BODY ELECTRICAL

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PRECAUTION

Take care to observe the doing precautions when performing inspections or removal and replacement of body electrical related parts. BE1CL-11

HEADLIGHT SYSTEM BE38N-01

- Halogen bulbs have pressurized gas inside and require special handling. They can burst if scratched or dropped. Hold a bulb only by its plastic or metal case.
  Don't touch the glass part of a bulb with bare hands.

SRS (SUPPLEMENTAL RESTRAINT SYSTEM) BE1CM-11

The LAND CRUISER / LAND CRUISER PRADO is equipped with an SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during 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.

AUDIO SYSTEM BE1CK-0W

If the negative (−) terminal cable is disconnected from the battery, the preset AM, FM 1 and FM 2 stations stored in memory are erased, so be sure to note the stations and reset them after the battery terminal is reconnected.

MOBILE COMMUNICATION SYSTEM BE1CP-0U

If the vehicle is equipped with a mobile communication system, refer to precautions in the IN section.

BE

PREPARATION

SST (SPECIAL SERVICE TOOLS) BE03Q-0E

	09843–18020 Diagnosis Check Wire	
	09992–00241 Turbocharger Pressure Gauge	

RECOMMENDED TOOLS BE0BH-0X

	09082–00040 TOYOTA Electrical Tester.	

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BE03J-01

EQUIPMENT

Voltmeter	
Ammeter	
Ohmmeter	
Test lead	
Syphon	Brake fluid level warning switch
Bulb (3.4 W)	Fuel sender gauge, Seat belt warning relay
Bulb (21 W)	Turn signal flasher relay
Dry cell battery	Fuel sender gauge
Torque wrench	
Masking tape	Rear window defogger wire
Tin foil	Rear window defogger wire

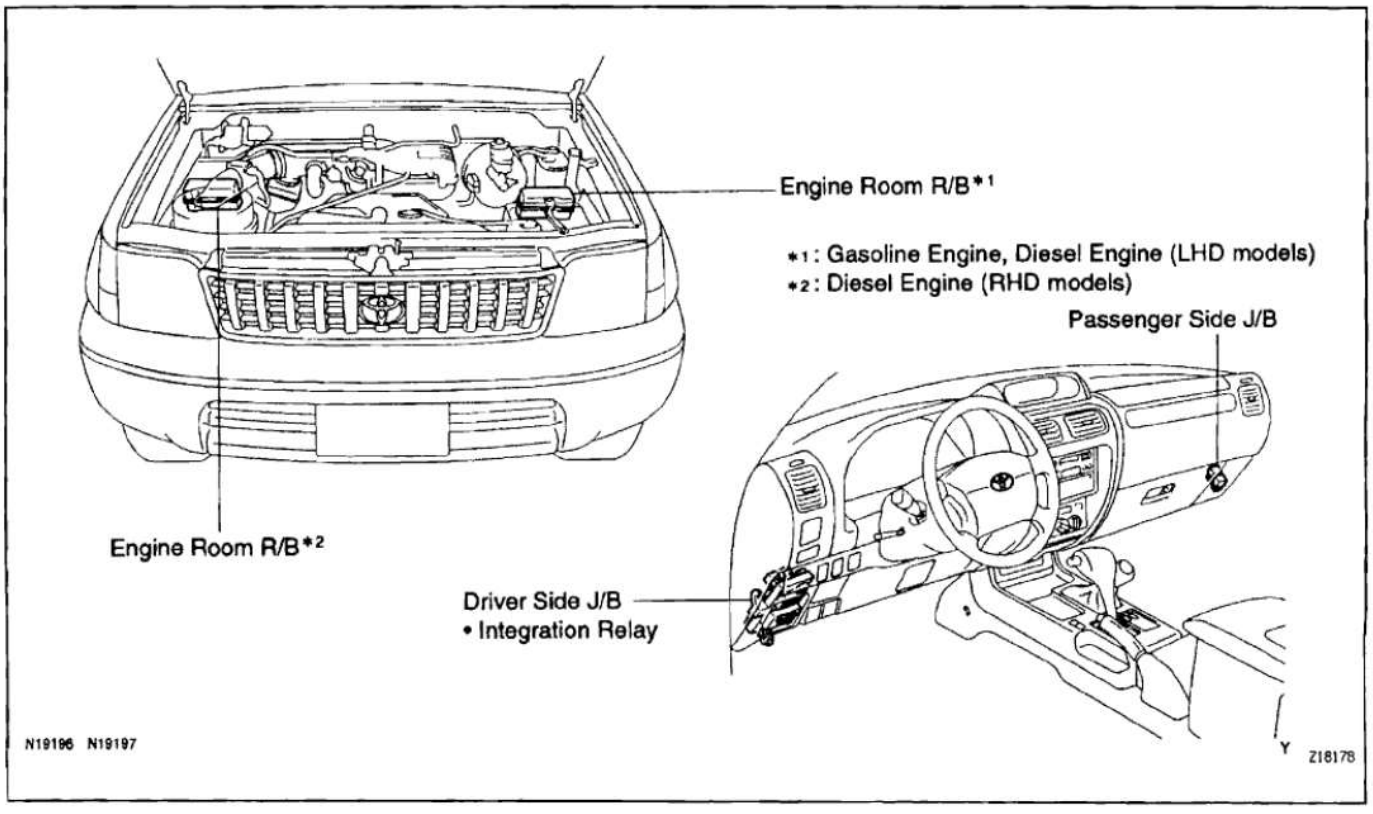
BE10M-02

SSM (SPECIAL SERVICE MATERIAL)

08888–88888	DuPont Paste No. 4817 or equivalent	Rear window defogger

POWER SOURCE
PARTS LOCATION

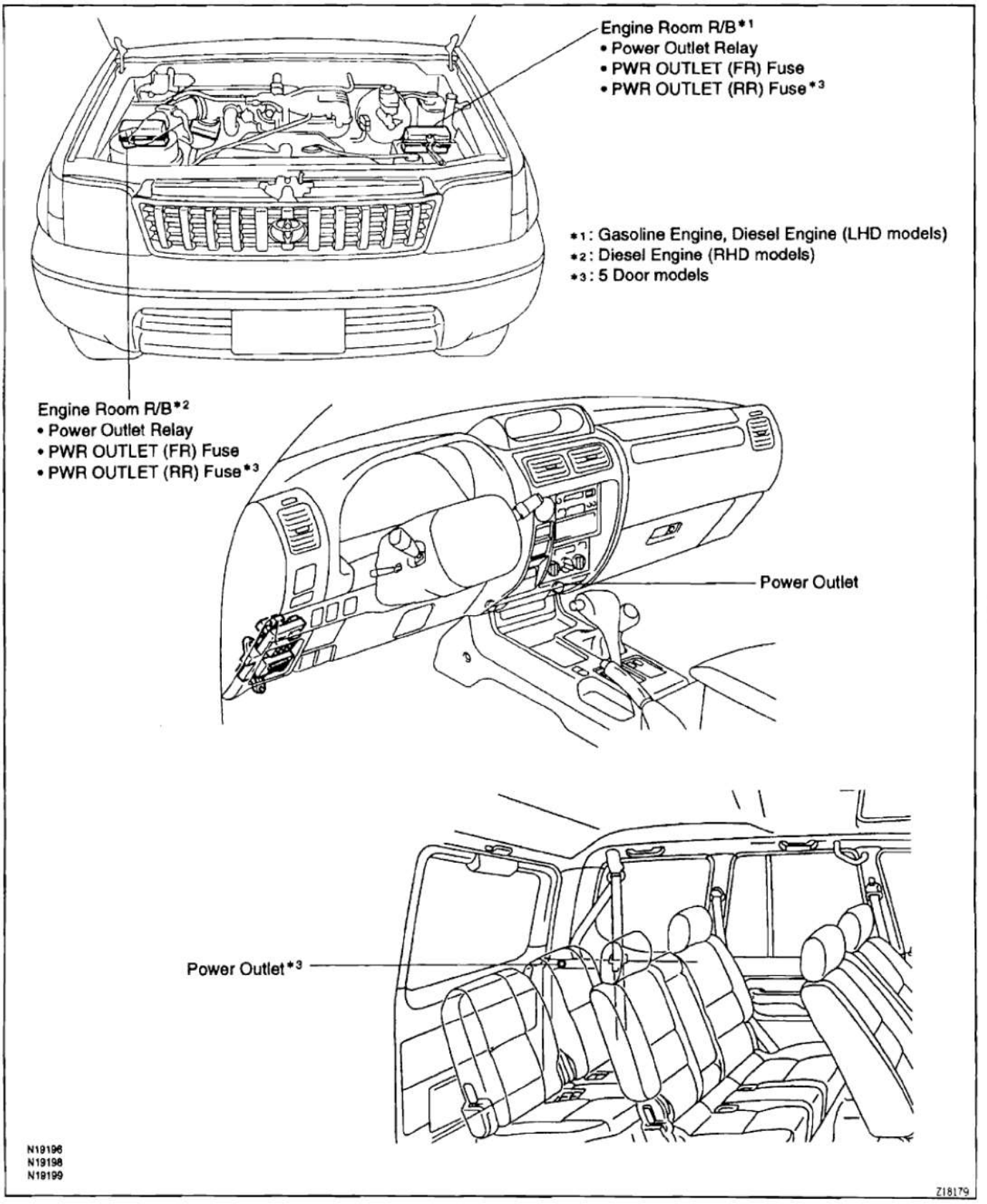
BE2P4-02



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POWER OUTLET
PARTS LOCATION

BE380-01

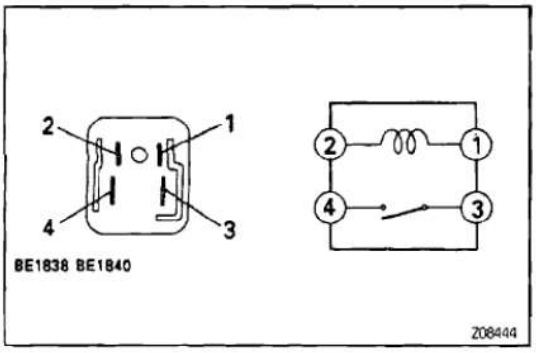


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TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Electric power source cannot be taken out of the power outlet.	1. Battery 2. Power Outlet Relay 3. PWR OUTLET (FR) Fuse (Engine Room R/B) 4. 5 door models: PWR OUTLET (RR) Fuse (Engine Room R/B) 5. Wire Harness	(BE–5)
Electric power source cannot be taken out of the front power outlet.	1. Battery 2. Power Outlet Relay 3. PWR OUTLET (FR) Fuse (Engine Room R/B) 4. Wire Harness	(BE–5)
5 door models only: Electric power source cannot be taken out of the rear power outlet.	1. Battery 2. Power Outlet Relay 3. 5 door models: PWR OUTLET (RR) Fuse (Engine Room R/B) 4. Wire Harness	(BE–5)



POWER OUTLET RELAY INSPECTION

INSPECT RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 4	Continuity

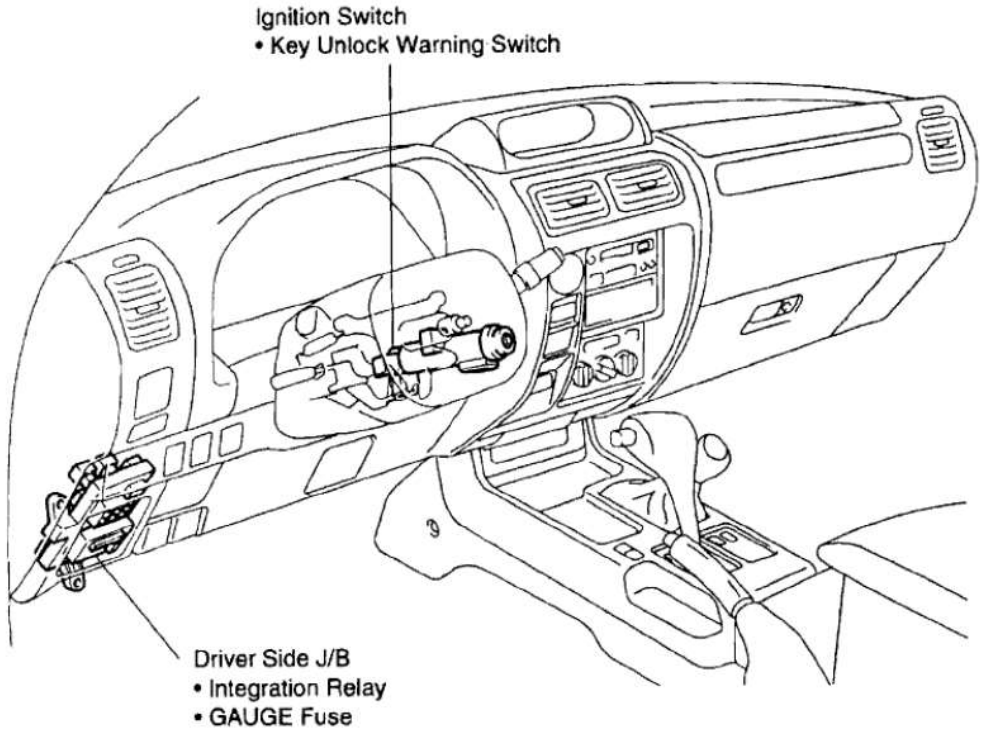
If continuity is not as specified, replace the relay.

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IGNITION SWITCH

PARTS LOCATION

BE03W-08



BE

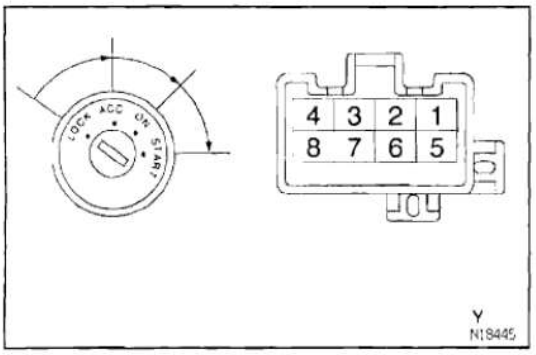
TROUBLESHOOTING

BE1U8-08

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Ignition switch is not set to each position.	1. Ignition Switch	(BE–7)
	2. Power Source Circuit	
"Key unlock warning system" does not operate.	1. GAUGE Fuse (Driver Side J/B)	
	2. Key Unlock Warning Switch	(BE–7)
	3. Door Courtesy Switch	(BE–30)
	4. Wire Harness	

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IGNITION SWITCH INSPECTION

BE1CQ-0H

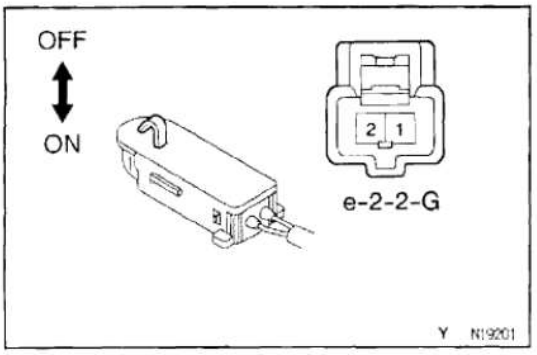
INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
LOCK	–	No continuity
ACC	2 – 3	Continuity
ON	2 – 3 – 4 6 – 7	Continuity
START	1 – 2 – 4 6 – 7 – 8	Continuity

If continuity is not as specified, replace the switch.

KEY UNLOCK WARNING SWITCH INSPECTION

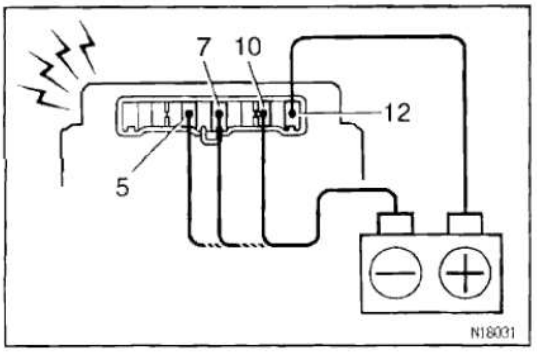
BE269-0D



INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Key removed)	–	No continuity
ON (Key set)	1 – 2	Continuity

If continuity is not as specified, replace the switch.



KEY UNLOCK WARNING SYSTEM INSPECTION

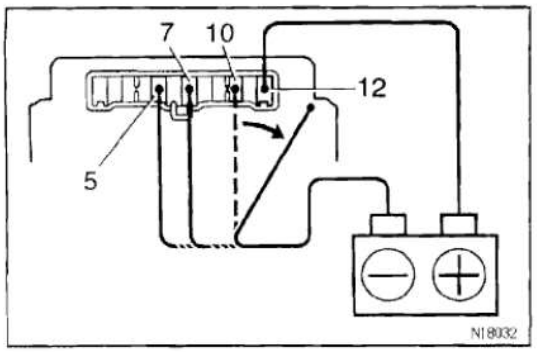
BE2AX-0S

1. INSPECT INTEGRATION RELAY OPERATION

(a) Connect the positive (+) lead from the battery to terminal 12.

(b) Connect the negative (–) lead from the battery to terminals 5, 7 and 10.

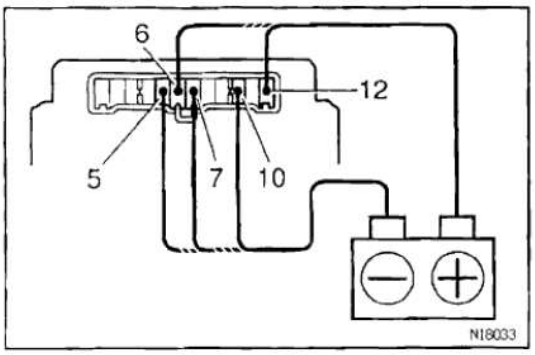
(c) Check that the chime sounds.



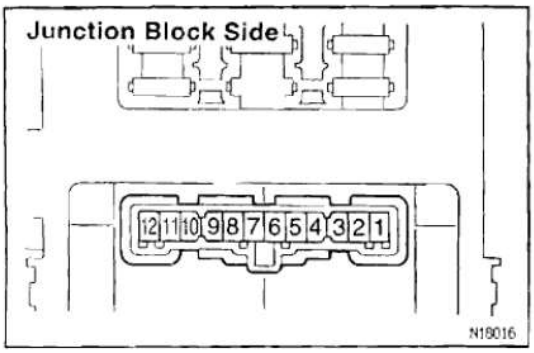
(d) Disconnect the negative (–) lead from the battery to terminal 10.

(e) Check that the chime stops sounding.

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(f) Connect the negative (−) lead from the battery to terminal 10.
(g) Connect the positive (+) lead from the battery to terminal 6.
(h) Check that the chime stops sounding.
If operation is not as specified, replace the relay.



2. INSPECT INTEGRATION RELAY CIRCUIT

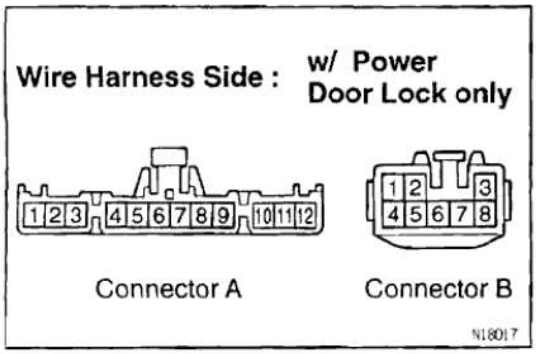
(a) Remove the relay from the Driver Side J/B and inspect the connectors on the J/B side.

Tester connection	Condition	Specified condition
7 – Ground	Constant	Continuity
9 – Ground	Passenger's door courtesy switch OFF (Room light switch OFF)	Continuity
9 – Ground	Passenger's door courtesy switch ON (Room light switch OFF)	No continuity
4 – Ground	Light control switch OFF	No voltage
4 – Ground	Light control switch TAIL or HEAD	Battery voltage
6 – Ground	Ignition switch LOCK or ACC	No voltage
6 – Ground	Ignition switch ON	Battery voltage
8 – Ground	Ignition switch LOCK	No voltage
8 – Ground	Ignition switch ACC or ON	Battery voltage
11 – Ground	Constant	Battery positive voltage
12 – Ground	Constant	Battery positive voltage

If circuit is as specified, try replacing the relay with a new one.
If circuit is not as specified, inspect the circuits connected to other parts.

BE

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(b) Disconnect the connector from the integration relay and inspect the connectors on the wire harness side.

Tester connection	Condition	Specified condition
A3 – Ground	Driver's buckle switch OFF	No continuity
A3 – Ground	Driver's buckle switch ON	Continuity
A5 – Ground	Driver's door courtesy switch OFF	Continuity
A5 – Ground	Driver's door courtesy switch ON	No continuity
A10 – Ground	Key unlock warning switch OFF	No continuity
A10 – Ground	Key unlock warning switch ON	Continuity
B1 – Ground	Constant	Continuity
B4 – Ground	Driver's door key lock and unlock switch OFF	No continuity
B4 – Ground	Driver's door key lock and unlock switch UNLOCK	Continuity
B5 – Ground	Door lock control switch OFF and driver's and passenger's door key lock and unlock switch OFF	No continuity
B5 – Ground	Door lock control switch LOCK or driver's or passenger's door key lock and unlock switch LOCK	Continuity
B6 – Ground	Door lock control switch OFF and passenger's door key lock and unlock switch OFF	No continuity
B6 – Ground	Door lock control switch UNLOCK or passenger's door key lock and unlock switch UNLOCK	Continuity
B7 – Ground	Passenger's door unlock detection switch OFF	No continuity
B7 – Ground	Passenger's door unlock detection switch ON	Continuity
B8 – Ground	Driver's door unlock detection switch OFF	No continuity
B8 – Ground	Driver's door unlock detection switch ON	Continuity
A1 – Ground	Constant	Battery voltage

If circuit is as specified, try replacing the relay with a new one.
If circuit is not as specified, inspect the circuits connected to other parts.

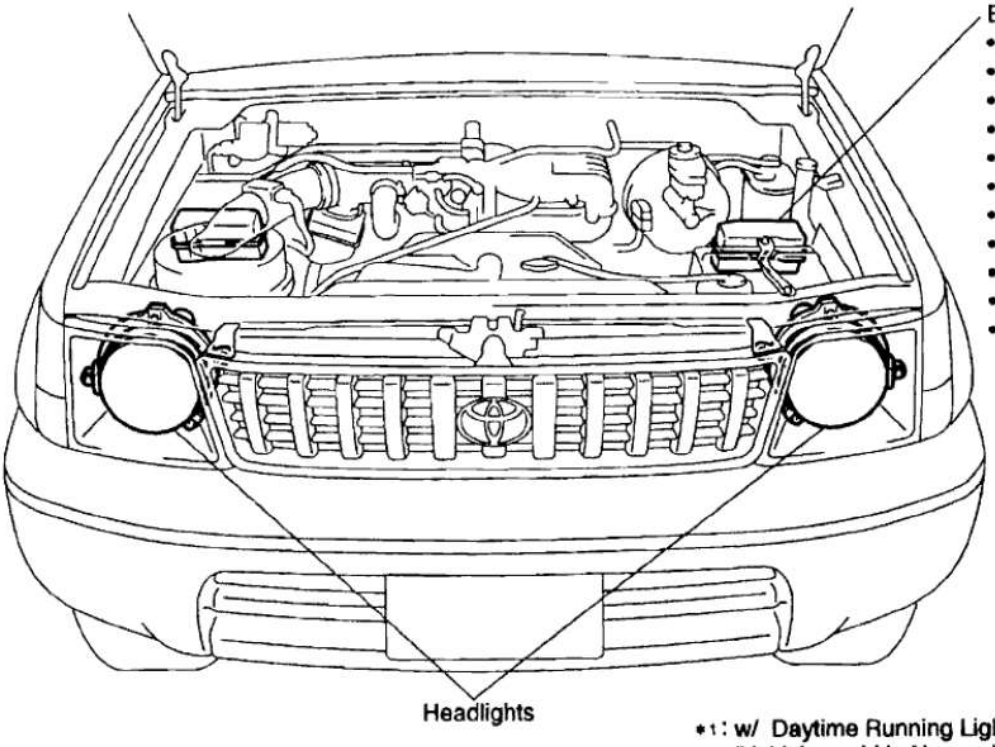
cardiagn.com

HEADLIGHT AND TAILLIGHT SYSTEM

PARTS LOCATION

BE8SW-01

3 Door Models

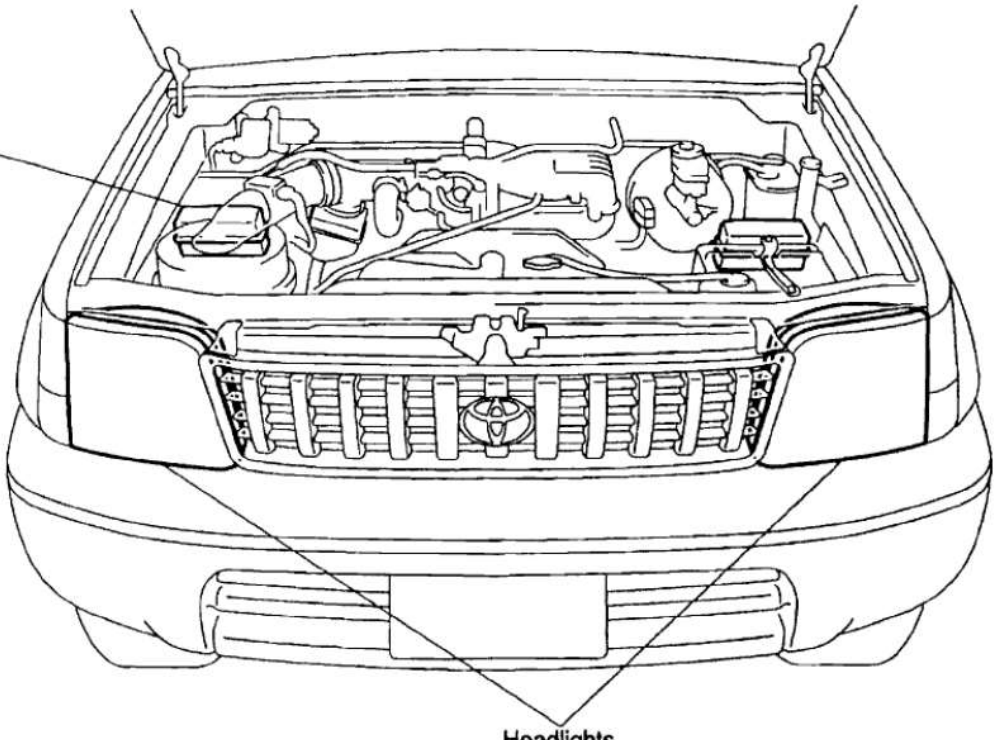


Engine Room R/B *2
- Headlight Relay
- Headlight Dimmer Relay
- Taillight Relay
- HEAD (LH) Fuse
- HEAD (RH) Fuse
- HEAD (HI LH) Fuse*1
- HEAD (LO LH) Fuse*1
- HEAD (HI RH) Fuse*1
- HEAD (LO RH) Fuse*1
- TAIL Fuse
- STOP Fuse

Headlights

*1: w/ Daytime Running Light System (Vehicles sold in Norway)
*2: Gasoline Engine, Diesel Engine (LHD models)
*3: Diesel Engine (RHD models)

5 Door Models



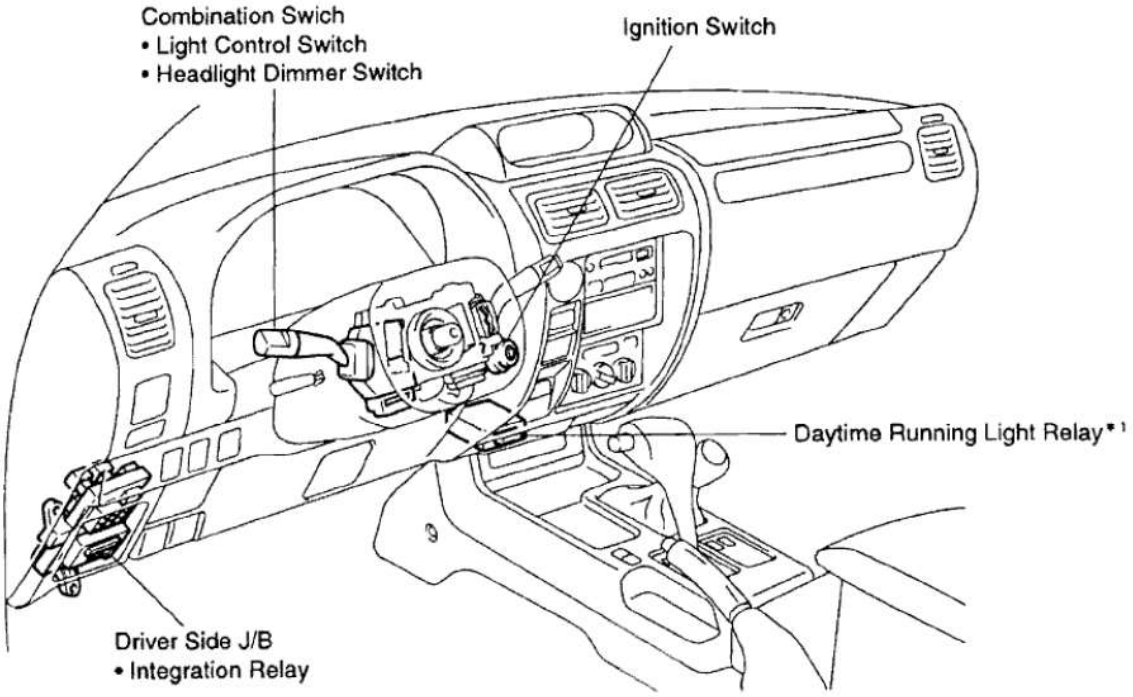
Engine Room R/B*3
- Headlight Relay
- Headlight Dimmer Relay
- Taillight Relay
- HEAD (LH) Fuse
- HEAD (RH) Fuse
- HEAD (HI LH) Fuse*1
- HEAD (LO LH) Fuse*1
- HEAD (HI RH) Fuse*1
- HEAD (LO RH) Fuse*1
- TAIL Fuse
- STOP Fuse

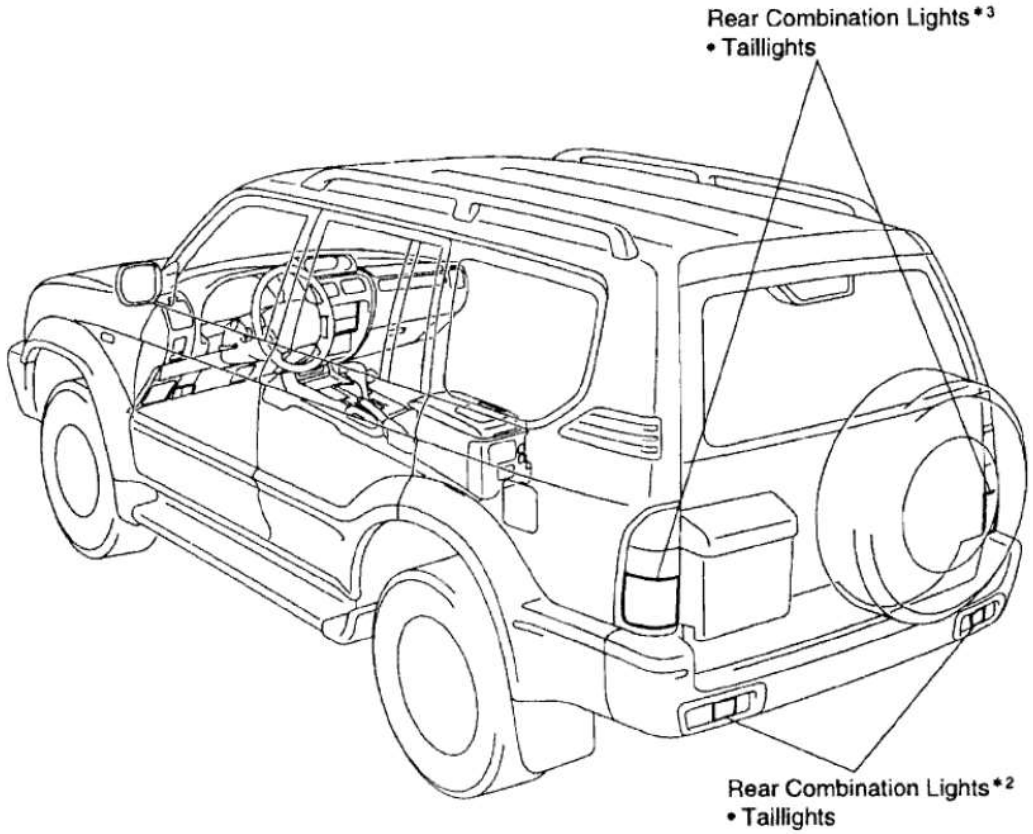
Headlights

N19202
N19203

Y Z18180

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*1 : Vehicles sold in Norway
*2 : Vehicles sold in Europe and Australia.
*3 : Except for vehicles sold in Europe and Australia.

N19204
N19205

Y

Z18181

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TROUBLESHOOTING

BE098-17

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, in the replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Headlight does not light (Taillight is normal)	1. Headlight Relay	(BE–16)
	2. Headlight Dimmer Relay	(BE–16)
	3. D.R.L. Relay *	(BE–17)
	4. Light Control Switch	(BE–16)
	5. Headlight Bulb	
	6. Wire Harness	
Headlight does not light (Taillight does not light up)	1. Light Control Switch	(BE–16)
	2. D.R.L. Relay *	(BE–17)
	3. Headlight and Taillight Bulb	
	4. Wire Harness	
Only one side headlight does not light	1. HEAD (LH) Fuse (Engine Room R/B)	
	2. HEAD (RH) Fuse (Engine Room R/B)	
	3. HEAD (LO LH) Fuse (Engine Room R/B) *	
	4. HEAD (LO RH) Fuse (Engine Room R/B) *	
	5. Headlight Bulb	
	6. Wire Harness	
"Lo–Beam" does not light (ALL)	1. Headlight Dimmer Switch	(BE–16)
	2. Headlight Dimmer Relay	(BE–16)
	3. D.R.L. Relay *	(BE–17)
	4. Wire Harness	
"Lo–Beam" does not light (ONE SIDE)	1. HEAD (LH) Fuse (Engine Room R/B)	
	2. HEAD (RH) Fuse (Engine Room R/B)	
	3. HEAD (LO LH) Fuse (Engine Room R/B) *	
	4. HEAD (LO RH) Fuse (Engine Room R/B) *	
	5. Headlight Bulb	
	6. Wire Harness	
"Hi–Beam" does not light (ALL)	1. Headlight Dimmer Switch	(BE–16)
	2. Headlight Dimmer Relay	(BE–16)
	3. D.R.L. Relay *	(BE–17)
	4. Wire Harness	
"Hi–Beam" does not light (ONE SIDE)	1. HEAD (LH) Fuse (Engine Room R/B)	
	2. HEAD (RH) Fuse (Engine Room R/B)	
	3. HEAD (HI LH) Fuse (Engine Room R/B) *	
	4. HEAD (HI RH) Fuse (Engine Room R/B) *	
	5. Headlight Bulb	
	6. Wire Harness	

* : w/ Daytime Running Light System (Vehicle sold in Norway)

BE

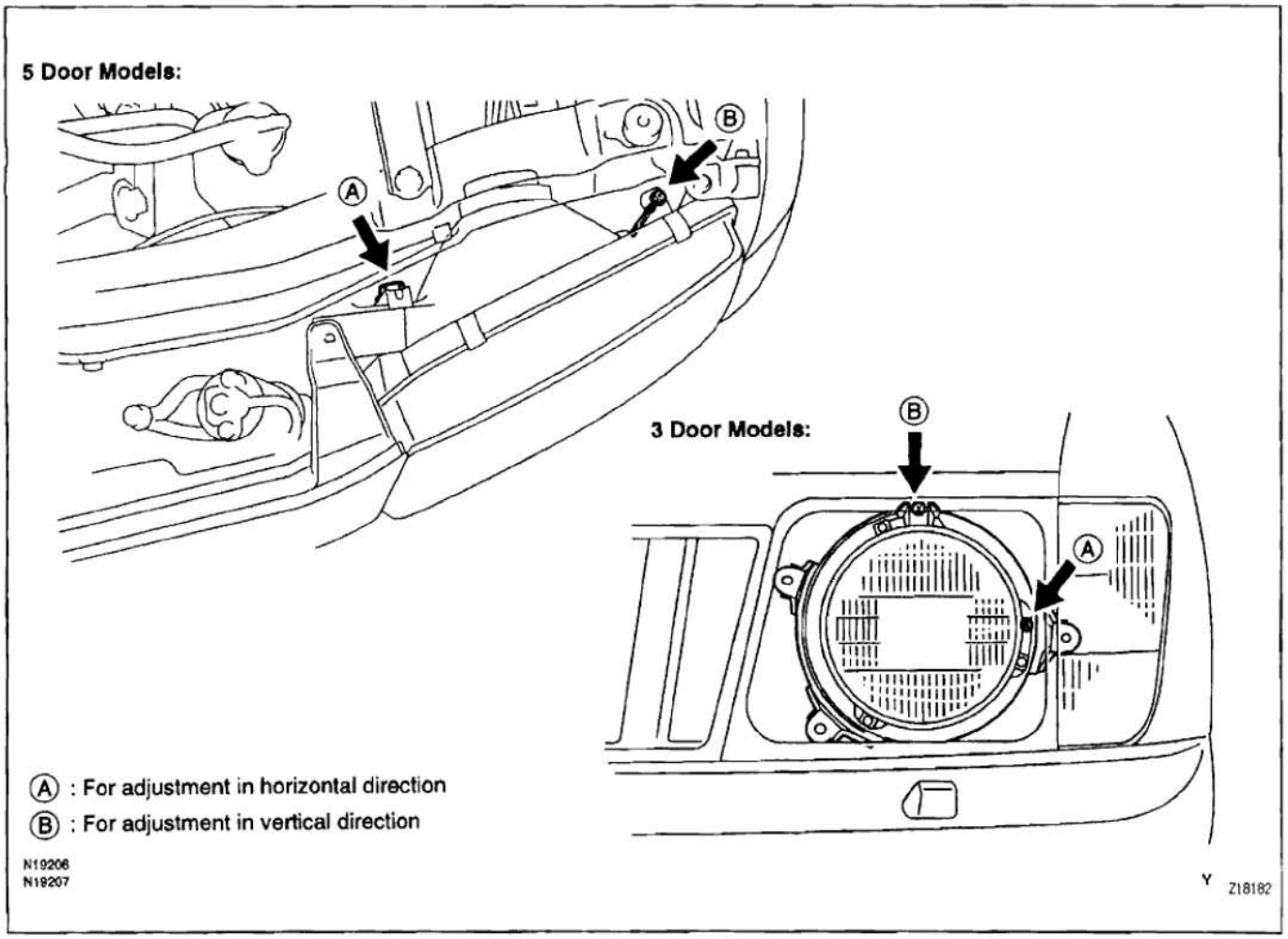
cardiagn.com

Trouble	Parts name	(See page)
"Flash" does not light	1. Headlight Dimmer Switch	(BE–16)
	2. Headlight Dimmer Relay	(BE–16)
	3. D.R.L. Relay *	(BE–17)
	4. Wire Harness	
"Light Reminder System" does not operate	1. Integration Relay (Driver Side J/B)	(BE–7)
	2. ECU–B Fuse (Driver Side J/B)	
	3. TAIL Fuse (Engine Room R/B)	
	4. GAUGE Fuse (Driver Side J/B)	
	5. DOME Fuse (Engine Room R/B)	
	6. CIG Fuse (Driver Side J/B)	
	7. Ignition Switch	(BE–7)
	8. D.R.L. Relay *	(BE–17)
	9. Door Courtesy Switch	(BE–30)
	10. Wire Harness	
Headlight does not light with light control switch in HEAD.	1. Light Control Switch	(BE–16)
	2. D.R.L. Relay *	(BE–17)
	3. Wire Harness	
Headlight does not go out with light control switch in OFF	1. Headlight Relay	(BE–16)
	2. D.R.L. Relay *	(BE–17)
	3. Wire Harness	
Headlight and Taillight do not and light with engine running light control switch in OFF	1. GAUGE Fuse (Driver Side J/B)	
	2. DOME Fuse (Engine Room R/B)	
	3. D.R.L. Relay *	(BE–17)
	4. Alternator L Terminal	
	5. Wire Harness	
Taillight does not light with light control switch in TAIL	1. Taillight Relay	(BE–16)
	2. TAIL Fuse (Engine Room R/B)	
	3. D.R.L. Relay *	(BE–17)
	4. Wire Harness	
Taillight does not go out with light control switch in OFF	1. Taillight Relay	(BE–16)
	2. D.R.L. Relay *	(BE–17)
	3. Light Control switch	(BE–16)
	4. Wire Harness	
Taillight does not light (Headlight is normal)	1. Taillight Bulb	
	2. TAIL Fuse (Engine Room R/B)	
	3. Light Control Switch	(BE–16)
	4. Taillight Relay	(BE–16)
	5. Wire Harness	
Taillight does not light (Headlight does not light up)	1. Taillight Bulb	
	2. TAIL Fuse (Engine Room R/B)	
	3. Light Control Switch	(BE–16)
	4. Wire Harness	

* : w/ Daytime Running Light System (Vehicle sold in Norway)

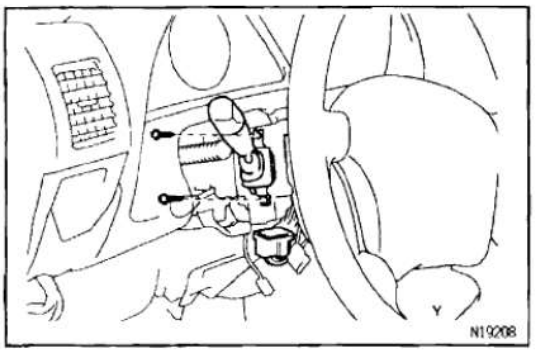
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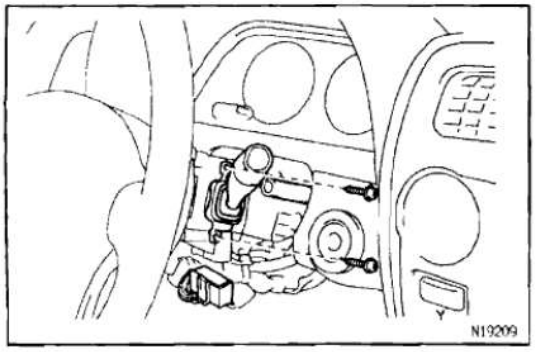
HEADLIGHT AIMING ADJUSTMENT



Ⓐ : For adjustment in horizontal direction
Ⓑ : For adjustment in vertical direction

N19206
N19207





LIGHT CONTROL SWITCH AND WIPER AND WASHER SWITCH REMOVAL

1. **REMOVE UPPER AND LOWER COLUMN COVERS (See page SR–16)**
2. **REMOVE LIGHT CONTROL SWITCH**
(a) Disconnect the connector.
(b) Remove the 2 screws.
(c) Remove the switch.

3. **REMOVE WIPER AND WASHER SWITCH**
(a) Disconnect the connector.
(b) Remove the 2 screws.
(c) Remove the switch.

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LIGHT CONTROL SWITCH AND WIPER AND WASHER SWITCH INSTALLATION

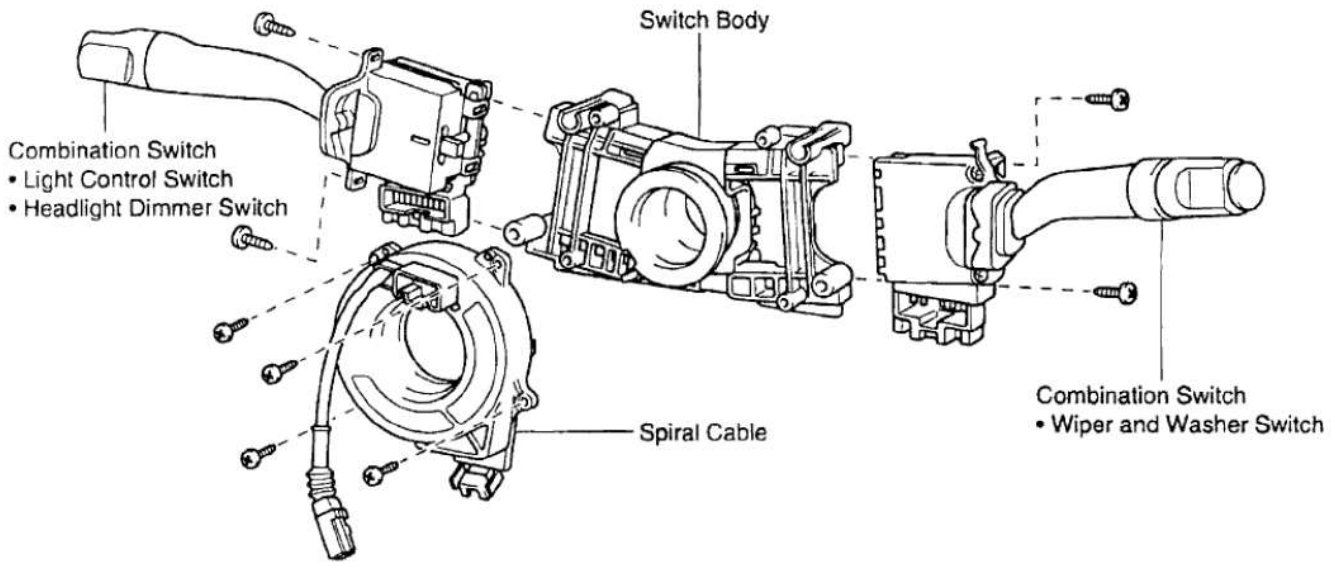
BE38Y-01

Installation is in the reverse order of removal.

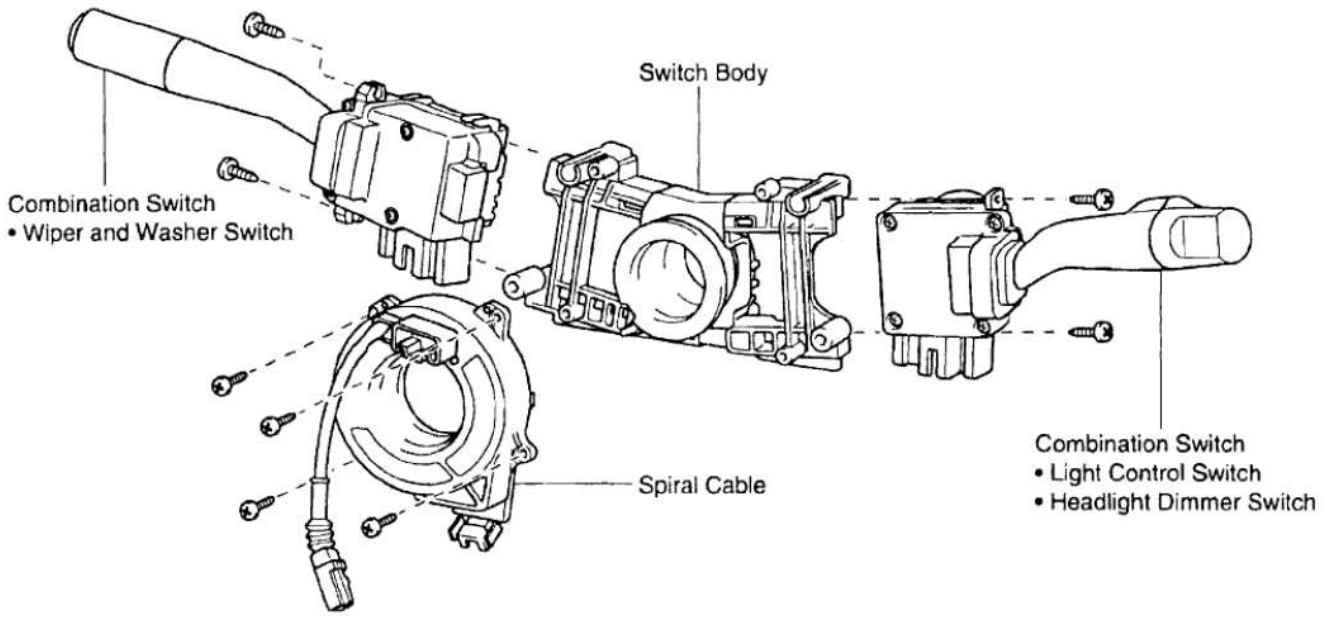
COMBINATION SWITCH DISASSEMBLY

BE1CT-00

LHD models (Include RHD models for Europe) :



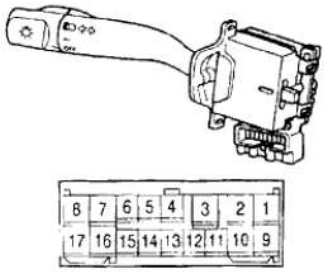
RHD models (Except RHD models for Europe) :



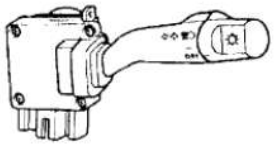
N16946

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LHD models
(Include RHD models for Europe) :



RHD models
(Except RHD models for Europe) :





N15853

COMBINATION SWITCH INSPECTION

BE393-01

1. INSPECT LIGHT CONTROL SWITCH

( ): RHD Models (Except RHD models for Europe)

Switch position	Tester connection	Specified condition
OFF	–	No continuity
TAIL	14 – 16 (9 – 15)	Continuity
HEAD	13 – 14 – 16 (9 – 14 – 15)	Continuity

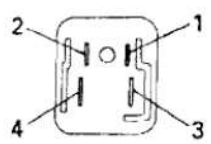
If continuity is not as specified, replace the switch.

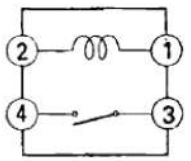
2. INSPECT HEADLIGHT DIMMER SWITCH

( ): RHD Models (Except RHD models for Europe)

Switch position	Tester connection	Specified condition
Flash	7 – 8 – 16 (1 – 2 – 9)	Continuity
Low beam	16 – 17 (9 – 10)	Continuity
Hi beam	7 – 16 (2 – 9)	Continuity

If continuity is not as specified, replace the switch.





BE1838 BE1840

Z08444

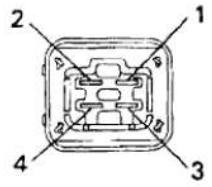
HEADLIGHT RELAY INSPECTION

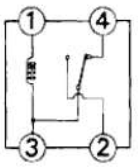
BE1CW-0K

INSPECT RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 4	Continuity

If continuity is not as specified, replace the relay.





BE1839 BE1842

Z13550

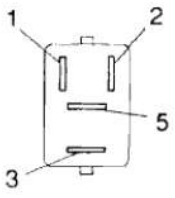
HEADLIGHT DIMMER RELAY INSPECTION

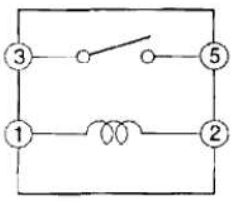
BE1CW-0L

INSPECT RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 3, 3 – 4	Continuity
Apply B+ between terminals 1 and 2.	2 – 3	Continuity

If continuity is not as specified, replace the relay.





Y N14863

TAILLIGHT RELAY INSPECTION

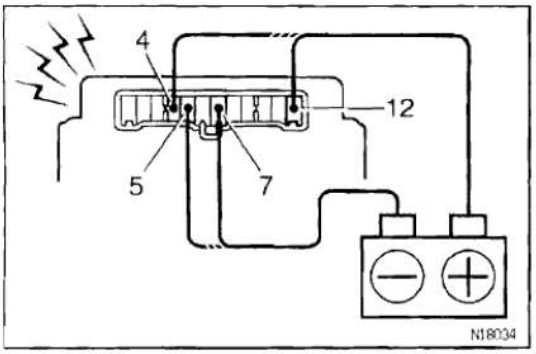
BE396-01

INSPECT 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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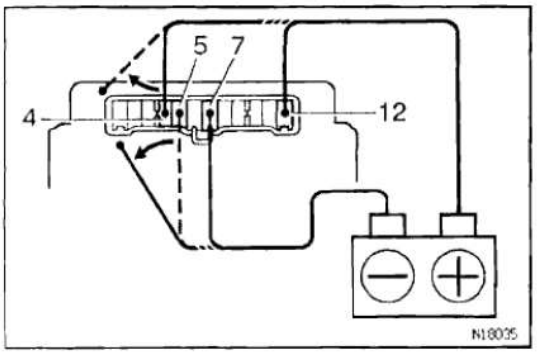


BE368-01

LIGHT–ON WARNING SYSTEM INSPECTION

1. **INSPECT FRONT DOOR COURTESY SWITCH (See page BE–30)**
2. **INSPECT LIGHT REMAINDER RELAY OPERATION**

(a) Connect the positive (+) lead from the battery to terminal 5 and the negative (–) lead to terminal 6.

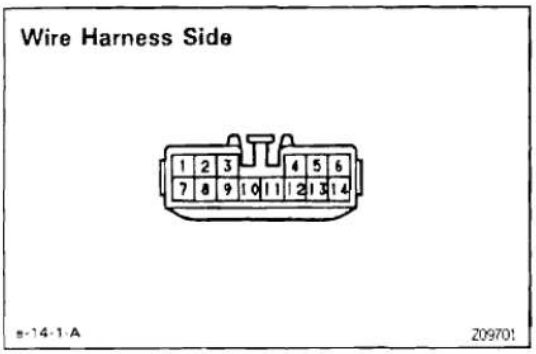


(b) Check that the buzzer does not sound when is terminal 3 or 4 connected to the positive (+) lead.

(c) Check that the buzzer sounds when disconnecting terminal 3 or 4 from the positive (+) lead.

If operation is not as specified, replace the relay.

3. **INSPECT INTEGRATION RELAY CIRCUIT (See page BE–8)**



BE369-01

w/ D.R.L. System

D.R.L. RELAY INSPECTION

INSPECT RELAY CIRCUIT

Connector Disconnected

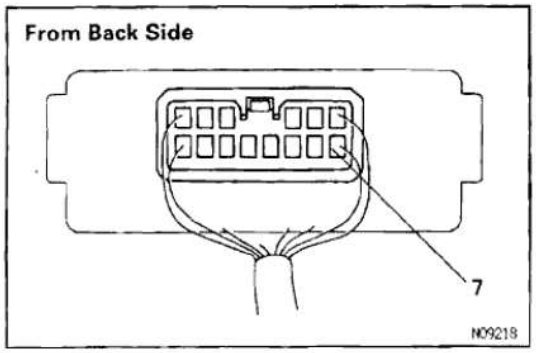
Disconnect the connector from relay and inspect the connector on wire harness side, as shown.

Tester connection	Condition	Specified condition
1 – Ground	Headlight dimmer switch position Low beam or High beam	No continuity
1 – Ground	Headlight dimmer switch position Flash	Continuity
3 – Ground	Light control switch position OFF or TAIL	No continuity
3 – Ground	Light control switch position HEAD	Continuity
5 – Ground	Light control switch position OFF	No continuity
5 – Ground	Light control switch position TAIL or HEAD	Continuity
8 – Ground	Light control switch position Low beam	No continuity
8 – Ground	Light control switch position Flash or High beam	Continuity
10 – Ground 11 – Ground 12 – Ground	Constant	Continuity
13 – Ground	Engine condition STOP	No continuity
13 – Ground	Engine condition RUNNING	Continuity
14 – Ground	Constant	Continuity

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Tester connection	Condition	Specified condition
2 – Ground 4 – Ground	Constant	Battery voltage
6 – Ground	Ignition switch position LOCK or ACC	No voltage
6 – Ground	Ignition switch position ON	Battery voltage
9 – Ground	Constant	Battery voltage

If circuit is as specified, try replacing the relay with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.



2. Connector Connected

Connect the wire harness side connector to the relay and inspect wire harness side connector from the back side, as shown.

Tester connection	Condition	Specified condition
7 – Ground	*Headlight dimmer switch position Low beam	No voltage
7 – Ground	*Headlight dimmer switch position High or Flash	Battery voltage

*: With light control switch turned to HEAD.

If circuit is as specified, try replacing the relay with a new one.

If circuit is not as specified, inspect the circuits connected to other parts.

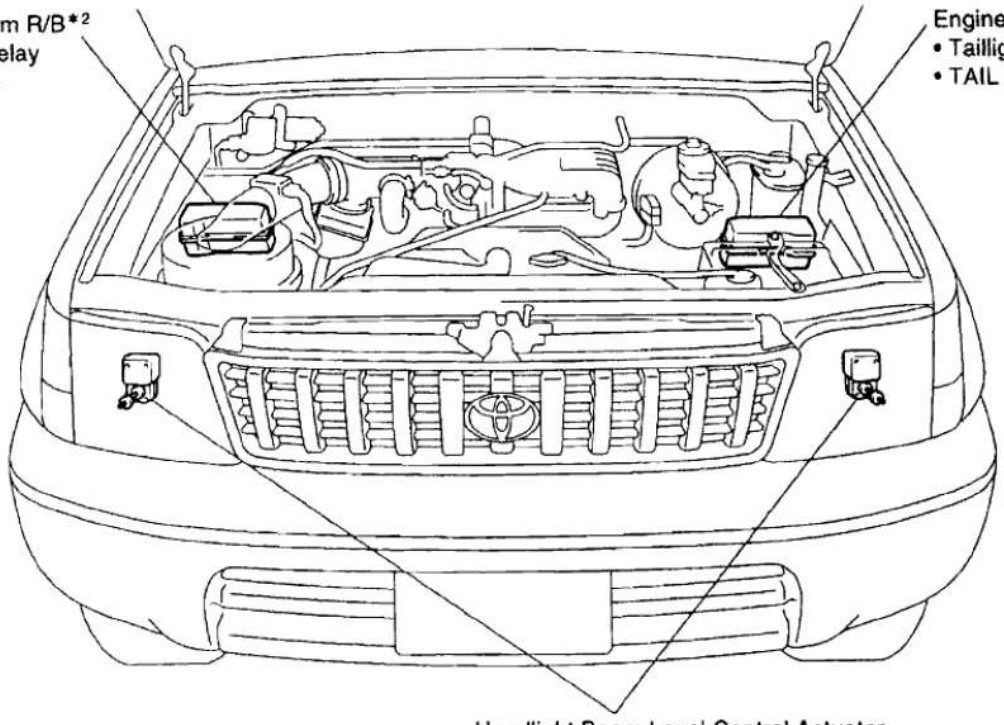
cardiagn.com

HEADLIGHT BEAM LEVEL CONTROL SYSTEM

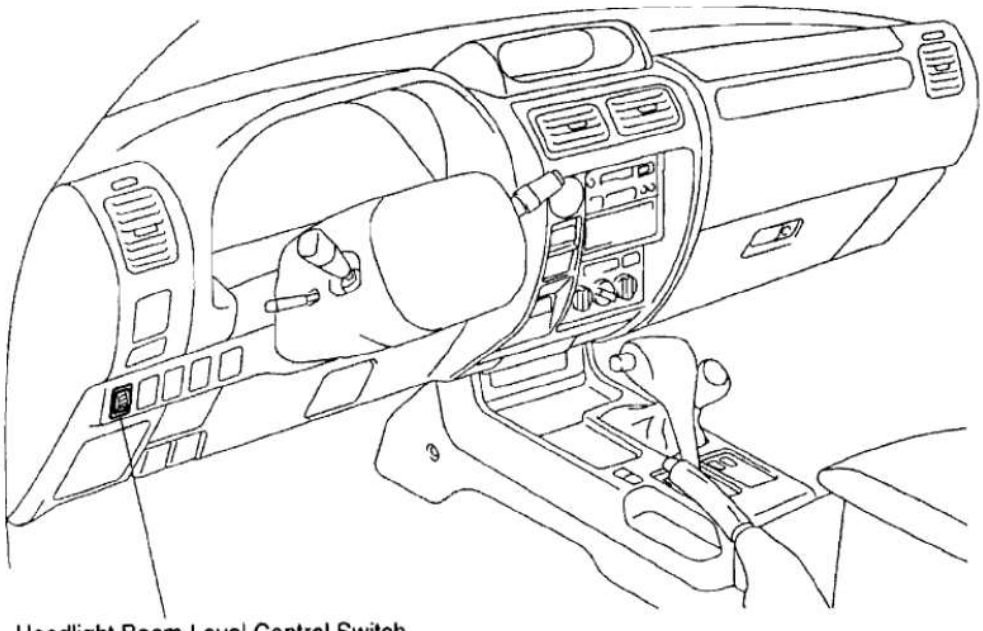
BE33X-02

Europe Only:

PARTS LOCATION



*1 : Gasoline Engine, Diesel Engine (LHD models)
*2 : Diesel Engine (RHD models)



N19210
N19211

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Z18183

cardiagn.com

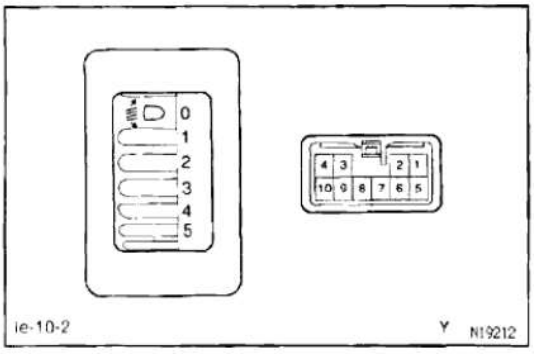
TROUBLESHOOTING

BE33Y-02

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Headlight beam level control system does not operate (All).	1. TAIL Fuse (Engine Room R/B)	
	2. Taillight Relay (Engine Room R/B)	(BE–16)
	3. Headlight Beam Level Control Switch	(BE–20)
	4. Headlight Beam Level Control Actuator	(BE–21)
	5. Wire Harness	
Headlight beam level control system does not operate (One side).	1. Headlight Beam Level Control Switch	(BE–20)
	2. Headlight Beam Level Control Actuator	(BE–21)
	3. Wire Harness	
Abnormal operation (All).	1. Headlight Beam Level Control Switch	(BE–20)
	2. Headlight Beam Level Control Actuator	(BE–21)
	3. Wire Harness	
Abnormal operation (One side).	1. Headlight Beam Level Control Switch	(BE–20)
	2. Headlight Beam Level Control Actuator	(BE–21)
	3. Wire Harness	

BE



HEADLIGHT BEAM LEVEL CONTROL SWITCH INSPECTION

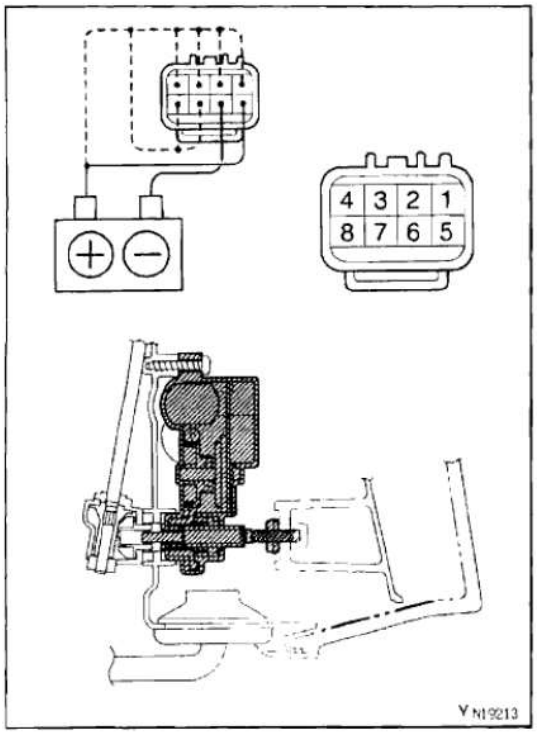
BE33Z-02

INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
0	4 – 10	Continuity
1	4 – 9	Continuity
2	4 – 8	Continuity
3	4 – 7	Continuity
4	4 – 6	Continuity
5	4 – 5	Continuity
Illumination circuit	2 – 3	Continuity

If continuity is not as specified, replace the switch.

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BE340-03

HEADLIGHT BEAM LEVEL CONTROL ACTUATOR INSPECTION

INSPECT ACTUATOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 6 and the negative (−) lead to terminal 5.

(b) Ground each terminal and check that each mode operates, as shown in the chart and illustration.

Terminal	Headlight Beam Level
1 – Ground	"0"
2 – Ground	"1"
3 – Ground	"2"
4 – Ground	"3"
7 – Ground	"4"
8 – Ground	"5"

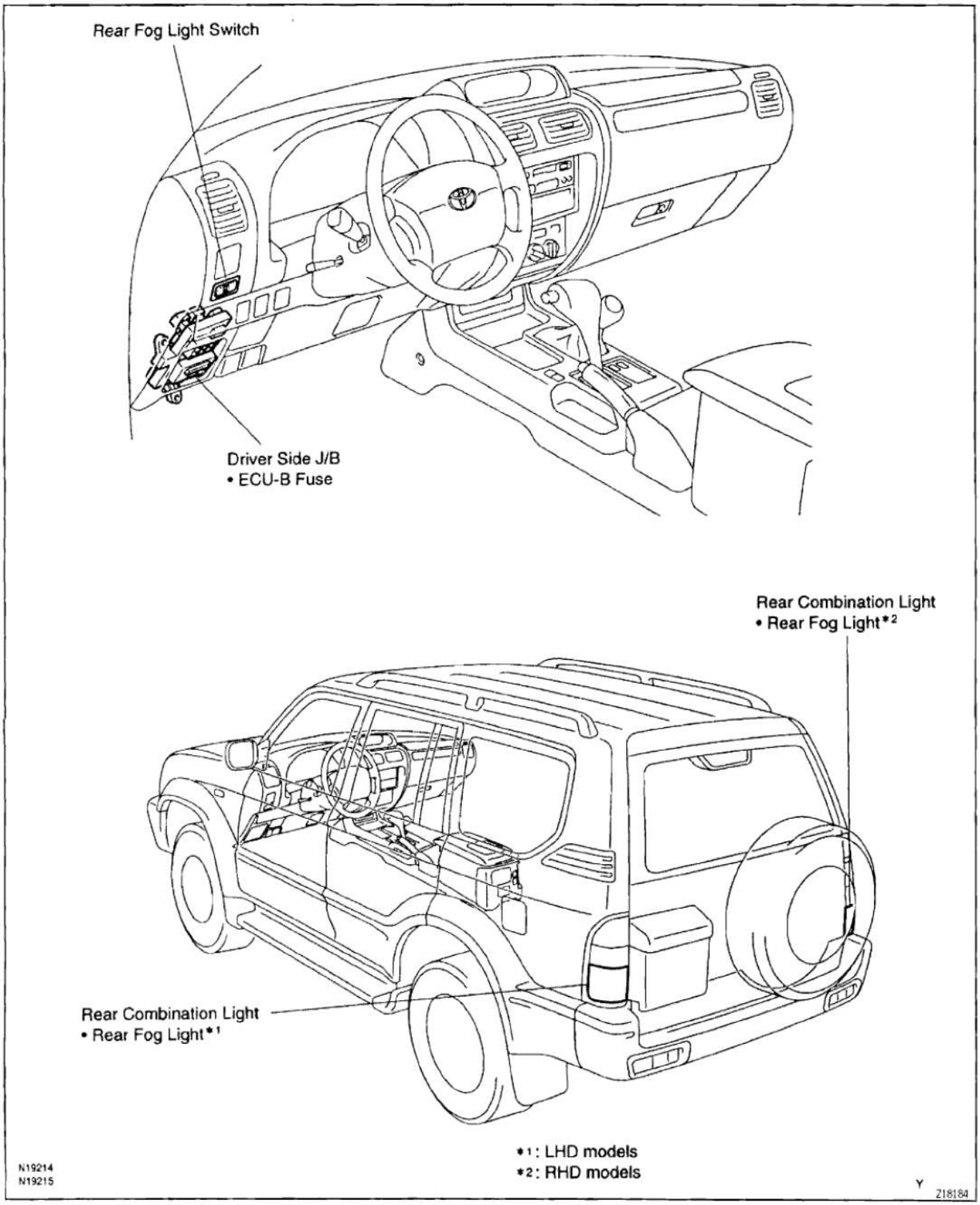
If operation is not as specified, replace the actuator.

cardiagn.com

REAR FOG LIGHT SYSTEM

BE10Z-0A

Europe only:
PARTS LOCATION



BE

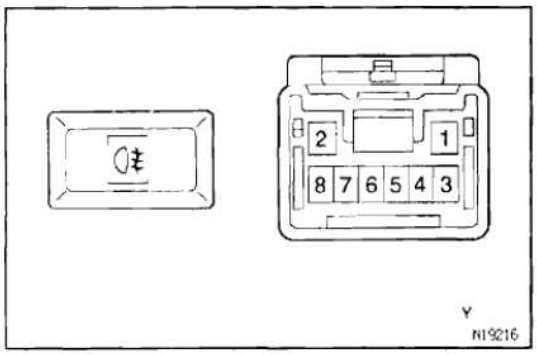
cardiagn.com

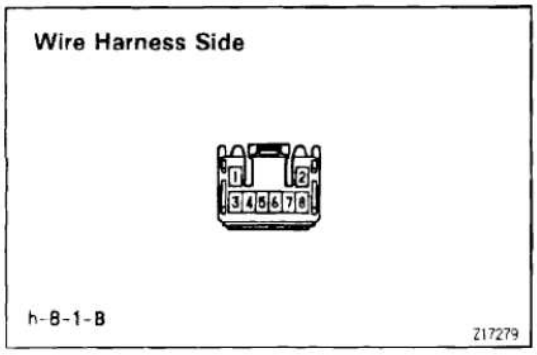
BE110-00

TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Rear fog light does not light with light control switch HEAD. (Headlight is normal.)	1. Bulb 2. ECU–B Fuse (Driver Side J/B) 3. Rear Fog Light Switch 4. Wire Harness	(BE–23)
Rear fog light does not light with light control switch HEAD. (Headlight does not light.)	1. Headlight and Taillight System 2. Wire Harness	(BE–10)
Only one light does not light	1. Bulb 2. Wire Harness	





REAR FOG LIGHT SWITCH INSPECTION

BE30W-02

1. INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF	–	No continuity
ON	2 – 5	Continuity
Illumination circuit	2 – 8	Continuity

If continuity is not as specified, replace the switch.

2. INSPECT SWITCH CIRCUIT

Disconnect the actuator connector from the switch, and inspect the connector on the wire harness side.

*: There is resistance because this circuit is grounded through the bulb.

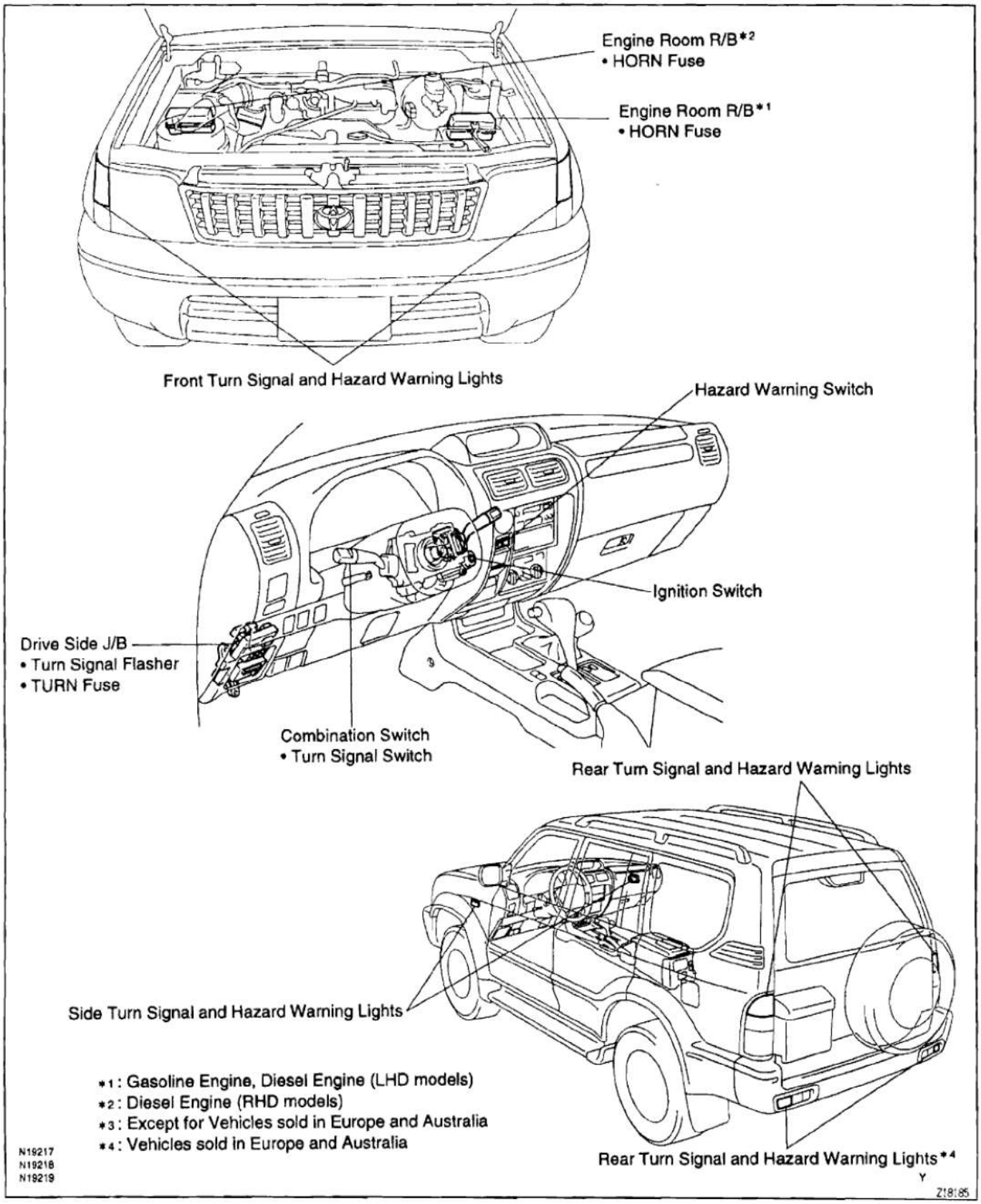
If the circuit is not as specified, inspect the circuits connected to other pars.

Tester connection	Condition	Specified condition
1 – Ground	Constant	* Continuity
4 – Ground	Constant	Continuity
5 – Ground	Light control switch HEAD	Continuity
7 – Ground	Constant	Continuity
8 – Ground	Constant	Continuity
2 – Ground	Light control switch TAIL or HEAD	Battery voltage
3 – Ground	Constant	Battery voltage

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TURN SIGNAL AND HAZARD WARNING SYSTEM
PARTS LOCATION

BE04N-00



*1: Gasoline Engine, Diesel Engine (LHD models)
*2: Diesel Engine (RHD models)
*3: Except for Vehicles sold in Europe and Australia
*4: Vehicles sold in Europe and Australia

N19217
N19218
N19219

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Z18185

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BE04G-12

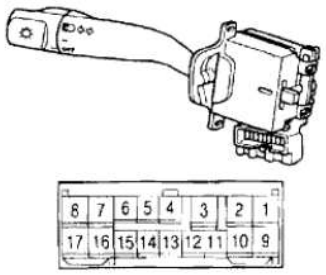
TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

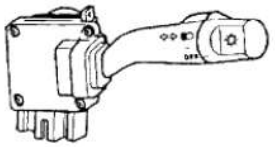
Trouble	Parts name	(See page)
"Hazard" and "Turn" do not light up.	1. Hazard Warning Switch 2. Turn Signal Flasher 3. Wire Harness	(BE–26) (BE–26)
The flashing frequency is abnormal.	1. Bulb 2. Turn Signal Flasher 3. Wire Harness	 (BE–26)
Hazard warning light does not light up. (Turn is normal)	1. HORN Fuse (Engine Room R/B) 2. Wire Harness	
Hazard warning light does not light up in one direction.	1. Hazard Warning Switch 2. Wire Harness	(BE–26)
Turn signal does not light up. (Combination meter, wiper and washer do not operate.)	1. Ignition Switch 2. TURN Fuse (Driver Side J/B) 3. Turn Signal Switch 4. Wire Harness	(BE–7) (BE–26)
Turn signal does not light up. (Combination meter, wiper and washer are normal.)	1. TURN Fuse (Driver Side J/B) 2. Turn Signal Switch 3. Wire Harness	 (BE–26)
Turn signal does not light up in one direction.	1. Turn Signal Switch 2. Wire Harness	(BE–26)
Only one bulb does not light up.	1. Bulb 2. Wire Harness	

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LHD models
(Include RHD models for Europe) :



RHD models
(Except RHD models for Europe) :





N15865

TURN SIGNAL SWITCH INSPECTION

BE34U-01

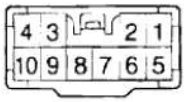
INSPECT SWITCH CONTINUITY

( ): RHD models (Except RHD models for Europe)

Switch position	Tester connection	Specified condition
Left turn	1 – 2 (6 – 7)	Continuity
Neutral	–	No continuity
Right turn	2 – 3 (7 – 8)	Continuity

If continuity is not as specified, replace the switch.





N15872

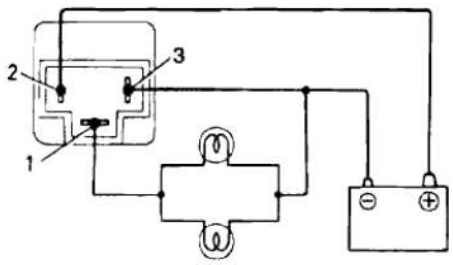
HAZARD WARNING SWITCH INSPECTION

BE1CZ-0E

INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF	5 – 7	Continuity
ON	1 – 2 – 3 – 4 5 – 6	Continuity
Illumination circuit	2 – 3	Continuity

If continuity is not as specified, replace the switch.



Turn Signal Light Bulbs (21W)

BE1843

TURN SIGNAL FLASHER INSPECTION

BE04U-0W

INSPECT FLASHER OPERATION

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 3.

(b) Connect the 2 turn signal light bulbs parallel to each other to terminals 1 and 3, check that the bulbs flash.
HINT: The turn signal lights should flash 60 or 120 times per minute.
If one of the front or rear turn signal lights has an open circuit, the number of flashers will be more than 140 per minute.
If operation is not as specified, replace the flasher.

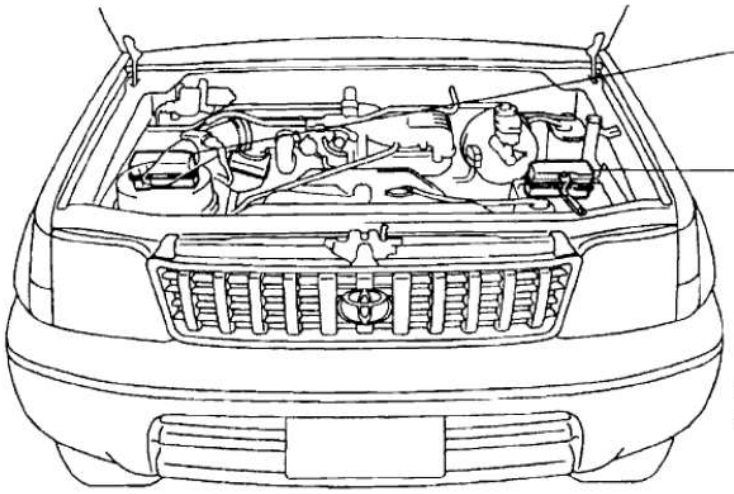
BE

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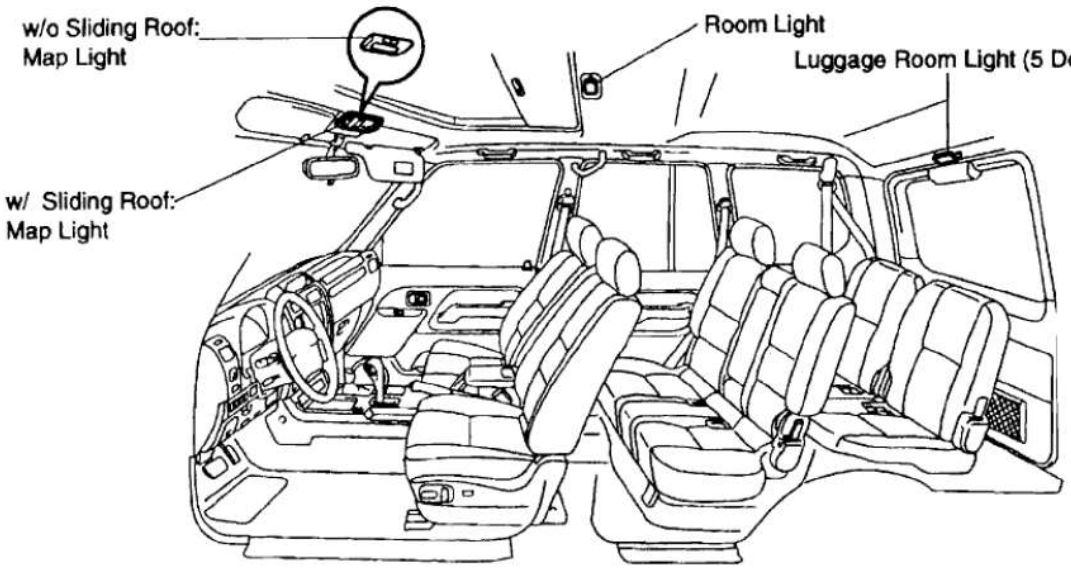
INTERIOR LIGHT SYSTEM

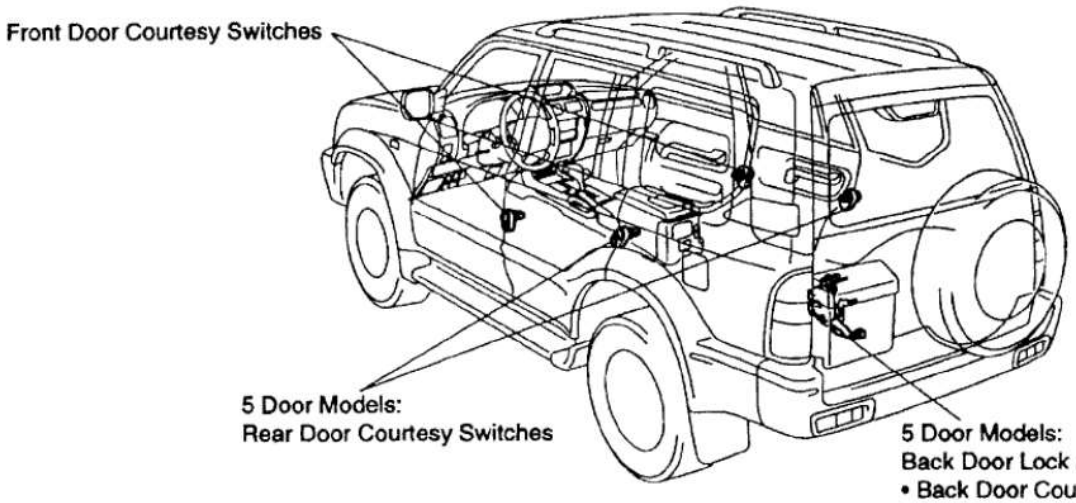
PARTS LOCATION

BE11B-0A



*1: Gasoline Engine, Diesel Engine (LHD models)
*2: Diesel Engine (RHD models)





N19196
N19220
N19221

Y

Z18185

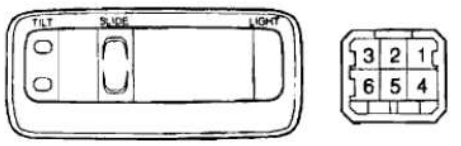
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TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Only one light does not light up.	1. Bulb 2. Wire Harness	
Interior light does not light up (All).	1. DOME Fuse (Driver's side R/B) 2. Wire Harness	
Interior light does not light up (in front map light).	1. Bulb 2. Map Light Assembly 3. Wire Harness	(BE–28)
Room light does not light up.	1. Bulb 2. Room Light Assembly 3. Wire Harness	(BE–29)
Luggage room light does not light up.	1. Bulb 2. Luggage Room Light Assembly 3. Wire Harness	(BE–29)

w / Sliding Roof



S-b-2-B Y N19222

w/o Sliding Roof



GA-2-1-B Y N19223

MAP LIGHT ASSEMBLY INSPECTION

w/ Sliding Roof System:

1. INSPECT LIGHT CONTINUITY

Switch position	Tester connection	Specified condition
ON	1 – 4	Continuity
OFF	–	No continuity

If continuity is not as specified, replace the light assembly assembly or bulb.

