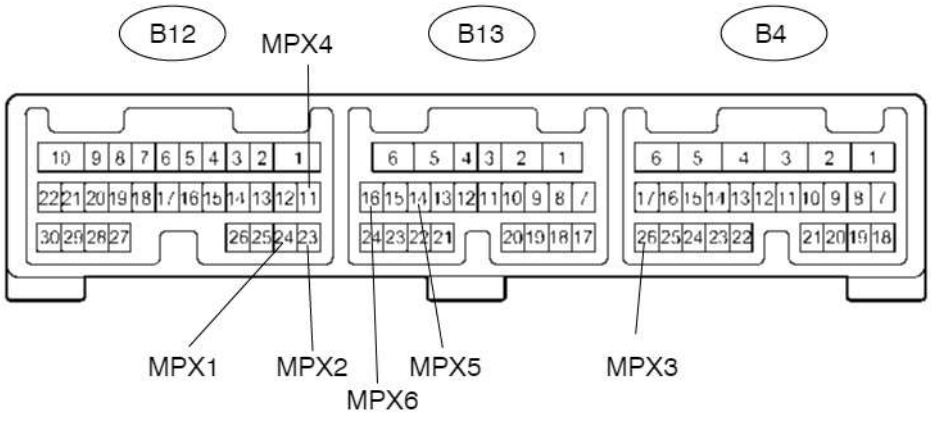
PARTS LOCATION



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TERMINALS OF ECU

● **Body ECU**



H

I24951

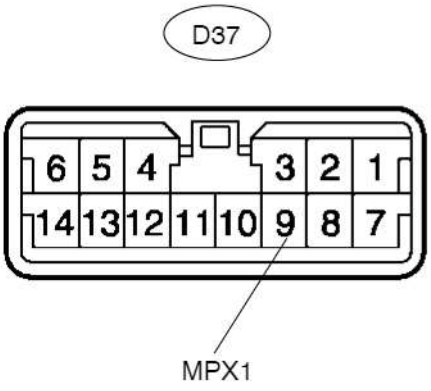
● **Rain Sensor**



H

I24944

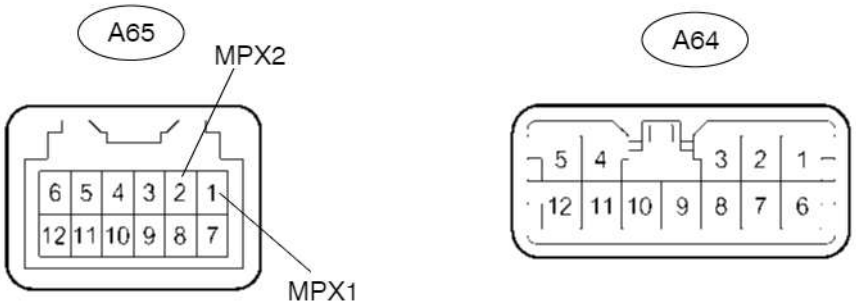
● **Double Lock ECU**



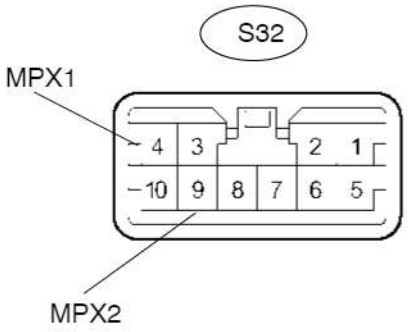
I26065

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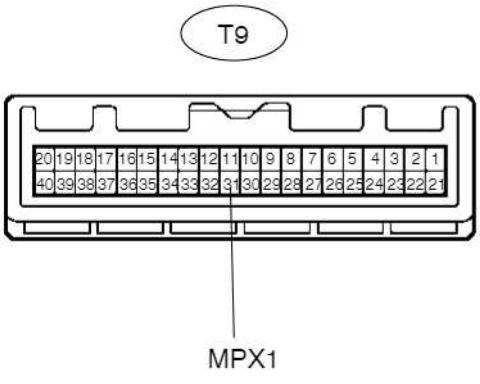
● **Wiper Control ECU**



● **Power Seat Control ECU**

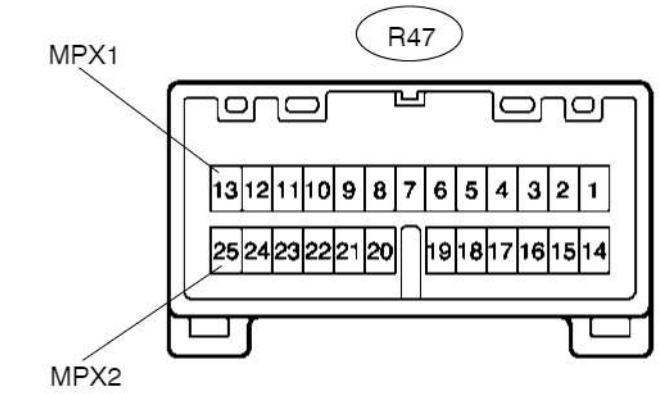


● **Theft Deterrent ECU**



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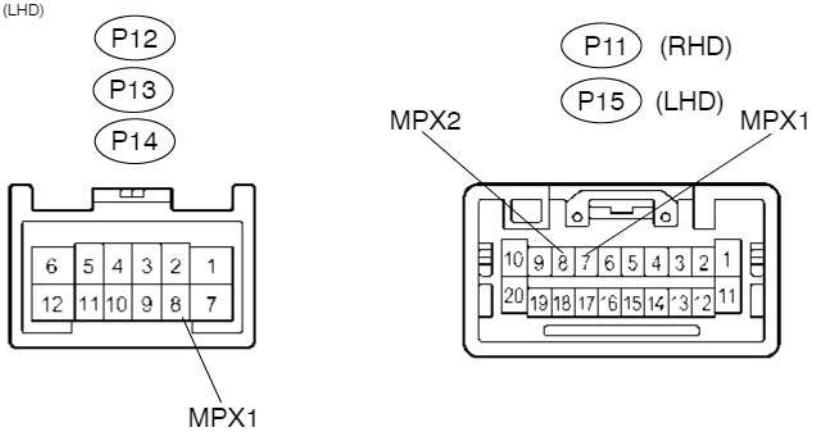
● **Mirror Control ECU**



T

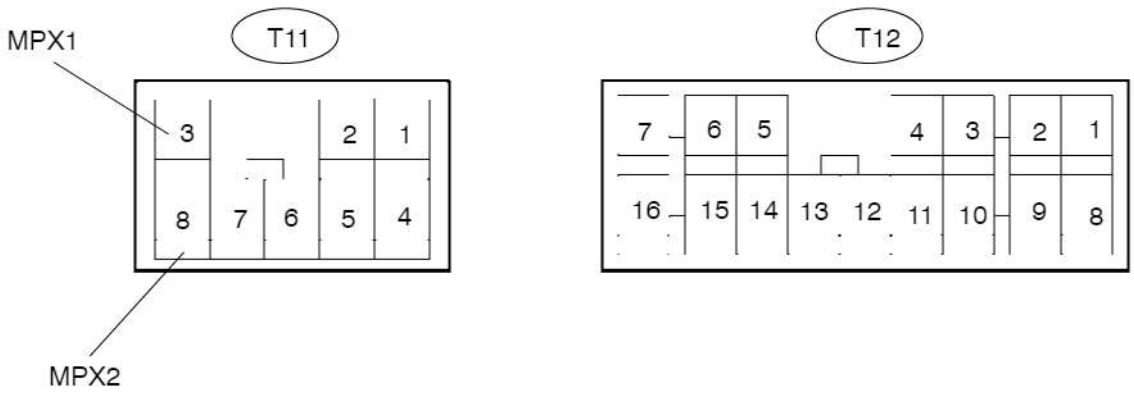
I20398

● **Power Window Master Switch**
● **Power Window Switch Front RH** (P12) (LHD)
● **Power Window Switch Rear LH** (P13)
● **Power Window Switch Rear RH** (P14)



I26008

● **Tilt and Telescopic ECU**



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DIAX0-01

CIRCUIT INSPECTION

DTC	B1211	Driver door ECU communication stop

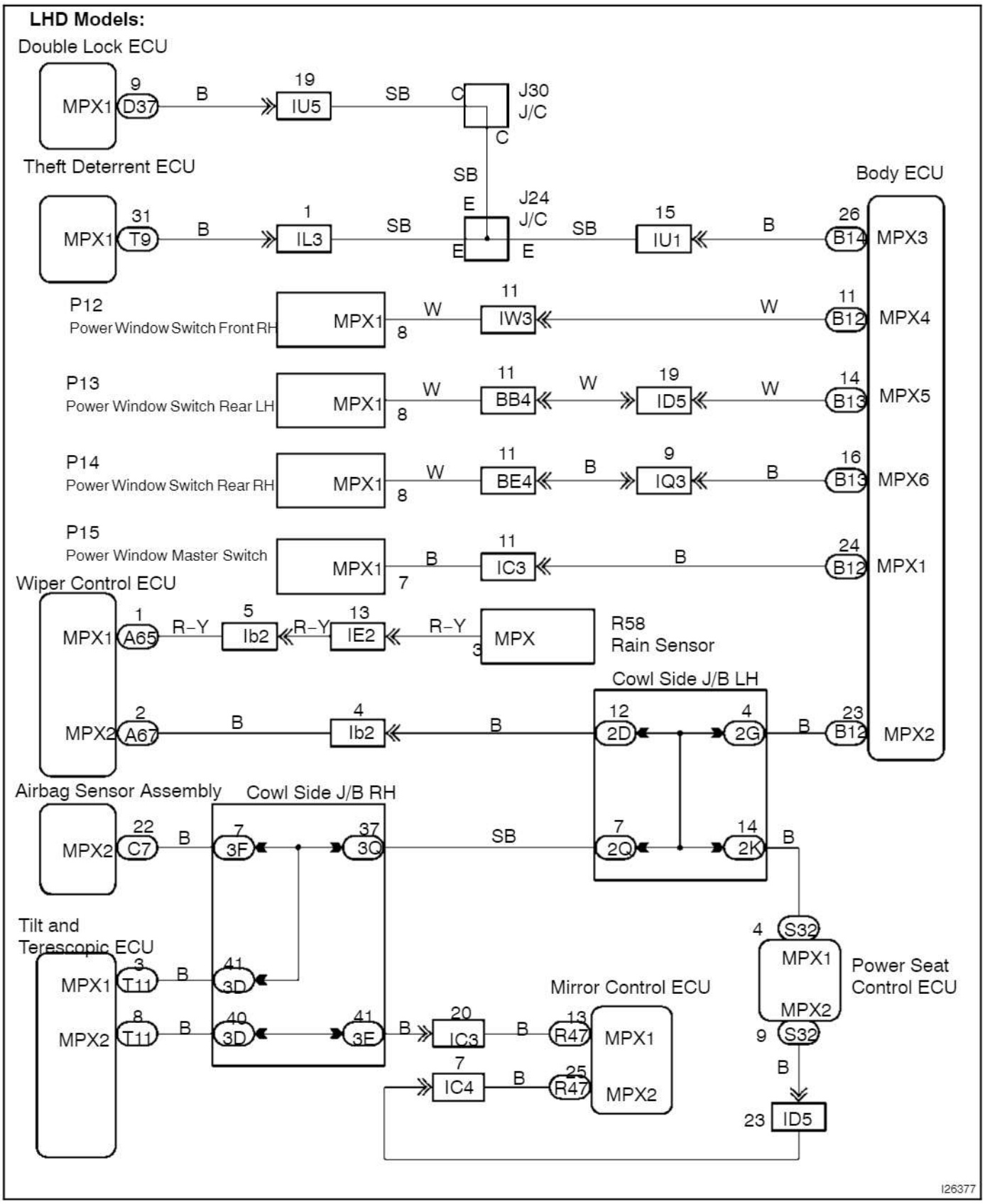
CIRCUIT DESCRIPTION

This DTC is output when communication stops between the Power window master switch (Driver door ECU) and the Body ECU.

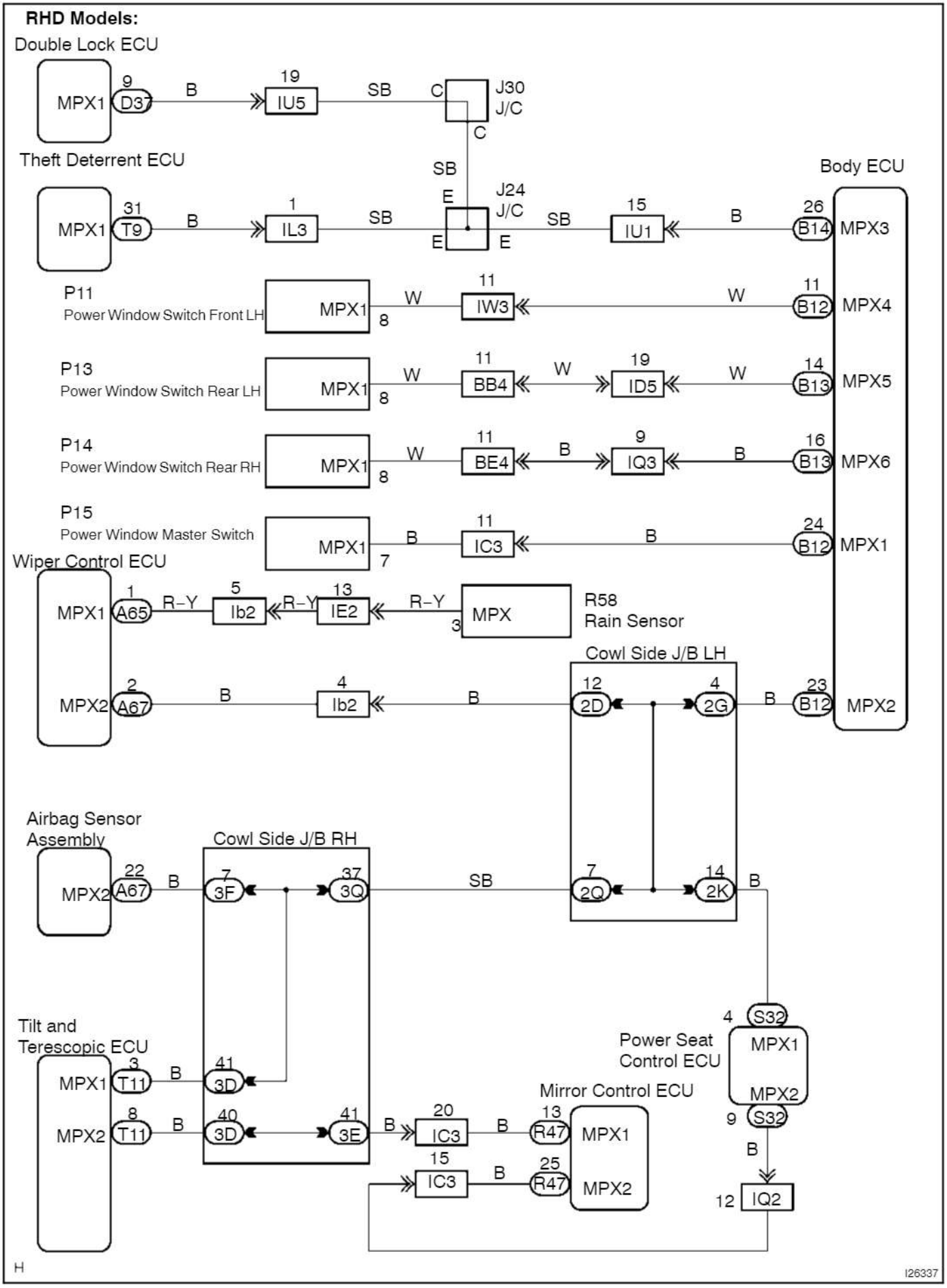
DTC No.	DTC Detecting Condition	Trouble Area
B1211	No communication from driver door ECU for more than 10 seconds.	• Power window master switch (Driver door ECU) • Wire harness

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WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check Power window master switch (Driver door ECU).**

CHECK:

Check if the Driver door window glass move up automatically.

HINT:

With this inspection, whether or not the Power window master switch functions normally can be diagnosed.

NG → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1063).**

OK

2	**Check wire harness.**

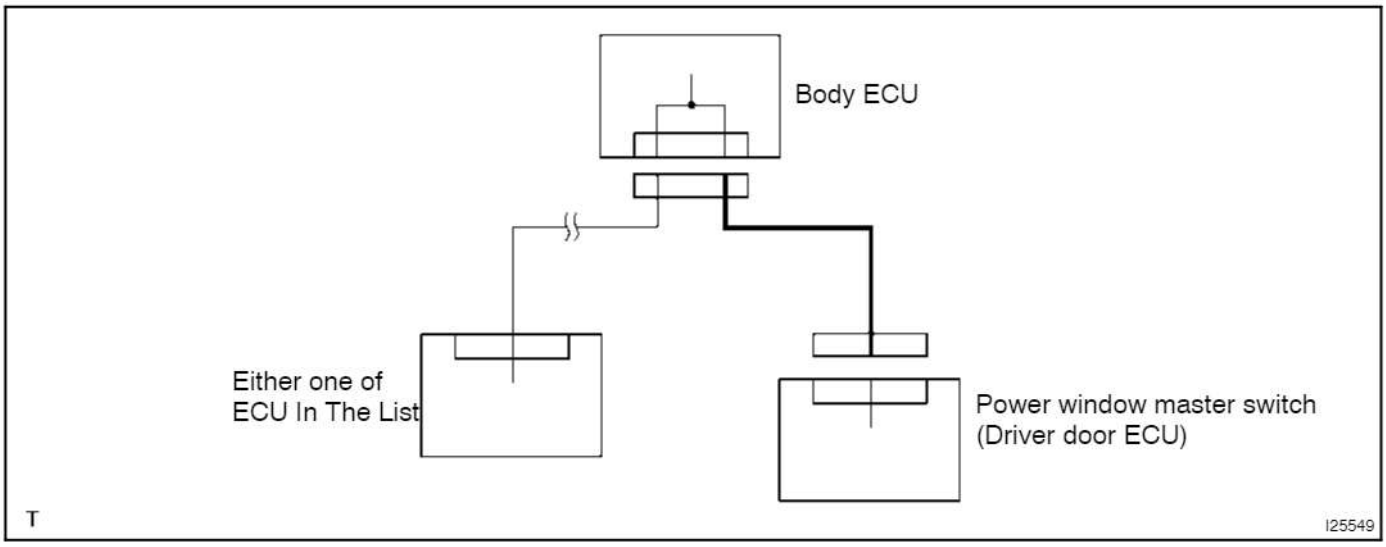
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Power window master switch (Driver door ECU) – Body ECU	MPX1 (P15–7) – MPX1 (B12–24)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

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NG → **Repair or replace wire harness.**

OK

Replace Power window master switch (Driver door ECU).

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DIAX1–01

DTC	B1213	Tilt and Telescopic ECU communication stop

CIRCUIT DESCRIPTION

This DTC is output when communication stops between the Tilt and telescopic ECU and the Body ECU.

DTC No.	DTC Detecting Condition	Trouble Area
B1211	No communication from Tilt and telescopic ECU for more than 10 seconds.	• Tilt and telescopic ECU • Wire harness

WIRING DIAGRAM

See page DI–1118.

INSPECTION PROCEDURE

1	Check Tilt and telescopic ECU.

CHECK:

Check the operation of the manual Tilt and telescopic.

HINT:

With this inspection, whether or not the Tilt and telescopic ECU functions normally can be diagnosed.

NG → Replace Tilt and telescopic ECU.

OK

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2	**Check wire harness.**

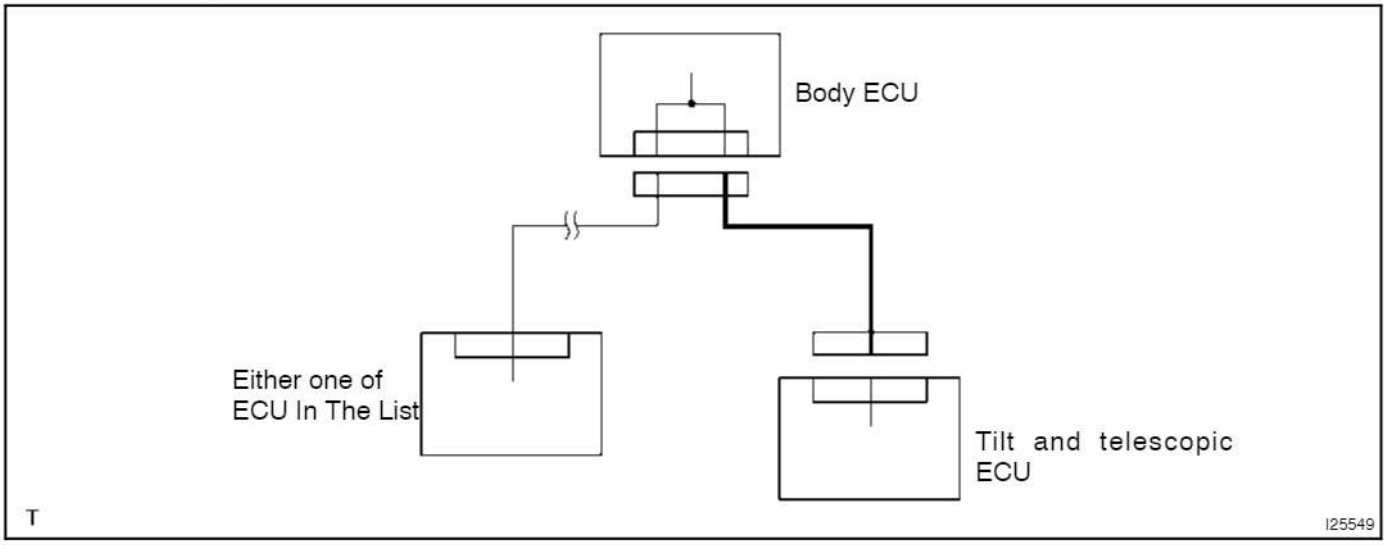
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Tilt and telescopic ECU – Body ECU	MPX1 (T11–3) – MPX2 (B12–23)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

NG → **Repair or replace wire harness.**

OK →

Replace Tilt and telescopic ECU.

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DTC	B1214	Door system communication bus malfunction (+B short)

DTC	B1215	Door system communication bus malfunction (GND short)

CIRCUIT DESCRIPTION

This DTC is output when +B or GND short occurs on the door system communication bus.

WIRING DIAGRAM

See page DI–1118.

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INSPECTION PROCEDURE

1	**Check communication circuit inside ECU.**

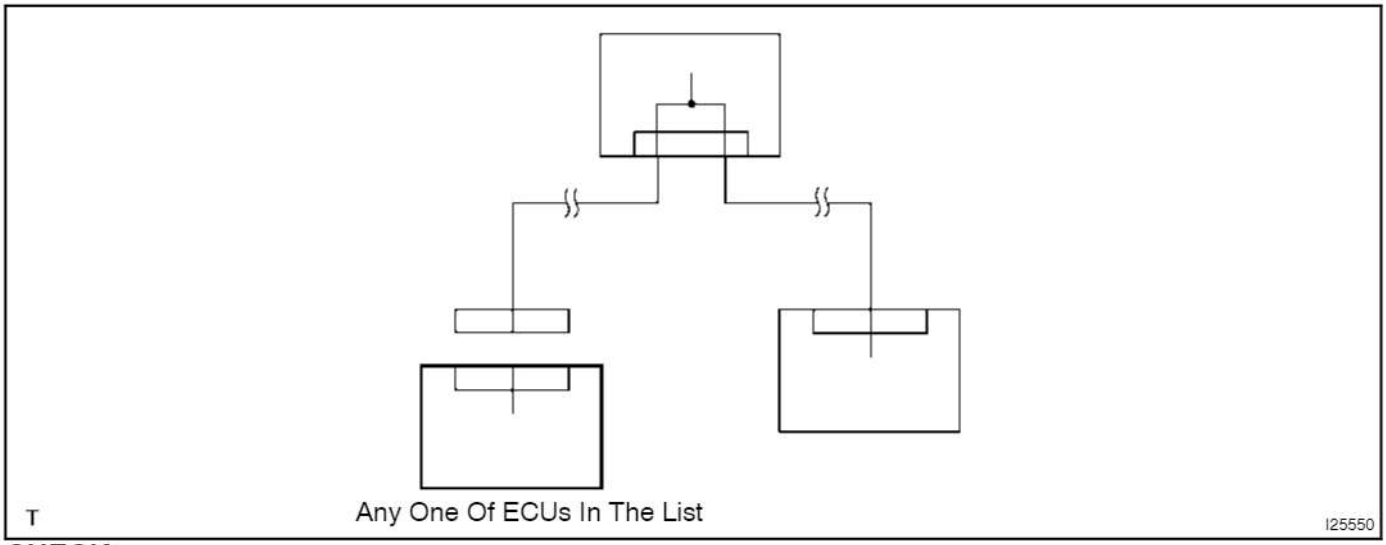
PREPARATION:

Disconnect the following ECU connectors in order from the top downward.

HINT:

Before disconnecting the next connector, be sure that disconnected ECU connector is reconnected.

Disconnect ECU connector	Connector No.
Power window master switch (Driver door ECU)	P15
Power window switch (Front RH door ECU) LHD Power window switch (Front LH door ECU) RHD	P12 (LHD) P11 (RHD)
Power window switch (Rear LH door ECU)	P13
Power window switch (Rear RH door ECU)	P14



CHECK:

Check the DTC every time each connector is disconnect.

OK:

DTC B1214 or B1215 is not output.

OK → **Replace corresponding ECU (ECU for which DTC is deleted is defective.) (See page IN–38).**

NG

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2	**Check for short circuit.**

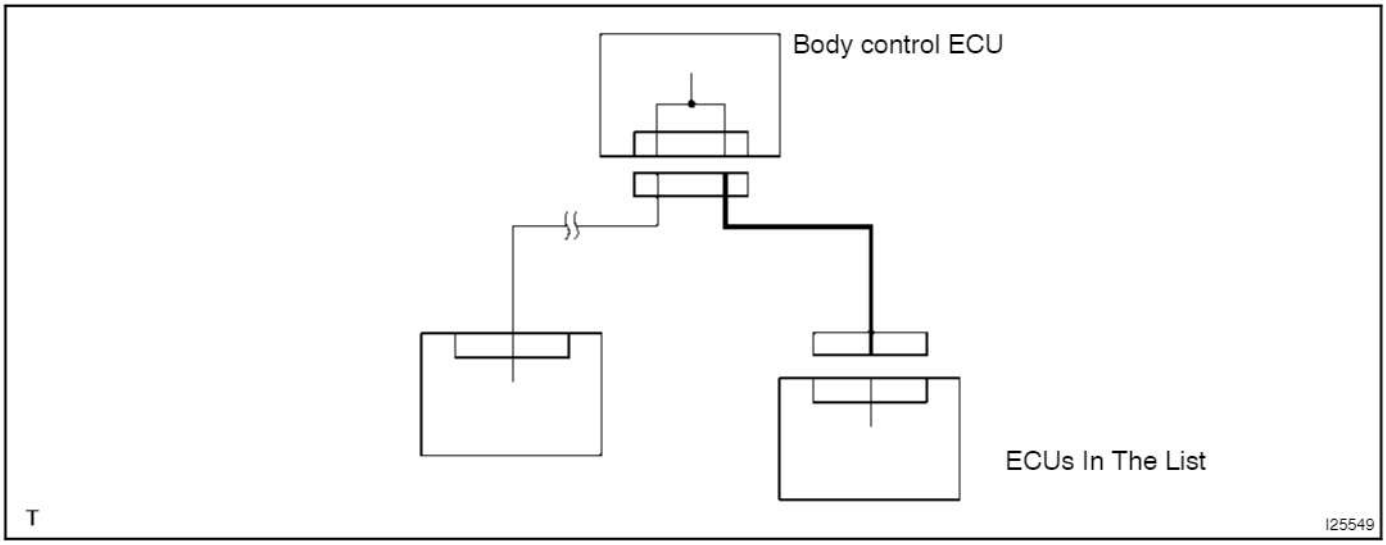
PREPARATION:

Disconnect the following connectors of ECU.

HINT:

Before disconnecting the next connector, be sure reconnect the ECU connector that is already disconnected.

Disconnect ECU connector	Connector No.
Body ECU Power window master switch (Driver door ECU)	B12 P15
Body ECU Power window switch (Front RH door ECU) LHD Power window switch (Front RH door ECU) RHD	B12 P12 (LHD) / P11 (RHD)
Body ECU Power window switch (Rear LH door ECU)	B13 P13
Body ECU Power window switch (Rear RH door ECU)	B13 P14



CHECK:

Check whether or not there is +B short and GND short between the above connectors.

OK:

No +B short and GND short.

NG → **Repair or replace corresponding wire harness.**

OK

Replace Body control ECU
(See page IN–38).

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DIAX3–01

DTC	B1245	Auto wiper ECU communication stop

CIRCUIT INSPECTION

This DTC is output when communication stops between the Wiper control ECU and the Body ECU.

DTC No.	DTC Detecting Condition	Trouble Area
B1245	No communication from wiper control ECU for more than 10 seconds.	• Wiper control ECU • Wire harness

WIRING DIAGRAM

See page DI–1118.

INSPECTION PROCEDURE

1	Check auto wiper ECU.

CHECK:

Check that the auto wiper system operates normally.

HINT:

With this inspection, whether or not the auto wiper ECU CPU functions normally can be diagnosed.

NG → **Replace the auto wiper ECU (See page IN–38).**

YES

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2	**Check wire harness. (See page IN–38)**

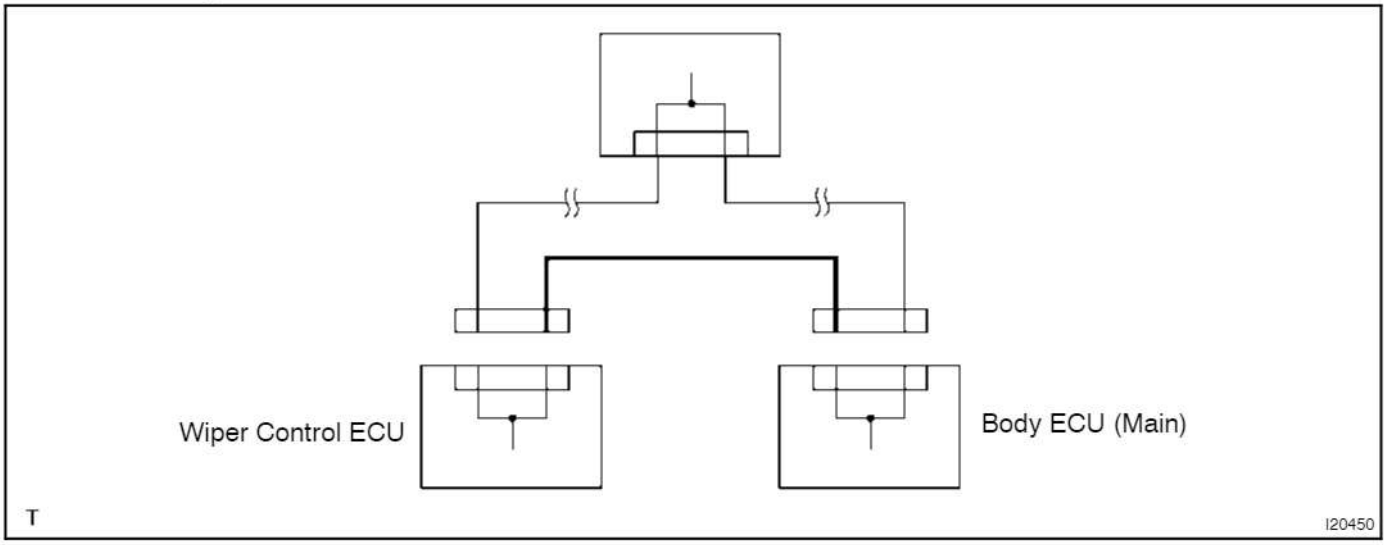
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Wiper control ECU – Body ECU	MPX2 (A65–2) – MPX2 (B12–23)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

NG → **Repair or replace wire harness.**

OK

Replace wiper control ECU (See page IN–38).

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DIAX4–01

DTC	B1249	Double lock communication stop

CIRCUIT INSPECTION

This DTC is output when communication stops between the Double lock ECU and the Body ECU.

DTC No.	DTC Detecting Condition	Trouble Area
B1249	No communication from double lock ECU for more than 10 seconds.	• Double lock ECU • Wire harness

WIRING DIAGRAM

See page DI–1118.

INSPECTION PROCEDURE

1	Check double lock ECU.

CHECK:

Check that the Double lock control system operates normally.

HINT:

With this inspection, whether or not the double lock ECU CPU functions normally can be diagnosed.

NG → **Replace the double lock ECU (See page IN–38).**

YES

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2	**Check wire harness. (See page IN–38)**

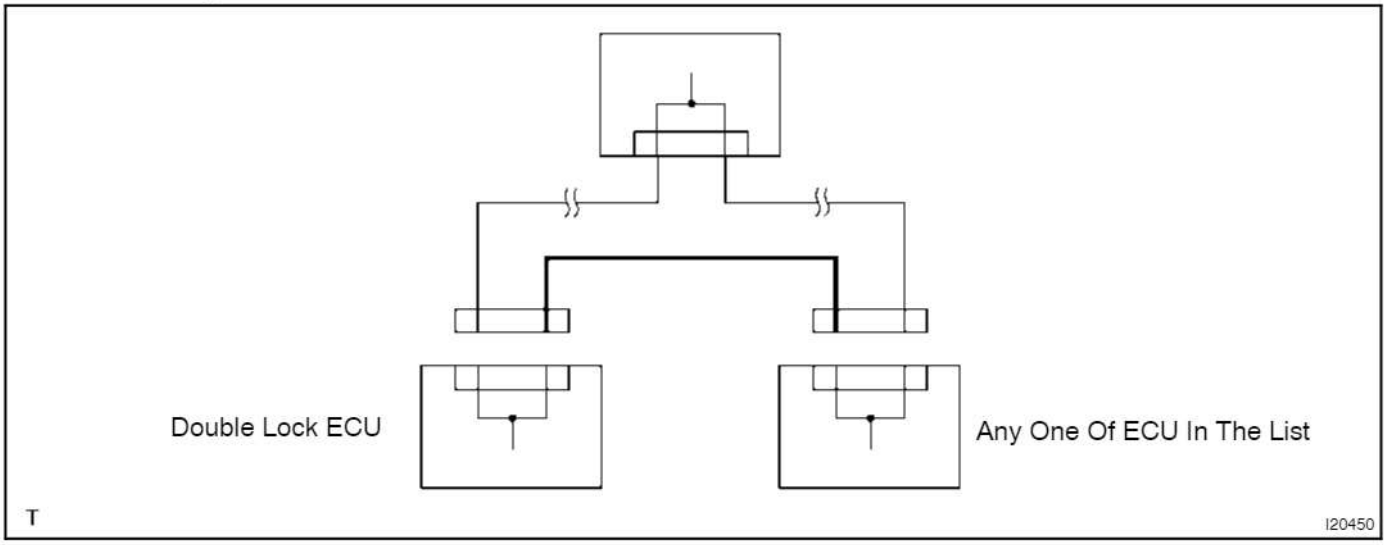
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Double lock ECU – Body ECU	MPX1 (D37–9) – MPX3 (B14–26)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

NG → **Repair or replace wire harness.**

OK →

Replace double lock ECU (See page IN–38).

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DIAX5–01

DTC	B1269	Theft deterrent ECU communication stop

CIRCUIT INSPECTION

This DTC is output when communication stops between the theft deterrent ECU and the Body ECU.

DTC No.	DTC Detecting Condition	Trouble Area
B1269	No communication from theft deterrent ECU for more than 10 seconds.	• Theft deterrent ECU • Wire harness

WIRING DIAGRAM

See page DI–1118.

INSPECTION PROCEDURE

1	**Check wire harness.**

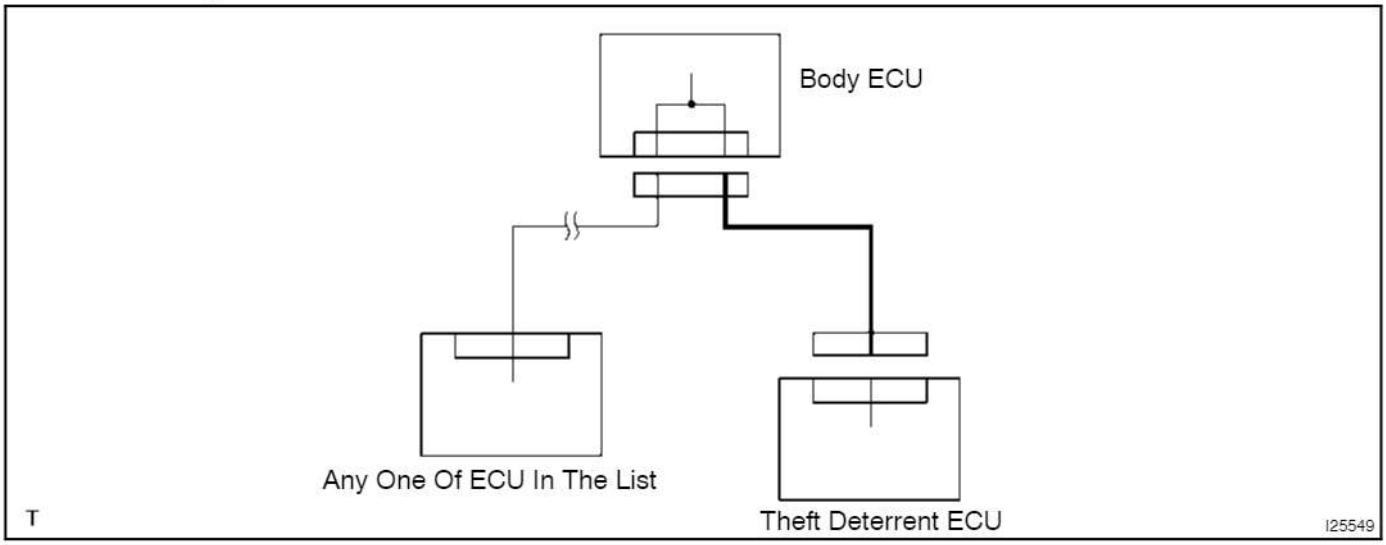
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Theft deterrent ECU – Body ECU	MPX1 (T9–31) – MPX3 (B14–26)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

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NG → Repair or replace wire harness.

OK

Replace Theft deterrent ECU
(See page IN–38).

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DIAX6–01

DTC	B1272	Power seat ECU communication stop

CIRCUIT DESCRIPTION

This DTC is output when communication stops between the Power seat ECU (driver seat ECU) and the Body ECU.

DTC No.	DTC Detecting Condition	Trouble Area
B1272	No communication from driver seat ECU for more than 10 seconds.	• Power seat ECU (Driver seat ECU) • Wire harness

WIRING DIAGRAM

See page DI–1118.

INSPECTION PROCEDURE

1	Check power seat ECU.

CHECK:

Check that the operation of front vertical and rear vertical is normal.

HINT:

With this inspection, whether or not the power seat ECU CPU functions normally can be diagnosed.

NG → **Replace power seat ECU (See page IN–38).**

YES

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2	**Check wire harness. (See page IN–38)**

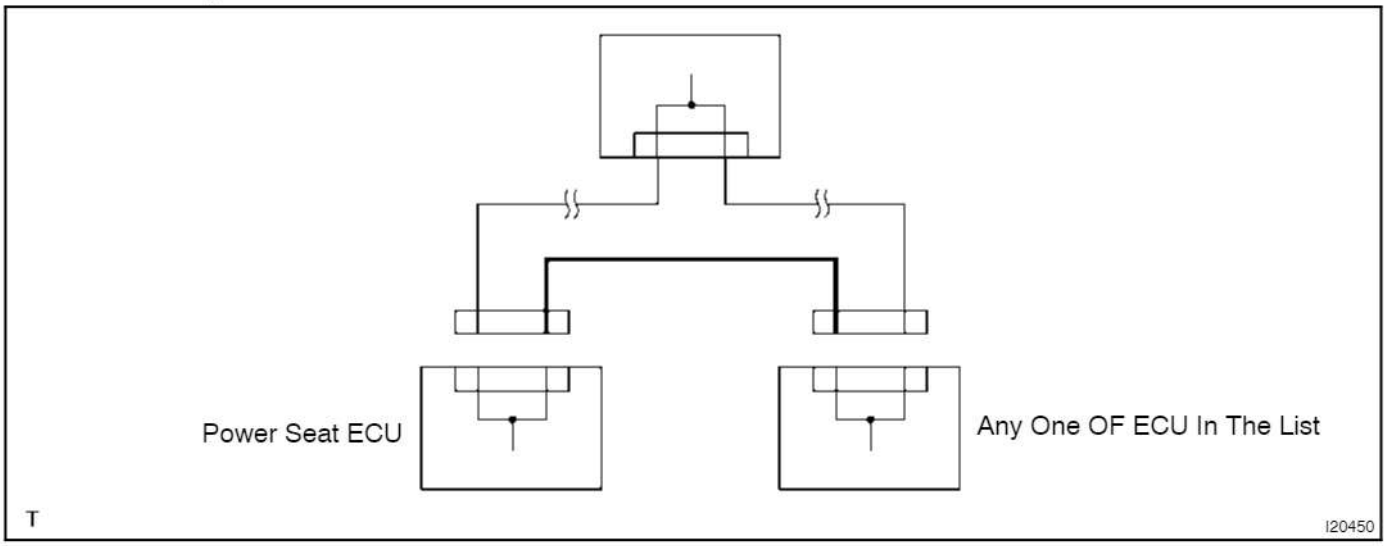
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Power seat ECU – Body ECU	MPX1 (S32–4) – MPX2 (B12–23)
Power seat ECU – Remote control mirror ECU	MPX1 (S32–9) – MPX1 (R47–25)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

NG → **Repair or replace wire harness.**

OK →

Replace power seat ECU (See page IN–38).

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DIAX7–01

DTC	B1276	Mirror ECU communication stop

CIRCUIT INSPECTION

This DTC is output when communication stops between the Mirror control ECU and the Body ECU.

DTC No.	DTC Detecting Condition	Trouble Area
B1276	No communication from mirror control ECU for more than 10 seconds.	• Mirror control ECU • Wire harness

WIRING DIAGRAM

See page DI–1118.

INSPECTION PROCEDURE

1	Check mirror control ECU.

CHECK:

Check that the mirror control system operates normally.

HINT:

With this inspection, whether or not the mirror control ECU CPU functions normally can be diagnosed.

NG → **Replace the mirror control ECU (See page IN–38).**

YES

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2	**Check wire harness. (See page IN–38)**

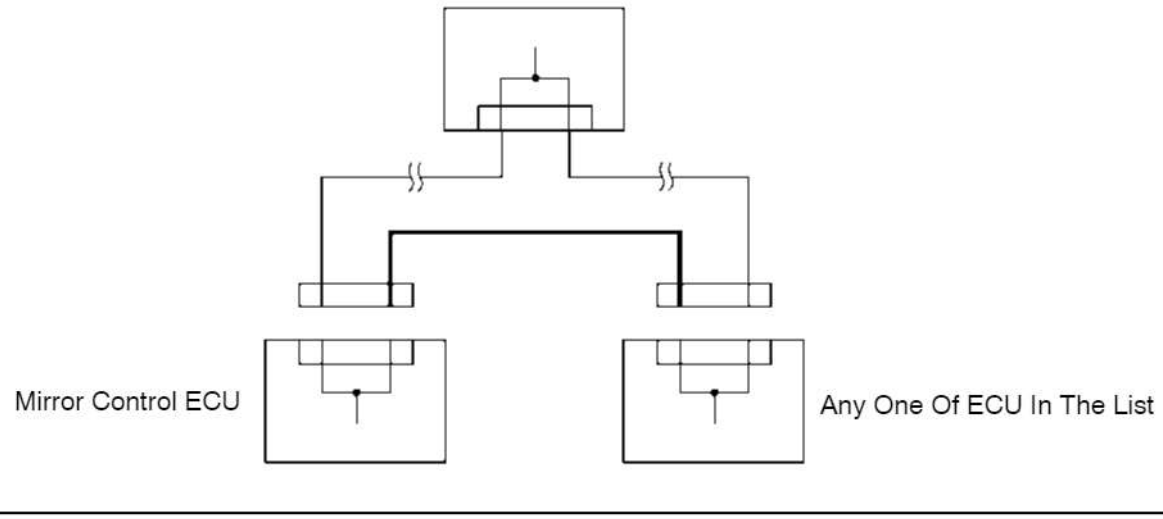
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Mirror control ECU – Power seat ECU	MPX1 (R47–25) – MPX2 (S32–9)
Mirror control ECU – Tilt and telescopic ECU	MPX1 (R47–13) – MPX1 (T11–8)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

NG → **Repair or replace wire harness.**

OK →

Replace mirror control ECU (See page IN–38).

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DIAX8–01

DTC	B1279	Rain sensor communication stop

CIRCUIT DESCRIPTION

This DTC is output when communication stops between the Rain sensor and the Body ECU.

DTC No.	DTC Detecting Condition	Trouble Area
B1279	No communication from rain sensor ECU for more than 10 seconds.	• Rain sensor • Wire harness

WIRING DIAGRAM

See page DI–1118.

INSPECTION PROCEDURE

1	Check rain sensor.

CHECK:

Check that the auto wiper system operates normally.

HINT:

With this inspection, whether or not the rain sensor CPU functions normally can be diagnosed.

NG → Replace the rain sensor (See page IN–38).

YES

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2	**Check wire harness. (See page IN–38)**

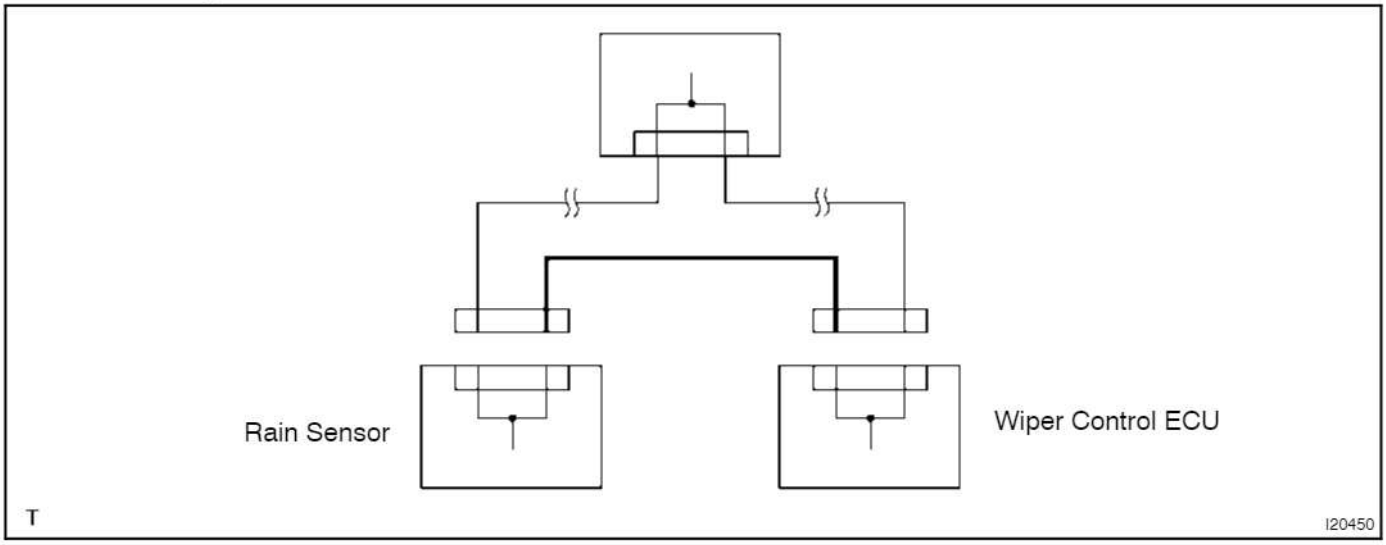
PREPARATION:

Pull out the ECU connectors mentioned below.

Wire harness side connector of ECU	Terminal
Rain sensor – Wiper control ECU	MPX (R58–3) – MPX1 (A65–1)

CHECK:

Check continuity of the wire harness between the connectors.



OK:

There is a continuity between the connectors.

HINT:

If there is OPEN in any wire harness, please repair it.

NG → **Repair or replace wire harness.**

OK

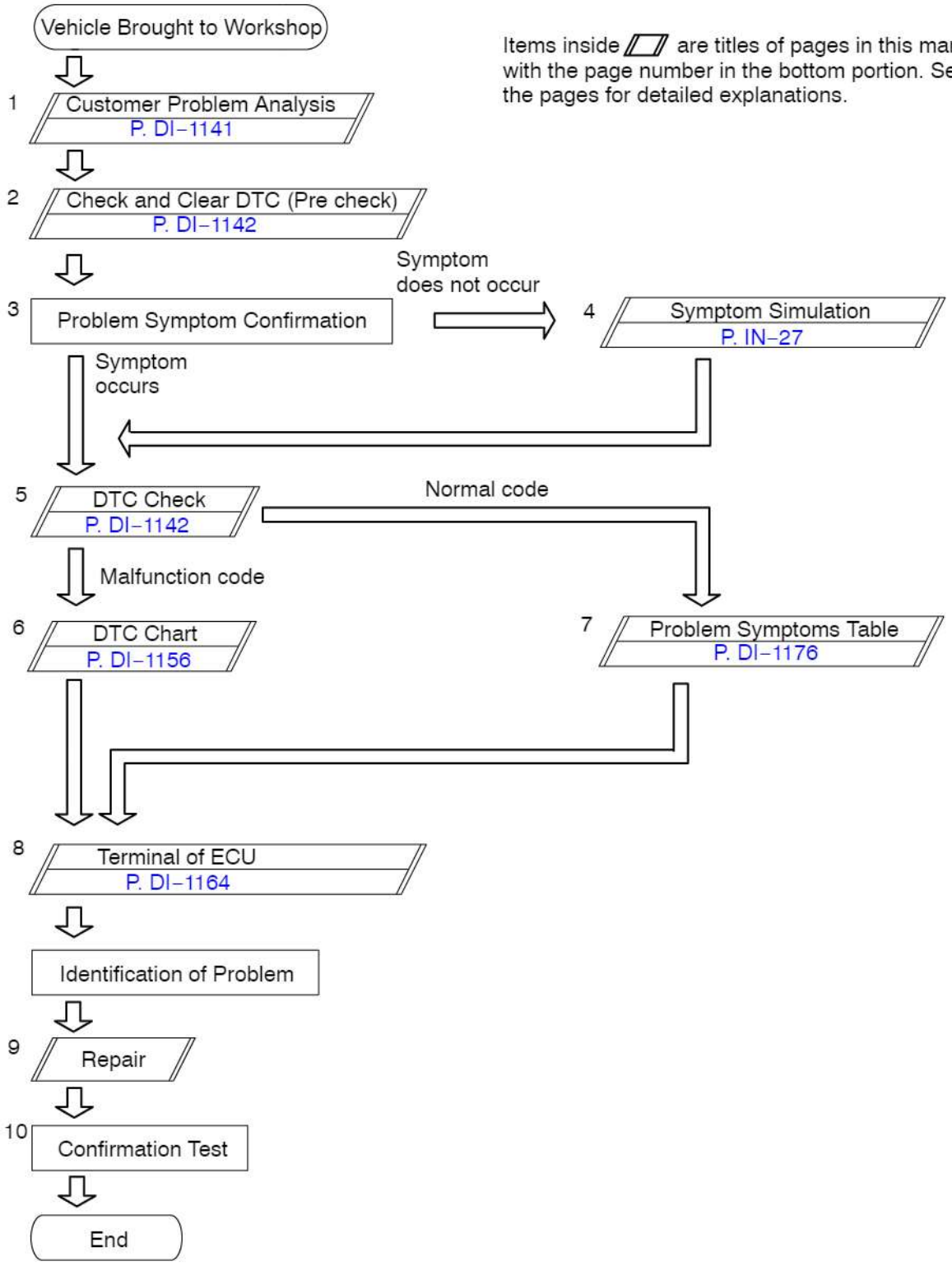
Replace rain sensor (See page IN–38).

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NAVIGATION SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

DIAVT–01



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DIAVV–01

CUSTOMER PROBLEM ANALYSIS CHECK

NAVIGATION SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date of Vehicle Brought in	/ /	**Odometer Reading**	**km Mile**

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Constant ☐ Intermittent (Times a day)

Problem Symptom	**Navigation malfunction**	☐ Cursor movement is defective.
		☐ Cursor does not move.
		☐ GPS mark does not appear.
		☐ Map is not displayed.
		☐ Others ( )
	Display malfunction	☐ Screen is dark.
		☐ Screen is white.
		☐ Color is not uniform.
		☐ Screen is in disorder.
		☐ Others ( )
	Control Switch malfunction	☐ Can not operate with panel switches.
		☐ Can not operate with touch switches.
		☐ Others ( )

	Parts name	1st time malfunction code.	2nd time malfunction code.
DTC Check	NAVI (Navigation ECU)		
	EMV (Multi–display)		
	AUDIO H/U (Radio receiver)		
	G/W (Gateway ECU)		
	CD–CH		

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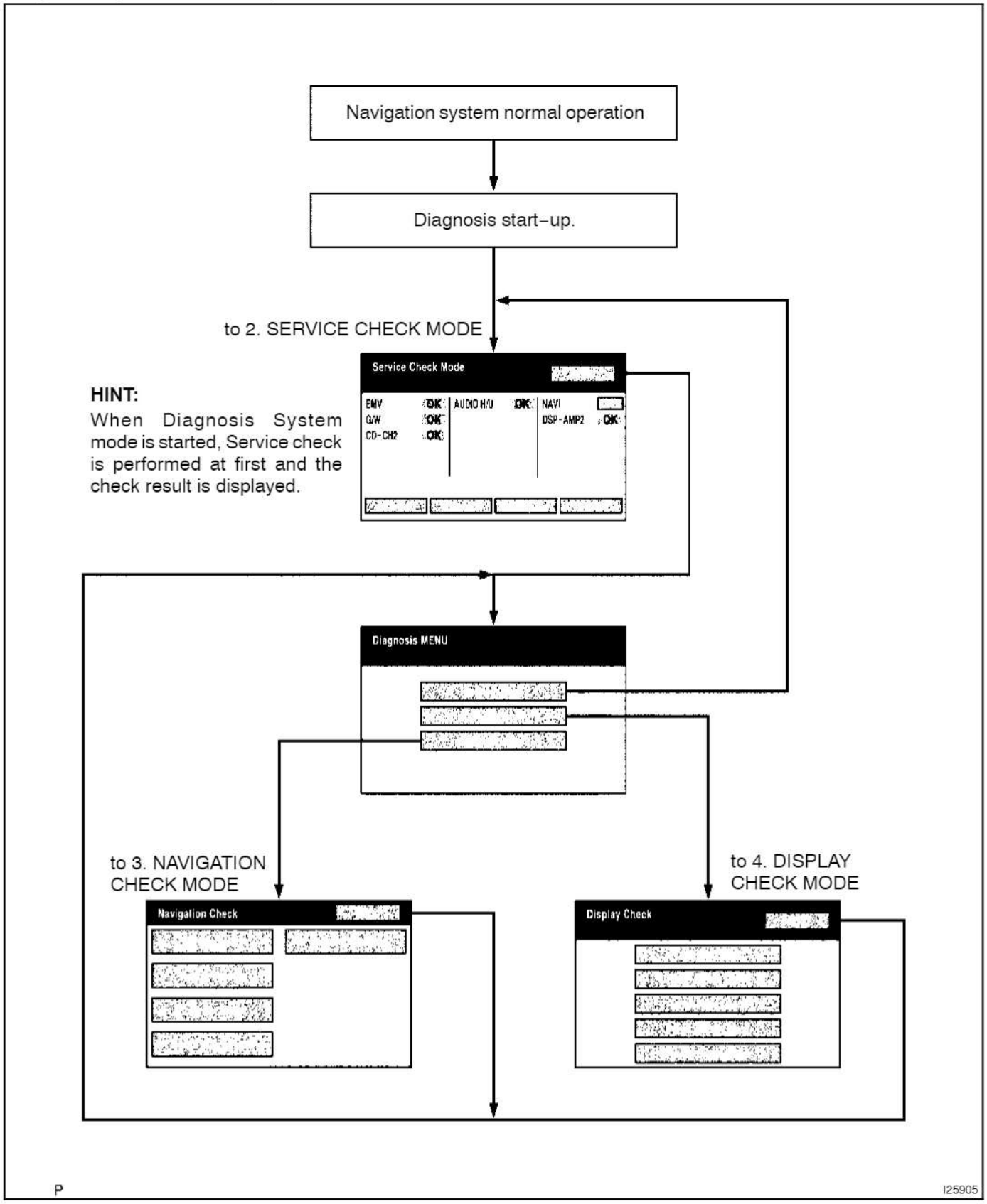
DIAVY-01

PRE–CHECK

1. DIAGNOSIS SYSTEM MODE

HINT:

Diagnosis System Mode is operated as follows.



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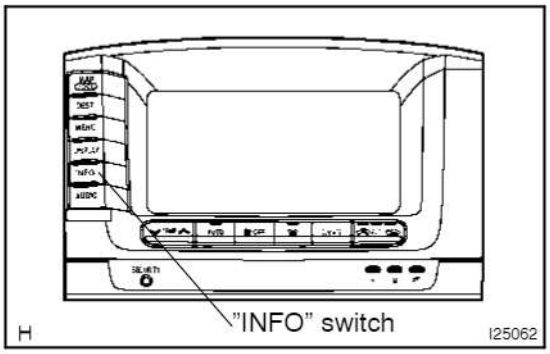
(a) DIAGNOSIS START–UP

HINT:

- Before starting the Diagnosis System, make sure that the map appears on the screen after turning on the IG switch.

If not, some items cannot be checked.

- To start the diagnosis menu, there are 2 ways: using a light control switch and using a touch switch.



(b) Diagnosis Start–up by light control switch.

(1) Vehicle speed should be 0 km/h (0 mph).

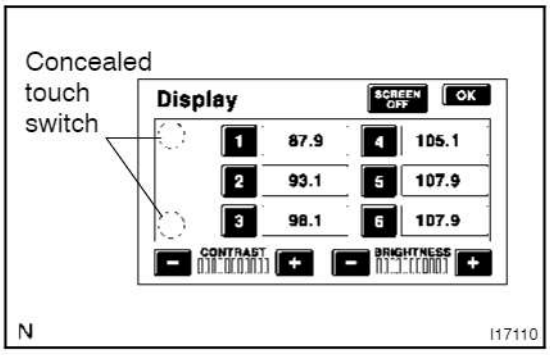
(2) Turn the ignition switch to ACC or ON.

(3) While pressing the "INFO" switches on the Multi Display, turn the Light Control switch from OFF → TAIL → OFF → TAIL → OFF → TAIL → OFF.

Display	Description
Service Check	By performing system check and collecting data of diagnosis memory, this mode checks the current and past condition of each connection device.
Display Check	It displays the Display Check on the screen.
Navigation Check	It displays the Navigation ECU Check on the screen.

HINT:

- When Diagnosis System starts, Service Check screen is displayed and the service check begins.
- Select MENU to display Diagnosis Check Menu.



(c) Diagnosis Start–Up by touch switch.

(1) Vehicle speed should be 0 km/h (0 mph).

(2) Turn the ignition switch to ACC or ON.

(3) Activate the screen adjustment screen.

(4) Alternately touch the upper and lower bottom parts of the left end of the screen 3 times.

(d) Finishing the Diagnosis System

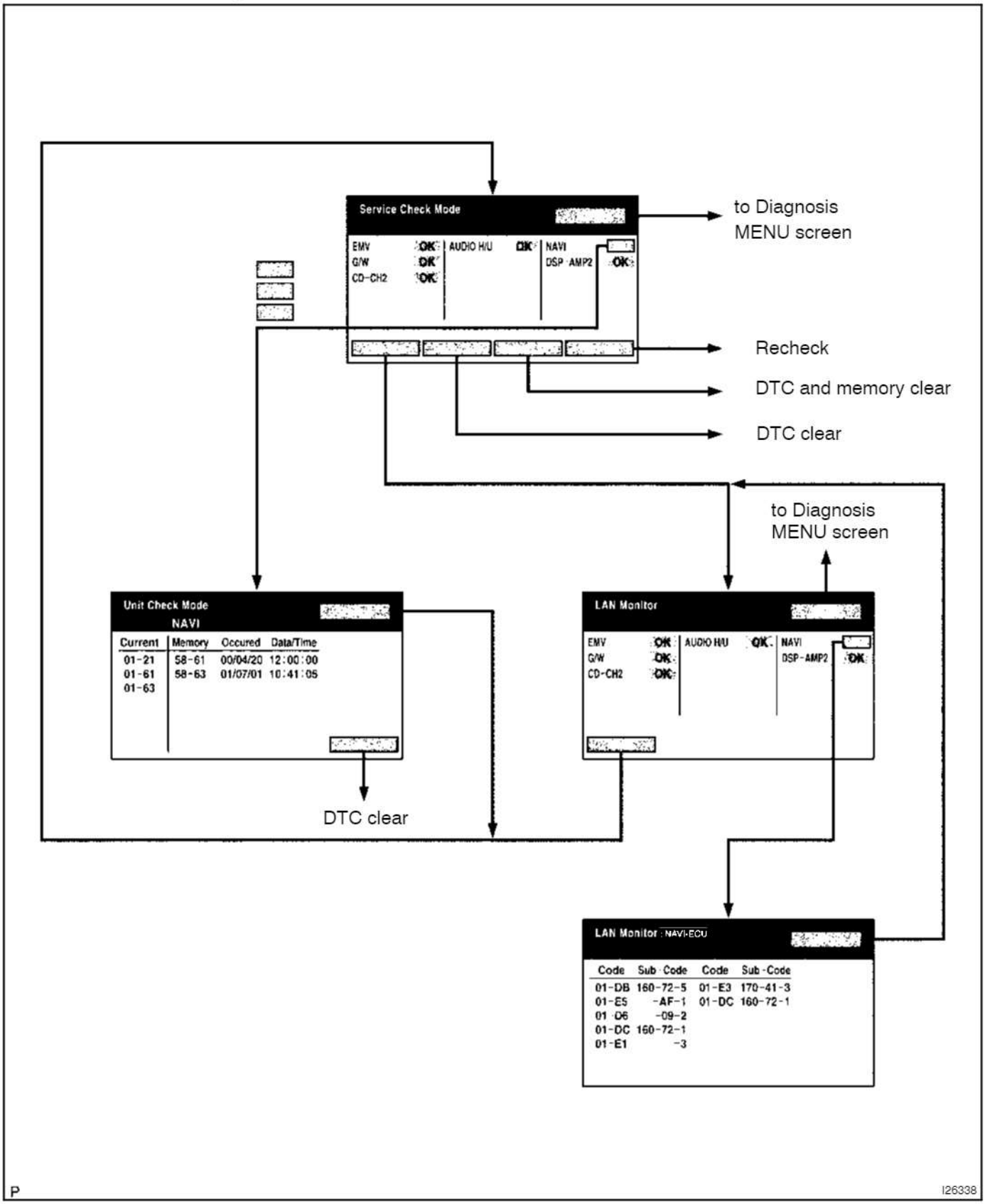
Turn the ignition switch off to finish the mode.

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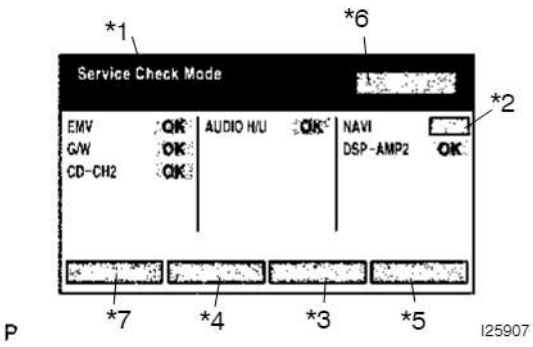
2. SERVICE CHECK MODE

HINT:

Service Check Mode is operated as follows.



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(a) SERVICE CHECK SCREEN

(b) Service Check

(1) Start the Diagnosis System.

Display Item	Function
Components Name/*1	List of component names including optional components (15 components max.) are displayed. When the names are not identified, their physical addresses are displayed.
Check/*2	Check results are displayed.
Memory CLR/*3	Pressing this switch for 3 sec. deletes all the information about master component registration.
Code CLR/*4	Pressing this switch for 3 sec. deletes diagnosis memory of all the components. It deletes Service Check results and the screen displaying the check results.
Recheck/*5	Pressing this switch performs Service Check again.
MENU/*6	Pressing this switch activates the Diagnosis Menu screen.
LAN Mon/*7	Pressing this switch activates the LAN monitor screen.

HINT:

Service Check displays the check results based on the information obtained from each component's response to "System Check Execution" and "Diagnosis Memory Request", and the information of "Current DTC Notification" (the Unit Check and the LAN Check information that will be displayed on the next screens.).

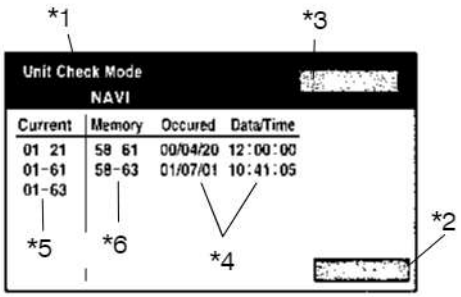
(2) Read Check Result

Check Result	Meaning
OK	No DTC is identified.
EXCH	One or more DTC requesting for exchange are detected.
CHEK	One or more DTC requesting for check are detected.
NCON	No connection response to Diagnosis System start–up, whereas it has the connection response to the AVC LAN system when the power switch is turned on (when IG is turned to ACC).
Old	One or more DTC are detected because of old version.
NRES	No response to the information about the Diagnosis System, whereas it responds to the Diagnosis System start–up.
No Err	No DTC is identified.

HINT:

- After repair and check, press "Code CLR" for more than 3 sec. to delete diagnosis memory.
- After deleting diagnosis memory, press "Recheck" and make sure "OK" is displayed on the screen.

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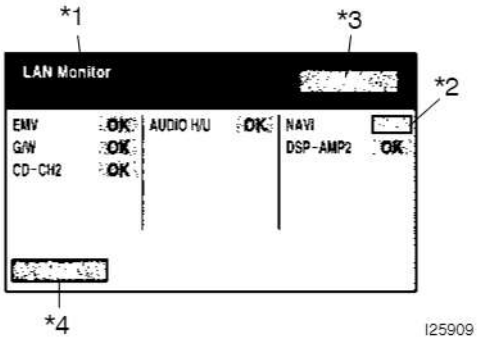
P I25908

(3) "EXCH", "CHEK" and "Old" can be used as switches to activate "Unit Check Mode" for detail information. Check troubled parts of the components in these modes by referring to the DTC code list.

Display Item	Description
Components name/*1	Names of components to be checked are displayed.
Code CLR/*2	Pressing this switch for 3 sec. deletes DTC memory of the selected diagnosis component.
Service/*3	Pressing this returns to the System Check Mode screen.
Date/Time/*4	The date and time stamped at the time of DTC occurrence are displayed in the order of year–month–day–hour–minute–second. (If the date and time data is invalid, it is displayed as a blank.)
Current/ *5	Up to 6 DTC codes detected during the System Check are displayed.
Memory/ *6	DTC memories stored and current DTC Notification are displayed.

HINT:

- Detecting Unit DTC activates the Unit Check Mode on the screen.
- In the Unit Check Mode, DTC which is identified as "EXCH" in the Service Check, is displayed as classified into Current DTC and Past DTC.



P I25909

(c) LAN Monitor

(1) Start the Diagnosis System.

Display Item	Function
Components Name/*1	List of component names including optional components (15 components max.) are displayed. When the names are not identified, their physical addresses are displayed.
CHEK/*2	Check results are displayed.
MENU/*3	Pressing this switch activates the Diagnosis Menu screen.
BACK/*4	Pressing this switch activates the System Check Mode screen.

HINT:

System Check displays the check results based on the information obtained from each component's response to "System Check Execution" and "Diagnosis Memory Request", and the information of "Current DTC Notification" (the LAN Monitor that will be displayed on the next screens).

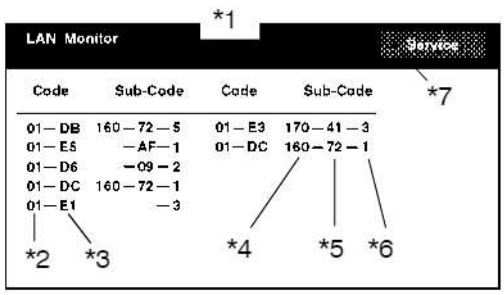
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(2) Read Check Result

Check Result	Meaning
OK	No DTC is identified.
EXCH	One or more DTC requesting for exchange are detected.
CHEK	One or more DTC requesting for check are detected.
NCON	No connection response to Diagnosis System start–up, whereas it has the connection response to the AVC LAN system when the power switch is turned on (when IG is turned to ACC).
Old	One or more DTC are detected because of old version.
NRES	No response to the information about the Diagnosis System, whereas it responds to the Diagnosis System start–up.
No Err	No DTC is identified.

HINT:

- After repair and check, press "Code CLR" for more than 3 sec. to delete diagnosis memory.
- After deleting diagnosis memory, press "Recheck" and make sure "OK" is displayed on the screen.



C I25910

(3) "CHEK" can be used as switches to activate "LAN Monitor" for detail information. Check troubled parts of the components in these modes by referring to the DTC code list.

Display Item	Description
Components name/*1	Names of components to be checked are displayed.
Segment/*2	Logical address codes corresponding to DTC are displayed.
DTC/*3	DTC is displayed.
Sub–Code (address numbers of related components)/*4	Physical address codes memorized together with DTC are displayed.
Sub–code (Connection confirmation number) /*5	Connection confirmation numbers memorized together with DTC are displayed.
Sub–code (Number of occurrence) /*6	The number of occurrence of the same DTC is displayed.
Service/*7	Pressing this returns to the System Check Mode screen.

HINT:

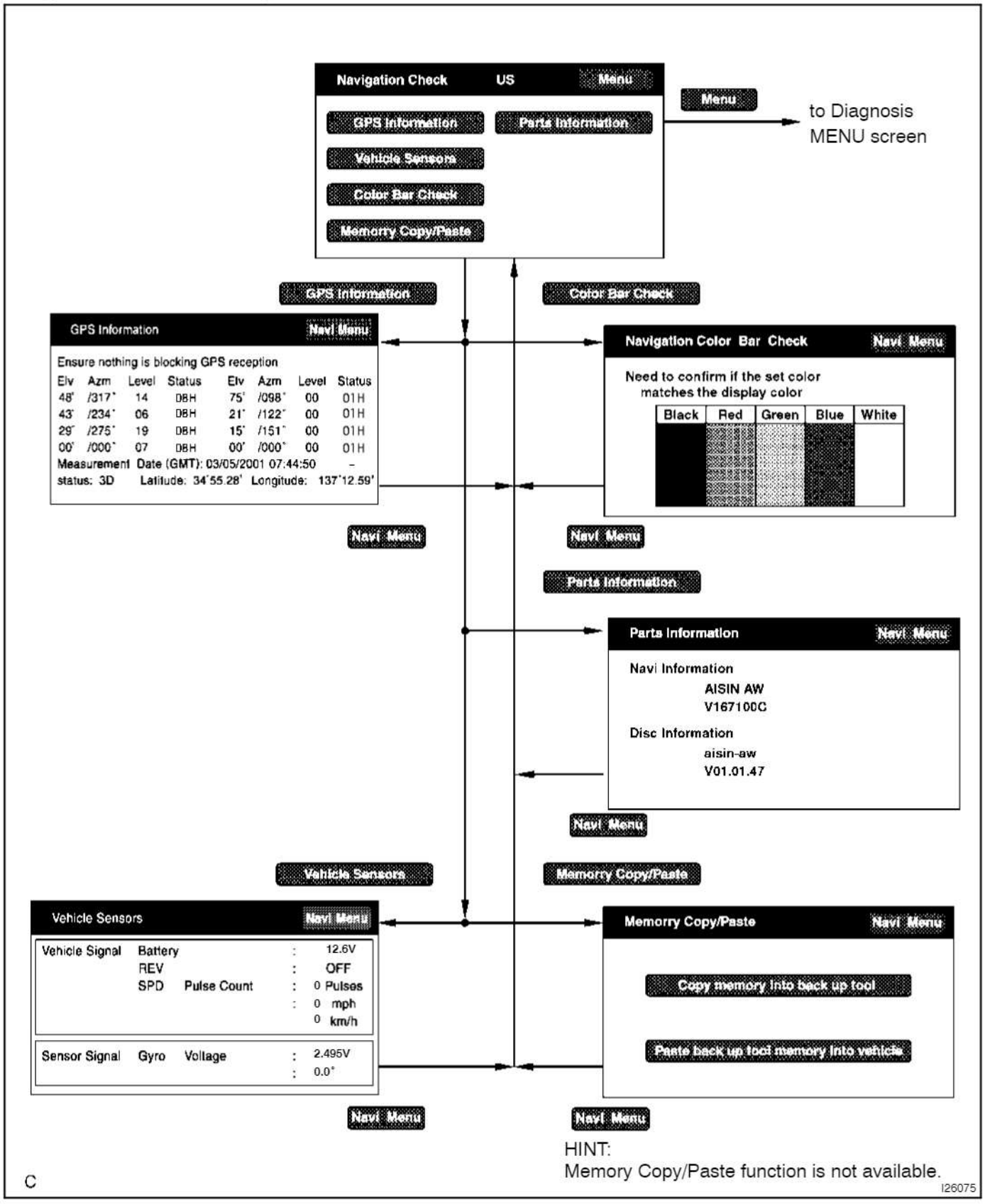
Detecting no LAN DTC activates the LAN Check Mode on the screen.

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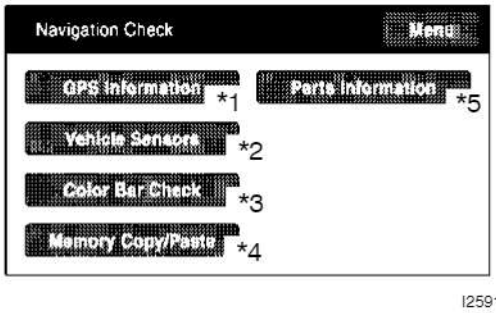
3. NAVIGATION CHECK MODE

HINT:

Navigation Check Mode is operated as follows.



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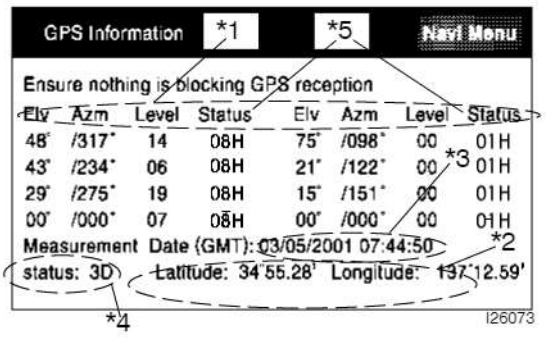
(a) NAVIGATION CHECK MODE SCREEN

Display	Description
GPS Information/*1	Information related to GPS is displayed (updated every 1 second.).
Vehicle Sensors/*2	Vehicle signal information to be loaded in the Navigation ECU is displayed (updated every 1 second.).
Color Bar Check/*3	Color display of the Navigation ECU is checked. (Compare with the Color Bar Check results in the Display Check.)
Memory Copy / Paste/*4	This function is not available.
Parts Information/*5	Navigation program version and disc version are displayed.

HINT:

- In the Navigation Check mode, the checks mentioned above can be conducted.
- The Navigation ECU operates each Navigation Check screen.

Display Item	Meaning
Menu	Pressing this switch activates the "Diagnosis MENU".



(b) GPS Information

(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Navigation Check".
(4) Select "GPS Information".
(5) Check the GPS–related information.

Display Data	Description
Satellite Information/*1	"Angle of elevation", "Azimuth", "Level of Signal" and "Status of Wave Reception" of the Satellite captured by the antenna are displayed (for 8 satellites max.)
Position Data/*2	The latitude and longitude of the current position are displayed in degree, minute and second.
Time Data/*3	Date and time data obtained from the GPS receiver is displayed.
Navi Menu	Pressing this switch activates the "Navigation Check".

Measurement Status: /*4

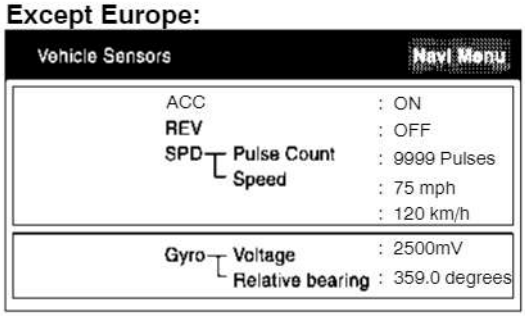
Display	Conditions
2D	Measurement on 2 dimensions.
3D	Measurement on 3 dimensions.
NG	GPS information cannot be used.
Error	Reception error occurs.
–	Other than the above.

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Status of Wave Reception: /*5

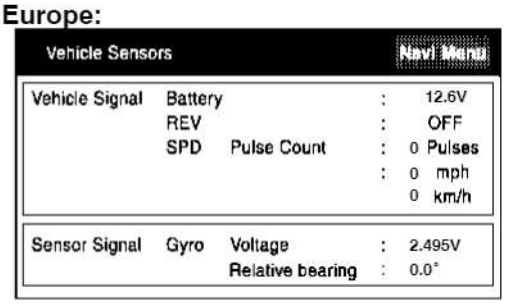
Display	Conditions
P	Using GPS.
–	Complement no GPS.
T	Complement GPS but no using.

Except Europe:



I25921

Europe:

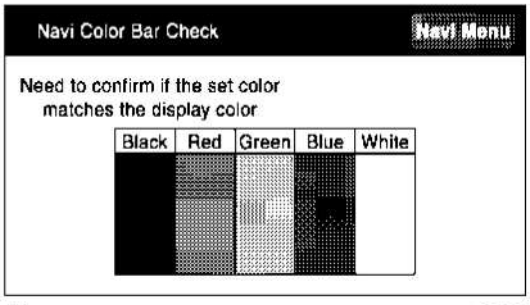


I26068

(c) Vehicle Sensors

(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Navigation Check".
(4) Select "Vehicle sensors".
(5) Check the vehicle signals (ACC, REV, SPD) and the output signal of the gyro sensor introduced into the navigation ECU.

Items	Display Method
ACC signal status	Displayed as Voltage (V).
REV signal status	Displayed as ON/OFF.
SPD signal status	The cumulative value of input pulse count and the vehicle speed [km/h] [mph] are displayed. [The cumulative value of input pulse count is set to be 0 when this screen is displayed. When the vehicle starts to drive, it is counted and displayed continually.]
Output signal of the gyro sensor	Voltage [V] and relative azimuthal angle [degree] are displayed. [The position of the vehicle when this screen is displayed is set to be 0 degree in azimuth. Based on this, relative azimuthal angle is measured and displayed continually.]
Navi Menu	Pressing this switch activates the "Navigation Check".



N

I25922

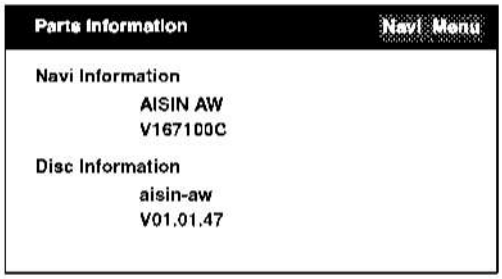
(d) Navigation Color Bar Check

(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Navigation Check".
(4) Select "Color Bar Check".
(5) Make sure that the set color matches the display color.
(6) Compare with the Color Bar Check in the Display Check and make sure that no difference is found.

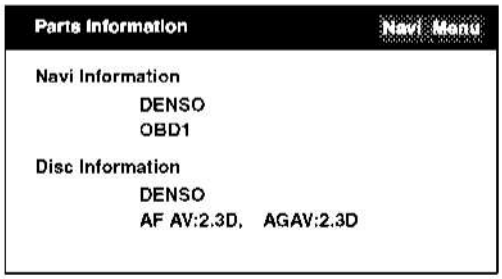
Display Item	Meaning
Navi Menu	Pressing this switch activates the "Navigation Check".

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Europe:



Australia:



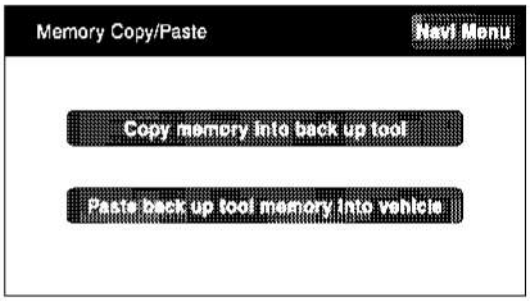
C

I26074

(e) Parts Information

(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Navigation Check".
(4) Select "Parts Information".
(5) Check the program and disc version.

Display Item	Meaning
Navi Menu	Pressing this switch activates the "Navigation Check".



N

I25924

(f) Memory Copy/ Paste

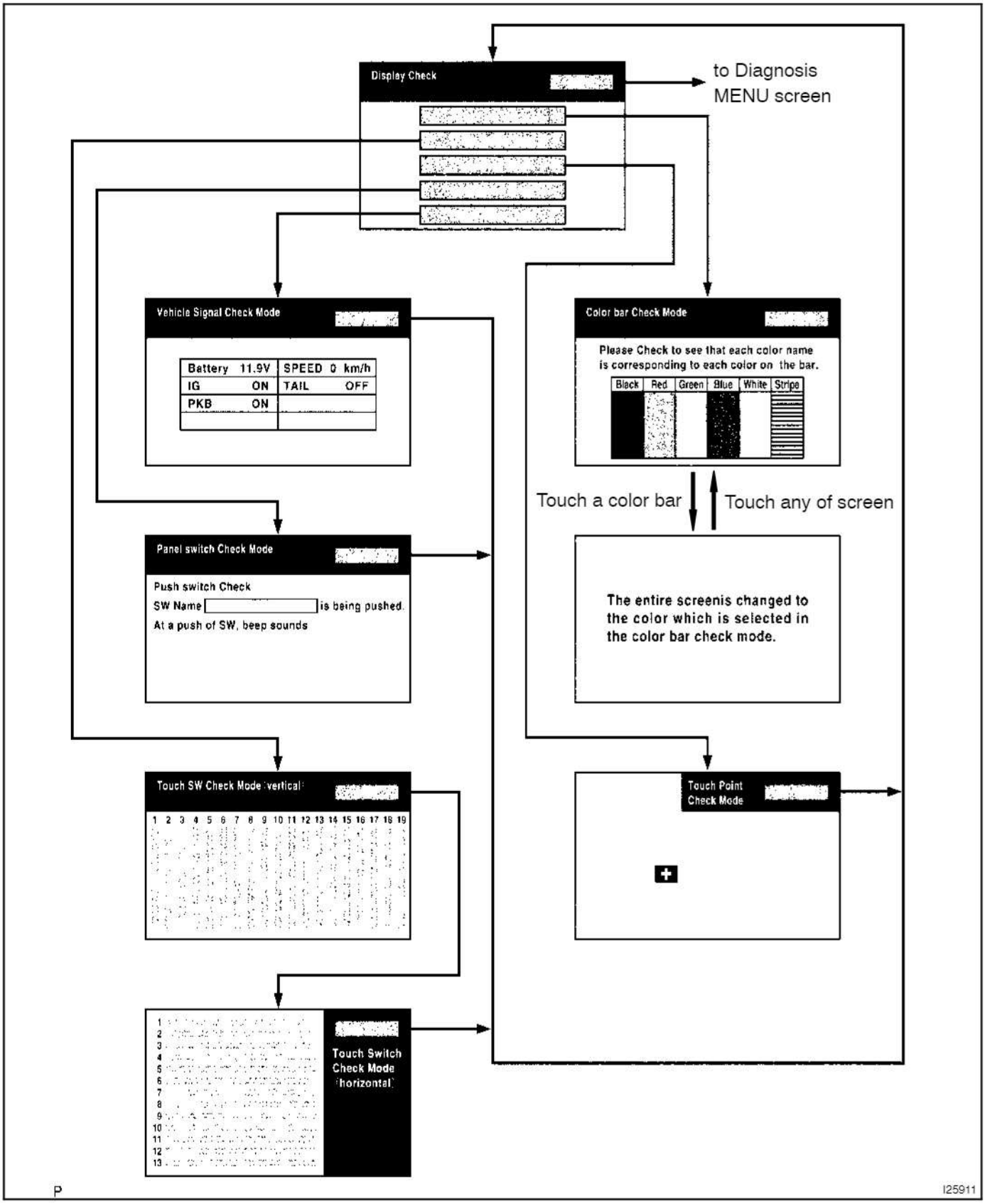
HINT:

This function is not available.

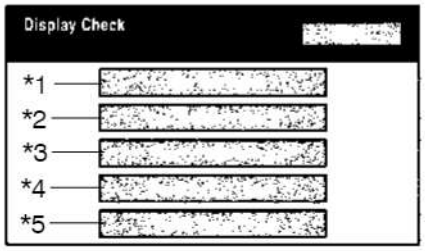
Display Item	Meaning
Navi Menu	Pressing this switch activates the "Navigation Check".

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4. DISPLAY CHECK MODE



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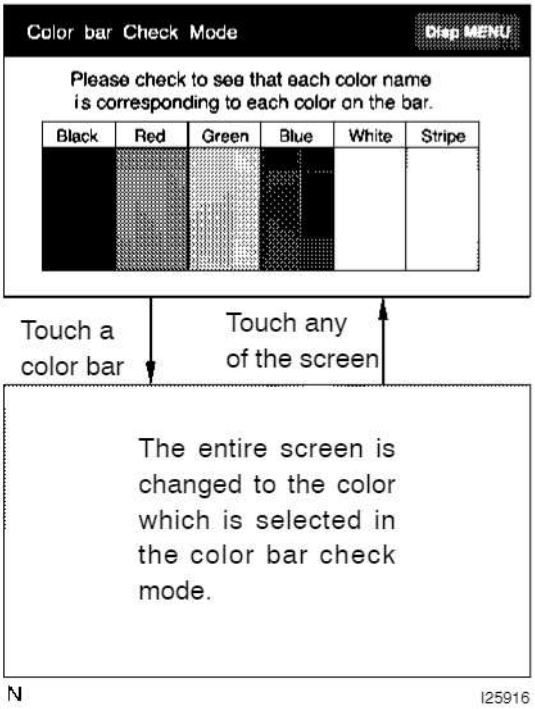
P I25912

(a) DISPLAY CHECK MODE

Display	Contents
Color Bar Check/*1	Color display is checked.
Touch Switch Check/*2	Operating condition of touch switch display is checked.
Touch Point Check/*3	Operating condition of touch point display is checked.
Panel Switch Check/*4	Operating condition of switches on both sides of the display is checked.
Vehicle Signal Check/*5	Status of the vehicle signal which has been loaded into the display is checked.

HINT:
In Display Check Mode, above checks can be performed.

Display Item	Meaning
MENU	Pressing this switch activates the "Diagnosis MENU".



N I25916

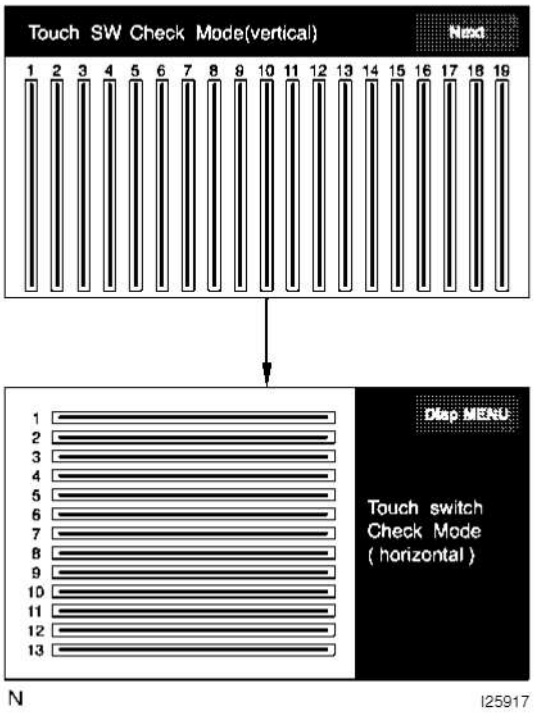
(b) Display Color Bar Check
(1) Start the Diagnosis System.
(2) Select "MENU".
(3) Select "Display Check".
(4) Select "Color Bar Check".
(5) Make sure that each color name is corresponding to each color on the bar.

HINT:
Select Black, Red, Green, Blue, White and Stripe to display selected colors and stripe on the entire screen.

(6) Compare with the Color Bar Check in the Navigation Check and make sure that no difference is found.

Display Item	Meaning
Disp MENU	Pressing this switch activates the "Display Check".

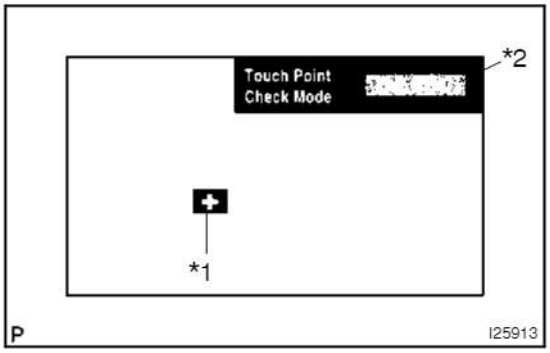
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(c) Display Touch Switch Check
(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Display Check".
(4) Select "Touch Switch Check".
(5) Touch the screen and make sure that every line reacts to the touch.

HINT:
After the Touch Switch Check for vertical lines, press "Next" to check horizontal lines.

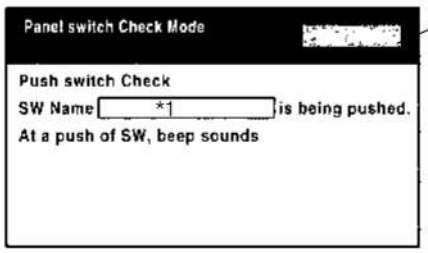
Display Item	Meaning
Disp MENU	Pressing this switch activates the "Display Check".



(d) Display Touch Point Check
(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Display Check".
(4) Select "Touch Point Check".
(5) The position detected by the pressure sensing touch switch is checked.

Display Item	Meaning
Press point/*1	The detected point is indicated by a cross–hair cursor.
Disp MENU/*2	Pressing this switch activates Display Check Menu.

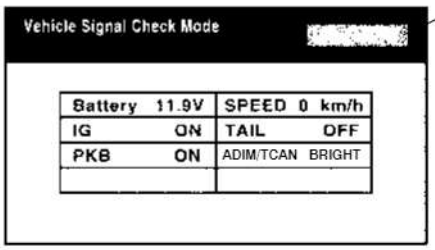
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P I25914

(e) Display Panel Switch Check
(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Display Check".
(4) Select "Panel Switch Check".
(5) Press each switch and make sure that it corresponds to the display on the screen.

Display Data	Description
Names of push–button switches/*1	Names of push–button switches pressed are displayed. Pressing 2 or more push–button switches is displayed as "MULTIPLE". After that if the number of push–button switches being pressed becomes 1, the name of the push–button switch being pressed is displayed.
Disp MENU*2	Pressing this switch activates Display Check Menu.



P I25915

(f) Display Vehicle Signal Check
(1) Start the Diagnosis system.
(2) Select "MENU".
(3) Select "Display Check".
(4) Select "Vehicle Signal Check".
(5) Check the status of the vehicle signal (Battery, PKB, SPEED, TAIL, ADIM/TCAN) loaded into the display.

HINT:
Vehicle signal data is updated every 1 second.

Display Item	Meaning
Battery	Battery voltage is displayed by V.
IG	IG (Signal State) is displayed by ON/OFF.
PKB	Parking Brake Switch (Signal State) is displayed by ON/OFF. (IG switch ON)
SPEED	SPD is displayed by calculatingthe vehicle speed from the pulse signal.
TAIL	TAIL (Signal State) is displayed by ON/OFF.
ADIM/TCAN	ADIM/TCAN signal indicates "DIM" when the light is reduced and "BRIGHT" when the light is not reduced.
Disp MENU/*1	Pressing this switch activates Display Check Menu.

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DIAVZ–01

DIAGNOSTIC TROUBLE CODE CHART

Terms	Meaning
Physical address	Three–digit code (shown in hexadecimal) which is given to each component comprising the AVC–LAN. Corresponding to the function, individual symbols are specified.
Logical address	Two–digit code (shown in hexadecimal) which is given to each function comprising the inner system of the AVC–LAN.

1. PHYSICAL ADDRESS: 110 MULTI DISPLAY (EMV)

HINT:

- *1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
- *2: It is stored when 180 sec. has passed after the power supply connector is pulled out after engine start.
- *3: It may be stored when the engine key is turned again after engine start.
- *4: It may be stored when the engine key is turned 1 min. again after engine start.

(a) Logical address: 01 (Communication control)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
21	ROM Error	Abnormal condition of ROM is detected.	Replace multi–display assembly.
22	RAM Error	Abnormal condition of RAM is detected.	Replace multi–display assembly.
D5 *1	Registered component disconnected	Component shown by auxiliary code is or was disconnected from system with ignition switch in ACC or ON. Communication with component shown by auxiliary code is not ensured when engine is started.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
D8 *2	No response to connection check	Component shown by auxiliary code is or was disconnected from system after engine is started.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
D9 *1	Last Mode Error	Component operated (sound and/or image was provided) before engine stop is or was disconnected with ignition switch in ACC or ON.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DB *1	Mode Status Error	Dual alarm is detected.	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DC *4	Transmission Error	Transmission to component shown by auxiliary code has been failed. (This code does not necessarily mean actual failure.)	If same auxiliary code is recorded in order component(s), check harness for power supply and communication system of all components shown by code.
DE *3	Slave Reset (Momentary Interruption)	After engine start, slave component has been disconnected. DB	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
E2	ON/OFF Instruction Parameter Error	Error is detected in ON/OFF control command from multi–display assembly.	Replace multi–display assembly.
E3 *1	Registration Request Transmission	• Registration Request command is output from slave component. • By reception of connection check instruction, Registration Request command is output from sub–master component.	Since this DTC is provided for engineering, it may be detected when no actual failure exists.

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(b) Logical address: 21 (Switch)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
10	Panel Switch Error	Error in panel switch input part is detected. (Error in switch control part, or internal communication error with switch control part is detected.)	• Inspect all switches on panel switch test screen in display check mode. If any of them does not function, replace multi–display assembly. • If all switches function without problem, observe them for a while.
11	Touch Switch Error	Error in touch switch sensor is detected. (Light level of LED is detected to be less than a fixed value.)	• Inspect all touch switches on touch switch test screen in display check mode. If any of lines does not react, replace multi–display assembly. • If all of vertical and horizontal lines react normally, observe them for a while.

(c) Logical address: 34 (Front passenger monitor)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
10	Error in Picture Circuit	Error in power supply system for picture circuit (abnormal voltage) is detected.	Replace multi–display assembly.
11	Back–light Error (No current)	Decline in power output from inverter circuit for back–light.	Replace multi–display assembly.
12	Back–light Error (Excess current)	Excess power output from inverter circuit for back–light.	Replace multi–display assembly.

2. PHYSICAL ADDRESS: 1C4 GATEWAY ECU (G/W–ECU)

HINT:

*1: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address: 01 (Communication control)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
D4 *1	Regular Communication Error	Component in which this code is recorded has been disconnected after engine start. Or, when this code was recorded, multi–display was disconnected.	• Check harness for power supply system of multi–display assembly. • Check harness for communication system of multi–display assembly. • Check harness for power supply system of gateway ECU. • Check harness for communication system of gateway ECU.

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3. PHYSICAL ADDRESS: 190 RADIO RECEIVER (AUDIO H/U)

HINT:

- *1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
- *2: It is stored when 180 sec. has passed after the power supply connector is pulled out after engine start.
- *3: It may be stored when the engine key is turned 1 min. again after engine start.
- *4: It may be stored when the engine key is turned again after engine start.
- *5: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

(a) Logical address: 01 (Communication control)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
D6 *1	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, multi–display assembly was disconnected.	• Check harness for power supply system of multi–display. • Check harness for communication system of multi–display. • Check harness for power supply system of radio receiver. • Check harness for communication system of radio receiver.
D8 *2	No Response to Connection Check	Component shown by auxiliary code is or had been disconnected from system after engine is start. D9	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
D9 *1	Last Mode Error	Component operated (sounds and/or images were provided) before engine stop is or has been disconnected with ignition switch in ACC or ON.	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DA	No Response to ON/OFF Instruction	No response is identified when changing mode (audio and visual mode change). Detected when sound and picture does not change by button operation.	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code. • If error occurs again, replace component shown by auxiliary code.
DB *1	Mode Status Error	Dual alarm is detected.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DC *3	Transmission Error	Transmission to component shown by auxiliary code has been failed. (Detecting this DTC does not necessarily mean actual failure.)	If same auxiliary code is recorded in order component, check harness for power supply and communication system of all components shown by code.
DD *4	Master Reset (Momentary Interruption)	After engine is started, multi–display assembly was disconnected from system.	• Check harness for power supply system of multi–display. • Check harness for communication system of multi–display. • Check harness for power supply system of radio receiver. • Check harness for communication system of radio receiver. • If this error occurs frequently, replace multi–display assembly.

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DE *4	Slave Reset (Momentary Interruption)	After engine is started, slave component was disconnected from system.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DF *5	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub–master (audio) and master component.	• Check harness for power supply of multi–display assembly. • Check harness for communication system of multi–display assembly. • Check harness for communication system between multi–display assembly and sub–master component.
E0 *1	Registration Completion Instruction Error	"Registration Completion Instruction" command from master cannot be received.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
E1 *1	Audio processor ON error	While source equipment is operating, AMP output is stopped.	• Check harness for power supply of multi–display assembly. • Check harness for communication system of multi–display assembly.
E2	ON/OFF Instruction Parameter Error	Error occurs in ON/OFF controlling command from multi–display assembly.	Replace multi–display assembly.
E3 *1	Registration Request Transmission	Registration Request command is output from slave component. Receiving Connection Check Instruction, Registration Request command is output from sub–master component.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
E4 *1	Multiple Frame Abort	Multiple frame transmission is aborted.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

(b) Logical address: 61 (Cassette switch)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
40	Mechanical of Media Error	Malfunction due to mechanical failure is identified. Or cassette tape is cut or entangled.	• Inspect cassette tape. • Replace radio receiver.

4. PHYSICAL ADDRESS: 178 NAVIGATION ECU (NAVI–ECU)

HINT:

- *1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
- *2: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.
- *3: It may be stored when the engine key is turned 1 min. again after engine start.
- *4: It may be stored when the engine key is turned again after engine start.

(a) Logical address: 01 (Communication control)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
D6 *1	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, multi–display assembly was disconnected.	• Check harness for power supply system of multi–display. • Check harness for communication system of multi–display. • Check harness for power supply system of navigation ECU. • Check harness for communication system of navigation ECU.

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D7 *2	Communication Check Error	Component in which this code is recorded has been disconnected from system after engine start. Or, when this code was recorded, multi–display assembly was disconnected. D6	• Check harness for power supply system of multi–display. • Check harness for communication system of multi–display. • Check harness for power supply system of navigation ECU. • Check harness for communication system of navigation ECU.
DC *3	Transmission Error	Transmission to component shown by auxiliary code has been failed. (This code does not necessarily mean actual failure.)	If same auxiliary code is recorded in other component(s), check harness for power supply and communication system of all components shown by code.
DD *4	Master Reset (Momentary Interruption)	Component that is to be master has been disconnected after engine start.	• Check harness for power supply system of multi–display assembly. • Check harness for communication system of multi–display assembly. • If error occurs frequently, replace multi–display assembly.
DF *5	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub–master (audio) and master component.	• Check harness for power supply of multi–display assembly. • Check harness for communication system of multi–display assembly. • Check harness for communication system between multi–display assembly and sub–master component.
E0 *1	Registration Completion Instruction Error	"Registration Completion Instruction" command from master cannot be received.	Since this DTC is provided for engineering, it may be detected when no actual failure exists.
E2	ON/OFF Instruction Parameter Error	Error is detected in ON/OFF control command from multi–display assembly.	Replace multi–display assembly.
E3 *1	Registration Request Transmission	• Registration Request command is output from slave component. • Registration Request command is output from sub–master component.	Since this DTC is provided for engineering, it may be detected when no actual failure exists.
E4 *1	Multiple Frame Abort	Multiple frame transmission is aborted.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

(b) Logical address: 58 (Navigation ECU)

DTC	Diagnosis item	diagnosis content	Countermeasure and inspected parts
10	Gyro Error	Error in gyro sensor is detected. (Abnormal value in voltage output from sensor is detected for more than specified time.)	Replace navigation ECU.
11	GPS Receiver Error	Operation error of GPS receiver is detected.	At an outdoor site with a clear view, operate to display GPS data. If GPS mark is not properly displayed after 15 min. or more, replace navigation ECU.
40	GPS Antenna Error	Open condition of GPS antenna is detected. (Open circuit, connection failure of connectors, etc.)	Inspect antenna and replace if necessary.

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41	Power Supply Error of GPS Antenna	Abnormal voltage of GPS antenna cable or short circuit is detected.	• Inspect GPS antenna and replace if necessary. (When no continuity is identified between connector's core and sealed part, GPS antenna is normal.) • If GPS antenna is normal, replace navigation ECU.
42	Map Disc Error	Data cannot be read for a certain time due to scratches or dirt on disc surface or insertion of disc.	Inspect disc and replace if necessary. (Visually check disc surface and wipe it with soft cloth.)
43	Vehicle Signal Error	Input error of vehicle signal is detected. (When no vehicle signal has been input for a certain time.)	• Inspect wire harness. • If wire harness is normal, replace navigation ECU.

5. STEREO COMPONENT AMPLIFIER (Physical address: 440)

HINT:

- *1: Even if no failure is detected, this code may be stored depending on the battery condition or voltage for starting an engine.
- *2: This code may be stored when the engine key is turned again 1 min. after engine start.
- *3: This code may be stored when the engine key is turned again after engine start.
- *4: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address: 01 (Communication control)

DTC	Diagnosis item	Condition	Countermeasure and inspected parts
D6 *1	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, multi–display assembly was disconnected.	• Check harness for power supply of multi display. • Check harness for communication system of multi display. • Check harness for power supply of stereo component amplifier. • Check harness for communication system of stereo component amplifier.
D7	Communication Check Error	Component in which this code is recorded is or was disconnected from system after engine start. Or, when recording this code, multi–display assembly was disconnected.	• Check harness for power supply of multi display. • Check harness for communication system of multi display. • Check harness for power supply of stereo component amplifier. • Check harness for communication system of stereo component amplifier.
DC *2	Transmission Error	Transmission to component shown by sub–code has been failed. (Detecting this DTC does not necessarily mean actual failure.)	If same sub–code is recorded in other component, check harness for power supply and communication system of all components shown by code.
DD *3	Master Reset (Momentary Interruption)	After engine start, multi–display assembly was disconnected from system.	• Check harness for power supply of multi display. • Check harness for communication system of multi display. • Check harness for power supply of stereo component amplifier. • Check harness for communication system of stereo component amplifier. • If this error occurs frequently, replace multi–display assembly.

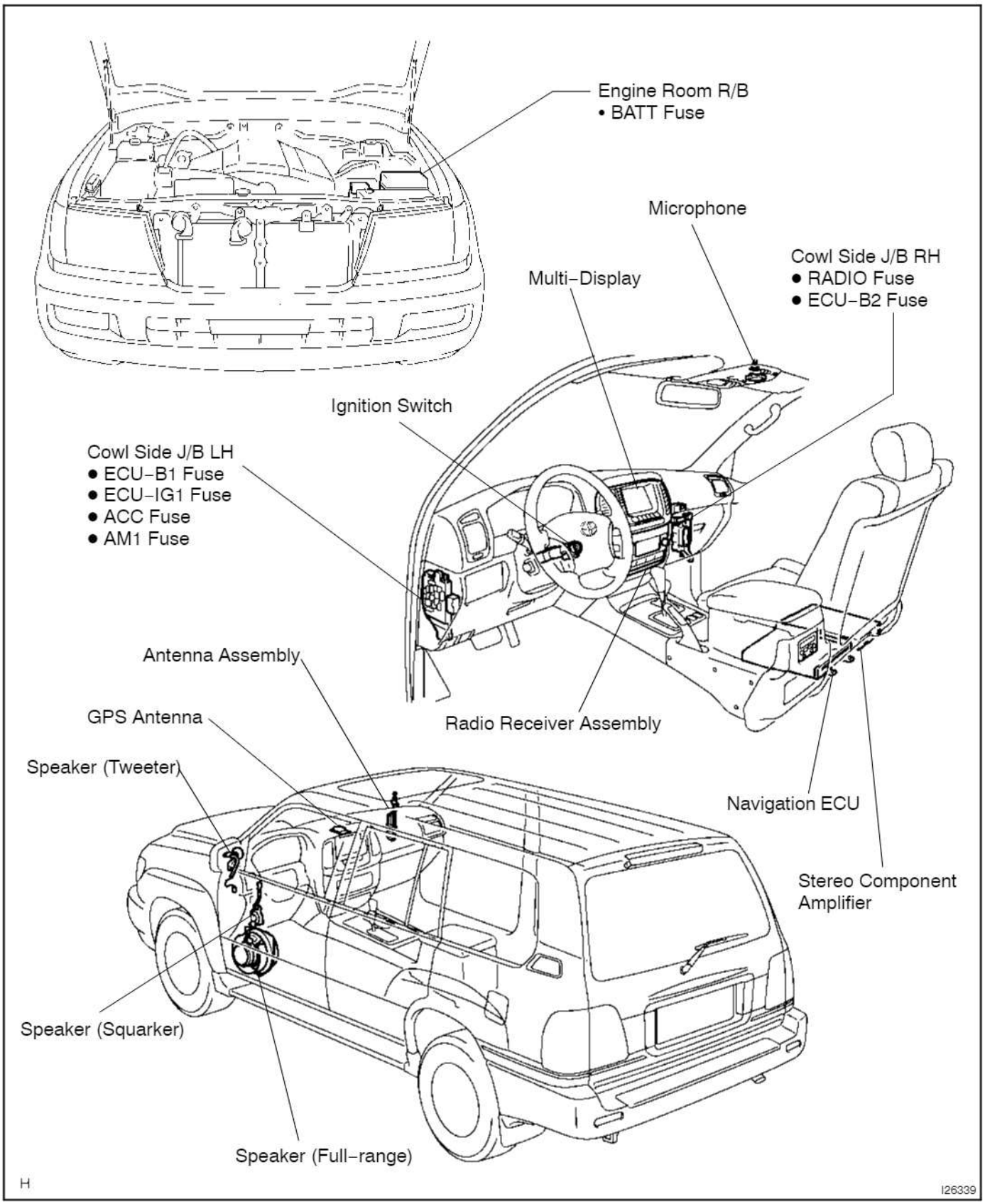
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DF *4	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub–master (audio) and master component.	• Check harness for power supply of multi–display assembly. • Check harness for communication system of multi–display assembly. • Check harness for communication system between multi–display assembly and sub–master component.
E0 *1	Registration Completion Instruction Error	"Registration Completion Instruction" command from master cannot be received.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
E1 *1	Audio processor ON error	While source equipment is operating, AMP output is stopped.	• Check harness for power supply of multi–display assembly. • Check harness for communication system of multi–display assembly.
E2	ON/OFF Instruction Parameter Error	Error occurs in ON/OFF controlling command from multi–display assembly.	Replace multi–display assembly.
E3 *1	Registration Request Transmission	• Registration Request command is output from slave component. • Registration Connection Check Instruction, Registration Request command is output from sub–master component.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

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DIAWO–01

PARTS LOCATION

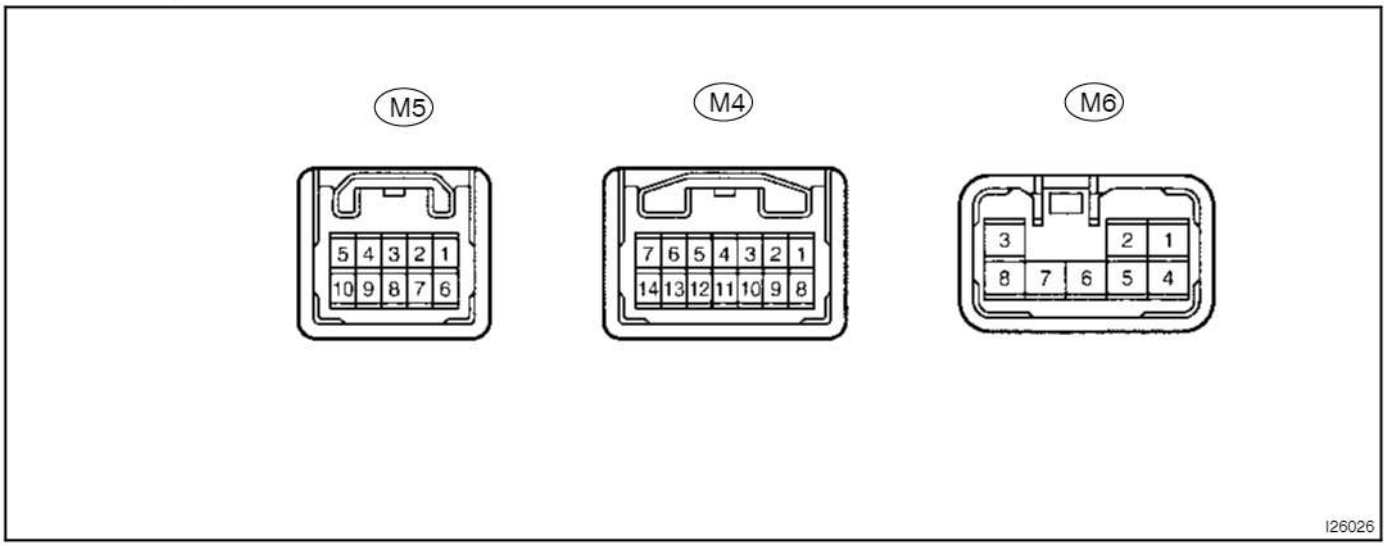


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DIAW1–01

TERMINALS OF ECU

Multi–display:



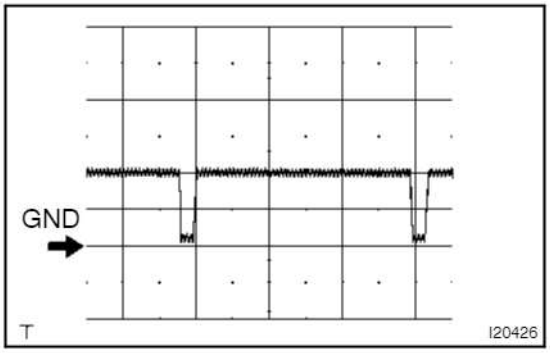
Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
M6–1 – M6–6 (+B1 – GND1)	L–W – W–B	Constant	10 – 14 V
M6–2 – M6–6 (IG – GND1)	B–W – W–B	Ignition switch OFF or ACC	Below 1 V
		Ignition switch ON	10 – 14 V
M6–4 – M6–6 (ACC – GND1)	GR – W–B	Ignition switch OFF	Below 1 V
		Ignition switch ACC or ON	10 – 14 V
M6–6 – Body ground (GND1 – Body ground)	W–B – Body ground	Constant	Below 1 V
M4–3 (TX+)	P	See "Service Check Mode"	–
M4–4 (TX3+)	P–L	See "Service Check Mode"	–
M4–5 – M6–6 (SPD – GND1)	V – W–B	See "Vehicle Signal Check Mode"	–
M4–7 – M6–6 (LP – GND1)	G–R – W–B	Security indicator OFF	Below 1 V
		Security indicator ON	10 – 14 V
M4–10 (TX–)	L	See "Service Check Mode"	–
M4–11 (TX3–)	P–B	See "Service Check Mode"	–
M4–13 – M6–6 (PKB – GND1)	R–W – W–B	See "Vehicle Signal Check Mode"	–
M4–14 – M6–6 (TC – GND1)	P–W – W–B	Ignition switch OFF and connect terminals TC and CG of DLC3.	Below 1 V
M5–1 – M5–6 (VR – VG)	L – Shielded	Ignition switch OFF	Below 1 V
M5–2 – M5–6 (R – VG)	LG – Shielded	Navigation map is switched	Pulse generation *2
M5–3 – M5–6 (B – VG)	R – Shielded	Navigation map is switched	Pulse generation *2
M5–6 – M6–6 (VG – GND1)	Shielded – W–B	Ignition switch OFF	Below 1 V

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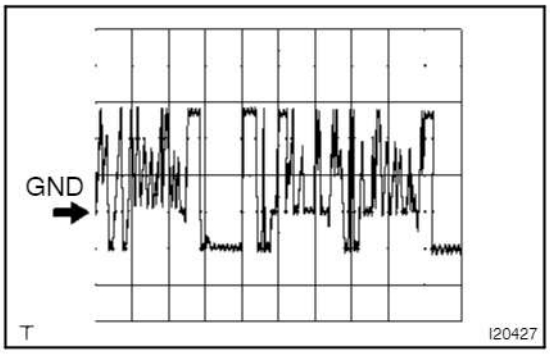
M5–7 – M5–6 (G – VG)	W – Shielded	Navigation map is switched	Pulse generation *2
M6–8 – M6–6 (SYNC – VG)	G – Shielded	Navigation display is displayed	Pulse generation *1

Terminal No. (Symbols)	Problem symptom when open circuit is detected.	Problem symptom when short circuit is detected.
M6–1 – M6–6 (+B1 – GND1)	Navigation system does not operate.	Navigation system does not operate.
M6–2 – M6–6 (IG – GND1)	Navigation system does not operate.	Navigation system does not operate.
M6–4 – M6–6 (ACC – GND1)	Navigation system does not operate.	Navigation system does not operate.
M6–6 – Body ground (GND1 – Body ground)	Navigation system does not operate.	Navigation system is normal.
M4–3 (TX+)	Screen is in disorder.	Screen is in disorder.
M4–4 (TX3+)	DVD screen is in disorder.	DVD screen is in disorder.
M4–5 – M6–6 (SPD – GND1)	All switch operation is available during driving.	All switch operation is available during driving.
M4–7 – M6–6 (PBEW – GND1)	Passenger seat belt warning does not light up.	Passenger seat belt warning remains lit.
M4–10 (TX–)	Screen is in disorder.	Screen is in disorder.
M4–11 (TX3–)	DVD screen is in disorder.	DVD screen is in disorder.
M4–13 – M6–6 (PKB – GND1)	The system can not enter diagnosis system mode.	Navigation system is normal.
M4–14 – M6–6 (TC – GND1)	Navigation system is normal.	The system can not exit service check mode.
M5–1 – M5–6 (VR – VG)	Screen noise or other types of noise occur.	Screen noise or other types of noise occur.
M5–2 – M5–6 (R – VG)	Screen color turns to blue.	Screen color turns to blue.
M5–3 – M5–6 (B – VG)	Screen color turns to yellow.	Screen color turns to yellow.
M5–6 – M6–6 (VG – GND1)	Screen noise or other types of noise occur.	Navigation system is normal.
M5–7 – M6–6 (G – VG)	Screen color turns to red–purple.	Screen color turns to red–purple.
M5–8 – M5–6 (SYNC – VG)	Synchronous pulse fluctuates rapidly in map screen.	Synchronous pulse fluctuates slowly in map screen.

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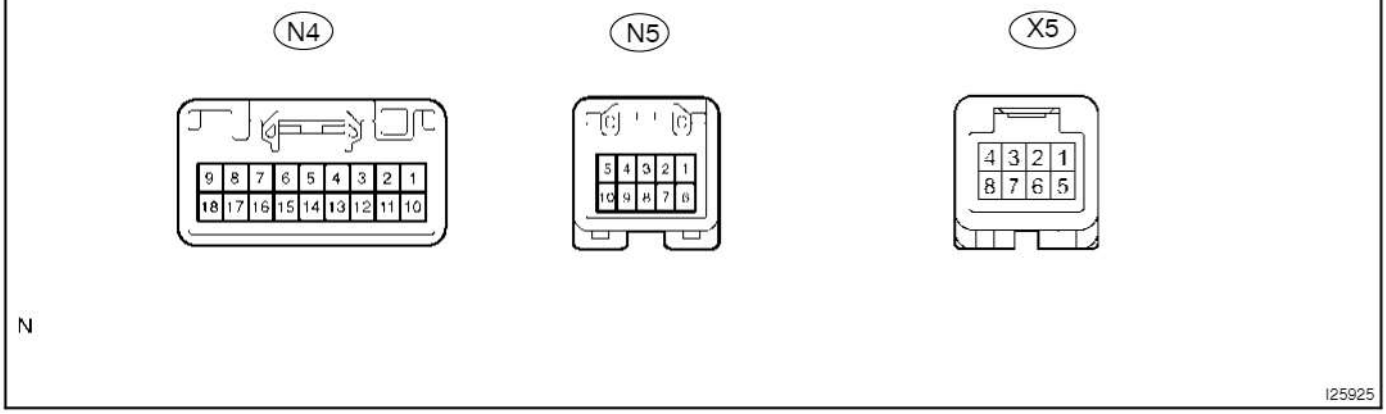
- *1: Oscilloscope wave
  Terminal to be measured: SYNC – GND1
  Setting for measurement: 500 mV/DIV10– μs/DIV
  Condition: Navigation display is displayed.



- *2: Oscilloscope wave
  Terminal to be measured: R, G, B – GND1
  Setting for measurement: 200 mV/DIV10– μs/DIV
  Condition: Navigation map is switched.

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Navigation ECU



Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
N4–1 – N4–17 (AUI+ – GND)	P – W–B	Audio system is sounding	A waveform synchronized with sounds is output
N4–2 (AUO+)	P	Sound quality test	–
N4–5 – N4–17 (SPD – GND)	Y–R – W–B	See "Vehicle Signal Check Mode"	–
N4–9 – N4–17 (+B – GND)	L–Y – W–B	Constant	10 – 14 V
N4–10 – N4–17 (AUI– – GND)	V	Audio system is sounding	A waveform synchronized with sounds is output
N4–11 (AUO–)	V	Sound quality test	–
N4–14 (REV)	R–B	See "Vehicle Signal Check Mode"	–
N4–15 – N4–17 (MUTE – GND)	G–R – W–B	Navigation voice sounding	Below 1 V
N4–17 – Body ground (GND – Body ground)	W–B – Body ground	Constant	Below 1 V
N4–18 – N4–17 (ACC – GND)	GR – W–B	Ignition switch OFF	Below 1 V
		Ignition switch ACC or ON	10 – 14 V
N5–1 – N5–6 (VR – VG)	Y – Shielded	Ignition switch OFF	Below 1 V
N5–2 – N5–6 (R – VG)	R – Shielded	Navigation map is switched	Pulse generation *2
N5–3 – N5–6 (B – VG)	B – Shielded	Navigation map is switched	Pulse generation *2
N5–5 (TX+)	L	See "Service Check Mode"	–
N5–6 – N4–17 (VG – GND)	Shielded – W–B	Ignition switch OFF	Below 1 V
N5–7 – N5–6 (G – VG)	W – Shielded	Navigation map is switched	Pulse generation *2
N5–8 – N5–6 (SYNC – VG)	G – Shielded	Navigation display is displayed	Pulse generation *1
N5–10 (TX–)	LG	See "Service Check Mode"	–

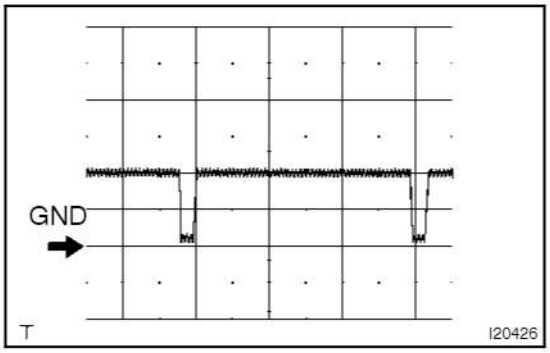
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X5–3 – N4–17 (MIC+ – GND)	R–W – W–B	Ignition switch ACC	5 V
X5–4 – N4–17 (MACC – GND)	Y–G – W–B	Ignition switch OFF	Below 1 V
		Ignition switch ACC or ON	5 V
X5–5 – N4–17 (MIC– – GND)	R – W–B	Ignition switch OFF	Below 1 V
X5–6 – N4–17 (SGND – GND)	R – W–B	Ignition switch OFF	Below 1 V
X5–7 – N4–17 (SNSE – GND)	W–B – W–B	Ignition switch OFF	Below 1 V

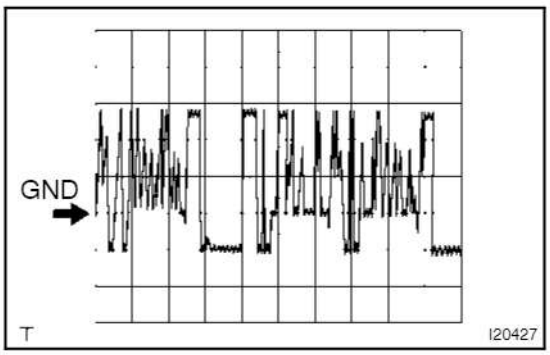
Terminal No. (Symbols)	Problem symptom when open circuit is detected.	Problem symptom when short circuit is detected.
N4–1 – N4–17 (AUI+ – GND)	Driver side speaker does not sound.	Driver side speaker does not sound.
N4–2 (AUO+)	Navigation voice does not sound.	Navigation voice does not sound.
N4–5 – N4–17 (SPD – GND)	Navigation operation is available during, or a cursor on present site does not move.	Navigation operation is available during, or a cursor on present site does not move.
N4–9 – N4–17 (+B – GND)	Map screen does not appear.	Map screen does not appear.
N4–10 – N4–17 (AUI– – GND)	Driver side speaker does not sound.	Driver side speaker does not sound.
N4–11 (AUO–)	Navigation voice does not sound.	Navigation voice does not sound.
N4–14 (REV)	Moving direction of the vehicle is different from that of the cursor.	Moving direction of the vehicle is different from that of the cursor.
N4–15 – N4–17 (MUT2 – GND)	Noise occurs when navigation phrase is changed.	Speaker does not sound.
N4–17 – Body ground (GND – Body ground)	Audio system is normal.	Audio system is normal.
N4–18 – N4–17 (ACC–GND)	Navigation system does not operate.	Fuse is blown.
N5–1 – N5–6 (VR – VG)	Screen noise or other types of noise occur.	Screen noise or other types of noise occur.
N5–2 – N5–6 (R – VG)	Screen color turns to blue.	Screen color turns to blue.
N5–3 – N5–6 (B – VG)	Screen color turns to yellow.	Screen color turns to yellow.
N5–5 (TX+)	Screen is in disorder.	Screen is in disorder.
N5–6 – N4–17 (VG – GND)	Screen noise or other types of noise occur.	Navigation sysytem does not operate.
N5–7 – N5–6 (G – VG)	Screen color turns to red–purple	Screen color turns to red–purple.
N5–8 – N5–6 (SYNC – VG)	Synchronous pulse fluctuates rapidly in map screen.	Synchronous pulse fluctuates slowly in map screen.
X5–3 – N4–17 (MIC+ – GND)	Voice cannot be recognized.	Voice cannot be recognized.
X5–4 – N4–17 (MACC – GND)	Voice cannot be recognized.	Voice cannot be recognized.
X5–5 – N4–17 (MIC– – GND)	Voice cannot be recognized.	Voice cannot be recognized.

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X5–6 – N4–17 (SGND – GND)	Voice cannot be recognized.	Voice cannot be recognized.
X5–7 – N4–17 (SNSE – GND)	Voice cannot be recognized.	Voice cannot be recognized.



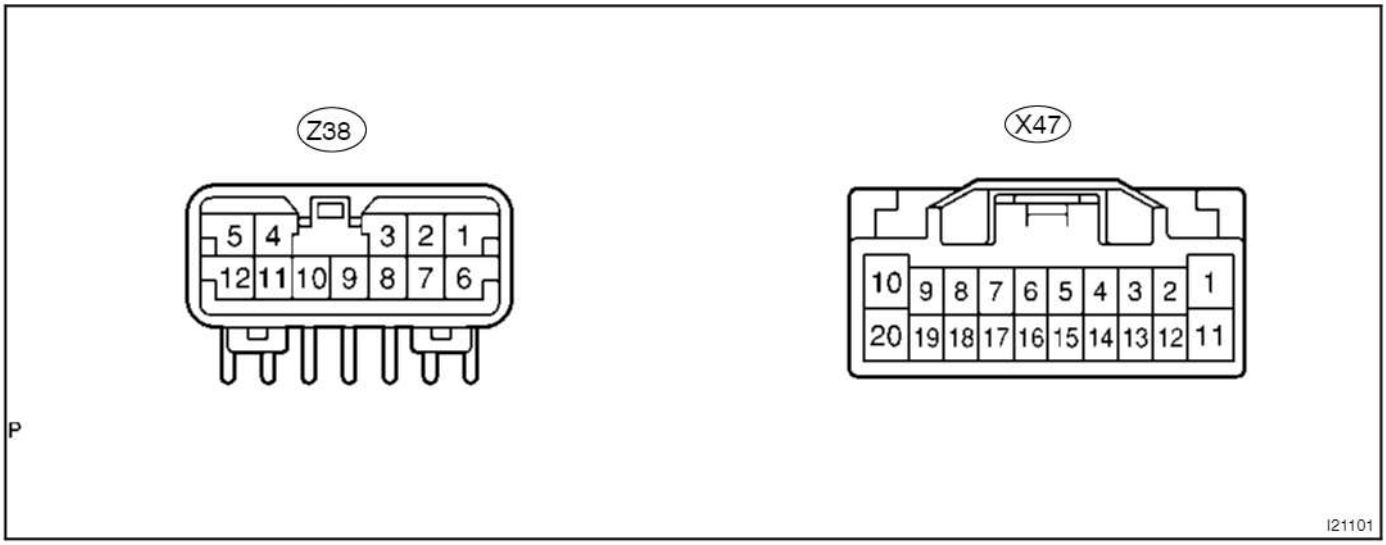
- *1: Oscilloscope wave
  Terminal to be measured: SYNC – GND1
  Setting for measurement: 500mV/DIV 10 μs/DIV
  Condition: Navigation display is displayed



- *2: Oscilloscope wave
  Terminal to be measurement: R, G, B – GND1
  Setting for measurement: 200mV/DIV 10 μs/DIV
  Condition: Navigation map is switched.

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Radio receiver assembly



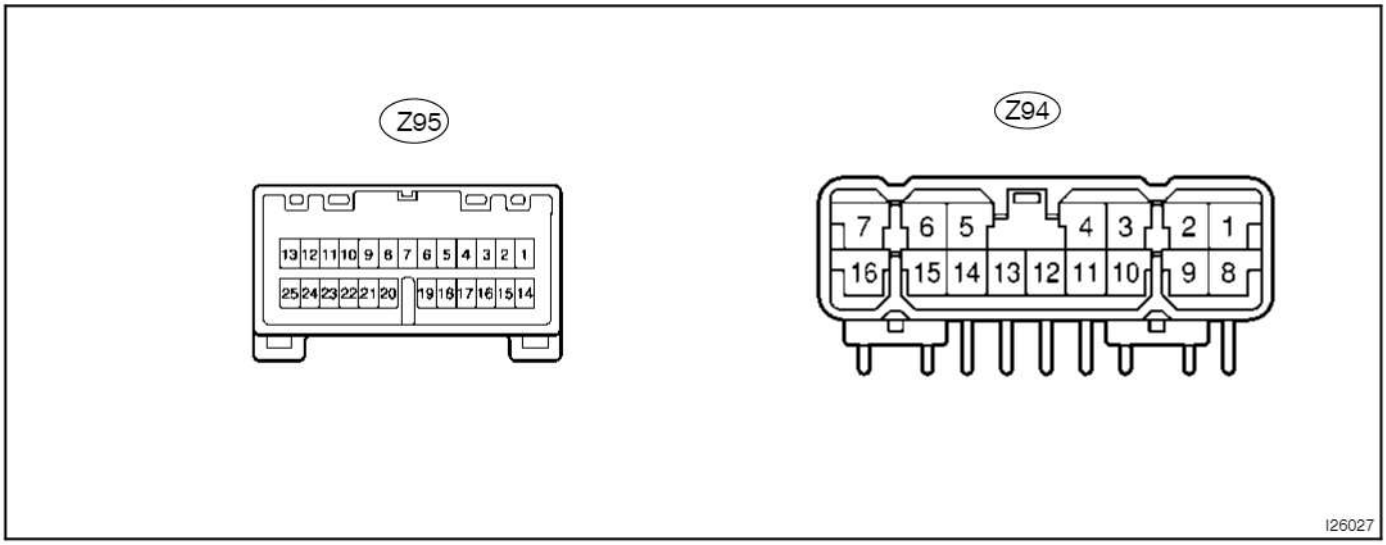
Symbols (Terminal No.)	Condition	Specified condition	Problem symptoms when short circuit is detected.
B ↔ GND (X47–1 ↔ X47–20)	Constant	10 – 14 V	Audio system does not operate.
ILL+ ↔ GND (X47–2 ↔ R2–20)	Light control switch TAIL	10 – 14 V	Audio head unit illumination does not light up.
TX+ (X47–5)	AVC–LAN Communication circuit	–	Audio system does not operate.
MUTE ↔ GND (X47–7 ↔ X47–20)	–	–	Pop sound etc.
R+ ↔ GND (X47–8 ↔ X47–20)	Constant	10 – 14 V	Sound from front right speaker is small
L+ ↔ GND (X47–9 ↔ X47–20)	Constant	10 – 14 V	Sound from front left speaker is small
ACC ↔ GND (X47–11 ↔ X47–20)	Ignition switch ACC	10 – 14 V	Audio system does not operate.
ANT+ ↔ GND (X47–13 ↔ R2–20)	Radio switch ON	10 – 14 V	Antenna does not extend.
ILL– ↔ GND (X47–12 ↔ R2–20)	Light control switch TAIL	10 – 14 V	Fuse is blown.
TX– (X47–15)	AVC–LAN Communication circuit	–	Audio system does not operate.
R– ↔ GND (X47–18 ↔ X47–20)	Constant	10 – 14 V	Sound from rear right side speaker is small.
L– ↔ GND (X47–19 ↔ X47–20)	Constant	10 – 14 V	Sound from rear left side speaker is small.
GND ↔ Body ground (X47–20 ↔ Body ground)	Constant	Continuity	Audio system is normal.
R+ (Z38–2)	–	–	Sound from right side speaker is small
R– (Z38–2)	–	–	Sound from left side speaker is small
L+ (Z38–4)	–	–	Sound from right side speaker is small

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L– (Z38–5)	–	–	Sound from left side speaker is small
MUTE ↔ GND (Z38–6 ↔ X47–20)	–	–	Pop sound etc. Audio system does not operate.
TX+ (Z38–9)	AVC–LAN communication circuit	–	Audio system does not operate.
TX+ (Z38–10)	AVC–LAN communication circuit	–	Audio system does not operate.
RMUTE ↔ GND (R54–19 ↔ X47–20)	–	–	Pop sound etc. Audio system does not operate.

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Stereo component amplifier



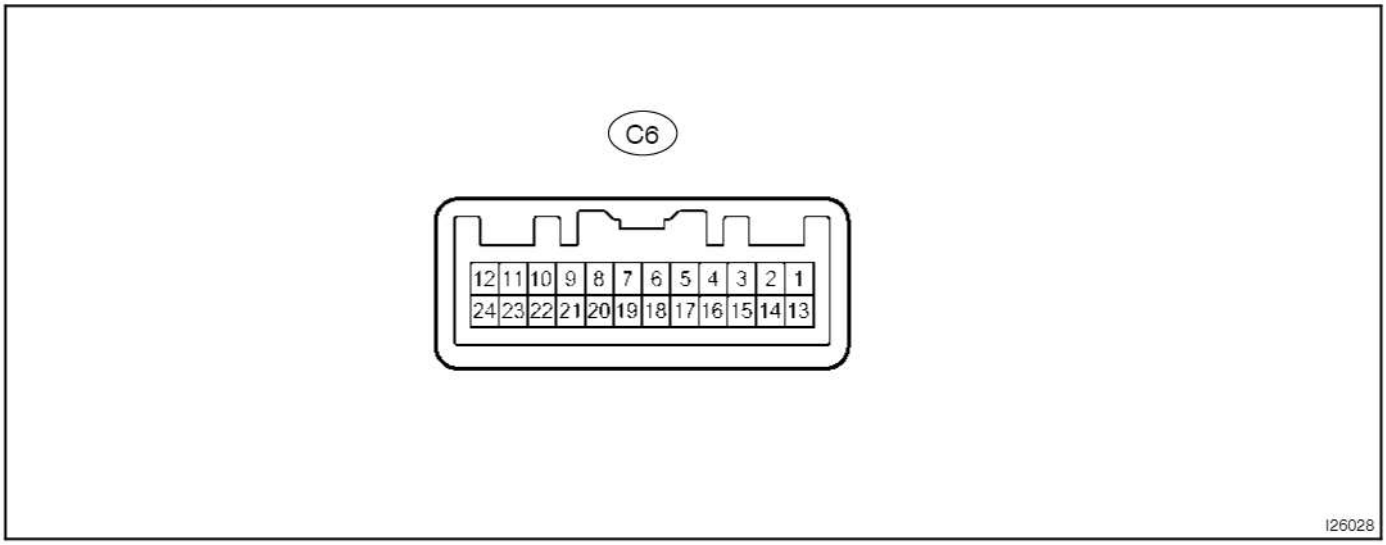
Symbols (Terminal No.)	Condition	Specified condition	Problem symptom when open circuit is detected.
FR+ ↔ GND1 (Z94–1 ↔ Z94–12)	Radio switch ON	5 – 7 V	RH side speaker does not sound.
FL+ ↔ GND1 (Z94–2 ↔ Z94–12)	Radio switch ON	5 – 7 V	LH side speaker does not sound.
RR+ ↔ GND1 (Z94–3 ↔ Z94–12)	Radio switch ON	5 – 7 V	Rear RH side speaker does not sound.
RL+ ↔ GND1 (Z94–4 ↔ Z94–12)	Radio switch ON	5 – 7 V	Rear LH side speaker does not sound.
WR+ ↔ GND1 (Z94–5 ↔ Z94–12)	Radio switch ON	5 – 7 V	Rear RH side speaker does not sound.
WL+ ↔ GND1 (Z94–6 ↔ Z94–12)	Radio switch ON	5 – 7 V	Rear LH side speaker does not sound.
+B ↔ GND1 (Z94–7 ↔ Z94–12)	Constant	10 – 14 V	All speaker does not sound
FR– ↔ GND1 (Z94–8 ↔ Z94–12)	Radio switch ON	5 – 7 V	RH side speaker does not sound.
FL– ↔ GND1 (Z94–9 ↔ Z94–12)	Radio switch ON	5 – 7 V	LH side speaker does not sound.
RL– ↔ GND1 (Z94–11 ↔ Z94–12)	Radio switch ON	5 – 7 V	Rear LH side speaker does not sound.
GND1 ↔ Body ground (Z94–12 ↔ Body ground)	Constant	Continuity	–
GND2 ↔ Body ground (Z94–13 ↔ Body ground)	Constant	Continuity	–
WR– ↔ GND1 (Z94–14 ↔ Z94–12)	Radio switch ON	5 – 7 V	Rear RH side speaker does not sound.
WL– ↔ GND1 (Z94–14 ↔ Z94–12)	Radio switch ON	5 – 7 V	Rear LH side speaker does not sound.
+B2 ↔ GND2 (Z94–7 ↔ Z94–13)	Constant	10 – 14 V	All speaker does not sound
AMP (Z95–1)	–	–	–

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ACC ↔ GND1 (Z95–2 ↔ Z94–13)	Ignition switch ACC	10 – 14 V	Audio system does not operate.
BEEP (Z95–4)	–	–	LH side speaker does not sound.
F.L ↔ GND1 (Z95–5 ↔ Z94–13)	Constant	10 – 14 V	Sound from front LH speaker is small.
F.R ↔ GND1 (Z95–6 ↔ Z94–13)	Constant	10 – 14 V	Sound from front RH speaker is small.
SGND ↔ GND1 (Z95–11 ↔ Z94–13)	–	5 – 7 V	–
MUTE ↔ GND1 (Z95–12 ↔ Z94–13)	Radio switch ON	5 – 7 V	Audio system does not operate.
R.L ↔ GND1 (Z95–13 ↔ Z94–13)	Constant	10 – 14 V	Sound from rear LH speaker is small.

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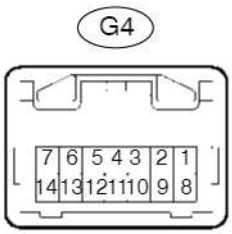
CD auto changer:



Symbols (Terminal No.)	Condition	Specified condition	Problem symptom when open circuit is detected.
CDR+ (C6–8)	–	–	Sound from right side speaker is small.
CDR– (C6–9)	–	–	Sound from right side speaker is small.
CDL+ (C6–10)	–	–	Sound from left side speaker is small.
CDL– (C6–11)	–	–	Sound from left side speaker is small.
MUTE ↔ GND (C6–12 ↔ C6–20)	DISC switch ON	5 – 7 V	Audio system does not operate.
TXM+ ↔ GND (C6–21 ↔ C6–20)	AVC–LAN communication circuit	–	Audio system does not operate.
TXM– ↔ GND (C6–22 ↔ C6–20)	AVC–LAN communication circuit	–	Audio system does not operate.
ACC ↔ GND (C6–23 ↔ C6–20)	Ignition switch ACC	10 – 14 V	CD auto changer does not operate.
+B ↔ GND (C6–24 ↔ C6–20)	Constant	10 – 14 V	CD auto changer does not operate.

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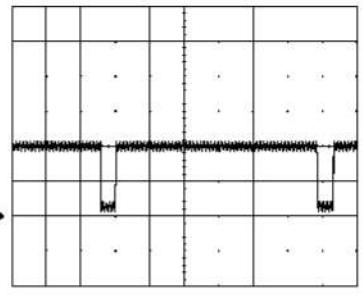
Gateway ECU:



N

I13684

Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
IG ↔ GND (G4–2 ↔ G4–14	GR ↔ W–B	Ignition switch ON.	10 – 14 V
MPD1 (G4–4	W	Communication circuit (Gateway ECU and Center ECU)	–
GTX+ (G4–5)	BR	AVC–LAN communication circuit	–
CG ↔ Body ground (G4–7 ↔ Body gound)	W–B ↔ Body ground	Constant	Continuity
BATT ↔ GND (G4–8 ↔ G4–14)	G–W ↔ W–B	Constant	10 – 14 V
MPD2 (G4–11)	W	Communication circuit (Gateway ECU and Center ECU)	–
GTX– (G4–12)	Y	AVC–LAN communication circuit	–
GND ↔ Body ground (G4–7 ↔ Body gound)	W–B ↔ Body ground	Constant	Continuity



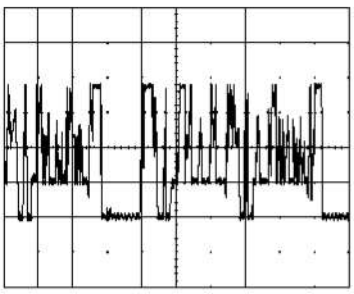
N

Oscilloscope

*1: wave1

- Measure terminal: SYNC ↔ GND1
- Measure set: 500 mV/DIV 10 μs/DV
- Condition: Navigation display is displayed

I15531



N

Oscilloscope

*1: wave1

- Measure terminal: R, G, B ↔ GND1
- Measure set: 200 mV/DIV 10 μs/DV
- Condition: Navigation map is switched

I15532

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DIAW2–01

PROBLEM SYMPTOMS TABLE

Flow chart No. (See page)	Component	Symptom
1. (DI–1178)	Multi display	Black screen (Nothing displayed)
2. (DI–1179)		No sound with Power switch pressed. ("AUTO OFF" on audio screen)
3. (DI–1182)		No navigation screen displayed when "MAP", "MENU" or "DEST" switch pressed. (Screen cannot be switched.)
4. (DI–1184)		No corresponding screen displayed when "AUDIO" or "Information" switch pressed.
5. (DI–1185)		No navigation displayed, "Audio OFF" on audio screen and no audio sound.
6. (DI–1187)		Screen cannot be dimmed in night time.
7. (DI–1188)		Navigation screen not stabilized. (Synchronous error)
8. (DI–1189)		Color on navigation screen is unusual (RGB signal error)
9. (DI–1191)		Black screen appears when "MAP", "Menu" or "DEST" switch pressed.
10. (DI–1192)		Sound of radio, cassette tape or CD only cannot be heard from speaker.
11. (DI–1193)		No sound (radio, cassette tape, CD) can be heard from driver side door speaker only.
12. (DI–1195)		Map DISC cannot be inserted.
13. (DI–1197)		MAP screen display does not appear. (Disc Caution screen does not change.)
14. (DI–1198)		MAP is displayed in white or blue screen. (Switch and vehicle position mark is displayed.)
15. (DI–1199)		Touch switch does not function. (Navigation screen only)
16. (DI–1200)		Touch switch does not function. (A/C control screen only)
17. (DI–1201)		Panel switch does not function. (Navigation screen only)
18. (DI–1202)		Panel switch does not function. (A/C control screen only)
19. (DI–1203)		The screen cannot be change to night mode color.
20. (DI–1205)		Vehicle position is deviated from correct point badly.
21. (DI–1208)		GPS mark does not appear.

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22. (DI–1210)		No voice navigation.
23. (DI–1211)		Vehicle position rotates without control. (Map rotates without control)
24. (DI–1213)		Driving direction is opposite to moving direction of vehicle position mark.
25. (DI–1214)		Navigation system cannot be operated with voice recognition.

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DIAWS–01

CIRCUIT INSPECTION

1. Black screen (Nothing displayed)

INSPECTION PROCEDURE

1	**Check the ECU–B1, ECU–IG1 and ACC fuse.**

NG → **Replace the fuse.**

OK

2	**Check multi–display.**

PREPARATION:
Disconnect the multi– display connector.
CHECK:
Check voltage terminals +B1.
OK:
+B: 10 – 14 V
CHECK:
Check voltage terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check voltage terminal IG when turn ignition switch ON position.
OK:
IG: 10 – 14 V
CHECK:
Check continuity terminal GND1.
OK:
GND1: Continuity

NG → **Replace or repair wire harness or connector.**

OK

Replace the multi–display.

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2. No sound with POWER switch pressed. (”Audio OFF” on audio screen)

INSPECTION PROCEDURE

1	**Service check mode (Check ”AUDIO H/U” and ”DSP–AMP”).**

NG	**Troubleshoot for each diagnosis.**
OK	**Go to step 5.**

Ncon

2	**Check the radio receiver assembly.**

PREPARATION:
Disconnect the radio receiver assembly connector.
CHECK:
Check voltage terminals +B.
OK:
+B: 10 – 14 V
CHECK:
Check voltage terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check continuity terminal GND.
OK:
GND: Continuity

NG	**Replace or repair wire harness or connector.**

OK

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3	**Check the stereo component amplifier.**

PREPARATION:
Disconnect the stereo component amplifier connector.
CHECK:
Check voltage terminals +B and +B2.
OK:
+B and +B2: 10 – 14 V
CHECK:
Check voltage terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check continuity terminal GND2 and E.
OK:
GND2 and E: Continuity

NG → **Replace or repair wire harness or connector.**

OK

4	**Check wire harness and connector between radio receiver and stereo component amplifier (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

5	**Check the stereo component amplifier.**

PREPARATION:
Disconnect the stereo component amplifier connector.
CHECK:
Check voltage terminals MUTE.
OK:
MUTE: Above 3.5 V (When audio is sounding)

NG → **Replace or repair wire harness or connector.**

OK

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Check and replace the stereo component amplifier.

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DIAWS–01

3. No navigation screen displayed when ”MAP”, ”Menu”, or ”DEST” switch pressed. (Screen cannot be switched.)

INSPECTION PROCEDURE

1	**Service check mode (Check the navigation ECU).**

NG	**Troubleshoot for each diagnosis.**
OK	**Replace multi–display.**

Ncon

2	**Check the navigation ECU.**

PREPARATION:
Disconnect the navigation ECU connector.
CHECK:
Check voltage terminals +B.
OK:
+B: 10 – 14 V
CHECK:
Check voltage terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check continuity terminal GND.
OK:
GND: Continuity

NG	**Replace or repair wire harness or connector.**

OK

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3	**Check wire harness and connector between multi display and navigation ECU (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

Check and replace multi display.

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DIAW6–01

4. No corresponding screen displayed when ”Audio” or ”Information” switch pressed.

INSPECTION PROCEDURE

1	Service check mode (Panel switch check mode screen).

NG → Troubleshoot for each diagnosis.

OK ↓

2	Check AVC–LAN communication circuit (See page DI–1215).

NG → Repair or replace AVC–LAN circuit.

OK ↓

Replace the multi display.

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5. No navigation displayed, "Audio OFF" on audio screen and no audio sound.

INSPECTION PROCEDURE

1	**Service check mode.**

NG → **Troubleshoot for each diagnosis.**

OK ↓

2	**Check the radio receiver assembly.**

PREPARATION:
Disconnect the radio receiver assembly connector.
CHECK:
Check voltage terminals +B.
OK:
+B: 10 – 14 V
CHECK:
Check voltage terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check continuity terminal GND.
OK:
GND: Continuity

NG → **Replace or repair wire harness.**

OK ↓

3	**Check "AVC–LAN communication circuit" (See page DI–1215).**

NG → **Replace the AVC–LAN circuit or radio receiver assembly.**

OK ↓

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Replace the multi display.

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DIAW8–01

6. Screen cannot be dimmed in night time.

INSPECTION PROCEDURE

1	**Check if the screen is dimmed at night (With the light control switch ON), do all screens except the navigation screen appear in Night Mode?).**

NG → **Check the light control switch.**

OK

2	**Check "Display check mode" (Vehicle Signal Check).**

CHECK:
Check the input signal TAIL and ADIM/TCAN.
OK:
Status is normal

NG → **Check and replace multi display.**

OK

3	**Check the multi display.**

CHECK:
Check terminal DR.
OK:
DR: See "Multi display" of "TERMINAL OF ECU".

NG → **Replace or repair wire harness or connector.**

OK

Check and replace the multi display.

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DIAW9–01

7. Navigation screen not stabilized (Synchronous error).

INSPECTION PROCEDURE

1	**Check the navigation ECU.**

CHECK:
Check terminals +B.
OK:
+B: 10 – 14 V
CHECK:
Check terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check terminal SYNC, VR or VG.
OK:
SYNC, VR, VG: See "Navigation ECU" of "TERMINAL OF ECU"

NG → **Repair or replace the wire harness when all terminals are faulty. Replace the navigation ECU when the SYNC terminal is faulty.**

OK →

Replace the multi–display.

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DIAWA–01

8. Color on navigation screen is unusual (RGB signal error).

INSPECTION PROCEDURE

1	Display check mode (Color bar check).

NG → Replace the multi display.

2	Navigation check mode (Color bar check).

NG → Go to step 4.

OK

3	Check the screen setting (Day or Night mode).

OK → Normal.

NG

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4	**Check the navigation ECU.**

CHECK:
Check terminals +B.
OK:
+B: 10 – 14 V
CHECK:
Check terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check terminal R, G, B, VR or VG.
OK:
R, G, B, VR or VG: See "Navigation ECU" of "TERMINAL OF ECU"

NG → **Repair or replace the wire harness when all terminals are faulty. Replace the navigation ECU when R,G,B terminal is faulty.**

OK →

Replace the multi display.

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DIAWB–01

9. Black screen appears when ”MAP”, ”Menu” or ”DESTINATION” switch pressed.

INSPECTION PROCEDURE

1	**Check the navigation ECU.**

CHECK:

Check terminals +B.

OK:

+B: 10 – 14 V

CHECK:

Check terminal ACC when turn ignition switch ACC or ON position.

OK:

ACC: 10 – 14 V

CHECK:

Check terminal R, G, B, VR or VG.

OK:

R, G, B, VR or VG: See ”Navigation ECU” of ”TERMINAL OF ECU”

NG → **Replace the wire harness when all terminals are faulty. Replace the wire harness when R,G,B terminal is faulty.**

OK

Replace the multi–display.

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DIAWC–01

10. Sound of radio, cassette tape or CD only cannot be heard from speaker.

INSPECTION PROCEDURE

1	**Check the radio receiver assembly.**

PREPARATION:
Disconnect the radio receiver assembly connector.
CHECK:
Check voltage terminals +B.
OK:
+B: 10 – 14 V
CHECK:
Check voltage terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check continuity terminal GND.
OK:
GND: Continuity

NG → **Replace or repair wire harness or connector.**

OK →

Replace the radio receiver assembly.

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DIAWD–01

11. No sound (radio, cassette tape, CD) can be heard from driver side door speaker only.

INSPECTION PROCEDURE

1	**Service check mode.**

NG → **Troubleshoot for each diagnosis.**

OK

2	**Check wire harness (between navigation ECU and stereo component amplifier).**

PREPARATION:

Disconnect the navigation ECU and radio receiver assembly connector.

CHECK:

(a) Check continuity between terminal AUI+ of navigation ECU connector and terminal AUO+ of stereo component amplifier.

(b) Check continuity between terminal AUI– of navigation ECU connector and terminal AUO– of stereo component amplifier.

OK:

Continuity

NG → **Replace or repair wire harness.**

OK

3	**Check the navigation system voice.**

OK → **Go to step 6.**

NG

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4	**Check wire harness (between navigation ECU and driver side door speaker).**

PREPARATION:

Disconnect the navigation ECU and driver side door speaker connector.

CHECK:

(a) Check continuity between terminal AUO+ of navigation ECU connector and terminal 1 of driver side door speaker.

(b) Check continuity between terminal AUO– of navigation ECU connector and terminal 2 of driver side door speaker.

OK:

Continuity

NG → **Replace or repair wire harness.**

OK

5	**Check the driver side door speaker.**

NG → **Replace the speaker.**

OK

Replace the navigation ECU.

6	**Check the navigation ECU.**

CHECK:

Check terminal AUO+, AUO–, AUI+ and AUI–.

OK:

AUO+, AUO–, AUI+ and AUI–: See "Navigation ECU" of "TERMINAL OF ECU".

NG → **Replace the navigation ECU.**

OK

Replace the stereo component amplifier.

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DIAWE–01

12. Map DISC cannot be inserted.

INSPECTION PROCEDURE

1	**Check the MAP DISC.**

NG → **Replace the MAP DISC.**

OK

2	**Insert a MAP DISC without tilt.**

OK → **Normal.**

NG

3	**Check the navigation ECU.**

PREPARATION:
Disconnect the navigation ECU connector.
CHECK:
Check voltage terminals +B.
OK:
+B: 10 – 14 V
CHECK:
Check voltage terminal ACC when turn ignition switch ACC or ON position.
OK:
ACC: 10 – 14 V
CHECK:
Check continuity terminal GND.
OK:
GND: Continuity

NG → **Replace or repair wire harness.**

OK

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Replace the navigation ECU.

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DIAWF–01

13. MAP screen display does not appear. (Disc Caution screen does not change)

INSPECTION PROCEDURE

1	Take appropriate measures according to the caution screen.

OK → Normal.

NG

2	Check map DISC.

NG → Replace the disc.

OK

Replace the navigation ECU.

CAUTION SCREEN

CAUTION MESSAGE	CAUSE	CORRECTIVE ACTION
The DVD cover is open. Close it and perform operation again.	The cover of the map disk slot is open.	Close the cover,
No DVD. Please insert map DVD.	No map disk is inserted.	Insert a proper map disc.
Unable to read DVD correctly. Check if the DVD is damage or dirty.	Data cannot be read because the map disc is dirty or scratched.	Wipe off dirt on the both disc surface with soft cloth.
Unable to read data. Check if map DVD is correct.	Something other than map disc is inserted.	Insert a correct map disc.
Unable to read data. Consult your dealer.	The player cannot read data from the map disc temporarily.	Turn the ignition switch OFF and ON.*1

*1: If the same caution screen appears again after turning the ignition switch ON, replace the navigation ECU.

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14. Map is displayed in white or blue screen. (Switches and vehicle position mark is displayed)

INSPECTION PROCEDURE

1	**Set the map scale to the max.**

OK → **Normal.**

HINT:
Correct the current position and check it again.

NG

2	**Wipe the disc with a soft cloth, insert it again, and turn the ignition switch ON from OFF.**

NG → **Replace the disc.**

OK

Normal.

HINT:
If the trouble still occurs, replace the navigation ECU.

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DIAWH–01

15. Touch switch does not function. (Navigation screen only)

INSPECTION PROCEDURE

1	Display check mode (Touch switch, Touch point screen).

NG → Replace the multi–display.

OK ↓

2	Check "AVC–LAN communication circuit" (See page DI–1215).

NG → Replace or repair AVC–LAN circuit.

OK ↓

Replace the navigation ECU.

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DIAWI–01

16. Touch switch does not function. (A/C control screen only)

INSPECTION PROCEDURE

1	Display check mode (Touch switch, Touch point screen).

NG → Replace the multi–display.

OK ↓

2	Check "AVC–LAN communication circuit" (See page DI–1215).

NG → Replace or repair AVC–LAN circuit.

OK ↓

3	Check "Gateway ECU (AVC–LAN adopter) circuit" (See page DI–1221).

NG → Repair or replace wire harness and connector

OK ↓

Check and replace A/C amplifier (Center ECU).

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DIAWJ–01

17. Panel switch does not function. (Navigation screen only)

INSPECTION PROCEDURE

1	Display check mode (Panel switch check screen).

NG → Replace the multi display.

OK ↓

2	Check "AVC–LAN communication circuit" (See page DI–1215).

NG → Replace or repair AVC–LAN circuit.

OK ↓

Replace the navigation ECU.

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DIAWK–01

18. Panel Switch Does Not Function (A/C control only)

INSPECTION PROCEDURE

1	Display check mode (Panel Switch Check screen).

NG → Replace the multi display.

OK

2	Check "AVC–LAN communication circuit" (See page DI–1215).

NG → Replace or repair AVC–LAN circuit.

OK

3	Check "Gateway ECU (AVC–LAN adopter) circuit" (See page DI–1221).

NG → Repair or replace wire harness and connector.

OK

Check and replace A/C amplifier (Center ECU).

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DIAWL–01

19. Navigation screen cannot change to the night mode color.

INSPECTION PROCEDURE

1	Check the setting. (Is it set to Day Mode in screen adjustment?)

Yes → Normal.

No

2	Check if the screen is dimmed at night. (With the light control switch ON, do all screens except the navigation screen appear in Night Mode?)

NG → Go to step 5.

OK

3	Does the beep sound by operating switches on the navigation screen?

OK → Replace the navigation ECU.

NG

4	Check "AVC–LAN communication circuit" (See page DI–1215).

NG → Replace or repair AVC–LAN circuit.

OK

Replace the navigation ECU.

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5	**Check the multi display.**

CHECK:

Check terminal DR.

OK:

DR: See "Multi Display" of "TERMINAL OF ECU".

OK → **Replace the multi display.**

NG

Replace or repair wire harness.

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DIAWM–01

20. Vehicle position is deviated from correct point badly.

INSPECTION PROCEDURE

1	Check the mark display. (At a place with a fine view, is GPS mark displayed or not?)

No → Go to step 7.

Yes

2	Does the trouble occur in the specific area or not?

Yes → Normal. (If the vehicle is positioned in the place where it is difficult to be identified, the current vehicle position may be incorrectly displayed.)

No

3	Check the setting (Color of the automatic calibration button on the calibration screen).

Green → Normal. (Drive the vehicle (10 km or more) until calibration is completed.

Blue

4	Service check mode (Is ”58–43” displayed in the unit check mode of the navigation ECU?).

Yes → Troubleshoot for each diagnosis.

No

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5	Navigation check mode (vehicle signal check mode: SPD).

NG → Replace or repair speed sensor wire harness.

OK ↓

6	Recurrence Test (Confirm the phenomenon) (Correct the current position and drive the vehicle for a while with the GPS mark displayed).

OK → Normal.

NG ↓

Replace the navigation ECU.

7	Check if the harness is caught or sharply bent or not.

NG → Navigation antenna is surely connected.

OK ↓

8	Check optional components (Does it become if the optionals such as the theft deterrent system is removed?).

Yes → Remove or change the position of the components.

HINT:
Some optionals receive radio signals, and if this happens, GPS reception may be affected.

No ↓

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9	**Is there anything such as a film stuck to the window?**

Yes → **Reception may be affected by a screen such as a film.**

No

10	**Service check mode (Is "80–40, 41" is displayed in the unit check mode of the navigation ECU?).**

Yes → **Troubleshoot for each diagnosis.**

No

Replace the navigation antenna.

HINT:
If the trouble still occurs, replace the navigation ECU.

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DIAWN–01

21. GPS mark does not appear.

INSPECTION PROCEDURE

1	**Check the mark display (At a place with a fine view, is GPS mark displayed or not?).**

Yes → **Normal.**

No

2	**Check if the harness is caught or sharply bent or not.**

NG → **Navigation antenna is surely connected.**

OK

3	**Check optional components (Does it become normal if the optionals such as the theft deterrent system is removed?).**

Yes → **Remove or change the position of the components.**

HINT:
Some optionals receive radio signals, and if this happens, GPS reception may be affected.

No

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4	**Is there anything such as a film stuck to the window?**

Yes → **Reception may be affected by a screen such as a film.**

No

5	**Service check mode (Is "80–40, 41" is displayed in the unit check mode of the navigation ECU?).**

Yes → **Troubleshoot for each diagnosis.**

No

Replace the navigation antenna.

HINT:
If the trouble still occurs, replace the navigation ECU.

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DIAWO–01

22. No voice navigation.

INSPECTION PROCEDURE

1	**Set the volume to the max in the menu screen.**

OK → **Normal. (Voice navigation is not available. No destination is set, or the vehicle is running off the route.)**

NG

2	**Check wire harness (navigation ECU and driver side door speaker).**

PREPARATION:

Disconnect the navigation ECU connector and driver side door speaker connector.

CHECK:

(a) Check continuity between terminal AUO+ of navigation ECU connector and terminal 1 of driver side door speaker.

(b) Check continuity between terminal AUO– of navigation ECU connector and terminal 2 of driver side door speaker.

OK:

Continuity

NG → **Replace or repair wire harness.**

OK

3	**Check the sound (Check if the radio sound can be heard from the driver side door speaker.).**

OK → **Replace the navigation ECU.**

NG

Replace the speaker.

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23. Vehicle position rotates without control. (Map rotates without control)

INSPECTION PROCEDURE

1	Recheck (While not rotating the vehicle, turn the ignition switch ON from OFF again.).

OK → Normal. (While the vehicle was turning, the ignition switch was turned ON.)

NG

2	System check mode (Is ”58–10” is displayed in the unit check mode of the navigation ECU?).

Yes → Replace the navigation ECU.

No

3	System check mode (Is ”58–43” is displayed in the unit check mode of the navigation ECU?).

Yes → Replace and repair SPD terminal wire harness.

No

4	Navigation check mode (vehicle signal check mode: SPD and gyro).

OK → Replace the navigation ECU.

NG

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Replace or repair wire harness.

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DIAWQ–01

24. Driving direction is opposite to moving direction of vehicle position mark.

INSPECTION PROCEDURE

1	Navigation check mode (vehicle signal check mode REV).

OK → Replace the navigation ECU.

NG

2	Check the navigation ECU.

CHECK:

Check terminal REV.

OK:

REV: See "Navigation ECU" of "TERMINAL OF ECU".

OK → Replace the navigation ECU.

NG

Replace or repair wire harness.

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DIAWR–01

25. Navigation system cannot be operated with voice recognition.

INSPECTION PROCEDURE

1	Check microphone.

NG → Replace microphone (See page IN–38).

OK ↓

2	Check overhead J/B.

NG → Replace overhead J/B (See page IN–38).

OK ↓

3	Check wire harness between overhead J/B (microphone) and navigation ECU.

PREPARATION:

Disconnect the overhead J/B and navigation ECU connectors.

CHECK:

Check continuity of the wire harness between terminals of the overhead J/B and those of the navigation ECU0.

OK:

Continuity

NG → Replace or repair wire harness or connector.

OK ↓

Check and replace navigation ECU.

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DIAWS–01

AVC–LAN (Communication bus) Circuit

CIRCUIT DESCRIPTION

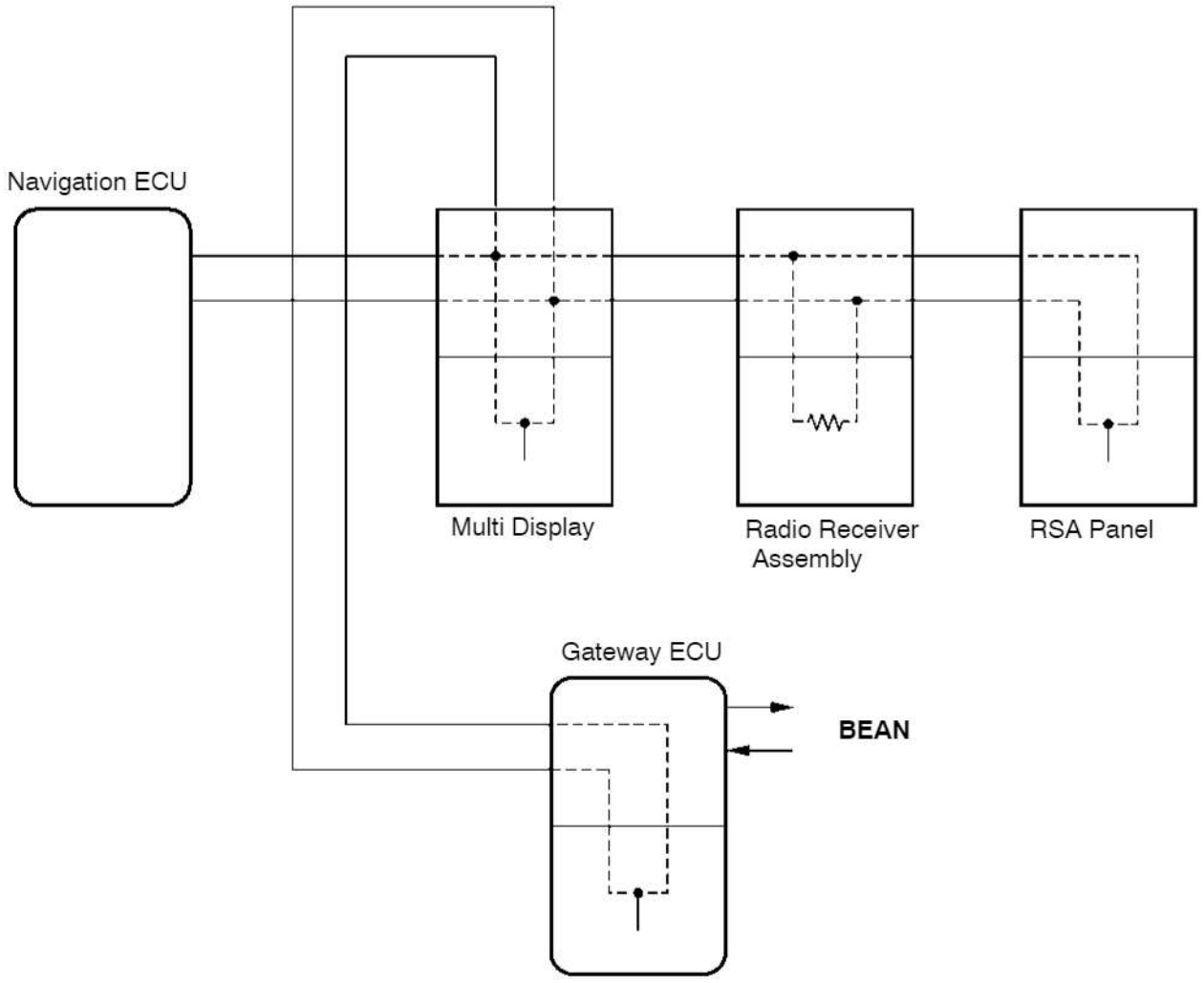
Each unit of navigation system connected with AVC–LAN (communication bus) transfers the signal of each switch by communication.

When +B short and GND short occur in this AVC–LAN, navigation system will not function normally as the communication is discontinued.

In this AVC–LAN, multi display becomes the master of the communication, and the radio receiver assembly has a terminator necessary for transmitting the communication.

multi display is connected between navigation ECU and radio receiver assembly, navigation system has the structure that makes communication impossible without navigation ECU, multi display or radio receiver assembly.

AVC–LAN

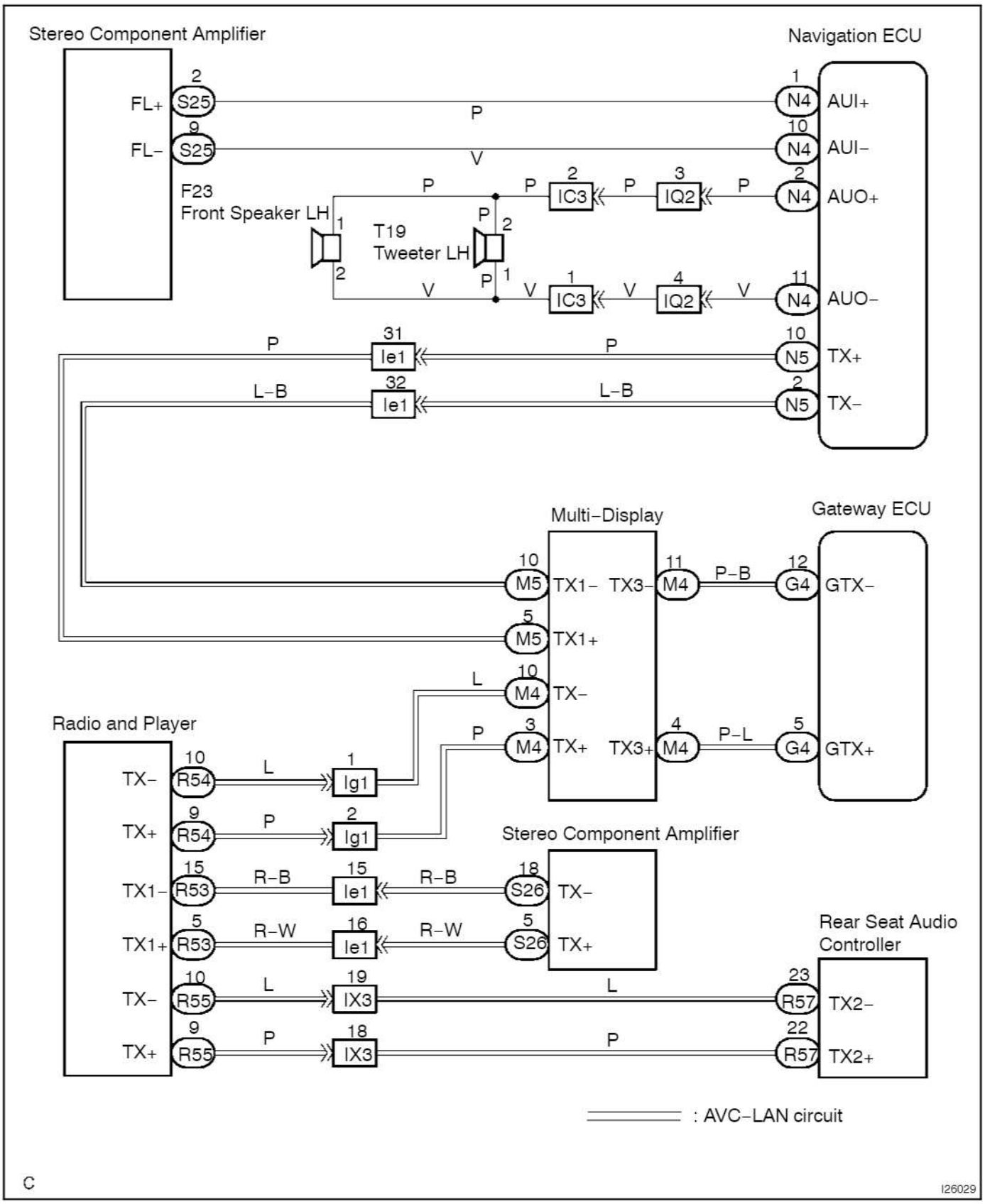


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WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Disconnect the connector "R57" of RSA panel and check if AVC–LAN will be recovered normally.**

CHECK:
Check that the display will change by pressing either of the Panel switch or Touch switch on the display.
HINT:
It can be judged that AVC–LAN is recovered if the display is changed.

OK	**Replace the RSA panel.**

NG

2	**Check wire harness and connector between radio receiver assembly and RSA panel (See page IN–38).**

NG	**Repair or replace wire harness or connector.**

OK

3	**Disconnect the "S26" connector of the stereo component amplifier, check if AVC–LAN will be recovered normally.**

CHECK:
Check that the display will change by pressing either of the Panel switch or Touch switch on the display.
HINT:
It can be judged that AVC–LAN is recovered if the display is changed.

OK	**Replace the stereo copmponent amplifier.**

NG

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4	**Check wire harness and connector between radio receiver assembly and stereo component amplifier (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

5	**Disconnect the "N5" connector of the navigation ECU, check if AVC–LAN will be recovered normally.**

CHECK:

Check that the display will change by pressing either of the Panel switch or Touch switch on the display.

HINT:

It can be judged that AVC–LAN is recovered if the display is changed.

OK → **Replace the stereo navigation ECU.**

NG

6	**Check wire harness and connector between navigation ECU and multi–display (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

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7	**Disconnect the connector "G4" of gateway ECU and check if AVC–LAN will be recovered normally.**

CHECK:

Check that the display will change by pressing either of the Panel switch or Touch switch on the display.

HINT:

It can be judged that AVC–LAN is recovered if the display is changed.

OK	**Replace the gateway ECU.**

NG

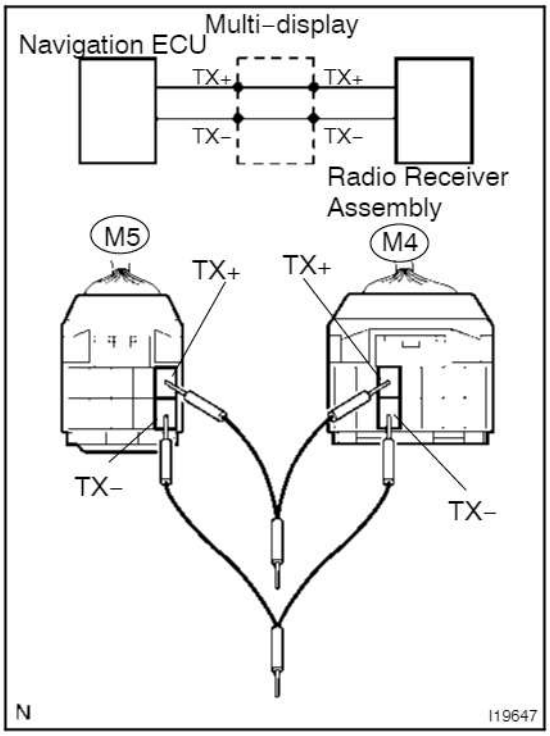
8	**Check wire harness and connector between multi display and gateway ECU. (See page IN–38)**

NG	**Repair or replace wire harness or connector.**

OK

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9	Skip multi display and check AVC–LAN.



PREPARATION:

(a) Connect all the connectors except "M4" and "M5" of the multi display..

(b) Using 2 SSTs (Diagnosis check wire P/N 09893–12040), connect the terminal TX+ of connector "M4" and TX+ of connector "M5", the terminal TX– of connector "M4" and TX– of connector "M5" respectively of multi–display.

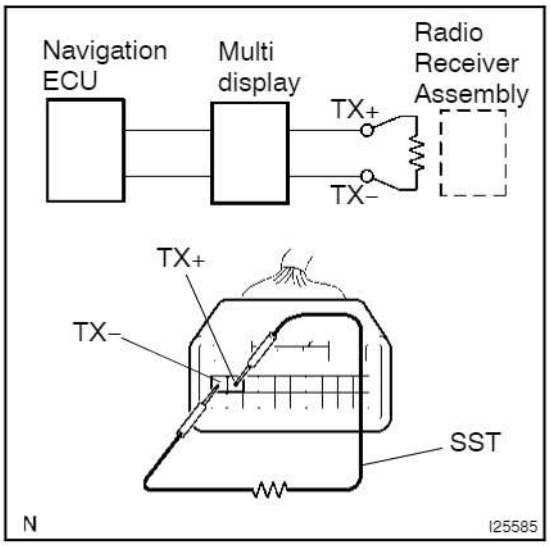
CHECK:

Operate audio head unit (CD, Cassette tape, etc.) and check that the sound comes out from the speaker.
(Check that AVC–LAN is recovered.)

OK	Replace the multi display.

NG

10	Skip Audio head unit and check AVC–LAN.



PREPARATION:

(a) Connect multi display connector.

(b) Disconnect Audio head unit "R54" connector.

(c) Using SST (Navigation Check Wire P/N 09843–18050), connect the terminal TX+ to terminal TX– of "R54" connector of radio receiver assembly.

CHECK:

Operate the panel switch and the touch switch of the display and check that the navigation functions.
(Check that AVC–LAN is recovered.)

OK	Replace the radio receiver assembly.

NG

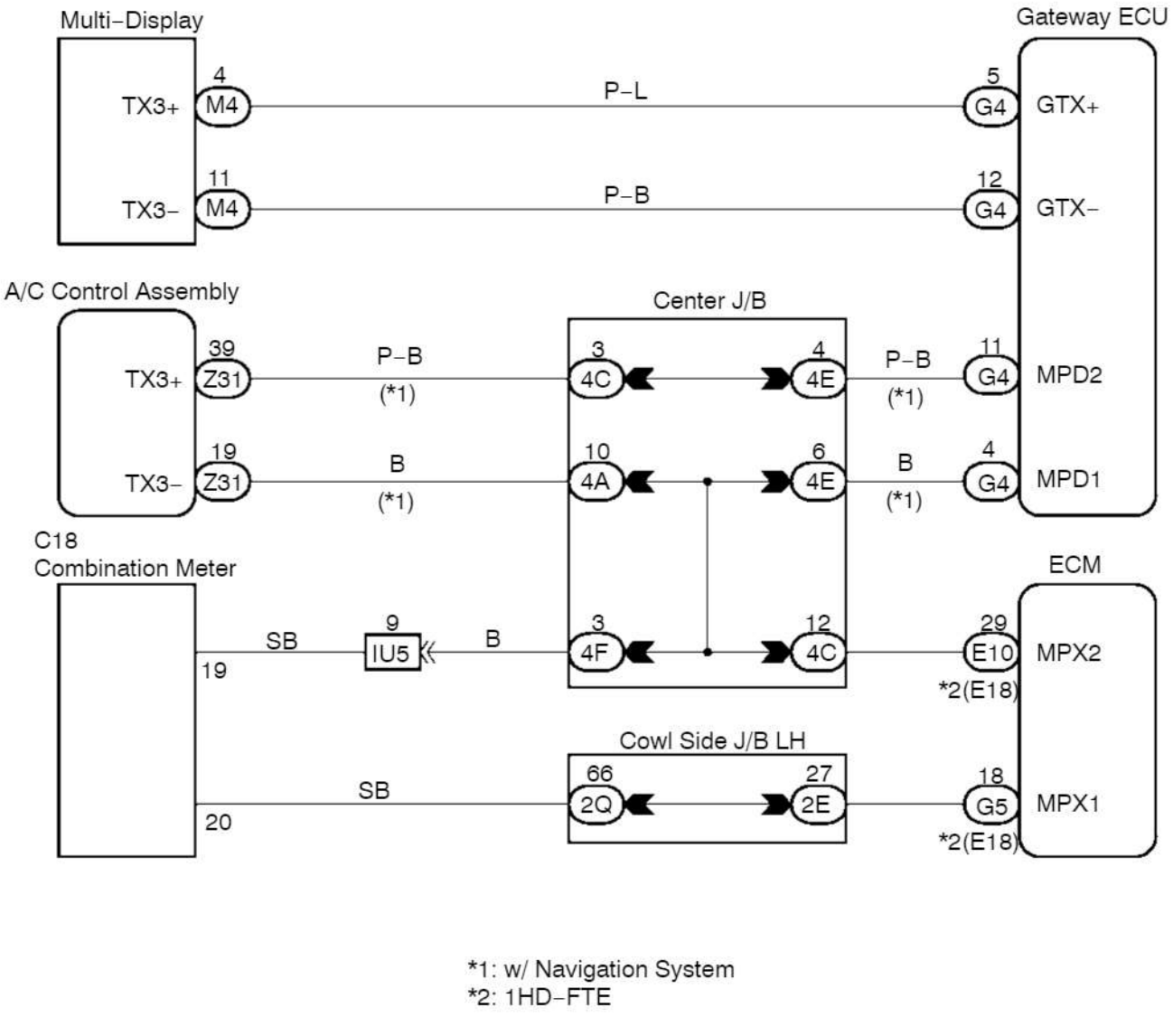
Replace the navigation ECU.

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DIAWT–01

Gateway ECU (AVC–LAN adapter) Circuit

WIRING DIAGRAM



*1: w/ Navigation System
*2: 1HD–FTE

C

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INSPECTION PROCEDURE

1	**Check "Service check mode" of Navigation system (AVC–LAN diagnosis check) (See page DI–1215).**

CHECK:

Connection of the gateway ECU can be checked by AVC–LAN diagnosis. ("Service check mode" of Navigation system)

OK:

Display

G/W: OK (System is normal)	A
G/W: (Communication error)	B
G/W: (Never registered)	C

B → **Go to step 5.**

C → **Go to step 5.**

A

2	**Check wire harness and connector between gateway ECU and A/C amplifier (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

3	**Check wire harness and connector between gateway ECU and combination meter (See page IN–38).**

NG → **Repair or replace wire harness or connector.**

OK

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4	Check wire harness and connector between gateway ECU and ECM (See page IN–38).

NG → Repair or replace wire harness or connector.

OK →

Check and replace the multi display.

5	Check wire harness and connector between gateway ECU and multi display (See page IN–38).

NG → Repair or replace wire harness or connector.

OK →

Check and replace the gateway ECU.

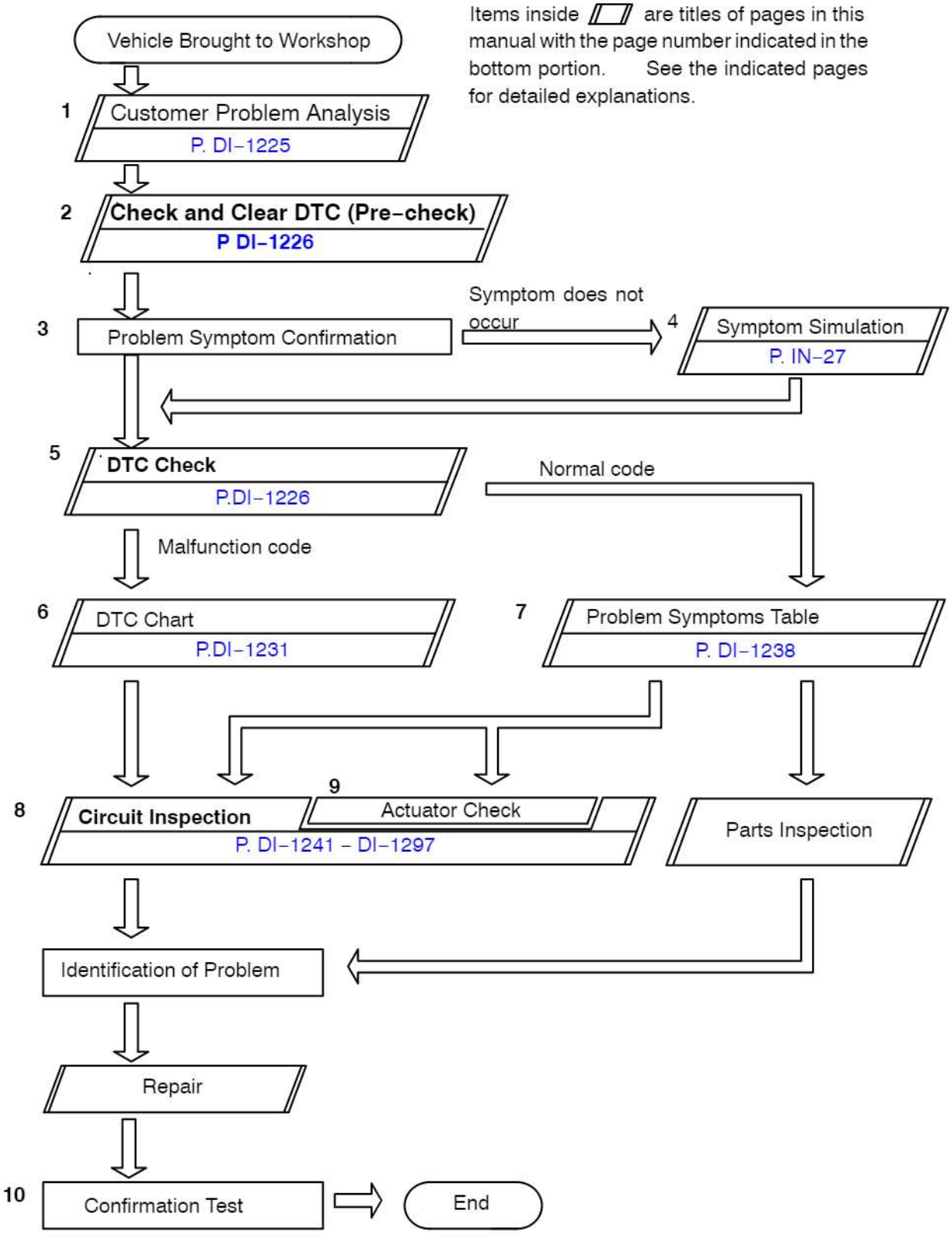
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AIR CONDITIONING SYSTEM

DI261–08

HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.



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DI262-05

CUSTOMER PROBLEM ANALYSIS CHECK

AIR CONDITIONING SYSTEM Check Sheet

Inspector's name:

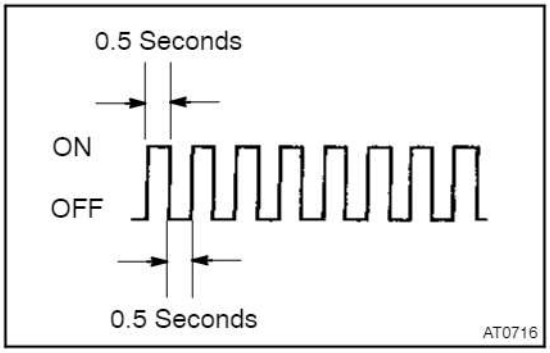
Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Date vehicle Brought In	/ /	**Odometer Reading**	**km Miles**

Date of Problem Occurrence	/ /
How Often does Problem Occur?	☐ Continuous ☐ Intermittent (times a day)
Weather	☐ Fine ☐ Cloudy ☐ Snowy ☐ Various / Other
Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °F °C)

Symptoms	**Air Flow Control is Faulty**	☐ Blower motor does not operate ☐ Blower motor speed does not change (Always Hi, Always Med, Always Lo)
	Temperature Control is Faulty	☐ Cabin temperature does not go down ☐ Cabin temperature does not rise ☐ Response is slow
	Air Inlet Control is Faulty	☐ Cannot change between FRS and REC (Always Fresh or always Recirculating)
	Vent Control is Faulty	☐ Mode does not chage ☐ Not entering the desired mode

DTC Check	**1st Time**	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

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DIAQT–01

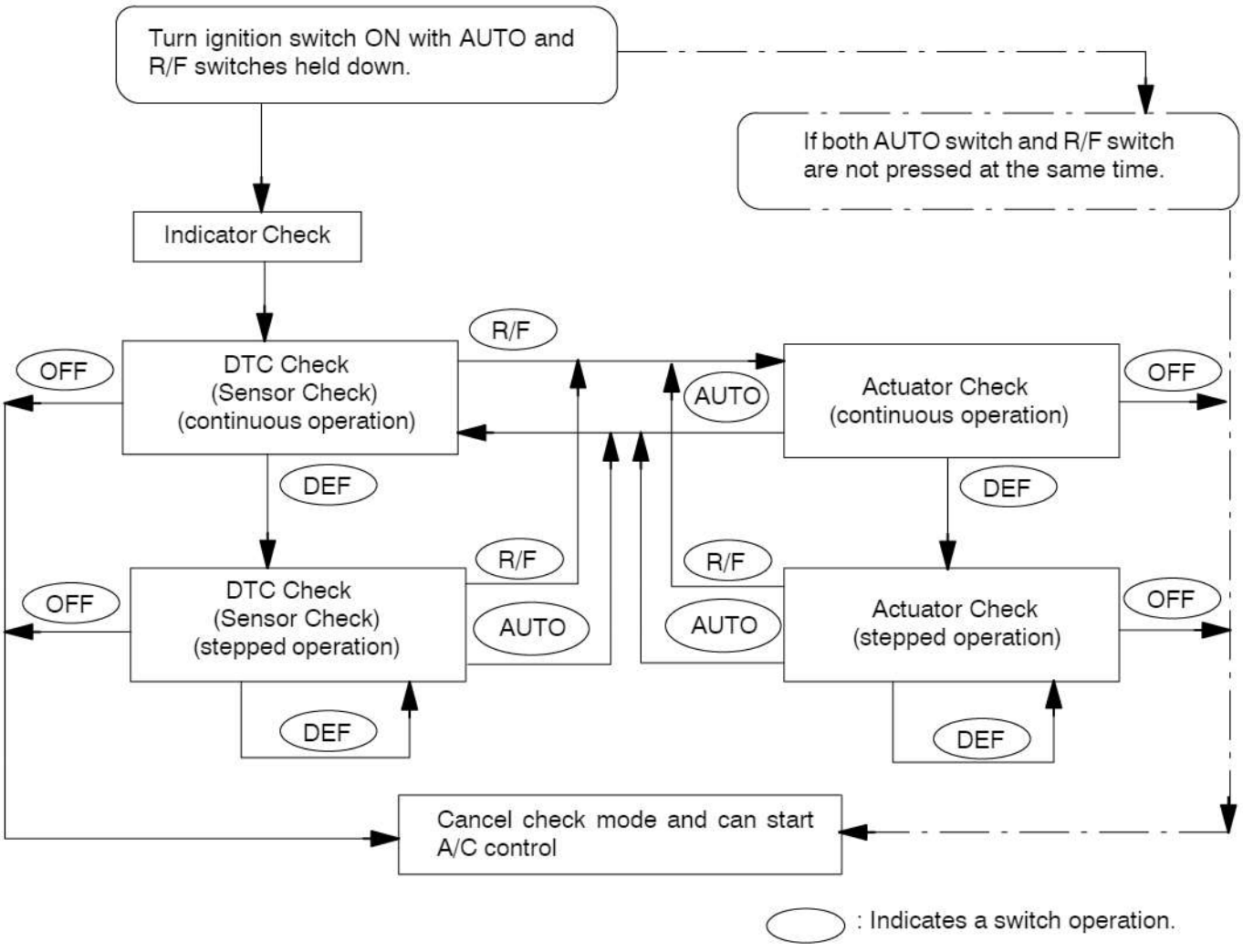
PRE–CHECK

1. Warning for A/C compressor lock

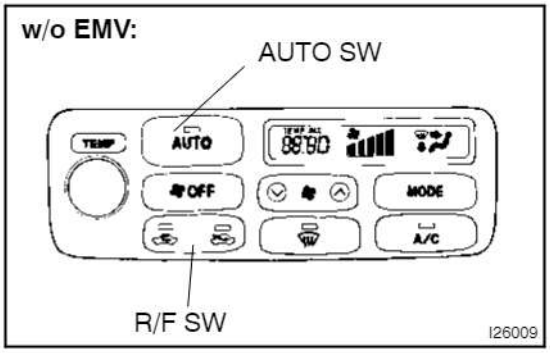
If compressor lock occurs during A/C operation, the A/C switch indicator on the A/C control assembly starts blinking.
When this occurs, check for compressor lock (DTC 22) using diagnosis trouble code check, and then proceed to inspect the circuit or the component.
Compressor lock sensor circuit. → (See page DI–1261)

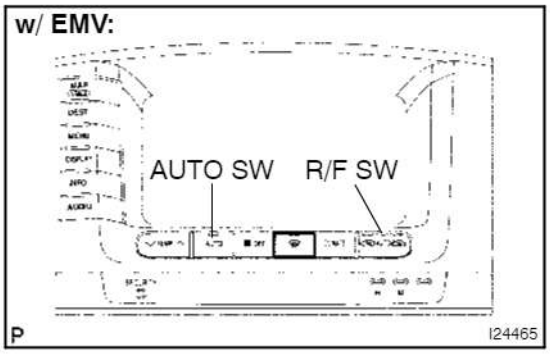
2. LIST OF OPERATION METHODS

By operating each of the A/C control switches as shown in the diagram below, it is possible to enter the diagnosis check mode.



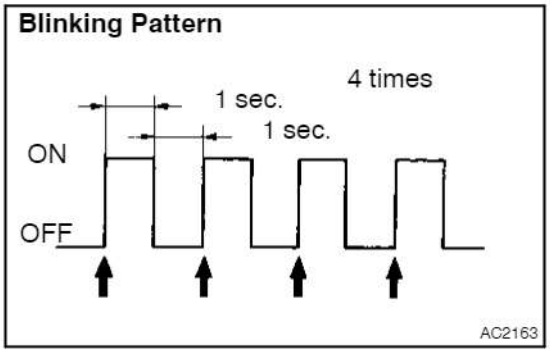
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3. INDICATOR CHECK

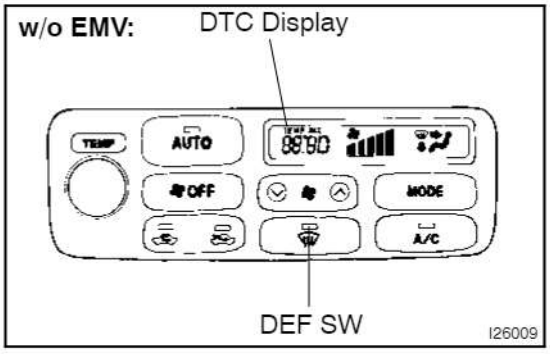
(a) Turn the ignition switch to on while pressing the A/C control AUTO SW and R/F SW simultaneously.



(b) Check that all the indicators light up and go off 4 times in succession at 1 second intervals.

HINT:

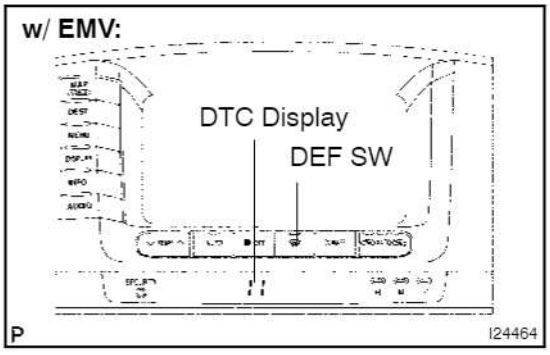
- After the indicator check ends, the diagnostic trouble code check begins automatically.
- Press the OFF SW (when desiring) to cancel the check mode.



4. DTC CHECK (SENSOR CHECK)

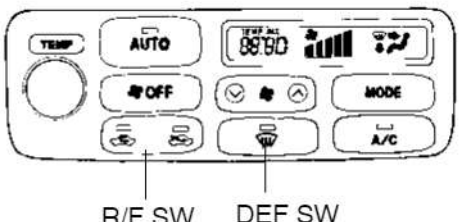
(a) Perform an indicator check. After the indicator check is completed, the system enters the DTC check mode automatically.

(b) Read the DTC displayed on the panel. Refer to the list of DTCs on page DI–1231 when reading the DTCs.
If the slower display is desired, press the DEF SW and change it to step operation. Every time the DEF SW is pressed, the display changes by 1 step.

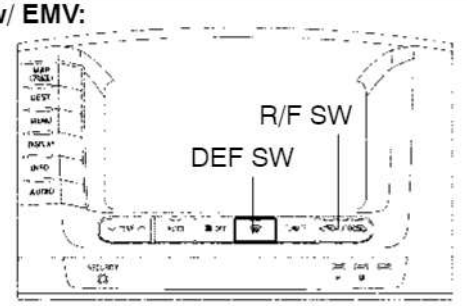


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w/o EMV:



w/ EMV:



5. ACTUATOR CHECK

(a) After entering the sensor check mode, press the R/F SW.

(b) Since each damper, motor and relay automatically operates at 1 second intervals beginning in order from 20 in the temperature display, check the temperature and air flow visually and manually.

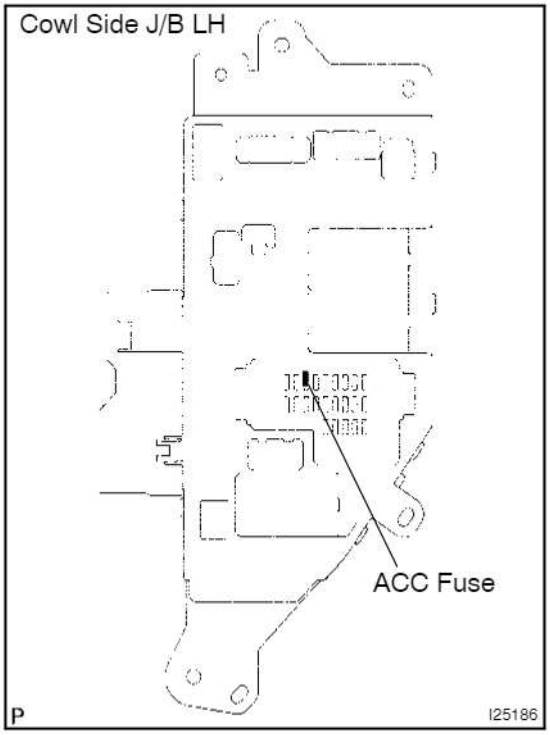
If a slower display is desired, press the DEF SW and change it to step operation. Every time the DEF SW is pressed, the display changes by 1 step.

HINT:

- The buzzer sounds when the display trouble code changes.
- Code are displayed in order from the smaller to the larger numbers.
- To cancel the check mode, press the OFF SW.

Step No.	Display code	Conditions					
		Blower motor	Air flow vent	Air inlet damper	Magnetic clutch	Air mix damper	Rr. Heater blower motor
1	0	OFF	FACE	FRESH	OFF	Cool side (0% open)	OFF
2	1	LO	↑	↑	↑	↑	↑
3	2	MED	↑	R/F (50% open)	ON	↑	LO
4	3	↑	BI–LEVEL	RECIRC	↑	Cool / Hot (50% open)	↑
5	4	↑	FOOT	FRESH	↑	↑	↑
6	5	↑	↑	↑	↑	Hot side (100% open)	HI
7	6	↑	FOOT/DEF	↑	↑	↑	↑
8	7	HI	DEF	↑	↑	↑	↑

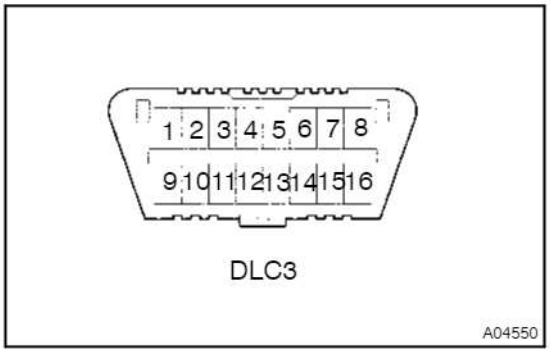
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6. CLEARING DTC

(a) Pull out the ACC fuse in cowl side J/B LH for 10 sec. or longer to clear diagnostic the DTC's memory.

(b) After reinserting the fuse, check that the normal code is output.



7. CHECK DLC3

The vehicle's engine (and ECT) ECU uses the ISO 9141–2 (Euro–OBD)/ISO 14230 (M–OBD) communication protocol. The terminal arrangement of the DLC3 complies with ISO 15031–3 and matches the ISO 9141–2/ISO 14230 format.

Terminal No.	Connection/Voltage or Resistance	Condition
7	Bus + Line/Pulse generation	During transmission
4	Chassis Ground ↔ Body Ground/1 Ω or less	Always
5	Signal Ground ↔ Body Ground/1 Ω or less	Always
16	Battery Positive ↔ Body Ground/9 – 14 V	Always

8. DATA LIST

HINT:

According to the DATA LIST displayed by hand–held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, read the "DATA LIST".

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
A/C SIG	A/C SW Status/ ON or OFF	• A/C SW Push: ON • A/C SW Release: OFF	←
A/C MAG CLUTCH	A/C magnet clutch status/ ON or OFF	• A/C SW Push: ON • A/C SW Release: OFF	←

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9. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using hand–held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) According to the display on tester, read the "ACTIVE TEST".

Item	Test Details	Diagnostic Note
A/C MAG CLUTCH	Control the A/C magnet clutch ON/OFF	—

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DIAGNOSTIC TROUBLE CODE CHART

If malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below (Proceed to the page given for that circuit.)

DTC No. (See page)	Detection Item	Trouble Area	Memory
00	Normal	–	–
11 *1 (DI–1241)	Front room temperature sensor circuit	• Front room temp. sensor • Harness or connector between front room temp. sensor and A/C amplifier • A/C amplifier	○ (8.5 min. or more)
12 *2 (DI–1244)	Ambient temperature sensor circuit	• Ambient temp. sensor • Harness or connector between ambient temp. sensor and A/C amplifier • A/C amplifier	○ (8.5 min. or more)
13 (DI–1247)	Front evaporator temperature sensor circuit	• Front evaporator temp. sensor • Harness or connector between front evaporator temp. sensor and A/C amplifier • A/C amplifier	○ (8.5 min. or more)
14 (DI–1250)	Water temperature communication circuit	• Water temp. sensor • Harness or connector between water temp. sensor and engine (and ECT) ECU • Harness or connector between engine (and ECT) ECU and A/C amplifier • Engine (and ECT) ECU • A/C amplifier	–
17 (DI–1252)	Rear evaporator temperature sensor circuit	• Rear evaporator temp. sensor • Harness or connector between Rear evaporator temp. sensor and rear A/C amplifier • Rear A/C amplifier	Rear A/C amplifier communication data
19 *1 (DI–1255)	Rear room temperature sensor circuit	• Rear room temp. sensor • Harness or connector between rear room temp. sensor and rear A/C amplifier • Rear A/C amplifier	Rear A/C amplifier communication data
21 *3 (DI–1258)	Solar sensor circuit (Open)	• Solar sensor • Harness or connector between solar sensor and A/C amplifier • A/C amplifier	–
	Solar sensor circuit (Short)		○ (8.5 min. or more)
22 *4 (DI–1261)	All conditions below are detected for 3 sec. or more (a) Engine speed: 450 rpm or more (b) Ratio between engine and compressor rpm deviates 20% or more in comparison to normal operation.	• Compressor drive belt • Compressor lock sensor • Compressor • Engine (and ECT) ECU • Harness or connector between compressor lock sensor and engine (and ECT) ECU • Harness or connector between engine (and ECT) ECU and A/C amplifier • A/C amplifier	–
23 (DI–1264)	Open in pressure sensor circuit Abnormal refrigerant pressure [below 196 kPa (2.0 kgf/cm^2, 28 psi) over 3,140 kPa (32.0 kgf/cm^2, 455 psi)]	• Pressure switch • Harness or connector between pressure switch and A/C amplifier • Refrigerant pipe line • A/C amplifier	–

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26 (DI–1267)	Rear linlet air temperature sensor circuit	• Rear inlet air temp. sensor • Harness or connector between rear inlet air temp. sensor and rear A/C amplifier • Rear A/C amplifier	Rear A/C amplifier communication data
31 (DI–1270)	Front air mix damper position sensor circuit	• Front air mix damper position sensor • Harness or connector between front air mix damper position sensor and A/C amplifier • A/C amplifier	○ (1 min. or more)
32 (DI–1273)	Air inlet damper position sensor circuit	• Air inlet damper position sensor sensor • Harness or connector between air inlet damper position sensor and A/C amplifier • A/C amplifier	○ (1 min. or more)
37 (DI–1276)	Rear air mix damper position sensor circuit	• Rear air mix damper position sensor • Harness or connector between rear air mix damper position sensor and rear A/C amplifier • Rear A/C amplifier	Rear A/C amplifier communication data
41 (DI–1270 DI–1279)	Front air mix damper control servomotor circuit	• Front air mix damper control servomotor • Harness or connector between front air mix damper control servomotor and A/C amplifier • A/C amplifier	○ (15 secs. or more)
42 (DI–1273 DI–1282)	Air inlet damper control servomotor circuit	• Air inlet damper control servomotor • Harness or connector between air inlet damper control servomotor and A/C amplifier • A/C amplifier	○ (15 secs. or more)
47 (DI–1276 DI–1285)	Rear Air mix damper control servomotor circuit	• Rear air mix damper control servomotor • Harness or connector between rear air mix damper control servomotor and rear A/C amplifier • Rear A/C amplifier	Rear A/C amplifier communication data

HINT:

- *1 If the room temp. is approx. –20°C (–4°F) or less, DTC 11 may be light up even though the system is normal.
- *2 If the ambient temperature is approx. –50°C (–58°F) or less, a DTC may be output even though the system is normal.
- *3 If the check is being performed in a dark place, DTC 21 (solar sensor circuit abnormal) could be displayed. In this case, perform DTC check again while shining a light, such as an inspection light, on the solar sensor. If DTC 21 is still displayed, there could be trouble in the solar sensor circuit.
- *4 Compressor lock (DTC 22) is indicated only for a current malfunction. (See page DI–1261)

To confirm DTC 22, preform the following steps.

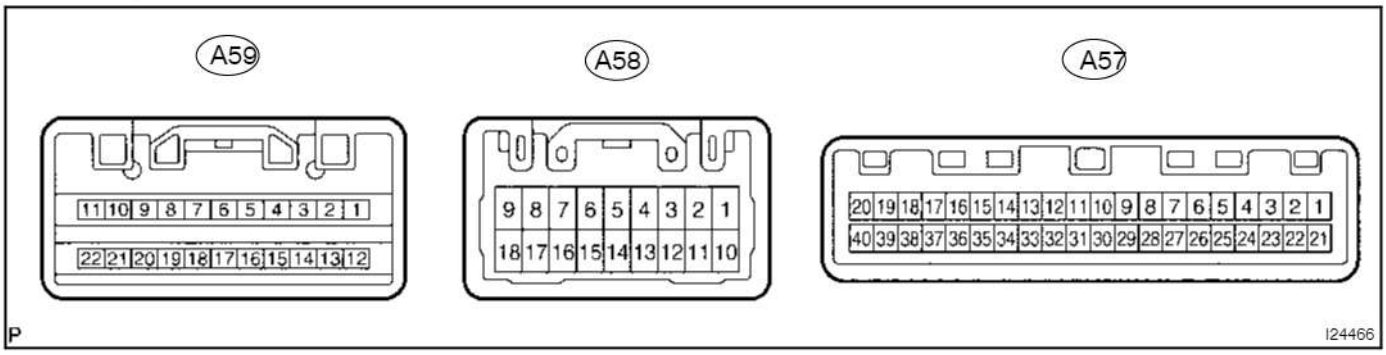
(1) With the engine ON, enter the DTC check mode.
(2) Press the R/F SW to enter actuator check mode, and set the operation to Step No. 3.
(3) Press the AUTO SW to return to DTC check mode.
(4) The DTC is displayed after approx. 3 secs.

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TERMINALS OF ECU

FRONT A/C AMPLIFIER



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
AIF ↔ GND (A57–1 ↔ A59–12)	G–W ↔ W–B	IG ON. Air inlet control switch "FRESH"	Battery voltage
		IG ON. Air inlet control switch "RECIRC"	Below 1.0 V
AIR ↔ GND (A57–2 ↔ A59–12)	LG–B ↔ W–B	IG ON. Air inlet control switch "RECIRC"	Battery voltage
		IG ON. Air inlet control switch "FRESH"	Below 1.0 V
RHR ↔ GND (A57–3 ↔ A59–12)	L–B ↔ W–B	IG ON. Rear heater switch "OFF"	Battery voltage
		IG ON. Rear heater switch "ON"	Below 1.0 V
RHFR ↔ GND (A57–4 ↔ A59–12)	L–R ↔ W–B	IG ON. Rear heater switch "OFF"	Battery voltage
		IG ON. Rear heater switch "ON"	Below 1.0 V
MRRHR ↔ GND (A57–6 ↔ A59–12)	R ↔ W–B	IG ON. Mirror heater switch "OFF"	Battery voltage
		IG ON. Mirror heater switch "ON"	Below 1.0 V
A/CS ↔ GND (A57–7 ↔ A59–12)	L–B (*2) ↔ W–B	Compressor does not operate	Battery voltage
		Compressor operate	Below 1.0 V
FRHR ↔ GND (A57–9 ↔ A59–12)	Y–R ↔ W–B	IG ON. Front A/C blower motor does not operate	Battery voltage
		IG ON. Front A/C blower motor operate	Below 1.0 V
RDFGR ↔ GND (A57–10 ↔ A59–12)	LG ↔ W–B	IG ON. Rear defogger switch "OFF"	Battery voltage
		IG ON. Rear defogger switch "ON"	Below 1.0 V
TEO ↔ GND (A57–11 ↔ A59–12)	P–B (*1) ↔ W–B	Compressor does not operate	Battery voltage
		Compressor operate	Below 1.0 V
DEF ↔ GND (A57–12 ↔ A59–12)	B–W ↔ W–B	IG ON. Mode control switch "Except DEF"	Battery voltage
		IG ON. Mode control switch "DEF"	Below 0.7 V
F/D ↔ GND (A57–13 ↔ A59–12)	P–L ↔ W–B	IG ON. Mode control switch "Except FOOT/DEF"	Battery voltage
		IG ON. Mode control switch "FOOT/DEF"	Below 0.7 V
FOOT ↔ GND (A57–14 ↔ A59–12)	W ↔ W–B	IG ON. Mode control switch "Except FOOT/DEF"	Battery voltage
		IG ON. Mode control switch "FOOT/DEF"	Below 0.7 V
B/L ↔ GND (A57–15 ↔ A59–12)	BR–W ↔ W–B	IG ON. Mode control switch "Except BI–LEVEL"	Battery voltage
		IG ON. Mode control switch "BI–LEVEL"	Below 0.7 V
FACE ↔ GND (A57–16 ↔ A59–12)	GR ↔ W–B	IG ON. Mode control switch "Except FACE"	Battery voltage
		IG ON. Mode control switch "FACE"	Below 0.7 V
RHI–I ↔ GND (A57–17 ↔ A59–12)	R–G ↔ W–B	IG ON. Rear heater switch "OFF"	Battery voltage
		IG ON. Rear heater switch "HI"	Below 1.0 V
RLO–I ↔ GND (A57–18 ↔ A59–12)	R–B ↔ W–B	IG ON. Rear heater switch "OFF"	Battery voltage
		IG ON. Rear heater switch "LO"	Below 1.0 V

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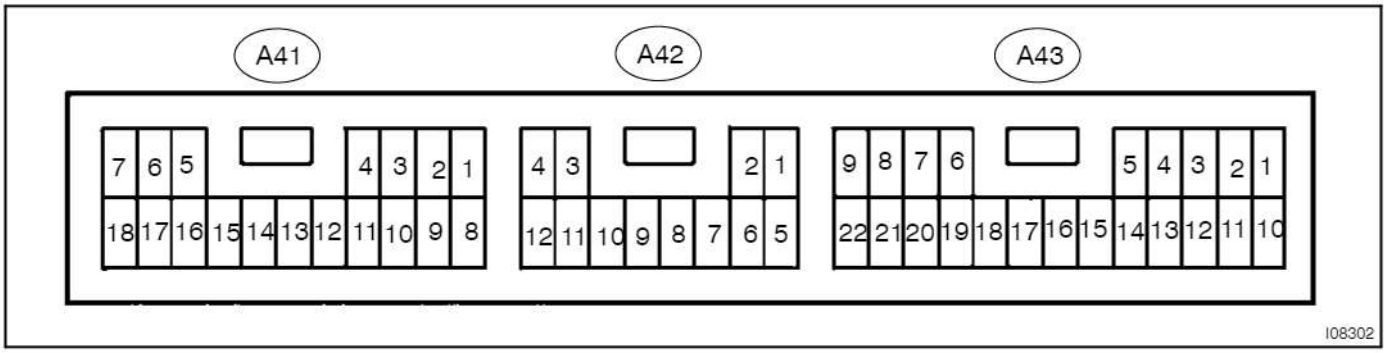
FRMGV ↔ GND (A57–20 ↔ A59–12)	L ↔ W–B	IG ON. A/C switch "OFF"	Battery voltage
		IG ON. A/C switch "ON"	Below 1.0 V
FRAMH ↔ GND (A57–21 ↔ A59–12)	P–B ↔ W–B	IG ON. Temperature control dial "MAX. WARM"	Battery voltage
		IG ON. Temperature control dial "MAX. COOL"	Below 1.0 V
FRAMC ↔ GND (A57–22 ↔ A59–12)	P–G ↔ W–B	IG ON. Temperature control dial "MAX. COOL"	Battery voltage
		IG ON. Temperature control dial "MAX. WARM"	Below 1.0 V
FRBLW ↔ GND (A57–23 ↔ A59–12)	W–R ↔ W–B	IG ON. Front A/C blower does not operate	Battery voltage
		IG ON. Front A/C blower motor operate	Below 1.0 V
DEFC ↔ GND (A57–27 ↔ A59–12)	R–L ↔ W–B	Diff. lock switch "ON"	Continuity
RRMGV ↔ GND (A57–40 ↔ A59–12)	LG–R ↔ W–B	IG ON. Rear cooler switch "OFF"	Battery voltage
		IG ON. Rear cooler switch "ON"	Below 1.0 V
FRTP ↔ FRSG (A58–5 ↔ A58–18)	B–Y ↔ Y–G	IG ON. Temperature control dial "MAX. COOL"	Approx. 4.0 V
		IG ON. Temperature control dial "MAX. WARM"	Approx. 1.0 V
TEC ↔ FRSG (A58–6 ↔ A58–18)	R–L ↔ Y–G	Cool box evaporator temperature at 25 °C (77 °F)	1.4 – 1.8 V
TAM ↔ FRSG (A58–7 ↔ A58–18)	L–Y ↔ Y–G	IG ON. Ambient temperature at 25 °C (77 °F)	1.35 – 1.75 V
TS ↔ FRSG (A58–8 ↔ A58–18)	B–Y ↔ Y–G	IG ON. Sensor subjected electric light	0.8 – 4.3V
		IG ON. Sensor covered by a cloth	Below 0.8 V
FRS5 ↔ FRSG (A58–9 ↔ A58–18)	G–R ↔ Y–G	Trun ignition switch "ON"	5.0 V
		Trun ignition switch "OFF"	No voltage
TPI ↔ FRSG (A58–14 ↔ A58–18)	L–R ↔ Y–G	IG ON. Air inlet control switch "FRESH"	Approx. 1.0 V
		IG ON. Air inlet control switch "RECIRC"	Approx. 4.0 V
FRTE ↔ FRSG (A58–16 ↔ A58–18)	GR–B ↔ Y–G	IG ON. Evaporator temperature at 15 °C (59 °F)	1.4 – 1.8 V
FRTR ↔ FRSG (A58–17 ↔ A58–18)	B ↔ Y–G	IG ON. Cabin temperature at 25 °C (77 °F)	1.8 – 2.2 V
FRSG ↔ Body ground (A58–18 ↔ Body ground)	Y–G ↔ Body ground	Always	Continuity
ALED ↔ GND (A59–4 ↔ A59–12)	G–B (*1) ↔ W–B	Compressor operate	Below 1.0 V
		Compressor does not operate	No voltage
TW ↔ GND (A59–5 ↔ A59–12)	Y–B (*2, *3) ↔ W–B Y–B (*4) ↔ W–B	IG ON.	Pluse
SPD ↔ GND (A59–6 ↔ A59–12)	V ↔ W–B	Turn propeller shaft slowly	Pluse
PSW ↔ GND (A59–8 ↔ A59–12)	L–W ↔ W–B	A/C refrigerant pressure: less than 0.19 MPa (2.0 kgf/cm^2) or more than 3.14 MPa (32 Kgf/cm^2)	From 10 – 14 V to below 1.0 V
RH–S ↔ GND (A59–9 ↔ A59–12)	R–W ↔ W–B	IG ON. Rear heater switch "OFF"	Battery voltage
		IG ON. Rear heater switch "ON"	Below 1.0 V
ILL+ ↔ GND (A59–10 ↔ A59–12)	G ↔ W–B	IG ON. Light control switch "TAIL"	Battery voltage
		IG ON. Light control switch "OFF"	No voltage
+B ↔ GND (A59–11 ↔ A59–12)	L–W ↔ W–B	Always	Battery voltage
GND ↔ Body ground (A59–12 ↔ Body ground)	W–B ↔ Body ground	Always	Continuity

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ILL– ↔ GND (A59–19 ↔ A59–12)	W–G ↔ W–B	IG ON. Light control switch "TAIL"	Below 1.0 V
		IG ON. Light control switch "OFF"	No voltage
IG ↔ GND (A59–22 ↔ A59–12)	R–L ↔ W–B	IG ON. Light control switch "ON"	Battery voltage
		IG ON. Light control switch "OFF"	No voltage

*1: 2UZ–FE
*2: 2UZ–FE, LHD
*3: 1HD–FTE, LHD
*4: RHD

REAR A/C AMPLIFIER



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
RRAT ↔ RG (A41–1 ↔ A41–8)	W–G ↔ G–W	Rr A/C control panel AUTO switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch
RRAO ↔ RG (A41–2 ↔ A41–8)	Y–B ↔ G–W	Rr A/C control panel OFF switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch
RRLO ↔ RG (A41–3 ↔ A41–8)	GR ↔ G–W	Rr A/C control panel LO switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch
RRME ↔ RG (A41–4 ↔ A41–8)	L–Y ↔ G–W	Rr A/C control panel ME switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch
ATIN ↔ GND (A41–5 ↔ A43–22)	L–R ↔ W–B	Rr A/C control panel switch: except. AUTO → AUTO	Battery voltage → Below 1.0 V
LOIN ↔ GND (A41–6 ↔ A43–22)	L–W ↔ W–B	Rr A/C control panel switch: except. LO → LO	Battery voltage → Below 1.0 V
MEIN ↔ GND (A41–7 ↔ A43–22)	L ↔ W–B	Rr A/C control panel switch: except. ME → ME	Battery voltage → Below 1.0 V
RG ↔ GND (A41–8 ↔ A43–22)	G–W ↔ W–B	Always	Continuity
RRHI ↔ GND (A41–9 ↔ A43–22)	GR–R ↔ W–B	Rr A/C control panel HI switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch
FACE ↔ GND (A41–10 ↔ A43–22)	R–L ↔ W–B	Rr A/C control panel FACE switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch
B/L ↔ GND (A41–11 ↔ A43–22)	R–Y ↔ W–B	Rr A/C control panel B/L switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch

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FOOT ↔ GND (A41–12 ↔ A43–22)	R–G ↔ W–B	Rr A/C control panel FOOT switch: OFF → ON	Battery voltage → Below 1.0 V during pushed switch
FCIN ↔ GND (A41–15 ↔ A43–22)	G ↔ W–B	Rr A/C control panel switch: except. FACE → FACE	Battery voltage → Below 1.0 V
BLIN ↔ GND (A41–16 ↔ A43–22)	W–G ↔ W–B	Rr A/C control panel switch: except. B/L → B/L	Battery voltage → Below 1.0 V
FTIN ↔ GND (A41–17 ↔ A43–22)	W–R ↔ W–B	Rr A/C control panel switch: except. FOOT → FOOT	Battery voltage → Below 1.0 V
HIIN ↔ GND (A41–18 ↔ A43–22)	L ↔ W–B	Rr A/C control panel switch: except. HI → HI	Battery voltage → Below 1.0 V
TR ↔ SGND (A42–7 ↔ A42–12)	B ↔ G–Y	IG ON. Rr room temp.: 25 °C (77 °F)	1.8 – 2.2 V
		IG ON. Rr room temp.: 40 °C (104 °F)	1.2 – 1.6 V
TSET ↔ SGND (A42–8 ↔ A42–12)	L–O ↔ G–Y	Rr temp. control switch: Max. COOL → Max. HOT	5.0 → 0 V
SGND ↔ SG (A42–12 ↔ A43–9)	G–Y ↔ Y–G	Always	Continuity
+B ↔ GND (A43–1 ↔ A43–22)	L–W ↔ W–B	Always	Battery voltage
IG ↔ GND (A43–2 ↔ A43–22)	B–W ↔ W–B	IG ON.	Battery voltage
VMC ↔ GND (A43–3 ↔ A43–22)	W–L ↔ W–B	Rr FACE mode. Rr blower switch: Lo → ME → HI	7.2 → 4.2 → 0.5 V
BLWC ↔ GND (A43–4 ↔ A43–22)	R ↔ W–B	Rr FACE mode. Fr blower switch: OFF → Lo	Below 1.0 V → 1.5 – 3.0 V
S5 ↔ SG (A43–5 ↔ A43–9)	R–Y ↔ Y–G	IG ON.	4.5 – 5.5 V
TPH ↔ SG (A43–6 ↔ A43–9)	GR–R ↔ Y–G	Rr temp. control switch: Max. COOL → Max. HOT	4.0 – 1.0 V
TEC ↔ SG (A43–7 ↔ A43–9)	Y ↔ Y–G	Rr evaporator temp.: 0 °C (32 °F)	2.0 – 2.4 V
		Rr evaporator temp.: 15 °C (59 °F)	2.0 – 2.4 V
TINH ↔ SG (A43–8 ↔ A43–9)	GR–G ↔ Y–G	Rr inlet air temp.: 25 °C (77 °F)	1.5 – 1.9 V
		Rr inlet air temp.: 40 °C (104 °F)	1.2 – 1.6 V
SG ↔ GND (A43–9 ↔ A43–22)	Y–G ↔ W–B	Always	Continuity
MCH ↔ GND (A43–11 ↔ A43–22)	W–L ↔ W–B	Rr temp. control switch: Max. HOT → Max. COOL	Below 1.0V → Battery voltage for 16 sec.
MHH ↔ GND (A43–12 ↔ A43–22)	Y ↔ W–B	Rr temp. control switch: Max. COOL → Max. HOT	Below 1.0V → Battery voltage for 16 sec.
HRC ↔ GND (A43–13 ↔ A43–22)	R–Y ↔ W–B	Rr FACE mode. Rr blower control switch: OFF → LO	Battery voltage → Below 1.0 V
HRH ↔ GND (A43–14 ↔ A43–22)	L–B ↔ W–B	Rr FOOT mode. Rr blower control switch: OFF → LO	Battery voltage → Below 1.0 V
VMH ↔ GND (A43–15 ↔ A43–22)	R–W ↔ W–B	Rr FOOT mode. Rr blower control switch: LO → ME → HI	7.2 → 4.2 → 0.5 V
BLWH ↔ GND (A43–16 ↔ A43–22)	R–G ↔ W–B	Rr FOOT mode. Rr blower control switch: OFF → LO	Below 1.0 V → 1.5 – 3.0 V

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CID ↔ GND (A43–18 ↔ A43–22)	B ↔ W–B	IG ON.	Pulse
CSD ↔ GND (A43–19 ↔ A43–22)	R ↔ W–B	IG ON.	Pulse
CLKF ↔ GND (A43–20 ↔ A43–22)	G ↔ W–B	IG ON.	Pulse
GND ↔ Body ground (A43–22 ↔ Body ground)	W–B	Always	Continuity

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DI29M–13

PROBLEM SYMPTOMS TABLE

FRONT A/C

Symptom	Suspect Area	See page
Whole functions does not operate	1. IG power source circuit	DI–1291
	2. A/C amplifier	DI–1233
	3. EMV	–
Air Flow Control: No blower operation	1. IG power source circuit	DI–1291
	2. Heater main relay	AC–15
	3. Blower motor circuit	DI–1294
	4. A/C amplifier	DI–1233
	5. Blower motor controller	–
Air Flow Control: No blower control	1. Blower motor circuit	DI–1294
	2. A/C amplifier	DI–1233
	3. Solar sensor circuit	DI–1258
	4. Blower motor controller	–
Air Flow Control: Insufficient air flow	1. Blower motor circuit	DI–1294
	2. Blower motor controller	–
Temperature Control: No cool air comes out	1. Refrigerant volume	–
	2. Drive belt tension	–
	3. Refrigeration system inspection with manifold gauge set	–
	4. Compressor circuit	DI–1297
	5. Pressure switch circuit	DI–1264
	6. Front air mix damper position sensor circuit	DI–1270
	7. Front air mix damper control servomotor circuit	DI–1279
	8. Front room temp. sensor circuit	DI–1241
	9. Ambient temp. sensor circuit	DI–1244
	10. A/C amplifier	DI–1233
	11. Engine (and ECT) ECU	–
Temperature Control: No warm air comes out	1. Front air mix damper position sensor circuit	DI–1270
	2. Front air mix damper control servomotor circuit	DI–1279
	3. Front room temp. sensor circuit	DI–1241
	4. Ambient temp. sensor circuit	DI–1244
	5. Front evaporator temp. sensor circuit	DI–1247
	6. A/C amplifier	DI–1233
Temperature Control: Output air is warmer or cooler than the set temperature, or response is slow	1. Refrigerant volume	–
	2. Drive belt tension	–
	3. Refrigeration system inspection with manifold gauge set	–
	4. Cooling fan system	–
	5. Solar sensor circuit	DI–1258
	6. Front room temp. sensor circuit	DI–1241
	7. Ambient temp. sensor circuit	DI–1244
	8. Front Evaporator temp. sensor circuit	DI–1247
	9. Front air mix damper position sensor circuit	DI–1270
	10. Front air mix damper control servomotor circuit	DI–1279
	11. Front air inlet damper position sensor circuit	DI–1273
	12. Front air inlet damper control servomotor circuit	DI–1282
	13. Condenser	–
	14. Evaporator	–
	15. Heater radiator	–
	16. Expansion valve	–
	17. A/C amplifier	DI–1233
	18. Engine (and ECT) ECU	–

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Symptom	Suspect Area	See page
Temperature Control: No temperature control (only Max. cool or Max. warm)	1. Front room temp. sensor circuit 2. Ambient temp. sensor circuit 3. Front air mix damper position sensor circuit 4. Front air mix damper control servomotor circuit 5. A/C amplifier	DI–1241 DI–1244 DI–1270 DI–1279 DI–1233
No air inlet control	1. Front air inlet damper position sensor circuit 2. Front air inlet damper control servomotor circuit 3. A/C amplifier	DI–1273 DI–1282 DI–1233
No air flow control	1. Air outlet damper position sensor circuit 2. Air outlet damper control servomotor circuit 3. A/C amplifier	– – DI–1233
Engine idle up does not occur, or is continuous	1. Compressor circuit 2. Engine (and ECT) ECU	DI–1297 –

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REAR A/C

Symptom	Suspect Area	See page
Whole functions does not operate	1. Rear A/C amplifier	IN–38
	2. IG power source circuit	DI–1291
Air Flow Control: No blower operation	1. IG power source circuit	DI–1291
	2. Rear heater main relay	AC–16
	3. Rear blower motor	–
	3. Rear blower resister	–
	4. Rear A/C amplifier	IN–38
Air Flow Control: No blower control	1. Rear heater main relay	AC–16
	2. Rear blower motor	–
	3. Rear blower resister	–
	4. Rear A/C amplifier	IN–38
	5.Solar sensor circuit	DI–1258
Air Flow Control: Insufficient air flow	1. Rear blower motor	–
	2. Rear blower resister	–
Temperature Control: No cool air comes out	1. Refrigerant volume	–
	2. Drive belt tension	–
	3. Refrigeration system inspection with manifold gauge set	–
	4. Compressor circuit	DI–1297
	5. Pressure switch circuit	DI–1264
	6. Rear air mix damper position sensor circuit	DI–1276
	7. Rear air mix damper control servomotor circuit	DI–1285
	8. Rear room temp. sensor circuit	DI–1255
	9. Ambient temp. sensor circuit	DI–1244
	10. Rear A/C amplifier	IN–38
Temperature Control: No warm air comes out	1. Rear air mix damper position sensor circuit	DI–1276
	2. Rear air mix damper control servomotor circuit	DI–1285
	3. Rear room temp. sensor circuit	DI–1255
	4. Ambient temp. sensor circuit	DI–1244
	5. Rear evaporator temp. sensor circuit	DI–1252
	6. Rear A/C amplifier	IN–38
Temperature Control: Output air is warmer or cooler than the set temperature or response is slow	1. Refrigerant volume	–
	2. Drive belt tension	–
	3. Refrigeration system inspection with manifold gauge set	–
	4. Cooling fan system	–
	5. Solar sensor circuit	DI–1258
	6. Rear room temp. sensor circuit	DI–1255
	7. Ambient temp. sensor circuit	DI–1244
	8. Rear evaporator temp. sensor circuit	DI–1252
	9. Rear air mix damper position sensor circuit	DI–1276
	10. Rear air mix damper control servomotor circuit	DI–1285
	11. Condenser	–
	12. Evaporator	–
	13. Heater radiator	–
	14. Expansion valve	–
	15. Rear A/C amplifier	IN–38
Temperature Control: No temperature control (only Max. cool or Max. warm)	1. Rear room temp. sensor circuit	DI–1255
	2. Ambient temp. sensor circuit	DI–1244
	3. Rear air mix damper position sensor circuit	DI–1276
	4. Rear air mix damper control servomotor circuit	DI–1285
	5. Rear A/C amplifier	IN–38

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DIAQU-01

CIRCUIT INSPECTION

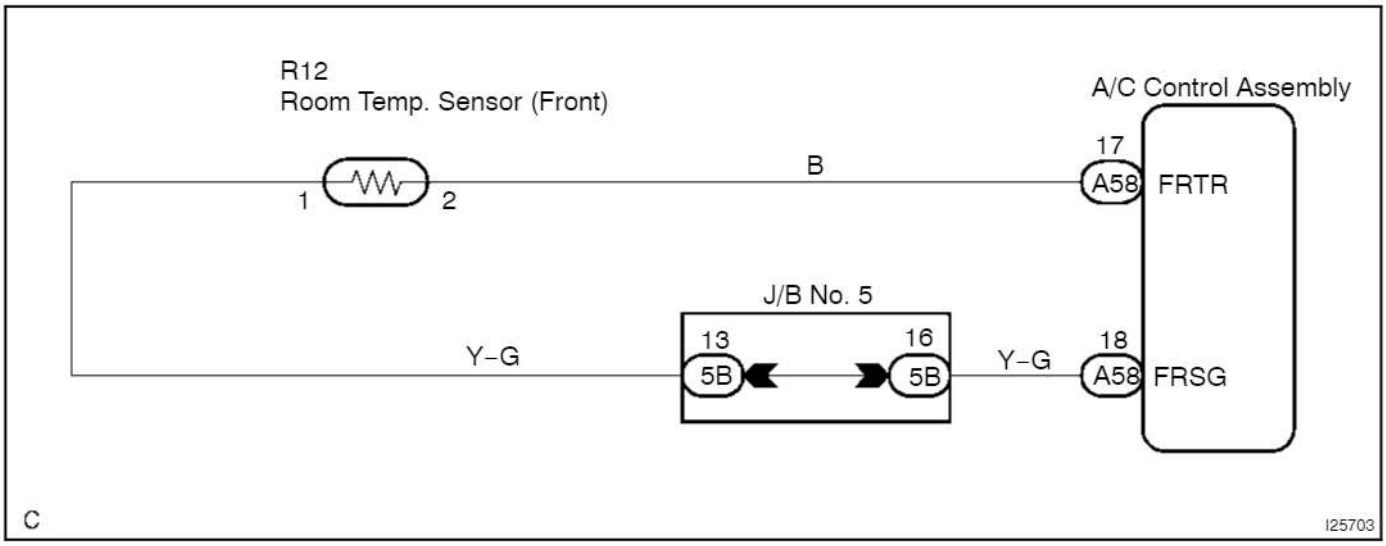
DTC	11	Front Room Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cabin (front side) and sends the appropriate signals to the A/C amplifier.

