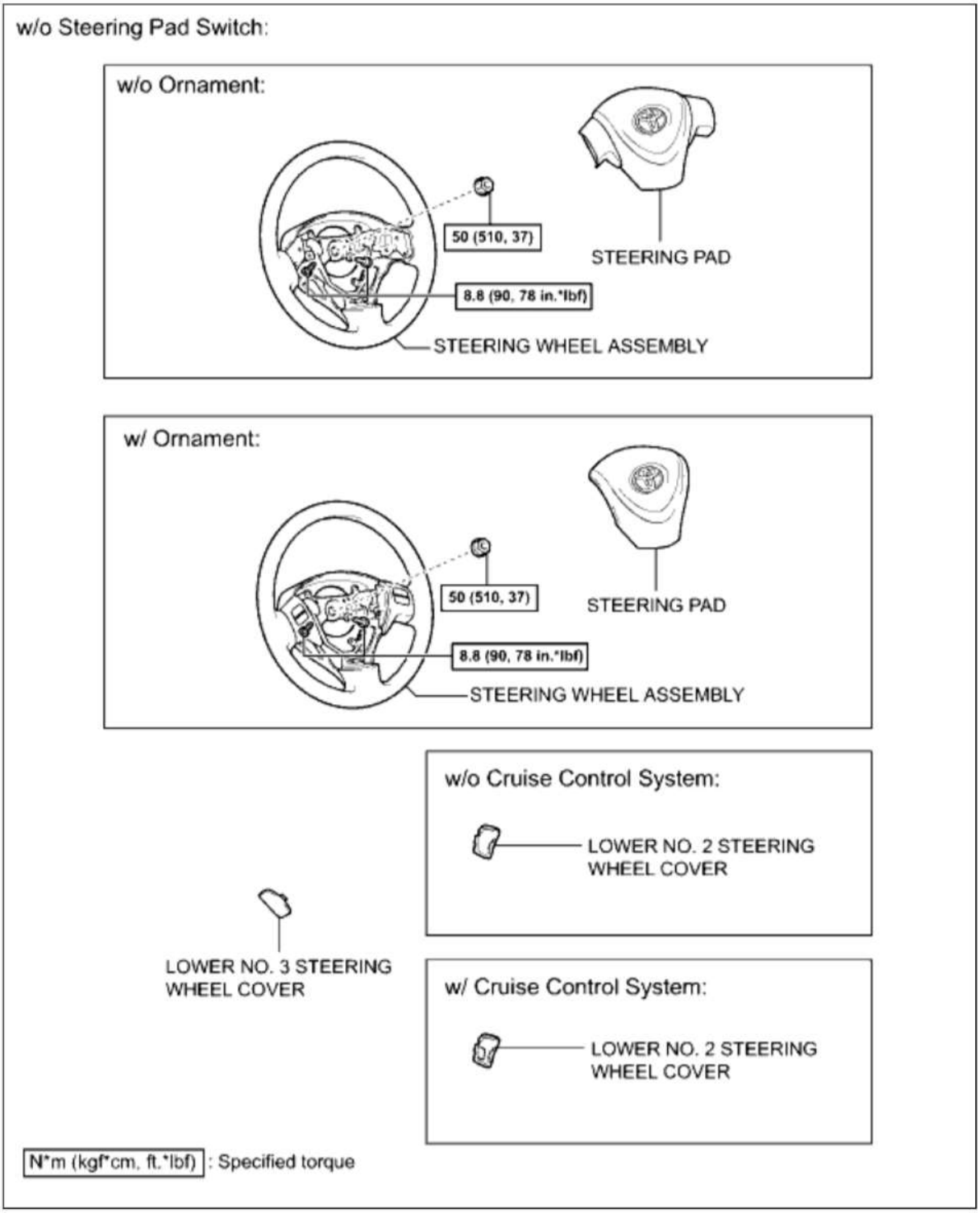
Last Modified: 3-10-2010	6.4 K	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003FA5005X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: STEERING ANGLE SENSOR (w/ VSC): COMPONENTS (2010 Corolla)		

COMPONENTS

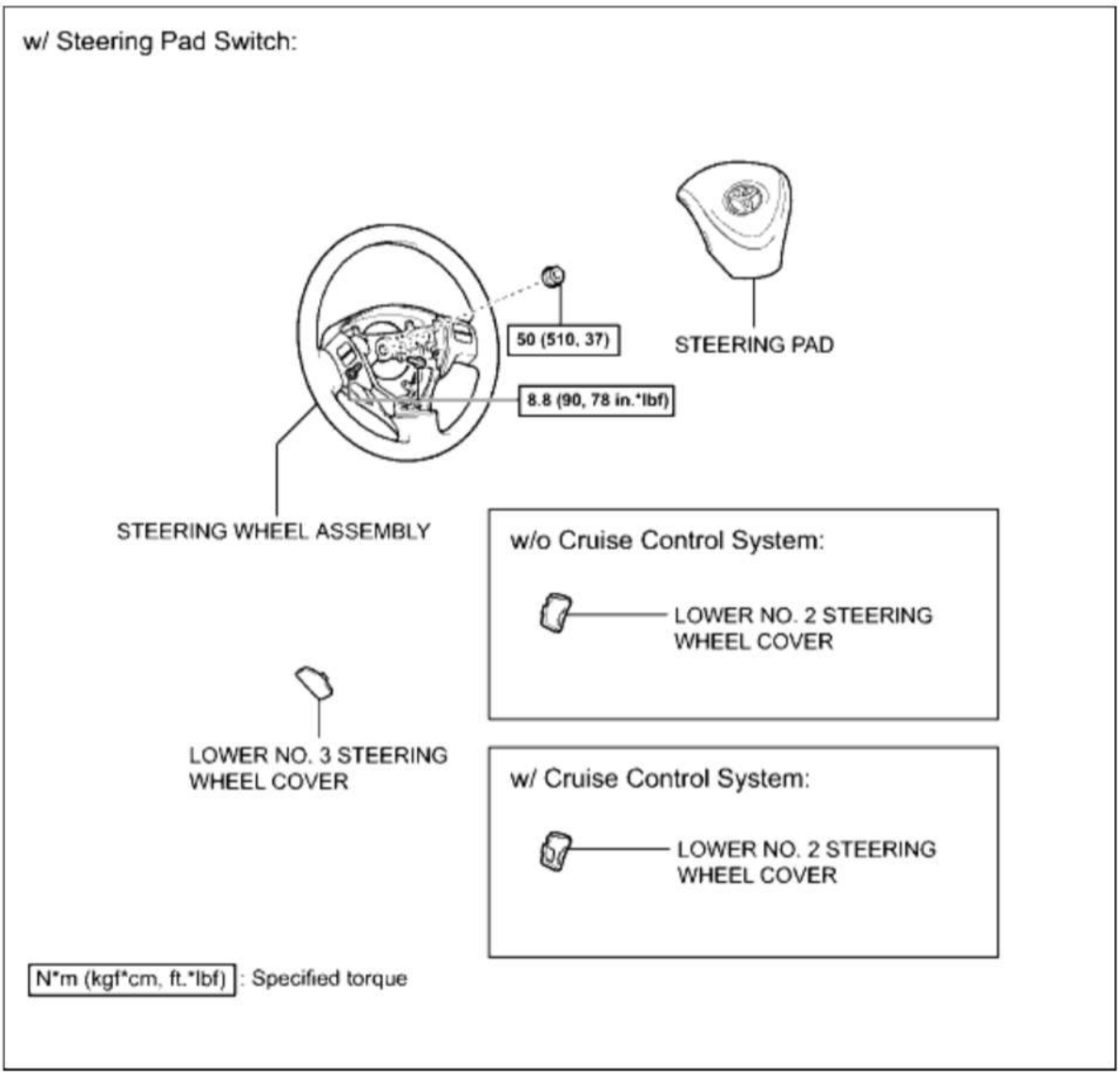
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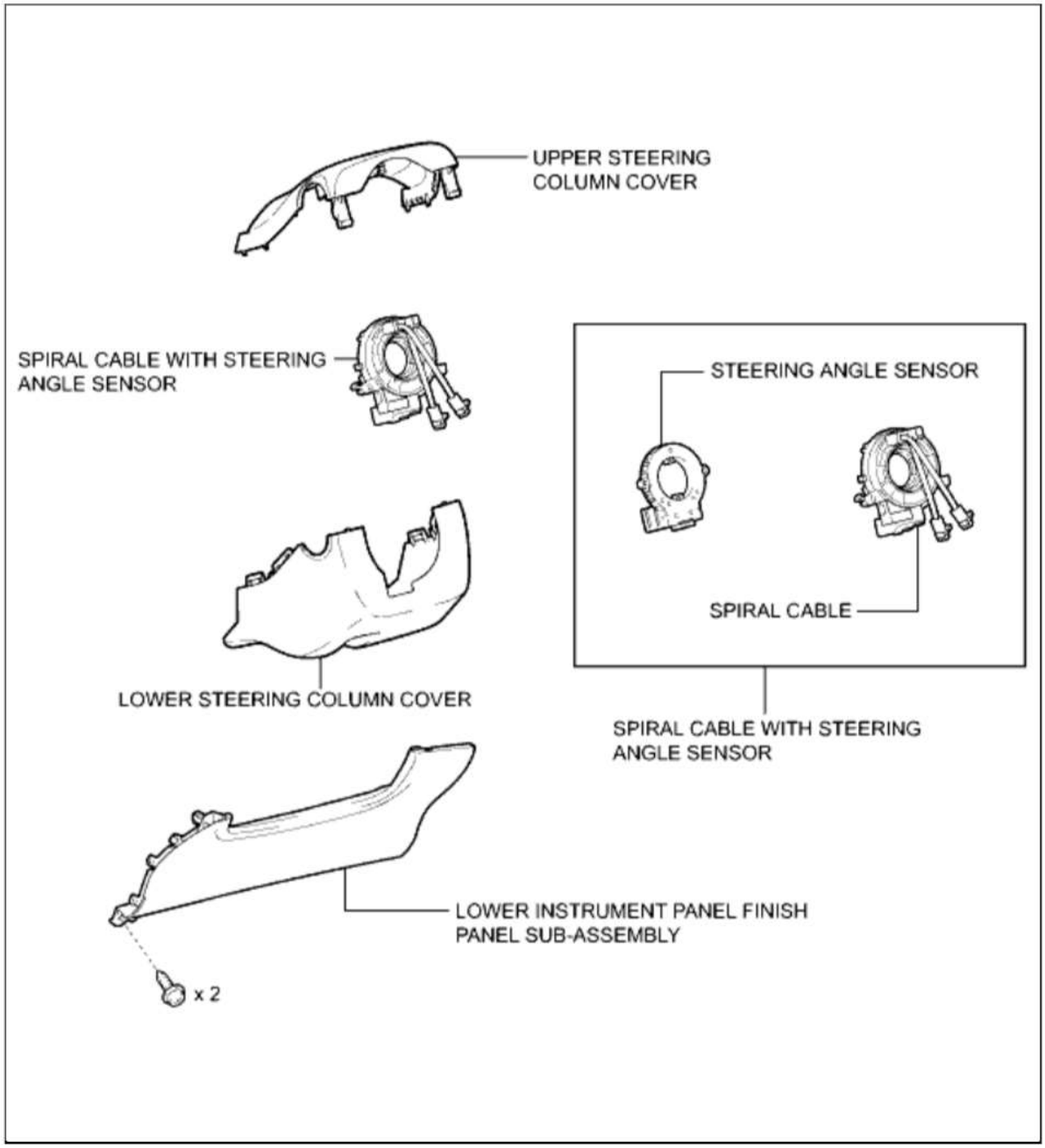
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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VP100GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: STEERING ANGLE SENSOR (w/ VSC): REMOVAL (2010 Corolla)		

REMOVAL

1. PRECAUTION

CAUTION:

Be sure to read Precaution throughly before servicing INFO

2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system INFO .

3. ALIGN FRONT WHEELS FACING STRAIGHT AHEAD

4. REMOVE LOWER NO. 3 STEERING WHEEL COVER INFO

5. REMOVE LOWER NO. 2 STEERING WHEEL COVER INFO

6. REMOVE STEERING PAD INFO

7. REMOVE STEERING WHEEL ASSEMBLY INFO

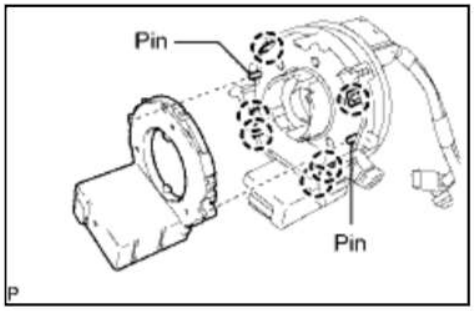
8. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY INFO

9. REMOVE LOWER STEERING COLUMN COVER INFO

10. REMOVE UPPER STEERING COLUMN COVER INFO

11. REMOVE SPIRAL CABLE WITH STEERING ANGLE SENSOR INFO

12. REMOVE STEERING ANGLE SENSOR



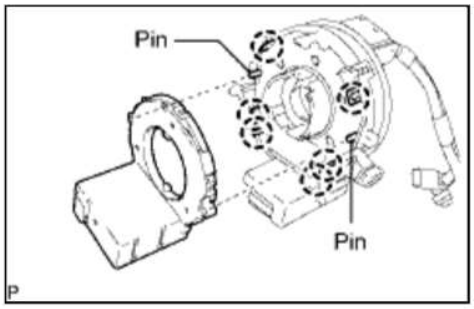
(a) Disengage the 6 claws and 2 pins, and remove the steering angle sensor from the spiral cable.

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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VOY00GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: STEERING ANGLE SENSOR (w/ VSC): INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL STEERING ANGLE SENSOR



(a) Align the 2 locating pins, engage the 6 claws, and install the steering angle sensor to the spiral cable.

2. INSTALL SPIRAL CABLE WITH STEERING ANGLE SENSOR INFO

3. INSTALL UPPER STEERING COLUMN COVER INFO

4. INSTALL LOWER STEERING COLUMN COVER INFO

5. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY INFO

6. ADJUST SPIRAL CABLE INFO

7. INSTALL STEERING WHEEL ASSEMBLY INFO

8. INSPECT STEERING WHEEL CENTER POINT

9. INSTALL STEERING PAD INFO

10. INSTALL LOWER NO. 3 STEERING WHEEL COVER INFO

11. INSTALL LOWER NO. 2 STEERING WHEEL COVER INFO

12. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When reconnecting the cable to the negative (-) battery terminal after installing the steering sensor, check that the front tires and steering wheel are kept aligned straight ahead before and after connecting the cable to the negative (-) battery terminal.

13. INSPECT STEERING PAD INFO

14. INSPECT SRS WARNING LIGHT

INFO

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Last Modified: 3-10-2010	6.4 L	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XFT04LX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: PRECAUTION (2010 Corolla)		

PRECAUTION

1. EXPRESSIONS OF IGNITION SWITCH

The type of ignition switch used on this model differs according to the specifications of the vehicle.

The expressions listed in the table below are used in this section.

EXPRESSION	SWITCH TYPE	
	IGNITION SWITCH (POSITION)	ENGINE SWITCH (CONDITION)
Ignition switch off	LOCK	off
Ignition switch ON	ON	on (IG)
Ignition switch ACC	ACC	on (ACC)
Engine start	START	start

2. TROUBLESHOOTING PRECAUTIONS

(a) When there is a malfunction with terminal contact points or part installation problems, removal and installation of the suspected parts may return the system to normal 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 any connector or removing and installing parts.

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

3. HANDLING PRECAUTIONS

(a) Do not remove or install VSC parts such as the steering angle sensor or yaw rate and acceleration 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 VSC system.

(c) Be sure to remove and install the ECU, brake actuator and each sensor, etc. with the ignition switch off unless it is specified in the inspection procedure.

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

4. DTC PRECAUTION

(a) Warnings for some DTCs will not be cleared by just replacing the malfunctioning parts. If a

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warning is still displayed after completing a repair, turn the ignition switch off before beginning the clear DTC procedure.

NOTICE:

If a DTC for a malfunctioning part reappears after it was cleared, then it has been stored again.

5. CHASSIS DYNAMOMETER PRECAUTION

(a) Enter Test Mode to disable TRAC and VSC control when using a chassis dynamometer 

.

HINT:

- The vehicle may unexpectedly move off of the dynamometer because of TRAC and VSC operation.
- Pressing the VSC OFF switch does not disable TRAC and VSC operation completely.

NOTICE:

- Make sure that the VSC OFF indicator light is blinking (Test Mode is activated).
- Secure the vehicle with lock chains for safety.

6. CAN COMMUNICATION SYSTEM PRECAUTIONS

(a) The CAN communication system is used for data communication between the skid control ECU, the steering angle sensor, the 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 output.

(b) If any CAN communication line DTCs are output, repair the malfunction in the communication line and troubleshoot the VSC system while 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.



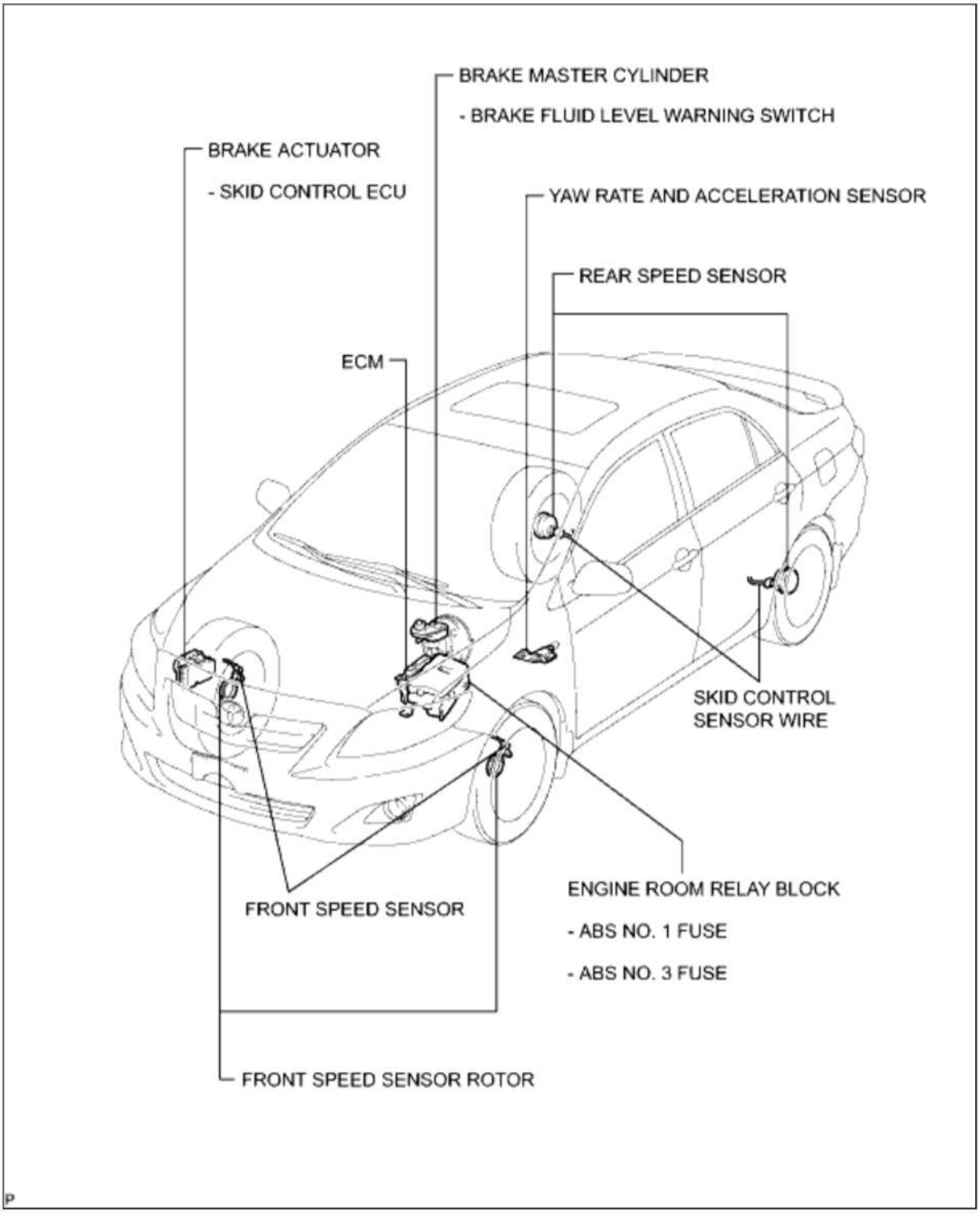
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Last Modified: 3-10-2010	6.4 R	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JB302NX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: PARTS LOCATION (2010 Corolla)		

PARTS LOCATION

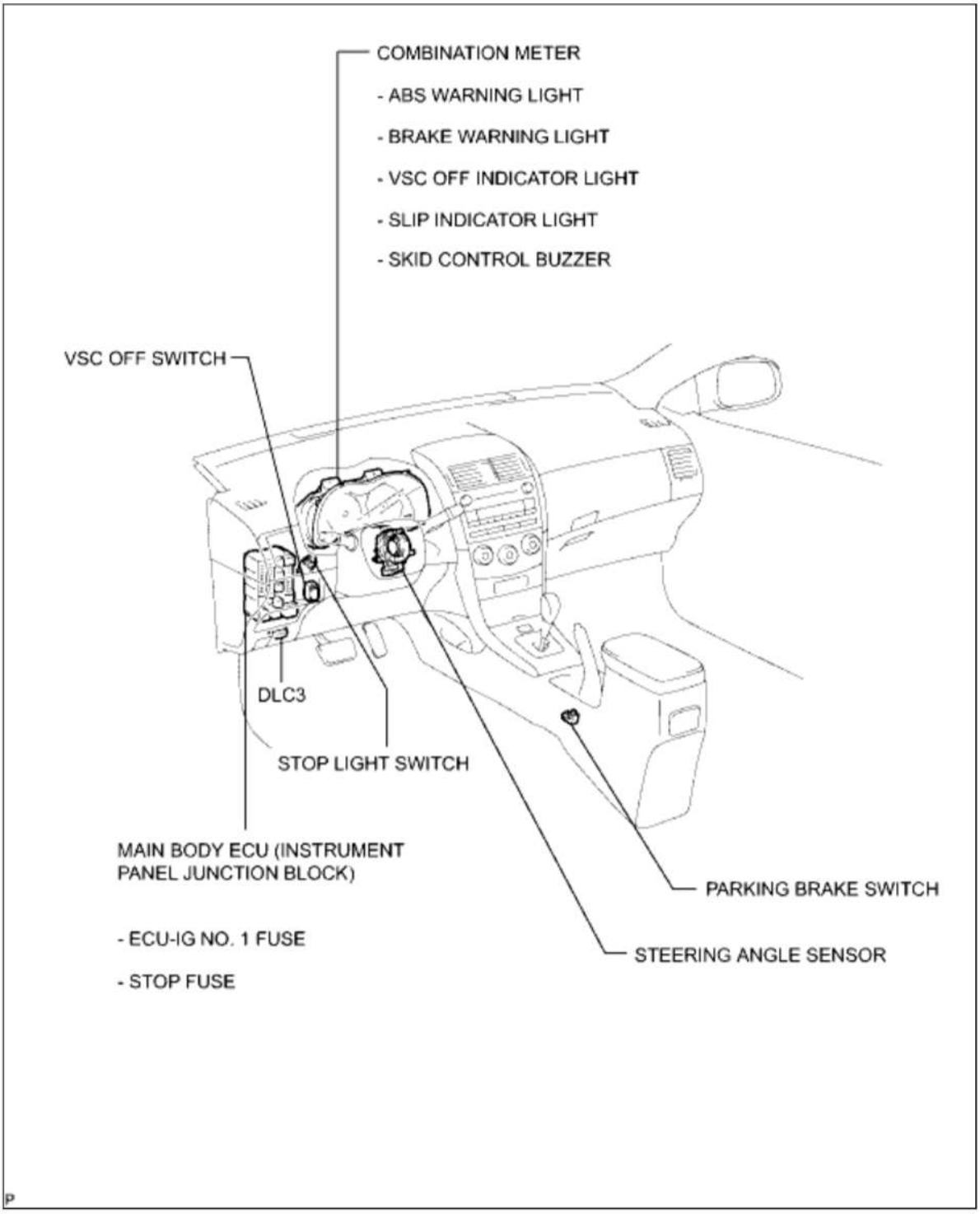
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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHO03GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: SYSTEM DESCRIPTION (2010 Corolla)		

SYSTEM DESCRIPTION

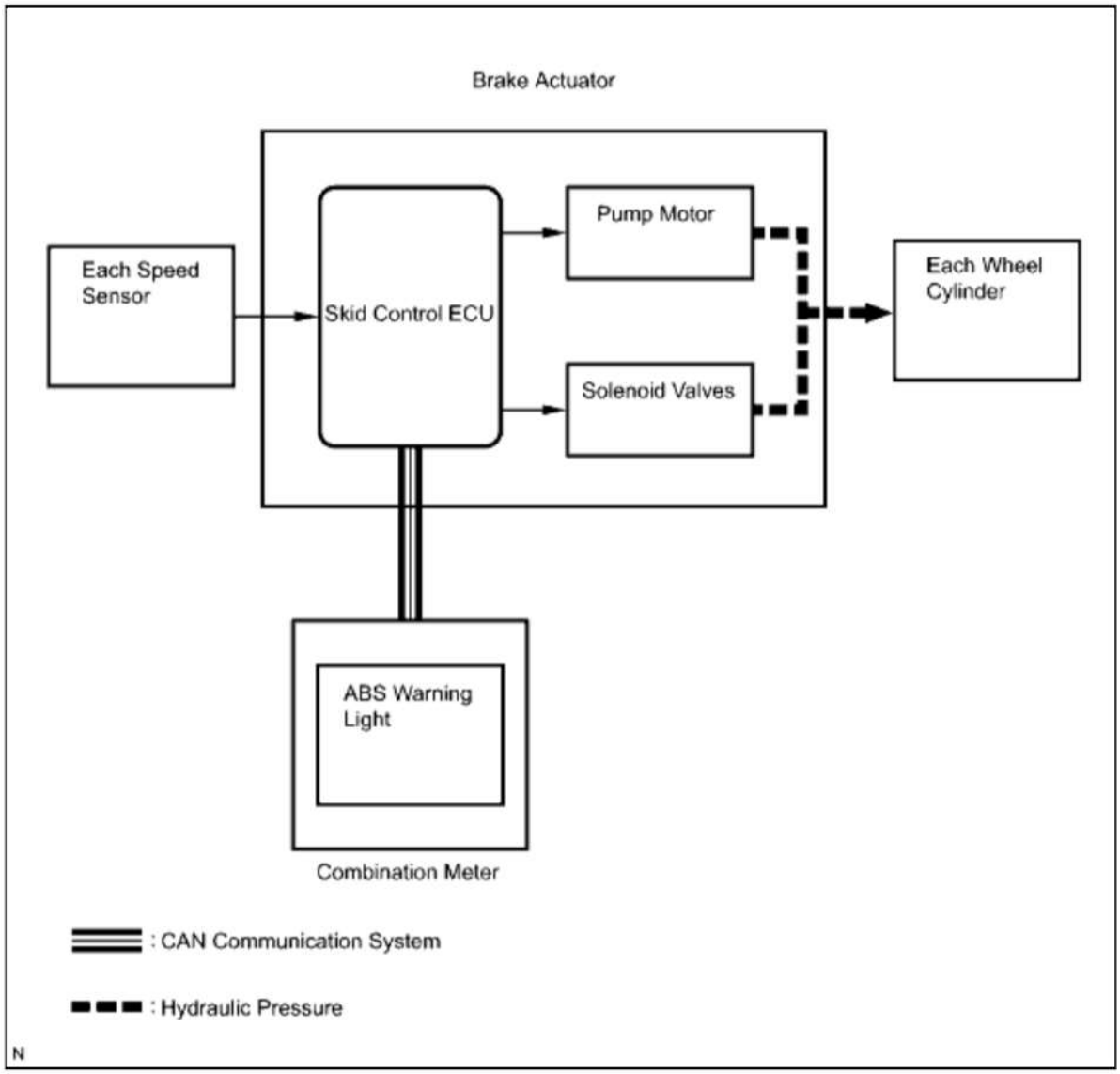
1. FUNCTION DESCRIPTION

HINT:

- The skid control ECU is located within the brake actuator assembly.
- The yaw rate sensor and acceleration sensor are combined in a single unit. This unit communicates with the skid control ECU through CAN communication.

(a) ABS (Anti-lock Brake System)

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



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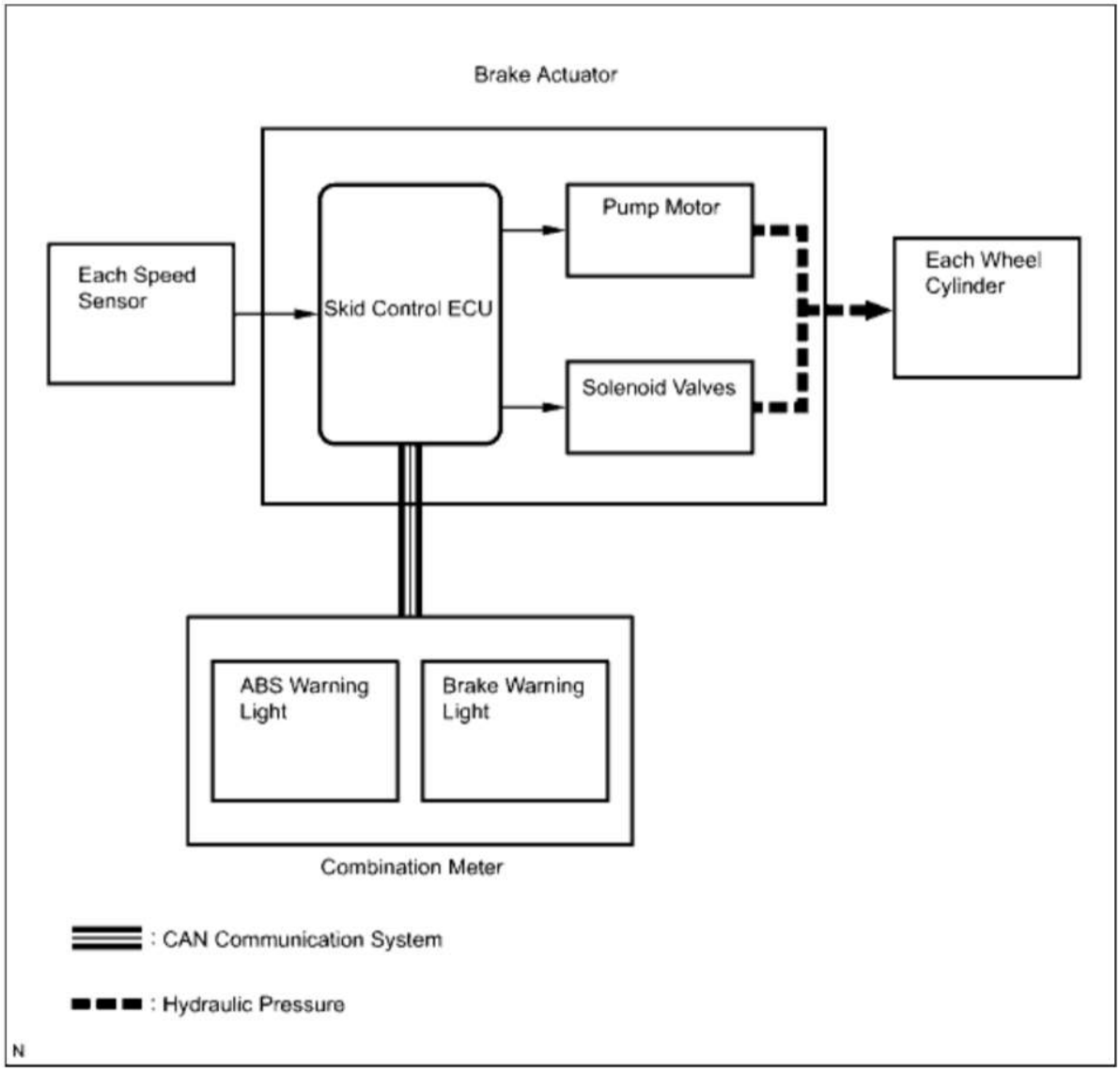
(1) Operation description

The skid control ECU detects wheel lock based on speed signals received from the wheel speed sensors. Based on this information, the skid control ECU controls the pump motor and solenoid valves. The pump motor and solenoid valves are used to prevent wheel lock by controlling the hydraulic pressure applied to the brakes at each wheel. The ABS warning light will come on when the system is malfunctioning.

(b) EBD (Electronic Brake force Distribution)

The EBD control utilizes the ABS to properly distribute brake force between the front and rear wheels in accordance with driving conditions.

When braking while cornering, it also controls the brake force distribution between the right and left wheels, helping to maintain vehicle behavior.



(1) Operation description

The skid control ECU receives a speed signal from each wheel speed sensor, and uses these signals to detect locking of the wheels. The ECU uses this information in order to determine appropriate control of the solenoid valves.

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The solenoid valves control the hydraulic pressure applied to the brake cylinder at each wheel. In this way, the solenoid valves are used to control the brake power split between the front and rear, and left and right wheels. The ABS warning and brake warning lights will come on if there is a malfunction in the EBD system.

(c) BA (Brake Assist)

The primary purpose of the brake assist system is to provide auxiliary brake force to assist a driver who cannot generate a large enough brake force during emergency braking, thus helping to maximize the brake performance of the vehicle.

(1) Operation description

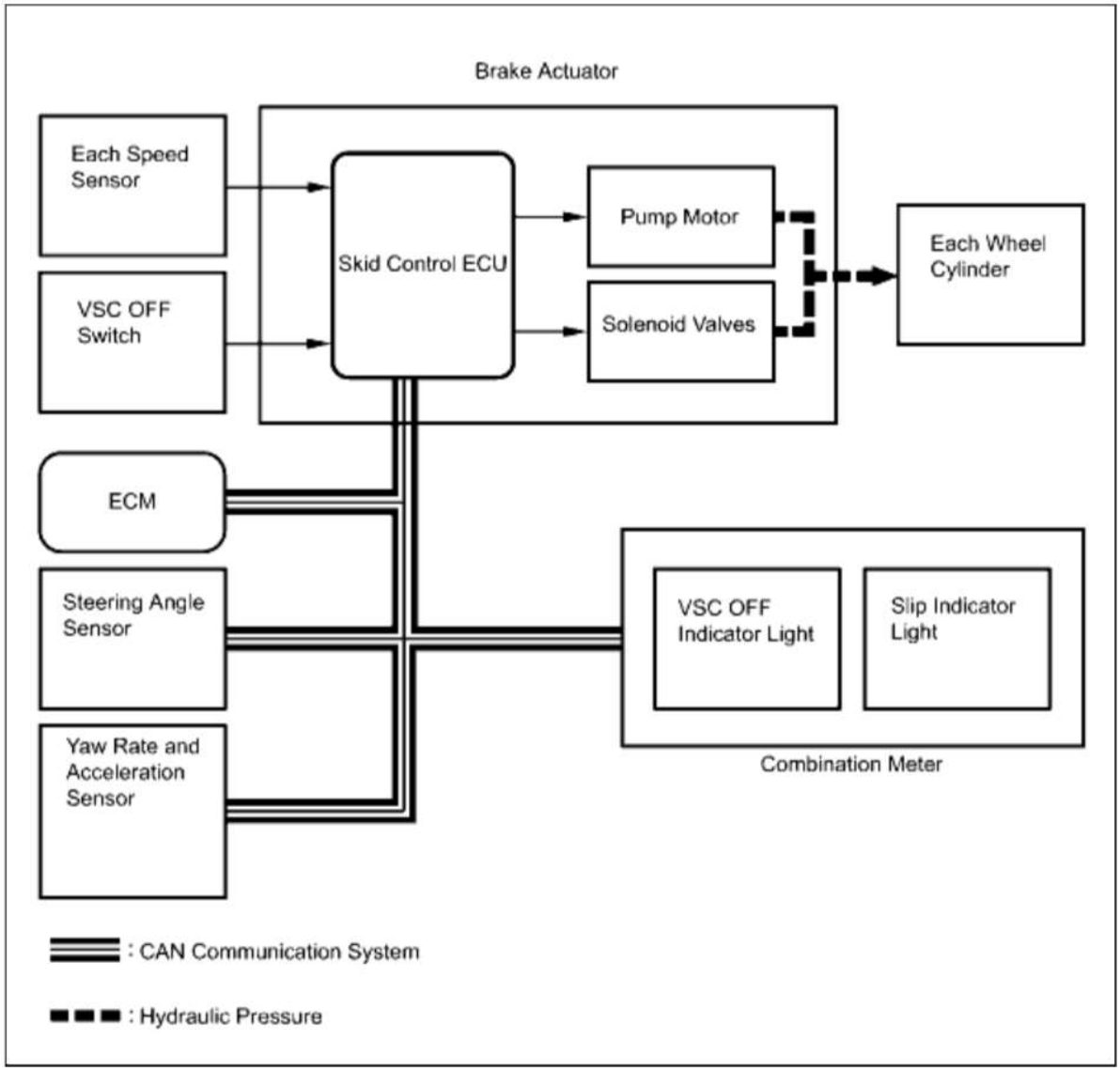
The skid control ECU receives a speed signal from each speed sensor and a fluid pressure signal from the master cylinder pressure sensor to determine whether brake assist is necessary. If brake assist is necessary, the skid control ECU sends control signals to the pump motor and solenoid valves. The pump motor and the solenoid valves then control the pressure applied to each wheel cylinder.

The ABS warning light will come on to indicate a malfunction in the BA system.

(d) TRAC (Traction Control)

The TRAC system helps prevent the drive wheels from slipping when the driver depresses the accelerator pedal excessively when starting off or accelerating on a slippery surface.

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(1) Operation description

The skid control ECU detects wheelspin by receiving signals from each speed sensor and the ECM via CAN communication. The skid control ECU sends signals via CAN communication to the ECM in order to control engine torque. The skid control ECU controls brake hydraulic pressure using the pump motor and solenoid valves.

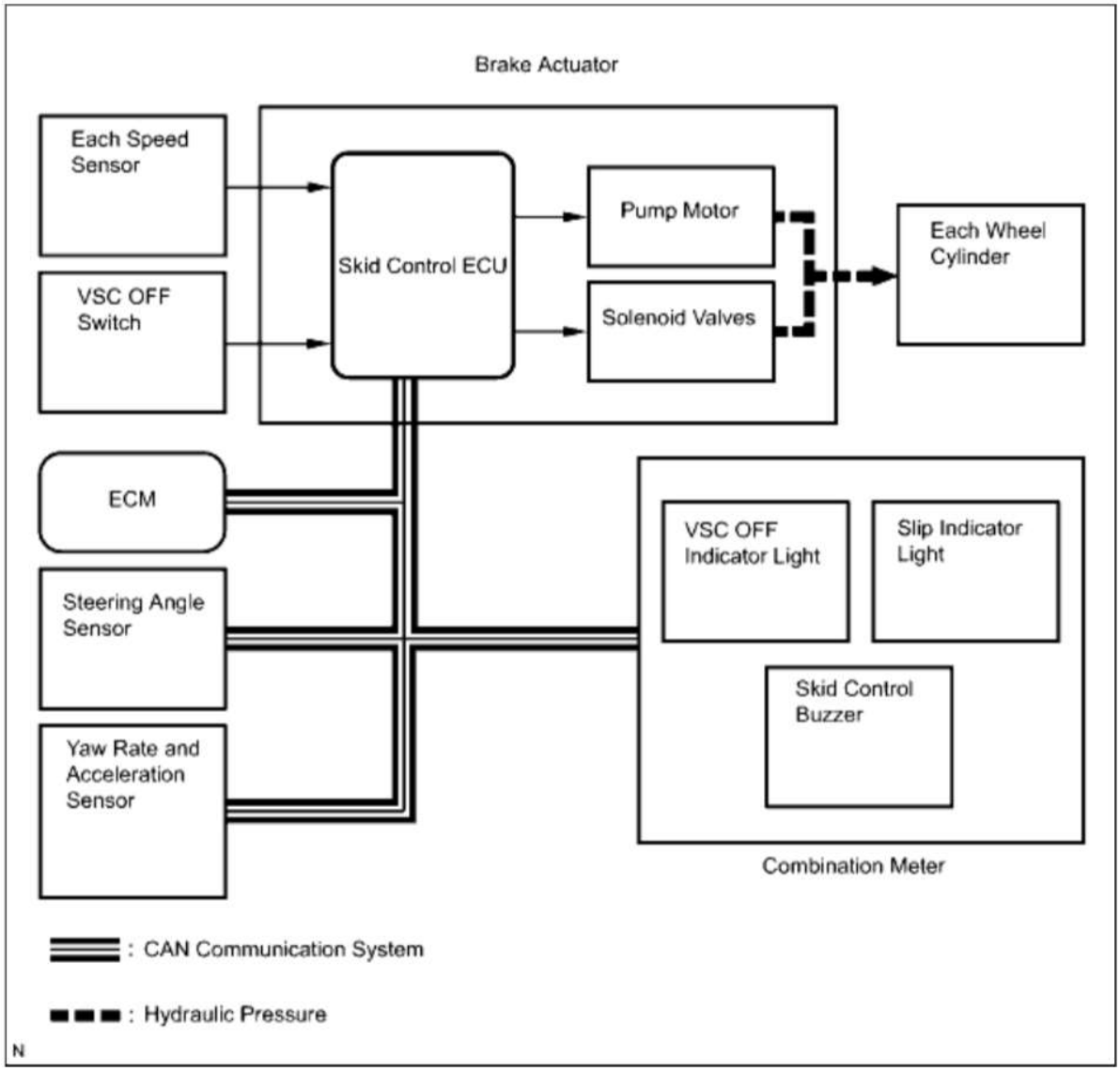
The slip indicator light blinks when the system is operating. When there is a malfunction in the TRAC system, the VSC OFF indicator light blinks and slip indicator light comes on.

The VSC OFF switch is used to disable traction control operation.

(e) VSC (Vehicle Stability Control)

The VSC system helps prevent the vehicle from slipping sideways as a result of strong front or rear wheel skid during cornering.

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(1) Operation description

The skid control ECU determines the vehicle operating conditions based on signals received from the wheel speed sensors, yaw rate and acceleration sensor, and steering angle sensor. The skid control ECU sends signals via CAN communication to the ECM in order to control engine torque. The skid control ECU controls brake hydraulic pressure using the pump and solenoid valves.

The slip indicator light blinks, and the skid control buzzer sounds when the system is operating. If a malfunction occurs in the VSC system, the VSC OFF indicator light blinks and slip indicator light comes on.

The VSC OFF switch is used to disable VSC control operation.

2. ABS with EBD, BA, TRAC and VSC OPERATION

(a) The skid control ECU calculates vehicle stability based on signals from the speed sensor, yaw rate and acceleration sensor, and steering angle sensor. In addition, it evaluates the results to determine whether any control actions (control of the engine output torque using electronic throttle control or wheel brake pressure using the brake actuator assembly) should be implemented.

(b) The slip indicator light blinks and the skid control buzzer sounds to inform the driver that the VSC

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system is operating. The slip indicator light also blinks when traction control is operating, and the operation being performed is displayed.

3. FAIL SAFE

(a) When a malfunction occurs in the ABS with BA, TRAC and VSC systems, the ABS warning and slip indicator lights come on and the VSC OFF indicator light blinks, and ABS with BA, TRAC and VSC operations are prohibited. In addition, when there is a malfunction that disables EBD operation, the brake warning light also comes on and EBD operation is prohibited.

(b) If control is prohibited due to a malfunction during operation, control will be disabled gradually.

This is to avoid sudden vehicle instability.

4. INITIAL CHECK

(a) When the vehicle speed first reaches approximately 6 km/h (4 mph) or more after the ignition switch is turned to ON, each solenoid valve and motor of the brake actuator are sequentially activated to perform an electrical check. During the initial check, the operating sound of the solenoid valves and motor can be heard from the engine compartment, but this is not a malfunction.

5. INSPECTION MODE

(a) TRAC and VSC operation can be disabled by operating the Techstream 

.

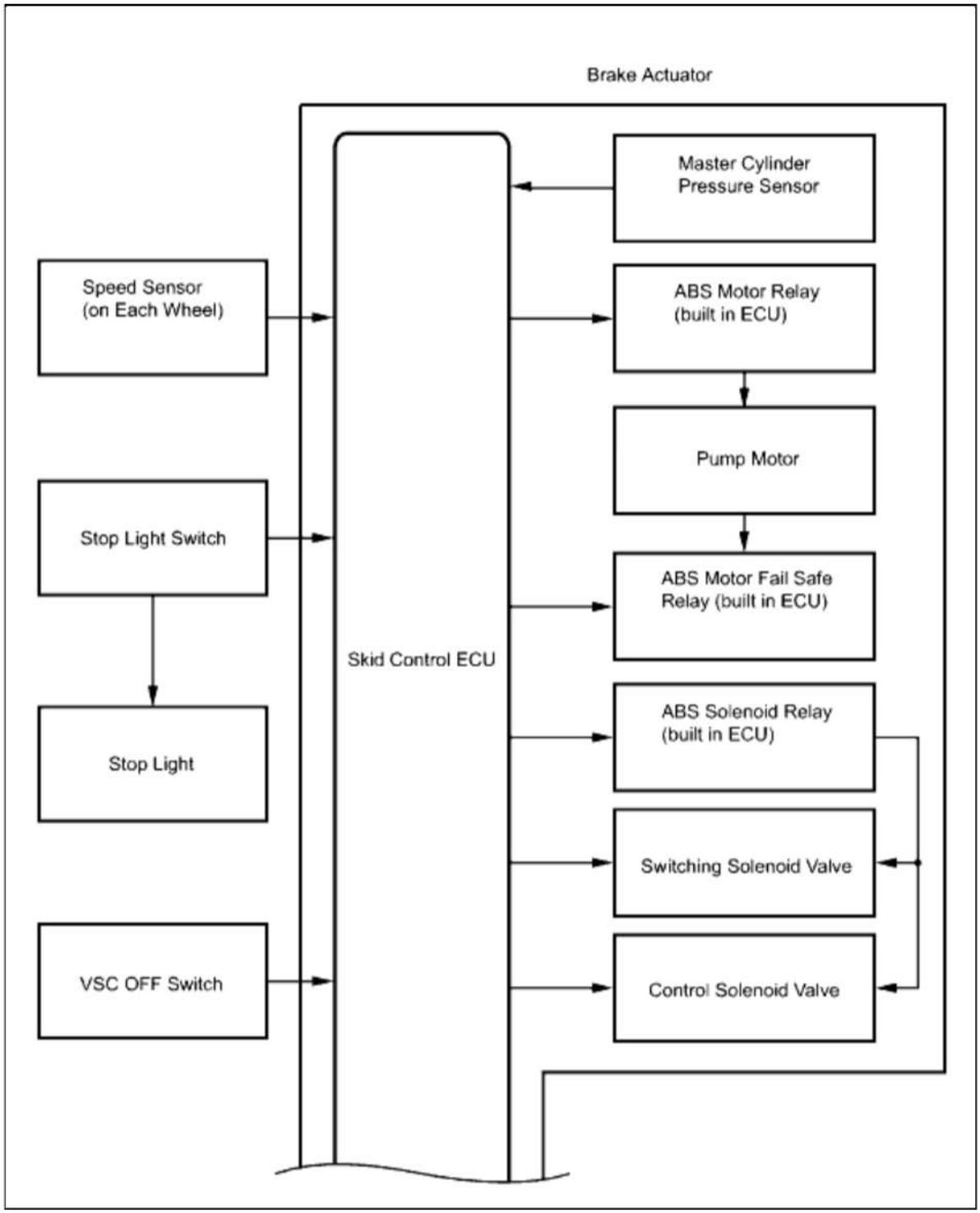
6. FUNCTION OF COMPONENTS

COMPONENT	FUNCTION
Speed sensor	Detects the wheel speed and sends the signal to the skid control ECU.
Yaw rate and acceleration sensor	• The acceleration sensor measures the capacity of the condenser that changes the distance between the electrodes depending on G force, which occurs when the vehicle is accelerated, and converts the measured value into electrical signals. • The yaw rate sensor detects the vehicle's angular velocity (yaw rate) in the vertical direction based on the amount and direction of the piezoelectric ceramics deflection. • Sends signals to the skid control ECU via CAN communication.
Steering angle sensor	• Installed in the combination switch. • Detects the steering amount and direction and sends the signals to the skid control ECU via CAN communication. • Has a magnetic resistance element which detects the rotation of the magnet housed in the detection gear in order to detect the changes of magnetic resistance and the steering amount and direction.
Stop light switch	Detects the brake operating conditions and inputs the result to the skid control ECU.
Main body ECU	Detects the parking brake operating conditions and inputs the result to the skid control ECU via CAN communication.
Master cylinder pressure sensor	• Detects the fluid pressure in the master cylinder. • Housed in the brake actuator assembly.

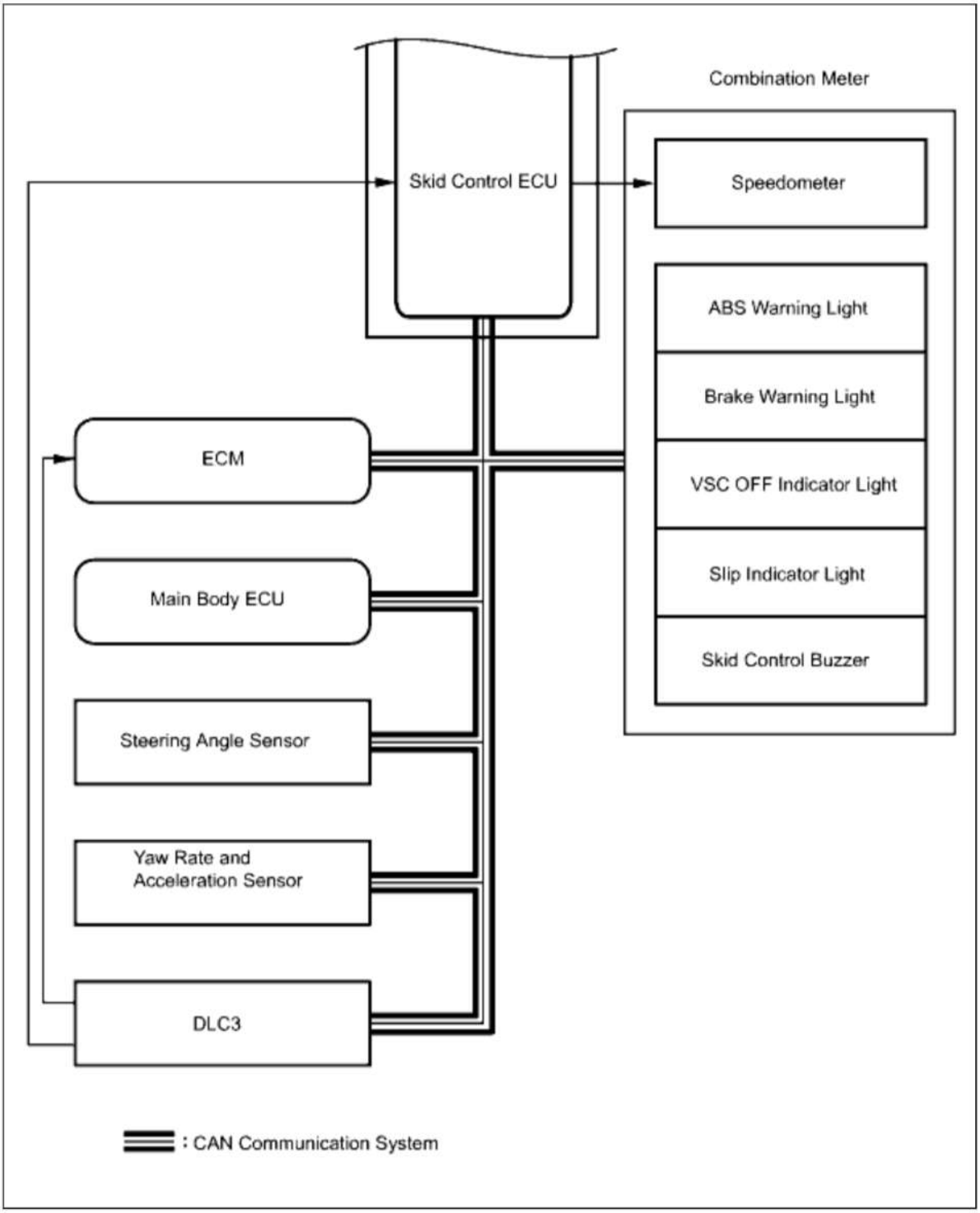
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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHQ02ZX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: SYSTEM DIAGRAM (2010 Corolla)		

SYSTEM DIAGRAM



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TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU	SIGNAL	COMMUNICATION METHOD
Skid control ECU	Steering angle sensor	Steering angle sensor request signal	CAN communication system
Skid control ECU	Yaw rate and acceleration sensor	Yaw rate and acceleration request signal	CAN communication system

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TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU	SIGNAL	COMMUNICATION METHOD
Skid control ECU	ECM	• Wheel speed signal • VSC data signal	CAN communication system
ECM	Skid control ECU	• Shift position signal • Throttle position signal • Engine speed signal • Intake air temperature signal • Engine torque request signal • Accelerator pedal position signal	CAN communication system
Main body ECU	Skid control ECU	Parking brake switch signal	CAN communication system
Skid control ECU	Combination meter	• ABS warning light signal • Brake warning light signal • VSC OFF indicator light signal • Slip indicator light signal • Skid control buzzer signal • Wheel speed signal	CAN communication system

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHK050X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2010 Corolla)		

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 a CAN communication system malfunction are output, repair the CAN

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communication system before repairing each corresponding sensor INFO .

- If any of the DTCs U0100/65, U0123/62, U0124/95, and U0126/63 is output together with a CAN communication DTC, first check the appropriate sensor for a momentary open circuit 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

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 Diagnosis System INFO .

NEXT ▼

6.	**PROBLEM SYMPTOMS TABLE**

(a) Proceed to Problem Symptoms Table INFO .

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NEXT

7.	CIRCUIT INSPECTION*

NEXT

8.	IDENTIFICATION OF PROBLEM

NEXT

9.	REPAIR OR REPLACEMENT

NEXT

10.	CONFIRMATION TEST*

NEXT END

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHT03LX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: TEST MODE PROCEDURE (2010 Corolla)		

TEST MODE PROCEDURE

1. WARNING LIGHT AND INDICATOR LIGHT INITIAL CHECK

(a) Release the parking brake.

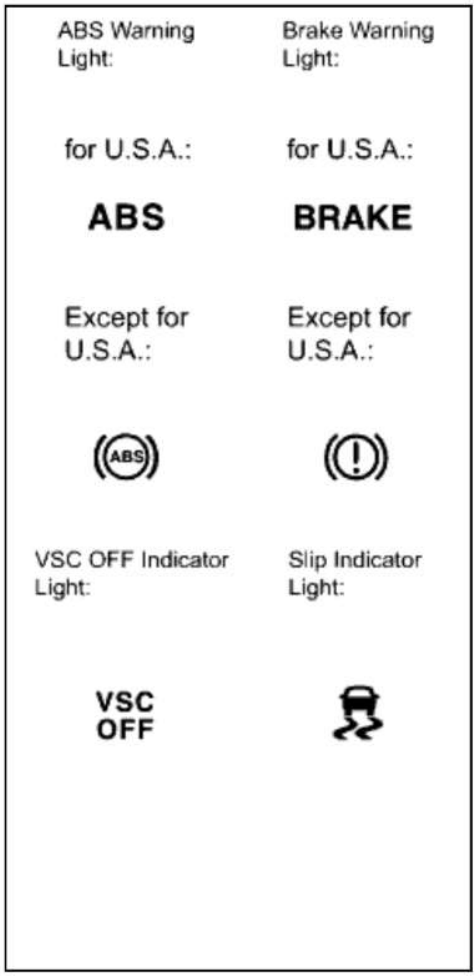
NOTICE:

When releasing the parking brake, move the shift lever to P for safety (for automatic transaxle model) or set the chocks to hold the vehicle for safety (for manual transaxle model).

HINT:

When the parking brake is applied or the level of the brake fluid is low, the brake warning light will come on.

(b) When the ignition switch is turned to ON, check that the ABS warning, brake warning, VSC OFF indicator and slip indicator lights come on for approximately 3 seconds.



HINT:

- If the skid control ECU stores any DTCs, the ABS warning, brake warning and slip indicator lights will come on and the VSC OFF indicator light will blink.
- 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 circuit (Remains on)	INFO
Brake warning light circuit (Does not come on)	INFO
VSC OFF indicator light circuit (Remains on)	INFO
VSC OFF indicator light circuit (Does not come on)	INFO
Slip indicator light circuit (Remains on)	INFO
Slip indicator light circuit (Does not come on)	INFO

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

NOTICE:

After replacement of the brake actuator assembly and/or yaw rate and acceleration sensor, perform zero point calibration of the yaw rate and acceleration sensor.

HINT:

- If the ignition switch is turned from ON to 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 of the sensor check function. By performing Test Mode (signal check), the codes are cleared if a normal condition is confirmed. The remaining codes are the codes where a malfunction was found.

(a) Procedure to enter Test Mode.

(1) Turn the ignition switch off.

(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is applied (for manual transaxle model).

(4) Connect the Techstream to the DLC3.

(5) Turn the ignition switch to ON.

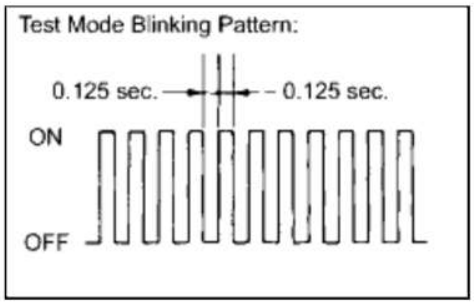
(6) Turn the Techstream on.

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

(8) Check that the ABS warning and VSC OFF indicator lights come on for several seconds and then blink in Test Mode.

HINT:

- The slip indicator light remains on during Test Mode because traction control operation is prohibited (The slip indicator light goes off when the VSC OFF switch is on).
- If the ABS warning and VSC OFF indicator lights do not blink, inspect the TS and CG terminal circuit and ABS warning and VSC OFF indicator light circuits.



TROUBLE AREA	SEE PROCEDURE
TS and CG terminal circuit	INFO
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO
VSC OFF indicator light circuit (Remains on)	INFO

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VSC OFF indicator light circuit (Does not come on)	

(9) Check the ABS sensors.

HINT:

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

3. ACCELERATION SENSOR CHECK (When Using the Techstream)

(a) 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.

4. MASTER CYLINDER PRESSURE SENSOR CHECK (When Using the Techstream)

(a) Keep the vehicle stationary and release the brake pedal for 1 second or more, and quickly and continuously depress the brake pedal with a force of 98 N (10 kgf, 22 lbf) or more for 1 second.

(b) 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 is illuminated, 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 brake pedal operation above is performed.
- If the master cylinder pressure sensor check is not completed, depressing the brake pedal causes further decreases in the vacuum in the brake booster, making the sensor check difficult to complete.
- If the vacuum remaining in the booster is insufficient, the master cylinder pressure sensor check may not be completed. In this case, run the engine at idle to obtain sufficient vacuum.
- If the brake pedal is strongly depressed when the vacuum in the booster is insufficient, the brake warning light may come on in accordance with the booster pressure control. In this case, run the engine at idle to obtain sufficient vacuum.

5. SPEED SENSOR CHECK (When Using the Techstream)

(a) Check the speed sensor signal.

(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 blinks when the sensor check has been completed and the brake pedal is depressed.
- The ABS warning light comes on immediately after a malfunction has been detected during the speed sensor check.

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(b) Stop the vehicle.

NOTICE:

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

HINT:

When the sensor check has been completed, the ABS warning light goes off while driving and blinks in the Test Mode pattern while the vehicle is stationary.

(c) Check the VSC sensor.