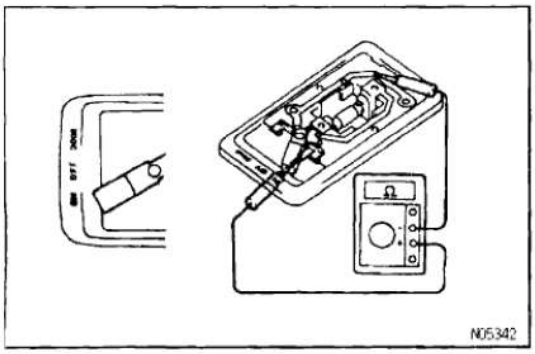
w/o Sliding Roof System:

2. INSPECT LIGHT CONTINUITY

Switch position	Tester connection	Specified condition
ON	1 – 2	Continuity
OFF	–	No continuity

If continuity is not as specified, replace the light assembly assembly or bulb.

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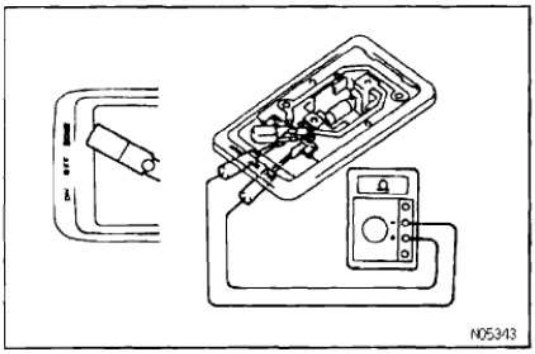


ROOM LIGHT ASSEMBLY INSPECTION BE38F-01

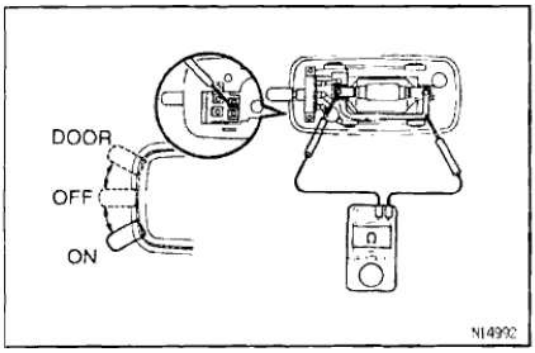
INSPECT ASSEMBLY CONTINUITY

(a) Disconnect the connector from the room light assembly.

(b) Turn the between room light switch ON, check that there is terminal 2 and the body ground.



(c) Turn the room light switch DOOR, check that there is continuity between the terminals.
If operation is not as specified, replace the switch.

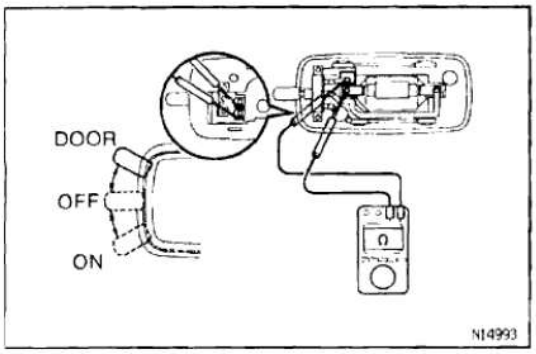


LUGGAGE ROOM LIGHT ASSEMBLY INSPECTION BE38H-01

5 door models only:
INSPECT ROOM LIGHT SWITCH CONTINUITY

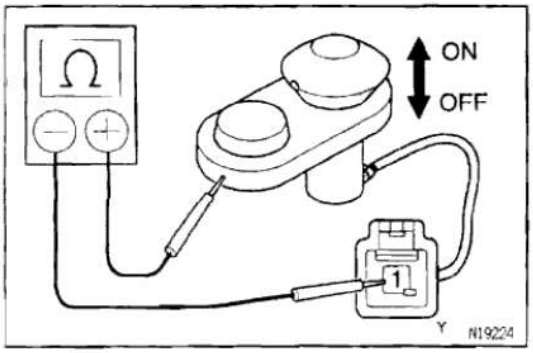
(a) Disconnect the connector from room light assembly.

(b) Turn the room light switch ON, and check that there is continuity between terminal 2 and body ground.



(c) Turn the room light switch DOOR, and check that there is continuity between terminals 1 and 2.
If operation is not as specified, replace the light assembly.

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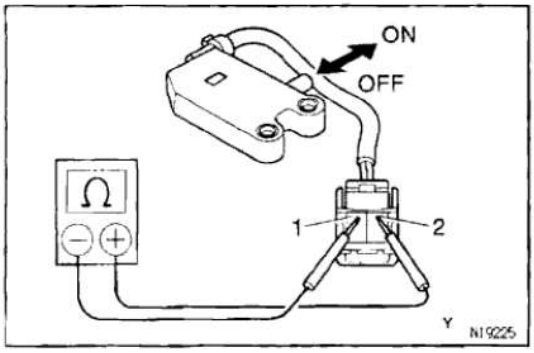
DOOR COURTESY SWITCH INSPECTION

1. **INSPECT FRONT AND REAR DOOR COURTESY SWITCH CONTINUITY**

(a) Check that there is continuity between terminal and the switch body with the switch ON (switch pin released : opened door).

(b) Check that there is no continuity between terminal and the switch body with the switch OFF (switch pin pushed in : closed door).

If continuity is not as specified, replace the switch.



2. **INSPECT BACK DOOR COURTESY SWITCH CONTINUITY**

(a) Check that there is continuity between terminals 1 and 2 with the switch ON (switch pin pushed).

(b) Check that there is no continuity between terminals 1 and 2 with the switch OFF (switch pin pushed).

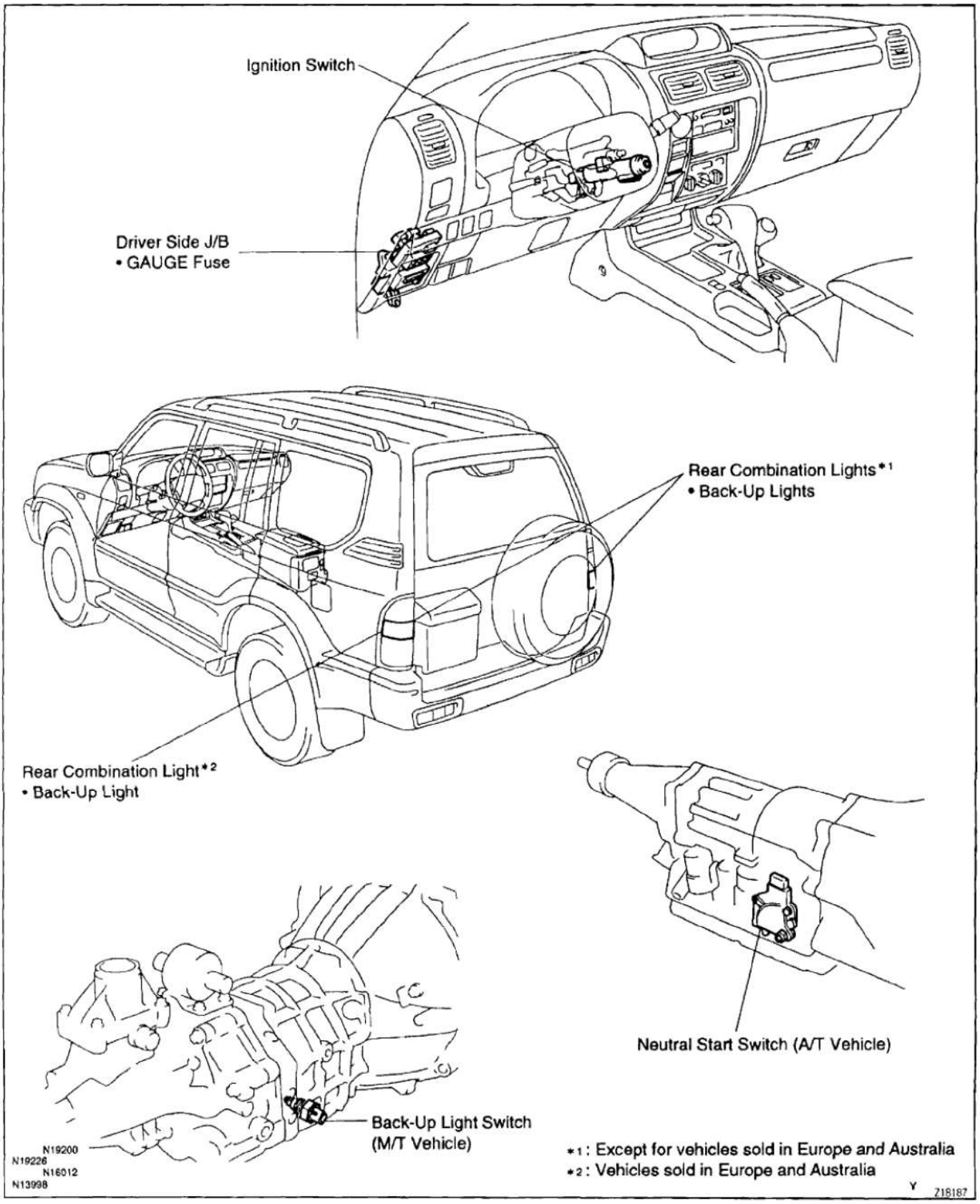
If continuity is not as specified, replace the switch.

BE

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BACK–UP LIGHT SYSTEM
PARTS LOCATION

BE012–0N



*1 : Except for vehicles sold in Europe and Australia
*2 : Vehicles sold in Europe and Australia

Y Z18187

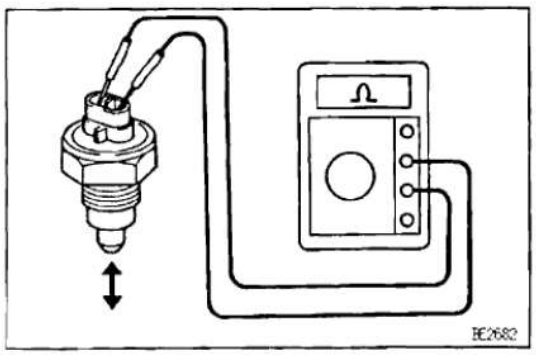
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TROUBLESHOOTING

BE013-11

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Back Up Light does not light up.	1. GAUGE Fuse (Driver Side J/B)	
	2. Ignition Switch	(BE–7)
	3. Back–up Light Switch	(BE–32)
	4. Neutral Start Switch	(AT–60)
	5. Bulb	
	6. Wire Harness	
Back Up Light remains always on.	1. Wire Harness	
Only one light does not light up.	1. Bulb	
	2. Wire Harness	



BACK–UP LIGHT SWITCH INSPECTION

BE014-0W

INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Free	–	No continuity
Push	1 – 2	Continuity

If continuity is not as specified, replace the switch.

NEUTRAL START SWITCH INSPECTION

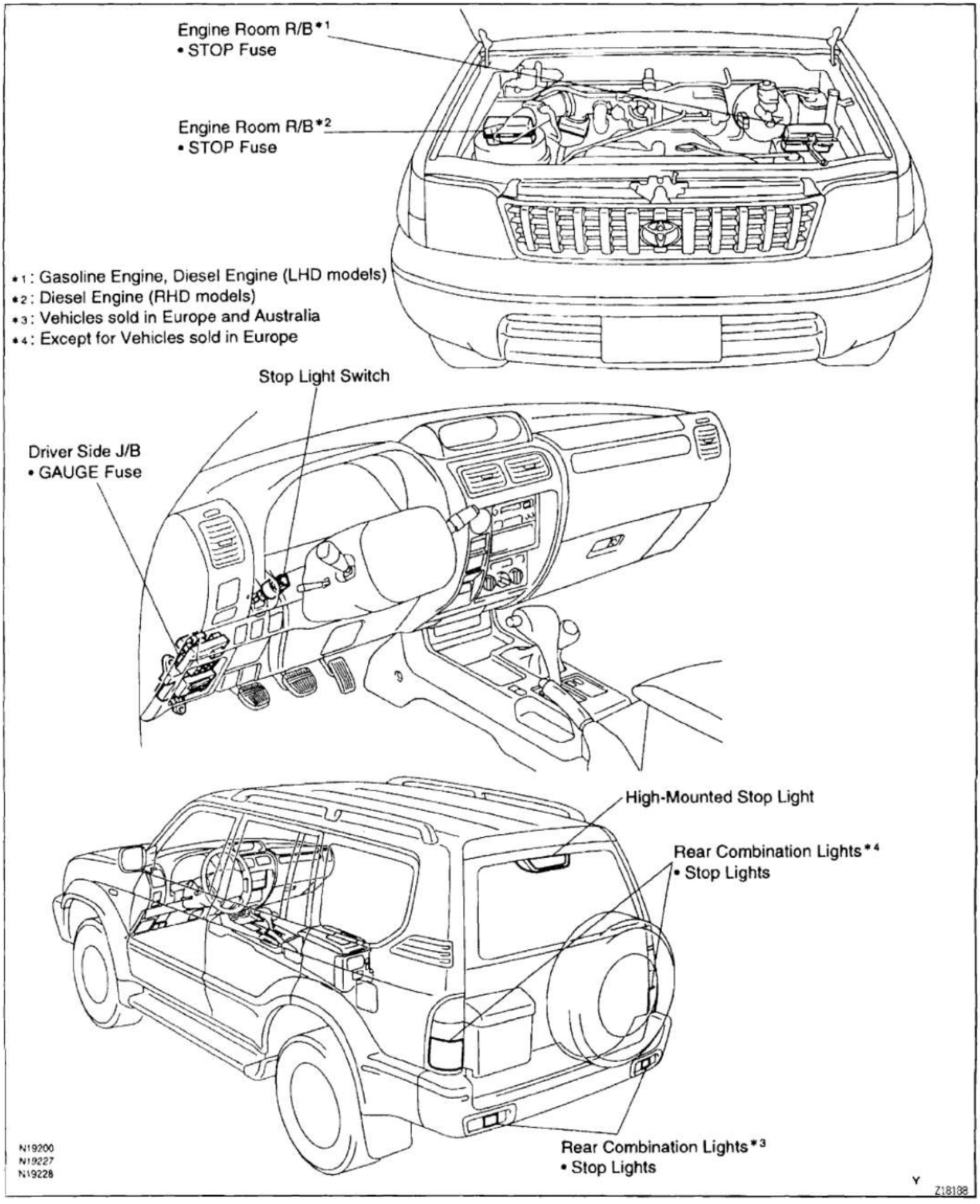
BE1D6-0A

See page AT–60

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STOP LIGHT SYSTEM
PARTS LOCATION

BE81P-02



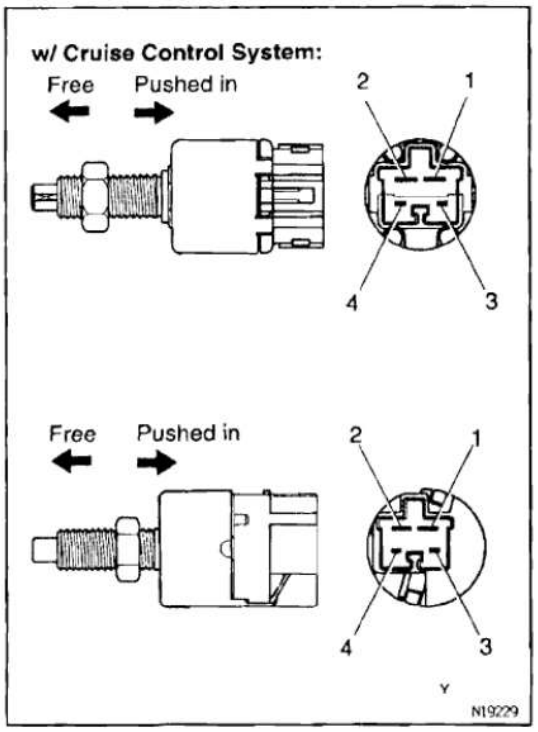
cardiagn.com

TROUBLESHOOTING

BE016-11

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Stop light does not light up.	1. STOP Fuse (Driver Side J/B) 2. GAUGE Fuse (Driver Side J/B) 3. Stop Light Switch 4. Bulb 5. Wire Harness	(BE–34 and 35)
Stop light remains always on.	1. Stop Light Switch 2. Wire Harness	(BE–34 and 35)
Only one light does not light up.	1. Bulb 2. Wire Harness	



STOP LIGHT SWITCH INSPECTION

BE348-01

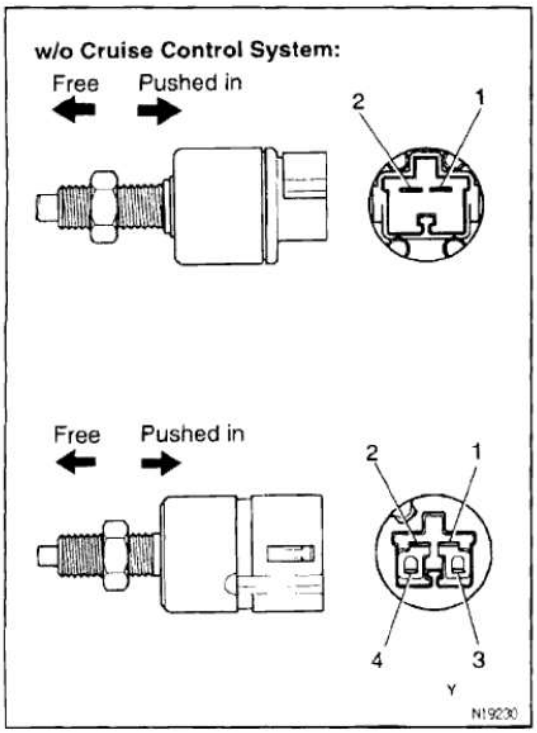
w/ Cruise Control System:

1. INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Switch pin pushed in (Pedal released)	–	No continuity
Switch pin free (Pedal depressed)	1 – 2	Continuity

If continuity is not as specified, replace the switch.

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w/o Cruise Control System:

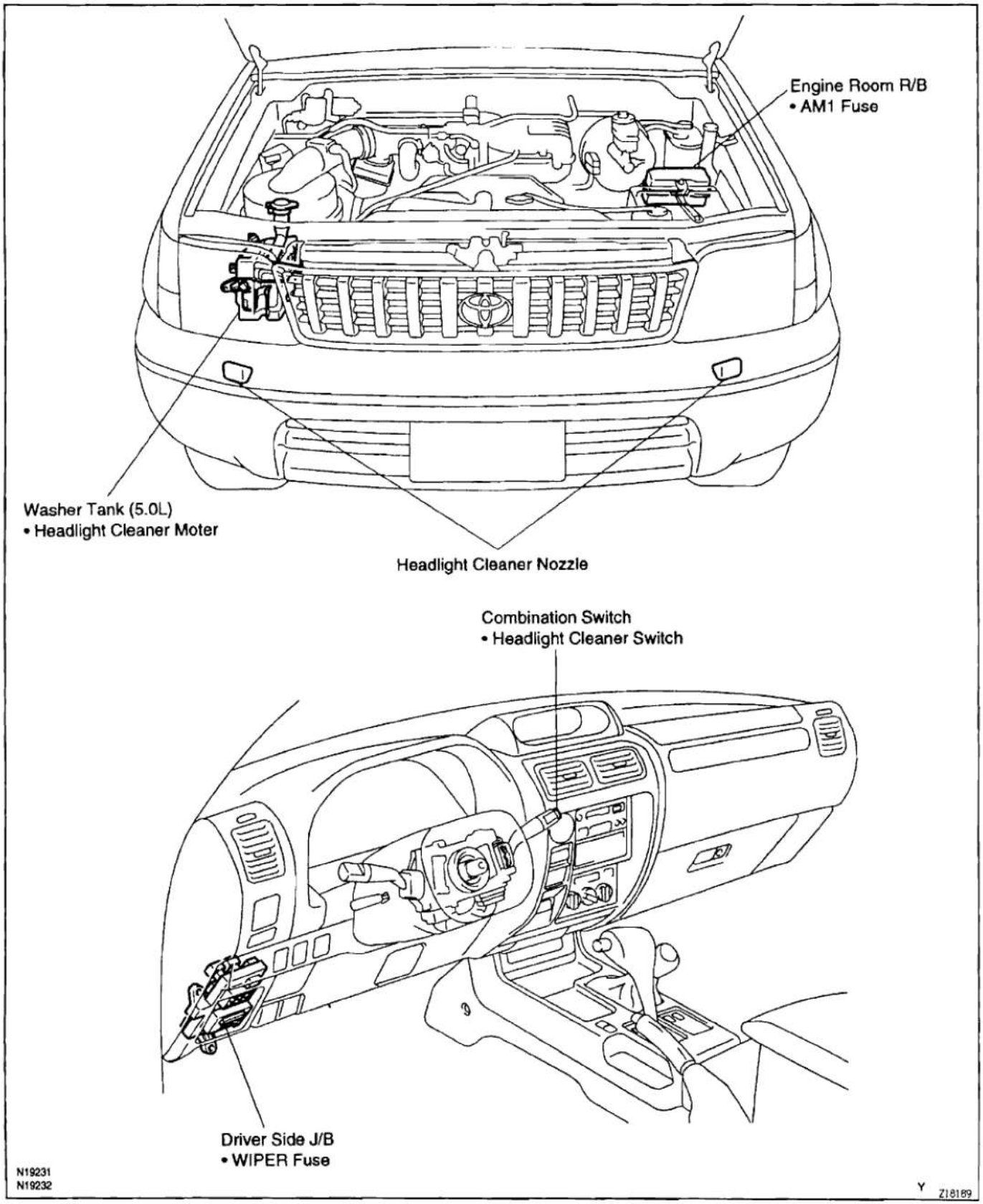
2. INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Switch pin pushed in (Pedal released)	–	No continuity
Switch pin free (Pedal depressed)	1 – 2	Continuity

If continuity is not as specified, replace the switch.

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HEADLIGHT CLEANER SYSTEM
PARTS LOCATION



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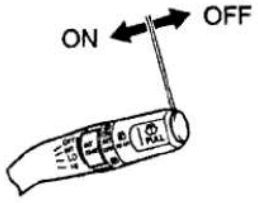
BE17A-04

TROUBLESHOOTING

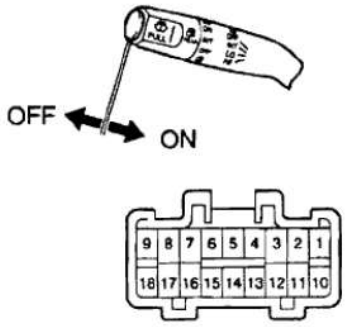
The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
"Headlight Cleaner System" does not operate. (Using light control switch)	1. Light Control Switch 2. Wire Harness	(BE–16)
"Headlight Cleaner System" does not operate. (All)	1. AM1 Fuse (Engine Room R/B) 2. WIPER Fuse (Driver Side J/B) 3. Headlight Cleaner Switch 4. Headlight Cleaner Relay 5. Headlight Cleaner Motor 6. Headlight Cleaner Nozzle and Hose 7. Wire Harness	 (BE–37) (BE–38) (BE–38)
Washer fluid does not spray.	1. Headlight Cleaner Nozzle and Hose	

LHD models
(Include RHD models for Europe) :



RHD models
(Except RHD models for Europe) :



YN19662

BE26E-04

HEADLIGHT CLEANER SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

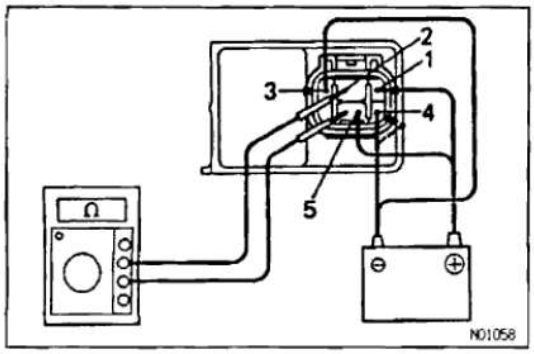
( ): RHD models (Except RHD models for Europe)

Switch position	Tester connection	Specified condition
OFF	–	No continuity
ON	3 – 15 (7 – 13)	Continuity

If continuity is not as specified, replace the switch.

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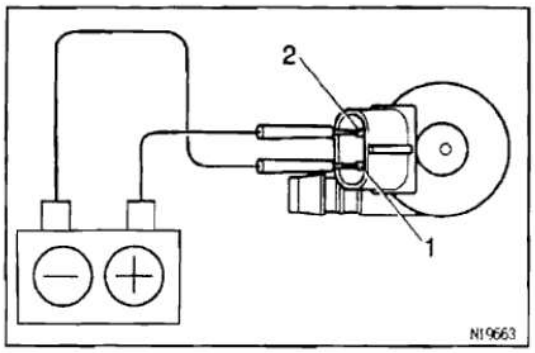
HEADLIGHT CLEANER RELAY INSPECTION

INSPECT RELAY OPERATION

(a) Check that there is no continuity between terminals 2 and 5.

(b) Connect the positive (+) lead from the battery to terminals 1 and 5, and the negative (−) lead to terminal 3.

(c) Connect the negative (−) lead from the battery to terminal 4, and check that there is continuity between terminals 2 and 5 for 0.4 – 0.6 seconds and that there is no more continuity after that.
If operation is not as specified, replace the relay.



HEADLIGHT CLEANER MOTOR INSPECTION

INSPECT MOTOR OPERATION

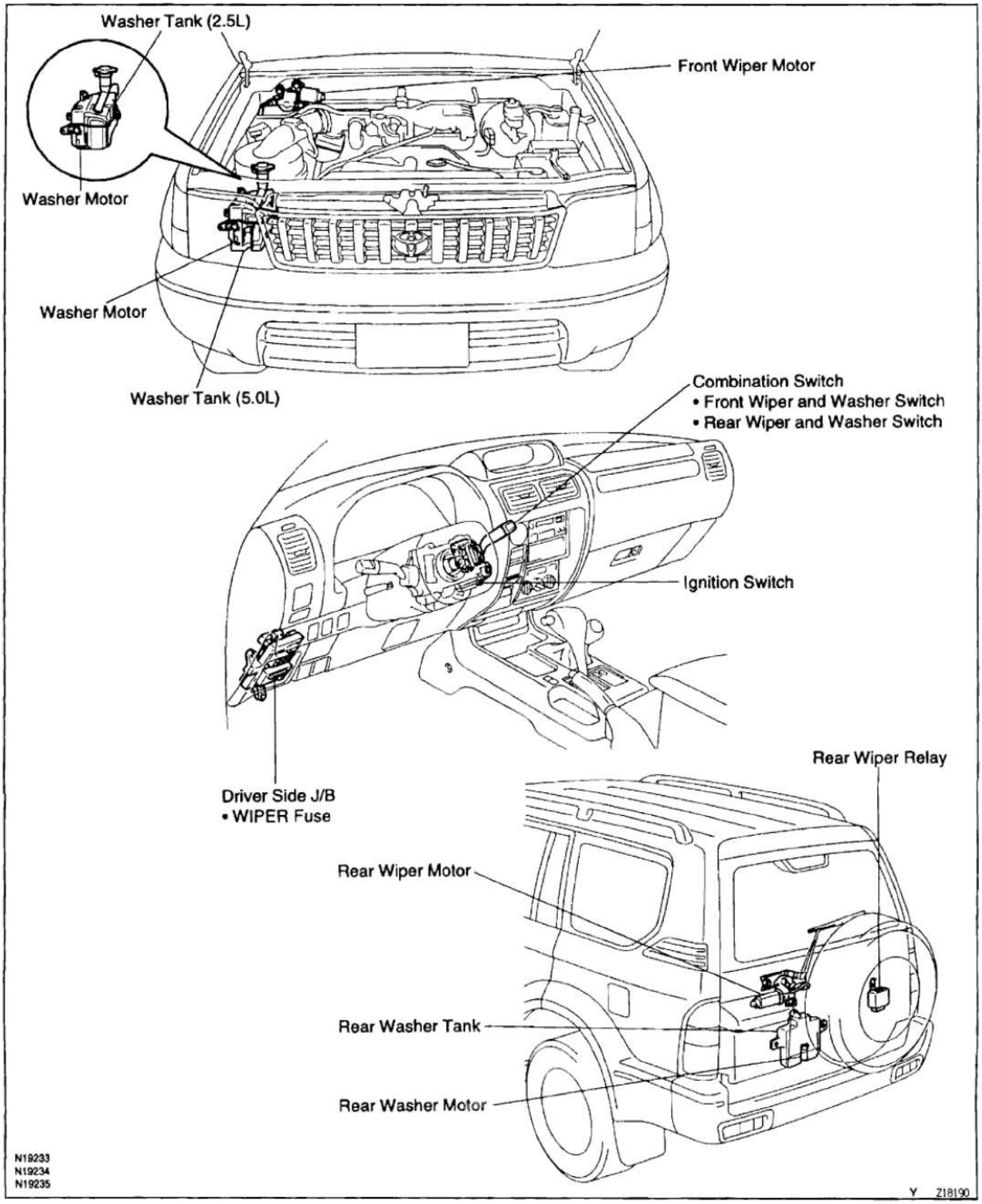
Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 1, check that the motor operates.

NOTICE: These tests must be performed quickly (within 20 seconds) to prevent the coil from burning out.

If operation is not as specified, replace the motor.

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WIPER AND WASHER SYSTEM
PARTS LOCATION



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TROUBLESHOOTING

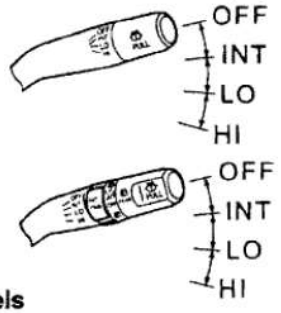
BE0A7-17

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

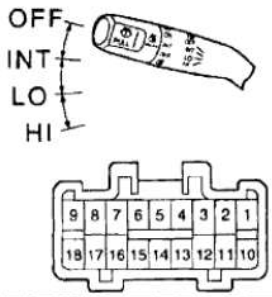
Trouble	Parts name	(See page)
Wipers and washers do not operate.	1. WIPER Fuse (Driver Side J/B)	
	2. Ignition Switch	(BE–7)
	3. Wiper and Washer Switch	(BE–41 and 42)
	4. Wire Harness	
Front wiper does not operate.	1. Front Wiper and Washer Switch	(BE–41)
	2. Front Wiper Motor	(BE–43)
	3. Wire Harness	
Rear wiper does not operate.	1. Rear Wiper and Washer Switch	(BE–42)
	2. Rear Wiper Motor and Relay	(BE–45)
	3. Wire Harness	
Front washer does not operate.	1. Front Wiper and Washer Switch	(BE–41)
	2. Washer Motor	(BE–45)
	3. Wire Harness	
Rear washer does not operate.	1. Rear Wiper and Washer Switch	(BE–42)
	2. Washer Motor	(BE–45)
	3. Wire Harness	

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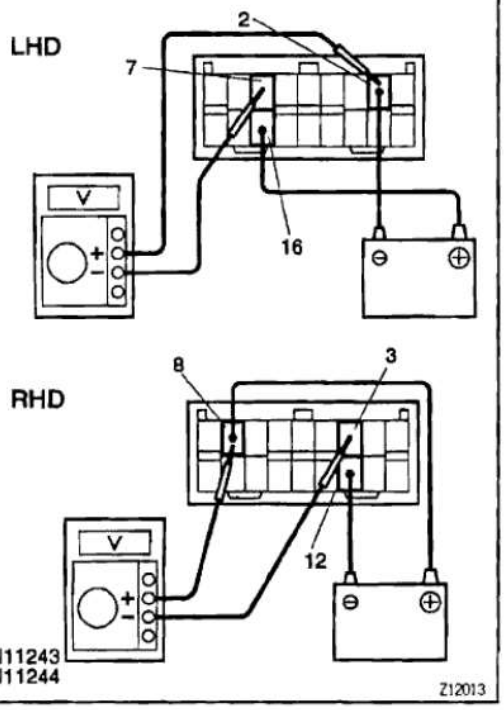
LHD models
(Include RHD models for Europe) :



RHD models
(Except RHD models for Europe) :



N15857



COMBINATION SWITCH INSPECTION

M21VJ-02

1. INSPECT FRONT WIPER SWITCH CONTINUITY

( ): RHD Models (Except RHD models for Europe)

Switch position	Tester connection	Specified condition
OFF	7 – 16 (3 – 12)	Continuity
INT	7 – 12 (3 – 12)	Continuity
LO	7 – 17 (3 – 11)	Continuity
HI	8 – 17 (2 – 11)	Continuity

If continuity is not as specified, replace the switch.

2. INSPECT FRONT WASHER SWITCH CONTINUITY

( ): RHD Models (Except RHD models for Europe)

Switch position	Tester connection	Specified condition
OFF	–	No continuity
ON	2 – 11 (8 – 17)	Continuity

If continuity is not as specified, replace the switch.

3. INSPECT INTERMITTENT OPERATION

( ): RHD Models (Except RHD models for Europe)

(a) Turn the wiper switch the to the INT position.

(b) Turn the intermittent time control switch to the FAST position.

(c) Connect the positive (+) lead from the battery to terminal 16(12) and the negative (–) lead to terminal 2(8).

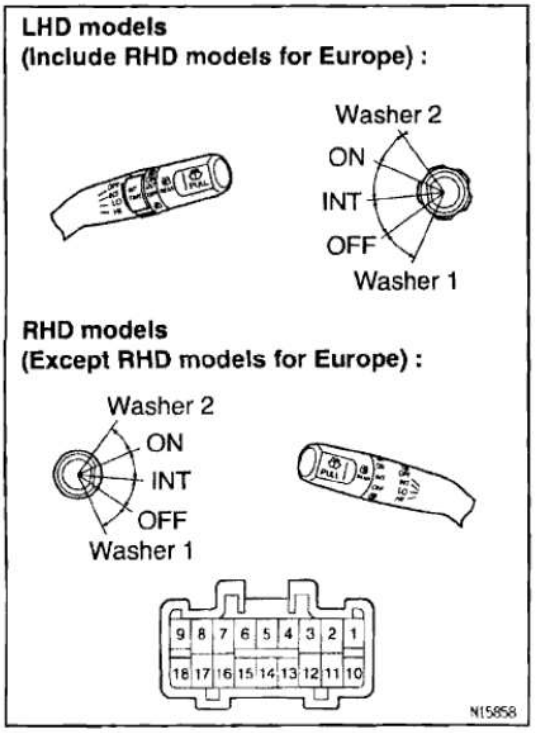
(d) Connect the positive (+) lead from the voltmeter to terminal 7(3) and the negative (–) lead to terminal 2 (8), and check that the meter needle indicates battery voltage.

INT time control switch position	Voltage
FAST	Approx. 1–3 sec. Battery voltage 0 volt
SLOW	Approx. 10–15 sec. Battery voltage 0 volt

V04134

If operation is not as specified, replace the wiper and washer switch.

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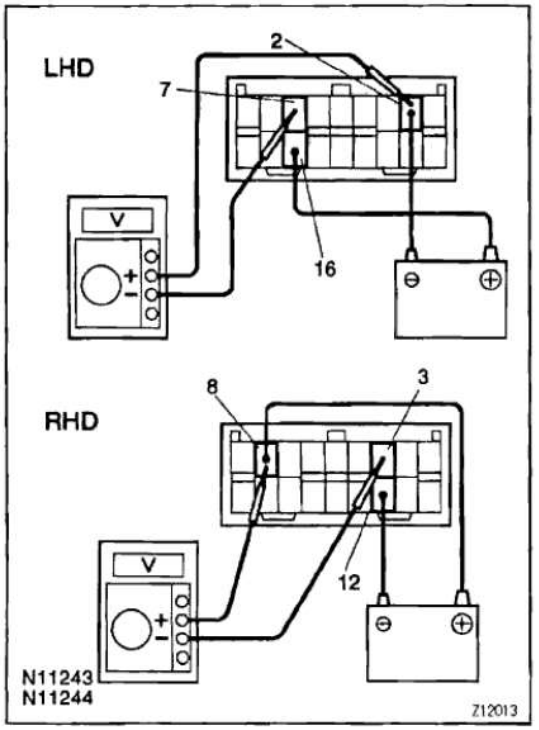


4. INSPECT REAR WIPER AND WASHER SWITCH CONTINUITY

( ): RHD Models (Except RHD models for Europe)

Switch position	Tester connection	Specified condition
Washer 1	2 – 12 (8 – 16)	Continuity
Wiper OFF	–	No continuity
Wiper INT	2 – 13 (8 – 15)	Continuity
Wiper ON	2 – 10 (8 – 18)	Continuity
Washer 2	2 – 10 – 12 (8 – 16 – 18)	Continuity

If continuity is not as specified, replace the switch.



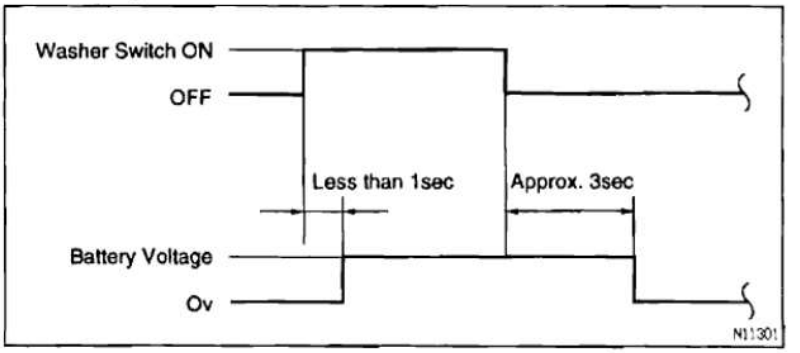
5. INSPECT WASHER LINKED OPERATION

( ): RHD Models (Except RHD models for Europe)

(a) Connect the positive (+) lead from the battery to terminal 16(12) and the negative (−) lead to terminal 2(8).

(b) Connect the positive (+) lead from the voltmeter to terminal 7(3) and the negative (−) lead to terminal 2 (8).

(c) Push in the washer switch, and check that the voltage changes as shown in the table.

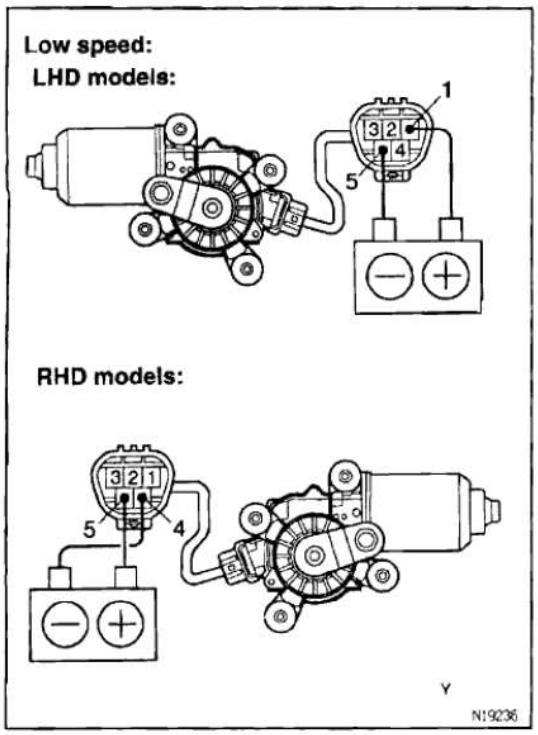


If operation is not as specified, replace the wiper and washer switch.

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BE38X-01

FRONT WIPER MOTOR INSPECTION

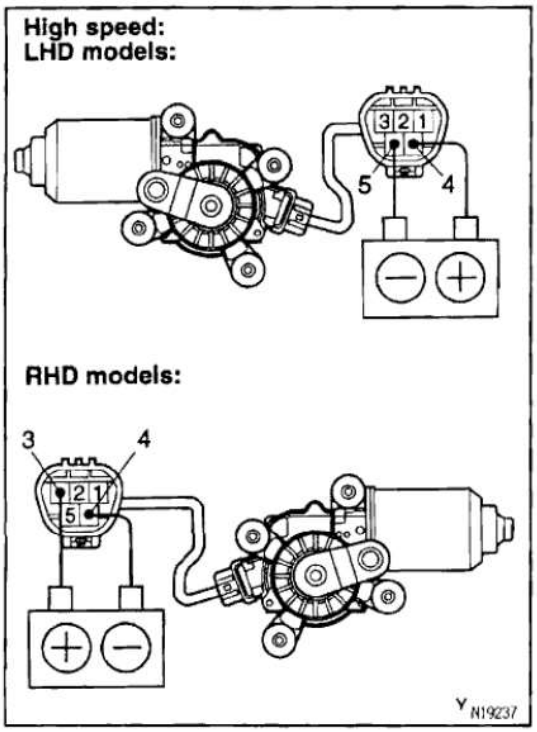


INSPECT MOTOR OPERATION

( ): RHD models

Low speed operation:

Connect the positive (+) lead from the battery to terminal 1 (5) and the negative (−) lead to terminal 5 (4), and check that the motor operates at low speed. If operation is not as specified, replace the motor.

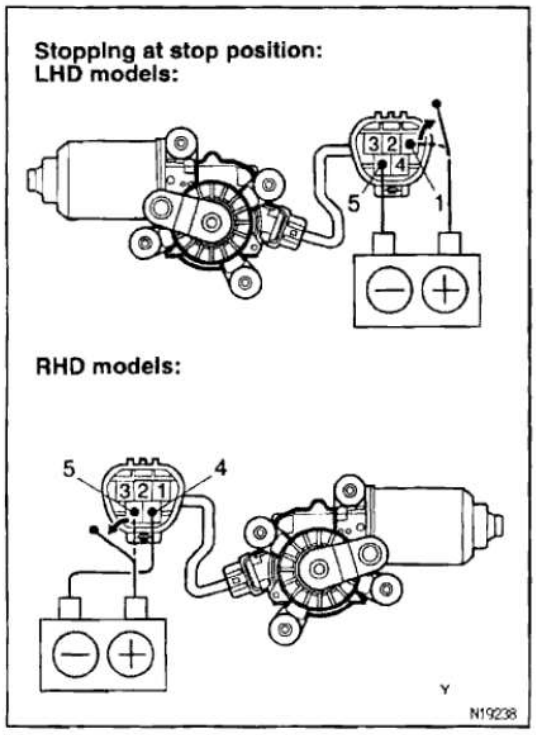


High speed operation:

Connect the positive (+) lead from the battery to terminal 4 (3) and the negative (−) lead to terminal 5 (4), and check that the motor operates at high speed. If operation is not as specified, replace the motor.

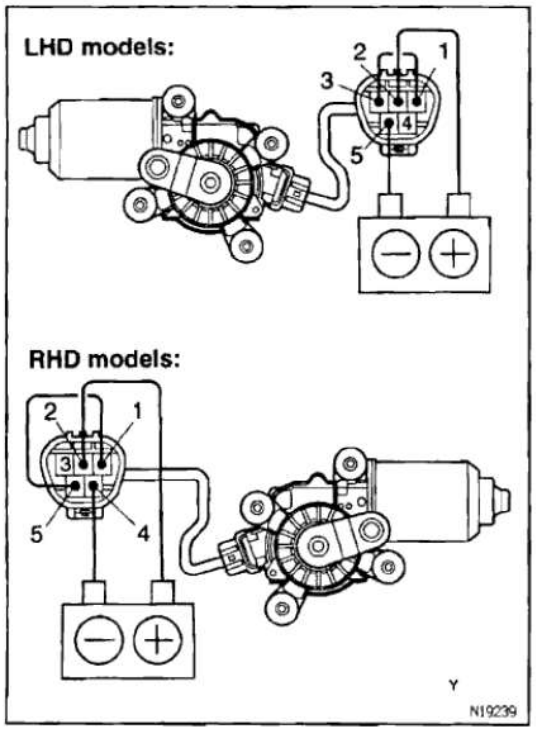
BE

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Stopping at stop position operation:

(a) Operate the motor at low speed and stop the motor operates anywhere by disconnecting positive (+) lead from terminal 1 (5).

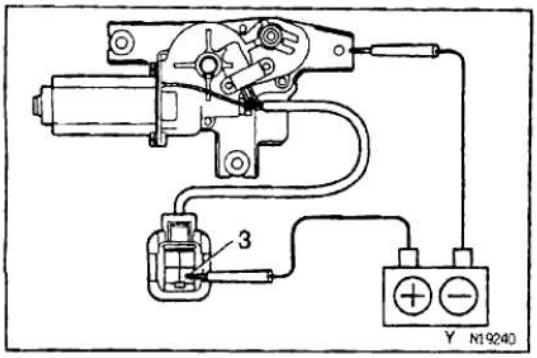


(b) Connect terminals 1 (1) and 3 (5).

(c) Connect the positive (+) lead from the battery to terminal 2 (2) and negative (−) lead to terminal 5 (4), and check that the motor stops running at the stop position after the motor operates again.
If operation is not as specified, replace the motor.

BE

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REAR WIPER MOTOR INSPECTION

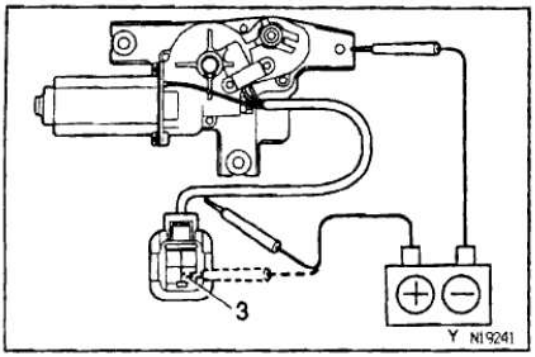
BE36Z-01

INSPECT MOTOR AND RELAY OPERATION

Operating:

Connect the positive (+) lead from the battery to terminal 4, and the negative (−) lead to the motor body, and check that the motor operates.

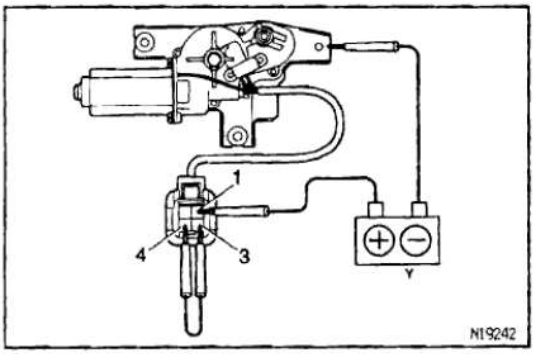
If operation is not as specified, replace the motor with the relay.



Stopping at stop position:

Operate the motor and stop the motor operation anywhere except at the stop position by disconnecting the positive (+) lead from terminal 4, and the negative (−) lead to the motor body.

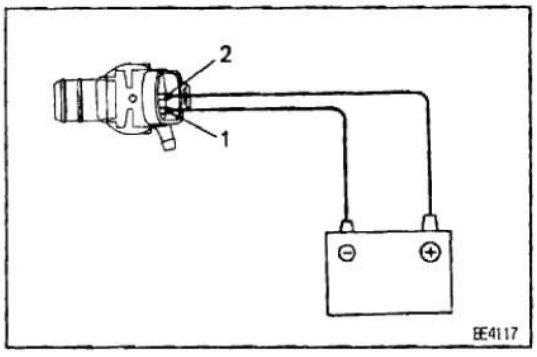
If operation is not as specified, replace the motor with the relay.



Intermittent operation:

Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to the motor body, and check that the motor operates intermittently for 9 − 15 seconds.

If operation is not as specified, replace the motor with the relay.



WASHER MOTOR INSPECTION

BE361-01

INSPECT MOTOR OPERATION

Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 1, and check that the motor operates.

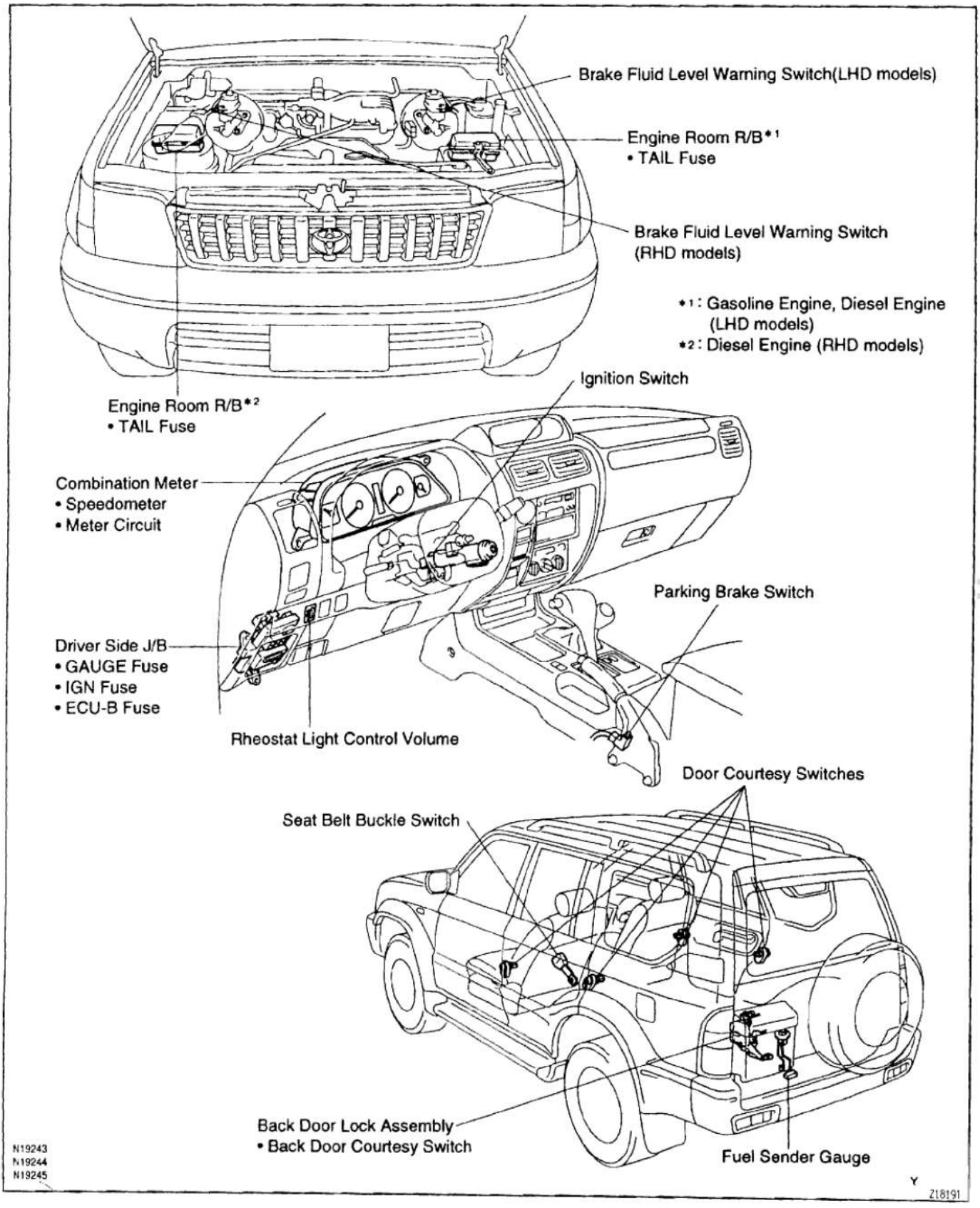
NOTICE: These tests must be performed quickly (within 20 seconds) to prevent the coil from burning out.

If operation is not as specified, replace the motor.

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COMBINATION METER
PARTS LOCATION

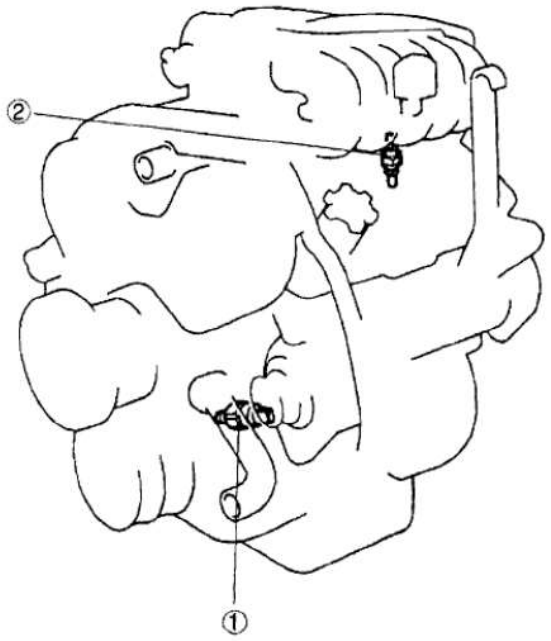
BE38E-02



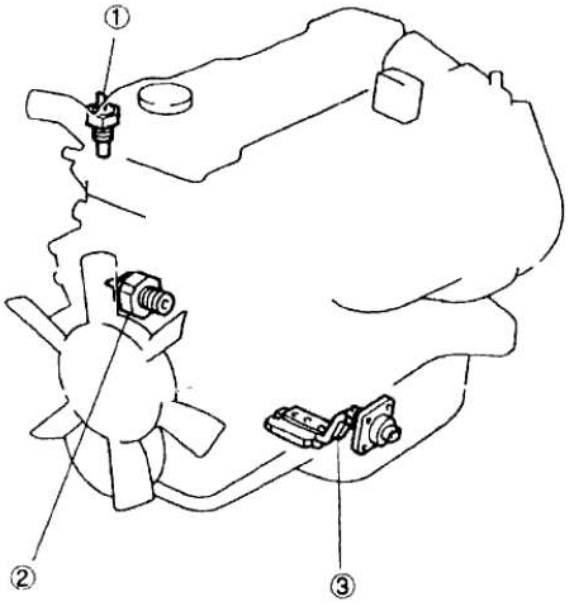
BE

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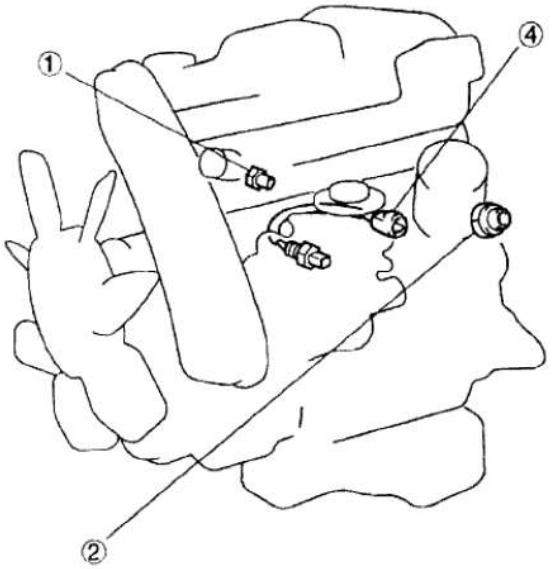
• VZ Series Engine



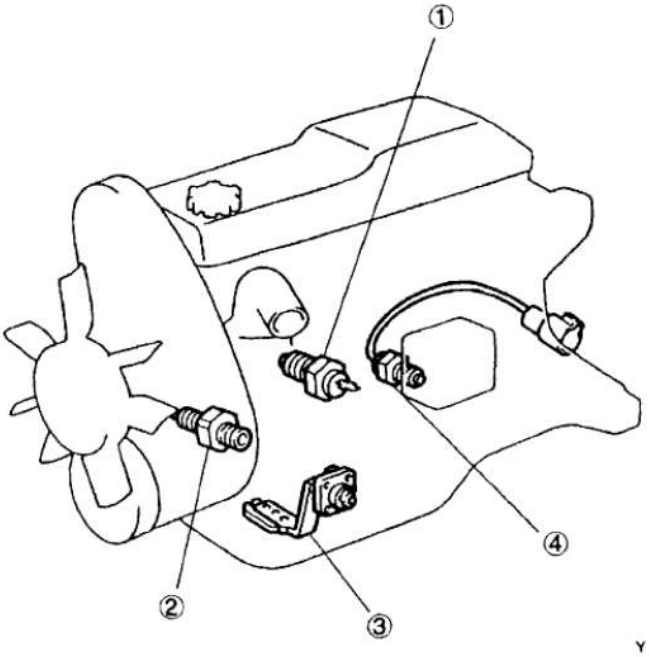
• RZ Series Engine



• KZ Series Engine



• L Series Engine



①: Water Temperature Sender Gauge
②: Low Oil Pressure Warning Switch
③: Engine Oil Level Warning Sensor
④: Pick-up Sensor

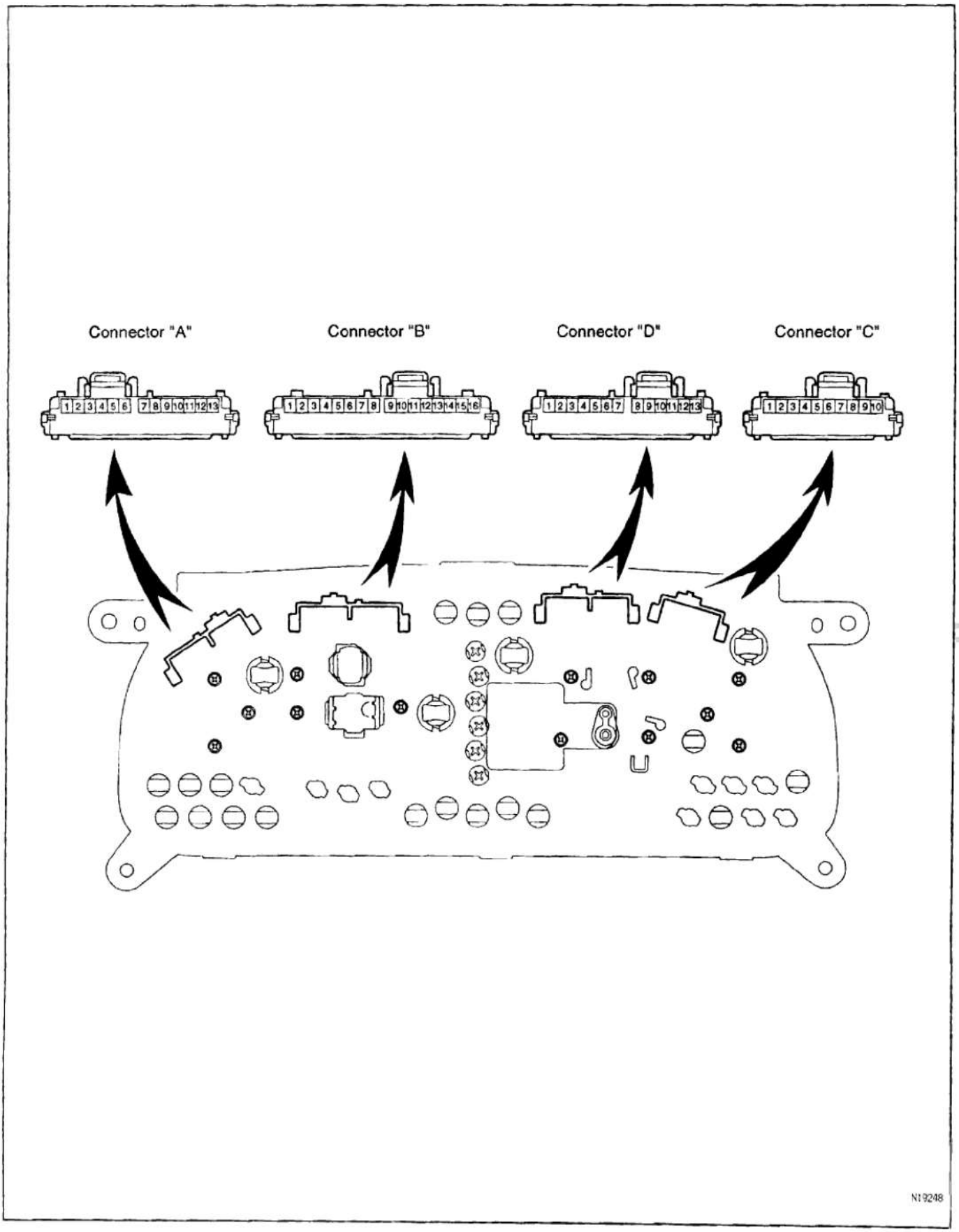
N19246
N16245
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Z18192

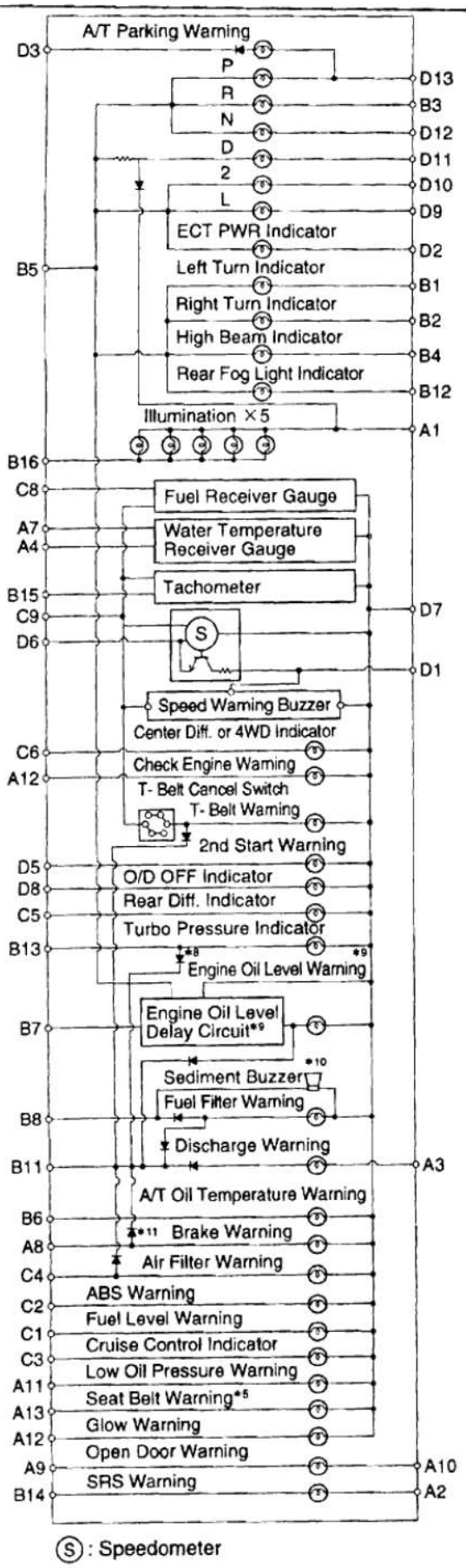
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BE23F-03

METER CIRCUIT



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No.		Wiring Connector Side
A	1	TAIL Fuse
	2	ECU-B Fuse
	3	IGN Fuse
	4	Water Temperature Sender Gauge
	7	Ground (Water Temperature Sender Gauge)
	8	Brake Fluid Level Warning Switch and Parking Brake Switch, Vacuum Switch*1
	9	Door Courtesy Switch
	10	DOME Fuse
	11	Low Oil Pressure Warning Switch
	12	Glow Plug Timer*1, EFI ECU*4
	13	Seat Belt Buckle Switch*5
B	1	Turn Signal Switch (Left)
	2	Turn Signal Switch (Right)
	3	Neutral Start Switch (R)*3
	4	Headlight Dimmer Switch
	5	Ground (General)
	6	A/T Fluid Temperature Sensor*3
	7	Engine Oil Level Sensor
	8	Fuel Filter Warning Switch*1
	11	Alternator L Terminal
	12	Rear Fog Light Switch*2
	13	Turbo Pressure Switch*6
	14	Airbag Sensor Assembly
	15	Pick-Up Sensor*14, Igniter*4, ECT ECU*15, ECD ECU*9
	16	Rheostat Light Control Volume or Ground
C	1	Fuel Level Warning Switch
	2	ABS ECU
	3	Cruise Control ECU
	4	Air Filter Warning Switch*7
	5	Rear Differential Lock Control Switch
	6	Center Differential Lock Control Switch*12 Transfer 4WD Position Switch*13
	8	Fuel Sender Gauge
	9	Ground
D	1	Vehicle Speed Sensor
	2	Pattern Select Switch*3
	3	Transfer Neutral Position Switch*3
	5	ECM
	6	Speed Control Unit
	7	GAUGE Fuse
	8	O/D OFF Switch*3
	9	Neutral Start Switch (L)*3
	10	Neutral Start Switch (2)*3
	11	Neutral Start Switch (D)*3
	12	Neutral Start Switch (N)*3
	13	Neutral Start Switch (P)*3

*1 : Diesel Engine
*2 : Vehicles sold in Europe.
*3 : A/T Vehicles
*4 : Gasoline Engine
*5 : G.C.C. Countries
*6 : Turbo Vehicles
*7 : General and Australia
*8 : General (1KZ-T Engine)
*9 : Europe (1KZ-TE Engine)
*10 : General (Diesel Engine)
*11 : Europe and Australia
*12 : Full Time 4WD Vehicles
*13 : Part Time 4WD Vehicles
*14 : 3L, 1KZ-T Engine
*15 : Diesel engined vehicle with A/T except 1KZ-TE engine.

N19249
Y
Z18428

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BE1DL-01W

TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

METER, GAUGES AND ILLUMINATION

Trouble	Parts name	(See page)
Tachometer, fuel gauge and water temperature gauge do not operate.	1. GAUGE Fuse (Driver Side J/B) 2. Meter Circuit 3. Wire Harness	 (BE–48 and 49)
Speedometer does not operate.	1. Vehicle Speed Sensor 2. Meter Circuit 3. Wire Harness	(BE–56) (BE–48 and 49)
Tachometer does not operate.	1. Meter Circuit 2. Igniter (Gasoline Engine) 3. Tacho Pick–up Sensor (3L, 1KZ–T Engine) 4. ECT ECU (Diesel engines vehicle with A/T except 1KZ–TE engine.) 5. ECD ECU (1KZ–TE Engine) 6. Wire Harness	(BE–48 and 49) (BE–57)
Fuel gauge does not operate or abnormal operation.	1. Fuel Receiver Gauge 2. Fuel Sender Gauge 3. Meter Circuit 4. Wire Harness	(BE–59) (BE–59) (BE–48 and 49)
Water temperature gauge does not operate or abnormal operation.	1. Water Temperature Receiver Gauge 2. Water Temperature Sender Gauge 3. Meter Circuit 4. Wire Harness	(BE–59) (BE–59) (BE–48 and 49)
All illumination lights do not light up.	1. TAIL Fuse (Engine Room R/B) 2. Light Control Rheostat 3. Meter Circuit 4. Wire Harness	 (BE–65) (BE–48 and 49)
Only one illumination light does not light up.	1. Bulb 2. Meter Circuit 3. Wire Harness	 (BE–48 and 49)

WARNING LIGHTS

Trouble	Parts name	(See page)
Warning lights do not light up. (Except discharge, SRS and open door)	1. Bulb 2. GAUGE Fuse (Driver Side J/B) 3. Ignition Switch 4. Meter Circuit 5. Wire Harness	 (BE–7) (BE–48 and 49)
Timing belt warning light does not light up.	1. Bulb 2. Speedometer 3. Wire Harness	 (BE–55)

BE

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Discharge warning light does not light up.	1. Bulb 2. IGN Fuse (Driver Side J/B) 3. Alternator 4. Wire Harness	
Brake warning light does not light up.	1. Bulb 2. Brake Fluid Level Warning Switch 3. Parking Brake Switch 4. Meter Circuit 5. Wire Harness	(BE–61) (BE–61) (BE–48 and 49)
Engine oil level warning light does not light up.	1. Bulb 2. Meter Circuit 3. Engine Oil Level Sensor 4. Wire Harness	(BE–48 and 49) (BE–63)
Low oil pressure warning light does not light up.	1. Bulb 2. Low Oil Pressure Warning Switch 3. Meter Circuit 4. Wire Harness	(BE–60) (BE–48 and 49)
Fuel filter warning light does not light up.	1. Bulb 2. Meter Circuit 3. Fuel Filter Warning Switch 4. Wire Harness	(BE–48 and 49) (BE–60)
Air filter warning light does not light up.	1. Bulb 2. Meter Circuit 3. Air Filter Warning Switch 4. Wire Harness	(BE–48 and 49) (BE–65)
Turbo warning light does not light up.	1. Bulb 2. Meter Circuit 3. Turbo Pressure Switch 4. Wire Harness	(BE–48 and 49) (BE–64)
Seat belt warning light does not light up.	1. Bulb 2. Seat Belt Buckle Switch 3. Meter Circuit 4. Wire Harness	(BE–62) (BE–48 and 49)
Fuel level warning light does not light up.	1. Bulb 2. Fuel Level Warning Switch 3. Meter Circuit 4. Wire Harness	(BE–58) (BE–48 and 49)
Open door warning light does not light up.	1. Bulb 2. DOME Fuse (Engine Room R/B) 3. Door Courtesy Switch 4. Meter Circuit 5. Wire Harness	(BE–30) (BE–48 and 49)
SRS warning light does not light up.	1. Bulb 2. ECU–B Fuse (Engine Room R/B) 3. Airbag Sensor Assembly 4. Meter Circuit 5. Wire Harness	(BE–48 and 49)

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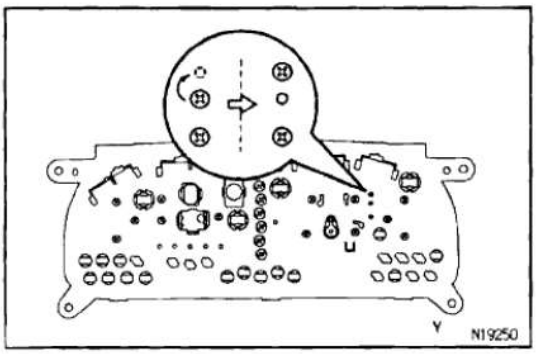
A/T parking warning light does not light up.	1. Bulb 2. Neutral Start Switch 3. Transfer Neutral Position Switch 4. Meter Circuit 5. Wire Harness	 (AT–60) (TR–17 and 55) (BE–48 and 49)
A/T oil temperature warning light does not light up.	1. Bulb 2. A/T Fluid Temperature Sensor 3. Meter Circuit 4. Wire Harness	 (AT–44) (BE–48 and 49)

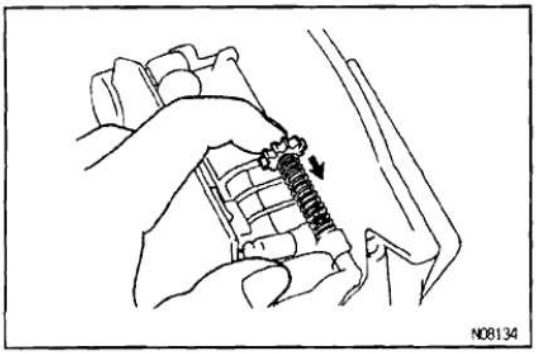
INDICATOR LIGHTS

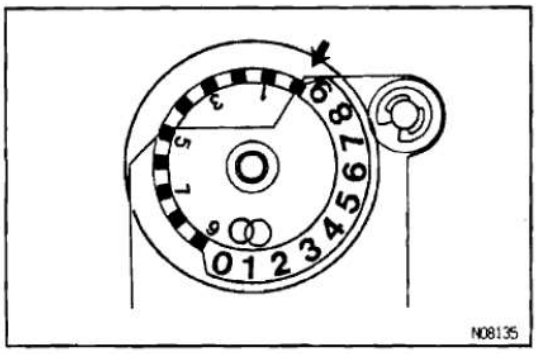
Trouble	Parts name	(See page)
ABS indicator light does not light up.	1. Bulb 2. ABS ECU 3. Meter Circuit 4. Wire Harness	 (BR–66) (BE–48 and 49)
Center differential lock or 4WD indicator light does not light up.	1. Bulb 2. Center Differential Lock Control Switch 3. Meter Circuit 4. Wire Harness	 (TR–17 and 55) (BE–48 and 49)
Rear differential lock indicator light does not light up.	1. Bulb 2. Rear Differential Lock Control Switch 3. Meter Circuit 4. Wire Harness	 (SA–105) (BE–48 and 49)
Check engine indicator light does not light up.	1. Bulb 2. Meter Circuit 3. Wire Harness	 (BE–48 and 49)
A/T shift position indicator light does not light up.	1. Bulb 2. Neutral Start Switch 3. Light Control Rheostat 4. Meter Circuit 5. Wire Harness	 (AT–60) (BE–65) (BE–48 and 49)
O/D OFF indicator light does not light up.	1. Bulb 2. O/D Main Switch 3. Meter Circuit 4. Wire Harness	 (AT–66) (BE–48 and 49)
Turn indicator light does not light up.	1. Bulb 2. Turn Signal and Hazard Warning System 3. Meter Circuit 4. Wire Harness	 (BE–24) (BE–48 and 49)
High beam indicator light does not light up.	1. Bulb 2. Headlight and Taillight System 3. Meter Circuit 4. Wire Harness	 (BE–10) (BE–48 and 49)
CRUISE indicator light does not light up.	1. Bulb 2. Cruise Control System 3. Meter Circuit 4. Wire Harness	 (BE–189) (BE–48 and 49)

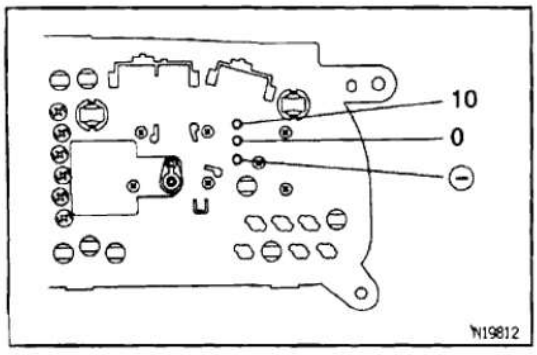
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ECT PWR indicator light does not light up.	1. Bulb 2. ECT Pattern Select Switch 3. Meter Circuit 4. Wire Harness	 (AT–71 and 74) (BE–48 and 49)









TIMING BELT WARNING INSPECTION

1. **RESET TIMING BELT WARNING**

The timing belt warning light lights up when the vehicle has run 100,000 km. When the belt has been replace, remove the screw from the "0" position at the rear of the meter and reinstall it in the "10" position.
HINT: When the warning light lights up after 200,000 km, remove the screw from the "10" position and reinstall it at the "0" position. After 300,000 km, install the screw back at the "10" position.

2. **IF REPLACING TIMING BELT BEFORE WARNING LIGHT LIGHTS UP**

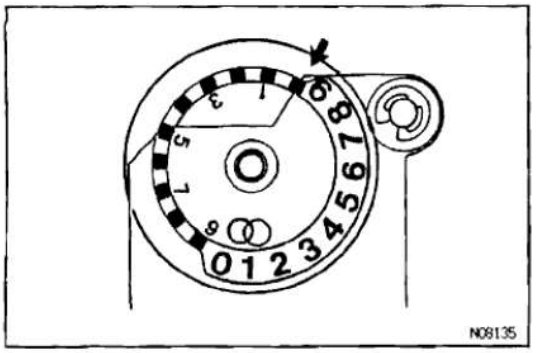
(a) Remove the speedometer unit from the combination meter.

(b) Disengage the gear on top of the odometer, and adjust the cam location as shown in the illustration.

HINT: Install the screw at the "0" and "⊖" position.

(c) Install the speedometer in the combination meter and install the combination meter in the vehicle.

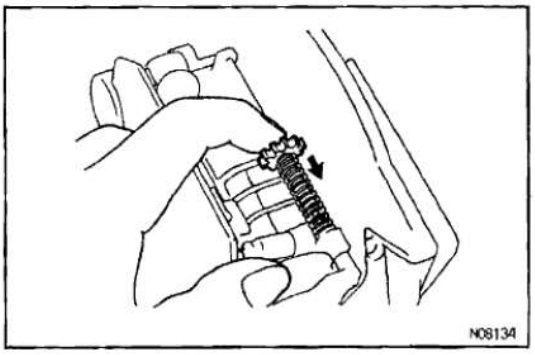
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3. INSPECT TIMING BELT WARNING MICRO SWITCH

(a) Remove the speedometer unit from the combination meter.

(b) Read the number indicated by the timing belt microswitch in the speedometer.

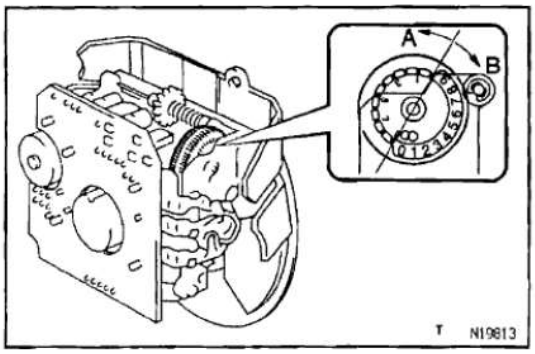


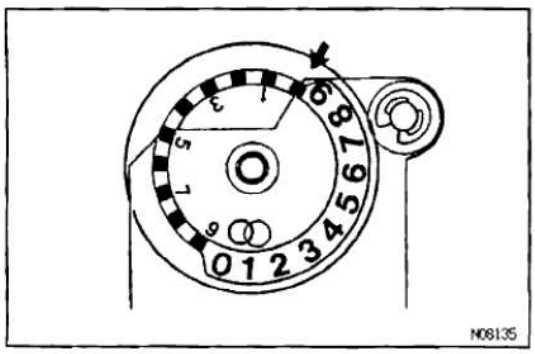
(c) Disengage the gear on top of the odometer and check the continuity between the terminals when the cam for the microswitch is rotated.
Position "A"

Condition	Tester connection	Specified value
Constant	0 – ⊖	No continuity
Constant	10 – ⊖	Continuity

Position "B"

Condition	Tester connection	Specified value
Constant	0 – ⊖	Continuity
Constant	10 – ⊖	No continuity

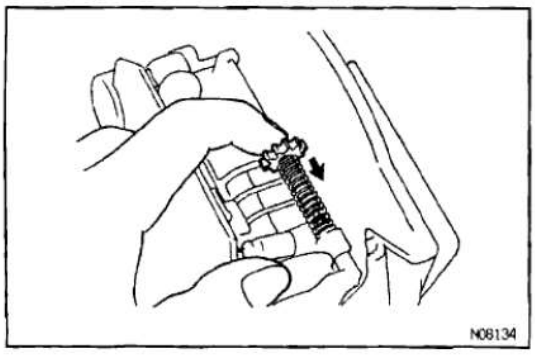




4. REPLACE SPEEDOMETER

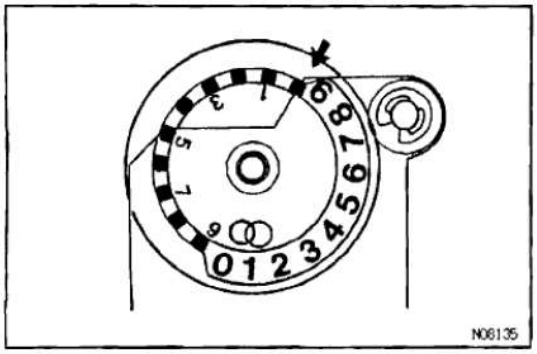
(a) Remove the speedometer unit from the combination meter.