DTC No.	Detection Item	Trouble Area
11	Open or short in front room temperature sensor circuit	• Front room temp. sensor • Harness or connector between front room temp. sensor and A/C amplifier • A/C amplifier

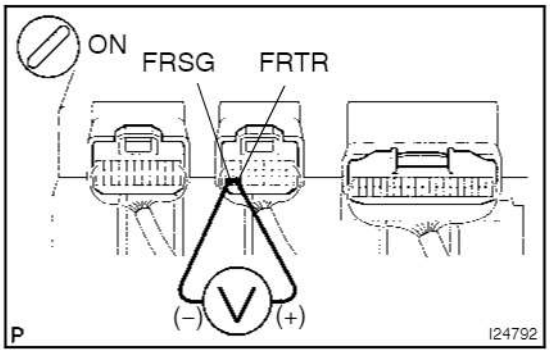
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals FRTR and FRSG of A/C amplifier.**



PREPARATION:

Remove A/C amplifier with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminals FRTR and FRSG of A/C amplifier connector at each temperature.

OK:

Voltage :
at 25°C (77°F) : 1.8 – 2.2 V
at 40°C (104°F) : 1.2 – 1.6 V

HINT:

As the temperature increases, the voltage decreases.

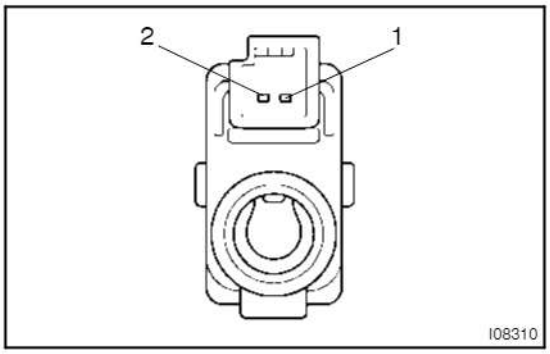
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 11 is displayed, check and replace A/C amplifier.

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2	Check front room temperature sensor.



PREPARATION:
Disconnect front room temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of front room temperature sensor connector at each temperature.
OK:

Resistance :
at 25°C (77°F) : 1.65 – 1.75 kΩ
at 50°C (122°F) : 0.55 – 0.65 kΩ

HINT:
As the temperature increases, the resistance decreases.

NG → **Replace front room temperature sensor.**

OK

3	Check harness and connector between A/C amplifier and front room temperature sensor (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C amplifier.

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DIAQV–01

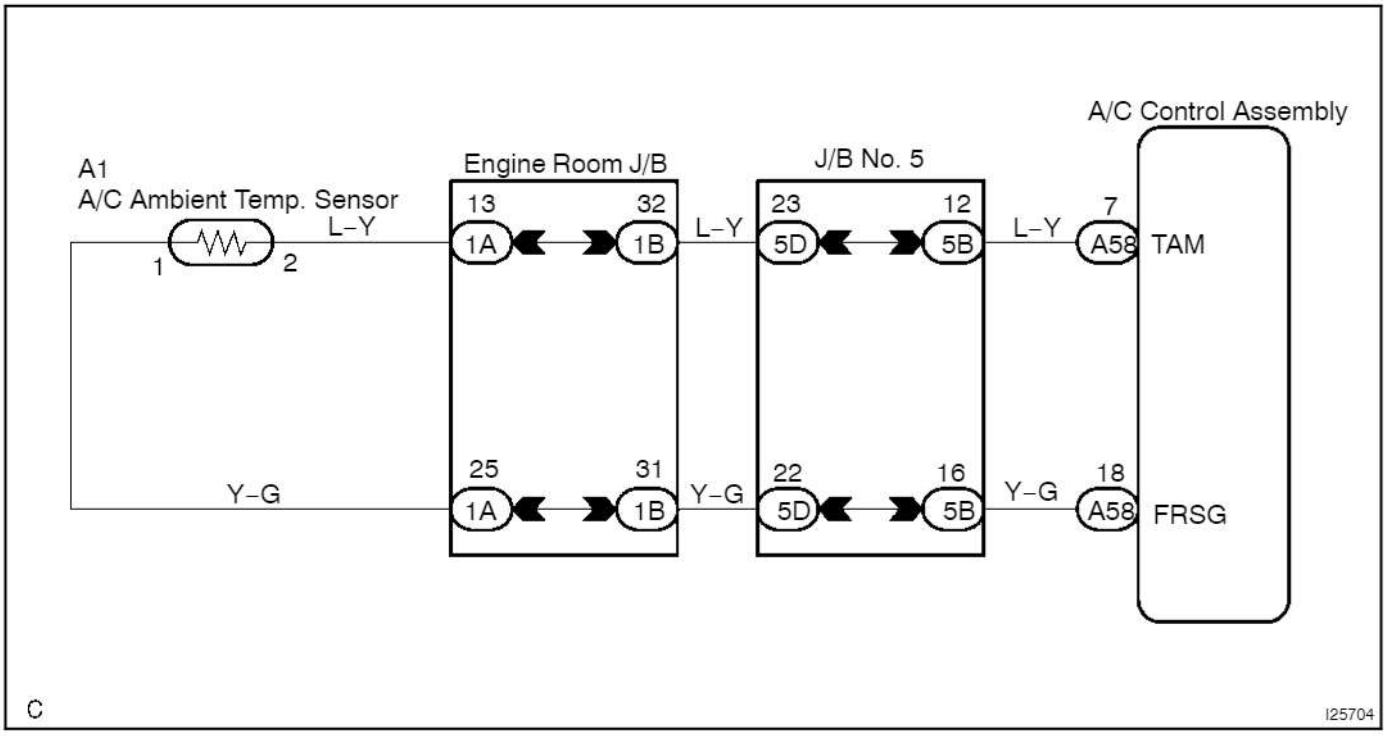
DTC	12	Ambient Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the ambient temperature and sends the appropriate signals to the A/C amplifier.

DTC No.	Detection Item	Trouble Area
12	Open or short in ambient temperature sensor circuit	• Ambient temp. sensor • Harness or connector between ambient temp. sensor and A/C amplifier • A/C amplifier

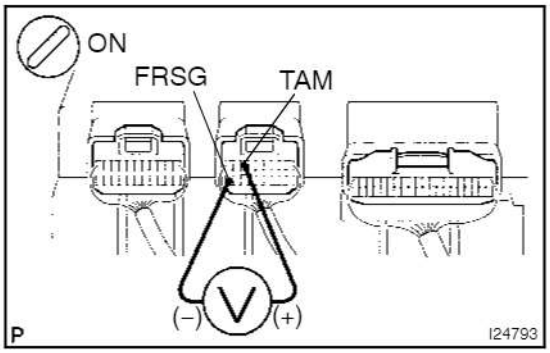
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals TAM and FRSG of A/C amplifier.**



PREPARATION:

Remove A/C amplifier with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminals TAM and FRSG of A/C amplifier connector at each temperature.

OK:

Voltage :
at 25°C (77°F) : 1.35 – 1.75 V
at 40°C (104°F) : 0.85 – 1.25 V

HINT:

As the temperature increases, the voltage decreases.

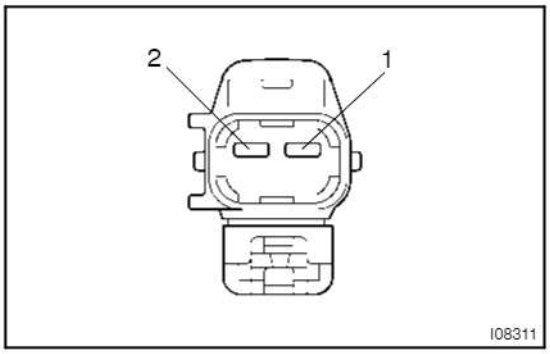
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 12 is displayed, check and replace A/C amplifier.

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2	Check ambient temperature sensor.



PREPARATION:
Disconnect ambient temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of ambient temperature sensor connector at each temperature.
OK:

Resistance :
at 25°C (77°F) : 1.6 – 1.8 kΩ
at 50°C (122°F) : 0.5 – 0.7 kΩ

HINT:
As the temperature increases, the resistance decreases.
NOTICE:
When installing the ambient temperature sensor, be sure to connect the sensor connector before connecting the battery.

NG → **Replace ambient temperature sensor.**

OK

3	Check harness and connector between ambient temperature sensor and A/C amplifier (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C amplifier.

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DIAQW–01

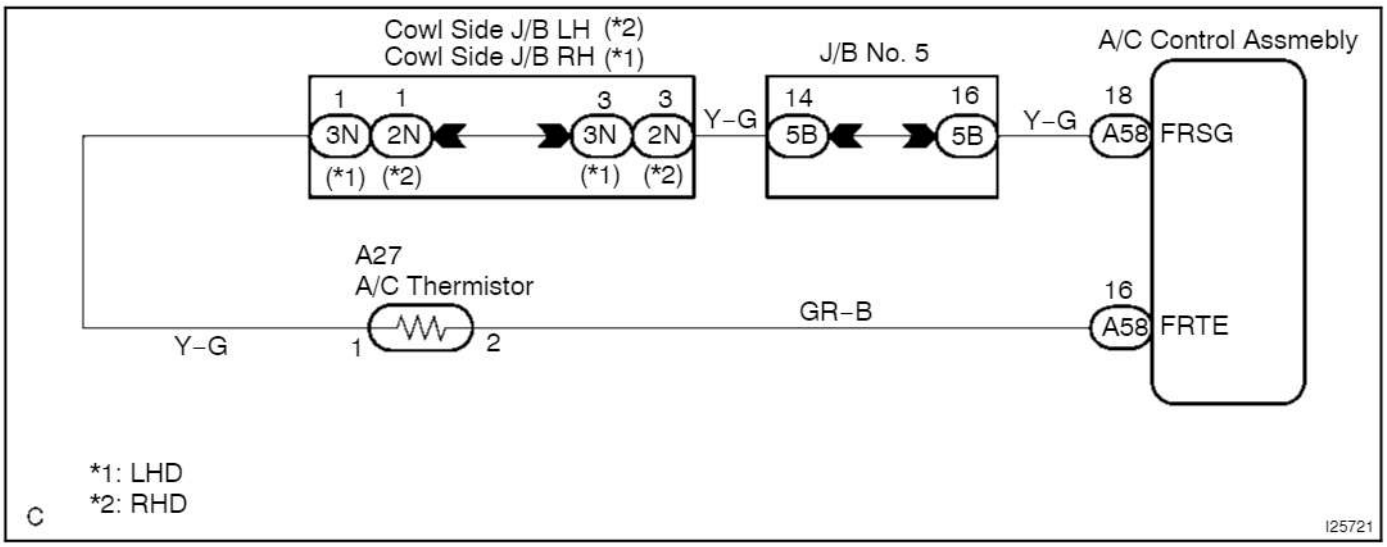
DTC	13	Front Evaporator Temperature Sensor circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cooling unit and sends the appropriate signals to the A/C amplifier.

DTC No.	Detection Item	Trouble Area
13	Open or short in front evaporator temperature sensor circuit	• Front evaporator temp. sensor • Harness or connector between front evaporator temp. sensor and A/C amplifier • A/C amplifier

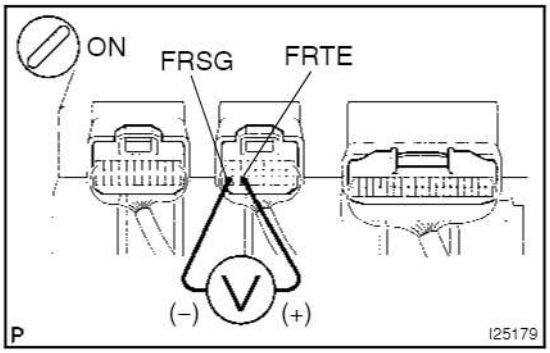
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check voltage between terminals FRTE and FRSG of A/C amplifier.



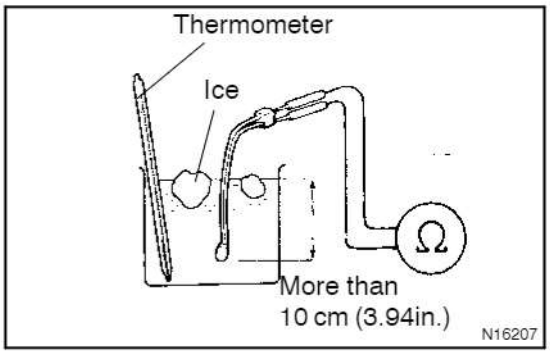
PREPARATION:
Remove A/C amplifier with connectors still connected.
CHECK:
(a) Turn ignition switch to ON.
(b) Measure voltage between terminals FRTE and FRSG of A/C amplifier connector at each temperature.
OK:
Voltage :
at 0°C (32°F) : 2.0 – 2.4 V
at 15°C (59°F) : 1.4 – 1.8 V
HINT:
As the temperature increases, the voltage decreases.

NG	Go to step 2.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 13 is displayed, check and replace A/C amplifier.

2	Check front evaporator temperature sensor.



PREPARATION:
Remove front evaporator temperature sensor.
CHECK:
Measure resistance between terminals 1 and 2 of evaporator temperature sensor connector at each temperature.
OK:
Resistance :
at 0°C (32°F) : 4.5 – 5.2 kΩ
at 15°C (59°F) : 2.0 – 2.7 kΩ
HINT:
As the temperature increases, the resistance decreases.

NG	Replace front evaporator temperature sensor.

OK

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3	Check harness and connector between front evaporator temperature sensor and A/C amplifier (See page IN–38).

NG → Repair or replace harness or connector.

OK

Check and replace A/C amplifier.

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DIAQX–01

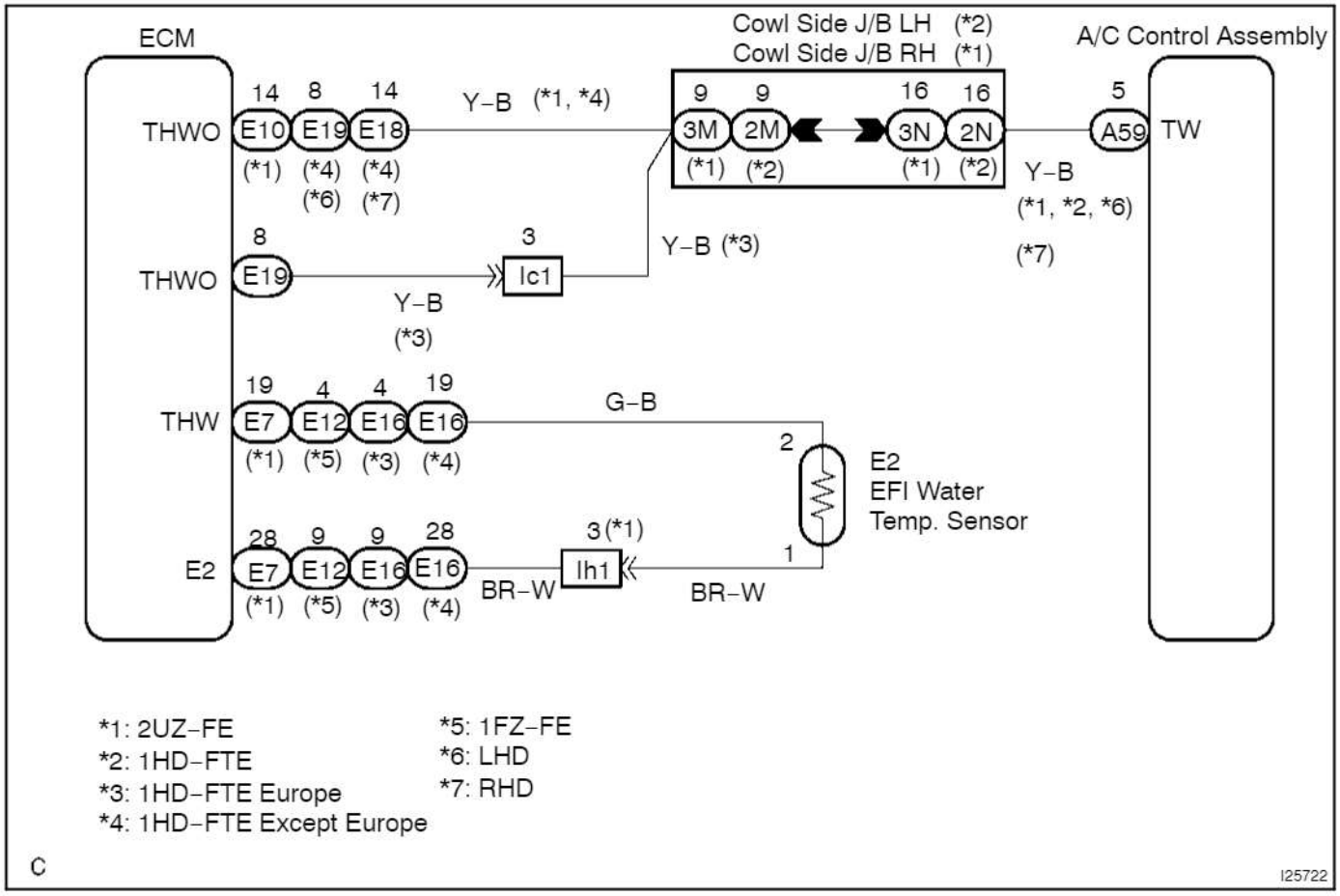
DTC	14	Water Temperature Communication Circuit

CIRCUIT DESCRIPTION

This sensor detects the water temperature and sends the appropriate signals to the engine (and ECT) ECU. These signals are used for warm up control when engine is cold.

DTC No.	Detection Item	Trouble Area
14	Open or short in water temperature sensor circuit	• Water temp. sensor • Harness or connector between water temp. sensor and engine (and ECT) ECU • Harness or connector between engine (and ECT) ECU and A/C amplifier • Engine (and ECT) ECU • A/C amplifier

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check water temperature sensor circuit (Refer Engine Repair Manual).

NG → Replace water temperature sensor.

OK ↓

2	Check harness and connector between engine (and ECT) ECU and A/C amplifier.

NG → Repair or replace harness or connector.

OK ↓

Check and replace A/C amplifier.

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DIAQY–01

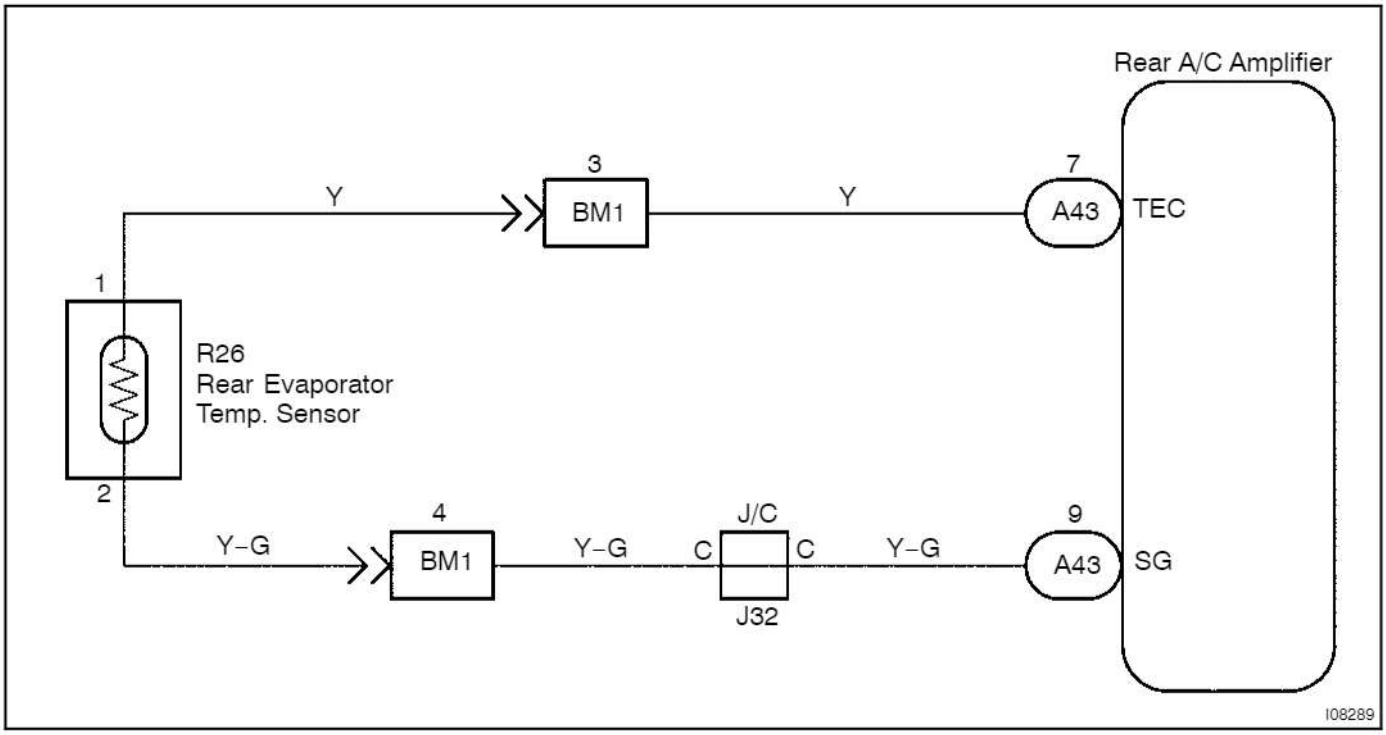
DTC	17	Rear Evaporator Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the rear evaporator temperature and sends the appropriate signals to the A/C amplifier.

DTC No.	Detection Item	Trouble Area
17	Open or short in rear evaporator temperature sensor circuit	• Rear evaporator temp. sensor • Harness or connector between rear evaporator temp. sensor and rear A/C amplifier • Rear A/C amplifier

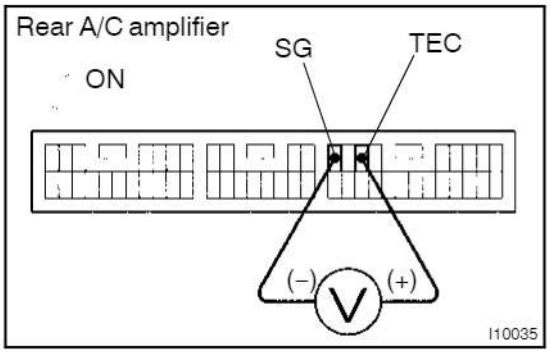
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check voltage between terminals TEC and SG of rear A/C amplifier.



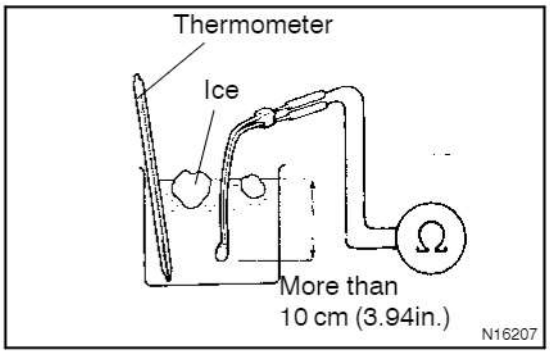
PREPARATION:
Remove rear A/C amplifier with connectors still connected.
CHECK:
(a) Turn ignition switch to ON.
(b) Measure voltage between terminals TEC and SG of rear A/C amplifier connector at each temperature.
OK:
Voltage :
at 0°C (32°F) : 2.0 – 2.4 V
at 15°C (59°F) : 1.4 – 1.8 V
HINT:
As the temperature increases, the voltage decreases.

NG	Go to step 2.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 17 is displayed, check and replace A/C amplifier.

2	Check rear evaporator temperature sensor.



PREPARATION:
Remove rear evaporator temperature sensor.
CHECK:
Measure resistance between terminals 1 and 2 of evaporator temperature sensor connector at each temperature.
OK:
Resistance :
at 0°C (32°F) : 4.5 – 5.2 kΩ
at 15°C (59°F) : 2.0 – 2.7 kΩ
HINT:
As the temperature increases, the resistance decreases.

NG	Replace rear evaporator temperature sensor.

OK

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3	Check harness and connector between rear evaporator temperature sensor and A/C amplifier (See page IN–38).

NG → Repair or replace harness or connector.

OK →

Check and replace A/C amplifier.

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DIAQZ-01

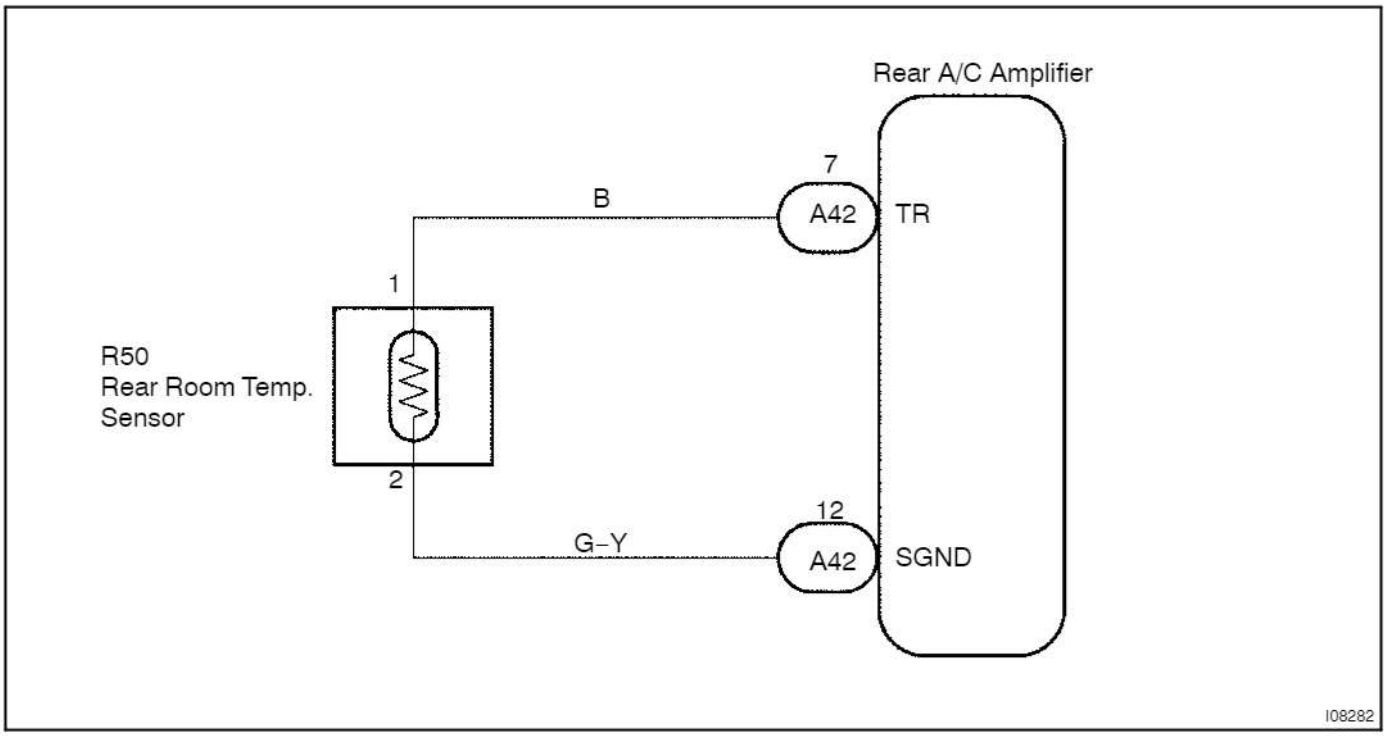
DTC	19	Rear Room Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the temperature inside the cabin (rear side) and sends the appropriate signals to the rear A/C amplifier.

DTC No.	Detection Item	Trouble Area
19	Open or short in rear room temperature sensor circuit	• Rear room temp. sensor • Harness or connector between rear room temp. sensor and rear A/C amplifier • Rear A/C amplifier

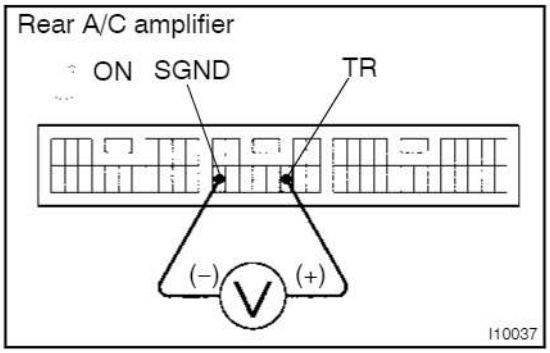
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check voltage between terminals TR and SGND of A/C amplifier.



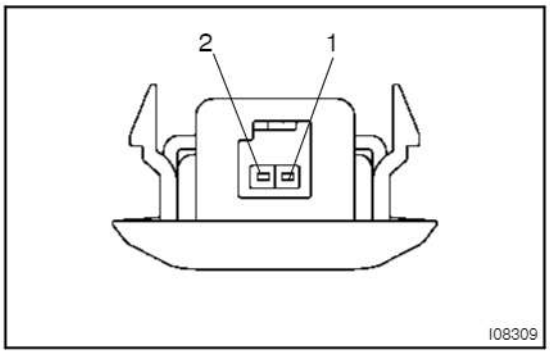
PREPARATION:
Remove rear A/C amplifier with connectors still connected.
CHECK:
(a) Turn ignition switch to ON.
(b) Measure voltage between terminals TR and SGND of rear A/C amplifier connector at each temperature.
OK:
Voltage :
at 25°C (77°F) : 1.8 – 2.2 V
at 40°C (104°F) : 1.2 – 1.6 V
HINT:
As the temperature increases, the voltage decreases.

NG	Go to step 2.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 19 is displayed, check and replace A/C amplifier.

2	Check rear room temperature sensor.



PREPARATION:
Disconnect rear room temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of room temperature sensor connector at each temperature.
OK:
Resistance :
at 25°C (77°F) : 1.65 – 1.75 kΩ
at 50°C (122°F) : 0.55 – 0.65 kΩ
HINT:
As the temperature increases, the resistance decreases.

NG	Replace rear room temperature sensor.

OK

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3	**Check harness and connector between rear A/C amplifier and rear room temperature sensor (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

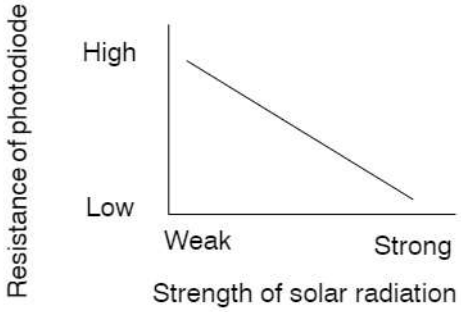
Check and replace A/C amplifier.

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DIAR0-01

DTC	21	Solar Sensor Circuit

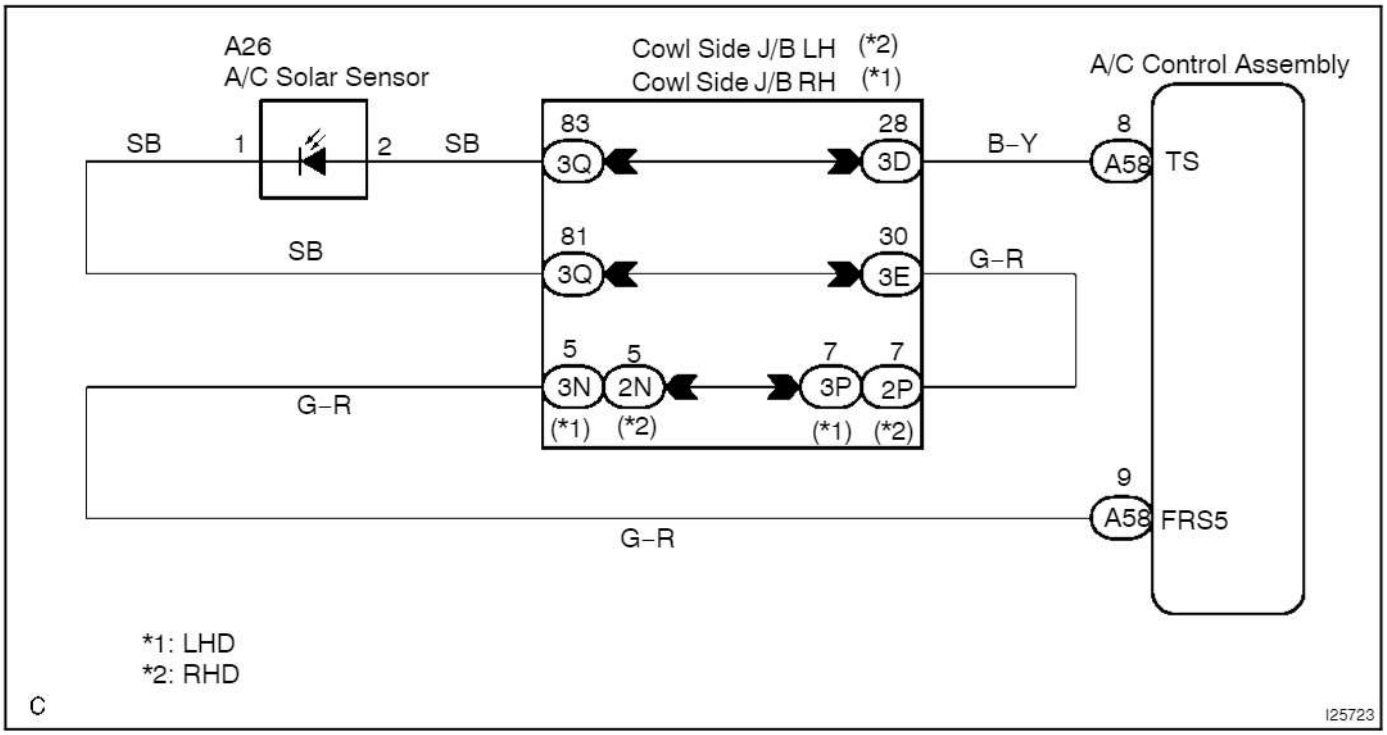
CIRCUIT DESCRIPTION



A photo diode in the solar sensor detects solar radiation and sends signals to the A/C amplifier.

DTC No	Detection Item	Trouble Area
21	Open or short in solar sensor circuit Please note that display of diagnostic trouble code 21 is not abnormal when the sensor is not receiving solar radiation	• Solar sensor • Harness or connector between solar sensor and A/C amplifier • A/C amplifier

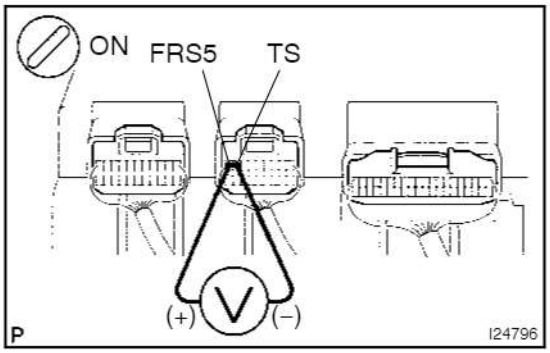
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals TS and FRS5 of A/C amplifier.**



PREPARATION:

Remove A/C amplifier with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminals TS and FRS5 of A/C amplifier connector when the solar sensor is subjected to an electric light, and when the sensor is covered with a cloth.

OK:

Condition	Voltage
Sensor subjected to electric light	0.8 – 4.3 V
Sensor covered with a cloth	Below 0.8 V

HINT:

As the inspection light is moved away from the sensor, the voltage increases.

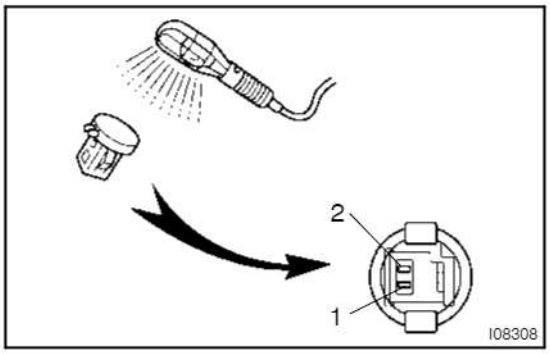
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 21 is displayed, check and replace A/C amplifier.

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2	Check solar sensor.



PREPARATION:
Remove solar sensor.
CHECK:
(a) Cover the sensor with a cloth.
(b) Measure resistance between terminals 1 and 2 of solar sensor connector.
HINT:
Connect positive (+) lead of ohmmeter to terminal 1 and negative (–) lead to terminal 2 of the solar sensor.
OK:
Resistance : ∞ Ω (no continuity)
PREPARATION:
(a) Remove the cloth from the solar sensor and subject the sensor to electric light.
(b) Measure resistance.
OK:
Resistance : Approx. 4 kΩ (continuity)
HINT:
As the electric light is moved away from the sensor, the resistance increases.

NG → **Replace solar sensor.**

OK

3	Check harness and connector between A/C amplifier and solar sensor (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C amplifier.

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DIAR1–01

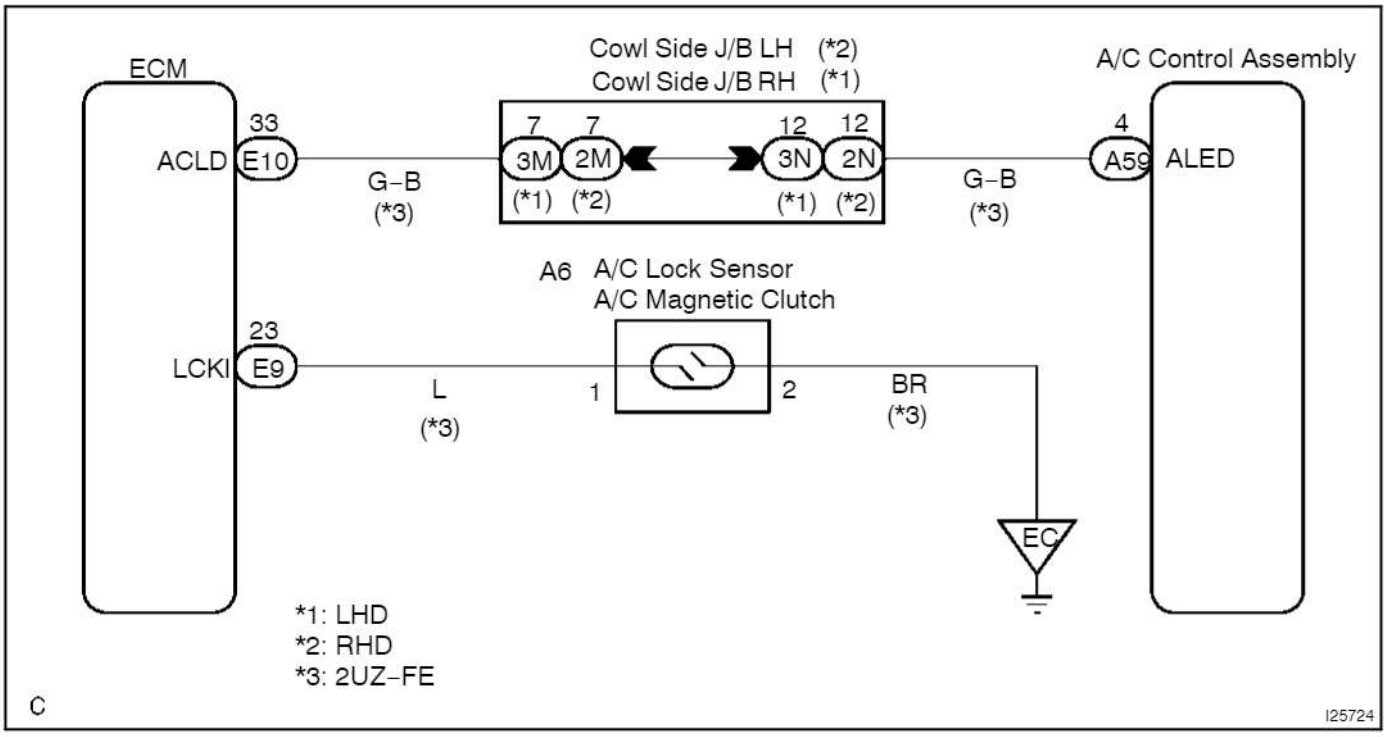
DTC	22	Compressor Lock Sensor Circuit

CIRCUIT DESCRIPTION

This sensor sends 1 pulse per engine revolution to the engine (and ECT) ECU.
If the number ratio of the compressor speed divided by the engine speed is smaller than a predetermined value, the engine (and ECT) ECU turns the compressor OFF. And, the indicator flashes at about 1 second intervals.

DTC No.	Detection Item	Trouble Area
22	All conditions below are detected for 3 sec. or more (a) Engine speed : 450 rpm or more (b) Ratio between engine and compressor speed deviates 20 % or more in comparison to normal operation.	• Compressor drive belt • Compressor lock sensor • Compressor • Engine (and ECT) ECU • Harness or connector between compressor lock sensor and engine (and ECT) ECU • Harness or connector between engine (and ECT) ECU and A/C amplifier • A/C amplifier

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check compressor.**

PREPARATION:

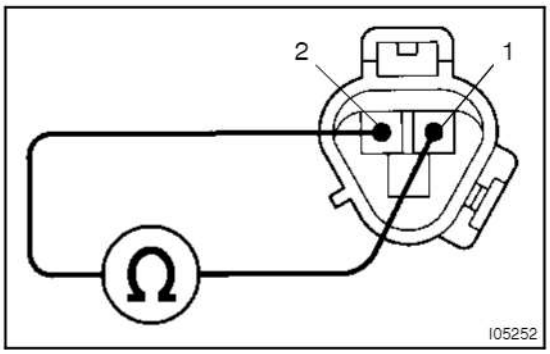
(a) Check compressor drive belt tension.

(b) Check if the compressor does not lock during operation with engine started and blower switch and A/C switch ON.

NG → **Adjust drive belt tension or repair compressor.**

OK

2	**Check compressor lock sensor.**



PREPARATION:

Disconnect compressor connector.

CHECK:

Measure resistance between terminals 1 and 2 of compressor lock sensor connector.

OK:

Resistance : 65 – 125 Ω at 20°C (68 °F)

NG → **Replace compressor.**

OK

3	**Check harness and connector between compressor lock sensor and engine (and ECT) ECU (See page IN–27).**

NG → **Repair or replace harness or connector.**

OK

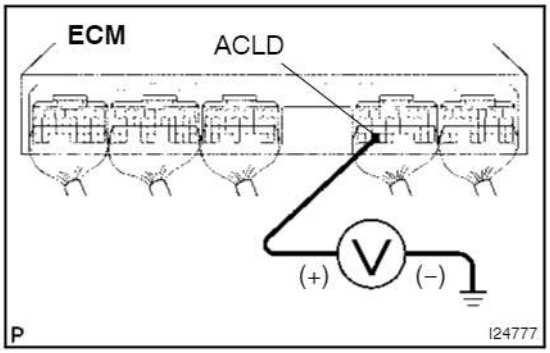
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4	**Check harness and connector between engine (and ECT) ECU and A/C amplifier (See page IN–27).**

NG → **Repair or replace harness or connector.**

OK

5	**Check voltage between terminals ACLD of engine (and ECT) ECU and body ground.**



PREPARATION:

Remove engine (and ECT) ECU with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.
(b) A/C switch ON.
(c) Measure voltage between terminals ACLD of engine (and ECT) ECU and body ground.

OK:

Voltage: Below 1.0 V

NG → **Check and replace engine (and ECT) ECU.**

OK

Check and replace A/C amplifier.

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DIAR2-01

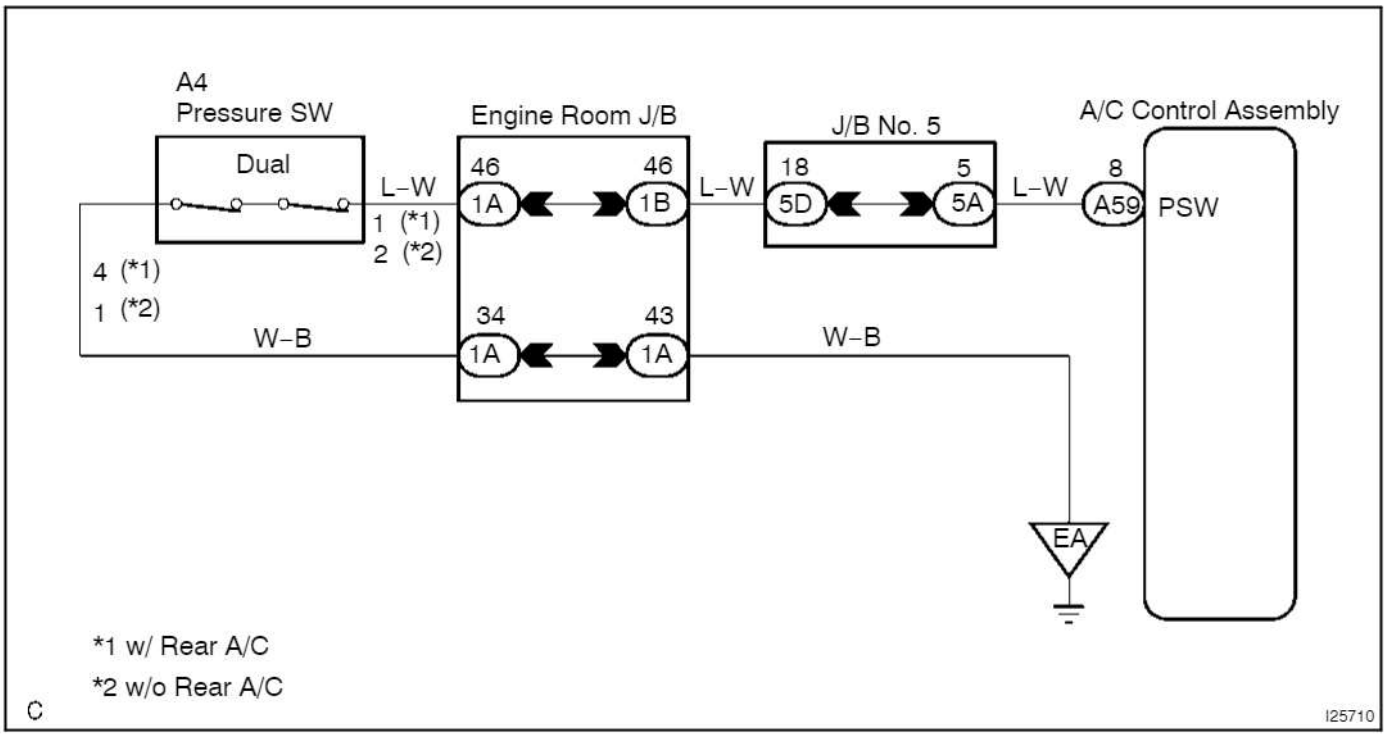
DTC	23	Pressure Switch Circuit

CIRCUIT DESCRIPTION

The pressure switch sends the appropriate signals to the A/C amprifier when the A/C refrigerant pressure drops too low or rises too high. When the A/C amplifier receives these signals, it output signals via the A/C amplifier to switch OFF the compressor relay and turns the magnetic clutch OFF.

DTC No.	Detection Item	Trouble Area
23	• Open in pressure sensor circuit • Abnormal refrigerant pressure below 196 kPa (2.0 kg/cm^2, 28 psi) over 3,140 kPa (32.0 kgf/cm^2, 455 psi)	• Pressure switch • Harness or connector between pressure switch and A/C amplifier • Refrigerant pipe line • A/C amplifier

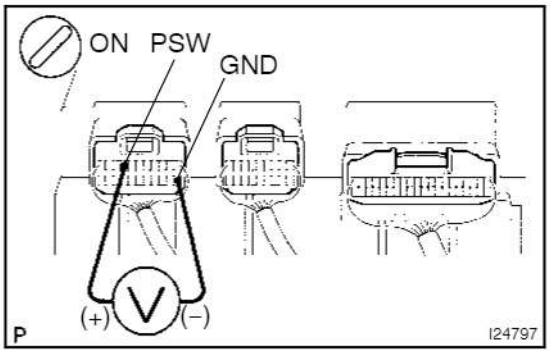
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check voltage between terminal PSW and GND of A/C amplifier.



PREPARATION:

Install the manifold gauge set.

CHECK:

(a) Turn ignition switch to ON.

(b) Check voltage between terminals PSW and GND of A/C amplifier connector when A/C gas pressure changes.

OK:

The voltage changes with gas pressure, as shown in the diagram below.

Low Pressure Cut Side	Reference : High Pressure Cut Side
ON (0V) 225 kPa 196 kPa OFF (12V)	ON (0V) 2,550 kPa 3,140 kPa OFF (12V)

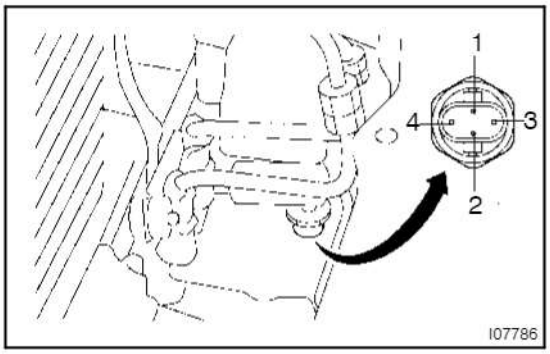
NG → **Go to step 2.**

OK →

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 23 is displayed, check and replace A/C amplifier.

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2	Check pressure switch.



PREPARATION:

Disconnect pressure switch connector.

CHECK:

(a) Turn ignition switch ON.

(b) Check continuity between terminals 1 and 2 of pressure switch when A/C gas pressure changes.

OK:

The continuity changes with gas pressure as shown below.

Low Pressure Cut Side	Reference : High Pressure Cut Side
ON (continuity) 225 kPa 196 kPa OFF (continuity)	ON (continuity) 2,550kPa 3,140kPa OFF (continuity)

NG → **Replace pressure switch.**

OK ↓

3	Check harness and connector between pressure switch and A/C amplifier (See page IN–38).

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace A/C amplifier.

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DIAR3–01

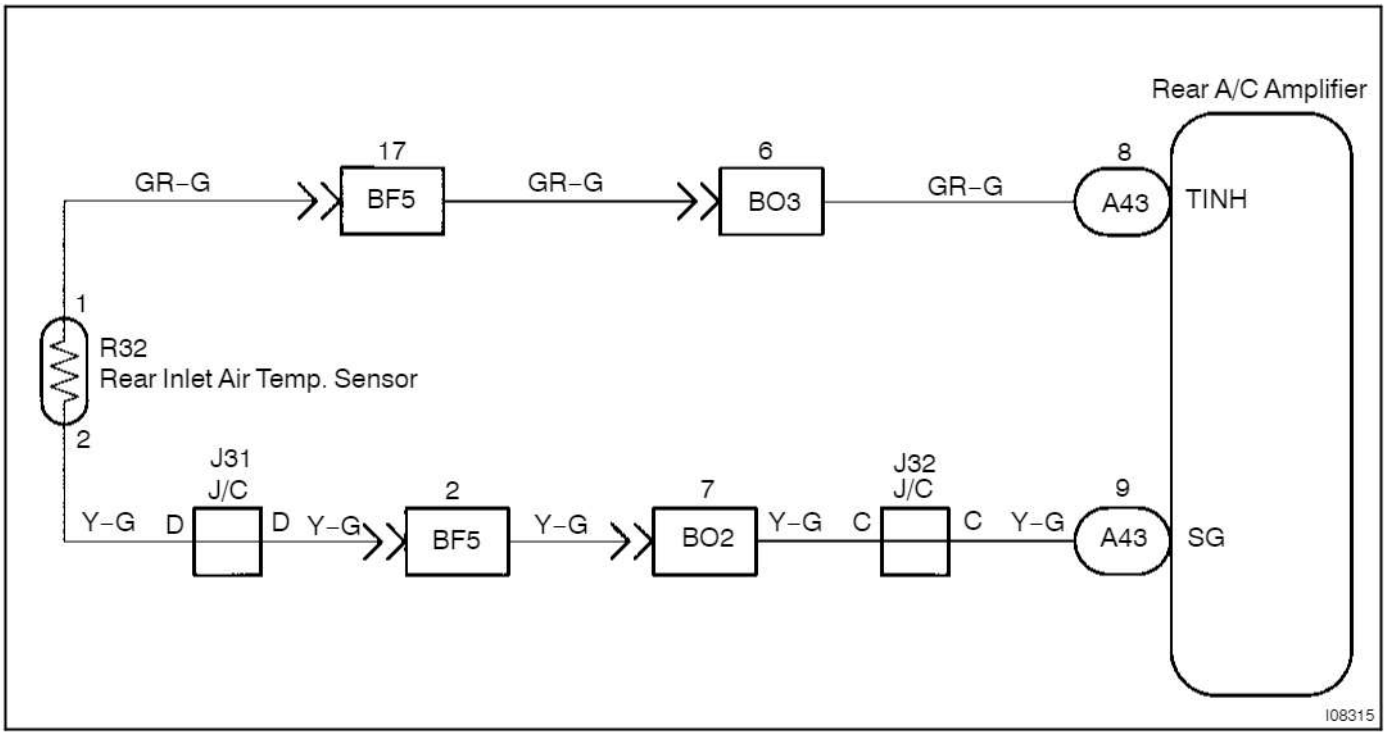
DTC	26	Rear Inlet Air Temperature Sensor Circuit

CIRCUIT DESCRIPTION

This sensor detects the rear inlet air temperature and sends the appropriate signals to the A/C amplifier.

DTC No.	Detection Item	Trouble Area
26	Open or short in rear inlet air temperature sensor circuit.	• Rear inlet air temp. sensor • Harness or connector between rear inlet air temp. sensor and rear A/C amplifier • Rear A/C amplifier

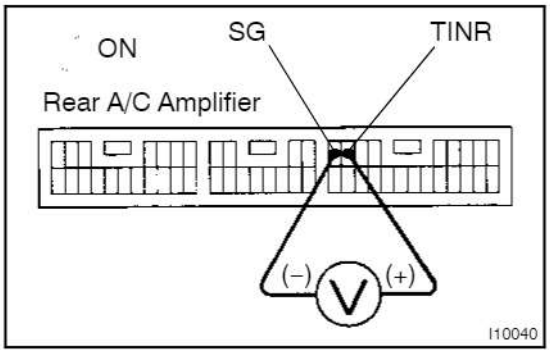
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals TINR and SG of rear A/C amplifier connector.**



PREPARATION:

Remove rear A/C amplifier with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Measure voltage between terminals TINR and SG of rear A/C amplifier connector at each temperature.

OK:

Voltage :
at 25°C (77°F) : 1.8 – 2.2 V
at 40°C (104°F) : 1.2 – 1.6 V

HINT:

As the temperature increases, the voltage decreases.

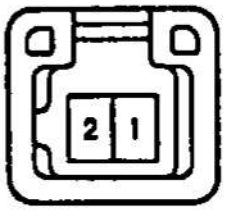
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 26 is display, check and replace rear A/C amplifier.

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2	Check rear inlet air temperature sensor.



I08364

PREPARATION:
Disconnect rear inlet air temperature sensor connector.
CHECK:
Measure resistance between terminals 1 and 2 of rear inlet air temperature sensor connector at each temperature.
OK:

Resistance :
at 25°C (77°F) : 1.65 – 1.75 kΩ
at 50°C (122°F) : 0.55 – 0.65 kΩ

HINT:
As the temperature increases, the resistance decreases.

NG → **Replace rear inlet air temperature sensor.**

OK

3	Check harness and connector between rear inlet air temperature sensor and A/C amplifier (See page IN–38).

NG → **Repair or replace harness or connector.**

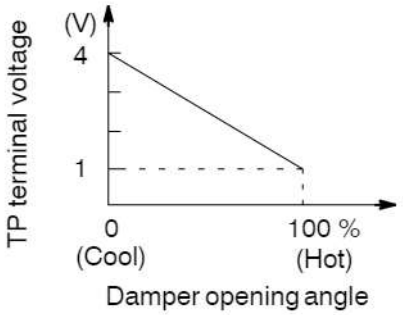
OK

Check and replace rear A/C amplifier.

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DTC	31, 41	Front Air Mix Damper Position Sensor Circuit

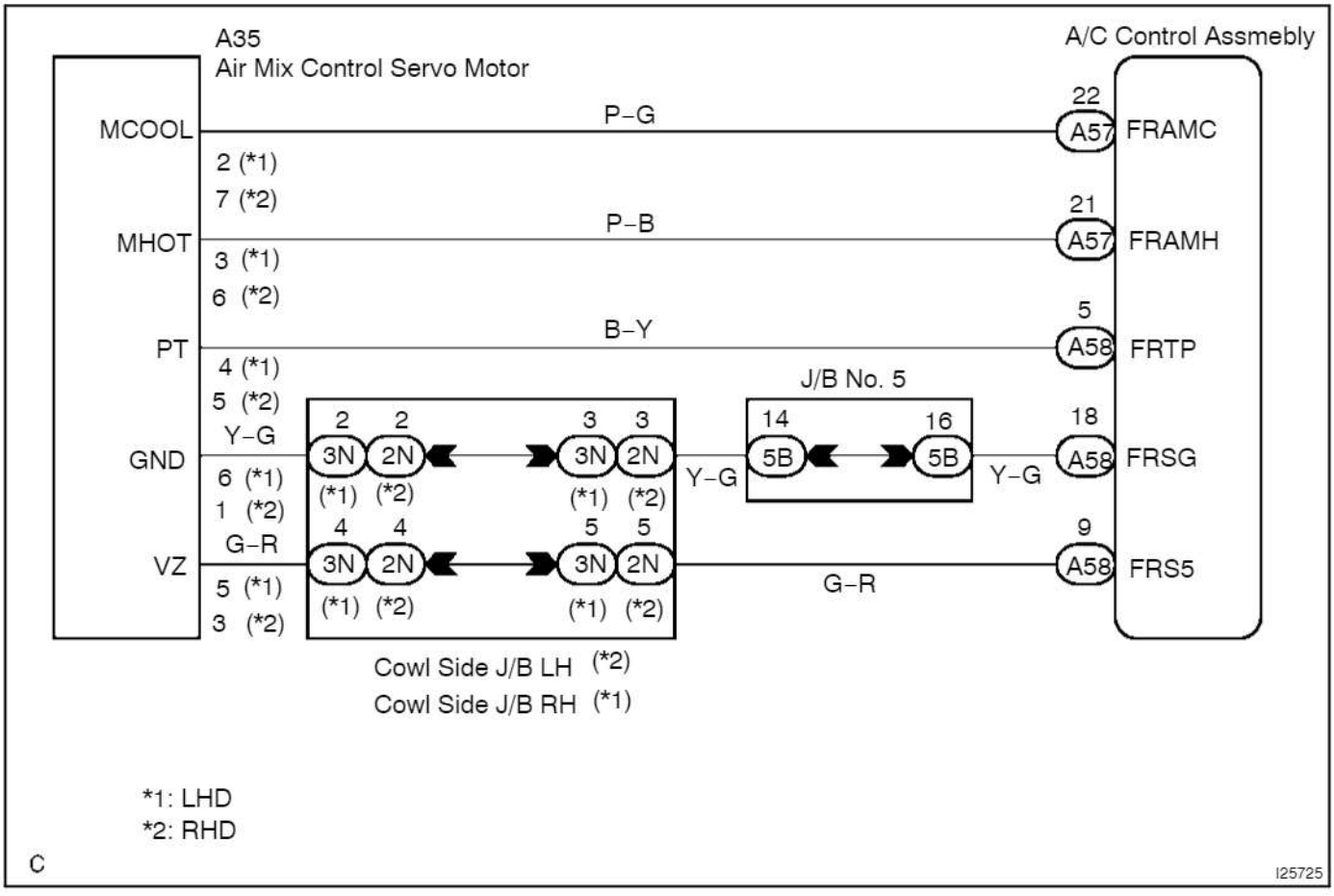
CIRCUIT DESCRIPTION



This sensor detects the position of the front air mix damper and sends the appropriate signals to the A/C amplifier.
The position sensor is built into the front air mix servomotor.

DTC No.	Detection Item	Trouble Area
31	Short to ground or to power source circuit in front air mix damper position sensor circuit	• Front air mix damper position sensor • Harness or connector between front air mix damper position sensor and A/C amplifier • A/C amplifier
41	Front air mix damper position sensor value does not change even if A/C amplifier operates front air mix damper control servomotor	

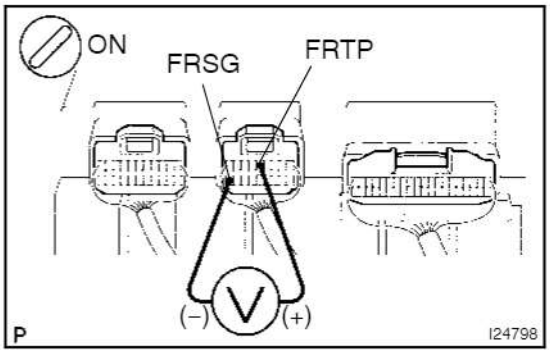
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check voltage between terminals FRTP and FRSG of A/C amplifier connector.



PREPARATION:

Remove A/C amplifier with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Change the set temperature to activate the front air mix servomotor, and measure the voltage between terminals FRTP and FRSG of A/C amplifier connector every time the set temperature is changed.

OK:

Set Temperature	Voltage
Max. cool	3.5 – 4.5 V
Max. hot	0.5 – 1.5 V

HINT:

As the set temperature increases, the voltage decreases.

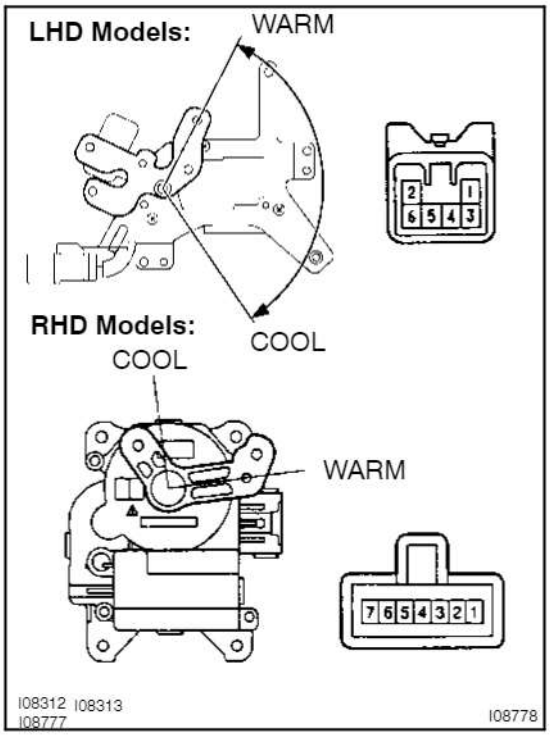
NG → **Go to step 2.**

Ok

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 31 or 41 is displayed, check and replace A/C amplifier.

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2	Check front air mix damper position sensor.



PREPARATION:

Remove front air mix servomotor.

CHECK:

Measure resistance between terminals 4 (5) and 6 (1) of front air mix damper control servomotor connector.

( ): RHD Models

OK:

Resistance : 4.2 – 7.8 kΩ

CHECK:

While operating front air mix servomotor, follow the procedure on page DI–1279 and measure resistance between terminals 4 (5) and 6 (1) of front air mix damper control servomotor connector.

( ): RHD Models

OK:

Position	Resistance
Max. COOL	3.6 – 6.8 kΩ
Max. WARM	0.5 – 1.1 kΩ

HINT:

As the front air mix servomotor moves from cool side to warm side, the resistance decreases.

NG → **Replace front air mix servomotor.**

OK

3	Check harness and connector between front air mix damper position sensor and A/C amplifier (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

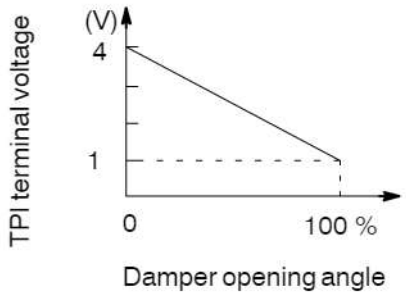
Check and replace A/C amplifier.

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DIAR5–01

DTC	32, 42	Air Inlet Damper Position Sensor Circuit

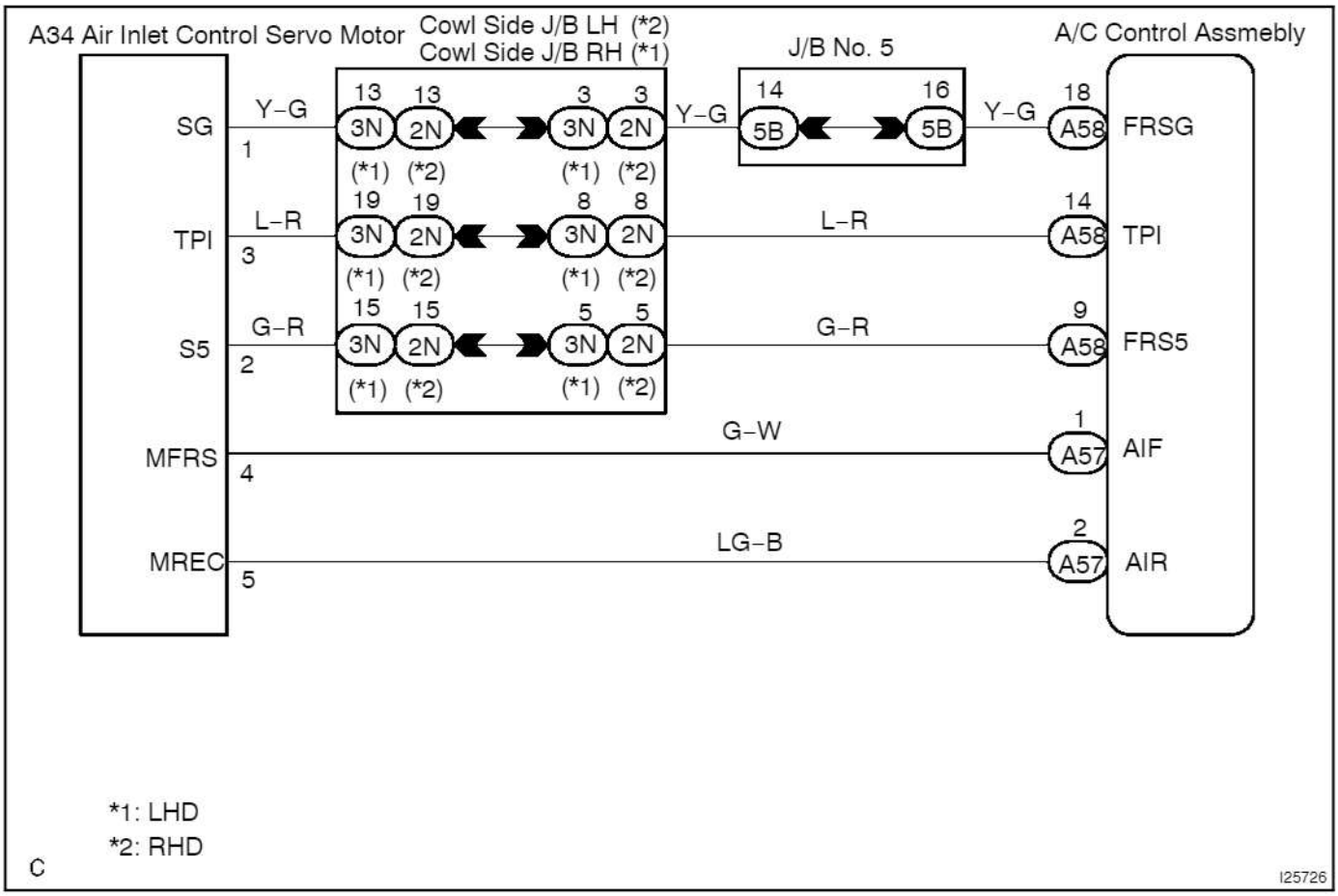
CIRCUIT DESCRIPTION



This sensor detects the position of the air inlet damper and sends the appropriate signals to the A/C amplifier.
The position sensor is built into the air inlet servomotor.

DTC No.	Detection Item	Trouble Area
32	Short to ground or to power source circuit in air inlet damper position sensor circuit	• Air inlet damper position sensor • Harness or connector between air inlet damper positoin sensor and A/C amplifier • A/C amplifier
42	Air inlet damper position sensor value does not change even if A/C amplifier operates air inlet damper control servomotor	

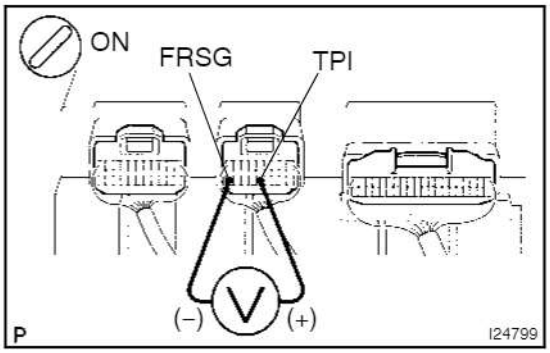
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals TPI and FRSG of A/C amplifier connector.**



PREPARATION:

Remove A/C amplifier with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Press REC/FRS switch to change air inlet between fresh and recirculation air, and measure voltage between terminals TPI and FRSG of A/C amplifier when the air inlet servomotor operates.

OK:

FRS–REC Switch	Voltage
REC	3.5 – 4.5 V
FRS	0.5 – 1.5 V

HINT:

As the air inlet servomotor is moved form REC side to FRS side, the voltage decreases.

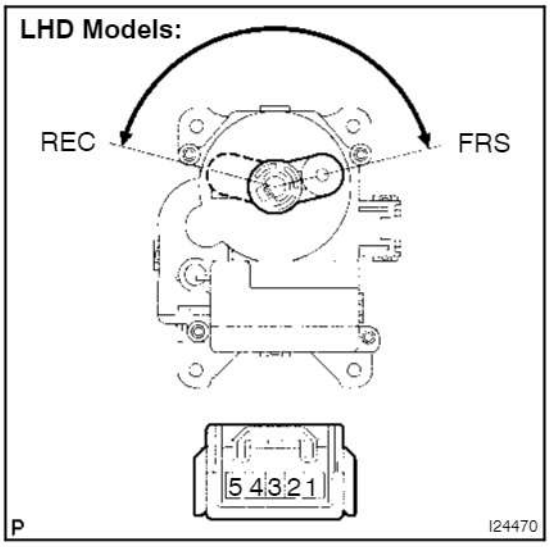
NG → **Go to step 2.**

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 32 or 42 is displayed, check and replace A/C amplifier.

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2	Check air inlet damper position sensor.



PREPARATION:
Remove air inlet servomotor.

CHECK:
Measure resistance between terminals 1 and 3 of air inlet damper control servomotor connector.

OK:

Resistance : 4.2 – 7.8 kΩ

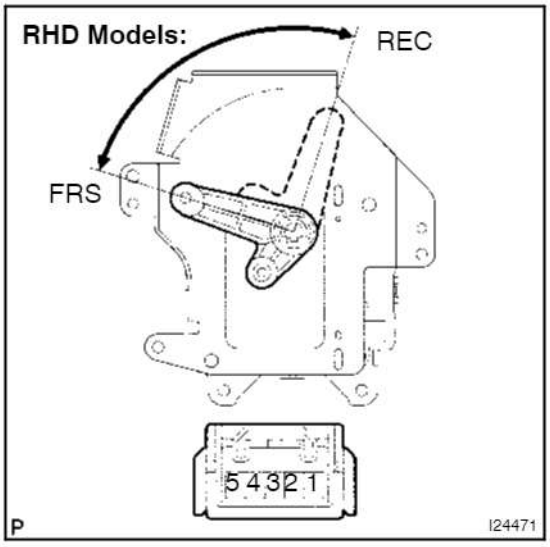
CHECK:
While operating air inlet damper control servomotor, follow the procedure on page DI–1282 and measure resistance between terminals 1 and 3 of air inlet servomotor connector.

OK:

Resistance

Damper Position	Resistance
REC side	3.1 – 5.8 kΩ
FRS side	0.8 – 1.6 kΩ

HINT:
As the air inlet servomotor moves from REC side to FRS side, the resistance decreases.



NG → **Replace air inlet servomotor.**

OK

3	Check harness and connectors between air inlet damper position sensor and A/C amplifier (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

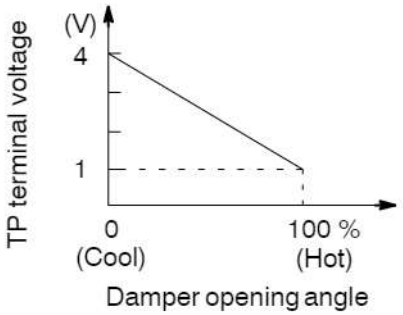
Check and replace A/C amplifier.

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DIAR6-01

DTC	37, 47	Rear Air Mix Damper Position Sensor Circuit

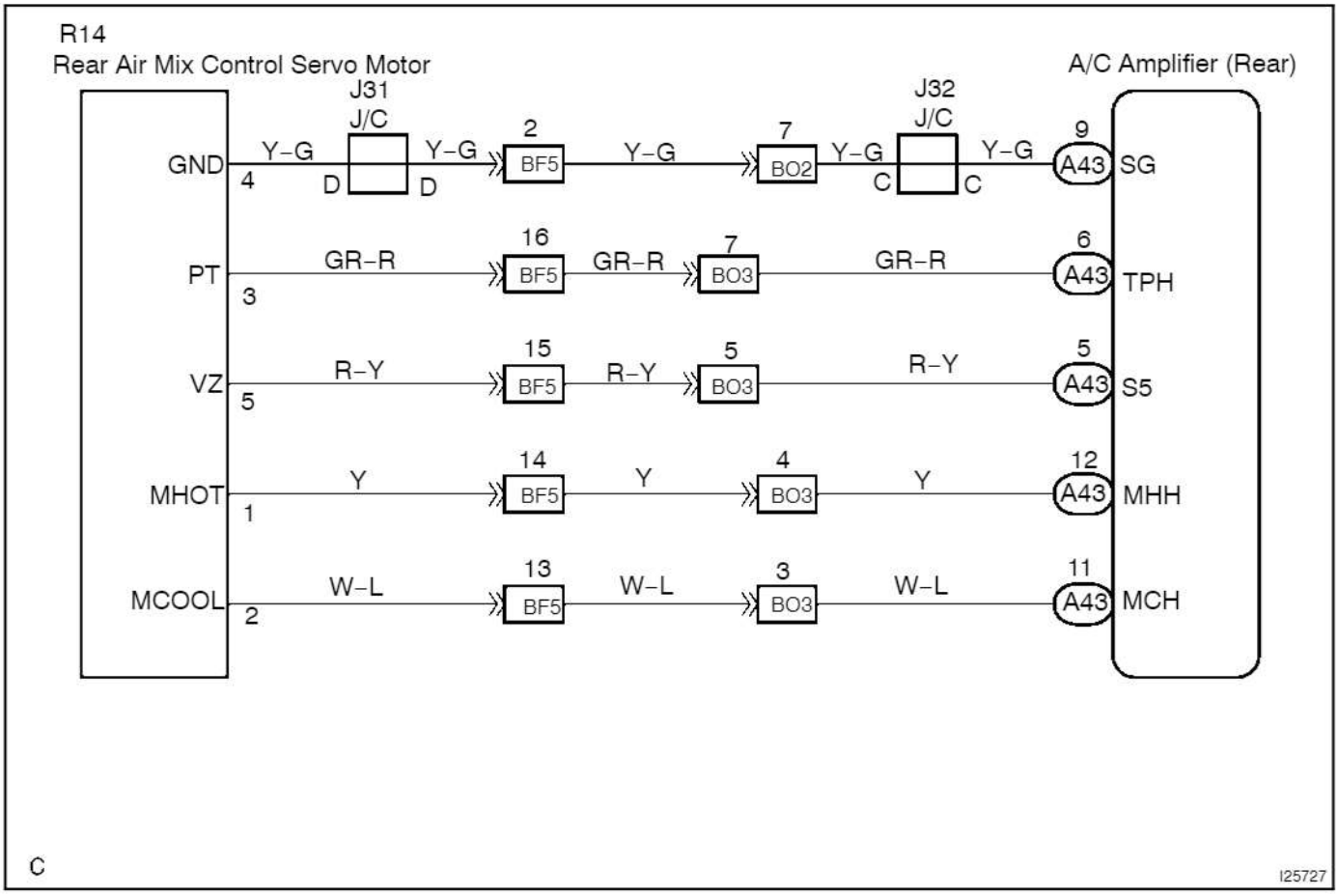
CIRCUIT DESCRIPTION



This sensor detects the position of the rear air mix damper and sends the appropriate signals to the rear A/C amplifier.
The position sensor is built into the rear air mix damper control servomotor.

DTC No.	Detection Item	Trouble Area
37	Short to ground or to power source circuit in rear air mix damper position sensor circuit	• Rear air mix damper position sensor • Harness or connector between rear air mix damper position sensor and rear A/C amplifier • Rear A/C amplifier
47	Rear air mix damper position sensor value does not change even if rear A/C amplifier operates rear air mix damper control servomotor	

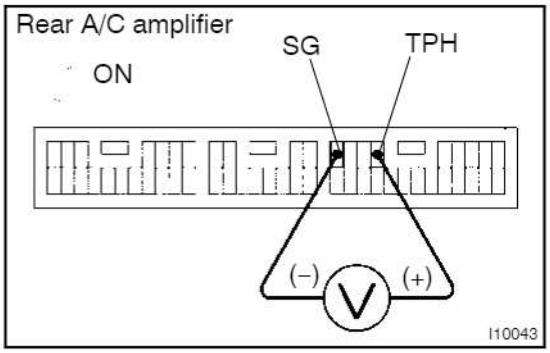
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminals TPH and SG of rear A/C amplifier.**



PREPARATION:

Remove rear A/C amplifier with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Change the set temperature to activate the rear air mix servomotor, and measure the voltage between terminals TPH and SG of rear A/C amplifier connector each time when the set temperature is changed.

OK:

Set Temperature	Voltage
Max. cool	3.5 – 4.5 V
Max. hot	0.5 – 1.5 V

HINT:

As the set temperature increases, the voltage decreases.

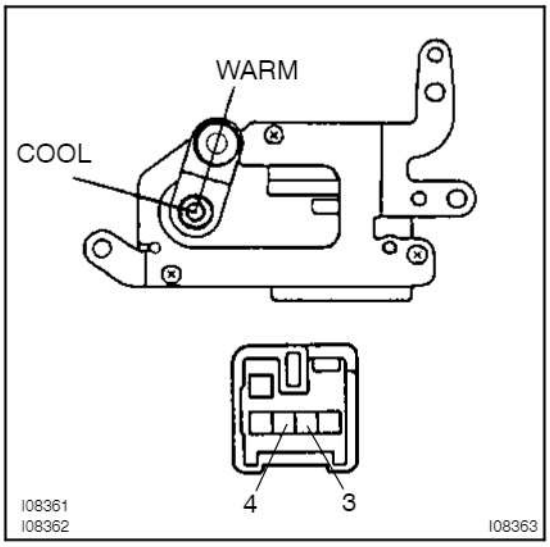
NG → **Go to step 2.**

Ok

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238). However, if DTC 37 or 47 is displayed, check and replace rear A/C amplifier.

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2	Check rear air mix damper position sensor.



PREPARATION:
Remove rear air mix servomotor.
CHECK:
Measure resistance between terminals 3 and 4 of rear air mix damper control servomotor connector.
OK:

Resistance : 4.2 – 7.8 kΩ

CHECK:
While operating rear air mix damper control servomotor, follow the procedure on page DI–1285 and measure resistance between terminals 3 and 4 of rear air mix servomotor connector.
OK:

Position	Resistance
Max. COOL	3.6 – 6.8 kΩ
Max. WARM	0.5 – 1.1 kΩ

HINT:
As the rear air mix servomotor moves from cool side to warm side, the resistance decreases.

NG → **Replace rear air mix servomotor assembly.**

OK ↓

3	Check harness and connector between rear air mix damper position sensor and rear A/C amplifier (See page IN–38).

NG → **Repair or replace harness or connector.**

OK ↓

Check and replace A/C amplifier.

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DIAR7–01

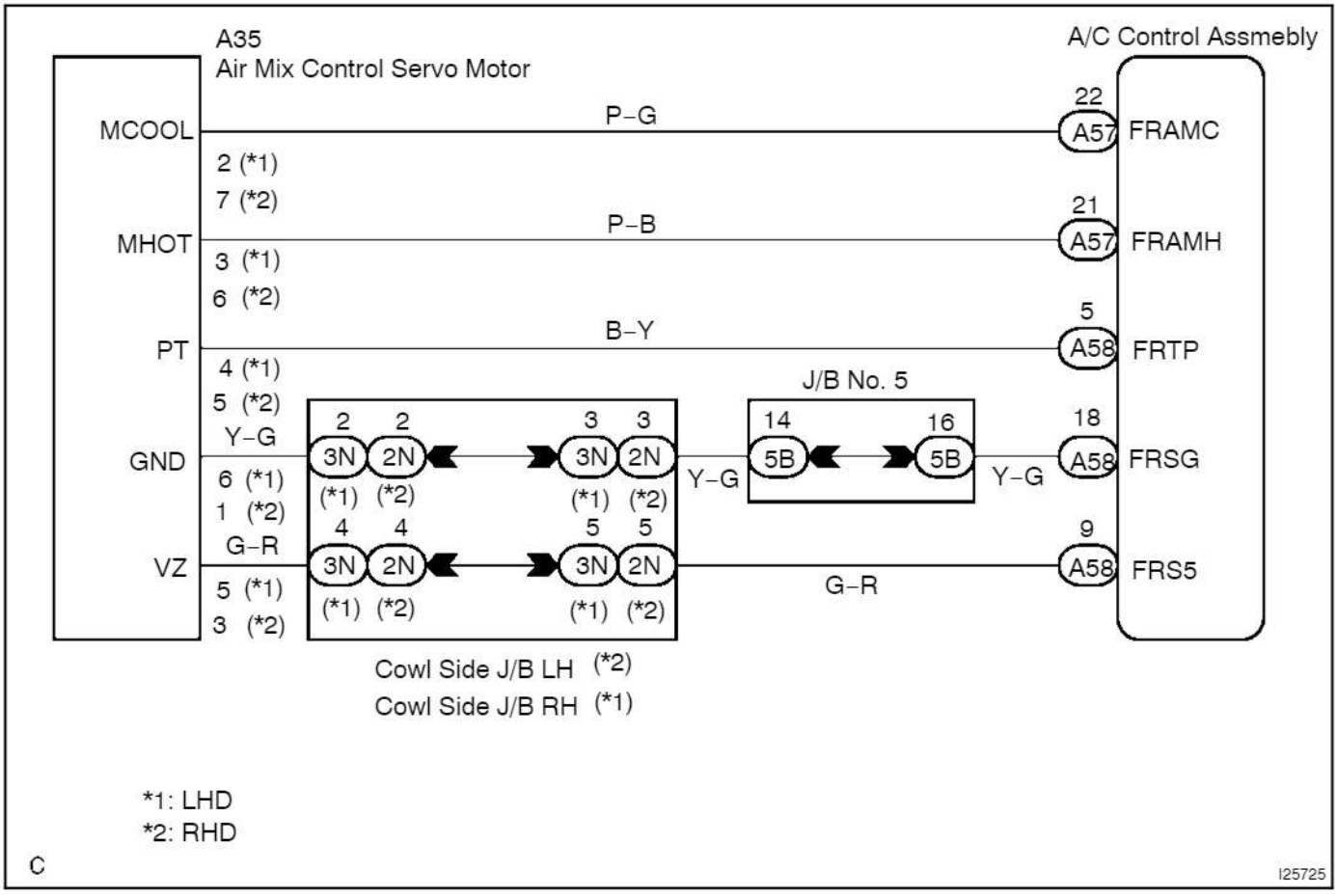
DTC	41	Front Air Mix Damper Control Servomotor Circuit

CIRCUIT DESCRIPTION

The front air mix damper control servomotor is controlled by the A/C amplifier and moves the air mix damper to the desired position.

DTC No.	Detection Item	Trouble Area
41	Air mix damper position sensor value does not change even if A/C control assembly operates air mix damper control servomotor.	• Front air mix damper control servomotor. • Harness or connector between front air mix damper control servomotor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Actuator check.**

PREPARATION:

(a) Warm up the engine.

(b) Set to actuator check mode (See page DI–1226).

(c) Press the DEF switch and change it to step operation.

CHECK:

Press the DEF switch and check the operation of the air mix damper and the condition of the blower.

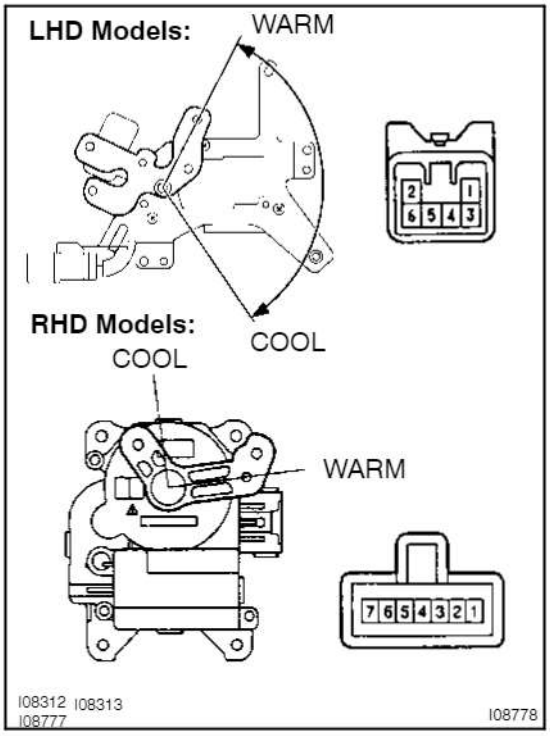
OK:

Display Code	Air Mix Damper	Condition
0 – 2	0 % (Fully closed)	Cool air comes out
3 – 4	50 %	
5 – 7	100 % (Full opened)	Warm air comes out

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238).**

NG

2	**Check front air mix damper control servomotor.**



PREPARATION:

Remove front air mix servomotor.

CHECK:

Connect positive (+) lead to terminal 3 (6) and negative (–) lead to terminal 2 (7).

( ): RHD Models

OK:

The lever turns smoothly to WARM side.

CHECK:

Connect positive (+) lead to terminal 2 (7) and negative (–) lead to terminal 3 (6).

( ): RHD Models

OK:

The lever turns smoothly to COOL side.

NG → **Replace front air mix damper control servomotor assembly.**

OK

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3	**Check harness and connector between front air mix damper control servomotor and A/C amplifier (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C amplifier.

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DIAR8–01

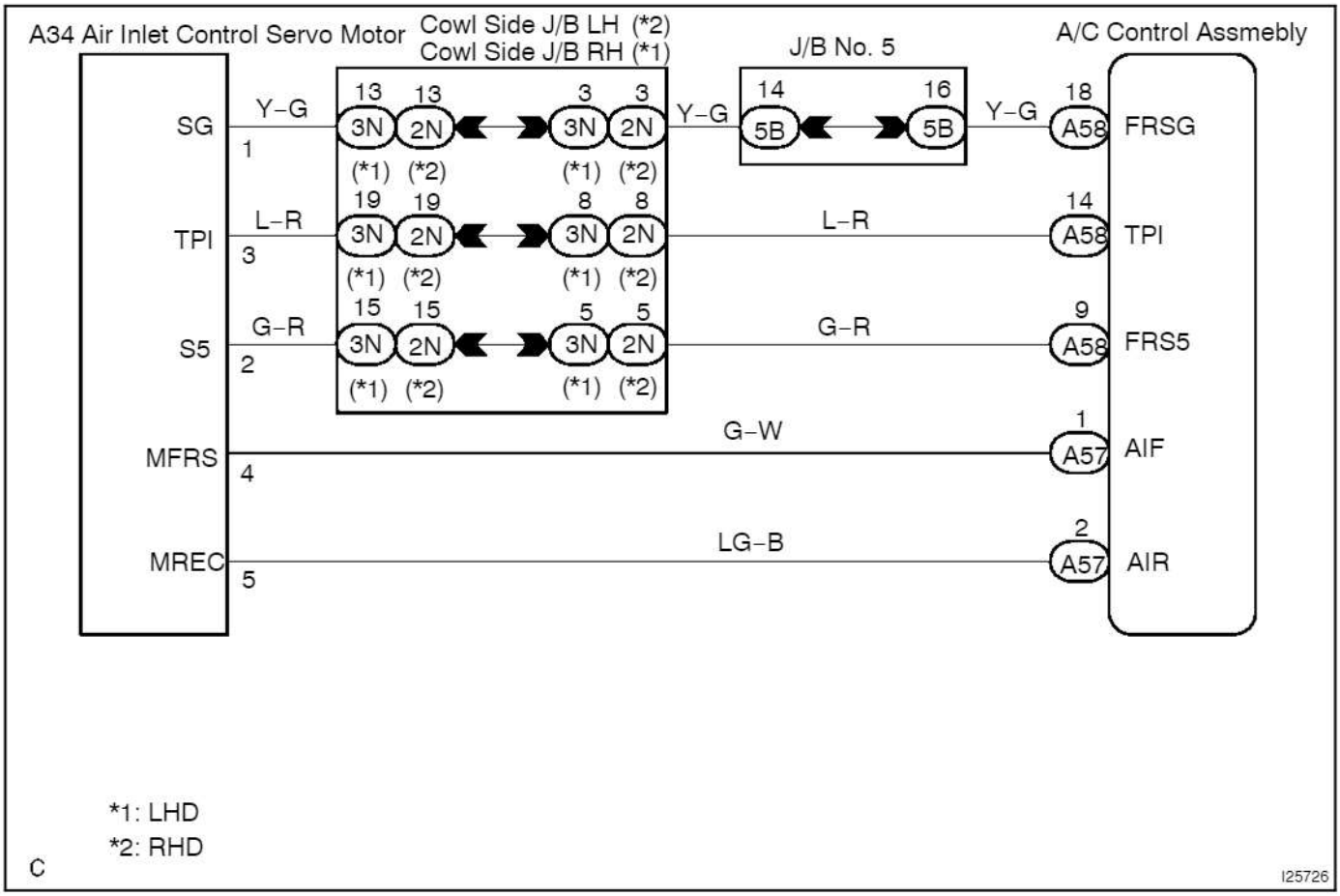
DTC	42	Air Inlet Damper Control Servomotor Circuit

CIRCUIT DESCRIPTION

The air inlet damper control servomotor is controlled by the A/C amplifier and moves the air inlet damper to the desired position.

DTC No.	Detection item	Trouble Area
42	Air inlet damper position sensor value does not change even if A/C amplifier operated air inlet damper control servomotor	• Air inlet damper control servomotor • Harness or connector between air inlet damper control servomotor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Actuator check.**

PREPARATION:

(a) Warm up the engine.

(b) Set to actuator check mode (See page DI–1226).

(c) Press the DEF switch and change it to step operation.

CHECK:

Press the DEF switch and check the operation of the air inlet damper and the condition of the blower.

OK:

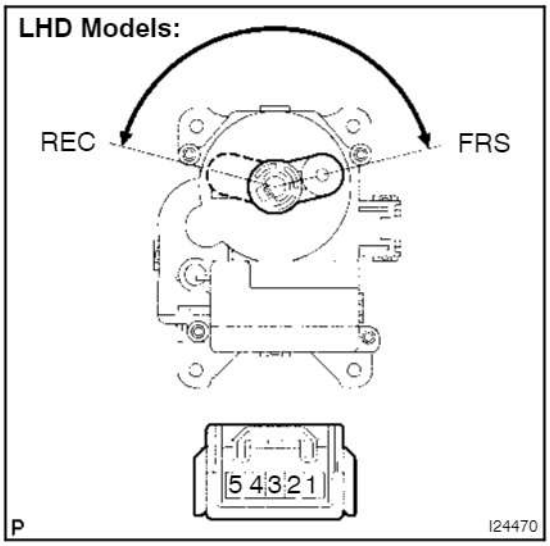
Display Code	Air Inlet Damper
0 – 1	FRESH
2	R/F (50%)
3	RECIRC
4 – 7	FRESH

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238).**

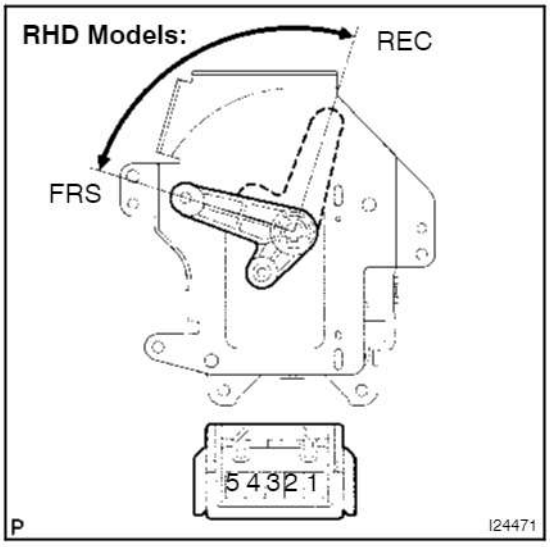
NG

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2	Check air inlet damper control servomotor.



PREPARATION:
Remove the air inlet servomotor.
CHECK:
Connect positive (+) lead to terminal 5 and negative (–) lead to terminal 4.
OK:
The lever moves smoothly to REC position.
CHECK:
Connect positive (+) lead to terminal 4 and negative (–) lead to terminal 5.
OK:
The lever moves smoothly to FRS position.



NG → **Replace air inlet servomotor.**

OK

3	Check harness and connector between air inlet damper control servomotor and A/C amplifier (See page IN–38).

NG → **Repair or replace harness or connector.**

OK

Check and replace A/C amplifier.

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DIAR9–01

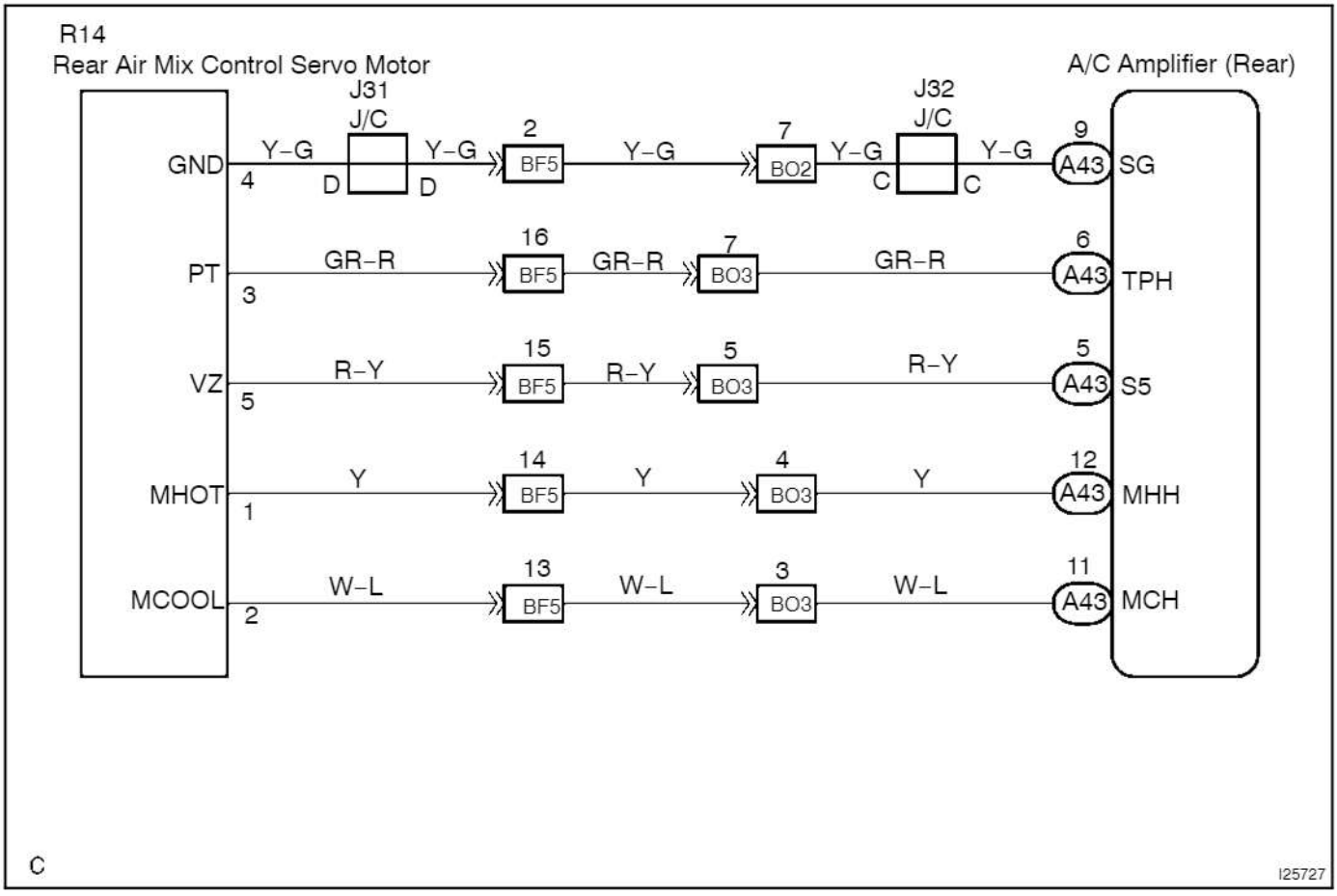
DTC	47	Rear Air Mix Damper Control Servomotor Circuit

CIRCUIT DESCRIPTION

The rear air mix damper control servomotor is controlled by the A/C amplifier and moves the air mix damper to the desired position.

DTC No.	Detection Item	Trouble Area
47	Air mix damper position sensor value does not change even if A/C control assembly operates air mix damper control servomotor	• Rear air mix damper control servomotor • Harness or connector between rear air mix damper control servomotor and rear A/C amplifier • Rear A/C amplifier

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Actuator check.**

PREPARATION:

(a) Warm up the engine.

(b) Set to actuator check mode (See page DI–1226).

(c) Press the DEF switch and change it to step operation.

CHECK:

Press the DEF switch and check the operation of the air mix damper and the condition of the blower.

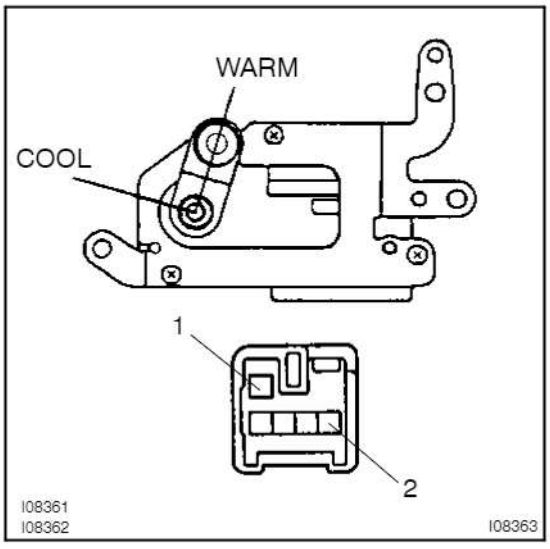
OK:

Display Code	Air Mix Damper	Condition
0 – 2	0 % (Fully closed)	Cool air comes out
3 – 4	50 %	
5 – 7	100 % (Full opened)	Warm air comes out

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238).**

NG

2	**Check rear air mix damper control servomotor.**



PREPARATION:

Remove the rear air mix servomotor.

CHECK:

Connect positive (+) lead to terminal 1 and negative (–) lead to terminal 2.

OK:

The lever turns smoothly to WARM side.

CHECK:

Connect positive (+) lead to terminal 2 and negative (–) lead to terminal 1.

OK:

The lever turns smoothly to COOL side.

NG → **Replace rear air mix servomotor.**

OK

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3	**Check harness and connector between rear air mix damper control servomotor and rear A/C amplifier (See page IN–38).**

NG → **Repair or replace harness or connector.**

OK

Check and replace rear A/C amplifier.

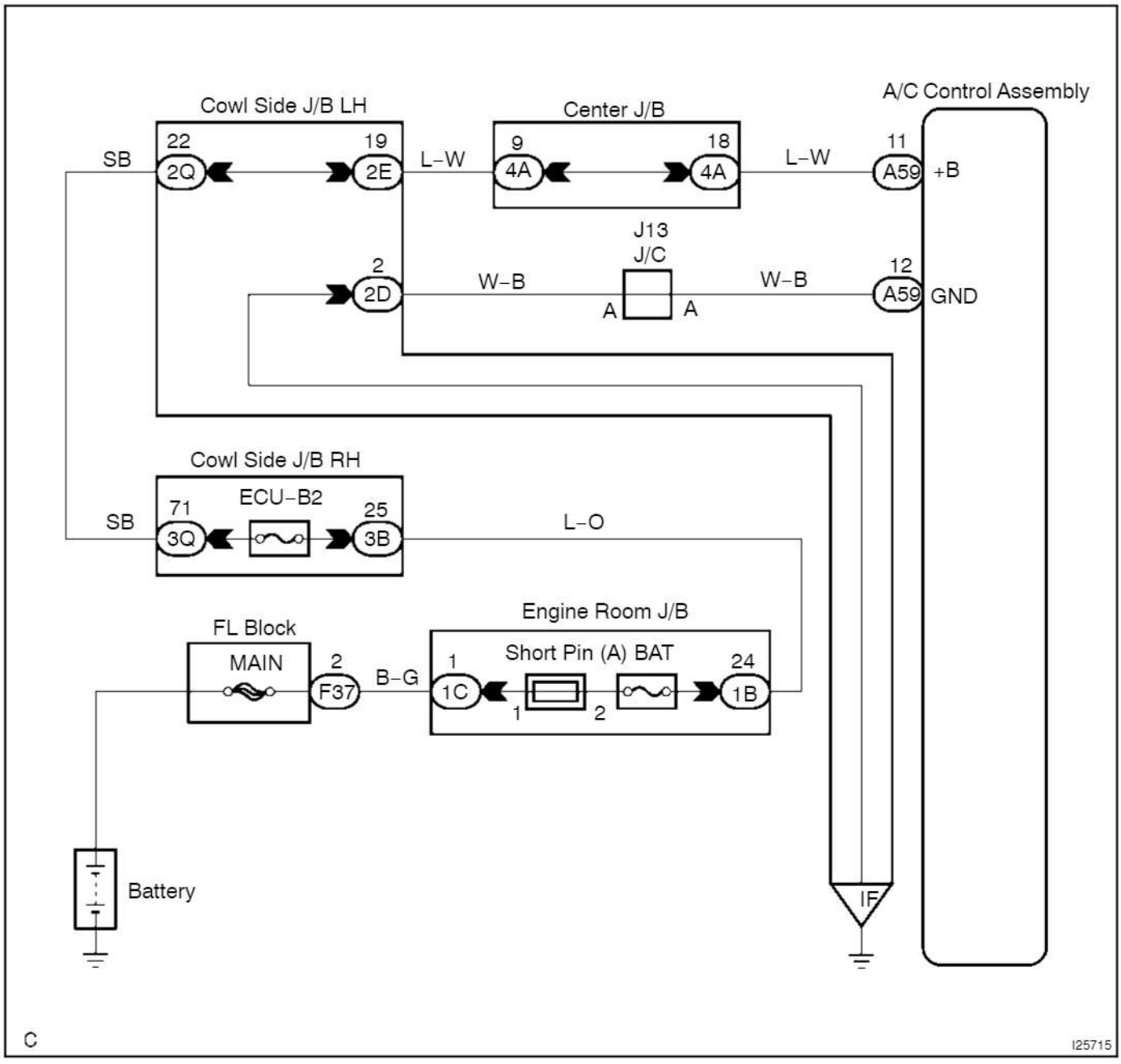
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Back Up Power Source Circuit

CIRCUIT DESCRIPTION

This is the back–up power source for the A/C amplifier. Power is supplied even when the ignition switch is off and is used for diagnostic trouble code memory, etc.

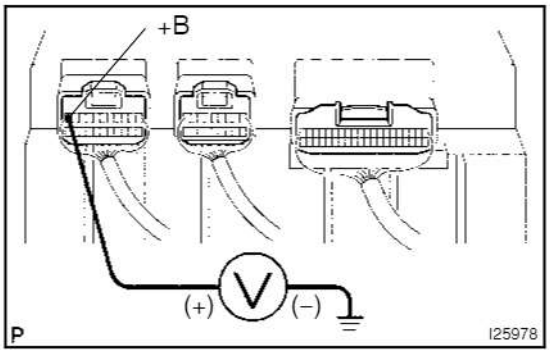
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminal +B of A/C amplifier and body ground.**



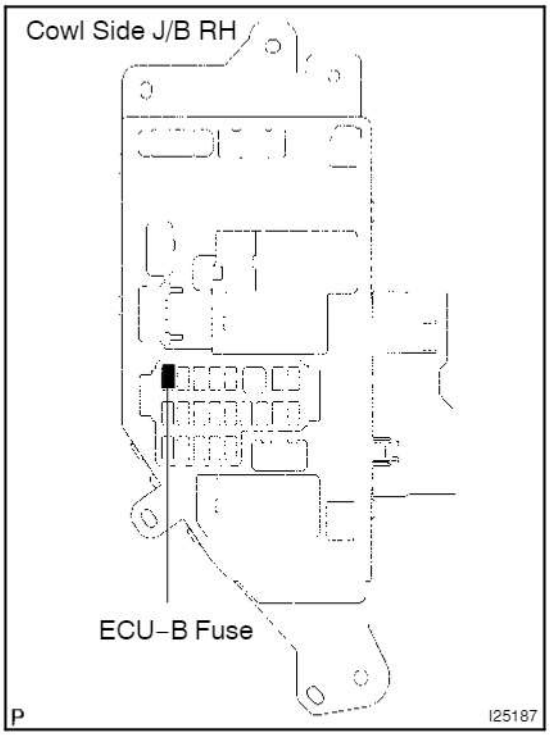
PREPARATION:
Remove the A/C amplifier with connector still connected.
CHECK:
Measure voltage between terminal +B of A/C amplifier connector and body ground.
OK:
Voltage : Battery positive voltage

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238).**

NG

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2	**Check ECU–B2 fuse.**



PREPARATION:
Remove ECU–B2 fuse from cowl side J/B RH.
CHECK:
Check continuity of ECU–B2 fuse.
OK:
Continuity

NG → **Check for short in all the harness and components connected to the ECU–B2 fuse (See attached wiring diagram).**

OK →

Check and repair harness and connector between A/C amplifier and battery.

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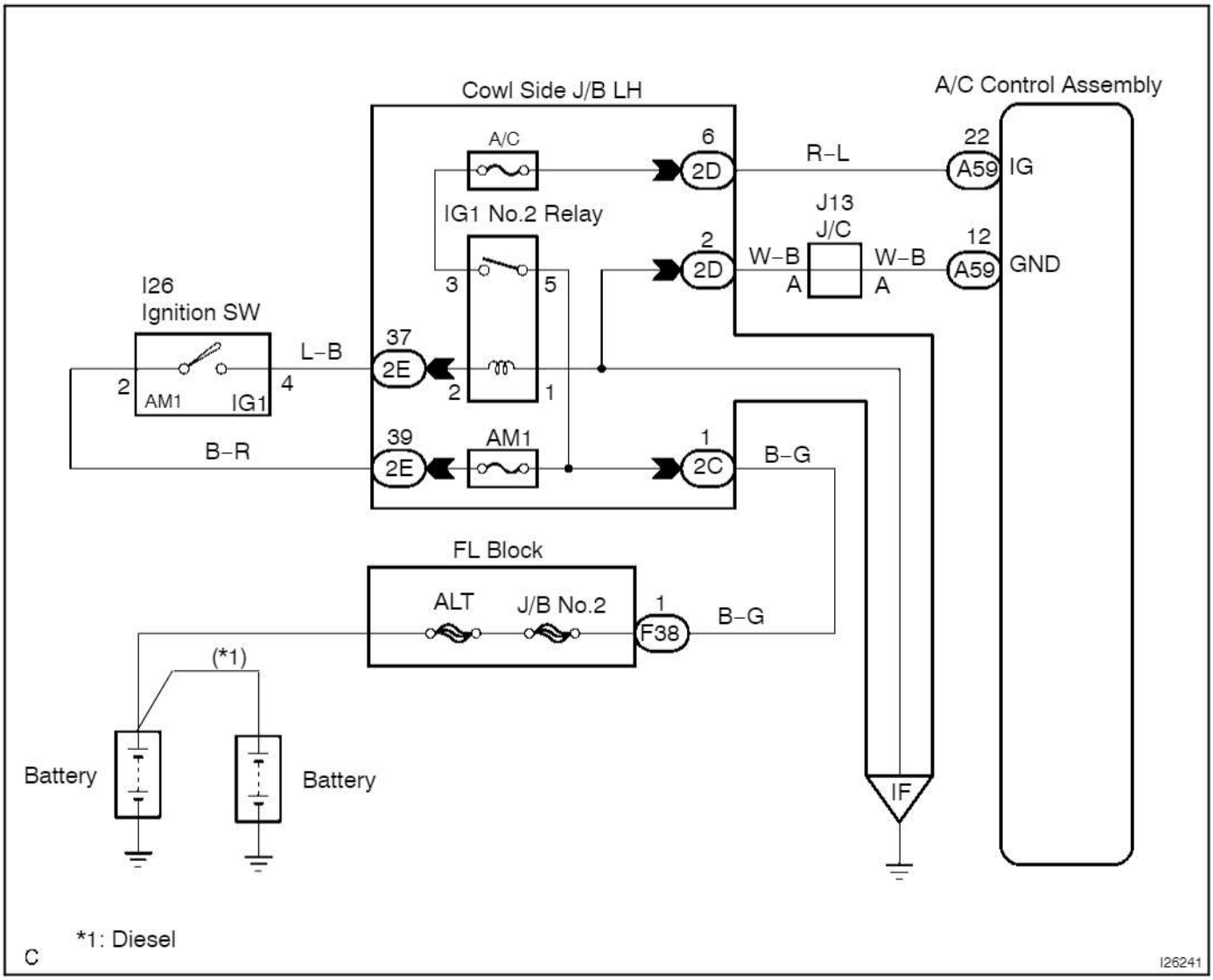
DIAR4–01

IG Power Source Circuit

CIRCUIT DESCRIPTION

This is the power source for A/C amplifier and servomotors, etc.

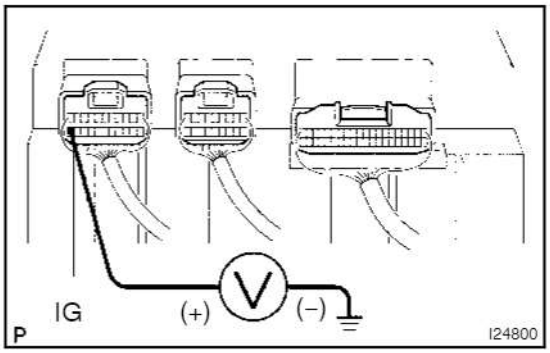
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check voltage between terminals IG and GND of A/C amplifier.

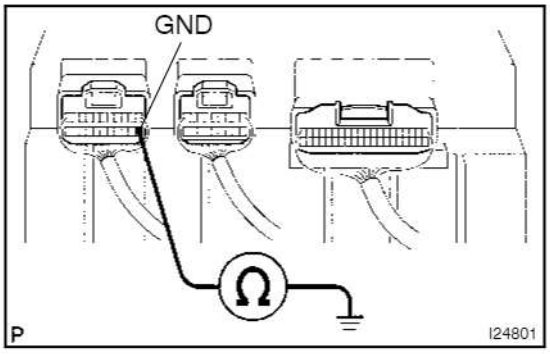


PREPARATION:
Remove A/C amplifier with connectors still connected.
CHECK:
(a) Turn ignition switch to ON.
(b) Measure voltage between terminals IG and GND of A/C amplifier.
OK:
Voltage : Battery positive voltage

OK	Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238).

NG

2	Check continuity between terminal GND of A/C amplifier and body ground.



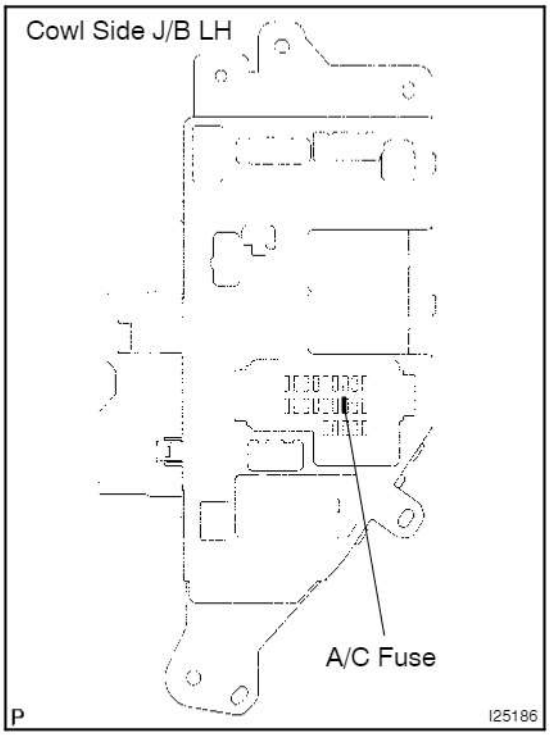
CHECK:
Measure resistance between terminal GND of A/C amplifier and body ground.
OK:
Resistance : 0 Ω (continuity)

NG	Repair or replace harness or connector.

OK

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3	Check A/C fuse.



PREPARATION:
Remove A/C fuse from cowl side J/B LH.
CHECK:
Check continuity of A/C fuse.
OK:

Continuity

NG → **Check for short in all the harness and components connected to the A/C fuse (See attached wiring diagram).**

OK →

Check and repair harness and connector between A/C amplifier and battery.

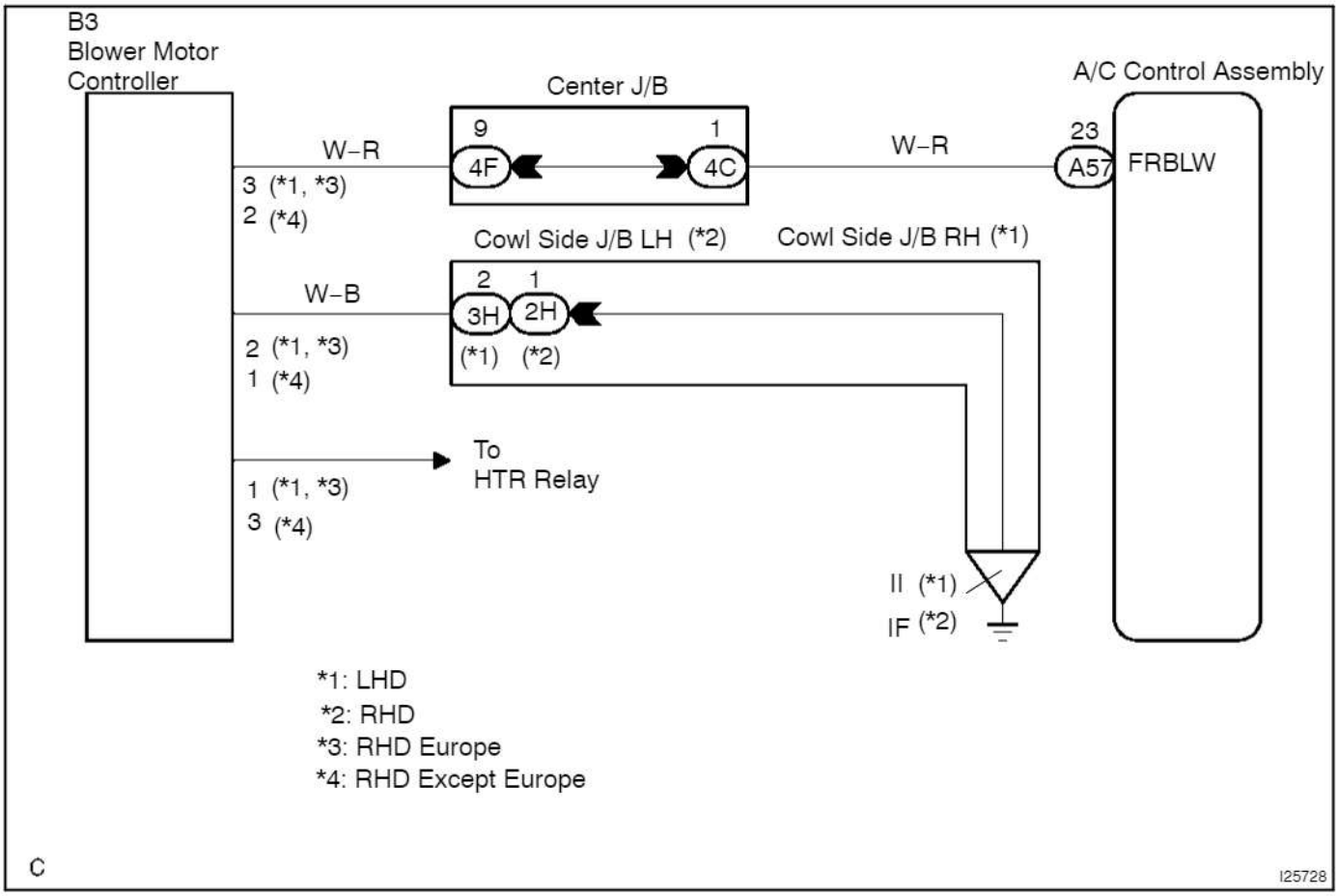
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Blower Motor Circuit

CIRCUIT DESCRIPTION

This is the power source for the blower motor.

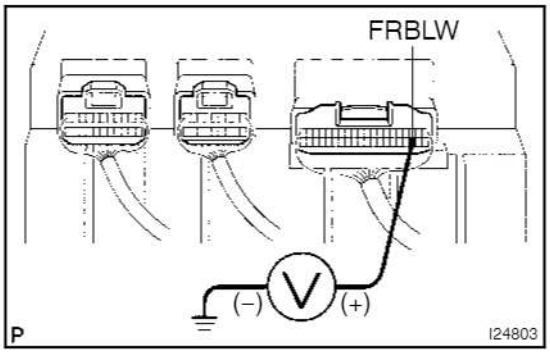
WIRING DIAGRAM



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INSPECTION PROCEDURE

1	**Check voltage between terminal FRBLW of A/C amplifier and body ground.**

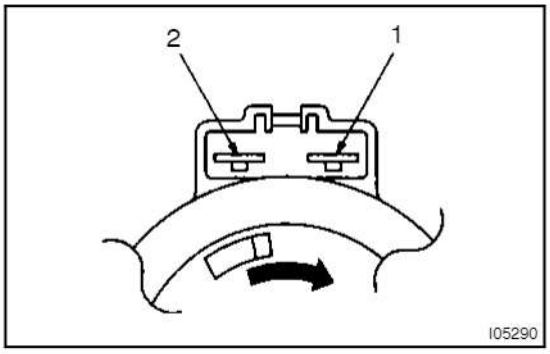


PREPARATION:
Remove the A/C amplifier with connector still connected.
CHECK:
(a) Turn ignition switch to ON.
(b) Operate blower motor.
(c) Measure voltage between terminal FRBLW of A/C amplifier and body ground.
OK:
Voltage : Battery voltage

OK	**Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238).**

NG

2	**Check blower motor.**



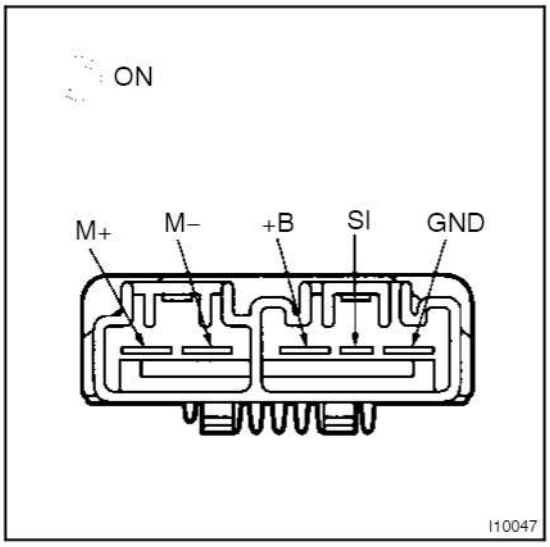
PREPARATION:
Remove blower motor.
CHECK:
Connect the positive (+) lead from the battery to terminal 2 of blower motor connector and the negative (–) lead to terminal 1.
OK:
Blower motor operates smoothly.

NG	**Replace blower motor.**

OK

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3	Check blower motor controller.



PREPARATION:

Remove blower motor controller with connectors still connected.

CHECK:

(a) Turn ignition switch to ON.

(b) Operate blower motor (High blower speed).

OK:

Terminals	Standard Value
GND ↔ Body Ground	Continuity
+B ↔ Body Ground	Battery Positive Voltage
+M ↔ Body Ground	Battery Positive Voltage
M+ ↔ M–	Battery Positive Voltage
SI ↔ Body Ground	1 – 3 V

NG → **Replace blower motor controller.**

OK →

Repair or replace harness or connector.

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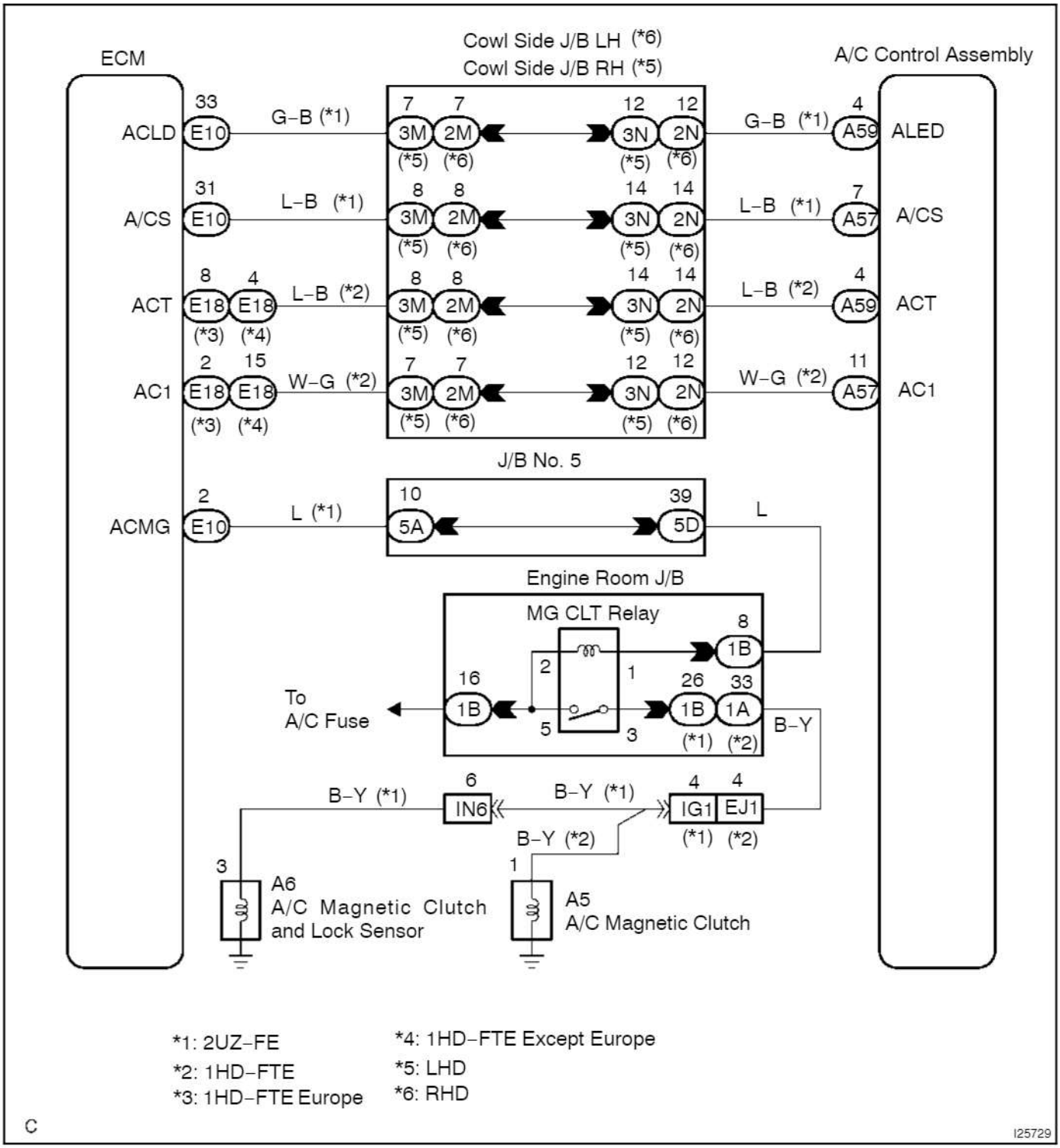
DIAR8–01

Compressor Circuit

CIRCUIT DESCRIPTION

The A/C amplifier outputs the magnetic clutch ON signal from terminal AC1, AC/S to the engine (and ECT) ECU. When the engine (and ECT) ECU receives this signal, it sends a signal from terminal ACMG and switches the A/C magnetic clutch relay ON, thus turning on the A/C magnetic clutch.

WIRING DIAGRAM



*1: 2UZ–FE
*2: 1HD–FTE
*3: 1HD–FTE Europe
*4: 1HD–FTE Except Europe
*5: LHD
*6: RHD

C

I25729

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INSPECTION PROCEDURE

HINT:
In case of using the hand–held tester, start the inspection from step 1 and in case of not using the hand–held tester start step 2.

1	**Read value of hand–held tester.**

PREPARATION:
(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main SW ON.

CHECK:
Select the item "A/C SIG" in the DATA LIST and read its value displayed on the hand–held tester.

OK:

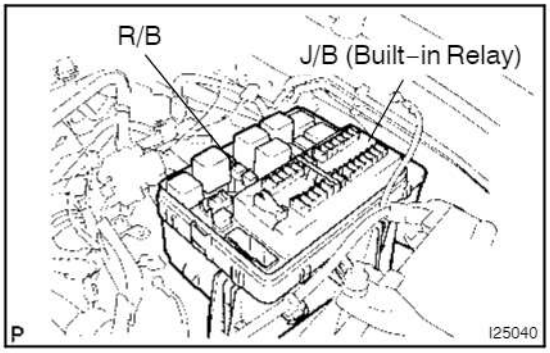
Item	Measurement Item/ Display (Range)	Normal condition	Diagnostic code
A/C SIG	A/C SW Status/ ON or OFF	• A/C SW Push: ON • A/C SW Release: OFF	←

HINT:
Check with the engine running.

NG → **Go to step 6.**

OK

2	**Check magnetic clutch relay.**



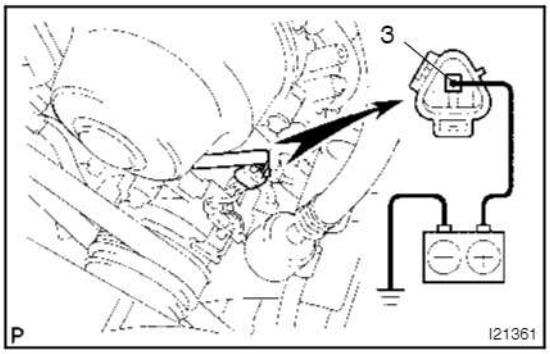
CHECK:
Check the magnetic clutch relay (See page AC–20).
HINT:
The magnetic clutch relay is built in the engine room J/B. Also the relay is constructed with a R/B that is in the J/B as unit. To disconnect the wireharness connecting with R/B is impossible. If the relay has a malfunction, replace it with J/B assembly wireharness together.

NG → **Replace engine room J/B.**

OK

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3	Check A/C magnetic clutch.



PREPARATION:
Disconnect magnetic clutch connector.
CHECK:
Connect positive (+) lead connected to battery to magnetic clutch connector terminal 3.
OK:
Magnetic clutch is energized.

NG → **Repair A/C magnetic clutch.**

OK

In case of using hand–held tester (Go to step 4)
In case of not using hand–held tester (Go to step 5)

4	Read value of hand–held tester.

PREPARATION:
(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON and push the hand–held tester main SW ON.
CHECK:
Select the item "A/C MAG CLUTCH" in the DATA LIST and read its value displayed on the hand–held tester.
OK:

Item	Measurement Item/ Display (Range)	Normal condition	Diagnostic Note
A/C MAG CLUTCH	A/C magnet clutch Status/ ON or OFF	• A/C SW Push: ON • A/C SW Release: OFF	←

HINT:
Check with the engine running.

NG → **Repair or replace harness or connector.**

OK

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5	Check harness and connector between magnetic clutch and battery (See page IN–38).

NG → Repair or replace harness or connector.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page DI–1238).

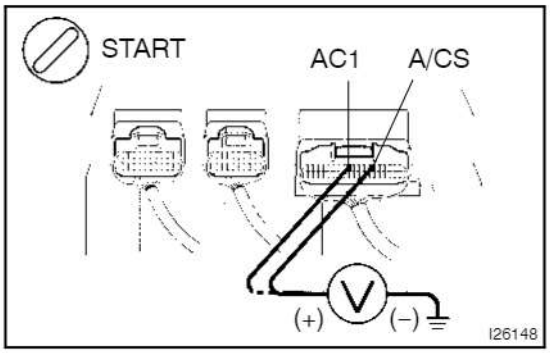
6	Check harness and connector between A/C amplifier and engine (and ECT) ECU (See page IN–38).

NG → Repair or replace harness or connector.

OK

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7	**Check voltage between terminal AC1 *1, A/CS *2 of A/C amplifier connector and body ground.**



PREPARATION:

(a) Remove A/C amplifier with connector still connected.

(b) Start the engine and push AUTO switch.

CHECK:

Check the voltage between terminal AC1 *1, A/CS *2 of A/C amplifier connector and body ground when magnetic clutch is ON and OFF by A/C switch.

*1: Except 2UZ–FE

*2: 2UZ–FE

OK:

Switch operation	Tester connection	Specified condition
ON	AC1 – Body ground	1.3 – 2.6 V
OFF	AC1 – Body ground	3.7 – 4.5 V
ON	A/CS – Body ground	10 – 14 V
OFF	A/CS – Body ground	Below 1.0 V

NG → **Check and replace A/C amplifier.**

OK

Repair or replace harness or connector.

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AUTOMATIC TRANSMISSION SYSTEM

PRECAUTION

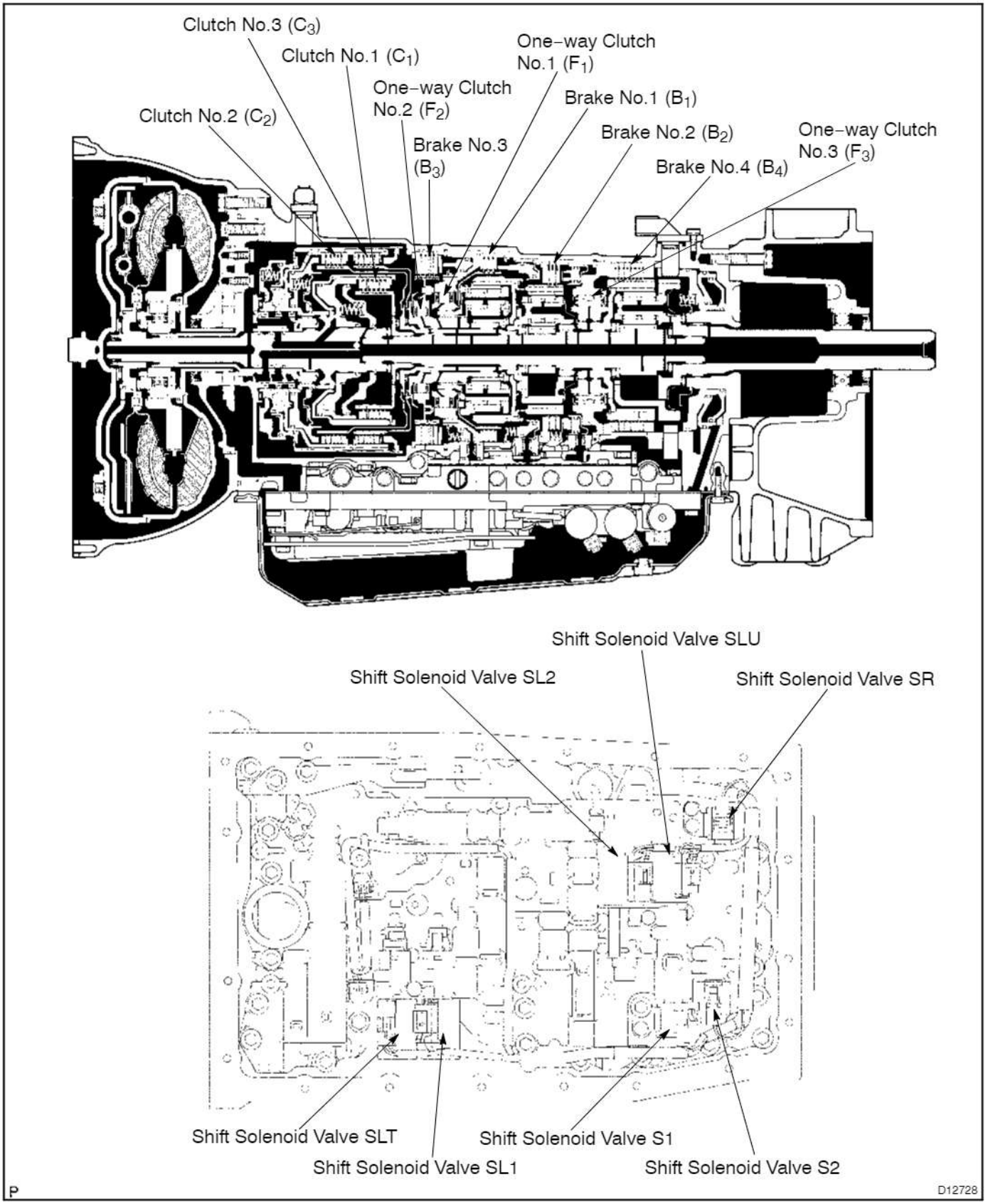
AT09B-02

If the vehicle is equipped with a mobile communication system, refer to the precautions in the IN section.

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AT09C–02

OPERATION



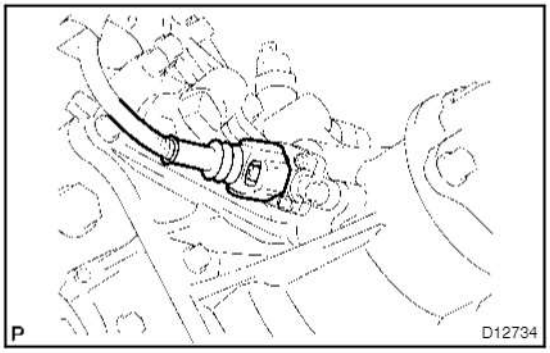
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Shift Lever Range	Gear Position	S1	S2	SR	SL1	SL2	SLU	C_1	C_2	C_3	B_1	B_2	B_3	B_4	F_1	F_2	F_3
P	Park	○	×	×	×	○	×	×	×	×	×	×	×	×	×	×	×
R	Reverse	○	×	×	×	○	×	×	×	○	○	×	×	○	○	×	×
N	Neutral	○	×	×	×	○	×	×	×	×	×	×	×	×	×	×	×
D	1st	○	×	×	×	○	×	○	×	×	×	×	×	×	×	×	○
	2nd	○	○	×	×	○	×	○	×	×	×	×	○	×	○	○	×
	3rd	×	○	×	×	○	×	○	×	○	×	×	○	×	○	×	×
	4th	×	×	×	×	○	○	○	○	○	×	×	○	×	×	×	×
	5th	×	×	○	○	×	○	×	○	○	○	×	○	×	×	×	×
4	1st	○	×	×	×	○	×	○	×	×	×	×	×	×	×	×	○
	2nd	○	○	×	×	○	×	○	×	×	×	×	○	×	○	○	×
	3rd	×	○	×	×	○	×	○	×	○	×	×	○	×	○	×	×
	4th	×	×	×	×	○	○	○	○	○	×	×	○	×	×	×	×
3	1st	○	×	×	×	○	×	○	×	×	×	×	×	×	×	×	○
	2nd	○	○	×	×	○	×	○	×	×	×	×	○	×	○	○	×
	3rd	×	○	×	×	×	×	○	×	○	○	×	○	×	○	×	×
2	1st	○	×	×	×	○	×	○	×	×	×	×	×	×	×	×	○
	2nd	○	○	○	×	×	×	○	×	×	×	○	○	×	○	○	×
L	1st	○	×	×	×	×	×	○	×	×	×	×	×	○	×	×	○

○ : Operating

F1, F2, F3 : Operate only when driving

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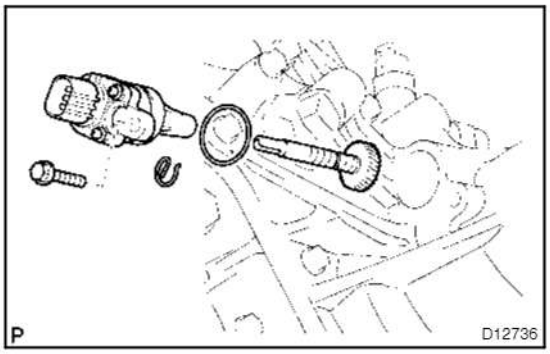


VEHICLE SPEED SENSOR

AT09E-02

ON–VEHICLE REPAIR

1. DISCONNECT NO. 1 VEHICLE SPEED SENSOR CONNECTOR



2. REMOVE NO. 1 VEHICLE SPEED SENSOR

Remove the bolt and the No. 1 vehicle speed sensor.

3. DISASSEMBLE NO. 1 VEHICLE SPEED SENSOR

(a) Remove the O–ring from the speedometer driven gear assembly.

(b) Remove the clip and speedometer driven gear from the speedometer driven gear sleeve.

4. ASSEMBLE NO. 1 VEHICLE SPEED SENSOR

(a) Install the speedometer driven gear and clip to the speedometer driven gear sleeve.

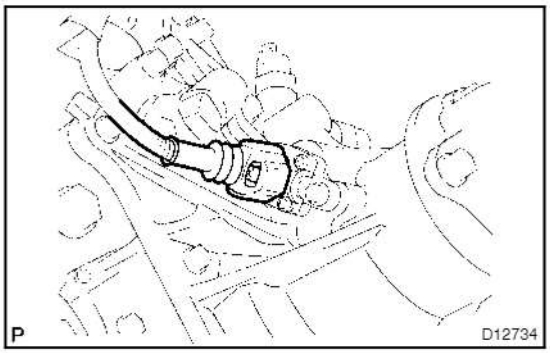
(b) Coat a new O–ring with ATF.

(c) Install the O–ring to the speedometer driven gear assembly.

5. INSTALL NO. 1 VEHICLE SPEED SENSOR

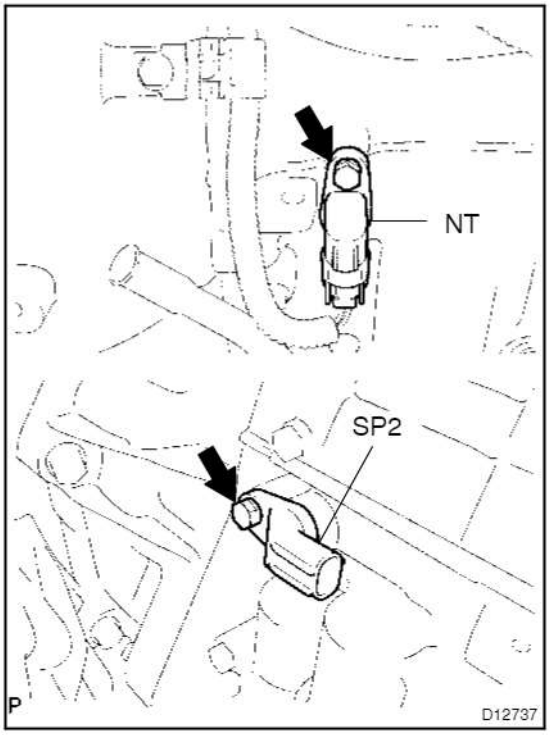
Install the No. 1 vehicle speed sensor with the bolt.

Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)



6. CONNECT NO. 1 VEHICLE SPEED SENSOR CONNECTOR

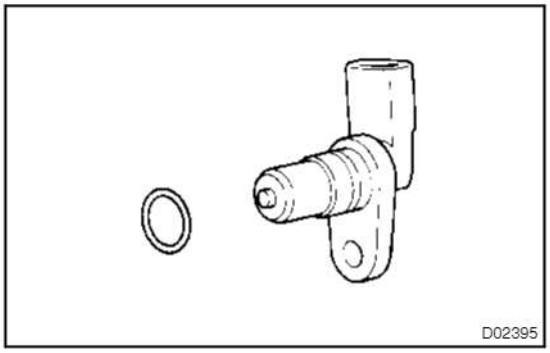
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7. DISCONNECT SPEED SENSOR CONNECTOR

8. REMOVE SPEED SENSOR NT AND SPEED SENSOR SP2

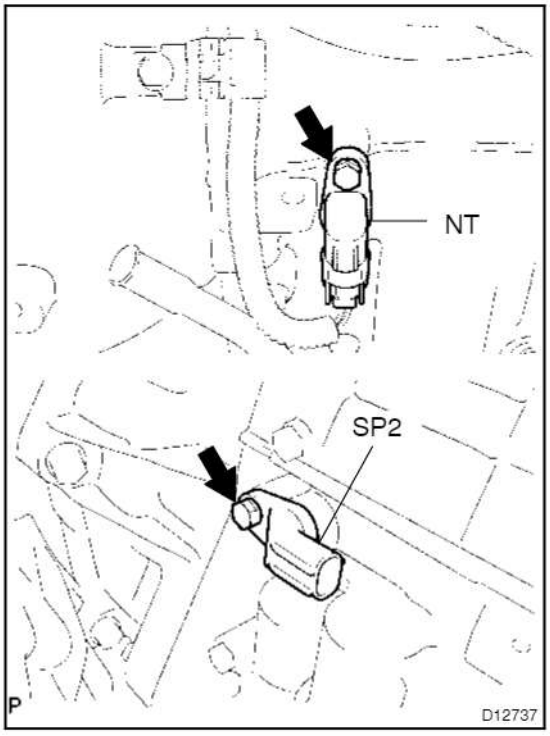
(a) Remove the 2 bolts speed sensor NT and speed sensor SP2.



(b) Remove the O–ring from the speed sensor NT and speed sensor SP2.

9. INSTALL SPEED SENSOR NT AND SPEED SENSOR SP2

(a) Coat a new O–ring with ATF and install it to the speed sensor NT speed sensor SP2.



(b) Install the speed sensor NT and speed sensor SP2 with the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

10. CONNECT SPEED SENSOR NT CONNECTOR AND SPEED SENSOR SP2 CONNECTOR

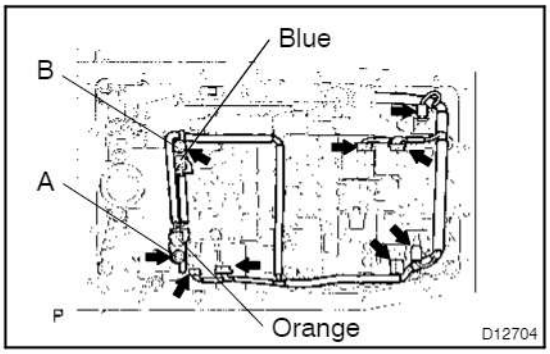
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ATF TEMPERATURE SENSOR

AT11U-01

ON–VEHICLE REPAIR

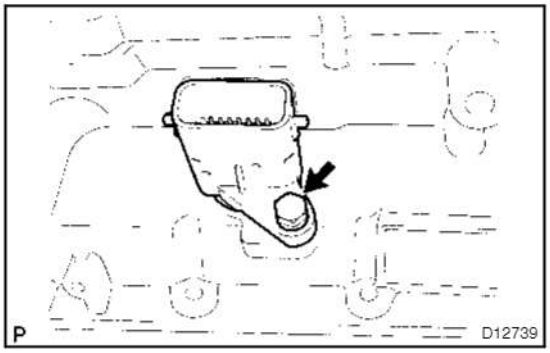
1. **REMOVE ENGINE NO.2 UNDER COVER**
2. **DRAIN ATF**
3. **REMOVE OIL PAN (See page AT–8)**
4. **REMOVE OIL STRAINER (See page AT–8)**



5. **REMOVE ATF TEMPERATURE SENSOR**

(a) Disconnect the 7 solenoid valve connectors.

(b) Remove the 2 bolts and disconnect the 2 ATF temperature sensors.



(c) Disconnect the solenoid connector.

(d) Remove the bolt and the transmission wire harness.

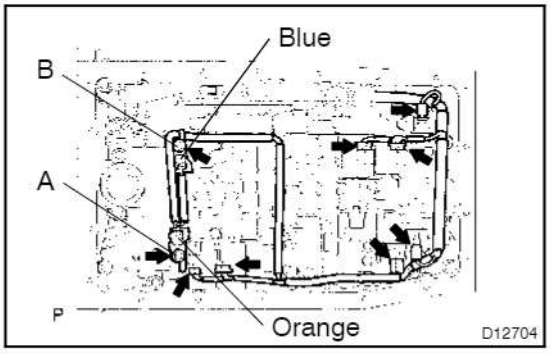
6. **INSTALL ATF TEMPERATURE SENSOR**

(a) Install the transmission wire harness.

(b) Install the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

(c) Connect the solenoid connector.



(d) Connect the 7 solenoid valve connectors.

(e) Connect the 2 ATF temperature sensors with the 2 bolts.

Torque:
A: 11 N·m (112 kgf·cm, 8 ft·lbf)
B: 10 N·m (100 kgf·cm, 7 ft·lbf)
Bolt length:
Bolt A: 36 mm (1.42 in.)
Bolt B: 12 mm (0.47 in.)

Sensor wire harness:

Wire harness	Color
for linear control	Orange
for oil temp warning lamp	Blue

7. **INSTALL OIL STRAINER (See page AT–8)**
8. **INSTALL OIL PAN (See page AT–8)**
9. **FILL ATF AND CHECK ATF LEVEL (See page DI–4 or DI–102)**
10. **INSTALL ENGINE NO.2 UNDER COVER**
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

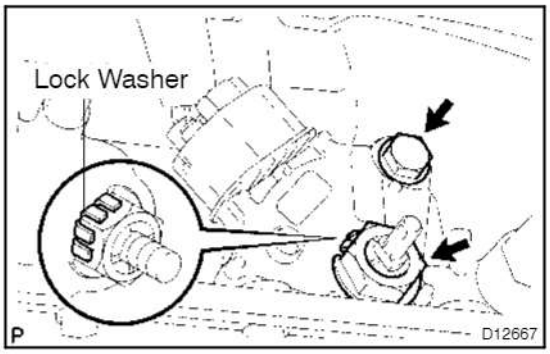
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NEUTRAL START SWITCH

AT12S-01

ON–VEHICLE REPAIR

1. **REMOVE ENGINE NO. 2 UNDER COVER**
2. **DISCONNECT NEUTRAL START SWITCH CONNECTOR**



3. **REMOVE NEUTRAL START SWITCH**

(a) Pry off the lock washer, remove the nut.

(b) Remove the bolt and neutral start switch.

4. **INSTALL NEUTRAL START SWITCH**

(a) Install the neutral start switch with bolt.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(b) Install a new lock washer and the nut.
Torque: 6.9 N·m (70 kgf·cm, 62 in.·lbf)

(c) Bent the claws on the lock washer to stake the nut.

(d) Adjust the neutral start switch
(See page DI–4 or DI–102).

5. **CONNECT NEUTRAL START SWITCH CONNECTOR**
6. **INSTALL ENGINE NO. 2 UNDER COVER**
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

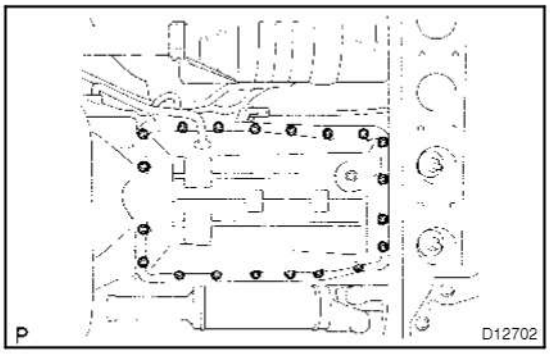
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VALVE BODY ASSEMBLY

AT11W–01

ON–VEHICLE REPAIR

1. **REMOVE ENGINE NO.2 UNDER COVER**
2. **DRAIN ATF**

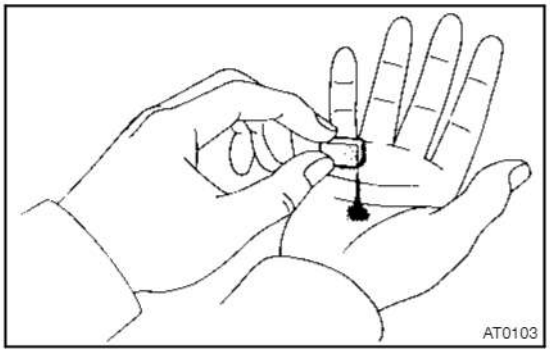


3. **REMOVE OIL PAN**

NOTICE:

Some fluid will remain in the oil pan.

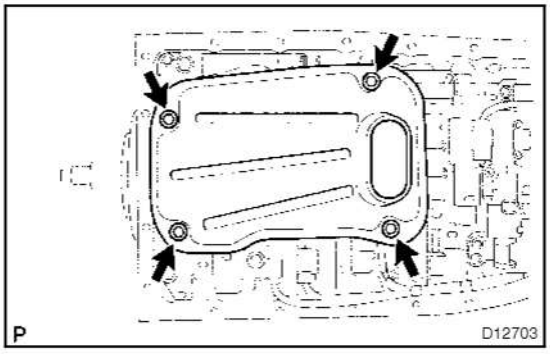
(a) Remove the 20 bolts.
(b) Remove the oil pan gasket.



4. **EXAMINE PARTICLES IN PAN**

Remove the magnets and use them to collect steel particles. Carefully look at the foreign matter and particles in the pan and on the magnets to anticipate the type of wear you will find in the transmission.

Steel (magnetic)...bearing, gear and clutch plate wear
Brass (non–magnetic)...bushing wear

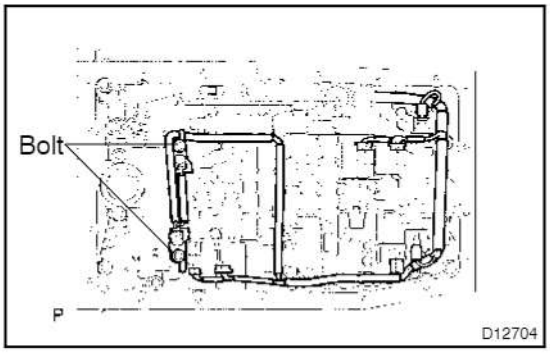


5. **REMOVE OIL STRAINER**

Remove the 4 bolts, the oil strainer and the O–ring.

NOTICE:

Be careful as some fluid will come out with the oil strainer.

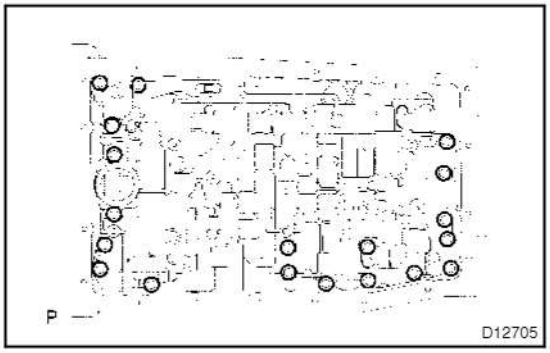


6. **DISCONNECT TEMPERATURE SENSOR**

(a) Disconnect the 7 solenoid connectors.
(b) Remove 2 bolts and the 2 temperature sensors clamp from the valve body.
(c) Disconnect the 2 temperature sensor from the valve body.

7. **DISCONNECT 7 CONNECTORS FROM SHIFT SOLENOID VALVES**

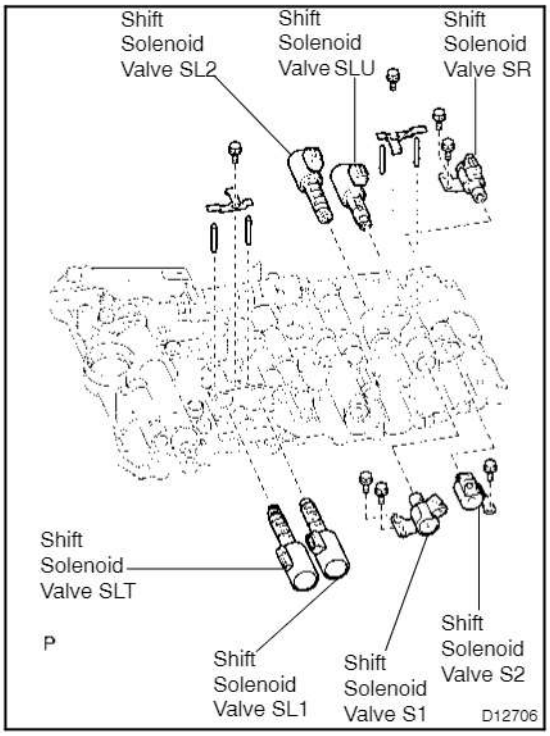
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8. REMOVE VALVE BODY

(a) Remove the 19 bolts and the valve body.

(b) Remove the 3 drum seal gaskets.



9. REMOVE SOLENOID VALVE

(a) Remove the 2 bolts and the shift solenoid valve SR.

(b) Remove the 3 bolts and the shift solenoid valve S1 and S2.

(c) Remove the 2 bolts, 2 solenoid lock plates and the 4 straight pins.

(d) Remove the shift solenoid SL2 and the shift solenoid valve SLU.

(e) Remove the shift solenoid SL1 and the shift solenoid valve SLT.

(f) Remove the O–ring from the solenoid valve S2.

10. INSTALL SOLENOID VALVE

(a) Install a new O–ring to shift solenoid valve S2.

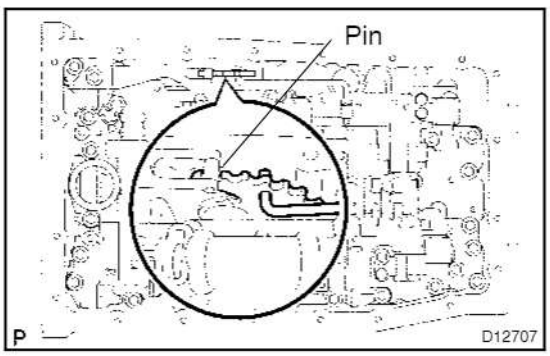
(b) Install the shift solenoid SL1 and the shift solenoid valve SLT.

(c) Install the shift solenoid SL2 and the shift solenoid valve SLU.

(d) Install the 4 straight pins and the 2 solenoid lock plates with the 2 bolts.
Torque:6.4 N·m (65 kgf·cm,57 in·lbf)

(e) Install the shift solenoid valve S1and S2 with the 2 bolts.
Torque:10 N·m (102 kgf·cm,7 ft·lbf)

(f) Install the shift solenoid valve SR with the 2 bolts.
Torque:6.4 N·m (65 kgf·cm,5.7 ft·lbf)



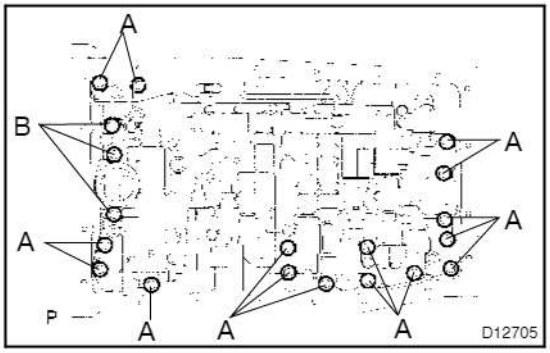
11. INSTALL VALVE BODY

HINT:

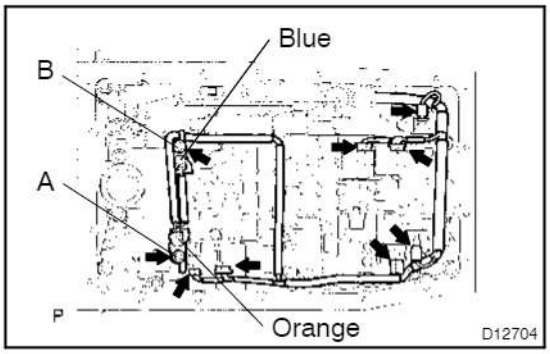
Align the groove of the manual valve with the pin of the lever.

(a) Install the 3 new drum seal gaskets to the transmission case.

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(b) Install the 19 bolts and the valve body.
Torque:
BoltA.B: 11 N·m (110 kgf·cm, 8 ft·lbf)
Bolt length:
Bolt A: 25 mm (0.98 in.)
Bolt B: 36 mm (1.42 in.)



12. CONNECT TEMPERATURE SENSOR

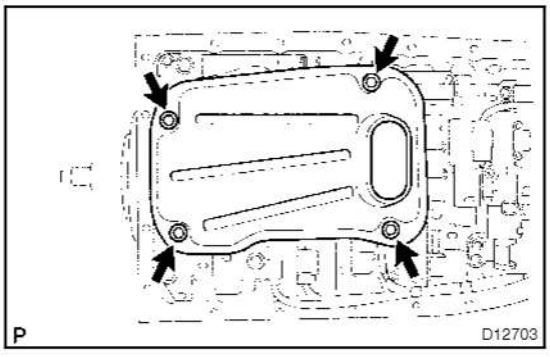
Connect the 2 temperature sensors to the valve body, and install the 2 temperature sensors clamp with the 2 bolts.

Torque:
A: 11 N·m (112 kgf·cm, 8 ft·lbf)
B: 10 N·m (100 kgf·cm, 7 ft·lbf)
Bolt length:
Bolt A: 36 mm (1.42 in.)
Bolt B: 12 mm (0.47 in.)

Sensor wire harness:

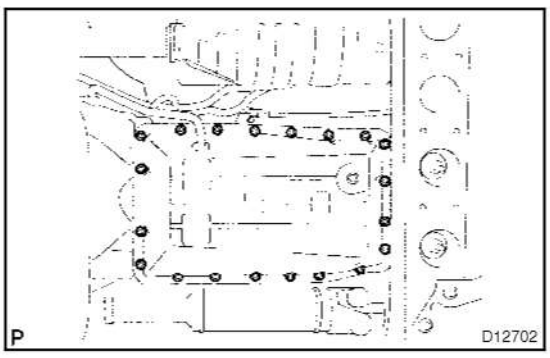
Wire harness	Color
for linear control	Orange
for oil temp warning lamp	Blue

13. CONNECT 7 CONNECTORS TO SHIFT SOLENOID VALVES



14. INSTALL OIL STRAINER

(a) Install a new O–ring.
(b) Install the oil strainer with the 4 bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)



15. INSTALL OIL PAN

HINT:
Remove any packing material, and be careful not to spill oil on the contacting surfaces of the transmission case and the oil pan.

(a) Install a new gasket and oil pan.
(b) Install the 20 bolts and oil pan.
Torque: 4.4 N·m (45 kgf·cm, 39 in·lbf)

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16. FILL ATF AND CHECK ATF LEVEL

(a) Install a new gasket and a drain plug.
Torque: 20 N·m (205 kgf·cm, 15 ft·lbf)

(b) Fill new fluid through the filler pipe (See page DI–4 or DI–102).

17. INSTALL ENGINE NO.2 UNDER COVER
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

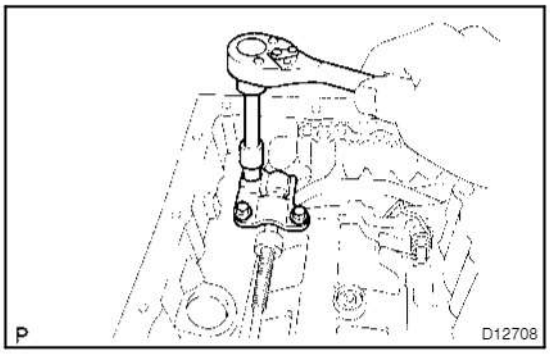
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PARKING LOCK PAWL

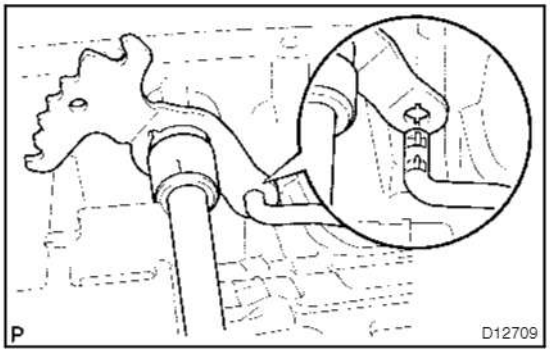
AT11X-01

ON–VEHICLE REPAIR

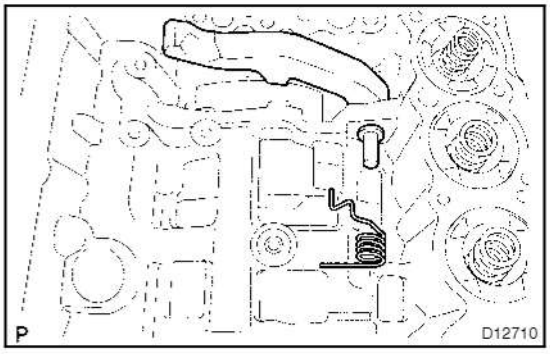
1. REMOVE VALVE BODY (See page AT–8)



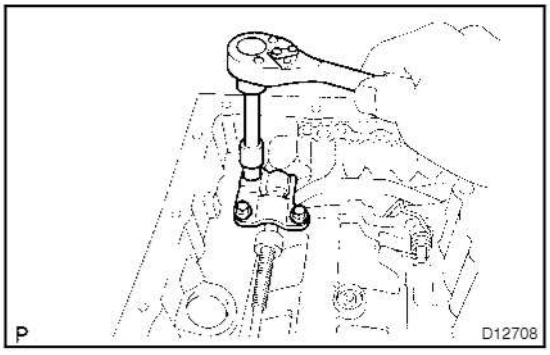
2. REMOVE PARKING LOCK PAWL BRACKET



3. REMOVE PARKING LOCK ROD



4. REMOVE SPRING FROM PARKING LOCK PAWL SHAFT
5. REMOVE PARKING LOCK PAWL AND SHAFT
6. INSTALL PARKING LOCK PAWL AND SHAFT
7. INSTALL SPRING TO PARKING LOCK PAWL SHAFT



8. INSTALL PARKING LOCK PAWL BRACKET

HINT:

- Push the lock rod fully forward.
- Check that the parking lock pawl operates smoothly.

Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)

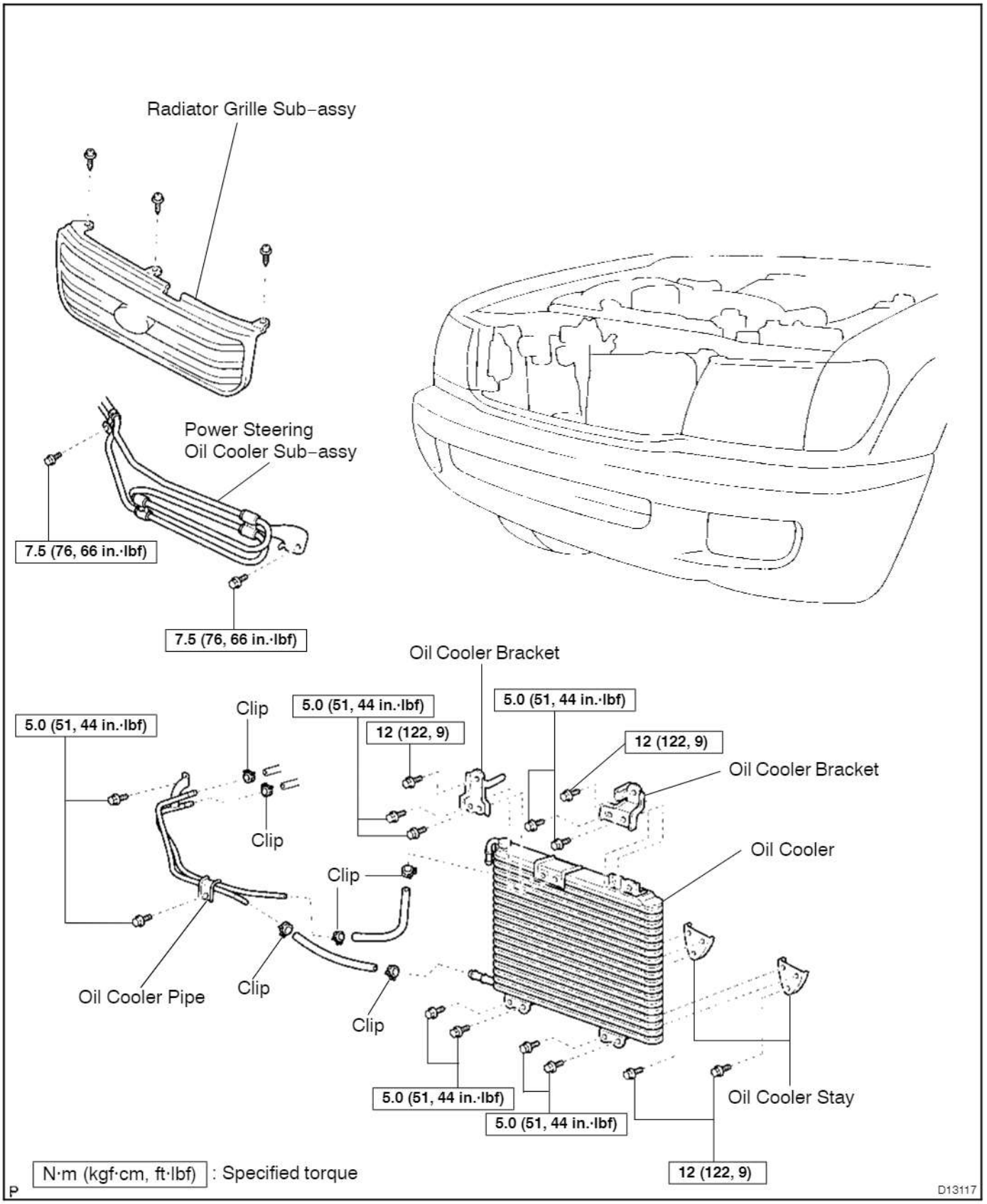
9. INSTALL VALVE BODY (See page AT–8)

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AIR COOLED OIL COOLER (2UZ–FE)

COMPONENTS

AT09M–02



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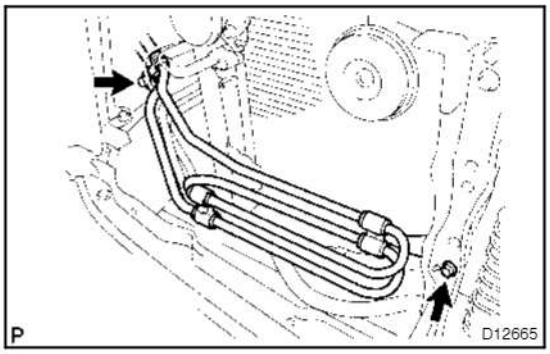
AT11Y–01

REMOVAL

1. REMOVE RADIATOR GRILLE SUB–ASSY

(a) Remove the 3 screws.

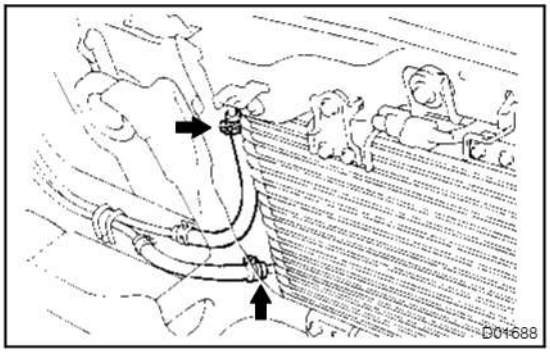
(b) Release the 2 clips, remove the radiator grille sub–assy.



2. SEPARATE POWER STEERING OIL COOLER SUB–ASSY

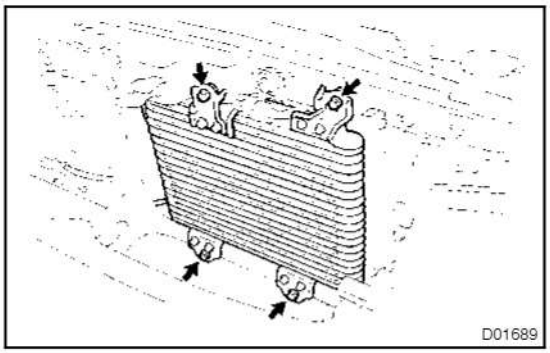
Remove the 2 bolts, separate the power steering oil cooler sub–assy.

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)



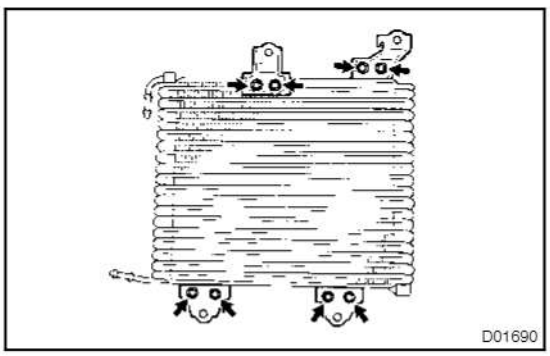
3. REMOVE OIL COOLER

(a) Loosen the 2 clips, disconnect the 2 hoses.



(b) Remove the 4 bolts and oil cooler.

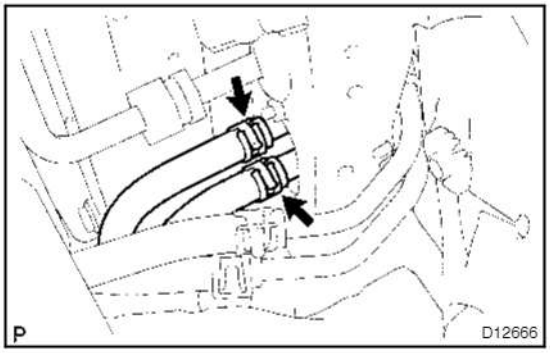
Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)



(c) Remove the 8 bolts, 2 oil cooler brackets and 2 stays.

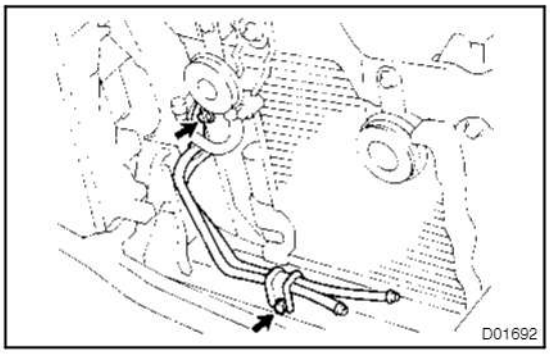
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

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4. REMOVE OIL COOLER PIPE BRACKET

(a) Loosen the 2 clips, disconnect the 2 hoses.



(b) Remove the 2 bolts and oil cooler pipe bracket.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

(c) Loosen the 2 clips, disconnect the 2 hoses.

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AT09O–02

INSTALLATION

Installation is in the reverse order of removal (See page AT–14).

HINT:

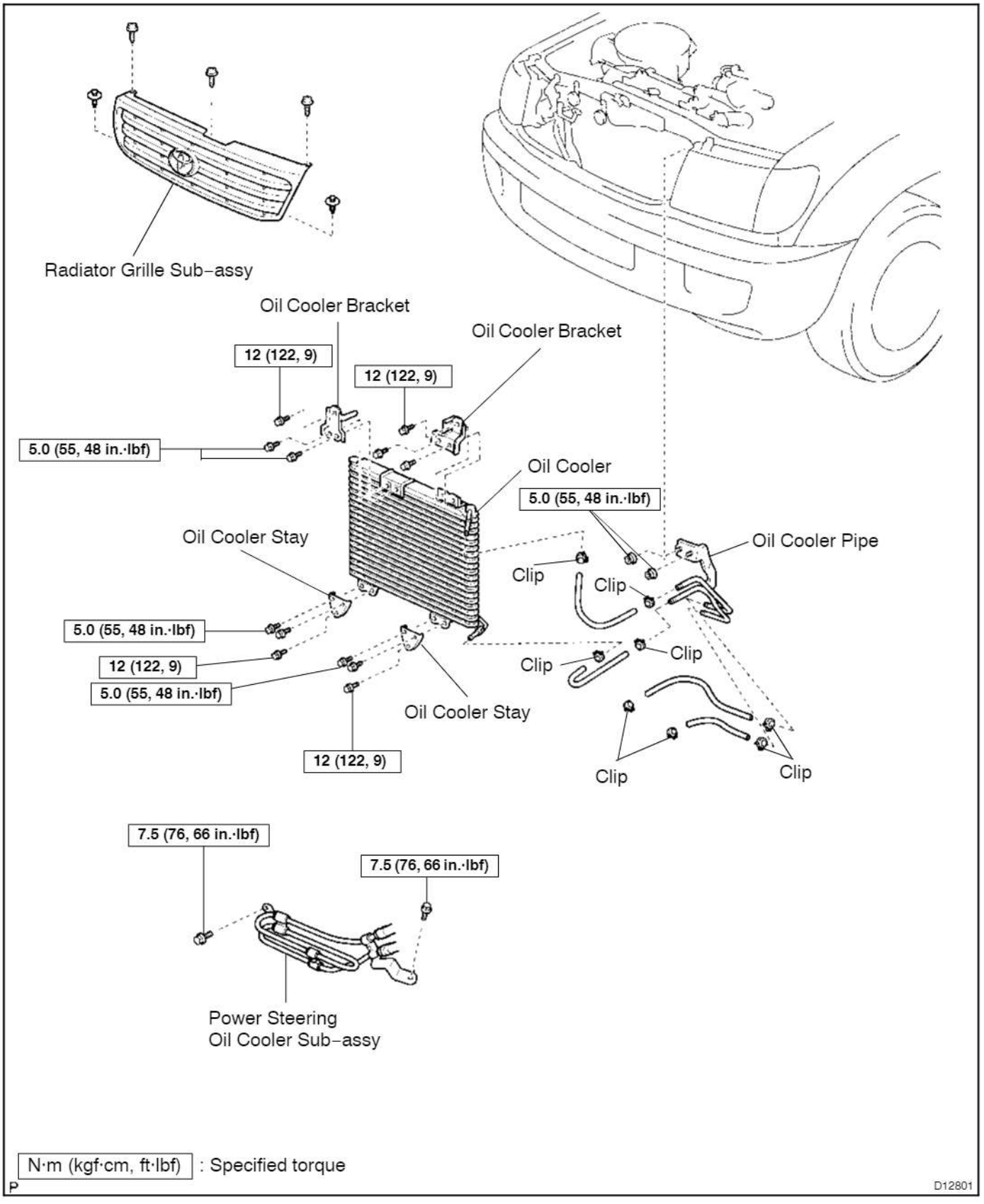
After installtion, check fluid level (See page DI–4).

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AIR COOLED OIL COOLER (1HD–FTE)

COMPONENTS

AT09P–02



N·m (kgf·cm, ft·lbf) : Specified torque

P

D12801

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AT11Z–01

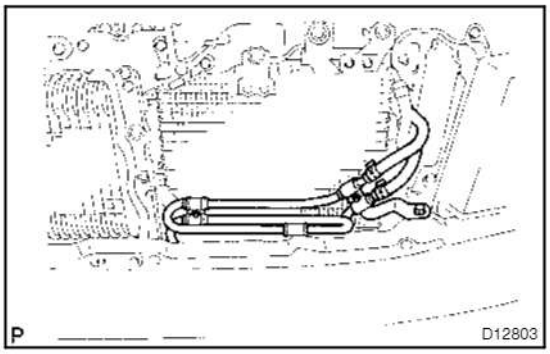
REMOVAL

1. REMOVE RADIATOR GRILLE

(a) Remove the 3 screws.

(b) Using a screwdriver, disconnect the 2 clips.

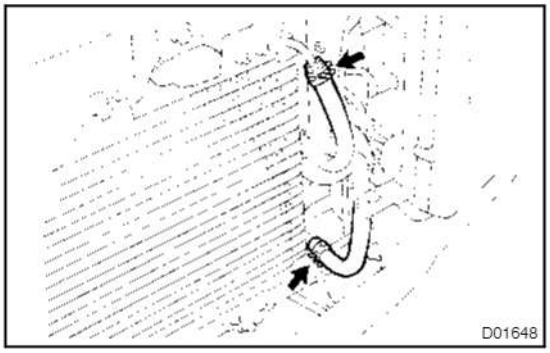
(c) Remove the radiator grille.



2. SEPARATE POWER STEERING OIL COOLER SUB–ASSY

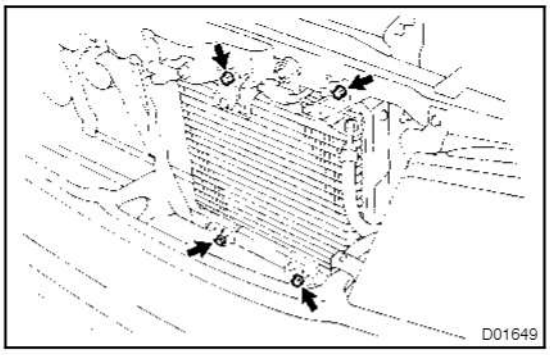
Remove the 2 bolts, separate the power steering oil cooler sub–assy.

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)



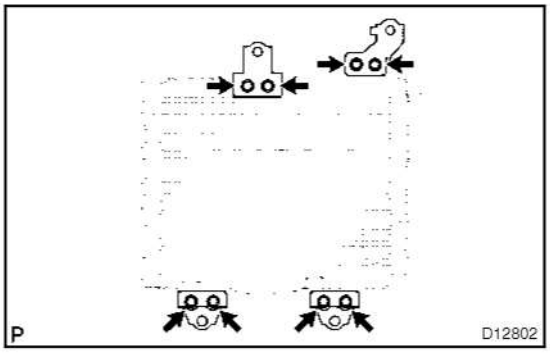
3. REMOVE OIL COOLER

(a) Loosen the 2 clips and disconnect the 2 hoses.



(b) Remove the 4 bolts and oil cooler.

Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)



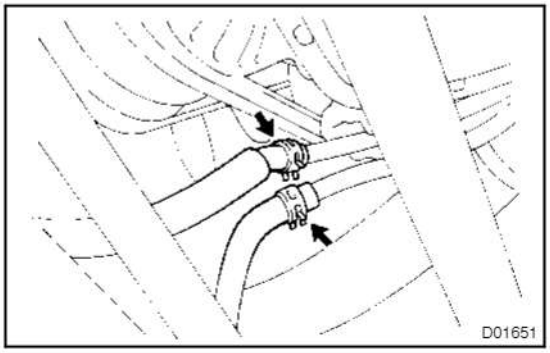
(c) Remove the 8 bolts, oil cooler bracket and stay.

4. REMOVE OIL COOLER PIPE BRACKET

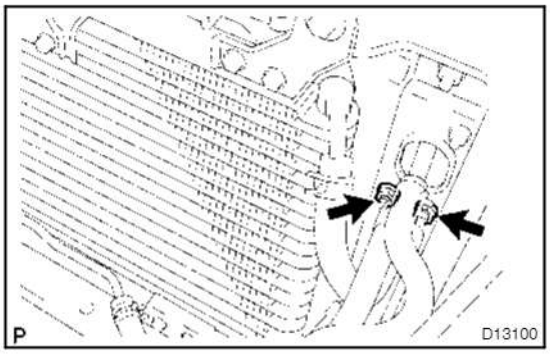
(a) Remove the 2 bolts and radiator reservoir tank.

Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

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(b) Loosen the 2 clips and disconnect the 2 hoses.



(c) Remove the 2 nuts and oil cooler pipe bracket.
Torque: 5.0 N·m (55 kgf·cm, 48 in.·lbf)

(d) Remove the 2 clips and 2 hoses from the oil cooler pipe.

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AT09R–02

INSTALLATION

Installation is in the reverse order of removal (See page AT–37).

HINT:

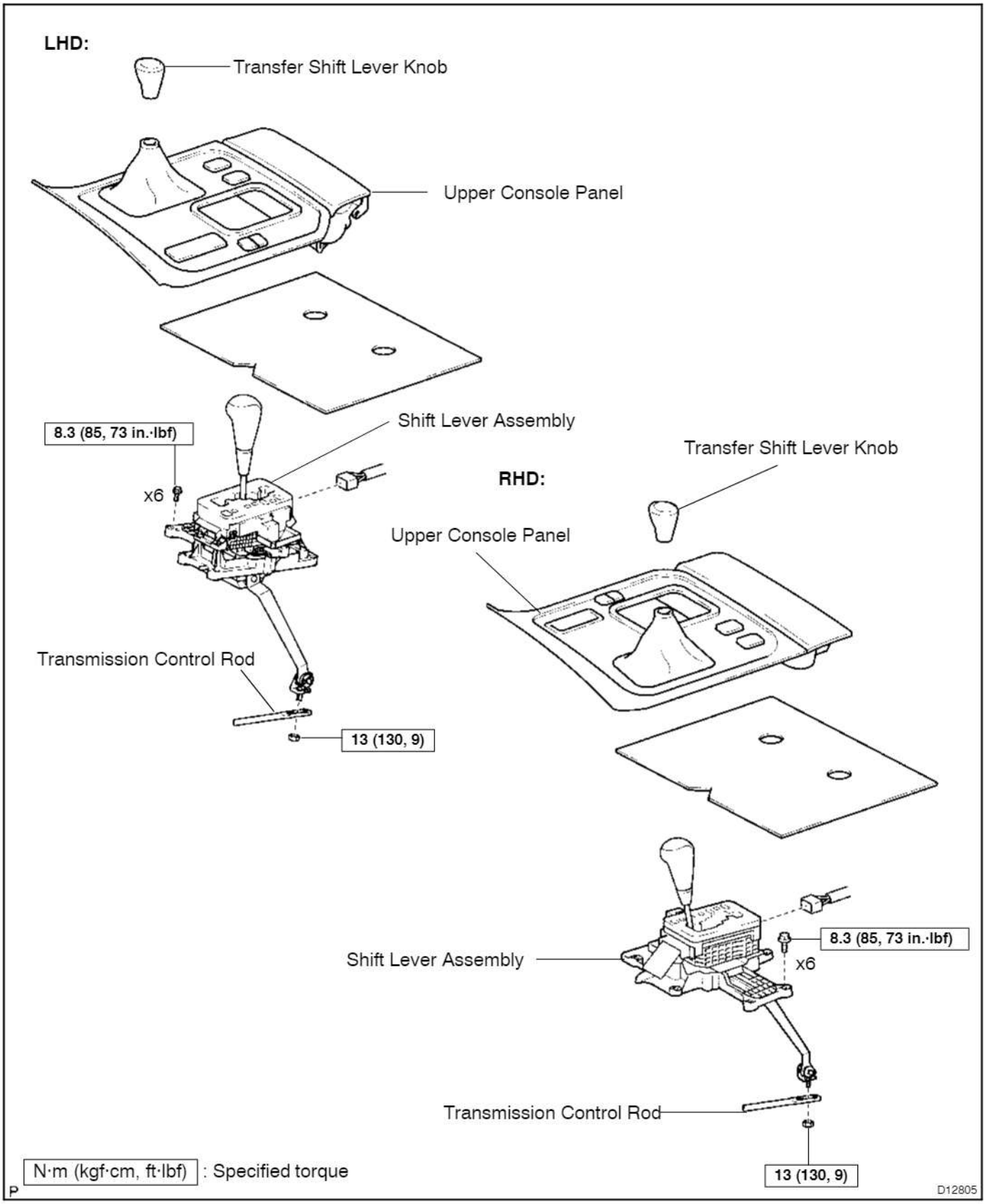
After installation, check fluid level (See page DI–102).

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FLOOR SHIFT ASSEMBLY

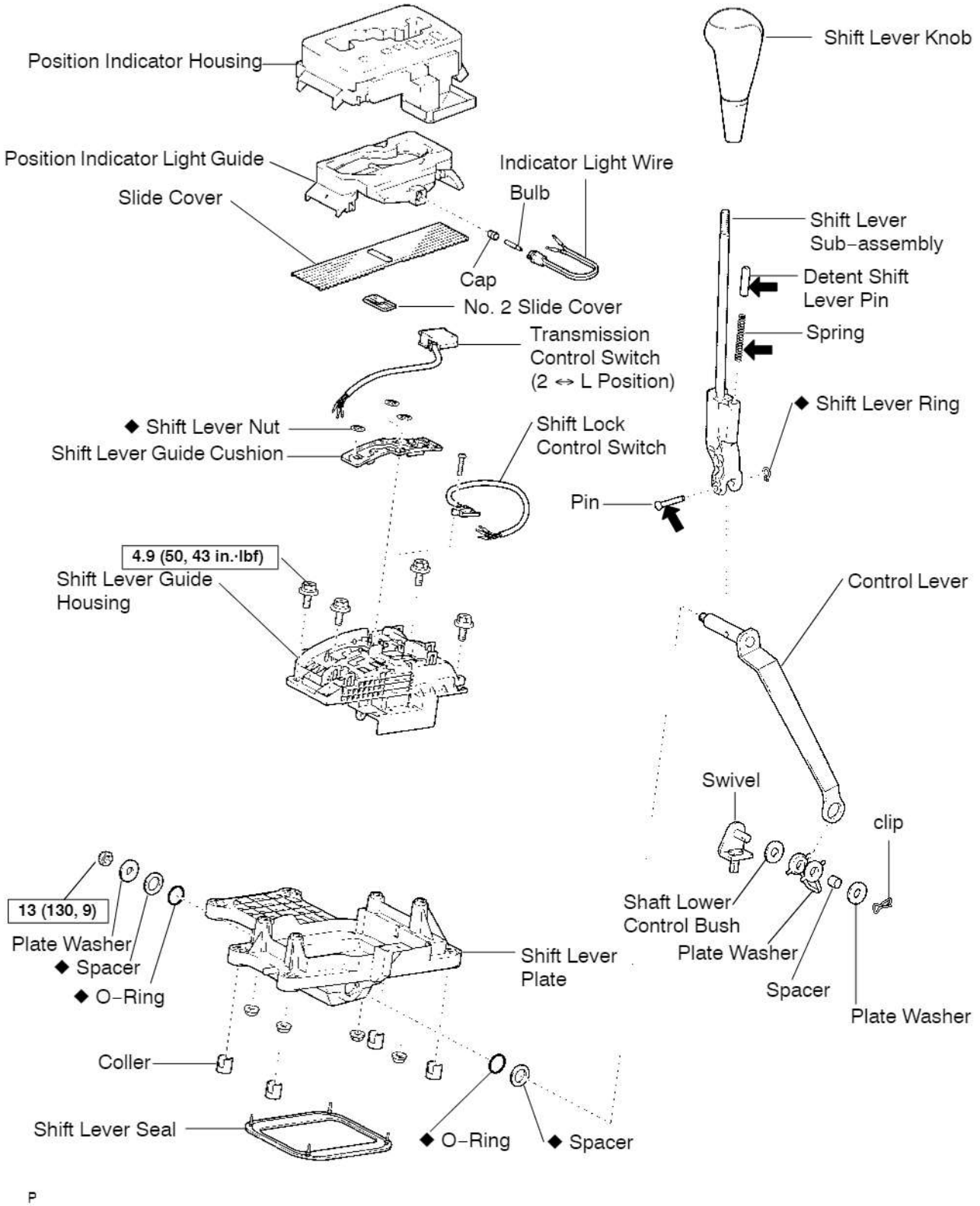
COMPONENTS

AT120-01



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RHD:

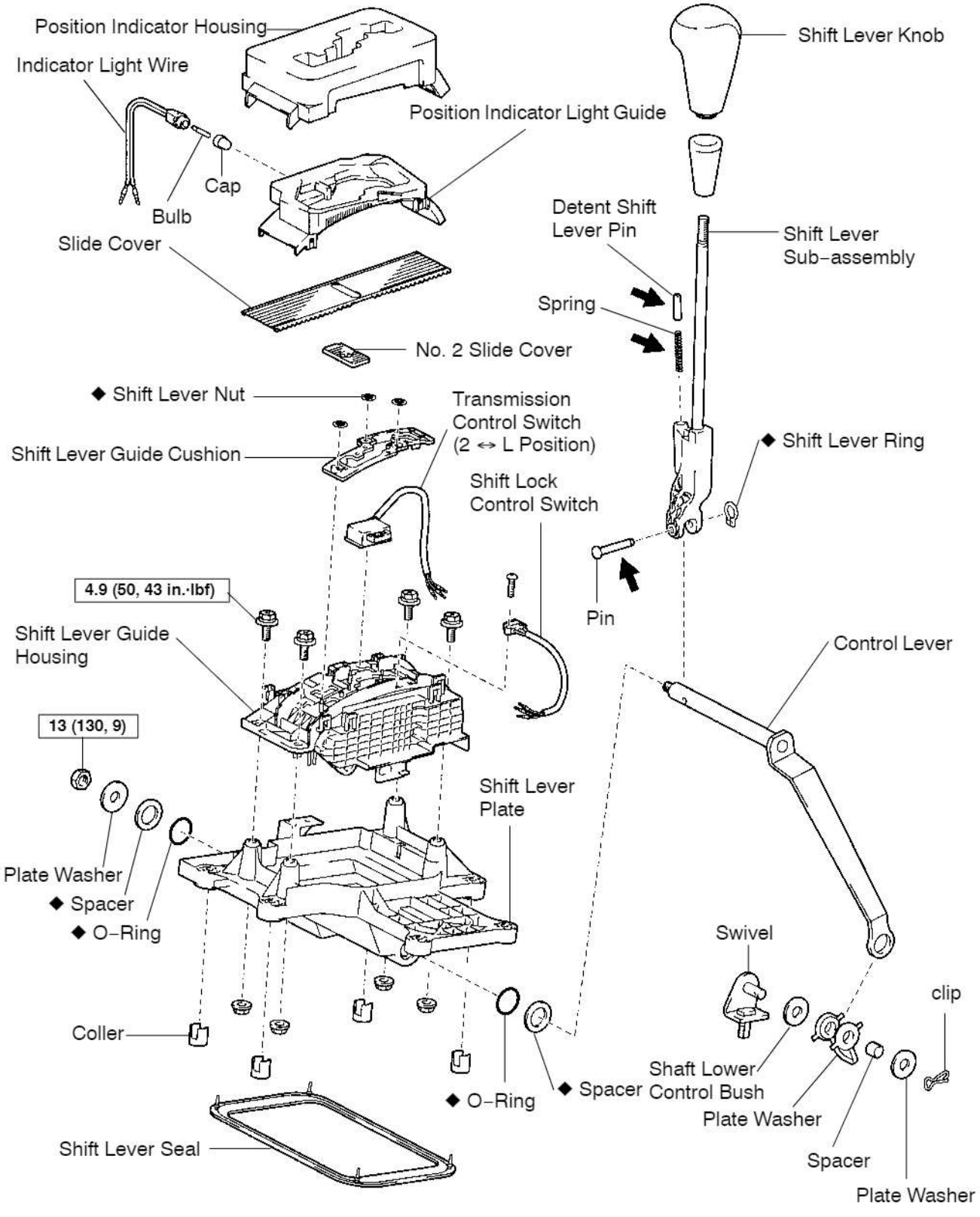


N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part
MP grease

D12813

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LHD:



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part
P MP grease

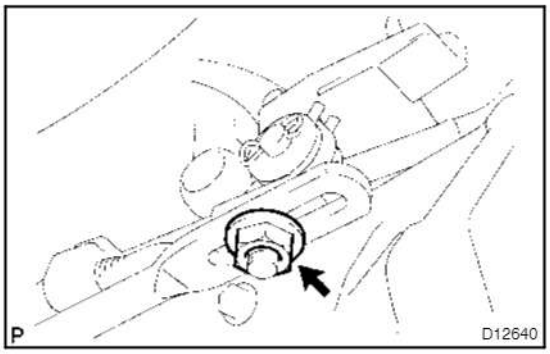
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AT0AU-02

REMOVAL

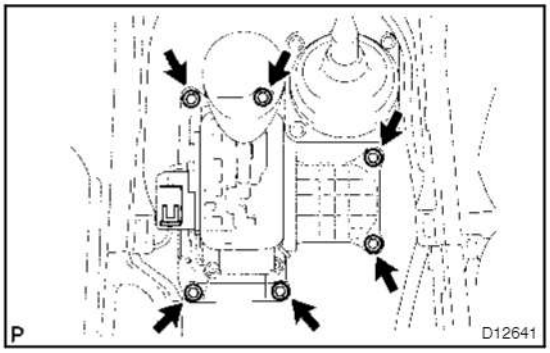
1. REMOVE TRANSFER SHIFT LEVER KNOB
2. REMOVE UPPER CONSOLE PANEL (See page BO–79)



3. SEPARATE NO. 1 FLOOR SHIFT GEAR SHIFTING ROD

(a) Shift into the N position.

(b) Remove the nut and separate the No. 1 floor shift gear shifting rod from the connecting rod swivel.



4. REMOVE FLOOR SHIFT LEVER ASSEMBLY

(a) Disconnect the connector.

(b) Remove the 6 bolts.

Torque: 8.3 N·m (85 kgf·cm, 73 in.·lbf)

(c) Remove the floor shift lever assembly.

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AT121-01

DISASSEMBLY

1. REMOVE SHIFT LEVER KNOB

2. REMOVE POSITION INDICATOR HOUSING

(a) Using a small screwdriver, remove the shift lock release cover from the position indicator housing.

(b) Remove the position indicator housing assembly.

3. REMOVE POSITION INDICATOR LIGHT GUIDE

(a) Disconnect the indicator lamp wire from the position indicator light guide.

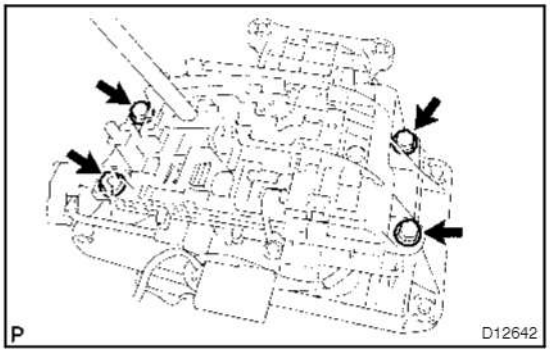
(b) Remove the position indicator light guide.

4. REMOVE SLIDE COVER AND NO. 2 SLIDE COVER

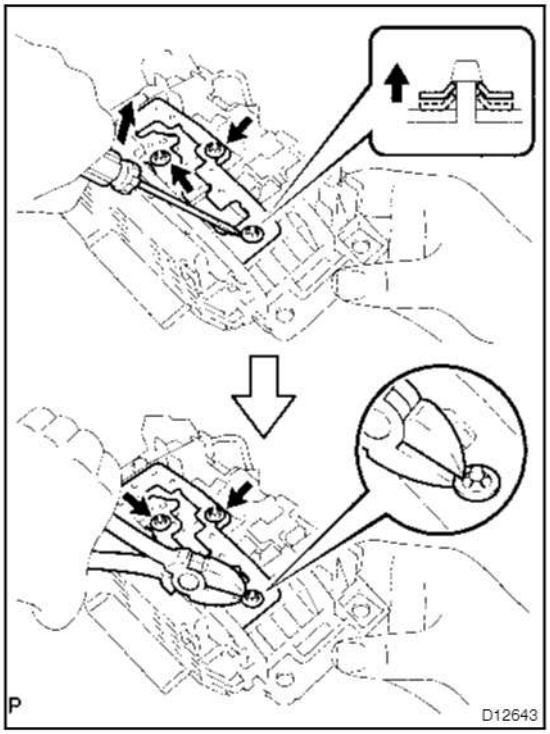
5. REMOVE SHIFT LEVER GUIDE HOUSING

(a) Disconnect the shift lock control ECU connector from the shift lever plate.

(b) Disconnect the 2 transmission control switches and shift lock control switch from the shift lever guide housing.



(c) Remove the 4 bolts, nuts and shift lever guide housing assembly.



6. DISASSEMBLE SHIFT LEVER GUIDE HOUSING

(a) Using a screwdriver, ply and push up 3 shift lever nuts.

(b) Using nippers, cut the 3 shift lever nuts off then.

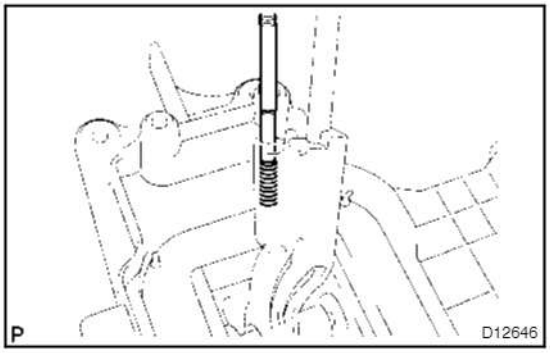
HINT:

Remove the shift lever lock pin of shift lever nut in the same way.

(c) Remove the shift lever guide cushion.

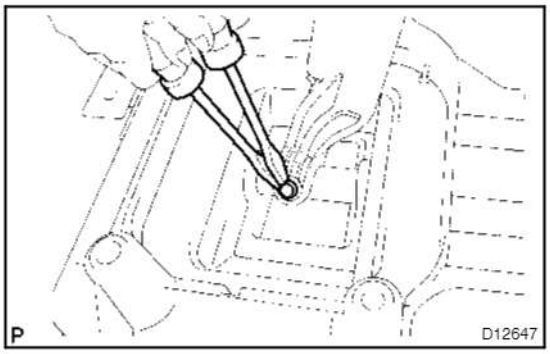
(d) Remove the indicator lamp wire.

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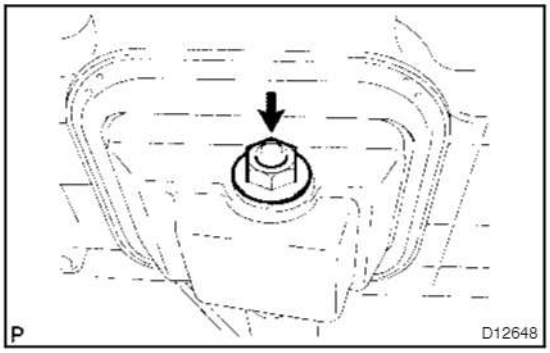


7. REMOVE SHIFT LEVER SUB–ASSEMBLY

(a) Using a magnetic finger, remove the detent shift lever pin and spring.

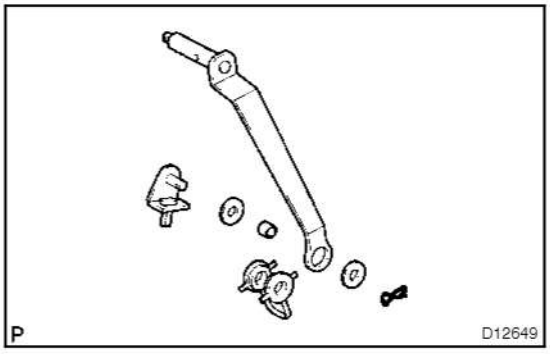


(b) Using 2 screwdrivers, remove the shift lever ring.
(c) Remove the pin and shift lever sub–assembly.



8. DISASSEMBLE SHIFT LEVER PLATE

(a) Remove the nut, control lever, plate washer, 2 spacers and 2 O–rings.



(b) Using pliers, remove the clip.
(c) Remove the swivel, 2 plate washers, shaft lower control bush and spacer.
(d) Remove the shift lever seal.
(e) Remove the 4 collars.
(f) Remove the 2 spring nuts.

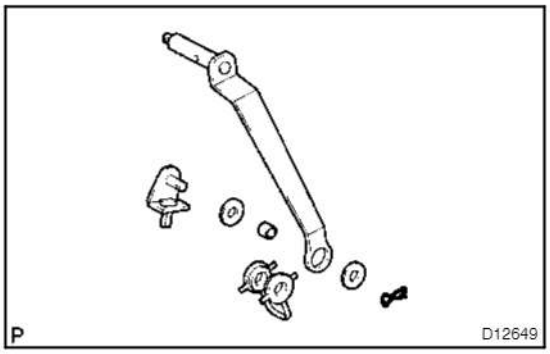
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AT122-01

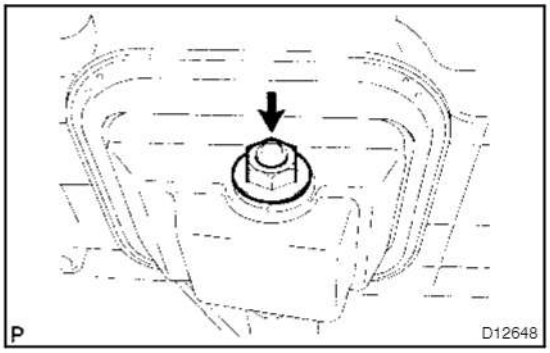
REASSEMBLY

1. REASSEMBLE SHIFT LEVER PLATE

(a) Install the 2 spring nuts.
(b) Install the 4 collars.
(c) Install the shift lever seal.



(d) Install the shaft lower control bush, spacer, 2 plate washers and swivel.
(e) Using pliers, install the clip.



(f) Apply MP grease to new 2 O–rings.
(g) Install the 2 O–rings, 2 new spacers, plate washer, control lever and nut.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

2. INSTALL SHIFT LEVER SUB–ASSEMBLY

(a) Apply MP grease to the pin.
(b) Install the shift lever sub–assembly and pin.
(c) Install the shift lever ring.
(d) Apply MP grease to the detent shift lever pin and spring.
(e) Install the detent shift lever pin and spring.

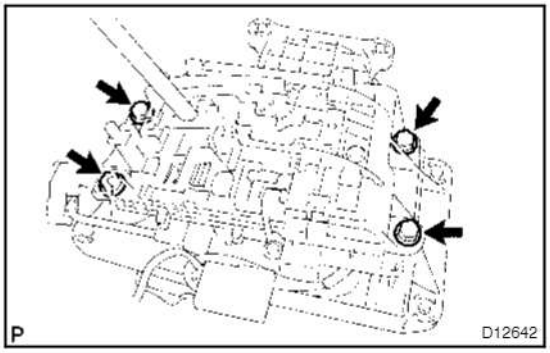
3. REASSEMBLE SHIFT LEVER GUIDE HOUSING

(a) Apply MP grease to the shift lever lock pin.
(b) Install the shift lever lock pin, shift lock plate stopper and cushion to the shift lever guide housing.
(c) Install a new shift lever nut to the shift lever lock pin by knocking them lightly via the 10 mm seated nut.

HINT:
Install the shift lever guide cushion of the shift lever nut in the same way.

(d) Install the shift lever guide cushion with 3 new shift lever nuts.

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4. INSTALL SHIFT LEVER GUIDE HOUSING

(a) Install the shift lever guide housing assembly with the 4 bolts and nuts to the shift lever plate.

Torque: 4.9 N·m (50 kgf·cm, 43 in.·lbf)

(b) Install the 2 transmission control switches and shift lock control switch to the shift lever guide housing.

(c) Connect the shift lock control ECU connector to the shift lever plate.

5. INSTALL SLIDE COVER AND NO. 2 SLIDE COVER

6. INSTALL POSITION INDICATOR LIGHT GUIDE

(a) Install the position indicator light guide.

(b) Connect the indicator lamp wire to the position indicator light guide.

7. INSTALL POSITION INDICATOR HOUSING

(a) Install the position indicator housing.

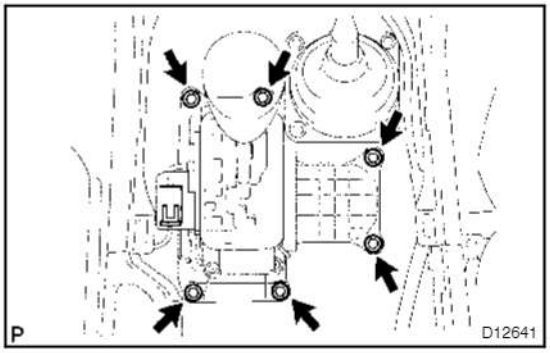
(b) Install the shift lock release cover to the position indicator housing.

8. INSTALL SHIFT LEVER KNOB

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AT123-01

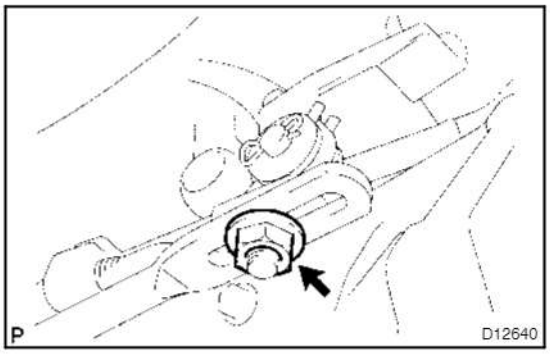
INSTALLATION



1. INSTALL FLOOR SHIFT LEVER ASSEMBLY

(a) Install the floor shift lever assembly with the 6 bolts.
Torque: 8.3 N·m (85 kgf·cm, 73 in.·lbf)

(b) Connect the connector to the floor shift lever assembly.



2. INSTALL No.1 FLOOR SHIFT GEAR SHIFTING ROD

(a) Shift into the N range.

(b) Connect the No.1 floor shift gear shifting rod and connecting rod swivel with the nut.
Torque: 13 N·m (130 kgf·cm, 9 ft.·lbf)

3. INSTALL UPPER CONSOL PANNEL (See Page BO–79)

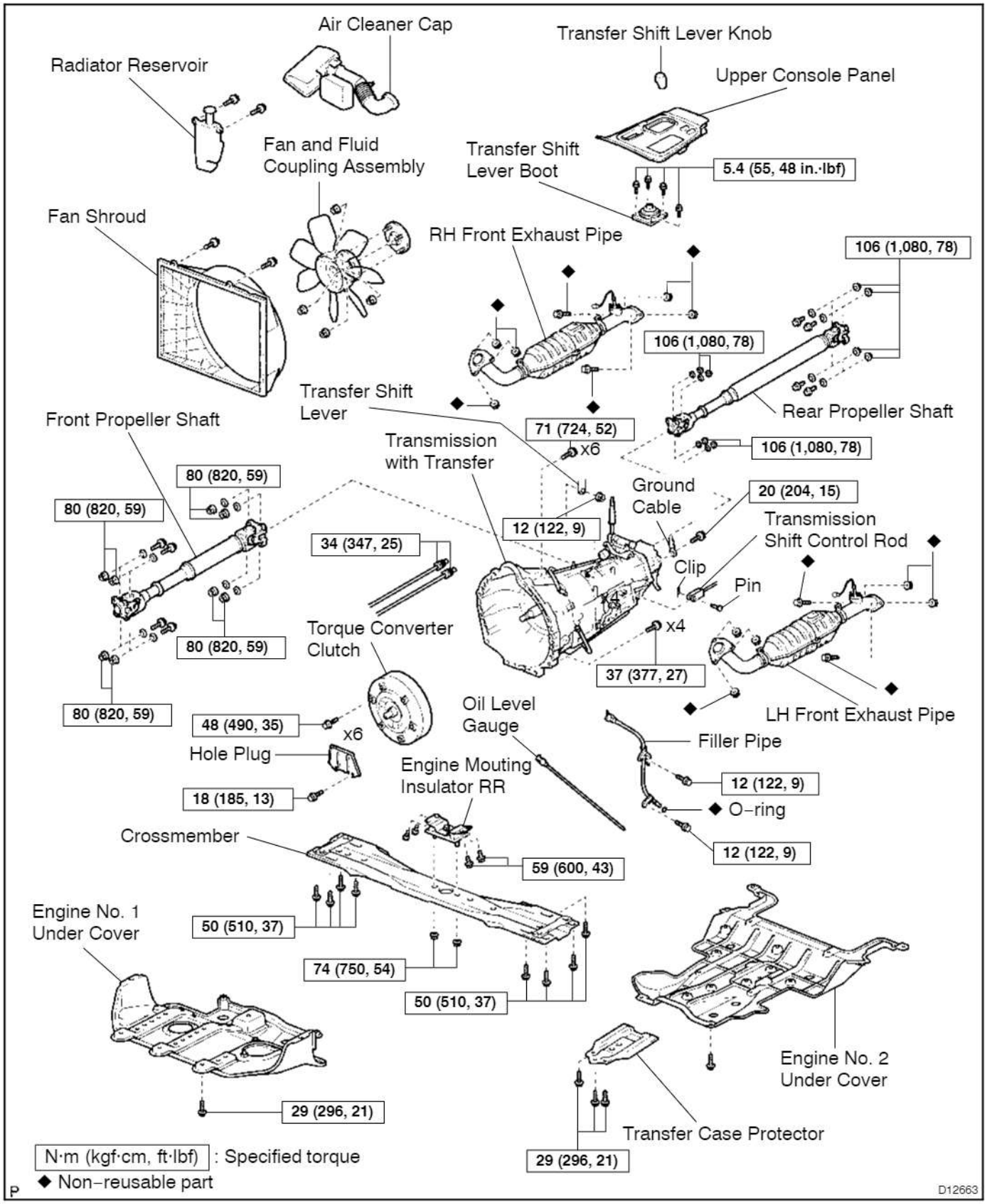
4. INSTALL TRANSFER SHIFT LEVER KNOB

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AUTOMATIC TRANSMISSION UNIT (2UZ–FE)

COMPONENTS

AT0B1–02

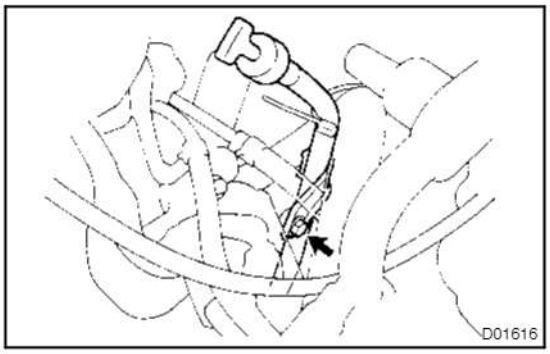


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AT124–01

REMOVAL

1. **REMOVE BATTERY**
2. **REMOVE AIR CLEANER CAP DRIVE BELT, FAN AND FLUID COUPLING ASSEMBLY, FAN SHROUD AND RADIATOR RESERVOIR**

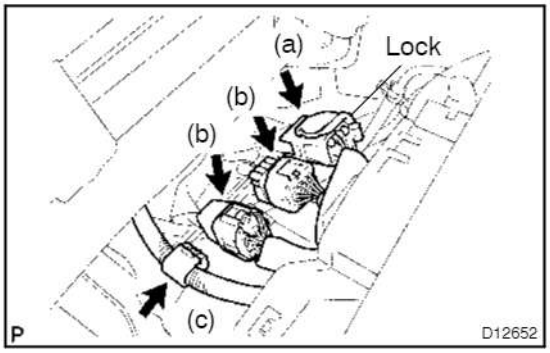


3. **REMOVE OIL FILLER PIPE UPPER SIDE MOUNTING BOLT**

(a) Remove the level gauge.

(b) Remove the upper side mounting bolt.
Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

(c) Disconnect the 2 bleeder hoses.



4. **DISCONNECT CONNECTORS**

(a) Release the lock and disconnect the transmission wire connector.

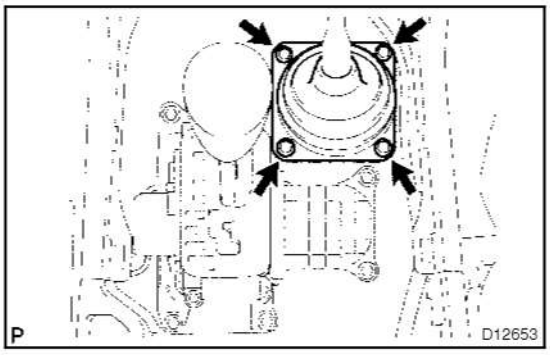
(b) Disconnect the 2 transmission wire connectors.

(c) Separate the connector clamp.

5. **REMOVE TRANSFER SHIFT LEVER BOOT**

(a) Remove the transfer shift lever knob.

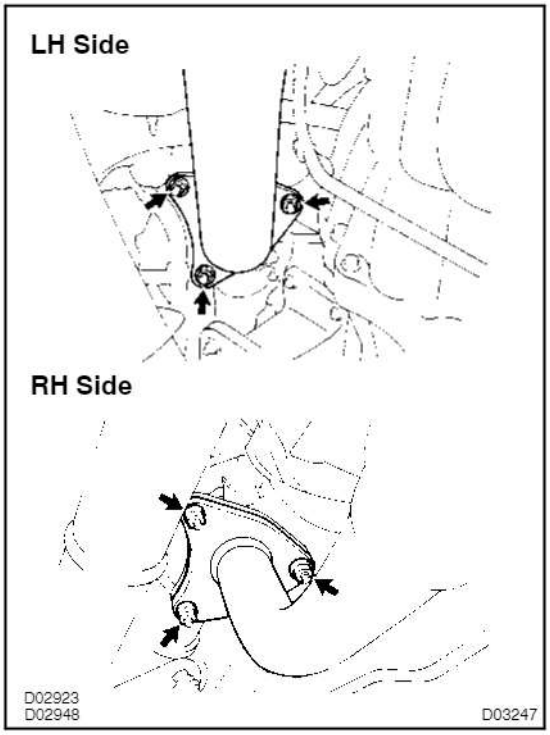
(b) Remove upper console panel (See page BO–79).



(c) Remove the 4 bolts and the transfer shift lever boot.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

6. **REMOVE ENGINE NO. 1 AND NO. 2 UNDER COVERS**
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

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7. REMOVE LH AND RH FRONT EXHAUST PIPE

(a) Remove the 6 nuts.

Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)

HINT:

After the time of installation, please refer to the following item. Replace the used nuts with new ones.

(b) Remove the 4 bolts and nuts.

Torque: 40 N·m (408 kgf·cm, 29 ft·lbf)

HINT:

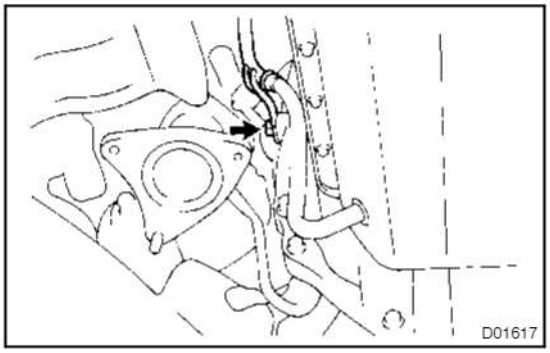
After the time of installation, please refer to the following item. Replace the used nuts with new ones.

(c) Remove the LH and RH front exhaust pipes and 4 gaskets.

HINT:

After the time of installation, please refer to the following item. Replace the used gaskets with new ones.

8. REMOVE FRONT AND REAR PROPELLER SHAFTS (See Pub. No. RM616E on page PR–4)



9. REMOVE OIL FILLER PIPE

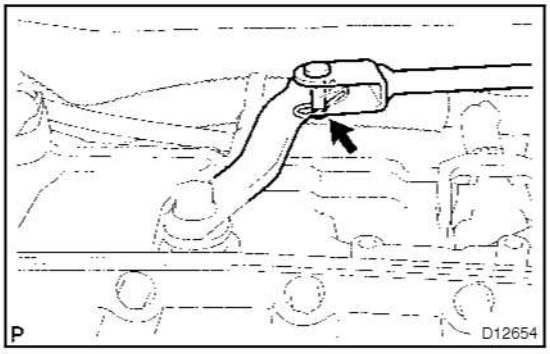
(a) Remove the bolt and the filler pipe.

Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

(b) Remove the O–ring from the filler pipe.

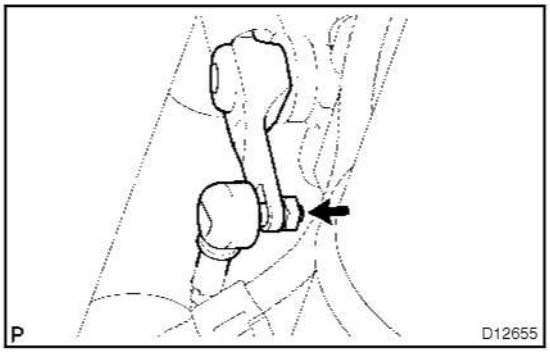
HINT:

At the time of installation, replace the used O–ring with a new one.



10. SEPARATE TRANSMISSION SHIFT CONTROL ROD

Remove the clip and pin and separate the shift control rod.

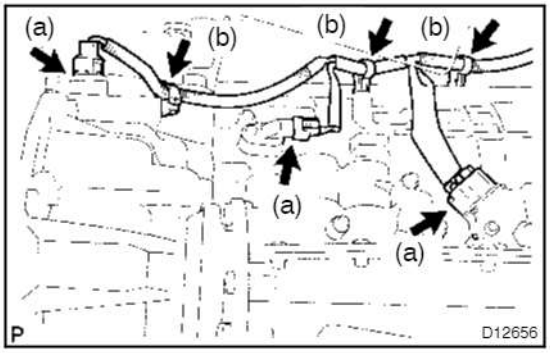


11. SEPARATE TRANSFER SHIFT LEVER

Remove the nut and separate the transfer shift lever rod assembly.

Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

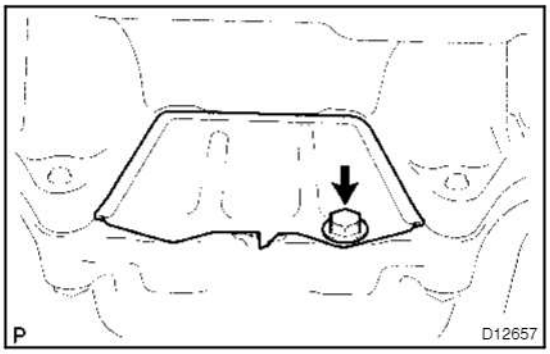
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12. SEPARATE WIRE HARNESS

(a) Disconnect 3 connectors.

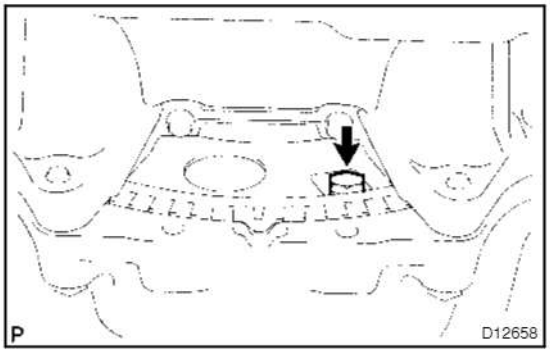
(b) Remove the 3 clamps from the transmission unit and separate the transmission wire.



13. REMOVE TORQUE CONVERTER CLUTCH MOUNTING BOLT

(a) Remove the bolt and the hole plug.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



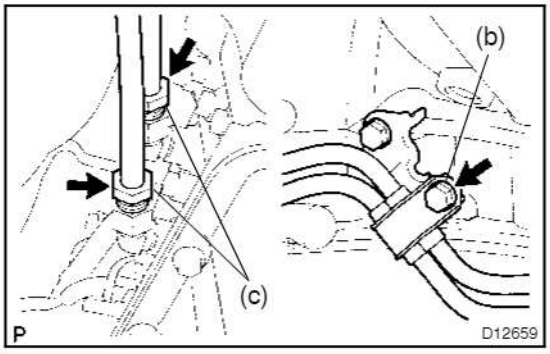
(b) Turn the crankshaft to gain access to each bolt.

(c) Hold the crankshaft pulley nut with a wrench, and remove the 6 bolts.

Torque: 48 N·m (490 kgf·cm, 35 ft·lbf)

HINT:

At the time of installation, first install the green colored bolt. And then install the other 5 bolts.



14. DISCONNECT OIL COOLER PIPES

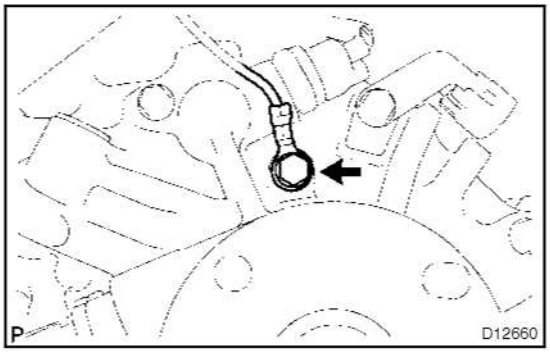
(a) Loosen the 2 union nuts.

(b) Remove the bolt and the clamp.

Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

(c) Remove the 2 union nuts and disconnect the 2 oil cooler pipes.

Torque: 34 N·m (347 kgf·cm, 25 ft·lbf)



15. SEPARATE GROUND CABLE

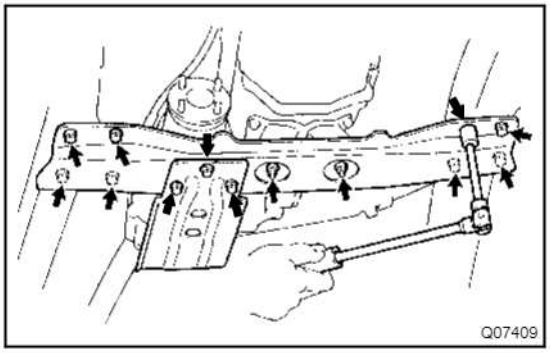
Remove the bolt and separate the ground cable.

Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

16. REMOVE CROSSMEMBER AND TRANSTER CASE PROTECTOR

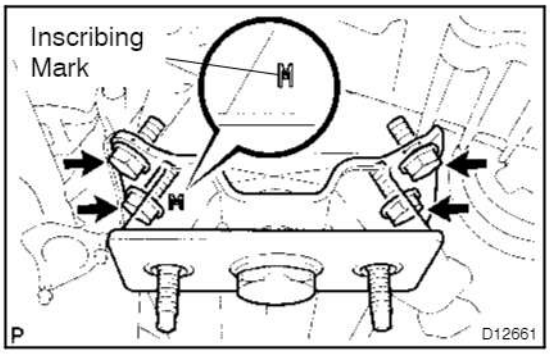
(a) Support the transmission with a jack.

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(b) Remove the 3 bolts and the transter case protector.
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

(c) Remove the 8 bolts, the 2 nuts and the crossmember.
Torque:
Bolt: 50 N·m (510 kgf·cm, 37 ft·lbf)
Nut: 74 N·m (750 kgf·cm, 54 ft·lbf)



17. REMOVE ENGINE MOUNTING INSULATOR RR

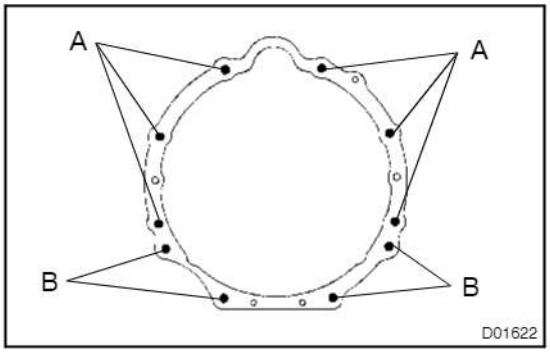
Remove the 4 bolts and the engine mounting insulator RR.
Torque: 59 N·m (600 kgf·cm, 43 ft·lbf)

HINT:
At the time of installation, install the insulator rear with the inscribing mark facing backward.