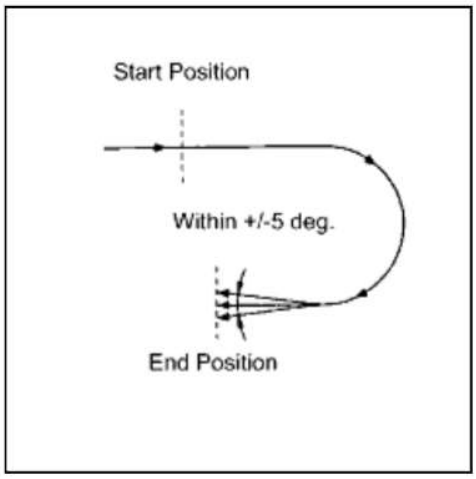
HINT:

Check that the VSC OFF indicator light blinks before performing the VSC sensor check.

6. YAW RATE SENSOR CHECK (When Using the Techstream)

(a) Check the output of the yaw rate sensor.

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



(2) Move the shift lever from P to D (for automatic transaxle model) or release the parking brake (for manual transaxle model) 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.

(3) Stop the vehicle and move the shift lever to P (for automatic transaxle model) or apply the parking brake (for manual transaxle model). Check that the skid control buzzer sounds for 3 seconds.

HINT:

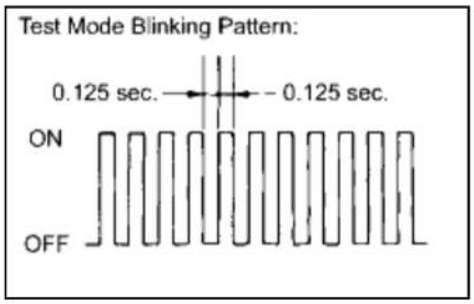
- If the skid control buzzer sounds, the sensor check has completed normally.
- If the skid control buzzer does not sound, check the skid control buzzer circuit INFO , then perform the sensor check again.
- If the skid control buzzer still does not sound, the yaw rate sensor may be malfunctioning. Check

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for DTCs.

- 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 spin the wheels.
- Do not turn the ignition switch off while turning.
- Do not move the shift lever to P (for automatic transaxle model) or do not apply the parking brake (for manual transaxle model) while turning, but changing the vehicle speed, stopping, or driving in reverse is acceptable.
- Complete the turn within 20 seconds.

7. END OF SENSOR CHECK (When Using the Techstream)



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

NOTICE:

- 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.

8. READ DTC OF SENSOR CHECK FUNCTION (When Using the Techstream)

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

NOTICE:

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

HINT:

See the list of DTCs (See procedure "A").

(b) Turn the ignition switch off and disconnect the Techstream.

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

NOTICE:

After replacement of the brake actuator assembly and/or yaw rate and acceleration sensor, perform zero point calibration of the yaw rate and acceleration sensor.

HINT:

- If the ignition switch is turned from ON to 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 of the sensor check function. By performing Test Mode (signal check), the codes are cleared if a normal condition is confirmed. The remaining codes are the codes where a malfunction was found.

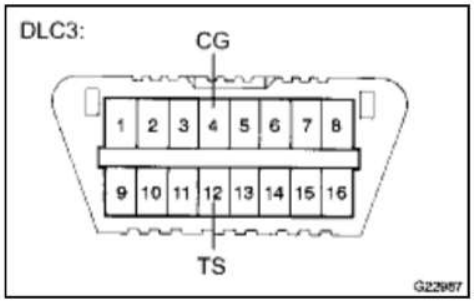
(a) Procedure to enter Test Mode.

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(1) Turn the ignition switch off.

(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is applied (for manual transaxle model).



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

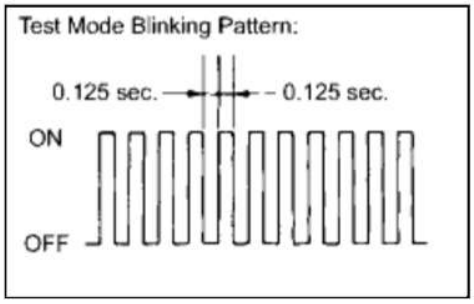
SST: 09843-18040

(5) Turn the ignition switch to ON.

(6) Check that the ABS warning and VSC OFF indicator lights come on for several seconds and then blink in Test Mode.

HINT:

- The slip indicator light remains on during Test Mode because traction control operation is prohibited (The slip indicator light goes off when the VSC OFF switch is on).
- If the ABS warning and VSC OFF indicator lights do not blink, inspect the TS and CG terminal circuit and ABS warning and VSC OFF indicator light circuits.



TROUBLE AREA	SEE PROCEDURE
TS and CG terminal circuit	INFO
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO
VSC OFF indicator light circuit (Remains on)	INFO
VSC OFF indicator light circuit (Does not come on)	INFO

(7) Check the ABS sensors.

HINT:

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

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10. ACCELERATION SENSOR CHECK (When not Using the Techstream)

(a) 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.

11. MASTER CYLINDER PRESSURE SENSOR CHECK (When not Using the Techstream)

(a) Keep the vehicle stationary and release the brake pedal for 1 second or more, and quickly and continuously depress the brake pedal with a force of 98 N (10 kgf, 22 lbf) or more for 1 second.

(b) 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 is illuminated, 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 brake pedal operation above is performed.
- If the master cylinder pressure sensor check is not completed, depressing the brake pedal causes further decreases in the vacuum in the brake booster, making the sensor check difficult to complete.
- If the vacuum remaining in the booster is insufficient, the master cylinder pressure sensor check may not be completed. In this case, run the engine at idle to obtain sufficient vacuum.
- If the brake pedal is strongly depressed when the vacuum in the booster is insufficient, the brake warning light may come on in accordance with the booster pressure control. In this case, run the engine at idle to obtain sufficient vacuum.

12. SPEED SENSOR CHECK (When not Using the Techstream)

(a) Check the speed sensor signal.

(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 blinks when the sensor check has been completed and the brake pedal is depressed.
- The ABS warning light comes on immediately after a malfunction has been detected during the speed sensor check.

(b) Stop the vehicle.

NOTICE:

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

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ABS will not operate.

HINT:

When the sensor check has been completed, the ABS warning light goes off while driving and blinks in the Test Mode pattern while the vehicle is stationary.

(c) Check the VSC sensor.

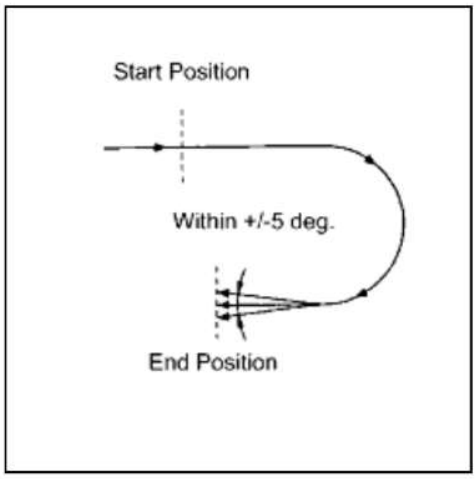
HINT:

Check that the VSC OFF indicator light blinks before performing the VSC sensor check.

13. YAW RATE SENSOR CHECK (When not Using the Techstream)

(a) Check the output of the yaw rate sensor.

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



(2) Move the shift lever from P to D (for automatic transaxle model) or release the parking brake (for manual transaxle model) 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.

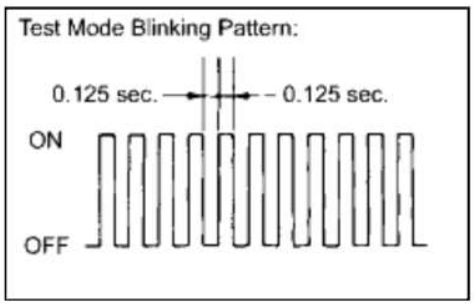
(3) Stop the vehicle and move the shift lever to P (for automatic transaxle model) or apply the parking brake (for manual transaxle model). Check that the skid control buzzer sounds for 3 seconds.

HINT:

- If the skid control buzzer sounds, the sensor check has completed normally.
- 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.
- 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 spin the wheels.
- Do not turn the ignition switch off while turning.
- Do not move the shift lever to P (for automatic transaxle model) or do not apply the parking brake (for manual transaxle model) while turning, but changing the vehicle speed, stopping, or driving in reverse is acceptable.
- Complete the turn within 20 seconds.

14. END OF SENSOR CHECK (When not Using the Techstream)

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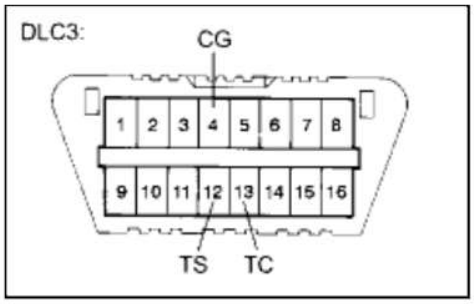


(a) If the sensor check is completed, the ABS warning light blinks (Test Mode) when the vehicle stops and the ABS warning light is off while the vehicle is driving.

NOTICE:

- 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 is not completed, the ABS warning light blinks even while the vehicle is driving and the ABS will not operate.

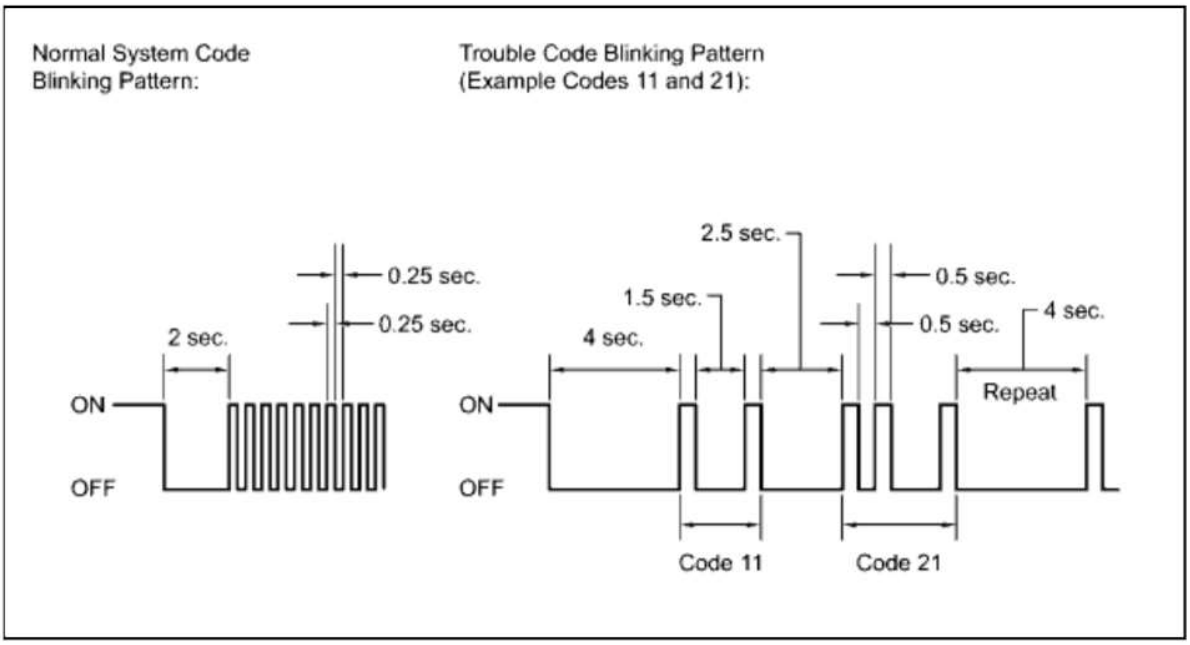
15. READ DTC OF SENSOR CHECK FUNCTION (When not Using the Techstream)



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

SST: 09843-18040

(b) Count the number of blinks of the ABS warning and VSC OFF indicator lights.



NOTICE:

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

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sensor check DTCs are displayed, repair the malfunction, 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 the list of DTCs (See procedure "A").

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

(d) Turn the ignition switch to ON.

HINT:

- If the ignition switch is not turned to ON after SST is removed from the DLC3, the previous Test Mode will continue.
- If the ignition switch is turned to ON with terminals TS and CG connected, the previous Test Mode will continue.

16. DTC OF SENSOR CHECK FUNCTION (Procedure "A")

ABS Sensor

DTC CODE	DETECTION ITEM	TROUBLE AREA
C1271/71	Low output signal of front speed sensor RH	• Front speed sensor RH • Sensor installation • Speed sensor rotor
C1272/72	Low output signal of front speed sensor LH	• Front speed sensor LH • Sensor installation • Speed sensor rotor
C1273/73	Low output signal of rear speed sensor RH	• Rear speed sensor RH • Sensor installation • Speed sensor rotor
C1274/74	Low output signal of rear speed sensor LH	• Rear speed sensor LH • Sensor installation • Speed sensor rotor
C1275/75	Abnormal change in output signal of front speed sensor RH	Speed sensor rotor
C1276/76	Abnormal change in output signal of front speed sensor LH	Speed sensor rotor
C1277/77	Abnormal change in output signal of rear speed sensor RH	Speed sensor rotor
C1278/78	Abnormal change in output signal of rear speed sensor LH	Speed sensor rotor

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DTC CODE	DETECTION ITEM	TROUBLE AREA
C1279/79	Acceleration sensor output voltage malfunction	• Yaw rate and acceleration sensor • Sensor installation
C1281/81	Master cylinder pressure sensor output malfunction	• Stop light switch • Master cylinder pressure sensor

VSC Sensor

DTC CODE	DETECTION ITEM	TROUBLE AREA
C0371/71	Yaw rate sensor	Yaw rate and acceleration sensor

HINT:

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

17. VSC OFF SWITCH CHECK

(a) Push the VSC OFF switch on.

(b) Check that the slip indicator light goes off.



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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHS05EX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: CHECK FOR INTERMITTENT PROBLEMS (2010 Corolla)		

CHECK FOR INTERMITTENT PROBLEMS

1. CHECK FOR INTERMITTENT PROBLEMS

HINT:

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

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

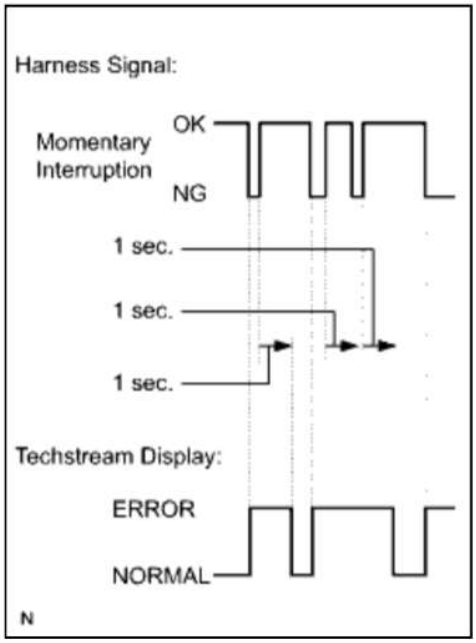
(c) Turn the ignition switch to ON.

(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.

HINT:

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



ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL:	-

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		Normal	
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
EFI Communication Open	EFI communication 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	-

(f) While observing the screen, gently jiggle the connector or wire harness between the ECU and sensors, or between ECUs.

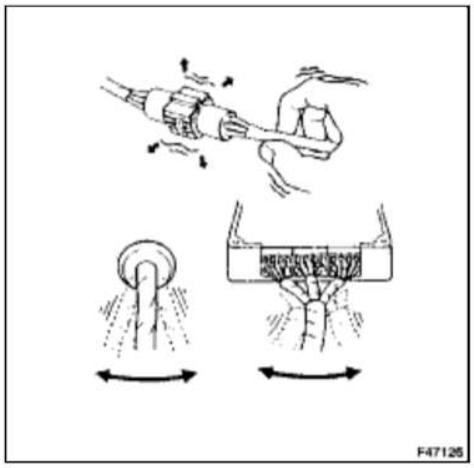
OK:

NORMAL display appears.

HINT:

The connector and/or wire harness has a momentary interruption (open circuit) if the display changes. Repair or replace the connector and/or wire harness as one of them is faulty.

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHR038X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: CALIBRATION (2010 Corolla)		

CALIBRATION

1. DESCRIPTION

- After replacing the VSC relevant components or performing front wheel alignment adjustment, clear and read the sensor calibration data.
- Follow the chart below to perform calibration.

REPLACING PARTS / OPERATION	NECESSARY OPERATION
Brake actuator assembly (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. (Do not start the engine.)
- 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 ignition switch off.

(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is applied (for manual transaxle model).

(4) Connect the Techstream to the DLC3.

(5) Turn the ignition switch to ON.

(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 ignition switch off.

NOTICE:

If the ignition switch is turned to ON for more than 15 seconds with the shift lever in P (for automatic transaxle model) or the parking brake applied (for manual transaxle model) after zero point of the yaw

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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 lights.

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

(1) Turn the ignition switch off.

(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is applied (for manual transaxle model).

NOTICE:

DTCs C1210/36 and C1336/39 will be recorded if the shift lever is not in P (for automatic transaxle model) or the parking brake is not applied (for manual transaxle model).

(4) Connect the Techstream to the DLC3.

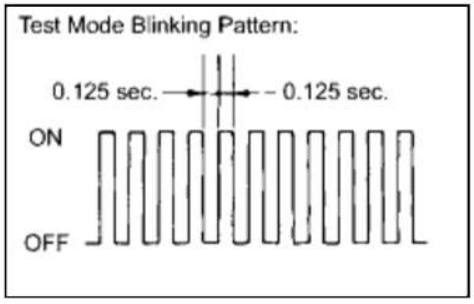
(5) Turn the ignition switch to ON.

(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 the system enters Test Mode, keep the vehicle stationary on a level surface for 2 seconds or more.

(9) Check that the VSC OFF indicator light comes on for several seconds and then blinks in Test Mode.



HINT:

- The slip indicator light remains on during Test Mode because traction control operation is prohibited (The slip indicator light goes off when the VSC OFF switch is on).
- If the VSC OFF indicator light does 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 ignition 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. (Do not start the engine.)
- 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 ignition switch off.

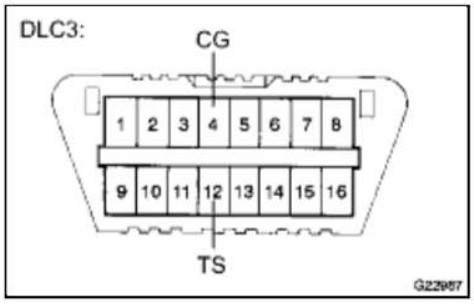
(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is applied (for manual transaxle model).

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(4) Turn the ignition switch to ON.

(5) The warning and indicator light come on for 3 seconds to indicate that the initial check is completed.



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

SST: 09843-18040

(7) Check that the VSC OFF indicator light comes on.

NOTICE:

If the ignition switch is turned to ON for more than 15 seconds with the shift lever in P (for automatic transaxle model) or the parking brake applied (for manual transaxle model) after 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 lights.

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

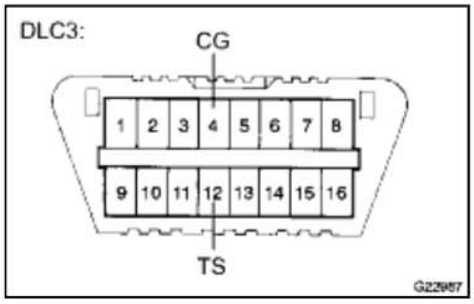
(1) Turn the ignition switch off.

(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is applied (for manual transaxle model).

NOTICE:

DTCs C1210/36 and C1336/39 will be recorded if the shift lever is not in P (for automatic transaxle model) or the parking brake is not applied (for manual transaxle model).



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

SST: 09843-18040

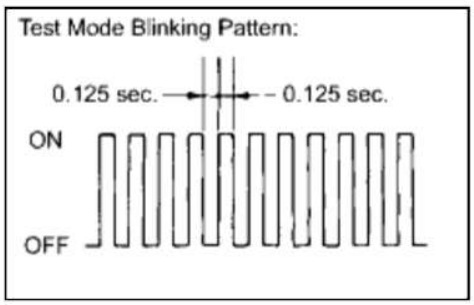
(5) Turn the ignition switch to ON.

(6) Keep the vehicle stationary on a level surface for 2 seconds or more.

(7) Check that the VSC OFF indicator light comes on for several seconds and then blinks in Test Mode.

HINT:

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- The slip indicator light remains on during Test Mode because traction control operation is prohibited (The slip indicator light goes off when the VSC OFF switch is on).
- If the VSC OFF indicator light does 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 ignition switch off and disconnect SST from the DLC3.

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Last Modified: 3-10-2010	6.4 T	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHN04PX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: PROBLEM SYMPTOMS TABLE (2010 Corolla)		

PROBLEM SYMPTOMS TABLE

If there are no DTCs output and 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 actuator assembly, sensors, etc., turn the ignition switch off.

HINT:

- 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.

Vehicle Stability Control System

SYMPTOM	SUSPECTED AREA	SEE PAGE
ABS, BA and/or EBD does not operate	Check for DTCs again and make sure that the normal system code is output.	INFO
	IG power source circuit (Low power supply voltage malfunction)	INFO
	IG power source circuit (High power supply voltage malfunction)	INFO
	Front speed sensor circuit (Output malfunction)	INFO
	Rear speed sensor circuit (Output malfunction)	INFO
	Front speed sensor circuit (Open or short malfunction)	INFO
	Rear speed sensor circuit (Open or short malfunction)	INFO
	Front speed sensor circuit (Comparison malfunction)	INFO
	Rear speed sensor circuit (Comparison malfunction)	INFO
	Check the brake actuator assembly using the Techstream. (Check brake actuator assembly operation using the Active Test function.) If abnormal, check the hydraulic circuit for leaks.	INFO
	If the symptom still occurs even after the circuits listed above have been inspected and proved to be normal, replace the brake actuator assembly (skid control ECU).	INFO
ABS, BA and/or EBD does not operate	Check for DTCs again and make sure that the normal system code is output.	INFO

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SYMPTOM	SUSPECTED AREA	SEE PAGE
efficiently	Front speed sensor circuit (Output malfunction)	INFO
	Rear speed sensor circuit (Output malfunction)	INFO
	Front speed sensor circuit (Open or short malfunction)	INFO
	Rear speed sensor circuit (Open or short malfunction)	INFO
	Front speed sensor circuit (Comparison malfunction)	INFO
	Front speed sensor circuit (Comparison malfunction)	INFO
	Stop light switch circuit	INFO
	Check the brake actuator assembly using the Techstream. (Check brake actuator assembly operation using the Active Test function.) If abnormal, check the hydraulic circuit for leaks.	INFO
	If the symptom still occurs even after the circuits listed above have been inspected and proved to be normal, replace the brake actuator assembly (skid control ECU).	INFO
ABS sensor DTC check cannot be done	Check for DTCs again and make sure that the normal system code is output.	INFO
	TC and CG terminal circuit	INFO
	If the symptom still occurs even after the circuits listed above have been inspected and proved to be normal, replace the brake actuator assembly (skid control ECU).	INFO
ABS warning light abnormal (Remains on)	ABS warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
ABS warning light abnormal (Does not come on)	ABS warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Brake warning light abnormal (Remains on)	Brake warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Brake warning light abnormal (Does not come on)	Brake warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
VSC and/or TRAC does not operate	Check for DTCs again and make sure that the normal system code is output.	INFO
	IG power source circuit (Low power supply voltage malfunction)	INFO
	IG power source circuit (High power supply voltage malfunction)	INFO
	Check the hydraulic circuit for leaks.	-

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SYMPTOM	SUSPECTED AREA	SEE PAGE
	Front speed sensor circuit (Output malfunction)	INFO
	Rear speed sensor circuit (Output malfunction)	INFO
	Front speed sensor circuit (Open or short malfunction)	INFO
	Rear speed sensor circuit (Open or short malfunction)	INFO
	Front speed sensor circuit (Comparison malfunction)	INFO
	Front speed sensor circuit (Comparison malfunction)	INFO
	Yaw rate and acceleration sensor circuit (Zero point malfunction)	INFO
	Yaw rate and acceleration sensor circuit (Power supply malfunction)	INFO
	Acceleration sensor circuit (Comparison malfunction)	INFO
	Yaw rate sensor circuit (Comparison malfunction)	INFO
	Yaw rate and acceleration sensor circuit (Stuck or output malfunction)	INFO
	Yaw rate and acceleration sensor circuit (Continuous invalidation malfunction)	INFO
	Yaw rate and acceleration sensor circuit (Internal malfunction)	INFO
	Steering angle sensor circuit (Zero point malfunction)	INFO
	Steering angle sensor circuit (Zero point initialization or calibration malfunction)	INFO
	Steering angle sensor circuit (Power supply malfunction)	INFO
	Steering angle sensor circuit (Output malfunction)	INFO
	Steering angle sensor circuit (Internal malfunction)	INFO
	If the symptom still occurs even after the circuits listed above have been inspected and proved to be normal, replace the brake actuator assembly (skid control ECU).	INFO
VSC sensor DTC check cannot be done	Check for DTCs again and make sure that the normal system code is output.	INFO
	TC and CG terminal circuit	INFO
	If the symptom still occurs even after the circuits listed above have been inspected and proved to be normal, replace the brake actuator assembly (skid control ECU).	INFO
VSC OFF indicator light abnormal (Remains on)	VSC OFF indicator light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO

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SYMPTOM	SUSPECTED AREA	SEE PAGE
VSC OFF indicator light abnormal (Does not come on)	VSC OFF indicator light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Slip indicator light abnormal (Remains on)	Slip indicator light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Slip indicator light abnormal (Does not come on)	Slip indicator light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Sensor check cannot be done	TS and CG terminal circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Skid control buzzer abnormal	Skid control buzzer circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHP04VX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: DIAGNOSIS SYSTEM (2010 Corolla)		

DIAGNOSIS SYSTEM

1. DESCRIPTION

When troubleshooting a vehicle with a 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 battery voltage.

Standard Voltage:
11 to 14 V

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

(b) Check the DLC3 INFO .

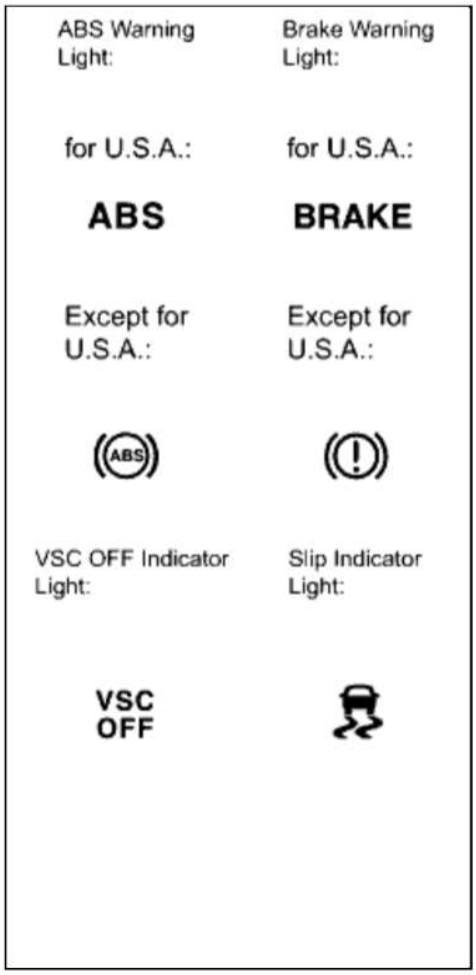
2. DIAGNOSIS

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

The table below indicates which lights will come on when there is a malfunction in a particular function.

ITEM / TROUBLE AREA	ABS	EBD	BA	TRAC	VSC	SKID CONTROL ECU
ABS warning light	○	○	○	-	-	○
Brake warning light	-	○	-	-	-	○
VSC OFF indicator light	• (VSC OFF switch OFF)	• (VSC OFF switch OFF)	• (VSC OFF switch OFF)	• (VSC OFF switch OFF)	• (VSC OFF switch OFF)	• (VSC OFF switch OFF)

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Slip indicator light	○	○	○	○	○	○

○: Light ON

●: Light ON (Blinking)

-: Light OFF

- 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 and VSC OFF indicator lights, or by connecting the Techstream.
- This system has a Test Mode (signal check) function INFO .

The DTCs can be read by connecting the Techstream and observing the blinking pattern of the ABS warning and VSC OFF indicator lights.

3. WARNING LIGHT AND INDICATOR LIGHT INITIAL CHECK

(a) Release the parking brake.

NOTICE:

When releasing the parking brake, move the shift lever to P for safety (for automatic transaxle model) or set the chocks to hold the vehicle for safety (for manual transaxle model).

HINT:

When the parking brake is applied or the brake fluid level is low, the brake warning light will come on.

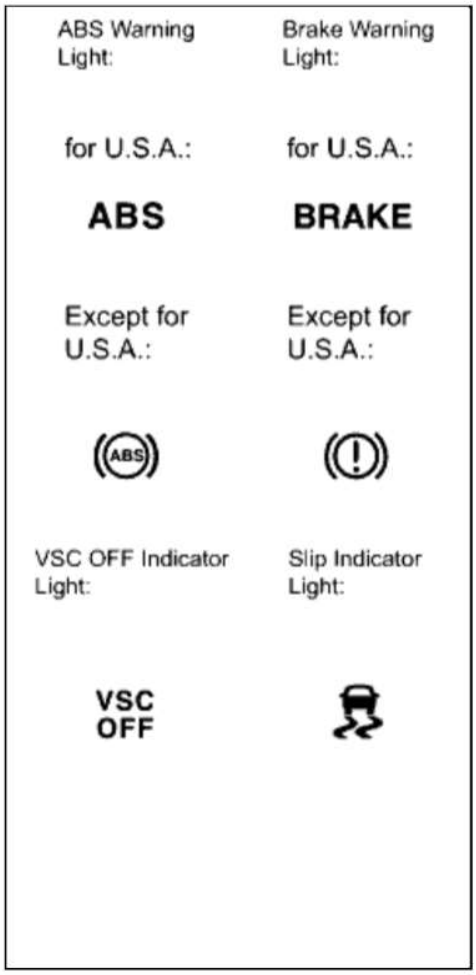
(b) When the ignition switch is turned to ON, check that the ABS warning, brake warning, VSC OFF indicator and slip indicator lights come on for approximately 3 seconds.

HINT:

If the warning light and indicator light check result is not normal, proceed to troubleshooting for the ABS warning, brake warning, VSC OFF indicator and slip indicator light circuits.

If the indicator remains on or does not come on, proceed to troubleshooting for the light circuits listed below.

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TROUBLE AREA	SEE PROCEDURE
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO
Brake warning light circuit (Remains on)	INFO
Brake warning light circuit (Does not come on)	INFO
VSC OFF indicator light circuit (Remains on)	INFO
VSC OFF indicator light circuit (Does not come on)	INFO
Slip indicator light circuit (Remains on)	INFO
Slip indicator light circuit (Does not come on)	INFO

4. SYMPTOM SIMULATION

HINT:

The most difficult case in troubleshooting is when no symptoms occur. In such cases, a thorough customer problem analysis must be carried out. Then the same or similar conditions and environment in which the problem occurred in the customer's vehicle should be reproduced. No matter how experienced or skilled a technician may be, if he/she proceeds to troubleshooting without confirming the problem symptoms, he/she will likely overlook something important and make a wrong guess at some points in the repair operation. This leads to a standstill in troubleshooting.

(a) Vibration method: When vibration seems to be the major cause.

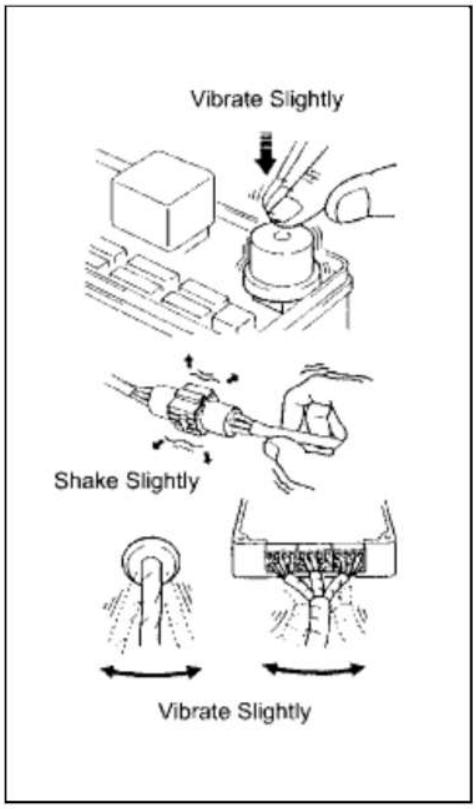
HINT:

Perform the simulation method only during the primary check period (for approximately 6 seconds after the ignition switch is turned to ON).

(1) Slightly vibrate the part of the sensor considered to be the problem cause with your fingers and check whether the malfunction occurs.

(2) Slightly shake the connector vertically and

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horizontally.

HINT:

Shaking the relays too strongly may result in open relays.

(3) Slightly shake the wire harness vertically and horizontally. The connector joint and fulcrum of the vibration are the major areas to be checked thoroughly.

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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JB402GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: TERMINALS OF ECU (2010 Corolla)		

TERMINALS OF ECU

1. TERMINALS OF ECU

Component without harness connected:
(Skid Control ECU)



TERMINAL NO. (SYMBOL)	TERMINAL DESCRIPTION
1 (GND1)	Skid control ECU ground
2 (STP)	Stop light switch input
4 (RL-)	Rear wheel speed LH (-) signal input
5 (RL+)	Rear wheel speed LH (+) power supply output
6 (FR-)	Front wheel speed RH (-) signal input
7 (FR+)	Front wheel speed RH (+) power supply output
11 (SP1)	Speed signal output for speedometer
12 (+BS)	Solenoid relay power supply
13 (GND2)	Pump motor ground
14 (CANL)	CAN communication line L
16 (RR-)	Rear wheel speed RH (-) signal input
17 (RR+)	Rear wheel speed RH (+) power supply output
18 (FL-)	Front wheel speed LH (-) signal input
19 (FL+)	Front wheel speed LH (+) power supply output
24 (+BM)	Motor relay power supply
25 (CANH)	CAN communication line H

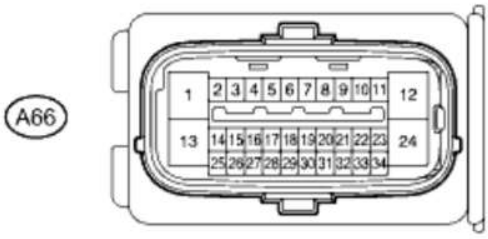
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TERMINAL NO. (SYMBOL)	TERMINAL DESCRIPTION
30 (CSW)	VSC OFF switch input
33 (TS)	Sensor check input
34 (IG1)	ECU power supply

2. TERMINAL INSPECTION

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

Front view of wire harness connector:
(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
A66-1 (GND1) - Body ground	W-B - Body ground	Skid control ECU ground	Always	Below 1 Ω
A66-2 (STP) - Body ground	L-W - Body ground	Stop light switch input	Stop light switch ON → OFF (Brake pedal depressed → released)	8 to 14 V → Below 1.5 V
A66-12 (+BS) - Body ground	W - Body ground	Solenoid relay power supply	Always	11 to 14 V
A66-13 (GND2) - Body ground	W-B - Body ground	Pump motor ground	Always	Below 1 Ω
A66-24 (+BM) - Body ground	L - Body ground	Motor relay power supply	Always	11 to 14 V

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TERMINAL NO. (SYMBOL)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
A66-30 (CSW) - Body ground	P - Body ground	VSC OFF switch input	VSC OFF switch held ON → OFF (Not pressed)	Below 25 Ω → 10 kΩ or higher
A66-34 (IG1) - Body ground	L-B - Body ground	ECU power supply	Ignition switch ON	11 to 14 V

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHV04WX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: DTC CHECK / CLEAR (2010 Corolla)		

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 ignition switch to ON.

(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 ignition switch to ON.

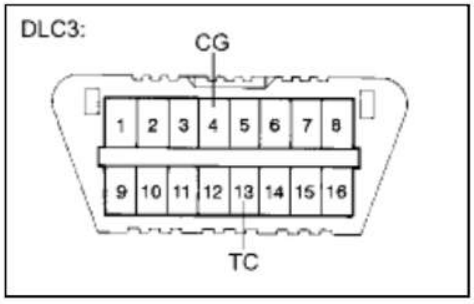
(3) Turn the Techstream on.

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

(5) According to the Techstream display, 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

(2) Turn the ignition switch to ON.

(3) Observe the blinking pattern of the ABS warning and VSC OFF indicator lights in order to identify the DTC.

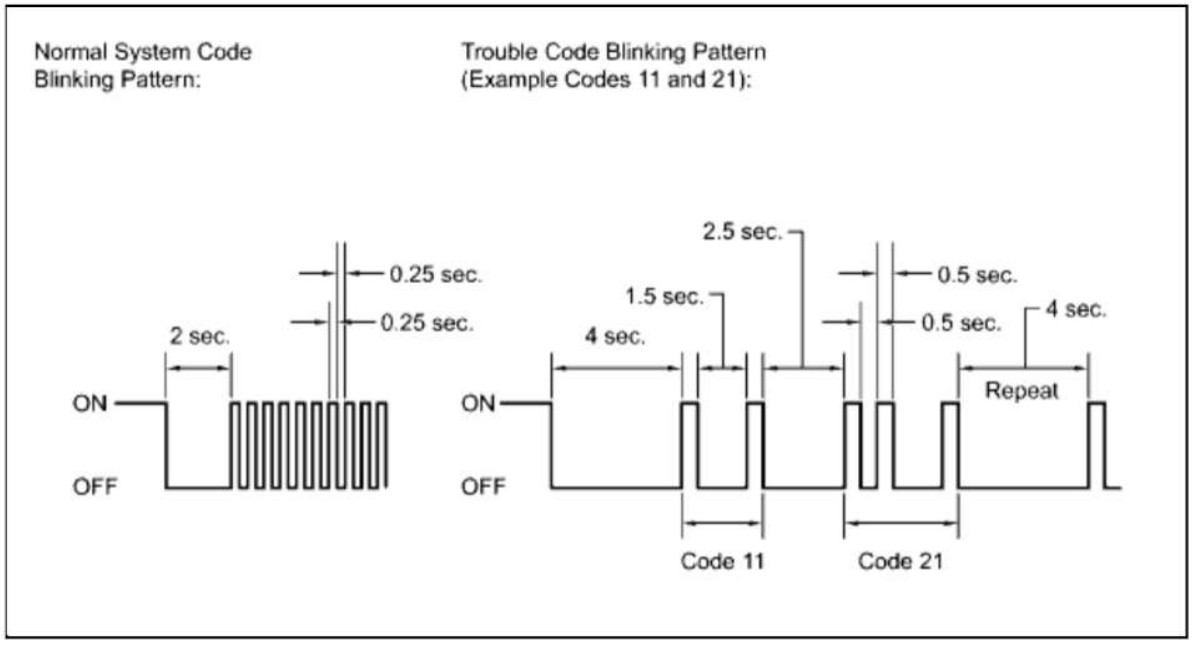
HINT:

If no code appears, inspect the TC and CG terminal circuit, and ABS warning and VSC OFF indicator light circuits.

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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
VSC OFF indicator light circuit (Remains on)	INFO
VSC OFF 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 and VSC OFF indicator lights.



(5) Check the details of the DTCs.

ABS DTC

WARNING LIGHT DISPLAY	TECHSTREAM DISPLAY
11	C0278
12	C0279
13	C0273
14	C0274
21	C0226
22	C0236
23	C0246
24	C0256

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WARNING LIGHT DISPLAY	TECHSTREAM DISPLAY
25	C1225
31	C1401
	C1405
32	C1402
	C1406
33	C1403
	C1407
34	C1404
	C1408
35	C1413
36	C1414
38	C1415
39	C1416
41	C1241
	C1417
43	C1243
44	C1419
	C1420
	C1442
45	C1245
46	C1421
	C1422
	C1423
	C1424
49	C1425
51	C1427
	C1428
91	C1361
94	U0073
95	U0124
97	C1381

VSC DTC

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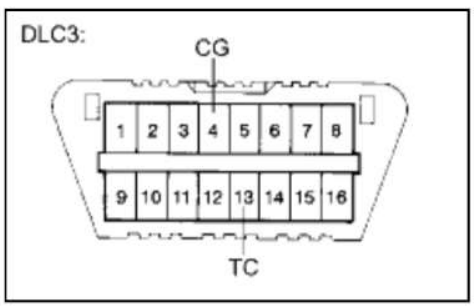
INDICATOR LIGHT DISPLAY	TECHSTREAM DISPLAY
31	C1432
	C1433
	C1434
32	C1232
34	C1435
	C1436
	C1443
36	C1210
39	C1336
43*1	-
51	C1201
53	C1203
62	U0123
63	U0126
65	C1437
	U0100
66	C1290
	C1439
	C1445
98	C1440

*1: This DTC is output when the VSC system detects a malfunction in the ABS.

(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.

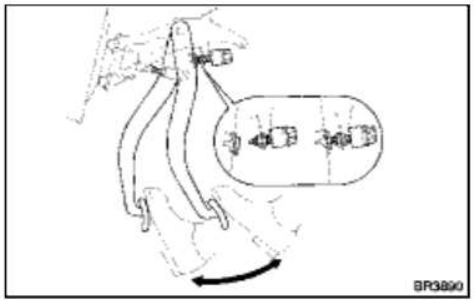


(1) Using SST, connect terminals TC and CG of the DLC3.

SST: 09843-18040

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(2) Turn the ignition switch to ON.



(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 negative cable from the battery terminal or the ECU-IG NO. 1 fuse.

3. END OF DTC CHECK/CLEAR

(a) Turn the ignition switch to ON.

(b) Check that the ABS warning and VSC OFF indicator lights go off within approximately 3 seconds after turning the ignition switch to ON.

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHY04NX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: FREEZE FRAME DATA (2010 Corolla)		

FREEZE FRAME DATA

1. FREEZE FRAME DATA

(a) Whenever an ABS 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 ignition switch has been turned from off to ON since the last time the ABS was activated.

HINT:

- If the vehicle is stopped, 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 ignition switch has been turned from off to ON.
- 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

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Turn the Techstream on.

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

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM	REFERENCE VALUE
Elapsed Time after Freeze Trigger	Elapsed time after freeze frame trigger	Min.: 0 ms, Max.: 500 ms
Number of IG ON	Number of operations of ignition switch being turned to ON after storing Freeze Frame Data	0 to 31
Buzzer	Skid control buzzer signal	Skid control buzzer ON: ON, OFF: OFF

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TESTER DISPLAY	MEASUREMENT ITEM	REFERENCE VALUE
Stop Light SW	Stop light switch signal	Stop light switch ON: ON, OFF: OFF
Parking Brake SW	Parking brake switch signal	Parking brake switch ON: ON, OFF: OFF
Gear Position	Gear position information	FAIL P, N R NOT R 1st 2nd 3rd 4th 5th
Shift Lever Position	Shift lever position information	FAIL P, N R D/M 1st 2nd 3rd 4th 5th
Operated System	Operated system status	ABS: ABS activated VSC: VSC activated TRC: TRAC activated BA: BA activated FAIL: Fail safe mode activated SYS: System prohibit activated NON: No operation activated
Master Cylinder Sensor	Master cylinder pressure sensor reading	Brake pedal released: 0.3 to 0.9 V Brake pedal depressed: 0.8 to 4.5 V
M/C Sensor Grade	Master cylinder pressure sensor change	Min.: -30 MPa/s, Max.: 225 MPa/s
Yaw Rate Sensor	Yaw rate sensor reading	Min.: -128 deg/s, Max.: 127 deg/s
Lateral G	Lateral G	Min.: -25.11 m/s^2, Max.: 24.91 m/s^2

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TESTER DISPLAY	MEASUREMENT ITEM	REFERENCE VALUE
Forward and Rearward G	Forward and backward G	Min.: -25.11 m/s^2, Max.: 24.91 m/s^2
FR Wheel Speed	FR wheel speed	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
FL Wheel Speed	FL wheel speed	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
RR Wheel Speed	RR wheel speed	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
RL Wheel Speed	RL wheel speed	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
Vehicle Speed	Vehicle speed reading	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
Vehicle Speed Grade	Vehicle speed grade	Min.: -25.11 m/s^2, Max.: 24.91 m/s^2
Real Engine Torque	Real engine torque	Min.: -1024 Nm, Max.: 1023 Nm
Accelerator Opening Angle %	Accelerator opening angle %	Min.: 0%, Max.: 128%
Inspection Mode	Inspection mode	OTHER: Normal mode INSPECT: Inspection mode
Steering Angle Sensor	Steering angle sensor reading	Left turn: Increase Right turn: Decrease
TRAC/VSC Off Mode	TRAC/VSC off mode	NORMAL: Normal mode TRC OFF: TRAC off mode VSC OFF: VSC off mode

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3. CLEAR FREEZE FRAME DATA

NOTICE:

Clearing the DTCs will also clear the Freeze Frame Data.

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

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

Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHW04FX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: DATA LIST / ACTIVE TEST (2010 Corolla)		

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 ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON.

(e) Turn the Techstream on.

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

(g) According to the Techstream display, 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	-
VSC Warning Light	VSC OFF indicator light / ON or OFF	ON: Indicator light ON OFF: Indicator light OFF	-
Brake Warning Light	Brake warning light / ON or OFF	ON: Warning light ON OFF: Warning light OFF	-
Slip Indicator Light	Slip indicator light / ON or OFF	ON: Indicator light ON OFF: Indicator light OFF	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
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	-
Main Idle SW	Main idle switch / ON or OFF	ON: Accelerator pedal released OFF: Accelerator pedal depressed	-
Gear Position	Gear position information / P/N, R, 1st-5th, FAIL, NOT R	Actual gear position	-
Shift Lever Position	Shift lever position information / P/N, R, D/M, 1st-5th, FAIL	Actual shift lever position	-
Shift Information	Shift information / ON or OFF	ON: During gear change	-
Inspection Mode	Inspection mode / OTHER or INSPECT	OTHER: Normal mode INSPECT: Inspection mode	-
Number of IG ON(Inspection)	Number of times ignition switch turned ON after entering inspection mode / min.: 0, max.: 255	Min.: 0 Max.: 255	-
Master Cylinder Sensor	Master cylinder pressure sensor / min.: 0 V, max.: 5 V	When brake pedal is released: 0.3 to 0.9 V	Reading increases when brake pedal is depressed
Zero Point of M/C	Memorized zero value / min.: -12.5 MPa, max.: 12.4 MPa	Min.: -12.5 MPa Max.: 12.4 MPa	-
Deceleration Sensor	Acceleration sensor / min.: -18.52 m/s^2, max.: 18.39 m/s^2	Min.: -18.52 m/s^2 Max.: 18.39 m/s^2	Reading changes when vehicle is bounced
Zero Point of Decele	Memorized zero value / min.: -25.11 m/s^2, max.: 24.91 m/s^2	Min.: -25.11 m/s^2 Max.: 24.91 m/s^2	-
Deceleration Sensor2	Acceleration sensor 2 / min.: -18.52 m/s^2, max.: 18.39 m/s^2	Min.: -18.52 m/s^2 Max.: 18.39 m/s^2	Reading changes when vehicle is bounced

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Zero Point of Decele2	Memorized zero value / min.: -25.11 m/s^2, max.: 24.91 m/s^2	Min.: -25.11 m/s^2 Max.: 24.91 m/s^2	-
Yaw Rate Sensor	Yaw rate sensor / min.: -128 deg/s, max.: 127 deg/s	Vehicle stationary: 0 deg/s Right turn: -128 to 0 deg/s Left turn: 0 to 127 deg/s	-
Zero Point of Yaw Rate	Memorized zero value / min.: -128 deg/s, max.: 127 deg/s	Min.: -128 deg/s Max.: 127 deg/s	-
Yaw Rate Sensor2	Yaw rate sensor 2 / min.: -128 deg/s, max.: 127 deg/s	Vehicle stationary: 0 deg/s Right turn: -128 to 0 deg/s Left turn: 0 to 127 deg/s	-
Zero Point of Yaw Rate2	Memorized zero value / min.: -128 deg/s, max.: 127 deg/s	Min.: -128 deg/s Max.: 127 deg/s	-
Steering Angle Sensor	Steering angle sensor / min.: -3276.8 deg, max.: 3276.7 deg	Left turn: Increase Right turn: Decrease	-
Zero Point of Steering Angle	Memorized zero value / min.: -3276.8 deg, max.: 3276.7 deg	Min.: -3276.8 deg Max.: 3276.7 deg	-
Lateral G	Lateral G / min.: -25.11 m/s^2, max.: 24.91 m/s^2	Min.: -25.11 m/s^2 Max.: 24.91 m/s^2	-
Forward and Rearward G	Forward and backward G / min.: -25.11 m/s^2, max.: 24.91 m/s^2	Min.: -25.11 m/s^2 Max.: 24.91 m/s^2	-
Yaw Rate Value	Yaw rate value / min.: -128 deg/s, max.: 127 deg/s	Min.: -128 deg/s Max.: 127 deg/s	-
Steering Angle Value	Steering angle value / min.: -3276.8 deg, max.: 3276.7 deg	Min.: -3276.8 deg Max.: 3276.7 deg	-
FR Wheel Speed	FR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel Speed	FL wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Wheel Speed	RR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RL Wheel Speed	RL wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
Vehicle Speed	Maximum wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual vehicle speed	Speed indicated on speedometer
FR Wheel Acceleration	FR wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
FL Wheel Acceleration	FL wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
RR Wheel Acceleration	RR wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
RL Wheel Acceleration	RL wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
FR Wheel ABS Ctrl Status	FR wheel ABS control status / ON or OFF	ON: During control	-
FL Wheel ABS Ctrl Status	FL wheel ABS control status / ON or OFF	ON: During control	-
RR Wheel ABS Ctrl Status	RR wheel ABS control status / ON or OFF	ON: During control	-
RL Wheel ABS Ctrl Status	RL wheel ABS control status / ON or OFF	ON: During control	-
RR Wheel EBD Ctrl Status	RR wheel EBD control status / ON or OFF	ON: During control	-
RL Wheel EBD Ctrl Status	RL wheel EBD control status / ON or OFF	ON: During control	-
BA Ctrl Status	BA 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	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
TRC(TRAC) Brake Ctrl Status	TRAC brake control status / ON or OFF	ON: During control	-
FR Wheel VSC Ctrl Status	FR wheel VSC control status / ON or OFF	ON: During control	-
FL Wheel VSC Ctrl Status	FL wheel VSC control status / ON or OFF	ON: During control	-
RR Wheel VSC Ctrl Status	RR wheel VSC control status / ON or OFF	ON: During control	-
RL Wheel VSC Ctrl Status	RL wheel VSC control status / ON or OFF	ON: During control	-
Engine Revolutions	Engine speed / min.: 0 r/min, max.: 65535 r/min	Min..: 0 r/min Max.: 65535 r/min	-
Real Engine Torque	Real engine torque / min.: -1024 N*m, max.: 1023 N*m	Min.: -1024 N*m Max.: 1023 N*m	-
Accelerator Opening Angle %	The difference of a present accelerator / min.: 0%, max.: 128%	When the accelerator pedal is released: 0%,	During accelerator pedal operation: Changes in proportion with the pedal movement
Solenoid Relay	ABS solenoid relay / ON or OFF	ON: Solenoid relay ON OFF: Solenoid relay OFF	-
ABS Motor Relay	ABS motor relay / ON or OFF	ON: Motor relay ON OFF: Motor relay OFF	-
Fail Safe Motor Relay	ABS motor fail safe relay / ON or OFF	ON: Motor relay ON OFF: Motor relay OFF	-
TR(A)C/VSC Solenoid (SM2)	Master cut solenoid (SM2) / ON or OFF	ON: Operates	-
TR(A)C/VSC Solenoid (SM1)	Master cut solenoid (SM1) / ON or OFF	ON: Operates	-
ABS Solenoid (SFRH)	ABS solenoid (SFRH) / ON or OFF	ON: Operates	-
ABS Solenoid (SFRR)	ABS solenoid (SFRR) / ON or OFF	ON: Operates	-
ABS Solenoid (SFLH)	ABS solenoid (SFLH) / ON or OFF	ON: Operates	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
ABS Solenoid (SFLR)	ABS solenoid (SFLR) / ON or OFF	ON: Operates	-
ABS Solenoid (SRRH)	ABS solenoid (SRRH) / ON or OFF	ON: Operates	-
ABS Solenoid (SRRR)	ABS solenoid (SRRR) / ON or OFF	ON: Operates	-
ABS Solenoid (SRLH)	ABS solenoid (SRLH) / ON or OFF	ON: Operates	-
ABS Solenoid (SRLR)	ABS solenoid (SRLR) / ON or OFF	ON: Operates	-
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
EFI Communication Open	EFI communication 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	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		NORMAL: Normal	
MT Voltage Value	Motor driving monitor voltage / min.: 0 V, max.: 20 V	Min.: 0 V Max.: 20 V	-
TRAC/VSC Off Mode	TRAC/VSC off mode / NORMAL, TRC OFF or VSC OFF	NORMAL: Normal mode TRC OFF: TRAC off mode VSC OFF: VSC off mode	-
Number of DTC	Number of DTC recorded / min.: 0, max.: 255	Min.: 0 Max.: 255	-

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 ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON.

(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
VSC Warning Light	VSC OFF indicator light	Indicator light ON/OFF	Observe combination meter
Brake Warning Light	Brake warning light	Warning light ON/OFF	Observe combination meter
Slip Indicator Light	Slip indicator light	Indicator light ON/OFF	Observe combination meter

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TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Buzzer	Skid control buzzer	Buzzer ON/OFF	Buzzer can be heard
Solenoid Relay	ABS solenoid relay	Relay ON/OFF	-
Motor Relay	ABS motor relay	Relay ON/OFF	Operating sound of motor can be heard
ABS Solenoid (SRLR)	ABS solenoid (SRLR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRLH)	ABS solenoid (SRLH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRRR)	ABS solenoid (SRRR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRRH)	ABS solenoid (SRRH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFLR)	ABS solenoid (SFLR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFLH)	ABS solenoid (SFLH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFRR)	ABS solenoid (SFRR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFRH)	ABS solenoid (SFRH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
VSC/TRC Solenoid (SMR)	Master cut solenoid (SM2)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
VSC/TRC Solenoid (SMF)	Master cut solenoid (SM1)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard

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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHX03UX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: FAIL-SAFE CHART (2010 Corolla)		

FAIL-SAFE CHART

1. FAIL SAFE OPERATION

- If there is a problem with sensor signals or the brake actuator system, the skid control ECU prohibits power supply to the brake actuator and informs the ECM of the VSC system malfunction.

  The brake actuator turns off the solenoids and the ECM stops its VSC control according to signals from the skid control ECU. The vehicle will operate in a manner similar to a vehicle that is not equipped with ABS, TRAC and VSC systems.

  ABS control will be prohibited, but EBD control will continue to the extent that EBD control is possible. If EBD control is impossible, the brake warning light will come on to warn the driver INFO .
- If a VSC system component malfunctions before VSC control begins, VSC control will be prohibited. If a system component malfunctions during VSC control, the system will gradually stop performing the control so as not to trigger a sudden change in vehicle operation.

  If it is impossible to control the systems, the warning light will come on to inform the driver of system control termination INFO .

ABS, EBD and BA System

MALFUNCTIONING AREA	CONTROL METHOD
ABS system	ABS, BA, TRAC and VSC control prohibited
BA system	ABS, BA, TRAC and VSC control prohibited
EBD system	ABS, EBD, BA, TRAC and VSC control prohibited

HINT:

A malfunction in either the ABS or BA system will result in identical operation with ABS, BA, TRAC and VSC system control being prohibited.

TRAC and VSC System

MALFUNCTIONING AREA	CONTROL METHOD
Engine control system (TRAC and VSC systems)	Before control: Disables control During control: Uses only the brakes to effect control
Brake control system (VSC system)	Before control: Disables control During control: Uses only the engine to effect control

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MALFUNCTIONING AREA	CONTROL METHOD
Brake control system (TRAC system)	Before control: Disables control During control: Disables control (by gradually ending control)

HINT:

As for the TRAC and VSC systems, different systems prohibit different controls depending on the malfunctioning part.

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Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHU03VX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2010 Corolla)		

DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

Turn the ignition switch off before removing any parts.

HINT:

- If no malfunction is found when inspecting parts, inspect the skid control ECU and ground points for poor connect.
- 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 inspection one by one until the problem is identified.
- For DTCs indicated by the warning light or indicator light, refer to the DTC charts in DTC Check/Clear.
- Inspect the fuses and relays before investigating the trouble areas as shown in the table below.

ABS DTC

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C0226	SFR Solenoid Circuit	1. SFRR or SFRH circuit 2. Brake actuator assembly	INFO
C0236	SFL Solenoid Circuit	1. SFLR or SFLH circuit 2. Brake actuator assembly	INFO
C0246	SRR Solenoid Circuit	1. SRRR or SRRH circuit 2. Brake actuator assembly	INFO
C0256	SRL Solenoid Circuit	1. SRLR or SRLH circuit 2. Brake actuator assembly	INFO
C0273*1	Open in ABS Motor Relay Circuit	1. ABS NO. 1 fuse 2. ABS motor relay circuit 3. Brake actuator assembly (ABS motor relay)	INFO
C0274	Short in ABS Motor Relay Circuit	1. ABS motor relay circuit 2. Brake actuator assembly (ABS motor relay)	INFO
C0278	Open in ABS Solenoid Relay Circuit	1. ABS NO. 3 fuse 2. ABS solenoid relay circuit 3. Brake actuator assembly (ABS solenoid relay)	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C0279	Short in ABS Solenoid Relay Circuit	1. ABS solenoid relay circuit 2. Brake actuator assembly (ABS solenoid relay)	INFO
C1225	SM Solenoid Circuit	1. SM1 or SM2 circuit 2. Brake actuator assembly	INFO
C1241	Low Power Supply Voltage Malfunction	1. ECU-IG NO. 1 fuse 2. Battery 3. Charging system 4. Power source circuit 5. Internal power supply circuit of the skid control ECU	INFO
C1243*1	Acceleration Sensor Stuck Malfunction	1. Sensor installation 2. Yaw rate and acceleration sensor	INFO
C1245*1	Acceleration Sensor Output Malfunction	1. Sensor installation 2. Yaw rate and acceleration sensor	INFO
C1361	Short in ABS Motor Fail Safe Relay Circuit	1. ABS NO. 1 fuse 2. ABS motor fail safe relay circuit 3. Brake actuator assembly (ABS motor fail safe relay)	INFO
C1381	Acceleration Sensor Power Supply Voltage Malfunction	1. Yaw rate and acceleration sensor power source circuit 2. Yaw rate and acceleration sensor	INFO
C1401*1	Front Speed Sensor RH Malfunction	1. Front speed sensor RH 2. Speed sensor rotor	INFO
C1402*1	Front Speed Sensor LH Malfunction	1. Front speed sensor LH 2. Speed sensor rotor	INFO
C1403*1	Rear Speed Sensor RH Malfunction	1. Rear speed sensor RH 2. Speed sensor rotor	INFO
C1404*1	Rear Speed Sensor LH Malfunction	1. Rear speed sensor LH 2. Speed sensor rotor	INFO
C1405*1	Open or Short in Front Speed Sensor RH Circuit	1. Front speed sensor RH 2. Speed sensor circuit 3. Brake actuator assembly (Skid control ECU)	INFO
C1406*1	Open or Short in Front Speed Sensor LH Circuit	1. Front speed sensor LH 2. Speed sensor circuit 3. Brake actuator assembly (Skid control ECU)	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C1407*1	Open or Short in Rear Speed Sensor RH Circuit	1. Rear speed sensor RH 2. Speed sensor circuit 3. Brake actuator assembly (Skid control ECU)	INFO
C1408*1	Open or Short in Rear Speed Sensor LH Circuit	1. Rear speed sensor LH 2. Speed sensor circuit 3. Brake actuator assembly (Skid control ECU)	INFO
C1413*1	Front Speed Sensor RH Output Malfunction	1. Front speed sensor RH 2. Speed sensor circuit 3. Speed sensor rotor 4. Brake actuator assembly (Skid control ECU)	INFO
C1414*1	Front Speed Sensor LH Output Malfunction	1. Front speed sensor LH 2. Speed sensor circuit 3. Speed sensor rotor 4. Brake actuator assembly (Skid control ECU)	INFO
C1415*1	Rear Speed Sensor RH Output Malfunction	1. Rear speed sensor RH 2. Speed sensor circuit 3. Speed sensor rotor 4. Brake actuator assembly (Skid control ECU)	INFO
C1416*1	Rear Speed Sensor LH Output Malfunction	1. Rear speed sensor LH 2. Speed sensor circuit 3. Speed sensor rotor 4. Brake actuator assembly (Skid control ECU)	INFO
C1417	High Power Supply Voltage Malfunction	1. ECU-IG NO. 1 fuse 2. Battery 3. Charging system 4. Power source circuit 5. Internal power supply circuit of the skid control ECU	INFO
C1419	Acceleration Sensor Internal Circuit	Yaw rate and acceleration sensor	INFO
C1420	Acceleration Sensor Malfunction	1. Sensor installation 2. Yaw rate and acceleration sensor	INFO
C1421*2	Open or Short in Master Cylinder Pressure Sensor	Brake actuator assembly (Master cylinder pressure sensor)	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C1422*2	Master Cylinder Pressure Sensor Zero Point High Malfunction	1. Stop light switch 2. Stop light switch circuit 3. Master cylinder pressure sensor circuit 4. Brake actuator assembly (Master cylinder pressure sensor)	INFO
C1423*2	Master Cylinder Pressure Sensor Zero Point Low Malfunction	Brake actuator assembly (Master cylinder pressure sensor)	INFO
C1424*2	Master Cylinder Pressure Sensor Output Malfunction	Brake actuator assembly (Master cylinder pressure sensor)	INFO
C1425*3	Open in Stop Light Switch Circuit	1. STOP fuse 2. Stop light switch 3. Stop light switch circuit 4. Brake actuator assembly (Skid control ECU)	INFO
C1427*1	Motor Malfunction	1. Brake actuator assembly (Ground circuit) 2. Brake actuator assembly (Motor circuit)	INFO
C1428*1	Motor Circuit Malfunction	Brake actuator assembly (Motor circuit)	INFO
C1442	Invalid Data Received from Acceleration Sensor	Yaw rate and acceleration sensor	INFO
U0073	Control Module Communication Bus OFF	CAN communication system	INFO
U0124	Lost Communication with Lateral Acceleration Sensor Module	CAN communication system (Skid control ECU to yaw rate and acceleration sensor)	INFO

*1 to *3:

Even after the trouble areas are repaired, the ABS warning light will not go off unless the following operations are performed:

- *1:
  a. Drive the vehicle at 20 km/h (12 mph) for 30 seconds or more and check that the ABS warning light goes off.
  b. Clear the DTCs.
- *2:
  a. Turn the ignition switch to ON.
  b. Keep the vehicle stationary for 5 seconds or more and depress the brake pedal lightly 2 or 3 times.
  c. Drive the vehicle at the vehicle speed of 50 km/h (31 mph) and depress and hold

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the brake pedal firmly for approximately 3 seconds.

d. Repeat the above operation 3 times or more and check that the ABS warning light goes off.

e. Clear the DTCs.

