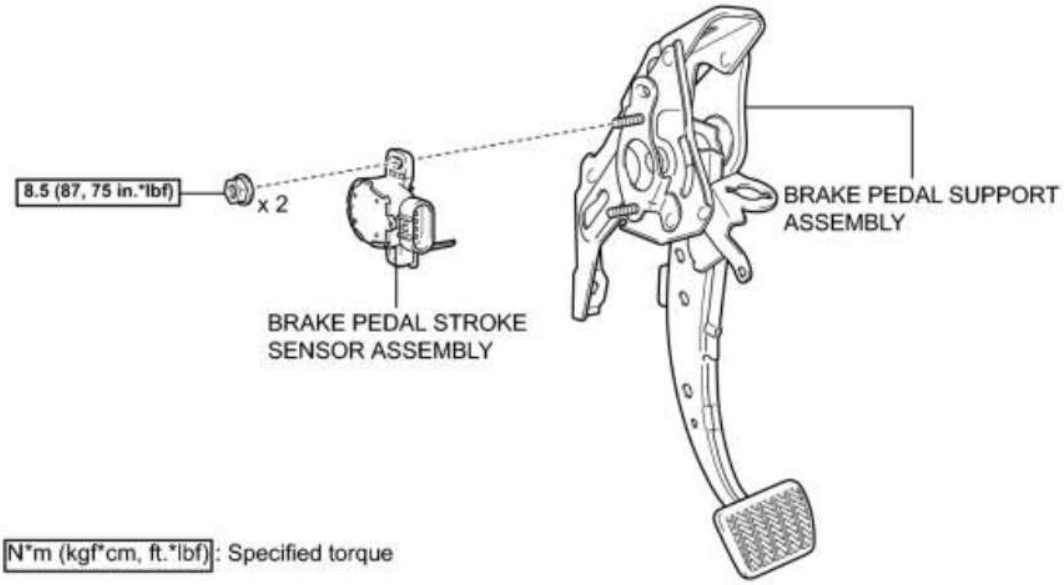
COMPONENTS

ILLUSTRATION



c

cardiagn.com

REMOVAL

NOTICE:

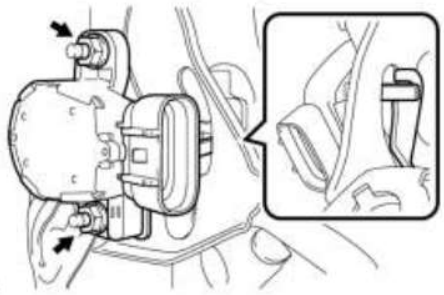
While the battery is connected, even if the power switch is off, the brake control system activates when the brake pedal is depressed or any door courtesy switch turns on. Therefore, when servicing the brake system components, do not operate the brake pedal or open/close the doors while the battery is connected.

1. REMOVE BRAKE PEDAL SUPPORT ASSEMBLY

HINT:

Refer to the procedure up to Remove Brake Pedal Support Assembly INFO.

2. REMOVE BRAKE PEDAL STROKE SENSOR ASSEMBLY



c

(a) Remove the 2 nuts and brake pedal stroke sensor assembly.

NOTICE:

Do not drop the brake pedal stroke sensor assembly. If the brake pedal stroke sensor assembly has been dropped, replace the brake pedal stroke sensor assembly with a new one.

cardiagn.com

INSTALLATION

NOTICE:

While the battery is connected, even if the power switch is off, the brake control system activates when the brake pedal is depressed or any door courtesy switch turns on. Therefore, when servicing the brake system components, do not operate the brake pedal or open/close the doors while the battery is connected.

1. INSTALL BRAKE PEDAL STROKE SENSOR ASSEMBLY

NOTICE:

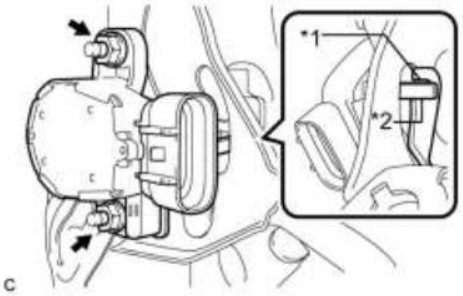
Do not drop the brake pedal stroke sensor assembly. If the brake pedal stroke sensor assembly has been dropped, replace the brake pedal stroke sensor assembly with a new one.

(a) When installing a new brake pedal stroke sensor assembly:

NOTICE:

Do not break the brake pedal stroke sensor assembly lever set pin before installing the brake pedal stroke sensor assembly with the bolts. If the brake pedal stroke sensor assembly lever set pin breaks while tightening a bolt, do not use that brake pedal stroke sensor assembly.

(1) Temporarily install a new brake pedal stroke sensor assembly with the 2 nuts.



Text in Illustration

*1	Brake Pedal Groove
*2	Brake Pedal Stroke Sensor Assembly Lever

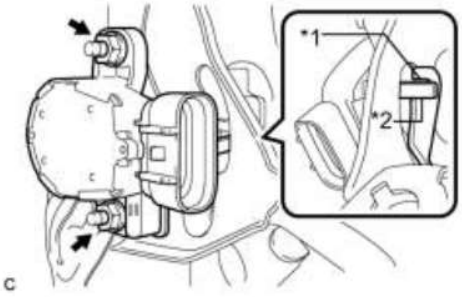
- Engage the brake pedal stroke sensor assembly lever with the brake pedal groove.
- Check that there is no foreign matter attached to the contact surface of the brake pedal stroke sensor assembly.
- Check that the tip of the brake pedal stroke sensor assembly lever is protruding from the brake pedal groove.

(b) When reusing the brake pedal stroke sensor assembly:

cardiagn.com

(1) Temporarily install the brake pedal stroke sensor assembly with the 2 nuts.

Text in Illustration



*1	Brake Pedal Groove
*2	Brake Pedal Stroke Sensor Assembly Lever

- Engage the brake pedal stroke sensor assembly lever with the brake pedal groove.
- Check that there is no foreign matter attached to the contact surface of the brake pedal stroke sensor assembly.
- Check that the tip of the brake pedal stroke sensor assembly lever is protruding from the brake pedal groove.

2. INSTALL BRAKE PEDAL SUPPORT ASSEMBLY

HINT:

Refer to the instructions for installation of the Brake Pedal Support Assembly INFO

3. INSPECT AND ADJUST BRAKE PEDAL INFO

4. ADJUST BRAKE PEDAL STROKE SENSOR ASSEMBLY

(a) When installing a new brake pedal stroke sensor assembly:

(1) Fully tighten a new brake pedal stroke sensor assembly with the 2 nuts.

Torque: **8.5 N·m (87 kgf·cm, 75in·lbf)**

(2) Firmly depress the brake pedal and break the brake pedal stroke sensor assembly lever set pin.

(3) Remove the broken lever set pin.

(b) When reusing the brake pedal stroke sensor assembly:

(1) Connect the cable to the negative (-) battery terminal.

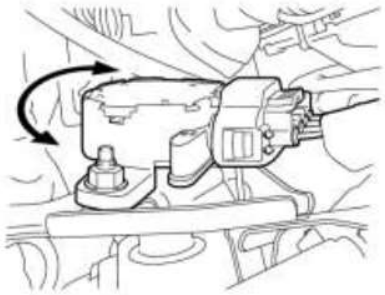
(2) Connect the Techstream to the DLC3.

cardiagn.com

(3) Turn the power switch on (IG).

(4) Turn the Techstream on.

(5) Enter the following menus: Chassis / ABS/VSC/ TRAC / Data List.



(6) Reading the value of the brake pedal stroke sensor assembly shown in the Data List, turn the brake pedal stroke sensor assembly slowly to the right and left to adjust the output voltage to the standard voltage.

Standard Voltage:

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Stroke Sensor	Stroke sensor / min.: 0 V, max.: 5 V	0.8 to 1.2 V	-

(7) Tighten the 2 nuts.

Torque: **8.5 N·m (87 kgf·cm, 75in·lbf)**

NOTICE:

Do not depress the brake pedal after turning the power switch on (IG).

(8) Turn the power switch off.

(9) Disconnect the Techstream.

5. CHECK AND CLEAR DTC

(a) Check and clear the DTCs INFO.

6. PERFORM LINEAR VALVE OFFSET LEARNING

(a) Perform linear valve offset learning INFO.

cardiagn.com

PRECAUTION

1. PRECAUTION FOR DISCONNECTING THE BATTERY CABLE

NOTICE:

When disconnecting the battery negative (-) cable, initialize the following system after the cable is reconnected:

System	See Procedure
Advanced Parking Guidance System	INFO

2. TROUBLESHOOTING PRECAUTIONS

(a) When there is a malfunction with terminal contact points or part installation problems, removal and installation of the suspected problem parts may return the system to the normal condition either completely or temporarily.

(b) In order to determine the malfunctioning area, be sure to check the conditions at the time the malfunction occurred, such as DTC output and the Freeze Frame Data, and record it before disconnecting each connector or removing and installing parts.

(c) Since the system may be influenced by malfunctions in systems other than the brake control system, be sure to check for DTCs in other systems.

3. HANDLING PRECAUTIONS

(a) Do not remove or install electronically controlled brake system parts such as the steering angle sensor, yaw rate and acceleration sensor or brake pedal stroke sensor except when required, as they cannot be adjusted correctly after removal or installation.

(b) Be sure to perform preparation before work and confirmation after work is completed by following the directions in the repair manual when working on the electronically controlled brake system.

(c) Be sure that the power switch is off when removing and installing the ECU, actuator, each sensor, etc. unless it is specified otherwise in the inspection procedure.

(d) If the brake booster with master cylinder (skid control ECU and brake actuator) or a sensor has been removed and installed, it is necessary to check the system for problems after the parts have been reassembled. Check for DTCs using the Techstream, also check that system functions and signals received by the ECU are normal using Test Mode.

(e) If the brake pedal is depressed before the brake control system is prepared to operate, the pedal stroke may seem unusually long or short. This is due to the fact the stroke simulator cut solenoid has not yet operated and is not a malfunction.

After the power switch is turned on (IG) or the brake pedal is depressed twice or more, the stroke simulator will operate and the brake pedal stroke will remain consistent.

4. DTC PRECAUTION

cardiagn.com

(a) Warnings for some DTCs cannot be cleared only by repairing the malfunctioning parts. If the warning is displayed even after repair work, the DTC should be cleared after turning the power switch off.

NOTICE:

If a DTC part is still malfunctioning even after the DTC is cleared, the DTC will be stored again.

5. CHASSIS DYNAMOMETER PRECAUTION

(a) Enter Inspection Mode to disable TRAC and VSC control when using a chassis dynamometer INFO.

NOTICE:

- Make sure that the slip indicator lights blink (Inspection Mode is activated).
- Secure the vehicle with a lock chain for safety.

6. CAN COMMUNICATION SYSTEM PRECAUTIONS

(a) The CAN communication system is used for the data communication between the skid control ECU, the steering angle sensor, yaw rate and acceleration sensor and other ECUs. If there are any problems in the CAN communication line, corresponding DTCs in the communication line are stored.

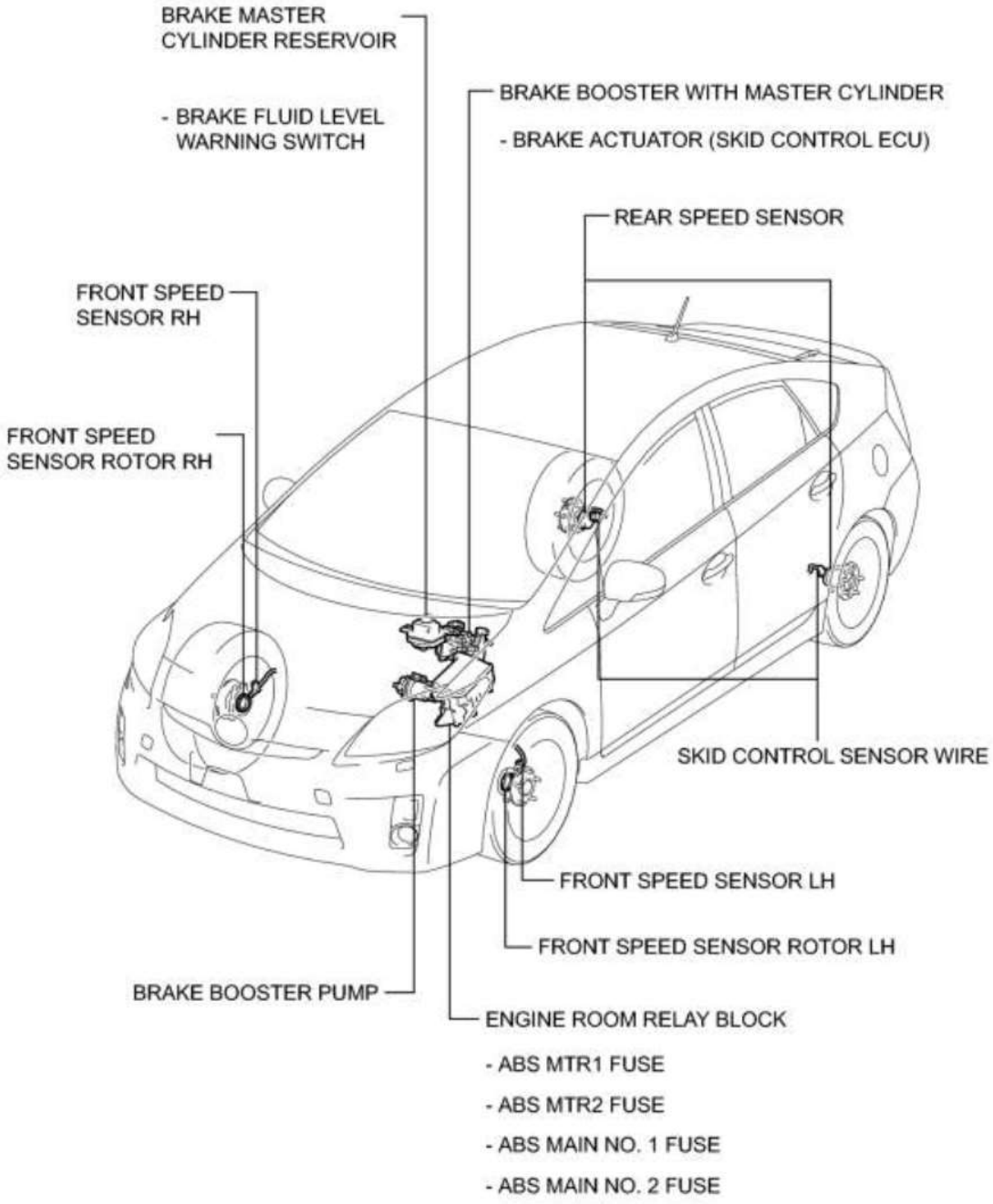
(b) If any CAN communication line DTCs are output, repair the malfunction in the communication line and troubleshoot the electronically controlled brake system when data communication is normal.

(c) In order to enable CAN communication, a specific type of wiring is used for the CAN communication lines. The wiring used for each communication line is a twisted pair of wires that have an equal length. A bypass wire should not be used, because the data being transmitted will be corrupted.

cardiagn.com

PARTS LOCATION

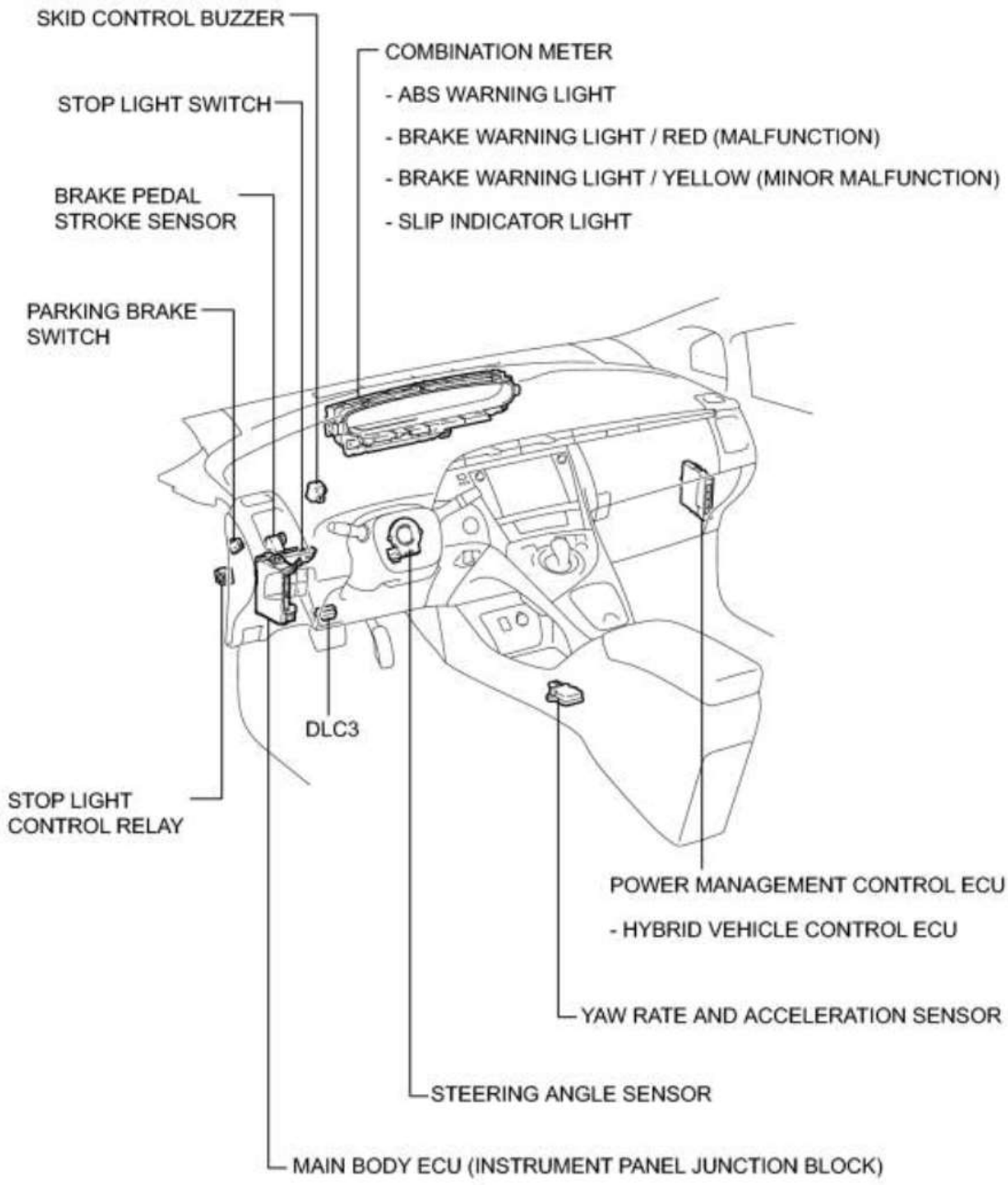
ILLUSTRATION



P

ILLUSTRATION

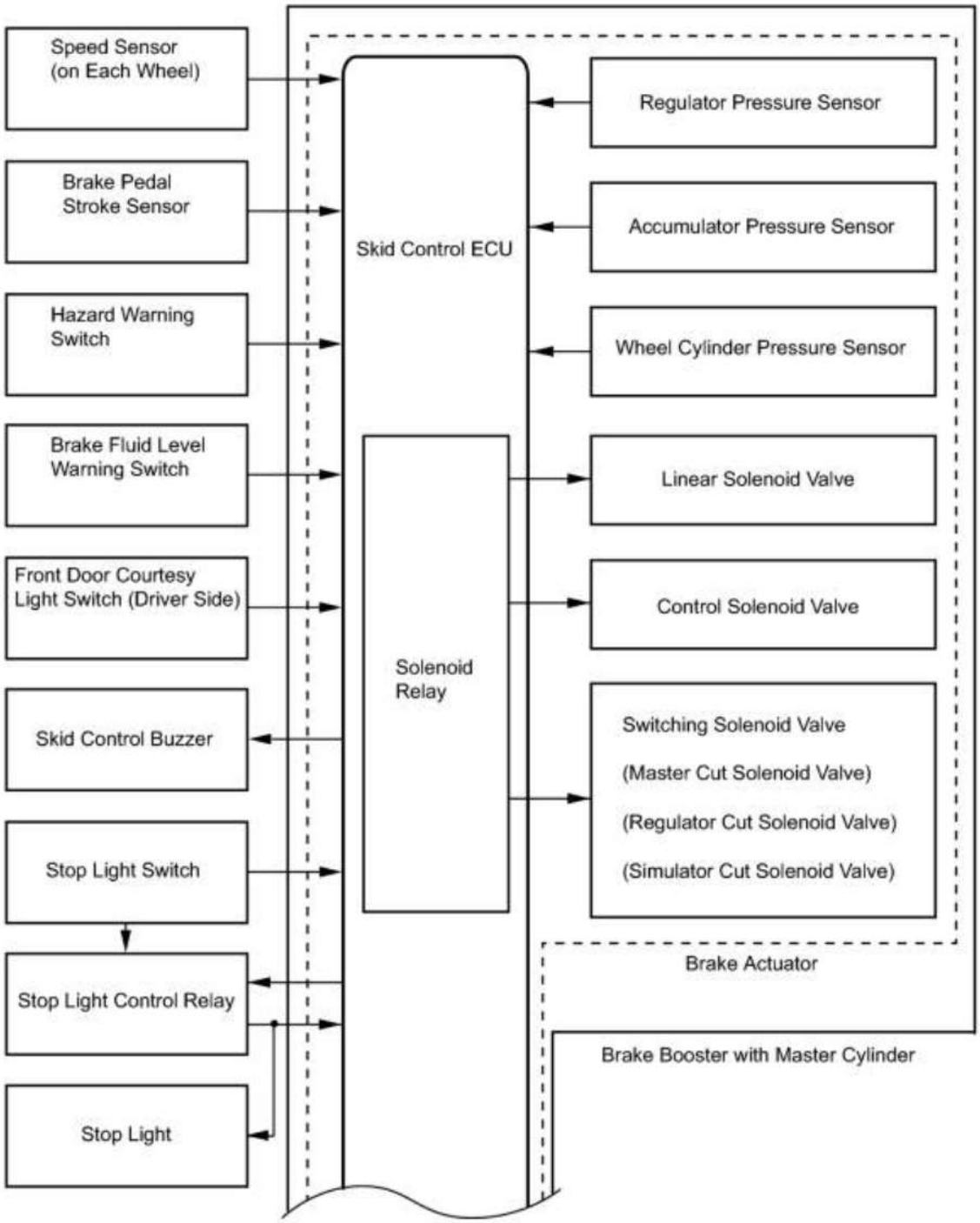
cardiagn.com



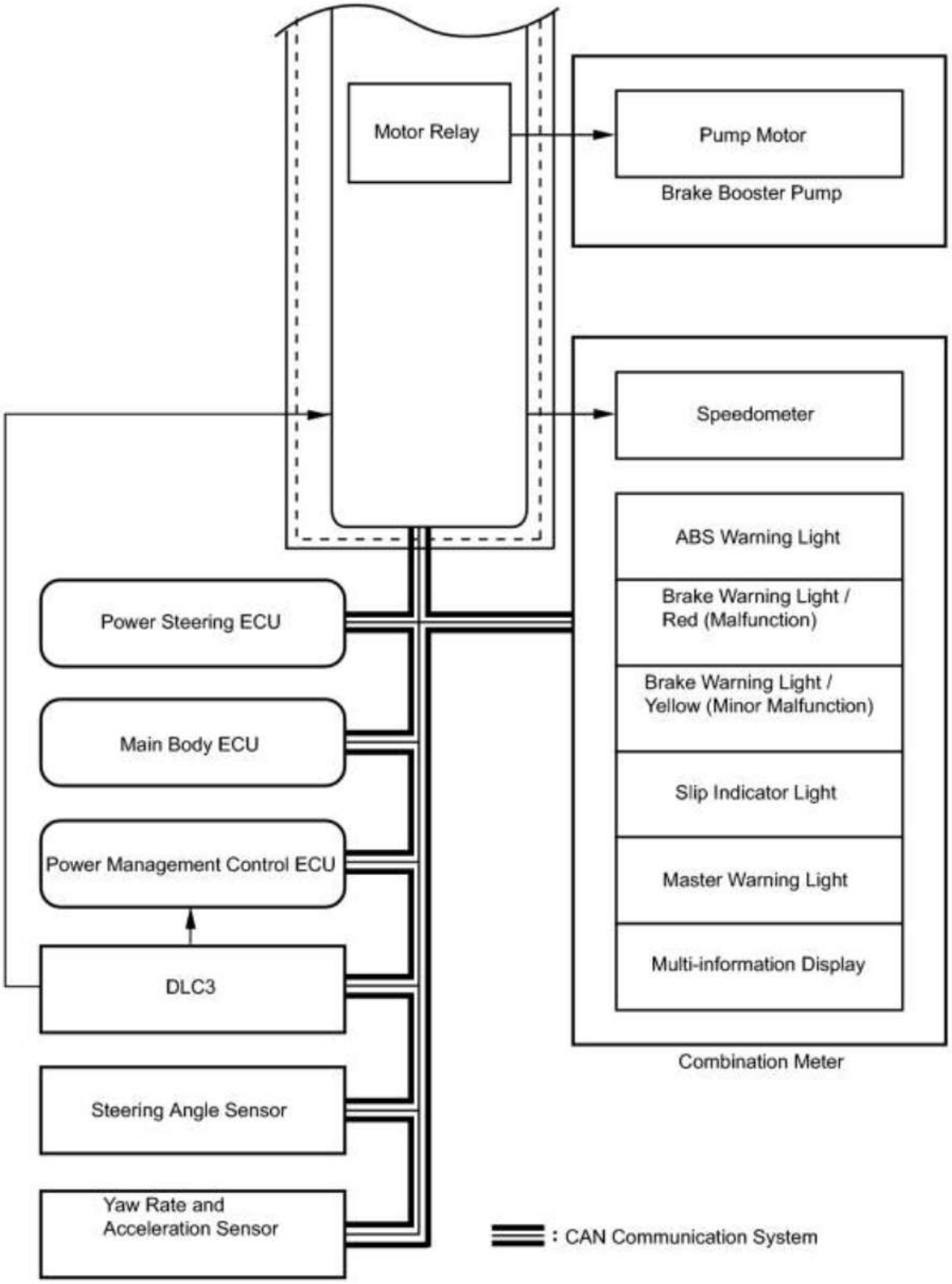
P

cardiagn.com

SYSTEM DIAGRAM



cardiagn.com



Transmitting ECU (Transmitter)	Receiving ECU	Signal	Communication Method
Skid control ECU	Power steering ECU	• Target steering angle signal	CAN communication

2010 Toyota Prius Repair Manual

cardiagn.com

Transmitting ECU (Transmitter)	Receiving ECU	Signal	Communication Method
		• Target relative angle signal	system
Power steering ECU	Skid control ECU	Electronic power steering cooperative control enabling signal	CAN communication system
Main body ECU	Skid control ECU	Parking brake switch signal	CAN communication system
Skid control ECU	Power management control ECU	• Wheel speed signal • VSC data signal	CAN communication system
Power management control ECU	Skid control ECU	• Shift lever position signal • Throttle position signal • Engine speed signal • Intake air temperature signal • Driving torque request signal • Accelerator pedal position signal	CAN communication system
Skid control ECU	Steering angle sensor	Steering angle sensor request signal	CAN communication system
Steering angle sensor	Skid control ECU	Steering angle sensor signal	CAN communication system
Skid control ECU	Yaw rate and acceleration sensor	Yaw rate and acceleration request signal	CAN communication system
Yaw rate and acceleration sensor	Skid control ECU	Yaw rate and acceleration signal	CAN communication system
Skid control ECU	Combination meter	• ABS warning light signal • Brake warning light / red (malfunction) signal • Brake warning light / yellow (minor malfunction) signal • Slip indicator light signal	CAN communication system

cardiagn.com

SYSTEM DESCRIPTION

1. FUNCTION DESCRIPTION

(a) Electronically Controlled Brake System

(1) Upon receiving signals from the skid control ECU, this system effects hydraulic pressure control at the four wheels.

(b) Regenerative Brake Cooperative Control

(1) Controls hydraulic braking in order to recover electrical energy by utilizing the regenerative brake of the hybrid control system as much as possible.

(c) Enhanced-VSC (Cooperative Control with EPS)

(1) Effects cooperative control with the power steering ECU in order to provide steering assist in accordance with the operating conditions of the vehicle.

(d) Anti-lock Brake System (ABS)

(1) The ABS helps prevent the wheels from locking when the brakes are applied firmly or when braking on a slippery surface.

(e) Electronic Brake force Distribution (EBD)

(1) The EBD control utilizes ABS, realizing proper brake force distribution between the front and rear wheels in accordance with the driving conditions. In addition, during braking while cornering, it also controls the brake forces of the right and left wheels, helping maintain vehicle behavior.

(f) Brake Assist (BA)

(1) The primary purpose of brake assist is to provide an auxiliary brake force to assist a driver who cannot generate a large brake force during emergency braking, thus helping draw the vehicles braking performance.

(g) Traction Control (TRAC)

(1) The TRAC helps restrain the slippage of the drive wheels if the driver depresses the accelerator pedal excessively when starting off or accelerating on a slippery surface.

(h) Vehicle Stability Control (VSC)

(1) The VSC helps restrain sideways slippage of the vehicle during a strong front wheel skid or strong rear wheel skid, during cornering.

(i) Hill-start Assist Control

(1) When starting uphill, this control maintains the brake hydraulic pressure to the four wheels, in order to momentarily prevent the vehicle from descending backward.

2. FUNCTION OF COMPONENTS

Component		Function
Brake Booster with Master Cylinder	Brake Actuator	• Consists of four switching solenoid valves, two linear solenoid valves, eight control solenoid valves. • Changes the brake fluid path based on the signals from the skid control ECU during the operations of the ABS with EBD, BA, TRAC, VSC, hill-start assist control, and Enhanced-VSC in order to control the fluid pressure that is applied to the wheel cylinders.
	Hydraulic Brake Booster	• Generates hydraulic pressure in accordance with the amount of effort applied to the brake pedal by the driver. • When a malfunction occurs in the brake system, the hydraulic brake booster supplies the fluid pressure (which is generated by the brake

cardiagn.com

Component		Function
		pedal effort) directly to the wheel cylinders.
	Stroke Simulator	Generates a pedal stroke during braking in accordance with the drivers pedal effort.
Brake Actuator	Skid Control ECU	• Monitors the driving conditions of the vehicle in accordance with the signals received from the sensors and through cooperative control with the power management control ECU and power steering ECU calculates the required amount of braking force, and controls the brake actuator. • Judges the vehicle driving condition based on signals from each sensor, and controls ABS with EBD, BA, TRAC, Enhanced-VSC and hill-start assist control. • Operates the brake booster pump to control accumulator pressure based on accumulator pressure sensor signal.
Skid Control ECU	Relief Valve	Returns the brake fluid to the reservoir to prevent excessive pressure if the pump operates continuously due to a malfunction of the accumulator pressure sensor.
	Solenoid Relay	Supply or cut off power to solenoid valves in the brake actuator.
	Motor Relay	Normally supplies power to the pump motor using two out of three relays. Ensures power to the pump motor by using the rest relay if the skid control ECU malfunctions.
	Linear Solenoid Valve	Controls the wheel cylinder pressure to generate a braking force responsive to the braking force requirement when the brake pedal is depressed normally.
	Switching Solenoid Valve	Switches the brake hydraulic path when the brake control system is activated.
	Control Solenoid Valve	Controls the wheel cylinder pressure when the ABS with EBD, BA, TRAC, VSC, hill-start control and Enhanced-VSC are activated.
	Regulator Pressure Sensor	The regulator pressure sensor converts the fluid pressure generated by the hydraulic brake booster into electrical signals and transmits them to the skid control ECU. Accordingly, the skid control ECU determines the braking force required by the driver.
	Wheel Cylinder Pressure Sensor	This sensor detects the fluid pressure that acts on the respective wheel cylinders and transmits them to the skid control ECU in the form of feedback. Accordingly, the skid control ECU monitors the fluid pressure of the wheel cylinders and controls the linear solenoid valve, in order to achieve the optimal wheel cylinder pressures.
	Accumulator Pressure Sensor	The accumulator pressure sensor constantly detects the brake fluid pressure in the accumulator and transmits the signals to the skid control ECU. Accordingly, the skid control ECU controls the pump motor.
Brake Booster Pump		• Consisting of a pump, pump motor and accumulator, the hydraulic power source portion generates and stores the hydraulic pressure, which the skid control ECU uses for controlling braking. • The relief valve is installed in the hydraulic brake booster.

cardiagn.com

Component		Function
		• The accumulator pressure sensor is installed in the brake actuator.
Speed Sensor		Detects the wheel speed of each of four wheels.
Brake Pedal Stroke Sensor		Directly detects the extent of the brake pedal stroke operated by the driver.
Brake Fluid Level Warning Switch		Detects the low brake fluid level.
Skid Control Buzzer		• This buzzer sounds continuously to inform the driver when there is a malfunction in the hydraulic pressure or a failure in the power supply. • This buzzer sounds intermittently to inform the driver of the vehicle skidding.
Stop Light Switch		Detects brake pedal operation.
Stop Light Control Relay		Illuminates the stop lights when hill-start assist control is operating.
Power Steering ECU		Operates cooperatively with the skid control ECU to control the steering assist torque.
Main Body ECU (Instrument Panel Junction Block)		Detects the parking brake signal and outputs it to the skid control ECU via CAN communication.
Power Management Control ECU		• Actuates the regenerative brake on receiving signal from the skid control ECU. • Sends the actual regenerative brake control value to the skid control ECU. • Controls the motive force based on an output control request signal received from the skid control ECU while the VSC, TRAC or the dynamic radar cruise control system is operating.
Steering Angle Sensor		Detects the steering direction and angle of the steering wheel.
Yaw Rate and Acceleration Sensor		• Detects the vehicles yaw rate. • Detects the vehicles acceleration in the forward, rearward, and lateral.
Combination Meter	ABS Warning Light	Lights up to alert the driver when the skid control ECU detects the malfunction in the ABS, EBD, or BA.
	Brake Warning Light / Red (Malfunction)	• Lights up to alert the driver when the skid control ECU detects the malfunction in the apportioning of the brake. • Lights up to inform the driver when the parking brake is on or the brake fluid level is low.
	Brake Warning Light / Yellow (Minor Malfunction)	Lights up to alert the driver when a minor malfunction occurs in the brake system, which does not affect the braking force (such as a malfunction in the regenerative brake).
	Slip Indicator Light	• Blinks to inform the driver when the TRAC, the VSC or the hill-start assist control is operated. • Lights up to alert the driver in the event of malfunction of the TRAC or

cardiagn.com

Component		Function
		VSC.

cardiagn.com

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

*: Use the Techstream.

1.	VEHICLE BROUGHT TO WORKSHOP

NEXT

2.	CUSTOMER PROBLEM ANALYSIS

(a) Interview the customer and confirm the problem INFO.

NEXT

3.	CHECK DTC AND FREEZE FRAME DATA*

(a) Check and record DTCs and Freeze Frame Data.

(b) Clear the DTCs and Freeze Frame Data INFO for DTC Check/Clear, and INFO for Freeze Frame Data).

(c) Reconfirm the DTCs.

(1) Reconfirm the DTCs based on the recorded DTCs and Freeze Frame Data INFO for DTC Check/Clear, and INFO for Freeze Frame Data).

HINT:

- When DTCs indicating CAN communication system malfunctions are output, repair the CAN communication system before repairing each corresponding sensor INFO.
- If any of DTCs U0123/62, U0124/95, U0126/63, and U0293/59 is output together with a CAN communication DTC, first check the appropriate sensor for a momentary open circuit INFO.
- If the Techstream cannot communicate with the skid control ECU, inspect the CAN communication system INFO.
- If there is no response from the skid control ECU, inspect the IG1 circuit of the skid control ECU INFO.

Result:

Result	Proceed to
DTC is output	A
DTC is not output (Problem symptom does not occur)	B
DTC is not output (Problem symptom occurs)	C

cardiagn.com

B Go to step 5

C Go to step 6

A

4.	DIAGNOSTIC TROUBLE CODE CHART

(a) Proceed to Diagnostic Trouble Code Chart INFO.

NEXT **Go to step 7**

5.	SYMPTOM SIMULATION

(a) Proceed to How to Proceed with Troubleshooting INFO.

NEXT

6.	PROBLEM SYMPTOMS TABLE

(a) Proceed to Problem Symptoms Table INFO.

NEXT

7.	CIRCUIT INSPECTION*

NEXT

8.	IDENTIFICATION OF PROBLEM

NEXT

9.	REPAIR OR REPLACEMENT

NEXT

10.	CONFIRMATION TEST*

NEXT **END**

cardiagn.com

cardiagn.com

CHECK FOR INTERMITTENT PROBLEMS

1. CHECK FOR INTERMITTENT PROBLEMS

HINT:

A momentary interruption (open circuit) in the connectors and/or wire harnesses between the sensors and ECUs can be detected using the ECU Data List function of the Techstream.

(a) Turn the power switch off.

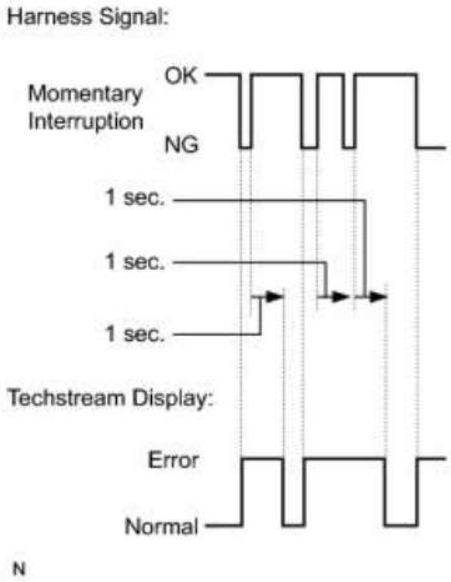
(b) Connect the Techstream to the DLC3.

(c) Turn the power switch on (IG).

(d) Turn the Techstream on.

(e) Follow the directions on the Techstream to display the Data List and select areas where momentary interruptions should be monitored.

- A momentary interruption (open circuit) cannot be detected for 3 seconds after the power switch is turned on (IG) (initial check).
- If the Error display remains displayed, check for continuity between the ECUs and the sensors, or between ECUs.
- The Error display on the Techstream will remain displayed for 1 second after the harness signal changes from momentary interruption (open circuit) to normal condition.



N

ABS/VSC/TRAC

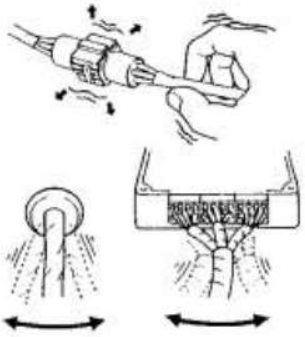
Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FR Speed Open	Front speed sensor RH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
FL Speed Open	Front speed sensor LH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
RR Speed Open	Rear speed sensor RH open detection / Error or Normal	Error: Momentary interruption	-

cardiagn.com

		Normal: Normal	
RL Speed Open	Rear speed sensor LH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Yaw Rate Open	Yaw rate sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Deceleration Open	Acceleration sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Steering Open	Steering angle sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Master Cylinder Open	Regulator pressure sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Stroke Open	Brake pedal stroke sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
FR Wheel Cylinder Open	Wheel cylinder pressure sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Accumulator Open	Accumulator pressure sensor open detection / Error or Normal	Error: Momentary	-

cardiagn.com

		interruption Normal: Normal	
HV Communication Open	Hybrid vehicle communication open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-


F47126

(f) While observing the screen, gently jiggle the connectors or wire harnesses between the ECUs and sensors, or between ECUs.

OK:

Normal display appears.

HINT:

If the display changes, this indicates that there has been a momentary interruption (open circuit) in the connector and/or wire harness. In this case, repair or replace the connectors and/or wire harnesses as one of them is faulty.

cardiagn.com

INITIALIZATION

1. DESCRIPTION

(a) Perform initialization and calibration of the linear solenoid valve when the brake booster with master cylinder (skid control ECU, brake actuator or pressure sensor), brake pedal stroke sensor or brake pedal is replaced.

Follow the procedure to perform initialization.

HINT:

- If there is a problem with the auxiliary battery (12 V) voltage, initialization and calibration of the linear solenoid valve cannot be completed normally. Make sure to check the auxiliary battery voltage before performing initialization and calibration of the linear solenoid valve.
- If the actuator's temperature is high, initialization and calibration of the linear solenoid valve may not be completed normally. If so, wait until the temperature decreases and then perform initialization and calibration of the linear solenoid valve.
- If the power switch is turned off, the brake pedal is operated, parking brake is applied or vehicle speed signal is input while the linear solenoid valve offset learning is being performed, the learning will be cancelled.

Part to be Replaced	Necessary Operation
Brake booster with master cylinder (Skid control ECU, brake actuator or pressure sensor)	Initialization and calibration of the linear solenoid valve
• Brake pedal stroke sensor • Brake pedal	1. Clearing stored linear solenoid valve calibration data 2. Initialization and calibration of the linear solenoid valve

2. PERFORM INITIALIZATION AND CALIBRATION OF LINEAR SOLENOID VALVE (When Using the Techstream)

NOTICE:

If the brake control has been disabled, or the brake pedal stroke sensor or brake pedal has been replaced, it is necessary to perform linear solenoid valve learning.

If the brake booster with master cylinder has been replaced, or the brake booster pump or brake master cylinder reservoir has been replaced, linear solenoid valve learning will be automatically performed during the Bleed Brake System procedure INFO.

(a) Clear the stored linear solenoid valve calibration data.

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.

cardiagn.com

(4) Connect the Techstream to the DLC3.

(5) Turn the power switch on (IG).

(6) Turn the Techstream on.

(7) Select the skid control ECU to clear the linear solenoid valve calibration data using the Techstream. Enter the following menus: Chassis / ABS/VSC/TRAC / Utility / Reset Memory.

(8) Perform initialization and calibration of the linear solenoid valve.

(9) Perform the zero point calibration of yaw rate and acceleration sensor INFO.

(b) Perform initialization and calibration of the linear solenoid valve.

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.

(4) Check that the parking brake is released.

NOTICE:

Linear valve offset learning cannot be started with the parking brake applied. If the parking brake is applied during offset learning, the learning process will be canceled and then restarted when the parking brake is released.

(5) Connect the Techstream to the DLC3.

(6) Turn the power switch on (IG) with the brake pedal released.

NOTICE:

- If the linear solenoid valve offset learning is performed without turning the power switch on (IG), the learning process may not be completed properly because of insufficient auxiliary battery voltage.
- When the linear solenoid valve offset learning is interrupted, or the learning process is performed with park (P) is not selected, DTC C1345 (Linear Solenoid Valve Offset Learning Undone) will be stored.

(7) Turn the Techstream on.

(8) Switch the skid control ECU to the Test Mode using the Techstream. Enter the following menus: Chassis / ABS/VSC/TRAC / Utility / ECB* Utility / Linear Valve Offset.

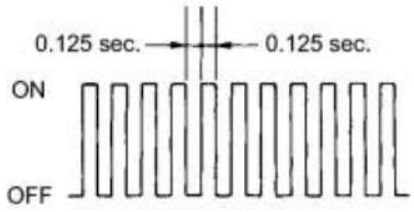
*: Electronically Controlled Brake System

(9) Leave the vehicle stationary without depressing the brake pedal for 1 or 2 minutes.

(10) Check that the interval between blinks of the brake warning light /

cardiagn.com

Test Mode Blinking Pattern:



yellow (minor malfunction) changes from 1 second to 0.25 seconds.

- The time needed to complete initialization and calibration of the linear solenoid valve varies depending on auxiliary battery voltage.
- The brake warning light / yellow (minor malfunction) blinks at 1 second intervals during initialization and calibration of the linear solenoid valve and changes to the Test Mode display.
- The brake warning light / yellow (minor malfunction) blinks at 0.25 seconds intervals if the Test Mode is normal.

(11) Check that DTC C1345 (Linear Solenoid Valve Offset Learning Undone) which indicates trouble with stroke sensor zero point learning is not output when the brake warning light / yellow (minor malfunction) changes to the Test Mode display upon initialization and calibration of the linear solenoid valve completion.

(12) Enter the normal mode from the Test Mode following the Techstream directions.

HINT:

Refer to the Techstream operator's manual for further details.

3. PERFORM INITIALIZATION AND CALIBRATION OF LINEAR SOLENOID VALVE (When not Using the Techstream)

NOTICE:

If the brake control has been disabled, or the brake pedal stroke sensor or brake pedal has been replaced, it is necessary to perform linear solenoid valve learning.

If the brake booster with master cylinder has been replaced, or the brake booster pump or brake master cylinder reservoir has been replaced, linear solenoid valve learning will be automatically performed during the Bleed Brake System procedure INFO.

(a) Clear the stored linear solenoid valve calibration data.

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.

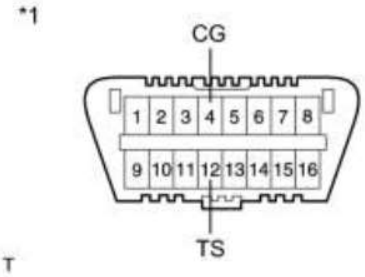
(4) Check that the parking brake is released.

NOTICE:

Linear valve offset learning cannot be started with the parking brake applied. If the parking brake is applied during offset learning, the learning process will be canceled and then restarted when the parking brake is released.

(5) Turn the power switch on (IG) with the brake pedal released.

cardiagn.com



(6) Using SST, connect and disconnect terminals TS and CG of the DLC3 4 times or more within 8 seconds.

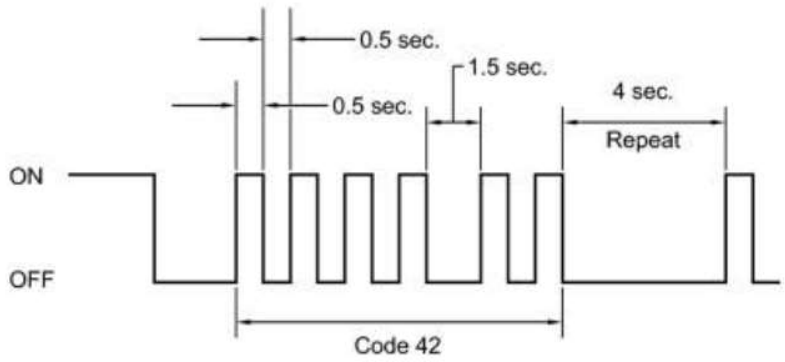
SST: 09843-18040

Text in Illustration

*1	Front view of DLC3

(7) Check that no codes other than ABS code 42, VSC code 45 and electronically controlled brake system code 48, 66, or 95 are stored in the diagnostic system.

Trouble Code Blinking Pattern (Example Code 42):



cardiagn.com

HINT:

The ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights do not indicate a normal system code.

(8) Remove SST from the terminals of the DLC3.

(9) Perform initialization and calibration of the linear solenoid valve.

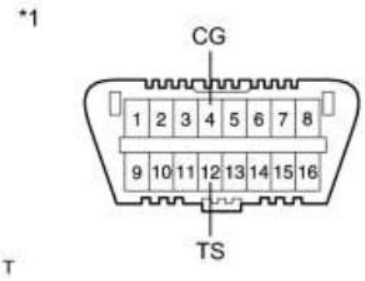
(10) Perform the zero point calibration of yaw rate and acceleration sensor INFO.

(b) Perform initialization and calibration of the linear solenoid valve.

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.



(4) Using SST, connect terminals TS and CG of the DLC3.

SST: 09843-18040

Text in Illustration

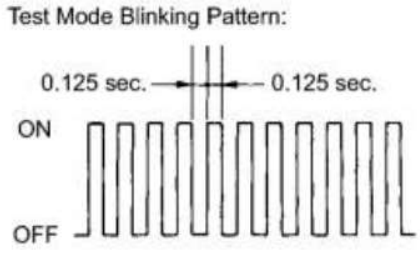
*1	Front view of DLC3

(5) Turn the power switch on (IG) with the brake pedal released.

NOTICE:

- If the linear solenoid valve offset learning is performed without turning the power switch on (IG), the learning process may not be completed properly because of insufficient auxiliary battery voltage.
- When the linear solenoid valve offset learning is interrupted, or the learning process is performed with park (P) is not selected, DTC 66 (Linear Solenoid Valve Offset Learning Undone) will be stored.

(6) Leave the vehicle stationary without depressing the brake pedal for 1 or 2 minutes.



(7) Check that the interval between blinks of the brake warning light / yellow (minor malfunction) changes from 1 second to 0.25 seconds.

- The time needed to complete initialization and calibration of the linear solenoid valve varies depending on the auxiliary battery voltage.
- The brake warning light / yellow (minor malfunction) blinks at 1 second intervals during initialization and calibration of the linear solenoid valve and changes to the Test Mode display.
- The brake warning light / yellow (minor malfunction) blinks at 0.25 seconds intervals if Test Mode is normal.

(8) Check that DTC 66 (Linear Solenoid Valve Offset Learning Undone) which indicates trouble with stroke sensor zero point learning is not output when the brake warning light / yellow (minor malfunction) changes to the Test Mode display upon initialization and calibration of the linear solenoid valve completion.

(9) Turn the power switch off and disconnect SST from the DLC3.

cardiagn.com

CALIBRATION

1. DESCRIPTION

(a) After replacing any VSC related components or performing front wheel alignment adjustment, clear and read the sensor calibration data.

Follow the chart below to perform calibration.

Part to be Replaced / Operation	Necessary Operation
Brake booster with master cylinder (Skid control ECU)	Yaw rate and acceleration sensor zero point calibration
Yaw rate and acceleration sensor	1. Clearing zero point calibration data 2. Yaw rate and acceleration sensor zero point calibration
Front wheel alignment adjustment	1. Clearing zero point calibration data 2. Yaw rate and acceleration sensor zero point calibration

2. OBTAIN ZERO POINT OF YAW RATE AND ACCELERATION SENSOR (When Using the Techstream)

NOTICE:

- While obtaining the zero point, keep the vehicle stationary and do not vibrate, tilt, move, or shake it.
- Be sure to perform this procedure on a level surface (with an inclination of less than 1 degree).

(a) Clear the zero point calibration data.

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.

(4) Connect the Techstream to the DLC3.

(5) Turn the power switch on (IG).

(6) Turn the Techstream on.

(7) Select the skid control ECU to clear the zero point calibration data using the Techstream. Enter the following menus: Chassis / ABS/VSC/TRAC / Utility / Reset Memory.

(8) Turn the power switch off.

NOTICE:

cardiagn.com

If the power switch is turned on (IG) for more than 15 seconds with park (P) is selected after the zero point of the yaw rate and acceleration sensor has been cleared, only the zero point of the yaw rate sensor will be stored. If the vehicle is driven under these conditions, the skid control ECU will store the zero point calibration for the acceleration sensor as not being completed. The skid control ECU will then also indicate this as a malfunction of the VSC system using the indicator light.

(b) Perform the zero point calibration of the yaw rate and acceleration sensor.

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.

NOTICE:

DTCs C1210 (Zero Point Calibration of Yaw Rate Sensor Undone) and C1336 (Zero Point Calibration of Acceleration Sensor Undone) will be stored if park (P) is not selected.

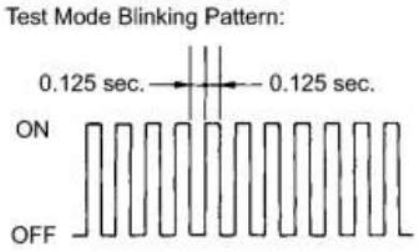
(4) Connect the Techstream to the DLC3.

(5) Turn the power switch on (IG).

(6) Turn the Techstream on.