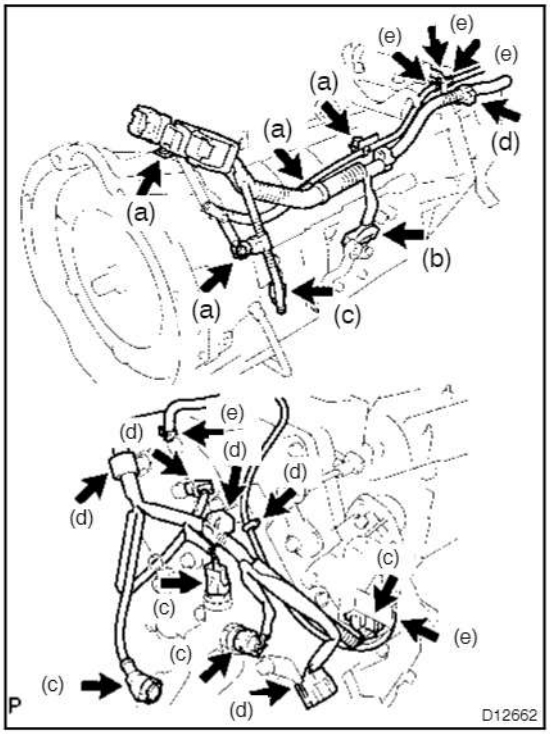
18. REMOVE TRANSMISSION

(a) Lower the rear end of the transmission unit.

(b) Remove the transmission wire clamp bolt.



(c) Remove the 10 bolts and the transmission unit.
Torque:
Bolt A: 71 N·m (724 kgf·cm, 52 ft·lbf)
Bolt B: 37 N·m (377 kgf·cm, 27 ft·lbf)



19. REMOVE WIRE HARNESS AND HOSE

(a) Remove the 4 bolts.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

(b) Release the lock and disconnect the connector.

(c) Disconnect the 5 connectors.

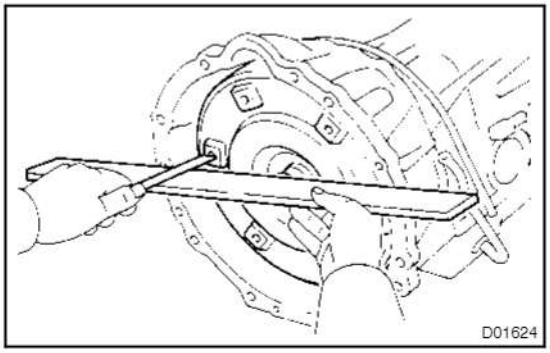
(d) Separate the 6 connector clamps.

(e) Disconnect the 5 hoses and remove the wire harness and the hose.

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AT0B3–02

INSTALLATION



1. CHECK TORQUE CONVERTER CLUTCH INSTALLATION

Using calipers and a straight edge, measure the distance from the installed surface of the transmission housing to the installed surface of the torque converter clutch.

Correct distance: More than 17.1 mm (0.673 in.)

2. TRANSMISSION INSTALLATION

Installation is in the reverse order of removal (See page AT–31).

HINT:

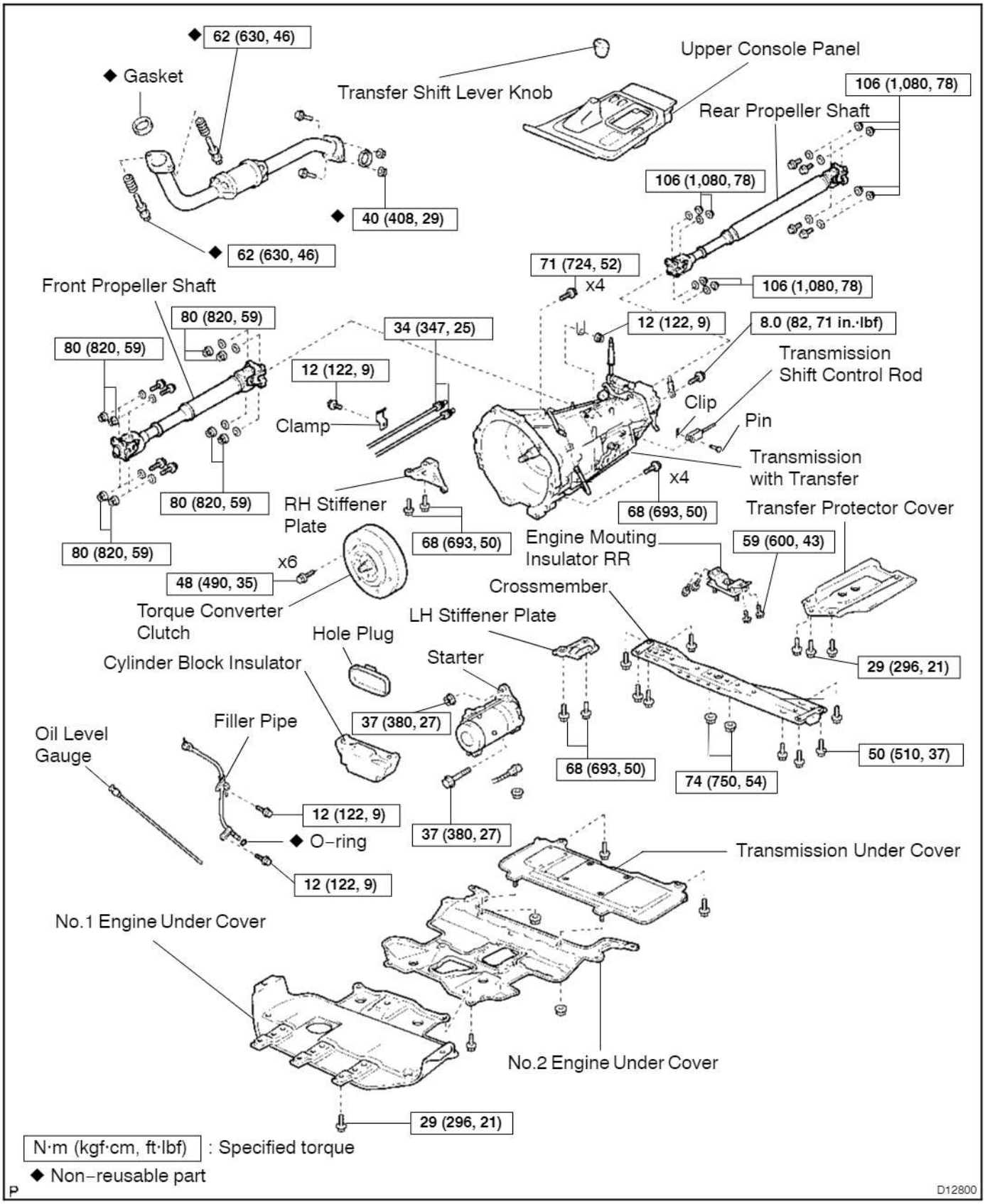
- Transmission control rod and park/neutral positionswitch (See page DI–4).
- ATF level (See page DI–4).
- Conduct the road test of the vehicle (See page DI–4).

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AUTOMATIC TRANSMISSION UNIT (1HD–FTE)

COMPONENTS

AT125-01

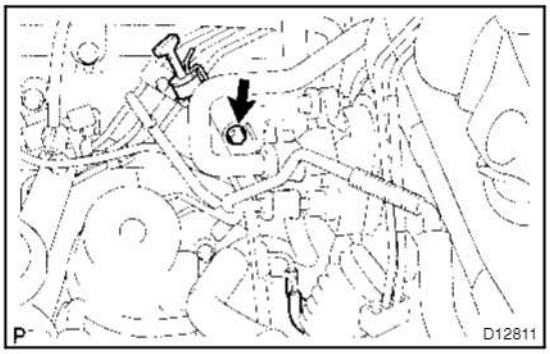


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AT126-01

REMOVAL

1. REMOVE BATTERY



2. REMOVE OIL FILLER PIPE UPPER SIDE MOUNTING BOLT

(a) Remove the level gauge.

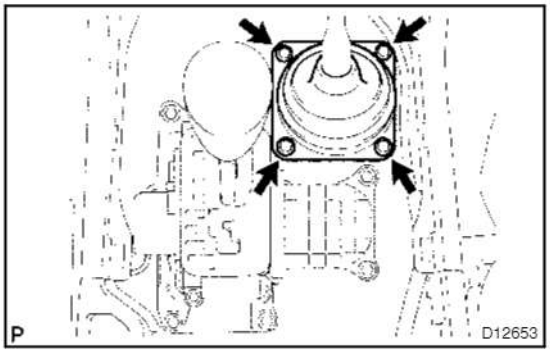
(b) Remove the upper side mounting bolt.
Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

(c) Disconnect the 2 bleeder hoses.

3. REMOVE TRANSFER SHIFT LEVER BOOT

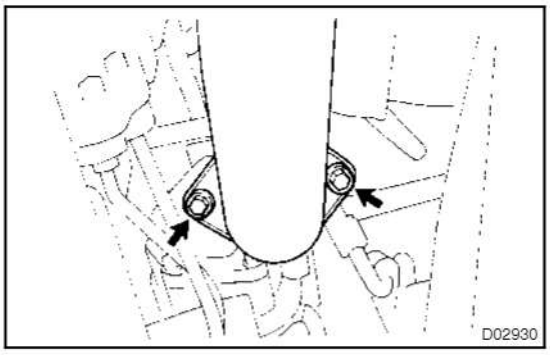
(a) Remove the transfer shift lever knob.

(b) Remove upper console panel (See page BO–79).



(c) Remove the 4 bolts and transfer shift lever boot.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

4. REMOVE ENGINE NO. 1 AND NO. 2 UNDER COVERS
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

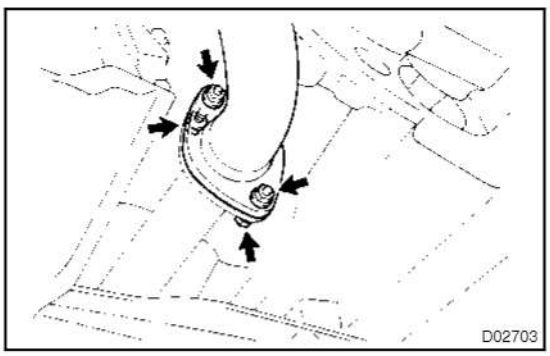


5. REMOVE FRONT EXHAUST PIPES

(a) Remove the nuts.
Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)

HINT:
At the time of installation, please refer to the following item.
Replace the used nuts with new ones.

(b) Remove the 2 bolts.
Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)

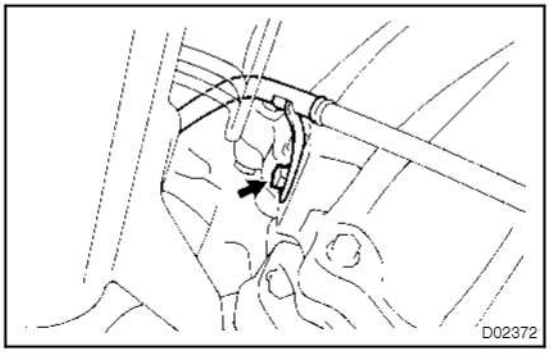


(c) Remove the 2 bolts and nuts.
Torque: 40 N·m (408 kgf·cm, 29 ft·lbf)

HINT:
At the time of installation, please refer to the following item.
Replace the used nuts with new ones.

6. REMOVE FRONT AND REAR PROPELLER SHAFTS (See Pub. No. RM616E on page PR–4)

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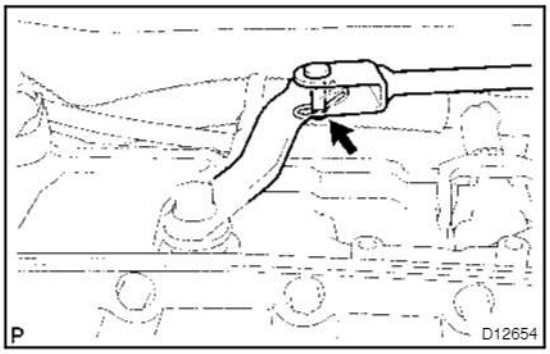


7. REMOVE OIL FILLER PIPE

(a) Remove the bolt and filler pipe.
Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

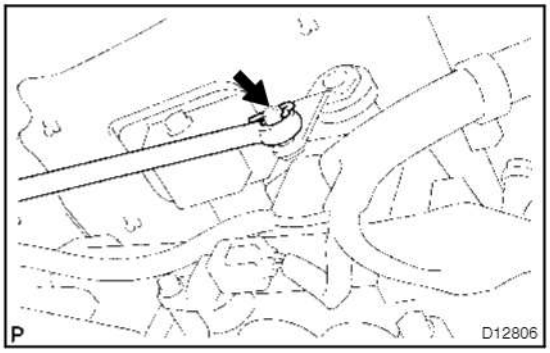
(b) Remove the O–ring from the filler pipe.

HINT:
At the time of installation, please refer to the following item.
Replace the used O–ring with a new one.



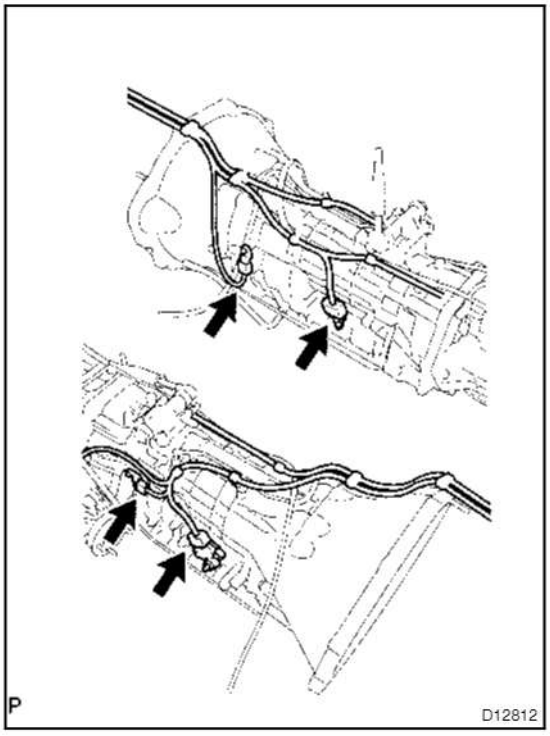
8. SEPARATE TRANSMISSION SHIFT CONTROL ROD

Remove the clip and pin, separate the shift control rod.



9. SEPARATE TRANSFER SHIFT LEVER

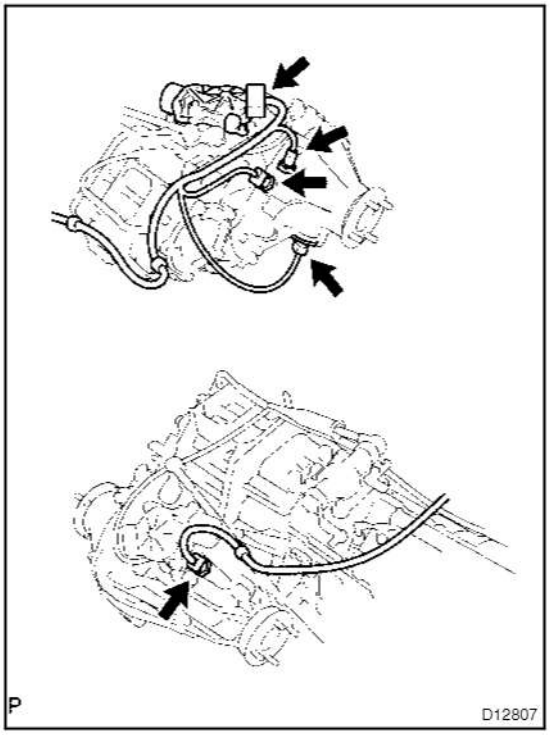
Remove the clip and washer, separate the transfer shift lever rod assembly.



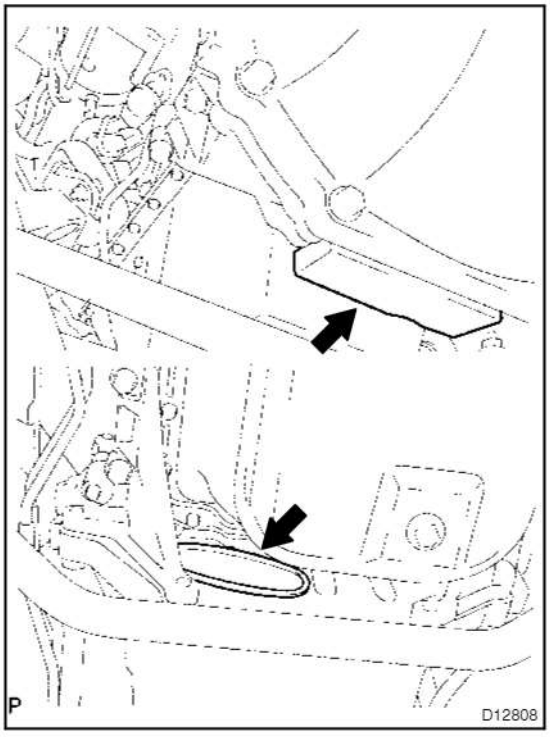
10. SEPARATE WIRE HARNESS

(a) Transmission side:
Disconnect 4 connectors.

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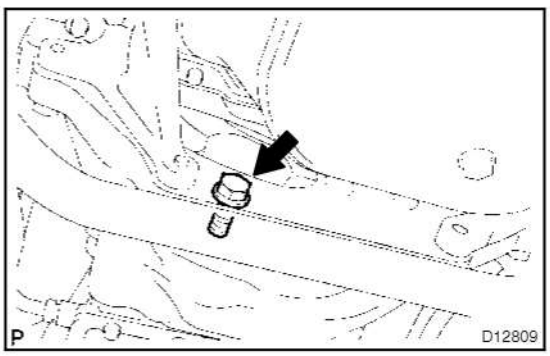


(b) Transfer side:
(1) Disconnect the 4 connectors.
(2) Disconnect the speed sensor connector.



11. REMOVE TORQUE CONVERTER CLUTCH MOUNTING BOLT

(a) Remove the cylinder block insulator and hole plug.

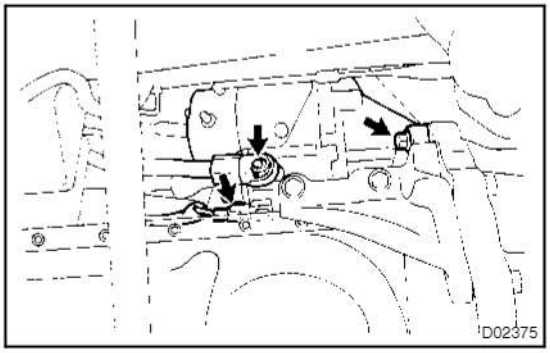


(b) Turn the crankshaft to gain access to each bolt.
(c) Hold the crankshaft pulley nut with a wrench and remove the 6 bolts.

Torque: 48 N·m (490 kgf·cm, 35 ft·lbf)

HINT:
At the time of installation, please refer to the following item.
First install green colored bolt and then 5 other bolts.

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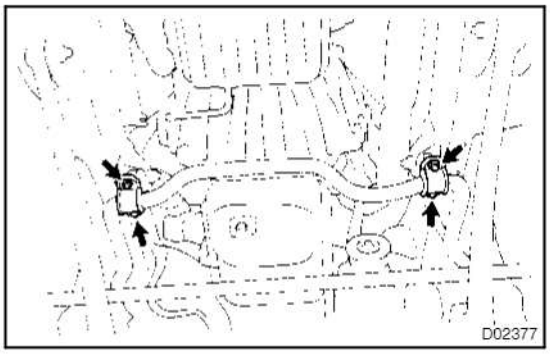


12. REMOVE STARTER

(a) Remove the nut and disconnect the starter wire and connector.

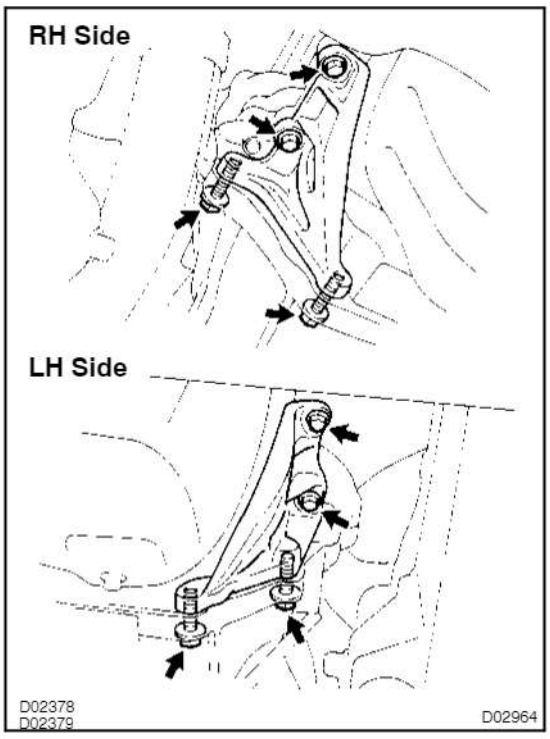
(b) Remove the bolt and starter.

Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)



13. REMOVE 4 STABILIZER MOUNTING BOLTS

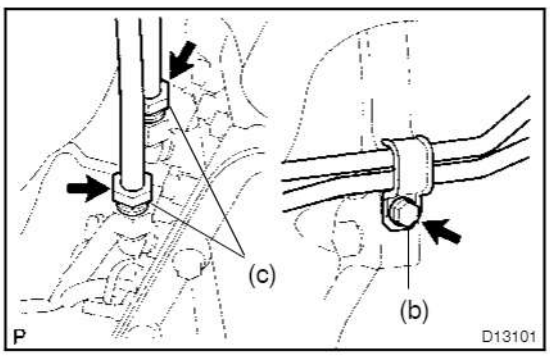
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



14. REMOVE LH AND RH STIFFENER PLATE

Remove the 8 bolts and LH and RH stiffener plates.

Torque: 68 N·m (693 kgf·cm, 50 ft·lbf)



15. DISCONNECT OIL COOLER PIPES

(a) Loosen the 2 union nuts.

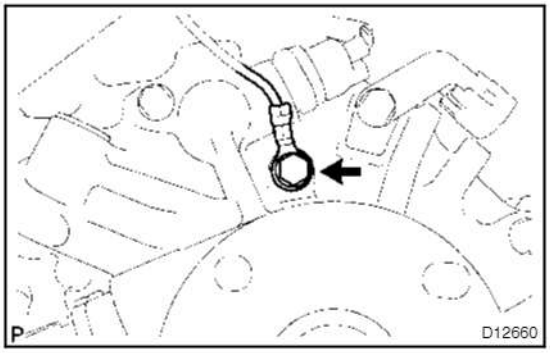
(b) Remove the bolt and clamp.

Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

(c) Remove the 2 union nuts, disconnect the 2 oil cooler pipes.

Torque: 34 N·m (347 kgf·cm, 25 ft·lbf)

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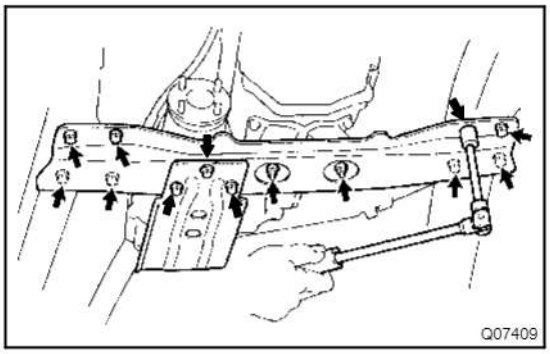
16. SEPARATE GROUND CABLE

Remove the bolt, separate the ground cable.

Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

17. REMOVE CROSSMEMBER AND TRANSTER CASE PROTECTOR

(a) Support the transmission with a jack.

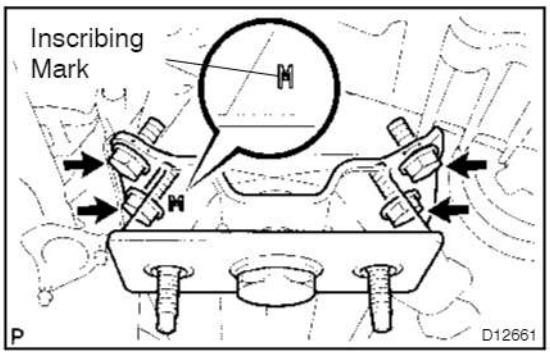


(b) Remove the 3 bolts and transter case protector.

Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)

(c) Remove the 8 bolts, 2 nuts and crossmember.

Torque:
Bolt: 50 N·m (510 kgf·cm, 37 ft·lbf)
Nut: 74 N·m (750 kgf·cm, 54 ft·lbf)



18. REMOVE ENGINE MOUNTING INSULATOR RR

Remove the 4 bolts and engine mounting insulator RR.

Torque: 59 N·m (600 kgf·cm, 43 ft·lbf)

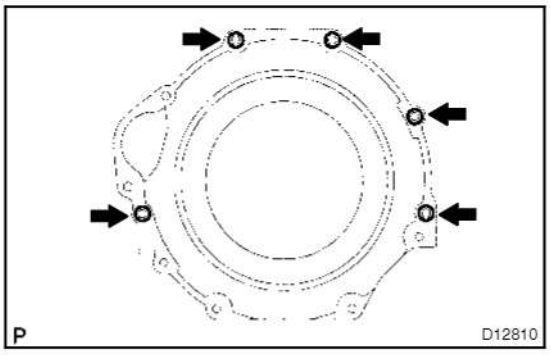
HINT:

At the time of installation, install the insulator rear with the inscribing mark facing backward.

19. REMOVE TRANSMISSION

(a) Lower the rear end of the transmission unit.

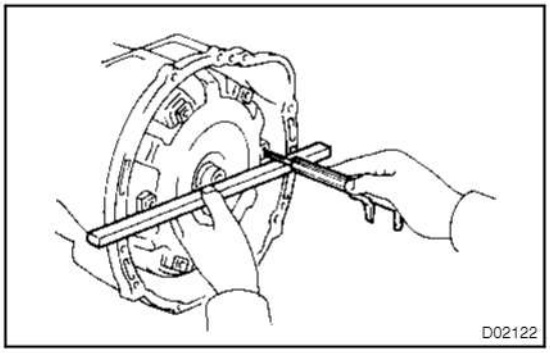
(b) Remove the transmission wire clamp bolt.



(c) Remove the 4 bolts and transmission unit.

Torque: 71 N·m (724 kgf·cm, 52 ft·lbf)

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D02122

AT0B6-02

INSTALLATION

1. CHECK TORQUE CONVERTER CLUTCH INSTALLATION

Using calipers and a straight edge, measure the distance from the installed surface of the transmission housing to the installed surface of the torque converter clutch.

Correct distance: More than 43.4 mm (1.710 in.)

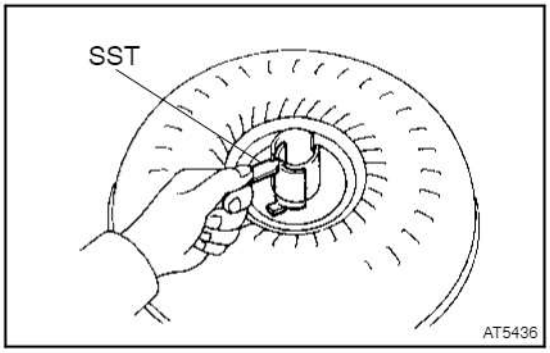
2. TRANSMISSION INSTALLATION

Installation is in the reverse order of removal (See page AT–37).

HINT:

- Transmission control rod and park/neutral position switch (See page DI–102).
- ATF level (See page DI–102).
- Conduct the road test of the vehicle (See page DI–102).

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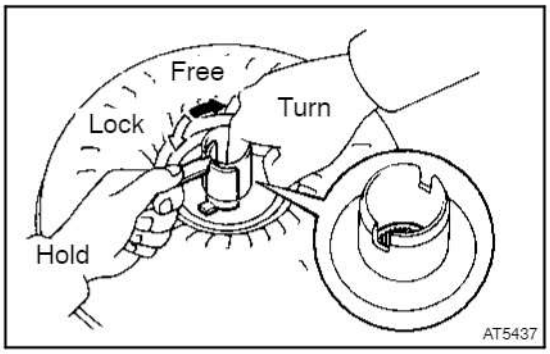
TORQUE CONVERTER AND DRIVE PLATE

AT12T–01

INSPECTION

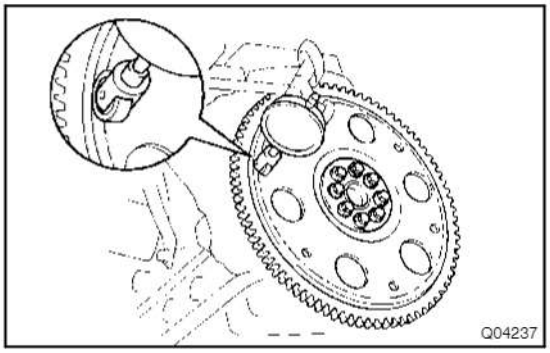
1. INSPECT ONE–WAY CLUTCH

(a) Install SST so that it fits in the notch of the converter hub and outer race of the one–way clutch.
SST 09350–30020 (09351–32020)



(b) Press on the serrations of stator with a finger and rotate it.
(c) Check if it rotates smoothly when turned clockwise and locks up when turned counterclockwise.

If necessary, clean the converter and retest the one–way clutch.
Replace the converter if the clutch still fails in the test.



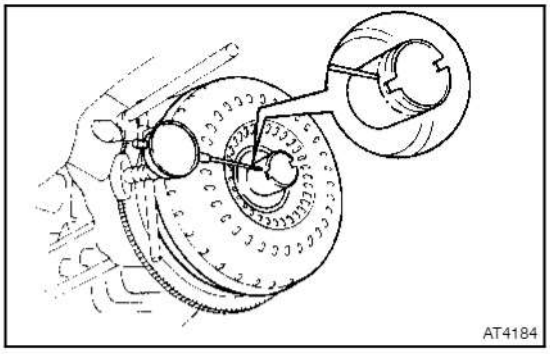
2. MEASURE DRIVE PLATE RUNOUT AND INSPECT RING GEAR

Set up a dial indicator and measure the drive plate runout.

Maximum runout: 0.20 mm (0.0079 in.)

If runout is not within the specification or if the ring gear is damaged, replace the drive plate. If installing a new drive plate, note the orientation of the spacers and tighten the bolts.

Torque:
1st: 49 N·m (500 kgf·cm, 36 ft·lbf)
2nd: Turn extra 90°



3. MEASURE TORQUE CONVERTER CLUTCH SLEEVE RUNOUT

(a) Temporarily mount the torque converter to the drive plate. Set up a dial indicator and measure the torque converter sleeve runout.

Maximum runout: 0.30 mm (0.0118 in.)

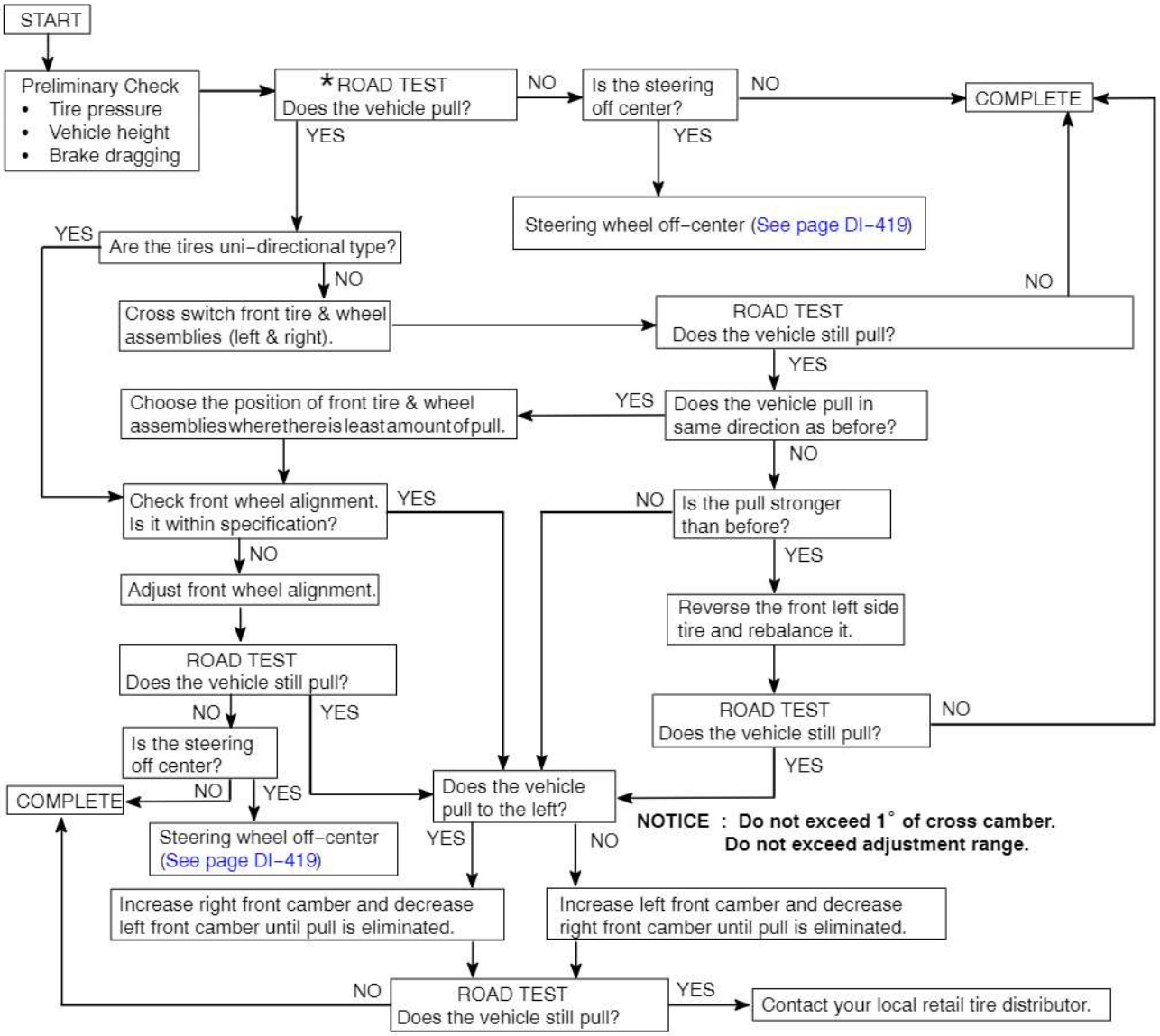
If runout is not within the specification, correct it by reorienting the installation of the torque converter.
If excessive runout cannot be corrected, replace the torque converter.

(b) Remove the torque converter.

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SA2BJ–02

VEHICLE PULLING DIAGNOSIS



* Select a flat road where the vehicle can be driven in a straight line for 100 meters at a constant speed of 35mph. Please confirm safety and set the steering wheel to its straight position. Drive the vehicle in a straight line for 100 meters at a constant speed of 35mph without holding the steering wheel.

(1) The vehicle can keep straight but the steering wheel has some angle.
→ STEERING OFF CENTER (See page DI–419)

(2) The vehicle cannot keep straight.
→ STEERING PULL

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FRONT WHEEL ALIGNMENT

SA17I–05

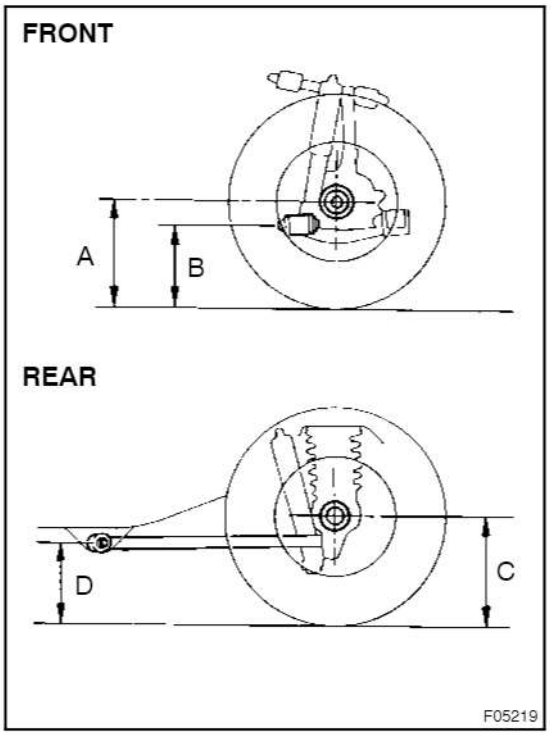
INSPECTION

NOTICE:

After adjusting wheel alignment perform the VGRS calibration.

HINT:

- For the steering wheel off–center, perform the "steering off–center" (See page DI–419).
- Check that the "STRAIGHT ANG FLG" is "VALID" in the DATA LIST (See page DI–348 step 5.).



1. MEASURE VEHICLE HEIGHT

Vehicle height

EUROPE

Engine	Front	Rear
2UZ–FE	A – B: 75.0 mm (2.953 in.)	C – D: 40.0 mm (1.575 in.)
1HD–FT	A – B: 76.0 mm (2.992 in.)	C – D: 41.0 mm (1.614 in.)

GENERAL

Engine	Front	Rear
2UZ–FE	A – B: 76.0 mm (2.992 in.)	C – D: 31.0 mm (1.220 in.)
1HD–T	A – B: 76.0 mm (2.992 in.)	C – D: 34.0 mm (1.339 in.)

G.C.C.

Engine	Front	Rear
2UZ–FE	A – B: 72.0 mm (2.835 in.)	C – D: 53.0 mm (2.087 in.)
1FZ–FE	A – B: 71.0 mm (2.795 in.)	C – D: 64.0 mm (2.520 in.)

AUSTRALIA

Front	A – B: 75.0 mm (2.953 in.)
Rear	C – D: 39.0 mm (1.535 in.)

w/ AHC System

Front	A – B: 83.0 mm (3.268 in.)
Rear	C – D: 71.0 mm (2.795 in.)

Measuring points:

A: Ground clearance of spindle center

B: Ground clearance of lower suspension arm front bolt center

C: Ground clearance of rear axle shaft center

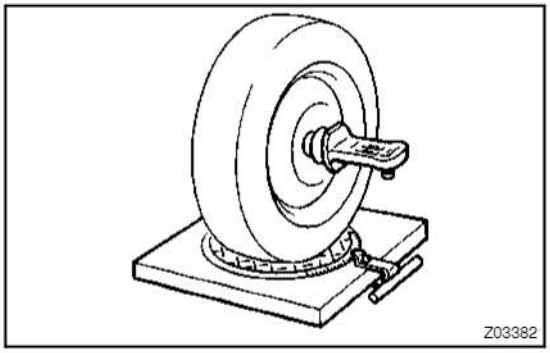
D: Ground clearance of lower control arm front bolt center

NOTICE:

Before inspecting the wheel alignment, adjust the vehicle height to the specification.

If the vehicle height is not within the specification, try to adjust it by pushing down on or lifting the body.

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2. INSTALL CAMBER–CASTER–KINGPIN GAUGE OR POSITION VEHICLE ON WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.

3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

EUROPE AND GENERAL (2UZ–FE)

Camber Left–right error	0°05' ± 45' (0.08° ± 0.75°) 30' (0.5°) or less
Caster Left –right error	2°10' ± 45' (2.17° ± 0.75°) 30' (0.5°) or less
Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less

GENERAL (1HD–T)

Camber Left–right error	0°05' ± 45' (0.08° ± 0.75°) 30' (0.5°) or less
Caster Left –right error	2°25' ± 45' (2.42° ± 0.75°) 30' (0.5°) or less
Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less

G.C.C. (2UZ–FE)

Camber Left–right error	0°05' ± 45' (0.08° ± 0.75°) 30' (0.5°) or less
Caster Left –right error	2°15' ± 45' (2.25° ± 0.75°) 30' (0.5°) or less
Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less

G.C.C. (1FZ–FE)

Camber Left–right error	0°05' ± 45' (0.08° ± 0.75°) 30' (0.5°) or less
Caster Left –right error	2°50' ± 45' (2.83° ± 0.75°) 30' (0.5°) or less
Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less

AUSTRALIA

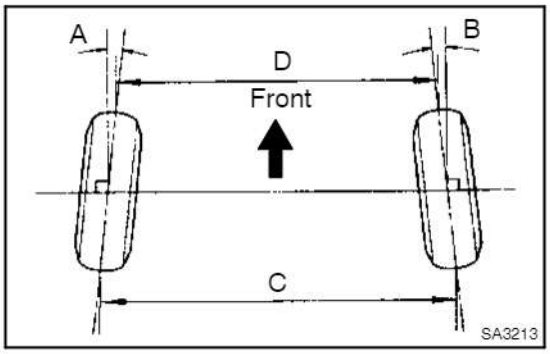
Camber Left–right error	0°05' ± 45' (0.08° ± 0.75°) 30' (0.5°) or less
Caster Left –right error	2°10' ± 45' (2.17° ± 0.75°) 30' (0.5°) or less
Steering axis inclination Left–right error	12°10' ± 45' (12.17° ± 0.75°) 30' (0.5°) or less

w/ AHC System

Camber Left–right error	0°00' ± 45' (0° ± 0.75°) 30' (0.5°) or less
Caster Left –right error	3°05' ± 45' (3.08° ± 0.75°) 30' (0.5°) or less
Steering axis inclination Left–right error	12°15' ± 45' (12.25° ± 0.75°) 30' (0.5°) or less

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If the steering axis inclination is not within the specification, after the camber and caster have been correctly adjusted, recheck the steering knuckle front wheel for bearing or looseness.



4. INSPECT TOE–IN

w/ AHC System

Toe–in (total)	A + B: 0°00' ± 12' (0° ± 0.2°) C – D: 0 ± 2 mm (0 ± 0.08 in.)

OTHERS

Toe–in (total)	A + B: 0°06' ± 12' (0.1° ± 0.2°) C – D: 1 ± 2 mm (0.04 ± 0.08 in.)

If the toe–in is not within the specification, adjust the rack ends.

5. ADJUST CAMBER AND CASTER

NOTICE:

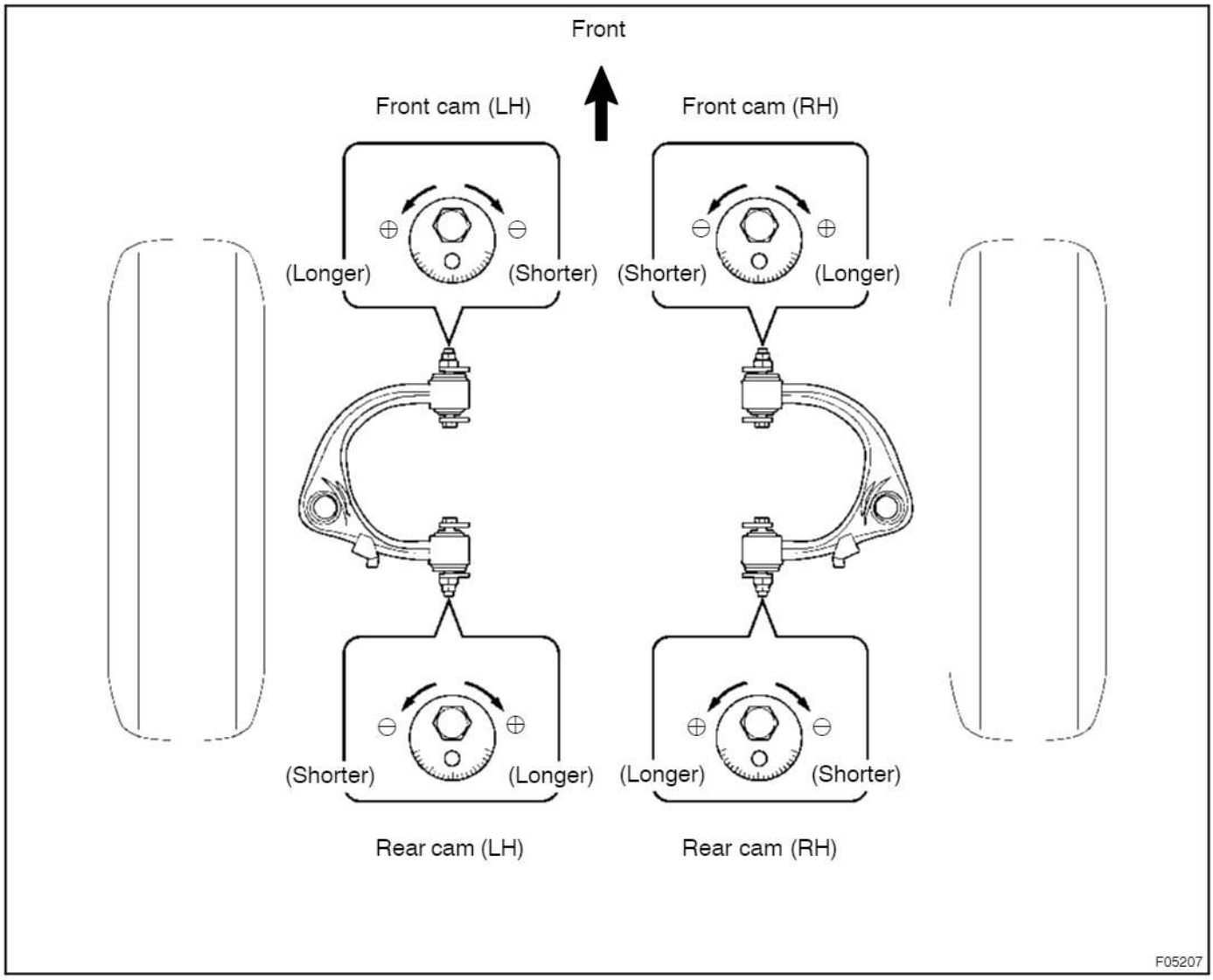
After the camber has been adjusted, inspect the toe–in.

(a) Loosen the front and/or rear adjusting cam nuts.

(b) Adjust the camber and caster by front and/or rear adjusting cams.

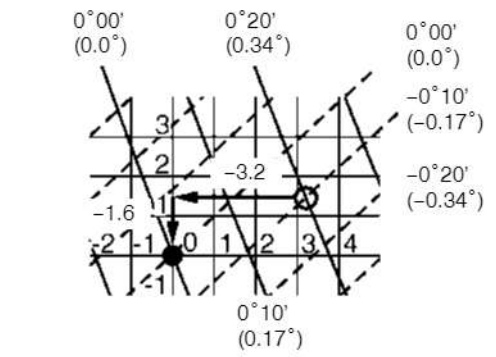
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HINT:
Try to adjust the camber and caster to the center value.



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(Example)



(c) How to read adjustment chart (using examples).

(1) Measure the present alignment.

Camber: –0°20' (–0.33°)

Caster: 3°15' (3.25°)

(2) Mark the difference between the standard value (A) and the measured value (B) on the adjustment chart.

Standard value:

Camber: 0°00' (0°)

Caster: 3°05' (3.08°)

Formula: A – B = C

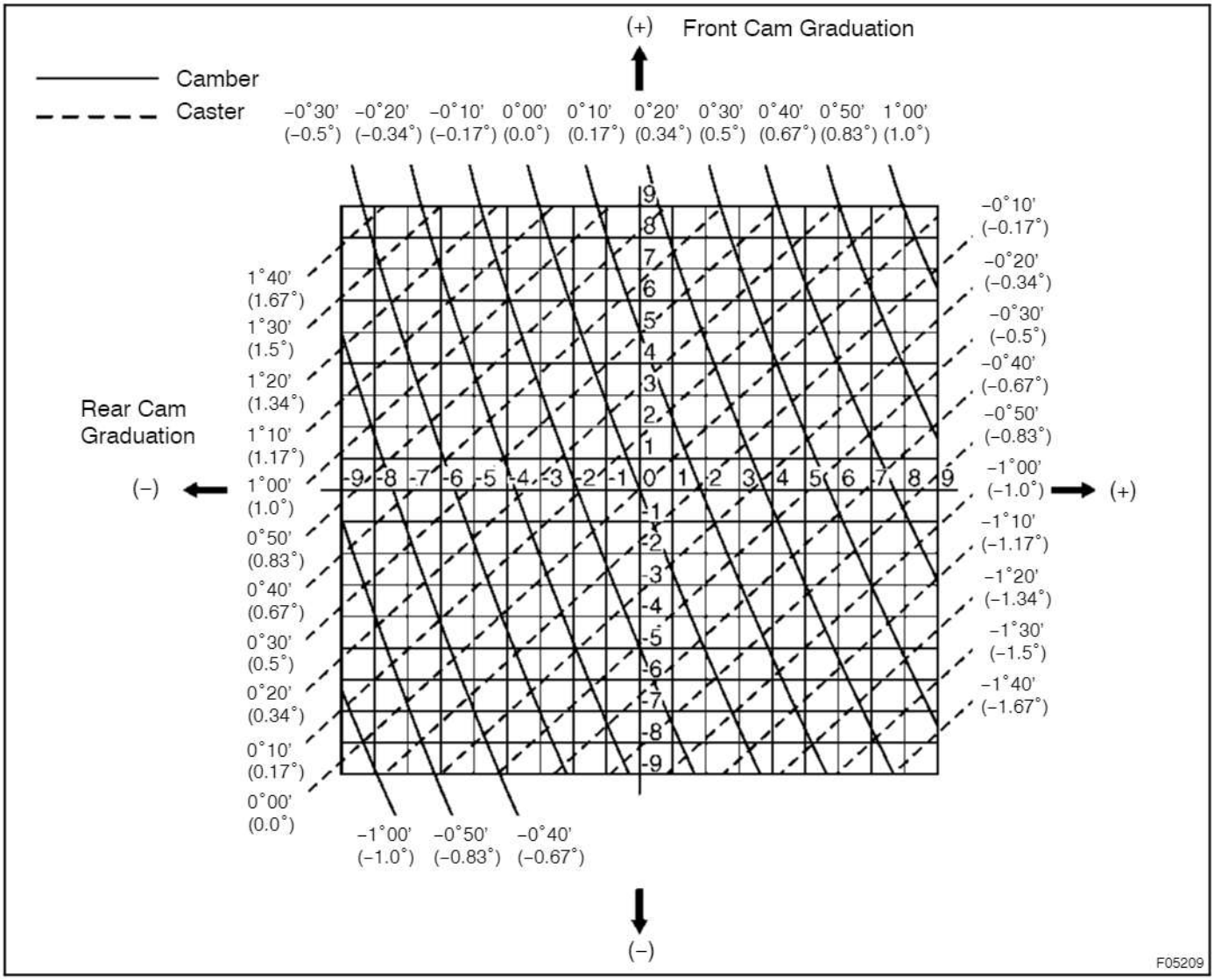
Camber: 0°00' – (–0°20') = 0°20'

Caster: 3°05' – 3°15' = –0°10'

(3) As shown in the chart, read the distance from the marked point to 0 point, and adjust the front and/or rear adjusting cams accordingly.

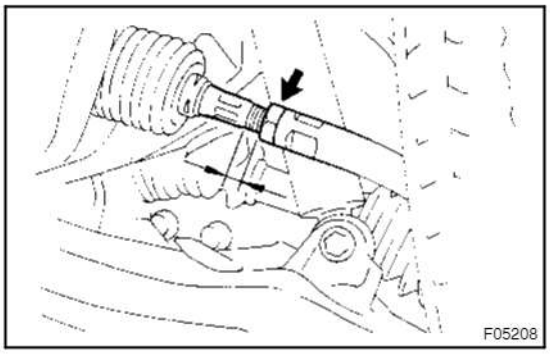
Front cam: – (Shorter) 1.6

Rear cam: – (Shorter) 3.2



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(d) Torque the front and/or rear adjusting cam nuts.
Torque: 98 N·m (1,000 kgf·cm, 72 ft·lbf)



6. ADJUST TOE–IN

NOTICE:

After adjusting wheel alignment perform the VGRS calibration.

(a) Check or adjust the lengths of the rack ends, then adjust the toe–in.
Rack end length difference: 3.0 mm (0.118 in.) or less

(b) Remove the boot clamps.

(c) Loosen the tie rod lock nuts.

(d) Turn the left and right rack ends an equal amount to adjust the toe–in.

HINT:

Try to adjust the toe–in to the center value.

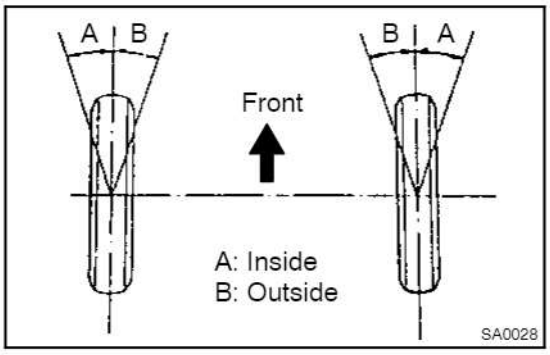
(e) Tighten the tie rod lock nuts.

(f) Place the boot on the seat and clamp it.

HINT:

Make sure that the boots are not twisted.

(g) Perform the VGRS system calibration (See page DI–357).

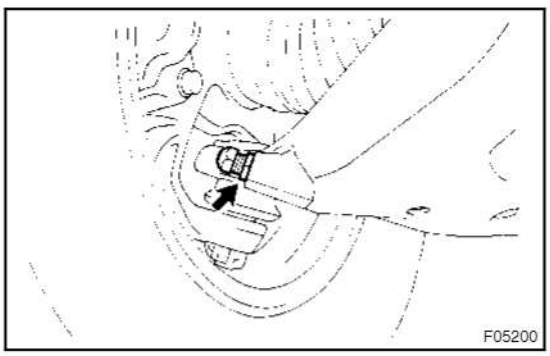


7. INSPECT AND ADJUST WHEEL ANGLE

(a) Turn the steering wheel fully, and measure the turning angle.

Inside wheel	36°42' (33°42' – 36°42') 36.7° (33.7° – 36.7°)
Reference: Outside wheel	32°36' 32.6°

If the wheel angles differ from the standard of the specification, inspect the toe–in.



(b) When toe–in is normal after inspection, adjust wheel angle with the knuckle stopper bolt of the lower suspension arm.
Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)

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POWER STEERING FLUID (Independent Front Suspension)

SR1IV–01

INSPECTION

1. CHECK STEERING FLUID PRESSURE

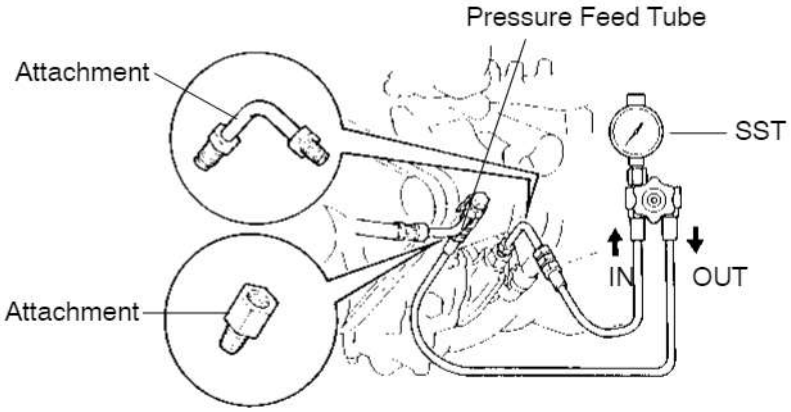
(a) Disconnect the pressure feed tube from the PS vane pump.

(b) Connect SST, as shown in the illustration below.
SST 09640–10010 (09641–01010, 09641–01030, 09641–01060)

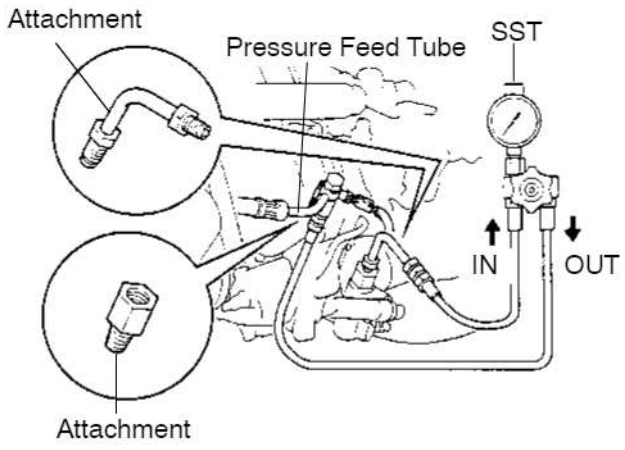
NOTICE:

Check that the valve of the SST is in the open position.

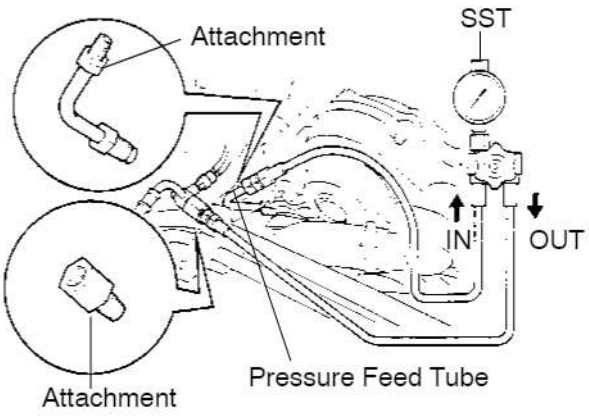
1FZ–FE:



1HD–FTE:



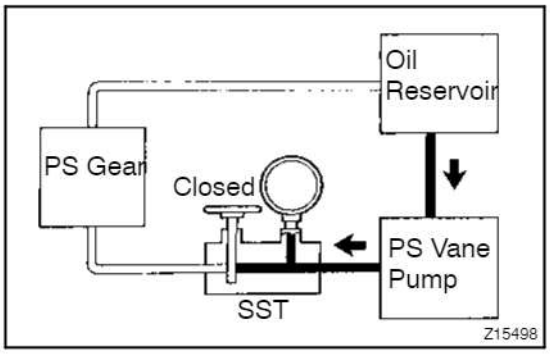
2UZ–FE:



F17607

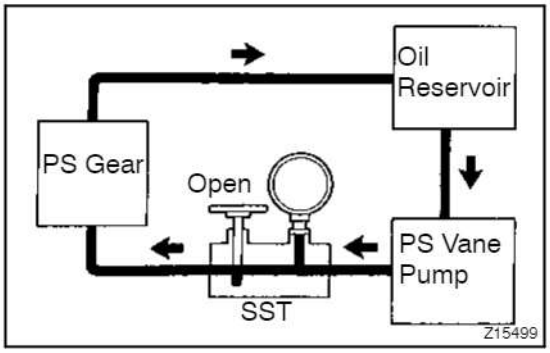
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(c) Bleed the power steering system.
(d) Start the engine and run it at idle.
(e) Turn the steering wheel from lock to lock several times to boost fluid temperature.
Fluid temperature: 80 °C (176 °F)



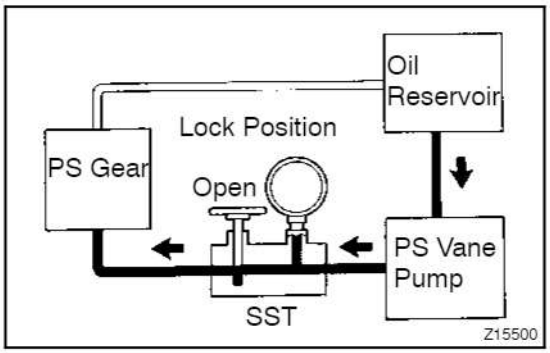
(f) With the engine idling, close the valve of the SST and observe the reading on the SST.
Minimum fluid pressure:
10,000 kPa (102 kgf/cm², 1,451 psi)

NOTICE:
- **Do not keep the valve closed for more than 10 seconds.**
- **Do not let the fluid temperature become too high.**



(g) With the engine idling, open the valve fully.
(h) Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.
Difference fluid pressure:
490 kPa (5 kgf/cm², 71 psi) or less

NOTICE:
Do not turn the steering wheel.



(i) With the engine idling and valve fully opened, turn the steering wheel to full lock.
Minimum fluid pressure:
10,000 kPa (102 kgf/cm², 1,451 psi)

NOTICE:
- **Do not maintain lock position for more than 10 seconds.**
- **Do not let the fluid temperature become too high.**

(j) Disconnect the SST.
(k) Connect the pressure feed tube to the PS vane pump.
1FZ–FE: (See page SR–31)
2UZ–FE : (See page SR–32)
1HD–FTE: (See page SR–50)
(l) Bleed the power steering system.
(See Pub. No. RM616E on page SR–4)

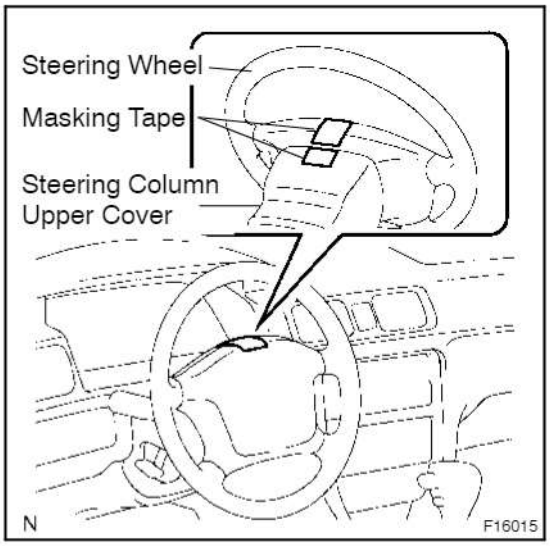
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SR1HO–14

REPAIR PROCEDURES

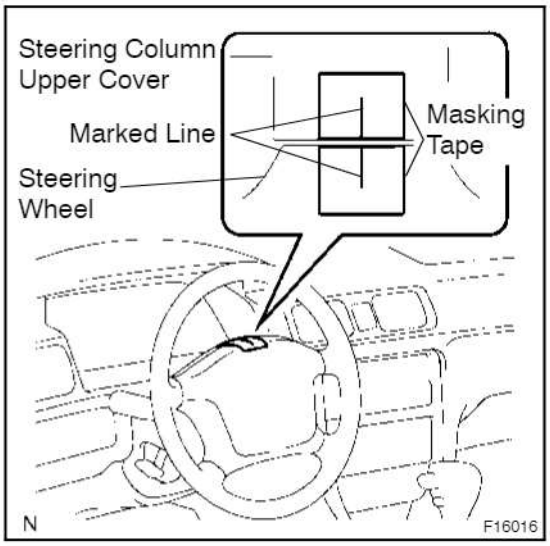
HINT:

- For the steering off–center, perform the "steering off–center" (See page DI–419).
- Check that the "STRAIGHT ANG FLG" is "VALID" in the DATA LIST (See page DI–348 step 5.).
- This is the repair procedure for steering off center.



1. INSPECT STEERING WHEEL OFF CENTER

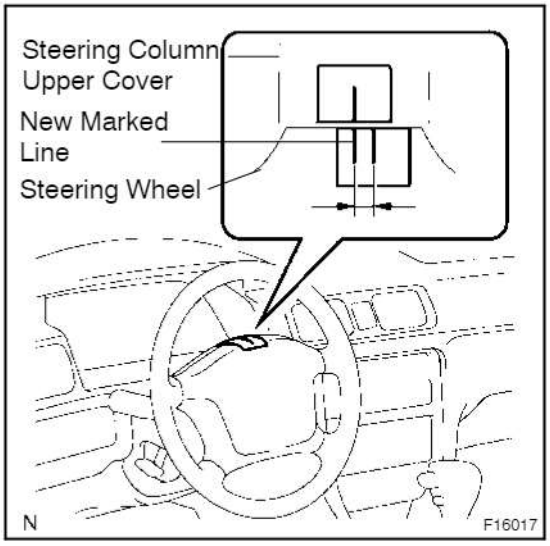
(a) Apply masking tape on the top center of the steering wheel and steering column upper cover.



(b) Drive the vehicle in a straight line for 100 meters at a constant speed of 35 mph (56 km/h), and hold the steering wheel to maintain the course.

(c) Draw a line on the masking tape as shown in the illustration.

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(d) Turn the steering wheel to its straight position.

HINT:

Refer to the upper surface of the steering wheel, steering spoke and SRS airbag line for the straight position.

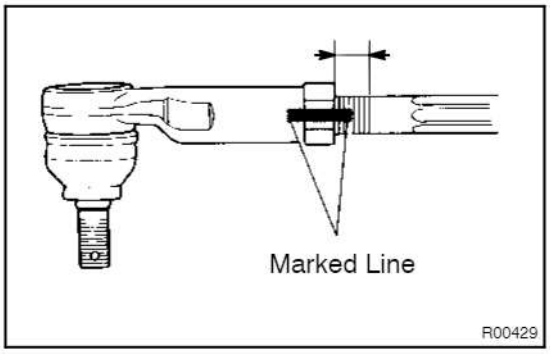
(e) Draw a new line on the masking tape of the steering wheel as shown in the illustration.

(f) Measure the distance between the 2 lines on the masking tape of the steering wheel.

(g) Convert the measured distance to steering angle.
Measured distance 1 mm (0.04 in.) = Steering angle approximately 1 deg.

HINT:

Make a note of the steering angle.



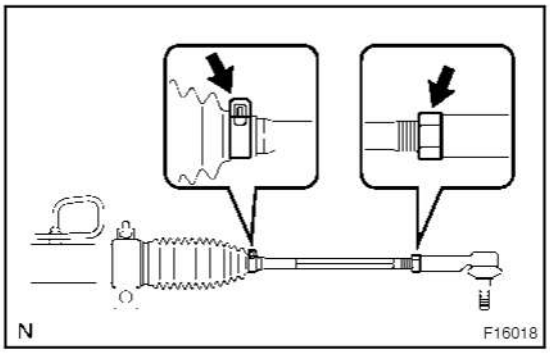
2. ADJUST STEERING ANGLE

(a) Draw a line on the RH and LH tie rod and rack ends where it can easily be seen.

(b) Using a paper gauge, measure the distance from RH and LH tie rod ends to the rack end screws.

HINT:

- Measure the RH side and LH side.
- Make a note of the measured values.



(c) Remove the RH and LH boot clips from the rack boots.

(d) Loosen the RH and LH lock nuts.

(e) Turn the RH and LH rack end by the same amount (but in different directions) according to the steering angle.
1 turn 360 deg. of rack end (1.5 mm (0.059 in.) horizontal movement) = 12 deg. of steering angle

(f) Tighten the RH and LH lock nuts.
Torque: 55 N·m (560 kgf·cm, 41 ft·lbf)

NOTICE:

Make sure that the difference in length between RH and LH tie rod ends and rack end screws are within 3.0 mm (0.118 in.).

(g) Install the RH and LH boot clips.

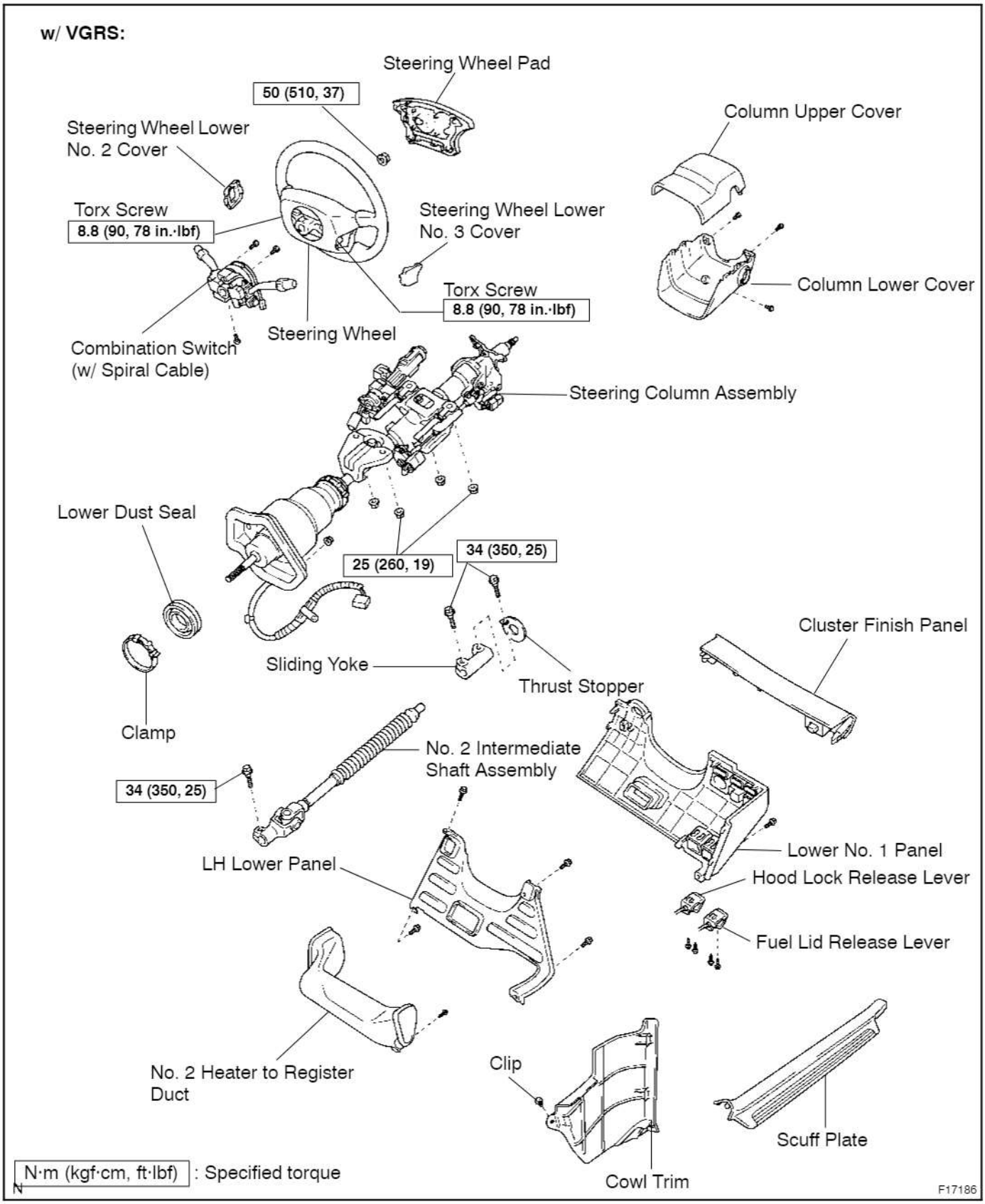
(h) Perform the steering angle adjustment (See page DI–357 step 4 to 7).

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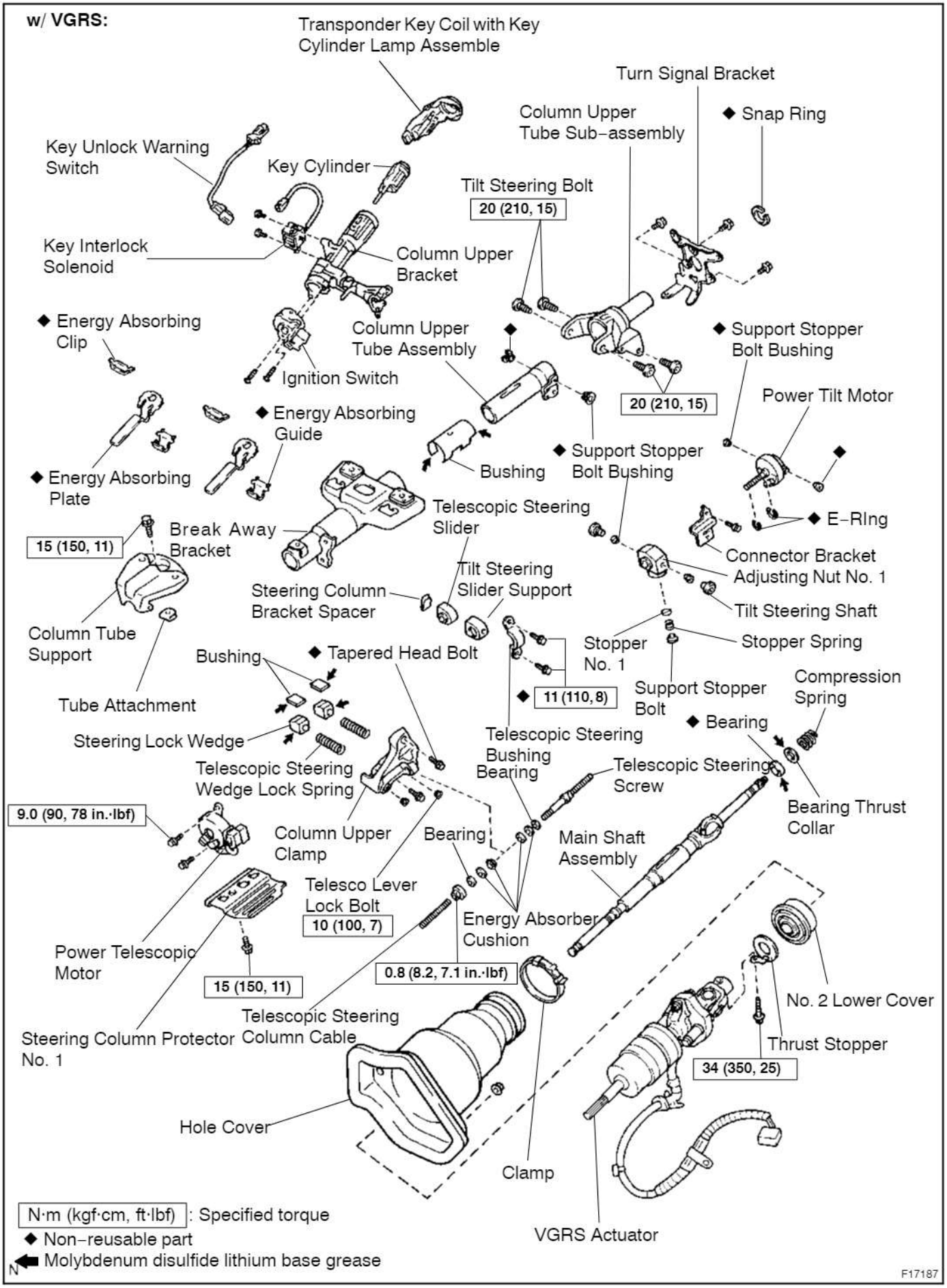
POWER TILT AND POWER TELESCOPIC STEERING COLUMN

COMPONENTS

SR0FF-02



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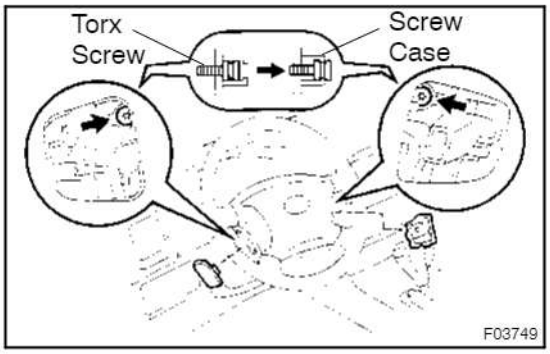
SR1IW–01

REMOVAL

1. REMOVE STEERING WHEEL PAD

NOTICE:

If the airbag connector is disconnected with the ignition switch at ON or ACC, DTCs will be recorded.



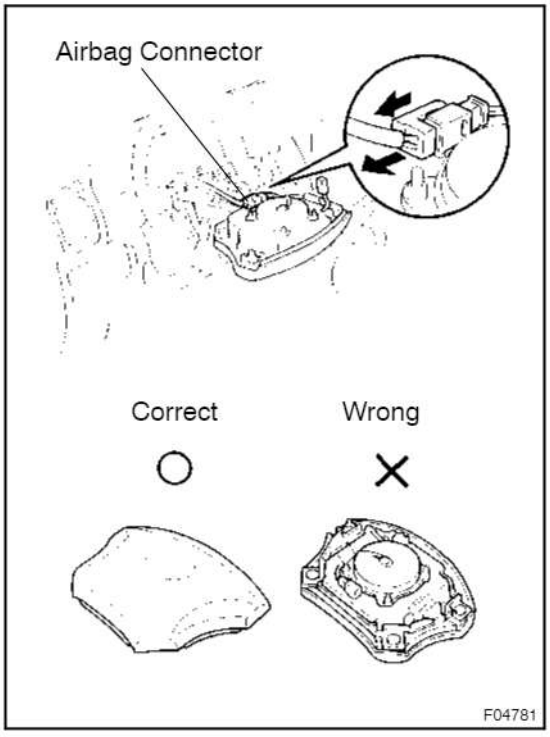
(a) Place the front wheels facing straight ahead.

(b) Remove the steering wheel lower No. 2 and No. 3 covers.

(c) Using a torx socket wrench, loosen the 2 torx screws.

HINT:

Loosen the 2 screws until the groove along the screw circumference catches on the screw case.



(d) Except Dual–stage Airbag:
Pull out the wheel pad from the steering wheel and disconnect the airbag connector.

(e) Except Dual–stage Airbag:
Disconnect the connector.

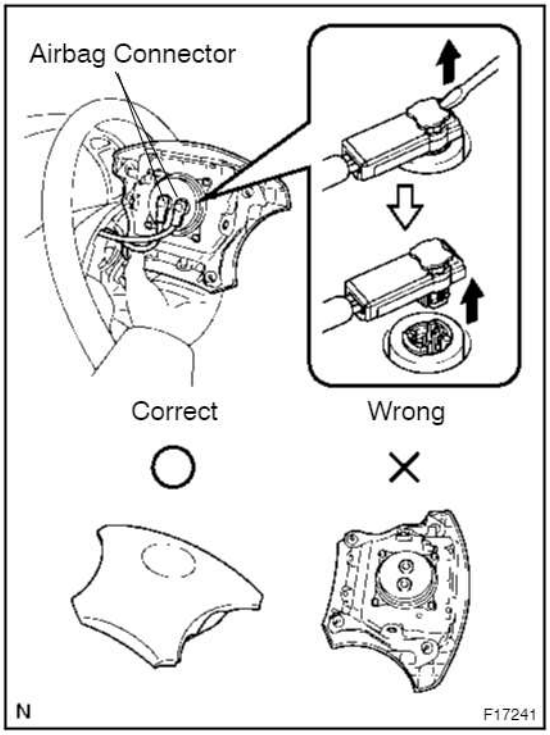
CAUTION:

- **When storing the wheel pad, keep the upper surface of the pad facing upward.**
- **Never disassemble the wheel pad.**

NOTICE:

When removing the wheel pad, take care not to pull the airbag wire harness.

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(f) Dual–stage Airbag:
Pull the pad out from the steering wheel and disconnect the airbag connector.

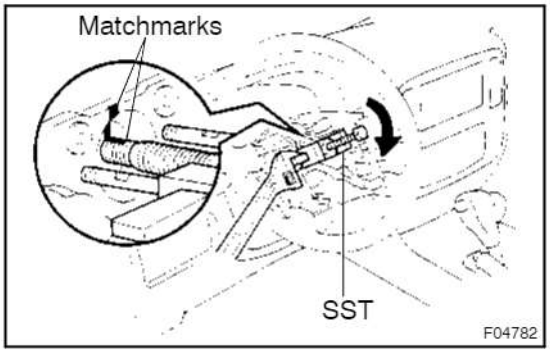
(g) Dual–stage Airbag:
Disconnect the connector.

CAUTION:

- **When storing the wheel pad, keep the upper surface of the pad facing upward.**
- **Never disassemble the wheel pad.**

NOTICE:

When removing the wheel pad, take care not to pull the airbag wire harness.



2. REMOVE STEERING WHEEL

(a) Disconnect the connector.

(b) Remove the steering wheel set nut.

(c) Place matchmarks on the steering wheel and main shaft assembly.

(d) Using SST, remove the wheel.
SST 09950–50013 (09951–05010, 09952–05010, 09953–05020, 09954–05021)

3. REMOVE UPPER AND LOWER COLUMN COVERS

Remove the 3 screws.

4. REMOVE COMBINATION SWITCH WITH SPIRAL CABLE

(a) Disconnect the 5 connectors.

(b) Disconnect the airbag connector.

(c) Remove the 3 screws.

5. REMOVE SPIRAL CABLE (See page BE–22)

NOTICE:

Do not disassembly the cable or apply oil to it.

6. REMOVE SCUFF PLATE

7. REMOVE COWL TRIM

Remove the clip.

8. REMOVE CLUSTER FINISH PANEL

Remove the connector.

9. REMOVE LOWER NO. 1 PANEL

(a) Remove the 2 screws and disconnect the hood lock release lever from the panel.

(b) Remove the 2 screws and disconnect the fuel lid release lever from the panel.

(c) Remove pad set screw.

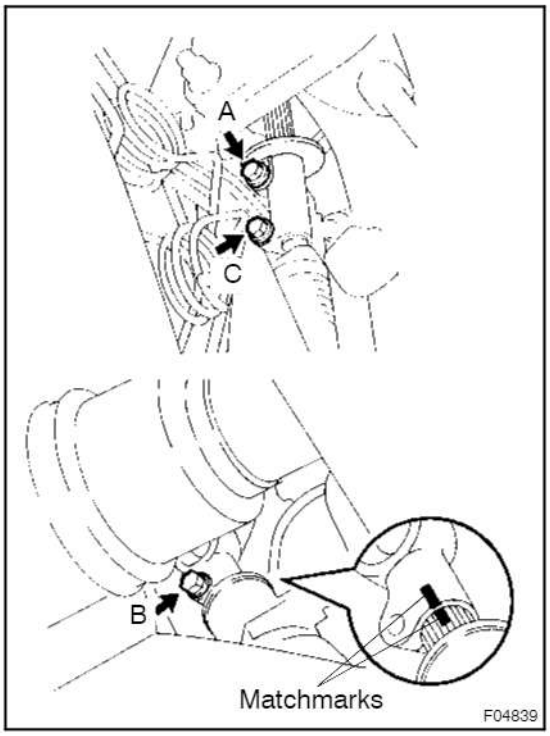
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10. REMOVE LH LOWER PANEL

Remove the 4 bolts.

11. REMOVE NO. 2 HEATER TO REGISTER DUCT

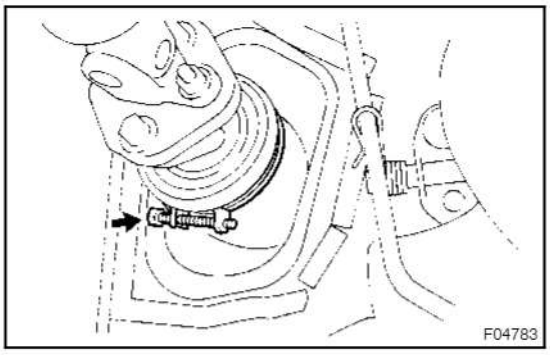
Remove the screw.



12. DISCONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY

(a) Place matchmarks on the intermediate shaft and control valve shaft.
(b) Loosen the bolt A.
(c) Remove the bolt B and the bolt C.

13. w/o VGRS:
DISCONNECT HOLE COVER



14. w/o VGRS:
REMOVE STEERING COLUMN ASSEMBLY

(a) Loosen the hose clamp.
(b) Remove the 4 bolts.
(c) Disconnect the connectors from column assembly.
(d) Remove the 4 column assembly set nuts.
(e) Remove the steering column assembly.

15. w/ VGRS:
REMOVE STEERING COLUMN ASSEMBLY

(a) Disconnect the connectors from column assembly.
(b) Disconnect the connector from VGRS ECU.
(c) Disconnect the VGRS wire harness clamp.
(d) Remove the 2 nuts from hole cover.
(e) Remove the 4 column assembly set nuts.
(f) Remove the steering column assembly.

16. REMOVE NO. 2 INTERMEDIATE SHAFT ASSEMBLY

17. REMOVE SLIDING YOKE

(a) Remove the bolt.
(b) Remove the thrust stopper, and sliding yoke.

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18. REMOVE LOWER DUST SEAL

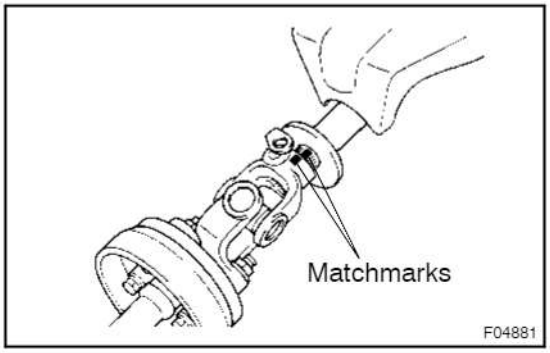
Remove the clamp.

19. w/o VGRS:

REMOVE HOLE COVER, HOSE CLAMP AND NO.2 HOLE COVER FROM COLUMN ASSEMBLY

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SR11X-01



DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

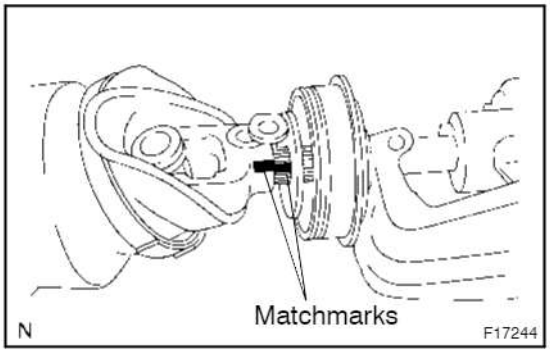
1. w/o VGRS:
REMOVE NO. 2 LOWER COVER

Remove the 2 nuts and No. 2 lower cover.

2. w/o VGRS:
REMOVE INTERMEDIATE SHAFT ASSEMBLY

(a) Place matchmarks on the intermediate shaft assembly and main shaft assembly.
(b) Remove the bolt and disconnect the intermediate shaft assembly.
(c) Remove the thrust stopper.

3. w/o VGRS:
REMOVE NO. 2 LOWER COVER



4. w/ VGRS:
REMOVE VGRS ACTUATOR

(a) Loosen the boot clamp.
(b) Remove the bolt and place matchmarks on the intermediate shaft assembly and main shaft assembly.
(c) Disconnect the VGRS assemblywith hole cover.
(d) Remove the thrust stopper.
(e) Disconnect VGRS wire harness clamp from the plate.
(f) Remove the boot from the VGRS actuator assembly.
(g) Remove the No. 2 lower cover.

5. REMOVE TRANSPONDER KEY COIL AND KEY CYLINDER LAMP ASSEMBLY

Remove the screw and transponder key coil with the key cylinder lamp assembly.

6. REMOVE CONNECTOR BRACKET

Remove the bolt and connector bracket.

7. REMOVE STEERING COLUMN PROTECTOR NO. 1

Remove the bolt and steering column protector No. 1.

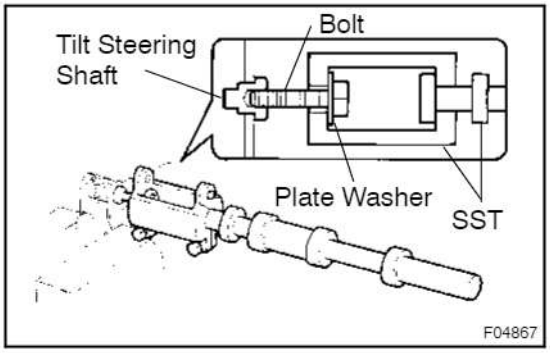
8. REMOVE TURN SIGNAL BRACKET

Remove the 3 bolts and turn signal bracket.

9. REMOVE POWER TILT MOTOR

(a) Using a hexagon wrench, remove the support stopper bolt.
(b) Remove the stopper spring and stopper No. 1.
(c) Using a hexagon wrench, remove the 2 tilt steering bolts.
(d) Using a screwdriver, remove the 2 E–rings.
(e) Remove the 2 support stopper bolt bushings from the motor.

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10. REMOVE ADJUSTING NUT NO. 1

(a) Set SST, a plate washer (36 mm outer diameter) and bolt (6 mm normal diameter, 1.0 mm pitch, 50 mm length), as shown in the illustration.

SST 09910–00015 (09911–00011, 09912–00010)

Reference:

Plate washer 90201–10201

Bolt 91111–51050

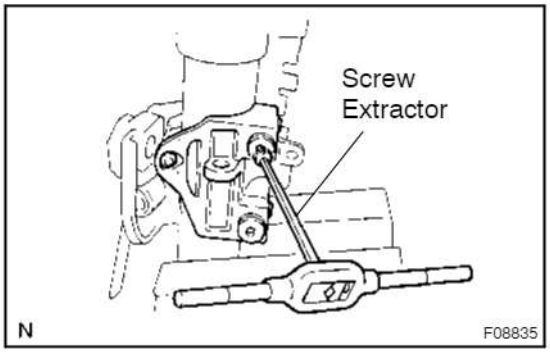
(b) Remove the 2 tilt steering shafts by using the sliding hammer on SST.

(c) Remove the 2 support stopper bolt bushings from the adjusting nut No. 1.

11. REMOVE POWER TELESCOPIC MOTOR

(a) Remove the 2 bolts and power telescopic motor.

(b) Remove the telescopic steering column cable.



12. REMOVE COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

(a) Remove column tube stopper.

(b) Using a centering punch, mark the center of the 2 tapered–head bolts.

(c) Using a 3 – 4 mm (0.12 – 0.16 in.) drill, drill into the 2 bolts.

(d) Using a screw extractor, remove the 2 bolts, column upper bracket and column upper clamp.

(e) Using a hexagon wrench, remove the 2 telesco lever lock bolts.

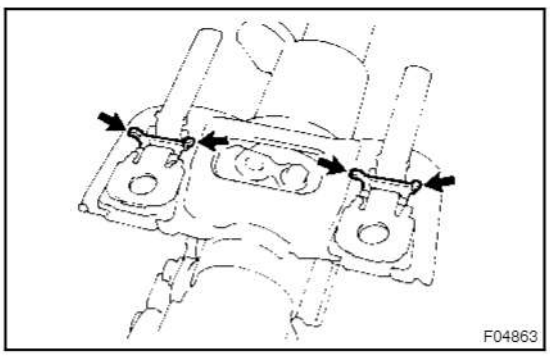
(f) Remove the 2 telescopic steering wedge lock springs and 2 steering lock wedges.

13. REMOVE COLUMN TUBE SUPPORT

(a) Remove the bolt.

(b) Remove the tube support with tube attachment.

(c) Remove the tube attachment from the tube support.



14. REMOVE 2 ENERGY ABSORBING PLATES

(a) Using pliers, remove the 2 energy absorbing clips.

(b) Remove the 2 energy absorbing plates and energy absorbing guides.

15. REMOVE TELESCOPIC STEERING SLIDER SUPPORT

Remove the 2 bolts and telescopic steering slider support.

16. REMOVE TELESCOPIC STEERING BUSHING

17. REMOVE TELESCOPIC STEERING SLIDER

18. REMOVE STEERING COLUMN BRACKET SPACER

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19. REMOVE TELESCOPIC STEERING SCREW

Remove the nut, 4 energy absorber cushions, 2 bearings and telescopic steering screw.

20. REMOVE COLUMN UPPER TUBE SUB–ASSEMBLY WITH MAIN SHAFT ASSEMBLY

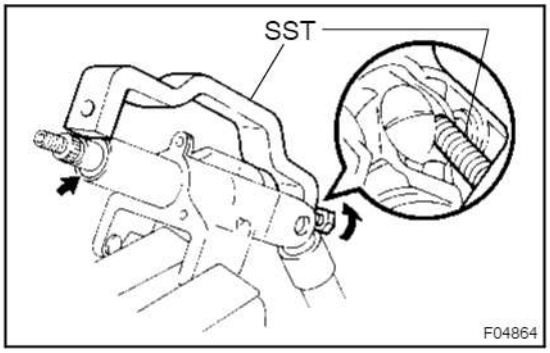
(a) Using a screwdriver, remove the lower side snap ring from the main shaft assembly.

(b) Using a hexagon wrench, remove the 2 tilt steering bolts and column upper tube sub–assembly with the main shaft assembly.

(c) Remove the column upper tube assembly from the break away bracket.

(d) Remove the 2 support stopper bolt bushings from the column upper tube assembly.

(e) Remove the 3 bushings from the break away bracket.



21. REMOVE MAIN SHAFT ASSEMBLY

(a) Using SST, compress the compression spring.
SST 09950–40011 (09958–04010)

NOTICE:

Do not bend the universal joint of the shaft assembly more than 20°.

(b) Using a snap ring expander, remove the upper side snap ring.

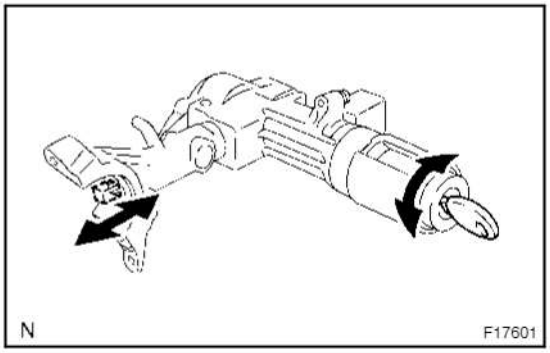
(c) Remove the main shaft assembly from the column upper tube sub–assembly.

(d) Remove the compression spring and bearing thrust collar from the main shaft assembly.

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SR1IY-01

INSPECTION

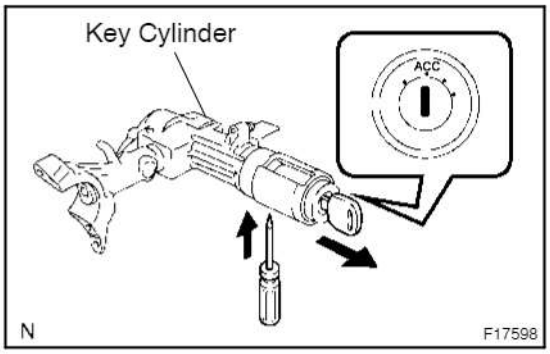


NOTICE:

When using a vise, do not overtighten it.

1. INSPECT STEERING LOCK OPERATION

Check that the steering lock mechanism operates properly.



2. IF NECESSARY, REPLACE KEY CYLINDER

(a) Place the ignition key at the ACC position.

(b) Using a screwdriver, push down the stop pin of the cylinder, and pull out the key cylinder.

(c) Install a new cylinder.

HINT:

Make sure the key is at the ACC position.

3. INSPECT IGNITION SWITCH

(See Pub. No. RM616E on page BE–20)

4. IF NECESSARY, REPLACE IGNITION SWITCH

(a) Remove the 2 screws.

(b) Install a new switch with the 2 screws.

5. INSPECT KEY UNLOCK WARNING SWITCH

(See Pub. No. RM616E on page BE–20)

6. IF NECESSARY, REPLACE KEY UNLOCK WARNING SWITCH

(a) Slide out the switch.

(b) Slide in a new switch.

7. IF NECESSARY, REPLACE KEY INTERLOCK SOLENOID

(a) Remove the 2 screws.

(b) Install a new solenoid with the 2 screws.

8. INSPECT TRANSPONDER KEY COIL

(See page BE–103)

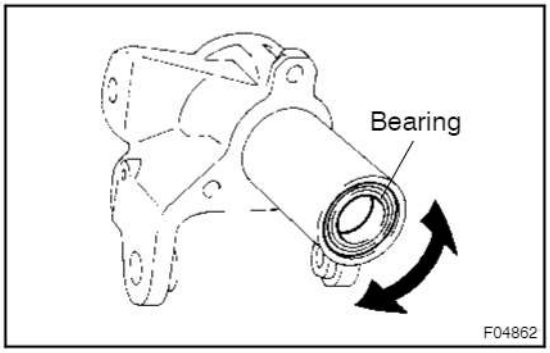
9. IF NECESSARY, REPLACE TRANSPONDER KEY COIL

10. IF NECESSARY, REPLACE TRANSPONDER KEY AMPLIFIER

(a) Remove the 2 screws.

(b) Install a new key amplifier with the 2 screws.

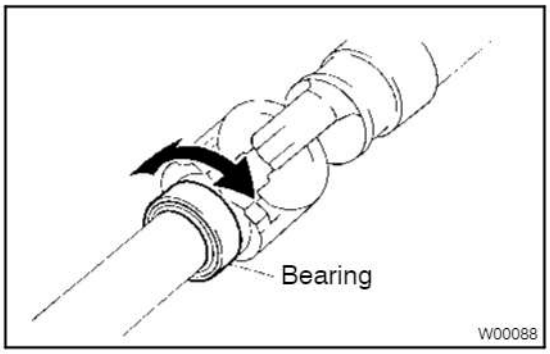
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11. INSPECT BEARING

(a) Check the bearing rotation condition and check for abnormal noise.
If the bearing is worn or damaged, replace the column upper tube.

(b) Coat the bearing with molybdenum disulfide lithium base grease.



12. INSPECT BEARING

(a) Check the bearing rotation condition of the main shaft assembly and check for abnormal noise.

If necessary, replace bearing.

(b) Coat the bearing with molybdenum disulfide lithium base grease.

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SR1IZ-01

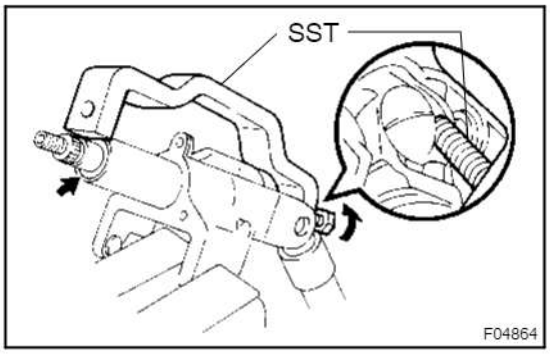
REASSEMBLY

NOTICE:

When using a vise, do not over tighten it.

1. COAT WITH MOLYBDENUM DISULFIDE LITHIUM BASE GREASE

(See page SR–5)



2. INSTALL MAIN SHAFT ASSEMBLY

(a) Install the bearing thrust collar and compression spring to the main shaft assembly.

(b) Install the main shaft assembly to the column upper tube sub–assembly.

(c) Using SST, compress the compression spring.

SST 09950–40011 (09958–04010)

NOTICE:

Do not bend the universal joint of the shaft more than 20°.

(d) Using a snap ring expander, install a new snap ring to the shaft.

3. INSTALL COLUMN UPPER TUBE SUB–ASSEMBLY WITH MAIN SHAFT ASSEMBLY

(a) Install the 3 bushings to the break away bracket.

(b) Install 2 new support stopper bolt bushings to the column upper tube assembly.

(c) Install the column upper tube assembly to the break away bracket.

(d) Install the column upper tube sub–assembly with the main shaft assembly to the break away bracket.

(e) Using a hexagon wrench, install the 2 tilt steering bolts.

Torque: 20 N·m (210 kgf·cm, 15 ft·lbf)

(f) Install a new snap ring.

4. INSTALL TELESCOPIC STEERING SCREW

(a) Install the 4 energy absorber cushions, 2 bearings and telescopic steering screw.

(b) Install the nut.

Torque: 0.8 N·m (8.2 kgf·cm, 7.1 in.·lbf)

(c) Using a punch, stake the nut.

5. INSTALL STEERING COLUMN BRACKET SPACER

6. INSTALL TELESCOPIC STEERING SLIDER

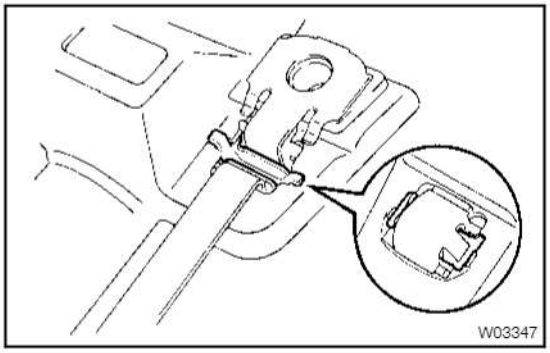
7. INSTALL TELESCOPIC STEERING BUSHING

8. INSTALL TELESCOPIC STEERING SLIDER SUPPORT

Install the telescopic steering slider support with the 2 bolts.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)

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9. INSTALL 2 ENERGY ABSORBING GUIDES, PLATES AND CLIPS

(a) Install 2 new energy absorbing guides and new absorbing plates.

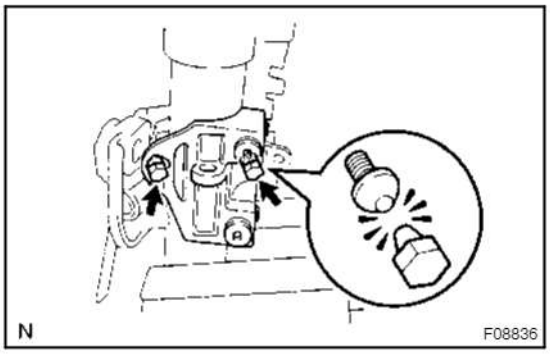
(b) Install 2 new energy absorbing clips.

10. INSTALL COLUMN TUBE SUPPORT

(a) Install the tube attachment to the tube support.

(b) Install the column tube support with the bolt.

Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)



11. INSTALL COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

(a) Install the 2 telescopic steering wedge lock springs and 2 steering lock wedges.

(b) Using a hexagon wrench, install the 2 telesco lever lock bolts.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

(c) Install and tighten the 2 new tapered–head bolts until the bolt heads break off.

(d) Install the column tube stopper.

Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)

12. INSTALL POWER TELESCOPIC MOTOR

(a) Install the telescopic steering column cable.

(b) Install the power telescopic motor with the 2 bolts.

13. INSTALL ADJUSTING NUT NO. 1

(a) Install 2 new support stopper bolt bushings.

(b) Install the adjusting nut No. 1 to the power tilt motor.

(c) Install the 2 tilt steering shafts.

14. INSTALL POWER TILT MOTOR

(a) Install 2 new support stopper bolt bushings to the power tilt motor.

(b) Install 2 new E–rings.

(c) Using a hexagon wrench, install the 2 tilt steering bolts.

Torque: 20 N·m (210 kgf·cm, 15 ft·lbf)

(d) Install the stopper No. 1 and stopper spring.

(e) Using a hexagon wrench, install the support stopper bolt.

15. INSTALL TURN SIGNAL BRACKET

Install the turn signal bracket with the 3 bolts.

16. INSTALL STEERING COLUMN PROTECTOR NO. 1

Install the steering column protector No. 1 with the bolt.

Torque: 15 N·m (153 kgf·cm, 11 ft·lbf)

17. INSTALL CONNECTOR BRACKET

Install the connector bracket with the bolt.

18. INSTALL KEY CYLINDER LAMP ASSEMBLY AND TRANSPONDER KEY COIL

(a) Install the transponder key coil with the key cylinder lamp assembly to the column upper bracket.

(b) Install the screw.

19. w/o VGRS:
INSTALL NO. 2 LOWER COVER

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20. w/o VGRS:
INSTALL INTERMEDIATE SHAFT ASSEMBLY

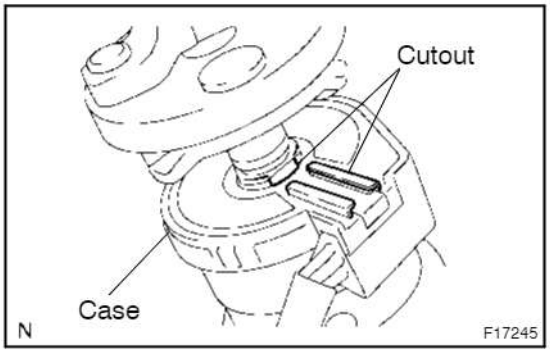
(a) Install the thrust stopper.

(b) Align the matchmarks on the intermediate shaft assembly and main shaft assembly.

(c) Install the bolt.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

21. w/o VGRS:
INSTALL NO. 2 LOWER COVER

Install the No. 2 lower cover with the 2 nuts.
Torque: 24.5 N·m (240 kgf·cm, 17 ft·lbf)



22. w/ VGRS:
INSTALL VGRS ACTUATOR ASSEMBLY

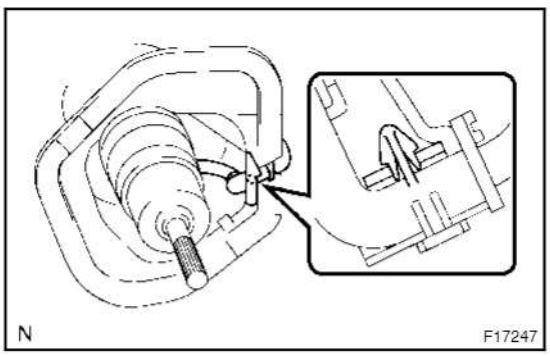
NOTICE:
Pull out the key from the key cylinder and lock the main shaft.

(a) Turn the case clockwise by hand until it becomes harder to turn the cable.

(b) Then rotate the case counterclockwise about 2.5 turns to align the cutout.

HINT:
The cable will rotate about 2.5 turns to either left or right of the center.

NOTICE:
After setting, pay attention not to rotate the VGRS actuator until the installation of the steering column.



(c) Install the boot with plate to the VGRS actuator assembly and connect wire harness clamp to the plate.

(d) Install the thrust stopper, No. 2 lower cover and boot clamp to the main shaft assembly.

(e) Align the matchmarks on the VGRS assembly and main shaft assembly.

(f) Install the bolt.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

(g) Install the boot to the No. 2 lower cover and clamp.

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INSTALLATION

1. w/o VGRS:
INSTALL NO.2 HOLE COVER, HOSE CLAMP AND HOLE COVER TO COLUMN ASSEMBLY

Temporarily tighten the hose clamp.

2. INSTALL SLIDING YOKE

(a) Check that the front wheels are facing straight ahead.
(b) Install the thrust stopper.
(c) Temporarily tighten the bolt.

3. INSTALL STEERING COLUMN ASSEMBLY

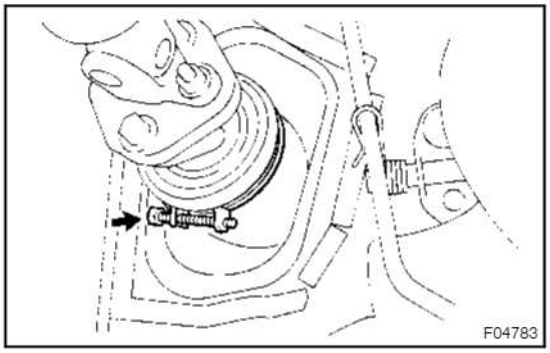
(a) Torque the 4 column assembly set nuts.
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)
(b) Connect the connector.

4. INSTALL LOWER DUST COVER

Install the clamp.

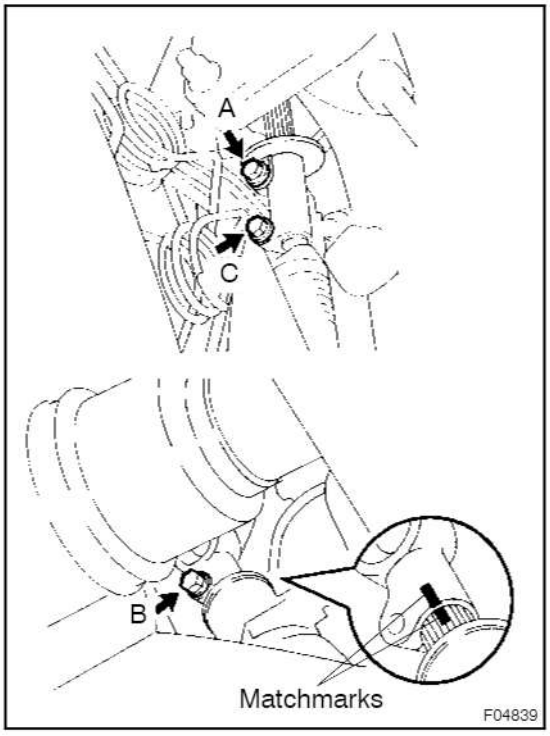
5. INSTALL NO.2 INTERMEDIATE SHAFT ASSEMBLY

Temporarily tighten the bolt.



6. w/o VGRS:
CONNECT HOLE COVER

(a) Torque the 4 bolts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
(b) Tighten the hose clamp.



7. CONNECT NO.2 INTERMEDIATE SHAFT ASSEMBLY

(a) Align the matchmarks on the intermediate shaft and control valve shaft.
(b) Torque the bolt C.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)
(c) Torque the bolt B.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)
(d) Torque the bolt A.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

8. INSTALL NO.2 HEATER TO REGISTER DUCT

Tighten the screw.

9. INSTALL LOWER NO.1 PANEL

(a) Connect the connector.
(b) Tighten the pad set screw.
(c) Connect the fuel lid release lever with the 2 screws.
(d) Connect the hood lock release lever with the 2 screws.

10. INSTALL CLUSTER FINISH PANEL

Connect the connector.

11. INSTALL COWL TRIM

Install the clip.

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12. INSTALL SCUFF PLATE

13. INSTALL SPIRAL CABLE

14. INSTALL COMBINATION SWITCH WITH SPIRAL CABLE

(a) Tighten the 3 screws.

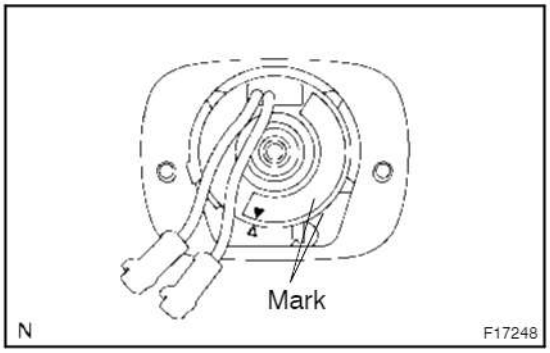
(b) Connect the airbag connector.

(c) Connect the 3 connectors.

(d) w/ Power tilt and power telescopic steering column:
Connect the 5 connectors.

15. INSTALL COLUMN UPPER AND LOWER COVERS

Tighten the 3 screws to the lower cover.



16. CENTER SPIRAL CABLE

(a) Check that the front wheels are facing straight ahead.

(b) Turn the cable counterclockwise by hand until it becomes harder to turn.

(c) Then rotate the cable clockwise about 2.5 turns to align the marks.

HINT:

The cable will rotate about 2.5 turns to either left or right of the center.

17. INSTALL STEERING WHEEL

(a) Align the matchmarks on the wheel and main shaft.

(b) Torque the wheel set nut.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

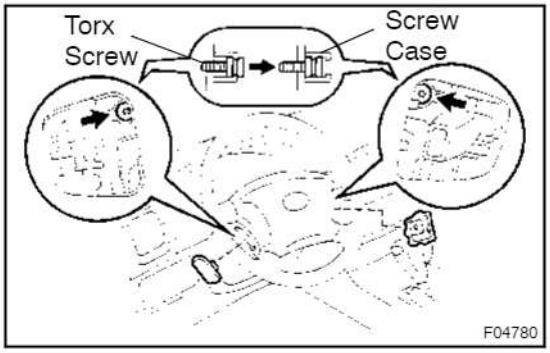
(c) w/ Airbag:
Connect the connector.

18. INSTALL STEERING WHEEL PAD

NOTICE:

- **Make sure the wheel pad is installed to the specified torque.**
- **If the wheel pad has been dropped, or there are cracks, dents or other defects in the case or connector, replace the wheel pad with a new one.**
- **When installing the wheel pad, take care that the wirings do not interfere with other parts and are not pinched between other parts.**

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(a) Connect the connector.
(b) Connect the airbag connector.
(c) Install the pad after confirming that the circumference groove of the torx screw is caught on the screw case.
(d) Using a torx socket wrench, torque the 2 screws.
Torque: 8.8 N·m (90 kgf·cm, 78 in.·lbf)
(e) Install the steering wheel lower No.2 and No.3 covers.

19. CHECK AND ADJUST STEERING WHEEL CENTER POINT (See page DI–348)

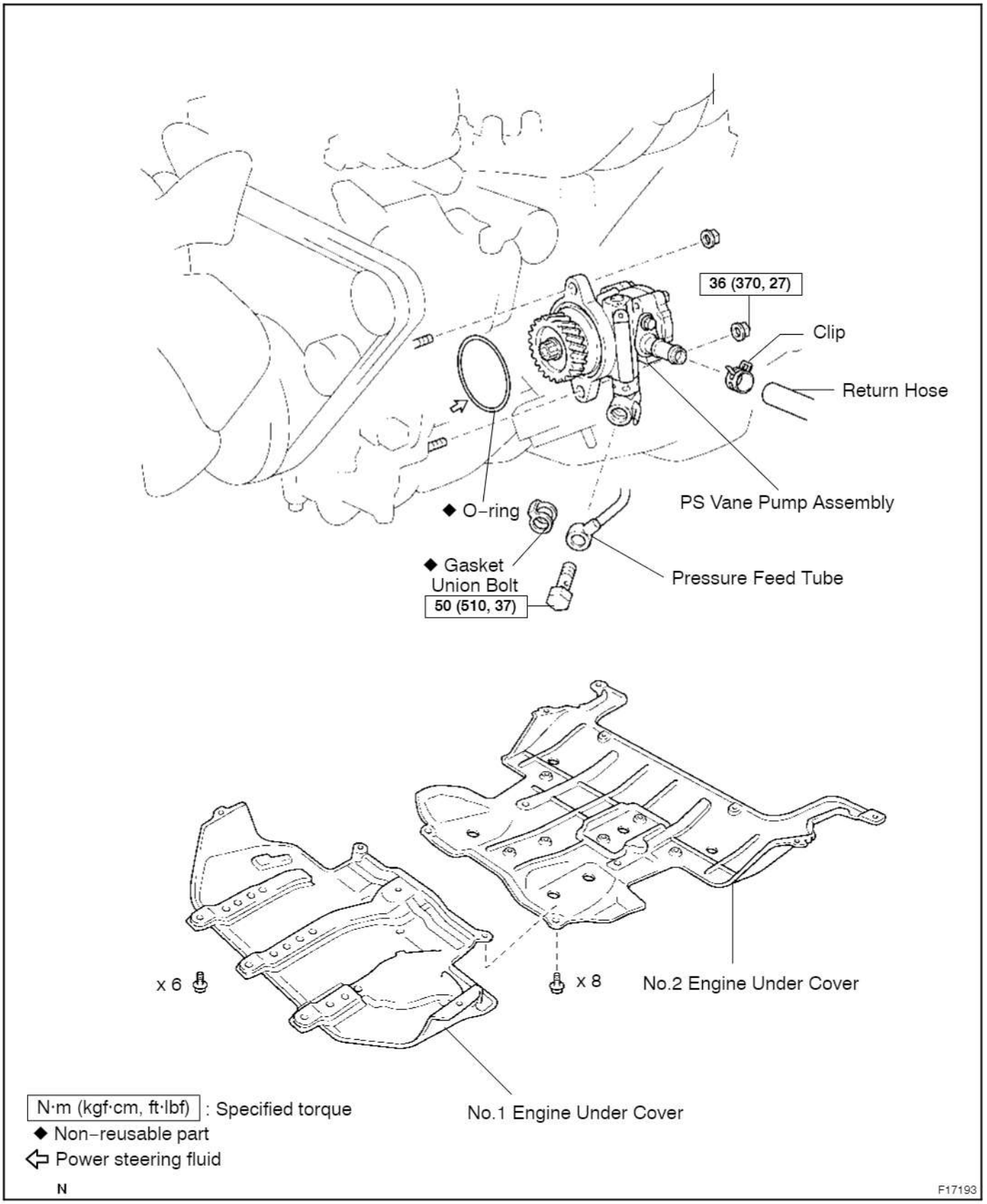
20. PERFORM STEERING CENTER POINT CALIBRATION (See page DI–348)

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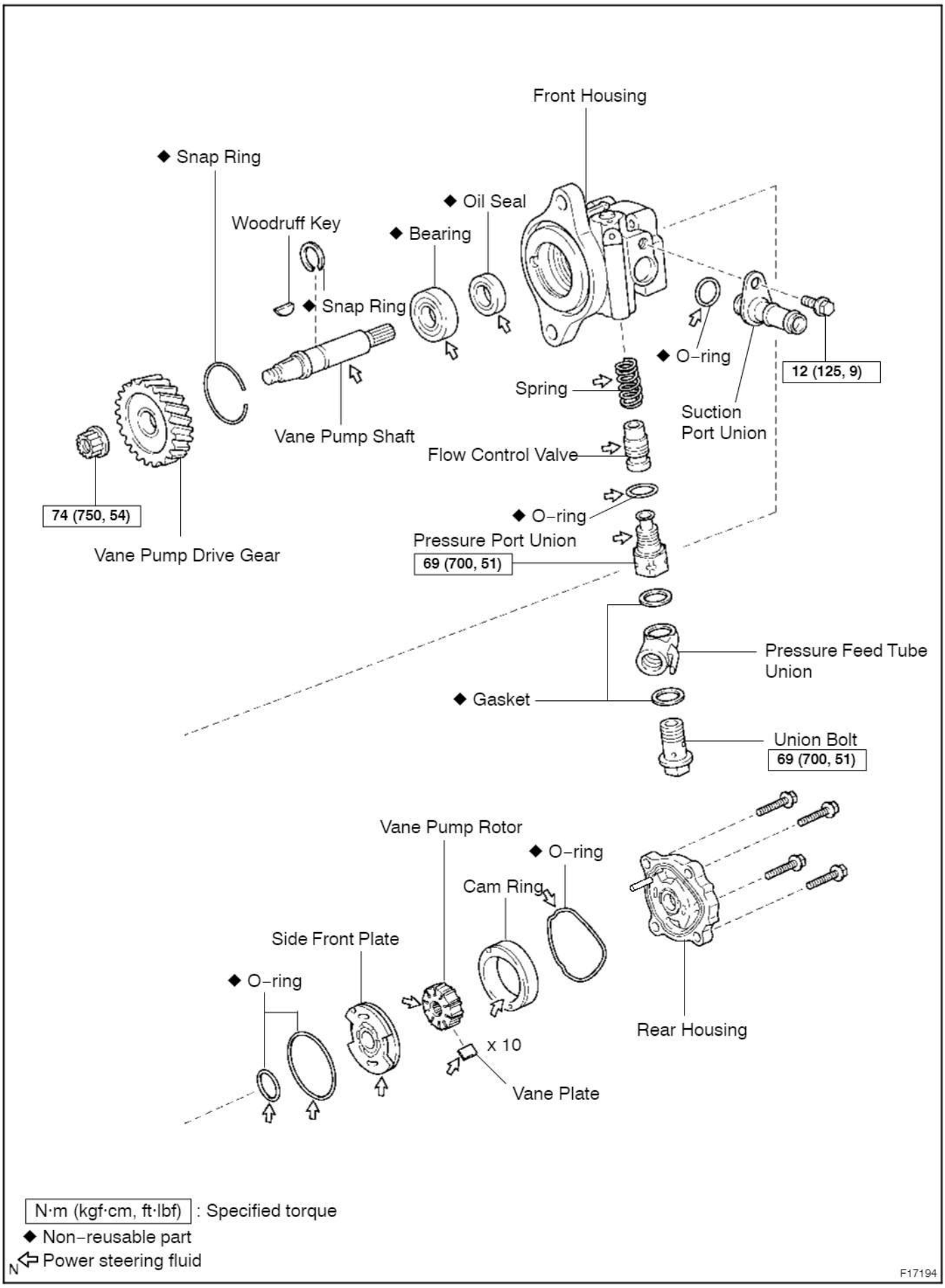
POWER STEERING VANE PUMP (1FZ–FE)

COMPONENTS

SR1J1–01



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SR0PK–01

REMOVAL

1. Independent Front Suspension:
REMOVE NO.1 AND NO.2 ENGINE UNDER COVERS

(a) Remove the 8 bolts and No.2 under cover.

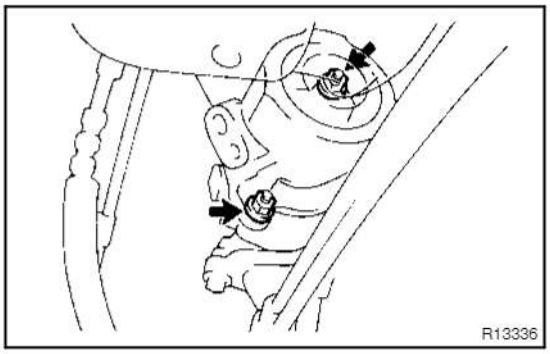
(b) Remove the 6 bolts and No.1 under cover.

2. DISCONNECT RETURN HOSE

Remove the clip.

3. DISCONNECT PRESSURE FEED TUBE

Remove the union bolt and 2 gaskets.



4. REMOVE PS VANE PUMP ASSEMBLY

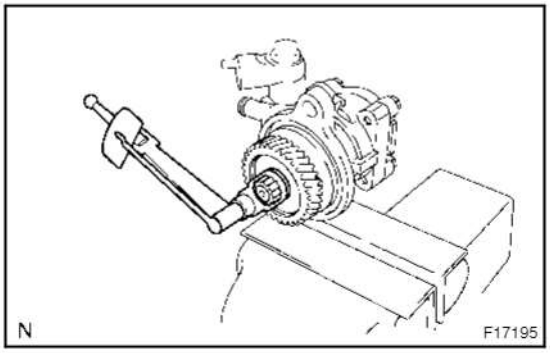
(a) Remove the 2 nuts.

(b) Remove the O–ring from the vane pump assembly.

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SR1J2–01

DISASSEMBLY



NOTICE:

When using a vise, do not overtighten it.

1. MEASURE POWER STEERING VANE PUMP ROTATING TORQUE

(a) Check that the pump rotates smoothly without abnormal noise.

(b) Using a torque wrench, check the pump rotating torque.

Rotating torque:

0.3 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less

2. REMOVE SUCTION PORT UNION

(a) Remove the bolt.

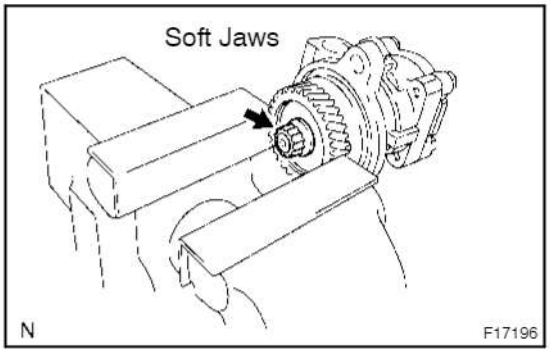
(b) Remove the O–ring from the union.

3. REMOVE PRESSURE FEED TUBE UNION

Remove the union bolt and 2 gaskets.

4. REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING

Remove the O–ring from the union.



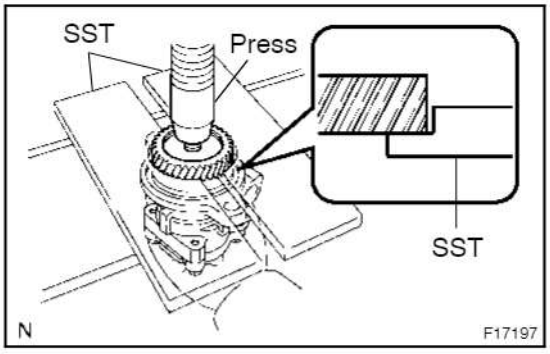
5. REMOVE VANE PUMP DRIVE GEAR

(a) Using soft jaws on a vise, clamp the gear in the vise.

NOTICE:

Be careful not to damage the gear.

(b) Remove the gear set nut.



(c) Using SST, press out the gear.

SST 09527–10011

NOTICE:

- **Be careful not to damage the gear.**
- **Support the pump assembly with your hand not to drop it.**

(d) Remove the woodruff key from the vane pump shaft.

6. REMOVE REAR HOUSING

(a) Remove the 4 bolts and rear housing.

(b) Remove the gasket from the rear housing.

7. REMOVE CAM RING, VANE PUMP ROTOR AND 10 VANE PLATES

NOTICE:

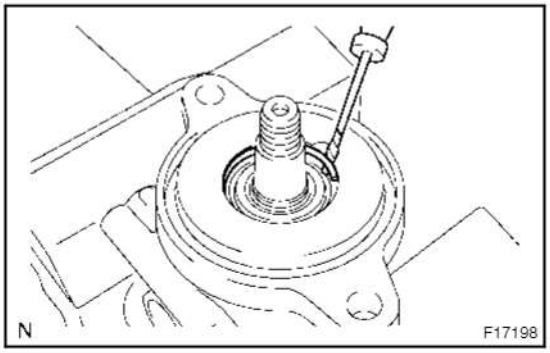
Be careful not to scratch the cam ring, rotor or vane plates.

8. REMOVE SIDE PLATE

(a) Remove the O–ring from the side plate.

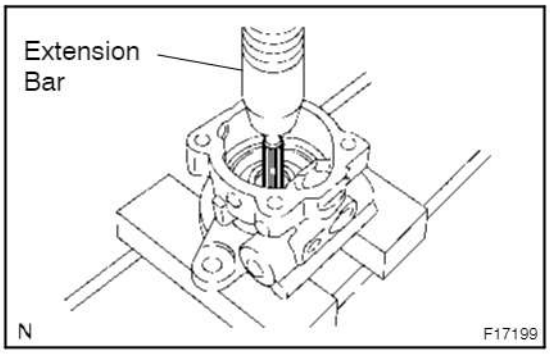
(b) Remove the O–ring from the front housing.

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9. REMOVE VANE PUMP SHAFT WITH BEARING

(a) Using screw driver, remove the snap ring.

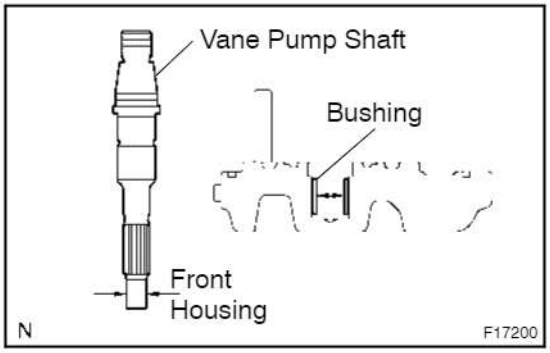


(b) Using a brass bar and hammer, tap out the shaft with the bearing.

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SR1J3–01

INSPECTION

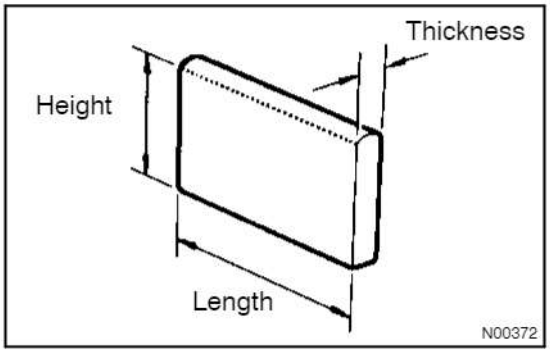


1. MEASURE OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING

Using a micrometer and caliper gauge, measure the oil clearance.

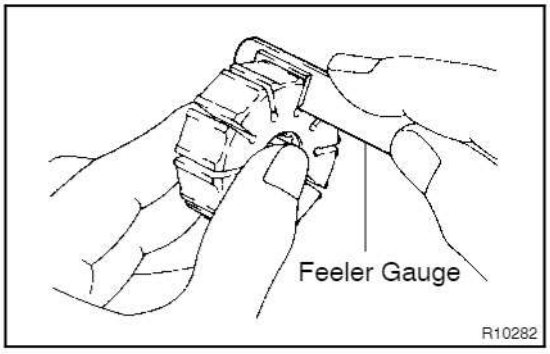
Standard clearance:
Front housing and shaft
0.021 – 0.043 mm (0.00079 – 0.00169 in.)
Rear housing and shaft
0.020 – 0.077 mm (0.00079 – 0.00303 in.)
Maximum clearance:
Front housing and shaft
0.070 mm (0.00276 in.)
Rear housing and shaft
0.080 mm (0.00315 in.)

If it is more than the maximum, replace a new vane pump assembly.



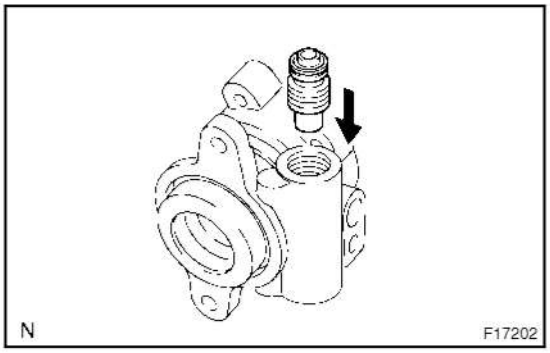
2. INSPECT VANE PUMP ROTOR AND 10 VANE PLATES

(a) Using a micrometer, measure the height, thickness and length of the plate.
Minimum thickness: 1.405 mm (0.05531 in.)



(b) Using a feeler gauge, measure the clearance between the rotor groove and plate.
Maximum clearance: 0.033 mm (0.00130 in.)

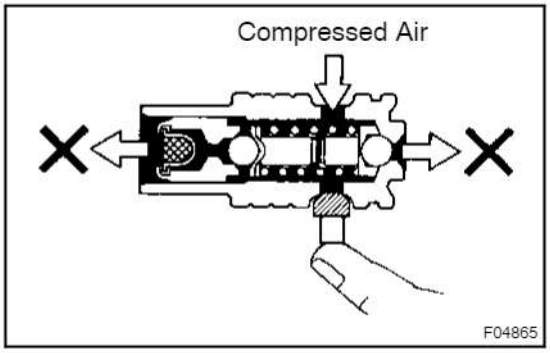
If it is more than the maximum, replace a new vane pump assembly.



3. INSPECT FLOW CONTROL VALVE

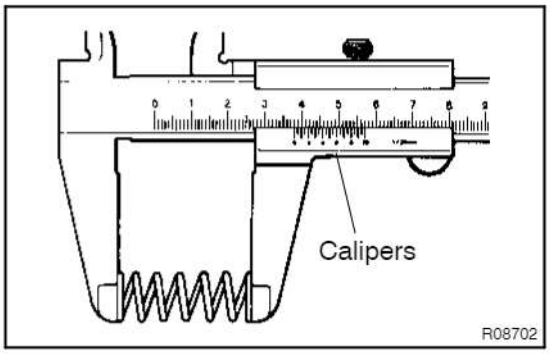
(a) Coat the valve with power steering fluid and check that it falls smoothly into the valve hole by its own weight.

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(b) Check the flow control valve for leakage. Close one of the holes and apply compressed air 392 – 490 kPa (4 – 5 kgf/cm^2, 57 – 71 psi) into the opposite side hole, and confirm that air does not come out from the end holes.

If necessary, replace a new vane pump assembly.

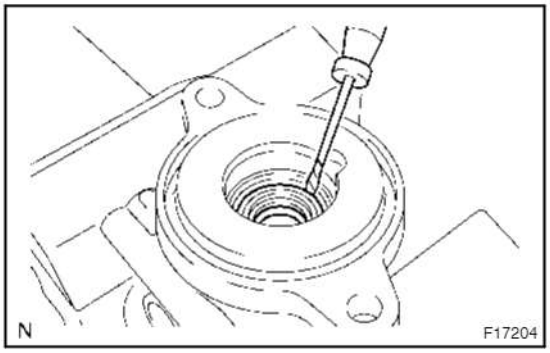


4. INSPECT SPRING

Using calipers, measure the free length of the spring.

Minimum free length: 31.3 mm (1.2323 in.)

If it is not within the specification, replace a new vane pump assembly.

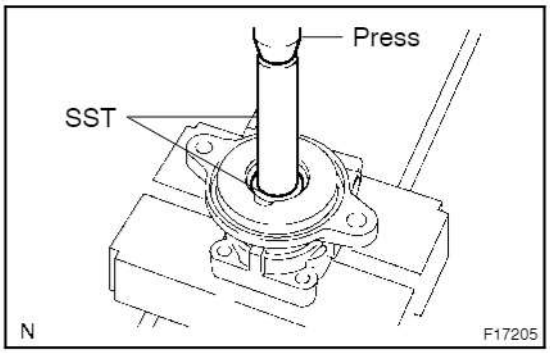


5. IF NECESSARY, REPLACE OIL SEAL

(a) Using a screwdriver with vinyl tape wound around its tip and hammer, tap out the oil seal from the front housing.

NOTICE:

Be careful not to damage the housing.



(b) Coat a new oil seal lip with power steering fluid.

(c) Using SST, press in the oil seal as shown in the illustration.

SST 09950–60010 (09951–00320), 09950–70010 (09951–07100)

NOTICE:

- **Make sure to install the oil seal facing the correct direction.**
- **Be careful not to damage the front housing.**

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SR0PN–02

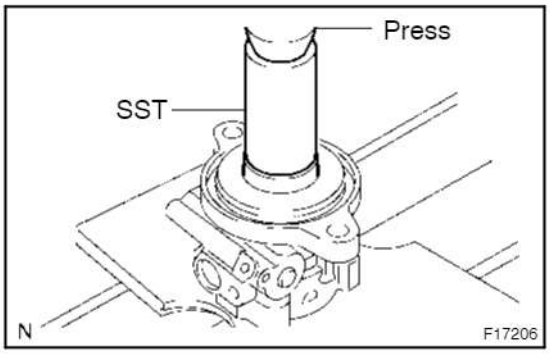
REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. COAT WITH POWER STEERING FLUID

(See page SR–22)



2. INSTALL VANE PUMP SHAFT WITH BEARING

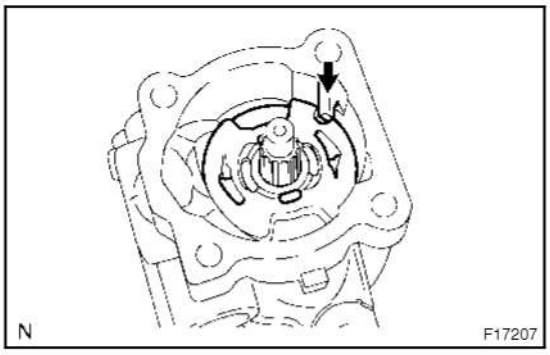
(a) Using SST, press in the shaft with the bearing to the front housing.

SST 09632–36010

NOTICE:

Be careful not to damage the oil seal lip.

(b) Install the snap ring to the front housing.



3. INSTALL SIDE PLATE

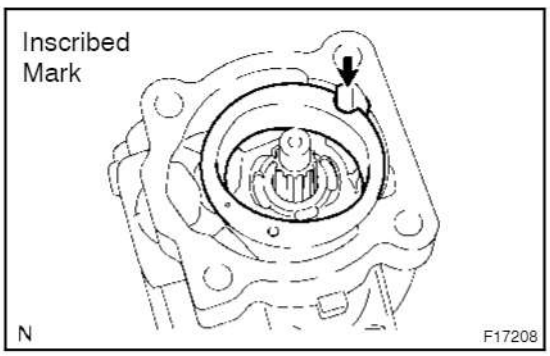
(a) Coat new O–ring with power steering fluid and install them to the plate.

(b) Align the hole of the plate and longer straight pin.

NOTICE:

Make sure to install the plate facing the correct direction.

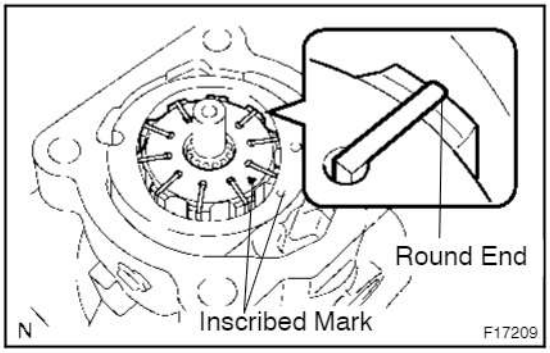
(See page SR–22)



4. INSTALL CAM RING AND VANE PUMP ROTOR

Install the ring and rotor with the inscribed marks facing outward.

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5. INSTALL 10 VANE PLATES

Install the plates with the round end facing outward.

6. INSTALL SIDE REAR PLATE

(a) Coat a new O–ring with power steering fluid and install it to the plate.

(b) Align the holes of the plate with the straight pins.

7. INSTALL REAR HOUSING

(a) Coat a new gasket with power steering fluid and install it to the housing.

(b) Torque the 4 bolts.

Torque: 22 N·m (225 kgf·cm, 16 ft·lbf).

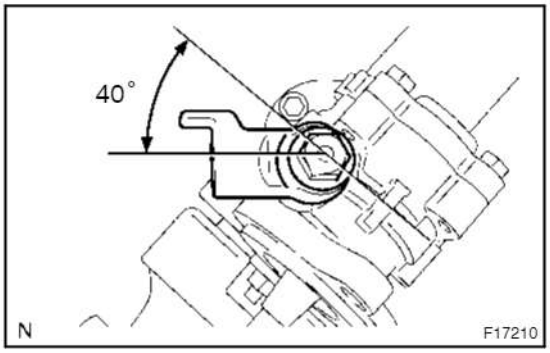
8. INSTALL SPRING, FLOW CONTROL VALVE AND PRESSURE PORT UNION

(a) Install the valve facing the correct direction.
(See page SR–22)

(b) Coat a new O–ring with power steering fluid and install it to the union.

(c) Torque the union.

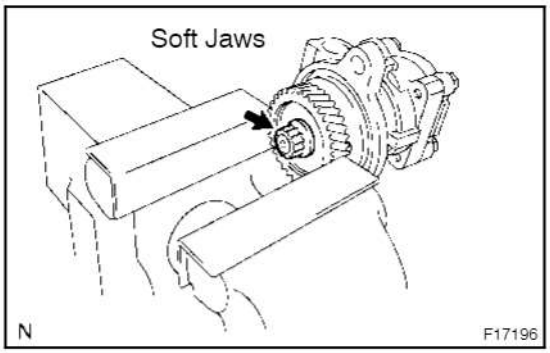
Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)



9. INSTALL PRESSURE FEED TUBE UNION

Install the union as shown in the illustration.

Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)



10. INSTALL VANE PUMP DRIVE GEAR

(a) Install the woodruff key and gear.

(b) Using soft jaws on a vise, clamp the gear in the vise.

NOTICE:

Be careful not to damage the gear.

(c) Torque the gear set nut.

Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

11. MEASURE PS VANE PUMP ROTATING TORQUE
(See page SR–25)

12. INSTALL SUCTION PORT UNION

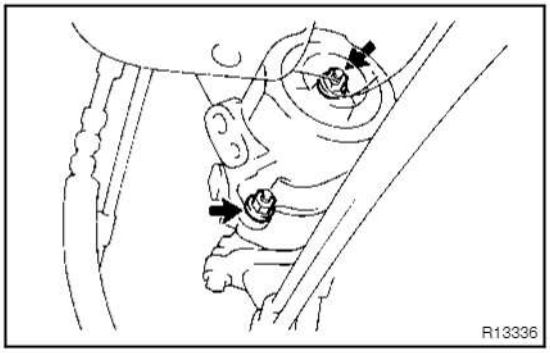
(a) Coat a new O–ring with power steering fluid and install it to the union.

(b) Torque the bolt.

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

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SR0PO–02



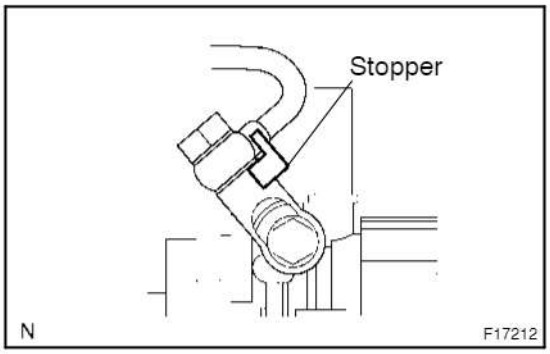
INSTALLATION

1. INSTALL PS VANE PUMP ASSEMBLY

(a) Coat a new O–ring with power steering fluid and install it to the vane pump assembly.

(b) Torque the 2 nuts.

Torque: 36 N·m (370 kgf·cm, 27 ft·lbf)



2. CONNECT PRESSURE FEED TUBE

Install new gaskets on each side of the tube and torque the union bolt.

Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

HINT:

Make sure that the stopper of the tube touches the PS vane pump body as shown in the illustration, then torque the union bolt.

3. CONNECT RETURN HOSE

Install the clip.

4. Independent Front Suspension:
INSTALL NO.1 AND NO.2 ENGINE UNDER COVERS

(a) Install the No.1 under cover with the 6 bolts.

(b) Install the No.2 under cover with the 8 bolts.

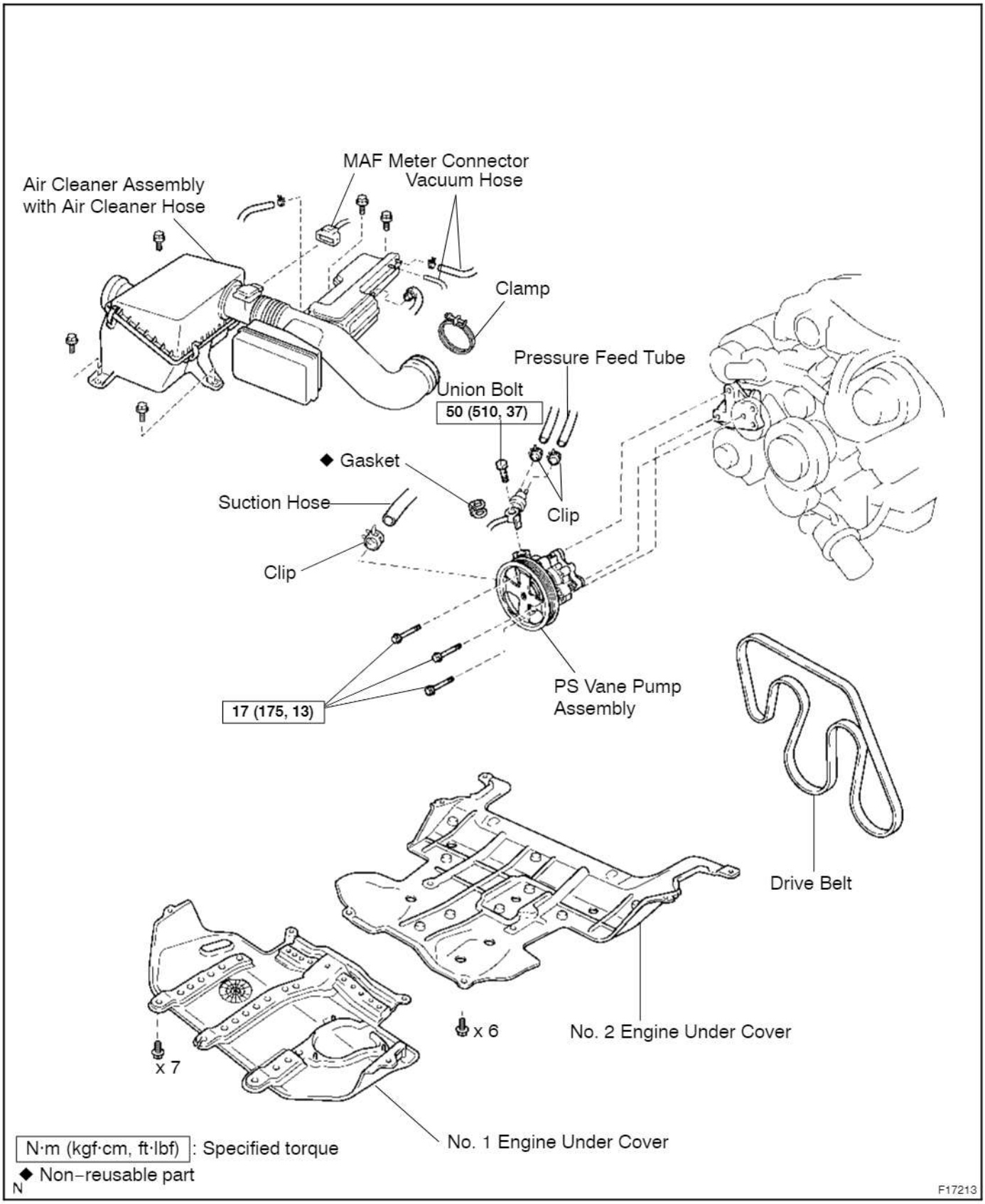
5. BLEED POWER STEERING SYSTEM
(See Pub. No. RM616E on page SR–4)

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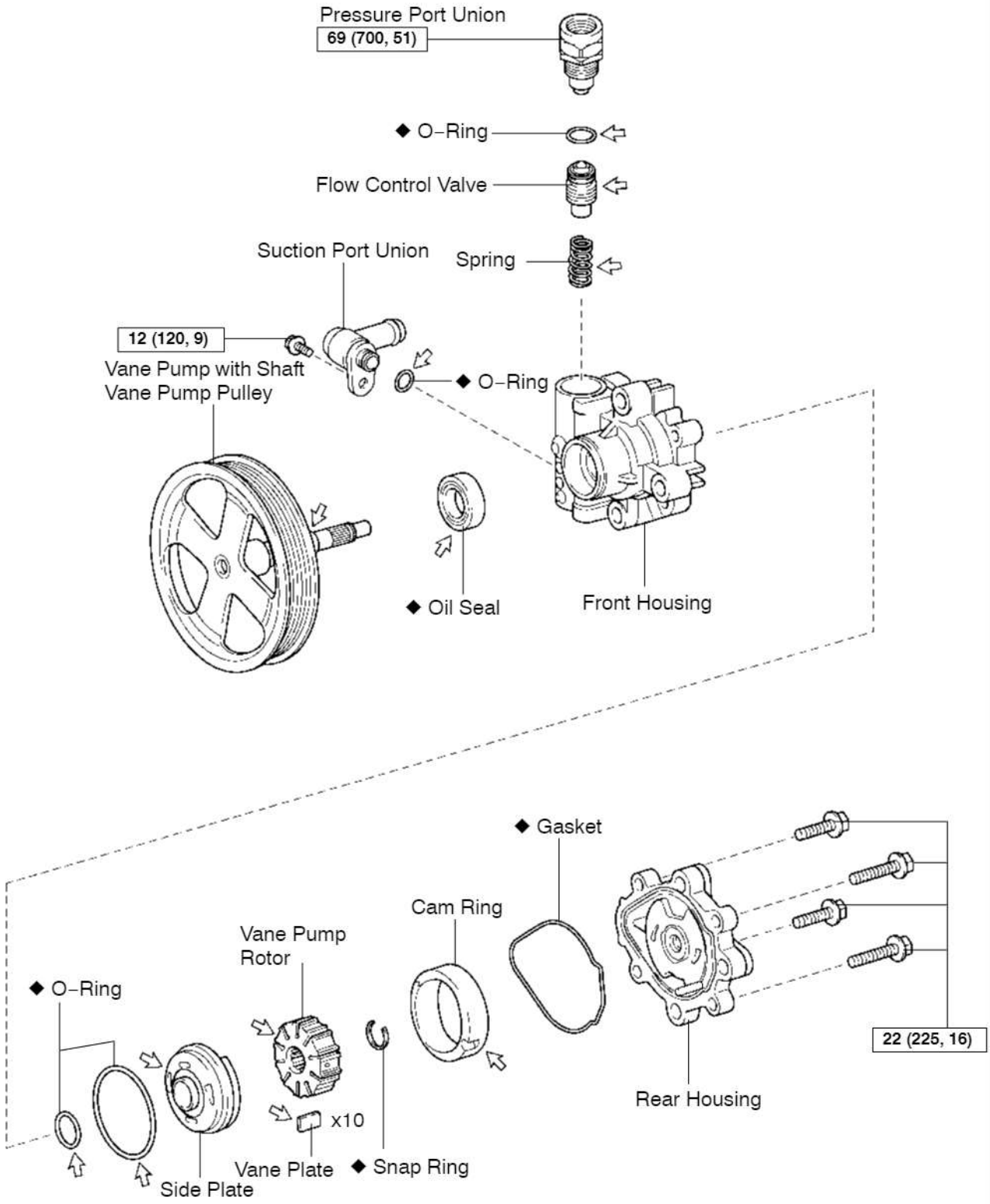
POWER STEERING VANE PUMP (2UZ–FE)

SR0PV–02

COMPONENTS



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N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part
N ⇦ Power steering fluid

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SR1J4–01

REMOVAL

1. REMOVE NO. 1 ENGINE UNDER COVER

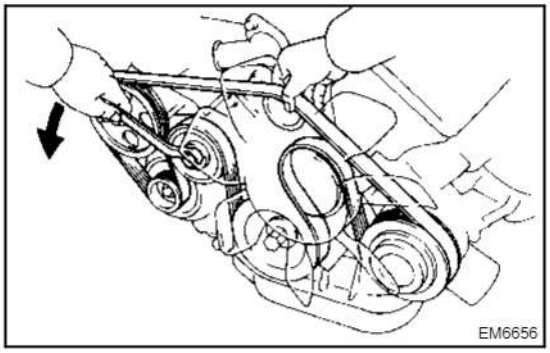
Remove the 6 bolts.

2. REMOVE NO. 2 ENGINE UNDER COVER

Remove the 8 bolts.

3. REMOVE AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE

(a) Disconnect the MAF meter connector.
(b) Disconnect the hoses.
(c) Loosen the clamp.
(d) Remove the 3 bolts.


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4. REMOVE DRIVE BELT

Loosen the drive belt tension by turning the drive belt tensioner counterclockwise, and remove the drive belt.

5. DISCONNECT 2 VACUUM HOSES

Remove the 2 clips.

6. DISCONNECT RETURN HOSE

Remove the clip.

7. REMOVE PRESSURE FEED TUBE

Remove the union bolt and 2 gaskets.

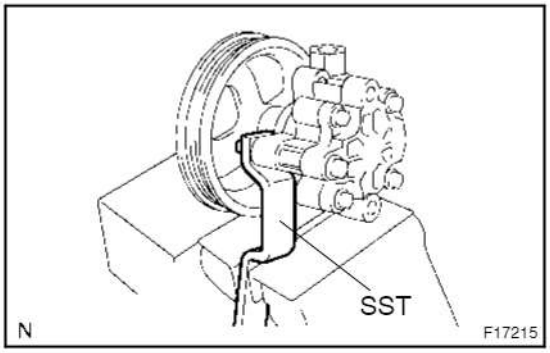
8. REMOVE PS VANE PUMP ASSEMBLY

Remove the 3 bolts.

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SR1J5–01

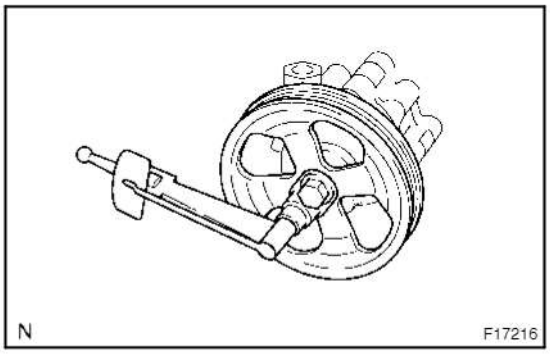
DISASSEMBLY



1. FIX VANE PUMP ASSEMBLY

Using SST, hold the vane assembly in a vise.

SST 09630–00014 (09631–00132)



2. MEASURE PS VANE PUMP ROTATING TORQUE

(a) Check that the pump rotates smoothly without abnormal noise.

(b) Temporarily install the bolt to the shaft.

(c) Using a torque wrench, check the pump rotating torque.

Rotating torque:

0.3 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less

3. REMOVE SUCTION PORT UNION

(a) Remove the bolt.

(b) Remove the O–ring from the union.

4. REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING

Remove the O–ring from the union.

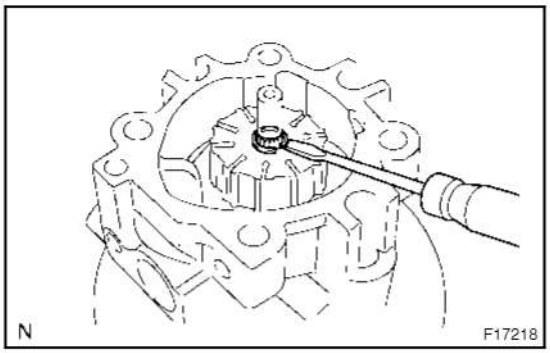
5. REMOVE REAR HOUSING

(a) Loosen the 4 bolts.

(b) Remove the vane pump assembly from the SST.

(c) Remove the 4 bolts and rear housing.

(d) Remove the gasket from the housing.



6. REMOVE CAM RING, 10 VANE PLATES AND VANE PUMP ROTOR

Using a screwdriver, remove the snap ring from the vane pump shaft.

NOTICE:

Be careful not to drop the plate.

7. REMOVE SIDE PLATE

8. REMOVE VANE PUMP SHAFT WITH PUMP PULLEY

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SR1J6–01

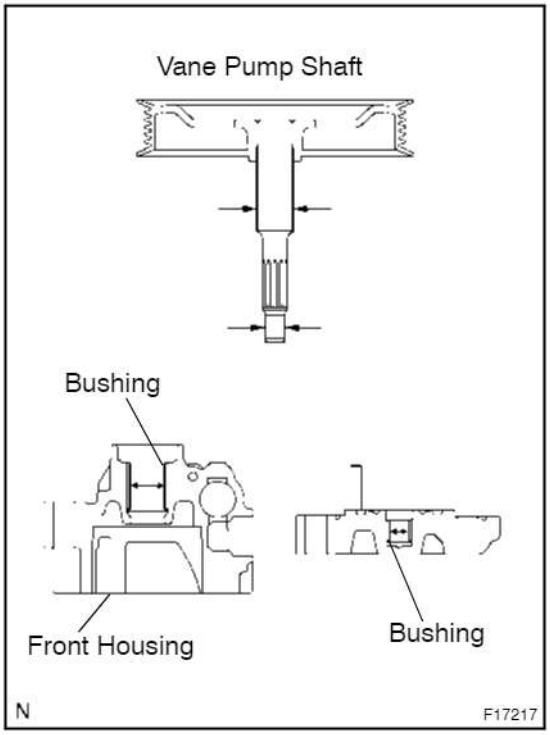
INSPECTION

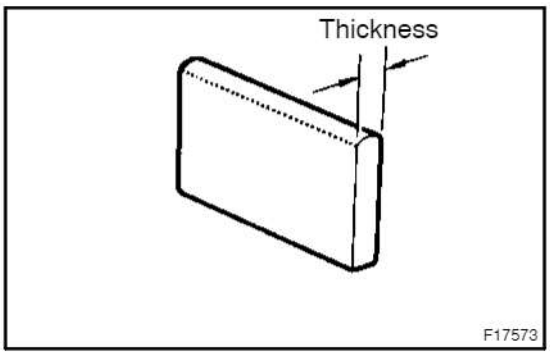
1. CHECK OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING OF FRONT HOUSING AND REAR HOUSING

Using a micrometer and caliper gauge, measure the oil clearance.

Standard clearance:
Front housing and shaft
0.020 – 0.077 mm (0.00079 – 0.00303 in.)
Rear housing and shaft
0.020 – 0.077 mm (0.00079 – 0.00303 in.)
Maximum clearance:
Front housing and shaft
0.070 mm (0.00276 in.)
Rear housing and shaft
0.080 mm (0.00315 in.)

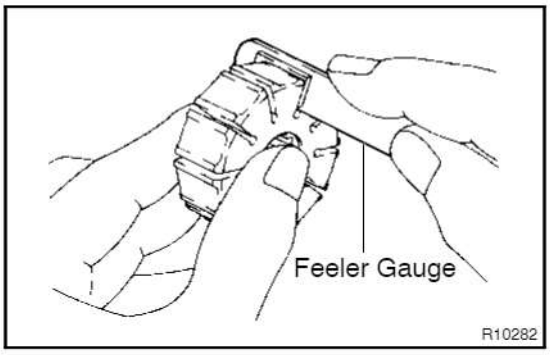
If it is more than the maximum, replace a new vane pump assembly.





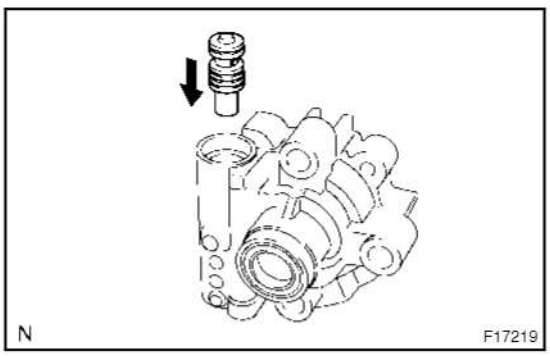
2. INSPECT VANE PUMP ROTOR AND VANE PLATES

(a) Using a micrometer, measure the height, thickness and length of the 10 plates.
Minimum thickness: 1.405 mm (0.05531 in.)



(b) Using a feeler gauge, measure the clearance between the rotor groove and plate.
Maximum clearance: 0.03 mm (0.0012 in.)

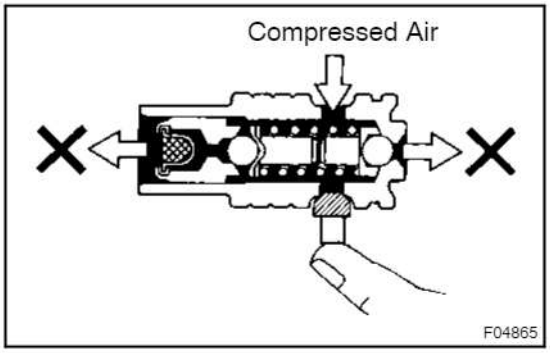
If it is more than the maximum, replace a new vane pump assembly.



3. INSPECT FLOW CONTROL VALVE

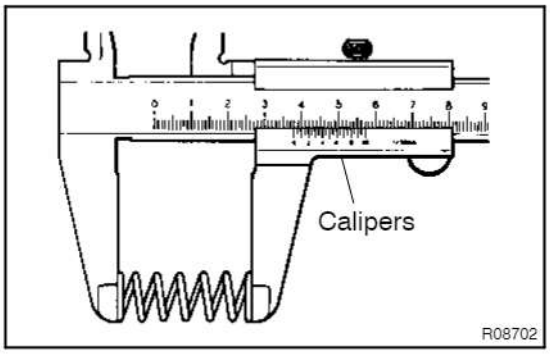
(a) Coat the valve with power steering fluid and check that it falls smoothly into the valve hole by its own weight.

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(b) Check the flow control valve for leakage.
Close one of the holes and apply compressed air 392–490 kPa (4–5 kgf/cm^2, 57–71 psi) into the opposite side hole, and confirm that air does not come out from the end holes.

If necessary, replace a new vane pump assembly.



4. INSPECT SPRING

Using calipers, measure the free length of the spring.

Minimum free length: 31.3 mm (1.2323 in.)

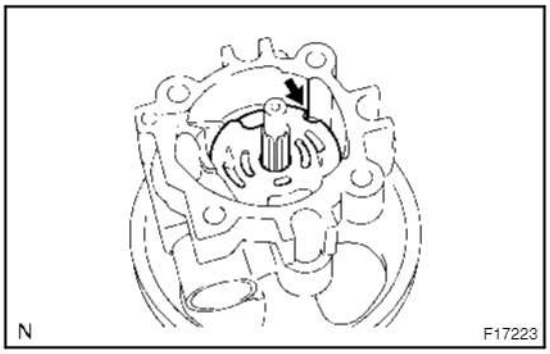
If it is not within the specification, replace a new vane pump assembly.

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SR1J7–01

REASSEMBLY

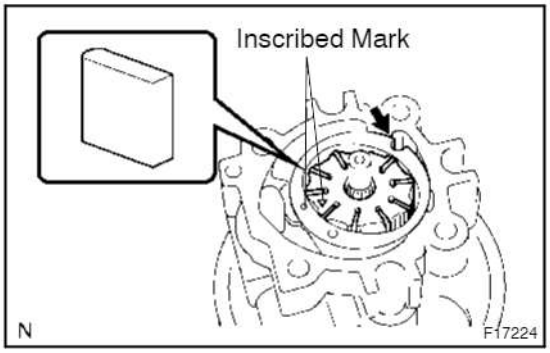
1. **COAT WITH POWER STEERING FLUID**
(See page SR–32)
2. **INSTALL VANE PUMP SHAFT**



3. **INSTALL SIDE PLATE**

(a) Install a new O–ring to the front housing.
(b) Install a new O–ring to side plate.
(c) Install the side plate as shown in the illustrating.

HINT:
Align the hole of the side plate with the hole of the front housing.



4. **INSTALL CAM RING**

Install the ring with the inscribed mark facing outward.

HINT:
Align the hole of the cam ring with the hole of the front housing.

5. **INSTALL VANE PUMP ROTOR**

(a) Install the rotor with the inscribed mark facing outward.
(b) Install a new snap ring to the vane pump shaft.

6. **INSTALL 10 VANE PLATES**

(a) Install the plates with the round end facing outward.

7. **INSTALL REAR HOUSING**

(a) Coat new gasket with power steering fluid and install it to the housing.
(b) Temporarily install the 4 bolts.
(c) Using SST, hold the vane pump assembly in a vise.
(d) Torque the 4 bolts.
Torque: 22 N·m (225 kgf·cm, 16 ft·lbf)

8. **INSTALL SPRING, FLOW CONTROL VALVE AND PRESSURE PORT UNION**

(a) Install the valve facing the correct direction
(See page SR–32).
(b) Coat a new O–ring with power steering fluid and install it to the union.
(c) Torque the union.
Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

9. **INSTALL SUCTION PORT UNION**

(a) Coat a new O–ring with power steering fluid and install it to the union.
(b) Torque the bolt.
Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

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10. **MEASURE PS VANE PUMP ROTATING TORQUE**
(See page SR–35)

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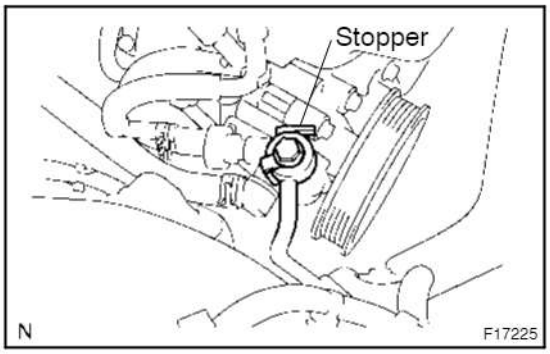
SR1J6–01

INSTALLATION

1. INSTALL PS VANE PUMP ASSEMBLY

Torque the 3 bolts.

Torque: 17 N·m (175 kgf·cm, 13 ft·lbf)



2. INSTALL PRESSURE FEED TUBE

Install new gaskets on each side of the tube and torque the union bolt.

Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

HINT:

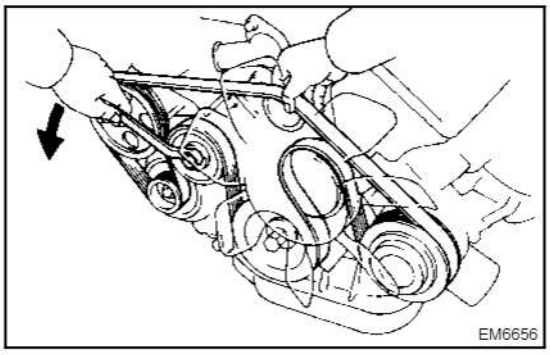
Make sure that the stopper of the tube touches the PS vane pump body as shown in the illustration, then torque the bolt.

3. CONNECT RETURN HOSE

Install the clip.

4. CONNECT 2 VACUUM HOSES

Install the 2 clips.



5. INSTALL DRIVE BELT

Loosen the drive belt tension by turning the drive belt tensioner counterclockwise, and install the belt.

6. INSTALL AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE

(a) Tighten the 3 bolts.
(b) Tighten the clamp.
(c) Connect the hose.
(d) Connect the MAF meter connector.

7. INSTALL NO. 2 ENGINE UNDER COVER

Tighten the 8 bolts.

8. INSTALL NO. 1 ENGINE UNDER COVER

Tighten the 6 bolts.

9. BLEED POWER STEERING SYSTEM

(See Pub. No. RM616E on page SR–4)

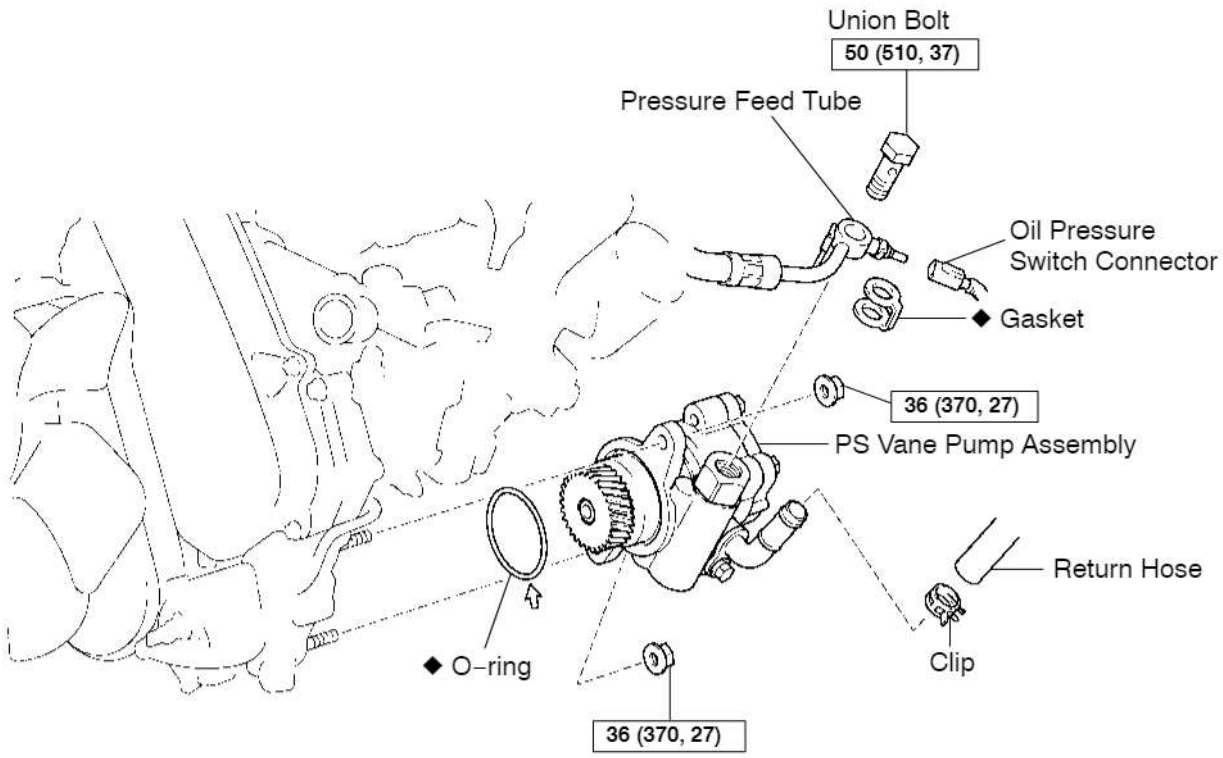
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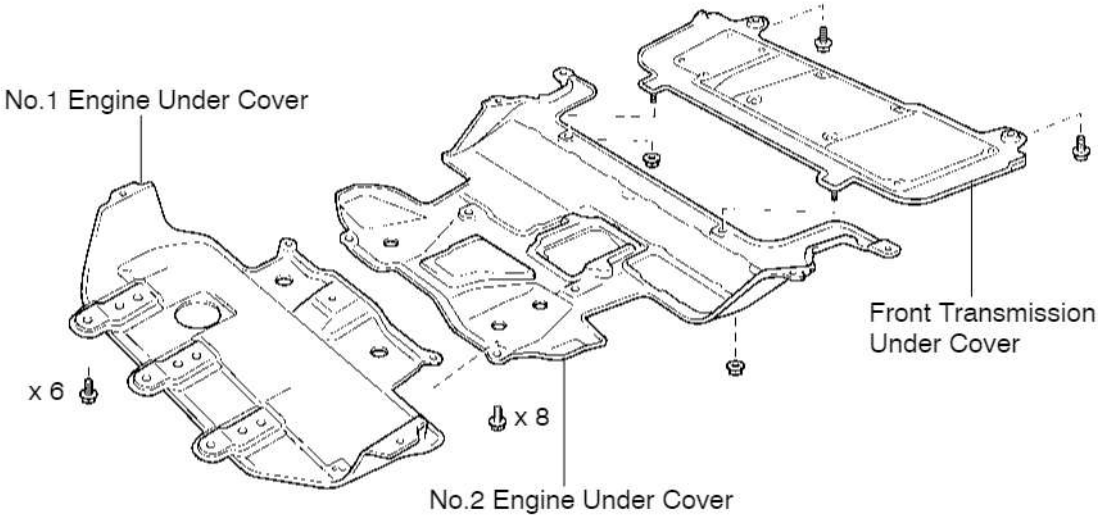
POWER STEERING VANE PUMP (1HD–FTE)

COMPONENTS

SR1J9–01

1HD–FTE:

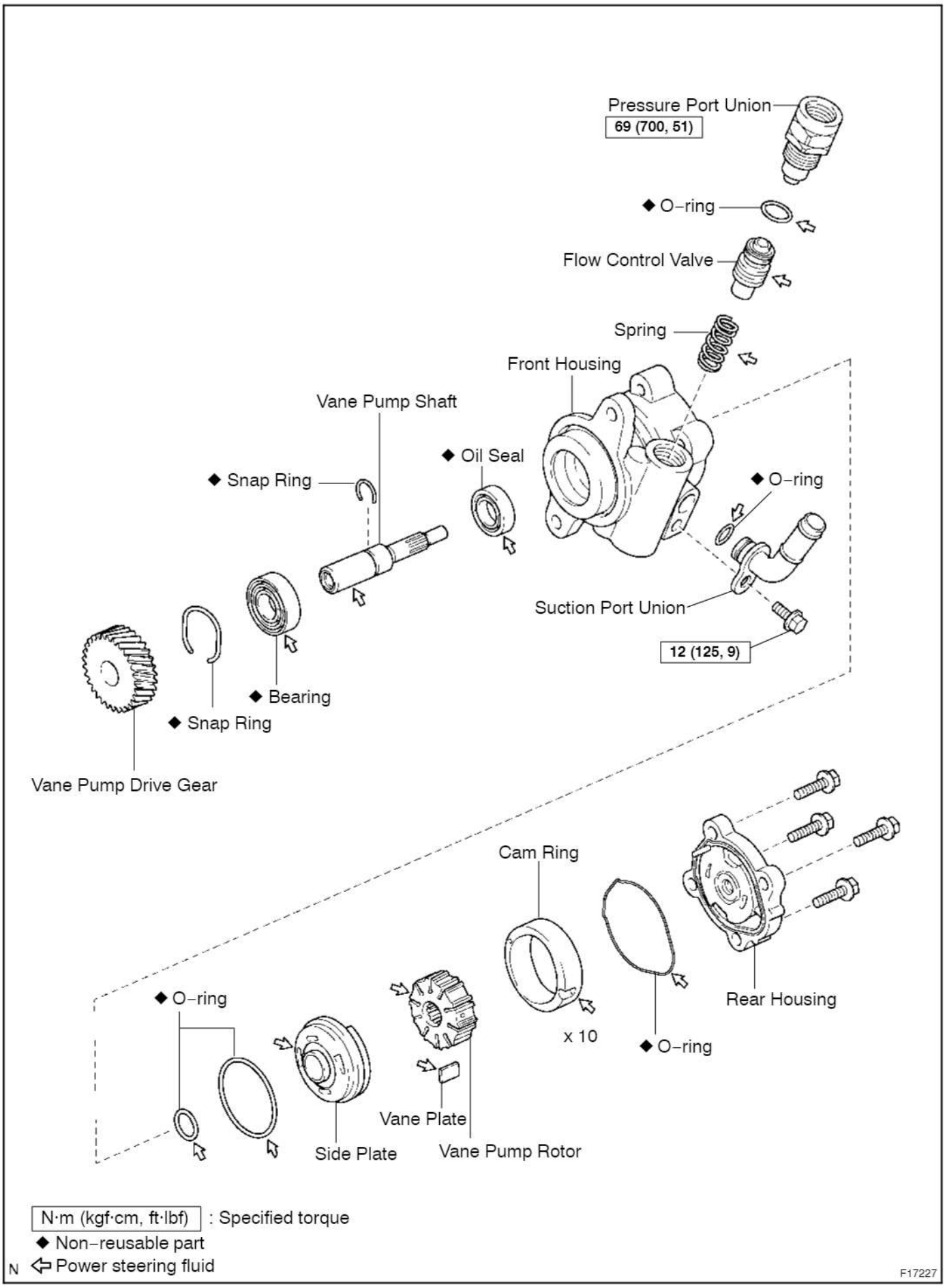




N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part
N ⇦ Power steering fluid

F17226

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SR00S–02

REMOVAL

1. REMOVE FRONT TRANSMISSION UNDER COVER

Remove the 2 bolts and nuts.

2. REMOVE NO.1 AND NO.2 ENGINE UNDER COVERS

(a) Remove the 8 bolts and No.2 under cover.

(b) Remove the 6 bolts and No.1 under cover.

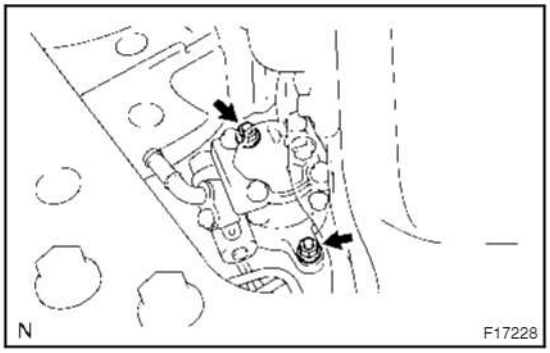
3. DISCONNECT RETURN HOSE

Remove the clip.

4. DISCONNECT OIL PRESSURE SWITCH CONNECTOR

5. DISCONNECT PRESSURE FEED TUBE

Remove the union bolt and 2 gaskets.

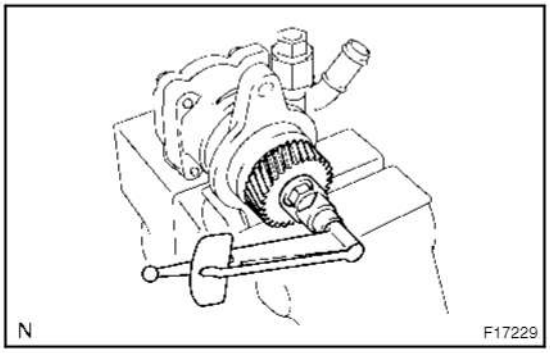


6. REMOVE PS VANE PUMP ASSEMBLY

(a) Remove the 2 nuts.

(b) Remove the O–ring from the vane pump assembly.

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SR1JA–01

DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. MEASURE PS VANE PUMP ROTATING TORQUE

(a) Check that the pump rotates smoothly without abnormal noise.

(b) Using a torque wrench, check the pump rotating torque.

Rotating torque:

0.3 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less

2. REMOVE SUCTION PORT UNION

(a) Remove the bolt.

(b) Remove the O–ring from the union.

3. REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING

Remove the O–ring from the union.

4. REMOVE REAR HOUSING

(a) Remove the 4 bolts.

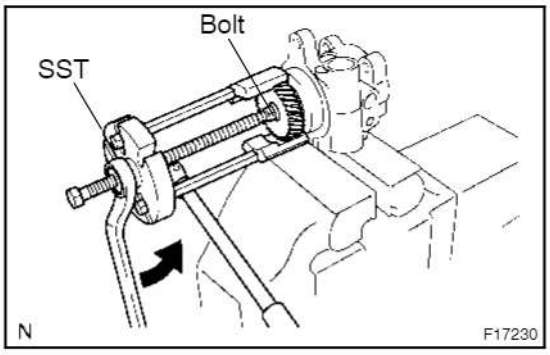
(b) Remove the gasket from the housing.

5. REMOVE CAM RING, VANE PUMP ROTOR, 10 VANE PLATES, AND SIDE PLATE

Remove the 2 O–rings.

NOTICE:

- **Take care not to drop the vane plate.**
- **Be careful not to scratch the side plate.**



6. REMOVE VANE PUMP DRIVE GEAR

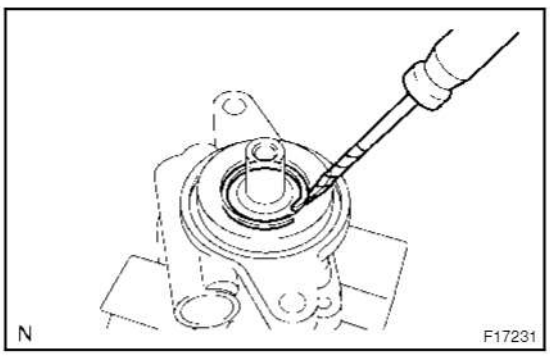
(a) Temprarily install the bolt to the shaft.

(b) Using SST, pull out the gear.

SST 09950–30010 (09951–03010, 09953–03010, 09954–03010, 09955–03020)

NOTICE:

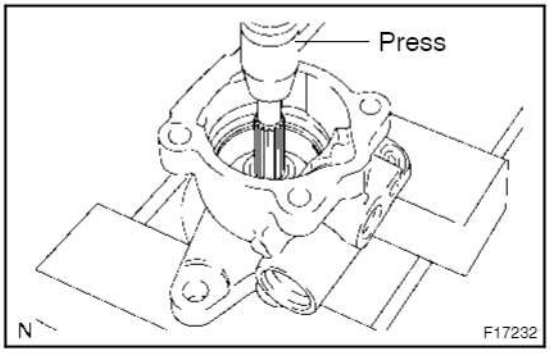
Be careful not to damage the gear.



7. REMOVE VANE PUMP SHAFT WITH BEARING

(a) Using a screwdriver, remove the snap ring.

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(b) Press out the shaft with the bearing.

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SR1JB–01

INSPECTION

NOTICE:

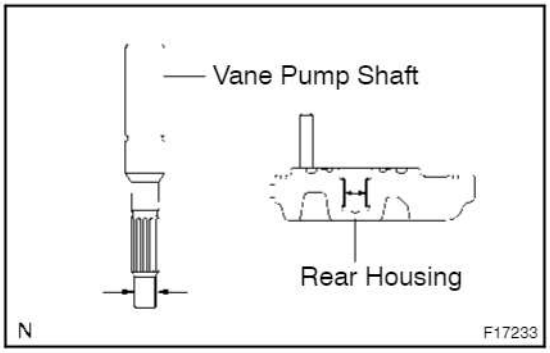
When using a vise, do not overtighten it.

1. CHECK OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND REAR HOUSING

Using a micrometer and caliper gauge, measure the oil clearance.

Standard clearance:
Front housing and shaft
0.021 – 0.043 mm (0.00079 – 0.00169 in.)
Rear housing and shaft
0.020 – 0.077 mm (0.00079 – 0.00303 in.)
Maximum clearance:
Front housing and shaft
0.070 mm (0.00276 in.)
Rear housing and shaft
0.080 mm (0.00315 in.)

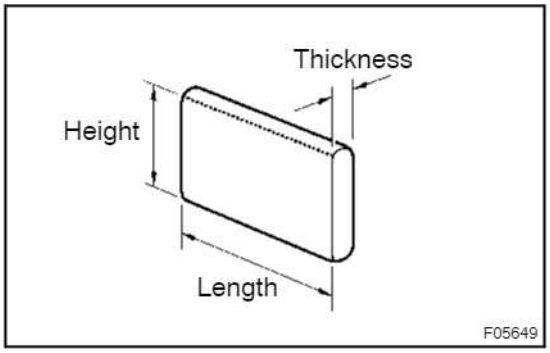
If it is more than the maximum, replace a new vane pump assembly.



2. INSPECT VANE PUMP ROTOR AND VANE PLATES

(a) Using a micrometer, measure the height, thickness and length of the plates.

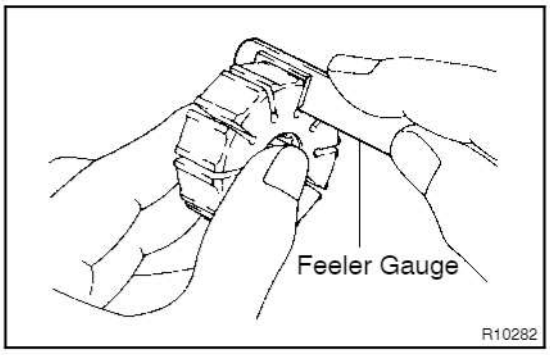
Minimum thickness: 1.405 mm (0.05531 in.)



(b) Using a feeler gauge, measure the clearance between the rotor groove and plate.

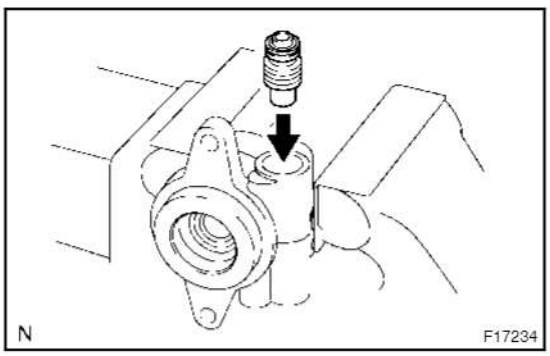
Maximum clearance: 0.03 mm (0.0012 in.)

If it is more than the maximum, replace a new vane pump assembly.

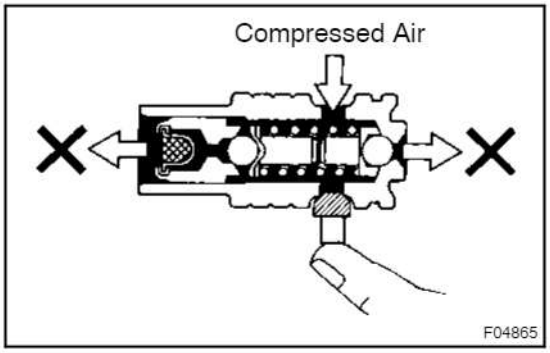


3. INSPECT FLOW CONTROL VALVE

(a) Coat the valve with power steering fluid and check that it falls smoothly into the valve hole by its own weight.

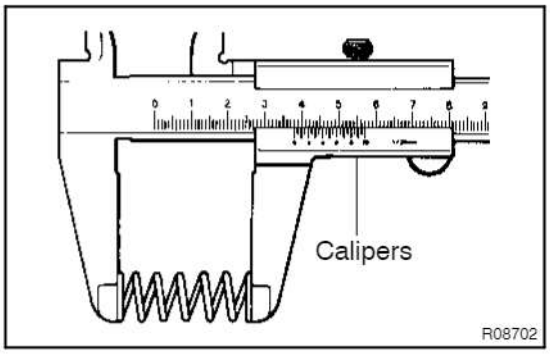


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(b) Check the valve for leakage. Close one of the holes and apply compressed air 392 – 490 kPa (4 – 5 kgf/cm^2, 57 – 71 psi) into the opposite side hole, and confirm that air does not come out from the end hole.

If necessary, replace a new vane pump assembly.

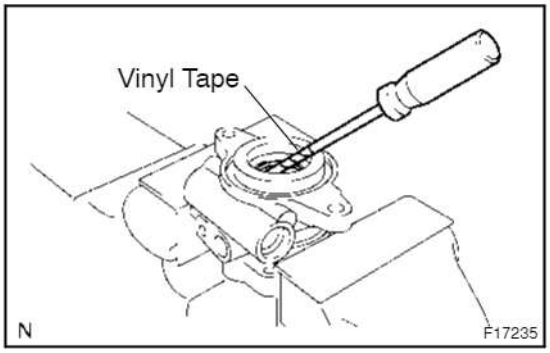


4. INSPECT SPRING

Using a calipers, measure the free length of the spring.

Minimum free length: 31.95 mm (1.2579 in.)

If it is not within the specification, replace the spring.



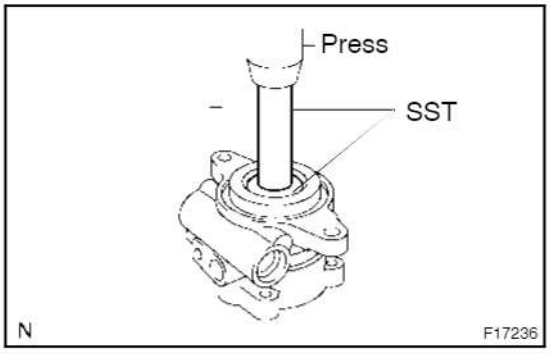
5. IF NECESSARY, REPLACE OIL SEAL

(a) Using a screwdriver with vinyl tape wound around its tip, remove the oil seal from the front housing.

NOTICE:

Be careful not to damage the front housing.

(b) Coat a new oil seal lip with power steering fluid.



(c) Using SST, press in the oil seal as shown in the illustration.

SST 09950–60010 (09951–00320),
09950–70010 (09951–07100)

NOTICE:

Make sure to install the oil seal facing the correct direction.

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SR0QB-02

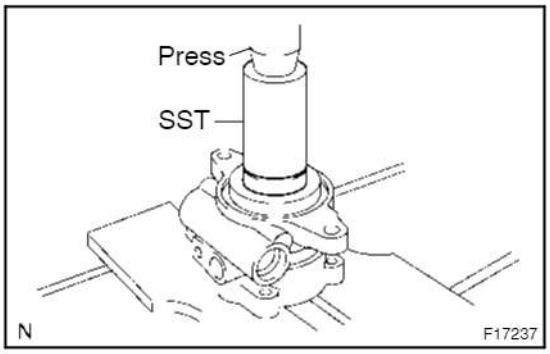
REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. COAT WITH POWER STEERING FLUID

(See page SR–41)



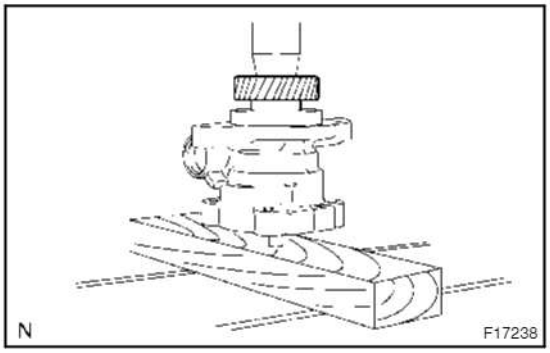
2. INSTALL VANE PUMP SHAFT WITH BEARING

(a) Using SST, press in the shaft with the bearing.
SST 09612–22011

NOTICE:

Be careful not to damage the oil seal lip.

(b) Install a new snap ring.

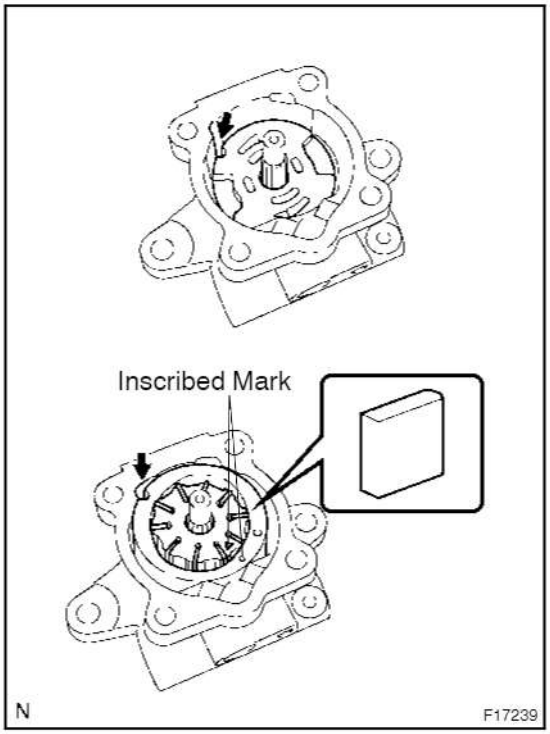


3. INSTALL VANE PUMP DRIVE GEAR

Supporting the vane pump shaft end with the wood block, press in the drive gear to the shaft as shown in the illustration.

NOTICE:

Press in the drive gear until its top surface levels with the top of the pump shaft.



4. INSTALL SIDE PLATE

(a) Coat 2 new O–rings with power steering fluid and install them.

(b) Install the side plate as shown in the illustrating.

HINT:

Align the hole of the side plate with the hole of the front housing.

5. INSTALL CAM RING AND VANE PUMP ROTOR

Install the ring and rotor with the inscribed marks facing out ward.

6. INSTALL 10 VANE PLATES

7. INSTALL REAR HOUSING

(a) Coat a new gasket with power steering fluid and install it to the housing.

(b) Install the 4 bolts.

Torque: 22 N·m (225 kgf·cm, 16 ft·lbf).

8. INSTALL SPRING, FLOW CONTROL VALVE AND PRESSURE PORT UNION

(a) Install the valve facing the correct direction.

(See page SR–41)

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(b) Coat a new O–ring with power steering fluid and install it to the union.

(c) Torque the union.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

9. INSTALL SUCTION PORT UNION

(a) Coat a new O–ring with power steering fluid and install it to the union.

(b) Torque the bolt.

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

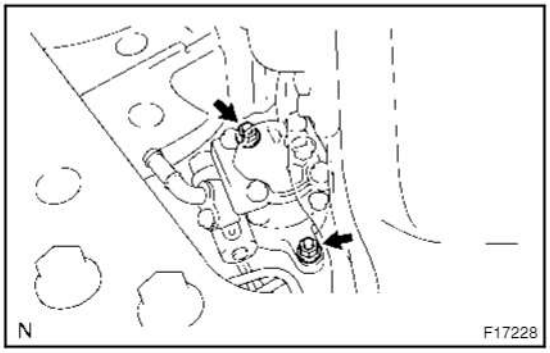
10. MEASURE PS VANE PUMP ROTATING TORQUE

(See page SR–44)

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SR0QC-02

INSTALLATION

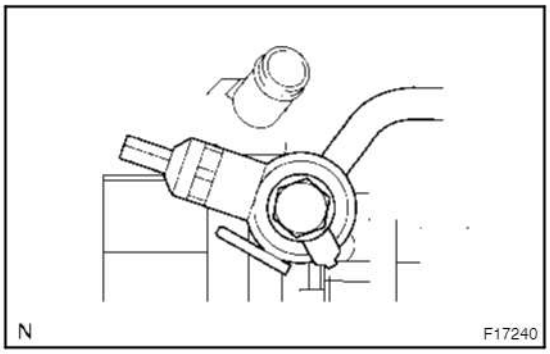


1. INSTALL PS VANE PUMP ASSEMBLY

(a) Coat a new O–ring with power steering fluid and install it to the vane pump assembly.

(b) Torque the 2 nuts.

Torque: 36 N·m (370 kgf·cm, 27 ft·lbf)



2. CONNECT PRESSURE FEED TUBE

Install new gaskets on each side of the tube and torque the union bolt.

Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

HINT:

Make sure that the stopper of the tube touches the PS vane pump body as shown in the illustration, then torque the union bolt.

3. CONNECT OIL PRESSURE SWITCH CONNECTOR

4. CONNECT RETURN HOSE

Install the clip.

5. INSTALL NO.1 AND NO.2 ENGINE UNDER COVERS

(a) Install the No.1 under cover with the 6 bolts.

(b) Install the No.2 under cover with the 8 bolts.

6. INSTALL FRONT TRANSMISSION UNDER COVER

Tighten the 2 bolts and nuts.

7. BLEED POWER STEERING SYSTEM

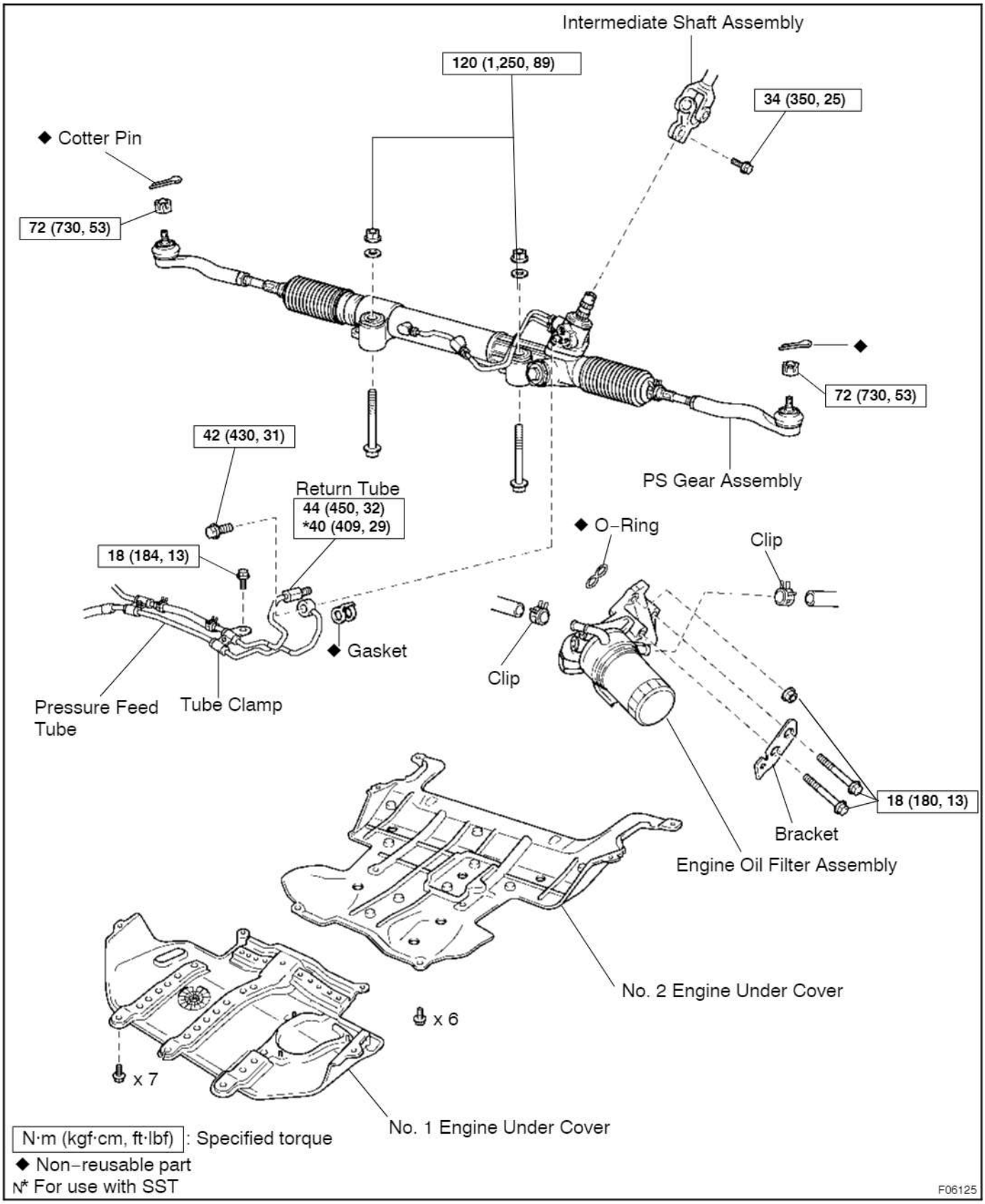
(See Pub. No. RM616E on page SR–4)

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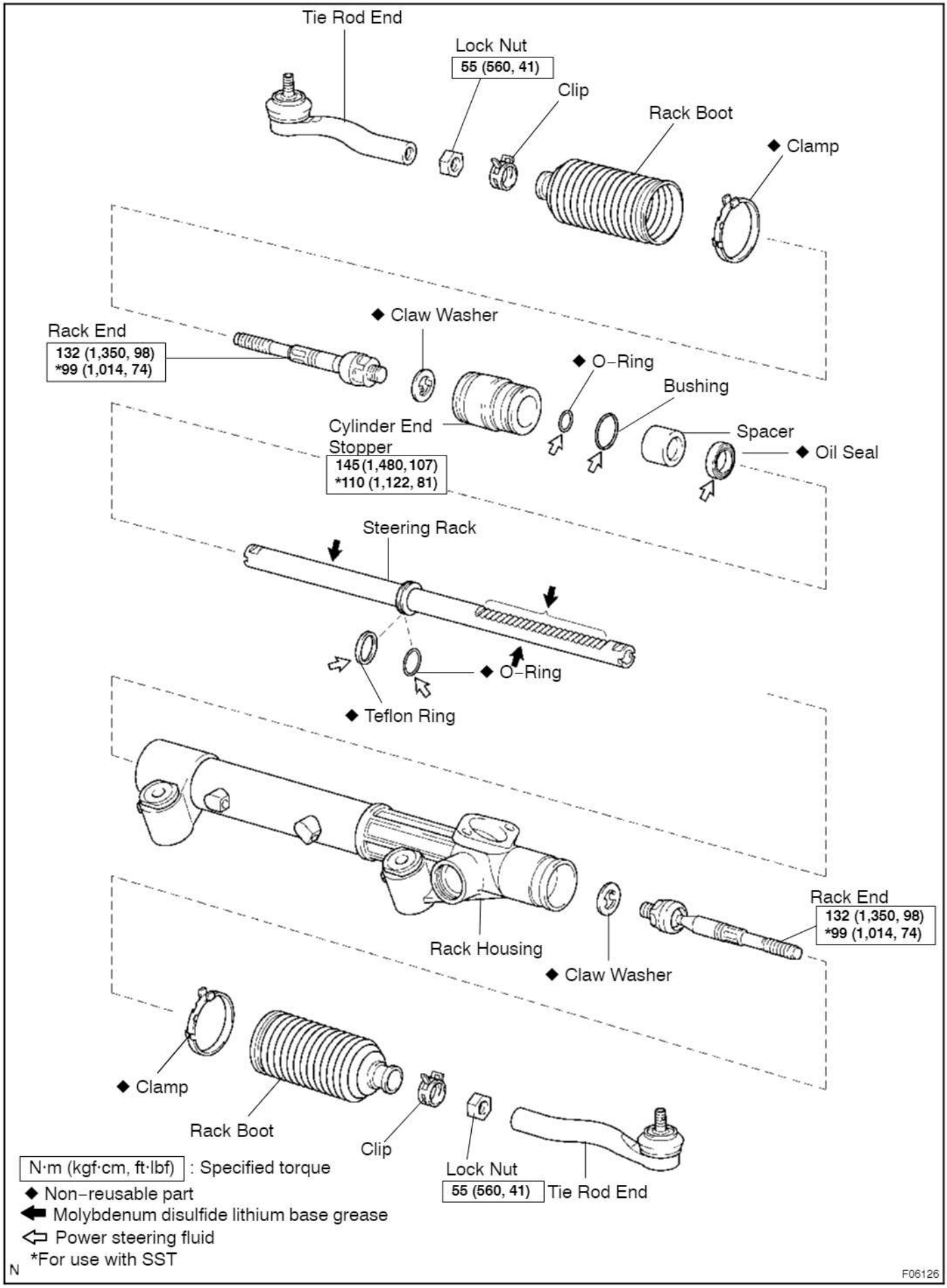
POWER STEERING GEAR (Independent Front Suspension)

SR0QJ-02

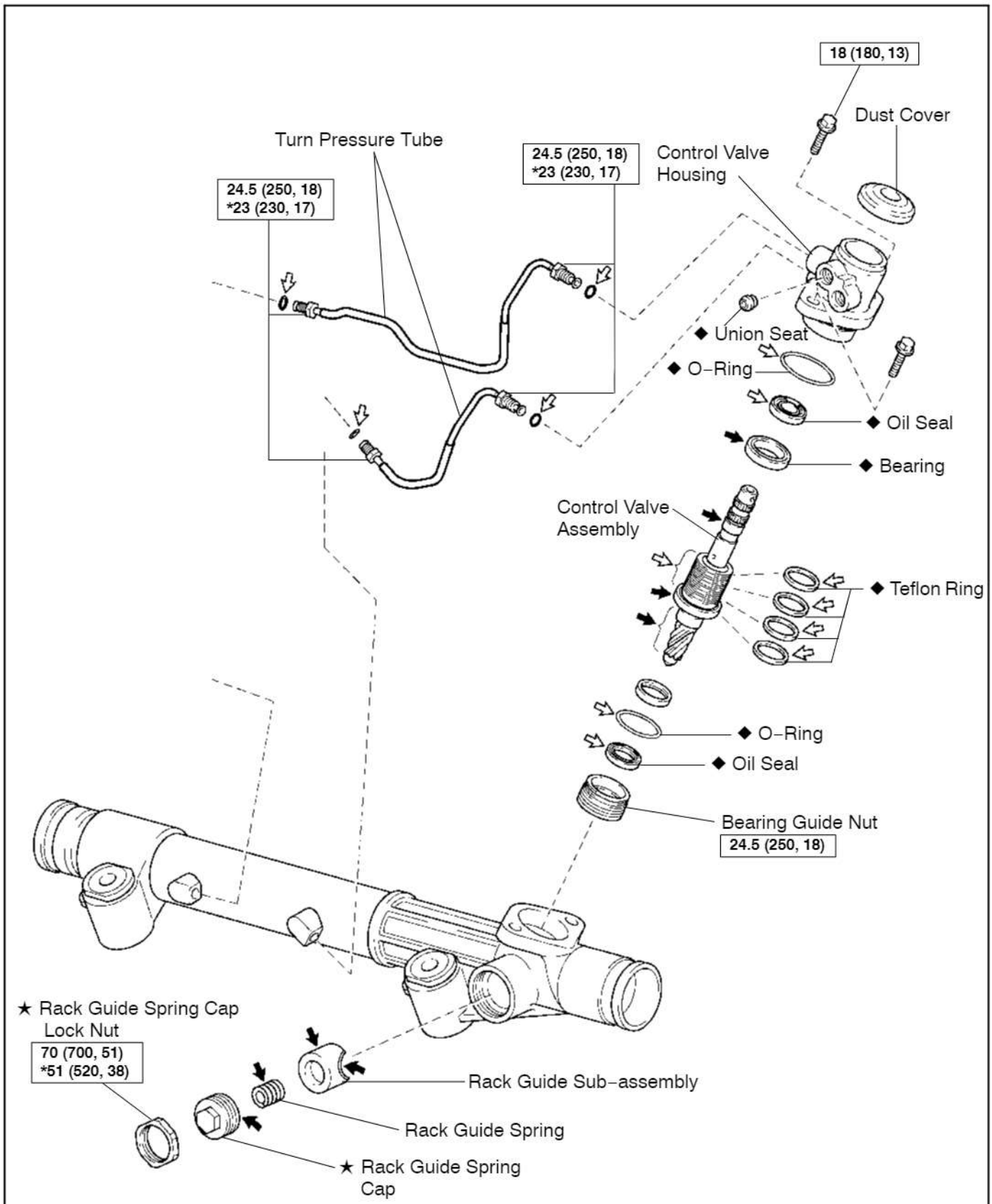
COMPONENTS



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SR0QK-02

REMOVAL

NOTICE:

Remove the steering wheel assembly before the steering gear removal, because there is possibility of breaking of the spiral cable.

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

2. REMOVE STEERING WHEEL PAD
(See page SR–7)

3. REMOVE STEERING WHEEL (See page SR–7)

4. REMOVE NO. 1 ENGINE UNDER COVER

Remove the 7 bolts.

5. REMOVE NO. 2 ENGINE UNDER COVER

Remove the 6 bolts.

6. DISCONNECT RH AND LH TIE ROD ENDS
(See Pub. No. RM616E on page SA–34)

7. REMOVE ENGINE OIL FILTER ASSEMBLY

(a) Disconnect the 2 clips and hoses.

(b) Remove the 2 bolts and nut with the bracket.

(c) Remove the O–ring.

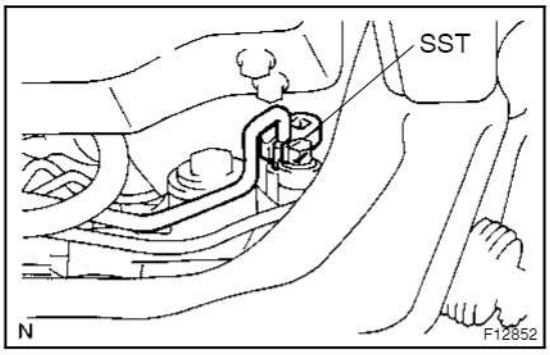
8. DISCONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See page SR–7)

HINT:

Turn the steering wheel fully to the right side.

9. DISCONNECT PRESSURE FEED TUBE

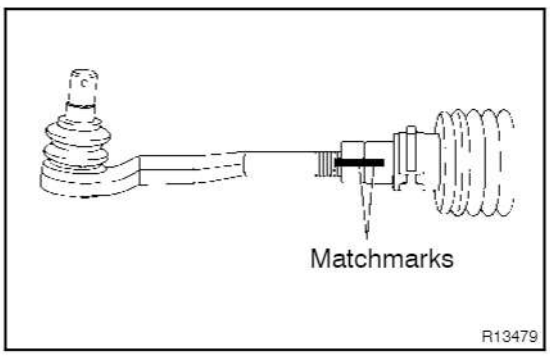
Remove the union bolt, gasket and disconnect the pressure feed tube.



10. DISCONNECT RETURN TUBE

Using SST, disconnect the tube.

SST 09023–38400



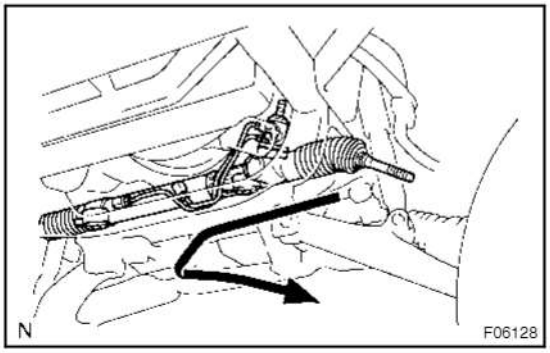
11. REMOVE RH AND LH TIE ROD ENDS AND LOCK NUTS

(a) Place matchmarks on the tie rod end and rack end.

(b) Loosen the lock nut, and remove the tie rod end and lock nut.

(c) Employ the same manner described above to the other side.

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12. REMOVE PS GEAR ASSEMBLY

Remove the 2 gear assembly set bolts, nuts and washers.

HINT:

Slide the gear assembly to the right side, pull out the left side of the gear assembly from the member.

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SR0ML–09

DISASSEMBLY

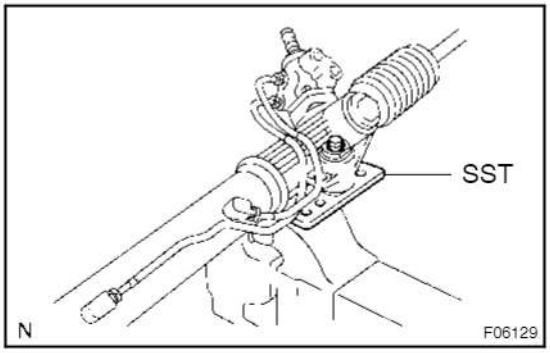
NOTICE:

When using a vise, do not overtighten it.

1. SECURE PS GEAR ASSEMBLY IN VISE

Using SST, secure the gear assembly in a vise, as shown in the illustration.

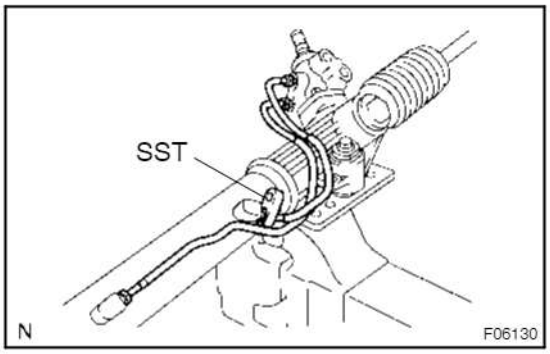
SST 09630–00014 (09631–00142)



2. REMOVE 2 TURN PRESSURE TUBES

Using SST, remove the tube.

SST 09023–38200



3. REMOVE RH AND LH CLIPS, RACK BOOTS AND CLAMPS

(a) Using pliers, loosen the clamp, as shown in the illustration.

NOTICE:

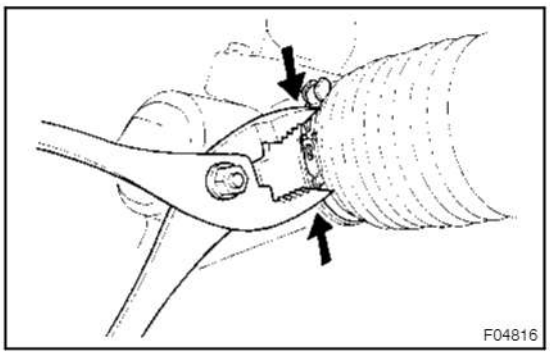
Be careful not to damage the boot.

(b) Remove the clip, rack boot and clamp.

(c) Employ the same manner described above to the other side.

HINT:

Mark the RH and LH rack boots.

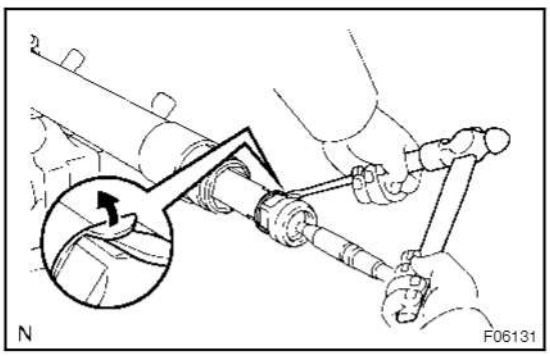


4. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

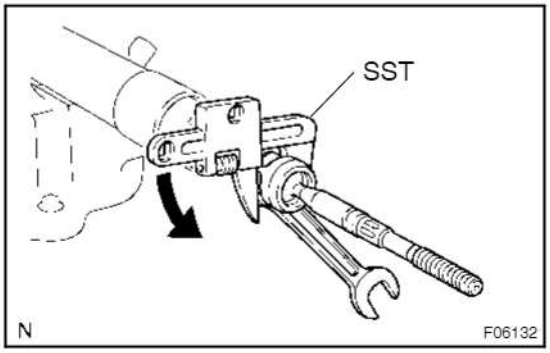
(a) Using a screwdriver and hammer, stake back the washer.

NOTICE:

Avoid and impact to the steering rack.



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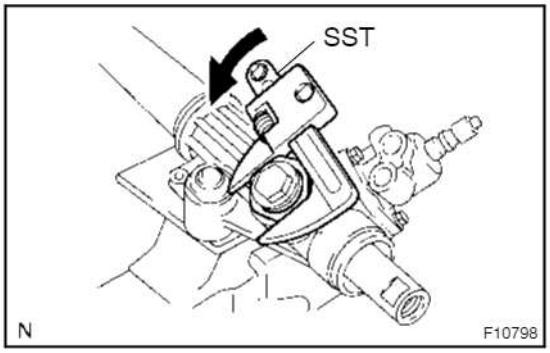


(b) Using a spanner to hold the steering rack steady, and using SST, remove the rack end.
SST 09922–10010

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

(c) Remove the claw washer.
(d) Employ the same manner described above to the other side.

HINT:
Mark the RH and LH rack ends.



5. REMOVE RACK GUIDE SPRING CAP LOCK NUT

Using SST, remove the nut.
SST 09922–10010

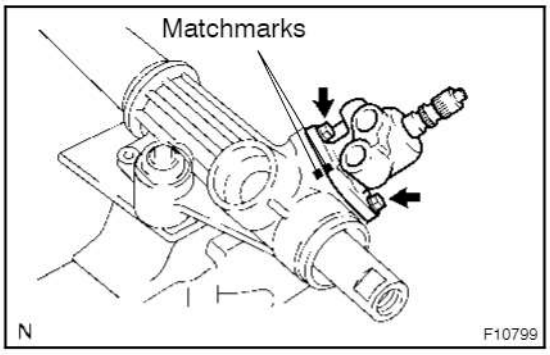
NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

6. REMOVE RACK GUIDE SPRING CAP

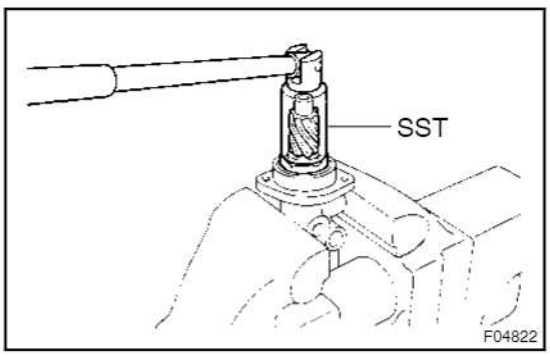
7. REMOVE RACK GUIDE SPRING AND RACK GUIDE SUB–ASSEMBLY

8. REMOVE DUST COVER

9. REMOVE CONTROL VALVE HOSING WITH CONTROL VALVE ASSEMBLY



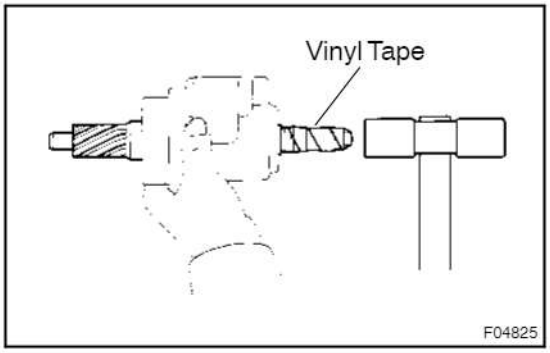
(a) Place matchmarks on the valve housing and rack housing.
(b) Remove the 2 bolts.
(c) Pull out the control valve assembly with the valve housing.
(d) Remove the O–ring from the valve housing.



10. REMOVE CONTROL VALVE ASSEMBLY

(a) Using SST, loosen the bearing guide nut.
SST 09631–20060

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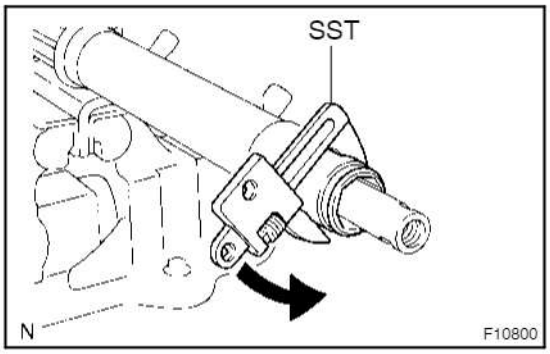
(b) Wind vinyl tape to the control valve shaft.
(c) Using a plastic hammer, tap out the valve assembly with the nut from the control valve housing.

NOTICE:
Be careful not to damage the oil seal lip.

(d) Remove the nut from the valve assembly.

NOTICE:
Be careful not the damage the oil seal lip.

(e) Remove the O–ring from the nut.

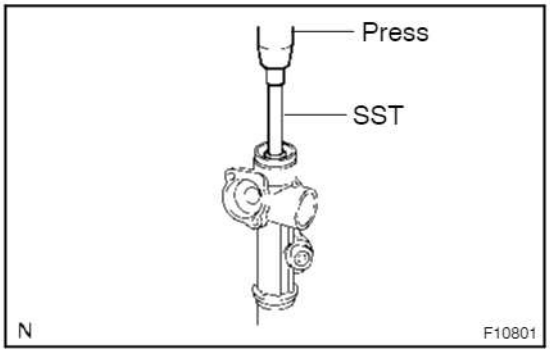


11. REMOVE CYLINDER END STOPPER AND SPACER

(a) Using SST, remove the stopper.
SST 09922–10010

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

(b) Remove the O–ring from the stopper.



12. REMOVE STEERING RACK AND OIL SEAL

(a) Using SST, press out the rack and oil seal.

NOTICE:
Take care not to drop the rack.

SST 09950–70010 (09951–07200)

(b) Remove the oil seal from the rack.

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SR0MM–04

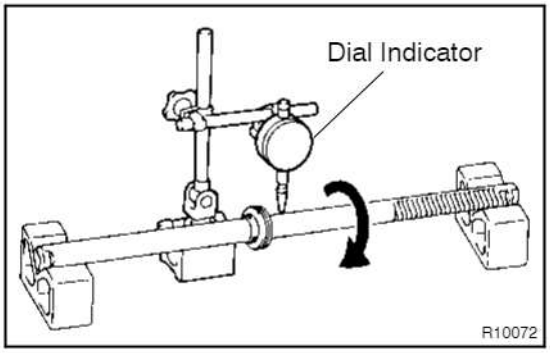
INSPECTION

1. INSPECT STEERING RACK

(a) Using a dial indicator, check the rack for runout and for teeth wear and damage.

Maximum runout: 0.03 mm (0.0012 in.)

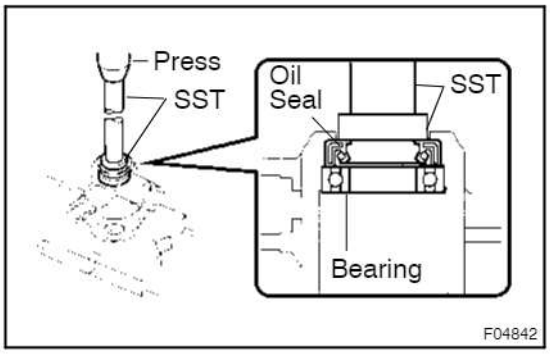
(b) Check the back surface for wear and damage.



2. IF NECESSARY, REPLACE OIL SEAL AND BEARING

(a) Using SST, press out the oil seal and bearing from the control valve housing.

SST 09950–60010 (09951–00260), 09950–70010 (09951–07150)



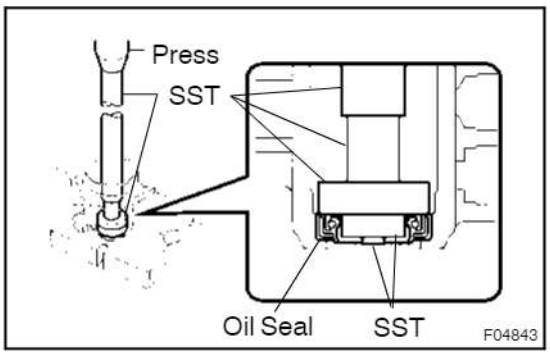
(b) Coat a new oil seal lip with power steering fluid.

(c) Using SST, press in the oil seal.

SST 09950–60010 (09951–00180, 09951–00330, 09952–06010), 09950–70010 (09951–07150)

NOTICE:

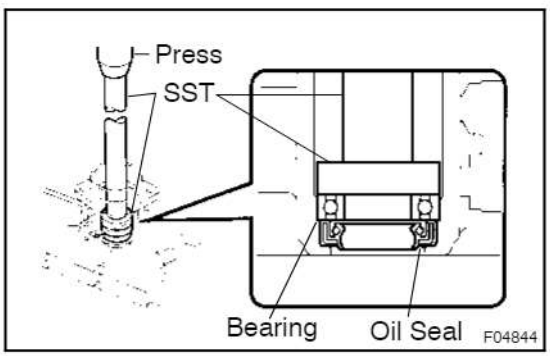
Make sure to install the oil seal facing the correct direction.



(d) Coat a new bearing with molybdenum disulfide lithium base grease.

(e) Using SST, press in the bearing.

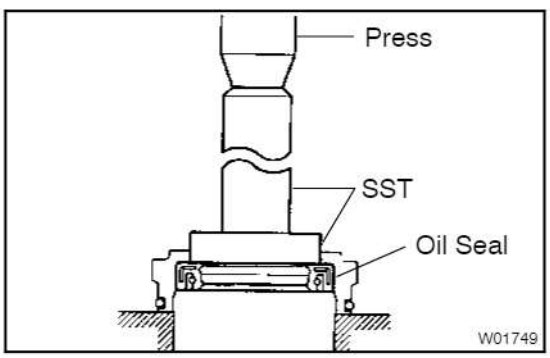
SST 09950–60010 (09951–00330), 09950–70010 (09951–07150)



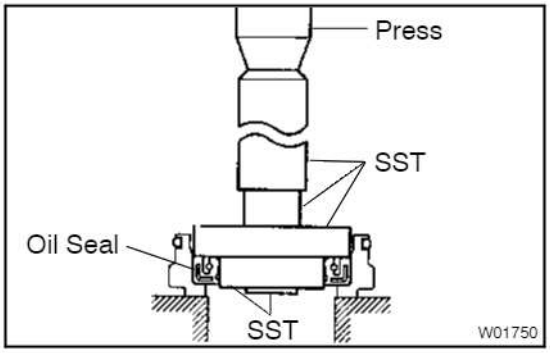
3. IF NECESSARY, REPLACE OIL SEAL

(a) Using SST, press out the oil seal from the bearing guide nut.

SST 09950–60010 (09951–00320), 09950–70010 (09951–07100)

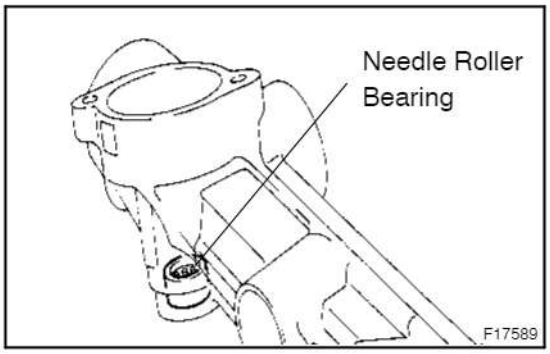


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(b) Coat a new oil seat lip with power steering fluid.
(c) Using SST, press in the oil seal.
SST 09950–60010 (09951–00280, 09951–00360, 09952–06010), 09950–70010 (09951–07100)

NOTICE:
Make sure to install the oil seal facing the correct direction.

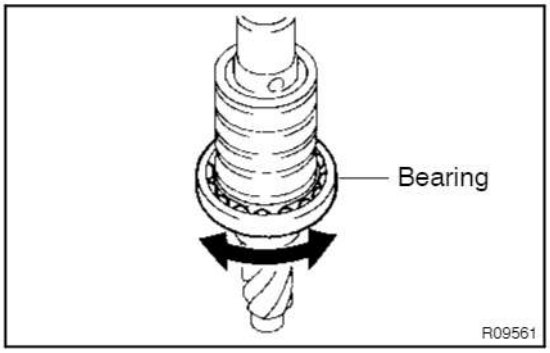


4. INSPECT BEARING

(a) Check the needle roller bearing of the rack housing for pitmarks or damage.

If faulty, replace the rack housing.

(b) Coat the inside of the bearing with molybdenum disulfide lithium base grease.

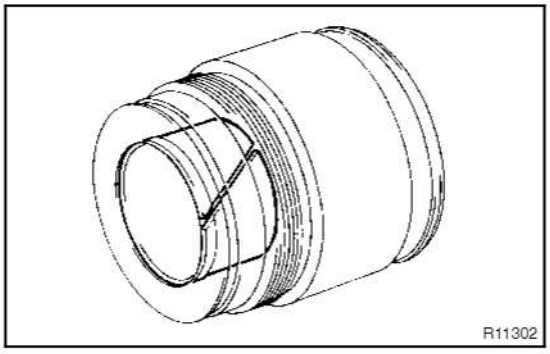


5. INSPECT BEARING

(a) Check the bearing rotation condition and check for abnormal noise.

If the bearing is worn or damaged, replace the control valve assembly.

(b) Coat the bearing with molybdenum disulfide lithium base grease.

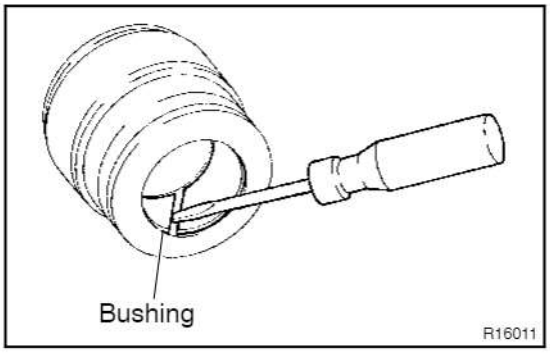


6. INSPECT BUSHING

(a) Check the inside of the bushing of the cylinder end stopper for cracks.

If faulty, replace the bushing.

(b) Apply molybdenum disulfide lithium base grease to the inside of the bushing.



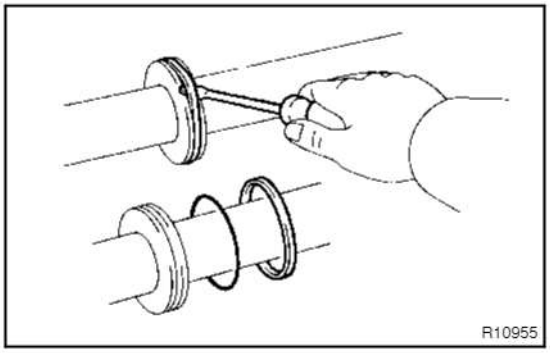
7. IF NECESSARY, REPLACE BUSHING

(a) Using a screwdriver, remove the bushing from the cylinder end stopper.

NOTICE:
Be careful not to damage the cylinder end stopper.

(b) Coat the inside of a new bushing with molybdenum disulfide lithium base grease.
(c) Install the bushing.

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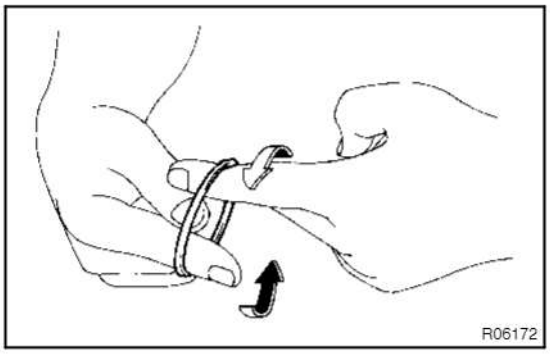
8. IF NECESSARY, REPLACE TEFLON RING AND O–RING

(a) Using a screwdriver, remove the teflon ring and O–ring from the steering rack.