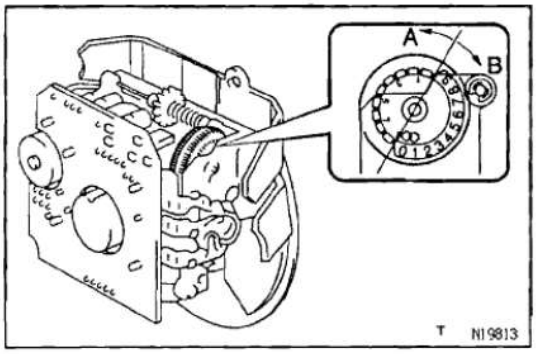
(b) Read the number indicated by the timing belt microswitch in the speedometer.



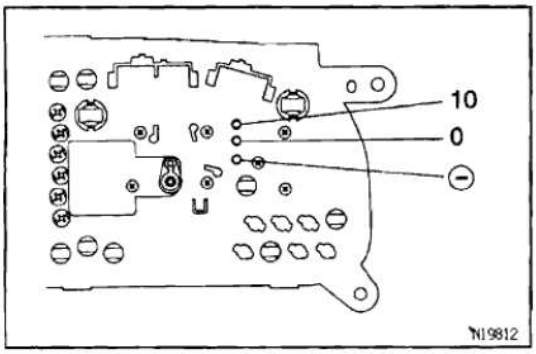
(c) Disengage the gear on top of the odometer, reset the timing belt microswitch to the reading in (b) above, then engage the gear.

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(d) When the arrow in the illustration indicates the A side, install the screws at "0" and the "⊖" positions. For the B side, install the screws at the "10" and "⊖" position.



BE31V-02

SPEEDOMETER

1. INSPECT SPEEDOMETER ON VEHICLE

(a) 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.

If an error is excessive, replace the speedometer.

(b) Check the speedometer for pointer vibration and abnormal noise.

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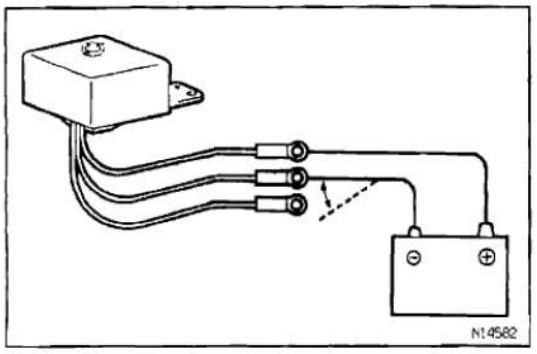
Europe (km/h and mph) and G.C.C. countries (km/h)

n/h)	Allowable range (km/h)	Standard indication (mph)	Allowable range (mph)
	20 – 26	20	20 – 24.5
	40 – 48	40	40 – 46.5
	60 – 70	60	60 – 68.5
80	80 – 92	80	80 – 90.5
100	100 – 114	100	100 – 112.5
120	120 – 136	–	
140	140 – 158	–	
160	160 – 180	–	

Australia (km/h) and General (km/h and mph)

Standard indication (km/h)	Allowable range (km/h)	Standard indication (mph)	Allowable range (mph)
–		20	18 – 24
40	36 – 44	40	38 – 44
60	54 – 66	60	58 – 66
80	72 – 88	80	78 – 88
100	90 – 110	100	98 – 110
120	108 – 132	120	118 – 132
140	126 – 154	–	
160	144 – 176	–	

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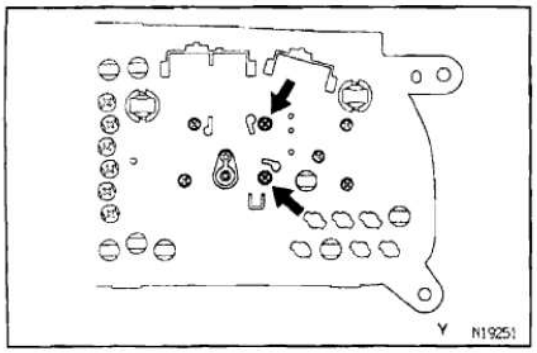


2. INSPECT SPEED WARNING BUZZER

Apply battery voltage intermittently between terminals of the buzzer and check that the buzzer sound.

HINT: The sound will be distorted if the buzzer is tilted.

If operation is not as specified, replace the buzzer.



VEHICLE SPEED SENSOR INSPECTION

BE1DP-01

INSPECT VEHICLE SPEED SENSOR

Check that there is continuity between terminals A and B 4 times for every revolution of the speedometer shaft.

If operation is not as specified, replace the speedometer.

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TACHOMETER INSPECTION

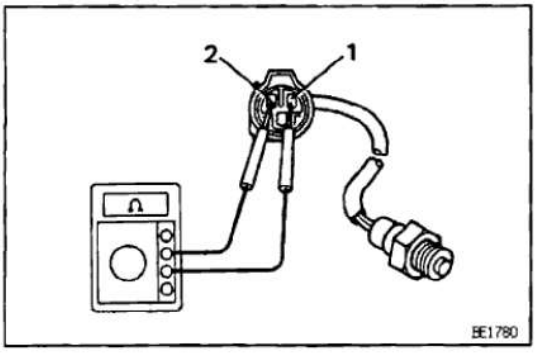
BE30A-01

1. 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.

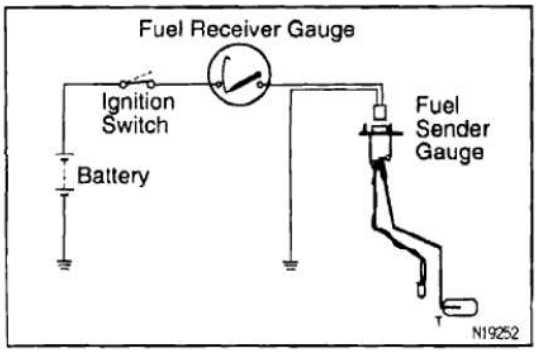
(b) Compare the tester and tachometer indications.
If an error is excessive, replace the tachometer.
RPM (DC 13.5 V, 25 °C (77°F))

Standard indication (rpm)	Allowable range (rpm)
700	630 – 770
1,000	(900 – 1,100)
2,000	(1,875 – 2,125)
3,000	2,850 – 3,150
4,000	(3,850 – 4,150)
5,000	4,850 – 5,150
6,000	(5,820 – 6,180)
7,000	(6,790 – 7,210)



2. INSPECT PICK–UP SENSOR (Diesel engine)

Measure the resistance between terminals 1 and 2.
Resistance: Approx. 730 Ω
If resistanse value is not as specified, replace the sensor.



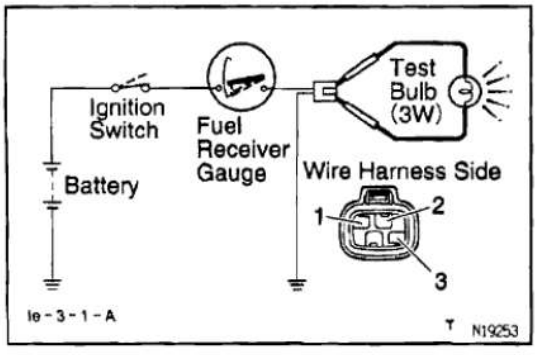
FUEL GAUGE INSPECTION

BE30B-01

1. INSPECT RECEIVER GAUGE OPERATION

(a) Disconnect the connector from the sender gauge assembly.

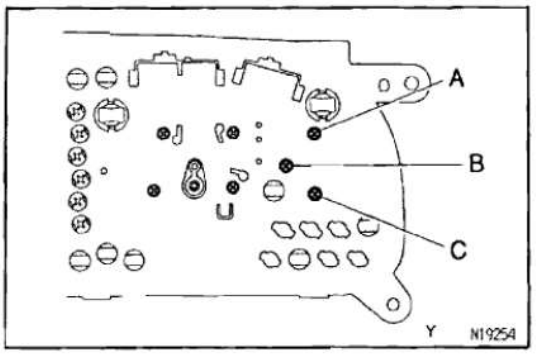
(b) Turn the ignition switch ON, check that the receiver gauge needle indicates EMPTY.



(c) Connect terminals 1 and 2 on the wire harness side connector through a 3.4 W test bulb.

(d) Turn the ignition switch ON, check that the bulb lights up and the receiver gauge needle moves toward the full side.
HINT: Because of the silicon oil in the gauge, it will take a short time for the needle to stabilize.
If operation is not as specified, inspect the receiver gauge resistance.

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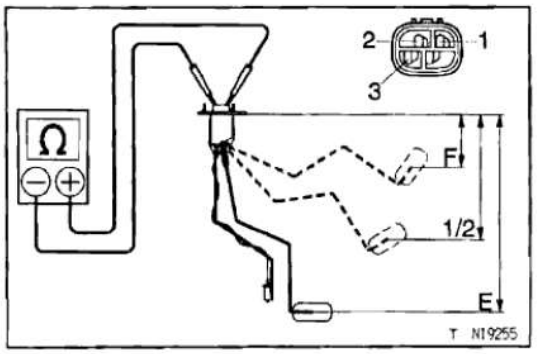


2. INSPECT RECEIVER GAUGE RESISTANCE

Measure the resistance between terminals.

Between terminals	Resistance (Ω)
A – B	Approx. 125.0
A – C	Approx. 228.0
B – C	Approx. 103.0

If resistance value is not as specified, replace the fuel receiver gauge.



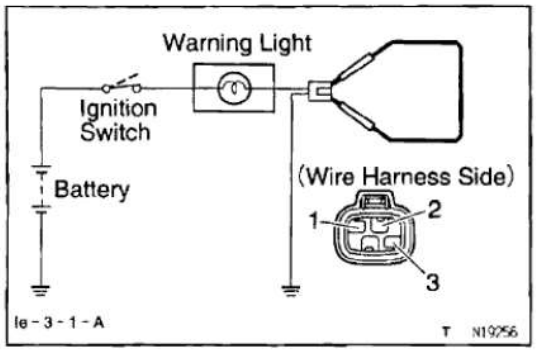
3. INSPECT SENDER GAUGE RESISTANCE

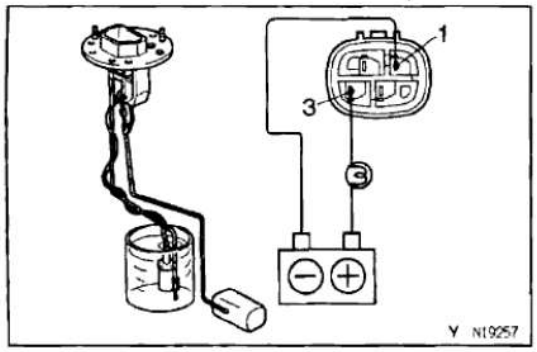
Measure the resistance between terminals 1 and 2 for each float position.

Float position : mm (in.)	Resistance (Ω)
F: Approx. 78.9 (3.106) ~ 83.9 (3.303)	Approx. 3.0 ± 0.6
1/2: Approx. 192.9 (7.594)	Approx. 32.5 ± 1.5
E: Approx. 303.0 (11.929) ~ 308.0 (12.126)	Approx. 110.0 ± 2.5

If resistance value is not as specified, replace the sender gauge.

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FUEL LEVEL WARNING INSPECTION

1. INSPECT WARNING LIGHT

(a) Disconnect the connector from the sender gauge.

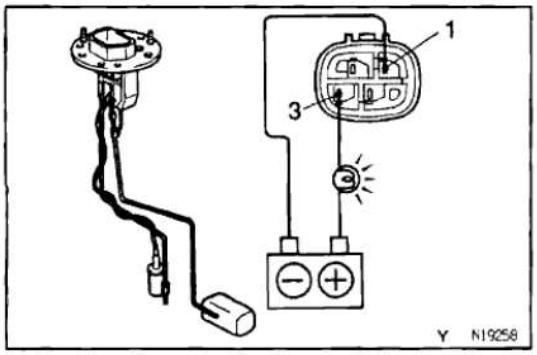
(b) Connect terminals 1 and 3 on the wire harness side connector.

(c) Turn the ignition switch ON, check that the warning light lights up.
If the warning light does not light up, test the bulb or inspect wire harness.

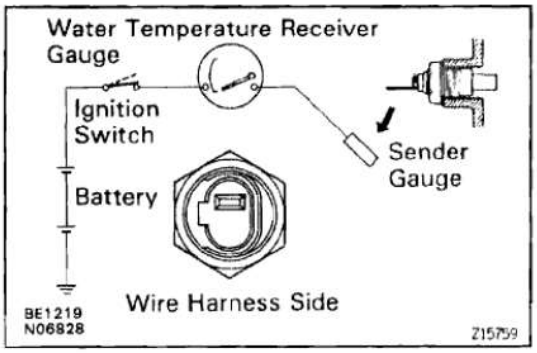
2. INSPECT SWITCH OPERATION

(a) Connect the positive (+) lead from battery to terminal 3 through a 3.4 W test bulb and the negative (–) lead to terminal 1, and check that the bulb lights up.
HINT: It will take a short time for the bulb to light up.

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(b) Submerge the switch in fuel, check that the bulb goes out.
If operation is not as specified, replace the sender gauge.

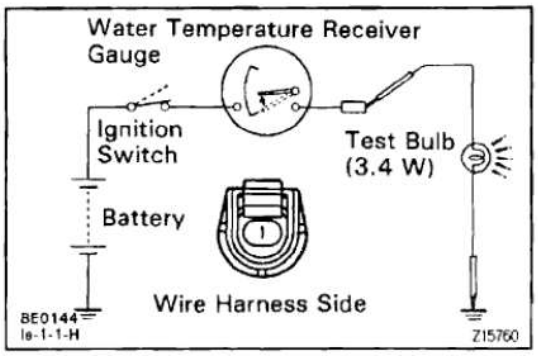


WATER TEMPERATURE GAUGE INSPECTION

BE30C-01

1. INSPECT RECEIVER GAUGE OPERATION

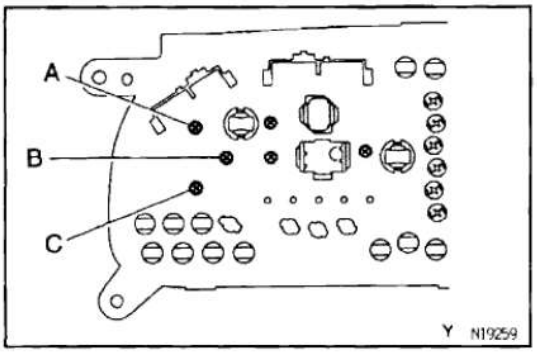
(a) Disconnect the connector from the sender gauge.
(b) Turn the ignition switch ON, check that the receiver gauge needle indicates COOL.



(c) Ground terminal on the wire harness side connector through a 3.4 W test bulb.
(d) Turn the ignition switch ON, check that the bulb lights up and the receiver gauge needle moves toward the hot side.
If operation is as specified, replace the sender gauge. then recheck the system.
If operation is not as specified, measure the receiver gauge resistance.

2. INSPECT RECEIVER GAUGE RESISTANCE

Measure the resistance between the terminals.
HINT: Connect the test leads so that the current from the ohmmeter can flow according to the chart order.

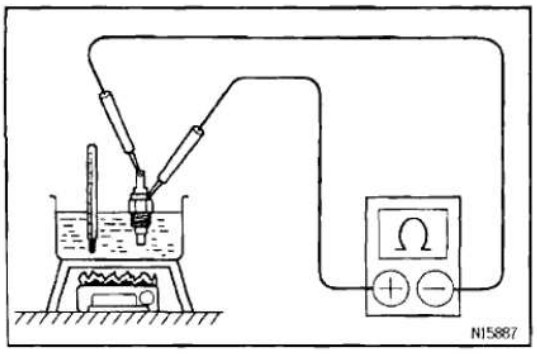


Between terminals	Resistance (Ω)
A – B	Approx. 235.0
A – C	Approx. 175.0
B – C	Approx. 90.0

If resistance value is not as specified, replace the water temperature receiver gauge.

3. INSPECT SENDER GAUGE RESISTANCE

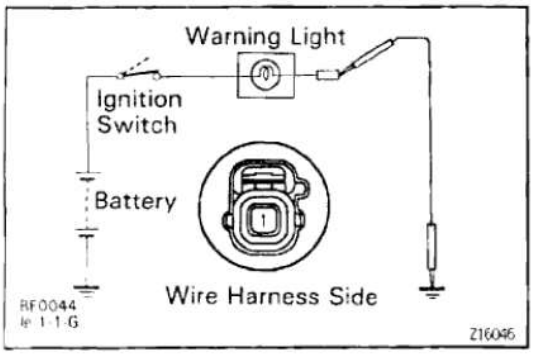
Measure the resistance between the terminal and gauge body.



Temperature °C (°F)	Resistance (Ω)
50 (122.0)	160 ~ 240
120 (248.0)	17.1 ~ 21.2

If resistance value is not as specified, replace the water temperature sender gauge.

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LOW OIL PRESSURE WARNING INSPECTION

BE0C4-0X

1. INSPECT WARNING LIGHT

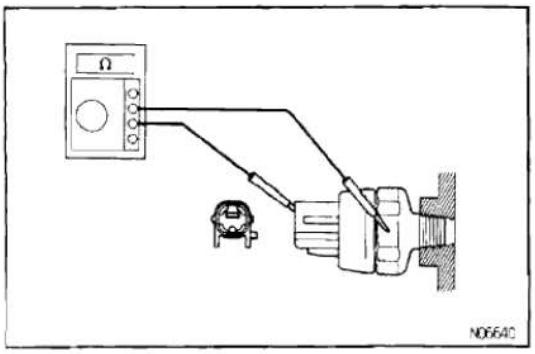
(a) Disconnect the connector from the warning switch and ground terminal on the wire harness side connector.

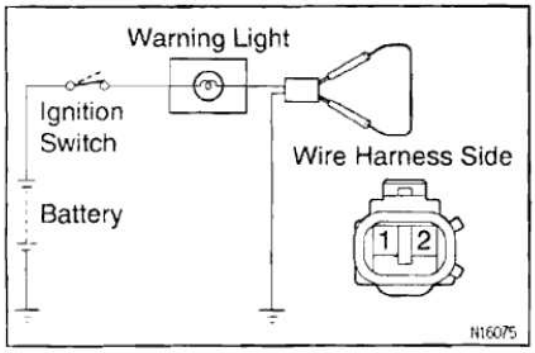
(b) Turn the ignition switch ON, check that the warning light lights up.
If the warning light does not light up, test the bulb or inspect wire harness.

2. INSPECT SWITCH CONTINUITY

(a) Check that there is continuity between the terminal and with ground the engine stopped.

(b) Check that there is no continuity between the terminal and ground with the engine running.
HINT: Oil pressure should be over 34 kPa (0.35 kgf/cm², 4.98 psi)
If operation is not as specified, replace the switch.





FUEL FILTER WARNING INSPECTION

BE39L-01

1. INSPECT WARNING LIGHT

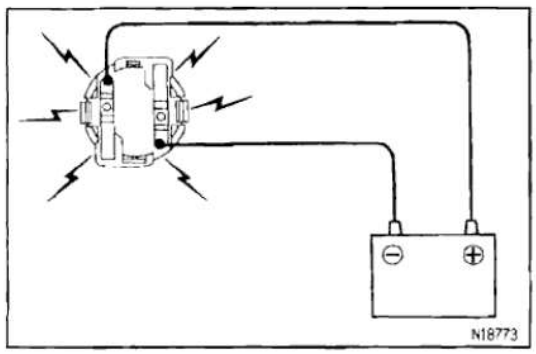
(a) Disconnect the connector from the warning switch and connect terminals on the wire harness side connector.

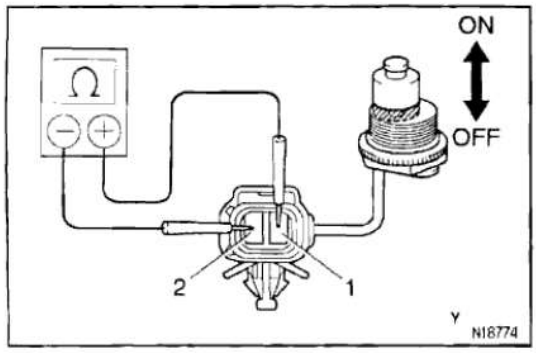
(b) Remove the CHARGE fuse and turn the ignition switch ON.

(c) Check that the warning light lights up and the warning buzzer sounds.

2. INSPECT FUEL SEDIMENTER BUZZER OPERATION

Apply battery voltage between terminals, check that the buzzer sound.
If buzzer does not sound, replace the buzzer.



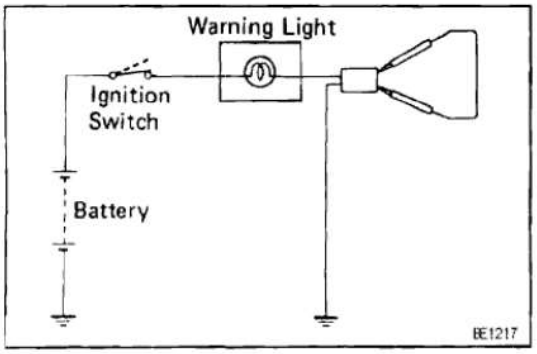


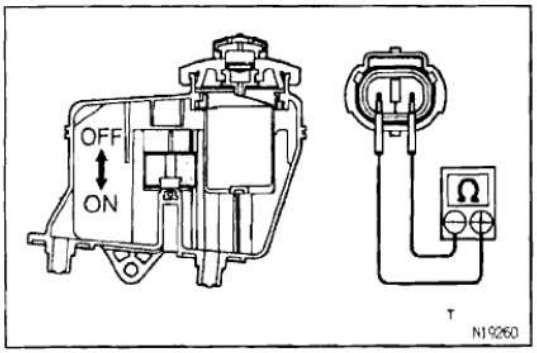
3. INSPECT WARNING SWITCH CONTINUITY

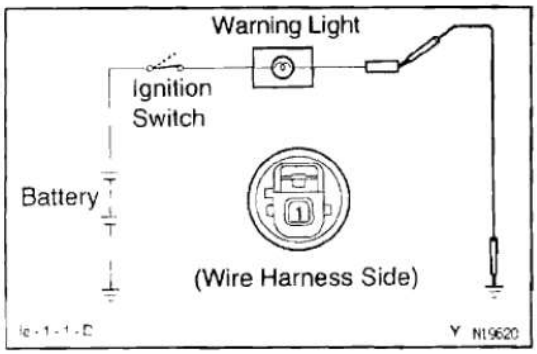
(a) Check that there is no continuity between terminals with the warning switch OFF (float down).

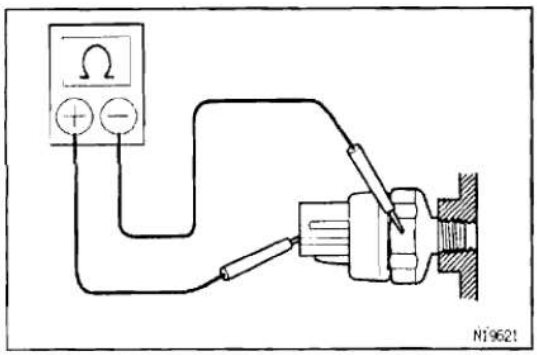
(b) Check that there is continuity between terminals with the warning switch ON (float up).
If operation is not as specified, replace the switch.

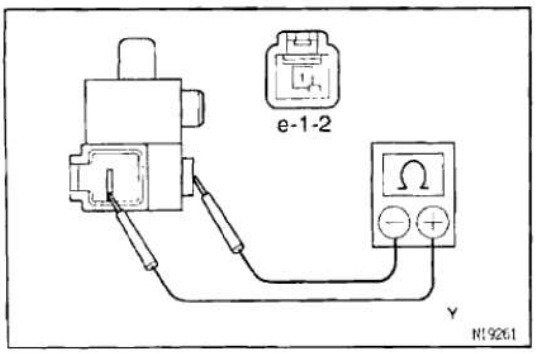
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BRAKE WARNING INSPECTION

Gasoline engine:

1. INSPECT WARNING LIGHT

(a) Disconnect the connector from the brake fluid level warning switch and parking brake switch.

(b) Connect terminals on the wire harness side of the brake fluid level warning switch connector.

(c) Start the engine, and check that the warning light lights up.

If the warning light does not light up, test the bulb or wire harness.

2. INSPECT BRAKE FLUID LEVEL WARNING SWITCH OPERATION

(a) Check that there is no continuity between terminals with the switch OFF (float up).

(b) Check that there is continuity between terminals with the switch ON (float down).

If operation is not as specified, replace the switch.

Diesel engine:

1. INSPECT WARNING LIGHT

(a) Disconnect the connector from the vacuum warning switch and ground germinal on the wire harness side connector.

(b) Turn the ignition switch ON, and check that the warning light lights up.

If the warning light does not light up, test the bulb or wire harness.

2. INSPECT VACUUM SWITCH OPERATION

(a) Check that there is continuity between terminal and ground with the engine stopped.

(b) Check that there is no continuity between terminal and ground with the engine running.

HINT: Oil pressure should be over 26.7 kPa (200 mmHg, 7.88 in.Hg)

If operation is not as specified, replace the switch.

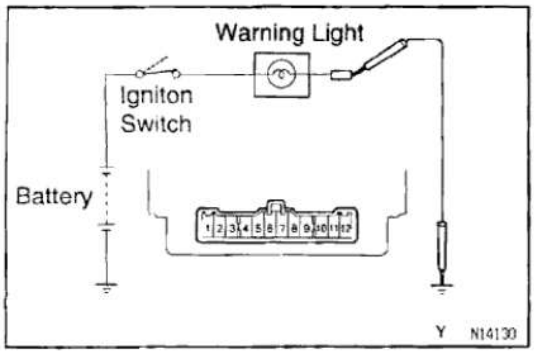
INSPECT PARKING BRAKE SWITCH CONTINUITY

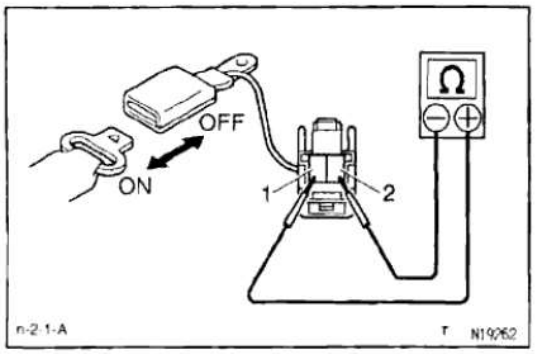
(a) Check that there is continuity between the terminal and switch body with the switch ON (switch pin released)

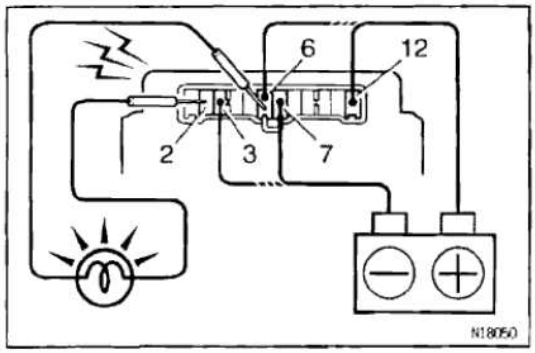
(b) Check that there is no continuity between the terminal and switch body with the switch OFF (switch pin pushed in).

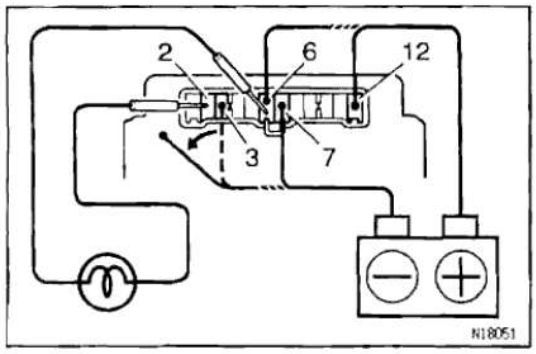
If operation is not as specified, replace the switch or inspect ground point.

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SEAT BELT WARNING INSPECTION

B38Q-01

1. INSPECT WARNING LIGHT

(a) Remove the integration relay from the Driver Side J/B.

(b) Ground terminal 9 on the junction block side connector.

(c) Turn the ignition switch ON and check that the warning light lights up.

If the warning light does not light up, inspect the bulb or wire harness.

2. INSPECT BUCKLE SWITCH CONTINUITY

(a) Check that there is continuity between terminals on the switch side connector with the switch ON (belt unfastened).

(b) Check that there is no continuity between terminals on the switch side connector with the switch OFF (belt fastened).

If operation is not as specified, replace the seat belt inner.

3. INSPECT INTEGRATION RELAY OPERATION

(a) Connect the positive (+) lead from the battery to terminal 12 the and negative (−) lead from the battery to terminal 7.

(b) Connect the terminal 2 to terminal 5 through the 3.4 W test bulb.

(c) Connect the negative (−) lead from the battery to terminal 3.

(d) Check that the bulb lights and the chime sounds for 4 − 8 seconds.

(e) Return to step (a) and operate the chime again.

(f) Check that the buzzer does not sounds when disconnecting terminal 3 from the negative (−) lead.

(g) Check that the chime stops sounding.

HINT: Check the chime within a period of 4 to 8 seconds.

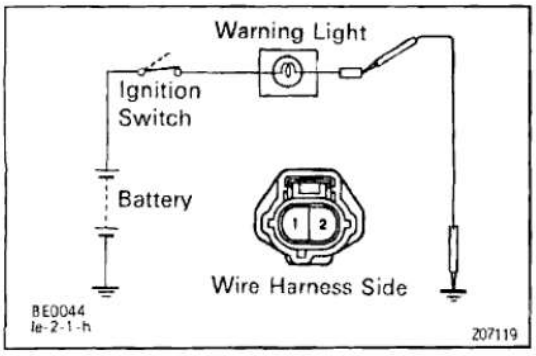
If operation is not as specified, replace the relay.

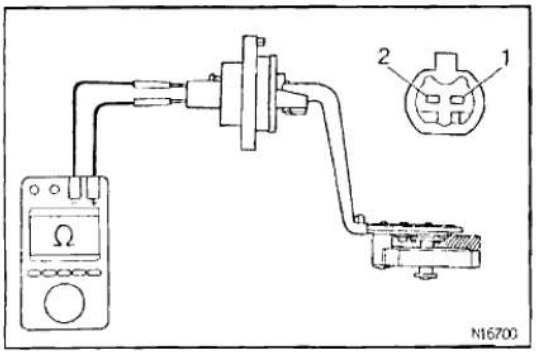
4. INSPECT INTEGRATION RELAY CIRCUIT

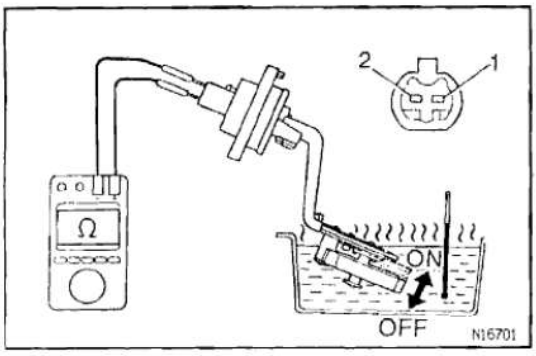
See page BE−8

BE

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ENGINE OIL LEVEL WARNING INSPECTION

BE39H-01

1. INSPECT WARNING LIGHT

(a) Disconnect the connector from the switch.
(b) Ground terminal 1 on the wire harness connector.
(c) Turn the ignition switch ON, and check that the warning light lights up after approximately 40 seconds.
If the warning light does not light up, inspect bulb or wire harness.

2. INSPECT SENSOR OPERATION

(a) Check that there is continuity between terminals with each switch position.
(b) Heat the switch to above 60°C (140°F) in an oil bath.
(c) Check that there is continuity between terminals with the switch ON (float up).
(d) Check that there is no continuity between terminals with the switch OFF (float down).
If operation is not as specified, replace the switch.

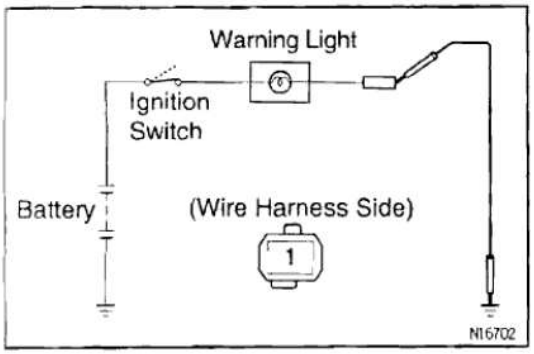
3. INSPECT SENSOR CIRCUIT

Disconnect the switch connector and inspect the connector on wire harness side, as shown.

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity

If continuity is not as specified, inspect the wire harness or ground point.

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OPEN DOOR WARNING INSPECTION

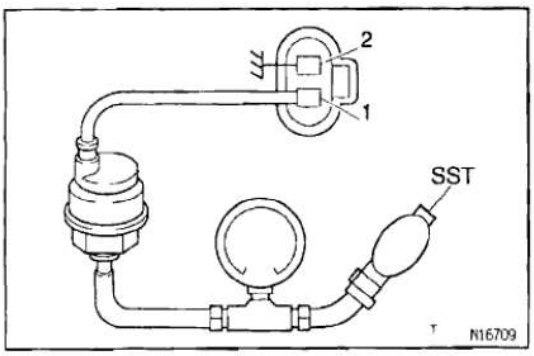
BE99J-01

1. INSPECT WARNING LIGHT

(a) Disconnect the connectors from the door courtesy switch and ground terminal on the wire harness side connector.

(b) Turn the ignition switch ON, and check that the warning light lights up.
If the warning light does not light up, inspect the bulb or wire harness.

2. INSPECT FRONT DOOR COURTESY SWITCH CONTINUITY
See page BE–30



TURBO WARNING INSPECTION

BE30K-01

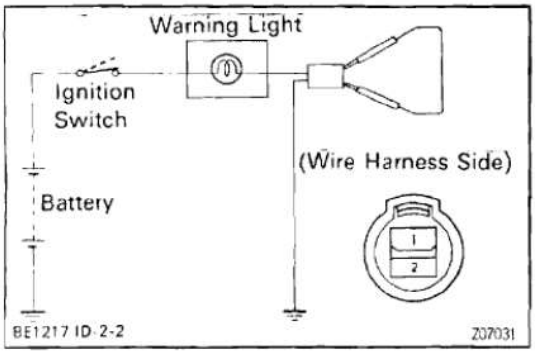
INSPECT TURBO PRESSURE SWITCH CONTINUITY
Check the continuity between the terminals 1 and 2, as shown in the chart.
SST: 09992–00241

Condition	Specified condition
No pressure	Continuity
Apply 1.0 kgf/cm² (14.2 psi, 98.1 kPa) of pressure.	No continuity

If operation is not as specified, replace the switch.

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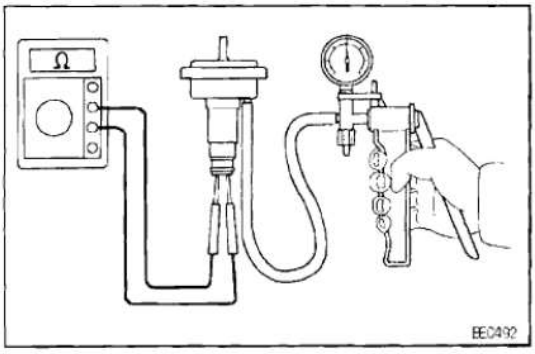
AIR CLEANER WARNING INSPECTION

BE39M-01

1. INSPECT WARNING LIGHT

(a) Disconnect the connector from the air filter warning switch. Connect the wire harness side connector terminals 1 and 2.

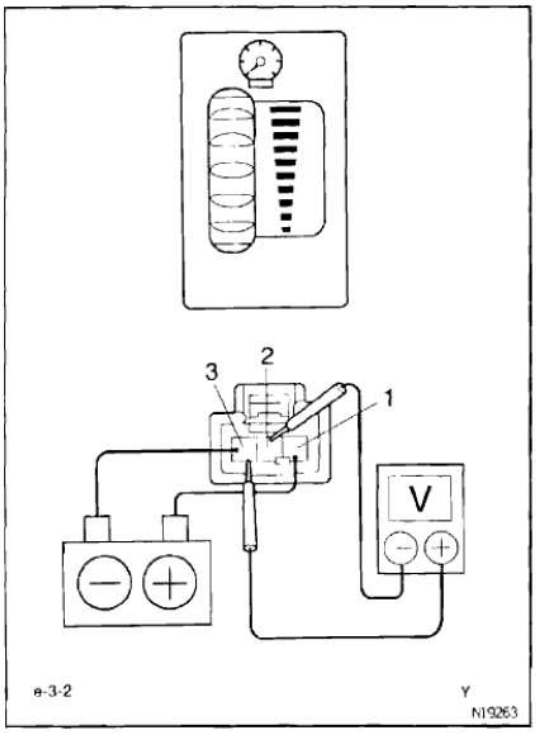
(b) Start the engine. Check that the bulb lights up.
If the warning light does not light up, replace the bulb.



2. INSPECT VACUUM SENSOR OPERATION

(a) With a vacuum of 3.9 ± 0.5 kPa (29.4 ± 3.7 mmHg, 1.157 ± 0.146 in.Hg) or above, check that there is continuity between terminals.

(b) Check that there is not continuity between terminals with no vacuum.
If operation is not as specified, replace the sensor.



LIGHT CONTROL RHEOSTAT INSPECTION

BE31X-02

INSPECT LIGHT CONTROL RHEOSTAT

(a) Connect the positive (+) lead from the battery to terminal 1 and negative lead (−) to terminal 3.

(b) Connect the positive (+) lead from the voltmeter to terminal 2 and negative lead to terminal 3.

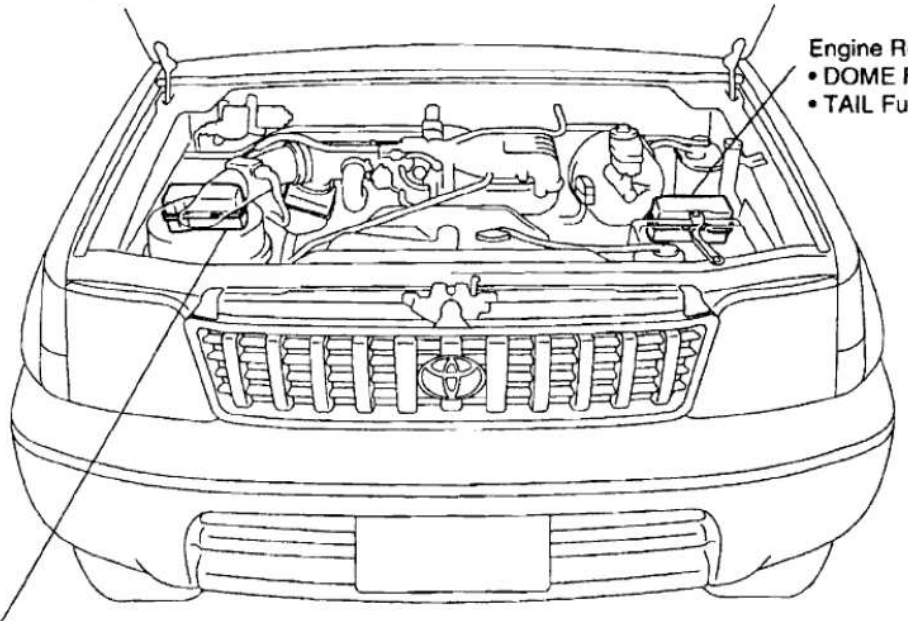
(c) Turn the rheostat knob and check that the voltage changes.

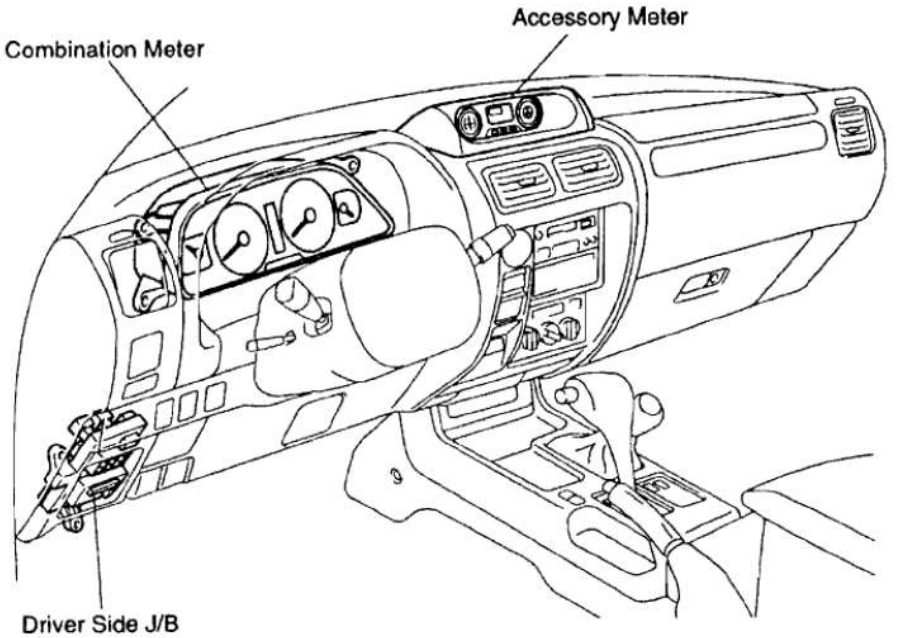
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ACCESSORY METER
PARTS LOCATION

BE01H0-04

*1: Gasoline Engine, Diesel Engine (LHD models)
*2: Diesel Engine (RHD models)





N19196
N19846

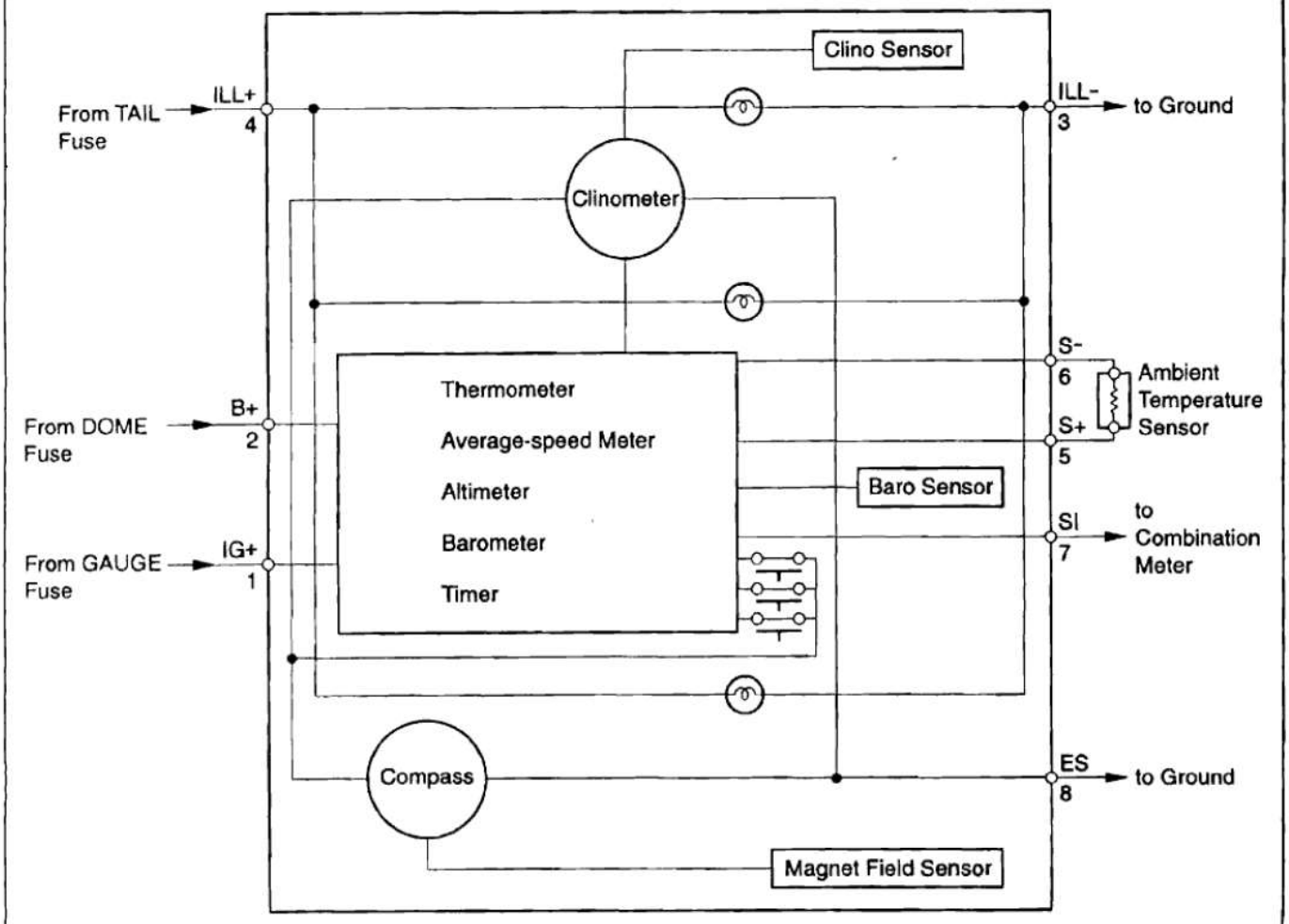
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Z18207

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BE39C-01

METER CIRCUIT



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TROUBLESHOOTING

BE0H2-06

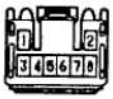
The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

METER, GAUGES AND ILLUMINATION

Trouble	Parts name	(See page)
Timer does not operate.	1. DOME Fuse (Engine Room R/B) 2. GAUGE Fuse (Driver Side J/B) 3. Accessory Meter 4. Wire Harness	(BE–68)
Altimeter does not operate.	1. DOME Fuse (Engine Room R/B) 2. GAUGE Fuse (Driver Side J/B) 3. Accessory Meter 4. Wire Harness	(BE–68)
Clinometer does not operate.	1. DOME Fuse (Engine Room R/B) 2. GAUGE Fuse (Driver Side J/B) 3. Accessory Meter 4. Wire Harness	(BE–68)
Barometer does not operate.	1. DOME Fuse (Engine Room R/B) 2. GAUGE Fuse (Driver Side J/B) 3. Accessory Meter 4. Wire Harness	(BE–68)
Compass does not operate.	1. DOME Fuse (Engine Room R/B) 2. GAUGE Fuse (Driver Side J/B) 3. Accessory Meter 4. Wire Harness	(BE–68)
Average–speed meter does not operate.	1. DOME Fuse (Engine Room R/B) 2. GAUGE Fuse (Driver Side J/B) 3. Vehicle Speed Sensor 4. Accessory Meter 5. Wire Harness	(BE–56) (BE–68)
Thermostat does not operate.	1. DOME Fuse (Engine Room R/B) 2. GAUGE Fuse (Driver Side J/B) 3. Ambient Temperature Sensor 4. Accessory Meter 5. Wire Harness	(BE–68)

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Wire Harness Side



h-8-1-B

Z17279

ACCESSORY METER INSPECTION

BE368-02

INSPECT METER CIRCUIT

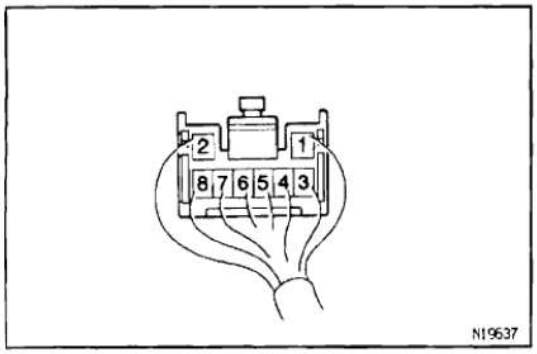
Connector disconnected:

Disconnect the connector from the accessory meter and inspect the connector on the wire harness side, as shown in the chart.

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Tester connection	Condition	Specified condition
3 – Ground	Constant	Continuity
4 – Ground	Light control switch OFF	No voltage
4 – Ground	Light control switch TAIL or HEAD	Battery voltage
8 – Ground	Constant	Continuity
5 – 6	Constant	Approx. 1.7 kΩ at 25 °C (77 °F)
1 – Ground	Ignition switch LOCK or ACC	No voltage
1 – Ground	Ignition switch ON	Battery voltage
2 – Ground	Constant	Battery voltage

If the circuit is as specified, try replacing the accessory meter with a new one.
If the circuit is not as specified, inspect the wire harness.



Connector connected
Connect the connector from the accessory meter and inspect the connector on the back side, as shown in the chart.

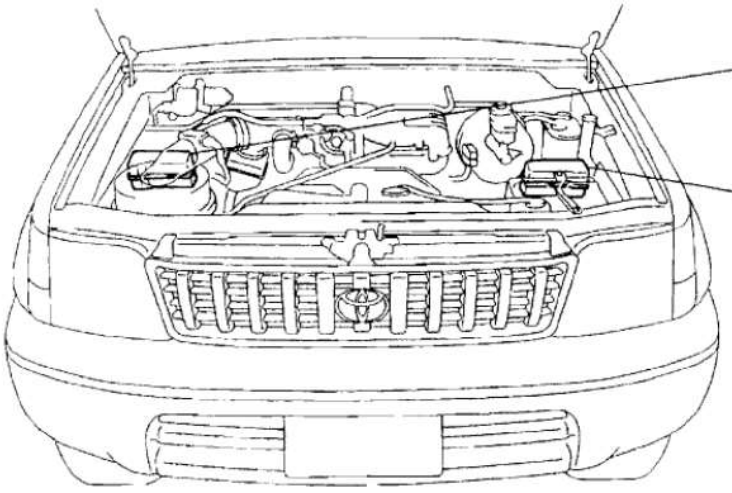
Tester connection	Condition	Specified condition
7 – Ground	Engine start. Stop a vehicle.	4.5 ~ 5.5 V
7 – Ground	During driving	Repeatedly changes from below 1 V to 4.5 ~ 5.5 V

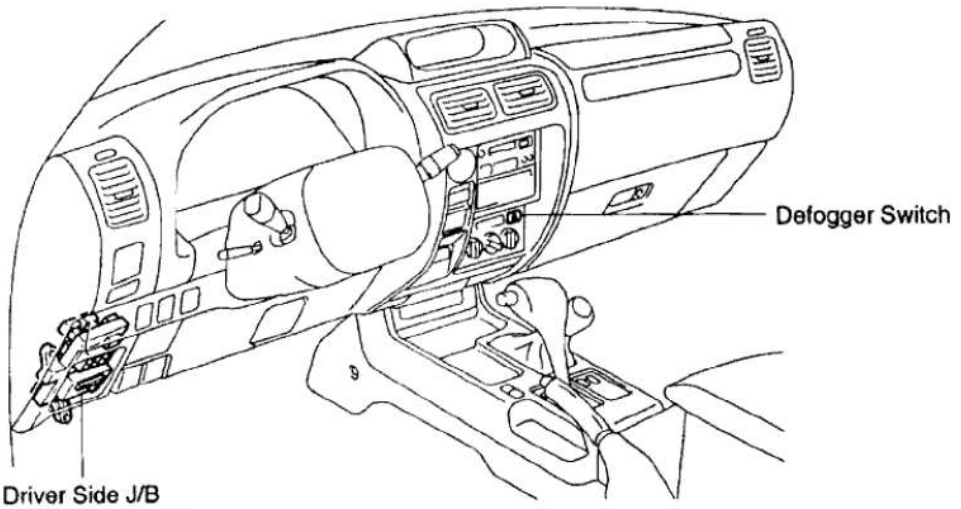
If the circuit is as specified, try replacing the relay with a new one.
If the circuit is not as specified, inspect the circuit connected to other parts.

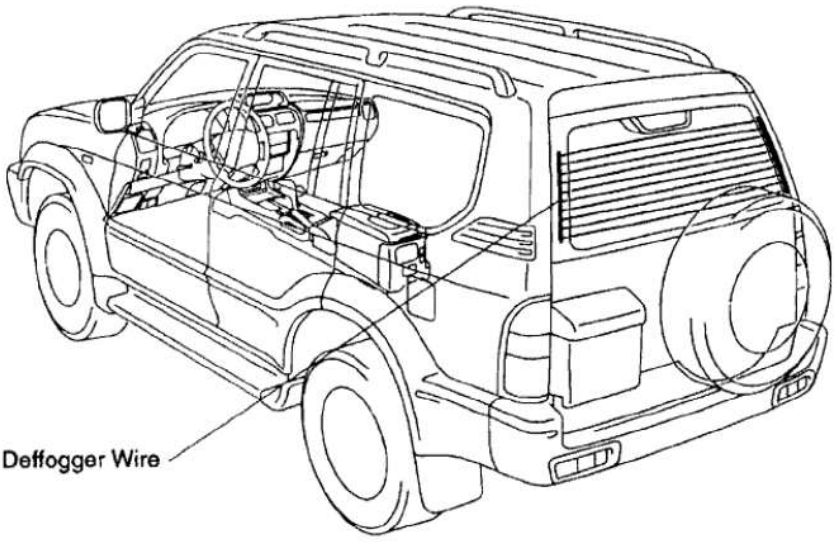
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DEFOGGER SYSTEM
PARTS LOCATION

BE124-ON







N19196
N19264
N19265

Y
Z18193

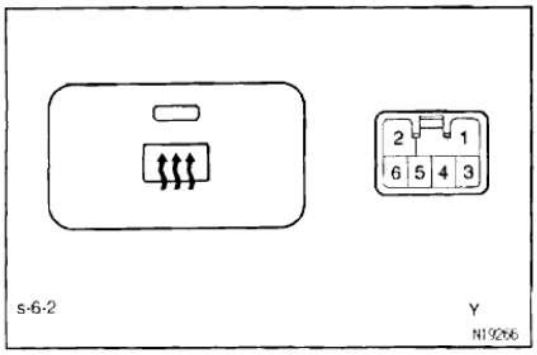
BE

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TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
All defogger systems do not operate.	1. DEFOG Fuse (Engine Room R/B)	
	2. GAUGE Fuse (Driver Side J/B)	
	3. Defogger Switch	(BE–71)
	4. Defogger Relay (Driver Side J/B)	
	5. Defogger Wire	(BE–71)
	6. Wire Harness	
Rear window defogger does not operate.	1. Defogger Wire	(BE–71)
	2. Wire Harness	

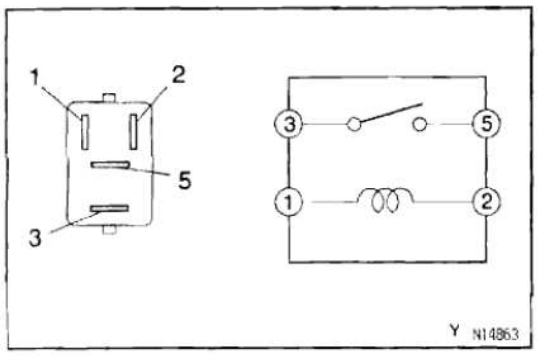


DEFOGGER SWITCH INSPECTION

INSPECT SWITCH OPERATION

Switch position	Tester connection	Specified condition
OFF	–	No continuity
ON	3 – 4 – 5	Continuity
Illumination circuit	2 – 6	Continuity

If continuity is not as specified, replace the switch.

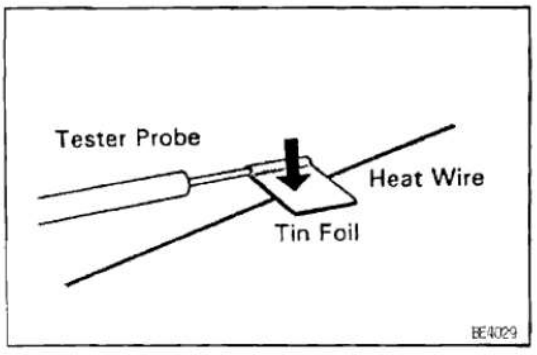


DEFOGGER RELAY INSPECTION

INSPECT 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.

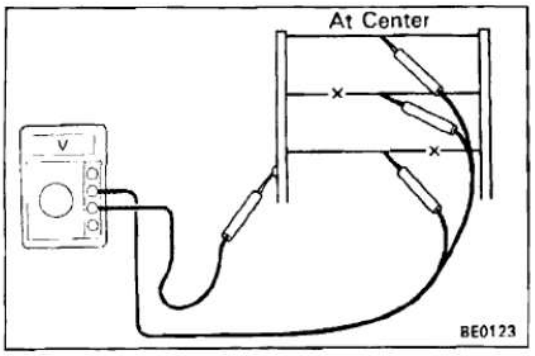


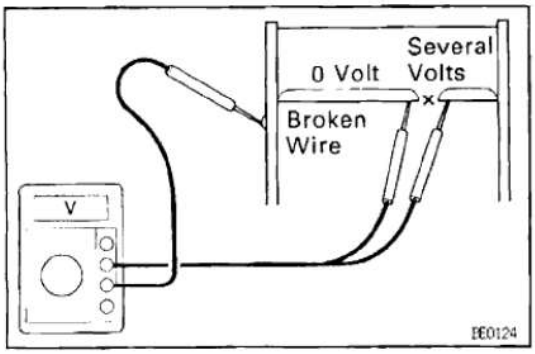
DEFOGGER WIRE INSPECTION

NOTICE:

- **When cleaning the glass, use a soft, dry cloth, and wipe the glass in the direction of the wire. Take care not to damage the wires.**
- **Do not use detergents or glass cleaners with abrasive ingredients.**

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- **When measuring voltage, wind a piece of tin foil around the top of the negative probe and press the foil against the wire with your finger, as shown.**

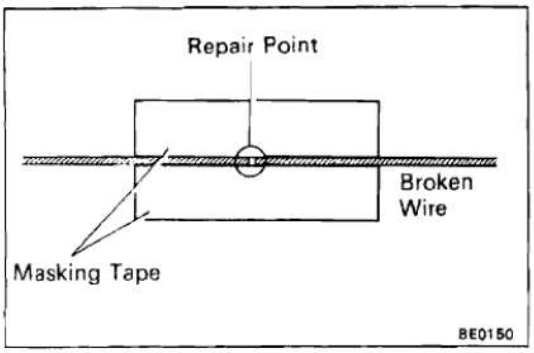
(a) Turn the ignition switch ON.
(b) Turn the defogger switch ON.
(c) Inspect the voltage at the center of each heat wire, as shown.

Voltage	Criteria
Approx. 5V	Okay (No break in wire)
Approx. 10V or 0V	Broken wire

HINT: If there is approximately 10 V, the wire is broken between the center of the wire and the positive (+) end. If there is no voltage, the wire is broken between the center of the wire and ground.

(d) Place the voltmeter positive (+) lead against the defogger positive (+) terminal.
(e) Place the voltmeter negative (−) lead with the foil strip against the heat wire at the positive (+) terminal end and slide it toward the negative (−) terminal end.
(f) The point where the voltmeter deflects from zero to several V is the place where the heat wire is broken.
HINT: If the heat wire is not broken, the voltmeter indicates 0 V at the positive (+) end of the heat wire but gradually increases to about 12 V as the meter probe is moved to the other end.

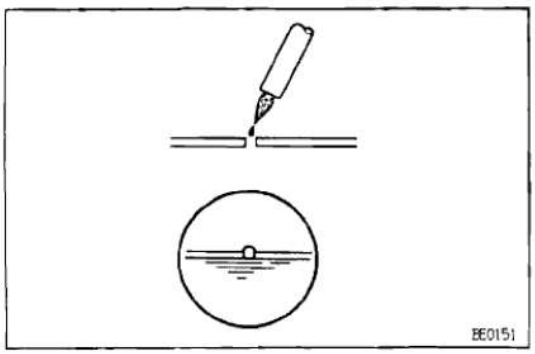
BE



DEFOGGER WIRE REPAIR

BE09V-0X

(a) Clean the broken wire tips with a grease, wax and silicone remover.
(b) Place the masking tape along both sides of the wire to be repaired.
(c) Thoroughly mix the repair agent (Dupont paste No. 4817).



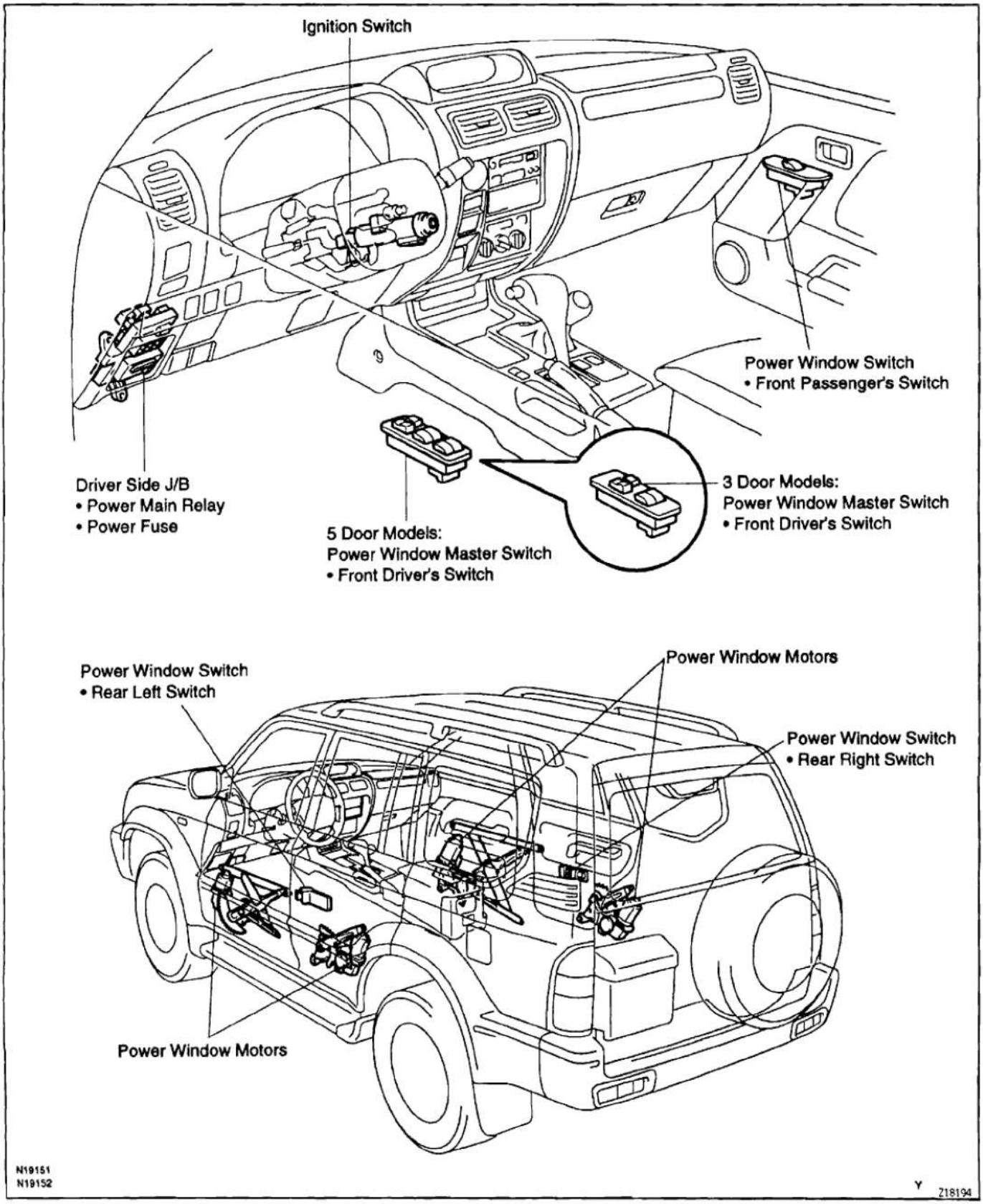
(d) Using a fine tip brush, apply a small amount to the wire.
(e) After a few minutes, remove the masking tape.
(f) Do not repair the defogger wire for at least 24 hours.

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POWER WINDOW CONTROL SYSTEM

PARTS LOCATION

BE1Z1-03



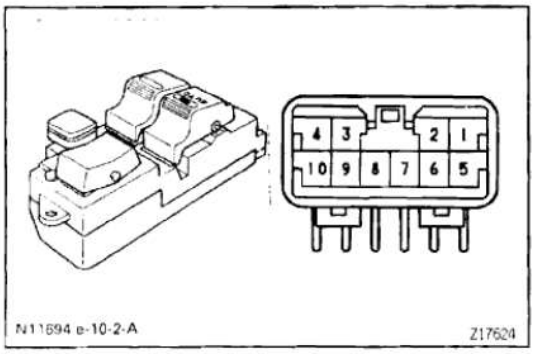
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TROUBLESHOOTING

BE3Z3-04

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Power Window does not operate.	1. POWER Fuse (Driver Side J/B)	
	2. Power Main Relay (Driver Side J/B)	(BE–80)
	3. Ignition Switch	(BE–7)
	4. Power Window Master Switch	(BE–74)
	5. Wire Harness	
"One Touch Power Window System" does not operate.	1. Power Window Master Switch	(BE–74)
Only one window glass does not move.	1. Power Window Master Switch	(BE–74)
	2. Power Window Switch	(BE–78)
	3. Power Window Motor	(BE–78)
	4. Wire Harness	
"Window lock System" does not operate.	1. Power Window Master Switch	(BE–74)



BE

POWER WINDOW MASTER SWITCH INSPECTION

BE380-01

1. **3 door models:**
   INSPECT SWITCH CONTINUITY
   ( ): RHD models
   Driver's Switch

Switch position	Tester connection	Specified condition
UP	1 – 4 (1 – 4) 3 – 9 (2 – 6)	Continuity
OFF	1 – 3 (1 – 4) 1 – 4 (2 – 4)	Continuity
DOWN	1 – 3 (1 – 6) 4 – 9 (2 – 4)	Continuity

Passenger's Switch: Window unlock

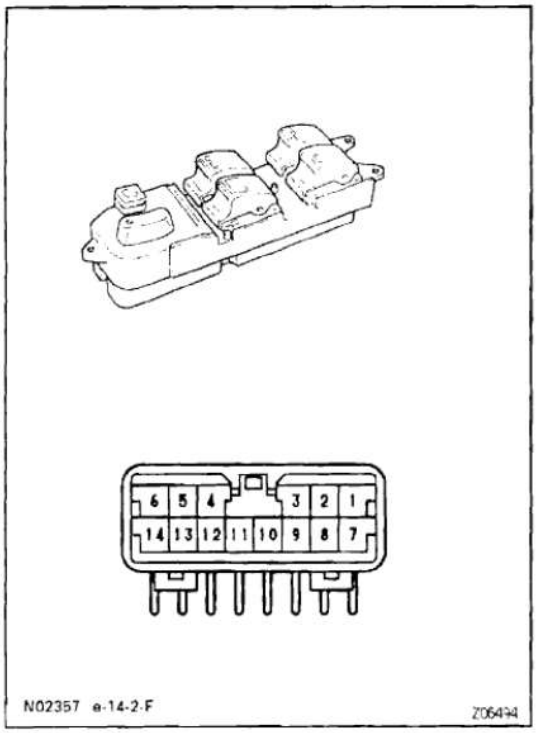
Switch position	Tester connection	Specified condition
UP	1 – 10 (4 – 5) 8 – 9 (6 – 7)	Continuity
OFF	1 – 10 (4 – 5) 1 – 8 (4 – 7)	Continuity
DOWN	1 – 8 (4 – 7) 9 – 10 (5 – 6)	Continuity

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Passenger's Switch: Window lock

Switch position	Tester connection	Specified condition
UP	8 – 9 (6 – 7)	Continuity
OFF	8 – 10 (5 – 7)	Continuity
DOWN	9 – 10 (5 – 6)	Continuity

If continuity is not as specified, replace the switch.



2. 5 door models:
INSPECT SWITCH CONTINUITY
( ): RHD models
Front Driver's Switch (Window unlock):

Switch position	Tester connection	Specified condition
UP	1(6)–10, 1(6)–11 3–5(2), 4–5(2)	Continuity
OFF	1(6)–3, 1(6)–4 3–5(2), 4–5(2)	Continuity
DOWN	5(2)–10, 5(2)–11 1(6)–3, 1(6)–4	Continuity
DOWN AUTO	5(2)–10, 5(2)–11 1(6)–3, 1(6)–4	Continuity

Front Passenger's Switch (Window unlock):

Switch position	Tester connection	Specified condition
UP	10–14(7), 11–14(7) 3–6(1), 4–6(1)	Continuity
OFF	3–14(7), 4–14(7) 3–6(1), 4–6(1)	Continuity
DOWN	6(1)–10, 6(1)–11 3–14(7), 4–14(7)	Continuity

Front Passenger's Switch (Window lock):

Switch position	Tester connection	Specified condition
UP	10–14(7), 11–14(7)	Continuity
OFF	6 – 14 (1 – 7)	Continuity
DOWN	6(1)–10, 6(1)–11	Continuity

Rear Left Switch (Window unlock):

Switch position	Tester connection	Specified condition
UP	9(13)–10, 9(13)–11 3–12(8), 4–12(8)	Continuity
OFF	3–9(13), 4–9(13) 3–12(8), 4–12(8)	Continuity
DOWN	10–12(8), 11–12(8) 3–9(13), 4–9(13)	Continuity

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Rear Left Switch (Window lock):

Switch position	Tester connection	Specified condition
UP	9(13)–10, 9(13)–11	Continuity
OFF	9 – 12 (8 – 13)	Continuity
DOWN	10–12(8), 11–12(8)	Continuity

Rear Right Switch (Window unlock):

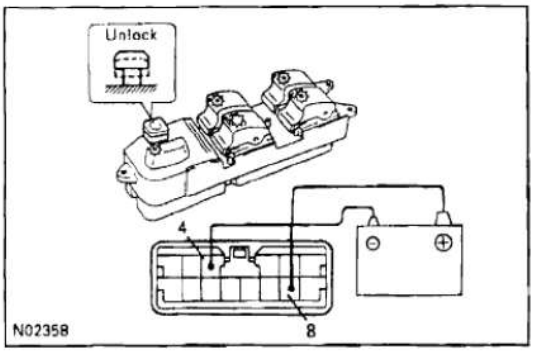
Switch position	Tester connection	Specified condition
UP	8(12)–10, 8(12)–11 3–13(9), 4–13(9)	Continuity
OFF	3–8(12), 4–8(12) 3–13(9), 4–13(9)	Continuity
DOWN	10–13(9), 11–13(9) 3–8(12), 4–8(12)	Continuity

Rear Right Switch (Window lock):

Switch position	Tester connection	Specified condition
UP	8(12)– 10, 8(11)–10	Continuity
OFF	8 – 13 (9 – 12)	Continuity
DOWN	10–13(9), 11–13(9)	Continuity

If continuity is not as specified, replace the master switch.

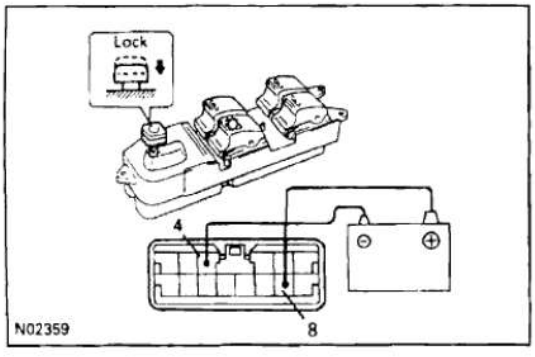
BE



3. INSPECT POWER WINDOW MASTER SWITCH ILLUMINATION

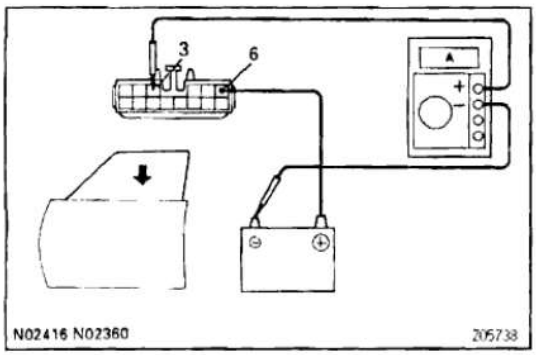
(a) Set the window lock switch to the unlock position.

(b) Connect the positive (+) lead from the battery to terminal 8 and the negative (–) lead to terminal 4, and check that all the illuminations light up.



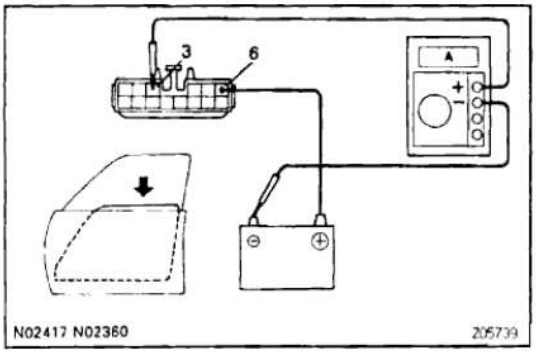
(c) Set the window lock switch to the lock position, check that all the passenger's power window switch illuminations go out.
If operation is not as specified, replace the master switch.

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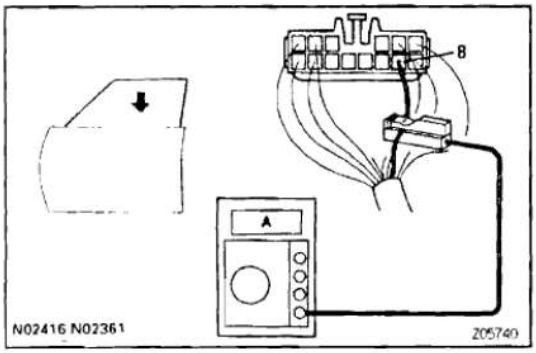
One touch power window / Current of circuit
Inspection using an ammeter:

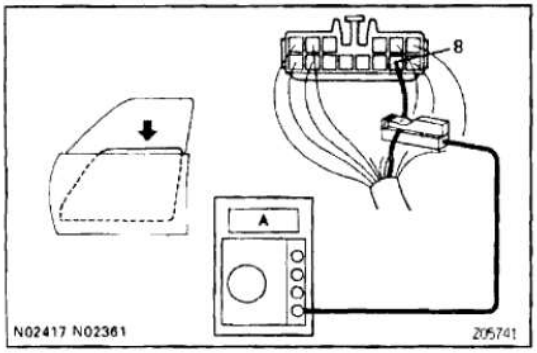
(a) Disconnect the connector from the master switch.
(b) Connect the positive (+) lead from the ammeter to terminal 3 on the wire harness side connector and the negative (−) lead to the negative terminal of the battery.
(c) Connect the positive (+) lead from the battery to terminal 6 on the wire harness side connector.
(d) As the window goes down, check that the current flow is approximately 7 A.
(e) Check that the current increases up to approximately 14.5 A or more when the window stops going down.
HINT: The circuit breaker opens some 4 – 40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If the operation is as specified, replace the master switch.



Inspection using an ammeter with a current – measuring probe:

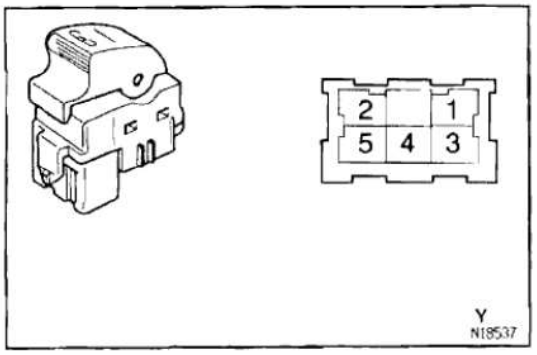
(a) Remove the master switch with connector connected.
(b) Attach a current–measuring probe to terminal 8 of the wire harness.
(c) Turn the ignition switch ON and set the power window switch in the down position.
(d) As the window goes down, check that the current flow is approximately 7 A.

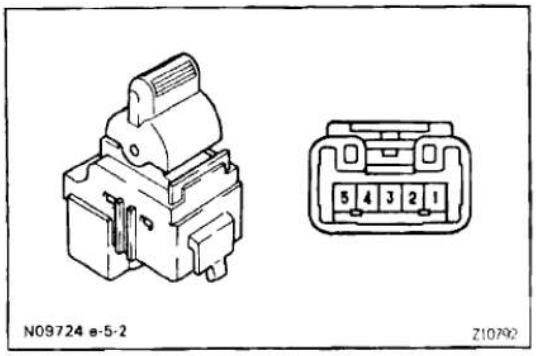




(e) Check that the current increases up to approximately 14.5 A or more when the window stops going down.
HINT: The circuit breaker opens some 4 – 40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If operation is as specified, replace the master switch.

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POWER WINDOW SWITCH INSPECTION BE381-01

INSPECT SWITCH CONTINUITY

Passenger's door:

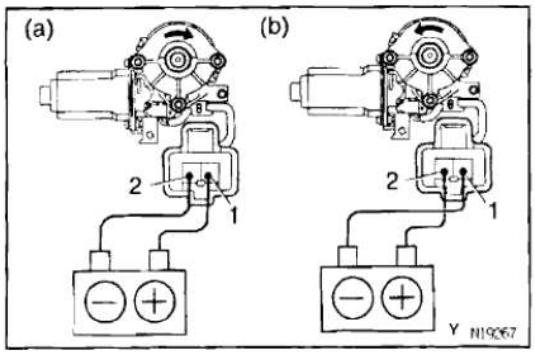
Switch position	Tester connection	Specified condition
UP	1 – 5, 3 – 4	Continuity
OFF	1 – 2, 3 – 4	Continuity
DOWN	1 – 2, 4 – 5	Continuity

If continuity is not as specified, replace the switch.

Rear door:

Switch position	Tester connection	Specified condition
UP	1 – 4, 3 – 5	Continuity
OFF	1 – 2, 3 – 5	Continuity
DOWN	1 – 2, 3 – 4	Continuity

If continuity is not as specified, replace the switch.



POWER WINDOW MOTOR INSPECTION BE34K-02

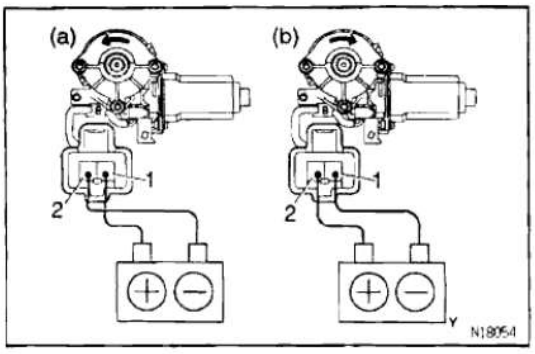
1. INSPECT MOTOR OPERATION

Driver's Door:

(a) Connect the positive (+) lead from the battery to 1 and the negative (−) lead to terminal 2, and check that the motor turns clockwise.

(b) Reverse the polarity, and check that the motor turns counterclockwise.

If operation is not as specified, replace the motor.

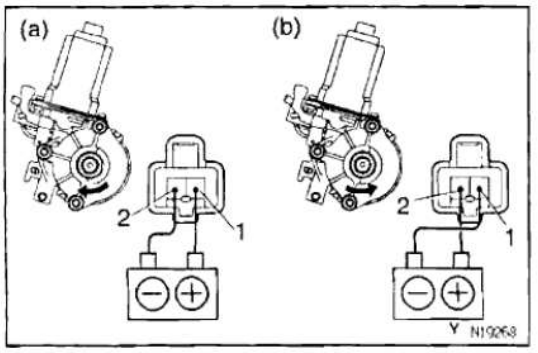


Front Passenger's Door:

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to terminal 2, and check that the motor turns counterclockwise.

(b) Reverse the polarity, and check that the motor turns clockwise.

If operation is not as specified, replace the motor.



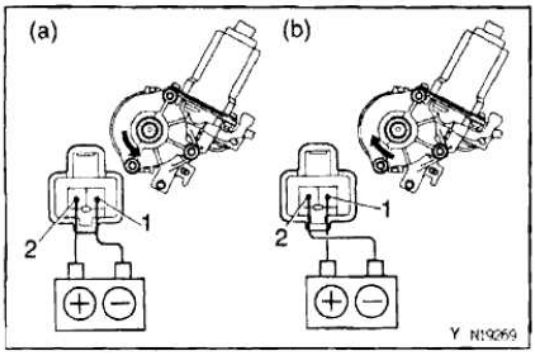
Rear Left Side Door:

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to terminal 2, and check that the motor turns clockwise.

(b) Reverse the polarity, and check that the motor turns counterclockwise.

If operation is not as specified, replace the motor.

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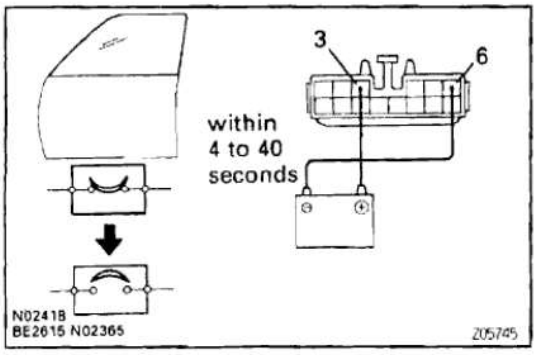


Rear Right Side Door:

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 1, and check that the motor turns counterclockwise.