(7) Switch the skid control ECU to Test Mode using the Techstream. Enter the following menus: Chassis / ABS/VSC/TRAC / Utility / Test Mode.

(8) After Test Mode has been entered, keep the vehicle stationary on a level surface for 2 seconds or more.



(9) Check that the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights come on for several seconds and then blink in Test Mode.

- If the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights do not blink, perform zero point calibration again.
- The zero point calibration is performed only once after the system enters Test Mode.
- Calibration cannot be performed again until the stored data is cleared.

(10) Turn the power switch off and disconnect the Techstream.

3. OBTAIN ZERO POINT OF YAW RATE AND ACCELERATION SENSOR (When not Using the Techstream)

NOTICE:

- While obtaining the zero point, keep the vehicle stationary and do not vibrate, tilt, move, or shake it.
- Be sure to perform this procedure on a level surface (with an inclination of less than 1 degree).

cardiagn.com

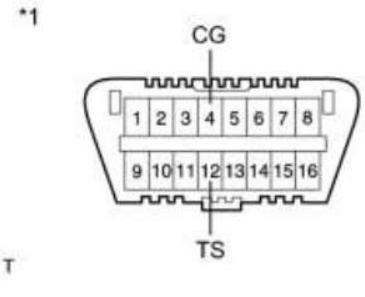
(a) Clear the zero point calibration data.

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.

(4) Turn the power switch on (IG).



(5) Using SST, connect and disconnect terminals TS and CG of the DLC3 4 times or more within 8 seconds.

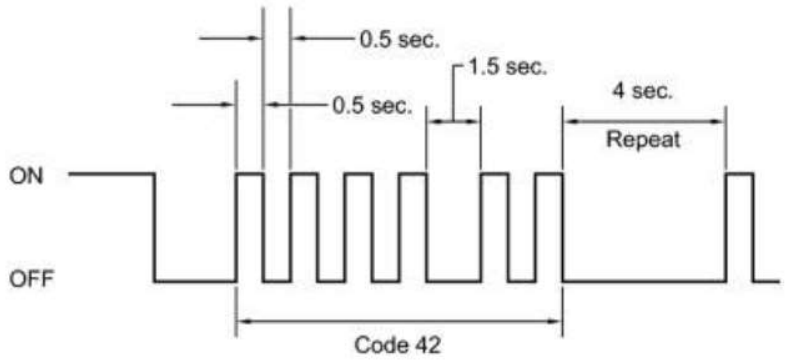
SST: 09843-18040

Text in Illustration

*1	Front view of DLC3

(6) Check that no codes other than ABS code 42, VSC code 45 and electronically controlled brake system code 48, 66, or 95 are stored in the diagnostic system.

Trouble Code Blinking Pattern (Example Code 42):



HINT:

The ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights do not indicate a normal system code.

cardiagn.com

NOTICE:

If the power switch is turned on (IG) for more than 15 seconds with park (P) is selected after the zero point of the yaw rate and acceleration sensor has been cleared, only the zero point of the yaw rate sensor will be stored. If the vehicle is driven under these conditions, the skid control ECU will store the zero point calibration for the acceleration sensor as not being completed. The skid control ECU will then also indicate this as a malfunction of the VSC system using the indicator light.

(7) Turn the power switch off.

(b) Perform the zero point calibration of the yaw rate and acceleration sensor.

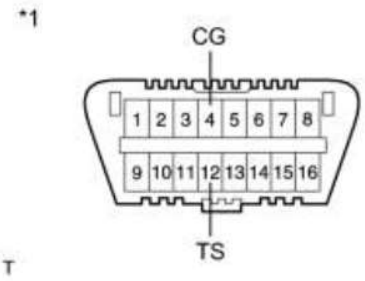
(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that park (P) is selected.

NOTICE:

DTCs 36 (Zero Point Calibration of Yaw Rate Sensor Undone) and 98 (Zero Point Calibration of Acceleration Sensor Undone) will be recorded if park (P) is not selected.



(4) Using SST, connect terminals TS and CG of the DLC3.

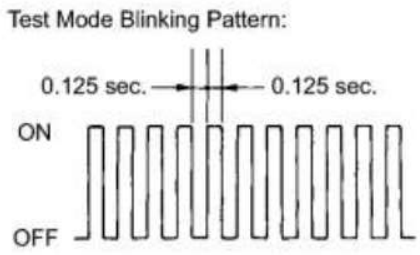
SST: 09843-18040

Text in Illustration

*1	Front view of DLC3

(5) Turn the power switch on (IG).

(6) After Test Mode has been entered, keep the vehicle stationary on a level surface for 2 seconds or more.



(7) Check that the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights come on for several seconds and then blinks in Test Mode.

- If the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights do not blink, perform zero point calibration again.
- The zero point calibration is performed only once after the system enters Test Mode.
- Calibration cannot be performed again until the stored data is cleared.

(8) Turn the power switch off and disconnect SST from the DLC3.

cardiagn.com

cardiagn.com

TEST MODE PROCEDURE

1. WARNING LIGHT AND INDICATOR LIGHT INITIAL CHECK

(a) Release the parking brake.

NOTICE:

When releasing the parking brake, push the P position switch for safety.

HINT:

When the parking brake is applied or the brake fluid level is low, the brake warning light / red (malfunction) comes on.

ABS Warning Light:

for U.S.A.: Except for U.S.A.:



Brake Warning Light / Red (Malfunction):

for U.S.A.: Except for U.S.A.:



Brake Warning Light / Yellow (Minor Malfunction):



Slip Indicator Light:



(b) When the power switch is turned on (IG), check that the ABS warning, brake warning / red (malfunction), brake warning / yellow (minor malfunction) and slip indicator lights come on until the power switch is turned on (READY).

- If the skid control ECU stores any DTCs, the ABS warning, brake warning / red (malfunction), brake warning / yellow (minor malfunction) and slip indicator lights will come on.
- If any of the indicators remains on or does not come on, proceed to troubleshooting for the light circuits listed below.

Trouble Area	See Procedure
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO
Brake warning light / red (malfunction) circuit (Remains on)	INFO
Brake warning light / red (malfunction) circuit (Does not come on)	INFO
Brake warning light / yellow (minor malfunction) circuit (Remains on)	INFO
Brake warning light / yellow (minor malfunction) circuit (Does not come on)	INFO
Slip indicator light circuit (Remains on)	INFO
Slip indicator light circuit (Does not come on)	INFO

cardiagn.com

2. SENSOR CHECK USING TEST MODE (SIGNAL CHECK) (When Using the Techstream)

NOTICE:

Before performing the master cylinder pressure sensor check or yaw rate sensor zero point voltage check, perform linear valve offset learning.

HINT:

- If the power switch is turned from on (IG) to on (ACC) or off during Test Mode (signal check), DTCs recorded during the sensor check will be cleared.
- During Test Mode (signal check), the skid control ECU records all DTCs detected in the sensor check. By performing Test Mode (signal check), the codes are cleared if a normal condition is confirmed. The remaining codes are the codes where an abnormality was found.

(a) Procedure to enter the Test Mode

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that the parking brake is released.

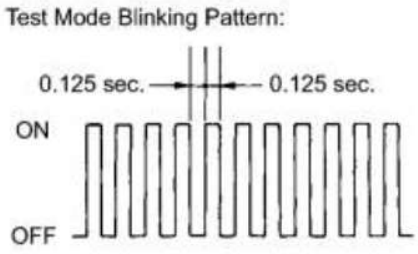
(4) Check that park (P) is selected.

(5) Connect the Techstream to the DLC3.

(6) Turn the power switch on (IG).

(7) Turn the Techstream on.

(8) Switch the skid control ECU to Test Mode using the Techstream. Enter the following menus: Chassis / ABS/VSC/TRAC / Utility / Signal Check.



(9) Check that the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights come on for several seconds and then blink in Test Mode.

HINT:

If the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights do not blink, inspect the TS and CG terminal circuit and ABS warning, brake warning / yellow (minor malfunction) and slip indicator light circuits.

(10) Check the ABS sensors.

HINT:

cardiagn.com

Check that the ABS warning light is blinking in the Test Mode blinking pattern before performing the ABS sensor check.

(b) Acceleration Sensor Check

(1) Keep the vehicle stationary on a level surface for 1 second or more.

HINT:

The acceleration sensor check can be performed with the master cylinder pressure sensor check below.

(c) Master Cylinder Pressure Sensor Check

NOTICE:

Before performing the master cylinder pressure sensor check, perform linear valve offset learning.

(1) Leave the vehicle in a stationary condition and release the brake pedal for 1 second or more, and quickly and continuously depress the brake pedal with a force greater than 98 N (10 kgf, 22.0 lbf) for 1 second.

(2) Check that the ABS warning light stays on for 3 seconds.

HINT:

- Confirm that the ABS warning light comes on.
- While the ABS warning light stays on, continue to depress the brake pedal with a force of 98 N (10 kgf, 22 lbf) or more.
- The ABS warning light comes on for 3 seconds every time the preceding brake pedal operation is performed.

(d) Speed Sensor Check

NOTICE:

Before performing the speed sensor check, complete the acceleration sensor and master cylinder pressure sensor checks.

(1) Drive the vehicle straight-ahead.

Accelerate the vehicle to a speed of 45 km/h (28 mph) or more for several seconds and check that the ABS warning light goes off.

HINT:

- The sensor check may not be completed if wheelspin occurs.
- The ABS warning light comes on immediately if a malfunction is detected during the speed sensor check.

(2) Stop the vehicle.

NOTICE:

cardiagn.com

- The speed sensor check may not be completed if the speed sensor check is started while turning the steering wheel or spinning the wheels.
- After the ABS warning light goes off, if vehicle speed exceeds 80 km/h (50 mph), a sensor check code will be stored again. Decelerate or stop the vehicle before the speed reaches 80 km/h (50 mph).
- If the sensor check has not been completed, the ABS warning light will blink while driving and the ABS will not operate.

(3) Check the VSC sensor.

HINT:

Check that the brake warning / yellow (minor malfunction) and slip indicator lights are blinking in the Test Mode blinking pattern before performing the VSC sensor check.

(e) Yaw Rate Sensor Zero Point Voltage Check

NOTICE:

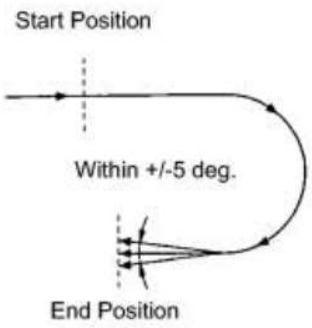
Before performing the yaw rate sensor zero point voltage check, perform linear valve offset learning.

(1) Check that park (P) is selected.

(2) Keep the vehicle stationary on a level surface for 1 second or more.

(3) Check that the brake warning light / yellow (minor malfunction) blinks.

(f) Yaw Rate Sensor Output Check



(1) Move the shift lever from P to D and drive the vehicle at a speed of approximately 5 km/h (3 mph), and turn the steering wheel either to the left or right 90° or more until the vehicle makes a 180° turn.

- Make a 180° turn. At the end of the turn, the direction of the vehicle should be within 180° +/-5° of its start position.
- Do not allow the wheels to spin.
- Do not turn the power switch off while turning.
- Do not push the P position switch while turning, but changing the vehicle speed, stopping, or driving in reverse is acceptable.

(2) Stop the vehicle and push the P position switch. Check that the skid control buzzer sounds for 3 seconds.

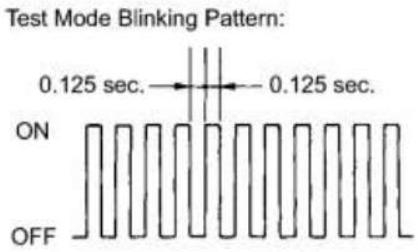
HINT:

- If the skid control buzzer sounds, the sensor check has completed normally.

cardiagn.com

- If the skid control buzzer does not sound, check the skid control buzzer circuit INFO, then perform the sensor check again.
- If the skid control buzzer still does not sound, the yaw rate sensor may be malfunctioning. Check for DTCs.

(g) End of Sensor Check



(1) If the sensor check is completed, the ABS warning light blinks (Test Mode) when the vehicle is stopped and goes off while the vehicle is driving.

- When all the yaw rate sensor, acceleration sensor, speed sensor, and master cylinder pressure sensor checks are completed, the sensor check is completed.
- If the sensor check has not been completed, the ABS warning light will blink while driving and the ABS will not operate.

(h) Read Sensor Check DTCs

(1) Read the DTC(s) by following the Techstream screen.

NOTICE:

- If only DTCs other than Test Mode sensor check DTCs are displayed, repair the malfunction and clear the DTCs.
- If Test Mode sensor check DTCs and other DTCs are displayed or if only Test Mode sensor check DTCs are displayed, repair the malfunction, clear the DTCs, and perform the Test Mode inspection again.

HINT:

See "Sensor Check DTCs".

(2) Turn the power switch off and disconnect the Techstream.

(i) Sensor Check DTCs

ABS Sensor

DTC Code	Detection Item	Trouble Area
C1271	Low Output Signal of Front Speed Sensor RH	• Front speed sensor RH • Sensor installation • Speed sensor rotor
C1272	Low Output Signal of Front Speed Sensor LH	• Front speed sensor LH • Sensor installation • Speed sensor rotor
C1273	Low Output Signal of Rear Speed Sensor RH	• Rear speed sensor RH • Sensor installation

cardiagn.com

DTC Code	Detection Item	Trouble Area
		• Speed sensor rotor
C1274	Low Output Signal of Rear Speed Sensor LH	• Rear speed sensor LH • Sensor installation • Speed sensor rotor
C1275	Abnormal Change in Output Signal of Front Speed Sensor RH	• Front speed sensor RH • Speed sensor rotor
C1276	Abnormal Change in Output Signal of Front Speed Sensor LH	• Front speed sensor LH • Speed sensor rotor
C1277	Abnormal Change in Output Signal of Rear Speed Sensor RH	• Rear speed sensor RH • Speed sensor rotor
C1278	Abnormal Change in Output Signal of Rear Speed Sensor LH	• Rear speed sensor LH • Speed sensor rotor
C1279	Acceleration Sensor Output Voltage Malfunction	• Sensor installation • Yaw rate and acceleration sensor
C1281	Master Cylinder Pressure Sensor Output Malfunction	• Stop light switch • Regulator pressure sensor

VSC Sensor

DTC Code	Detection Item	Trouble Area
C0371	Yaw Rate Sensor	• Sensor installation • Yaw rate and acceleration sensor

Electronically Controlled Brake System Sensor

DTC Code	Detection Item	Trouble Area
C1346	Stroke Sensor Zero Point Learning Malfunction	• Brake pedal stroke sensor • Brake pedal stroke sensor circuit

HINT:

The codes in this table are output only in Test Mode (signal check).

3. SENSOR CHECK USING TEST MODE (SIGNAL CHECK) (When not Using the Techstream)

cardiagn.com

NOTICE:

Before performing the master cylinder pressure sensor check or yaw rate sensor zero point voltage check, perform linear valve offset learning.

HINT:

- If the power switch is turned from on (IG) to on (ACC) or off during Test Mode (signal check), DTCs recorded during the sensor check will be cleared.
- During Test Mode (signal check), the skid control ECU records all DTCs detected in the sensor check. By performing Test Mode (signal check), the codes are cleared if a normal condition is confirmed. The remaining codes are the codes where an abnormality was found.

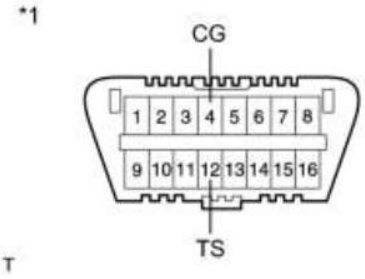
(a) Procedure to enter Test Mode

(1) Turn the power switch off.

(2) Check that the steering wheel is centered.

(3) Check that the parking brake is released.

(4) Check that park (P) is selected.



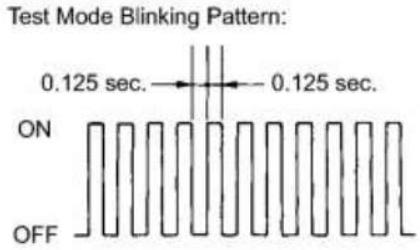
(5) Using SST, connect terminals TS and CG of the DLC3.

SST: 09843-18040

Text in Illustration

*1	Front view of DLC3

(6) Turn the power switch on (IG).



(7) Check that the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights come on for several seconds and then blink in Test Mode.

HINT:

If the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights do not blink, inspect the TS and CG terminal circuit and ABS warning, brake warning / yellow (minor malfunction) and slip indicator light circuits.

(8) Check the ABS sensors.

HINT:

cardiagn.com

Check that the ABS warning light is blinking in the Test Mode blinking pattern before performing the ABS sensor check.

(b) Acceleration Sensor Check

(1) Keep the vehicle stationary on a level surface for 1 second or more.

HINT:

The acceleration sensor check can be performed with the master cylinder pressure sensor check below.

(c) Master Cylinder Pressure Sensor Check

NOTICE:

Before performing the master cylinder pressure sensor check, perform linear valve offset learning.

(1) Leave the vehicle in a stationary condition and release the brake pedal for 1 second or more, and quickly and continuously depress the brake pedal with a force greater than 98 N (10 kgf, 22.0 lbf) for 1 second.

(2) Check that the ABS warning light stays on for 3 seconds.

HINT:

- Confirm that the ABS warning light comes on.
- While the ABS warning light stays on, continue to depress the brake pedal with a force of 98 N (10 kgf, 22 lbf) or more.
- The ABS warning light comes on for 3 seconds every time the preceding brake pedal operation is performed.

(d) Speed Sensor Check

NOTICE:

Before performing the speed sensor check, complete the acceleration sensor and master cylinder pressure sensor checks.

(1) Drive the vehicle straight-ahead.

Accelerate the vehicle to a speed of 45 km/h (28 mph) or more for several seconds and check that the ABS warning light goes off.

HINT:

- The sensor check may not be completed if wheelspin occurs.
- The ABS warning light comes on immediately if a malfunction is detected during the speed sensor check.

(2) Stop the vehicle.

NOTICE:

cardiagn.com

- The speed sensor check may not be completed if the speed sensor check is started while turning the steering wheel or spinning the wheels.
- After the ABS warning light goes off, if vehicle speed exceeds 80 km/h (50 mph), a sensor check code will be stored again. Decelerate or stop the vehicle before the speed reaches 80 km/h (50 mph).
- If the sensor check has not been completed, the ABS warning light will blink while driving and the ABS will not operate.

(3) Check the VSC sensor.

HINT:

Check that the brake warning / yellow (minor malfunction) and slip indicator lights are blinking in the Test Mode blinking pattern before performing the VSC sensor check.

(e) Yaw Rate Sensor Zero Point Voltage Check

NOTICE:

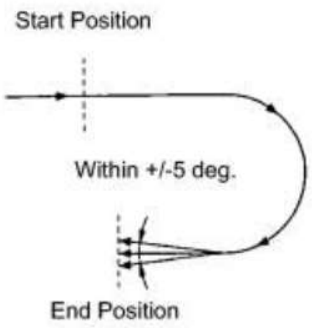
Before performing the yaw rate sensor zero point voltage check, perform linear valve offset learning.

(1) Check that park (P) is selected.

(2) Keep the vehicle stationary on a level surface for 1 second or more.

(3) Check that the brake warning light / yellow (minor malfunction) blinks.

(f) Yaw Rate Sensor Output Check



(1) Move the shift lever from P to D and drive the vehicle at a speed of approximately 5 km/h (3 mph), and turn the steering wheel either to the left or right 90° or more until the vehicle makes a 180° turn.

- Make a 180° turn. At the end of the turn, the direction of the vehicle should be within 180° +/-5° of its start position.
- Do not allow the wheels to spin.
- Do not turn the power switch off while turning.
- Do not push the P position switch while turning, but changing the vehicle speed, stopping, or driving in reverse is acceptable.

(2) Stop the vehicle and push the P position switch. Check that the skid control buzzer sounds for 3 seconds.

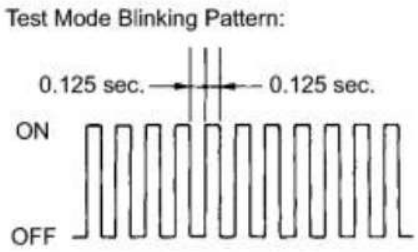
HINT:

- If the skid control buzzer sounds, the sensor check has completed normally.

cardiagn.com

- If the skid control buzzer does not sound, check the skid control buzzer circuit INFO, then perform the sensor check again.
- If the skid control buzzer still does not sound, the yaw rate sensor may be malfunctioning. Check for DTCs.

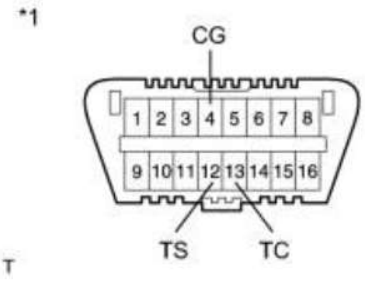
(g) End of Sensor Check



(1) If the sensor check is completed, the ABS warning light blinks (Test Mode) when the vehicle is stopped and goes off while the vehicle is driving.

- When the yaw rate sensor, acceleration sensor, speed sensor, and master cylinder pressure sensor checks are completed, the sensor check is completed.
- If the sensor check has not been completed, the ABS warning light will blink while driving and the ABS will not operate.

(h) Read Sensor Check DTCs



(1) Using SST, connect terminals TC and CG of the DLC3.

SST: 09843-18040

Text in Illustration

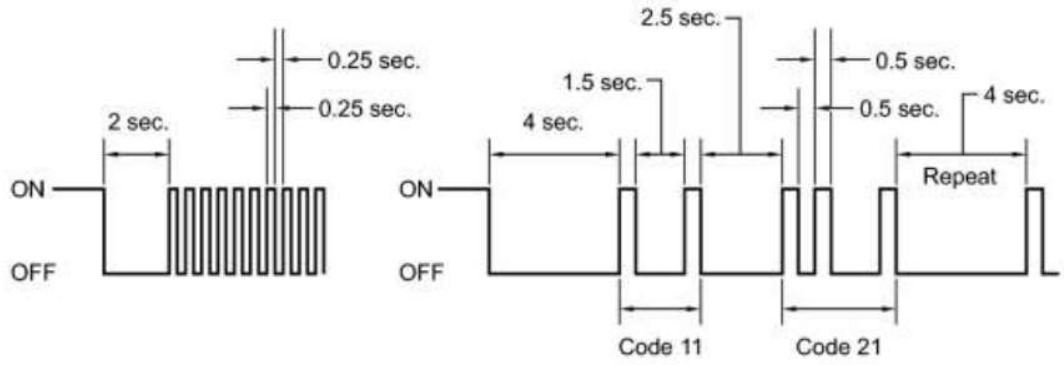
*1	Front view of DLC3

(2) Count the number of blinks of the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights.

cardiagn.com

Normal System Code Blinking Pattern:

Trouble Code Blinking Pattern (Example Codes 11 and 21):



NOTICE:

- If only DTCs other than the Test Mode sensor check DTCs are displayed, repair the malfunctions and clear the DTCs.
- If Test Mode sensor check DTCs and other DTCs are displayed or if only the Test Mode sensor check DTCs are displayed, repair the malfunctions, clear the DTCs, and perform the Test Mode inspection again.

HINT:

- If more than 1 malfunction is detected at the same time, the lowest numbered code will be displayed first.
- See "Sensor Check DTCs".

(3) After performing the check, disconnect SST from terminals TS and CG, and TC and CG of the DLC3 and turn the power switch off.

HINT:

- If the power switch is not turned on (IG) after SST is removed from the DLC3, the previous Test Mode will continue.
- If the power switch is turned on (IG) with terminals TS and CG connected, the previous Test Mode will continue.

(i) Sensor Check DTCs

ABS Sensor

DTC Code	Detection Item	Trouble Area
71	Low Output Signal of Front Speed Sensor RH	• Front speed sensor RH • Sensor installation

cardiagn.com

DTC Code	Detection Item	Trouble Area
		• Speed sensor rotor
72	Low Output Signal of Front Speed Sensor LH	• Front speed sensor LH • Sensor installation • Speed sensor rotor
73	Low Output Signal of Rear Speed Sensor RH	• Rear speed sensor RH • Sensor installation • Speed sensor rotor
74	Low Output Signal of Rear Speed Sensor LH	• Rear speed sensor LH • Sensor installation • Speed sensor rotor
75	Abnormal Change in Output Signal of Front Speed Sensor RH	• Front speed sensor RH • Speed sensor rotor
76	Abnormal Change in Output Signal of Front Speed Sensor LH	• Front speed sensor LH • Speed sensor rotor
77	Abnormal Change in Output Signal of Rear Speed Sensor RH	• Rear speed sensor RH • Speed sensor rotor
78	Abnormal Change in Output Signal of Rear Speed Sensor LH	• Rear speed sensor LH • Speed sensor rotor
79	Acceleration Sensor Output Voltage Malfunction	• Sensor installation • Yaw rate and acceleration sensor
81	Master Cylinder Pressure Sensor Output Malfunction	• Stop light switch • Regulator pressure sensor

VSC Sensor

DTC Code	Detection Item	Trouble Area
71	Yaw Rate Sensor	• Sensor installation • Yaw rate and acceleration sensor

Electronically Controlled Brake System Sensor

DTC Code	Detection Item	Trouble Area
71	Stroke Sensor Zero Point Learning Malfunction	• Brake pedal stroke sensor

cardiagn.com

DTC Code	Detection Item	Trouble Area
		• Brake pedal stroke sensor circuit

HINT:

The codes in this table are output only in Test Mode (signal check).

cardiagn.com

PROBLEM SYMPTOMS TABLE

If there are no DTCs but the problem still occurs, check the circuits for each problem symptom in the order given in the table below and proceed to the relevant troubleshooting page.

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), sensor, etc., make sure that the power switch is turned off, the stop light switch is off, and 2 minutes have elapsed since the driver's door was closed.

HINT:

- Since the hydraulic passage is blocked off by the master cut solenoid during electronically controlled brake system control, there is no kickback (vibration) to the brake pedal, creating a quiet sound even while the ABS is operating.
- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Electronically Controlled Brake System

Symptom	Suspected Area	See page
ABS, BA and/or EBD does not operate	Use a chassis dynamometer, etc. to check the electronically controlled brake system operation.	-
	Check the DTC again and make sure that the normal system code is output.	INFO
	IG power source circuit	INFO
	Front speed sensor circuit	INFO
	Rear speed sensor circuit	INFO
	Check the brake booster with master cylinder (brake actuator) using the Techstream. (Check brake booster with master cylinder (brake actuator) operation using the Active Test function.) If abnormal, check the hydraulic circuit for leaks.	INFO
	If the symptoms still occur even after the above circuits in suspected areas have been inspected and proved to be normal, replace the brake booster with master cylinder (skid control ECU).	INFO
ABS, BA and/or EBD does not operate efficiently	Check the DTC again and make sure that the normal system code is output.	INFO
	Front speed sensor circuit	INFO
	Rear speed sensor circuit	INFO
	Check the brake booster with master cylinder (brake actuator) using the Techstream. (Check brake booster with master cylinder (brake actuator)	INFO

cardiagn.com

Symptom	Suspected Area	See page
	operation using the Active Test function.) If abnormal, check the hydraulic circuit for leaks.	
	If the symptoms still occur even after the above circuits in suspected areas have been inspected and proved to be normal, replace the brake booster with master cylinder (skid control ECU).	INFO
ABS warning light abnormal (Remains on)	ABS warning light circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
ABS warning light abnormal (Does not come on)	ABS warning light circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
Brake warning light / red (malfunction) abnormal (Remains on)	Brake fluid level warning switch circuit	INFO
	Brake warning light / red (malfunction) circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
Brake warning light / red (malfunction) abnormal (Does not come on)	Brake warning light / red (malfunction) circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
VSC and/or TRAC does not operate	Check that traction control has not operated by carrying out diagnosis.	-
	Check the DTC again and make sure that the normal system code is output.	INFO
	IG power source circuit	INFO
	Check the hydraulic circuit for leaks.	-
	Front speed sensor circuit	INFO
	Rear speed sensor circuit	INFO
	Yaw rate and acceleration sensor circuit	INFO
	Steering angle sensor circuit	INFO
	If the symptoms still occur even after the above circuits in suspected areas have been inspected and proved to be normal, replace the brake booster with master cylinder (skid control ECU).	INFO
Brake warning light / yellow (minor malfunction) abnormal (Remains on)	Brake warning light / yellow (minor malfunction) circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
Brake warning light / yellow (minor malfunction) abnormal (Does not come on)	Brake warning light / yellow (minor malfunction) circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
Slip indicator light abnormal (Remains on)	Slip indicator light circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
Slip indicator light abnormal (Does not come on)	Slip indicator light circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
DTC check cannot be done	Check the DTC again and make sure that the normal system code is output.	INFO

cardiagn.com

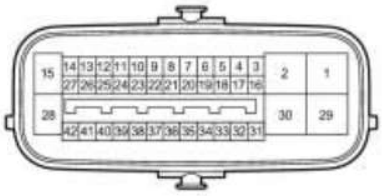
Symptom	Suspected Area	See page
	TC and CG terminal circuit	INFO
	If the symptoms still occur even after the above circuit in suspected areas has been inspected and proved to be normal, replace the brake booster with master cylinder (skid control ECU).	INFO
Sensor check cannot be done	TS and CG terminal circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO
Skid control buzzer abnormal	Skid control buzzer circuit	INFO
	Brake booster with master cylinder (Skid control ECU)	INFO

cardiagn.com

TERMINALS OF ECU

1. TERMINALS OF ECU

*1



H

Text in Illustration

*1	Component without harness connected (Skid Control ECU)

Terminal No. (Symbol)	Terminal Description
1 (MRI1)	Motor power supply input 1
2 (MRI2)	Motor power supply input 2
3 (STP0)	Stop light control relay output
4 (TS)	Sensor check switch input
5 (FR-)	Front speed sensor RH (-) signal input
6 (STP2)	Stop light control relay input
7 (RL-)	Rear speed sensor LH (-) signal input
9 (RR-)	Rear speed sensor RH (-) signal input
10 (HZRI)	Hazard warning switch input
11 (SP1)	Speed sensor signal output
12 (IG2)	IG2 power source input
13 (BZ)	Skid control buzzer output
14 (BI)	+B power source input
15 (BS)	Solenoid power supply input
16 (IG1)	IG1 power source input
18 (FR+)	Front speed sensor RH (+) power supply output
19 (CTY)	Courtesy switch input

cardiagn.com

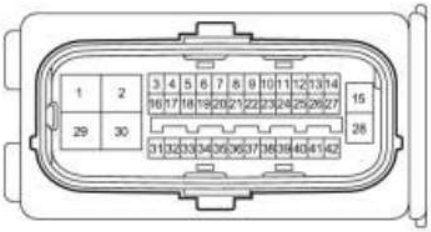
Terminal No. (Symbol)	Terminal Description
20 (RL+)	Rear speed sensor LH (+) power supply output
22 (RR+)	Rear speed sensor RH (+) power supply output
23 (GND6)	Skid control ECU ground 6
24 (GND5)	Skid control ECU ground 5
25 (GND4)	Skid control ECU ground 4
26 (GND3)	Skid control ECU ground 3
27 (GND2)	Skid control ECU ground 2
28 (GND)	Skid control ECU ground
29 (MRO1)	Motor power supply output 1
30 (MRO2)	Motor power supply output 2
31 (FL+)	Front speed sensor LH (+) power supply output
32 (FL-)	Front speed sensor LH (-) signal input
33 (STP)	Stop light switch input
34 (CA2L)	CAN communication line 2 (L)
35 (CA2H)	CAN communication line 2 (H)
36 (LBL)	Brake fluid level warning switch input
37 (CA1H)	CAN communication line 1 (H)
38 (CA1L)	CAN communication line 1 (L)
39 (VCSK)	Stroke sensor power supply output
40 (SKS2)	Stroke sensor signal input 2
41 (SKG)	Stroke sensor ground
42 (SKS)	Stroke sensor signal input

2. TERMINAL INSPECTION

(a) Disconnect the connector and measure the voltage or resistance on the wire harness side.

*1

A58



H

cardiagn.com

Text in Illustration

*1	Front view of wire harness connected (to Skid Control ECU)

HINT:

Voltage cannot be measured with the connector connected to the skid control ECU as the connector is watertight.

Standard

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
A58-1 (MRI1) - Body ground	B - Body ground	Motor power supply input 1	Always	11 to 14 V
A58-2 (MRI2) - Body ground	R - Body ground	Motor power supply input 2	Always	11 to 14 V
A58-3 (STP0) - Body ground	Y - Body ground	Stop light control relay output	Always	11 to 14 V
A58-6 (STP2) - Body ground	BE - Body ground	Stop light control relay input	Stop light switch ON → OFF (Brake pedal depressed → released)	11 to 14 V → Below 1.5 V
A58-10 (HZRI) - Body ground	SB - Body ground	Hazard warning switch input	Hazard warning switch ON → OFF	Below 1 Ω → 10 kΩ or higher
A58-12 (IG2) - Body ground	BE - Body ground	IG2 power source input	Power switch on (IG)	11 to 14 V
A58-13 (BZ) - Body ground	BR - Body ground	Skid control buzzer output	Power switch on (IG), buzzer not sounding	11 to 14 V
A58-14 (BI) - Body ground	W - Body ground	+B power source input	Always	11 to 14 V
A58-15 (BS) - Body ground	B - Body ground	Solenoid power supply input	Always	11 to 14 V
A58-16 (IG1) - Body ground	B - Body ground	IG1 power source input	Power switch on (IG)	11 to 14 V
A58-19 (CTY) - Body ground	V - Body ground	Courtesy switch input	Driver door close → open	11 to 14 V → Below 1.5 V
A58-23 (GND6) - Body ground	W-B - Body ground	Skid control ECU ground 6	Always	Below 1 Ω
A58-24 (GND5) - Body ground	W-B - Body ground	Skid control ECU ground 5	Always	Below 1 Ω
A58-25 (GND4) -	W-B - Body	Skid control ECU	Always	Below 1 Ω

cardiagn.com

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
Body ground	ground	ground 4		
A58-26 (GND3) - Body ground	W-B - Body ground	Skid control ECU ground 3	Always	Below 1 Ω
A58-27 (GND2) - Body ground	W-B - Body ground	Skid control ECU ground 2	Always	Below 1 Ω
A58-28 (GND) - Body ground	W - Body ground	Skid control ECU ground	Always	Below 1 Ω
A58-33 (STP) - Body ground	L - Body ground	Stop light switch input	Stop light switch ON → OFF (Brake pedal depressed → released)	11 to 14 V → Below 1.5 V
A58-36 (LBL) - Body ground	P - Body ground	Brake fluid level warning switch input	Brake fluid level warning switch OFF → ON	1.84 to 2.16 kΩ → Below 1 Ω

cardiagn.com

DIAGNOSIS SYSTEM

1. DESCRIPTION

When troubleshooting a vehicle with the diagnosis system, the only difference from the usual troubleshooting procedure is connecting the Techstream to the vehicle and reading various data output from the vehicle's skid control ECU.

The skid control ECU records DTCs when it detects a malfunction in the ECU itself or in its circuits.

To check the DTCs, connect the Techstream to the DLC3 on the vehicle. The Techstream enables you to clear the DTCs, activate the various actuators, and check the Freeze Frame Data and Data List.

(a) Check the auxiliary battery voltage.

Standard Voltage:

11 to 14 V

If the voltage is below 11 V, recharge the auxiliary battery before proceeding to the next step.

(b) Check the DLC3 INFO.

2. DIAGNOSIS

(a) If the skid control ECU detects a malfunction, the ABS warning, brake warning / red (malfunction), brake warning / yellow (minor malfunction) and slip indicator lights will come on in order to warn the driver.

cardiagn.com

ABS Warning Light:

for U.S.A.:	Except for U.S.A.:
ABS	

Brake Warning Light / Red (Malfunction):

for U.S.A.:	Except for U.S.A.:
BRAKE	

Brake Warning Light / Yellow (Minor Malfunction):



Slip Indicator Light:



cardiagn.com

(b) The DTCs are simultaneously stored in the memory.

The DTCs can be read by connecting SST between terminals TC and CG of the DLC3 and observing the blinking pattern of the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights, or by connecting the Techstream INFO.

(c) This system has a Test Mode (signal check) function.

The DTCs can be read by connecting SST between terminals TS and CG of the DLC3 and observing the blinking pattern of the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights, or by connecting the Techstream INFO.

3. WARNING LIGHT AND INDICATOR LIGHT INITIAL CHECK

(a) Release the parking brake.

NOTICE:

When releasing the parking brake, push the P position switch for safety.

HINT:

When the parking brake is applied or the brake fluid level is low, the brake warning light / red (malfunction) comes on.

ABS Warning Light:

for U.S.A.: Except for U.S.A.:



Brake Warning Light / Red (Malfunction):

for U.S.A.: Except for U.S.A.:



Brake Warning Light / Yellow (Minor Malfunction):



Slip Indicator Light:



(b) When the power switch is turned on (IG), check that the ABS warning, brake warning / red (malfunction), brake warning / yellow (minor malfunction) and slip indicator lights come on until the power switch is turned on (READY).

- If the warning light and indicator light check result is not normal, proceed to troubleshooting for the ABS warning, brake warning / red (malfunction), brake warning / yellow (minor malfunction) and slip indicator light circuits.
- If the indicator remains on or does not come on, proceed to troubleshooting for the light circuits listed below.

Trouble Area	See Procedure
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO
Brake warning light / red (malfunction) circuit (Remains on)	INFO
Brake warning light / red (malfunction) circuit (Does not come on)	INFO
Brake warning light / yellow (minor malfunction) circuit (Remains on)	INFO
Brake warning light / yellow (minor malfunction) circuit (Does not come on)	INFO
Slip indicator light circuit (Remains on)	INFO
Slip indicator light circuit (Does not come on)	INFO

cardiagn.com

DTC CHECK / CLEAR

1. DTC CHECK/CLEAR (When Using the Techstream)

(a) Check for DTCs.

(1) Connect the Techstream to the DLC3.

(2) Turn the power switch on (IG).

(3) Turn the Techstream on.

(4) Read the DTCs following the prompts on the Techstream screen. Enter the following menus: Chassis / ABS/VSC/TRAC / Trouble Codes.

(5) Check the details of the DTCs INFO.

(b) Clear the DTCs.

(1) Connect the Techstream to the DLC3.

(2) Turn the power switch on (IG).

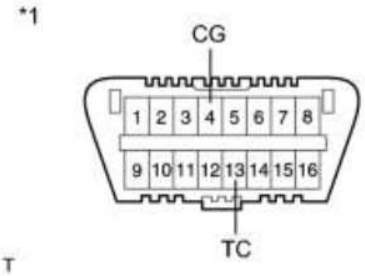
(3) Turn the Techstream on.

(4) Operate the Techstream to clear the codes. Enter the following menus: Chassis / ABS/VSC/TRAC / Trouble Codes.

(5) According to the display on the Techstream, select the trouble code data display with the clear button.

2. DTC CHECK/CLEAR (When not Using the Techstream)

(a) Check for DTCs.



(1) Using SST, connect terminals TC and CG of the DLC3.

SST: 09843-18040

Text in Illustration

*1	Front view of DLC3

(2) Turn the power switch on (IG).

(3) Observe the blinking pattern of the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights in order to identify the DTC.

cardiagn.com

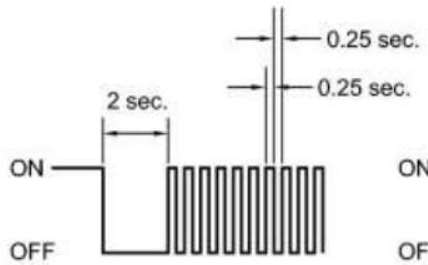
HINT:

If no code appears, inspect the TC and CG terminal circuit, and ABS warning, brake warning / yellow (minor malfunction) and slip indicator light circuits.

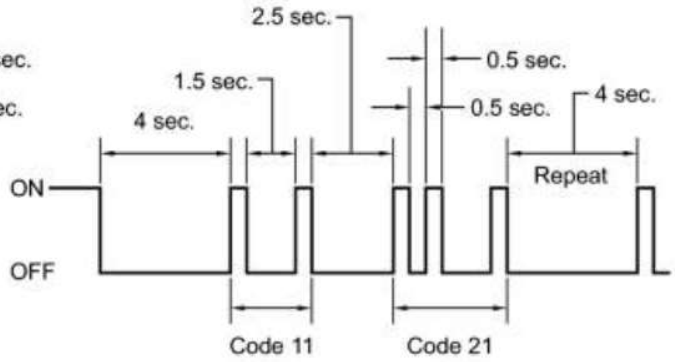
Trouble Area	See Procedure
TC and CG terminal circuit	INFO
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO
Brake warning light / yellow (minor malfunction) circuit (Remains on)	INFO
Brake warning light / yellow (minor malfunction) circuit (Does not come on)	INFO
Slip indicator light circuit (Remains on)	INFO
Slip indicator light circuit (Does not come on)	INFO

(4) As an example, the illustration below shows the blinking patterns of the normal system code and trouble codes 11 and 21 for the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights.

Normal System Code Blinking Pattern:



Trouble Code Blinking Pattern (Example Codes 11 and 21):



(5) Check the details of the DTCs INFO.

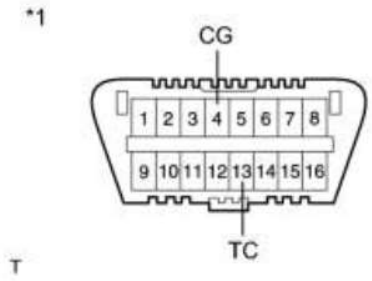
(6) After completing the check, disconnect terminals TC and CG of the DLC3 to turn off the display.

If 2 or more DTCs are detected at the same time, the DTCs will be displayed in ascending order.

(b) Clear the DTCs.

(1) Using SST, connect terminals TC and CG of the DLC3.

cardiagn.com

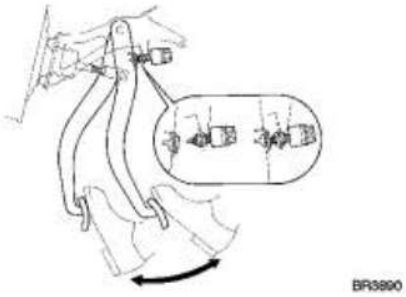


SST: 09843-18040

Text in Illustration

*1	Front view of DLC3

(2) Turn the power switch on (IG).



(3) Clear the DTCs stored in the ECU by depressing the brake pedal 8 times or more within 5 seconds.

(4) Check that the warning light indicates a normal system code.

(5) Remove SST from the terminals of the DLC3.

HINT:

The DTCs cannot be cleared by disconnecting the battery terminal or the ECU-IG NO. 2 fuse.

3. END OF DTC CHECK/CLEAR

(a) Turn the power switch on (IG).

(b) Check that the ABS warning, brake warning / yellow (minor malfunction) and slip indicator lights go off when the power switch is turned on (READY).

FREEZE FRAME DATA

1. FREEZE FRAME DATA/INFORMATION

(a) Whenever an ABS, VSC, electronically controlled brake system DTC is detected, the skid control ECU stores the current vehicle (sensor) state as Freeze Frame Data.

(b) The skid control ECU stores the number of times (maximum: 31) the power switch has been turned from off to on (IG) since the last time the ABS was activated.

(c) For DTCs stored in the skid control ECU, information (INF) codes that are contained in the Freeze Frame Data can be displayed on the Techstream.

cardiagn.com

HINT:

- However, if the vehicle is stopped or at a low speed (7 km/h (4.3 mph) or less), or if a DTC is detected, the skid control ECU will stop counting the number of times the power switch has been turned from off to on (IG).
- Freeze Frame Data at the time the ABS operates:

  The skid control ECU stores and updates data whenever the ABS system operates.

  When the ECU stores data at the time a DTC is detected, the data stored during ABS operation is cleared.

- Freeze Frame Data at the time a DTC is detected:

  When the skid control ECU stores data at the time a DTC is detected, no updates will be performed until the data is cleared.

2. CHECK FREEZE FRAME DATA AND INFORMATION

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Chassis / ABS/VSC/TRAC / Trouble Codes.

(e) According to the display on the Techstream, select the trouble code data display with Freeze Frame Data.

(f) Read the Freeze Frame Data recorded when the DTC was set.

(g) Read the information.

(1) Select the item that has an information (INF) code from the Freeze Frame Data screen.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Detailed Freeze DTC	Detailed code for Freeze Frame DTC / Min.: 0, Max.: 65535	-	Number of information (INF) code output is displayed
Elapsed Time after Freeze Trigger	Elapsed time after freeze trigger / Min.: 0 msec, Max.: 500 msec	-	-
Number of IG ON	Number of operations of power switch on (IG) after storing Freeze Frame Data / 0 to 31	-	-
Elapsed Time	Elapsed time after power	-	-

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	switch on (IG) / Min.: 0 sec., Max.: 100661.76 sec.		
Buzzer	Skid control buzzer / ON or OFF	ON: Buzzer on OFF: Buzzer off	-
Stop Light SW	Stop light switch / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
Parking Brake SW	Parking brake switch / ON or OFF	ON: Parking brake applied OFF: Parking brake released	-
Reservoir Warning SW	Brake fluid level warning switch / ON or OFF	ON: Reservoir level low OFF: Reservoir level normal	-
Shift Lever Position	Shift lever position information / Fail, 1st-6th/B, D/M, P/N or R	Actual shift lever position	-
Operated System	Operated system status / ABS, VSC, TRAC, BA, PB, PBA, HAB, HA-CTRL, Fail, Non or Sys	-	ABS: ABS activated VSC: VSC activated TRAC: TRAC activated BA: BA activated PB: PB activated PBA: PBA activated HAB: HAB activated HA-CTRL: Hill-start assist control activated Fail: Fail safe mode activated Non: No system activated Sys: System prohibited

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Stroke Sensor	Brake pedal stroke sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.65 to 1.35 V	Reading increases when brake pedal is depressed
Accumulator Sensor	Accumulator pressure sensor / Min.: 0 V, Max.: 5 V	Specified value: 2.9 to 4.2 V	When brake fluid is stored in the accumulator: Accumulator pressure changes in accordance with volume of fluid stored in the accumulator
Yaw Rate Sensor	Yaw rate sensor / Min.: -128 °/s, Max.: 127 °/s	Vehicle stopped: 0 °/s Turning right: -128 to 0 °/s Turning left: 0 to 127 °/s	-
Lateral G	Lateral G / Min.: -25.20 m/s^2, Max.: 24.91 m/s^2	-	During turning: Changes in proportion with acceleration
Forward and Rearward G	Forward and backward G / Min.: -25.11 m/s^2, Max.: 24.91 m/s^2	-	During acceleration/deceleration: Changes in proportion with acceleration
FR Wheel Speed	Front speed sensor RH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
FL Wheel Speed	Front speed sensor LH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
RR Wheel Speed	Rear speed sensor RH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
RL Wheel Speed	Rear speed sensor LH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
Vehicle Speed	Maximum wheel speed sensor / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
Accelerator Opening Angle %	The difference of a present accelerator / Min.: 0%, Max.: 127%	When the accelerator pedal released: 0%	During accelerator pedal operation: Changes in proportion with the pedal movement

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ECB* Motor Relay	ABS motor relay / ON or OFF	ON: Relay on OFF: Relay off	-
ECB* Main Relay	ABS main relay / ON or OFF	ON: Relay on OFF: Relay off	-
IG1 Voltage Value	IG1 voltage value / Min.: 0 V, Max.: 20 V	-	Changes in proportion to auxiliary battery voltage
IG2 Voltage Value	IG2 voltage value / Min.: 0 V, Max.: 20 V	-	Changes in proportion to auxiliary battery voltage
BS1 Voltage Value	BS voltage value / Min.: 0 V, Max.: 20 V	-	Changes in proportion to auxiliary battery voltage
VM1 Voltage Value	VM1 voltage value / Min.: 0 V, Max.: 20 V	-	Changes in proportion to auxiliary battery voltage
Motor Relay Voltage Value	Motor relay voltage value / Min.: 0 V, Max.: 20 V	During motor operation: 12 V No motor operation: 0 V	-
Steering Angle Sensor	Steering angle sensor / Min.: - 3276.8 °, Max.: 3276.7 °	Left turn: Increase Right turn: Decrease	-
Regulator Pressure Sensor	Regulator pressure sensor / Min.: -1 MPa, Max.: 23.99 MPa	-	-
Regulator Pressure Sensor Output Variant	Regulator pressure sensor output variant / Min.: -30 MPa/s, Max.: 225 MPa/s	-	-
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed
SLA Solenoid Current	Linear solenoid additional valve (SLA) current / Min.: 0 A, Max.: 1.5 A	When brake pedal released: 0 A	-
SLR Solenoid Current	Linear solenoid reduction valve (SLR) current / Min.: 0 A, Max.: 1.5 A	When brake pedal released: 0 A	-
Target Oil Pressure	Wheel target hydraulic pressure / Min.: 0 MPa, Max.: 20 MPa	Changes according to the target wheel cylinder hydraulic pressure	-

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ECB* Solenoid (SSC)	Simulator cut solenoid valve (SSC) / ON or OFF	ON: Solenoid on OFF: Solenoid off	-
ECB* Solenoid (SCC)	Switching solenoid valve (SCC) / ON or OFF	ON: Solenoid on OFF: Solenoid off	-
ECB* Solenoid (SMC)	Master cut solenoid valve (SMC) / ON or OFF	ON: Solenoid on OFF: Solenoid off	-
ECB* Solenoid (SRC)	Regulator cut solenoid valve (SRC) / ON or OFF	ON: Solenoid on OFF: Solenoid off	-

*: Electronically Controlled Brake System

3. CLEAR FREEZE FRAME DATA AND INFORMATION

NOTICE:

Clearing the DTCs will also clear the Freeze Frame Data and information (INF) codes.

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Turn the Techstream on.

(d) Clear the DTCs and Freeze Frame Data INFO.

cardiagn.com

FAIL-SAFE CHART

1. FAIL-SAFE FUNCTION OF CONTROL SYSTEM

(a) When a malfunction is detected in the brake control system, the skid control ECU turns the ABS warning, brake warning / red (malfunction), brake warning / yellow (minor malfunction) and slip indicator lights come on, as well as prohibits ABS, BA, TRAC and VSC operations.

(b) If the skid control ECU detects that a system related to the hybrid control system is malfunctioning, it will prohibit operation of the TRAC and VSC system in order to prevent further malfunctions and to protect the system.

Item	Operation
Malfunction in the ABS system	ABS, BA, TRAC and VSC control prohibited
Malfunction in the BA system	ABS, BA, TRAC and VSC control prohibited
Malfunction in the EBD system	ABS, EBD, BA, TRAC and VSC control prohibited
Malfunction in the TRAC system	ABS, BA, TRAC and VSC control prohibited
Malfunction in the VSC system	ABS, BA, TRAC and VSC control prohibited

2. FAIL-SAFE FUNCTION OF HYDRAULIC SYSTEM

(a) If a malfunction is detected in the brake booster with master cylinder (skid control ECU or brake actuator) or an individual sensor, control will be stopped and brake effort will be generated by the brake booster with master cylinder (hydraulic brake booster).

(b) If brake control is stopped due to a malfunction in the hydraulic pressure source, the pressure generated in the master cylinder by the driver is applied to the wheel cylinders to ensure braking force.

Item	Operation
Skid control ECU malfunction	Brake booster with master cylinder (hydraulic brake booster) generated braking force
Hydraulic pressure controlling components malfunction	Brake booster with master cylinder (hydraulic brake booster) generated braking force
Power supply components (Hydraulic pressure source) malfunction	Braking force solely generated by the driver

cardiagn.com

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.