- *3:

a. Turn the ignition switch to ON.

b. Depress the brake pedal.

c. Clear the DTCs.

HINT:

In some cases, the Techstream cannot be used when the ABS warning light remains on.

VSC DTC

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C1201	Engine Control System Malfunction	Engine control system	INFO
C1203	ECM Communication Circuit Malfunction	ECM	INFO
C1210	Zero Point Calibration of Yaw Rate Sensor Undone	Yaw rate and acceleration sensor	INFO
C1232	Acceleration Sensor Stuck Malfunction	1. Sensor installation 2. Yaw rate and acceleration sensor	INFO
C1290	Steering Angle Sensor Zero Point Malfunction	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
C1336	Zero Point Calibration of Acceleration Sensor Undone	Yaw rate and acceleration sensor	INFO
C1432	Steering Angle Sensor Power Source Voltage Malfunction	1. Steering angle sensor power supply 2. Steering angle sensor	INFO
C1433	Steering Angle Sensor Internal Circuit	Steering angle sensor	INFO
C1434	Steering Angle Sensor Output Malfunction	1. Steering angle sensor power supply 2. Steering angle sensor 3. Brake actuator assembly (Skid control ECU)	INFO
C1435	Yaw Rate Sensor Internal Circuit	Yaw rate and acceleration sensor	INFO
C1436	Yaw Rate Sensor Malfunction	Yaw rate and acceleration sensor	INFO
C1437	Lost Communication with ECM	1. CAN communication system (Skid control ECU to ECM)	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
		2. Brake actuator assembly (Skid control ECU)	
C1439	Steering Angle Sensor Initialization Incomplete	1. Steering angle sensor 2. Yaw rate and acceleration sensor 3. Brake actuator assembly (Skid control ECU)	INFO
C1440	Unusual Bank Angle Detected	Yaw rate and acceleration sensor	INFO
C1443	Invalid Data Received from Yaw Rate Sensor	Yaw rate and acceleration sensor	INFO
C1445	Vehicle Driven with Steering Angle Sensor not Initialized	1. Steering angle sensor 2. Yaw rate and acceleration sensor 3. Brake actuator assembly (Skid control ECU)	INFO
U0100	Lost Communication with ECM / PCM	CAN communication system (Skid control ECU to ECM)	INFO
U0123	Lost Communication with Yaw Rate Sensor Module	CAN communication system (Skid control ECU to yaw rate and acceleration sensor)	INFO
U0126	Lost Communication with Steering Angle Sensor Module	CAN communication system (Skid control ECU to steering angle sensor)	INFO

HINT:

In some cases, the Techstream cannot be used when the VSC OFF indicator light remains on.

ABS Test Mode DTC

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C1271	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	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	Low Output Signal of Rear Speed Sensor RH (Test Mode DTC)	1. Rear speed sensor RH 2. Sensor installation 3. Speed sensor rotor	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C1274	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	Abnormal Change in Output Signal of Front Speed Sensor RH (Test Mode DTC)	Speed sensor rotor	INFO
C1276	Abnormal Change in Output Signal of Front Speed Sensor LH (Test Mode DTC)	Speed sensor rotor	INFO
C1277	Abnormal Change in Output Signal of Rear Speed Sensor RH (Test Mode DTC)	Speed sensor rotor	INFO
C1278	Abnormal Change in Output Signal of Rear Speed Sensor LH (Test Mode DTC)	Speed sensor rotor	INFO
C1279	Acceleration Sensor Output Voltage Malfunction (Test Mode DTC)	1. Sensor installation 2. Yaw rate and acceleration sensor	INFO
C1281	Master Cylinder Pressure Sensor Output Malfunction (Test Mode DTC)	1. Stop light switch 2. Master cylinder pressure sensor	INFO

VSC Test Mode DTC

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C0371	Yaw Rate Sensor (Test Mode DTC)	Yaw rate and acceleration sensor	INFO

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Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI804TX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C0226,C0236,C0246,C0256,C1225: SFR Solenoid Circuit (2010 Corolla)		

DTC	**C0226**	**SFR Solenoid Circuit**

DTC	**C0236**	**SFL Solenoid Circuit**

DTC	**C0246**	**SRR Solenoid Circuit**

DTC	**C0256**	**SRL Solenoid Circuit**

DTC	**C1225**	**SM Solenoid Circuit**

DESCRIPTION

These solenoids turn on when signals are received from the skid control ECU and they control the pressure acting on the wheel cylinders to control the braking force.

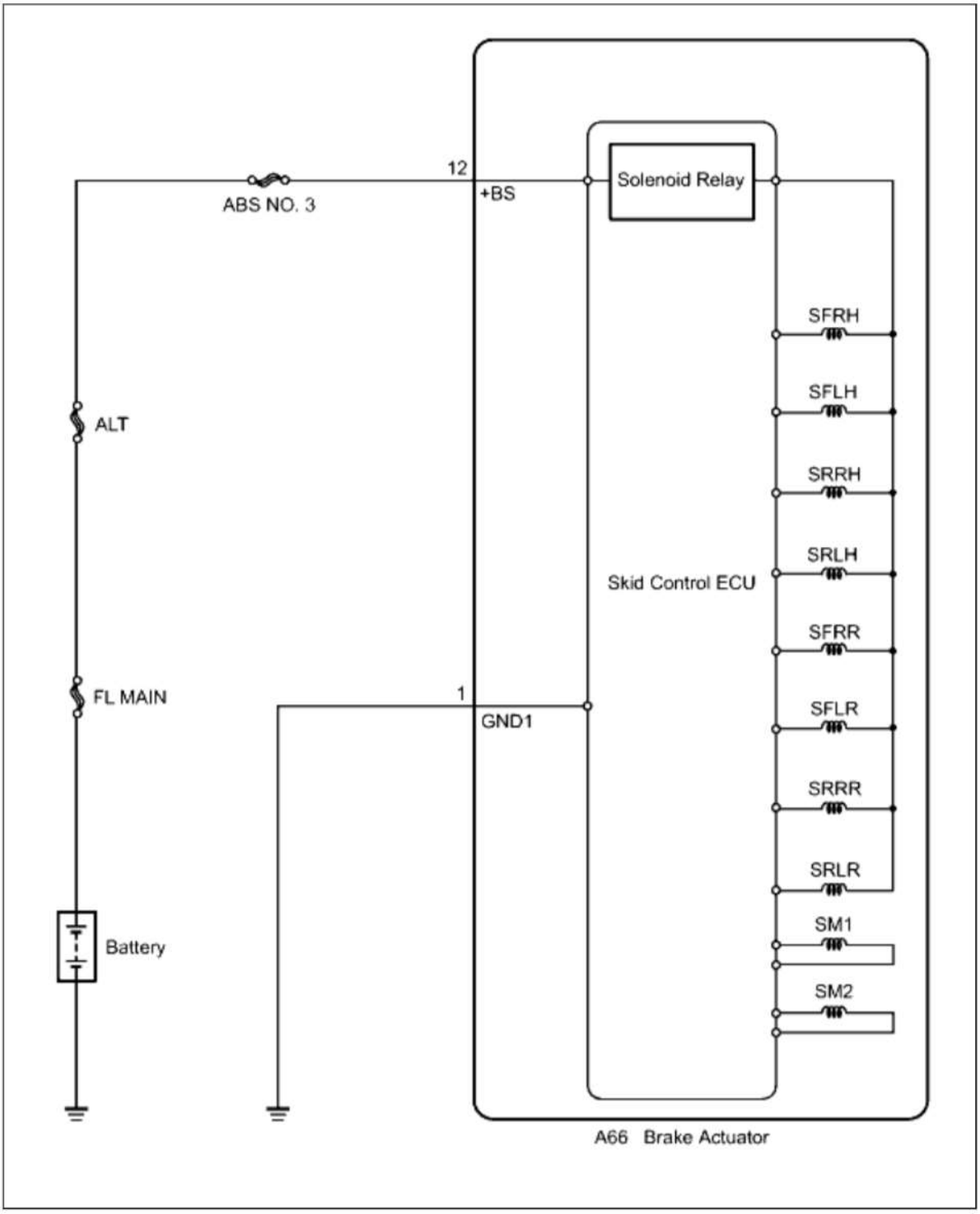
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0226 C0236 C0246 C0256	Open or short in the solenoid circuit continues for 0.05 seconds or more.	• Solenoid circuit • Brake actuator assembly
C1225	Any of the following is detected: 1. While switching solenoid (SM1 or SM2) is ON, overcurrent continues for 0.15 seconds or more. 2. While switching solenoid (SM1 or SM2) is OFF, an open circuit continues for 0.05 seconds or more. 3. While switching solenoid (SM1 or SM2) is ON, an open circuit continues for 0.05 seconds or more. 4. While switching solenoid (SM1 or SM2) is OFF, current continues to be applied for 0.05 seconds or more.	• SM1 or SM2 circuit • Brake actuator assembly

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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
	5. Either of the following conditions continues for 0.2 seconds or more: • SM1 output is 2 times more than SM2 output. • SM2 output is 2 times more than SM2 output.	

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

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1.	**RECONFIRM DTC**

HINT:

These codes are detected when a problem is determined in the brake actuator assembly.

The solenoid circuits are in the brake actuator assembly.

Therefore, solenoid circuit inspection and solenoid unit inspection cannot be performed. Be sure to check if any DTCs are output before replacing the brake actuator assembly.

(a) Clear the DTCs INFO.

(b) Start the engine.

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

Result:

RESULT	PROCEED TO
DTCs (C0226, C0236, C0246, C0256 and C1225) are not output	A
DTCs (C0226, C0236, C0246, C0256 and/or C1225) are output	B

HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harness, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JD603FX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C0273,C0274,C1361: Open in ABS Motor Relay Circuit (2010 Corolla)		

DTC	**C0273**	**Open in ABS Motor Relay Circuit**

DTC	**C0274**	**Short in ABS Motor Relay Circuit**

DTC	**C1361**	**Short in ABS Motor Fail Safe Relay Circuit**

DESCRIPTION

The ABS motor relay supplies power to the ABS pump motor. While the ABS is activated, the ECU turns the motor relay on and operates the ABS pump motor.

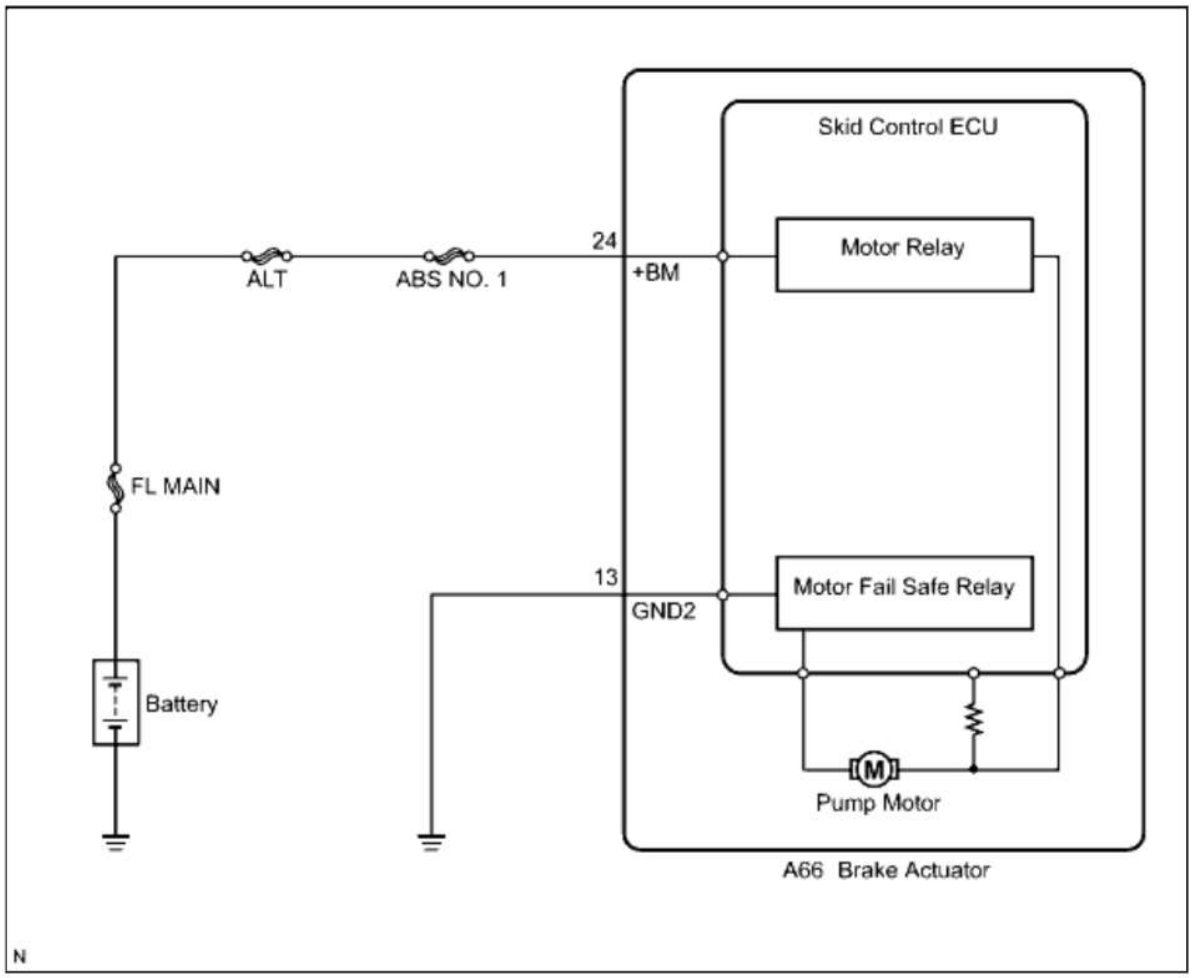
If the voltage supplied to the motor relay (+BM) is below the DTCs detection threshold due to low voltage from the battery or alternator, these DTCs may be stored.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0273	Either of the following is detected: 1. All of the following conditions continue for 0.1 seconds or more. - The IG1 terminal voltage is between 9.5 and 17.2 V. - While initial check, or ABS, BA, TRAC or VSC is operating. - Relay contact remains open when the relay is ON. 2. Both of the following conditions continue for 0.1 seconds or more. - The IG1 terminal voltage is less than 9.5 V. - Relay contact remains open when the relay is ON.	• ABS NO. 1 fuse • ABS motor relay circuit • Brake actuator assembly (ABS motor relay)
C0274	When the motor relay is OFF, the motor relay remains closed for 4 seconds or more.	• ABS motor relay circuit

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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
		• Brake actuator assembly (ABS motor relay)
C1361	Immediately after the ignition switch is turned to ON, the relay contact is closed for 4 seconds when the motor fail safe relay is OFF.	• ABS NO. 1 fuse • ABS motor fail safe relay circuit • Brake actuator assembly (ABS motor fail safe relay)

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO **.**

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HINT:

When C1241 and/or C1417 is output together with C0273, C0274 and/or C1361, inspect and repair the trouble areas indicated by C1241 and/or C1417 first INFO , or INFO).

PROCEDURE

1.	**PERFORM ACTIVE TEST USING TECHSTREAM (ABS MOTOR RELAY)**

(a) Connect the Techstream to the DLC3.

(b) Start the engine.

(c) Select the Active Test on the Techstream INFO .

ABS/VSC/TRAC

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Motor Relay	ABS motor relay	Relay ON/OFF	Operating sound of motor can be heard

(d) Check for operating sound of the ABS motor relay when operating it using the Techstream.

Result:

RESULT	PROCEED TO
Operating sound is not heard	A
Operating sound is heard	B

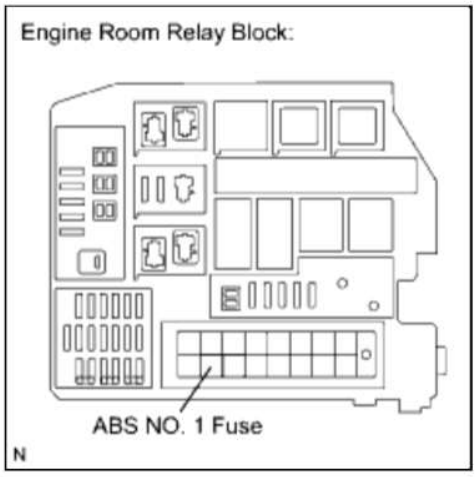
B ▶ **RECONFIRM DTC**

A ▼

2.	**INSPECT ABS NO. 1 FUSE**

(a) Turn the ignition switch off.

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(b) Remove the ABS NO. 1 fuse from the engine room relay block.

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

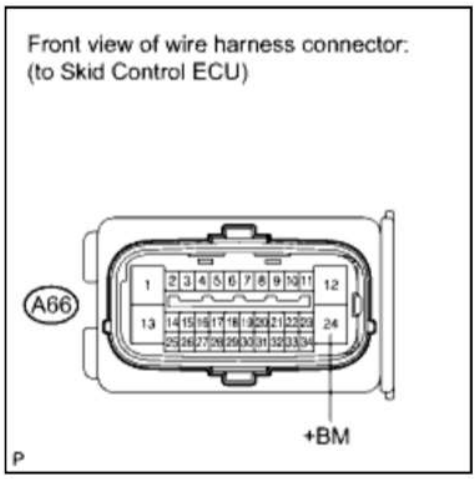
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
ABS NO. 1 (50 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE ABS NO. 1 FUSE**

OK ▼

3.	**INSPECT SKID CONTROL ECU (+BM TERMINAL)**



(a) Install the ABS NO. 1 fuse.

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(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.

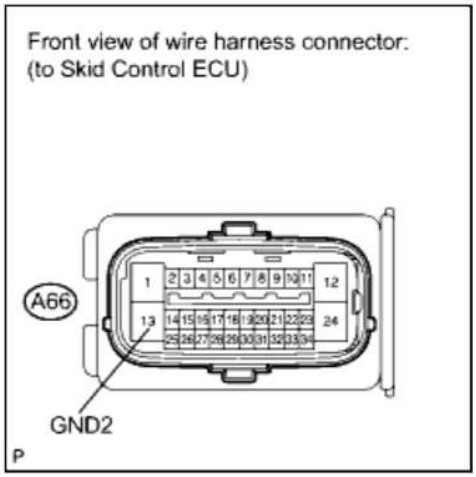
Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-24 (+BM) - Body ground	Always	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (+BM CIRCUIT)**

OK ▼

4.	INSPECT SKID CONTROL ECU (GND2 TERMINAL)



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-13 (GND2) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND2 CIRCUIT)**

OK ▼

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5.	RECONFIRM DTC

HINT:

This code is detected when a problem is identified in the brake actuator assembly.

The ABS motor relay is in the brake actuator assembly.

Therefore, ABS motor relay inspection and motor relay unit inspection cannot be performed. Be sure to check if the DTC is output before replacing the brake actuator assembly.

(a) Turn the ignition switch off.

(b) Reconnect the skid control ECU connector.

(c) Clear the DTCs INFO.

(d) Start the engine.

(e) Drive the vehicle at a speed of 20 km/h (12 mph) or more for 30 seconds or more.

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

Result:

RESULT	PROCEED TO
DTCs (C0273, C0274 and C1361) are not output	A
DTCs (C0273, C0274 and/or C1361) are output	B

HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harness, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI7044X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C0278,C0279: Open in ABS Solenoid Relay Circuit (2010 Corolla)		

DTC	**C0278**	**Open in ABS Solenoid Relay Circuit**

DTC	**C0279**	**Short in ABS Solenoid Relay Circuit**

DESCRIPTION

The ABS solenoid relay supplies power to the ABS solenoid and TRAC solenoid.

The solenoid relay is turned on 1.5 seconds after the ignition switch is turned to ON, and is turned off if an open or short in the solenoid is detected by self diagnosis performed when the vehicle starts running.

The ABS solenoid relay is housed in the skid control ECU in the actuator assembly.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0278	Either of the following is detected: 1. Both of the following conditions continue for 0.2 seconds or more. o The IG1 terminal voltage is 9.5 V or more. o The solenoid relay contact is open when the relay is ON. 2. Both of the following conditions continue for 0.2 seconds or more. o The IG1 terminal voltage becomes lower than 9.5 V when the relay is turned on. o The relay contact remains open.	• ABS NO. 3 fuse • ABS solenoid relay circuit • Brake actuator assembly (ABS solenoid relay)
C0279	Immediately after the ignition switch is turned to ON, the solenoid relay contact is closed for 4 seconds when the relay is turned off.	• ABS solenoid relay circuit • Brake actuator assembly (ABS solenoid relay)

WIRING DIAGRAM

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Refer to DTCs C0226, C0236, C0246, C0256 and C1225 INFO .

INSPECTION PROCEDURE

NOTICE:

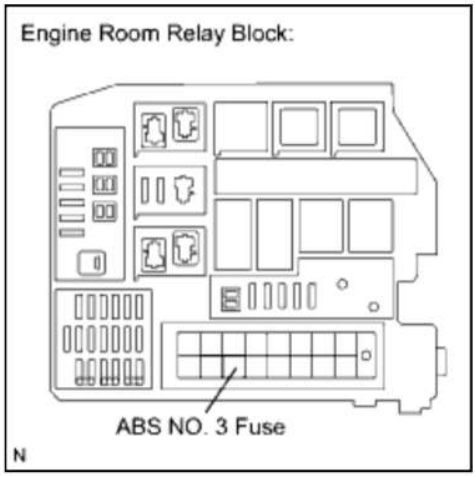
When replacing the brake actuator assembly, perform zero point calibration INFO .

HINT:

When C1241 and/or C1417 is output together with C0278 and/or C0279, inspect and repair the trouble areas indicated by C1241 and/or C1417 first INFO , or INFO).

PROCEDURE

1.	**INSPECT ABS NO. 3 FUSE**



(a) Remove the ABS NO. 3 fuse from the engine room relay block.

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

Standard Resistance:

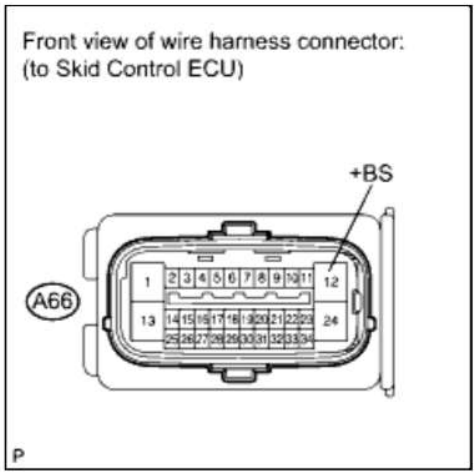
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
ABS NO. 3 (30 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE ABS NO. 3 FUSE**

OK ▼

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2.	INSPECT SKID CONTROL ECU (+BS TERMINAL)



(a) Install the ABS NO. 3 fuse.

(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
A66-12 (+BS) - Body ground	Always	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (+BS CIRCUIT)**

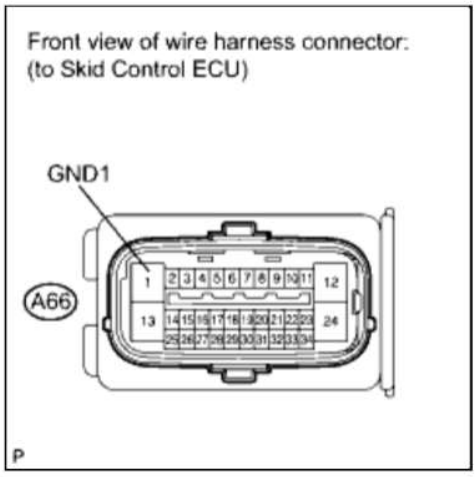
OK ▼

3.	INSPECT SKID CONTROL ECU (GND1 TERMINAL)

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

Standard Resistance:

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

4.	**RECONFIRM DTC**

HINT:

This code is detected when a problem is identified in the brake actuator assembly.

The solenoid circuit is in the brake actuator assembly.

Therefore, solenoid circuit inspection and solenoid unit inspection cannot be performed. Be sure to check if the DTC is output before replacing the brake actuator assembly.

(a) Reconnect the skid control ECU connector.

(b) Clear the DTCs INFO.

(c) Start the engine.

(d) Drive the vehicle at a speed of 20 km/h (12 mph) or more for 30 seconds or more.

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

Result:

RESULT	PROCEED TO
DTCs (C0278 and C0279) are not output	A
DTCs (C0278 and/or C0279) are output	B

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HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harnesses, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**



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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001RFV03FX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C0371,C1279: Yaw Rate Sensor (Test Mode DTC) (2010 Corolla)		

DTC	**C0371**	**Yaw Rate Sensor (Test Mode DTC)**

DTC	**C1279**	**Acceleration Sensor Output Voltage Malfunction (Test Mode DTC)**

DESCRIPTION

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

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0371	Detected only during Test Mode.	Yaw rate and acceleration sensor
C1279	Detected only during Test Mode.	• Sensor installation • Yaw rate and acceleration sensor

WIRING DIAGRAM

Refer to DTCs C1232, C1243 and C1245 INFO .

INSPECTION PROCEDURE

NOTICE:

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

PROCEDURE

1.	**CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION**

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

OK:

The sensor should be tightened to the specified torque.

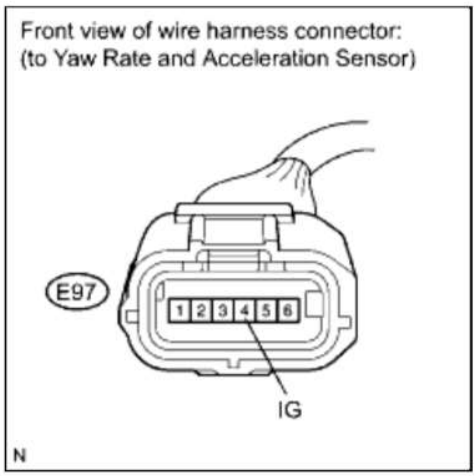
The sensor should not be installed in a tilted position.

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NG ▶ **INSTALL YAW RATE AND ACCELERATION SENSOR CORRECTLY**

OK ▼

2.	**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 ignition switch to ON.

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

Standard Voltage:

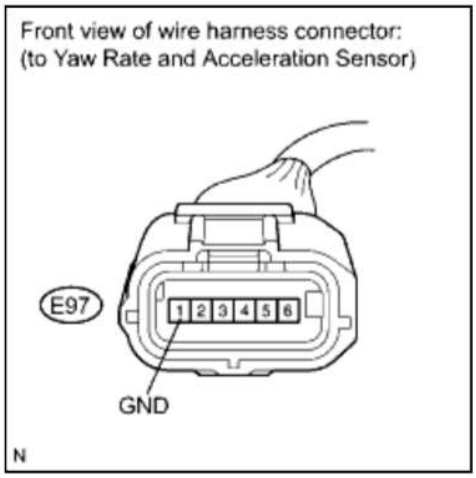
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E97-4 (IG) - Body ground	Ignition switch ON	11 to 14 V

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

OK ▼

3.	**INSPECT YAW RATE AND ACCELERATION SENSOR (GND TERMINAL)**

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(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E97-1 (GND) - Body ground	Always	Below 1 Ω

NOTICE:

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

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

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

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XII03PX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1201: Engine Control System Malfunction (2010 Corolla)		

DTC	**C1201**	**Engine Control System Malfunction**

DESCRIPTION

If the engine control system is malfunctioning, VSC and TRAC operations are prohibited, as a fail safe function. If a normal signal is received from the engine control system, the fail safe function cancelled and the DTC will be cleared.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1201	Engine control system malfunction signal continues for 1 second or more.	Engine control system

INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK ENGINE CONTROL SYSTEM**

(a) Check if any engine control system DTC is output INFO for 2AZ-FE, or INFO for 2ZR-FE).

Result:

RESULT	PROCEED TO
DTC is not output (for 2AZ-FE)	A
DTC is not output (for 2ZR-FE)	B
DTC is output (for 2AZ-FE)	C
DTC is output (for 2ZR-FE)	D

D ▶ **INSPECT ENGINE CONTROL SYSTEM (for 2ZR-FE)**

C ▶ **INSPECT ENGINE CONTROL SYSTEM (for 2AZ-FE)**

B ▶ **REPLACE ECM (for 2AZ-FE)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIJ02DX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1203: ECM Communication Circuit Malfunction (2010 Corolla)		

DTC	**C1203**	**ECM Communication Circuit Malfunction**

DESCRIPTION

The circuit is used to send TRAC and VSC control information from the skid control ECU to the ECM, and engine control information from the ECM to the skid control ECU through the CAN communication system.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1203	Engine, drive source and destination variations that are sent from the ECM do not match the ones of the skid control ECU.	ECM

INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK PART NUMBER (ECM AND BRAKE ACTUATOR ASSEMBLY)**

(a) Check that the proper ECM and brake actuator assembly (skid control ECU) are installed.

OK:

Proper ECUs are installed.

Result:

RESULT	PROCEED TO
OK (for 2AZ-FE)	A
OK (for 2ZR-FE)	B
NG	C

C ▶ **REPLACE ECUS WITH PROPER ONES**

B ▶ **REPLACE ECM (for 2ZR-FE)**

A ▶ **REPLACE ECM (for 2AZ-FE)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIK03GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1210,C1336: Zero Point Calibration of Yaw Rate Sensor Undone (2010 Corolla)		

DTC	**C1210**	**Zero Point Calibration of Yaw Rate Sensor Undone**

DTC	**C1336**	**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 is trouble in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123 (Lost Communication with Yaw Rate Sensor Module) and U0124 (Lost Communication with Lateral Acceleration Sensor Module) are output.

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

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1210	Zero point calibration of yaw rate sensor undone.	Yaw rate and acceleration sensor
C1336	Zero point calibration of acceleration sensor undone.	Yaw rate and acceleration sensor

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly or yaw rate and acceleration sensor, perform zero point calibration INFO **.**

HINT:

When U0123, U0124 and/or U0126 is output together with C1210 and/or C1336, inspect and repair the trouble areas indicated by U0123, U0124 and/or U0126 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 .

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NEXT

2.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition switch off.

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

OK:
All Test Mode DTCs are cleared.

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 ▶ **CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION**

OK ▶ **END**

3.	CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION

(a) Turn the ignition switch off.

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

OK:
The sensor should be tightened to the specified torque.
The sensor should not be installed in a tilted position.

NG ▶ **INSTALL YAW RATE AND ACCELERATION SENSOR CORRECTLY**

OK

4.	READ VALUE USING TECHSTREAM (YAW RATE AND ACCELERATION SENSOR)

(a) Connect the Techstream to the DLC3.

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(b) Turn the ignition switch to ON.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Deceleration Sensor	Acceleration sensor / min.: -18.52 m/s^2, max.: 18.39 m/s^2	Min.: -18.52 m/s^2 Max.: 18.39 m/s^2	Reading changes when vehicle is bounced
Deceleration Sensor2	Acceleration sensor 2 / min.: -18.52 m/s^2, max.: 18.39 m/s^2	Min.: -18.52 m/s^2 Max.: 18.39 m/s^2	Reading changes when vehicle is bounced
Yaw Rate Sensor	Yaw rate sensor / min.: -128 deg/s, max.: 127 deg/s	Vehicle stationary: 0 deg/s Right turn: -128 to 0 deg/s Left turn: 0 to 127 deg/s	-
Yaw Rate Sensor2	Yaw rate sensor 2 / min.: -128 deg/s, max.: 127 deg/s	Vehicle stationary: 0 deg/s Right turn: -128 to 0 deg/s Left turn: 0 to 127 deg/s	-

(d) Check that the yaw rate and acceleration sensor output value displayed on the Techstream.

OK:

The yaw rate and acceleration sensor output value is normal.

NOTICE:

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

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 YAW RATE AND ACCELERATION SENSOR**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI906NX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1271,C1272,C1275,C1276: Low Output Signal of Front Speed Sensor RH (Test Mode DTC) (2010 Corolla)		

DTC	**C1271**	**Low Output Signal of Front Speed Sensor RH (Test Mode DTC)**

DTC	**C1272**	**Low Output Signal of Front Speed Sensor LH (Test Mode DTC)**

DTC	**C1275**	**Abnormal Change in Output Signal of Front Speed Sensor RH (Test Mode DTC)**

DTC	**C1276**	**Abnormal Change in Output Signal of Front Speed Sensor LH (Test Mode DTC)**

DESCRIPTION

DTCs C1271 to C1276 will be cleared when the speed sensor sends a vehicle speed signal or when Test Mode ends. DTCs from C1271 to C1276 are output only in Test Mode.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1271 C1272	Detected only during Test Mode.	• Front speed sensor RH/LH • Sensor installation • Speed sensor rotor
C1275 C1276	Detected only during Test Mode.	Speed sensor rotor

HINT:

- DTCs C1271 and C1275 are for the front speed sensor RH.
- DTCs C1272 and C1276 are for the front speed sensor LH.

WIRING DIAGRAM

Refer to DTCs C1401 and C1402 INFO .

INSPECTION PROCEDURE

NOTICE:

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When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-

Result:

RESULT	PROCEED TO
There are momentary interruptions	A
There are no momentary interruptions	B
There is a constant open circuit	C

HINT:

Perform the above inspection before removing the sensor and connector.

C ▶ CHECK FRONT SPEED SENSOR INSTALLATION

B ▶ READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)

A ▼

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2.	**REPAIR OR REPLACE HARNESS OR CONNECTOR (SKID CONTROL ECU - FRONT SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Repair or replace the harness or connector.

(c) Check for any momentary interruption between the skid control ECU and the front speed sensor INFO .

(d) Check that there are no momentary interruptions.

NEXT

3.	**PERFORM TEST MODE (SIGNAL CHECK)**

(a) Turn the ignition switch off.

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

OK:
All Test Mode DTCs are cleared.

NG ▶ **READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)**

OK ▶ **END**

4.	**READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

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

ABS/VSC/TRAC

TESTER	MEASUREMENT ITEM/RANGE	NORMAL	DIAGNOSTIC NOTE

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DISPLAY		CONDITION	
FR Wheel Speed	FR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel Speed	FL wheel speed sensor reading /min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

OK ▼

5.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition switch off.

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

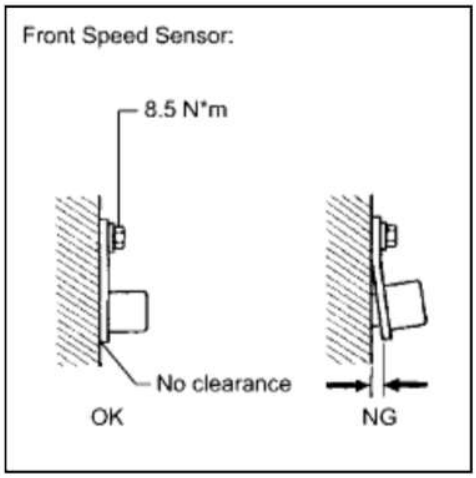
OK:
All Test Mode DTCs are cleared.

NG ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

OK ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

6.	CHECK FRONT SPEED SENSOR INSTALLATION

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(a) Turn the ignition switch off.

(b) Check the speed sensor installation.

OK:

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

The installation nut is tightened properly.

Torque

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

NG ▶ **INSTALL FRONT SPEED SENSOR CORRECTLY**

OK ▼

7.	CHECK FRONT SPEED SENSOR TIP

(a) Remove the front speed sensor INFO .

(b) Check the speed sensor tip.

OK:

No scratches, oil, or foreign matter on the sensor tip.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

NG ▶ **CLEAN OR REPLACE FRONT SPEED SENSOR**

OK ▼

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8.	CHECK FRONT SPEED SENSOR ROTOR

(a) Remove the front speed sensor rotor INFO for 2AZ-FE or INFO for 2ZR-FE).

(b) Check the speed sensor rotor.

OK:

No scratches, oil, or foreign matter on the rotors.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

HINT:

If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.

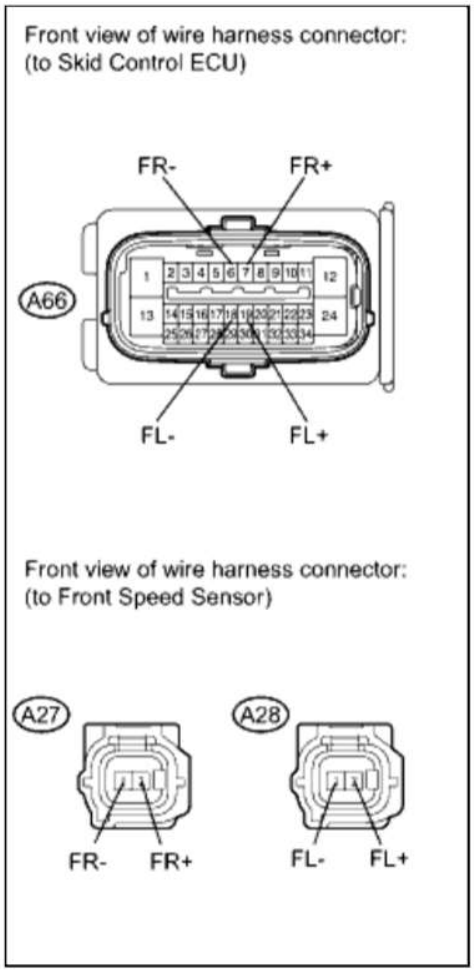
NG ▶ **CLEAN OR REPLACE FRONT SPEED SENSOR ROTOR**

OK ▼

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

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

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(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
A66-7 (FR+) - A27-2 (FR+)	Always	Below 1 Ω
A66-7 (FR+) - Body ground	Always	10 kΩ or higher
A66-6 (FR-) - A27-1 (FR-)	Always	Below 1 Ω
A66-6 (FR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-19 (FL+) - A28-2 (FL+)	Always	Below 1 Ω

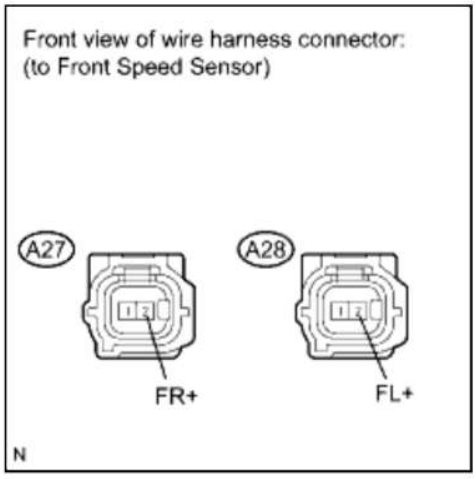
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-19 (FL+) - Body ground	Always	10 kΩ or higher
A66-18 (FL-) - A28-1 (FL-)	Always	Below 1 Ω
A66-18 (FL-) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

10.	INSPECT SKID CONTROL ECU (SENSOR INPUT)



(a) Reconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

(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
A27-2 (FR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A28-2 (FL+) - Body ground	Ignition switch ON	8 to 14 V

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NG ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

OK ▼

11.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition switch off.

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

OK:
All Test Mode DTCs are cleared.

NG ▶ REPLACE FRONT SPEED SENSOR

OK ▶ CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)

12.	REPLACE FRONT SPEED SENSOR

(a) Turn the ignition switch off.

(b) Replace the front speed sensor INFO.

NOTICE:

Check the speed sensor signal after replacement INFO.

NEXT ▼

13.	PERFORM TEST MODE (SIGNAL CHECK)

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

OK:
All Test Mode DTCs are cleared.

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NG ▶ REPLACE FRONT SPEED SENSOR ROTOR

OK ▶ END

14.	REPLACE FRONT SPEED SENSOR ROTOR

(a) Turn the ignition switch off.

(b) Remove the front drive shaft assembly INFO for 2AZ-FE or INFO for 2ZR-FE).

(c) Replace the front axle outboard joint shaft assembly (front speed sensor rotor) INFO for 2AZ-FE or INFO for 2ZR-FE).

HINT:

If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.

NOTICE:

Check the speed sensor signal after replacement INFO .

NEXT

15.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Install the front drive shaft assembly.

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

OK:
All Test Mode DTCs are cleared.

NG ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

OK ▶ END

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001RFV03GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1232,C1243,C1245: Acceleration Sensor Stuck Malfunction (2010 Corolla)		

DTC	**C1232**	**Acceleration Sensor Stuck Malfunction**

DTC	**C1243**	**Acceleration Sensor Stuck Malfunction**

DTC	**C1245**	**Acceleration Sensor Output 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 is trouble in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123 (Lost Communication with Yaw Rate Sensor Module) and U0124 (Lost Communication with Lateral Acceleration Sensor Module) are set.

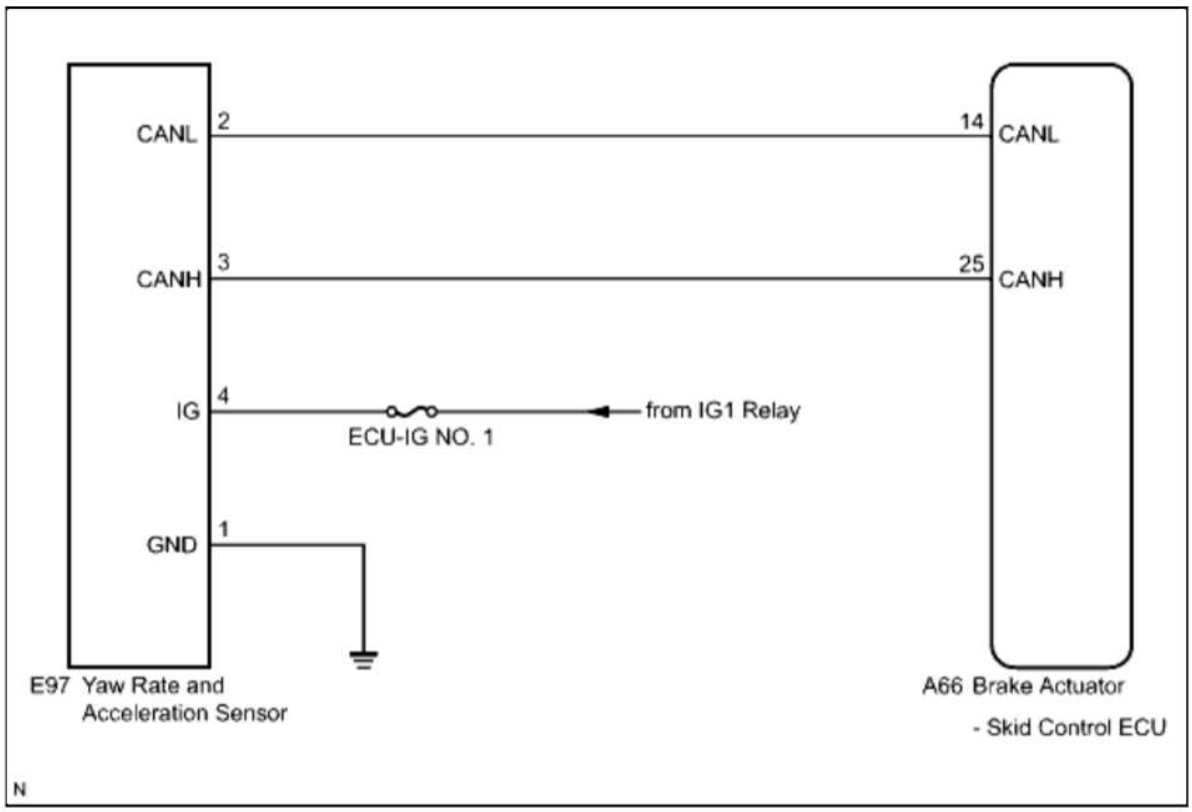
These DTCs are also output when calibration has not been completed.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1232	At a vehicle speed of 10 km/h (6 mph) or more, acceleration sensor output value does not change for 30 seconds or more.	• Sensor installation • Yaw rate and acceleration sensor
C1243	While the vehicle speed changes from 30 km/h (19 mph) to 0 km/h (0 mph), the condition that the value of acceleration sensor does not change by 0.0294 G or more occurs 16 times or more.	• Sensor installation • Yaw rate and acceleration sensor
C1245	At a vehicle speed of 30 km/h (19 mph) or more, the difference between the forward and backward G calculated from the	• Sensor installation

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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
	acceleration sensor value and that calculated from the vehicle speed sensor exceeds 0.35 G for 60 seconds or more.	• Yaw rate and acceleration sensor

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

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

HINT:

When U0123, U0124 and/or U0126 is output together with C1232, C1243, and/or C1245, inspect and repair the trouble areas indicated by U0123, U0124 and/or U0126 first INFO .

PROCEDURE

1.	CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION

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

OK:

The sensor should be tightened to the specified torque.

The sensor should not be installed in a tilted position.

NOTICE:

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

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 ▶ **INSTALL YAW RATE AND ACCELERATION SENSOR CORRECTLY**

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



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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XW604ZX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1241: Low Power Supply Voltage Malfunction (2010 Corolla)		

DTC	**C1241**	**Low Power Supply Voltage Malfunction**

DESCRIPTION

If a malfunction is detected in the power supply circuit, the skid control ECU (housed in the actuator assembly) stores this DTC and the fail safe function prohibits ABS operation.

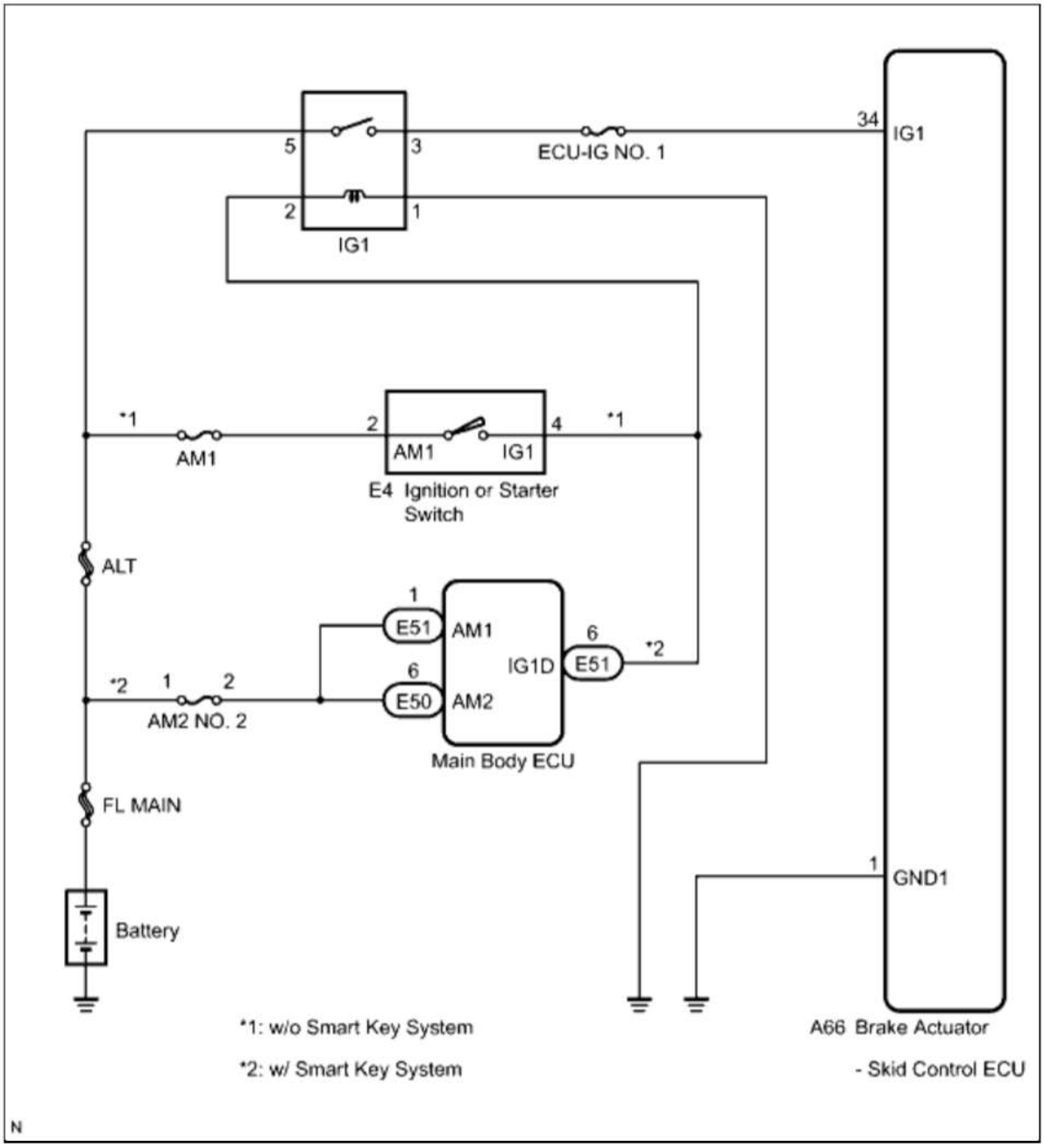
This DTC is stored when the IG1 terminal voltage deviates from the DTC detection condition due to a malfunction in the power supply or charging circuit such as the battery or alternator circuit, etc.

The DTC is cancelled when the IG1 terminal voltage returns to normal.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1241	Any of the following is detected: 1. At a vehicle speed of 3 km/h (2 mph) or more, the IG1 terminal voltage is less than 9.5 V for 10 seconds or more. 2. When the solenoid relay remains ON and the IG1 terminal voltage is less than 9.5 V, the relay contact is open for 0.22 seconds or more. 3. With the IG1 terminal voltage 9.5 V or less, the vehicle speed sensor power supply decreases for 60 seconds or more. 4. When the motor fail safe relay is ON after the motor relay turns ON, the IG1 terminal voltage is 9.5 V or less and the actuator pump drive motor is OFF for 0.22 seconds or more.	• ECU-IG NO. 1 fuse • Battery • Charging system • Power source circuit • Internal power supply circuit of the skid control ECU

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

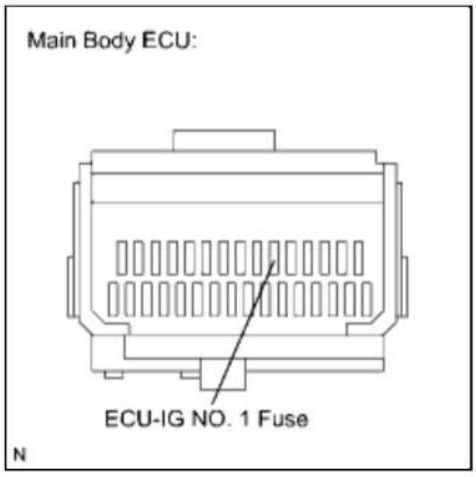
When replacing the brake actuator assembly, perform zero point calibration INFO **.**

PROCEDURE

1.	**INSPECT ECU-IG NO. 1 FUSE**

(a) Remove the ECU-IG NO. 1 fuse from the main body

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ECU (instrument panel junction block).

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
ECU-IG NO. 1 (10 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE ECU-IG NO. 1 FUSE**

OK ▼

2.	**CHECK BATTERY**

(a) Install the ECU-IG NO. 1 fuse.

(b) Check the battery voltage.

Standard Voltage:
11 to 14 V
Result:

RESULT	PROCEED TO
OK	A
NG (for 2AZ-FE)	B
NG (for 2ZR-FE)	C

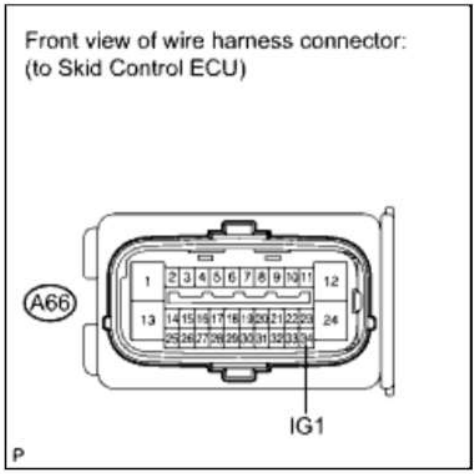
C ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)**

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B ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2AZ-FE)**

A ▼

3.	**INSPECT SKID CONTROL ECU (IG1 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) Turn the ignition switch to ON.

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

Standard Voltage:

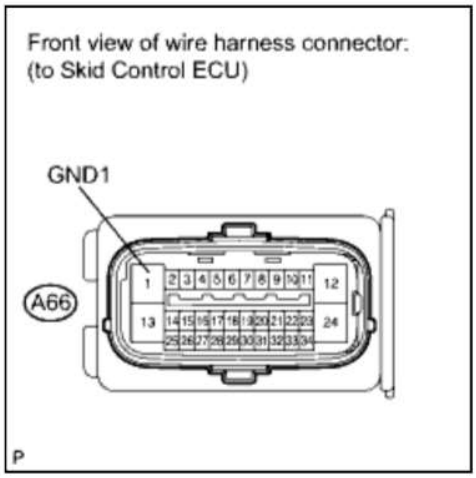
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A66-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)**

OK ▼

4.	**INSPECT SKID CONTROL ECU (GND1 TERMINAL)**

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(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

5.	**RECONFIRM DTC**

(a) Reconnect the skid control ECU connector.

(b) Clear the DTCs INFO.

(c) Start the engine.

(d) Drive the vehicle at a speed of 20 km/h (12 mph) or more for 30 seconds or more.

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

Result:

RESULT	PROCEED TO
DTC (C1241) is not output	A

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RESULT	PROCEED TO
DTC (C1241) 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 ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003695 00JX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1273,C1274,C1277,C1278: Low Output Signal of Rear Speed Sensor RH (Test Mode DTC) (2010 Corolla)		

DTC	**C1273**	**Low Output Signal of Rear Speed Sensor RH (Test Mode DTC)**

DTC	**C1274**	**Low Output Signal of Rear Speed Sensor LH (Test Mode DTC)**

DTC	**C1277**	**Abnormal Change in Output Signal of Rear Speed Sensor RH (Test Mode DTC)**

DTC	**C1278**	**Abnormal Change in Output Signal of Rear Speed Sensor LH (Test Mode DTC)**

DESCRIPTION

DTCs C1273 to C1278 will be cleared when the speed sensor sends a vehicle speed signal or when Test Mode ends. DTCs from C1273 to C1278 are output only in Test Mode.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1273 C1274	Detected only during Test Mode.	• Rear speed sensor RH/LH • Sensor installation • Speed sensor rotor
C1277 C1278	Detected only during Test Mode.	Speed sensor rotor

HINT:

- DTCs C1273 and C1277 are for the rear speed sensor RH.
- DTCs C1274 and C1278 are for the rear speed sensor LH.

WIRING DIAGRAM

Refer to DTCs C1403 and C1404 INFO .

INSPECTION PROCEDURE

NOTICE:

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When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-

Result:

RESULT	PROCEED TO
There are momentary interruptions	A
There are no momentary interruptions	B
There is a constant open circuit	C

HINT:

Perform the above inspection before removing the sensor and connector.

C ▶ CHECK REAR SPEED SENSOR INSTALLATION

B ▶ READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)

A ▼

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2.	**REPAIR OR REPLACE HARNESS OR CONNECTOR (SKID CONTROL ECU - REAR SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Repair or replace the harness or connector.

(c) Check for any momentary interruption between the skid control ECU and the rear speed sensor INFO .

(d) Check that there are no momentary interruptions.

NEXT

3.	**PERFORM TEST MODE (SIGNAL CHECK)**

(a) Turn the ignition switch off.

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

OK:
All Test Mode DTCs are cleared.

NG ▶ **READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)**

OK ▶ **END**

4.	**READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

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

ABS/VSC/TRAC

TESTER	MEASUREMENT ITEM/RANGE	NORMAL	DIAGNOSTIC NOTE

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DISPLAY		CONDITION	
RR Wheel Speed	RR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RL Wheel Speed	RL wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ **CHECK REAR SPEED SENSOR INSTALLATION**

OK ▼

5.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition switch off.

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

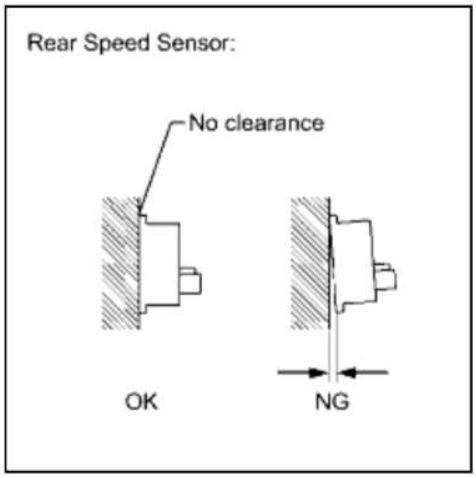
OK:
All Test Mode DTCs are cleared.

NG ▶ **CHECK REAR SPEED SENSOR INSTALLATION**

OK ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

6.	CHECK REAR SPEED SENSOR INSTALLATION

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(a) Turn the ignition switch off.

(b) Check the speed sensor installation.

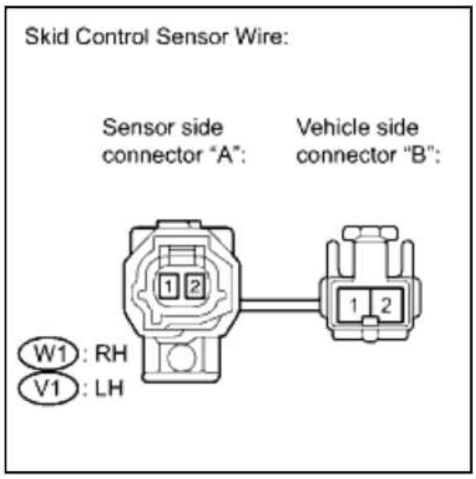
OK:

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

NG ▶ **INSTALL REAR SPEED SENSOR CORRECTLY**

OK ▼

7.	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.

(b) Disconnect the skid control sensor wire.