(b) Reverse the polarity, and check that the motor turns clockwise.

If operation is not as specified, replace the motor.



2. INSPECT CIRCUIT BREAKER OPERATION

Driver's door:

(a) Disconnect the connector from the power window switch.

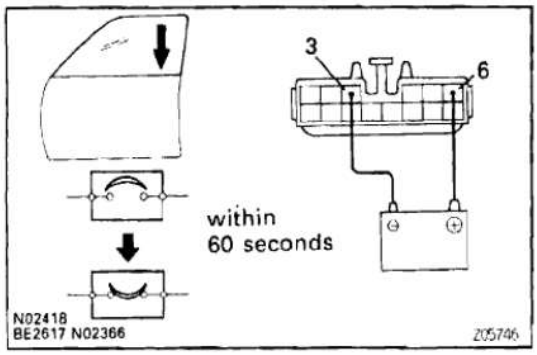
(b) Connect the positive (+) lead from the battery to terminal 3 and the negative (−) lead to terminal 6 on the wire harness side connector, and raise the window to the fully closed position.

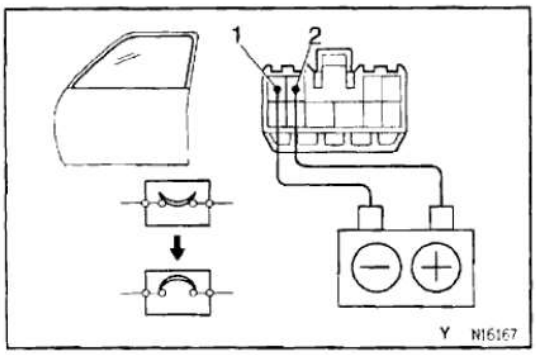
(c) Continue to apply voltage, and check that the current changes from approximately 14 A to less than 1 A within 4 to 40 seconds.

(d) Disconnect the leads from terminals.

(e) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 6 and the negative (−) lead to terminal 3, and check that the window begins to descend.

If operation is not as specified, replace the motor.





Front passenger's door:

(a) Disconnect the connector from the power window switch.

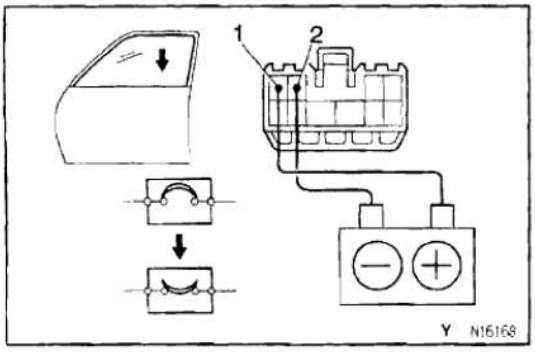
(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 1 on the wire harness side connector, and raise the window to the fully closed position.

(c) Continue to apply voltage, and check that the current changes from approximately 14 A to less than 1 A within 4 to 40 seconds.

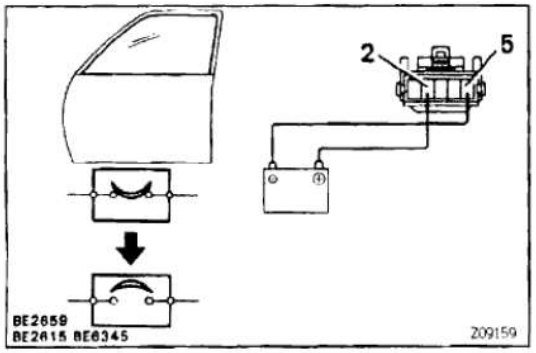
(d) Disconnect the leads from terminals.

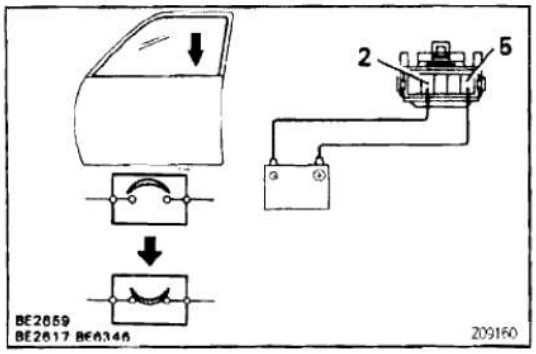
(e) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 1 and negative (−) lead to terminal 2, and check that the window begins to descend.

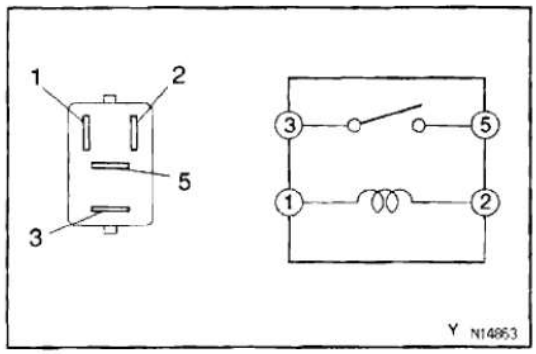
If operation is not as specified, replace the motor.



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Rear door:

(a) Disconnect the connector from the power window switch.

(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 5 on the wire harness side connector, and raise the window to the fully closed position.

(c) Continue to apply voltage, check that the current changes from approximately 14 A to less than 1 A within 4 to 40 seconds.

(d) Disconnect the leads from terminals.

(e) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 5 and negative (−) lead to terminal 2 and check that the window begins to descend.

If operation is not as specified, replace the motor.

POWER MAIN RELAY INSPECTION

BE3Z8-04

INSPECT 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.

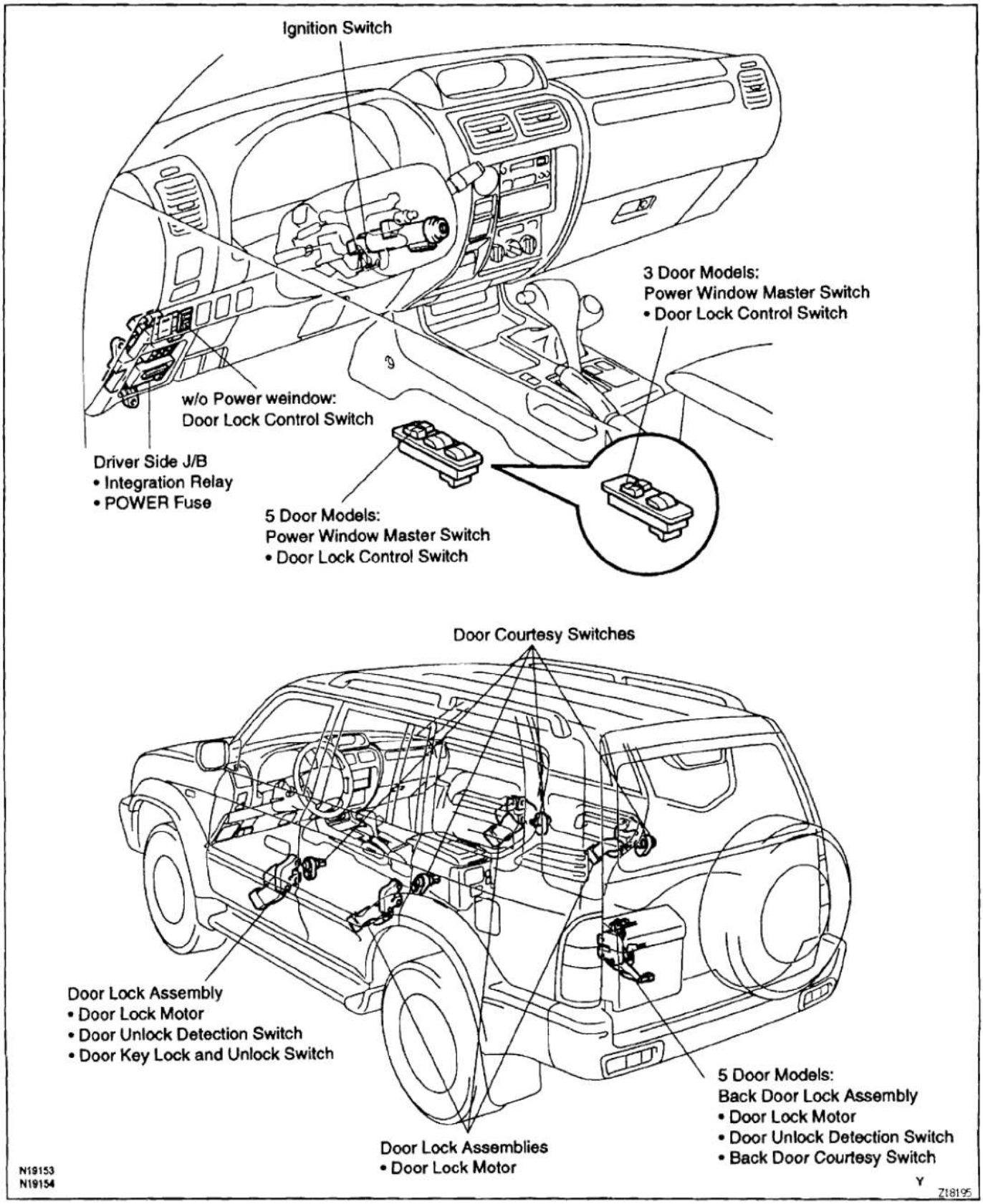
BE

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POWER DOOR LOCK CONTROL SYSTEM

PARTS LOCATION

M327-03



BE

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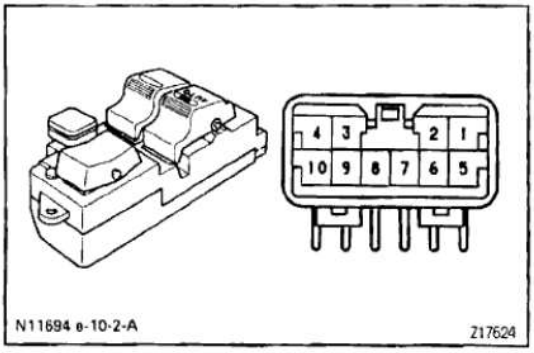
TROUBLESHOOTING

BE228-04

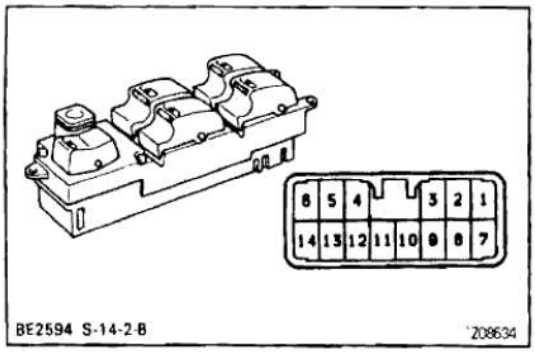
The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
"Door lock control system" does not operate (All).	1. Integration Relay (Driver Side J/B) 2. POWER Fuse (Driver Side J/B) 4. Wire Harness	(BE–8)
Malfunction in Door Lock / Unlock. (Using door manual switch)	1. Integration Relay (Driver Side J/B) 2. Door Lock Control Switch 3. Wire Harness	(BE–8) (BE–82)
Malfunction in Door Lock / Unlock. (Using door manual switch and key)	1. Wire Harness	
Malfunction in Door Lock / Unlock. (Using Key)	1. Integration Relay (Driver Side J/B) 2. Door Key Lock and Unlock Switch 3. Wire Harness	(BE–8) (BE–83)
Fault in key confine prevention operation.	1. Integration Relay (Driver Side J/B) 2. Door Lock Control Switch 3. Wire Harness	(BE–8) (BE–82)
Only one door lock does not operate.	1. Door Lock Motor 2. Wire Harness	(BE–83)

BE



N11694 e-10-2-A Z17624



BE2594 S-14-2-B Z08634

DOOR LOCK CONTROL SWITCH INSPECTION

BE343-01

1. INSPECT SWITCH CONTINUITY

w/ Power Window ( ): RHD Models

3 Door models:

Switch position	Tester connection	Specified condition
LOCK	1 – 2 (3 – 4)	Continuity
OFF	–	No continuity
UNLOCK	1 – 5 (4 – 10)	Continuity

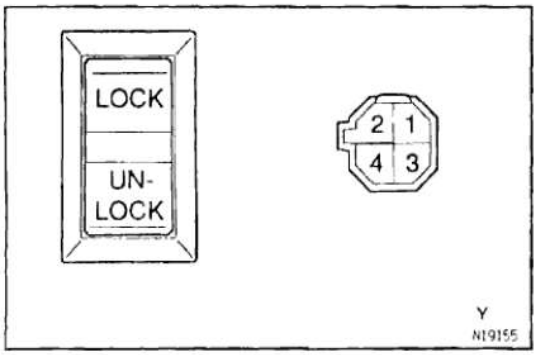
If continuity is not as specified, replace the switch.

5 Door models:

Switch position	Tester connection	Specified condition
LOCK	2 – 3 (3 – 5)	Continuity
OFF	–	No continuity
UNLOCK	3 – 7 (3 – 14)	Continuity

If continuity is not as specified, replace the switch.

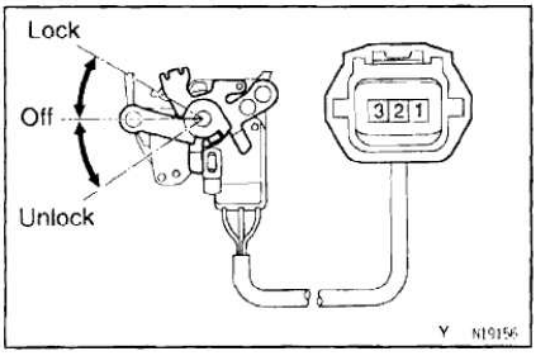
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w/o Power Window:

Switch position	Tester connection	Specified condition
LOCK	1 – 4, 2 – 3	Continuity
OFF	–	No continuity
UNLOCK	1 – 3, 2 – 4	Continuity

If continuity is not as specified, replace the switch.

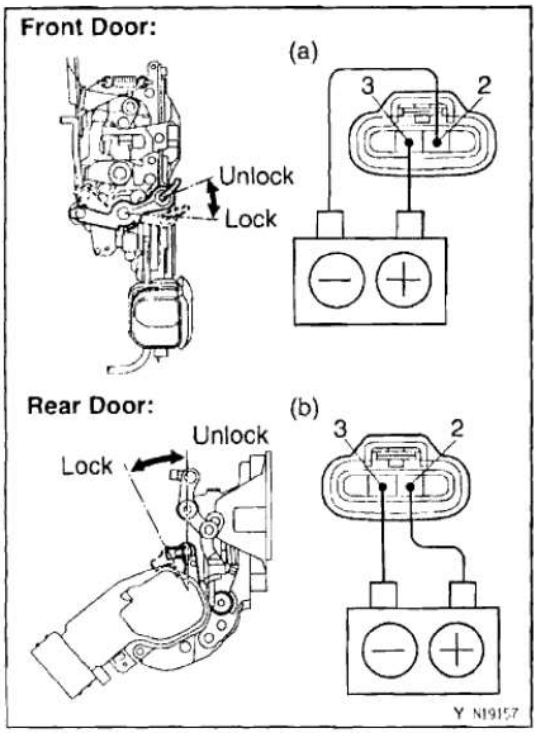


DOOR KEY LOCK AND UNLOCK SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
LOCK	1 – 3	Continuity
OFF	–	No continuity
UNLOCK	1 – 2	Continuity

If continuity is not as specified, replace the switch.



DOOR LOCK MOTOR INSPECTION

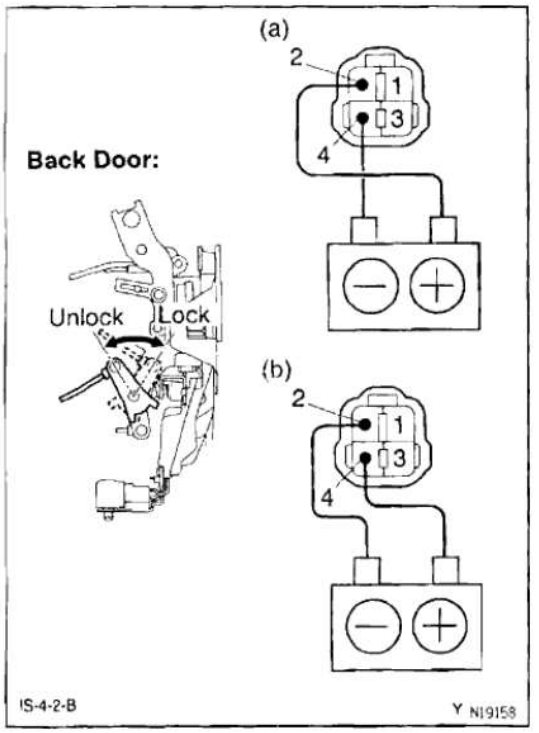
1. **INSPECT FRONT AND REAR DOOR LOCK MOTOR OPERATION**

(a) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 2, the check that the door lock link moves to the UNLOCK position.

(b) Reverse the polarity, and check that the door lock link moves to the LOCK position.

If operation is not as specified, replace the door lock assembly.

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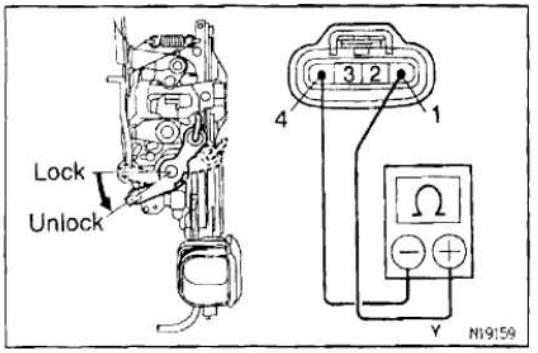


2. INSPECT BACK DOOR LOCK MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 4, the check that the door lock link moves to the UNLOCK position.

(b) Reverse the polarity, and check that the door lock link moves to the LOCK position.

If operation is not as specified, replace the door lock assembly.



BE

FRONT DOOR UNLOCK DETECTION SWITCH INSPECTION

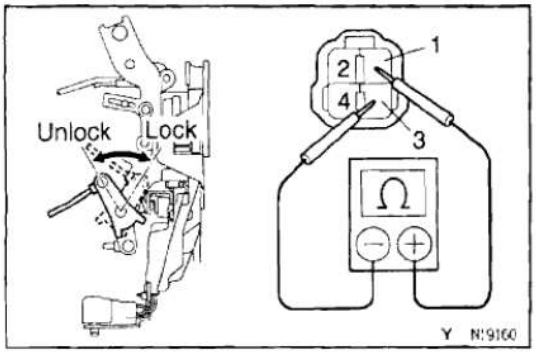
BE384-01

INSPECT SWITCH CONTINUITY

Switch position	Condition	Specified condition
OFF (Door Lock set to LOCK)	–	No continuity
ON (Door Lock set to UNLOCK)	1 – 4	Continuity

If continuity is not as specified, replace the switch.

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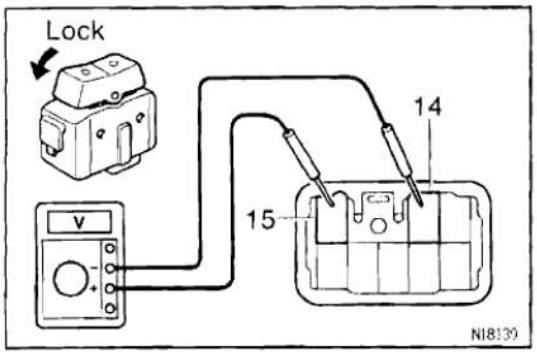
BE1J7-07

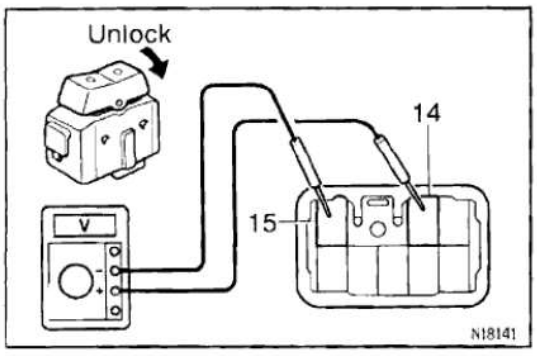
BACK DOOR UNLOCK DETECTION SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Door Lock set to LOCK)	–	No continuity
ON (Door Lock set to UNLOCK)	1 – 3	Continuity

If continuity is not as specified, replace the switch.





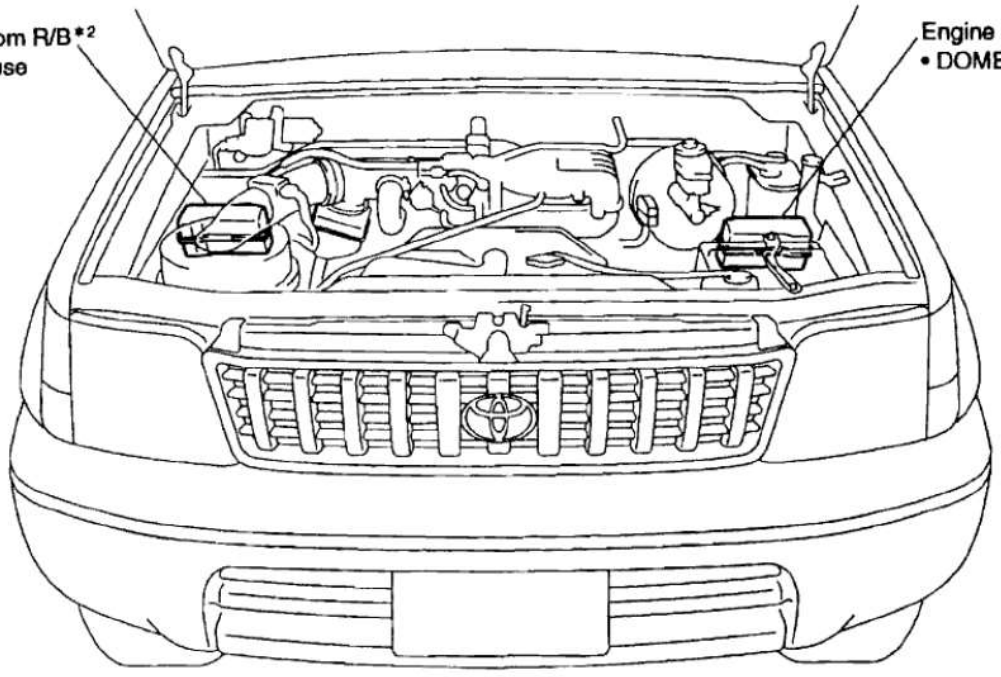
BE3H5-01

INTEGRATION RELAY INSPECTION

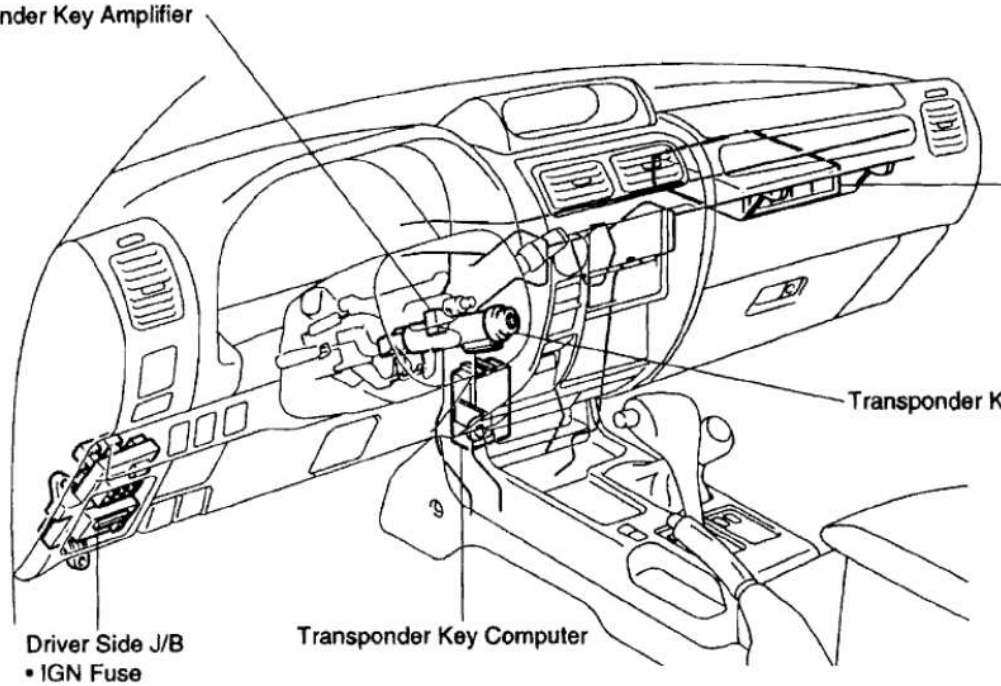
1. **INSPECT RELAY OPERATION**
   Door lock signal:
   HINT: When the relay circuit is as specified, inspect the door lock signal.
   (a) Connect the positive (+) lead from the voltmeter to terminal 14 and the negative (–) lead to terminal 15.
   (b) Set the door lock control switch to UNLOCK and check that the voltage rises from 0 V to battery voltage for approximately 0.2 seconds.
   (c) Reverse the polarity of the voltmeter leads.
   (d) Set the door lock control switch to LOCK and check that the voltage rises from 0 V to battery voltage for approximately 0.2 seconds.
2. **INSPECT INTEGRATION RELAY CIRCUIT**
   See page BE–8

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ENGINE IMMOBILISER SYSTEM
PARTS LOCATION



*1 : Gasoline Engine, Diesel Engine (LHD models)
*2 : Diesel Engine (RHD models)



N19196
N19161

Y
Z18196

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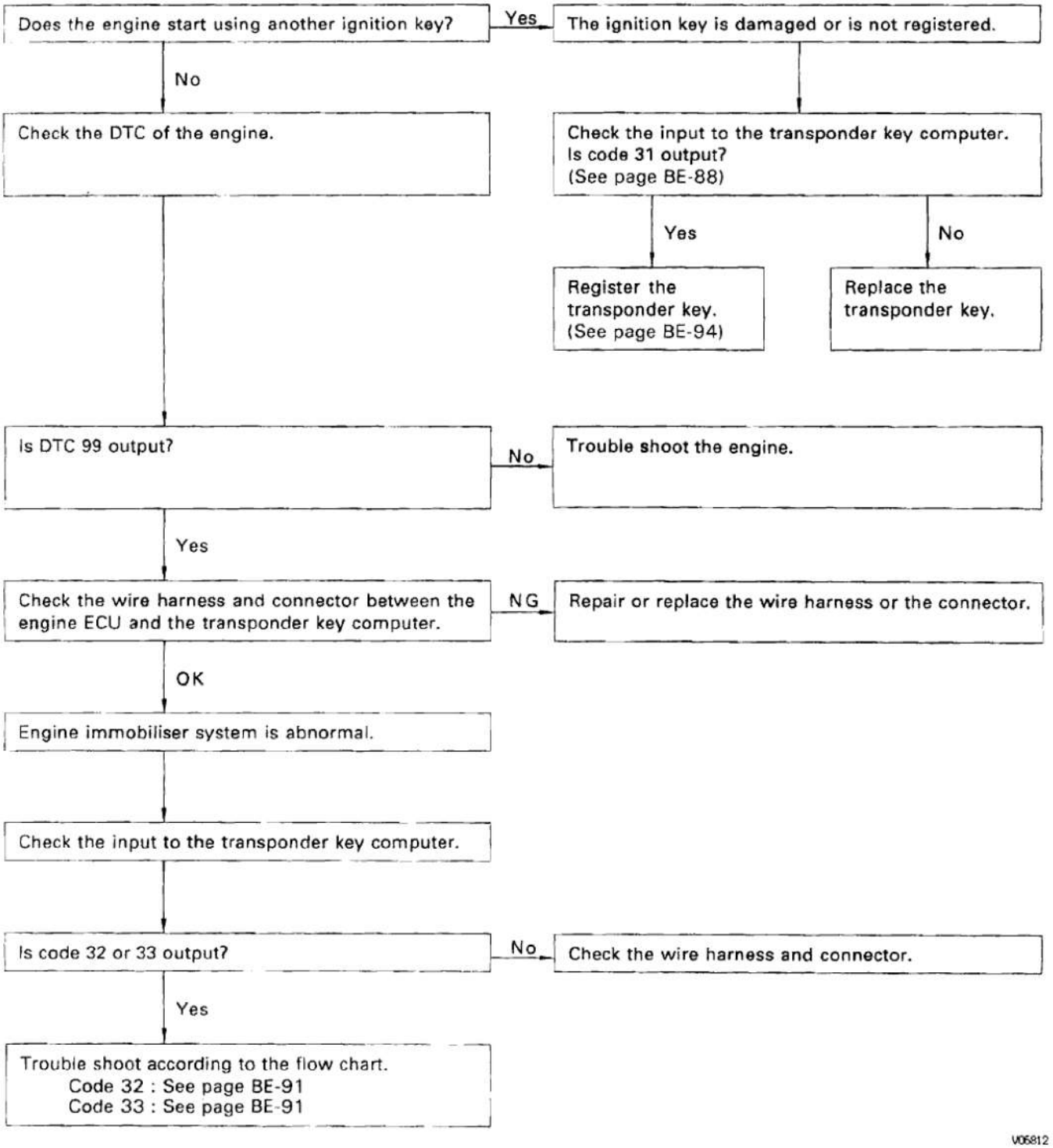
TROUBLESHOOTING

If a malfunction occurs in the engine immobiliser system, either of the following symptoms occurs:

1. Cranking occurs, but the engine does not start.
2. The engine starts, but stops after 5 seconds.

If either of these symptoms occurs, do troubleshooting to the following flow chart.

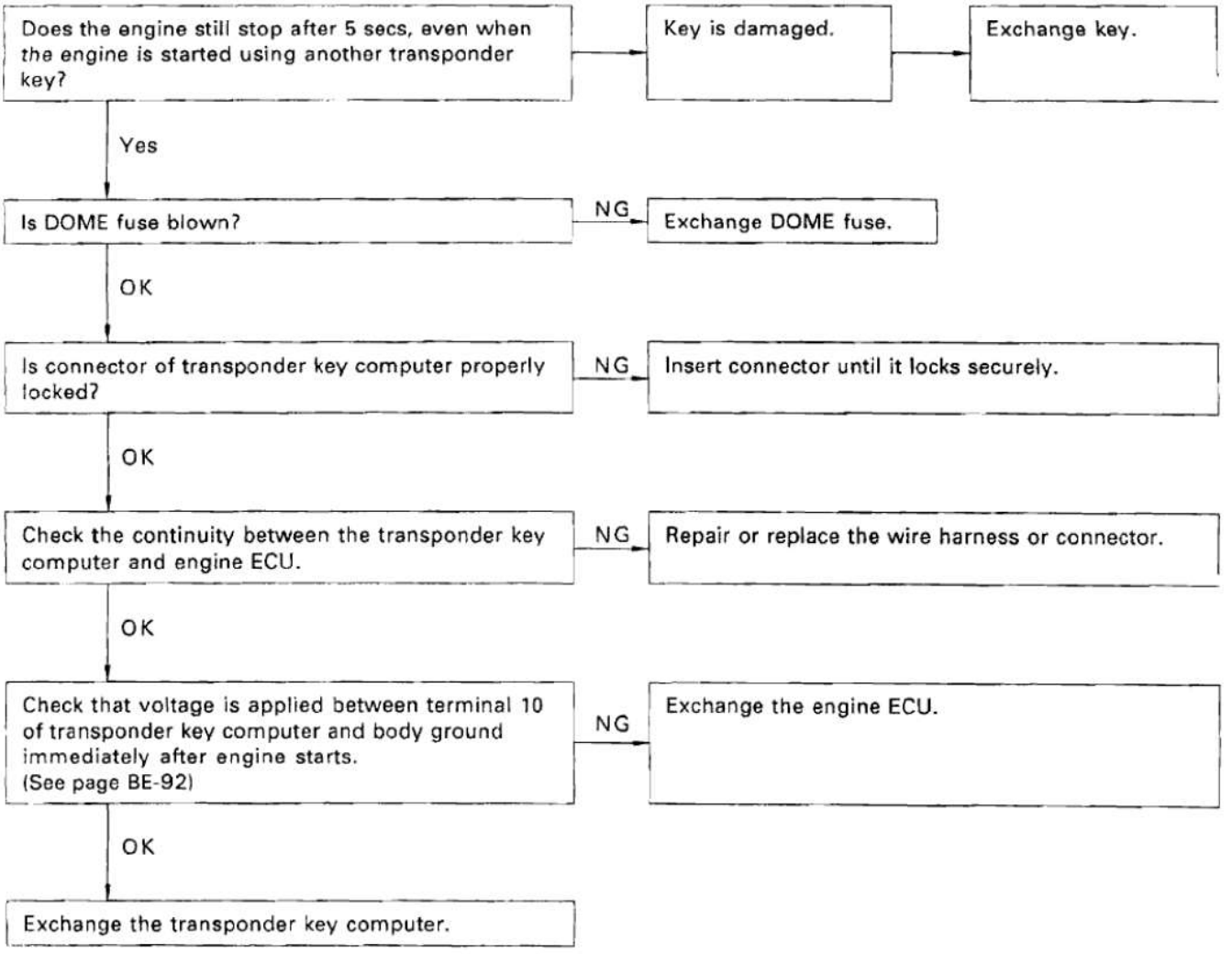
1. CRANKING OCCURS, BUT THE ENGINE DOES NOT START



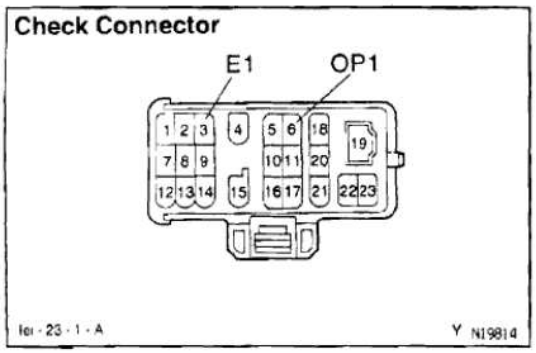
V05812

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2. ENGINE STARTS, BUT STOPS AFTER 5 SECONDS



BE



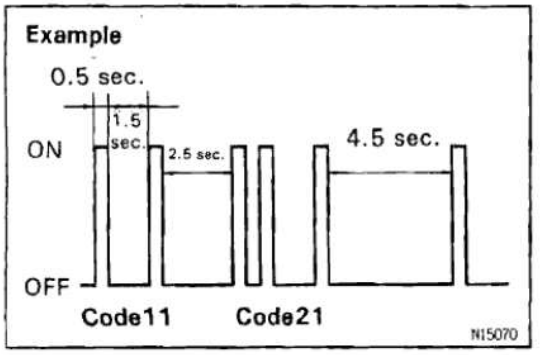
TRANSPONDER KEY COMPUTER INPUT CONDITION DISPLAY

BE2NK-08

1. READ CODE

(a) Connect the positive (+) lead from the volt meter (Analog Type) to OP1 of the check connector and the negative (–) lead to E1 of the check connector.

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(b) Insert the ignition key in the key cylinder.

(c) Read the code from the movement of the tester needle.
If no code is output, turn the ignition switch on. If a code is now output, check if the DOME fuse is blown.

HINT:

- The code can be read using a luminous diode (Recommend activation current 10 ~ 20 mA) instead of a tester.
- A digital tester can also be used.

Display condition:

- When there are multiple codes, they are output in order starting from the lowest code.
- After all the codes are output, Lo is displayed for 4.5 sec., then all the code are output again starting from the lowest code.
- If the situation changes during code output, Lo is output for 4.5 seconds after output of the current code ceases, then the codes are output again starting from the lowest code.
  E.g. While 11 (out of 11 and 21) is being output, conditions change and 12 is added. So after 11 is output, Lo is output for 4.5 sec., then 11, 12 and 21 are output.

2. Code list

Code	Output condition
11	Key unlock warning switch ON (Ignition key inserted)
12	Any door is open. (Door courtesy switch ON)
13	Ignition switch at ON position
21	Master key is inserted in key and the immobiliser system is OFF.
22	Sub key is inserted in key cylinder and immobiliser system is OFF.
31	Key code recorded in transponder key computer differs from code of key inserted in key cylinder.
32	Transponder key code cannot be read.
33	Key code cannot be read because format of chip inside key is wrong.
34	Transponder key computer has no memory space to register key code.

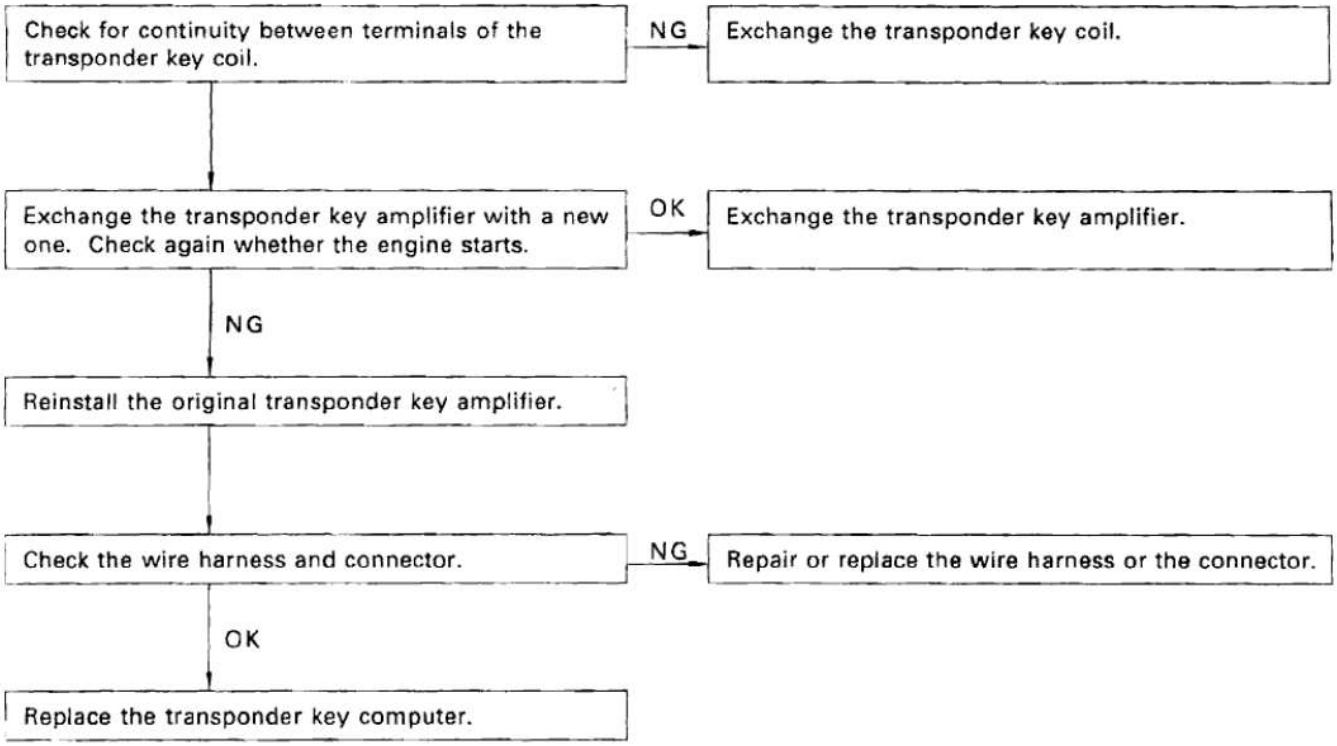
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3. Malfunction list

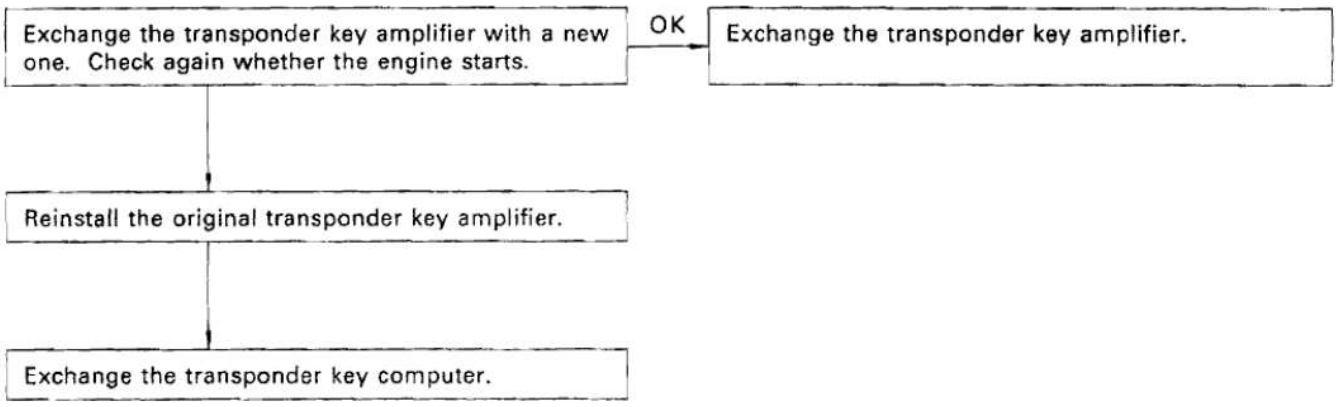
Symptom	Cause
No code is output.	1. DOME Fuse (Engine Room R/B) 2. Wire harness or connector 3. Transponder key computer
Even when key is inserted in key cylinder, Code 11 is not output.	1. Key unlock warning switch (BE–7) 2. Wire harness or connector 3. Transponder key computer
Code 12 is not output when the door is open.	1. Door courtesy switch (BE–30) 2. Wire harness or connector 3. Transponder key computer
Code 13 is not output when ignition switch ON.	1. IGN Fuse (Driver Side J/B) 2. Wire harness or connector 3. Transponder key computer
Code 31 is not output when key is inserted in key cylinder.	Key code is not registered.
Code 32 is output.	1. Transponder key coil 2. Transponder key amplifier 3. Wire harness or connector 4. Transponder key computer
Code 33 is output	1. Transponder key amplifier 2. Transponder key computer
Code 34 is output	Transponder key computer has no memory space to register key code.

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If code 32 is output, troubleshoot according to this flow chart.

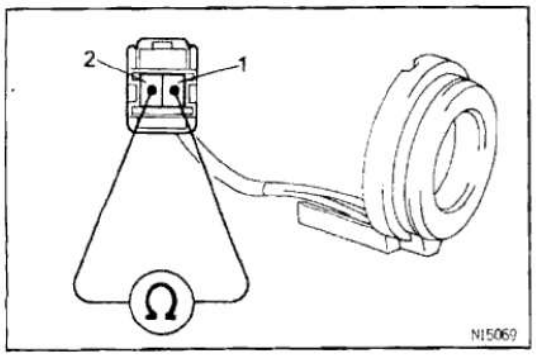


If code 33 is output, troubleshoot according to this flow chart.



V06813

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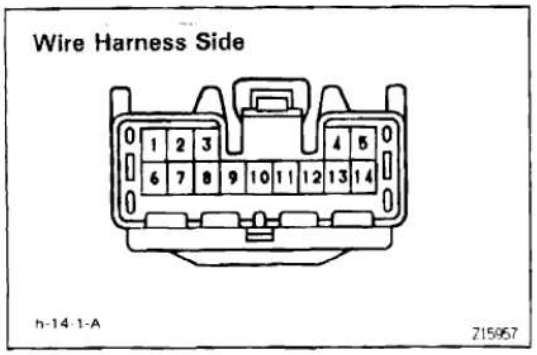


TRANSPONDER KEY COIL INSPECTION

INSPECT TRANSPONDER KEY COIL CONTINUITY

Check that there is continuity between terminals 1 and 2.

If continuity is not as specified, replace the coil.



TRANSPONDER KEY COMPUTER INSPECTION

1. INSPECT COMPUTER CIRCUIT

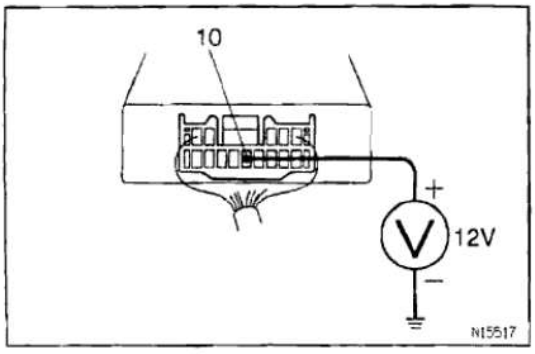
Disconnect the connector from the computer and inspect the connector on the wire harness side, as shown in the table below.

If the circuit is not as specified, try replacing the computer with a new one.

If the circuit is not as specified, inspect the circuits connected to other parts.

BE

Tester connection	Condition	Specified condition
1 – Ground	Constant	Battery voltage
2 – Ground	Ignition switch ON	Battery voltage
8 – Ground	All doors closed	No continuity
8 – Ground	Any door open.	Continuity
9 – Ground	Key unlock warning switch ON (key inserted)	Continuity
9 – Ground	Key unlock warning switch OFF (key removed)	No continuity
14 – Ground	Constant	Continuity



2. INSPECT COMPUTER

(a) With the connector connected, connect the positive (+) lead from the analog type tester to terminal 10 and the negative (–) lead to the body ground.

(b) Check that there is battery voltage when the ignition switch is turned ON.

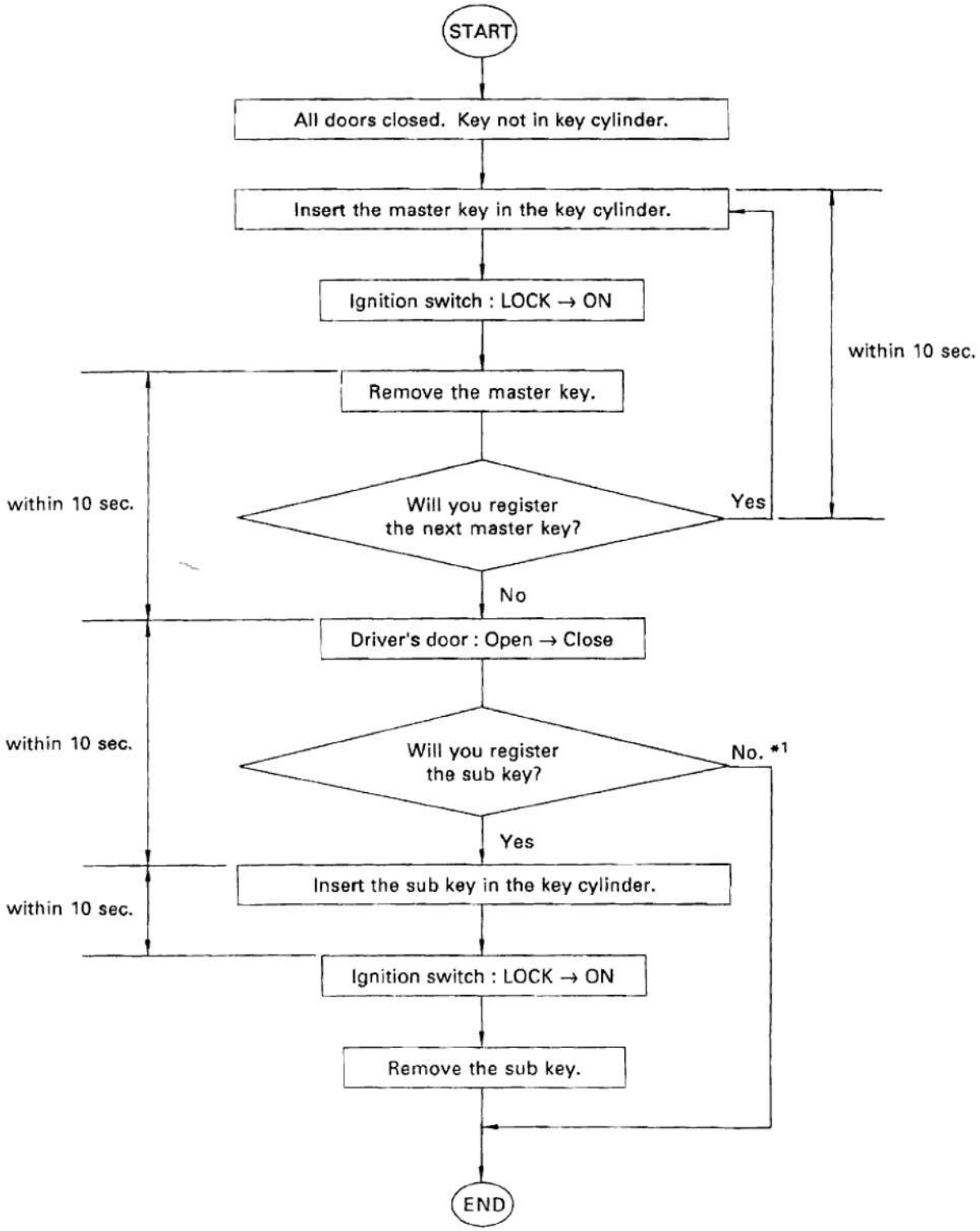
(c) Check that the tester needle swings strongly for approx. 1 sec. when the engine is started using the ignition key.

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RESISTING PROCEDURE

1. RESISTING A NEW TRANSPONDER KEY CODE

This must be done when you have install a new transponder key computer.



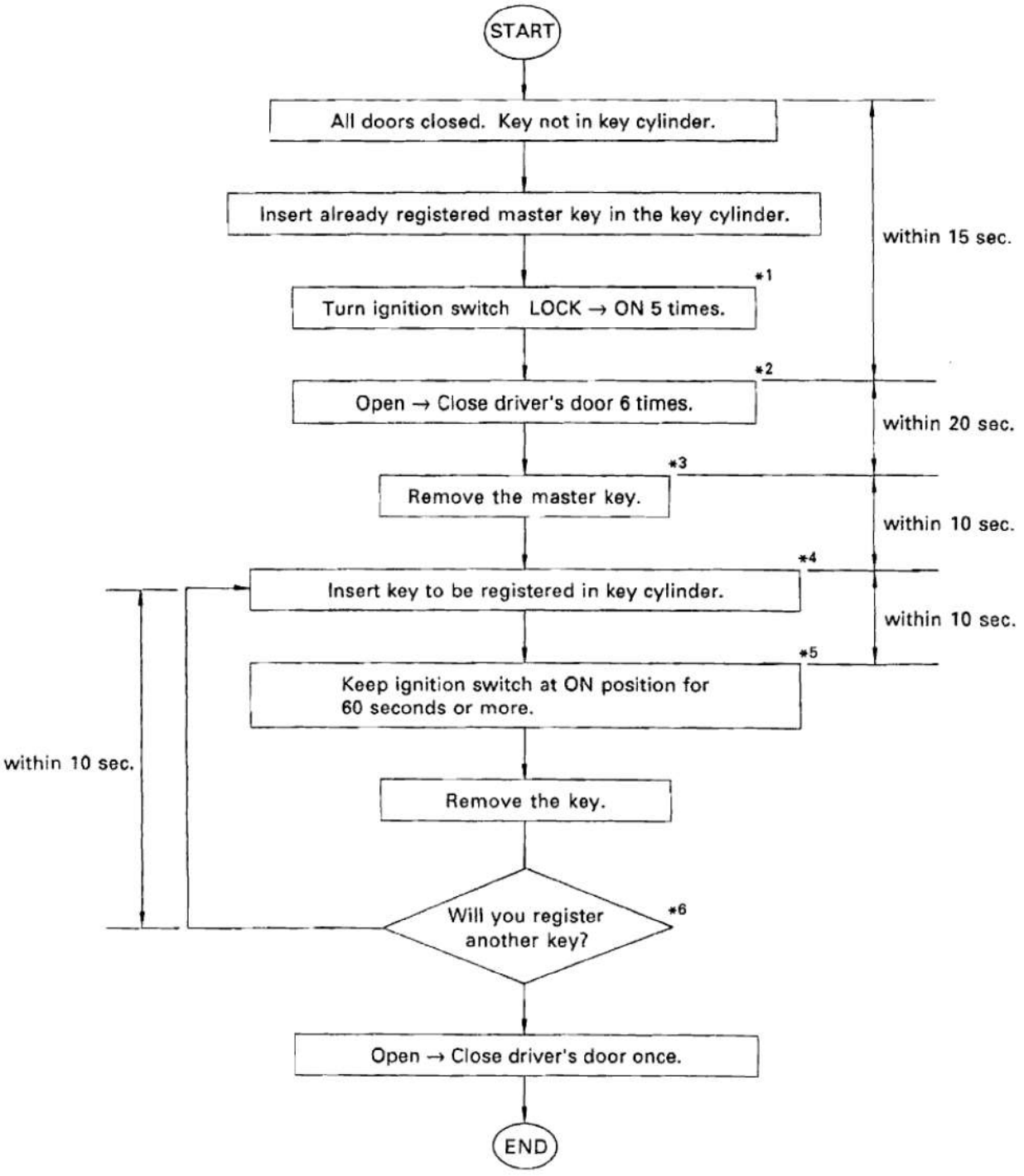
*1: When not resistering the sub key, resister the master key within 10 sec. of Driver's Door : Open → Close.

V06814

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2. REGISTRATION OF ADDITIONAL MASTER KEY

Do this operation to register an additional master key.



V06815

BE

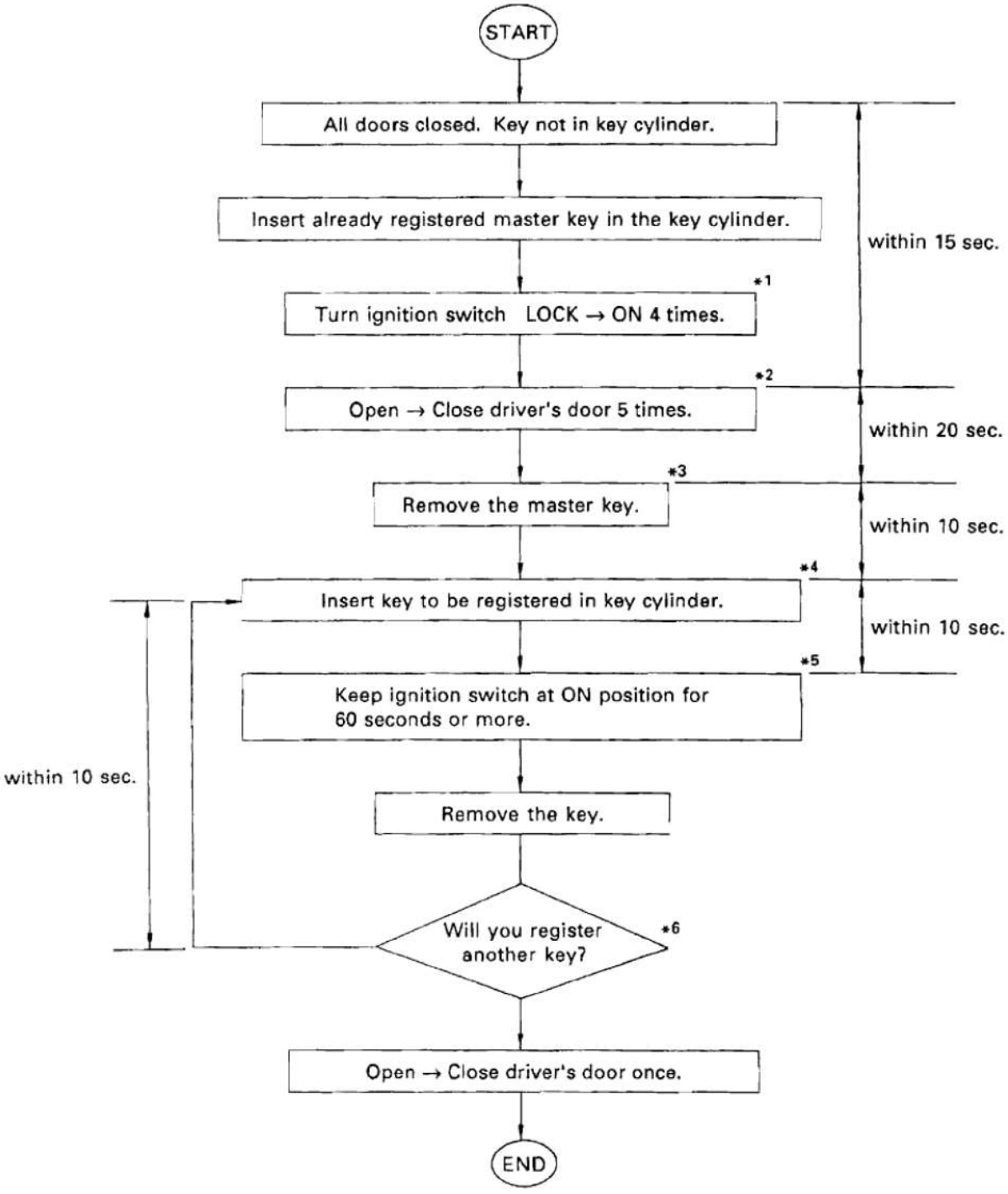
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*1: Turn the ignition switch LOCK → ON 5 times within 15 sec. of inserting the master key in the key cylinder.
*2: Open and close the driver's door the first time within 15 sec. of inserting the master key in the key cylinder. Then open and close the driver's door another 6 times within 20 sec. of closing the driver's door the first time.
*3: Remove the master key from the ignition switch within 20 sec. of closing the driver's door the first time.
*4: Insert the key to be registered in the key cylinder within 10 sec. of removing the master key.
*5: Turn the ignition switch LOCK → ON within 10 sec. of inserting the key.
*6: If you are to register another key, insert the next key within 10 sec. of removing the previous key.

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3. ADDITIONAL REGISTRATION OF SUB KEY

Do this operation to register an additional sub key.



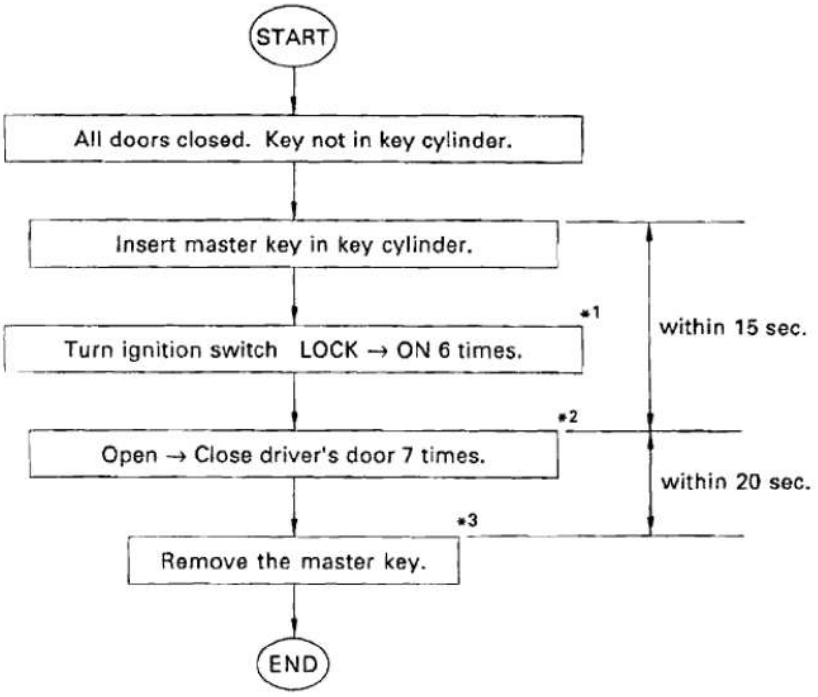
V06816

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*1: Turn the ignition switch LOCK → ON 4 times within 15 sec. of inserting the master key in the key cylinder.
*2: Open and close the driver's door the first time within 15 sec. of inserting the master key in the key cylinder. Then open and close the driver's door another 5 times within 20 sec. of closing the driver's door the first time.
*3: Remove the master key from the ignition switch within 20 sec. of closing the driver's door the first time.
*4: Insert the key to be registered in the key cylinder within 10 sec. of removing the master key.
*5: Turn the ignition switch LOCK → ON within 10 sec. of inserting the key.
*6: If you are to register another key, insert the next key within 10 sec. of removing the previous key.

4. ERASURE OF TRANSPONDER KEY CODE

Do this operation to erase transponder key registration from the transponder key computer.

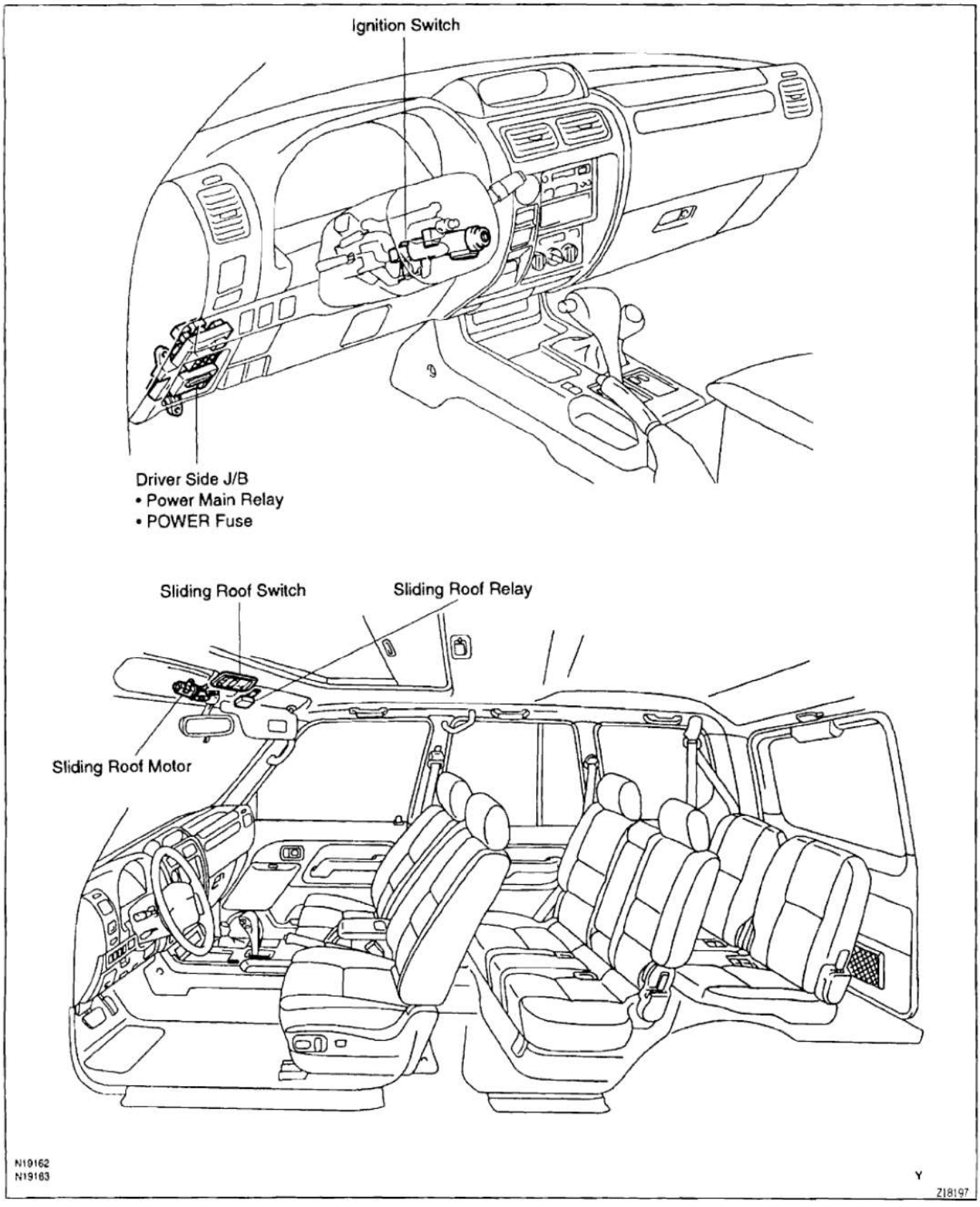


*1: Turn the ignition switch LOCK → ON 6 times within 15 sec. of inserting the master key in the key cylinder.
*2: Open and close the driver's door the first time within 15 sec. of inserting the master key in the key cylinder. Then open and close the driver's door another 6 times within 20 sec. of closing the driver's door the first time.
*3: Remove the master key from the ignition switch within 20 sec. of closing the driver's door the first time.

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SLIDING ROOF SYSTEM
PARTS LOCATION

BE544M-01



N19162
N19163

Y

Z18197

BE

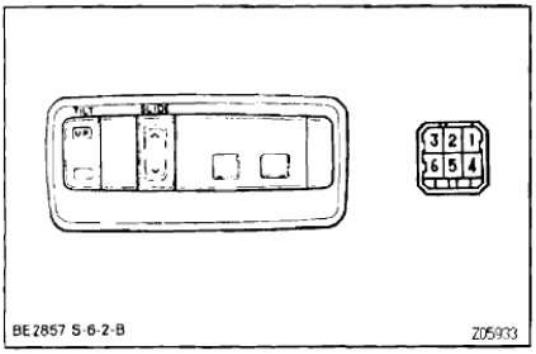
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TROUBLESHOOTING

BE34N-02

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Sliding roof system does not operate.	1. POWER Fuse (Driver side J/B)	
	2. Sliding Roof Relay	(BE–101)
	3. Power Main Relay	(BE–80)
	4. Sliding Roof Switch	(BE–99)
	5. Sliding Roof Motor	(BE–100)
	6. Wire Harness	
Sliding roof system operates abnormally.	1. Sliding Roof Switch	(BE–99)
	2. Wire Harness	
Sliding roof system stops operation half way.	1. Sliding Roof Switch	(BE–99)
	2. Sliding Roof Motor	(BE–100)
	(Stones to foreign material trapped in motor assembly)	
	3. Wire Harness	



BE2857 S-6-2-B Z05933

SLIDING ROOF SWITCH INSPECTION

BE34P-02

INSPECT SWITCH CONTINUITY

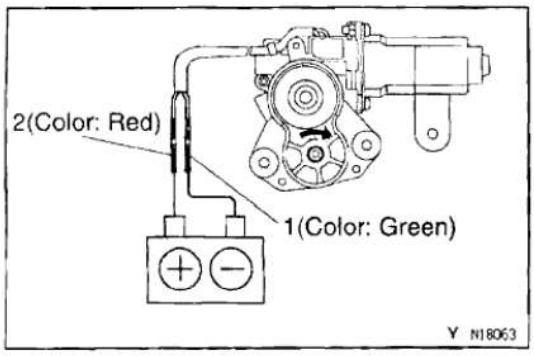
Switch position	Tester connection	Specified condition
SLIDE OPEN	3 – 4	Continuity
SLIDE OFF	–	No continuity
SLIDE CLOSE	4 – 6	Continuity
TILT DOWN	2 – 4	Continuity
TILT OFF	–	No continuity
TILT UP	4 – 5	Continuity

If continuity is not as specified, replace the switch.

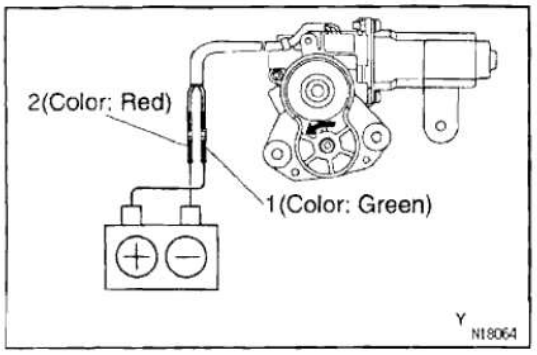
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SLIDING ROOF MOTOR INSPECTION

1. INSPECT MOTOR OPERATION

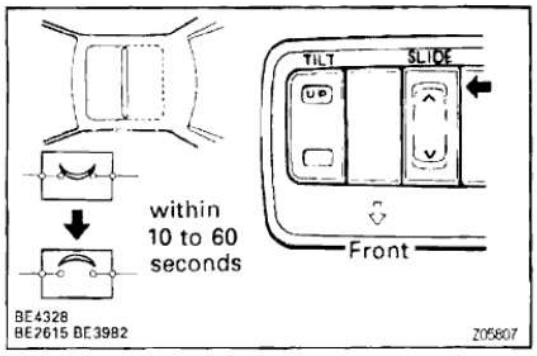


(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 1, check that the motor turns to clockwise.

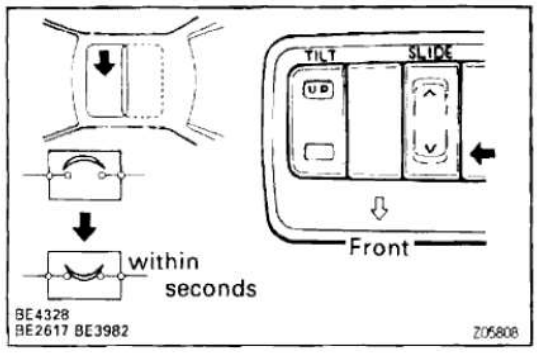


(b) Reverse the polarity, and check that the motor turns to counterclockwise.

2. INSPECT CIRCUIT BREAKER OPERATION

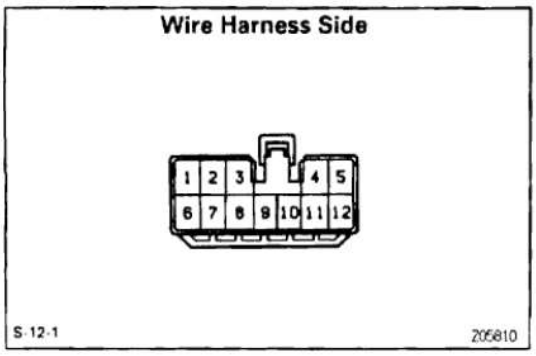


(a) With the sliding roof in the fully opened position, hold the sliding roof switch in the "OPEN" position and check that there is a circuit breaker operation noise within 10 to 60 seconds.



(b) With the sliding roof in fully opened position, hold the sliding roof switch in the "CLOSE" position and check that the sliding roof begins to close within 60 seconds.
If operation is not as specified, replace the motor.

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BE347-01

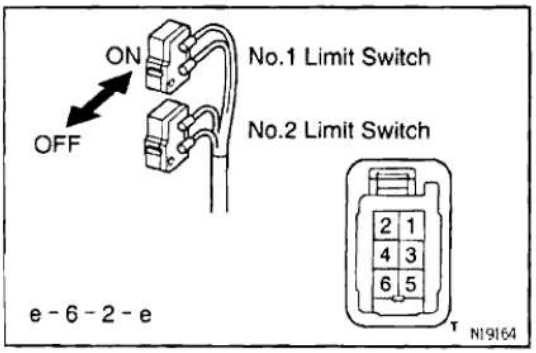
SLIDING ROOF CONTROL RELAY INSPECTION

INSPECT RELAY CIRCUIT

Disconnect the connector from the relay and inspect the connector on the wire harness side, as shown in the chart.

*: Exceptions: During 60 second after the ignition switch ON → OFF.

Tester connection	Condition	Specified condition
1 – Ground	Sliding roof SLIDE switch OPEN	Continuity
2 – Ground	Sliding roof SLIDE switch CLOSE	Continuity
3 – Ground	Sliding roof TILT switch UP	Continuity
4 – Ground	Constant	No continuity
4 – 5	Constant	Continuity
5 – Ground	Constant	No continuity
7 – Ground	Sliding roof TILT switch DOWN	Continuity
8 – Ground	No. 1 limit switch OFF (Sliding roof tilted up or open approx. 200 mm (7.87 in.))	No continuity
8 – Ground	No. 1 limit switch ON (Except for conditions mentioned above)	Continuity
9 – Ground	No.2 limit switch OFF (Sliding roof closed)	No continuity
9 – Ground	No.2 limit switch ON (Sliding roof opened)	Continuity
11 – Ground	Constant	Continuity
6 – Ground	Ignition switch LOCK or ACC	*No voltage
6 – Ground	Ignition switch ON	Battery voltage
12 – Ground	Constant	Battery voltage



BE390-01

SLIDING ROOF LIMIT SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
No.1 limit switch ON (SW pin pushed in)	4 – 5	Continuity
No.2 limit switch ON (SW pin pushed in)	4 – 6	Continuity

If continuity is not as specified, replace the switch.

BE348-01

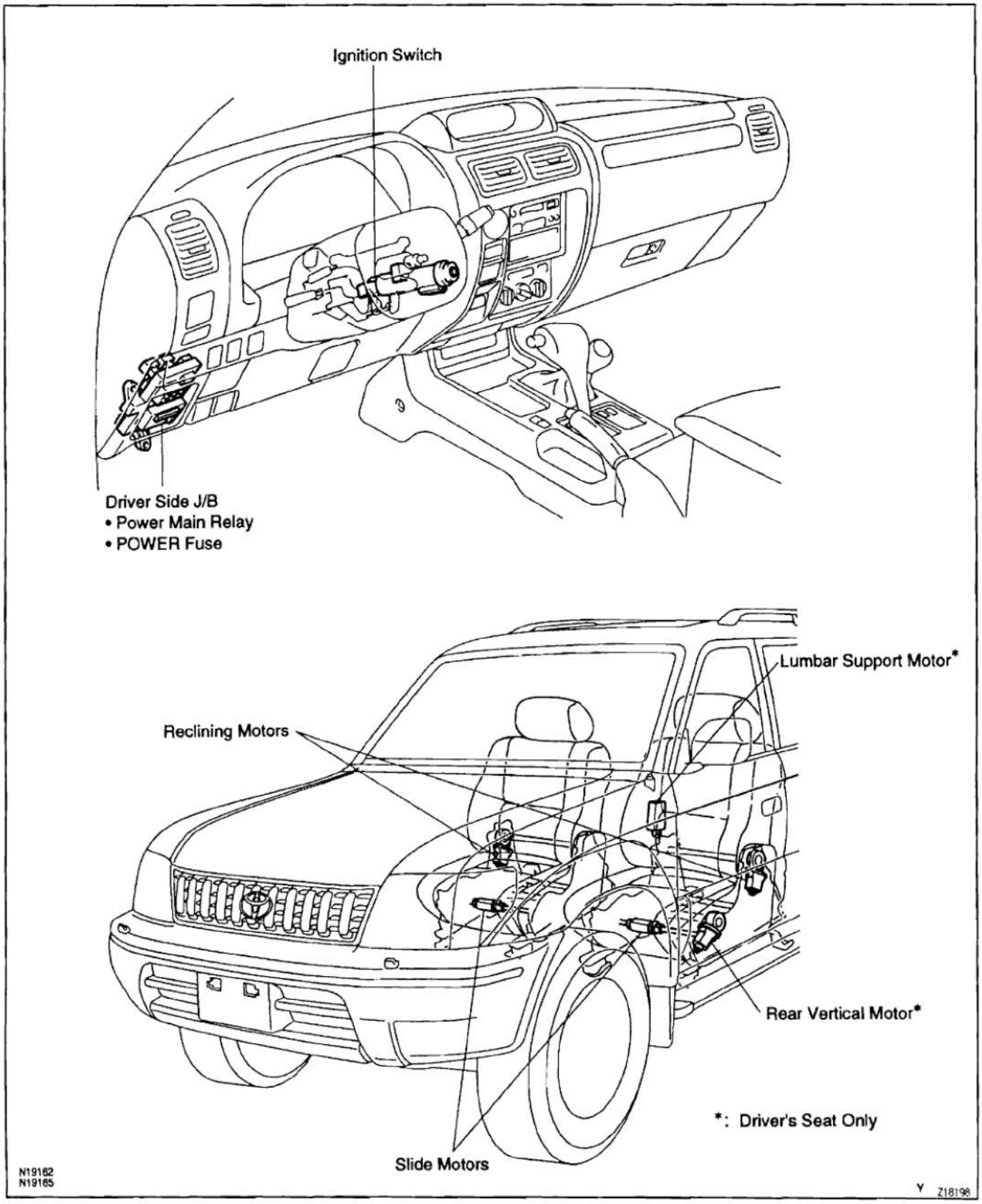
POWER MAIN RELAY INSPECTION

See page BE–80

BE
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POWER SEAT CONTROL SYSTEM
BE1DW-04

PARTS LOCATION



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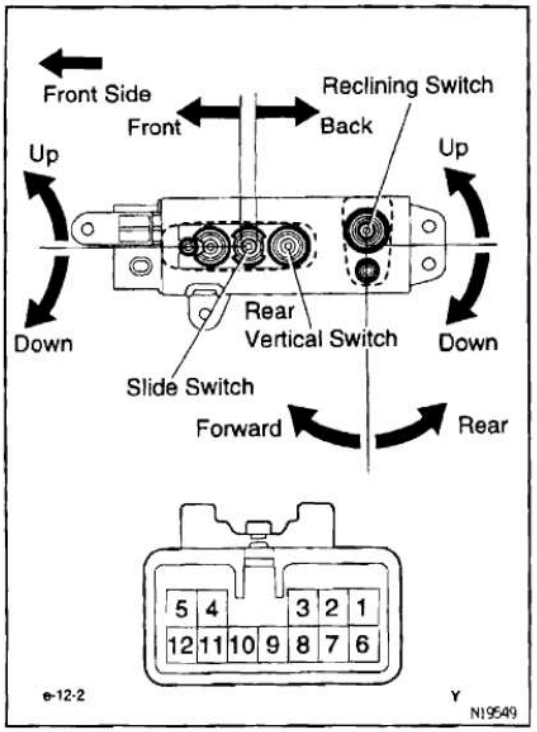
BE1DX-0A

TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Power seat does not operate.	1. POWER Fuse (Driver Side J/B) 2. Power Seat Switch 3. Wire Harness	 (BE–104)
Power seat "Slide operation" does not operate.	1. Power Seat Switch 2. Seat Slide Motor 3. Wire Harness	(BE–104) (BE–105)
Power seat "Rear vertical operation" does not operate.	1. Power Seat Switch 2. Rear Vertical Motor 3. Wire Harness	(BE–104) (BE–106)
Power seat "Reclining operation" does not operate	1. Power Seat Switch 2. Reclining Motor 3. Wire Harness	(BE–104) (BE–107)
Power seat "Lumbar support operation" does not operate	1. Power Seat Switch 2. Lumbar Support Motor 3. Wire Harness	(BE–104) (BE–108)

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POWER SEAT SWITCH INSPECTION

BE36A-01

(Driver's side)

INSPECT SWITCH CONTINUITY

( ): RHD models

Slide switch:

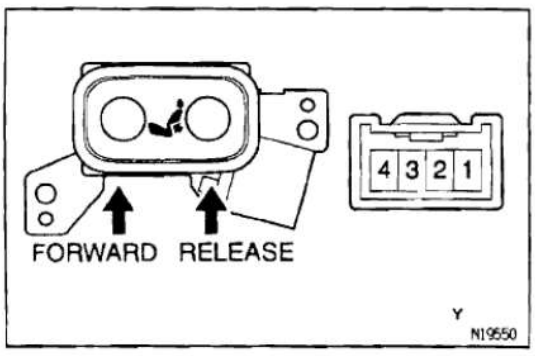
Switch position	Tester connection	Specified condition
FRONT	4 – 6, 4 – 7 8 – 11, 8 – 12	Continuity
OFF	4 – 6, 4 – 7 6 – 8, 7 – 8	Continuity
BACK	6 – 8, 7 – 8 4 – 11, 4 – 12	Continuity

Rear vertical switch:

Switch position	Tester connection	Specified condition
UP	2(3) – 11, 2(3) – 12 3(2) – 6, 3(2) – 7	Continuity
OFF	2 – 6, 2 – 7 3 – 6, 3 – 7	Continuity
DOWN	2(3) – 6, 2(3) – 7 3(2) – 11, 3(2) – 12	Continuity

Reclining switch:

Switch position	Tester connection	Specified condition
FORWARD	1 – 11, 1 – 12 5 – 6, 5 – 7	Continuity
OFF	1 – 6, 1 – 7 5 – 6, 5 – 7	Continuity
REAR	1 – 6, 1 – 7 5 – 11, 5 – 12	Continuity

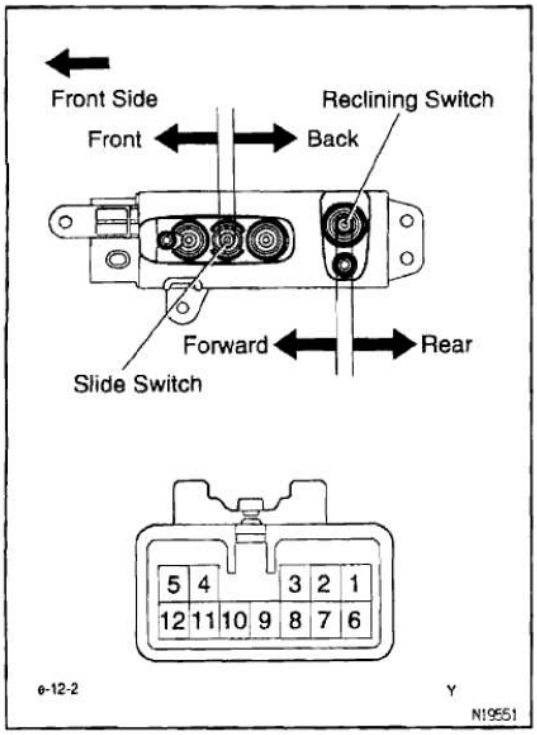


Lumber support switch:

Switch position	Tester connection	Specified condition
FORWARD	1 – 4, 2 – 3	Continuity
OFF	1 – 3, 2 – 3	Continuity
RELEASE	1 – 3, 2 – 4	Continuity

If continuity is not as specified, replace the switch.