(b) Turn the power switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the power switch on (IG).

(e) Turn the Techstream on.

(f) Enter the following menus: Chassis / ABS/VSC/TRAC / Data List.

(g) According to the display on the Techstream, read the Data List.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ABS Warning Light	ABS warning light / ON or OFF	ON: Warning light on OFF: Warning light off	-
Brake Warning Light	Brake warning light / red (malfunction) / ON or OFF	ON: Warning light on OFF: Warning light off	-
ECB* Warning Light	Brake warning light / yellow (minor malfunction) / ON or OFF	ON: Warning light on OFF: Warning	-

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		light off	
Buzzer	Skid control buzzer / ON or OFF	ON: Buzzer on OFF: Buzzer off	-
Stop Light SW	Stop light switch / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
Parking Brake SW	Parking brake switch / ON or OFF	ON: Parking brake applied OFF: Parking brake released	-
Reservoir Warning SW	Brake fluid level warning switch / ON or OFF	ON: Reservoir level low OFF: Reservoir level normal	-
Main Idle SW	Main idle switch / ON or OFF	ON: Accelerator pedal released OFF: Accelerator pedal depressed	-
Shift Lever Position	Shift lever position information / Fail, 1st-6th/B, D/M, P/N or R	Actual shift lever position	-
Inspection Mode	Inspection mode / Other or Inspect	Other: Normal mode Inspect: Inspection mode	-
Regulator Pressure Sensor Output	Regulator pressure sensor output / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed
Stroke Sensor	Brake pedal stroke sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.65 to 1.35 V	Reading increases when brake pedal is depressed
Voltage of Stroke Sensor	Voltage of brake pedal stroke sensor / Min.: -2.5 V, Max.: 2.49 V	-	-
Stroke Sensor2	Brake pedal stroke sensor 2 / Min.: 0 V, Max.: 5 V	When brake pedal released:	Reading decreases when brake pedal is depressed

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		3.65 to 4.35 V	
Voltage of Stroke Sensor2	Voltage of brake pedal stroke sensor 2 / Min.: -2.5 V, Max.: 2.49 V	-	-
Accumulator Sensor	Accumulator pressure sensor / Min.: 0 V, Max.: 5 V	Specified value: 2.9 to 4.2 V	When brake fluid is stored in the accumulator: Accumulator pressure changes in accordance with volume of fluid stored in the accumulator
Deceleration Sensor	Acceleration sensor 1 / Min.: -18.18 m/s^2, Max.: 18.18 m/s^2	-	During deceleration/acceleration: Changes continuously
Zero Point of Decele	Memorized zero value / Min.: -25.11 m/s^2, Max.: 24.91 m/s^2	-	-
Deceleration Sensor2	Acceleration sensor 2 / Min.: -18.18 m/s^2, Max.: 18.18 m/s^2	-	During deceleration/acceleration: Changes continuously
Zero Point of Decele2	Memorized zero value / Min.: -25.11 m/s^2, Max.: 24.91 m/s^2	-	-
Yaw Rate Sensor	Yaw rate sensor 1 / Min.: -128 degrees/s, Max.: 127 degrees/s	Vehicle stationary: 0 degrees/s Right turn: -128 to 0 degrees/s Left turn: 0 to 127 degrees/s	-
Zero Point of Yaw Rate	Memorized zero value / Min.: -128 degrees/sec, Max.: 127 degrees/sec	-	After completing zero point calibration: 0 degrees/sec
Yaw Rate Sensor2	Yaw rate sensor 2 / Min.: -128 degrees/s, Max.: 127 degrees/s	Vehicle stationary: 0 degrees/s Right turn: -128 to 0 degrees/s Left turn: 0 to 127 degrees/s	-
Zero Point of Yaw Rate2	Memorized zero value / Min.: -128 degrees/s, Max.: 127 degrees/s	-	After completing zero point calibration: 0 degrees/s

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Steering Angle Sensor	Steering angle sensor / Min.: -3276.8 degrees, Max.: 3276.7 degrees	Left turn: Increase Right turn: Decrease	-
Zero Point of Steering Angle	Memorized zero value / Min.: -3276.8 degrees, Max.: 3276.7 degrees	-	After clearing zero point calibration: 0 degrees
Lateral G	Lateral G / Min.: -25.11 m/s^2, Max.: 24.91 m/s^2	-	During turning: Changes in proportion with acceleration
Forward and Rearward G	Forward and backward G / Min.: -25.11 m/s^2, Max.: 24.91 m/s^2	-	During acceleration/deceleration: Changes in proportion with acceleration
Yaw Rate Value	Yaw rate value / Min.: -128 degrees/s, Max.: 127 degrees/s	-	During turning: Changes in proportion with yaw
Steering Angle Value	Steering angle value / Min.: -3276.8 degrees, Max.: 3276.7 degrees	-	During steering operation: Changes in proportion with steering wheel rotation
Slip Indicator Light	Slip indicator light / ON or OFF	ON: Indicator light on OFF: Indicator light off	-
FR Wheel Speed	Front speed sensor RH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
FL Wheel Speed	Front speed sensor LH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
RR Wheel Speed	Rear speed sensor RH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
RL Wheel Speed	Rear speed sensor LH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
Vehicle Speed	Maximum wheel speed sensor / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FR Wheel Acceleration	Front wheel RH acceleration / Min.: -200.84 m/s^2, Max.: 199.27 m/s^2	-	During deceleration/acceleration: Changes continuously
FL Wheel Acceleration	Front wheel LH acceleration / Min.: -200.84 m/s^2, Max.: 199.27 m/s^2	-	During deceleration/acceleration: Changes continuously
RR Wheel Acceleration	Rear wheel RH acceleration / Min.: -200.84 m/s^2, Max.: 199.27 m/s^2	-	During deceleration/acceleration: Changes continuously
RL Wheel Acceleration	Rear wheel LH acceleration / Min.: -200.84 m/s^2, Max.: 199.27 m/s^2	-	During deceleration/acceleration: Changes continuously
Stop Light Relay Output	Stop light control relay output / ON or OFF	ON: Relay output on OFF: Relay output off	-
FR Wheel ABS Ctrl Status	Front wheel RH ABS control status / ON or OFF	ON: During control	-
FL Wheel ABS Ctrl Status	Front wheel LH ABS control status / ON or OFF	ON: During control	-
RR Wheel ABS Ctrl Status	Rear wheel RH ABS control status / ON or OFF	ON: During control	-
RL Wheel ABS Ctrl Status	Rear wheel LH ABS control status / ON or OFF	ON: During control	-
RR Wheel EBD Ctrl Status	Rear wheel RH EBD control status / ON or OFF	ON: During control	-
RL Wheel EBD Ctrl Status	Rear wheel LH EBD control status / ON or OFF	ON: During control	-
BA Ctrl Status	BA control status / ON or OFF	ON: During control	-
PBA Ctrl Status	PBA control status / ON or OFF	ON: During control	-
TRC(TRAC) Ctrl Status	TRAC control status / ON or OFF	ON: During control	-
TRC(TRAC) Engine Ctrl Status	TRAC engine control status / ON or OFF	ON: During control	-
TRC(TRAC) Brake Ctrl Status	TRAC brake control status / ON or OFF	ON: During control	-

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FR Wheel VSC Ctrl Status	Front wheel RH VSC control status / ON or OFF	ON: During control	-
FL Wheel VSC Ctrl Status	Front wheel LH VSC control status / ON or OFF	ON: During control	-
RR Wheel VSC Ctrl Status	Rear wheel RH VSC control status / ON or OFF	ON: During control	-
RL Wheel VSC Ctrl Status	Rear wheel LH VSC control status / ON or OFF	ON: During control	-
Accelerator Opening Angle %	The difference of a present accelerator / Min.: 0%, Max.: 127%	When the accelerator pedal released: 0%	During accelerator pedal operation: Changes in proportion with the pedal movement
Regenerative Cooperation	Regenerative cooperation / ON or OFF	ON: Operate OFF: Not operate	-
FR Regenerative Request	FR regenerative request torque / Min.: 0 N*m, Max.: 65536 N*m	-	Changes according to brake pedal force (When depressing the brake pedal lightly after above 30 km/h (19 mph) or more, avoiding sudden braking.)
FR Regenerative Operation	FR regenerative operation torque / Min.: 0 N*m, Max.: 65536 N*m	-	Changes according to brake pedal force (When depressing the brake pedal lightly after above 30 km/h (19 mph) or more, avoiding sudden braking.)
ECB* Motor Relay	ABS motor relay / ON or OFF	ON: Relay on OFF: Relay off	-
ECB* Main Relay	ABS main relay / ON or OFF	ON: Relay on OFF: Relay off	-
ABS Solenoid (SFRH)	Holding solenoid valve (FRH) / ON or OFF	ON: Operate OFF: Not operate	-
ABS Solenoid (SFRR)	Reduction solenoid valve (FRR) / ON or OFF	ON: Operate OFF: Not operate	-
ABS Solenoid (SFLH)	Holding solenoid valve (FLH) / ON or OFF	ON: Operate OFF: Not operate	-

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ABS Solenoid (SFLR)	Reduction solenoid valve (FLR) / ON or OFF	ON: Operate OFF: Not operate	-
ABS Solenoid (SRRH)	Holding solenoid valve (RRH) / ON or OFF	ON: Operate OFF: Not operate	-
ABS Solenoid (SRRR)	Reduction solenoid valve (RRR) / ON or OFF	ON: Operate OFF: Not operate	-
ABS Solenoid (SRLH)	Holding solenoid valve (RLH) / ON or OFF	ON: Operate OFF: Not operate	-
ABS Solenoid (SRLR)	Reduction solenoid valve (RLR) / ON or OFF	ON: Operate OFF: Not operate	-
ECB* Solenoid (SRC)	Regulator cut solenoid valve (SRC) / ON or OFF	ON: Operate OFF: Not operate	-
ECB* Solenoid (SCC)	Switching solenoid valve (SCC) / ON or OFF	ON: Operate OFF: Not operate	-
ECB* Solenoid (SMC)	Master cut solenoid valve (SMC) / ON or OFF	ON: Operate OFF: Not operate	-
ECB* Solenoid (SSC)	Simulator cut solenoid valve (SSC) / ON or OFF	ON: Operate OFF: Not operate	-
FR Speed Open	Front speed sensor RH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
FL Speed Open	Front speed sensor LH open detection / Error or Normal	Error: Momentary	-

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		interruption Normal: Normal	
RR Speed Open	Rear speed sensor RH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
RL Speed Open	Rear speed sensor LH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Yaw Rate Open	Yaw rate sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Deceleration Open	Acceleration sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Steering Open	Steering angle sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Master Cylinder Open	Regulator pressure sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Stroke Open	Brake pedal stroke sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
FR Wheel Cylinder Open	Wheel cylinder pressure sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Accumulator Open	Accumulator pressure sensor open detection /	Error: Momentary	-

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	Error or Normal	interruption Normal: Normal	
HV Communication Open	Hybrid vehicle communication open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Number of DTC	Number of DTC / Min.: 0, Max.: 255	-	Number of DTC output is displayed
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed
Regulator Pressure Sensor Output After Filter	Regulator pressure sensor output after filter / Min.: -1 MPa, Max.: 23.99 MPa	-	-
Regulator Pressure Sensor Variation	Regulator pressure sensor variation / Min.: -30 MPa/s, Max.: 225 MPa/s	-	-
SLA Solenoid Current	Linear solenoid additional valve (SLA) current / Min.: 0 A, Max.: 3 A	When brake pedal released: 0 A	-
SLR Solenoid Current	Linear solenoid reduction valve (SLR) current / Min.: 0 A, Max.: 3 A	When brake pedal released: 0 A	-
SSC Solenoid Current	Simulator cut solenoid valve (SSC) current / Min.: 0 A, Max.: 3 A	When brake pedal released: 0 A	-
SCC Solenoid Current	Switching solenoid valve (SCC) current / Min.: 0 A, Max.: 3 A	When brake pedal released: 0 A	-
SMC Solenoid Current	Master cut solenoid valve (SMC) current / Min.: 0 A, Max.: 3 A	When brake pedal released: 0 A	-
SRC Solenoid Current	Regulator cut solenoid valve (SRC) current / Min.: 0 A, Max.: 3 A	When brake pedal released: 0 A	-
Hazard Switch History	Hazard switch history / Incomplete or Complete	Incomplete: Incomplete Complete: Complete	-

*: Electronically Controlled Brake System

cardiagn.com

2. ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts to operate without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

(a) Warm up the engine.

(b) Turn the power switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the power switch on (IG).

(e) Turn the Techstream on.

(f) Enter the following menus: Chassis / ABS/VSC/TRAC / Active Test.

(g) According to the display on the Techstream, perform the Active Test.

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
ABS Warning Light	ABS warning light	Warning light ON/OFF	Observe combination meter
Brake Warning Light	Brake warning light / red (malfunction)	Warning light ON/OFF	Observe combination meter
ECB* Warning Light	Brake warning light / yellow (minor malfunction)	Warning light ON/OFF	Observe combination meter
Buzzer	Skid control buzzer	Buzzer ON/OFF	Buzzer can be heard
Stop Light Relay	Stop light control relay	Relay ON/OFF	Stop lights come on
ECB* Main Relay	ABS main relay	Relay ON/OFF	-
ECB* Motor Relay	ABS motor relay	Relay ON/OFF	-
ABS Solenoid (SRLR)	Reduction solenoid valve (RLR)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRLH)	Holding solenoid valve (RLH)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRRR)	Reduction solenoid valve (RRR)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRRH)	Holding solenoid valve (RRH)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard

cardiagn.com

Tester Display	Test Part	Control Range	Diagnostic Note
ABS Solenoid (SFLR)	Reduction solenoid valve (FLR)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFLH)	Holding solenoid valve (FLH)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFRR)	Reduction solenoid valve (FRR)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFRH)	Holding solenoid valve (FRH)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ECB* Control Invalid	Electronically controlled brake system control invalid	Control invalid ON/OFF	Electronically controlled brake system control is disabled (braking with no accumulator assist)
Accumulator Zero Down	Accumulator zero down activation	Activation ON/OFF	Brake fluid in the accumulator makes noise
Actuator Air Bleeding Pattern	Actuator air bleeding pattern activation	Activation ON/OFF	When accumulator pressure lowers, pump operation creates sound
Power Supply Air Bleeding Pattern1	Power supply air bleeding pattern activation 1	Activation ON/OFF	When accumulator pressure lowers, pump operation creates sound
Power Supply Air Bleeding Pattern2	Power supply air bleeding pattern activation 2	Activation ON/OFF	When accumulator pressure lowers, pump operation creates sound
Slip Indicator Light	Slip indicator light	Indicator light ON/OFF	Observe combination meter
ECB* Solenoid (SLR) Valve Close	Linear solenoid reduction valve (SLR)	Valve close ON/OFF	-
ECB* Solenoid (SLA) Valve Close	Linear solenoid additional valve (SLA)	Valve close ON/OFF	-
Stroke Simulator Cut Valve Pattern	Simulator cut solenoid valve (SSC)	Pattern activation ON/OFF	(Difficult to identify visually)
ECB* Solenoid (SRC)	Regulator cut solenoid valve (SRC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ECB* Solenoid (SMC)	Master cut solenoid valve (SMC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ECB* Solenoid (SCC)	Switching solenoid valve (SCC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ECB* Solenoid (SSC)	Simulator cut solenoid valve (SSC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard
ECB* Solenoid (SMC/SRC/SCC)	Switching solenoid valve (SMC/SRC/SCC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard

*: Electronically Controlled Brake System

cardiagn.com

DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), sensor, etc., make sure that the power switch is turned off, the stop light switch is off, and 2 minutes have elapsed since the driver's door was closed.

HINT:

- If no abnormality is found when inspecting parts, inspect the skid control ECU and ground points for poor connections.
- If a trouble code is displayed during the DTC check, check the circuit indicated by the DTC. For details of each code, refer to the page for the respective "DTC Code" in the DTC chart.
- When 2 or more DTCs are detected, perform circuit inspections one by one until the problem is identified.
- Inspect the fuses and relays before inspecting the trouble areas as shown in the table below.

ABS DTC

DTC Code	Detection Item	INF Code	Trouble Area	See page
42	Electronically Controlled Brake System Malfunction	-	Electronically controlled brake system	INFO
C0200/31	Front Speed Sensor RH Circuit	501 502 503 504 506 507 508	1. Open or short in speed sensor 2. Improperly installed speed sensor, or abnormal clearance between sensor and rotor 3. Open or short in wire harness 4. Improperly connected connector, deformation or corrosion of terminals 5. Front speed sensor RH 6. Brake booster with master cylinder (Skid control ECU)	INFO
C0205/32	Front Speed Sensor LH Circuit	511 512 513 514 516 517	1. Open or short in speed sensor 2. Improperly installed speed sensor, or abnormal clearance between sensor and rotor 3. Open or short in wire harness 4. Improperly connected connector, deformation or corrosion of terminals 5. Front speed sensor LH	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
		518	6. Brake booster with master cylinder (Skid control ECU)	
C0210/33	Rear Speed Sensor RH Circuit	521 522 523 524 526 527 528	1. Open or short in speed sensor 2. Improperly installed speed sensor, or abnormal clearance between sensor and rotor 3. Open or short in wire harness 4. Improperly connected connector, deformation or corrosion of terminals 5. Rear speed sensor RH 6. Brake booster with master cylinder (Skid control ECU)	INFO
C0215/34	Rear Speed Sensor LH Circuit	531 532 533 534 536 537 538	1. Open or short in speed sensor 2. Improperly installed speed sensor, or abnormal clearance between sensor and rotor 3. Open or short in wire harness 4. Improperly connected connector, deformation or corrosion of terminals 5. Rear speed sensor LH 6. Brake booster with master cylinder (Skid control ECU)	INFO
C1235/35	Foreign Object is Attached on Tip of Front Speed Sensor RH	541	1. Speed sensor rotor malfunction (foreign object attached) 2. Foreign object attached to speed sensor 3. Open or short in speed sensor 4. Open or short in wire harness 5. Improperly connected connector, deformation or corrosion of terminals 6. Resistance in speed sensor circuit 7. Brake booster with master cylinder (Skid control ECU)	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
C1236/36	Foreign Object is Attached on Tip of Front Speed Sensor LH	542	1. Speed sensor rotor malfunction (foreign object attached) 2. Foreign object attached to speed sensor 3. Open or short in speed sensor 4. Open or short in wire harness 5. Improperly connected connector, deformation or corrosion of terminals 6. Resistance in speed sensor circuit 7. Brake booster with master cylinder (Skid control ECU)	INFO
C1238/38	Foreign Object is Attached on Tip of Rear Speed Sensor RH	543	1. Speed sensor rotor malfunction (foreign object attached) 2. Foreign object attached to speed sensor 3. Open or short in speed sensor 4. Open or short in wire harness 5. Improperly connected connector, deformation or corrosion of terminals 6. Resistance in speed sensor circuit 7. Brake booster with master cylinder (Skid control ECU)	INFO
C1239/39	Foreign Object is Attached on Tip of Rear Speed Sensor LH	544	1. Speed sensor rotor malfunction (foreign object attached) 2. Foreign object attached to speed sensor 3. Open or short in speed sensor 4. Open or short in wire harness 5. Improperly connected connector, deformation or corrosion of terminals 6. Resistance in speed sensor circuit 7. Brake booster with master cylinder (Skid	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
			control ECU)	
C1243/43	Acceleration Sensor Stuck Malfunction	561 562 563 564	Yaw rate and acceleration sensor internal stuck malfunction	INFO
C1244/44	Open or Short in Acceleration Sensor Circuit	571	1. Yaw rate and acceleration sensor installed improperly 2. Yaw rate and acceleration sensor	INFO
C1245/45	Acceleration Sensor Output Malfunction	581	1. Yaw rate and acceleration sensor installed improperly 2. Yaw rate and acceleration sensor	INFO
C1336/98	Zero Point Calibration of Acceleration Sensor Undone	-	1. Zero point calibration undone 2. Yaw rate and acceleration sensor 3. Brake booster with master cylinder (Skid control ECU) (Perform 0 point calibration and check for DTCs. If no DTCs are output again, the sensor is normal.)	INFO
C1381/97	Acceleration Sensor Power Supply Voltage Malfunction	601	1. Yaw rate and acceleration sensor supply voltage shut down 2. Yaw rate and acceleration sensor 3. Brake booster with master cylinder (Skid control ECU)	INFO
C1442/44	Invalid Data Received from Acceleration Sensor	572	Yaw rate and acceleration sensor	INFO
U0124/95	Lost Communication with Lateral Acceleration Sensor Module	591 592	1. CAN communication line (CAN No. 1 bus) 2. Yaw rate and acceleration sensor 3. Brake booster with master cylinder (Skid control ECU)	INFO

VSC DTC

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
43	ABS Control System Malfunction	-	ABS control system	INFO
45	Electronically Controlled Brake System Malfunction	-	Electronically controlled brake system	INFO
C1210/36	Zero Point Calibration of Yaw Rate Sensor Undone	-	1. Zero point calibration undone 2. Yaw rate and acceleration sensor 3. Brake booster with master cylinder (Skid control ECU) (Perform 0 point calibration and check for DTCs. If no DTCs are output again, the sensor is normal.)	INFO
C1231/31	Steering Angle Sensor Circuit Malfunction	701 702 703	Steering angle sensor internal malfunction	INFO
C1234/34	Yaw Rate Sensor Malfunction	711 712 713 714	Yaw rate and acceleration sensor internal malfunction	INFO
C1290/66	Steering Angle Sensor Zero Point Malfunction	751	1. Yaw rate and acceleration sensor zero point calibration incomplete 2. Poor adjustment of the center position of the steering wheel 3. Poor adjustment of front wheel alignment	INFO
C1310/51	Malfunction in HV system	-	Power management control ECU (Hybrid vehicle control ECU)	INFO
C1380/64	Stop Light Control Relay Malfunction	761 762	1. Stop light switch 2. Stop light switch circuit 3. Stop light control relay 4. Stop light control relay circuit 5. Brake booster with master cylinder (Skid control ECU)	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
C1439/66	Steering Angle Sensor Initialization Incomplete	752	1. Steering angle sensor 2. Yaw rate and acceleration sensor 3. Brake booster with master cylinder (Skid control ECU)	INFO
C1440/98	Unusual Bank Angle Detected	-	Yaw rate and acceleration sensor	INFO
C1443/34	Invalid Data Received from Yaw Rate Sensor	715	Yaw rate and acceleration sensor	INFO
C1445/66	Vehicle Driven with Steering Angle Sensor not Initialized	753	1. Steering angle sensor 2. Yaw rate and acceleration sensor 3. Brake booster with master cylinder (Skid control ECU)	INFO
U0123/62	Lost Communication with Yaw Rate Sensor Module	731 732	1. CAN communication line (CAN No. 1 bus) 2. Yaw rate and acceleration sensor 3. Brake booster with master cylinder (Skid control ECU)	INFO
U0126/63	Lost Communication with Steering Angle Sensor Module	741 742	1. CAN communication line (CAN No. 1 bus) 2. Steering angle sensor 3. Brake booster with master cylinder (Skid control ECU)	INFO

Electronically Controlled Brake System DTC

DTC Code	Detection Item	INF Code	Trouble Area	See page
36	ABS Control System Malfunction	-	ABS control system	INFO
C1202/68	Master Reservoir Level Malfunction	371	1. Low brake fluid level 2. Brake fluid leaks 3. Brake master cylinder reservoir (Brake fluid level warning switch) internal open circuit 4. Brake master cylinder reservoir (Brake fluid level warning switch) internal short circuit	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
			5. Open in wire harness 6. Short in wire harness 7. Brake disc rotor excessive wear 8. Brake booster with master cylinder (Skid control ECU)	
C1203/95	ECM Communication Circuit Malfunction	-	1. The wrong ECU and sensor was installed 2. Brake booster with master cylinder (Skid control ECU)	INFO
C1211/25	SLA Linear Solenoid	21 22 23 24	1. Supply voltage reduced 2. Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1212/26	SLR Linear Solenoid	31 32 33 34	1. Supply voltage reduced 2. Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1214/62	Hydraulic Control System Malfunction	431 432 433 434 435 436 437 438	1. Brake fluid leaks 2. Brake disc rotor excessive wear 3. Brake booster with master cylinder (Brake actuator)	INFO
C1225/31	SA1 Solenoid Circuit	41 42	1. Supply voltage reduced 2. Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
		43 44		
C1226/32	SA2 Solenoid Circuit	51 52 53 54	1. Supply voltage reduced 2. Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1227/33	SA3 Solenoid Circuit	61 62 63 64	1. Supply voltage reduced 2. Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1228/34	STR Solenoid Circuit	71 72 73 74	1. Supply voltage reduced 2. Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1242/42	Open in IG1 / IG2 Power Source Circuit	111 112	1. Open or short in IG1 circuit 2. Open or short in IG2 circuit 3. Improperly connected connector, deformation or corrosion of terminals 4. Smart key system (IG start circuit) 5. Auxiliary battery 6. Hybrid control system (Charging circuit) 7. Brake booster with master cylinder (Skid control ECU)	INFO
C1246/46	Master Cylinder Pressure Sensor Malfunction	201 202 203	1. Brake pedal stroke sensor 2. Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
		204 207		
C1247/47	Stroke Sensor Malfunction	211 212 213 214 215 216 217 218 219 220 221 222 223	1. Open or short in brake pedal stroke sensor power supply circuit 2. Open or short in wire harness 3. Improperly connected connector, deformation or corrosion of terminals 4. Brake pedal stroke sensor 5. Brake booster with master cylinder (Skid control ECU)	INFO
C1249/49	Open in Stop Light Switch Circuit	231	1. STOP fuse 2. Stop light switch 3. Stop light switch circuit 4. Brake booster with master cylinder (Skid control ECU)	INFO
C1252/52	Brake Booster Pump Motor on Time Abnormally Long	311	1. Short in motor circuit or motor monitor circuit 2. Motor relay stuck 3. Accumulator pressure sensor malfunction in brake actuator 4. Brake booster with master cylinder (Skid control ECU)	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
C1253/53	Pump Motor Relay Malfunction	321 322 323 324 325 326 327 328 329	1. Open or short in motor circuit or motor monitor circuit 2. Brake booster with master cylinder (Skid control ECU)	INFO
C1256/56	Accumulator Low Pressure	341	1. Accumulator pressure dropped due to frequent brake pedal operation (not a malfunction) 2. Pump motor malfunction 3. Accumulator deterioration 4. Accumulator pressure sensor 5. Supply voltage reduced	INFO
C1257/57	Power Supply Drive Circuit	361 362	Brake booster with master cylinder (Skid control ECU)	INFO
C1259/58	HV System Regenerative Malfunction	-	Power management control ECU (Hybrid vehicle control ECU)	INFO
C1300	Skid Control ECU Malfunction	-	Brake booster with master cylinder (Skid control ECU)	INFO
C1311/11	Open in Main Relay 1 Circuit	1	1. Open or short in ABS main relay circuit 2. Brake booster with master cylinder (Skid control ECU)	INFO
C1312/12	Short in Main Relay 1 Circuit	2	1. Short in ABS main relay circuit 2. ABS main relay internal stuck 3. Brake booster with master cylinder (Skid control ECU)	INFO
C1345/66	Linear Solenoid Valve Offset	-	Perform linear valve offset learning and check for	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
	Learning Undone		DTCs. If no DTCs are output again, the valve is normal.	
C1352/21	Front Increasing Pressure Solenoid RH Malfunction	11 12	Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1353/23	Front Increasing Pressure Solenoid LH Malfunction	15 16	Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1356/22	Front Decreasing Pressure Solenoid RH Malfunction	13 14	Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1357/24	Front Decreasing Pressure Solenoid LH Malfunction	17 18	Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1364/61	Wheel Cylinder Pressure Sensor Malfunction	421 422 423 424 426	Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1365/54	Accumulator Pressure Sensor Malfunction	331 332 333 334	Brake booster with master cylinder (Skid control ECU or brake actuator)	INFO
C1368/67	Linear Solenoid Valve Offset Malfunction	-	1. Perform linear valve offset learning and check for DTCs. If no DTCs are output again, the valve is normal. 2. Brake booster with master cylinder (Brake actuator)	INFO
C1391/69	Accumulator Leak Malfunction	351	1. Brake fluid leaks 2. Brake booster with master cylinder (Brake actuator) (Malfunctioning internal seal, low gas pressure in accumulator, etc.)	INFO
C1392/48	Stroke Sensor Zero Point Calibration Undone	-	1. Brake pedal stroke sensor zero point calibration incomplete (Initialization and calibration of linear solenoid valve incomplete)	INFO

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
			2. Brake booster with master cylinder (Skid control ECU)	
C1451/72	Motor Drive Permission Malfunction	-	1. Brake fluid leaks 2. Air bleeding not performed	INFO
U0073/94	Control Module Communication Bus OFF	461 462 463 464 465 466	1. CAN communication line (CAN No. 1 bus) 2. Yaw rate and acceleration sensor 3. Steering angle sensor 4. Brake booster with master cylinder (Skid control ECU)	INFO
U0293/59	Communication Error from HV ECU	411 412 413	1. CAN communication line (Power management bus) 2. Power management control ECU (Hybrid vehicle control ECU) 3. Brake booster with master cylinder (Skid control ECU)	INFO

ABS and Electronically Controlled Brake System DTC

DTC Code	Detection Item	INF Code	Trouble Area	See page
C1241/41	Low Battery Positive Voltage	101*1 102*2 551*2 552*2 553*2	1. Improperly connected connector, deformation or corrosion of terminals 2. Auxiliary battery 3. Hybrid control system (Charging circuit) 4. Brake booster with master cylinder (Skid control ECU)	INFO

*1: Electronically Controlled Brake System DTC

*2: ABS DTC

ABS Test Mode DTC

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
C1271/71	Low Output Signal of Front Speed Sensor RH (Test Mode DTC)	-	1. Front speed sensor RH 2. Sensor installation 3. Speed sensor rotor	INFO
C1272/72	Low Output Signal of Front Speed Sensor LH (Test Mode DTC)	-	1. Front speed sensor LH 2. Sensor installation 3. Speed sensor rotor	INFO
C1273/73	Low Output Signal of Rear Speed Sensor RH (Test Mode DTC)	-	1. Rear speed sensor RH 2. Sensor installation 3. Speed sensor rotor	INFO
C1274/74	Low Output Signal of Rear Speed Sensor LH (Test Mode DTC)	-	1. Rear speed sensor LH 2. Sensor installation 3. Speed sensor rotor	INFO
C1275/75	Abnormal Change in Output Signal of Front Speed Sensor RH (Test Mode DTC)	-	1. Front speed sensor RH 2. Speed sensor rotor	INFO
C1276/76	Abnormal Change in Output Signal of Front Speed Sensor LH (Test Mode DTC)	-	1. Front speed sensor LH 2. Speed sensor rotor	INFO
C1277/77	Abnormal Change in Output Signal of Rear Speed Sensor RH (Test Mode DTC)	-	1. Rear speed sensor RH 2. Speed sensor rotor	INFO
C1278/78	Abnormal Change in Output Signal of Rear Speed Sensor LH (Test Mode DTC)	-	1. Rear speed sensor LH 2. Speed sensor rotor	INFO
C1279/79	Acceleration Sensor Output Voltage Malfunction (Test Mode DTC)	-	1. Sensor installation 2. Yaw rate and acceleration sensor	INFO
C1281/81	Master Cylinder Pressure Sensor Output Malfunction (Test Mode DTC)	-	1. Stop light switch 2. Regulator pressure sensor	INFO

VSC Test Mode DTC

DTC Code	Detection Item	INF Code	Trouble Area	See page

cardiagn.com

DTC Code	Detection Item	INF Code	Trouble Area	See page
C0371/71	Yaw Rate Sensor (Test Mode DTC)	-	1. Sensor installation 2. Yaw rate and acceleration sensor	INFO

Electronically Controlled Brake System Test Mode DTC

DTC Code	Detection Item	INF Code	Trouble Area	See page
C1346/71	Stroke Sensor Zero Point Learning Malfunction (Test Mode DTC)	-	1. Brake pedal stroke sensor 2. Brake pedal stroke sensor circuit	INFO

cardiagn.com

DTC	36	ABS Control System Malfunction
DTC	43	ABS Control System Malfunction

DESCRIPTION

These DTCs are stored if the VSC and/or electronically controlled brake system detects a malfunction in the ABS control system.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
36	-	Malfunction in the ABS control system.	ABS control system
43	-	Malfunction in the ABS control system.	ABS control system

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK ABS CONTROL SYSTEM

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Drive the vehicle at a speed of approximately 40 km/h (25 mph) or more for 60 seconds or more.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (ABS control system DTC) is not output	A
DTC (ABS control system DTC) is output	B

B ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A ▼

2.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

cardiagn.com

(c) Turn the power switch on (READY).

(d) Drive the vehicle at a speed of approximately 40 km/h (25 mph) or more for 60 seconds or more.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (36 and 43) are not output	A
DTCs (36 and/or 43) are output	B

B ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A ▶ **CHECK FOR INTERMITTENT PROBLEMS**

cardiagn.com

DTC	42	Electronically Controlled Brake System Malfunction
DTC	45	Electronically Controlled Brake System Malfunction

DESCRIPTION

These DTCs are stored if the ABS and/or VSC system detects a malfunction in the electronically controlled brake system.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
42	-	Malfunction in the electronically controlled brake system.	Electronically controlled brake system
45	-	Malfunction in the electronically controlled brake system.	Electronically controlled brake system

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK ELECTRONICALLY CONTROLLED BRAKE SYSTEM

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Drive the vehicle at a speed of approximately 40 km/h (25 mph) or more for 60 seconds or more.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (Electronically controlled brake system DTC) is not output	A
DTC (Electronically controlled brake system DTC) is output	B

B ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A ▼

2.	RECONFIRM DTC

cardiagn.com

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Drive the vehicle at a speed of approximately 40 km/h (25 mph) or more for 60 seconds or more.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (42 and 45) are not output	A
DTCs (42 and/or 45) are output	B

B ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A ▶ **CHECK FOR INTERMITTENT PROBLEMS**

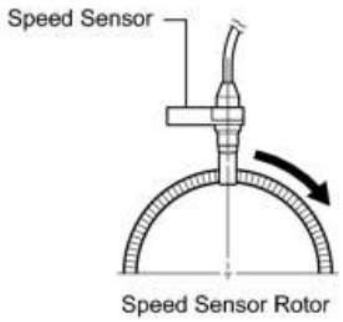
cardiagn.com

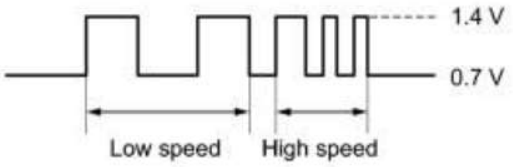
DTC	C0200/31	Front Speed Sensor RH Circuit
DTC	C0205/32	Front Speed Sensor LH Circuit
DTC	C1271/71	Low Output Signal of Front Speed Sensor RH (Test Mode DTC)
DTC	C1272/72	Low Output Signal of Front Speed Sensor LH (Test Mode DTC)

DESCRIPTION

The speed sensor detects wheel speed and sends the appropriate signals to the skid control ECU. These signals are used for ABS control.

DTCs C1271/71 and C1272/72 can be cleared when the speed sensor sends a wheel speed signal or when Test Mode ends. DTCs C1271/71 and C1272/72 are output only in Test Mode.





P

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C0200/31	501	While driving at 10 km/h (6 mph) or more, speed sensor output from one or two wheels is lower than that from other wheels for 15 seconds or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Front speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	502	A malfunction occurs in 2 or more wheels.	↑
↑	503	An open is detected in the speed sensor signal circuit for 0.05 seconds or more.	• Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
			terminals • Front speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	504	Instantaneous interruption of sensor signal from the malfunctioning wheel occurs 255 times or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Front speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	506	When VM1 voltage is 8.6 V or more, sensor supply voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
↑	507	While driving at 10 km/h (6 mph) or more, speed sensor output from one wheel is 0 km/h (0 mph) for 1 second or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Front speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	508	When IG1 terminal voltage is 9.5 V or more, sensor voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
C0205/32	511	While driving at 10 km/h (6 mph) or more, speed sensor output from one or two wheels is lower than that from other wheels for 15 seconds or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Front speed sensor LH • Brake booster with master cylinder

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
			(Skid control ECU)
↑	512	A malfunction occurs in 2 or more wheels.	↑
↑	513	An open is detected in the speed sensor signal circuit for 0.05 seconds or more.	• Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Front speed sensor LH • Brake booster with master cylinder (Skid control ECU)
↑	514	Instantaneous interruption of sensor signal from the malfunctioning wheel occurs 255 times or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Front speed sensor LH • Brake booster with master cylinder (Skid control ECU)
↑	516	When VM1 voltage is 8.6 V or more, sensor supply voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
↑	517	While driving at 10 km/h (6 mph) or more, speed sensor output from one wheel is 0 km/h (0 mph) for 1 second or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Front speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	518	When IG1 terminal voltage is 9.5 V or more, sensor voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
C1271/71	-	Detected only during Test Mode.	• Front speed sensor RH/LH • Sensor installation

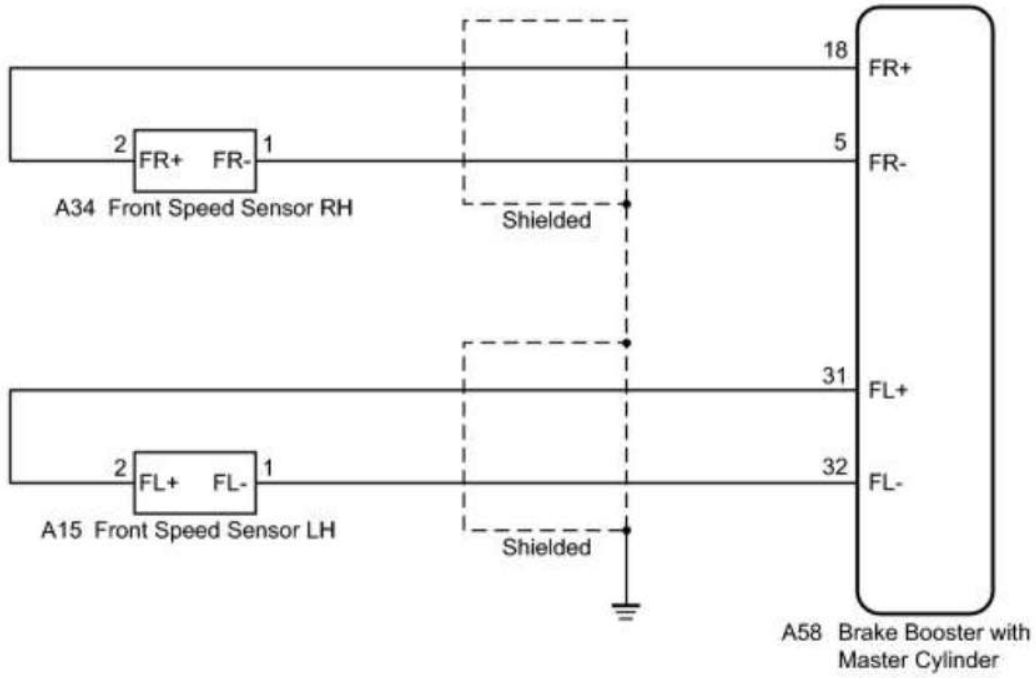
cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1272/72			• Speed sensor rotor

HINT:

- DTCs C0200/31 and C1271/71 are for the front speed sensor RH.
- DTCs C0205/32 and C1272/72 are for the front speed sensor LH.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve .

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)

(a) Using the Techstream, check for any momentary interruptions in the wire harness and connector corresponding to a DTC .

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FR Speed Open	Front speed sensor RH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
FL Speed Open	Front speed sensor LH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-

OK:

There are no momentary interruptions.

HINT:

Perform the above inspection before removing the sensor and connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

2.	READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)

(a) Select the Data List on the Techstream .

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FR Wheel Speed	Front speed sensor RH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
FL Wheel Speed	Front speed sensor LH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations

(b) Check that the speed value output from the speed sensor displayed on the Techstream.

HINT:

cardiagn.com

Factors that affect the indicated vehicle speed include tire size, tire inflation, and tire wear. The speed indicated on the speedometer has an allowable margin of error. This can be tested using a speedometer tester (calibrated chassis dynamometer). For details about testing and the margin of error, see the reference chart .

OK:

The speed value output from the speed sensor displayed on the Techstream is the similar speed as indicated on the speedometer.

NG ▶ CHECK FRONT SPEED SENSOR INSTALLATION

OK

▼

3.	PERFORM TEST MODE INSPECTION (SIGNAL CHECK)

(a) Turn the power switch off.

(b) Perform the sensor check in the Test Mode procedure .

OK:

All Test Mode DTCs are cleared.

NG ▶ CHECK FRONT SPEED SENSOR INSTALLATION

OK

▼

4.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs .

(c) Turn the power switch on (READY).

(d) Perform a road test.

(e) Check if the same DTC is recorded .

Result:

Result	Proceed to
DTCs (C0200/31 and C0205/32) are not output	A
DTCs (C0200/31 and/or C0205/32) are output	B

cardiagn.com

HINT:

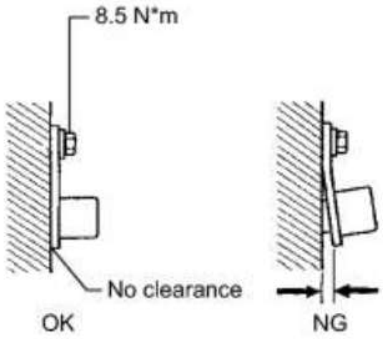
If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step .

B REPLACE FRONT SPEED SENSOR

A **CHECK FOR INTERMITTENT PROBLEMS**

5.	CHECK FRONT SPEED SENSOR INSTALLATION

Front Speed Sensor:



(a) Turn the power switch off.

(b) Check the speed sensor installation.

OK:

There is no clearance between the sensor and the front steering knuckle.

The installation bolt is tightened properly.

Torque

8.5 N*m (87 kgf*cm, 75 in.*lbf)

NG INSTALL FRONT SPEED SENSOR CORRECTLY

OK

▼

6.	CHECK FRONT SPEED SENSOR TIP

(a) Remove the front speed sensor .

(b) Check the speed sensor tip.

cardiagn.com

OK:

The sensor tip is free of scratches, oil, and foreign matter.

NOTICE:

Check the speed sensor signal after cleaning or replacement .

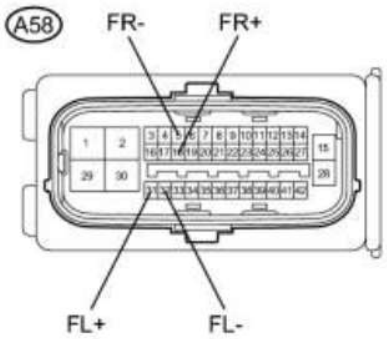
NG ▶ CLEAN OR REPLACE FRONT SPEED SENSOR

OK

▼

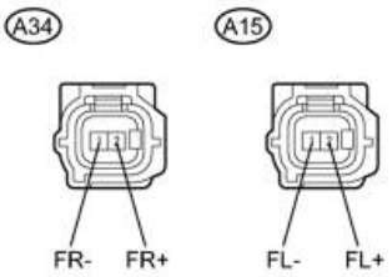
7.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - FRONT SPEED SENSOR)

*1



(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

*2



(b) Disconnect the skid control ECU connector and the front speed sensor connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

cardiagn.com

for RH

for LH

Tester Connection	Condition	Specified Condition
A58-18 (FR+) - A34-2 (FR+)	Always	Below 1 Ω
A58-18 (FR+) - Body ground	Always	10 kΩ or higher
A58-5 (FR-) - A34-1 (FR-)	Always	Below 1 Ω
A58-5 (FR-) - Body ground	Always	10 kΩ or higher

Tester Connection	Condition	Specified Condition
A58-31 (FL+) - A15-2 (FL+)	Always	Below 1 Ω
A58-31 (FL+) - Body ground	Always	10 kΩ or higher
A58-32 (FL-) - A15-1 (FL-)	Always	Below 1 Ω
A58-32 (FL-) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Front Speed Sensor)

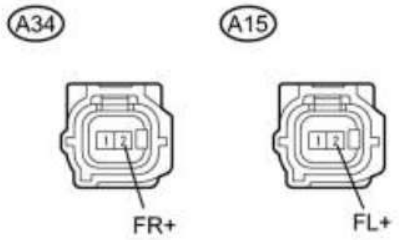
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

8.	INSPECT SKID CONTROL ECU (SENSOR OUTPUT)

*1



(a) Reconnect the skid control ECU connector.

N

cardiagn.com

(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

for RH

for LH

Tester Connection	Switch Condition	Specified Condition
A34-2 (FR+) - Body ground	Power switch on (IG)	5.7 to 14 V

Tester Connection	Switch Condition	Specified Condition
A15-2 (FL+) - Body ground	Power switch on (IG)	5.7 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Front Speed Sensor)

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

9.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Reconnect the front speed sensor connector.

(c) Clear the DTCs INFO.

(d) Turn the power switch on (READY).

(e) Perform a road test.

(f) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C0200/31 and/or C0205/32) are output	A
DTCs (C0200/31 and C0205/32) are not output	B

HINT:

2010 Toyota Prius Repair Manual

cardiagn.com

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B CHECK FOR INTERMITTENT PROBLEMS

A

10.	REPLACE FRONT SPEED SENSOR

(a) Turn the power switch off.

(b) Replace the front speed sensor INFO.

NOTICE:

Check the speed sensor signal after replacement INFO.

NEXT

11.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Perform a road test.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C0200/31 and/or C0205/32) are output	A
DTCs (C0200/31 and C0205/32) are not output	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B END

A

cardiagn.com

12.	REPLACE FRONT SPEED SENSOR ROTOR

(a) Turn the power switch off.

(b) Replace the front axle hub sub-assembly (front speed sensor rotor) INFO.

HINT:

The front speed sensor rotor is incorporated into the front axle hub sub-assembly.

If the front speed sensor rotor needs to be replaced, replace it together with the front axle hub sub-assembly.

NOTICE:

Check the speed sensor signal after replacement INFO.

NEXT

13.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Perform a road test.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C0200/31 and/or C0205/32) are output	A
DTCs (C0200/31 and C0205/32) are not output	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B END

A **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

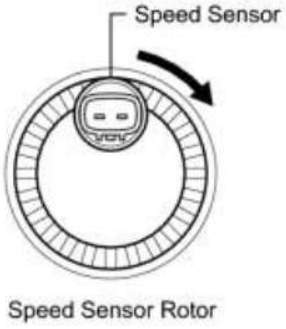
cardiagn.com

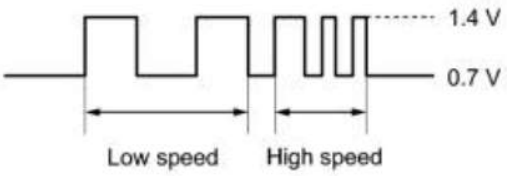
DTC	C0210/33	Rear Speed Sensor RH Circuit
DTC	C0215/34	Rear Speed Sensor LH Circuit
DTC	C1273/73	Low Output Signal of Rear Speed Sensor RH (Test Mode DTC)
DTC	C1274/74	Low Output Signal of Rear Speed Sensor LH (Test Mode DTC)

DESCRIPTION

The speed sensor detects wheel speed and sends the appropriate signals to the skid control ECU. These signals are used for ABS control.

DTCs C1273/73 and C1274/74 can be cleared when the speed sensor sends a wheel speed signal or when Test Mode ends. DTCs C1273/73 and C1274/74 are output only in Test Mode.





DTC Code	INF Code	DTC Detection Condition	Trouble Area
C0210/33	521	While driving at 10 km/h (6 mph) or more, speed sensor output from one or two wheels is lower than that from other wheels for 15 seconds or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Rear speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	522	A malfunction occurs in 2 or more wheels.	↑
↑	523	An open is detected in the speed sensor signal circuit for 0.05 seconds or more.	• Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
			terminals • Rear speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	524	Instantaneous interruption of sensor signal from the malfunctioning wheel occurs 255 times or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Rear speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	526	When VM1 voltage is 8.6 V or more, sensor supply voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
↑	527	While driving at 10 km/h (6 mph) or more, speed sensor output from one wheel is 0 km/h (0 mph) for 1 second or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Rear speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	528	When IG1 terminal voltage is 9.5 V or more, sensor voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
C0215/34	531	While driving at 10 km/h (6 mph) or more, speed sensor output from one or two wheels is lower than that from other wheels for 15 seconds or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Rear speed sensor LH • Brake booster with master cylinder

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
			(Skid control ECU)
↑	532	A malfunction occurs in 2 or more wheels.	↑
↑	533	An open is detected in the speed sensor signal circuit for 0.05 seconds or more.	• Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Rear speed sensor LH • Brake booster with master cylinder (Skid control ECU)
↑	534	Instantaneous interruption of sensor signal from the malfunctioning wheel occurs 255 times or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Rear speed sensor LH • Brake booster with master cylinder (Skid control ECU)
↑	536	When VM1 voltage is 8.6 V or more, sensor supply voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
↑	537	While driving at 10 km/h (6 mph) or more, speed sensor output from one wheel is 0 km/h (0 mph) for 1 second or more.	• Open or short in speed sensor • Improperly installed speed sensor, or abnormal clearance between sensor and rotor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Rear speed sensor RH • Brake booster with master cylinder (Skid control ECU)
↑	538	When IG1 terminal voltage is 9.5 V or more, sensor voltage drops for 0.5 seconds or more.	• Open or short in wire harness • Brake booster with master cylinder (Skid control ECU)
C1273/73	-	Detected only during Test Mode.	• Rear speed sensor RH/LH • Sensor installation

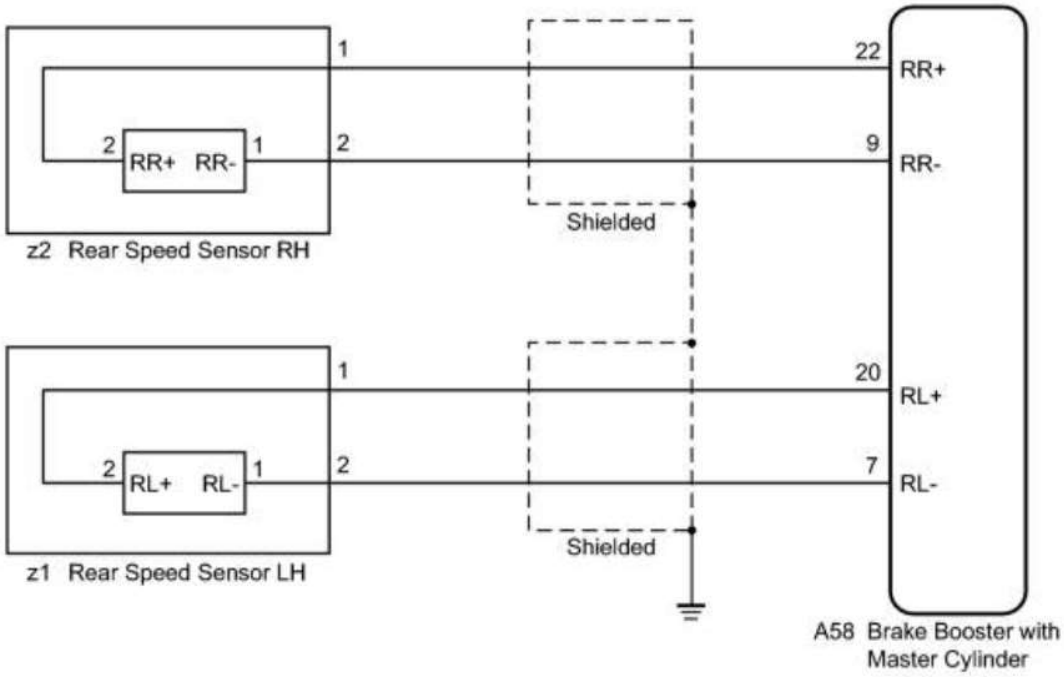
cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1274/74			• Speed sensor rotor

HINT:

- DTCs C0210/33 and C1273/73 are for the rear speed sensor RH.
- DTCs C0215/34 and C1274/74 are for the rear speed sensor LH.