NOTICE:

Be careful not to damage the groove for the ring.

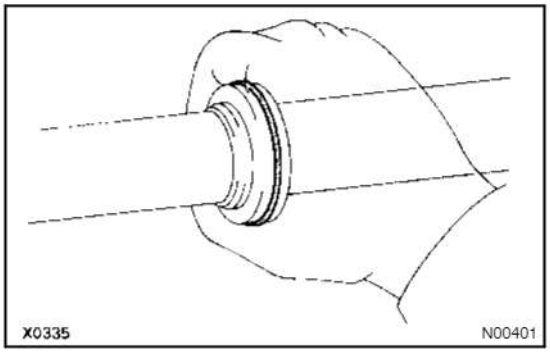
(b) Coat a new O–ring with power steering fluid and install it.



(c) Expand a new teflon ring with your fingers.

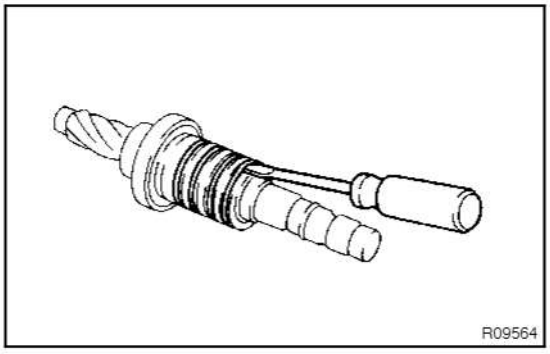
NOTICE:

Be careful not to overexpand the ring.



(d) Coat the ring with power steering fluid.

(e) Install the ring to the rack, and settle it down with your fingers.



9. IF NECESSARY, REPLACE 4 TEFLON RINGS

(a) Using a screwdriver, remove the 4 rings from the control valve assembly.

NOTICE:

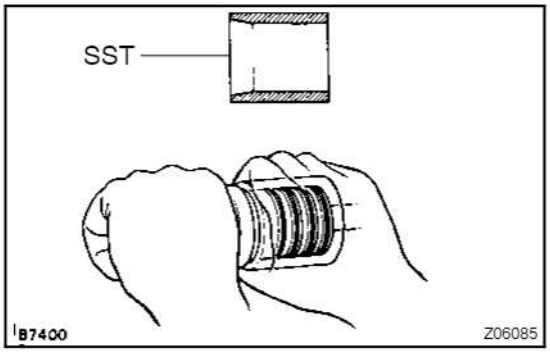
Be careful not to damage the grooves for the ring.

(b) Expand 4 new rings with your fingers.

NOTICE:

Be careful not to overexpand the ring.

(c) Coat the rings with power steering fluid.



(d) Install the rings to the control valve assembly, and settle them down with your fingers.

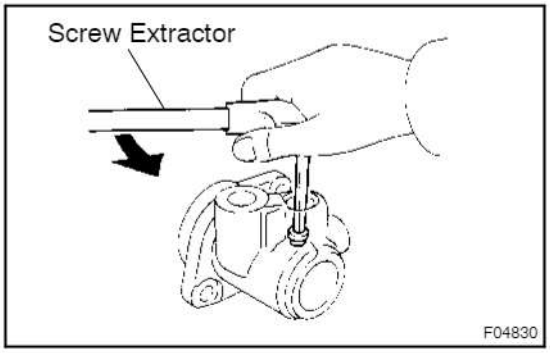
(e) Carefully slide the tapered end of SST over the rings until the ring fits to the valve assembly.

SST 09631–20081

NOTICE:

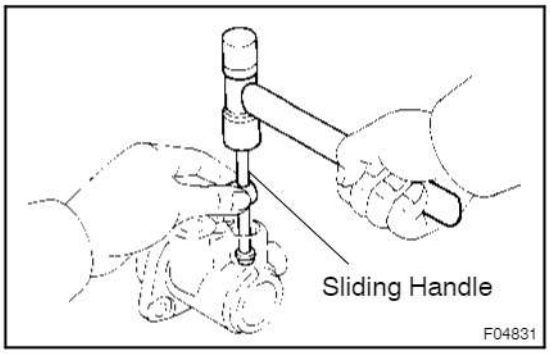
Be careful not to damage the rings.

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10. IF NECESSARY, REPLACE UNION SEAT

(a) Using a screw extractor, remove the seat from the control valve housing.



(b) Using plastic hammer and sliding handle, lightly tap in a new seat.

NOTICE:

Before installing the union seat, remove dust sticking to the control valve housing.

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SR1JC–01

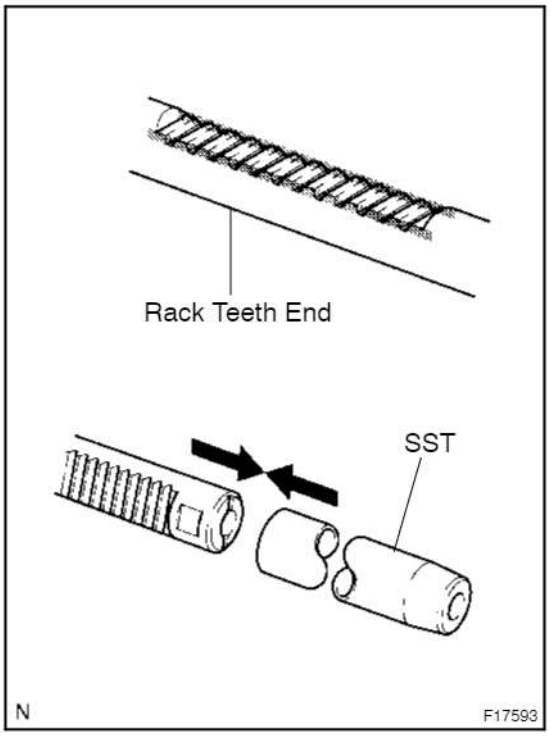
REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. COAT PARTS INDICATED BY ARROWS WITH POWER STEERING FLUID OR MOLYBDENUM DISULFIDE LITHIUM BASE GREASE

(See page SR–51)



2. INSTALL STEERING RACK

(a) Install SST to the rack.
SST 09631–00350

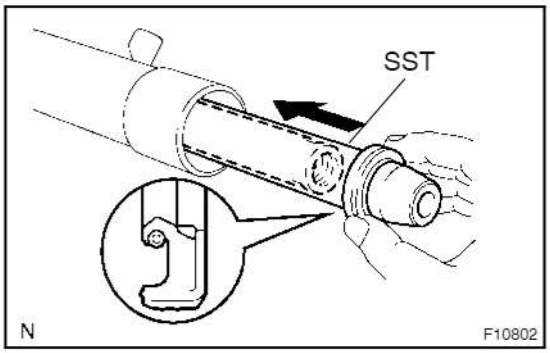
HINT:

If necessary, scrape the burrs off the rack teeth end and burnish.

(b) Coat SST with power steering fluid.

(c) Install the rack into the rack housing.

(d) Remove the SST.



3. INSTALL OIL SEAL

(a) Install SST to the steering rack opposite end.
SST 09631–00350

(b) Coat SST with power steering fluid.

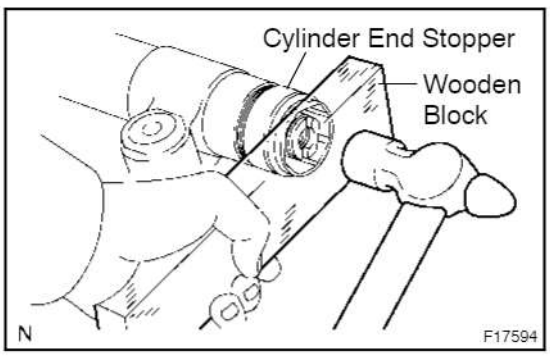
(c) Coat a new oil seal lip with power steering fluid.

(d) Install the oil seal by pushing it onto the SST without tilting.

NOTICE:

Make sure to install the oil seal facing the correct direction.

(e) Remove the SST.



4. INSTALL SPACER AND CYLINDER END STOPPER

(a) Install the spacer.

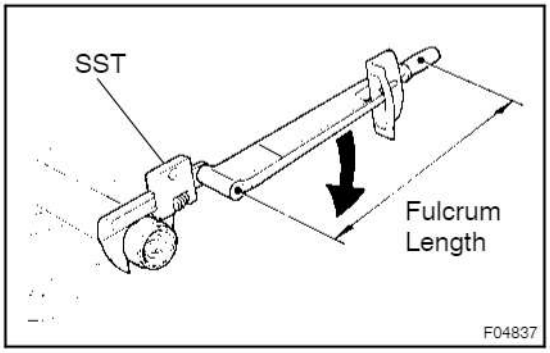
(b) Coat a new O–ring with power steering fluid, and install it to the stopper.

(c) Using a wooden block and hammer, drive in the stopper until it is tightly installed.

NOTICE:

Be careful not to damage the O–ring.

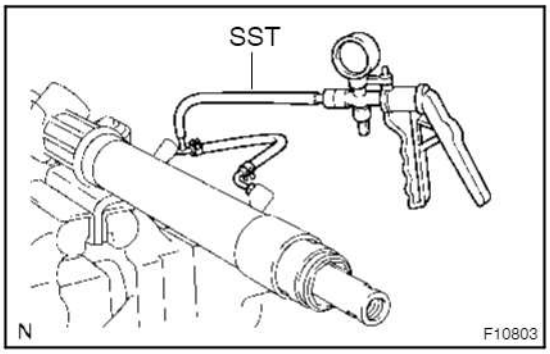
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(d) Using SST, torque the stopper.
SST 09922–10010
Torque: 110 N·m (1,122 kgf·cm, 81 ft·lbf)

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

HINT:
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).



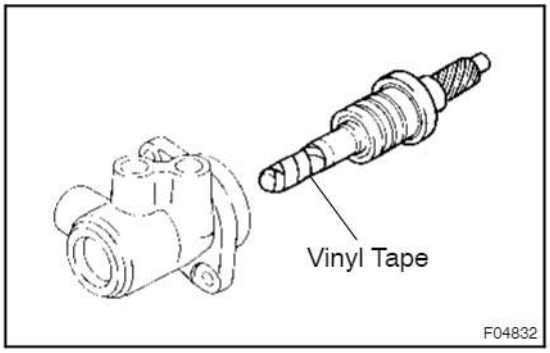
5. AIR TIGHTNESS TEST

(a) Install SST to the unions of the rack housing.
SST 09631–12071

(b) Apply 53 kPa (400 mmHg, 15.75 in.Hg) of vacuum for about 30 seconds.

(c) Check that there is no change in the vacuum.

If there is change in the vacuum, check the installation of the oil seals.



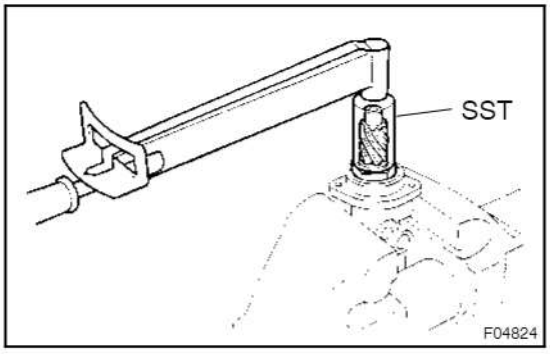
6. INSTALL CONTROL VALVE ASSEMBLY

(a) Coat the teflon rings with power steering fluid.

(b) To prevent oil seal lip damage, wind vinyl tape on the serrated part of the control valve shaft.

(c) Push the valve assembly into the control valve housing.

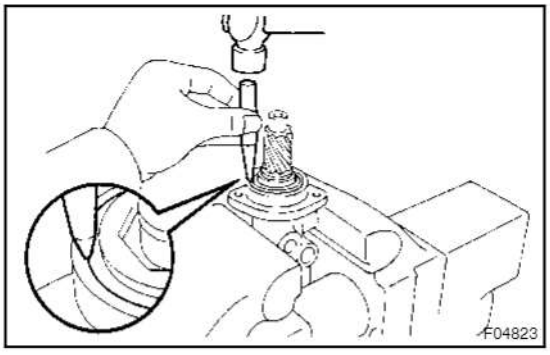
NOTICE:
Be careful not to damage the teflon rings and oil seal lip.



(d) Coat a new O–ring with power steering fluid, and install it to the bearing guide nut.

(e) Using SST, torque the nut.
SST 09631–20060
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)

NOTICE:
Be careful not to damage the oil seal lip.



(f) Using a punch, stake the nut.

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7. INSTALL CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

(a) Coat a new O–ring with power steering fluid, and install it to the valve housing.

(b) Align the matchmarks on the valve housing and rack housing, and install the valve housing with the valve assembly to the rack housing.

(c) Torque the 2 bolts.

Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)

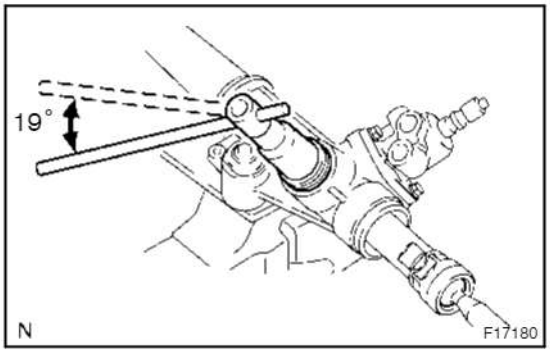
8. INSTALL DUST COVER

9. INSTALL RACK GUIDE SUB–ASSEMBLY, RACK GUIDE SPRING AND RACK GUIDE SPRING CAP

(a) Apply sealant to 2 or 3 threads of the cap.

Sealant:
Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(b) Temporarily install the cap.



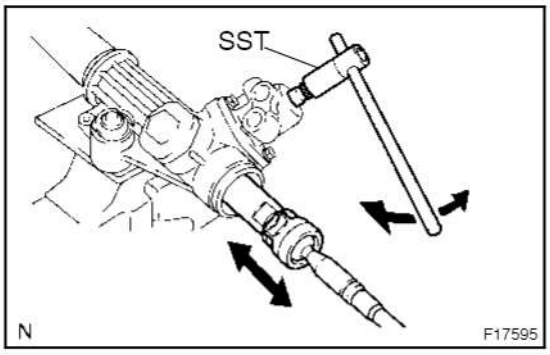
10. ADJUST TOTAL PRELOAD

(a) To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.

(b) Torque the rack guide spring cap.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

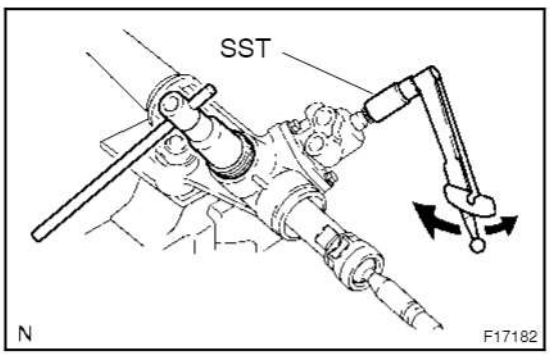
(c) Return the cap 19°.



(d) Using SST, turn the control valve shaft right and left 1 or 2 times.

SST 09616–00011

(e) Loosen the cap until the rack guide spring is not functioning.

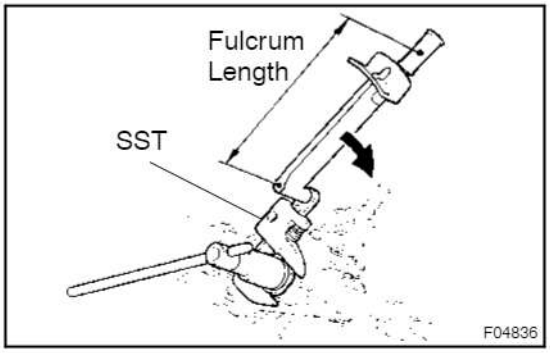


(f) Using SST and a torque wrench, tighten the cap until the preload is within specification.

SST 09616–00011

Preload (turning):
Center Area
1.8 – 2.2 N·m (18.4 – 22.4 kgf·cm, 16.0 – 19.5 in.·lbf)
End Area
1.3 – 1.7 N·m (13.3 – 17.3 kgf·cm, 11.5 – 15.0 in.·lbf)

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11. INSTALL RACK GUIDE SPRING CAP LOCK NUT

(a) Apply sealant to 2 or 3 threads of the nut.
Sealant:
Part No.08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

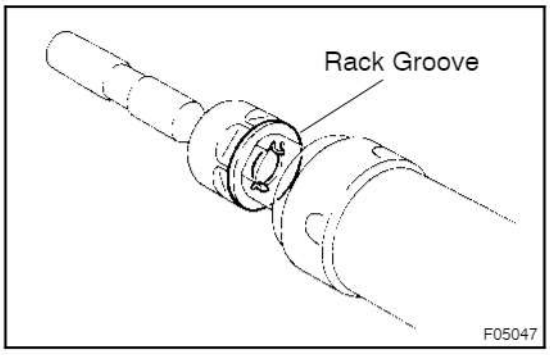
(b) Holding the rack guide spring cap rotating, and using SST, torque the nut.
SST 09922–10010
Torque: 52 N·m (520 kgf·cm, 38 ft·lbf)

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

HINT:
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

(c) Recheck the total preload.
Preload (turning):
Center Area
1.8 – 2.2 N·m (18.4 – 22.4 kgf·cm, 16.0 – 19.5 in.·lbf)
End Area
1.3 – 1.7 N·m (13.3 – 17.3 kgf·cm, 11.5 – 15.0 in.·lbf)

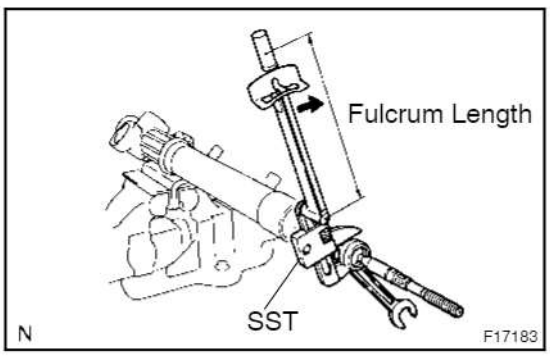
(d) Remove the RH and LH rack ends.



12. INSTALL RH AND LH CLAW WASHERS AND RACK ENDS

(a) Install a new washer, and temporarily tighten the rack end.

HINT:
Align the claws of the washer with the steering rack grooves.

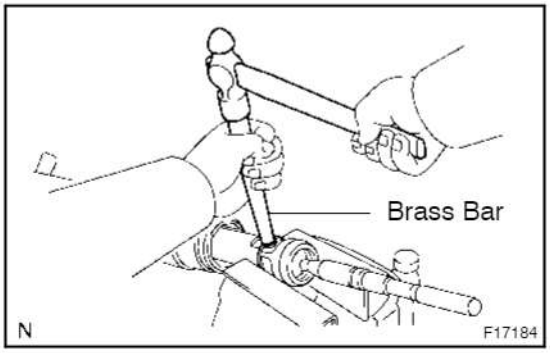


(b) Using a spanner to hold the steering rack steady, and using SST, torque the rack end.
SST 09922–10010
Torque: 99 N·m (1,014 kgf·cm, 74 ft·lbf)

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

HINT:
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

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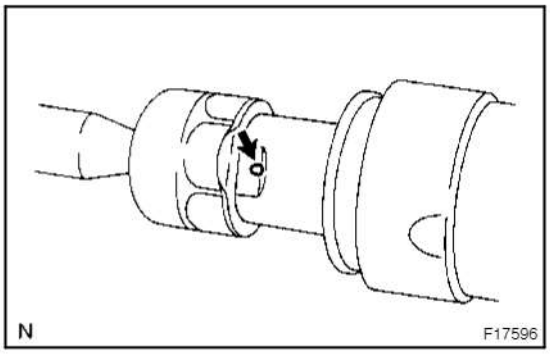


(c) Using a brass bar and hammer, stake the washer.

NOTICE:

Avoid any impact to the rack.

(d) Employ the same manner described above to the other side.

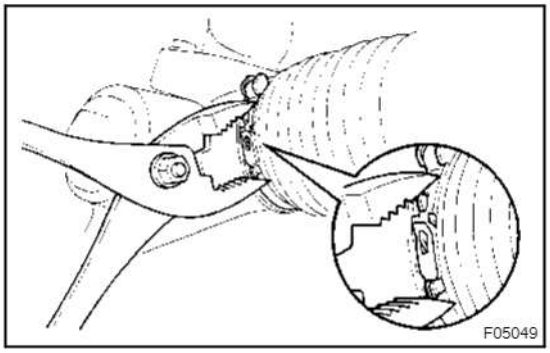


13. INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS

(a) Ensure that the tube hole is not clogged with grease.

HINT:

If the tube hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel is turned.



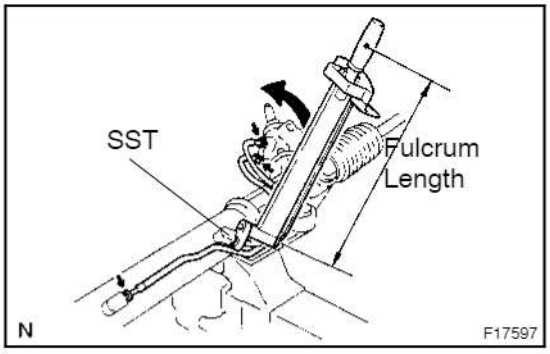
(b) Install the boot.

NOTICE:

Be careful not to damage or twist the boot.

(c) Using pliers tighten a new clamp, as shown in the illustration.

(d) Employ the same manner described above to the other side.



14. INSTALL 2 TURN PRESSURE TUBES

Using SST, install the tube.

SST 09023–38200

Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)

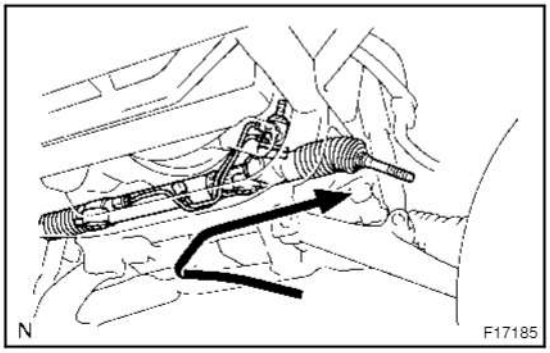
HINT:

- Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.

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SR0QL–02

INSTALLATION



1. INSTALL PS GEAR ASSEMBLY

Torque the 2 new gear assembly set bolts, nuts and washers.

Torque: 120 N·m (1,250 kgf·cm, 89 ft·lbf)

HINT:

Slide the gear assembly to the right side, slide the gear assembly to the left side and position it.

2. INSTALL RH AND LH TIE ROD ENDS AND LOCK NUTS

(a) Screw the lock nut and tie rod end onto the rack end until the matchmarks are aligned.

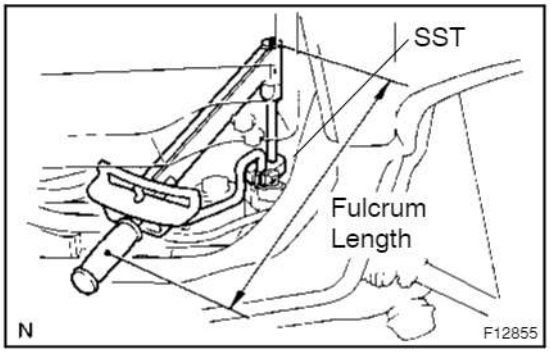
(b) After adjusting toe–in, torque the nut (See Pub. No. RM616E on page SA–9).

Torque: 55 N·m (560 kgf·cm, 41 ft·lbf)

3. CONNECT TUBE CLAMP

Torque the bolt.

Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)



4. CONNECT RETURN TUBE

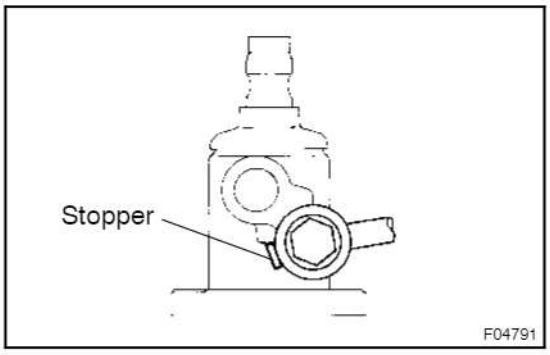
Using SST, connect the tube.

SST 09023–38400

Torque: 44 N·m (450 kgf·cm, 32 ft·lbf)

HINT:

- Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.



5. CONNECT PRESSURE FEED TUBE

Torque the union bolt with a new gasket.

HINT:

Make sure the stopper of the pressure feed tube touches the PS gear assembly as shown in the illustration, then torque the bolt.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

6. CONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See page SR–19)

7. INSTALL ENGINE OIL FILTER ASSEMBLY

(a) Install a new O–ring.

(b) Torque the 2 bolts and nut with the bracket.

Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)

(c) Connect the 2 clips and hoses.

8. CONNECT RH AND LH TIE ROD ENDS (See Pub. No. RM616E on page SA–38)

9. INSTALL NO. 2 ENGINE UNDER COVER

Tighten the 6 bolts.

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10. INSTALL NO. 1 ENGINE UNDER COVER

Tighten the 7 bolts.

11. POSITION FRONT WHEELS FACING STRAIGHT AHEAD

HINT:

Do it with the front of the vehicle jacked up.

12. CENTER SPIRAL CABLE (See page SR–19)

13. INSTALL STEERING WHEEL

(a) Align the matchmarks on the wheel and steering column main shaft.

(b) Temporarily tighten the wheel set nut.

(c) Connect the connector.

14. BLEED POWER STEERING SYSTEM (See Pub. No. RM616E on page SR–4)

15. CHECK STEERING WHEEL CENTER POINT

16. TORQUE STEERING WHEEL SET NUT

Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

17. INSTALL STEERING WHEEL PAD (See page SR–19)

18. CHECK FRONT WHEEL ALIGNMENT (See Pub. No. RM616E on page SA–9)

19. PERFORM VGRS SYSTEM CALIBRATION (See page DI–357)

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SRS AIRBAG

PRECAUTION

RS0CU–03

CAUTION:

- The LAND CRUISER is equipped with SRS, which comprises a driver airbag, front passenger airbag, side airbag and curtain shield airbag. Failure to carry out service operations in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Further, if a mistake is made in servicing the SRS, it is possible that the SRS may fail to operate when required. Before performing servicing (including removal or installation of parts, inspection or replacement), be sure to read the following items carefully, then follow the correct procedures described in the repair manual.
- Work must be started 90 seconds after the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery.
  (The SRS is equipped with a back–up power source so that if work is started within 90 seconds from disconnecting the negative (–) terminal cable of the battery, the SRS may be deployed.)
- Do not expose the steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly, airbag sensor assembly, front airbag sensor, side and curtain shield airbag sensor assembly, curtain shield airbag sensor assembly or seat position sensor assembly directly to hot air or flames.

NOTICE:

- Malfunction symptoms of the SRS are difficult to confirm, so the DTCs become the most important source of information when troubleshooting. When troubleshooting the SRS, always inspect the DTCs before disconnecting the battery.
- Even in the case of a minor collision where the SRS does not deploy, the steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly, airbag sensor assembly, front airbag sensor, side and curtain shield airbag sensor assembly, curtain shield airbag sensor assembly and seat position sensor assembly should be inspected (See page RS–18, RS–33, RS–48, RS–63, RS–71, RS–82, RS–87, RS–92, RS–98 and RS–103).
- Before repairs, remove the airbag sensor if shocks are likely to be applied to the sensor during repairs.
- Never use SRS parts from another vehicle. When replacing parts, replace them with new parts.
- Never disassemble and repair the steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly, airbag sensor assembly, front airbag sensor, side and curtain shield airbag sensor assembly, curtain shield airbag sensor assembly or seat position sensor assembly in order to reuse it.
- If the steering wheel pad, front passenger airbag assembly, side airbag assembly, curtain shield airbag assembly, airbag sensor assembly, front airbag sensor, side and curtain shield airbag sensor assembly, curtain shield airbag sensor assembly or seat position sensor assembly has been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace it with new one.
- Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) for troubleshooting the system's electrical circuits.
- Information labels are attached to the periphery of the SRS components. Follow the instructions on the notice.
- After work on the SRS is completed, perform the SRS warning light check (See page DI–432).

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- **When the negative (–) terminal cable is disconnected from the battery, the memory of the clock and audio system will be canceled. So before starting work, make a record of the contents memorized in the audio memory system. When work is finished, reset the audio systems as they were before and adjust the clock. To avoid erasing the memory in each memory system, never use a back– up power supply from outside the vehicle.**
- **If the vehicle is equipped with a mobile communication system, refer to the precaution in the IN section.**

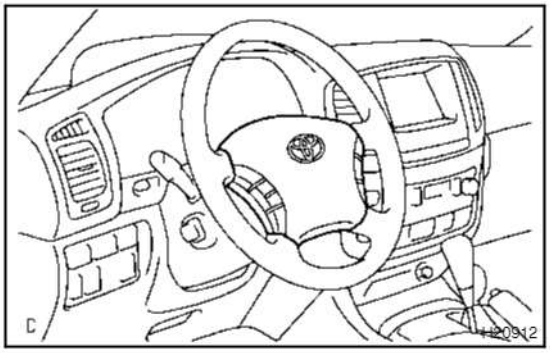
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RS0VS-01

OPERATION

1. STEERING WHEEL PAD (with AIRBAG)

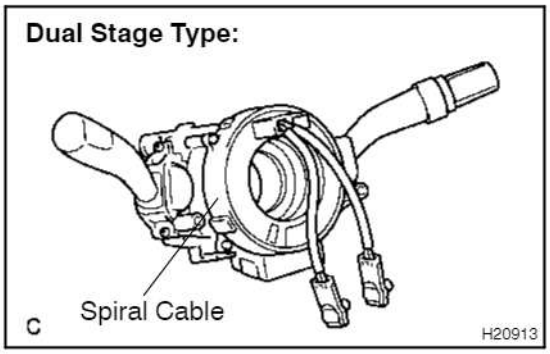
The inflater and bag of the SRS are stored in the steering wheel pad and cannot be disassembled. The inflater contains a squib, igniter charge, gas generator, etc., and inflates the bag when instructed by the airbag sensor assembly and front airbag sensor.



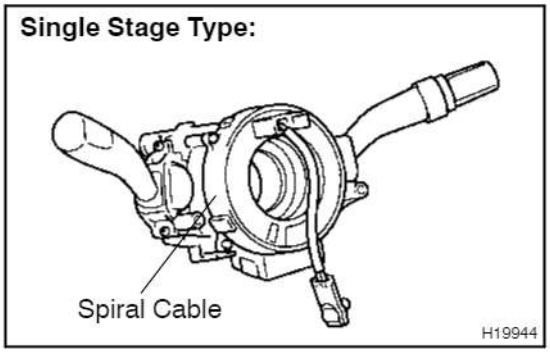
2. SPIRAL CABLE (in COMBINATION SWITCH)

A spiral cable is used as an electrical joint from the vehicle body side to the steering wheel.

Dual Stage Type:

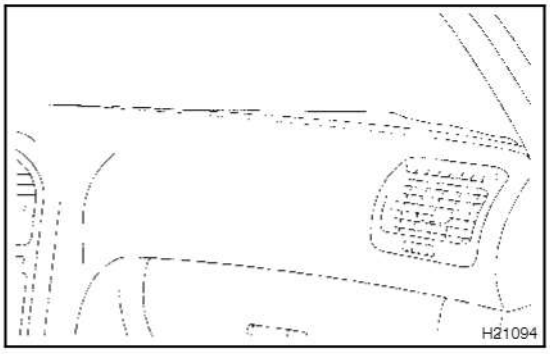


Single Stage Type:



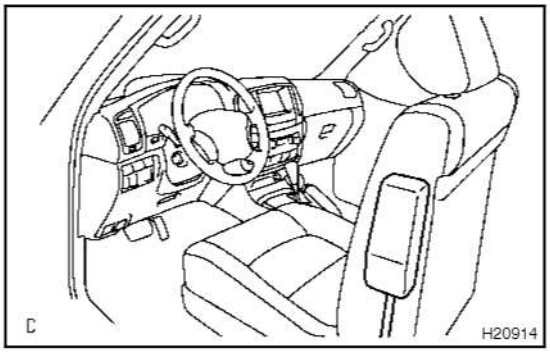
3. FRONT PASSENGER AIRBAG ASSEMBLY

The inflater and bag of the SRS are stored in the front passenger airbag assembly and cannot be disassembled. The inflater contains a squib, igniter charge, gas generator, etc., and inflates the bag when instructed by the airbag sensor assembly and front airbag sensor.

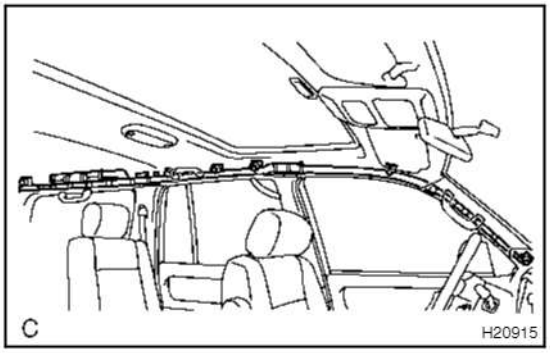


4. SIDE AIRBAG ASSEMBLY

The inflater and bag of the SRS side airbag are stored in the side airbag assembly and cannot be disassembled. The inflater contains a squib, igniter charge, gas generator, etc., and inflates the bag when instructed by the side and curtain shield airbag sensor assembly and airbag sensor assembly.

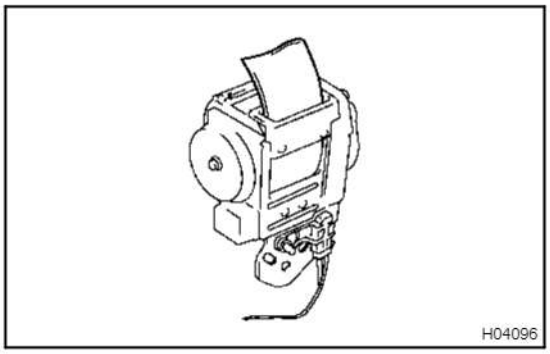


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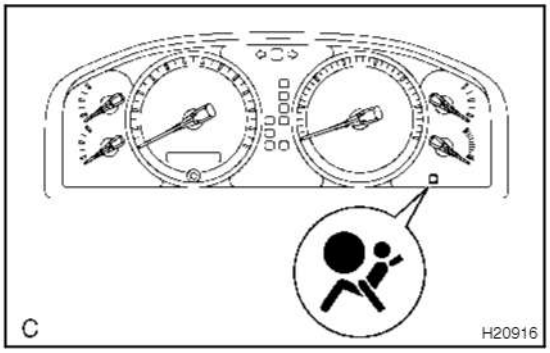
5. CURTAIN SHIELD AIRBAG ASSEMBLY

The inflater and bag of the SRS are stored in the curtain shield airbag assembly and cannot be disassembled. The inflater contains a squib, igniter charge, gas generator, etc., and inflates the bag when instructed by the side and curtain shield airbag sensor assembly, curtain shield airbag sensor assembly and airbag sensor assembly.



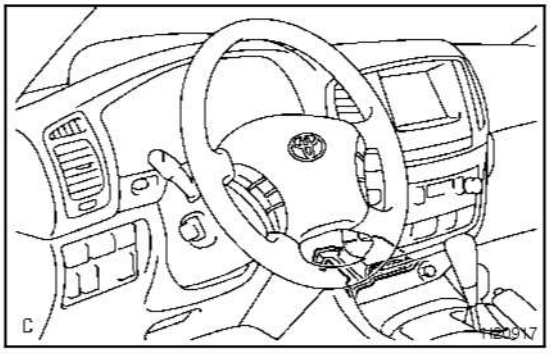
6. SEAT BELT PRETENSIONER

The seat belt pretensioner system is a component of the front seat outer belt. The seat belt pretensioner cannot be disassembled.



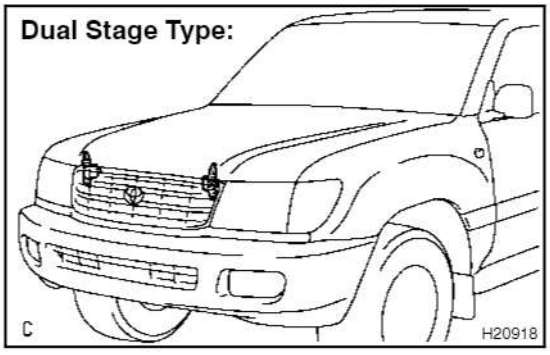
7. SRS WARNING LIGHT

The SRS warning light is located on the combination meter. It goes on to alert the driver of trouble in the system when a malfunction is detected in the airbag sensor assembly self–diagnosis. In normal operating conditions when the ignition switch is turned to the ON position, the light comes on for about 3 seconds and then goes off.



8. AIRBAG SENSOR ASSEMBLY

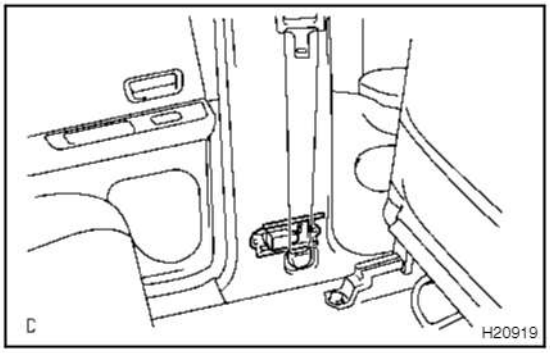
The airbag sensor assembly is mounted on the floor inside the front console box. The airbag sensor assembly consists of an airbag sensor, safing sensor, diagnosis circuit, ignition control, drive circuit, etc. It receives signals from the airbag sensor, front airbag sensor, side and curtain shield airbag sensor assembly, curtain shield airbag sensor assembly and judges whether the SRS must be activated or not. The airbag sensor assembly cannot be disassembled.



9. FRONT AIRBAG SENSOR

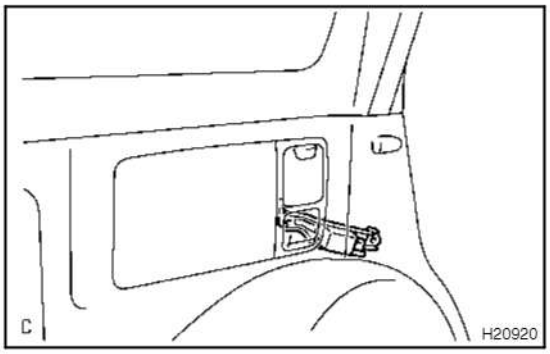
The front airbag sensor is mounted on each of the radiator side supports. The front airbag sensor consists of a frontal deceleration sensor, diagnosis circuit, etc. These send signals to the airbag sensor assembly. The front airbag sensor cannot be disassembled.

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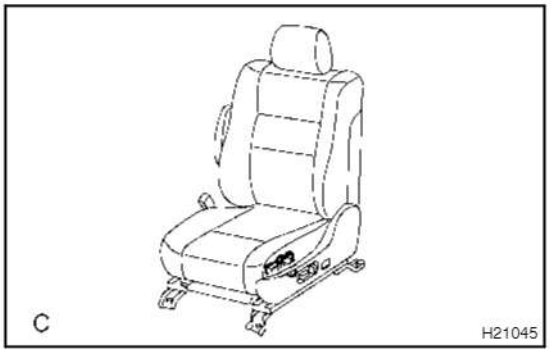
10. SIDE AND CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY

The side and curtain shield airbag sensor assembly is mounted in the LH and RH center pillars. The side and curtain shield airbag sensor assembly consist of a lateral deceleration sensor, safing sensor, diagnosis circuit, etc. These send signals to the airbag sensor assembly to judge whether the SRS side airbag and curtain shield airbag must be activated or not. The side and curtain shield airbag sensor assembly cannot be disassembled.



11. CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY

The curtain shield airbag sensor assembly is mounted in the LH and RH rear pillars. The curtain shield airbag sensor assembly consists of a lateral deceleration sensor, safing sensor, diagnosis circuit, etc. These sensors send signals to the airbag sensor assembly to judge whether the SRS curtain shield airbag must be activated or not. The curtain shield airbag sensor assembly cannot be disassembled.



12. SEAT POSITION SENSOR ASSEMBLY

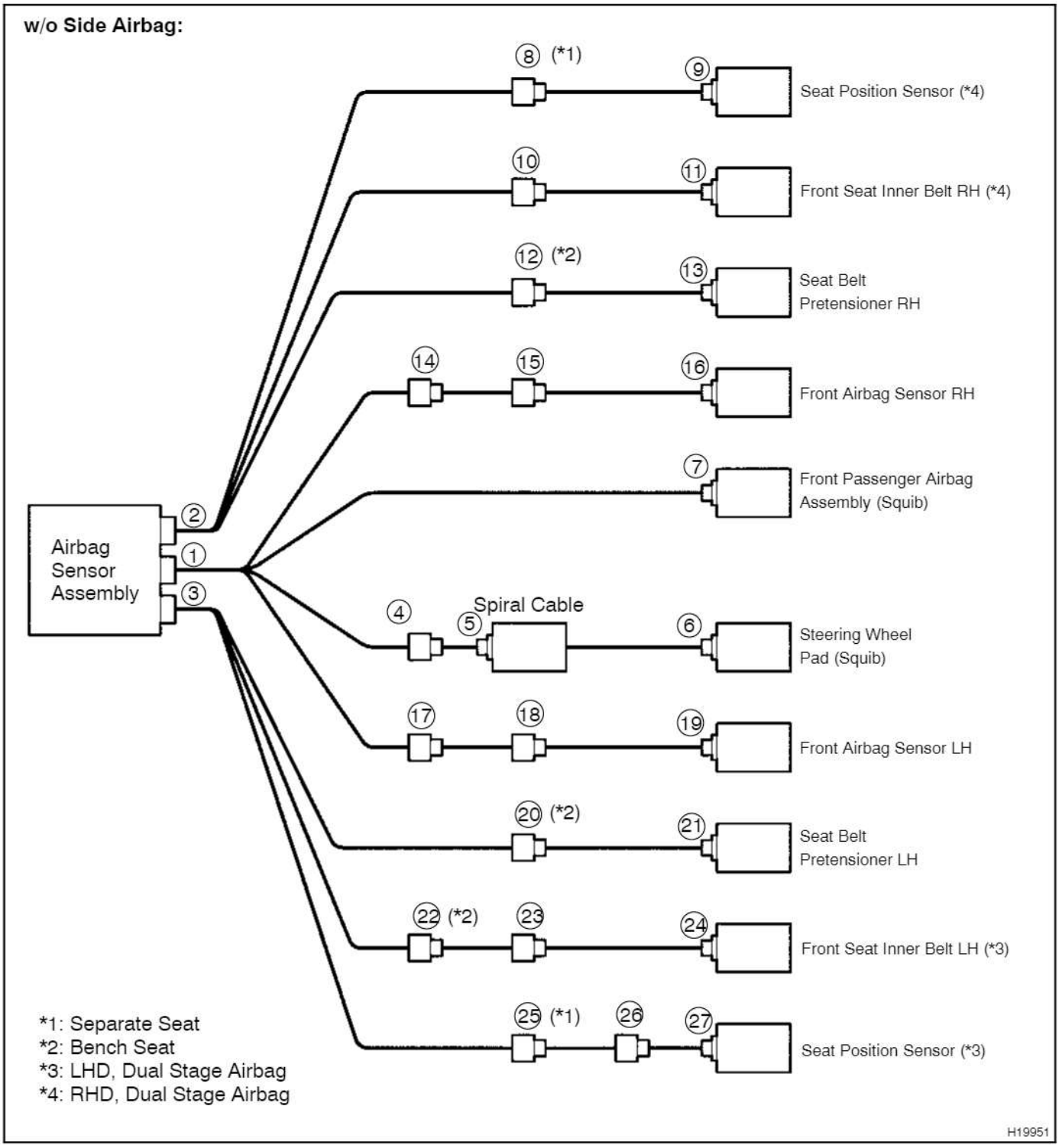
The seat position sensor assembly is mounted on the seat rail of the driver's seat. The sensor unit consists of a magnet sensor, diagnosis circuit, etc. It judges the seat sliding position and sends the signal to the airbag sensor assembly. The seat position sensor assembly cannot be disassembled.

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13. SRS CONNECTORS

HINT:

SRS connectors are located as shown in the following illustration.

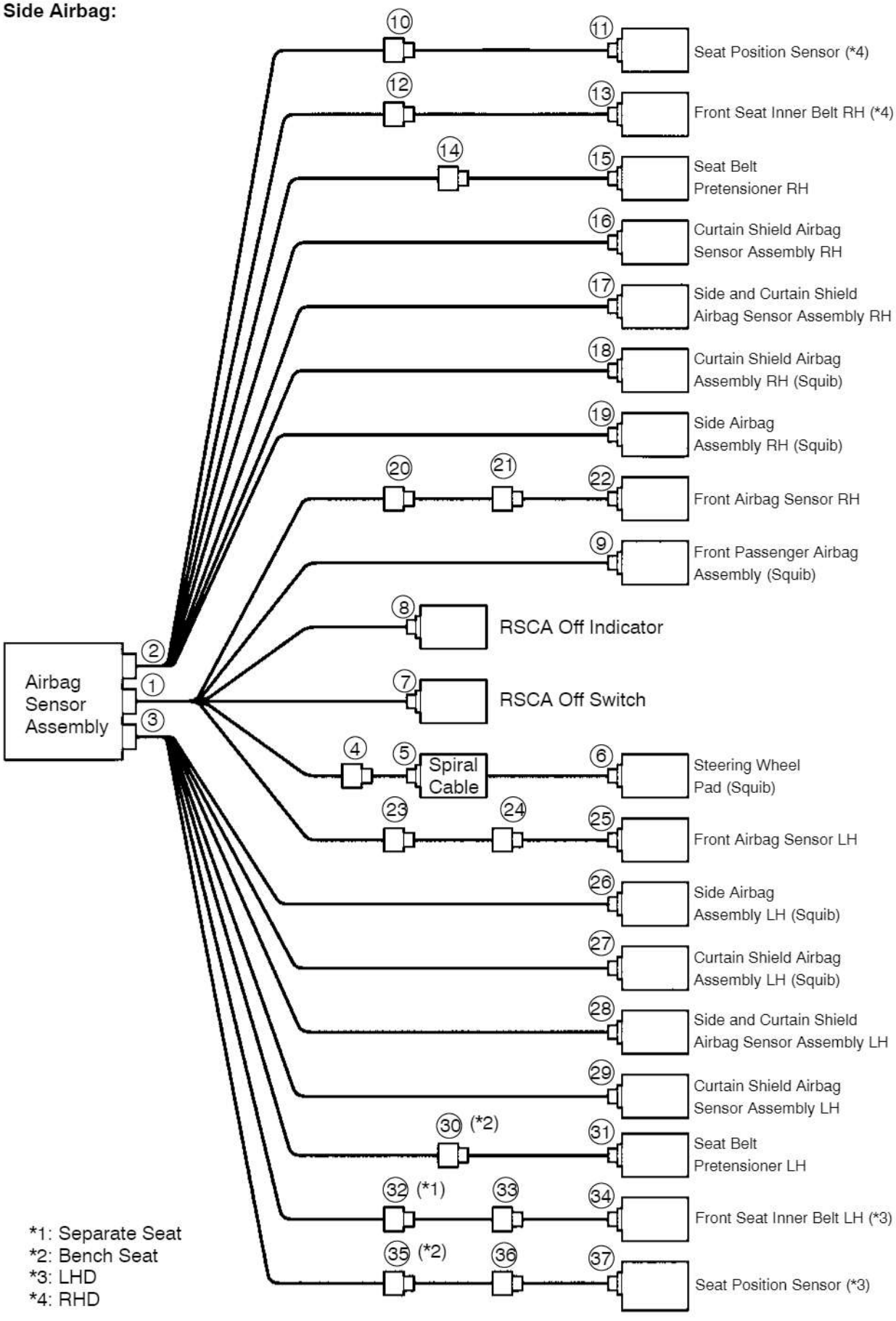


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No.	Item	Application
(1)	Terminal Twin–Lock Mechanism	Connectors 1, 2, 3, 4, 5, 7, 14, 15, 16, 17, 18, 19
(2)	Activation Prevention Mechanism	Connectors 1, 2, 3, 4, 5, 6, 7, 12, 13, 20, 21
(3)	Electrical Connection Check Mechanism	Connectors 1, 2, 3
(4)	Half Connection Prevention Mechanism	Connectors 4, 5, 7, 12, 14, 15, 16, 17, 18, 19, 20
(5)	Connector Lock Mechanism	Connectors 6

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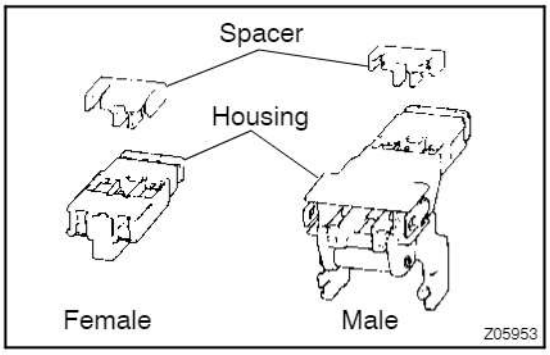
w/ Side Airbag:



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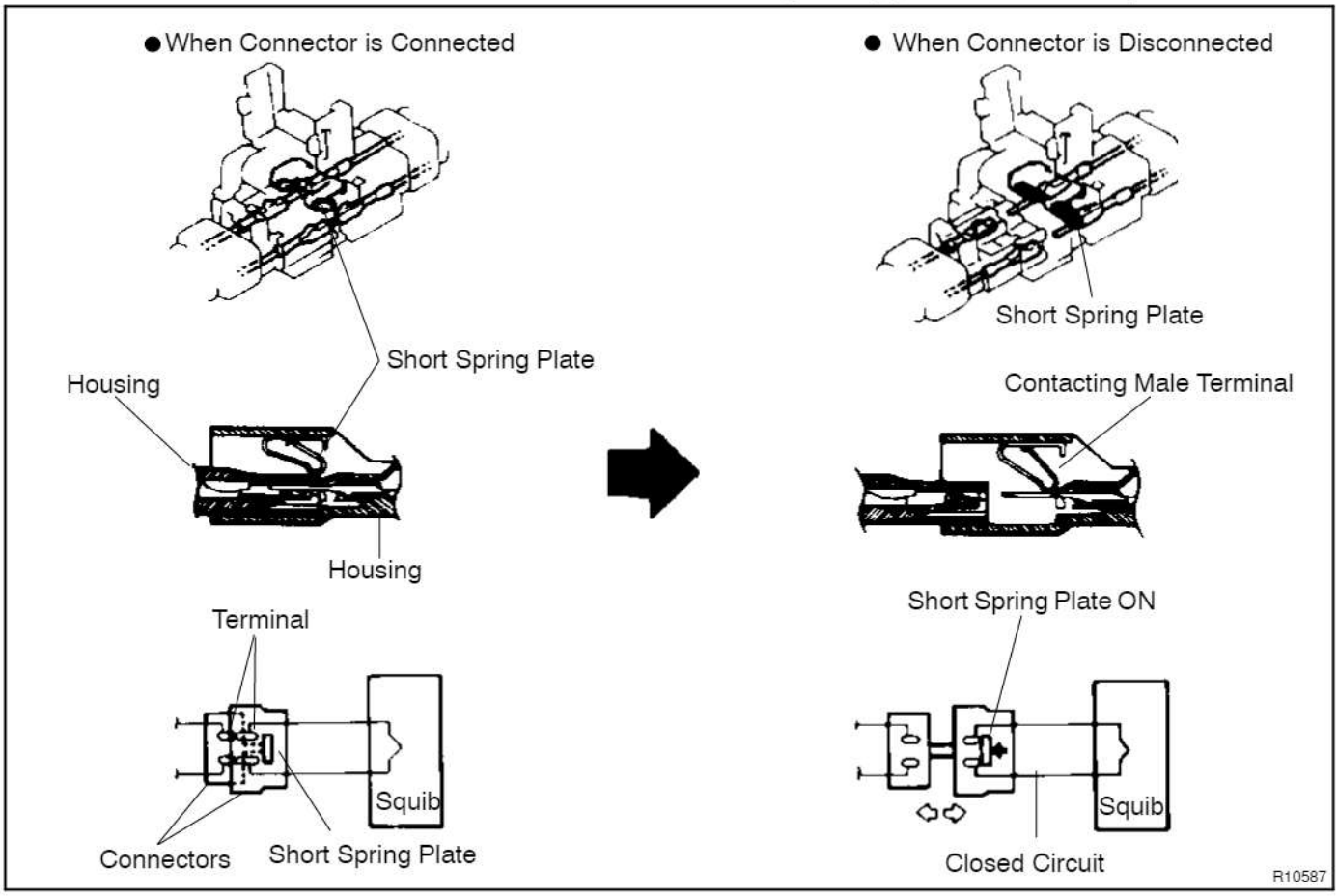
No.	Item	Application
(1)	Terminal Twin–Lock Mechanism	Connectors 1, 2, 3, 4, 5, 9, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29
(2)	Activation Prevention Mechanism	Connectors 1, 2, 3, 4, 5, 6, 9, 14, 15, 18, 19, 26, 27, 30, 31
(3)	Electrical Connection Check Mechanism	Connectors 1, 2, 3
(4)	Half Connection Prevention Mechanism	Connectors 4, 5, 9, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30
(5)	Connector Lock Mechanism	Connectors 6

(a) All connectors in the SRS are colored in yellow to distinguish them from other connectors. Connectors having special functions and specifically designed for the SRS are used in the locations shown on the previous page to ensure high reliability. These connectors use durable gold–plated terminals.



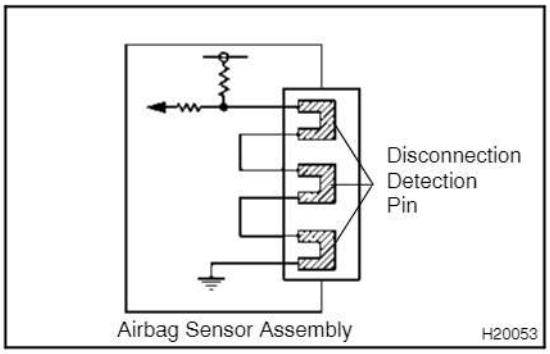
(1) Terminal Twin–Lock Mechanism
Each connector has a two–piece component consisting of a housing and a spacer. This design allows the terminal to be locked securely by two locking devices (the retainer and the lance) to prevent terminals from coming out.

(2) Activation Prevention Mechanism
Each connector contains a short spring plate. When the connector is disconnected, the short spring plate automatically connects positive (+) terminal and negative (–) terminal of the squib.

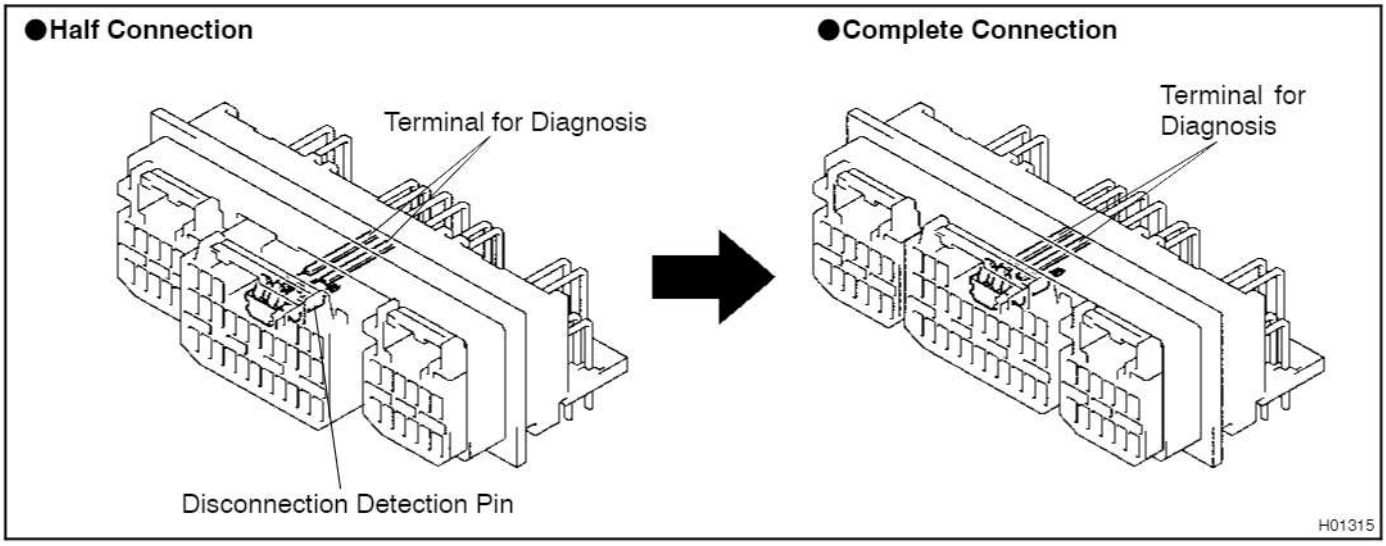


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HINT:
The type of connector is shown in the diagram on the previous page.



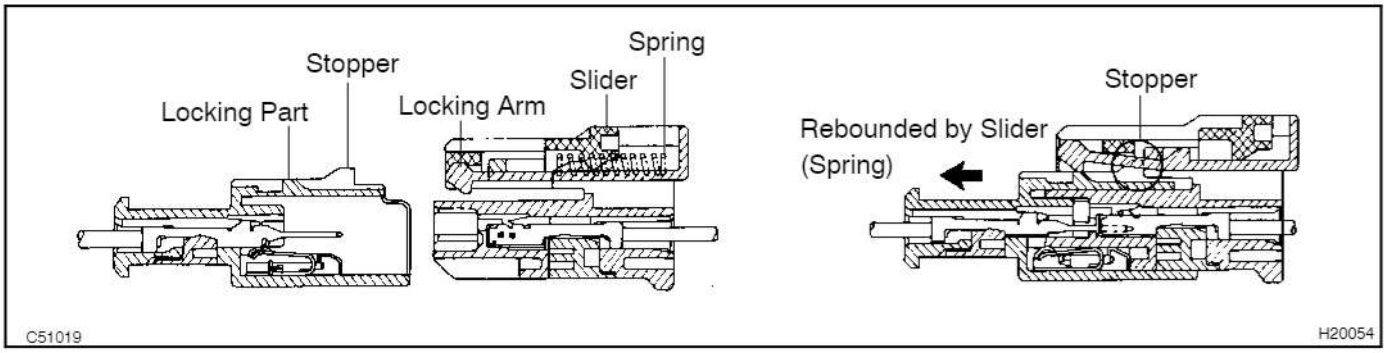
(3) Electrical Connection Check Mechanism
This mechanism electrically checks that connectors are connected correctly and completely. The electrical connection check mechanism is designed so that the disconnection detection pin is connected with the diagnosis terminals when the connector housing lock is locked.



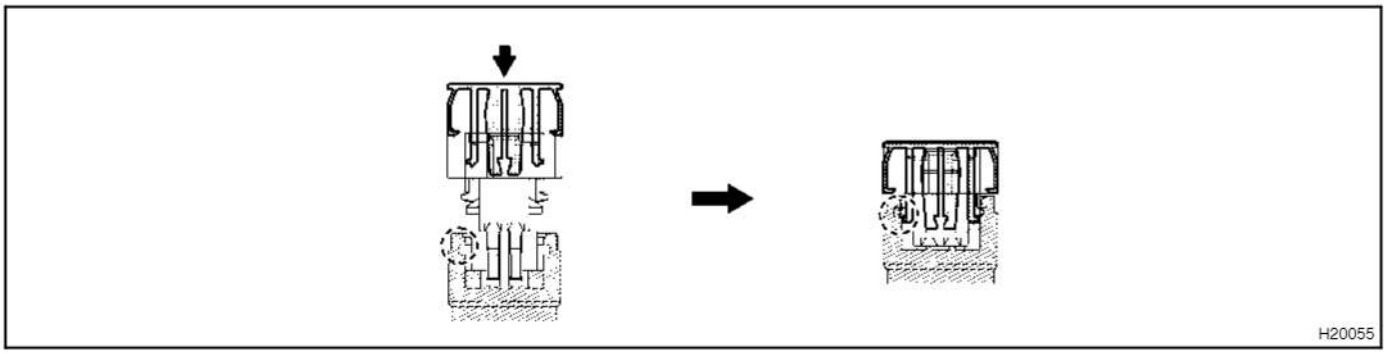
HINT:
- The illustration shows connectors "1", "2" and "3" in step 13.
- Connectors 2 and 3 also have similar mechanism.

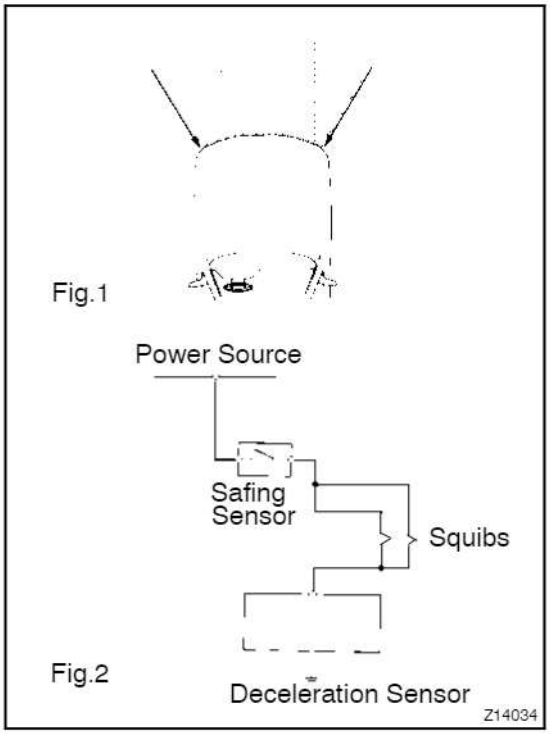
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(4) Half connection prevention mechanism:
If the connector is not completely connected, the connector is disconnected due to the spring operation to the extent that no continuity exists.



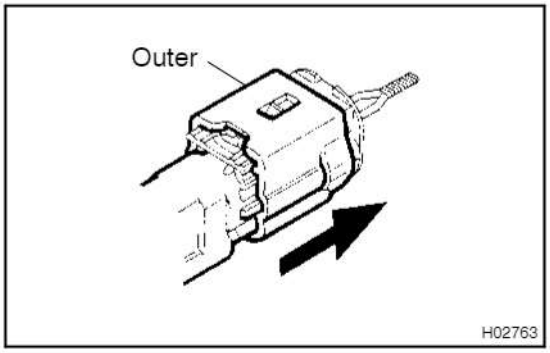
(5) Connector lock mechanism:
Locking the connector lock button securely connects the connector.





(b) When the vehicle is involved in a frontal collision in the hatched area (Fig. 1) and the shock is larger than the predetermined level, the SRS is activated automatically. A safing sensor is designed to go on at a smaller deceleration rate than the airbag sensor. As illustrated in Fig. 2, ignition is caused when current flows to the squib, which happens when a safing sensor and the deceleration sensor go on simultaneously. When a deceleration force acts on the sensors, 2 squibs in the driver airbag and front passenger airbag ignite and generate gas. The gas discharging into the driver airbag and front passenger airbag rapidly increases the pressure inside the bags, breaking open the steering wheel pad and instrument panel.
Bag inflation then ends, and the bags deflate as the gas is discharged through discharge holes at the bag's rear or side.

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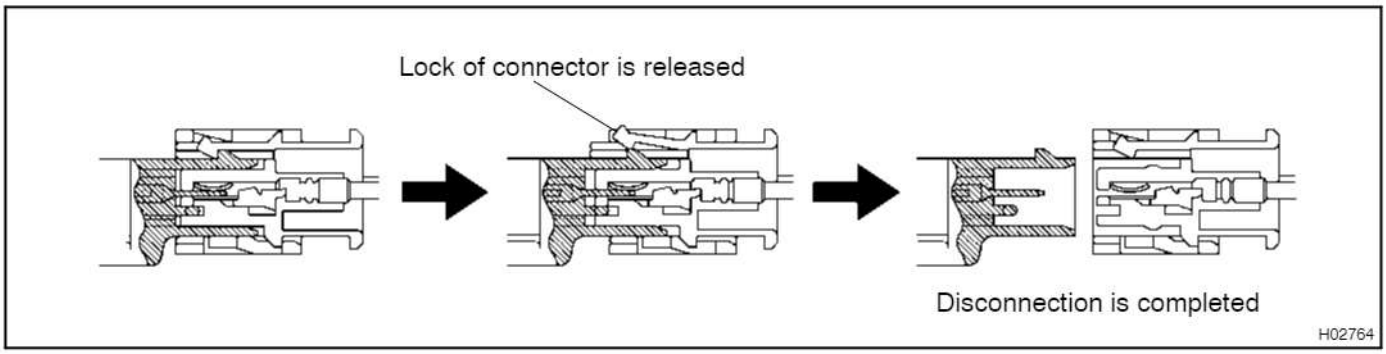
14. DISCONNECTION OF CONNECTORS FOR FRONT AIRBAG SENSOR, SIDE AND CURTAIN SHIELD AIRBAG SENSOR AND CURTAIN SHIELD AIRBAG SENSOR

(a) While holding both flank sides of the outer, slide the outer in the direction shown by an arrow.

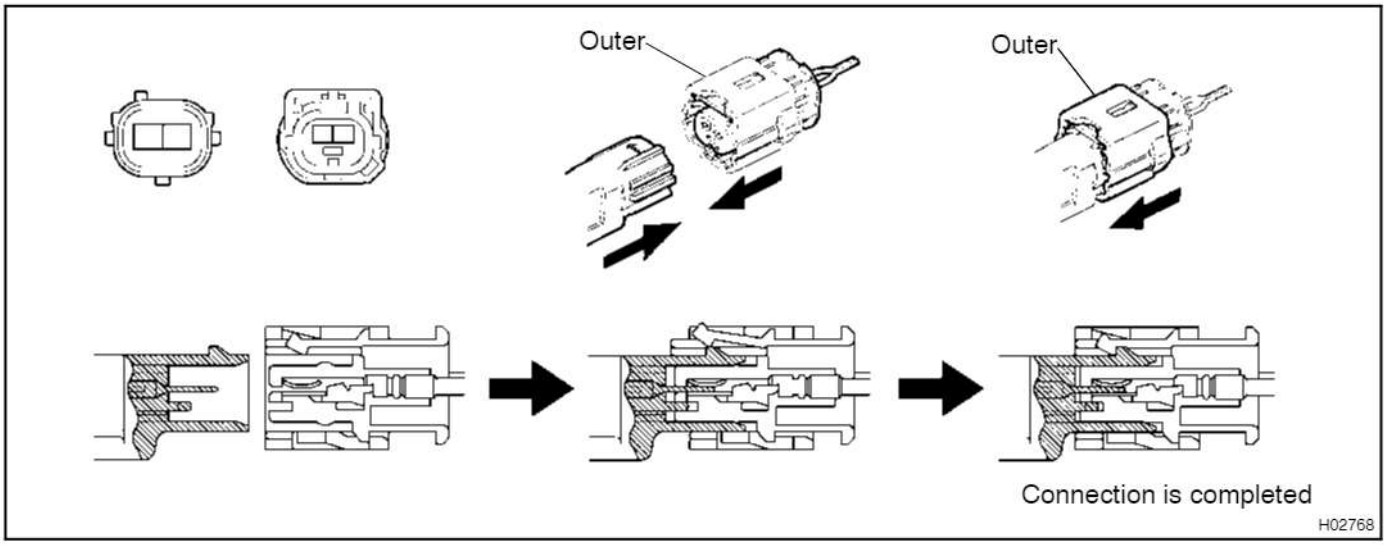
(b) Lock of the connectors is released, and then disconnect the connectors.

HINT:

Be sure to hold both flank sides of the outer. If holding the top and bottom sides, it will obstruct disconnection.



15. CONNECTION OF CONNECTORS FOR FRONT AIRBAG SENSOR, SIDE AND CURTAIN SHIELD AIRBAG SENSOR AND CURTAIN SHIELD AIRBAG SENSOR



(a) Align the male connector (of the side of sensor) and female connector in the same direction as shown in the illustration and fit them in without rubbing.

(b) As they are fitted in, the outer slides rearward. Press it until the outer returns to its original position again.

If fitting stops half way, connectors will separate.

(c) Be sure to insert until they are locked. After fitting in, pull them slightly to check that they are locked. (When locked, make sure that the outer returns to its original position and sound to be fit in can be heard.)

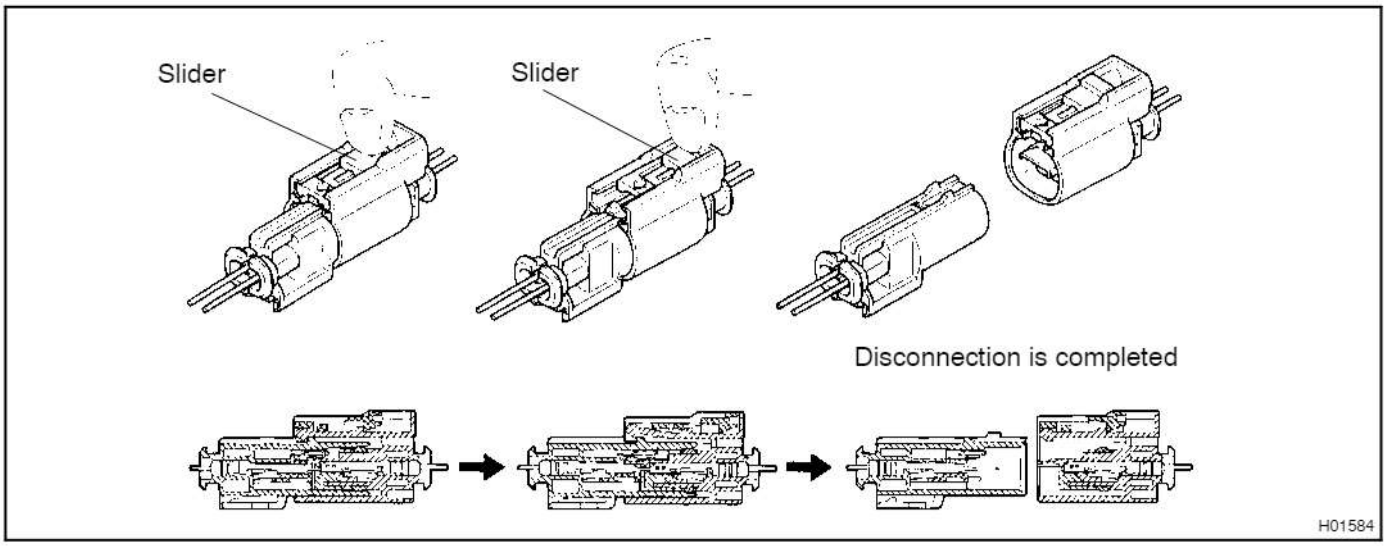
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HINT:

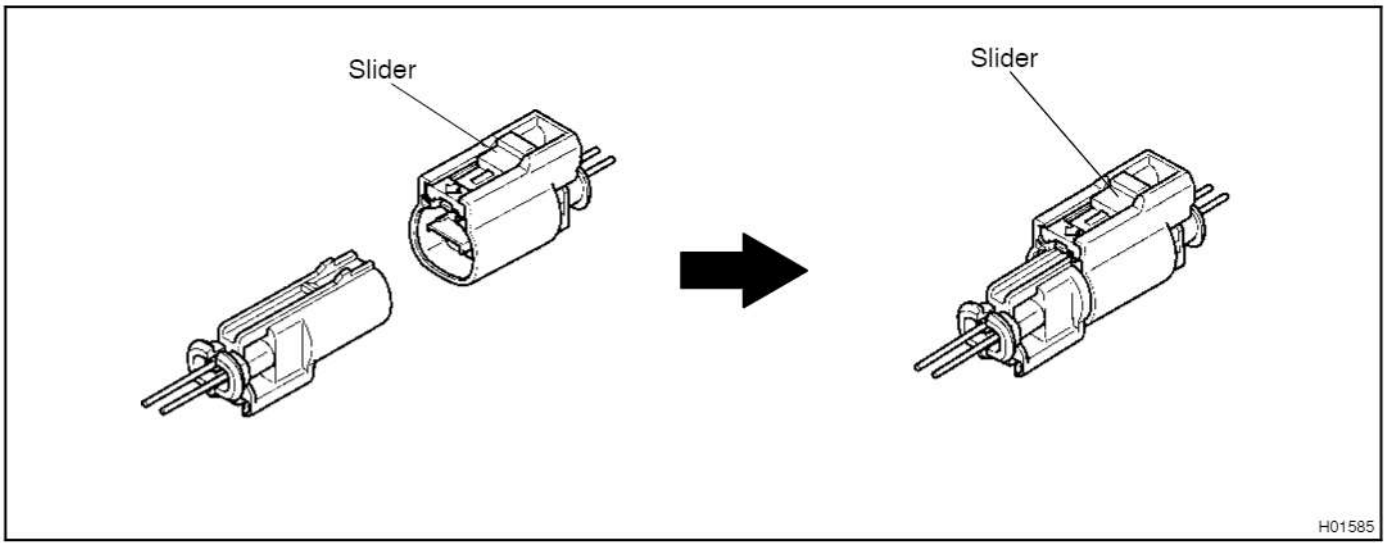
- Do not fit in while holding the outer.
- When fitting in, the outer slides. Do not touch it.

16. DISCONNECTION OF SIDE AIRBAG CONNECTOR

(a) Place a finger on the slider.
(b) Slide the slider to release lock.
(c) Disconnect the connector.



17. CONNECTION OF SIDE AIRBAG CONNECTOR



(a) Align a lock part of male connector and a slider of female connector in the same direction as shown in the illustration, fit them in without rubbing.
(b) Be sure to insert until they are locked. After fitting in pull them slightly to check that they are locked. (When locked, make sure that the outer returns to its original position and sound to be fit in can be heard.)

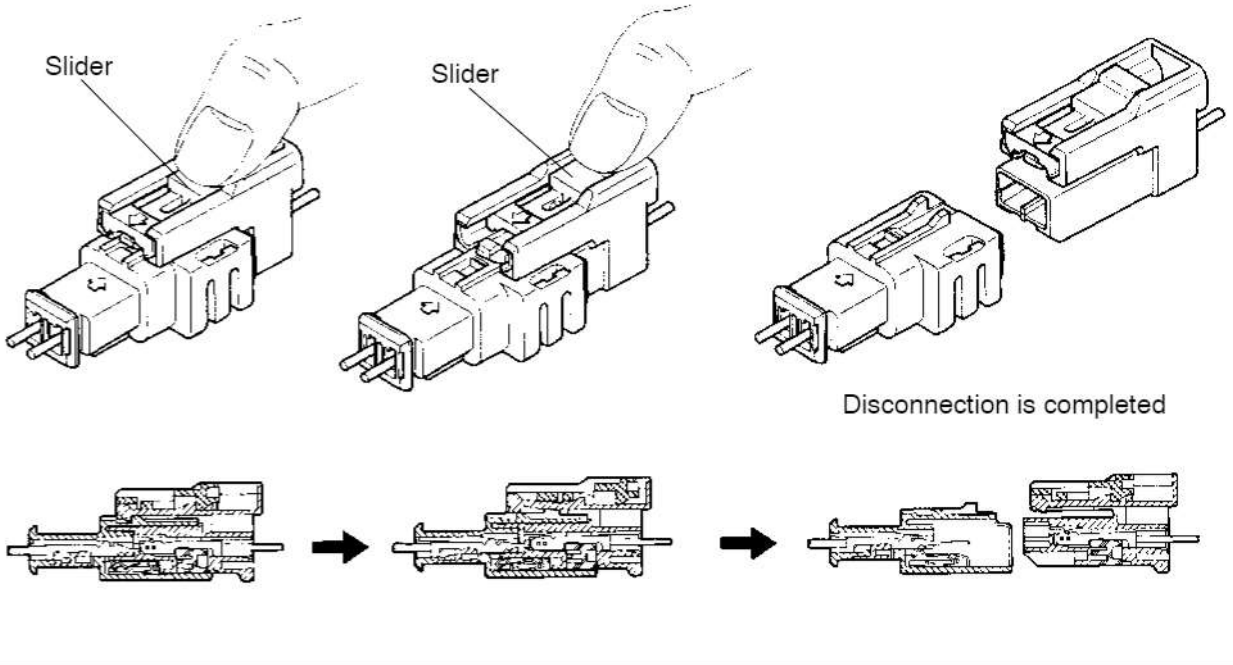
HINT:

- As the slider slides, do not touch it.
- Be careful not to deform the release board. If the release board is deformed, replace it with a new one.

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18. DISCONNECTION OF CONNECTORS FOR CURTAIN SHIELD AIRBAG ASSEMBLY AND FRONT PASSENGER AIRBAG ASSEMBLY

(a) Place a finger on the slider.
(b) Slide the slider to release lock.
(c) Disconnect the connector.



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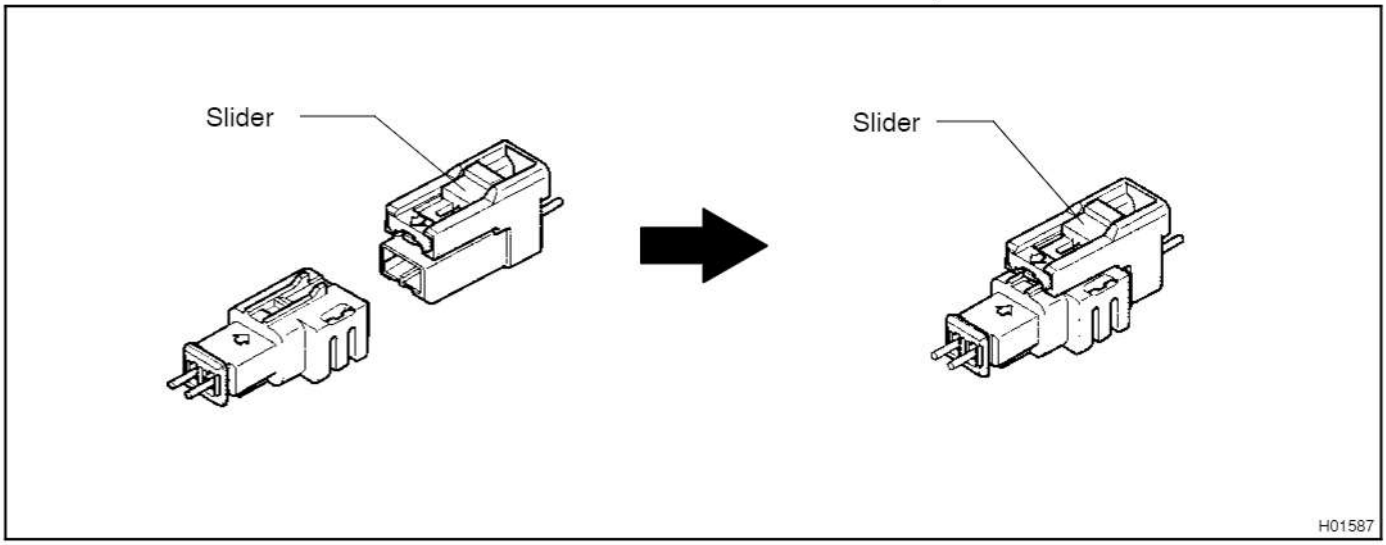
19. CONNECTION OF CONNECTORS FOR CURTAIN SHIELD AIRBAG ASSEMBLY AND FRONT PASSENGER AIRBAG ASSEMBLY

(a) Align a lock part of male connector and a slider of female connector in the same direction as shown in the illustration, fit them in without rubbing.

(b) Be sure to insert until they are locked. After fitting in pull them slightly to check that they are locked. (When locked, make sure that the outer returns to its original position and sound to be fit in can be heard.)

HINT:

- As the slider slides, do not touch it.
- Be careful not to deform the release board. If the release board is deformed, replace it with a new one.

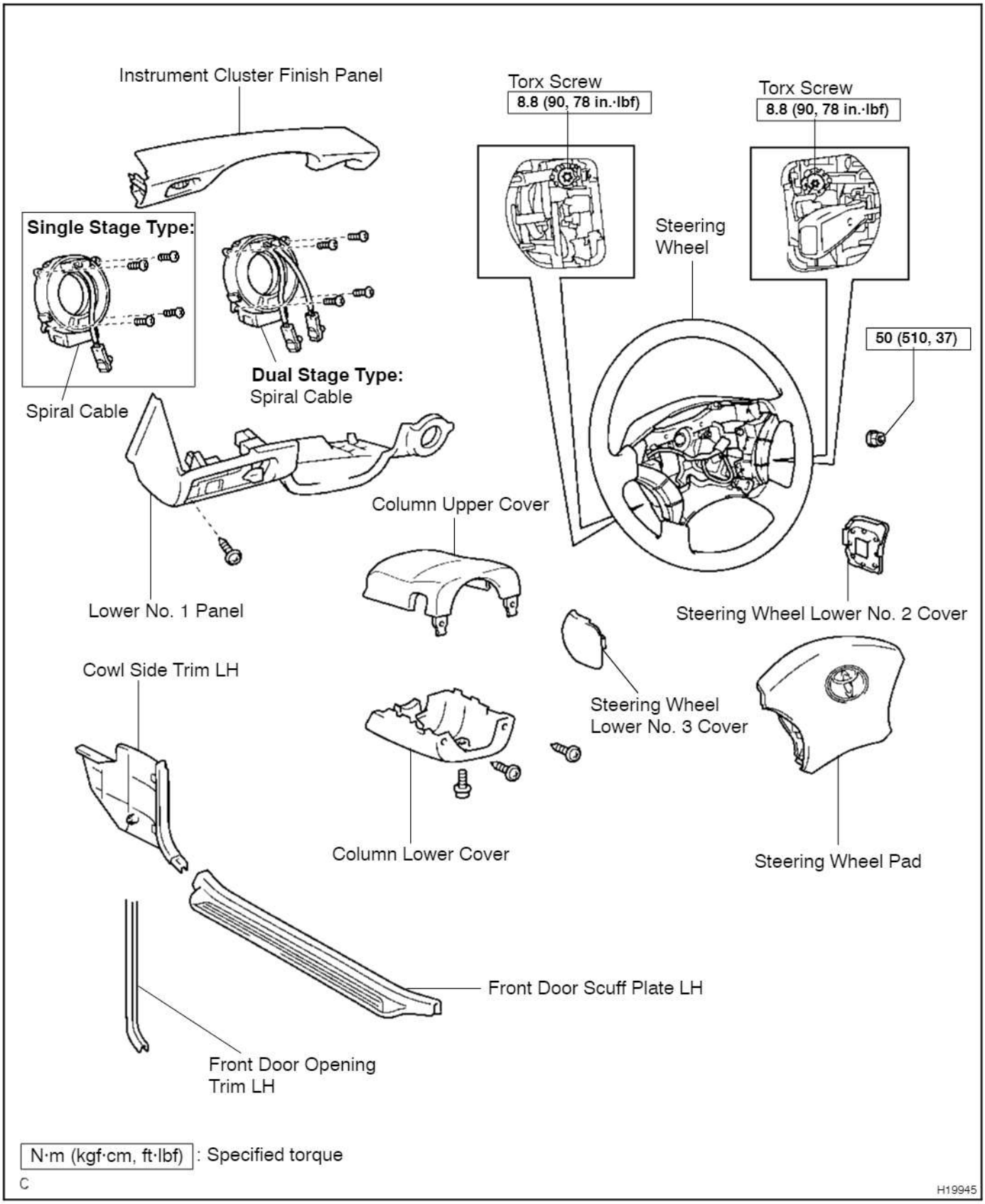


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STEERING WHEEL PAD AND SPIRAL CABLE

COMPONENTS

RS0CW-03



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RS0CX-02

REMOVAL

HINT:

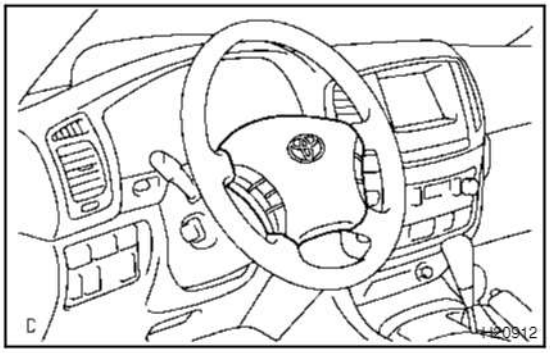
For step 1 to 9, refer to page SR–7.

1. **REMOVE STEERING WHEEL PAD**
2. **REMOVE STEERING WHEEL**
3. **REMOVE FRONT DOOR SCUFF PLATE LH**
4. **REMOVE COWL SIDE TRIM LH**
5. **REMOVE FRONT DOOR OPENING TRIM LH**
6. **REMOVE INSTRUMENT CLUSTER FINISH PANEL**
7. **REMOVE LOWER NO. 1 PANEL**
8. **REMOVE COLUMN UPPER AND LOWER COVERS**
9. **REMOVE SPIRAL CABLE**

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RS0VT-01

INSPECTION



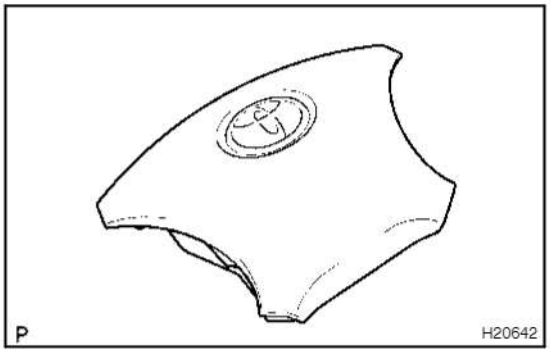
1. Vehicle not involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

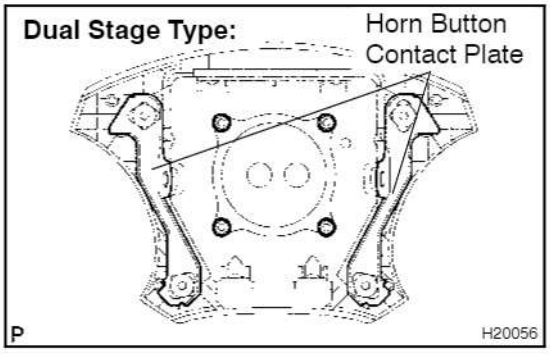
(b) Do a visual check which includes the following item with the steering wheel pad (with airbag) installed in the vehicle.
Check cuts, minute cracks or marked discoloration on the steering wheel pad top surface and in the grooved portion.

2. Vehicle involved in collision and airbag is not deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).



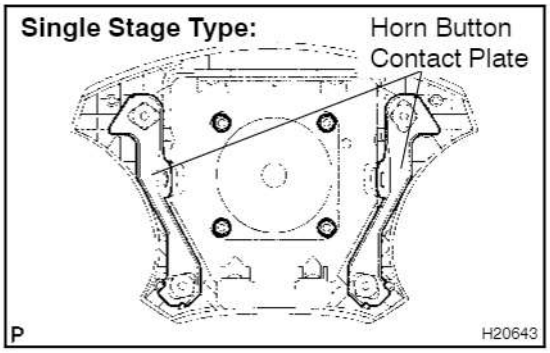
(b) Do a visual check which includes the following items with the steering wheel pad (with airbag) removed from the vehicle.
- Check cuts, minute cracks or marked discoloration on the steering wheel pad top surface and in the grooved portion.
- Check cuts and cracks in wire harness, and chipping in connectors.



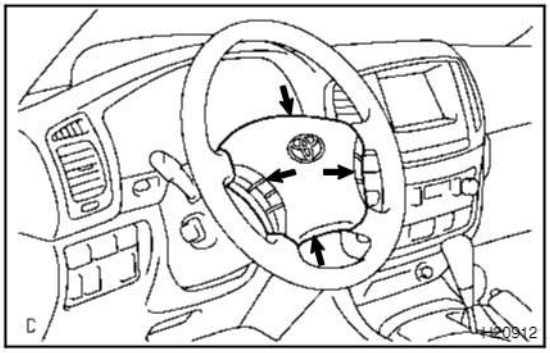
- Check the deformation of the horn button contact plate on the steering wheel pad (with airbag).

CAUTION:
For removal and installation of the steering wheel pad, see page SR–7 and SR–19, and be sure to follow the correct procedure.

HINT:
- If the horn button contact plate of the steering wheel pad (with airbag) is deformed, never repair it. Always replace the steering wheel assembly with a new one.



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- There should be no interference between the steering wheel pad and steering wheel, and the clearance should be uniform all the way around when the new steering wheel pad is installed on the steering wheel.

3. Vehicle involved in collision and airbag is deployed: INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

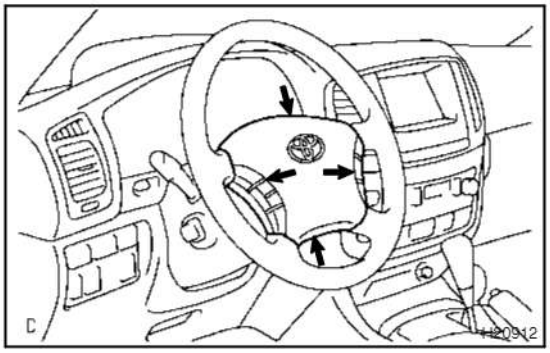
(a) Do a diagnostic system check (See page DI–432).

(b) Do a visual check which includes the following items with the steering wheel pad (with airbag) removed from the vehicle.

- Check that the metal part where the steering wheel pad is to be installed is not deformed.
- Check the damage on the spiral cable connector and wire harness.

HINT:

- Do not repair the metal part where the steering wheel pad is to be installed even if any deformation is found. Always replace the steering wheel assembly with a new one.



- There should be no interference between the steering wheel pad and steering wheel, and the clearance should be uniform all the way around when the new steering wheel pad is installed on the steering wheel.

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RS0VU–01

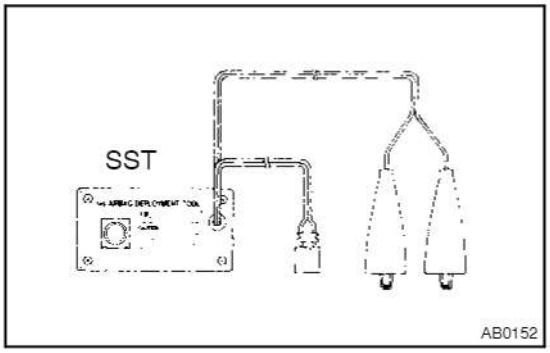
DISPOSAL

HINT:

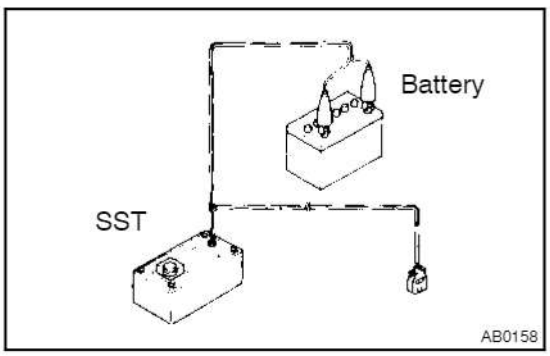
When scrapping vehicle equipped with an SRS or disposing of a steering wheel pad (with airbag), always first deploy the airbag in accordance with the procedure described below. If any abnormality occurs with the airbag deployment, contact the SERVICE DEPT. of the DISTRIBUTOR.

CAUTION:

- **Never dispose of a steering wheel pad of which airbag has not been deployed.**
- **The airbag produces a sizeable exploding sound when it deploys, so perform the operation out–of–doors and where it will not create a nuisance to nearby residents.**



- **When deploying the airbag, always use the specified SST (SRS Airbag Deployment Tool). Perform the operation in a place away from electrical noise.**
  SST 09082–00700
- **When deploying an airbag, perform the operation at least 10 m (33 ft) away from the steering wheel pad.**
- **The steering wheel pad is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a steering wheel pad with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a steering wheel pad with the deployed airbag.**

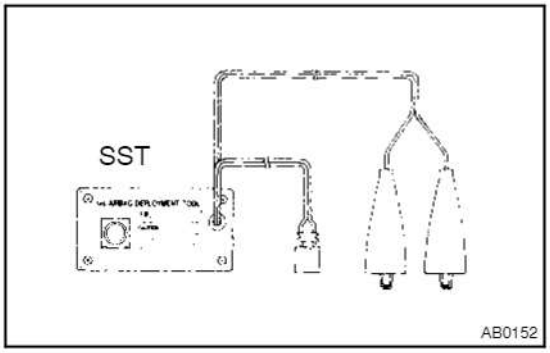


1. AIRBAG DEPLOYMENT WHEN SCRAPPING VEHICLE

HINT:

Have a battery ready as the power source to deploy the airbag.

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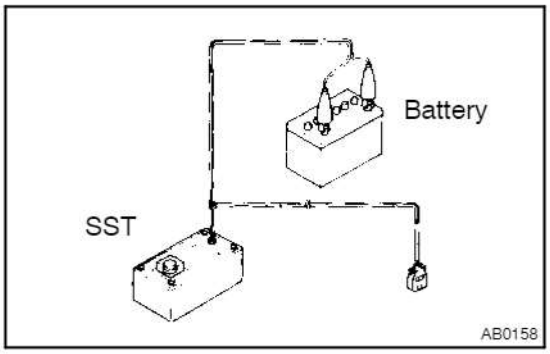


(a) Check the function of the SST.

CAUTION:

When deploying the airbag, always use the specified SST: SRS Airbag Deployment Tool.

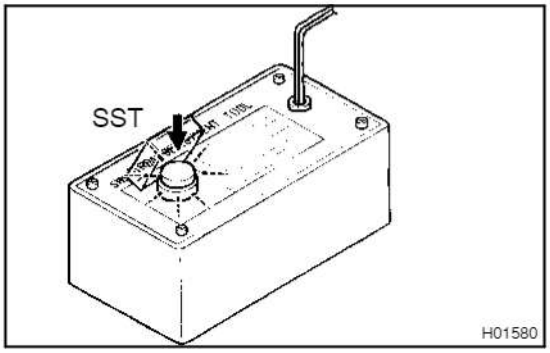
SST 09082–00700



(1) Connect the red clip of the SST to the battery positive (+) terminal and the black clip to the battery negative (–) terminal.

HINT:

Do not connect the yellow connector of the SST which will be connected with the supplemental restraint system.

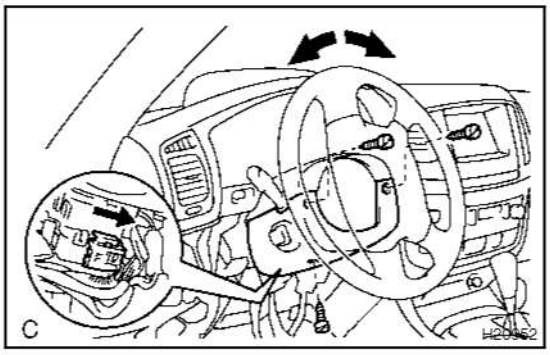


(2) Press the SST activation switch, and check that the LED of the SST activation switch comes on.

CAUTION:

If the LED lights up while the activation switch is not being pressed, a malfunction on SST is probable, so never use the SST.

(3) Disconnect the SST from the battery.



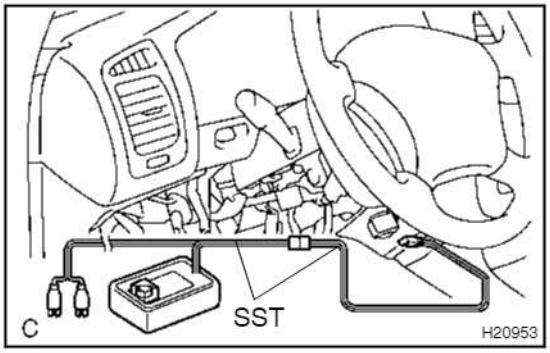
(b) Install the SST.

CAUTION:

Check that there is no looseness in the steering wheel and steering wheel pad.

(1) Remove the front door scuff plate LH.
(2) Remove the cowl side trim LH.
(3) Remove the front door opening trim LH.
(4) Remove the lower No. 1 panel.
(5) While turning the steering wheel right or left, remove the 3 screws and column lower cover.
(6) Disconnect the airbag connector of the spiral cable.

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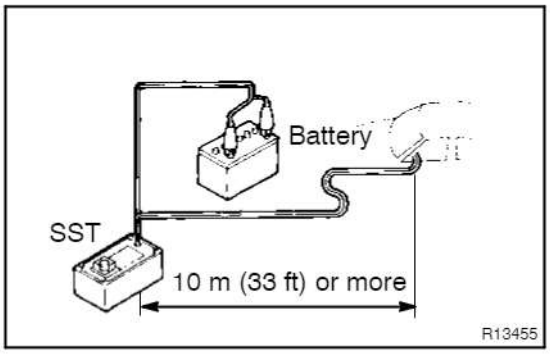


(7) Connect the connector of SST to the airbag connector of the spiral cable.

SST 09082–00700, 09082–00780

NOTICE:

To avoid damaging the connector of the SST and wire harness, do not lock the secondary lock of the twin lock.



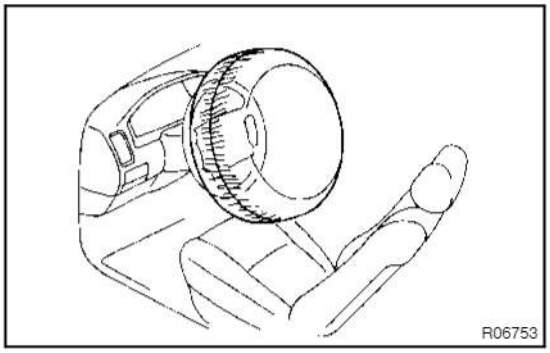
(8) Move the SST at least 10 m (33 ft) away from the front of the vehicle.

(9) Close all the doors and windows of the vehicle.

NOTICE:

Take care not to damage the SST wire harness.

(10) Connect the SST red clip to the battery positive (+) terminal and the black clip to the negative (–) terminal.



(c) Deploy the airbag.

(1) Confirm that no one is inside the vehicle nor within 10 m (33 ft) area around the vehicle.

(2) Press the SST activation switch and deploy the airbag.

CAUTION:

- **The steering wheel pad is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **When moving a vehicle for scrapping which has a steering wheel pad with deployed airbag, use gloves and safety glasses.**
- **Use gloves and safety glasses when handling a steering wheel pad with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a steering wheel pad with the deployed airbag.**

HINT:

The airbag deploys as the LED of the SST activation switch comes on.

2. DEPLOYMENT WHEN DISPOSING OF STEERING WHEEL PAD ONLY

NOTICE:

- **When disposing of the steering wheel pad (with airbag) only, never use the customer's vehicle to deploy the airbag.**
- **Be sure to follow the procedure given below when deploying the airbag.**

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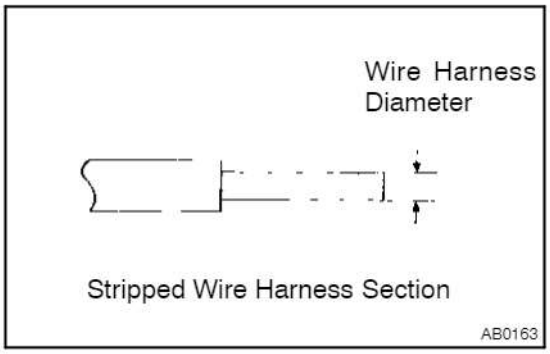
HINT:

Have a battery ready as the power source to deploy the airbag.

(a) Remove the steering wheel pad (See page SR–7).

CAUTION:

- **When storing the steering wheel pad, keep the upper surface of the pad facing upward.**
- **When removing the steering wheel pad, work must be started 90 seconds after the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery.**



(b) Using a service–purpose wire harness for the vehicle, tie down the steering wheel pad to the disc wheel.

Wire harness: Stripped wire harness section 1.25 mm^2 or more (0.0019 in^2. or more).

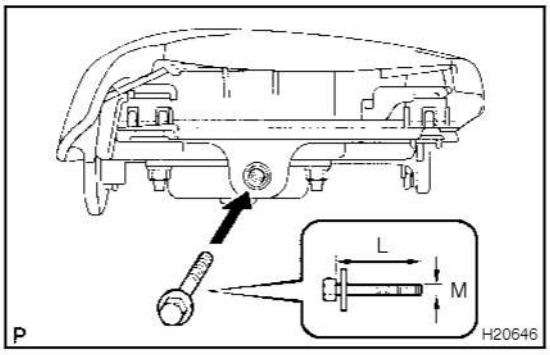
CAUTION:

If a wire harness which is too thin or some other thing is used to tie down the steering wheel pad, it may be snapped by the shock when the airbag is deployed. This is highly dangerous. Always use a wire harness for vehicle use which is at least 1.25 mm^2 (0.0019 in^2).

HINT:

To calculate the square of the stripped wire harness section:

Square = 3.14 x (Diameter)^2 divided by 4



(1) Install the 2 bolts with washers in the 2 bolt holes in the steering wheel pad.

Bolt:

L: 35.0 mm (1.387 in.)

M: 6.0 mm (0.236 in.)

Pitch: 1.0 mm (0.039 in.)

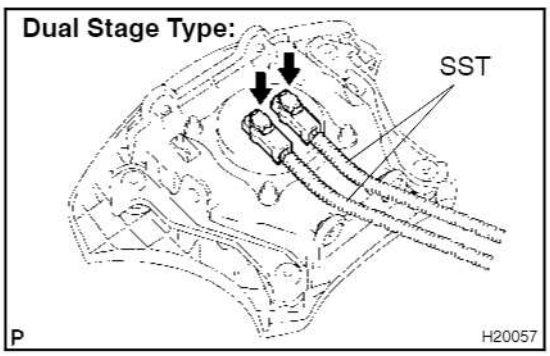
NOTICE:

- **Tighten the bolts by hand until the bolts become difficult to turn.**
- **Do not tighten the bolts excessively.**

(2) Dual stage type:

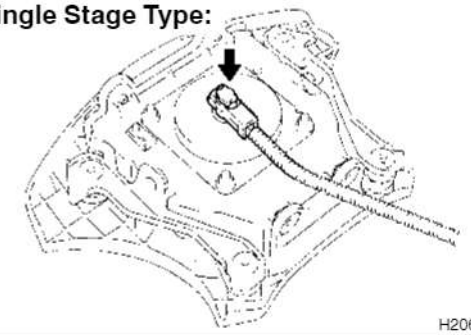
Connect the connectors of the SST to the steering wheel pad connectors.

SST 09082–00802 (09082–10801, 09082–30801)



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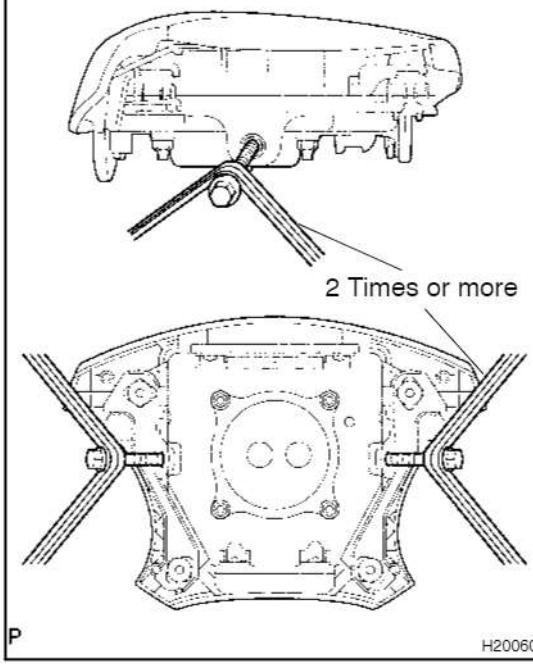
Single Stage Type:



(3) Single stage type:
Connect the connectors of the SST to the steering wheel pad connector.

SST 09082–00802 (09082–10801, 09082–40800)

Dual Stage Type:

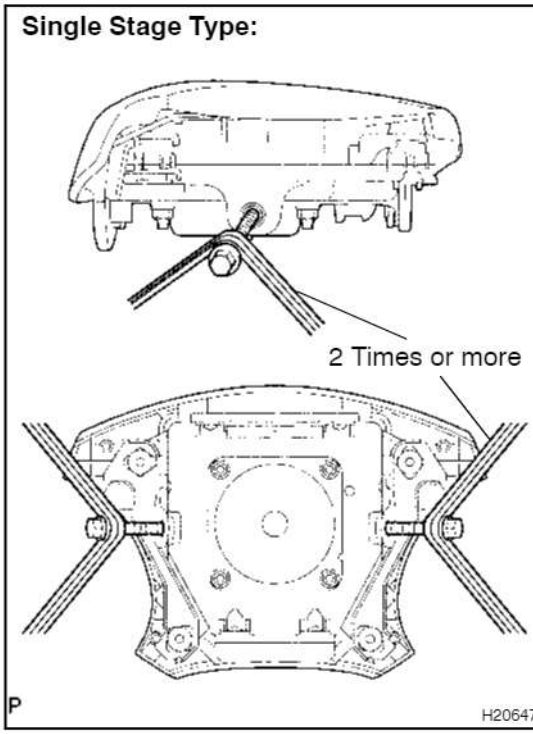


(4) Using 3 wire harness, wind the wire harness at least 2 times each around the bolts installed on the left and right sides of the steering wheel pad.

CAUTION:

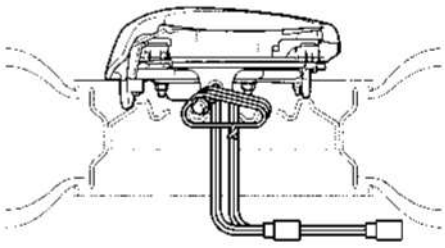
- **Tightly wind the wire harness around the bolts so that there is no slack.**
- **If there is slackness in the wire harness, the steering wheel pad may come loose due to the shock when the airbag is deployed. This is highly dangerous.**

Single Stage Type:



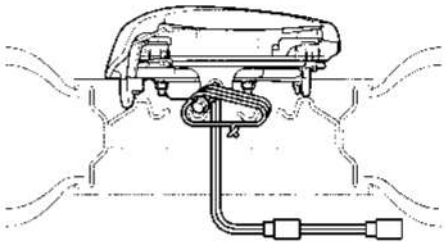
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Dual Stage Type:

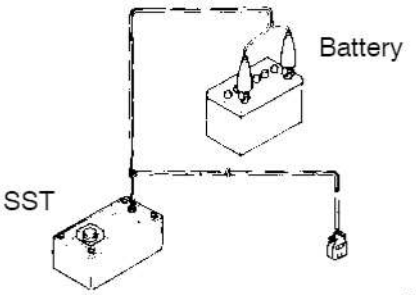


P H20058

Single Stage Type:

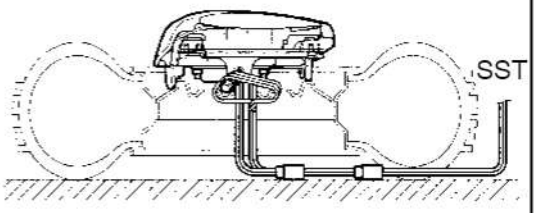


P H20652



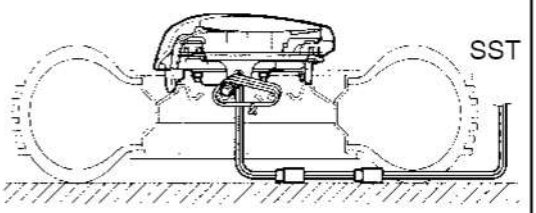
AB0158

Dual Stage Type:



P H20059

Single Stage Type:



P H20649

(5) Face the upper surface of the steering wheel pad upward. Separately tie the left and right sides of the steering wheel pad to the disc wheel through the hub nut holes. Position the steering wheel pad connector so that it hangs downward through a hub hole in the disc wheel.

CAUTION:

- **Make sure that the wire harness is tight. It is very dangerous when looseness in the wire harness results in the steering wheel pad coming free through the shock from the airbag deploying.**
- **Always tie down the steering wheel pad with the pad side facing upward. It is very dangerous if the steering wheel pad is tied down with the metal surface facing upward as the wire harness will be cut by the shock caused by the airbag is deployment and the steering wheel pad will be thrown into the air.**

NOTICE:

The disc wheel will be marked by airbag deployment, so when disposing of the airbag, use a redundant disc wheel.

(c) Check the function of the SST (See step 1–(a)).
SST 09082–00700

(d) Install the SST.

CAUTION:

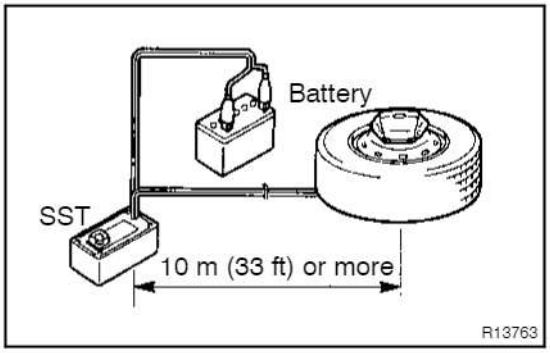
Place the disc wheel on the level ground.

(1) Connect the connector of the SST.
SST 09082–00700

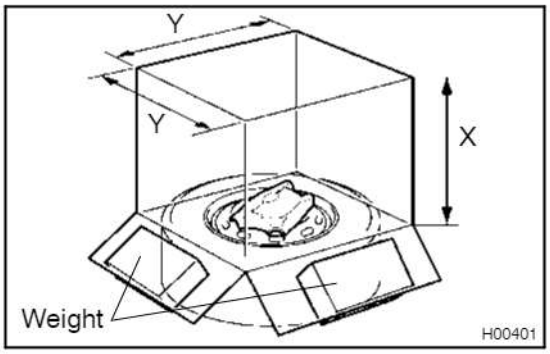
NOTICE:

To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock. Also, secure some slack for the SST wire harness inside the disc wheel.

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(2) Move the SST at least 10 m (33 ft) away from the steering wheel pad tied down on the disc wheel.



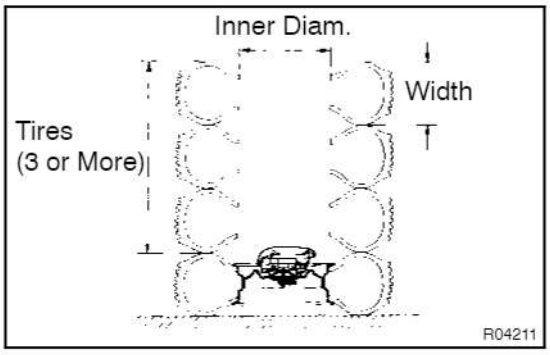
(e) Cover the steering wheel pad with a cardboard box or tires.

- Covering method using a cardboard box:
  Cover the steering wheel pad with the cardboard box and weight the cardboard box down in 4 places with at least 190 N (20 kg, 44 lb).

Size of cardboard box:
Must exceed the following dimensions:
X = 460 mm (18.11 in.)
Y = 650 mm (25.59 in.)

NOTICE:

- **When dimension Y of the cardboard box exceeds the diameter of the disc wheel with tire to which the steering wheel pad is tied, X should be the following size.**
  X = 460 mm (18.11 in.) + width of tire
- **If a cardboard box smaller than the specified size is used, the cardboard box will be broken by the shock from the airbag deployment.**



- Covering method using tires:
  Place at least 3 tires with no disc wheels on top of the tire with disc wheel to which the steering wheel pad is tied.

Tire size: Must exceed the following dimensions–
Width: 185 mm (7.28 in.)
Inner diameter: 360 mm (14.17 in.)

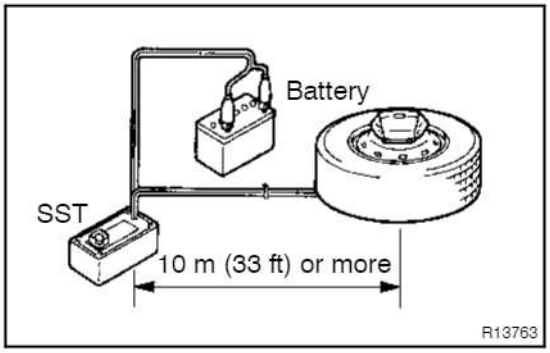
CAUTION:
Do not use tires with disc wheels.

NOTICE:
The tires may be marked by the airbag deployment, so use the redundant tires.

(f) Deploy the airbag.

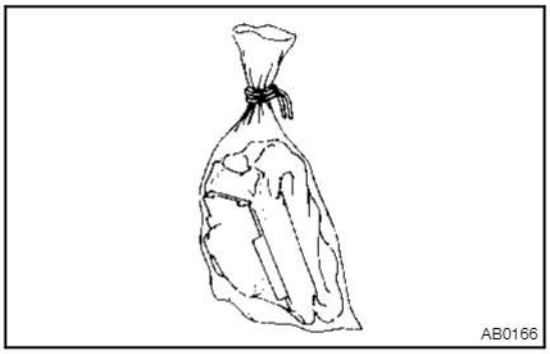
(1) Connect the red clip of the SST to the battery positive (+) terminal and the black clip to the battery negative (–) terminal.

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(2) Check that no one is within 10 m (33 ft) area around the disc wheel which the steering wheel pad is tied to.
(3) Press the SST activation switch and deploy the airbag.

HINT:
The airbag deploys as the LED of the SST activation switch comes on.

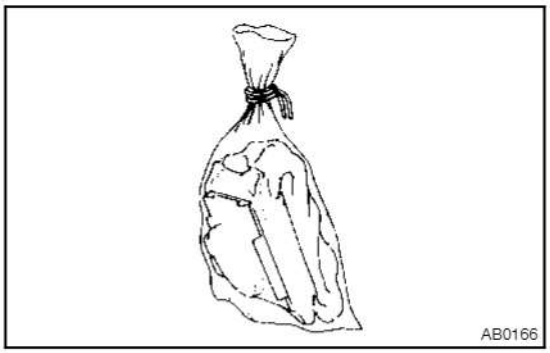


(g) Dispose of the steering wheel pad (with airbag).

CAUTION:

- **The steering wheel pad is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a steering wheel pad with deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a steering wheel pad with deployed airbag.**

(1) Remove the steering wheel pad from the disc wheel.
(2) Place the steering wheel pad in a plastic bag, tie the end tightly and dispose of it as the other general parts disposal.



3. DEPLOYMENT WHEN DISPOSING OF STEERING WHEEL PAD WITH AN AIRBAG DEPLOYED IN A COLLISION

Dispose of the steering wheel pad (with airbag).

CAUTION:

- **The steering wheel pad is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **When moving a vehicle for scrapping which has a steering wheel pad with the deployed airbag, use gloves and safety glasses.**
- **Use gloves and safety glasses when handling a steering wheel pad with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a steering wheel pad with the deployed airbag.**

(1) Remove the steering wheel pad from the steering wheel (See page SR–7).

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(2) Place the steering wheel pad in a plastic bag, tie the end tightly and dispose of it as the other general parts disposal.

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RS0DD-03

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the steering wheel pad, steering wheel or spiral cable.

Case	Replacing part
If the airbag has been deployed.	Steering wheel pad
If the steering wheel pad has been found to be faulty in troubleshooting.	Steering wheel pad
If the spiral cable has been found to be faulty in troubleshooting.	Spiral cable
If the steering wheel pad has been found to be faulty during checking items (See page RS–18).	Steering wheel pad
If the steering wheel has been found to be faulty during checking items (See page RS–18).	Steering wheel
If the spiral cable has been found to be faulty during checking items (See page RS–18).	Spiral cable
If the steering wheel pad has been dropped.	Steering wheel pad

CAUTION:

For removal and installation of the steering wheel pad, see page SR–7 and SR–19, and be sure to follow the correct procedure.

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RS0D1-03

INSTALLATION

HINT:

For step 1 to 9, refer to page SR–19.

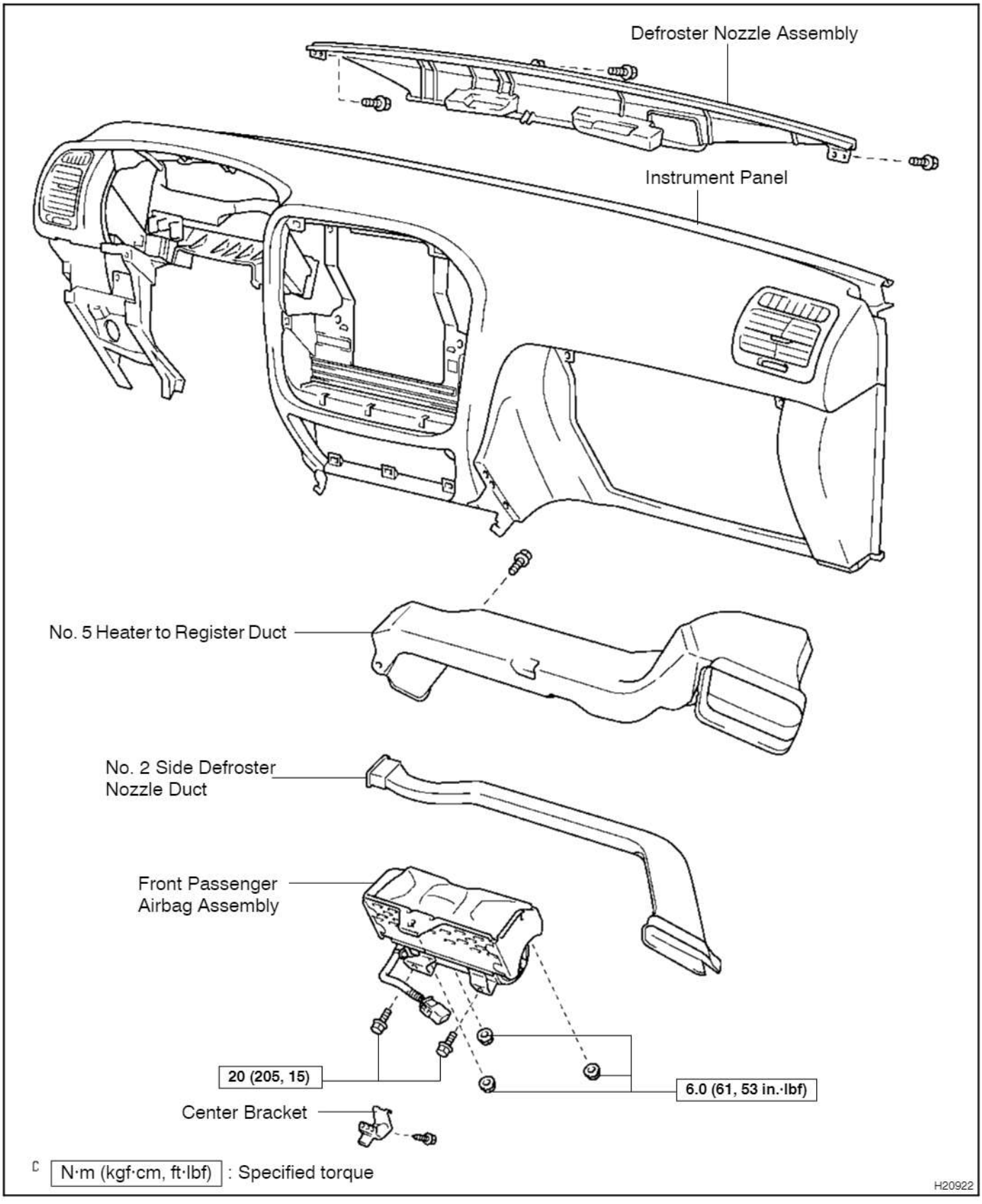
1. **INSTALL SPIRAL CABLE**
2. **INSTALL COLUMN UPPER AND LOWER COVERS**
3. **INSTALL LOWER NO. 1 PANEL**
4. **INSTALL INSTRUMENT CLUSTER FINISH PANEL**
5. **INSTALL FRONT DOOR OPENING TRIM LH**
6. **INSTALL COWL SIDE TRIM LH**
7. **INSTALL FRONT DOOR SCUFF PLATE LH**
8. **INSTALL STEERING WHEEL**
9. **INSTALL STEERING WHEEL PAD**
10. **INSPECT SRS WARNING LIGHT (See page DI–432)**

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FRONT PASSENGER AIRBAG ASSEMBLY

COMPONENTS

RS0D2-02



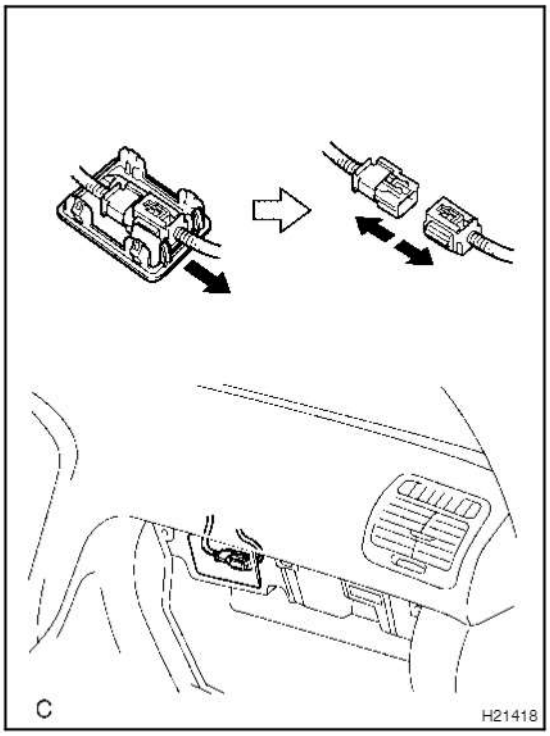
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RS0D3-02

REMOVAL

NOTICE:

- **If the wiring connector of the SRS is disconnected and the ignition switch is in ON position, DTCs will be recorded.**
- **Never use the airbag parts from another vehicle. When replacing parts, replace them with new parts.**



1. DISCONNECT AIRBAG CONNECTOR

(a) Remove the glove compartment door.

(b) Remove the No. 1 under cover from the lower No. 2 finish panel.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.

(c) Slide the airbag connector to pull out from the No. 1 under cover.

(d) Disconnect the front passenger airbag connector.

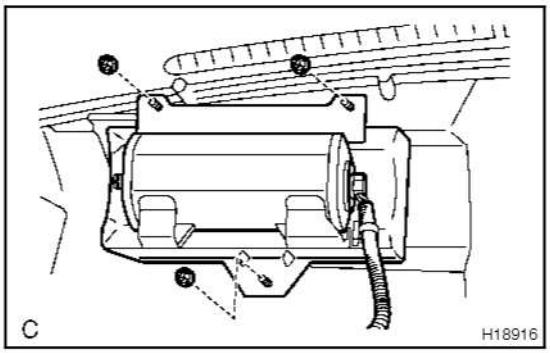
2. REMOVE INSTRUMENT PANEL
(See page BO–79)

3. REMOVE CENTER BRACKET

4. REMOVE DEFROSTER NOZZLE ASSEMBLY

5. REMOVE NO. 5 HEATER TO REGISTER DUCT

6. REMOVE NO. 2 SIDE DEFROSTER NOZZLE DUCT



7. REMOVE FRONT PASSENGER AIRBAG ASSEMBLY

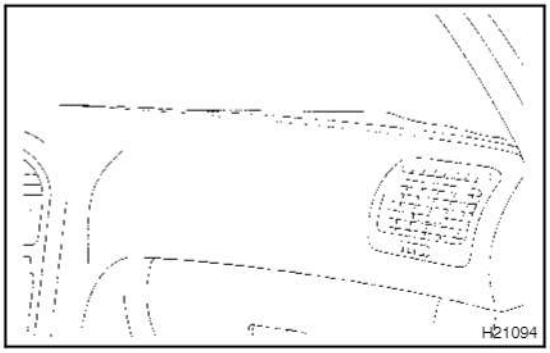
Remove the 3 nuts, then remove the front passenger airbag assembly.

CAUTION:

- **Do not store the front passenger airbag assembly with the airbag deployment side facing downward.**
- **Never disassemble the front passenger airbag assembly.**

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RS0D4-02

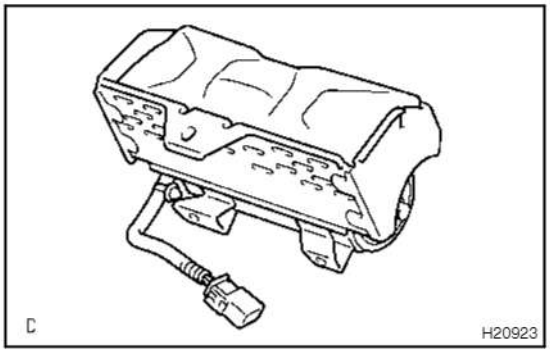


INSPECTION

1. Vehicle not involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check
(See page DI–432).

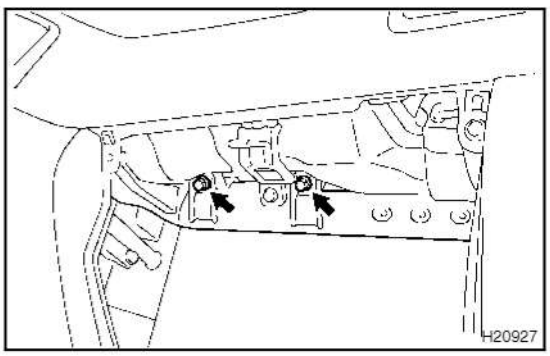
(b) Do a visual check which includes the following items with the front passenger airbag assembly installed in the vehicle.
Check cuts, minute cracks or marked discoloration on the front passenger airbag assembly and instrument panel.



2. Vehicle involved in collision and airbag is not deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check
(See page DI–432).

(b) Do a visual check which includes the following items with the front passenger airbag assembly removed from the vehicle.
- Check cuts, minute cracks or marked discoloration on the front passenger airbag assembly.
- Check cuts and cracks in wire harnesses, and for chipping in connectors.
- Check the deformation or cracks on the instrument panel and instrument panel reinforcement.



HINT:
If the instrument panel or instrument panel reinforcement is deformed or cracked, never repair it. Always replace it with a new one.

CAUTION:
For removal and installation of the front passenger airbag assembly, see page RS–32 and RS–42 and be sure to follow the correct procedure.

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3. Vehicle involved in collision and airbag is deployed: INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check
(See page DI–432).

(b) Do a visual check which includes the following items with the front passenger airbag assembly removed from the vehicle.
- Check the deformation or cracks on the instrument panel and instrument panel reinforcement.
- Check the damage on the connector and wire harness.

HINT:
If the instrument panel or instrument panel reinforcement is deformed or cracked, never repair it. Always replace it with a new one.

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RS0VV–01

DISPOSAL

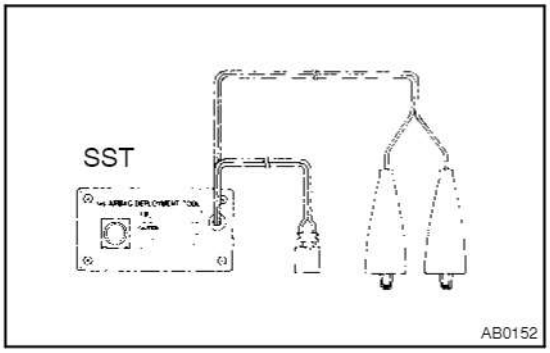
HINT:

When scrapping vehicle equipped with an SRS or disposing of a front passenger airbag assembly, always first deploy the airbag in accordance with the procedure described below. If any abnormality occurs with the airbag deployment, contact the SERVICE DEPT. of the DISTRIBUTOR.

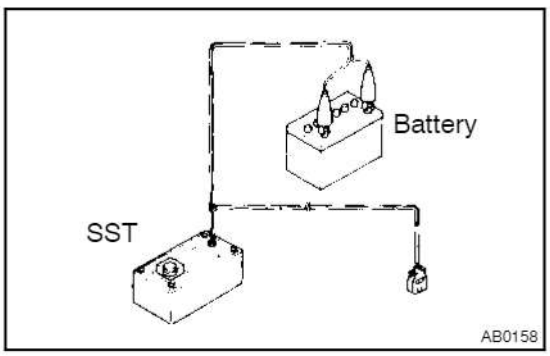
When disposing of a front passenger airbag assembly with an airbag deployed in a collision, follow the same procedure given in step 1–(e) in "DISPOSAL".

CAUTION:

- **Never dispose of a front passenger airbag assembly of which airbag has not been deployed.**
- **The airbag produces a sizeable exploding sound when it deploys, so perform the operation out of doors and where it will not create a nuisance to nearby residents.**



- **When deploying the airbag, always use the specified SST (SRS Airbag Deployment Tool). Perform the operation in a place away from electrical noise.**
  SST 09082–00700
- **When deploying an airbag, perform the operation at least 10 m (33 ft) away from the front passenger airbag assembly.**
- **The front passenger airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a front passenger airbag assembly with deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a front passenger airbag assembly with deployed airbag.**



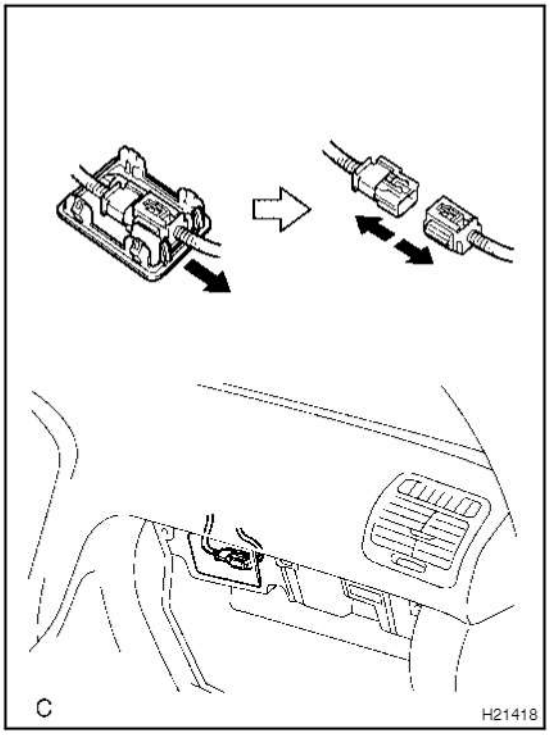
1. AIRBAG DEPLOYMENT WHEN SCRAPPING VEHICLE

HINT:

Have a battery ready as the power source to deploy the airbag.

(a) Check the function of the SST (See page RS–20).

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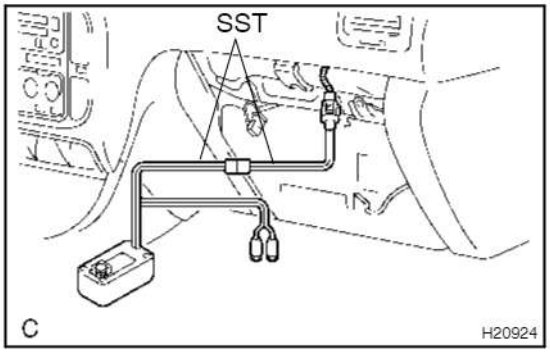


(b) Disconnect the airbag connector.
(1) Remove the glove compartment door.
(2) Remove the No. 1 under cover.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.

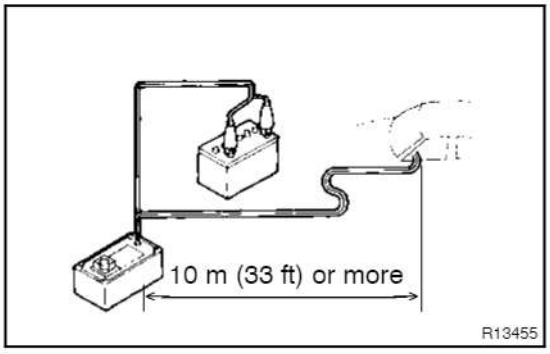
(3) Slide the airbag connector to pull out from the No. 1 under cover.
(4) Disconnect the airbag connector.



(c) Install the SST.
(1) Connect the connector of SST to the front passenger airbag assembly connector.
SST 09082–00700, 09082–00780

NOTICE:

To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock.

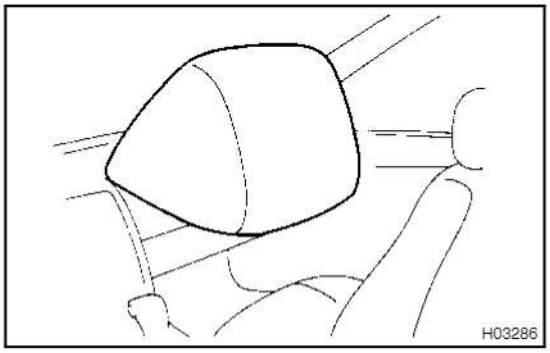


(2) Move the SST at least 10 m (33 ft) away from the front of the vehicle.
(3) Close all the doors and windows of the vehicle.

NOTICE:

Take care not to damage the SST wire harness.

(4) Connect the red clip of the SST to the battery positive (+) terminal and the black clip to the negative (+) terminal.



(d) Deploy the airbag.
(1) Check that no one is inside the vehicle, nor within 10 m (33 ft) area around the vehicle.
(2) Press the SST activation switch and deploy the airbag.

CAUTION:

- **The front passenger airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**

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- **Use gloves and safety glasses when handling a front passenger airbag assembly with deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a front passenger airbag assembly with deployed airbag.**
- **When scrapping a vehicle, deploy the airbag and scrap the vehicle with the front passenger airbag assembly still installed.**
- **When moving a vehicle for scrapping which has a front passenger airbag assembly with deployed airbag, use gloves and safety glasses.**

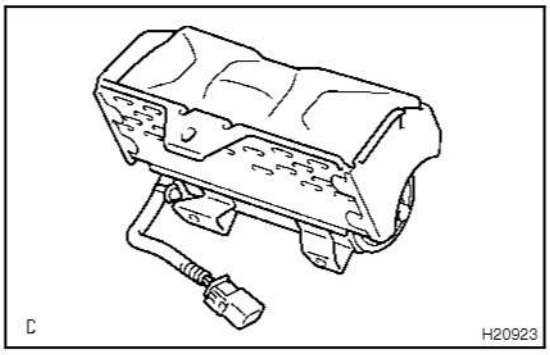
HINT:
The airbag deploys as the LED of the SST activation switch comes on.

2. DEPLOYMENT WHEN DISPOSING OF FRONT PASSENGER AIRBAG ASSEMBLY ONLY

NOTICE:

- **When disposing of the front passenger airbag assembly only, never use the customer's vehicle to deploy the airbag.**
- **Be sure to follow the procedure given below when deploying the airbag.**

HINT:
Have a battery ready as the power source to deploy the airbag.

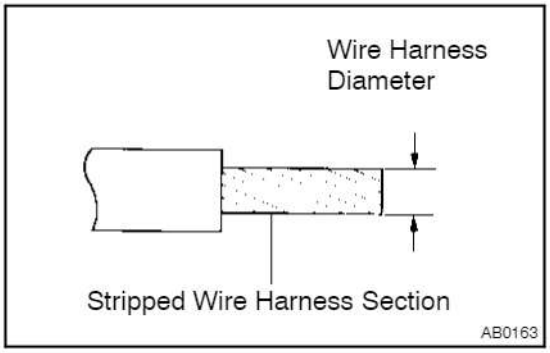


(a) Remove the front passenger airbag assembly (See page RS–32).

CAUTION:

- **When removing the front passenger airbag assembly, work must be started 90 seconds after the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery.**
- **When storing the front passenger airbag assembly, keep the upper surface of the airbag deployment side facing upward.**

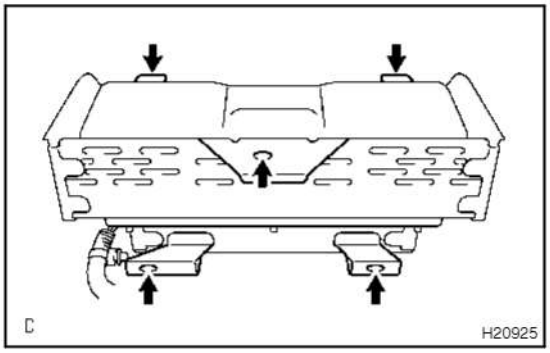
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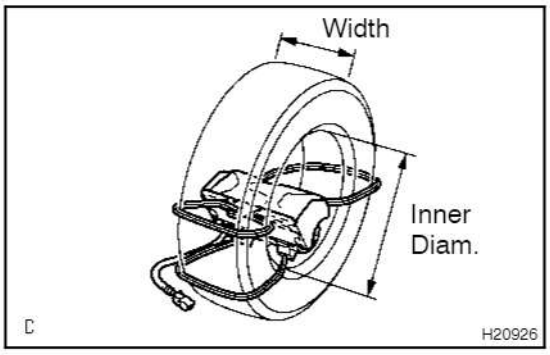
(b) Using a service–purpose wire harness for the vehicle, tie down the front passenger airbag assembly to the tire.
Wire harness: Stripped wire harness section 1.25 mm^2 or more (0.0019 in.^{2} or more)

CAUTION:
If a wire harness which is too thin or some other thing is used to tie down the front passenger airbag assembly, it may be snapped by the shock when the airbag is deployed. This is highly dangerous. Always use a wire harness which is at least 1.25 mm^2 (0.0019 in.^{2}).

HINT:
To calculate the square of the stripped wire harness section:
Square = 3.14 X (Diameter)^2 divided by 4



(1) While passing the wire harness through the installation holes indicated by arrows in the illustration, wind the wire harness around the tire.

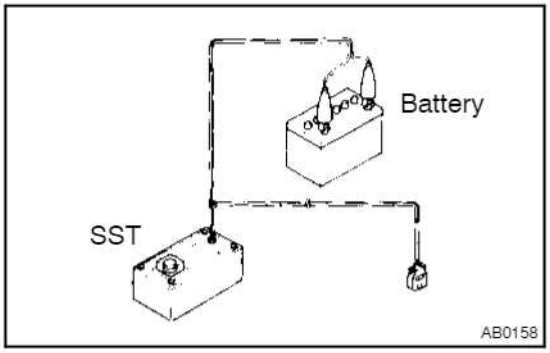


(2) Position the front passenger airbag assembly inside the tire with the airbag deployment side facing inside.
Tire size: Must exceed the following dimensions–
Width: 185 mm (7.28 in.)
Inner diameter: 360 mm (14.17 in.)

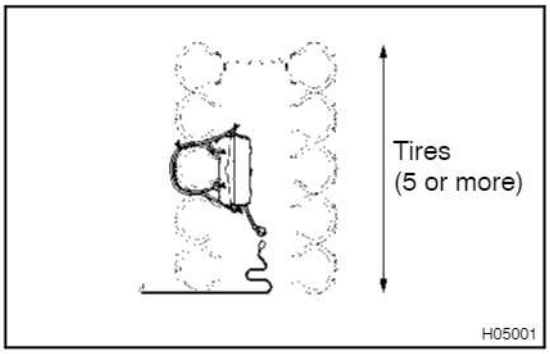
CAUTION:
- **Make sure that the wire harness is tight. It is very dangerous if looseness in the wire harness results in the front passenger airbag assembly coming free due to the shock from the airbag deployment.**
- **Always tie down the front passenger airbag assembly with the airbag deployment side facing inside.**

NOTICE:
The tire will be marked by the airbag deployment, so use a redundant tire.

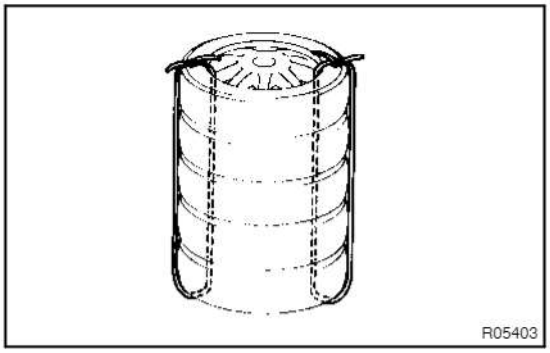
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(c) Check the functioning of the SST
(See step 1–(a) on page RS–20).
SST 09082–00700

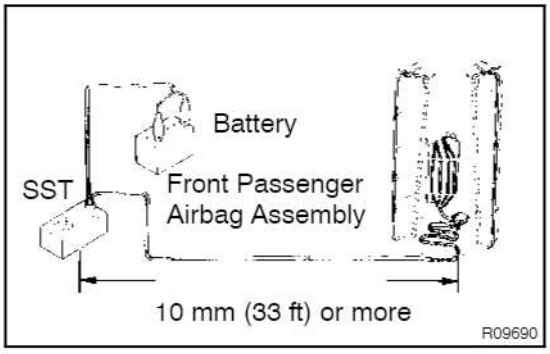


(d) Place tires.
(1) Place at least 2 tires under the tire to which the front passenger airbag assembly is tied.
(2) Place at least 2 tires over the tire to which the front passenger airbag assembly is tied. The top tire should have the wheel installed.



(3) Tie the tires together with 2 wire harnesses.

CAUTION:
Make sure that the wire harnesses are tight. It is very dangerous if loose wire harnesses result in the tires coming free due to the shock from the airbag deploying.
HINT:
Place the SST connector and wire harness inside tires. Provide at least 1 m (3 ft) of slack for the wire harness.



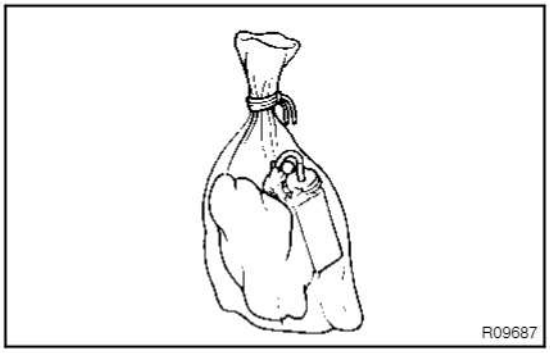
(e) Install the SST.
Connect the connector of the SST to the front passenger airbag assembly connector.
SST 09082–00700, 09082–00780

NOTICE:
To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock. Also, secure some slack for the SST wire harness inside the tires.

(f) Deploy the airbag.
(1) Connect the red clip to the battery positive (+) terminal and the black clip to the battery negative (–) terminal.
(2) Confirm that no one is within 10 m (33 ft) area around the tire which the front passenger airbag assembly is tied to.
(3) Press the SST activation switch and deploy the airbag.

HINT:
The airbag deploys as the LED of the SST activation switch comes on.

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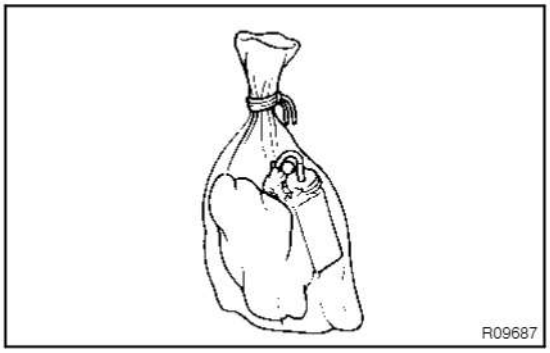
(g) Dispose of the front passenger airbag assembly.

CAUTION:

- **The front passenger airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a front passenger airbag assembly with deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a front passenger airbag assembly with deployed airbag.**

(1) Remove the front passenger airbag assembly from the tire.

(2) Place the front passenger airbag assembly in a plastic bag, tie the end tightly and dispose of it in the same way as other general parts disposal.



3. DEPLOYMENT WHEN–DISPOSING OF FRONT PASSENGER AIRBAG ASSEMBLY DEPLOYED IN A COLLISION

Dispose of the front passenger airbag assembly.

CAUTION:

- **The front passenger airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a front passenger airbag assembly with deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a front passenger airbag assembly with deployed airbag.**

(1) Remove the front passenger airbag assembly from the tire.

(2) Place the front passenger airbag assembly in a plastic bag, tie the end tightly and dispose of it as the other general parts disposal.

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RS0D6-02

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the front passenger airbag assembly, instrument panel or instrument panel reinforcement.

Case	Replacing part
If the airbag has been deployed.	Front passenger airbag assembly
If the front passenger airbag assembly has been found to be faulty in trouble-shooting.	Front passenger airbag assembly
If the front passenger airbag assembly has been found to be faulty during checking items (See page RS–33).	Front passenger airbag assembly
If the instrument panel has been found to be faulty during checking items (See page RS–33).	Instrument panel
If the instrument panel reinforcement has been found to be faulty during checking items (See page RS–33).	Instrument panel reinforcement
If the front passenger airbag assembly has been dropped.	Front passenger airbag assembly

CAUTION:

For replacement of the front passenger airbag assembly, see page RS–32 and RS–42.

Be sure to follow the correct procedure.

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RS0DT-02

INSTALLATION

NOTICE:

Never use airbag parts from another vehicle. When replacing parts, replace them with new parts.

HINT:

For step 2 to 5, refer to page BO–79.

1. INSTALL FRONT PASSENGER AIRBAG ASSEMBLY

Install the front passenger airbag assembly to the instrument panel with the 3 nuts.

Torque: 6.0 N·m (61 kgf·cm, 53 in.·lbf)

CAUTION:

- **Make sure that no foreign objects are trapped between the airbag bag and the module.**
- **Do not damage the strap when installing the module.**

NOTICE:

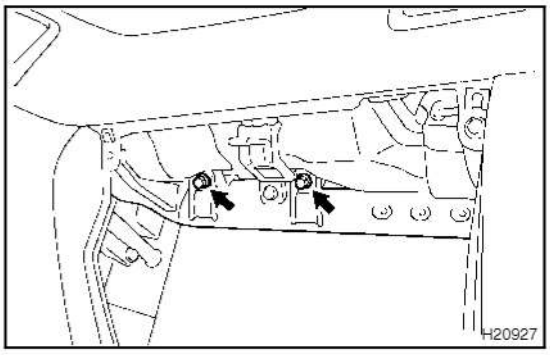
If the front passenger airbag assembly has been dropped, or there are cracks, dents or other defects in the case or connector, replace the front passenger airbag assembly with a new one.

2. INSTALL NO. 2 SIDE DEFROSTER NOZZLE DUCT

3. INSTALL NO. 5 HEATER TO REGISTER DUCT

4. INSTALL DEFROSTER NOZZLE ASSEMBLY

5. INSTALL CENTER BRACKET



6. INSTALL INSTRUMENT PANEL

(See page BO–86)

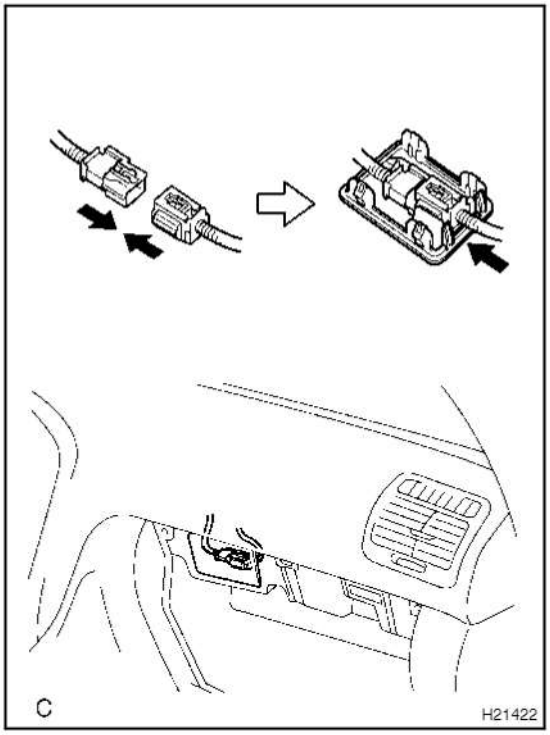
Install the 2 bolts to instrument panel reinforcement.

Torque: 20 N·m (205 kgf·cm, 15 ft·lbf)

NOTICE:

- **Make sure the front passenger airbag assembly is installed with the specified torque.**
- **When installing the instrument panel, take care that the airbag wire harness does not interfere with other parts and is not pinched between other parts.**
- **When installing the instrument panel box, carefully pull out the airbag wire harness from the glove compartment upper hole.**

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7. CONNECT AIRBAG CONNECTOR

(a) Connect the airbag connector.

(b) Set the connector on the No. 1 under cover.

(c) Install the No. 1 under cover to the lower No. 2 finish panel.

(d) Install the glove compartment door (See page BO–86).

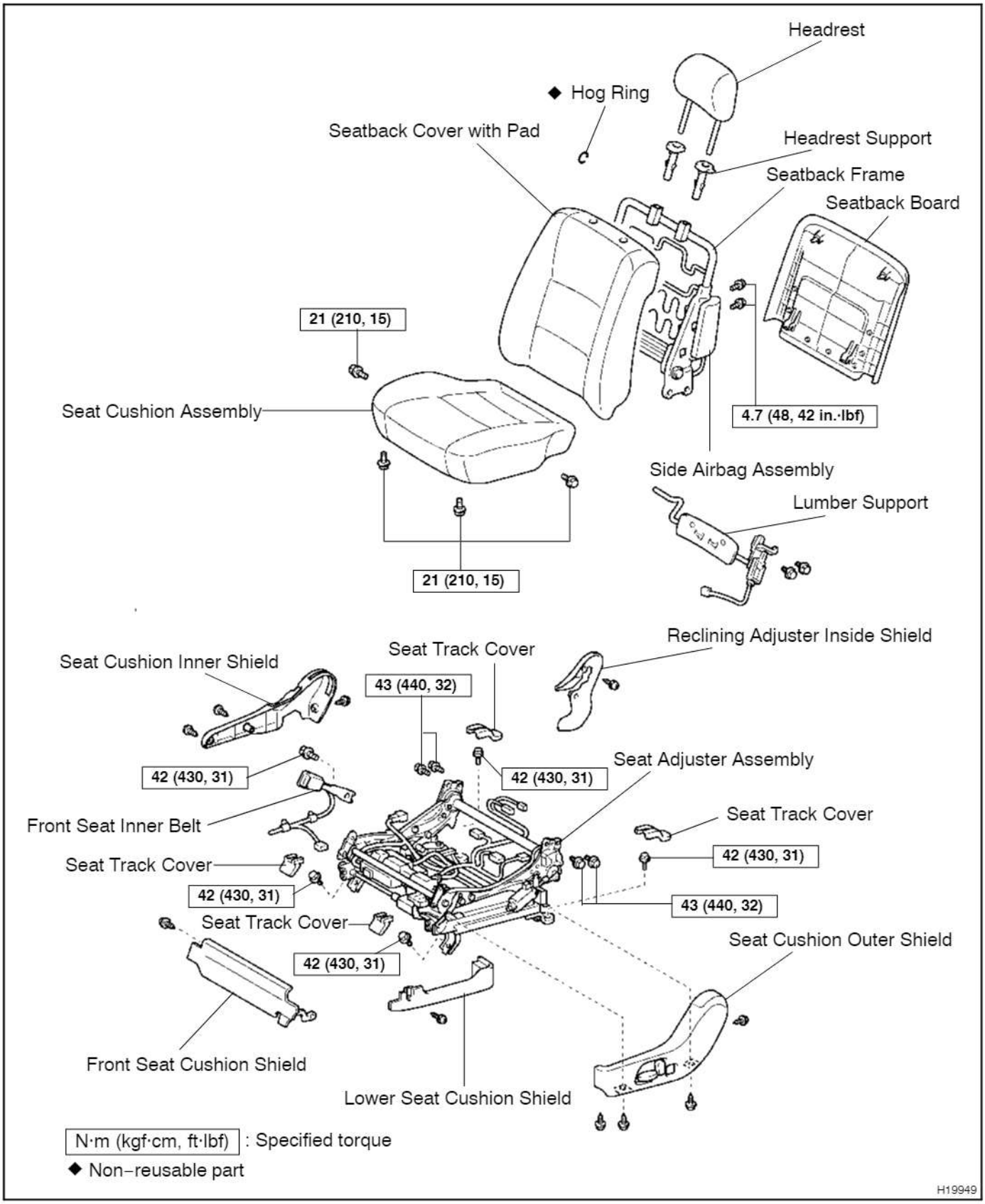
8. INSPECT SRS WARNING LIGHT (See page DI–432)

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SIDE AIRBAG ASSEMBLY (Power Adjuster Type)

COMPONENTS

RS0T9-04



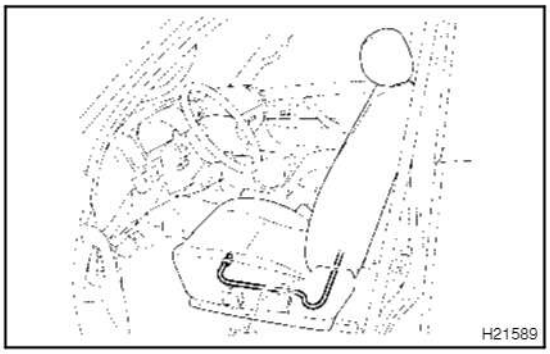
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RS0VW–01

REMOVAL

NOTICE:

- **If the wiring connector of the SRS is disconnected and the ignition switch is at ON position, DTCs will be recorded.**
- **Never use the airbag parts from another vehicle. When replacing parts, replace them with new parts.**



1. REMOVE FRONT SEAT

(a) Remove the 4 seat track covers and 4 bolts.

(b) Disconnect the connectors.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.

(c) Remove the front seat.

NOTICE:

Be careful not to damage the body.

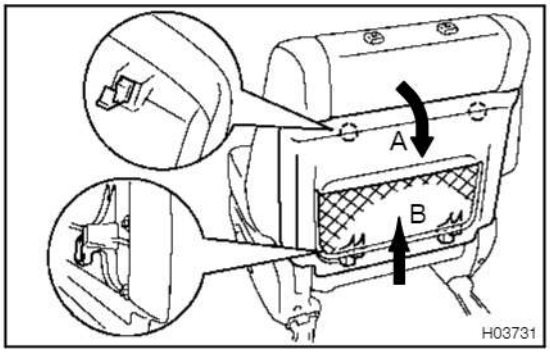
2. REMOVE HEADREST

3. REMOVE SEATBACK BOARD

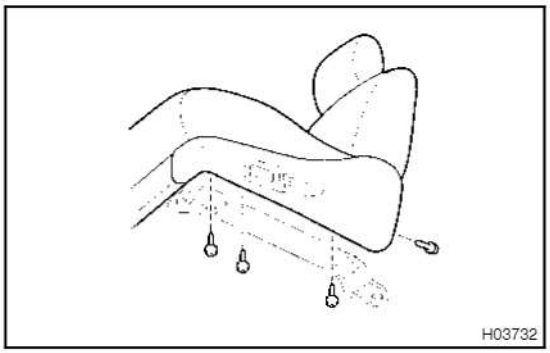
Remove the seatback board as shown in the illustration.

HINT:

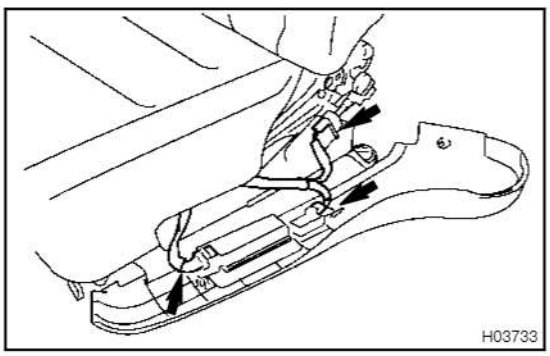
Remove the seatback board in order "A" and "B" as shown in the illustration.



4. REMOVE SEAT CUSHION OUTER SHIELD



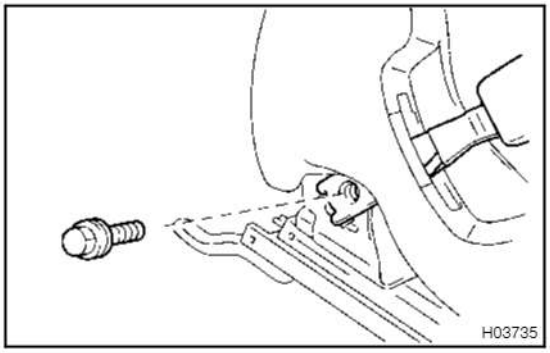
(a) Remove the 4 screws.



(b) Disconnect the connectors as shown in the illustration.

(c) Remove the seat cushion outer shield.

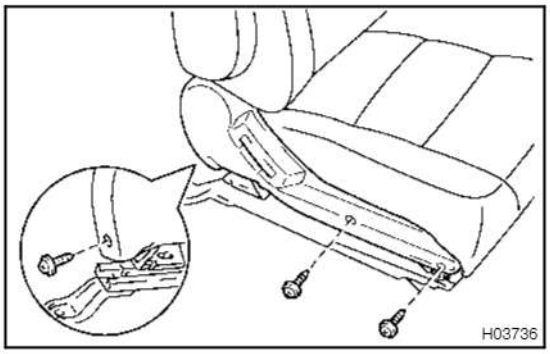
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5. REMOVE FRONT SEAT INNER BELT

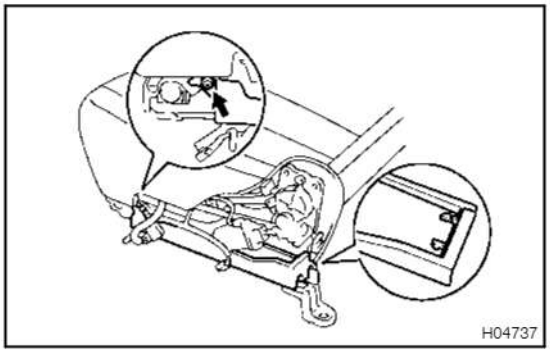
(a) Remove the clump, then disconnect the connector.

(b) Remove the bolt and inner belt.



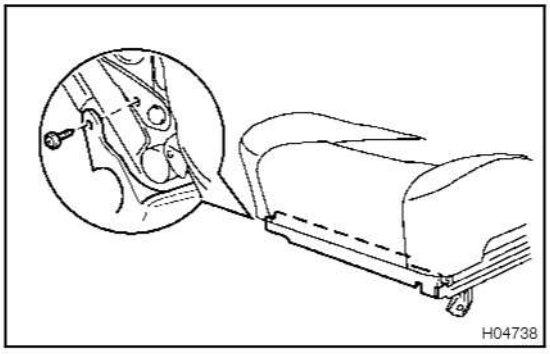
6. REMOVE SEAT CUSHION INNER SHIELD

Remove the 3 screws and seat cushion inner shield.



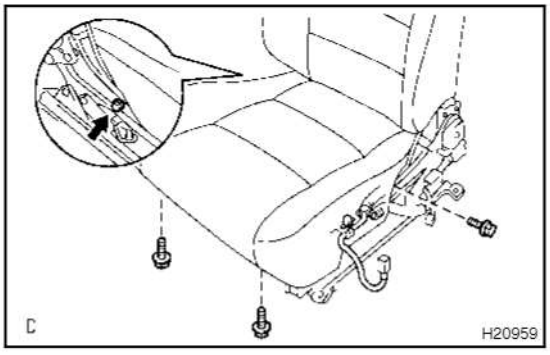
7. REMOVE LOWER SEAT CUSHION SHIELD

Remove the screw and lower seat cushion shield as shown in the illustration.



8. REMOVE FRONT SEAT CUSHION SHIELD

Remove the screw and front seat cushion shield.

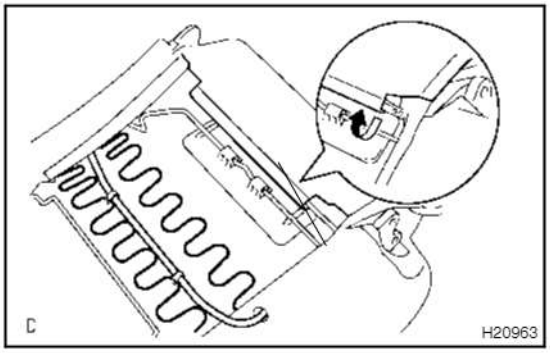


9. REMOVE SEAT CUSHION ASSEMBLY

(a) Remove the 4 bolts.

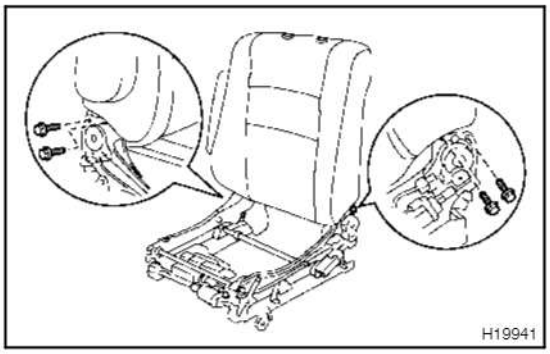
(b) Remove the clamps from the seat cushion assembly.

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10. REMOVE SEATBACK ASSEMBLY

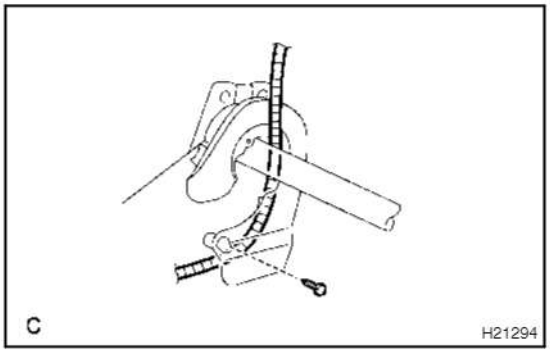
(a) Remove the hog rings.
(b) Disengage the hook as shown in the illustration.
(c) Disconnect the connectors.



(d) Remove the 4 bolts and seatback assembly.

NOTICE:

When handling the airbag connector take care not to damage the airbag wire harness.

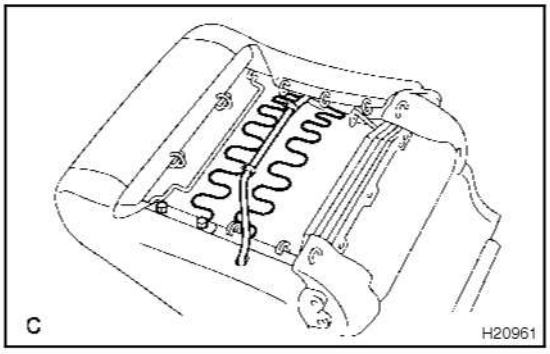


(e) Remove the 2 screws and RH reclining adjuster inside shield, then disconnect the side airbag connector.

NOTICE:

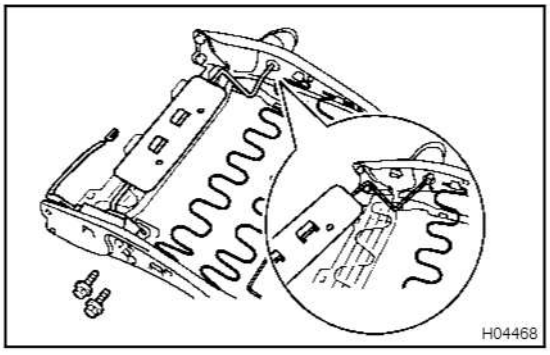
When handling the airbag connector take care not to damage the airbag wire harness.

11. REMOVE ARMREST



12. REMOVE SEATBACK FRAME

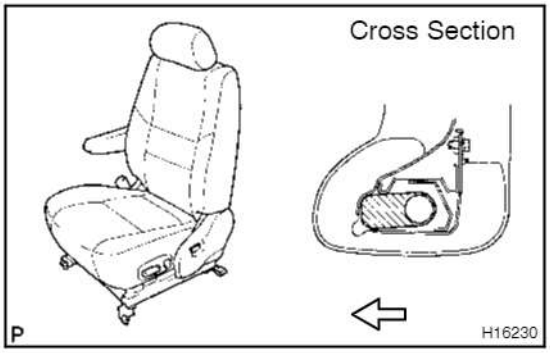
(a) Remove the hog rings, clamps and 2 bolts.
(b) Remove the 2 headrest supports.
(c) Remove the seatback frame from the seatback cover with pad.



13. REMOVE LUMBER SUPPORT

Remove the 2 bolts and lumber support.

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RS0LE–05

INSPECTION

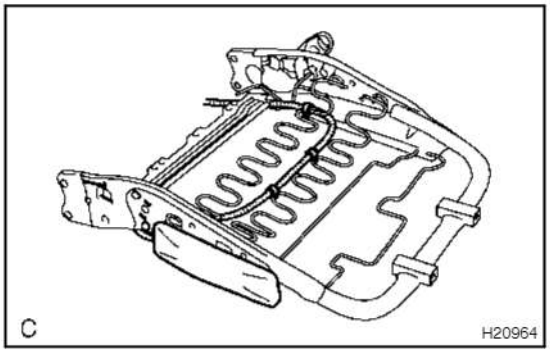
1. Vehicle not involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

(b) Do a visual check which includes the following item with the seatback assembly installed in the vehicle.
Check that there are no cuts or frayed in seams and outside of seatback cover.

2. Vehicle involved in a collision and airbag is not deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).



(b) Do a visual check which includes the following items with the seatback assembly removed from the vehicle.
- Check cuts, tears and cracks of the side airbag assembly.
- Check cuts and cracks in wire harness, and chipping in connectors.
- Check cuts and cracks of the side airbag bracket.

CAUTION:
For removal and installation of the seatback assembly, see page RS–45 and RS–56. Be sure to follow the correct procedure.

3. Vehicle involved in a collision and airbag is deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

(b) Do a visual check which includes the following items with the seatback assembly removed from the vehicle.
- Check the seatback installation part of the seat adjuster.
- Check the damage to the connector and wire harness.

CAUTION:
For removal and installation of the seatback assembly, see page RS–45 and RS–56. Be sure to follow the correct procedure.

HINT:
If the seat adjuster is deformed, never repair it. Always replace it with a new one.

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RS0VX–01

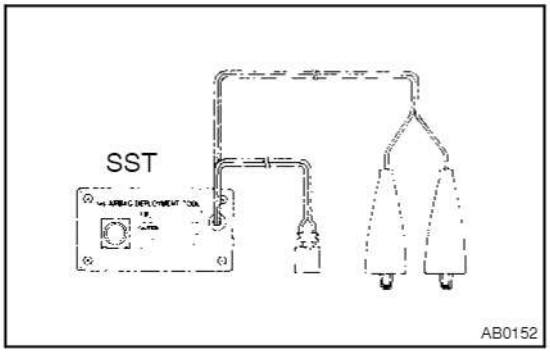
DISPOSAL

HINT:

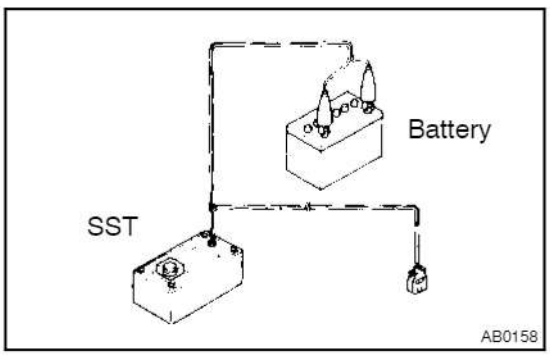
When scrapping vehicles equipped with an SRS or disposing of the side airbag assembly always first deploy the airbag in accordance with the procedure described below. If any abnormality occurs with the airbag deployment, contact the SERVICE DEPT. of the DISTRIBUTOR.

CAUTION:

- **Never dispose of a side airbag assembly of which airbag has not been deployed.**
- **The airbag produces a sizeable exploding sound when it deploys, so perform the operation out–of–doors and where it will not create a nuisance to nearby residents.**



- **When deploying the airbag, always use the specified SST (SRS Airbag Deployment Tool), perform the operation in a place away from electrical noise.**
  SST 09082–00700
- **When deploying an airbag, perform the operation at least 10 m (33 ft) away from the airbag assembly.**
- **The side airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling side airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a side airbag assembly with the deployed airbag.**



1. AIRBAG DEPLOYMENT WHEN SCRAPPING VEHICLE

HINT:

Have a battery ready as the power source to deploy the airbag.

(a) Check the function of the SST (See step 1–(a) on page RS–20).
SST 09082–00700

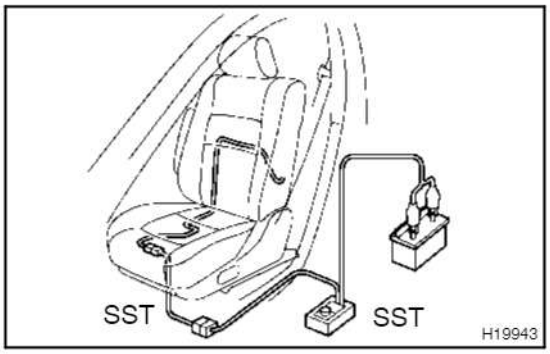
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(b) Disconnect the side airbag connector.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.



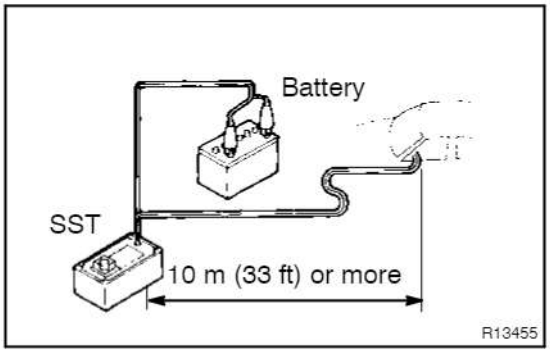
(c) Install the SST.

(1) Connect the connectors of the SST to the airbag connector.

SST 09082–00700, 09082–00750

NOTICE:

To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock.



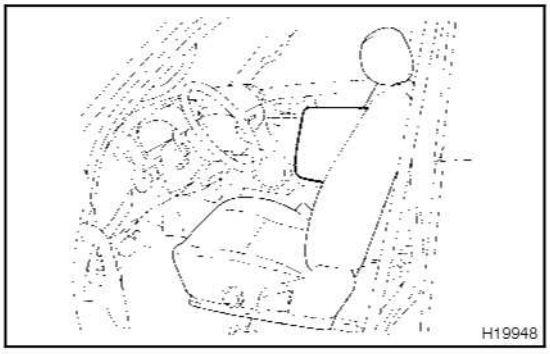
(2) Move the SST at least 10 m (33 ft) away from the front of the vehicle.

(3) Close all the doors and windows of the vehicle.

NOTICE:

Take care not to damage the SST wire harness.

(4) Connect the SST red clip to the battery positive (+) terminal and the black clip to the battery negative (–) terminal.



(d) Deploy the airbag.

(1) Check that no one is inside the vehicle or within 10 m (33 ft) area around the vehicle.

(2) Press the SST activation switch and deploy the airbag.

CAUTION:

- **The side airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling the side airbag assembly with the deployed airbag.**
- **Do not apply water, etc. to the side airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **When scrapping a vehicle, deploy the airbag and scrap the vehicle with the side airbag assembly still installed.**

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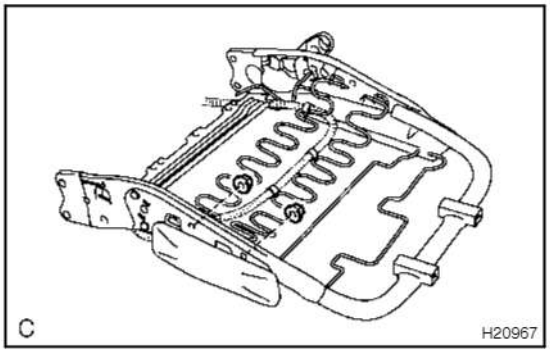
HINT:
The airbag deploys as the LED of the SST activation switch comes on.

2. DEPLOYMENT WHEN DISPOSING OF SIDE AIRBAG ASSEMBLY

NOTICE:

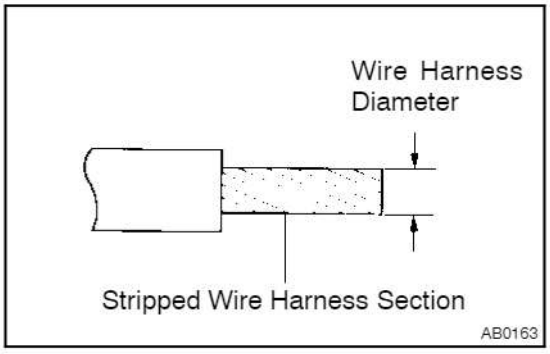
- **When disposing of the side airbag assembly only, never use the customer's vehicle to deploy the airbag.**
- **Be sure to follow the procedure given below when deploying the airbag.**

HINT:
Have a battery ready as the power source to deploy the airbag.



(a) Remove the 2 nuts and side airbag assembly from the seatback assembly, then disengage the clamps.

CAUTION:
When storing the side airbag assembly, keep the upper surface of the airbag deployment side facing upward.

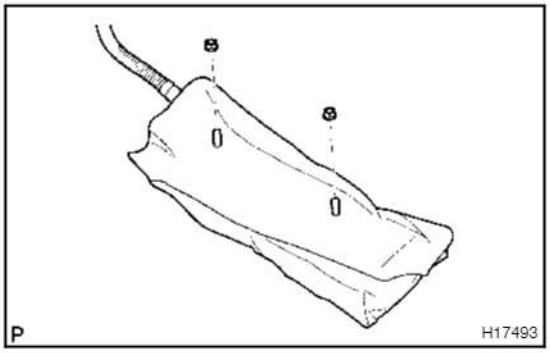


(b) Using a service–purpose wire harness, tie down the side airbag assembly to the tire.
Wire harness: Stripped wire harness section 1.25 mm^2 or more (0.0019 in^2. or more)

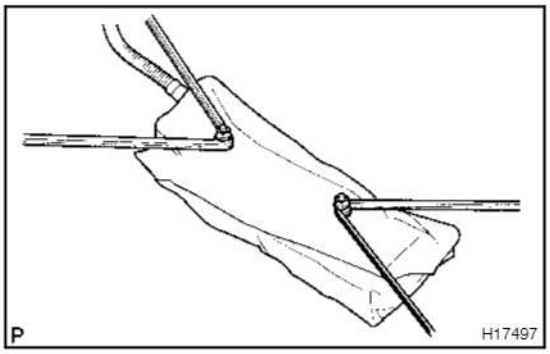
CAUTION:
If a wire harness which is too thin or some other thing is used to tie down the side airbag assembly, it may be snapped by the shock when the airbag is deployed. This is highly dangerous. Always use a wire harness for vehicle use which is at least 1.25 mm^2 (0.0019 in^2.).

HINT:
To calculate the square of the stripped wire harness section–
Square = 3.14 x (Diameter)^2 divided by 4

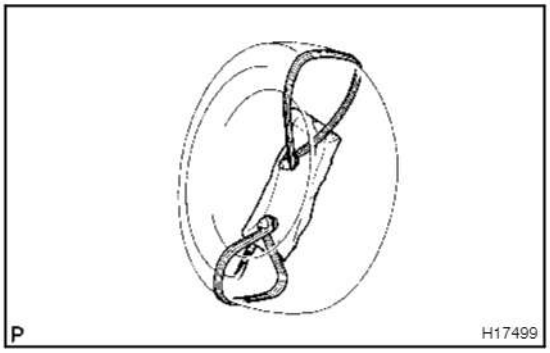
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(1) Install the 2 nuts to the side airbag assembly.



(2) Wind the wire harness around the stud bolts of the side airbag assembly as shown in the illustration.



(3) Position the side airbag assembly inside the tire with the airbag deployment direction facing inside.

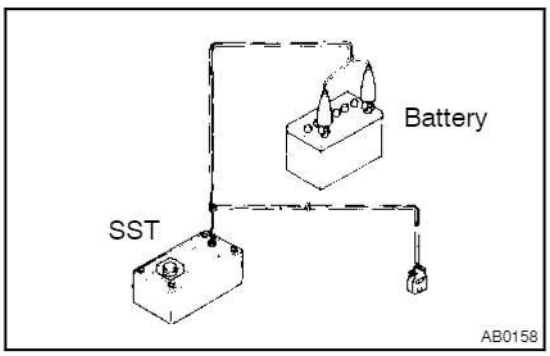
Tire size: Must exceed the following dimensions–
Width: 185 mm (7.28 in.)
Inner diameter: 360 mm (14.17 in.)

CAUTION:

- **Make sure that the wire harness is tight. It is very dangerous when a loose wire harness results in the side airbag assembly coming free due to the shock from the airbag deploying.**
- **Always tie down the side airbag assembly with the airbag deployment side facing inside.**

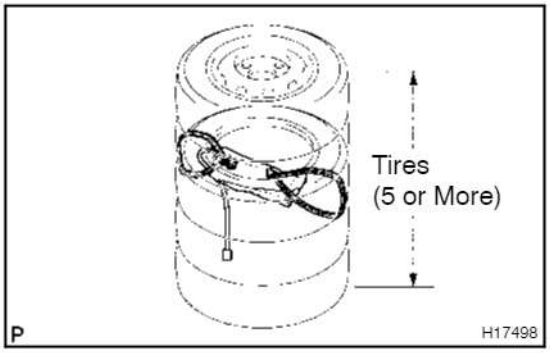
NOTICE:

The tire will be marked by the airbag deployment, so when disposing of the airbag, use a redundant tire.

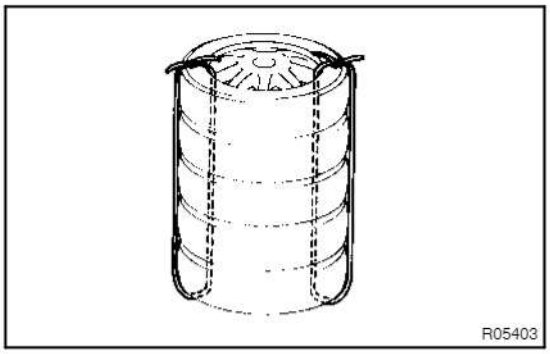


(c) Check the function of the SST (See step 1–(a) on page RS–20).
SST 09082–00700

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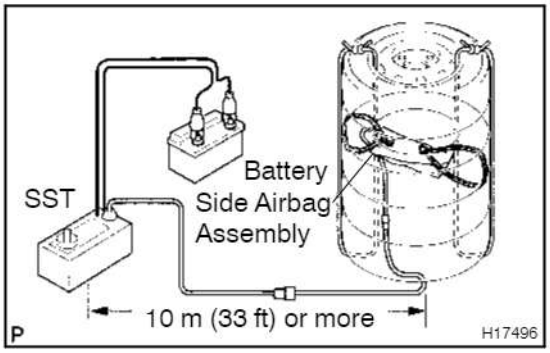
(d) Place the tires.
(1) Place at least 2 tires under the tire to which the side airbag assembly is tied.
(2) Place at least 2 tires over the tire to which the side airbag assembly is tied. The top tire should have the wheel installed.



(3) Tie the tires together with 2 wire harnesses.

CAUTION:
Make sure that the wire harnesses are tight. It is very dangerous when loose wire harness results in the tires coming free due to the shock from the airbag deployment.

HINT:
Place the SST connector and wire harness inside tires. Secure at least 1 m (3 ft) of slack for the wire harness.



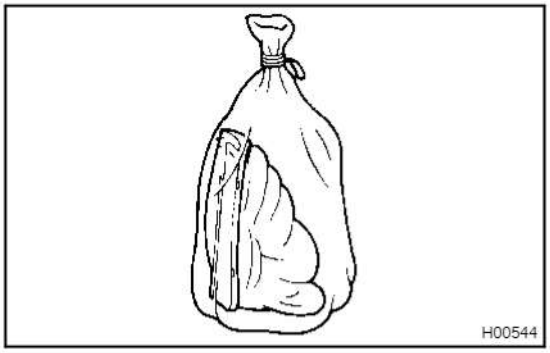
(e) Install the SST.
Connect the connectors of the SST to the side airbag assembly connector.
SST 09082–00700, 09082–00750

NOTICE:
To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock. Also, secure some slack for the SST wire harness inside the tire.

(f) Deploy the airbag.
(1) Connect the SST red clip to the battery positive (+) terminal and the black clip to the battery negative (–) terminal.
(2) Check that no one is within 10 m (33 ft) area around the tire which the side airbag assembly is tied to.
(3) Press the SST activation switch and deploy the airbag.

HINT:
The airbag deploys as the LED of the SST activation switch comes on.

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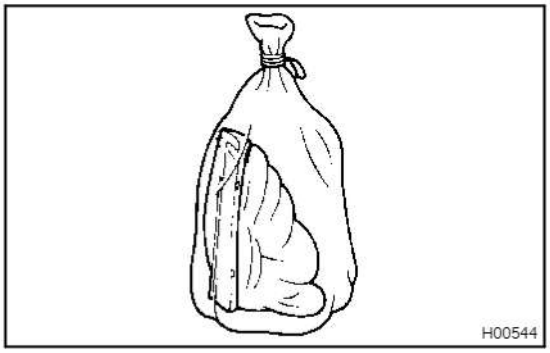
(g) Dispose of the side airbag assembly.

CAUTION:

- **The side airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a side airbag assembly with the deployed airbag.**
- **Do not apply water etc. to a side airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**

(1) Remove the side airbag assembly from the tire.

(2) Place the side airbag assembly in a plastic bag, tie the end tightly and dispose of it as the other general parts disposal.



3. DEPLOYMENT WHEN DISPOSING OF SIDE AIRBAG ASSEMBLY WITH AIRBAG DEPLOYED IN COLLISION

Dispose of the side airbag assembly.

CAUTION:

- **The side airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a side airbag assembly with the deployed airbag.**
- **Do not apply water etc. to a side airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**

(1) Remove the side airbag assembly from the seat (See page RS–45 and see step 2. on page RS–49).

(2) Place the side airbag assembly in a plastic bag, tie the end tightly and dispose of it as the other general parts disposal.

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RS0LD-04

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the seatback assembly or seatback cover.

Case	Replacing part
If the side airbag has been deployed.	Seatback assembly
If the side airbag assembly has been found to be faulty in troubleshooting.	Seatback assembly
If the side airbag assembly has cuts during checking items (See page RS–48).	Seatback assembly
If the seatback cover has cuts and frayed seams during checking items (See page RS–48).	Seatback cover
If the side airbag assembly has been found to be faulty during checking items (See page RS–48).	Seatback assembly
If the seatback cover has been found to be faulty during checking items (See page RS–48).	Seatback cover
If the seatback assembly has been dropped.	Seatback assembly

CAUTION:

For removal and installation of the seatback assembly, see page RS–45 and RS–56. Be sure to follow the correct procedure.

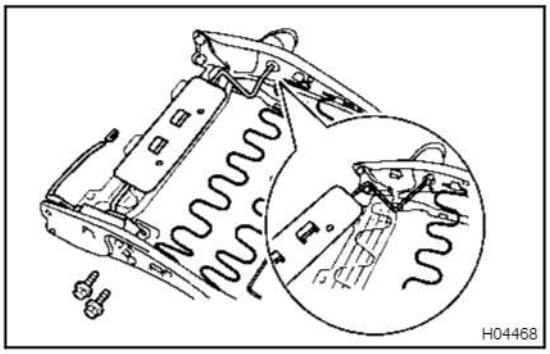
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RS0VY-01

INSTALLATION

NOTICE:

Never use airbag parts from another vehicle. When replacing parts, replace them with new parts.

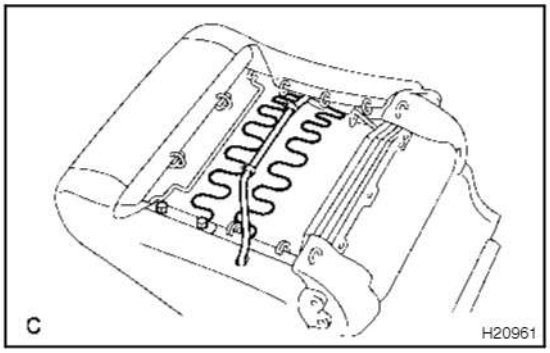


1. INSTALL LUMBER SUPPORT

Install the lumber support with the 2 bolts.

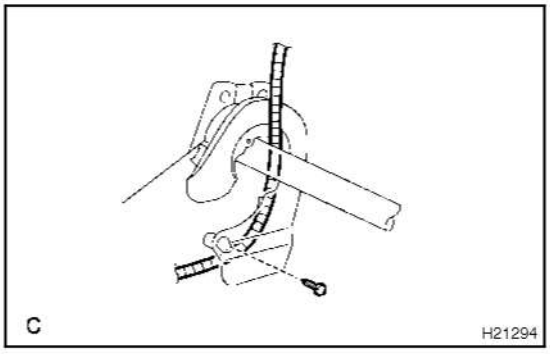
2. INSTALL SEATBACK FRAME

(a) Install the seatback cover with pad to the seatback frame.



(b) Install new hog rings, clamps and the 2 bolts.
Torque: 4.7 N·m (48 kgf·cm, 42 in.·lbf)

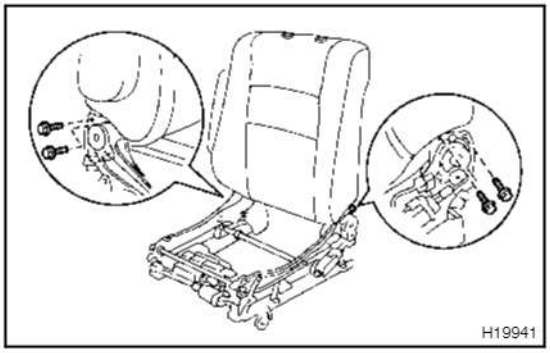
(c) Install the 2 headrest supports.



3. INSTALL SEATBACK ASSEMBLY

(a) Place the airbag connector along the inner seat adjuster, and then install the RH reclining adjuster inside shield so that the connector is placed in between.

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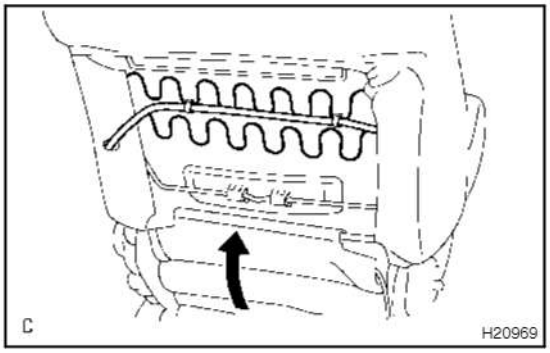


(b) Install the seatback assembly with the 4 bolts.
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

NOTICE:

- **Make sure that the seatback assembly is installed to the specified torque.**
- **If the seatback assembly has been dropped, or there are cracks, dents or other defects in the case or connector, replace the seatback assembly with a new one.**
- **When installing the seatback assembly, take care it is not to be pinched between other parts.**

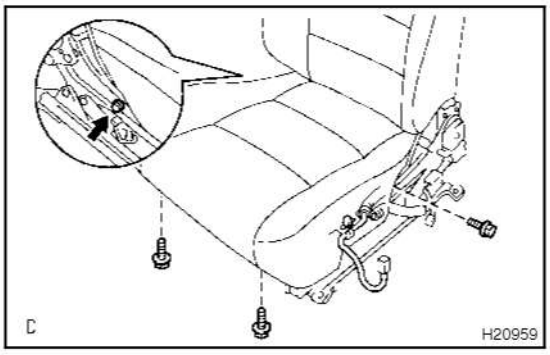
(c) Install new hog rings.



(d) Hang the hook.
(e) Connect the connectors.

4. INSTALL ARMREST
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

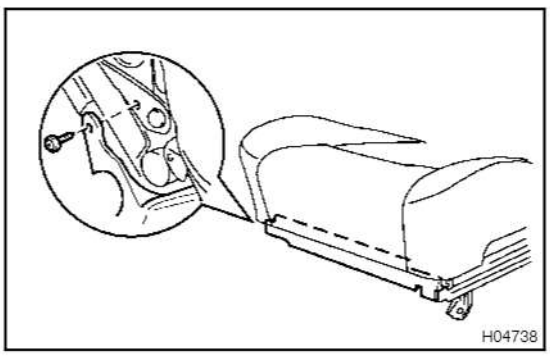
5. INSTALL HEADREST



6. INSTALL SEAT CUSHION ASSEMBLY

(a) Install the seat cushion assembly with the 4 bolts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

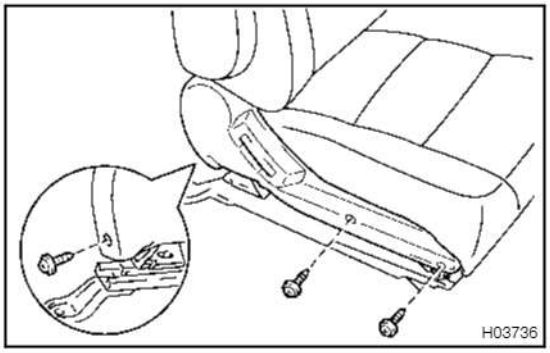
(b) Engage the wire harness clamp.



7. INSTALL FRONT SEAT CUSHION SHIELD

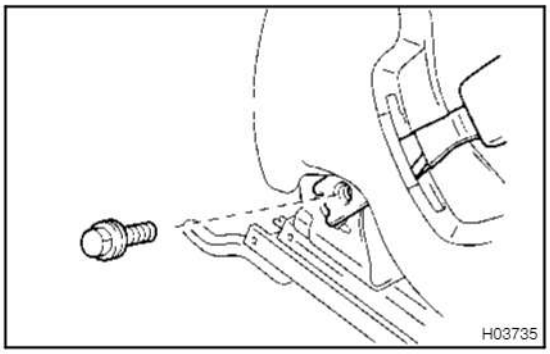
Install the seat cushion shield with the screw.

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8. INSTALL LOWER SEAT CUSHION SHIELD

Install the lower seat cushion shield with the screws.

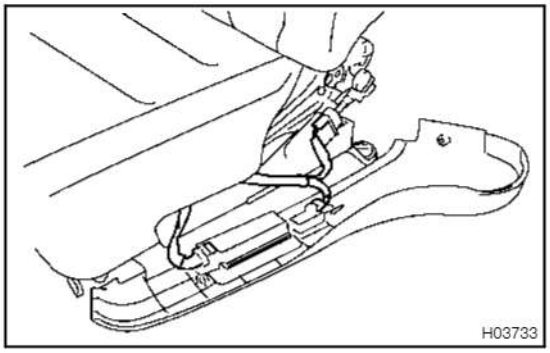


9. INSTALL FRONT SEAT INNER BELT

(a) Engage the clamp, then connect the connector.

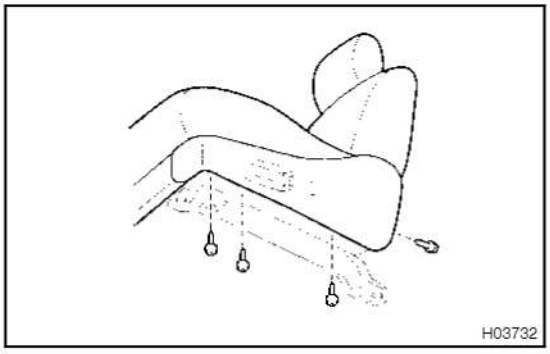
(b) Install the inner belt with the bolt.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)



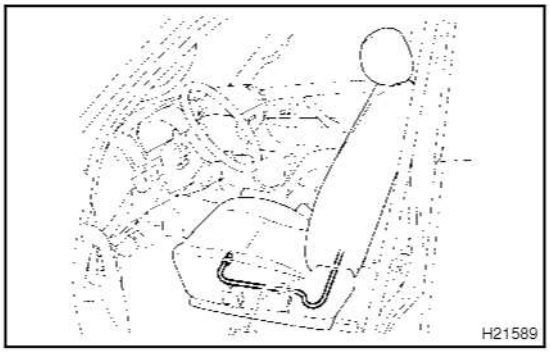
10. INSTALL SEAT CUSHION OUTER SHIELD

(a) Connect the connectors as shown in the illustration.



(b) Install the seat cushion outer shield with the 4 screws.

11. INSTALL SEATBACK BOARD



12. INSTALL FRONT SEAT

(a) Install the front seat.

NOTICE:

Be careful not to damage body.

(b) Connect the connectors.

(c) Install the 4 bolts.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

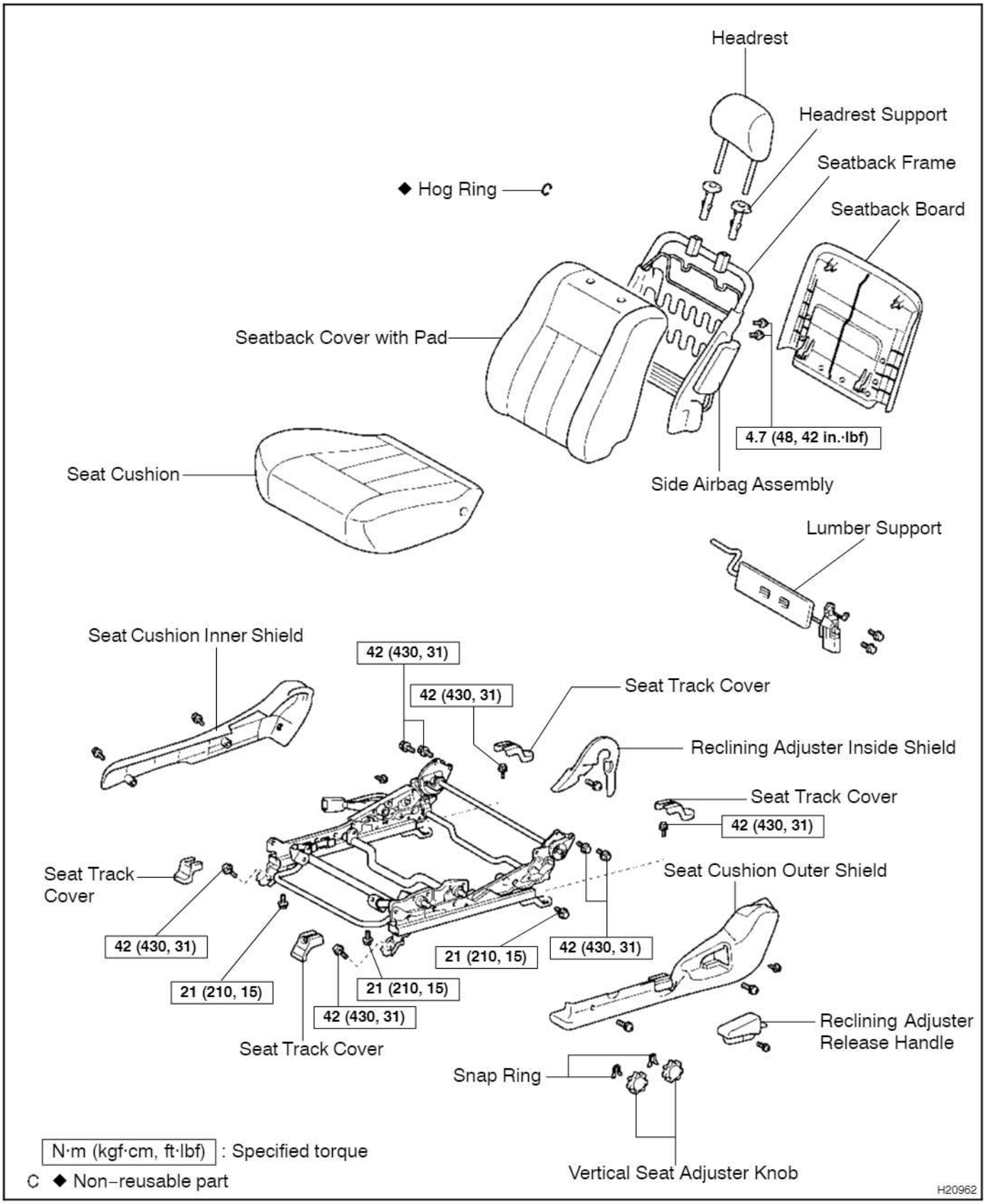
(d) Install the 4 rack covers.

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SIDE AIRBAG ASSEMBLY (Manual Adjuster Type)

COMPONENTS

RS0TD-03



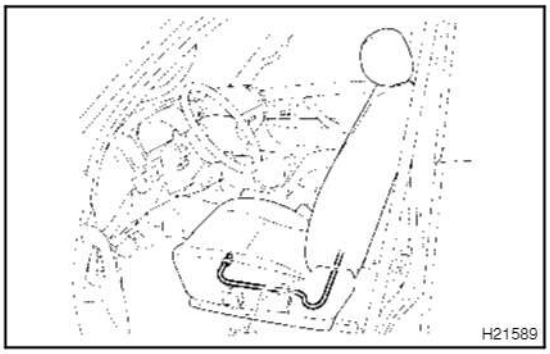
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RS0VZ-01

REMOVAL

NOTICE:

- **If the wiring connector of the SRS is disconnected and the ignition switch is at ON position, DTCs will be recorded.**
- **Never use the airbag parts from another vehicle. When replacing parts, replace them with new parts.**



1. REMOVE FRONT SEAT

(a) Remove the 4 seat track covers and 4 bolts.

(b) Disconnect the connectors.

NOTICE:

When handling the airbag connector, be careful not to damage the airbag wire harness.

(c) Remove the front seat.

NOTICE:

Be careful not to damage the body.

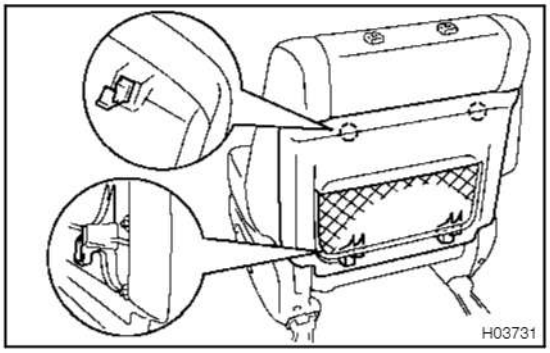
2. REMOVE HEADREST

3. REMOVE SEATBACK BOARD

Remove the seatback board as shown in the illustration.

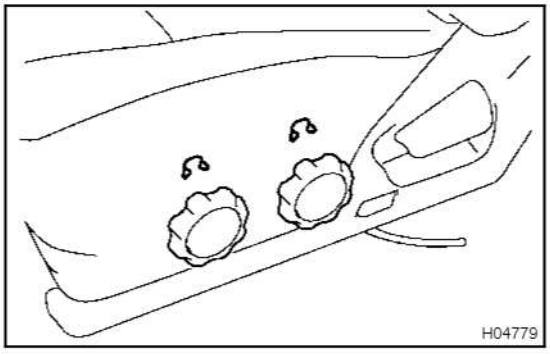
HINT:

Remove the seatback board in order "A" and "B" as shown in the illustration.



4. REMOVE RECLINING ADJUSTER RELEASE HANDLE

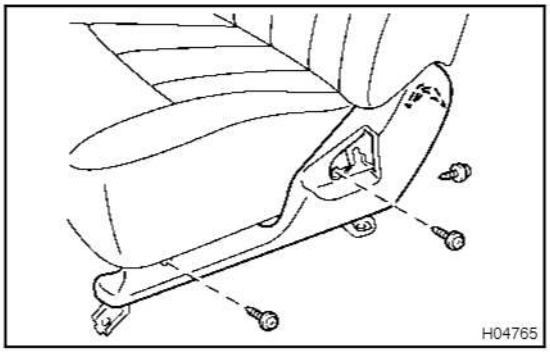
Remove the screw and reclining adjuster release handle.



5. Vertical adjuster type:
REMOVE VERTICAL SEAT ADJUSTER KNOB

(a) Remove the snap ring.

(b) Remove the vertical seat adjuster knobs.

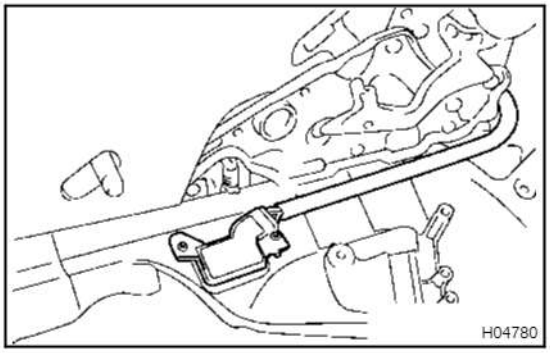


6. w/o Lumber support:
REMOVE SEAT CUSHION OUTER SHIELD

(a) Remove the 3 screws.

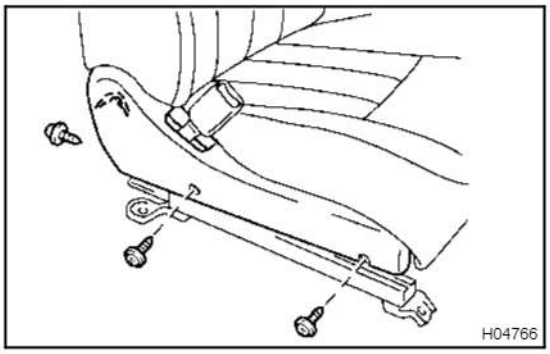
(b) Remove the seat cushion outer shield as shown in the illustration.

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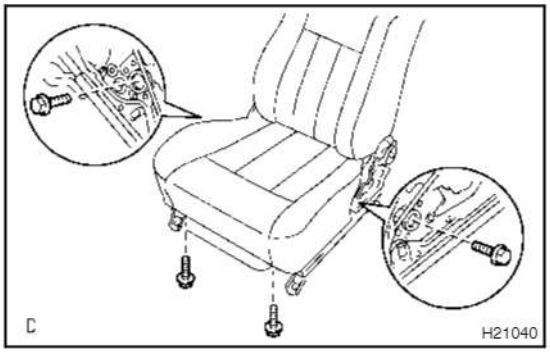
7. w/ Lumber support:
REMOVE SEAT CUSHION OUTER SHIELD

(a) Remove the 3 screws.
(b) Disconnect the connector as shown in the illustration.
(c) Remove the seat cushion outer shield.



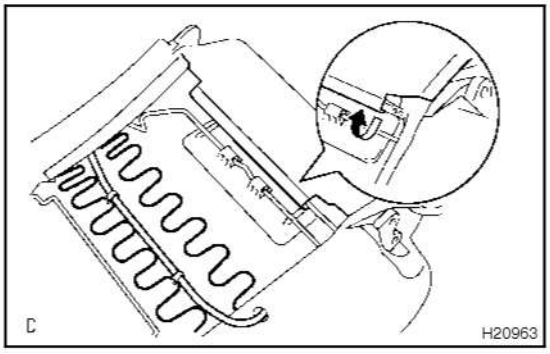
8. REMOVE SEAT CUSHION INNER SHIELD

(a) Remove the 3 screws.
(b) Remove the seat cushion inner shield as shown in the illustration.



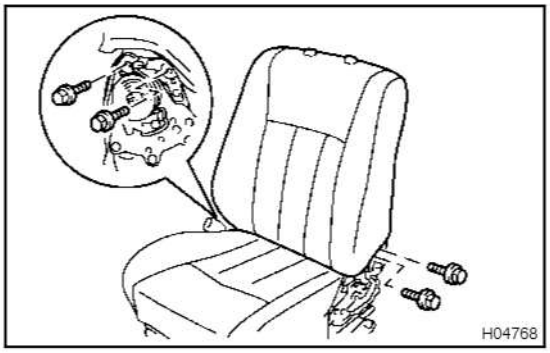
9. REMOVE SEAT CUSHION ASSEMBLY

(a) Remove the 4 bolts.
(b) Remove the wire harness clamps from the seat cushion assembly.



10. REMOVE SEATBACK ASSEMBLY

(a) Remove the hog rings.
(b) Disengage the hook as shown in the illustration.
(c) Disconnect the connectors.



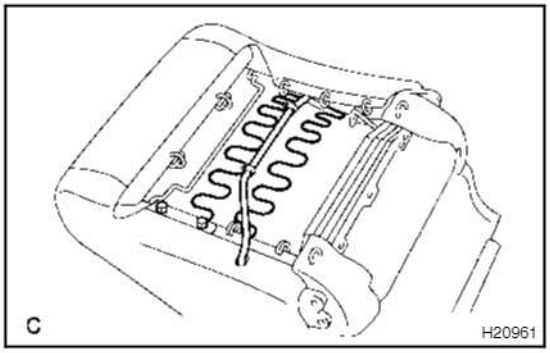
(d) Remove the 4 bolts and seatback assembly.

NOTICE:

When handling the airbag connector take care not to damage the airbag wire harness.

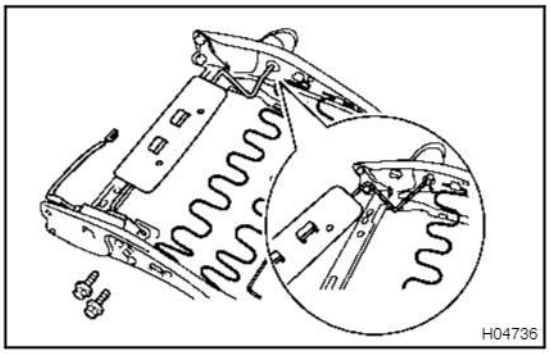
(e) Remove the screw and RH reclining adjuster inside shield, then disconnect the side airbag connector.

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11. REMOVE SETBACK FRAME

(a) Remove the hog rings, clamps and 2 bolts.
(b) Remove the 2 headrest supports.
(c) Remove the seatback frame from the seatback cover with pad.

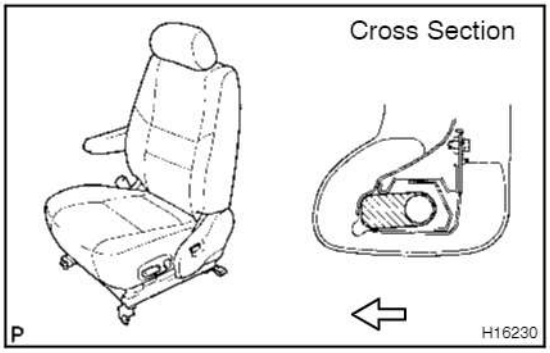


12. w/ Lumber support:
REMOVE LUMBER SUPPORT

Remove the 2 bolts and lumber support.

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RS0LH-04



INSPECTION

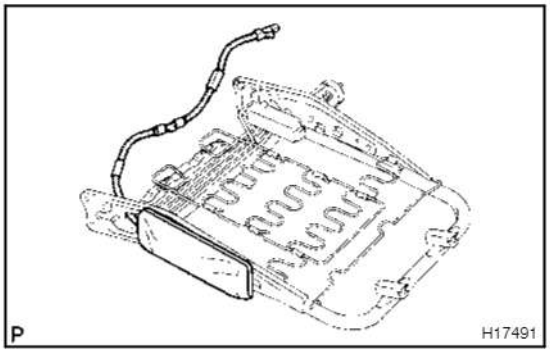
1. Vehicle not involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

(b) Do a visual check which includes the following item with the seatback assembly installed in the vehicle.
Check that there are no cuts or frayed in seams and outside of seatback cover.

2. Vehicle involved in a collision and airbag is not deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).



(b) Do a visual check which includes the following items with the seatback assembly removed from the vehicle.
- Check cuts, tears and cracks of the side airbag assembly.
- Check cuts and cracks in wire harness, and chipping in connectors.

CAUTION:
For removal and installation of the seatback assembly, see page RS–60 and RS–66. Be sure to follow the correct procedure.

3. Vehicle involved in a collision and airbag is deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

(b) Do a visual check which includes the following items with the seatback assembly removed from the vehicle.
- Check the seatback installation part of the seat adjuster.
- Check the damage to the connector and wire harness.

HINT:
If the seat adjuster is deformed, never repair it. Always replace it with new one.

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RSGLI-02

DISPOSAL

See page RS–49.

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RS0LJ-02

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the seatback assembly or seatback cover.

Case	Replacing part
If the side airbag has been deployed.	Seatback assembly
If the side airbag assembly has been found to be faulty in troubleshooting.	Seatback assembly
If the side airbag assembly has cuts during checking items (See page RS–63).	Seatback assembly
If the seatback cover has cuts and frayed seams during checking items (See page RS–63).	Seatback cover
If the side airbag assembly has been found to be faulty during checking items (See page RS–63).	Seatback assembly
If the seatback cover has been found to be faulty during checking items (See page RS–63).	Seatback cover
If the seatback assembly has been dropped.	Seatback assembly

CAUTION:

For removal and installation of the seatback assembly, see page RS–60 and RS–66. Be sure to follow the correct procedure.

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RS0W0-01

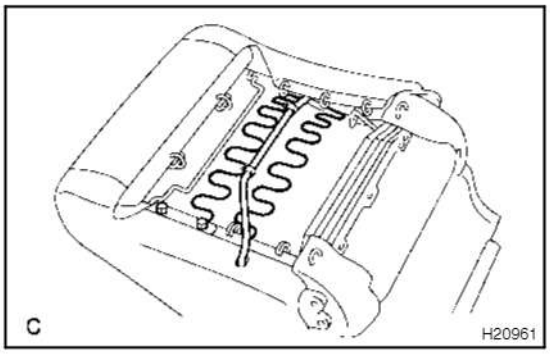
INSTALLATION

NOTICE:

Never use airbag parts from another vehicle. When replacing parts, replace them with new parts.

1. w/ Lumber support:
INSTALL LUMBER SUPPORT

Install the lumber support with 2 bolts to seatback frame.



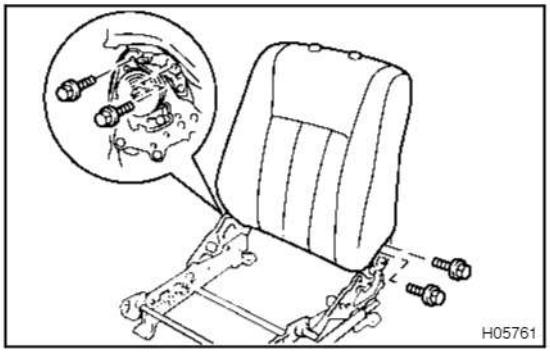
2. INSTALL SEATBACK FRAME

(a) Install the seatback frame with new hog rings, clamps and 2 bolts.

(b) Install the headrest supports.

3. INSTALL SEATBACK ASSEMBLY

(a) Place the airbag connector along the inner seat adjuster, and then install the RH reclining adjuster inside shield with a screw that the connector is placed in between.



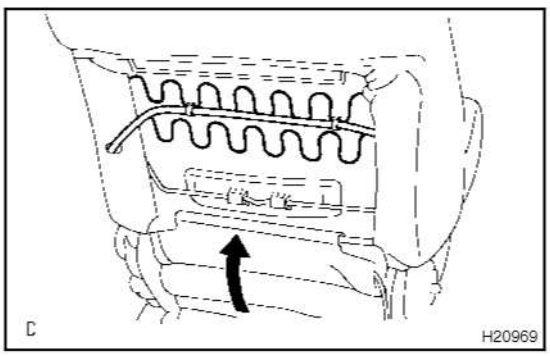
(b) Install the seatback assembly with 4 bolts.
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

NOTICE:

- **Make sure that the seatback assembly is installed to the specified torque.**
- **If the seatback assembly has been dropped, or there are cracks, dents or other defects in the case or connector, replace the seatback assembly with a new one.**
- **When installing the seatback assembly, take care it is not to be pinched between other parts.**

HINT:

Tighten the 4 bolts temporarily, then from the bolts on the front right side tighten them completely.



(c) Install new hog rings.

(d) Hang the hook.

(e) Connect the connectors.

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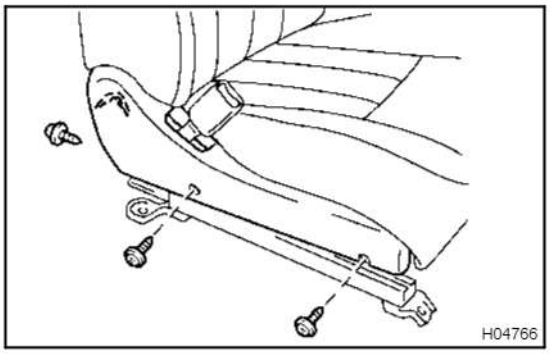
4. INSTALL SEAT CUSHION ASSEMBLY

Install the seat cushion assembly with 4 bolts to the seat adjuster.

HINT:

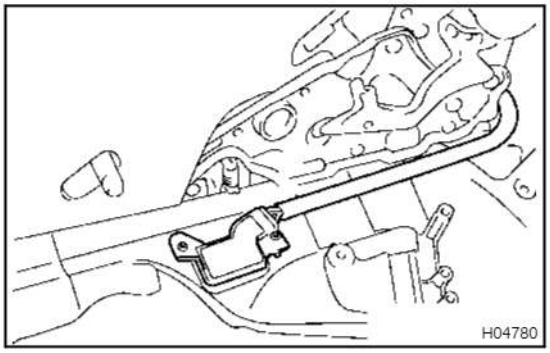
Tighten the 4 bolts temporarily, then from the bolts on the rear side tighten them completely.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)



5. INSTALL SEAT CUSHION INNER SHIELD

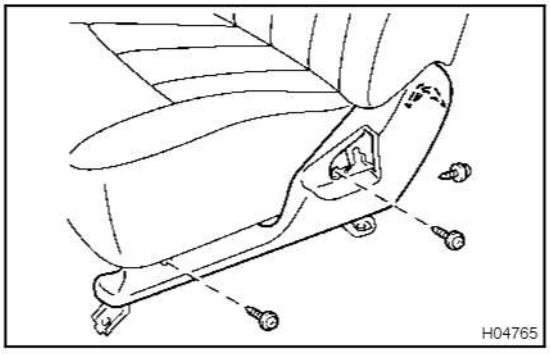
Install the seat cushion inner shield with 3 screws as shown in the illustration.



6. w/ Lumber support:
INSTALL SEAT CUSHION OUTER SHIELD

(a) Connect the connector.

(b) Install the seat cushion outer shield with 3 screws.

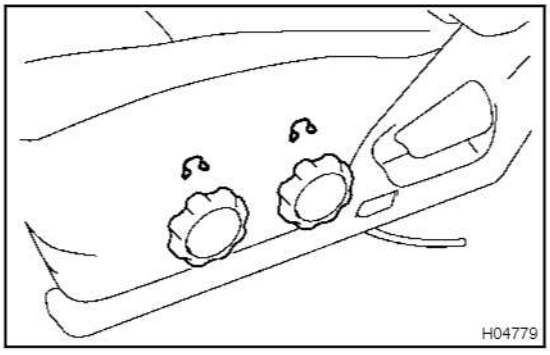


7. w/o Lumber support:
INSTALL SEAT CUSHION OUTER SHIELD

Install the seat cushion outer shield with 3 screws as shown in the illustration.

8. INSTALL RECLINING ADJUSTER RELEASE HANDLE

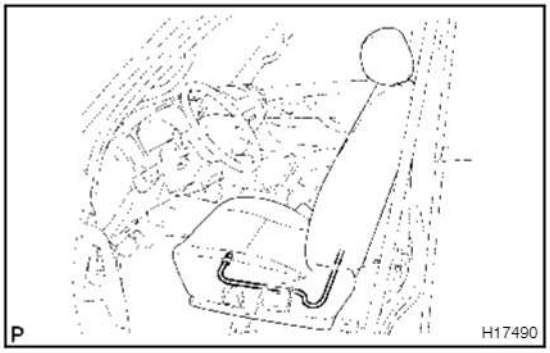
9. INSTALL HEADREST



10. Vertical adjuster type:
INSTALL VERTICAL SEAT ADJUSTER KNOB

Install the vertical seat adjuster knob with snap rings.

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11. INSTALL FRONT SEAT

(a) Install the front seat.

NOTICE:

Be careful not to damage body.

(b) Connect the connectors.

(c) Install the 4 bolts.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

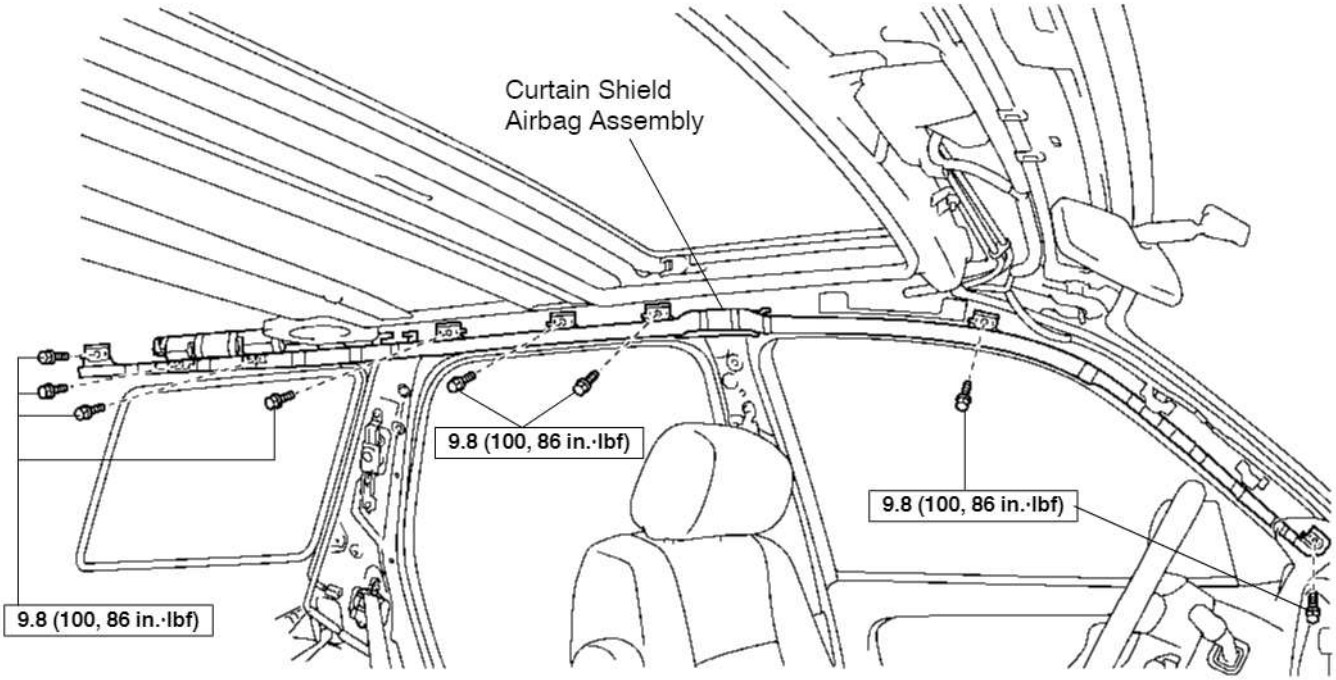
(d) Install the 4 track covers.

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CURTAIN SHIELD AIRBAG ASSEMBLY

COMPONENTS

RS0N2-12



C N·m (kgf·cm, ft·lbf) : Specified torque

H20928

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RS0TG-04

REMOVAL

NOTICE:

- **If the wiring connector of the SRS is disconnected and the ignition switch is at ON position, DTCs will be recorded.**
- **Never use the airbag parts from another vehicle. When replacing parts, replace them with new parts.**

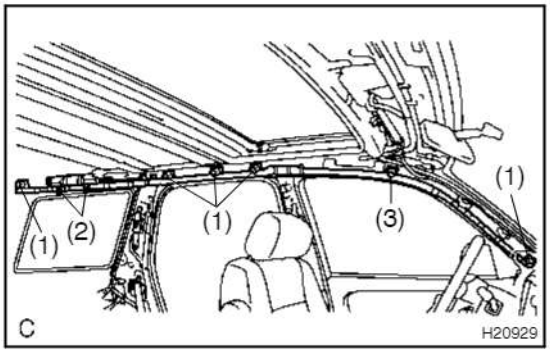
1. REMOVE ROOF HEADLINING (See page BO–92)

2. REMOVE CURTAIN SHIELD AIRBAG ASSEMBLY

(a) Disconnect the curtain shield airbag connector.

NOTICE:

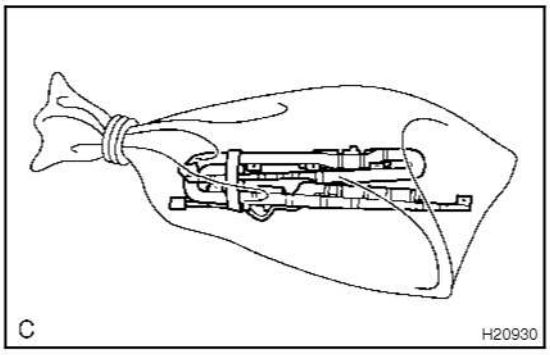
When handling the airbag connector, take care not to damage the airbag wire harness.



(b) In the order shown in the illustration, remove the bolts and curtain shield airbag assembly.

HINT:

- Loosen the bolt (3) before removing the bolt (2).
- Bind the front and rear parts of the curtain shield airbag assembly before removing the bolt (3).



(c) Put the removed curtain shield airbag in a clear plastic bag and keep it in a safe place.

CAUTION:

Never disassemble the curtain shield airbag assembly.

NOTICE:

Plastic bag is not reusable.

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RS0N4-10

INSPECTION

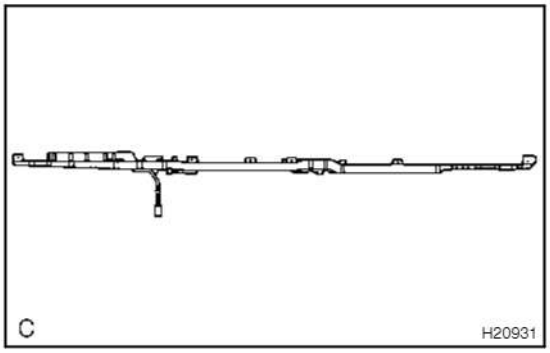
1. Vehicle not involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

(b) Do a visual check which includes the following items with the curtain shield airbag assembly installed in the vehicle. Check cuts, minute cracks or marked discoloration on the front pillar garnish and roof headlining.

2. Vehicle involved in a collision and airbag is not deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).



(b) Do a visual check which includes the following items with the curtain shield airbag assembly removed from the vehicle.

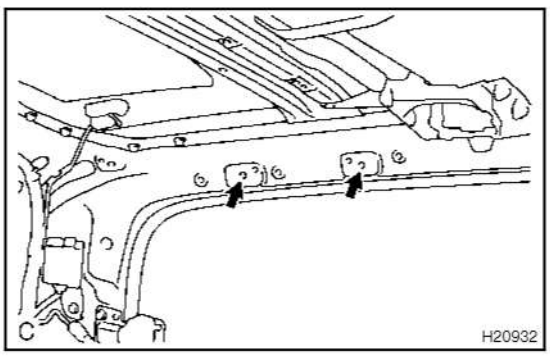
- Check cuts, tears and cracks, or marked discoloration of the curtain shield airbag assembly.
- Check cuts and cracks in wire harness, and chipping in connectors.

CAUTION:
For removal and installation of the curtain shield airbag assembly, see page RS–70 and RS–79. Be sure to follow the correct procedure.

3. Vehicle involved in a collision and airbag is deployed:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

(b) Do a visual check which includes the following items with the curtain shield airbag assembly removed from the vehicle.



- Check the deformation or cracks on the body that the curtain shield airbag installed on.
- Check the damage to the connector and wire harness.

HINT:
If the body that the curtain shield airbag was installed on is deformed or cracked, replace it.

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RS0W1–01

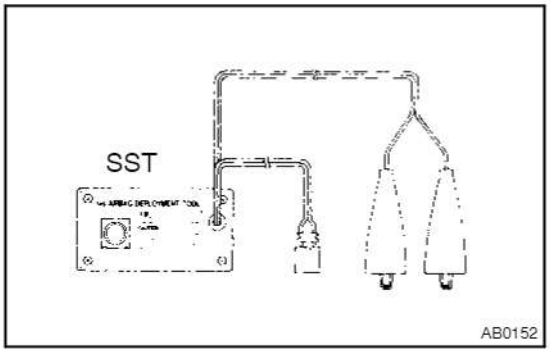
DISPOSAL

HINT:

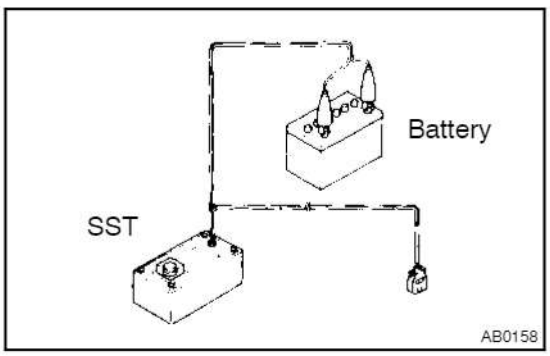
When scrapping vehicles equipped with an SRS or disposing of the curtain shield airbag assembly always first deploy the airbag in accordance with the procedure described below. If any abnormality occurs with the airbag deployment, contact the SERVICE DEPT. of the DISTRIBUTOR.

CAUTION:

- **Never dispose of a curtain shield airbag assembly of which airbag has not been deployed.**
- **The airbag produces a sizeable exploding sound when it deploys, so perform the operation out–of–doors and where it will not create a nuisance to nearby residents.**



- **When deploying the airbag, always use the specified SST (SRS Airbag Deployment Tool), perform the operation in a place away from electrical noise.**
  SST 09082–00700
- **When deploying an airbag, perform the operation at least 10 m (33 ft) away from the airbag assembly.**
- **The curtain shield airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling curtain shield airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **Do not apply water, etc. to a curtain shield airbag assembly with the deployed airbag.**



1. AIRBAG DEPLOYMENT WHEN SCRAPPING VEHICLE

HINT:

Have a battery ready as the power source to deploy the airbag.

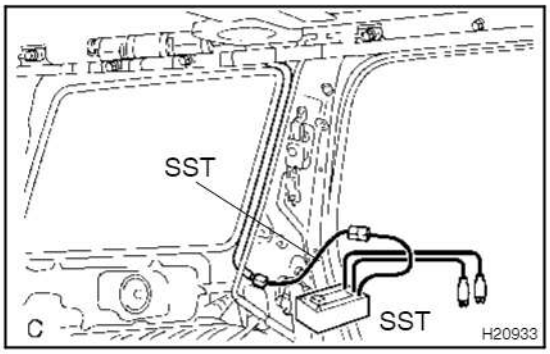
(a) Check the function of the SST (See step 1–(a) on page RS–20).
SST 09082–00700

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(b) Disconnect the curtain shield airbag connector.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.