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

Standard Resistance:

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for RH
for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
W1 ("A"-2) - W1 ("B"-1)	Always	Below 1 Ω
W1 ("A"-2) - W1 ("B"-2)	Always	10 kΩ or higher
W1 ("A"-2) - Body ground	Always	10 kΩ or higher
W1 ("A"-1) - W1 ("B"-2)	Always	Below 1 Ω
W1 ("A"-1) - W1 ("B"-1)	Always	10 kΩ or higher
W1 ("A"-1) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
V1 ("A"-2) - V1 ("B"-1)	Always	Below 1 Ω
V1 ("A"-2) - V1 ("B"-2)	Always	10 kΩ or higher
V1 ("A"-2) - Body ground	Always	10 kΩ or higher
V1 ("A"-1) - V1 ("B"-2)	Always	Below 1 Ω
V1 ("A"-1) - V1 ("B"-1)	Always	10 kΩ or higher
V1 ("A"-1) - Body ground	Always	10 kΩ or higher

NOTICE:

Check the speed sensor signal after replacement INFO .

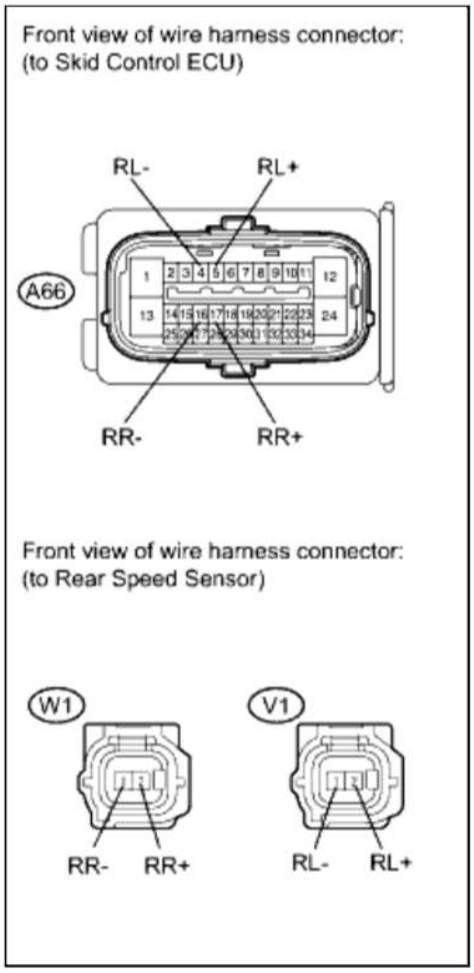
NG ▶ **REPLACE SKID CONTROL SENSOR WIRE**

OK ▼

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

(a) Reconnect the skid control sensor wire.

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(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 rear 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
A66-17 (RR+) - W1-2 (RR+)	Always	Below 1 Ω
A66-17 (RR+) - Body ground	Always	10 kΩ or higher
A66-16 (RR-) - W1-1 (RR-)	Always	Below 1 Ω
A66-16 (RR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-5 (RL+) - V1-2 (RL+)	Always	Below 1 Ω

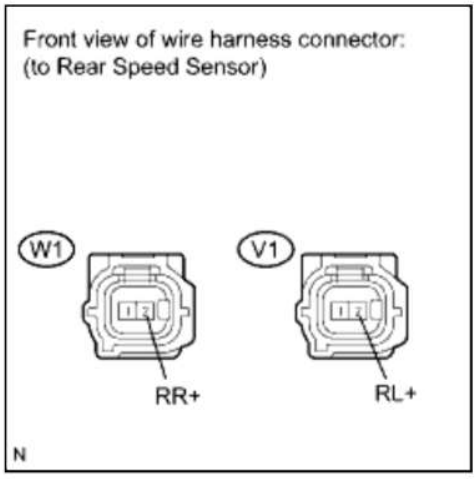
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-5 (RL+) - Body ground	Always	10 kΩ or higher
A66-4 (RL-) - V1-1 (RL-)	Always	Below 1 Ω
A66-4 (RL-) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

9.	INSPECT SKID CONTROL ECU (SENSOR INPUT)



(a) Reconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

(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
W1-2 (RR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
V1-2 (RL+) - Body ground	Ignition switch ON	8 to 14 V

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NG ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

OK ▼

10.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition switch off.

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

OK:
All Test Mode DTCs are cleared.

NG ▶ REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR

OK ▶ CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)

11.	REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR

(a) Turn the ignition 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 ▼

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12.	PERFORM TEST MODE (SIGNAL CHECK)

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

OK:
All Test Mode DTCs are cleared.

NG ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

OK ▶ END

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIG04SX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1281: Master Cylinder Pressure Sensor Output Malfunction (Test Mode DTC) (2010 Corolla)		

DTC	**C1281**	**Master Cylinder Pressure Sensor Output Malfunction (Test Mode DTC)**

DESCRIPTION

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

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1281	Detected only during Test Mode.	• Stop light switch • Master cylinder pressure sensor

WIRING DIAGRAM

Refer to DTC C1425 INFO .

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration 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
Brake pedal released	OFF

NG ▶ **INSPECT STOP LIGHT CIRCUIT**

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OK

2.	READ VALUE USING TECHSTREAM (STOP LIGHT SWITCH)

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(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 ▶ **INSPECT SKID CONTROL ECU (STP TERMINAL)**

OK

3.	READ VALUE USING TECHSTREAM (MASTER CYLINDER PRESSURE SENSOR)

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Master	Master cylinder pressure	When brake pedal is	Reading increases when

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Cylinder Sensor	sensor / min.: 0 V, max.: 5 V	released: 0.3 to 0.9 V	brake pedal is depressed

(b) Check that the brake fluid pressure value of the master cylinder pressure sensor observed on the Techstream changes when the brake pedal is depressed.

OK:
When the pedal is depressed, voltage displayed on the Techstream increases.

NG ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

OK ▼

4.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition switch off.

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

OK:
All Test Mode DTCs are cleared.

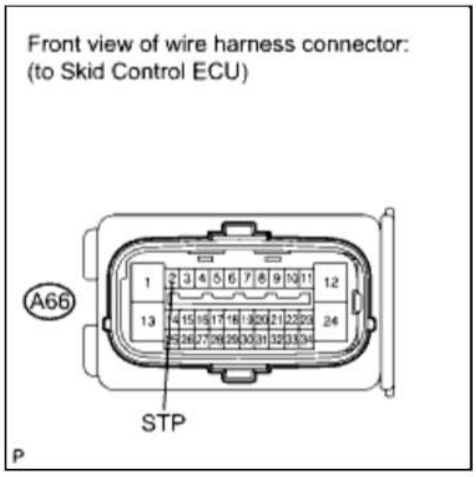
NG ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

OK ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

5.	INSPECT SKID CONTROL ECU (STP TERMINAL)

(a) Turn the ignition switch off.

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(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
A66-2 (STP) - Body ground	Stop light switch ON (Brake pedal depressed)	8 to 14 V
A66-2 (STP) - Body ground	Stop light switch OFF (Brake pedal released)	Below 1.5 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (STP CIRCUIT)**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000ZRR050X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1290: Steering Angle Sensor Zero Point Malfunction (2010 Corolla)		

DTC	**C1290**	**Steering Angle Sensor Zero Point Malfunction**

DESCRIPTION

The skid control ECU acquires steering angle sensor zero point every time the ignition switch is turned to ON 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 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.

Warning operation for the steering angle sensor zero point malfunction will be cancelled by turning the ignition switch off.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1290	The newly acquired steering angle sensor zero point vastly differs from the previous one.	• 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 actuator assembly, perform zero point calibration 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:

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- 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.

NEXT

2.	**CHECK STEERING ANGLE SENSOR ZERO POINT CALIBRATION**

(a) Turn the ignition switch off.

(b) Start the engine.

(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 while driving straight ahead.

HINT:

If front wheel alignment and steering position are adjusted as a result of an abnormal center position of the steering wheel, acquire yaw rate and acceleration sensor zero point again after adjusting front wheel alignment and steering position again.

OK:
The steering wheel is centered.

NG ▶ **ADJUST FRONT WHEEL ALIGNMENT OR STEERING POSITION**

OK

3.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO.

(c) Start the engine.

(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.

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

Result:

RESULT	PROCEED TO
DTC (C1290) is not output	A
DTC (C1290) 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 ACTUATOR ASSEMBLY

A ▶ END

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001RFV03HX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1381: Acceleration Sensor Power Supply Voltage Malfunction (2010 Corolla)		

DTC	**C1381**	**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 is trouble in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123 (Lost Communication with Yaw Rate Sensor Module) and U0124 (Lost Communication with Lateral Acceleration Sensor Module) are set.

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

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1381	At a vehicle speed of more than 3 km/h (2 mph), an acceleration sensor power source malfunction signal is received for 10 seconds or more.	• Yaw rate and acceleration sensor power source circuit • Yaw rate and acceleration sensor

WIRING DIAGRAM

Refer to DTCs C1232, C1243 and C1245 INFO .

INSPECTION PROCEDURE

NOTICE:

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

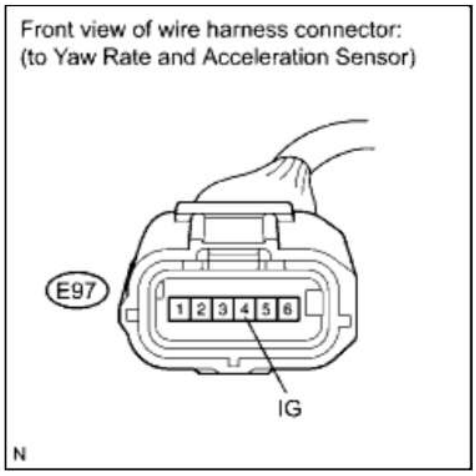
HINT:

When U0123, U0124 and/or U0126 is output together with C1381, inspect and repair the trouble areas indicated by U0123, U0124 and/or U0126 first INFO .

PROCEDURE

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1.	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 ignition switch to ON.

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E97-4 (IG) - Body ground	Ignition switch ON	11 to 14 V

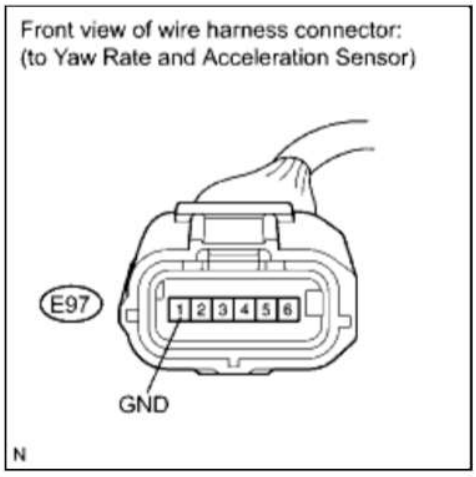
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG CIRCUIT)**

OK ▼

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

(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E97-1 (GND) - Body ground	Always	Below 1 Ω

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

OK ▼

3.	**RECONFIRM DTC**

(a) Reconnect the yaw rate and acceleration sensor connector.

(b) Clear the DTCs INFO.

(c) Start the engine.

(d) Drive the vehicle at a speed of 3 km/h (2 mph) or more for at least 10 seconds.

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

Result:

RESULT	PROCEED TO
DTC (C1381) is not output	A
DTC (C1381) is output	B

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NOTICE:

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

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 YAW RATE AND ACCELERATION SENSOR

A ▶ CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)



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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI906OX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1401,C1402: Front Speed Sensor RH Malfunction (2010 Corolla)		

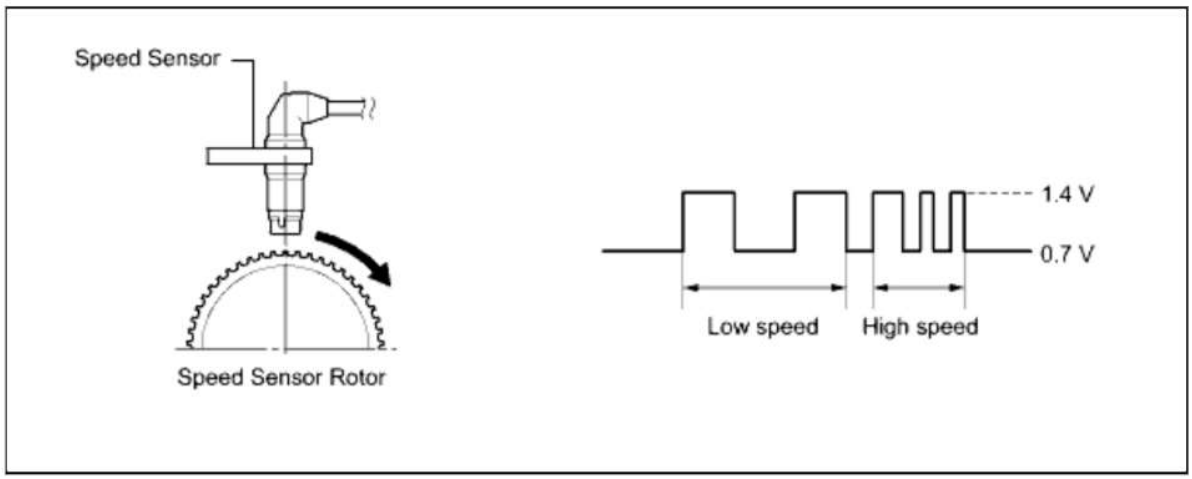
DTC	**C1401**	**Front Speed Sensor RH Malfunction**

DTC	**C1402**	**Front Speed Sensor LH Malfunction**

DESCRIPTION

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

Speed sensor rotors have 48 serrations. The hall IC type speed sensor uses the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1401 C1402	Any of the following is detected: 1. At a vehicle speed 10 km/h (6 mph) or more, output voltage from one of the speed sensors is less than that from the other sensors for 15 seconds or more. 2. At a vehicle speed less than 10 km/h (6 mph), output from one of the speed sensors is 0 km/h (0 mph) for 1 second or more. 3. At a vehicle speed 10 km/h (6 mph) or more, outputs from both front speed sensors are 0 km/h (0 mph) for 15	• Front speed sensor RH/LH • Speed sensor rotor

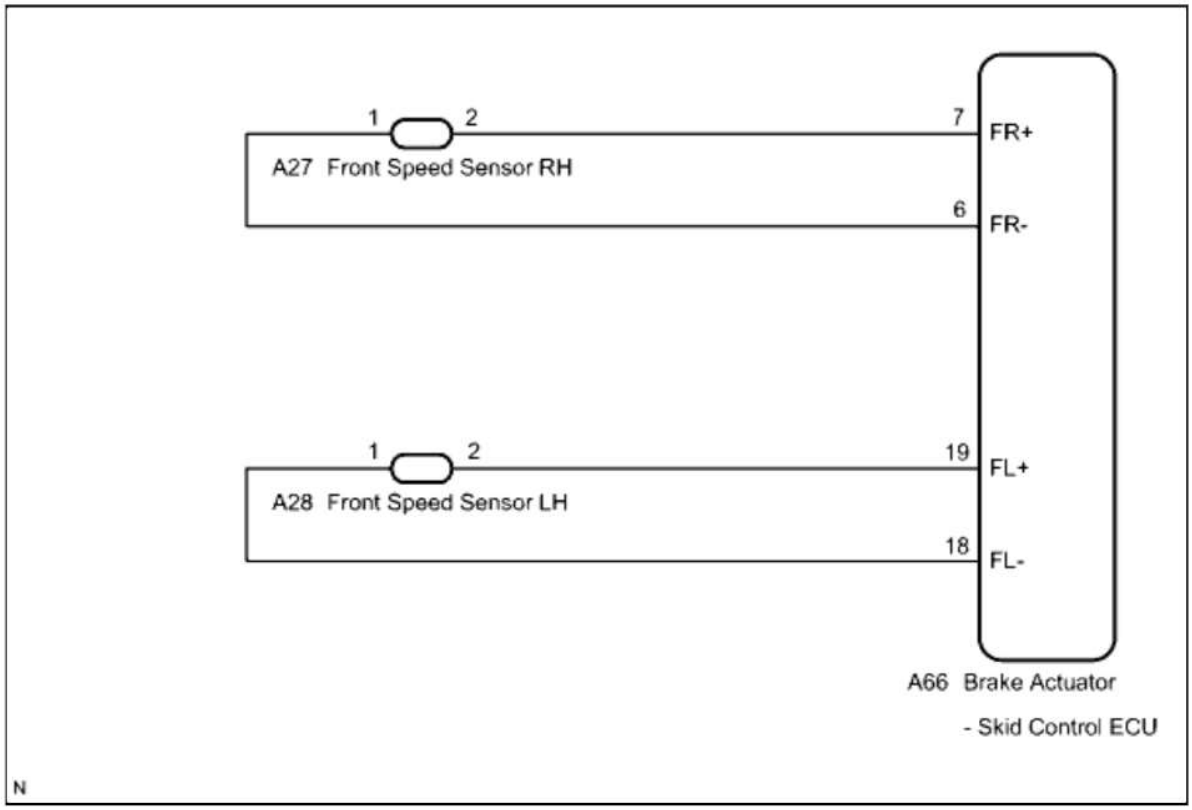
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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
	seconds or more.	

HINT:

- DTC C1401 is for the front speed sensor RH.
- DTC C1402 is for the front speed sensor LH.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

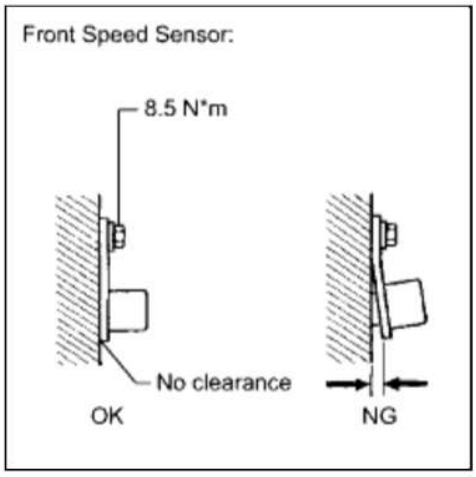
1.	**CHECK FRONT SPEED SENSOR INSTALLATION**

(a) Check the speed sensor installation.

OK:

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

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The installation nut is tightened properly.

Torque

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

NG ▶ **INSTALL FRONT SPEED SENSOR CORRECTLY**

OK ▼

2.	**CHECK FRONT SPEED SENSOR TIP**

(a) Remove the front speed sensor INFO .

(b) Check the speed sensor tip.

OK:

No scratches, oil, or foreign matter on the sensor tip.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

NG ▶ **CLEAN OR REPLACE FRONT SPEED SENSOR**

OK ▼

3.	**CHECK FRONT SPEED SENSOR ROTOR**

(a) Remove the front speed sensor rotor INFO for 2AZ-FE or INFO for 2ZR-FE).

(b) Check the speed sensor rotor.

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OK:

No scratches, oil, or foreign matter on the rotors.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

HINT:

If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.

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

OK ▼

4.	READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)

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

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Wheel Speed	FR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel Speed	FL wheel speed sensor reading /min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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:

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The speed value output from the speed sensor displayed on the Techstream is the same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

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 FRONT SPEED SENSOR**

OK ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

5.	REPLACE FRONT SPEED SENSOR

(a) Turn the ignition switch off.

(b) Replace the front speed sensor INFO .

NOTICE:

Check the speed sensor signal after replacement INFO .

NEXT ▼

6.	RECONFIRM DTC

(a) Clear the DTCs INFO .

(b) Start the engine.

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

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

Result:

RESULT	PROCEED TO
DTCs (C1401 and C1402) are not output	A
DTCs (C1401 and/or C1402) are output	B

NOTICE:

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Check the speed sensor signal after replacement INFO .

HINT:

- If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.
- 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 FRONT SPEED SENSOR ROTOR

A ▶ END

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM00000369R00JX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1403,C1404: Rear Speed Sensor RH Malfunction (2010 Corolla)		

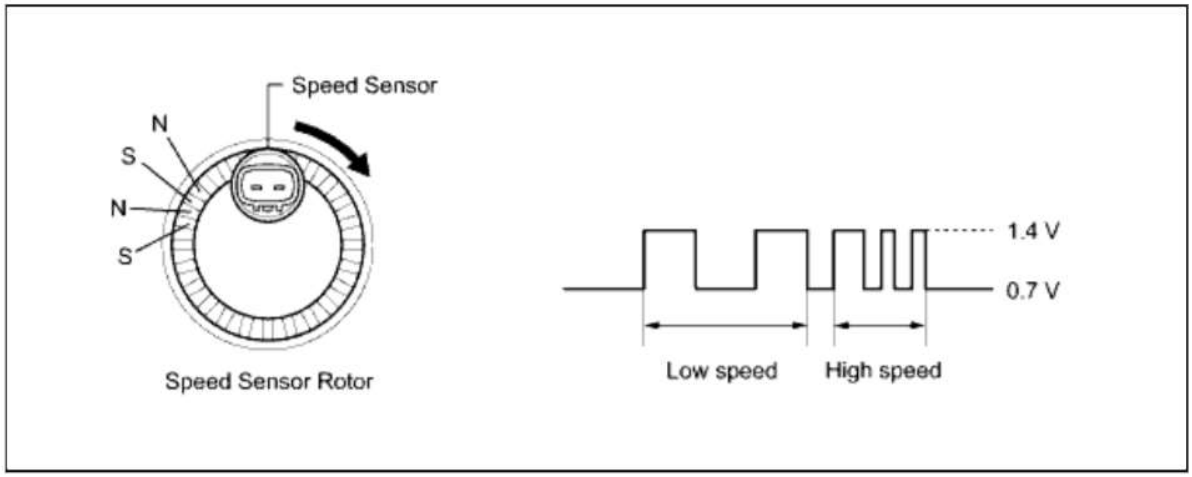
DTC	**C1403**	**Rear Speed Sensor RH Malfunction**

DTC	**C1404**	**Rear Speed Sensor LH Malfunction**

DESCRIPTION

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

Speed sensor rotors have rows of alternating N and S magnetic poles. The hall IC type speed sensor uses the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1403 C1404	Any of the following is detected: 1. At a vehicle speed 10 km/h (6 mph) or more, output voltage from one of the speed sensors is less than that from the other sensors for 15 seconds or more. 2. At a vehicle speed less than 10 km/h (6 mph), output from one of the speed sensors is 0 km/h (0 mph) for 1 second or more. 3. At a vehicle speed less than 10 km/h (6 mph), outputs from both rear speed sensors are 0 km/h (0 mph) for a	• Rear speed sensor RH/LH • Speed sensor rotor

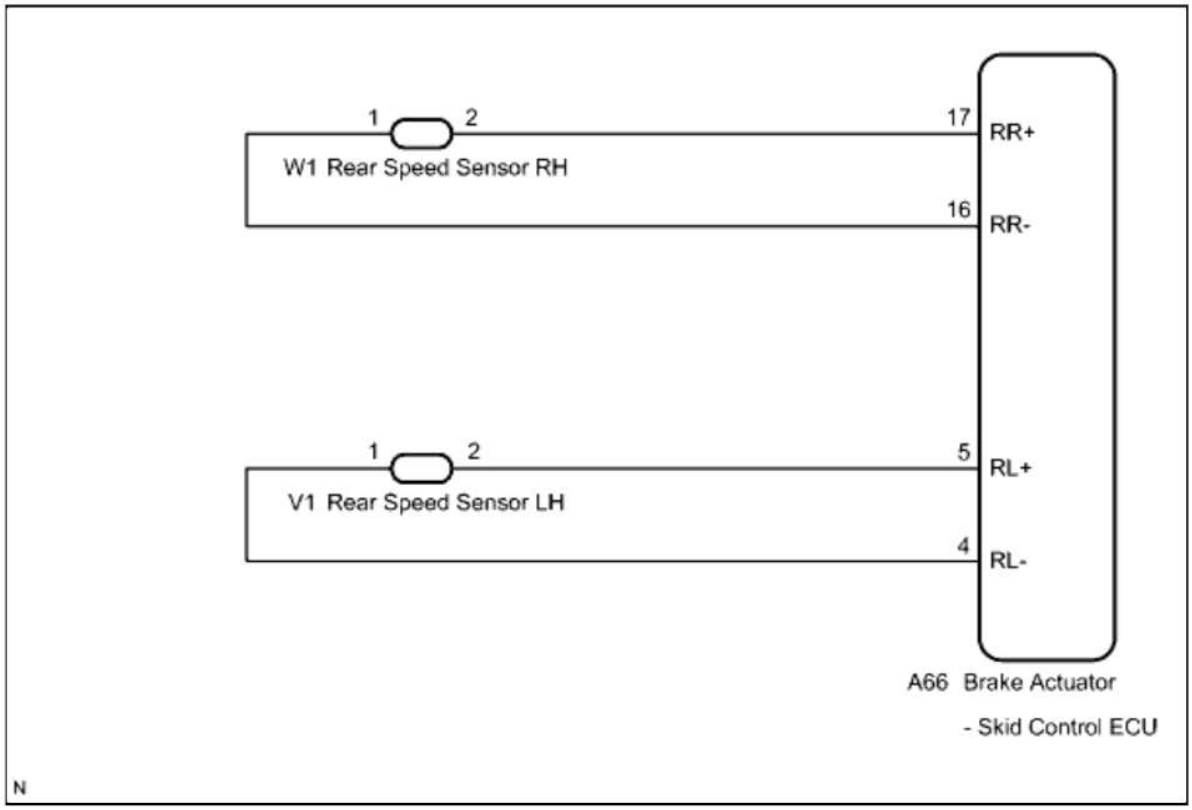
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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
	cumulative time of 200 seconds.	

HINT:

- DTC C1403 is for the rear speed sensor RH.
- DTC C1404 is for the rear speed sensor LH.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

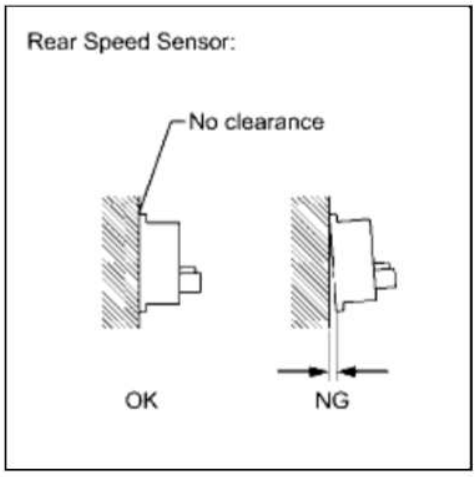
1.	**CHECK REAR SPEED SENSOR INSTALLATION**

(a) Check the speed sensor installation.

OK:

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

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NG ▶ **INSTALL REAR SPEED SENSOR CORRECTLY**

OK ▼

2.	READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)

(a) Connect the Techstream to the DLC3.

(b) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Wheel Speed	RR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RL Wheel Speed	RL wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(d) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

Factors that affect the indicated vehicle speed include tire size, tire inflation, and tire wear. The speed indicated

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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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NOTICE:

Check the speed sensor signal after replacement 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.
- 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 REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR**

OK ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**



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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI906PX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1405,C1406: Open or Short in Front Speed Sensor RH Circuit (2010 Corolla)		

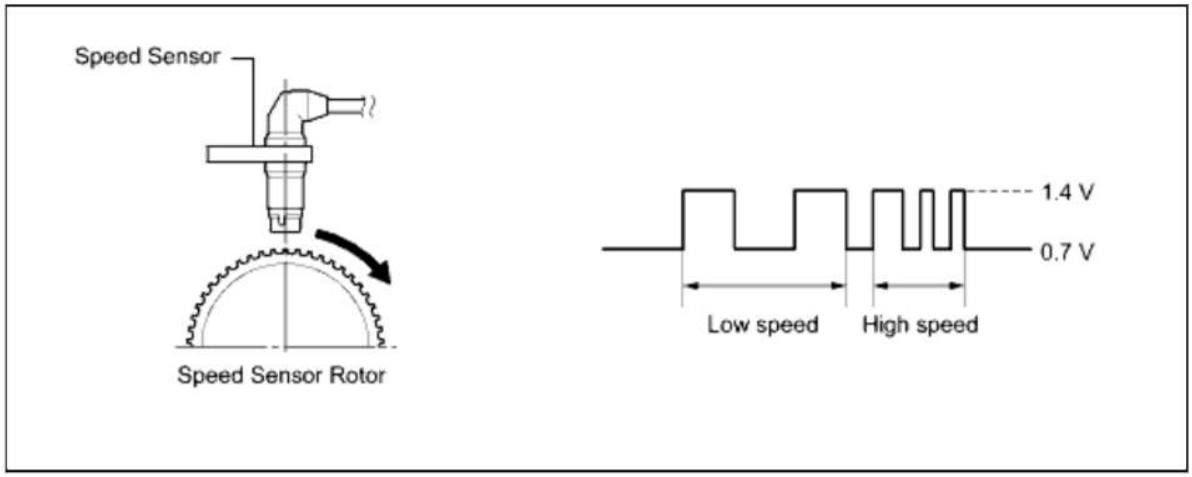
DTC	**C1405**	**Open or Short in Front Speed Sensor RH Circuit**

DTC	**C1406**	**Open or Short in Front Speed Sensor LH Circuit**

DESCRIPTION

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

Speed sensor rotors have 48 serrations. The hall IC type speed sensor uses the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1405 C1406	Any of the following is detected: 1. An open in the speed sensor signal circuit continues for 0.5 seconds or more. 2. With the IG1 terminal voltage 9.5 V or more, the sensor power supply voltage decreases for 0.5 seconds or more. 3. With the IG1 terminal voltage 9.5 V or more, an invalid state of the sensor power supply voltage occurs for 60 seconds or more.	• Front speed sensor RH/LH • Speed sensor circuit • Brake actuator assembly (Skid control ECU)

HINT:

- DTC C1405 is for the front speed sensor RH.
- DTC C1406 is for the front speed sensor LH.

WIRING DIAGRAM

Refer to DTCs C1401 and C1402.

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)**

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor 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 ▶ **CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - FRONT SPEED SENSOR)**

OK
▼

2.	**READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

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(c) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Wheel Speed	FR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel Speed	FL wheel speed sensor reading /min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ **CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - FRONT SPEED SENSOR)**

OK ▼

3.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO.

(c) Start the engine.

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

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

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Result:

RESULT	PROCEED TO
DTCs (C1405 and C1406) are not output	A
DTCs (C1405 and/or C1406) are output	B

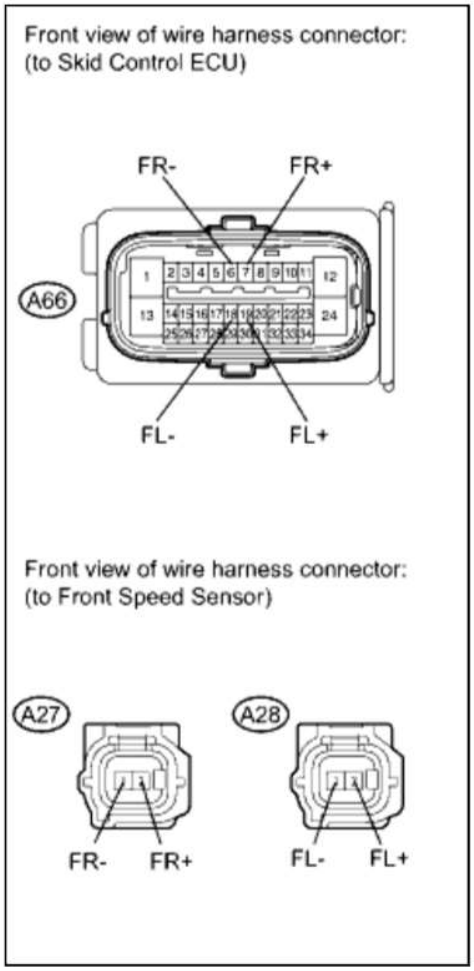
HINT:

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 ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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



(a) Turn the ignition switch off.

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(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
A66-7 (FR+) - A27-2 (FR+)	Always	Below 1 Ω
A66-7 (FR+) - Body ground	Always	10 kΩ or higher
A66-6 (FR-) - A27-1 (FR-)	Always	Below 1 Ω
A66-6 (FR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-19 (FL+) - A28-2 (FL+)	Always	Below 1 Ω
A66-19 (FL+) - Body ground	Always	10 kΩ or higher
A66-18 (FL-) - A28-1 (FL-)	Always	Below 1 Ω
A66-18 (FL-) - Body ground	Always	10 kΩ or higher

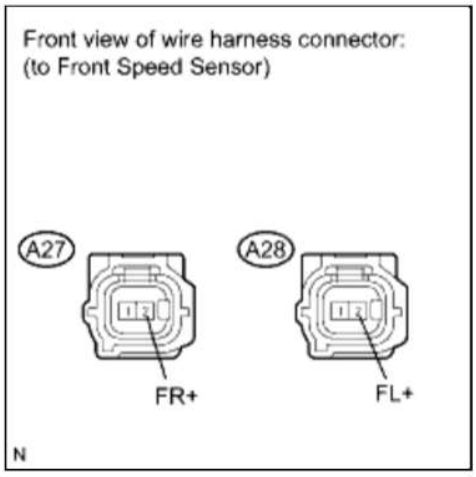
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

5.	**INSPECT SKID CONTROL ECU (SENSOR INPUT)**

(a) Reconnect the skid control ECU connector.

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(b) Turn the ignition switch to ON.

(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
A27-2 (FR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A28-2 (FL+) - Body ground	Ignition switch ON	8 to 14 V

NOTICE:

Check the speed sensor signal after replacement INFO **.**

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 BRAKE ACTUATOR ASSEMBLY**

OK ▶ **REPLACE FRONT SPEED SENSOR**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003693 00JX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1407,C1408: Open or Short in Rear Speed Sensor RH Circuit (2010 Corolla)		

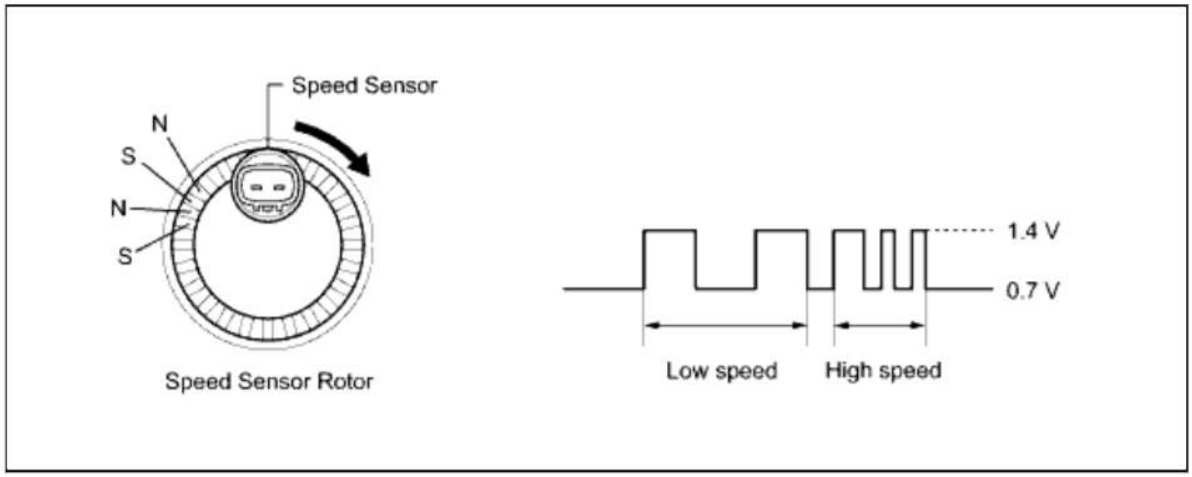
DTC	**C1407**	**Open or Short in Rear Speed Sensor RH Circuit**

DTC	**C1408**	**Open or Short in Rear Speed Sensor LH Circuit**

DESCRIPTION

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

Speed sensor rotors have rows of alternating N and S magnetic poles. The hall IC type speed sensor uses the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1407 C1408	Any of the following is detected: 1. An open in the speed sensor signal circuit continues for 0.5 seconds or more. 2. With the IG1 terminal voltage 9.5 V or more, the sensor power supply voltage decreases for 0.5 seconds or more. 3. With the IG1 terminal voltage 9.5 V or more, an invalid state of the sensor power supply voltage occurs for 60 seconds or more.	• Rear speed sensor RH/LH • Speed sensor circuit • Brake actuator assembly (Skid control ECU)

HINT:

- DTC C1407 is for the rear speed sensor RH.
- DTC C1408 is for the rear speed sensor LH.

WIRING DIAGRAM

Refer to DTCs C1403 and C1404.

INFO

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)**

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor 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 ▶ **CHECK HARNESS AND CONNECTOR (SKID CONTROL SENSOR WIRE)**

OK
▼

2.	**READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

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(c) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Wheel Speed	RR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RL Wheel Speed	RL wheel speed sensor reading /min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ **CHECK HARNESS AND CONNECTOR (SKID CONTROL SENSOR WIRE)**

OK ▼

3.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

(c) Start the engine.

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

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

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Result:

RESULT	PROCEED TO
DTCs (C1407 and C1408) are not output	A
DTCs (C1407 and/or C1408) are output	B

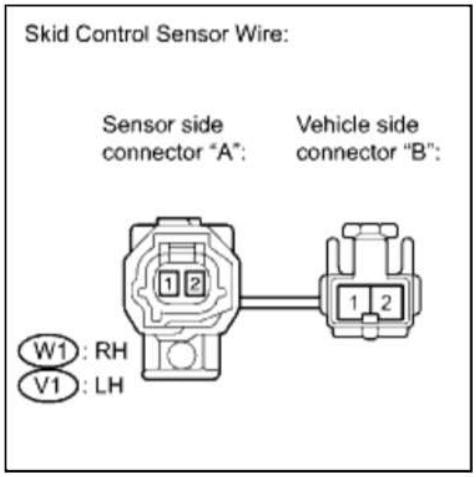
HINT:

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 ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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



(a) Turn the ignition 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 sensor wire.

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

Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
W1 ("A"-2) - W1 ("B"-1)	Always	Below 1 Ω
W1 ("A"-2) - W1 ("B"-2)	Always	10 kΩ or higher
W1 ("A"-2) - Body ground	Always	10 kΩ or higher
W1 ("A"-1) - W1 ("B"-2)	Always	Below 1 Ω
W1 ("A"-1) - W1 ("B"-1)	Always	10 kΩ or higher
W1 ("A"-1) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
V1 ("A"-2) - V1 ("B"-1)	Always	Below 1 Ω
V1 ("A"-2) - V1 ("B"-2)	Always	10 kΩ or higher
V1 ("A"-2) - Body ground	Always	10 kΩ or higher
V1 ("A"-1) - V1 ("B"-2)	Always	Below 1 Ω
V1 ("A"-1) - V1 ("B"-1)	Always	10 kΩ or higher
V1 ("A"-1) - Body ground	Always	10 kΩ or higher

NOTICE:

Check the speed sensor signal after replacement INFO .

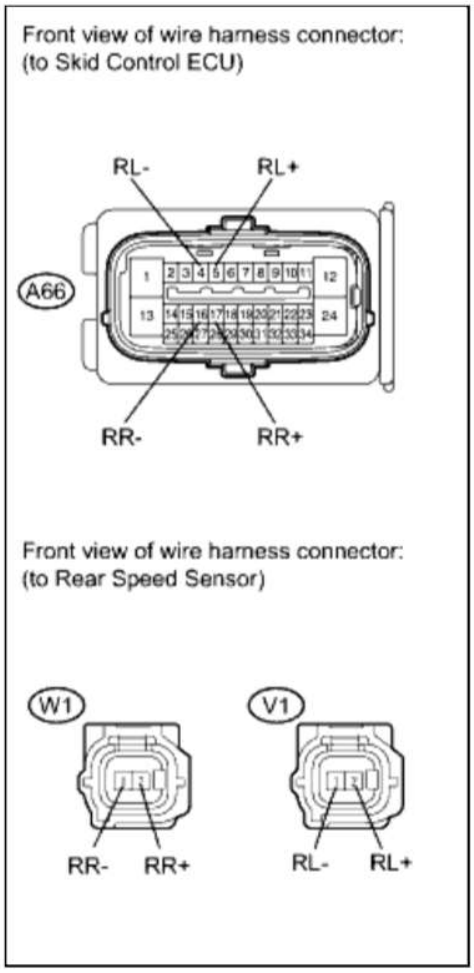
NG ▶ **REPLACE SKID CONTROL SENSOR WIRE**

OK ▼

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

(a) Reconnect the skid control sensor wire.

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(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 rear 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
A66-17 (RR+) - W1-2 (RR+)	Always	Below 1 Ω
A66-17 (RR+) - Body ground	Always	10 kΩ or higher
A66-16 (RR-) - W1-1 (RR-)	Always	Below 1 Ω
A66-16 (RR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-5 (RL+) - V1-2 (RL+)	Always	Below 1 Ω

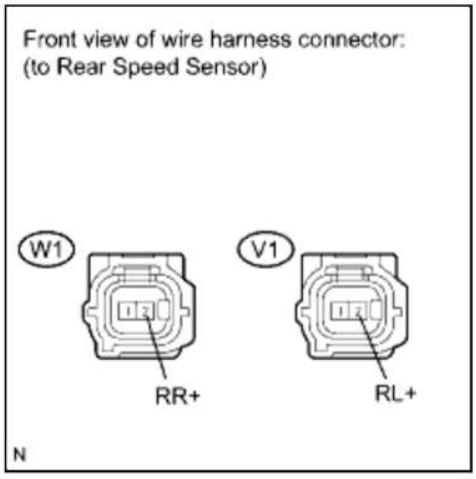
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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-5 (RL+) - Body ground	Always	10 kΩ or higher
A66-4 (RL-) - V1-1 (RL-)	Always	Below 1 Ω
A66-4 (RL-) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

6.	INSPECT SKID CONTROL ECU (SENSOR INPUT)



(a) Reconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

(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
W1-2 (RR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
V1-2 (RL+) - Body ground	Ignition switch ON	8 to 14 V

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NOTICE:

Check the speed sensor signal after replacement INFO .

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 BRAKE ACTUATOR ASSEMBLY**

OK ▶ **REPLACE REAR SPEED SENSOR**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIA05PX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1413,C1414: Front Speed Sensor RH Output Malfunction (2010 Corolla)		

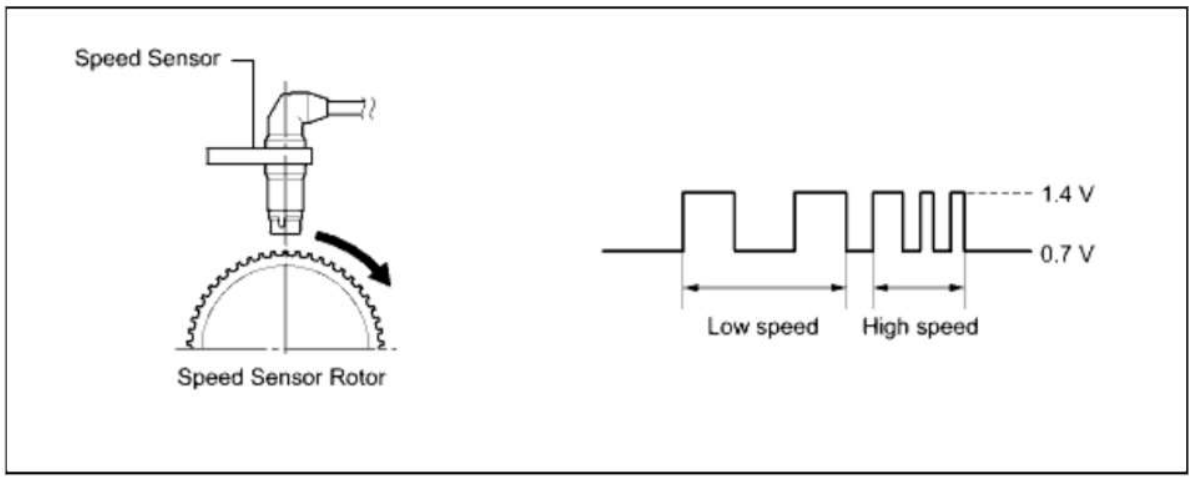
DTC	**C1413**	**Front Speed Sensor RH Output Malfunction**

DTC	**C1414**	**Front Speed Sensor LH Output Malfunction**

DESCRIPTION

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

Speed sensor rotors have 48 serrations. The hall IC type speed sensor uses the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1413 C1414	Any of the following is detected: 1. An open in the sensor signal circuit of a malfunctioning area occurs 255 times or more. 2. At a vehicle speed 20 km/h (12 mph) or more, noise occurs in the sensor signals from the abnormal wheel for 5 seconds or more. 3. At a vehicle speed 10 km/h (6 mph) or more, noise occurs once per rotor rotation for 15 seconds or more.	• Front speed sensor RH/LH • Speed sensor circuit • Speed sensor rotor • Brake actuator assembly (Skid control ECU)

HINT:

- DTC C1413 is for the front speed sensor RH.
- DTC C1414 is for the front speed sensor LH.

WIRING DIAGRAM

Refer to DTCs C1401 and C1402 (INFO).

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)**

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor 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 ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

OK
▼

2.	**READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Wheel Speed	FR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel Speed	FL wheel speed sensor reading /min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

OK ▼

3.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO.

(c) Start the engine.

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

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

Result:

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RESULT	PROCEED TO
DTCs (C1413 and C1414) are not output	A
DTCs (C1413 and/or C1414) are output	B

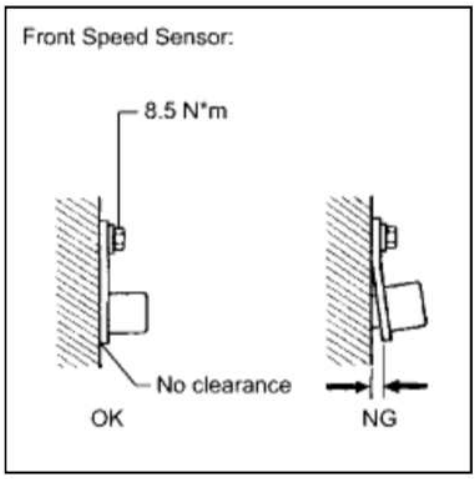
HINT:

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 ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

4.	CHECK FRONT SPEED SENSOR INSTALLATION



(a) Turn the ignition switch off.

(b) Check the speed sensor installation.

OK:

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

The installation nut is tightened properly.

Torque

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

NG ▶ **INSTALL FRONT SPEED SENSOR CORRECTLY**

OK

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5.	CHECK FRONT SPEED SENSOR TIP

(a) Remove the front speed sensor INFO .

(b) Check the speed sensor tip.

OK:

No scratches, oil, or foreign matter on the sensor tip.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

NG ▶ CLEAN OR REPLACE FRONT SPEED SENSOR

OK

6.	CHECK FRONT SPEED SENSOR ROTOR

(a) Remove the front speed sensor rotor INFO for 2AZ-FE or INFO for 2ZR-FE).

(b) Check the speed sensor rotor.

OK:

No scratches, oil, or foreign matter on the rotors.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

HINT:

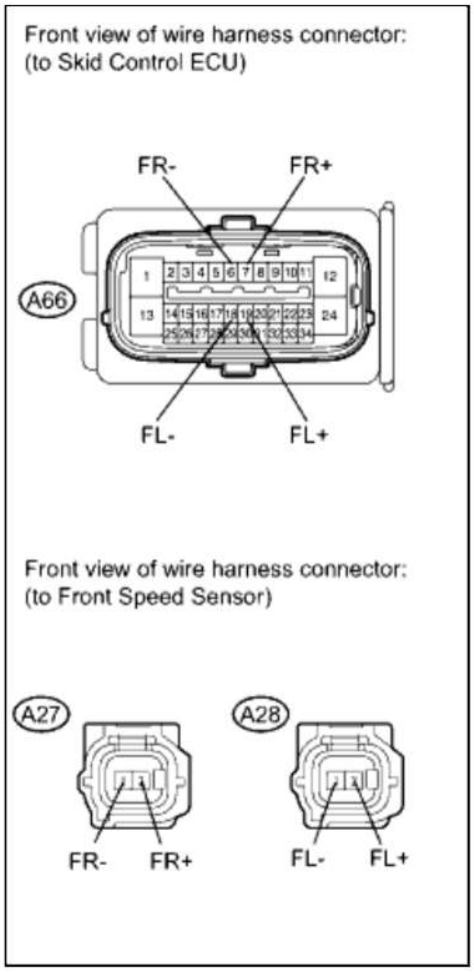
If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.

NG ▶ CLEAN OR REPLACE FRONT SPEED SENSOR ROTOR

OK

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



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

(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
A66-7 (FR+) - A27-2 (FR+)	Always	Below 1 Ω
A66-7 (FR+) - Body ground	Always	10 kΩ or higher
A66-6 (FR-) - A27-1 (FR-)	Always	Below 1 Ω

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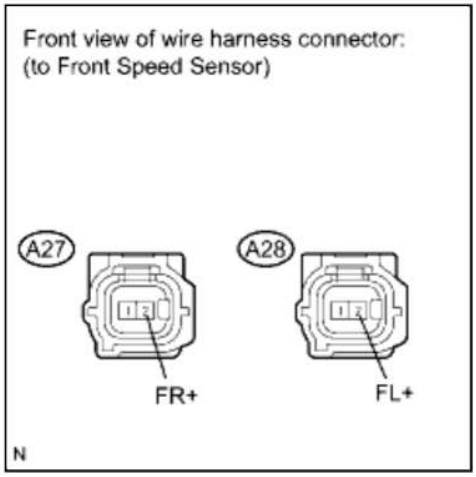
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-6 (FR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-19 (FL+) - A28-2 (FL+)	Always	Below 1 Ω
A66-19 (FL+) - Body ground	Always	10 kΩ or higher
A66-18 (FL-) - A28-1 (FL-)	Always	Below 1 Ω
A66-18 (FL-) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

8.	INSPECT SKID CONTROL ECU (SENSOR INPUT)



(a) Reconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

(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

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A27-2 (FR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A28-2 (FL+) - Body ground	Ignition switch ON	8 to 14 V

NOTICE:

Check the speed sensor signal after replacement INFO .

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 BRAKE ACTUATOR ASSEMBLY**

OK ▶ **REPLACE FRONT SPEED SENSOR**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000369S00JX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1415,C1416: Rear Speed Sensor RH Output Malfunction (2010 Corolla)		

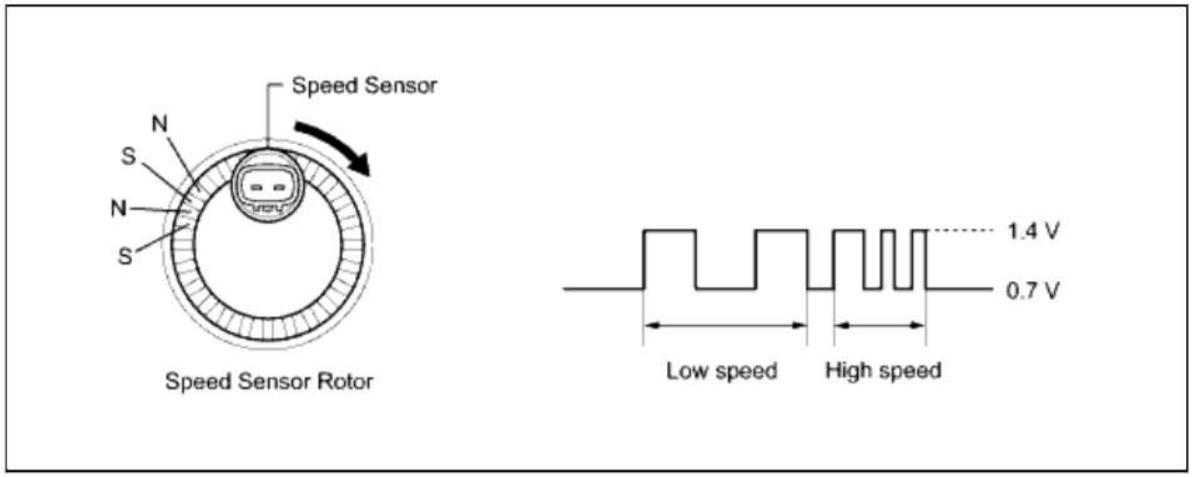
DTC	**C1415**	**Rear Speed Sensor RH Output Malfunction**

DTC	**C1416**	**Rear Speed Sensor LH Output Malfunction**

DESCRIPTION

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

Speed sensor rotors have rows of alternating N and S magnetic poles. The hall IC type speed sensor uses the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1415 C1416	Any of the following is detected: 1. An open in the sensor signal circuit of a malfunctioning area occurs 255 times or more. 2. At a vehicle speed 20 km/h (12 mph) or more, noise occurs in the sensor signals from the abnormal wheel for 5 seconds or more. 3. At a vehicle speed 10 km/h (6 mph) or more, noise occurs once per rotor rotation for 15 seconds or more.	• Rear speed sensor RH/LH • Speed sensor circuit • Speed sensor rotor • Brake actuator assembly (Skid control ECU)

HINT:

- DTC C1415 is for the rear speed sensor RH.
- DTC C1416 is for the rear speed sensor LH.

WIRING DIAGRAM

Refer to DTCs C1403 and C1404 (INFO).

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)**

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor 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 ▶ **CHECK REAR SPEED SENSOR INSTALLATION**

OK
▼

2.	**READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Wheel Speed	RR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RL Wheel Speed	RL wheel speed sensor reading /min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ CHECK REAR SPEED SENSOR INSTALLATION

OK ▼

3.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

(c) Start the engine.

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

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

Result:

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RESULT	PROCEED TO
DTCs (C1415 and C1416) are not output	A
DTCs (C1415 and/or C1416) are output	B

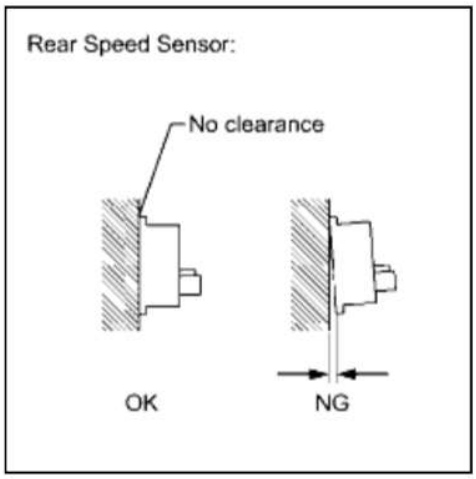
HINT:

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 ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

4.	CHECK REAR SPEED SENSOR INSTALLATION



(a) Turn the ignition switch off.

(b) Check the speed sensor installation.

OK:

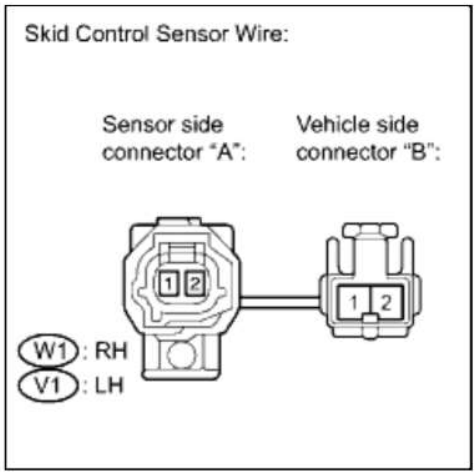
There is no clearance between the sensor and the rear axle carrier.

NG ▶ **INSTALL REAR SPEED SENSOR CORRECTLY**

OK ▼

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5.	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.

(b) Disconnect 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
W1 ("A"-2) - W1 ("B"-1)	Always	Below 1 Ω
W1 ("A"-2) - W1 ("B"-2)	Always	10 kΩ or higher
W1 ("A"-2) - Body ground	Always	10 kΩ or higher
W1 ("A"-1) - W1 ("B"-2)	Always	Below 1 Ω
W1 ("A"-1) - W1 ("B"-1)	Always	10 kΩ or higher
W1 ("A"-1) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
V1 ("A"-2) - V1 ("B"-1)	Always	Below 1 Ω
V1 ("A"-2) - V1 ("B"-2)	Always	10 kΩ or higher
V1 ("A"-2) - Body ground	Always	10 kΩ or higher
V1 ("A"-1) - V1 ("B"-2)	Always	Below 1 Ω
V1 ("A"-1) - V1 ("B"-1)	Always	10 kΩ or higher
V1 ("A"-1) - Body ground	Always	10 kΩ or higher

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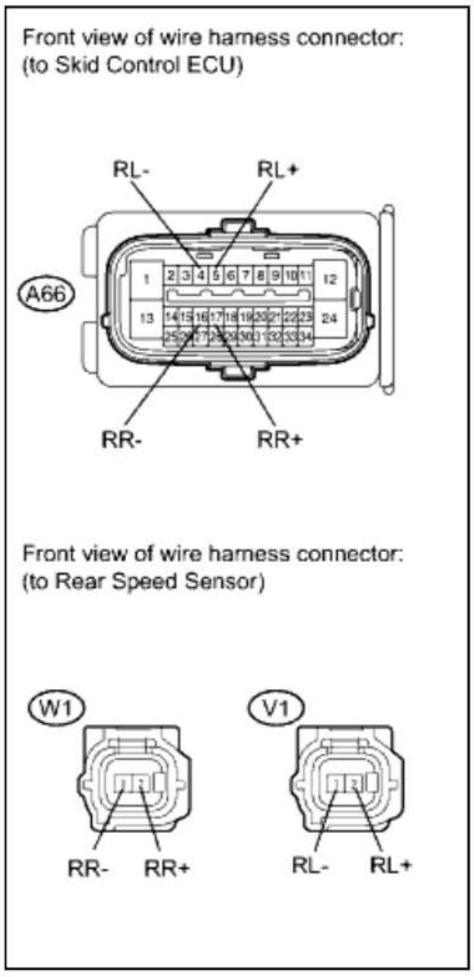
NOTICE:

Check the speed sensor signal after replacement INFO .

NG ▶ **REPLACE SKID CONTROL SENSOR WIRE**

OK ▼

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



(a) Reconnect the skid control sensor wire.

(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 rear speed sensor connector.

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

Standard Resistance:

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for RH
for LH

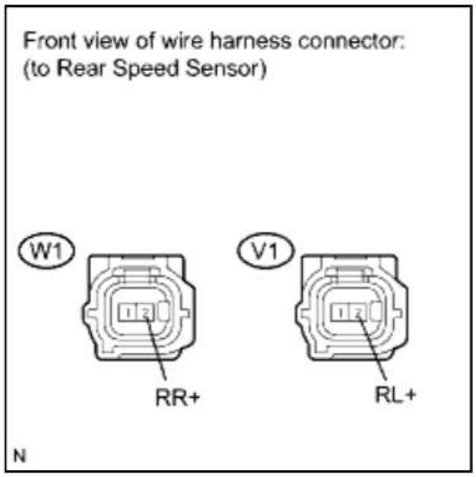
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-17 (RR+) - W1-2 (RR+)	Always	Below 1 Ω
A66-17 (RR+) - Body ground	Always	10 kΩ or higher
A66-16 (RR-) - W1-1 (RR-)	Always	Below 1 Ω
A66-16 (RR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-5 (RL+) - V1-2 (RL+)	Always	Below 1 Ω
A66-5 (RL+) - Body ground	Always	10 kΩ or higher
A66-4 (RL-) - V1-1 (RL-)	Always	Below 1 Ω
A66-4 (RL-) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK
▼

7.	**INSPECT SKID CONTROL ECU (SENSOR INPUT)**



(a) Reconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

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

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Standard Voltage:

for RH

for LH

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
W1-2 (RR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
V1-2 (RL+) - Body ground	Ignition switch ON	8 to 14 V

NOTICE:

Check the speed sensor signal after replacement INFO .

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 BRAKE ACTUATOR ASSEMBLY**

OK ▶ **REPLACE REAR SPEED SENSOR**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM00000368W00IX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1417: High Power Supply Voltage Malfunction (2010 Corolla)		

DTC	**C1417**	**High Power Supply Voltage Malfunction**

DESCRIPTION

If a malfunction is detected in the power supply circuit, the skid control ECU (housed in the actuator assembly) stores this DTC and the fail safe function prohibits ABS operation.

This DTC is stored when the IG1 terminal voltage deviates from the DTC detection condition due to a malfunction in the power supply or charging circuit such as the battery or alternator circuit, etc.

The DTC is cleared when the IG1 terminal voltage returns to normal.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1417	The IG1 terminal voltage is 17.4 V or more for 1 second or more.	• ECU-IG NO. 1 fuse • Battery • Charging system • Power source circuit • Internal power supply circuit of the skid control ECU

WIRING DIAGRAM

Refer to DTC C1241 INFO .