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POWER SEAT SWITCH INSPECTION (Passenger's side)

INSPECT SWITCH CONTINUITY

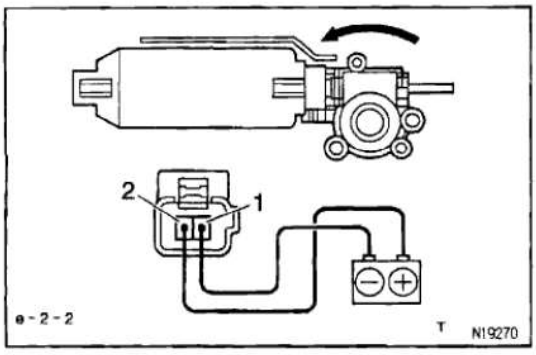
Slide switch:

Switch position	Tester connection	Specified condition
FRONT	4 – 6, 4 – 7 8 – 11, 8 – 12	Continuity
OFF	4 – 6, 4 – 7 6 – 8, 7 – 8	Continuity
BACK	6 – 8, 7 – 8 4 – 11, 4 – 12	Continuity

Reclining switch:

Switch position	Tester connection	Specified condition
FORWARD	4 – 6, 4 – 7 1 – 11, 1 – 12	Continuity
OFF	1 – 6, 1 – 7 5 – 6, 5 – 7	Continuity
REAR	1 – 6, 1 – 7 5 – 11, 5 – 12	Continuity

If continuity is not as specified, replace the switch.



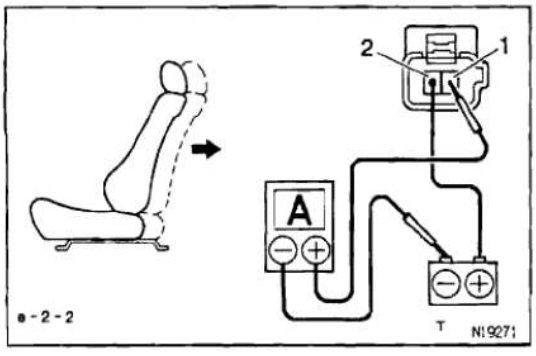
SEAT SLIDE MOTOR INSPECTION

1. INSPECT MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the motor turns counterclockwise.

(b) Reverse the polarity, check that the motor turns clockwise.

If operation is not as specified, replace the motor.



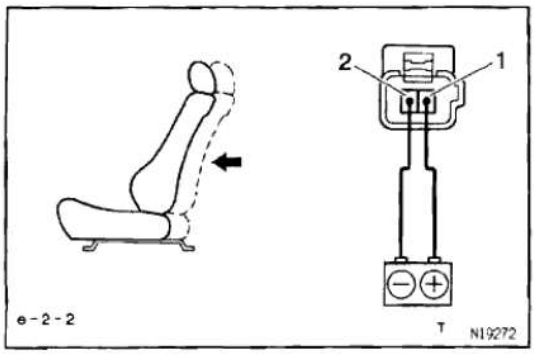
2. INSPECT PTC THERMISTOR OPERATION

Reference: Driver's seat (LHD models)

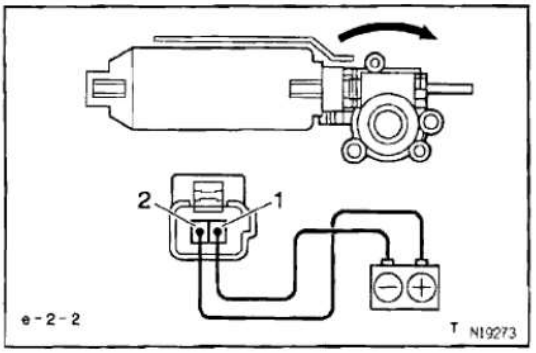
(a) Connect the positive (+) lead from the battery to terminal 2, the positive (+) lead from the ammeter to terminal 1, and the negative (–) lead to battery negative (–) terminal, and move the seat rear end position.

(b) Continue to apply voltage, check the current changes to less than 1 ampere within 4 to 90 seconds.

BE
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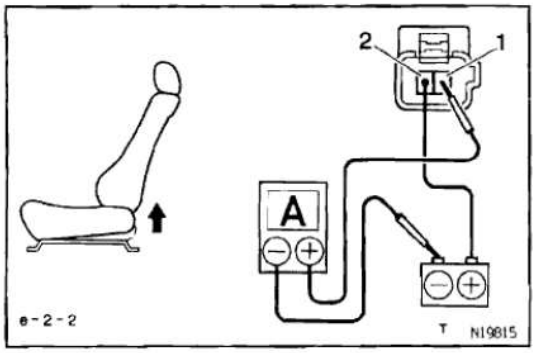
(c) Disconnect the lead from terminals.
(d) Approximately 60 seconds later , connect the positive (+) lead from battery to terminal 1 and the negative (−) lead to terminal 2, check that the seat begins to move forwards.
HINT: Operational for RHD models is in the reverse order.
If operation is not as specified, replace the motor.



REAR VERTICAL MOTOR INSPECTION

1. INSPECT MOTOR OPERATION

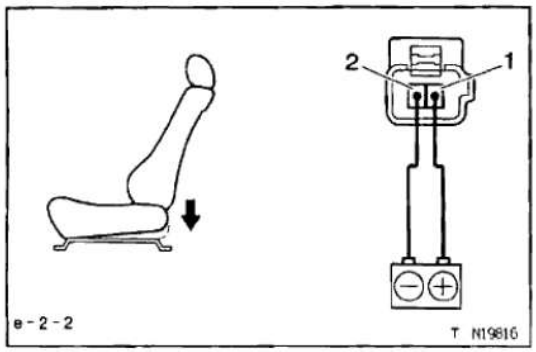
(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (−) lead to terminal 1, check that the motor turns clockwise.
(b) Reverse the polarity, check that the motor turns counterclockwise.
If operation is not as specified, replace the motor.



2. INSPECT PTC THERMISTOR OPERATION

Reference: Driver's seat (LHD models)

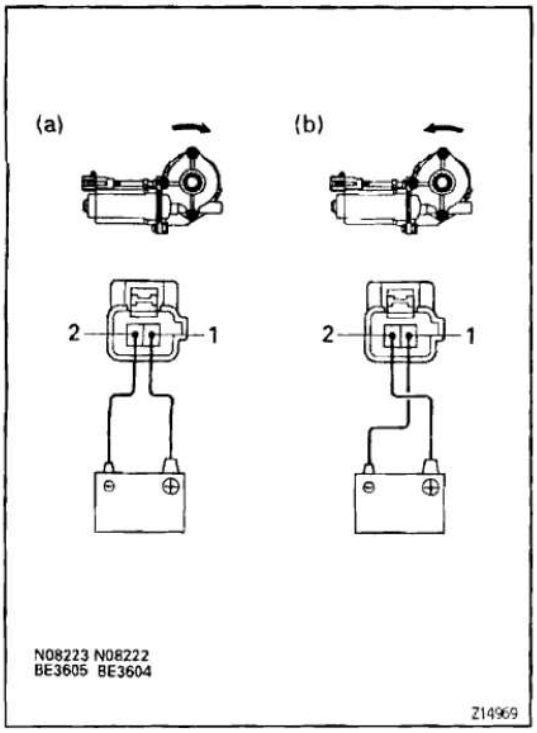
(a) Connect the positive (+) lead from the battery to terminal 2, the positive (+) lead from the ammeter to terminal 1 and the negative (−) lead to battery negative (−) terminal, and move the rear edge of seat cushion to the highest position.
(b) Continue to apply voltage, check the current changes to less than 1 ampere within 4 to 90 seconds.



(c) Disconnect the leads from terminals.
(d) Approximately 60 seconds later, connect the positive (+) lead from battery to terminal 1 and the negative (−) lead to terminal 2, check that the seat cushion begins to descend.
HINT: Operational for RHD models is in the reverse order.
If operation is not as specified, replace the motor.

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RECLINING MOTOR INSPECTION



1. INSPECT MOTOR OPERATION

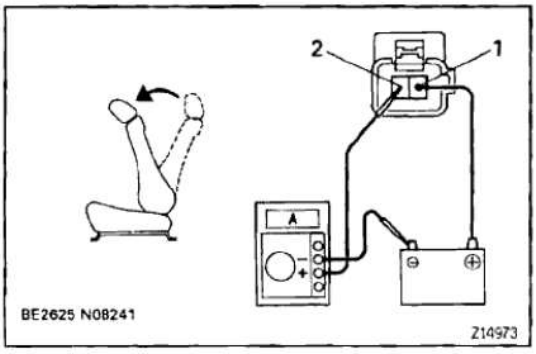
Reference: Driver's Seat (LHD models)

(a) Connect the positive (+) lead from the battery to terminal 2 and negative (−) lead to terminal 1 and check that the motor turns counterclockwise.

(b) Reverse the polarity, check that the motor turns clockwise.

HINT: Oprational for RHD models is in the reverse order.

If operation is not as specified, replace the motor.

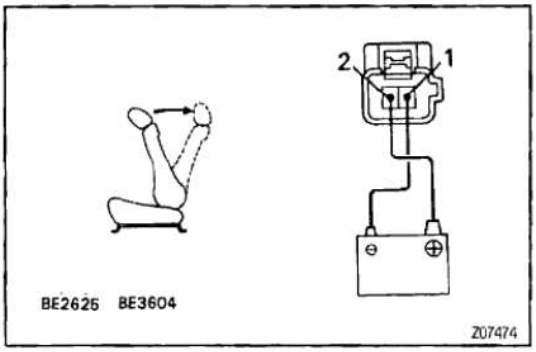


2. INSPECT PTC THERMISTOR OPERATION

Reference: Driver's Seat (RHD models)

(a) Connect the positive (+) lead from the battery to terminal 1, the positive (+) lead from the ammeter to terminal 2 and the negative (−) lead to battery negative (−) terminal, and recline the seat back to the most forward position.

(b) Continue to apply voltage , check the current changes to less than 1 ampere within 4 to 90 seconds.



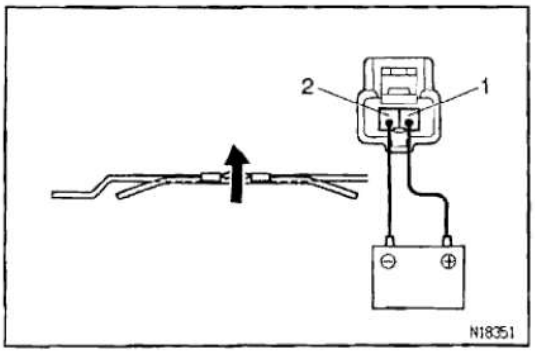
(c) Disconnect the lead from terminals.

(d) Approximately 60 seconds later, connect the positive (+) lead from battery to terminal 2 and the negative (−) lead to terminal 1, check that the seat back starts to fall backwards.

HINT: Operational for LHD models is in the reverse order.

If operation is not as specified, replace the motor.

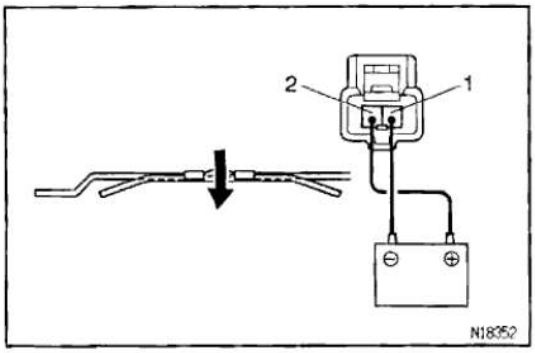
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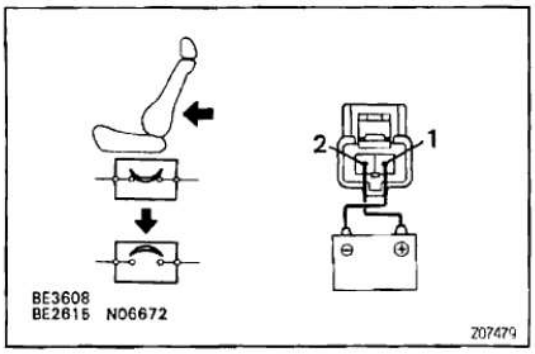
LUMBAR SUPPORT MOTOR INSPECTION

1. INSPECT MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to the to terminal 2, check that the lumbar support moves release side.



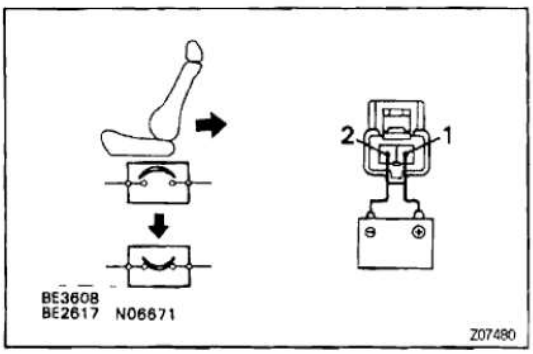
(b) Reverse the polarity, check that the lumbar support moves forward.
If operation is not as specified, replace the motor.



2. INSPECT MOTOR CIRCUIT BREAKER OPERATION

(a) Connect the positive (+) lead from the battery to terminal and the negative (−) lead to terminal on the lumbar support motor connector and move the lumbar support to the front end position.

Seat	Battery positive lead	Battery negative lead
Driver's	Terminal 2	Terminal 1



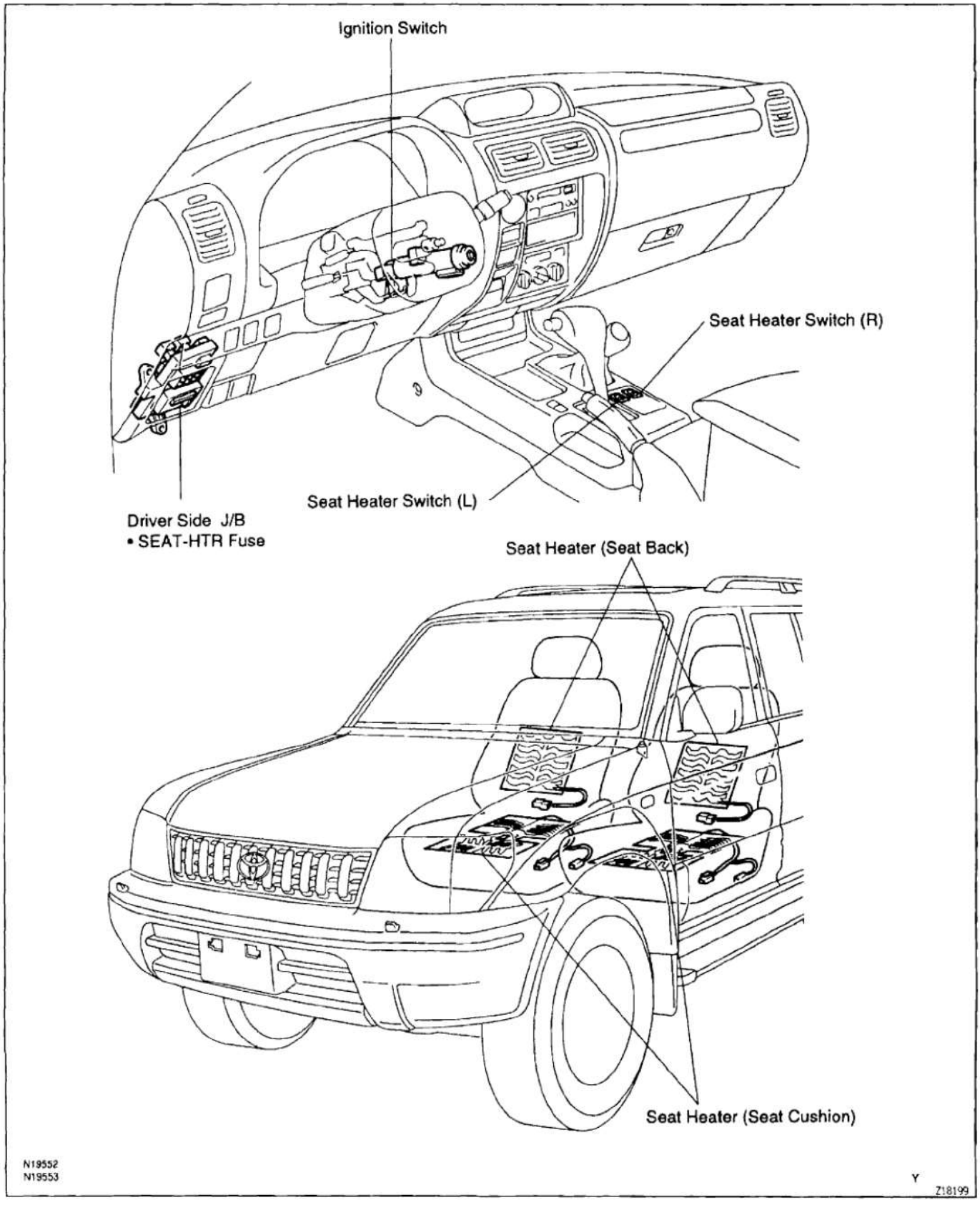
(b) Continue to apply voltage, check that there is a circuit breaker operation noise within 4 to 60 seconds.

(c) Reverse the polarity check that the lumbar support begins to move release side within approximately 60 seconds.
If operation is not as specified, replace the motor.

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SEAT HEATER SYSTEM
PARTS LOCATION

BE11X-08



N19552
N19553

Y
Z18199

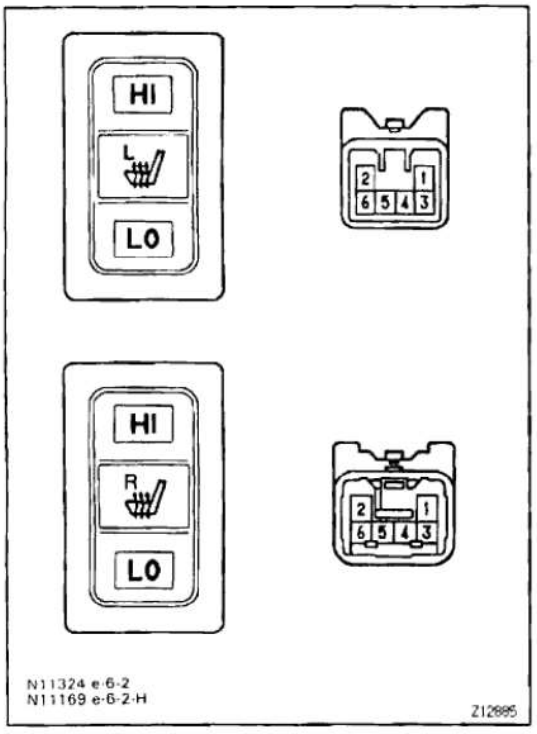
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TROUBLESHOOTING

BE06Q-0H

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Seat heaters do not operate. (Driver's and Passenger's)	1. SEAT–HTR Fuse (Driver Side J/B) 2. Wire Harness	
Driver's seat heater does not operate.	1. Seat Heater Switch (Driver's) 2. Seat Heater 3. Wire Harness	(BE–110) (BE–111)
Passenger's seat heater does not operate.	1. Seat Heater Switch (Passenger's) 2. Seat Heater 3. Wire Harness	(BE–110) (BE–111)
Seat heater temperature is too hot.	1. Seat Heater	(BE–111)



SEAT HEATER SWITCH INSPECTION

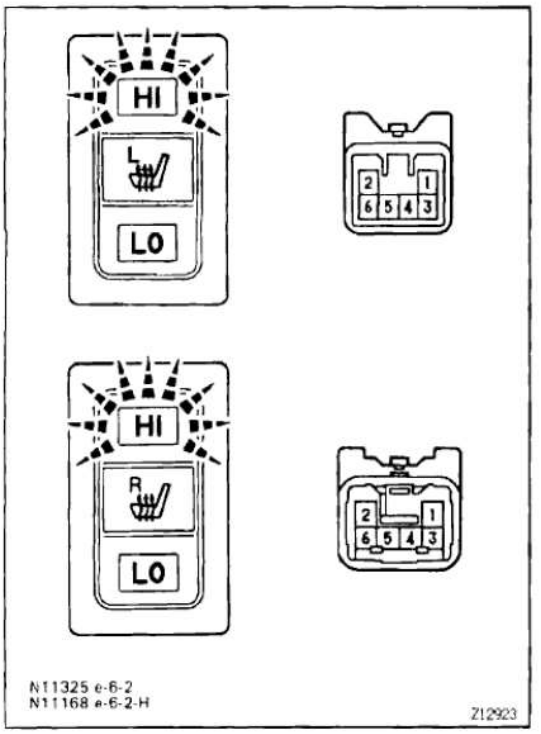
BE11Y-0E

1. INSPECT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
HI	2 – 4, 3 – 6	Continuity
OFF	–	No continuity
LO	3 – 4	Continuity
Illumination circuit	1 – 5	Continuity

If continuity is not as specified, replace the switch or the bulb.

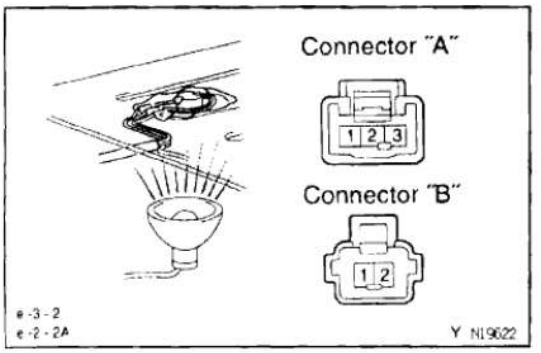
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2. INSPECT SEAT HEATER INDICATOR LIGHT

(a) Connect the positive (+) lead from the battery to terminals 2 and 6, the negative (−) lead to terminal 1.

(b) Push the switches, check that the indicator light up.
If operation is not as specified, replace the switch and inspect the circuits connected to other parts.



SEAT HEATER INSPECTION

BE11Z-01

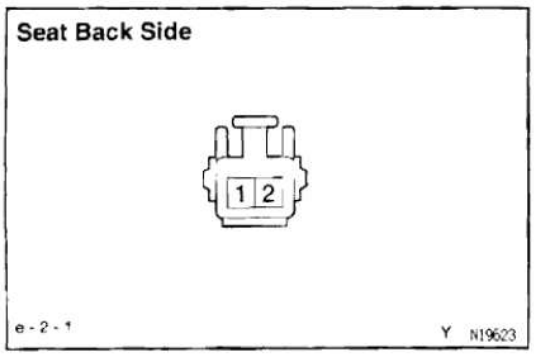
1. INSPECT SEAT CUSHION CONTINUITY

(a) Heat the thermostat with a light.

(b) Inspect the seat heater continuity between terminals as shown.
If continuity is not as specified, replace the seat cushion pad.

Tester connection	Condition	Specified condition
A3 – B1	Constant	Continuity
A1 – A3	Seat heater temperature below 25°C(77°F)	Continuity
A1 – B2	Seat heater temperature below 25°C(77°F)	Continuity
A2 – B2	Seat heater temperature above 45°C(113°F)	Continuity
A1 – B2	Seat heater temperature above 45°C(113°F)	No continuity

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2. INSPECT SEAT BACK CONTINUITY

Inspect the seat heater continuity between terminals, as shown.

Tester connection	Condition	Specified condition
1 – 2	Constant	Continuity

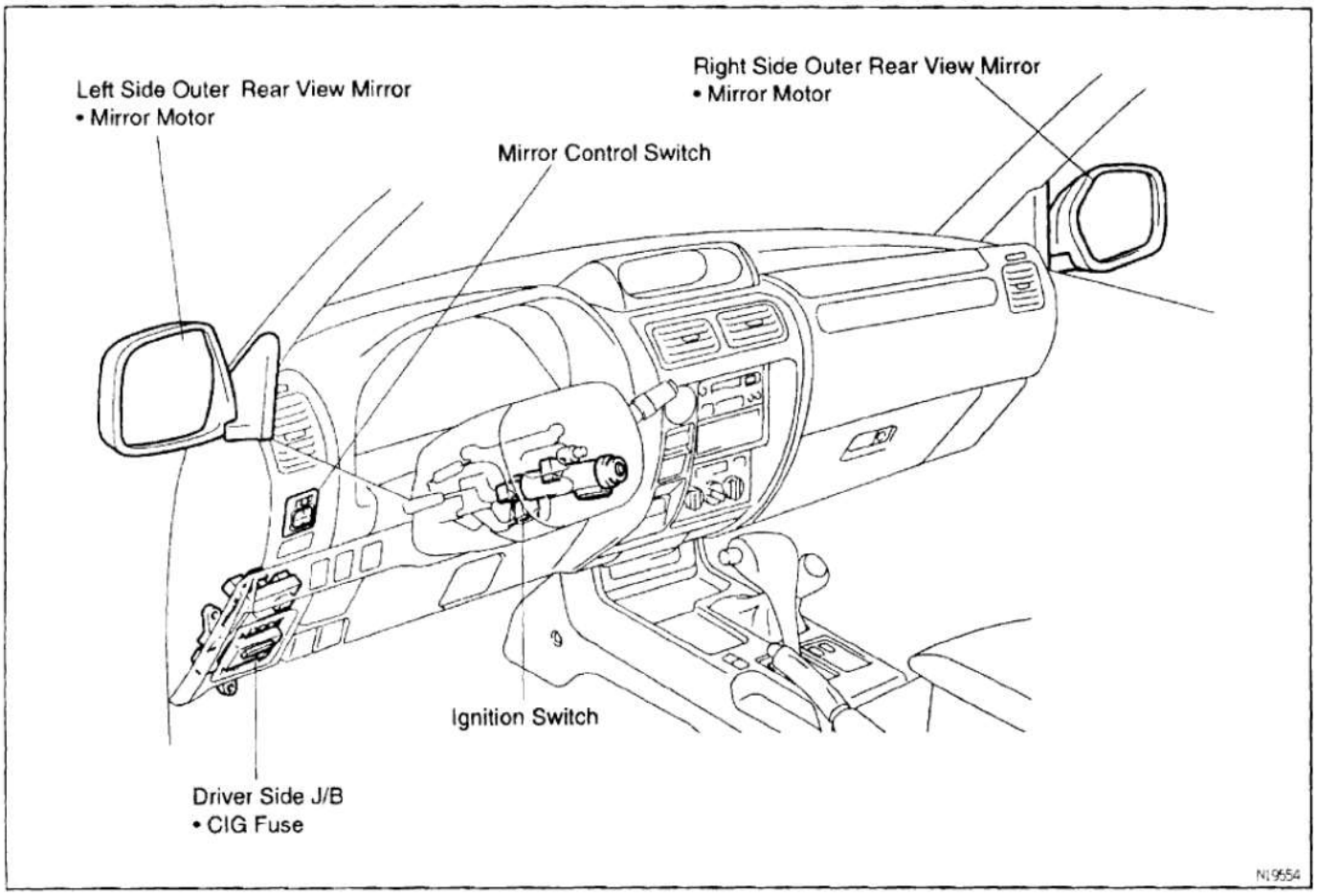
If continuity is not as specified, replace the seat back pad.

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POWER MIRROR CONTROL SYSTEM

BE129-0E

PARTS LOCATION



BE07E-12

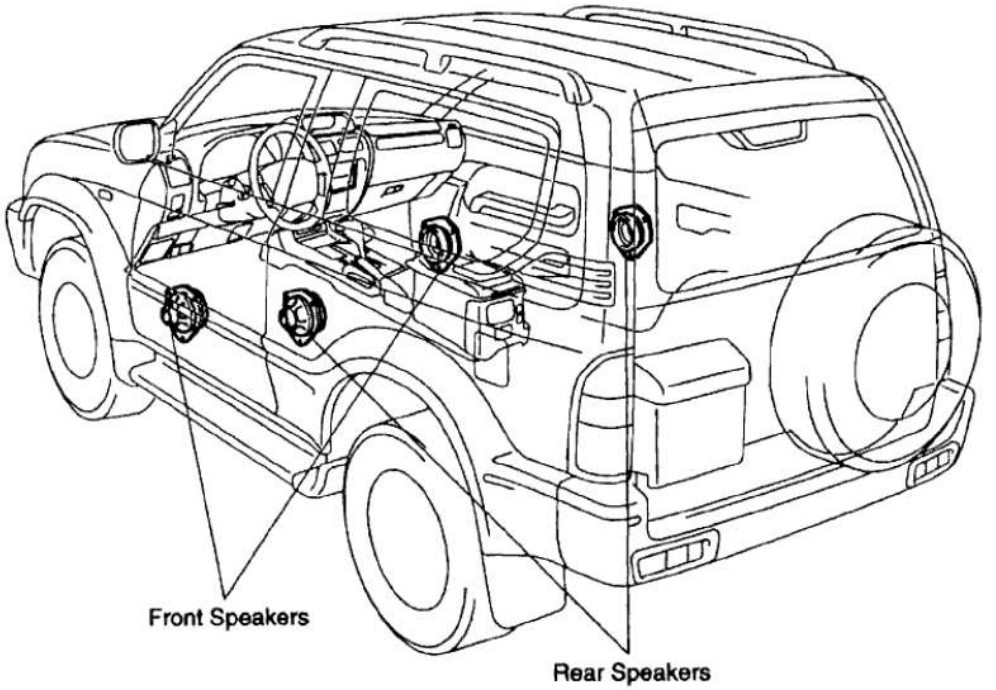
TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Mirror does not operate.	1. CIG Fuse (Driver Side J/B)	
	2. Ignition Switch	(BE–7)
	3. Mirror Switch	(BE–114)
	4. Mirror Motor	(BE–114)
	5. Wire Harness	
Mirror operates abnormally.	1. Mirror Switch	(BE–114)
	2. Mirror Motor	(BE–114)
	3. Wire Harness	

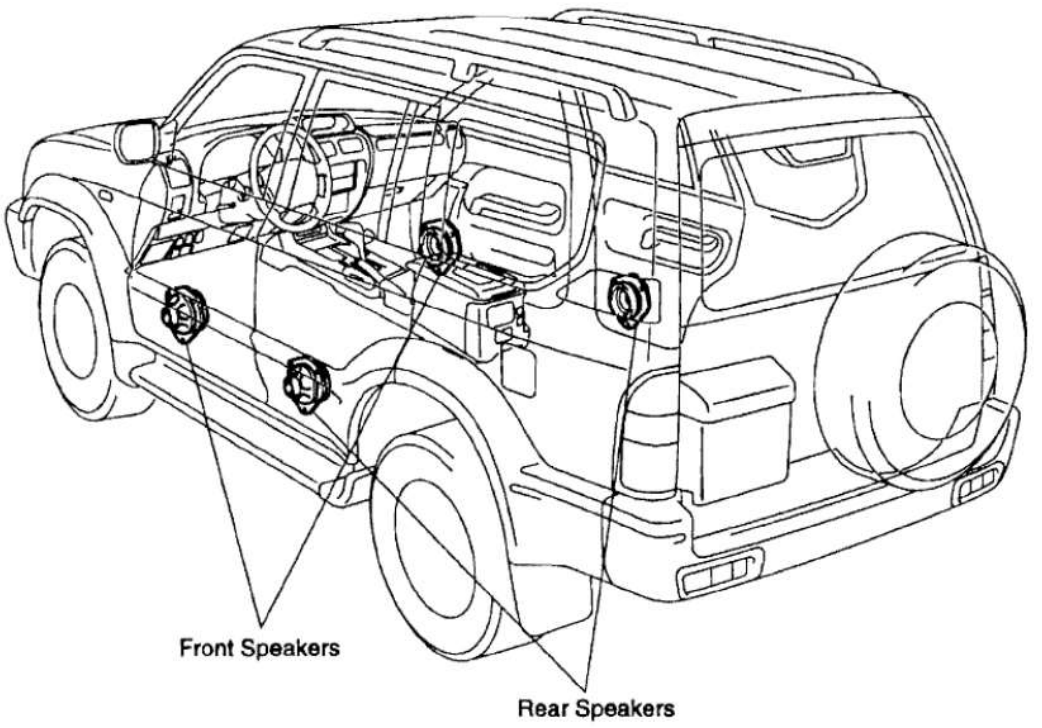
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3 Door Models:



BE

5 Door Models:



N19561
N19562

Y Z18203

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BE37U-01

TROUBLESHOOTING

NOTICE: When replacing the internal mechanism (ECU 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.

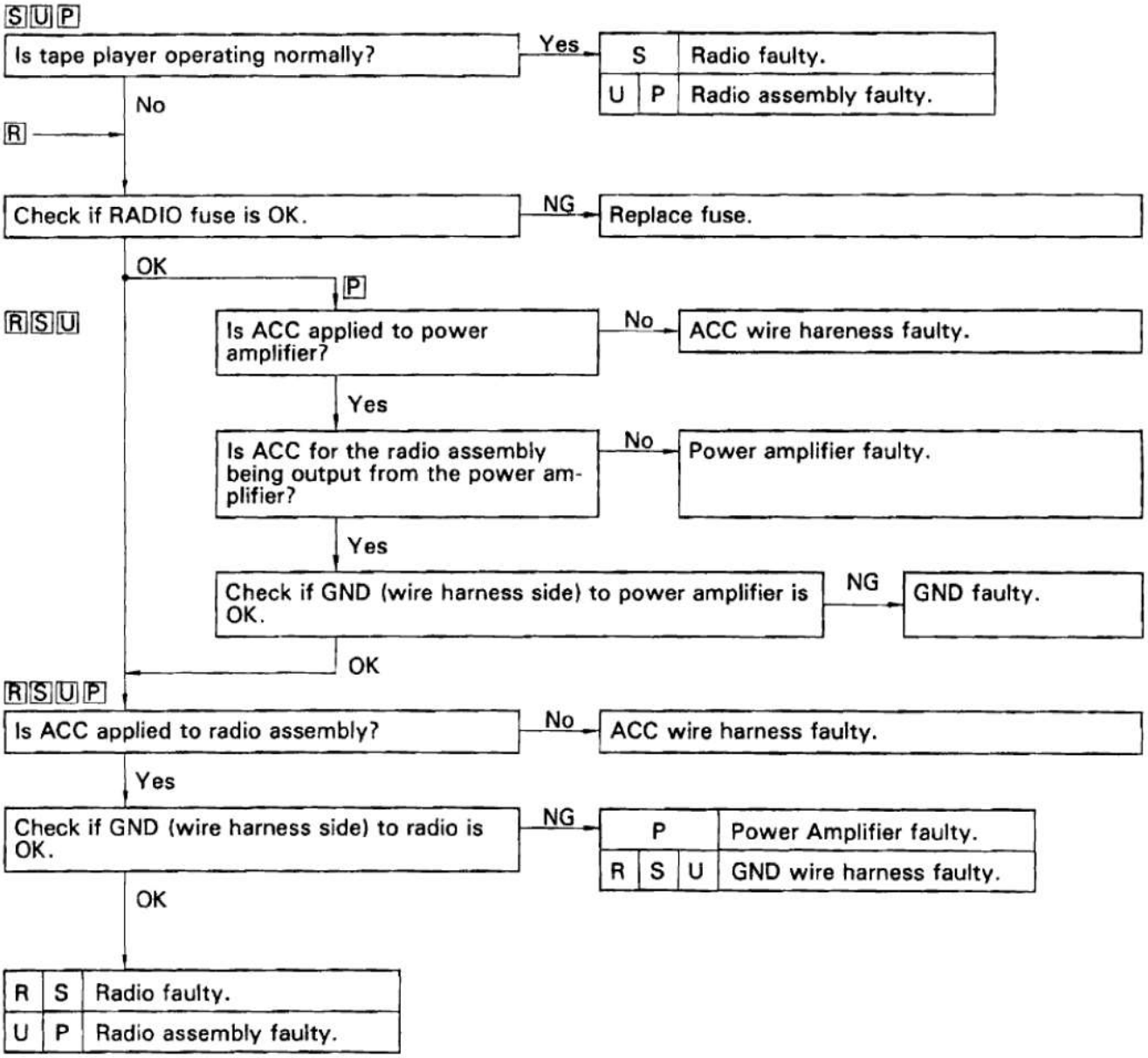
- Open or short circuit of the wire harness
- Connector or terminal connection fault

	Problem	No.
Radio	No power coming in.	*1
	Power coming in, but radio not operating.	*2
	Noise present, but AM – FM not operating.	3
	Either speaker does not work.	4
	Either AM or FM does not work.	5
	Reception poor (Volume faint).	5
	Few preset tuning bands.	5
	Sound quality poor.	6
	Cannot set station select button.	6
	Preset memory disappears.	7
Tape Player	Cassette tape cannot be inserted.	8
	Cassette tape inserts, but no power.	*9
	Power coming in, but tape player not operating.	10
	Either speaker does not work.	11
	Sound quality poor (Volume faint).	12
	Tape jammed, malfunction with tape speed or auto – reverse.	13
	APS, SKIP, RPT buttons not operating.	14
	Cassette tape will not eject.	*15
CD Player	CD cannot be inserted.	16
	CD inserts, but no power.	17
	Power coming in, but CD player not operating.	18
	Sound jumps.	19
	Sound quality poor (Volume faint).	20
	Either speaker does not work.	21
	CD will not eject.	22
Antenna	Antenna does not fully extend of fully retract.	23
	Antenna – related.	24
Noise	Noise produced by vibration or shock while driving.	25
	Noise produced when engine starts.	26

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1	Radio	NO POWER COMING IN

[R]: Radio [S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)



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2 Radio — POWER COMING IN, BUT RADIO NOT OPERATING

[R]: Radio [S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)

[S][U][P] Is tape player operating normally?

- Yes → Go to No. 24.
  - If radio side faulty:
    - S: Radio faulty.
    - U, P: Radio assembly faulty.
- No → [R] [R][S][U][P] Is there continuity in speaker wire harness?
  - No → Speaker wire harness faulty.
  - Yes → Temporarily install another speaker. Functions OK?
    - Yes → Speaker faulty.
    - No → [R][S][U]
      - R, S: Radio faulty.
      - U: Radio assembly faulty.
    - Hissing sound from speaker?
      - No → Power amplifier faulty. Recheck system after repair.
      - Yes → Radio assembly faulty. Recheck system after repair.

3 Radio — NOISE PRESENT, BUT AM-FM NOT OPERATING

[R]: Radio [S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Type–CD Player (Separate Power Amplifier)

[S][U][P] Is tape player operating normally?

- Yes → Go to No. 24.
  - If radio side faulty:
    - R, S: Radio faulty.
    - U, P: Radio assembly faulty.
  - [R]
- No → [P] [S][U] Hissing sound from speaker?
  - No → Power amplifier faulty. Recheck system after repair.
  - [S][U][P] Radio assembly faulty.

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V03814

4 Radio — EITHER SPEAKER DOES NOT WORK

[R]: Radio [S]: Radio + Tape Player [U]: Radio – Tape Player (Built-in Power Amplifier)
[P]: Radio – Tape – CD Player (Separate Power Amplifier)

Is FADER or BALANCE knob in the normal position?
- No → Position the knob normally.
- Yes ↓

[S][U][P]

Is tape player operating normally?
- Yes →
  - S: Radio faulty.
  - U, P: Radio assembly faulty.
- No ↓

[R] →

[R][S][U][P]

Is hiss produced by non-functioning speaker?
- Yes →
  - R, S: Radio faulty.
  - U: Radio assembly faulty.
  - P: Radio assembly faulty. Recheck system after repair.
- No ↓

Is there continuity in speaker wire harness?
- No → Speaker wire harness faulty.
- Yes ↓

Temporarily install another speaker. Functions OK?
- Yes → Speaker faulty.
- No ↓

R, S	Radio faulty.
U	Radio assembly faulty.
P	Radio assembly faulty. Recheck system after repair.

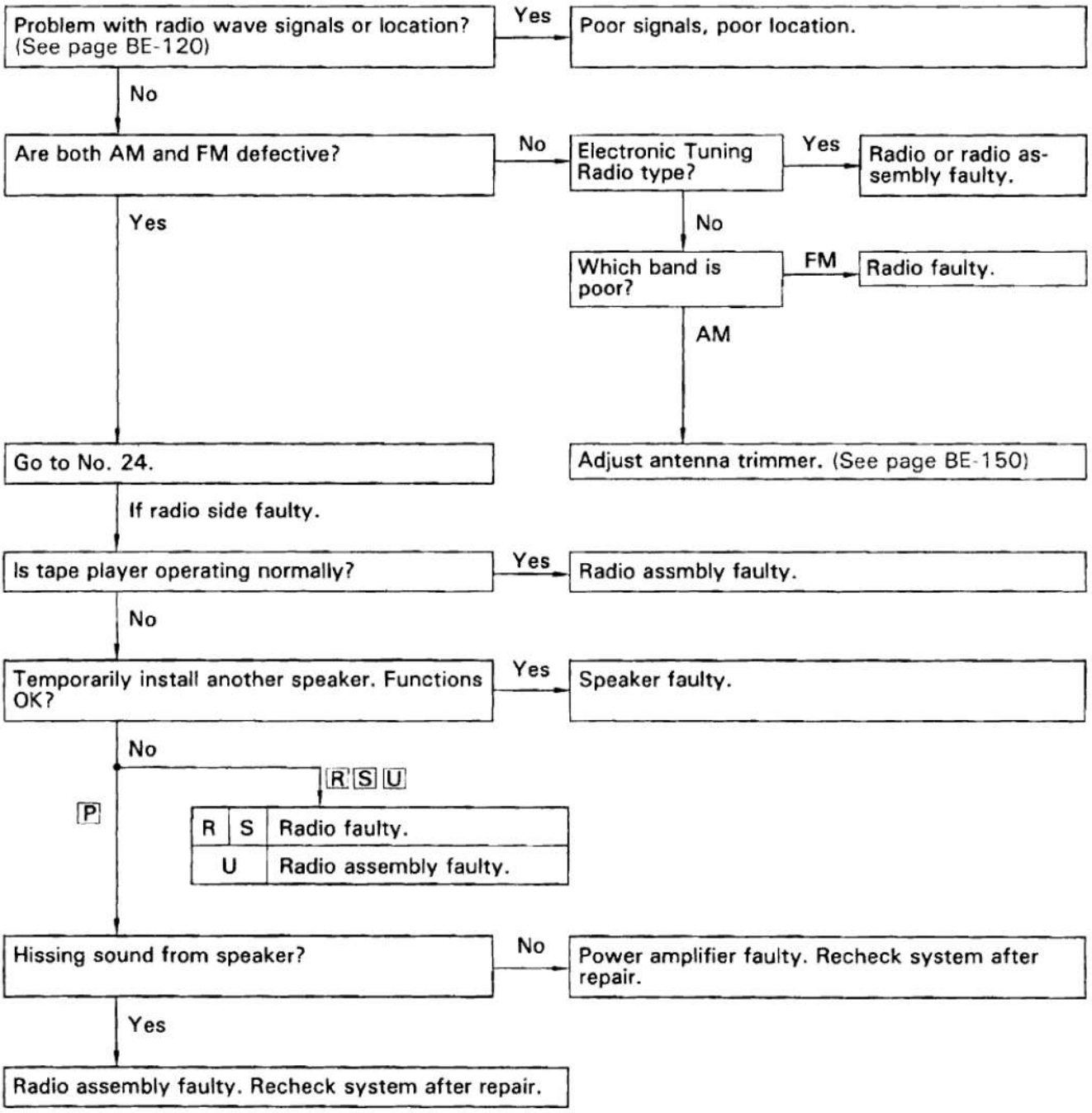
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V07519

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5	Radio	EITHER AM OR FM DOES NOT WORK, RECEPTION POOR (VOLUME FAINT), FEW PRESET TUNING BANDS

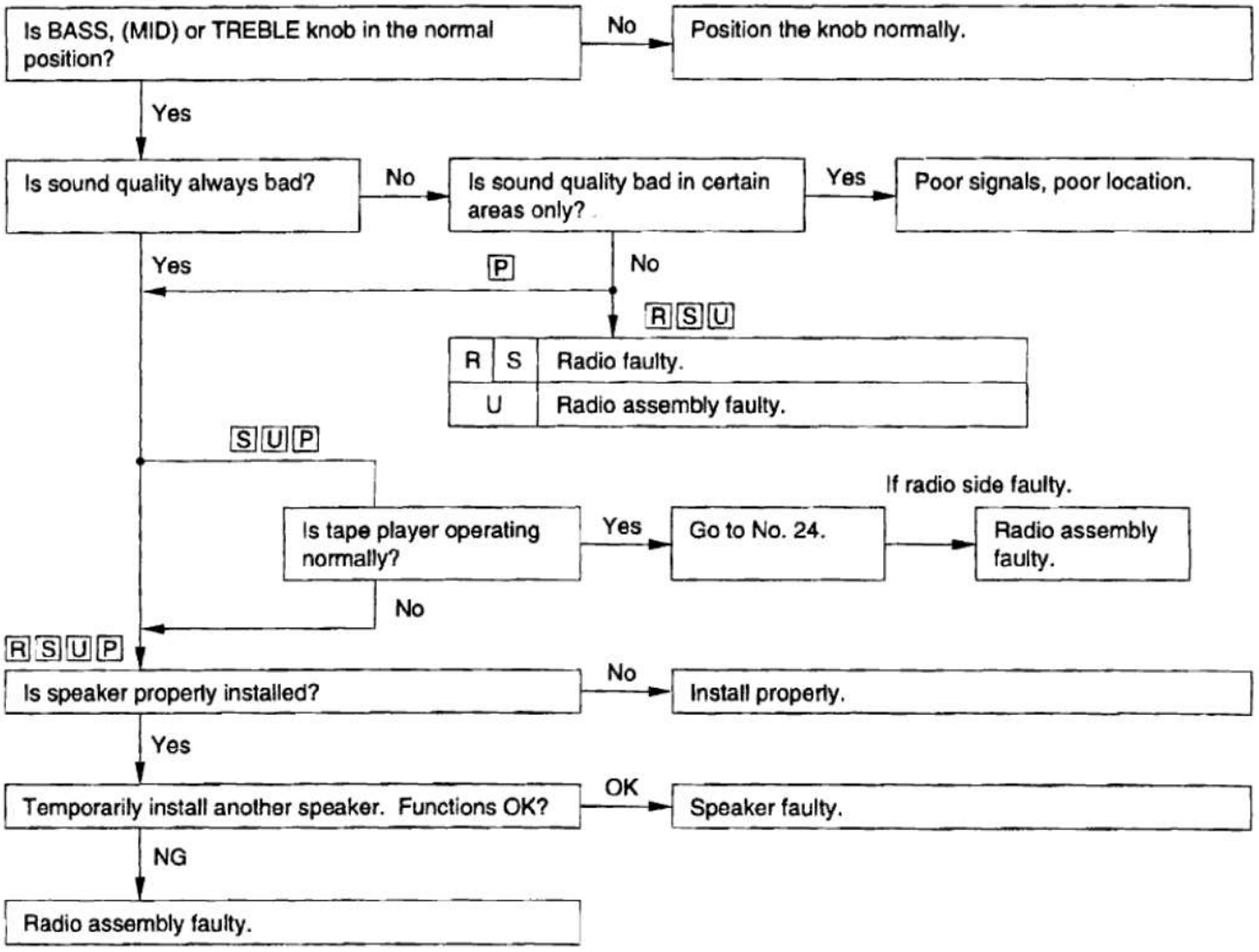
[R]: Radio [S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)



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6 Radio — SOUND QUALITY POOR

[R]: Radio [S]: Radio + Tape Player [U]: Radio – Tape Player (Built-in Power Amplifier)
[P]: Radio – Tape – CD Player (Separate Power Amplifier)



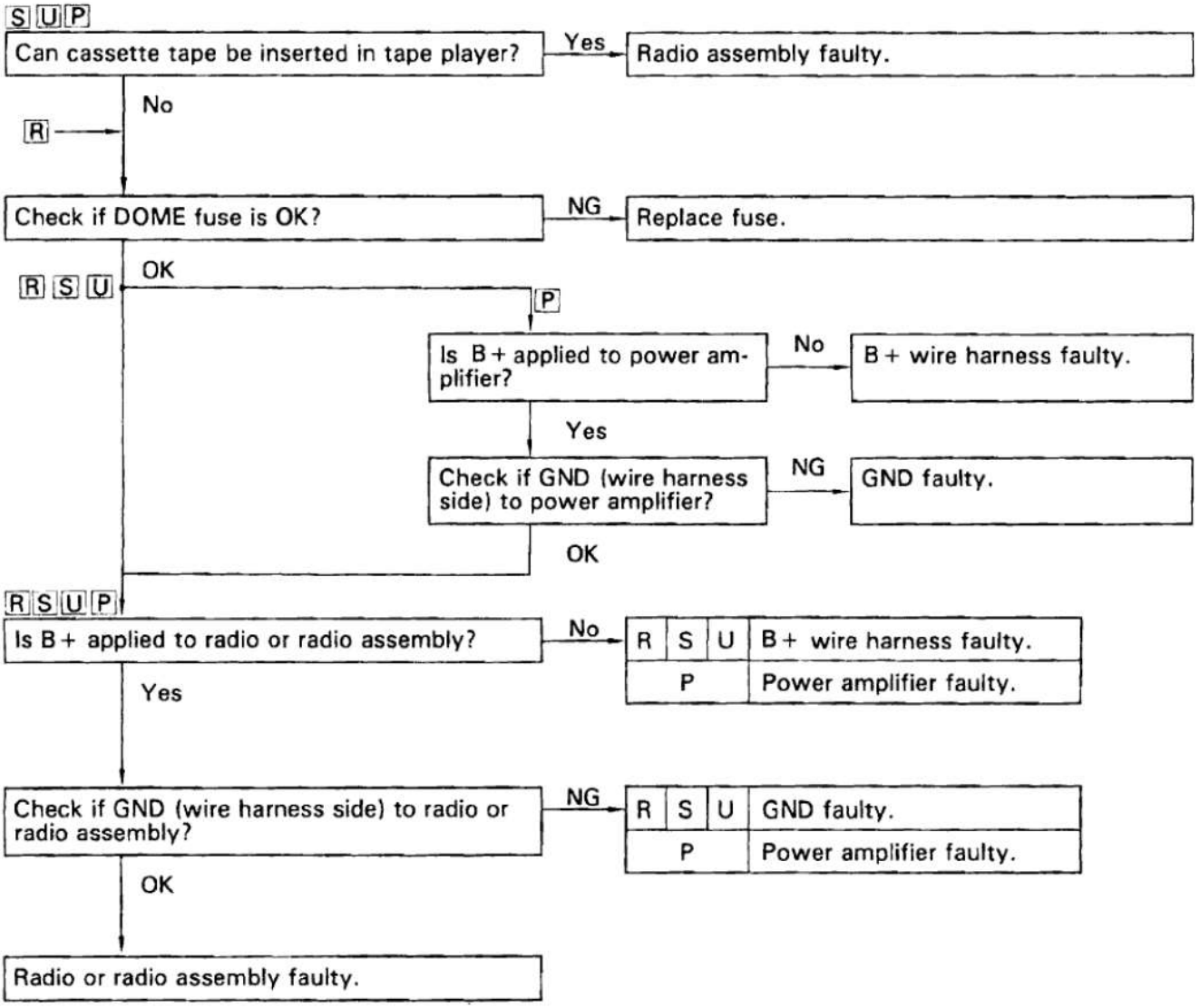
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Y V07518

7	Radio	CANNOT SET STATION SELECT BUTTON, PRESET MEMORY DISAPPEARS

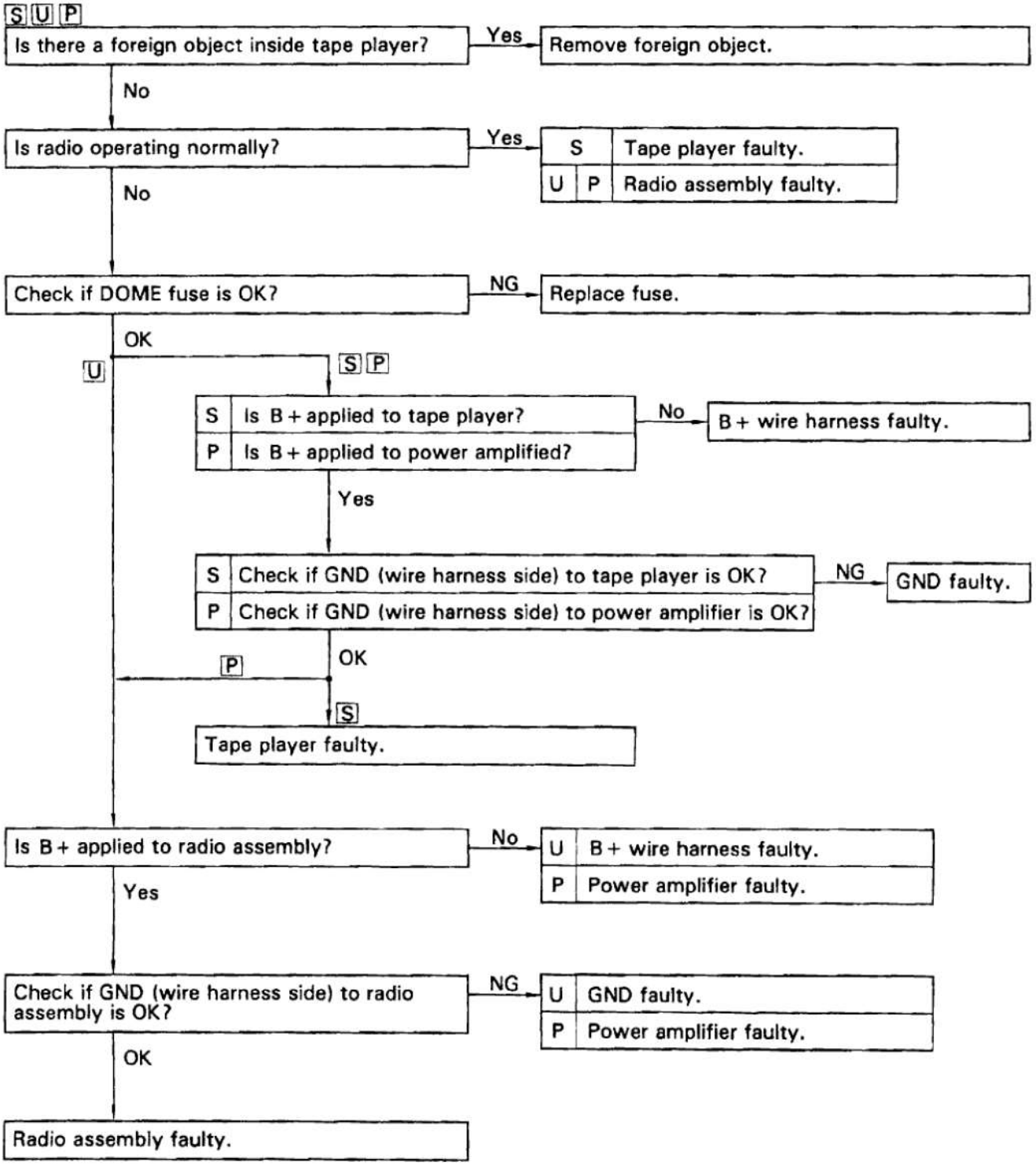
[R]: Radio [S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)



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8	Tape Player	CASSETTE TAPE CANNOT BE INSERTED

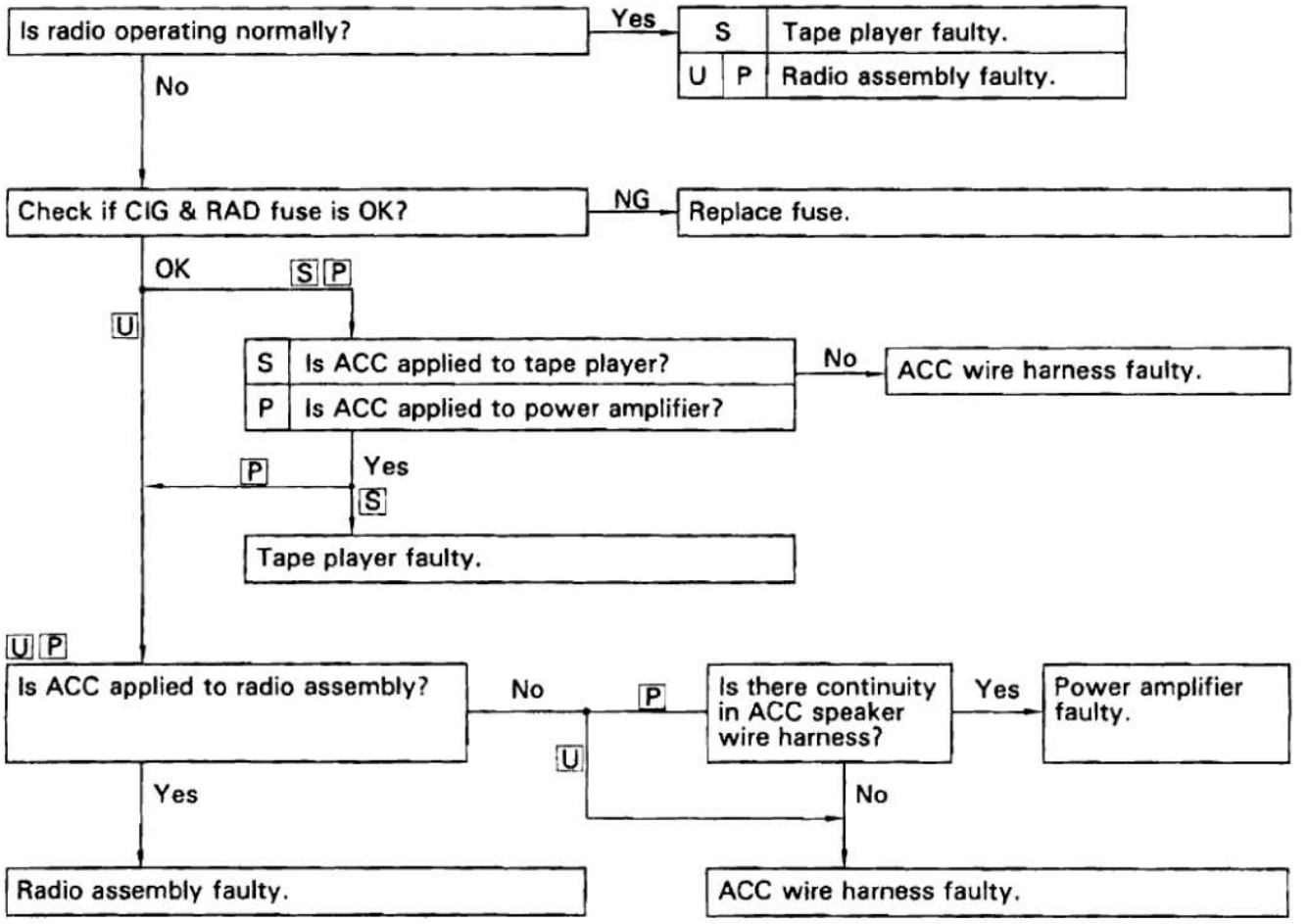
[S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)



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9	Tape Player	CASSETTE TAPE INSERTS, BUT NO POWER

[S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)

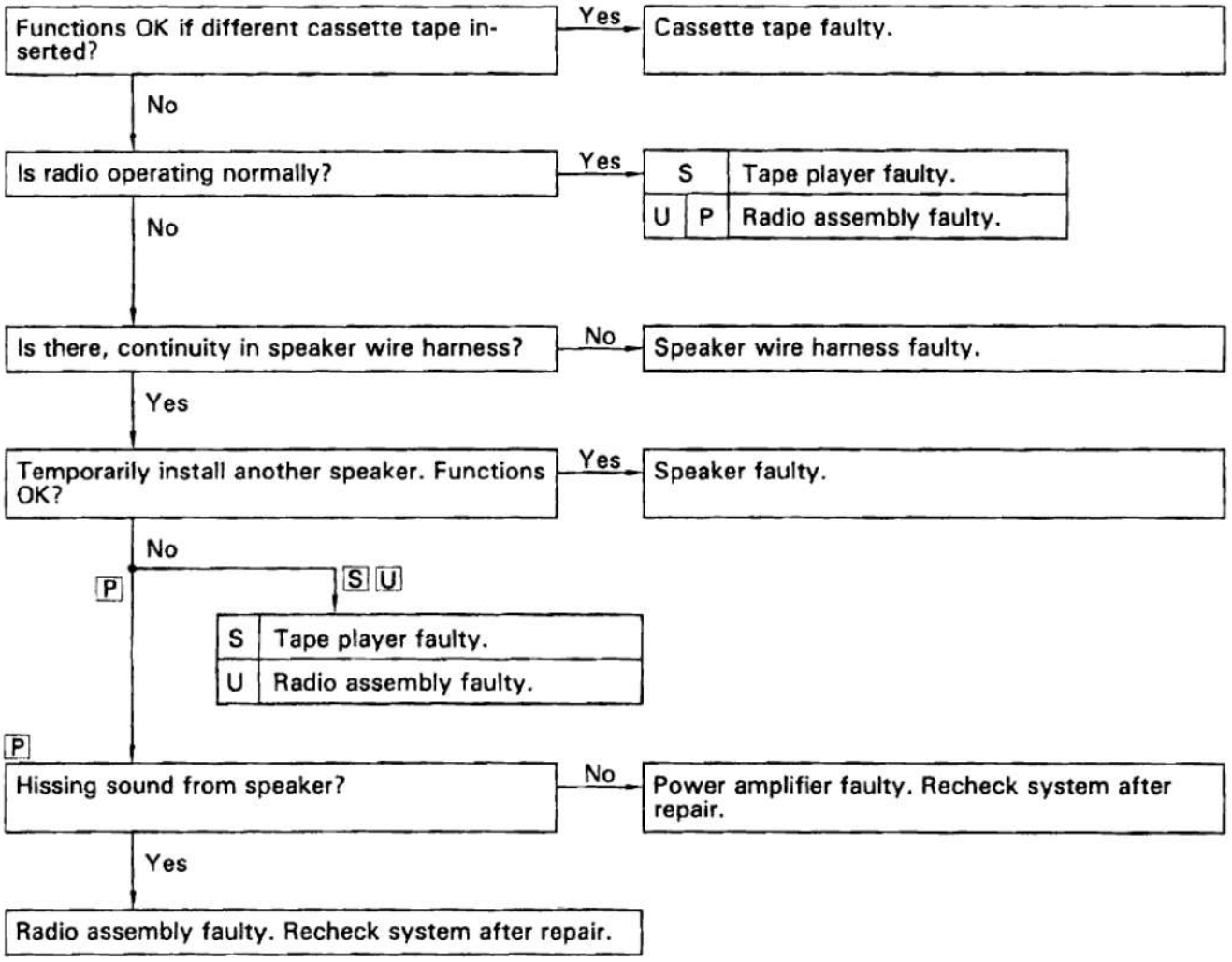


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10	Tape Player	POWER COMING IN, BUT TAPE PLAYER NOT OPERATING

[S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)



V03831

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11	Tape Player	EITHER SPEAKER DOES NOT WORK

[S]: Radio + Tape Player [U]: Radio – Tape Player (Built-in Power Amplifier)
[P]: Radio – Tape – CD Player (Separate Power Amplifier)

Is FADER or BALANCE knob in the normal position?
- No → Position the knob normally.
- Yes ↓

Is radio operating normally?
- Yes →

S		Tape player faulty.
U	P	Radio assembly faulty.

- No ↓

Is hiss produced by non-functioning speaker?
- Yes →

S	Tape player faulty.
U	Radio assembly faulty.
P	Radio assembly faulty. Recheck system after repair.

- No ↓

Is there continuity in speaker wire harness?
- No → Speaker wire harness faulty.
- Yes ↓

Temporarily install another speaker. Functions OK?
- OK → Speaker faulty.
- NG ↓

S	Tape player faulty.
U	Radio assembly faulty.
P	Radio assembly faulty. Recheck system after repair.

Y
V07617

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12 Tape Player — SOUND QUALITY POOR (VOLUME FAINT)

[S]: Radio + Tape Player [U]: Radio – Tape Player (Built-in Power Amplifier)
[P]: Radio – Tape – CD Player (Separate Power Amplifier)

- Is BASS, (MID) or TREBLE knob in the normal position? — No → Position the knob normally.
- Yes ↓
- Functions OK if different cassette tape inserted? — Yes → Cassette tape faulty.
- No ↓
- Operates normally after cleaning the heads? (See page BE-122) — Yes → Head dirty.
- No ↓
- Is radio operating normally? — Yes → Radio assembly faulty.
- No ↓
- Is speaker properly installed? — No → Install properly.
- Yes ↓
- Temporarily install another speaker. Functions OK? — Yes → Speaker faulty.
- No ↓

S	Tape player faulty.
U	Radio assembly faulty.
P	Radio assembly faulty. Recheck system after repair.

13 Tape Player — TAPE JAMMED, MALFUNCTION WITH TAPE SPEED OR AUTO-REVERSE

[S]: Radio + Tape Player [U]: Radio – Tape Player (Built-in Power Amplifier)
[P]: Radio – Tape – CD Player (Separate Power Amplifier)

- Functions OK if different tape (less than 90 mins.) is inserted? — Yes → Cassette tape faulty.
- No ↓
- Is there a foreign object or liquid such as juice inside tape player? — Yes → Remove foreign object.
- No ↓
- Operates normally after cleaning the heads? (See page BE-122) — Yes → Head dirty.
- No ↓

S		Tape player faulty.
U	P	Radio assembly faulty.

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14 Tape Player — APS, SKIP, RPT BUTTONS NOT OPERATING

[S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)

- Functions OK if different cassette tape inserted?
  - No → Radio assembly faulty.
  - Yes → Cassette tape faulty. (Less than 3 secs. of silence between songs (APS, RPT). Less than 15 secs. of silence (SKIP).)

15 Tape Player — CASSETTE TAPE WILL NOT EJECT

[S]: Radio + Tape Player [U]: Radio–Tape Player (Built-in Power Amplifier)
[P]: Radio–Tape–CD Player (Separate Power Amplifier)

- Is tape player operating normally?
  - No → Cassette tape jammed.
  - Yes →
- Is radio operating normally?
  - Yes →

S		Tape player faulty.
U	P	Radio assembly faulty.

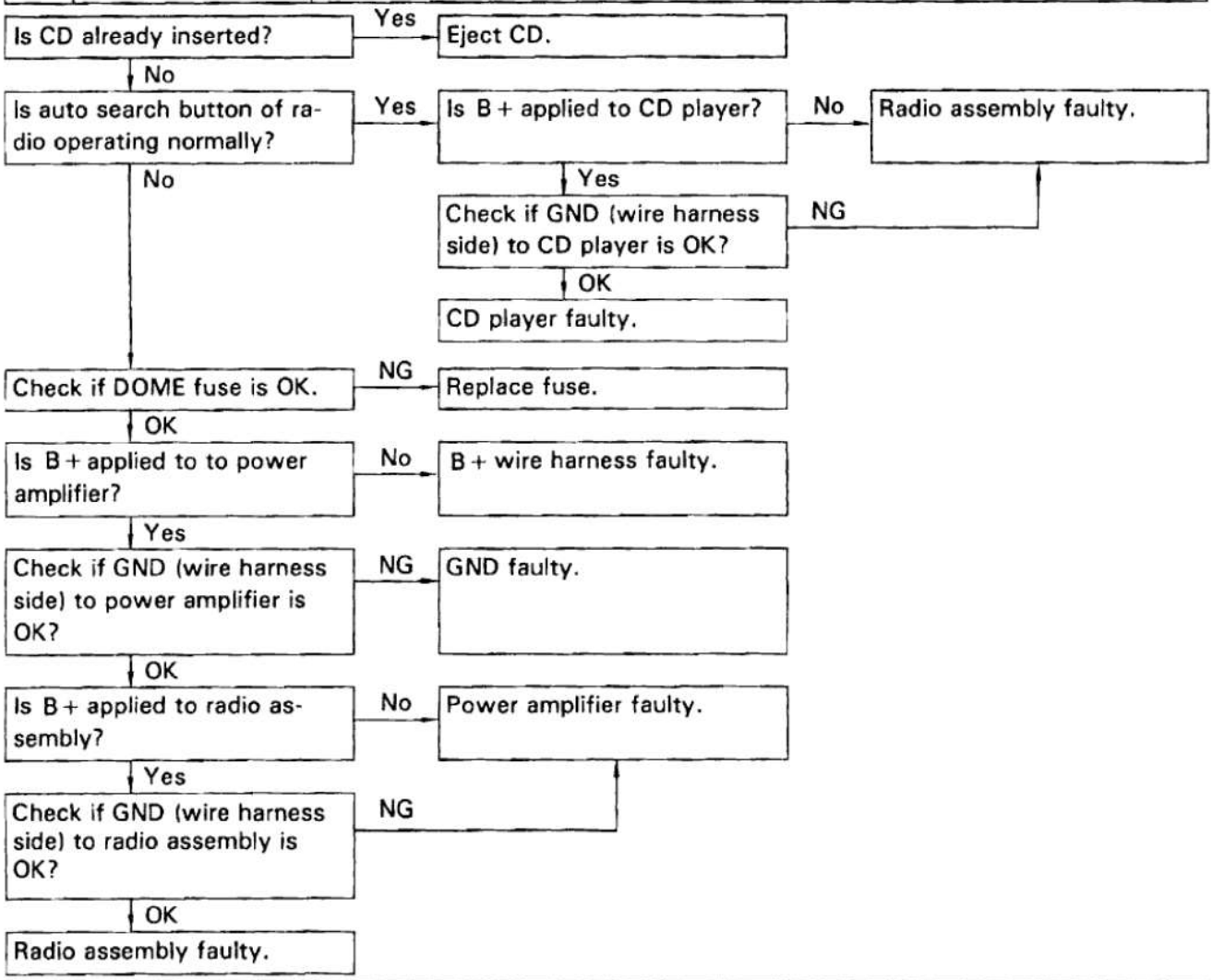
- Check if DOME fuse is OK?
  - NG → Replace fuse.
  - OK →
- Is B+ applied to power amplifier?
  - No → B+ wire harness faulty.
  - Yes →
- Is B+ applied to tape player? (S)
- Is B+ applied to radio assembly? (U P)
  - No [P] → Is there continuity in B+ wire harness between power amplifier and radio assembly?
    - Yes → Power amplifier faulty.
    - No → B+ wire harness faulty.
  - No [S] [U] → B+ wire harness faulty.
  - Yes →

S		Tape player faulty.
U	P	Radio assembly faulty.

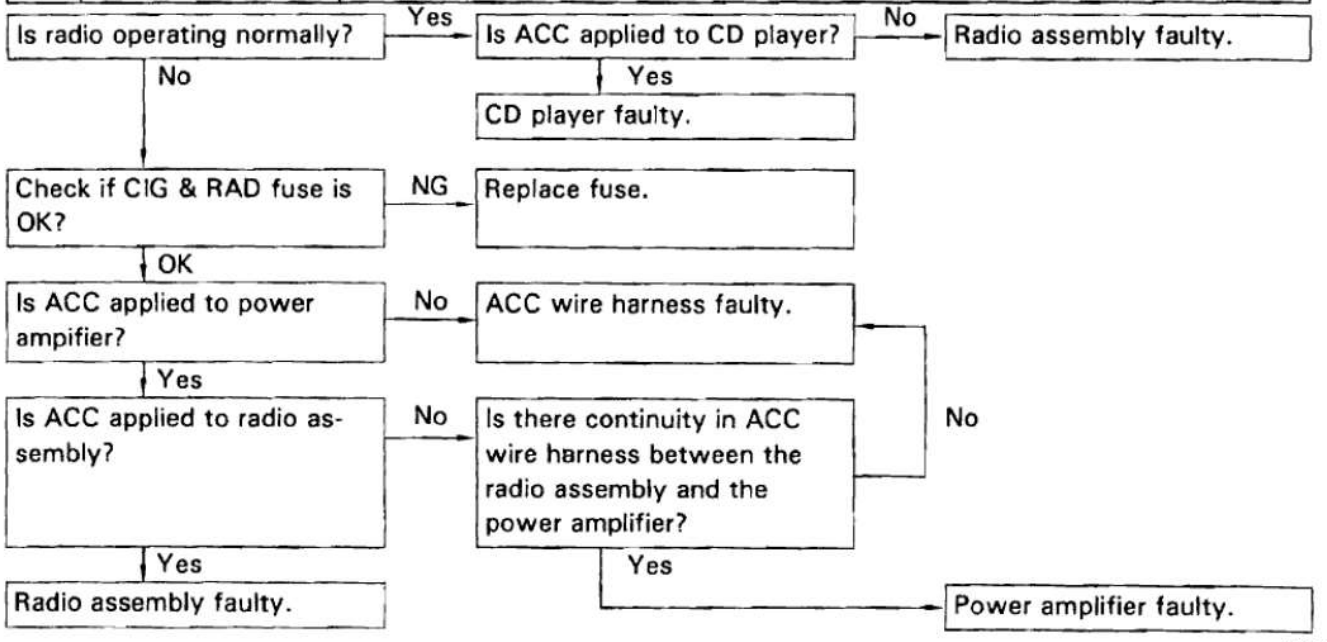
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V03818

16 CD Player — CD CANNOT BE INSERTED



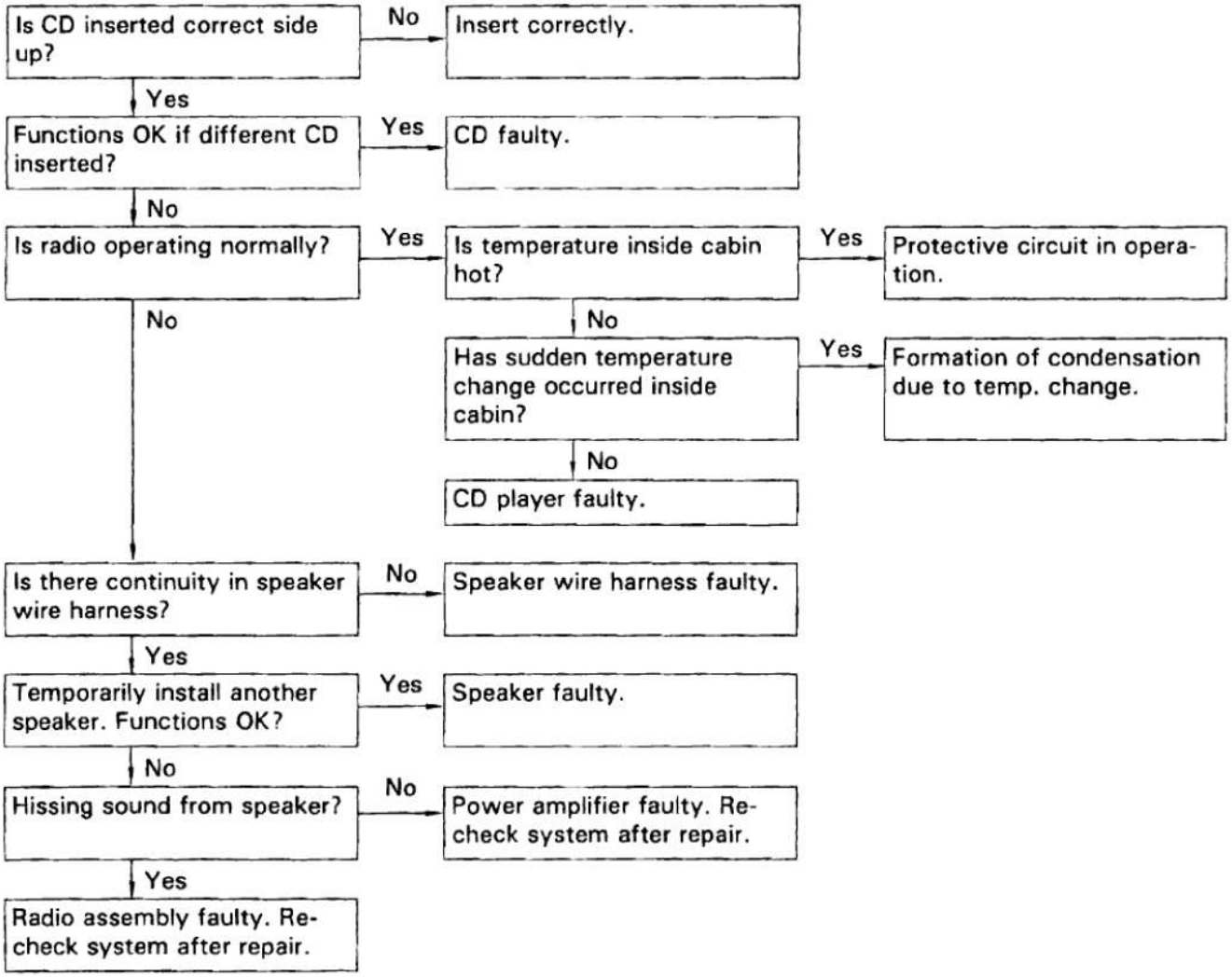
17 CD Player — CD INSERTS, BUT NO POWER



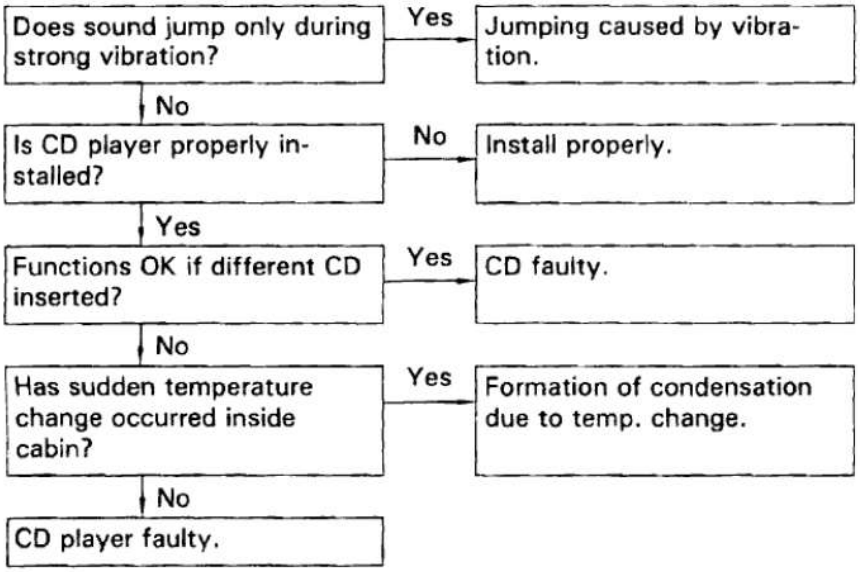
V03819

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18 CD Player — POWER COMING IN, BUT CD PLAYER NOT OPERATING



19 CD Player — SOUND JUMPS



VC3820

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20 CD Player — SOUND QUALITY POOR (VOLUME FAINT)

- Is BASS, (MID) or TREBLE knob in the normal position?
  - No → Position the knob normally.
  - Yes ↓
- Functions OK if different CD inserted?
  - Yes → CD faulty.
  - No ↓
- Is radio operating normally?
  - Yes → CD player faulty.
  - No ↓
- Is speaker properly installed?
  - No → Install properly.
  - Yes ↓
- Temporarily install another speaker. Functions OK?
  - Yes → Speaker faulty.
  - No ↓
- Radio assembly faulty. Recheck system after repair.

21 CD Player — EITHER SPEAKER DOES NOT WORK

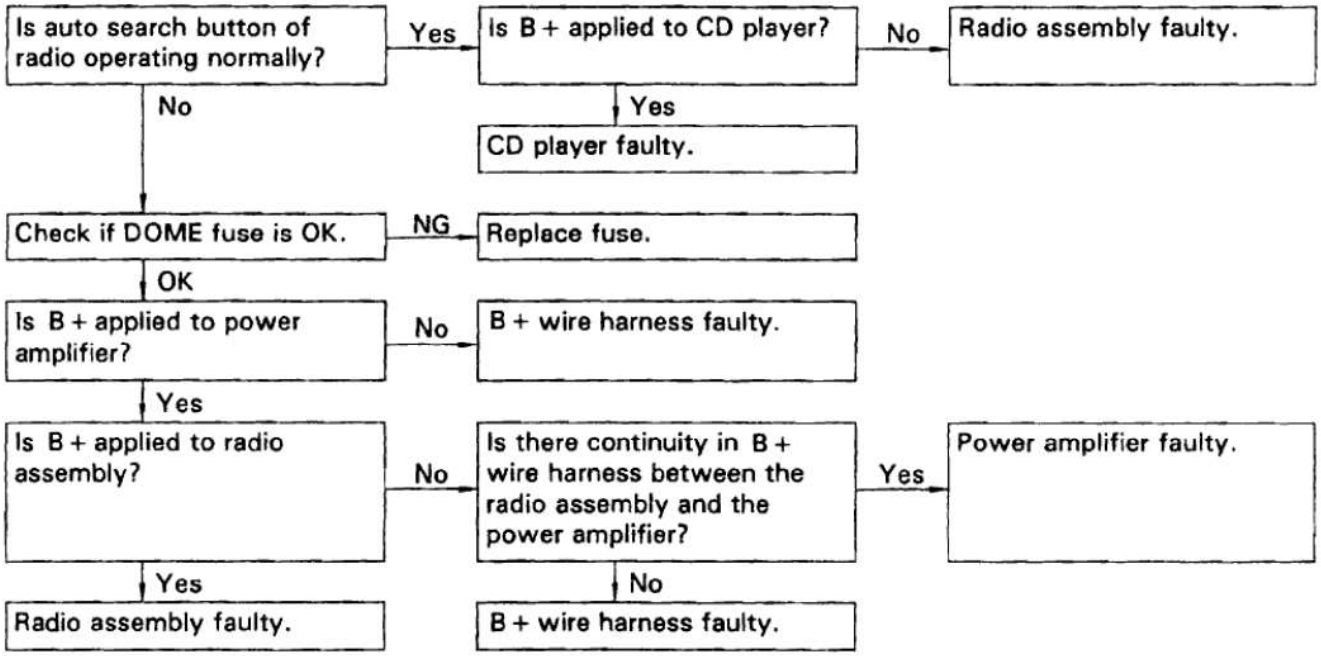
- Is FADER or BALANCE knob in the normal position?
  - No → Position the knob normally.
  - Yes ↓
- Is radio operating normally?
  - Yes → CD player faulty.
  - No ↓
- Is hiss produced by non-functioning speaker?
  - Yes → Radio assembly faulty. Recheck system after repair.
  - Yes ↓
- Is there continuity in speaker wire harness?
  - No → Speaker wire harness faulty.
  - Yes ↓
- Temporarily install another speaker. Functions OK?
  - Yes → Speaker faulty.
  - No ↓
- Power amplifier faulty. Recheck system after repair.