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)

cardiagn.com

(a) Using the Techstream INFO ck for any momentary interruptions in the wire harness and connector corresponding to a DTC .

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RR Speed Open	Rear speed sensor RH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
RL Speed Open	Rear speed sensor LH open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-

OK:

There are no momentary interruptions.

HINT:

Perform the above inspection before removing the sensor and connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

2.	READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)

(a) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
RR Wheel Speed	Rear speed sensor RH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations
RL Wheel Speed	Rear speed sensor LH / Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations

(b) Check that the speed value output from the speed sensor displayed on the Techstream.

HINT:

cardiagn.com

Factors that affect the indicated vehicle speed include tire size, tire inflation, and tire wear. The speed indicated on the speedometer has an allowable margin of error. This can be tested using a speedometer tester (calibrated chassis dynamometer). For details about testing and the margin of error, see the reference chart INFO.

OK:

The speed value output from the speed sensor displayed on the Techstream is the similar speed as indicated on the speedometer.

NG ▶ CHECK REAR SPEED SENSOR INSTALLATION

OK

▼

3.	PERFORM TEST MODE INSPECTION (SIGNAL CHECK)

(a) Turn the power switch off.

(b) Perform the sensor check in the Test Mode procedure INFO.

OK:

All Test Mode DTCs are cleared.

NG ▶ CHECK REAR SPEED SENSOR INSTALLATION

OK

▼

4.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Perform a road test.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C0210/33 and C0215/34) are not output	A
DTCs (C0210/33 and/or C0215/34) are output	B

cardiagn.com

HINT:

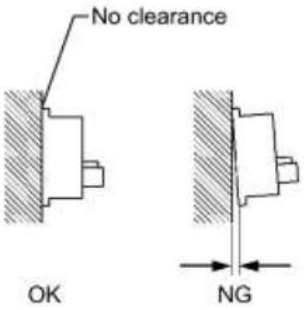
If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR

A **CHECK FOR INTERMITTENT PROBLEMS**

5.	CHECK REAR SPEED SENSOR INSTALLATION

Rear Speed Sensor:



(a) Turn the power switch off.

(b) Check the speed sensor installation.

OK:

There is no clearance between the sensor and rear axle carrier.

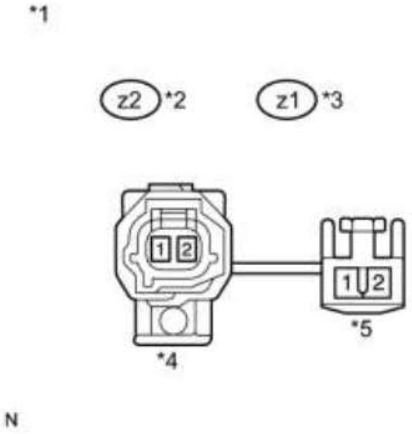
NG INSTALL REAR SPEED SENSOR CORRECTLY

OK

6.	CHECK HARNESS AND CONNECTOR (SKID CONTROL SENSOR WIRE)

(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

cardiagn.com



(b) Disconnect the rear speed sensor connector and the skid control sensor wire.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

for RH

for LH

Tester Connection	Condition	Specified Condition
z2 ("A"-2) - z2 ("B"-1)	Always	Below 1 Ω
z2 ("A"-2) - z2 ("B"-2)	Always	10 kΩ or higher
z2 ("A"-2) - Body ground	Always	10 kΩ or higher
z2 ("A"-1) - z2 ("B"-2)	Always	Below 1 Ω
z2 ("A"-1) - z2 ("B"-1)	Always	10 kΩ or higher
z2("A"-1) - Body ground	Always	10 kΩ or higher
Tester Connection	**Condition**	**Specified Condition**
z1 ("A"-2) - z1 ("B"-1)	Always	Below 1 Ω
z1 ("A"-2) - z1 ("B"-2)	Always	10 kΩ or higher
z1 ("A"-2) - Body ground	Always	10 kΩ or higher
z1 ("A"-1) - z1 ("B"-2)	Always	Below 1 Ω
z1 ("A"-1) - z1 ("B"-1)	Always	10 kΩ or higher
z1 ("A"-1) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of skid control sensor wire
*2	for RH

cardiagn.com

*3	for LH
*4	Front view of wire harness connector (to Sensor Side Connector "A")
*5	Front view of wire harness connector (to Vehicle Side Connector "B")

NOTICE:

Check the speed sensor signal after replacement INFO.

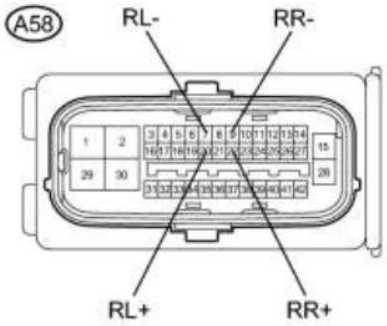
NG ▶ REPLACE SKID CONTROL SENSOR WIRE

OK

▼

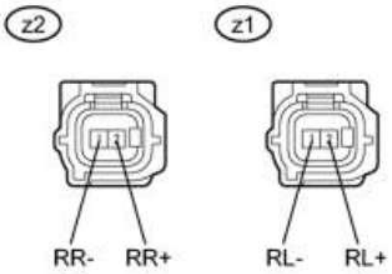
7.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - REAR SPEED SENSOR)

*1



(a) Reconnect the skid control sensor wire (for vehicle side connector).

*2



cardiagn.com

(b) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(c) Disconnect the skid control ECU connector.

(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

for RH

for LH

Tester Connection	Condition	Specified Condition
A58-22 (RR+) - z2-2 (RR+)	Always	Below 1 Ω
A58-22 (RR+) - Body ground	Always	10 kΩ or higher
A58-9 (RR-) - z2-1 (RR-)	Always	Below 1 Ω
A58-9 (RR-) - Body ground	Always	10 kΩ or higher

Tester Connection	Condition	Specified Condition
A58-20 (RL+) - z1-2 (RL+)	Always	Below 1 Ω
A58-20 (RL+) - Body ground	Always	10 kΩ or higher
A58-7 (RL-) - z1-1 (RL-)	Always	Below 1 Ω
A58-7 (RL-) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Rear Speed Sensor)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

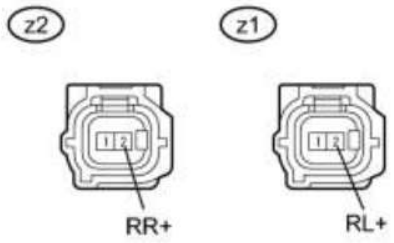
▼

8.	INSPECT SKID CONTROL ECU (SENSOR OUTPUT)

(a) Reconnect the skid control ECU connector.

cardiagn.com

*1



N

(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

for RH

for LH

Tester Connection	Switch Condition	Specified Condition
z2-2 (RR+) - Body ground	Power switch on (IG)	5.7 to 14 V

Tester Connection	Switch Condition	Specified Condition
z1-2 (RL+) - Body ground	Power switch on (IG)	5.7 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Rear Speed Sensor)

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

9.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Reconnect the rear speed sensor connector.

(c) Clear the DTCs INFO.

cardiagn.com

(d) Turn the power switch on (READY).

(e) Perform a road test.

(f) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C0210/33 and/or C0215/34) are output	A
DTCs (C0210/33 and C0215/34) are not output	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B CHECK FOR INTERMITTENT PROBLEMS

A

10.	REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR

(a) Turn the power switch off.

(b) Replace the rear speed sensor and the rear axle hub and bearing assembly (rear speed sensor rotor) INFO.

HINT:

The rear speed sensor rotor is incorporated into the rear axle hub and bearing assembly.

If the rear speed sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly with rear speed sensor.

NOTICE:

Check the speed sensor signal after replacement INFO.

NEXT

11.	RECONFIRM DTC

(a) Clear the DTCs INFO.

cardiagn.com

(b) Turn the power switch on (READY).

(c) Perform a road test.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C0210/33 and/or C0215/34) are output	A
DTCs (C0210/33 and C0215/34) are not output	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B ▶ END

A ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

DTC	C0371/71	Yaw Rate Sensor (Test Mode DTC)
DTC	C1234/34	Yaw Rate Sensor Malfunction
DTC	C1243/43	Acceleration Sensor Stuck Malfunction
DTC	C1244/44	Open or Short in Acceleration Sensor Circuit
DTC	C1245/45	Acceleration Sensor Output Malfunction
DTC	C1279/79	Acceleration Sensor Output Voltage Malfunction (Test Mode DTC)
DTC	C1381/97	Acceleration Sensor Power Supply Voltage Malfunction

DESCRIPTION

The skid control ECU receives signals from the yaw rate and acceleration sensor via the CAN communication system.

The yaw rate sensor has a built-in acceleration sensor and detects the vehicle's condition using 2 circuits (GL1, GL2).

If there are any problems in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123/62 (Lost Communication with Yaw Rate Sensor Module) and U0124/95 (Lost Communication with Lateral Acceleration Sensor Module) are output.

These DTCs are also output when calibration has not been completed.

DTCs C0371/71 and C1279/79 will be cleared when the yaw rate and acceleration sensor sends a yaw rate and/or acceleration signal or when Test Mode ends. DTCs C0371/71 and C1279/79 are output only in Test Mode.

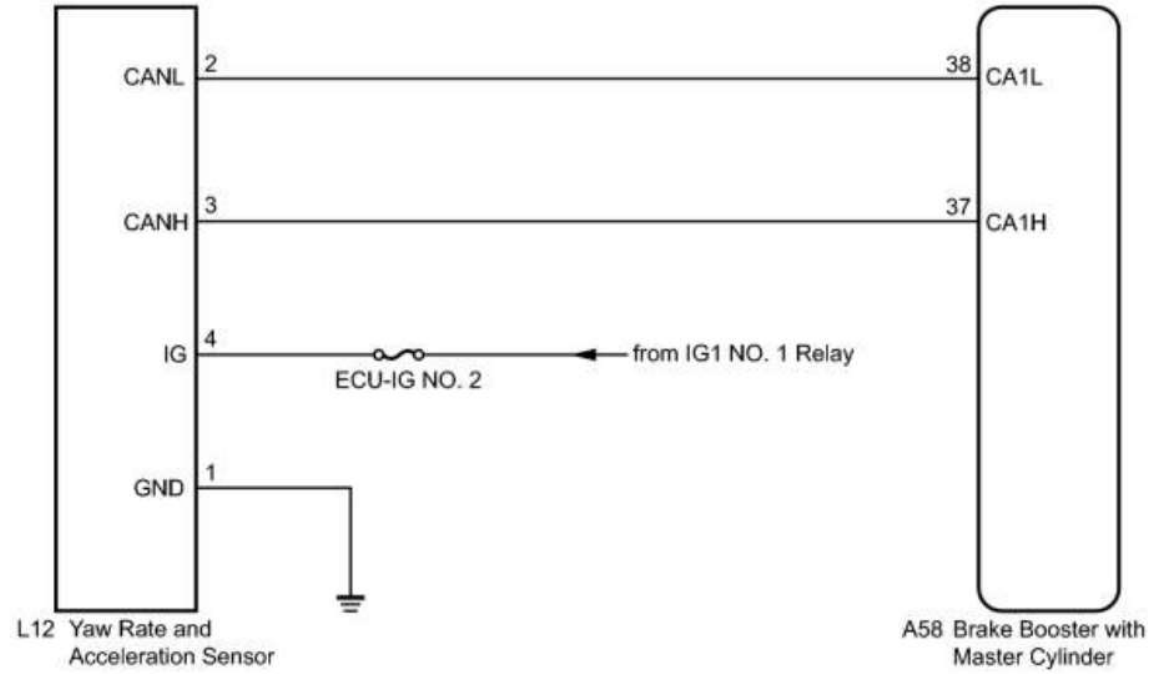
DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1234/34	711	While yaw rate sensor communication is enabled, a malfunction signal output is received during the sensor self-check (sensor 1 (GL1) malfunction).	Yaw rate and acceleration sensor internal malfunction
↑	712	While yaw rate sensor communication is enabled, a malfunction signal output is received during the sensor self-check (sensor 2 (GL2) malfunction).	↑
↑	713	While yaw rate sensor communication is enabled, a malfunction signal output is received during the sensor self-check (0 point calibration malfunction).	↑
↑	714	While yaw rate sensor communication is enabled, a malfunction signal output is received during the sensor self-check (Two-value comparison malfunction).	↑
C1243/43	561	An acceleration sensor malfunction occurs 16 times or more when the vehicle speed drops from above 30 km/h (19 mph) to 0 km/h (0 mph).	Yaw rate and acceleration sensor internal stuck malfunction

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
↑	562 563 564	A fixed acceleration sensor value is determined.	↑
C1244/44	571	Either of the following is detected: 1. Difference between GL1 and GL2 does not become less than 0.4 G for 60 seconds or more after reaching 0.6 G when the vehicle is stopped. 2. A malfunction signal from the acceleration sensor is received.	• Yaw rate and acceleration sensor installed improperly • Yaw rate and acceleration sensor
C1245/45	581	Difference between longitudinal G calculated from the acceleration sensor value and that calculated from the vehicle speed exceeds 0.35 G for 60 seconds or more.	• Yaw rate and acceleration sensor installed improperly • Yaw rate and acceleration sensor
C1381/97	601	While yaw rate and acceleration sensor communication is enabled, a supply voltage malfunction signal is received from the sensor for 10 seconds.	• Yaw rate and acceleration sensor supply voltage shut down • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU)
C0371/71	-	Detected only during Test Mode.	• Sensor installation • Yaw rate and acceleration sensor
C1279/79	-	Detected only during Test Mode.	• Sensor installation • Yaw rate and acceleration sensor

WIRING DIAGRAM

cardiagn.com



N

INSPECTION PROCEDURE

NOTICE:

When replacing the yaw rate and acceleration sensor, perform zero point calibration INFO.

HINT:

When U0123/62 and/or U0124/95 is output together with C1234/34, C1243/43, C1244/44, C1245/45, and/or C1381/97, inspect and repair the trouble areas indicated by U0123/62 and/or U0124/95 first INFO.

PROCEDURE

1.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch off.

(c) Turn the power switch on (READY).

(d) Drive the vehicle at a speed of 30 km/h (19 mph) or more, turn the steering wheel, and decelerate (depress the brake pedal) the vehicle.

cardiagn.com

(e) Turn the power switch on (IG) again and check that no CAN communication system DTC is output INFO.

(f) Check if DTC C1210/36 (Zero Point Calibration of Yaw Rate Sensor Undone) or C1336/98 (Zero Point Calibration of Acceleration Sensor Undone) is output INFO.

Result:

Result	Proceed to
DTCs (C1210/36, C1336/98 and CAN communication system DTC) are not output	A
CAN communication system DTC is output	B
DTCs (C1210/36 and/or C1336/98) are output	C

C ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A

▼

2.	CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION

(a) Turn the power switch off.

(b) Check that the yaw rate and acceleration sensor has been installed properly INFO.

OK:

The sensor is tightened to the specified torque.

The sensor is not tilted.

NG ▶ INSTALL YAW RATE AND ACCELERATION SENSOR CORRECTLY

OK

▼

3.	INSPECT YAW RATE AND ACCELERATION SENSOR (IG TERMINAL)

(a) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(b) Disconnect the yaw rate and acceleration sensor connector.

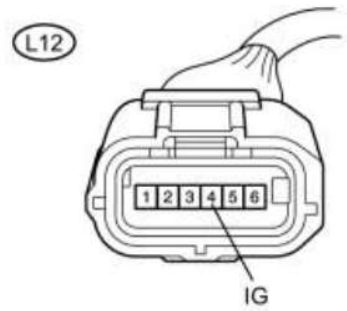
(c) Turn the power switch on (IG).

(d) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

cardiagn.com

*1



N

Tester Connection	Switch Condition	Specified Condition
L12-4 (IG) - Body ground	Power switch on (IG)	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Yaw Rate and Acceleration Sensor)

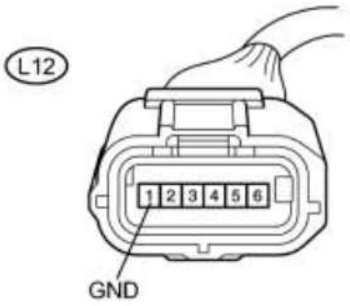
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (IG CIRCUIT)

OK

▼

4.	INSPECT YAW RATE AND ACCELERATION SENSOR (GND TERMINAL)

*1



N

(a) Turn the power switch off.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
L12-1 (GND) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Yaw Rate and Acceleration Sensor)

NOTICE:

Check the yaw rate and acceleration sensor signal after replacement INFO.

cardiagn.com

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)

OK ▶ **REPLACE YAW RATE AND ACCELERATION SENSOR**

cardiagn.com

DTC	C1202/68	Master Reservoir Level Malfunction

DESCRIPTION

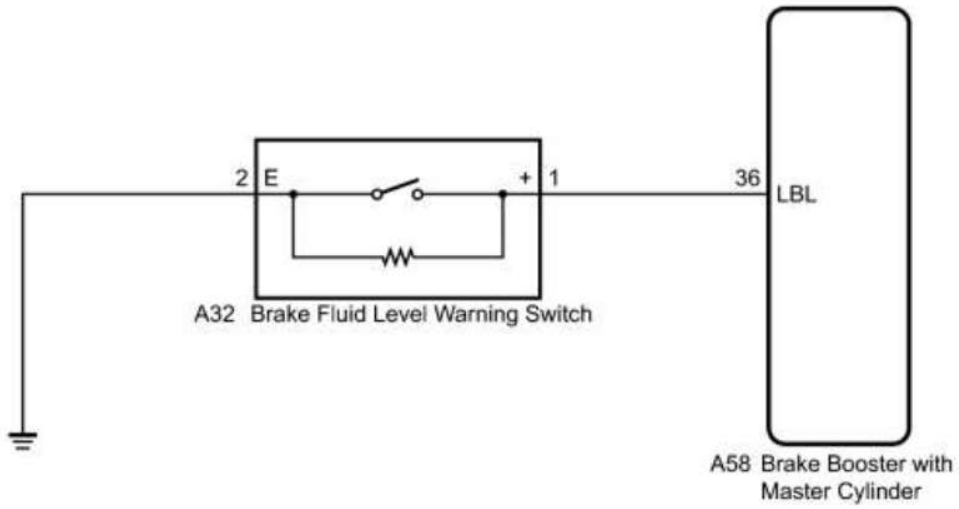
When a fluid level drop in the master cylinder reservoir is detected, the signal is input to the skid control ECU.

If the DTC for the fluid level drop is memorized, the warning will be canceled and the DTC will not be stored when the fluid level returns to normal.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1202/68	371	An open is detected in the switch signal circuit for 2 seconds or more.	• Brake master cylinder reservoir (Brake fluid level warning switch) internal open circuit • Open in wire harness • Brake booster with master cylinder (Skid control ECU)
↑	-	The reservoir level remains low.	• Low brake fluid level • Brake fluid leaks • Brake master cylinder reservoir (Brake fluid level warning switch) internal short circuit • Short in wire harness • Brake disc rotor excessive wear • Brake booster with master cylinder (Skid control ECU)

WIRING DIAGRAM

cardiagn.com



INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

HINT:

When releasing the parking brake, chock the wheels for safety.

PROCEDURE

1.	CHECK BRAKE FLUID LEVEL

(a) Check that the brake fluid level is sufficient.

OK:

Brake fluid level is sufficient.

HINT:

If the fluid level is low, check for fluid leaks, and repair as necessary.

(1) Check for brake fluid leaks (Connection between the brake booster pump, brake master cylinder reservoir and brake booster with master cylinder, and the brake booster with master cylinder and wheel cylinders).

cardiagn.com

HINT:

If no leaks exist, add and adjust fluid using the Techstream INFO.

(2) Check that the trouble code is not output again INFO.

(b) Check that there are no leaks from the connections between the brake booster pump and brake booster with master cylinder.

HINT:

As a visual check is very difficult, perform the check with the following procedure.

(1) Bleed the air from the brake systems INFO.

(2) Connect the Techstream to the DLC3.

(3) Turn the power switch on (IG).

(4) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Accumulator Sensor	Accumulator pressure sensor / Min.: 0 V, Max.: 5 V	Specified value: 2.9 to 4.2 V	When brake fluid is stored in the accumulator: Accumulator pressure changes in accordance with volume of fluid stored in the accumulator

(5) Wait for 30 seconds without depressing the brake pedal.

(6) Check that the accumulator pressure sensor output values change is within the specified range.

OK:

Accumulator pressure sensor output values change is within 0.55 V.

NG ▶ CHECK AND REPAIR BRAKE FLUID LEAKS OR ADD FLUID

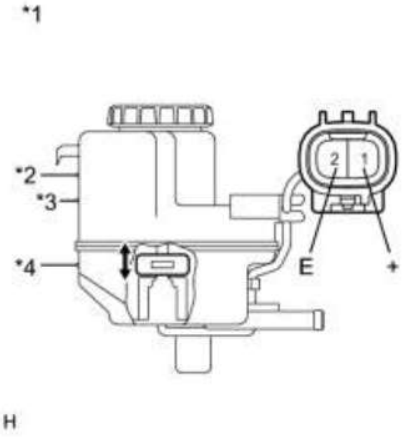
OK

▼

2.	INSPECT BRAKE FLUID LEVEL WARNING SWITCH

(a) Turn the power switch off.

cardiagn.com



(b) Remove the reservoir filler cap and strainer.

(c) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(d) Disconnect the brake fluid level warning switch connector.

(e) Measure the resistance according to the value(s) in the table below.

HINT:

A float is located inside the reservoir. Its position changes according to the level of brake fluid.

Standard Resistance:

Tester Connection	Switch Condition	Specified Condition
1 (+) - 2 (E)	Brake fluid level warning switch OFF (Float up)	1.84 to 2.16 kΩ
1 (+) - 2 (E)	Brake fluid level warning switch ON (Float down)	Below 1 Ω

Text in Illustration

*1	Component without harness connected (Brake Fluid Level Warning Switch)
*2	MAX Line
*3	Fluid Level Support Line
*4	MIN Line

NG ▶ REPLACE BRAKE MASTER CYLINDER RESERVOIR ASSEMBLY (BRAKE FLUID LEVEL WARNING SWITCH)

OK

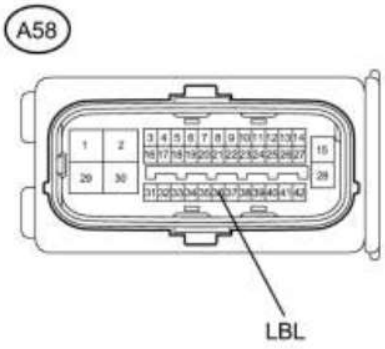
▼

3.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - BRAKE FLUID LEVEL

cardiagn.com

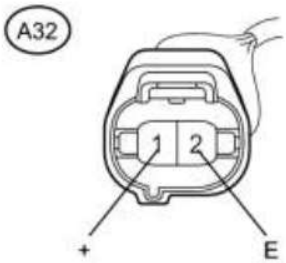
	WARNING SWITCH)

*1



(a) Make sure that there is no looseness at the locking part and the connecting part of the connector.

*2



(b) Disconnect the skid control ECU connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-36 (LBL) - A32-1 (+)	Always	Below 1 Ω
A58-36 (LBL) - Body ground	Always	10 kΩ or higher
A32-2 (E) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

cardiagn.com

*2	Front view of wire harness connector (to Brake Fluid Level Warning Switch)

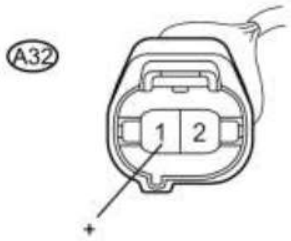
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

4.	INSPECT SKID CONTROL ECU (SWITCH INPUT)

*1



(a) Reconnect the skid control ECU connector.

H

(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
A32-1 (+) - Body ground	Power switch on (IG)	4 to 7 V

Text in Illustration

*1	Front view of wire harness connector (to Brake Fluid Level Warning Switch)

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

5.	CHECK BRAKE DISC

cardiagn.com

(a) Turn the power switch off.

(b) Reconnect the brake fluid level warning switch connector.

(c) Disconnect the brake pedal stroke sensor connector.

(d) Perform a road test according to Freeze Frame Data or customer problem analysis. Check the brake line pressure vibration caused due to uneven wear of the disc according to brake pedal vibration.

OK:

Brake pedal does not vibrate during braking.

HINT:

- An unevenly worn disc may vibrate the caliper piston and cause fluctuations in brake line pressure, triggering a malfunction detection condition.
- The brake pedal does not kick back due to wheel cylinder piston vibration during electronically controlled brake system control.
- If the brake pedal stroke sensor connector is disconnected, the fail-safe function will prohibit electronically controlled brake system control.
- The Active Test does not prohibit electronically controlled brake system control when the vehicle is running, so disconnect the stroke sensor connector before continuing with inspection.
- Disc uneven wear can be checked by measuring the disc thickness variation INFO for front, or INFO for rear).

NG ▶ REPLACE BRAKE DISC

OK

▼

6.	RECONFIRM DTC

(a) Reconnect the brake pedal stroke sensor connector.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Perform a road test.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1202/68) is not output	A
DTC (C1202/68) is output	B

cardiagn.com

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A **CHECK FOR INTERMITTENT PROBLEMS**

cardiagn.com

DTC	C1203/95	ECM Communication Circuit Malfunction

DESCRIPTION

The circuit is used to send TRAC and VSC information from the skid control ECU to the power management control ECU, and hybrid control system information from the power management control ECU to the skid control ECU via the CAN communication system.

Identification information sent from other ECUs is stored when shipped from the factory and used as default values.

NOTICE:

DTC C1203/95 is output when an incorrect ECU is installed. If initialization is performed and learning occurs with an incorrect ECU installed, operations and functions will differ from that stored when the vehicle was shipped from the factory. Therefore, make sure that learning occurs properly.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1203/95	-	Either of the following is detected: 1. Identification information sent from other ECUs does not match with the value stored when shipped from the factory. 2. No stored information for destination.	• The wrong ECU and sensor was installed • Brake booster with master cylinder (Skid control ECU)

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK PART NUMBER

(a) Check that a proper power management control ECU, main body ECU and yaw rate and acceleration sensor are installed.

OK:

Proper ECUs and sensor are installed.

(b) Check if the power management control ECU, main body ECU and yaw rate and acceleration sensor had been replaced before the DTC was recorded.

cardiagn.com

OK:

ECU and sensor had not been replaced.

Result:

Result	Proceed to
OK	A
NG (A proper power management control ECU is not installed and/or the power management control ECU had been replaced)	B
NG (A proper main body ECU is not installed and/or the main body ECU had been replaced)	C
NG (A proper yaw rate and acceleration sensor is not installed and/or the yaw rate and acceleration sensor had been replaced)	D

D REPLACE YAW RATE AND ACCELERATION SENSOR

C REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

B REPLACE POWER MANAGEMENT CONTROL ECU

A

2.	PERFORM INITIALIZATION AND CALIBRATION OF LINEAR SOLENOID VALVE

(a) Perform initialization and calibration of the linear solenoid valve INFO.

HINT:

Before carrying out Perform Initialization and Calibration of Linear Solenoid Valve, C1203/95 will be output.

NEXT

3.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (IG).

(d) Check if the same DTC is recorded INFO.

Result:

cardiagn.com

Result	Proceed to
DTC (C1203/95) is output	A
DTC (C1203/95) is not output	B

B ▶ END

A ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

DTC	C1210/36	Zero Point Calibration of Yaw Rate Sensor Undone
DTC	C1336/98	Zero Point Calibration of Acceleration Sensor Undone

DESCRIPTION

The skid control ECU receives signals from the yaw rate and acceleration sensor via the CAN communication system.

The yaw rate sensor has a built-in acceleration sensor and detects the vehicle's condition using 2 circuits (GL1, GL2).

If there are any problems in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123/62 (Lost Communication with Yaw Rate Sensor Module) and U0124/95 (Lost Communication with Lateral Acceleration Sensor Module) will be output.

The DTCs will be also output when the calibration has not been completed.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1210/36	-	Yaw rate sensor 0 point calibration is incomplete.	• Zero point calibration undone • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU) (Perform 0 point calibration and check for DTCs. If no DTCs are output again, the sensor is normal.)
C1336/98	-	Either of the following is detected: 1. The vehicle is driven normally without 0 point calibration completed. 2. After completing 0 point calibration, 0 point voltage of the sensor is not within the range of 2.38 to 2.62 V.	• Zero point calibration undone • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU) (Perform 0 point calibration and check for DTCs. If no DTCs are output again, the sensor is normal.)

cardiagn.com

INSPECTION PROCEDURE

NOTICE:

- When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.
- When replacing the yaw rate and acceleration sensor, perform zero point calibration INFO.

HINT:

When U0123/62 and/or U0124/95 is output together with C1210/36 and/or C1336/98, inspect and repair trouble areas indicated by U0123/62 and/or U0124/95 first INFO.

PROCEDURE

1.	PERFORM ZERO POINT CALIBRATION OF YAW RATE AND ACCELERATION SENSOR

(a) Perform zero point calibration of the yaw rate and acceleration sensor INFO.

NEXT

▼

2.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Drive the vehicle at a speed of 30 km/h (18 mph) or more, turn the steering wheel, and decelerate (depress the brake pedal) the vehicle.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1210/36 and/or C1336/98) are output	A
DTCs (C1210/36 and C1336/98) are not output	B

HINT:

- The DTCs are recorded because zero point calibration has not been completed.
- End the procedure because the same DTCs are not recorded after completion of zero point calibration.

B ▶ END

A

▼

3.	CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION

(a) Turn the power switch off.

cardiagn.com

(b) Check that the yaw rate and acceleration sensor has been installed properly INFO.

OK:

The sensor bolt should be tightened to the specified torque.

The sensor should not be tilted.

NG ▶ INSTALL YAW RATE AND ACCELERATION SENSOR CORRECTLY

OK

▼

4.	REPLACE YAW RATE AND ACCELERATION SENSOR

(a) Replace the yaw rate and acceleration sensor INFO.

NOTICE:

Check the yaw rate and acceleration sensor signal after replacement INFO.

NEXT

▼

5.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Drive the vehicle at a speed of 30 km/h (18 mph) or more, turn the steering wheel, and decelerate (depress the brake pedal) the vehicle.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1210/36 and/or C1336/98) are output	A
DTCs (C1210/36 and C1336/98) are not output	B

B ▶ END

A ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

DTC	C1211/25	SLA Linear Solenoid
DTC	C1212/26	SLR Linear Solenoid
DTC	C1225/31	SA1 Solenoid Circuit
DTC	C1226/32	SA2 Solenoid Circuit
DTC	C1227/33	SA3 Solenoid Circuit
DTC	C1228/34	STR Solenoid Circuit
DTC	C1352/21	Front Increasing Pressure Solenoid RH Malfunction
DTC	C1353/23	Front Increasing Pressure Solenoid LH Malfunction
DTC	C1356/22	Front Decreasing Pressure Solenoid RH Malfunction
DTC	C1357/24	Front Decreasing Pressure Solenoid LH Malfunction

DESCRIPTION

Each solenoid adjusts pressure which affects each wheel cylinder according to signals from the skid control ECU and controls the vehicle.

The master cut solenoid is closed and blocks the regulator pressure from the electronically controlled brake system control pressure when the system is normal. The master cut solenoid is open and sends the master cylinder and regulator hydraulic pressure to the non-assisted brake wheel cylinders during the fail-safe due to a system malfunction.

HINT:

If the supply voltage decreases, a drop in current may cause a DTC to be stored.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1211/25	21	Excess current is applied for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	22	An open is detected for 0.05 seconds or more while the solenoid is OFF.	↑
↑	23	An open is detected for 0.05 seconds or more while the solenoid is ON.	• Supply voltage reduced • Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	24	A short to +B or voltage leaks is detected for 0.05 seconds.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1212/26	31	Excess current is applied for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	32	An open is detected for 0.05 seconds or more while the solenoid is OFF.	↑
↑	33	An open is detected for 0.05 seconds or more	• Supply voltage reduced

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
		while the solenoid is ON.	• Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	34	A short to +B or voltage leaks is detected for 0.05 seconds.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1225/31	41	Excess current is applied for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	42	An open is detected for 0.05 seconds or more while the solenoid is OFF.	↑
↑	43	An open is detected for 0.05 seconds or more while the solenoid is ON.	• Supply voltage reduced • Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	44	A short to +B or voltage leaks are detected for 0.05 seconds.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1226/32	51	Excess current is applied for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	52	An open is detected for 0.05 seconds or more while the solenoid is OFF.	↑
↑	53	An open is detected for 0.05 seconds or more while the solenoid is ON.	• Supply voltage reduced • Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	54	A short to +B or voltage leaks are detected for 0.05 seconds.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1227/33	61	Excess current is applied for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	62	An open is detected for 0.05 seconds or more while the solenoid is OFF.	↑
↑	63	An open is detected for 0.05 seconds or more while the solenoid is ON.	• Supply voltage reduced • Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	64	A short to +B or voltage leaks are detected for 0.05 seconds.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1228/34	71	Excess current is applied for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	72	An open is detected for 0.05 seconds or more while the solenoid is OFF.	↑
↑	73	An open is detected for 0.05 seconds or more while the solenoid is ON.	• Supply voltage reduced • Brake booster with master cylinder (Skid control ECU or brake actuator)

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
↑	74	A short to +B or voltage leaks are detected for 0.05 seconds.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1352/21	11 12	When the solenoid relay contact on, open or short in solenoid circuit continues for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1353/23	15 16	When the solenoid relay contact on, open or short in solenoid circuit continues for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1356/22	13 14	When the solenoid relay contact on, open or short in solenoid circuit continues for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1357/24	17 18	When the solenoid relay contact on, open or short in solenoid circuit continues for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU or brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Check if the same DTC is recorded INFO.

HINT:

If a DTC for undervoltage is output, first troubleshoot the power source system.

Result:

Result	Proceed to
DTCs (C1211/25, C1212/26, C1225/31, C1226/32, C1227/33, C1228/34, C1352/21, C1353/23, C1356/22 and C1357/24) are not output	A
A DTC (C1241/41) for undervoltage is output	B
DTCs (C1211/25, C1212/26, C1225/31, C1226/32, C1227/33, C1228/34, C1352/21, C1353/23, C1356/22 and/or C1357/24) are output	C

cardiagn.com

C ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

B ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A ▶ **CHECK FOR INTERMITTENT PROBLEMS**

cardiagn.com

DTC	C1214/62	Hydraulic Control System Malfunction

DESCRIPTION

The skid control ECU controls braking force according to the hybrid control system regenerative braking force and inputs the hydraulic pressure necessary for operating each wheel cylinder according to the wheel cylinder pressure sensor.

DTCs may be stored if one of the following occurs:

- Brake fluid leaks.
- Wheel cylinder vibrates due to uneven wear of a brake rotor.
- Foreign matter enters solenoid valve.
- Line pressure drops during air bleeding.
- Brake pad is replaced.
- Rotor is replaced.

HINT:

When replacing the brake pad, retracting the brake calipers piston and attaching a new brake pad will greatly increase the clearance between the brake pad and brake disc, which will likely cause these DTCs to be set the next time the brake pedal is depressed. As there is not malfunction, clear the DTCs.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1214/62	431	Decrease in hydraulic pressure control performance. (Pressure increase malfunction)	• Brake fluid leaks • Brake disc rotor excessive wear • Brake booster with master cylinder (Brake actuator)
↑	432	Decrease in hydraulic pressure control performance. (Pressure decrease malfunction)	↑
↑	433	Malfunctions such as leaks occur in the SLA valve.	↑
↑	434 435	Malfunctions such as leaks occur in the SLR valve.	↑
↑	436 437	Decrease in hydraulic pressure control performance.	↑
↑	438	Malfunctions such as leaks occur in a hydraulic circuit valve.	Brake booster with master cylinder (Brake actuator)

INSPECTION PROCEDURE

cardiagn.com

NOTICE:

When replacing the brake booster with master cylinder (brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

HINT:

When C1364/61 is output together with C1214/62, inspect and repair the trouble areas indicated by C1364/61 first INFO.

PROCEDURE

1.	CHECK FOR FLUID LEAK

(a) Check that there is no fluid leaks in the brake line between the brake actuator and the wheel cylinder.

(b) Check that the brake is not dragging.

OK:

There is no fluid leaks or dragging.

NG ▶ REPAIR OR REPLACE APPLICABLE PART

OK

▼

2.	PERFORM AIR BLEEDING

(a) Bleed the air from the brake systems INFO.

NEXT

▼

3.	CHECK BRAKE BOOSTER WITH MASTER CYLINDER (ACTUATOR SIDE)

(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

(b) Disconnect the skid control ECU connector 2 minutes after the power switch is turned off.

(c) Check both the connector case and the terminal for deformation and corrosion.

OK:

No deformation or corrosion.

cardiagn.com

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

4.	CHECK HARNESS AND CONNECTOR (VEHICLE SIDE)

(a) Measure the voltage and resistance on the wire harness side INFO.

OK:

Voltage and resistance readings are all normal.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

5.	READ VALUE USING TECHSTREAM (WHEEL CYLINDER PRESSURE SENSOR)

(a) Reconnect the skid control ECU connector.

(b) Connect a pedal effort gauge INFO.

(c) Connect the Techstream to the DLC3.

(d) Turn the power switch on (IG).

(e) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed

(f) Check the output value of the wheel cylinder pressure sensor at each hydraulic pressure level during the electronically controlled brake system control.

Standard Voltage:

for Front Wheel Cylinder Pressure Sensor LH

for Front Wheel Cylinder Pressure Sensor RH

cardiagn.com

Hydraulic Pressure (MPa (kgf/cm^2, psi))	Wheel Cylinder Pressure Sensor (V)
2.0 (20.4, 290)	0.53 to 1.33
5.0 (51.0, 725)	1.12 to 1.92
7.0 (71.4, 1015)	1.52 to 2.32
10.0 (102.0, 1451)	2.14 to 2.94

Hydraulic Pressure (MPa (kgf/cm^2, psi))	Wheel Cylinder Pressure Sensor (V)
2.0 (20.4, 290)	0.53 to 1.33
5.0 (51.0, 725)	1.12 to 1.92
7.0 (71.4, 1015)	1.52 to 2.32
10.0 (102.0, 1451)	2.14 to 2.94

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

6.	CHECK BRAKE DISC

(a) Turn the power switch off.

(b) Disconnect the brake pedal stroke sensor connector.

(c) Perform a road test according to Freeze Frame Data or customer problem analysis. Check the brake line pressure vibration caused due to uneven wear of the disc according to brake pedal vibration.

OK:

Brake pedal does not vibrate during braking.

HINT:

- An unevenly worn disc may vibrate the caliper piston and cause fluctuations in brake line pressure, triggering a malfunction detection condition.
- The brake pedal does not kick back due to wheel cylinder piston vibration during electronically controlled brake system control.
- If the brake pedal stroke sensor connector is disconnected, the fail-safe function will prohibit electronically controlled brake system control.
- The Active Test does not prohibit electronically controlled brake system control when the vehicle is running, so disconnect the stroke sensor connector before continuing with inspection.
- Disc uneven wear can be checked by measuring the disc thickness variation INFO for front, or INFO for rear).

NG ▶ REPLACE BRAKE DISC

cardiagn.com

OK

7.	RECONFIRM DTC

(a) Reconnect the brake pedal stroke sensor connector.

(b) Clear the DTCs INFO.

(c) Perform a road test under the same malfunction conditions recreated based on the Freeze Frame Data or customer problem analysis.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1214/62) is not output	A
DTC (C1214/62) is output	B

HINT:

If the DTC is no longer output, it can be suspected that it was output due to an improperly connected connector.

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A **CHECK FOR INTERMITTENT PROBLEMS**

cardiagn.com

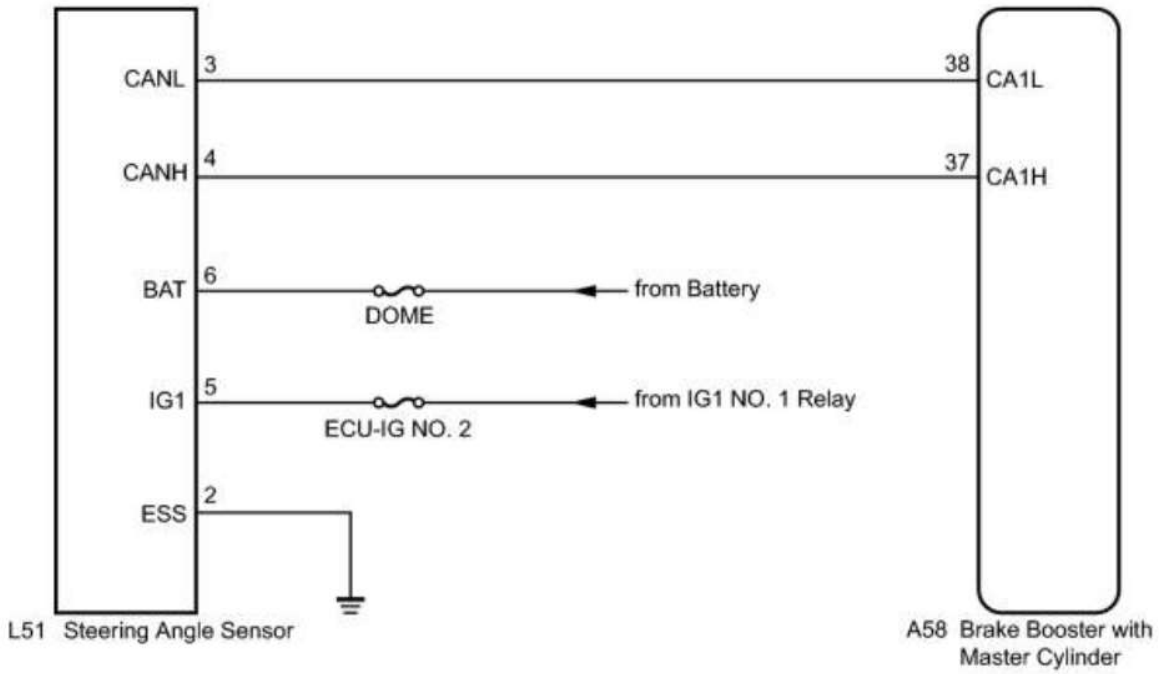
DTC	C1231/31	Steering Angle Sensor Circuit Malfunction

DESCRIPTION

The skid control ECU inputs steering angle sensor signals via the CAN communication. When a malfunction occurs in the communication line with the steering angle sensor, DTC U0126/63 (Lost Communication with Steering Angle Sensor Module) is output.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1231/31	701	While steering angle sensor communication is enabled, a malfunction signal output is received during the sensor self-check (sensor malfunction).	Steering angle sensor internal malfunction
↑	702	While steering angle sensor communication is enabled, a malfunction signal output is received during the sensor self-check (internal malfunction).	↑
↑	703	While steering angle sensor communication is enabled, a malfunction signal output is received during the sensor self-check (+B malfunction).	↑

WIRING DIAGRAM



N

cardiagn.com

INSPECTION PROCEDURE

HINT:

- When U0126/63 is output together with C1231/31, inspect and repair the trouble areas indicated by U0126/63 first INFO.
- When the speed sensor or the yaw rate and acceleration sensor are malfunctioning, DTCs for the steering angle sensor may be output even when the steering angle sensor is normal. When DTCs for the speed sensor or yaw rate and acceleration sensor are output together with DTCs for the steering angle sensor, inspect and repair the speed sensor and yaw rate and acceleration sensor first, and then inspect and repair the steering angle sensor.

PROCEDURE

1.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch off.

(c) Turn the power switch on (IG) again and check that no CAN communication system DTC is output INFO.

(d) Drive the vehicle and turn the steering wheel to the right and left at the speed of 35 km/h (22 mph) and check that no speed sensor and/or yaw rate and acceleration sensor DTCs are output INFO.

Result:

Result	Proceed to
DTC (C1231/31) is output	A
CAN communication system DTC is output	B
Speed sensor and/or yaw rate and acceleration sensor DTC is output	C
DTC (C1231/31) is not output	D

HINT:

- When DTCs indicating CAN communication system malfunctions are output, repair the CAN communication system before repairing each corresponding sensor.
- If there is a malfunction in the speed sensor or the yaw rate and acceleration sensor, an abnormal value may be output although the steering angle sensor is normal.
- If speed sensor and yaw rate and acceleration sensor DTCs are output simultaneously, repair these two sensors and inspect the steering angle sensor.

D ▶ CHECK FOR INTERMITTENT PROBLEMS

C ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

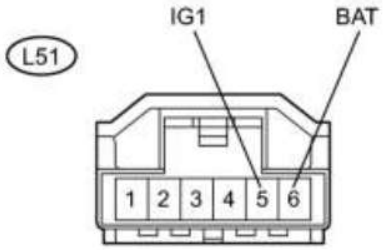
B ▶ INSPECT CAN COMMUNICATION SYSTEM

cardiagn.com

A

2.	INSPECT STEERING ANGLE SENSOR (POWER SOURCE TERMINAL)

*1



(a) Turn the power switch off.

(b) Remove the steering wheel and the column cover.

(c) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(d) Disconnect the steering angle sensor connector.

(e) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
L51-5 (IG1) - Body ground	Power switch on (IG)	11 to 14 V
L51-6 (BAT) - Body ground	Always	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Steering Angle Sensor)

NG REPAIR OR REPLACE HARNESS OR CONNECTOR (POWER SOURCE CIRCUIT)

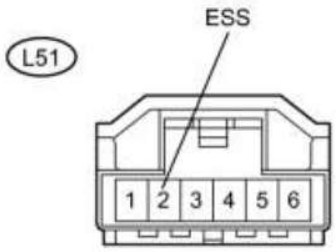
OK

3.	INSPECT STEERING ANGLE SENSOR (GROUND TERMINAL)

(a) Turn the power switch off.

cardiagn.com

*1



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
L51-2 (ESS) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Steering Angle Sensor)

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (GROUND CIRCUIT)

OK ▶ **REPLACE SPIRAL CABLE SUB-ASSEMBLY (STEERING ANGLE SENSOR)**

cardiagn.com

DTC	C1235/35	Foreign Object is Attached on Tip of Front Speed Sensor RH
DTC	C1236/36	Foreign Object is Attached on Tip of Front Speed Sensor LH
DTC	C1238/38	Foreign Object is Attached on Tip of Rear Speed Sensor RH
DTC	C1239/39	Foreign Object is Attached on Tip of Rear Speed Sensor LH
DTC	C1275/75	Abnormal Change in Output Signal of Front Speed Sensor RH (Test Mode DTC)
DTC	C1276/76	Abnormal Change in Output Signal of Front Speed Sensor LH (Test Mode DTC)
DTC	C1277/77	Abnormal Change in Output Signal of Rear Speed Sensor RH (Test Mode DTC)
DTC	C1278/78	Abnormal Change in Output Signal of Rear Speed Sensor LH (Test Mode DTC)

DESCRIPTION

When foreign matter adheres to the speed sensor tip or speed sensor rotor, these DTCs are output. An abnormal waveform input from the sensor determines these conditions.

These DTCs may be detected when a malfunction occurs in the connector terminals or wire harness of the speed sensor circuit.

DTCs C1275/75 to C1278/78 will be cleared when the speed sensor sends a wheel speed signal or when Test Mode ends. DTCs from C1275/75 to C1278/78 are output only in Test Mode.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1235/35	541	Either of the following is detected: 1. When driving at 20 km/h (12 mph) or more, noise occurs on the speed sensor signal waveform for 5 seconds or more. 2. When driving at 10 km/h (6 mph) or more, noise occurs once per wheel revolution for 15 seconds or more.	• Speed sensor rotor malfunction (foreign object attached) • Foreign object attached to speed sensor • Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Resistance in speed sensor circuit • Brake booster with master cylinder (Skid control ECU)
C1236/36	542	Either of the following is detected: 1. When driving at 20 km/h (12 mph) or more, noise occurs on the speed sensor signal waveform for 5 seconds or more. 2. When driving at 10 km/h (6 mph) or more, noise occurs once per wheel revolution for 15 seconds or more.	• Speed sensor rotor malfunction (foreign object attached) • Foreign object attached to speed sensor • Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Resistance in speed sensor circuit

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
			• Brake booster with master cylinder (Skid control ECU)
C1238/38	543	Either of the following is detected: 1. When driving at 20 km/h (12 mph) or more, noise occurs on the speed sensor signal waveform for 5 seconds or more. 2. When driving at 10 km/h (6 mph) or more, noise occurs once per wheel revolution for 15 seconds or more.	• Speed sensor rotor malfunction (foreign object attached) • Foreign object attached to speed sensor • Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Resistance in speed sensor circuit • Brake booster with master cylinder (Skid control ECU)
C1239/39	544	Either of the following is detected: 1. When driving at 20 km/h (12 mph) or more, noise occurs on the speed sensor signal waveform for 5 seconds or more. 2. When driving at 10 km/h (6 mph) or more, noise occurs once per wheel revolution for 15 seconds or more.	• Speed sensor rotor malfunction (foreign object attached) • Foreign object attached to speed sensor • Open or short in speed sensor • Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Resistance in speed sensor circuit • Brake booster with master cylinder (Skid control ECU)
C1275/75 C1276/76 C1277/77 C1278/78	-	Detected only during Test Mode.	• Speed sensor • Speed sensor rotor

HINT:

- DTCs C1235/35 and C1275/75 are for the front speed sensor RH.
- DTCs C1236/36 and C1276/76 are for the front speed sensor LH.
- DTCs C1238/38 and C1277/77 are for the rear speed sensor RH.
- DTCs C1239/39 and C1278/78 are for the rear speed sensor LH.

WIRING DIAGRAM

Refer to DTCs C0200/31, C0205/32, C0210/33 and C0215/34 INFO for front, and INFO for rear).

2010 Toyota Prius Repair Manual

cardiagn.com

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK DTC

(a) Check that no speed sensor malfunction DTC is output INFO.

HINT:

When C0200/31, C0205/32, C0210/33, and/or C0215/34 are output together with C1235/35, C1236/36, C1238/38, and/or C1239/39, inspect and repair the trouble areas indicated by C0200/31, C0205/32, C0210/33, and/or C0215/34 first.

Result:

Result	Proceed to
DTCs (C1235/35 and/or C1236/36) are output	A
DTCs (C1238/38 and C1239/39) are output	B
Speed sensor malfunction DTCs (C0200/31, C0205/32, C0210/33 and/or C0215/34) are output	C

C ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

B ▶ CHECK HARNESS AND CONNECTOR (SKID CONTROL SENSOR WIRE)

A

▼

2.	CHECK FRONT SPEED SENSOR AND FRONT SPEED SENSOR ROTOR

(a) Remove the front speed sensor and front speed sensor rotor INFO and INFO).

(b) Check the speed sensor tip and speed sensor rotor.