INSPECTION PROCEDURE

NOTICE:

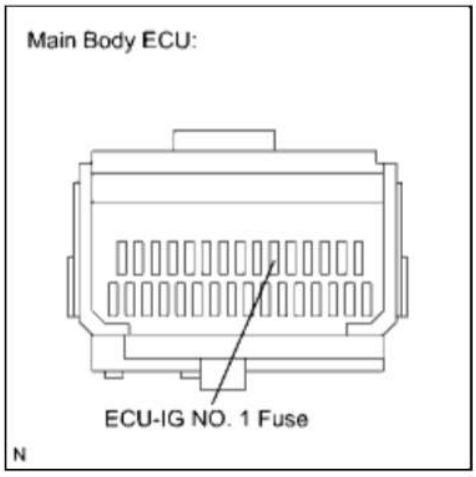
When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**INSPECT ECU-IG NO. 1 FUSE**

(a) Remove the ECU-IG NO. 1 fuse from the main body ECU (instrument panel junction block).

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
ECU-IG NO. 1 (10 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE ECU-IG NO. 1 FUSE**

OK ▼

2.	**CHECK BATTERY**

(a) Install the ECU-IG NO. 1 fuse.

(b) Check the battery voltage.

Standard Voltage:
11 to 14 V
Result:

RESULT	PROCEED TO
OK	A
NG (for 2AZ-FE)	B
NG (for 2ZR-FE)	C

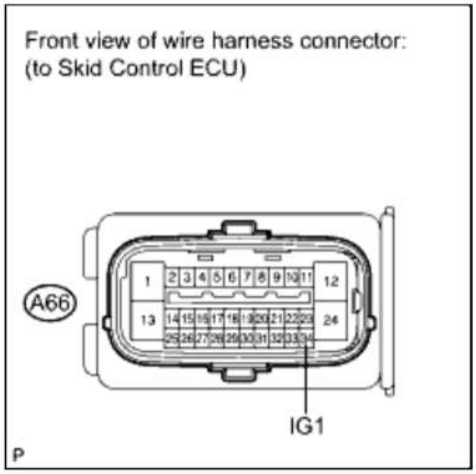
C ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)**

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B ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2AZ-FE)**

A ▼

3.	INSPECT SKID CONTROL ECU (IG1 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) Turn the ignition switch to ON.

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A66-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

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 (IG1 CIRCUIT)**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000035P400IX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1419,C1435: Acceleration Sensor Internal Circuit (2010 Corolla)		

DTC	**C1419**	**Acceleration Sensor Internal Circuit**

DTC	**C1435**	**Yaw Rate Sensor Internal Circuit**

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 is trouble in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123 (Lost Communication with Yaw Rate Sensor Module) and U0124 (Lost Communication with Lateral Acceleration Sensor Module) are set.

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

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1419	A data malfunction signal is received from the acceleration sensor.	Yaw rate and acceleration sensor
C1435	A data malfunction signal is received from the yaw rate sensor.	Yaw rate and acceleration sensor

INSPECTION PROCEDURE

NOTICE:

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

HINT:

When U0123, U0124 and/or U0126 is output together with C1419 and/or C1435, inspect and repair the trouble areas indicated by U0123, U0124 and/or U0126 first INFO **.**

PROCEDURE

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1.	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 .

HINT:

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

NEXT ▶ END

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000035P600IX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1420: Acceleration Sensor Malfunction (2010 Corolla)		

DTC	**C1420**	**Acceleration Sensor 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 is trouble in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123 (Lost Communication with Yaw Rate Sensor Module) and U0124 (Lost Communication with Lateral Acceleration Sensor Module) are set.

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

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1420	After the difference between GL1 and GL2 becomes 0.6 G or more with the vehicle stationary, the difference remains 0.4 G or more for 60 seconds or more.	• Sensor installation • Yaw rate and acceleration sensor

INSPECTION PROCEDURE

NOTICE:

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

HINT:

When U0123, U0124 and/or U0126 is output together with C1420, inspect and repair the trouble areas indicated by U0123, U0124 and/or U0126 first INFO .

PROCEDURE

1.	**CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION**

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

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OK:

The sensor should be tightened to the specified torque.

The sensor should not be installed in a tilted position.

NOTICE:

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

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 ▶ INSTALL YAW RATE AND ACCELERATION SENSOR CORRECTLY

OK ▶ REPLACE YAW RATE AND ACCELERATION SENSOR

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIE05SX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1425: Open in Stop Light Switch Circuit (2010 Corolla)		

DTC	**C1425**	**Open in Stop Light Switch Circuit**

DESCRIPTION

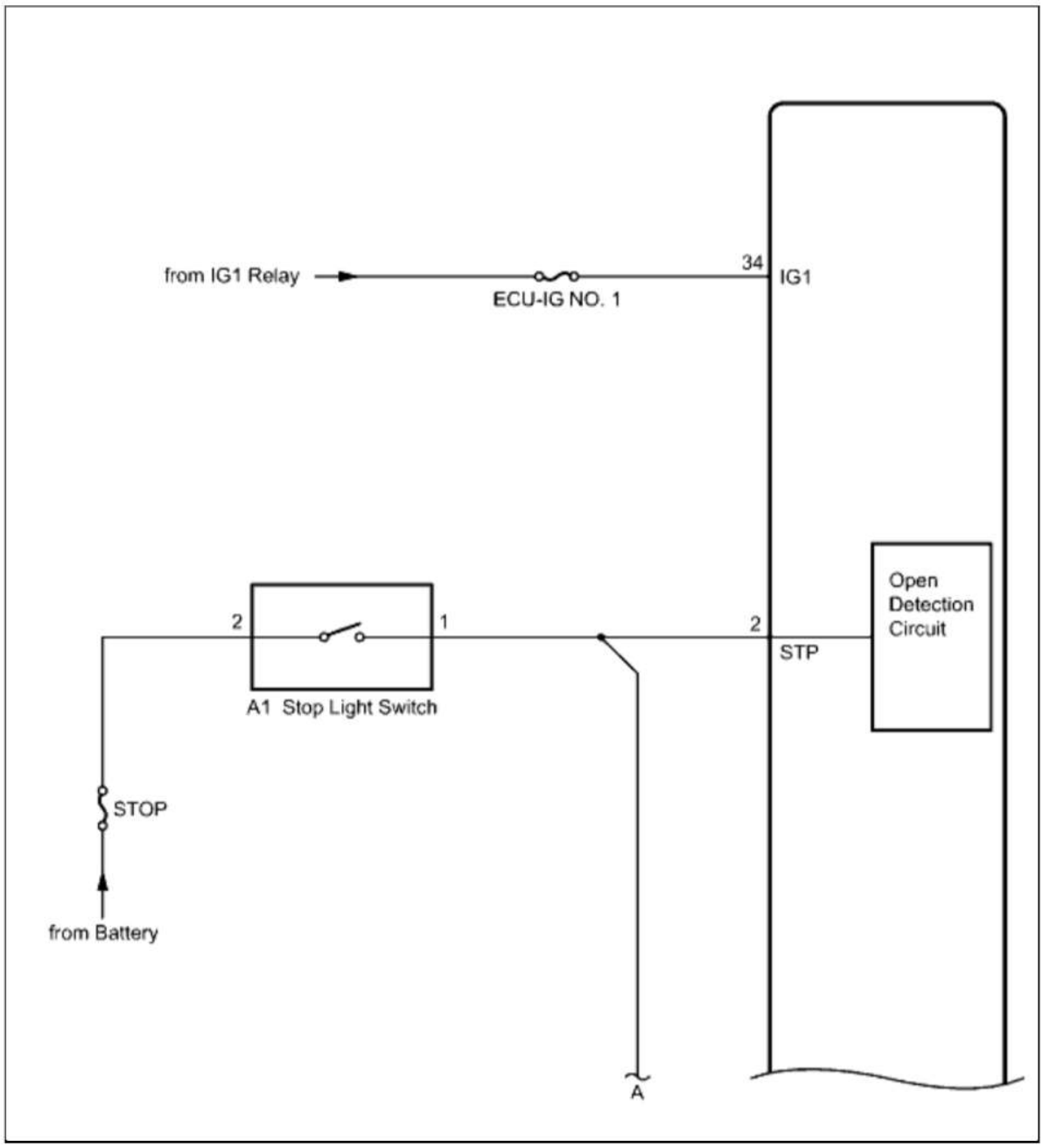
The skid control ECU (housed in the actuator assembly) inputs stop light switch signals and the condition of brake operation.

The skid control ECU has an open detection circuit, which outputs this DTC when detecting an open in the stop light input line or the ground line of the stop light circuit with the stop light switch off (brake pedal not depressed).

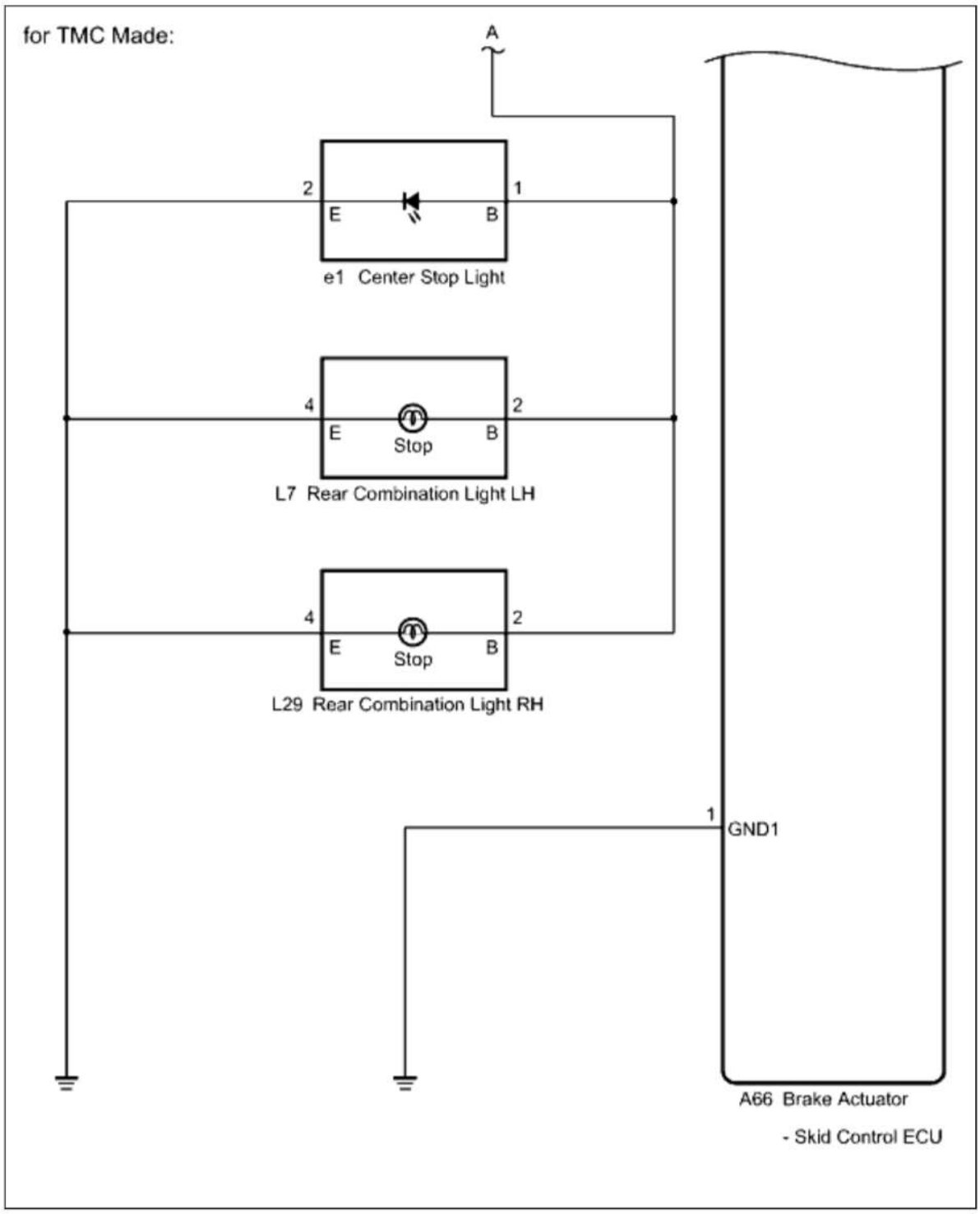
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1425	When IG1 terminal voltage is between 9.5 and 17.4 V, an open stop light switch circuit continues for 0.3 seconds or more.	• STOP fuse • Stop light switch • Stop light switch circuit • Brake actuator assembly (Skid control ECU)

WIRING DIAGRAM

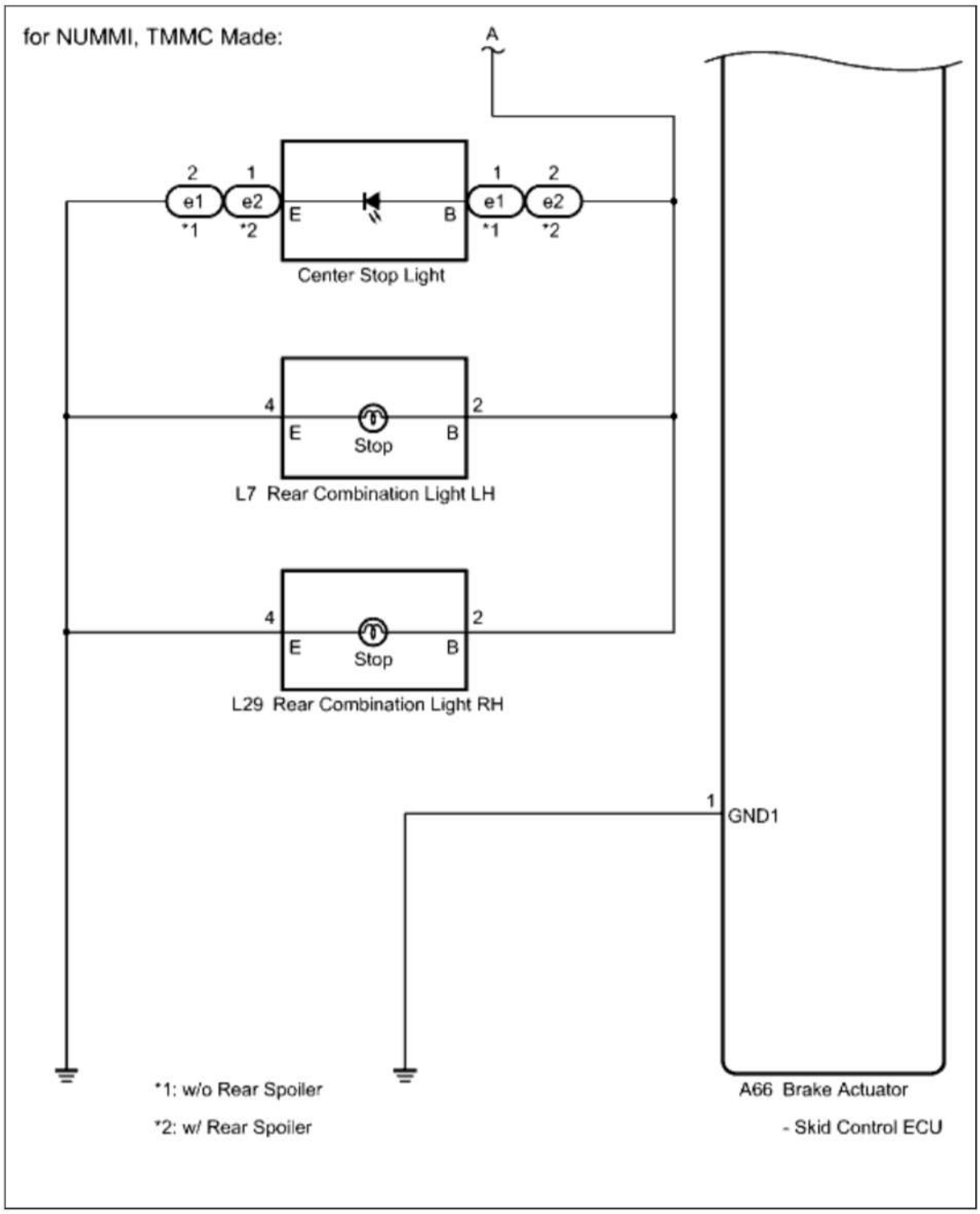
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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

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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 FUSE**

OK ▼

2.	**READ VALUE USING TECHSTREAM (STOP LIGHT SWITCH)**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(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)**

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OK

3.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

(c) Start the engine.

(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 (C1425) is not output	A
DTC (C1425) 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 .

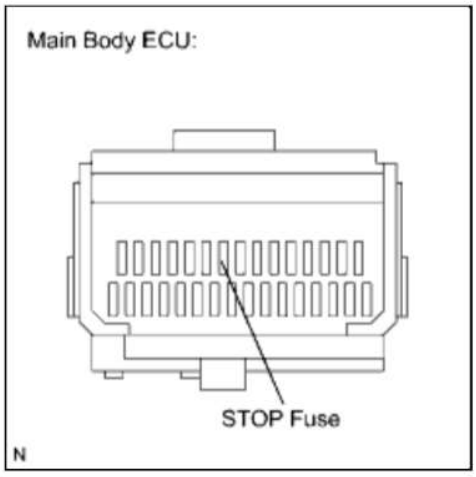
B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

4.	INSPECT STOP FUSE

(a) Remove the STOP fuse from the main body ECU (instrument panel junction block).

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

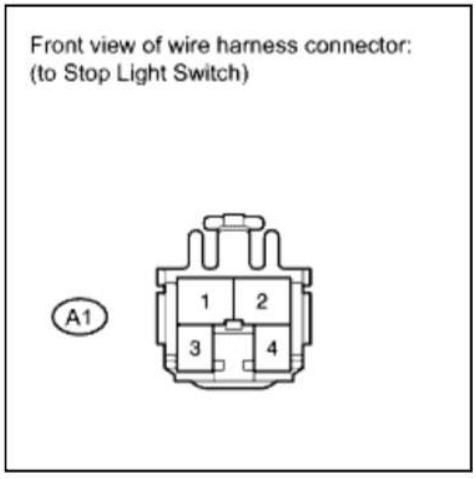
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
STOP (10 A) fuse	Always	Below 1 Ω

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.

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(c) Disconnect the stop light switch connector.

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

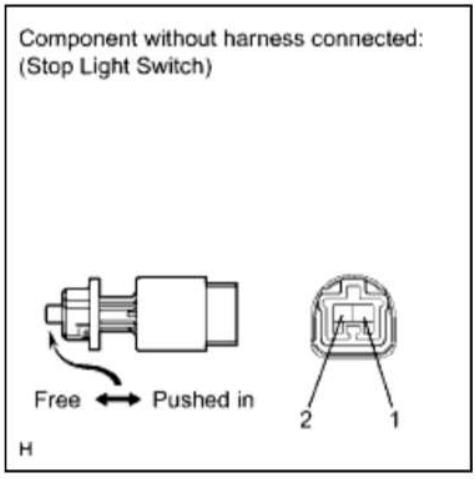
Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A1-2 - Body ground	Always	11 to 14 V

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

OK ▼

6.	INSPECT STOP LIGHT SWITCH



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

Standard Resistance:

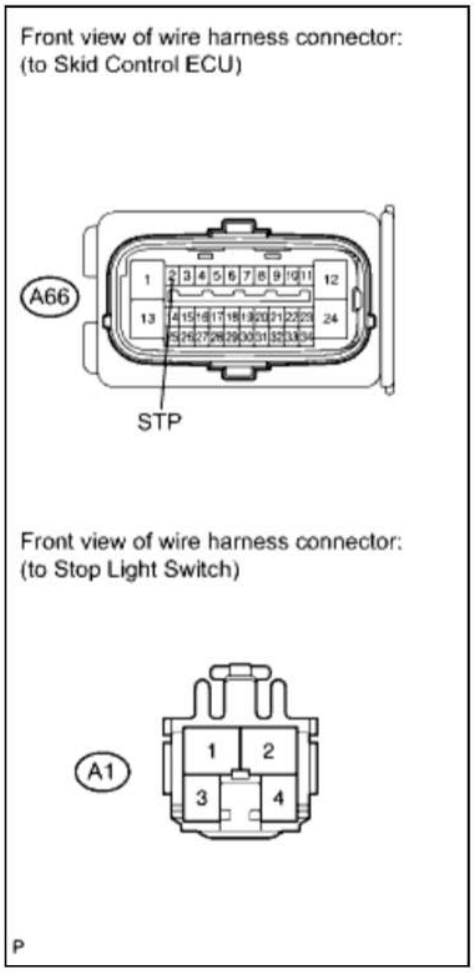
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 - 2	Switch pin free	Below 1 Ω
1 - 2	Switch pin pushed in	10 kΩ or higher

NG ▶ **REPLACE STOP LIGHT SWITCH**

OK ▼

7.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - STOP LIGHT SWITCH)

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-2 (STP) - A1-1	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

8.	**RECONFIRM DTC**

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(a) Reconnect the skid control ECU connector and the stop light switch connector.

(b) Clear the DTCs INFO .

(c) Start the engine.

(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 (C1425) is not output	A
DTC (C1425) 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 .

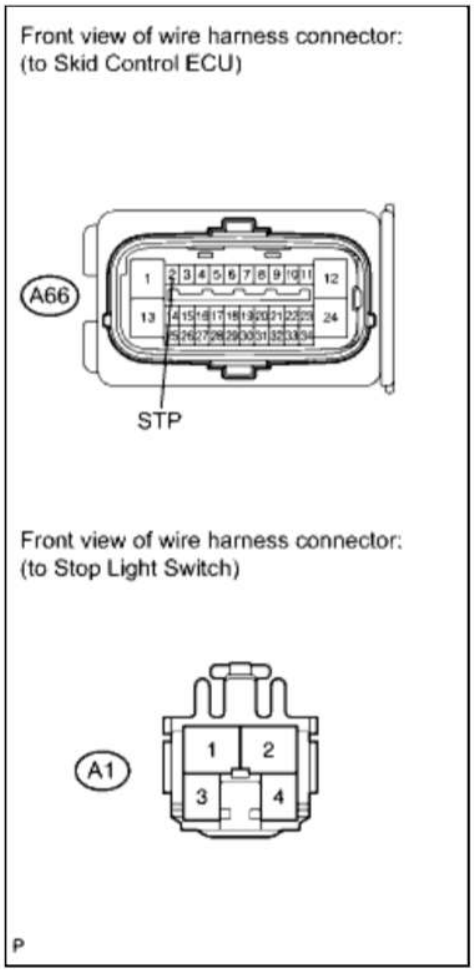
B ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

A ▶ INSPECT LIGHTING SYSTEM (STOP LIGHT CIRCUIT)

9.	**CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - STOP LIGHT SWITCH)**

(a) Turn the ignition switch off.

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(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
A66-2 (STP) - A1-1	Always	Below 1 Ω

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 ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIG04TX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1421,C1423,C1424: Open or Short in Master Cylinder Pressure Sensor (2010 Corolla)		

DTC	**C1421**	**Open or Short in Master Cylinder Pressure Sensor**

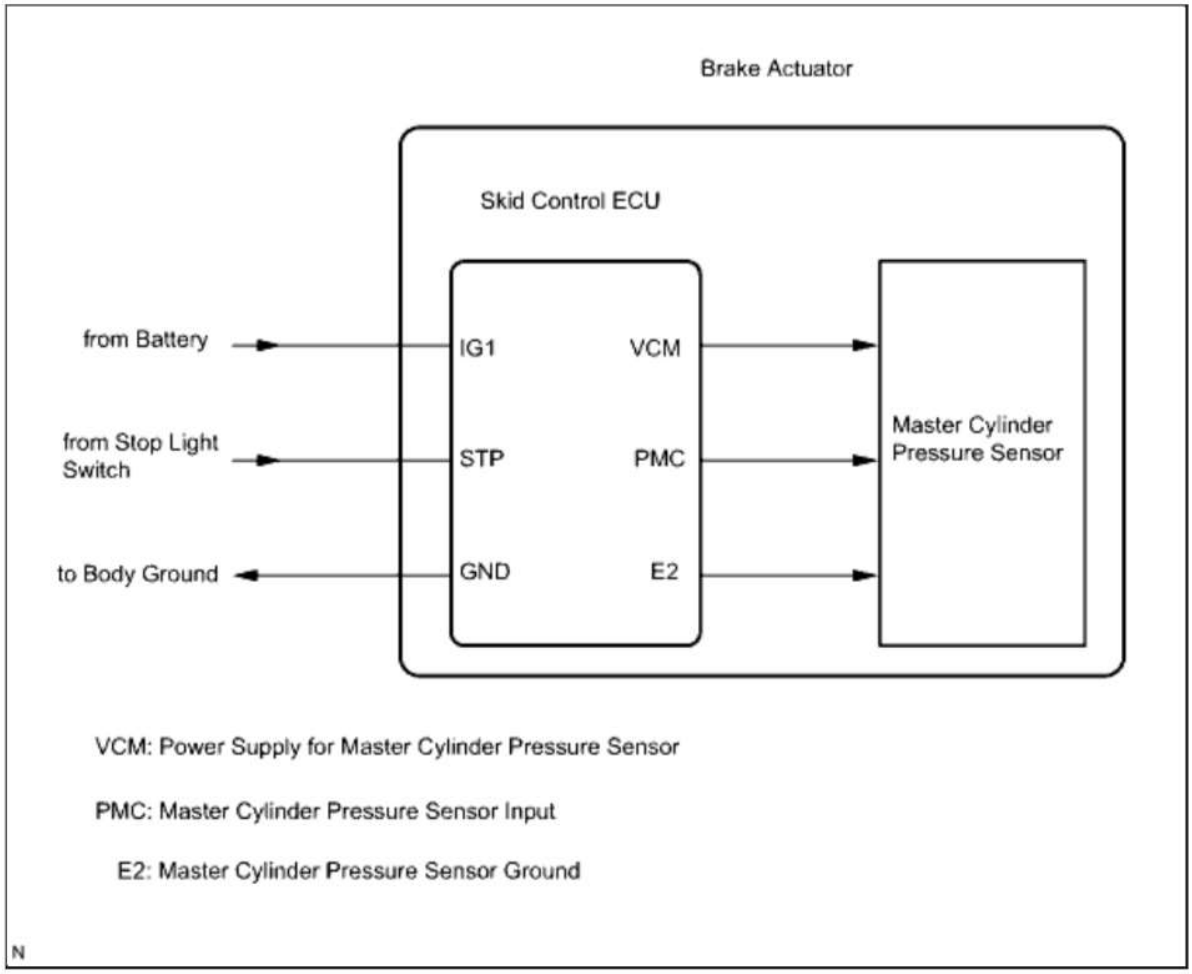
DTC	**C1423**	**Master Cylinder Pressure Sensor Zero Point Low Malfunction**

DTC	**C1424**	**Master Cylinder Pressure Sensor Output Malfunction**

DESCRIPTION

The master cylinder pressure sensor is connected to the skid control ECU in the brake actuator assembly.

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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1421	Either of the following is detected: 1. With the IG1 terminal voltage between 9.5 and 17.4 V, the VCM terminal voltage is not between 4.4 and 5.6 V for 1.2 seconds or more. 2. When the VCM terminal voltage is between 4.4 and 5.6 V, the PMC terminal voltage is not between 0.19 and 4.57 V for 1.2 seconds or more.	Brake actuator assembly (Master cylinder pressure sensor)
C1423	The PMC terminal voltage is less than 0.27 V for 5 seconds or more.	Brake actuator assembly (Master cylinder pressure sensor)
C1424	Any of the following is detected: 1. Noise occurs in the PMC terminal 7 times or more within 5 seconds. 2. When the vehicle speed drops from 40 km/h (25 mph) to 0 km/h (0 mph), the master cylinder pressure does not change by at least 0.048 MPa. 3. At a vehicle speed of 7 km/h (4.3 mph) or more, the PMC	Brake actuator assembly (Master cylinder pressure sensor)

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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
	terminal voltage is between 0.86 and 1.0 V and does not change by at least 0.048 MPa for 60 seconds or more. 4. At a vehicle speed of 7 km/h (4.3 mph) or more, the PMC terminal voltage is 1.0 V or more and does not change by at least 0.048 MPa for 30 seconds or more. 5. All of the following are detected 8 times continuously each time the ignition switch is turned to ON. (8-trip) • Vehicle speed is 7 km/h (4.3 mph) or more • Stop light switch is on • Difference between the master cylinder pressure and the sensor input value is 20 MPa/s or less. • A condition where the sensor input value is apparently larger than the estimated master cylinder pressure based on the deceleration rate continues for 1 second or more, and repeats 5 times or more during each trip.	

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**REPLACE BRAKE ACTUATOR ASSEMBLY**

(a) Replace the brake actuator assembly (master cylinder pressure sensor) INFO .

NEXT ▶ END

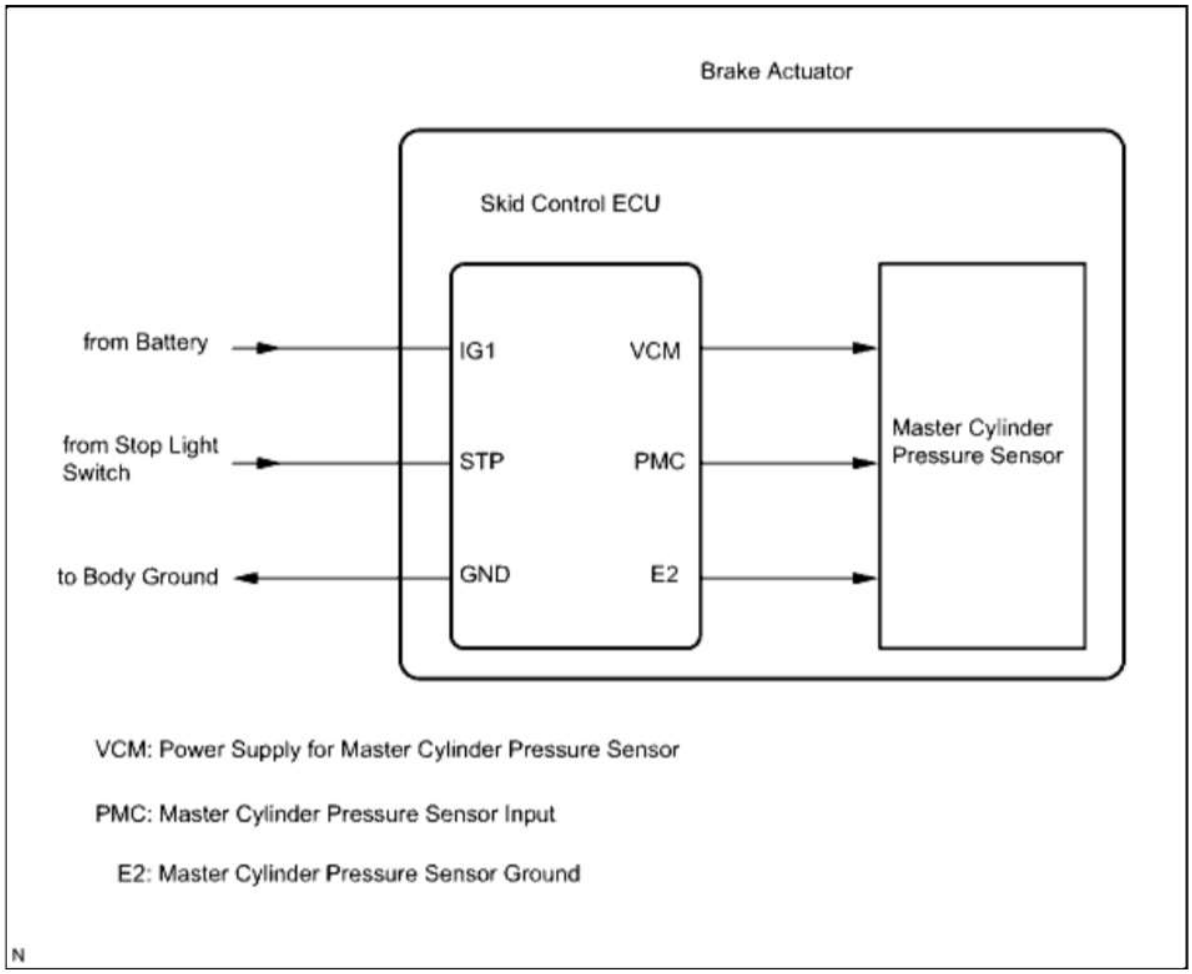
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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIG04UX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1422: Master Cylinder Pressure Sensor Zero Point High Malfunction (2010 Corolla)		

DTC	**C1422**	**Master Cylinder Pressure Sensor Zero Point High Malfunction**

DESCRIPTION

The master cylinder pressure sensor is connected to the skid control ECU in the brake actuator assembly.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1422	When the stop light switch is OFF, the PMC terminal voltage is more than 0.86 V for 5 seconds or more.	• Stop light switch • Stop light switch circuit • Master cylinder pressure

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DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
		sensor circuit • Brake actuator assembly (Master cylinder pressure sensor)

WIRING DIAGRAM

Refer to DTC C1425 INFO .

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

HINT:

When C1425 is output together with C1422, inspect and repair the trouble areas indicated by C1425 first 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
Brake pedal released	OFF

NG ▶ **INSPECT STOP LIGHT CIRCUIT**

OK ▼

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2.	READ VALUE USING TECHSTREAM (STOP LIGHT SWITCH)

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(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 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.	CHECK BRAKE PEDAL AND STOP LIGHT SWITCH INSTALLATION

(a) Turn the ignition switch off.

(b) Check the brake pedal height and stop light switch installation INFO.

OK:

The brake pedal height and stop light switch installation are normal.

NG ▶ **ADJUST BRAKE PEDAL OR STOP LIGHT SWITCH**

OK
▼

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4.	RECONFIRM DTC

(a) Clear the DTCs INFO .

(b) Start the engine.

(c) Drive the vehicle at a speed of 40 km/h (25 mph) or more and perform braking test (decelerate the vehicle by depressing the brake pedal).

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

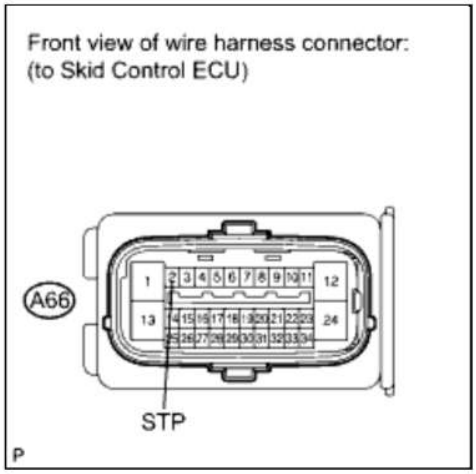
Result:

RESULT	PROCEED TO
DTC (C1422) is not output	A
DTC (C1422) is output	B

B ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

A ▶ CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)

5.	INSPECT SKID CONTROL ECU (STP TERMINAL)



(a) Turn the ignition 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.

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Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A66-2 (STP) - Body ground	Stop light switch ON (Brake pedal depressed)	8 to 14 V
A66-2 (STP) - Body ground	Stop light switch OFF (Brake pedal released)	Below 1.5 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (STP CIRCUIT)**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIF04BX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1427: Motor Malfunction (2010 Corolla)		

DTC	**C1427**	**Motor Malfunction**

DESCRIPTION

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1427	Actuator pump motor does not operate properly.	• Brake actuator assembly (Ground circuit) • Brake actuator assembly (Motor circuit)

WIRING DIAGRAM

Refer to DTCs C0273, C0274 and C1361 INFO .

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**PERFORM ACTIVE TEST USING TECHSTREAM (ABS MOTOR RELAY)**

(a) Connect the Techstream to the DLC3.

(b) Start the engine.

(c) Select the Active Test on the Techstream INFO .

ABS/VSC/TRAC

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Motor Relay	ABS motor relay	Relay ON/OFF	Operating sound of motor can be heard

(d) Check for operating sound of the ABS motor relay when operating it using the

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Techstream.

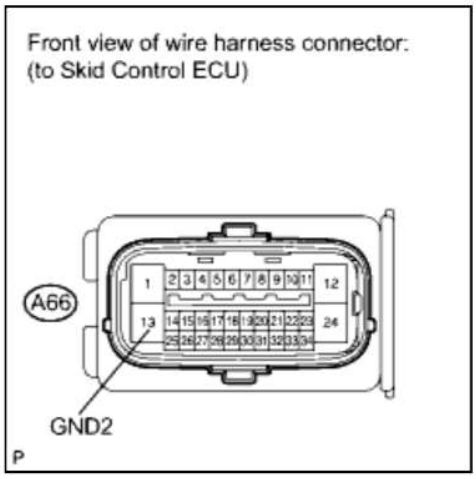
Result:

RESULT	PROCEED TO
Operating sound is not heard	A
Operating sound is heard	B

B ▶ **RECONFIRM DTC**

A ▼

2.	INSPECT SKID CONTROL ECU (GND2 TERMINAL)



(a) Turn the ignition 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 resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-13 (GND2) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND2 CIRCUIT)**

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OK

3.	**RECONFIRM DTC**

HINT:

This code is detected when a problem is identified in the brake actuator assembly.

The ABS motor relay is in the brake actuator assembly.

Therefore, ABS motor relay unit inspection cannot be performed. Be sure to check if the DTC is output before replacing the brake actuator assembly.

(a) Turn the ignition switch off.

(b) Reconnect the skid control ECU connector.

(c) Clear the DTCs INFO .

(d) Start the engine.

(e) Drive the vehicle at a speed of 20 km/h (12 mph) or more for 30 seconds or more.

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

Result:

RESULT	PROCEED TO
DTC (C1427) is not output	A
DTC (C1427) is output	B

HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harness, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM00000368U00IX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1428: Motor Circuit Malfunction (2010 Corolla)		

DTC	**C1428**	**Motor Circuit Malfunction**

DESCRIPTION

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1428	With the ABS motor relay OFF and the ABS motor fail safe relay ON, an open in the motor circuit continues for 2 seconds or more.	Brake actuator assembly (Motor circuit)

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**REPLACE BRAKE ACTUATOR ASSEMBLY**

(a) Replace the brake actuator assembly INFO .

NEXT ▶ **END**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIM04ZX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1432: Steering Angle Sensor Power Source Voltage Malfunction (2010 Corolla)		

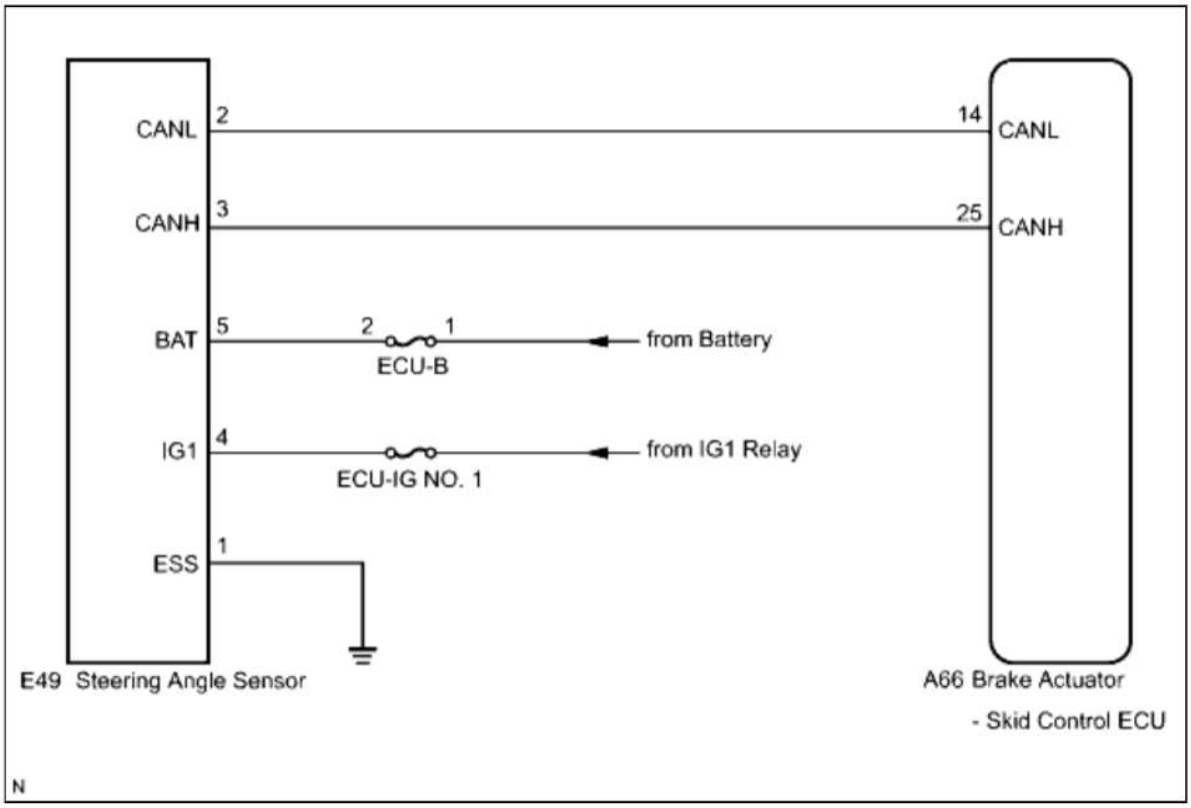
DTC	**C1432**	**Steering Angle Sensor Power Source Voltage Malfunction**

DESCRIPTION

Steering angle sensor signals are sent to the skid control ECU via the CAN communication system. When there is a malfunction in the CAN communication system, it will be detected by the steering angle sensor zero point malfunction diagnostic function.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1432	Steering angle sensor power supply malfunction signal is received from steering angle sensor.	• Steering angle sensor power supply • Steering angle sensor

WIRING DIAGRAM



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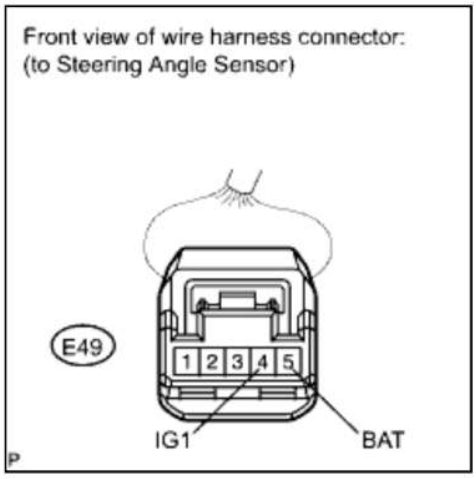
INSPECTION PROCEDURE

HINT:

- When U0073, U0123, U0124 and/or U0126 is output together with C1432, inspect and repair the trouble areas indicated by U0073, U0123, U0124 and/or U0126 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 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.	**INSPECT STEERING ANGLE SENSOR (POWER SOURCE TERMINAL)**



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

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

(c) Disconnect the steering angle sensor connector.

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

Standard Voltage:

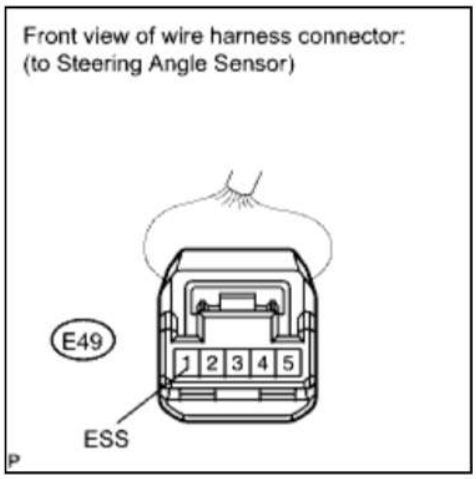
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E49-4 (IG1) - Body ground	Ignition switch ON	11 to 14 V
E49-5 (BAT) - Body ground	Always	11 to 14 V

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

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OK

2.	INSPECT STEERING ANGLE SENSOR (GROUND TERMINAL)



(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E49-1 (ESS) - Body ground	Always	Below 1 Ω

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 STEERING ANGLE SENSOR**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIM050X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1433: Steering Angle Sensor Internal Circuit (2010 Corolla)		

DTC	**C1433**	**Steering Angle Sensor Internal Circuit**

DESCRIPTION

Steering angle sensor signals are sent to the skid control ECU via the CAN communication system. When there is a malfunction in the CAN communication system, it will be detected by the steering angle sensor zero point malfunction diagnostic function.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1433	When the IG1 terminal voltage is between 10 and 17.4 V, a malfunction signal is received from the steering angle sensor.	Steering angle sensor

INSPECTION PROCEDURE

HINT:

- When U0073, U0123, U0124 and/or U0126 is output together with C1433, inspect and repair the trouble areas indicated by U0073, U0123, U0124 and/or U0126 first INFO .
- When any of the speed sensors 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 sensors 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.	**REPLACE STEERING ANGLE SENSOR**

(a) Replace the steering angle sensor INFO .

HINT:

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

NEXT ▶ END

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIM051X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1434: Steering Angle Sensor Output Malfunction (2010 Corolla)		

DTC	**C1434**	**Steering Angle Sensor Output Malfunction**

DESCRIPTION

Steering angle sensor signals are sent to the skid control ECU via the CAN communication system. When there is a malfunction in the CAN communication system, it will be detected by the steering angle sensor zero point malfunction diagnostic function.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1434	Error in communication between the skid control ECU and the steering angle sensor, or abnormal steering angle sensor zero point.	• Steering angle sensor power supply • Steering angle sensor • Brake actuator assembly (Skid control ECU)

WIRING DIAGRAM

Refer to DTC C1432 INFO .

INSPECTION PROCEDURE

HINT:

- When U0073, U0123, U0124 and/or U0126 is output together with C1434, inspect and repair the trouble areas indicated by U0073, U0123, U01245 and/or U0126 first INFO .
- When any of the speed sensors 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 sensors 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**

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(a) Clear the DTCs INFO .

(b) Turn the ignition switch off.

(c) Turn the ignition switch to ON again and check that no CAN communication system DTC is output INFO .

(d) Start the engine.

(e) 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 or yaw rate and acceleration sensor DTCs are output INFO .

Result:

RESULT	PROCEED TO
No CAN communication system, speed sensor, or yaw rate and acceleration sensor DTCs are output	A
CAN communication system DTC is output	B
Speed sensor or yaw rate and acceleration sensor DTC is output	C

HINT:

- If there is a malfunction in any of the speed sensors 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 first and inspect the steering angle sensor.

C ▶ **REPAIR CIRCUIT INDICATED BY OUTPUT DTC**

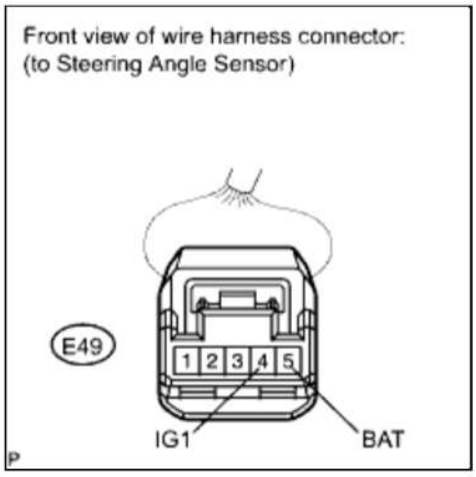
B ▶ **INSPECT CAN COMMUNICATION SYSTEM**

A ▼

2.	**INSPECT STEERING ANGLE SENSOR (POWER SOURCE TERMINAL)**

(a) Turn the ignition switch off.

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(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
E49-4 (IG1) - Body ground	Ignition switch ON	11 to 14 V
E49-5 (BAT) - Body ground	Always	11 to 14 V

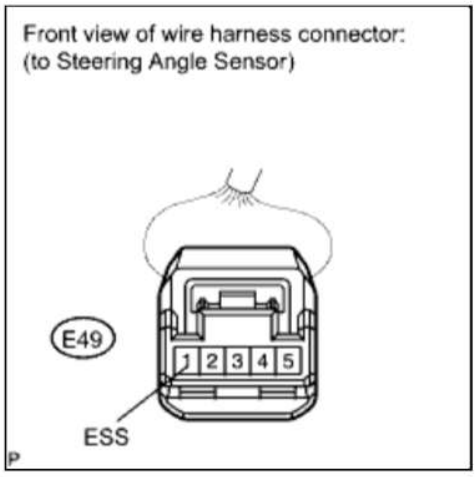
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (POWER SOURCE CIRCUIT)**

OK ▼

3.	**INSPECT STEERING ANGLE SENSOR (GROUND TERMINAL)**

(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E49-1 (ESS) - Body ground	Always	Below 1 Ω

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 STEERING ANGLE SENSOR**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000035P500IX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1436: Yaw Rate Sensor Malfunction (2010 Corolla)		

DTC	**C1436**	**Yaw Rate Sensor 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 is trouble in the bus lines between the yaw rate and acceleration sensor and the CAN communication system, DTCs U0123 (Lost Communication with Yaw Rate Sensor Module) and U0124 (Lost Communication with Lateral Acceleration Sensor Module) are set.

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

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1436	Either of the following is detected: 1. With the vehicle stationary, the yaw rate and acceleration sensor output value is not 0 deg/s. 2. Abnormal comparison value.	Yaw rate and acceleration sensor

INSPECTION PROCEDURE

NOTICE:

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

HINT:

When U0123, U0124 and/or U0126 is output together with C1436, inspect and repair the trouble areas indicated by U0123, U0124 and/or U0126 first INFO **.**

PROCEDURE

1.	**READ VALUE USING TECHSTREAM (YAW RATE AND ACCELERATION SENSOR)**

(a) Connect the Techstream to the DLC3.

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(b) Turn the ignition switch to ON.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Yaw Rate Sensor	Yaw rate sensor / min.: -128 deg/s, max.: 127 deg/s	Vehicle stationary: 0 deg/s Right turn: -128 to 0 deg/s Left turn: 0 to 127 deg/s	-
Yaw Rate Sensor2	Yaw rate sensor 2 / min.: -128 deg/s, max.: 127 deg/s	Vehicle stationary: 0 deg/s Right turn: -128 to 0 deg/s Left turn: 0 to 127 deg/s	-

(d) Check that the yaw rate and acceleration sensor output value displayed on the Techstream.

Result:

RESULT	PROCEED TO
NG (The yaw rate and acceleration sensor output value is 0 deg/s when the vehicle is stationary, but the value fluctuates when turning)	A
NG (The yaw rate and acceleration sensor output value is not 0 deg/s when the vehicle is stationary)	B
OK	C

NOTICE:

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

HINT:

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

C ▶ CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)

B ▶ REPLACE YAW RATE AND ACCELERATION SENSOR

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A

2.	CHECK YAW RATE AND ACCELERATION SENSOR INSTALLATION

(a) Turn the ignition switch off.

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

OK:
The sensor should be tightened to the specified torque.
The sensor should not be installed in a tilted position.

NOTICE:

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

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 ▶ **INSTALL YAW RATE AND ACCELERATION SENSOR CORRECTLY**

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

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YUO050X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1437: Lost Communication with ECM (2010 Corolla)		

DTC	**C1437**	**Lost Communication with ECM**

DESCRIPTION

The skid control ECU receives signals from the ECM via the CAN communication system.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1437	When the IG1 terminal voltage is 10 V or more and the vehicle speed is 15 km/h (9 mph) or more, data cannot be sent to the ECM for 2 seconds or more.	• CAN communication system (Skid control ECU to ECM) • Brake actuator assembly (Skid control ECU)

INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)**

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
EFI Communication Open	EFI communication 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.

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NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (SKID CONTROL ECU - ECM)

OK ▼

2.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO.

(c) Start the engine.

(d) Drive the vehicle at a speed of 15 km/h (9 mph) or more for 10 seconds or more.

(e) Check that no CAN communication system DTC is output INFO.

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

Result:

RESULT	PROCEED TO
DTC (C1437) is not output	A
DTC (C1437) is output	B
DTC (CAN communication system DTC) is output	C

C ▶ INSPECT CAN COMMUNICATION SYSTEM

B ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

A ▶ CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)

3.	REPAIR OR REPLACE HARNESS OR CONNECTOR (SKID CONTROL ECU - ECM)

(a) Turn the ignition switch off.

(b) Repair or replace the harness or connector.

(c) Check for any momentary interruption between the skid control ECU and the ECM INFO.

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(d) Check that there is no momentary interruption.

NEXT

4.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO.

(c) Start the engine.

(d) Drive the vehicle at a speed of 15 km/h (9 mph) or more for 10 seconds or more.

(e) Check that no CAN communication system DTC is output INFO.

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

Result:

RESULT	PROCEED TO
DTC (C1437) is not output	A
DTC (C1437) is output	B
DTC (CAN communication system DTC) is output	C

C ▶ **INSPECT CAN COMMUNICATION SYSTEM**

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **END**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003NJL019X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1439,C1445: Steering Angle Sensor Initialization Incomplete (2010 Corolla)		

DTC	**C1439**	**Steering Angle Sensor Initialization Incomplete**

DTC	**C1445**	**Vehicle Driven with Steering Angle Sensor not Initialized**

DESCRIPTION

The skid control ECU acquires the steering angle sensor zero point every time the ignition switch is turned to ON and the vehicle is driven at 35 km/h (22 mph) or more for approximately 5 seconds. The ECU also stores previous zero points.

Warning of the steering angle sensor zero point malfunction will be cancelled by turning the ignition switch off.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1439	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 actuator assembly (Skid control ECU)
C1445	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 actuator assembly (Skid control ECU)

INSPECTION PROCEDURE

NOTICE:

- When replacing the brake actuator assembly, perform zero point calibration INFO .

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- Before proceeding with the inspection, explain to the customer that the output DTC is related to temporary loss of the steering angle zero point calibration, such as when the power source voltage drops when the battery is removed, and confirm that this condition occurred.

HINT:

- When U0073, U0123, U0124 and/or U0126 is output together with C1439 and/or C1445, inspect and repair the trouble areas indicated by U0073, U0123, U0124 and/or U0126 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

1.	**CHECK DTC**

(a) Clear the DTCs INFO .

(b) Turn the ignition switch off.

(c) Turn the ignition switch to ON 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 and yaw rate and acceleration sensor DTCs are output INFO .

Result:

RESULT	PROCEED TO
DTCs (C1439 and/or C1445) are output	A
CAN communication system DTC is output	B
Speed sensor and/or yaw rate and acceleration sensor DTC is output	C
DTCs (C1439 and C1445) are not output	D

HINT:

- 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 and/or C1445 is not output again, the DTC may have been stored due to a temporary loss of the steering angle zero point calibration, such as when the power source voltage drops.

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D ▶ CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)

C ▶ REPAIR CIRCUIT INDICATED BY OUTPUT DTC

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 while driving straight ahead.

HINT:

If 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.

NG ▶ ADJUST FRONT WHEEL ALIGNMENT OR STEERING POSITION

OK ▼

3.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

(c) Start the engine.

(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 .

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Result:

RESULT	PROCEED TO
DTCs (C1439 and/or C1445) are output	A
DTCs (C1439 and C1445) are not output	B

HINT:

- If the same DTC C1439 and/or C1445 is not output again, the DTC may have been stored due to a temporary loss of the steering angle zero point calibration, such as when the power source voltage drops.
- 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 ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003NL2010X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1440: Unusual Bank Angle Detected (2010 Corolla)		

DTC	**C1440**	**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 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, which automatically clears DTC 1440, after the vehicle is returned to a normal position.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1440	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) is output	A
DTC (C1440) is not output	B
Yaw rate and acceleration sensor DTC is output	C

C ▶ **REPAIR CIRCUIT INDICATED BY OUTPUT DTC**

B ▶ **END**

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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 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, which automatically clears DTC 1440, after the vehicle is returned to a normal position.

NEXT END

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003NL3016X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: C1442,C1443: Invalid Data Received from Acceleration Sensor (2010 Corolla)		

DTC	**C1442**	**Invalid Data Received from Acceleration Sensor**

DTC	**C1443**	**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	DTC DETECTION CONDITION	TROUBLE AREA
C1442	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	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) Start and idle the engine for 60 seconds, and then stop the engine.