Y

V07515

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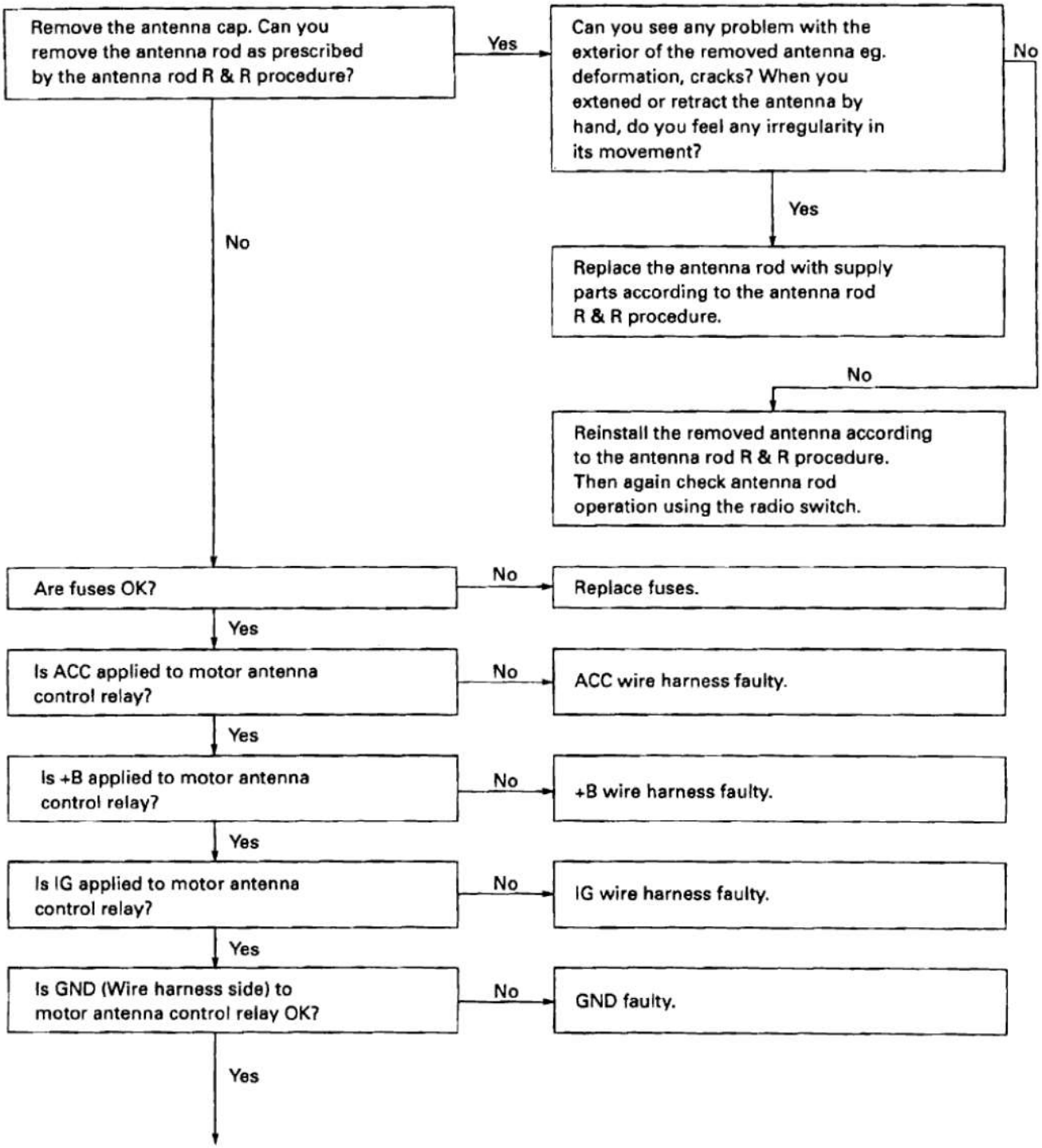
22	CD Player	CD WILL NOT EJECT



V03837

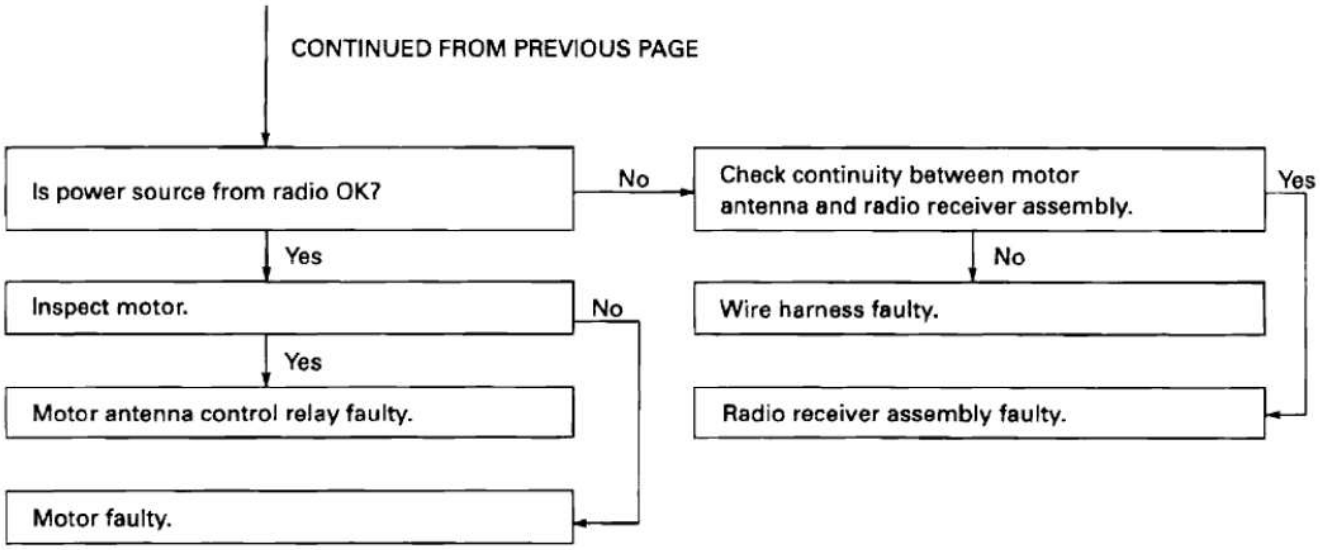
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23	Antenna	ANTENNA DOES NOT FULLY EXTENED OR FULLY RETRACT



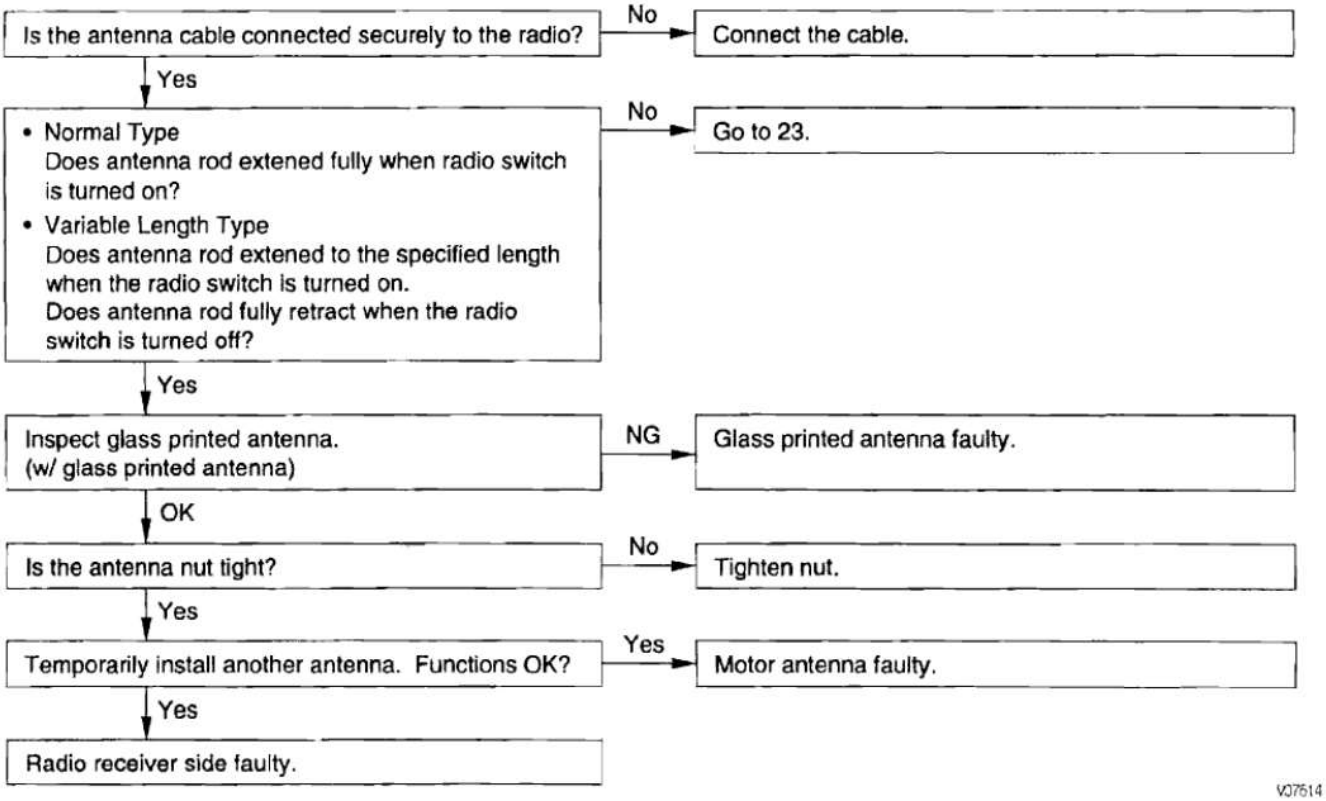
CONTINUED ON NEXT PAGE

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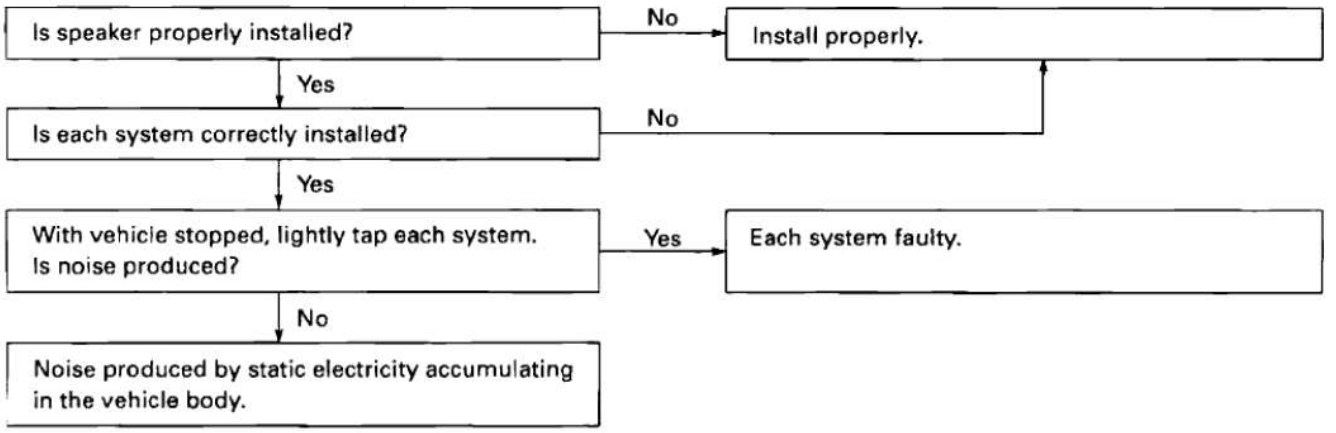
24	Antenna	ANTENNA-RELATED



V07614

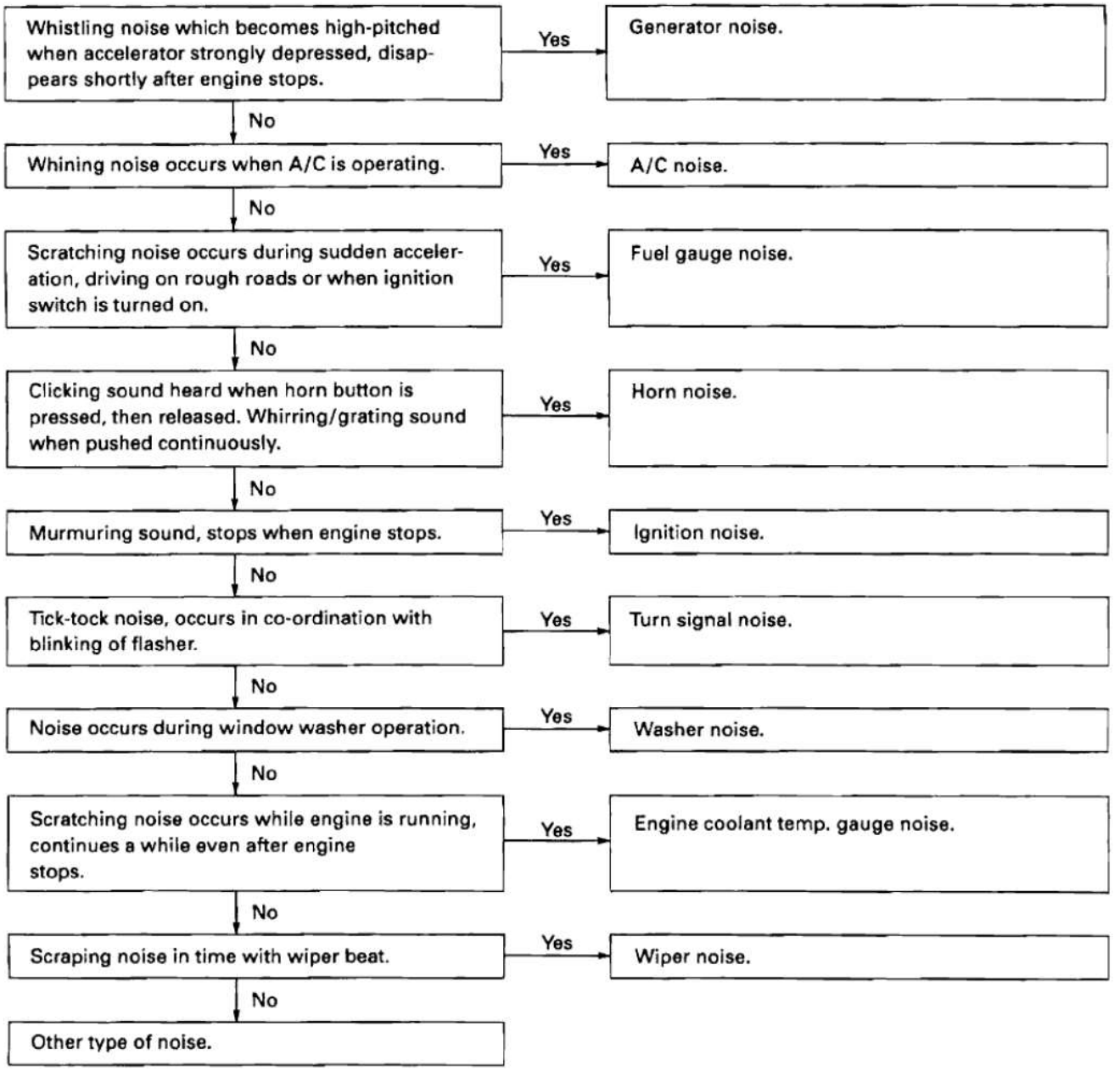
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25	Noise	NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING



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26	Noise	NOISE PRODUCED WHEN ENGINE STARTS



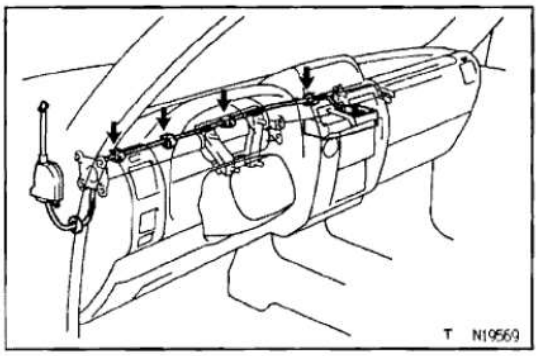
BE

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V06165

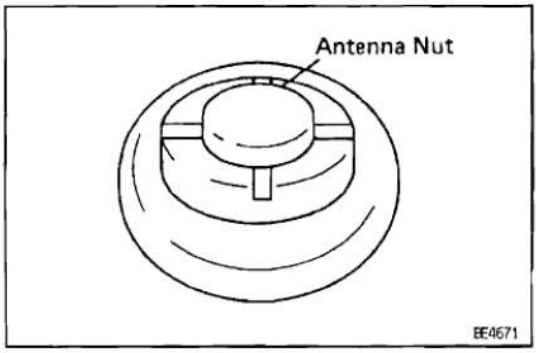
BE37V-01

ANTENNA REMOVAL

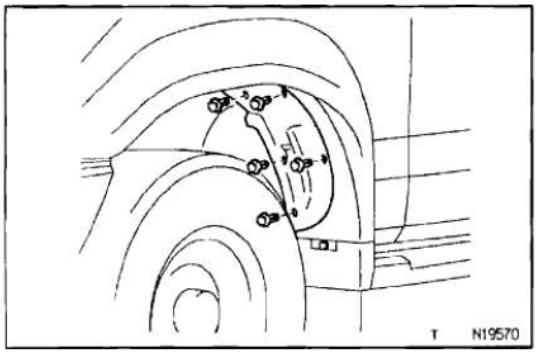


1. **REMOVE INSTRUMENT PANEL**
   (See page BO–55)
2. **DISCONNECT ANTENNA CABLE**

(a) Remove the radio and disconnect the antenna cable.
(b) Disconnect the antenna cable from the 4 clamps.

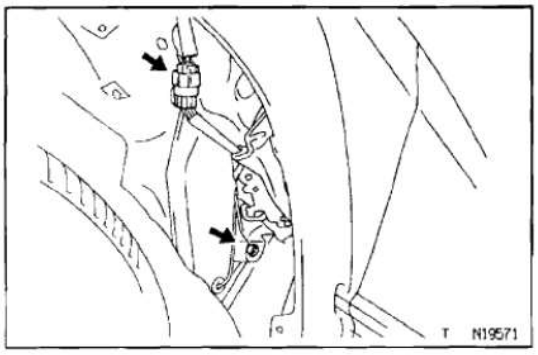


3. **REMOVE ANTENNA NUT AND ORNAMENT**



4. **REMOVE ANTENNA ASSEMBLY**

(a) Whether or not the wheel opening extension is installed, remove the 5 clips.
(b) Pull the fender liner.



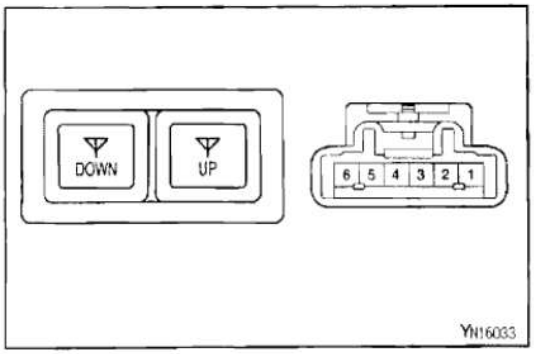
(c) Auto Antenna models:
Disconnect the connector.
(d) Remove the bolt and antenna assembly.

BE37W-01

ANTENNA INSTALLATION

Installation is in the reverse order of removal.

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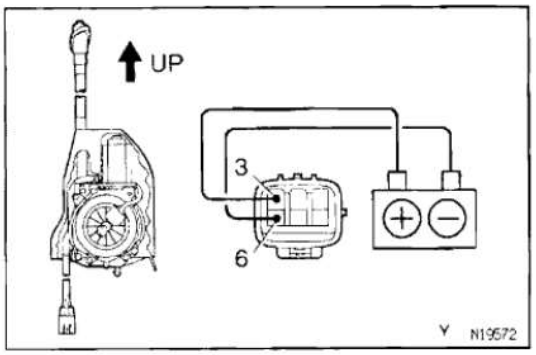
ANTENNA SWITCH INSPECTION

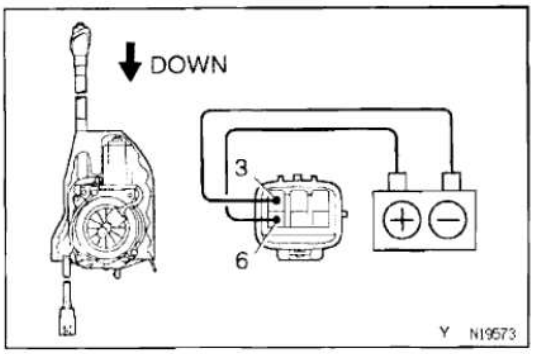
BE37X-01

1. **INSPECT SWITCH CONTINUITY**
w/ Motor Antenna:
Except: Radio–Linked Type

Condition	Tester connection	Specified condition
UP Button Position Free	2 – 5	Continuity
UP Button Position Pushed in	4 – 5	Continuity
DOWN Button Position Free	2 – 3	Continuity
DOWN Button Position Pushed in	3 – 4	Continuity
Illumination circuit	1 – 6	Continuity

If continuity is not as specified, replace the switch.





ANTENNA MOTOR INSPECTION

BE37Y-01

INSPECT MOTOR OPERATION
w/ Motor antenna:

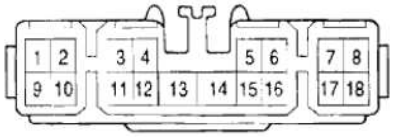
(a) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 6.

(b) Check that the motor turns (moves upwards).
NOTICE: These tests must be done quickly (within 3–5 seconds) to prevent the coil from burning out.

(c) Then, reverse the polarity, check that the motor turns the opposite way (moves downward).
NOTICE: These tests must be done quickly (within 3–5 seconds) to prevent the coil from burning out.
If operation is not as specified, replace the motor.

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Wire Harness Side



Y N17395

ANTENNA CONTROL RELAY INSPECTION BE35T-02

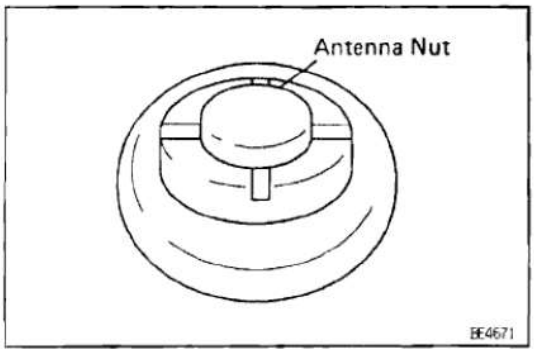
INSPECT RELAY CIRCUIT

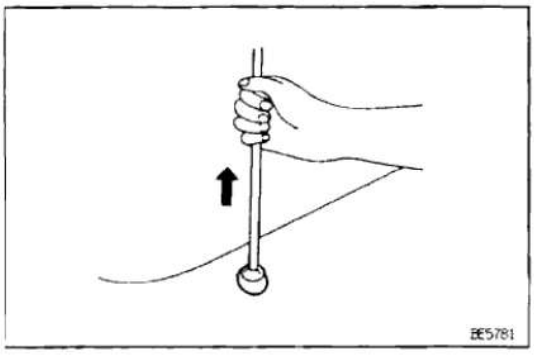
Disconnect the connector from the relay and inspect the connector on the harness side, as shown.

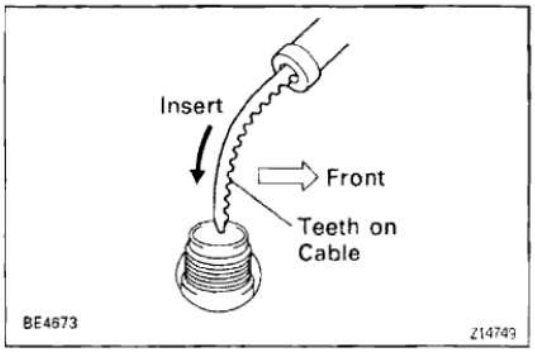
Tester connector	Condition	Specified condition
1 – Ground	Antenna "UP" switch OFF	No continuity
1 – Ground	Antenna "UP" switch ON	Continuity
5 – Ground	Constant	Continuity
4 – Ground	Constant	Battery voltage
7 – Ground	Ignition switch position LOCK or ACC	No voltage
7 – Ground	Ignition switch position ON	Battery voltage
17 – Ground	Ignition switch position LOCK	No voltage
17 – Ground	Ignition switch position ACC	Battery voltage

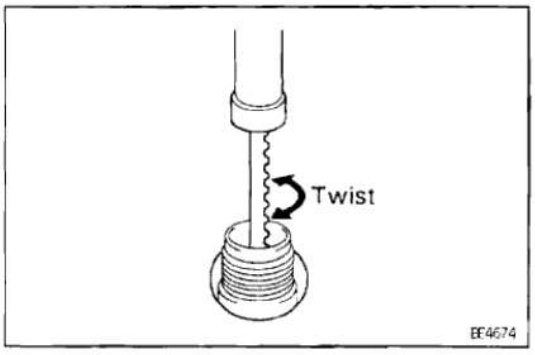
If the circuit is not as specified, inspect the circuits connected to other parts.

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ANTENNA ROD REMOVAL AND INSTALLATION

BE37Z-01

1. REMOVE ANTENNA ROD

HINT: Do this operation with the negative (−) terminal cable connected to the battery.

(a) Turn the ignition switch to the "LOCK" position.

(b) Remove the antenna nut.

(c) Press the antenna switch to "UP", and simultaneously turn the ignition switch to the "ACC" position.

HINT:

- The rod will extend fully and be released from the motor antenna.
- After removing the antenna rod, leave the ignition switch at "ACC".

NOTICE: To prevent body damage when the antenna rod is released, hold the rod while it comes out.

2. INSTALL ANTENNA ROD

(a) Insert the cable of the rod until it reaches the bottom.

HINT:

- When inserting the cable, the teeth on the cable must face toward the rear of the vehicle.
- Insert the cable approx. 400 mm.

(b) Wind the cable to retract the rod by turning the ignition switch to the "LOCK" position.

HINT:

- If the ignition switch is already in the "LOCK" position, do step 1 (c) first, then turn the ignition switch to the "ACC" position.
- In case the cable is not wound, twist it as shown in the illustration.
- Even if the rod has not retracted fully, install the antenna nut and inspect the antenna rod operation. It will finally retract fully.

(c) Inspect the antenna rod operation by pushing the antenna switch to "UP" or "DOWN".

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CLOCK

TROUBLESHOOTING

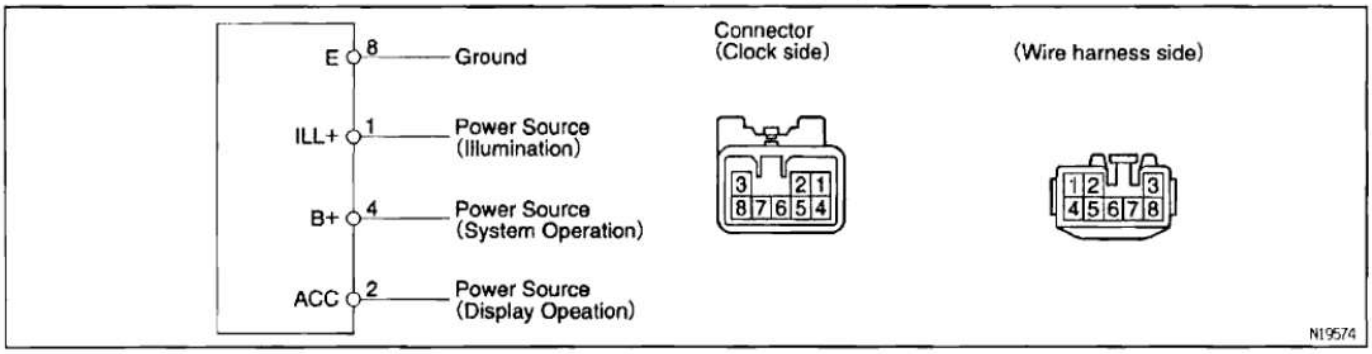
BE30F-01

HINT: Troubleshoot the clock according to the table below.

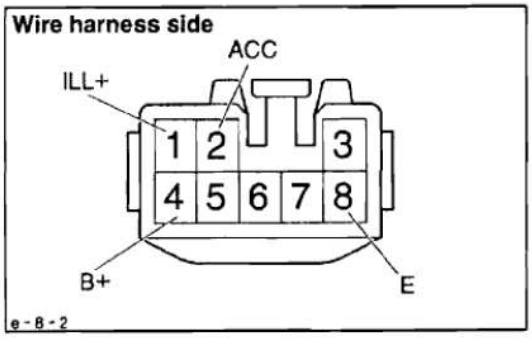
Clock will not operate	1
Clock loses or gains time	2

± 1.5 seconds / day

w/ Sub fuel gauge:



1 CLOCK WILL NOT OPERATE



(a) Check that the battery voltage is 10 – 16 V.
If voltage is not as specified, replace the battery.

(b) Check that the TAIL, DOME and CIG fuses in not below.
If the fuse is blown, replace the fuse and check for short.

(c) Troubleshoot the clock as follows.
HINT : Inspect the connector on the wire harness side.

Is there battery voltage between terminal B+ and body ground?
- No → Open or short circuit in wire harness between terminal +B and DOME fuse.
- Yes ↓

Is there battery voltage between terminal ACC and body ground?
- No → Open or short circuit in wire harness between terminal ACC and CIG fuse.
- Yes ↓

Is there continuity battery terminal GND and body ground?
- No → Open circuit in wire harness between terminal E and body ground.
- Yes ↓

Is there battery voltage between terminal ILL+ and body ground?
- No → Open circuit in wire harness between terminal ILL+ and TAIL fuse.
- Yes ↓

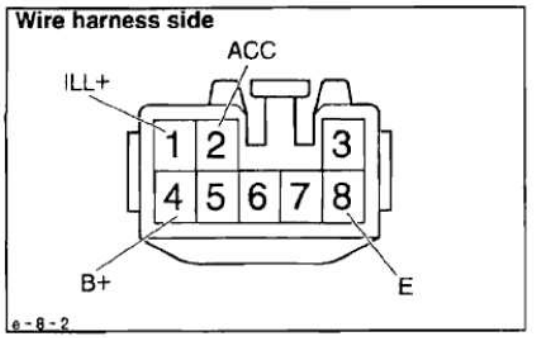
Replace clock assembly.

N19626

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V08043

2 CLOCK LOSES OR GAINS TIME

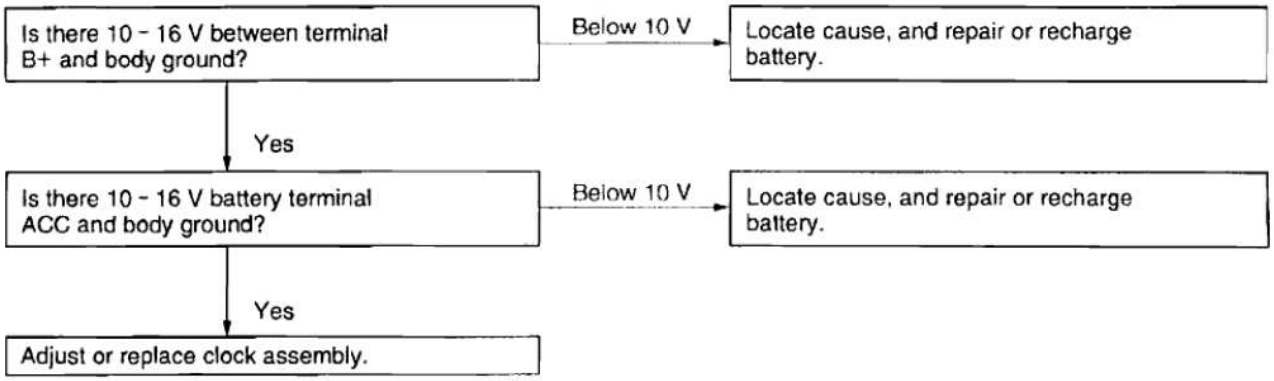


(a) Check that the battery voltage is 10 – 16 V.
If voltage is not as specified, replace the battery.

(b) Inspect the error of the clock.
Allowable error (per day) ±1.5 seconds
if the error exceeds the allowable error, replace the clock assembly.

(c) Check if the clock adjusting button is sticking in position and has failed to return.

(d) Troubleshoot the clock as follows.
HINT : Inspect the connector on the wire harness side.



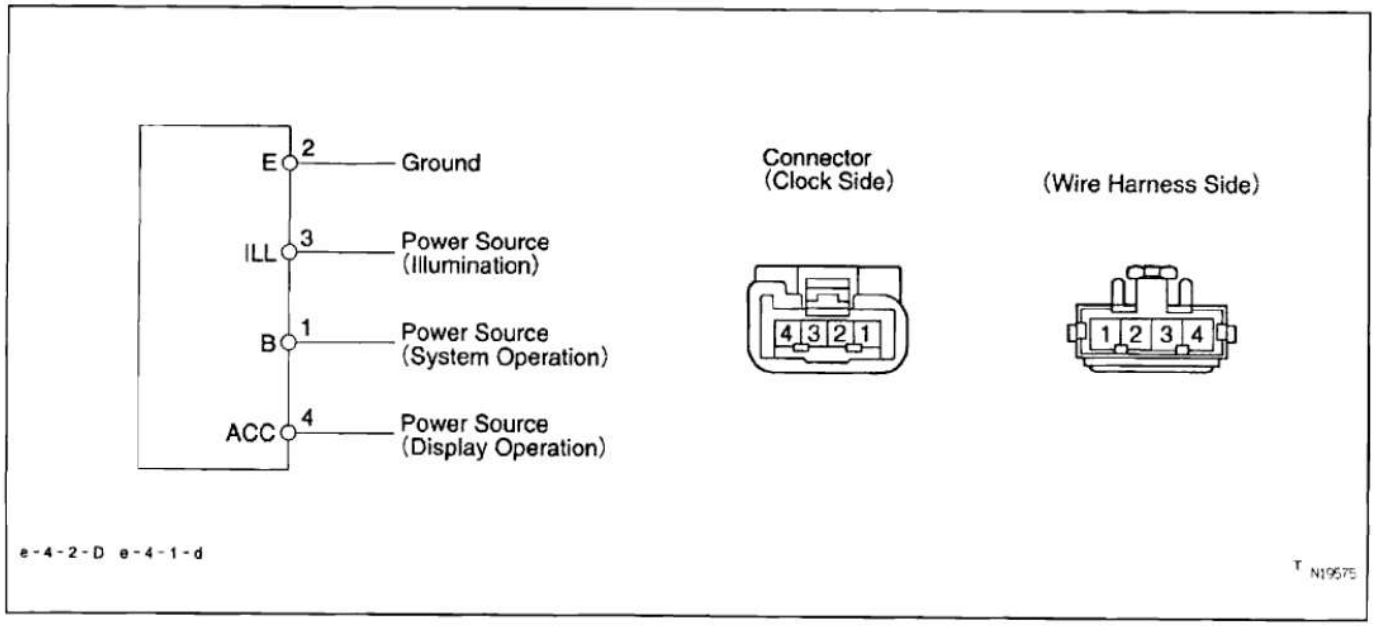
N19627

T V08044

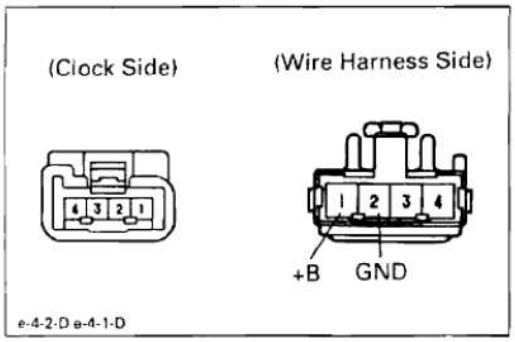
BE

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w/o Sub fuel gauge:



1 CLOCK WILL NOT OPERATE



(a) Check that the battery voltage is 10 – 16 V.
If voltage is not as specified, replace the battery.

(b) Check that the DOME fuse is not blown.
If the fuse is blown, replace the fuse and check for short.

(c) Troubleshoot the clock as follows.
HINT: Inspect the connector on the wire harness side.

Is there battery voltage between terminal +B and body ground?
- No → Open or short circuit in wire harness between terminal +B and DOME fuse.
- Yes ↓

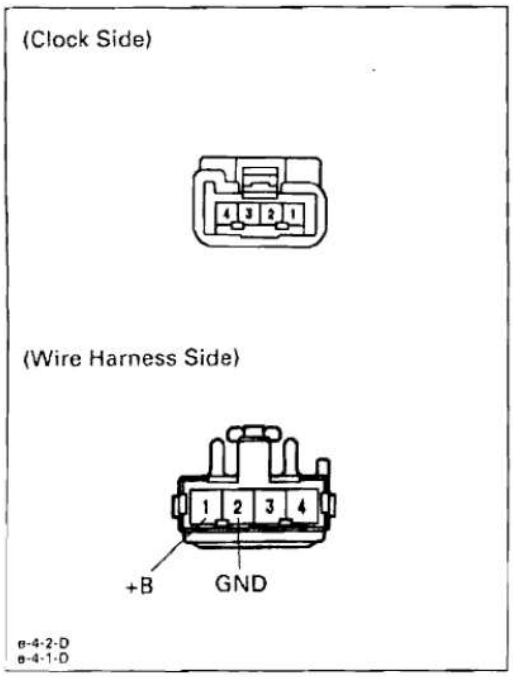
Is there continuity between terminal GND and body ground?
- No → Open circuit in wire harness between terminal GND and body ground.
- Yes ↓

Replace clock.

V04928

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2 CLOCK LOSES OR GAINS TIME



(a) Check that the battery 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 clock.

(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 clock.

(d) Troubleshoot the clock as follows.
HINT: Inspect the connector on the wire harness side.

Is there 10 – 16 V between terminal +B and body ground?

Below 10V → Locate cause and repair, or recharge battery.

Yes ↓

Adjust or replace clock.

V04929

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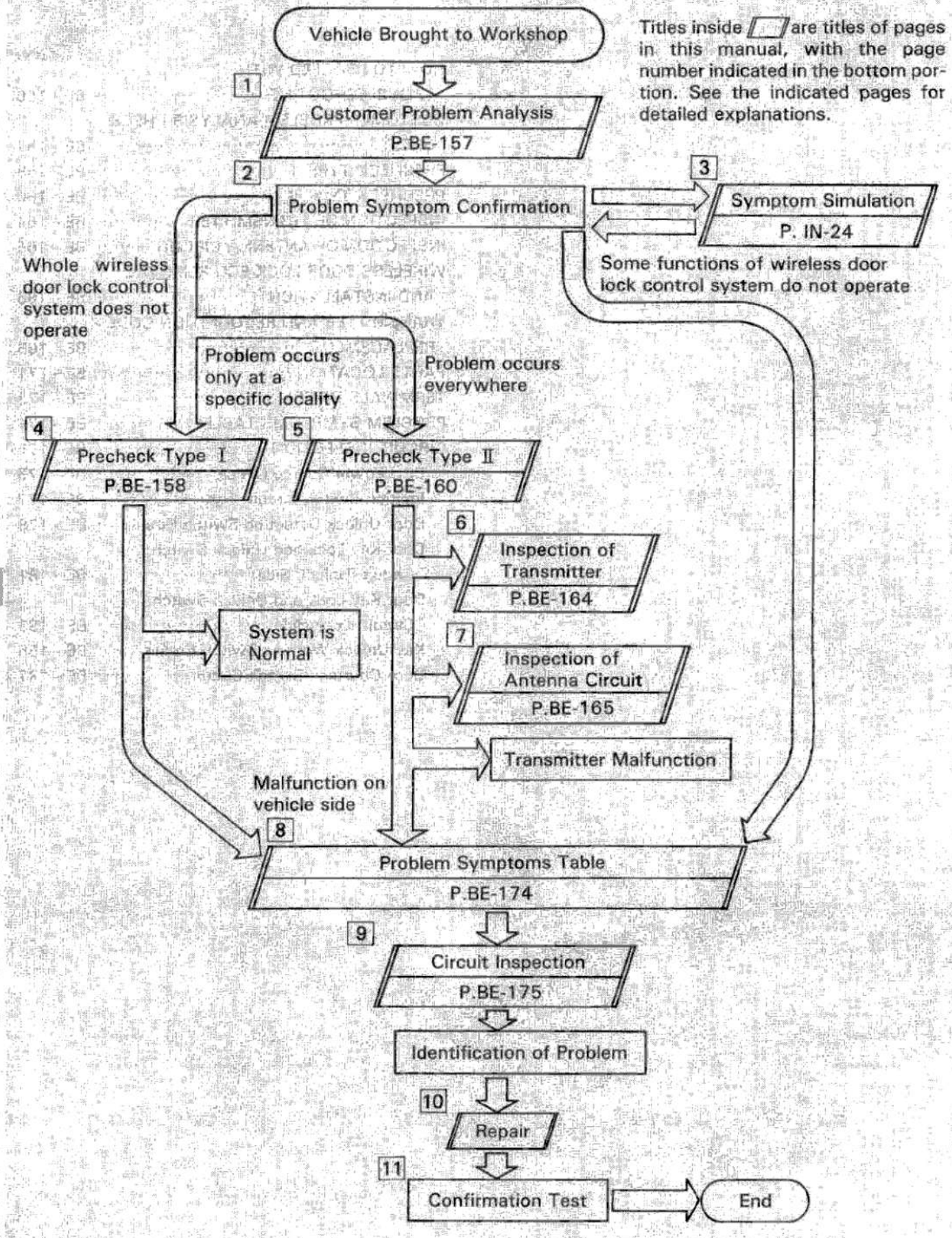
WIRELESS DOOR LOCK CONTROL SYSTEM

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Door Unlock Detection Switch Circuit ... BE – 179
Door Key Lock and Unlock Switch Circuit (Unlock Side) ..... BE – 181
Door Key Lock and Unlock Switch Circuit (Lock Side) ..... BE – 183
Key Unlock Warning Switch Circuit ..... BE – 185
Door Courtesy Switch Circuit ..... BE – 187

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HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.



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CUSTOMER PROBLEM ANALYSIS CHECK SHEET

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 Occurs	**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 confine prevention function is not possible.		
☐ Wireless door lock function operates even when each door is opened.		
☐ Wireless door lock function incorrectly. (Although one door is unlocked, when the transmitter switch is pressed, all doors unlock.)	☐ When Front RH door is unlocked ☐ When Front LH door is unlocked ☐ When Rear RH door is unlocked ☐ When Rear LH door is unlocked	
Others		

BE

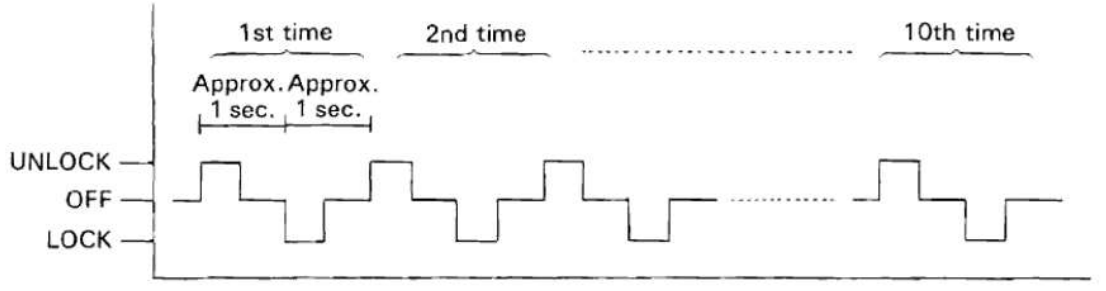
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PRECHECK TYPE I

Only Wireless Function (Remote Control) Not Operating (Malfunctions Only at a Specific Locality)

Put vehicle in initial condition as follows:
① Key is not inserted in ignition key cylinder.
② All doors are closed.

Enter diagnostic mode.
Put the door lock receiver in diagnostic mode as follows:
① Open the driver's door.
② Lock all doors.
③ Insert the key in the ignition key cylinder, then window it.
④ Using the door control (for manual operation), within a period of 30 seconds, switch 9 times from UNLOCK or vice-versa at 1 second intervals).
For the 10th time, switch only from UNLOCK to LOCK.
(If operation of the door control switch is too slow or too fast, diagnostic mode is not initiated.)



Does UNLOCK-LOCK automatically occur 1 time within 3 seconds of switching to diagnostic mode?

No
(Not in diagnostic mode)

Correct method for entering diagnostic mode

No

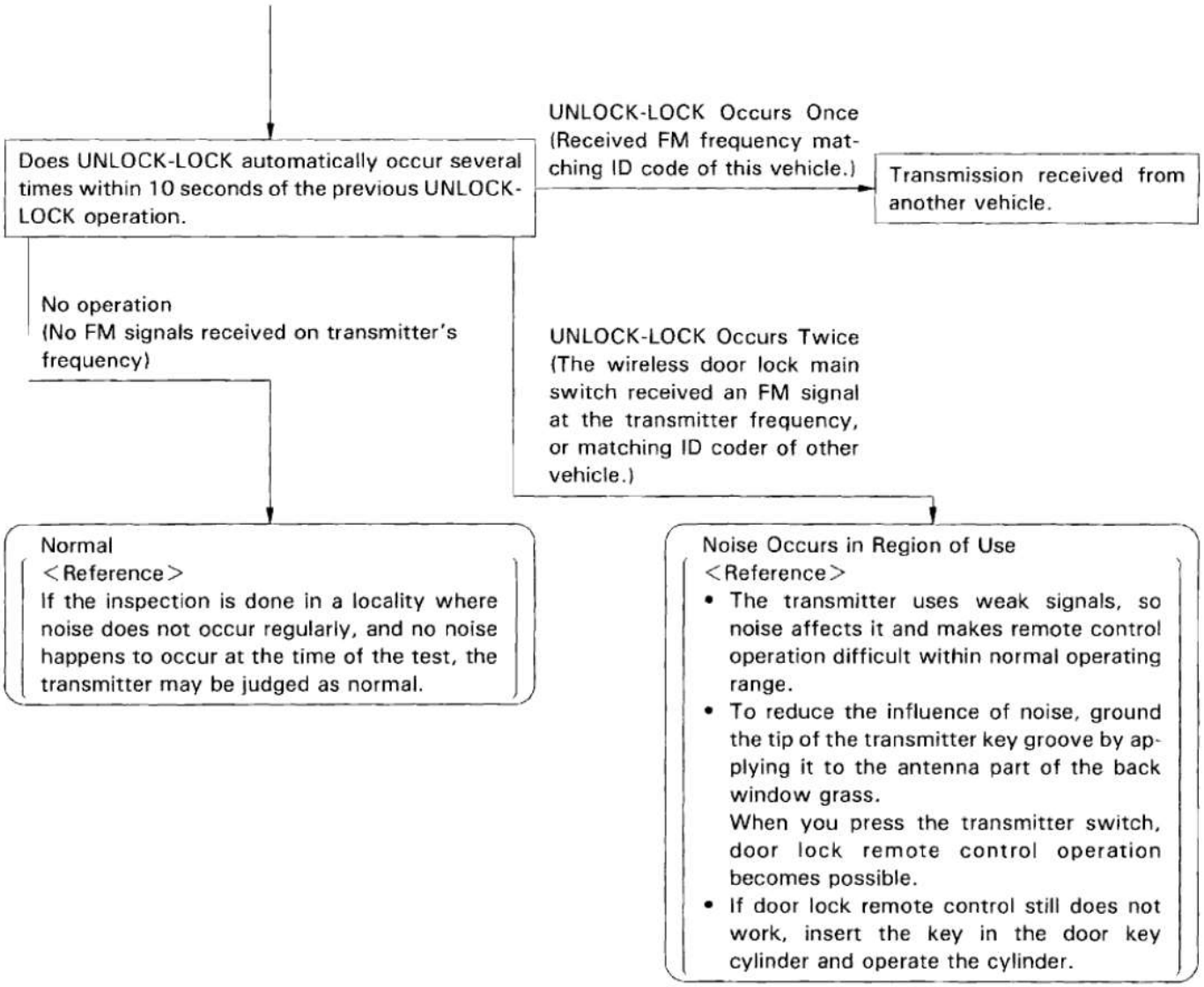
Yes

Yes
(Diagnostic mode entered)

Receiver faulty

BE

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PRECHECK TYPE II

Only Wireless Function (Remote control) Not Operating (Malfunction Not concentrated in Specific Locality)

Put vehicle in initial condition as follows:
① Key is not inserted in ignition key cylinder.
② All doors are closed and locked.

Do doors UNLOCK by the following standard operation?
① Hold transmitter about 1 meter to the right of the driver's outside door handle.
② Point the key plate of the transmitter toward the vehicle and press the transmission switch for about 1 sec.
(Do not touch the transmitter's key plate with your fingers.)

No

Yes

NORMAL
<Reference>
- The minimum operating distance varies according to who the operator is, how the key is hold, and the vehicle location.
- A very weak signal is used, so the operable distance can become shortened by the presence of strong radio waves or noise interfering with the signal.
- If you touch the key plate, the operating distance is reduced.

Is the transmitter's battery charge sufficient? (See "Separate Inspection" – "Control Transmitter")

No

Battery faulty.

Yes

Set the FM radio to 94.0 MHz (93.9 MHz – 94.1 MHz) and bring the transmitter key plate close to the radio antenna.
<Reference>
- Although the inspection can be done by inserting the transmitter in the ignition key cylinder, turning it to ACC and using the radio, the transmitter is separated from the antenna so it is not possible to judge whether the transmitter is faulty.
- If the frequency 94.0 MHz (93.9 MHz – 94.1 MHz) is the same as an FM radio station frequency, use a portable radio and do the inspection in doors where radio reception is weak. In this case, touch the key plate against the antenna of the portable radio.

Does noise affect the speaker when the transmitter switch is pressed?
NOTICE:
- The sound differs according to the battery capacity remaining and the way the key is held, so no judgement about malfunction can be made based on sound volume or quality.
- Judgement about whether the battery is functioning properly or not cannot be made based on noise interference.

Yes

No

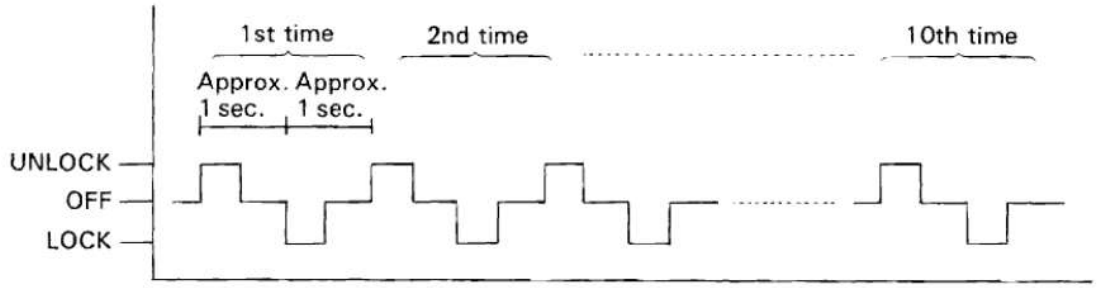
Transmitter faulty

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Put the vehicle in initial condition.

Put the door lock receiver in diagnostic mode as follows:

① Open the driver's door.
② Lock all doors.
③ Insert the key in the ignition key cylinder, then withdraw it.
④ Using the door control switch (for manual operation), within a period of 30 seconds, switch 9 times from UNLOCK to LOCK to UNLOCK (switching from LOCK to UNLOCK or vice – versa at 1 second intervals). For the 10th time, switch only from UNLOCK to LOCK.
(If operation of the door control switch is too slow or too fast, diagnostic mode is not initiated.)



Does UNLOCK-LOCK automatically occur 1 time within 3 seconds, of switching to diagnostic mode?

No (Not in diagnostic mode) → Correct method for entering diagnostic mode? → No

Yes

Yes (Diagnostic mode entered)

For each terminal of the connector connected to the receiver, check continuity with the body ground, check the voltage or check for normal operation of the electronic door lock, as specified below.

Specifications

Terminal No.	Check Item	Inspection Condition	Specification
2	Voltage	Constant	10 ~ 14 V
3	Voltage	Ignition switch OFF → ON	0V → 10 ~ 14V
4	Operation	All doors locked → ground terminal 4 while grownding terminal 9	All doors UNLOCK
6	Operation	All doors unlocked → ground terminal 6	All doors LOCK
7	Voltage	Door lock knob of all doors to LOCK → except driver's door lock knob to UNLOCK	5 V more → 0 V
8	Voltage	Insert key plate into ignition key cylinder → remove key plate	0V → 10 ~ 14V
9	Continuity	Constant	Continuity
10	Voltage	Driver's door lock knob LOCK → UNLOCK	5 V more → 0 V
12	Voltage	All doors closed → any door open	10 ~ 14V → 0V

Yes → Receiver faulty

No → Vehicle wiring faulty

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Within 5 seconds of entering diagnostic mode, insert the transmitter into the door key cylinder and push the transmitter switch for at least 1 second.

Within the next 10 seconds, how many times does UNLOCK-LOCK automatically occur?

Occured 2 times
(FM transmission on transmitter frequency received, or matching ID code of other vehicle.)
→ Transmitter faulty

Occured once (Received FM transmission on transmitter frequency matching vehicle's code.)

Is mode for confirming registration of ID code normal?
See "Door Control Receiver and Transmitter"

Yes

No

When ignition switch is turned OFF → ON, does voltage between 3 terminals of connector connected to receiver and body ground go from 0 V → 10 ~ 14 V?

Yes → Receiver Faulty

No → Fault in ignition power source system

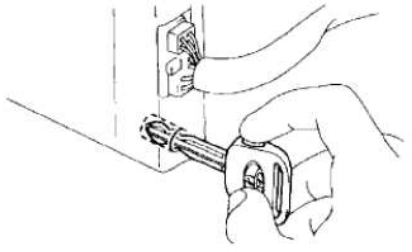
Are ID code registration changeover mode and additional mode normal?
(See "Door Control Receiver and Transmitter" and "Registration of ID codes"

No → Transmitter Faulty

Yes → Registration of ID codes Normal

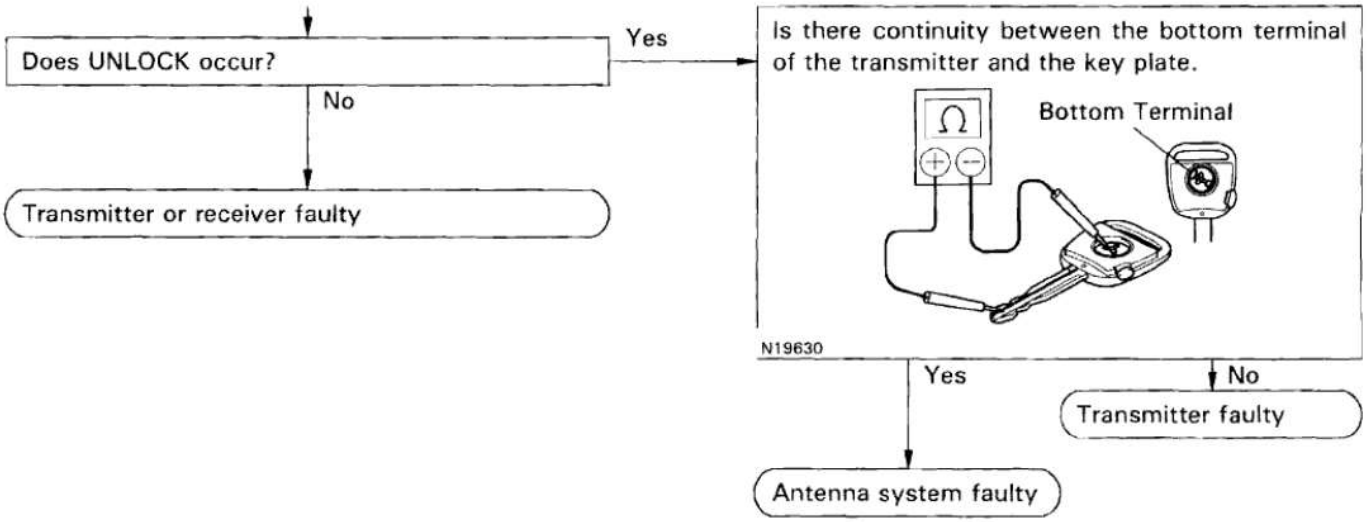
Put vehicle in initial condition

Remove antenna cable from receiver, insert transmitter key plate directly into the antenna cable jack and press the transmitter switch for about 1 second.



N19629

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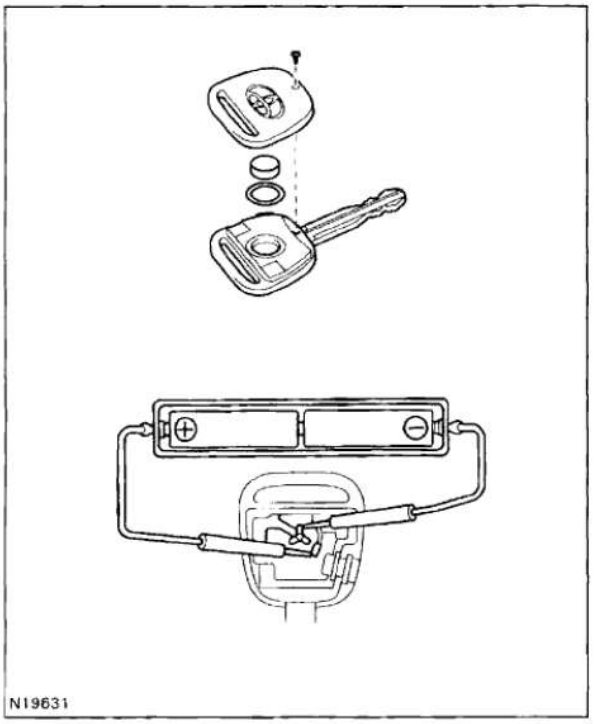


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INSPECTION OF TRANSMITTER

HINT: Perform this inspection only when transmitter is judged to be faulty in precheck type II.

1 Transmitter battery capacity check.



HINT:
This inspection is not directly for the purpose of checking the capacity of the transmitter battery, but is performed when remote control operation becomes difficult or impossible, in order to ascertain if this is caused by low battery capacity.

PREPARATION:

(1) Remove the transmitter screw.
(2) Remove the cover.
(3) Remove the O-ring and battery.

CHECK:

(1) Connect 2 new 1.5 V dry-cell batteries in series. Connect the battery ⊕ terminal to the battery receptacle side terminal and the battery ⊖ terminal to the bottom terminal to provide 3 V to the transmitter.
(2) In the condition (1), push the wireless door lock remote control switch on the side of the transmitter body and operate the door lock by remote control.

OK:

Remote control operation possible.

NG

Replace transmitter and registration of recognition code (See page BE-167).

OK

Replace the battery for transmitter (See page BE-166).

BE

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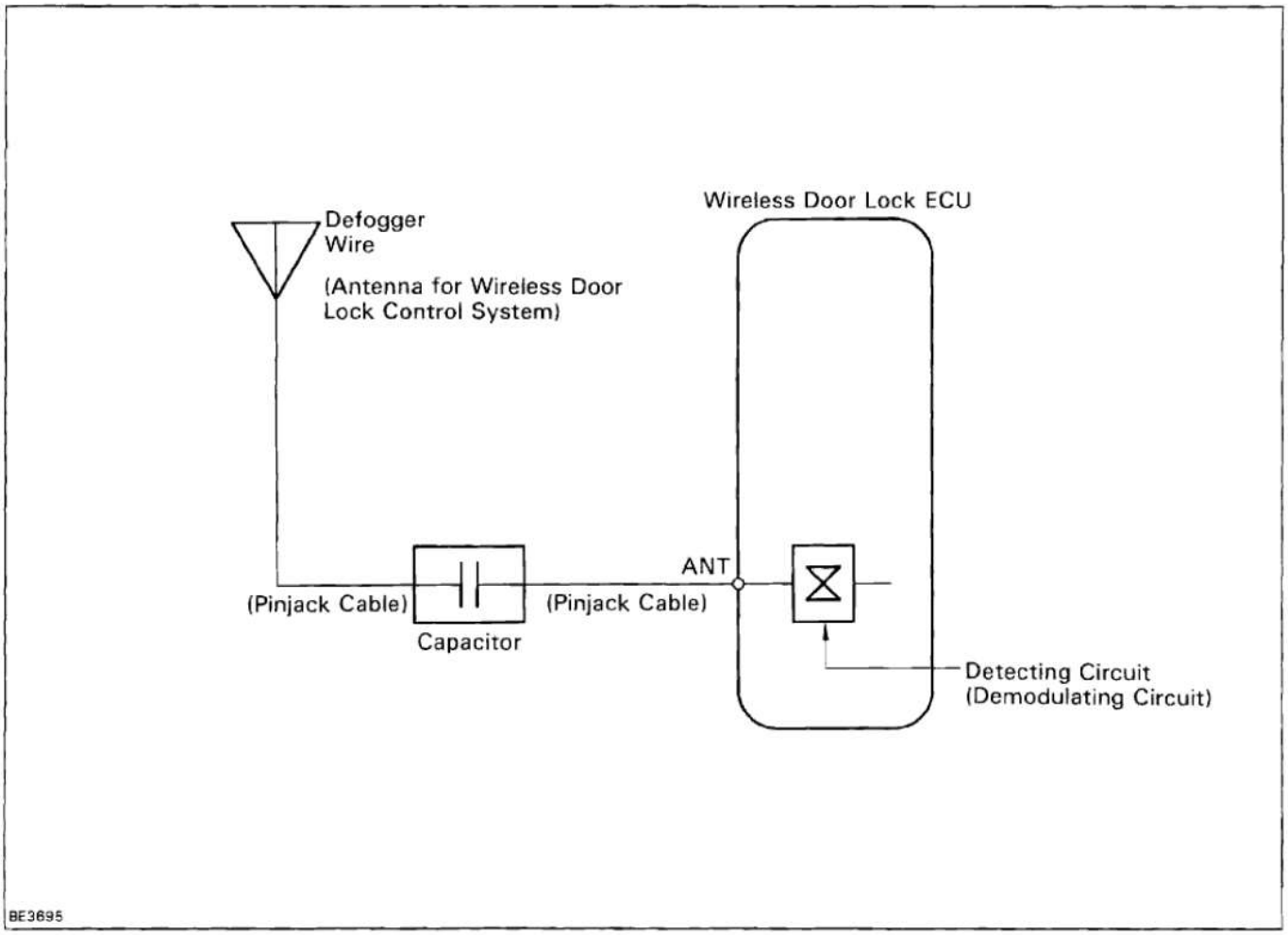
INSPECTION OF ANTENNA CIRCUIT

Antenna Circuit

CIRCUIT DESCRIPTION

The antenna receives the electromagnetic wave emitted by the transmitter and sends it to the wireless door lock ECU.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check defogger wire (See page BE-71).

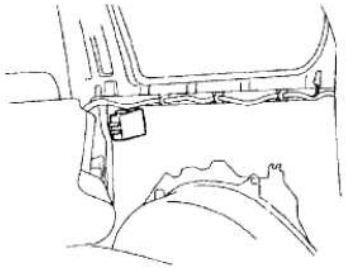
OK

NG → Repair defogger wire.

Replace antenna pinjack cable and capacitor.

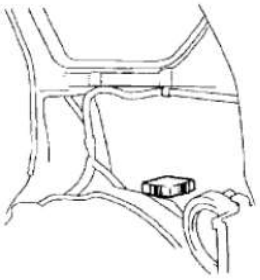
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• 3 Doors



N19632

• 5 Doors



N19633

WIRELESS DOOR LOCK ECU REMOVAL AND INSTALLATION

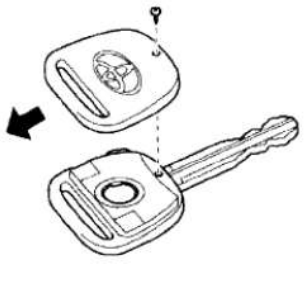
1. **REMOVE WIRELESS DOOR LOCK ECU.**
(a) Remove quarter trim RH side cover.
(b) Remove the 2 nuts.
(c) Disconnect the connectors.
(d) Remove the ECU.

2. **INSTALL WIRELESS DOOR LOCK ECU**
Installation is in the reverse order of removal.

TRANSMITTER AND RECOGNITION CODE REPLACEMENT

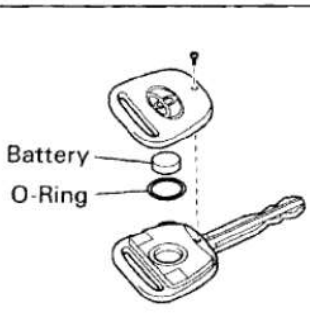
CAUTION:
- **Each part is a precise electronic instrument which must be handled carefully.**
- **The transmitter and door control receiver are provided as separate supply parts, so the recognition code must be registered when replacing the parts.**

BE



N19634

1. **REPLACEMENT OF TRANSMITTER BATTERY**
(a) Remove the screw and slide the cover to the rear to remove the cover.



N19635

(b) Remove the battery and O-ring.
(c) Set the new O-ring and battery into the transmitter with the battery's positive terminal (+) facing upward.
HINT: The O-ring and battery are supplied as a set.
(d) When closing the cover, take care that the O-ring is not twisted or displaced.
(e) Tighten the screw.

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2. REGISTRATION OF RECOGNITION CODE

Follow the flow chart on the following page to register the transmitter recognition code with the door control receiver.

HINT:

- If the prescribed conditions are not entered while registering the transmitter code, the receiver returns to normal operation.
- There are 4 modes: add mode, rewrite mode, confirmation mode and erase mode; the mode to use is decided after the recognition code is registered.
- If maximum of 4 recognition codes can be registered.

REFERENCE:

- The add mode is used to retain codes already registered while you register new recognition codes. However, if the number of registered codes exceeds 4 codes, previous registered codes are correspondingly erased in order, starting from the first registered code.
- The rewrite mode is used to erase all previous registered codes before registering new recognition codes. This mode is used when replacing the transmitter or door control receiver.
- The confirmation mode is for confirming how many recognition codes are already registered before you register additioned recognition codes.
- The erase mode is used to erase all registered modes and cancels the wireless door lock operates. Use this mode when the transmitter is lost.

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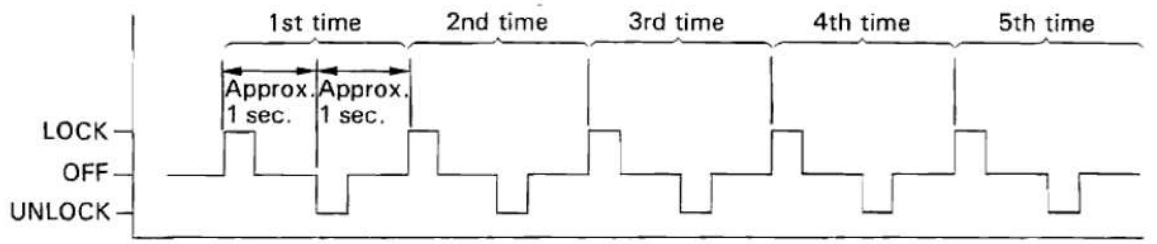
Start registration of recognition code

The vehicle should be as follows.
- 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 remove it.

within 20 secs.

Using the door control switch (for manual operation) move the switch 5 times to LOCK/UNLOCK at approx. 1 sec. intervals.

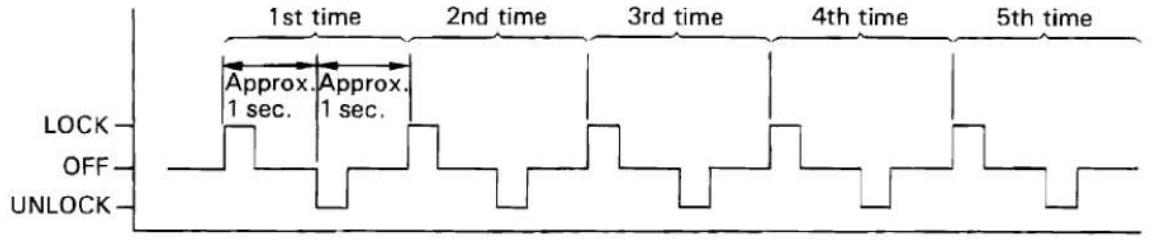


within 20 secs.

Close the driver's door, then open it.

within 20 secs.

Again using the door control switch (for manual operation), move the switch 5 times to LOCK/UNLOCK at approx. 1 sec. intervals.



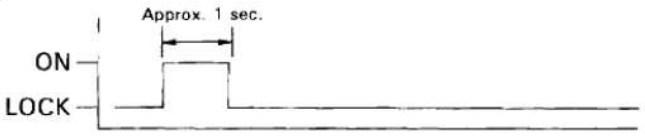
Insert the key into the ignition key cylinder.

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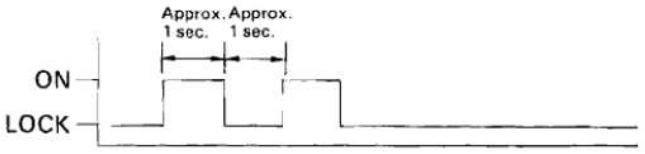
within 20 secs.

Turn the ignition switch from ON to LOCK at approx. 1 sec. intervals for 1 to 4 times according to the desired mode.

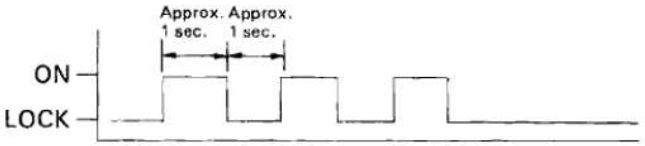
Add Mode
ON-LOCK change occurs 1 time



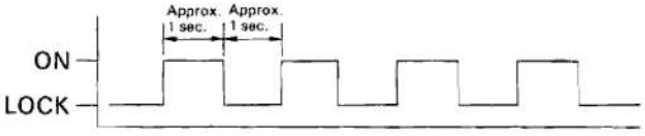
Rewrite Mode
ON-LOCK change occurs 2 times



Confirmation Mode
ON-LOCK change occurs 3 times



Erase Mode
ON-LOCK change occurs 4 times



Remove the key from the ignition key cylinder.

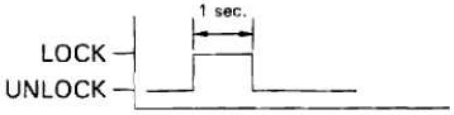
within 20 secs.

When add mode, rewrite mode or erase mode been selected.

The receiver automatically performs the LOCK-UNLOCK operation once, twice or 5 times at 1 sec. intervals to inform the technician whether the add mode, rewrite mode or erase mode has been selected.

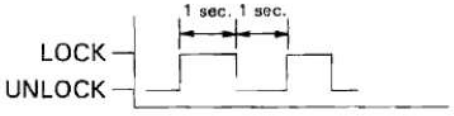
LOCK-UNLOCK occurs once

Indicates that add mode has been selected.



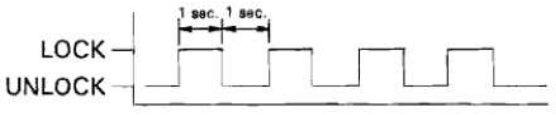
LOCK-UNLOCK occurs twice

Indicates that rewrite mode has been selected.



LOCK-UNLOCK occurs 5 times

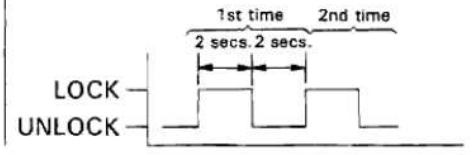
Indicates that erase mode has been selected.



When confirmation mode is selected.

The receiver automatically performs the LOCK-UNLOCK operation 0 to 4 times at 2 secs. intervals to inform the technician of the number of registered codes.

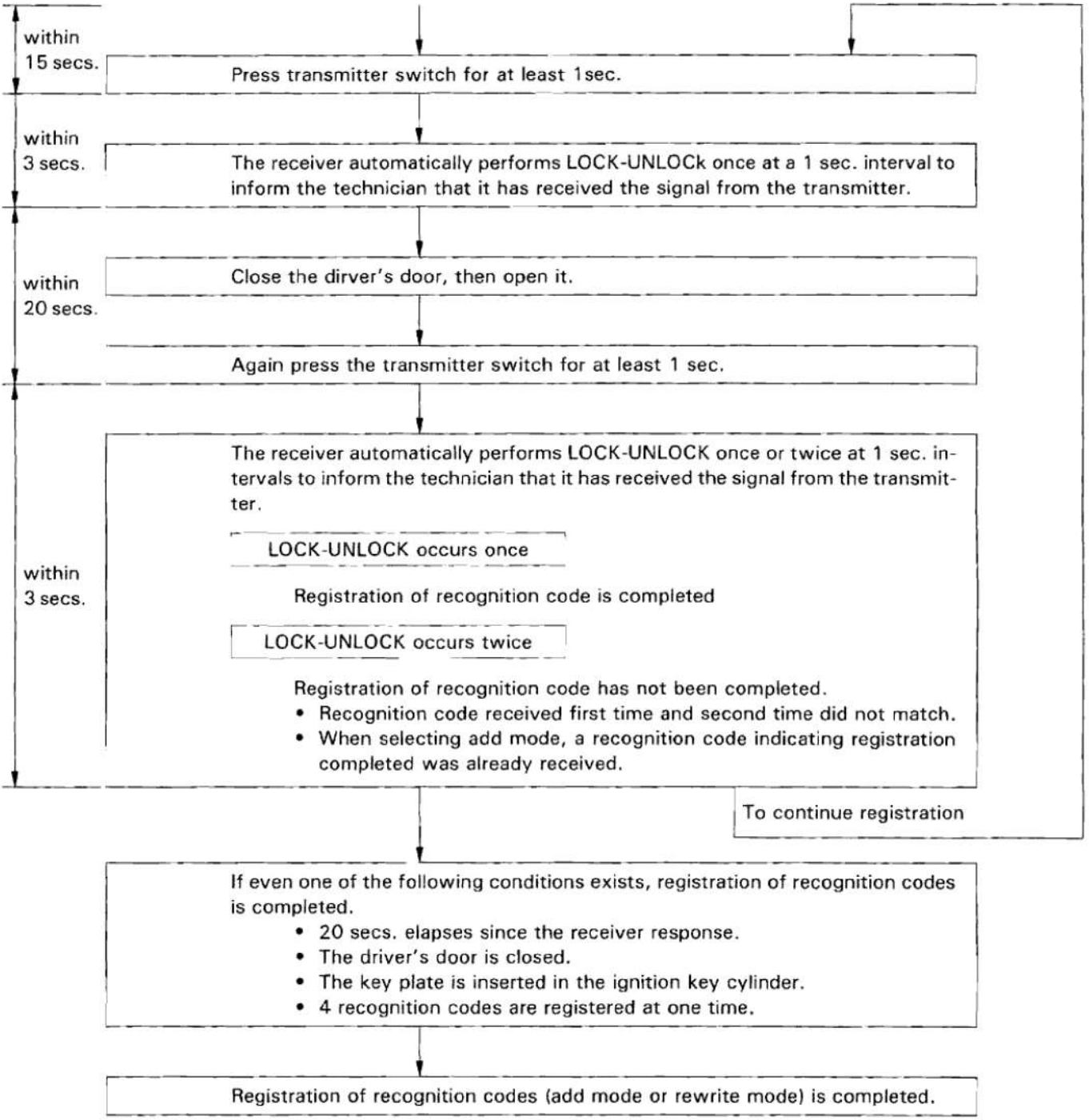
Example:
LOCK-UNLOCK occurs twice:
2 recognition codes are registered.



Registration of recognition code (Confirmation mode) and erase mode completed.