OK:

The sensor tip and rotor is free of scratches, oil, and foreign matter.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO.

cardiagn.com

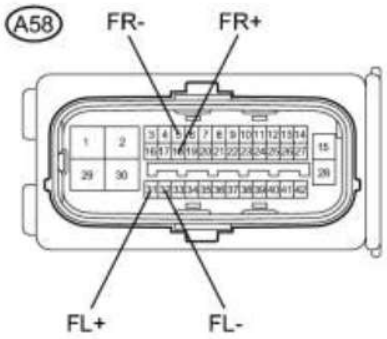
NG ▶ CLEAN OR REPLACE FRONT SPEED SENSOR AND FRONT SPEED SENSOR ROTOR

OK

▼

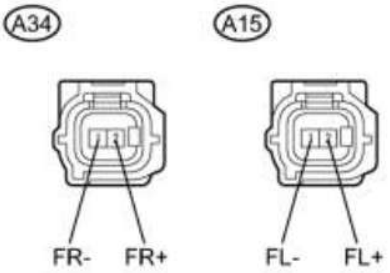
3.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - FRONT SPEED SENSOR)

*1



(a) Install the front speed sensor and front speed sensor rotor.

*2



(b) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

(c) Disconnect the skid control ECU connector and the front speed sensor connector.

(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

for RH

for LH

Tester Connection	Condition	Specified Condition

cardiagn.com

Tester Connection	Condition	Specified Condition
A58-18 (FR+) - A34-2 (FR+)	Always	Below 1 Ω
A58-18 (FR+) - Body ground	Always	10 kΩ or higher
A58-5 (FR-) - A34-1 (FR-)	Always	Below 1 Ω
A58-5 (FR-) - Body ground	Always	10 kΩ or higher

Tester Connection	Condition	Specified Condition
A58-31 (FL+) - A15-2 (FL+)	Always	Below 1 Ω
A58-31 (FL+) - Body ground	Always	10 kΩ or higher
A58-32 (FL-) - A15-1 (FL-)	Always	Below 1 Ω
A58-32 (FL-) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Front Speed Sensor)

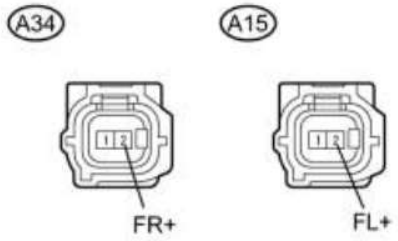
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

4.	INSPECT SKID CONTROL ECU (SENSOR OUTPUT)

*1



(a) Reconnect the skid control ECU connector.

N

(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

cardiagn.com

Standard Voltage:

for RH

for LH

Tester Connection	Switch Condition	Specified Condition
A34-2 (FR+) - Body ground	Power switch on (IG)	5.7 to 14 V

Tester Connection	Switch Condition	Specified Condition
A15-2 (FL+) - Body ground	Power switch on (IG)	5.7 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Front Speed Sensor)

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

5.	RECONFIRM DTC

(a) Reconnect the front speed sensor connector.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 15 seconds.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1235/35 and/or C1236/36) are output	A
DTCs (C1235/35 and C1236/36) are not output	B

B ▶ CHECK FOR INTERMITTENT PROBLEMS

A

▼

6.	REPLACE FRONT SPEED SENSOR

cardiagn.com

(a) Turn the power switch off.

(b) Replace the front speed sensor INFO.

NOTICE:

Check the speed sensor signal after replacement INFO.

NEXT

▼

7.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 15 seconds.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1235/35 and/or C1236/36) are output	A
DTCs (C1235/35 and C1236/36) are not output	B

B ▶ END

A

▼

8.	REPLACE FRONT SPEED SENSOR ROTOR

(a) Turn the power switch off.

(b) Replace the front axle hub sub-assembly (front speed sensor rotor) INFO.

HINT:

The front speed sensor rotor is incorporated into the front axle hub sub-assembly.

If the front speed sensor rotor needs to be replaced, replace it together with the front axle hub sub-assembly.

NOTICE:

Check the speed sensor signal after replacement INFO.

cardiagn.com

NEXT

9.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 15 seconds.

(d) Check if the same DTC is recorded INFO.

Result:

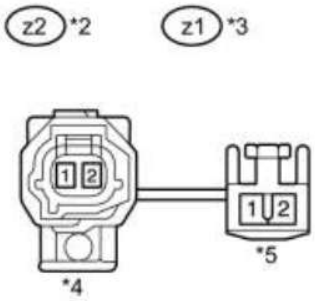
Result	Proceed to
DTCs (C1235/35 and/or C1236/36) are output	A
DTCs (C1235/35 and C1236/36) are not output	B

B END

A **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

10.	CHECK HARNESS AND CONNECTOR (SKID CONTROL SENSOR WIRE)

*1



(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

N

(b) Disconnect the rear speed sensor connector and the skid control sensor wire.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

for RH

cardiagn.com

for LH

Tester Connection	Condition	Specified Condition
z2 ("A"-2) - z2 ("B"-1)	Always	Below 1 Ω
z2 ("A"-2) - z2 ("B"-2)	Always	10 kΩ or higher
z2 ("A"-2) - Body ground	Always	10 kΩ or higher
z2 ("A"-1) - z2 ("B"-2)	Always	Below 1 Ω
z2 ("A"-1) - z2 ("B"-1)	Always	10 kΩ or higher
z2("A"-1) - Body ground	Always	10 kΩ or higher

Tester Connection	Condition	Specified Condition
z1 ("A"-2) - z1 ("B"-1)	Always	Below 1 Ω
z1 ("A"-2) - z1 ("B"-2)	Always	10 kΩ or higher
z1 ("A"-2) - Body ground	Always	10 kΩ or higher
z1 ("A"-1) - z1 ("B"-2)	Always	Below 1 Ω
z1 ("A"-1) - z1 ("B"-1)	Always	10 kΩ or higher
z1 ("A"-1) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of skid control sensor wire
*2	for RH
*3	for LH
*4	Front view of wire harness connector (to Sensor Side Connector "A")
*5	Front view of wire harness connector (to Vehicle Side Connector "B")

NOTICE:

Check the speed sensor signal after replacement INFO.

NG ▶ REPLACE SKID CONTROL SENSOR WIRE

OK

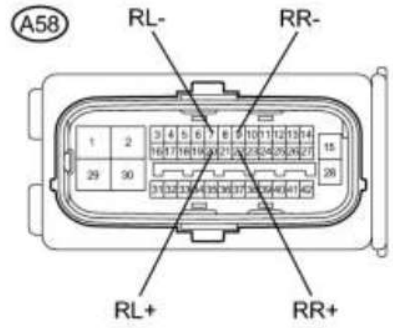
▼

11.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - REAR SPEED SENSOR)

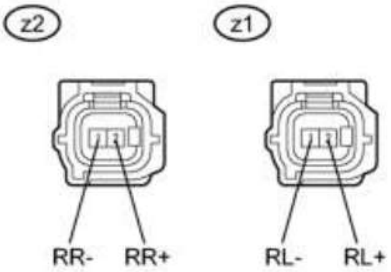
(a) Reconnect the skid control sensor wire (for vehicle side connector).

cardiagn.com

*1



*2



(b) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(c) Disconnect the skid control ECU connector.

(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

for RH

for LH

Tester Connection	Condition	Specified Condition
A58-22 (RR+) - z2-2 (RR+)	Always	Below 1 Ω
A58-22 (RR+) - Body ground	Always	10 kΩ or higher
A58-9 (RR-) - z2-1 (RR-)	Always	Below 1 Ω
A58-9 (RR-) - Body ground	Always	10 kΩ or higher

Tester Connection	Condition	Specified Condition
A58-20 (RL+) - z1-2 (RL+)	Always	Below 1 Ω

cardiagn.com

Tester Connection	Condition	Specified Condition
A58-20 (RL+) - Body ground	Always	10 kΩ or higher
A58-7 (RL-) - z1-1 (RL-)	Always	Below 1 Ω
A58-7 (RL-) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Rear Speed Sensor)

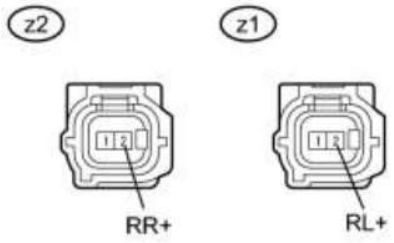
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

12.	INSPECT SKID CONTROL ECU (SENSOR OUTPUT)

*1



(a) Reconnect the skid control ECU connector.

N

(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

for RH

for LH

Tester Connection	Switch Condition	Specified Condition

cardiagn.com

Tester Connection	Switch Condition	Specified Condition
z2-2 (RR+) - Body ground	Power switch on (IG)	5.7 to 14 V

Tester Connection	Switch Condition	Specified Condition
z1-2 (RL+) - Body ground	Power switch on (IG)	5.7 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Rear Speed Sensor)

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

13.	RECONFIRM DTC

(a) Reconnect the rear speed sensor connector.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 15 seconds.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1238/38 and/or C1239/39) are output	A
DTCs (C1238/38 and C1239/39) are not output	B

B ▶ CHECK FOR INTERMITTENT PROBLEMS

A

▼

14.	REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR

(a) Turn the power switch off.

(b) Replace the rear speed sensor and the rear axle hub and bearing assembly (rear speed sensor rotor) INFO.

HINT:

cardiagn.com

The rear speed sensor rotor is incorporated into the rear axle hub and bearing assembly.

If the rear speed sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly with rear speed sensor.

NOTICE:

Check the speed sensor signal after replacement INFO.

NEXT

15.	RECONFIRM DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 15 seconds.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1238/38 and/or C1239/39) are output	A
DTCs (C1238/38 and C1239/39) are not output	B

B END

A **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

DTC	C1241/41	Low Battery Positive Voltage
DTC	C1242/42	Open in IG1 / IG2 Power Source Circuit

DESCRIPTION

If a malfunction is detected in the power supply circuit, the skid control ECU power source voltage drops, or there is insufficient voltage to operate ABS main relay, the skid control ECU will store these codes.

These codes may be also be stored if the auxiliary battery voltage drops below 9.5 V.

HINT:

DTC C1256/56 (Accumulator Low Pressure) may also be memorized if there is a drop in power source voltage.

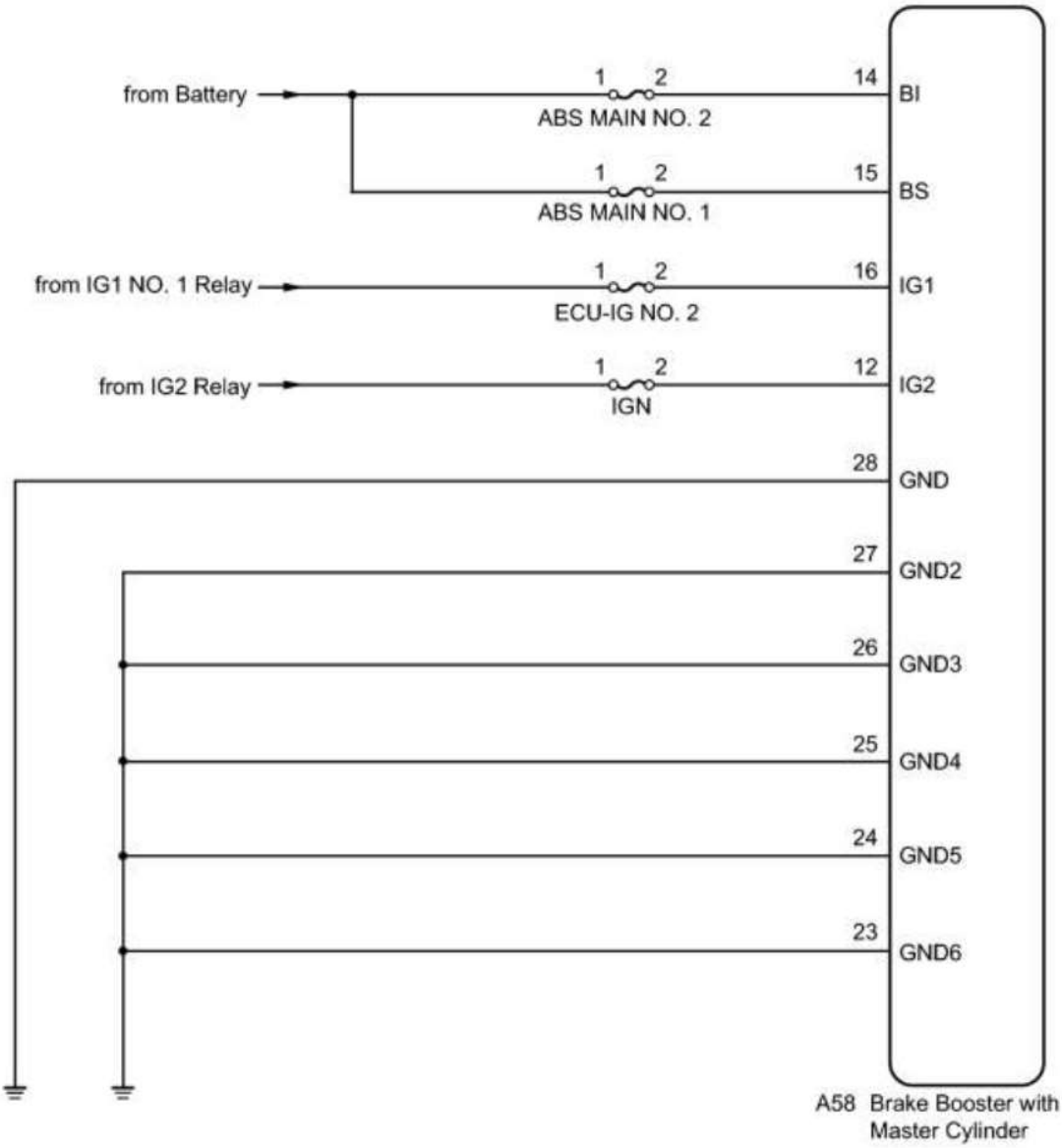
DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1241/41	101	Any of the following conditions when the BS terminal voltage is 9.3 V or less: 1. Vehicle not decelerated (brake pedal is not depressed) for 3 seconds or more. 2. While depressing the brake pedal, linear solenoid current does not satisfy 1.34A. 3. Vehicle decelerated (brake pedal is depressed) for 0.06 seconds.	• Improperly connected connector, deformation or corrosion of terminals • Auxiliary battery • Hybrid control system (Charging circuit) • Brake booster with master cylinder (Skid control ECU)
↑	102	Either of the following conditions when the ECU internal voltage is 6.3 V or less: 1. When main relay ON is requested, voltage of the relay connection does not exceed 3.5 V for 0.22 seconds or more. 2. Sensor supply voltage is 4.75 V or less, or 5.25 V or more for 0.06 seconds. 3. Accumulator pressure sensor output voltage is 4.54 V or less, or 5.46 V or more for 0.06 seconds.	↑
↑	551	When driving at 3 km/h (1.9 mph) or more, IG1 terminal voltage is 9.5 V or less, or VM1 voltage is 8.6 V or less for 10 seconds or more.	↑
↑	552	When VM1 voltage is 8.6 V or less, sensor supply voltage is low for 60 seconds or more.	↑
↑	553	VM1 voltage is 16.6 V or more for 0.8 seconds.	↑
C1242/42	111	Voltage is not applied to the IG1 terminal (less than 3.5 V), and applied to the IG2 terminal (9.5 V or more) for 4 seconds or more.	• Open or short in IG1 circuit • Improperly connected connector, deformation or corrosion of terminals

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
			• Smart key system (IG start circuit) • Auxiliary battery • Hybrid control system (Charging circuit) • Brake booster with master cylinder (Skid control ECU)
↑	112	Voltage is not applied to the IG2 terminal (less than 3.5 V), and applied to the IG1 terminal (9.5 V or more) for 4 seconds or more.	• Open or short in IG2 circuit • Improperly connected connector, deformation or corrosion of terminals • Smart key system (IG start circuit) • Auxiliary battery • Hybrid control system (Charging circuit) • Brake booster with master cylinder (Skid control ECU)

WIRING DIAGRAM

cardiagn.com



cardiagn.com

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK SMART KEY SYSTEM (for Start Function)

(a) Check if the smart key system (for start function) DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B INSPECT SMART KEY SYSTEM (for Start Function)

A

2.	CHECK HYBRID CONTROL SYSTEM

(a) Check if the hybrid control system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B INSPECT HYBRID CONTROL SYSTEM

A

3.	CHECK DTC

(a) Check that no main relay DTC is output INFO.

Result:

Result	Proceed to
Main relay malfunction DTC is not output	A
Main relay malfunction DTC is output	B

B REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A

4.	CHECK AUXILIARY BATTERY

cardiagn.com

(a) Check the auxiliary battery voltage.

Standard Voltage:

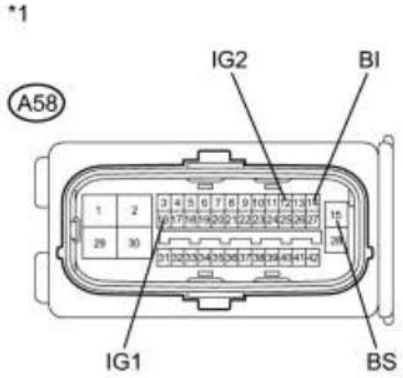
11 to 14 V

NG ▶ CHARGE OR REPLACE AUXILIARY BATTERY

OK

▼

5.	INSPECT SKID CONTROL ECU (POWER SOURCE TERMINAL)



(a) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(b) Disconnect the skid control ECU connector.

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
A58-14 (BI) - Body ground	Always	11 to 14 V
A58-15 (BS) - Body ground	Always	11 to 14 V
A58-16 (IG1) - Body ground	Power switch on (IG)	11 to 14 V
A58-12 (IG2) - Body ground	Power switch on (IG)	11 to 14 V

Text in Illustration

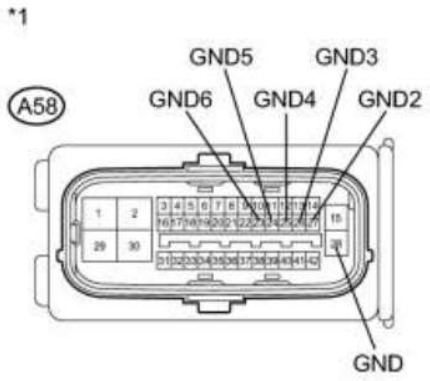
*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (POWER SOURCE CIRCUIT)

cardiagn.com

OK

6.	INSPECT SKID CONTROL ECU (GND TERMINAL)



(a) Turn the power switch off.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-28 (GND) - Body ground	Always	Below 1 Ω
A58-27 (GND2) - Body ground	Always	Below 1 Ω
A58-26 (GND3) - Body ground	Always	Below 1 Ω
A58-25 (GND4) - Body ground	Always	Below 1 Ω
A58-24 (GND5) - Body ground	Always	Below 1 Ω
A58-23 (GND6) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)

OK

7.	RECONFIRM DTC

(a) Reconnect the skid control ECU connector.

cardiagn.com

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Perform a road test.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1241/41 and C1242/42) are not output	A
DTCs (C1241/41 and/or C1242/42) are output	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A **CHECK FOR INTERMITTENT PROBLEMS**

cardiagn.com

DTC	C1246/46	Master Cylinder Pressure Sensor Malfunction
DTC	C1281/81	Master Cylinder Pressure Sensor Output Malfunction (Test Mode DTC)
DTC	C1364/61	Wheel Cylinder Pressure Sensor Malfunction

DESCRIPTION

The regulator pressure sensor and the wheel cylinder pressure sensor are built into the brake actuator, and measure the regulator pressure and the wheel cylinder pressure sent to the skid control ECU.

DTC C1281/81 will be cleared when the regulator pressure sensor sends a regulator pressure signal or when Test Mode ends. DTC C1281/81 is output only in Test Mode.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1246/46	201	Sensor supply voltage (VCM1) is 4.75 V or less, or 5.25 V or more for 0.05 seconds.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	202	Regulator pressure sensor output voltage (Preg) is less than 8%, or 90.3% or more (less than 0.4 V, or 4.52 V or more) of sensor supply voltage (VCM1) for 0.05 seconds or more.	↑
↑	203	When not under braking, the regulator pressure sensor output voltage is 0.2 V or less or 0.88 V or more for 3 seconds or more.	↑
↑	204	Either of the following is detected: 1. The regulator pressure sensor output voltage does not correspond with stroke sensor and the readings remain out of specification for 0.5 to 5 seconds or more continuously. (The stroke sensor may be malfunctioning.) 2. The regulator pressure sensor output voltage does not correspond with wheel cylinder pressure sensor and the outputs remain out of specification for 0.5 to 5 seconds or more continuously. (May be output with INF code 424.)	• Brake pedal stroke sensor • Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	207	Fluctuation of regulator pressure sensor output is out of specification (the difference between the present value and last value is 15 MPa or more) for 0.1 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
C1364/61	421	Sensor supply voltage 1 (VCM1) is 4.75 V or less, or 5.25 V or more for 0.05 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	422	Wheel cylinder pressure sensor output voltage (Pfront) is less than 8%, or 90.3% or more (less than 0.4 V, or 4.52 V	↑

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
		or more) of sensor supply voltage (VCM1) for 0.05 seconds or more.	
↑	423	When not under braking, the wheel cylinder pressure sensor output voltage is 0.2 V or less or 0.88 V or more for 0.1 to 3 seconds or more.	↑
↑	424	The wheel cylinder pressure sensor output voltage does not correspond with regulator pressure sensor and the outputs remain out of specification for 0.5 to 5 seconds or more continuously. (May be output with INF code 204.)	↑
↑	426	Fluctuation of wheel cylinder pressure sensor output is out of specification (the difference between the present value and last value is 15 MPa or more) for 0.1 seconds or more.	↑
C1281/81	-	Detected only during Test Mode.	• Stop light switch • Regulator pressure sensor

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU or brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	READ VALUE USING TECHSTREAM (REGULATOR PRESSURE SENSOR)

(a) Set a pedal effort gauge and LSPV gauge to rear wheel INFO.

(b) Connect the Techstream to the DLC3.

(c) Turn the power switch on (IG).

(d) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Regulator Pressure Sensor Output	Regulator pressure sensor output / Min.: 0 V, Max.: 5 V	When brake pedal released:	Reading increases when brake pedal is depressed

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		0.1 to 0.9 V	

(e) Check the output value of the regulator pressure sensor as the brake pedal is depressed.

Standard Voltage:

Brake Effort (N (kgf, lbf))	Regulator Pressure Sensor Output (V)	Rear Right Wheel Hydraulic Pressure (MPa (kgf/cm^2, psi))	Rear Left Wheel Hydraulic Pressure (MPa (kgf/cm^2, psi))
100 (10.2, 22.5)	1.35 to 2.15	4.10 to 8.10 (41.8 to 82.5, 595 to 1174)	4.10 to 8.10 (41.8 to 82.5, 595 to 1174)
200 (20.4, 45.0)	3.00 to 3.80	12.20 to 16.20 (124.4 to 165.1, 1770 to 2349)	12.20 to 16.20 (124.4 to 165.1, 1770 to 2349)

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

2.	READ VALUE USING TECHSTREAM (WHEEL CYLINDER PRESSURE SENSOR)

(a) Set a LSPV gauge to front wheel INFO.

(b) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed

(c) Check the output value of the wheel cylinder pressure sensor at each hydraulic pressure during electronically controlled brake system control.

Standard Voltage:

for Front Wheel Cylinder Pressure Sensor LH

for Front Wheel Cylinder Pressure Sensor RH

cardiagn.com

Hydraulic Pressure (MPa (kgf/cm^2, psi))	Wheel Cylinder Pressure Sensor (V)
2.0 (20.4, 290)	0.53 to 1.33
5.0 (51.0, 725)	1.12 to 1.92
7.0 (71.4, 1015)	1.52 to 2.32
10.0 (102.0, 1451)	2.14 to 2.94

Hydraulic Pressure (MPa (kgf/cm^2, psi))	Wheel Cylinder Pressure Sensor (V)
2.0 (20.4, 290)	0.53 to 1.33
5.0 (51.0, 725)	1.12 to 1.92
7.0 (71.4, 1015)	1.52 to 2.32
10.0 (102.0, 1451)	2.14 to 2.94

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK

▼

3.	READ VALUE USING TECHSTREAM (BRAKE PEDAL STROKE SENSOR AND PRESSURE SENSOR COMPARISON)

(a) Set a pedal effort gauge and LSPV gauge to front and rear wheel INFO.

(b) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Stroke Sensor	Brake pedal stroke sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.65 to 1.35 V	Reading increases when brake pedal is depressed
Stroke Sensor2	Brake pedal stroke sensor 2 / Min.: 0 V, Max.: 5 V	When brake pedal released: 3.65 to 4.35 V	Reading decreases when brake pedal is depressed
Regulator Pressure Sensor Output	Regulator pressure sensor output / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed

(c) Check the output value of the brake pedal stroke sensor as the brake pedal is depressed.

cardiagn.com

Standard Voltage:

Brake Effort (N (kgf, lbf))	Stroke Sensor (V)	Stroke Sensor2 (V)	Regulator Pressure Sensor Output (V)	Wheel Cylinder Pressure Sensor (V)
100 (10.2, 22.5)	1.10 to 1.80	3.20 to 3.90	1.35 to 2.15	1.17 to 1.97
200 (20.4, 45.0)	1.45 to 2.15	2.85 to 3.55	3.00 to 3.80	2.58 to 3.38

NG ▶ REPLACE BRAKE PEDAL STROKE SENSOR

OK

▼

4.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Perform a road test.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1246/46 and C1364/61) are not output	A
DTCs (C1246/46 and/or C1364/61) are output	B

B ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A ▶ **CHECK FOR INTERMITTENT PROBLEMS**

cardiagn.com

DTC	C1247/47	Stroke Sensor Malfunction
DTC	C1346/71	Stroke Sensor Zero Point Learning Malfunction (Test Mode DTC)
DTC	C1392/48	Stroke Sensor Zero Point Calibration Undone

DESCRIPTION

The stroke sensor inputs the pedal stroke into the skid control ECU.

DTC C1346/71 will be cleared when the brake pedal stroke sensor sends a stroke sensor signal or when Test Mode ends. DTC C1346/71 is output only in Test Mode.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1247/47	211	Sensor supply voltage (VCM1) is 4.75 V or less, or 5.25 V or more for 0.2 seconds or more.	• Open or short in brake pedal stroke sensor power supply circuit • Improperly connected connector, deformation or corrosion of terminals • Brake booster with master cylinder (Skid control ECU)
↑	212	Sensor output voltage 1 (SKS1) is less than 3%, or 97% or more (less than 0.15 V, or 4.85 V or more) of sensor supply voltage (VCM1) for 0.2 seconds or more.	• Open or short in wire harness • Improperly connected connector, deformation or corrosion of terminals • Brake pedal stroke sensor
↑	213	Sensor output voltage 2 (SKS2) is less than 3%, or 97% or more (less than 0.15 V, or 4.85 V or more) of sensor supply voltage (VCSK) for 0.2 seconds or more.	↑
↑	214	Either of the following is detected: 1. Fluctuation of sensor output 1 (SKS1) is out of specification. 2. The difference between the present value and last value of sensor output voltage 1 (SKS1) is 8.5% or more (0.43 V or more) of sensor supply voltage (VCM1) for 0.2 seconds or more.	↑
↑	215	Either of the following is detected: 1. Fluctuation of sensor output 2 (SKS2) is out of specification. 2. The difference between the present value and last value of the sensor output voltage 2 (SKS2) is 8.5% or more (0.43 V or more) of the sensor	↑

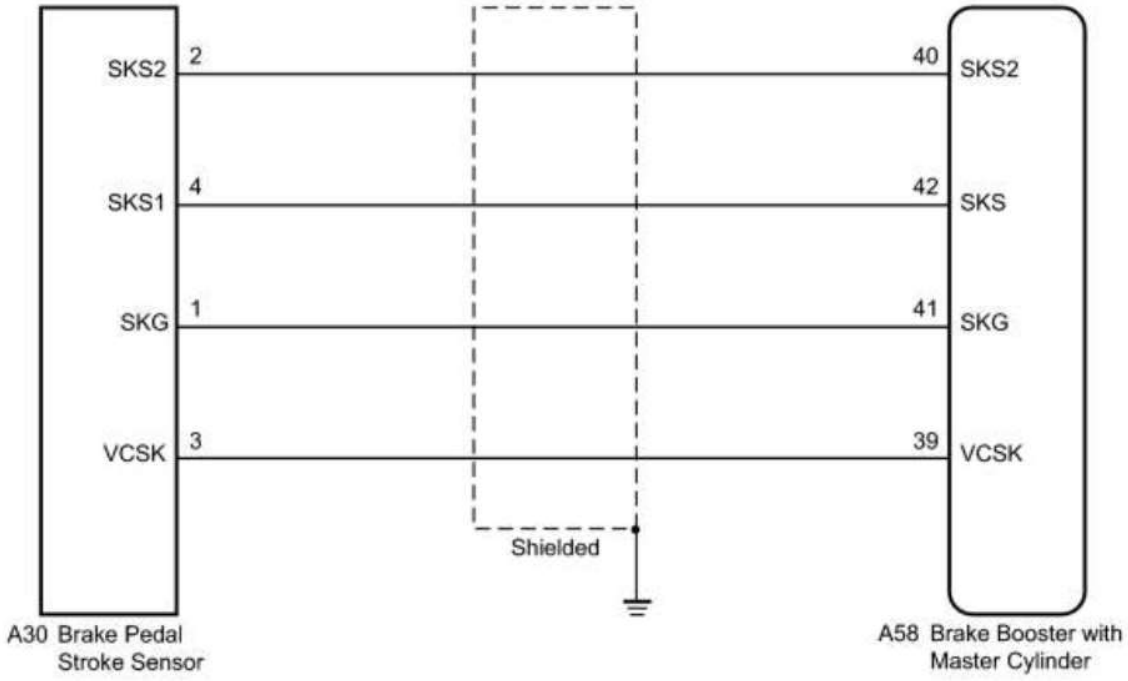
cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
		supply voltage (VCM1) for 0.2 seconds or more.	
↑	216	Either of the following is detected: 1. Brake pedal OFF position (0 point learned value) is out of specification. 2. The 0 point learned value of sensor output 1 (SKS1) is -17% to 25.9% (0.15 to 2.3V) or more than the theoretical value.	↑
↑	217	Either of the following is detected: 1. Brake pedal OFF position (0 point learned value) is out of specification. 2. The 0 point learned value of sensor output 2 (SKS2) is -31.7% to 17% (2.42 to 4.85V) or more than the theoretical value.	↑
↑	218	An excessive difference between the change in sensor output 1 (SKS1) and sensor output 2 (SKS2) is detected for 0.2 seconds or more.	↑
↑	219	Sensor data is invalid for 0.2 seconds or more. (Skid control ECU internal monitor circuit malfunction.)	↑
↑	220	The output from sensor 1 (SKS1) and sensor 2 (SKS2) differ by 15% or more from the theoretical value 5 V.	↑
↑	221	The output variation between sensor 1 (SKS1) and sensor 2 (SKS2) differ by an excessive amount.	↑
↑	222	Sensor data is invalid for 0.2 seconds or more with sensor supply voltage (VCM1) 4.75 V or less, or 5.25 V or more.	↑
↑	223	Sensor data is invalid for 0.2 seconds or more. (Open, short, or noise.)	↑
C1392/48	-	Zero point calibration of stroke sensor is unfinished.	• Brake pedal stroke sensor zero point calibration incomplete (Initialization and calibration of linear solenoid valve incomplete) • Brake booster with master cylinder (Skid control ECU)
C1346/71	-	Detected only during Test Mode.	• Brake pedal stroke sensor

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
			• Brake pedal stroke sensor circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU) or brake pedal stroke sensor, perform initialization and calibration of the linear solenoid valve INFO.

HINT:

Check the condition of each related circuit connector before troubleshooting INFO.

PROCEDURE

1.	CHECK BRAKE PEDAL

cardiagn.com

(a) Check that the brake pedal and the brake pedal stroke sensor are properly installed and that the pedal can be operated normally.

(b) Check and adjust the brake pedal height INFO.

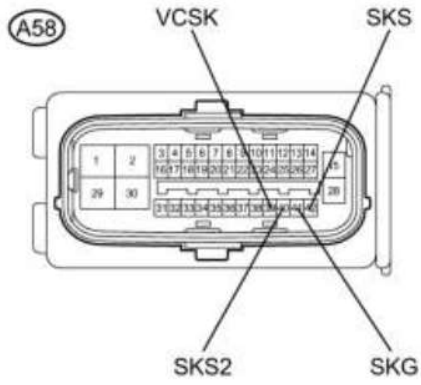
(c) Adjust the brake pedal stroke sensor INFO.

NEXT

▼

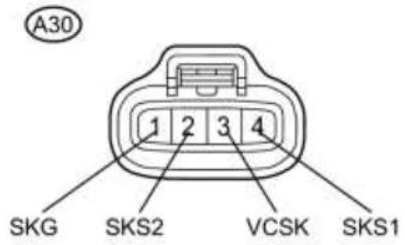
2.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - BRAKE PEDAL STROKE SENSOR)

*1



(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

*2



(b) Disconnect the skid control ECU connector and the brake pedal stroke sensor connector.

(c) Check both the connector case and the terminal for deformation and corrosion.

OK:

No deformation or corrosion.

2010 Toyota Prius Repair Manual

cardiagn.com

(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-39 (VCSK) - A30-3 (VCSK)	Always	Below 1 Ω
A58-39 (VCSK) - Body ground	Always	10 kΩ or higher
A58-41 (SKG) - A30-1 (SKG)	Always	Below 1 Ω
A58-41 (SKG) - Body ground	Always	10 kΩ or higher
A58-42 (SKS) - A30-4 (SKS1)	Always	Below 1 Ω
A58-42 (SKS) - Body ground	Always	10 kΩ or higher
A58-40 (SKS2) - A30-2 (SKS2)	Always	Below 1 Ω
A58-40 (SKS2) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Brake Pedal Stroke Sensor)

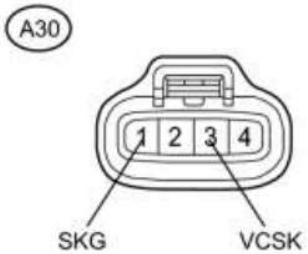
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

▼

3.	INSPECT SKID CONTROL ECU (SENSOR OUTPUT)

*1



(a) Reconnect the skid control ECU connector.

(b) Turn the power switch on (IG).

cardiagn.com

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
A30-3 (VCSK) - A30-1 (SKG)	Power switch on (IG)	4.84 to 5.16 V

Text in Illustration

*1	Front view of wire harness connector (to Brake Pedal Stroke Sensor)

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK ▶ **REPLACE BRAKE PEDAL STROKE SENSOR**

cardiagn.com

DTC	C1249/49	Open in Stop Light Switch Circuit

DESCRIPTION

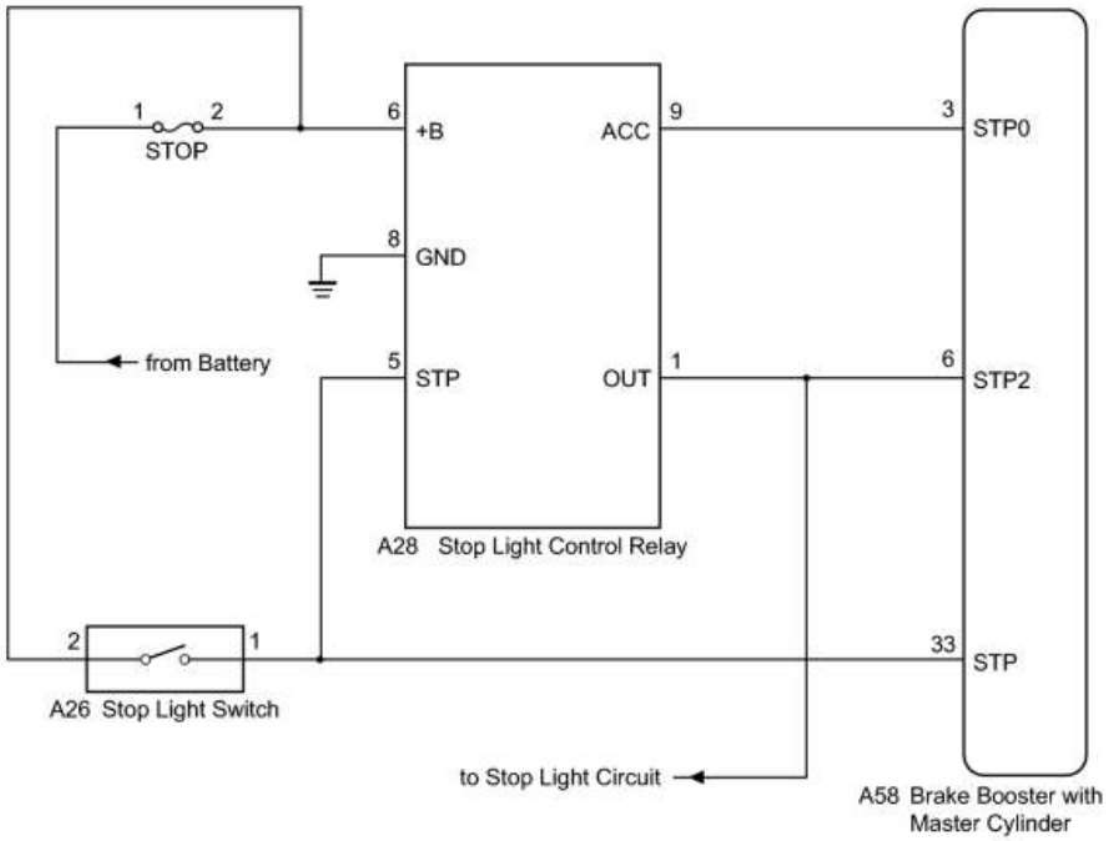
The skid control ECU inputs the stop light switch signal and detects the brake pedal operation status.

The skid control ECU has an open detection circuit, which outputs this DTC if it detects an open in the stop light input line or ground line of the stop light circuit with the stop light switch off (brake pedal not depressed).

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1249/49	231	When IG1 terminal voltage is 9.5 V or more, an open stop light switch circuit continues for 10 seconds or more.	• STOP fuse • Stop light switch • Stop light switch circuit • Brake booster with master cylinder (Skid control ECU)

WIRING DIAGRAM

cardiagn.com



INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK STOP LIGHT OPERATION

(a) Check that the stop lights come on when the brake pedal is depressed, and go off when the brake pedal is released.

OK:

Condition	Illumination Condition
Brake pedal depressed	ON

cardiagn.com

Condition	Illumination Condition
Brake pedal released	OFF

NG ▶ INSPECT STOP FUSE

OK

▼

2.	READ VALUE USING TECHSTREAM (STOP LIGHT SWITCH)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Stop Light SW	Stop light switch / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

(d) Check that the stop light switch display observed on the Techstream changes according to brake pedal operation.

OK:

The Techstream displays ON or OFF according to brake pedal operation.

NG ▶ CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - STOP LIGHT SWITCH)

OK

▼

3.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Depress the brake pedal several times to test the stop light circuit.

(e) Check if the same DTC is recorded INFO.

cardiagn.com

Result:

Result	Proceed to
DTC (C1249/49) is not output	A
DTC (C1249/49) is output	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A **CHECK FOR INTERMITTENT PROBLEMS**

4.	INSPECT STOP FUSE

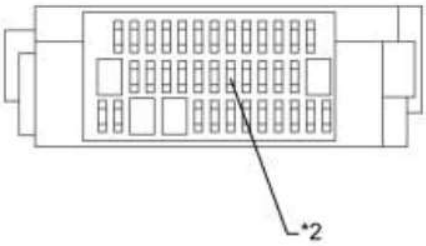
(a) Remove the STOP fuse from the main body ECU (instrument panel junction block).

(b) Measure the resistance according to the value(s) in the table below.

*1

Standard Resistance:

Tester Connection	Condition	Specified Condition
STOP (10 A) fuse	Always	Below 1 Ω



Text in Illustration

*1	Main Body ECU (Instrument Panel Junction Block)
*2	STOP Fuse

H

NG REPLACE STOP FUSE

OK

5.	INSPECT STOP LIGHT SWITCH (POWER SOURCE TERMINAL)

(a) Install the STOP fuse.

(b) Make sure that there is no looseness at the locking part and the connecting part of the connector.

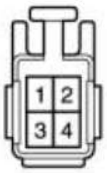
(c) Disconnect the stop light switch connector.

(d) Measure the voltage according to the value(s) in the table below.

cardiagn.com

*1

A26



Standard Voltage:

Tester Connection	Condition	Specified Condition
A26-2 - Body ground	Always	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Stop Light Switch)

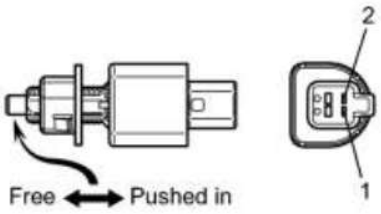
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (POWER SOURCE CIRCUIT)

OK

▼

6.	INSPECT STOP LIGHT SWITCH

Component without harness connected:
(Stop Light Switch)



(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch pin free	Below 1 Ω
1 - 2	Switch pin pushed in	10 kΩ or higher

N

NG ▶ REPLACE STOP LIGHT SWITCH

OK

▼

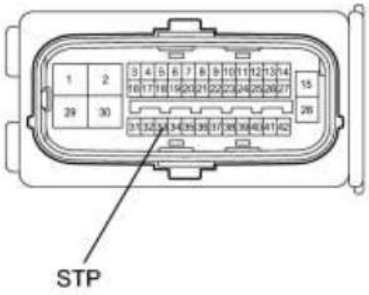
7.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - STOP LIGHT SWITCH)

(a) Make sure that there is no looseness at the locking part and the connecting part of the connector.

cardiagn.com

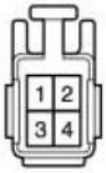
*1

A58



*2

A26



(b) Disconnect the skid control ECU connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-33 (STP) - A26-1	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Stop Light Switch)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

cardiagn.com

OK

8.	RECONFIRM DTC

(a) Reconnect the skid control ECU connector and the stop light switch connector.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Depress the brake pedal several times to test the stop light circuit.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C249/49) is not output	A
DTC (C1249/49) is output	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A **INSPECT LIGHTING SYSTEM (STOP LIGHT CIRCUIT)**

9.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - STOP LIGHT SWITCH)

(a) Turn the power switch off.

(b) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

(c) Disconnect the skid control ECU connector and the stop light switch connector.

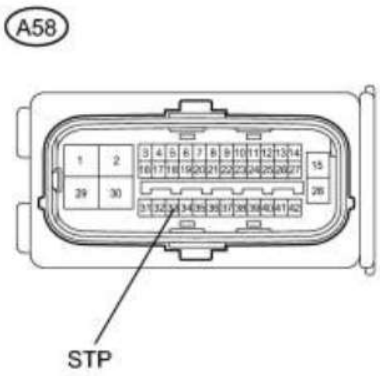
(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-33 (STP) - A26-1	Always	Below 1 Ω

cardiagn.com

*1



*2



Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Stop Light Switch)

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

DTC	C1252/52	Brake Booster Pump Motor on Time Abnormally Long
DTC	C1253/53	Pump Motor Relay Malfunction

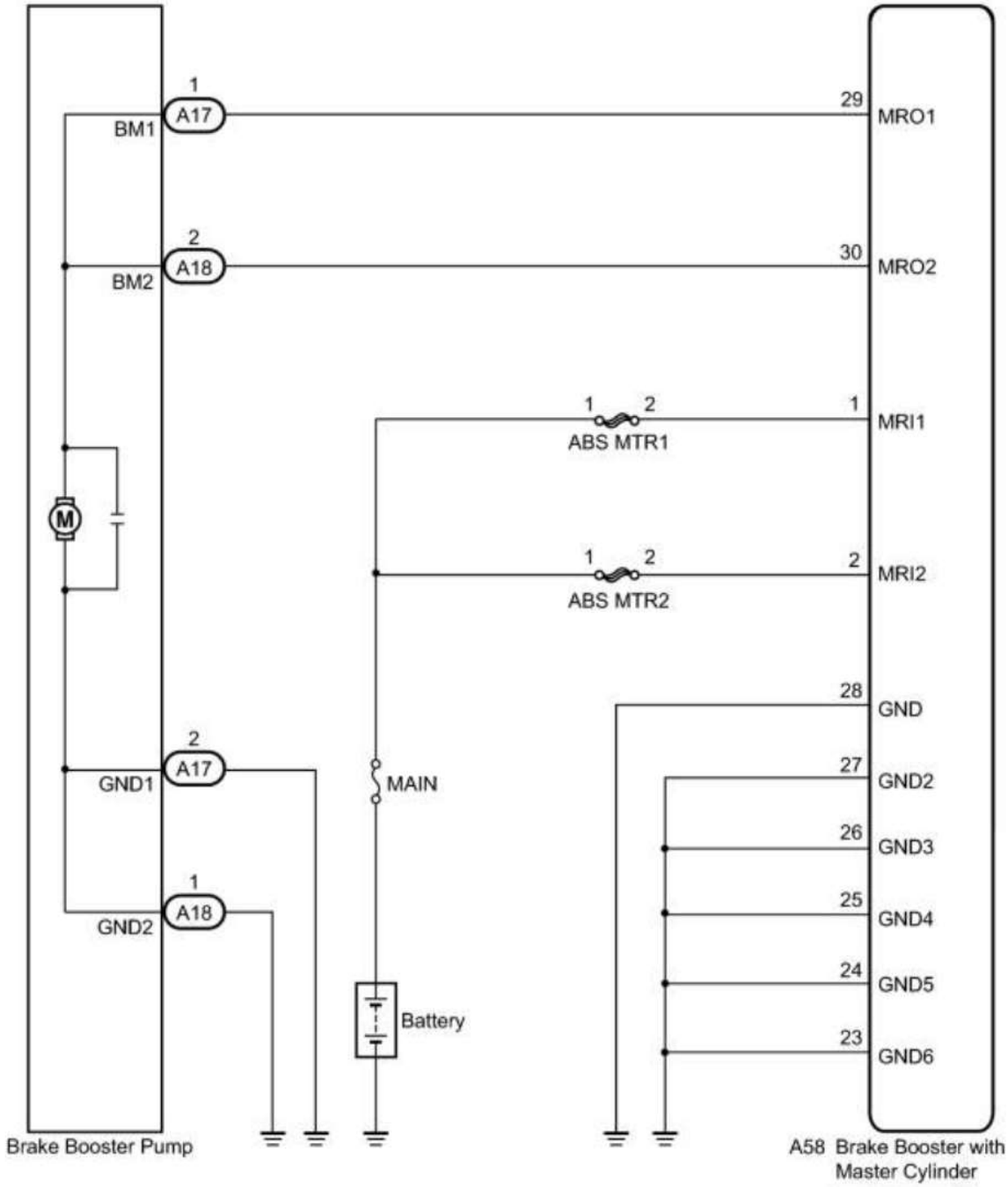
DESCRIPTION

The skid control ECU detects decreases in the accumulator pressure according to the data from the accumulator pressure sensor, and then starts and stops the pump motor by operating the motor relay.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1252/52	311	The pump motor is operating continuously for 178 seconds or more. (When relay malfunction is 98 seconds or more.)	• Short in motor circuit or motor monitor circuit • Motor relay stuck • Accumulator pressure sensor malfunction in brake actuator • Brake booster with master cylinder (Skid control ECU)
C1253/53	321	With the IG1 terminal voltage 9.5 V or more, the motor drive monitor remains off for 0.2 seconds or more after a motor drive on request.	• Open in motor circuit or motor monitor circuit • Brake booster with master cylinder (Skid control ECU)
↑	322	The motor drive monitor remains on for 2 seconds or more after a motor drive off request.	• Short in motor circuit or motor monitor circuit • Brake booster with master cylinder (Skid control ECU)
↑	323	The skid control ECU internal motor drive logical inconsistency continues for 2 seconds or more.	Brake booster with master cylinder (Skid control ECU)
↑	324	An open circuit in both skid control ECU internal motor relays 1 and 2.	• Open in motor circuit or motor monitor circuit • Brake booster with master cylinder (Skid control ECU)
↑	325	An open circuit in both skid control ECU internal motor relays 1 and 3.	↑
↑	326	An open circuit in both skid control ECU internal motor relays 2 and 3.	↑
↑	327	An open circuit in skid control ECU internal motor relay 1.	↑
↑	328	An open circuit in skid control ECU internal motor relay 2.	↑
↑	329	An open circuit in skid control ECU internal motor relay 3.	↑

cardiagn.com

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

cardiagn.com

When replacing the brake booster with master cylinder (skid control ECU or brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	PERFORM ACTIVE TEST USING TECHSTREAM (ABS MOTOR RELAY)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Active Test on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
ECB* Motor Relay	ABS motor relay	Relay ON/OFF	-

*: Electronically Controlled Brake System

(d) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ECB* Motor Relay	ABS motor relay / ON or OFF	ON: Relay on OFF: Relay off	-

*: Electronically Controlled Brake System

(e) Check the operating condition of the ABS motor relay when operating it with the Techstream.

Result:

Result	Proceed to
ABS motor relay in the Data List turns ON/OFF using the Active Test	A
ABS motor relay in the Data List does not change using the Active Test	B

B ▶ INSPECT ABS MTR FUSES

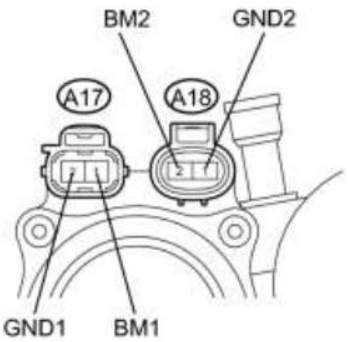
A

▼

2.	INSPECT BRAKE BOOSTER PUMP

cardiagn.com

*1



H

(a) Turn the power switch off.

(b) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

(c) Disconnect the brake booster pump connectors.

(d) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A17-1 (BM1) - A17-2 (GND1)	Always	Below 10 Ω
A18-2 (BM2) - A18-1 (GND2)	Always	Below 10 Ω
A17-1 (BM1) - A18-2 (BM2)	Always	Below 1 Ω
A17-2 (GND1) - A18-1 (GND2)	Always	Below 1 Ω

Text in Illustration

*1	Component without harness connected (Brake Booster Pump)

NG ▶ REPLACE BRAKE BOOSTER PUMP

OK

▼

3.	INSPECT BRAKE BOOSTER PUMP (GND TERMINAL)

(a) Measure the resistance according to the value(s) in the table below.

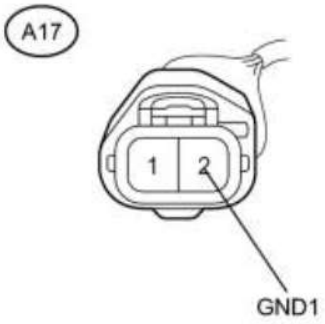
Standard Resistance:

Tester Connection	Condition	Specified Condition

cardiagn.com

A17-2 (GND1) - Body ground	Always	Below 1 Ω
A18-1 (GND2) - Body ground	Always	Below 1 Ω

*1





Text in Illustration

*1	Front view of wire harness connector (to Brake Booster Pump)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)

OK

▼

4.	READ VALUE USING TECHSTREAM (ACCUMULATOR PRESSURE SENSOR)

(a) Reconnect the brake booster pump connectors.

(b) Connect the Techstream to the DLC3.

(c) Turn the power switch on (IG).

(d) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Accumulator Sensor	Accumulator	Specified value: 2.9 to 4.2 V	When brake fluid is stored in the accumulator: Accumulator pressure changes in accordance with

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	pressure sensor / Min.: 0 V, Max.: 5 V		volume of fluid stored in the accumulator

(e) Wait for 30 seconds without depressing the brake pedal.

(f) Check that the accumulator pressure sensor output values change is within the specified range.

OK:

Accumulator pressure sensor output values change is within 0.55 V.

NG ▶ PERFORM ACTIVE TEST USING TECHSTREAM (SOLENOID VALVE)

OK

▼

5.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (IG).