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

Result:

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RESULT	PROCEED TO
DTCs (C1442 and/or C1443) are output	A
DTCs (C1442 and C1443) 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 (SYMPTOM SIMULATION)**

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

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YUO051X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: U0073,U0100,U0123,U0124,U0126: Control Module Communication Bus OFF (2010 Corolla)		

DTC	**U0073**	**Control Module Communication Bus OFF**

DTC	**U0100**	**Lost Communication with ECM / PCM**

DTC	**U0123**	**Lost Communication with Yaw Rate Sensor Module**

DTC	**U0124**	**Lost Communication with Lateral Acceleration Sensor Module**

DTC	**U0126**	**Lost Communication with Steering Angle Sensor Module**

DESCRIPTION

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

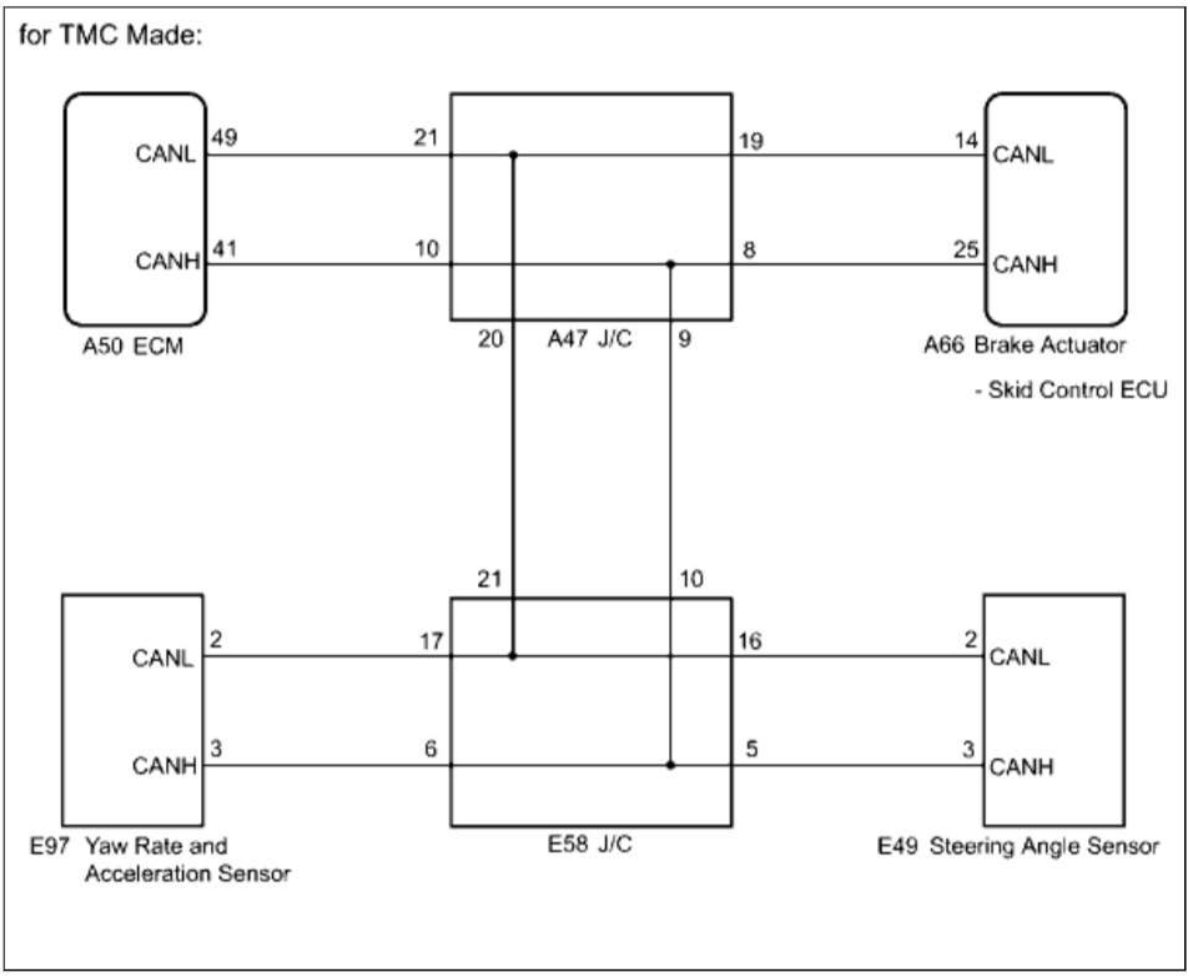
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
U0073	Any of the following is detected: 1. When the IG1 terminal voltage is between 10 and 17.4 V, after the output of data from the skid control ECU is completed, the signals cannot be sent for 5 seconds or more. 2. The condition that bus OFF state occurs once or more within 0.1 seconds occurs 10 times in succession. (Sent signals cannot be received.) 3. When the IG1 terminal voltage is between 10 and 17.4 V, a delay in receiving data from the yaw rate and acceleration sensor and steering angle sensor continues for 1 second or more. 4. When the IG1 terminal voltage is between 10 and 17.4	CAN communication system

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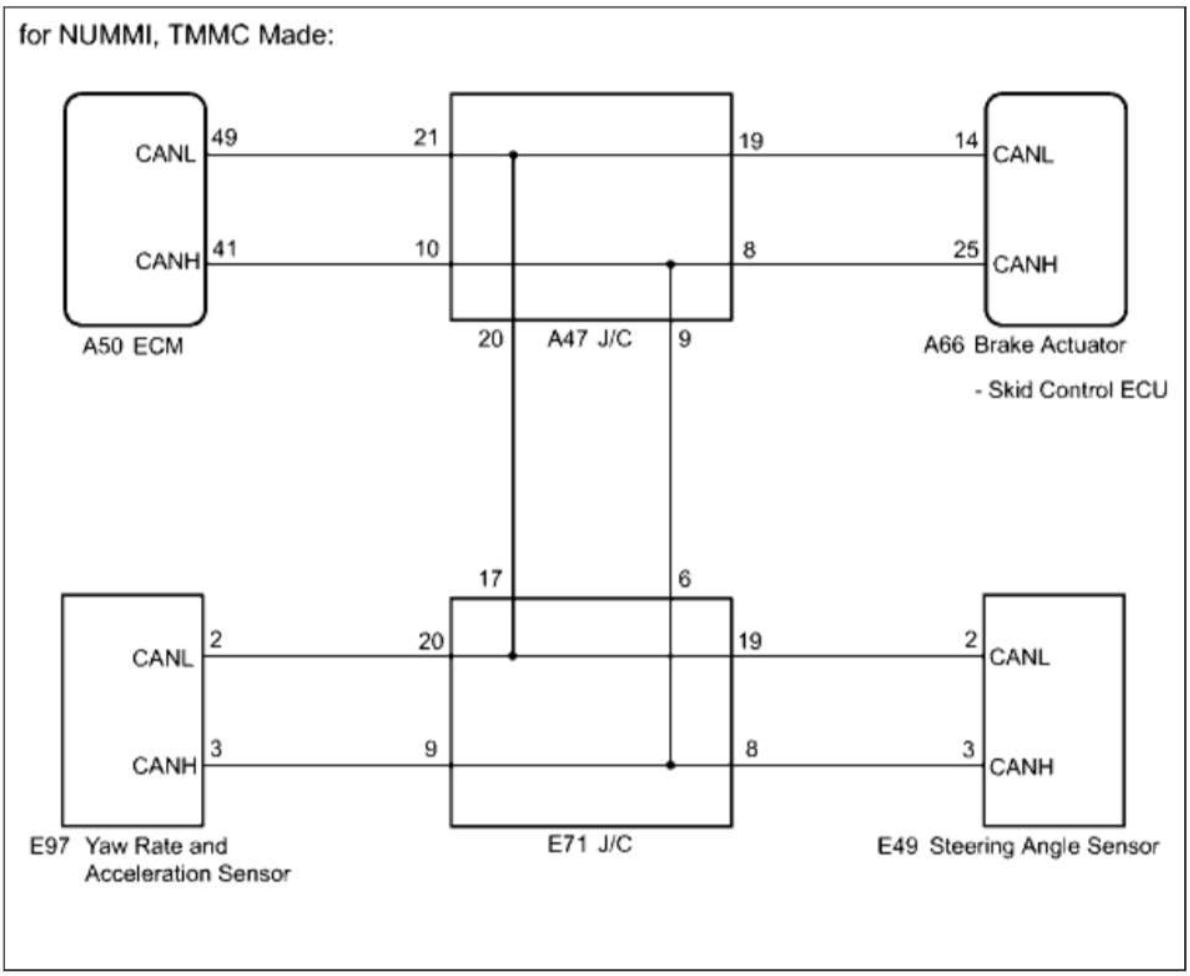
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
	V, the following occurs 10 times in succession. o The condition that a delay in receiving data from the yaw rate and acceleration sensor and steering angle sensor occurs more than once within 5 seconds.	
U0100	The IG1 terminal voltage is between 10 and 17.4 V and the vehicle speed is 15 km/h (9 mph) or more, data cannot be received from the ECM for 2 seconds or more.	CAN communication system (Skid control ECU to ECM)
U0123	Either of the following is detected: 1. When the IG1 terminal voltage is between 10 and 17.4 V, data from the yaw rate sensor cannot be received for 1 second or more. 2. When the IG1 terminal voltage is between 10 and 17.4 V, the following occurs 10 times in succession. o The condition that data from the yaw rate sensor cannot be received occurs once or more within 5 seconds.	CAN communication system (Skid control ECU to yaw rate and acceleration sensor)
U0124	Either of the following is detected: 1. When the IG1 terminal voltage is between 10 and 17.4 V, data from the acceleration sensor cannot be received for 1 second or more. 2. When the IG1 terminal voltage is between 10 and 17.4 V, the following occurs 10 times in succession. o The condition that data from the acceleration sensor cannot be received occurs once or more within 5 seconds.	CAN communication system (Skid control ECU to yaw rate and acceleration sensor)
U0126	Either of the following is detected: 1. When the IG1 terminal voltage is between 10 and 17.4 V, data from the steering angle sensor cannot be received for 1 second or more. 2. When the IG1 terminal voltage is between 10 and 17.4 V, the following occurs 10 times in succession. o The condition that data from the steering angle sensor cannot be received occurs once or more within 5 seconds.	CAN communication system (Skid control ECU to steering angle sensor)

WIRING DIAGRAM

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INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (MOMENTARY INTERRUPTION)**

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
EFI Communication Open	EFI communication open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
Yaw Rate Open	Yaw rate sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		NORMAL: Normal	
Steering Open	Steering angle sensor 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 the sensor and connector.

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

B ▶ **RECONFIRM DTC**

A
▼

2.	CHECK IF EACH SENSOR AND ECM CONNECTOR IS SECURELY CONNECTED

(a) Turn the ignition switch off.

(b) Check if each sensor or ECM connector is securely connected.

OK:
Each connector is securely connected.

NG ▶ **CONNECT CONNECTOR TO EACH SENSOR OR ECM CORRECTLY**

OK
▼

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3.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Record the output DTCs (for ABS, VSC system and/or CAN communication system) INFO for ABS and VSC system, or INFO for CAN communication system).

HINT:

If CAN communication system DTCs and the relevant sensor DTCs are output simultaneously, troubleshoot the relevant sensor DTCs (for ABS and/or VSC system) after the CAN communication system returns to normal.

Result:

RESULT	PROCEED TO
DTC is not output	A
DTC (ABS and/or VSC system DTC) is output	B
DTC (CAN communication system DTC) is output	C

C ▶ **INSPECT CAN COMMUNICATION SYSTEM**

B ▶ **REPAIR CIRCUIT INDICATED BY OUTPUT DTC**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

4.	REPAIR OR REPLACE HARNESS OR CONNECTOR

(a) Turn the ignition 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 ECM INFO.

(d) Check that there are no momentary interruptions.

NEXT

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5.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

(c) Start the engine.

(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 and/or VSC system DTCs are output, record them INFO .

Result:

RESULT	PROCEED TO
DTC is not output	A
DTC (ABS and/or VSC system DTC) is output	B
DTC (CAN communication system DTC) is output	C

HINT:

The CAN communication system must be normal when performing troubleshooting for each sensor DTC (for ABS and/or VSC system).

C ▶ INSPECT CAN COMMUNICATION SYSTEM

B ▶ REPAIR CIRCUIT INDICATED BY OUTPUT DTC

A ▶ END

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIH053X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: ABS Warning Light Remains ON (2010 Corolla)		

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:

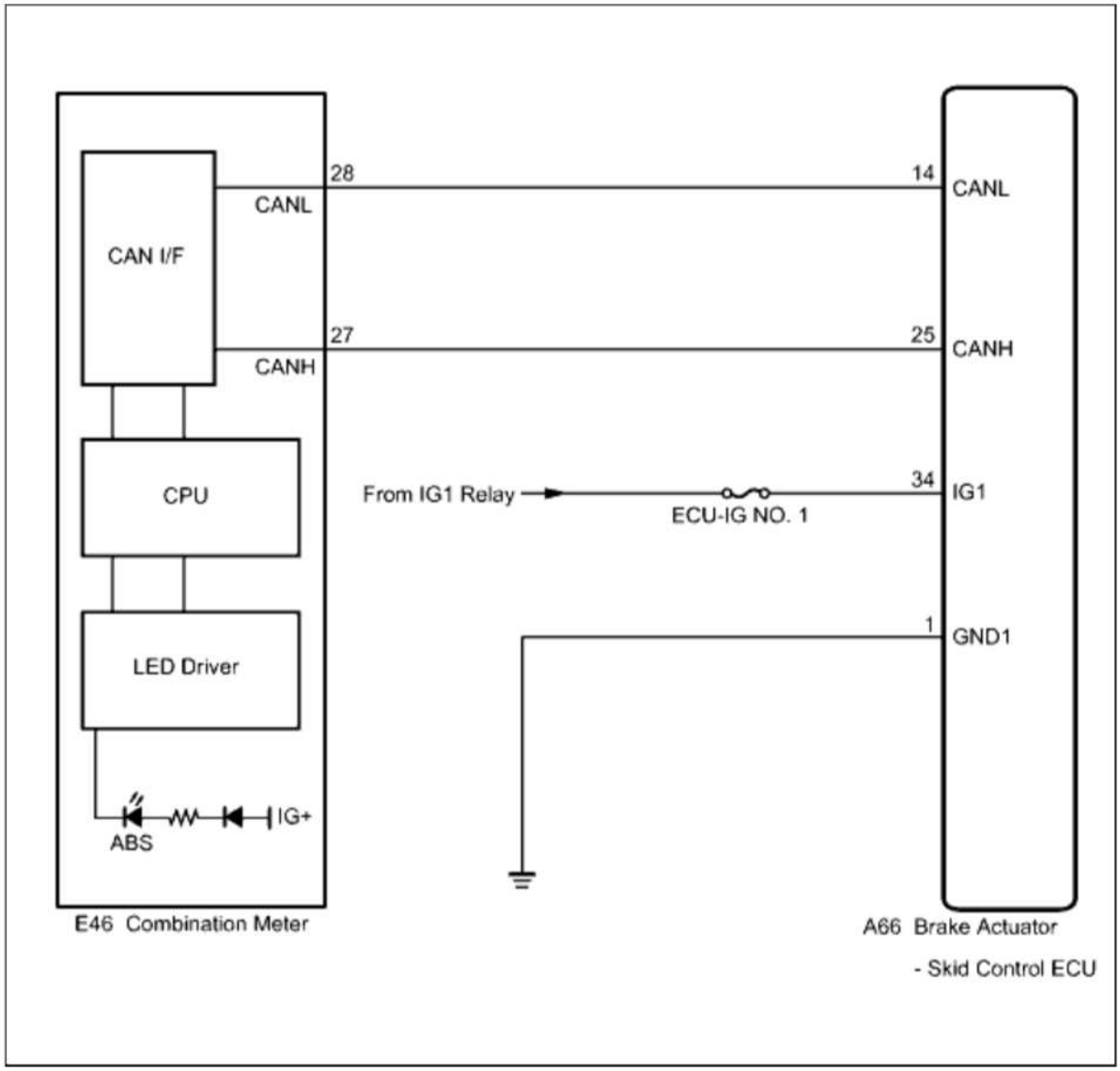
- The skid control ECU connector is disconnected from the skid control ECU.
- There is a malfunction in the skid control ECU internal circuit.
- There is an open circuit malfunctioning in the harness between the combination meter and the skid control ECU.
- The ABS control system is malfunctioning.

HINT:

In some cases, the Techstream cannot be used when the skid control ECU is abnormal.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK CAN COMMUNICATION SYSTEM**

(a) Check if a CAN communication system DTC is output INFO .

Result:

RESULT	PROCEED TO

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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 BATTERY

(a) Check the battery voltage.

Standard Voltage:
11 to 14 V
Result:

RESULT	PROCEED TO
OK	A
NG (for 2AZ-FE)	B
NG (for 2ZR-FE)	C

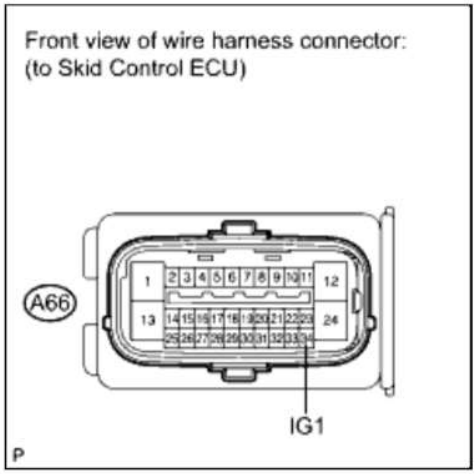
C ▶ CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)

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B ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2AZ-FE)**

A

4.	**INSPECT SKID CONTROL ECU (IG1 TERMINAL)**



(a) Disconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

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

Standard Voltage:

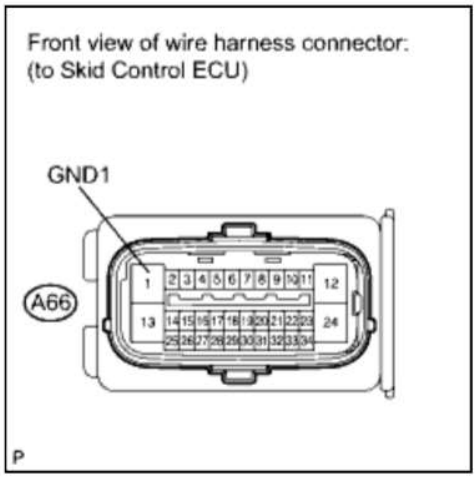
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A66-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)**

OK

5.	**INSPECT SKID CONTROL ECU (GND1 TERMINAL)**

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(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

6.	**INSPECT COMBINATION METER ASSEMBLY**

(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:

The ABS warning light turns on or off in accordance with the Techstream operation.

HINT:

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

NG ▶ **REPLACE COMBINATION METER ASSEMBLY**

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OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YHG051X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: Brake Warning Light Remains ON (2010 Corolla)		

Brake Warning Light Remains ON

DESCRIPTION

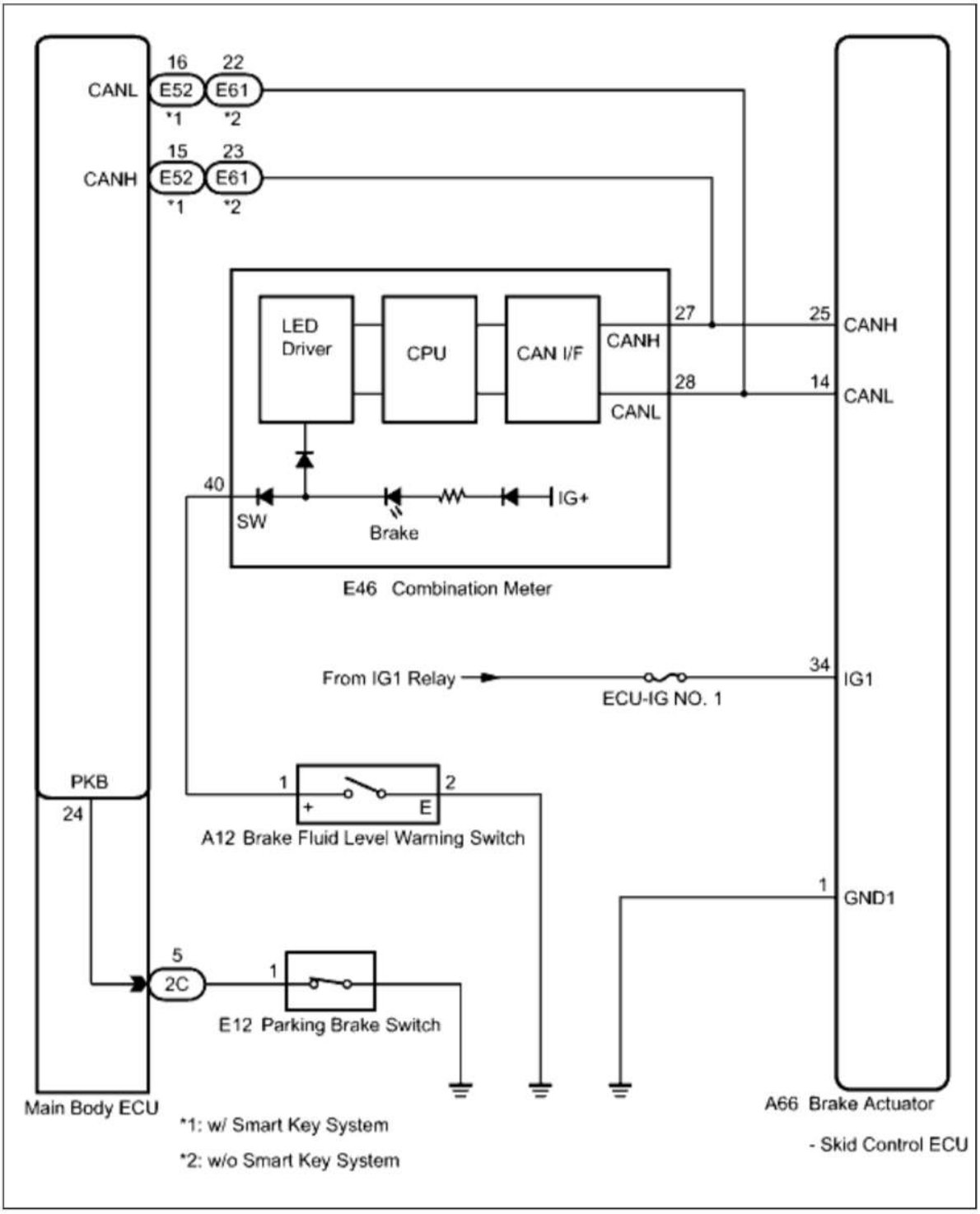
The skid control ECU is connected to the combination meter via CAN communication.

If any of the following is detected, the brake warning light 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

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

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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 BATTERY**

(a) Check the battery voltage.

Standard Voltage:

11 to 14 V

Result:

RESULT	PROCEED TO

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RESULT	PROCEED TO
OK	A
NG (for 2AZ-FE)	B
NG (for 2ZR-FE)	C

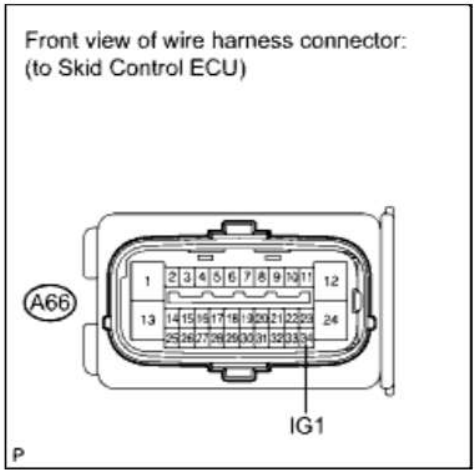
C ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)**

B ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2AZ-FE)**

A

▼

4.	**INSPECT SKID CONTROL ECU (IG1 TERMINAL)**



(a) Disconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

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

Standard Voltage:

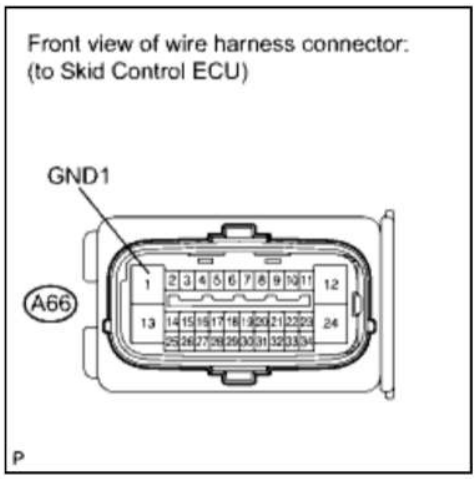
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A66-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)**

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OK

5.	INSPECT SKID CONTROL ECU (GND1 TERMINAL)



(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK

6.	READ VALUE USING TECHSTREAM (PARKING BRAKE SWITCH)

(a) Reconnect the skid control ECU connector.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

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(d) Select Data List mode 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	-

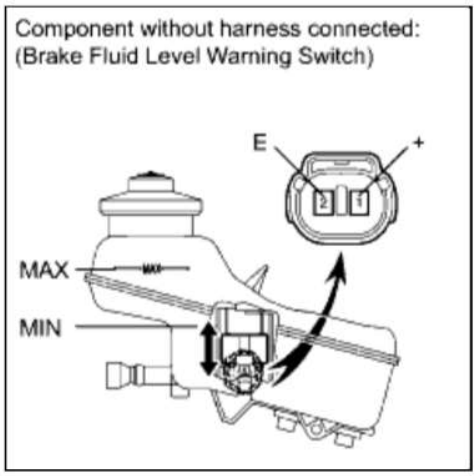
(e) Using the Techstream, check the switch operation when the parking brake is applied.

OK:
The Techstream displays ON or OFF according to parking brake operation.

NG ▶ **INSPECT PARKING BRAKE SWITCH**

OK
▼

7.	**INSPECT BRAKE FLUID LEVEL WARNING SWITCH**



(a) Turn the ignition switch off.

(b) Remove the reservoir filler cap and strainer.

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

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

HINT:

A float is located inside the reservoir. Its position can be changed by increasing or decreasing the level of

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brake fluid.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (+) - 2 (E)	Switch OFF (Float up)	1.9 to 2.1 kΩ
1 (+) - 2 (E)	Switch ON (Float down)	Below 1 Ω

HINT:

If there are no problems after finishing the check above, adjust the brake fluid level to the MAX level.

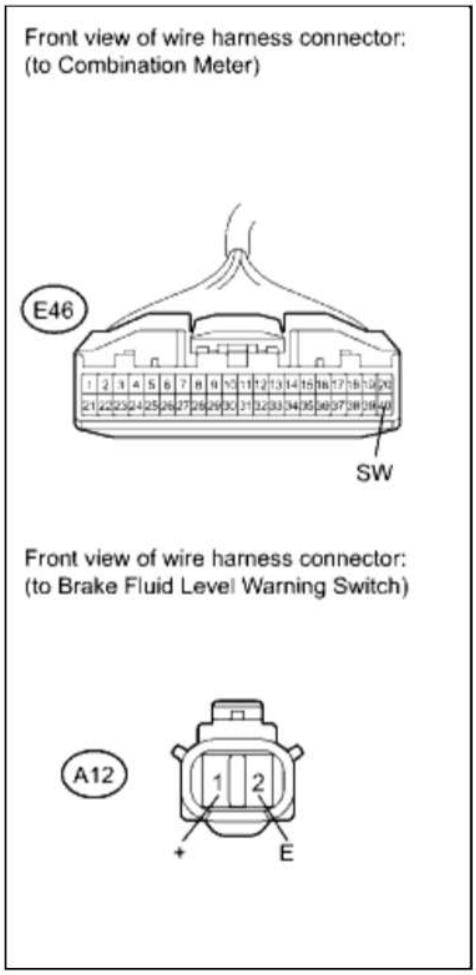
NG ▶ **REPLACE BRAKE MASTER CYLINDER RESERVOIR ASSEMBLY (BRAKE FLUID LEVEL WARNING SWITCH)**

OK ▼

8.	**CHECK HARNESS AND CONNECTOR (COMBINATION METER - BRAKE FLUID LEVEL WARNING SWITCH)**

(a) Disconnect the combination meter connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E46-40 (SW) - A12-1 (+)	Always	Below 1 Ω
E46-40 (SW) - Body ground	Always	10 kΩ or higher
A12-2 (E) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

9.	**INSPECT COMBINATION METER ASSEMBLY**

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(a) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO .

(b) Check the combination meter.

HINT:

Reinstall the connectors and restore the vehicle to its prior condition before checking the combination meter.

OK:
The brake warning light turns on or off in accordance with the Techstream operation.

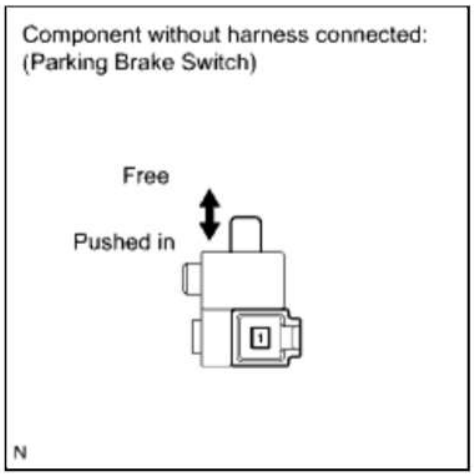
HINT:

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

NG ▶ **REPLACE COMBINATION METER ASSEMBLY**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

10.	INSPECT PARKING BRAKE SWITCH



(a) Turn the ignition switch off.

(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

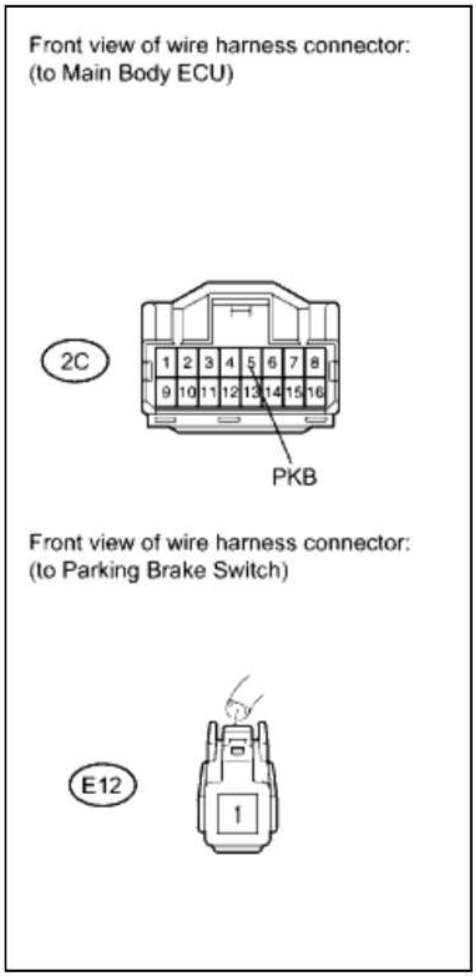
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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 - Body ground	Parking brake switch OFF (Switch pin pushed in)	10 kΩ or higher

NG ▶ **REPLACE PARKING BRAKE SWITCH**

OK ▼

11.	CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - PARKING BRAKE SWITCH)



(a) Disconnect the main body ECU connector.

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

Standard Resistance:

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2C-5 (PKB) - E12-1	Always	Below 1 Ω
2C-5 (PKB) - Body ground	Always	10 kΩ or higher

HINT:

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

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIQ052X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: ABS Warning Light does not Come ON (2010 Corolla)		

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 actuator assembly, perform zero point calibration 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.

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(b) Turn the ignition switch to ON.

(c) Check that the ABS warning light comes on.

OK:
The ABS warning light comes on.

HINT:

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

NG ▶ INSPECT COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

3.	INSPECT COMBINATION METER ASSEMBLY

(a) Turn the ignition 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 the Problem Symptoms Table, refer back to the table and proceed to the next step INFO .

NG ▶ REPLACE COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001FQO03KX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: VSC OFF Indicator Light Remains ON (2010 Corolla)		

VSC OFF Indicator Light Remains ON

DESCRIPTION

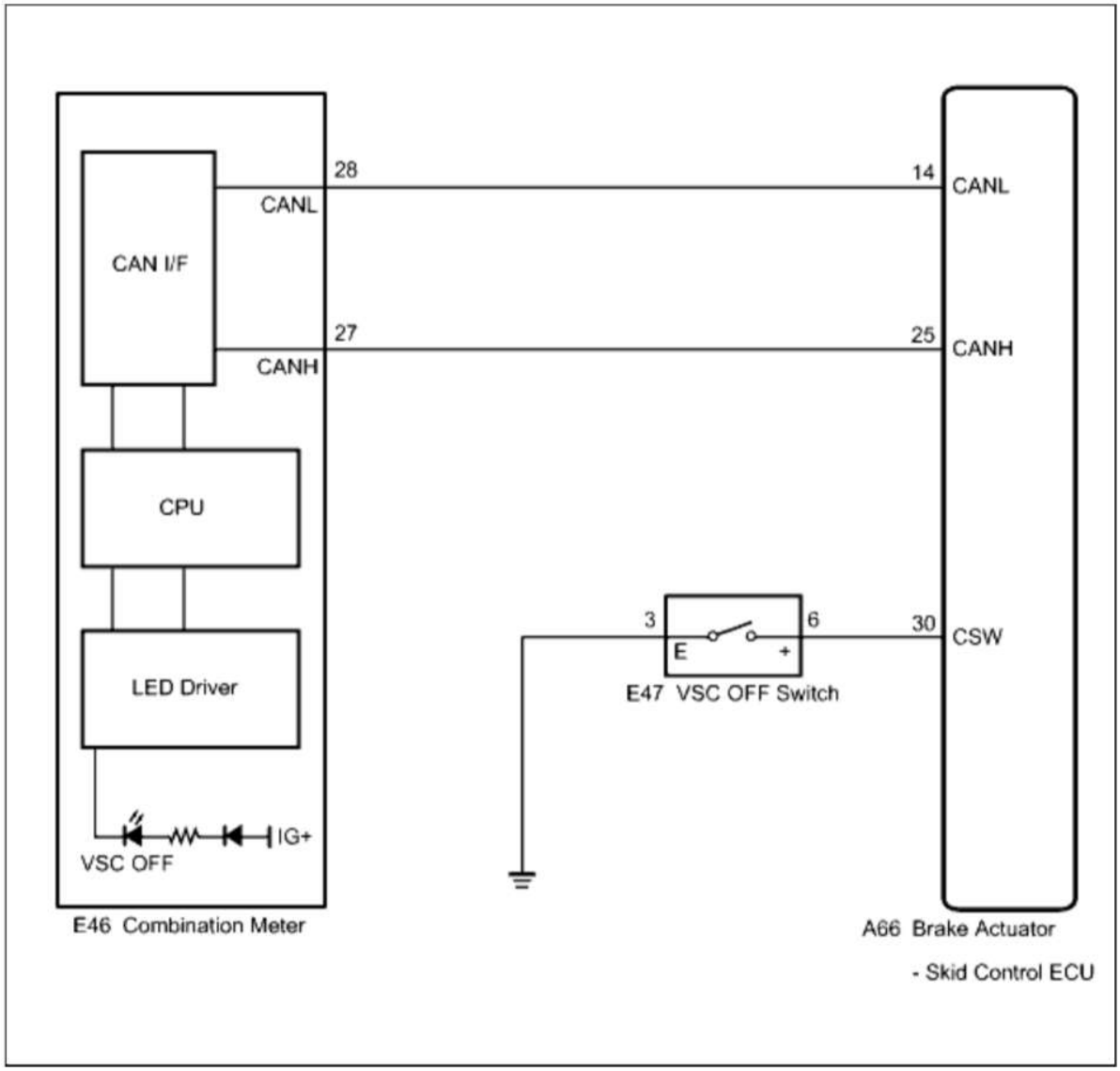
The skid control ECU is connected to the combination meter via CAN communication.

If the skid control ECU stores a DTC, the VSC OFF indicator light blinks in the combination meter.

Pressing the VSC OFF switch turns off traction control and pressing and holding this switch turns off traction and VSC controls. If VSC control turns off, the VSC OFF indicator light will come on.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK CAN COMMUNICATION SYSTEM**

(a) Check if a CAN communication system DTC is output INFO .

Result:

RESULT	PROCEED TO

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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 BATTERY

(a) Check the battery voltage.

Standard Voltage:
11 to 14 V
Result:

RESULT	PROCEED TO
OK	A
NG (for 2AZ-FE)	B
NG (for 2ZR-FE)	C

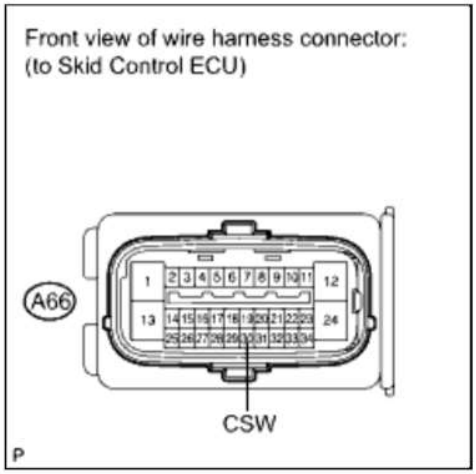
C ▶ CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)

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B ▶ CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2AZ-FE)

A ▼

4.	INSPECT SKID CONTROL ECU (CSW TERMINAL)



(a) Disconnect the skid control ECU connector.

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

Standard Resistance:

TESTER CONDITION	SWITCH CONDITION	SPECIFIED CONDITION
A66-30 (CSW) - Body ground	VSC OFF switch OFF (Not pressed)	10 kΩ or higher

NG ▶ INSPECT VSC OFF SWITCH

OK ▼

5.	INSPECT COMBINATION METER ASSEMBLY

(a) Reconnect the skid control ECU connector.

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(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO .

(c) Check the combination meter.

OK:

The VSC OFF indicator light turns on or off in accordance with the Techstream operation.

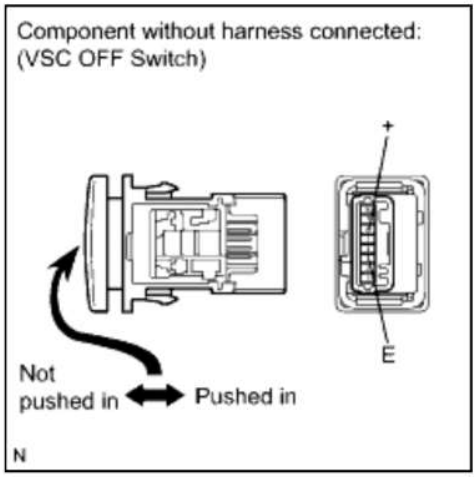
HINT:

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

NG ▶ REPLACE COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

6.	INSPECT VSC OFF SWITCH



(a) Disconnect the VSC OFF switch connector.

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

Standard Resistance:

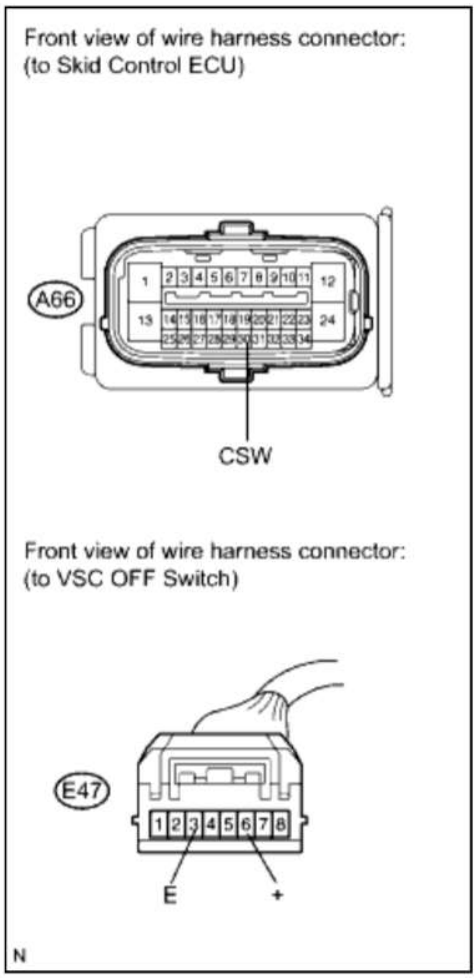
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
6 (+) - 3 (E)	Switch is pushed in	Below 25 Ω
6 (+) - 3 (E)	Switch is not pushed in	10 kΩ or higher

NG ▶ REPLACE VSC OFF SWITCH

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OK

7.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - VSC OFF SWITCH)



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-30 (CSW) - E47-6 (+)	Always	Below 1 Ω
A66-30 (CSW) - Body ground	Always	10 kΩ or higher
E47-3 (E) - Body ground	Always	Below 1 Ω

HINT:

If troubleshooting has been carried out according to the 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 ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YHH051X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: Brake Warning Light does not Come ON (2010 Corolla)		

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 actuator assembly, perform zero point calibration 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**

(a) Disconnect the skid control ECU connector.

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(b) Turn the ignition switch to ON.

(c) Check that the brake warning light comes on.

OK:
The brake warning light comes on.

HINT:

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

NG ▶ INSPECT COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

3.	INSPECT COMBINATION METER ASSEMBLY

(a) Turn the ignition 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 turns on or off in accordance with the Techstream operation.

HINT:

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

NG ▶ REPLACE COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YHI040X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: Slip Indicator Light Remains ON (2010 Corolla)		

Slip Indicator Light Remains ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

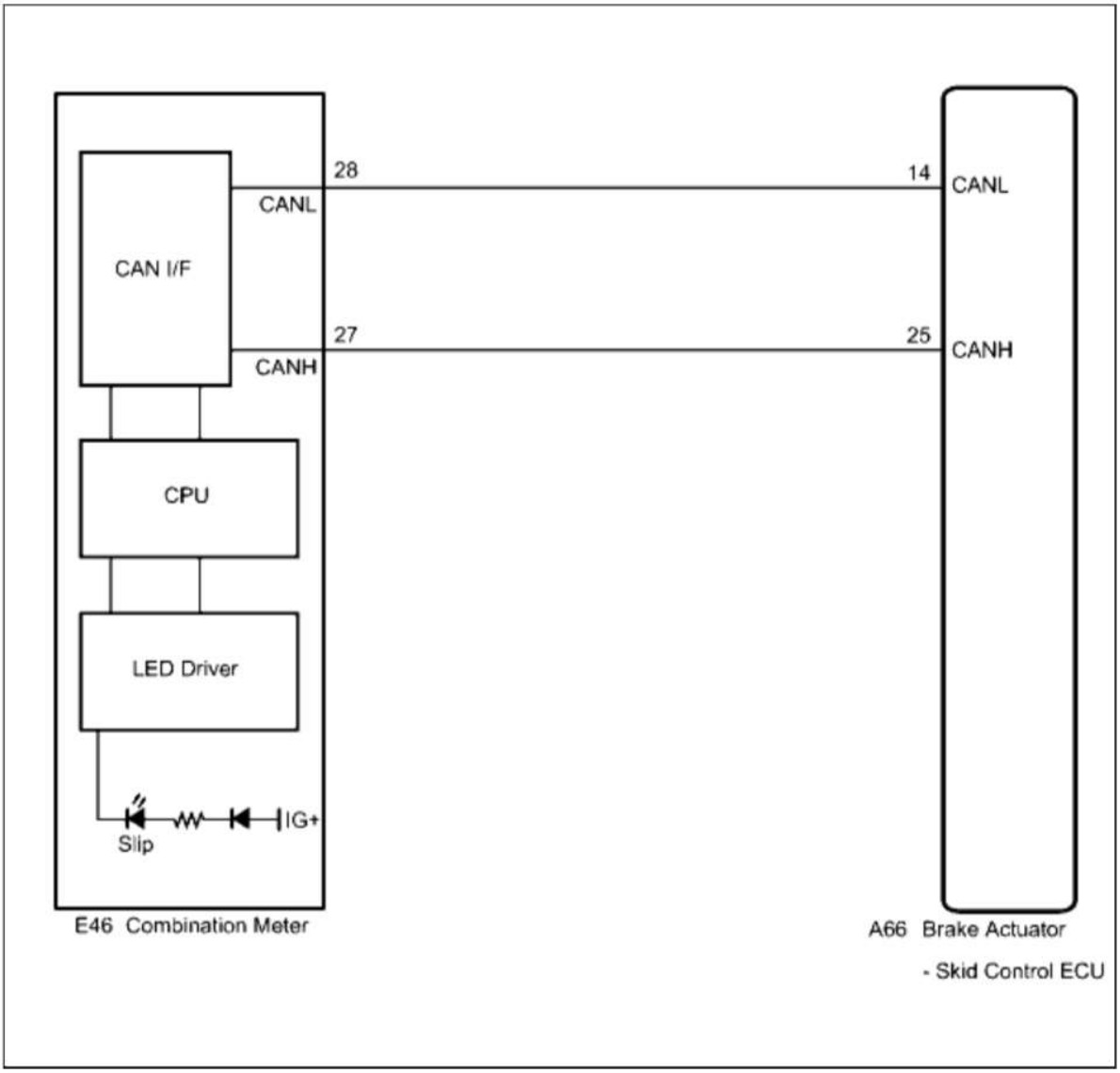
The slip indicator light blinks during VSC and/or TRAC operation.

When the system fails, the slip indicator light comes on to warn the driver 

.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK CAN COMMUNICATION SYSTEM**

(a) Check if a CAN communication system DTC is output INFO .

Result:

RESULT	PROCEED TO

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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 BATTERY

(a) Check the battery voltage.

Standard Voltage:
11 to 14 V
Result:

RESULT	PROCEED TO
OK	A
NG (for 2AZ-FE)	B
NG (for 2ZR-FE)	C

C ▶ CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)

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B ▶ CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2AZ-FE)

A

4.	INSPECT COMBINATION METER ASSEMBLY

(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 the Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO .

NG ▶ REPLACE COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001FQP03HX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: VSC OFF Indicator Light does not Come ON (2010 Corolla)		

VSC OFF Indicator Light does not Come ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

If the skid control ECU stores a DTC, the VSC OFF indicator light blinks in the combination meter.

Pressing the VSC OFF switch turns off traction control and pressing and holding this switch turns off traction and VSC controls. If VSC control turns off, the VSC OFF indicator light will come on.

WIRING DIAGRAM

Refer to VSC OFF Indicator Light Remains ON INFO .

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration 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 ▼

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2.	PERFORM ACTIVE TEST USING TECHSTREAM (VSC OFF INDICATOR LIGHT)

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Select Active Test mode on the Techstream INFO .

ABS/VSC/TRAC

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
VSC warning Light	VSC OFF indicator light	Indicator light ON/OFF	Observe combination meter

(d) Check that the VSC OFF indicator light turns on or off in accordance with the Techstream operation.

OK:

The VSC OFF indicator light turns on or off in accordance with the Techstream operation.

HINT:

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

NG ▶ INSPECT COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

3.	INSPECT COMBINATION METER ASSEMBLY

(a) Turn the ignition switch off.

(b) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO .

(c) Check the combination meter.

OK:

The VSC OFF indicator light turns on or off in accordance with the Techstream operation.

HINT:

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

NG ▶ REPLACE COMBINATION METER ASSEMBLY

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OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIS041X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: Skid Control Buzzer Circuit (2010 Corolla)		

Skid Control Buzzer Circuit

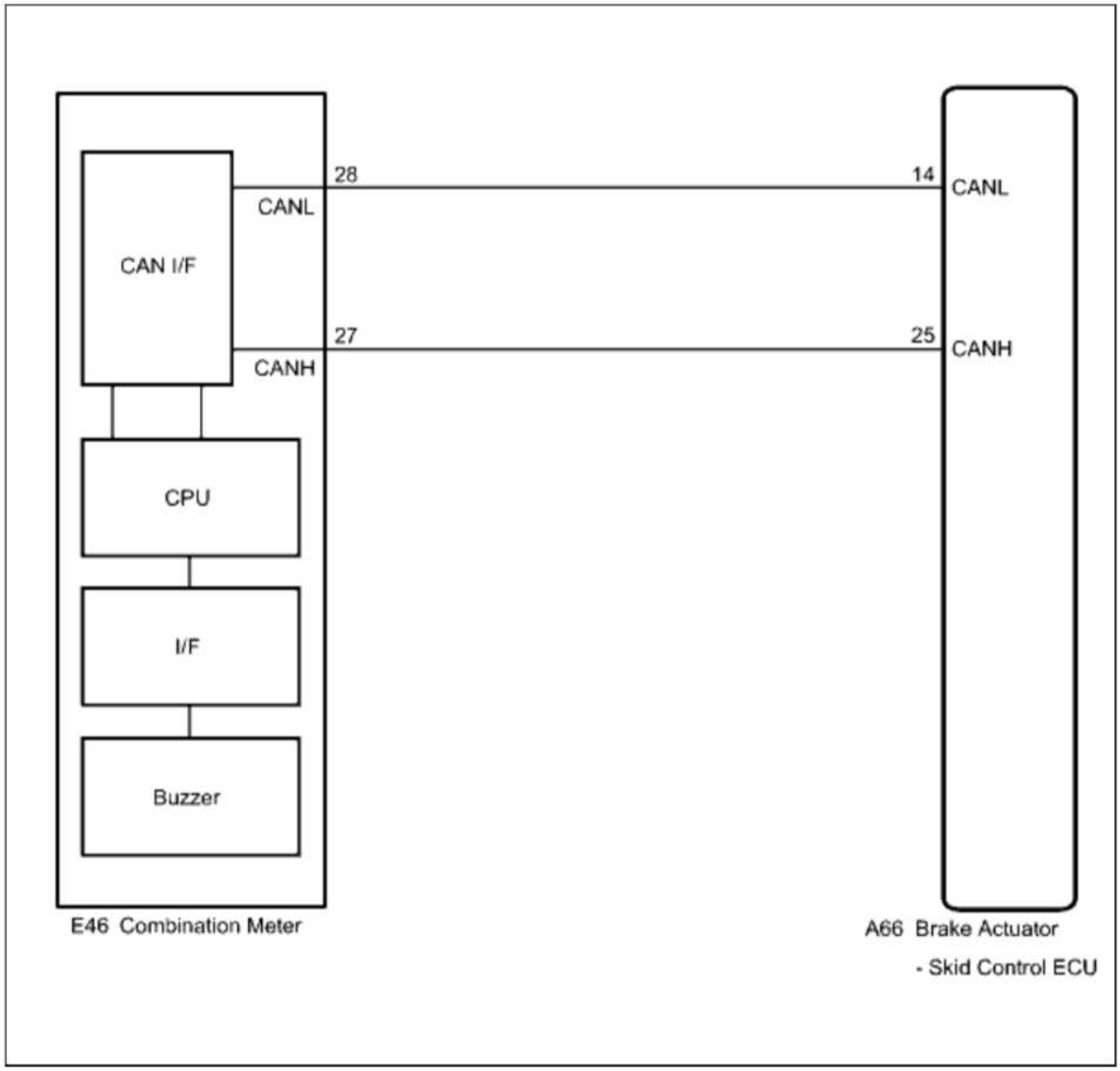
DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

The combination meter has a built-in skid control buzzer. The skid control buzzer sounds during VSC operation.

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK CAN COMMUNICATION SYSTEM**

(a) Check if a CAN communication system DTC is output INFO .

Result:

RESULT	PROCEED TO

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RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	PERFORM ACTIVE TEST USING TECHSTREAM (SKID CONTROL BUZZER)

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Select Active Test mode 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 or sounds constantly	A
Buzzer sounds/stops	B

HINT:

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

B ▶ END

A

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3.	INSPECT COMBINATION METER ASSEMBLY

(a) Turn the ignition switch off.

(b) Check the combination meter INFO .

OK:
The combination meter is normal.

HINT:

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

NG ▶ **REPLACE COMBINATION METER ASSEMBLY**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YHJ040X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: Slip Indicator Light does not Come ON (2010 Corolla)		

Slip Indicator Light does not Come ON

DESCRIPTION

The skid control ECU is connected to the combination meter via CAN communication.

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

Refer to Slip Indicator Light Remains ON INFO .

INSPECTION PROCEDURE

NOTICE:

When replacing the brake actuator assembly, perform zero point calibration 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 ▼

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2.	PERFORM ACTIVE TEST USING TECHSTREAM (SLIP INDICATOR LIGHT)

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Select Active Test mode 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

(d) Check that the slip indicator light 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 the Problem Symptoms Table, refer back to the table and proceed to the next step before replacing the part INFO .

NG ▶ INSPECT COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

3.	INSPECT COMBINATION METER ASSEMBLY

(a) Turn the ignition 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 the Problem Symptoms Table, refer back to the table and proceed to the next step INFO .

NG ▶ REPLACE COMBINATION METER ASSEMBLY

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OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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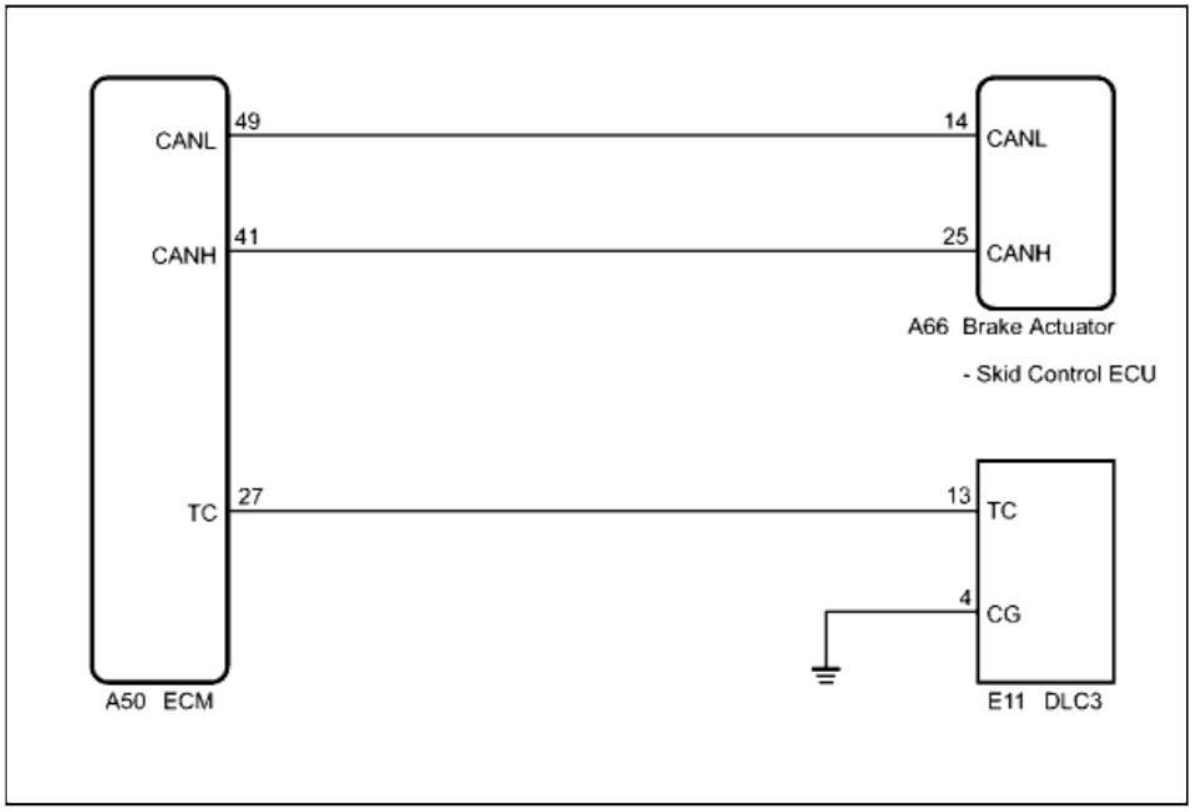
Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIU05JX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: TC and CG Terminal Circuit (2010 Corolla)		

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:

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 actuator assembly, perform zero point calibration INFO **.**

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PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if a CAN communication system DTC is output INFO.

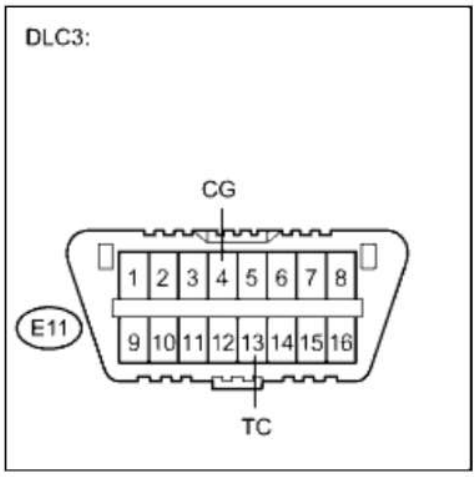
Result:

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	INSPECT DLC3



(a) Turn the ignition switch to ON.

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION

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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-13 (TC) - E11-4 (CG)	Ignition switch ON	11 to 14 V

Result:

RESULT	PROCEED TO
NG	A
OK	B

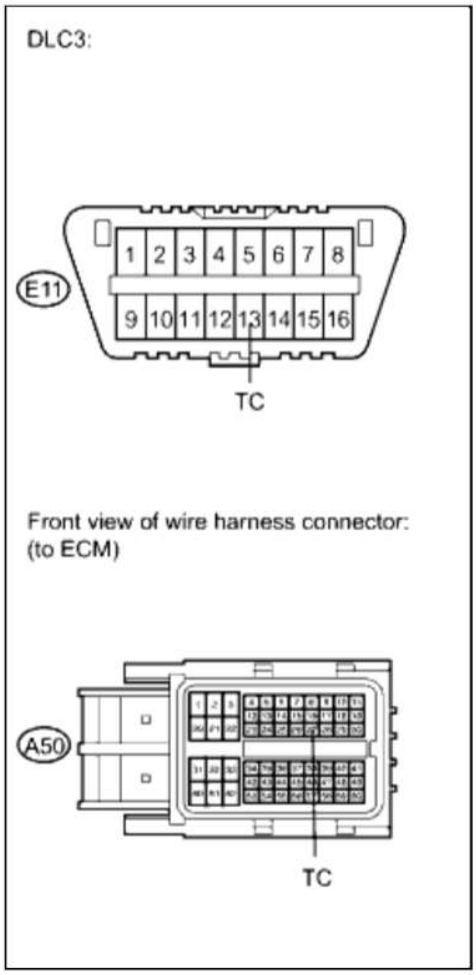
B ▶ CHECK ECM (TC of DLC3 INPUT)

A ▼

3.	**CHECK HARNESS AND CONNECTOR (TC of DLC3 - ECM)**

(a) Turn the ignition switch off.

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(b) Disconnect the ECM connector.

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

Standard Resistance:

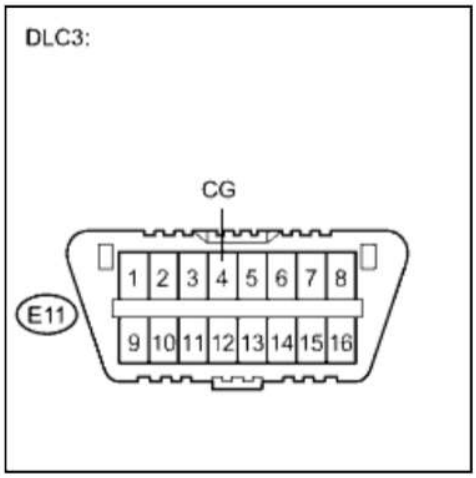
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-13 (TC) - A50-27 (TC)	Always	Below 1 Ω
E11-13 (TC) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**CHECK HARNESS AND CONNECTOR (CG of DLC3 - BODY GROUND)**

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

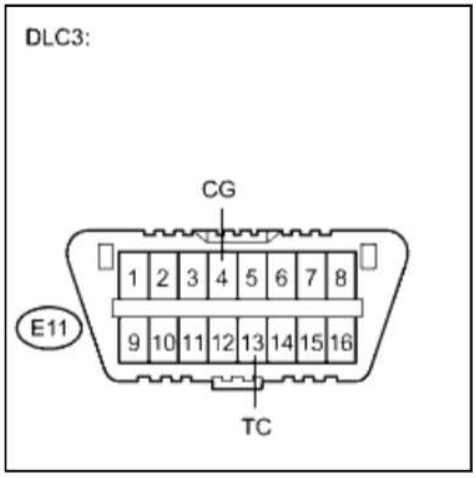
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-4 (CG) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

5.	**CHECK ECM (TC of DLC3 INPUT)**



(a) Turn the ignition switch off.

(b) Reconnect the ECM connector.

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

SST: 09843-18040

(d) Turn the ignition switch to ON.

(e) Check that the check engine warning light is blinking.

Result:

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RESULT	PROCEED TO
Check engine warning light is blinking	A
Check engine warning light is not blinking	B

HINT:

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

B ▶ **REPAIR OR REPLACE WIRE HARNESS OR ECM (TC of ECM CIRCUIT)**

A ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIV04YX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VEHICLE STABILITY CONTROL SYSTEM: TS and CG Terminal Circuit (2010 Corolla)		

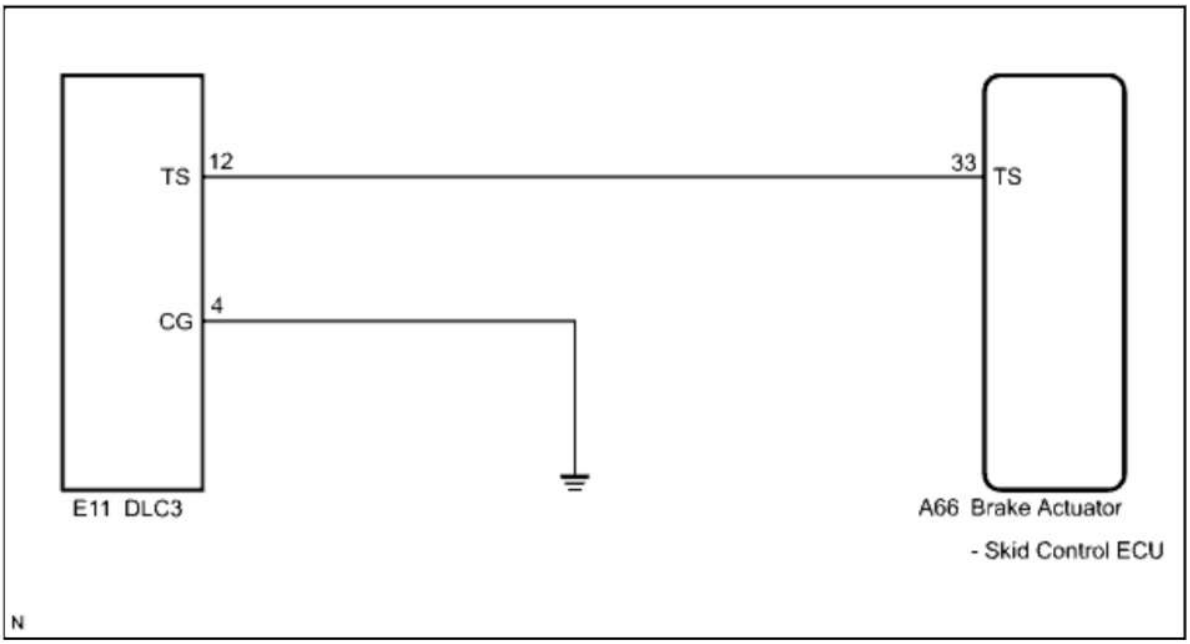
TS and CG Terminal Circuit

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 ignition switch from off to ON.

WIRING DIAGRAM



INSPECTION PROCEDURE

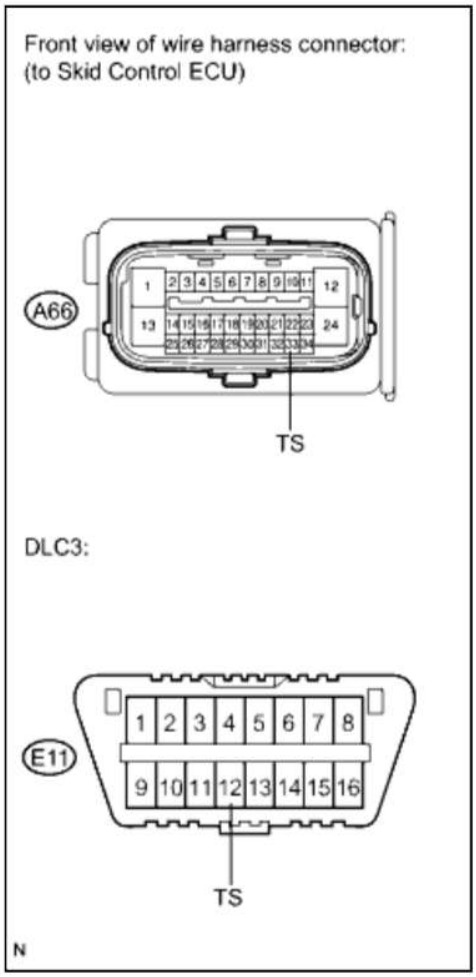
NOTICE:

When replacing the brake actuator assembly, perform zero point calibration INFO .