Erase Mode

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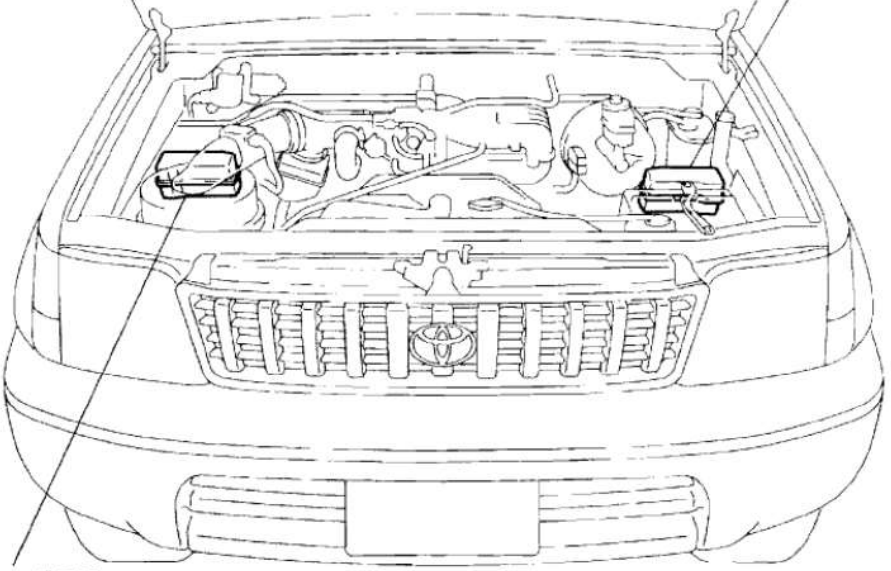
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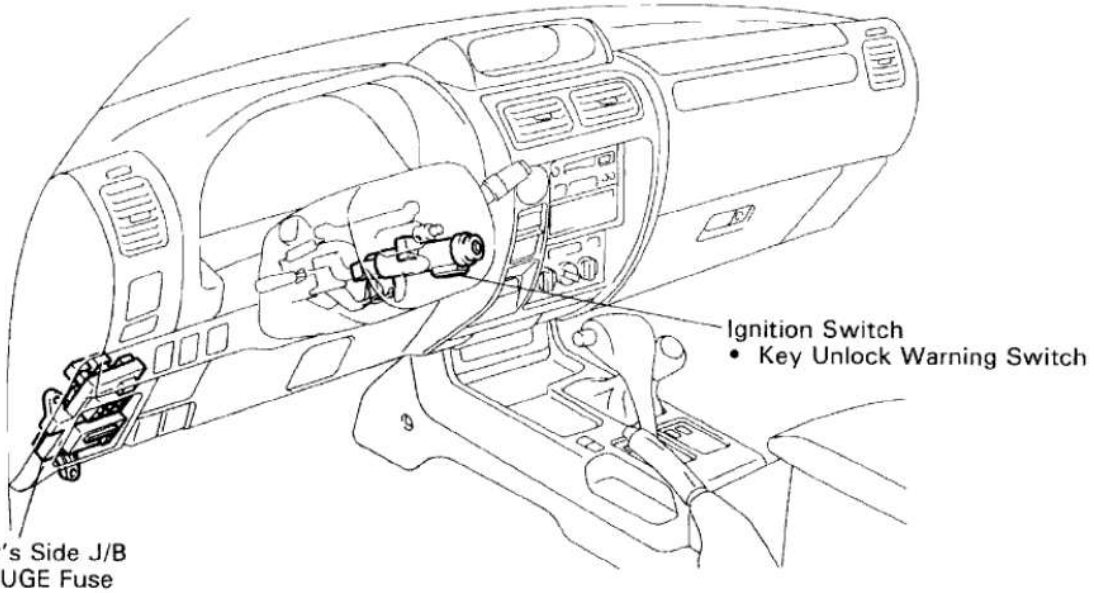
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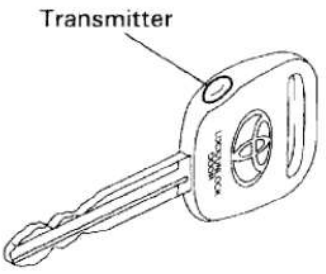
PARTS LOCATION

*1: Gasoline Engine and Diesel Engine (LHD models)

*2: Diesel Engine (RHD models)



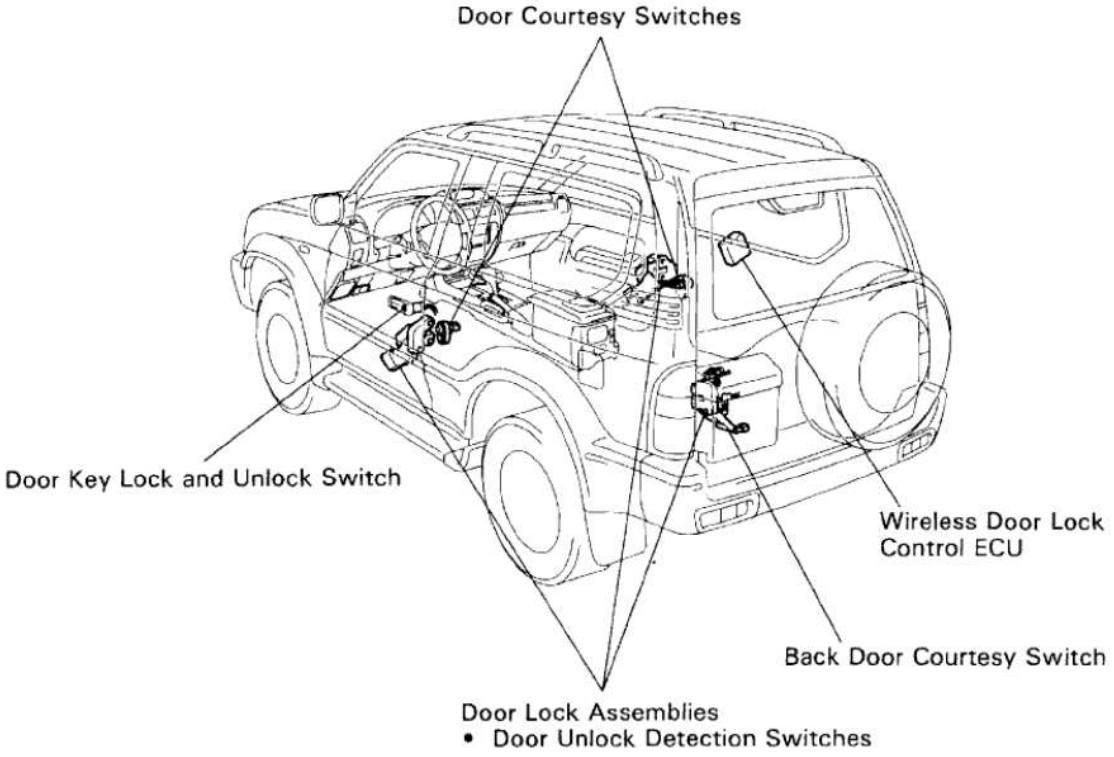




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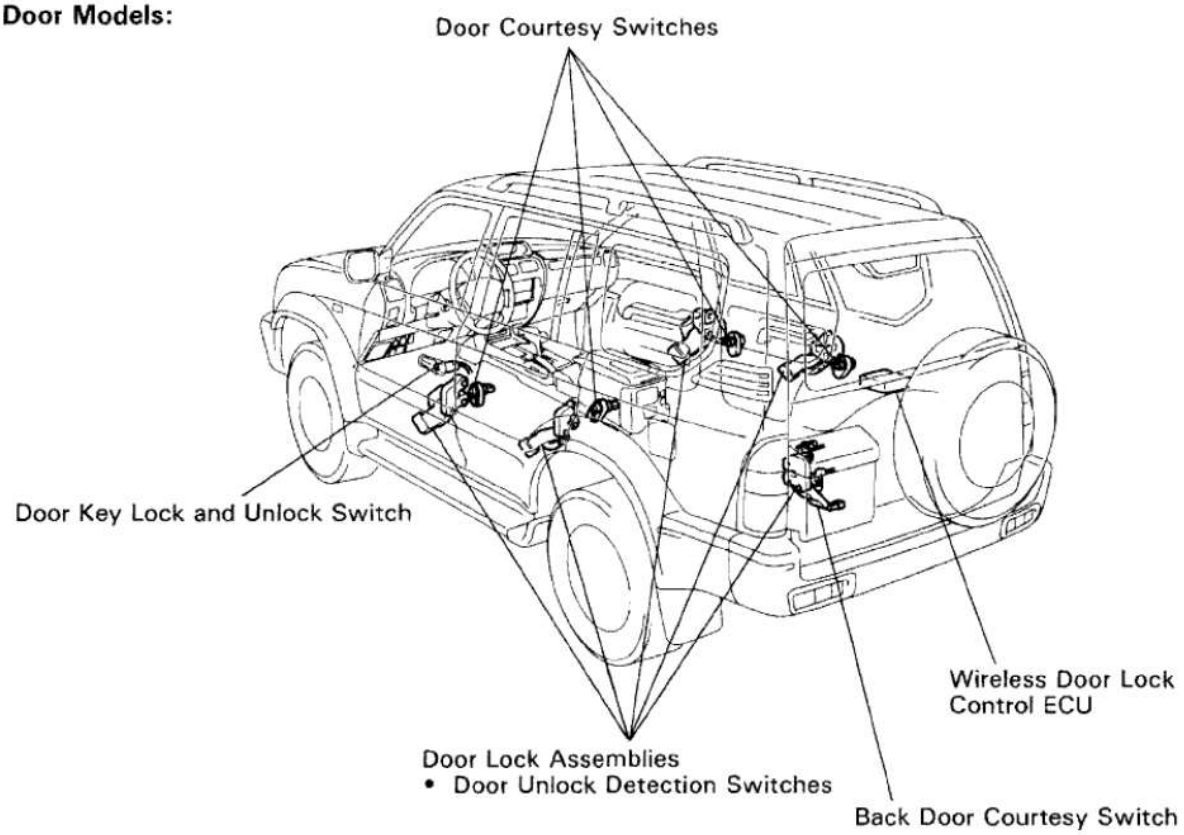
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3 Door Models:



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5 Door Models:



N19639
N19640

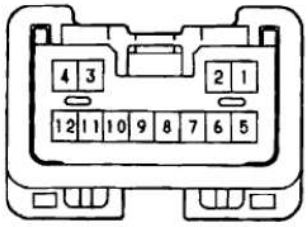
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TERMINALS OF ECU

Terminals	Symbols	Condition	Standard Value
W8-2 ↔W8-9	+B↔GND	Always	10 ~ 14 V
W8-3 ↔Ground	IG↔Ground	Turn the ignition switch OFF or ACC	Below 1 V
		Turn the ignition switch ON	10 ~ 14 V
W8-4 ↔Ground	UL↔Ground	Door key lock and unlock switch left and right UNLOCK	Below 1.5 V
		Door key lock and unlock switch left or right UNLOCK	
		Except above mention	8 ~ 10 V
W8-6 ↔Ground	L↔Ground	Door key lock and unlock switch LOCK	Below 1 V
		Except above mention	8 ~ 10 V
W8-7 ↔Ground	LSWF↔Ground	Door lock knob of except driver's door UNLOCK	Below 1 V
		Door lock knob of except driver's door LOCK	8 ~ 10 V
W8-8 ↔Ground	ULSW↔Ground	Ignition key insert key cylinder	Below 1 V
		Ignition key pull out key cylinder	10 ~ 14 V
W8-9 ↔Ground	GND↔Ground	Always	Below 1 V
W8-10↔Ground	LSWD↔Ground	Door lock knob of driver's door UNLOCK	Below 1 V
		Door lock knob of driver's door LOCK	8 ~ 10 V
W8-12↔Ground	CTY↔Ground	Door open detection switch ON (all door)	Below 1 V
		Door open detection switch ON (either door)	
		Door open detection switch OFF (all door)	10 ~ 14 V

(W8)

Wireless Door Lock Control ECU



h-12-2

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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:

- 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.
- 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 large 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 Wireless Door Lock ECU as the last step.

See Page / Suspect Area / Symptom	BE-175 ECU Power Source Circuit	BE-177 Ignition Switch Circuit	BE-179 Door Unlock Detection Switch Circuit	BE-181 Door Key Lock and Unlock Switch Circuit (Unlock side)	BE-183 Door Key Lock and Unlock Switch Circuit (Lock side)	BE-185 Key Unlock Warning Switch Circuit	BE-187 Door Courtesy Switch Circuit	IN-35 Wireless Door Lock Control ECU
All functions of wireless door lock control system do not operate.	1	2		4	5	6	3	7
Only door unlock operation is not possible (Lock operation is possible).			2	1				3
Only door lock operation is not possible (Unlock operation is possible).					1			2
Only transmitter misoperation prevention function is not possible.						1		2
Wireless door lock function operates even when each door is opened.							1	2
Wireless door lock functions incorrectly. (Although one door is unlocked, when the transmitter switch is pressed, all does unlock.)			1					2

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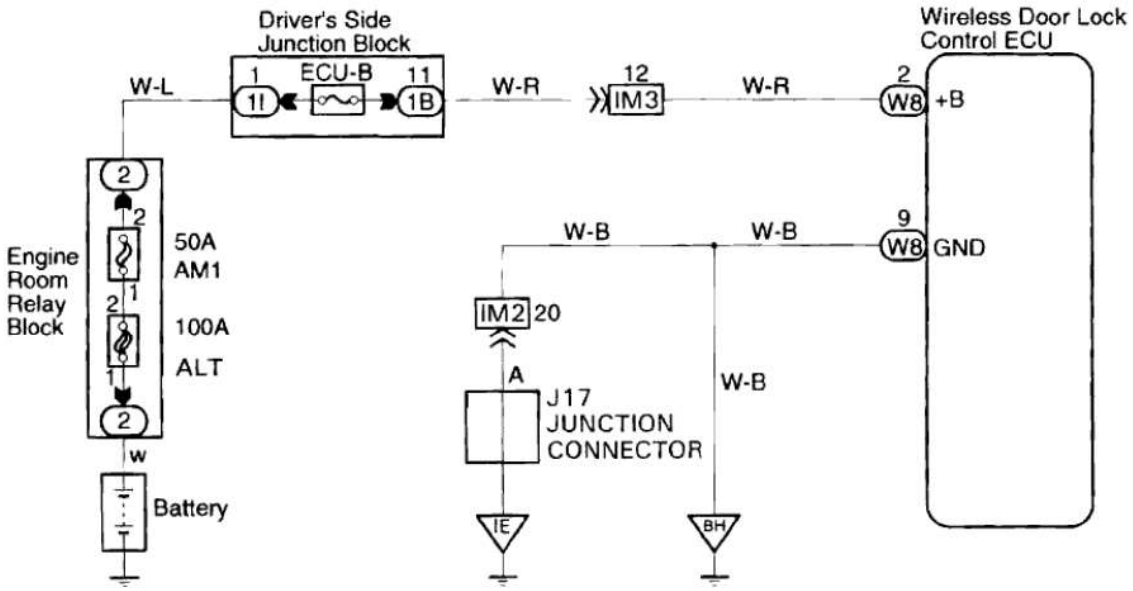
CIRCUIT INSPECTION

ECU Power Source Circuit

CIRCUIT DESCRIPTION

Battery voltage is applied to terminal +B of the wireless door lock ECU, causing the ECU to operate.

WIRING DIAGRAM



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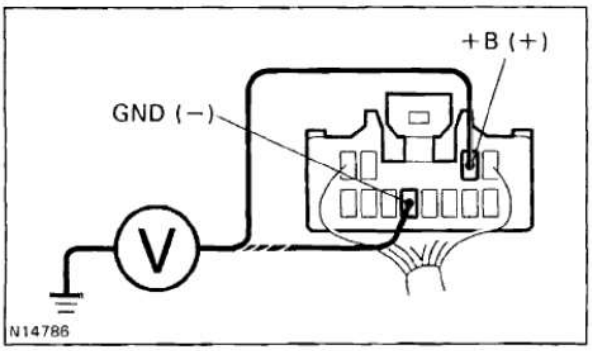
INSPECTION PROCEDURE

1 Check ECU-B fuse.

OK

NG → Check for short in all the harness and components connected to ECU-B fuse (See attached wiring diagram).

2 Check voltage between terminals +B and E of ECU connector.



PREPARATION:

(1) Remove the quarter trim panel RH side cover.
(2) Remove the ECU and disconnect the ECU connector.

CHECK:

Measure voltage between terminals +B and E of ECU connector.

OK:

Voltage: 10 – 14 V

NG

OK → Proceed to next circuit inspection shown on problem symptoms table (See page BE-174).

BE

3 Check for open in harness and connector between terminal E of ECU and body ground (See page IN-30).

OK

NG → Repair or replace harness or connector.

Check and repair harness and connector between ECU and battery.

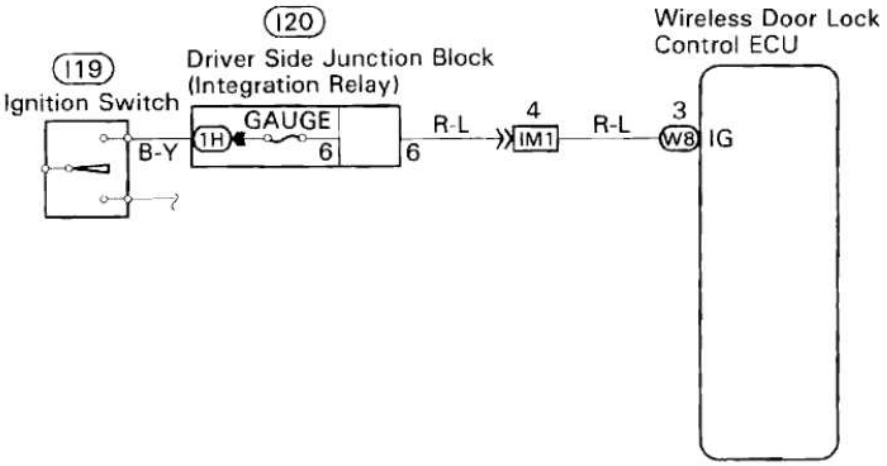
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Ignition Switch Circuit

CIRCUIT DESCRIPTION

When the ignition switch is turned to the ON position, battery voltage is applied to the terminals IG of the ECU.

WIRING DIAGRAM

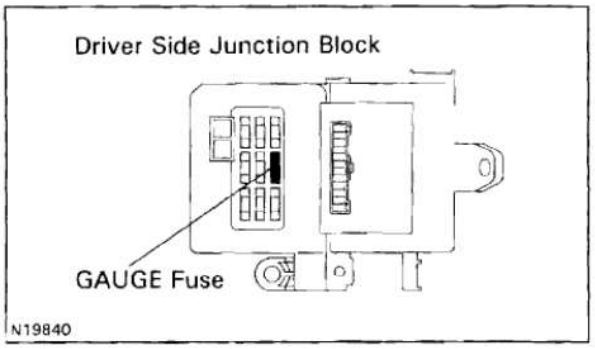


N19642

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INSPECTION PROCEDURE

1 Check GAUGE fuses.



PREPARATION:

(1) Remove the front lower panel.
(2) Remove GAUGE fuses from driver side junction block.

CHECK:

Check continuity of GAUGE fuses.

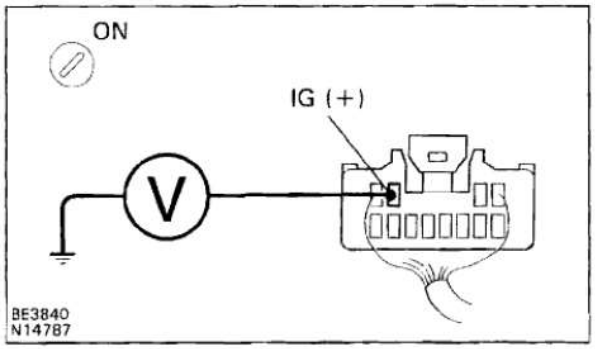
OK:

Continuity

OK

NG → **Check for short in all the harness and components connected to the GAUGE fuses (See attached wiring diagram).**

2 Check voltage between terminals IG of ECU and body ground.



PREPARATION:

(1) Remove the quarter trim panel RH side cover.
(2) Remove the ECU and disconnect the ECU connector.
(3) Turn the ignition switch on.

CHECK:

Measure voltage between terminals IG of ECU connector and body ground.

OK:

Voltage: 10 – 14 V

NG

OK → **Check and replace ECU.**

Check and repair harness and connector between ECU and battery (See page IN-30).

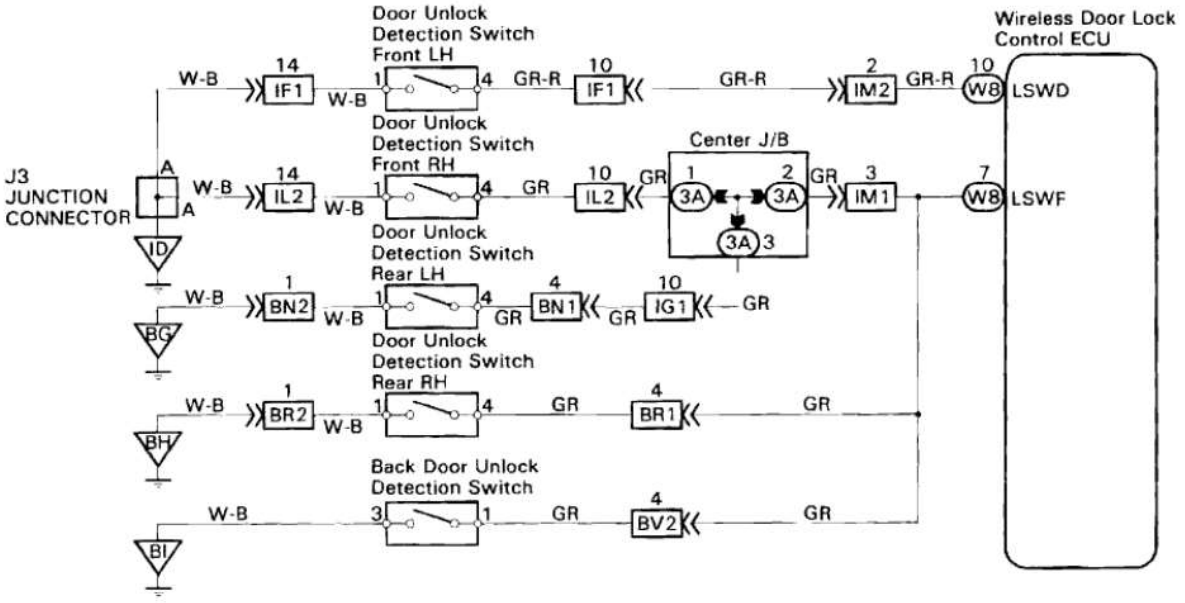
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Door Unlock Detection Switch Circuit

CIRCUIT DESCRIPTION

The door unlock detection switch is built into the door lock motor assembly. The switch is OFF when the door lock knob is in Lock position, and is ON when the knob is in Unlock position.
Furthermore, the door unlock detection switch circuit has terminal +B connected inside the theft deterrent ECU, when the door unlock detection switch is OFF, battery voltage is applied to the terminal of the door unlock detection switch circuit of the wireless door lock ECU.

WIRING DIAGRAM

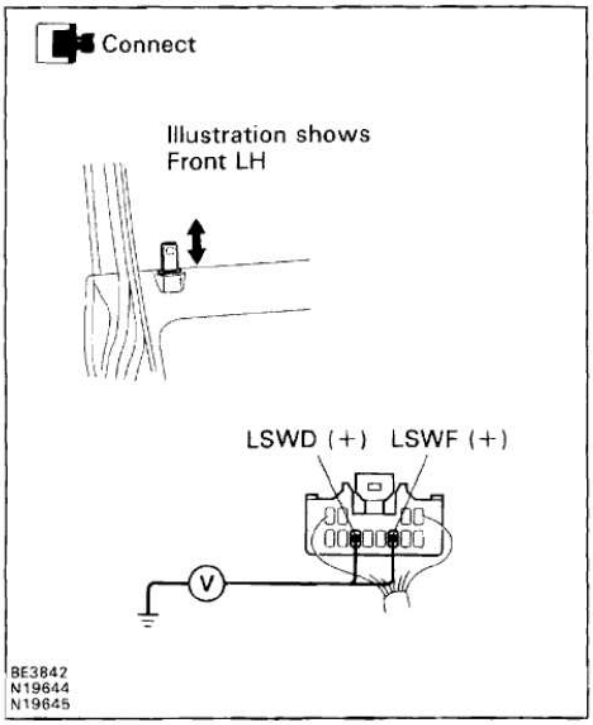


N19643

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INSPECTION PROCEDURE

1 **Check voltage between terminals LSWD, LSWF of ECU connector and body ground.**



PREPARATION:

(1) Remove the quarter trim panel RH side cover.
(2) Remove the ECU and disconnect the ECU connector.

CHECK:

Measure voltage between terminals LSWD,LSWF of ECU connector and body ground, when the respective door lock knob involved is pushed to the lock side.

OK:

Voltage: 5 V or more

BE

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-174).**

Check and repair harness and connector between ECU and door unlock detection switch.

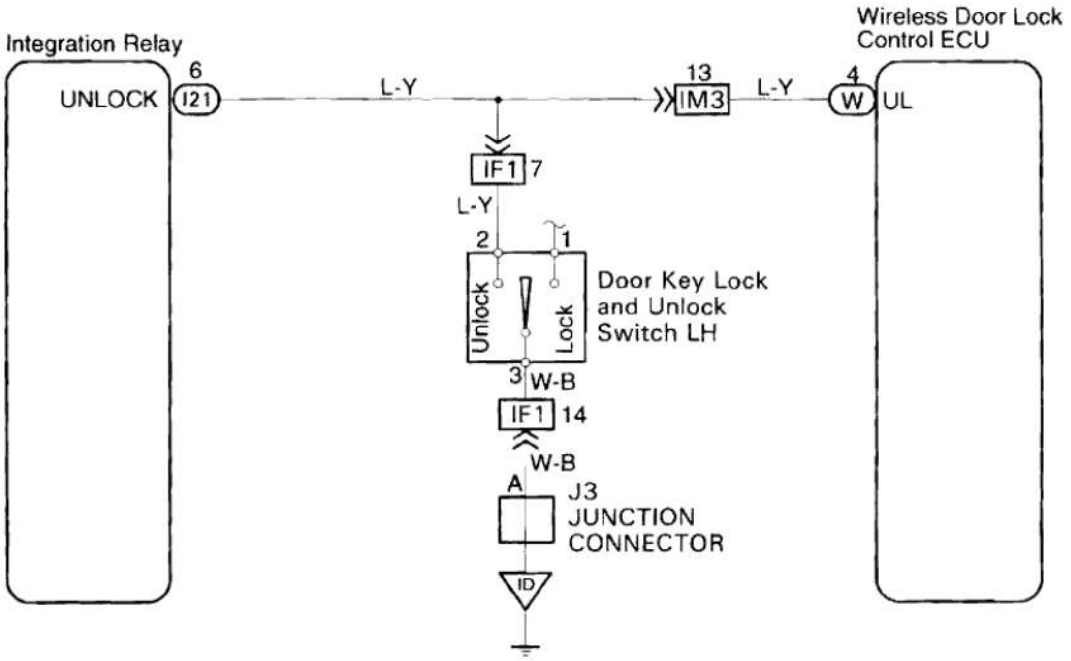
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Door Key Lock and Unlock Switch Circuit (Unlock Side)

CIRCUIT DESCRIPTION

The door key lock and unlock switch is built into the door key cylinder. When the key is turned to the lock side, the lock terminal of the switch is grounded, and when the key is turned to the unlock side the unlock terminal is grounded.
Furthermore, the door key lock and unlock switch circuit has terminal +B connected inside the integration relay, when neither the lock or unlock terminal of the door key lock and unlock switch are grounded, battery voltage is applied to the door key lock and unlock switch circuit of the wireless door lock ECU.
(Tr inside the ECU coming ON causes the wireless door lock ECU to output a signal to unlock all the doors.)

WIRING DIAGRAM



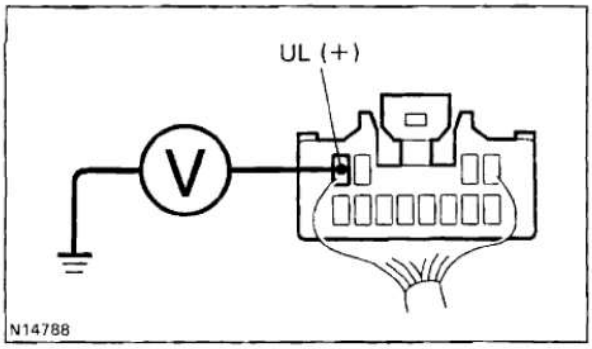
N19646

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BE

INSPECTION PROCEDURE

1 **Check voltage between terminal UL of ECU connector and body ground.**



PREPARATION:

(1) Remove the quarter trim panel RH side cover.
(2) Remove the ECU and disconnect the ECU connector.

CHECK:

Measure voltage between terminal UL of ECU connector and body ground.

OK:

Voltage: 10 – 14 V

NG

Check and repair harness and connector between ECU and door key lock and unlock switch.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page BE-174).

BE

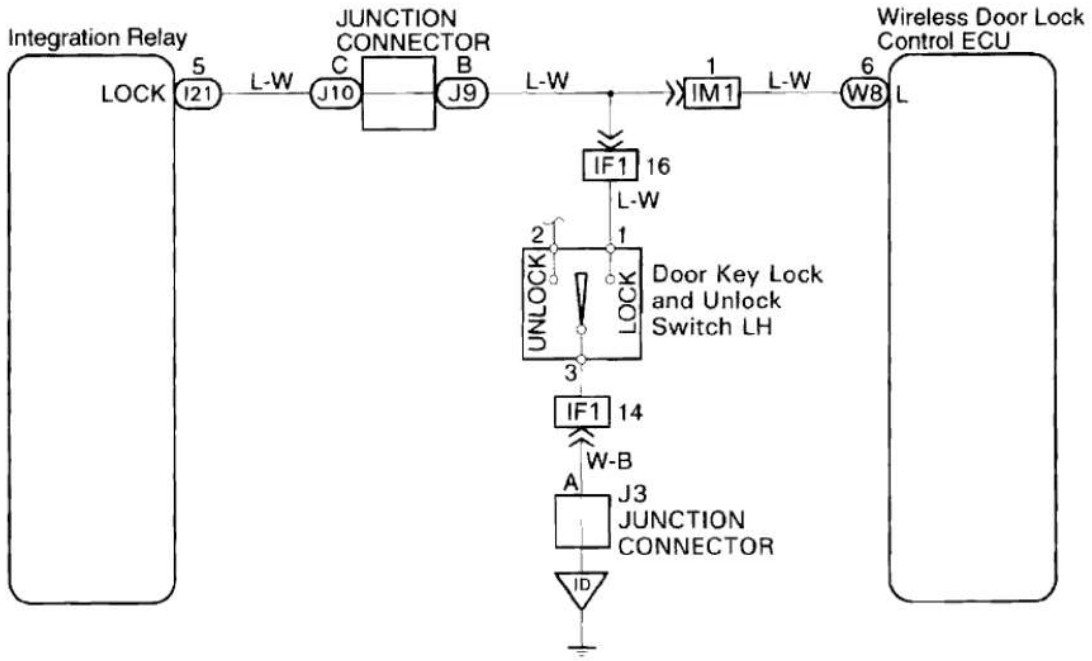
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Door Key Lock and Unlock Switch Circuit (Lock Side)

CIRCUIT DESCRIPTION

Refer to page BE-181.
Tr inside the ECU coming ON causes the wireless door lock ECU to output a signal to lock all the doors.

WIRING DIAGRAM

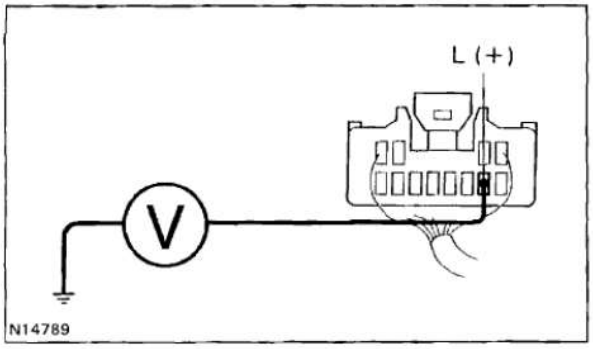


N19647

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INSPECTION PROCEDURE

1 **Check voltage between terminal L of wireless door lock ECU connector and body ground.**



PREPARATION:

(1) Remove the quarter trim panel RH side cover.
(2) Remove the ECU and disconnect the ECU connector.

CHECK:

Measure voltage between terminal L of ECU connector and body ground.

OK:

Voltage: 10 – 14 V

NG

Check and repair harness and connector between ECU and door key lock and unlock switch.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page BE-174).

BE

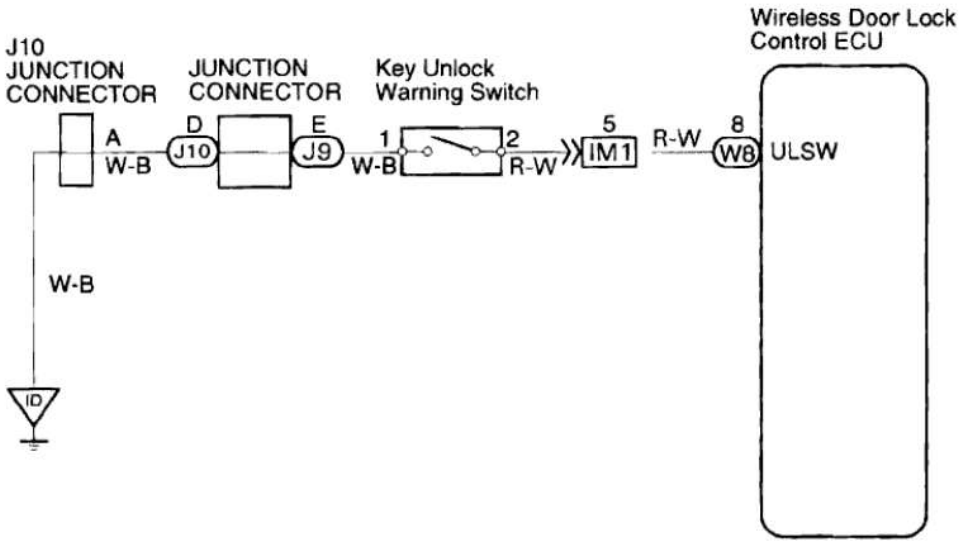
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Key Unlock Warning Switch Circuit

CIRCUIT DESCRIPTION

When the key is inserted in the ignition key cylinder, the key unlock warning switch comes ON, and when the key is not inserted, the switch is OFF.
When the key unlock warning switch is ON, the ECU operates the key confinement prevention function.

WIRING DIAGRAM

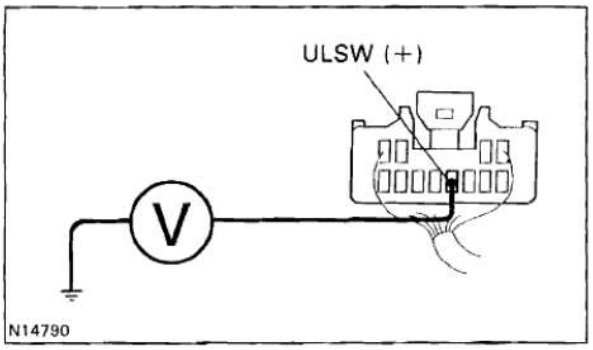


N19648

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INSPECTION PROCEDURES

1	Check voltage between terminal ULSW of ECU connector and body ground.



PREPARATION:

(1) Remove the quarter trim panel RH side cover.
(2) Remove the ECU and disconnect the ECU connector.
(3) Key plate is not inserted in the key cylinder.

CHECK:

Measure voltage between terminal ULSW of ECU connector and body ground, when key plate is not inserted in the key cylinder.

OK:

Voltage: 10 – 14 V

NG

Check and repair harness and connector between ECU and key unlock warning switch.

OK

Proceed to next circuit inspection shown on problem symptoms table (See page BE-174).

BE

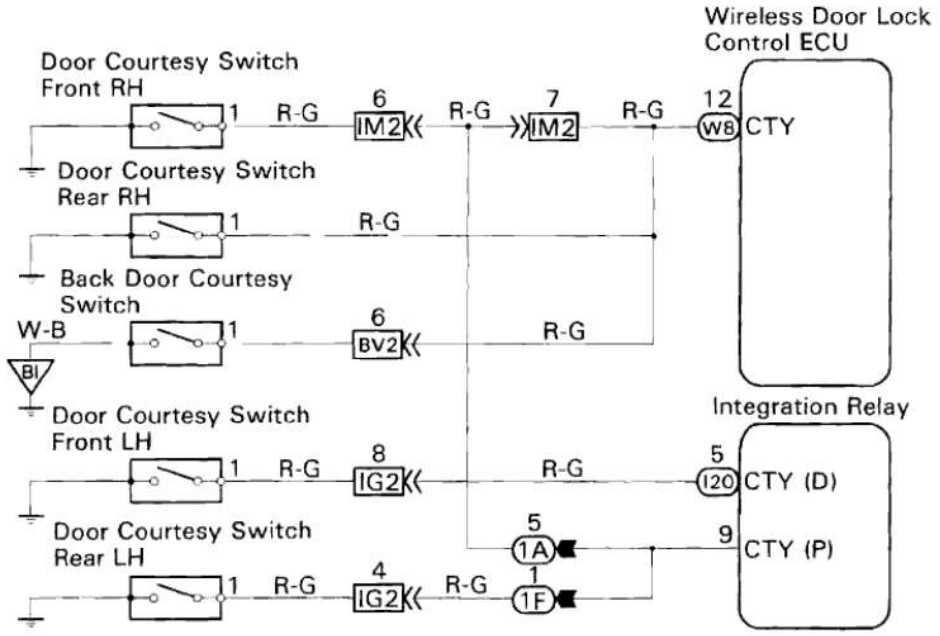
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Door Courtesy Switch Circuit

CIRCUIT DESCRIPTION

The door courtesy switch comes ON when the door is opened and goes OFF when the door is closed. Furthermore the door courtesy switch circuit has terminal +B connected inside the theft deterrent and door lock ECU, battery voltage is applied to terminal CTY of the wireless door lock ECU when all doors are closed, i.e., when the door courtesy switch of all doors are OFF.

WIRING DIAGRAM



N19628

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INSPECTION PROCEDURE

1 **Check operation of open door warning light.**

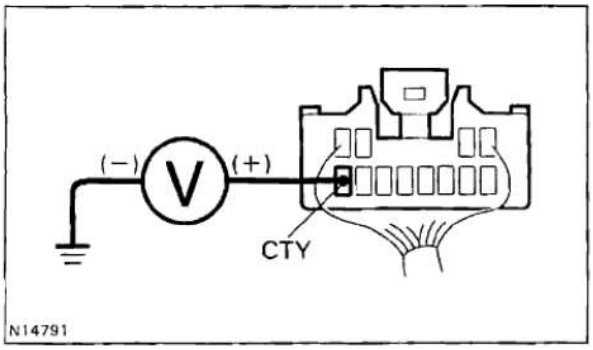
CHECK:

Check that open door warning light comes on when each door is opened, and goes off when all doors are closed.

OK

NG → **Check open door warning light circuit (See page BE-64).**

2 **Check voltage between terminal CTY of ECU connector and body ground.**



PREPARATION:

(1) Remove the quarter trim panel RH side cover.
(2) Remove the ECU and disconnect the ECU connector.
(3) Key plate is not inserted in the key cylinder.

CHECK:

Measure voltage between terminal CTY of ECU connector and body ground, when all doors are closed.

OK:

Voltage: 10 − 14 V

BE

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-174).**

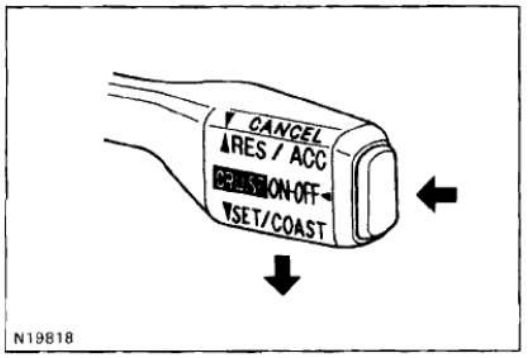
Check and repair harness and connector between ECU and door courtesy switch.

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CRUISE CONTROL SYSTEM

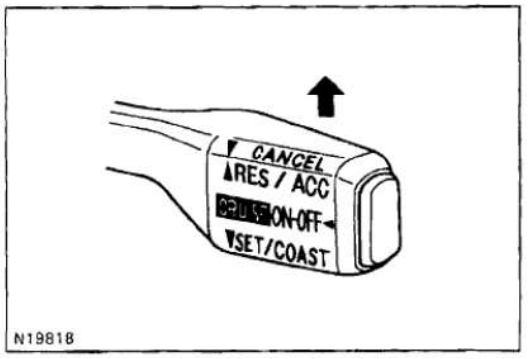
ROAD TEST ..... BE – 190
HOW TO PROCEED WITH TROUBLESHOOTING ..... BE – 192
CUSTOMER PROBLEM ANALYSIS CHECK .. BE – 193
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DIAGNOSTIC CODE CHART ..... BE – 197
PARTS LOCATION ..... BE – 198
TERMINALS OF ECU ..... BE – 199
PROBLEM SYMPTOMS TABLE ..... BE – 201
CIRCUIT INSPECTION
- DTC. Code 11,15 Actuator Motor Circuit ..... BE – 203
- DTC. Code 12 Magnetic Clutch Circuit ..... BE – 205
- DTC. Code 13 Actuator Position Sensor Circuit (RHD models) ..... BE – 207
- DTC. Code 14 Actuator Mechanical Malfunction ..... BE – 210
- DTC. Code 21 Open in Vehicle Speed Sensor Circuit ..... BE – 213
- DTC. Code 23 Vehicle Speed Signal Abnormal ..... BE – 216
- DTC. Code 32 Control Switch Circuit (Cruise Control Switch) ..... BE – 217
- DTC. Code 51 Idle Signal Circuit ..... BE – 220
- Stop Light Switch Circuit ..... BE – 222
- Idle Switch Circuit ..... BE – 225
- Electronically Controlled Transmission Communication Circuit ..... BE – 227
- Neutral Start Switch Circuit ..... BE – 230
- Clutch Switch Circuit ..... BE – 233
- ECU Power Source Circuit ..... BE – 235
- Back-up Power Source Circuit ..... BE – 238
- Main Switch Circuit (Cruise Control Switch) ..... BE – 240
- CRUISE MAIN Indicator Light Circuit ..... BE – 242
- Diagnosis Circuit ..... BE – 244
- Actuator Control Cable ..... BE – 246

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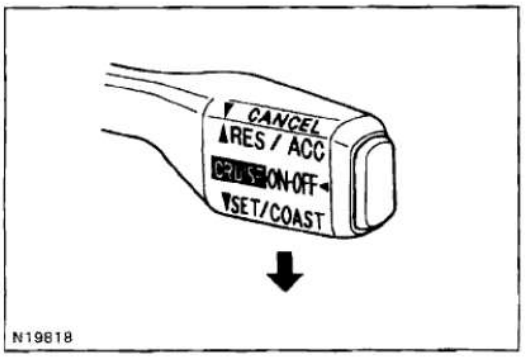
ROAD TEST

(a) SET INSPECTION
- (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/COAST.
- (4) After releasing the switch, check that the vehicle cruises at the desired speed.



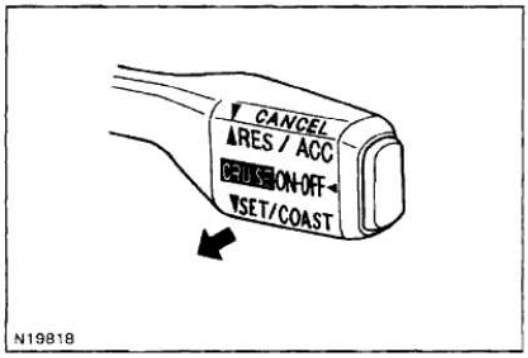
(b) ACCEL INSPECTION
- (1) Push the main switch ON.
- (2) Drive at a desired speed (40 km/h (25 mph) or higher).
- (3) Check that the vehicle speed is increased while the control switch turned to RES/ACC, and that the vehicle cruises at the set speed when the switch is released.
- (4) Momentarily press the control switch upward in the RES/ACC and then immediately release it. Check that the vehicle speed increases by about 1.5 km/h (Tap-up function).

BE

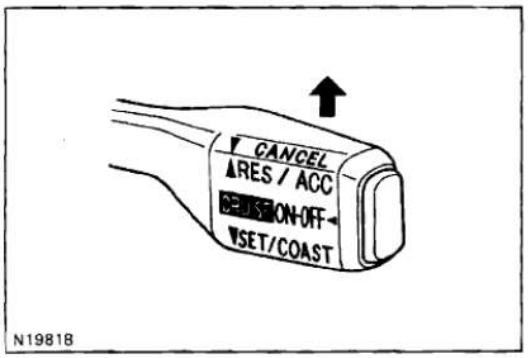


(c) COAST INSPECTION
- (1) Push the main switch ON.
- (2) Drive at a desired speed (40 km/h (25 mph) or higher).
- (3) Check that the vehicle speed is decreased while the control switch is turned to SET/COAST, and the vehicle cruise at the set speed when the switch is released.
- (4) Momentarily press the control switch is turned to SET/COAST, and then immediately release it. Check that the vehicle speed decreases by about 1.5 km/h (Tap-down function).

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(d) CANCEL INSPECTION
(1) Push the main switch 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
- Depress the clutch pedal (M/T)
- Shift to except D range (A/T)
- Turn the main switch OFF
- Pull the cruise control switch to CANCEL



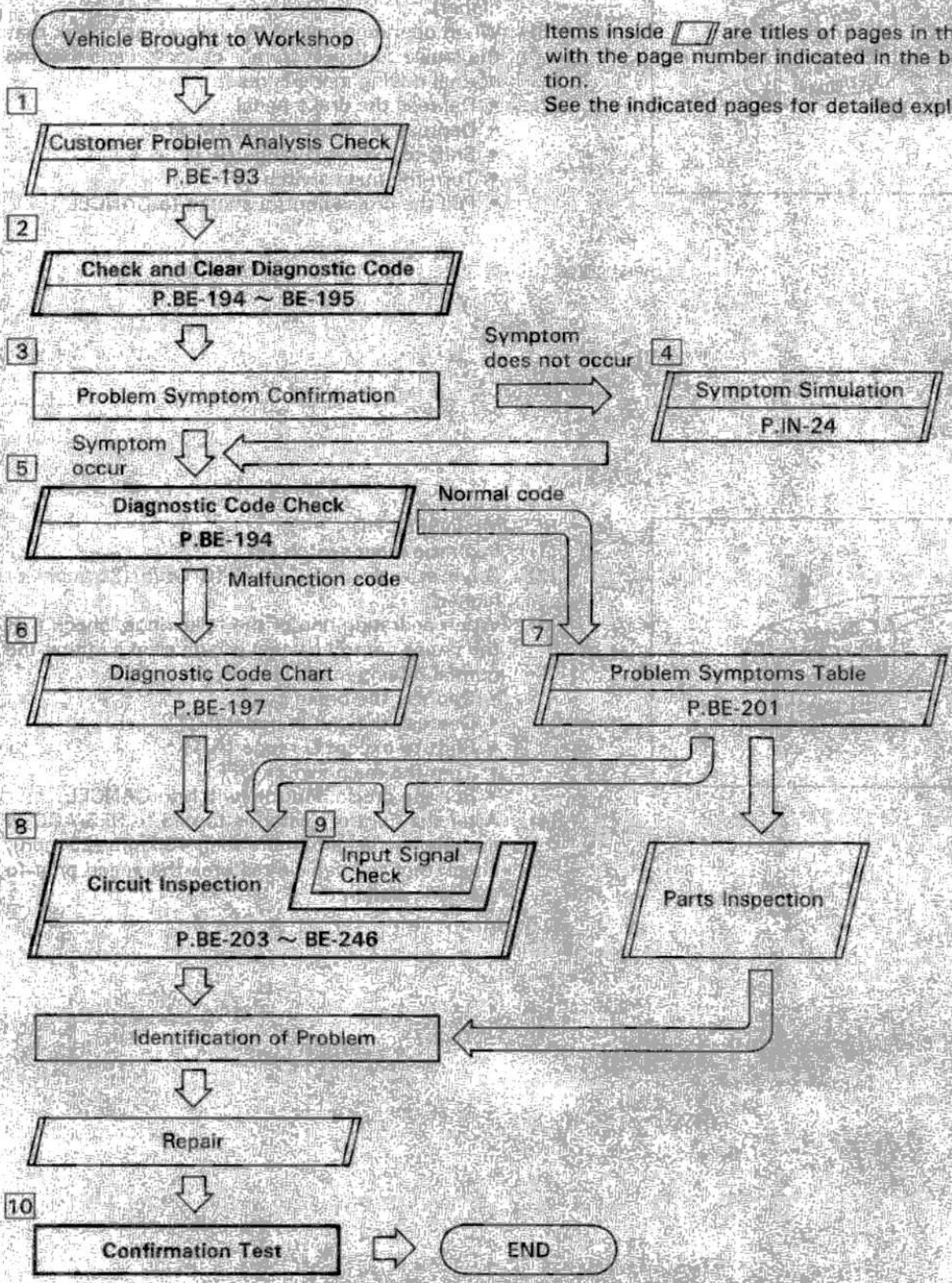
(e) RESUME INSPECTION
(1) Push the main switch ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal
- Depress the clutch pedal (M/T)
- Shift to except D range (A/T)
- Turn the main switch OFF
- Pull the cruise control switch to CANCEL

(4) After the control switch is turned to RES/ACC at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed prior to the cancellation.

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HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting 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.

Step 2 , 5 , 8 , 10 : Diagnostic steps permitting the use of the TOYOTA hand-held tester or TOYOTA braek-out-box.

BE

CUSTOMER PROBLEM ANALYSIS CHECK

CRUISE CONTROL SYSTEM Check Sheet

Inspector's Name :

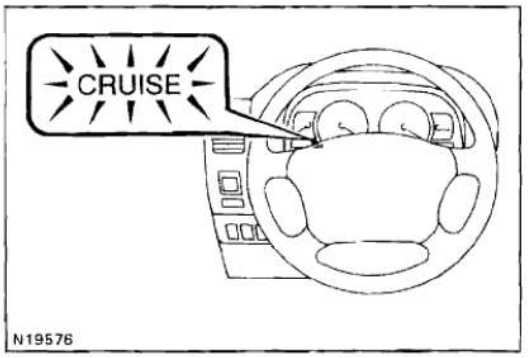
Customer's Name		**Registration No.**	
		Registration Year	
		Frame No.	
Data of Vehicle Brought in	/ /	**Odometer Reading**	km Mile

Condition of Problem Occurrence	**Date of Problem Occurrence**	/ /
	How Often does Problem Occur?	☐ 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 range shift ☐ At 40 km/h (25 mph) or less ☐ 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
	☐	☐ Remains ON ☐ Does not light up: ☐ Blinking

Diagnostic Code Check	**1st Time**	☐ Normal Code	☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code	☐ Malfunction Code (Code)

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PRE-CHECK

1. DIAGNOSIS SYSTEM

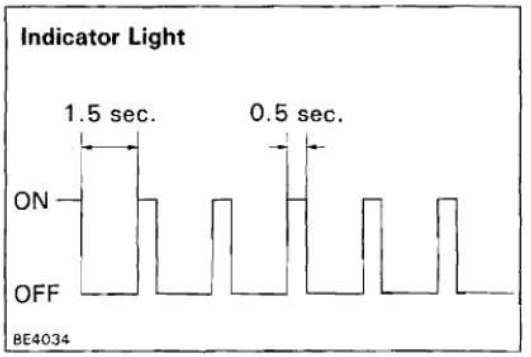
(a) INDICATOR CHECK

(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:

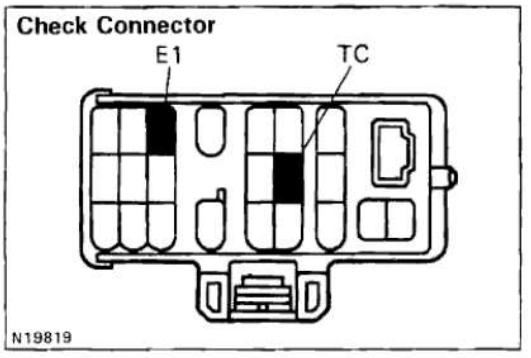
If the indicator check result is not normal, proceed to troubleshooting (See page BE-51) for the combination meter section.



(b) DIAGNOSTIC CODE CHECK

HINT:

If a malfunction occurs in the No.1 vehicle speed sensors or actuator, etc. during cruise control driving, the ECU 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 stopped in memory as a diagnostic code.



(c) OUTPUT OF DIAGNOSTIC CODE USING DIAGNOSIS CHECK WIRE

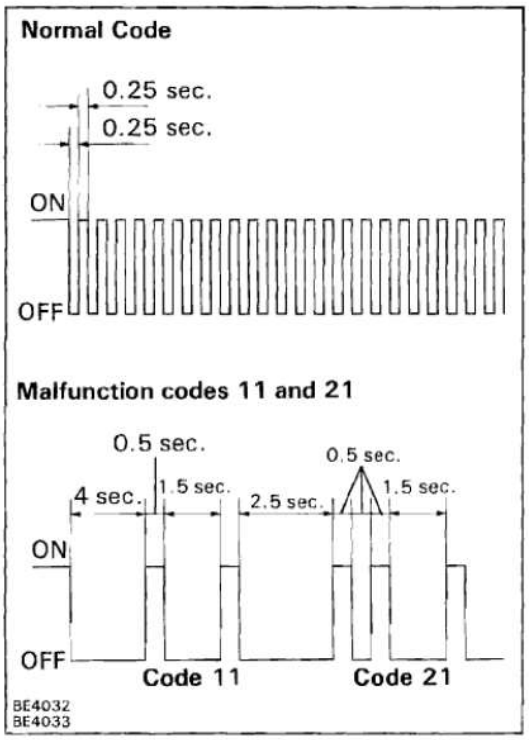
(1) Turn the ignition switch ON.

(2) Using SST, connect terminals Tc and E_1 of check connector.

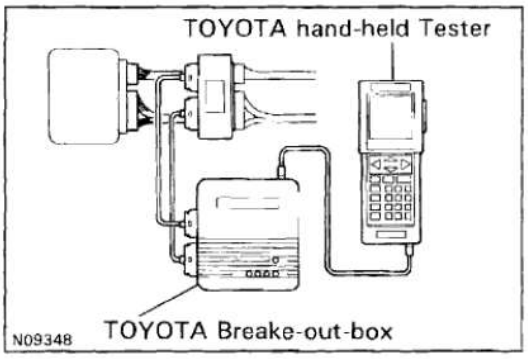
SST 09843–18020

(3) Read the diagnostic code on the CRUISE MAIN indicator light.

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HINT:
If the diagnostic code is not output, inspect the diagnosis circuit (See page BE-244).
As an example, the blinking patterns for codes; normal, 11 and 21 are shown in the illustration.

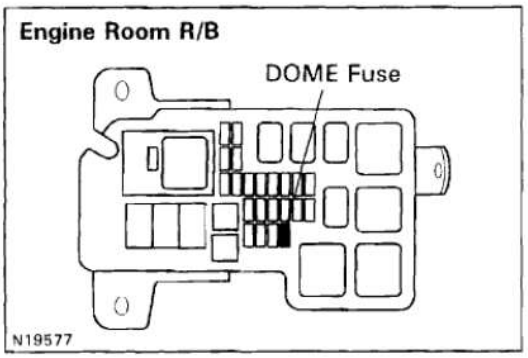


2. ECU TERMINAL VALUES MEASUREMENT BY USING TOYOTA BREAK-OUT-BOX AND TOYOTA HAND-HELD TESTER

(a) Hook up the TOYOTA break-out-box and TOYOTA hand-held tester to the vehicle.

(b) Read the ECU input/output values by following the prompts on the tester screen.

(c) Please refer to the TOYOTA hand-held tester. It has a "Snapshot" function. This records the measured data and is effective in the diagnosis of intermittent problems.

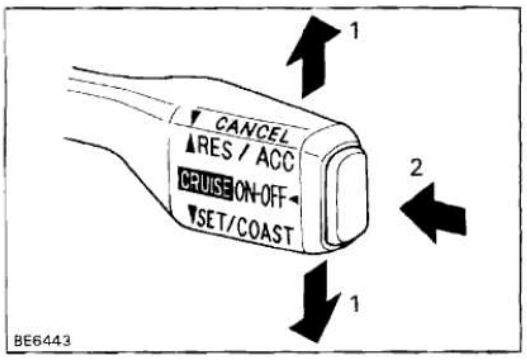


3. DIAGNOSTIC CODE CLEARANCE

(a) After completing repairs, the diagnostic code retained in memory can be cleared by removing the DOME fuse for 10 seconds or more, with the ignition switch off.

(b) Check that the normal code is displayed after connecting the fuse.

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4. INPUT SIGNAL CHECK

HINT:

(1) For check No.1 ~ No.2
Turn the ignition switch ON.

(2) For check No.3
- Turn ignition switch ON.
- Shift to D range

(3) For check No.4
- Jack up the vehicle.
- Start the engine.
- Shift to D range.

(a) Press the control switch to SET/COAST or RES/ACC position and hold it down or hold it up to "1".

(b) Push on the main switch ON "2".

(c) Check that the CRUISE MAIN indicator light blinks twice or 3 times repeatedly after 3 seconds.

(d) Turn the SET/COAST or RES/ACC switch OFF.

(e) Operate each switch as listed in the table below.

(f) Read the blinking pattern of the CRUISE MAIN indicator light.

(g) After performing the check, turn the main switch OFF.

HINT:

When 2 or more signals are input to the ECU, the smallest numbered code will be displayed first.

No.	Operation Method	CRUISE MAIN Indicator Light Blinking Pattern	Diagnosis
1	Turn SET/COAST switch ON	Light: ON / OFF — 0.25 sec. ON, 0.25 sec. OFF, 1 sec.	SET/COAST switch circuit is normal
2	Turn RES/ACC switch ON	Light: ON / OFF	RES/ACC switch circuit is normal
3	Turn CANCEL switch ON	Light: ON — Switch OFF; OFF — Switch ON	CANCEL switch circuit is normal
	Turn stop light switch ON Depress brake pedal		Stop light switch circuit is normal
	Turn neutral start switch OFF (Shift to except D range)	Light: ON — Switch ON; OFF — Switch OFF	Neutral start switch circuit is normal
	Turn clutch switch OFF (Depress clutch pedal)		Clutch switch circuit is normal
4	Drive at about 40 km/h (25 mph) or higher	Light: ON / OFF	Vehicle Speed Sensor is normal
	Drive at about 40 km/h (25 mph)or below	Light: ON / OFF	

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DIAGNOSTIC CODE CHART

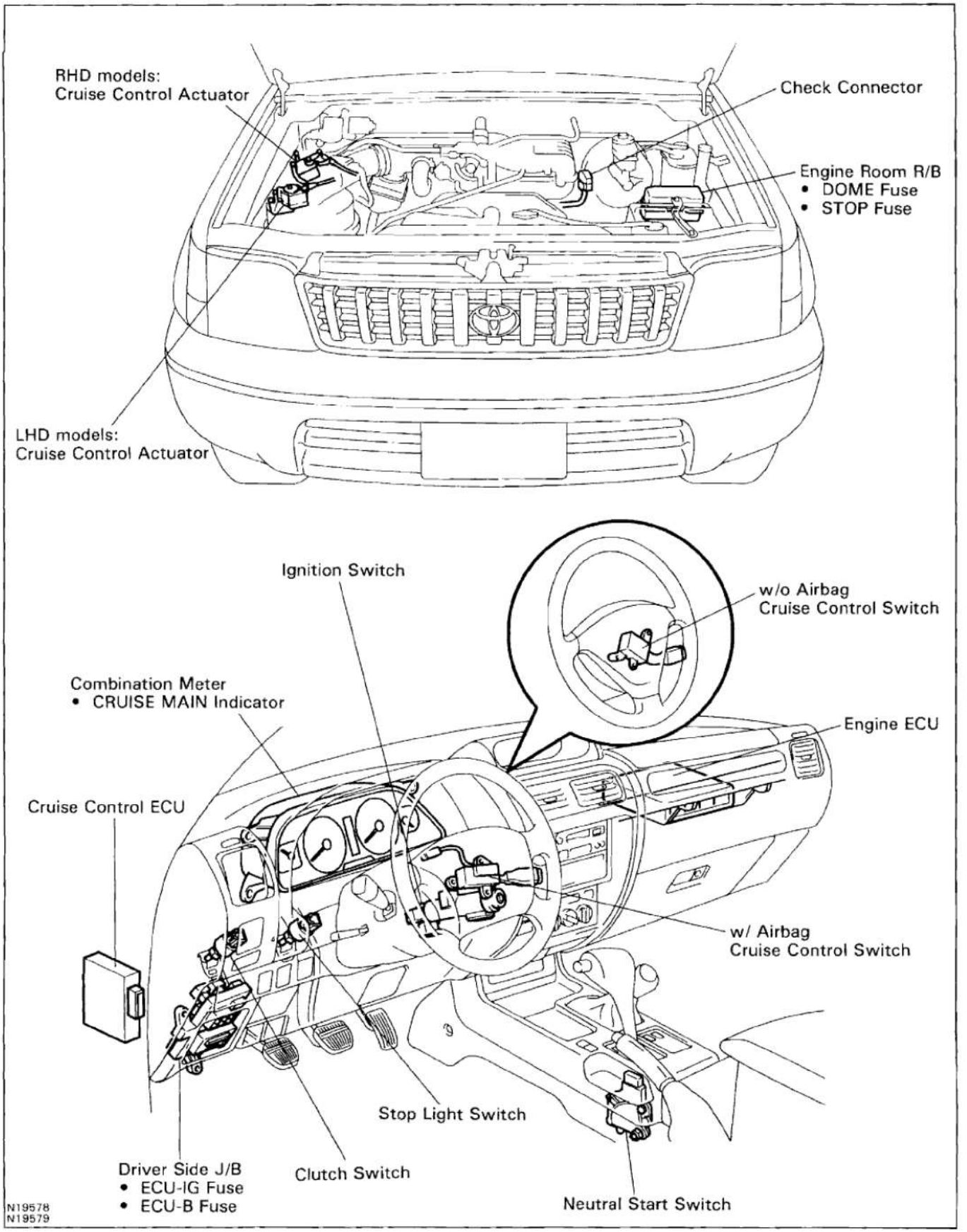
If a malfunction code is displayed during the diagnostic code check, check the circuit listed for that code in the table below and proceed to the appropriate page.

Diagnostic Code No. (See Page)	Detection Item	Trouble Area
11, 15*1 (BE-203)	Actuator Motor Circuit	• Cruise control actuator motor • Harness or connector between actuator motor and ECU • ECU
12 (BE-205)	Actuator Magnetic Clutch Circuit	• Cruise control magnetic clutch • Harness or connector between ECU and magnetic clutch, magnetic clutch and body ground • ECU
13*2 (BE-207)	Actuator Position Sensor Circuit	• Cruise control actuator motor • Cruise control actuator position sensor • Harness or connector between actuator position sensor and body ground • Harness or connector between actuator motor and ECU • ECU
14 (BE-210)	Actuator Motor Circuit Actuator Position Sensor	• Cruise control actuator motor • Cruise control actuator position sensor • Harness or connector between actuator position sensor and body ground • Harness or connector between actuator motor and ECU • ECU
21 (BE-213)	Vehicle Speed Sensor Circuit	• Vehicle speed sensor • ECM • Combination meter • Harness or connector between vehicle speed sensor and ECM, ECM and combination meter, combination meter and ECU • ECU
23 (BE-216)	Vehicle Speed Sensor Circuit	• Vehicle speed sensor • Harness or connector (SPD) • ECU
32 (BE-217)	Control Switch Circuit (Cruise Control Switch)	• Cruise control switch • Harness or connector between control switch and ECU • ECU
41	Cruise Control ECU	• Cruise control ECU
42	Source voltage drop	• Power source
51*1 (BE-220)	Idle switch circuit	• Throttle position sensor • Harness or connector between cruise control ECU and throttle position sensor • Cruise control ECU

*1: LHD models
*2: RHD models

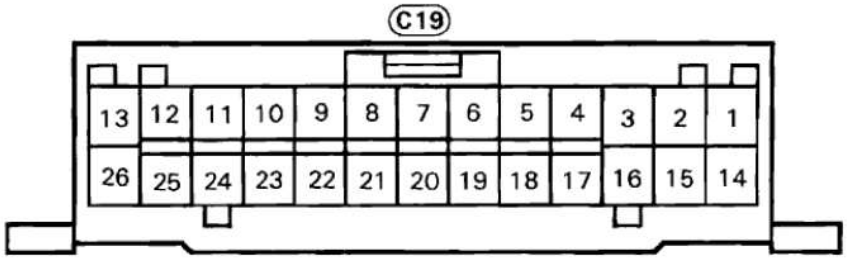
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PARTS LOCATION



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TERMINALS OF ECU



N19820

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
D ↔ GND (C17-2 ↔ C17-13)	M/T:G-Y ↔ W-B	M/T: Depress clutch pedal A/T: Shift to except D range	Below 1 V
	A/T:G-O ↔ W-B	M/T: Release clutch pedal A/T: Shift to D range	10 – 16 V
PI ↔ GND (C17-7 ↔ C17-13)	B-Y ↔ W-B	Ignition switch ON Cruise control main switch ON	Below 1.2 V
		Ignition switch ON Cruise control main switch OFF	10 – 16 V
TC ↔ GND (C17-8 ↔ C17-13)	P-L ↔ W-B	Ignition switch ON	10 – 16 V
		Ignition switch ON Connect terminals TC and E1 of diagnostic check connector	Below 1 V
OD ↔ GND (C17-9 ↔ C17-13)	V-R ↔ W-B	During cruise control driving OD switch ON	10 – 16 V
		During cruise control driving OD switch OFF (3rd driving)	Below 1 V
L ↔ GND (C17-10 ↔ C17-13)	R ↔ W-B	During cruise control driving	9 – 15 V
		Except during cruise control driving	Below 1 V
MC ↔ GND (C17-11 ↔ C17-13)	L-R ↔ W-B	During cruise control driving COAST switch hold ON	9 – 15 V
		During cruise control driving ACC switch hold ON	Below 1 V
MO ↔ GND (C17-12 ↔ C17-13)	L ↔ W-B	During cruise control driving ACC switch hold ON	9 – 15 V
		During cruise control driving COAST switch hold ON	Below 1 V
GND ↔ Body Ground (C17-13 ↔ Body Ground)	W-B ↔ Body Ground	Constant	Below 1 V
B ↔ GND (C17-14 ↔ C17-13)	B-R ↔ W-B	Ignition switch ON	10 – 16 V
BATT ↔ GND (C17-15 ↔ C17-13)	W-R ↔ W-B	Constant	10 – 16 V
STP ↔ GND (C19-16 ↔ C19-13)	G-W ↔ W-B	Depress brake pedal	10 – 16 V
		Release brake pedal	Below 1 V

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Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
CCS ↔ GND (C17-18 ↔ C17-13)	B ↔ W-B	Ignition switch ON	10 – 16 V
		Ignition switch ON CANCEL switch hold ON	5.1 – 8.3 V
		Ignition switch ON SET/COAST switch hold ON	2.4 – 4.0 V
		Ignition switch ON RES/ACC switch hold ON	0.8 – 1.4 V
CMS ↔ GND (C17-19 ↔ C17-13)	Y-R ↔ W-B	Ignition switch ON Main switch ON	Below 1 V
		Ignition switch ON Main switch OFF	10 – 16 V
SPD ↔ GND (C17-20 ↔ C17-13)	V-W ↔ W-B	Ignition switch ON	10 – 16 V
		During driving	3 – 7 V
IDL ↔ GND (C17-21 ↔ C17-13)	G-W ↔ W-B	Ignition switch ON Throttle valve fully closed	Below 1 V
		Ignition switch ON Throttle valve fully opened	10 – 16 V
ECT ↔ GND (C17-22 ↔ C17-13)	R-Y ↔ W-B	During driving Gear position O/D	Below 1 V
		During driving Gear position 3rd	10 – 16 V
*VR1 ↔ GND (C17-23 ↔ C17-13)	Y ↔ W-B	Ignition switch ON	4.7 – 5.2 V
*VR2 ↔ VR3 (C17-24 ↔ C17-25)	Y-G ↔ R-B	During cruise control driving	1.0 – 4.7 V
		Ignition switch ON Actuator control plate fully opened	4.2 – 4.7 V
		Ignition switch ON Actuator control plate fully closed	1.0 – 1.2 V
*VR3 ↔ GND (C17-25 ↔ C17-13)	R-B ↔ W-B	Constant	Below 1 V
L ↔ GND (C19-26 ↔ C19-13)	W-G ↔ W-B	Constant	Below 1 V

*: RHD models

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PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
•Cruise control system does not set. •Cruise control system does not operate.	Input signal check No.4: OK	
	1. ECU Power Source Circuit	BE-235
	2. Wire Harness	
	3. Cruise Control Main Switch Circuit	BE-240
	4. Cruise Control Switch Circuit	BE-217
	5. Stop Light Switch Circuit	BE-222
	6. Neutral Start Switch or Clutch Switch Circuit	BE-230,BE-233
	7. Actuator Control Cable	BE-246
	8. Cruise Control Actuator Motor Circuit	BE-203
	9. Cruise Control ECU	IN-35
	Input signal check No.4: NG	
	1. Vehicle Speed Sensor Circuit	BE-213
	2. Cruise Control ECU	IN-35
Indicator light does not light up.	1. Wire Harness	
	2. Indicator Light Circuit	BE-242
	3. Cruise Control ECU	IN-35
Vehicle speed drop when the cruise control switch turned to SET.	1. Actuator Control Cable	BE-246
	2. ECU Power Source Circuit	BE-235
	3. Idle Switch Circuit	BE-225
	4. Cruise Control Actuator Motor Circuit	BE-203
	5. Cruise Control ECU	IN-35
Set speed deviates on high or low side.	Input signal check No.4: OK	
	1. Vehicle Speed Sensor Circuit	BE-213
	2. Actuator Control Cable	BE-246
	3. ECU Power Source Circuit	BE-235
	4. Cruise Control Actuator Motor Circuit	BE-203
	5. Cruise Control ECU	IN-35
	Input signal check No.4: NG	
	1. Cruise Control ECU	IN-35
Vehicle speed fluctuates when cruise control switch turn to SET.	1. Vehicle Speed Sensor Circuit	BE-213
	2. Actuator Control Cable	BE-246
	3. Idle Switch Circuit	BE-225
	4. ECT Communication Circuit	BE-227
	5. Cruise Control Actuator Motor Circuit	BE-203
	6. Cruise Control ECU	
Acceleration response is sluggish when cruise control switch turn to "ACCEL" or "RESUME".	Input signal check No.4: OK	
	1. Actuator Control Cable	BE-246
	2. Vehicle Speed Sensor Circuit	BE-213
	3. Cruise Control Actuator Motor Circuit	BE-203
	4. Cruise Control ECU	IN-35
	Input signal check No.4: NG	
	1. Cruise Control Switch Circuit	BE-217
	2. Cruise Control ECU	IN-35
Set speed does not cancel when brake pedal depressed.	Input signal check No.3: OK	
	1. Cruise Control ECU	IN-35
	Input signal check No.3: NG	
	1. Stop Light Switch Circuit	BE-222
	2. Cruise Control ECU	IN-35
Cruise control does not cancel when transmission is shifted to except D range. (A/T)	Input signal check No.3: OK	
	1. Cruise Control ECU	IN-35
	Input signal check No.3: NG	
	1. Neutral Start Switch Circuit	BE-230
	2. Cruise Control ECU	IN-35

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Symptom	Suspect Area	See page
Cruise control does not cancel when clutch pedal depressed.	Input signal check No.3: OK	
	1. Cruise Control ECU	IN-35
	Input signal check No.3: NG	
	1. Clutch Switch Circuit	BE-233
	2. Cruise Control ECU	IN-35
Cruise control does not cancel when cruise control switch turned to CANCEL.	Input signal check No.3: OK	
	1. Cruise Control ECU	IN-35
	Input signal check No.3: NG	
	1. Cruise Control Switch Circuit	BE-217
	2. Cruise Control ECU	IN-35
Vehicle speed does not decrease when cruise control switch turned to COAST.	Input signal check No.1: OK	
	1. Cruise Control Actuator Motor Circuit	BE-203
	2. Actuator Control Cable	BE-246
	3. Vehicle Speed Sensor Circuit	BE-213
	4. Cruise Control ECU	IN-35
	Input signal check No.1: NG	
	1. Cruise Control Switch Circuit	BE-217
	2. Cruise Control ECU	IN-35
Vehicle speed does not accelerate when cruise control switch turned to ACCEL.	Input signal check No.2: OK	
	1. Cruise Control Actuator Motor Circuit	BE-203
	2. Actuator Control Cable	BE-246
	3. Vehicle Speed Sensor Circuit	BE-213
	4. Cruise Control ECU	
	Input signal check No.2: NG	
	1. Cruise Control Switch Circuit	BE-217
	2. Cruise Control ECU	IN-35
Vehicle speed does not return to memorized speed when cruise control switch turned to RESUME.	Input signal check No.2: OK	
	1. Cruise Control Actuator Motor Circuit	BE-203
	2. Actuator Control Cable	BE-246
	3. Vehicle Speed Sensor Circuit	BE-213
	4. Cruise Control ECU	IN-35
	Input signal check No.2: NG	
	1. Cruise Control Switch Circuit	BE-217
	2. Cruise Control ECU	IN-35
Speed can be set below about 40 km/h (25 mph).	Input signal check No.4: OK	
	1. Cruise Control ECU	IN-35
	Input signal check No.4: NG	
	1. Vehicle Speed Sensor Circuit	BE-213
	2. Cruise Control ECU	IN-35
Cruise control does not cancel when speed is less than 40 km/h (25 mph).	Input signal check No.4: OK	
	1. Cruise Control Actuator Motor Circuit	BE-203
	2. Cruise Control ECU	IN-35
	Input signal check No.4: NG	
	1. Vehicle Speed Sensor Circuit	BE-213
	2. Cruise Control ECU	IN-35

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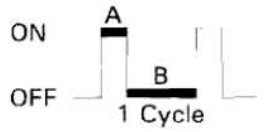
CIRCUIT INSPECTION

DTC	11,15	Actuator Motor Circuit

CIRCUIT DESCRIPTION

The actuator motor is operated by signals from the ECU. Acceleration and deceleration signals are transmitted by changes in the Duty Ratio (See note below).
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.

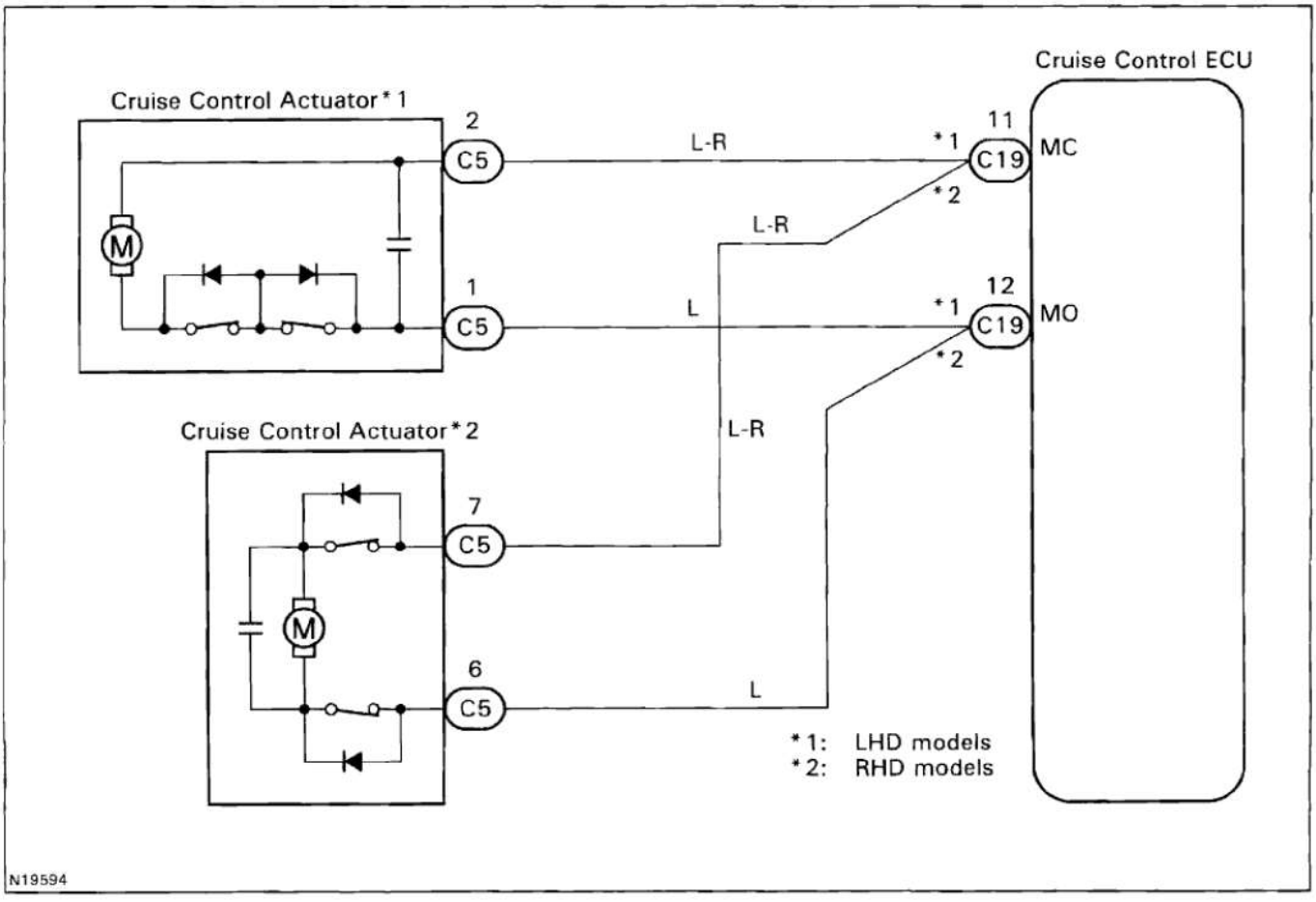
$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$



BE4056

DTC No.	Detection Item	Trouble Area
11	Short in actuator motor circuit	• Cruise control actuator • Harness or connector between actuator and cruise control ECU • Cruise control ECU
15	Open in actuator motor circuit	• Cruise control actuator

WIRING DIAGRAM

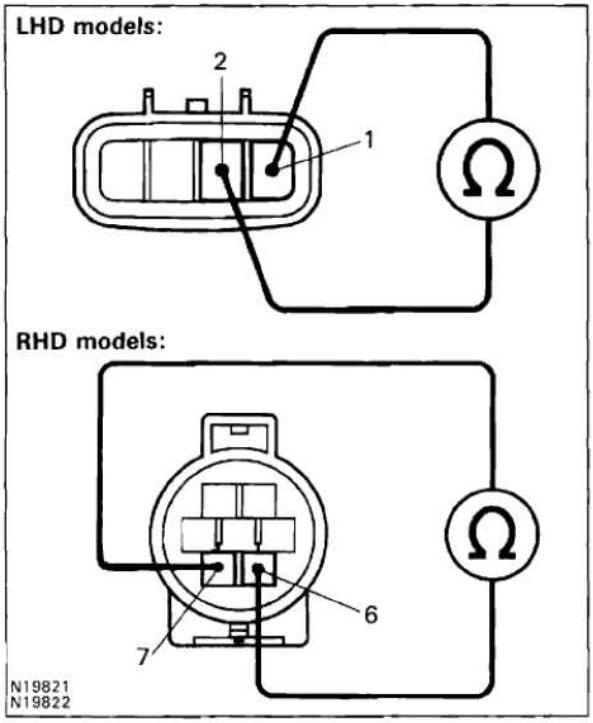


N19594

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INSPECTION PROCEDURE

1 **Check resistance between terminals MO and MC of cruise control actuator.**



PREPARATION:

(a) Ignition switch ON.
(b) Disconnect actuator connector.

CHECK:

Measure resistance between terminals 1 (6) and 2 (7).
( ): RHD models
HINT:
If control plate position is fully opened or fully closed, resistance can not measure.

OK:

Resistance: more than 4.2 Ω

OK → **NG** → **Replace cruise control actuator.**

2 **Check wire harness and connector between terminals MO of cruise control ECU and MO of cruise control actuator (See page IN-30).**

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

Replace cruise control ECU. (See page IN-35).

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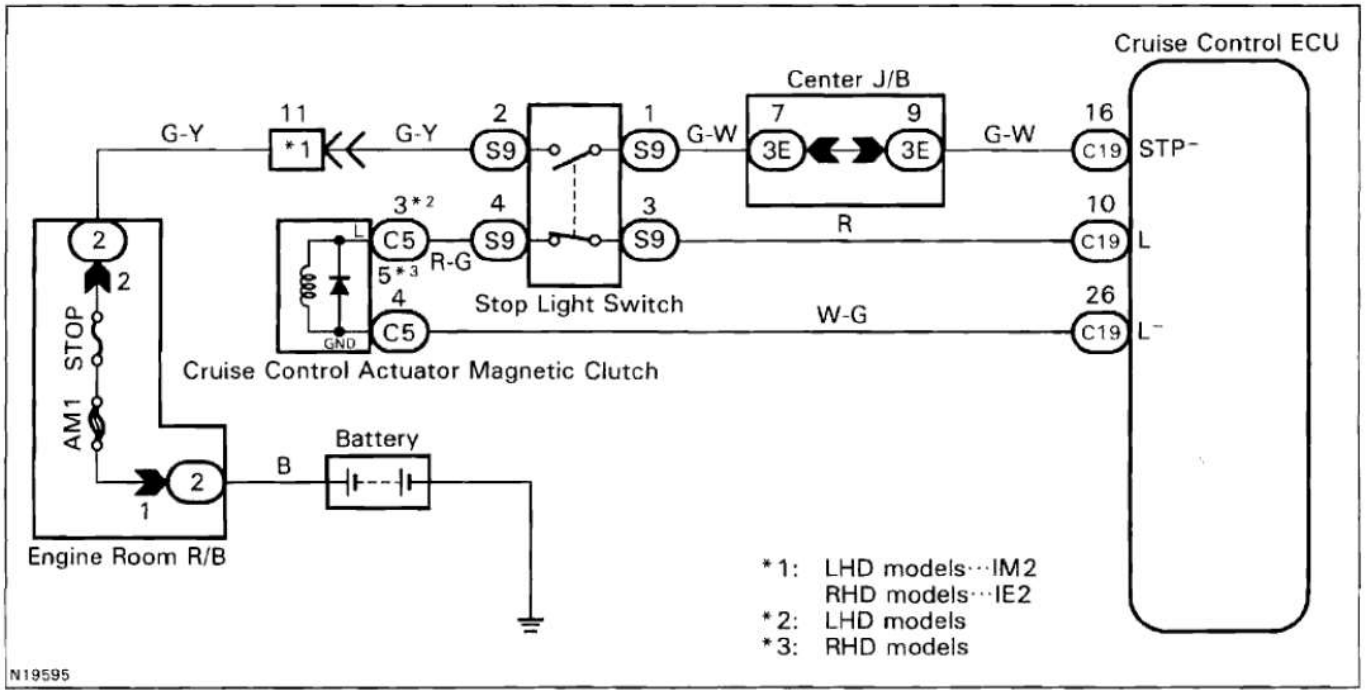
DTC	12	Magnetic Clutch Circuit

CIRCUIT DESCRIPTION

This circuit turns on the magnetic clutch inside the actuator during cruise control operation according to the signal from the ECU. If a malfunction occurs in the actuator or speed sensor, etc. during cruise control operation, the rotor shaft between the motor and control plate is released.
When the brake pedal is depressed, the stop light switch turns on, supplying electrical power to the stop light. Power supply to the magnetic clutch is mechanically cut and the magnetic clutch is turned OFF.
When driving downhill, if the vehicle speed exceeds the set speed by 15 km/h (6 mph) above the set speed, then cruise control at the set speed is resumed.

DTC No.	Detection Item	Trouble Area
12	• Short in magnetic clutch circuit. • Open (0.8 sec.) in magnetic clutch circuit	• Cruise control actuator magnetic clutch • Harness or connector between ECU and magnetic clutch, magnetic clutch and body ground • Cruise control ECU

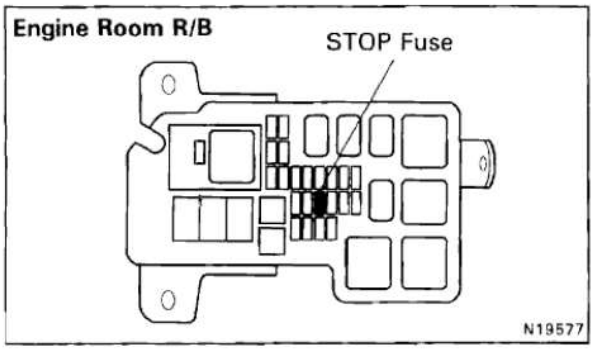
WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **Check STOP fuse.**



PREPARATION:
Remove the STOP fuse from engine room relay block.

CHECK:
Check fuse continuity.

OK:
There is continuity.