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1252/52 and C1253/53) are not output	A
DTCs (C1252/52 and/or C1253/53) are output	B

B ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A ▶ **CHECK FOR INTERMITTENT PROBLEMS**

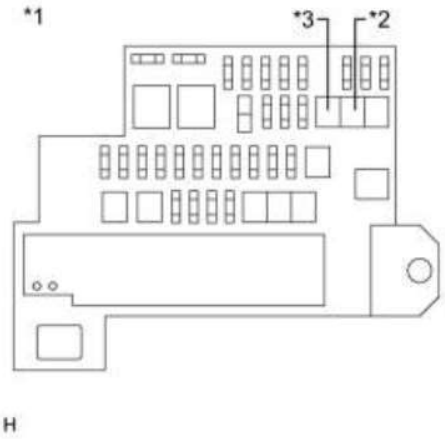
6.	INSPECT ABS MTR FUSES

(a) Turn the power switch off.

(b) Remove the ABS MTR fuses.

(c) Measure the resistance according to the value(s) in the table below.

cardiagn.com



Standard Resistance:

Tester Connection	Condition	Specified Condition
ABS MTR1 (30 A) fuse	Always	Below 1 Ω
ABS MTR2 (30 A) fuse	Always	Below 1 Ω

Text in Illustration

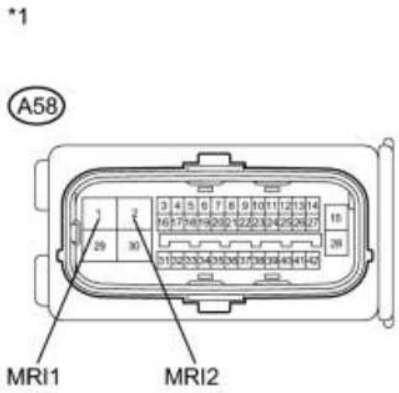
*1	Engine Room Relay Block
*2	ABS MTR1 Fuse
*3	ABS MTR2 Fuse

NG ▶ REPLACE ABS MTR FUSES

OK

▼

7.	INSPECT SKID CONTROL ECU (MRI TERMINAL)



(a) Install the ABS MTR fuses.

(b) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(c) Disconnect the skid control ECU connector.

(d) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
A58-1 (MRI1) - Body ground	Always	11 to 14 V
A58-2 (MRI2) - Body ground	Always	11 to 14 V

cardiagn.com

Text in Illustration

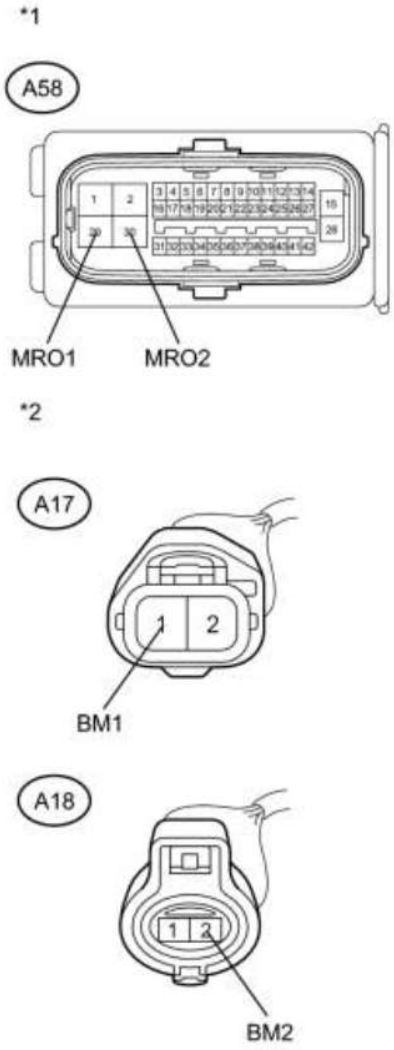
*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (MRI CIRCUIT)

OK

▼

8.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - BRAKE BOOSTER PUMP)



(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

(b) Disconnect the brake booster pump connectors.

(c) Measure the resistance according to the value(s) in the table below.

cardiagn.com

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-29 (MRO1) - A17-1 (BM1)	Always	Below 1 Ω
A58-29 (MRO1) - Body ground	Always	10 kΩ or higher
A58-30 (MRO2) - A18-2 (BM2)	Always	Below 1 Ω
A58-30 (MRO2) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Brake Booster Pump)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

9.	PERFORM ACTIVE TEST USING TECHSTREAM (SOLENOID VALVE)

(a) Select the Active Test on the Techstream INFO.

HINT:

The Active Test can be performed when the following conditions are met.

- ABS main relay is on.
- Park (P) selected.
- Parking brake is applied.
- Vehicle speed is 0 km/h (0 mph).

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
ECB* Solenoid (SMC/SRC/SCC)	Switching solenoid valve (SMC/SRC/SCC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard

*: Electronically Controlled Brake System

(b) Perform the Active Test of the solenoid using the Techstream.

(c) Select the Data List on the Techstream INFO.

cardiagn.com

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed

(d) Check that the output value of wheel cylinder does not increase.

OK:

The output value of wheel cylinder does not increase.

HINT:

If any output value increases, there may be brake fluid leaks in the brake actuator.

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK ▶ **REPLACE BRAKE BOOSTER PUMP**

cardiagn.com

DTC	C1256/56	Accumulator Low Pressure

DESCRIPTION

The accumulator pressure sensor is built into the actuator and detects the accumulator pressure.

The skid control ECU turns on the brake warning light / red (malfunction) and brake warning light / yellow (minor malfunction), and sounds the skid control buzzer if it senses a decrease in the accumulator pressure.

DTC C1256/56 may be output if the accumulator pressure drops due to frequent braking (this is not a malfunction).

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1256/56	341	Significant drop in accumulator pressure continues. (DTCs will be stored and the buzzer will operate when either condition is met.)	• Accumulator pressure dropped due to frequent brake pedal operation (not a malfunction) • Pump motor malfunction • Accumulator deterioration • Accumulator pressure sensor • Supply voltage reduced

WIRING DIAGRAM

Refer to DTCs C1252/52 and C1253/53 INFO.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

HINT:

When C1202/68, C1241/41, C1252/52, C1253/53 and/or C1391/69 are output together with C1256/56, inspect and repair the trouble areas indicated by C1202/68, C1241/41, C1252/52, C1253/53 and/or C1391/69 first INFO, INFO, INFO, or INFO).

PROCEDURE

1.	BRAKE PROBLEM CHECK

(a) Ask the customer if frequent braking was performed while the brake warning light / yellow (minor malfunction) was on.

cardiagn.com

OK:

Result	Proceed to
Frequent braking was not performed	A
Frequent braking was performed	B

HINT:

This DTC is output even if the accumulator pressure drops only temporarily due to frequent braking.

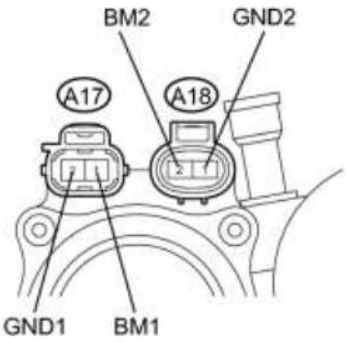
B ▶ END

A

▼

2.	INSPECT BRAKE BOOSTER PUMP

*1



H

(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

(b) Disconnect the brake booster pump connectors.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A17-1 (BM1) - A17-2 (GND1)	Always	Below 10 Ω
A18-2 (BM2) - A18-1 (GND2)	Always	Below 10 Ω
A17-1 (BM1) - A18-2 (BM2)	Always	Below 1 Ω
A17-2 (GND1) - A18-1 (GND2)	Always	Below 1 Ω

Text in Illustration

cardiagn.com

*1	Component without harness connected (Brake Booster Pump)

NG ▶ REPLACE BRAKE BOOSTER PUMP

OK

▼

3.	READ VALUE USING TECHSTREAM (ACCUMULATOR PRESSURE SENSOR)

(a) Reconnect the brake booster pump connectors.

(b) Connect the Techstream to the DLC3.

(c) Turn the power switch on (IG).

(d) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Accumulator Sensor	Accumulator pressure sensor / Min.: 0 V, Max.: 5 V	Specified value: 2.9 to 4.2 V	When brake fluid is stored in the accumulator: Accumulator pressure changes in accordance with volume of fluid stored in the accumulator

(e) Wait for 30 seconds without depressing the brake pedal.

(f) Check that the accumulator pressure sensor output values change is within the specified range.

OK:

Accumulator pressure sensor output values change is within 0.55 V.

NG ▶ PERFORM ACTIVE TEST USING TECHSTREAM (SOLENOID VALVE)

OK ▶ **CHECK FOR INTERMITTENT PROBLEMS**

4.	PERFORM ACTIVE TEST USING TECHSTREAM (SOLENOID VALVE)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

(c) Turn the power switch on (IG).

cardiagn.com

(d) Select the Active Test on the Techstream INFO.

HINT:

The Active Test can be performed when the following conditions are met.

- ABS main relay is on.
- Park (P) selected.
- Parking brake is applied.
- Vehicle speed is 0 km/h (0 mph).

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
ECB* Solenoid (SMC/SRC/SCC)	Switching solenoid valve (SMC/SRC/SCC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard

*: Electronically Controlled Brake System

(e) Perform the Active Test of the solenoid using the Techstream.

(f) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed

(g) Check that the output value of wheel cylinder does not increase.

OK:

The output value of wheel cylinder does not increase.

HINT:

If any output value increases, there may be brake fluid leaks in the brake actuator.

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK ▶ **REPLACE BRAKE BOOSTER PUMP**

cardiagn.com

DTC	C1257/57	Power Supply Drive Circuit

DESCRIPTION

The skid control ECU detects a drop in accumulator pressure according to the signals from the accumulator pressure sensor, then operates and stops the motor relay as well as the pump motor.

The skid control ECU troubleshoots the built-in motor relay drive circuit, and outputs this DTC when a malfunction is detected.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1257/57	361	While accumulator pressure falls below hard pump ON pressure, the hard drive circuit does not operate for 1 second or more.	Brake booster with master cylinder (Skid control ECU)
↑	362	When hard driving, one of the 3 built-in motor relays does not operate for 0.2 seconds or more.	↑

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

HINT:

When C1241/41, C1242/42 and/or C1253/53 are output together with C1257/57, inspect and repair the trouble areas indicated by C1241/41, C1242/42 and/or C1253/53 first INFO or INFO).

PROCEDURE

1.	REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

(a) Replace the brake booster with master cylinder (skid control ECU) INFO.

NEXT ▶ **END**

cardiagn.com

DTC	C1259/58	HV System Regenerative Malfunction
DTC	C1310/51	Malfunction in HV system

DESCRIPTION

The skid control ECU communicates with the power management control ECU and controls braking force according to the motor's regenerative force.

The skid control ECU sends Enhanced-VSC signals to the power management control ECU and inputs operating signals from the power management control ECU.

The skid control ECU uses CAN communication for communication with the power management control ECU. If a communication malfunction is memorized, the skid control ECU prohibits Enhanced-VSC operation and a part of electronically controlled brake system control by fail-safe function.

If the signals from the power management control ECU returned to normal, the warning light will go off and the DTCs C1259/58 and C1310/51 will be cleared.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1259/58	-	The regeneration malfunction signal is input for at least 0.036 seconds when IG2 terminal voltage is 9.5 V or more for at least 2 seconds and communication with power management control ECU is valid.	Power management control ECU (Hybrid vehicle control ECU)
C1310/51	-	The internal malfunction signal is input for at least 0.072 seconds when IG2 terminal voltage is 10.5 V or more for at least 2 seconds and communication with power management control ECU is valid.	Power management control ECU (Hybrid vehicle control ECU)

HINT:

This DTC will be output from the skid control ECU when the power management control ECU sends a malfunction signal to the skid control ECU.

INSPECTION PROCEDURE

PROCEDURE

1.	CHECK HYBRID CONTROL SYSTEM

(a) Check if the hybrid control system DTC is output INFO.

Result:

Result	Proceed to

cardiagn.com

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT HYBRID CONTROL SYSTEM

A ▶ **REPLACE POWER MANAGEMENT CONTROL ECU**

cardiagn.com

DTC	C1290/66	Steering Angle Sensor Zero Point Malfunction

DESCRIPTION

The skid control ECU acquires the steering angle sensor zero point every time the power switch is turned on (READY) and the vehicle is driven at 35 km/h (22 mph) or more for approximately 5 seconds. The ECU also stores the previous zero point.

If the front wheel alignment or the steering wheel position is adjusted without disconnecting the cable from the negative (-) battery terminal, or if yaw rate and acceleration sensor zero point is not acquired after the adjustments have been completed, the skid control ECU detects the difference between the previous zero point and newly acquired zero point and outputs this DTC to indicate a poor adjustment.

The warning of the steering angle sensor zero point malfunction will be cancelled by turning the power switch off.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1290/66	751	The steering angle sensor 0 point is judged as an abnormal value.	• Yaw rate and acceleration sensor zero point calibration incomplete • Poor adjustment of the center position of the steering wheel • Poor adjustment of front wheel alignment

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	PERFORM ZERO POINT CALIBRATION OF YAW RATE AND ACCELERATION SENSOR

(a) Perform zero point calibration of the yaw rate and acceleration sensor INFO.

HINT:

- When the stored zero point of the yaw rate and acceleration sensor is cleared, steering angle sensor zero point will also be cleared.
- If the zero point and output value of the yaw rate and acceleration sensor and the output value of the speed sensors are not normal, steering angle sensor zero point cannot be acquired normally even if the vehicle is driven straight ahead at 35 km/h (22 mph) or more.

cardiagn.com

NEXT

2.	CHECK STEERING ANGLE SENSOR ZERO POINT CALIBRATION

(a) Turn the power switch off.

(b) Turn the power switch on (READY).

(c) Drive the vehicle straight ahead at 35 km/h (22 mph) or more for at least 5 seconds.

(d) Check that the steering wheel is centered correctly while driving straight ahead.

HINT:

If front wheel alignment and steering position are adjusted as a result of an off-center of the steering wheel, acquire yaw rate and acceleration sensor zero point again after the adjustments are completed.

OK:

The steering wheel is centered correctly.

NG ADJUST FRONT WHEEL ALIGNMENT OR STEERING POSITION

OK

3.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Drive the vehicle and turn the steering wheel to the right and left at a speed of 35 km/h (22 mph) or more.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1290/66) is not output	A
DTC (C1290/66) is output	B

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

cardiagn.com



cardiagn.com

DTC	C1300	Skid Control ECU Malfunction

DESCRIPTION

The skid control ECU outputs this DTC if malfunctions are found in the circuit inside the ECU by self diagnosis.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1300	-	Skid control ECU internal malfunction.	Brake booster with master cylinder (Skid control ECU)

INSPECTION PROCEDURE

PROCEDURE

1.	REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

(a) Replace the brake booster with master cylinder (skid control ECU) INFO.

(b) Perform initialization and calibration of the linear solenoid valve INFO.

(c) Perform the zero point calibration of the yaw rate and acceleration sensor INFO.

(d) Perform the sensor check in the Test Mode procedure INFO.

NEXT **END**

cardiagn.com

DTC	C1311/11	Open in Main Relay 1 Circuit
DTC	C1312/12	Short in Main Relay 1 Circuit

DESCRIPTION

The ABS main relay supplies power to the changeover solenoid and the linear solenoid.

The ABS main relay remains on for approximately 2 minutes after the power switch is turned off and the input of brake pedal operation signals stops, and supplies power to the system to keep it ready to operate.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1311/11	1	Either of the following is detected: 1. When the power switch is on (READY): The ABS main relay contact is not turned ON (BS terminal voltage 3.5 V or more) for 0.2 seconds or more when ABS main relay ON is requested while IG1 terminal voltage is 9.5 V or more. 2. When the power switch is off: The ABS main relay contact is not turned ON (BS terminal voltage 3.5 V or more) for 0.2 seconds or more when ABS main relay ON is requested.	• Open or short in ABS main relay circuit • Brake booster with master cylinder (Skid control ECU)
C1312/12	2	The ABS main relay contact is turned ON (BS terminal voltage 3.5 V or more) for 4.5 seconds or more when ABS main relay OFF is requested from the ECU.	• Short in ABS main relay circuit • ABS main relay internal stuck • Brake booster with master cylinder (Skid control ECU)

WIRING DIAGRAM

Refer to DTCs C1241/41 and C1242/42 INFO.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

cardiagn.com

PROCEDURE

1.	PERFORM ACTIVE TEST USING TECHSTREAM (ABS MAIN RELAY)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Active Test on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
ECB* Main Relay	ABS main relay	Relay ON/OFF	-

*: Electronically Controlled Brake System

(d) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ECB* Main Relay	ABS main relay / ON or OFF	ON: Relay on OFF: Relay off	-

*: Electronically Controlled Brake System

(e) Check the operating condition of the ABS main relay when operating it with the Techstream.

Result:

Result	Proceed to
ABS main relay in the Data List turns ON/OFF using the Active Test	A
ABS main relay in the Data List does not change using the Active Test	B

B ▶ INSPECT ABS MAIN FUSES

A

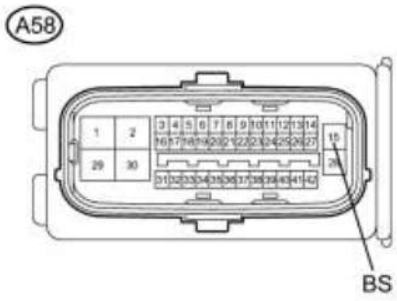
▼

2.	INSPECT SKID CONTROL ECU (BS TERMINAL)

(a) Turn the power switch off.

cardiagn.com

*1



(b) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(c) Disconnect the skid control ECU connector.

(d) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
A58-15 (BS) - Body ground	Always	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (BS CIRCUIT)

OK

▼

3.	RECONFIRM DTC

(a) Reconnect the skid control ECU connector.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (IG).

(d) Check if the same DTC is recorded INFO.

Result:

cardiagn.com

Result	Proceed to
DTCs (C1311/11and C1312/12) are not output	A
DTCs (C1311/11 and/or C1312/12) are output	B

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A **CHECK FOR INTERMITTENT PROBLEMS**

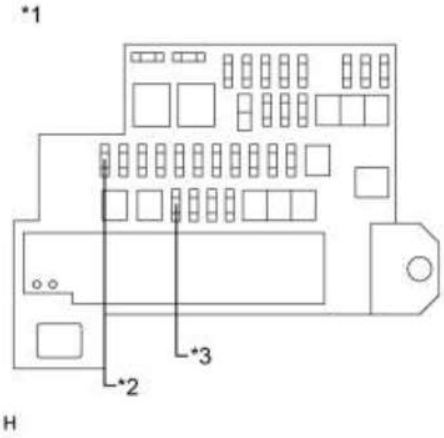
4.	INSPECT ABS MAIN FUSES

(a) Turn the power switch off.

(b) Remove the ABS MAIN fuses from the engine room relay block.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



H

Tester Connection	Condition	Specified Condition
ABS MAIN NO. 1 (20 A) fuse	Always	Below 1 Ω
ABS MAIN NO. 2 (7.5 A) fuse	Always	Below 1 Ω

Text in Illustration

*1	Engine Room Relay Block
*2	ABS MAIN NO. 1 Fuse
*3	ABS MAIN NO. 2 Fuse

NG REPLACE ABS MAIN FUSES

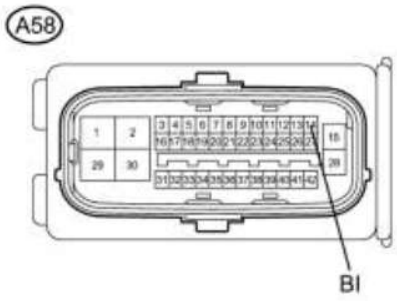
OK

5.	INSPECT SKID CONTROL ECU (BI TERMINAL)

(a) Install the ABS MAIN fuses.

cardiagn.com

*1



(b) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(c) Disconnect the skid control ECU connector.

(d) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
A58-14 (BI) - Body ground	Always	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (BI CIRCUIT)

OK

▼

6.	INSPECT SKID CONTROL ECU (BS TERMINAL)

(a) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

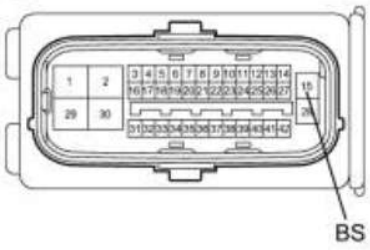
Tester Connection	Condition	Specified Condition
A58-15 (BS) - Body ground	Always	11 to 14 V

Text in Illustration

cardiagn.com

*1

A58



*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (BS CIRCUIT)

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

DTC	C1345/66	Linear Solenoid Valve Offset Learning Undone
DTC	C1368/67	Linear Solenoid Valve Offset Malfunction

DESCRIPTION

The skid control ECU stores and corrects the individual differences in the stroke sensor, actuator solenoids, and stroke simulator solenoid. Perform initialization of the linear solenoid valve and calibration if any of these parts is replaced.

The skid control ECU receives park (P) signal from the power management control ECU through the CAN communication system.

The DTCs are cleared when the linear valve offset learning results are normal.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1345/66	-	Linear valve offset learning undone.	Perform linear valve offset learning and check for DTCs. If no DTCs are output again, the valve is normal.
C1368/67	-	Offset learned value out of specification.	• Perform linear valve offset learning and check for DTCs. If no DTCs are output again, the valve is normal. • Brake booster with master cylinder (Brake actuator)

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

HINT:

When C1451/72 is output together with C1345/66 and/or C1368/67, inspect and repair the trouble areas indicated by C1451/72 first INFO.

PROCEDURE

1.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch off.

(c) Turn the power switch on (IG).

cardiagn.com

(d) Check that the DTCs (electronically controlled brake system and hybrid control system) are recorded INFO for electronically controlled brake system, or INFO for hybrid control system).

Result:

Result	Proceed to
DTCs (except C1345/66, C1368/67 and hybrid control system DTC) are not output	A
Hybrid control system DTC is output	B
DTCs (except C1345/66 and/or C1368/67) are output	C

HINT:

Before carrying out Perform Initialization and Calibration of the Linear Solenoid Valve, C1203/95 will output.

C ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

B ▶ INSPECT HYBRID CONTROL SYSTEM

A

▼

2.	PERFORM INITIALIZATION AND CALIBRATION OF LINEAR SOLENOID VALVE

(a) Turn the power switch off.

(b) Perform initialization and calibration of the linear solenoid valve INFO.

NEXT

▼

3.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (IG).

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1345/66 and C1368/67) are not output	A
DTCs (C1345/66 and/or C1368/67) are output	B

cardiagn.com

B ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A ▶ **END**

cardiagn.com

DTC	C1365/54	Accumulator Pressure Sensor Malfunction

DESCRIPTION

The accumulator pressure sensor is built into the brake actuator.

The skid control ECU detects the accumulator pressure from the data sent from the accumulator pressure sensor, and then runs and stops the pump motor by operating the motor relay.

DTCs may be output if the accumulator pressure drops due to frequent braking (this is not a malfunction).

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1365/54	331	Sensor supply voltage (VACC) is 4.54 V or less, or 5.46 V or more for 0.8 seconds or more.	Brake booster with master cylinder (Skid control ECU or brake actuator)
↑	332	Accumulator pressure sensor output voltage (PACC) is less than 8%, or 88% or more of sensor supply voltage for 0.8 seconds or more (less than 0.4 V, or 4.4 V or more for 0.8 seconds or more).	↑
↑	333	Fluctuation of sensor output is out of specification (the difference between the present value and last value is 7.5 MPa) for 0.8 seconds or more.	↑
↑	334	With the vehicle driven at 6 km/h (4 mph) or more and output value of the accumulator pressure sensor 19.7 MPa or less, the pump motor does not operate for 12 seconds or more.	↑

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU or brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	READ VALUE USING TECHSTREAM (ACCUMULATOR PRESSURE SENSOR)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

cardiagn.com

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Accumulator Sensor	Accumulator pressure sensor / Min.: 0 V, Max.: 5 V	Specified value: 2.9 to 4.2 V	When brake fluid is stored in the accumulator: Accumulator pressure changes in accordance with volume of fluid stored in the accumulator

(d) Wait for 30 seconds without depressing the brake pedal.

(e) Check that the accumulator pressure sensor output values change is within the specified range.

OK:

Accumulator pressure sensor output values change is within 0.55 V.

NG ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

OK ▼

2.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Perform a road test.

(d) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1365/54) is not output	A
DTC (C1365/54) is output	B

B ▶ REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A ▶ **CHECK FOR INTERMITTENT PROBLEMS**

cardiagn.com

DTC	C1380/64	Stop Light Control Relay Malfunction

DESCRIPTION

Upon receiving the dynamic radar cruise control system operating signal from the skid control ECU, the relay contact turns on and the stop light comes on.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1380/64	761	When the voltage at the BI terminal is 8.9 V or more and the stop light control relay drive output (STP0) is ON, a signal is not input to the STP2 terminal for 2 seconds or more.	• Stop light switch • Stop light switch circuit • Stop light control relay • Stop light control relay circuit • Brake booster with master cylinder (Skid control ECU)
↑	762	When the voltage at the BI terminal is 8.9 V or more and the stop light control relay drive output (STP0) is OFF, the signal at the STP terminal is different from the input signal at the STP2 for 5 seconds or more.	• Stop light switch • Stop light switch circuit • Stop light control relay • Stop light control relay circuit • Brake booster with master cylinder (Skid control ECU)

WIRING DIAGRAM

Refer to DTC C1249/49 INFO.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

HINT:

When C1249/49 is output together with C1380/64, inspect and repair the trouble areas indicated by C1249/49 first INFO.

cardiagn.com

PROCEDURE

1.	CHECK STOP LIGHT OPERATION

(a) Check that the stop lights come on when the brake pedal is depressed and go off when the brake pedal is released.

OK:

Condition	Illumination Condition
Brake pedal depressed	ON
Brake pedal released	OFF

NG ▶ INSPECT STOP LIGHT CIRCUIT

OK

▼

2.	READ VALUE USING TECHSTREAM (STOP LIGHT SWITCH)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Stop Light SW	Stop light switch / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

(d) Check that the stop light switch condition observed on the Techstream changes according to brake pedal operation.

OK:

The Techstream displays ON or OFF according to brake pedal operation.

NG ▶ INSPECT SKID CONTROL ECU (STP TERMINAL)

OK

▼

3.	PERFORM ACTIVE TEST USING TECHSTREAM (STOP LIGHT CONTROL RELAY)

cardiagn.com

(a) Select the Active Test on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
Stop Light Relay	Stop light control relay	Relay ON/OFF	Stop lights come on

(b) Perform the Active Test of the stop light control relay using the Techstream.

(c) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Stop Light Relay Output	Stop light control relay output / ON or OFF	ON: Relay output on OFF: Relay output off	-

(d) Check for stop light control relay operation using Data List and stop light operation by performing an Active Test.

Result:

Result	Proceed to
Data List content and stop light operation are normal	A
Data List content is normal but stop lights do not turn on or off	B

B ▶ INSPECT STOP LIGHT CONTROL RELAY

A

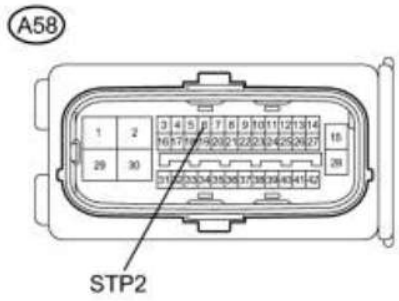
▼

4.	INSPECT SKID CONTROL ECU (STP2 TERMINAL)

(a) Turn the power switch off.

cardiagn.com

*1



(b) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

(c) Disconnect the skid control ECU connector.

(d) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
A58-6 (STP2) - Body ground	Stop light switch ON (Brake pedal depressed)	11 to 14 V
A58-6 (STP2) - Body ground	Stop light switch OFF (Brake pedal released)	Below 1.5 V

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (STP2 CIRCUIT)

OK

▼

5.	RECONFIRM DTC

(a) Reconnect the skid control ECU connector.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Perform a road test.

cardiagn.com

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1380/64) is not output	A
DTC (C1380/64) is output	B

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A **CHECK FOR INTERMITTENT PROBLEMS**

6.	INSPECT STOP LIGHT CONTROL RELAY

(a) Inspect the stop light control relay INFO.

OK:

The stop light control relay is normal.

NG REPLACE STOP LIGHT CONTROL RELAY

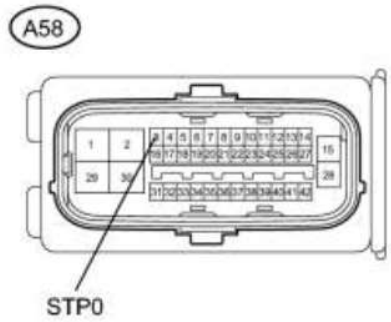
OK

7.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - STOP LIGHT CONTROL RELAY)

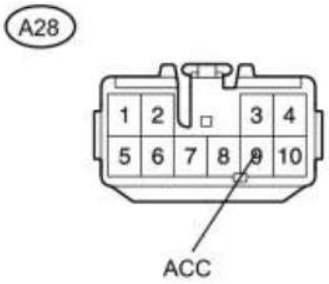
(a) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

cardiagn.com

*1



*2



(b) Disconnect the skid control ECU connector and the stop light control relay connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-3 (STP0) - A28-9 (ACC)	Always	Below 1 Ω
A58-3 (STP0) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Stop Light Control Relay)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

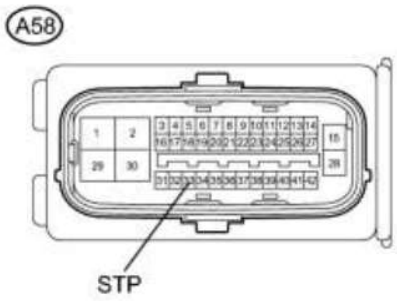
2010 Toyota Prius Repair Manual

cardiagn.com

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

8.	INSPECT SKID CONTROL ECU (STP TERMINAL)

*1



(a) Turn the power switch off.

(b) Make sure that there is no looseness at the locking part and the connecting part of the connector.

(c) Disconnect the skid control ECU connector.

(d) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
A58-33 (STP) - Body ground	Stop light switch ON (Brake pedal depressed)	11 to 14 V
A58-33 (STP) - Body ground	Stop light switch OFF (Brake pedal released)	Below 1.5 V

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (STP CIRCUIT)

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

DTC	C1391/69	Accumulator Leak Malfunction

DESCRIPTION

The DTC is stored if internal or external brake fluid leaks are detected due to improper sealing in the brake actuator or brake booster pump. Internal leaks are suspected if the pump motor operates frequently without braking.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1391/69	351	Either of the following is detected: 1. Accumulator pressure sensor input does not increase before braking or while the pump motor is operating. 2. Accumulator pressure sensor input reduction rate exceeds the specification before braking and while the pump motor is not operating.	• Brake fluid leaks • Brake booster with master cylinder (Brake actuator) (Malfunctioning internal seal, low gas pressure in accumulator, etc.)

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (brake actuator), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK FOR FLUID LEAK

(a) Check that there is no fluid leaks in the brake line between the brake actuator and the wheel cylinder which is indicated by DTCs.

(b) Check that the brake is not dragging.

OK:

There is no fluid leaks or dragging.

NG ▶ REPAIR OR REPLACE APPLICABLE PART

OK

▼

2.	RECONFIRM DTC

cardiagn.com

(a) Clear the DTCs INFO.

(b) Turn the power switch on (READY).

(c) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1391/69) is output	A
DTC (C1391/69) is not output	B

B REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

A

3.	PERFORM ACTIVE TEST USING TECHSTREAM (SOLENOID VALVE)

(a) Turn the power switch off.

(b) Connect the Techstream to the DLC3.

(c) Turn the power switch on (IG).

(d) Select the Active Test on the Techstream INFO.

HINT:

The Active Test can be performed when the following conditions are met.

- ABS main relay is on.
- Park (P) selected.
- Parking brake is applied.
- Vehicle speed is 0 km/h (0 mph).

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
ECB* Solenoid (SMC/SRC/SCC)	Switching solenoid valve (SMC/SRC/SCC)	Solenoid ON/OFF	Operation sound of solenoid (clicking sound) can be heard

*: Electronically Controlled Brake System

(e) Perform the Active Test of the solenoid using the Techstream.

(f) Select the Data List on the Techstream INFO.

cardiagn.com

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Wheel Cylinder Pressure Sensor	Wheel cylinder pressure sensor / Min.: 0 V, Max.: 5 V	When brake pedal released: 0.1 to 0.9 V	Reading increases when brake pedal is depressed

(g) Check that the output value of wheel cylinder does not increase.

OK:

The output value of wheel cylinder does not increase.

HINT:

If any output value increases, there may be brake fluid leaks in the brake actuator.

Result:

Result	Proceed to
The output value of wheel cylinder increases	A
The output values of wheel cylinders do not increase	B

B ▶ REPLACE BRAKE BOOSTER PUMP

A

▼

4.	REPLACE BRAKE BOOSTER WITH MASTER CYLINDER

(a) Replace the brake booster with master cylinder (brake actuator) INFO.

NEXT ▶ **REPLACE BRAKE BOOSTER PUMP**

cardiagn.com

DTC	C1439/66	Steering Angle Sensor Initialization Incomplete
DTC	C1445/66	Vehicle Driven with Steering Angle Sensor not Initialized

DESCRIPTION

The skid control ECU acquires the steering angle sensor zero point every time the power switch is turned on (IG) and the vehicle is driven at 35 km/h (22 mph) or more for approximately 5 seconds. The ECU also stores previous zero points.

DTCs C1439/66 and C1445/66 will be cleared when the power switch is turned off.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1439/66	752	After the steering angle sensor zero point calibration is cleared due to, for example, fluctuations in the power source, the steering angle sensor zero point calibration cannot be obtained for 60 seconds of continuous driving.	• Steering angle sensor • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU)
C1445/66	753	Steering angle sensor zero point calibration cannot be obtained when the vehicle is driven without a record of steering angle sensor zero point calibration at a speed of 35 km/h (22 mph) or more for 30 seconds or more without the brake pedal being depressed.	• Steering angle sensor • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU)

INSPECTION PROCEDURE

NOTICE:

Before proceeding with the inspection, explain to the customer that the output DTC is related to temporary loss of the steering angle zero calibration, such as when the power source voltage drops when the battery is removed, and confirm that this condition occurred.

HINT:

- When DTC U0073/94, U0123/62, U0124/95 and/or U0126/63 is output together with DTC C1439/66 and/or C1445/66, inspect and repair the trouble areas indicated by DTC U0073/94, U0123/62, U0124/95 and/or U0126/63 first INFO.
- When the speed sensor or the yaw rate and acceleration sensor has trouble, DTCs for the steering angle sensor may be output even when the steering angle sensor is normal. When DTCs for the speed sensor or yaw rate and acceleration sensor are output together with other DTCs for the steering angle sensor, inspect and repair the speed sensor and yaw rate and acceleration sensor first, and then inspect and repair the steering angle sensor.

PROCEDURE

2010 Toyota Prius Repair Manual

cardiagn.com

1.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Turn the power switch off.

(c) Turn the power switch on (IG) again and check that no CAN communication system DTCs are output INFO.

(d) Drive the vehicle and turn the steering wheel to the right and left at a speed of 35 km/h (22 mph) and check that no speed sensor, yaw rate and acceleration sensor and steering angle sensor DTCs are output INFO.

Result:

Result	Proceed to
DTCs (C1439/66 and/or C1445/66) are output	A
CAN communication system DTC is output	B
Speed sensor, yaw rate and acceleration sensor and/or steering angle sensor DTC is output	C
DTCs (C1439/66 and C1445/66) are not output	D

HINT:

- When DTCs indicating CAN communication system malfunctions are output, repair the CAN communication system before repairing each corresponding sensor.
- If there is a malfunction in the speed sensor or the yaw rate and acceleration sensor, an abnormal value may be output although the steering angle sensor is normal.
- If the speed sensor and the yaw rate and acceleration sensor DTCs are output simultaneously, repair the sensors and inspect the steering angle sensor.
- If the same DTC C1439/66 and/or C1445/66 is not output again, the DTC may have been stored due to a temporary loss of the steering angle zero calibration, such as when the power source voltage drops.

D ▶ CHECK FOR INTERMITTENT PROBLEMS

C ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A

▼

2.	CHECK STEERING ANGLE SENSOR ZERO POINT CALIBRATION

(a) Drive the vehicle straight ahead at 35 km/h (22 mph) or more for at least 5 seconds.

(b) Check that the steering wheel is centered correctly while driving straight ahead.

HINT:

cardiagn.com

If the front wheel alignment and steering position are adjusted as a result of an off-centered position of the steering wheel, acquire yaw rate and acceleration sensor zero point again after the adjustments are completed.

OK:

The steering wheel is centered correctly.

NG ▶ ADJUST FRONT WHEEL ALIGNMENT OR STEERING POSITION

OK

▼

3.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Drive the vehicle and turn the steering wheel to the right and left at the speed of 35 km/h (22 mph) or more.

(e) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1439/66 and C1445/66) are not output	A
Yaw rate and acceleration sensor and/or steering angle sensor DTC is output	B

HINT:

If the same DTC C1439/66 and/or C1445/66 is not output again, the DTC may have been stored due to a temporary loss of the steering angle zero calibration, such as when the power source voltage drops.

B ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A ▶ **END**

DTC	C1440/98	Unusual Bank Angle Detected

DESCRIPTION

If the skid control ECU determines that the vehicle is being driven at a steep bank angle, the skid control ECU stores DTC C1440/98 while VSC operation is temporarily disabled.

It is not a malfunction if the system and sensor circuits are normal and if the normal VSC operation resumes.

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1440/98	-	Driving at a steep bank angle.	Yaw rate and acceleration sensor

INSPECTION PROCEDURE

PROCEDURE

1.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Perform a road test.

(c) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1440/98) is output	A
DTC (C1440/98) is not output	B
Yaw rate and acceleration sensor DTC is output	C

C ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

B ▶ END

A

▼

2.	CLEAR DTC

(a) Clear the DTCs INFO.

HINT:

- If the skid control ECU determines that the vehicle is being driven at a steep bank angle, the skid control ECU stores DTC C1440/98 while VSC operation is temporarily disabled.
- It is not a malfunction if the system and sensor circuits are normal and if the normal VSC operation resumes.

NEXT ▶ **END**

cardiagn.com

DTC	C1442/44	Invalid Data Received from Acceleration Sensor
DTC	C1443/34	Invalid Data Received from Yaw Rate Sensor

DESCRIPTION

The skid control ECU receives signals from the yaw rate and acceleration sensor via the CAN communication system.

The yaw rate sensor has a built-in acceleration sensor and detects the vehicle condition.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1442/44	572	With terminal IG1 voltage between 9.5 and 17.4 V, an invalid data signal is received from the acceleration sensor for 10 seconds or more.	Yaw rate and acceleration sensor
C1443/34	715	With terminal IG1 voltage between 9.5 and 17.4 V, an invalid data signal is received from the yaw rate sensor for 10 seconds or more.	Yaw rate and acceleration sensor

INSPECTION PROCEDURE

NOTICE:

When replacing the yaw rate and acceleration sensor, perform zero point calibration INFO.

PROCEDURE

1.	CHECK DTC

(a) Clear the DTCs INFO.

(b) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTCs (C1442/44 and/or C1443/34) are output	A
DTCs (C1442/44 and C1443/34) are not output	B

B ▶ CHECK FOR INTERMITTENT PROBLEMS
A ▶ **REPLACE YAW RATE AND ACCELERATION SENSOR**

cardiagn.com

DTC	C1451/72	Motor Drive Permission Malfunction

DESCRIPTION

If air bleeding has not been performed, the skid control ECU stores DTC C1451/72 to prevent the entry of air due to the pump motor operation.

If DTC C1451/72 is stored, the system will not return to normal until air bleeding is performed.

DTC Code	INF Code	DTC Detection Condition	Trouble Area
C1451/72	-	Air bleeding has not been performed.	• Brake fluid leaks • Air bleeding not performed

INSPECTION PROCEDURE

PROCEDURE

1.	CHECK BRAKE FLUID LEVEL

(a) Check that the brake fluid level is sufficient.

OK:

Brake fluid level is sufficient.

HINT:

- If the fluid level drops, check for fluid leaks, and repair as necessary.
- If no fluid leaks exist, add and adjust fluid INFO.

NG ▶ CHECK AND REPAIR BRAKE FLUID LEAKS OR ADD FLUID

OK

▼

2.	PERFORM AIR BLEEDING

(a) Bleed the air from the brake systems INFO.

HINT:

If air bleeding has been performed, this DTC will be cleared.

cardiagn.com

NEXT

3.	RECONFIRM DTC

(a) Check if the same DTC is recorded INFO.

Result:

Result	Proceed to
DTC (C1451/72) is output	A
DTC (C1451/728) is not output	B

B END

A

4.	CLEAR DTC

(a) Clear the DTCs INFO.

NEXT **END**

cardiagn.com

DTC	U0073/94	Control Module Communication Bus OFF
DTC	U0123/62	Lost Communication with Yaw Rate Sensor Module
DTC	U0124/95	Lost Communication with Lateral Acceleration Sensor Module
DTC	U0126/63	Lost Communication with Steering Angle Sensor Module
DTC	U0293/59	Communication Error from HV ECU

DESCRIPTION

The skid control ECU receives the signals from the power management control ECU, steering angle sensor, and yaw rate and acceleration sensor via the CAN communication system.

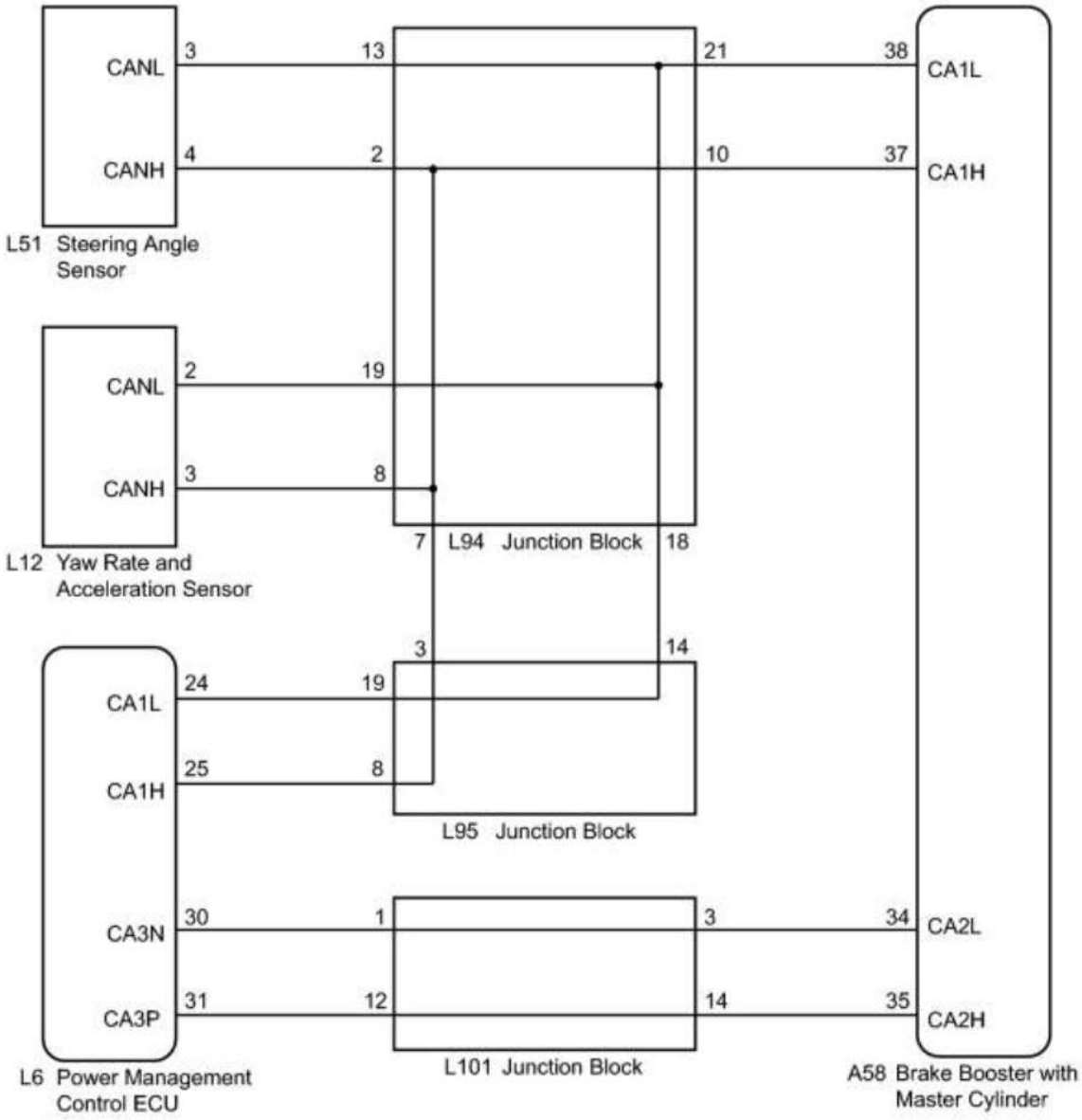
DTC Code	INF Code	DTC Detection Condition	Trouble Area
U0073/94	461	Either of the following is detected: 1. Yaw rate and acceleration sensor communication is disabled for 1 second or more. 2. Yaw rate and acceleration sensor communication is disabled once or more per 5 seconds 10 times or more within 60 seconds.	• CAN communication line (CAN No. 1 bus) • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU)
↑	462	Either of the following is detected: 1. Steering angle sensor communication is disabled for 1 second or more. 2. Steering angle sensor communication is disabled once or more per 5 seconds 10 times or more within 60 seconds.	• CAN communication line (CAN No. 1 bus) • Steering angle sensor • Brake booster with master cylinder (Skid control ECU)
↑	463 464	Bus off occurs once or more per 0.1 seconds 10 times repeatedly.	• CAN communication line • Brake booster with master cylinder (Skid control ECU)
↑	465 466	Sending does not complete within 5 seconds after data is output from the skid control ECU.	↑
U0123/62	731	Yaw rate sensor communication is disabled for 1 second or more.	• CAN communication line (CAN No. 1 bus) • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU)

cardiagn.com

DTC Code	INF Code	DTC Detection Condition	Trouble Area
↑	732	Yaw rate sensor communication is disabled once or more per 5 seconds 10 times or more within 60 seconds.	↑
U0124/95	591	Acceleration sensor communication is disabled for 1 second or more.	• CAN communication line (CAN No. 1 bus) • Yaw rate and acceleration sensor • Brake booster with master cylinder (Skid control ECU)
↑	592	Acceleration sensor communication is disabled once per 5 seconds 10 times or more within 60 seconds.	↑
U0126/63	741	Steering angle sensor communication is disabled for 1 second or more.	• CAN communication line (CAN No. 1 bus) • Steering angle sensor • Brake booster with master cylinder (Skid control ECU)
↑	742	Steering angle sensor communication is disabled once or more per 5 seconds 10 times or more within 60 seconds.	↑
U0293/59	411 412 413	Either of the following is detected: 1. With the IG2 terminal voltage 9.5 V or more, data from the power management control ECU cannot be received for 2 seconds or more. 2. With the IG2 terminal voltage 9.5 V or more, data from the power management control ECU cannot be received once or more within 5 seconds occur 10 times in succession.	• CAN communication line (Power management bus) • Power management control ECU (Hybrid vehicle control ECU) • Brake booster with master cylinder (Skid control ECU)

WIRING DIAGRAM

cardiagn.com



cardiagn.com

INSPECTION PROCEDURE

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)

(a) Using the Techstream, check for any momentary interruptions in the wire harness and connector corresponding to a DTC INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Yaw Rate Open	Yaw rate sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
Steering Open	Steering angle sensor open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-
HV Communication Open	Hybrid vehicle communication open detection / Error or Normal	Error: Momentary interruption Normal: Normal	-

Result:

Result	Proceed to
There is a constant open circuit	A
There are no momentary interruptions	B
There are momentary interruptions	C

HINT:

Perform the above inspection before removing any sensor or connector.

C ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

B ▶ RECONFIRM DTC

A

▼

2.	CHECK IF EACH SENSOR AND ECU CONNECTOR ARE SECURELY CONNECTED

(a) Turn the power switch off.

(b) Check if each sensor and ECU connector are securely connected.

OK:

Each sensor and ECU connector are securely connected.

NG ▶ CONNECT CONNECTOR TO EACH SENSOR OR ECU CORRECTLY

cardiagn.com

OK

3.	RECONFIRM DTC

(a) Turn the power switch off.

(b) Record the output DTCs (for ABS, VSC, electronically controlled brake system, and/or CAN communication system) INFO for ABS, VSC and/or electronically controlled brake system, or INFO for CAN communication system).

HINT:

If the CAN communication system DTC and the relevant sensor DTCs are output simultaneously, troubleshoot the relevant sensor DTCs (for ABS, VSC and/or electronically controlled brake system) after the CAN communication system returns to normal.

Result:

Result	Proceed to
DTC is not output	A
DTC (ABS, VSC and/or electronically controlled brake system DTC) is output	B
DTC (CAN communication system DTC) is output	C

C INSPECT CAN COMMUNICATION SYSTEM

B REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A **CHECK FOR INTERMITTENT PROBLEMS**

4.	REPAIR OR REPLACE HARNESS OR CONNECTOR

(a) Turn the power switch off.

(b) Repair or replace the harness or connector.

(c) Check for any momentary interruption between the skid control ECU and each sensor or ECU INFO.

(d) Check that there are no momentary interruptions.

NEXT

5.	RECONFIRM DTC

(a) Turn the power switch off.

cardiagn.com

(b) Clear the DTCs INFO.

(c) Turn the power switch on (READY).

(d) Drive the vehicle and turn the steering wheel to the right and left at a speed of 15 km/h (9 mph) or more.

(e) Check that no CAN communication system DTC is output INFO.

(f) If ABS, VSC and/or electronically controlled brake system DTCs are output, record them INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC (ABS, VSC and/or electronically controlled brake system DTC) is output	B
DTC (CAN communication system DTC) is output	C

HINT:

The CAN communication system must be normal when repairing each sensor DTC (for ABS, VSC and/or electronically controlled brake system).