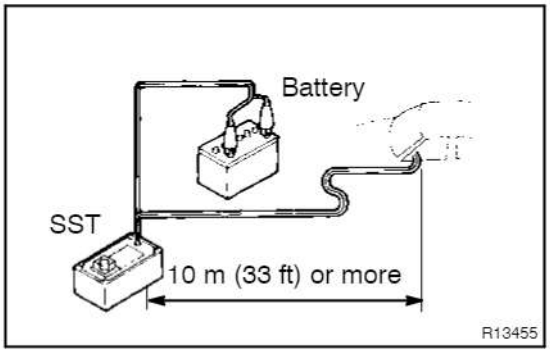
(c) Install the SST.

(1) Connect the connectors of the SST to the airbag connector.

SST 09082–00700, 09082–00760

NOTICE:

To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock.



(2) Move the SST at least 10 m (33 ft) away from the front of the vehicle.

(3) Close all the doors and windows of the vehicle.

NOTICE:

Take care not to damage the SST wire harness.

(4) Connect the SST red clip to the battery positive (+) terminal and the black clip to the battery negative (–) terminal.

(d) Deploy the airbag.

(1) Check that no one is inside the vehicle or within 10 m (33 ft) area around the vehicle.

(2) Press the SST activation switch and deploy the airbag.

CAUTION:

- **The curtain shield airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling the curtain shield airbag assembly with the deployed airbag.**
- **Do not apply water, etc. to the curtain shield airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**
- **When scrapping a vehicle, deploy the airbag and scrap the vehicle with the curtain shield airbag assembly still installed.**

HINT:

The airbag deploys as the LED of the SST activation switch comes on.

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2. DEPLOYMENT WHEN DISPOSING OF CURTAIN SHIELD AIRBAG ASSEMBLY

NOTICE:

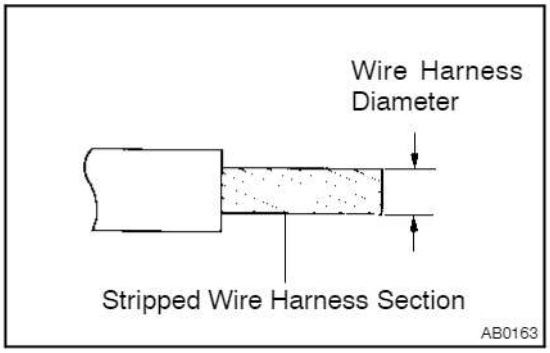
- **When disposing of the curtain shield airbag assembly only, never use the customer's vehicle to deploy the airbag.**
- **Be sure to follow the procedure given below when deploying the airbag.**

HINT:

Have a battery ready as the power source to deploy the airbag.

(a) Remove the curtain shield airbag assembly (See page RS–70).

(b) Cut off the deployment section in airbag from inflator.



(c) Using a service–purpose wire harness, tie down the curtain shield airbag assembly to the tire.

Wire harness: Stripped wire harness section 1.25 mm^2 or more (0.0019 in^2. or more)

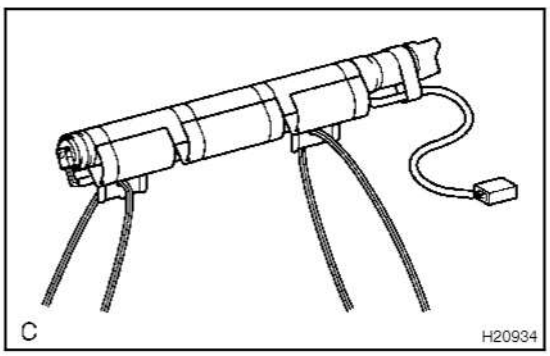
CAUTION:

If a wire harness which is too thin or some other thing is used to tie down the curtain shield airbag assembly, it may be snapped by the shock when the airbag is deployed. This is highly dangerous. Always use a wire harness for vehicle use which is at least 1.25 mm^2 (0.0019 in^2.).

HINT:

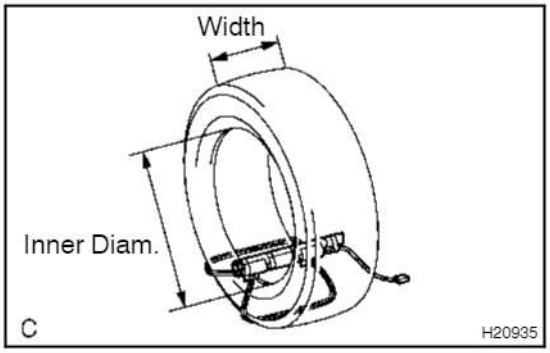
To calculate the square of the stripped wire harness section–

Square = 3.14 x (Diameter)^2 divided by 4



(1) Passing the wire harness through the installation holes as shown in the illustration.

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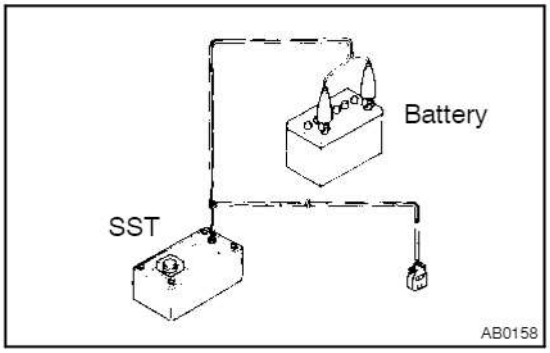


(2) Position the curtain shield airbag assembly inside the tire with the airbag deployment direction facing inside.

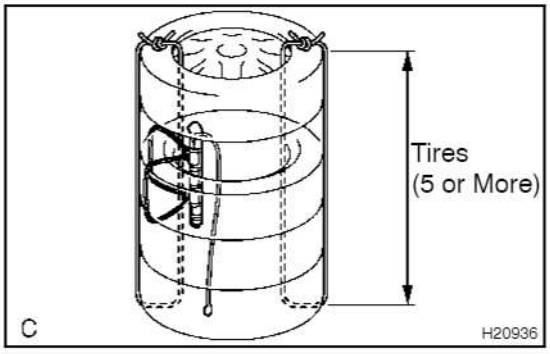
Tire size: Must exceed the following dimensions–
Width: 185 mm (7.28 in.)
Inner diameter: 360 mm (14.17 in.)

CAUTION:
Make sure that the wire harness is tight. It is very dangerous when a loose wire harness results in the curtain shield airbag assembly coming free due to the shock from the airbag deploying.

NOTICE:
The tire will be marked by the airbag deployment, so when disposing of the airbag use a redundant tire.



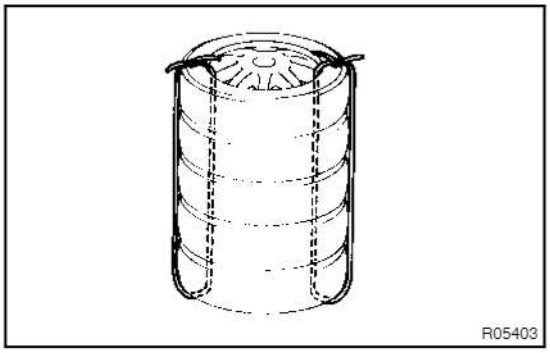
(d) Check the function of the SST (See step 1–(a) on page RS–20).
SST 09082–00700



(e) Place the tires.

CAUTION:
Place the tire so that the deployment direction of the curtain shield airbag will be downward.

(1) Place at least 2 tires under the tire to which the curtain shield airbag assembly is tied.
(2) Place at least 2 tires over the tire to which the curtain shield airbag assembly is tied. The top tire should have the wheel installed.

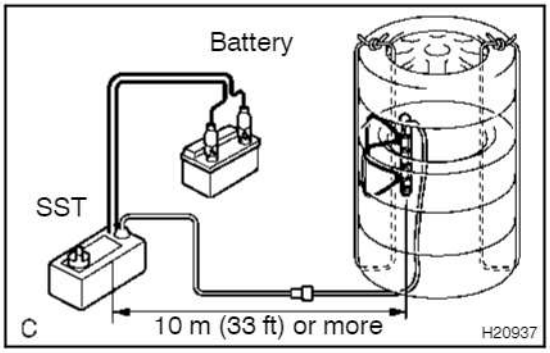


(3) Tie the tires together with 2 wire harnesses.

CAUTION:
Make sure that the wire harnesses are tight. It is very dangerous when loose wire harness results in the tires coming free due to the shock from the airbag deploying.

HINT:
Place the SST connector and wire harness inside tires. Secure at least 1 m (3 ft) of slack for the wire harness.

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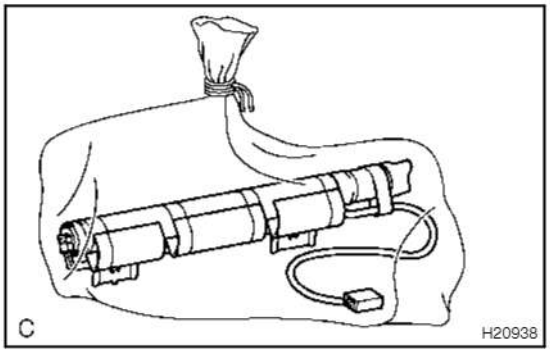


(f) Install the SST.
Connect the connectors of the SST to the curtain shield airbag assembly connector.
SST 09082–00700, 09082–00760

NOTICE:
To avoid damaging the SST connector and wire harness, do not lock the secondary lock of the twin lock. Also, secure some slack for the SST wire harness inside the tire.

(g) Deploy the airbag.
(1) Connect the SST red clip to the battery positive (+) terminal and the black clip to the battery negative (–) terminal.
(2) Check that no one is within 10 m (33 ft) area around the tire which the side airbag assembly is tied to.
(3) Press the SST activation switch and deploy the airbag.

HINT:
The airbag deploys as the LED of the SST activation switch comes on.

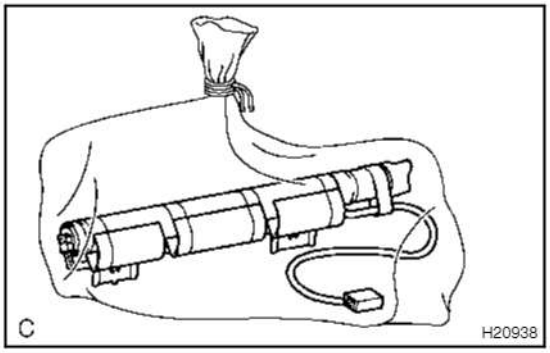


(h) Dispose of the curtain shield airbag assembly.

CAUTION:
- **The curtain shield airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a curtain shield airbag assembly with the deployed airbag.**
- **Do not apply water etc. to a curtain shield airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**

(1) Remove the curtain shield airbag assembly from the tire.
(2) Place the curtain shield airbag assembly in a plastic bag, tie the end tightly and dispose of it as the other general parts disposal.

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3. DEPLOYMENT WHEN DISPOSING OF CURTAIN SHIELD AIRBAG ASSEMBLY WITH AIRBAG DEPLOYED IN COLLISION

Dispose of the curtain shield airbag assembly.

CAUTION:

- **The curtain shield airbag assembly is very hot when the airbag is deployed, so leave it alone for at least 30 minutes after deployment.**
- **Use gloves and safety glasses when handling a curtain shield airbag assembly with the deployed airbag.**
- **Do not apply water etc. to a curtain shield airbag assembly with the deployed airbag.**
- **Always wash your hands with water after completing the operation.**

(1) Remove the curtain shield airbag assembly (See page RS–70).

(2) Place the curtain shield airbag assembly in a plastic bag, tie the end tightly and dispose of it as the other general parts disposal.

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RSON6–07

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the curtain shield airbag assembly or curtain shield airbag cover.

Case	Replacing part
If the curtain shield airbag has been deployed.	Curtain shield airbag assembly
If the curtain shield airbag assembly has been found to be faulty in trouble-shooting.	Curtain shield airbag assembly
If the curtain shield airbag assembly has been found to be faulty during checking items (See page RS–71).	Curtain shield airbag assembly
If the front pillar garnish has been found to be faulty during checking items (See page RS–71).	Front pillar garnish
If the roof headlining has been found to be faulty during checking items (See page RS–71).	Roof headlining
If the curtain shield airbag assembly has been dropped.	Curtain shield airbag assembly

CAUTION:

For removal and installation of the curtain shield airbag assembly, see page RS–70 and RS–79. Be sure to follow the correct procedure.

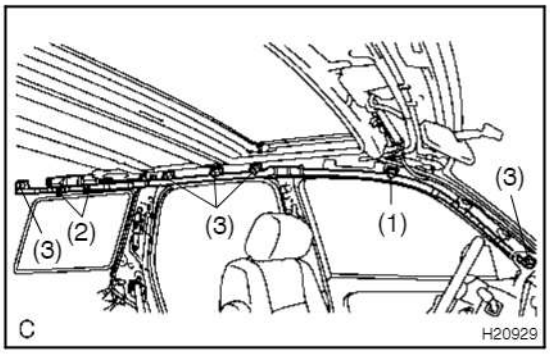
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RS0TH-04

INSTALLATION

NOTICE:

Never use airbag parts from another vehicle. When replacing parts, replace them with new parts.



1. INSTALL CURTAIN SHIELD AIRBAG ASSEMBLY

(a) In the order shown in the illustration, install the curtain shield airbag with the 8 bolts.

Torque: 9.8 N·m (100 kgf·cm, 86 in.·lbf)

CAUTION:

Pay due attention not to twist the deployment section of the curtain shield airbag assembly.

NOTICE:

- **Make sure that the curtain shield airbag assembly is installed to the specified torque.**
- **If the curtain shield airbag assembly has been dropped, or there are cracks, dents or other defects in the case or connector, replace the curtain shield airbag assembly with a new one.**
- **When installing the curtain shield airbag assembly, take care it is not pinched between other parts.**

(b) Connect the connector of the curtain shield airbag assembly.

2. INSTALL ROOF HEADLINING (See page BO–97)

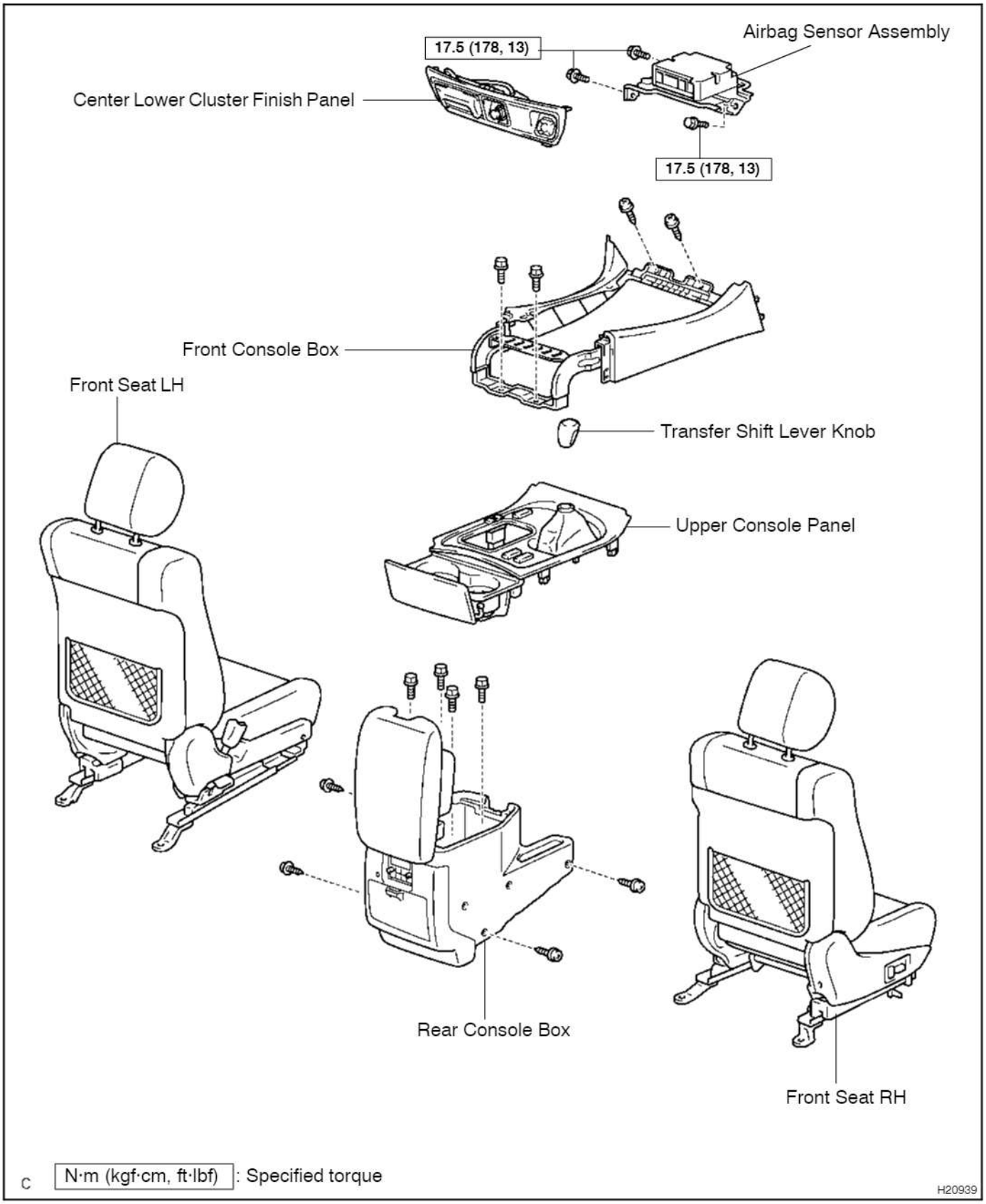
3. INSPECT SRS WARNING LIGHT (See page DI–432)

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AIRBAG SENSOR ASSEMBLY

COMPONENTS

RS0D8-03



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RS0DB-03

REMOVAL

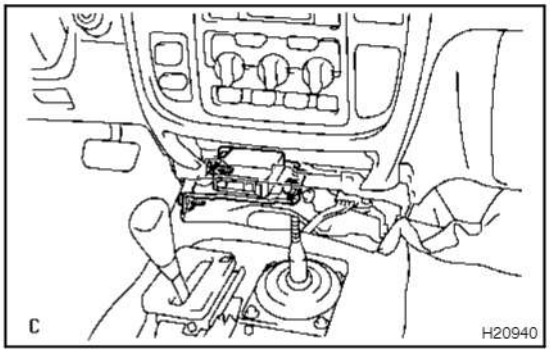
NOTICE:

Do not open the cover or the case of the ECU and various electrical devices unless absolutely necessary.
(If the IC terminals are touched, the IC may be destroyed by static electricity.)

HINT:

For step 2 to 6, refer to page BO–79.

1. **REMOVE FRONT SEAT (See page BO–99)**
2. **REMOVE TRANSFER SHIFT LEVER KNOB**
3. **REMOVE UPPER CONSOLE PANEL**
4. **REMOVE REAR CONSOLE BOX WITH CONSOLE REAR END PANEL**
5. **REMOVE FRONT CONSOLE BOX**
6. **REMOVE CENTER LOWER CLUSTER FINISH PANEL ASSEMBLY**



7. **REMOVE AIRBAG SENSOR ASSEMBLY**

(a) Disconnect the airbag sensor connectors.

NOTICE:

Disconnect the connectors with the airbag sensor assembly installed.

(b) Remove the 3 bolts and the airbag sensor assembly.

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FIS0DA–03

INSPECTION

1. **Vehicle not involved in collision:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

2. **Vehicle involved in collision and airbag is not deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

3. **Vehicle involved in collision and airbag is deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Replace the airbag sensor assembly (See page RS–80).

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RS00B–01

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the airbag sensor assembly.

- If the SRS has been deployed in a collision.
- If the airbag sensor assembly has been found to be faulty in troubleshooting.
- If the airbag sensor assembly has been dropped.

CAUTION:

For removal and installation of the airbag sensor assembly, see page RS–81 and RS–84. Be sure to follow the correct procedure.

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RS0DC-03

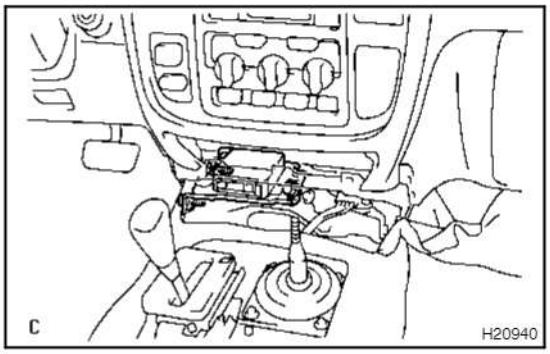
INSTALLATION

NOTICE:

- **Never use SRS parts from another vehicle. When replacing parts, replace them with new parts.**
- **Never reuse the airbag sensor assembly involved in a collision when the airbag has deployed.**
- **Never repair a sensor in order to reuse it.**

HINT:

For step 2 to 6, refer to page BO–86.



1. INSTALL AIRBAG SENSOR ASSEMBLY

(a) Install the airbag sensor assembly with the 3 bolts.
Torque: 17.5 N·m (178 kgf·cm, 13 ft·lbf)

(b) Connect the airbag sensor connectors.

NOTICE:

- **Connection of the connector is done after the sensor assembly has been installed.**
- **Make sure the sensor assembly is installed with the specified torque.**
- **If the sensor assembly has been dropped, or there are cracks, dents or other defects in the case, bracket or connector, replace the sensor assembly with a new one.**
- **When installing the sensor assembly, take care that the SRS wiring does not interfere with other parts and is not pinched between other parts.**
- **After installing, shake the sensor assembly to check that there is no looseness.**

2. INSTALL CENTER LOWER INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY

3. INSTALL FRONT CONSOLE BOX

4. INSTALL REAR CONSOLE BOX WITH CONSOLE REAR END PANEL

5. INSTALL UPPER CONSOLE PANEL

6. INSTALL TRANSFER SHIFT LEVER KNOB

7. INSTALL FRONT SEAT (See page BO–99)

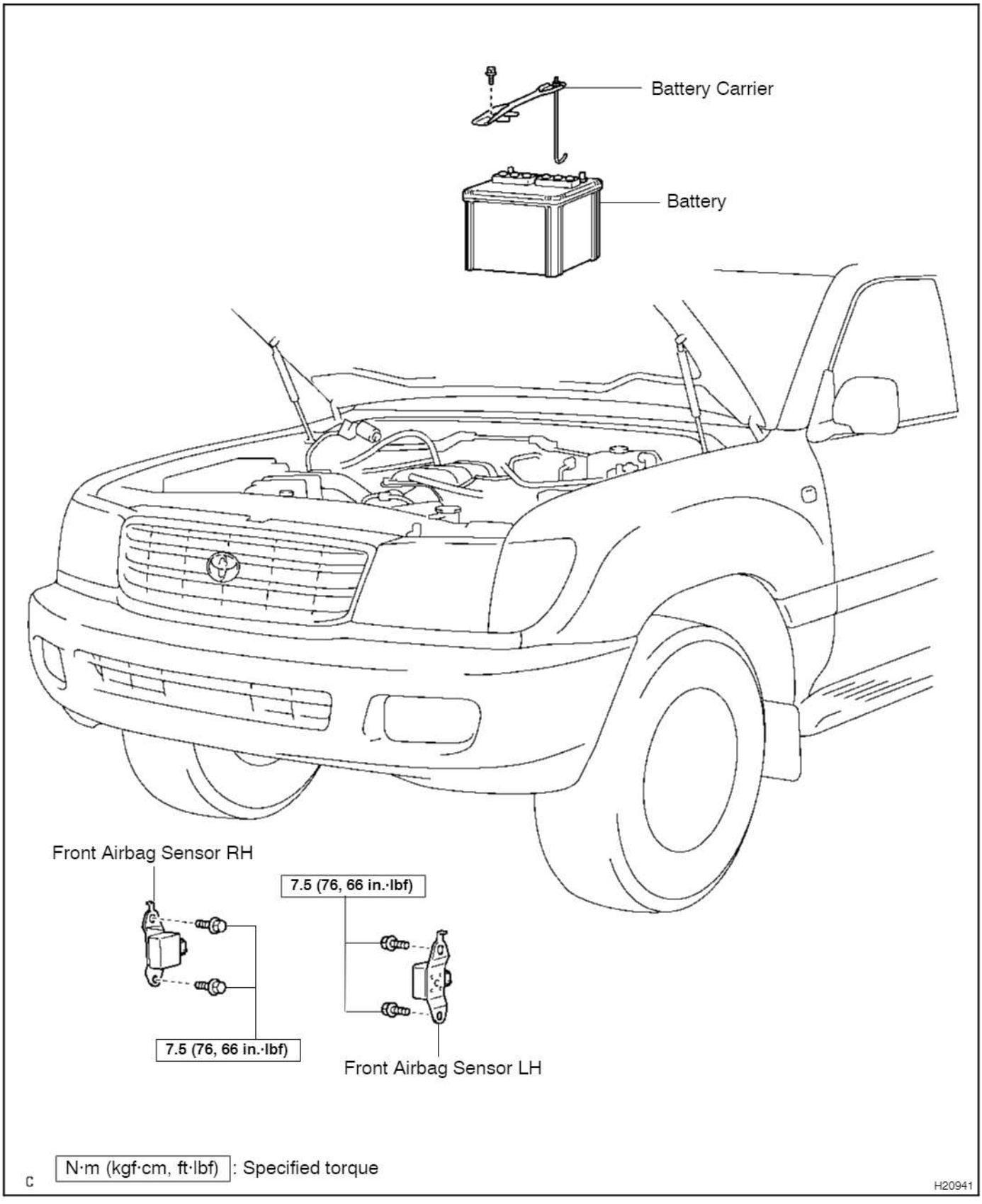
8. INSPECT SRS WARNING LIGHT (See page DI–432)

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FRONT AIRBAG SENSOR (Dual Stage Airbag Type)

RS0XE-01

COMPONENTS



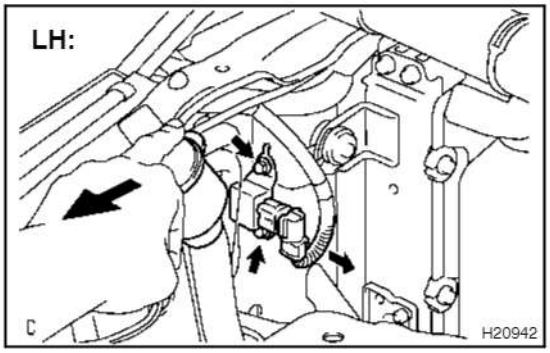
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RS0XF-01

REMOVAL

NOTICE:

- **If the wiring connector of the SRS is disconnected with the ignition switch at ON position, DTCs will be recorded.**
- **Never use SRS parts from another vehicle. When replacing parts, replace them with new parts.**
- **Never reuse the sensor involved in a collision when the SRS has deployed.**
- **Never repair a sensor in order to reuse it.**



1. REMOVE FRONT AIRBAG SENSOR LH

(a) Remove the battery carrier and battery.

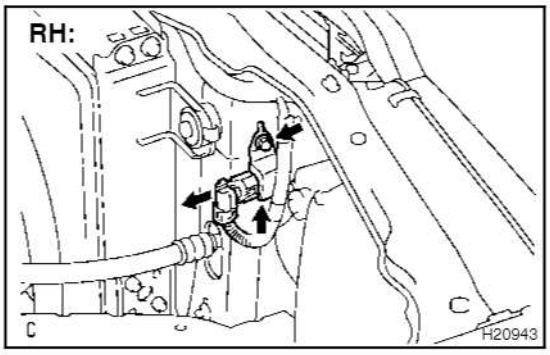
(b) Disconnect the front airbag sensor connector.

NOTICE:

Disconnect the connector with sensor assembly installed.

(c) Pull the windshield washer tank opening as shown in the illustration.

(d) Remove the 2 bolts and front airbag sensor LH.



2. REMOVE FRONT AIRBAG SENSOR RH

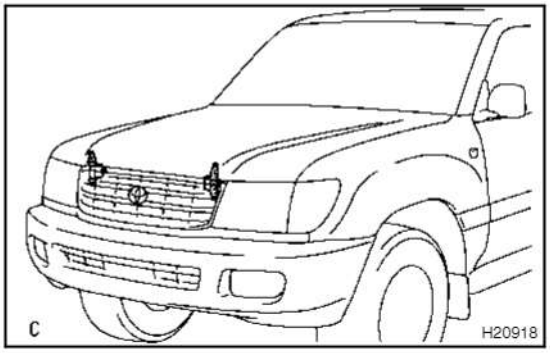
(a) Disconnect the front airbag sensor connector.

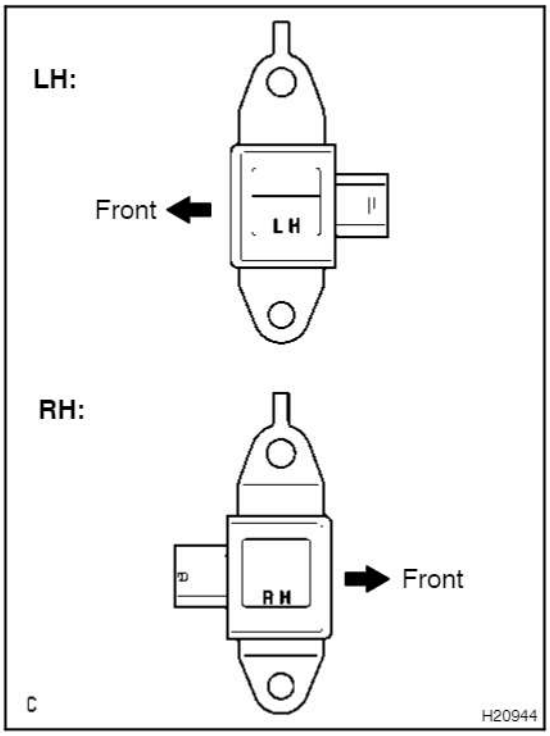
NOTICE:

Disconnect the connector with sensor assembly installed.

(b) Remove the 2 bolts and front airbag sensor RH.

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RS0XG-01

INSPECTION

1. Vehicle not involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

2. Vehicle involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).

(b) If the front fender of the vehicle or its periphery is damaged, do a visual check for damage to the front airbag sensor, which includes the following items even if the airbag was not deployed:

- Bracket deformation.
- Paint peeling off the bracket.
- Cracks, dents or chips in the case.
- Cracks, dents, chipping and scratches in the connector.
- Peeling off of the label or damage to the serial number.

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RS0XH–01

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the front airbag sensor.

- If the SRS has been deployed in a collision. (Replace both the left and right airbag sensors.)
- If the front airbag sensor has been found to be faulty in troubleshooting.
- If the front airbag sensor has been found to be faulty during checking items (See page RS–87).
- If the front airbag sensor has been dropped.

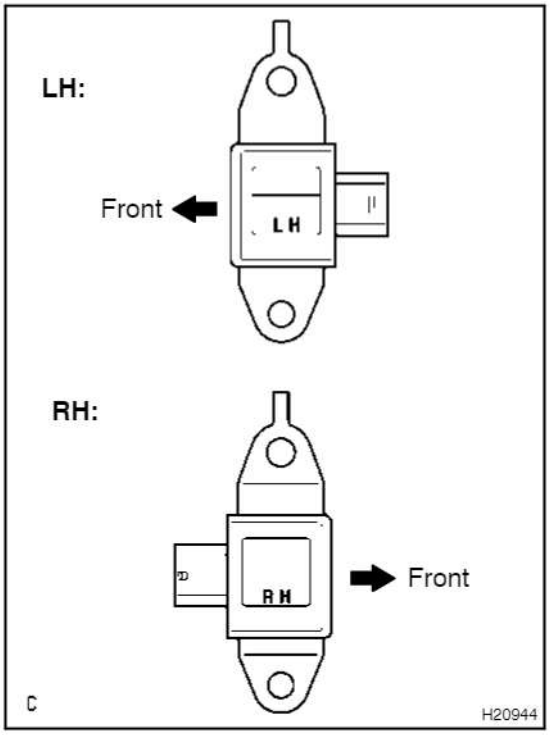
CAUTION:

For removal and installation of the front airbag sensor, see page RS–86 and RS–89.
Be sure to follow the correct procedure.

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RS0XI-01

INSTALLATION



1. INSTALL FRONT AIRBAG SENSOR

(a) Install the front airbag sensor with the arrow on the sensor facing toward the front of the vehicle.

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)

NOTICE:

- **Make sure that the sensor is installed with the specified torque.**
- **If the sensor has been dropped, or there are cracks, dents or other defects in the case, brackets or connector, replace the removed sensor with a new one.**
- **The front sensor is equipped with an electrical connection check mechanism. Be sure to lock this mechanism securely when connecting the connector. If the connector is not securely locked, a malfunction code will be detected by the diagnostic system.**

(b) Connect the front airbag sensor connector.

2. INSTALL BATTERY AND BATTERY CARRIER

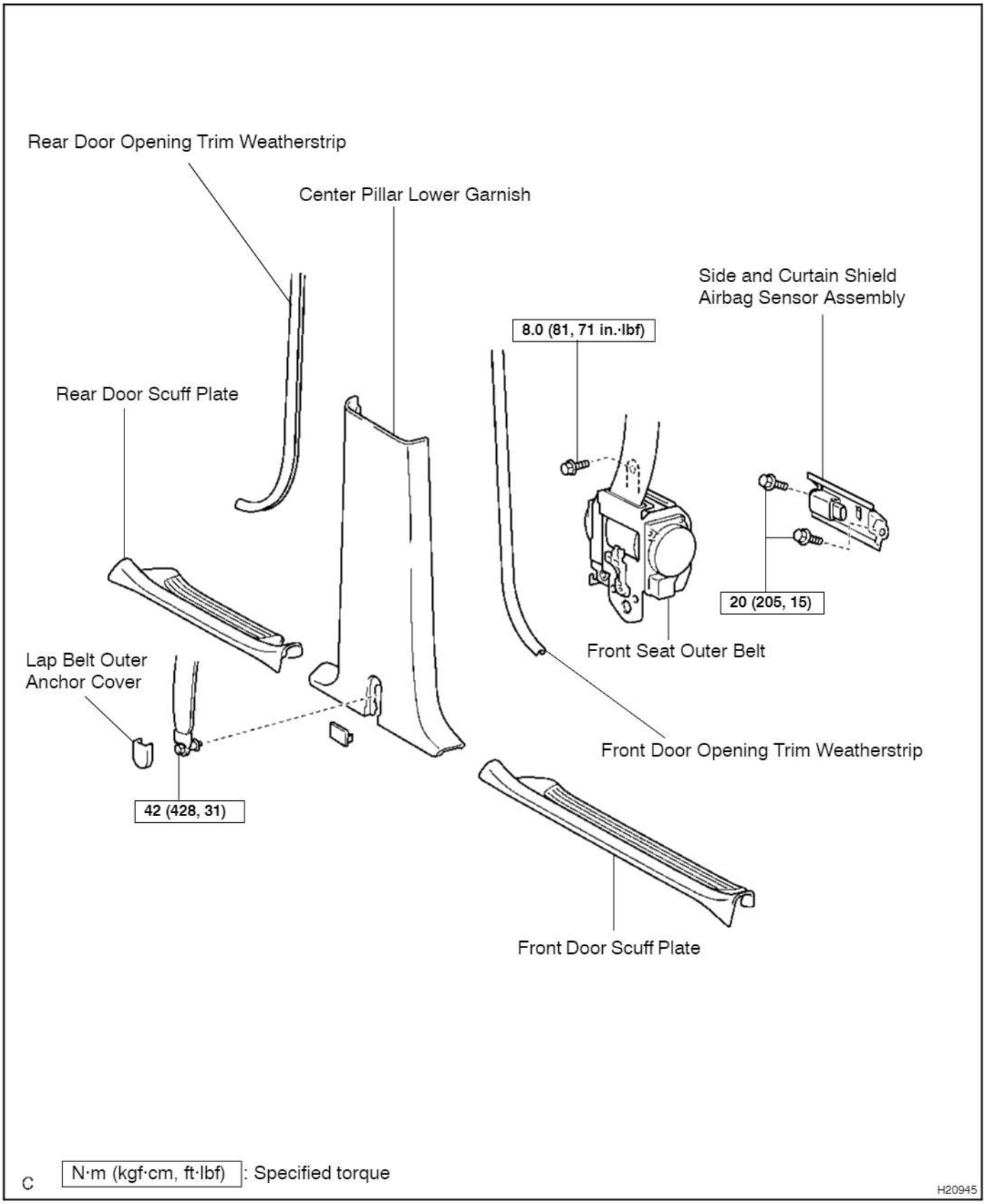
3. INSPECT SRS WARNING LIGHT (See page DI–432)

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SIDE AND CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY

RS0NI-08

COMPONENTS



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FIS0NJ-09

REMOVAL

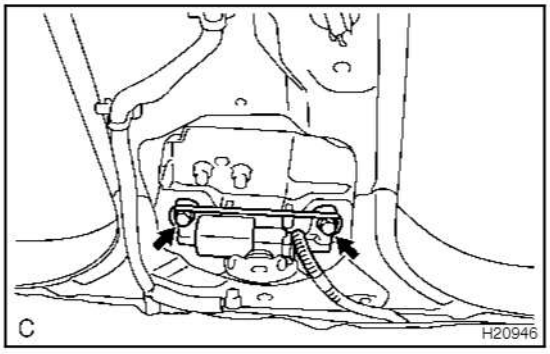
NOTICE:

- **Do not open the cover or the case of the ECU and various electrical devices unless absolutely necessary (If the IC terminals are touched, the IC may be destroyed by static electricity.).**
- **If the wiring connector of SRS is disconnected with the ignition switch at ON position, DTCs will be recorded.**

HINT:

For step 1 to 7, refer to page BO–92.

1. **REMOVE REAR DOOR SCUFF PLATE**
2. **REMOVE FRONT DOOR SCUFF PLATE**
3. **REMOVE LAP BELT OUTER ANCHOR COVER**
4. **REMOVE FRONT SEAT OUTER BELT FLOOR ANCHOR**
5. **REMOVE FRONT DOOR OPENING TRIM WEATHERSTRIP**
6. **REMOVE REAR DOOR OPENING TRIM WEATHERSTRIP**
7. **REMOVE CENTER PILLAR LOWER GARNISH**
8. **REMOVE FRONT SEAT OUTER BELT (See page BO–131)**



9. **REMOVE SIDE AND CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY**

(a) Remove the 2 bolts and side and curtain shield airbag sensor assembly.

NOTICE:

Disconnect the connector with the sensor assembly installed.

(b) Disconnect the connector.

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FIS0NK–07

INSPECTION

1. **Vehicle not involved in collision:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

2. **Vehicle involved in collision and airbag is not deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

3. **Vehicle involved in collision and airbag is deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Replace the side and curtain shield airbag sensor assembly (See page DI–432).

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RSONL–04

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the side and curtain shield airbag sensor assembly.

- If the side and curtain shield airbag assembly has been deployed in a collision.
- If the side and curtain shield airbag sensor assembly has been found to be faulty in troubleshooting.
- If the side and curtain shield airbag sensor assembly has been dropped.

CAUTION:

For removal and installation of the side and curtain shield airbag sensor assembly, see page RS–91 and RS–94. Be sure to follow the correct procedure.

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FIS0NM–09

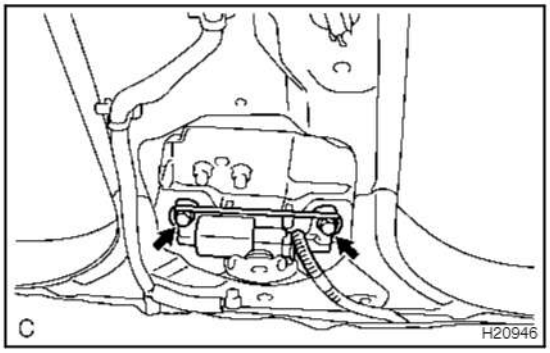
INSTALLATION

NOTICE:

- **Never use SRS parts from another vehicle. When replacing parts, replace them with new ones.**
- **Never reuse the side and curtain shield airbag sensor assembly involved in a collision when the airbag has deployed.**
- **Never repair a sensor in order to reuse it.**

HINT:

For step 3 to 9, refer to page BO–97.



1. **INSTALL SIDE AND CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY**

(a) Connect the connector of the side and curtain shield airbag sensor assembly.

(b) Install the side and curtain shield airbag sensor assembly with the 2 bolts.

Torque: 20 N·m (205 kgf·cm, 15 ft·lbf)

NOTICE:

- **Connection of the connector is done after the sensor assembly has been installed.**
- **Make sure that the sensor assembly is installed with the specified torque.**
- **If the sensor assembly has been dropped, or there are cracks, dents or other defects in the case, bracket or connector, replace the sensor assembly with a new one.**
- **When installing the sensor assembly, take care that the SRS wiring does not interfere with other parts and is not pinched between other parts.**
- **After installation, shake the sensor assembly to check that there is no looseness.**

2. **INSTALL FRONT SEAT OUTER BELT (See page BO–131)**

Torque:

Upper bolt: 8.0 N·m (81 kgf·cm, 71 in.·lbf)

3. **INSTALL CENTER PILLAR LOWER GARNISH**
4. **INSTALL REAR DOOR OPENING TRIM WEATHERSTRIP**
5. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP**

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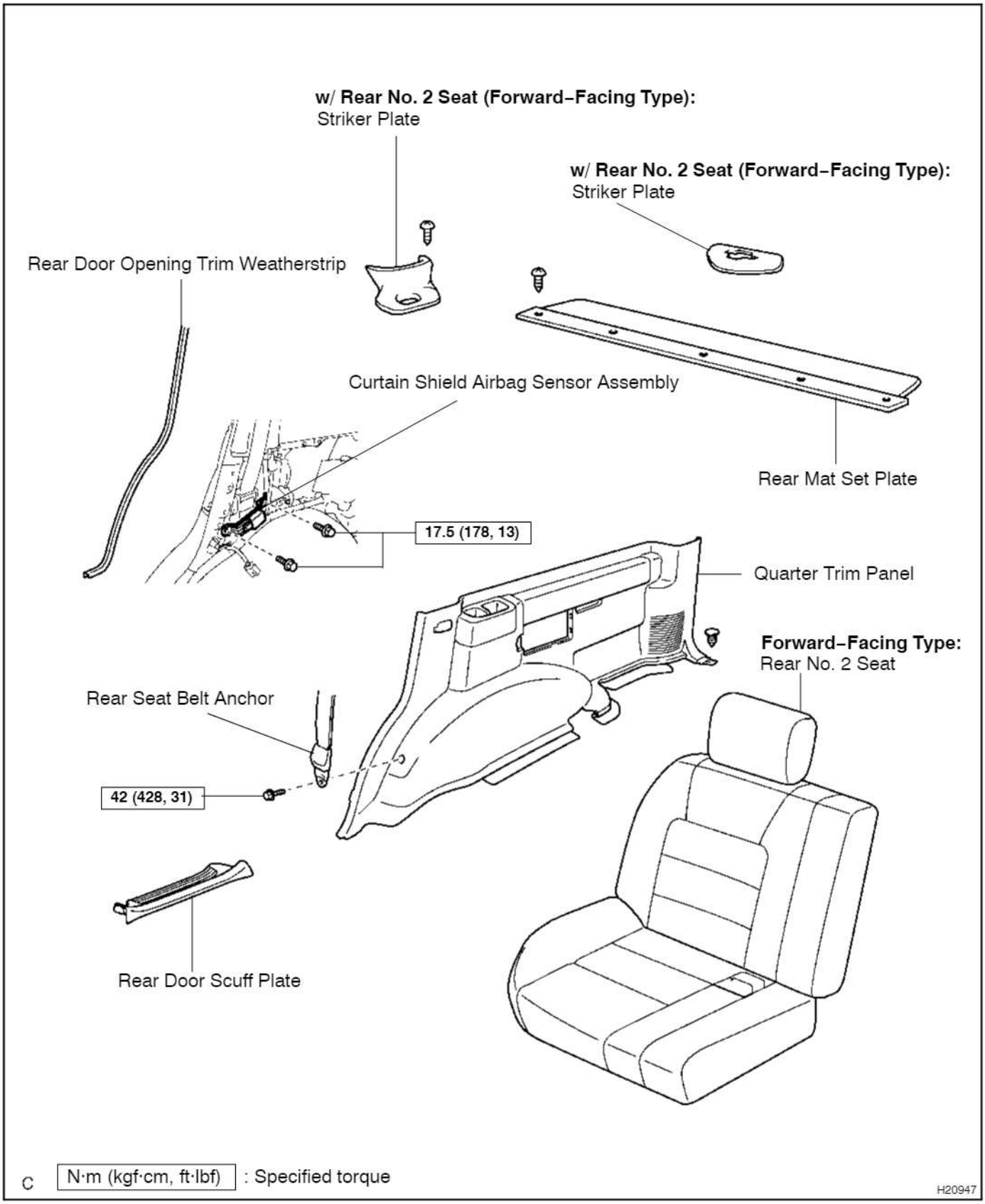
6. **INSTALL FRONT SEAT OUTER BELT FLOOR ANCHOR**
   Torque: 42 N·m (428 kgf·cm, 31 ft·lbf)
7. **INSTALL LAP BELT OUTER ANCHOR COVER**
8. **INSTALL FRONT DOOR SCUFF PLATE**
9. **INSTALL REAR DOOR SCUFF PLATE**
10. **INSPECT SRS WARNING LIGHT (See page DI–432)**

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CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY

COMPONENTS

RS0SH–05



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FIS0SI-05

REMOVAL

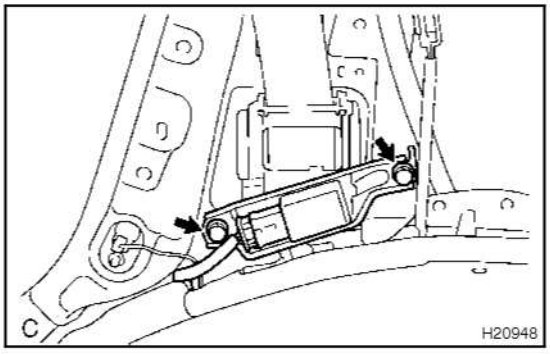
NOTICE:

- **Do not open the cover or the case of the ECU and various electrical devices unless absolutely necessary. (If the IC terminals are touched, the IC may be destroyed by static electricity.)**
- **If the wiring connector of the SRS is disconnected with the ignition switch at ON position, DTCs will be recorded.**

HINT:

For the step 1 to 7, refer to page BO–92.

1. **REMOVE REAR DOOR SCUFF PLATE**
2. **REMOVE REAR DOOR OPENING TRIM**
3. **REMOVE REAR SEAT BELT ANCHOR**
4. **REMOVE REAR MAT SET PLATE**
5. **Forward–Facing Type:**
   REMOVE REAR NO. 2 SEAT
6. **w/ Rear No. 2 Seat (Forward–Facing Type):**
   REMOVE STRIKER PLATES
7. **REMOVE QUARTER TRIM PANEL**



8. **REMOVE CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY**

(a) Disconnect the connector.

NOTICE:

Disconnect the connector with the sensor assembly installed.

(b) Remove the 2 bolts and curtain shield airbag sensor assembly.

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RS0SJ-04

INSPECTION

1. **Vehicle not involved in collision:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

2. **Vehicle involved in collision and airbag is not deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

3. **Vehicle involved in collision and airbag is deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Replace the curtain shield airbag sensor assembly (See page RS–96).

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RS0SK-03

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the curtain shield airbag sensor assembly.

- If the curtain shield airbag sensor assembly has been deployed in a collision.
- If the curtain shield airbag sensor assembly has been found to be faulty in troubleshooting.
- If the curtain shield airbag sensor assembly has been dropped.

CAUTION:

For removal and installation of the curtain shield airbag sensor assembly, see page RS–97 and RS–100. Be sure to follow the correct procedure.

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FIS0SL–05

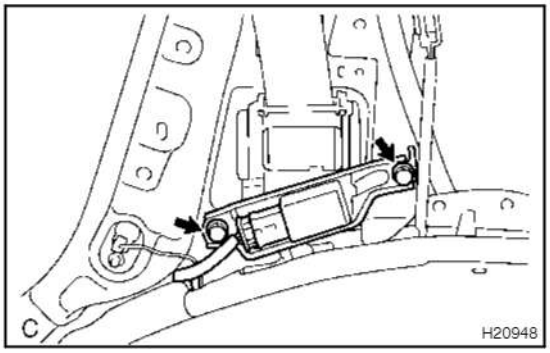
INSTALLATION

NOTICE:

- **Never use SRS parts from another vehicle. When replacing parts, replace them with new ones.**
- **Never reuse the curtain shield airbag sensor assembly involved in a collision when the airbag has deployed.**
- **Never repair a sensor in order to reuse it.**

HINT:

For step 2 to 9, refer to page BO–97.



1. **INSTALL CURTAIN SHIELD AIRBAG SENSOR ASSEMBLY**

(a) Install the curtain shield airbag sensor assembly with the 2 bolts.

Torque: 17.5 N·m (178 kgf·cm, 13 ft·lbf)

(b) Connect the connector.

NOTICE:

- **Connection of the connector is done after the sensor assembly has been installed.**
- **Make sure that the sensor assembly is installed with the specified torque.**
- **If the sensor assembly has been dropped, or there are cracks, dents or other defects in the case, bracket or connector, replace the sensor assembly with a new one.**
- **When installing the sensor assembly, take care that the SRS wiring does not interfere with other parts and is not pinched between other parts.**
- **After installation, shake the sensor assembly to check that there is no looseness.**

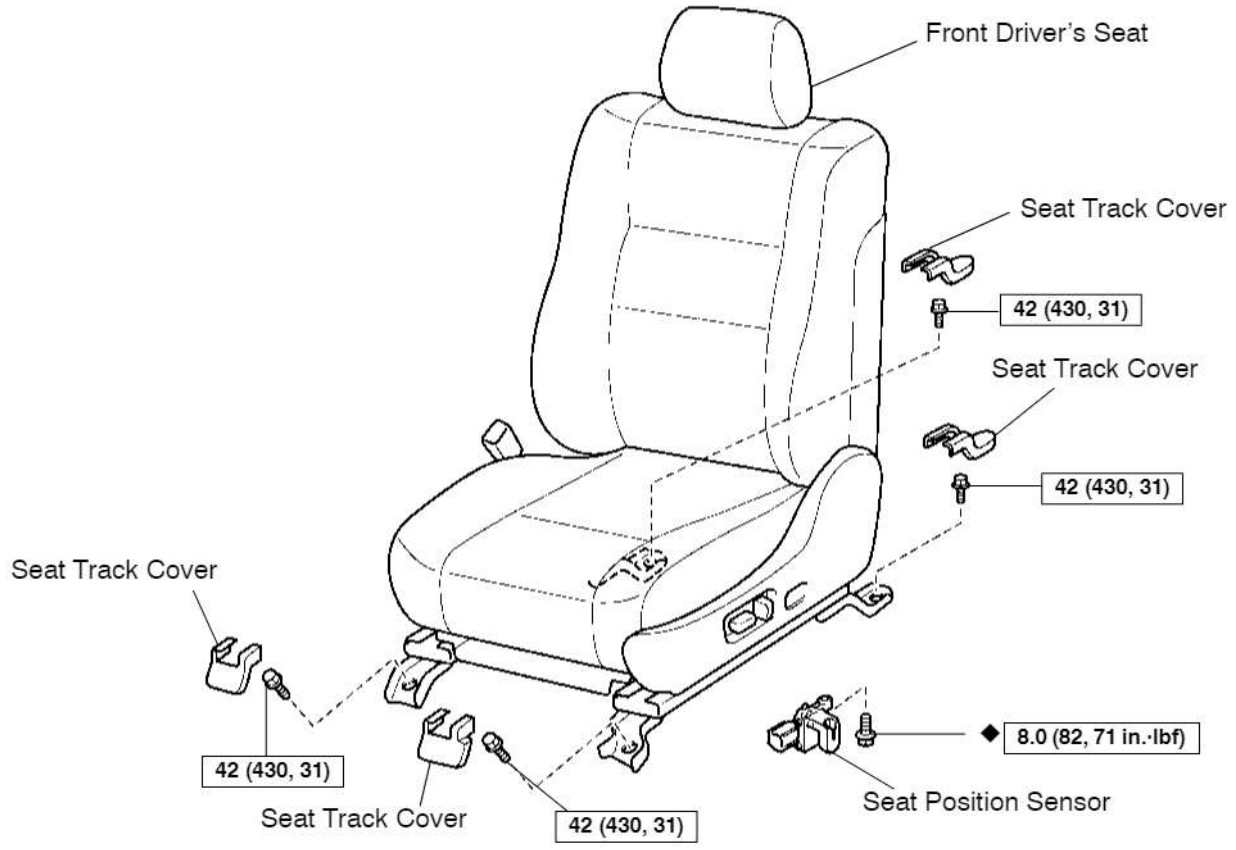
2. **INSTALL QUARTER TRIM PANEL**
3. **w/ Rear No. 2 Seat (Forward–Facing Type): INSTALL STRIKER PLATES**
4. **Forward–Facing Type: INSTALL REAR NO. 2 SEAT**
5. **INSTALL REAR MAT SET PLATE**
6. **INSTALL REAR SEAT BELT ANCHOR**
7. **INSTALL REAR DOOR OPENING TRIM**
8. **INSTALL REAR DOOR SCUFF PLATE**
9. **INSPECT SRS WARNING LIGHT (See page DI–432)**

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SEAT POSITION SENSOR ASSEMBLY

COMPONENTS

RS0UN-03



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non–reusable part

H19950

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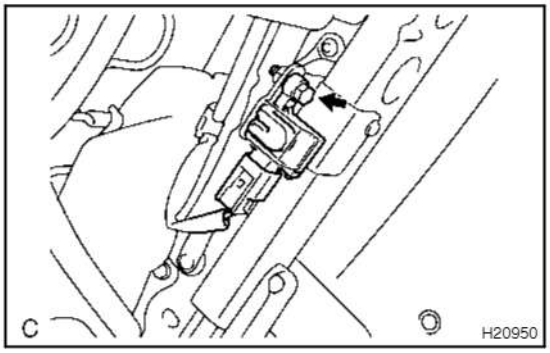
RS0W2–01

REMOVAL

NOTICE:

- **Do not open the cover or the case of the ECU and various electrical devices unless absolutely necessary. (If the IC terminals are touched, the IC may be destroyed by static electricity.)**
- **If the wiring connector of the SRS is disconnected with the ignition switch at ON position, DTCs will be recorded.**

1. REMOVE FRONT SEAT ASSEMBLY (DRIVER SIDE)
(See page BO–100, BO–115)



2. REMOVE SEAT POSITION SENSOR ASSEMBLY

(a) Remove the bolt and seat position sensor assembly.
(b) Disconnect the connector.

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RSOUP–03

INSPECTION

1. **Vehicle not involved in collision:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

2. **Vehicle involved in collision and airbag is not deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

3. **Vehicle involved in collision and airbag is deployed:**
   INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Replace the seat position sensor assembly (See page RS–101).

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RSGUG–03

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the seat position sensor assembly.

- If the seat position sensor assembly has been found to be faulty in troubleshooting.
- If the seat position sensor assembly has been dropped.

CAUTION:

For removal and installation of the seat position sensor assembly, see page RS–102 and RS–105. Be sure to follow the correct procedure.

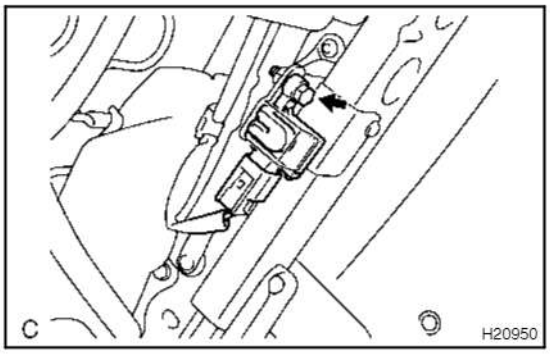
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RS0W3–01

INSTALLATION

NOTICE:

- **Never use SRS parts from another vehicle. When replacing parts, replace them with new ones.**
- **Never reuse the seat position sensor assembly involved in a collision when the airbag has deployed.**
- **Never repair a sensor in order to reuse it.**



1. INSTALL SEAT POSITION SENSOR ASSEMBLY

(a) Connect the connector.

(b) Install the seat position sensor assembly with a new bolt.

Part No.:
Bolt: 90119–06871
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

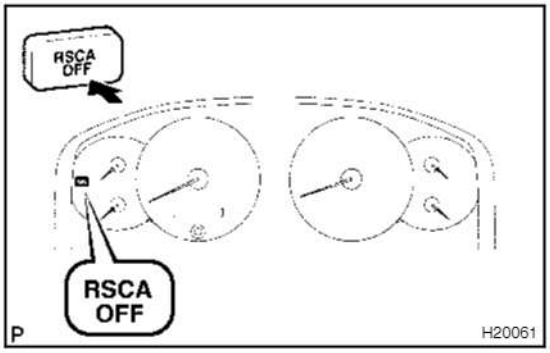
NOTICE:

- **Connection of the connector is done after the sensor assembly has been installed.**
- **Make sure that the sensor assembly is installed with the specified torque.**
- **If the sensor assembly has been dropped, or there are cracks, dents or other defects in the case, bracket or connector, replace the sensor assembly with a new one.**
- **When installing the sensor assembly, take care that the SRS wiring does not interfere with other parts and is not pinched between other parts.**
- **After installation, shake the sensor assembly to check that there is no looseness.**

2. INSTALL FRONT SEAT ASSEMBLY (DRIVER SIDE) (See page BO–112, BO–130)

3. INSPECT SRS WARNING LIGHT (See page DI–432)

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RSCA OFF SWITCH

RS0W4-01

INSPECTION

1. INSPECT RSCA OFF INDICATOR LIGHT

(a) Turn the ignition switch to ON.

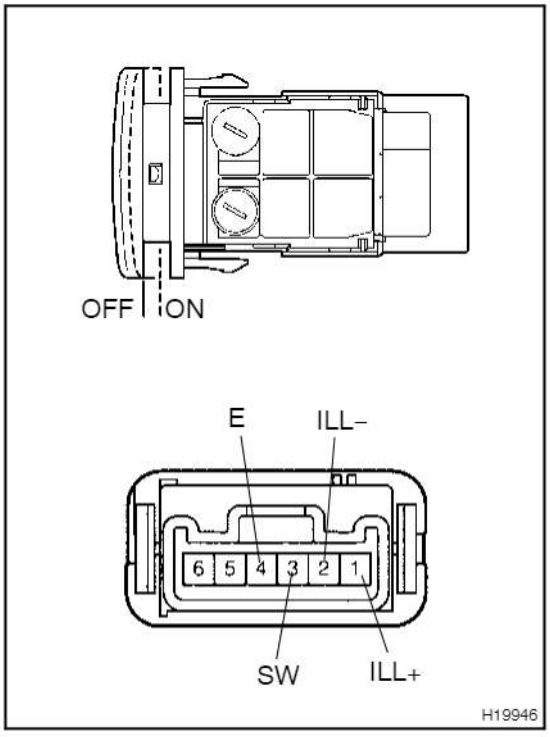
(b) Check that the RSCA OFF indicator light goes off after it comes on for 3 seconds.

(c) Check that the RSCA OFF indicator light comes on after pressing the RSCA OFF switch approx. 2 seconds.

2. INSPECT RSCA OFF SWITCH CONTINUITY

(a) Remove the LWR instrument panel finish panel (See page BO–79).

(b) Remove the RSCA OFF switch from the LWR instrument panel finish panel.



(c) Inspect the continuity between the each terminals.

Switch position	Tester connection	Specified condition
OFF	SW (3) ↔ E (4)	No continuity
Hold ON	SW (3) ↔ E (4)	Continuity
Illumination	ILL+ (1) ↔ ILL– (2)	Continuity

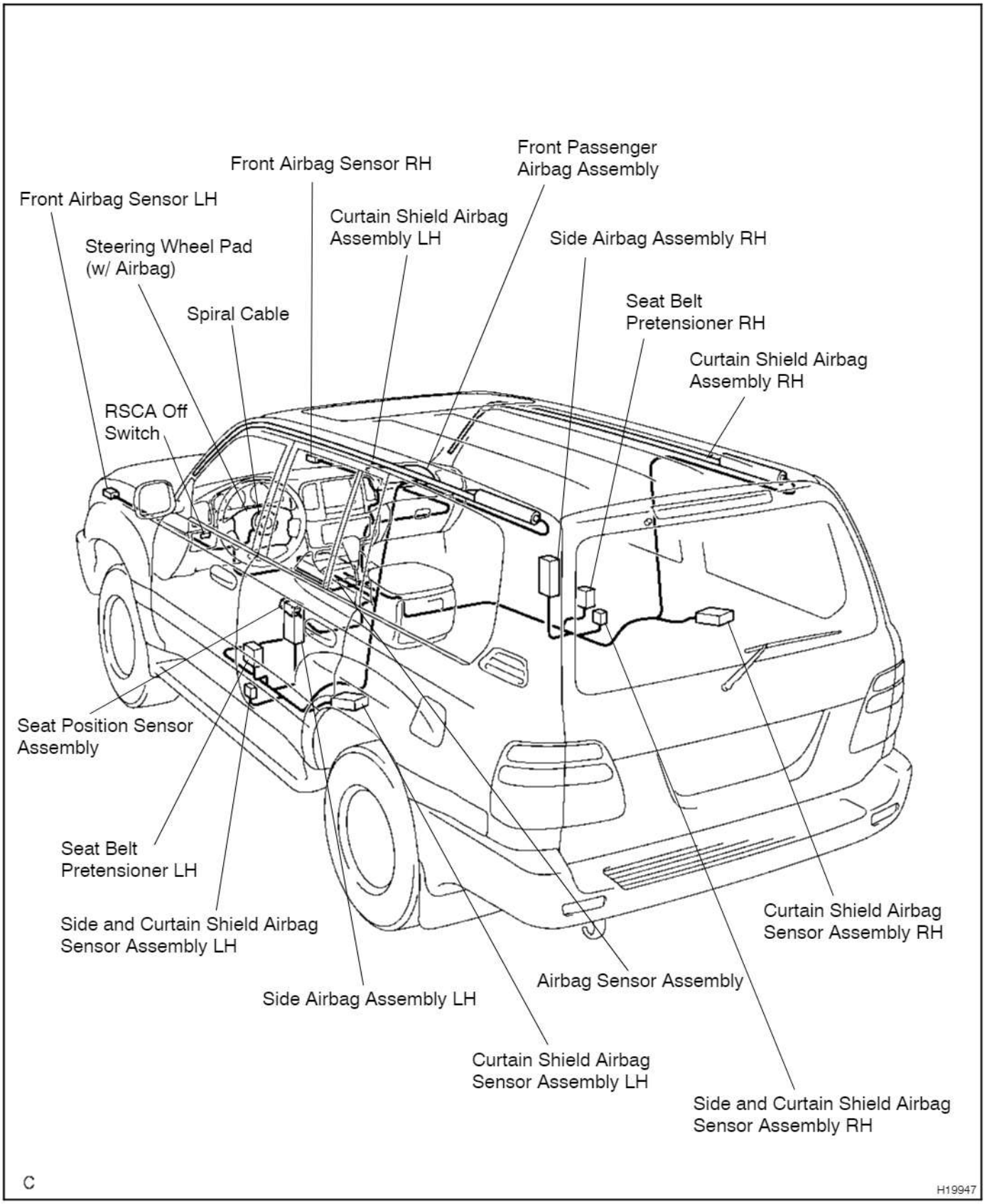
If continuity is not as specified, replace the RSCA OFF switch or bulb.

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WIRE HARNESS AND CONNECTOR

LOCATION

RS0DI–03



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RS0DJ–03

INSPECTION

HINT:

The SRS wire harness is integrated with the cowl wire harness assembly. The wires for the SRS wire harness are encased in a yellow corrugated tube and all the connectors in the system are a standard yellow color.

1. Vehicle not involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

Do a diagnostic system check (See page DI–432).

2. Vehicle involved in collision:
INSPECT SUPPLEMENTAL RESTRAINT SYSTEM

(a) Do a diagnostic system check (See page DI–432).
(b) Check for breaks in all wires of the SRS wire harness, and for exposed conductors.
(c) Check to see if the SRS wire harness connectors are cracked or chipped.

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RS0DK-03

REPLACEMENT

REPLACEMENT REQUIREMENTS

In the following cases, replace the wire harness or connector.

- If any part of the SRS wire harness or any connector has been found to be faulty in troubleshooting.
- If any part of the SRS wire harness or any connector has been found to be faulty during checking items 2–(b) or (c) (See page RS–108).

NOTICE:

If the wire harness used in the SRS is damaged, replace the whole wire harness assembly.

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BE01J–16

TROUBLESHOOTING

PROBLEM SYMPTOMS TABLE

HEADLIGHT AND TAILLIGHT SYSTEM:

This system uses the body control system, so check the body control system before you proceed with troubleshooting (See page DI–979).

Symptom	Suspect Area	See page
Headlight does not come on.	1. Engine Room J/B Relay Circuit 2. Body ECU 3. Headlight Dimmer Switch 4. Light Control Switch 5. Wire Harness 6. Bulb	BE–8 DI–979 BE–23 BE–23 – –

FOG LIGHT SYSTEM:

Symptom	Suspect Area	See page
Fog light does not light up with light control SW HEAD (Headlight is normal.)	1. FOG Fuse 2. Engine Room J/B Relay Circuit 3. Fog Light Switch 4. Wire Harness	– BE–8 BE–25 –
Fog light does not light up with light control SW HEAD (Headlight does not light).	1. *1 Other Parts 2. Wire Harness	– –
Only one light does not light up.	1. Bulb 2. Wire Harness	– –

*1: Inspect Headlight System

TURN SIGNAL AND HAZARD WARNING SYSTEM:

Symptom	Suspect Area	See page
"Hazard" and "Turn" do not light up.	1. ECU–IG2 Fuse 2. TURN HAZ Fuse 3. Ignitioin Switch 4. Turn Signal Flasher Relay 5. Wire Harness	– – *BE–20 BE–28 –
Hazard warning light does not light up. (Turn is normal)	1. Hazard Warning Switch 2. Wire Harness	BE–28 –

WIPER AND WASHER SYSTEM:

Symptom	Suspect Area	See page
Rear wiper does not operate in INT or ON position.	1. Rear Wiper Switch 2. Rear Wiper Relay 3. Wire Harness	BE–30 BE–30 –

COMBINATION METER (Meter Gauges):

Symptom	Suspect Area	See page
Speedometer does not operate.	1. Speed Sensor 2. Combination Meter 3. Wire Harness	BE–41 BE–33 –
Fuel gauge does not operate or is in abnormal operation.	1. Fuel Receiver Gauge 2. Fuel Sender Gauge 3. Combination Meter 4. Wire Harness	BE–41 BE–41 BE–33 –

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DEFOGGER SYSTEM:

Symptom	Suspect Area	See page
All defogger systems do not operate.	1. DEFOG Fuse 2. DEFOG Relay 3. Defogger Switch (Integration Control Panel Assembly) 4. Wire Harness	– – BE–48 –
Mirror defogger does not operate.	1. MIR HTR Fuse 2. Engine Room J/B Relay Circuit 3. Mirror Defogger 4. Wire Harness	– BE–8 BE–48 –

POWER WINDOW CONTROL SYSTEM:

This system uses the multiplex communication system, so check diagnosis system of the multiplex communication system before you proceed with troubleshooting.

Symptom	Suspect Area	See page
All the power windows do not operate. (Power Door Lock System is normal.)	1. P/W (FL, FR, RL, RR) Fuse 2. Power Window Master Switch 3. Wire Harness	– BE–51 –
Only the driver's window does not operate.	1. Power Window Master Switch 2. Power Window Motor 3. Wire Harness	BE–51 BE–51 –
"Window lock function" does not operate.	1. Power Window Master Switch	BE–51

POWER DOOR LOCK CONTROL SYSTEM:

This system uses the body control system, so check diagnosis system of the body control system before you proceed with troubleshooting.

Symptom	Suspect Area	See page
All the doors cannot be locked or unlocked. (Power Window Control System is normal.)	1. DOOR Fuse 2. Door Lock Control Switch 3. Wire Harness 4. Body ECU	– BE–53 – DI–979
Only one side door lock control does not operate.	1. Door Lock Motor 2. Wire Harness	BE–53 –
Door key related function does not operate.	1. Door Key Lock and Unlock Switch 2. Wire Harness 3. Body ECU	BE–53 – DI–979
Key confinement prevention function does not operate.	1. Key Unlock Warning Switch 2. Door Courtesy Switch 3. Wire Harness	*BE–20 *BE–49 –

DOUBLE LOCKING SYSTEM

Symptom	Suspect Area	See page
Double locking system does not operate.	1. Double Lock switch circuit 2. Double Lock motor circuit 3. Double Lock Motor 4. Body ECU	DI–1013 DI–1016 BE–56 DI–979

AUDIO SYSTEM:

Symptom	Suspect Area	See page
Audio system abnormal operation.	TROUBLESHOOTINGS	BE–70

ENGINE IMMOBILIZER SYSTEM:

Symptom	Suspect Area	See page
Engine immobilizer system does not operate.	See DIAGNOSIS SYSTEM	DI–880

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HORN SYSTEM:

Symptom	Suspect Area	See page
Horn system does not operate.	1. HORN Fuse	–
	2. Engine Room J/B Relay Circuit	BE–8
	3. Horn Switch	BE–105
	4. Horn	BE–105
	5. Wire Harness	–

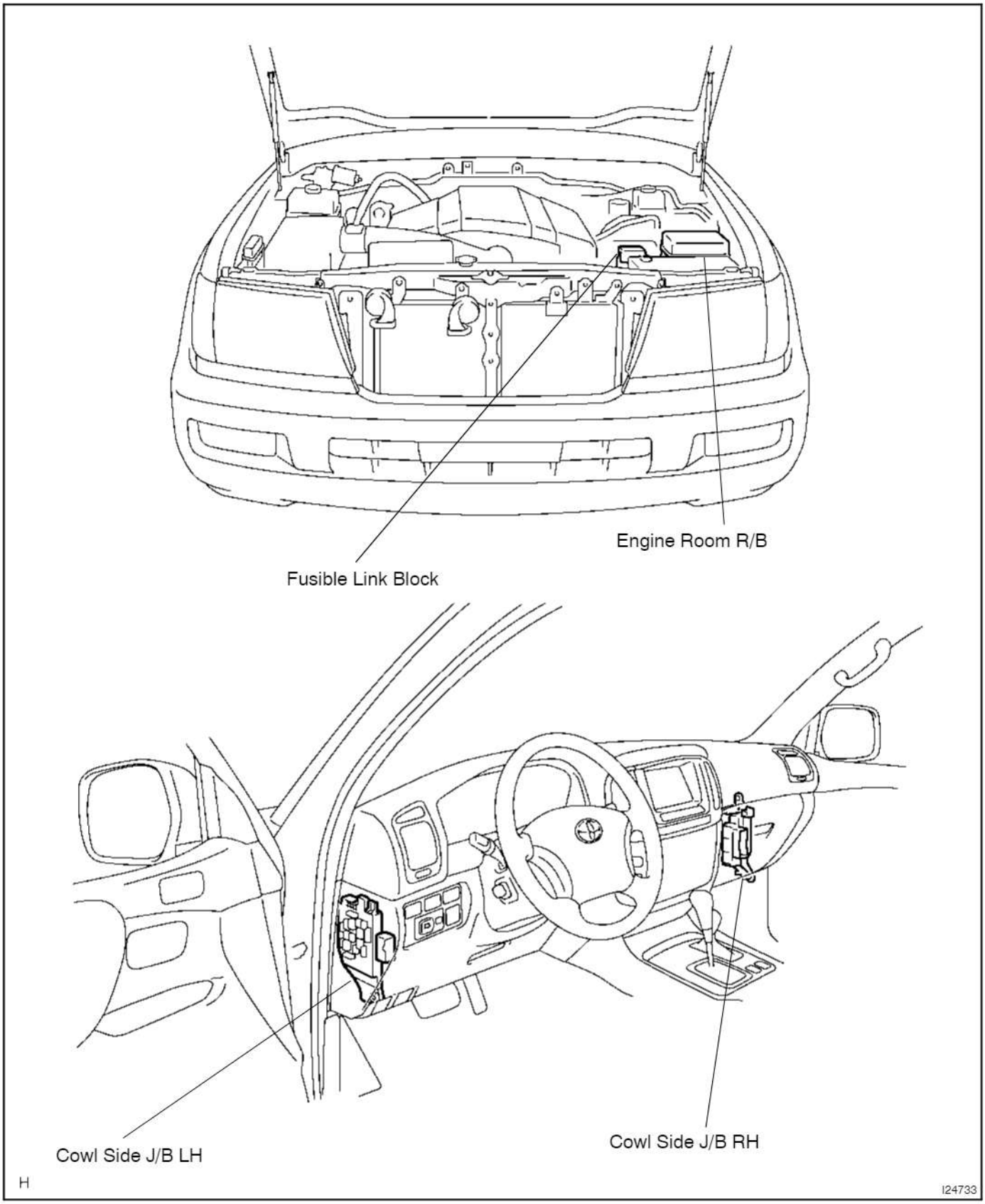
*: See Pub. No. RM616E on page.

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POWER SOURCE

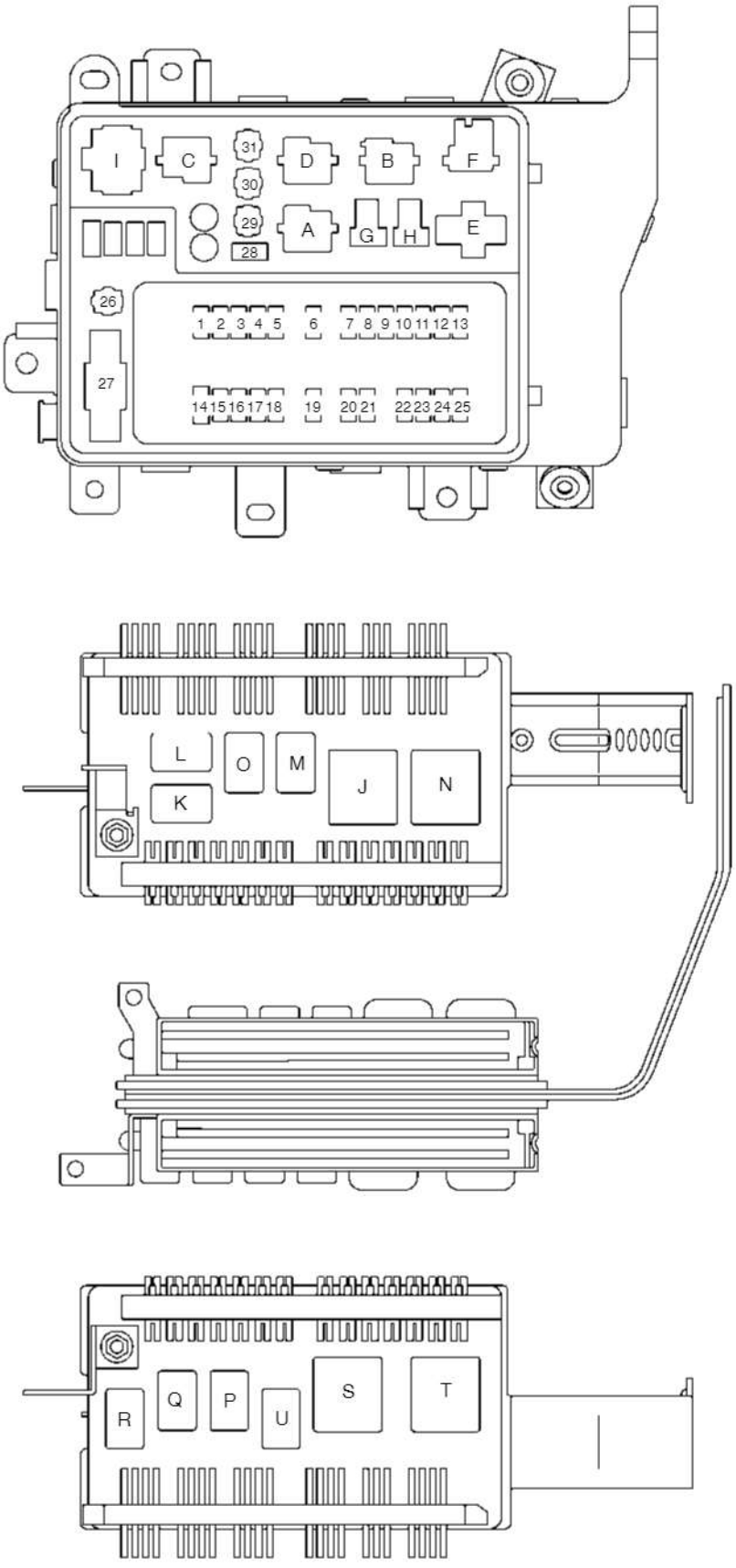
LOCATION

BE2EI–02



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Engine Room R/B



Fuses:

1. TOWING
2. MIR HTR
3. RR HTR
4. HAZ–TEN
5. ALT–S
6. NV–IR
7. FR FOG
8. BRK CTRL
9. HEAD CLNER
10. FR–IG
11. PANEL
12. TOWING TAIL
13. TAIL
14. –
15. BAT
16. TEL
17. AMP
18. EFI or ECD NO.1
19. AM2
20. ETCS
21. HORN
22. HEAD RH–LWR
23. HEAD LH–LWR
24. HEAD RH–UPR
25. HEAD LH–UPR
26. STARTER
27. GLOW
28. ST1
29. AHC
30. ABS NO.1
31. ABS NO.2

Relays:

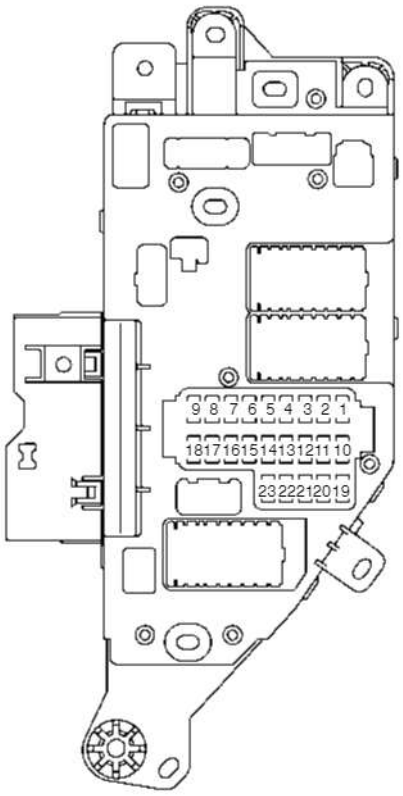
A. AHC
B. ABS SOL
C. ABS MTR1
D. ABS MTR2
E. STARTER
F. EFI or ECD
G. C/OPN
H. F/PUMP
I. HTR
J. IG1 NO.1
K. MIR HTR
L. RR HTR
M. FR FOG
N. TAIL
O. PANEL
P. CDS FAN
Q. MG CLT
R. W/TEMP CUT
S. HEAD
T. HEAD HI
U. HORN

H

I24921

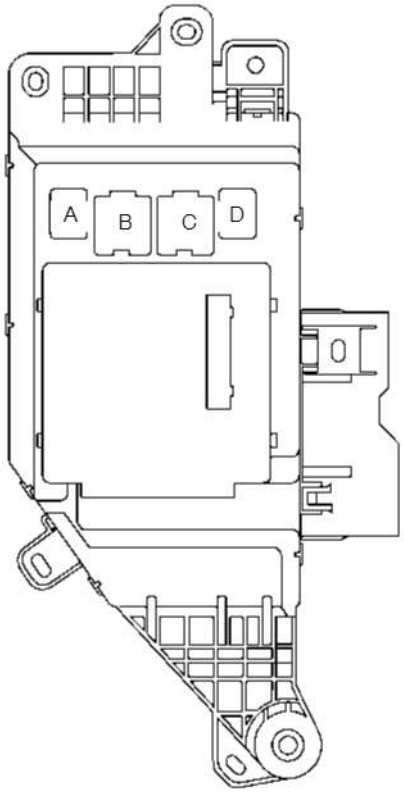
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Cowl Side J/B LH



Fuses:

1. AHC–IG
2. POWER HTR
3. FUEL HTR
4. AHC–B
5. DEFOG
6. AM1
7. ACC
8. CIG
9. PWR OUTLET
10. OBD–2
11. STOP
12. A/C
13. BATT CHARGE
14. DBL LOCK
15. ECU–B1
16. ECU–IG1
17. GAUGE1
18. EFI or ECD NO.2
19. RR WIPER
20. SUN ROOF
21. DOOR
22. LH SEAT
23. IDLE UP



Relays:

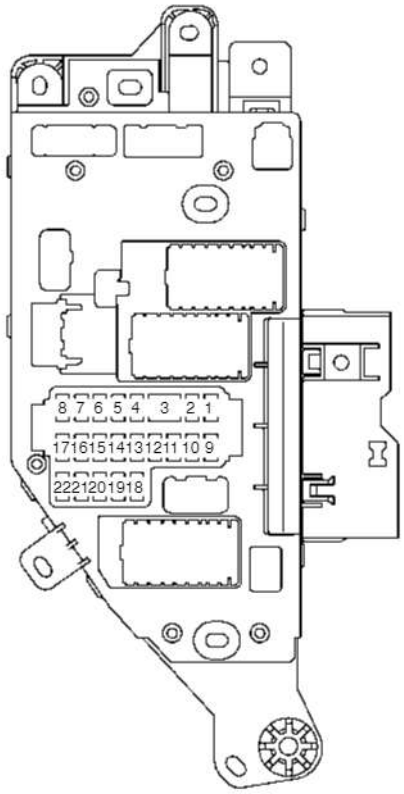
A. DEFOG
B. IG1 No.2
C. ACC
D. DOME

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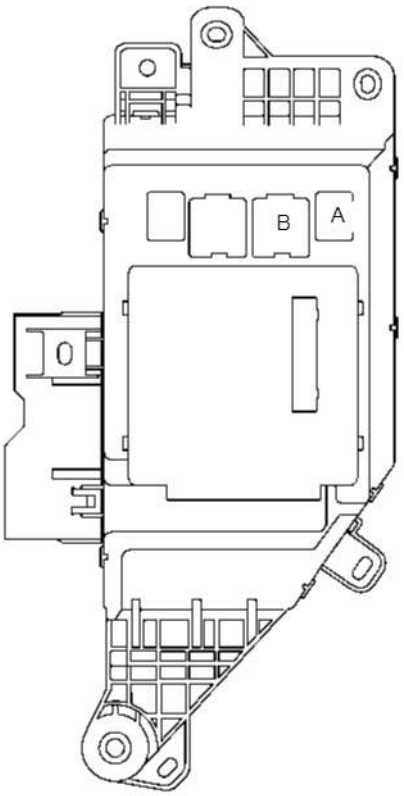
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Cowl Side J/B RH



Fuses:

1. P/W (RL)
2. P/W (FL)
3. VGRS
4. DOME
5. RADIO
6. WASHER
7. DIFF
8. ECU–B2
9. P/W(FR)
10. P/W(RR)
11. SECURITY
12. IGN
13. MET
14. GAUGE 2
15. SEAT HTR
16. ECU–IG2
17. WIPER
18. RH SEAT
19. RR A/C
20. TIL&TEL



Relays:

A. ACC CUT
B. IG1 NO.3
C. POWER MAIN

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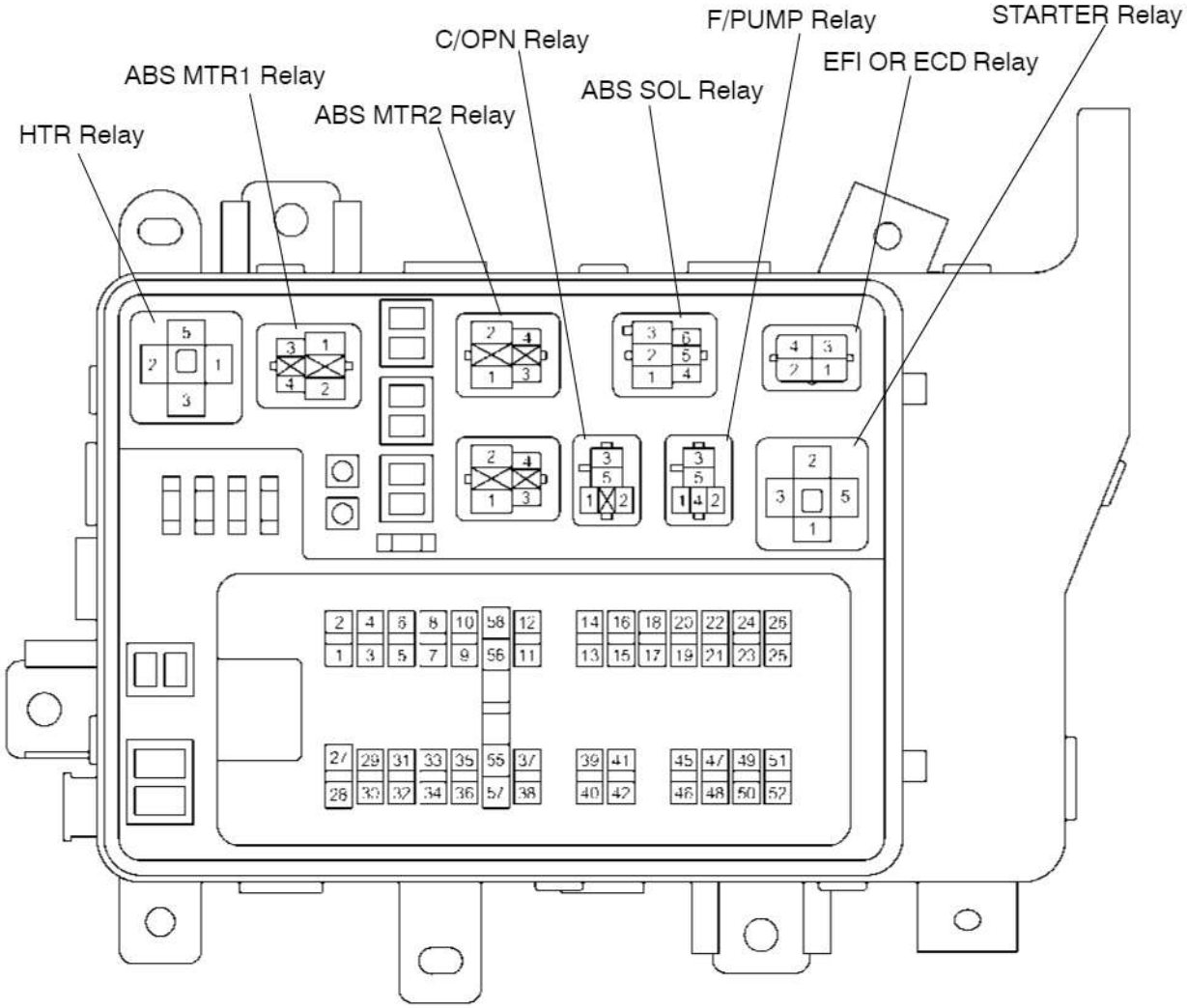
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BE2EJ–02

INSPECTION

1. INSPECT ENGINE ROOM R/B CIRCUIT

Engine Room R/B:

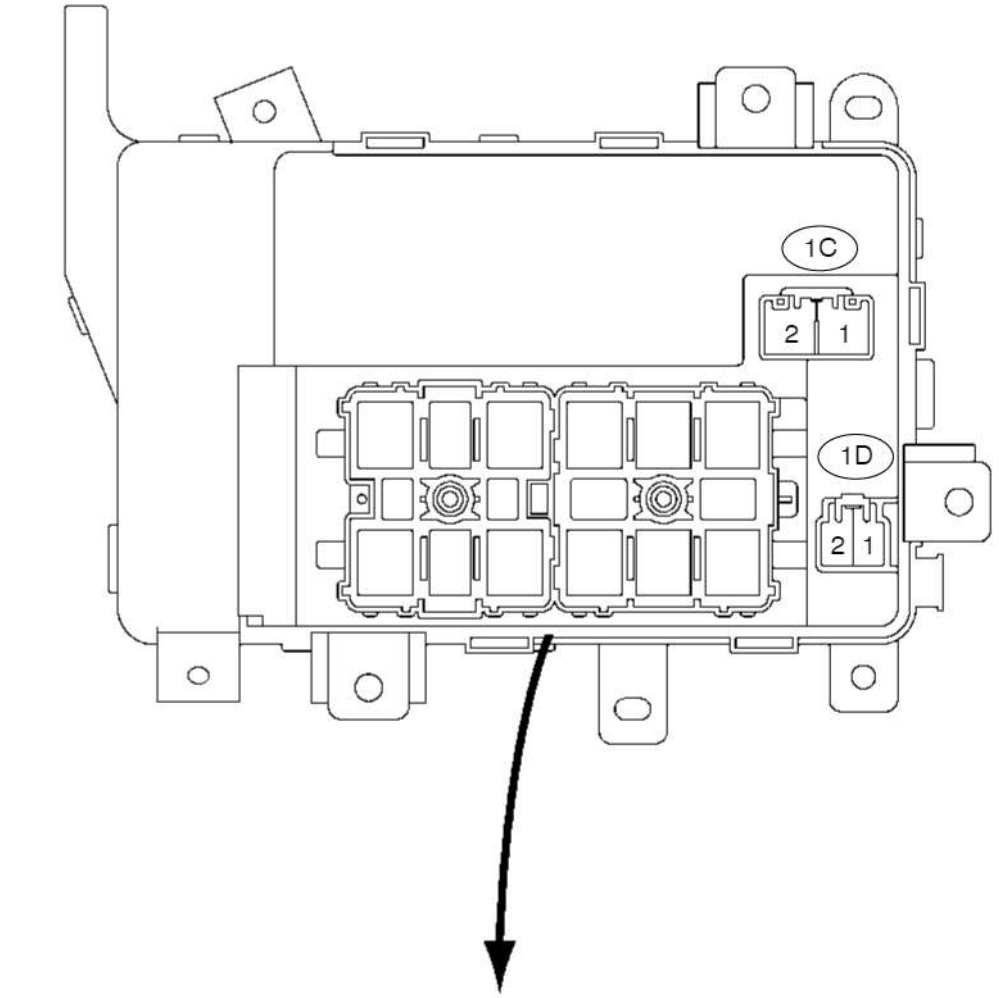


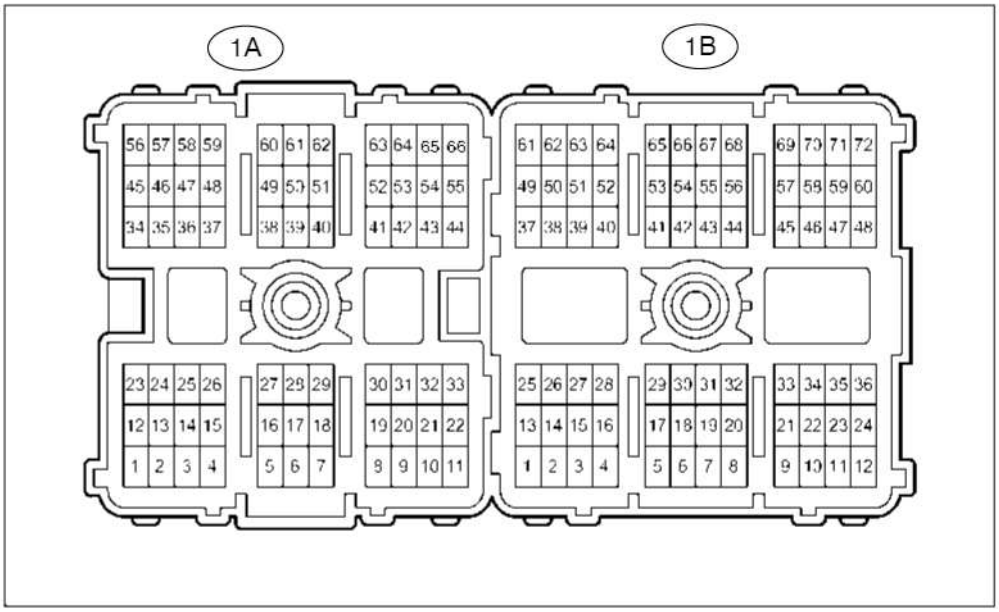
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Engine Room R/B (Back Side):

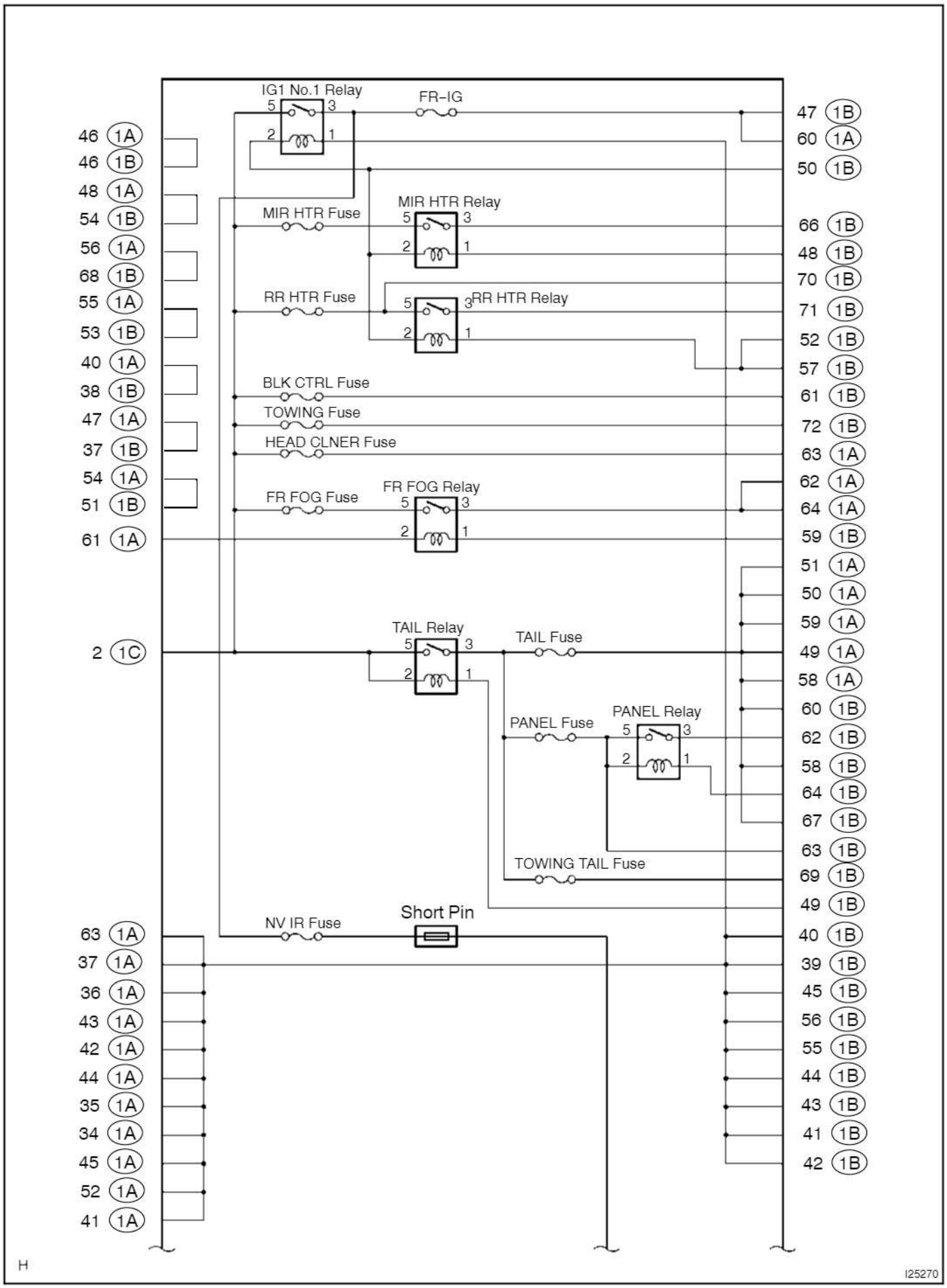




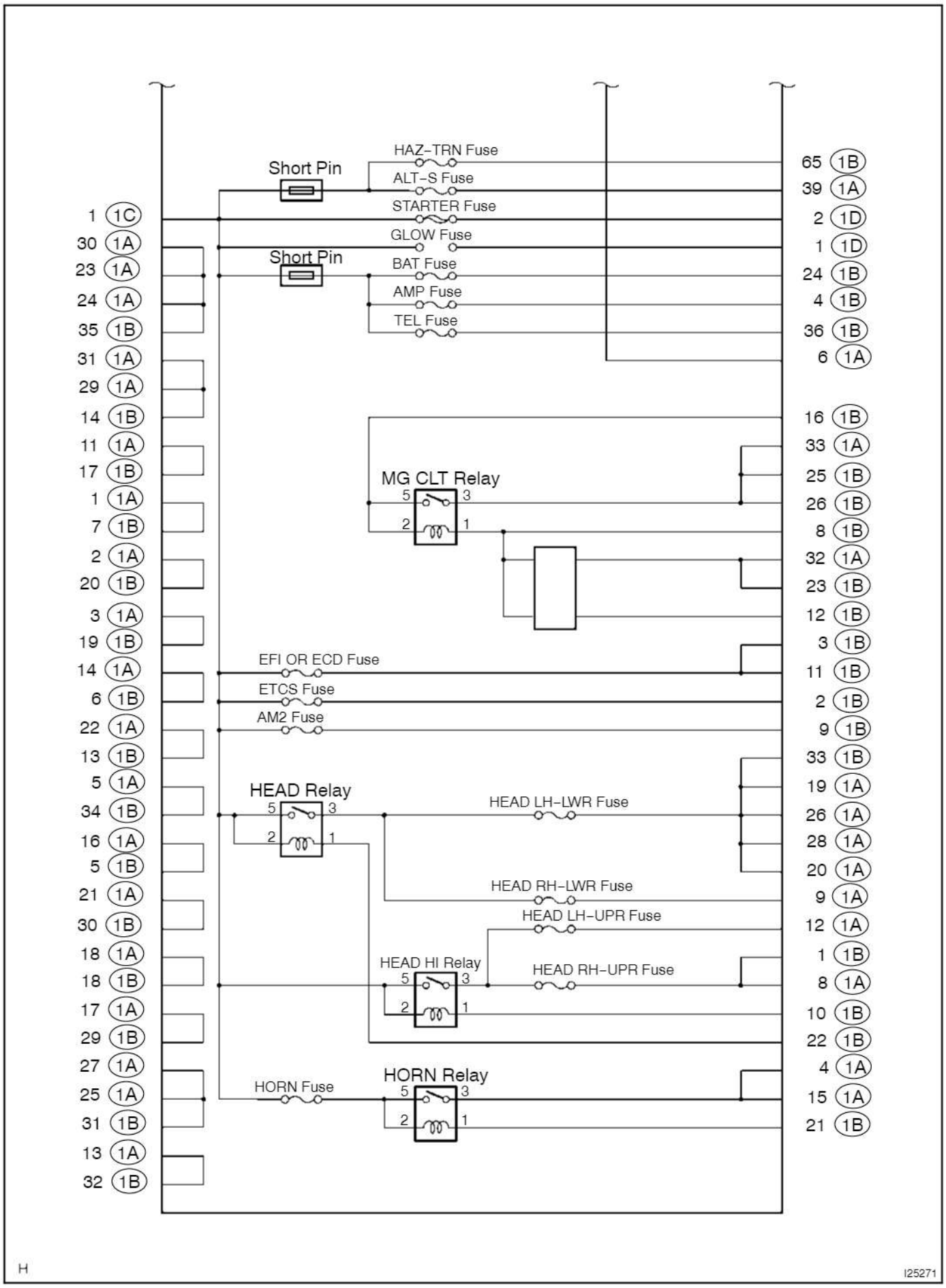
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H

I25271

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(a) Remove the fuse from the junction block and inspect the connector on junction block side.

Fuse	Tester connection	Condition	Specified condition
TOWING	1 – Ground	Constant	Battery positive voltage
MIR HTR	3 – Ground	Constant	Battery positive voltage
RR HTR	5 – Ground	Constant	Battery positive voltage
HAZ–TRN	7 – Ground	Constant	Battery positive voltage
ALT–S	9 – Ground	Constant	Battery positive voltage
NV–IR	13 – Ground	Constant	Battery positive voltage
FR FOG	13 – Ground	Constant	Battery positive voltage
BRK CTRL	15 – Ground	Constant	Battery positive voltage
HEAD CLNER	17 – Ground	Ignition switch ON	Battery positive voltage
FR–IG	19 – Ground	Ignition switch ON	Battery positive voltage
PANEL	21 – Ground	Light control switch HEAD or TAIL	Battery positive voltage
TOWING TAIL	23 – Ground	Light control switch HEAD or TAIL	Battery positive voltage
TAIL	25 – Ground	Light control switch HEAD or TAIL	Battery positive voltage
BAT	29 – Ground	Constant	Battery positive voltage
TEL	31 – Ground	Constant	Battery positive voltage
AMP	33 – Ground	Constant	Battery positive voltage
EFI or ECD NO.1	35 – Ground	Constant	Battery positive voltage
AM2	37 – Ground	Constant	Battery positive voltage
ETCS	39 – Ground	Constant	Battery positive voltage
HORN	41 – Ground	Constant	Battery positive voltage
HEAD LH–UPR	51 – Ground	Light control switch HI or Flash	Battery positive voltage
HEAD RH–UPR	49 – Ground	Light control switch HI or Flash	Battery positive voltage
HEAD LH–LWR	47 – Ground	Light control switch HEAD	Battery positive voltage
HEAD RH–LWR	45 – Ground	Light control switch HEAD	Battery positive voltage
ST1	1 – Ground	Constant	Battery positive voltage
AHC	1 – Ground	Constant	Battery positive voltage
ABS NO.1	1 – Ground	Constant	Battery positive voltage
ABS NO.2	1 – Ground	Constant	Battery positive voltage
STARTER	1 – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

(b) Remove the relay from the junction block and inspect the connector on junction block side.

Relay	Tester connection	Condition	Specified condition
AHC	1 – Ground	Ignition switch ON	Battery positive voltage
ABS SOL	1 – Ground	Ignition switch ON	Battery positive voltage
ABS MTR1	1 – Ground	Constant	Battery positive voltage
ABS MTR2	1 – Ground	Ignition switch ON	Battery positive voltage
STARTER	5 – Ground	Constant	Continuity
STARTER	2 – Ground	Ignition switch ON	Battery positive voltage
EFI or ECD	3 – Ground	Constant	Battery positive voltage
C/OPN SPIL VLV	5 – Ground	Constant	Battery positive voltage
C/OPN SPIL VLV	2 – Ground	Ignition switch ON	Continuity

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F/P PUMP ST CUT VISC MG 2 – Ground	Ignition switch ON	Battery positive voltage
F/P PUMP ST CUT VISC MG 3 – Ground	Ignition switch ON	Continuity
HTR 5 – Ground	Constant	Battery positive voltage
HTR 1 – Ground	Ignition switch ON	Continuity

If the circuit is not as specified, inspect the circuits connected to other parts.

(c) Inspect Engine Room Junction Block Inner Cercuit:
Inspect the connector on junction block side.

HINT:
Remove the junction block from the vehicle.

Relay	Tester connection	Condition	Specified condition
IG1 NO.1	50 (1B) – 40 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 39 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 45 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 56 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 55 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 44 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 43 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 41 (1B)	Constant	Continuity
IG1 NO.1	50 (1B) – 42 (1B)	Constant	Continuity
IG1 NO.1	2 (1C) – 47 (1B)	Apply B+ between terminals 50 (1B) and 40 (1B).	Continuity
IG1 NO.1	2 (1C) – 60 (1A)	Apply B+ between terminals 50 (1B) and 40 (1B).	Continuity
MIR HTR	50 (1B) – 48 (1B)	Constant	Continuity
MIR HTR	2 (1C) – 66 (1B)	Apply B+ between terminals 50 (1B) and 48 (1B).	Continuity
RR HTR	50 (1B) – 52 (1B)	Constant	Continuity
RR HTR	50 (1B) – 57 (1B)	Constant	Continuity
RR HTR	2 (1C) – 71 (1B)	Apply B+ between terminals 50 (1B) and 52 (1B).	Continuity
RR HTR	70 (1B) – 71 (1B)	Apply B+ between terminals 50 (1B) and 52 (1B).	Continuity
FR FOG	61 (1A) – 59 (1B)	Constant	Continuity
FR FOG	2 (1C) – 62 (1A)	Apply B+ between terminals 61 (1A) and 59 (1B).	Continuity
FR FOG	2 (1C) – 64 (1A)	Apply B+ between terminals 61 (1A) and 59 (1B).	Continuity
TAIL	2 (1C) – 49 (1B)	Constant	Continuity
TAIL	2 (1C) – 51 (1A)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 50 (1A)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 59 (1A)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 49 (1A)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 58 (1A)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 60 (1B)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 58 (1B)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 67 (1B)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
TAIL	2 (1C) – 69 (1B)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity
PANEL	2 (1C) – 64 (1B)	Apply B+ between terminals 2 (1C) and 49 (1B).	Continuity

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HEAD	1 (1C) – 22 (1B)	Constant	Continuity
HEAD	1 (1C) – 33 (1B)	Apply B+ between terminals 1 (1C) and 22 (1B).	Continuity
HEAD	1 (1C) – 19 (1A)	Apply B+ between terminals 1 (1C) and 22 (1B).	Continuity
HEAD	1 (1C) – 26 (1A)	Apply B+ between terminals 1 (1C) and 22 (1B).	Continuity
HEAD	1 (1C) – 28 (1A)	Apply B+ between terminals 1 (1C) and 22 (1B).	Continuity
HEAD	1 (1C) – 20 (1A)	Apply B+ between terminals 1 (1C) and 22 (1B).	Continuity
HEAD	1 (1C) – 9 (1A)	Apply B+ between terminals 1 (1C) and 22 (1B).	Continuity
HEAD HI	1 (1C) – 10 (1B)	Constant	Continuity
HEAD HI	1 (1C) – 12 (1A)	Apply B+ between terminals 1 (1C) and 10 (1B).	Continuity
HEAD HI	1 (1C) – 1 (1B)	Apply B+ between terminals 1 (1C) and 10 (1B).	Continuity
HEAD HI	1 (1C) – 8 (1A)	Apply B+ between terminals 1 (1C) and 10 (1B).	Continuity
HORN	1 (1C) – 21 (1B)	Constant	Continuity
HORN	1 (1C) – 4 (1A)	Apply B+ between terminals 1 (1C) and 21 (1B).	Continuity
HORN	1 (1C) – 15 (1A)	Apply B+ between terminals 1 (1C) and 21 (1B).	Continuity

If the circuit is not as specified, replace it with junction block assembly.

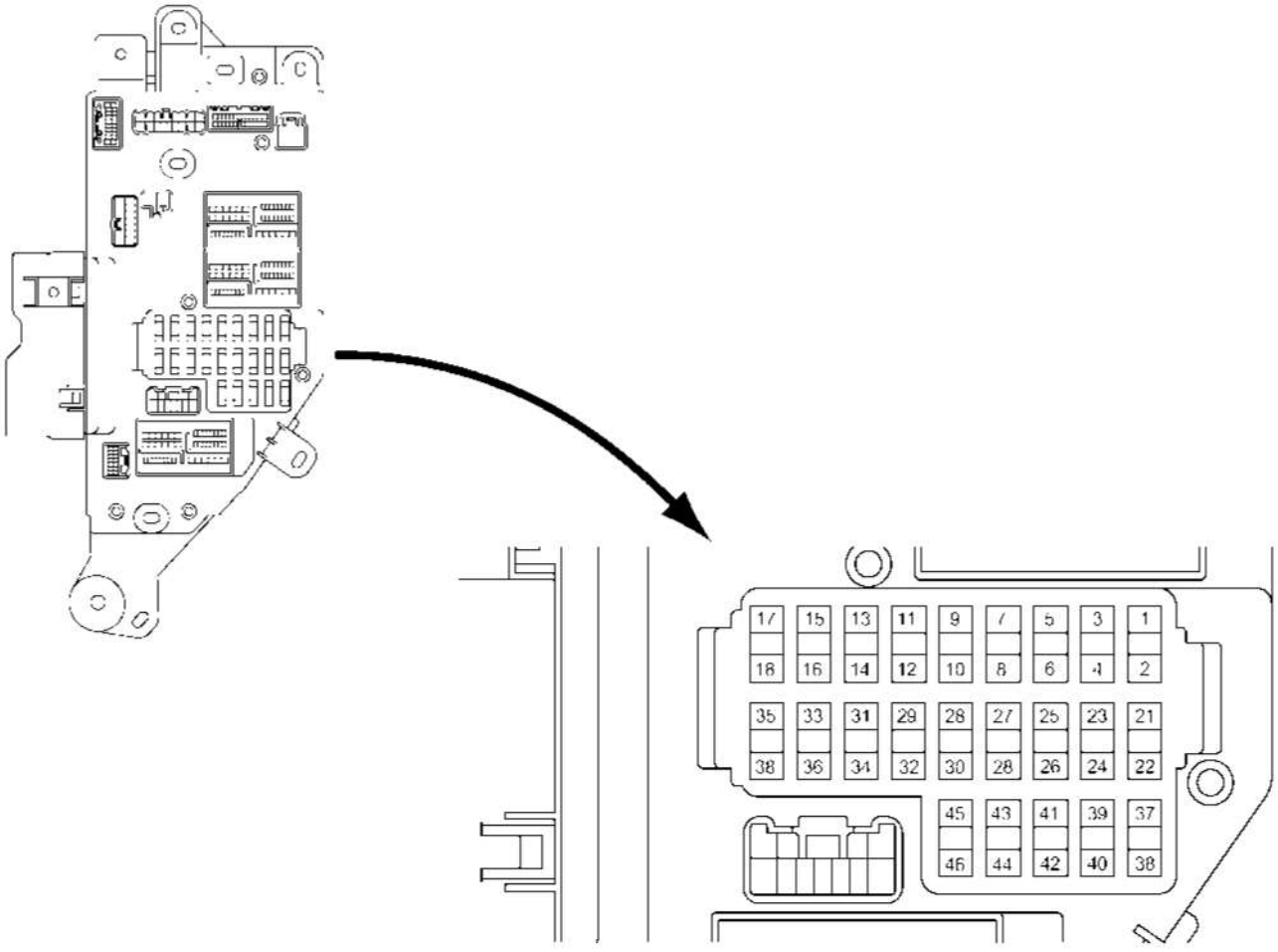
HINT:

The relay is built in engine room junction block. Also the relay is constructed with a relay block that is in the junction block as a unit. To disconnect the wire harness connecting with relay block is impossible. If the relay has a malfunction, replace it with junction block assembly wire harness together.

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2. INSPECT COWL SIDE J/B LH CIRCUIT

Cowl Side J/B LH:

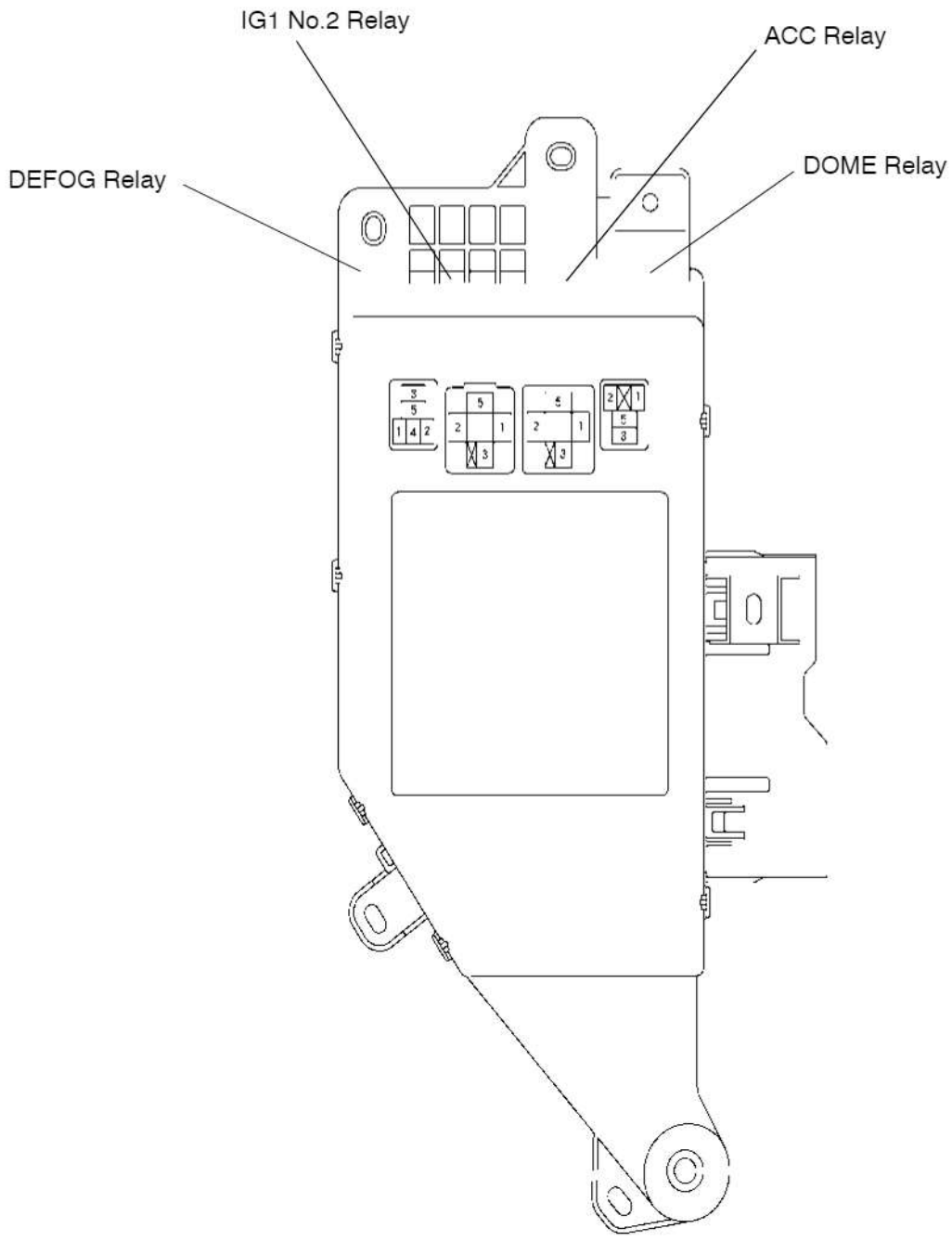


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Cowl Side J/B LH (Back Side):



(a) Remove the fuse from the junction block and inspect the connector on junction block side.

Fuse	Tester connection	Condition	Specified condition
AHC–IG	2 – Ground	Ignition switch ON	Battery positive voltage
POWER HTR	4 – Ground	Ignition switch ON	Battery positive voltage
FUEL HTR	6 – Ground	Ignition switch ON	Battery positive voltage
AHC–B	8 – Ground	Constant	Battery positive voltage
DEFOG	10 – Ground	Constant	Battery positive voltage
AM1	12 – Ground	Constant	Battery positive voltage

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ACC	13 – Ground	Ignition switch ACC	Battery positive voltage
CIG	15 – Ground	Ignition switch ACC	Battery positive voltage
PWR OUTLET	17 – Ground	Ignition switch ACC	Battery positive voltage
OBD–2	20 – Ground	Constant	Battery positive voltage
STOP	22 – Ground	Constant	Battery positive voltage
A/C	24 – Ground	Ignition switch ON	Battery positive voltage
BATT CHARGE	26 – Ground	Constant	Battery positive voltage
DBL LOCK	39 – Ground	Constant	Battery positive voltage
ECU–B1	29 – Ground	Constant	Battery positive voltage
ECU–IG1	32 – Ground	Ignition switch ON	Battery positive voltage
GAUGE1	34 – Ground	Ignition switch ON	Battery positive voltage
EFI or ECD NO.2	35 – Ground	Constant	Battery positive voltage
RR WIPER	37 – Ground	Ignition switch ON	Battery positive voltage
SUN ROOF	39 – Ground	Constant	Battery positive voltage
DOOR	41 – Ground	Constant	Battery positive voltage
LH SEAT	43 – Ground	Constant	Battery positive voltage
IDLE UP	46 – Ground	Rear deffoger system ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

(b) Remove the relay from the junction block and inspect the connector on junction block side.

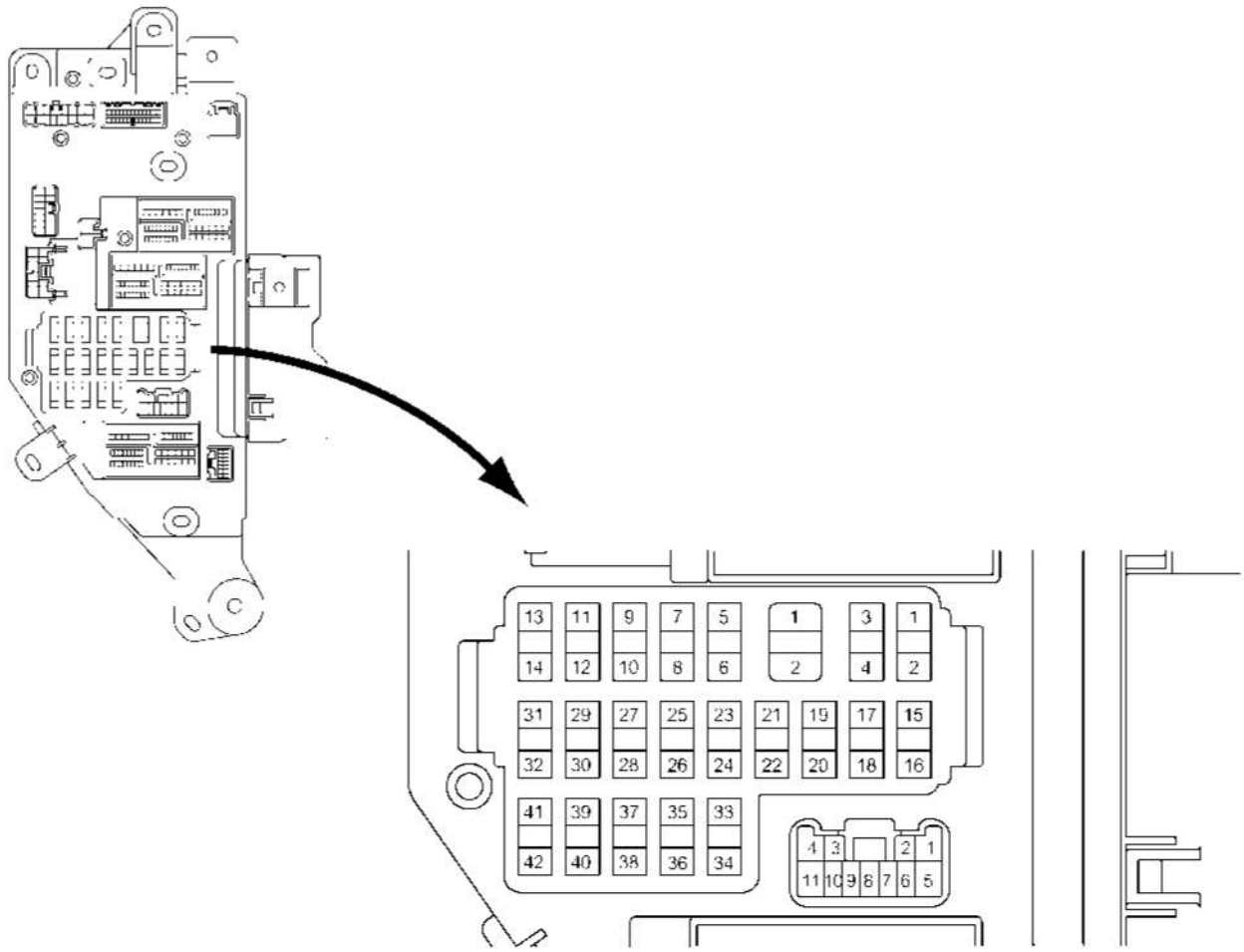
Relay	Tester connection	Condition	Specified condition
DOME	1 – Ground	Constant	Battery positive voltage
DOME	5 – Ground	Constant	Battery positive voltage
ACC	5 – Ground	Constant	Battery positive voltage
ACC	2 – Ground	Ignition switch ON	Battery positive voltage
IG1 NO.2	5 – Ground	Constant	Battery positive voltage
IG1 NO.2	2 – Ground	Ignition switch ON	Battery positive voltage
DEFOG	5 – Ground	Constant	Battery positive voltage
DEFOG	1 – Ground	Ignition switch ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

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3. INSPECT COWL SIDE J/B RH CIRCUIT

Cowl Side J/B RH:

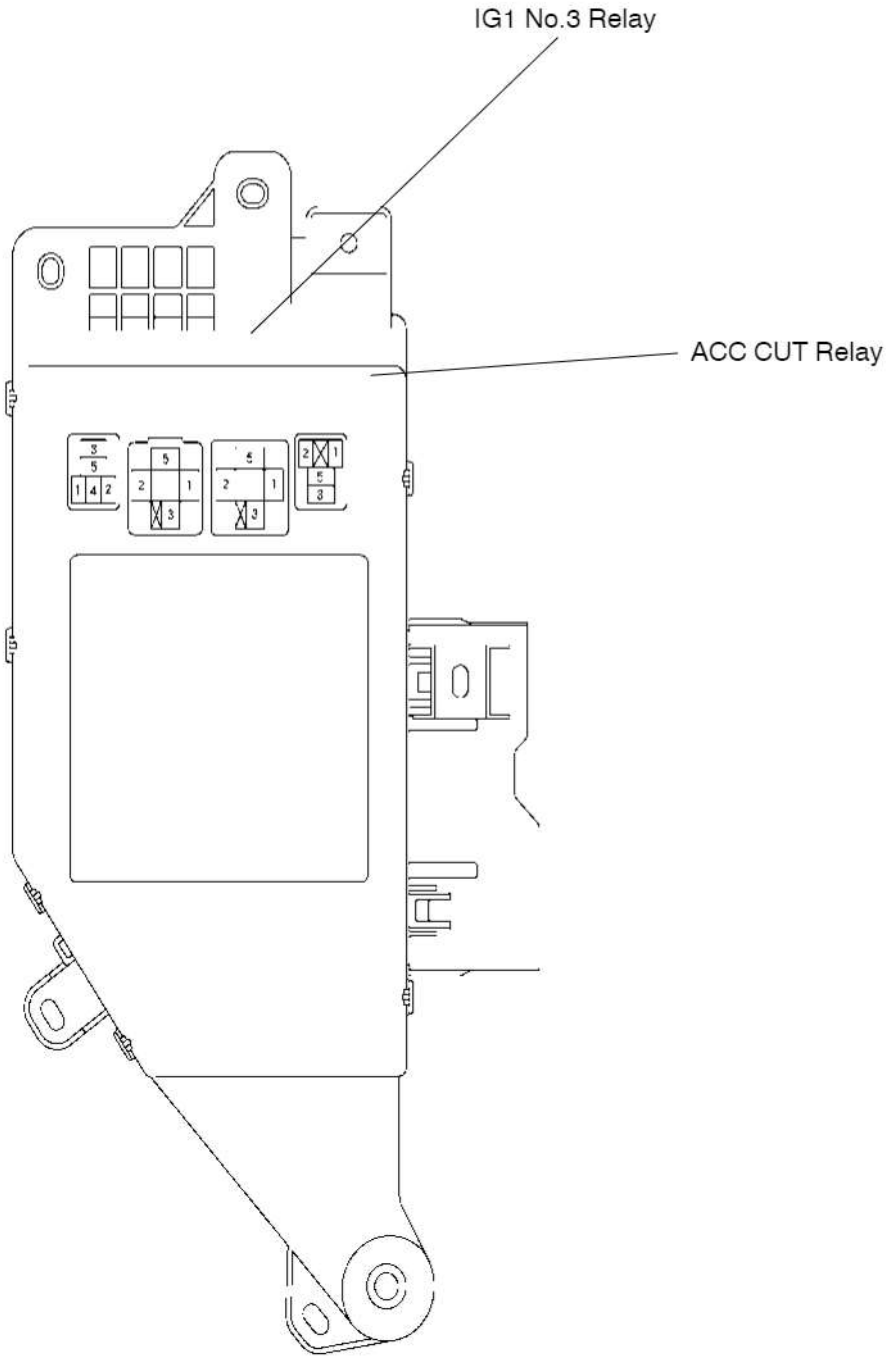


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Cowl Side J/B RH (Back Side):



(a) Remove the fuse from the junction block and inspect the connector on junction block side.

Fuse	Tester connection	Condition	Specified condition
P/W (RL)	2 – Ground	Constant	Battery positive voltage
P/W (FL)	4 – Ground	Constant	Battery positive voltage
VGRS	2 – Ground	Constant	Battery positive voltage
DOME	5 – Ground	Constant	Battery positive voltage
RADIO	7 – Ground	Constant	Battery positive voltage
WASHER	10 – Ground	Ignition switch ON	Battery positive voltage

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DIFF	12 – Ground	Ignition switch ON	Battery positive voltage
ECU–B2	13 – Ground	Constant	Battery positive voltage
P/W (FR)	15 – Ground	Constant	Battery positive voltage
P/W (RR)	17 – Ground	Constant	Battery positive voltage
SECURITY	20 – Ground	Constant	Battery positive voltage
IGN	21 – Ground	Ignition switch ON	Battery positive voltage
MET	23 – Ground	Ignition switch ON	Battery positive voltage
GAUGE2	25 – Ground	Ignition switch ON	Battery positive voltage
SEAT HTR	27 – Ground	Ignition switch ON	Battery positive voltage
ECU–IG2	29 – Ground	Ignition switch ON	Battery positive voltage
WIPER	31 – Ground	Ignition switch ON	Battery positive voltage
RH SEAT	33 – Ground	Constant	Battery positive voltage
RR A/C	35 – Ground	Constant	Battery positive voltage
TIL & TEL	37 – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

Remove the relay from the junction block and inspect the connector on junction block side.

Relay	Tester connection	Condition	Specified condition
ACC CUT	2 – Ground	Constant	Battery positive voltage
ACC CUT	4 – Ground	Ignition Switch ACC	Battery positive voltage
IG1 NO.3	5 – Ground	Constant	Battery positive voltage
IG1 NO.3	2 – Ground	Ignition Switch ON	Battery positive voltage

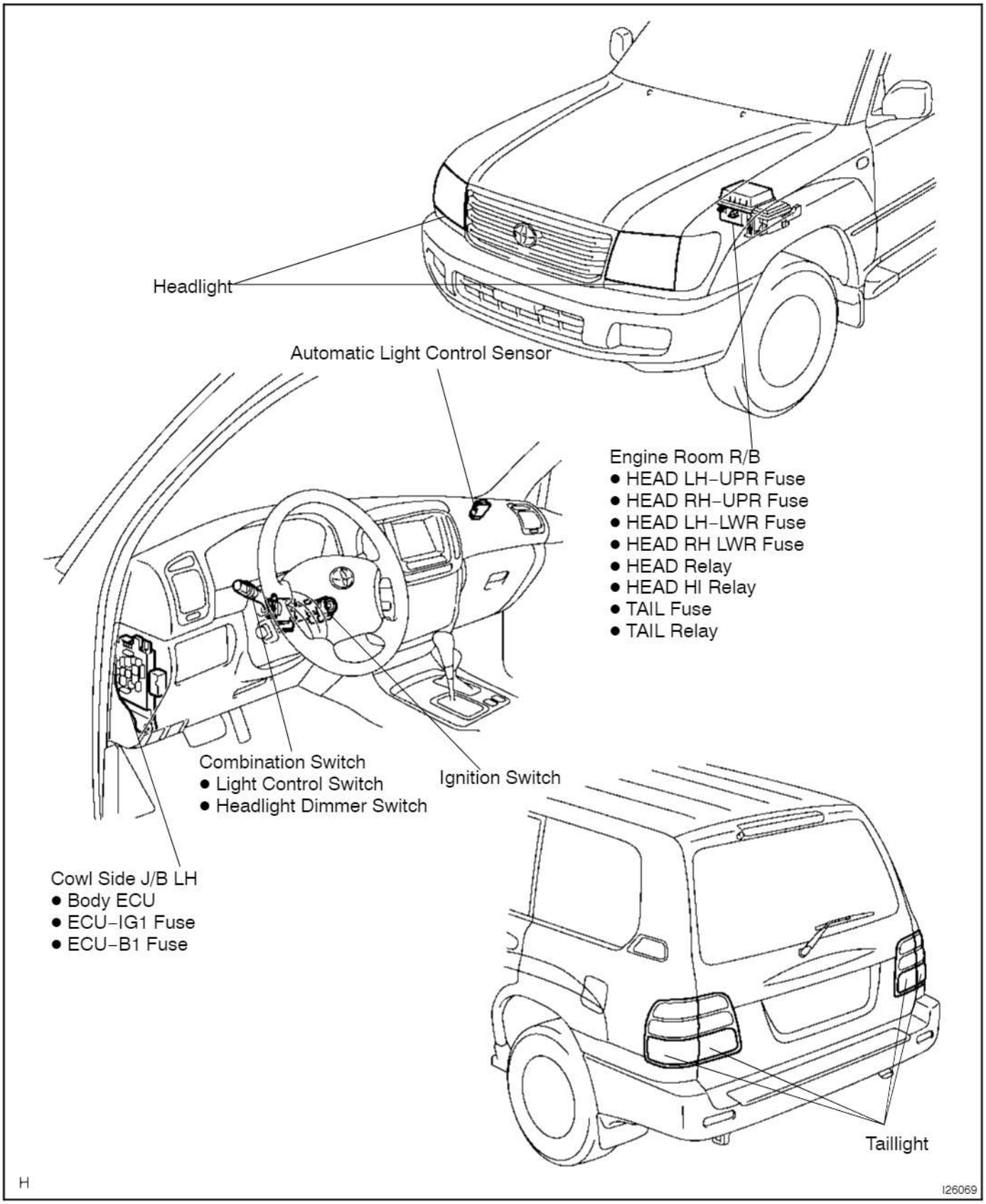
If the circuit is not as specified, inspect the circuits connected to other parts.

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HEADLIGHT AND TAILLIGHT SYSTEM

LOCATION

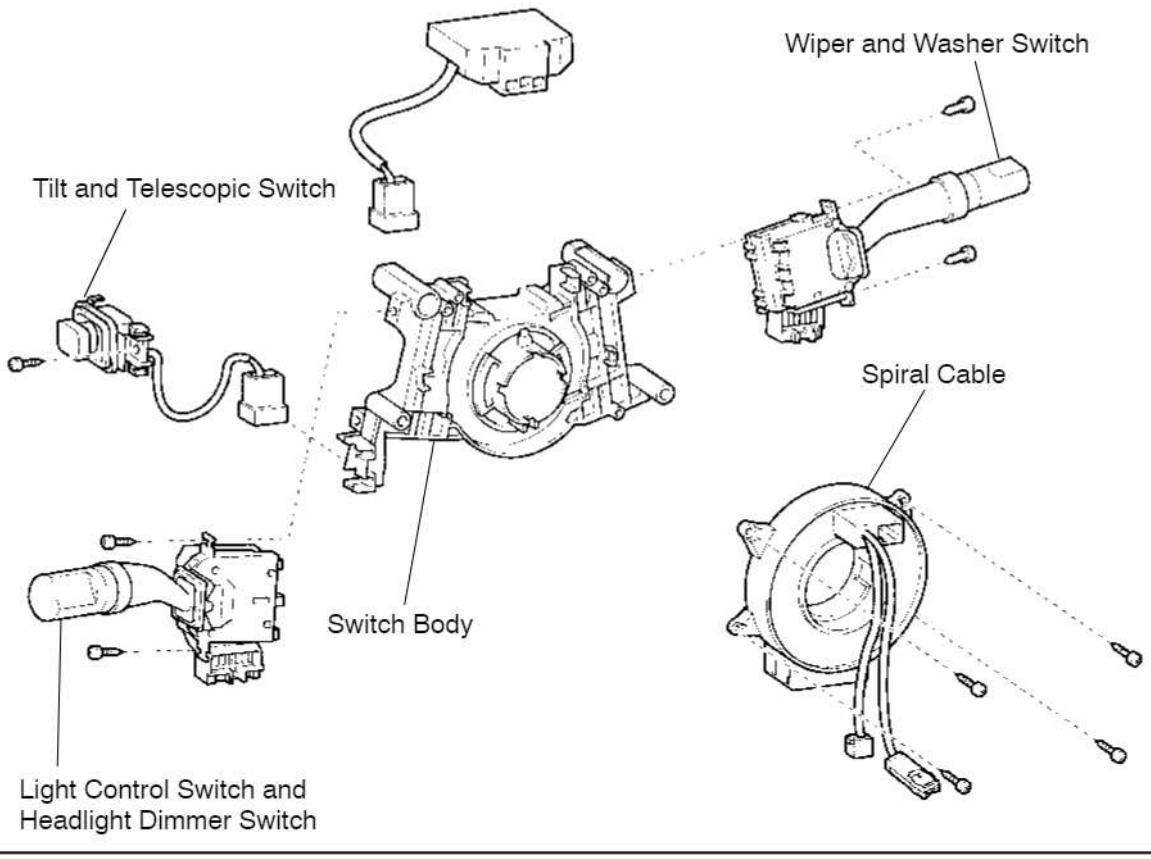
BE0H8-12



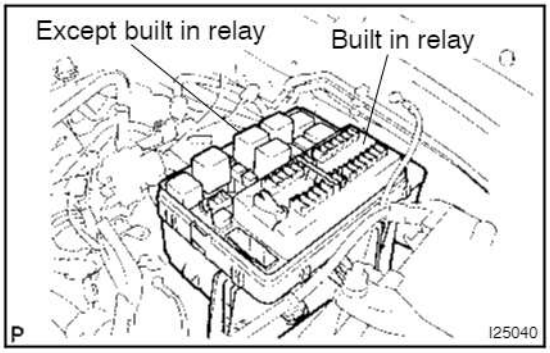
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BE0H8-09

COMPONENTS



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BE2FD-01

INSPECTION

INSPECT ENGINE ROOM R/B RELAY CIRCUIT (See Pase BE–8)

HINT:

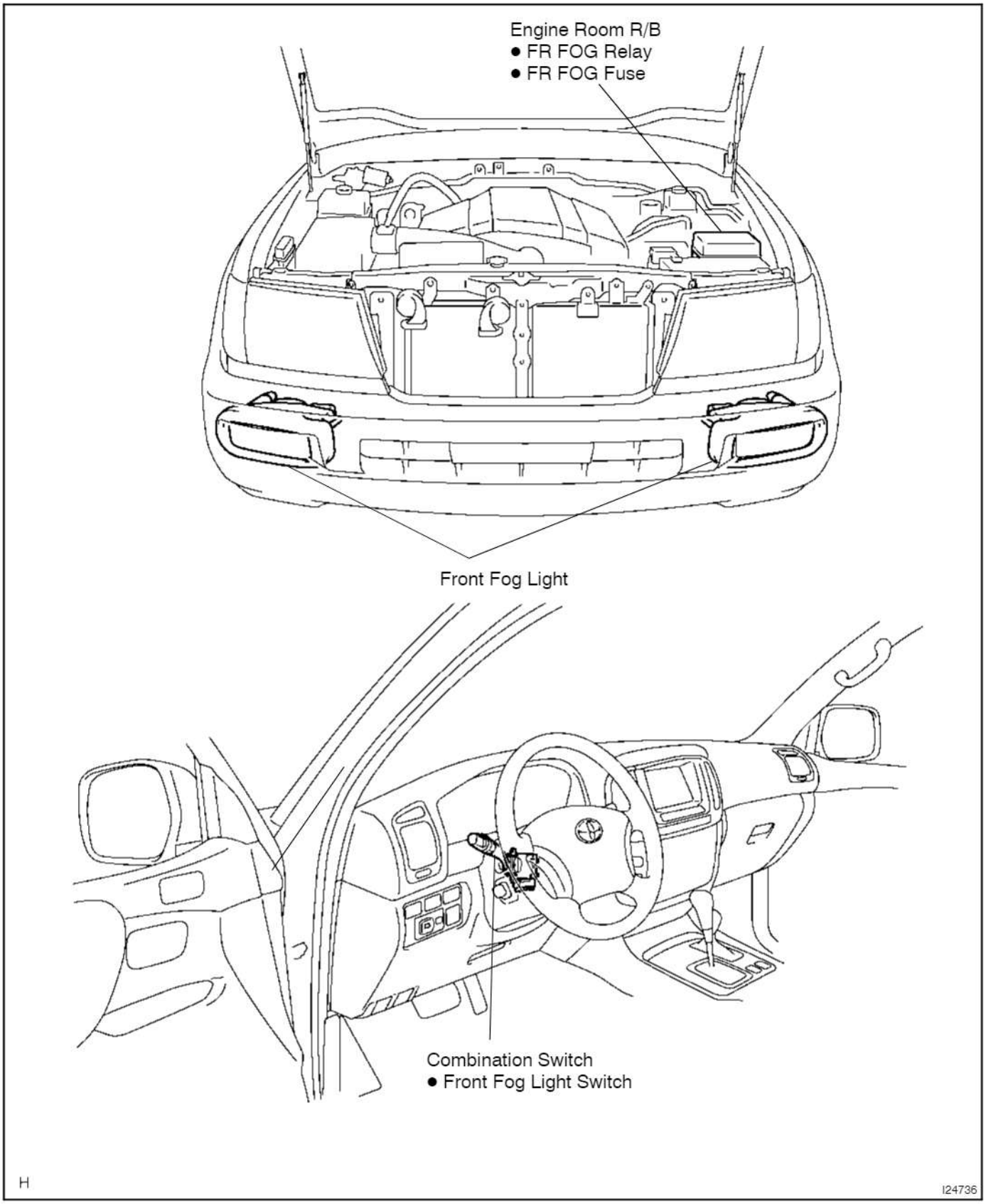
The (Headlight, DIM, Tail relay) is built in engine room junction block. Also the relay is constructed with a relay block that is in the junction block as a unit. To disconnect the wire harness connecting with relay block is impossible. If the relay has a malfunction, replace it with junction block assembly wire harness together.

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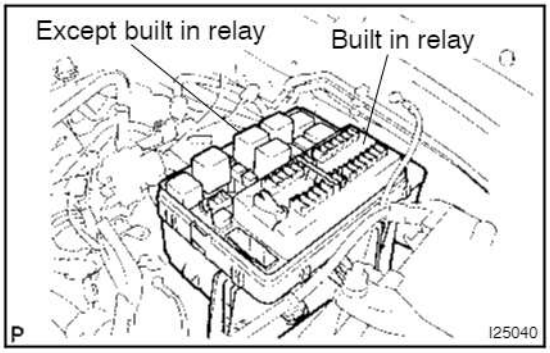
FOG LIGHT SYSTEM

LOCATION

BE0H2-17



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BE2FC-01

INSPECTION

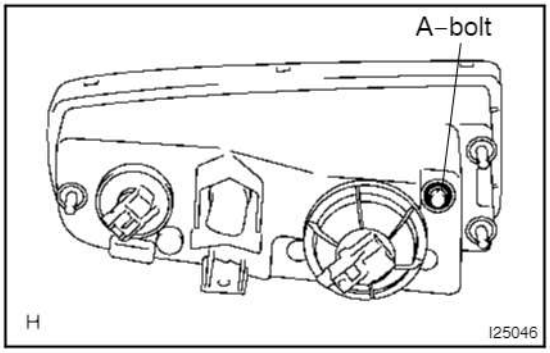
INSPECT ENGINE ROOM R/B RELAY CIRCUIT(See Pase BE–8)

HINT:

The foglight relay is built in engine room junction block. Also the relay is constructed with a relay block that is in the junction block as a unit. To disconnect the wire harness connecting with relay block is impossible. If the relay has a malfunction, replace it with junction block assembly wire harness together.

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BE0RU–05



ADJUSTMENT

ADJUST FOGLIGHT AIM

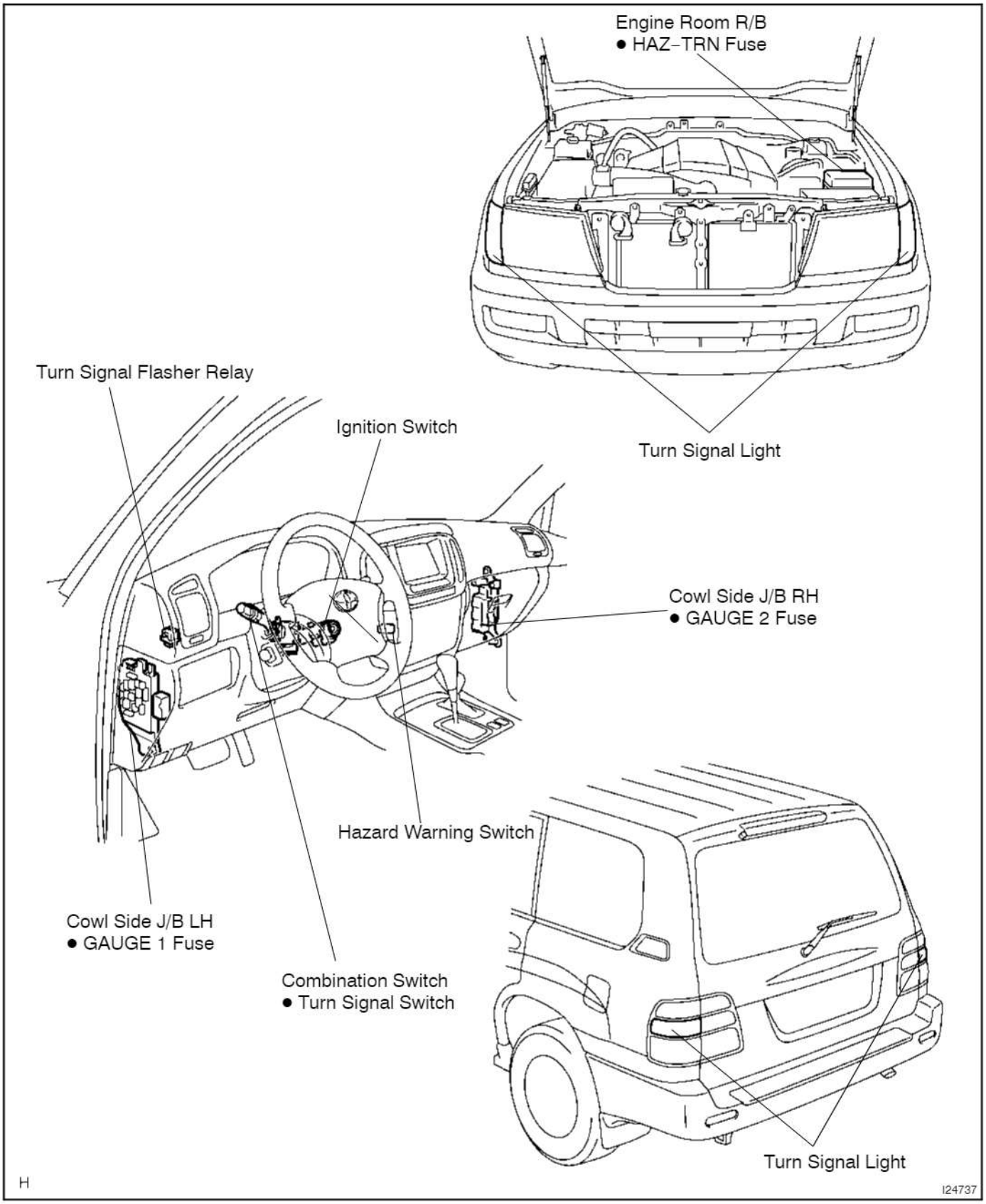
A–bolt : Vertical Direction

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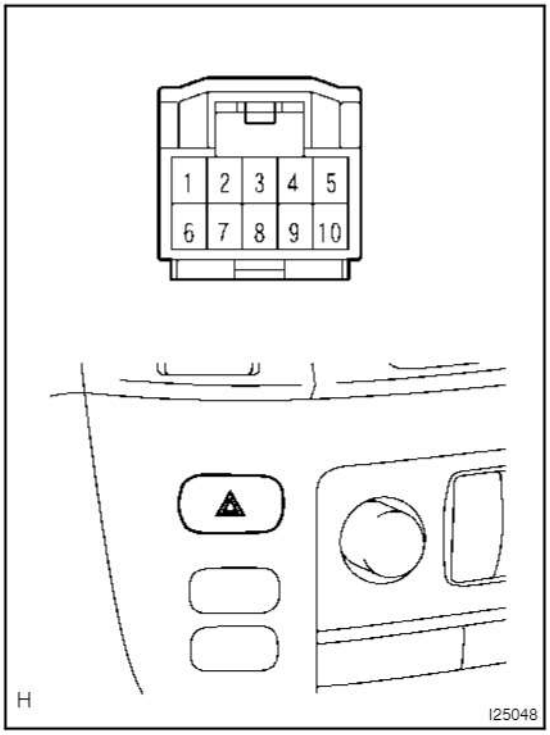
TURN SIGNAL AND HAZARD WARNING SYSTEM

LOCATION

BE0H0-13



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BE2FB-01

INSPECTION

INSPECT HAZARD WARNING SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Hazard button FREE	3 – 5	No continuity
Hazard button Pushed in	3 – 5	Continuity

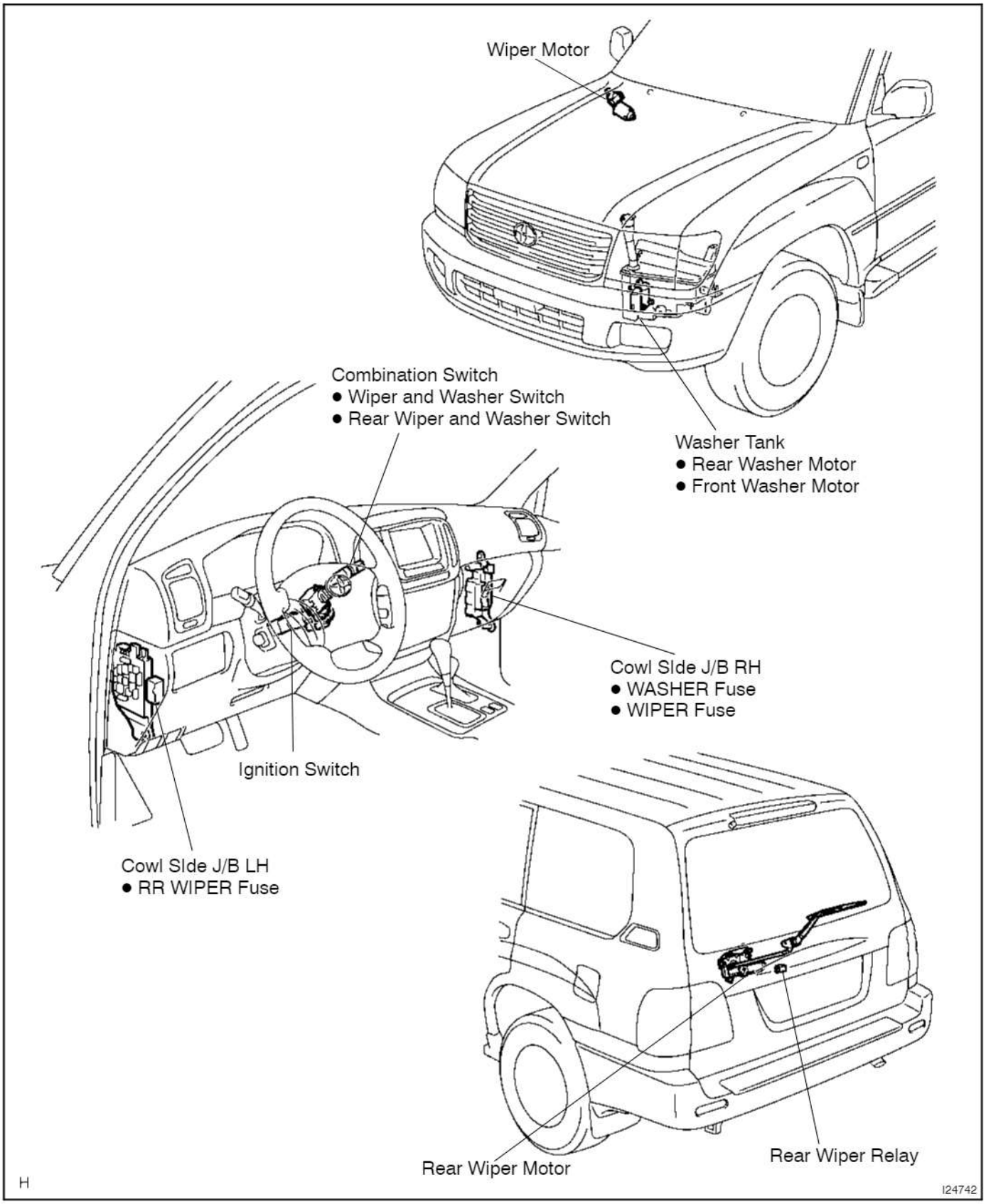
If continuity is not as specified, replace the switch.

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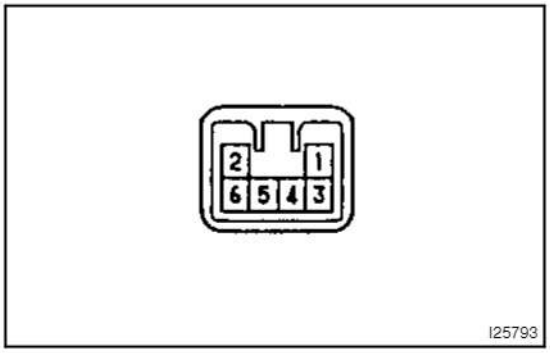
WIPER AND WASHER SYSTEM

LOCATION

BE0HN-12



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BE2FA-01

INSPECTION

INSPECT REAR WIPER RELAY CONTINUITY

Switch position	Tester connection	Specified condition
OFF	–	–
INT	1 – 4 – 6	Continuity
LO	3 – 5 – 6	Continuity
Wash2	3 – 5 – 6	Continuity

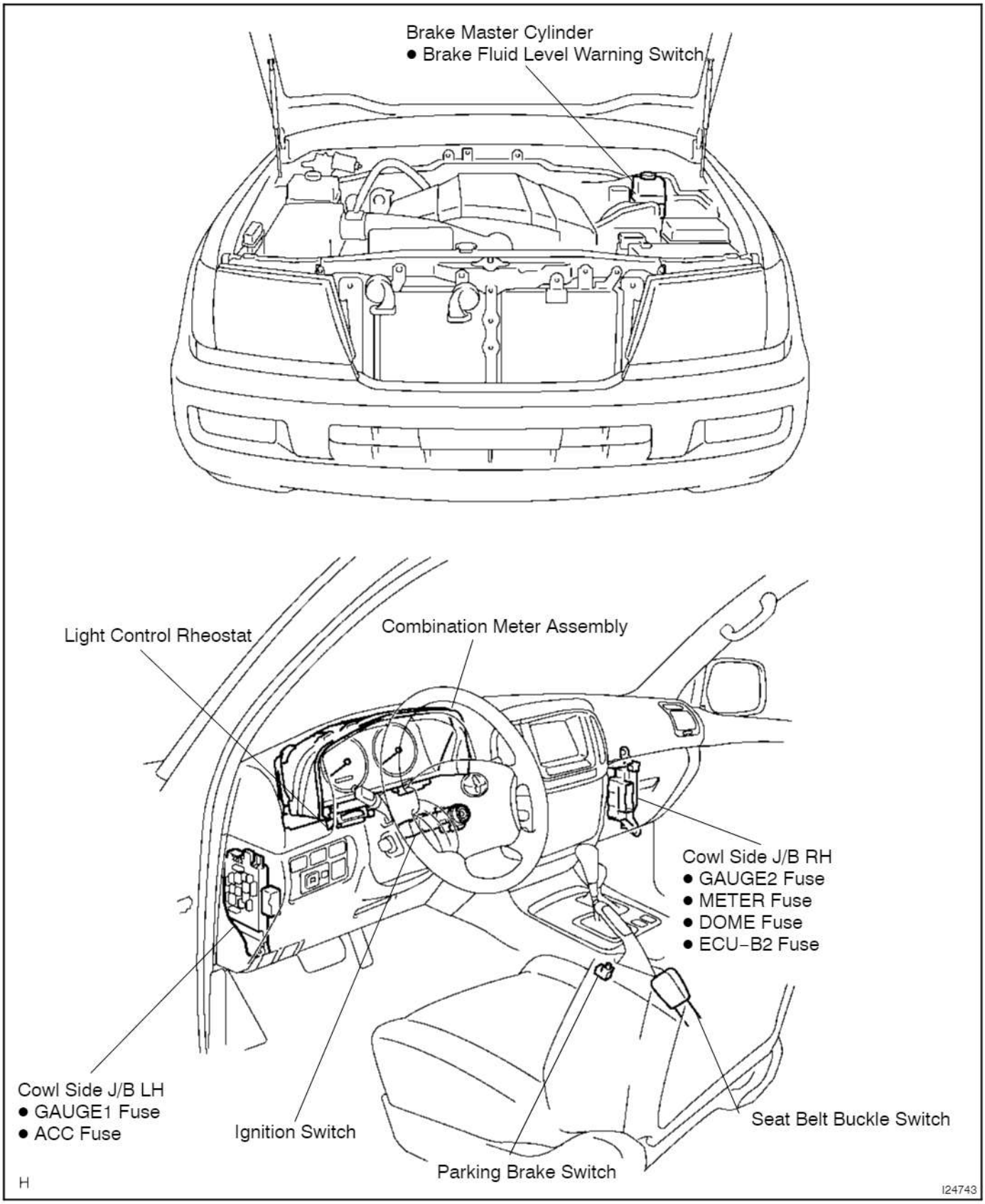
If continuity is not as specified, replace the relay.

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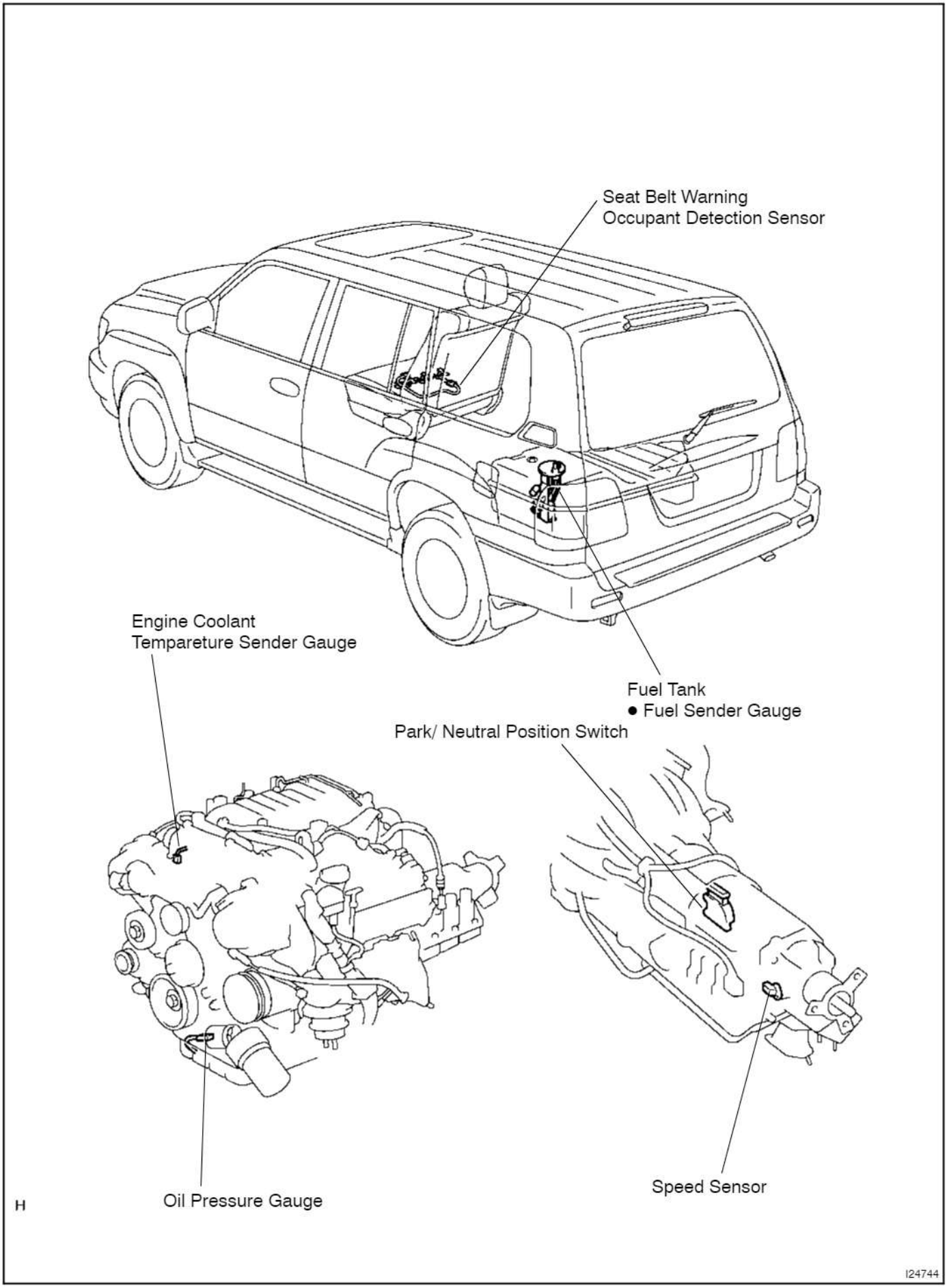
COMBINATION METER

LOCATION

BE0HH-13



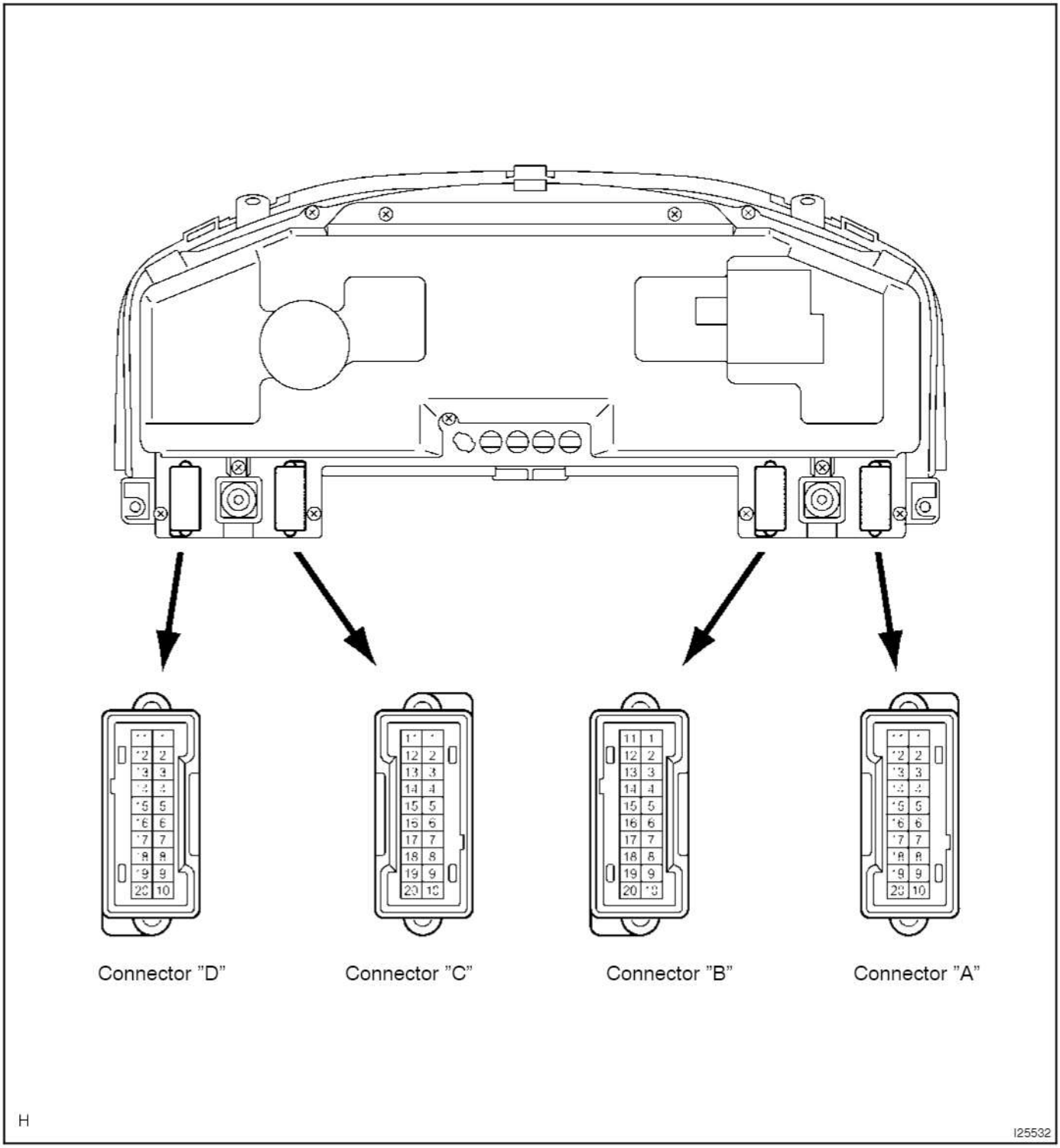
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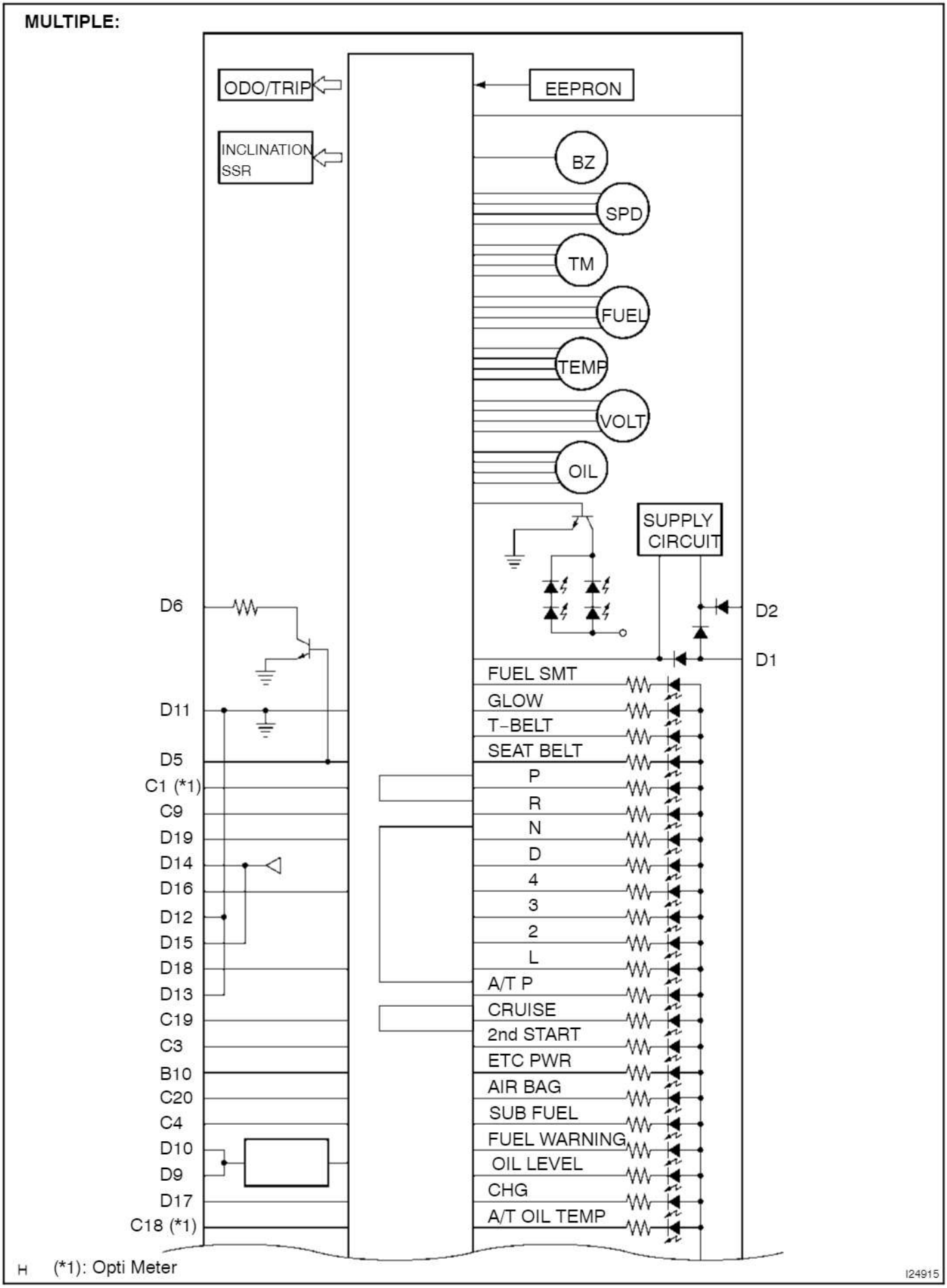
BE2F6-01

CIRCUIT

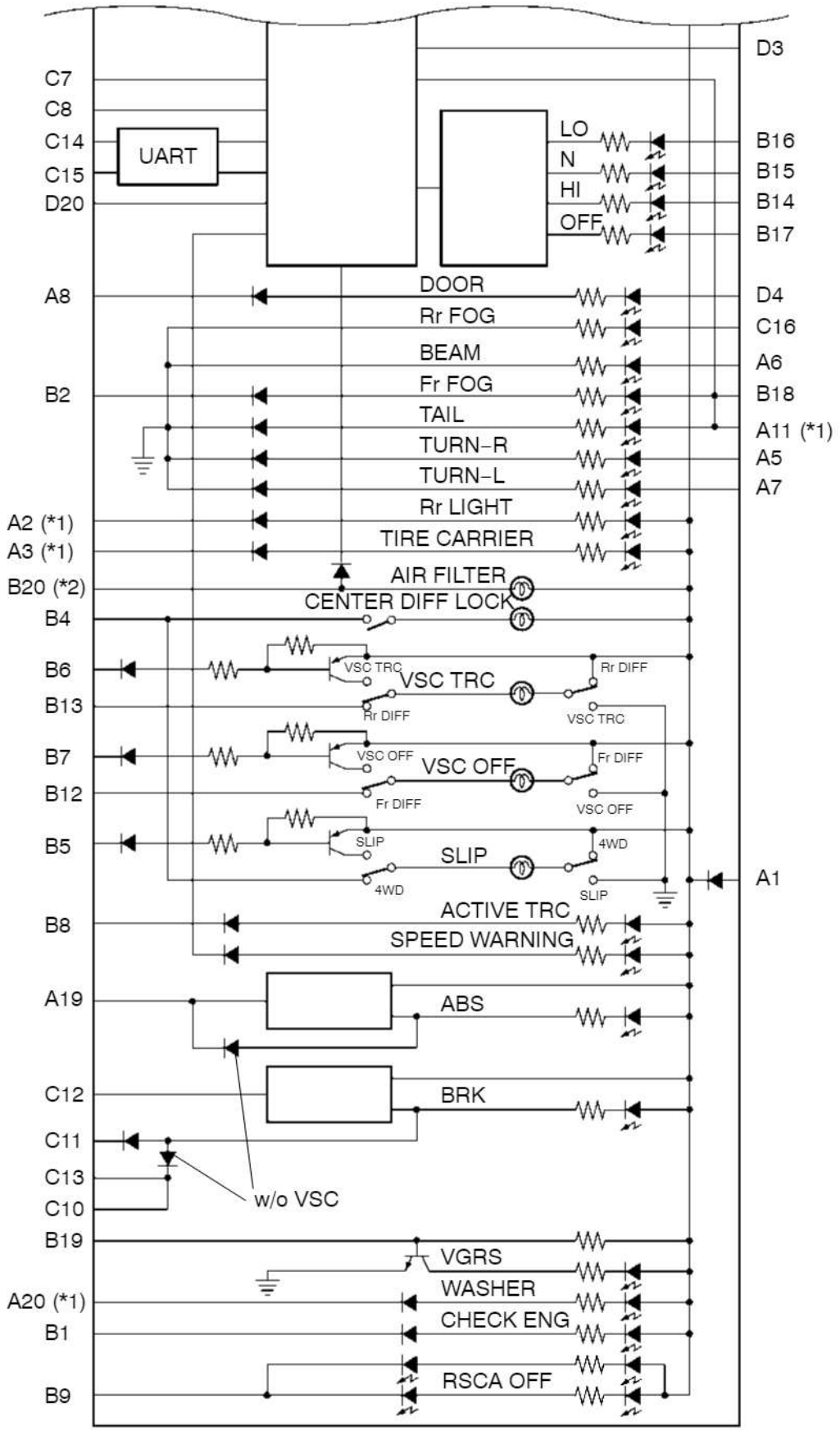


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MULTIPLE:



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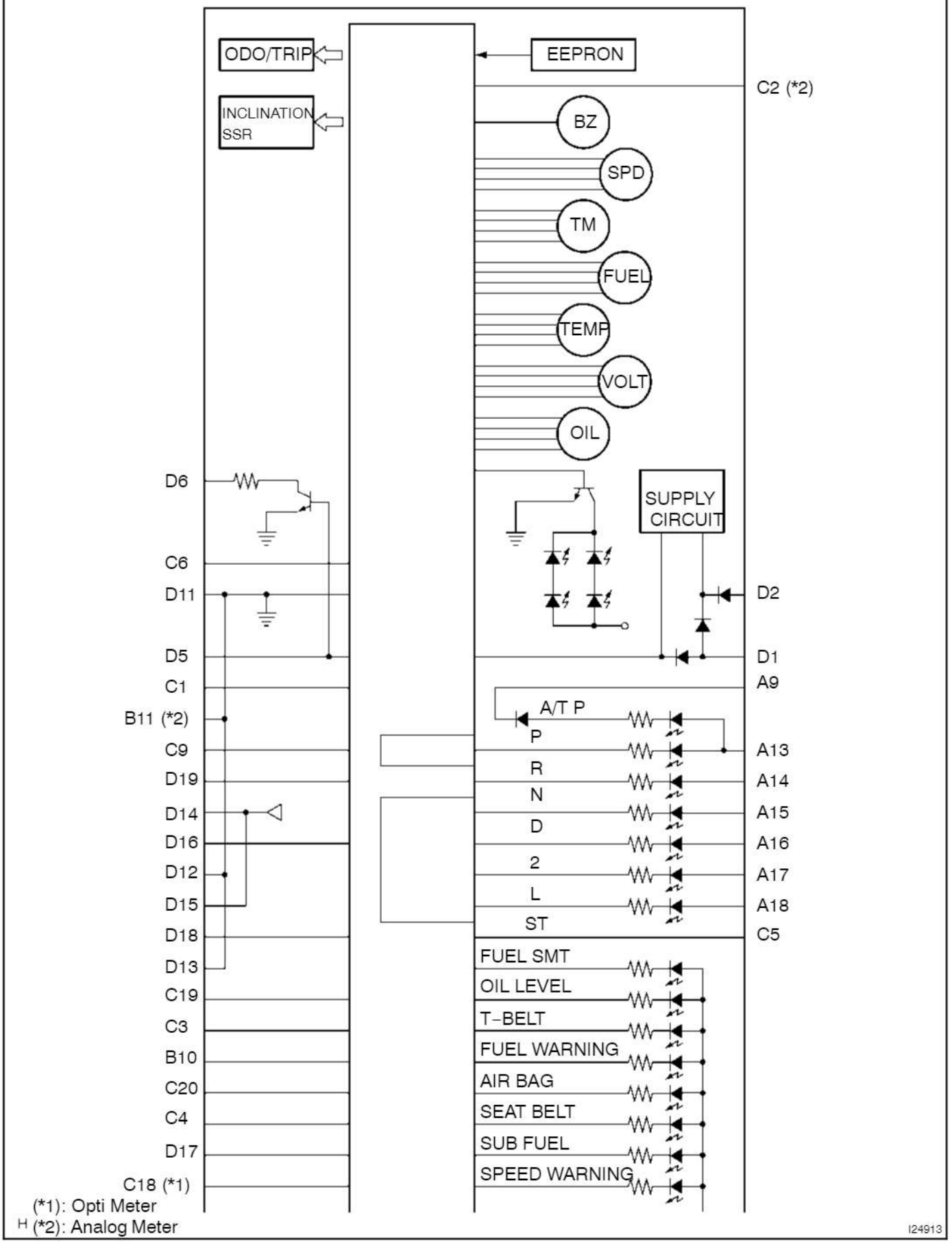


(*1): Opti Meter
(*2): Analog Meter

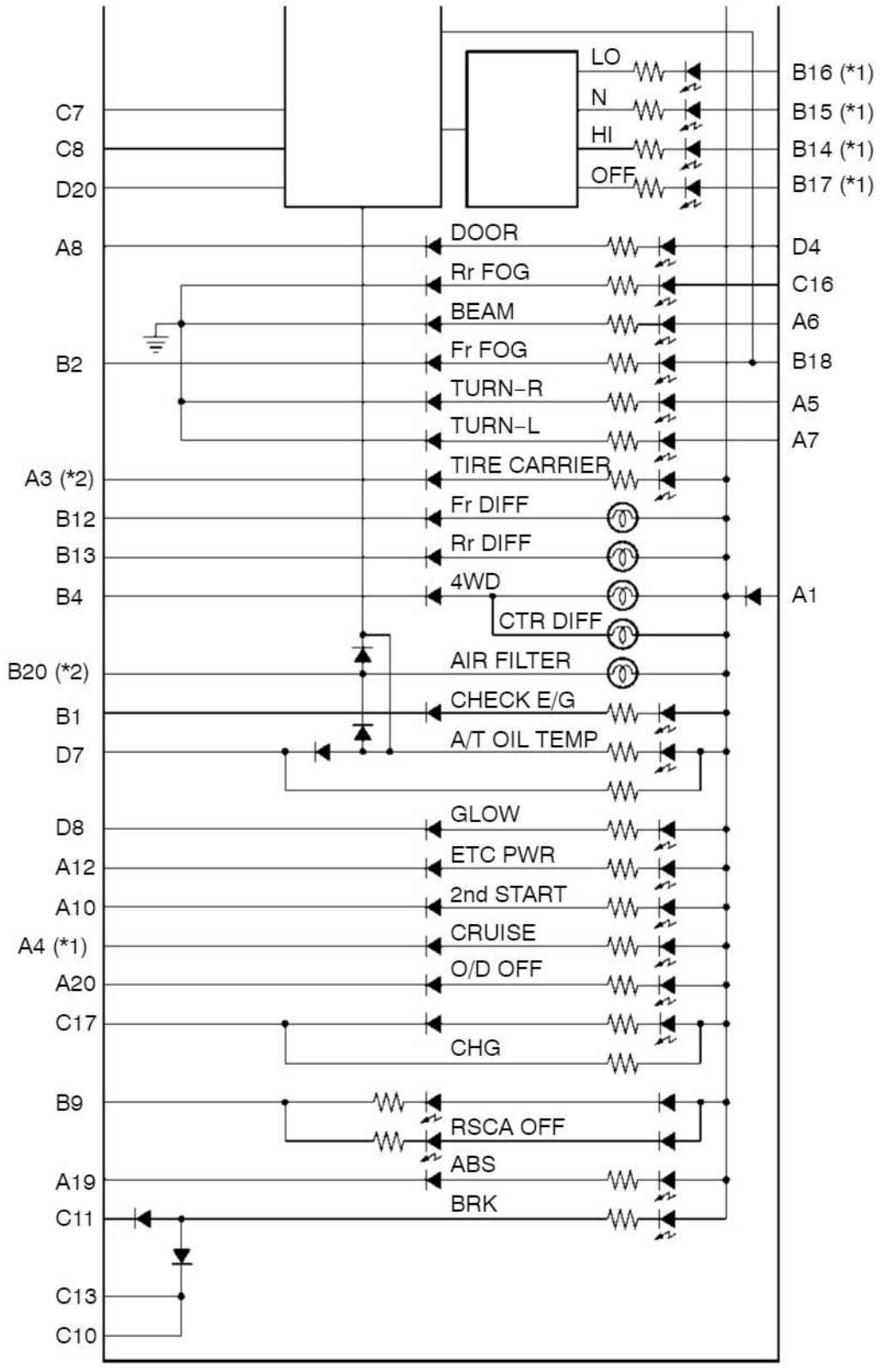
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UN–MULTIPLE:



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(*1): Opti Meter
(*2): Analog Meter

H

I24914

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UN–MULTIPLE:

No.		Wiring connector side
A	1	MET Fuse
	3	Tire Carrier Switch (*2)
	4	Light Control ECU (*1)
	5	Flasher Relay
	6	H/L R–HI Fuse
	7	Flasher Relay
	8	Body ECU
	9	Detection Switch
	10	ETC ECU
	12	Select Switch
	13	Park/Neutral Position Switch (P)
	14	Park/Neutral Position Switch (R)
	15	Park/Neutral Position Switch (N)
	16	Park/Neutral Position Switch (D)
	17	Park/Neutral Position Switch (2)
	18	Park/Neutral Position Switch (L)
	19	ABS, TRC, VSC ECU
	20	O/D Switch
B	1	Engine ECU
	2	FR Fog Switch
	4	CTR DIFF Switch/4WD Switch
	9	Airbag ECU
	10	Inclination Sensor
	12	FR DIFF Switch
	13	RR DIFF Switch
	14	AHC ECU (*1)
	15	AHC ECU (*1)
	16	AHC ECU (*1)
	17	AHC ECU (*1)
	18	PANEL Fuse
	20	Air Filter Switch (*2)
C	1	Engine ECU
	2	Sub Fuel Switch (*2)
	3	Oil Level Sensor
	4	Oil Pressure Sender Gauge
	7	Airbag ECU
	8	GND (*3)
	9	Fuel Sediment Switch
	10	Body ECU
	11	Brake Oil Level Switch
	13	Parking Brake Switch
	16	RR Fog Switch
	17	L Terminal
	18	Body ECU (*1)
	19	ABS ECU
	20	Driver Seat Belt Buckle Switch
D	1	GAUGE1 Fuse
	2	ECU–B2 Fuse
	4	DOME Fuse
	5	Speed Sensor
	6	Speed Control Unit
	7	A/T Oil Temp Switch
	8	Preheating Timer or EGR ECU
	11	Engine Earth
	12	Main Fuel Sender Gauge
	13	Sub Fuel Sender Gauge
	14	Main Fuel Sender Gauge
	15	Sub Fuel Sender Gauge
	16	Main Fuel Sender Gauge
	17	Light Control Rheostat
	18	Sub Fuel Sender Gauge
	19	Key Unlock Warning Switch
	20	Door Courtesy Switch

(*1): Opti Meter
(*2): Analog Meter
(*3): w/o ABS

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MULTIPLE:

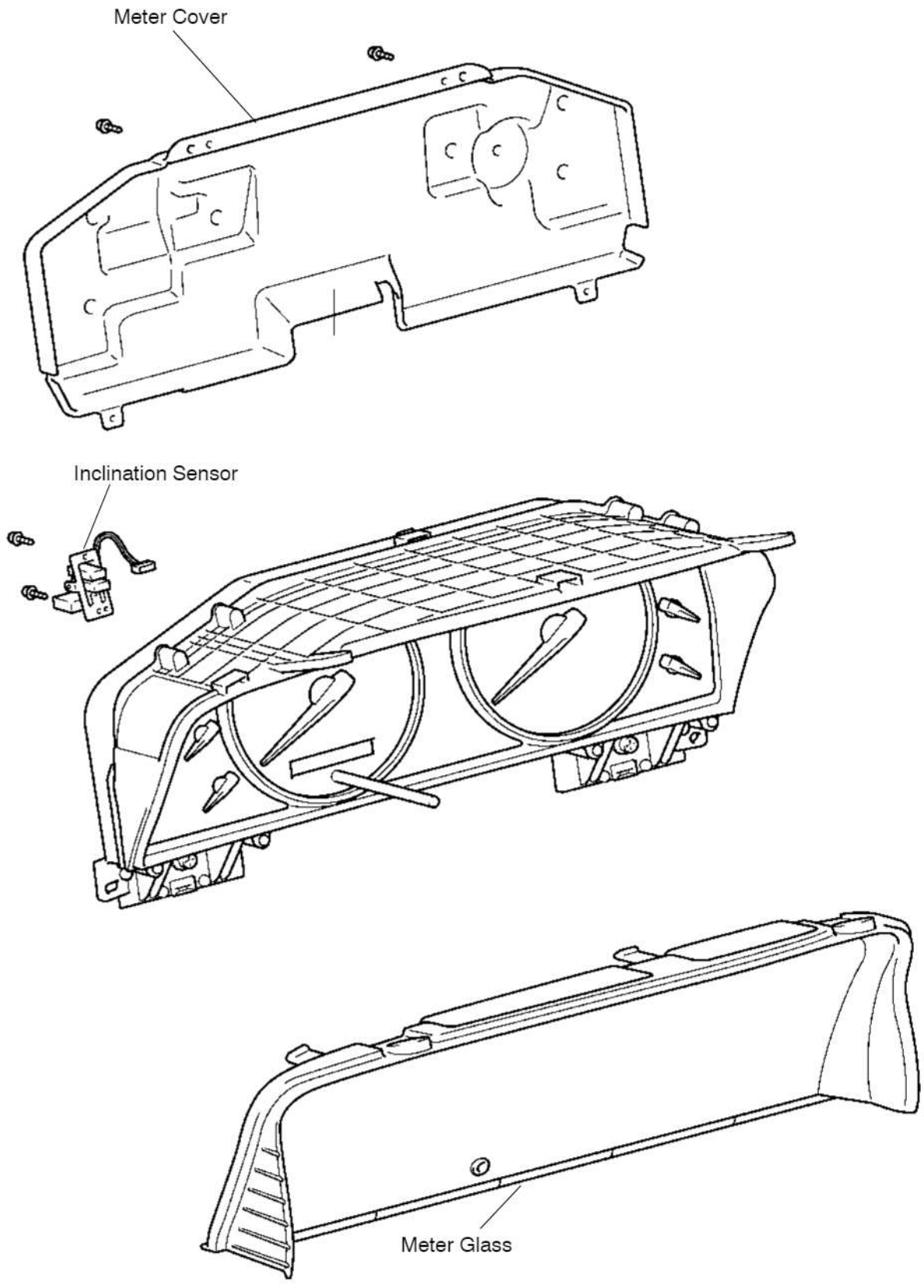
No.		Wiring connector side
A	1	MET Fuse
	2	Sub ECU (*1)
	3	Tire Carrier Switch (*2)
	5	Flasher Relay
	6	H/L R–HI Fuse
	7	Flasher Relay
	8	Body ECU
	11	H/L R–lo Fuse
	19	ABS, TRC, VSC ECU
	20	Washer Level Switch
B	1	Engine ECU
	2	FR Fog Switch
	4	CTR DIFF Switch
	5	ABS, TRC, VSC ECU
	6	ABS, TRC, VSC ECU
	7	ABS, TRC, VSC ECU
	8	ABS, TRC, VSC ECU
	9	Airbag ECU
	12	FR DIFF Switch
	13	RR DIFF Switch
	14	AHC ECU (*1)
	15	AHC ECU (*1)
	16	AHC ECU (*1)
	17	AHC ECU (*1)
	18	PANEL Fuse
	19	VGRS ECU
	20	Air Filter Switch (*2)
C	1	Engine ECU
	2	Sub Fuel Switch (*2)
	3	Oil Level Sensor
	4	Oil Pressure Sender Gauge
	7	Airbag ECU
	8	GND (*3)
	9	Fuel Sediment Switch
	10	Body ECU
	11	Brake Oil Level Switch
	13	Parking Brake Switch, ABS, TRC, VSC ECU
	16	RR Fog Switch
	18	Body ECU (*1)
	19	ABS ECU
	20	Driver Seat Belt Buckle Switch
D	1	GAUGE1 Fuse
	2	ECU–B2 Fuse
	3	ACC Fuse
	4	DOME Fuse
	5	Speed Sensor
	9	Gateway ECU
	10	Engine ECU
	11	Engine Earth
	12	Main Fuel Sender Gauge
	13	Sub Fuel Sender Gauge
	14	Main Fuel Sender Gauge
	15	Sub Fuel Sender Gauge
	16	Main Fuel Sender Gauge
	17	Light Control Rheostat
	18	Sub Fuel Sender Gauge
	19	Key Unlock Warning Switch
	20	Door Courtesy Switch

(*1): Opti Meter
(*2): Analog Meter
(*3): w/o ABS

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COMPONENTS



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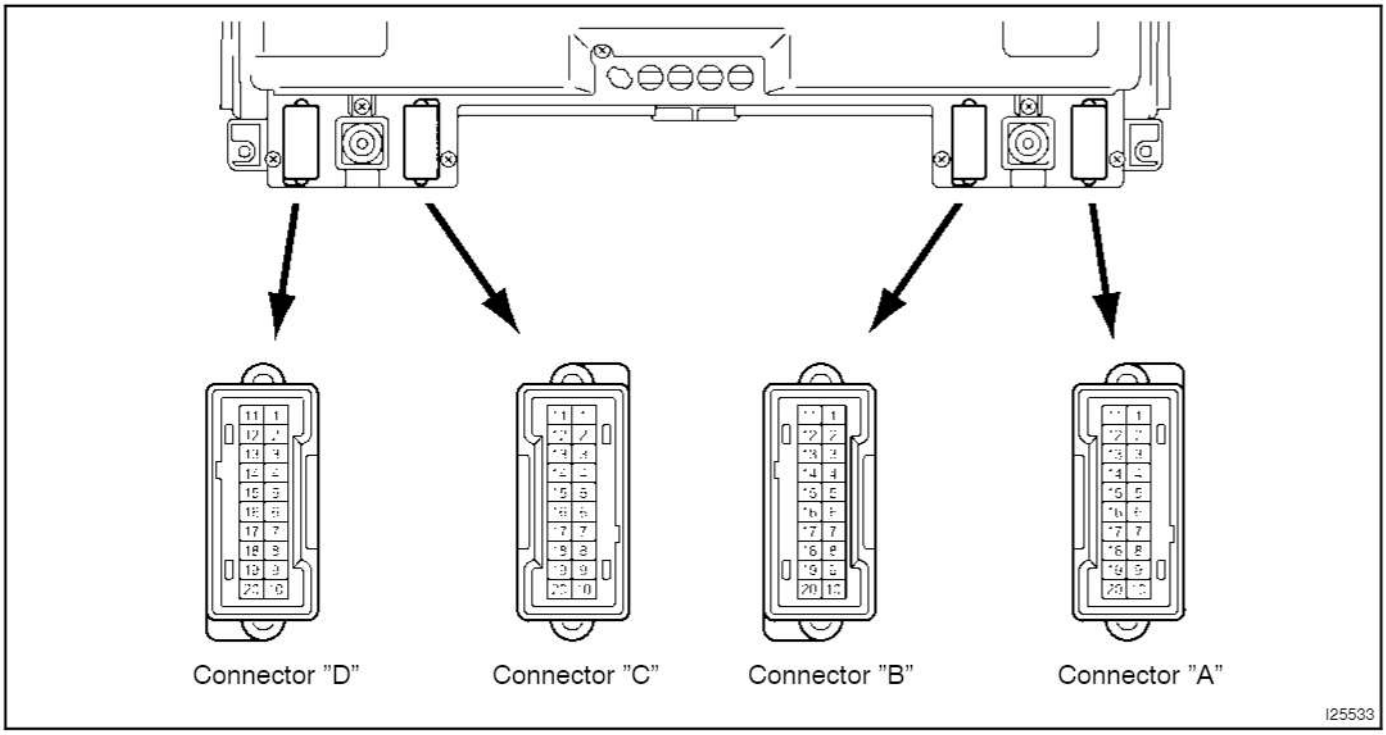
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BE2F8-01

INSPECTION

1. INSPECT COMBINATION METER CIRCUIT

Connect the connector "A" , "B", "C" and "D" to the combination meter and inspect the wire harness side connectors from the back side as shown in the table.



Tester connection	Condition	Specified condition
A1 (CHG+) – Ground	Ignition switch OFF	Below 1 V
	Ignition switch ON	10 – 14 V
A4 (BEAM–) – Ground	Ignition switch ON, light control switch ON	Below 1 V
A5 (TURN–R) – Ground	Ignition switch ON and turn signal switch OFF or LEFT	Below 1 V
	Ignition switch ON and turn signal switch RIGHT	10 – 14 V
A6 (BEAM+) – Ground	Ignition switch ON, light control switch OFF	Below 1 V
	Ignition switch ON, light control switch ON	10 – 14 V
A7 (TURN–L) – Ground	Ignition switch ON and turn signal switch OFF or RIGHT	Below 1 V
	Ignition switch ON and turn signal switch LEFT	10 – 14 V
A8 (DOOR–) – Ground	Either door is opened	Below 1 V
	Either door is closed	10 – 14 V
A11 (HEAD LIGHT+) – Ground	Ignition switch ON, light control switch OFF	Below 1 V
	Ignition switch ON, light control switch ON	10 – 14 V
A19 (ABS) – Ground w/o VSC	Ignition switch ON and ABS warning light lights up	Below 1 V
	Ignition switch ON and ABS warning light does not light up	10 – 14 V

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A19 (ABS) – Ground w/ VSC	Ignition switch ON and ABS warning light lights up	10 – 14 V
	Ignition switch ON and ABS warning light does not light up	Below 1 V
A20 (WASHER) – Ground	Ignition switch ON and window washer level warning switch float UP	Below 1 V
	Ignition switch ON and window washer level warning switch float DOWN	10 – 14 V
B1 (CHECK E/G) – Ground	Ignition switch ON and engine is stopped	Below 1 V
	Ignition switch ON and engine is running	10 – 14 V
B4 (CTR DIFF/4WD) – Ground	Ignition switch ON and center diff. lock switch OFF	Below 1 V
B4 (CTR DIFF/4WD) – Ground	Ignition switch ON and center diff. lock switch ON	Battery positive voltage
B5 (SLIP) – Ground	Ignition switch ON, SLIP warning light ON	Below 1.5 V
	Ignition switch ON, SLIP warning light OFF	10 – 14 V
B6 (VSC TRC) – Ground	Ignition switch ON, off road TRC indicator light ON	Below 1.5 V
	Ignition switch ON, off road TRC indicator light OFF	10 – 14 V
B7 (VSC OFF) – Ground	Ignition switch ON, VSC OFF indicator light ON	Below 1.5 V
	Ignition switch ON, VSC OFF indicator light OFF	10 – 14 V
B8 (ACTIVE TRC) – Ground	Ignition switch ON, TRC OFF indicator light ON	Below 1.5 V
	Ignition switch ON, TRC OFF indicator light OFF	10 – 14 V
B9 (RSCA OFF) – Ground	Ignition switch ON, RSCA warning light ON	Below 2.0 V
	Ignition switch ON, RSCA warning light OFF	10 – 14 V
B12 (Fr DIFF) – Ground	Ignition switch ON and front diff. lock switch OFF	Below 1 V
B12 (Fr DIFF) – Ground	Ignition switch ON and front diff. lock switch ON	Battery positive voltage
B13 (Rr DIFF) – Ground	Ignition switch ON and rear diff. lock switch OFF	Below 1 V
B13 (Rr DIFF) – Ground	Ignition switch ON and rear diff. lock switch ON	Battery positive voltage
B18 (ILL+) – Ground	Ignition switch OFF	Below 1 V
	Ignition switch ON	10 – 14 V
C1 (T/M PULSE) – Ground	Engine is Running	Pulse generation
C4 (OIL PRS SDR) – Ground	Ignition switch ON and indicator ON	Below 1 V
	Ignition switch ON and indicator OFF	10 – 14 V
C7 (AIR BAG–) – Ground	Ignition switch ON and ABS indicator light lights up	Pulse generation (60±5ms)
C7 (AIR BAG–) – Ground	Ignition switch ON and ABS indicator does not light up	Pulse generation (130±5ms)
C11 (BRAKE) – Ground	Ignition switch ON and indicator ON	Below 1 V
	Ignition switch ON and indicator OFF	10 – 14 V
C13 (PKB SW) – Ground	Ignition switch ON and parking brake lever is pulled	Below 1 V
	Ignition switch ON and parking brake lever is released	10 – 14 V
C19 (ABS BZ) – Ground	Ignition switch ON and ABS is error	Below 1 V
	Ignition switch ON and ABS is normal	10 – 14 V

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C20 (D–BKL SW) – Ground	Ignition switch ON and seat belt is unfastened	10 – 14 V
	Ignition switch ON and seat belt is fastened	Below 1 V
D1 (IGN+) – Ground	Ignition switch OFF	Below 1 V
	Ignition switch ON	10 – 14 V
D2 (ECU–B2) – Ground	Constant	10 – 14 V
D3 (ACC+) – Ground	Ignition switch OFF	Below 1 V
	Ignition switch ACC or ON	10 – 14 V
D4 (DOOR+) – Ground	Constant	10 – 14 V
D5 (SP IN) – Ground	Ignition switch ON and slowly move the wheel	Pulse signal is output below 1.5 V ↔ battery positive voltage
D6 (4P OUT) – Ground	Ignition switch ON and slowly move the wheel	Pulse signal is output below 1.5 V ↔ aprox. 5 V or below 1.5 V ↔ battery positive voltage
D11 (E/G EARTH) – Ground	Constant	Continuity
D12 (MAIN FE) – Ground	Constant	Continuity
D14 (MAIN FV) – Ground	Ignition switch ON	4.5 – 5.5 V
D16 (MAIN FR) – Ground	Ignition switch ON and fuel sender gauge float UP	Approx. 0.5 V
	Ignition switch ON and fuel sender gauge float DOWN	Approx. 5.5 V
D17 (ILL–) – Ground	Ignition switch ON and light control rheostat volume minimum	Below 1 V
	Ignition switch ON and light control rheostat volume maximum	10 – 14 V
D19 (KEY SW) – Ground	Key unlock warning switch ON (Key is inserted)	Below 1 V
	Key unlock warning switch OFF (Key is removed)	10 – 14 V
D20 (D–CTY SW) – Ground	Ignition switch ON and driver door is opened	Below 1 V
	Ignition switch ON and driver door is closed	10 – 14 V

If circuit is not as specified, wiring diagram and inspect the circuits connected to other parts.

2. INSPECT SPEEDOMETER/ ON–VEHICLE

Using a speedometer tester, inspect the speedometer for allowable indication error and check the operation of the odometer.

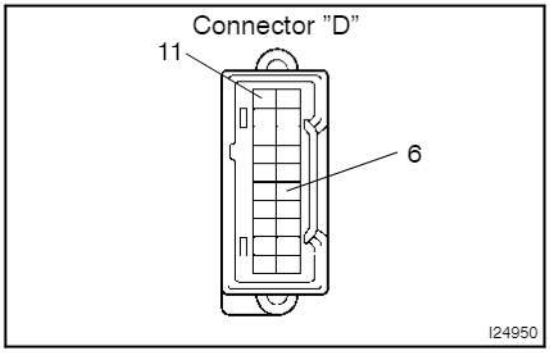
HINT:

Tire wear and tire over or under inflation will increase the indication error.

(mph)		(km/h)	
Standard indication	Allowable range	Standard indication	Allowable range
20	18 – 24	20	17 – 24
40	38 – 44	40	38 – 46
60	56 – 66	60	57.5 – 67
80	78 – 88	80	77 – 88
100	98 – 110	100	96 – 109
120	118 – 132	120	115 – 130
		140	134 – 151.5
		160	153 – 173

If error is excessive, replace the speedometer.

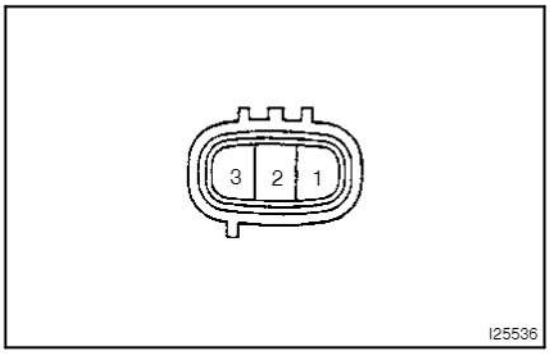
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3. INSPECT SPEEDOMETER RESISTANCE

(a) While driving the vehicle at the speed of 10 km/h, check the voltage between the terminals 6 and 11 of the combination meter assy.

STANDARD: Fluctuation between 10 to 14V or less is repeated 7 times within 1 sec.



4. INSPECT VEHICLE SPEED SENSOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and negative (–) lead to terminal 2.

(b) Connect the positive (+) lead from the tester to terminal 3 and the negative (–) lead to terminal 2.

(c) Rotate the shaft.

(d) Check that there is voltage change from approx. 0V to 11 V or more between terminals 2 and 3.

HINT:

The voltage change should be performed 4 times for every revolution is not as specified, replace the sensor.

5. INSPECT TACHOMETER / ON–VEHICLE

(a) Connect a tune–up test tachometer, and start the engine.

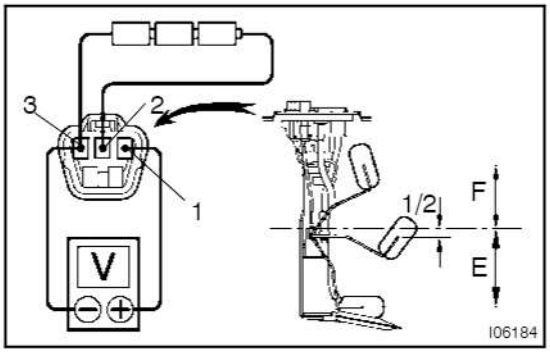
NOTICE:

- **Reversing the connection of the tachometer will damage the transistors and diodes inside.**
- **When removing or installing the tachometer, be careful not to drop or subject it to heavy shocks.**

(b) Compare the tester and tachometer indications.

DC 13.5 V 25 °C at (77°F):

Standard indication	Allowable range
700	630 – 770
1,000	900 – 1,100
2,000	1,850 – 2,150
3,000	2,800 – 3,200
4,000	3,800 – 4,200
5,000	4,800 – 5,200
6,000	5,750 – 6,250
7,000	6,700 – 7,300



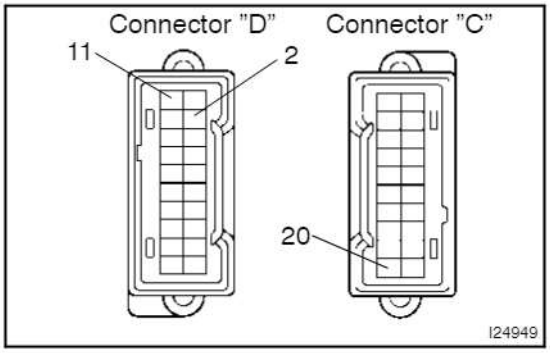
6. INSPECT FUEL SENDER GAUGE RESISTANCE

(a) Apply voltage between terminals 2 and 3.

(b) Measure voltage between terminals 1 and 2 for each float position.

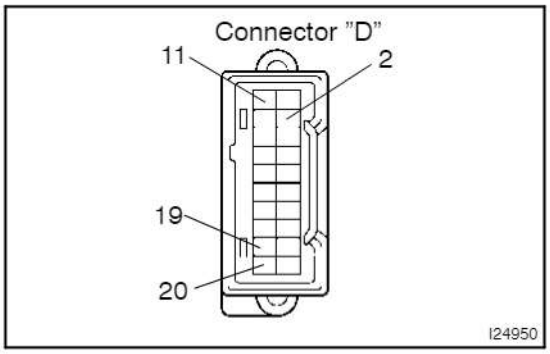
Float position mm (in.)	Voltage (V)
F: Approx. 85.3 (3.36)	Approx. 4.60 ± 0.1
1/2: Approx. 1.7 (0.67)	Approx. 2.45 ± 0.1
E: Approx. 91.9 (3.62)	Approx. 0.30 ± 0.1

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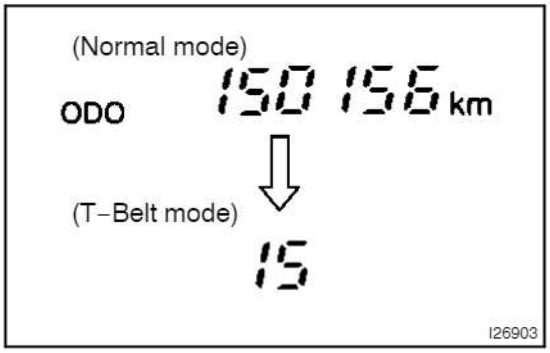
7. INSPECT SEAT BELT WARNING BUZZER

(a) Disconnect the connector from the combination meter.
(b) Connect the positive (+) lead from the baterry terminal 2 and negative (–) lead terminal 11.
(c) Check that the buzzer stop after 4 to 8 seconds.
(d) Chech that the buzzer stops when connecting the terminal 20 to the GND.



8. INSPECT KEY UNLOCK WARNING BUZZER

(a) Disconnect the connector from the combination meter.
(b) Connect the positive (+) lead from the baterry terminal 2 and negative (–) lead terminal 11.
(c) Connect the negative (–) lead from baterry terminal 19 and 20, check that the buzzer sound.



9. INSPECT T–BELT MODE DISPLAY

(a) Turn the ignition switch ON.
(b) Turn ODO/TRIP display screen to ODO, and turn the ignition switch OFF.
(c) While pressing the trip switch, turn the ignition switch ON and hold it for 5 secs.
(d) Release the trip switch, then press the trip switch again within 5 secs.
(e) Transfer to T–BELT mode, and the following initial setting value is displayed.

km : 15 (0,000 km) or 9 (0,000 mile)

HINT:

If the meter has been replaced before, the displayed value might not be the same as the initial setting value.

10. REWRITING REPLACEMENT SETTING VALUE

Press the trip switch and rewrite the replacement setting value.

Conditions	Setting value
When a belt is replaced	km : 15 (0,000 km) mile : 9 (0,000 mile)
When a meter is replaced	km : (15 (0,000 km)) – (Mileage when the meter is replaced.) mile : (9 (0,000 km)) – (Mileage when the meter is replaced.)

HINT:

Every press of the trip switch adds 10,000 km or 10,000 mile and the meter returns to 10,000 km or 10,000 mile when 200,000 km or 200,000 mile is reached. If switch operation is not performed within than 30 secs, the setting value will not be changed, the display screen turns to "ODO", and the mode returns to the normal mode.

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11. T–BELT MODE COMPLETION

NOTICE:

If T–BELT mode is completed, even though belt replacement or meter replacement has not been performed, the T–BELT warning is reset.

(a) After setting the replacement setting value, hold the trip switch ON for more than 5 secs. then release the trip switch.

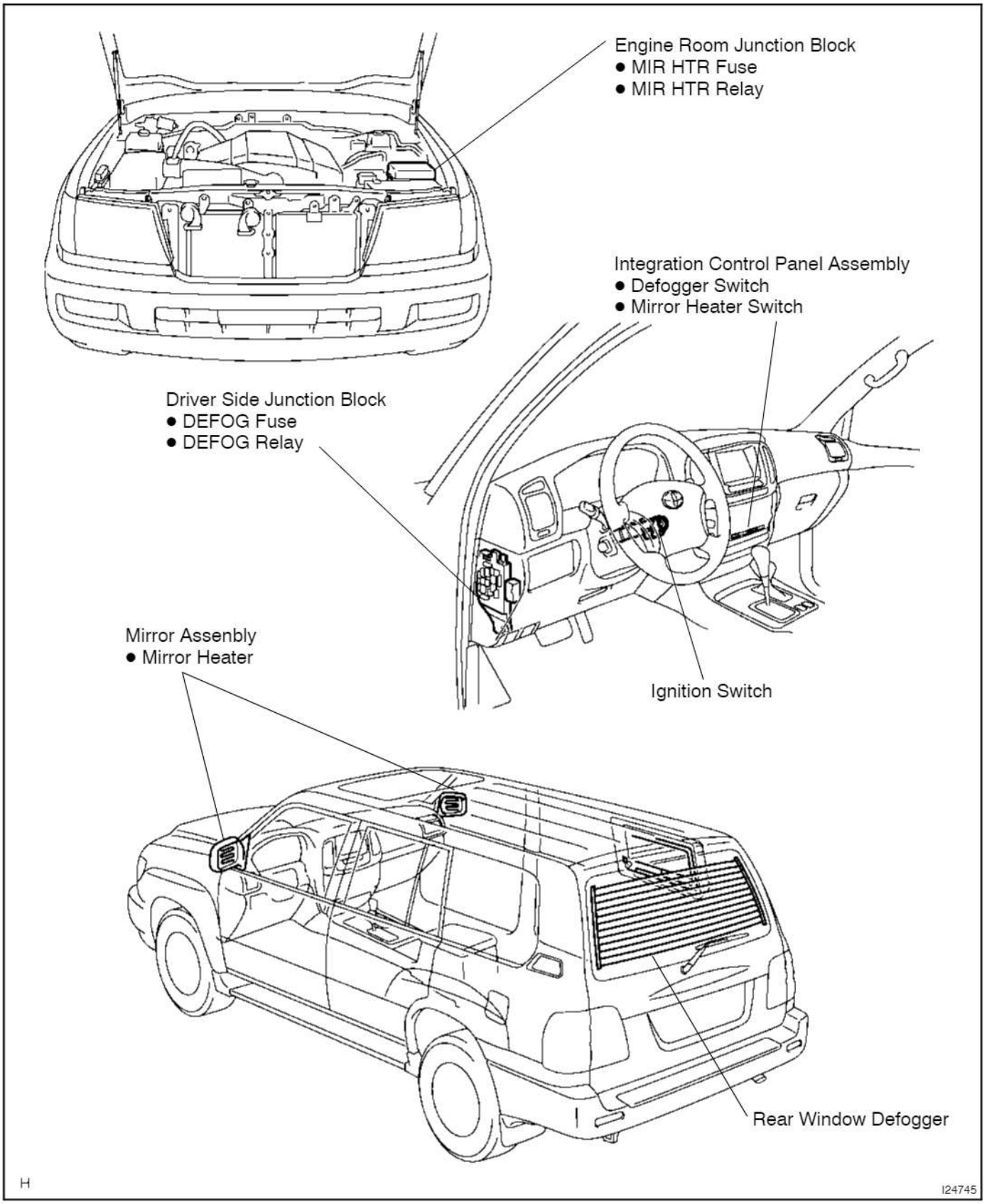
(b) Check that the display has changed to "ODO" and warning light has gone OFF.

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DEFOGGER SYSTEM

LOCATION

BE0GS-20



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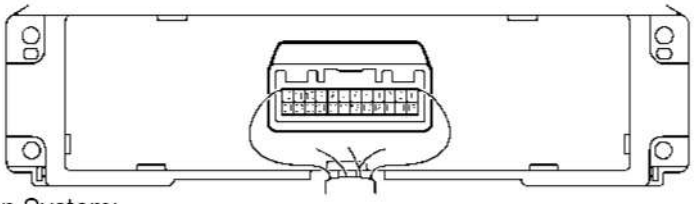
BE2F7-01

INSPECTION

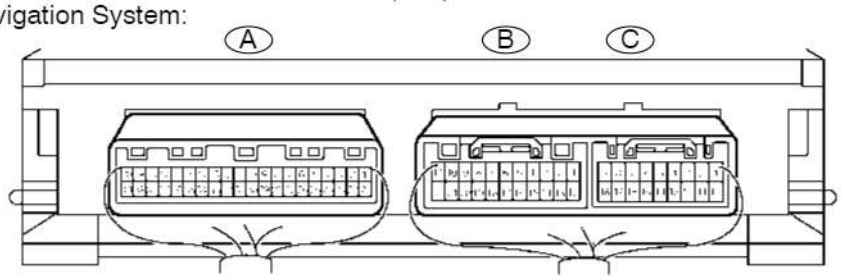
1. INSPECT DEFOGGER SWITCH CIRCUIT

Disconnect the connector from the panel switch and inspect the connector on wire harness side, as shown in the chart.

w/o Navigation System:



w/ Navigation System:



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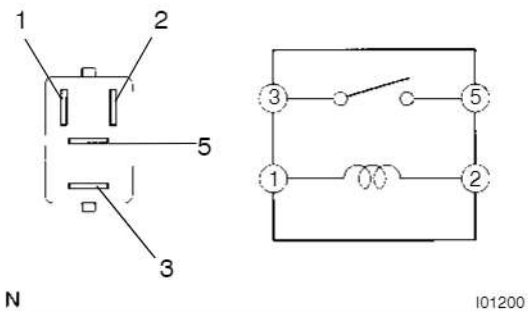
w/ Navigation:

Tester connection	Condition	Specified condition
B12 (GND) – Ground	Constant	Continuity
B11 (+B) – Ground	Constant	Battery positive voltage
B22 (IG) – Ground	Ignition switch LOCK or ACC	No voltage
B22 (IG) – Ground	Ignition switch ON	Battery positive voltage
A10 (RDFGR) – Ground	Constant	Battery positive voltage

w/o Navigation:

Tester connection	Condition	Specified condition
16 (GND) – Ground	Constant	Continuity
8 (IG) – Ground	Ignition switch LOCK or ACC	No voltage
8 (IG) – Ground	Ignition switch ON	Battery positive voltage
2 (DEFC) – Ground	Constant	Battery positive voltage

If the circuit is not as specified, replace the switch.



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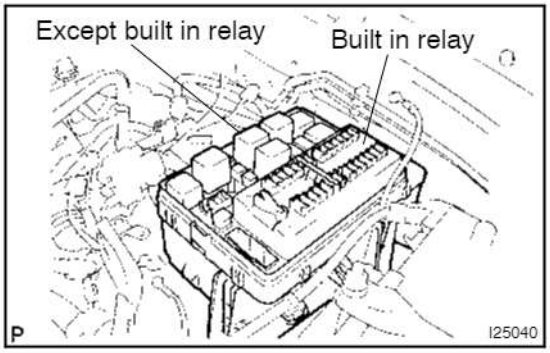
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2. INSPECT DEFOGGER RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

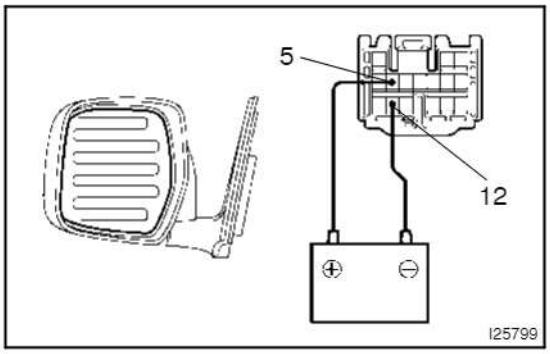
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3. INSPECT ENGINE ROOM R/B RELAY CIRCUIT (See page BE–8)

HINT:

The mirror heater relay is built in engine room junction block. Also the relay is constructed with a relay block that is in the junction block as a unit. To disconnect the wire harness connecting with relay block is impossible. If the relay has a malfunction, replace it with junction block assembly wire harness together.



4. w/ Mirror heater:
INSPECT MIRROR HEATER OPERATION

(a) Connect the positive (+) lead from the battery to terminal 5 and the negative (–) lead to terminal 12.

(b) Check that the mirror becomes warm.

HINT:

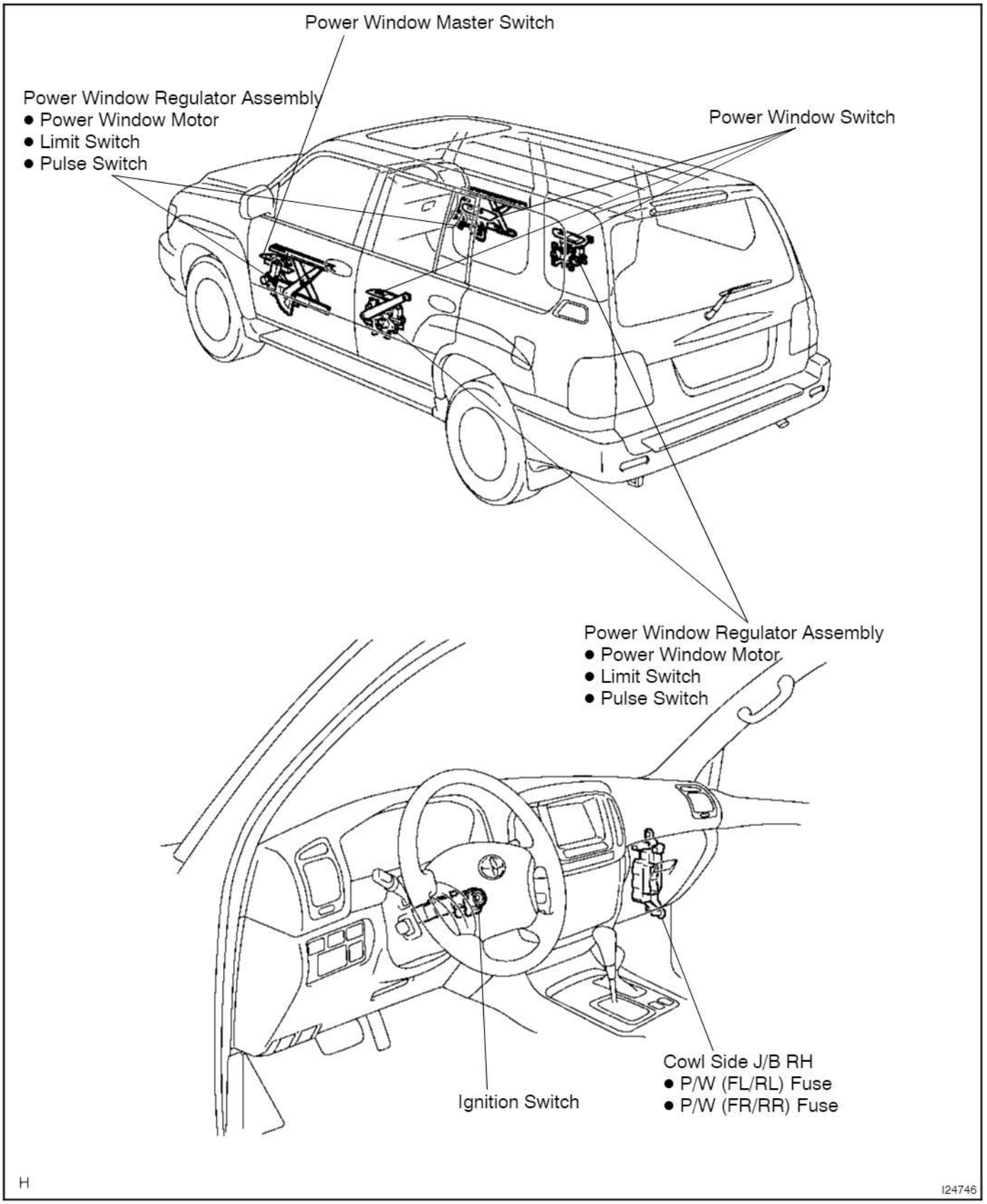
It will take a short time for the mirror to become warm.

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POWER WINDOW CONTROL SYSTEM

LOCATION

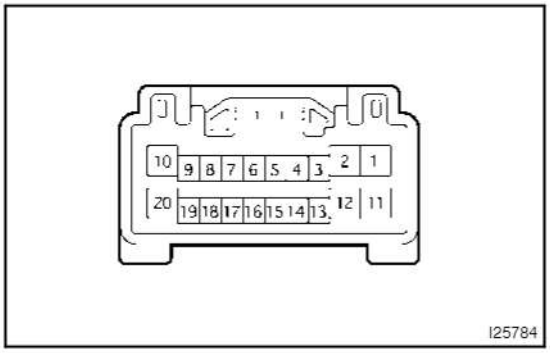
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BE2F6-01

INSPECTION

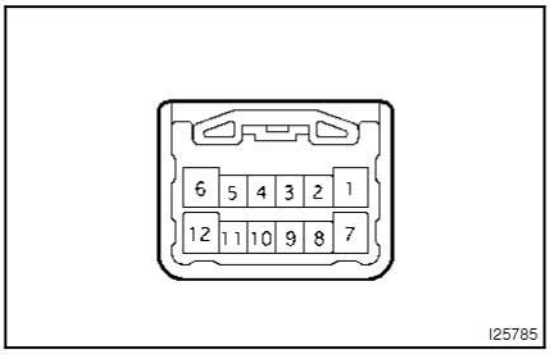


1. INSPECT POWER WINDOW MASTER SWITCH CIRCUIT

Check the voltage and continuity of each terminal of the wire harness side connector.

Tester connection	Condition	Specified condition
2 (GND) – Body ground	Constant	Continuity
10 (BDR) – 2 (GND)	Constant	10 – 14V
9 (CPUB) – 2 (GND)	Constant	10 – 14V
20 (SIG) – 2 (GND)	Ignition switch OFF → ON	0V → 10 – 14V
1 (UP) – 11 (DN)	Constant	Continuity
5 (LMT) – 13 (SGND)	Driver door glass fully closed	No continuity
	Driver door glass opened by 4 mm (1.06in.)	Continuity

If the circuit is not as specified, inspect the circuits connected to other parts.



2. INSPECT POWER WINDOW SWITCH CIRCUIT

Check the voltage and continuity of each terminal of the wire harness side connector.

Tester connection	Condition	Specified condition
7 (GND) – Body ground	Constant	Continuity
12 (BDR) – 7 (GND)	Constant	10 – 14V
6 (UP) – 1 (DN)	Constant	Continuity
3 (LMT) – 5 (SGND)	Driver door glass fully closed	No continuity
	Driver door glass opened by 4 mm (1.06in.)	Continuity

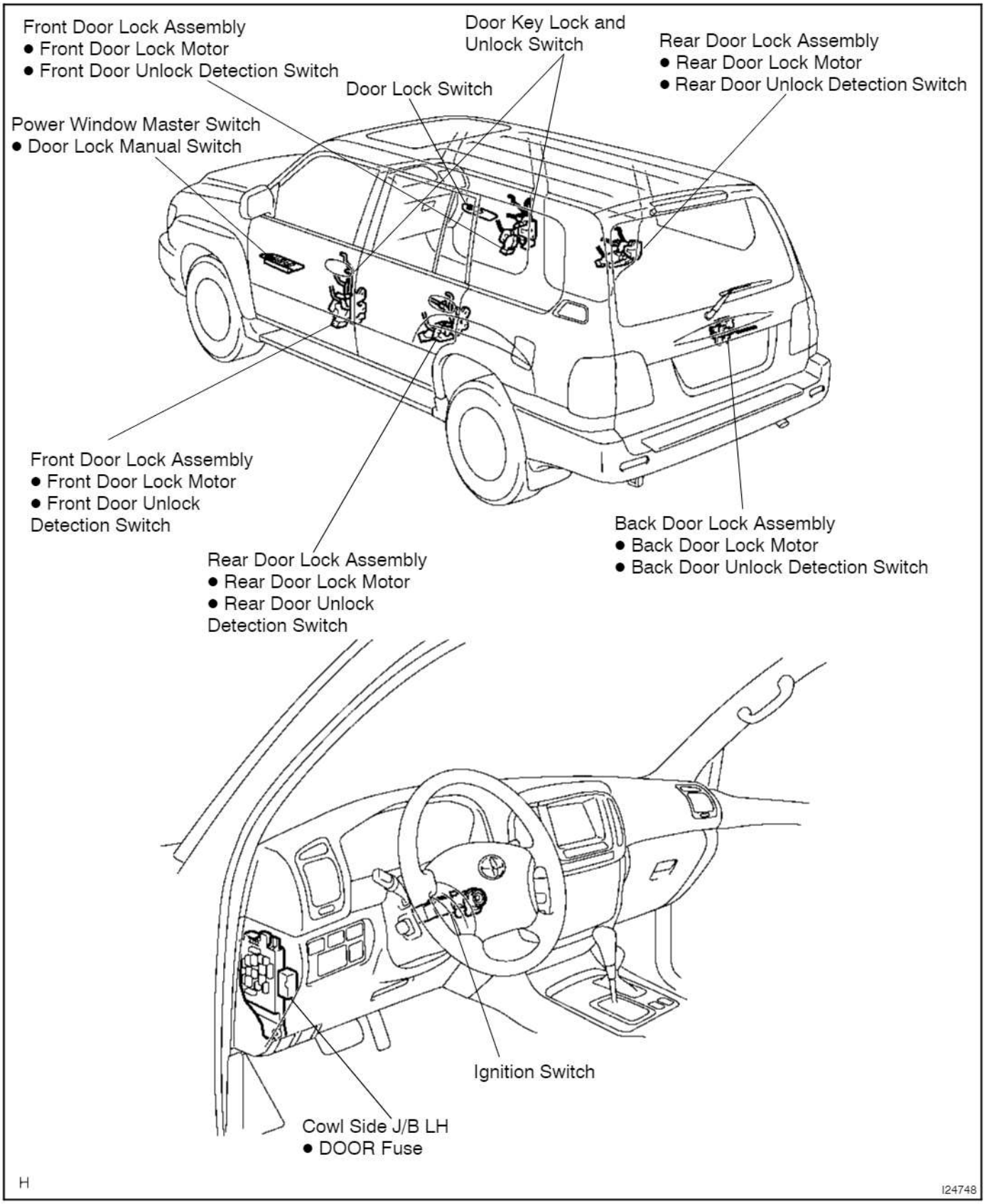
If the circuit is not as specified, inspect the circuits connected to other parts.

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POWER DOOR LOCK CONTROL SYSTEM

LOCATION

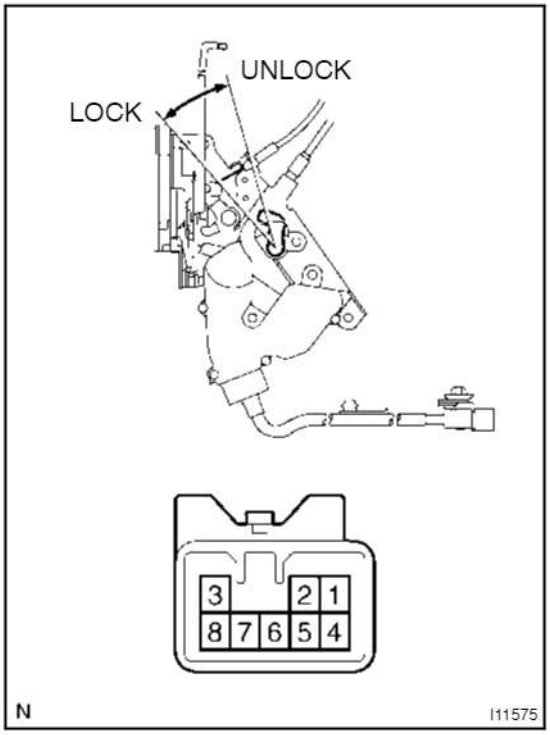
BE0HQ-20



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BE2F5-01

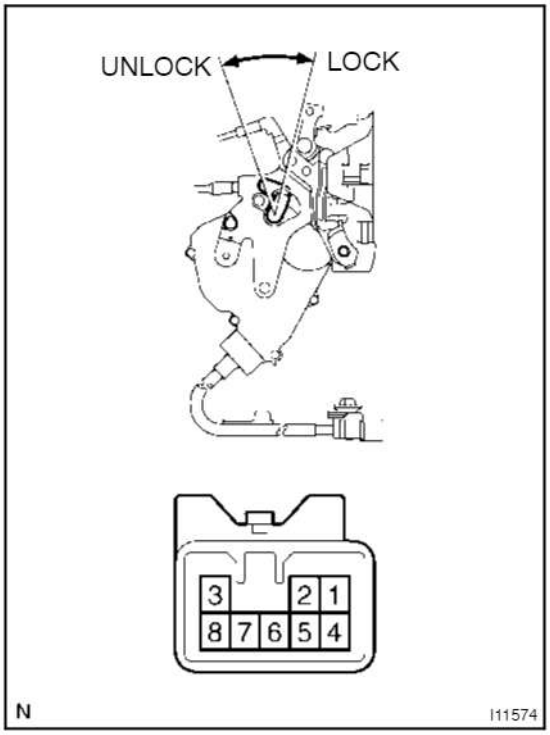
INSPECTION



1. w/ Double locking system:
INSPECT FRONT DOOR UNLOCK DETECTION SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Door Lock set to LOCK)	–	No continuity
ON (Door Lock set to UNLOCK)	1 – 5	Continuity

If continuity is not as specified, replace the door lock assembly.



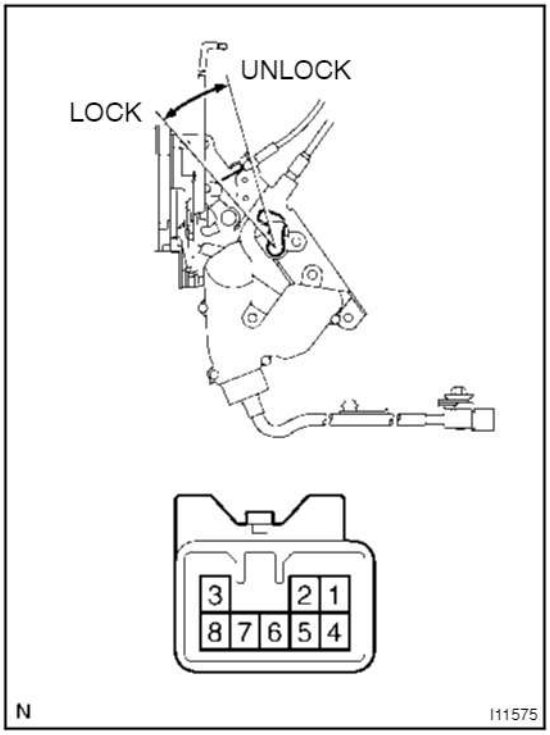
2. w/ Double locking system:
INSPECT REAR DOOR UNLOCK DETECTION SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Door Lock set to LOCK)	–	No continuity
ON (Door Lock set to UNLOCK)	1 – 5	Continuity

If continuity is not as specified, replace the door lock assembly.