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - TS of DLC3)**

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(a) Disconnect the skid control ECU connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A66-33 (TS) - E11-12 (TS)	Always	Below 1 Ω

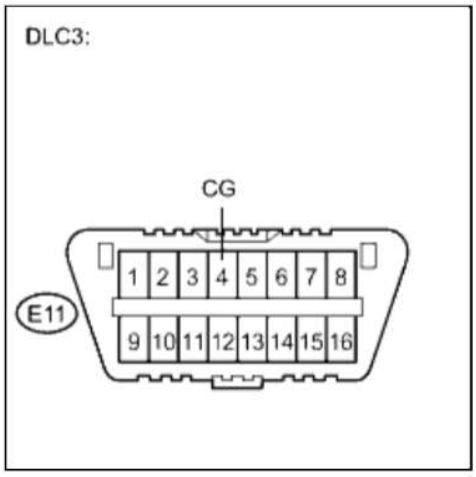
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

2.	**CHECK HARNESS AND CONNECTOR (CG of DLC3 - BODY GROUND)**

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

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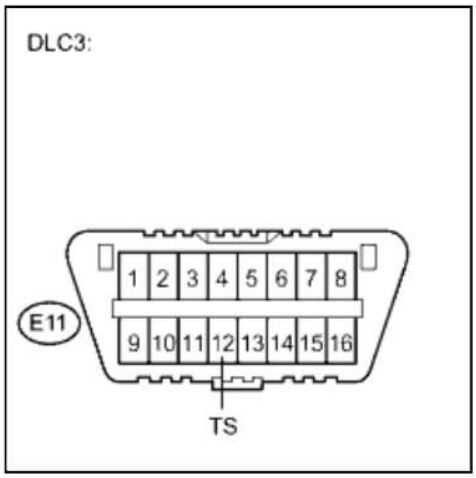
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-4 (CG) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

3.	CHECK HARNESS AND CONNECTOR (TS of DLC3 - BODY GROUND)



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-12 (TS) - Body ground	Always	10 kΩ or higher

HINT:

If troubleshooting has been carried out according to the 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**

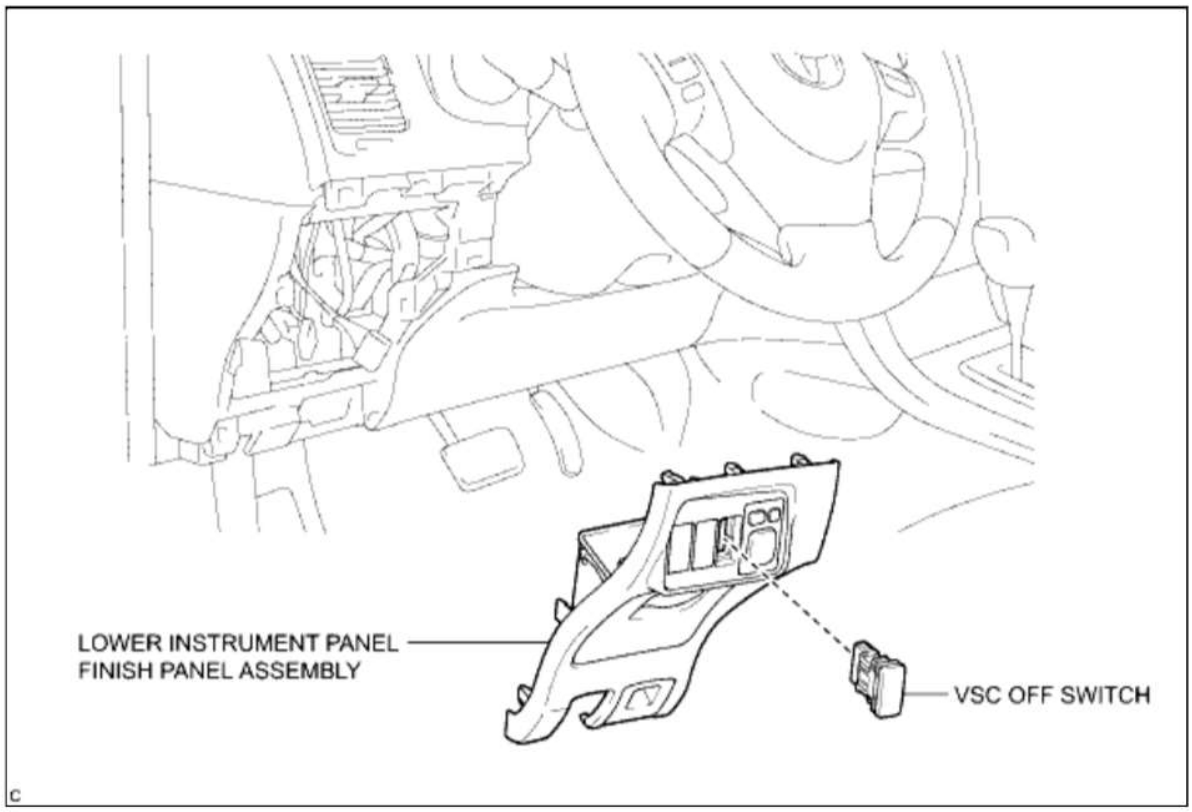
OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 K	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003FA6005X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VSC OFF SWITCH (w/ VSC): COMPONENTS (2010 Corolla)		

COMPONENTS

ILLUSTRATION



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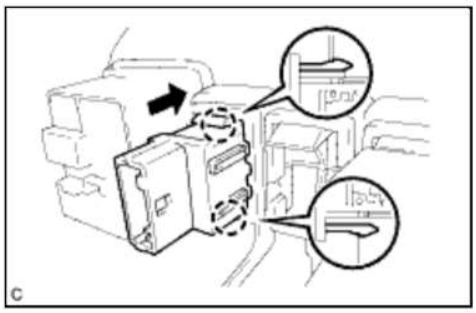
Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000033RX00DX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VSC OFF SWITCH (w/ VSC): REMOVAL (2010 Corolla)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

2. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

3. REMOVE VSC OFF SWITCH



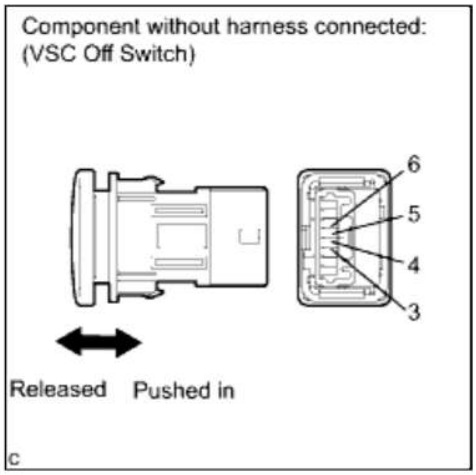
(a) Disengage the 2 claws and remove the VSC off switch.

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Last Modified: 3-10-2010	6.4 G	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VOV00LX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VSC OFF SWITCH (w/ VSC): INSPECTION (2010 Corolla)		

INSPECTION

1. INSPECT VSC OFF SWITCH



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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
3 - 6	Released	10 kΩ or higher
3 - 6	Pushed in	Below 25 Ω

If the result is not as specified, replace the switch.

(b) Check illumination operation.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
4 - 5	Battery positive (+) lead connected to terminal 5 and negative (-) lead to terminal 4	LED illuminates

If the result is not as specified, replace the VSC off switch.

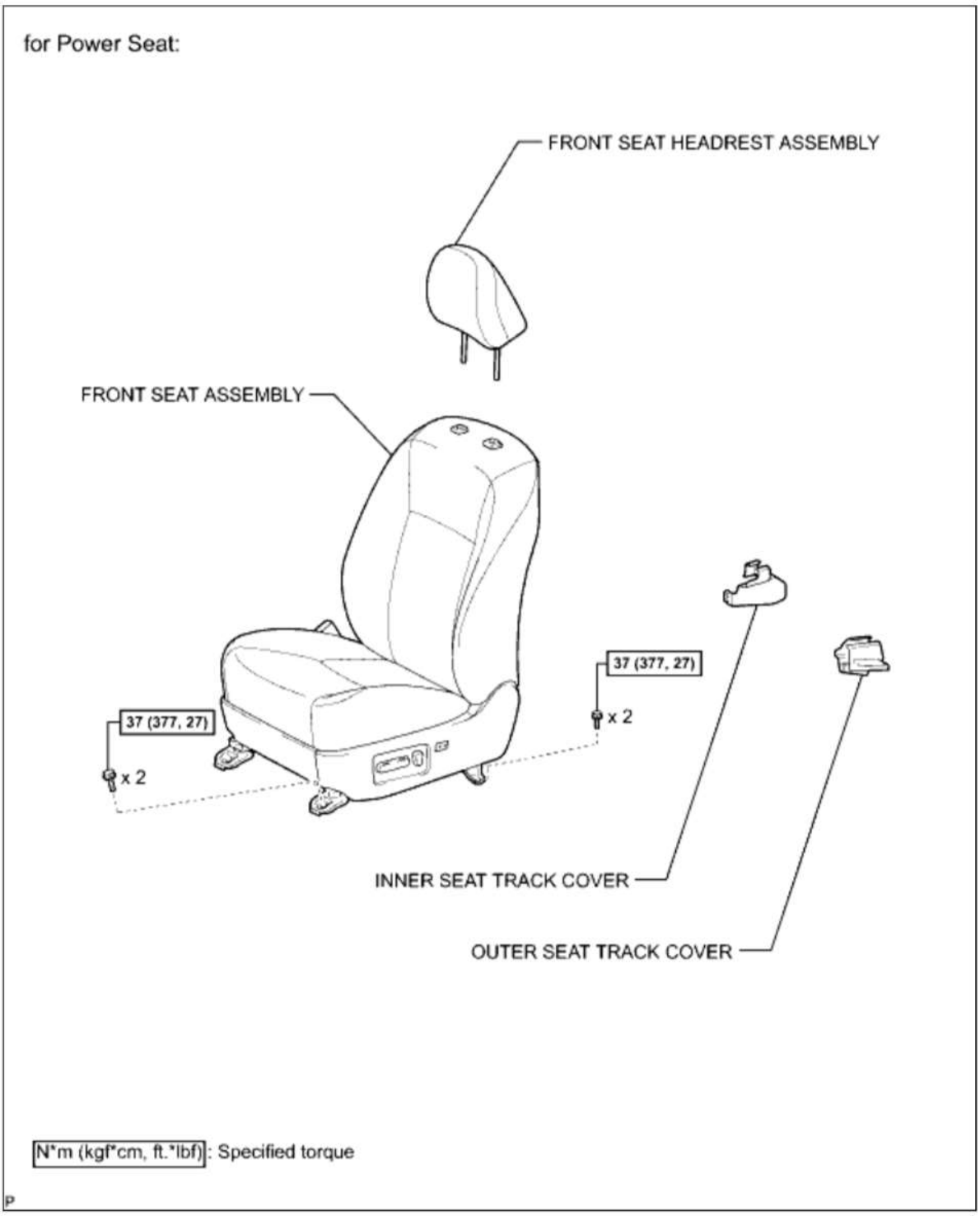
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Last Modified: 3-10-2010	6.4 K	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003FA4005X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: YAW RATE AND ACCELERATION SENSOR (w/ VSC): COMPONENTS (2010 Corolla)		

COMPONENTS

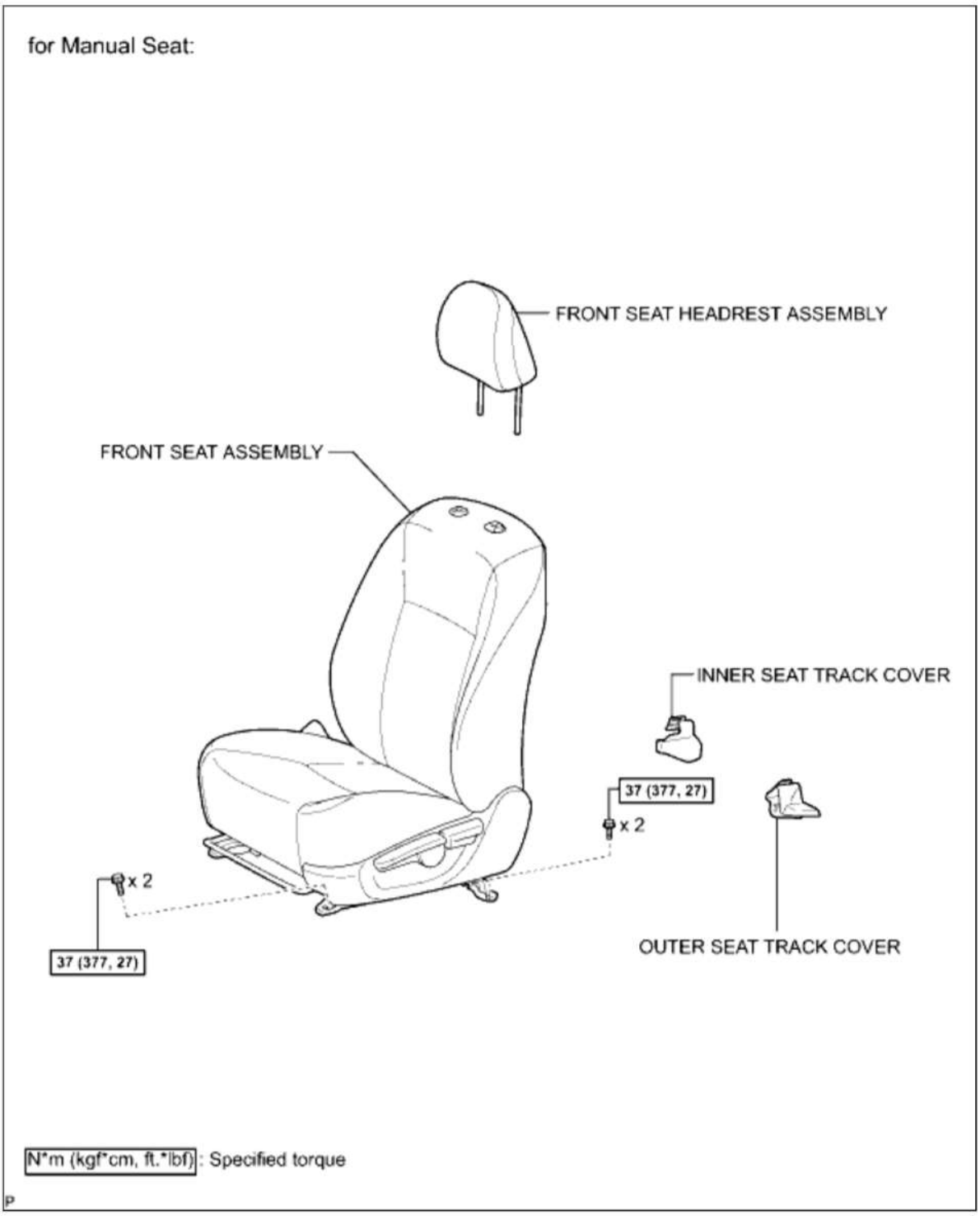
ILLUSTRATION

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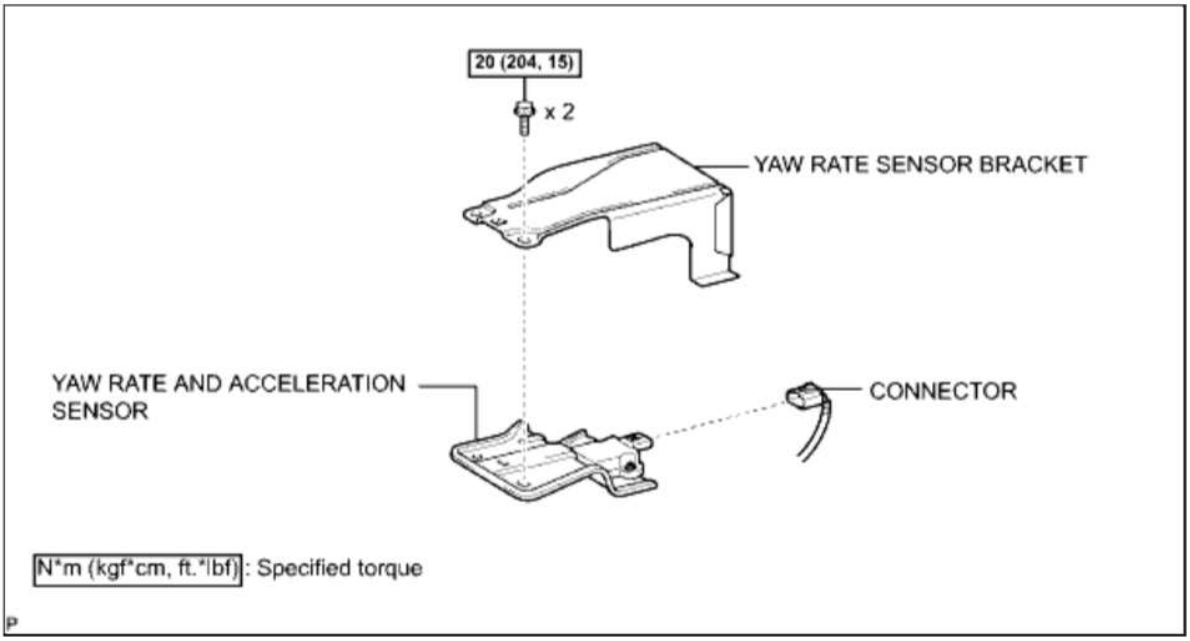
ILLUSTRATION

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ILLUSTRATION

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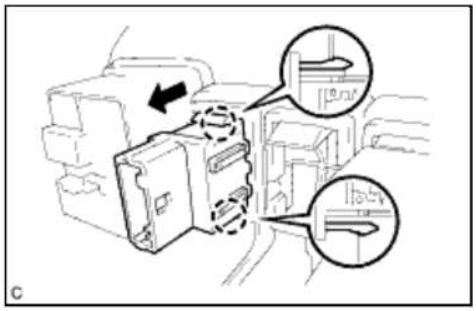
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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000033RW00DX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: VSC OFF SWITCH (w/ VSC): INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL VSC OFF SWITCH



(a) Engage the 2 claws to install the VSC off switch.

2. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY INFO

3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

4. CHECK VSC WARNING LIGHT AND VSC OFF INDICATOR LIGHT

INFO

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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003D8S008X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: YAW RATE AND ACCELERATION SENSOR (w/ VSC): REMOVAL (2010 Corolla)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system INFO

2. REMOVE FRONT SEAT HEADREST ASSEMBLY

3. REMOVE OUTER SEAT TRACK COVER (for Power Seat) INFO

4. REMOVE OUTER SEAT TRACK COVER (for Manual Seat) INFO

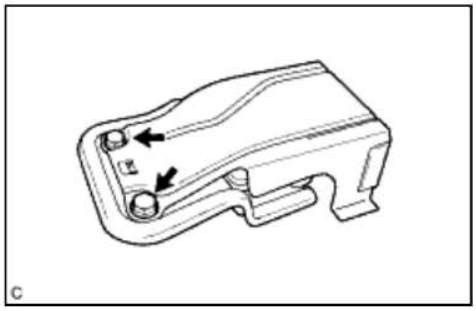
5. REMOVE INNER SEAT TRACK COVER (for Power Seat) INFO

6. REMOVE INNER SEAT TRACK COVER (for Manual Seat) INFO

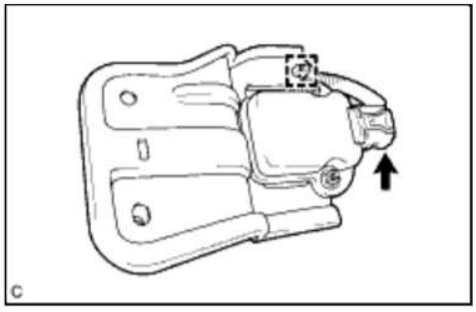
7. REMOVE FRONT SEAT ASSEMBLY (for Power Seat) INFO

8. REMOVE FRONT SEAT ASSEMBLY (for Manual Seat) INFO

9. REMOVE YAW RATE AND ACCELERATION SENSOR



(a) Remove the 2 bolts and yaw rate and acceleration sensor bracket.



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

NOTICE:

Do not remove the installation nuts.

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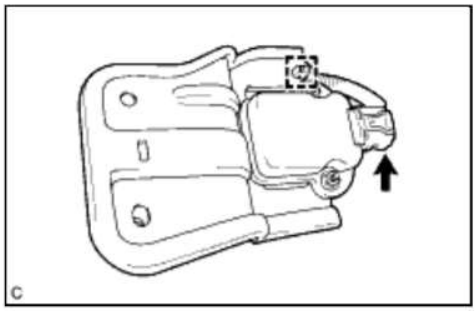


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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003D8Q00AX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: YAW RATE AND ACCELERATION SENSOR (w/ VSC): INSTALLATION (2010 Corolla)		

INSTALLATION

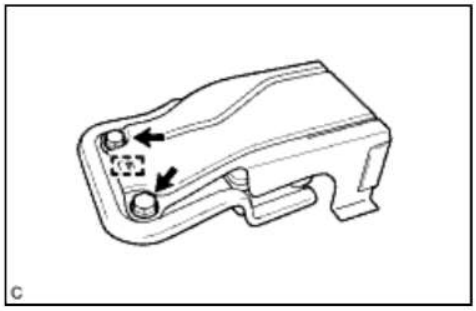
1. INSTALL YAW RATE AND ACCELERATION SENSOR



(a) Connect the connector and clamp to the yaw rate and acceleration sensor.

NOTICE:

Make sure that the yaw rate and acceleration sensor connector is connected securely.



(b) Insert the claw on the yaw rate and acceleration sensor bracket into the yaw rate and acceleration sensor and install the sensor with the 2 bolts.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

NOTICE:

- Keep foreign matter from adhering to the area between the yaw rate and acceleration sensor bracket and body.
- Do not damage the yaw rate and acceleration sensor.
- Make sure that the yaw rate and acceleration sensor is installed securely.

2. INSTALL FRONT SEAT ASSEMBLY LH (for Power Seat) INFO

3. INSTALL FRONT SEAT ASSEMBLY LH (for Manual Seat) INFO

4. INSPECT FRONT SEAT SLIDE ADJUSTER LOCK INFO

5. INSTALL INNER SEAT TRACK COVER (for Power Seat) INFO

6. INSTALL INNER SEAT TRACK COVER (for Manual Seat) INFO

7. INSTALL OUTER SEAT TRACK COVER (for Power Seat) INFO

8. INSTALL OUTER SEAT TRACK COVER (for Manual Seat) INFO

9. REMOVE FRONT SEAT HEADREST ASSEMBLY

10. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

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11. INSPECT FRONT SEAT ASSEMBLY (for Power Seat) INFO

12. INITIALIZE ZERO POINT CALIBRATION (for Manual Seat) INFO

13. INSPECT AND ADJUST YAW RATE AND ACCELERATION SENSOR ZERO POINT CALIBRATION

INFO

14. INSPECT SRS WARNING LIGHT (w/ Front Seat Side Airbag)

INFO



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Last Modified: 3-10-2010	6.4 L	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JB0013X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: PRECAUTION (2010 Corolla)		

PRECAUTION

1. EXPRESSIONS OF IGNITION SWITCH

The type of ignition switch used on this model differs according to the specifications of the vehicle.

The expressions listed in the table below are used in this section.

EXPRESSION	SWITCH TYPE	
	IGNITION SWITCH (POSITION)	ENGINE SWITCH (CONDITION)
Ignition switch off	LOCK	off
Ignition switch ON	ON	on (IG)
Ignition switch ACC	ACC	on (ACC)
Engine start	START	start

2. TROUBLESHOOTING PRECAUTIONS

(a) When there is a malfunction in the terminal contact points or part installation problems, removal and installation of the suspected parts may return the system to normal 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 any connector or removing and installing parts.

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

3. HANDLING PRECAUTIONS

(a) Be sure to remove and install the ECU, brake actuator and each sensor, etc. with the ignition switch off unless it is specified in the inspection procedure.

(b) If the ECU, brake actuator or a sensor has been removed and installed, it is necessary to check the system for problems after any parts have been reinstalled. Check for DTCs using the Techstream, and also check that system functions and signals received by the ECU are normal using Test Mode.

4. DTC PRECAUTION

(a) Warnings for some DTCs will not be cleared by just replacing the malfunctioning parts. If a warning is still displayed after completing a repair, turn the ignition switch off before beginning the clear DTC procedure.

NOTICE:

If a DTC for a malfunctioning part reappears after it was cleared, then it has been stored again.

5. CAN COMMUNICATION SYSTEM PRECAUTIONS

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(a) The CAN communication system is used for data communication between the skid control ECU and other ECUs. If there are any problems in the CAN communication line, corresponding DTCs in the communication line are output.

(b) If any CAN communication line DTCs are output, repair the malfunction in the communication line and troubleshoot the ABS system while 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.



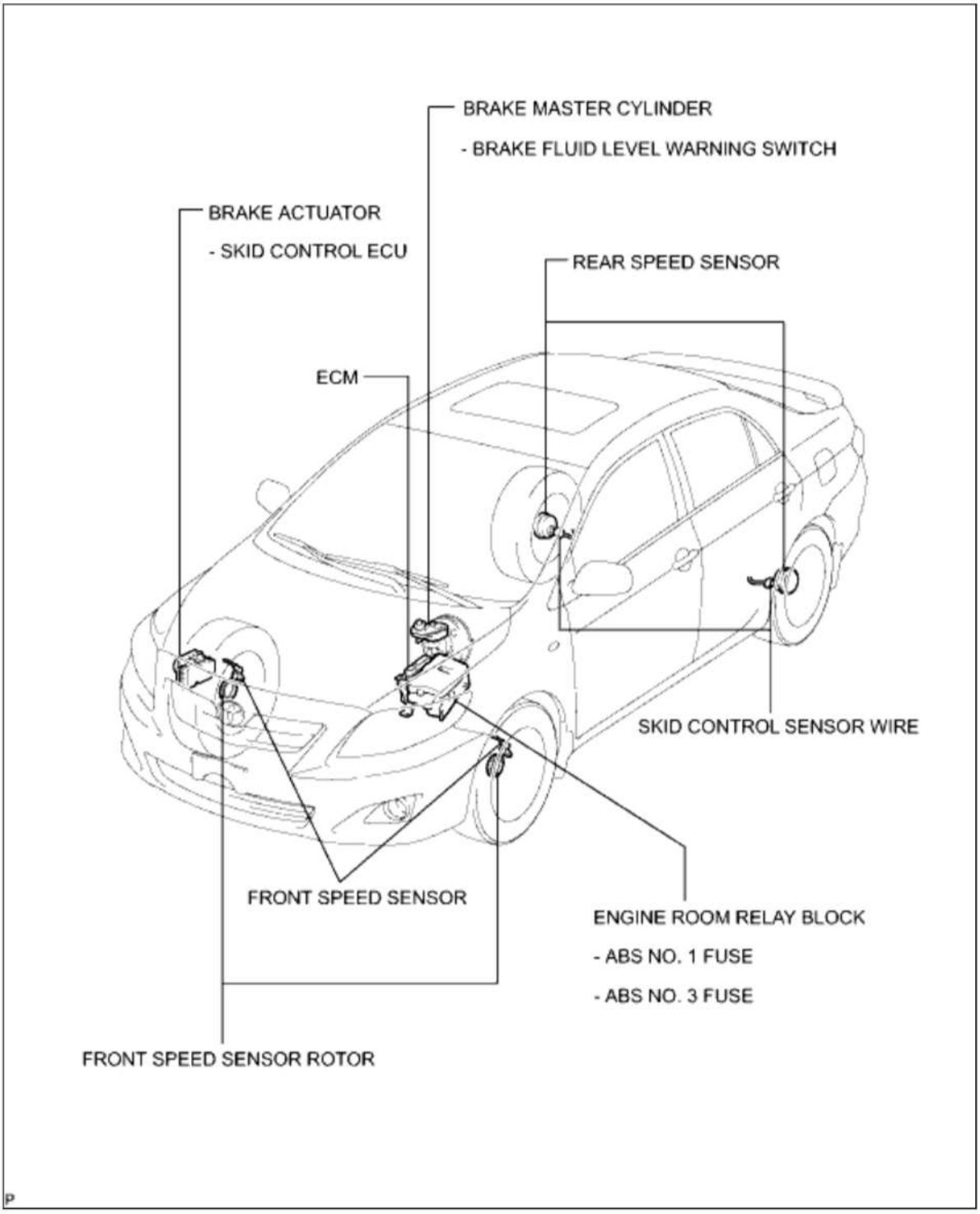
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Last Modified: 3-10-2010	6.4 R	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JB302OX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: PARTS LOCATION (2010 Corolla)		

PARTS LOCATION

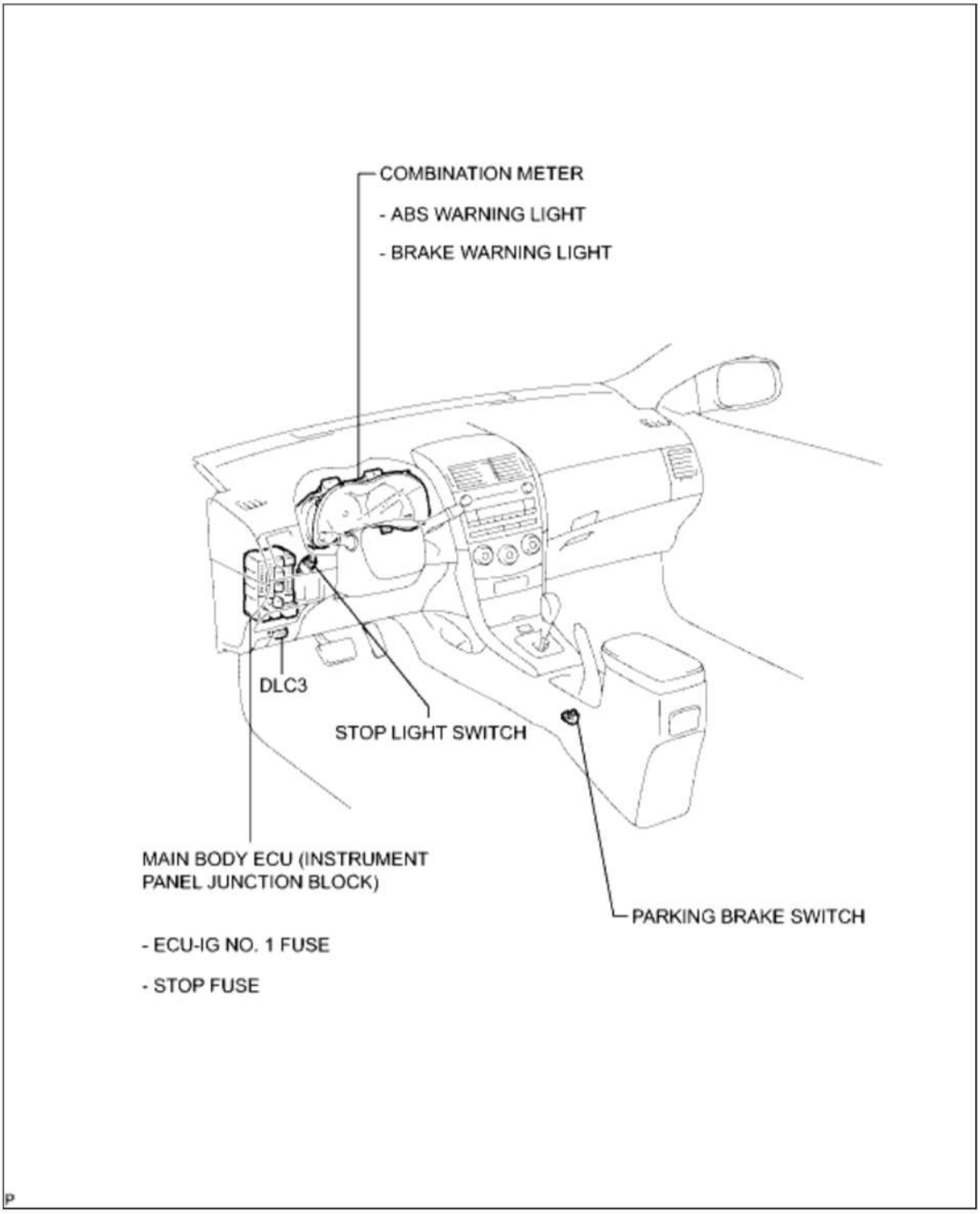
ILLUSTRATION

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ILLUSTRATION

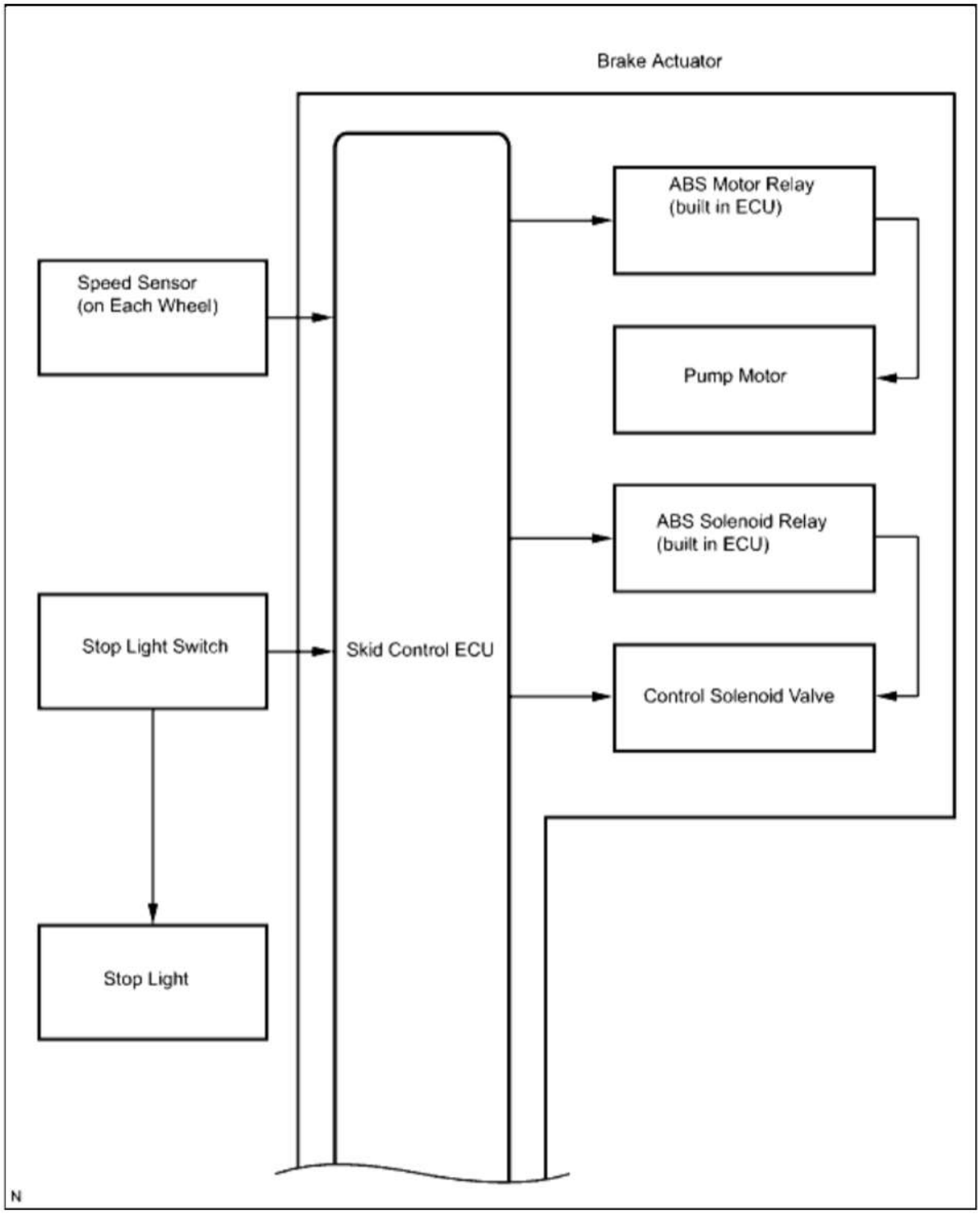
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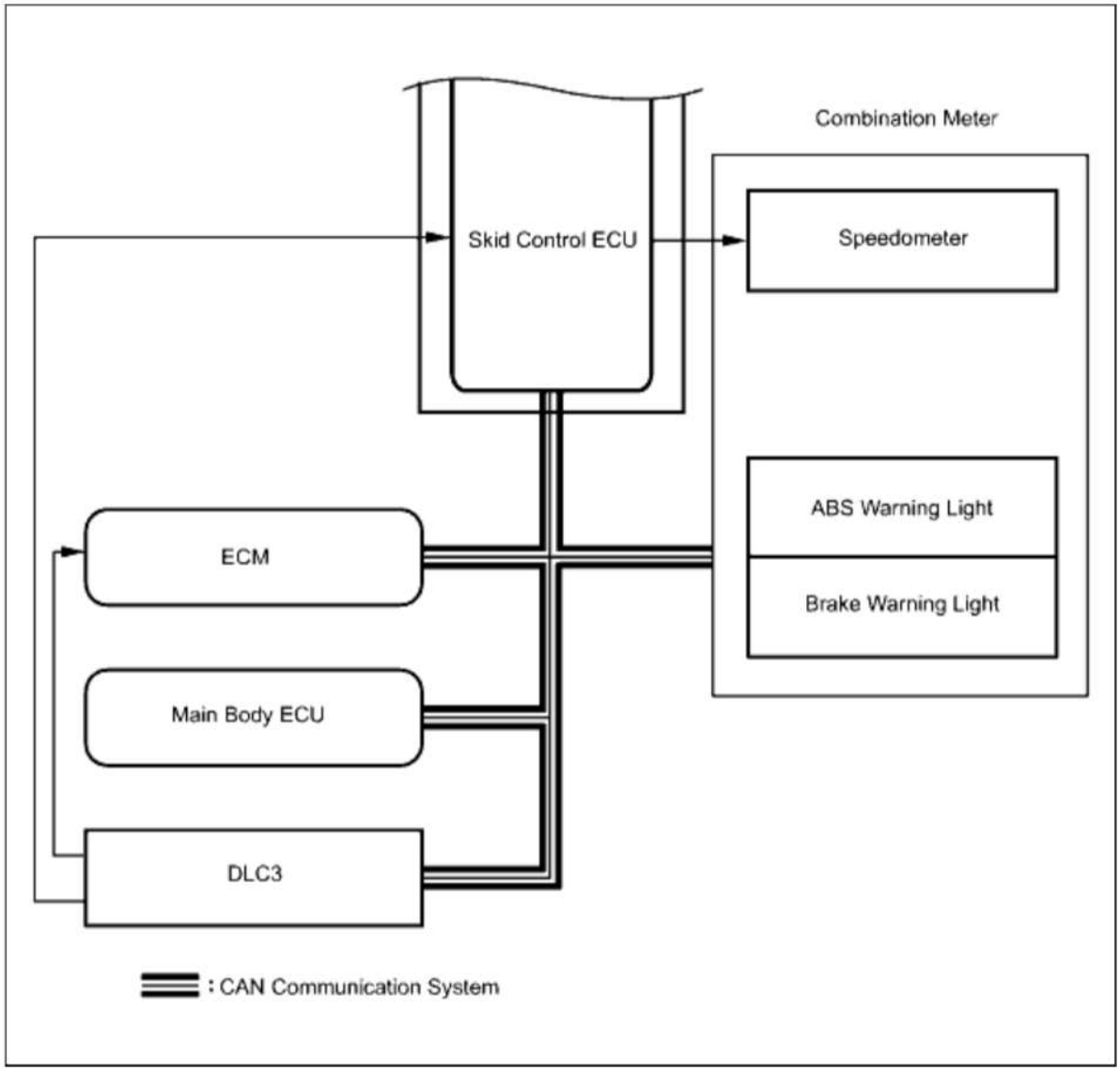
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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JB9017X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: SYSTEM DIAGRAM (2010 Corolla)		

SYSTEM DIAGRAM



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TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU	SIGNAL	COMMUNICATION METHOD
ECM	Skid control ECU	• Shift position signal • Throttle position signal • Engine speed signal • Diagnosis switch (TC) signal	CAN communication system
Main body ECU	Skid control ECU	Parking brake switch signal	CAN communication system
Skid control ECU	Combination meter	• ABS warning light signal	CAN communication system

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TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU	SIGNAL	COMMUNICATION METHOD
		• Brake warning light signal • Wheel speed signal	

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JB601DX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: SYSTEM DESCRIPTION (2010 Corolla)		

SYSTEM DESCRIPTION

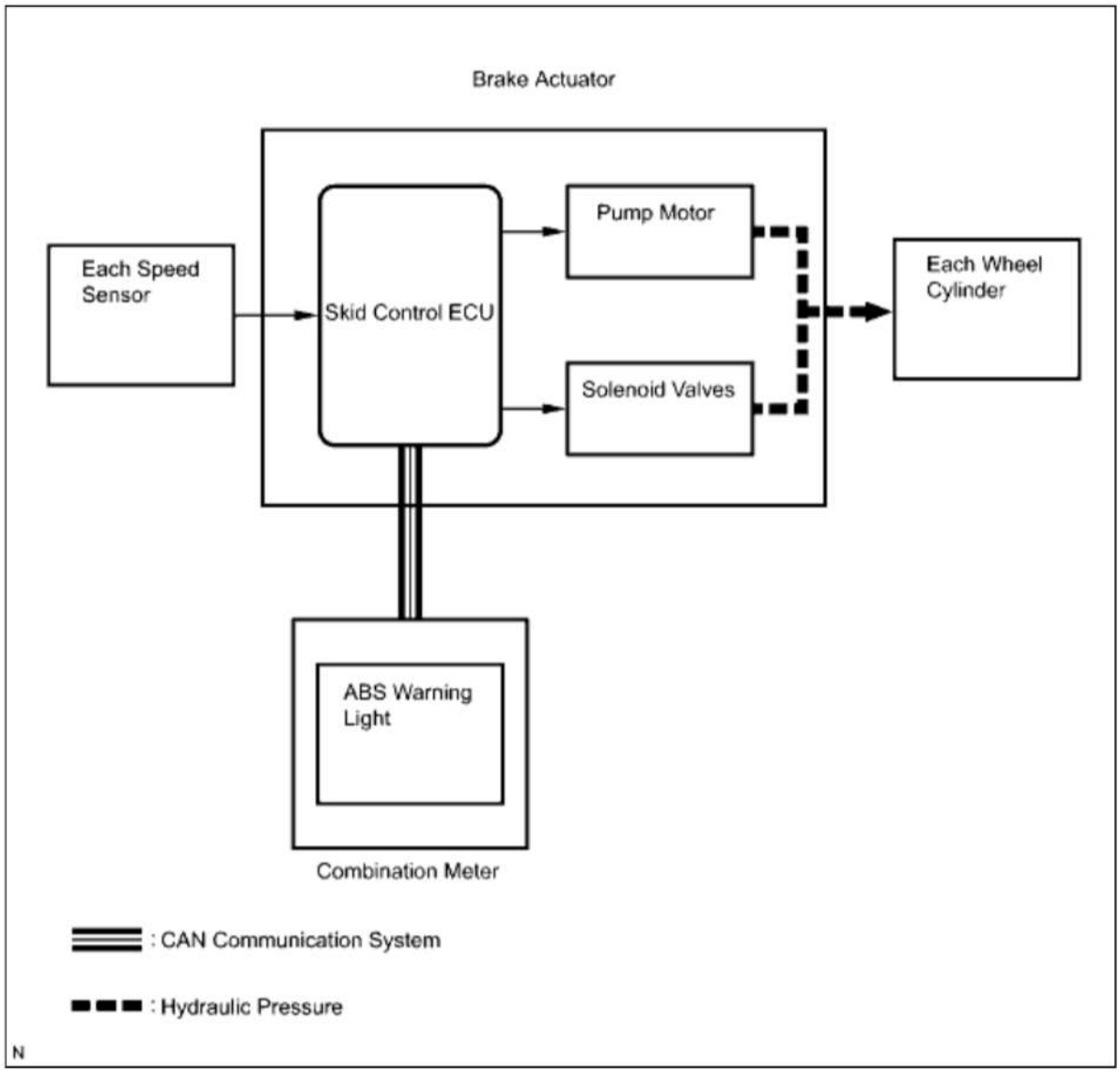
1. FUNCTION DESCRIPTION

HINT:

The skid control ECU is located within the brake actuator assembly.

(a) ABS (Anti-lock Brake System)

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



(1) Operation description

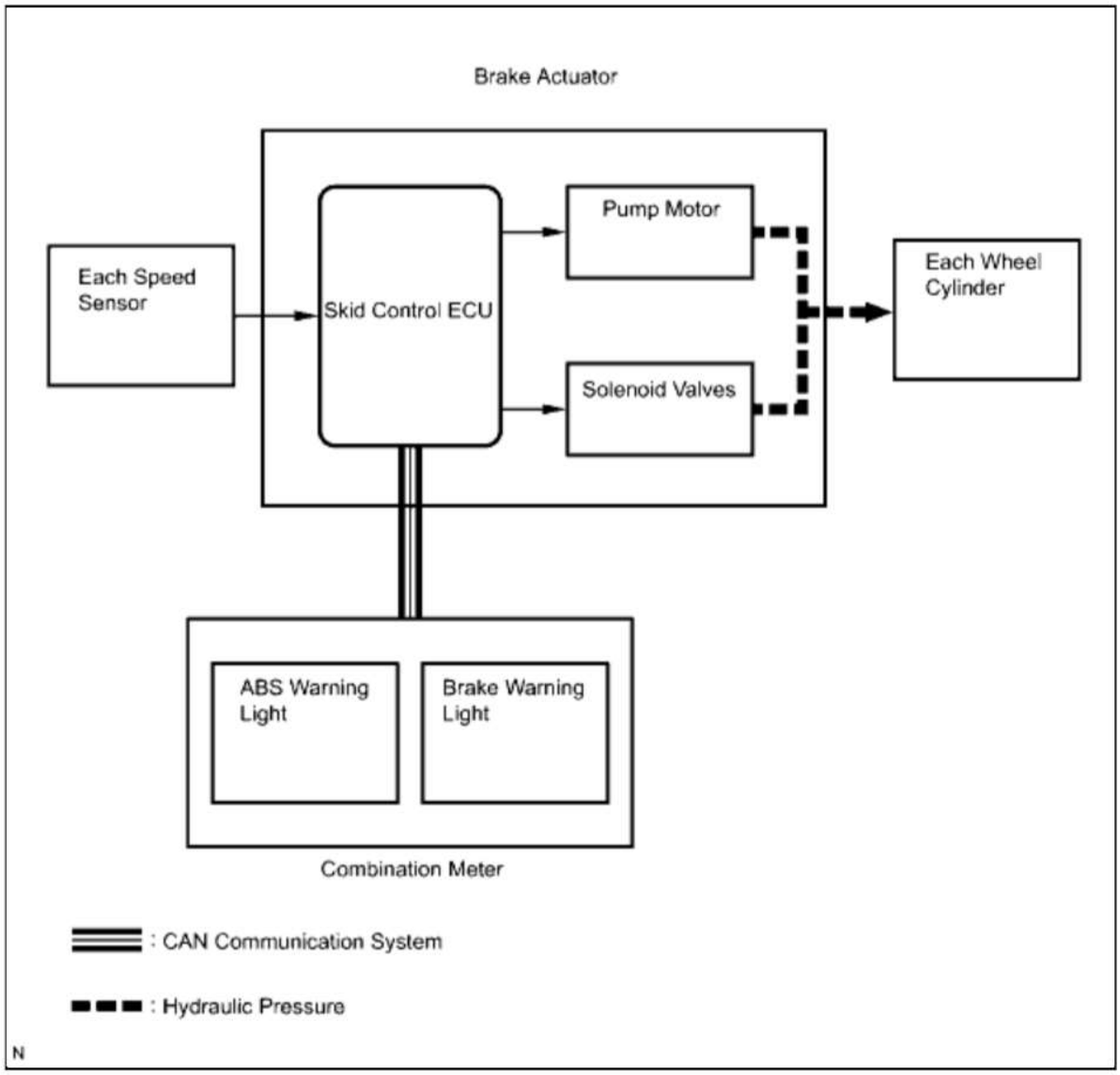
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The skid control ECU detects wheel lock based on speed signals received from the wheel speed sensors. Based on this information, the skid control ECU controls the pump motor and solenoid valves. The pump motor and solenoid valves are used to prevent wheel lock by controlling the hydraulic pressure applied to the brakes at each wheel. The ABS warning light will come on when the system is malfunctioning.

(b) EBD (Electronic Brake force Distribution)

The EBD control utilizes the ABS to properly distribute brake force between the front and rear wheels in accordance with driving conditions.

In addition, when braking while cornering, it also controls the brake force distribution between the right and left wheels, helping to maintain vehicle behavior.



(1) Operation description

The skid control ECU receives a speed signal from each wheel speed sensor, and uses these signals to detect locking of the wheels. The ECU uses this information in order to determine appropriate control of the solenoid valves. The solenoid valves control the hydraulic pressure applied to the brake cylinder at each wheel. In this way, the solenoid valves are used to control the brake power split between the front and rear, and left and right wheels. The ABS

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warning and brake warning lights will come on if there is a malfunction in the EBD system.

(c) BA (Brake Assist)

The primary purpose of the brake assist system is to provide auxiliary brake force to assist a driver who cannot generate a large enough brake force during emergency braking, thus helping to maximize the brake performance of the vehicle.

(1) Operation description

The brake assist mechanism installed on the control valve of the brake booster determines an emergency brake application based on the speed and the amount the brake pedal is depressed. This mechanism generates a stronger braking force as needed.

2. ABS with EBD and BA OPERATION

(a) Based on the signals received from the 4 wheel speed sensors, the skid control ECU calculates the deceleration and speed of each wheel, while monitoring for wheel lock. If wheel lock is occurring, the ECU controls the solenoid valves in the brake actuator in order to adjust the hydraulic pressure applied to the brakes at each wheel.

3. FAIL SAFE

(a) When a malfunction occurs in the ABS system, the ABS warning light comes on, and operation is prohibited. In addition, when a malfunction which disables EBD operation occurs, the brake warning light also comes on, and operation is prohibited.

4. INITIAL CHECK

(a) When the vehicle speed first reaches approximately 6 km/h (4 mph) or more after the ignition switch is turned to ON, each solenoid valve and motor of the brake actuator assembly are sequentially activated to perform an electrical check. During the initial check, the operating sound of the solenoid valves and motor can be heard from the engine compartment, but this is not a malfunction.

5. FUNCTION OF COMPONENTS

COMPONENT	FUNCTION
Speed sensor	Detects speed of each wheel and inputs the data into the skid control ECU.
Stop light switch	Detects the brake operating conditions and inputs the result to the skid control ECU.
Main body ECU	Detects the parking brake operating conditions and inputs the result to the skid control ECU via CAN communication.
Skid control ECU	• Housed in the brake actuator assembly. • Processes the signals sent from each sensor to control the ABS, EBD and BA.
ABS motor relay	• Supplies power to the pump motor. • Housed in the skid control ECU.
ABS solenoid relay	• Supplies power to each solenoid. • Housed in the skid control ECU.

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COMPONENT	FUNCTION
Brake actuator assembly	• Composed of the holding solenoid valves, pressure reduction solenoid valves, pump motor, reservoir, etc., and adjusts the hydraulic pressure applied to each wheel cylinder. • Houses the skid control ECU.
ABS warning light	• Comes on to inform the driver that a malfunction in the ABS and/or EBD system has occurred. • Blinks to output DTCs.
Brake warning light	• Comes on to inform the driver that the parking brake is on when the system is normal or the brake fluid level has decreased. • Comes on to inform the driver that a malfunction in the EBD system has occurred.
ECM	Detects the engine information and inputs the result to the skid control ECU via CAN communication.

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHK051X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2010 Corolla)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- The anti-lock brake system troubleshooting procedures are based on the premise that the CAN communication system is normally functioning. Check the CAN communication system first before troubleshooting the anti-lock brake system INFO .
- *: 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).

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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

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 Diagnosis System INFO.

NEXT
▼

6.	PROBLEM SYMPTOMS TABLE

(a) Proceed to Problem Symptoms Table INFO.

NEXT

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▼

7.	CIRCUIT INSPECTION*

NEXT
▼

8.	IDENTIFICATION OF PROBLEM

NEXT
▼

9.	REPAIR OR REPLACEMENT

NEXT
▼

10.	CONFIRMATION TEST*

NEXT ▶ END

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JBD01WX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: TEST MODE PROCEDURE (2010 Corolla)		

TEST MODE PROCEDURE

1. WARNING LIGHT INITIAL CHECK

(a) Release the parking brake.

NOTICE:

Before releasing the parking brake, move the shift lever to P for safety (for automatic transaxle model) or set the chocks to hold the vehicle for safety (for manual transaxle model).

HINT:

When the parking brake is applied or the level of the brake fluid is low, the brake warning light comes on.

(b) When the ignition switch is turned to ON, check that the ABS warning and brake warning lights come on for approximately 3 seconds.



HINT:

- If the skid control ECU stores any DTCs, the ABS warning and brake warning lights will come on.
- 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 circuit (Remains on)	INFO
Brake warning light circuit (Does not come on)	INFO

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

HINT:

- If the ignition switch is turned from ON to 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 of the sensor check function. By performing Test Mode (signal check), the codes are cleared if a normal condition is confirmed. The remaining codes are the codes where a malfunction was found.

(a) Procedure to enter Test Mode.

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(1) Turn the ignition switch off.

(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is applied (for manual transaxle model).

(4) Connect the Techstream to the DLC3.

(5) Turn the ignition switch to ON.

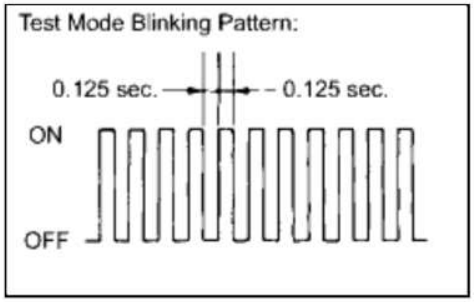
(6) Turn the Techstream on.

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

(8) Check that the ABS warning light comes on for several seconds and then blinks in Test Mode.

HINT:

If the ABS warning light does not blink, inspect the TS and CG terminal circuit and ABS warning light circuit.



TROUBLE AREA	SEE PROCEDURE
TS and CG terminal circuit	INFO
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO

(9) Check the ABS sensors.

HINT:

Check that the ABS warning light is blinking in Test Mode and perform the check.

3. SPEED SENSOR CHECK (When Using the Techstream)

(a) 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 wheel spin occurs.
- The ABS warning light blinks when the sensor check has been completed and the brake pedal is depressed.
- The ABS warning light comes on immediately after a malfunction has been detected during the speed sensor check.

(b) Stop the vehicle.

NOTICE:

- The speed sensor check may not be completed if the speed sensor check is started while turning

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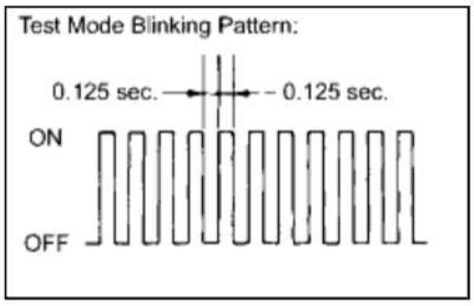
the steering wheel or spinning the wheels.

- After the ABS warning light goes off, if the 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.

HINT:

When the sensor check has been completed, the ABS warning light goes off while driving and blinks in the Test Mode pattern while the vehicle is stationary.

4. END OF SENSOR CHECK (When Using the Techstream)



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

NOTICE:

If the sensor check has not been completed, the ABS warning light will blink while driving and the ABS will not operate.

5. READ DTC OF SENSOR CHECK FUNCTION (When Using the Techstream)

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

NOTICE:

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

HINT:

See the list of DTC (See procedure "A").

(b) Turn the ignition switch off and disconnect the Techstream.

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

HINT:

- If the ignition switch is turned from ON to 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 of the sensor check function. By performing Test Mode (signal check), the codes are cleared if a normal condition is confirmed. The remaining codes are the codes where a malfunction was found.

(a) Procedure to enter Test Mode.

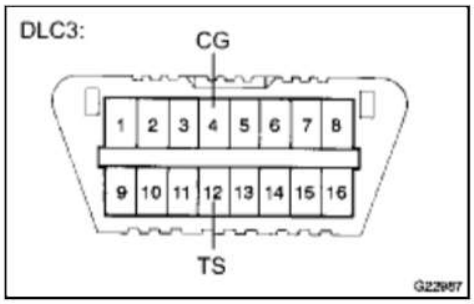
(1) Turn the ignition switch off.

(2) Check that the steering wheel is centered.

(3) Check that the shift lever is in P (for automatic transaxle model) or the parking brake is

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applied (for manual transaxle model).



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

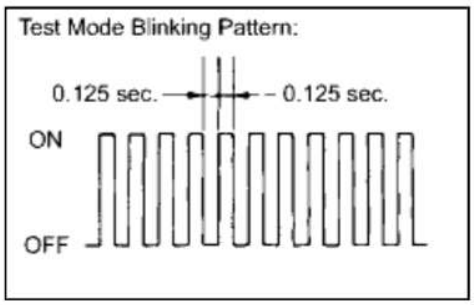
SST: 09843-18040

(5) Turn the ignition switch to ON.

(6) Check that the ABS warning light comes on for several seconds and then blinks in Test Mode.

HINT:

If the ABS warning light does not blink, inspect the TS and CG terminal circuit, and ABS warning light circuit.



TROUBLE AREA	SEE PROCEDURE
TS and CG terminal circuit	INFO
ABS warning light circuit (Remains on)	INFO
ABS warning light circuit (Does not come on)	INFO

(7) Check the ABS sensors.

HINT:

Check that the ABS warning light is blinking in Test Mode and perform the check.

7. SPEED SENSOR CHECK (When not Using the Techstream)

(a) 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 wheel spin occurs.
- The ABS warning light blinks when the sensor check has been completed and the brake pedal is depressed.
- The ABS warning light comes on immediately after a malfunction has been detected during the speed sensor check.

(b) Stop the vehicle.

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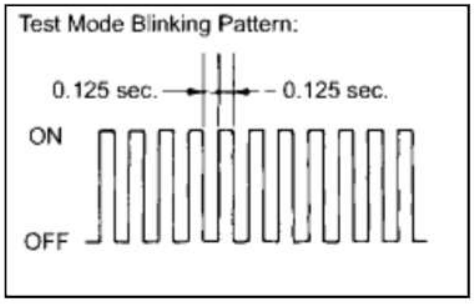
NOTICE:

- 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 the 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.

HINT:

When the sensor check has been completed, the ABS warning light goes off while driving and blinks in the Test Mode pattern while the vehicle is stationary.

8. END OF SENSOR CHECK (When not Using the Techstream)

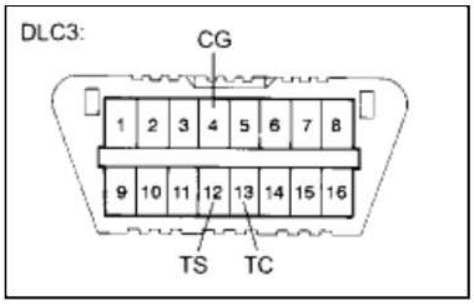


(a) If the sensor check is completed, the ABS warning light blinks (Test Mode) when the vehicle stops and the ABS warning light is off while the vehicle is driving.

NOTICE:

If the sensor check has not been completed, the ABS warning light will blink while driving and the ABS will not operate.