C ▶ INSPECT CAN COMMUNICATION SYSTEM

B ▶ REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A ▶ **END**

cardiagn.com

ABS Warning Light Remains ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

If any of the following is detected, the ABS warning light remains on:

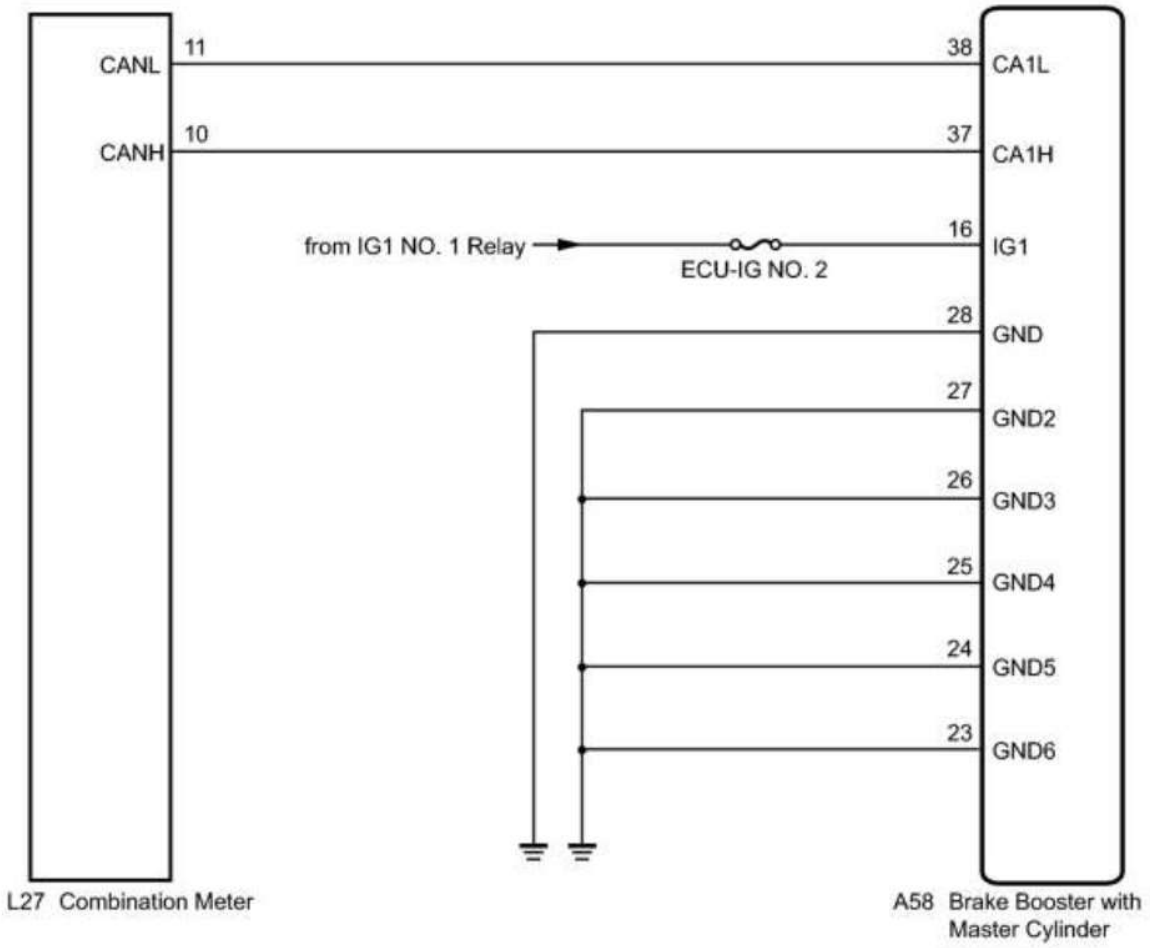
- The skid control ECU connector is disconnected from the skid control ECU.
- There is a malfunction in the skid control ECU internal circuit.
- There is an open in the harness between the combination meter and the skid control ECU.
- The ABS control system is defective.

HINT:

In some cases, the Techstream cannot be used when the skid control ECU is malfunctioning.

WIRING DIAGRAM

cardiagn.com



cardiagn.com

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

2010 Toyota Prius Repair Manual

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A

▼

2.	CHECK IF SKID CONTROL ECU CONNECTOR IS SECURELY CONNECTED

(a) Check if the skid control ECU connector is securely connected.

OK:

The connector is securely connected.

NG ▶ CONNECT CONNECTOR TO ECU CORRECTLY

OK

▼

3.	CHECK AUXILIARY BATTERY

(a) Check the auxiliary battery voltage.

Standard Voltage:

11 to 14 V

NG ▶ CHARGE OR REPLACE AUXILIARY BATTERY

OK

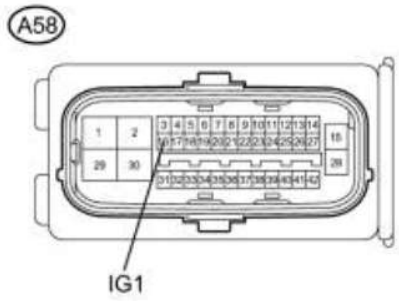
▼

4.	INSPECT SKID CONTROL ECU (IG1 TERMINAL)

(a) Disconnect the skid control ECU connector.

cardiagn.com

*1



(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
A58-16 (IG1) - Body ground	Power switch on (IG)	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)

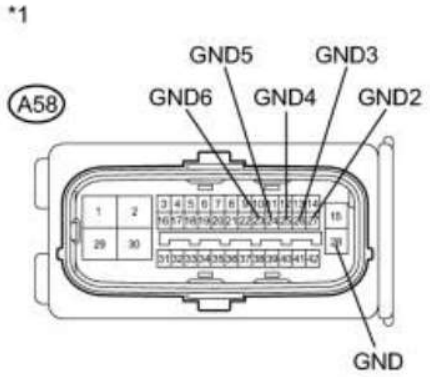
OK

▼

5.	INSPECT SKID CONTROL ECU (GND TERMINAL)

(a) Turn the power switch off.

cardiagn.com



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-28 (GND) - Body ground	Always	Below 1 Ω
A58-27 (GND2) - Body ground	Always	Below 1 Ω
A58-26 (GND3) - Body ground	Always	Below 1 Ω
A58-25 (GND4) - Body ground	Always	Below 1 Ω
A58-24 (GND5) - Body ground	Always	Below 1 Ω
A58-23 (GND6) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)

OK

▼

6.	INSPECT COMBINATION METER

(a) Reconnect the skid control ECU connector.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

cardiagn.com

The ABS warning light turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

ABS Warning Light does not Come ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

WIRING DIAGRAM

Refer to ABS Warning Light Remains ON INFO.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	CHECK ABS WARNING LIGHT

(a) Disconnect the skid control ECU connector.

(b) Turn the power switch on (IG).

(c) Check that the ABS warning light comes on.

OK:

The ABS warning light comes on.

HINT:

cardiagn.com

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ INSPECT COMBINATION METER
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

3.	INSPECT COMBINATION METER

(a) Turn the power switch off.

(b) Reconnect the skid control ECU connector.

(c) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(d) Check the combination meter.

OK:

The ABS warning light turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

Brake Warning Light Remains ON

DESCRIPTION

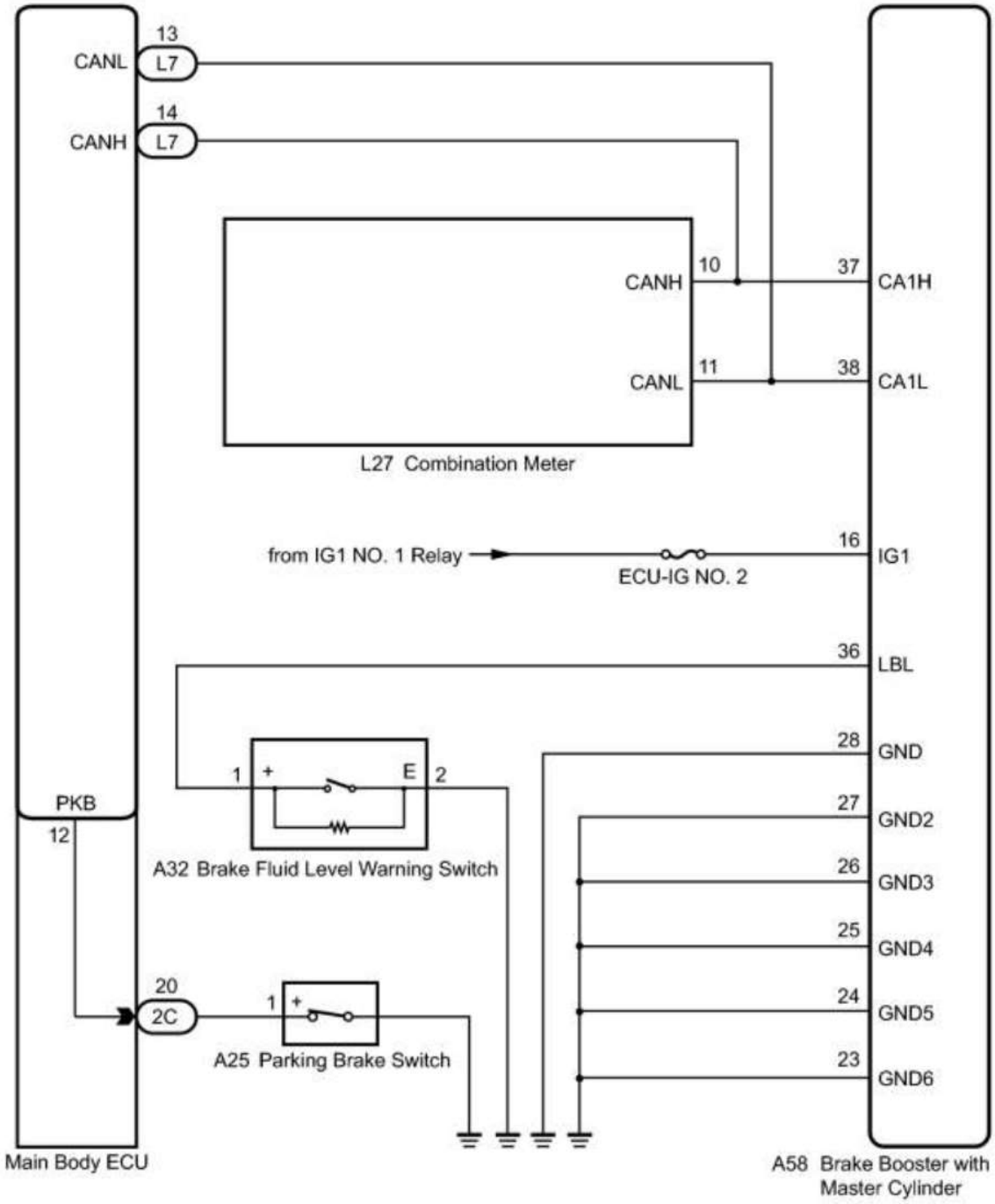
The skid control ECU is connected to the combination meter via CAN communication.

If any of the following is detected, the brake warning light / red (malfunction) remains on:

- The skid control ECU connector is disconnected from the skid control ECU.
- The brake fluid level is insufficient.
- The parking brake is applied.
- EBD operation has been disabled.

WIRING DIAGRAM

cardiagn.com



INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

2010 Toyota Prius Repair Manual

cardiagn.com

PROCEDURE

1.	CHECK DTC

(a) Check if a ABS, VSC and/or electronically controlled brake system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A

2.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B INSPECT CAN COMMUNICATION SYSTEM

A

3.	CHECK IF SKID CONTROL ECU CONNECTOR IS SECURELY CONNECTED

(a) Check if the skid control ECU connector is securely connected.

OK:

The connector is securely connected.

NG CONNECT CONNECTOR TO ECU CORRECTLY

OK

4.	CHECK AUXILIARY BATTERY

cardiagn.com

(a) Check the auxiliary battery voltage.

Standard Voltage:

11 to 14 V

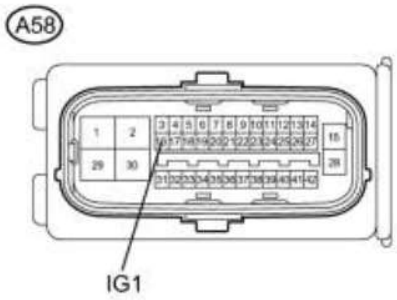
NG ▶ CHARGE OR REPLACE AUXILIARY BATTERY

OK

▼

5.	INSPECT SKID CONTROL ECU (IG1 TERMINAL)

*1



(a) Disconnect the skid control ECU connector.

(b) Turn the power switch on (IG).

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
A58-16 (IG1) - Body ground	Power switch on (IG)	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

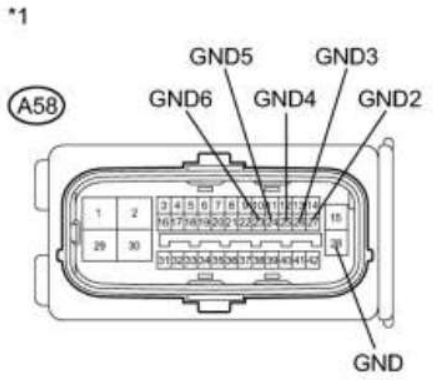
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)

OK

▼

cardiagn.com

6.	INSPECT SKID CONTROL ECU (GND TERMINAL)



(a) Turn the power switch off.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-28 (GND) - Body ground	Always	Below 1 Ω
A58-27 (GND2) - Body ground	Always	Below 1 Ω
A58-26 (GND3) - Body ground	Always	Below 1 Ω
A58-25 (GND4) - Body ground	Always	Below 1 Ω
A58-24 (GND5) - Body ground	Always	Below 1 Ω
A58-23 (GND6) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)

OK

▼

7.	READ VALUE USING TECHSTREAM (PARKING BRAKE SWITCH)

(a) Reconnect the skid control ECU connector.

(b) Connect the Techstream to the DLC3.

(c) Turn the power switch on (IG).

cardiagn.com

(d) Select the Data List on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Parking Brake SW	Parking brake switch / ON or OFF	ON: Parking brake applied OFF: Parking brake released	-

(e) Using the Techstream, check the switch condition on the Techstream changes according to parking brake operation.

OK:

The Techstream displays ON or OFF according to parking brake operation.

NG ▶ INSPECT PARKING BRAKE SWITCH

OK

▼

8.	INSPECT COMBINATION METER

(a) Turn the power switch off.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

The brake warning light / red (malfunction) turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

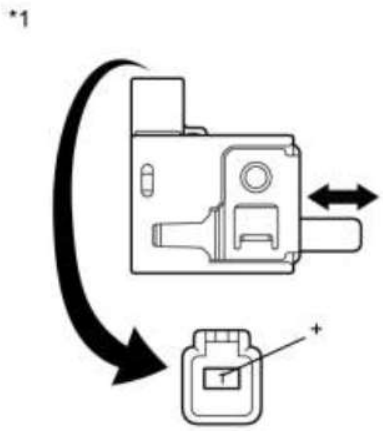
NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

9.	INSPECT PARKING BRAKE SWITCH

(a) Turn the power switch off.

cardiagn.com



(b) Disconnect the parking brake switch connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Switch Condition	Specified Condition
1 (+) - Body ground	Parking brake switch ON (Switch pin free)	Below 1 Ω
1 (+) - Body ground	Parking brake switch OFF (Switch pin pushed in)	10 kΩ or higher

Text in Illustration

*1	Component without harness connected (Parking Brake Switch)

NG ▶ REPLACE PARKING BRAKE SWITCH

OK

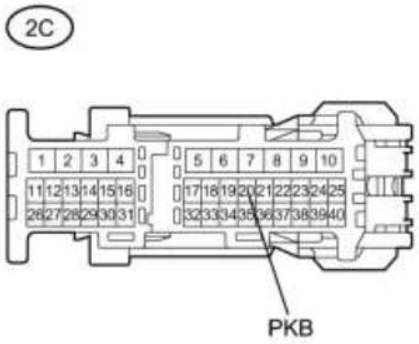
▼

10.	CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - PARKING BRAKE SWITCH)

(a) Disconnect the main body ECU connector.

cardiagn.com

*1



*2



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
2C-20 (PKB) - A25-1 (+)	Always	Below 1 Ω
2C-20 (PKB) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Main Body ECU)
*2	Front view of wire harness connector (to Parking Brake Switch)

HINT:

cardiagn.com

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▶ **REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)**

cardiagn.com

Brake Warning Light does not Come ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

WIRING DIAGRAM

Refer to Brake Warning Light Remains ON INFO.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	CHECK BRAKE WARNING LIGHT / RED (MALFUNCTION)

(a) Disconnect the skid control ECU connector.

(b) Turn the power switch on (IG).

(c) Check that the brake warning light / red (malfunction) comes on.

OK:

The brake warning light / red (malfunction) comes on.

HINT:

cardiagn.com

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ INSPECT COMBINATION METER
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

3.	INSPECT COMBINATION METER

(a) Turn the power switch off.

(b) Reconnect the skid control ECU connector.

(c) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(d) Check the combination meter.

OK:

The brake warning light / red (malfunction) turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

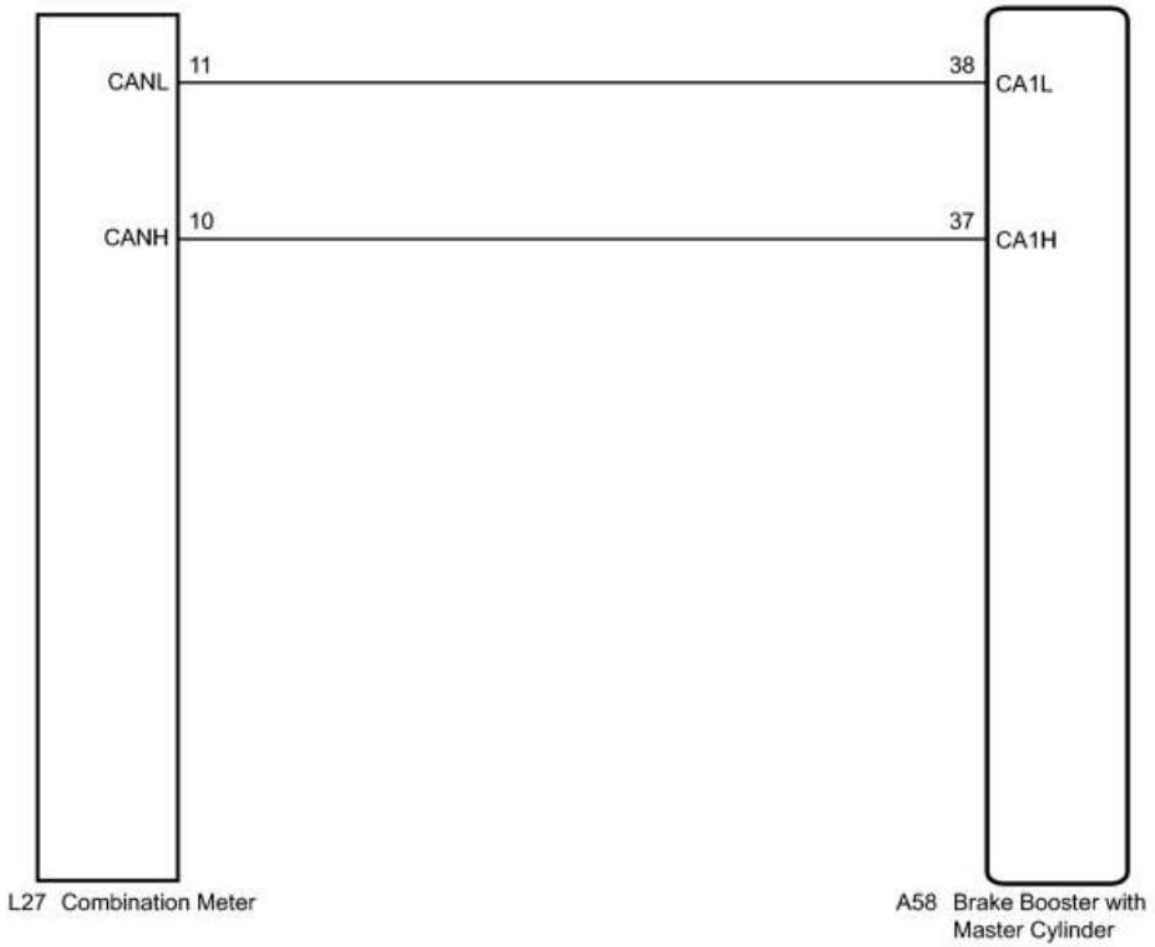
Brake Control Warning Light Remains ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

If the skid control ECU stores a DTC, the brake warning light / yellow (minor malfunction) comes on in the combination meter.

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

2010 Toyota Prius Repair Manual

cardiagn.com

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	CHECK IF SKID CONTROL ECU CONNECTOR IS SECURELY CONNECTED

(a) Check if the skid control ECU connector is securely connected.

OK:

The connector is securely connected.

NG ▶ CONNECT CONNECTOR TO ECU CORRECTLY

OK ▼

3.	CHECK AUXILIARY BATTERY

(a) Check the auxiliary battery voltage.

Standard Voltage:

11 to 14 V

NG ▶ CHARGE OR REPLACE AUXILIARY BATTERY

OK ▼

4.	INSPECT COMBINATION METER

(a) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(b) Check the combination meter.

OK:

cardiagn.com

The brake warning light / yellow (minor malfunction) turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

Brake Control Warning Light does not Come ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

WIRING DIAGRAM

Refer to Brake Control Warning Light Remains ON INFO.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	PERFORM ACTIVE TEST USING TECHSTREAM (BRAKE WARNING LIGHT / YELLOW (MINOR MALFUNCTION))

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Active Test on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
ECB* Warning	Brake warning light / yellow (minor	Warning light	Observe combination

cardiagn.com

Tester Display	Test Part	Control Range	Diagnostic Note
Light	malfunction)	ON/OFF	meter

*: Electronically Controlled Brake System

(d) Check that the brake warning light / yellow (minor malfunction) on the combination meter turns on or off in accordance with the Techstream operation.

OK:

The brake warning light / yellow (minor malfunction) turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ INSPECT COMBINATION METER
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

3.	INSPECT COMBINATION METER

(a) Turn the power switch off.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

The brake warning light / yellow (minor malfunction) turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

Slip Indicator Light Remains ON

DESCRIPTION

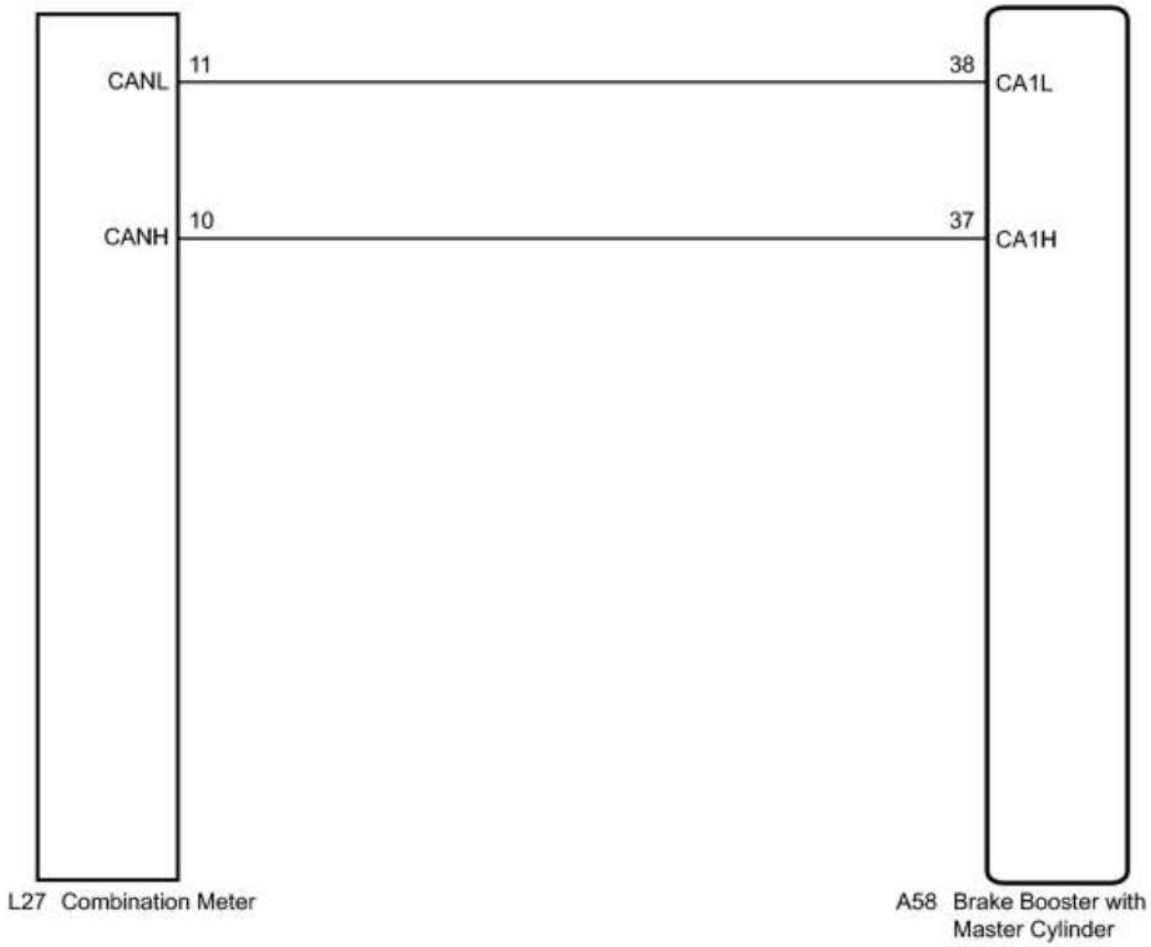
The skid control ECU is connected to the combination meter via CAN communication.

If the skid control ECU stores a DTC, the slip indicator light comes on in the combination meter.

The slip indicator light blinks during VSC and/or TRAC operation.

When the system fails, the slip indicator light comes on to warn the driver INFO.

WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	CHECK IF SKID CONTROL ECU CONNECTOR IS SECURELY CONNECTED

(a) Check if the skid control ECU connector is securely connected.

OK:

The connector is securely connected.

NG ▶ CONNECT CONNECTOR TO ECU CORRECTLY

OK ▼

3.	CHECK AUXILIARY BATTERY

(a) Check the auxiliary battery voltage.

Standard Voltage:

11 to 14 V

NG ▶ CHARGE OR REPLACE AUXILIARY BATTERY

OK ▼

4.	INSPECT COMBINATION METER

cardiagn.com

(a) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(b) Check the combination meter.

OK:

The slip indicator light turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 5 METER CIRCUIT PLATE
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

5.	REPLACE NO. 5 METER CIRCUIT PLATE

(a) Replace the No. 5 meter circuit plate INFO.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

The slip indicator light turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 2 METER CIRCUIT PLATE
OK ▶ **END**

6.	REPLACE NO. 2 METER CIRCUIT PLATE

(a) Replace the No. 2 meter circuit plate INFO.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

The slip indicator light turns on or off in accordance with the Techstream operation.

HINT:

cardiagn.com

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE
OK ▶ **END**

cardiagn.com

Slip Indicator Light does not Come ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

WIRING DIAGRAM

Refer to Slip Indicator Light Remains ON INFO.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	PERFORM ACTIVE TEST USING TECHSTREAM (SLIP INDICATOR LIGHT)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Active Test on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
Slip Indicator Light	Slip indicator light	Indicator light ON/OFF	Observe combination meter

cardiagn.com

(d) Check that the slip indicator light on the combination meter turns on or off in accordance with the Techstream operation.

OK:

The slip indicator light turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ INSPECT COMBINATION METER
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

3.	INSPECT COMBINATION METER

(a) Turn the power switch off.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

The slip indicator light turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

NG ▶ REPLACE NO. 5 METER CIRCUIT PLATE
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

4.	REPLACE NO. 5 METER CIRCUIT PLATE

(a) Replace the No. 5 meter circuit plate INFO.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

The slip indicator light turns on or off in accordance with the Techstream operation.

HINT:

cardiagn.com

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 2 METER CIRCUIT PLATE
OK ▶ **END**

5.	REPLACE NO. 2 METER CIRCUIT PLATE

(a) Replace the No. 2 meter circuit plate INFO.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO.

(c) Check the combination meter.

OK:

The slip indicator light turns on or off in accordance with the Techstream operation.

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPLACE NO. 3 METER CIRCUIT PLATE
OK ▶ **END**

cardiagn.com

Skid Control Buzzer Circuit

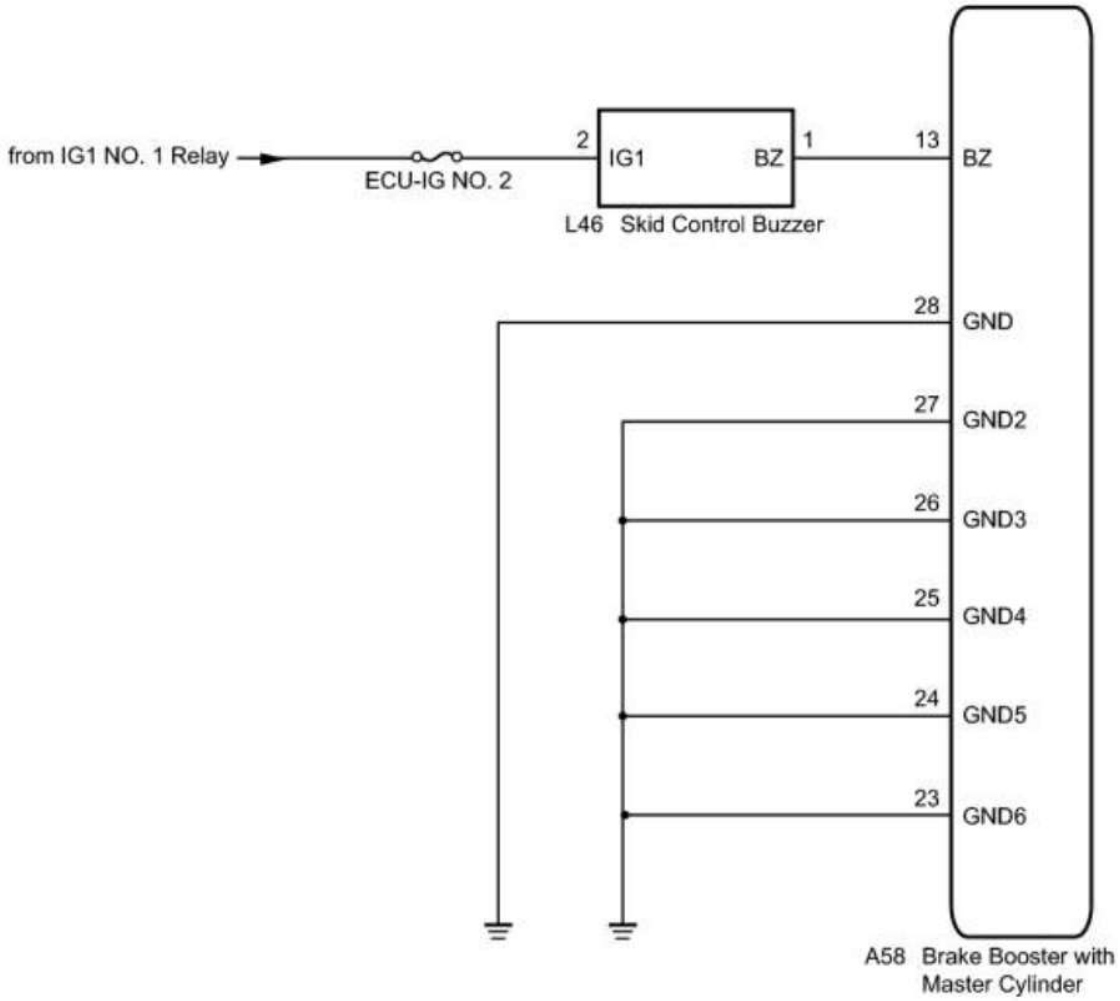
DESCRIPTION

The skid control buzzer sounds intermittently to warn the driver when the accumulator pressure is abnormally low. This buzzer also sounds intermittently when VSC is operating.

HINT:

The skid control buzzer may sound when the accumulator pressure drops due to frequent braking INFO.

WIRING DIAGRAM



INSPECTION PROCEDURE

cardiagn.com

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK BUZZER OPERATION

(a) Confirm problem symptoms of the skid control buzzer according to the customer problem analysis.

HINT:

If the buzzer stops after sounding continuously, a temporary drop in accumulator pressure is the suspected cause.

Result:

Result	Proceed to
Buzzer does not sound	A
Buzzer sounds constantly	B

B ▶ INSPECT SKID CONTROL ECU

A ▼

2.	PERFORM ACTIVE TEST USING TECHSTREAM (SKID CONTROL BUZZER)

(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Select the Active Test on the Techstream INFO.

ABS/VSC/TRAC

Tester Display	Test Part	Control Range	Diagnostic Note
Buzzer	Skid control buzzer	Buzzer ON/OFF	Buzzer can be heard

(d) Check that the buzzer sounds/stops when turning the skid control buzzer on/off using the Techstream.

Result:

Result	Proceed to
Buzzer does not sound	A
Buzzer sounds/stops	B

cardiagn.com

HINT:

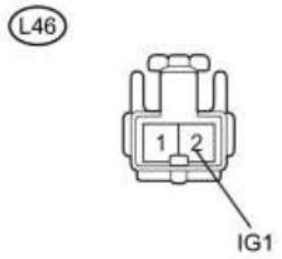
If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B CHECK FOR INTERMITTENT PROBLEMS

A

3.	INSPECT SKID CONTROL BUZZER (POWER SOURCE TERMINAL)

*1



(a) Turn the power switch off.

(b) Disconnect the skid control buzzer connector.

(c) Turn the power switch on (IG).

(d) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
L46-2 (IG1) - Body ground	Power switch on (IG)	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to Skid Control Buzzer)

NG REPAIR OR REPLACE HARNESS OR CONNECTOR (POWER SOURCE CIRCUIT)

OK

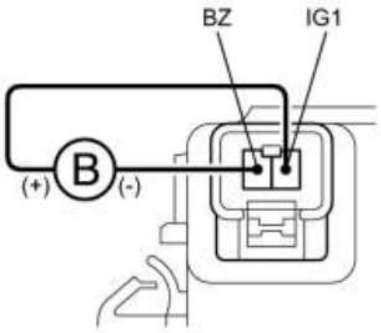
4.	INSPECT SKID CONTROL BUZZER

(a) Turn the power switch off.

(b) Connect a negative (-) lead from the battery to terminal 1, and a

cardiagn.com

*1



N

positive (+) lead to terminal 2 of the skid control buzzer, and then check that the buzzer sounds.

OK:

The skid control buzzer sounds.

Text in Illustration

*1	Component without harness connected (Skid Control Buzzer)

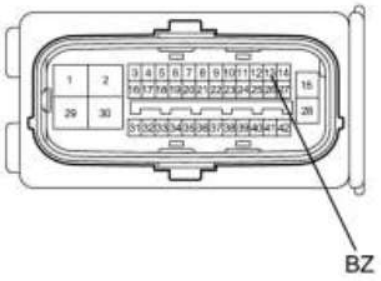
NG ▶ REPLACE SKID CONTROL BUZZER

OK ▼

5.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - SKID CONTROL BUZZER)

*1

A58



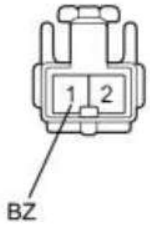
*2

(a) Disconnect the skid control ECU connector 2 minutes after the power switch is turned off.

HINT:

Do not open/close the driver door within 2 minutes after the power switch is turned off.

L46



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

cardiagn.com

Tester Connection	Condition	Specified Condition
A58-13 (BZ) - L46-1 (BZ)	Always	Below 1 Ω
A58-13 (BZ) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of wire harness connector (to Skid Control Buzzer)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

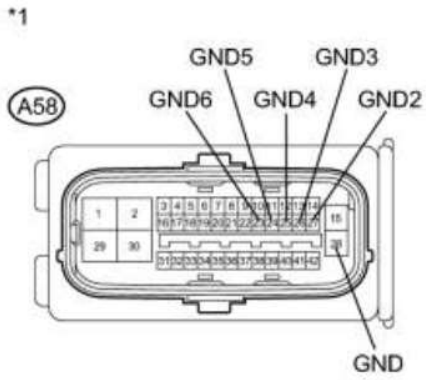
OK ▼

6.	INSPECT SKID CONTROL ECU (GND TERMINAL)

(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-28 (GND) - Body ground	Always	Below 1 Ω
A58-27 (GND2) - Body ground	Always	Below 1 Ω
A58-26 (GND3) - Body ground	Always	Below 1 Ω
A58-25 (GND4) - Body ground	Always	Below 1 Ω
A58-24 (GND5) - Body ground	Always	Below 1 Ω
A58-23 (GND6) - Body ground	Always	Below 1 Ω



Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)

OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

7.	INSPECT SKID CONTROL ECU

cardiagn.com

(a) Disconnect the skid control ECU connector.

(b) Check that the skid control buzzer operation.

Result:

Result	Proceed to
Buzzer stops	A
Buzzer sounds constantly	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

B ▶ REPLACE SKID CONTROL BUZZER
A ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

8.	REPLACE SKID CONTROL BUZZER

(a) Reconnect the skid control ECU connector.

(b) Replace the skid control buzzer INFO.

(c) Check that the skid control buzzer operation.

Result:

Result	Proceed to
Buzzer stops	A
Buzzer sounds constantly	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

B ▶ CHECK IF CONNECTOR IS SECURELY CONNECTED
A ▶ **END**

9.	CHECK IF CONNECTOR IS SECURELY CONNECTED

(a) Gently jiggle the connectors and wire harnesses and check the skid control buzzer operation.

Result:

Result	Proceed to

cardiagn.com

Result	Proceed to
Buzzer stops	A
Buzzer sounds constantly	B

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

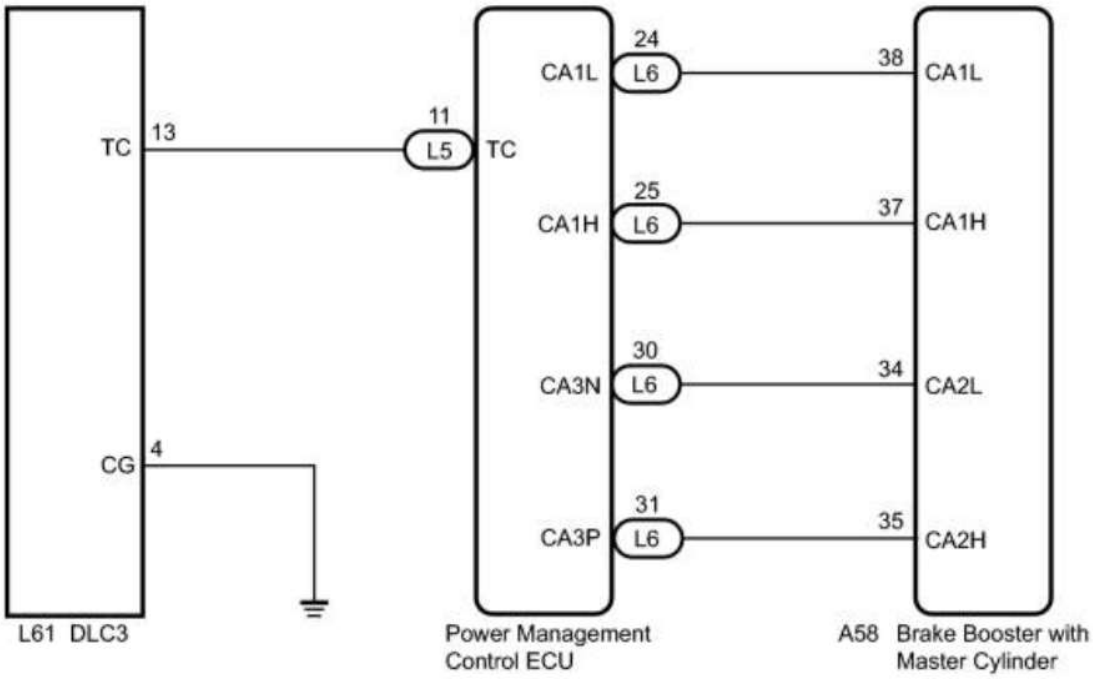
B ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
A ▶ **END**

TC and CG Terminal Circuit

DESCRIPTION

Connecting terminals TC and CG of the DLC3 causes the ECU to display the DTC by blinking the ABS warning light.

WIRING DIAGRAM



HINT:

cardiagn.com

When the warning lights continue to blink, a ground short in the wiring of terminal TC of the DLC3 or an internal ground short in one or more ECUs is suspected.

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

Result:

Result	Proceed to
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	CHECK HARNESS AND CONNECTOR (TC of DLC3 - POWER MANAGEMENT CONTROL ECU)

(a) Disconnect the power management control ECU connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
L61-13 (TC) - L5-11 (TC)	Always	Below 1 Ω

Text in Illustration

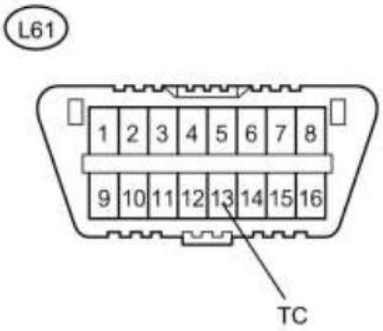
*1	Front view of DLC3
*2	Front view of wire harness connector (to Power Management Control ECU)

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

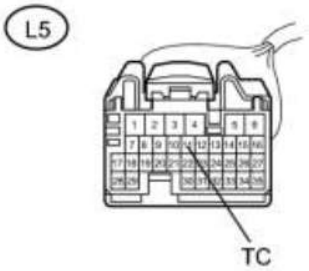
OK ▼

cardiagn.com

*1

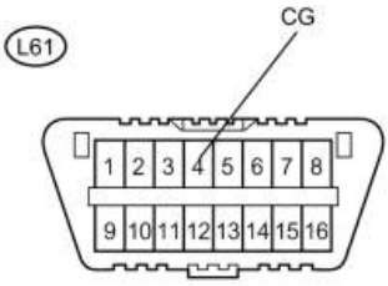


*2



3.	CHECK HARNESS AND CONNECTOR (CG of DLC3 - BODY GROUND)

*1



(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
L61-4 (CG) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of DLC3

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

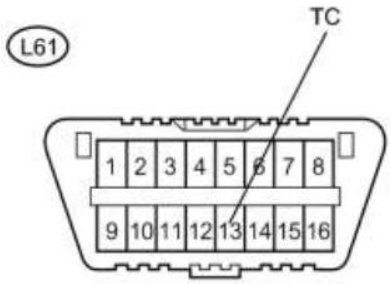
4.	CHECK HARNESS AND CONNECTOR (TC of DLC3 - BODY GROUND)

(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

cardiagn.com

*1



Tester Connection	Condition	Specified Condition
L61-13 (TC) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of DLC3

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

NG ▶ REPAIR OR REPLACE WIRE HARNESS OR EACH ECU
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

cardiagn.com

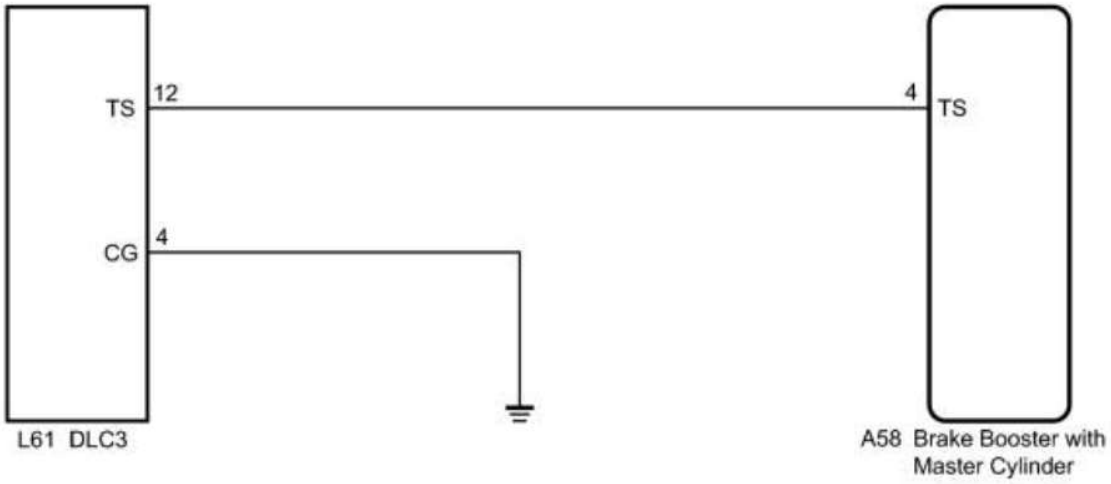
TS and CG Terminal Circuit

DESCRIPTION

In Test Mode (signal check), a malfunction in a speed sensor that cannot be detected when the vehicle is stopped can be detected while driving.

Sensor check mode can be entered by connecting terminals TS and CG of the DLC3 and turning the power switch from off to on (IG).

WIRING DIAGRAM



N

INSPECTION PROCEDURE

NOTICE:

When replacing the brake booster with master cylinder (skid control ECU), perform initialization and calibration of the linear solenoid valve INFO.

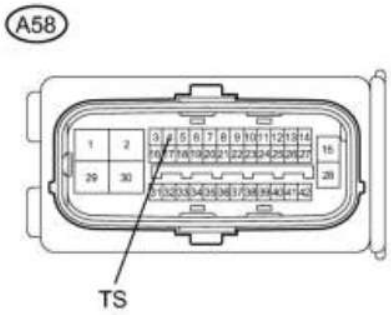
PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - TS of DLC3)

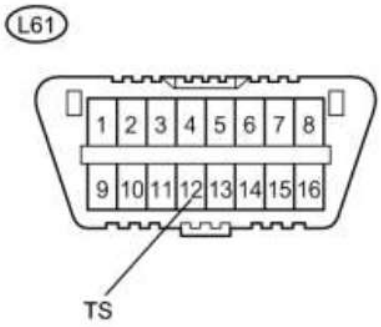
(a) Disconnect the skid control ECU connector.

cardiagn.com

*1



*2



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A58-4 (TS) - L61-12 (TS)	Always	Below 1 Ω
A58-4 (TS) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Skid Control ECU)
*2	Front view of DLC3

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

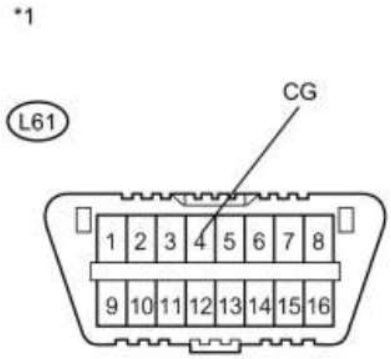
2.	CHECK HARNESS AND CONNECTOR (CG of DLC3 - BODY GROUND)

cardiagn.com

(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
L61-4 (CG) - Body ground	Always	Below 1 Ω



Text in Illustration

*1	Front view of DLC3

HINT:

If troubleshooting has been carried out according to Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO.

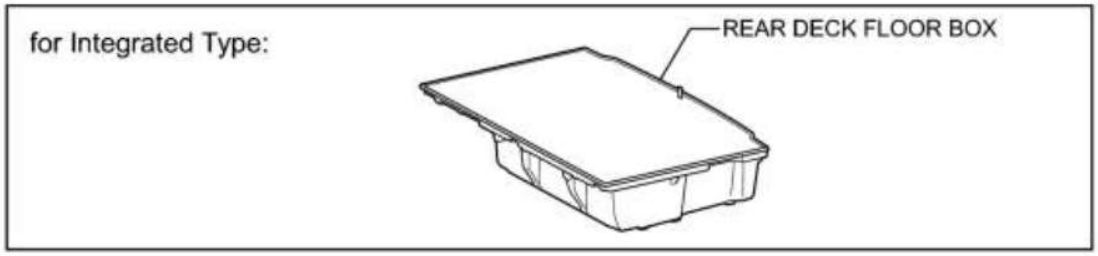
NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
OK ▶ **REPLACE BRAKE BOOSTER WITH MASTER CYLINDER**

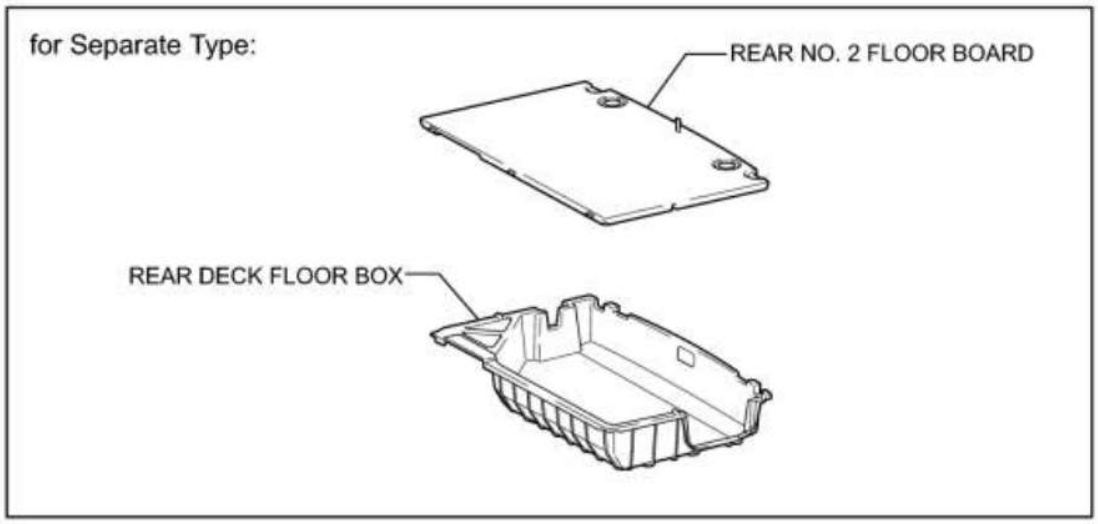
cardiagn.com

COMPONENTS

ILLUSTRATION



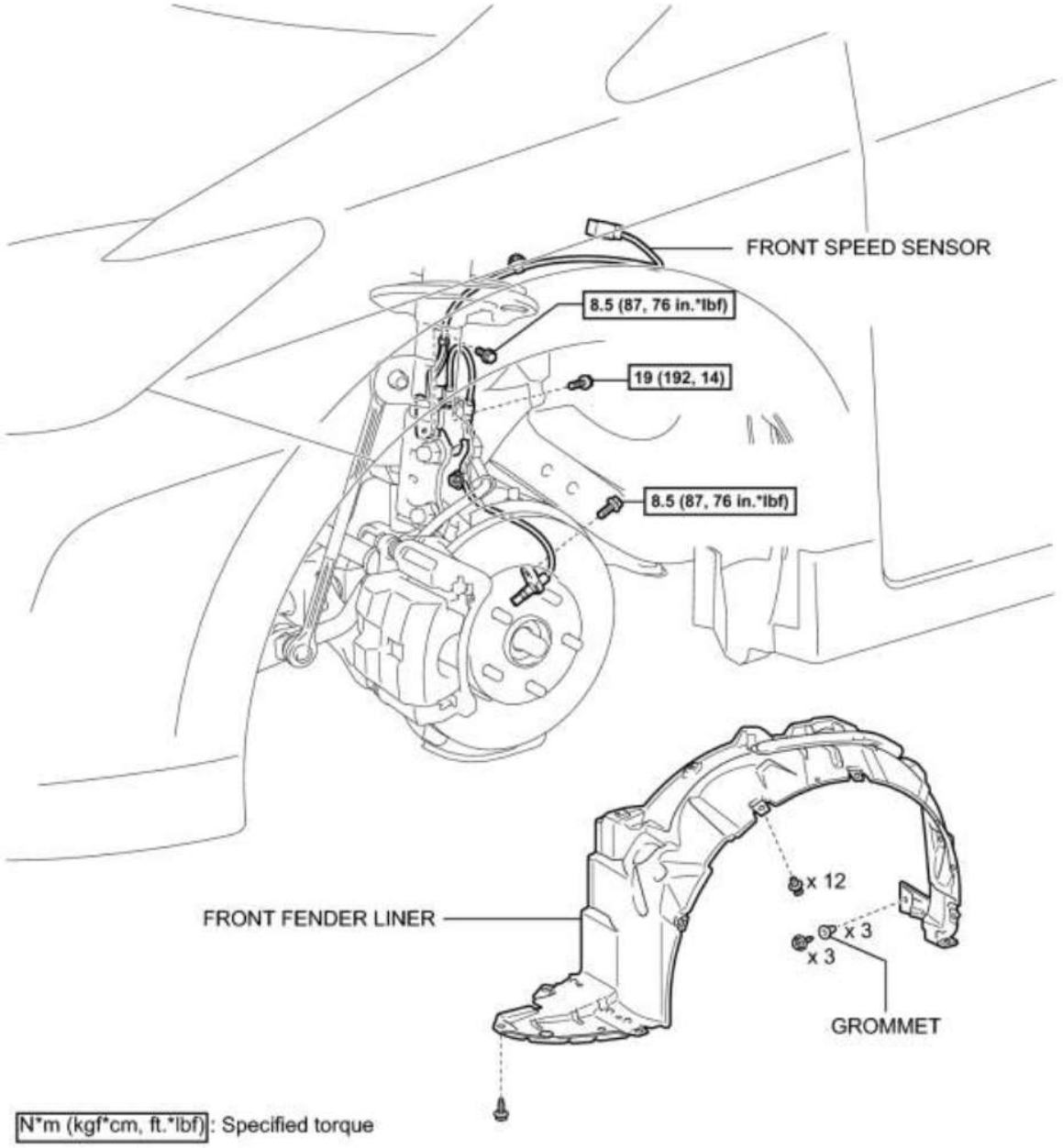




P

ILLUSTRATION

cardiagn.com



c

cardiagn.com

REMOVAL

NOTICE:

While the battery is connected, even if the power switch is off, the brake control system activates when the brake pedal is depressed or any door courtesy switch is turned on. Therefore, when servicing the brake system components, do not depress the brake pedal or open/ close the doors while the battery is connected.