3. INSPECT DOOR UNLOCK DETECTION SWITCH CIRCUIT (See page DI–1081)

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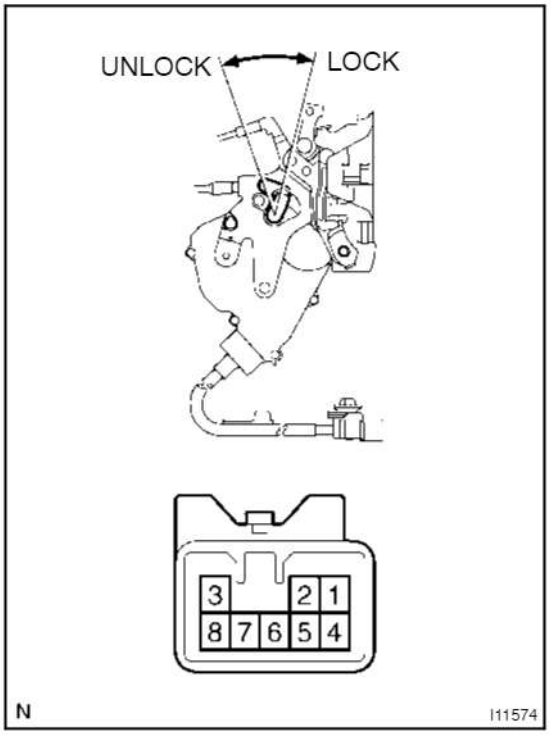


4. w/ Double locking system:
INSPECT FRONT DOOR LOCK MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 3, and check that the door lock link moves to LOCK position.

(b) Reverse the polarity and check that the door lock link moves to UNLOCK position.

If operation is not as specified, replace the door lock assembly.



5. w/ Double locking system:
INSPECT REAR DOOR LOCK MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 3, and check that the door lock link moves to LOCK position.

(b) Reverse the polarity and check that the door lock link moves to UNLOCK position.

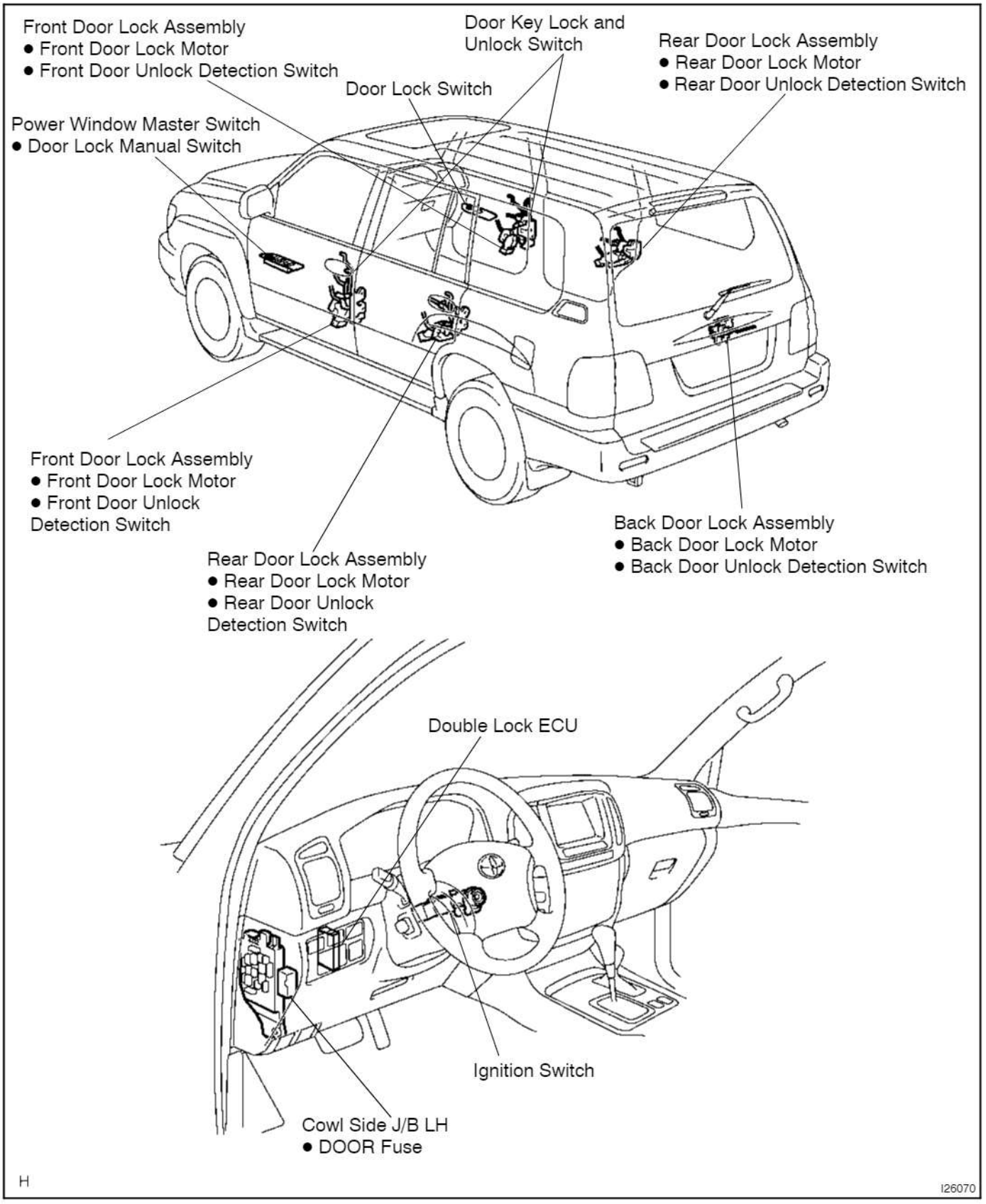
If operation is not as specified, replace the door lock assembly.

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DOUBLE LOCKING SYSTEM

LOCATION

BE16H-04



H

I26070

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BE16I-02

INSPECTION

1. INSPECT DOUBLE LOCKING SYSTEM FUNCTION

HINT:

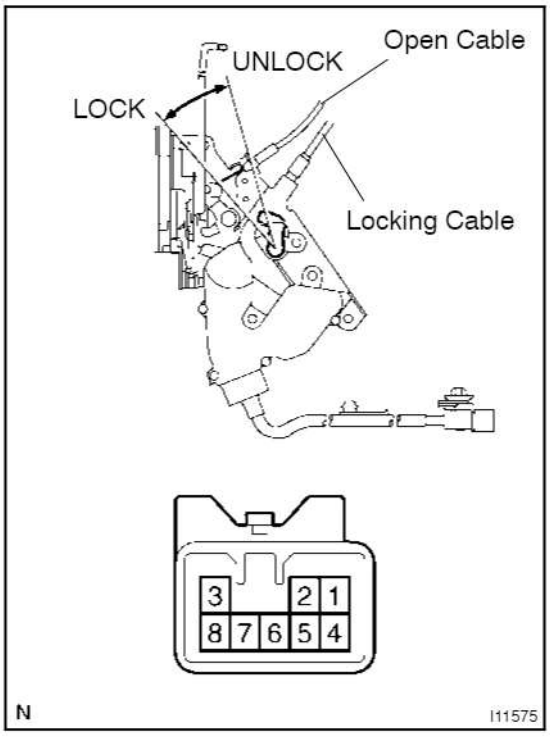
- In case of doing the following inspection, must open one of the windows of the doors.
- In order to set the double locking, turn the ignition switch ON to OFF, open the driver's door and close it, then lock the door with the transmitter.
- In case of doing the following inspection, for preventing the wrong warning, turn OFF the radar sensor. The method to turn off the radar sensor is to press the lock button of the transmitter to lock, then press the lock button again. (When the radar sensor turns OFF, "all turn signal light" flashes 5 times.)
  In order to turn ON the radar sensor again, press the lock button of the transmitter again. (When the radar sensor turns ON again, "all turn signal light" flashes once.)
  Switching from ON to OFF can be done only within 30 seconds after setting the Theft Deterrent System (locking with the transmitter).

(a) Check that the double locking is set.
  (1) Lock with the wireless transmitter from the inside of the vehicle.
  (2) Check that the doors won't open from the inside of the vehicle even operating the door lock knob and inside door handle

(b) Check that the double locking is released (Case 1).
  (1) Unlock with the wireless transmitter from the inside of the vehicle.
  (2) Check that the doors will open from the inside of the vehicle by operating the door knob and inside door handle.

(c) Check that the double locking is released (Case 2).
  (1) Lock with the wireless transmitter from the inside of the vehicle.
  (2) Under this condition, insert the key into the ignition key cylinder, turn the ignition switch to ON and check that the doors will open.

If you find any abnormal symptom in the check items of (a), (b) and (c), troubleshoot according to the Problem Symptom Table.



2. INSPECT FRONT DOUBLE LOCKING SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Double Locking is released)	4 – 6	No continuity
ON (Double Locking is set)	4 – 6	Continuity

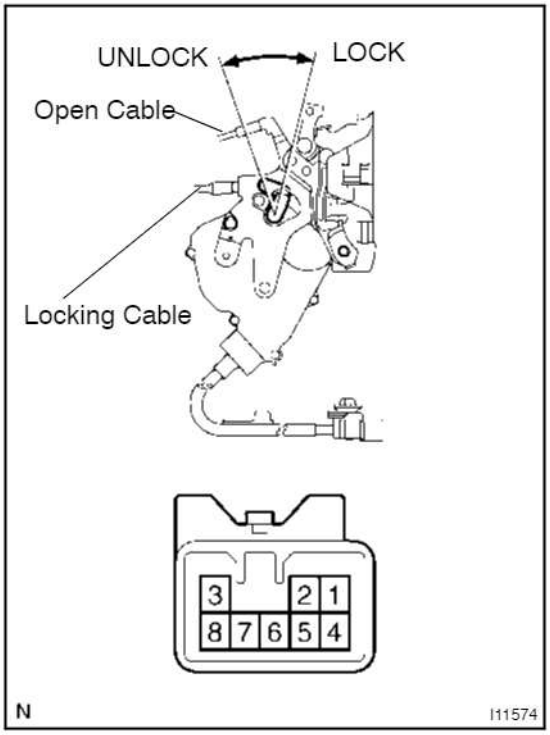
If continuity is not as specified, replace the door lock assembly.

3. INSPECT FRONT DOUBLE LOCKING MOTOR OPERATION

(a) Set the Door Lock to LOCK position by the locking cable.
(b) Connect the positive (+) lead from the battery to terminal 8 and negative (–) lead to terminal 7, and check that the Door Lock will not unlock by pulling the locking cable. (Locking cable must return to LOCK position by the force of spring when pulling the locking cable.)
(c) Reverse the polarity and check that the Door Lock will unlock by pulling the locking cable.

If operation is not as specified, replace the door lock assembly.

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4. INSPECT REAR DOUBLE LOCKING SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Double Locking is released)	4 – 6	No continuity
ON (Double Locking is set)	4 – 6	Continuity

If continuity is not as specified, replace the door lock assembly.

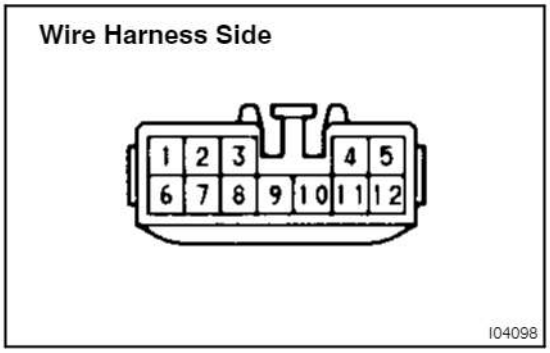
5. INSPECT REAR DEAD LOCK MOTOR OPERATION

(a) Set the Door Lock to LOCK position by the locking cable.

(b) Connect the positive (+) lead from the battery to terminal 8 and negative (–) lead to terminal 7, and check that the Door Lock will not unlock by pulling the locking cable. (Locking cable must return to LOCK position by the force of spring when pulling the locking cable.)

(c) Reverse the polarity and check that the Door Lock will unlock by pulling the locking cable.

If operation is not as specified, replace the door lock assembly.



6. INSPECT DOUBLE LOCKING ECU CIRCUIT

Disconnect connector from the ECU and inspect the connectors on the wire harness side as follows.

Tester connection	Condition	Specified condition
14 (GND) – Ground	Constant	Continuity
1 (+B) – Ground	Constant	Battery voltage
7 (CPUB) – Ground	Constant	Battery voltage

If circuit is as specified, replace the ECU.

If circuit is not as specified, wiring diagram and inspect the circuits connected to other parts.

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WIRELESS DOOR LOCK CONTROL SYSTEM

BE226-05

REGISTRATION PROCEDURE

HOW TO CODE REGISTRATION

NOTICE:

When replacing the theft deterrent ECU or transmitter, registration of recognition code is necessary because they are provided as a single components.

(a) Select the operation mode to perform from the following operation modes.
- Add mode
- Rewrite mode
- Prohibition mode
- Confirmation mode

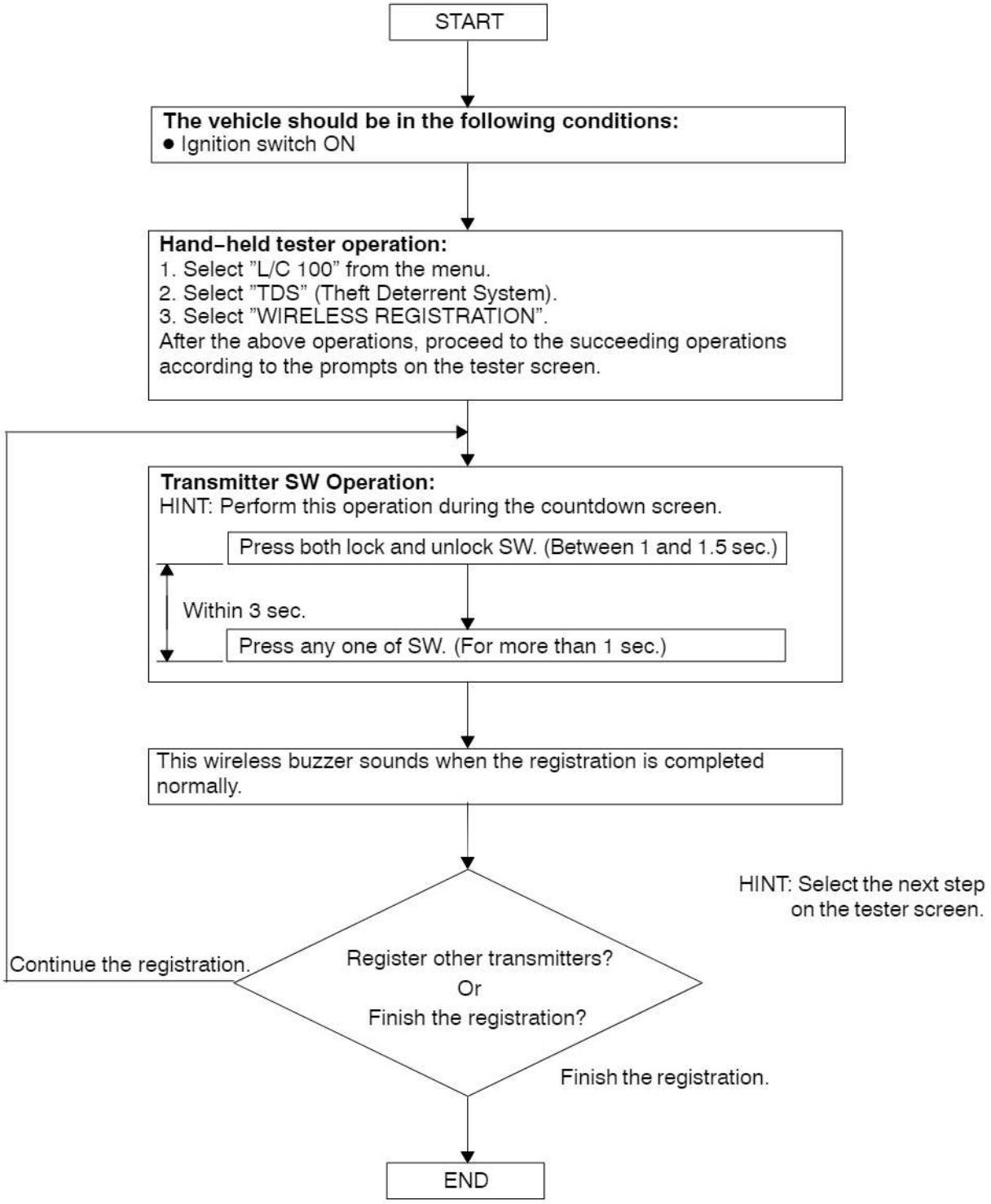
HINT:
- The "Add mode" is for adding the newly recognized codes for registration while the already registered codes are retained. This mode is used when the transmitter is added. When the number of the registered codes exceeds 4 codes, the previously registered codes will be erased in order, staring from the first registered code.
- The "Rewrite mode" is for erasing all the registered codes and registering newly recognized codes only. This mode is used when the transmitter or the door control receiver is replaced.
- The "Prohibition mode" is for erasing all the registered codes to prohibit the wireless door lock operation. This mode is used when the transmitter is lost.
- The "Confirmation mode" is for confirming the number of recognition codes that are registered. This mode is used to check the number of registered codes when new codes are added to the registration, etc.

(b) Follow the chart on the following page to register the transmitter recognition code to the theft deterrent ECU.

HINT:
- When procedure is out of the specified, the registration operation is cancelled.
- Maximum 4 recognition codes can be registered.

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(c) By TOYOTA Hand–Held Tester



HINT:

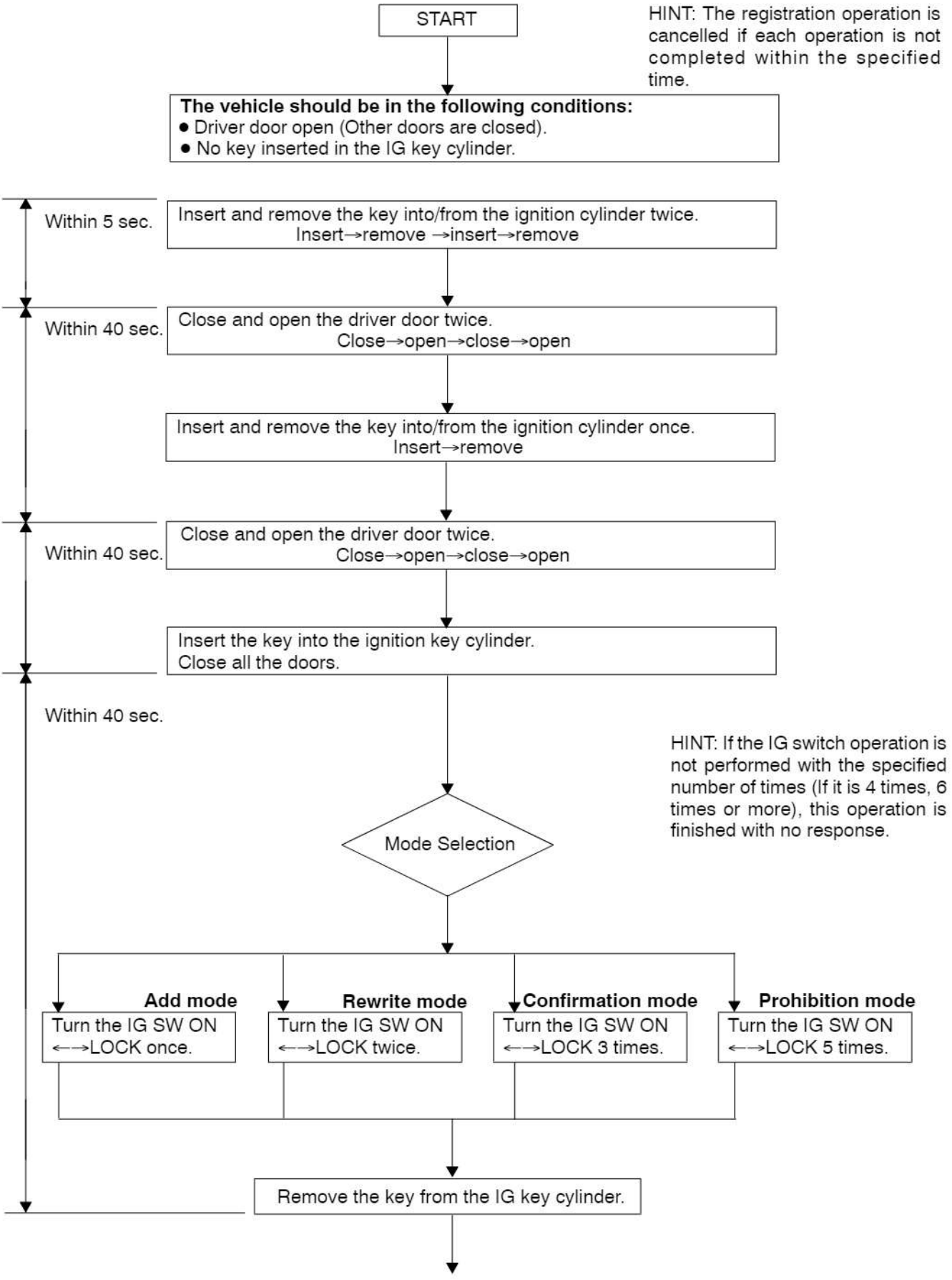
This page is to show briefly the registration procedure using the hand–held tester.

For detailed procedures, please refer to the prompts on the tester screen.

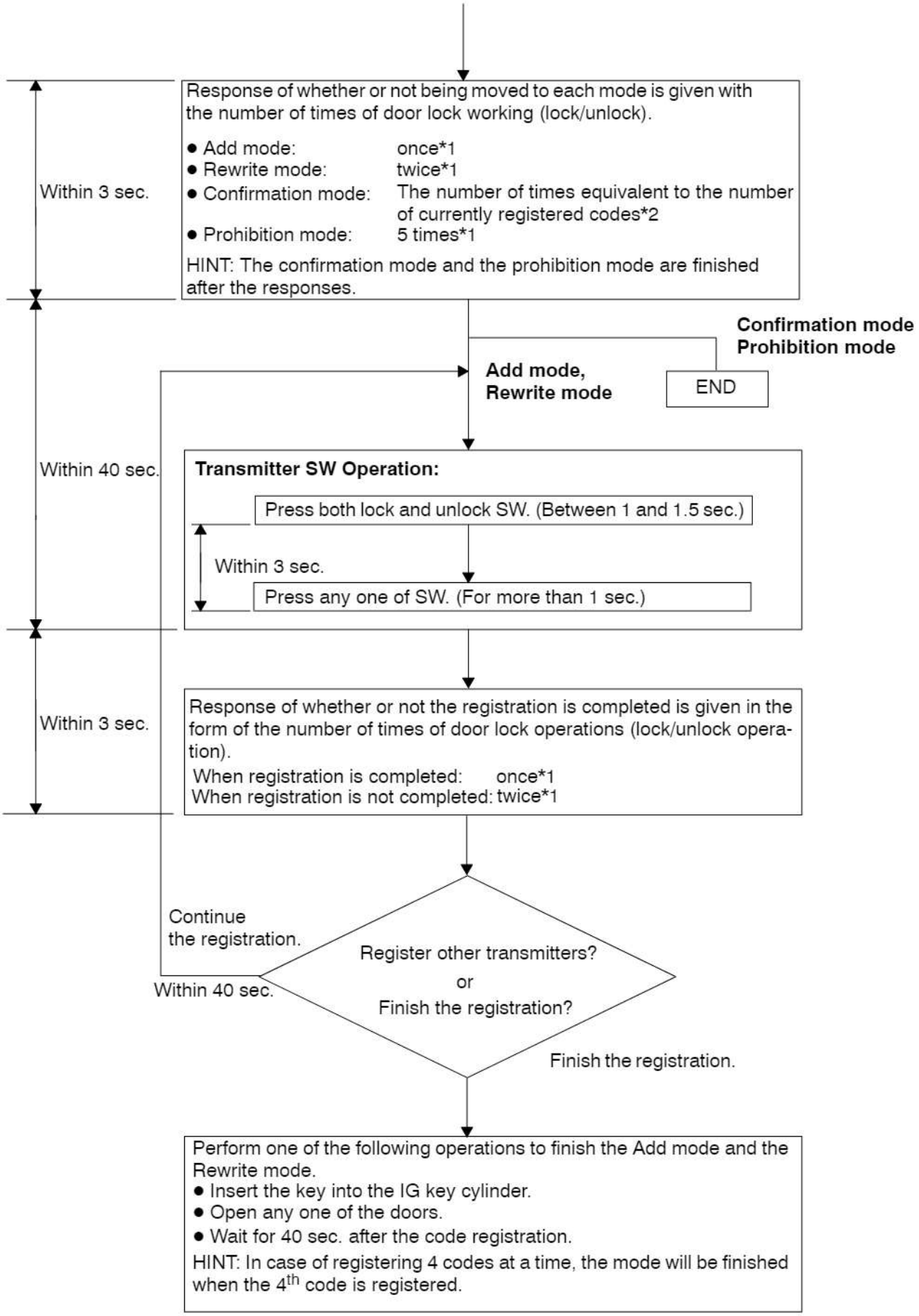
The number of currently registered codes can be checked out on the first screen of the WIRELESS REGISTRATION.

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(d) By Switch Operation:



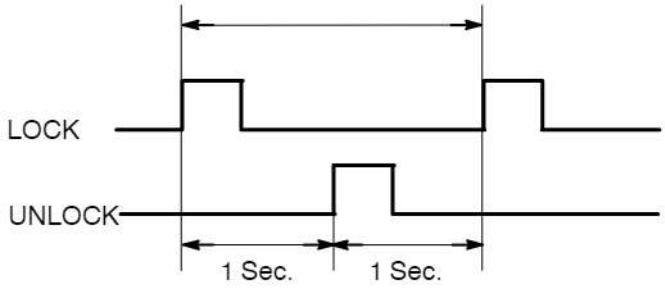
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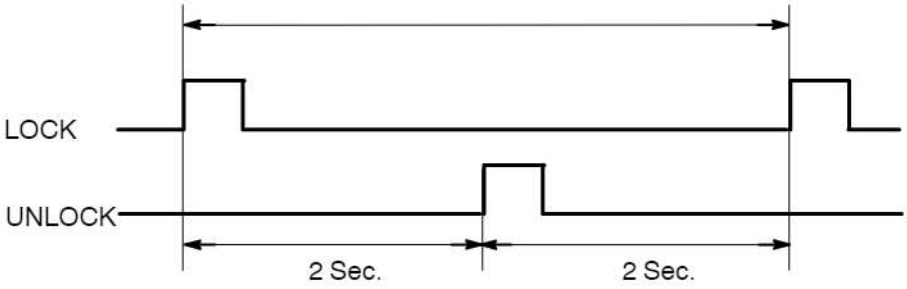
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HINT:
Operation cycle of the door lock (lock/unlock operation)

*1: Door Lock Motor



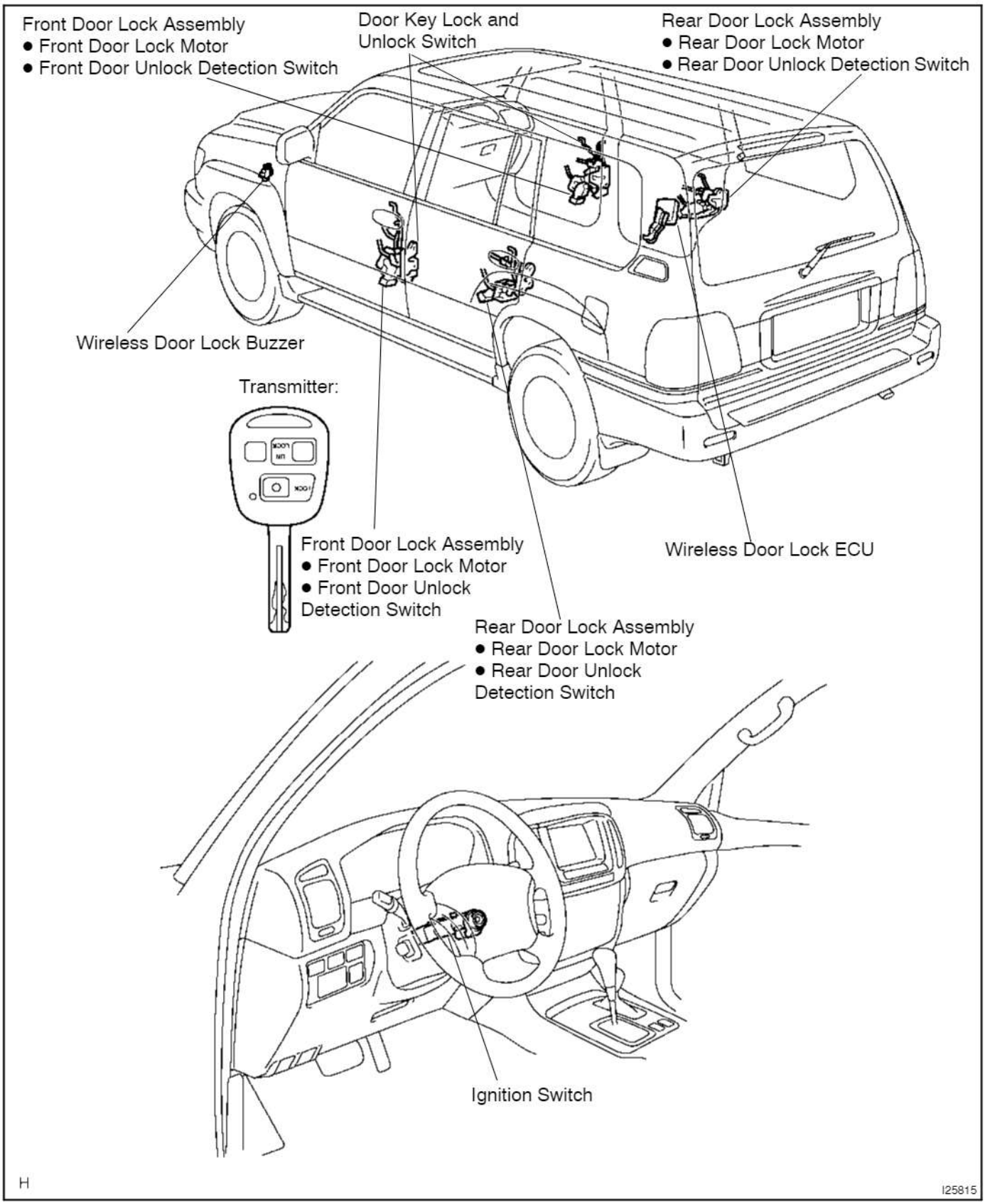
*2: Door Lock Motor



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BE0CH-10

LOCATION



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BE0CI-09

PRE–CHECK

1. CHARACTERS OF WIRELESS DOOR LOCK

(a) The operation distance changes according to how customers hold the transmitter or where it is used.

(b) Because of using the very weak radio wave, if there is a strong wave or noise on the frequency being used, the operation distance may become shorter.

2. WIRELESS DOOR LOCK BASIC FUNCTION

(a) Stand on the driver's side. Stay 1 m away from the vehicle.

(b) Turn the transmitter toward the vehicle and press any one of the transmission switched for 1 sec.

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BE2F2-02

INSPECTION

1. CHARACTERS OF WIRELESS DOOR LOCK

(a) The operation distance changes according to how customers hold the transmitter or where it is used.

(b) Because of using the very weak radio wave, if there is a strong wave or noise on the frequency being used, the operation distance may become shorter.

2. WIRELESS DOOR LOCK BASIC FUNCTION

(a) Stand on the driver's side. Stay 1 m away from the vehicle.

(b) Turn the transmitter toward the vehicle and press any one of the transmission switched for 1 sec.

3. INSPECT WIRELESS DOOR LOCK DIAGNOSIS MODE

(a) Start up diagnosis mode.

HINT:

Follow the method below.

(1) Insert the ignition key into the ignition key cylinder.

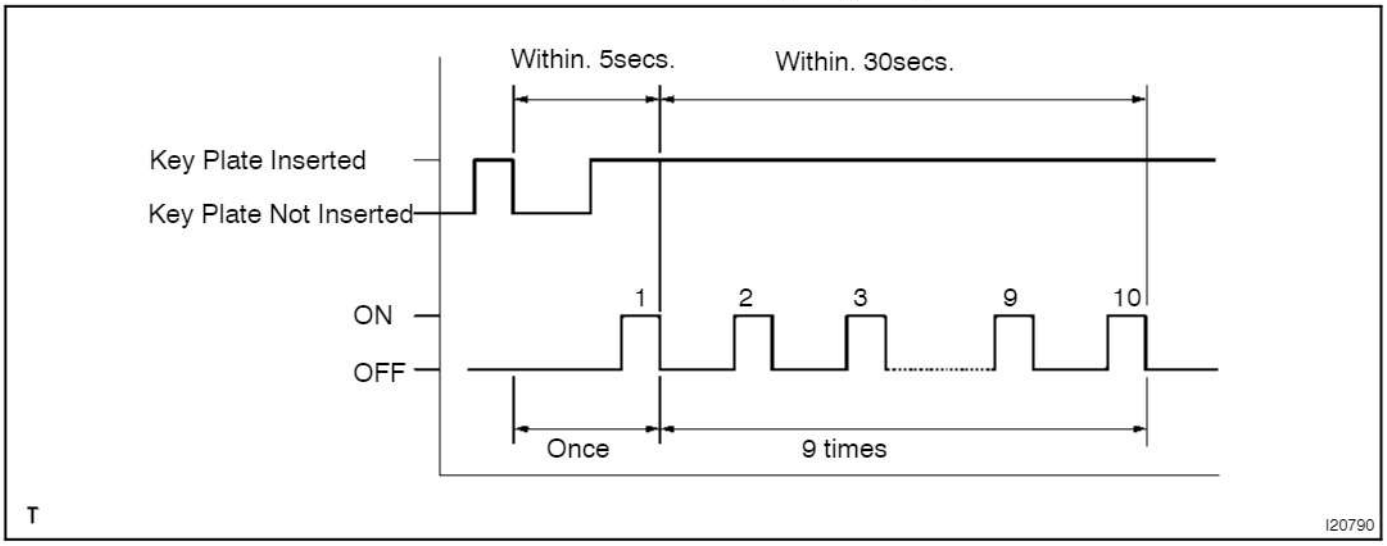
(2) Remove the ignition key from the ignition key cylinder.

(3) Insert the key into the ignition switch.

(4) Turn the ignition switch ON once within 5 sec.

(5) Repeat turnning the ignition switch OFF → ON 9 times within 30 sec.

(6) Enter the diagnosis mode, and make sure that the taillight lights up.

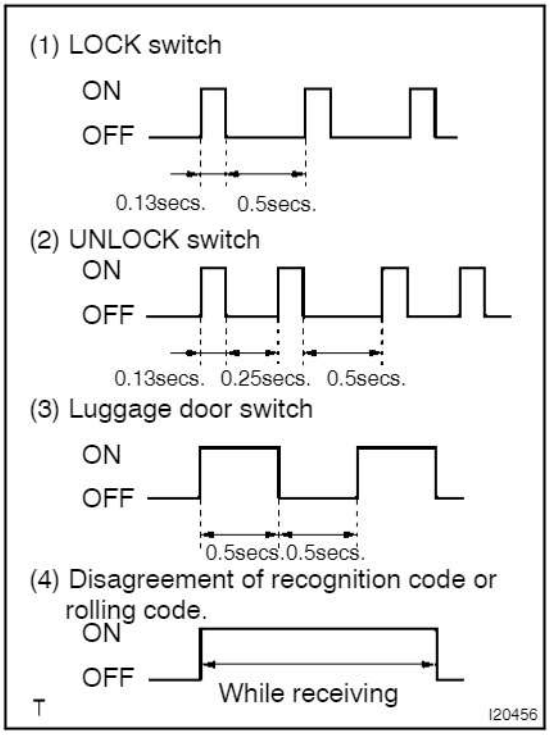


(b) Finishing the Diagnosis Mode.

During the Diagnosis mode, turn the ignition switch OFF → ON to go back to the normal mode.

At this time make sure that the taillight lights up.

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(c) Diagnosis Mode Check.

HINT:

Check how the taillight lights up when pressing each transmitter switch.

(1) LOCK switch
(2) UNLOCK switch
(3) Luggage door switch
(4) Disagreement of recognition code or rolling code.

HINT:

If (4) is detected in the Diagnosis Check, conduct the recognition code registration.

(5) No response from the taillight.

HINT:

Conduct the following checks.

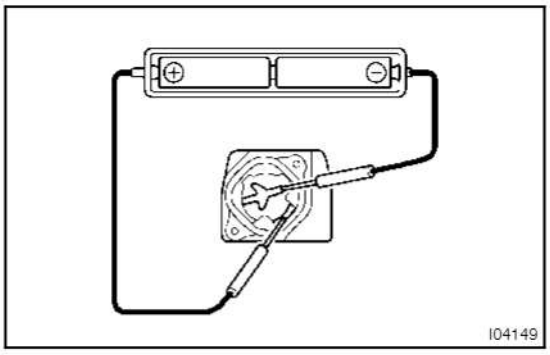
- Wireless door lock transmitter.
- Wireless door lock receiver.

4. INSPECT WIRELESS DOOR LOCK TRANSMITTER OPERATION

HINT:

Refer to "Wireless door lock control receiver and transmitter replacement".

(a) Using a screwdriver, remove the screw and cover.
(b) Remove the battery (lithium battery).



(c) Install a new or normal battery (lithium battery).

HINT:

When a new or normal battery can not be obtained, connect 2 new 1.5 V batteries in series, connect the battery (+) to the battery receptacle side terminal and battery (–) to the bottom terminal, then apply 3 V voltage to the transmitter.

(d) In the location where is approx. 1 M away from driver's outside handle in the right direction, face the key plate of the transmitter to the vehicle, and check the transmitter operation when pressing transmission switch on the side of the transmitter body.
(e) Install the battery (lithium battery).
(f) Install a cover so that O–ring is not distorted or slipped off.
(g) Using a screwdriver, tighten the screw.

Standard:

- **Remote control of vehicle door lock can be operated.**
- **LED lights up more than once.**

HINT:

- The minimum operation distance differs according to operator, the way of holding, and location.

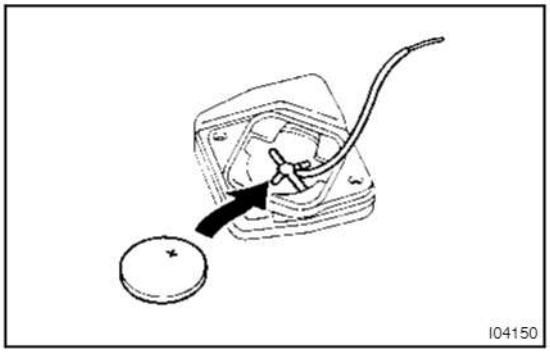
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- As weak wave is used, operation distance might be shortened when noise is detected in strong wave or used frequency.

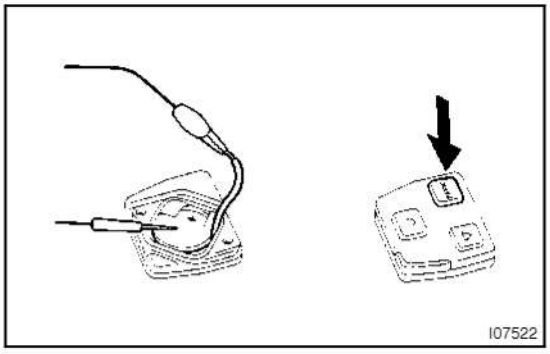
5. CHECK BATTERY CAPACITY

HINT:

- Make sure to use the TOYOTA electrical tester.
- With the battery unloaded, judge can not be made whether the battery is available or not on the test.
- When the transmitter is faulty, the energy amount left in the battery might not be checked correctly.
- On the lithium battery used for the transmitter, the voltage more than 2.5 V with the battery unloaded is shown on the tester until the energy is completely consumed.
  Accordingly when inspecting the energy amount left in the battery, it is necessary to measure the voltage when the battery is loaded. (1.2 kΩ).



(a) Remove the 2 screws and cover using a (–) driver.
(b) Remove the battery (lithium battery) from the transmitter.
(c) Connect the lead to the (–) terminal of the transmitter and install the battery.



(d) Connect the (+) tester to the (+) battery (lithium battery), and (–) tester to the lead respectively.
(e) Press one of the transmitting switches on the transmitter for approx. 1 second.
(f) Press the transmitting switch on the transmitter again to check the voltage.
Standard: 2.1 V or more

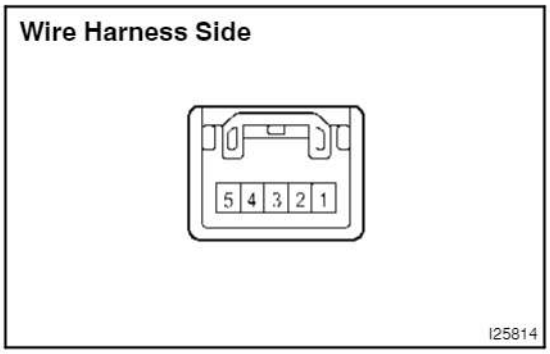
HINT:

- When the temperature of the battery is low, the judge can not be made correctly.
  When the outcome of the test is less than 2.1 V, conduct the test again after leaving the battery in the place at 18 °C for more than 30 minutes.
- By auto power off function, the voltage becomes no load voltage (more than 2.5 V) condition 20 seconds after the switch was pressed.
  Make sure to read the voltage before of it.

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- High voltage might be shown 1 to 2 times after leaving the battery, judge should be made with the voltage shown at the 3rd time or later.

(g) Disconnect the lead.
(h) Set the battery (lithium battery) in the transmitter.
(i) Install the cover, so that the O–ring is not distorted or slipped off.
(j) Using a screwdriver, tighten the 2 screws.



6. INSPECT WIRELESS DOOR LOCK CONTROL TUNER CIRCUIT

Disconnect the connector from the tuner and inspect the connector on the wire harness side, as shown.

Tester connection	Condition	Specified condition
1 (E) – Ground	Constant	Continuity
2 (RDA) – Ground	Ignition switch OFF, without key, all doors closed,, and transmitter switch OFF → ON	Below 1 V ↔ 6 V
5 (+B) – Ground	–	Repeatedly chage 0 – 5V

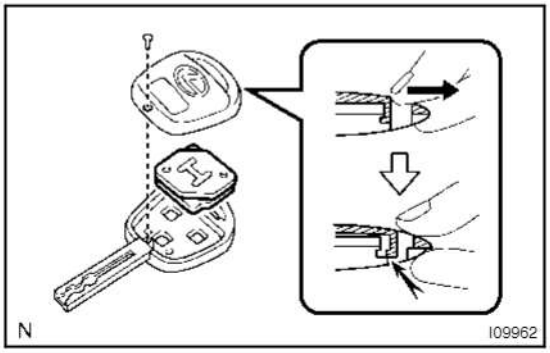
If the circuit is not as specified, inspect the circuit connected to other parts.

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BE23K–03

REPLACEMENT

REPLACE TRANSMITTER (LITHIUM) BATTERY



NOTICE:

Special caution should be taken for handling each component as they are precision electronic components.

(a) Using a screwdriver, remove the screw and cover.

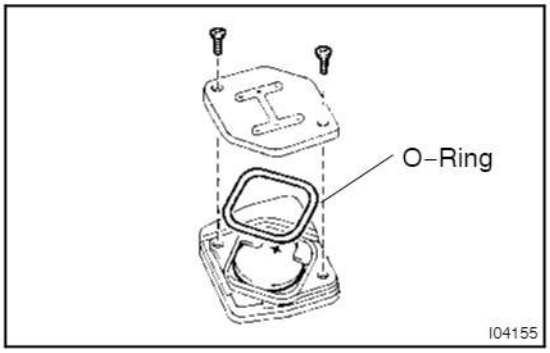
NOTICE:

Do not pry out the cover forcibly.

HINT:

Push the cover with a finger as shown in the illustration, so that there becomes clearance, then pry out the cover from that clearance.

(b) Remove the transmitter.

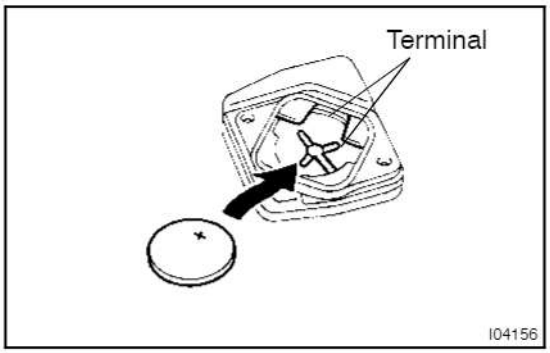


(c) Using a screwdriver, remove the 2 screws and cover.

(d) Remove the battery (lithium battery).

NOTICE:

- **Do not push the terminals with a finger.**
- **If prying up the battery (lithium battery) forcibly to remove, the terminals are deformed.**



(e) Install a battery (lithium battery) as shown in the illustration.

NOTICE:

Face the battery upward. Take care not to deform the terminals.

(f) Check that O–ring is not distorted or slipped off, and install the cover.

(g) Using a screwdriver, tighten the 2 screws.

NOTICE:

When the shrews are tightened loosely, it might cause faulty contact of battery (lithium battery) and terminals.

(h) Assemble the transmitter to the key plate and the cover.

(i) Using a screwdriver, tighten the screw.

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AUDIO SYSTEM

TROUBLESHOOTING

BE2E9-02

1. DIAGNOSIS FUNCTION (Main AVC–LAN)

(a) Diagnosis start–up

For shifting to diagnosis mode, turn the ignition switch ON and push the "DISC" switch 3 times while pressing "ch1" and "ch6" switches.

HINT:

To exit the diagnosis mode, push the "DISC" switch for 1.7 sec. or turn the ignition switch to ACC or OFF.

(b) Element check mode

After the diagnosis start–up, the system enters the element check mode. Check that the all elements light up.

HINT:

By pressing the "TUNE UP" switch, the system enters the "Service Check Mode".

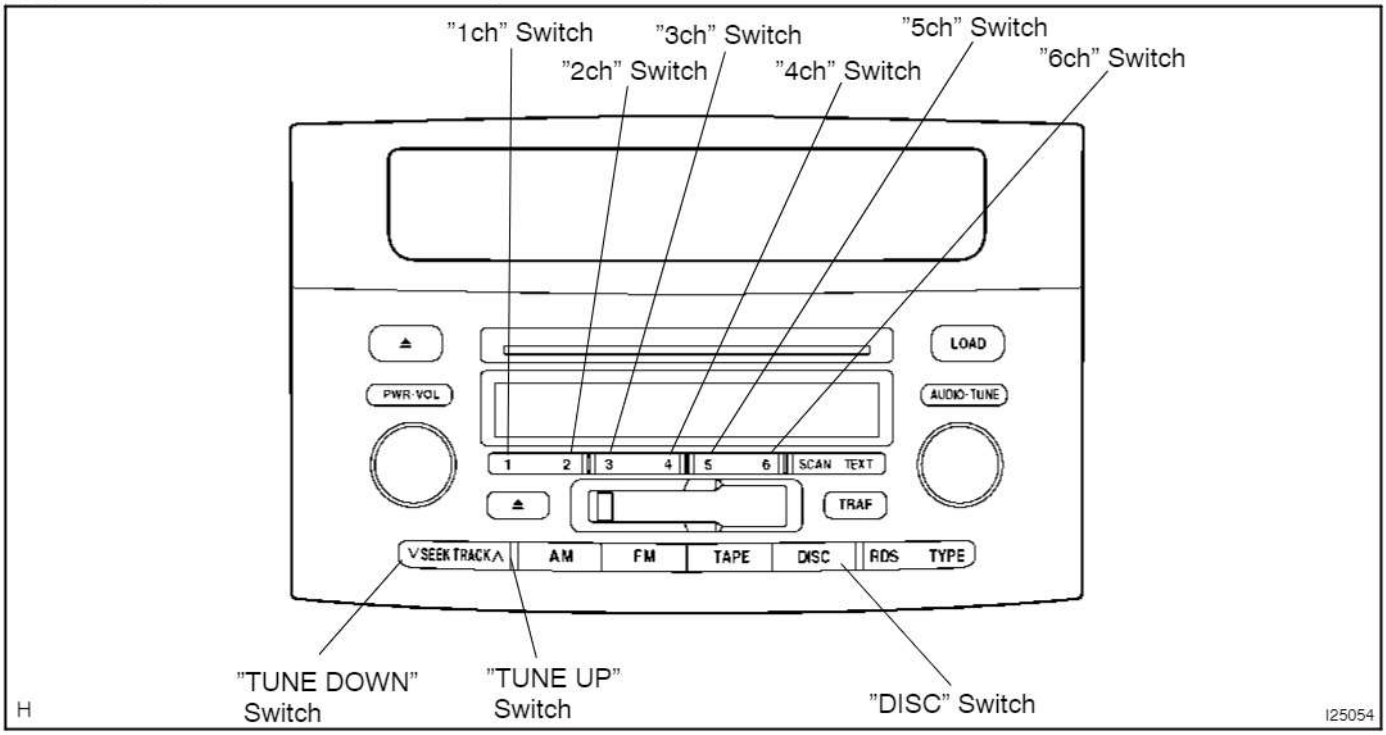
(c) Switch check mode

(1) Element check mode is started at the same time with the switch check mode.

(2) Check that there is a beep sound when any switch is pressed.

HINT:

By pressing "TUNE UP" switch, the system enters the "Service Check Mode".



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(d) Service check mode

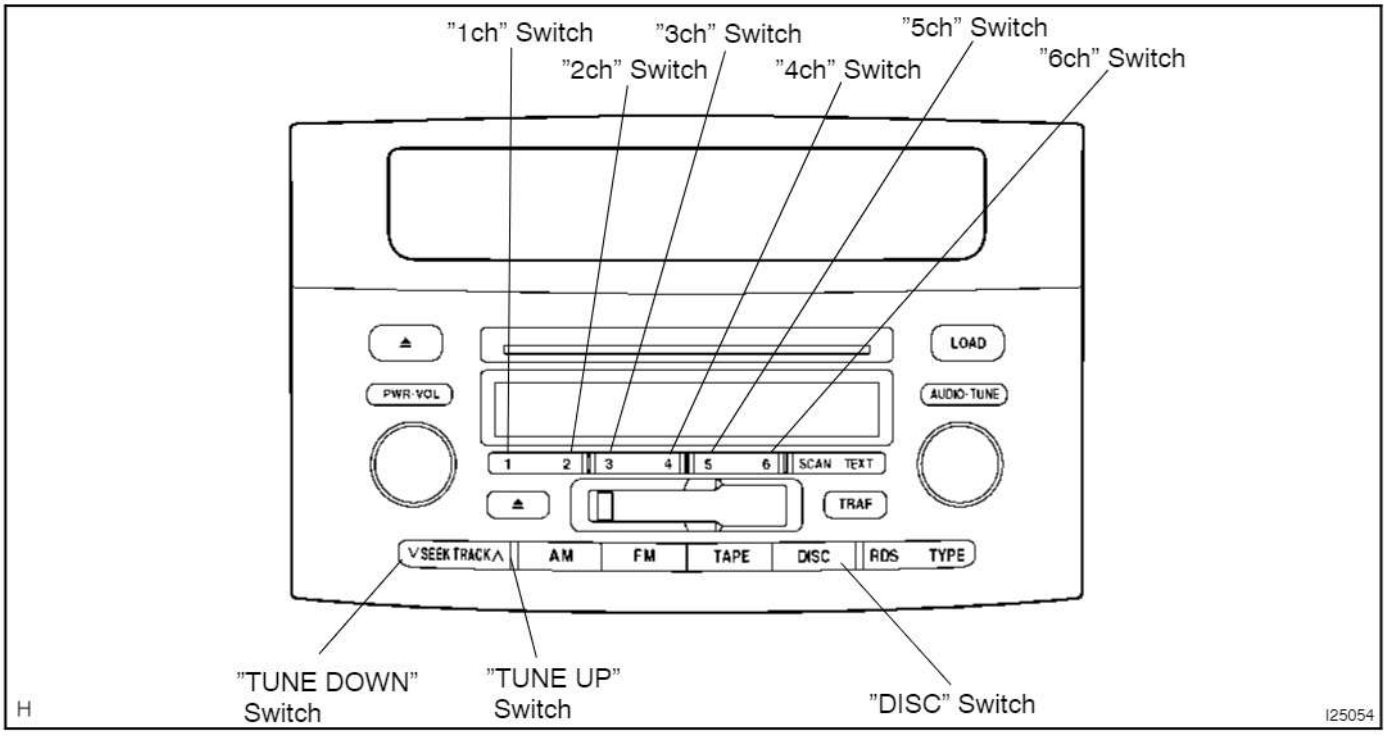
(1) After the element check and switch check is completed, the system enters service check mode when "TUNE UP" switch is pressed.

(2) Error codes over the tuner and connected equipments are displayed on the screen of the tuner. Results for each check are displayed as follows:

- good:
  No DTC is detected for both "System Check Confirmation" and "Diagnosis Memory Response".
- nCon:
  The component does not respond to the "Diagnosis On Instruction" command.
  Applicable to only the system where connected components are limited to be used.
- ECHn:
  Application of new version has been confirmed by the "Diagnosis On Check", and there is one or more DTC which indicates "Replacement" in the "System Check Result Response" or "Diagnosis Memory Response".
- CHEC:
  Application of new version has been confirmed by the "Diagnosis On Check", and there is no DTC which indicates "Replacement" in the "System Check Result Response" or "Diagnosis Memory Response", but one or more DTC which indicates "Check" is identified.
- Old:
  Application of old version is confirmed by the "Diagnosis On Check", and DTC is identified in the "System Check Result Response" or "Diagnosis Memory Response".
- nrES:
  No response is identified to the "System Check Start Instruction" and "Request for System Check Result" commands.

HINT:

- Check the present and past condition of components by performing the System Check and collecting stored DTC memories.
- Check results are displayed as one of the following six indications: "good", "ECHn", "CHEC","nCon", "Old" or "nrES".

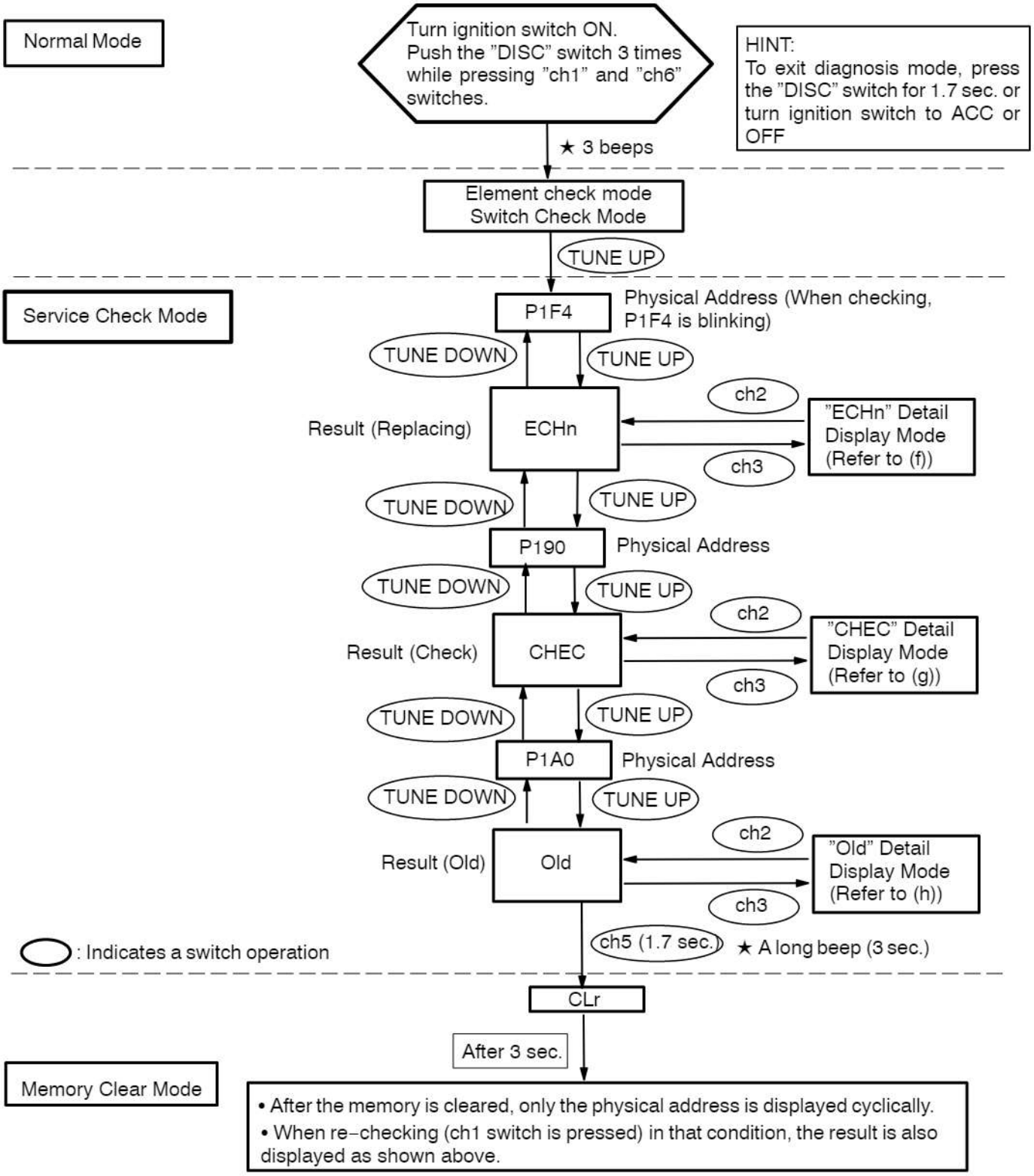


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(e) Display Screen for Service Check.

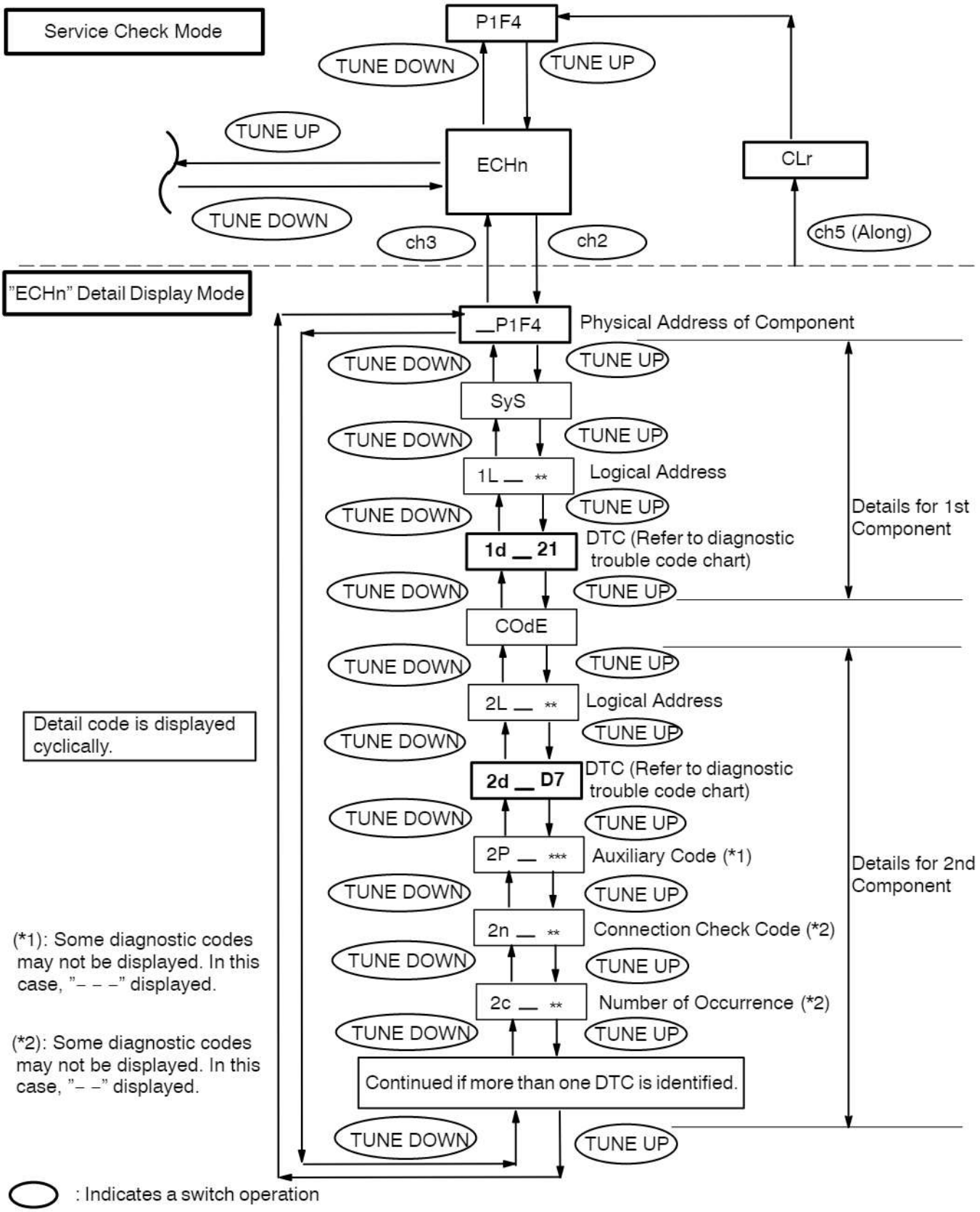
Example:

Connection parts (physical address): Radio receiver (P190), RSA ECU (P1F4), DVD player (P1A0)



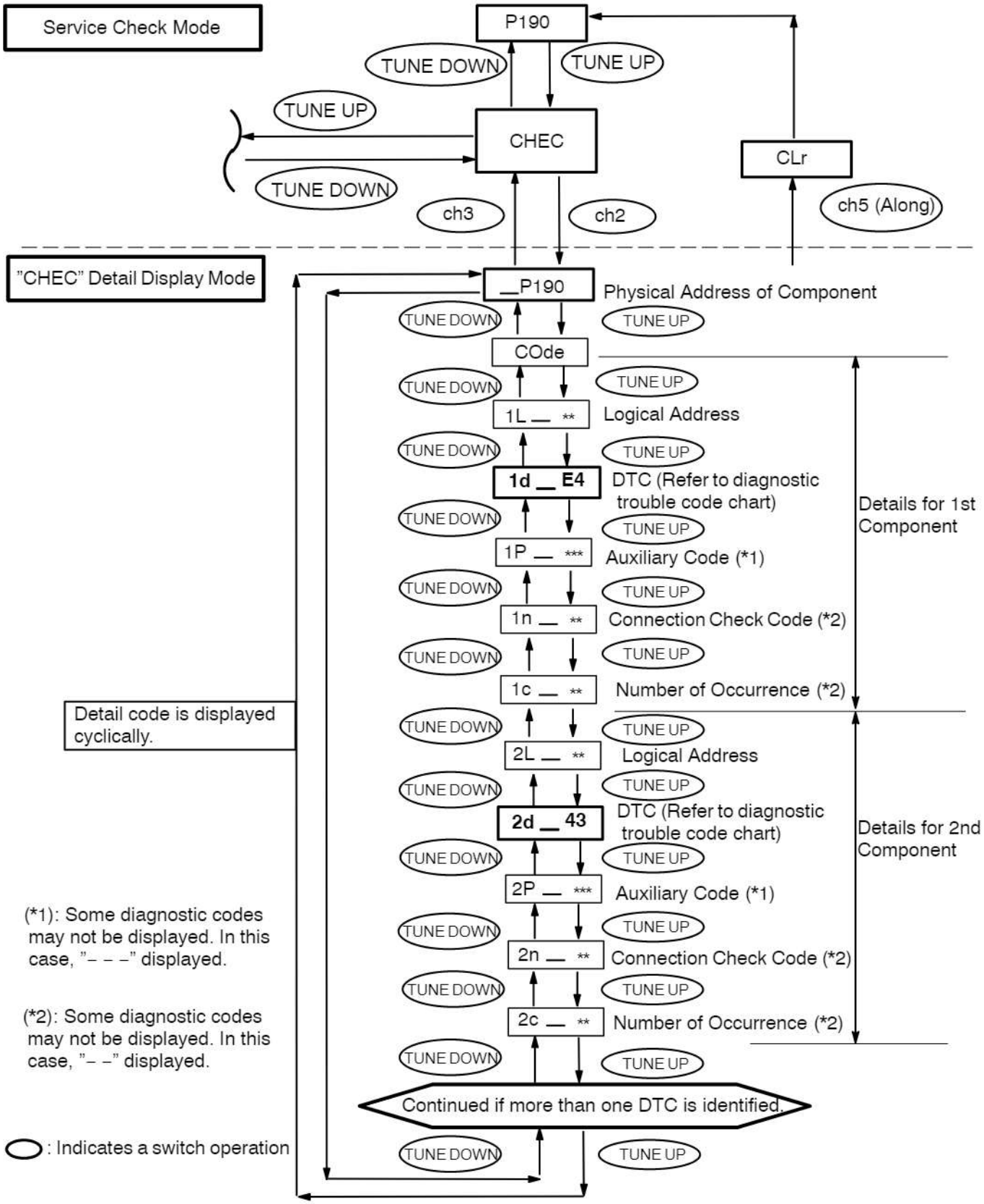
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(f) "ECHn" Detail Display Mode Screen



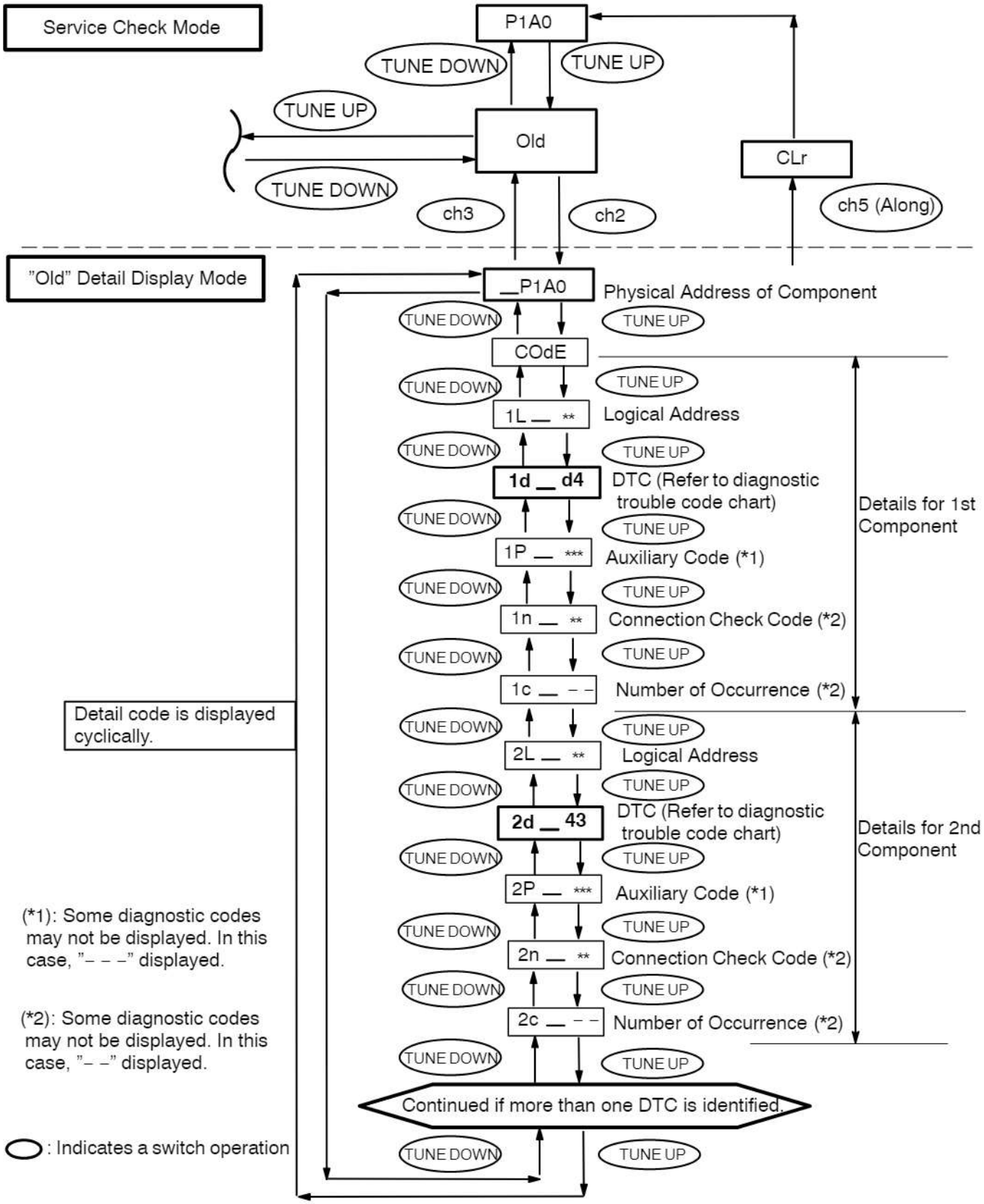
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(g) "CHEC" Detail Display Mode Screen



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(h) "Old" Detail Display Mode Screen



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2. DIAGNOSIS FUNCTION (Sub AVC–LAN)

HINT:

As starting Main AVC–LAN to operate the diagnosis mode, Sub AVC–LAN is automatically to the mode. Perform the diagnosis mode operation on the RSA panel.

(a) Element check mode

After the diagnosis start–up, the system enters the element check mode. Check that the all elements light up.

HINT:

By pressing the "TUNE UP" switch, the system enters the "Service Check Mode".

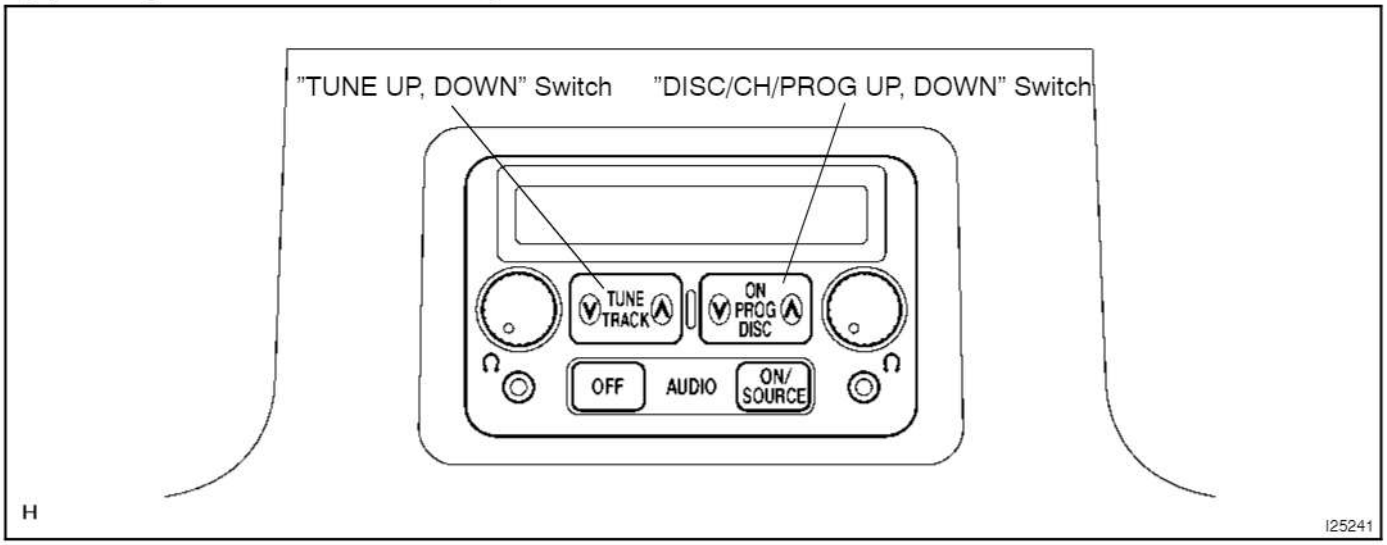
(b) Switch check mode

(1) Element check mode is started at the same time with the switch check mode.

(2) Check that there is a beep sound when any switch is pressed.

HINT:

By pressing "TUNE UP" switch, the system enters the "Service Check Mode".



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(c) Service check mode

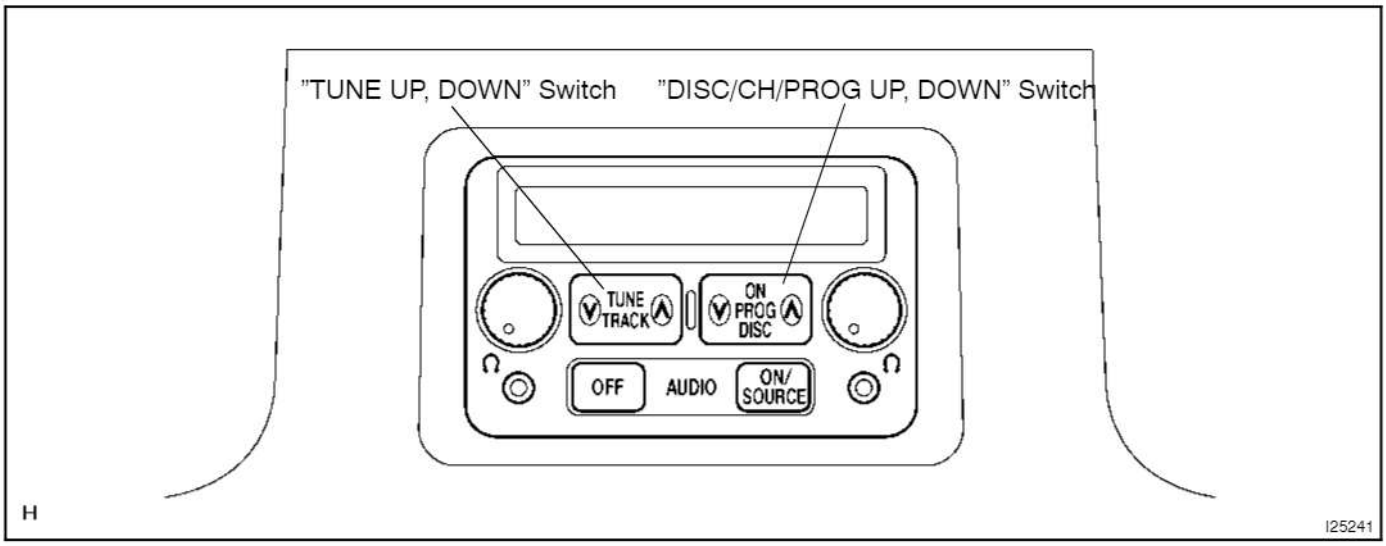
(1) After the element check and switch check is completed, the system enters service check mode when "TUNE UP" switch is pressed.

(2) Error codes over the tuner and connected equipments are displayed on the screen of the tuner. Results for each check are displayed as follows:

- good:
  No DTC is detected for both "System Check Confirmation" and "Diagnosis Memory Response".
- nCon:
  The component does not respond to the "Diagnosis On Instruction" command.
  Applicable to only the system where connected components are limited to be used.
- ECHn:
  Application of new version has been confirmed by the "Diagnosis On Check", and there is one or more DTC which indicates "Replacement" in the "System Check Result Response" or "Diagnosis Memory Response".
- CHEC:
  Application of new version has been confirmed by the "Diagnosis On Check", and there is no DTC which indicates "Replacement" in the "System Check Result Response" or "Diagnosis Memory Response", but one or more DTC which indicates "Check" is identified.
- Old:
  Application of old version is confirmed by the "Diagnosis On Check", and DTC is identified in the "System Check Result Response" or "Diagnosis Memory Response".
- nrES:
  No response is identified to the "System Check Start Instruction" and "Request for System Check Result" commands.

HINT:

- Check the present and past condition of components by performing the System Check and collecting stored DTC memories.
- Check results are displayed as one of the following six indications: "good", "ECHn", "CHEC","nCon", "Old" or "nrES".

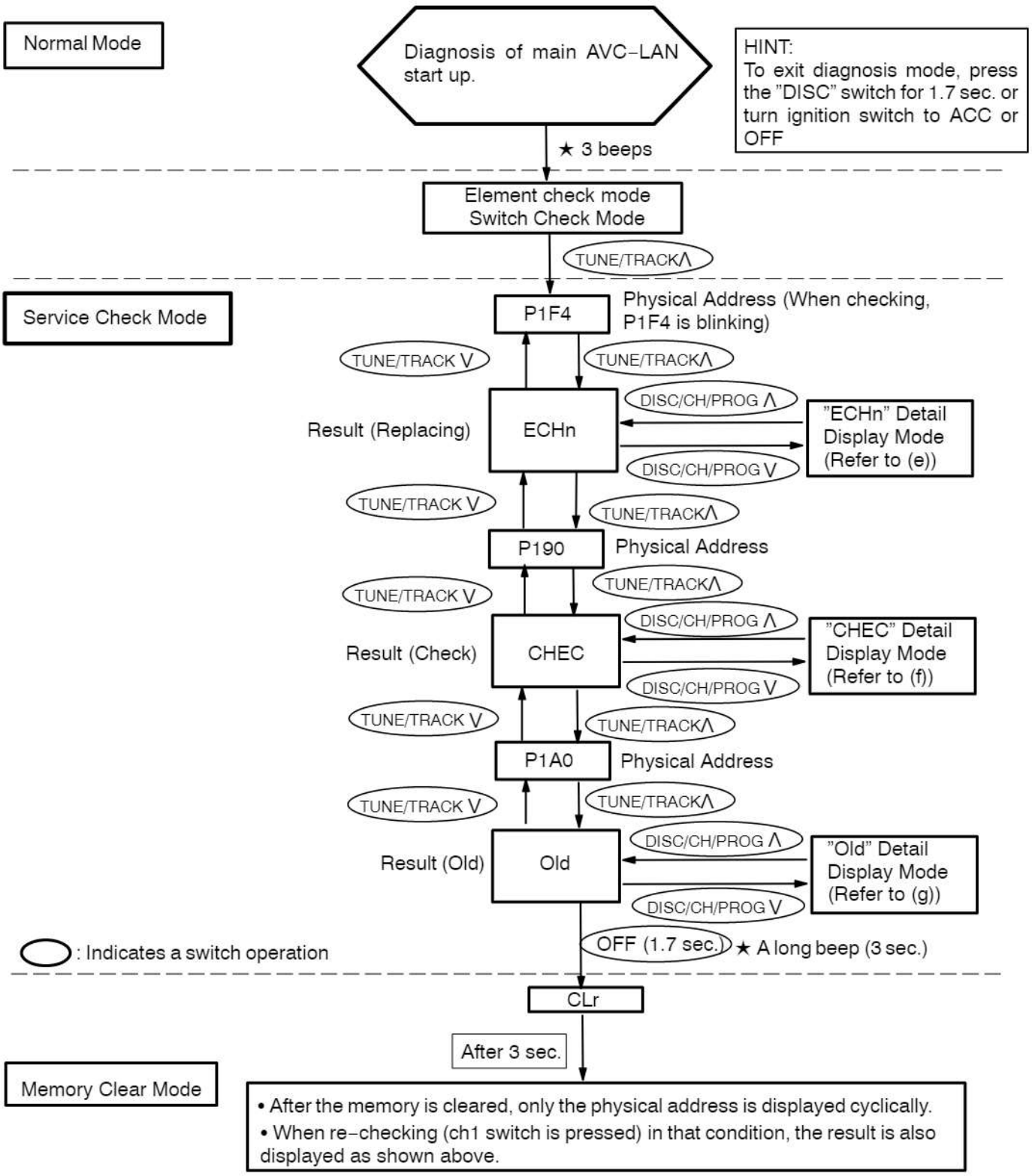


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(d) Display Screen for Service Check.

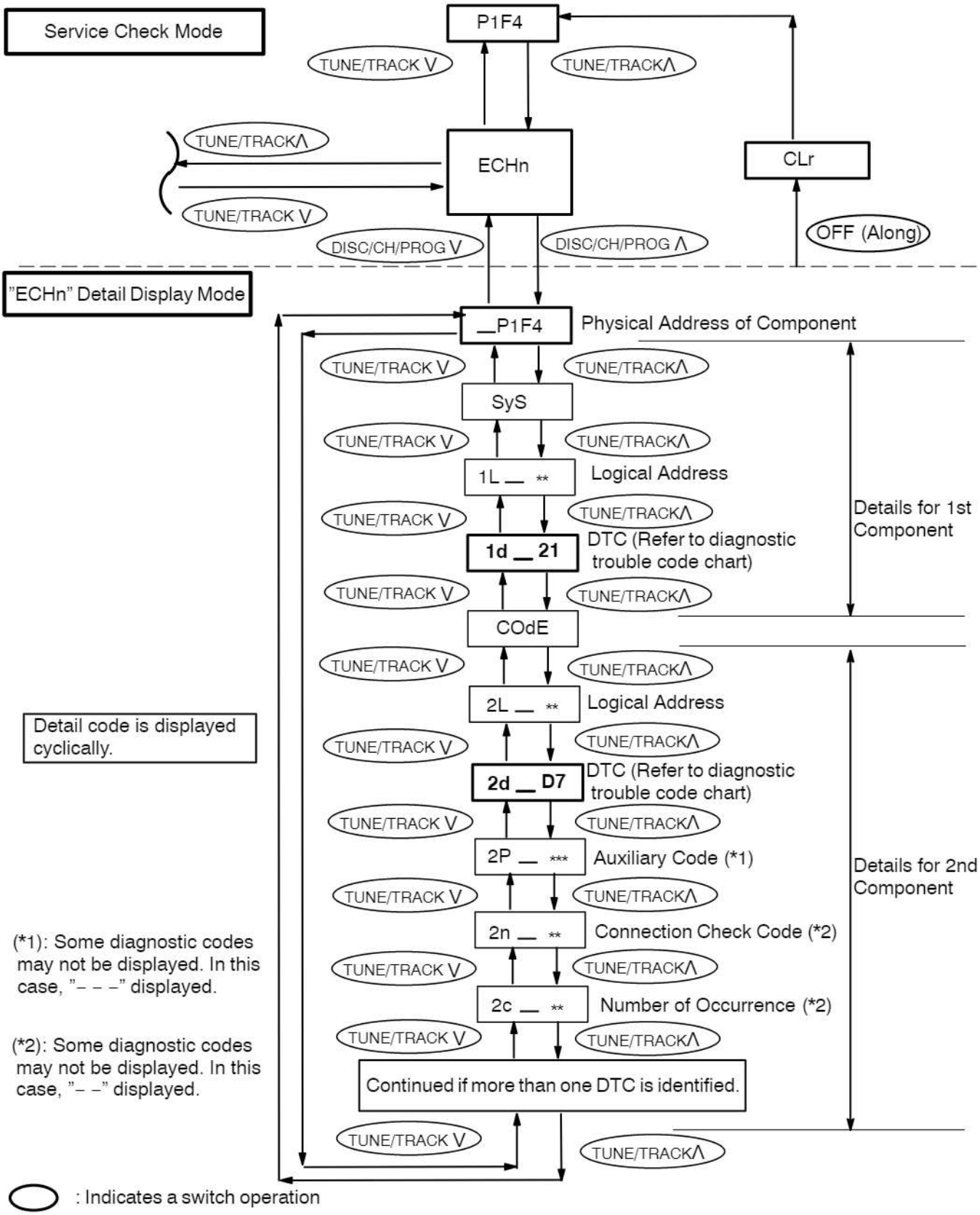
Example:

Connection parts (physical address): Radio receiver (P190), RSA ECU (P1F4), DVD player (P1A0)



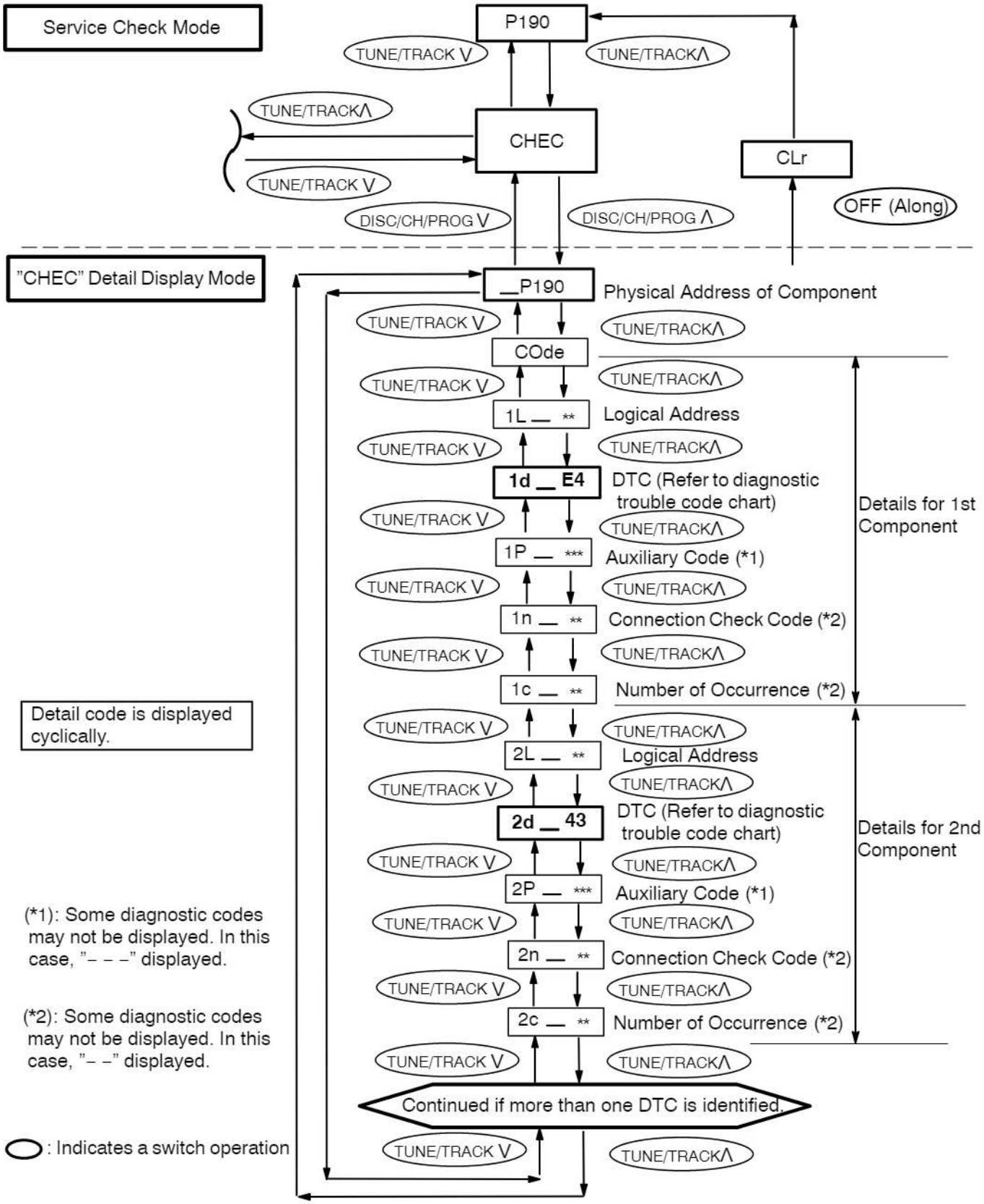
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(e) "ECHn" Detail Display Mode Screen



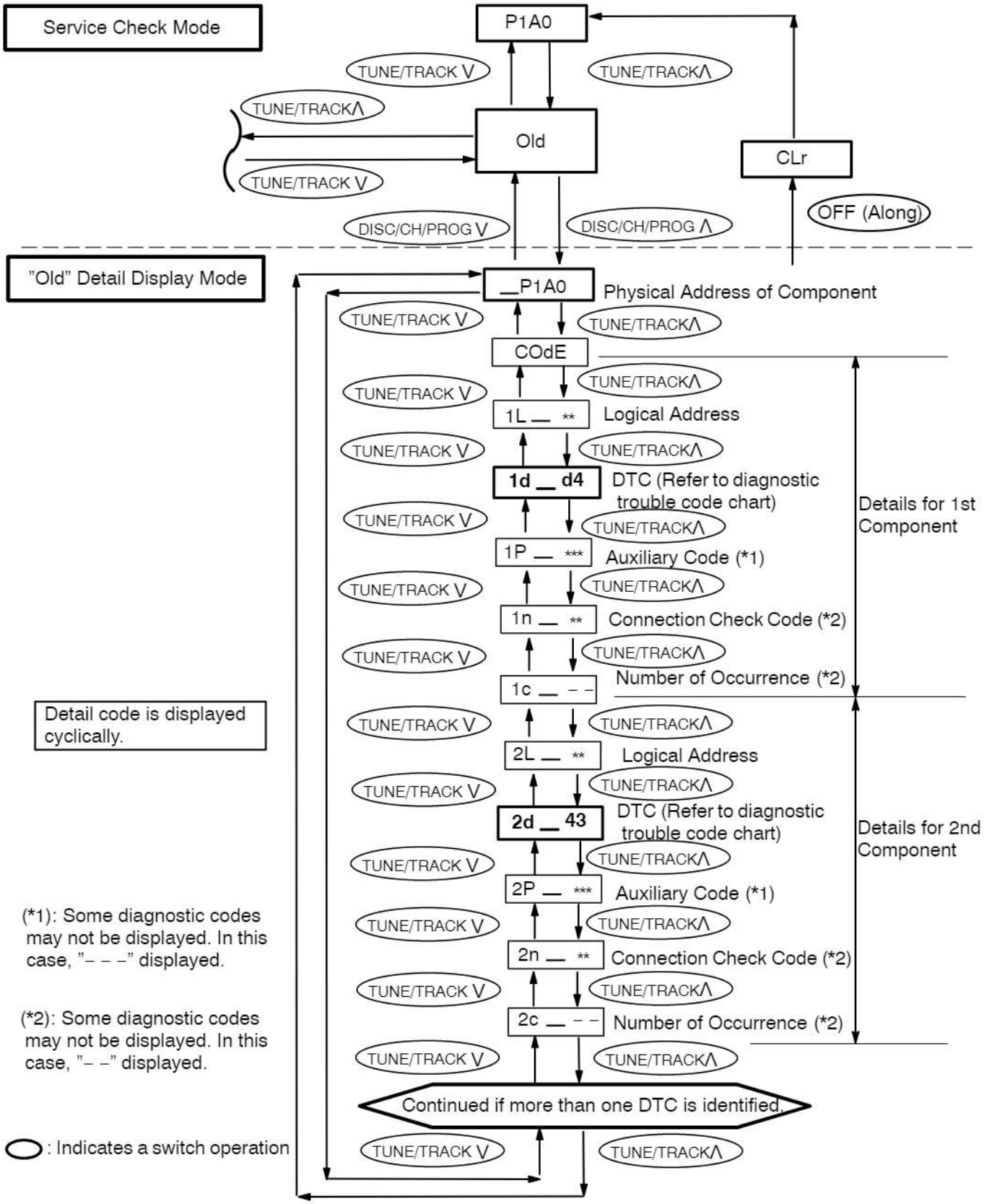
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(f) "CHEC" Detail Display Mode Screen



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(g) "Old" Detail Display Mode Screen



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3. DIAGNOSIS CODE LIST

w/ Navigation system (See page)

Physical address: 190 Radio receiver assembly

HINT:

*1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
*2: It may be stored when the engine key is turned 1 min. angain after engine start.
*3: It may be stored when the engine key is turned again after engine start.
*4: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
01 (Communication Control)	21	ROM Error	Error is detected in internal ROM.	Replace radio receiver assembly.
01 (Communication Control)	22	RAM Error	Error is detected in internal RAM.	Replace radio receiver assembly.
01 *2 (Communication Control)	D6	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, radio receiver assembly was disconnected.	• Check harness for power supply system of radio receiver assembly. • Check harness for communication system of radio receiver assembly.
01 *3 (Communication Control)	D8	No Response to Connection Check	Component shown by auxiliary code is or had been disconnected from system after engine start. D9	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
01 *2 (Communication Control)	D9	Last Mode Error	Component operated (sounds and/or images were provided) before engine stop is or has been disconnected with ignition switch in ACC or ON.	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
01 (Communication Control)	DA	No Response to ON/OFF Instruction	No response is identified when changing mode (audio and visual mode change). Detected when sound and picture does not change by button operation.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code. • If error occurs again, replace component shown by auxiliary code.
01 *2 (Communication Control)	DB	Mode Status Error	Dual alarm is detected.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.

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01 *4 (Communication Control)	DC	Transmission Error	Transmission to component shown by auxiliary code has been failed. (Detecting this DTC does not necessary mean actual failure.)	● If same auxiliary code is recorded in other component, check harness for power supply and communication system of components shown sub code.
01 *3 (Communication Control)	DD	Master Reset (Momentary Interruption)	After engine is started, radio receiver assembly assembly was disconnected from system.	● If this error occurs frequently, replace radio receiver assembly.
01 *3 (Communication Control)	DE	Slave Reset (Momentary Interruption)	After engine is started, slave component was disconnected from system.	● Check harness for power supply of component shown by auxiliary code. ● Check harness for communication system of component shown by auxiliary code.
01 *4 (Communication Control)	DF	Master Error	Due to defective condition of radio receiver assembly, master function is switched to audio equipment. Error occurs in communication between sub–master (audio) and radio receiver assembly.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly . ● Check harness for communication system between radio receiver assembly and sub–master component.
01 (Communication Control)	E0	Registration Completion Instruction Error	"Registration Completion Instruction" command from radio receiver assembly cannot be received.	● Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
01 *2 (Communication Control)	E1	Audio processor ON error	While source equipment is operating, AMP output is stopped.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly.
01 (Communication Control)	E2	ON/OFF Instruction Parameter Error	Error occurs in ON/OFF controlling command from radio receiver assembly assembly.	● Replace radio receiver assembly .
01 (Communication Control)	E3	Registration Request Transmission	Registration Request command is output from slave component. Receiving Connection Check Instruction, Registration Request command is output from sub–master component.	● Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
01 (Communication Control)	E4	Plural Frame Abort	Plural frame transmission is aborted.	● Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
60 (Radio receiver assembly)	43	AM Tuner Error	Abnormal condition is detected in AM tuner. Inspect radio receiver assembly.	Replace radio receiver assembly.
60 (Radio receiver assembly)	44	FM Tuner Error	Abnormal condition is detected in FM tuner.	Replace radio receiver assembly.

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61 (Cassette switch)	40	Mechanical or Media Error	Malfunction due to mechanical failure is identified. Or, cassette tape is cut or entangled.	Inspect cassette tape.
61 (Cassette switch)	41	EJECT Malfunction	Malfunction due to mechanical failure.	Replace radio receiver assembly.
63 (In–dash CD auto changer)	42	No Disc Readout	Disc cannot be read.	Inspect CD.
63 (In–dash CD auto changer)	44	CD Error	Error is detected in CD auto changer.	Replace radio receiver assembly.
63 (In–dash CD auto Changer)	45	EJECT Error	CD cannot be ejected.	Replace radio receiver assembly.
63 (In–dash CD auto Changer)	47	CD High Temp.	High temperature is detected in CD auto changer.	Replace radio receiver assembly.
63 (In–dash CD auto Changer)	48	CD Excess Current	Excess current is applied to CD auto changer.	Replace radio receiver assembly.

Physical address: 440 Strereo component amplifier

HINT:
*1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
*2: It may be stored when the engine key is turned 1 min. angain after engine start.
*3: It may be stored when the engine key is turned again after engine start.
*4: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspeced parts
01 (Communication Control)	21	ROM Error	Abnormal condition of ROM is detected.	Replace stereo component amplifier.
01 (Communication Control)	22	RAM Error	Abnormal condition of RAM is detected.	Replace stereo component amplifier.
01 (Communication Control)	D6 *1	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, radio receiver assembly was disconnected.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● Check harness for power supply of stereo component amplifier. ● Check harness for communication system of stereo component amplifier.

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01*6 (Communication Control)	D7	Connection Check Error	Component in which this code is recorded has been disconnected from system after engine start. Or, when this code was recorded, radio receiver assembly was disconnected.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● Check harness for power supply of stereo component amplifier. ● Check harness for communication system of stereo component amplifier.
01 (Communication Control)	DC *2	Transmission Error	Transmission to component shown by auxiliary code has bee failed. (This code does not necessarily mean actual failure.)	If same auxiliary code is recorded in other component(s), check harness for power supply and communication system of components shown sub code.
01 (Communication Control)	DD *3	Master Reset (Momentary Interruption)	After engine is started, radio receiver assembly assembly was disconnected from system.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● If error occurs frequently, replace radio receiver assembly.
01 (Communication Control)	DF *4	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment . Error occurs in communication between sub–master (audio) and master component.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● Check harness for communication system between radio receiver assembly and sub–master component.
01 (Communication Control)	E0 *1	Registration Completion Instruction Error	"Registration Completion Instruction" command fromradio receiver assembly cannot be received.	Since this DTC is provided for engineering, it may be detected when no actual failure exists.
01 (Communication Control)	E1 *1	Audio processor ON error	While source equipment is operating, AMP output is stopped.	● Check harness for power supply of radio receiver assembly ● Check harness for communication system of radio receiver assembly.
01 (Communication Control)	E2	ON/OFF Instruction Parameter Error	Error is detected in ON/OFF control command from radio receiver assembly.	Replace radio receiver assembly.
01 (Communication Control)	E3	Registration Request Transmission	● Registration Request command is output from slave component. ● By reception of connection check Instruction, Registration Request command is output from sub–master component.	Since this DTC is provided for engineering, it may be detected when no actual failure exists.
01 (Communication Control)	E4	Plural Frame Abort	Plural frame transmission is aborted.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

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Physical address: 1F4 RSA Panel (Main AVC–LAN)

HINT:
*1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
*2: It may be stored when the engine key is turned 1 min. angain after engine start.
*3: It may be stored when the engine key is turned again after engine start.
*4: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspeced parts
01 (Communication Control)	D6 *1	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, radio receiver assembly was disconnected.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● Check harness for power supply of RSA panel. ● Check harness for communication system of RSA panel.
01*6 (Communication Control)	D7	Connection Check Error	Component in which this code is recorded has been disconnected from system after engine start. Or, when this code was recorded, radio receiver assembly was disconnected.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● Check harness for power supply of RSA panel. ● Check harness for communication system of RSA panel.
01 (Communication Control)	DC *2	Transmission Error	Transmission to component shown by auxiliary code has bee failed. (This code does not necessarily mean actual failure.)	If same auxiliary code is recorded in other component(s), check harness for power supply and communication system of components shown sub code.
01 (Communication Control)	DD *3	Master Reset (Momentary Interruption)	After engine is started, radio receiver assembly was disconnected from system.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● If error occurs frequently, replace radio receiver assembly.
01 (Communication Control)	DF *4	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment . Error occurs in communication between sub–master (audio) and master component.	● Check harness for power supply of radio receiver assembly. ● Check harness for communication system of radio receiver assembly. ● Check harness for communication system between radio receiver assembly and sub–master component.
01 (Communication Control)	E0 *1	Registration Completion Instruction Error	"Registration Completion Instruction" command fromradio receiver assembly cannot be received.	Since this DTC is provided for engineering, it may be detected when no actual failure exists.
01 (Communication Control)	E3	Registration Request Transmission	● Registration Request command is output from slave component. ● By reception of connection check Instruction, Registration Request command is output from sub–master component.	Since this DTC is provided for engineering, it may be detected when no actual failure exists.

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01 (Communication Control)	E4	Plural Frame Abort	Plural frame transmission is aborted.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

Physical address: 16A, 16C RSA Panel (Sub AVC–LAN)
HINT:
*1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
*2: It may be stored when the engine key is turned 1 min. angain after engine start.
*3: It may be stored when the engine key is turned again after engine start.
*4: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspeced parts
01 *3 (Communication Control)	D8	No Response to Connection Check	Component shown by auxiliary code is or had been disconnected from system after engine start. D9	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
01 *2 (Communication Control)	D9	Last Mode Error	Component operated (sounds and/or images were provided) before engine stop is or has been disconnected with ignition switch in ACC or ON.	• Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
01 (Communication Control)	DA	No Response to ON/OFF Instruction	No response is identified when changing mode (audio and visual mode change). Detected when sound and picture does not change by button operation.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code. • If error occurs again, replace component shown by auxiliary code.
01 *2 (Communication Control)	DB	Mode Status Error	Dual alarm is detected.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
01 *4 (Communication Control)	DC	Transmission Error	Transmission to component shown by auxiliary code has been failed. (Detecting this DTC does not necessary mean actual failure.)	• If same auxiliary code is recorded in other component, check harness for power supply and communication system of components shown sub code.
01 *3 (Communication Control)	DE	Slave Reset (Momentary Interruption)	After engine is started, slave component was disconnected from system.	• Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
01 (Communication Control)	E4	Plural Frame Abort	Plural frame transmission is aborted.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

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4. PROBLEM SYSMPTOMS TABLE

NOTICE:

When replacing the internal mechanism (computer part) of the audio system, be careful that no part of your body or clothing comes in contact with the terminals of the leads from the IC, etc. of the replacement part (spare part).

HINT:

This inspection procedure is a simple troubleshooting which should be carried out on the vehicle during system operation and was prepared on the assumption of system component troubles (except for the wires and connectors, etc.).

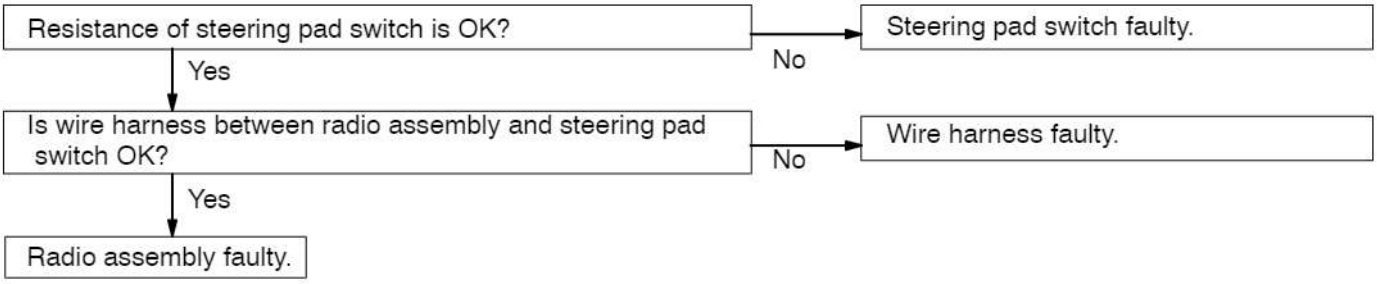
Always inspect the trouble taking the following items into consideration.

- Open or short circuit of the wire harness
- Connector or terminal connection fault

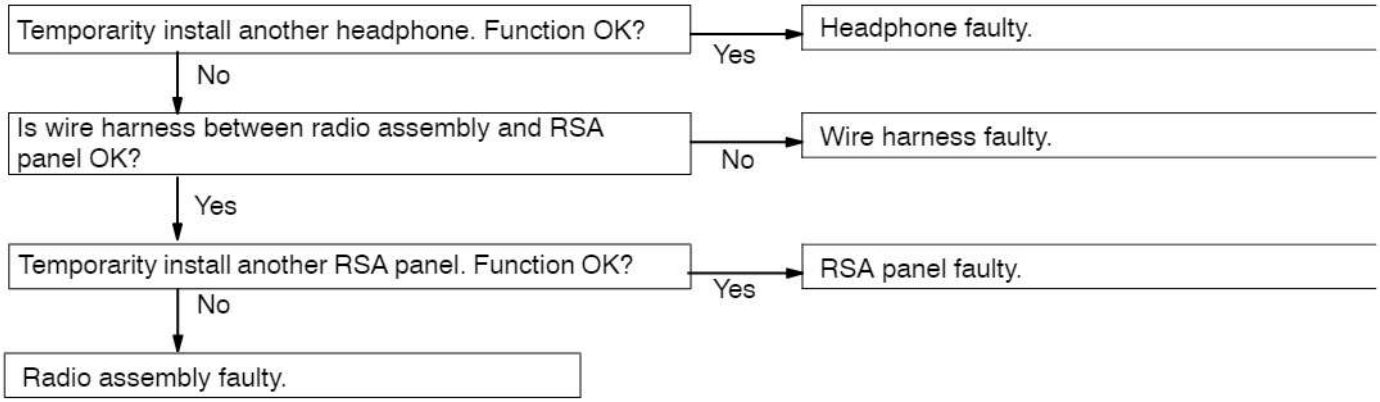
	Problem	Flow chart No.
Steering Pad Switch	A audio system cannot be operated with steering pad switch.	1
Rear Seat Audio	Quality of sound from headphone connected to headphone terminal is poor or no sound can be heard.	2

The term "AM" includes LW,MW and SW, and the term "FW" includes UKW.

1 Steering Pad Switch — A AUDIO SYSTEM CANNOT BE OPERATED WITH STEERING PAD SWITCH

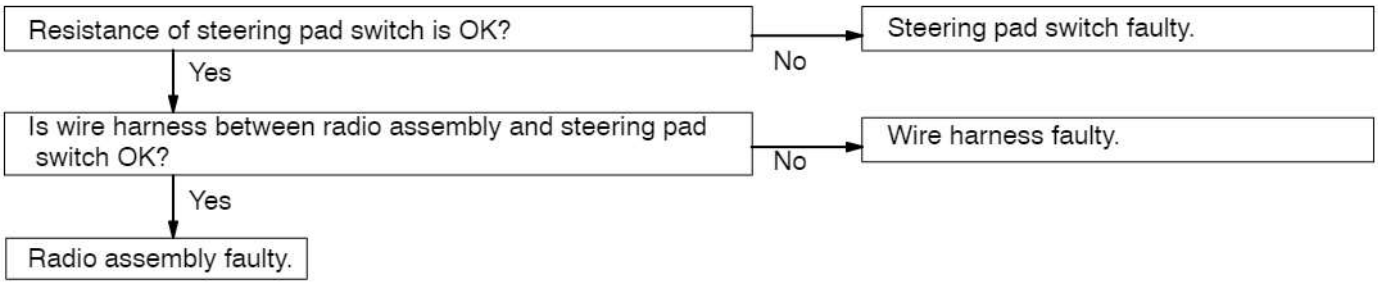


2 Rear Seat Audio — QUALITY OF SOUND FROM HEADPHONE TERMINAL IS POOR OR NO SOUND CAN BE HEARD

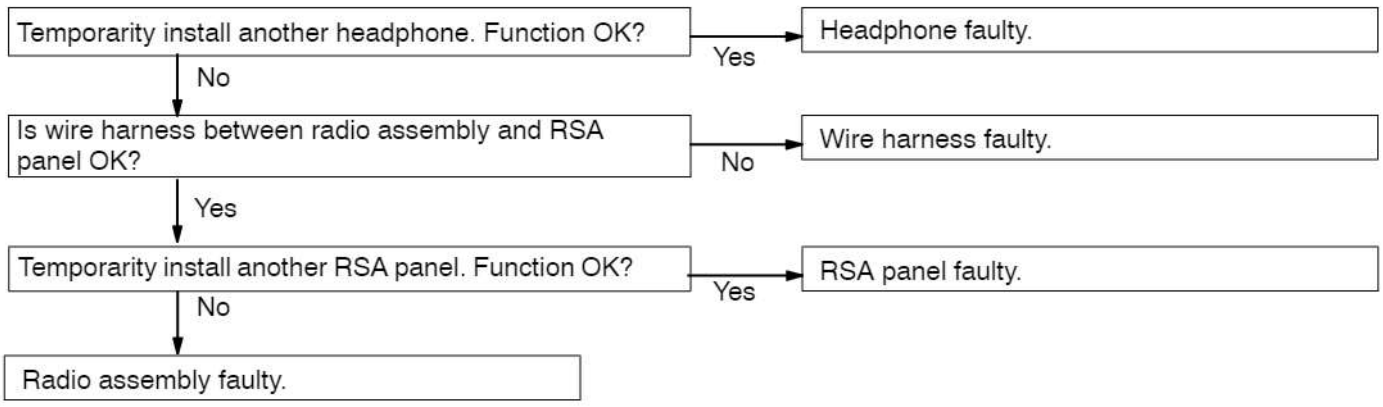


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3	Steering Pad Switch	A AUDIO SYSTEM CANNOT BE OPERATED WITH STEERING PAD SWITCH



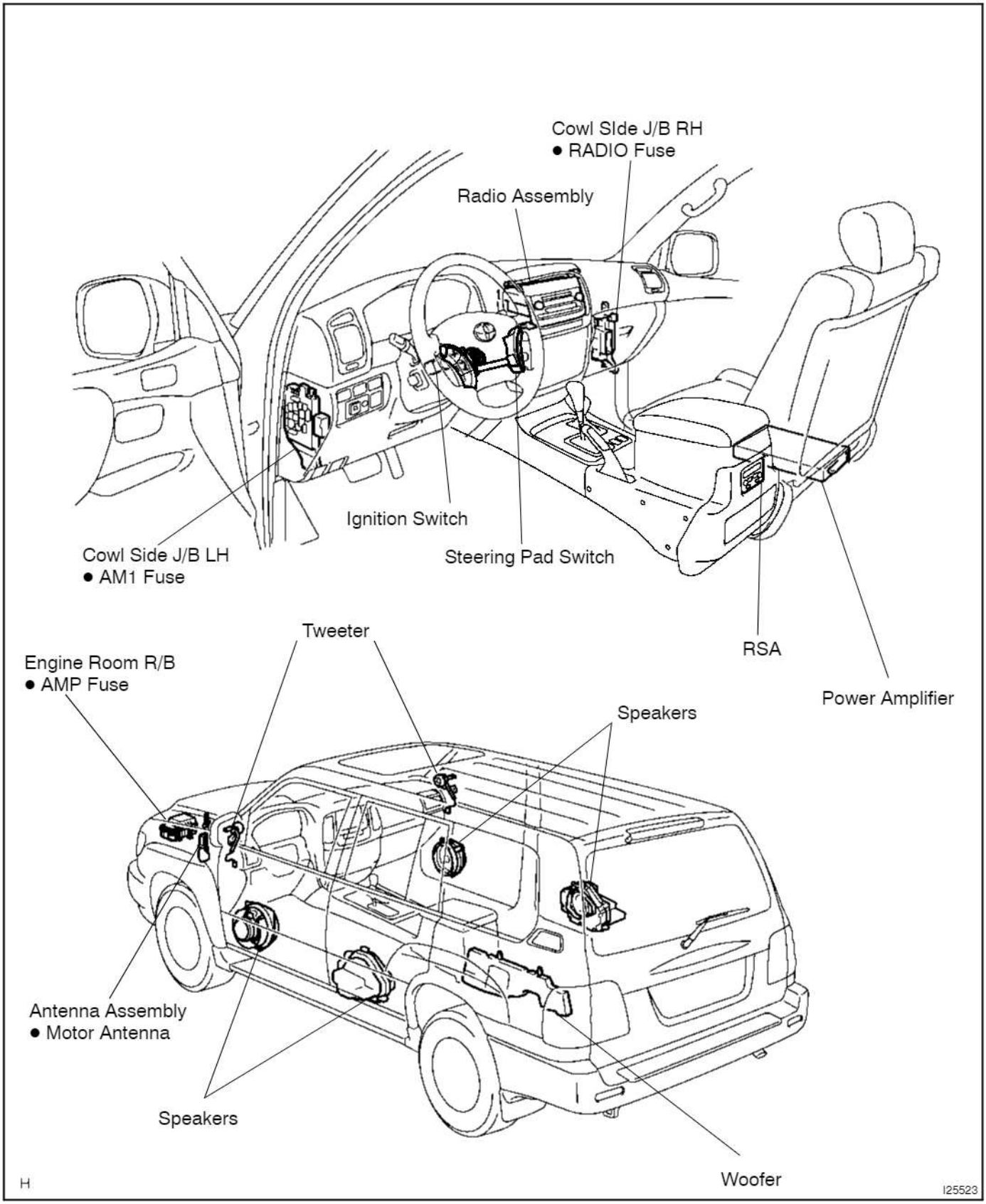
4	Rear Seat Audio	QUALITY OF SOUND FROM HEADPHONE TERMINAL IS POOR OR NO SOUND CAN BE HEARD



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BE0GD-24

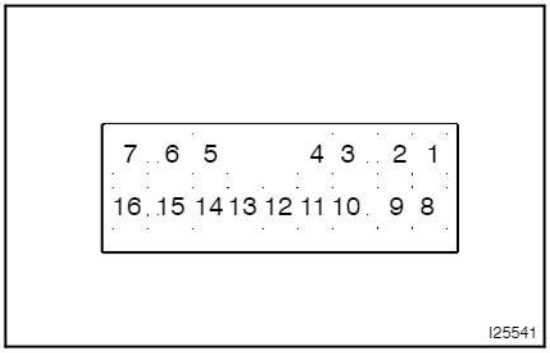
LOCATION



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BE2F4–01

INSPECTION

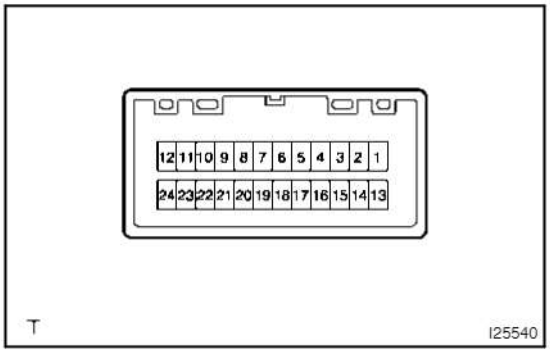


1. INSPECT POWER AMPLIFIER CIRCUIT

Disconnect the connector from power amplifier and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
12 – Ground	Constant	Continuity
13 – Ground	Constant	Continuity
7 – Ground	Constant	Battery voltage
16 – Ground	Constant	Battery voltage

If the circuit is not as specified, inspect the circuits connected to other parts.



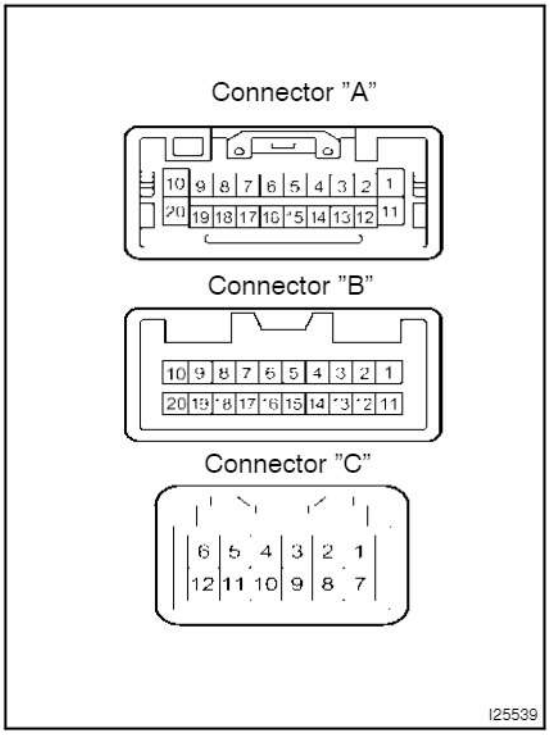
2. INSPECT REAR SEAT AUDIO CIRCUIT

Disconnect the connector from RSA controller and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
17 – Ground	Constant	Continuity
24 – Ground	Ignition switch LOCK	No voltage
24 – Ground	Ignition switch ACC or ON	Battery voltage
12 – Ground	Constant	Battery voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

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3. INSPECT RADIO RECEIVER ASSEMBLY CIRCUIT

Disconnect the connectors from the radio receiver assembly, and inspect the connector on the wire harness side.

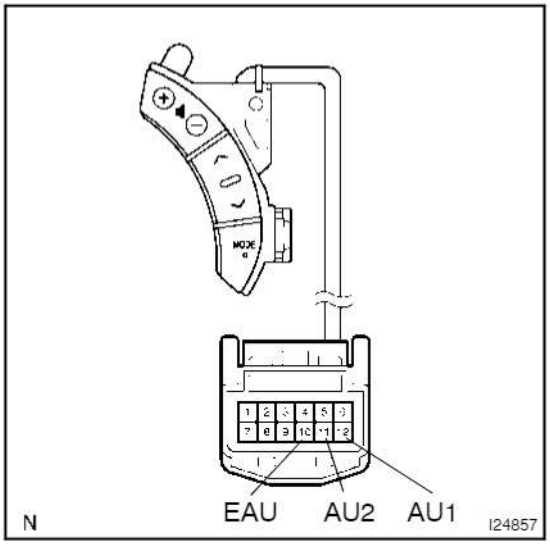
Tester connection	Condition	Specified condition
A20 – Ground	Constant	Continuity
A1 – Ground	Constant	Battery voltage
A11 – Ground	Ignition switch LOCK	No voltage
A11 – Ground	Ignition switch ACC or ON	Battery voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

HINT:

Check the wire harness between radio receiver assembly and the CD auto changer, between radio receiver assembly and power amplifier.

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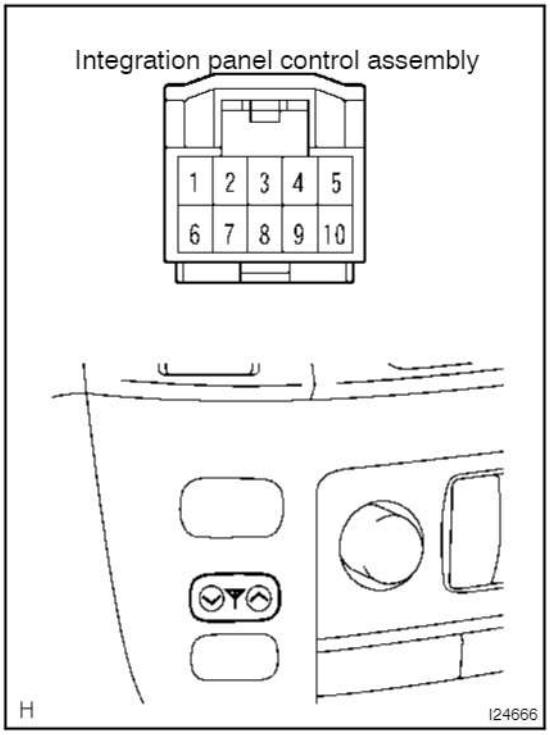
4. INSPECT STEERING PAD SWITCH CIRCUIT

Disconnect the connectors from the steering pad switch, and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
AU1 – EAU	Do not switch position	Approx. 100 kΩ
AU1 – EAU	SEEK+ switch: push	0 Ω
AU1 – EAU	SEEK– switch: push	Approx. 0.3 Ω
AU1 – EAU	VOL+ switch: push	Approx. 1k Ω
AU1 – EAU	VOL– switch: push	Approx. 3.2 kΩ
AU2 – EAU	Do not switch position	Approx. 100 kΩ
AU2 – EAU	MODE switch: push	0 Ω

If the circuit is not as specified, inspect the circuits connected to other parts.

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ANTENNA

INSPECTION

BE2F3-01

INSPECT ANTENNA SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
UP button FREE	4 – 5	No continuity
UP button Pushed in	4 – 5	Continuity
DOWN button FREE	9 – 5	No continuity
DOWN button Pushed in	9 – 5	Continuity

If continuity is not as specified, replace the switch.

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MULTI DISPLAY

TROUBLESHOOTING

BE2E1–02

HINT:

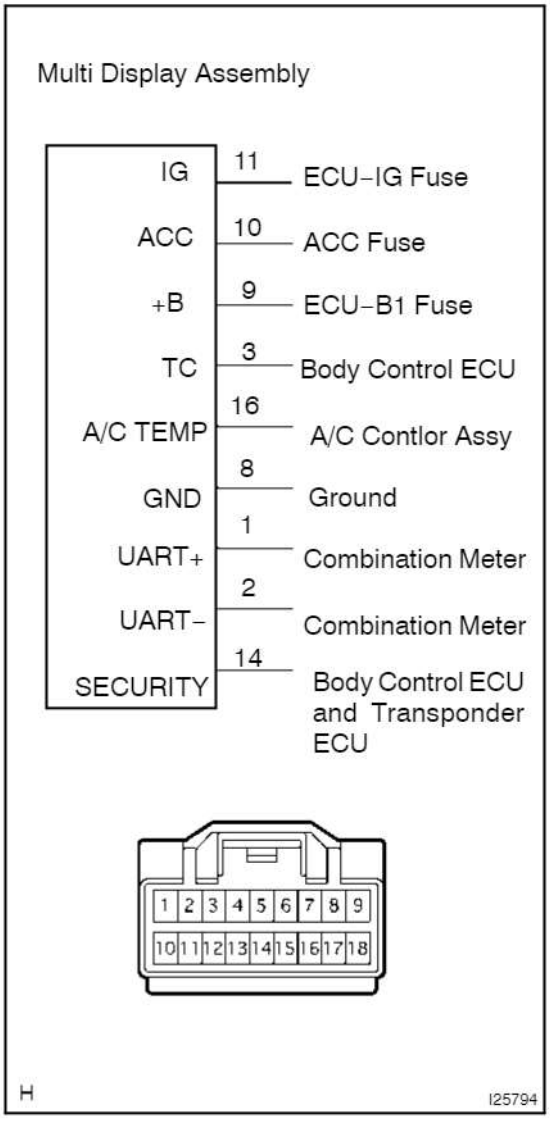
- Troubleshoot the Multi Display according to the table below.
- w/ Navigation System (See PageDI–1140)

Troubleshooting	No.
Multi disolay does not operate.	1
Clock loses or gains time.	2
Drive monitor function malfunction.	3
Outer temperature display malfunction.	4
Security indicator does not light up.	(See page DI–825)

± 1.5 seconds / day

1. TROUBLESHOOTING NO.1

1	**MULTI DISPLAY DOES NOT OPERATE**



(a) Check that the battery positive voltage is 10 – 16 V.

If voltage is not as specified, replace the battery.

(b) Check that the ECU–IG, ECU–B and ACC fuses are not blown.

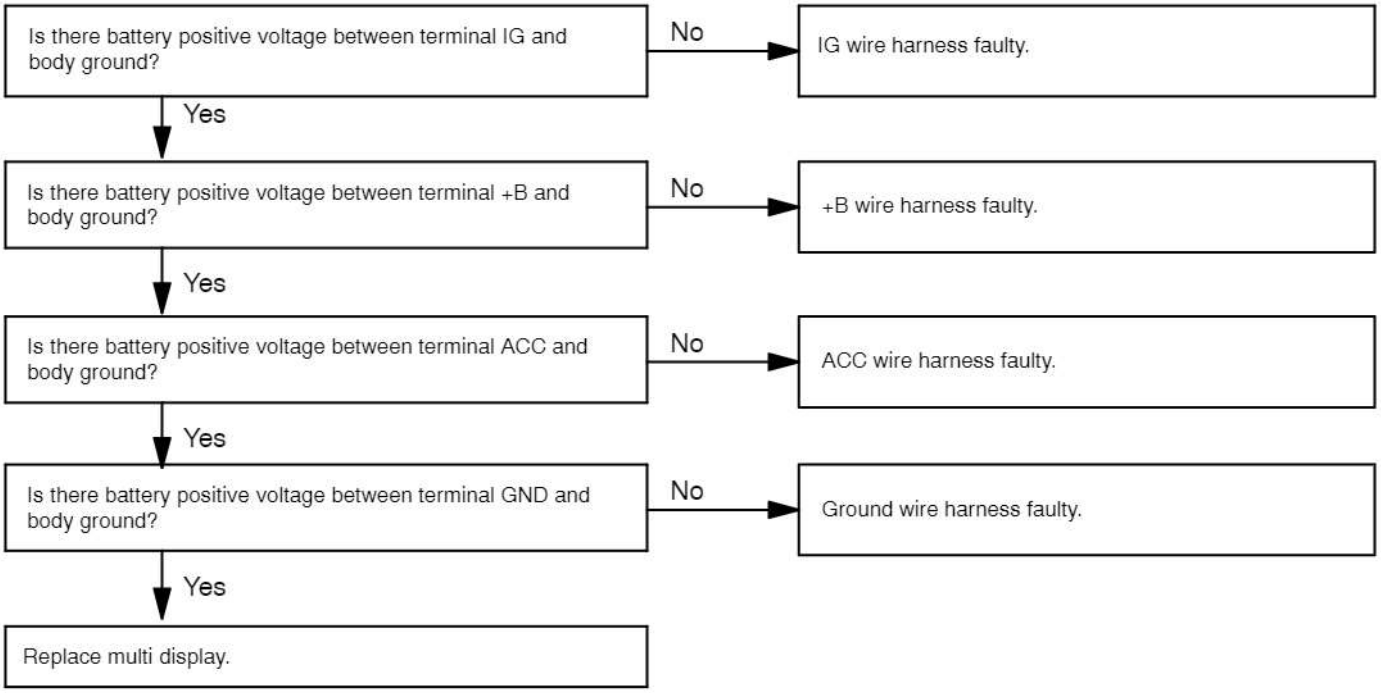
If the fuse is blown, replace the fuse and check for short.

(c) Troubleshoot the multi display as follows.

HINT:

Inspect the connector on the wire harness side.

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2. TROUBLESHOOTING NO.2

2	**CLOCK LOSES OR GAINS TIME**

(a) Check that the battery positive voltage is 10 – 16 V.

If voltage is not as specified, replace the battery.

(b) Inspect the error of the clock.

Allowable error (per day): ± 1.5 seconds

If the error exceeds the allowable error, replace the multi display.

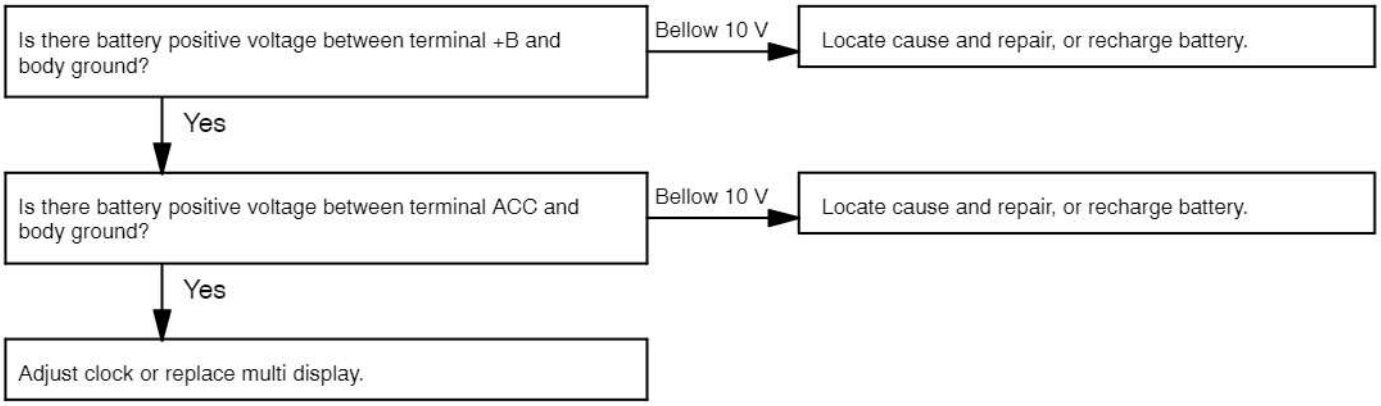
(c) Check that the clock adjusting button is sticking in position and has failed to return.

If the error exceeds the allowable error, replace the multi display.

(d) Troubleshoot the clock as follows.

HINT:

Inspect the connector on the wire harness side.

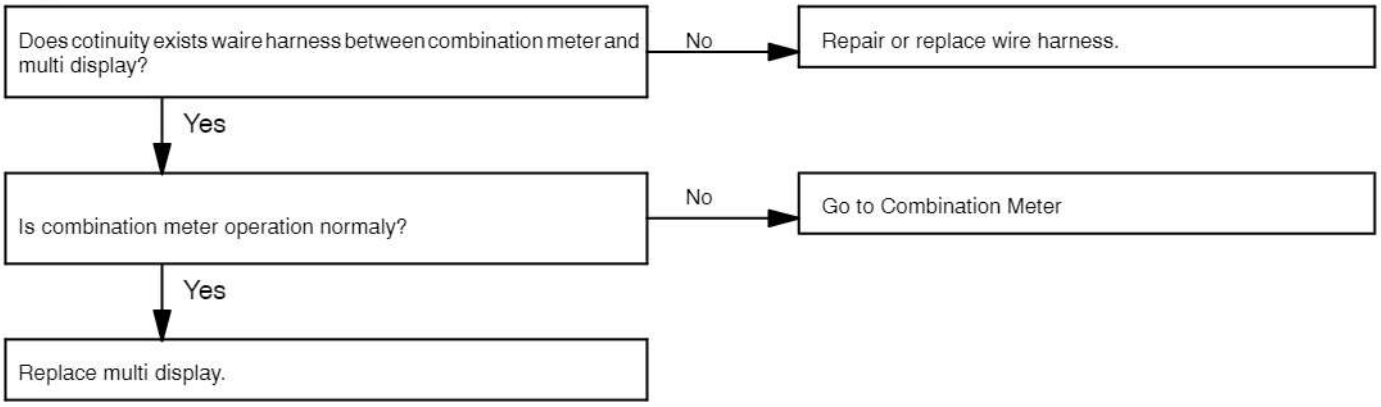


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3. TROUBLESHOOTING NO.3

3	**DRIVE MONITOR FUNCTION MALFUNCTION**

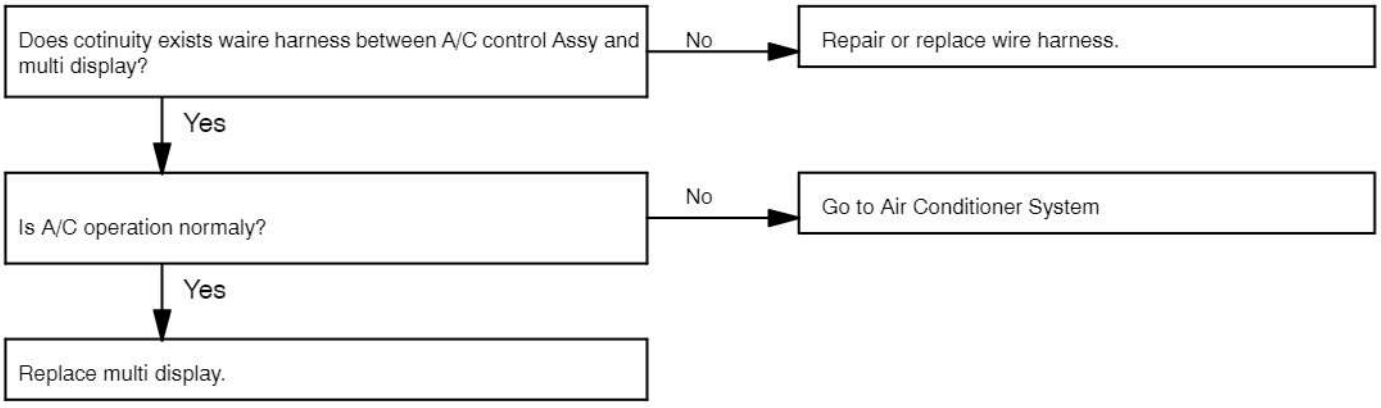
(a) Check that the battery positive voltage is 10 – 16 V.
If voltage is not as specified, replace the battery.
(b) Troubleshoot the drive monitor function as follows.
HINT:
Inspect the connector on the wire harness side.



4. TROUBLESHOOTING NO.4

4	**OUTER TEMPERATURE DISPLAY MALFUNCTION**

(a) Check that the battery positive voltage is 10 – 16 V.
If voltage is not as specified, replace the battery.
(b) Troubleshoot the outer temperature display as follows.
HINT:
Inspect the connector on the wire harness side.



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ENGINE IMMOBILISER SYSTEM

BE1Z6-02

REGISTRATION PROCEDURE

HINT:

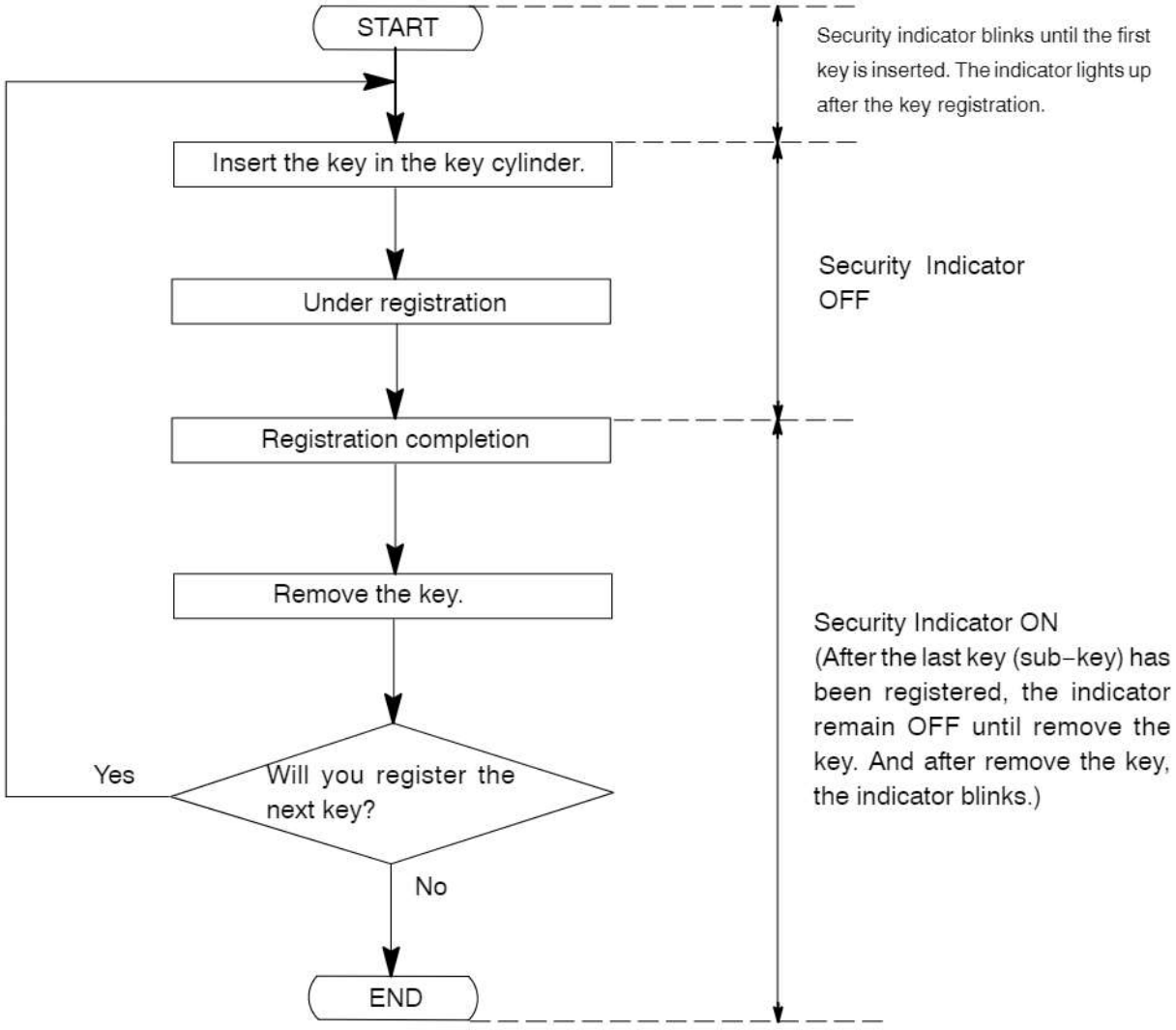
In case of having lost all the already registered master keys, you are not able to do additional registration or deletion. Change the Transponder key ECU and then must register the new key codes according to the following registration procedure of the automatic registration mode.

1. KEY REGISTRATION IN AUTOMATIC REGISTRATION MODE

(a) Registration of a new transponder key.

HINT:

- This must be done when you install a new Transponder key ECU.
- The new Transponder key ECU is on the automatic key code registration mode. The already fixed number of key codes for this Transponder key ECU can be registered.
  On this type of vehicle, up to 3 key codes can be registered.
- A master and sub key are registered automatically.



HINT:

- When a key is not inserted in the key cylinder on the automatic registration mode, the security indicator always lights on.
- When the immobiliser system operates normally and the key is pull out, the security indicator blinks.

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(b) Automatic registration mode completion

If completing the mode forcibly when more than 1 key code have been registered on the automatic registration mode, perform the following procedures.

After 1 more key code have been registered with master key, perform step (1) or (2) without pulling the key out or inserting the already registered key.

(1) Turn the ignition switch LOCK → ON 5 times within 10 sec.

(2) With the TOYOTA hand–held tester, require automatic registration mode completion.

2. REGISTRATION OF ADDITIONAL MASTER KEY AND SUB KEY

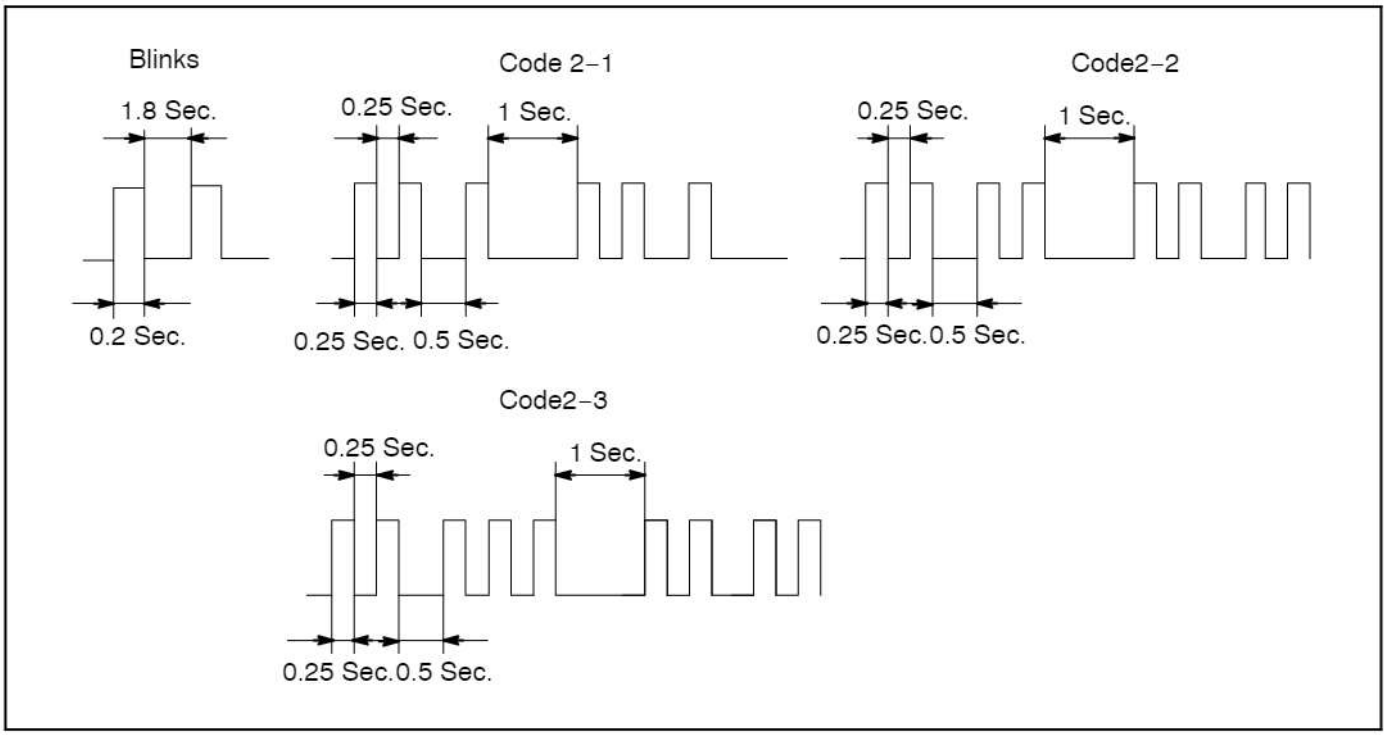
It is possible to carry out additional registration of the supply key.

HINT:

- It is possible to register up to 5 master key codes including the already registered key code.
- It is posible to register up to 3 sub key codes including the aleady registed key code.
- When any operation time described below is over, registration mode completes.
- When the next procedure is performed while the timer is working, the timer completes counting time, then next timer starts.
- When replacing "Ignition Cylinder Key Set" or "Lock Cylinder Set" and register according to the following procedure using the original master key. However, after the registration of the additional master key, as the original master key and the original sub–key is not necessary any more, so erase registration of those key codes.
- For the registration order, it is not necessary to distinguish between Main and Sub.
  (Main key and Sub key are automatically identified)

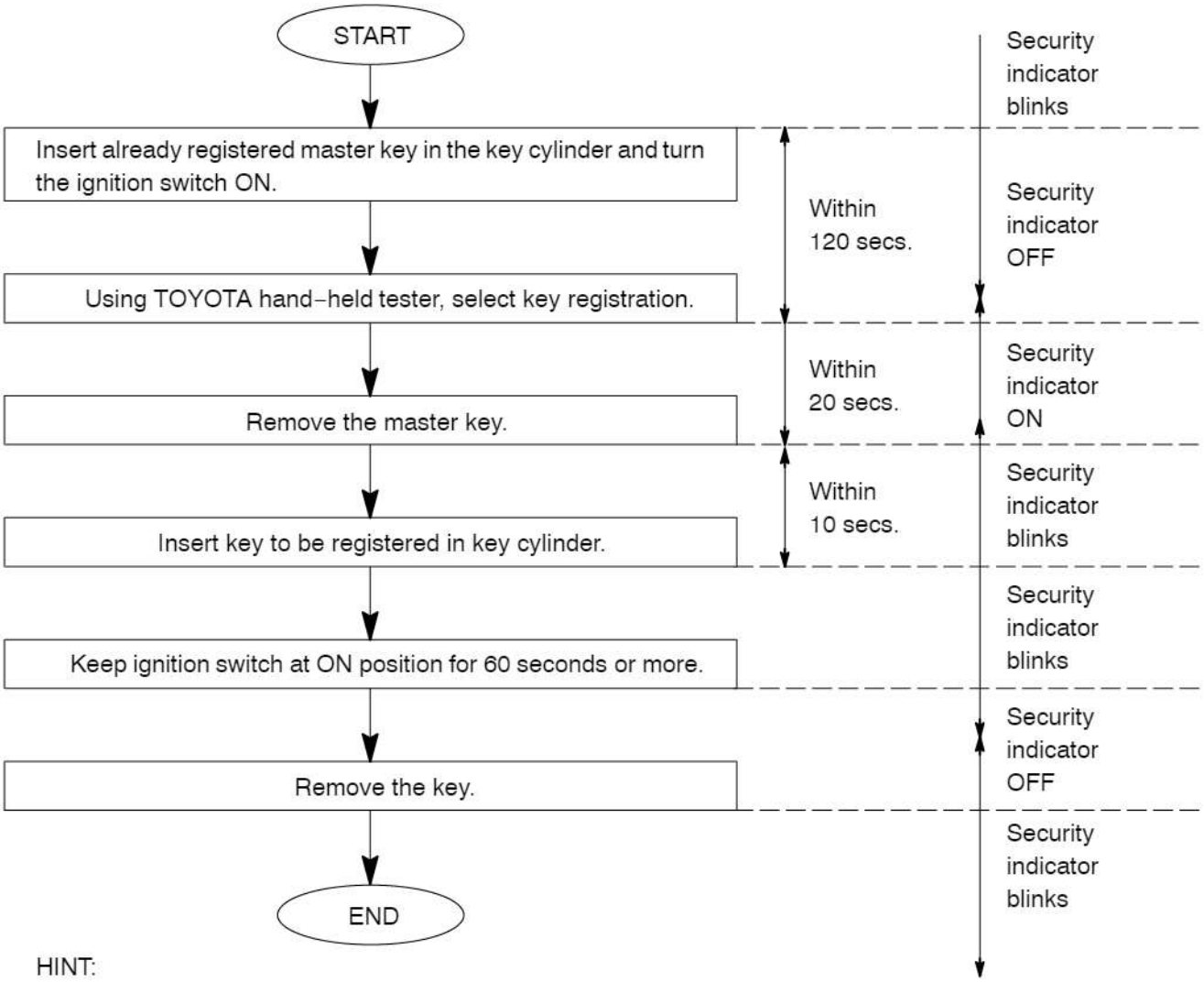
When a registration error in the transponder key ECU is detected, the security indicator indicates the following codes.

2 – 1	Communication error between the key to be registered and the transponder key ECU
2 – 2	When trying to register the key that is already registered
2 – 3	When exceeding the number of keys can be retistered (Master key: 5, Sub key: 3)



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(1) Using hand–held tester:

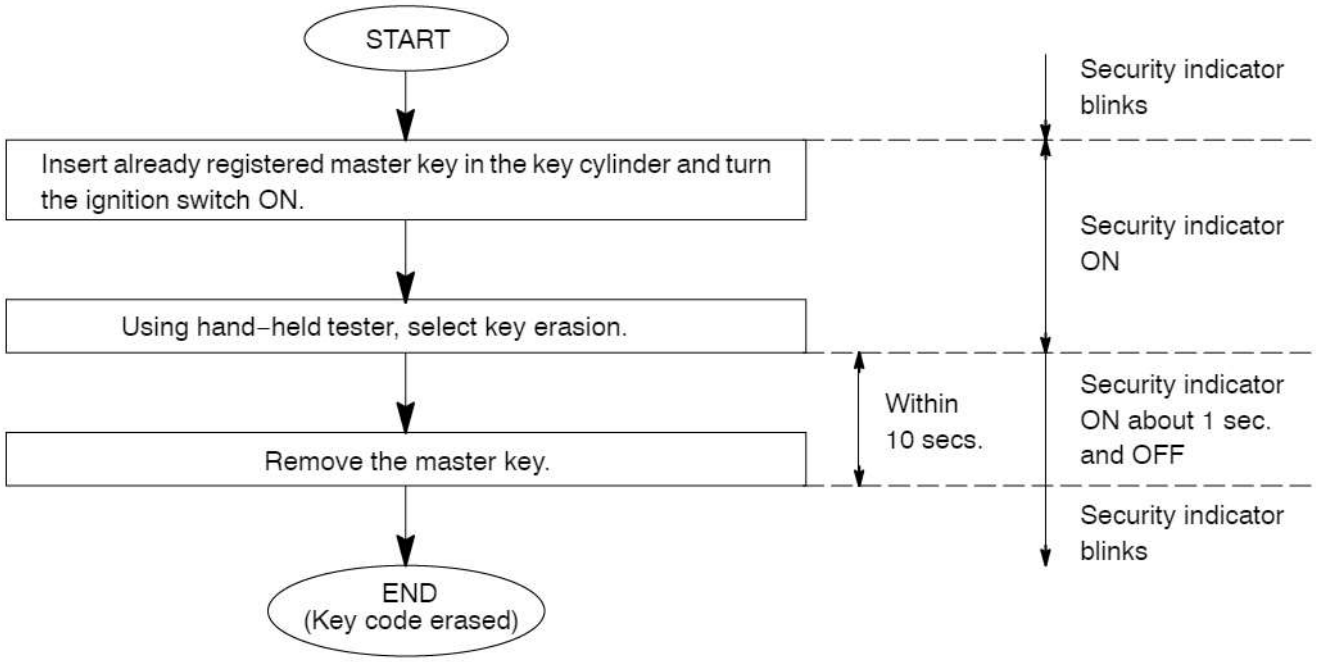


HINT:
Please follow the screen of the hand–held tester for more detailed procedure.

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3. ERASURE OF TRANSPONDER KEY CODE

Using hand–held tester:



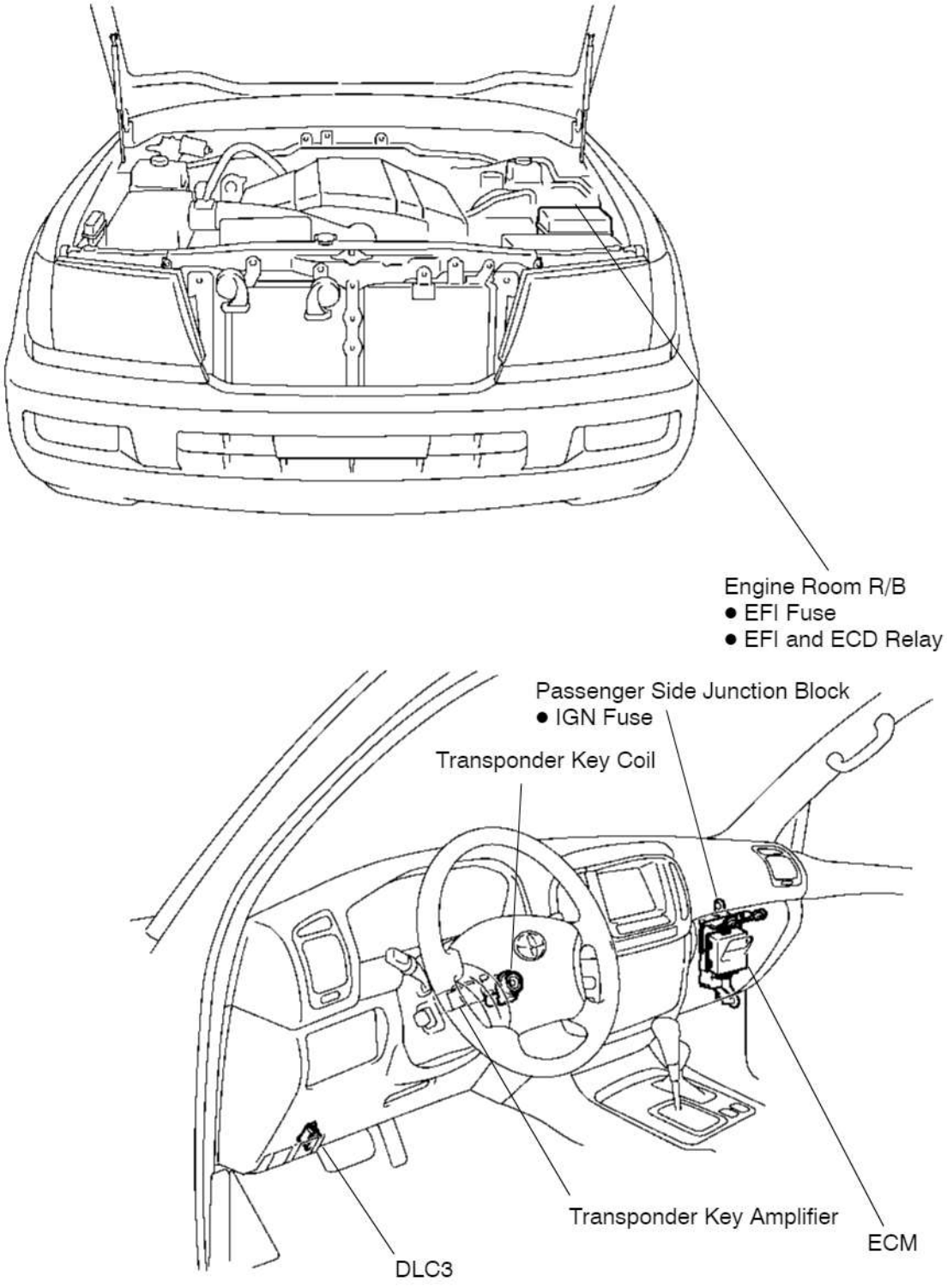
HINT:

- Follow the screen of the hand–held tester for more detailed procedure.

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BE02C-25

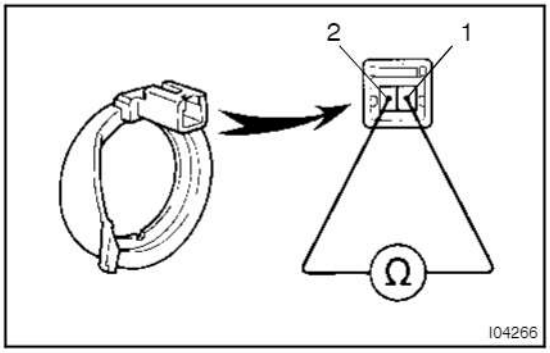
LOCATION



H

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BE0G8-14



INSPECTION

INSPECTION TRANSPONDER KEY COIL CONTINUITY

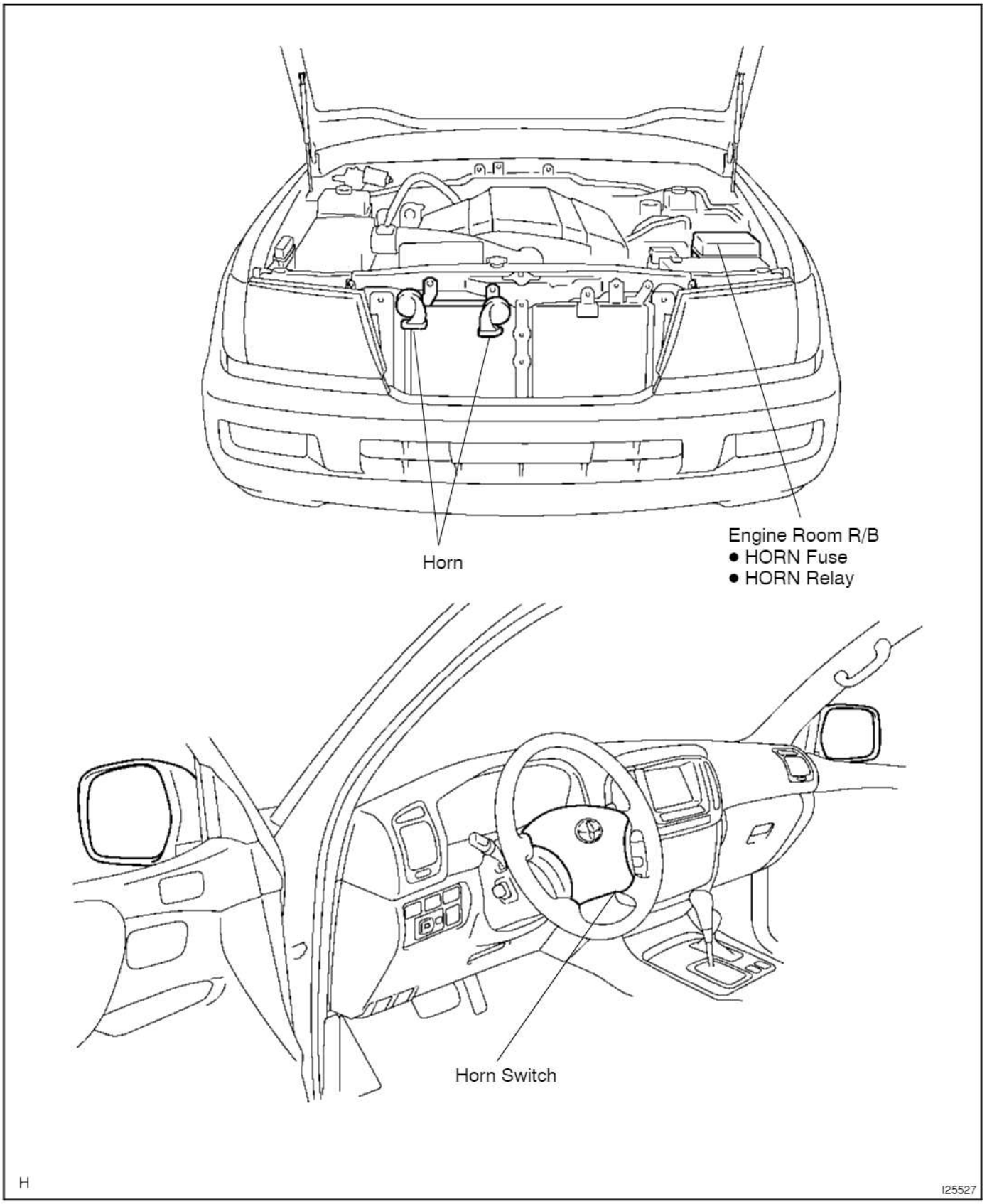
Check that continuity exists between terminals 1 and 2.
If continuity is not as specified, replace the coil.

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HORN SYSTEM

LOCATION

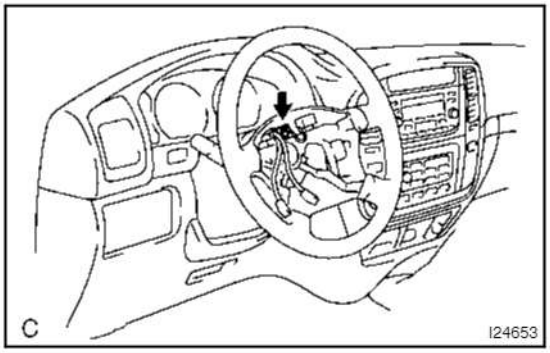
BE0FY-28



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BE0FZ-21

INSPECTION

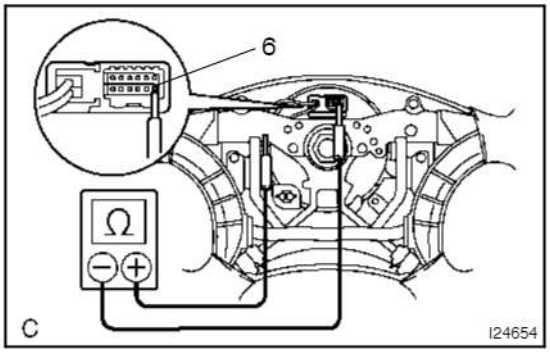


1. INSPECT HORN SWITCH

(a) Disconnect the negative (–) terminal from the battery.
(b) Remove the left and right covers from the steering wheel.
(c) Using a torx socket wrench, loosen the 2 bolts.
(d) Pull up the horn pad and place it on the steering column, as shown.

HINT:
Do not disconnect the connector from the horn pad.

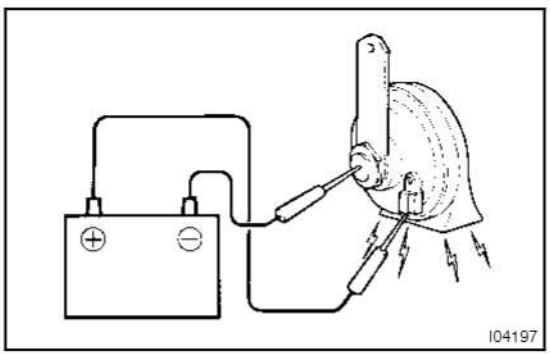
(e) Disconnect the connector from the slip ring.



(f) Check that no continuity exists between terminal 6 of the connector and body ground.
(g) Check that continuity exists between terminal 6 of the connector and body ground when the horn contact plate is pressed against the steering spoke assembly.

If continuity is not as specified, repair or replace the steering wheel or wire harness as necessary.

(h) Install the horn pad in place and using a torx socket wrench, torque the 2 bolts.
Torque: 7.1 N·m (72 kgf·cm, 62 in.·lbf)
(i) Install the left and right covers.
(j) Connect the negative (–) terminal to the battery.

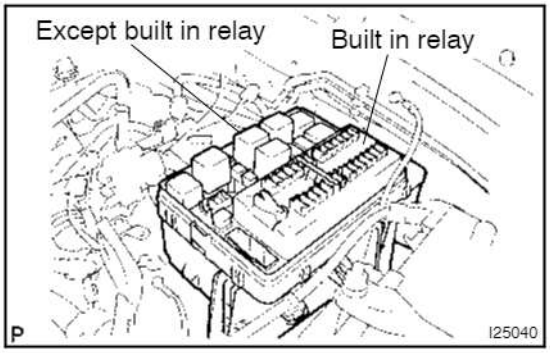


2. INSPECT HORN OPERATION

Connect the positive (+) lead from the battery to the terminal and negative (–) lead to the horn body and check that the horn blows.

If operation is not as specified, replace the horn.

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3. INSPECT ENGINE ROOM R/B RELAY CIRCUIT (See Pase BE–8)

HINT:

The horn relay is built in engine room junction block. Also the relay is constructed with a relay block that is in the junction block as a unit. To disconnect the wire harness connecting with relay block is impossible. If the relay has a malfunction, replace it with junction block assembly wire harness together.

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SRS AIRBAG

PRECAUTION

B00RW-10

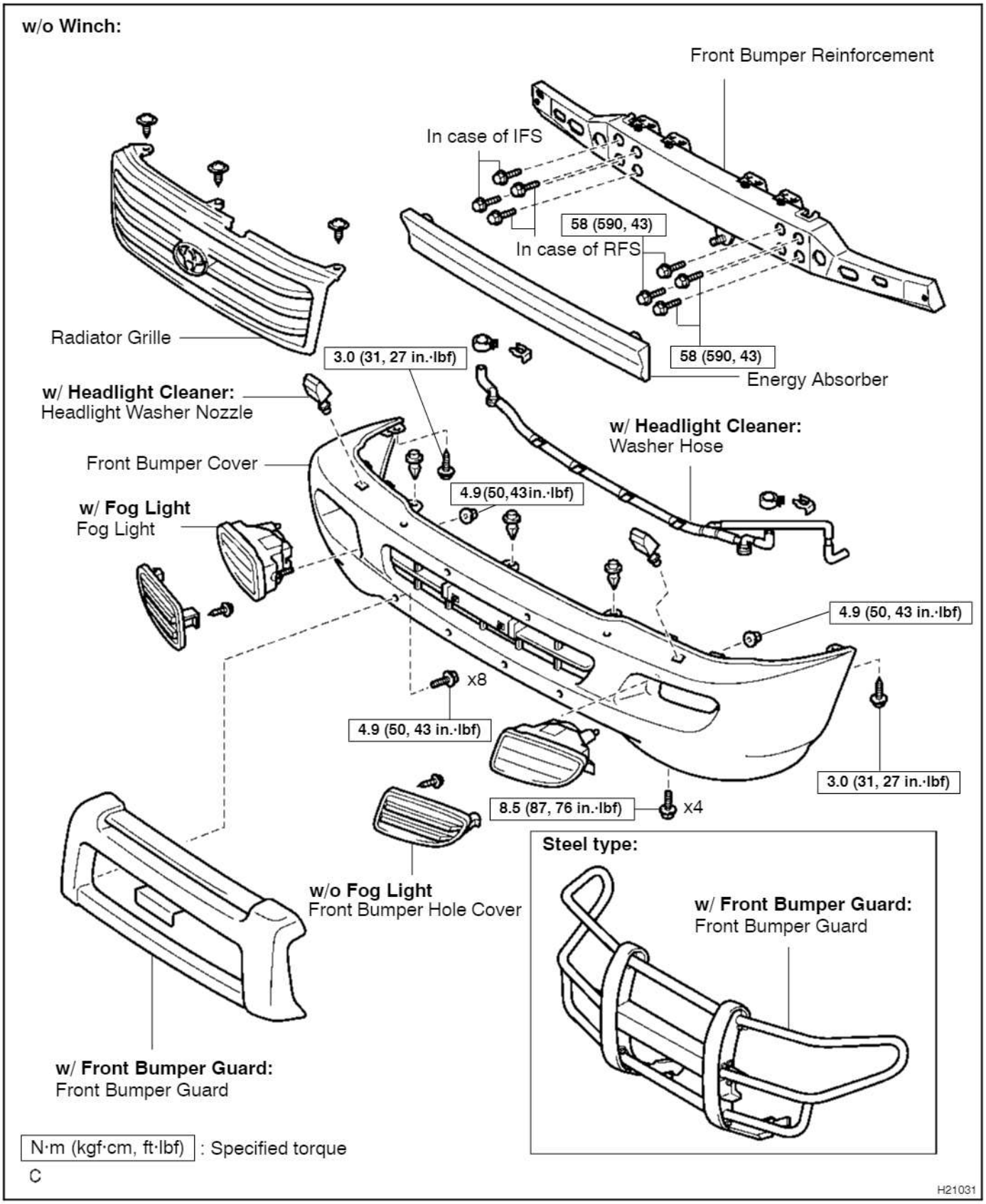
The LAND CRUISER (Station Wagon) is equipped with SRS (Supplemental Restraint System) such as the driver airbag and the front passenger airbag. (The side airbag and the curtain shield airbag are optional.) Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during the servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notices in the RS section.

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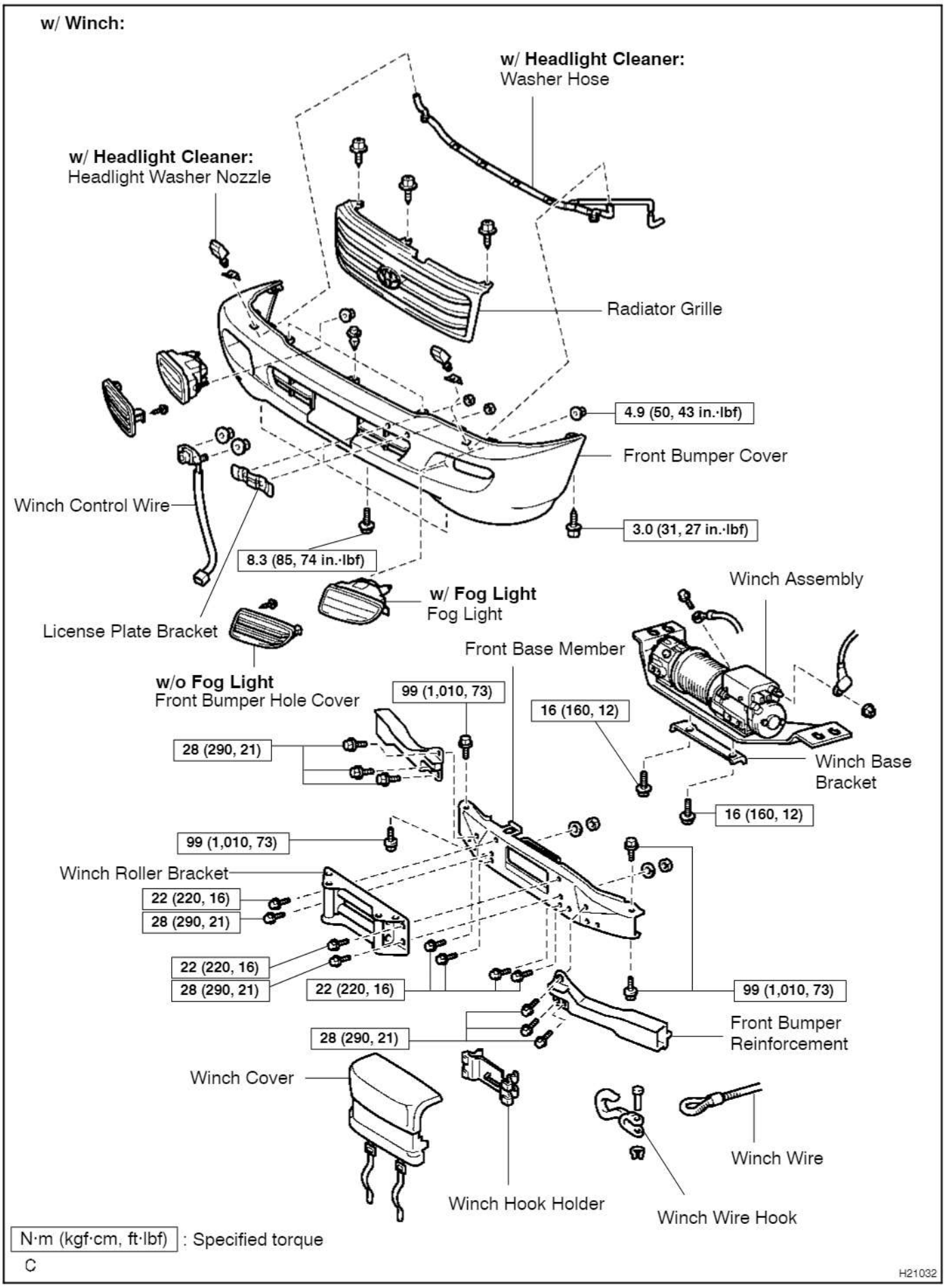
FRONT BUMPER

COMPONENTS

B01TL–03



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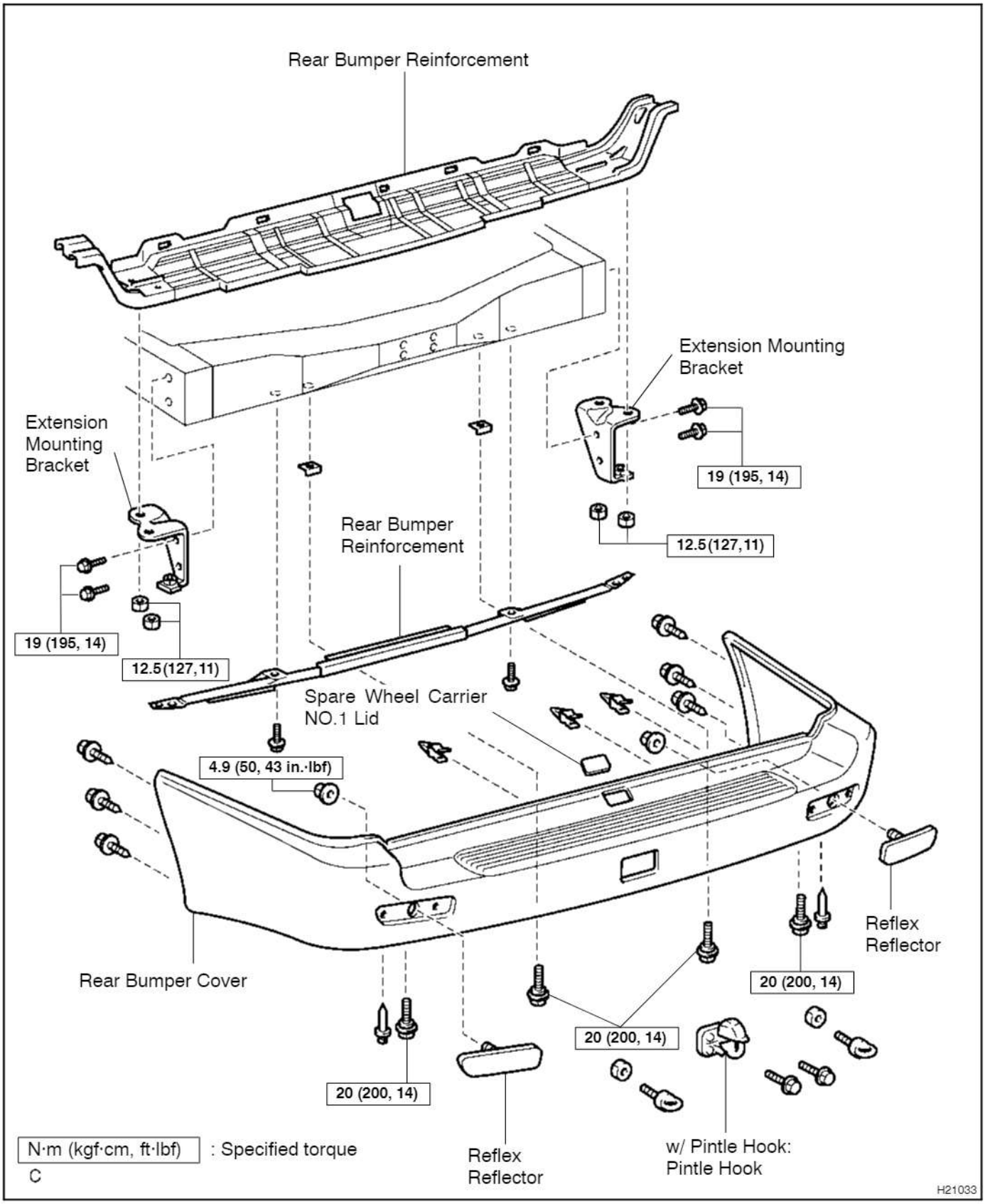


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REAR BUMPER

COMPONENTS

BO1TM–02

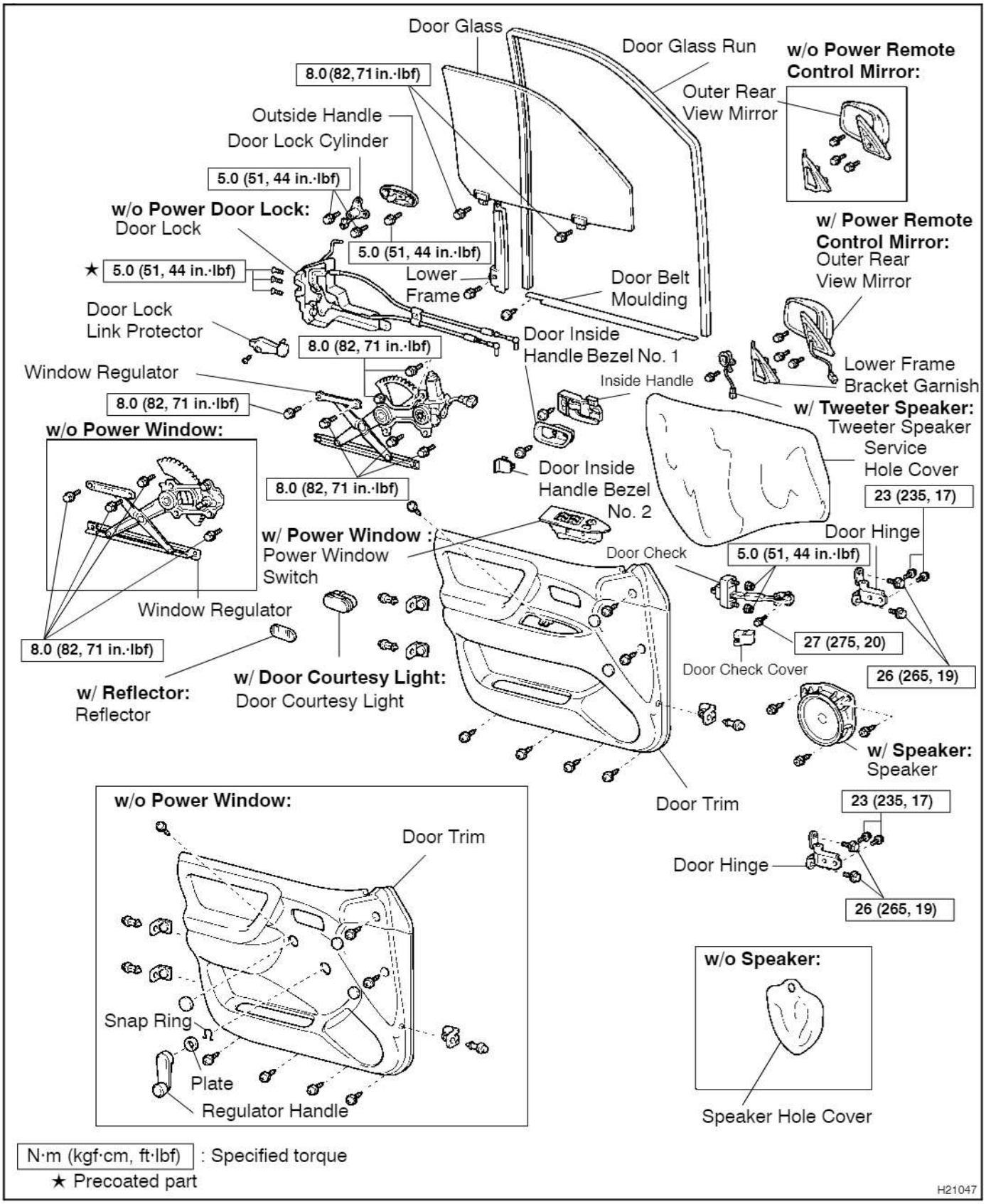


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FRONT DOOR

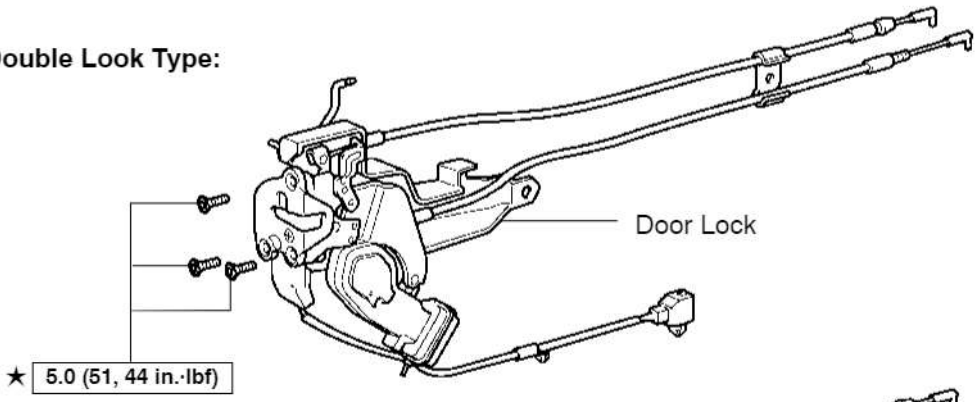
COMPONENTS

BO4J5-01

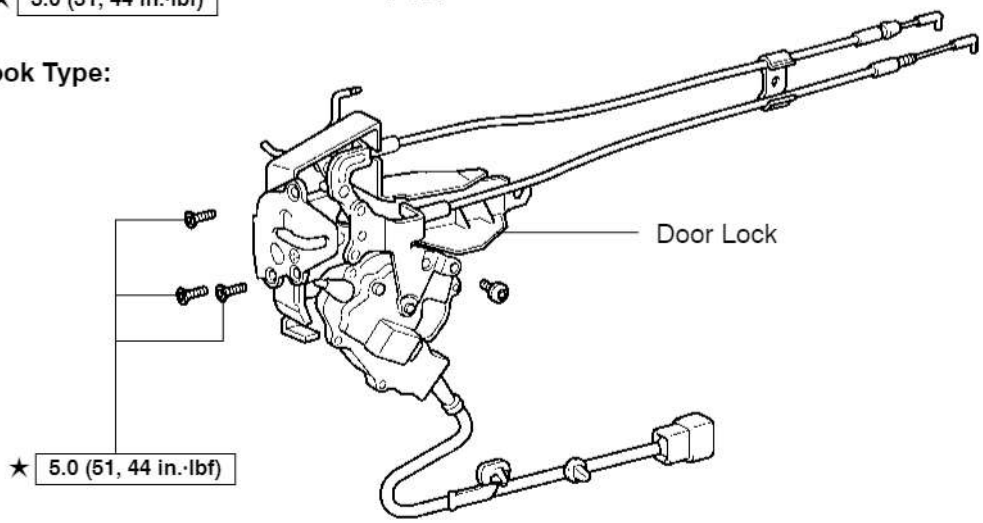


w/ Power Door Look:

Except Double Look Type:



Double Look Type:



N·m (kgf·cm, ft·lbf) : Specified torque

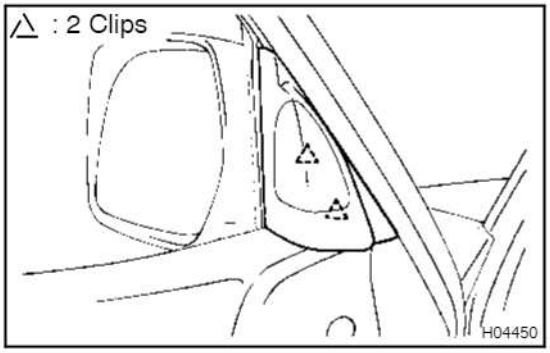
C ★ Precoated part

H21048

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BO1TQ-02

DISASSEMBLY

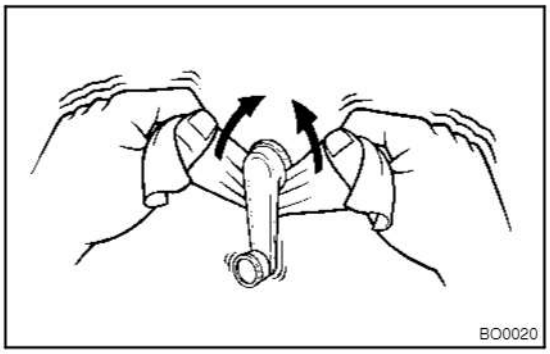


1. REMOVE LOWER FRAME BRACKET GARNISH

Using a screwdriver, remove the lower frame bracket garnish.

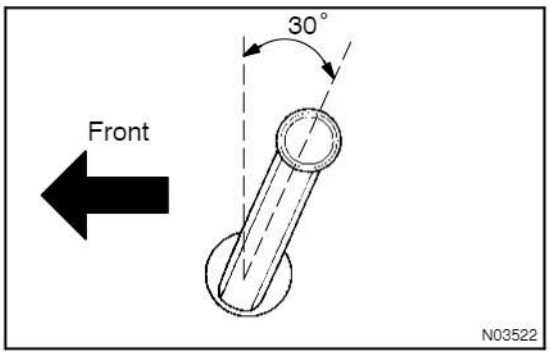
HINT:

Tape up the screwdriver tip before use.



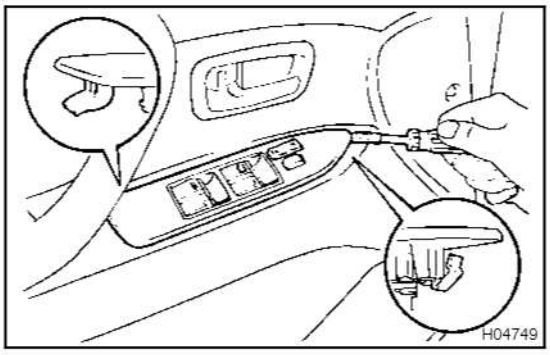
2. w/o Power Window:
REMOVE REGULATOR HANDLE

Pull off the snap ring with a shop rag and remove the regulator handle and the plate.



HINT:

At the time of assembly,with door window fully closed, install the plate and the regulator handle with the snap ring.



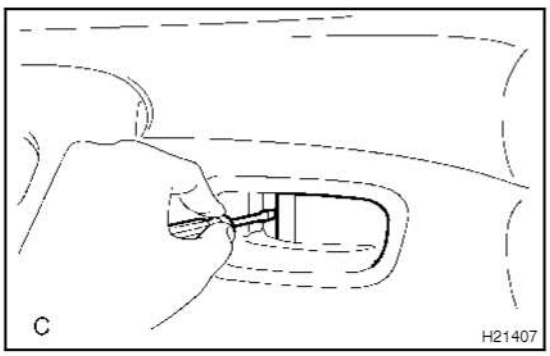
3. w/ Power Window:
REMOVE POWER WINDOW SWITCH

(a) Using a screwdriver, remove the power window switch as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.

(b) Disconnect the connector.



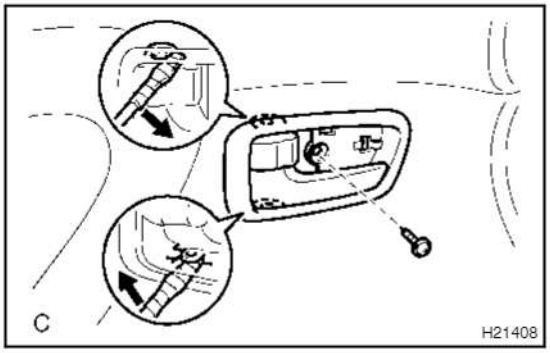
4. REMOVE DOOR INSIDE HANDLE BEZEL No. 2

Using a screwdriver, remove the door inside handle bezel No. 2 as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.

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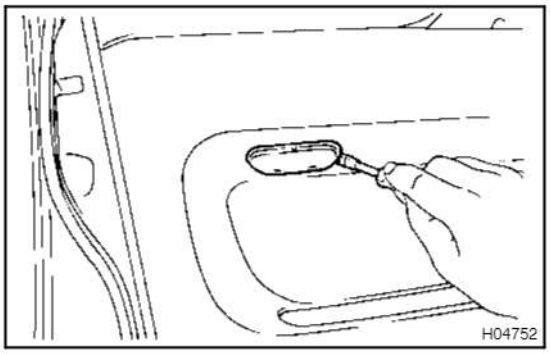
5. REMOVE DOOR INSIDE HANDLE BEZEL No. 1

(a) Remove the screw.

(b) Using a screwdriver, remove the door inside handle bezel No. 1 as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.



6. w/ Courtesy Light:
REMOVE DOOR COURTESY LIGHT

Using a screwdriver, remove the door courtesy light, then disconnect the connector.

HINT:

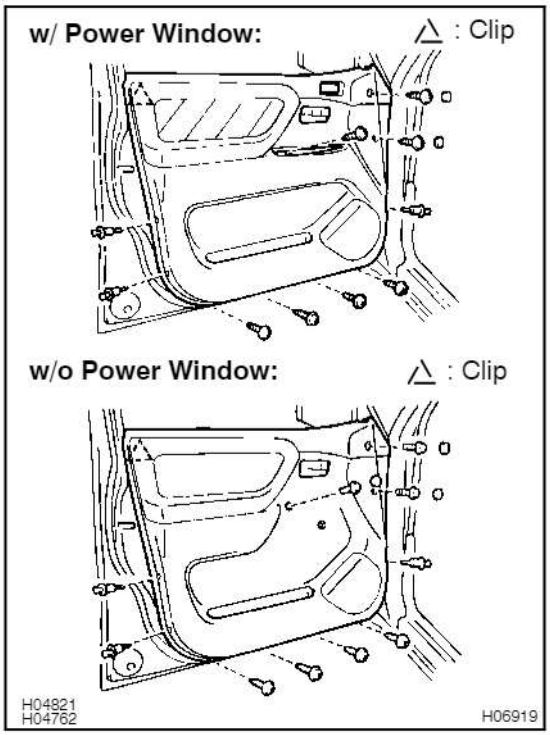
Tape up the screwdriver tip before use.

7. w/ Reflector:
REMOVE REFLECTOR

Using a screwdriver, remove the reflector.

HINT:

Tape up the screwdriver tip before use.



8. REMOVE DOOR TRIM

(a) w/ Power Window:
Remove the 2 caps and the 7 screws.

(b) w/o Power Window:
Remove the 3 caps and the 7 screws.

(c) Remove the 3 clips.

(d) Insert a screwdriver between the door and the door trim to pry the trim out.

NOTICE:

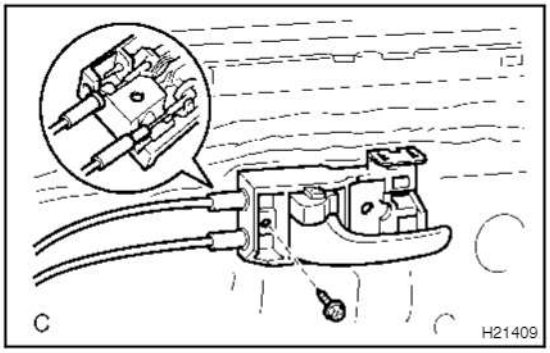
Be careful not to damage the door and the door trim.

HINT:

Tape up the screwdriver tip before use.

(e) Pull the trim upward to remove it.

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9. REMOVE INSIDE HANDLE

(a) Remove the screw and the inside handle.

(b) Disconnect the 2 control cables from the inside handle as shown in the illustration.

10. REMOVE SERVICE HOLE COVER

Remove the service hole cover.

NOTICE:

Do not tear the cover.

HINT:

At the time of assembly, pull out the 2 control cables through the service hole cover.

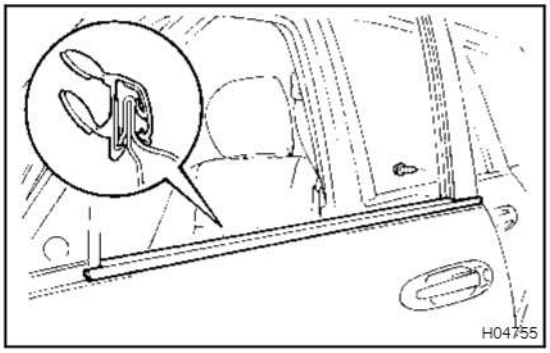
11. w/ Tweeter Speaker:
REMOVE TWEETER SPEAKER

Disconnect the connector, then remove the bolt and the tweeter speaker.

12. REMOVE OUTER REAR VIEW MIRROR

(a) w/ Power Remote Control Mirror:
Disconnect the connector.

(b) Remove the bolts and the outer view mirror.



13. REMOVE DOOR BELT MOULDING

(a) Remove the screw.

(b) Using a scraper, remove the door belt moulding.

HINT:

Tape up the scraper tip before use.

14. REMOVE DOOR GLASS

(a) Open the door glass until the bolts appear in the service hole.

(b) Remove the 2 bolts and the door glass.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

NOTICE:

Do not damage the door glass.

HINT:

Pull the glass upward to remove it.

15. REMOVE SPEAKER

(a) w/ Speaker:
Remove the 3 screws and the speaker, then disconnect the connector.

(b) w/o Speaker:
Using a screwdriver, remove the speaker hole cover.

HINT:

Tape up the screwdriver tip before use.

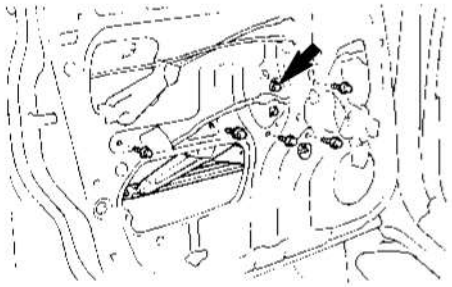
16. REMOVE DOOR GLASS RUN

17. REMOVE LOWER FRAME

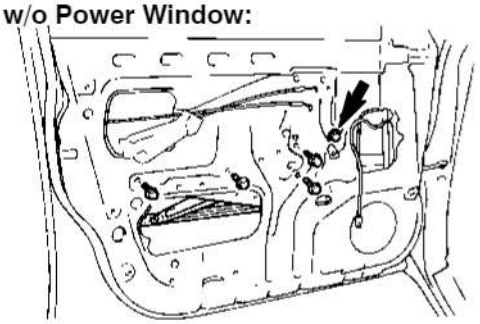
Remove the bolt and the lower frame.

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w/ Power Window:



w/o Power Window:



H06920

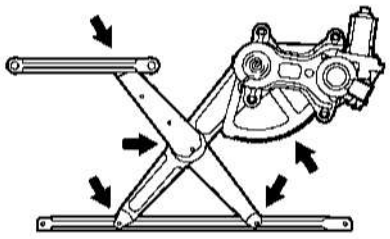
18. REMOVE WINDOW REGULATOR

(a) w/ Power Window:
Disconnect the connector, then remove the 5 bolts.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

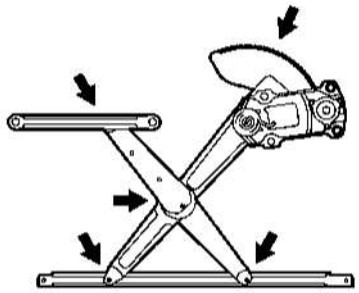
(b) w/o Power Window:
Remove the 4 bolts.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

(c) Loosen the bolt and remove the window regulator.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

w/ Power Window:



w/o Power Window:



H21413
H21414

H21590

HINT:

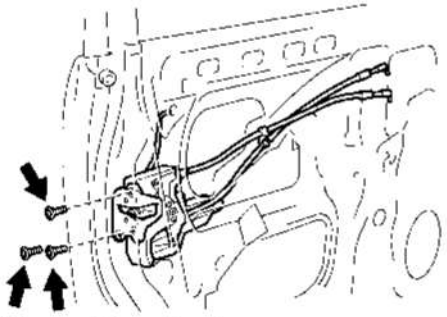
- Remove the regulator through the service hole.
- At the time of assembly, apply MP grease to the window regulator.

NOTICE:

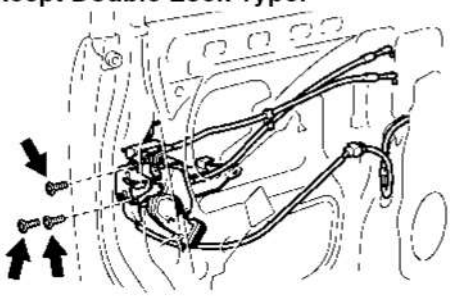
At the time of assembly, do not apply grease to the spring of the window regulator.

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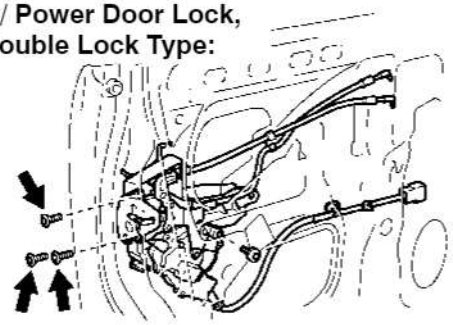
w/o Power Door Lock:



w/ Power Door Lock,
Except Double Lock Type:



w/ Power Door Lock,
Double Lock Type:



C H21049

19. REMOVE DOOR LOCK

(a) Remove the clip and the door lock link protector.

(b) w/ Power Door Lock, Except Double Lock Type:
Disconnect the connector or connectors.

(c) w/ Power Door Lock, Double Lock Type:
Disconnect the connector.

(d) Disconnect the 2 links from the outside handle and the door lock cylinder.

(e) Double Lock Type:
Remove the torx screw.

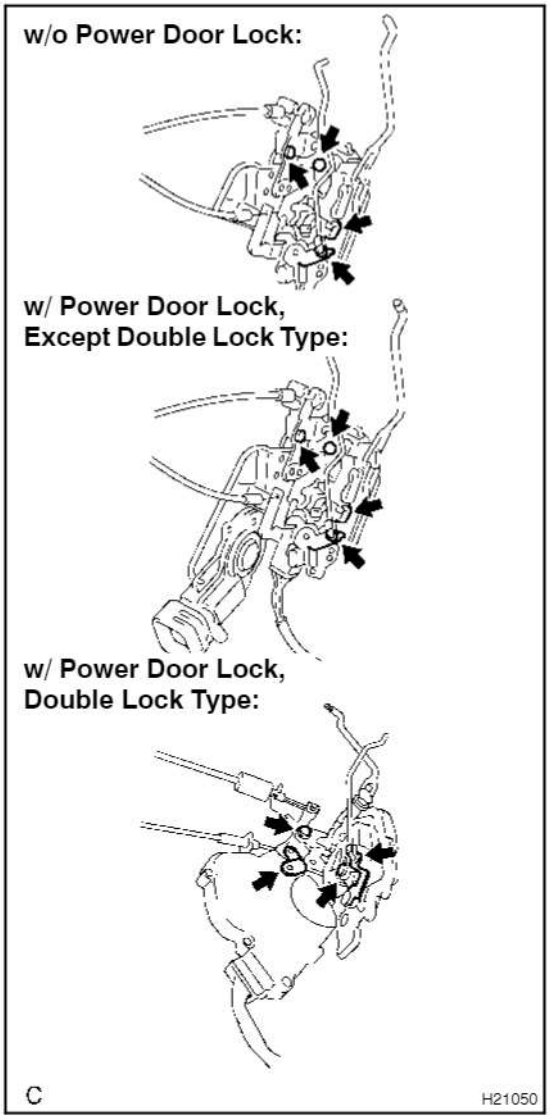
(f) Using a torx wrench, remove the 3 screws and the door lock through the service hole.
Torx wrench: T30 (Part No.09042–00010 or locally manufactured tool)
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

HINT:

At the time of assembly:

- Apply adhesive to the 3 screws.
Part No.08833–00070, THREE BOND 1324 or equivalent

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- Remove the protector, and apply MP grease to the sliding and rotating parts of the door lock.

20. REMOVE OUTSIDE HANDLE WITH DOOR LOCK CYLINDER

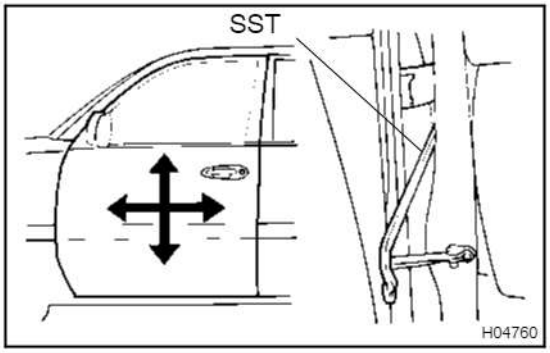
(a) Remove the 2 bolts and the outside handle with the door lock cylinder.

(b) Remove the bolt and the door lock cylinder from the outside handle.

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BO1TR–02

ADJUSTMENT

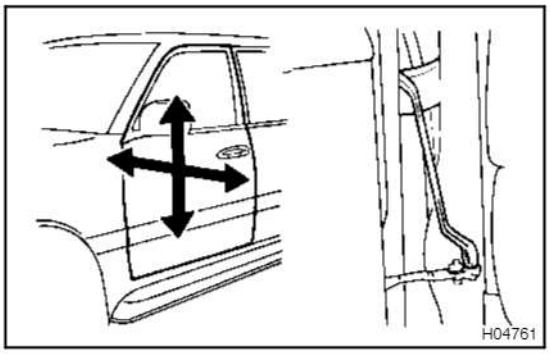


1. ADJUST DOOR IN FORWARD/BACKWARD AND VERTICAL DIRECTIONS

Using SST, loosen the body side hinge bolts to adjust.

SST 09812–00010

Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)



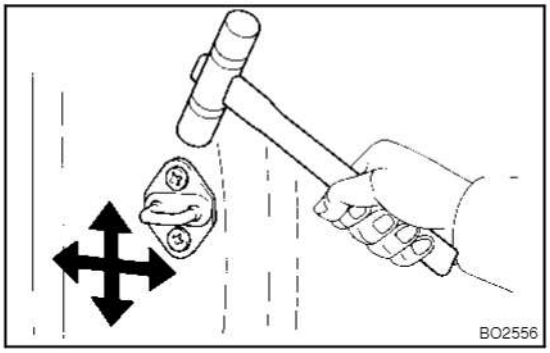
2. ADJUST DOOR IN RIGHT/LEFT AND VERTICAL DIRECTIONS

Loosen the door side hinge bolts to adjust.

HINT:

Substitute the bolt with washer for the centering bolt.

Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)



3. ADJUST DOOR LOCK STRIKER

(a) Check that the door fit and door lock linkages are adjusted correctly.

(b) Loosen the striker mounting screws.

Torque: 11 N·m (115 kgf·cm, 8 ft·lbf)

(c) Using a plastic hammer, tap the striker to adjust it.

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BO1TS–01

REASSEMBLY

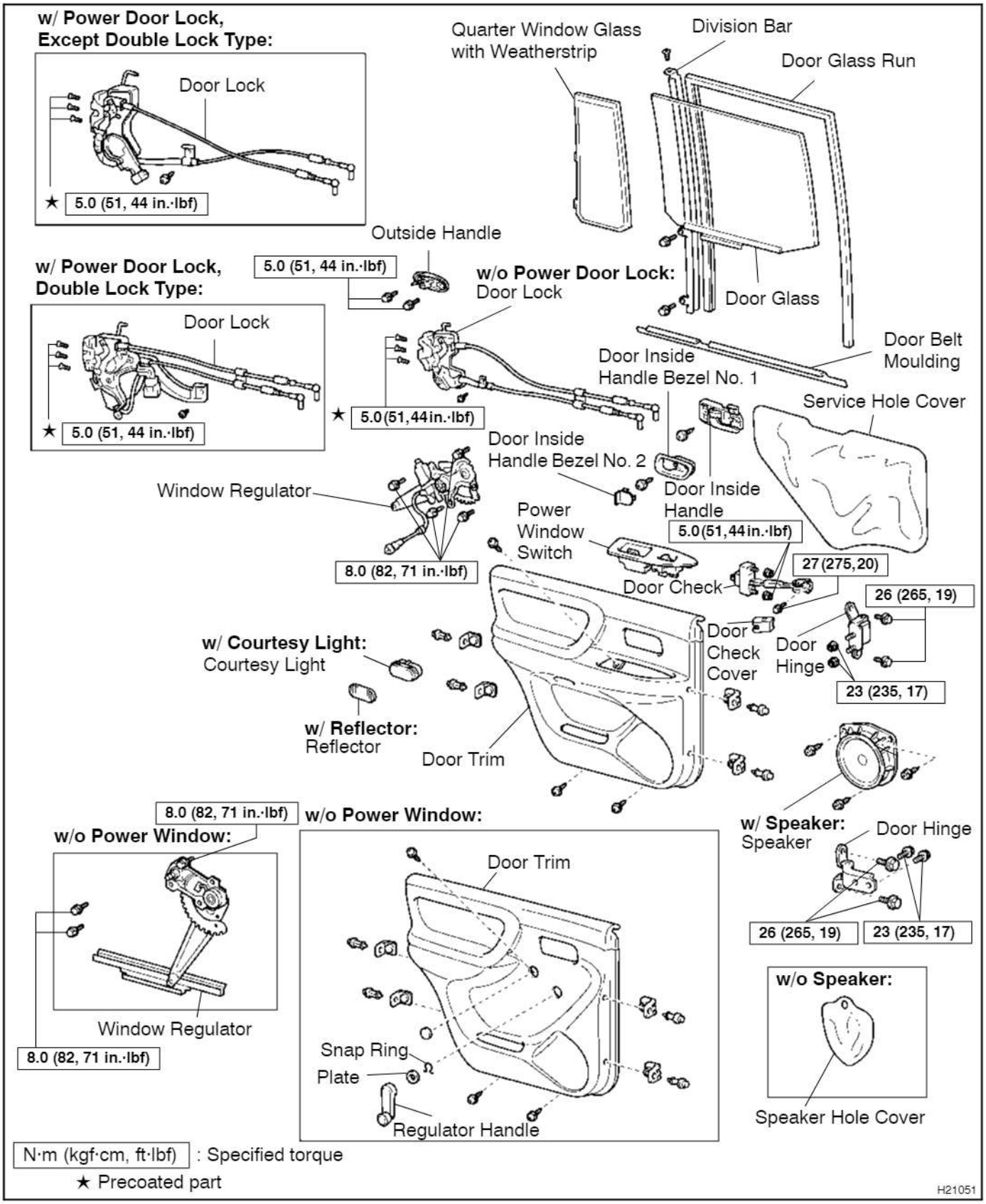
Reassembly is in the reverse order of disassembly (See page BO–7).

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REAR DOOR

COMPONENTS

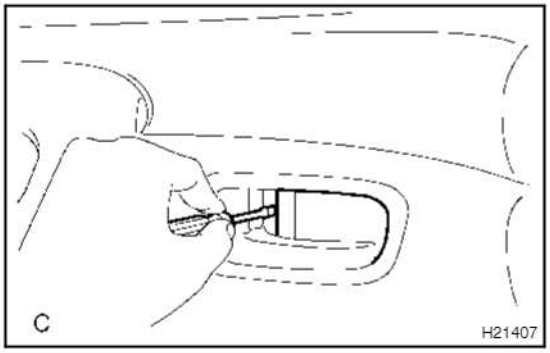
B01TT-02



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BO1TU–02

DISASSEMBLY

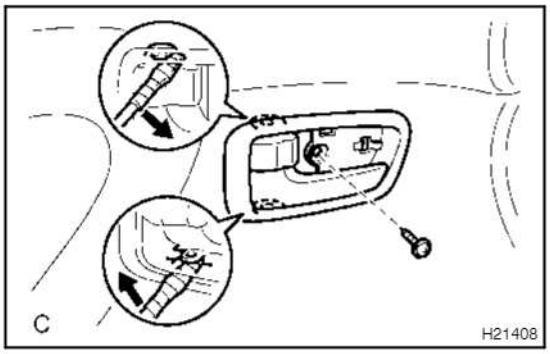


1. REMOVE DOOR INSIDE HANDLE BEZEL No. 2

Using a screwdriver, remove the door inside handle bezel No. 2 as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.



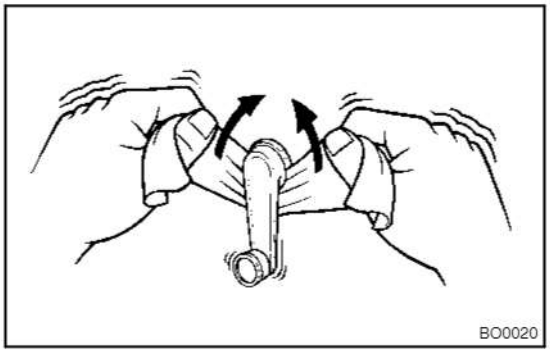
2. REMOVE DOOR INSIDE HANDLE BEZEL No. 1

(a) Remove the screw.

(b) Using a screwdriver, remove the door inside handle bezel No. 1 as shown in the illustration.

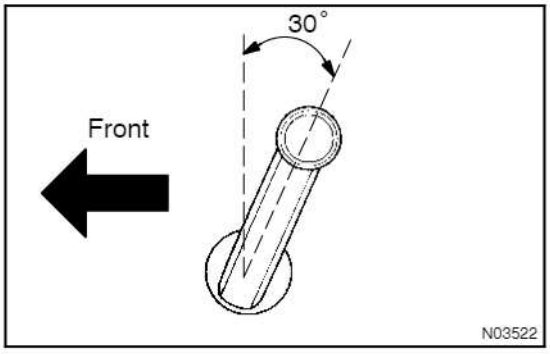
HINT:

Tape up the screwdriver tip before use.



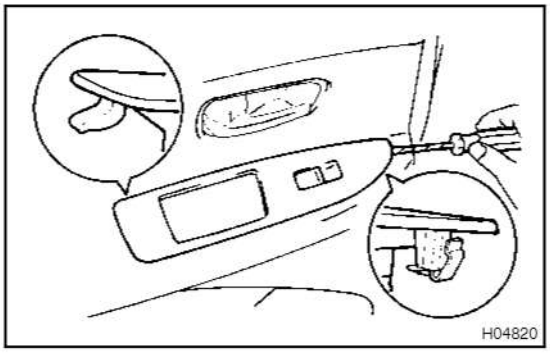
3. w/o Power Window:
REMOVE REGULATOR HANDLE

Pull off the snap ring with a shop rag and remove the regulator handle and the plate.



HINT:

At the time of assembly, with door window fully closed, install the plate and regulator handle with the snap ring.



4. w/ Power Window:
REMOVE POWER WINDOW SWITCH

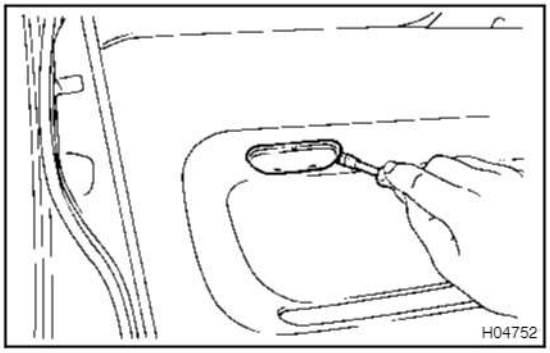
(a) Using a screwdriver, remove the power window switch as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.

(b) Disconnect the connector.

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5. w/ Door Courtesy Light:
REMOVE DOOR COURTESY LIGHT

Using a screwdriver, remove the courtesy light, then disconnect the connector.

HINT:

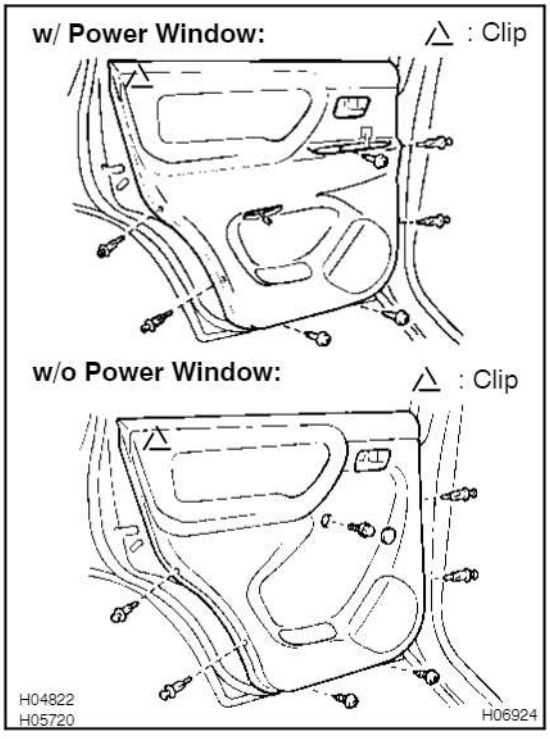
Tape up the screwdriver tip before use.

6. w/ Reflector:
REMOVE REFLECTOR

Using a screwdriver, remove the reflector.

HINT:

Tape up the screwdriver tip before use.



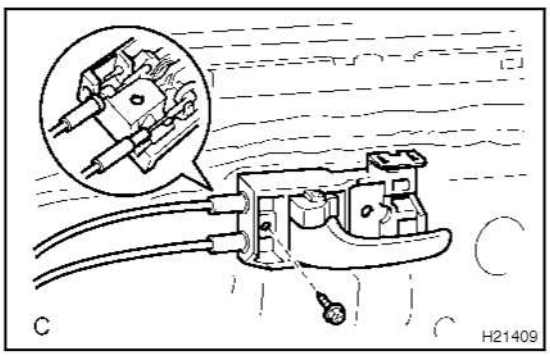
7. REMOVE DOOR TRIM

(a) w/ Power Window:
Remove the 3 screws.

(b) w/o Power Window:
Remove the cap and 3 screws.

(c) Remove the 4 clips.

(d) Pull the trim upward to remove it.



8. REMOVE INSIDE HANDLE

(a) Remove the screw and the inside handle.

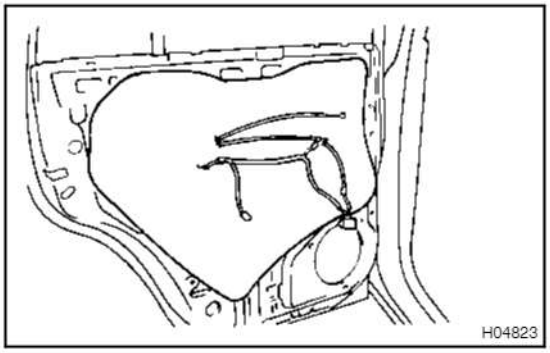
(b) Disconnect the 2 control cables from the inside handle as shown in the illustration.

9. w/ Speaker:
REMOVE SPEAKER

Remove the 3 screws and the speaker.

10. w/o Speaker:
REMOVE SPEAKER HOLE COVER

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11. REMOVE SERVICE HOLE COVER

(a) Remove the clamps and the wire harness.

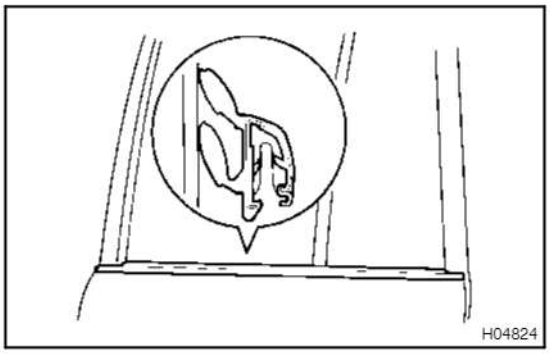
(b) Remove the service hole cover.

NOTICE:

Do not tear the cover.

HINT:

At the time of assembly, pull out the 2 control cables and the wire harness through the service hole cover.



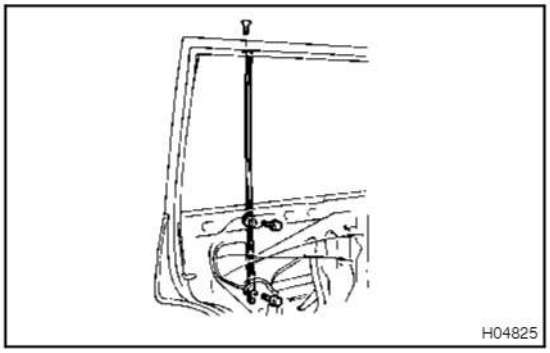
12. REMOVE DOOR BELT MOULDING

Using a scraper, remove the door belt moulding.

HINT:

Tape up the scraper tip before use.

13. REMOVE DOOR GLASS RUN



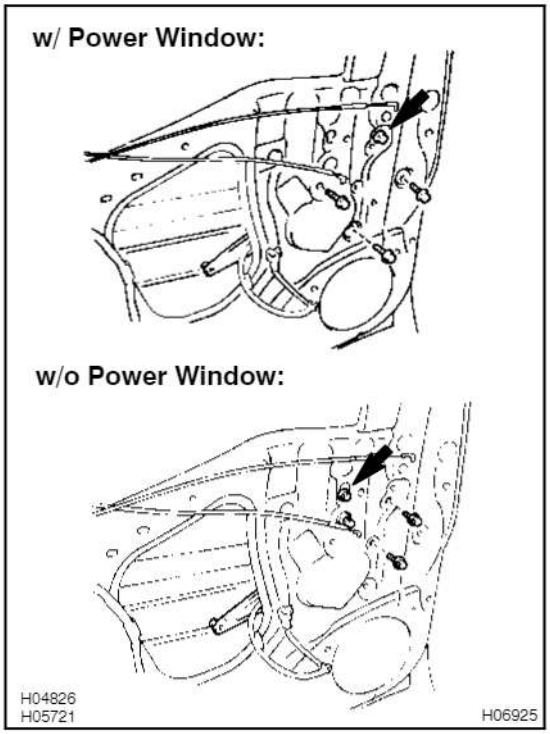
14. REMOVE DIVISION BAR

Remove the 2 bolts, the screw and the division bar.

15. REMOVE DOOR GLASS

Disconnect the glass from the regulator arm and remove the door glass by pulling it upward.

16. REMOVE QUARTER WINDOW GLASS WITH WEATHERSTRIP



17. REMOVE WINDOW REGULATOR

(a) w/ Power Window:
Disconnect the connector, then remove the 3 bolts.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

(b) w/o Power Window:
Remove the 2 bolts.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

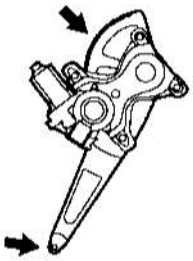
(c) Loosen the bolt and the window regulator.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

HINT:

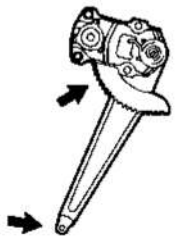
- Remove the regulator through the service hole.

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w/ Power Window:



w/o Power Window:



H21415
H21416

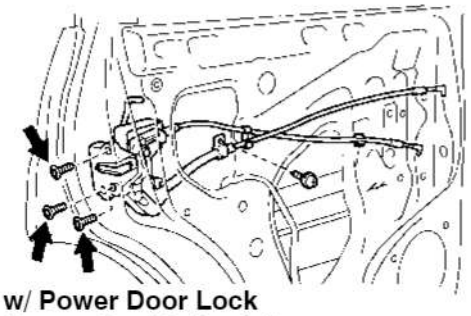
H21591

- At the time of assembly, apply MP grease to the window regulator.

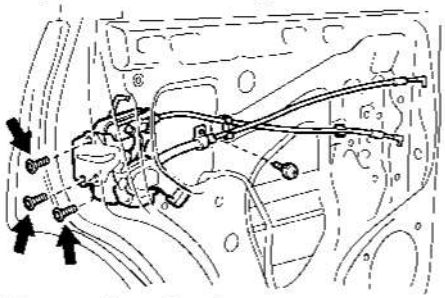
NOTICE:

At the time of assembly, do not apply grease to the spring of the window regulator.

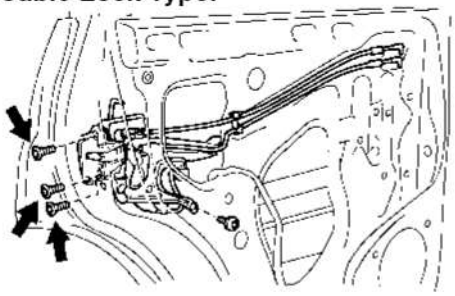
w/o Power Door Lock:



w/ Power Door Lock
Except Double Lock Type:



w/ Power Door Lock,
Double Lock Type:



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H21052

18. REMOVE DOOR LOCK

(a) Except Double Lock Type (w/ and w/o Power Door Lock):
Remove the screw from the link protector.

(b) w/ Power Door Lock:
Disconnect the connector.

(c) Disconnect the link from the outside handle.

(d) Double Lock Type:
Remove the torx screw.

(e) Using a torx wrench, remove the 3 screws and the door lock through the service hole.
Torx wrench: T30 (Part No. 09042–00010 or locally manufactured tool)
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

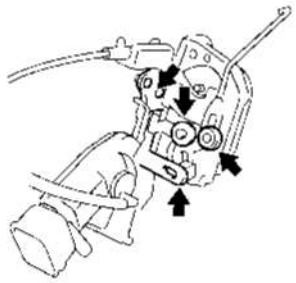
HINT:

At the time of assembly:

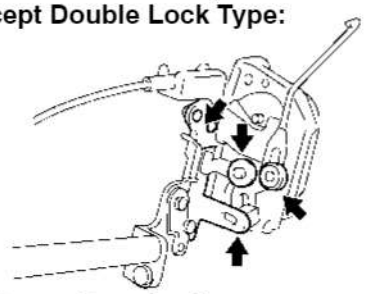
- Apply adhesive to 3 screws.
Part No. 08833–00070, THREE BOND 1324 or equivalent.

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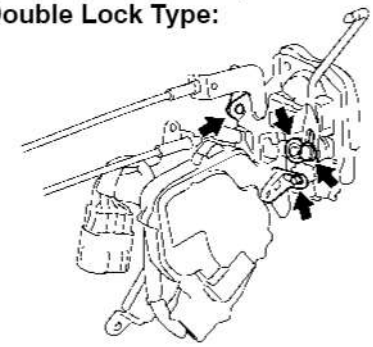
w/o Power Door Lock:



**w/ Power Door Lock,
Except Double Lock Type:**



**w/ Power Door Lock,
Double Lock Type:**



C H21053

- Remove the protector, and apply MP grease to the sliding and rotating parts of the door lock.

19. REMOVE OUTSIDE HANDLE

Remove the 2 bolts and the outside handle.

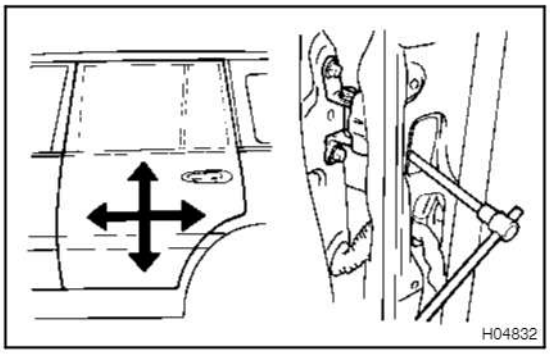
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BO1TV-02

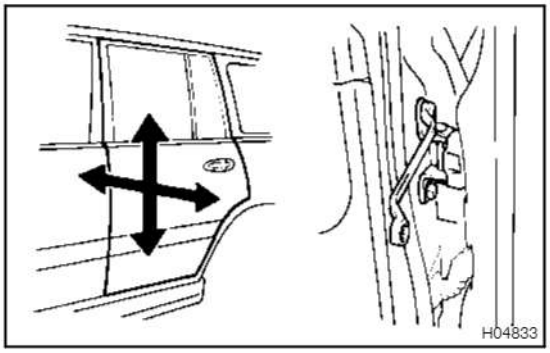
ADJUSTMENT

1. ADJUST DOOR IN FORWARD/BACKWARD AND VERTICAL DIRECTIONS

(a) Remove the front door scuff plate.
(b) Remove the rear door scuff plate.
(c) Remove the front door opening trim.
(d) Remove the rear door opening trim.
(e) Remove the center pillar lower garnish.

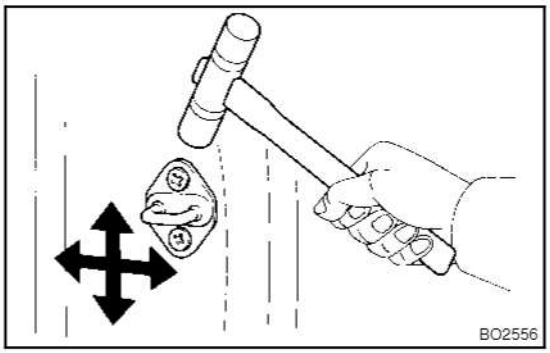


(f) Loosen the body side hinge nuts to adjust.
Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)
(g) Install the removed parts.



2. ADJUST DOOR IN RIGHT/LEFT AND VERTICAL DIRECTIONS

Loosen the door side hinge bolts to adjust.
Torque: 26 N·m (265 kgf·cm, 19 ft·lbf)



3. ADJUST DOOR LOCK STRIKER

(a) Check that the door fit and door lock linkages are adjusted correctly.
(b) Loosen the striker mounting screws to adjust.
Torque: 11 N·m (115 kgf·cm, 8 ft·lbf)
(c) Using a plastic hammer, tap the striker to adjust it.

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BO1TW–01

REASSEMBLY

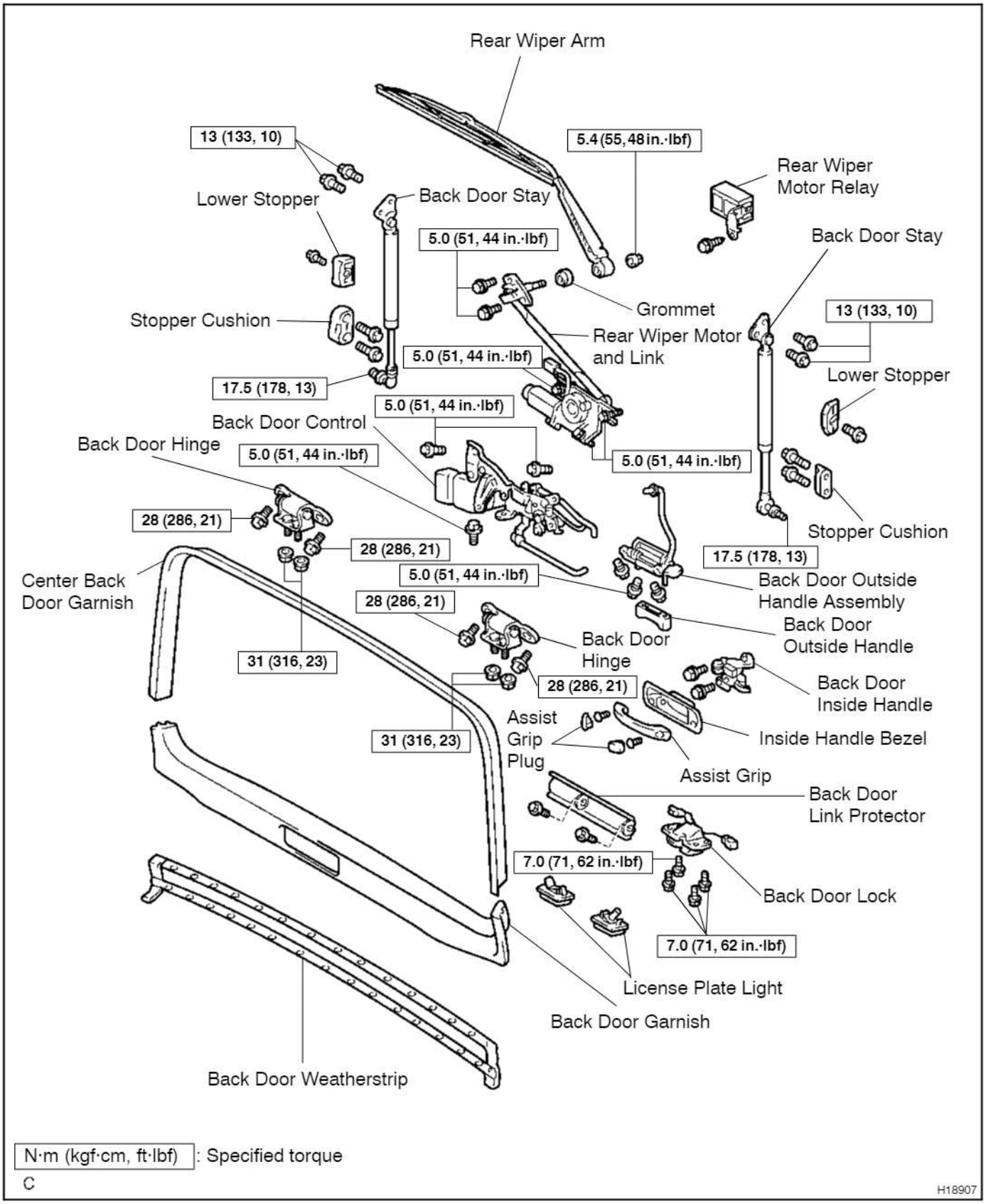
Reassembly is in the reverse order of disassembly (See page BO–16).