OK → **2** **Check harness and connector between actuator and cruise control actuator (See page IN-30).**

NG → **Replace STOP fuse.**

OK → **Check and replace cruise control ECU (See page IN-35).**

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

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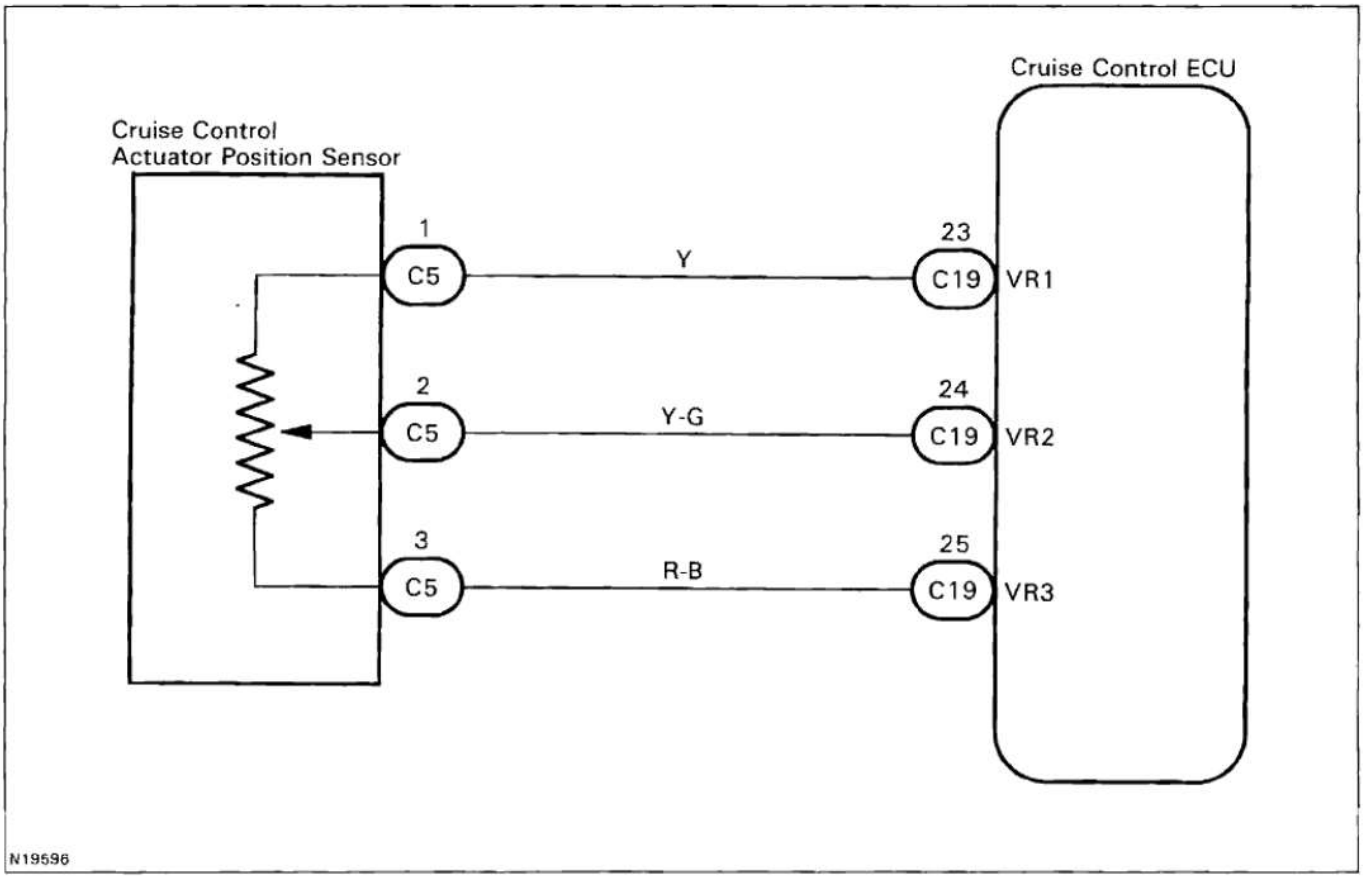
DTC	13	Actuator Position Sensor Circuit (RHD models)

CIRCUIT DESCRIPTION

This circuit detects the rotation position of the actuator control plate and sends a signal to the ECU.

DTC No.	Detection Item	Trouble Area
13	• Position Sensor detects abnormal voltage.	• Cruise control actuator motor • Cruise control actuator position sensor • Harness or connector between actuator position sensor and body ground • Harness or connector between actuator motor and ECU • ECU
14	• Open in actuator motor circuit. • Position sensor signal valve does not change when the motor operates.	

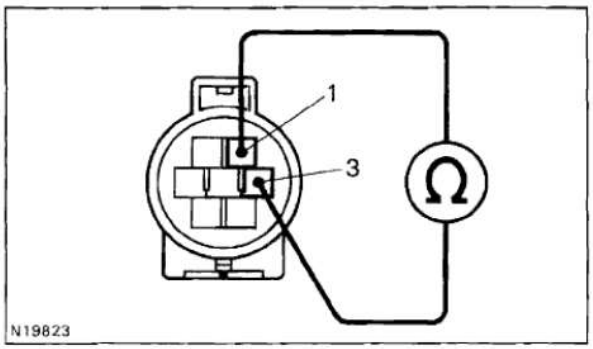
WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **Check resistance between terminals VR1 and VR3 of actuator.**



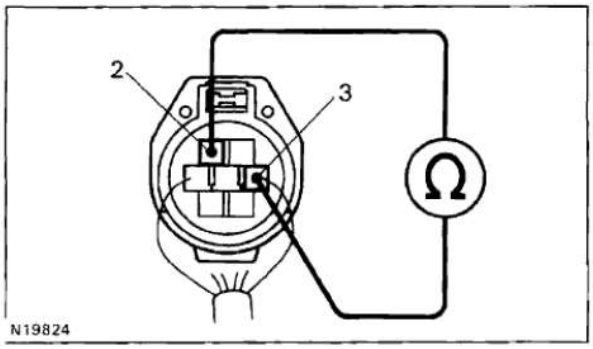
PREPARATION:
Disconnect the actuator connector.

CHECK:
Measure the resistance between the actuator terminal 1 and 3 of actuator connector.

OK:
Resistance: 1.8 ~ 2.2 kΩ (25°C)

OK → **NG** → **Replace actuator.**

2 **Check voltage between terminals VR2 and VR3 of cruise control actuator.**



PREPARATION:
Turn the ignition switch ON.

CHECK:
Measure the voltage between terminals 2 and 3 of actuator connector while turning the control plate slowly by hand from the deceleration side to the acceleration side.

OK:
Voltage:
Fully closed: Approx. 1.3 V
Fully opened: Approx. 4.6 V

HINT:
As the control plate is turned, the voltage should increase gradually without interruption.

OK → **NG** → **Replace cruise control actuator.**

BE

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3	Check for open and short in harness and connector between ECU and actuator position sensor (See page IN-30).

OK

NG → Repair or replace harness or connector.

Chech and replace cruise control ECU (See page IN-35).

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DTC	14	Actuator Mechanical Malfunction

CIRCUIT DESCRIPTION

See page BE-203.

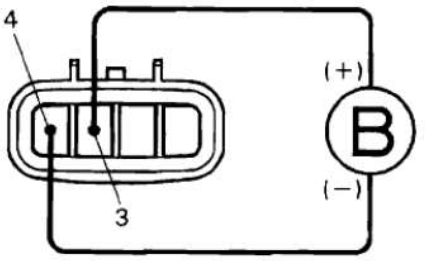
WIRING DIAGRAM

See page BE-203.

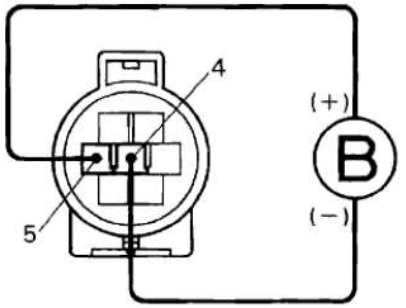
INSPECTION PROCEDURE

1 Check actuator arm locking operation

LHD models



RHD models



N19825
N19826

PREPARATION:

(a) Ignition switch OFF.
(b) Disconnect the actuator connector.

CHECK:

(a) Connect the positive (+) lead from the battery to the terminal 3 (5) of actuator and the negative (–) lead to terminal 4 (4).
( ): RHD models

NOTICE:
Do not connect the high tension cables to the wrong battery terminal. You will damage the cruise control actuator.

(b) Move the control plate by hand.

OK:

Control plate does not move.

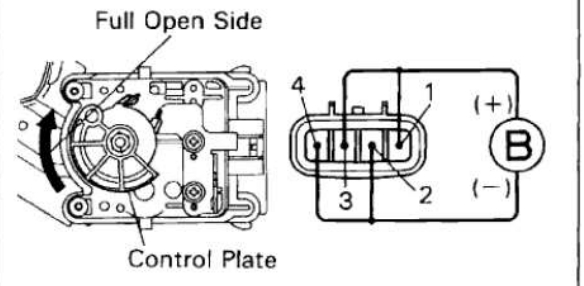
OK

NG → **Replace cruise control actuator.**

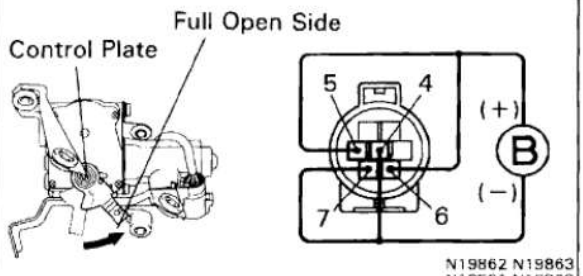
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2 Check actuator operation.

LHD models



RHD models



N19862 N19863
N19581 N19829

PREPARATION:

Disconnect the actuator connector.

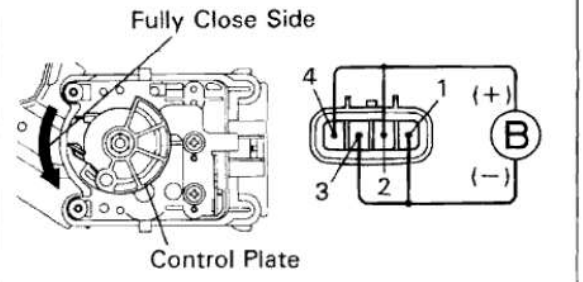
CHECK:

Connect the positive (+) lead from the battery to terminals 3 (5) and 1 (6) of actuator, connect the negative (−) lead to terminals 4 (4) and 2 (7) of actuator.
( ): RHD models

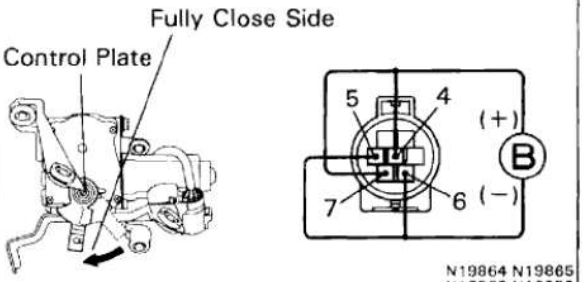
OK:

Control arm moves to full open side

LHD models



RHD models



N19864 N19865
N19580 N19832

CHECK:

Connect the positive (+) lead from the battery to terminals 4 (4) and 2 (7) of actuator, connect the negative (−) lead to terminals 3 (5) and 1 (6) of actuator.
( ): RHD models

OK:

Control arm moves to full close side

OK

NG → **Replace actuator.**

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3	Check harness and connector between actuator and cruise control ECU (See page IN-30).

OK

NG → Repair or replace harness or connector.

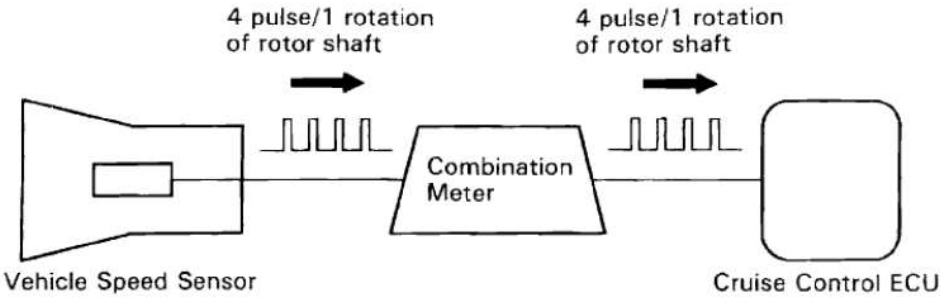
Check and replace cruise control ECU (See page IN-35).

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DTC	21	Open in Vehicle Speed Sensor Circuit

CIRCUIT DESCRIPTION

The vehicle speed sensor circuit is sent to cruise control ECU as vehicle speed signal. For each rotation of the shaft, the vehicle speed sensor sends a signal through the combination meter to the cruise control ECU (See the following). The ECU calculates the vehicle speed from this pulse frequency.

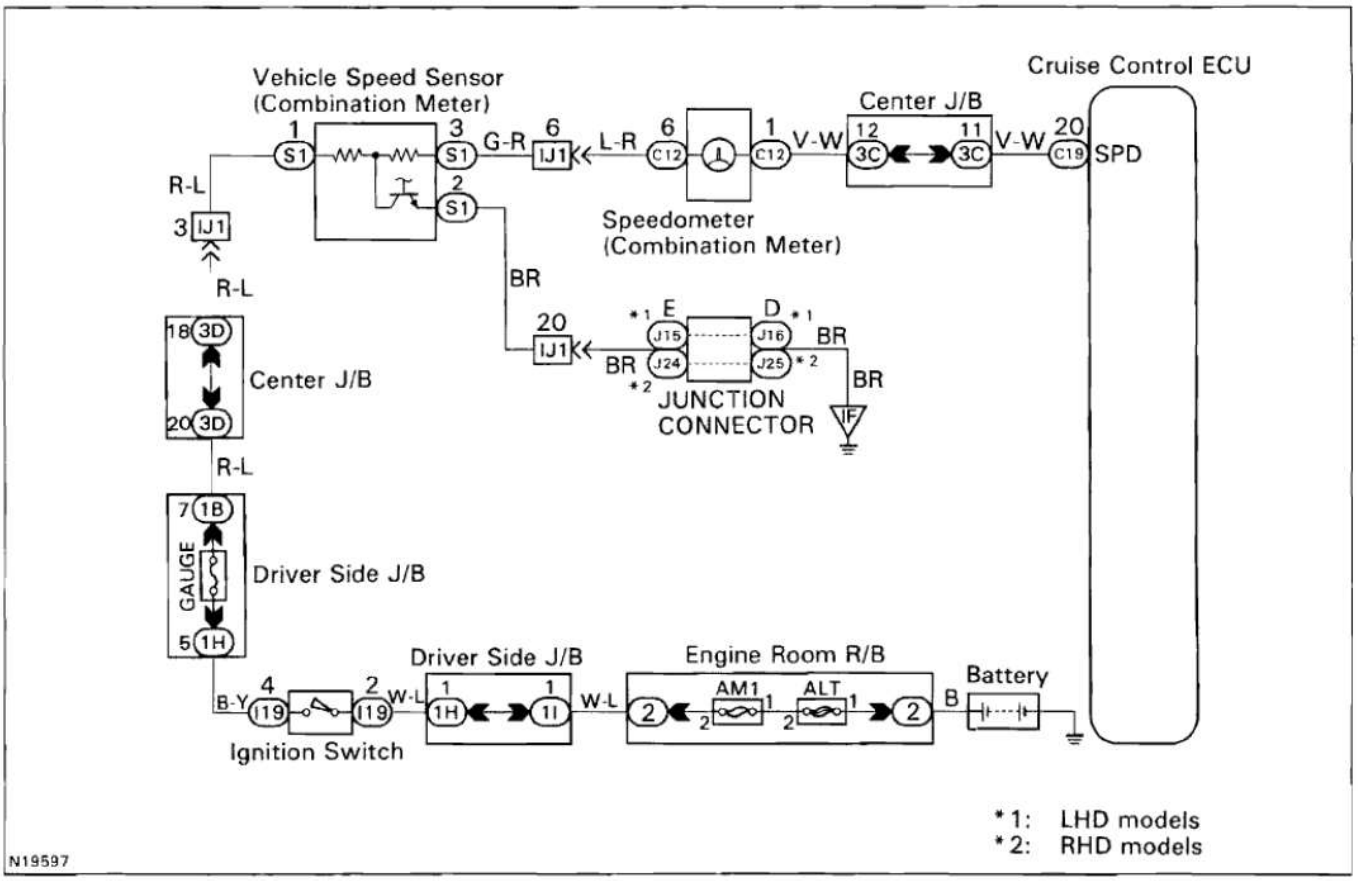


N10528

DTC No.	Detection Item	Trouble Area
21	Speed signal is not input to the cruise control ECU while cruise control is set.	• Vehicle speed sensor • Combination meter • Harness or connector between vehicle speed sensor and combination meter, combination meter and cruise control ECU • Cruise control ECU

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WIRING DIAGRAM



BE

INSPECTION PROCEDURE

1 Input signal check.

Input Signal	Indicator Light Blinking Pattern
Drive at about 40 km/h (25 mph) or below	Light: ON / OFF
Drive at about 40 km/h (25 mph) or higher	Light: ON / OFF

CHECK:

(a) See input signal check on page BE-196.
(b) Check the indicator light operation when driving with vehicle speed above 40 km/h (25 mph), and with vehicle speed below 40 km/h (25 mph).

OK:

Vehicle speed above 40 km/h (25 mph):
Indicator light blinks
Vehicle speed below 40 km/h (25 mph):
Indicator light stays on

NG

OK → **Check and replace cruise control ECU (See page IN-35).**

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2	Check harness and connector between speed meter and cruise control ECU (See page IN-30).

OK → Check vehicle speed sensor (See page BE-56).

NG → Repair or replace harness or connector.

3	Check vehicle speed sensor (See page BE-56).

OK → Check and replace cruise control ECU (See page IN-35).

NG → Replace vehicle speed sensor.

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DTC	23	Vehicle Speed Signal Abnormal

CIRCUIT DESCRIPTION

See page BE-213.

DTC No.	Detection Item	Trouble Area
23	• Vehicle speed sensor pulse is abnormal. (When speed signal is not input to the ECU below 0.2 sec., code will be displayed.)	• Vehicle speed sensor • Cruise control ECU

WIRING DIAGRAM

See page BE-214.

INSPECTION PROCEDURE

1	Check vehicle speed sensor (See page BE-56).

OK

NG → Replace vehicle speed sensor.

Chech and replace cruise control ECU (See page IN-35).

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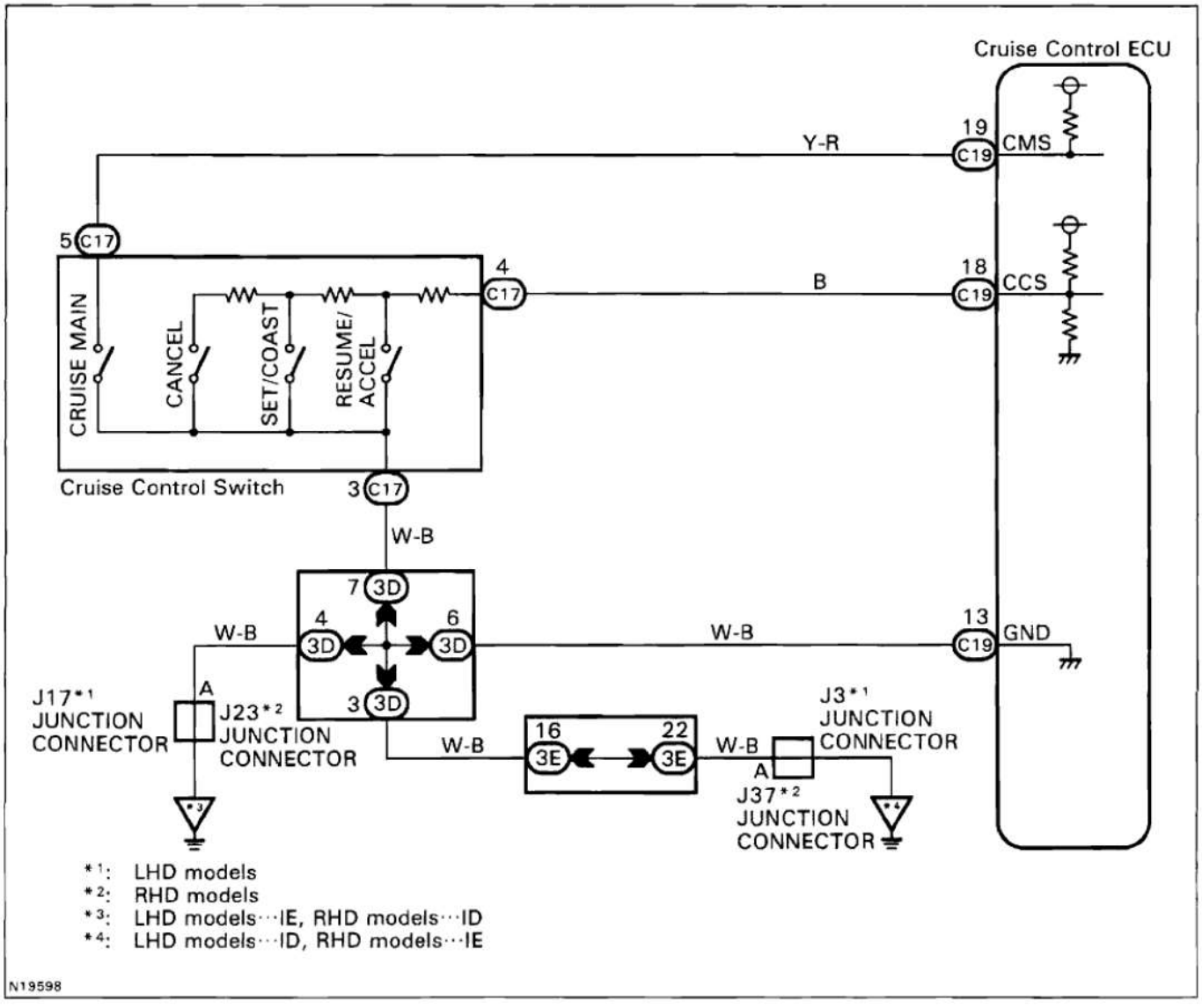
DTC	32	Control Switch Circuit (Cruise Control Switch)

CIRCUIT DESCRIPTION

This circuit carries the SET/COAST, RESUME/ACCEL and CANCEL signals (each voltage) to the ECU.

DTC No.	Detection Item	Trouble Area
32	Short in control switch circuit	• Cruise control switch • Harness or connector between control switch and cruise control ECU. • Cruise control ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **Input signal check.**

Input Signal	Indicator Light Blinking Pattern
SET/COAST switch	ON / OFF — 2 Pulses
RESUME/ACCEL switch	ON / OFF — 3 Pulses
CANCEL switch	ON / OFF — SW OFF, SW ON

PREPARATION:

See input signal check on page BE-196.

CHECK:

Check the indicator light operation when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned on.

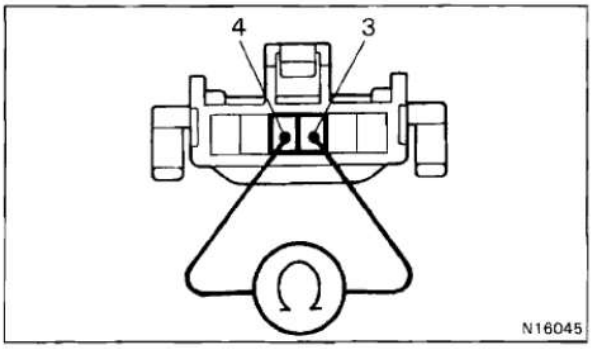
OK:

SET/COAST, RESUME/ACCEL switch
The signals shown in the table on the left should be output when each switch is ON. The signal should disappear when the switch is turned OFF.
CANCEL switch
The indicator light goes off when the cancel switch is turned ON.

NG

OK → **Wait and see.**

2 **Check control switch.**



PREPARATION:

(a) Remove steering wheel center pad. (See page SR-16).
(b) Disconnect control switch connector.

CHECK:

Measure resistance between terminals 3 and 4 of control switch connector when control switch is operated.

Switch position	Resistance (Ω)
Neutral	∞ (No continuity)
RES/ACC	50 – 80
SET/COAST	180 – 220
CANCEL	400 – 440

NG

OK → **Replace control switch.**

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3	Check harness and connector between cruise control switch and cruise control ECU (See page IN-30).

OK

NG → Repair or replace harness or connector.

4	Input signal check (See step 1).

NG

OK → Wait and see.

Check and replace cruise control ECU (See page IN-35).

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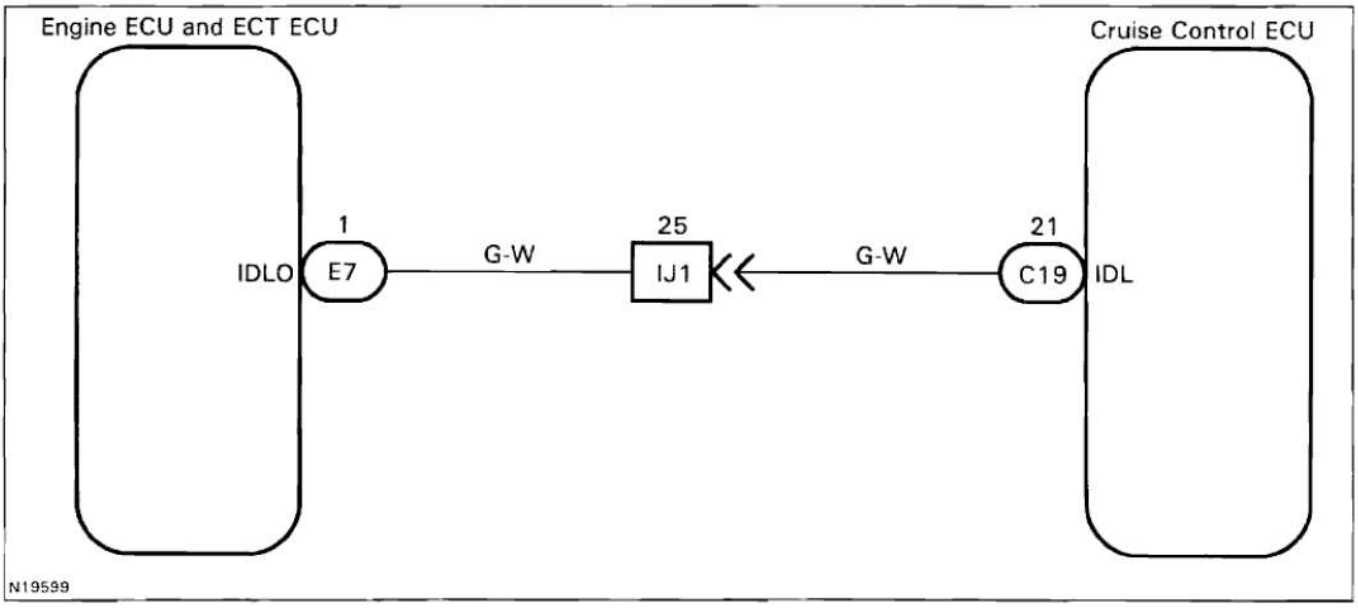
DTC	51	Idle Signal Circuit (LHD models)

CIRCUIT DESCRIPTION

When the idle switch in turned ON, a signal is sent to the ECU. The ECU uses this signal to correct the discrepancy between the throttle valve position and the actuator position sensor value to enable accurate cruise control at the set speed. If the idle switch is malfunctioning, problem symptoms also occur in the engine, so also inspect the engine.

DTC No.	Detection Item	Trouble Area
51	Short in idle signal circuit	• Harness or connector between cruise control ECU and throttle position sensor • Throttle position sensor • Cruise control ECU

WIRING DIAGRAM



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INSPECTION PROCEDURE

1	Check throttle position sensor circuit.

OK → 2

NG → Replace throttle position sensor.

2	Check harness and connector between ECM and throttle position sensor (See page IN-30).

OK → 3

NG → Repair or replace harness or connector.

3	Check harness and connector between cruise control ECU and throttle position sensor (See page IN-30).

OK → Check and replace cruise control ECU (See page IN-35).

NG → Repair or replace harness or connector.

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Stop Light Switch Circuit

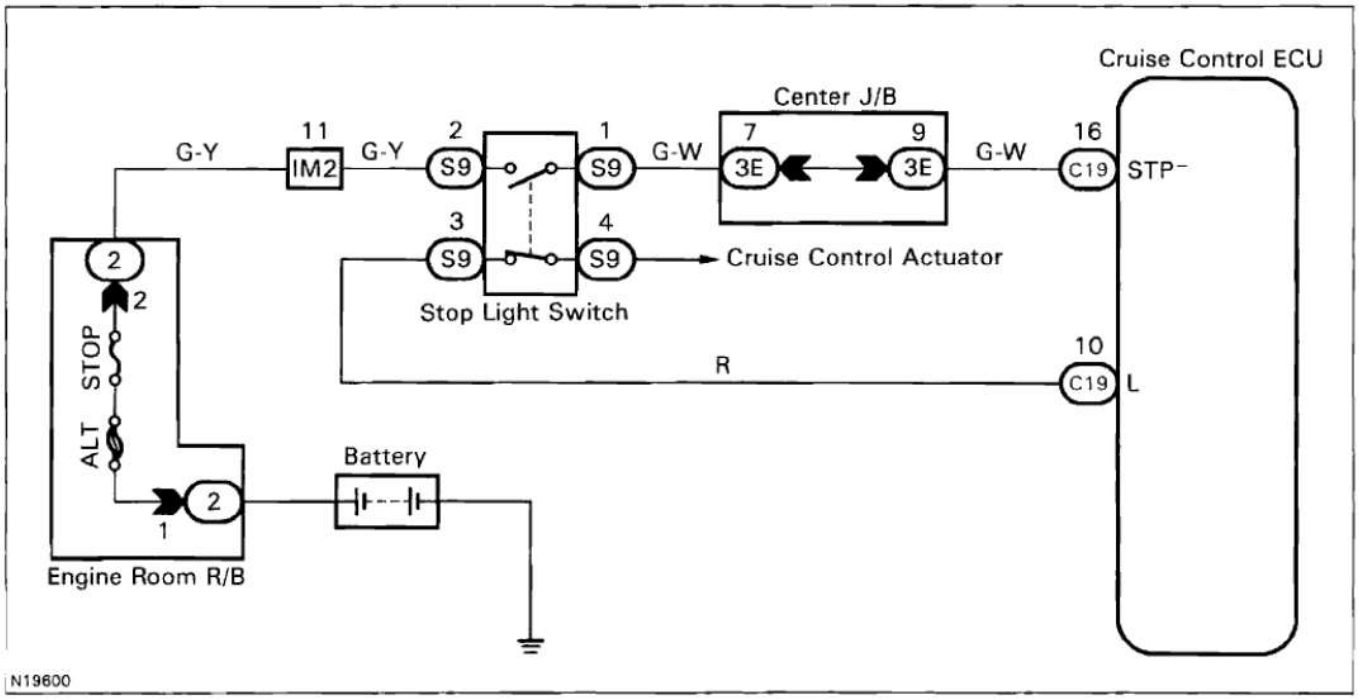
CIRCUIT DESCRIPTION

When the brake is on, battery positive voltage normally applies through the STOP fuse and stop light switch to terminal STP – of the ECU, and the ECU turns the cruise control off.
A fail – safe function is provided so that cancel functions normally, even if there is a malfunction in the stop light signal circuit.

If the harness connected to terminal STP – has an open circuit, terminal STP – will have battery voltage and the cruise control will be turned off.

Also, when the brake is on, the magnetic clutch is cut mechanically by the stop light switch, turning the cruise control off.(See page BE-205 for operation of the magnetic clutch)

WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **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.

OK

NG → **Check stop light system.**

2 **Input signal check.**

Input Signal	Indicator Light Blinking Pattern
Stop Light switch ON	Light ON (SW OFF) / OFF (SW ON)

CHECK:

(a) See input signal check on BE-196.
(b) Check the indicator light when the brake pedal is depressed.

OK:

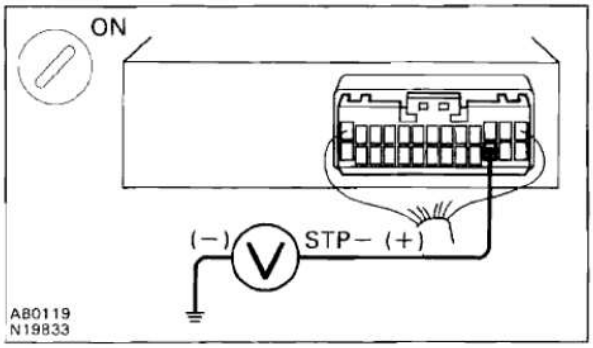
The indicator light goes off when the brake pedal is depressed.

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

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3 **Check voltage between terminal STP– of cruise control ECU connector and body ground.**



PREPARATION:

Remove the cruise control ECU with connectors still connected.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure the voltage between terminal STP– of cruise control ECU connector and body ground, when the brake pedal is depressed and released.

OK:

Depressed	10 – 14 V
Released	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

4 **Check for open in harness and connectors between terminal STP– of cruise control ECU and stop light switch (See page IN-30).**

OK

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

Check and replace cruise control ECU (See page IN-35).

BE

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Idle Switch Circuit

CIRCUIT DESCRIPTION

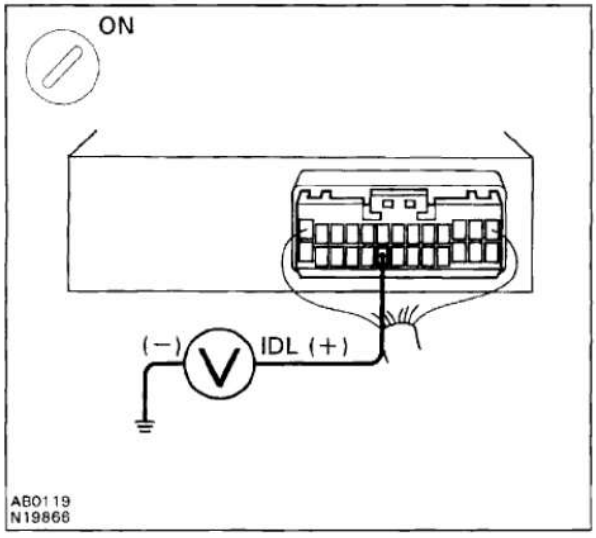
See page BE-220.

WIRING DIAGRAM

See page BE-220.

INSPECTION PROCEDURE

1 **Check voltage between terminal IDL of ECU connector and body ground.**



PREPARATION:

(a) Remove the cruise control ECU with connector still connected.
(b) Disconnect the ECM and ABS ECU connectors.
(c) Ignition switch ON.

CHECK:

Measure the voltage between terminal IDL of ECU connector and body ground when the throttle valve is fully closed and fully opened.

OK:

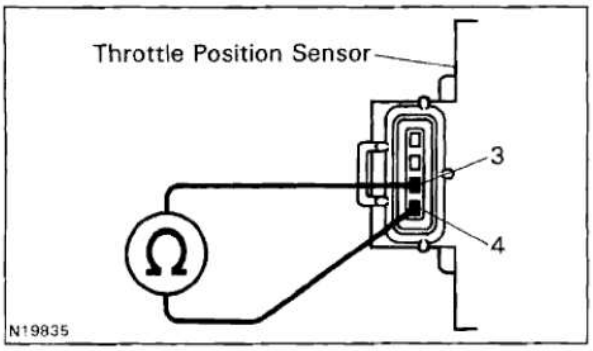
Throttle valve position	Voltage
Fully opened	10 – 14 V
Fully closed	Below 2 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

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2 **Check throttle position sensor.**



PREPARATION:

Disconnect the throttle position sensor connector.

CHECK:

Measure the resistance between terminals 3 and 4 of throttle position sensor connector when the throttle valve is fully closed and fully opened.

OK:

Throttle valve position	Resistance
Fully opened	1 MΩ or higher
Fully closed	Below 2.2 kΩ

OK

NG → **Replace throttle position sensor.**

3 **Check for open and short in harness and connector between ECU and throttle position sensor, throttle position sensor and body ground (See page IN-30).**

OK

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

Check and replace cruise control ECU (See page IN-35).

BE

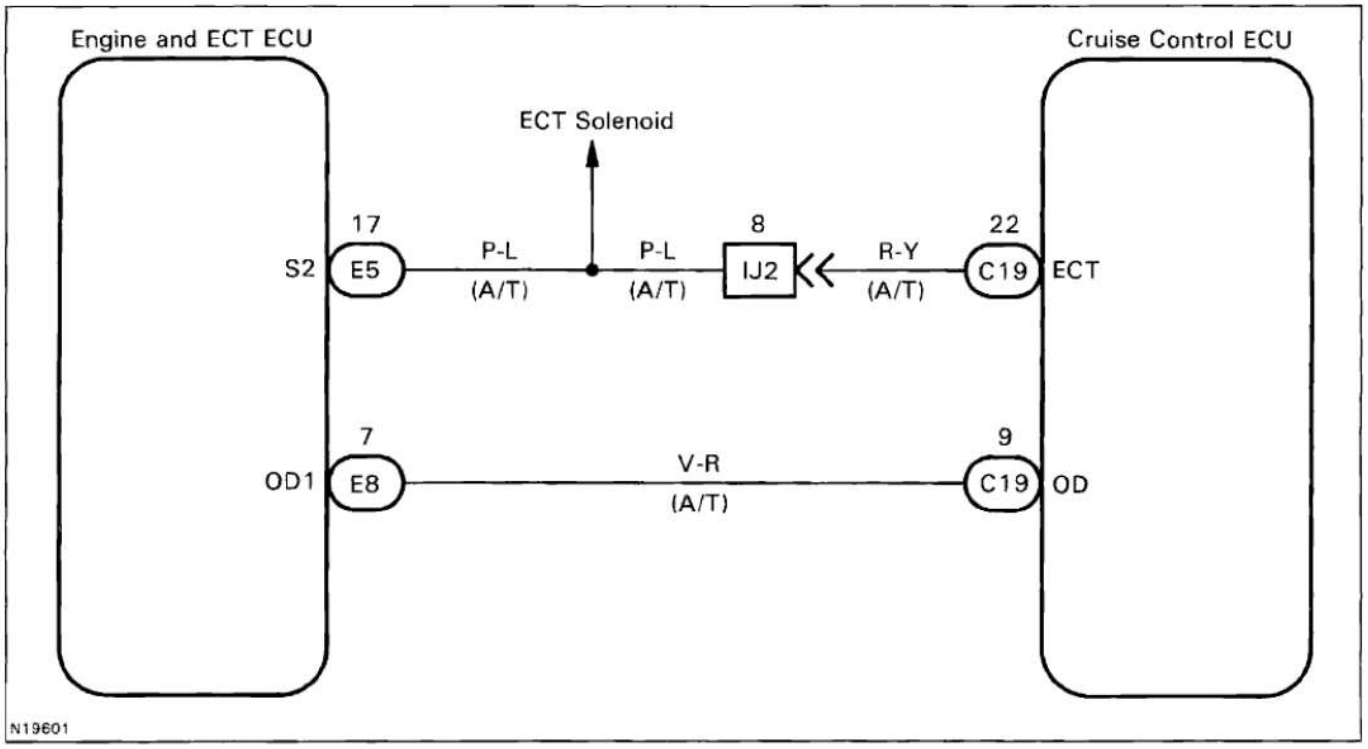
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Electronically Controlled Transmission Communication Circuit

CIRCUIT DESCRIPTION

When driving uphill under cruise control, in order to reduce shifting due to ON-OFF overdrive operation and to provide smooth driving, when down shifting in the electronically controlled transmission occurs, a signal to prevent upshift until the end of the up hill slope is sent from the cruise control ECU to the electronically controlled transmission.
Terminal ECT of the cruise control ECU detects the shift change signal (output to electronically controlled transmission No.2 solenoid) from the Engine & ECT ECU.
If vehicle speed down, also when terminal ECT of the cruise control ECU receives down shifting signal, it sends a signal from terminal OD to Engine & ECT ECU to cut overdrive until the end of the uphill slope, and the gear shifts are reduced and gear shift points in the electronically controlled transmission are changed.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1 Check operation of overdrive.

PREPARATION:

Test drive after engine warms up.

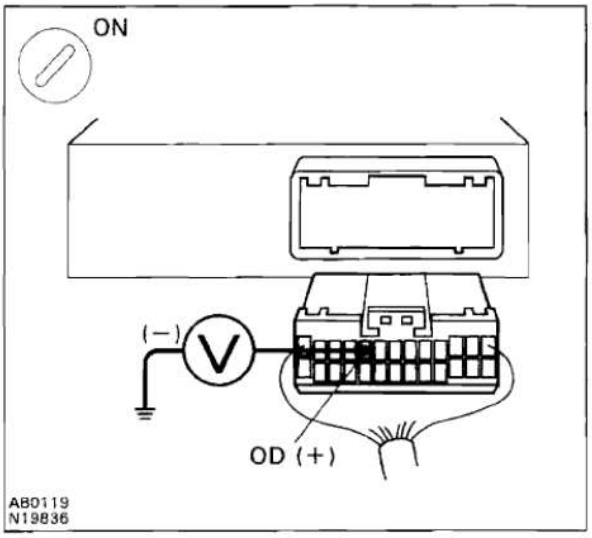
CHECK:

Check that overdrive ON ↔ OFF occurs with operation of OD switch ON-OFF.

OK

NG → **Check and repair electronically controlled transmission (See page AT-19).**

2 Check voltage between terminal OD of harness side connector of cruise control ECU and body ground.



PREPARATION:

Remove the cruise control ECU with connector still connected.

CHECK:

(a) Disconnect the cruise control ECU connector.
(b) Turn the ignition switch ON.
(c) Measure the voltage between terminal OD of harness side connector of cruise control ECU and body ground.

OK:

Voltage: 10 – 14 V

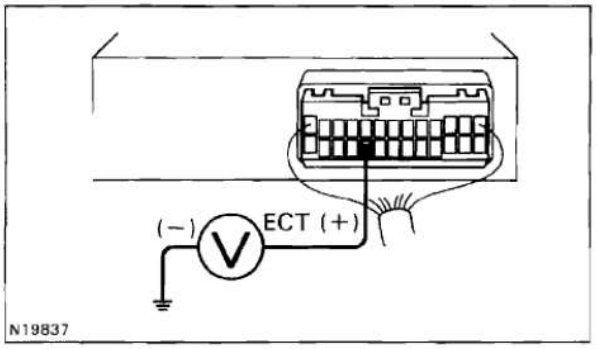
OK

NG → **Go to step 5.**

BE

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3 **Check voltage between terminal ECT of cruise control ECU connector and body ground (On test drive).**



PREPARATION:

(a) Connect cruise control ECU connector.
(b) Test drive after engine warms up.

CHECK:

Check voltage between terminal ECT of cruise control ECU connector and body ground when OD switch is ON and OFF.

OK:

OD switch position	Voltage
ON	8 – 14 V
OFF	Below 0.5 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

4 **Check harness and connector between terminal ECT of cruise control ECU and electronically controlled transmission solenoid (See page IN-30).**

OK

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

Check and replace cruise control ECU.

5 **Check harness and connector between terminal OD of cruise control ECU and terminal OD1 of ECM (See page IN-30).**

OK

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

Check and replace cruise control ECU (See page IN-35).

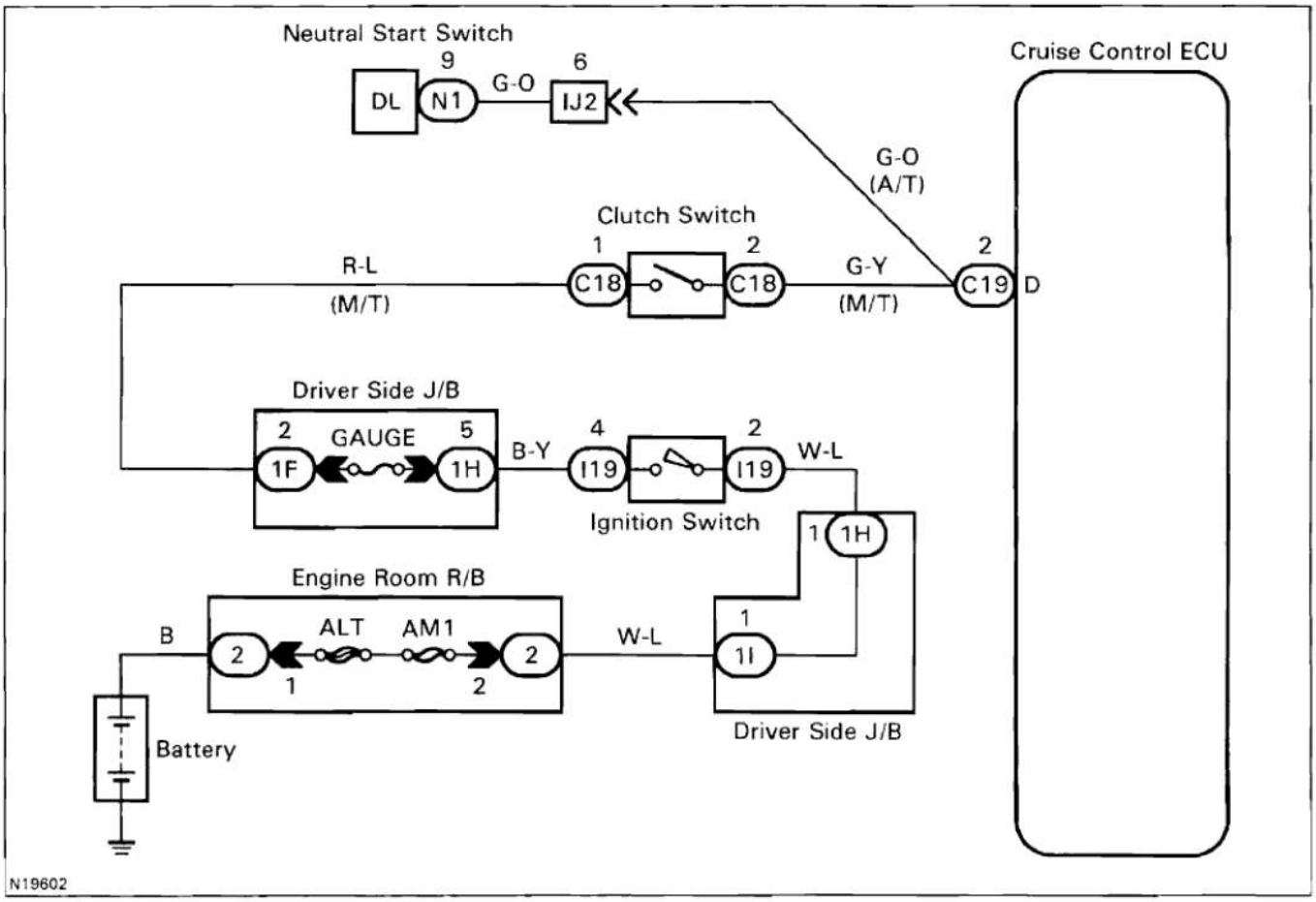
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Neutral Start Switch Circuit

CIRCUIT DESCRIPTION

When the shift position is put in except D range, a signal is sent from the neutral start switch to the ECU. When this signal is input during cruise control driving, the ECU cancels the cruise control.

WIRING DIAGRAM



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INSPECTION PROCEDURE

1 Check starter operation.

CHECK:

Check that the starter operates normally and that the engine starts.

OK

NG → **Proceed to engine troubleshooting. (See ST section).**

2 Input signal check.

Input Signal	Indicator Light Blinking Pattern
Turn neutral start switch OFF (Shift to except D range)	Light ON — SW ON; OFF - - - SW OFF

PREPARATION:

See the input signal check on page BE-196.

CHECK:

Check the indicator light when shifting into except D range.

OK:

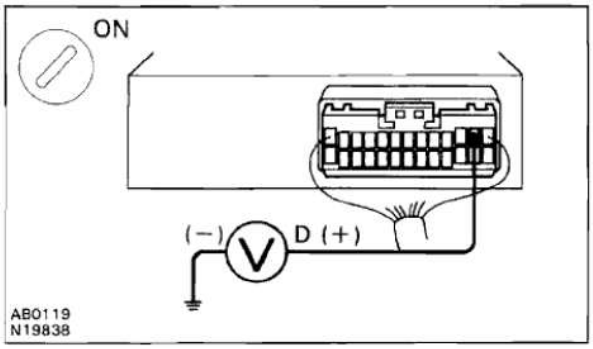
The indicator light goes off when shifting into except D range.

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

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3 **Check voltage between terminal D of cruise control ECU and body ground.**



PREPARATION:

Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal D of cruise control ECU connector and body ground when shifting into D range and other ranges.

OK:

Shift Position	Voltage
D range	10 – 14 V
Other ranges	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

4 **Check harness and connector between neutral start switch and cruise control ECU (See page IN-30).**

OK

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

BE

Check and replace cruise control ECU (See page IN-35).

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Clutch Switch Circuit

CIRCUIT DESCRIPTION

When the clutch pedal is depressed, the clutch switch sends a signal to the cruise control ECU. When the signal is input to the cruise control ECU during cruise control driving, the cruise control ECU cancels cruise control.

WIRING DIAGRAM

Refer to neutral start switch circuit on page BE-230.

INSPECTION PROCEDURE

1 **Check starter operation.**

CHECK:

Check that the starter operates normally and that the engine starts.

OK

NG → **Proceed to engine troubleshooting (See ST section).**

2 **Input signal check.**

Input Signal	Indicator Light Blinking Pattern
Clutch switch OFF (Depress clutch pedal)	Light ON — SW ON; OFF — SW OFF

PREPARATION:

See input signal check on page BE-196.

CHECK:

Check the indicator light when clutch pedal depressed.

OK:

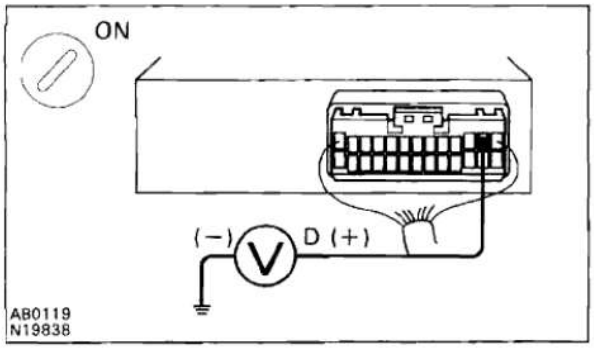
The indicator light goes off when clutch pedal depressed.

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

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3 **Check voltage between terminal D of cruise control ECU and body ground.**



PREPARATION:

Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal D of cruise control ECU connector and body ground when clutch pedal depressed and clutch pedal pushed in.

OK:

Shift Position	Voltage
Clutch pedal depressed	10 – 14 V
Clutch pedal pushed in	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

4 **Check for open in harness and connector between ECU and GAUGE fuse (See page IN-30).**

OK

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

Check and replace cruise control ECU (See page IN-35).

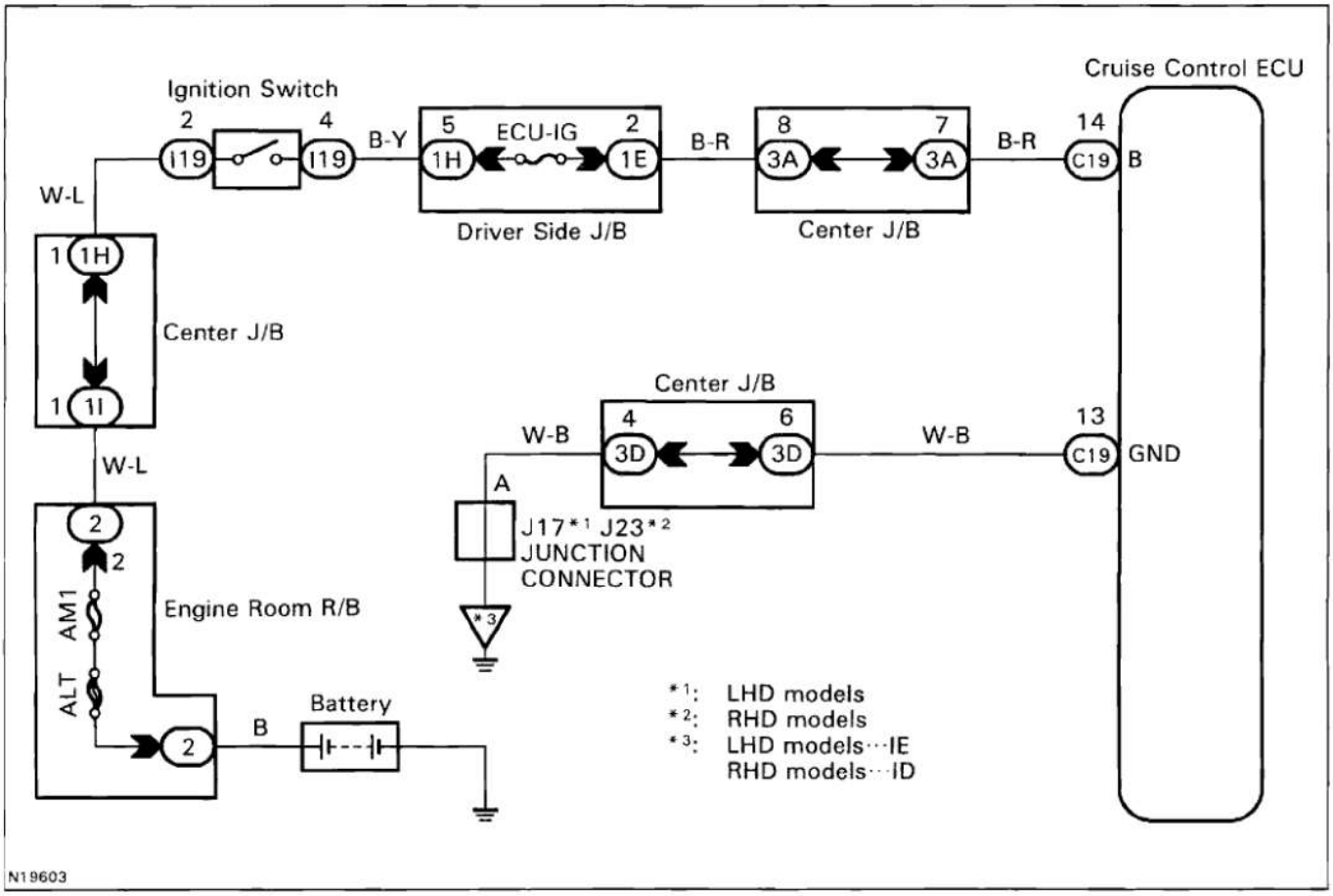
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ECU Power Source Circuit

CIRCUIT DESCRIPTION

The ECU power source supplies power to the actuator and sensors, etc.. When terminal GND and the cruise control ECU case are grounded.

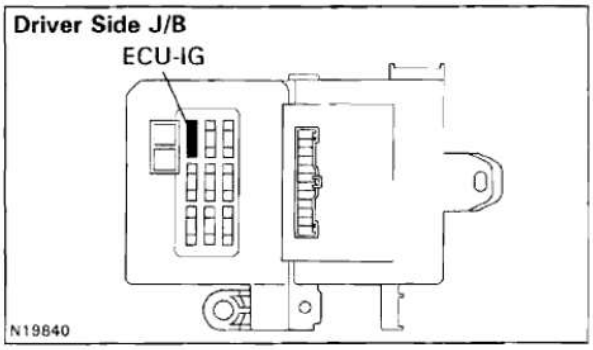
WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **Check ECU-IG fuse.**



PREPARATION:

Remove the ECU-IG fuse from driver side junction block.

CHECK:

Check the continuity of ECU-IG fuse.

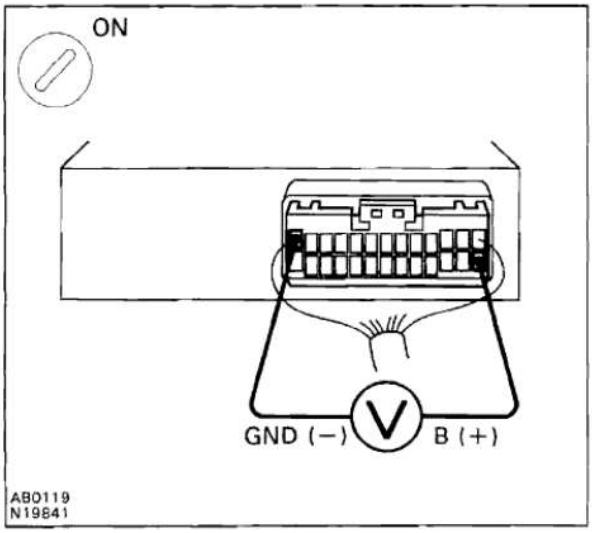
OK:

Continuity

OK

NG → **Check for short in all the harness and components connected to ECU-IG fuse.**

2 **Check voltage between terminals B and GND of cruise control ECU connector.**



PREPARATION:

Remove the cruise control ECU with connector still connected.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure the voltage between terminals B and GND of cruise control ECU connector.

OK:

10 – 14 V

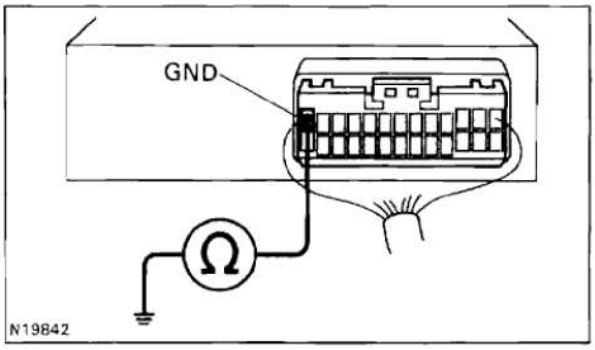
NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

BE

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3 **Check resistance between terminal GND of cruise control ECU connector and body ground (See page IN-31).**



CHECK:

Measure the resistance between terminal GND of cruise control ECU connector and body ground.

OK:

Resistance: Below 1 Ω

OK

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

Check and repair harness and connector between battery and cruise control ECU (See page IN-30).

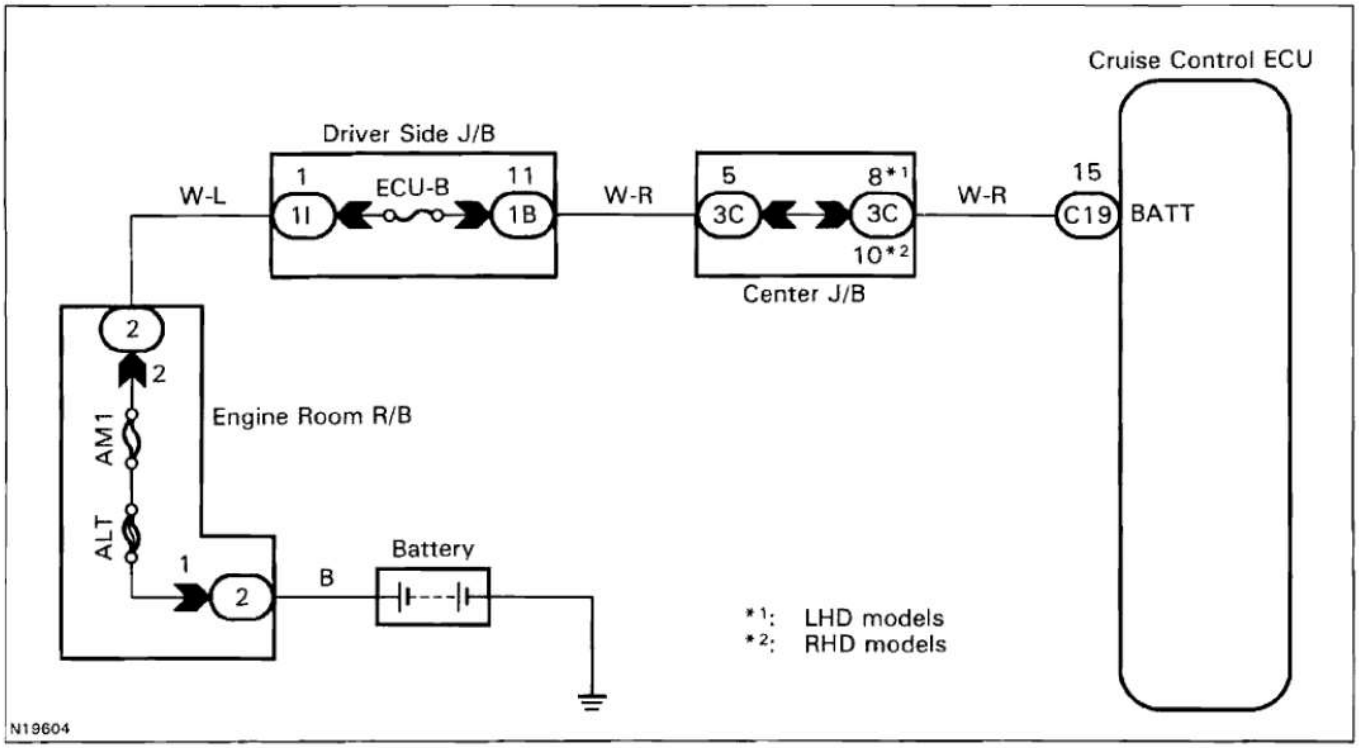
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Back-up Power Source Circuit

CIRCUIT DESCRIPTION

The ECU back-up power source provides power even when the ignition is off and is used for diagnostic code memory etc..

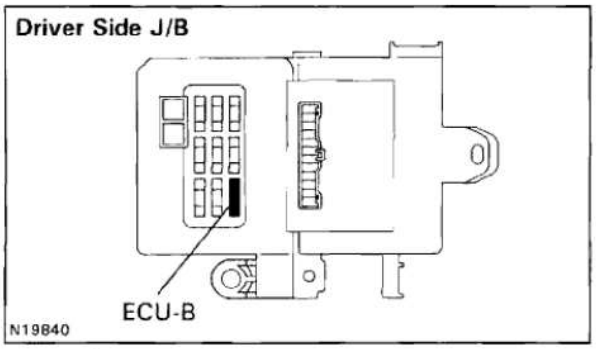
WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **Check ECU-B Fuse.**



PREPARATION:

Remove the ECU-B fuse from driver side junction block.

CHECK:

Check the continuity of ECU-B fuse.

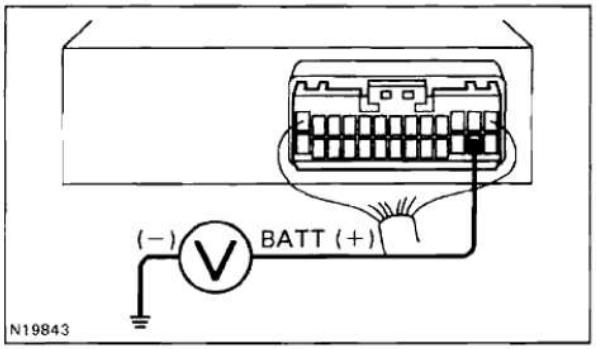
OK:

Continuity

OK

NG → **Check for short in all the harness and components connected to the ECU-B fuse.**

2 **Check voltage between terminal BATT of cruise control ECU connector and body ground (See page IN-33).**



PREPARATION:

Remove the cruise control ECU with connector still connected.

CHECK:

Measure the voltage between terminal BATT of cruise control ECU connector and body ground.

OK:

Voltage: 10 − 14 V

NG

Check and repair harness and connector between battery and cruise control ECU (See page IN-30).

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

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Main Switch Circuit (Cruise Control Switch)

CIRCUIT DESCRIPTION

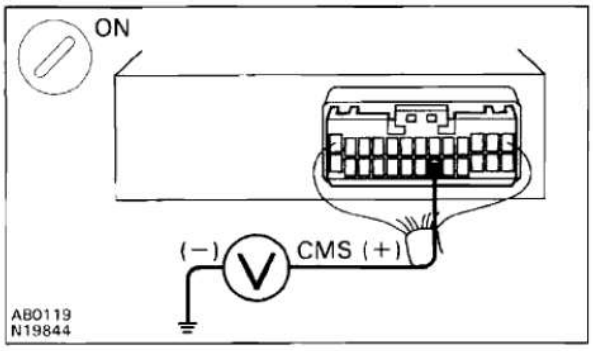
When the cruise control main switch is turned off, the cruise control does not operate.

WIRING DIAGRAM

See page BE-217.

INSPECTION PROCEDURE

1 **Check voltage between terminal CMS of cruise control ECU connector and body ground.**



PREPARATION:

Remove the cruise control ECU with connector still connected.

CHECK:

(a) Turn the ignition switch ON.
(b) Measure the voltage between terminal CMS of the cruise control ECU connector when main switch is held on and off.

OK:

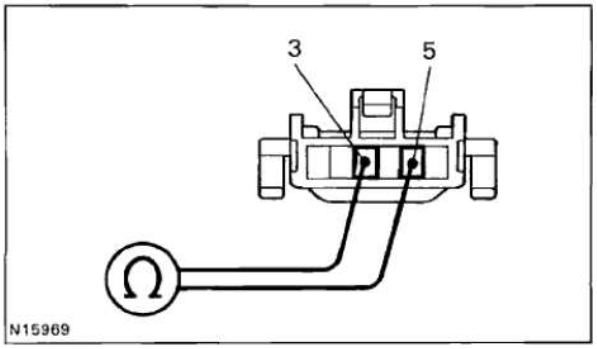
Main switch	Voltage
OFF	10 – 14 V
ON	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

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2 **Check main switch continuity.**



PREPARATION:

(a) Remove the steering wheel center pad. (See page SR-16)
(b) Disconnect the cruise control switch connector.

CHECK:

Check the continuity between terminals 3 and 5 of cruise control switch connector when main switch is held on and off.

OK:

Switch position	Tester connection	Specified condition
OFF	3 – 5	No continuity
Hold ON	3 – 5	Continuity

OK

NG → **Replace control switch.**

3 **Check harness and connector between cruise control ECU and main switch (See page IN-30).**

OK

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

Check and replace cruise control ECU (See page IN-35).

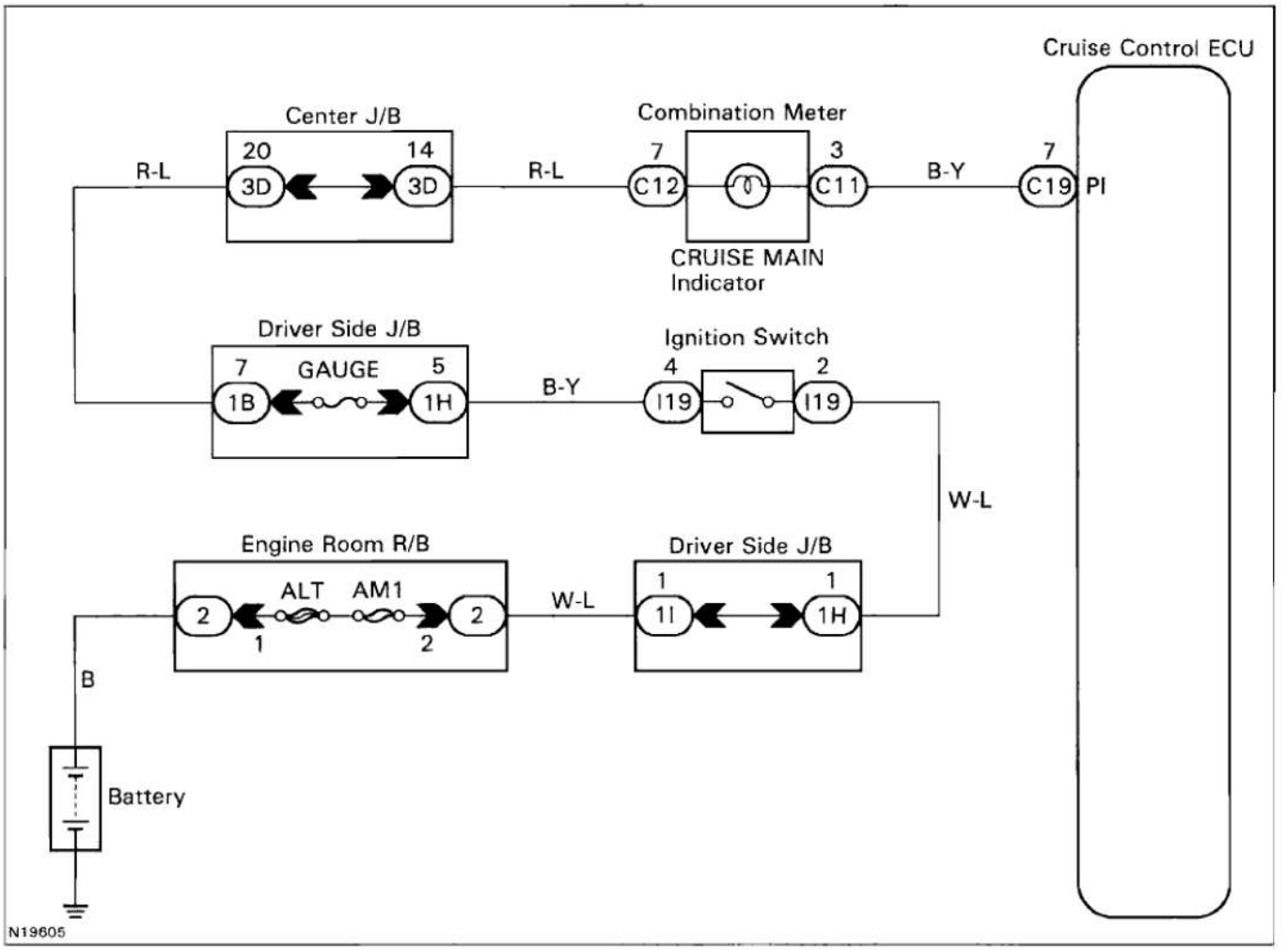
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CRUISE MAIN Indicator Light Circuit

CIRCUIT DESCRIPTION

When the cruise control main switch is turned ON, CRUISE MAIN indicator light lights up.

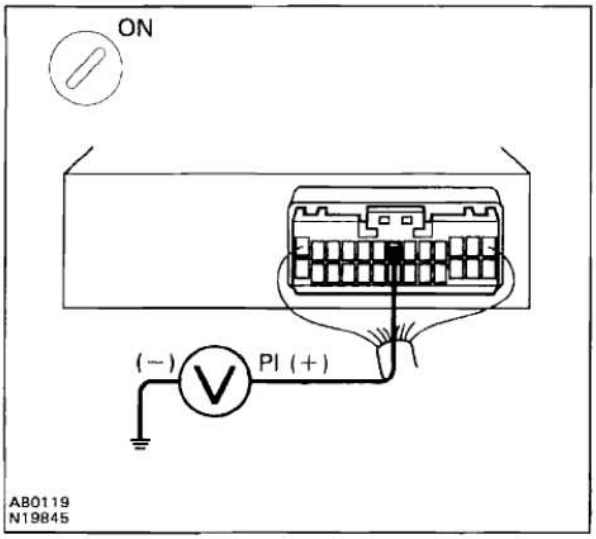
WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **Check voltage between terminals PI and GND of cruise control ECU connector.**



PREPARATION:

Ignition switch ON.

CHECK:

Measure the voltage between terminals PI and GND of the cruise control ECU connector when main switch on and off.

OK:

Switch position	Voltage
OFF	10 – 16 V
ON	Below 1.2 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

2 **Check combination meter. (See page BE-51)**

OK

NG → **Replace combination meter.**

Check and replace cruise control ECU (See page IN-35).

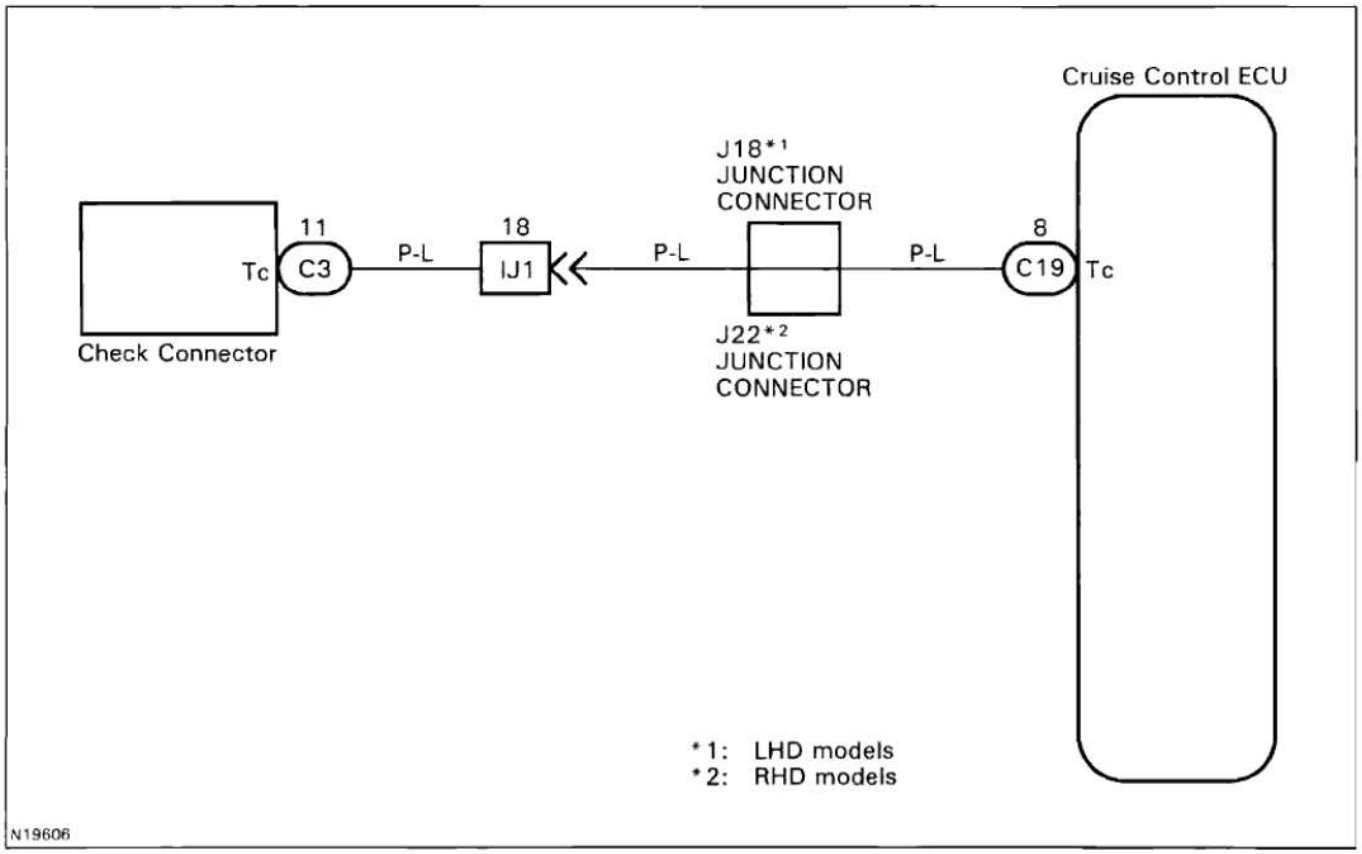
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Diagnosis Circuit

CIRCUIT DESCRIPTION

This circuit sends a signal to the ECU that diagnostic code output is required.

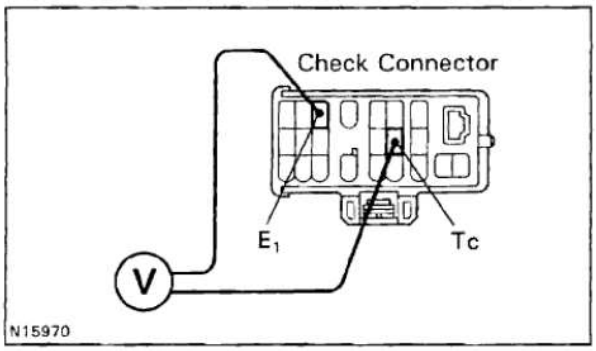
WIRING DIAGRAM



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INSPECTION PROCEDURE

1 **Check voltage between terminals Tc and E_1 of check connector.**



CHECK:

(a) Turn the ignition switch ON.
(b) Measure the voltage between terminals Tc and E_1 of the check connector.

OK:

Voltage: 10 – 14 V

NG

OK → **Proceed to next circuit inspection shown on problem symptoms table (See page BE-201).**

2 **Check harness and connector between cruise control ECU and check connector, check connector and body ground (See page IN-30).**

OK

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

Check and replace cruise control ECU (See page IN-35).

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Actuator Control Cable

INSPECTION PROCEDURE

1 Actuator control cable inspection

CHECK:

(a) Check that the actuator and control cable throttle link are properly installed and that the cable and link are connected correctly.
(b) Check that the actuator and bell crank are operating smoothly.
(c) Check that the cable is not loose or too tight.

OK:

Freeplay: less than 10 mm

HINT:

- If the control cable is very loose, the vehicle's loss of speed going uphill will be large.
- If the control cable is too tight, the idle RPM will become high.

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SERVICE SPECIFICATIONS

SERVICE DATA

BE1E1-00

INTEGRATION RELAY	
Junction Block Side:	
4 – Ground (Light control switch OFF)	No voltage
4 – Ground (Light control switch TAIL or HEAD)	Battery voltage
6 – Ground (Ignition switch LOCK or ACC)	No voltage
6 – Ground (Ignition switch ON)	Battery voltage
8 – Ground (Ignition switch LOCK)	No voltage
8 – Ground (Ignition switch ACC or ON)	Battery voltage
11 – Ground (Constant)	Battery voltage
12 – Ground (Constant)	Battery voltage
Wire Harness Side:	
A1 – Ground (Constant)	Battery voltage
DAYTIME RUNNING LIGHT RELAY	
Connector Disconnected:	
2 – Ground (Constant)	Battery voltage
4 – Ground (Constant)	Battery voltage
6 – Ground (Ignition switch LOCK or ACC)	No voltage
9 – Ground (Constant)	No voltage
Connector connected:	
7 – Ground (Headlight dimmer switch Low beam)	No voltage
7 – Ground (Headlight dimmer switch High or Flash)	Battery voltage
REAR FOR LIGHT SWITCH CIRCUIT	
Wire Harness Side:	
3 – Ground (Constant)	Battery voltage
TURN SIGNAL FLASHER	
Flashes / Minute	60 – 120
SPEEDOMETER (USING A SPEEDOMETER TESTER)	
Europe and G.C.C. countries	
Standard indication (km/h)	Allowable range (km/h)
20	20 – 26
40	40 – 48
60	60 – 70
80	80 – 92
100	100 – 114
120	120 – 136
140	140 – 158
160	160 – 180
Europe	
Standard indication (mph)	Allowable range (mph)
20	20 – 24.5
40	40 – 46.5
60	60 – 68.5
80	80 – 90.5
100	100 – 112.5

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SPEEDOMETER (USING A SPEEDOMETER TESTER)	
Australia and General	
Standard indication (km/h)	Allowable range (km/h)
40	36 – 44
60	54 – 66
80	72 – 88
100	90 – 110
120	108 – 132
140	126 – 154
160	144 – 176
General	
Standard indication (mph)	Allowable range (mph)
20	18 – 24
40	38 – 44
60	58 – 66
80	78 – 88
100	98 – 110
120	118 – 132
TACHOMETER (ON–VEHICLE)	
Standard indication (rpm)	Allowable range (rpm)
700	630 – 770
1,000	(900 – 1,100)
2,000	(1,875 – 2,125)
3,000	2,850 – 3,150
4,000	(3,850 – 4,150)
5,000	4,850 – 5,150
6,000	(5,820 – 6,180)
7,000	(6,790 – 7,210)
PICK–UP SENSOR (Diesel Engine)	
Between terminals	Resistance (Ω)
1 – 2	Approx. 730
FUEL RECEIVER GAUGE	
Between terminals	Resistance (Ω)
A – B	Approx. 125.0
A – C	Approx. 228.0
B – C	Approx. 103.0

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FUEL SENDER GAUGE	
Float position: mm (in.)	Resistance (Ω)
F: Approx. 78.9 (3.106) ~ 83.9 (3.303)	Approx. 3.0 ± 0.6
1/2: Approx. 192.9 (7.594)	Approx. 32.5 ± 1.5
E: Approx. 303.0 (11.929) ~ 308.0 (12.126)	Approx. 110.0 ± 2.5
WATER TEMPERATURE RECEIVER GAUGE	
Between terminals	Resistance (Ω)
A – B	Approx. 235.0
A – C	Approx. 175.0
B – C	Approx. 90.0
WATER TEMPERATURE SENDER GAUGE	
Temperature °C (°F)	Resistance (Ω)
50 (122.0)	160 ~ 240
120 (248.0)	17.1 ~ 21.2
ACCESSORY METER CIRCUIT	
Connector Disconnected:	
4 – Ground (Light control switch OFF)	No voltage
4 – Ground (Light control switch TAIL or HEAD)	Battery voltage
1 – Ground (Ignition switch LOCK or ACC)	No voltage
1 – Ground (Ignition switch ON)	Battery voltage
2 – Ground (Constant)	Battery voltage
TRANSPONDER KEY COMPUTER	
1 – Ground (Constant)	Battery voltage
2 – Ground (Ignition switch ON)	Battery voltage
SLIDING ROOF CONTROL RELAY CIRCUIT	
Wire Harness Side:	
6 – Ground (Ignition switch LOCK or ACC)	No voltage
6 – Ground (Ignition switch ON)	Battery voltage
12 – Ground (Constant)	Battery voltage
FUEL RECEIVER GAUGE	
Between terminals	Resistance (Ω)
3 – 5	Approx. 115.8
5 – 8	Approx. 177.2
3 – 8	Approx. 61.4
SUB FUEL SENDER GAUGE	
Float position: mm (in.)	Resistance (Ω)
F: Approx. 33.3 ± 2.0 (1.311 ± 0.079)	Approx. 3.0 ± 0.6
1/2: Approx. 62.6 (2.465)	Approx. 32.5 ± 1.5
E: Approx. 148.9 ± 1.8 (5.862 ± 0.071)	Approx. 110.0 ± 2.5

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