HINT:

- Use the same procedure for the LH side and RH side.
- The following procedure is for the LH side.
- If the sensor rotor needs to be replaced, replace it together with the front axle hub and bearing assembly.

1. REMOVE REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

2. REMOVE REAR DECK FLOOR BOX INFO

3. REMOVE REAR NO. 3 FLOOR BOARD INFO

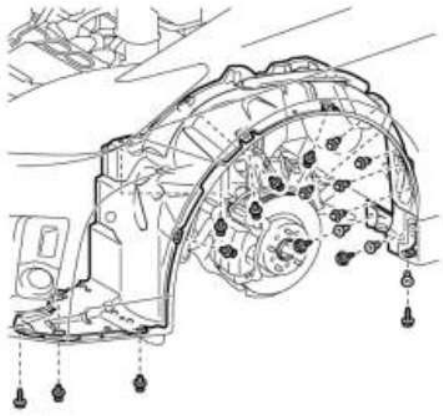
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

5. REMOVE FRONT WHEEL

6. REMOVE FRONT FENDER LINER



C

(a) Remove the 12 clips, 4 screws, 3 grommets, and front fender liner.

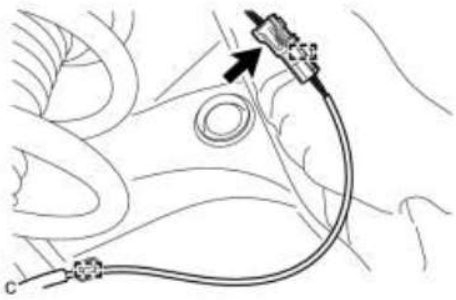
HINT:

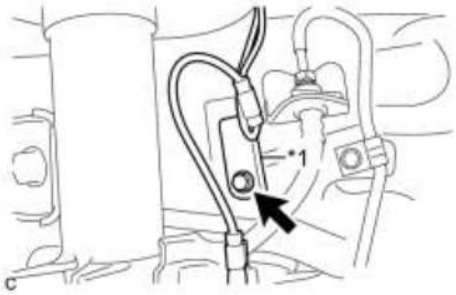
Use the same procedure for the RH side and LH side.

7. REMOVE FRONT SPEED SENSOR

(a) Remove the 2 clamps and disconnect the front speed sensor connector.

cardiagn.com

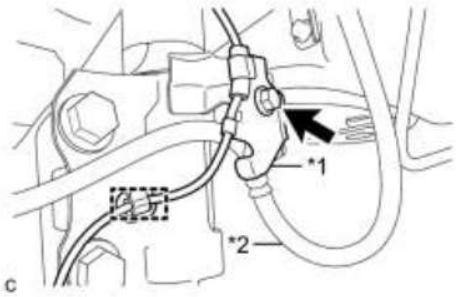




(b) Remove the bolt and No. 2 sensor clamp from the body.

Text in Illustration

*1	No. 2 Sensor Clamp

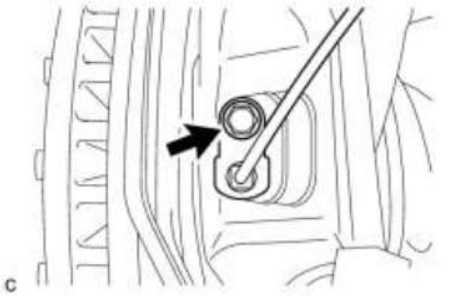


(c) Remove the bolt, No. 1 sensor clamp and front brake flexible hose together from the shock absorber assembly.

Text in Illustration

*1	No. 1 Sensor Clamp
*2	Front Brake Flexible Hose

(d) Remove the clamp from the shock absorber assembly.



(e) Remove the bolt and front speed sensor.

- Prevent foreign matter from attaching to the front speed sensor tip.
- Clean the speed sensor installation hole and the contact surfaces every time the front speed sensor is removed.

cardiagn.com

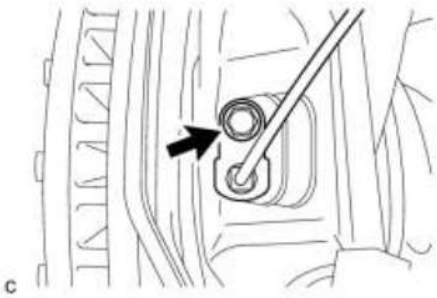
INSTALLATION

HINT:

- Use the same procedure for the LH side and RH side.
- The following procedure is for the LH side.
- If the sensor rotor needs to be replaced, replace it together with the front axle hub and bearing assembly.

1. INSTALL FRONT SPEED SENSOR

(a) Install the front speed sensor with the bolt.

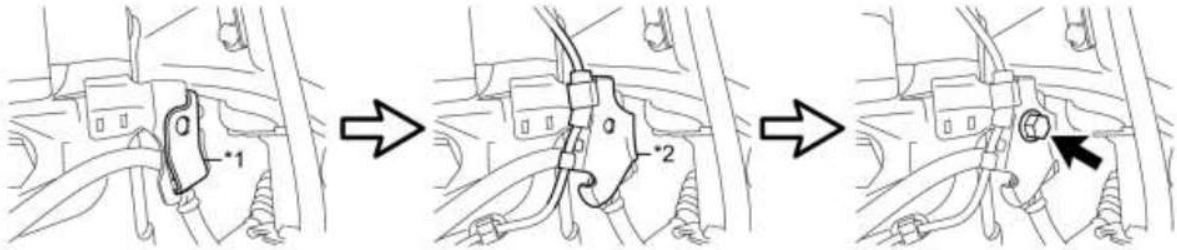


c

Torque: **8.5 N·m (87 kgf·cm, 76in·lbf)**

- Prevent foreign matter from attaching to the front speed sensor tip.
- Firmly insert the front speed sensor body into the knuckle before tightening the bolt.
- After installing the front speed sensor to the knuckle, make sure that there is no clearance between the front speed sensor stay and knuckle. Also make sure that no foreign matter is stuck between the parts.
- Before installing the clamp, firmly insert the points of the clamp into the installation holes.

(b) Temporarily install the front brake flexible hose.



c

Text in Illustration

*1	Front Brake Flexible Hose	*2	No. 1 Sensor Clamp

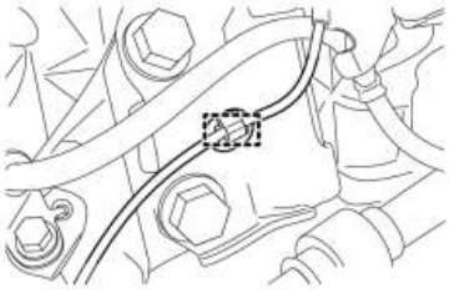
(c) Install the front brake flexible hose and No. 1 sensor clamp together to the shock absorber with the bolt.

Torque: **19 N·m (192 kgf·cm, 14ft·lbf)**

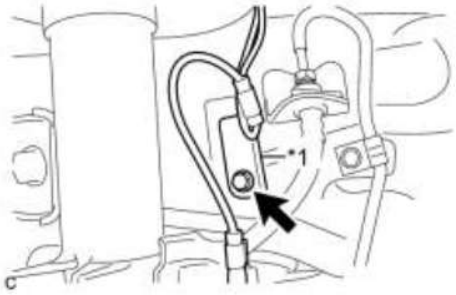
NOTICE:

cardiagn.com

- Do not twist the wire harness for the front speed sensor when installing the speed sensor.
- Bolt tightens the brake flexible hose and front speed sensor together. Make sure that the front speed sensor is positioned over the front brake flexible hose.



(d) Install the clamp to the shock absorber assembly.

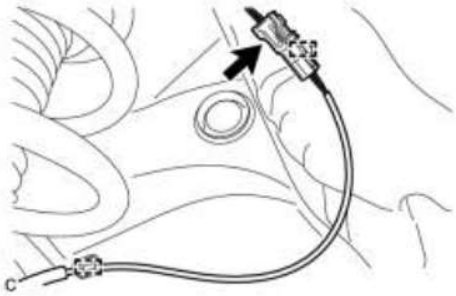


(e) Install the No. 2 sensor clamp to the body with the bolt.

Torque: **8.5 N·m (87 kgf·cm, 76in·lbf)**

Text in Illustration

*1	No. 2 Sensor Clamp



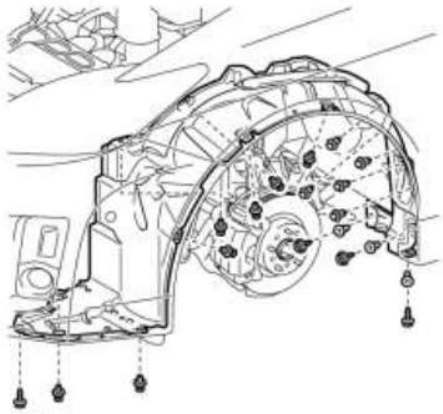
(f) Connect the speed sensor connector.

(g) Connect the 2 speed sensor wire harness clamps to the body.

2. INSTALL FRONT FENDER LINER

(a) Install the front fender liner with the 12 clips, 3 grommets and 4 screws.

cardiagn.com



C

3. INSTALL FRONT WHEEL

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

5. INSTALL REAR NO. 3 FLOOR BOARD INFO

6. INSTALL REAR DECK FLOOR BOX INFO

7. INSTALL REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

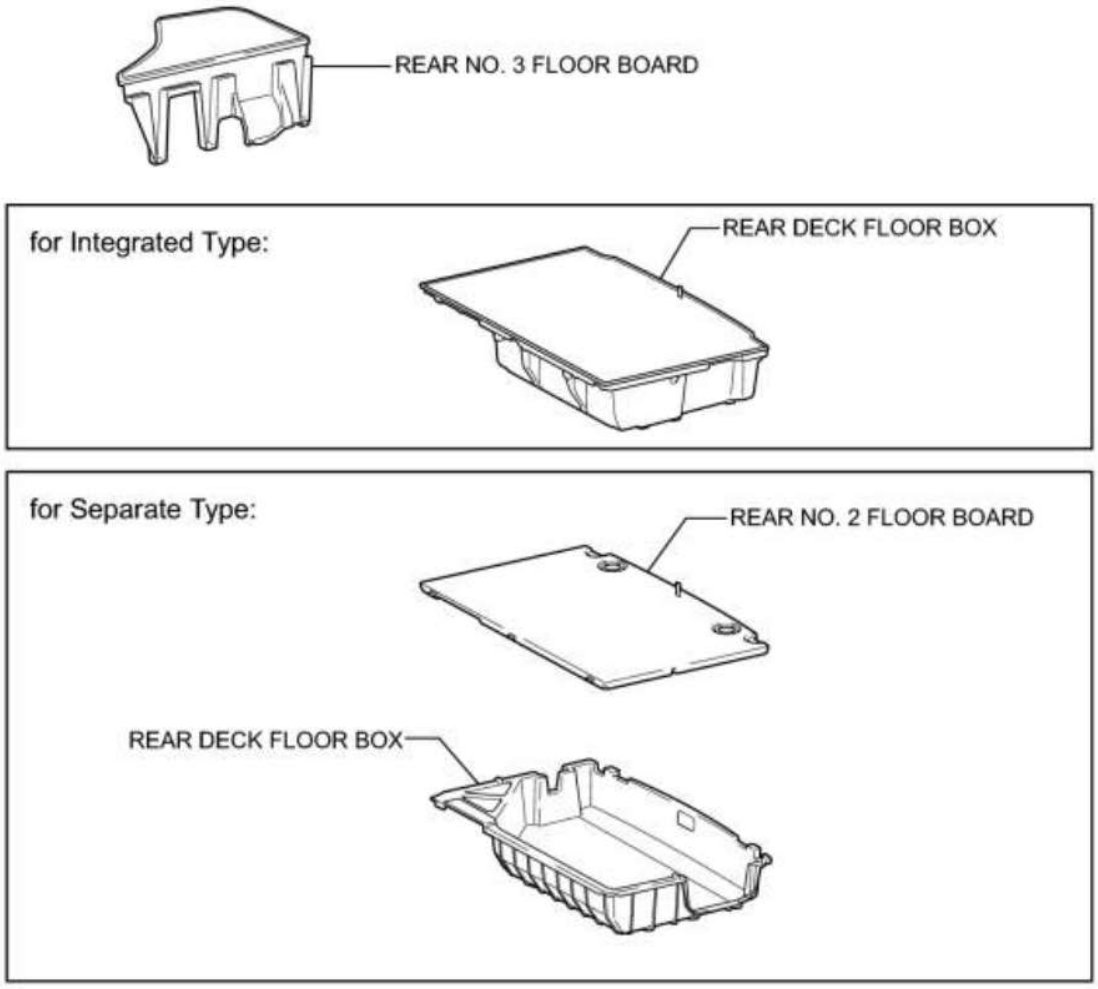
8. CHECK FOR SPEED SENSOR SIGNAL

INFO

cardiagn.com

COMPONENTS

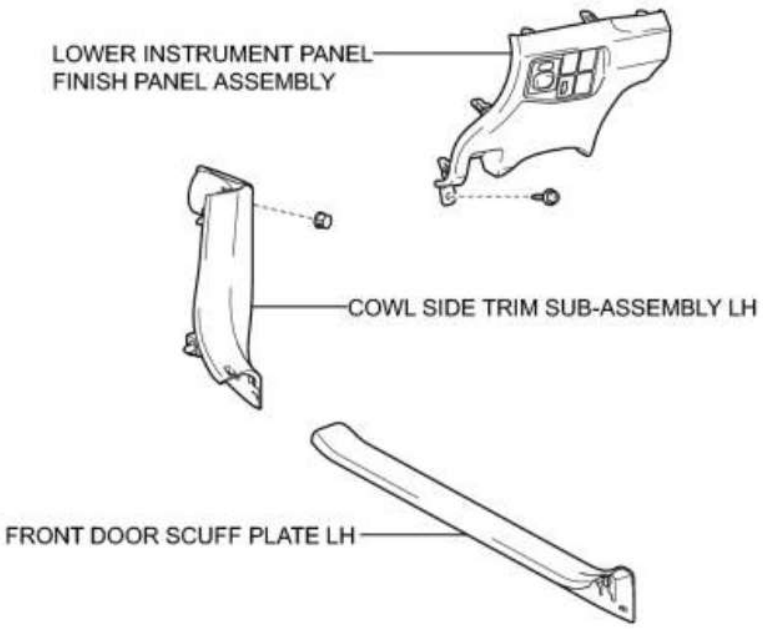
ILLUSTRATION



P

ILLUSTRATION

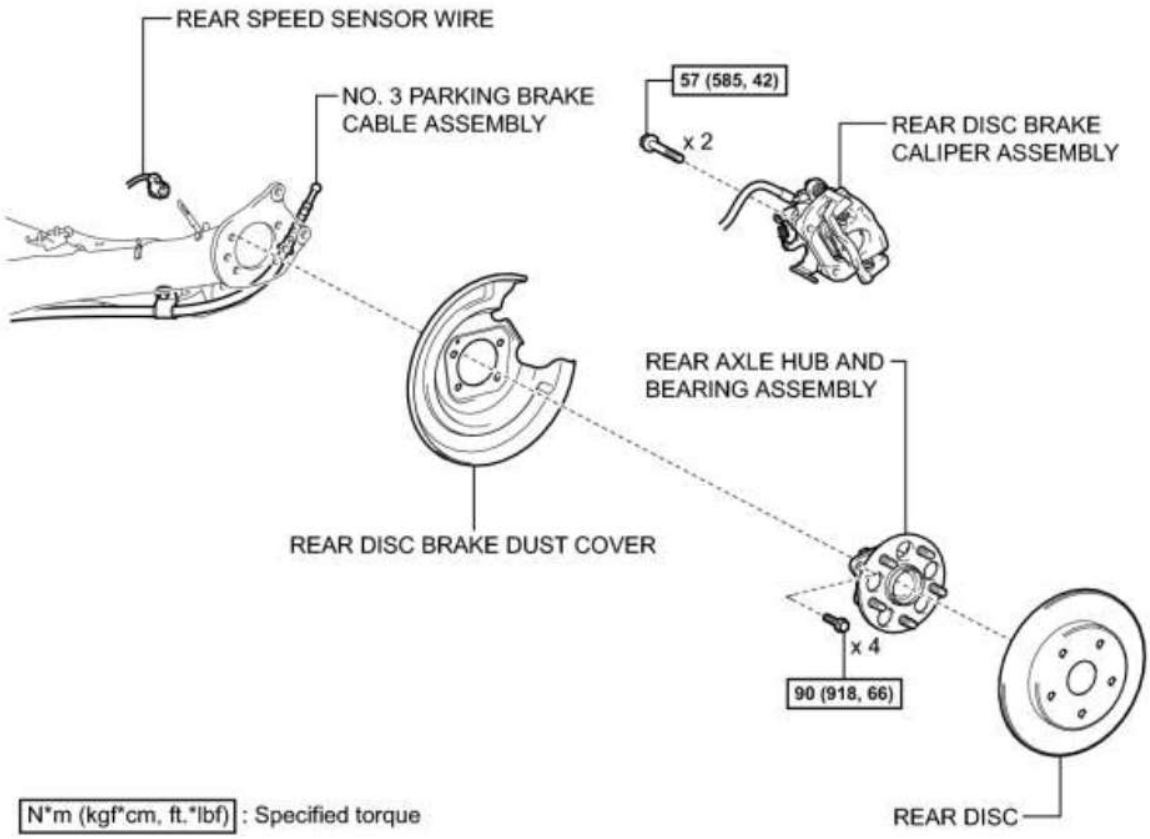
cardiagn.com



c

ILLUSTRATION

cardiagn.com



c

cardiagn.com

REMOVAL

NOTICE:

- While the battery is connected, even if the power switch is off, the brake control system activates when the brake pedal is depressed or any door courtesy switch is turned on. Therefore, when servicing the brake system components, do not depress the brake pedal or open/ close the doors while the battery is connected.
- When the brake pedal is first depressed after replacing the brake pads or pushing back the disc brake piston, DTC C1214 may be output. As there is no malfunction, clear the DTC.

HINT:

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.
- If the sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly.
- The rear speed sensor is a component of the rear axle hub and bearing assembly. If the sensor malfunctions, replace the rear axle hub and bearing assembly.

1. REMOVE REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

2. REMOVE REAR DECK FLOOR BOX INFO

3. REMOVE REAR NO. 3 FLOOR BOARD INFO

4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

5. REMOVE REAR WHEEL

6. REMOVE FRONT DOOR SCUFF PLATE LH INFO

7. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH INFO

8. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

9. LOOSEN PARKING BRAKE CABLE INFO

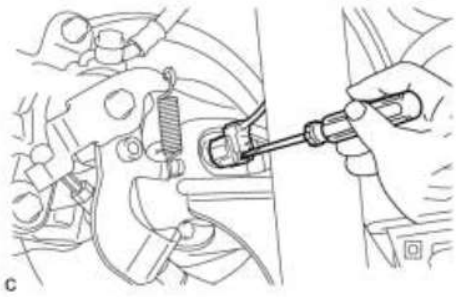
10. DISCONNECT REAR SPEED SENSOR WIRE

(a) Using a screwdriver, disconnect the connector from the rear speed sensor.

NOTICE:

Be careful not to damage the rear speed sensor.

cardiagn.com



11. DISCONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

12. SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY INFO

13. REMOVE REAR DISC INFO

14. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY

(a) Remove the rear axle hub and bearing assembly INFO.

HINT:

The rear speed sensor is a component of the rear axle hub and bearing assembly. If the sensor malfunctions, replace the rear axle hub and bearing assembly.

cardiagn.com

INSTALLATION

HINT:

- If the sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly.
- The rear speed sensor is a component of the rear axle hub and bearing assembly. If the sensor malfunctions, replace the rear axle hub and bearing assembly.

1. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY

(a) Install the rear axle hub and bearing assembly INFO.

HINT:

The rear speed sensor is a component of the rear axle hub and bearing assembly. If the sensor malfunctions, replace the rear axle hub and bearing assembly.

2. INSPECT REAR AXLE HUB BEARING LOOSENESS INFO

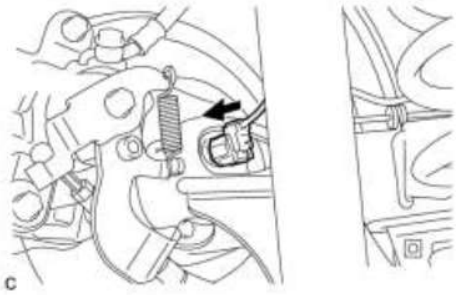
3. INSPECT REAR AXLE HUB RUNOUT INFO

4. INSTALL REAR DISC INFO

5. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY INFO

6. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY INFO

7. CONNECT REAR SPEED SENSOR WIRE



(a) Connect the rear speed sensor wire connector to the rear speed sensor.

8. ADJUST PARKING BRAKE LEVER TRAVEL INFO

9. INSPECT REAR DISC BRAKE CYLINDER OPERATION LEVER AND STOPPER CLEARANCE INFO

10. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

11. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH INFO

12. INSTALL FRONT DOOR SCUFF PLATE LH INFO

cardiagn.com

13. INSTALL REAR WHEEL

Torque: **103 N·m (1050 kgf·cm, 76ft·lbf)**

14. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

15. INSTALL REAR NO. 3 FLOOR BOARD INFO

16. INSTALL REAR DECK FLOOR BOX INFO

17. INSTALL REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

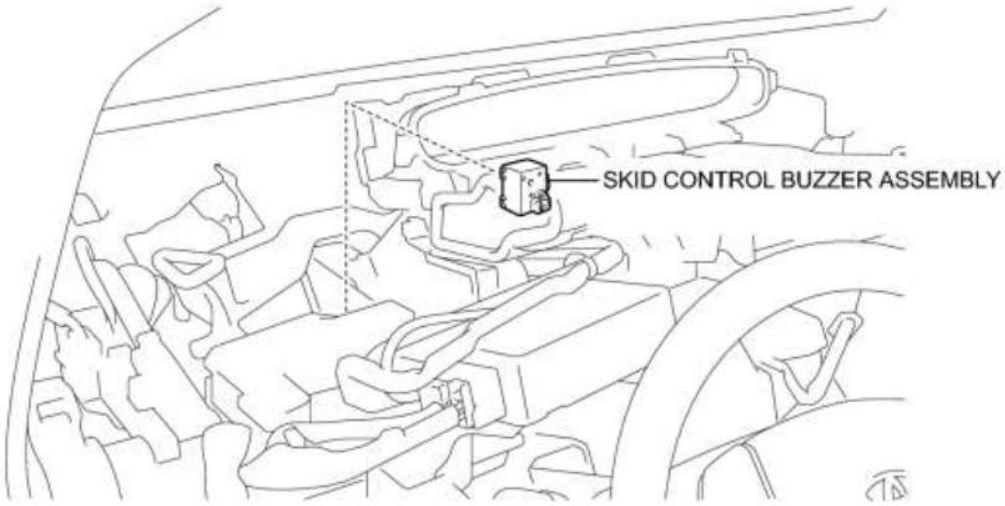
18. CHECK FOR SPEED SENSOR SIGNAL

INFO

cardiagn.com

COMPONENTS

ILLUSTRATION



c

cardiagn.com

REMOVAL

NOTICE:

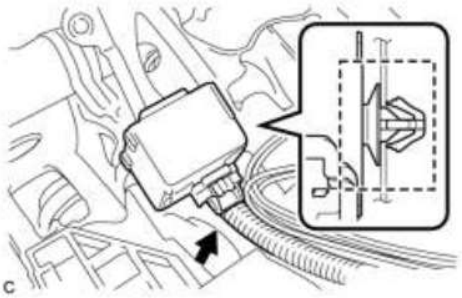
While the battery is connected, even if the power switch is off, the brake control system activates when the brake pedal is depressed or any door courtesy switch is turned on. Therefore, when servicing the brake system components, do not depress the brake pedal or open/close the doors while the battery is connected.

1. REMOVE UPPER INSTRUMENT PANEL SUB-ASSEMBLY

HINT:

Refer to the instructions for Removal of the Upper Instrument Panel Sub-assembly INFO.

2. REMOVE SKID CONTROL BUZZER ASSEMBLY



(a) Remove the skid control buzzer assembly.

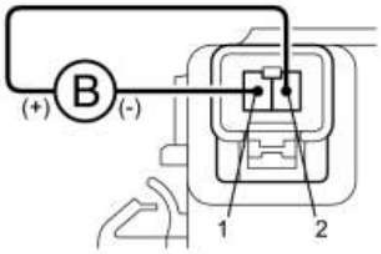
(b) Disconnect the skid control buzzer connector.

cardiagn.com

INSPECTION

1. INSPECT SKID CONTROL BUZZER ASSEMBLY

*1



N

(a) Connect a negative (-) lead from the battery to terminal 1 of the skid control buzzer and a positive (+) lead to terminal 2, and then check that the buzzer sounds.

Text in Illustration

*1	Component without harness connected (Skid Control Buzzer)

OK:

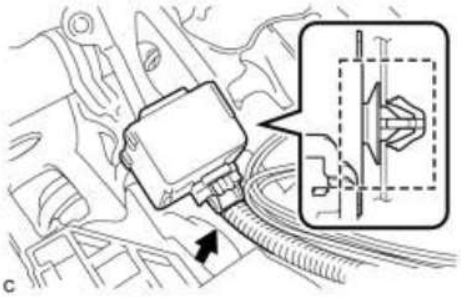
The skid control buzzer sounds.

If the result is not as specified, replace the switch.

cardiagn.com

INSTALLATION

1. INSTALL SKID CONTROL BUZZER ASSEMBLY



(a) Connect the skid control buzzer connector.

(b) Install the skid control buzzer assembly.

2. INSTALL UPPER INSTRUMENT PANEL SUB-ASSEMBLY

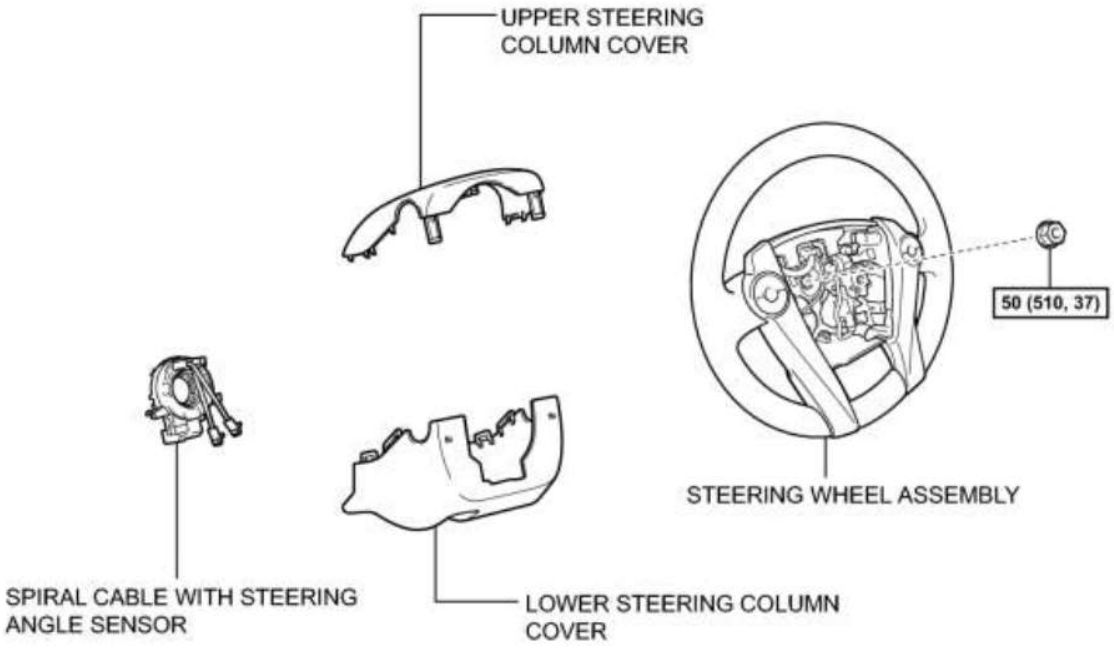
HINT:

Refer to the instructions for Installation of the Upper Instrument Panel Sub-assembly INFO.

cardiagn.com

COMPONENTS

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

cardiagn.com

REMOVAL

NOTICE:

- Do not remove the steering angle sensor from the spiral cable.
- While the battery is connected, even if the power switch is off, the brake control system activates when the brake pedal is depressed or any door courtesy switch is turned on. Therefore, when servicing the brake system components, do not depress the brake pedal or open/ close the doors while the battery is connected.

1. PRECAUTION

CAUTION:

Be sure to read Precaution thoroughly before servicing INFO.

2. ALIGN FRONT WHEELS FACING STRAIGHT AHEAD

3. REMOVE STEERING PAD

HINT:

Refer to the procedure up to Remove Steering Pad INFO.

4. REMOVE STEERING WHEEL ASSEMBLY INFO

5. REMOVE LOWER STEERING COLUMN COVER INFO

6. REMOVE UPPER STEERING COLUMN COVER INFO

7. REMOVE SPIRAL CABLE WITH STEERING ANGLE SENSOR

(a) Remove the spiral cable with steering angle sensor INFO.

NOTICE:

- Do not replace spiral cable with steering angle sensor with the battery connected and the power switch on (IG).
- Do not rotate the spiral cable with steering angle sensor with the battery connected and the power switch on (IG).
- Ensure that the steering wheel is installed and aligned straight when inspecting the steering angle sensor.
- Do not remove the steering angle sensor from the spiral cable.

cardiagn.com

INSTALLATION

1. INSTALL SPIRAL CABLE WITH STEERING ANGLE SENSOR

(a) Install the spiral cable with steering angle sensor INFO.

NOTICE:

- Do not replace the spiral cable with steering angle sensor with the battery connected and the power switch on (IG).
- Do not rotate the spiral cable with steering angle sensor with the battery connected and the power switch on (IG).
- Ensure that the steering wheel is installed and aligned straight when inspecting the steering angle sensor.
- Do not remove the steering angle sensor from the spiral cable.

2. INSTALL UPPER STEERING COLUMN COVER INFO

3. INSTALL LOWER STEERING COLUMN COVER INFO

4. ALIGN FRONT WHEELS FACING STRAIGHT AHEAD

5. ADJUST SPIRAL CABLE INFO

6. INSTALL STEERING WHEEL ASSEMBLY INFO

7. INSPECT STEERING WHEEL CENTER POINT

8. INSTALL STEERING PAD

HINT:

Refer to the procedure from Install Steering Pad INFO.

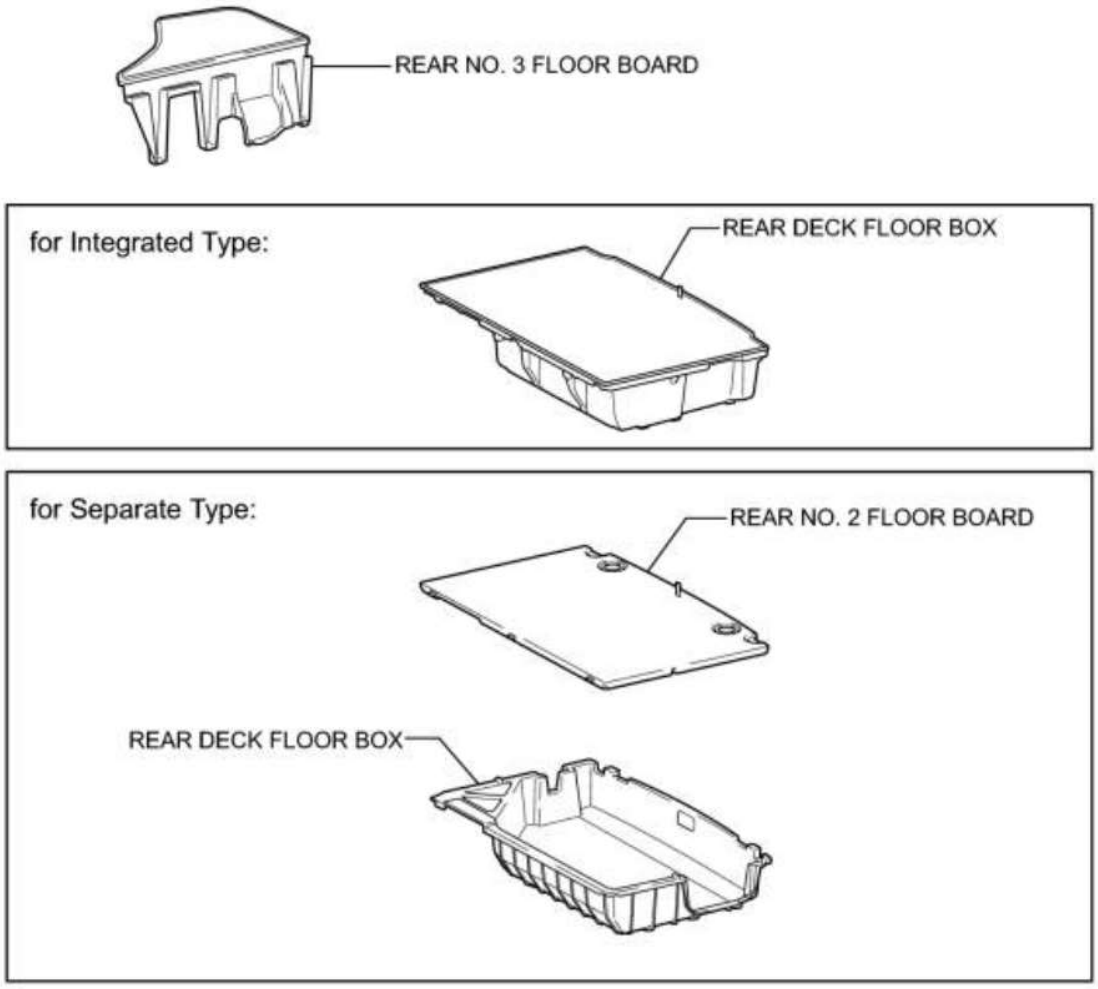
9. CALIBRATE STEERING ANGLE SENSOR

INFO

cardiagn.com

COMPONENTS

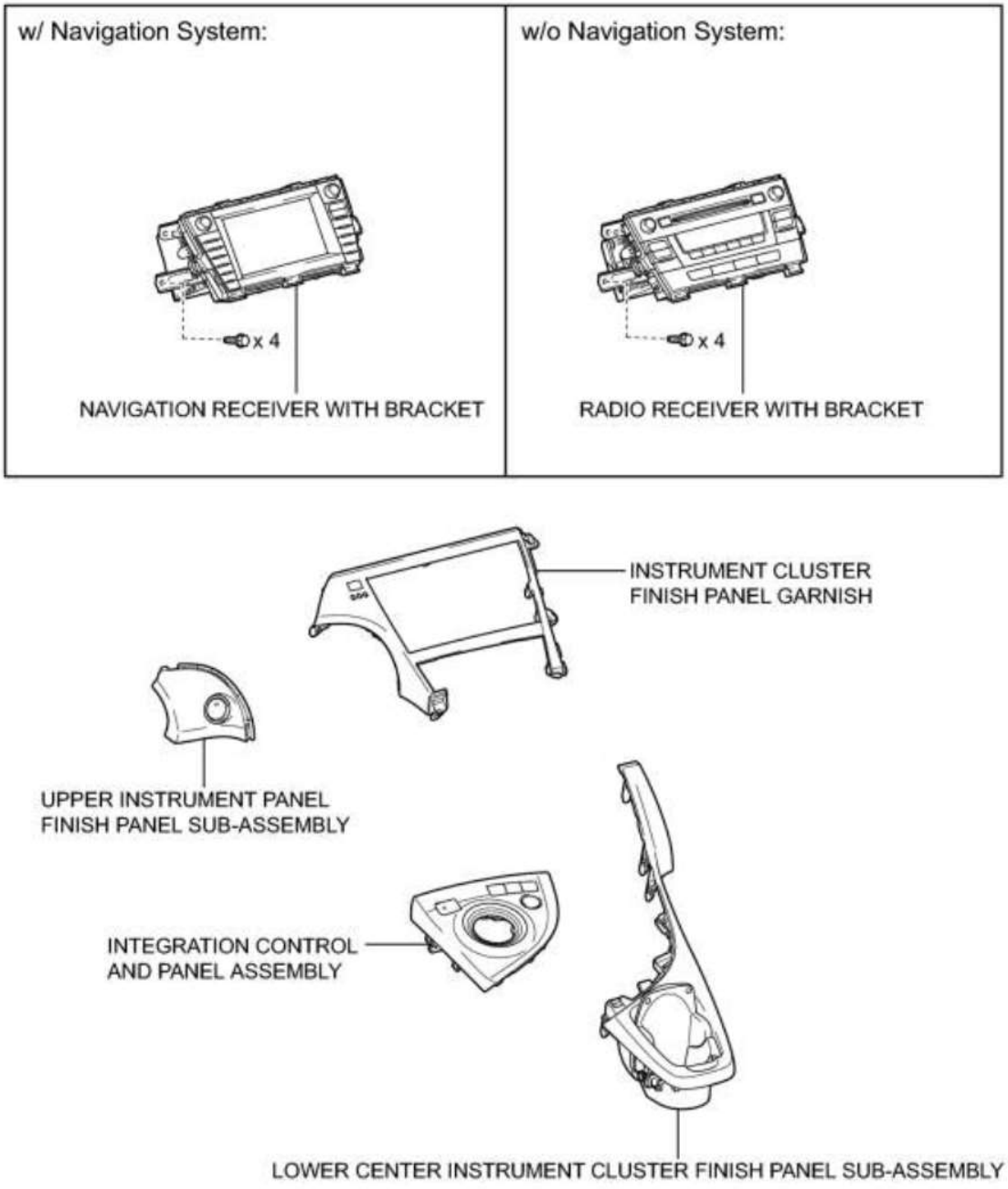
ILLUSTRATION



P

ILLUSTRATION

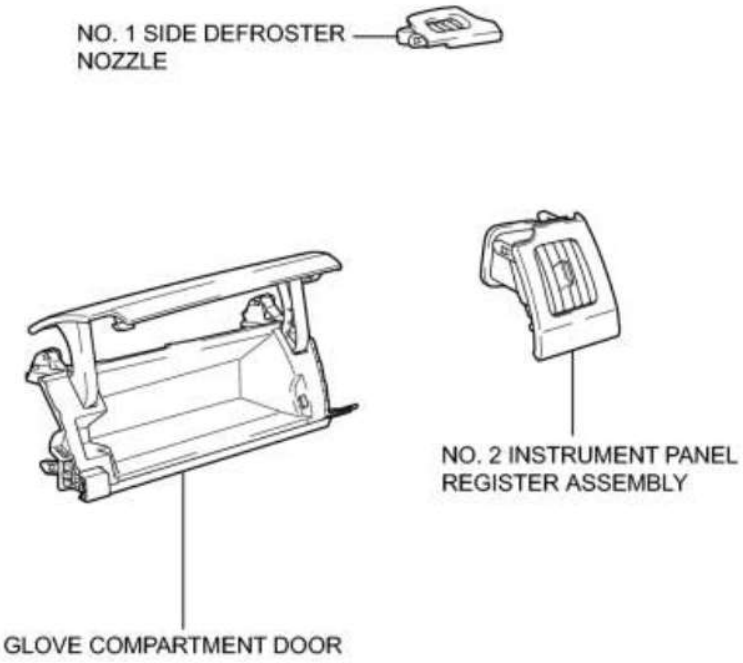
cardiagn.com



P

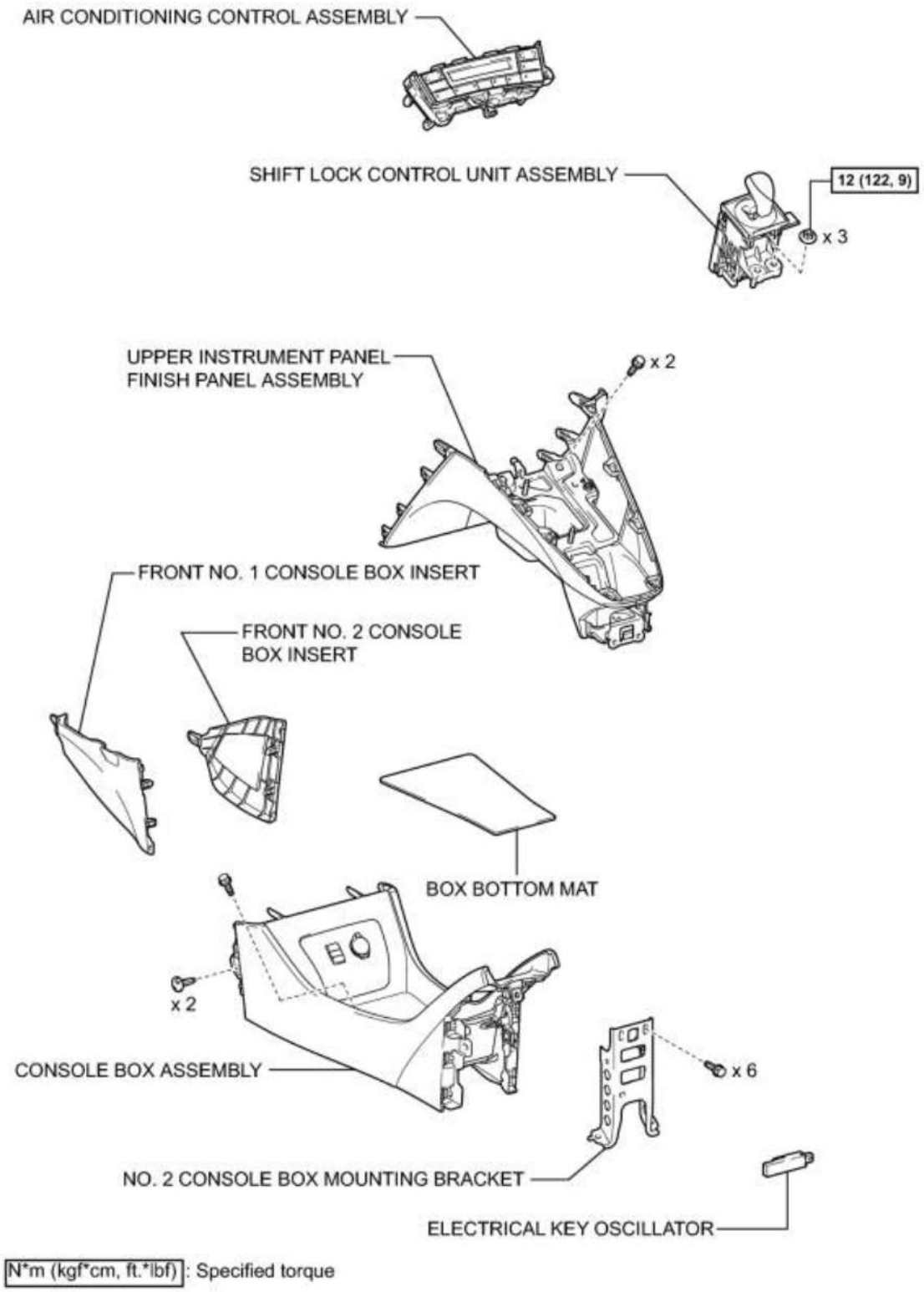
ILLUSTRATION

cardiagn.com



cardiagn.com

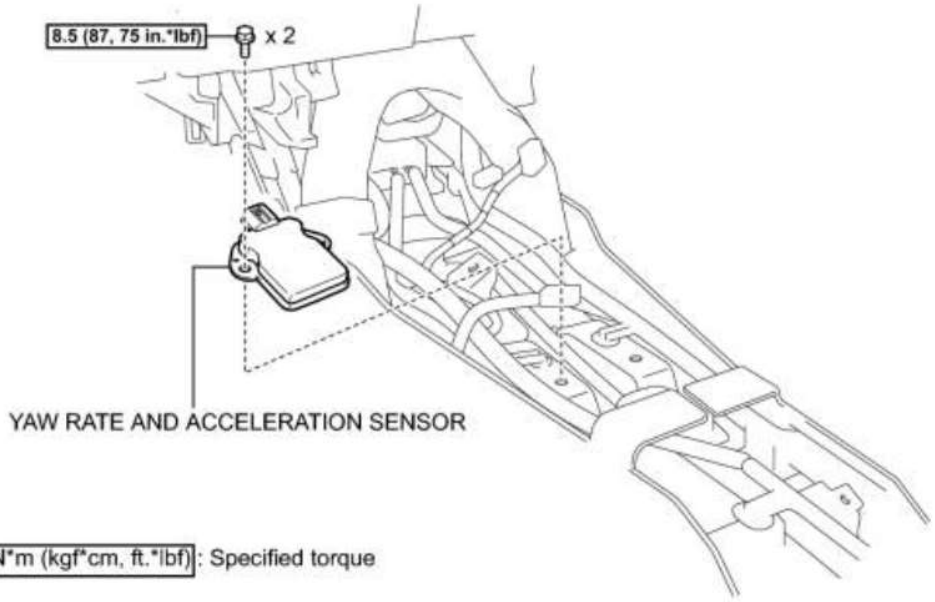
ILLUSTRATION



ILLUSTRATION

2010 Toyota Prius Repair Manual

cardiagn.com



c

cardiagn.com

REMOVAL

NOTICE:

While the battery is connected, even if the power switch is off, the brake control system activates when the brake pedal is depressed or any door courtesy switch is turned on. Therefore, when servicing the brake system components, do not depress the brake pedal or open/ close the doors while the battery is connected.

1. REMOVE REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

2. REMOVE REAR DECK FLOOR BOX INFO

3. REMOVE REAR NO. 3 FLOOR BOARD INFO

4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

5. REMOVE INTEGRATION CONTROL AND PANEL ASSEMBLY INFO

6. REMOVE LOWER CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY INFO

7. REMOVE INSTRUMENT CLUSTER FINISH PANEL GARNISH INFO

8. REMOVE UPPER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY INFO

9. REMOVE RADIO RECEIVER WITH BRACKET (w/o Navigation System) INFO

10. REMOVE NAVIGATION RECEIVER WITH BRACKET (w/ Navigation System) INFO

11. REMOVE NO. 1 SIDE DEFROSTER NOZZLE INFO

12. REMOVE NO. 2 INSTRUMENT PANEL REGISTER ASSEMBLY INFO

13. REMOVE GLOVE COMPARTMENT DOOR INFO

14. REMOVE REAR CONSOLE BOX ASSEMBLY

HINT:

Refer to the procedure up to Remove Rear Console Box Assembly INFO.

15. REMOVE ELECTRICAL KEY OSCILLATOR INFO

16. REMOVE NO. 2 CONSOLE BOX MOUNTING BRACKET INFO

cardiagn.com

17. REMOVE FRONT NO. 1 CONSOLE BOX INSERT INFO

18. REMOVE FRONT NO. 2 CONSOLE BOX INSERT INFO

19. REMOVE BOX BOTTOM MAT INFO

20. SEPARATE CONSOLE BOX ASSEMBLY INFO

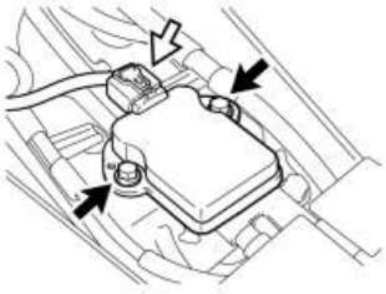
21. REMOVE AIR CONDITIONING CONTROL ASSEMBLY INFO

22. REMOVE SHIFT LOCK CONTROL UNIT ASSEMBLY INFO

23. REMOVE UPPER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

24. REMOVE CONSOLE BOX ASSEMBLY INFO

25. REMOVE YAW RATE AND ACCELERATION SENSOR



C

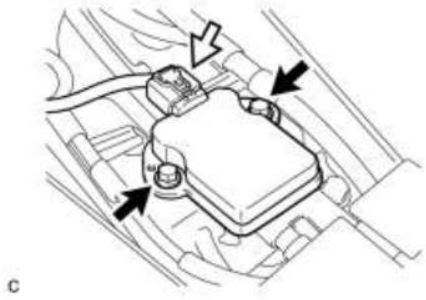
(a) Remove the 2 bolts and yaw rate and acceleration sensor.

(b) Disconnect the connector from the yaw rate and acceleration sensor.

cardiagn.com

INSTALLATION

1. INSTALL YAW RATE AND ACCELERATION SENSOR



(a) Connect the yaw rate and acceleration sensor connector.

NOTICE:

Make sure that the yaw rate and acceleration sensor connector is connected securely.

(b) Install the yaw rate and acceleration sensor with the 2 bolts.

Torque: **8.5 N·m (87 kgf·cm, 75in·lbf)**

NOTICE:

- Do not damage the yaw rate and acceleration sensor.
- Make sure that the yaw rate and acceleration sensor is installed securely.
- Do not use dropped or damaged parts.
- Keep the contact surfaces of the yaw rate and acceleration sensor and the body free of foreign matter.
- Make sure that the sensor is facing the correct direction.

2. INSTALL UPPER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

3. INSTALL SHIFT LOCK CONTROL UNIT ASSEMBLY INFO

4. INSTALL AIR CONDITIONING CONTROL ASSEMBLY INFO

5. INSTALL CONSOLE BOX ASSEMBLY INFO

6. INSTALL BOX BOTTOM MAT INFO

7. INSTALL FRONT NO. 2 CONSOLE BOX INSERT INFO

8. INSTALL NO. 2 CONSOLE BOX MOUNTING BRACKET INFO

9. INSTALL ELECTRICAL KEY OSCILLATOR INFO

10. INSTALL FRONT NO. 1 CONSOLE BOX INSERT INFO

11. INSTALL REAR CONSOLE BOX ASSEMBLY

HINT:

cardiagn.com

Refer to the procedure from Install Rear Console Box Assembly INFO.

12. INSTALL GLOVE COMPARTMENT DOOR INFO

13. INSTALL NO. 2 INSTRUMENT PANEL REGISTER ASSEMBLY INFO

14. INSTALL NO. 1 SIDE DEFROSTER NOZZLE INFO

15. INSTALL NAVIGATION RECEIVER WITH BRACKET (w/ Navigation System) INFO

16. INSTALL RADIO RECEIVER WITH BRACKET (w/o Navigation System) INFO

17. INSTALL UPPER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY INFO

18. INSTALL INSTRUMENT CLUSTER FINISH PANEL GARNISH INFO

19. INSTALL LOWER CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY INFO

20. INSTALL INTEGRATION CONTROL AND PANEL ASSEMBLY INFO

21. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO.

22. INSTALL REAR NO. 3 FLOOR BOARD INFO

23. INSTALL REAR DECK FLOOR BOX INFO

24. INSTALL REAR NO. 2 FLOOR BOARD (for Separate Type) INFO

25. PERFORM YAW RATE AND ACCELERATION SENSOR ZERO POINT CALIBRATION

(a) Perform the yaw rate and acceleration sensor zero point calibration INFO.

26. CHECK FOR YAW RATE AND ACCELERATION SENSOR SIGNAL

INFO

cardiagn.com