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BACK DOOR (Liftgate Type: Upper Side)

COMPONENTS

BO1TX-02



N·m (kgf·cm, ft·lbf) : Specified torque

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BO1TV-02

DISASSEMBLY

1. REMOVE ASSIST GRIP

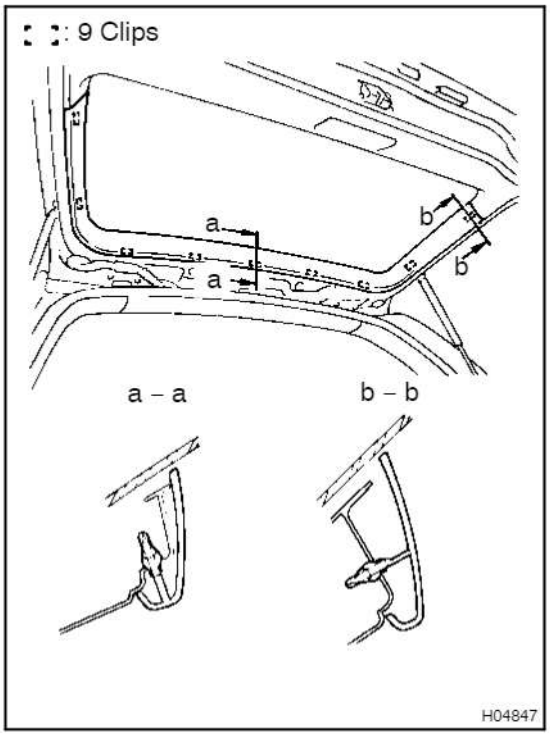
(a) Using a screwdriver, remove the 2 assist grip plugs.

HINT:

Tape the screwdriver tip before use.

(b) Remove the 2 screws and assist grip.

2. REMOVE INSIDE HANDLE BEZEL

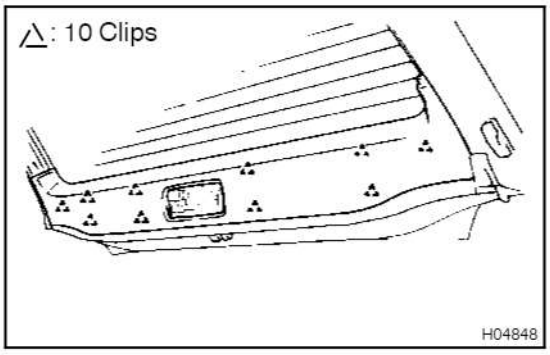


3. REMOVE CENTER BACK DOOR GARNISH

Using a screwdriver, remove the center back door garnish.

HINT:

Tape up the screwdriver tip before use.

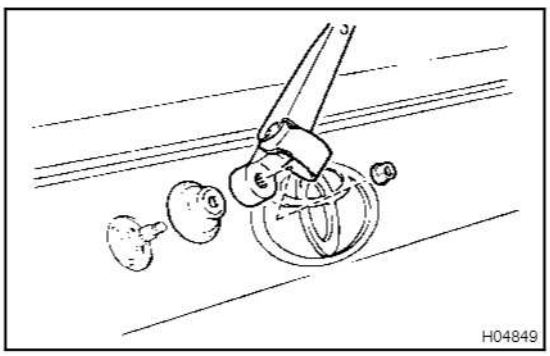


4. REMOVE BACK DOOR GARNISH

Using a screwdriver, remove the back door garnish.

HINT:

Tape up the screwdriver tip before use.



5. REMOVE REAR WIPER ARM

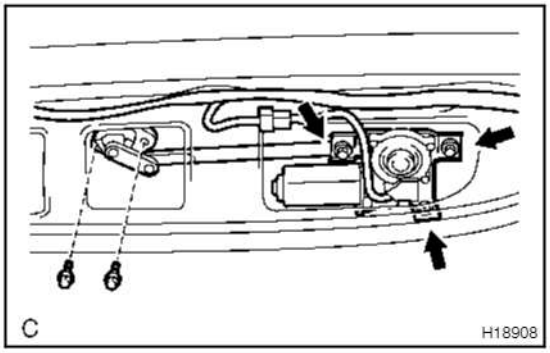
(a) Open the cover.

(b) Remove the nut and rear wiper arm.

Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

(c) Remove the grommet.

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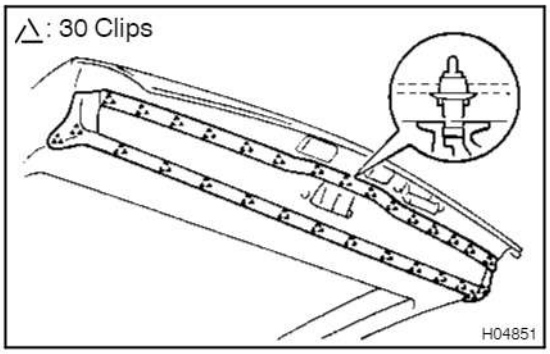


6. REMOVE REAR WIPER MOTOR AND LINK ASSEMBLY

(a) Disconnect the connector.
(b) Remove the 2 bolts.
(c) Unfasten the 3 bolts and remove the rear wiper motor and link assembly.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

7. REMOVE REAR WIPER MOTOR RELAY

Remove the bolt and rear wiper motor relay.

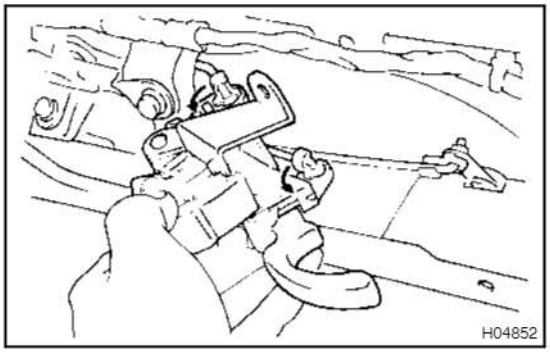


8. REMOVE BACK DOOR WEATHERSTRIP

Remove the back door weatherstrip.

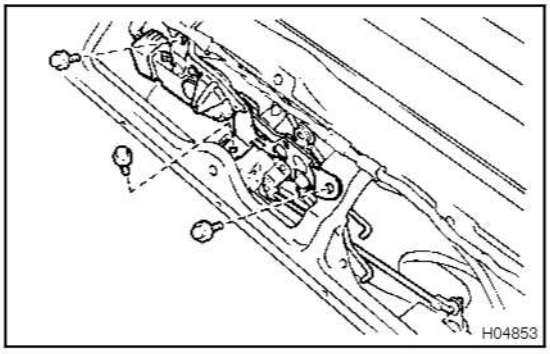
NOTICE:

Do not pull strongly on the weatherstrip as it may tear.



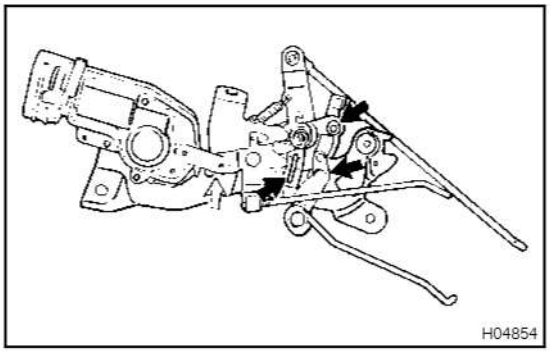
9. REMOVE BACK DOOR INSIDE HANDLE

(a) Remove the 2 bolts.
(b) Disconnect the back door lock locking rod and back door lock inside opening link, then remove the back door inside handle.



10. REMOVE BACK DOOR CONTROL

(a) Disconnect the links.
(b) Remove the 3 bolts.
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)
(c) Disconnect the connector, then remove the back door control.

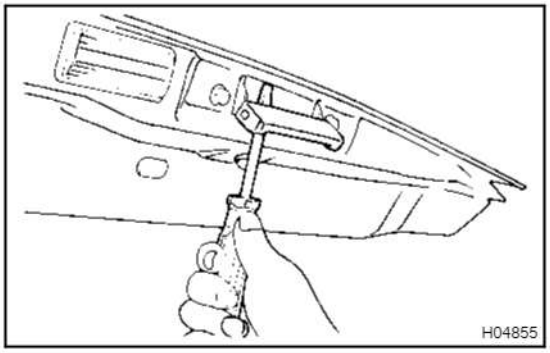


HINT:

At the time of reassembly, please refer to the following item.

Apply MP grease to the sliding surface of the back door control.

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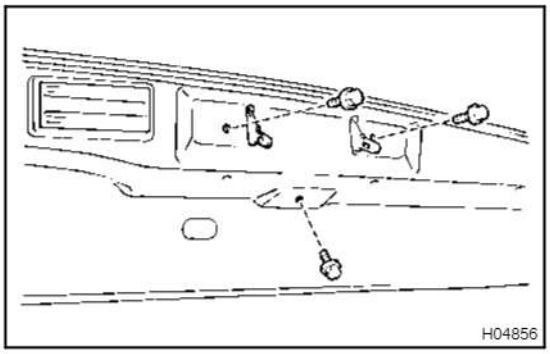


11. REMOVE BACK DOOR OUTSIDE HANDLE ASSEMBLY

(a) Using a screwdriver, remove the back door outside handle.

HINT:

Tape up the screwdriver tip before use.



(b) Remove the 3 bolts and back door outside handle assembly.

Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

12. REMOVE LICENSE PLATE LIGHTS

13. REMOVE BACK DOOR LOCK

Remove the 4 bolts and back door lock.

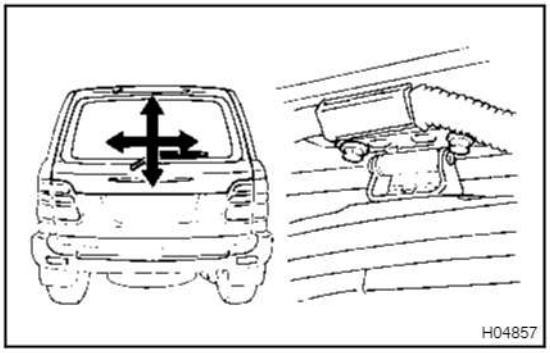
Torque: 7.0 N·m (71 ft·lbf, 62 in.·lbf)

14. REMOVE BACK DOOR LINK PROTECTOR

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BO1TZ-02

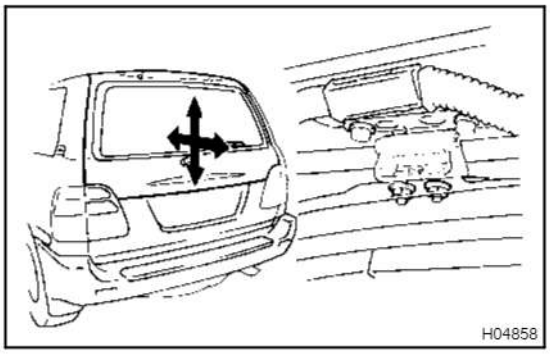
ADJUSTMENT



1. ADJUST DOOR IN LEFT/RIGHT AND VERTICAL DIRECTIONS

Loosen the door side hinge bolts to adjust.

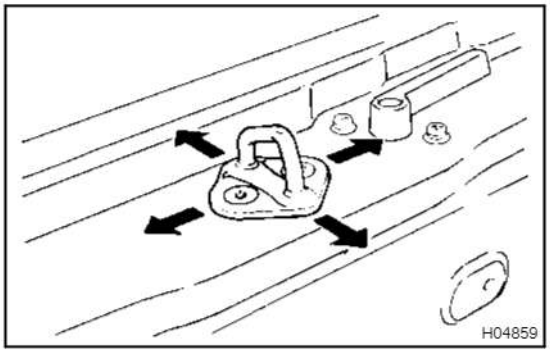
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)



2. ADJUST DOOR IN FORWARD/REARWARD AND VERTICAL DIRECTIONS

Loosen the body side hinge nuts to adjust.

Torque: 31 N·m (316 kgf·cm, 23 ft·lbf)



3. ADJUST DOOR LOCK STRIKER

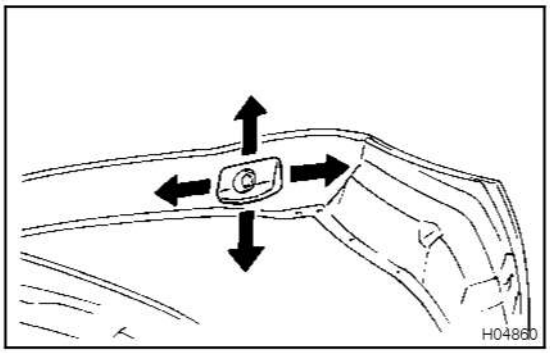
(a) Check that the door fit and door linkages are adjusted correctly.

(b) Using a torx wrench, loosen the door lock striker mounting screws.

Torx wrench: T40 (Part No. 09042–00020 or locally manufactured tool)

Torque: 11.5 N·m (117 kgf·cm, 8 ft·lbf)

(c) Using a plastic hammer, tap the door lock striker to adjust.



4. ADJUST LOWER STOPPER

(a) Loosen the stopper mounting bolt to adjust.

(b) Use the same manner described above to the other side.

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BO1U0-01

REASSEMBLY

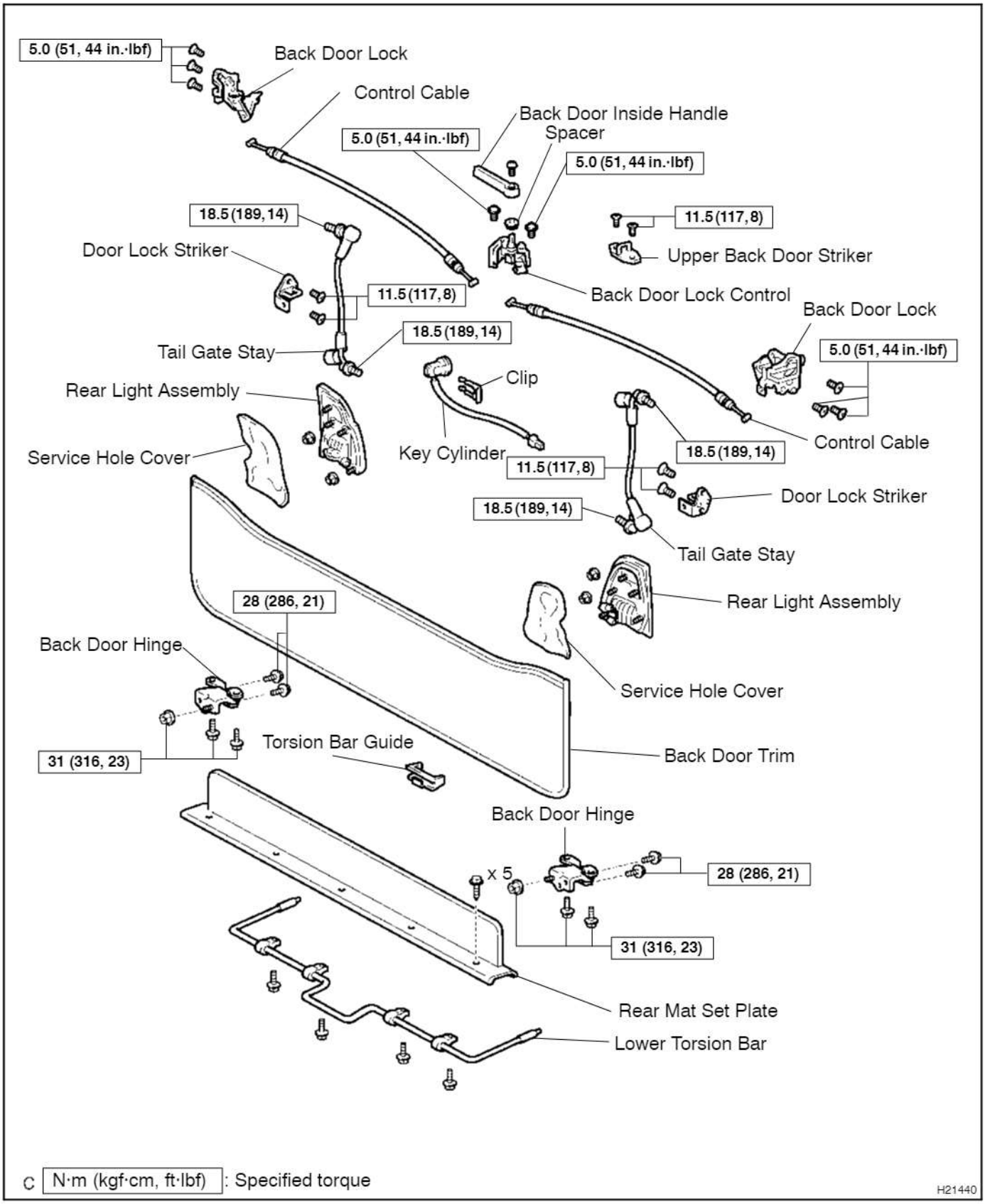
Reassembly is in the reverse order of disassembly (See page BO-24).

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BACK DOOR (Liftgate Type: Lower Side)

COMPONENTS

BO1U1-02



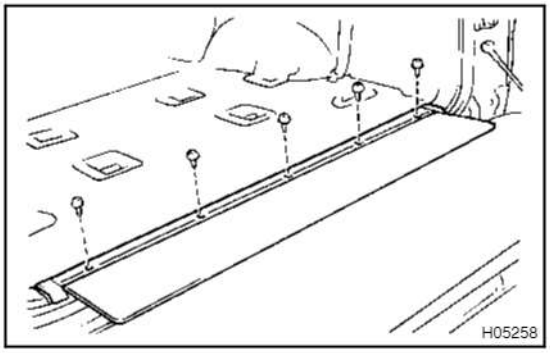
C N·m (kgf·cm, ft·lbf) : Specified torque

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BO4J6-01

DISASSEMBLY



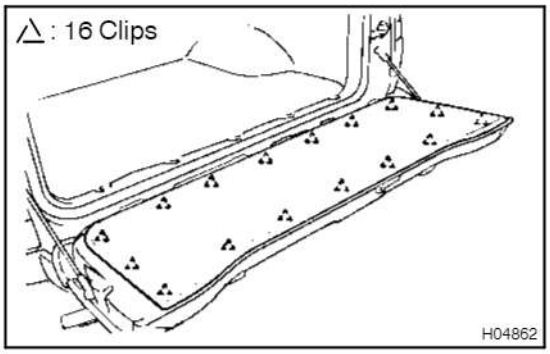
1. REMOVE REAR MAT SET PLATE

(a) Remove the 5 screws.

(b) Using a screwdriver, remove the rear mat set plate.

HINT:

Tape up the screwdriver tip before use.



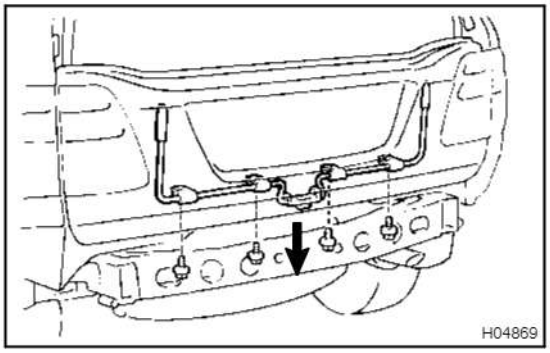
2. REMOVE BACK DOOR TRIM

(a) Insert a screwdriver between the door and door trim to pry out.

HINT:

Tape the screwdriver tip before use.

(b) Remove the back door trim.

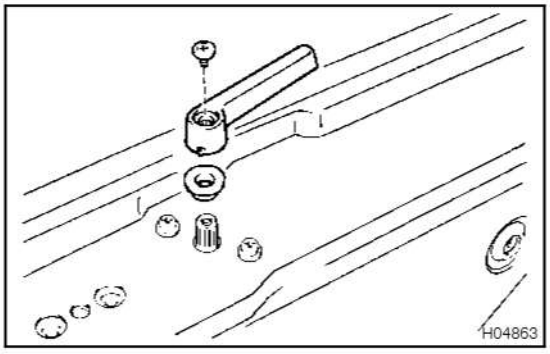


3. REMOVE LOWER TORSION BAR

(a) Remove the rear bumper (See page BO–4).

(b) Remove the 4 bolts and lower torsion bar as shown in the illustration.

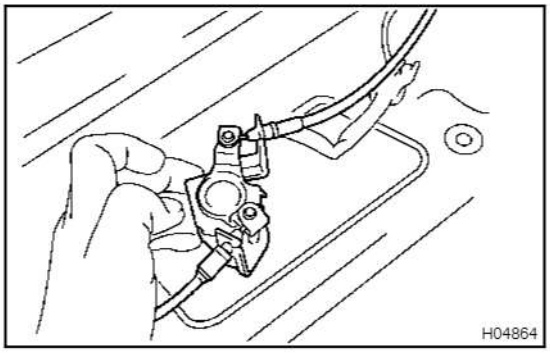
(c) Remove the torsion bar guide.



4. REMOVE BACK DOOR INSIDE HANDLE

(a) Remove the screw and back door inside handle.

(b) Remove the spacer.



5. REMOVE BACK DOOR LOCK CONTROL

(a) Remove the 2 screws.

Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

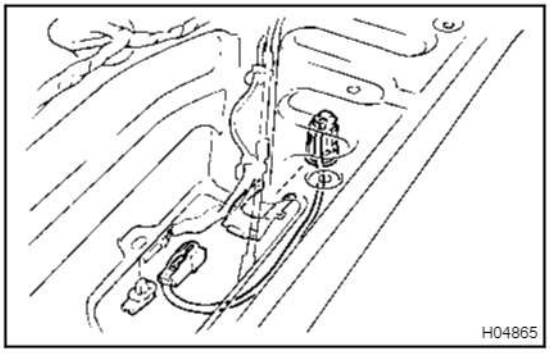
(b) Disconnect the back door lock control cables, then remove the back door control.

6. REMOVE SERVICE HOLE COVERS

NOTICE:

Do not tear the service hole cover.

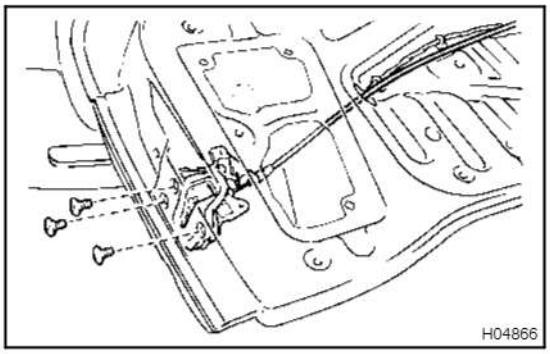
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7. REMOVE KEY CYLINDER

(a) Disconnect the connector.

(b) Remove the clip and key cylinder.



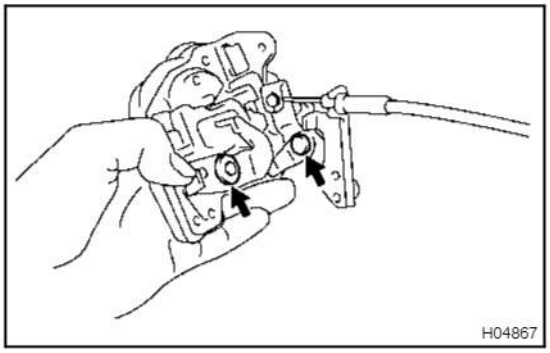
8. REMOVE BACK DOOR LOCK

(a) Disconnect the control cable from the clamp.

(b) Using a torx wrench, remove the 3 screws and back door lock.

Torx wrench: T30 (Part No. 09042–00010 or locally manufactured tool)

Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

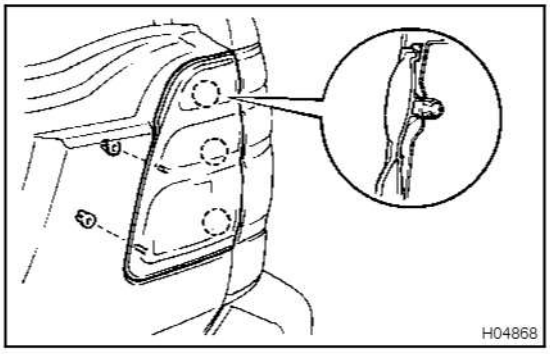


HINT:

At the time of reassembly, please refer to the following item.

Apply MP grease to the rotating parts of the door lock.

(c) Use the same manner described above to the other side.



9. REMOVE REAR LIGHT ASSEMBLY

(a) Disconnect the connector.

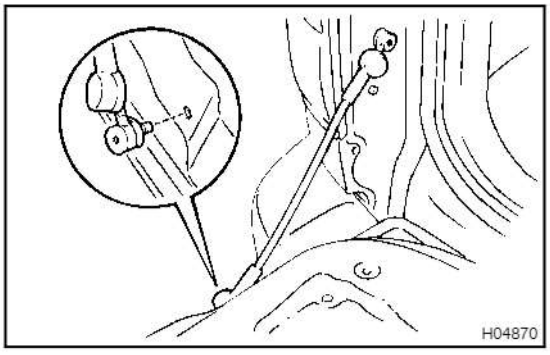
(b) Remove the 2 nuts.

(c) Using a screwdriver, remove the rear light assembly.

HINT:

Tape up the screwdriver tip before use.

(d) Use the same manner described above to the other side.



10. REMOVE TAIL GATE STAY

(a) Using a torx wrench, remove the 2 screws and tail gate stay.

Torx wretch: T30 (Part No. 09042–00010 or locally manufactured tool)

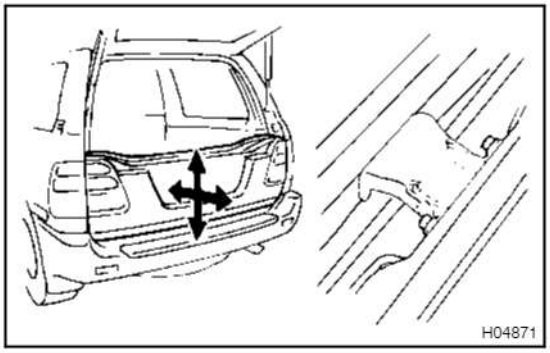
Torque: 18.5 N·m (189 kgf·cm, 14 ft·lbf)

(b) Use the same manner described above to the other side.

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BO1U3–02

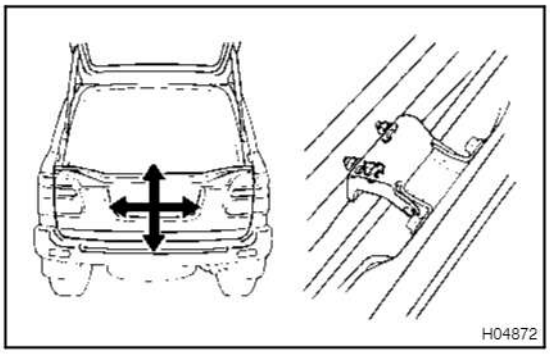
ADJUSTMENT



1. ADJUST DOOR IN FORWARD/REARWARD AND VERTICAL DIRECTIONS

Loosen the door side hinge bolts to adjust.

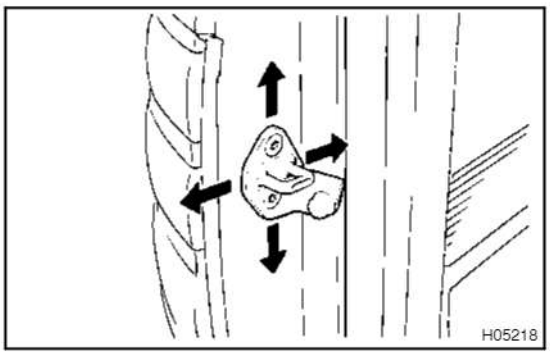
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)



2. ADJUST DOOR IN LEFT/RIGHT AND VERTICAL DIRECTIONS

Loosen the body side hinge bolts and nut to adjust.

Torque: 31 N·m (316 kgf·cm, 23 ft·lbf)



3. ADJUST DOOR LOCK STRIKER

(a) Check that the door fit and door linkages are adjusted correctly.

(b) Using a torx wrench, loosen the door lock striker mounting screws.

Torx wrench: T40 (Part No. 09042–00020 or locally manufactured tool)

Torque: 11.5 N·m (117 kgf·cm, 8 ft·lbf)

(c) Using a plastic hammer, tap the striker to adjust it.

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BO1U4–01

REASSEMBLY

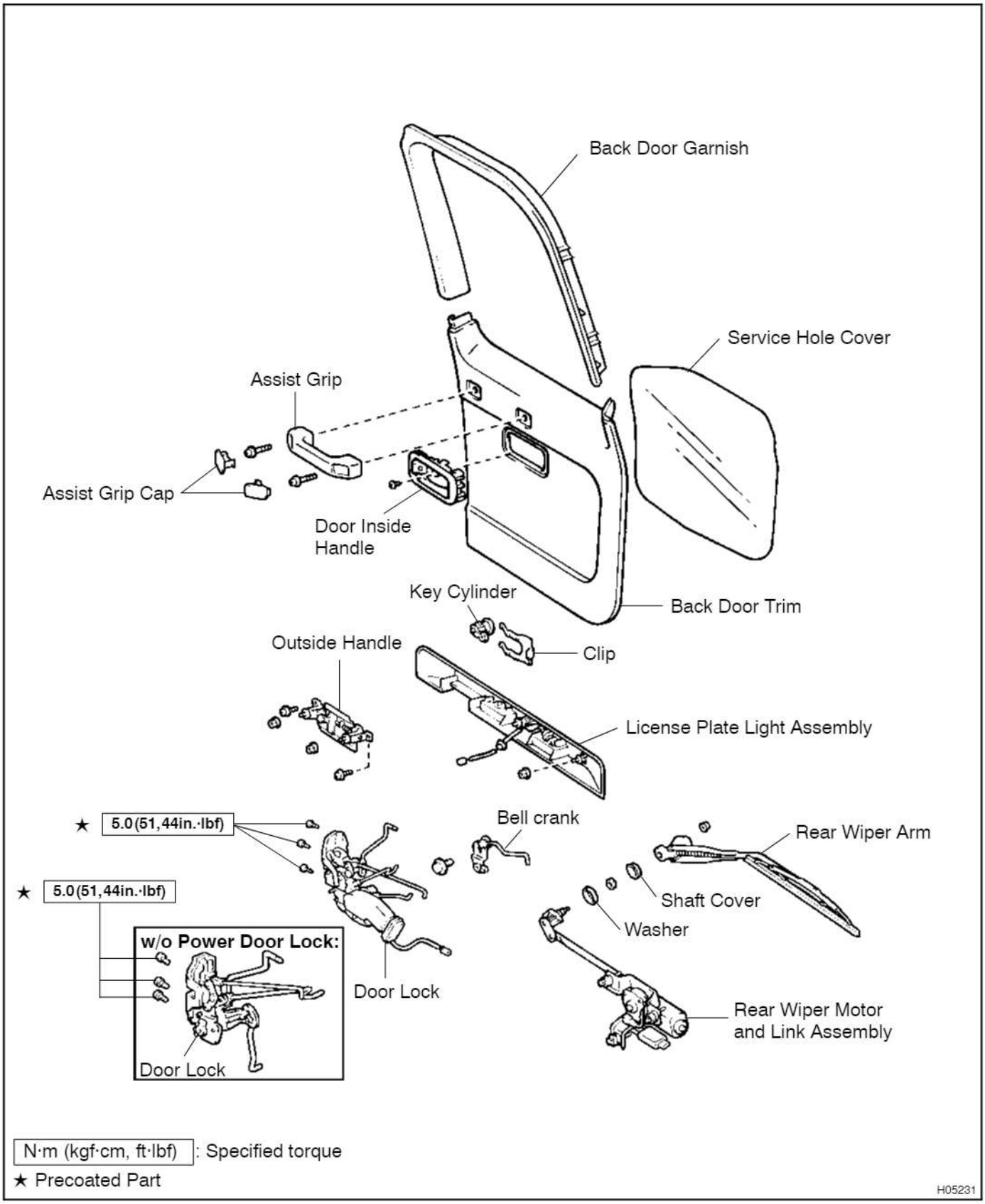
Reassembly is in the reverse order of disassembly (See page BO–30).

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BACK DOOR (Swing Type LH)

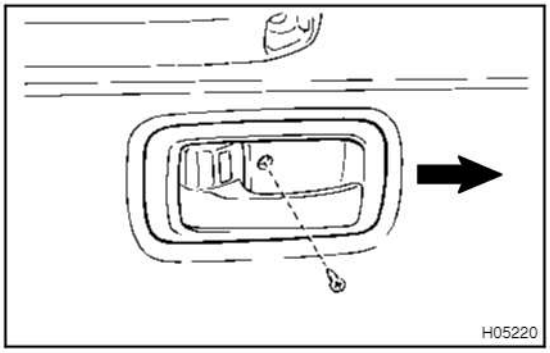
COMPONENTS

BO1U5–02



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BO1U6–02



DISASSEMBLY

1. REMOVE DOOR INSIDE HANDLE

(a) Remove the screw and slide the door inside handle as shown in the illustration.

(b) Disconnect the links from inside handle, then remove the inside handle.

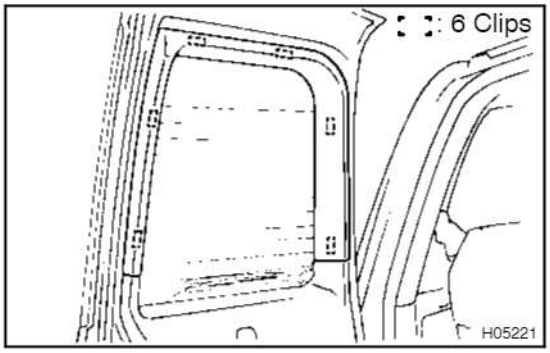
2. REMOVE ASSIST GRIP

(a) Using a screwdriver, remove the assist grip cap.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the 2 screws and assist grip.

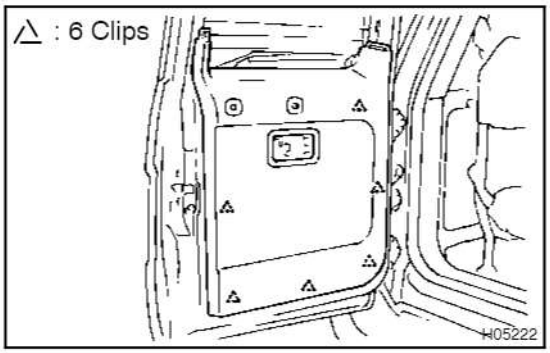


3. REMOVE BACK DOOR GARNISH

Using a screwdriver, remove the back door garnish.

HINT:

Tape up the screwdriver tip before use.



4. REMOVE BACK DOOR TRIM

(a) Insert a screwdriver between the door and door trim to pry out.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the back door trim.

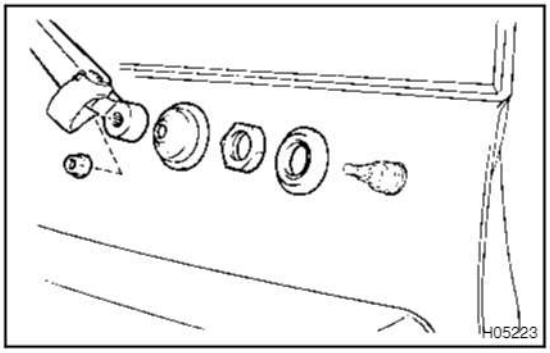
5. REMOVE SERVICE HOLE COVER

Remove the service hole cover.

HINT:

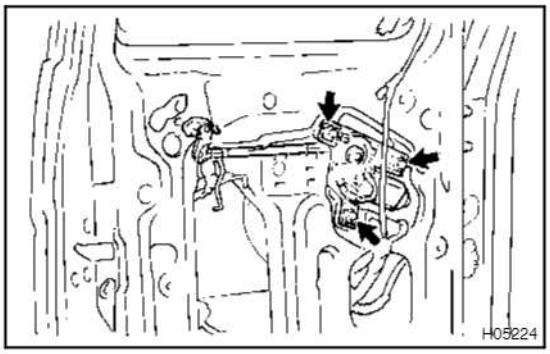
- Do not tear the service hole cover.
- At the time of assembly, please refer to the following item. Bring out the 2 links through the service hole cover.

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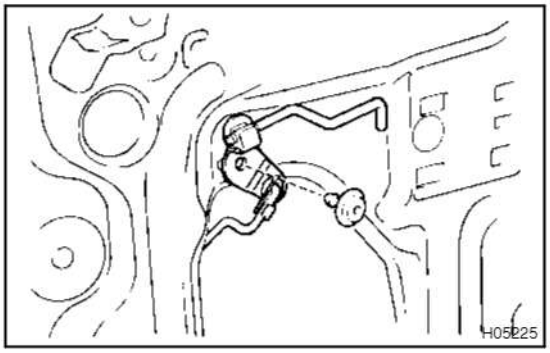
6. REMOVE REAR WIPER ARM

(a) Open the cover.
(b) Remove the nut and rear wiper arm.
(c) Remove the shaft cover, nut and washer.



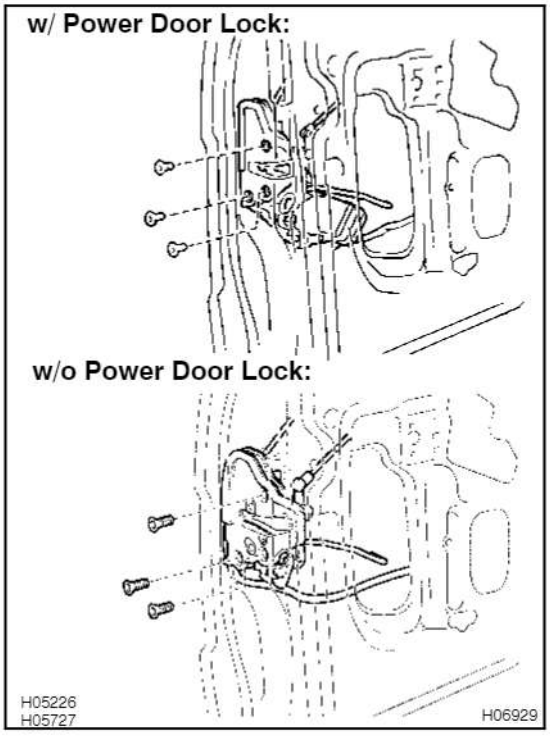
7. REMOVE REAR WIPER MOTOR AND LINK ASSEMBLY

(a) Disconnect the connector.
(b) Unfasten the 3 bolts and remove the rear wiper motor and link assembly.
(c) Remove the wiper link from wiper motor.



8. REMOVE BACK DOOR LOCK

(a) Disconnect the control link from the bell crank.
(b) Using a clip remover, remove the bell crank.



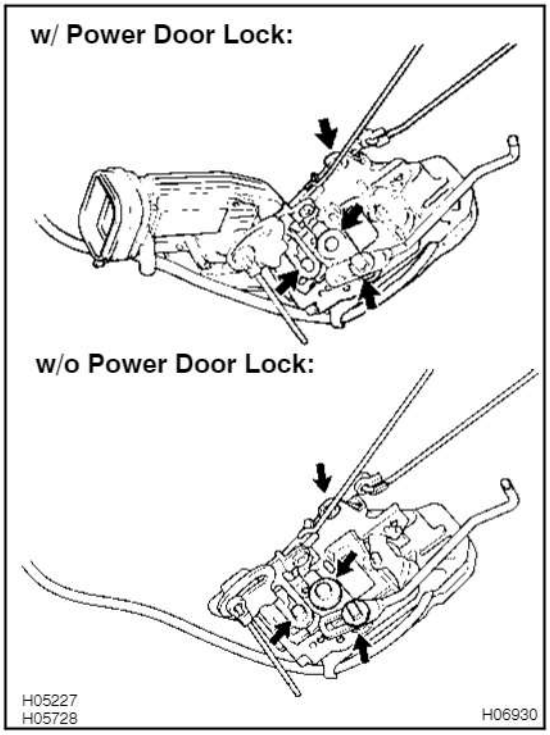
(c) Disconnect the control links from the door lock.
(d) Disconnect the connector.
(e) Using a torx wrench, remove the 3 screws and door lock.
Torx wrench: T30 (Part No.09042–00010 or locally manufactured tool)
Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)

HINT:

At the time of assembly, please refer to the following item.

- Apply adhesive to 3 screws.
Part No.08833–00070, THREE BOND 1324 or equivalent

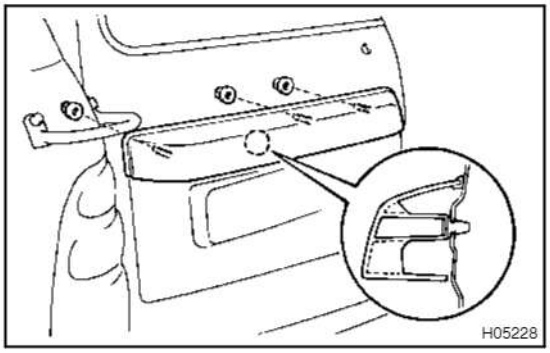
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- Apply MP grease to the sliding and rotating parts of the door lock.

9. REMOVE KEY CYLINDER

Remove the clip and key cylinder.



10. REMOVE LICENSE PLATE LIGHT ASSEMBLY

(a) Remove the 3 nuts.

(b) Disconnect the connector, then remove the license plate light.

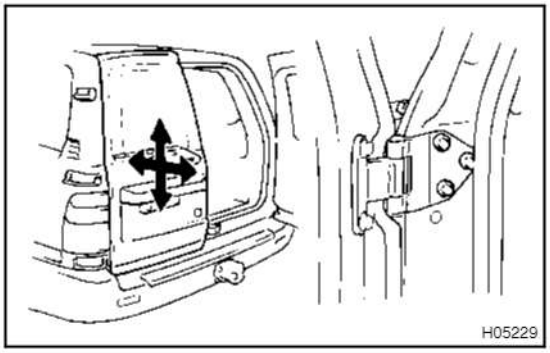
11. REMOVE OUTSIDE HANDLE

Remove the 2 screws and outside handle.

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BO1U7-02

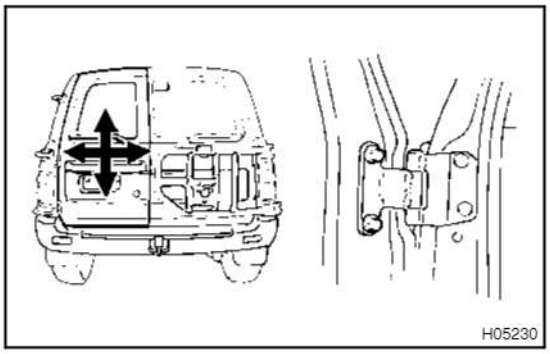
ADJUSTMENT



1. ADJUST DOOR IN FORWARD/REARWARD AND VERTICAL DIRECTIONS

Loosen the body side hinge bolts to adjust.

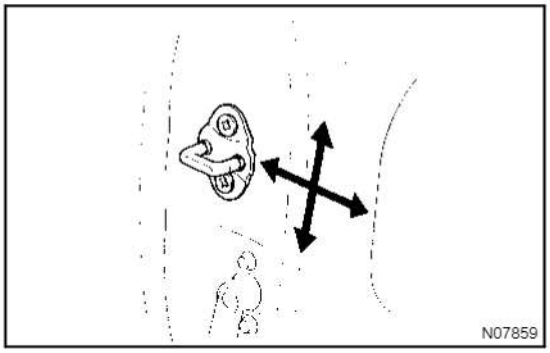
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)



2. ADJUST DOOR IN LEFT/RIGHT AND VERTICAL DIRECTIONS

Loosen the door side hinge bolts to adjust.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)



3. ADJUST DOOR LOCK STRIKER

(a) Check that the door fit and door lock linkages are adjusted correctly.

(b) Check that the right back door is adjusted correctly.

(c) Using a torx wrench, loosen the door lock striker mounting screws.

Torx wrench: T40 (Part No.09042–00020 or locally manufactured tool)

Torque: 11 N·m (115 kgf·cm, 8 ft·lbf)

(d) Using a plastic hammer, tap the striker to adjust.

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BO1U6–01

REASSEMBLY

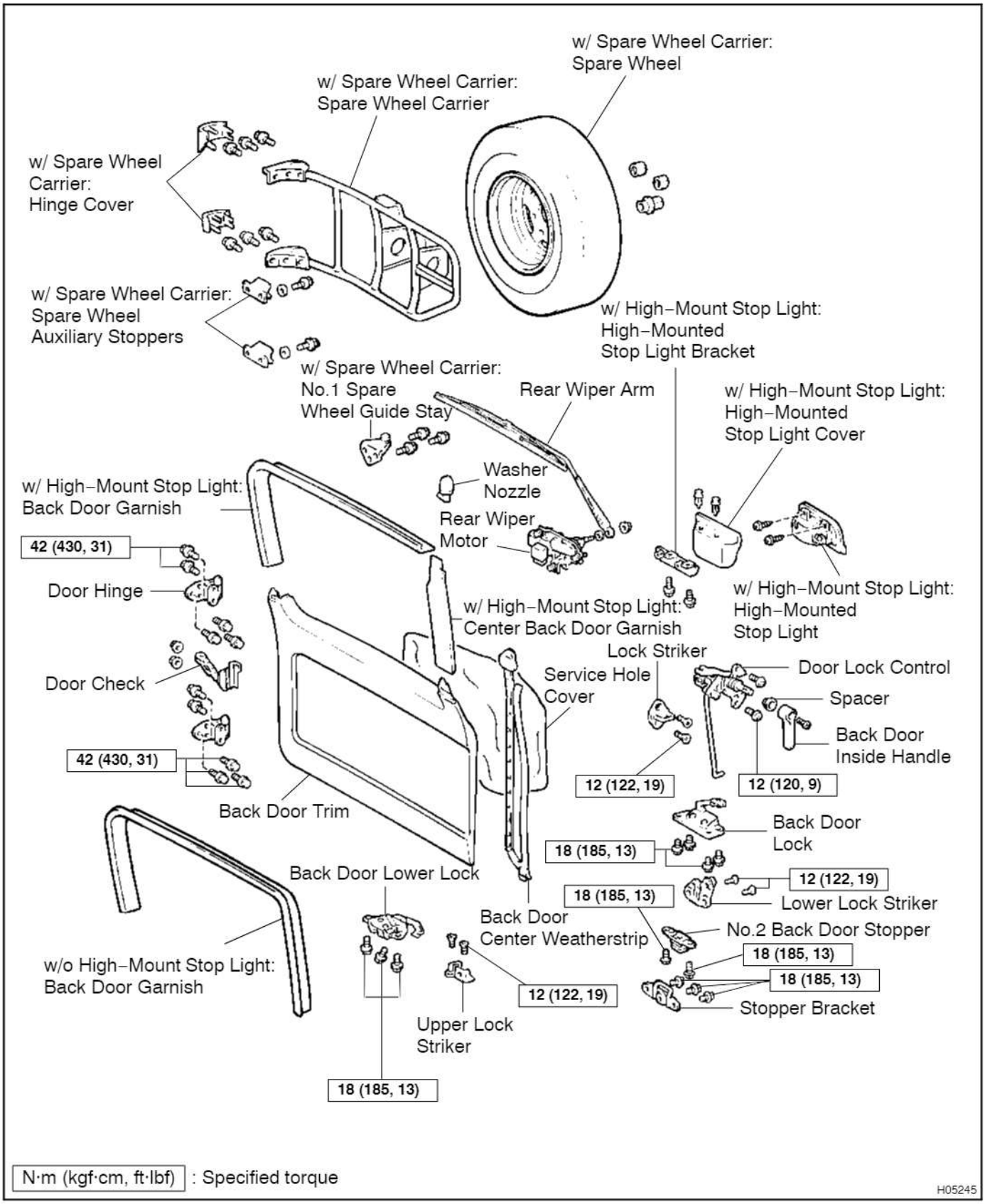
Reassembly is in the reverse order of disassembly (See page BO–35).

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BACK DOOR (Swing Type RH)

COMPONENTS

BO1U9-02



N·m (kgf·cm, ft·lbf) : Specified torque

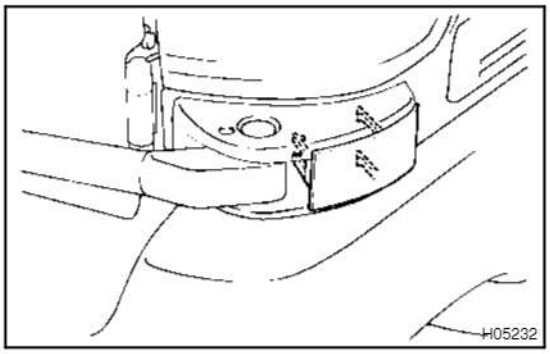
H05245

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BO1UA–02

DISASSEMBLY

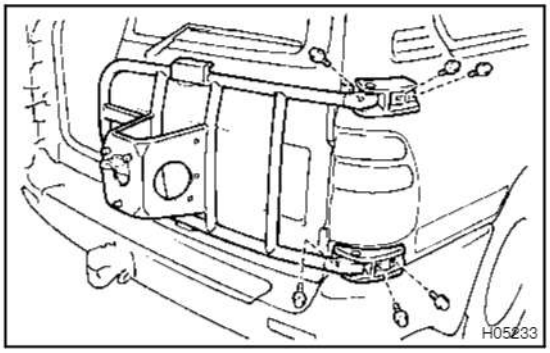
1. w/ Spare Wheel Carrier:
REMOVE SPARE WHEEL



2. w/ Spare Wheel Carrier:
REMOVE SPARE WHEEL CARRIER

(a) Using a screwdriver, remove the No.1 and No.2 hinge cover.

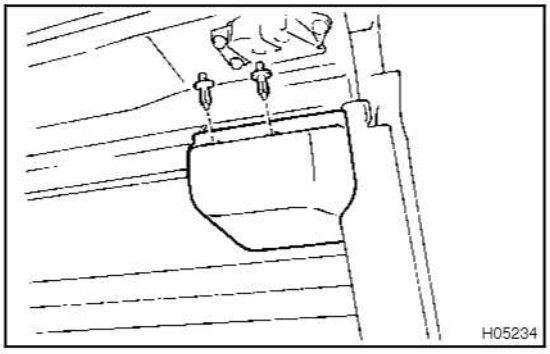
HINT:
Tape up the screwdriver tip before use.



(b) Remove the 6 bolts and spare wheel carrier.

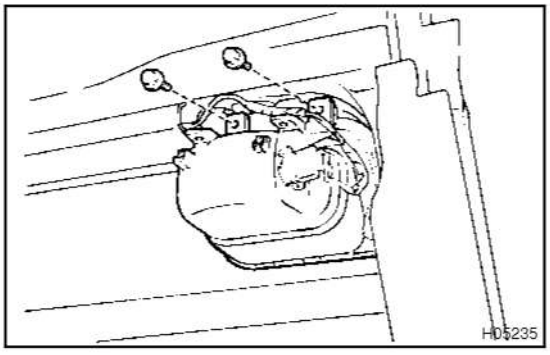
3. w/ Spare Wheel Carrier:
REMOVE No.1 SPARE WHEEL GUIDE STAY

4. w/ Spare Wheel Carrier:
REMOVE SPARE WHEEL AUXILIARY STOPPERS



5. w/ High–Mount Stop Light:
REMOVE HIGH–MOUNT STOP LIGHT

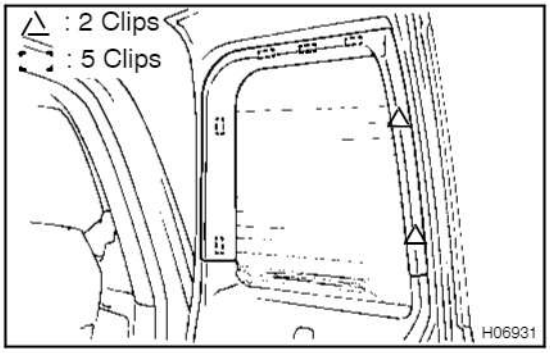
(a) Remove the 2 clips and high–mount stop light cover.



(b) Disconnect the connector, then remove the 2 bolts and high–mount stop light.

(c) Remove the 2 bolts and high–mount stop light bracket.

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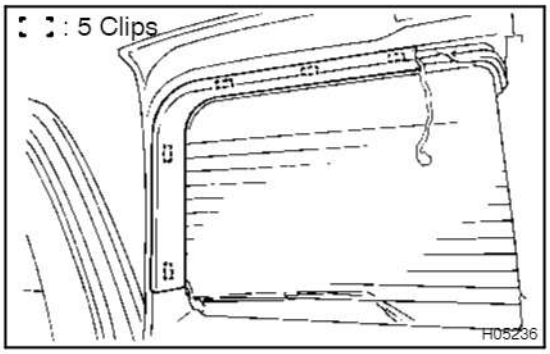


6. REMOVE BACK DOOR GARNISH

(a) Using a screwdriver, remove the back door garnish.

HINT:

Tape up the screwdriver tip before use.

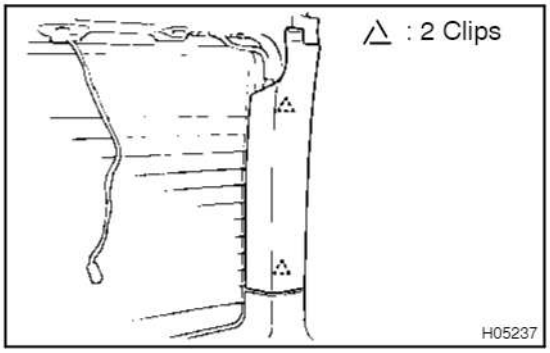


(b) w/ High–Mount Stop Light:

Using a screwdriver, remove the back door garnish.

HINT:

Tape up the screwdriver tip before use.

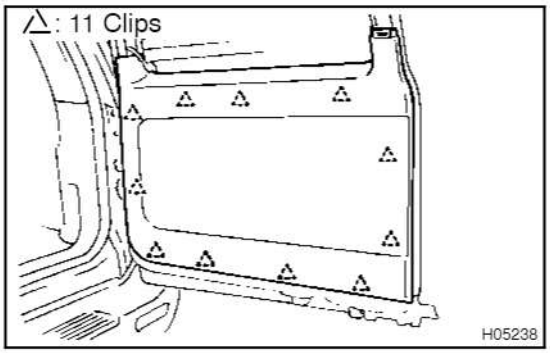


(c) w/ High–Mount Stop Light:

Using a screwdriver, remove the center back door garnish.

HINT:

Tape up the screwdriver tip before use.



7. REMOVE BACK DOOR TRIM

(a) Insert a screwdriver between the door and door trim to pry out.

HINT:

Tape up the screwdriver tip before use.

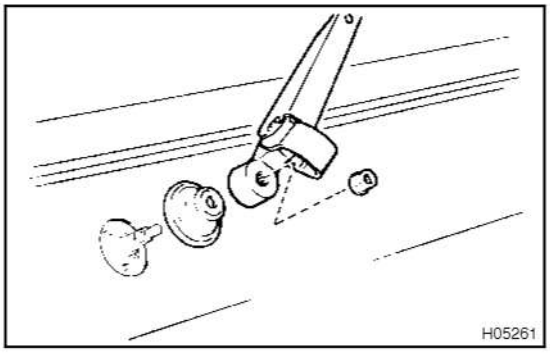
(b) Remove the back door trim.

8. REMOVE SERVICE HOLE COVER

Remove the service hole cover.

HINT:

Tape up the screwdriver tip before use.

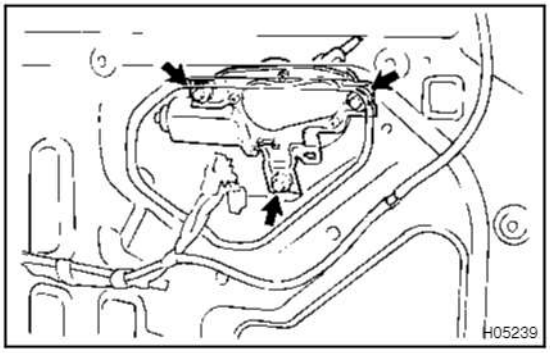


9. REMOVE REAR WIPER ARM

(a) Open the cover.

(b) Remove the nut, wiper arm and grommet.

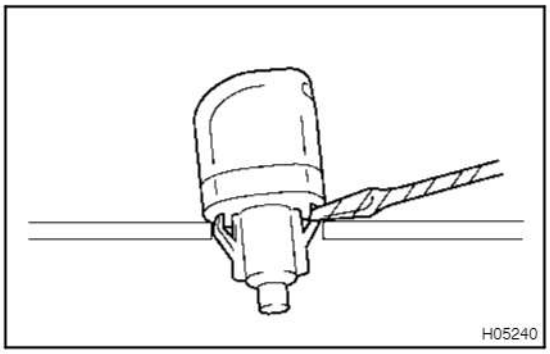
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10. REMOVE REAR WIPER MOTOR

(a) Disconnect the connector.

(b) Unfasten the 3 bolts and remove the rear wiper motor.

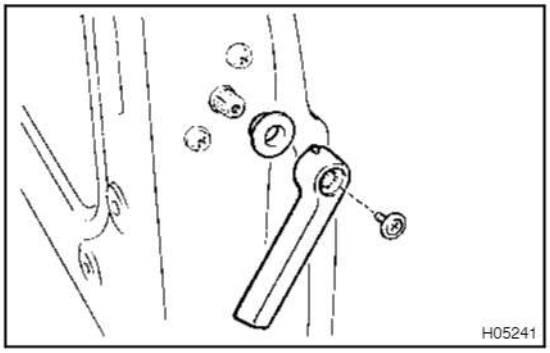


11. REMOVE WASHER NOZZLE

(a) Using a screwdriver, remove the washer nozzle.

(b) Disconnect the washer nozzle.

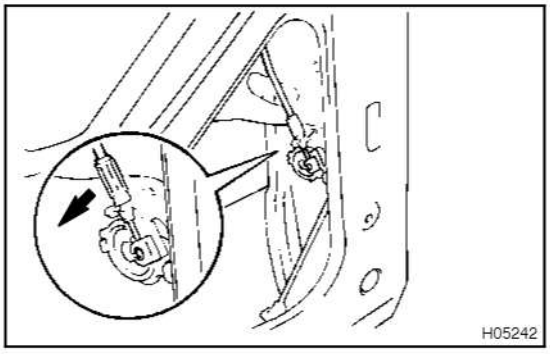
12. REMOVE BACK DOOR CENTER WEATHERSTRIP



13. REMOVE BACK DOOR INSIDE HANDLE

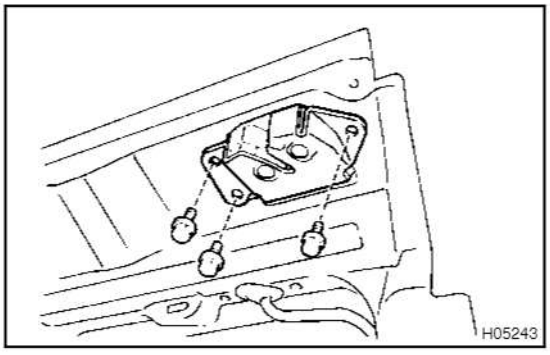
(a) Remove the screw and inside handle.

(b) Remove the spacer.



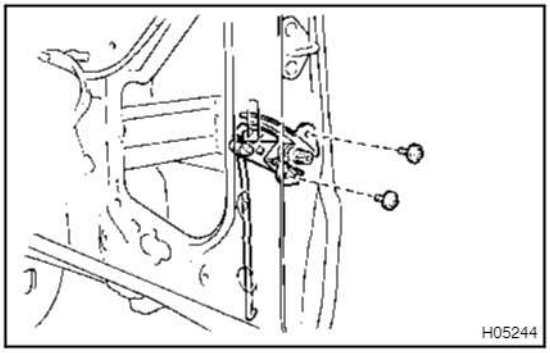
14. REMOVE BACK DOOR UPPER LOCK

(a) Disconnect the control cable from the back door lock control.



(b) Remove the 3 bolts and back door upper lock.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

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15. REMOVE DOOR LOCK CONTROL

(a) Disconnect the control link.

(b) Remove the 2 screws and door lock control.

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

16. REMOVE BACK DOOR LOWER LOCK

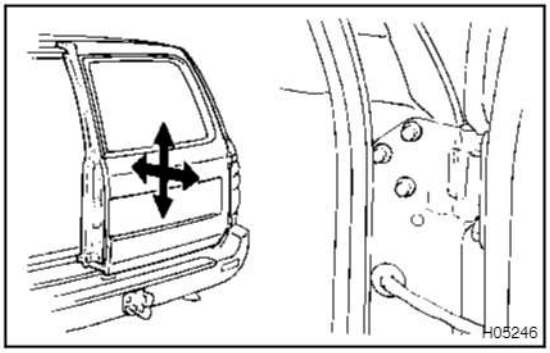
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

17. REMOVE No.2 BACK DOOR STOPPER

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BO1UB–02

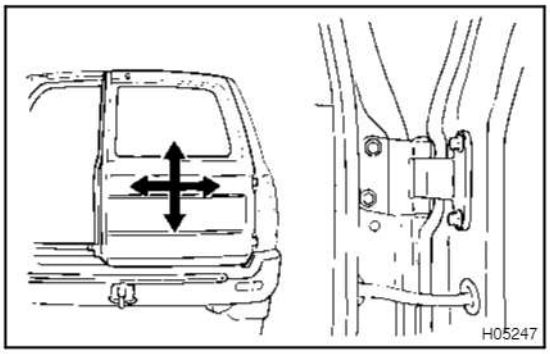
ADJUSTMENT



1. ADJUST DOOR IN FORWARD/REARWARD AND VERTICAL DIRECTION

Loosen the body side hinge bolts to adjust.

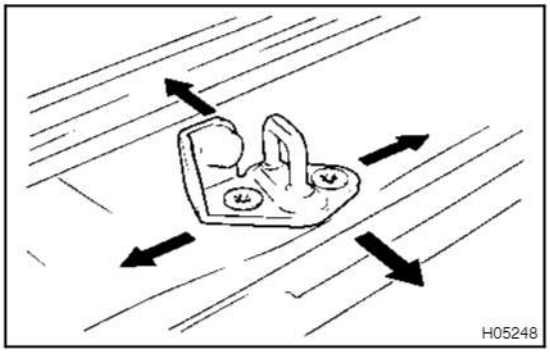
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)



2. ADJUST DOOR IN LEFT/RIGHT AND VERTICAL DIRECTION

Loosen the door side hinge bolts to adjust.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)



3. ADJUST DOOR UPPER LOCK STRIKER

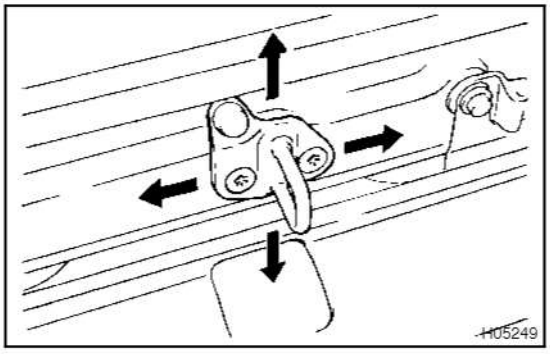
(a) Check that the door fit and door lock linkages are adjusted correctly.

(b) Using a torx wrench, loosen the door lock striker mounting screws.

Torx wrench: T40 (Part No.09042–00020 or locally manufactured tool)

Torque: 12 N·m (122 kgf·cm, 19 ft·lbf)

(c) Using a plastic hammer, tap the striker to adjust.



4. ADJUST DOOR LOWER LOCK STRIKER

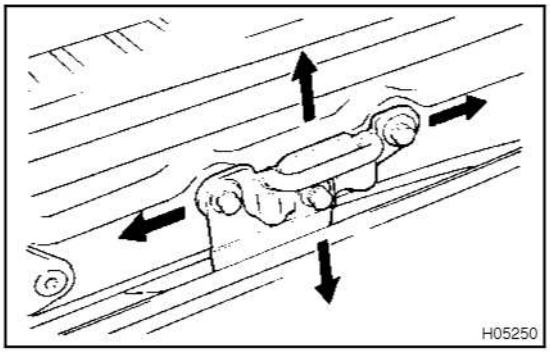
(a) Check that the door fit and door lock linkages the adjusted correctly.

(b) Using a torx wrench, loosen the door lock striker mounting screws.

Torx wrench: T40 (Part No.09042–00020 or locally manufactured tool)

Torque: 12 N·m (122 kgf·cm, 19 ft·lbf)

(c) Using a plastic hammer, tap the striker to adjust.



5. ADJUST BACK DOOR STOPPER BRACKET

(a) Check that the door fit and door stopper the adjusted correctly.

(b) Loosen the door stopper bracket mounting bolts.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

(c) Using a plastic hammer, tap the striker to adjust.

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BO1UC–01

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page BO–41).

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BACK DOOR STAY

BO1UD–02

REPLACEMENT

1. REMOVE BACK DOOR STAY

(a) Remove the bolts and back door stay from the back door.

HINT:

While supporting the back door with your hand, remove the back door stay.

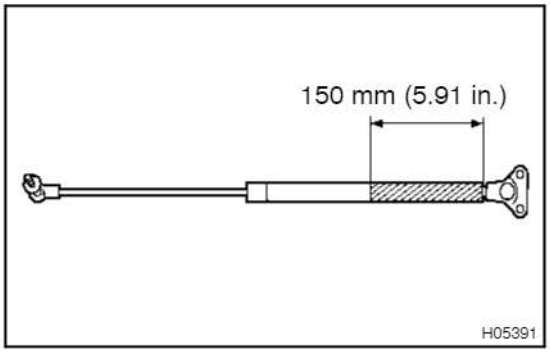
(b) Remove the bolt and back door stay from the body.

2. IF NECESSARY, REPLACE BACK DOOR STAY

NOTICE:

When handling the back door stay.

- **Do not disassemble the back door stay because the cylinder is filled with pressurized gas.**



- **If the back door stay is to be replaced, drill a 2.0 – 3.0 mm (0.079 – 0.118 in.) hole in the bottom of the back door stay as shown in the illustration to completely release the high–pressure gas before disposing of it.**
- **When drilling, chips may fly out so work carefully.**
- **The gas is colorless, odorless and non–toxic.**
- **When working, handle the back door stay carefully. Never score or scratch the exposed part of the piston rod, and never allow paint or oil to get on it.**
- **Do not turn the piston rod and cylinder with the back door stay fully extended.**

3. INSTALL BACK DOOR STAY

(a) Install the bolt and back door stay to the body.
Torque: 17.5 N·m (178 kgf·cm, 13 ft·lbf)

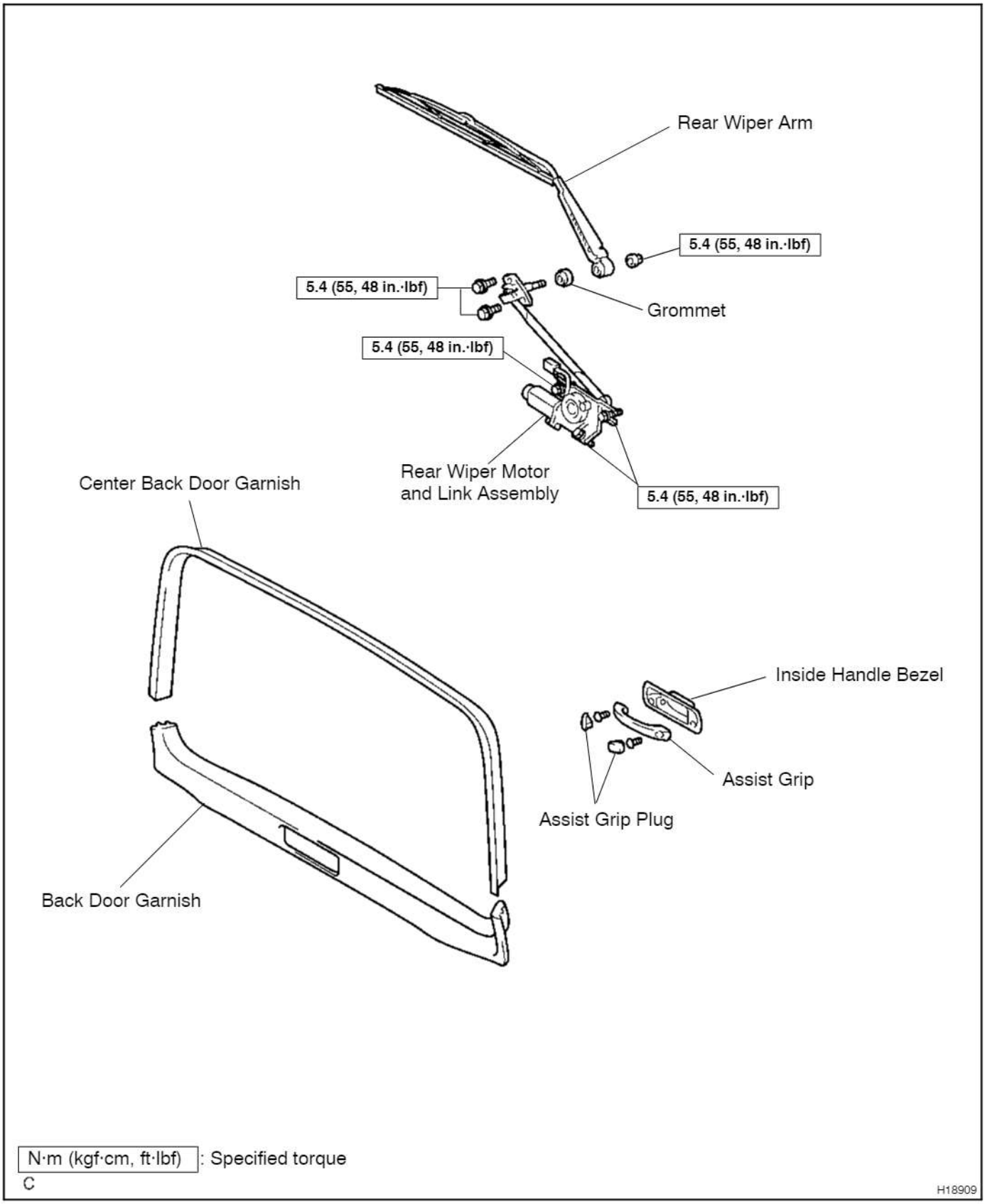
(b) Install the bolts and back door stay to the back door.
Torque: 13 N·m (133 kgf·cm, 10 in.·lbf)

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REAR WIPER AND WASHER (Liftgate Type)

COMPONENTS

BO1UJ-02



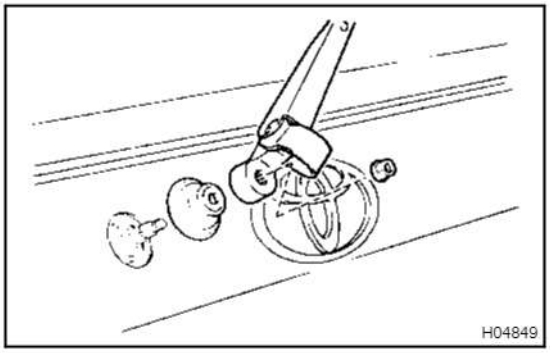
N·m (kgf·cm, ft·lbf) : Specified torque

C

H18909

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BO1UK-02



REMOVAL

1. REMOVE REAR WIPER ARM

(a) Open the cover.

(b) Remove the nut and the rear wiper arm.

(c) Remove the grommet.

2. REMOVE ASSIST GRIP

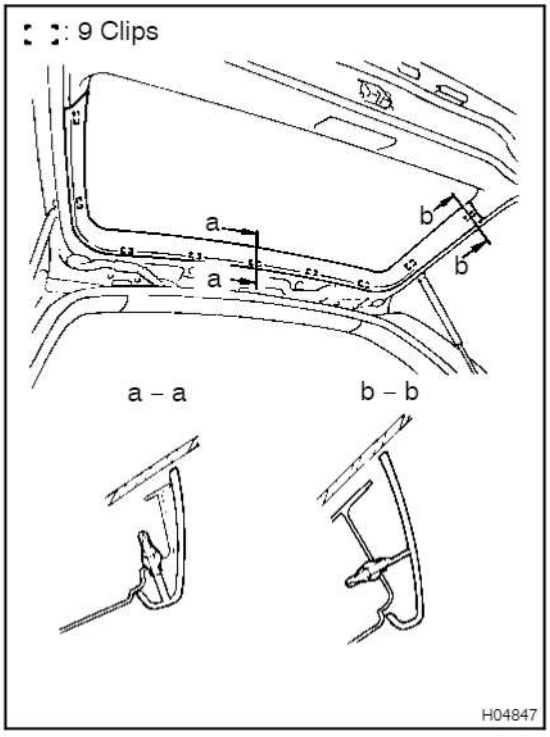
(a) Using a screwdriver, remove the 2 assist grip plugs.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the 2 screws and the assist grip.

3. REMOVE INSIDE HANDLE BEZEL

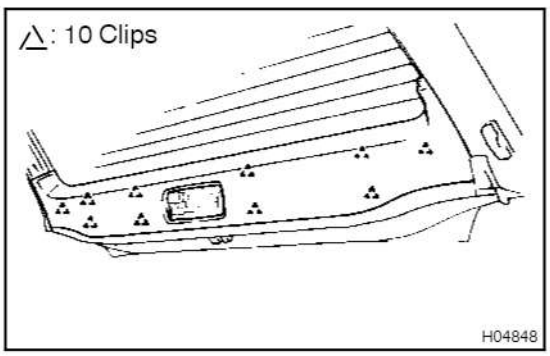


4. REMOVE CENTER BACK DOOR GARNISH

Using a screwdriver, remove the center back door garnish.

HINT:

Tape up the screwdriver tip before use.



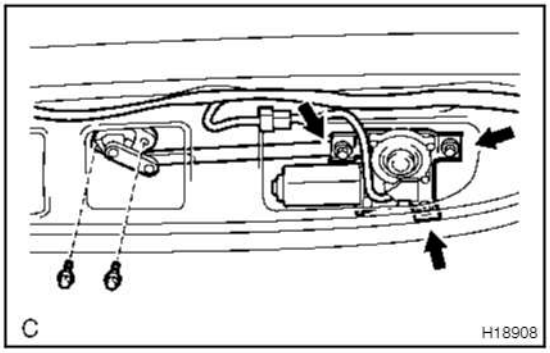
5. REMOVE BACK DOOR GARNISH

Using a screwdriver, remove the back door garnish.

HINT:

Tape up the screwdriver tip before use.

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6. REMOVE REAR WIPER MOTOR AND LINK ASSEMBLY

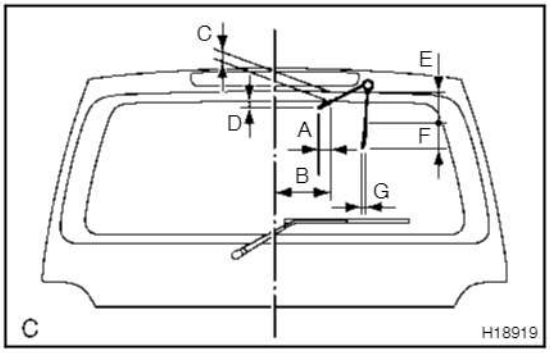
(a) Disconnect the connector

(b) Remove the 2 bolts.

(c) Unfasten the 3 bolts and remove the rear wiper motor with the link assembly.

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BO1UL-02



INSPECTION

INSPECT WASHER NOZZLE

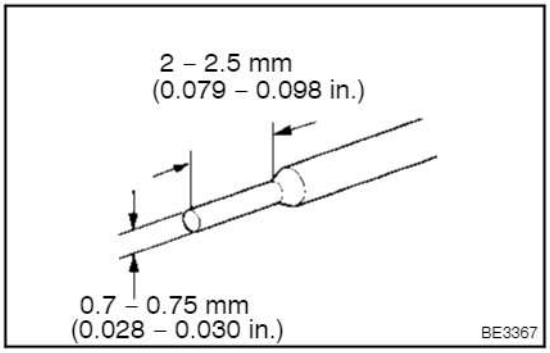
(a) While operating the washer, check if the point where the washer fluid hits the back door glass is within the range indicated in the illustration.

A: Approx. 40 mm (1.57 in.)
B: Approx. 180 mm (7.09 in.)
C: Approx. 40 mm (1.57 in.)
D: Approx. 30 mm (1.18 in.)
E: Approx. 120 mm (4.72 in.)
F: Approx. 90 mm (3.54 in.)
G: Approx. 15 mm (0.59 in.)

(b) Check that the lower point where the washer fluid hits the back door glass is within the range of the wiping pattern (the area of the glass which is wiped by the blades).

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BO1UM-01



ADJUSTMENT

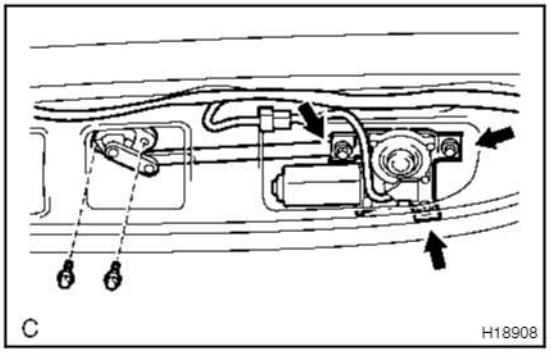
ADJUST WASHER NOZZLE

Using a tool like the one shown in the illustration, change the direction of the nozzle hole to adjust the point where washer fluid hits the back door glass.

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BO1UN–02

INSTALLATION



1. INSTALL REAR WIPER MOTOR AND LINK ASSEMBLY

(a) Install the wiper motor and the link assembly with the 5 bolts.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

(b) Connect the connector.

2. INSTALL BACK DOOR GARNISH

3. INSTALL CENTER BACK DOOR GARNISH

4. INSTALL INSIDE HANDLE BEZEL

5. INSTALL ASSIST GRIP

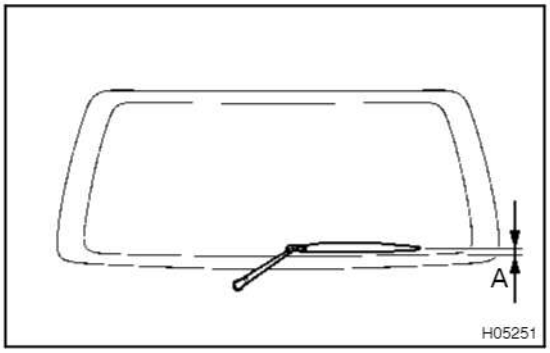
Install the assist grip with the 2 screws, then install the 2 assist grip plugs.

6. INSTALL REAR WIPER ARM

(a) Install the grommet.

(b) Operate the wiper once and turn the wiper switch OFF.

(c) Install the wiper arm and tighten the nut by hand.



(d) Adjust the installation position of the wiper arms to the position shown in the illustration.
A: Approx. 38 ± 10 mm (1.50 ± 0.39 in.)

(e) Torque the nuts.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

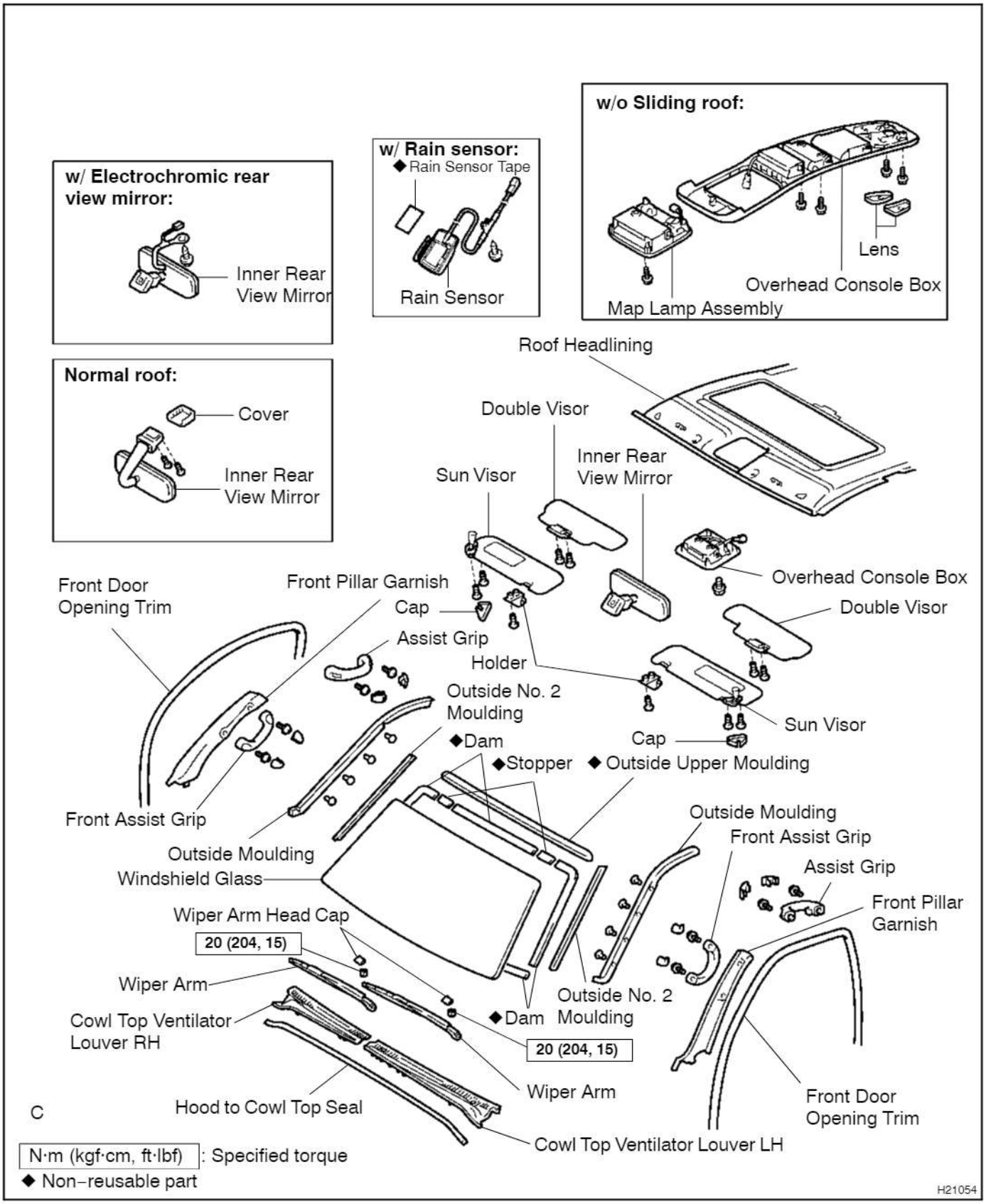
(f) Close the cover.

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WINDSHIELD

COMPONENTS

BO1V4–03



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BO4J7–01

REMOVAL

1. REMOVE FRONT DOOR OPENING TRIMS

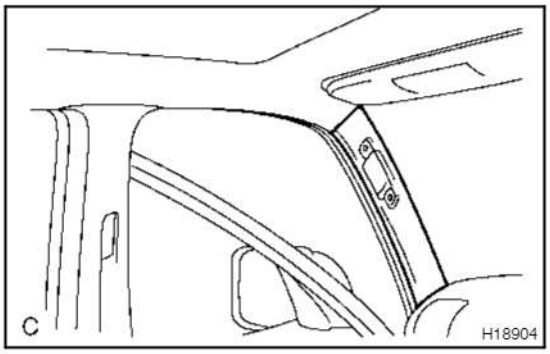
2. REMOVE FRONT ASSIST GRIP

(a) Using a screwdriver, remove the 2 assist grip plugs, then remove the 2 screws and the front assist grip.

HINT:

Tape up the screwdriver tip before use.

(b) Use the same manner described above to the other side.



3. REMOVE FRONT PILLAR GARNISH

(a) Using a screwdriver, remove the front pillar garnish.

HINT:

Tape up the screwdriver tip before use.

(b) Use the same manner described above to the other side.

4. REMOVE SUN VISOR

(a) Using a screwdriver, remove the caps.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the screws, then disconnect the connectors.

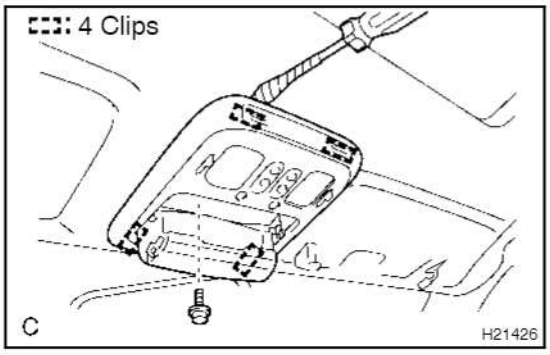
(c) Remove the sun visors.

5. REMOVE DOUBLE VISOR

Remove the screws and the double visors.

6. REMOVE HOLDER

Remove the screws and the holders.



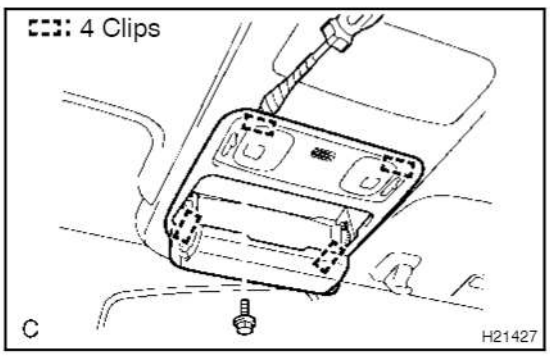
7. w/ Sliding roof:
REMOVE OVERHEAD CONSOLE BOX

(a) Remove the bolt.

(b) Using a screwdriver, remove the overhead console box, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.



8. w/o Sliding roof:
REMOVE OVERHEAD CONSOLE BOX

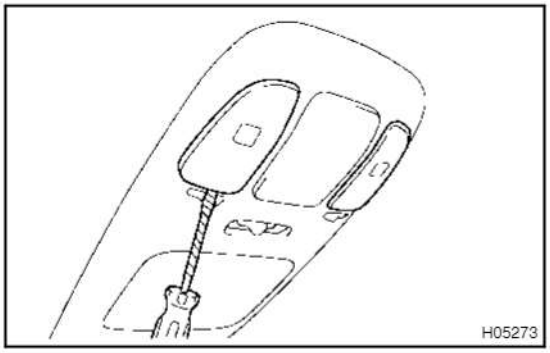
(a) Remove the bolt.

(b) Using a screwdriver, remove the map lamp assembly, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.

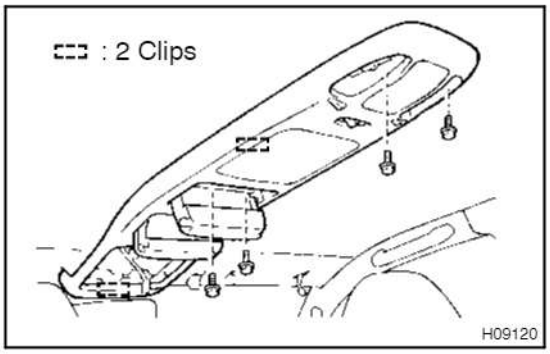
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(c) Using a screwdriver, remove the 2 lenses.

HINT:

Tape up the screwdriver tip before use.



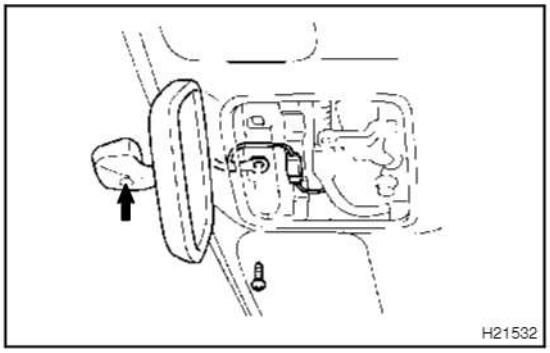
(d) Remove the 4 bolts.

(e) Using a screwdriver, remove the overhead console box, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.

9. REMOVE ASSIST GRIPS



10. w/ Electrochromic rear view mirror:
REMOVE INNER REAR VIEW MIRROR

(a) Pull down the front side of the roof headlining.

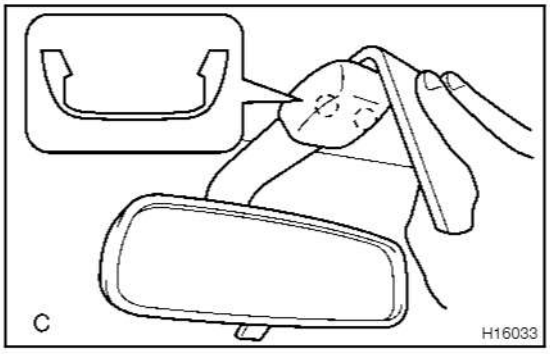
(b) Disconnect the connector.

(c) Unfasten a screw, and remove the other screw and the inner rear view mirror.

11. w/o Electrochromic rear view mirror:
REMOVE INNER REAR VIEW MIRROR

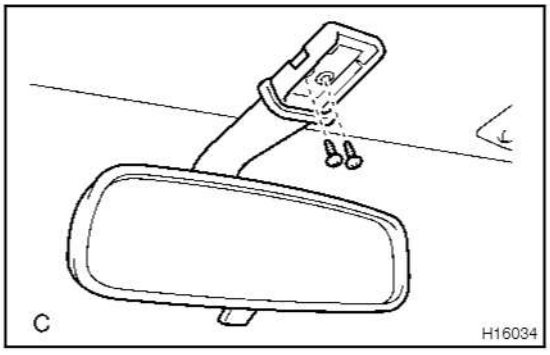
(a) Unfasten the screw and remove the inner rear view mirror.

(b) Pull down the front side of the roof headlining.



12. Normal roof:
REMOVE INNER REAR VIEW MIRROR

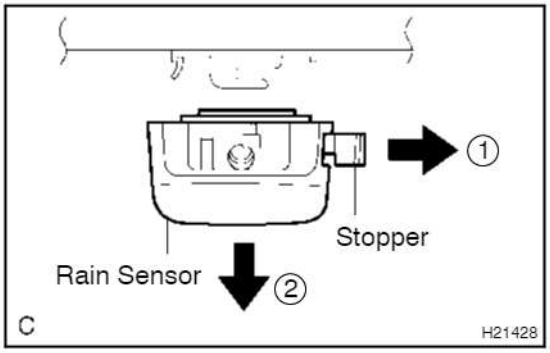
(a) Using a moulding remover, remove the cover as shown in the illustration.



(b) Remove the 2 screws and the inner rear view mirror.

(c) Pull down the front side of the roof headlining.

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13. w/ Rain sensor:
REMOVE RAIN SENSOR

(a) Remove the screw then disconnect the connector.
(b) Pull the stopper to release it as shown in the illustration, and remove the rain sensor.

14. REMOVE WIPER ARMS

(a) Remove the 2 wiper arm head caps and the 2 nuts.
(b) Remove the 2 wiper arms.

15. REMOVE HOOD TO COWL TOP SEAL

16. REMOVE COWL TOP VENTILATOR LOUVERS

(a) Remove the cowl top ventilator louver RH.
(b) Remove the cowl top ventilator louver LH.

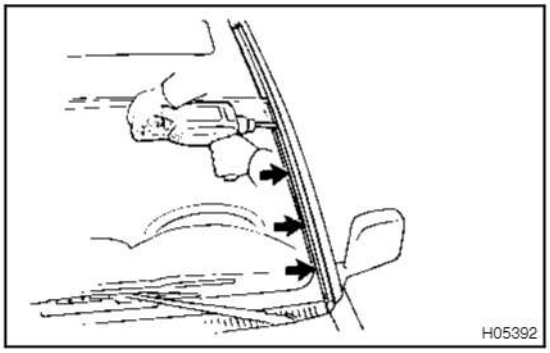
17. REMOVE OUTSIDE NO. 2 MOULDING

(a) Using a screwdriver, remove the outside No. 2 moulding.

HINT:

Tape up the screwdriver tip before use.

(b) Using a drill of less then ø 4 mm (0.16 in.).



(c) Gently and vertically put the drill to the rivet and cut the rivet flanges.

NOTICE:

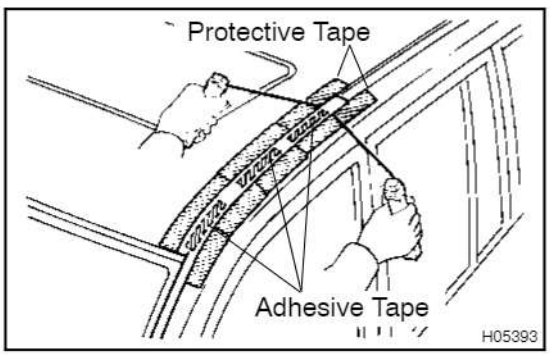
- **Prizing the hole with a drill can lead to damage to the rivet hole or breaking the drill.**
- **Take cafe as the cut rivet is hot.**

(d) Even if flange is taken off, continue drilling and push out remaining fragments with the drill.
(e) Using a heat light, heat the moulding to 40 – 60 °C (104 – 140 °F).

NOTICE:

Do not heat the moulding excessively.

(f) Tie both piano wire ends to wooden blocks or similar objects.



(g) Cut the adhesive tape by pulling the piano wire as shown.

NOTICE:

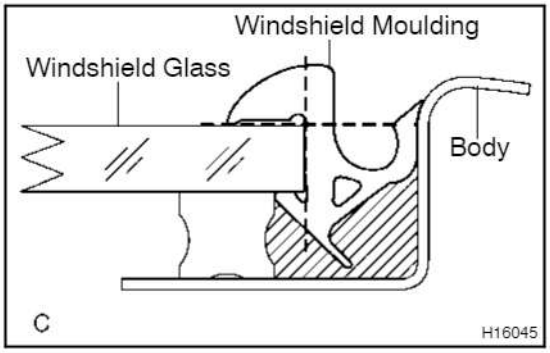
- **If reusing the moulding, take care not to damage the moulding.**
- **Do not damage the body.**

HINT:

Apply protective tape to the outer surface to keep the surface from being scratched.

(h) Remove the moulding.
(i) Use the same manner described above to the other side.

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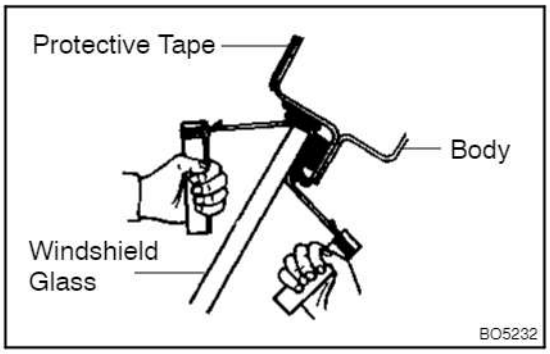


18. REMOVE OUTSIDE UPPER MOULDING

Using a knife, cut off the moulding as shown in the illustration.

NOTICE:

Do not damage the body with the knife.



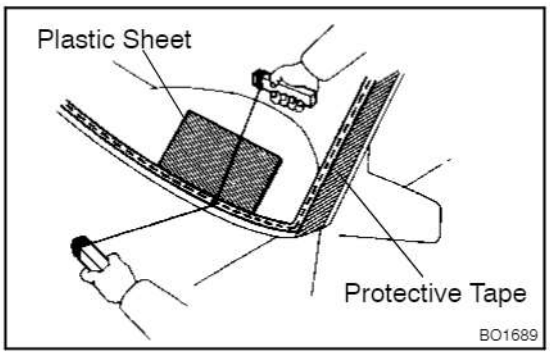
19. REMOVE WINDSHIELD GLASS

(a) Push piano wire through between the body and glass from the interior.

(b) Tie both wire ends to wooden blocks or similar objects.

HINT:

Apply protective tape to the outer surface to keep the surface from being scratched.



NOTICE:

When separating the glass, take care not to damage the paint and interior and exterior ornaments. To prevent the safety pad from scratching when removing the windshield, place a plastic sheet between the piano wire and the safety pad.

(c) Cut the adhesive by pulling the piano wire around it.

(d) Remove the windshield glass.

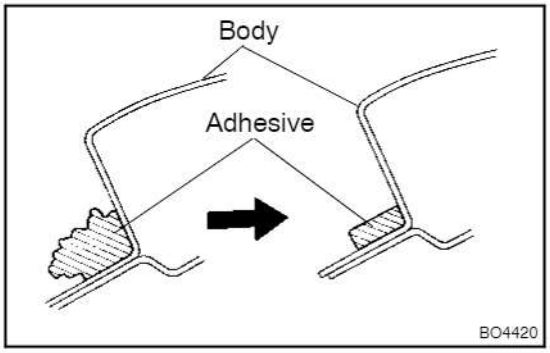
NOTICE:

Leave as much adhesive on the body as possible when cutting the glass.

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BO4J6-01

INSTALLATION



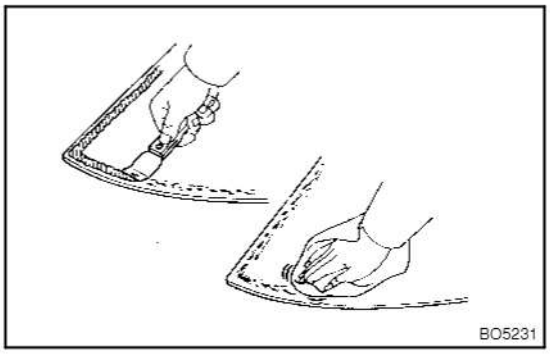
1. CLEAN AND SHAPE CONTACT SURFACE OF BODY

(a) Using a knife, cut away any rough areas on the body.

HINT:

Leave as much of the adhesive on the body as possible.

(b) Clean the cutting surface of the adhesive with a piece of shop rag dampen with cleanser.



2. CLEAN REMOVED GLASS

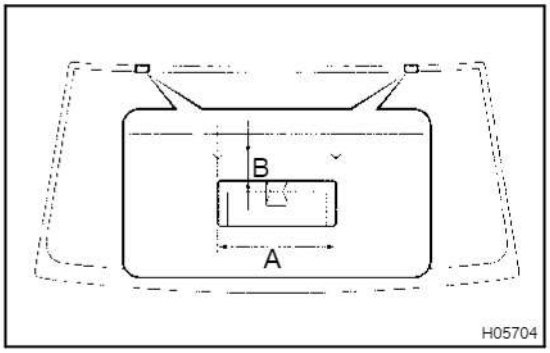
(a) Remove the damaged stoppers and dams.

(b) Using a scraper, remove the adhesive sticking to the glass.

(c) Clean the glass with cleanser.

NOTICE:

- **Do not touch the glass surface after cleaning it.**
- **Be careful not to damage the glass.**

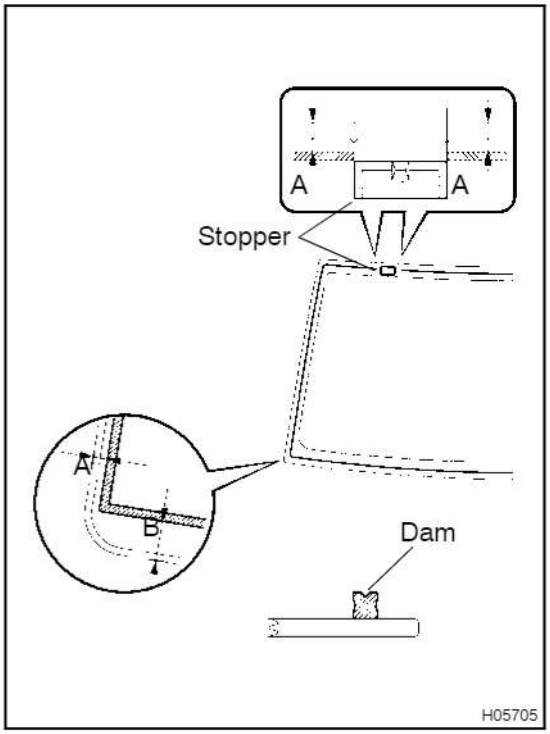


3. INSTALL NEW STOPPERS

Install new stoppers onto the glass.

A: 9 mm (0.35 in.)

B: 25 mm (0.98 in.)



4. INSTALL NEW DAMS

Install new dams with adhesive tape as shown in the illustration.

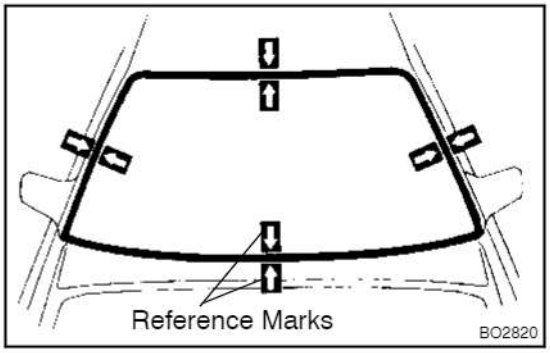
A: 7 mm (0.28 in.)

B: 20 mm (0.79 in.)

NOTICE:

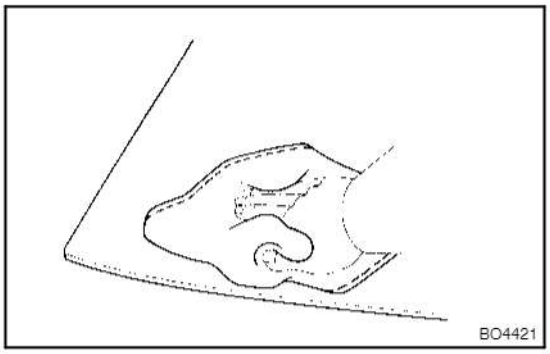
Do not touch the glass surface after cleaning it.

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5. POSITION GLASS

(a) Place the glass in the correct position.
(b) Check that all contacting parts of the glass rim are perfectly even.
(c) Place reference marks between the glass and the body.
(d) Remove the glass.

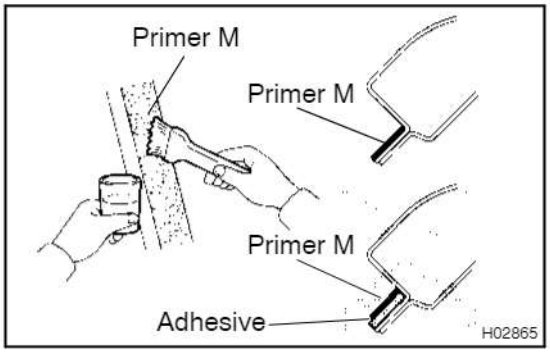


6. CLEAN CONTACT SURFACE OF GLASS

Using cleanser, clean the contact surface which is black–colored area around the entire glass rim.

NOTICE:

Do not touch the glass surface after cleaning it.

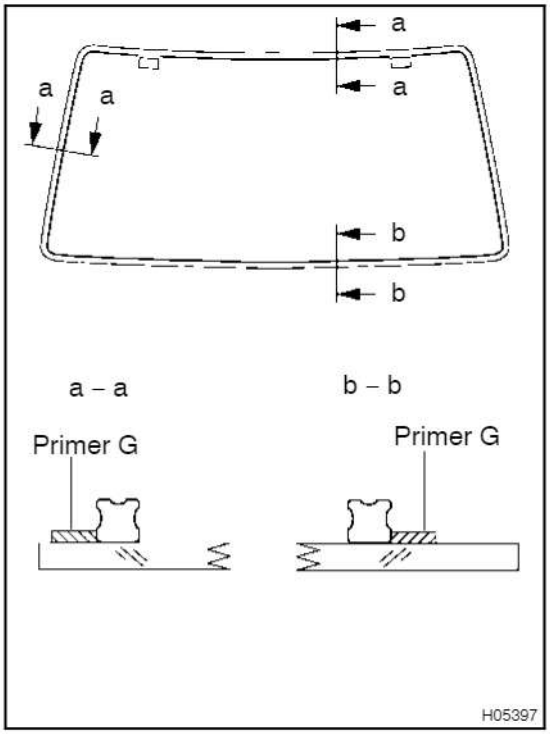


7. COAT CONTACT SURFACE OF BODY WITH PRIMER "M"

Using a brush, apply Primer M to the exposed part of the body on the vehicle side.

NOTICE:

- **Let the primer coating dry for more than 3 minutes or more.**
- **Do not apply Primer M to the adhesive.**
- **Do not keep remaining Primer M for later use.**



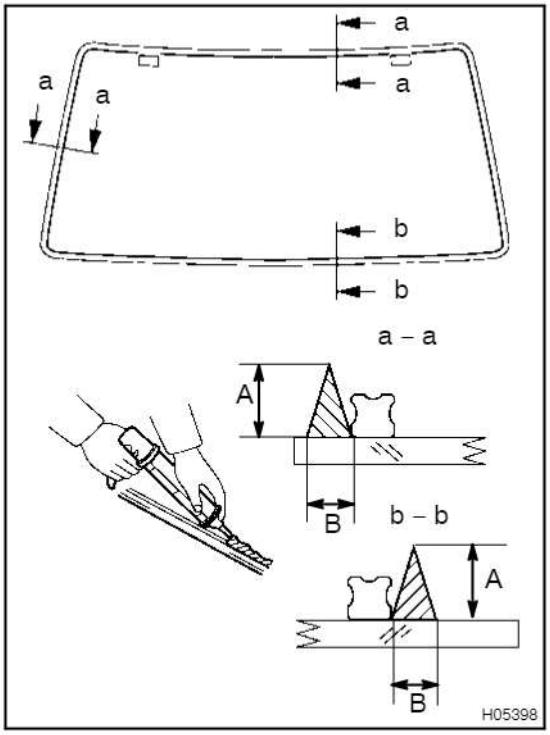
8. COAT CONTACT SURFACE OF GLASS WITH PRIMER "G"

(a) Using a brush or sponge, coat the edge of the glass and the contact surface with Primer G.
(b) If the primer is applied wrongly to the area not specified by accident, wipe it off with a clean shop rag before the primer dries.

NOTICE:

- **Let the primer coating dry for more than 3 minutes or more.**
- **Do not keep remaining Primer G for later use.**

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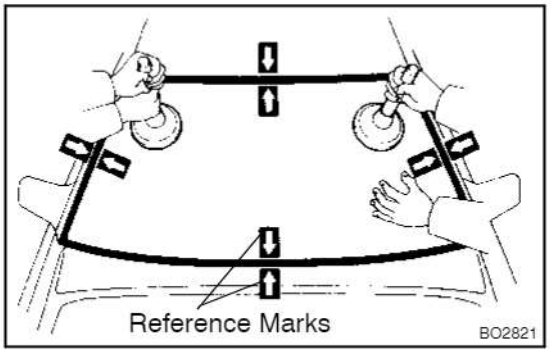
9. APPLY ADHESIVE

(a) Cut off the tip of the cartridge nozzle.
Part No. 08850–00801 or equivalent.

HINT:
After cutting off the tip, finish up all adhesive within the time described in the table below.

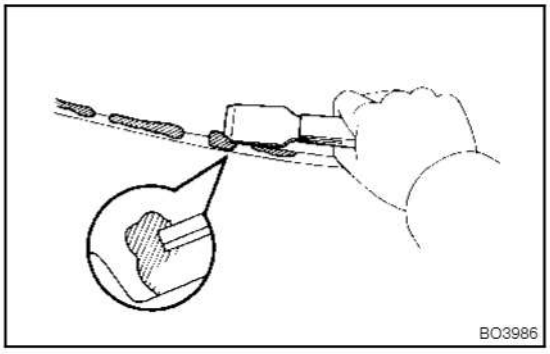
Temperature	Tackfree time
35 °C (95 °F)	15 minutes
20 °C (68 °F)	100 minutes
5 °C (41 °F)	8 hours

(b) Load the cartridge into the sealer gun.
(c) Coat the glass with adhesive as shown.
A: 12.0 mm (0.472 in.)
B: 8.0 mm (0.315 in.)

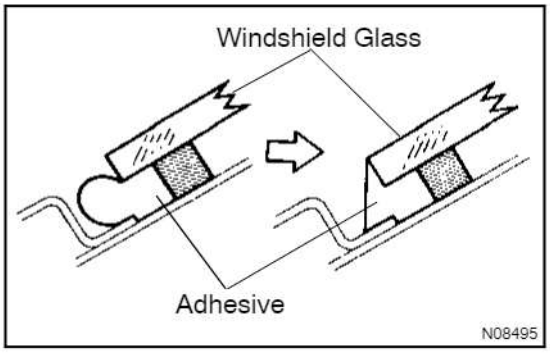


10. INSTALL WINDSHIELD GLASS

(a) Position the glass so that the reference marks are lined up, and press in gently along the rim.
(b) Using a spatula, apply adhesive on the glass rim.



(c) Use a scraper to remove any excess or protruding adhesive.



HINT:
Make sure that the dam is attached to the body panel, as shown in the illustration.

(d) Hold the windshield glass in place securely with a protective tape or equivalent until the adhesive hardens.

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NOTICE:

Take care not to drive the vehicle within the time described in the table below.

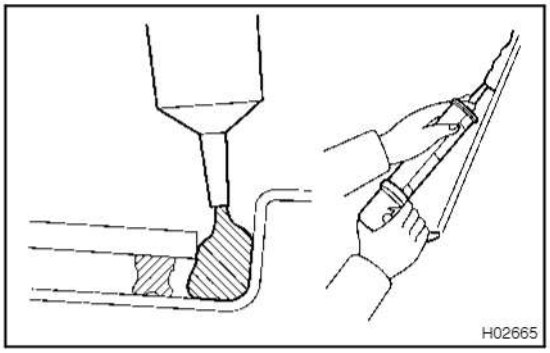
Temperature	Minimum time prior to driving the vehicle
35 °C (95 °F)	1.5 hours
20 °C (68 °F)	5 hours
5 °C (41 °F)	24 hours

11. INSPECT FOR LEAK AND REPAIR

(a) Conduct a leak test after the adhesive dried completely.

(b) Seal any leak with sealant.

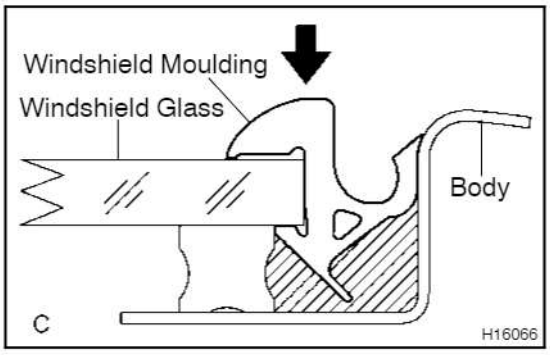
Part No. 08833–00030 or equivalent.



12. APPLY ADHESIVE TO MOULDING INSTALLATION AREA

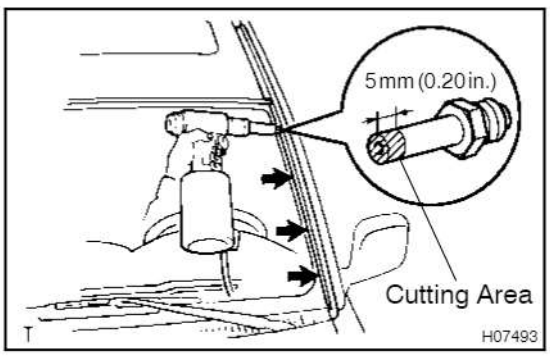
Apply adhesive to the moulding between the glass and the body.

Part No. 08833–00030 or equivalent.



13. INSTALL UPPER OUTSIDE MOULDING

Place a new moulding onto the body and tap it by hand.



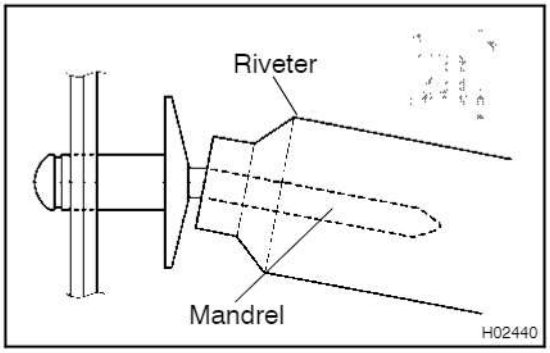
14. INSTALL OUTSIDE NO. 2 MOULDING

(a) Using an air riveter with nose piece No. 4, install 4 new rivets and the outside No. 2 moulding.

HINT:

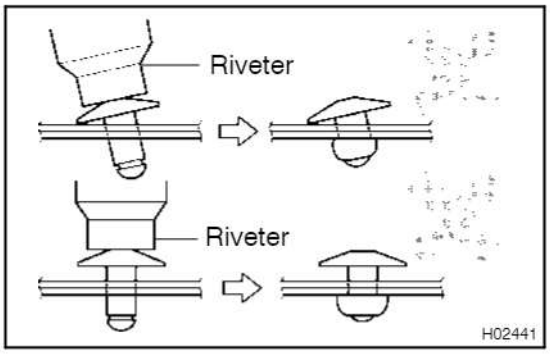
Before using the air riveter with nose piece No. 4, cut 5 mm (0.20 in.) from the edge of nose piece No. 4 as shown in the illustration.

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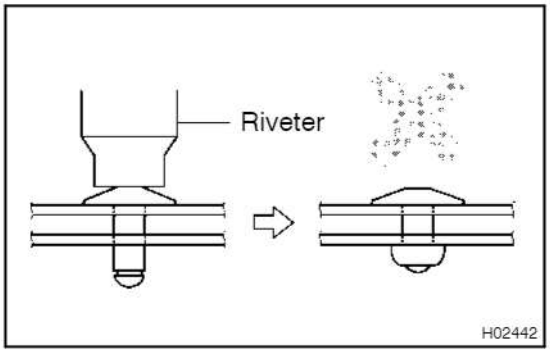


NOTICE:

- **Do not prize a riveter. It could damage the riveter and cause loose fitting and mandrel bend.**



- **Do not tilt the riveter when fasten the rivet to the material to avoid loose fitting.**
- **Do not allow gap spacing between the rivet head and the material.**



- **Do not allow gap spacing between the materials.**

(b) Use the same manner described above to the other side.

15. INSTALL COWL TOP VENTILATOR LOUVERS

(a) Install the cowl top ventilator louver LH.

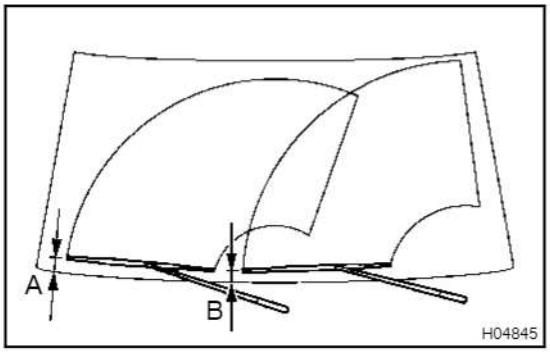
(b) Install the cowl top ventilator louver RH.

16. INSTALL HOOD TO COWL TOP SEAL

17. INSTALL WIPER ARMS

(a) Operate the wiper motor once and turn the wiper switch OFF.

(b) Install the wiper arms and tighten the nuts by hand.



(c) Adjust the installation positions of the wiper arms to the positions as shown in the illustration.

A: Approx. 30 mm (1.18 in.)

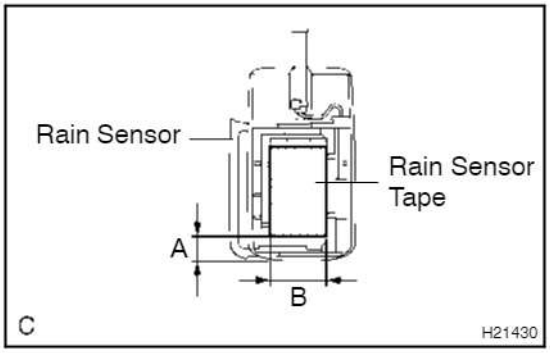
B: Approx. 21 mm (0.83 in.)

(d) Torque the nuts.

Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

(e) Install the 2 wiper arm head caps.

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18. w/ Rain sensor:
INSTALL RAIN SENSOR

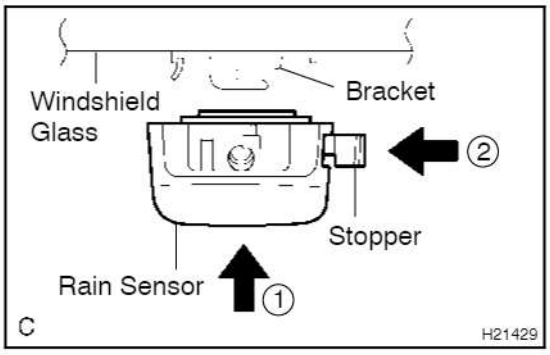
(a) If reusing the rain sensor:
Install new rain sensor tape.
(1) Remove the used rain sensor tape from the windshield glass or rain sensor.
(2) Stick the new rain sensor tape on the lens surface of the rain sensor indicated by the hatched line in the illustration.

A: 11.5 mm (0.45 in.)
B: Width of the lens.

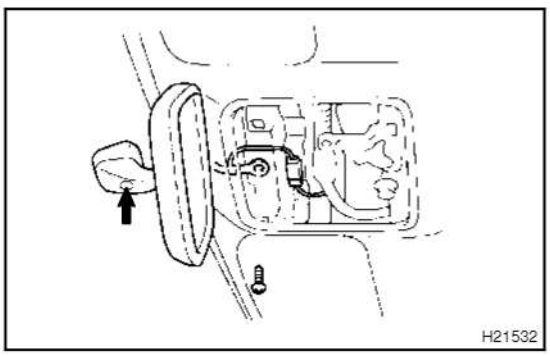
NOTICE:
- **Make sure that no dust nor fingerprint is not on the tape surface.**
- **Stick the tape surface to the wind shield glass firmly so that it does not come out.**

(b) Install the rain sensor.

NOTICE:
- **If reusing the windshield:**
Check that the no rain sensor tape remains on the windshield after removing the rain sensor. In case the tape remains, remove the tape.
- **Clean the glass face with a shop rag.**



(1) Install the screw and connect the connector.
(2) Peel the separation paper of the rain sensor tape.
(3) Securely insert the rain sensor into the bracket.
(4) Push the stopper.



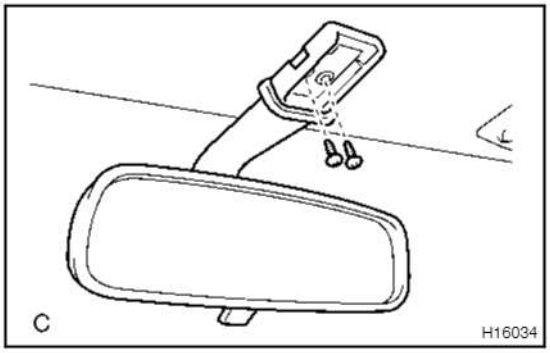
19. w/ Electrochromic rear view mirror:
INSTALL INNER REAR VIEW MIRROR

(a) Install the inner rear view mirror with the 2 screws.
(b) Connect the connector.
(c) Install the front side of the roof headlining.

20. w/o Electrochromic rear view mirror:
INSTALL INNER REAR VIEW MIRROR

(a) Install the front side of the roof headlining.
(b) Install the inner rear view mirror with the screw.

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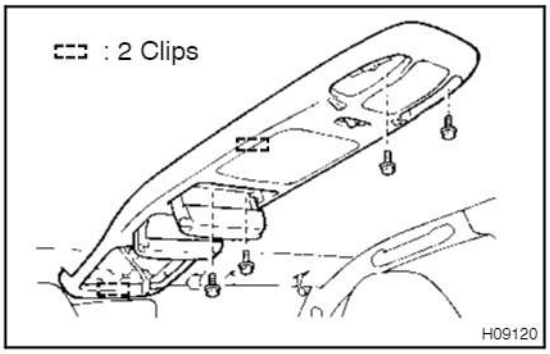
21. Normal roof:
INSTALL INNER REAR VIEW MIRROR

(a) Install the front side of the roof headlining.
(b) Install the inner rear view mirror with the 2 screws.
(c) Install the cover.

22. INSTALL ASSIST GRIPS

23. w/o Sliding roof:
INSTALL OVERHEAD CONSOLE BOX

(a) Connect the connector.



(b) Install the overhead console box with the 4 bolts.
(c) Install the 2 lenses.
(d) Connect the connector, then install the map lamp assembly with the bolt.

24. w/ Sliding roof:
INSTALL OVERHEAD CONSOLE BOX

Connect the connector, then install the overhead console box with the bolt.

25. INSTALL HOLDER

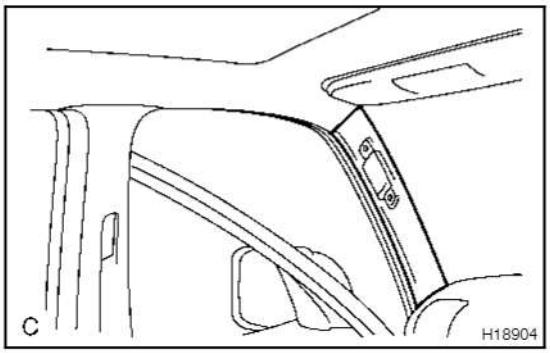
Install the holders with the screws.

26. INSTALL DOUBLE VISOR

Install the double visors with the screws.

27. INSTALL SUN VISOR

(a) Install the sun visors with the screws, then connect the connectors.
(b) Install the caps.



28. INSTALL FRONT PILLAR GARNISH

(a) Install the front pillar garnish.
(b) Use the same manner described above to the other side.

29. INSTALL FRONT ASSIST GRIP

(a) Install the front assist grip with the 2 screws, then install the 2 assist grip plugs.
(b) Use the same manner described above to the other side.

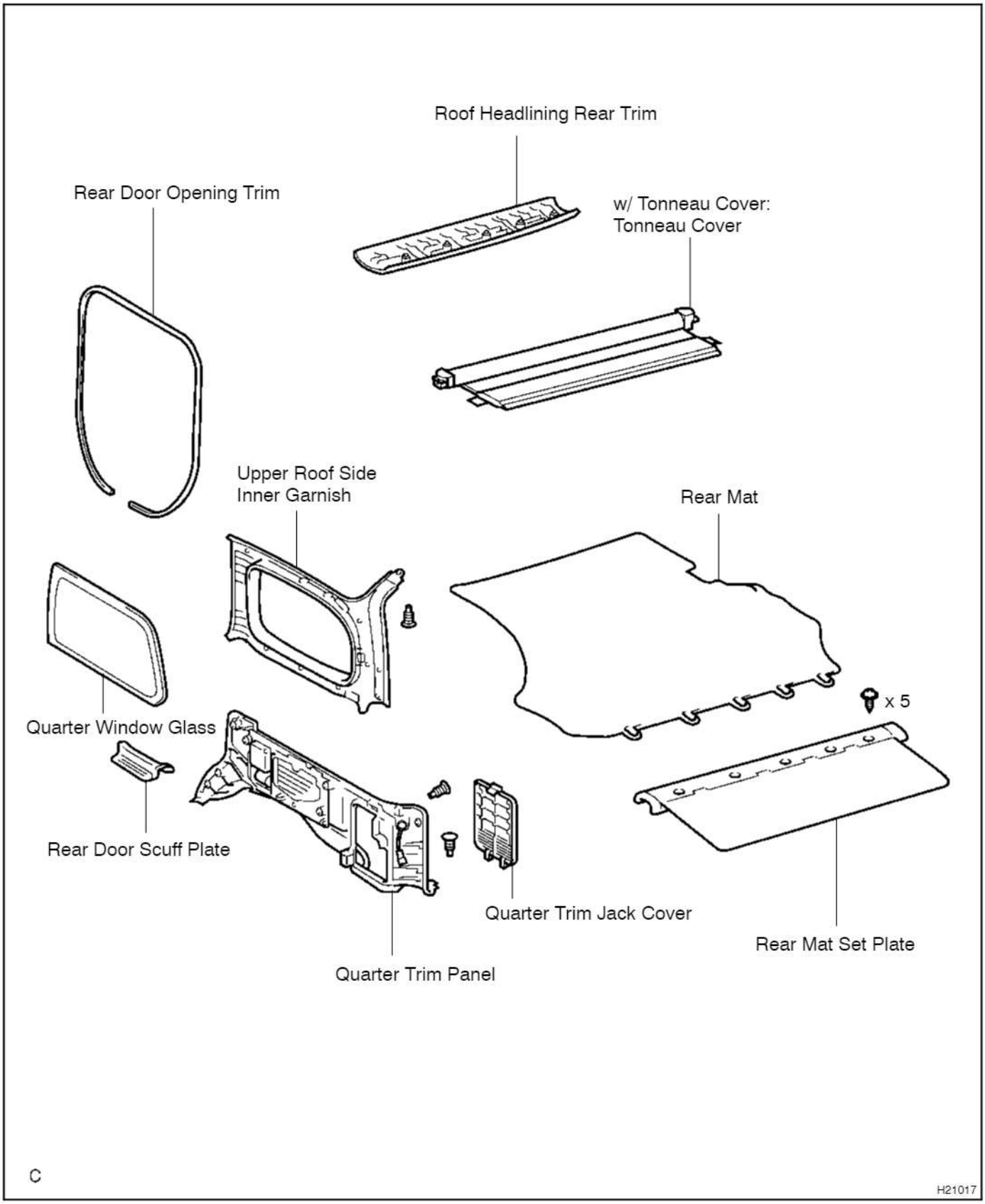
30. INSTALL FRONT DOOR OPENING TRIMS

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QUARTER WINDOW GLASS (Fixed Type)

COMPONENTS

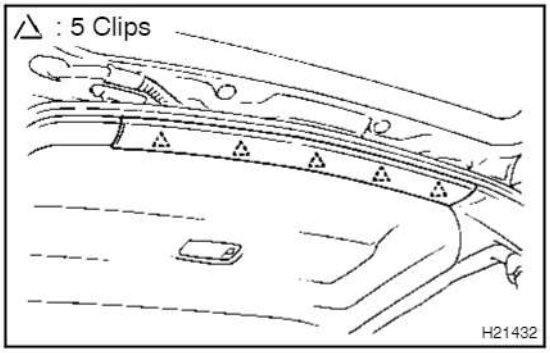
BO1V7-02



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BO4JA-01

REMOVAL

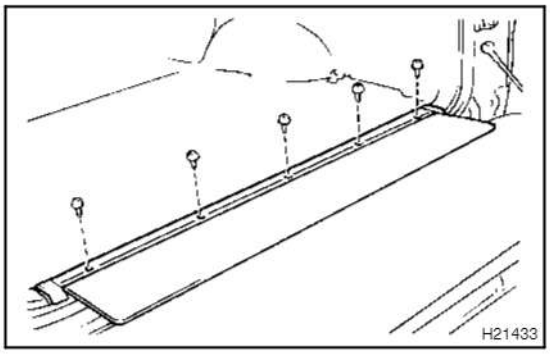


1. REMOVE ROOF HEADLINING REAR TRIM

Using a screwdriver, remove the roof headlining rear trim.

HINT:

Tape up the screwdriver tip before use.



2. REMOVE REAR MAT SET PLATE

(a) Remove the 5 screws.

(b) Using a screwdriver, remove the rear mat set plate.

HINT:

Tape up the screwdriver tip before use.

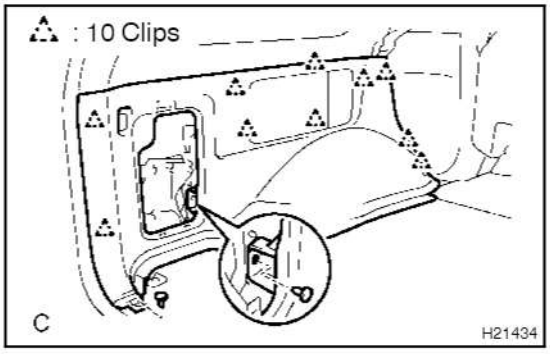
3. w/ TONNEAU COVER: REMOVE TONNEAU COVER

4. REMOVE REAR MAT

5. REMOVE REAR NO. 1 SEAT OUTER BELT FLOOR ANCHOR

6. REMOVE REAR DOOR SCUFF PLATE

7. REMOVE REAR DOOR OPENING TRIM



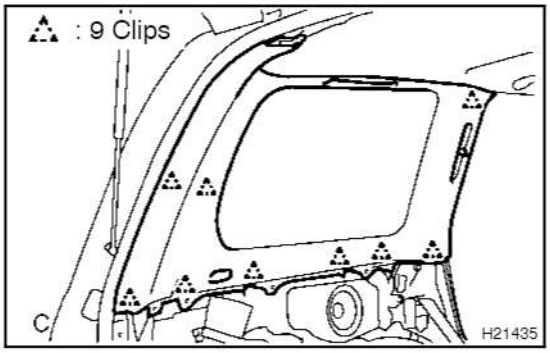
8. REMOVE QUARTER TRIM PANEL

(a) Remove the quarter trim jack cover.

(b) Using a clip remover, remove the 2 clips.

(c) Remove the quarter trim panel, then disconnect the connector.

9. REMOVE NO.1 SEAT OUTER BELT SHOULDER ANCHOR



10. REMOVE UPPER ROOF SIDE INNER GARNISH

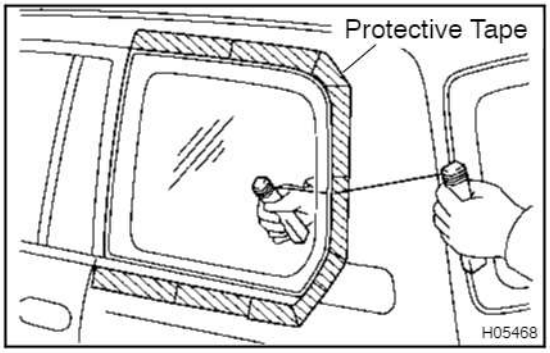
(a) Using a clip remover, remove the clip.

(b) Using a screwdriver, remove the upper roof side inner garnishes.

HINT:

Tape up the screwdriver tip before use.

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11. REMOVE QUARTER WINDOW GLASS

(a) Push a piano wire through from the interior.

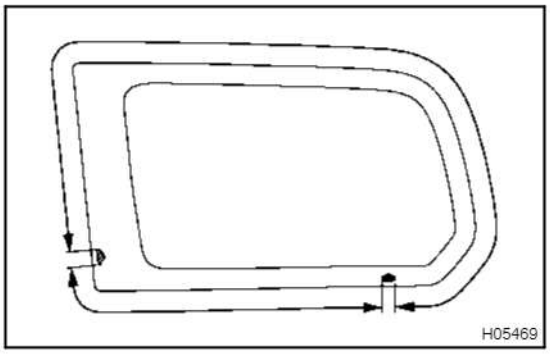
(b) Tie both wire ends to wooden blocks or similar object.

HINT:

Apply protective tape to the outer surface to keep the surface from being scratched.

NOTICE:

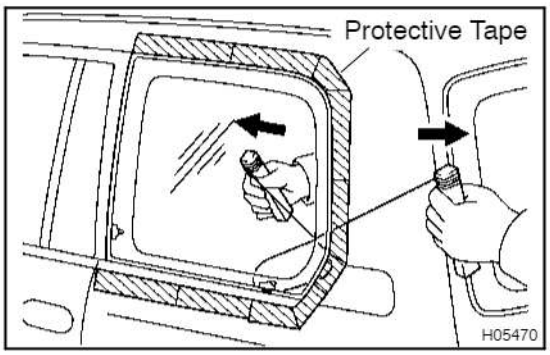
When separating the glass, take care not to damage the paint and the interior.



(c) Cut the adhesive by pulling the piano wire around it.

HINT:

Cut the adhesive areas as shown in the illustration, leaving the adhesive where the clips are.



(d) Push the piano wire through as shown in the illustration, cut off the adhesive on the clips.

(e) Remove the glass.

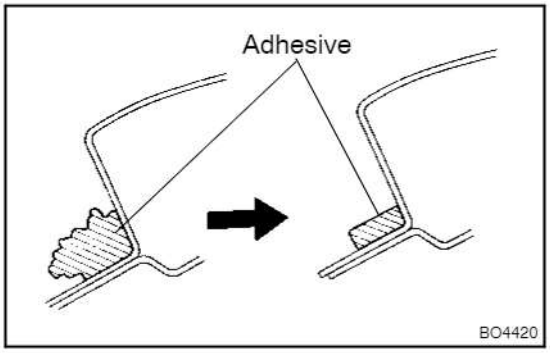
NOTICE:

Leave as much adhesive on the body as possible when cutting off the glass.

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BO4JB-01

INSTALLATION



1. CLEAN AND SHAPE CONTACT SURFACE OF DOOR PANEL

(a) Using a knife, cut away any rough areas on the door panel.

HINT:

Leave as much of the adhesive on the door panel as possible.

(b) Clean the cutting surface of the adhesive with a piece of shop rag dampen with cleanser.

HINT:

Clean the door panel after removing all the adhesive.

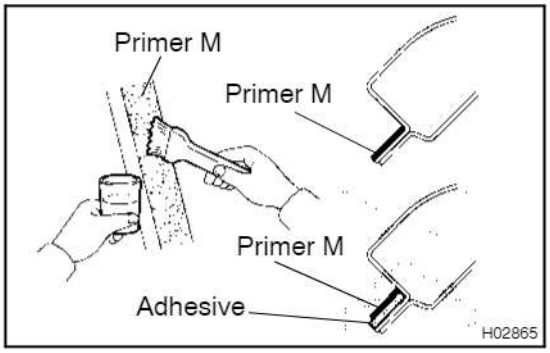
2. CLEAN REMOVED GLASS

(a) Using a scraper, remove the adhesive sticking to the glass.

(b) Clean the glass with cleanser.

NOTICE:

Do not touch the glass surface after cleaning it.

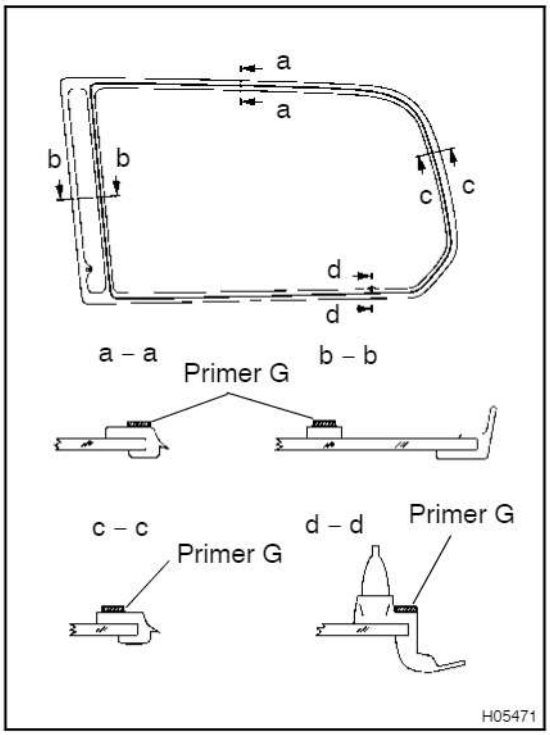


3. COAT CONTACT SURFACE OF DOOR PANEL WITH PRIMER "M"

Using a brush, coat the contact surface on the door panel with primer M.

NOTICE:

- **Let the primer coating dry for more than 3 minutes or more.**
- **Do not coat primer M to the adhesive.**
- **Do not keep remaining primer M for later use.**



4. COAT CONTACT SURFACE OF GLASS WITH PRIMER "G"

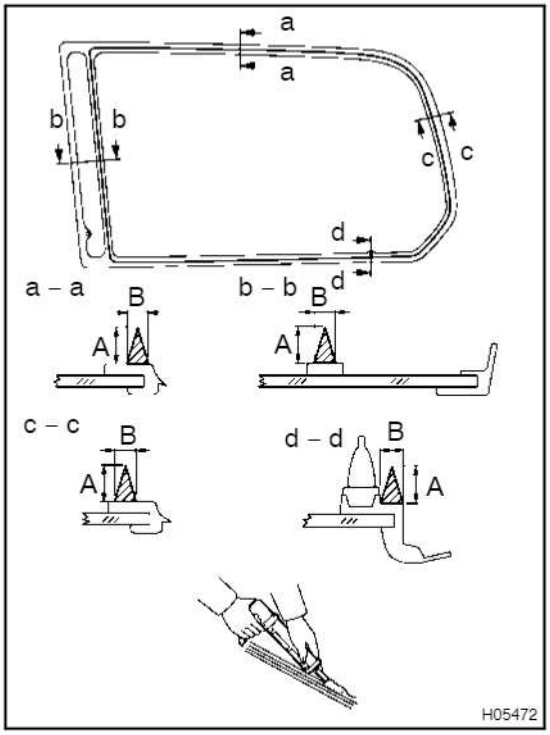
(a) Using a brush or sponge, coat the edge of the glass and the contact surface with primer G.

(b) When the primer is applied to the area other than the specified by accident, wipe it off with a clean shop rag before the primer dries.

NOTICE:

- **Let the primer coating dry for more than 3 minutes or more.**
- **Do not keep remaining primer G for later use.**

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5. APPLY ADHESIVE

(a) Cut off the tip of the cartridge nozzle.
Part No.08850–00801 or equivalent

HINT:
After cutting off the tip, finish up all adhesive within the time described in the table below.

Temperature	Tackfree time
35 °C (95 °F)	15 minutes
20 °C (68 °F)	100 minutes
5 °C (41 °F)	8 hours

(b) Load the cartridge into the sealer gun.
(c) Coat the glass with adhesive, as shown.
A: 12.0 mm (0.472 in.)
B: 8.0 mm (0.315 in.)

6. INSTALL GLASS

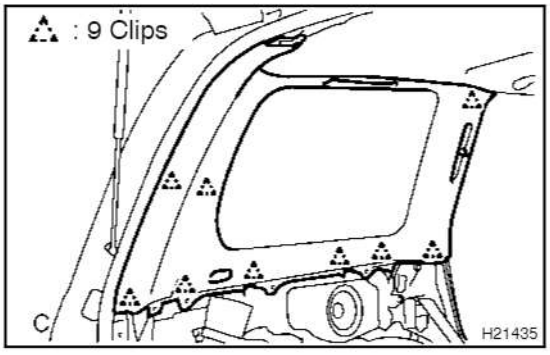
(a) Install the glass to the door.
(b) Hold the glass in place securely with a protective tape or equivalent until the adhesive hardens.

NOTICE:
Take care not to drive the vehicle with in the time described in the table below.

Temperature	Minimum time prior to driving the vehicle
35 °C (95 °F)	1.5 hours
20 °C (68 °F)	5 hours
5 °C (41 °F)	24 hours

7. INSPECT FOR LEAK AND REPAIR

(a) Conduct a leak test after the adhesive dried completely.
(b) Seal any leak with sealant.
Part No. 08833–00030 or equivalent

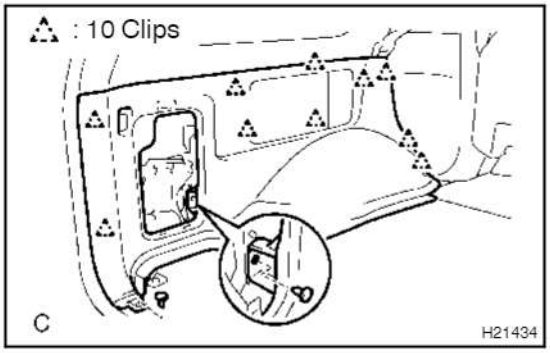


8. INSTALL UPPER ROOF SIDE INNER GARNISH

Install the upper roof side inner garnish with the clip.

9. INSTALL REAR No.1 SEAT OUTER BELT SHOULDER ANCHOR
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

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10. INSTALL QUARTER TRIM PANEL

Install the quarter trim panel with the 2 clips, then connect the connector.

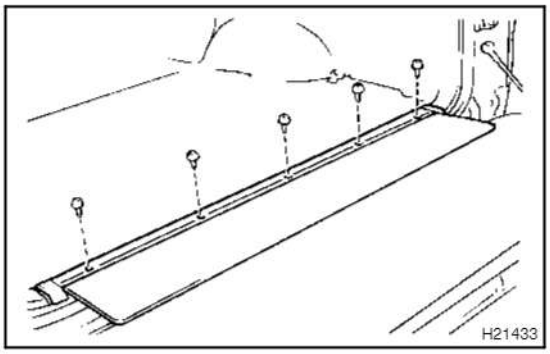
11. INSTALL REAR DOOR OPENING TRIM

12. INSTALL REAR DOOR SCUFF PLATE

13. INSTALL REAR No.1 SEAT OUTER BELT FLOOR ANCHOR

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

14. INSTALL REAR MAT



15. INSTALL REAR MAT SET PLATE

Install the rear mat set plate with the 5 screws.

16. w/ TONNEAU COVER:
INSTALL TONNEAU COVER

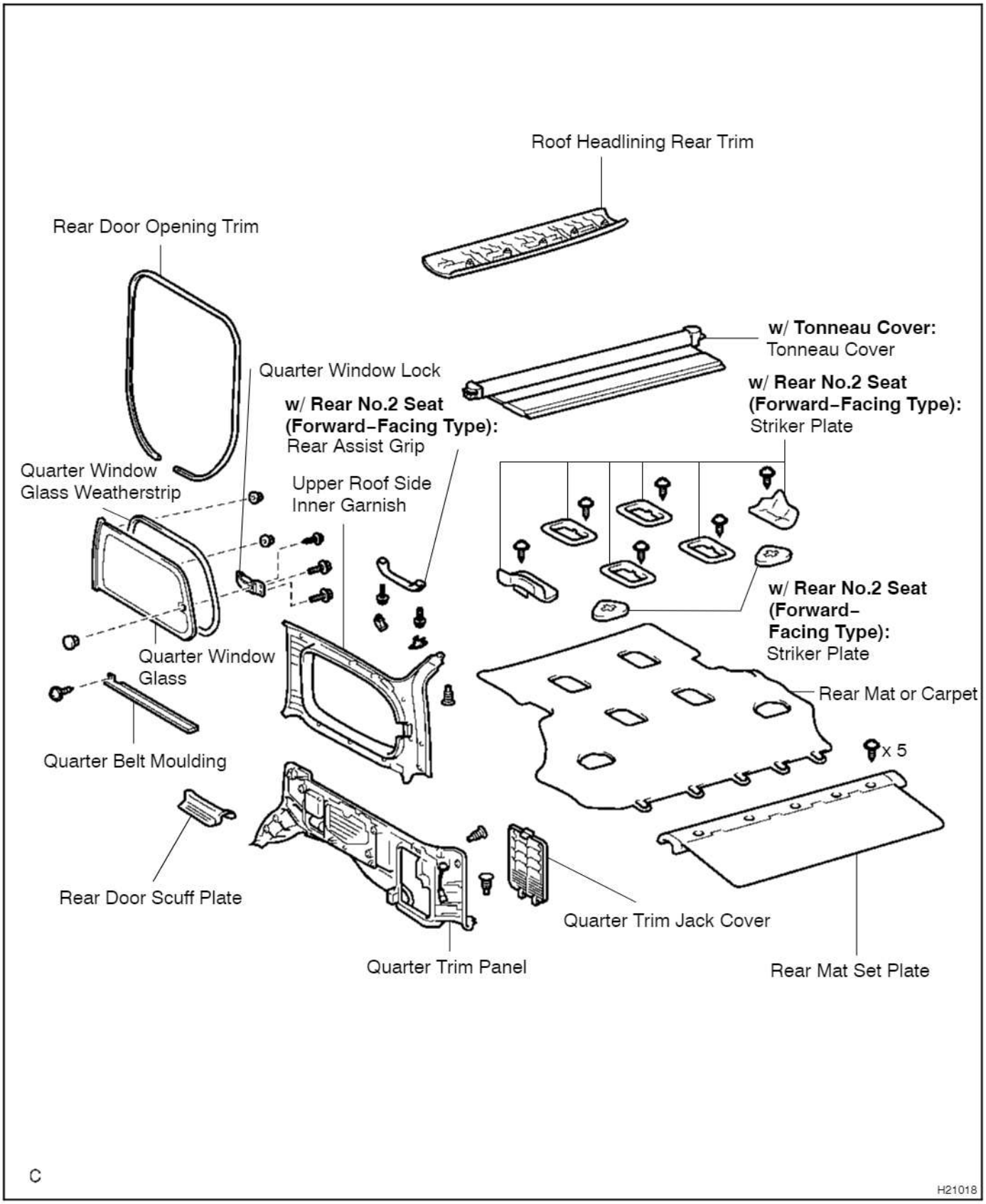
17. INSTALL ROOF HEADLINING REAR TRIM

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QUARTER WINDOW GLASS (Swing Type)

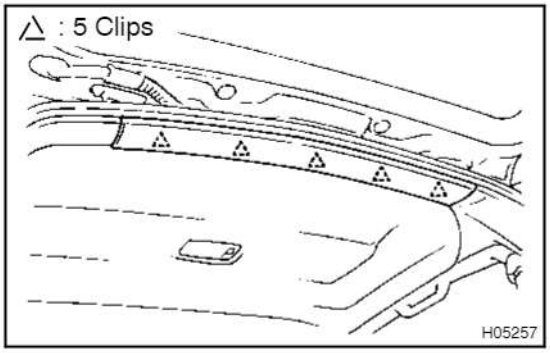
COMPONENTS

BO1VA-02



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BO4J8-01



REMOVAL

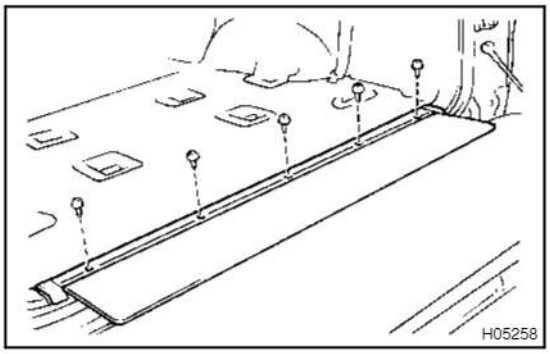
1. REMOVE ROOF HEADLINING REAR TRIM

Using a screwdriver, remove the roof headlining rear trim.

HINT:

Tape up the screwdriver tip before use.

2. w/ Rear No.2 Seat:
REMOVE REAR NO.2 SEAT



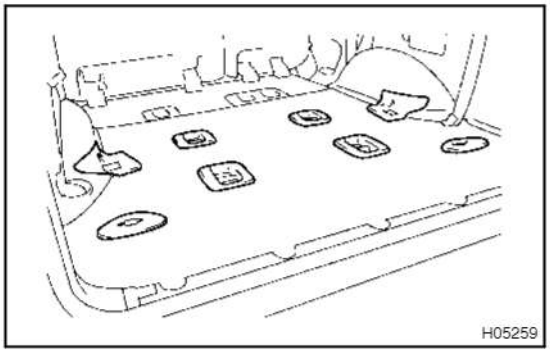
3. REMOVE REAR MAT SET PLATE

(a) Remove the 5 screws.

(b) Using a screwdriver, remove the rear mat set plate.

HINT:

Tape up the screwdriver tip before use.



4. w/ Rear No.2 Seat (Forward–Facing Type):
REMOVE STRIKER PLATE

(a) Remove the 6 screws.

(b) Using a screwdriver, remove the striker plates.

HINT:

Tape up the screwdriver tip before use.

5. w/ TONNEAU COVER:
REMOVE TONNEAU COVER

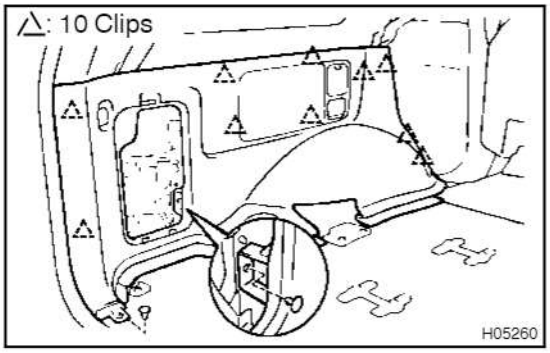
6. REMOVE REAR MAT

7. w/ Rear No.2 Seat (Forward–Facing Type):
REMOVE REAR NO. 2 SEAT OUTER BELT FLOOR ANCHOR
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

8. REMOVE REAR NO. 1 SEAT OUTER BELT FLOOR ANCHOR
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

9. REMOVE REAR DOOR SCUFF PLATE

10. REMOVE REAR DOOR OPENING TRIM



11. REMOVE QUARTER TRIM PANEL

(a) Remove the quarter trim jack cover.

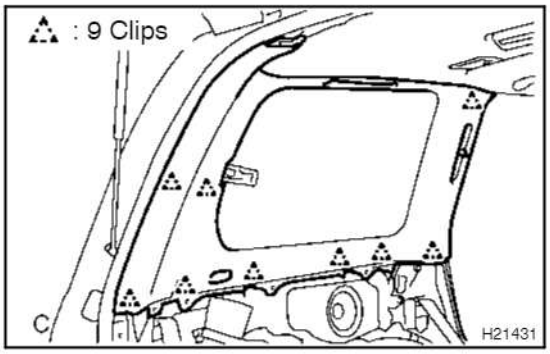
(b) Using a clip remover, remove the 2 clips.

(c) Remove the quarter trim panel, then disconnect the connector.

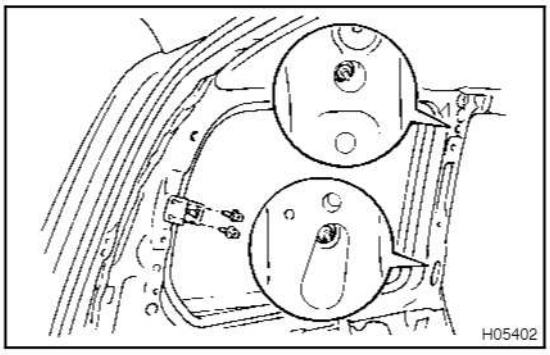
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12. w/ Rear No.2 Seat (Forward–Facing Type): REMOVE REAR NO. 2 SEAT OUTER BELT SHOULDER ANCHOR
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

13. REMOVE REAR NO. 1 SEAT OUTER BELT SHOULDER ANCHOR
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

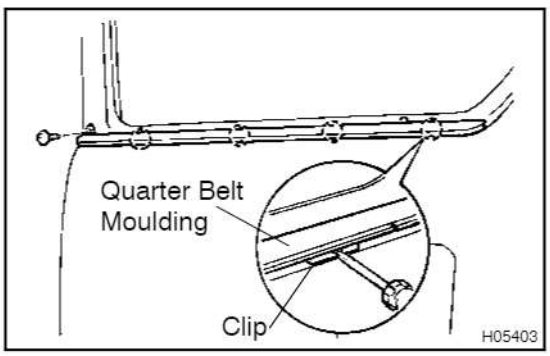


14. REMOVE UPPER ROOF SIDE INNER GARNISH
(a) w/ Rear No.2 Seat (Forward–Facing Type):
Using a screwdriver, remove the assist grip plugs, then remove the 2 screws and the rear assist grip.
HINT:
Tape up the screwdriver tip before use.
(b) Using a clip remover, remove the clip.
(c) Using a screwdriver, remove the upper roof side inner garnish.
HINT:
Tape up the screwdriver tip before use.



15. REMOVE QUARTER WINDOW GLASS
(a) w/ Power Vent:
Disconnect the connector.
(b) w/ Antenna:
Disconnect the connector.
(c) Remove the 2 bolts, the 2 nuts and the quarter window glass.

16. REMOVE QUARTER WINDOW GLASS WEATHERSTRIP



17. REMOVE QUARTER BELT MOULDING
(a) Remove the screw.
(b) Using a screwdriver, remove the quarter belt moulding.
HINT:
Tape up the screwdriver tip before use.

18. REMOVE QUARTER WINDOW LOCK
Remove the screw and the quarter window lock.

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BO1VC-01

INSTALLATION

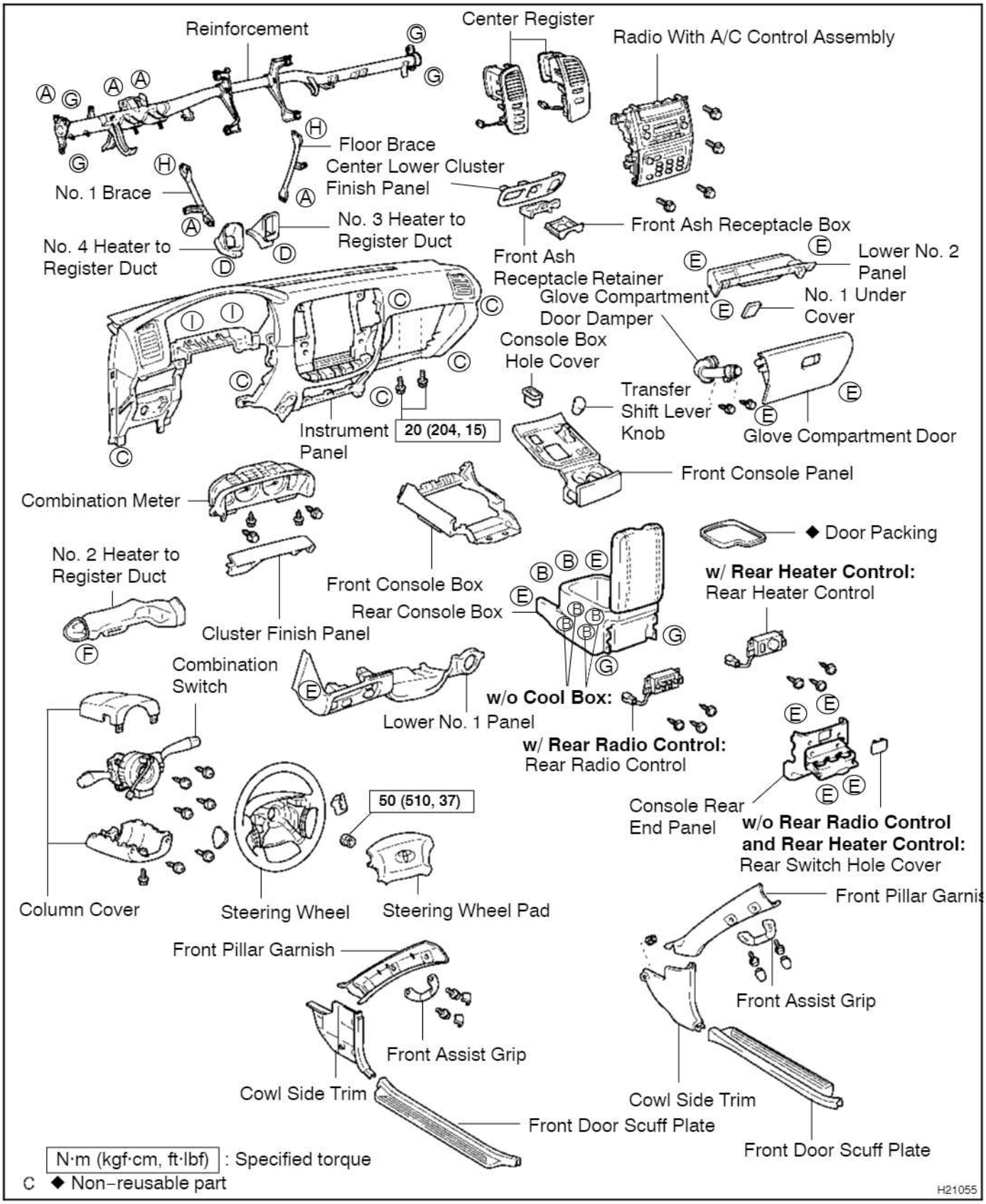
Installation is in the reverse order of removal (See page BO–73).

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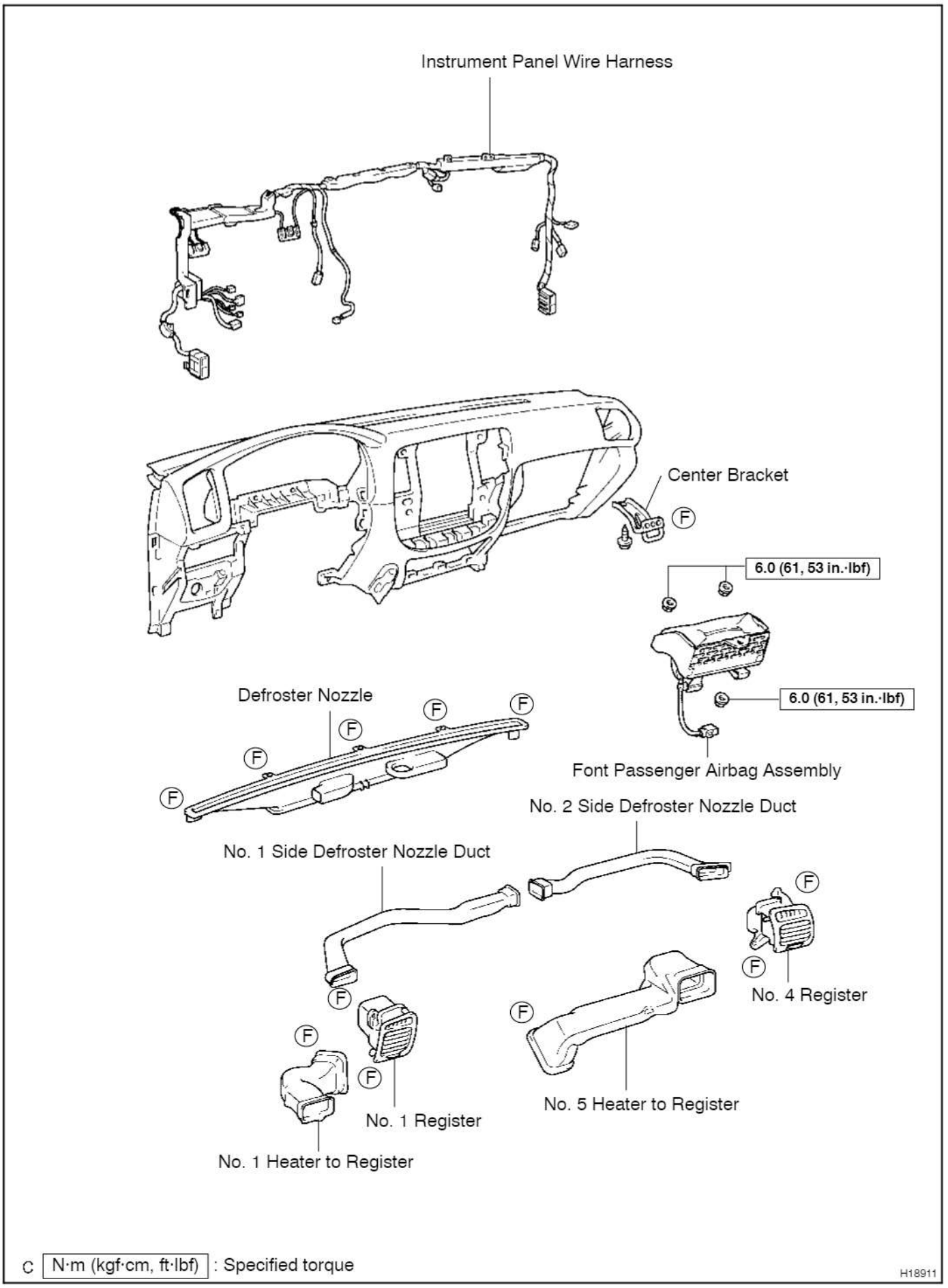
INSTRUMENT PANEL

COMPONENTS

BO1VT–03



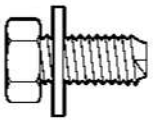
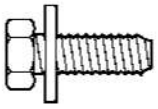
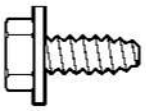
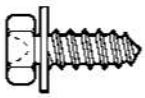
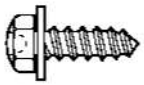
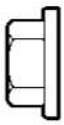
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HINT:
Screw shapes and sizes are indicated in the table below. The codes ("A" to "I") correspond to those indicated on the previous page.

mm (in.)

	Shape	Size		Shape	Size		Shape	Size
Ⓐ		ø = 8 (0.31) L = 16 (0.63)	Ⓑ		ø = 6 (0.24) L = 18 (0.71)	Ⓒ		ø = 6 (0.24) L = 16 (0.63)
Ⓓ		ø = 6 (0.24) L = 16 (0.63)	Ⓔ		ø = 5 (0.20) L = 16 (0.63)	Ⓕ		ø = 5 (0.20) L = 14 (0.55)
Ⓖ		ø = 5 (0.20) L = 14 (0.55)	Ⓗ		ø = 8 (0.31)	Ⓘ		ø = 6 (0.24)

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BO4JC-01

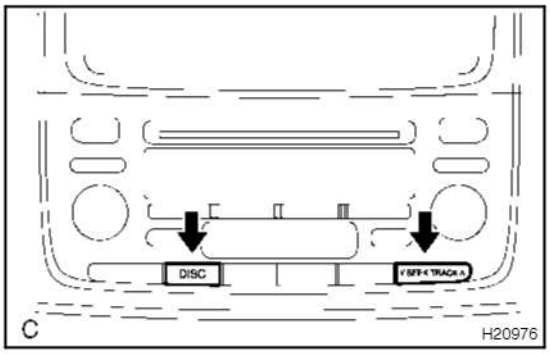
REMOVAL

1. w/ CD Changer Built In The Audio System: SHIP MODE SETTING

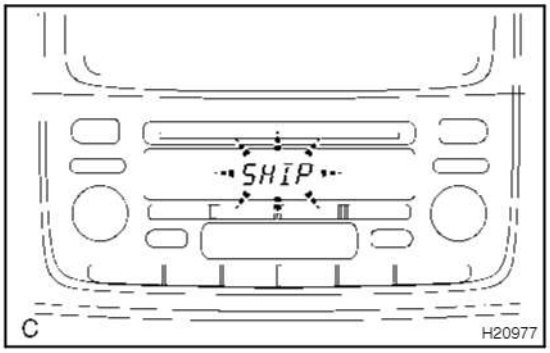
(a) Take out all of the CDs.

NOTICE:

If they cannot be taken out, do not attempt to take out forcibly and send the unit for repair.



(b) Turn the ignition switch to ACC as pressing the "SEEK UP" and "DISC" switches at the same time.



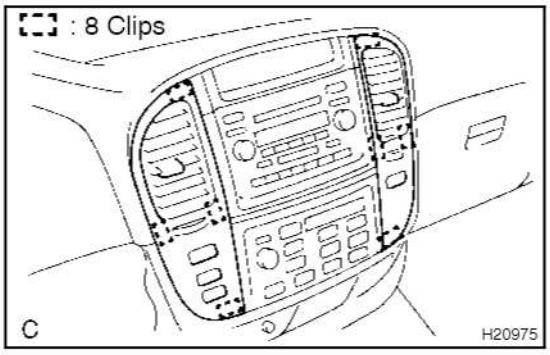
HINT:

When the ship mode has been set, "SHIP" must be displayed.

(c) Turn the ignition switch to OFF and disconnect the battery negative cable.

NOTICE:

Connecting the battery negative cable automatically end the ship mode.



2. REMOVE CENTER REGISTER

(a) Using a moulding remover, remove the center register.

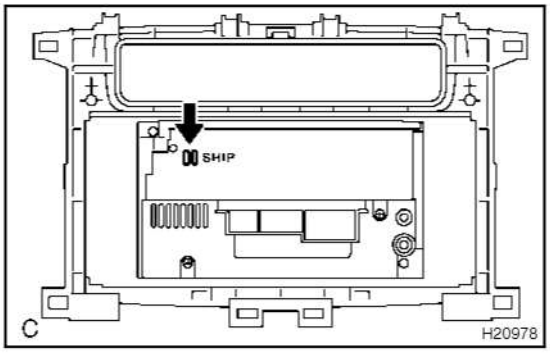
(b) Disconnect the connector.

(c) Use the same manner described above to the other side.

3. REMOVE RADIO WITH A/C CONTROL ASSEMBLY

(a) Remove the 4 bolts.

(b) Disconnect the radio with A/C control assembly cable and remove the radio with A/C control assembly.



4. w/ CD Changer Built In The Audio System: SHIP MODE CONFIRMATION

Check that a metal can be seen from a holes marked "SHIP" on the back of the radio with A/C control assembly.

NOTICE:

If a metal cannot be seen from a hole on the back of the radio with A/C control assembly, repeat "SHIP MODE".

5. REMOVE FRONT DOOR SCUFF PLATES

6. REMOVE COWL SIDE TRIMS

7. REMOVE FRONT DOOR OPENING TRIMS

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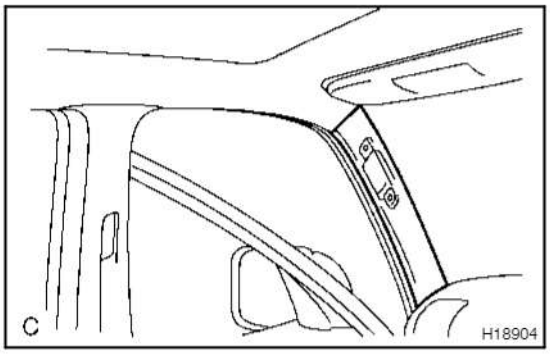
8. REMOVE FRONT ASSIST GRIP

(a) Using a screwdriver, remove the assist grip plugs, then remove the 2 screws and assist grip.

HINT:

Tape up the screwdriver tip before use.

(b) Use the same manner described above to the other side.



9. REMOVE FRONT PILLAR GARNISH

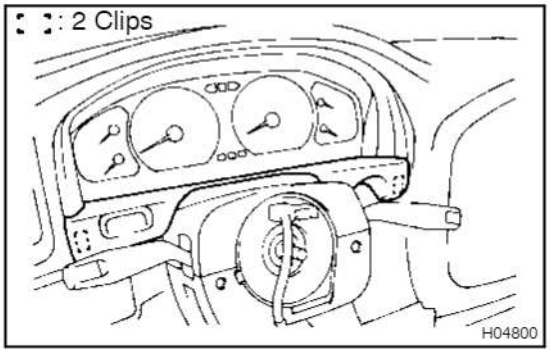
(a) Using a screwdriver, remove the front pillar garnish.

HINT:

Tape up the screwdriver tip before use.

(b) Use the same manner described above to the other side.

10. REMOVE STEERING WHEEL (See page SR–7 or See Pub. No. RM616E, page SR–13)



11. REMOVE CLUSTER FINISH PANEL

(a) Using a screwdriver, remove the cluster finish panel.

HINT:

Tape up the screwdriver tip before use.

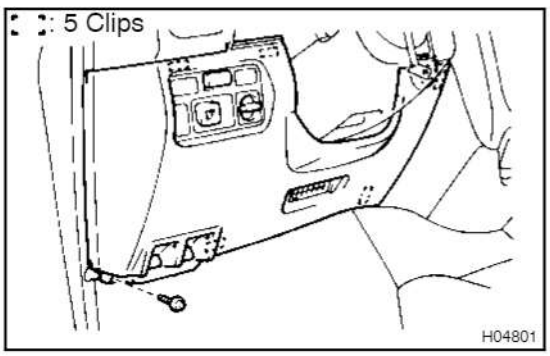
(b) w/ Rheostat:

Disconnect the connector.

12. REMOVE HOOD LOCK CONTROL CABLE LEVER AND FUEL LID CONTROL CABLE LEVER

(a) Remove the 2 screws and the hood lock control cable lever.

(b) Remove the 2 screws and the fuel lid control cable lever.



13. REMOVE LOWER NO. 1 PANEL

(a) Remove the screw.

(b) Using a screwdriver, remove the lower No. 1 panel, then disconnect the connectors.

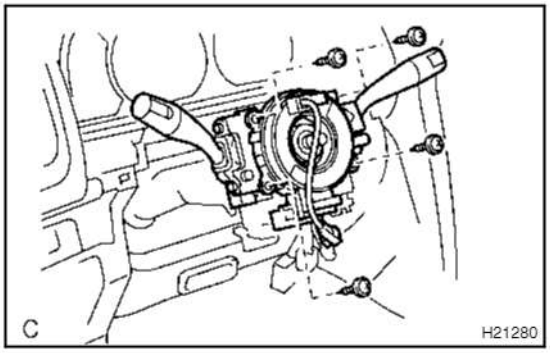
HINT:

Tape up the screwdriver tip before use.

14. REMOVE COLUMN COVERS

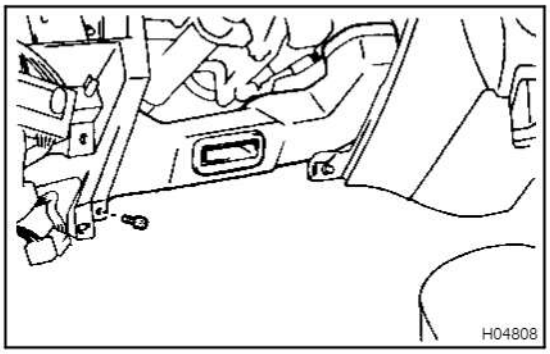
Remove the 3 screws and the column covers.

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15. REMOVE COMBINATION SWITCH

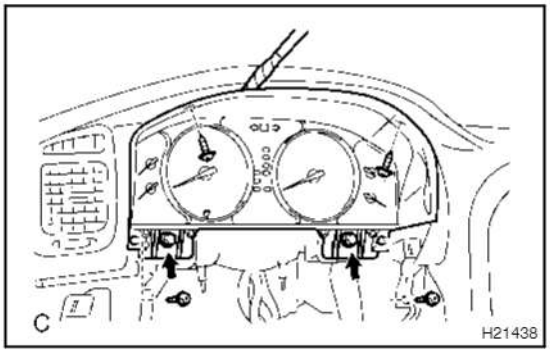
(a) Disconnect the connectors.
(b) Remove the clamp.
(c) Remove the 4 screws and the combination switch.



16. REMOVE NO. 2 HEATER TO REGISTER DUCT

Remove the screw and the No. 2 heater to register duct as shown in the illustration.

17. REMOVE STEERING COLUMN (See page SR–7 or See Pub. No. RM616E, page SR–13)



18. REMOVE COMBINATION METER

(a) Disconnect the connectors.

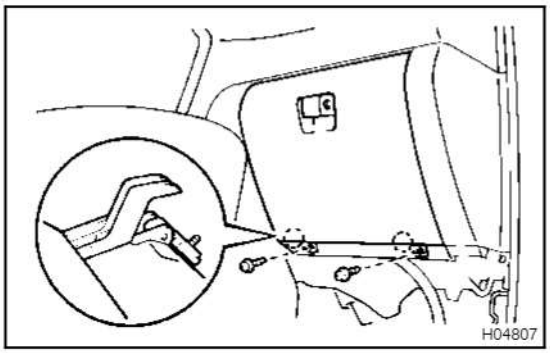
HINT:

The connectors can be disconnected by loosening the bolts.

(b) Remove the 4 screws.
(c) Using a screwdriver, remove the combination meter.

HINT:

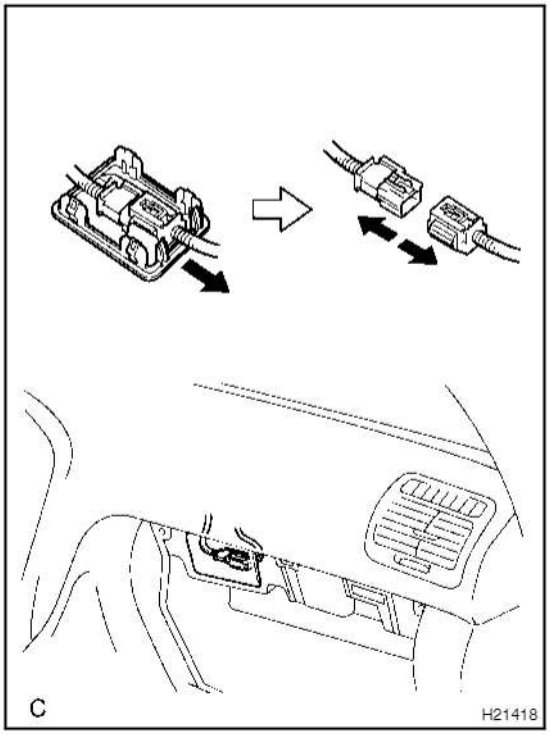
Tape up the screwdriver tip before use.



19. REMOVE GLOVE COMPARTMENT DOOR

(a) Remove the 2 screws.
(b) Remove the glove compartment door, then disconnect the glove compartment door damper clip.

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20. DISCONNECT AIRBAG CONNECTOR (See page RS–32)

(a) Using a screwdriver, remove the No. 1 under cover.

HINT:

Tape up the screwdriver tip before use.

(b) Slide the airbag connector to pull out from the No. 1 under cover.

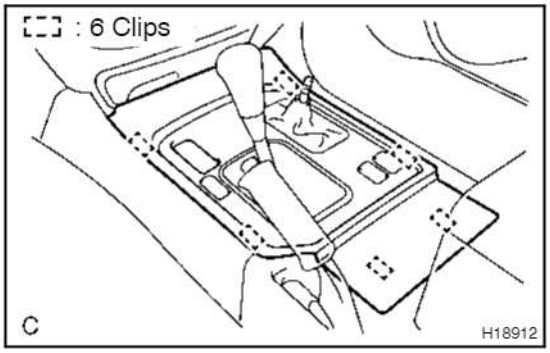
(c) Disconnect the airbag connector.

NOTICE:

When handling the airbag connector, take care not to damage the airbag wire harness.

21. REMOVE LOWER NO. 2 PANEL

Remove the 3 screws and the lower No. 2 panel.



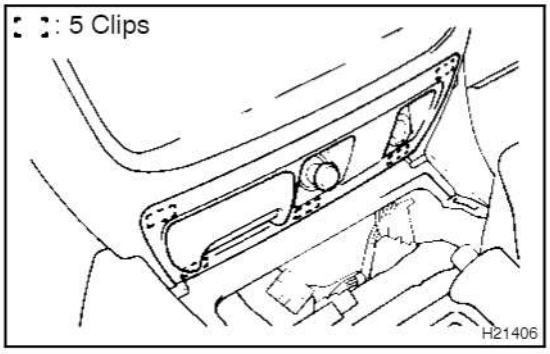
22. REMOVE FRONT CONSOLE PANEL

(a) Remove the transfer shift lever knob.

(b) Using a screwdriver, remove the front console panel.

HINT:

Tape up the screwdriver tip before use.

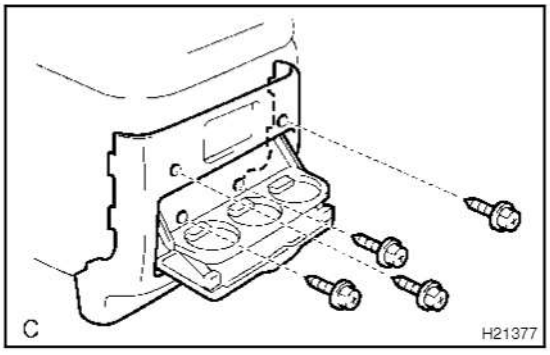


23. REMOVE CENTER LOWER CLUSTER FINISH PANEL

Using a screwdriver, remove the center lower cluster finish panel, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.



24. REMOVE CONSOLE REAR END PANEL

(a) w/o Rear Radio Control and Rear Heater Control:
Using a screwdriver, remove the rear switch hole cover.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the 4 screws.

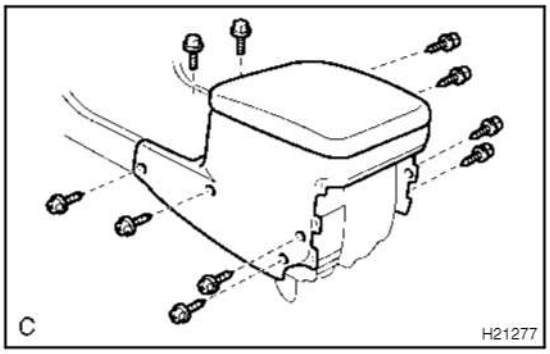
(c) Using a screwdriver, remove the console rear end panel.

HINT:

Tape up the screwdriver tip before use.

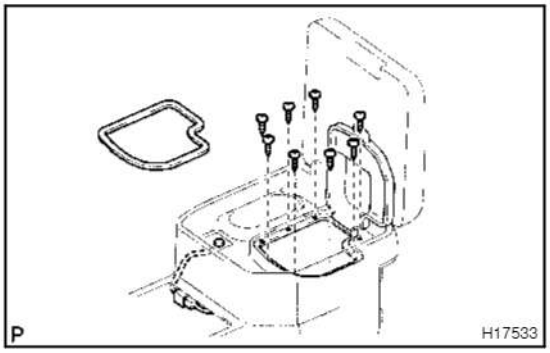
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(d) w/ Rear Radio Control or Rear Heater Control:
Remove the 3 screws and the rear radio control or the rear heater control.



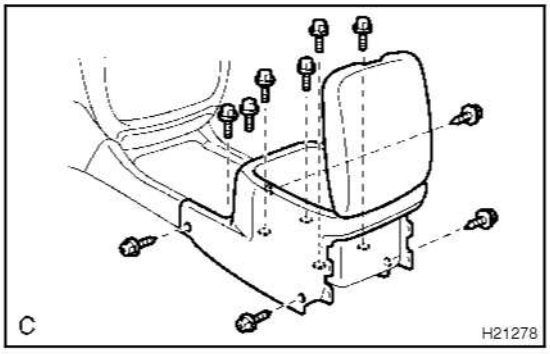
25. REMOVE REAR CONSOLE BOX AND FRONT CONSOLE BOX

(a) w/ Cool box:
Remove the 2 bolts and the 8 screws.



(b) w/ Cool box:
Disconnect the connector.

(c) w/ Cool box:
Remove the door packing, the 8 screws, the rear console box and the front console box.

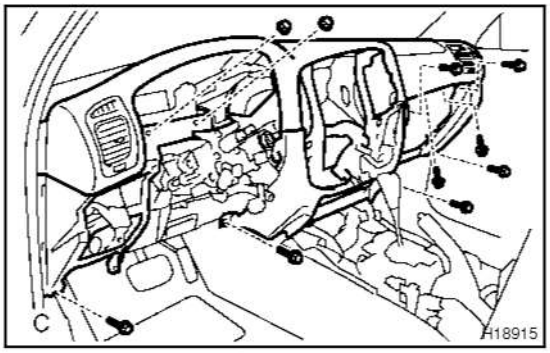


(d) w/o Cool box:
Remove the 6 bolts, the 4 screws, the rear console box and the front console box.

26. REMOVE INSTRUMENT PANEL

(a) Disconnect the junction connectors.

HINT:
The connectors can be disconnected by loosening the bolts.



(b) Disconnect the connector, then remove the 8 bolts, the 2 nuts and the instrument panel.

27. REMOVE ECU

28. REMOVE NO. 3 HEATER TO REGISTER DUCT

29. REMOVE NO. 4 HEATER TO REGISTER DUCT

30. REMOVE GLOVE COMPARTMENT DOOR DAMPER

31. REMOVE FLOOR BRACE

32. REMOVE NO. 1 BRACE

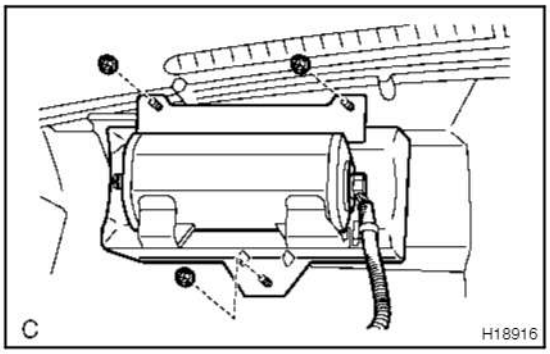
33. REMOVE REINFORCEMENT

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BO4JD-01

DISASSEMBLY

1. REMOVE NO. 2 SIDE DEFROSTER NOZZLE DUCT
2. REMOVE NO. 1 SIDE DEFROSTER NOZZLE DUCT
3. REMOVE DEFROSTER NOZZLE
4. REMOVE CENTER BRACKET
5. REMOVE NO. 1 HEATER TO REGISTER DUCT
6. REMOVE INSTRUMENT PANEL WIRE HARNESS
7. REMOVE NO. 5 HEATER TO REGISTER DUCT



8. REMOVE FRONT PASSENGER AIRBAG ASSEMBLY

Remove the 3 nuts and the front passenger airbag assembly.

Torque: 6.0 N·m (61 kgf·cm, 53 in.·lbf)

CAUTION:

- **Do not store the front passenger airbag assembly with the airbag deployment side facing down.**
- **Never disassemble the front passenger airbag assembly.**

NOTICE:

At the time of reassembly, please refer to the following items.

- **Make sure that the front passenger airbag assembly is installed with the specified torque.**
- **If the front passenger airbag assembly has been dropped, or if there are cracks, dents or other defects in the case or the connector, replace the front passenger airbag assembly with a new one.**
- **When installing the front passenger airbag assembly, take care that the wiring does not interfere with other parts and is not pinched between other parts.**

9. REMOVE NO. 1 REGISTER
10. REMOVE NO. 4 REGISTER

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BO1VW–01

REASSEMBLY

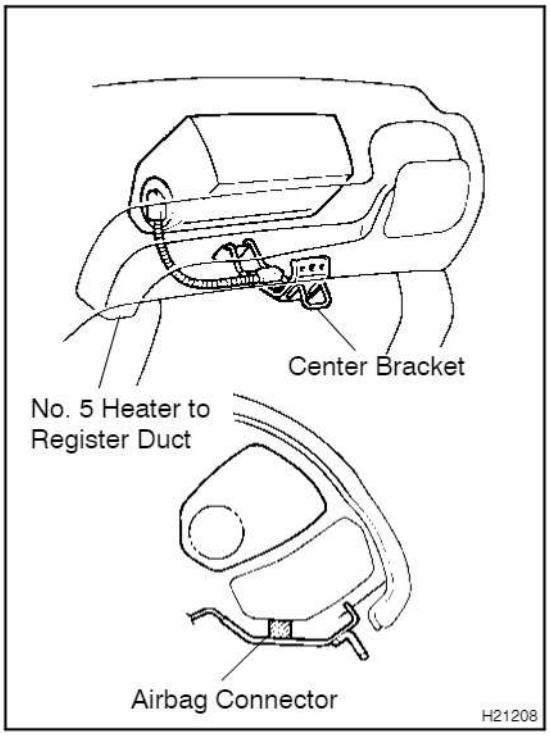
Reassembly is in the reverse order of disassembly (See page BO–84).

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BO4JE-01

INSTALLATION

1. INSTALL REINFORCEMENT
2. INSTALL NO. 1 BRACE
3. INSTALL FLOOR BRACE
4. INSTALL GLOVE COMPARTMENT DOOR DAMPER
5. INSTALL NO. 4 HEATER TO REGISTER DUCT
6. INSTALL NO. 3 HEATER TO REGISTER DUCT
7. INSTALL ECU



8. INSTALL INSTRUMENT PANEL

HINT:

- Install the airbag connector between the No. 5 heater to register duct and the center bracket temporarily, then install the instrument panel.
- Remove the airbag connector before installing the lower No. 2 panel.

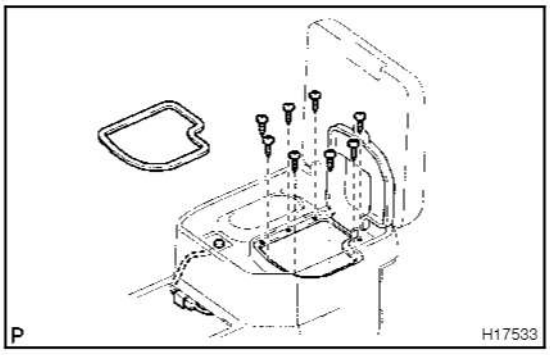
(a) Install the 6 bolts, the 2 nuts and the instrument panel, then connect the connectors.

(b) Install the 2 bolts to the front passenger airbag assembly.
Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

(c) Connect the junction connectors.

HINT:

The connectors can be connected by tightening the bolts.

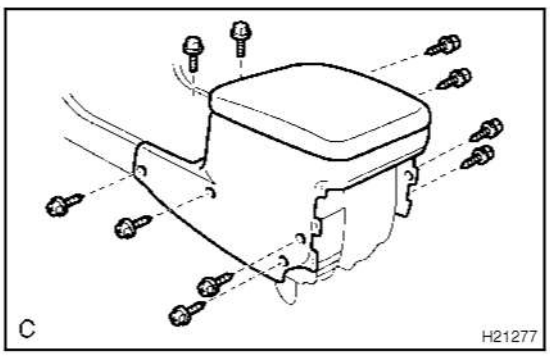


9. INSTALL FRONT CONSOLE BOX AND REAR CONSOLE BOX

(a) w/ Cool box:
Install the front console box and the rear console box with the 8 screws.

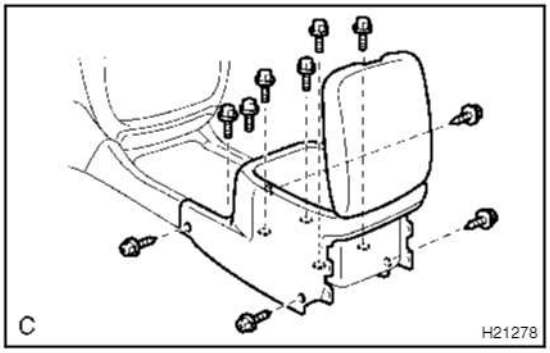
(b) w/ Cool box:
Install a new door packing.

(c) w/ Cool box:
Connect the connector.

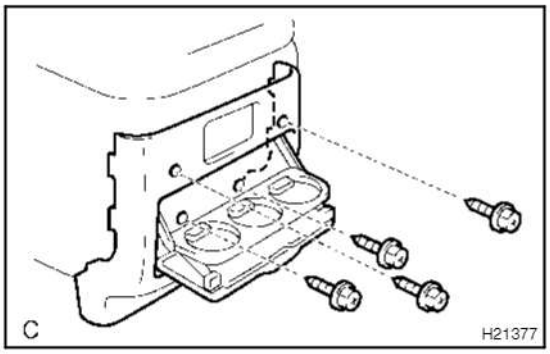


(d) w/ Cool box:
Install the 2 bolts and the 8 screws.

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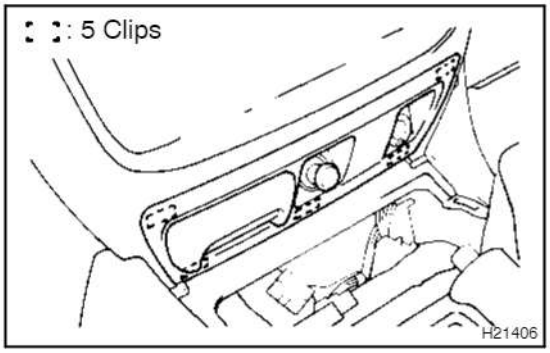


(e) w/o Cool box:
Install the front console box and the rear console box with the 6 bolts and the 4 screws.



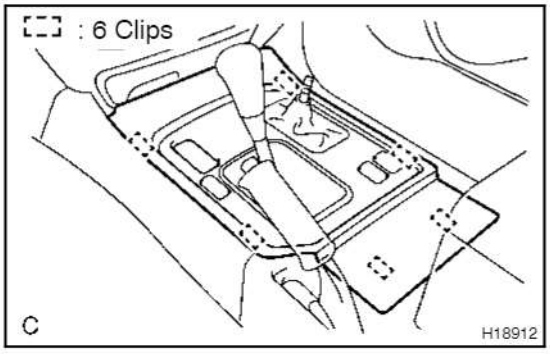
10. INSTALL CONSOLE REAR END PANEL

(a) w/ Rear Radio Control or Rear Heater Control:
Install the rear radio control or the rear heater control with the 3 screws.
(b) Install the console rear end panel with the 4 screws.
(c) w/o Rear Radio Control and Rear Heater Control:
Install the rear switch hole cover.



11. INSTALL CENTER LOWER CLUSTER FINISH PANEL

Connect the connector, then install the center lower cluster finish panel.



12. INSTALL FRONT CONSOLE PANEL

Install the front console panel, then install the transfer shift lever knob.

13. INSTALL RADIO WITH A/C CONTROL ASSEMBLY

HINT:
w/ Navigation System:
When removing/installing or replacing EMV, or when disconnecting/connecting the battery terminal, turn the IG ON and OFF twice for initial display setting.

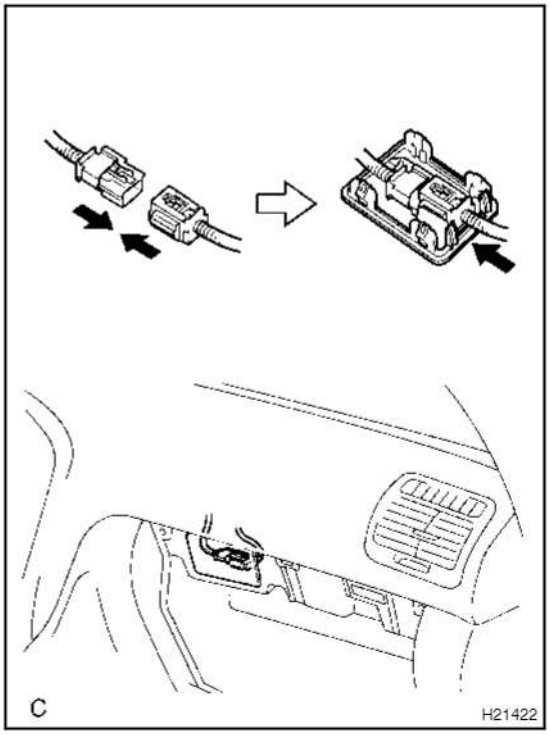
14. INSTALL CENTER REGISTER

Connect the connector, then install the center registers.

15. INSTALL LOWER NO. 2 PANEL

Install the lower No. 2 panel with the 3 screws.

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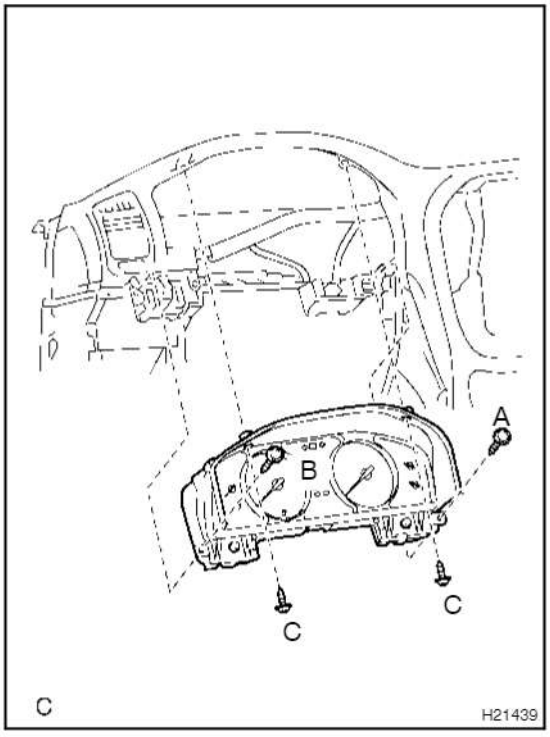


16. CONNECT AIRBAG CONNECTOR (See page RS–42)

17. INSTALL GLOVE COMPARTMENT DOOR

(a) Connect the glove compartment door damper clip, then install the glove compartment door.

(b) Install the 2 screws.



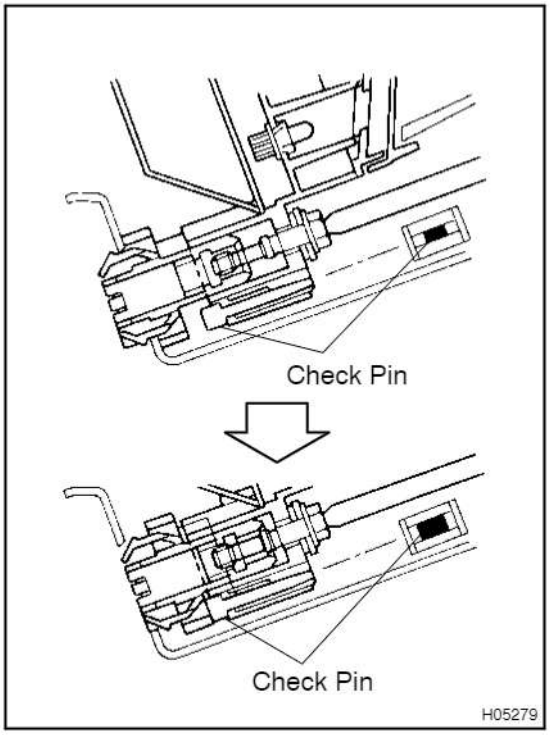
18. INSTALL COMBINATION METER

(a) Check that the set–in connectors are connected securely in the installation holes on the instrument panel.

(b) Place the combination meter on the instrument panel.

(c) Install the combination meter by tightening the screws, "A", "B" and "C" in order.

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(d) Tighten the connection bolts.

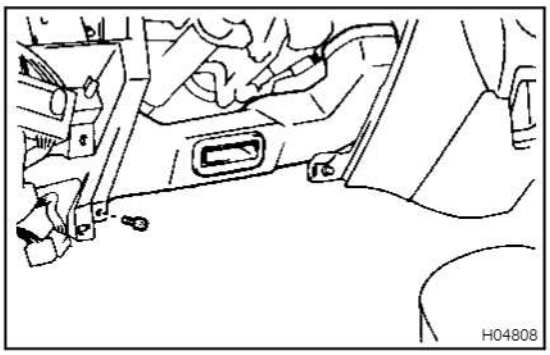
HINT:

- When connection completes, the bolts turns idly, causing turning noise.
- Check that the connection check pins protrude from the lower side of the connection bolts.

NOTICE:

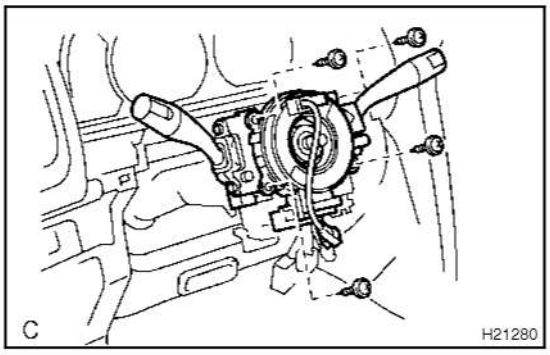
Follow the procedures in the order of (c) and (d). Otherwise, set–in connectors on the wire harness side and connectors on the meter side might not be connected properly.

19. INSTALL STEERING COLUMN (See page SR–19 or See Pub. No. RM616E, page SR–24)



20. INSTALL NO. 2 HEATER TO REGISTER DUCT

Install the No. 2 heater to register duct with the screw.



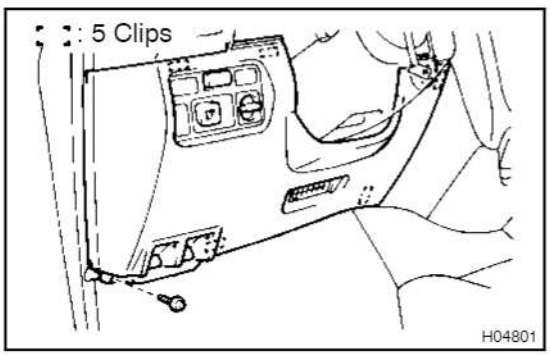
21. INSTALL COMBINATION SWITCH

(a) Install the combination switch with the 4 screws.

(b) Install the clamp, then connect the connectors.

22. INSTALL COLUMN COVERS

Install the column covers with the 3 screws.



23. INSTALL LOWER NO. 1 PANEL

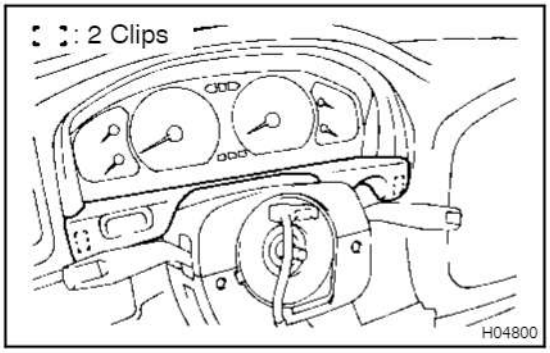
Connect the connector, then install the lower No. 1 panel with the screw.

24. INSTALL HOOD LOCK CONTROL CABLE LEVER AND FUEL LID CONTROL CABLE LEVER

(a) Install the fuel lid control cable lever with the 2 screws.

(b) Install the hood lock control cable with the 2 screws.

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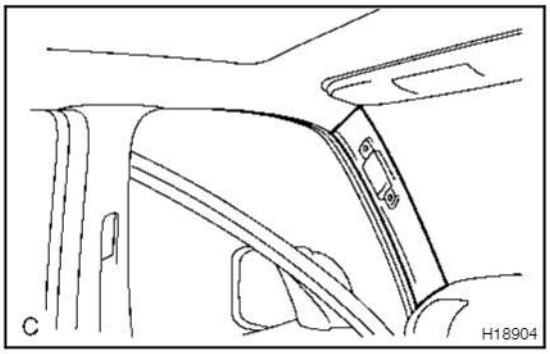


25. INSTALL CLUSTER FINISH PANEL

(a) w/ Rheostat:
Connect the connector.

(b) Install the cluster finish panel.

26. INSTALL STEERING WHEEL (See page SR-19 or See Pub. No. RM616E, page SR-24)



27. INSTALL FRONT PILLAR GARNISH

(a) Install the front pillar garnish.

(b) Use the same manner described above to the other side.

28. INSTALL FRONT ASSIST GRIP

(a) Install the assist grip with the 2 screws, then install the 2 assist grip plugs.

(b) Use the same manner described above to the other side.

29. INSTALL FRONT DOOR OPENING TRIMS

30. INSTALL COWL SIDE TRIMS

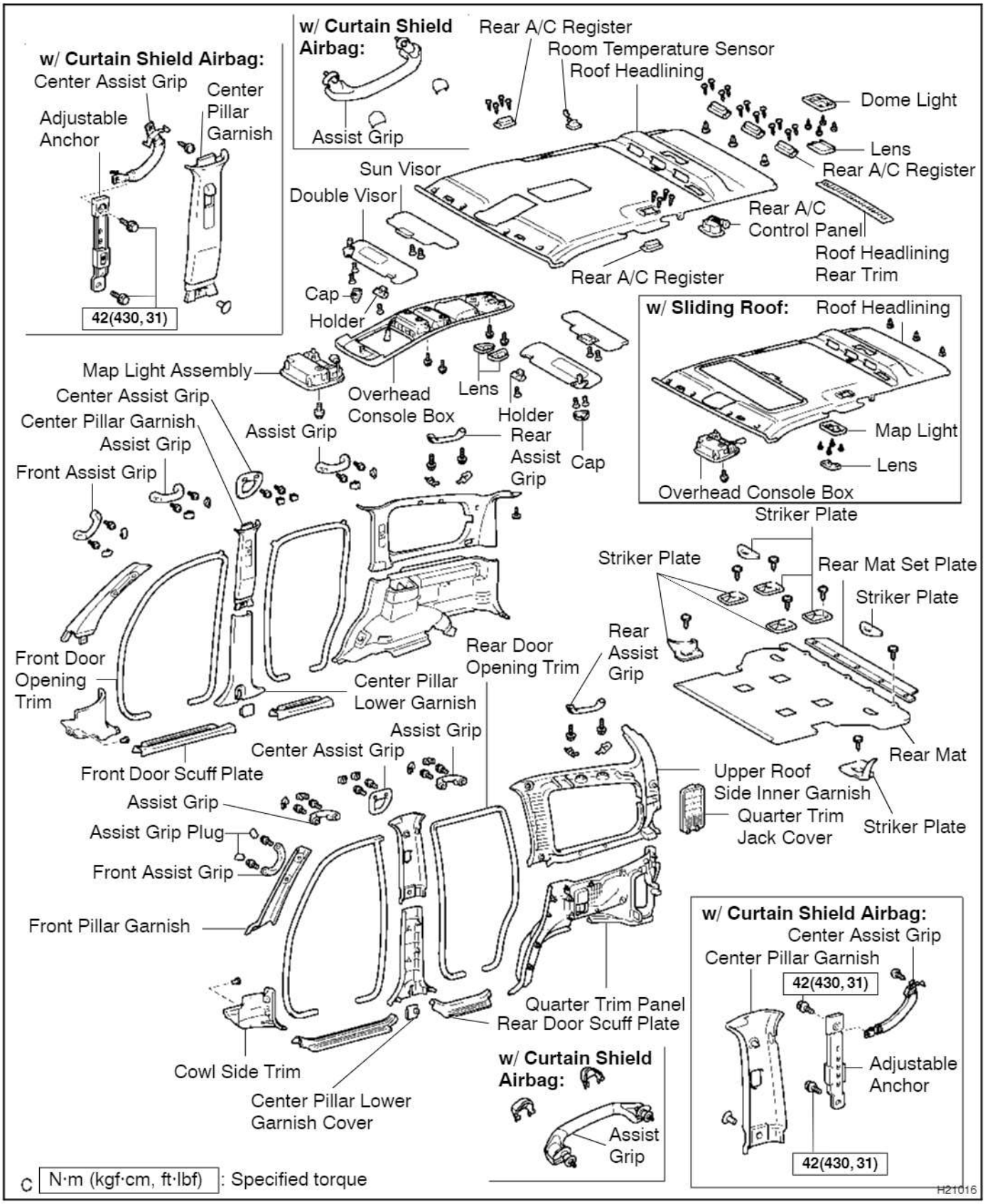
31. INSTALL FRONT DOOR SCUFF PLATES

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ROOF HEADLINING

COMPONENTS

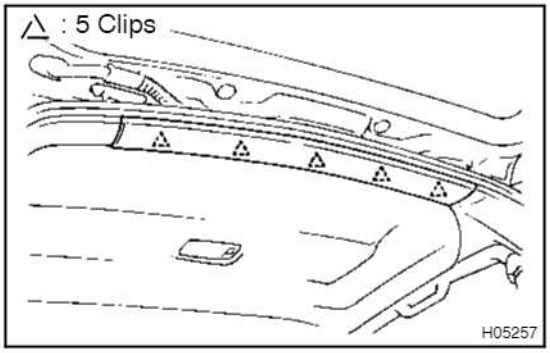
BO1VY-02



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BO4JF–01

REMOVAL



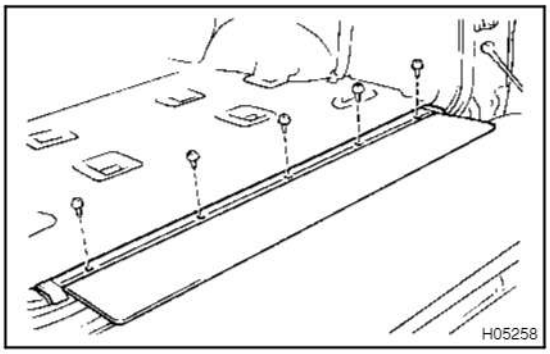
1. REMOVE ROOF HEADLINING REAR TRIM

Using a screwdriver, remove the roof headlining rear trim.

HINT:

Tape up the screwdriver tip before use.

2. w/ Rear No.2 Seat:
REMOVE REAR NO.2 SEAT



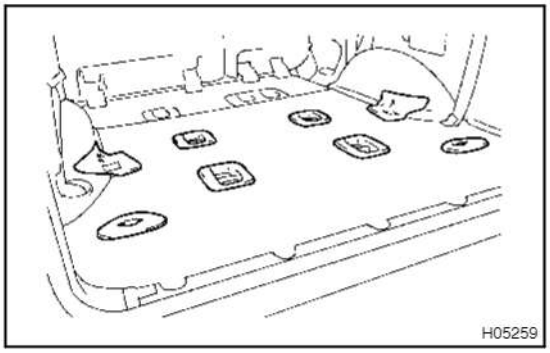
3. REMOVE REAR MAT SET PLATE

(a) Remove the 5 screws.

(b) Using a screwdriver, remove the rear mat set plate.

HINT:

Tape up the screwdriver tip before use.



4. w/ Rear No.2 Seat (Forward–Facing Type):
REMOVE STRIKER PLATE

(a) Remove the 6 screws.

(b) Using a screwdriver, remove the striker plates.

HINT:

Tape up the screwdriver tip before use.

5. w/ TONNEAU COVER:
REMOVE TONNEAU COVER

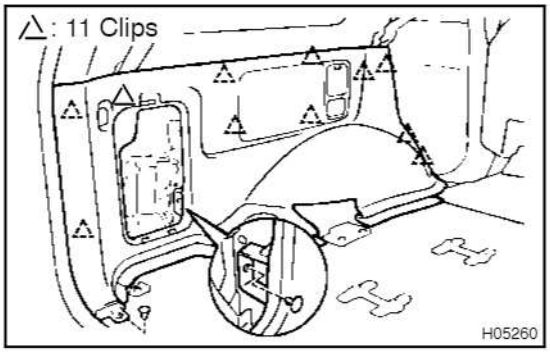
6. REMOVE REAR MAT

7. w/ Rear No.2 Seat (Forward–Facing Type):
REMOVE REAR NO. 2 SEAT OUTER BELT FLOOR ANCHOR
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

8. REMOVE REAR NO. 1 SEAT OUTER BELT FLOOR ANCHOR
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

9. REMOVE REAR DOOR SCUFF PLATE

10. REMOVE REAR DOOR OPENING TRIM



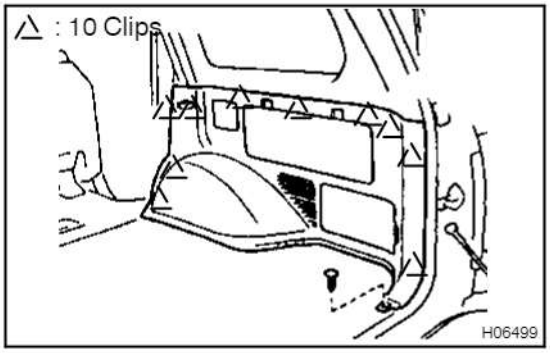
11. REMOVE LH QUARTER TRIM PANEL

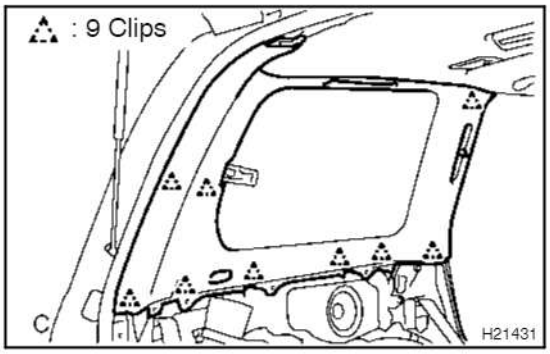
(a) Remove the quarter trim jack cover.

(b) Using a clip remover, remove the 2 clips.

(c) Remove the LH quarter trim panel, then disconnect the connector.

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12. REMOVE RH QUARTER TRIM PANEL

(a) Using a clip remover, remove the clip.

(b) Remove the RH quarter trim panel.

13. w/ Rear No.2 Seat (Forward–Facing Type): REMOVE REAR NO. 2 SEAT OUTER BELT SHOULDER ANCHOR

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

14. REMOVE REAR NO. 1 SEAT OUTER BELT SHOULDER ANCHOR

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

15. REMOVE UPPER ROOF SIDE INNER GARNISH

(a) w/ Rear No.2 Seat:

Using a screwdriver, remove the 2 assist grip plugs, then remove the 2 screws and the rear assist grips.

HINT:

Tape up the screwdriver tip before use.

(b) Using a clip remover, remove the clip.

(c) Using a screwdriver, remove the upper roof side inner garnishes.

HINT:

Tape up the screwdriver tip before use.

(d) Use the same manner described above to the other side.

16. REMOVE FRONT DOOR SCUFF PLATES

17. REMOVE COWL SIDE TRIMS

18. REMOVE FRONT DOOR OPENING TRIMS

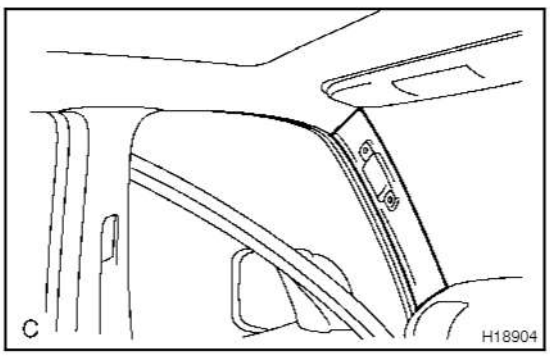
19. REMOVE FRONT ASSIST GRIP

(a) Using a screwdriver, remove the 2 assist grip plugs, then remove the 2 screws and front assist grip.

HINT:

Tape up the screwdriver tip before use.

(b) Use the same manner described above to the other side.



20. REMOVE FRONT PILLAR GARNISH

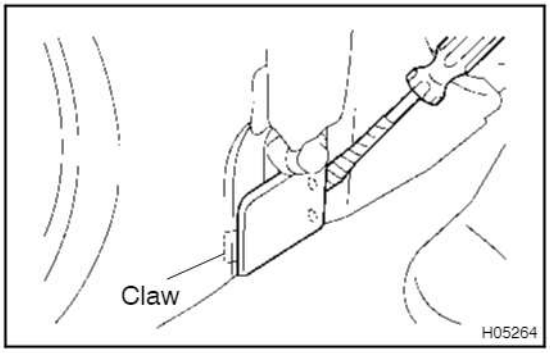
(a) Using a screwdriver, remove the front pillar garnish.

HINT:

Tape up the screwdriver tip before use.

(b) Use the same manner described above to the other side.

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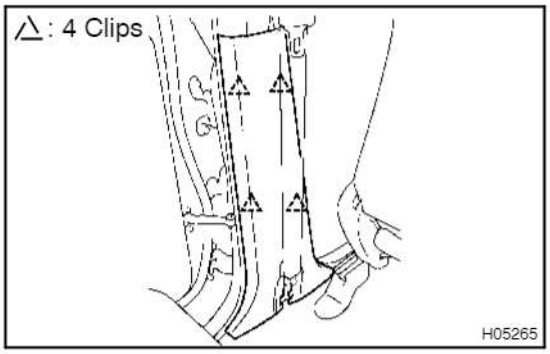


21. REMOVE CENTER PILLAR LOWER GARNISH

(a) Using a screwdriver, remove the center pillar garnish covers.

HINT:

Tape up the screwdriver tip before use.

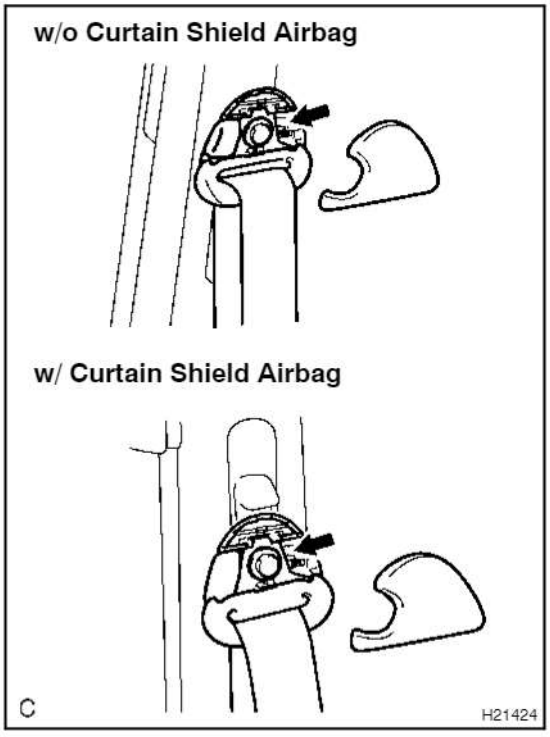


(b) Using a screwdriver, remove the center pillar lower garnish as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.

(c) Use the same manner described above to the other side.



22. REMOVE CENTER PILLAR GARNISH

(a) Using a screwdriver, remove the seat belt anchor cover cap.

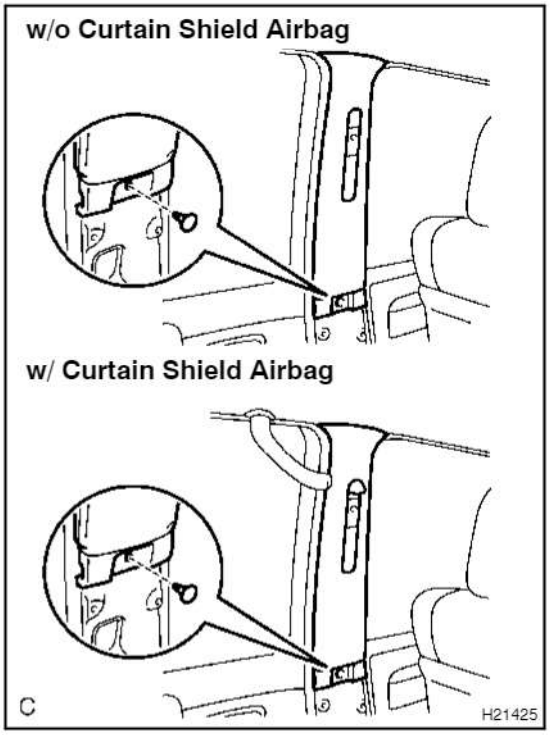
HINT:

Tape up the screwdriver tip before use.

(b) Remove the bolt and the front seat outer belt shoulder anchor.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

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(c) Using a clip remover, remove the clip.
(d) Using a screwdriver, remove the center pillar garnish.

HINT:

Tape up the screwdriver tip before use.

(e) Use the same manner described above to the other side.

23. REMOVE SUN VISOR

(a) Using a screwdriver, remove the caps.

HINT:

Tape up the screwdriver tip before use.

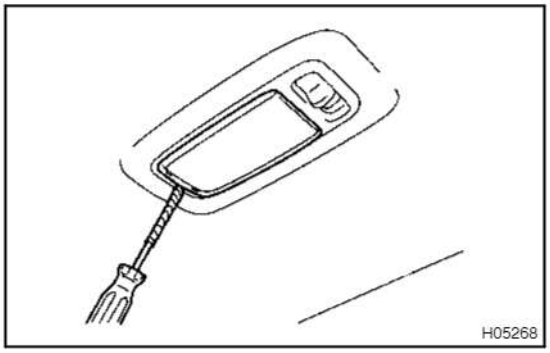
(b) Remove the screws, then disconnect the connectors.
(c) Remove the sun visors.

24. REMOVE DOUBLE VISOR

Remove the screws and the double visors.

25. REMOVE HOLDER

Remove the screws and the holders.



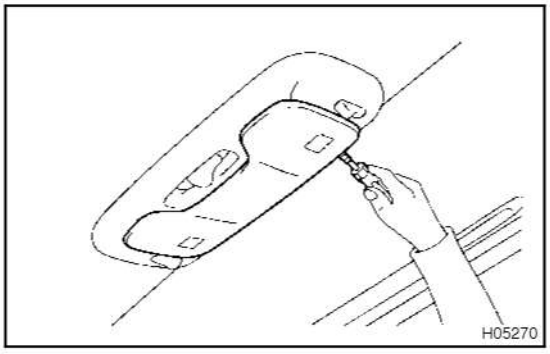
26. REMOVE DOME LIGHT

(a) Using a screwdriver, remove the lens as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the 4 screws and dome light, then disconnect the connector.



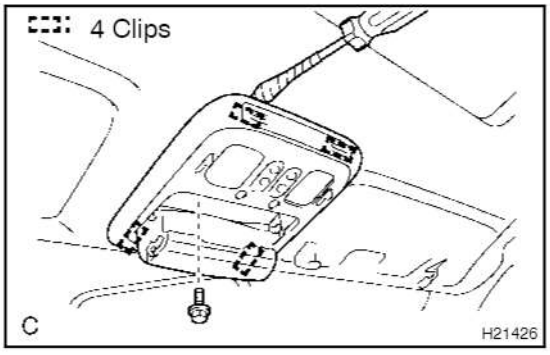
27. w/ sliding Roof:
REMOVE MAP LIGHT

(a) Using a screwdriver, remove the lens as shown in the illustration.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the 4 screws and map light, then disconnect the connector.



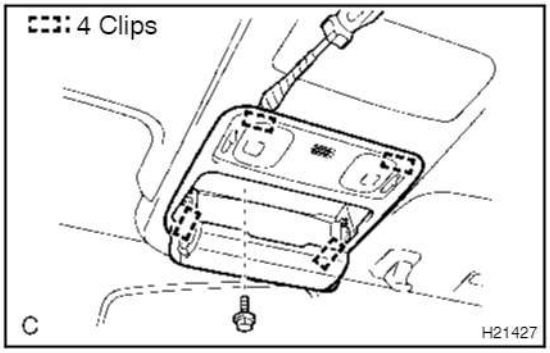
28. w/ Sliding Roof:
REMOVE OVERHEAD CONSOLE BOX

(a) Remove the bolt.
(b) Using a screwdriver, remove the overhead console box, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.

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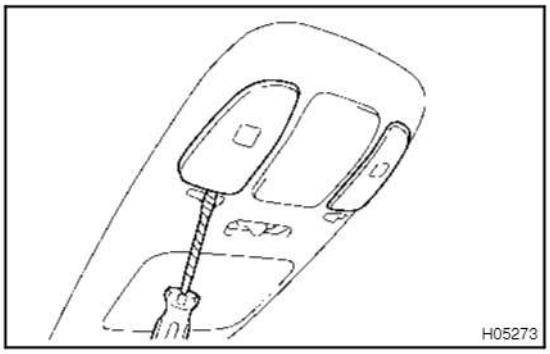
29. w/o Sliding Roof:
REMOVE OVERHEAD CONSOLE BOX

(a) Remove the bolt.

(b) Using a screwdriver, remove the map light assembly, then disconnect the connector.

HINT:

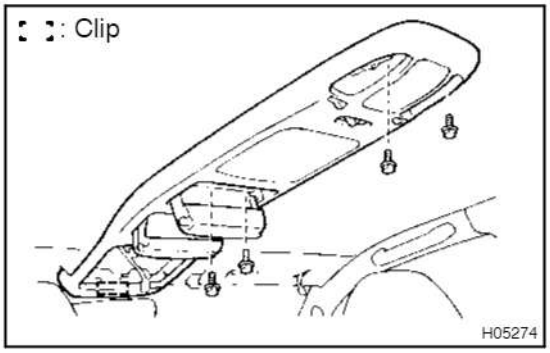
Tape up the screwdriver tip before use.



(c) Using a screwdriver, remove the 2 lenses.

HINT:

Tape up the screwdriver tip before use.



(d) Remove the 4 bolts.

(e) Using a screwdriver, remove the overhead console box, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.

30. REMOVE REAR A/C CONTROL PANEL

Using a screwdriver, release the 4 claws and pull out the rear A/C control panel, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.

31. REMOVE ROOM TEMPERATURE SENSOR

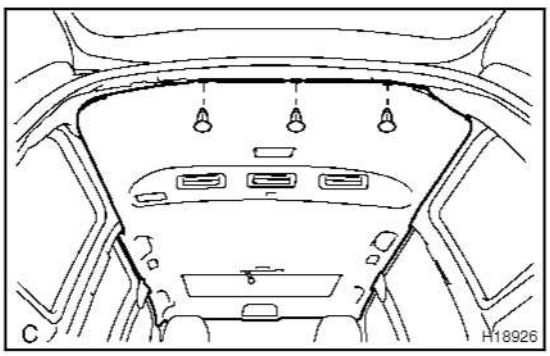
Using a scrwedriver, pull out the room temperature sensor, then disconnect the connector.

HINT:

Tape up the screwdriver tip before use.

32. REMOVE ASSIST GRIPS

33. w/o Curtain Shield Airbag:
REMOVE CENTER ASSIST GRIPS



34. REMOVE ROOF HEADLINING

Using a clip remover, remove the 3 clips and the roof headlining.

35. REMOVE REAR A/C REGISTER

36. w/ Curtain Shield Airbag:
REMOVE ADJUSTABLE ANCHOR

Remove the 2 bolts and the adjustable anchor.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

37. w/ Curtain Shield Airbag:
REMOVE CENTER ASSIST GRIPS

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BO1W0-01

INSTALLATION

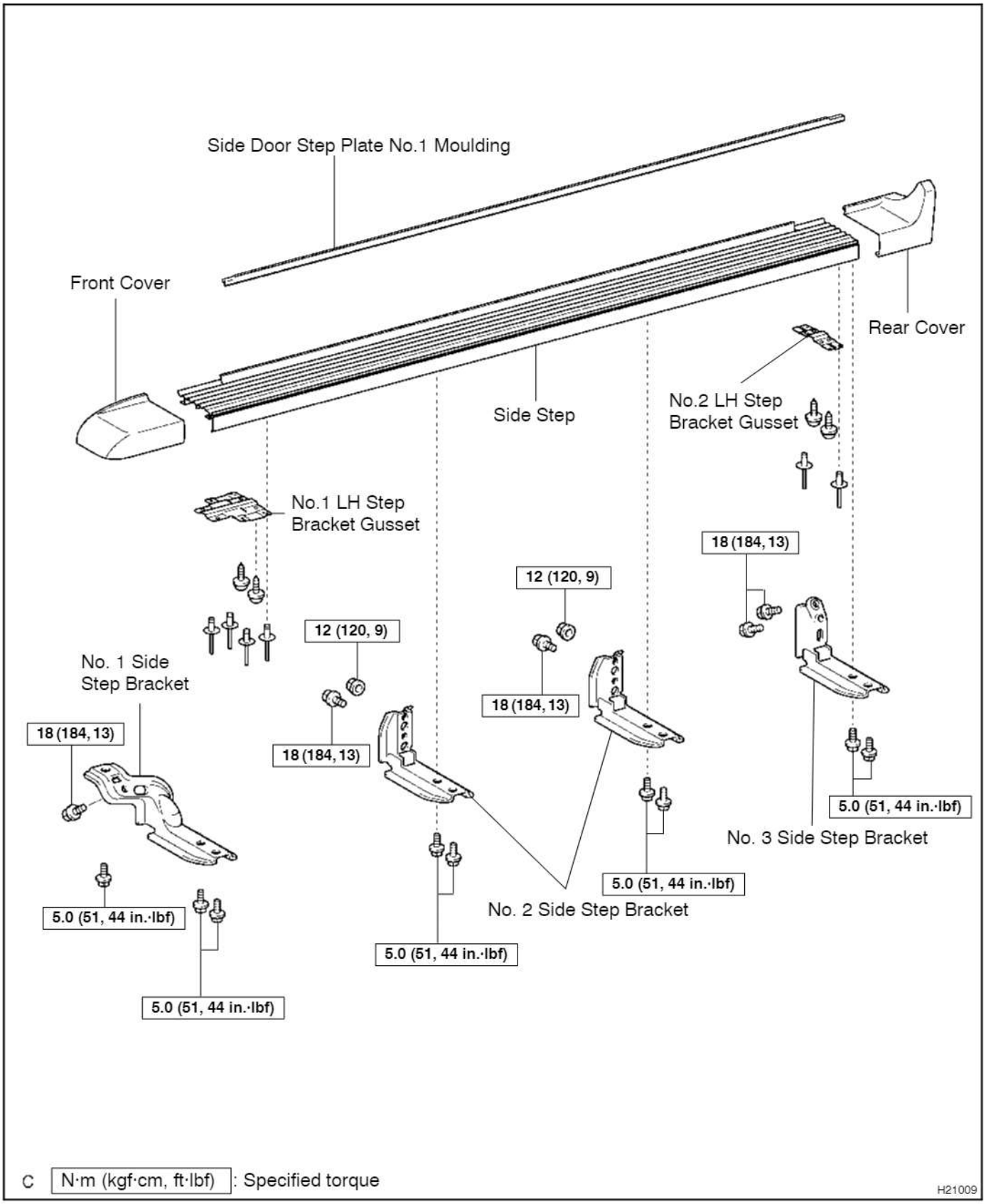
Installation is in the reverse order of removal (See page BO–92).

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SIDE STEP

COMPONENTS

BO1W1-02

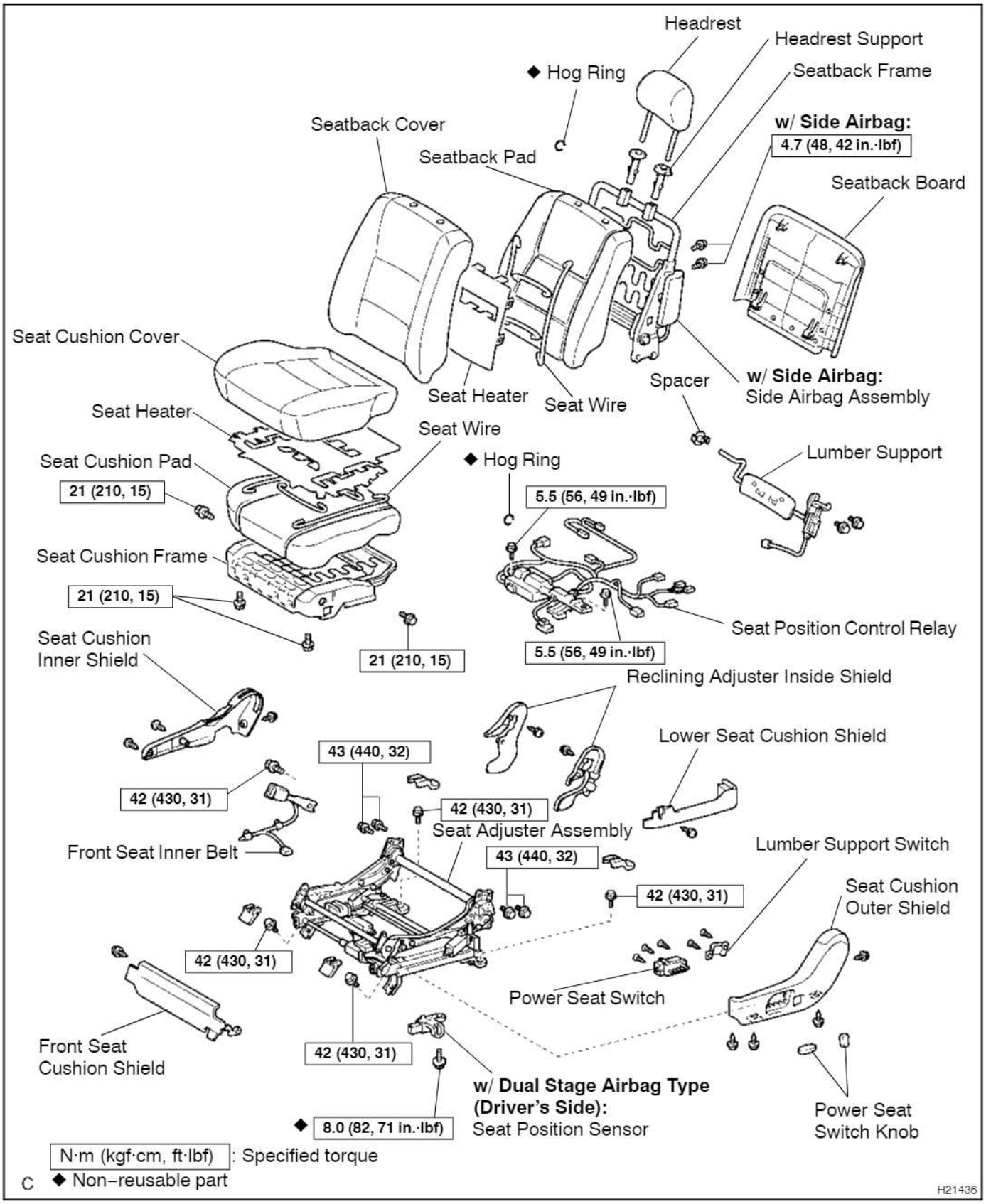


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FRONT SEAT (Separate Type: Power Adjuster)

COMPONENTS

BO1W2-02



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BO1W3–02

REMOVAL

1. REMOVE SEAT TRACK OUTER COVERS

Using a screwdriver, remove the 4 seat track outer covers.

HINT:

Tape up the screwdriver tip before use.

2. REMOVE FRONT SEAT

(a) Remove the 4 bolts.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

(b) Disconnect the connectors, then remove the front seat.

NOTICE:

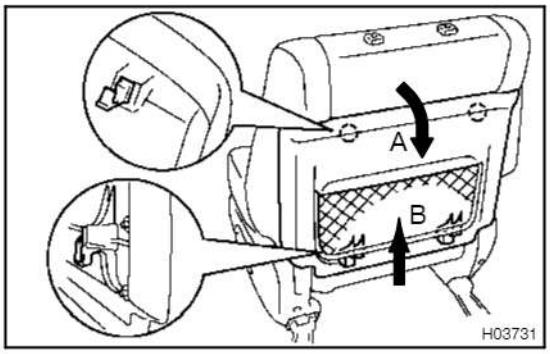
- **When handling the airbag connector, take care not to damage the airbag wire harness.**
- **Be careful not to damage the body.**

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BO4JG–01

DISASSEMBLY

1. REMOVE HEADREST



2. REMOVE SEATBACK BOARD

Remove the seatback board as shown in the illustration.

HINT:

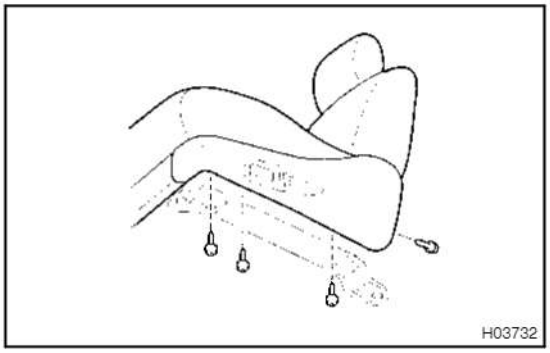
Remove the seatback board in the order of "A" and "B" as shown in the illustration.

3. REMOVE SEAT CUSHION OUTER SHIELD

(a) Using a screwdriver, remove the power seat switch knobs.

HINT:

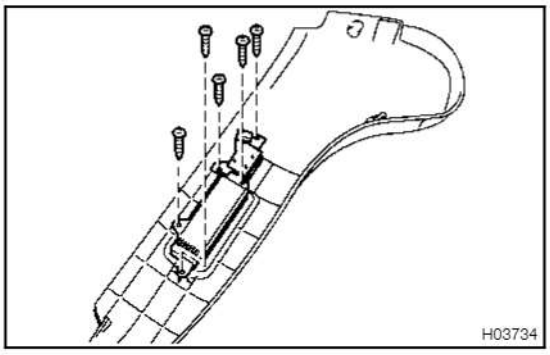
Tape up the screwdriver tip before use.



(b) Remove the 4 screws.

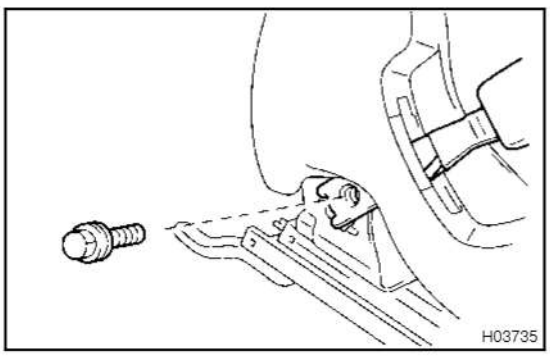
(c) Disconnect the connectors.

(d) Remove the seat cushion outer shield.



(e) Remove the 3 screws and the power seat switch from the seat cushion outer shield.

(f) Remove the 2 screws and lumber support switch from the seat cushion outer shield.

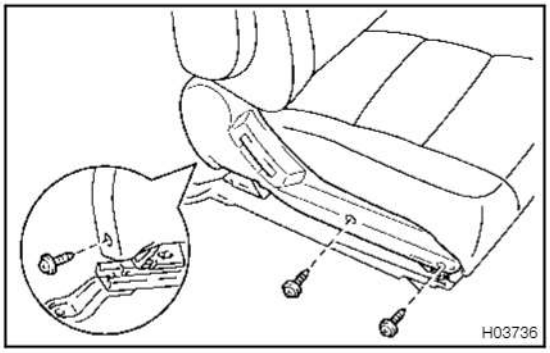


4. REMOVE FRONT SEAT INNER BELT

(a) Remove the clamp, then disconnect the connector.

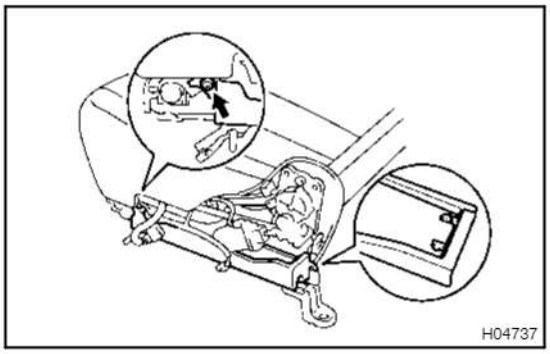
(b) Remove the bolt and the inner belt.

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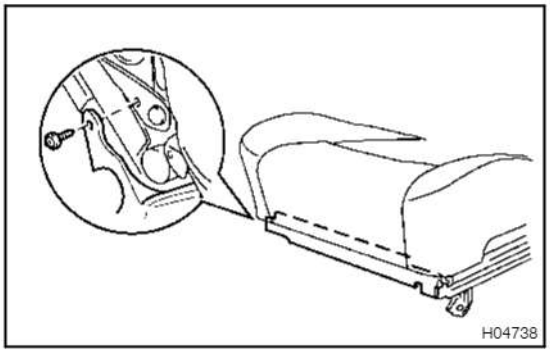
5. REMOVE SEAT CUSHION INNER SHIELD

Remove the 3 screws and the seat cushion inner shield.



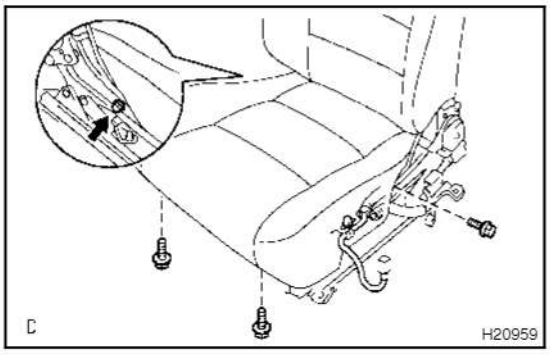
6. REMOVE LOWER SEAT CUSHION SHIELD

Remove the screw and the lower seat cushion shield as shown in the illustration.



7. REMOVE FRONT SEAT CUSHION SHIELD

Remove the screw and the front seat cushion shield.



8. REMOVE SEAT CUSHION ASSEMBLY

(a) Remove the 4 bolts.

(b) Remove the clamps from the seat cushion assembly.

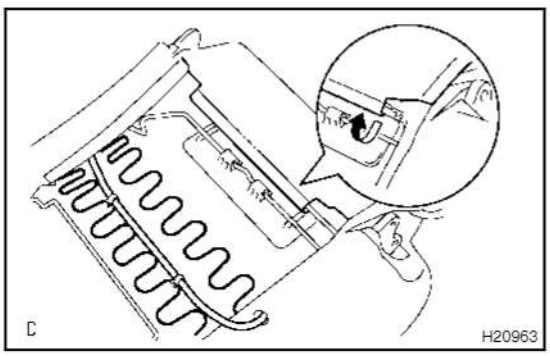
9. REMOVE SEAT CUSHION FRAME

(a) Disengage the hook.

(b) Remove the hog rings and the seat cushion frame from the seat cushion cover with pad.

10. REMOVE SEAT CUSHION COVER (See page BO–105)

11. IF NECESSARY, REPLACE SEAT CUSHION HEATER (See page BO–105)



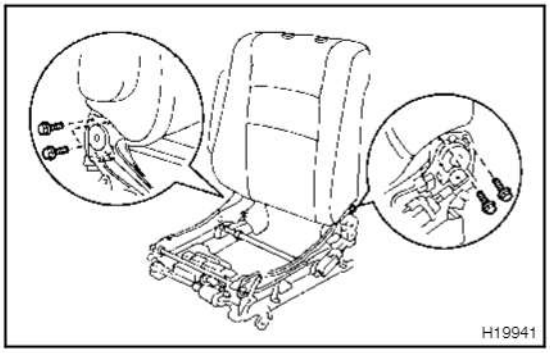
12. REMOVE SEATBACK ASSEMBLY

(a) Remove the hog lings.

(b) Disengage the hook as shown in the illustration.

(c) Disconnect the connectors.

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(d) Remove the 4 bolts and the seatback assembly.

NOTICE:

When handling the airbag connector take care not to damage the airbag wire harness.

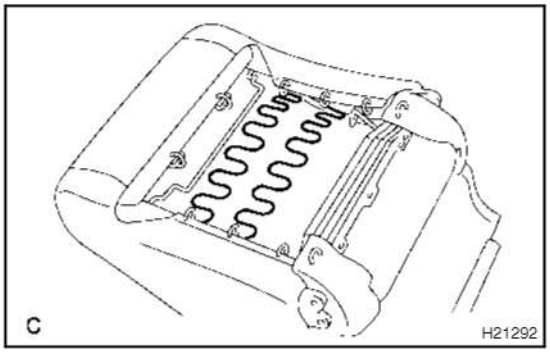
(e) Remove the screw and the RH reclining adjuster inside shield.

(f) w/ Side Airbag:
Disconnect the side airbag connector.

NOTICE:

When handling the airbag connector take care not to damage the airbag wire harness.

(g) Remove the screw and the LH reclining adjuster inside shield.

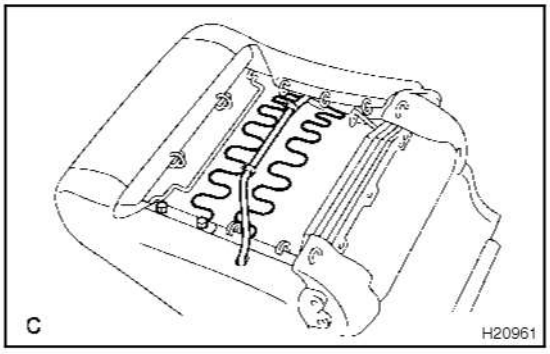


13. w/o Side Airbag:
REMOVE SEATBACK FRAME

(a) Remove the hog rings.

(b) Remove the 2 headrest supports.

(c) Remove the seatback frame from the seatback cover with pad.

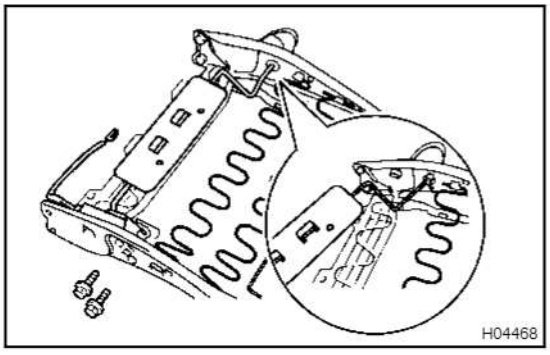


14. w/ Side Airbag:
REMOVE SEATBACK FRAME

(a) Remove the hog rings, the clamps and the 2 bolts.

(b) Remove the 2 headrest supports.

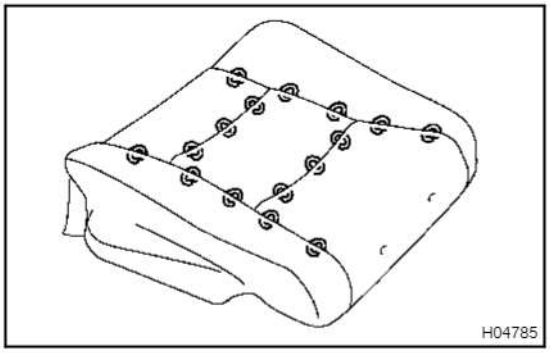
(c) Remove the seatback frame from the seatback cover with pad.



15. REMOVE LUMBER SUPPORT

Remove the 2 bolts, the lumber support and the spacer.

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16. REMOVE SEATBACK COVER

Remove the hog rings and the seatback cover from the seatback pad.

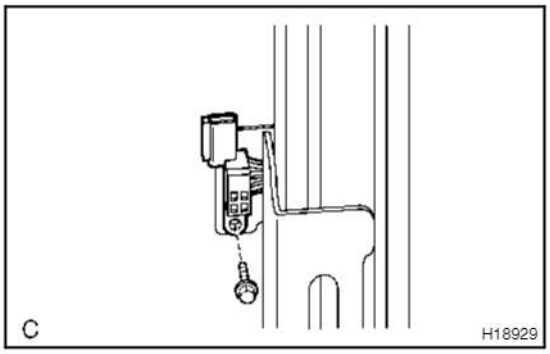
17. IF NECESSARY, REPLACE SEATBACK HEATER

(See page BO–105)

18. REMOVE SEAT POSITION CONTROL RELAY

(a) Disconnect the connectors.

(b) Remove the 2 bolts and the seat position control relay.



19. w/ Dual Stage Airbag Type (Driver's Side): REMOVE SEAT POSITION SENSOR

Remove the bolt and the seat position sensor, then disconnect the connector.

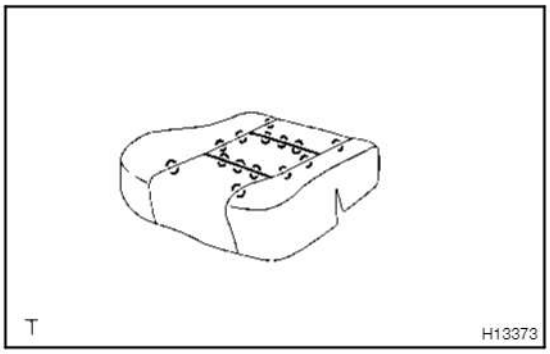
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BO4JH–01

REPLACEMENT

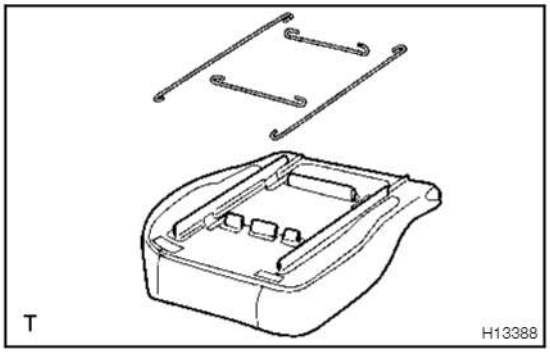
HINT:

- Following is the seat heater replacement procedure.
- Care should be taken during operation to protect the seat cover from scratches, dirt or accidental cut of thread.

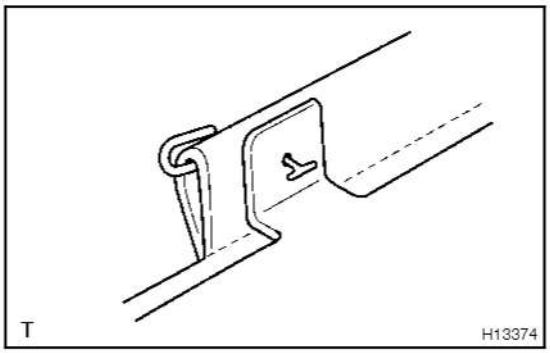


1. Seat cushion cover:
REMOVE SEAT HEATER

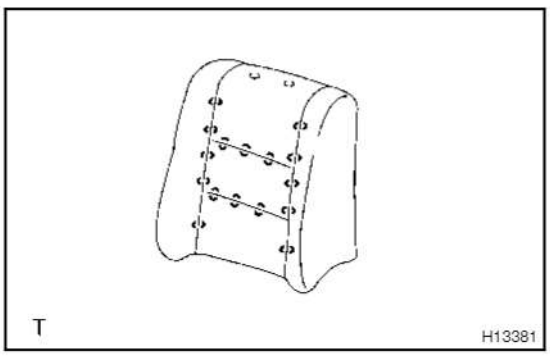
(a) Remove the hog rings.
(b) Remove the seat cushion cover from the pad.
(c) Turn the seat cushion cover inside out.



(d) Disconnect the seat wires.



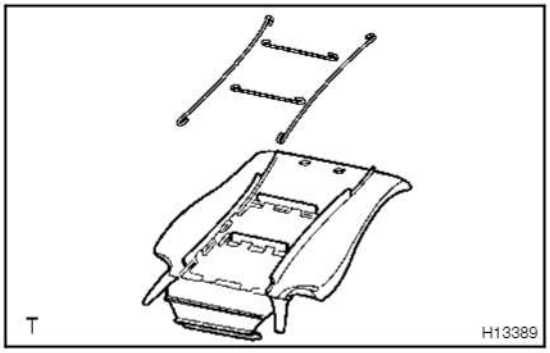
(e) Remove the tack pins which are fastened to the heater.
(f) Remove the seat heater from the seat cushion cover.



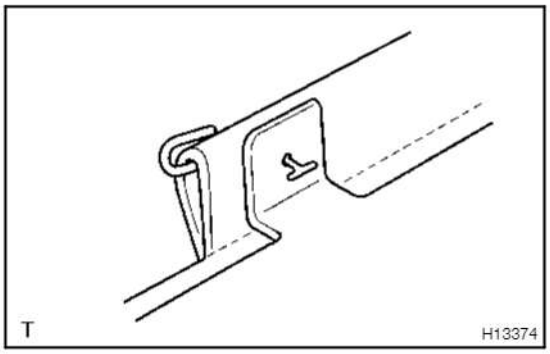
2. Seatback cover:
REMOVE SEAT HEATER

(a) Remove the hog rings and the wires.
(b) Remove the seatback cover from the pad.
(c) Turn the seatback cover inside out.

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(d) Disconnect the seat wires.



(e) Remove the tack pins which are fastened to the seat heater.

(f) Remove the seat heater from the seatback cover.

3. INSTALL SEAT HEATER TO SEAT COVER

Using a tacker, install a new seat heater to the seat cushion cover with tack pins.

Tacker: BANZAI 303XT or equivalent

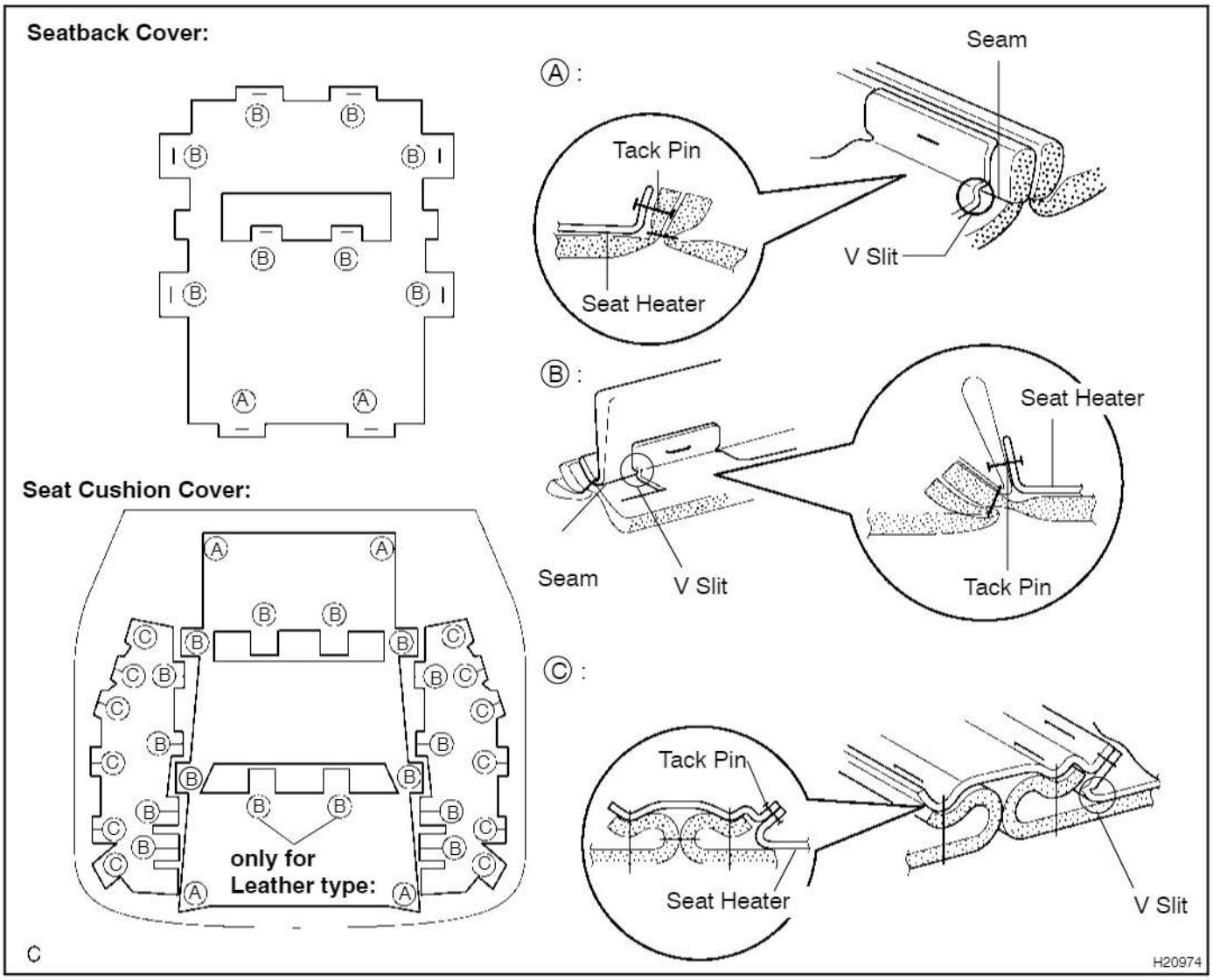
NOTICE:

Do not substitute other metal parts for the of tack pins. Insufficient distance between the heater and the cover may result in damage to the heater.

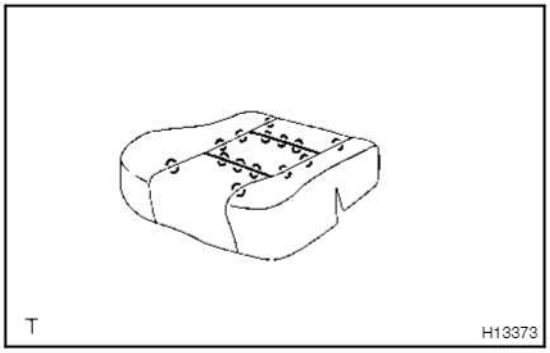
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HINT:

- Illustration "A" and "B":
  Fasten the cover and the heater with the tack pins matching the seam with the V slit of the heater.
- Illustration "C":
  Fasten the out–stretch cloth pad and the heater with the tack pins matching the edge of the cloth pad with the V slit of the heater.
- Sewing thread can be substituted for the tack pins. However, allow a distance of 6 – 7 mm (0.24 – 0.28 in.) between both sewed parts of the heater and the cover.

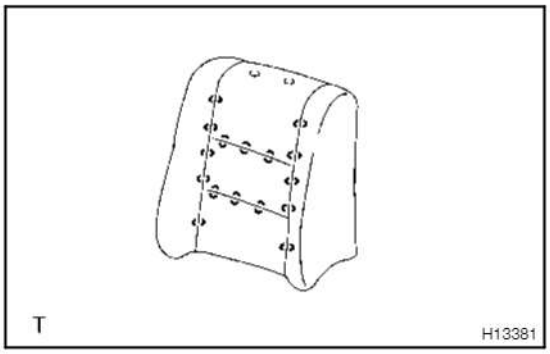


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4. INSTALL SEAT CUSHION COVER TO SEAT CUSHION PAD

(a) Thread the wires through the listing pocket.
(b) Install the seat cushion cover with new hog rings.
(c) Turn the seat cushion cover inside out to put it back to its original position.

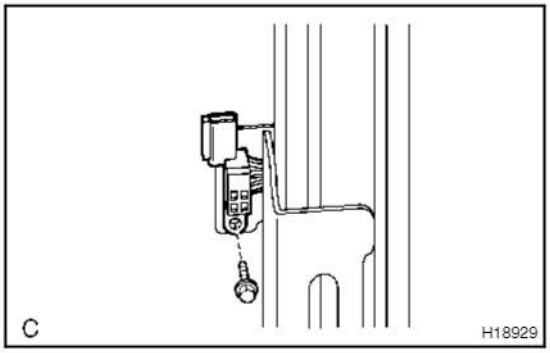


5. INSTALL SEATBACK COVER TO PAD

(a) Thread the wires though the listing pocket.
(b) Turn the seatback cover inside out to put it back to its original position.
(c) Install the seatback cover to pad with new hog rings.

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BO4JI-01



REASSEMBLY

1. w/ Dual Stage Airbag Type (Driver's Side): INSTALL SEAT POSITION SENSOR

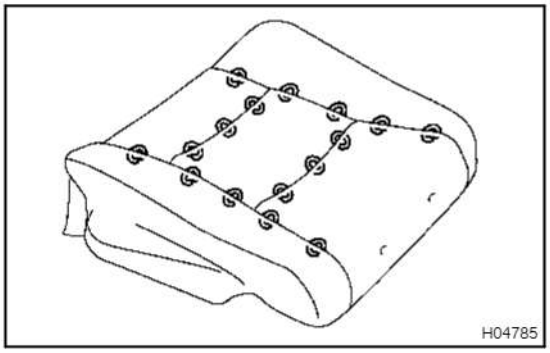
Install the seat position sensor with a new bolt, then connect the connector.

Part No.:
Bolt: 90119–06871
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

2. INSTALL SEAT POSITION CONTROL RELAY

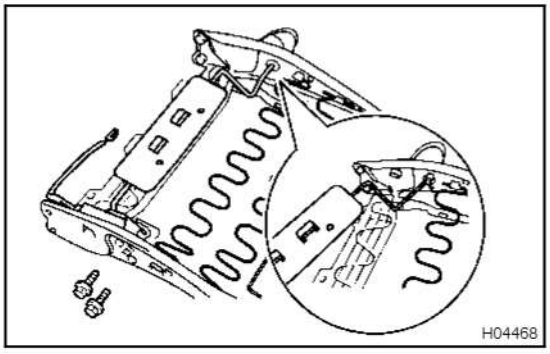
Install the seat position control relay with the 2 bolts, then connect the connectors.

Torque: 5.5 N·m (56 kgf·cm, 49 in.·lbf)



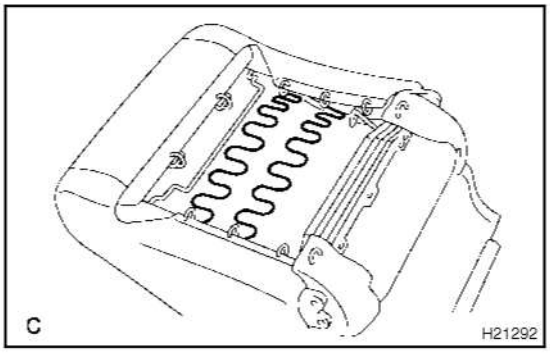
3. INSTALL SEATBACK COVER

Install the seatback cover to the seatback pad with new hog rings.



4. INSTALL LUMBER SUPPORT

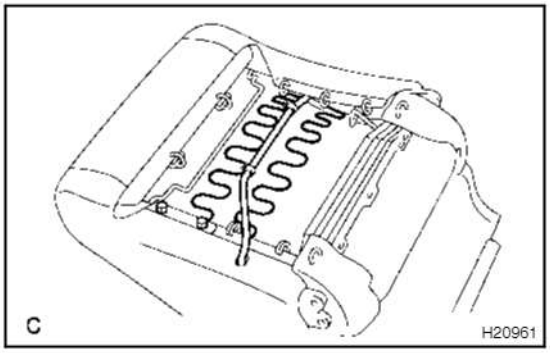
Install the lumber support and the spacer with the 2 bolts.



5. w/o Side Airbag: INSTALL SEATBACK FRAME

(a) Install the seatback cover to the seatback frame.
(b) Install new hog rings.
(c) Install the 2 headrest supports.

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6. w/ Side Airbag:
INSTALL SEATBACK FRAME

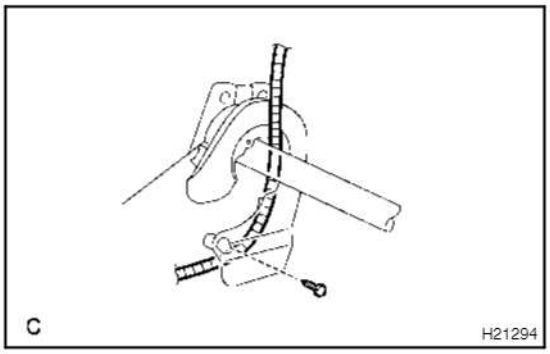
(a) Install the seatback cover to the seatback frame.

(b) Install new hog rings, the clamps and the 2 bolts.
Torque: 4.7 N·m (48 kgf·cm, 42 in.·lbf)

(c) Install the 2 headrest supports.

7. INSTALL SEATBACK ASSEMBLY

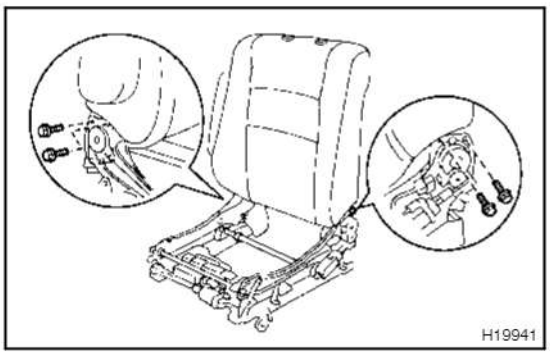
(a) w/o Side Airbag:
Install the RH reclining adjuster inside shield with a screw.



(b) w/ Side Airbag:
Place the airbag connector along the inner seat adjuster, and then install the RH reclining adjuster inside shield with a screw so that the connector is placed in between.

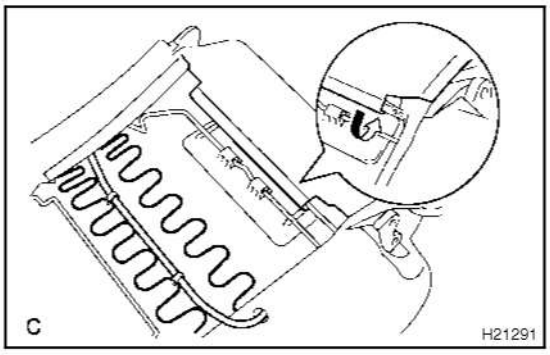
NOTICE:
When handling the airbag connector, take care not to damage the airbag wire harness.

(c) Install the LH reclining adjuster inside shield with a screw.



(d) Install the seatback assembly with the 4 bolts.
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

(e) Install new hog rings.



(f) Hang the hook.

(g) Connect the connectors.

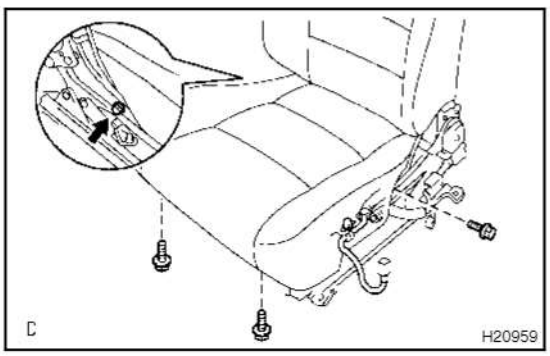
8. INSTALL HEADREST

9. INSTALL SEAT CUSHION COVER (See page BO–105)

10. INSTALL SEAT CUSHION FRAME

(a) Install the seat cushion frame with new hog rings to the seat cushion cover with pad.

(b) Hang the hook.

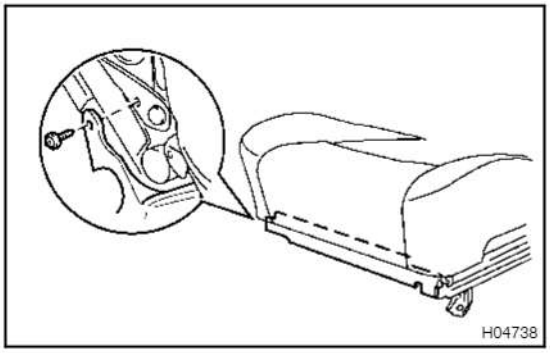


11. INSTALL SEAT CUSHION ASSEMBLY

(a) Install the seat cushion assembly with the 4 bolts to the seat adjuster.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

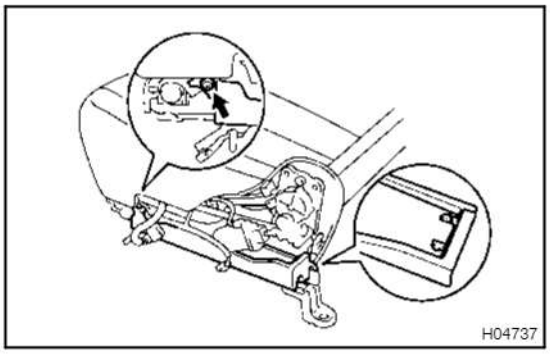
(b) Engage the wire harness clamp.

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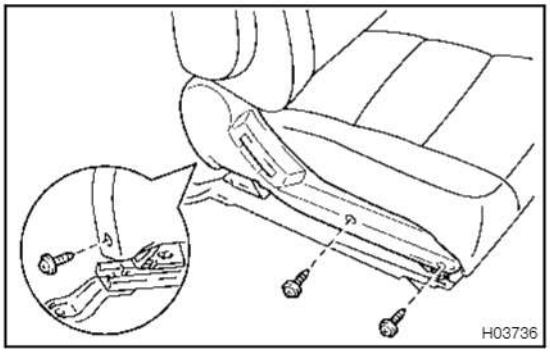
12. INSTALL FRONT SEAT CUSHION SHIELD

Install the seat cushion shield with the screw.



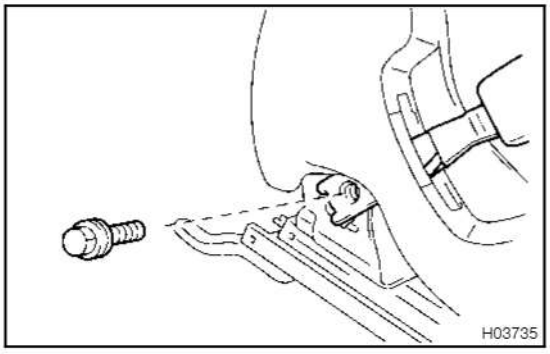
13. INSTALL LOWER SEAT CUSHION SHIELD

Install the seat cushion shield with the screw.



14. INSTALL SEAT CUSHION INNER SHIELD

Install the seat cushion inner shield with the 3 screws.



15. INSTALL FRONT SEAT INNER BELT

(a) Engage the clamp, then connect the connector.

(b) Install the inner belt with the bolt.

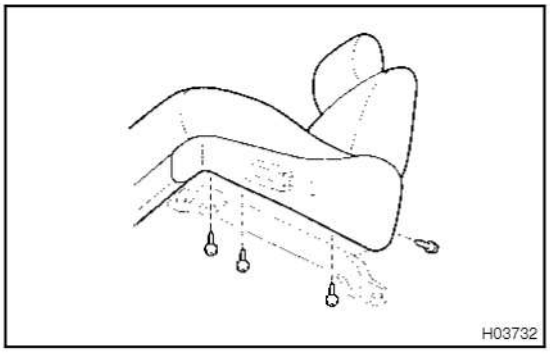
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

16. INSTALL SEAT CUSHION OUTER SHIELD

(a) Install the power seat switch with the 3 screws.

(b) Install the lumber support switch with the 2 screws.

(c) Connect the connectors.



(d) Install the seat cushion outer shield with the 4 screws.

(e) Install the power seat switch knobs.

17. INSTALL SEATBACK BOARD

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BO1W8–01

INSTALLATION

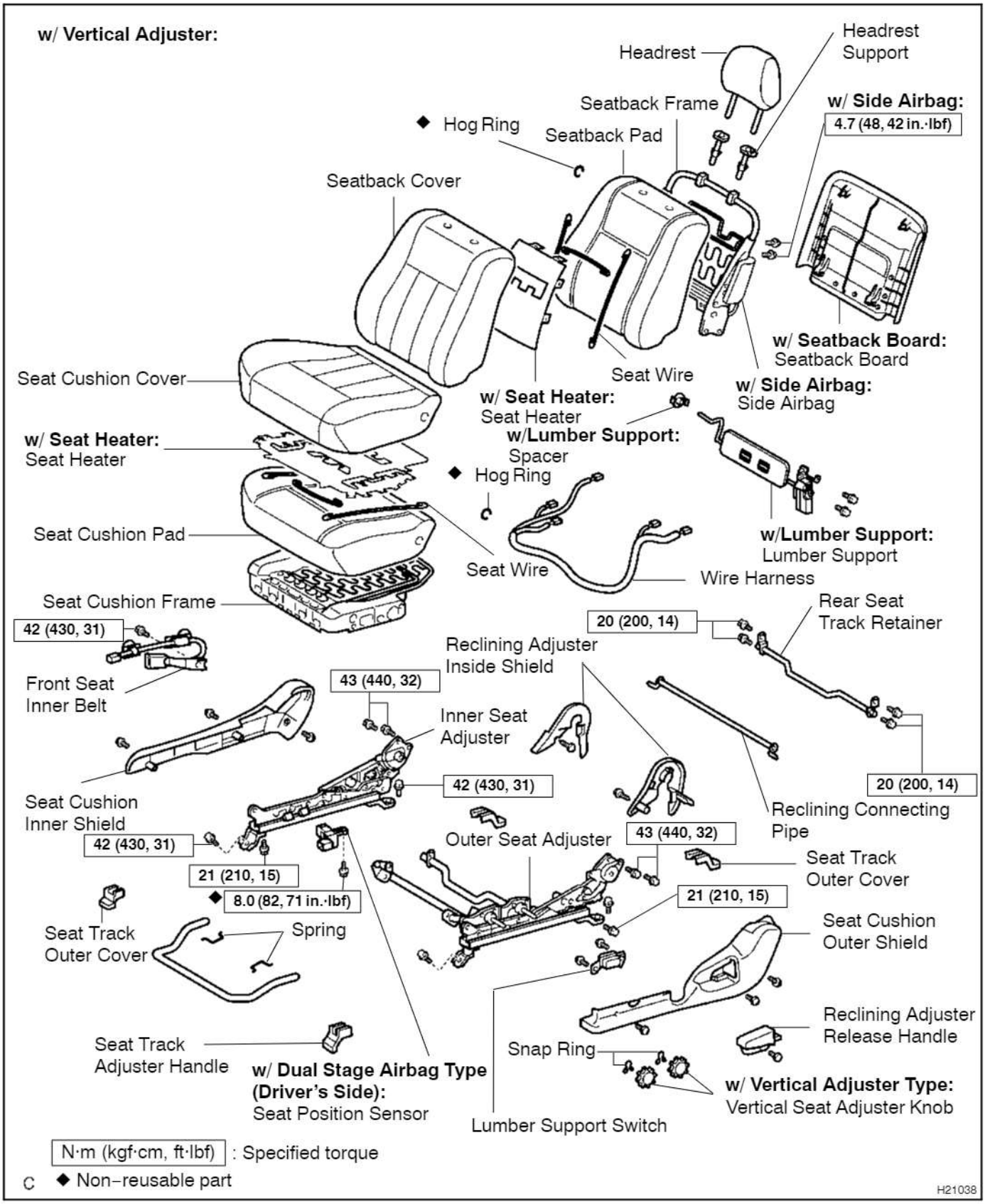
Installation is in the reverse order of removal (See page BO–100).

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FRONT SEAT (Separate Type: Manual Adjuster)

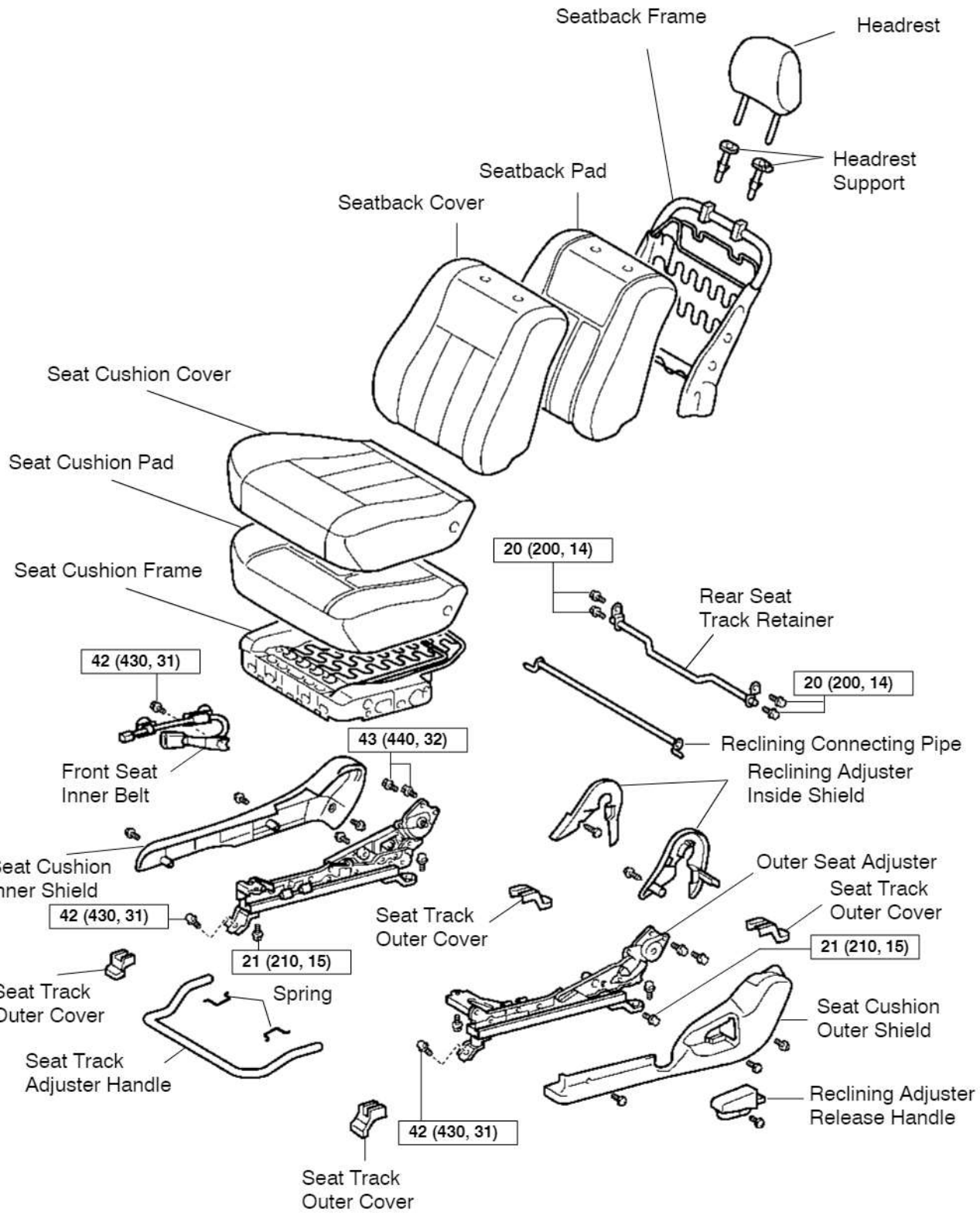
COMPONENTS

BO1W7–02



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w/o Vertical Adjuster:



C

N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non–reusable part

H21437

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BO1W8-02

REMOVAL

1. REMOVE SEAT TRACK OUTER COVER

Using a screwdriver, remove the 4 seat track outer covers.

HINT:

Tape up the screwdriver tip before use.

2. REMOVE FRONT SEAT

(a) Remove the 4 bolts.

(b) Disconnect the connectors, then remove the front seat.

NOTICE:

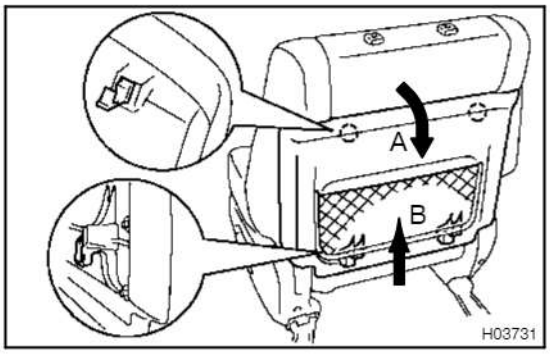
- **When handling the airbag connector, take care not to damage the airbag wire harness.**
- **Be careful not to damage the body.**

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BO4JJ–01

DISASSEMBLY

1. REMOVE HEADREST



2. w/ Seatback board:
REMOVE SEATBACK BOARD

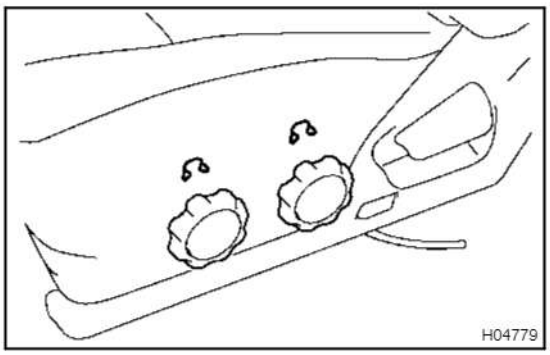
Remove the seatback board as shown in the illustration.

HINT:

Remove the seatback board in order "A" and "B" as shown in the illustration.

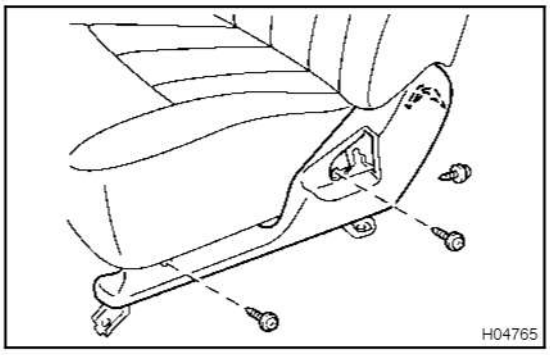
3. REMOVE RECLINING ADJUSTER RELEASE HANDLE

Remove the screw and the reclining adjuster release handle.



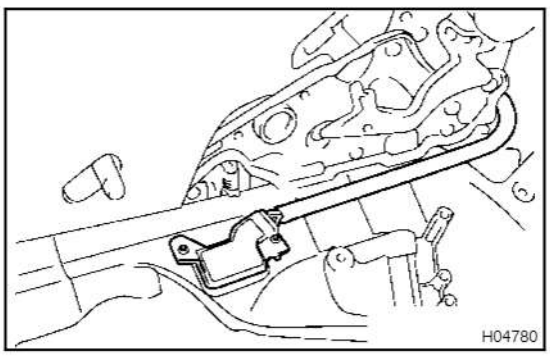
4. Vertical adjuster type:
REMOVE VERTICAL SEAT ADJUSTER KNOB

(a) Remove the snap rings.
(b) Remove the vertical seat adjuster knobs.



5. w/o Lumber support:
REMOVE SEAT CUSHION OUTER SHIELD

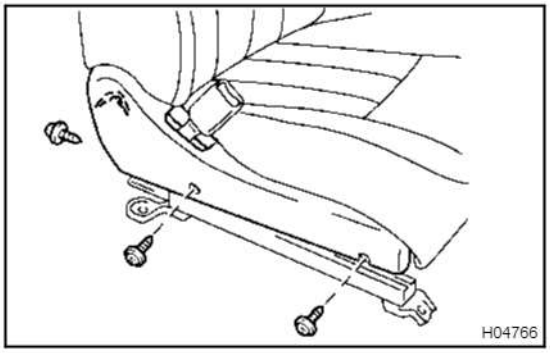
(a) Remove the 3 screws.
(b) Remove the seat cushion outer shield as shown in the illustration.



6. w/ Lumber support:
REMOVE SEAT CUSHION OUTER SHIELD

(a) Remove the 3 screws.
(b) Disconnect the connector as shown in the illustration.
(c) Remove the seat cushion outer shield.
(d) Remove the 2 screws and the lumber support switch.

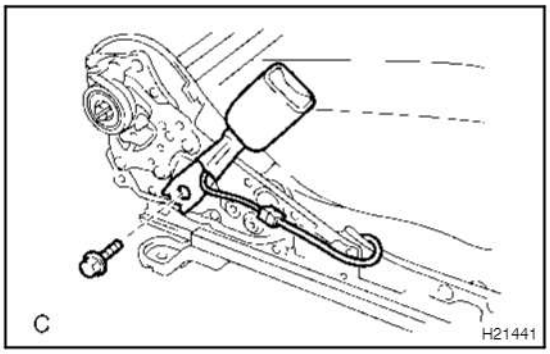
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7. REMOVE SEAT CUSHION INNER SHIELD

(a) Remove the 3 screws.

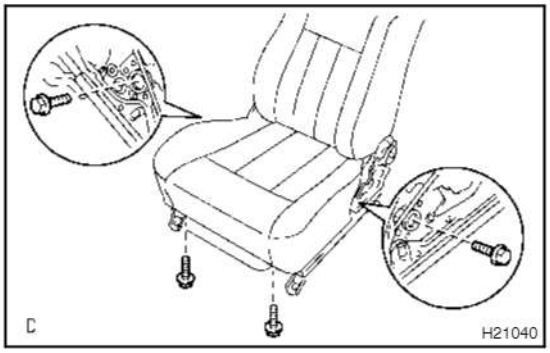
(b) Remove the seat cushion inner shield as shown in the illustration.



8. REMOVE FRONT SEAT INNER BELT

(a) Disconnect the connector, then remove the clamp.

(b) Remove the bolt, wave washer and the front seat inner belt.



9. REMOVE SEAT CUSHION ASSEMBLY

(a) Remove the 4 bolts.

(b) Remove the wire harness clamps from the seat cushion assembly.

10. REMOVE SEAT CUSHION FRAME

(a) Remove the wire harness.

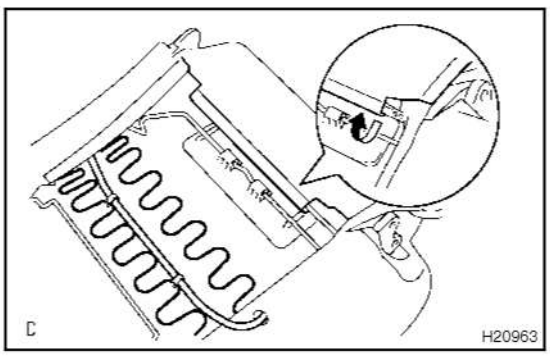
(b) Disengage the hook.

(c) Remove the hog rings and the seat cushion frame from the seat cushion with pad.

11. REMOVE SEAT CUSHION COVER

Remove the hog rings and the seat cushion cover.

12. w/ Seat heater:
IF NECESSARY, REPLACE SEAT CUSHION HEATER
(See page BO–122)



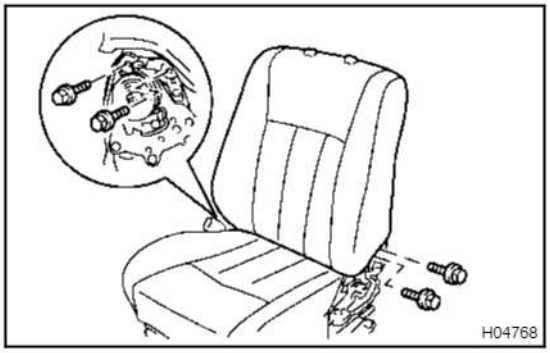
13. w/ Seatback board:
REMOVE SEATBACK ASSEMBLY

(a) Remove the hog rings.

(b) Disengage the hook as shown in the illustration.

(c) Disconnect the connectors.

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(d) Remove the 4 bolts and seatback assembly.

NOTICE:

When handling the airbag connector take care not to damage the airbag wire harness.

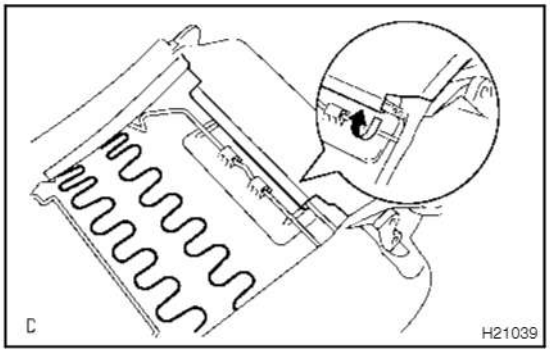
(e) Remove the screw and the RH reclining adjuster inside shield.

(f) w/ Side Airbag:
Disconnect the side airbag connector.

NOTICE:

When handling the airbag connector take care not to damage the airbag wire harness.

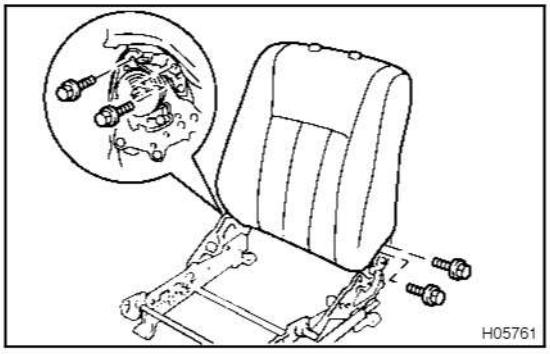
(g) Remove the screw and the LH reclining adjuster inside shield.



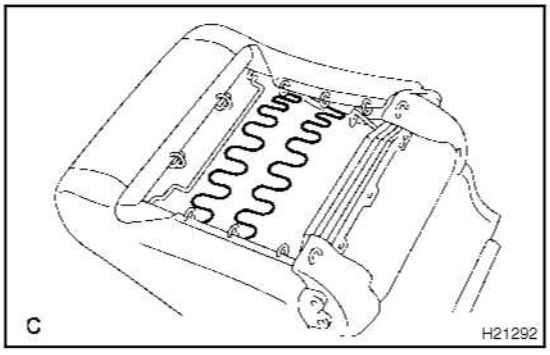
14. w/o Seatback board:
REMOVE SEATBACK ASSEMBLY

(a) Disengage the hook.

(b) Remove the hog rings.



(c) Remove the 4 bolts and the seatback assembly.



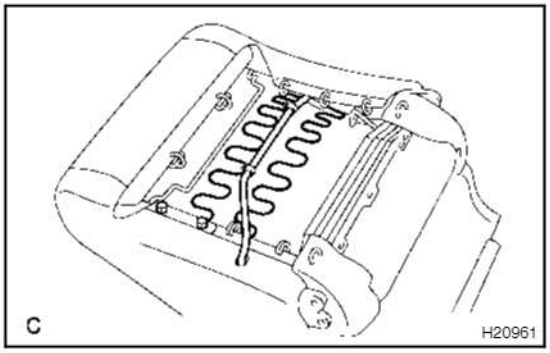
15. w/ Seatback board and w/o Side airbag:
REMOVE SEATBACK FRAME

(a) Remove the hog rings.

(b) Remove the 2 headrest supports.

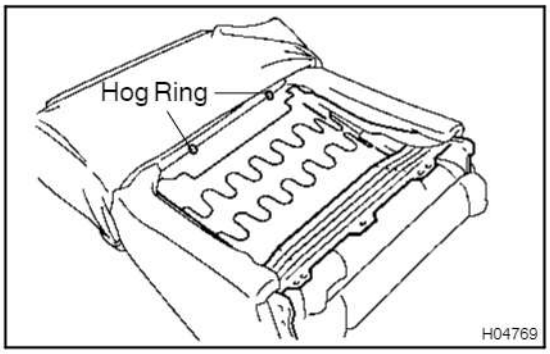
(c) Remove the seatback frame from the seatback cover with pad.

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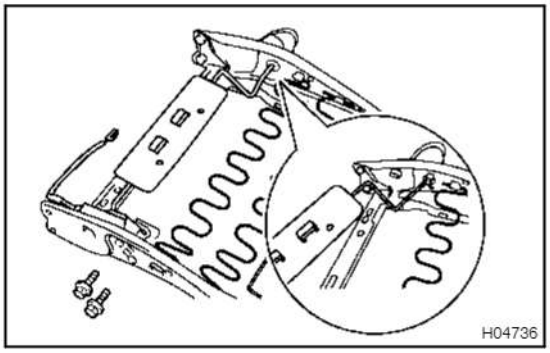
16. w/ Seatback board and w/ Side airbag: REMOVE SEATBACK FRAME

(a) Remove the hog rings, the clamps and the 2 bolts.
(b) Remove the 2 headrest supports.
(c) Remove the seatback frame from the seatback cover with pad.



17. w/o Seatback board: REMOVE SEATBACK FRAME

(a) Remove the hog rings.
(b) Remove the headrest support.
(c) Remove the seatback frame.



18. w/ Lumber support: REMOVE LUMBER SUPPORT

Remove the 2 bolts, the lumber support and the spacer.

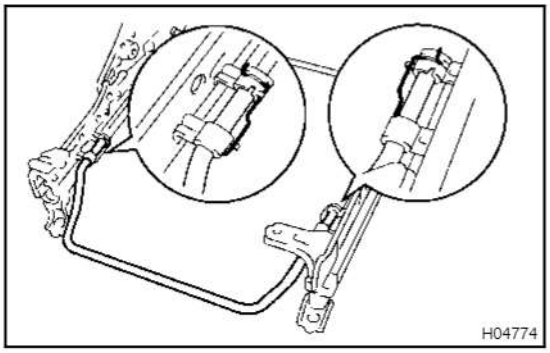
19. REMOVE SEATBACK COVER

Remove the hog rings and the seatback cover from the seatback pad.

20. w/ Seat heater: IF NECESSARY, REPLACE SEATBACK HEATER
(See page BO–122)

21. w/ Dual Stage Airbag Type (Driver's Side): REMOVE SEAT POSITION SENSOR

Remove the bolt and the seat position sensor, then disconnect the connector.



22. REMOVE SEAT TRACK ADJUSTER HANDLE

(a) Using a screwdriver, remove the 2 springs.

HINT:

Tape up the screwdriver tip before use.

(b) Remove the seat track adjuster handle.

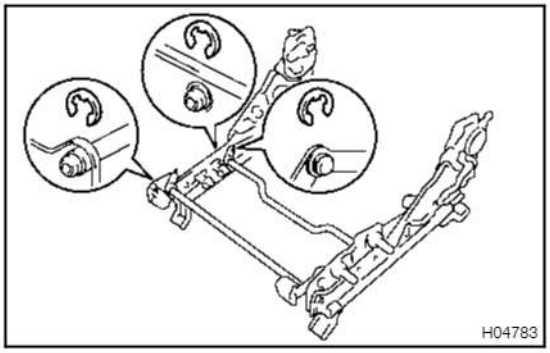
23. REMOVE REAR SEAT TRACK RETAINER

Remove the 4 bolts and the rear seat track retainer.

24. REMOVE RECLINING CONNECTING PIPE

Remove the reclining connecting pipe.

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25. Vertical adjuster type:
REMOVE INNER SEAT ADJUSTER

Remove the 3 E–rings and the inner seat adjuster.

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BO1WA-02

INSPECTION

INSPECT RECLINING LOCK POSITION AND SLIDING LOCK POSITION SLIPPING OFF

(a) When reclining the seat, inspect that the outer and the inner recliners are released at the same time.

HINT:

When the reclining lock positions slip off, disassemble the seat to adjust the position.

(b) When sliding the seat, inspect that the outer and inner tracks are locked at the same time.

HINT:

When sliding lock positions slip off, loosen the bolts to adjust the position.

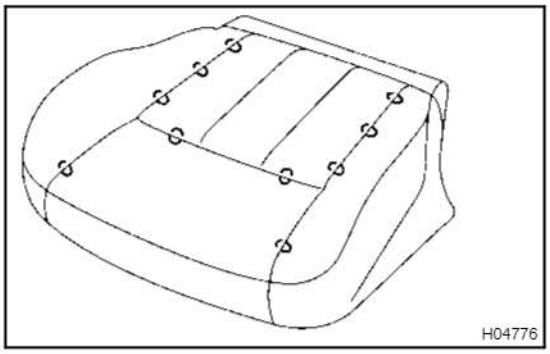
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BO4JK–01

REPLACEMENT

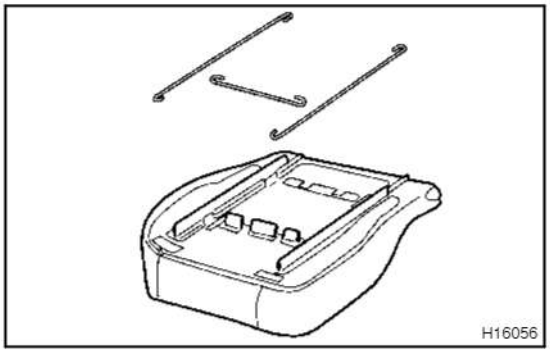
HINT:

- Following is the seat heater replacement procedure.
- Care should be taken during operation to protect the seat cover from scratches, dirt or accidental cut of thread.

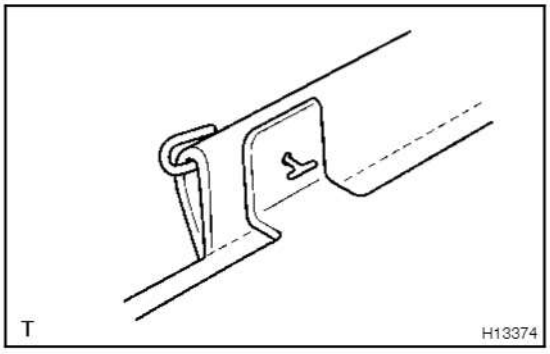


1. Seat cushion cover:
REMOVE SEAT HEATER

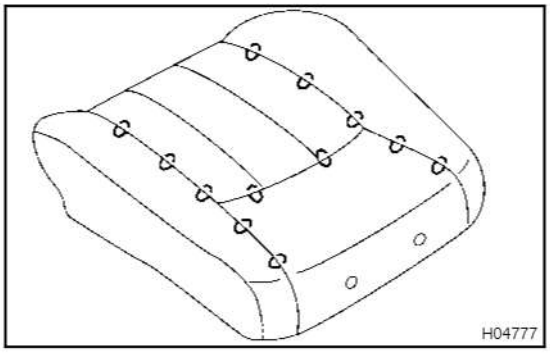
(a) Remove the hog rings.
(b) Remove the seat cushion cover from the pad.
(c) Turn the seat cushion cover inside out.



(d) Disconnect the 3 seat wires.



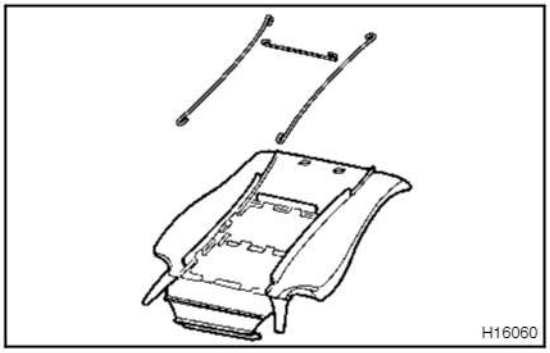
(e) Remove the tack pins which are fastened to the heater.
(f) Remove the seat heater from the seat cushion cover.



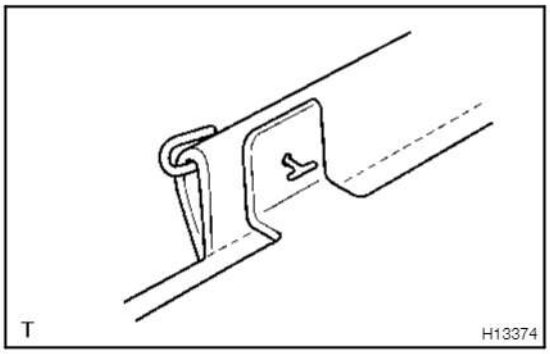
2. Seatback cover:
REMOVE SEAT HEATER

(a) Remove the hog rings and the wires.
(b) Remove the seatback cover from the pad.
(c) Turn the seatback cover inside out.

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(d) Disconnect the 3 seat wires.



(e) Remove the tack pins which are fastened to the seat heater.

(f) Remove the seat heater from the seatback cover.

3. INSTALL NEW SEAT HEATER TO SEAT COVER

Using a tacker, install a new seat heater to the seat cushion cover with tack pins.

Tacker: BANZAI 303XT or equivalent

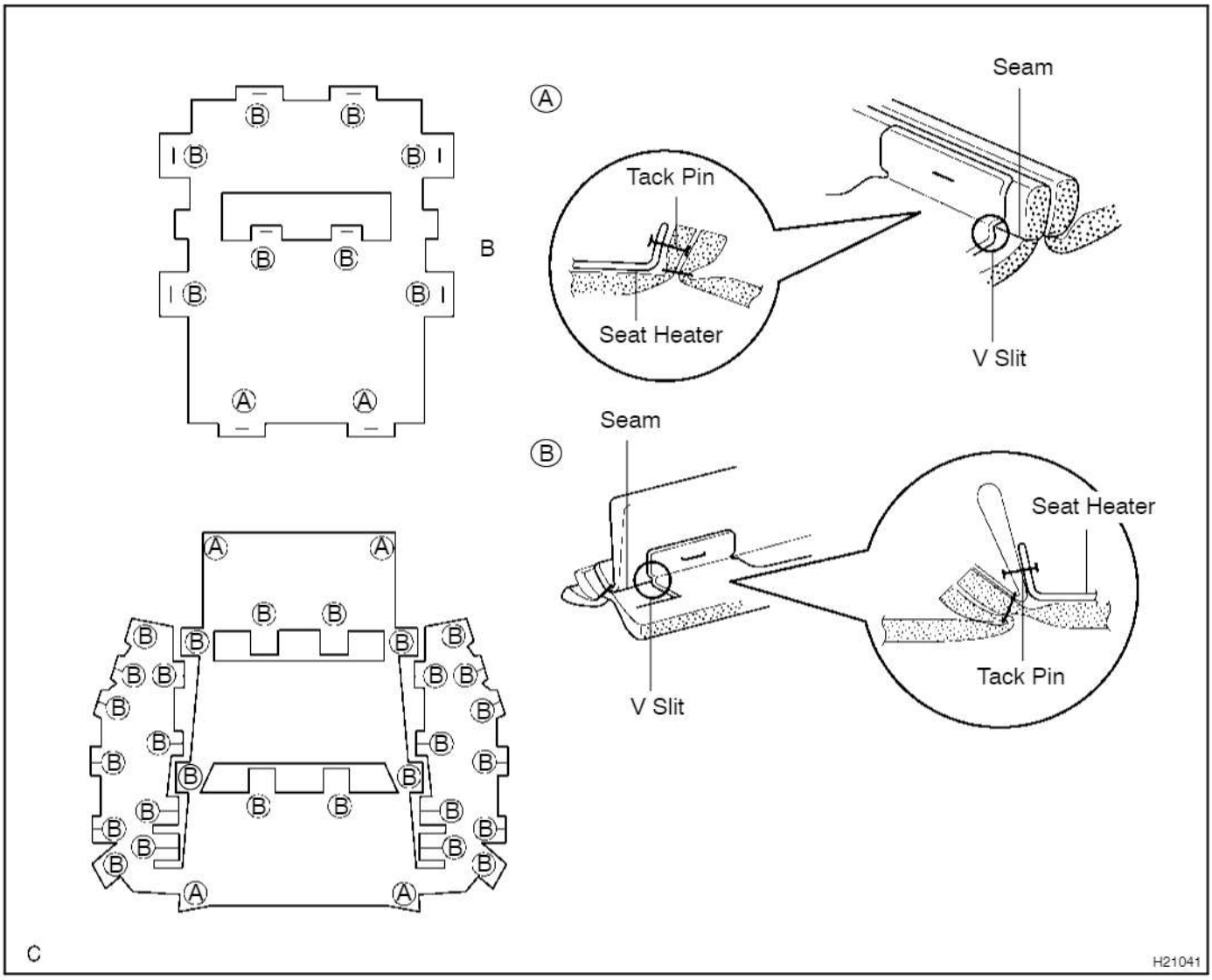
NOTICE:

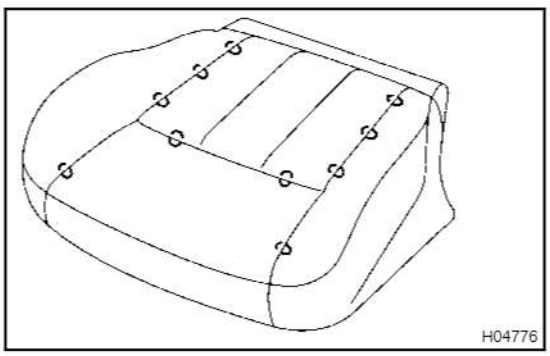
Do not substitute other metal parts for the of tack pins. Insufficient distance between the heater and the cover may result in damage to the heater.

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HINT:

- Fasten the cover and the heater with the tack pins matching the seam with the V slit of the heater.
- Sewing thread can be substituted for the tack pins. However, allow a distance of 6 – 7 mm (0.24 – 0.28 in.) between both sewed parts of the heater and the cover.

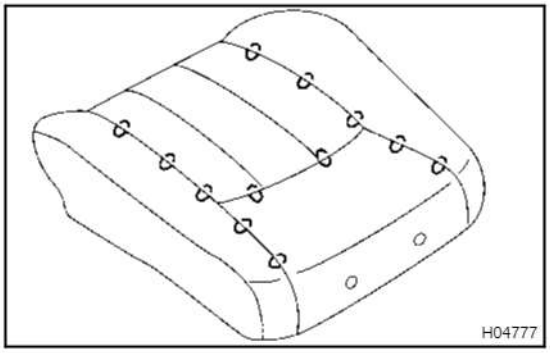




4. INSTALL SEAT CUSHION COVER TO SEAT CUSHION PAD

(a) Thread the 3 wires through the listing pocket.
(b) Install the seat cushion cover with new hog rings.
(c) Reverse turn the seat cushion cover inside out to put it back to its original position.

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5. INSTALL SEATBACK COVER TO PAD

(a) Thread the 3 wires though the listing pocket.

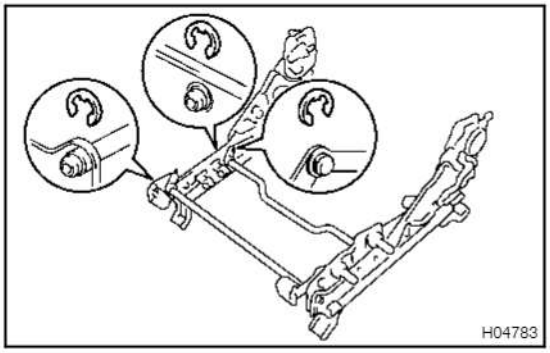
(b) Turn the seatback cover inside out to put it back to its original position.

(c) Install the seatback cover to pad with new hog rings.

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BO4JL–01

REASSEMBLY



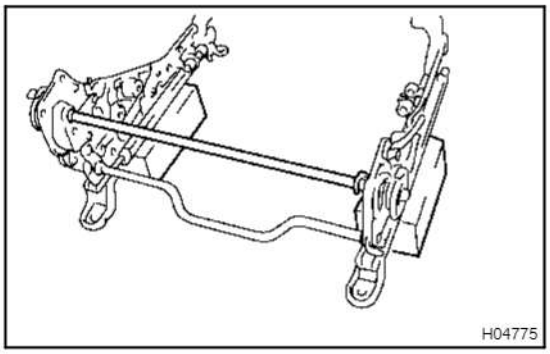
1. Vertical adjuster type:
INSTALL INNER SEAT ADJUSTER

Install the inner seat adjuster with the 3 E–rings.

2. INSTALL RECLINING CONNECTING PIPE

(a) Adjust the reclining lock positions of the seat adjuster.

(b) Slide the seat adjusters to the most front position.



(c) Place the adjusters on a spacer to adjust the seat rail in parallel and install the connecting pipe.

HINT:

When installing the connecting pipe with raising up the adjusters, the lock positions adjusted in 2 (a) step slip off then lock error occur.

3. INSTALL REAR SEAT TRACK RETAINER

Install the rear seat track retainer with the 4 bolts.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

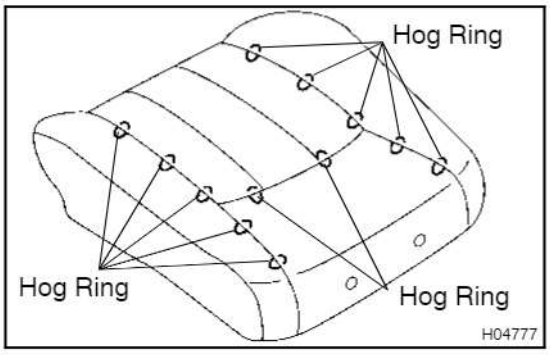
4. INSTALL SEAT TRACK ADJUSTER HANDLE

5. INSTALL RECLINING ADJUSTER INSIDE COVER

6. w/ Dual Stage Airbag Type (Driver's Side):
INSTALL SEAT POSITION SENSOR

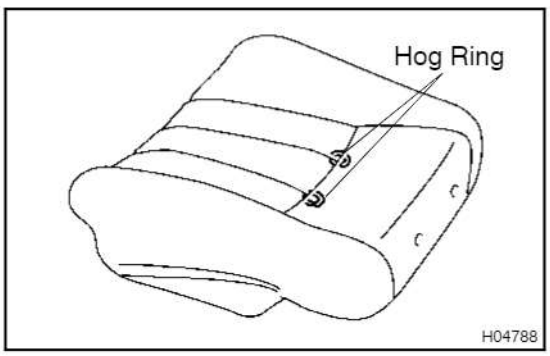
Install the seat position sensor with a new bolt, then connect the connector.

Part No.:
Bolt: 90119–06871
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)



7. w/ Seatback board:
INSTALL SEATBACK COVER

Install the seatback cover with new hog rings to the seatback pad.



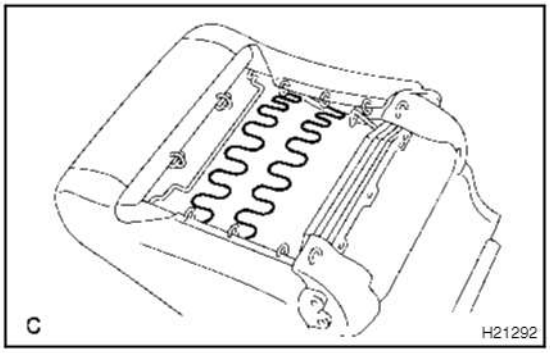
8. w/o Seatback board:
INSTALL SEATBACK COVER

Install the seatback cover with new hog rings to the seatback pad.

9. w/ Lumber support:
INSTALL LUMBER SUPPORT

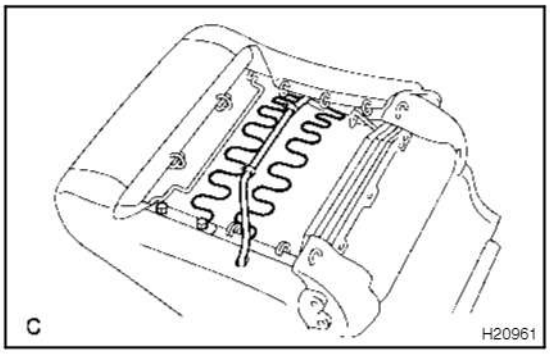
Install the lumber support with the 2 bolts to the seatback frame.

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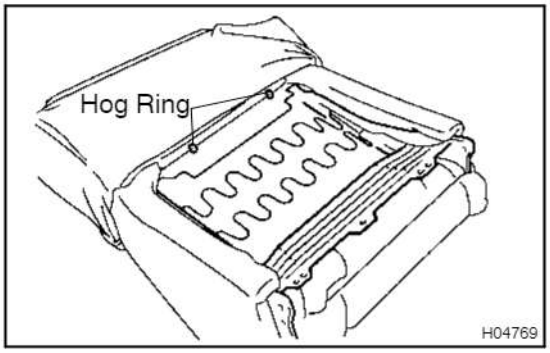
10. w/ Seatback board and w/o Side airbag:
INSTALL SEATBACK FRAME

(a) Install the seatback frame with new hog rings.
(b) Install the headrest supports.



11. w/ Seatback board and w/ Side airbag:
INSTALL SEATBACK FRAME

(a) Install the seatback cover to the seatback frame.
(b) Install new hog rings, the clamps and the 2 bolts.
Torque: 4.7 N·m (48 kgf·cm, 42 in.·lbf)
(c) Install the headrest supports.

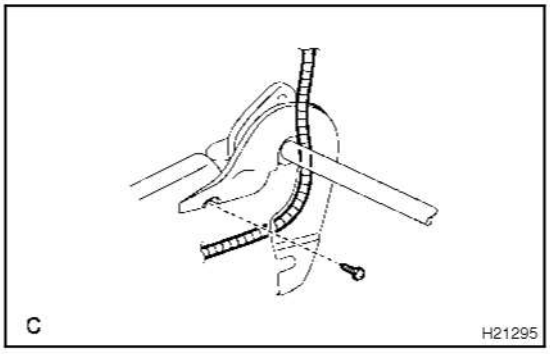


12. w/o Seatback board:
INSTALL SEATBACK FRAME

(a) Install the seatback frame with new hog rings.
(b) Install the headrest supports.

13. w/ Seatback board:
INSTALL SEATBACK ASSEMBLY

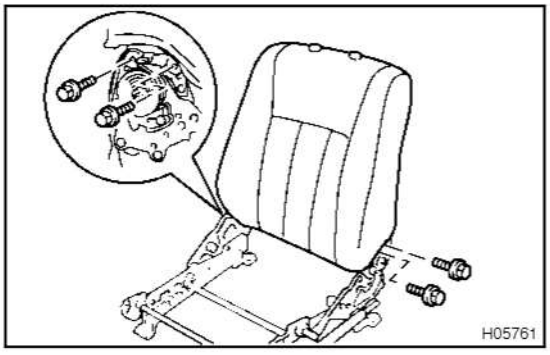
(a) w/o Side Airbag:
Install the RH reclining adjuster inside shield with a screw.



(b) w/ Side Airbag:
Place the airbag connector along the inner seat adjuster, and then install the RH reclining adjuster inside shield with a screw so that the connector is placed in between.

NOTICE:
When handling the airbag connector take care not to damage the airbag wire harness.

(c) Install the LH reclining adjuster inside shield with a screw.

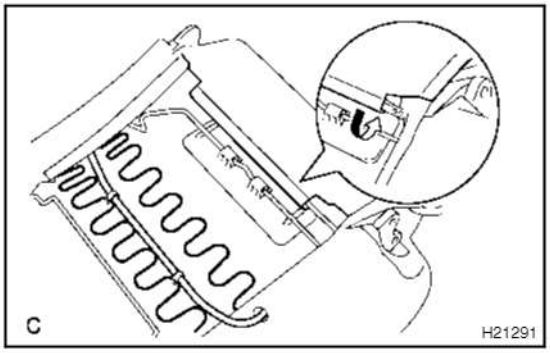


(d) Install the seatback assembly with the 4 bolts.
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

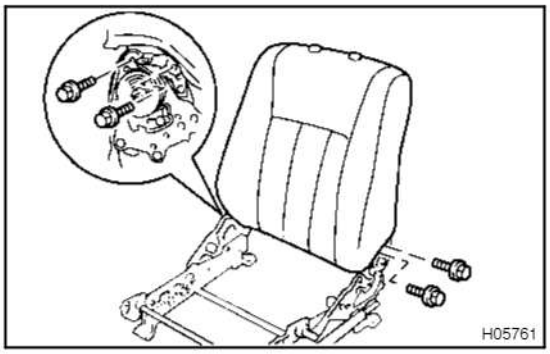
HINT:
Tighten the 4 bolts temporarily, then from the bolt on the front right side tighten them completely.

(e) Install new hog rings.

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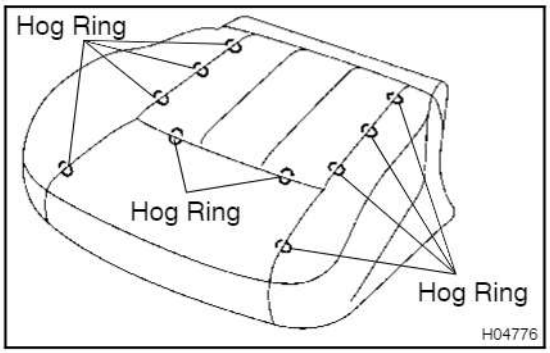


(f) Hang the hook.
(g) Connect the connectors.



14. w/o Seatback board:
INSTALL SEATBACK ASSEMBLY
(a) Install the seatback assembly with the 4 bolts.
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)
HINT:
Tighten the 4 bolts temporarily, then from the bolt on the front right side tighten them completely.
(b) Install new hog rings.
(c) Hang the hook.

15. INSTALL FRONT SEAT INNER BELT
Install the front seat inner belt with the wave washer and the bolt.
Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

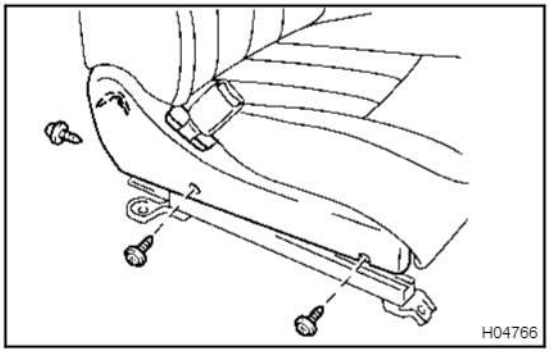


16. INSTALL SEAT CUSHION COVER
Install the seat cushion cover with new hog rings to the seat cushion pad.

17. INSTALL SEAT CUSHION FRAME
(a) Install the seat cushion frame with new hog rings to the seat cushion cover with pad.
(b) Hang the hook on the seat cushion frame.

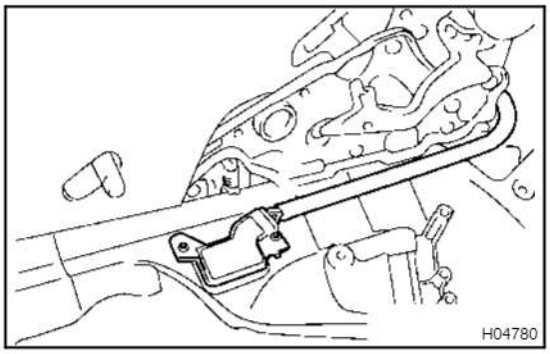
18. INSTALL SEAT CUSHION ASSEMBLY
Install the seat cushion assembly with the 4 bolts to the seat adjuster.
HINT:
Tighten the 4 bolts temporarily, then from the bolts on the rear side tighten them completely.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

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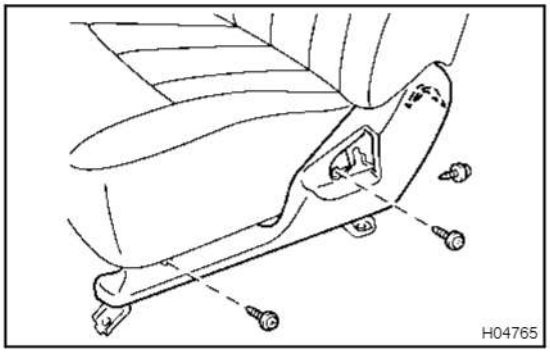
19. INSTALL SEAT CUSHION INNER SHIELD

Install the seat cushion inner shield with the 3 screws as shown in the illustration.



20. w/ Lumber support:
INSTALL SEAT CUSHION OUTER SHIELD

(a) Install the lumber support switch with the 2 screws.
(b) Connect the connector.
(c) Install the seat cushion outer shield with the 3 screws.

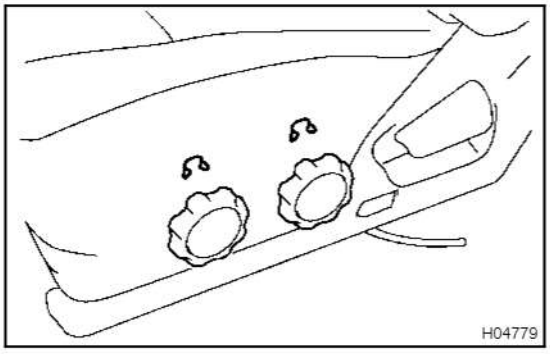


21. w/o Lumber support:
INSTALL SEAT CUSHION OUTER SHIELD

Install the seat cushion outer shield with the 3 screws as shown in the illustration.

22. INSTALL RECLINING ADJUSTER RELEASE HANDLE

23. INSTALL HEADREST



24. Vertical adjuster type:
INSTALL VERTICAL SEAT ADJUSTER KNOB

Install the vertical seat adjuster knobs with the snap rings.

25. w/ Seatback board:
INSTALL SEATBACK BOARD

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BO1WC-02

INSTALLATION

INSTALL FRONT SEAT

(a) Slide the front seat to the most front position.

NOTICE:

Make sure that seat adjuster locks.

(b) Without holding the seat track adjuster handle, mount the seat to the vehicle.

HINT:

If holding the seat track adjuster handle, the adjusted most front position slip off.

(c) Connect the connector.

(d) Tighten the bolts on the rear side temporarily, and then fasten tighten them completely starting from the the inner side.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

(e) Slide the seat to the most rear position to install the bolts on the front side.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

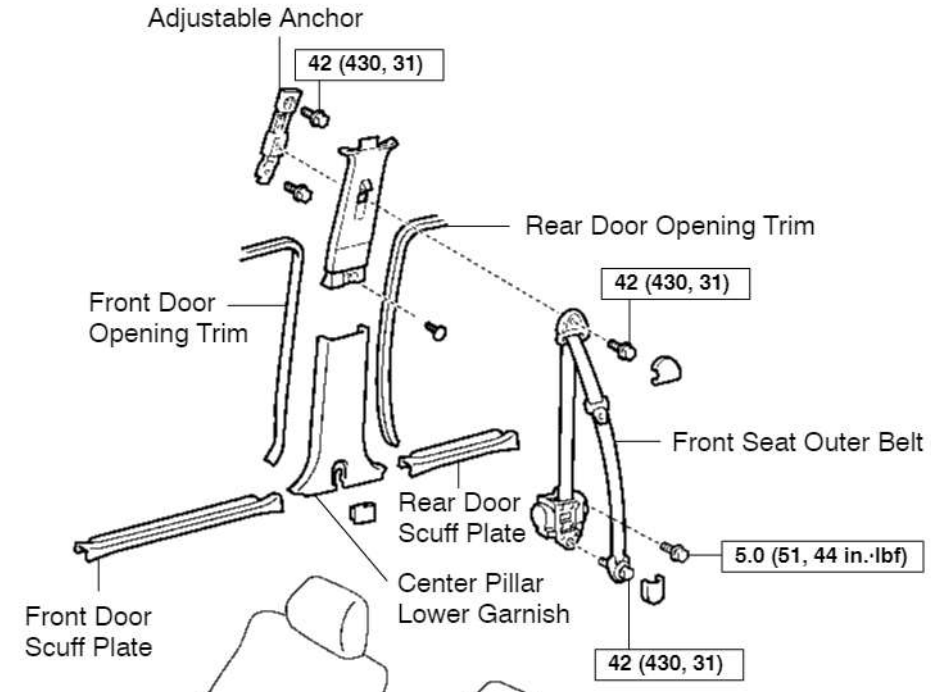
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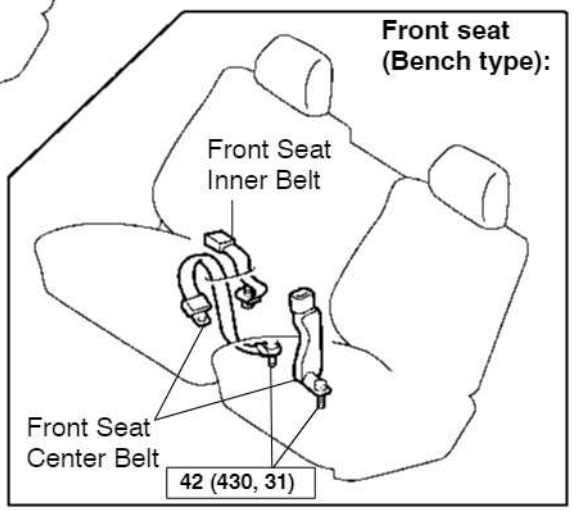
SEAT BELT

COMPONENTS

BO1X6-03

Front seat belt:



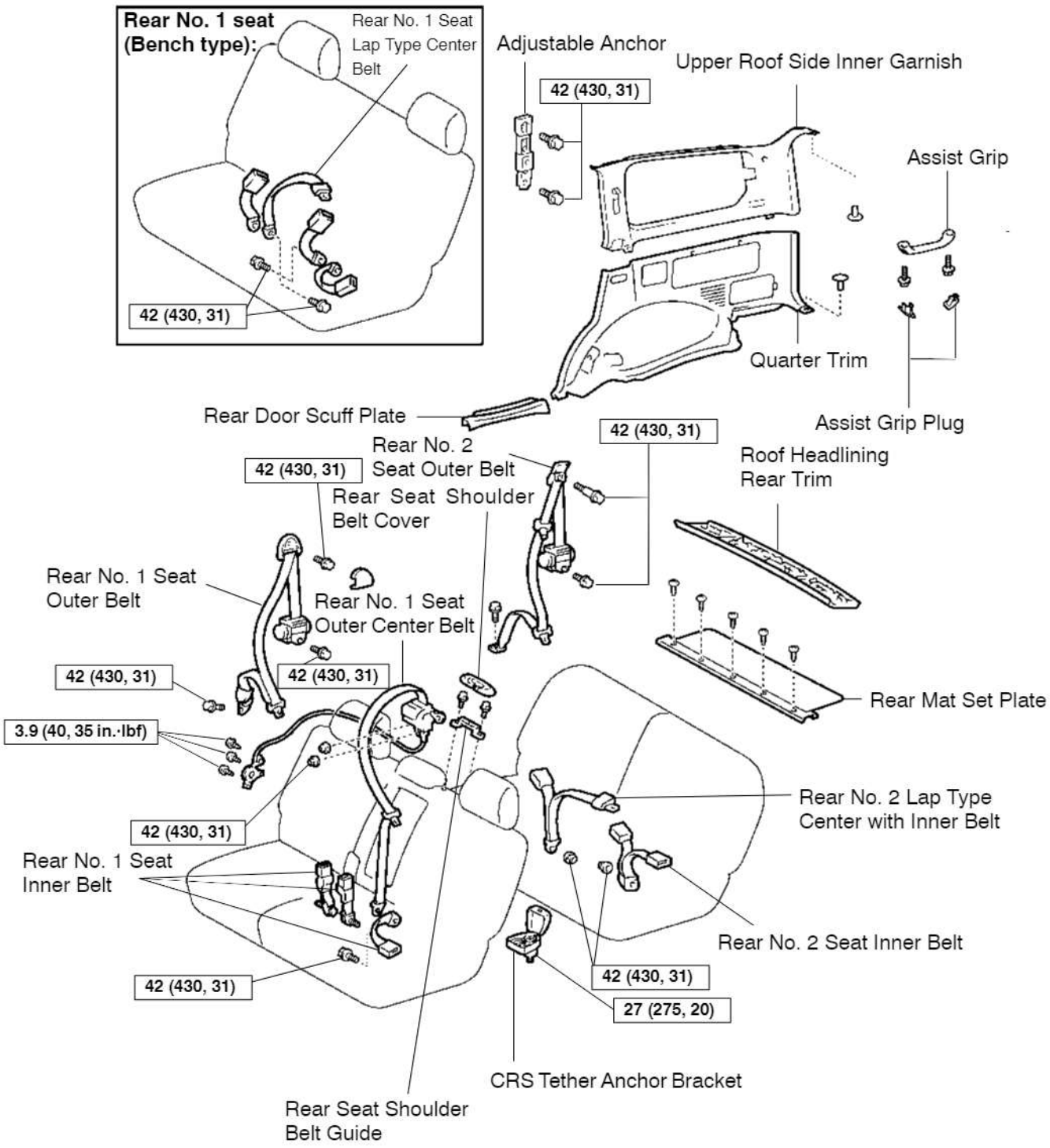


C N·m (kgf·cm, ft·lbf) : Specified torque

H21057

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Rear seat belt:



N·m (kgf·cm, ft·lbf) : Specified torque

H21274

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BO1X7-03

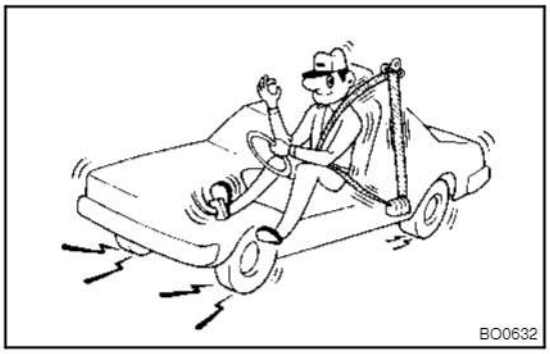
INSPECTION

CAUTION:

Replace the seat belt assembly (outer belt, inner belt, bolts, nuts or sill–bar) if it has been used in a severe impact. The entire assembly should be replaced even if damage is not obvious.

1. Except manual type:
RUNNING TEST (IN SAFE AREA)

(a) Fasten the front seat belts.


BO0632

(b) Drive the car at 10 mph (16 km/h) and slam on the brakes. Check that the belt locks and cannot be extended at this time.

HINT:

Conduct this test in a safe area. If the belt does not lock, remove the belt mechanism assembly and conduct the following static check. Also, whenever installing a new belt assembly.

2. Driver's seat belt (ELR):
STATIC TEST

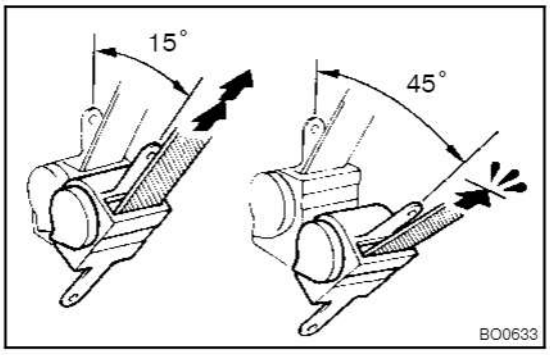
(a) Make sure that the belt locks when pulled out quickly.

(b) Remove the locking retractor assembly.

HINT:

Before removing the pretensioner connector, be sure to read the precautionary notice in the RS section.

(c) Tilt the retractor slowly.



BO0633

(d) Make sure that the belt can be pulled out at a tilt of 15 degrees or less, and cannot be pulled out over 45 degrees of tilt.

If a problem is found, replace the assembly.

3. Except driver's seat belt (ELR/ALR):
STATIC TEST

(a) Make sure that the belt locks when pulled out quickly.

(b) Remove the locking retractor assembly.

HINT:

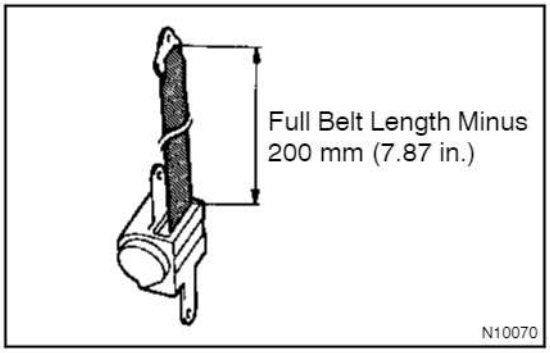
Before removing the pretensioner connector, be sure to read the precautionary notice in the RS section.

(c) Pull out the whole belt and measure the length of the whole belt.
Then retract the belt slightly and pull it out again

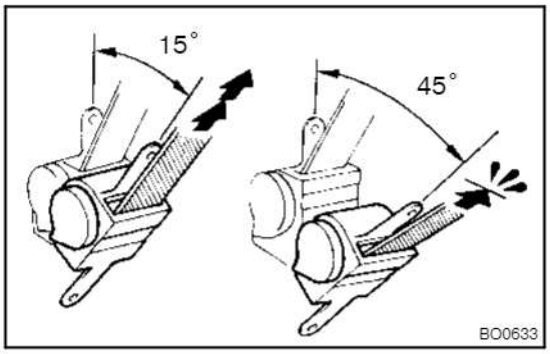
(d) Make sure that the belt cannot be extended further.

If a problem is found, replace the assembly.

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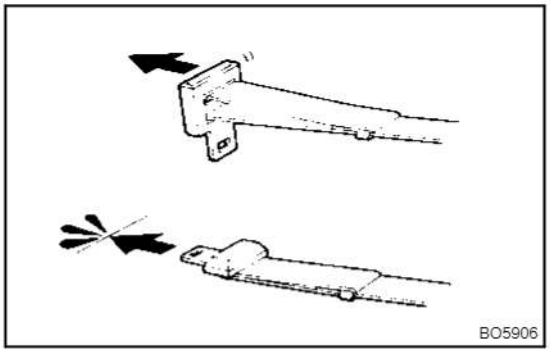


(e) Retract the whole belt, then pull out the belt until 200 mm (7.87 in.)of the belt remaining in the retractor.
(f) Tilt the retractor slowly.



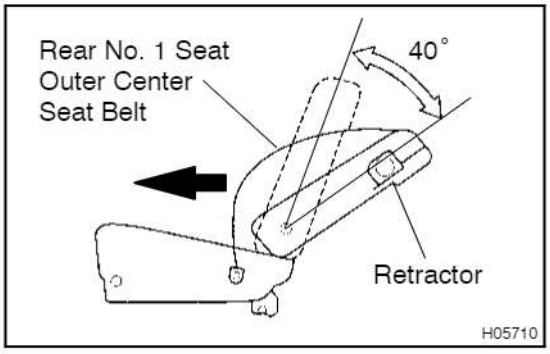
(g) Make sure that the belt can be pulled out at a tilt of 15 degrees or less, and cannot be pulled out at over 45 degrees of tilt.

If a problem is found, replace the assembly.



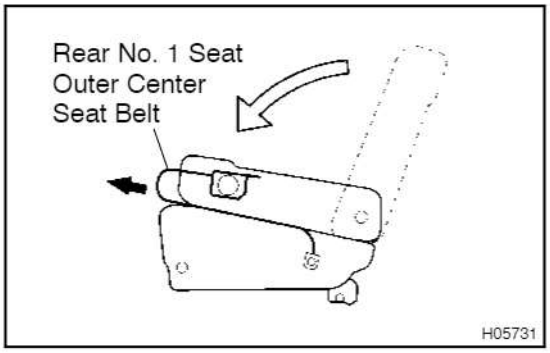
4. Manual type:
TESTING

(a) Adjust the belt to the proper length.
(b) Apply a firm load to the belt.
(c) Make sure that the belt does not extend.



5. INSPECT REAR NO. 1 SEAT CENTER BELT

(a) After pulling out 300 mm (11.81 in.) of the seat belt, check that the belt is locked when pulled out quickly.
(b) Check that the belt can be pulled out 300 mm (11.81 in.) without being locked when the seat is reclined as shown in the illustration.
(c) Check that the belt is locked when the belt is pulled out by a certain amount under (a) condition.



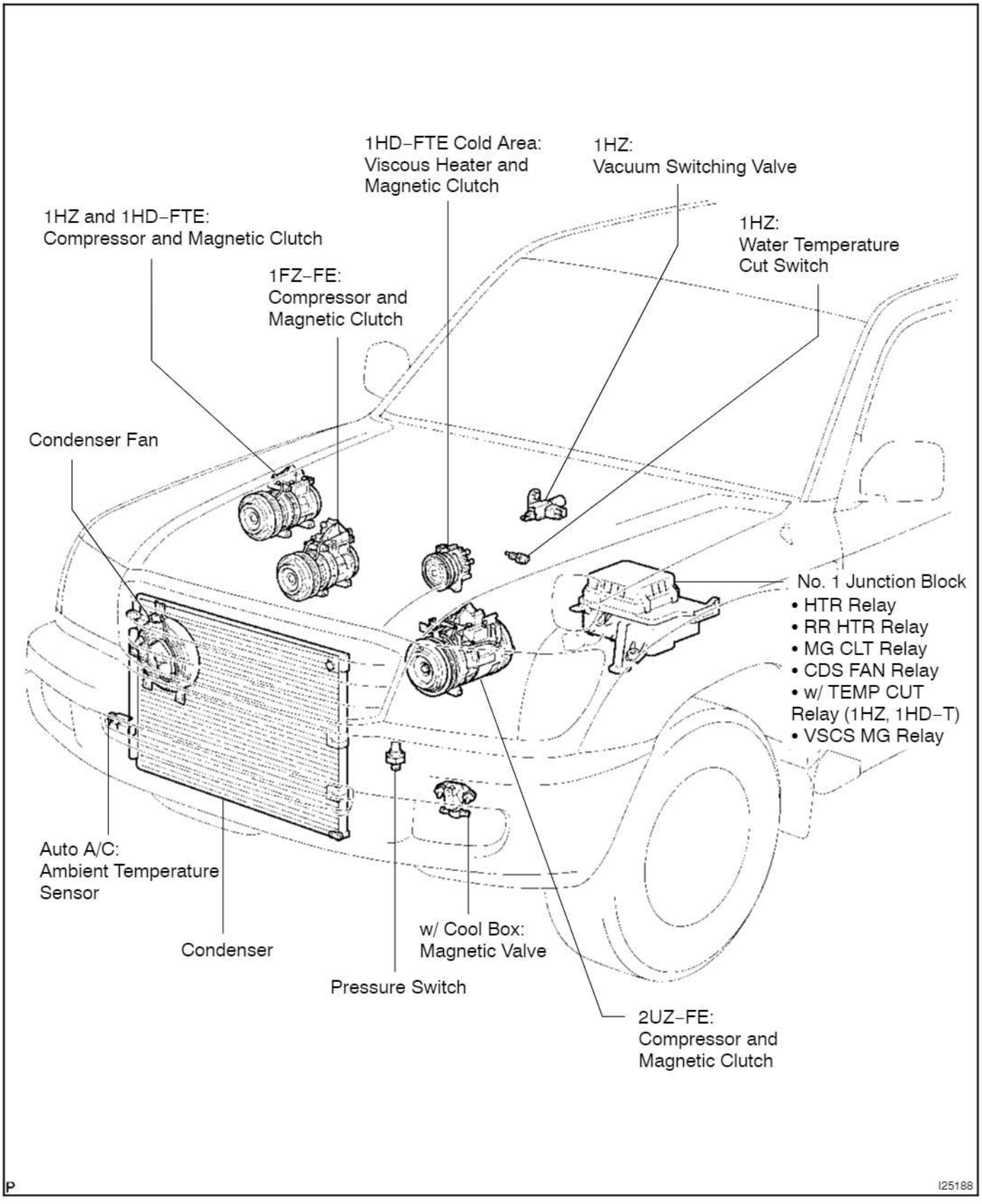
(d) When folding down the seatback forward and extracting the seat belt slowly, check that the belt is locked after a certain length (approx. 500 mm (19.69 in.)) of the belt has been extracted.

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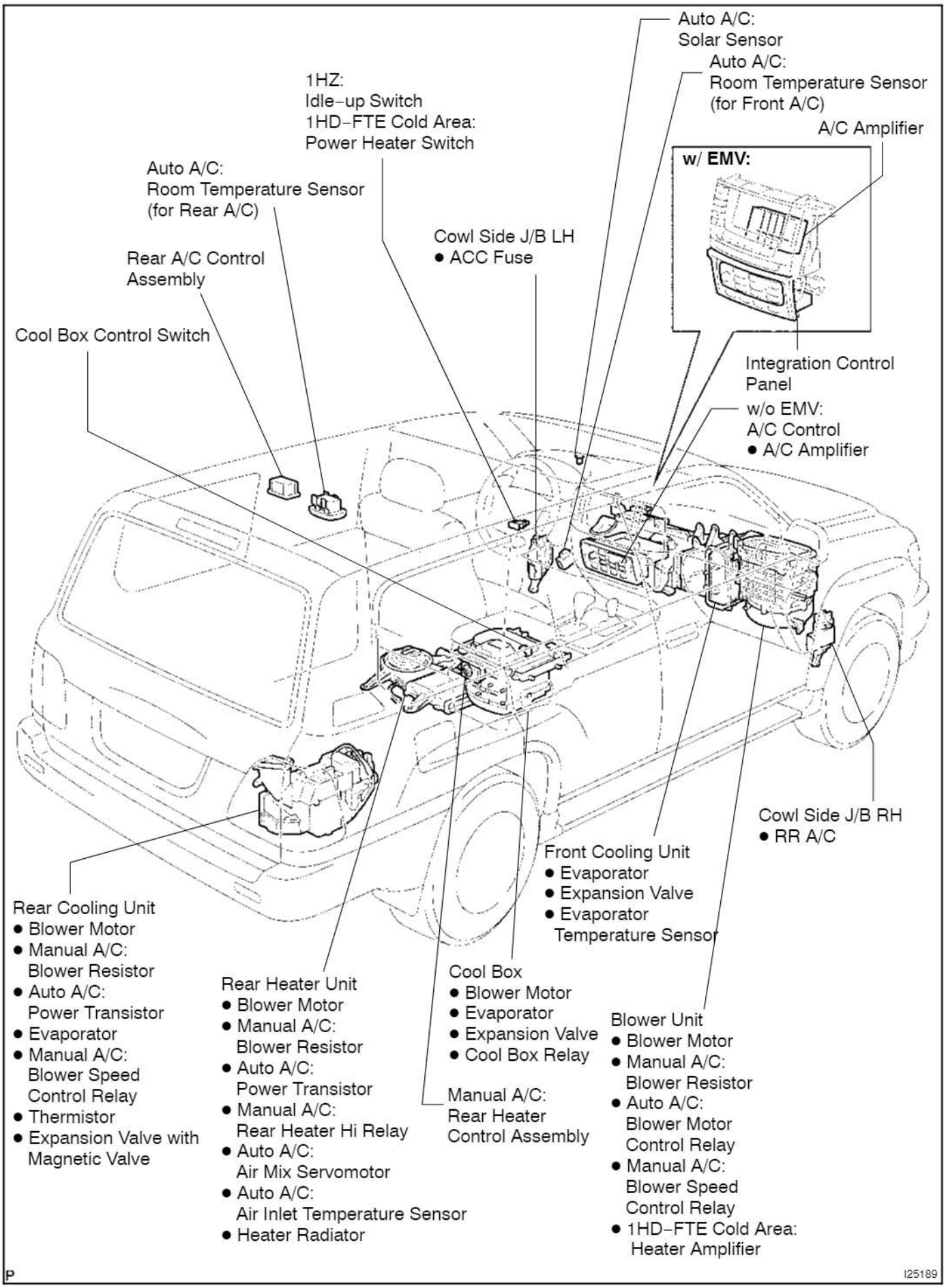
AIR CONDITIONING SYSTEM

LOCATION

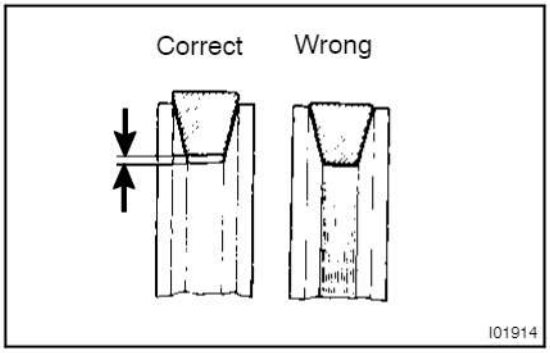
AC3PW–01



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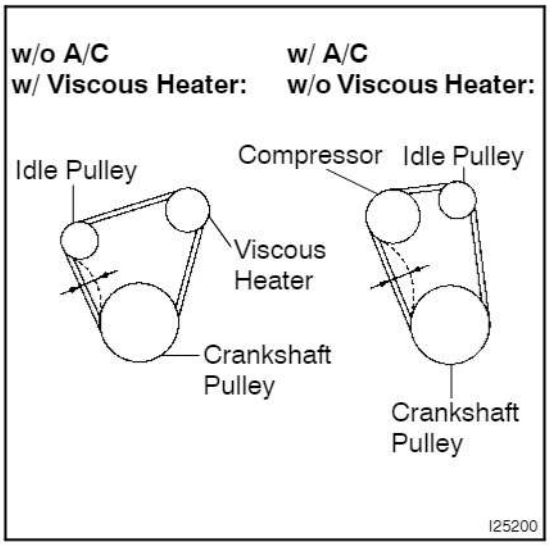
DRIVE BELT (1HD–FTE)

AC3FX–01

ON–VEHICLE INSPECTION

1. INSPECT DRIVE BELT'S INSTALLATION CONDITION

Check that the drive belt fits properly in the ribbed grooves.



2. CHECK DRIVE BELT DEFLECTION

(a) Using a belt tension gauge, apply a load of 98 N (10 kgf, 22 lbf).

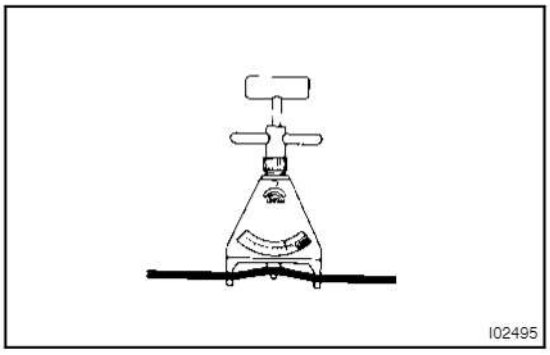
(b) Measure drive belt deflection.

Drive belt deflection:
New belt: 10.0 – 14.0 mm (0.39 – 0.55 in.)
Used belt: 13.0 – 18.0 mm (0.51 – 0.71 in.)

HINT:

- "New belt" refers to a belt which has been used for less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing the drive belt, check that it fits properly in the ribbed grooves.

If one belt has any of the above defects, replace the both belts.



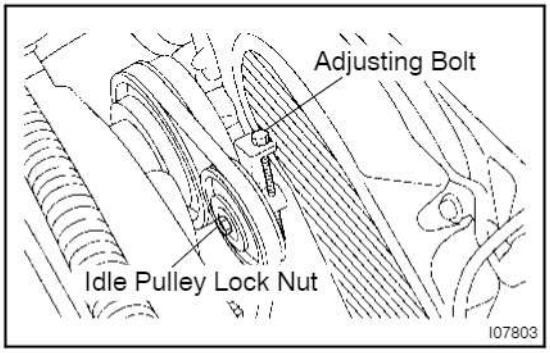
3. INSPECT DRIVE BELT TENSION

Using a belt tension gauge, check that the drive belt tension.

Drive belt tension:
New belt: 520 – 755 N (53 – 77 kgf)
Used belt: 343 – 539 N (35 – 55 kgf)

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AC9FY–01



REMOVAL

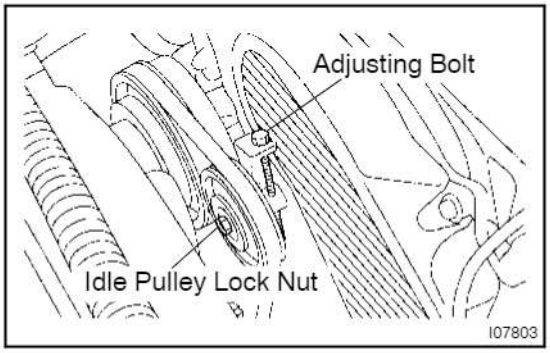
REMOVE DRIVE BELT

(a) Loosen the idle pulley lock nut.

(b) Loosen the drive belt by adjusting bolt and remove the drive belt.

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AC9FZ–01



INSTALLATION

INSTALL DRIVE BELT

(a) Tighten the idle pulley lock nut temporarily.
Torque: 2.5 N·m (25 kgf·cm, 22 in.·lbf)

(b) Install drive belt.

(c) Using a adjusting bolt, adjust drive belt tension.
Drive belt tension:
New belt: 520 – 755 N (53 – 77 kgf)
Used belt: 343 – 539 N (35 – 55 kgf)

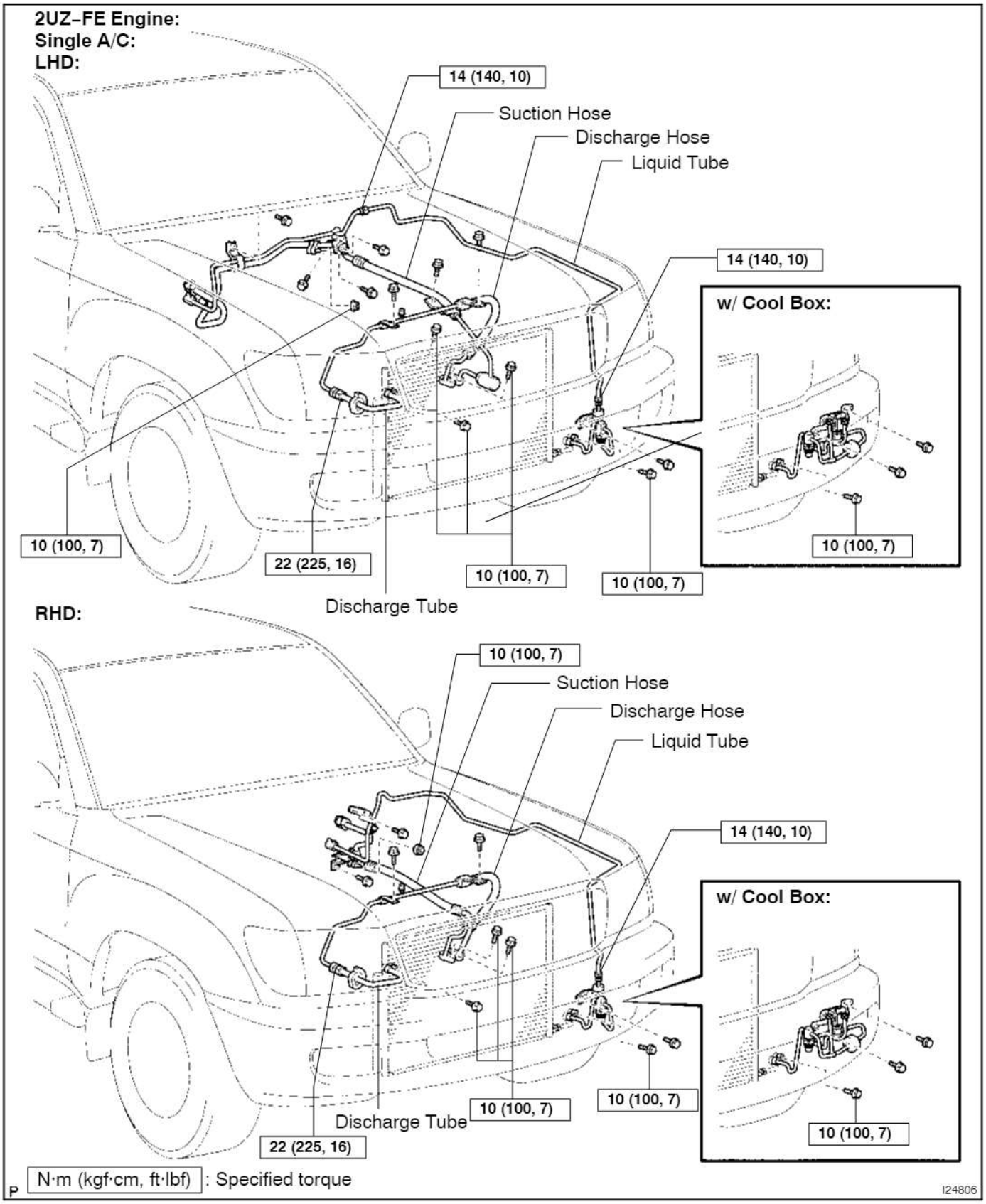
(d) Tighten the idle pulley lock nut.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

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REFRIGERANT LINE

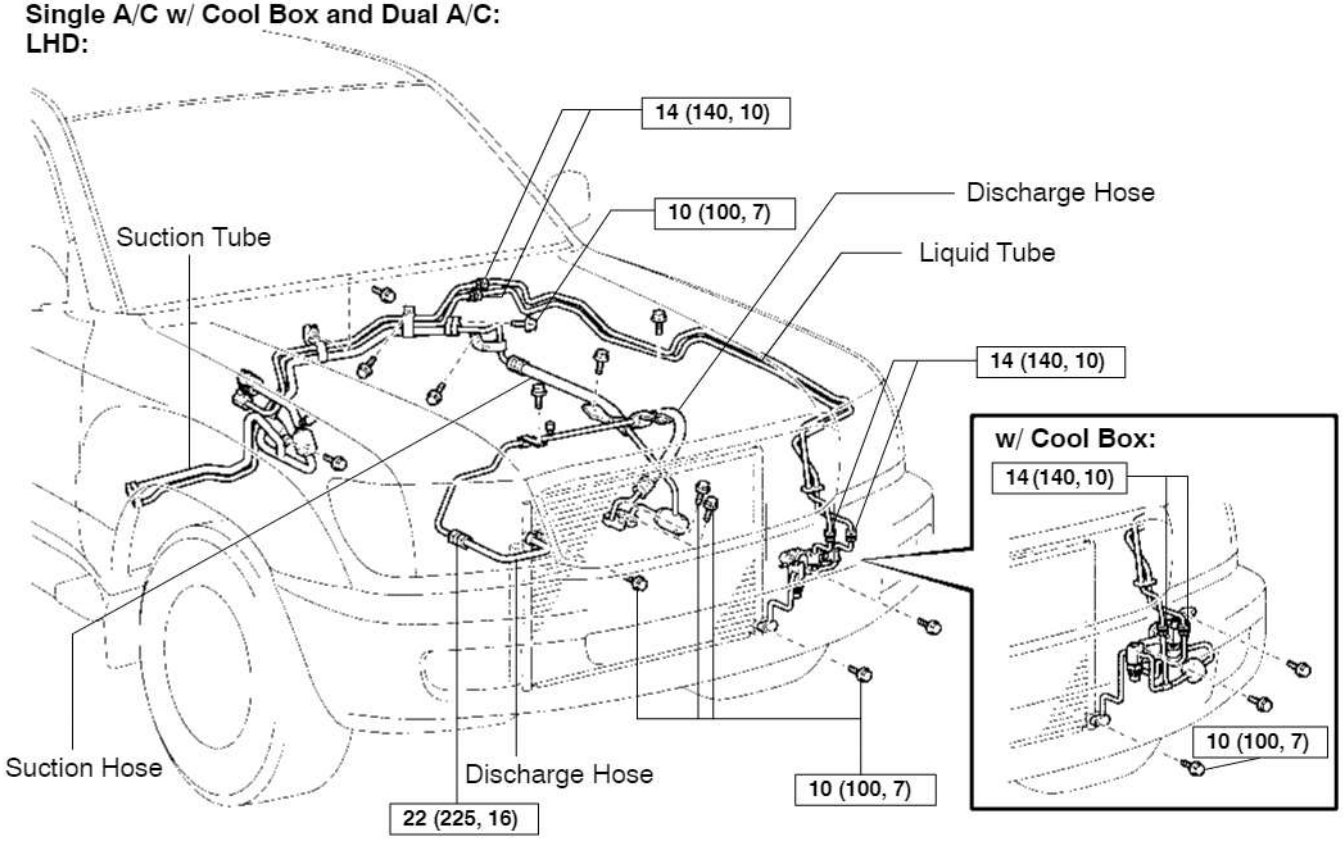
COMPONENTS

AC3Q0–01

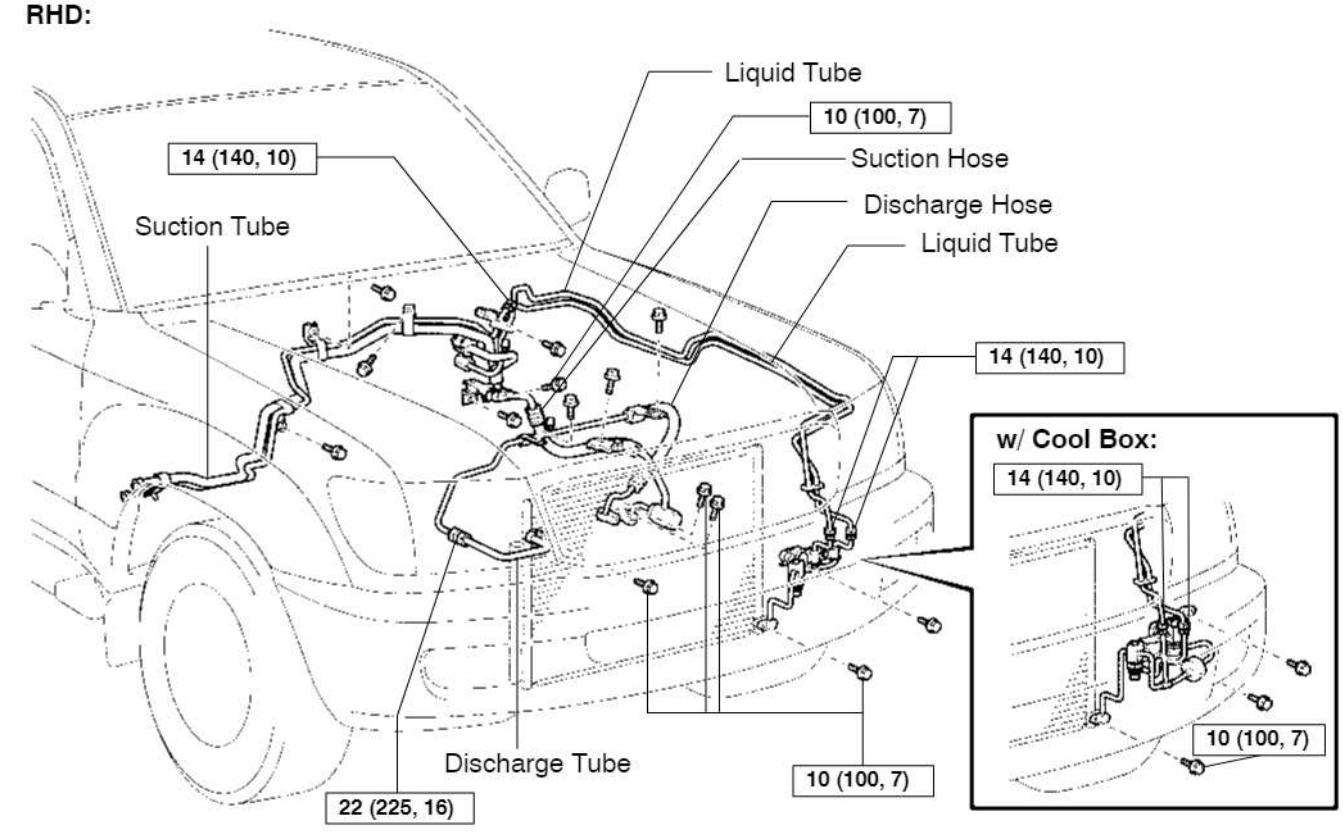


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2UZ–FE Engine:
Single A/C w/ Cool Box and Dual A/C:
LHD:



RHD:

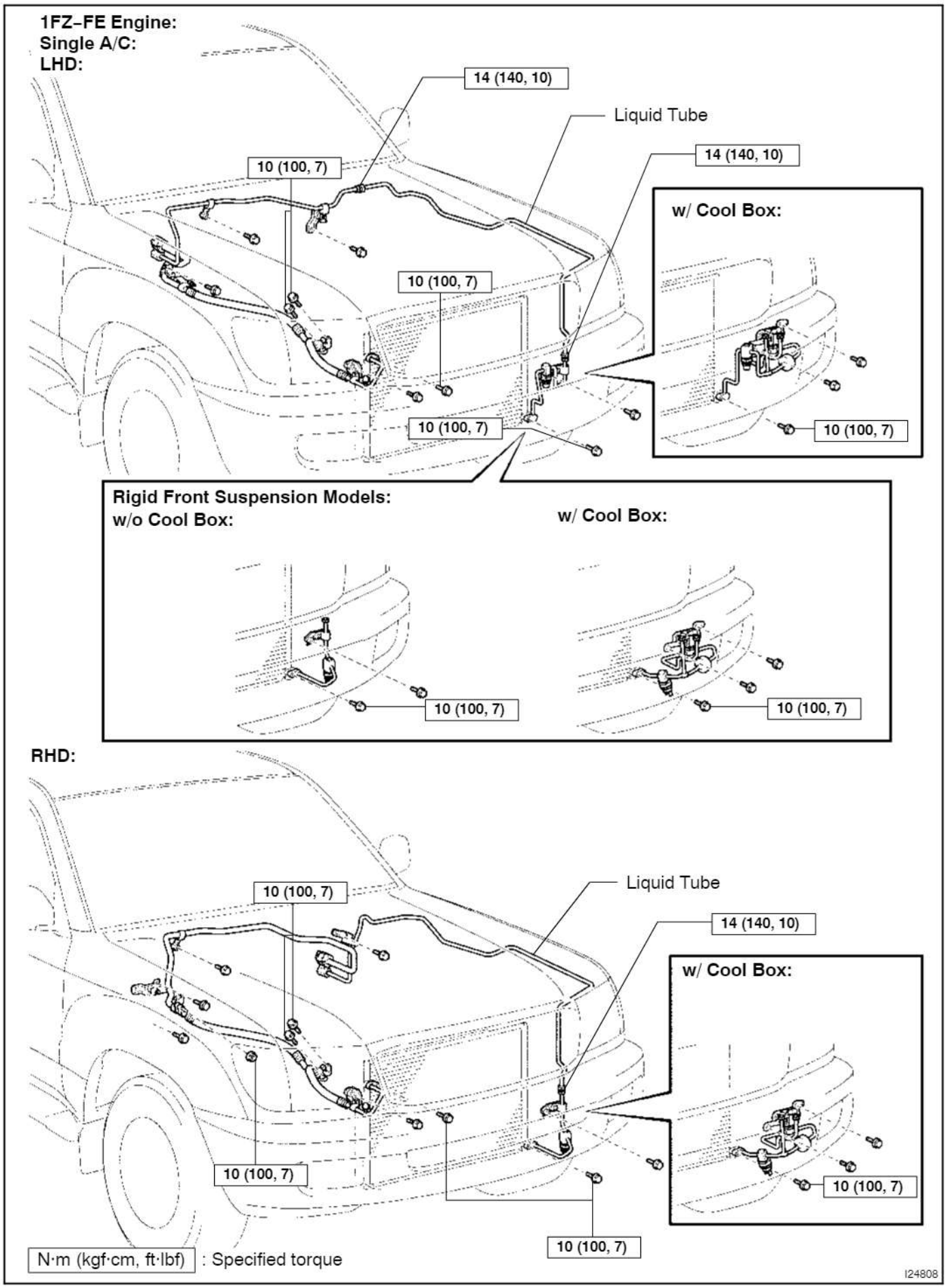


N·m (kgf·cm, ft·lbf) : Specified torque

P

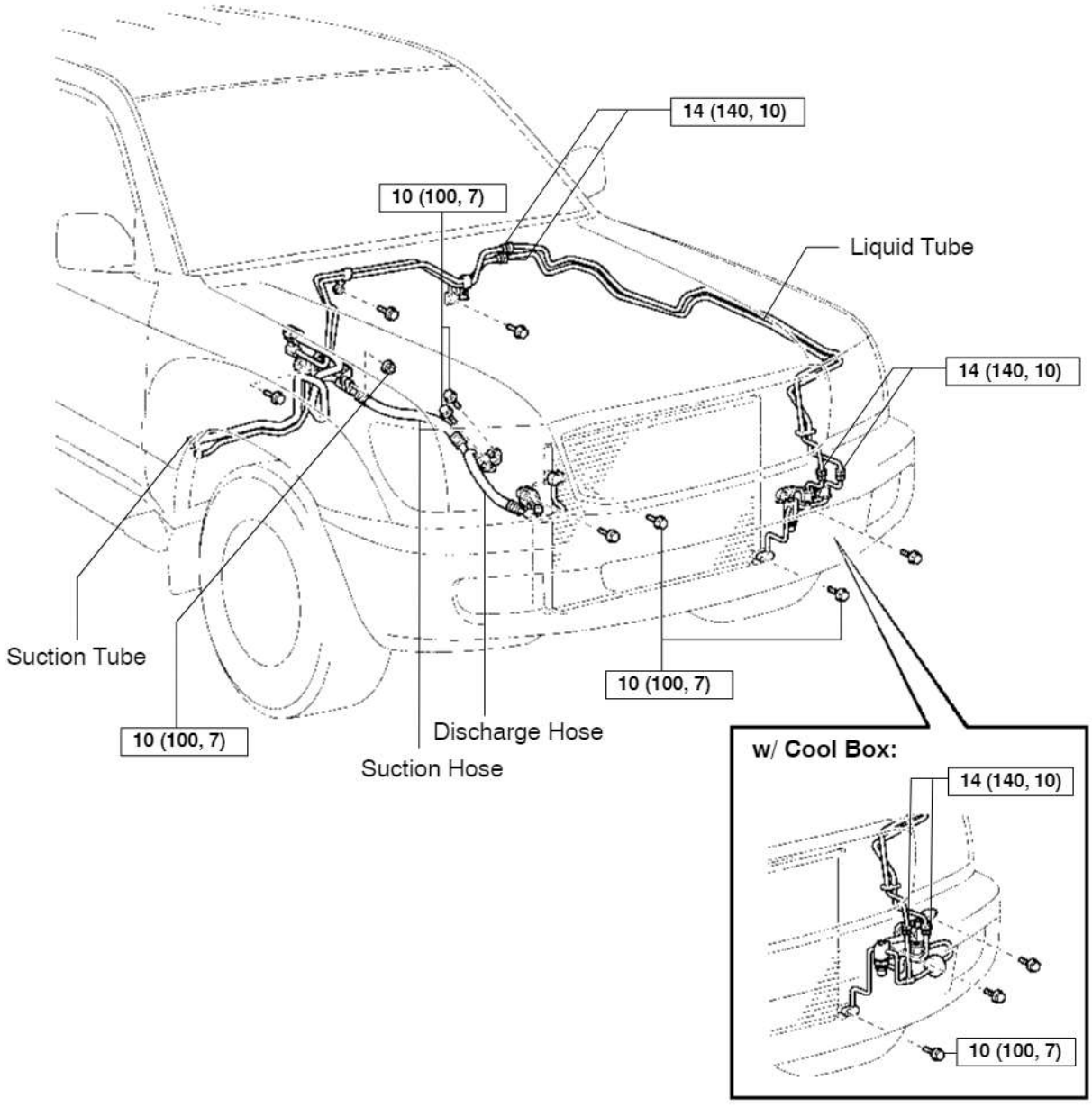
I24807

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1FZ–FE Engine:
Single A/C w/ Cool Box and Dual A/C:



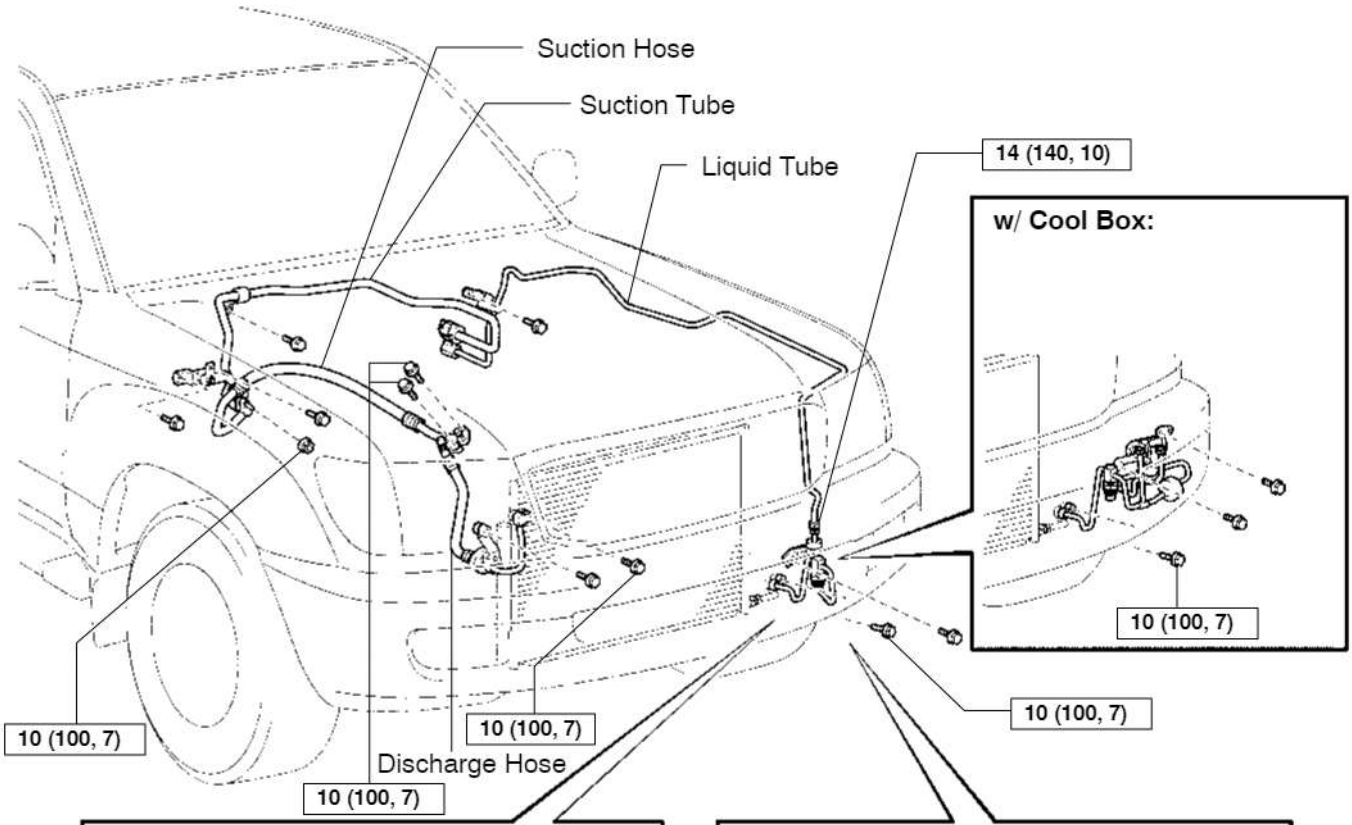
N·m (kgf·cm, ft·lbf) : Specified torque

P

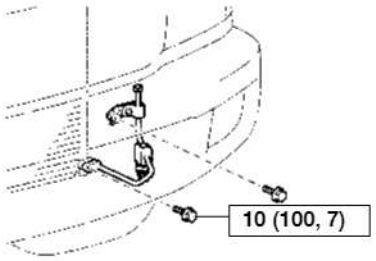
I24809

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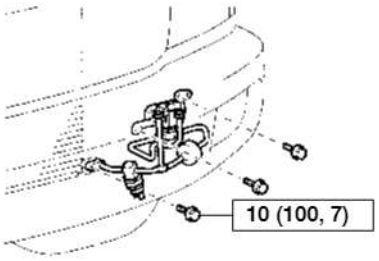
1HZ, 1HD–FTE Engine:
Single A/C LHD:



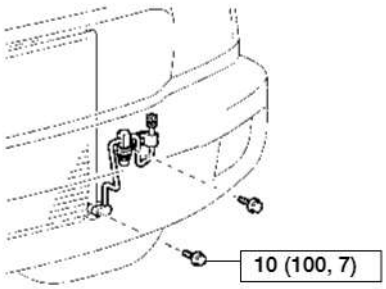
Rigid Front Suspension Models:
1HZ Engine:



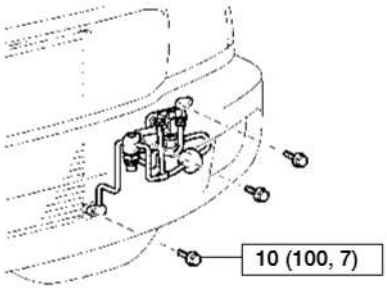
w/ Cool Box:



Australia Models:
1HD–FTE Engine:



w/ Cool Box:



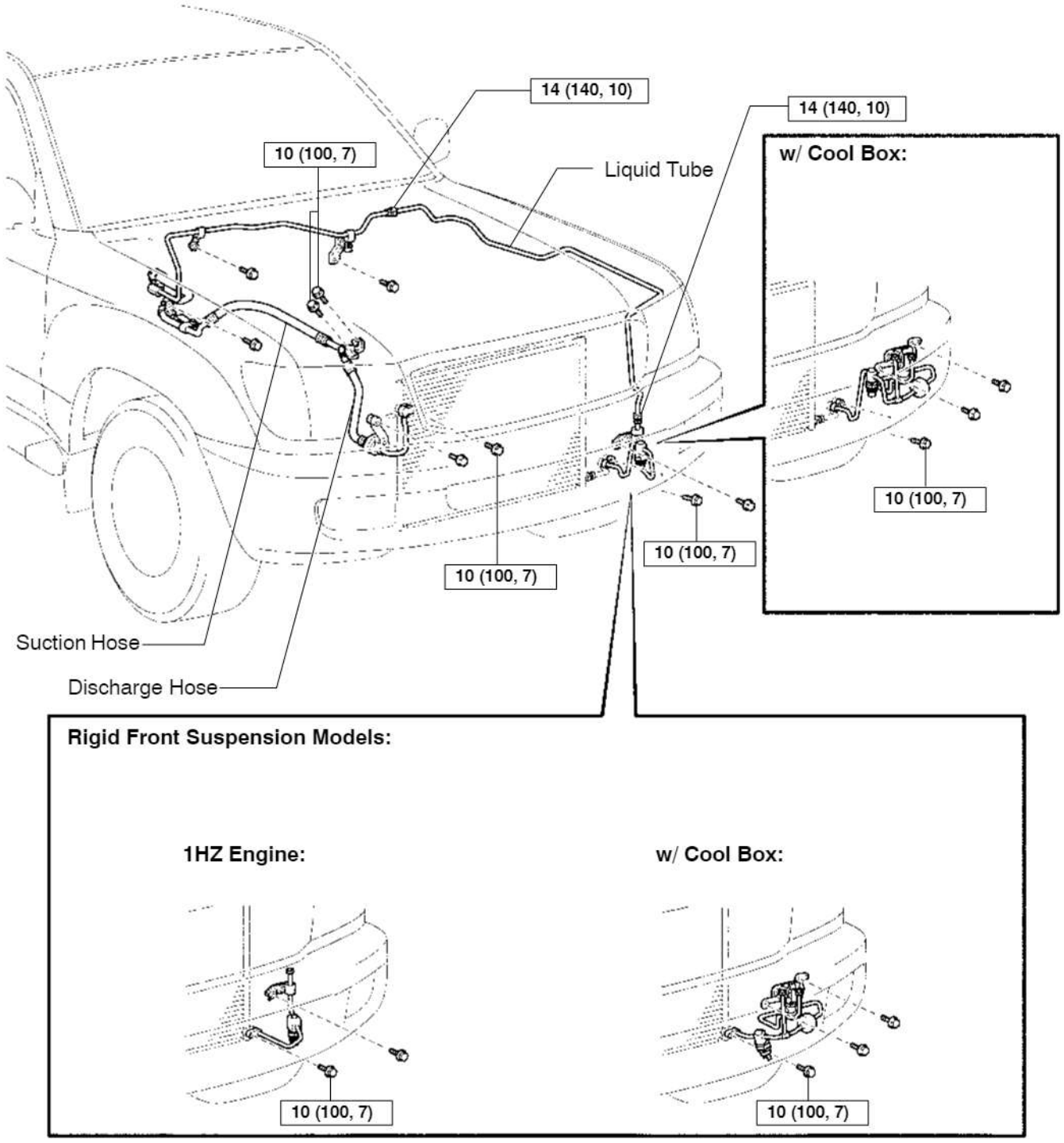
N·m (kgf·cm, ft·lbf) : Specified torque

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I24810

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1HZ, 1HD–FTE Engine:
Single A/C RHD:



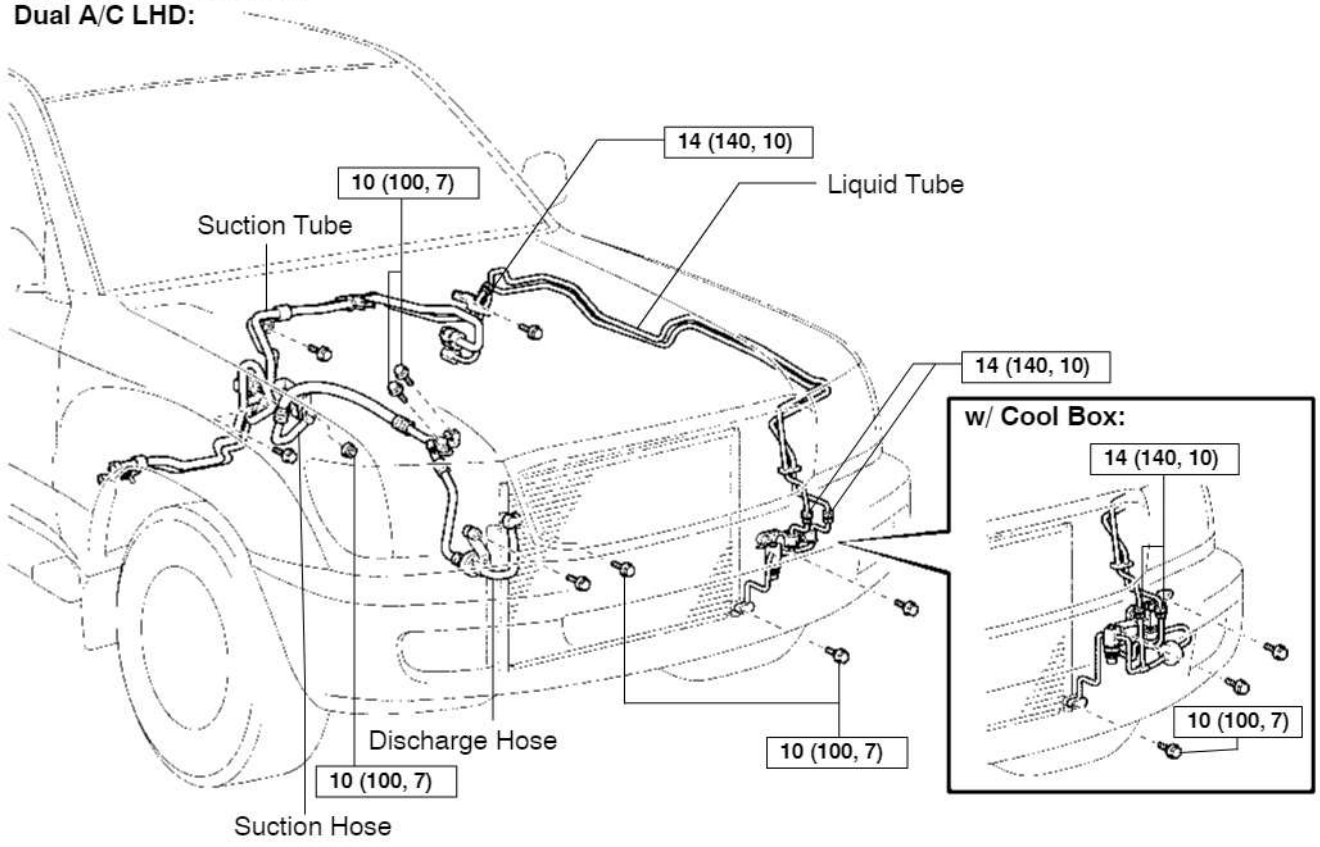
N·m (kgf·cm, ft·lbf) : Specified torque

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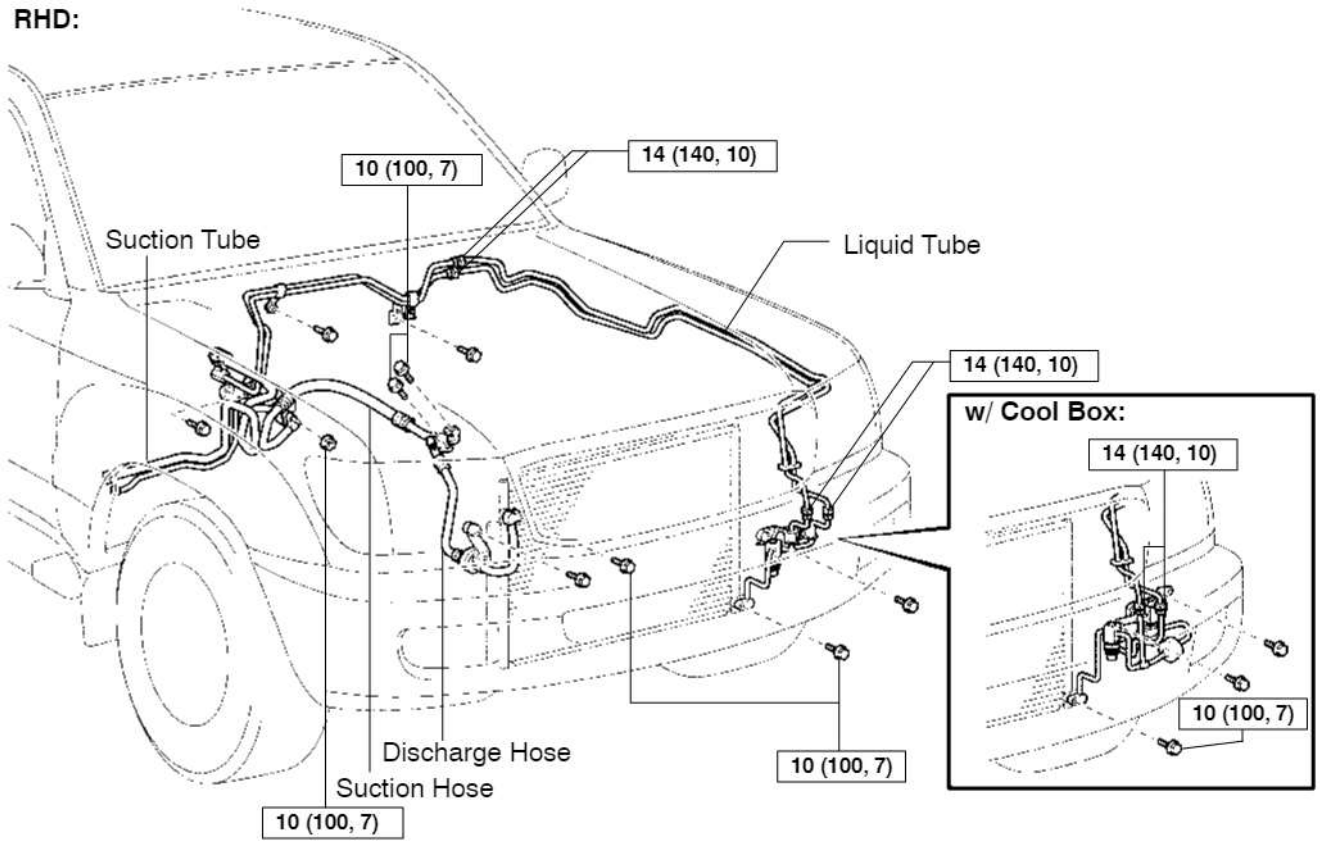
I24811

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1HZ, 1HD–FTE Engine:
Dual A/C LHD:



RHD:

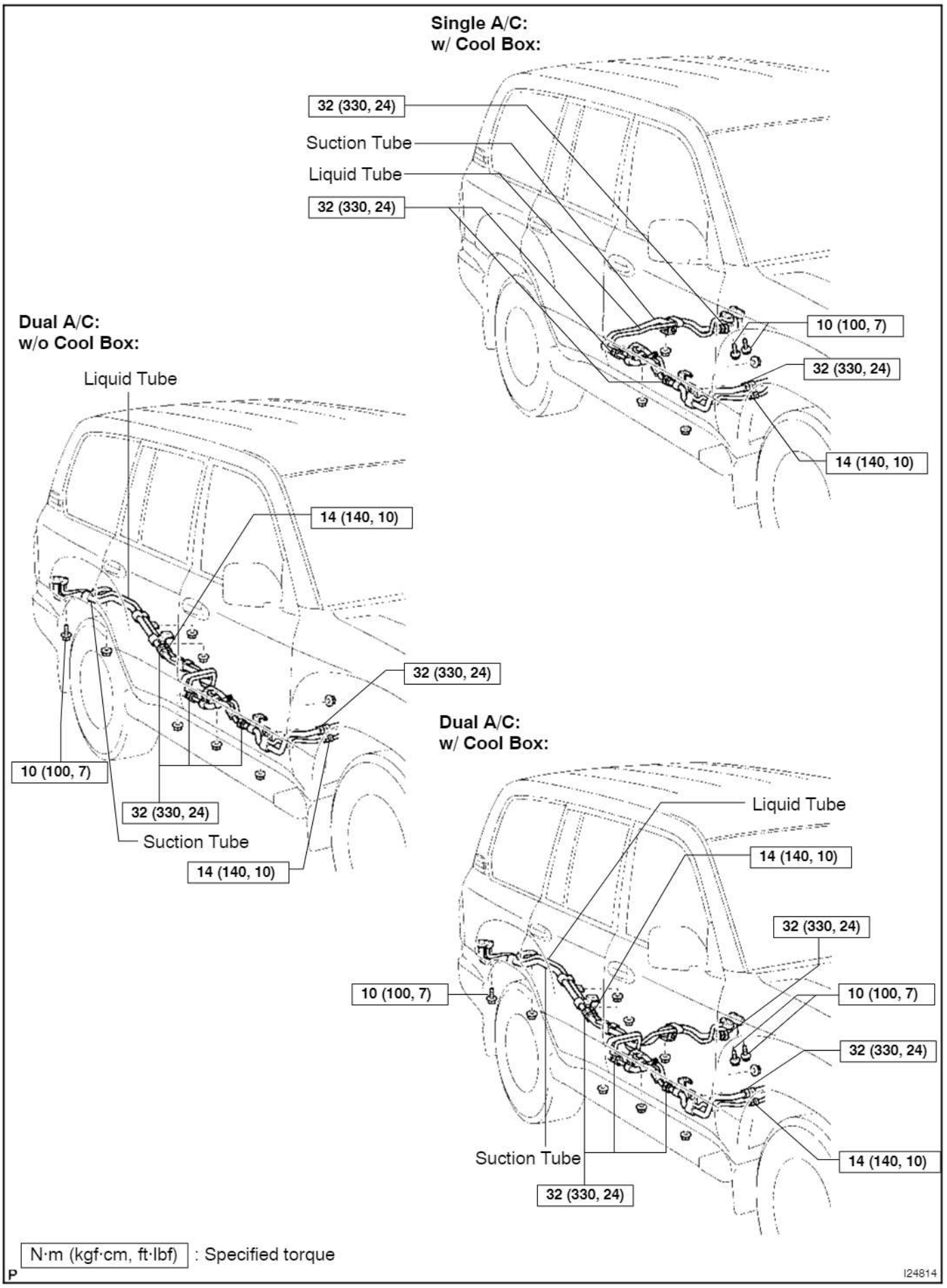


N·m (kgf·cm, ft·lbf) : Specified torque

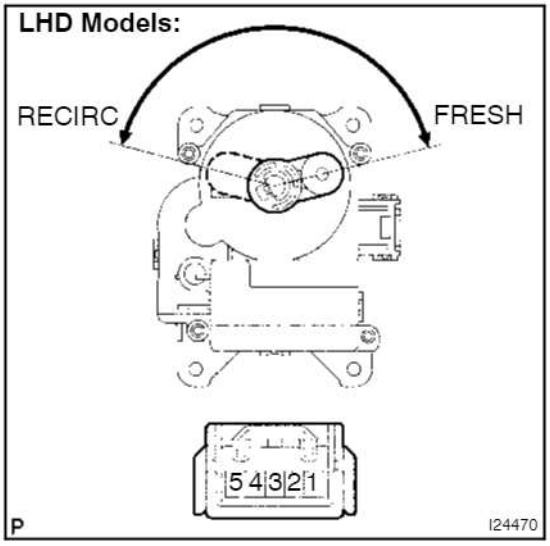
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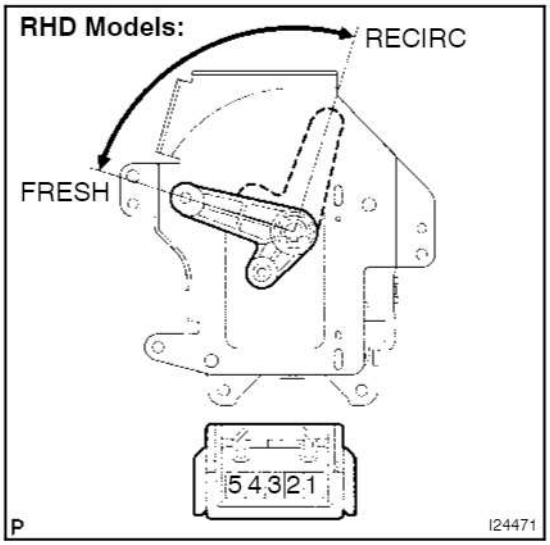
I24813

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BLOWER UNIT

INSPECTION

AC3Q1–01

Manual A/C:

INSPECT AIR INLET SERVOMOTOR

(a) Inspect the servomotor operation.

(1) Connect the positive (+) lead from the battery to terminal 4 and negative (–) lead to terminal 5, then check that the arm turns to "FRESH" side smoothly.

(2) Connect the positive (+) lead from the battery to terminal 5 and negative (–) lead to terminal 4, then check that the arm turns to "RECIRC" side smoothly.

If operations are not as specified, replace the servomotor.

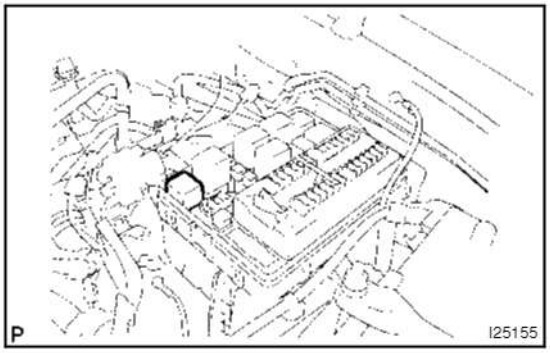
(b) Inspect position sensor resistance.

Measure resistance between terminals at servomotor arm each position as shown in the chart.

Tester connection	Condition	Specified condition
1 – 3	Constant	4.2 – 7.8 kΩ
2 – 3	Arm position at "FRESH"	0.76 – 1.4 kΩ
2 – 3	Arm position at "RECIRC"	3.4 – 6.4 kΩ

If resistance is not as specified , replace the servomotor.

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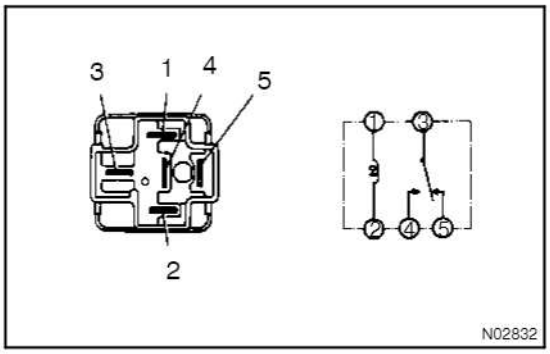
HEATER MAIN RELAY

AC3Q2–01

INSPECTION

1. REMOVE HEATER MAIN RELAY

Remove the heater main relay.



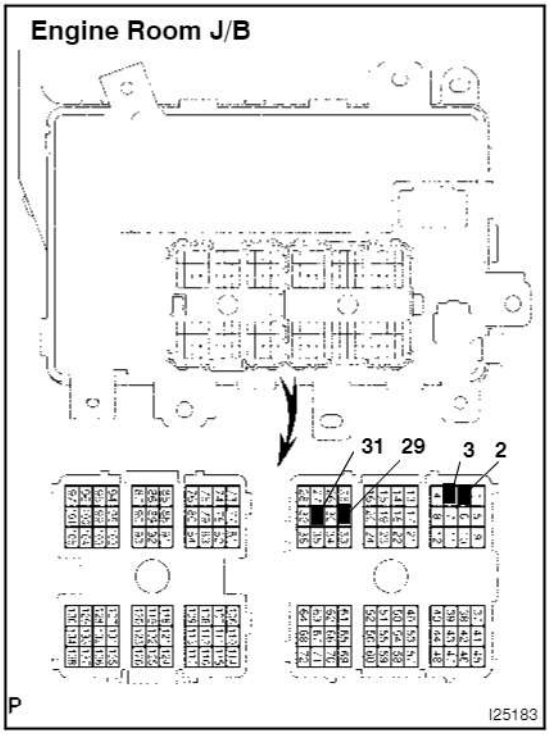
2. INSPECT HEATER MAIN RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2 3 – 4	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

3. INSTALL HEATER MAIN RELAY

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REAR HEATER RELAY

AC3Q3–01

INSPECTION

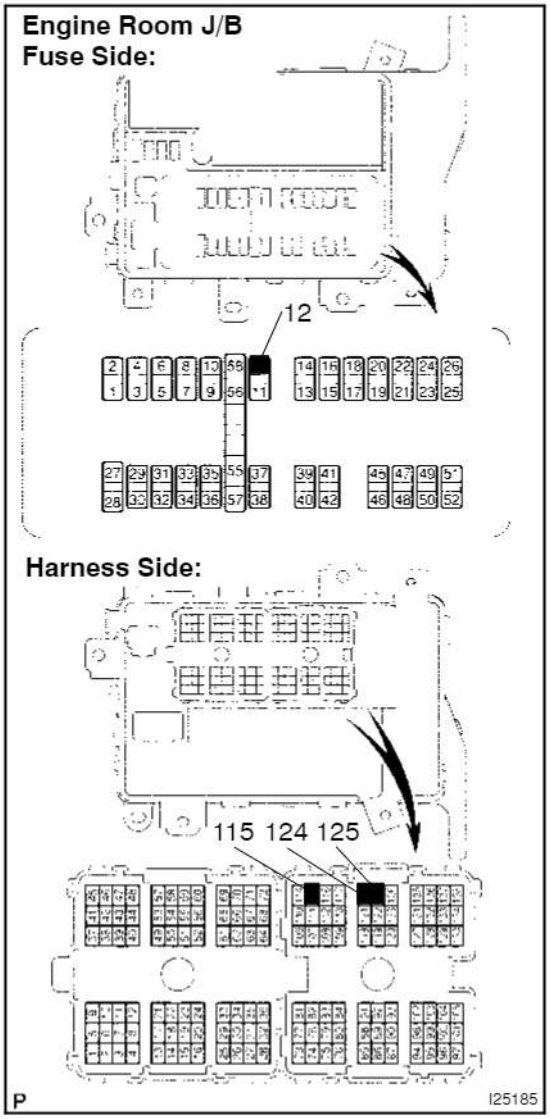
1. **REMOVE ENGINE ROOM J/B**
2. **INSPECT REAR HEATER RELAY CONTINUITY**

Condition	Tester connection	Specified condition
Constant	29 – 31	Continuity
Apply B+ between terminals 29 and 31.	2 – 3	Continuity

If continuity is not as specified, replace the engine room J/B.

3. **INSTALL ENGINE ROOM J/B**

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CONDENSER FAN RELAY

AC3Q4-01

INSPECTION

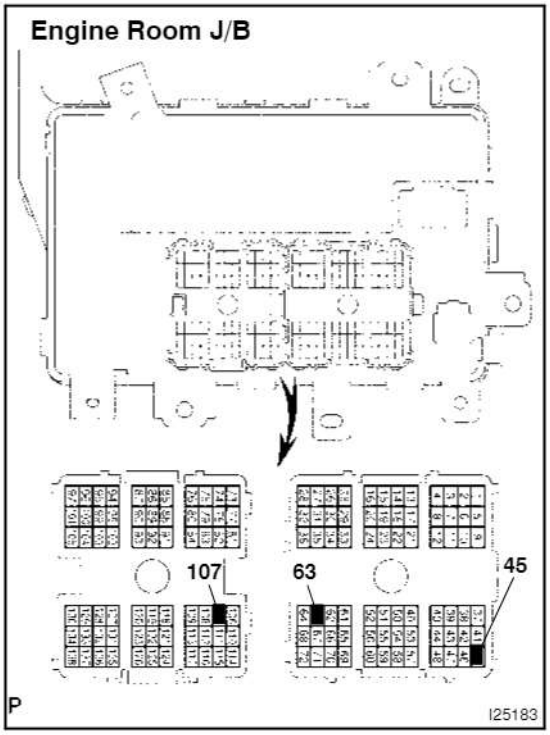
1. **REMOVE ENGINE ROOM J/B**
2. **INSPECT CONDENSER FAN RELAY CONTINUITY**

Condition	Tester connection	Specified condition
Constant	115 – 124	Continuity
Apply B+ between terminals 115 and 124.	12 – 125	Continuity

If continuity is not as specified, replace the engine room J/B.

3. **INSTALL ENGINE ROOM J/B**

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WATER TEMPERATURE CUT RELAY (1HZ, 1HD–T)

AC3Q5–01

INSPECTION

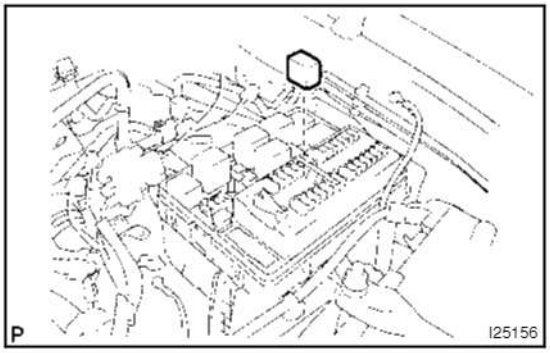
1. **REMOVE ENGINE ROOM J/B**
2. **INSPECT WATER TEMPERATURE CUT RELAY CONTINUITY**

Condition	Tester connection	Specified condition
Constant	45 – 63	Continuity
Apply B+ between terminals 45 and 63	63 – 107	Continuity

If continuity is not as specified, replace the engine room J/B.

3. **INSTALL ENGINE ROOM J/B**

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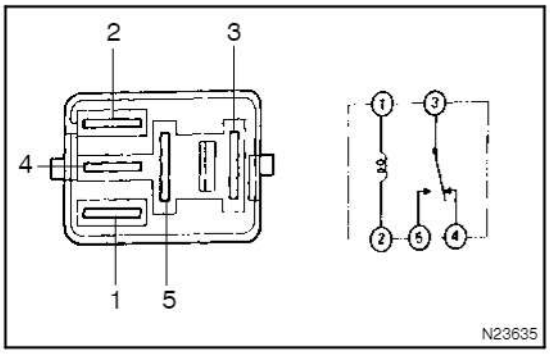
VISCOUS HEATER RELAY (1HD–FTE)

AC1U8–03

INSPECTION

1. REMOVE VISCOUS HEATER RELAY

Remove the viscous heater relay.



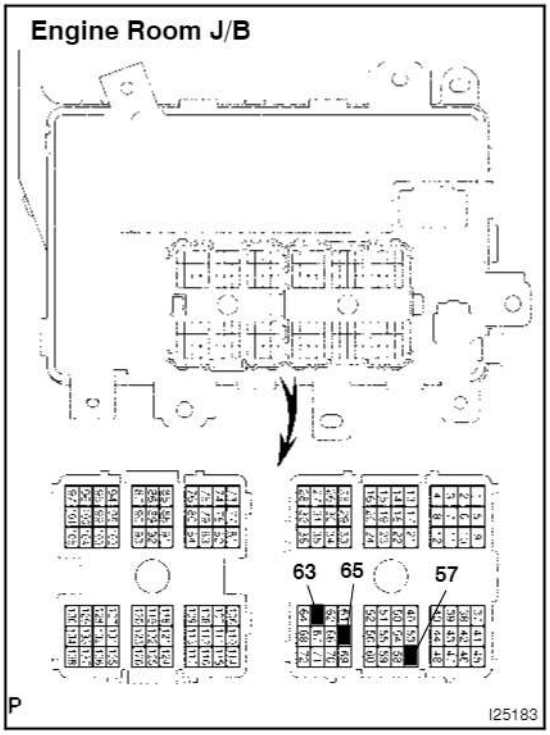
2. INSPECT VISCOUS HEATER RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2 3 – 4	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

3. INSTALL VISCOUS HEATER RELAY

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MAGNETIC CLUTCH RELAY

AC3Q6–01

INSPECTION

1. **REMOVE ENGINE ROOM J/B**
2. **INSPECT MAGNETIC CLUTCH RELAY CONTINUITY**

Condition	Tester connection	Specified condition
Constant	57 – 65	Continuity
Apply B+ between terminals 57 and 65	63 – 65	Continuity

If continuity is not as specified, replace the engine room J/B.

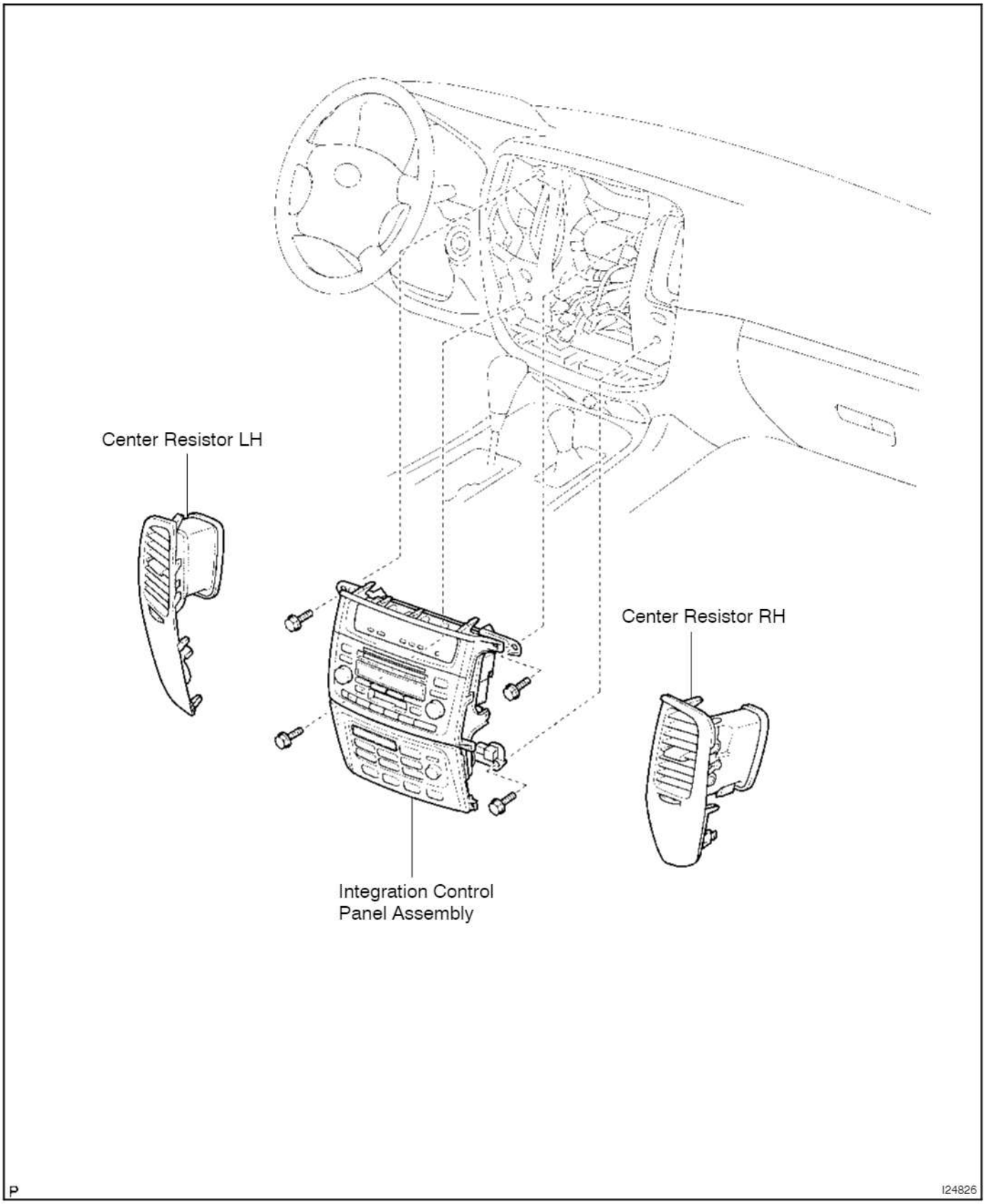
3. **INSTALL ENGINE ROOM J/B**

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AIR CONDITIONER CONTROL ASSEMBLY (Auto A/C)

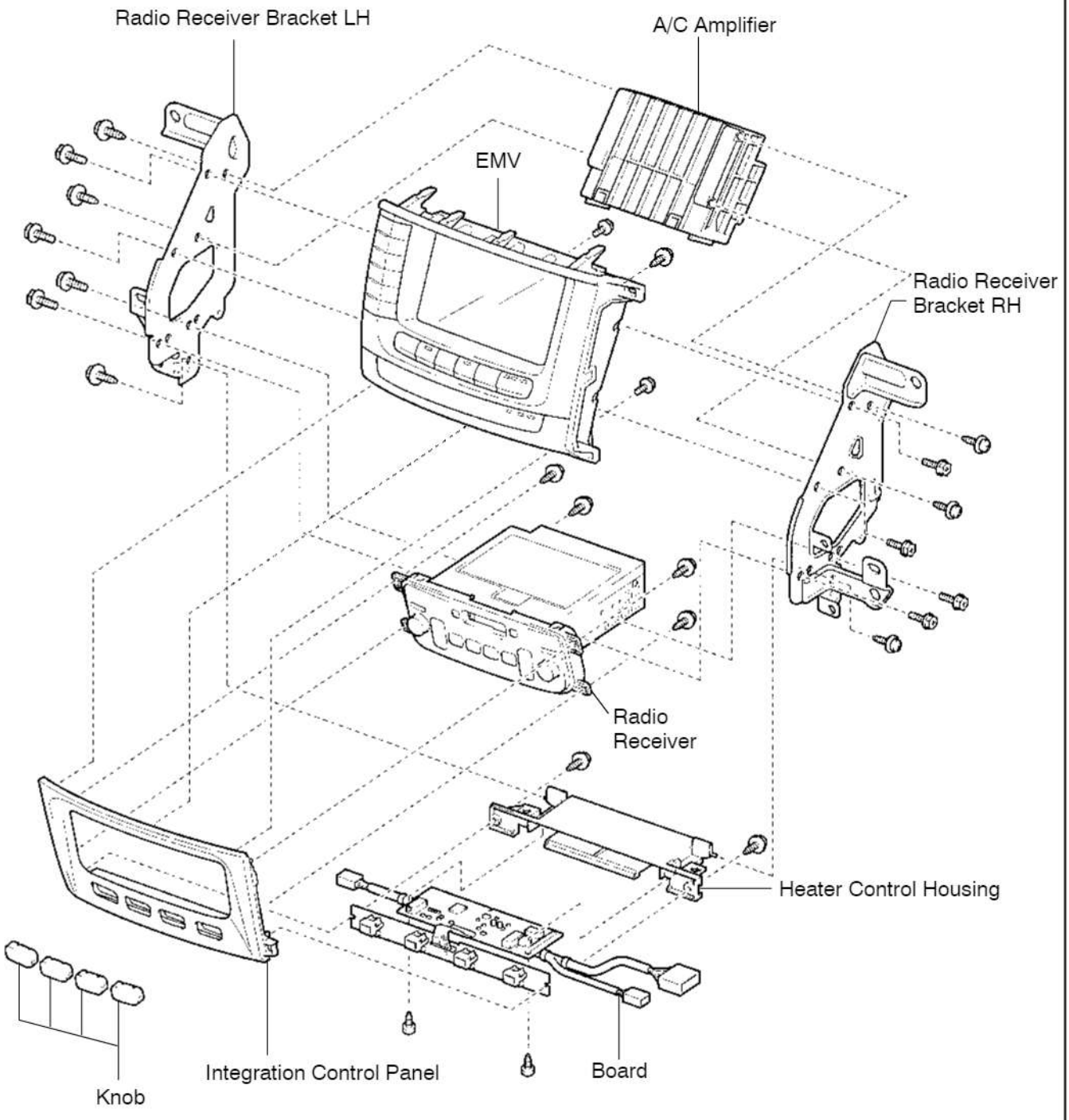
COMPONENTS

AC3Q7-01



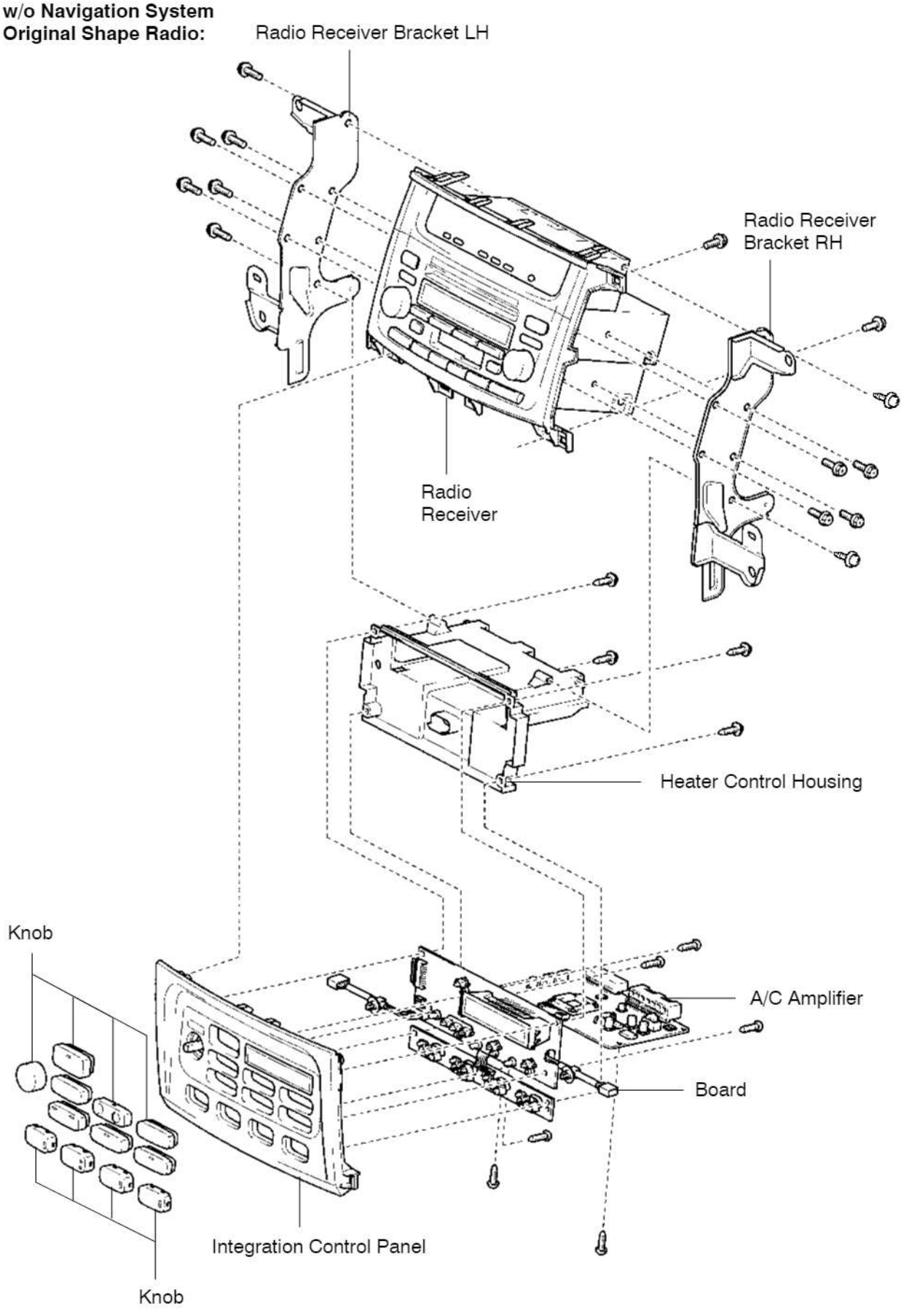
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w/ Navigation System:



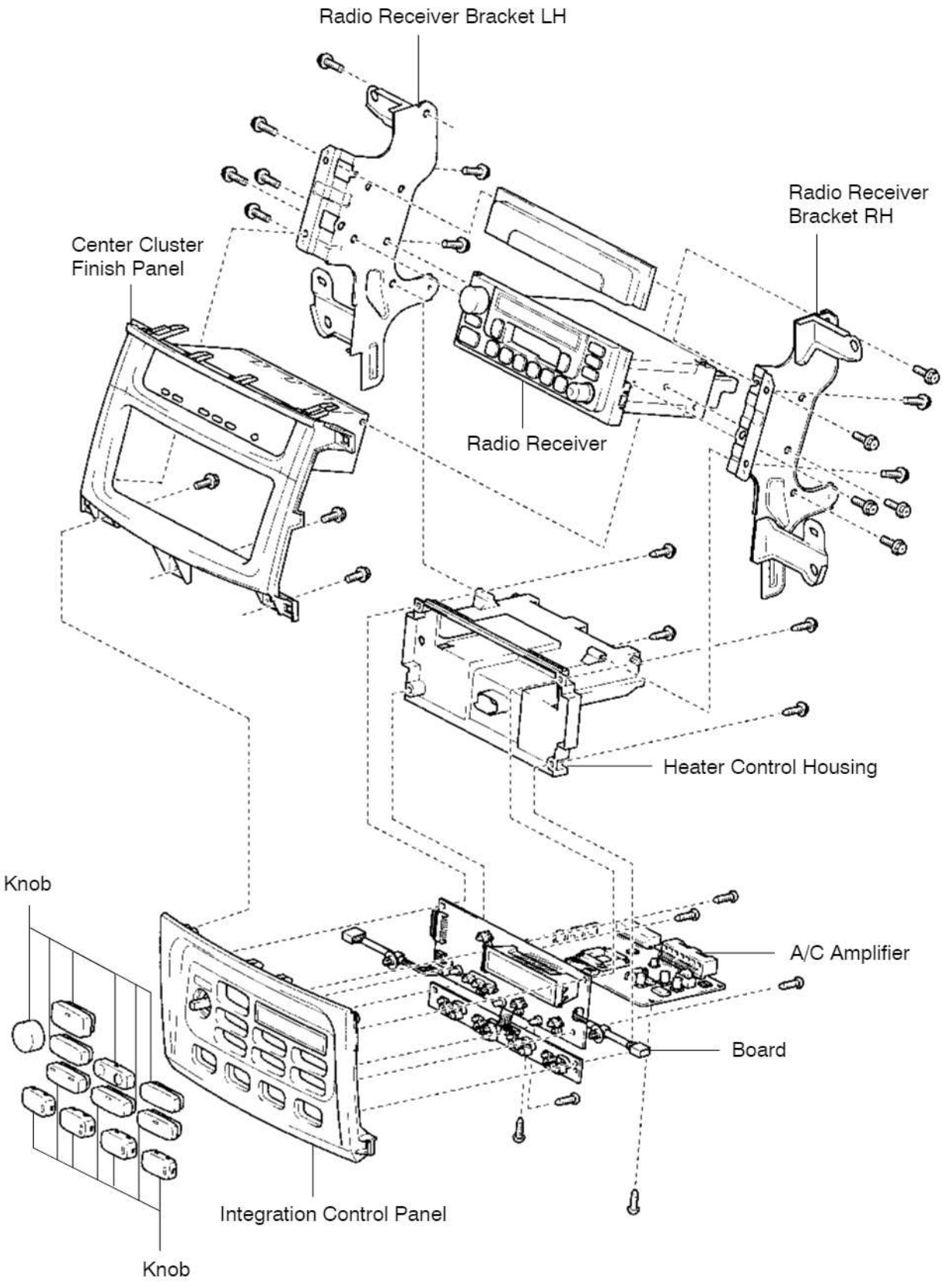
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w/o Navigation System
Original Shape Radio:



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w/o Navigation System
Except Original Shape Radio:



P

I25153

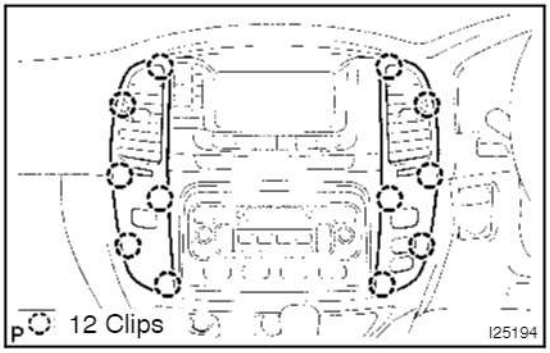
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AC3Q6–01

REMOVAL

1. REMOVE CENTER RESISTOR

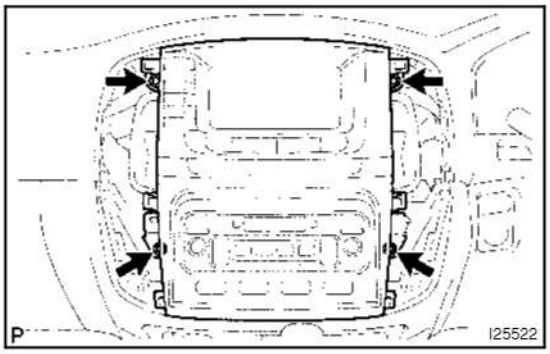
Disengage the12 clips and remove the center resistors, then disconnect the connectors.



2. REMOVE INTEGRATION CONTROL PANEL ASSEMBLY

(a) Remove the 4 bolts.

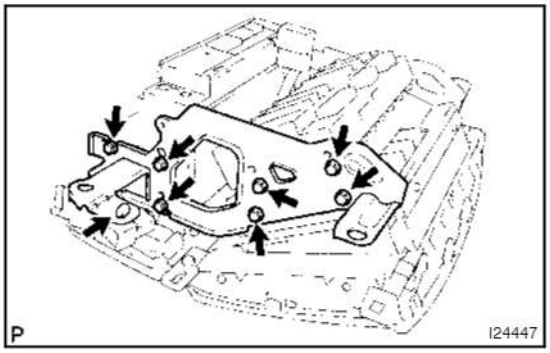
(b) Remove the integration control panel assembly, then disconnect the connector.



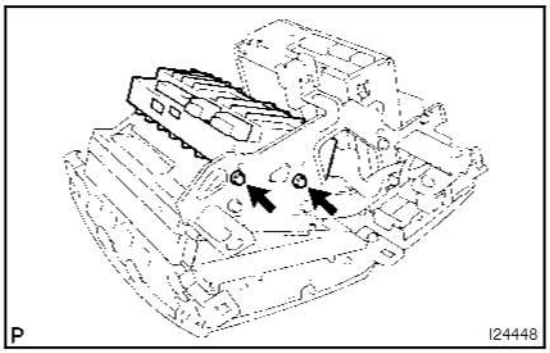
3. w/ navigation system: REMOVE A/C AMPLIFIER

(a) Disconnect the connector clamp.

(b) Remove the 3 screws, 4 bolts and radio receiver bracket LH.

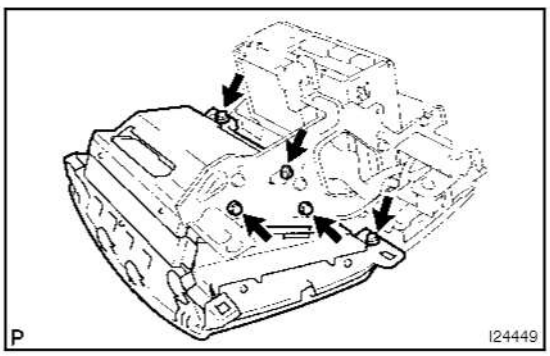


(c) Remove the 2 screws and A/C amplifier.

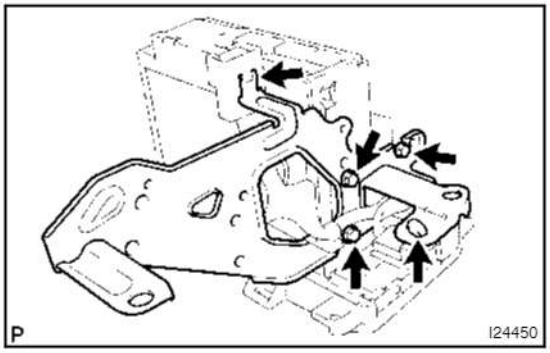


4. w/ navigation system: REMOVE EMV

Remove the 3 screws, 2 bolts and EMV.

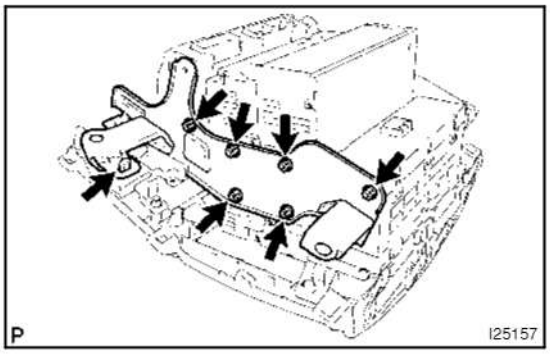


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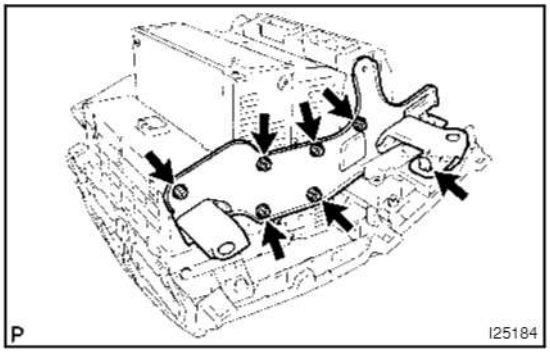
5. w/ navigation system:
REMOVE INTEGRATION CONTROL PANEL

(a) Disconnect the connector clamps.
(b) Remove the screw, 2 bolts and radio receiver bracket RH.
(c) Remove the integration control panel from radio receiver.

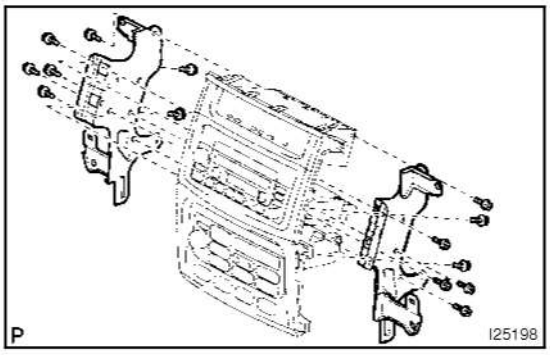


6. w/o navigation system
Original Shape Radio:
REMOVE INTEGRATION CONTROL PANEL

(a) Disconnect the connector clamp.
(b) Remove the 2 screws, 4 bolts and radio receiver bracket LH.

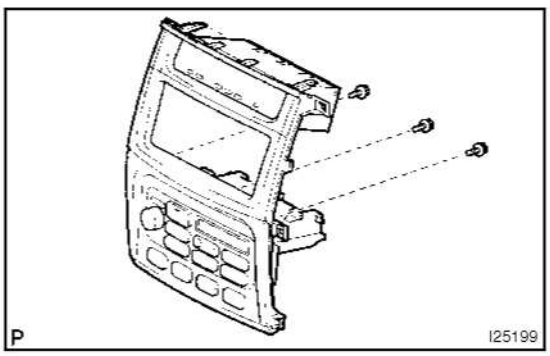


(c) Disconnect the connector clamp.
(d) Remove the 2 screws, 4 bolts and radio receiver bracket RH.
(e) Remove the integration control panel.



7. w/o navigation system
Except original shape radio:
REMOVE INTEGRATION CONTROL PANEL

(a) Remove 10 screws, 4 bolts and radio receiver bracket LH, RH.
(b) Remove the radio receiver.

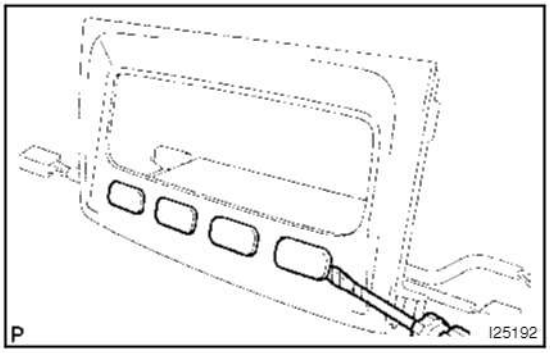


(c) Remove 3 screws and integration control panel.

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AC3Q8–01

DISASSEMBLY

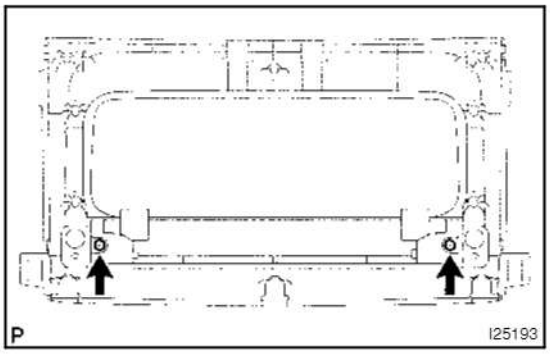


1. w/ navigation system:
REMOVE KNOB

Using a screwdriver, pull out the knobs.

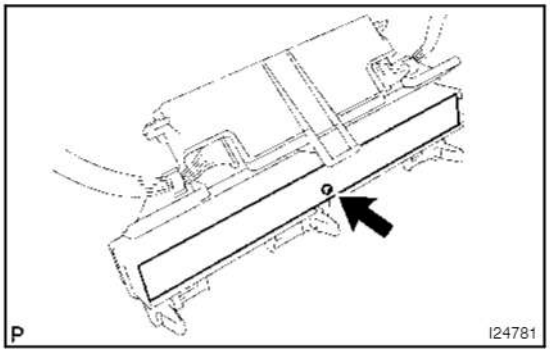
HINT:

Tape the screwdriver tip before use.

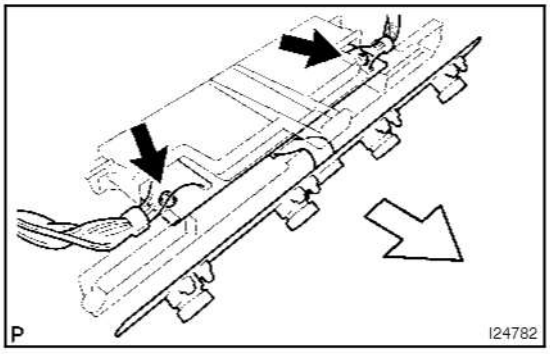


2. w/ navigation system:
REMOVE INTEGRATION CONTROL PANEL

(a) Remove the 2 screws.



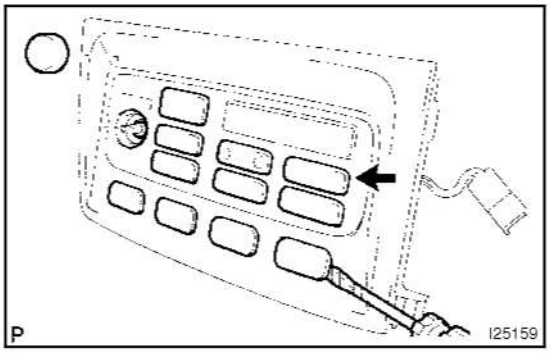
(b) Remove the screw and board.



3. w/ navigation system:
REMOVE A/C AMPLIFIER

(a) Disconnect the connector clamps.

(b) Remove the 2 screws and pull out the A/C amplifier from heater control housing.



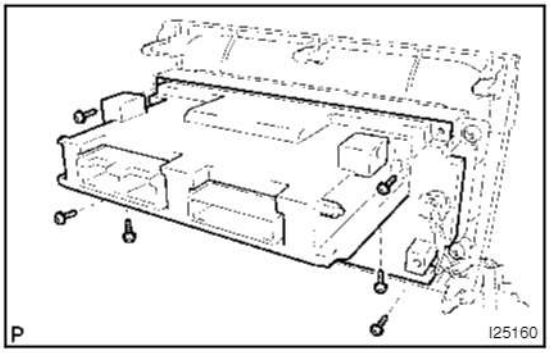
4. w/o navigation system:
REMOVE KNOB

Using a screwdriver, pull out the knobs.

HINT:

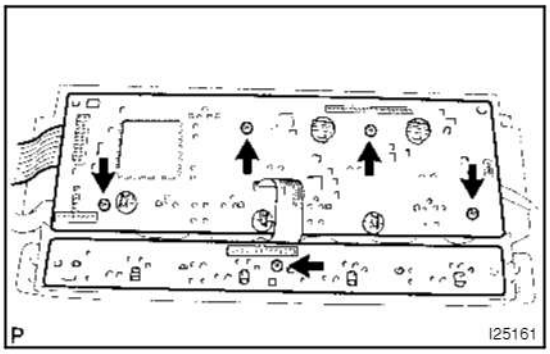
Tape the screwdriver tip before use.

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5. w/o navigation system:
REMOVE INTEGRATION CONTROL PANEL

(a) Remove the 6 screws and pull out the A/C amplifier.



(b) Remove the 5 screws and board.

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AC3QA-01

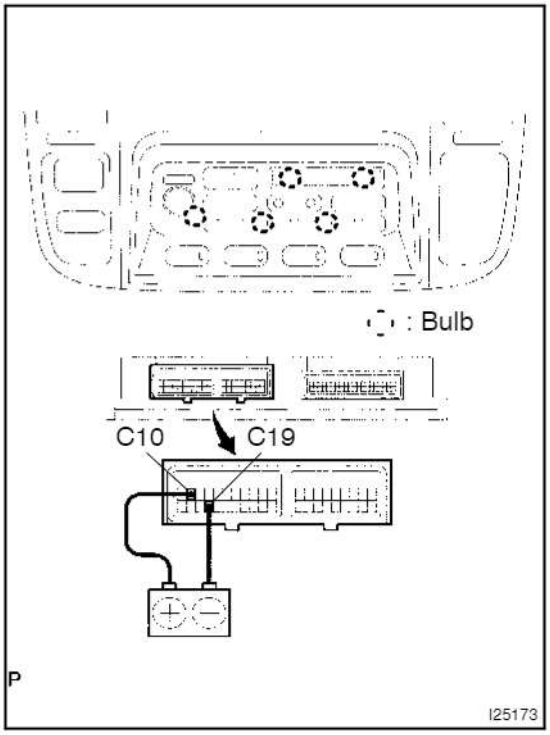
INSPECTION

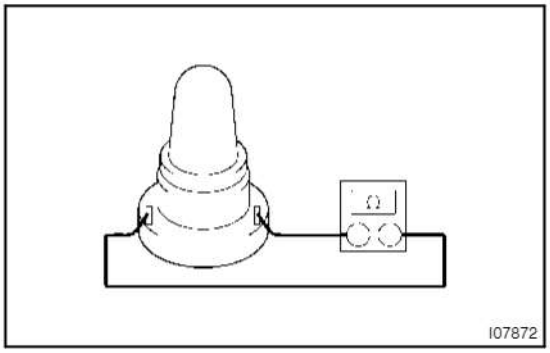
1. w/o Navigation system:
INSPECT ILLUMINATION OPERATION

(a) Connect the positive (+) lead from the battery to terminal C10 and negative (–) lead to terminal C19 then check that the illuminations lights up.

If operation is not as specified, check the faulty bulb.

(b) Remove the bulb.





(c) Apply the tester as shown in the illustration to the test for continuity.

If continuity exists, replace the heater control.
If no continuity exists, replace the bulb.

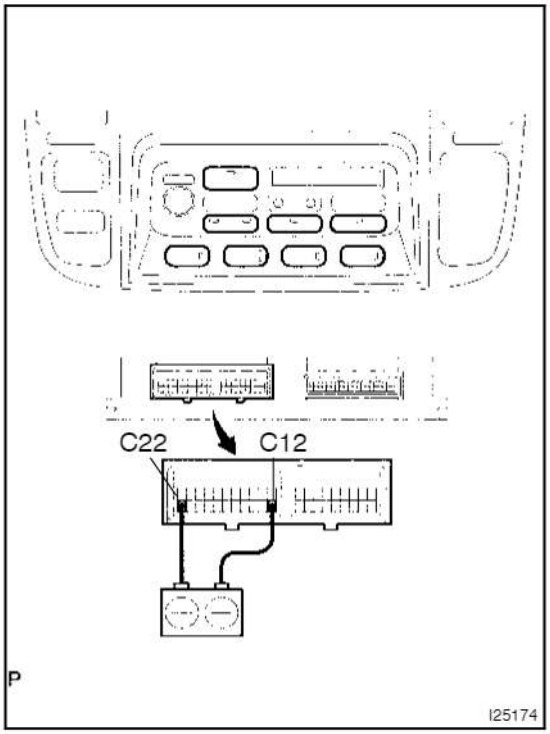
2. w/o Navigation system:
INSPECT INDICATORS OPERATION

(a) Connect the positive (+) lead from the battery to terminal C22 and negative (–) lead to terminal C12.

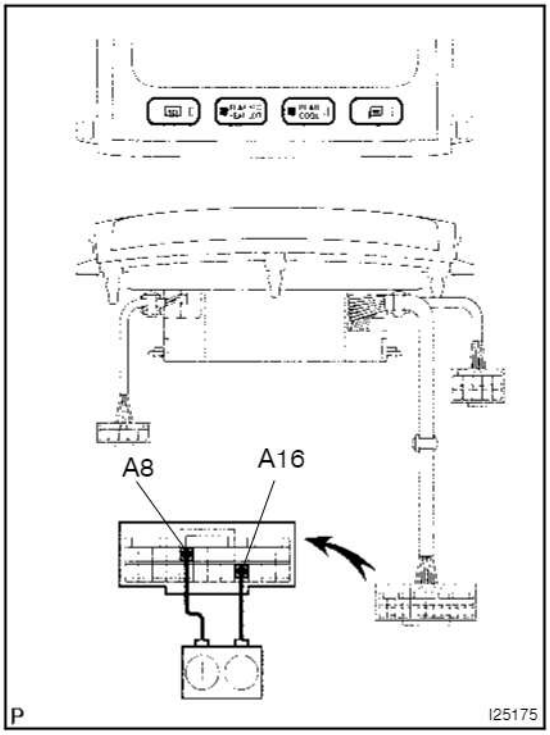
(b) Check that the indicators light up while operate the switches.

If operation is not as specified, replace the heater control.

3. INSPECT A/C CONTROL ASSEMBLY CIRCUIT
(See page DI–1233)



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4. w/ Navigation system:
INSPECT INDICATORS OPERATION

(a) Connect the positive (+) lead from the battery to terminal A8 and negative (–) lead to terminal A16.

(b) Check that the indicators light up while operate the switches.

If operation is not as specified, replace the heater control.

5. INSPECT A/C CONTROL ASSEMBLY CIRCUIT
(See page DI–1233)

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AC3QB–01

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page AC–27).

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AC3QC–01

INSTALLATION

Installation is in the reverse order of removal (See page AC–25).

HINT:

w/ Navigation System:

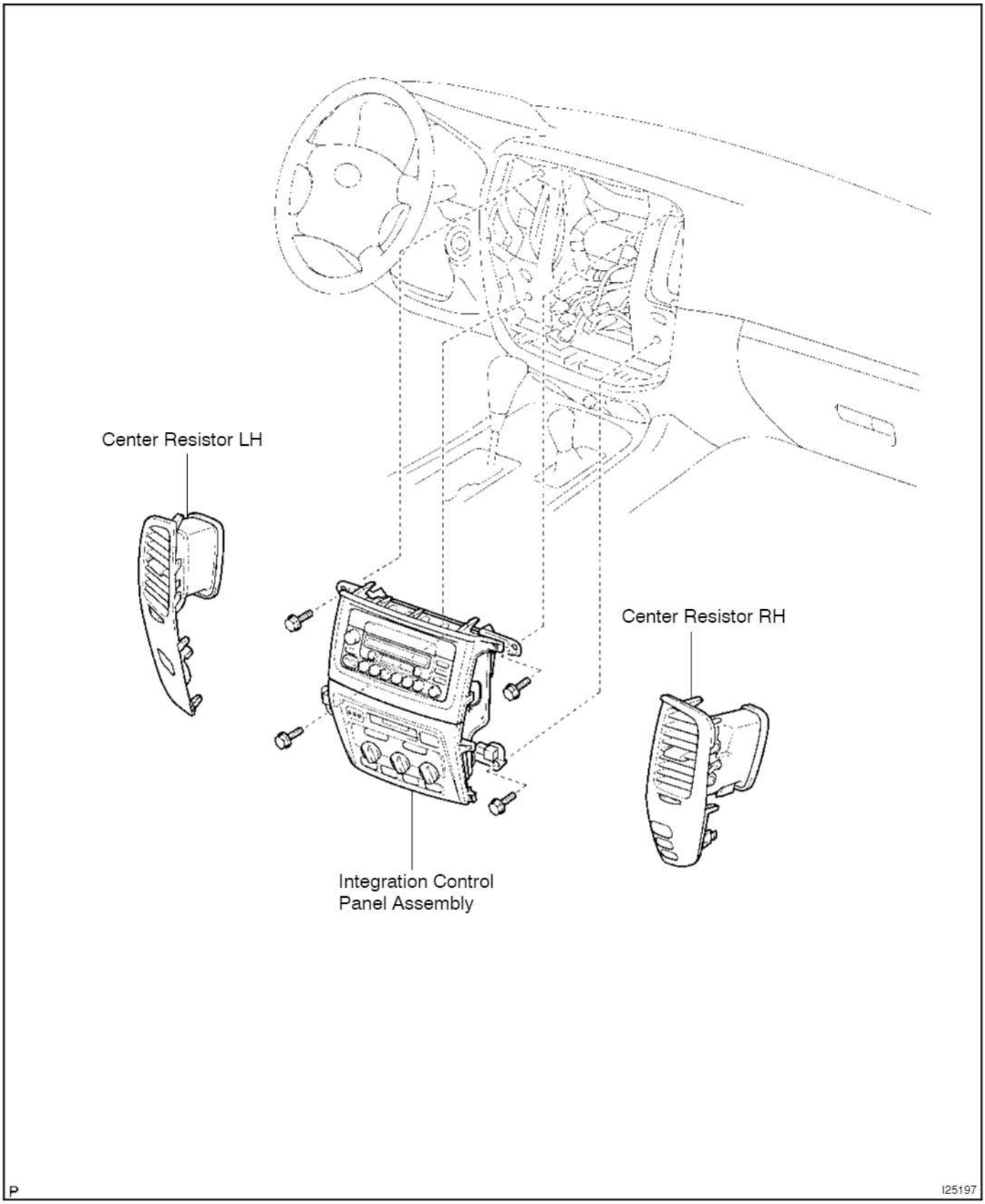
When removing/installing or replacing EMV, or when disconnecting/connecting the battery terminal, turn the IG ON and OFF twice for initial display setting.

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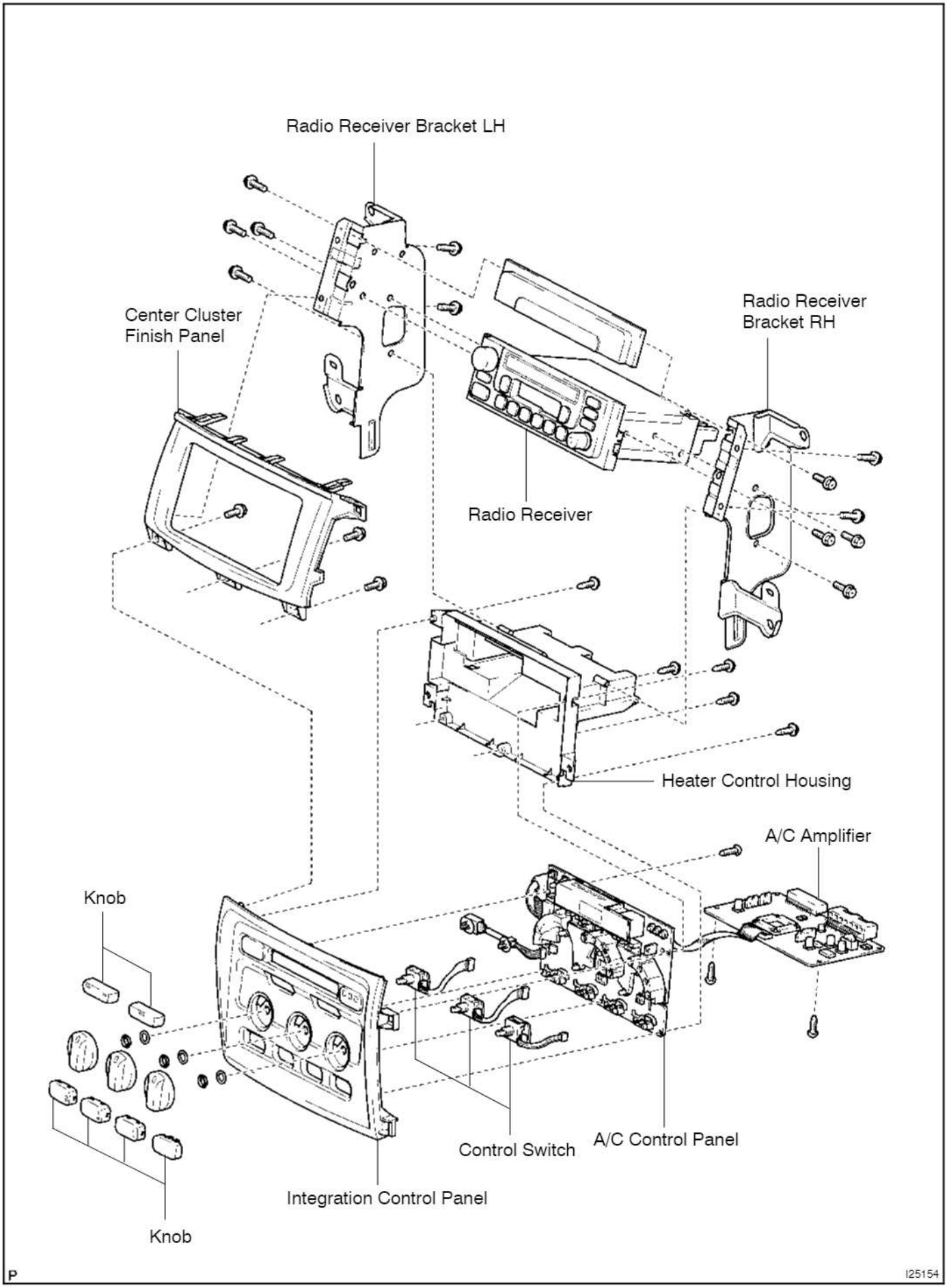
AIR CONDITIONER CONTROL ASSEMBLY (Manual A/C)

AC3QD-01

COMPONENTS

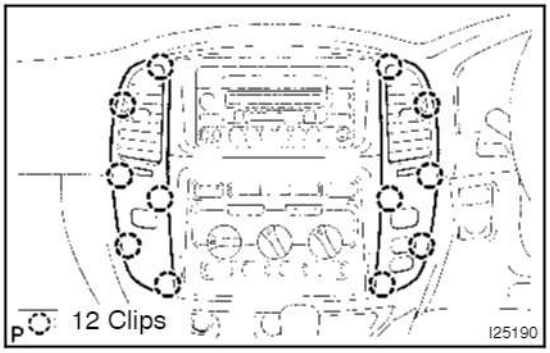


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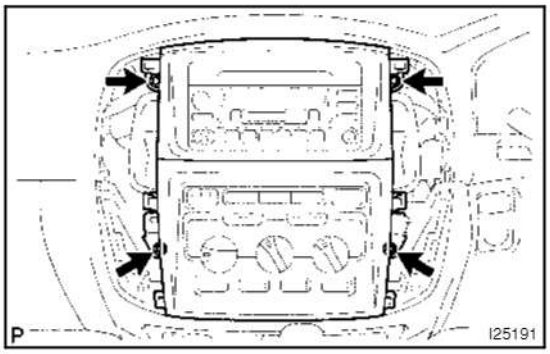
AC3QE-01



REMOVAL

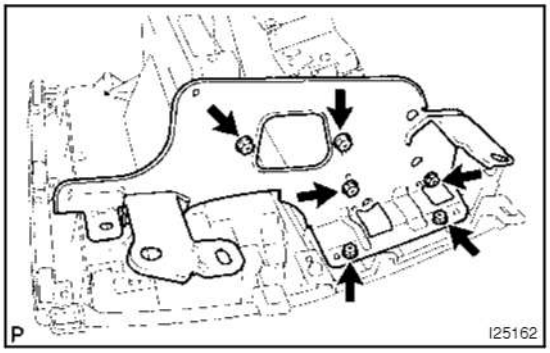
1. REMOVE CENTER RESISTOR

Remove the 2 center resistors.



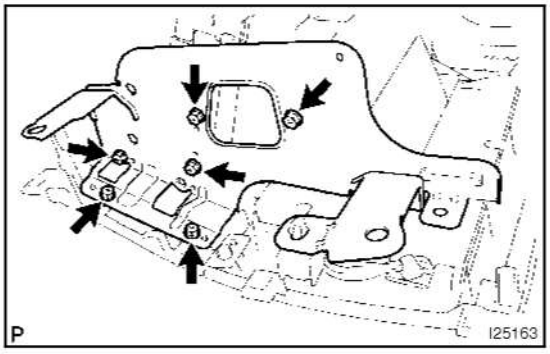
2. REMOVE INTEGRATION CONTROL PANEL ASSEMBLY

(a) Remove the 4 bolts.
(b) Remove the integration control panel assembly.
(c) Disconnect the connectors.



3. REMOVE RADIO RECEIVER BRACKET LH

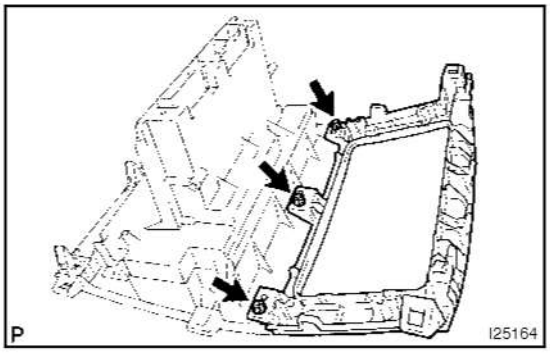
Remove the 6 bolts and radio receiver bracket LH.



4. REMOVE RADIO RECEIVER BRACKET RH

Remove the 4 screws, 2 bolts and radio receiver bracket RH.

5. REMOVE RADIO RECEIVER



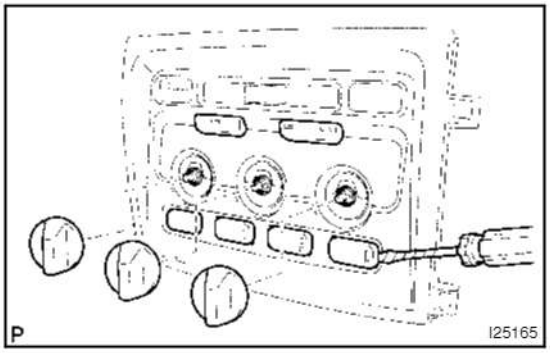
6. REMOVE CENTER CLUSTER FINISH PANEL

Remove the 3 screws and center cluster finish panel.

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AC3QF-01

DISASSEMBLY



1. REMOVE KNOB

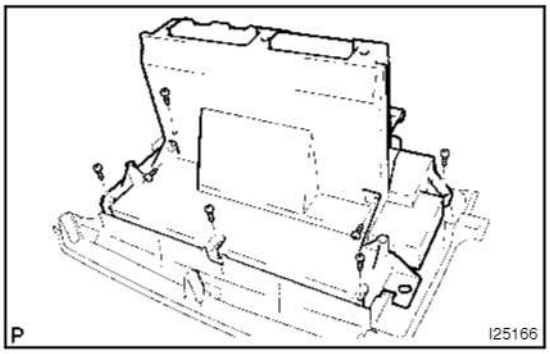
(a) Pull out the dial knobs.

(b) Remove the nuts.

(c) Using a screwdriver, pull out the switch knobs.

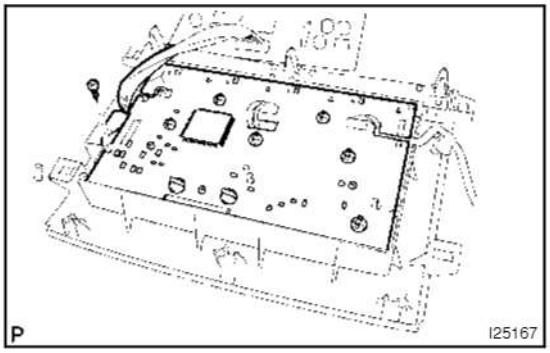
HINT:

Tape the screwdriver tip before use.



2. REMOVE A/C AMPLIFIER

Remove the 7 screws and pull out the A/C amplifier.



3. REMOVE A/C CONTROL PANEL

(a) Remove the screw and A/C control panel.

(b) Disconnect the connectors and remove the switches.

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AC3QG-01

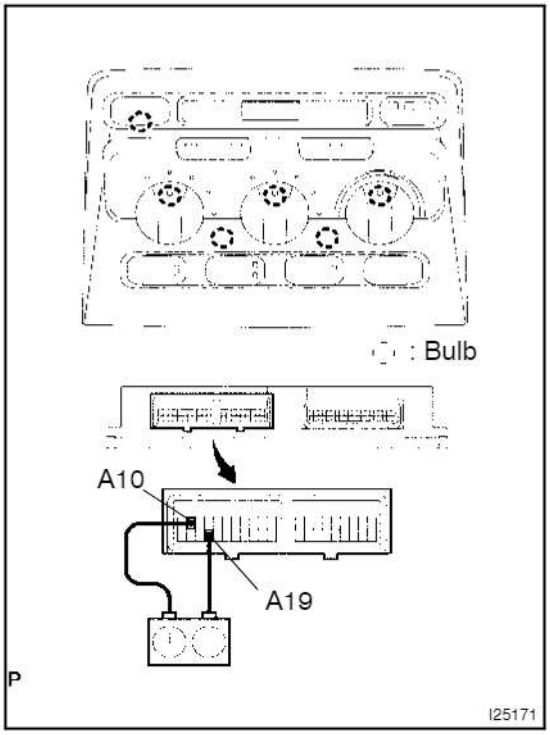
INSPECTION

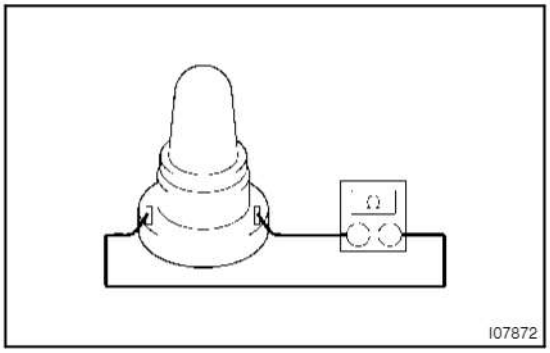
1. INSPECT ILLUMINATION OPERATION

(a) Connect the positive (+) lead from the battery to terminal C10 and negative (–) lead to terminal A19 then check that the illuminations lights up.

If operation is not as specified, check the faulty bulb.

(b) Remove the bulb.





(c) Apply the tester as shown in the illustration to the test for continuity.

If continuity exists, replace the heater control.

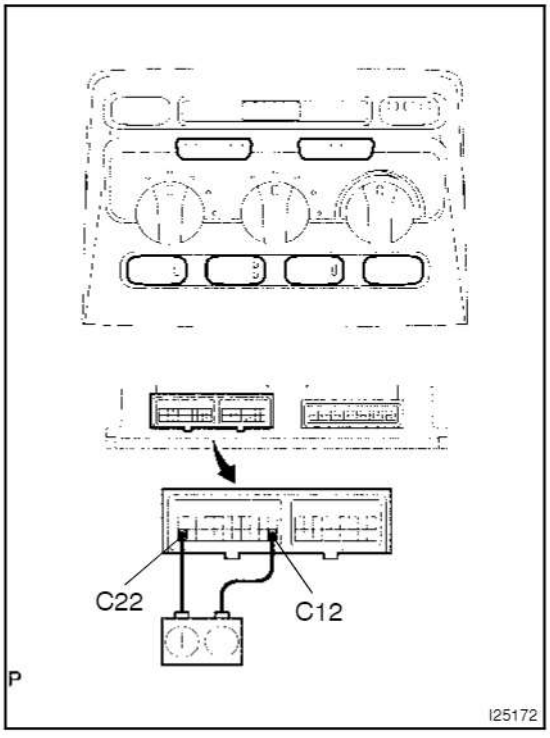
If no continuity exists, replace the bulb.

2. INSPECT INDICATORS OPERATION

(a) Connect the positive (+) lead from the battery to terminal C22 and negative (–) lead to terminal C12.

(b) Check that the indicators light up while operate the switches.

If operation is not as specified, replace the heater control.



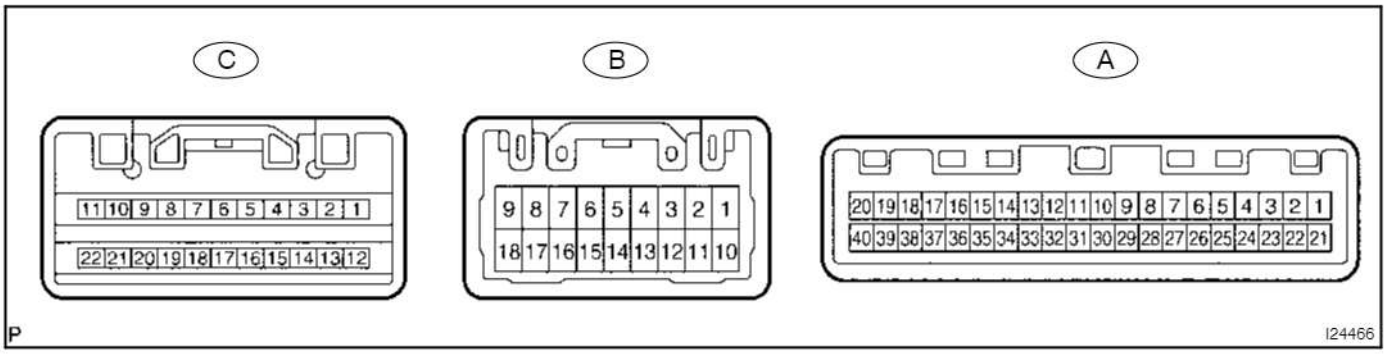
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3. INSPECT A/C CONTROL ASSEMBLY CIRCUIT

Connect the connectors to A/C control assembly and inspect wire harness side from the back side as shown in the chart below.

Test conditions:

- Run engine at idle speed
- Set on manifold gauge set



Tester connection	Condition	Specified condition
A1 – C12	Air inlet control switch "FRESH"	Battery voltage
	Air inlet control switch "RECIRC"	Below 1.0 V
A2 – C12	Air inlet control switch "FRESH"	Below 1.0 V
	Air inlet control switch "RECIRC"	Battery voltage
A3 – C12	Rear heater switch "OFF"	Battery voltage
	Rear heater switch "ON"	Below 1.0 V
A4 – C12	Rear heater switch "OFF"	Battery voltage
	Rear heater switch "ON"	Below 1.0 V
A6 – C12	Mirror heater switch "OFF"	Battery voltage
	Mirror heater switch "ON"	Below 1.0 V
A7 – C12 *1	Compressor operate	Battery voltage
	Compressor does not operate	Below 1.0 V
A7 – C12 *2	Compressor operates	Below 1.0 V
	Compressor does not operate	Battery voltage
A9 – C12	Front A/C blower motor operate	Below 1.0 V
	Front A/C blower motor does not operate	Battery voltage
A10 – C12	Rear defogger switch "OFF"	Battery voltage
	Rear defogger switch "ON"	Below 1.0 V
A11 – C12 *2	Compressor operate	Below 1.0 V
	Compressor does not operate	Battery voltage
A12 – C12	Mode control switch "DEF"	Below 0.7 V
	Mode control switch "Except DEF"	Battery voltage
A13 – C12	Mode control switch "FOOT/DEF"	Below 0.7 V
	Mode control switch "Except FOOT/DEF"	Battery voltage
A14 – C12	Mode control switch "FOOT"	Below 0.7 V
	Mode control switch "Except FOOT"	Battery voltage

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A15 – C12	Mode control switch "BI–LEVEL"	Below 0.7 V
	Mode control switch "Except BI–LEVEL"	Battery voltage
A16 – C12	Mode control dial "FACE"	Below 0.7 V
	Mode control dial "Except FACE"	Battery voltage
A17 – C12	Rear heater switch "HI"	Below 1.0 V
	Rear heater switch "OFF"	No voltage
A18 – C12	Rear heater switch "LO"	Below 1.0 V
	Rear heater switch "OFF"	No voltage
A19 – C12	Front blower control dial "LO"	Below 1.0 V
A20 – C12	A/C switch "ON"	Below 1.0 V
	A/C switch "OFF"	Battery voltage
A21 – C12	Temperature control dial "MAX. COOL"	Below 1.0 V
	Temperature control dial "MAX. WARM"	Battery voltage
A22 – C12	Temperature control dial "MAX. COOL"	Battery voltage
	Temperature control dial "MAX. WARM"	Below 1.0 V
A24 – C12	Hazard switch "ON"	Continuity
A25 – C12	Diff. lock switch "OFF"	Continuity
A26 – C12	Diff. lock switch "OFF"	Continuity
A27 – C12	Diff. lock switch "ON"	Continuity
A28 – C12	Push in antenna up switch	Continuity
A29 – C12	Push in antenna down switch	Continuity
A37 – C12	Front blower control dial "HI"	Below 1.0 V
A38 – C12	Front blower control dial "M1"	Below 1.0 V
A39 – C12	Rear cooler blower motor operate	Below 1.0 V
	Rear cooler blower motor does not operate	Battery
A40 – C12	Rear cooler switch "ON"	Below 1.0 V
	Rear cooler switch "OFF"	Battery voltage
B3 – C12	Rear cooler switch "OFF"	No voltage
	Rear cooler switch "ON"	Below 1.0 V
B5 – B18	Temperature control dial "MAX. COOL"	Approx. 4.0 V
	Temperature control dial "MAX. WARM"	Approx. 1.0 V
B6 – B18	Cool box evaporator temperature at 25 °C (77 °F)	1.4 – 1.8 V
B7 – B18	Ambient temperature at 25 °C (77 °F)	1.35 – 1.75 V
B9 – B18	Trun ignition switch "ON"	5.0 V
	Trun ignition switch "OFF"	No voltage
B11 – C12	Cool box control switch "OFF"	Battery voltage
	Cool box control switch "NORMAL"	Below 1.0 V
B12 – C12	Cool box control switch "NORMAL"	Battery voltage
	Cool box control switch "MAX"	Below 1.0 V
B13 – C12	Cool box control switch "OFF"	Battery voltage
	Cool box control switch "NORMAL"	Below 1.0 V
B14 – B18	Air inlet control switch "FRESH"	Approx. 1.0 V
	Air inlet control switch "RECIRC"	Approx. 4.0 V
B16 – B18	Evaporator temperature at 15°C (59°F)	1.4 – 1.8 V
B18 – Body ground	Always	Continuity

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C4 – C12 *1	Compressor operate	Below 1.0 V
	Compressor does not operate	No voltage
C4 – C12 *2	Compressor operate	No voltage
	Compressor does not operate	Below 1.0 V
C7 – C12	Cool box control switch "OFF"	Battery voltage
	Cool box control switch "COOL"	No voltage
C8 – C12	Refrigerant pressure at 196 – 3,140 kPa	Below 1.0 V
	Refrigerant pressure at below 196 kPa or over 3,140 kPa	No voltage
C9 – C12	Rear heater switch "OFF"	Battery voltage
	Rear heater switch "ON"	Below 1.0 V
C10 – C12	Light control switch "TAIL"	Battery voltage
	Light control switch "OFF"	No voltage
C11 – C12	Always	Battery voltage
C12 – Body ground	Always	Continuity
C13 – C12	Rear A/C switch "OFF"	No voltage
	Rear A/C switch "ON"	Below 1.0 V
C14 – C12 *3	Turn ignition switch "ON"	Below 1.0 V
	Turn ignition switch "OFF"	No voltage
C19 – C12	Light control switch "TAIL"	Below 1.0 V
	Light control switch "OFF"	No voltage
C21 – Ground	Turn ignition switch "ACC"	Battery voltage
	Turn ignition switch "OFF"	No voltage
C22 – C12	Light control switch "ON"	Battery voltage
	Light control switch "OFF"	No voltage

*1: 2UZ–FE Models
*2: Except 2UZ–FE Models
*3: RHD Models

If the circuits is as specified, try to replace the amplifier with a new one.
If the circuits is not as specified, inspect the circuits connected to other parts.

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AC3QH–01

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page AC–36).

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AC3QI–01

INSTALLATION

Installation is in the reverse order of removal (See page AC–35).

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