9. READ DTC OF SENSOR CHECK FUNCTION (When not Using the Techstream)

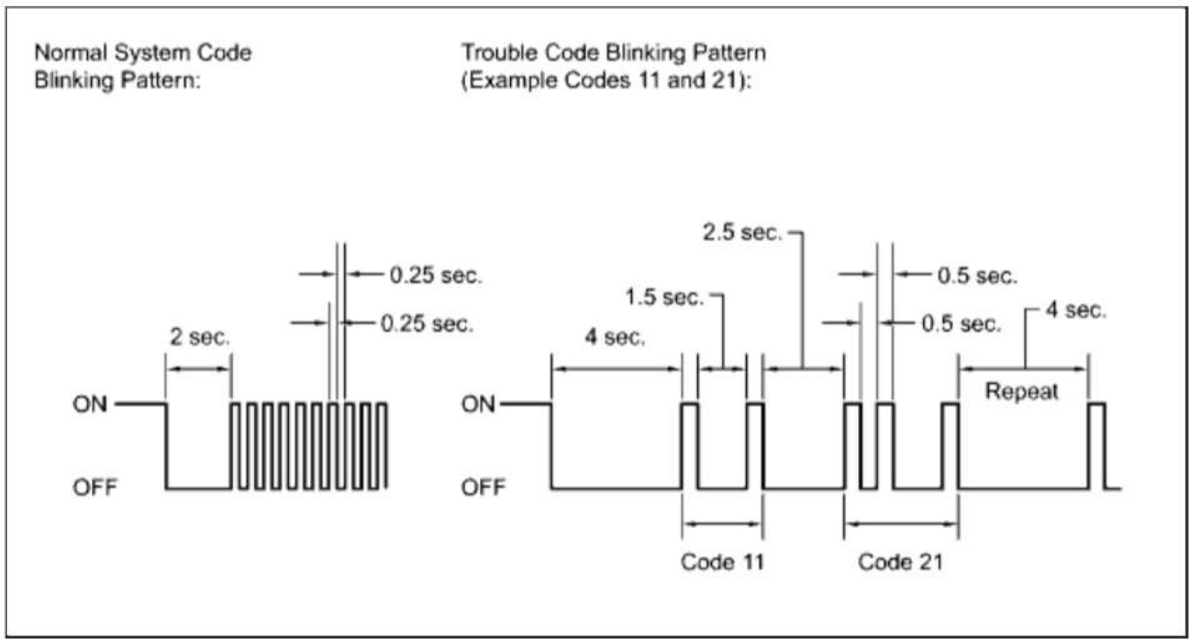


(a) Using SST, connect terminals TC and CG of the DLC3.

SST: 09843-18040

(b) Count the number of blinks of the ABS warning light.

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NOTICE:

- If only DTCs other than the Test Mode sensor check DTCs are displayed, repair the malfunction and clear the DTCs.
- If the Test Mode sensor check DTCs and other DTCs are displayed or if only the Test Mode sensor check DTCs are displayed, repair the malfunction, 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 the list of DTCs (See procedure "A").

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

(d) Turn the ignition switch to ON to cancel Test Mode.

HINT:

- If the ignition switch is not turned to ON after SST is removed from the DLC3, the previous Test Mode will continue.
- If the ignition switch is turned to ON with terminals TS and CG connected, the previous Test Mode will continue.

10. DTC OF SENSOR CHECK FUNCTION (Procedure "A")

ABS Sensor

DTC CODE	DETECTION ITEM	TROUBLE AREA
C1271/71	Low output signal of front speed sensor RH	• Front speed sensor RH • Sensor installation

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DTC CODE	DETECTION ITEM	TROUBLE AREA
		• Speed sensor rotor
C1272/72	Low output signal of front speed sensor LH	• Front speed sensor LH • Sensor installation • Speed sensor rotor
C1273/73	Low output signal of rear speed sensor RH	• Rear speed sensor RH • Sensor installation • Speed sensor rotor
C1274/74	Low output signal of rear speed sensor LH	• Rear speed sensor LH • Sensor installation • Speed sensor rotor
C1275/75	Abnormal change in output signal of front speed sensor RH	Speed sensor rotor
C1276/76	Abnormal change in output signal of front speed sensor LH	Speed sensor rotor
C1277/77	Abnormal change in output signal of rear speed sensor RH	Speed sensor rotor
C1278/78	Abnormal change in output signal of rear speed sensor LH	Speed sensor rotor

HINT:

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

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHS05FX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: CHECK FOR INTERMITTENT PROBLEMS (2010 Corolla)		

CHECK FOR INTERMITTENT PROBLEMS

1. CHECK FOR INTERMITTENT PROBLEMS

HINT:

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

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

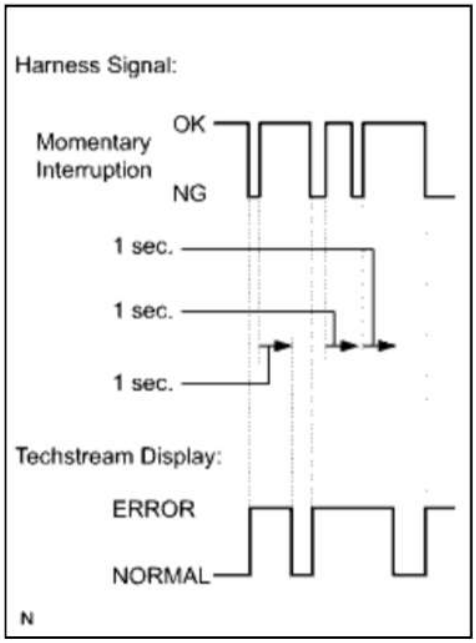
(c) Turn the ignition switch to ON.

(d) Turn the Techstream on.

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

HINT:

- A momentary interruption (open circuit) cannot be detected for 3 seconds after the ignition switch is turned to ON (initial check).
- If the status remains on (ERROR displayed), check for continuity between the ECU and the sensors, or between ECUs.
- The ERROR display on the Techstream remains on for 1 second after the harness signal changed from momentary interruption (open circuit) to normal condition.

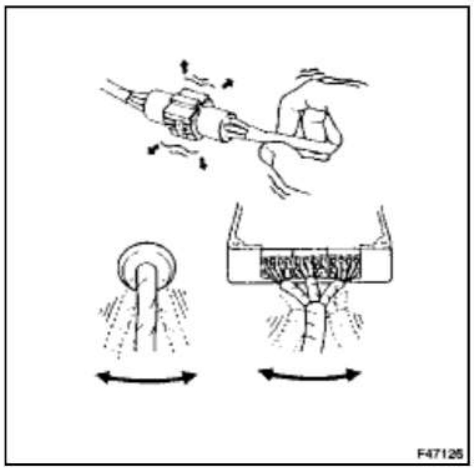


ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL:	-

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		Normal	
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-



(f) While observing the screen, gently jiggle the connector or wire harness between the ECU and sensors, or between ECUs.

OK:

NORMAL display appears.

HINT:

The connector and/or wire harness has a momentary interruption (open circuit) if the display changes. Repair or replace the connector and/or wire harness as one of them is faulty.

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Last Modified: 3-10-2010	6.4 T	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHN04OX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: PROBLEM SYMPTOMS TABLE (2010 Corolla)		

PROBLEM SYMPTOMS TABLE

If there are no DTCs output and 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 actuator assembly, sensors, etc., turn the ignition switch off.

HINT:

- 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.

Anti-lock Brake System

SYMPTOM	SUSPECTED AREA	SEE PAGE
ABS and/or EBD does not operate	Check for DTCs 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 actuator assembly using the Techstream. (Check brake actuator assembly 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 actuator assembly (skid control ECU).	INFO
ABS and/or EBD does not operate efficiently	Check for DTCs again and make sure that the normal system code is output.	INFO
	Front speed sensor circuit	INFO
	Rear speed sensor circuit	INFO
	Stop light switch circuit	INFO
	Check the brake actuator assembly using the Techstream. (Check brake actuator assembly operation using the Active Test function.) If abnormal, check the hydraulic circuit for leaks.	INFO

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SYMPTOM	SUSPECTED AREA	SEE PAGE
	If the symptoms still occur even after the above circuits in suspected areas have been inspected and proved to be normal, replace the brake actuator assembly (skid control ECU).	INFO
ABS sensor DTC check cannot be done	Check for DTCs again and make sure that the normal system code is output.	INFO
	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 actuator assembly (skid control ECU).	INFO
ABS warning light abnormal (Remains on)	ABS warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
ABS warning light abnormal (Does not come on)	ABS warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Brake warning light abnormal (Remains on)	Brake warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Brake warning light abnormal (Does not come on)	Brake warning light circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO
Sensor check cannot be done	TS and CG terminal circuit	INFO
	Brake actuator assembly (Skid control ECU)	INFO

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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JB402HX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: TERMINALS OF ECU (2010 Corolla)		

TERMINALS OF ECU

1. TERMINALS OF ECU

Component without harness connected:
(Skid Control ECU)



TERMINAL NO. (SYMBOL)	TERMINAL DESCRIPTION
1 (GND1)	Skid control ECU ground
4 (RL-)	Rear wheel speed LH (-) signal input
5 (RL+)	Rear wheel speed LH (+) signal input
6 (FR-)	Front wheel speed RH (-) signal input
7 (FR+)	Front wheel speed RH (+) signal input
12 (+BS)	Solenoid relay power supply
13 (GND2)	Pump motor ground
14 (CANL)	CAN communication line L
16 (RR-)	Rear wheel speed RH (-) signal input
17 (RR+)	Rear wheel speed RH (+) signal input
18 (FL-)	Front wheel speed LH (-) signal input
19 (FL+)	Front wheel speed LH (+) signal input
22 (SP1)	Speed signal output for speedometer
24 (+BM)	Motor relay power supply
25 (CANH)	CAN communication line H
28 (STP)	Stop light switch input

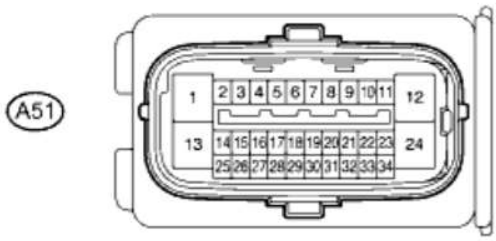
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TERMINAL NO. (SYMBOL)	TERMINAL DESCRIPTION
32 (TS)	Sensor check input
34 (IG1)	ECU power supply

2. TERMINAL INSPECTION

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

Front view of wire harness connector:
(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
A51-1 (GND1) - Body ground	W-B - Body ground	Skid control ECU ground	Always	Below 1 Ω
A51-12 (+BS) - Body ground	W - Body ground	Solenoid relay power supply	Always	11 to 14 V
A51-13 (GND2) - Body ground	W-B - Body ground	Pump motor ground	Always	Below 1 Ω
A51-24 (+BM) - Body ground	L - Body ground	Motor relay power supply	Always	11 to 14 V
A51-28 (STP) - Body ground	L-W - Body ground	Stop light switch input	Stop light switch ON → OFF (Brake pedal depressed → released)	8 to 14 V → Below 1.5 V
A51-34 (IG1) - Body ground	L-B - Body ground	ECU power supply	Ignition switch ON	11 to 14 V

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHP04WX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: DIAGNOSIS SYSTEM (2010 Corolla)		

DIAGNOSIS SYSTEM

1. DESCRIPTION

When troubleshooting a vehicle with a 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 battery voltage.

Standard Voltage:
11 to 14 V

If the voltage is below 11 V, recharge the 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 and brake warning lights will come on in order to warn the driver.

The table below indicates which lights will come on when there is a malfunction in a particular function.



ITEM / TROUBLE AREA	ABS	EBD	BA	SKID CONTROL ECU
ABS warning light	○	○	-	○
Brake warning light	-	○	-	○

○: Light ON

-: Light OFF

- 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 light or by connecting the Techstream.
- This system has a Test Mode (signal check) function INFO .

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The DTCs can be read by connecting the Techstream and observing the blinking pattern of the ABS warning light.

3. WARNING LIGHT INITIAL CHECK

(a) Release the parking brake.

NOTICE:

When releasing the parking brake, move the shift lever to P for safety (for automatic transaxle model) or set the chocks to hold the vehicle for safety (for manual transaxle model).

HINT:

When the parking brake is applied or the brake fluid level is low, the brake warning light comes on.

(b) When the ignition switch is turned to ON, check that the ABS warning and brake warning lights come on for approximately 3 seconds.



HINT:

If the warning light check result is not normal, proceed to troubleshooting for the ABS warning and brake warning 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 circuit (Remains on)	INFO
Brake warning light circuit (Does not come on)	INFO

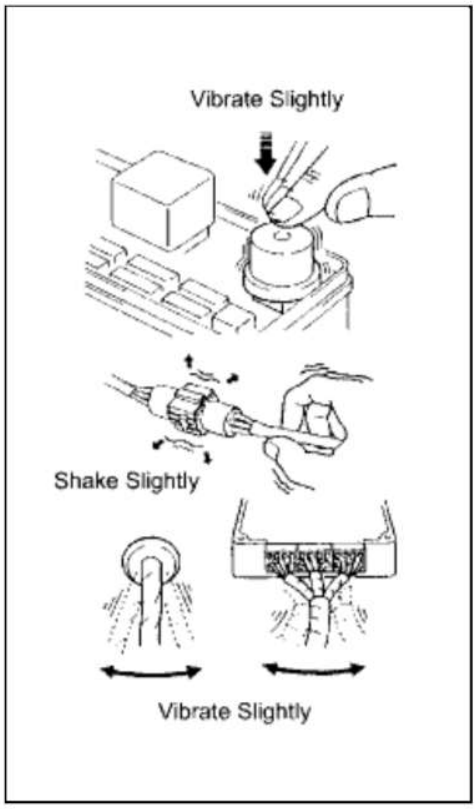
4. SYMPTOM SIMULATION

HINT:

The most difficult case in troubleshooting is when no symptoms occur. In such cases, a thorough customer problem analysis must be carried out. Then the same or similar conditions and environment in which the problem occurred in the customer's vehicle should be reproduced. No matter how experienced or skilled a technician may be, if he/she proceeds to troubleshooting without confirming the problem symptoms, he/she will likely overlook something important and make a wrong guess at some points in the repair operation. This leads to a standstill in troubleshooting.

(a) Vibration method: When vibration seems to be the major cause.

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HINT:

Perform the simulation method only during the primary check period (for approximately 6 seconds after the ignition switch is turned to ON).

(1) Slightly vibrate the part of the sensor considered to be the problem cause with your fingers and check whether the malfunction occurs.

(2) Slightly shake the connector vertically and horizontally.

HINT:

Shaking the relays too strongly may result in open relays.

(3) Slightly shake the wire harness vertically and horizontally. The connector joint and fulcrum of the vibration are the major areas to be checked thoroughly.

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHV04VX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: DTC CHECK / CLEAR (2010 Corolla)		

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 ignition switch to ON.

(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 ignition switch to ON.

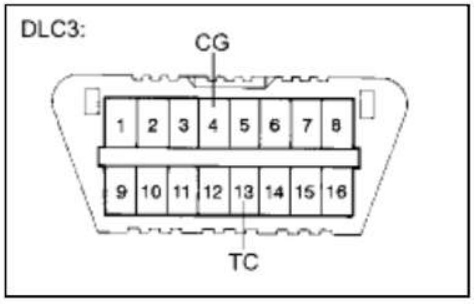
(3) Turn the Techstream on.

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

(5) According to the Techstream display, 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

(2) Turn the ignition switch to ON.

(3) Observe the blinking pattern of the ABS warning light in order to identify the DTC.

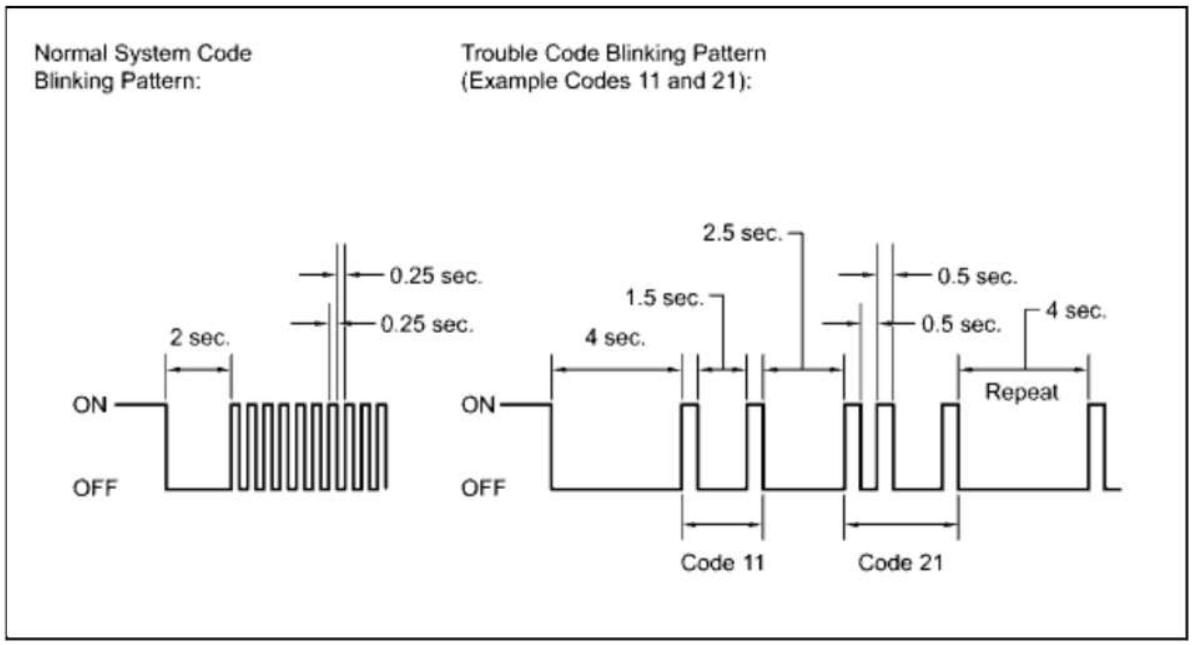
HINT:

If no code appears, inspect the TC and CG terminal circuit, and ABS warning light circuit.

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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

(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 light.

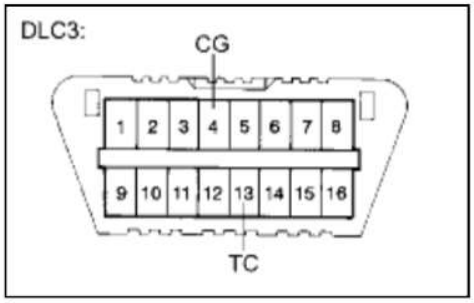


(5) The codes are explained in the code table INFO.

(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.

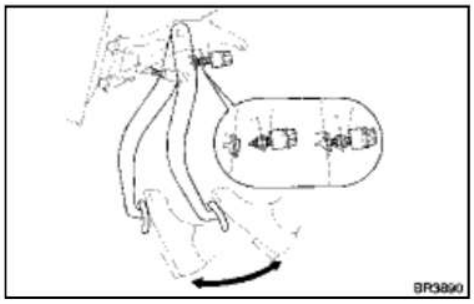


(1) Using SST, connect terminals TC and CG of the DLC3.

SST: 09843-18040

(2) Turn the ignition switch to ON.

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(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 negative cable from the battery terminal or the ECU-IG NO. 1 fuse.

3. END OF DTC CHECK/CLEAR

(a) Turn the ignition switch to ON.

(b) Check that the ABS warning light goes off within approximately 3 seconds.

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI906MX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C0200/31,C0205/32,C1271/71,C1272/72: Front Speed Sensor RH Circuit (2010 Corolla)		

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)**

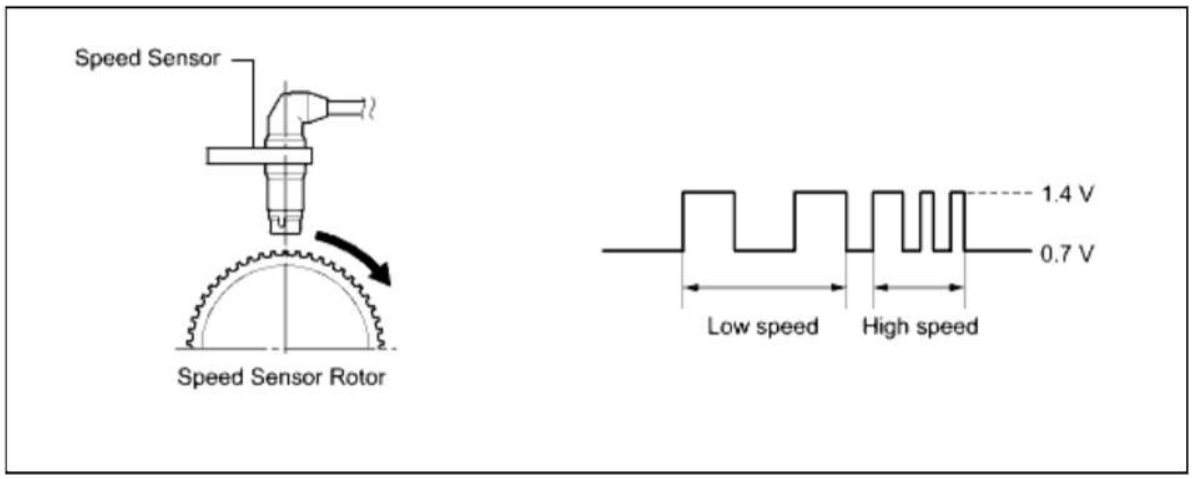
DTC	**C1272/72**	**Low Output Signal of Front Speed Sensor LH (Test Mode DTC)**

DESCRIPTION

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

Speed sensor rotors have 48 serrations. The hall IC type speed sensor use the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.

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



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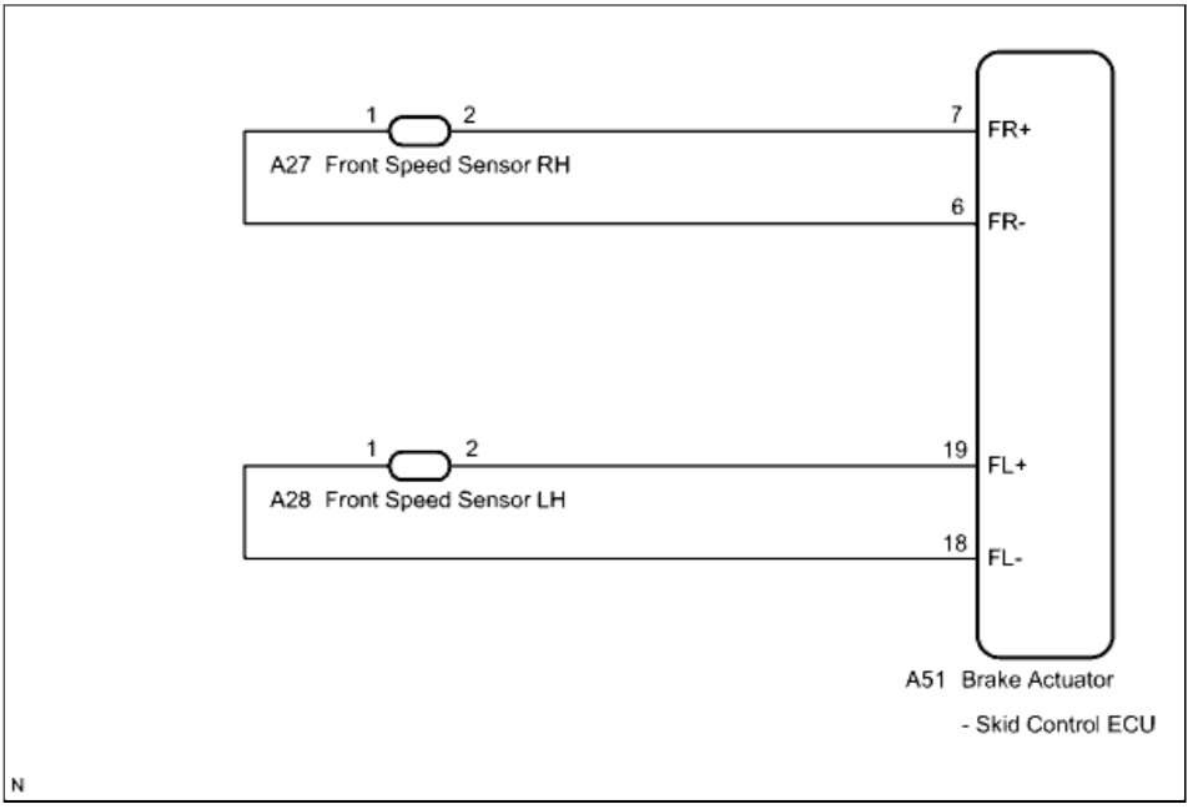
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0200/31 C0205/32	Any of the following is detected: 1. At a vehicle speed of 10 km/h (6 mph) or more, an open or short in the sensor signal circuit continues for 1 second or more. 2. Momentary interruptions of the sensor signal from the abnormal wheel occurs 255 times or more. 3. An open in the speed sensor signal circuit continues for 0.5 seconds or more. 4. With the IG1 terminal voltage 9.5 V or more, the sensor power supply voltage decreases for 0.5 seconds or more.	• Front speed sensor RH/LH • Speed sensor circuit • Speed sensor rotor • Sensor installation • Brake actuator assembly (Skid control ECU)
C1271/71 C1272/72	Detected only during Test Mode.	• Front speed sensor RH/LH • Sensor installation • 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

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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
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-

Result:

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RESULT	PROCEED TO
There are momentary interruptions	A
There are no momentary interruptions	B
There is a constant open circuit	C

HINT:

Perform the above inspection before removing the sensor and connector.

C ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

B ▶ **READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)**

A

▼

2.	**REPAIR OR REPLACE HARNESS OR CONNECTOR (SKID CONTROL ECU - FRONT SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Repair or replace the harness or connector.

(c) Check for any momentary interruptions between the skid control ECU and front speed sensor INFO .

(d) Check that there are no momentary interruptions.

NEXT

▼

3.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

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(c) Start the engine.

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

(e) 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 the Problem Symptoms Table, refer back to the table and proceed to the next step INFO .

B ▶ **END**

A ▼

4.	READ VALUE USING TECHSTREAM (FRONT SPEED SENSOR)

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Wheel Speed	FR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel Speed	FL wheel speed sensor reading /min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor

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displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

OK
▼

5.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition switch off.

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

OK:
All Test Mode DTCs are cleared.

NG ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

OK
▼

6.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

(c) Start the engine.

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

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

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Result:

RESULT	PROCEED TO
DTCs (C0200/31 and C0205/32) are not output	A
DTCs (C0200/31 and/or C0205/32) are output	B

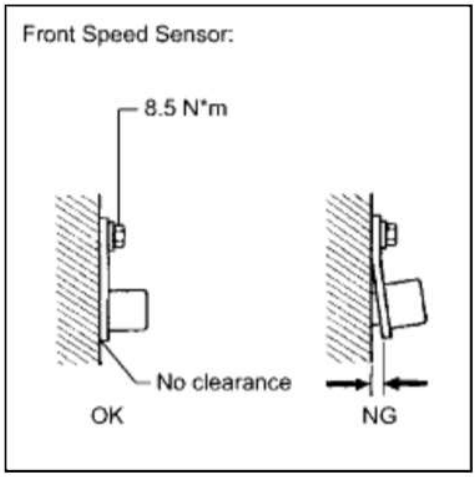
HINT:

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

B ▶ **REPLACE FRONT SPEED SENSOR**

A ▶ **CHECK FRONT SPEED SENSOR INSTALLATION**

7.	CHECK FRONT SPEED SENSOR INSTALLATION



(a) Turn the ignition switch off.

(b) Check the speed sensor installation.

OK:

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

The installation nut is tightened properly.

Torque

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

NG ▶ **INSTALL FRONT SPEED SENSOR CORRECTLY**

OK

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8.	CHECK FRONT SPEED SENSOR TIP

(a) Remove the front speed sensor INFO .

(b) Check the speed sensor tip.

OK:

No scratches or foreign matter on the sensor tip.

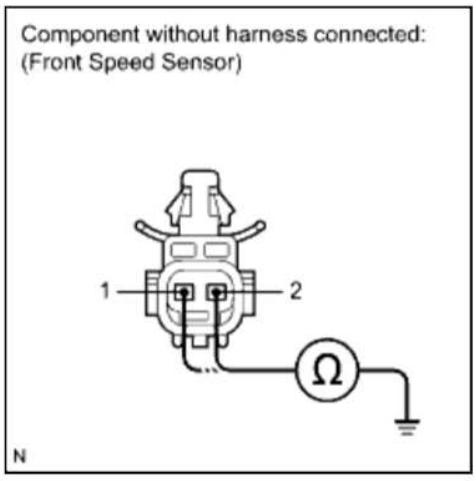
NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

NG ▶ **CLEAN OR REPLACE FRONT SPEED SENSOR**

OK

9.	INSPECT FRONT SPEED SENSOR



(a) Install the front speed sensor.

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

(c) Disconnect the front speed sensor connector.

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

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Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (FR+) - Body ground	Always	10 kΩ or higher
1 (FR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (FL+) - Body ground	Always	10 kΩ or higher
1 (FL-) - Body ground	Always	10 kΩ or higher

NOTICE:

Check the speed sensor signal after replacement INFO .

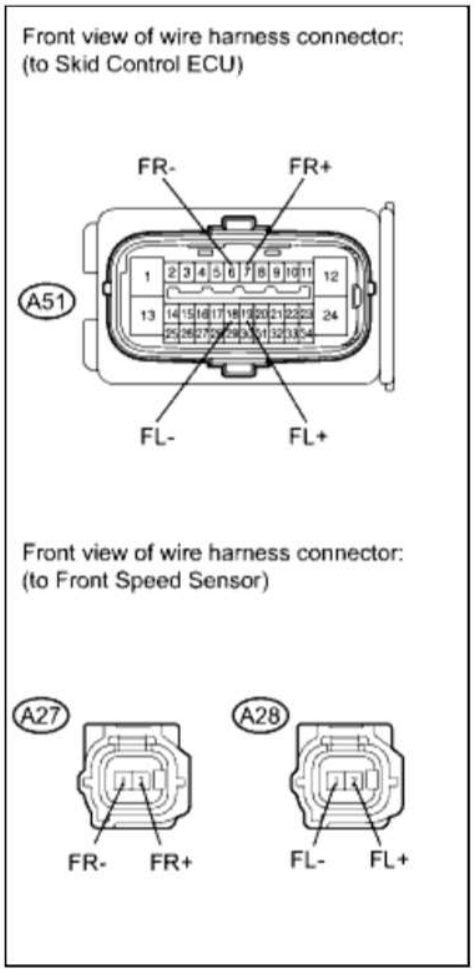
NG ▶ **REPLACE FRONT SPEED SENSOR**

OK ▼

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

(a) Disconnect the skid control ECU connector.

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

Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-7 (FR+) - A27-2 (FR+)	Always	Below 1 Ω
A51-7 (FR+) - Body ground	Always	10 kΩ or higher
A51-6 (FR-) - A27-1 (FR-)	Always	Below 1 Ω
A51-6 (FR-) - Body ground	Always	10 kΩ or higher

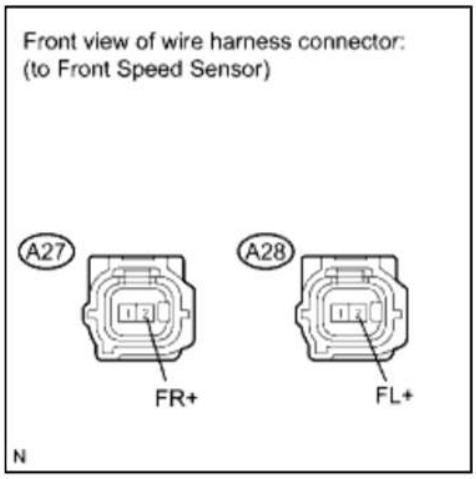
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-19 (FL+) - A28-2 (FL+)	Always	Below 1 Ω
A51-19 (FL+) - Body ground	Always	10 kΩ or higher
A51-18 (FL-) - A28-1 (FL-)	Always	Below 1 Ω
A51-18 (FL-) - Body ground	Always	10 kΩ or higher

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NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

11.	**INSPECT SKID CONTROL ECU (SENSOR INPUT)**



(a) Reconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

(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
A27-2 (FR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A28-2 (FL+) - Body ground	Ignition switch ON	8 to 14 V

NG ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

OK ▼

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12.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Reconnect the front speed sensor connector.

(c) Clear the DTCs INFO .

(d) Start the engine.

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

(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:

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

B ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

A

▼

13.	REPLACE FRONT SPEED SENSOR

(a) Turn the ignition switch off.

(b) Replace the front speed sensor INFO .

NOTICE:

Check the speed sensor signal after replacement INFO .

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NEXT

14.	RECONFIRM DTC

(a) Clear the DTCs INFO .

(b) Start the engine.

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

(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 the Problem Symptoms Table, refer back to the table and proceed to the next step INFO .

B END

A

15.	REPLACE FRONT SPEED SENSOR ROTOR

(a) Turn the ignition switch off.

(b) Remove the front drive shaft assembly INFO .

(c) Replace the front axle outboard joint shaft assembly (front speed sensor rotor) INFO .

HINT:

If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.

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NOTICE:

Check the speed sensor signal after replacement INFO .

NEXT

16.	RECONFIRM DTC

(a) Install the front drive shaft assembly.

(b) Clear the DTCs INFO .

(c) Start the engine.

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

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

Result:

RESULT	PROCEED TO
DTCs (C0200/31 and C0205/32) are not output	A
DTCs (C0200/31 and/or C0205/32) are output	B

HINT:

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

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **END**

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Last Modified: 3-10-2010	6.4 D	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHY04OX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: FREEZE FRAME DATA (2010 Corolla)		

FREEZE FRAME DATA

1. FREEZE FRAME DATA

(a) Whenever an ABS 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 ignition switch has been turned from off to ON since the last time the ABS was activated.

HINT:

- If the vehicle is stopped, 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 ignition switch has been turned from off to ON.
- 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

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Turn the Techstream on.

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

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM	REFERENCE VALUE
Elapsed Time after Freeze Trigger	Elapsed time after freeze frame trigger	Min.: 0 ms, Max.: 500 ms
Number of IG ON	Number of operations of ignition switch being turned to ON after storing Freeze Frame Data	0 to 31
Stop Light SW	Stop light switch signal	Stop light switch ON: ON, OFF: OFF

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TESTER DISPLAY	MEASUREMENT ITEM	REFERENCE VALUE
Parking Brake SW	Parking brake switch signal	Parking brake switch ON: ON, OFF: OFF
Operated System	Operated system status	ABS: ABS activated FAIL: Fail safe mode activated SYS: System prohibit activated NON: No operation activated
FR Wheel Speed	FR wheel speed reading	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
FL Wheel Speed	FL wheel speed reading	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
RR Wheel Speed	RR wheel speed reading	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
RL Wheel Speed	RL wheel speed reading	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
Vehicle Speed	Vehicle speed reading	Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)
Vehicle Speed Grade	Vehicle speed grade	Min.: -25.11 m/s^2, Max.: 24.91 m/s^2

3. CLEAR FREEZE FRAME DATA

NOTICE:

Clearing the DTC will also clear the Freeze Frame Data.

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Clear the DTC and Freeze Frame Data INFO .

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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHW04GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: DATA LIST / ACTIVE TEST (2010 Corolla)		

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 ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON.

(e) Turn the Techstream on.

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

(g) According to the Techstream display, 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 / ON or OFF	ON: Warning light ON OFF: Warning light 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	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
FR Wheel Speed	FR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
FL Wheel Speed	FL wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RR Wheel Speed	RR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RL Wheel Speed	RL wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
Vehicle Speed	Maximum wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual vehicle speed	Speed indicated on speedometer
FR Wheel Acceleration	FR wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
FL Wheel Acceleration	FL wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
RR Wheel Acceleration	RR wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
RL Wheel Acceleration	RL wheel acceleration / min.: -200.84 m/s^2, max.: 199.27 m/s^2	0 m/s^2	-
FR Wheel ABS Ctrl Status	FR ABS control status / ON or OFF	ON: During ABS control OFF: Not ABS control	-
FL Wheel ABS Ctrl Status	FL ABS control status / ON or OFF	ON: During ABS control OFF: Not ABS control	-
RR Wheel ABS Ctrl Status	RR ABS control status / ON or OFF	ON: During ABS control OFF: Not ABS control	-
RL Wheel ABS Ctrl Status	RL ABS control status / ON or OFF	ON: During ABS control OFF: Not ABS control	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Wheel EBD Ctrl Status	RR EBD control status / ON or OFF	ON: During EBD control OFF: Not EBD control	-
RL Wheel EBD Ctrl Status	RL EBD control status / ON or OFF	ON: During EBD control OFF: Not EBD control	-
Solenoid Relay	ABS solenoid relay / ON or OFF	ON: Solenoid relay ON OFF: Solenoid relay OFF	-
ABS Motor Relay	ABS motor relay / ON or OFF	ON: Motor relay ON OFF: Motor relay OFF	-
ABS Solenoid (SFRH)	ABS solenoid (SFRH) / ON or OFF	ON: Operates	-
ABS Solenoid (SFRR)	ABS solenoid (SFRR) / ON or OFF	ON: Operates	-
ABS Solenoid (SFLH)	ABS solenoid (SFLH) / ON or OFF	ON: Operates	-
ABS Solenoid (SFLR)	ABS solenoid (SFLR) / ON or OFF	ON: Operates	-
ABS Solenoid (SRRH)	ABS solenoid (SRRH) / ON or OFF	ON: Operates	-
ABS Solenoid (SRRR)	ABS solenoid (SRRR) / ON or OFF	ON: Operates	-
ABS Solenoid (SRLH)	ABS solenoid (SRLH) / ON or OFF	ON: Operates	-
ABS Solenoid (SRLR)	ABS solenoid (SRLR) / ON or OFF	ON: Operates	-
FR Speed Open	FR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
FL Speed Open	FL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-

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TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
Number of DTC	Number of DTC recorded / min.: 0, max.: 255	Min.: 0 Max.: 255	-

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. 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 ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON.

(e) Turn the Techstream on.

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

(g) According to the Techstream display, 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	Warning light ON/OFF	Observe combination meter
Solenoid Relay	ABS solenoid relay	Relay ON/OFF	-
Motor Relay	ABS motor relay	Relay ON/OFF	Operating sound of motor can be heard
ABS Solenoid (SRLR)	ABS solenoid (SRLR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard

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TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
ABS Solenoid (SRLH)	ABS solenoid (SRLH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRRR)	ABS solenoid (SRRR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SRRH)	ABS solenoid (SRRH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFLR)	ABS solenoid (SFLR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFLH)	ABS solenoid (SFLH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFRR)	ABS solenoid (SFRR)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard
ABS Solenoid (SFRH)	ABS solenoid (SFRH)	Solenoid ON/OFF	Operating sound of solenoid (clicking sound) can be heard

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Last Modified: 3-10-2010	6.4 U	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JBB01IX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: FAIL-SAFE CHART (2010 Corolla)		

FAIL-SAFE CHART

1. FAIL SAFE OPERATION

- If there is a problem with sensor signals or the brake actuator system, the skid control ECU will prohibit power supply to the brake actuator and terminate ABS control.

  ABS control will be prohibited, but EBD control will continue to the extent that EBD control is possible. If EBD control is impossible, the brake warning light will come on to warn the driver INFO .

- If an ABS system component malfunctions before ABS control begins, ABS control will be prohibited. If an ABS system component malfunctions during ABS control, the system will gradually stop performing the control so as not to trigger a sudden change in vehicle operation.

  If it is impossible to control the systems, the warning light will come on to inform the driver of system control termination INFO .

MALFUNCTIONING AREA	CONTROL METHOD
ABS system	ABS control prohibited
EBD system	ABS and EBD control prohibited

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIA05OX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C0210/33,C0215/34,C1273/73,C1274/74: Rear Speed Sensor RH Circuit (2010 Corolla)		

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)**

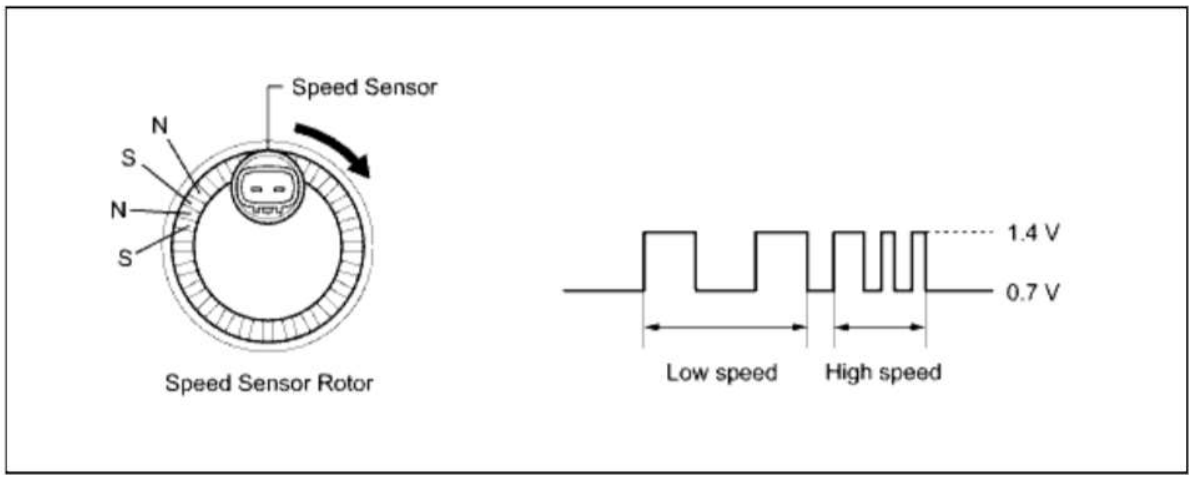
DTC	**C1274/74**	**Low Output Signal of Rear Speed Sensor LH (Test Mode DTC)**

DESCRIPTION

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

Speed sensor rotors have rows of alternating N and S magnetic poles. The hall IC type speed sensor use the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary..

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



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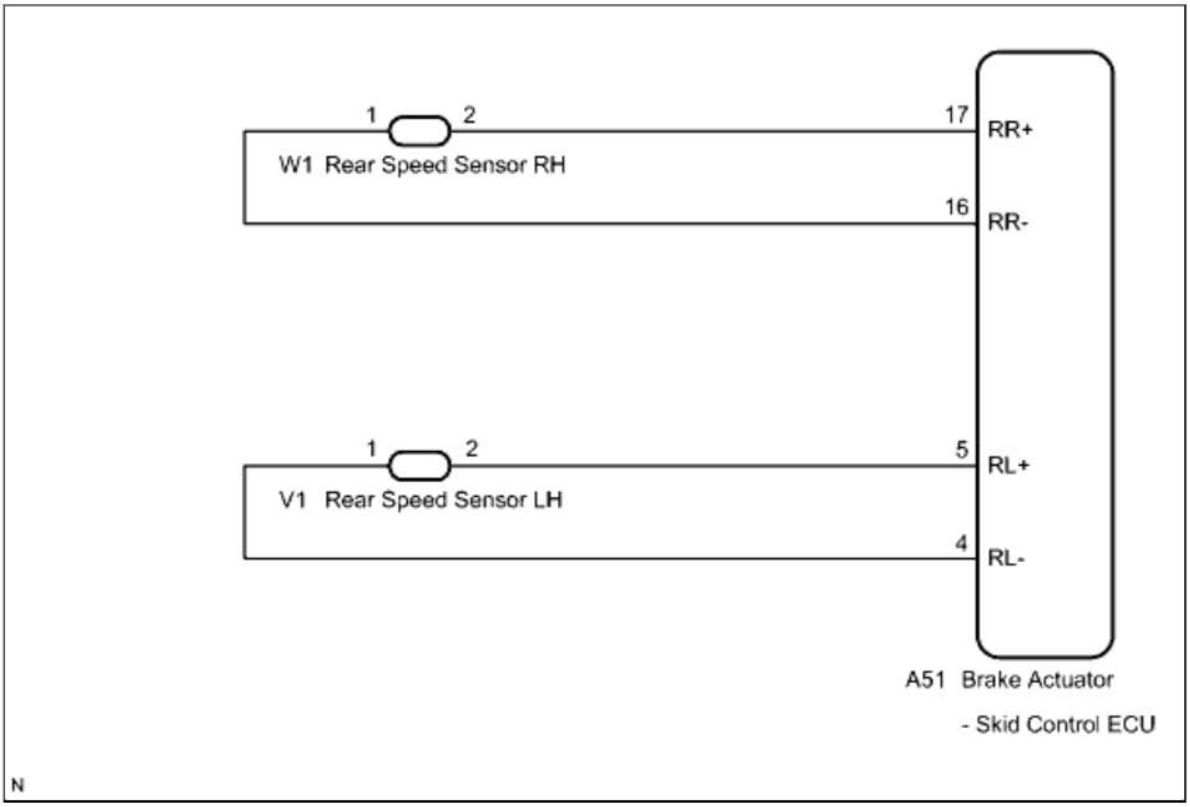
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0210/33 C0215/34	Any of the following is detected: 1. At a vehicle speed of 10 km/h (6 mph) or more, an open or short in the sensor signal circuit continues for 1 second or more. 2. Momentary interruptions of the sensor signal from the abnormal wheel occurs 255 times or more. 3. An open in the speed sensor signal circuit continues for 0.5 seconds or more. 4. With the IG1 terminal voltage 9.5 V or more, the sensor power supply voltage decreases for 0.5 seconds or more.	• Rear speed sensor RH/LH • Speed sensor circuit • Speed sensor rotor • Sensor installation • Brake actuator assembly (Skid control ECU)
C1273/73 C1274/74	Detected only during Test Mode.	• Rear speed sensor RH/LH • Sensor installation • 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

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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
RR Speed Open	RR speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-
RL Speed Open	RL speed sensor open detection / ERROR or NORMAL	ERROR: Momentary interruption NORMAL: Normal	-

Result:

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RESULT	PROCEED TO
There are momentary interruptions	A
There are no momentary interruptions	B
There is a constant open circuit	C

HINT:

Perform the above inspection before removing the sensor and connector.

C ▶ **CHECK REAR SPEED SENSOR INSTALLATION**

B ▶ **READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)**

A

▼

2.	**REPAIR OR REPLACE HARNESS OR CONNECTOR (SKID CONTROL ECU - REAR SPEED SENSOR)**

(a) Turn the ignition switch off.

(b) Repair or replace the harness or connector.

(c) Check for any momentary interruptions between the skid control ECU and rear speed sensor INFO .

(d) Check that there are no momentary interruptions.

NEXT

▼

3.	**RECONFIRM DTC**

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

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(c) Start the engine.

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

(e) 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 the Problem Symptoms Table, refer back to the table and proceed to the next step INFO .

B ▶ **END**

A ▼

4.	READ VALUE USING TECHSTREAM (REAR SPEED SENSOR)

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

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

ABS/VSC/TRAC

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Wheel Speed	RR wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer
RL Wheel Speed	RL wheel speed sensor reading / min.: 0 km/h (0 mph), max.: 326.4 km/h (202 mph)	Actual wheel speed	Similar speed as indicated on speedometer

(e) Check that there is no difference between the speed value output from the speed sensor

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displayed on the Techstream and the speed value displayed on the speedometer when driving the vehicle.

HINT:

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 same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ▶ **CHECK REAR SPEED SENSOR INSTALLATION**

OK
▼

5.	PERFORM TEST MODE (SIGNAL CHECK)

(a) Turn the ignition 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
▼

6.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Clear the DTCs INFO .

(c) Start the engine.

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

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

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Result:

RESULT	PROCEED TO
DTCs (C0210/33 and C0215/34) are not output	A
DTCs (C0210/33 and/or C0215/34) are output	B

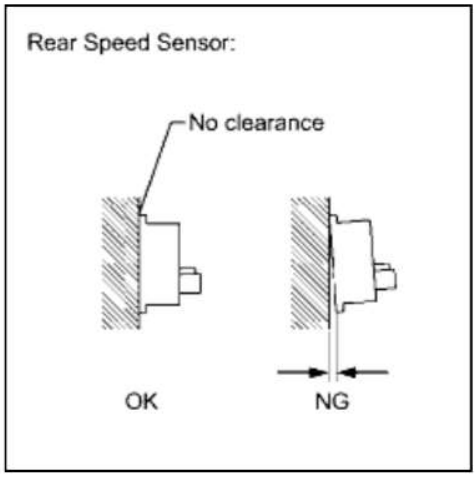
HINT:

If troubleshooting has been carried out according to the 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 (SYMPTOM SIMULATION)**

7.	CHECK REAR SPEED SENSOR INSTALLATION



(a) Turn the ignition switch off.

(b) Check the speed sensor installation.

OK:

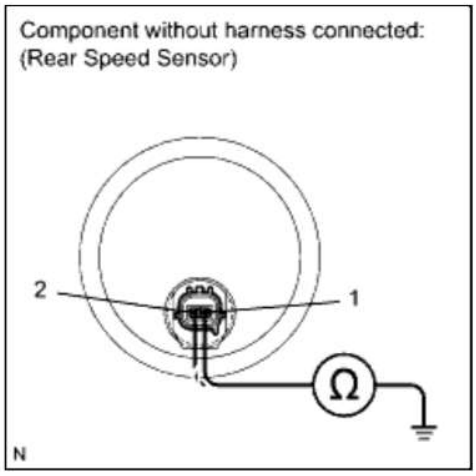
There is no clearance between the sensor and rear axle carrier.

NG ▶ **INSTALL REAR SPEED SENSOR CORRECTLY**

OK ▼

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8.	INSPECT REAR SPEED SENSOR



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

(b) Disconnect the rear speed sensor connector.

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

Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (RR+) - Body ground	Always	10 kΩ or higher
1 (RR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (RL+) - Body ground	Always	10 kΩ or higher
1 (RL-) - Body ground	Always	10 kΩ or higher

NOTICE:

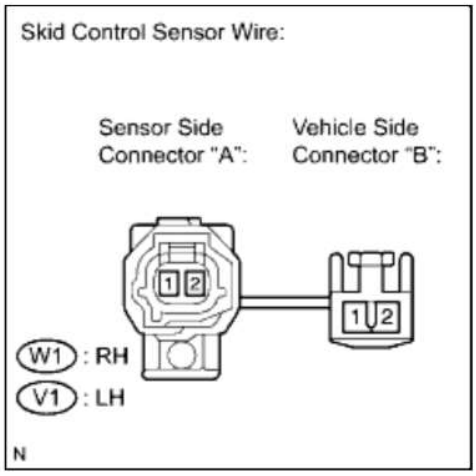
Check the speed sensor signal after replacement INFO .

NG ▶ **REPLACE REAR SPEED SENSOR**

OK ▼

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



(a) Disconnect the skid control sensor wire.

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

Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
W1 ("A"-2) - W1 ("B"-1)	Always	Below 1 Ω
W1 ("A"-2) - W1 ("B"-2)	Always	10 kΩ or higher
W1 ("A"-2) - Body ground	Always	10 kΩ or higher
W1 ("A"-1) - W1 ("B"-2)	Always	Below 1 Ω
W1 ("A"-1) - W1 ("B"-1)	Always	10 kΩ or higher
W1 ("A"-1) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
V1 ("A"-2) - V1 ("B"-1)	Always	Below 1 Ω
V1 ("A"-2) - V1 ("B"-2)	Always	10 kΩ or higher
V1 ("A"-2) - Body ground	Always	10 kΩ or higher
V1 ("A"-1) - V1 ("B"-2)	Always	Below 1 Ω
V1 ("A"-1) - V1 ("B"-1)	Always	10 kΩ or higher
V1 ("A"-1) - Body ground	Always	10 kΩ or higher

NOTICE:

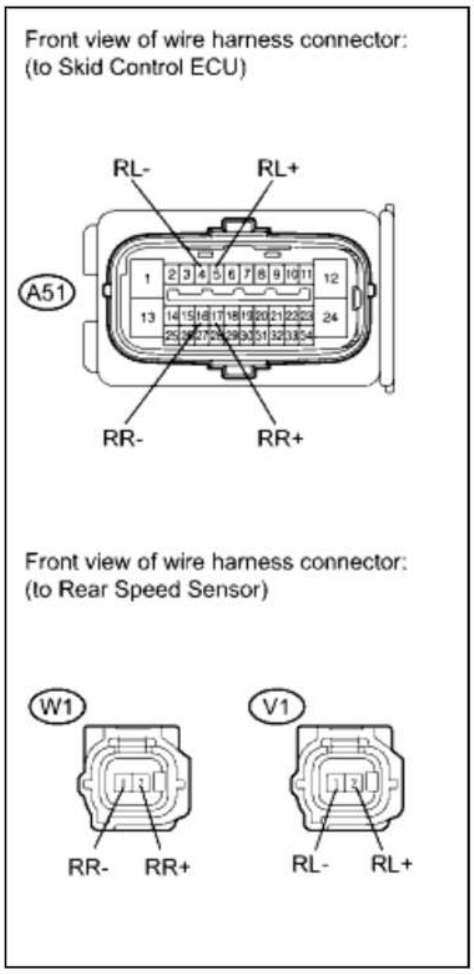
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Check the speed sensor signal after replacement INFO .

NG ▶ REPLACE SKID CONTROL SENSOR WIRE

OK ▼

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



(a) Reconnect the skid control sensor wire.

(b) Disconnect the skid control ECU connector.

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

Standard Resistance:

for RH

for LH

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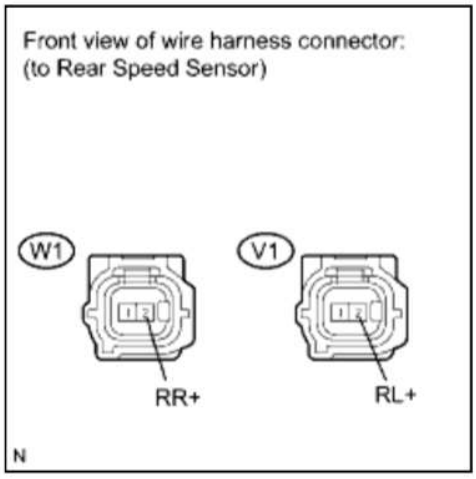
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-17 (RR+) - W1-2 (RR+)	Always	Below 1 Ω
A51-17 (RR+) - Body ground	Always	10 kΩ or higher
A51-16 (RR-) - W1-1 (RR-)	Always	Below 1 Ω
A51-16 (RR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-5 (RL+) - V1-2 (RL+)	Always	Below 1 Ω
A51-5 (RL+) - Body ground	Always	10 kΩ or higher
A51-4 (RL-) - V1-1 (RL-)	Always	Below 1 Ω
A51-4 (RL-) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

11.	**INSPECT SKID CONTROL ECU (SENSOR INPUT)**



(a) Reconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

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

Standard Voltage:

for RH

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for LH

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
W1-2 (RR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
V1-2 (RL+) - Body ground	Ignition switch ON	8 to 14 V

NG ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

OK ▼

12.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Reconnect the rear speed sensor connector.

(c) Clear the DTCs INFO .

(d) Start the engine.

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

(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 the Problem Symptoms Table, refer back to the table and proceed to the next step INFO .

B ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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A

13.	REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR

(a) Turn the ignition switch off.

(b) Replace the rear speed sensor INFO .

(c) Replace 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

14.	RECONFIRM DTC

(a) Clear the DTCs INFO .

(b) Start the engine.

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

(d) 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

HINT:

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

.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **END**



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Last Modified: 3-10-2010	6.4 S	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XHU03UX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2010 Corolla)		

DIAGNOSTIC TROUBLE CODE CHART

NOTICE:

Turn the ignition switch off before removing parts.

HINT:

- If no malfunction is found when inspecting parts, inspect the skid control ECU and ground points for poor contact.
- 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 inspection one by one until the problem is identified.
- Inspect the fuses and relays before investigating the trouble areas as shown in the table below.

ABS DTC

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C0200/31*1	Front Speed Sensor RH Circuit	1. Front speed sensor RH 2. Speed sensor circuit 3. Speed sensor rotor 4. Sensor installation 5. Brake actuator assembly (Skid control ECU)	INFO
C0205/32*1	Front Speed Sensor LH Circuit	1. Front speed sensor LH 2. Speed sensor circuit 3. Speed sensor rotor 4. Sensor installation 5. Brake actuator assembly (Skid control ECU)	INFO
C0210/33*1	Rear Speed Sensor RH Circuit	1. Rear speed sensor RH 2. Speed sensor circuit 3. Speed sensor rotor 4. Sensor installation 5. Brake actuator assembly (Skid control ECU)	INFO
C0215/34*1	Rear Speed Sensor LH Circuit	1. Rear speed sensor LH 2. Speed sensor circuit 3. Speed sensor rotor 4. Sensor installation 5. Brake actuator assembly (Skid control ECU)	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
C0226/21	SFR Solenoid Circuit	1. SFRR or SFRH circuit 2. Brake actuator assembly	INFO
C0236/22	SFL Solenoid Circuit	1. SFLR or SFLH circuit 2. Brake actuator assembly	INFO
C0246/23	SRR Solenoid Circuit	1. SRRR or SRRH circuit 2. Brake actuator assembly	INFO
C0256/24	SRL Solenoid Circuit	1. SRLR or SRLH circuit 2. Brake actuator assembly	INFO
C0273/13*1	Open in ABS Motor Relay Circuit	1. ABS NO. 1 fuse 2. ABS motor relay circuit 3. Brake actuator assembly (ABS motor relay)	INFO
C0274/14	Short to B+ in ABS Motor Relay Circuit	1. ABS motor relay circuit 2. Brake actuator assembly (ABS motor relay)	INFO
C0278/11	Open in ABS Solenoid Relay Circuit	1. ABS NO. 3 fuse 2. ABS solenoid relay circuit 3. Brake actuator assembly (ABS solenoid relay)	INFO
C0279/12	Short to B+ in ABS Solenoid Relay Circuit	1. ABS solenoid relay circuit 2. Brake actuator assembly (ABS solenoid relay)	INFO
C1235/35*1	Foreign Object is Attached on Tip of Front Speed Sensor RH	1. Front speed sensor RH 2. Speed sensor rotor 3. Sensor installation 4. Brake actuator assembly (Skid control ECU)	INFO
C1236/36*1	Foreign Object is Attached on Tip of Front Speed Sensor LH	1. Front speed sensor LH 2. Speed sensor rotor 3. Sensor installation 4. Brake actuator assembly (Skid control ECU)	INFO
C1238/38*1	Foreign Object is Attached on Tip of Rear Speed Sensor RH	1. Rear speed sensor RH 2. Speed sensor rotor 3. Sensor installation 4. Brake actuator assembly (Skid control ECU)	INFO
C1239/39*1	Foreign Object is Attached on Tip of Rear Speed Sensor LH	1. Rear speed sensor LH 2. Speed sensor rotor 3. Sensor installation 4. Brake actuator assembly (Skid	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
		control ECU)	
C1241/41	Low Battery Positive Voltage or Abnormally High Battery Positive Voltage	1. ECU-IG NO. 1 fuse 2. Battery 3. Charging system 4. Power source circuit 5. Internal power supply circuit of the skid control ECU	INFO
C1249/49	Open in Stop Light Switch Circuit	1. STOP fuse 2. Stop light switch 3. Stop light switch circuit 4. Brake actuator assembly (Skid control ECU)	INFO
C1251/51*1	Open in Pump Motor Circuit	1. Brake actuator assembly (Ground circuit) 2. Brake actuator assembly (Motor circuit)	INFO
U0073/94	Control Module Communication Bus OFF	CAN communication system	INFO

*1: Even after the trouble areas are repaired, the ABS warning light will not go off unless the following operations are performed:

1. Drive the vehicle at 20 km/h (12 mph) for 30 seconds or more and check that the ABS warning light goes off.
2. Clear the DTCs.

HINT:

In some cases, the Techstream cannot be used when the ABS warning light remains on.

ABS Test Mode DTC

DTC CODE	DETECTION ITEM	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	INFO

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DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
		rotor	
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)	Speed sensor rotor	INFO
C1276/76	Abnormal Change in Output Signal of Front Speed Sensor LH (Test Mode DTC)	Speed sensor rotor	INFO
C1277/77	Abnormal Change in Output Signal of Rear Speed Sensor RH (Test Mode DTC)	Speed sensor rotor	INFO
C1278/78	Abnormal Change in Output Signal of Rear Speed Sensor LH (Test Mode DTC)	Speed sensor rotor	INFO

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI804SX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C0226/21,C0236/22,C0246/23,C0256/24: SFR Solenoid Circuit (2010 Corolla)		

DTC	**C0226/21**	**SFR Solenoid Circuit**

DTC	**C0236/22**	**SFL Solenoid Circuit**

DTC	**C0246/23**	**SRR Solenoid Circuit**

DTC	**C0256/24**	**SRL Solenoid Circuit**

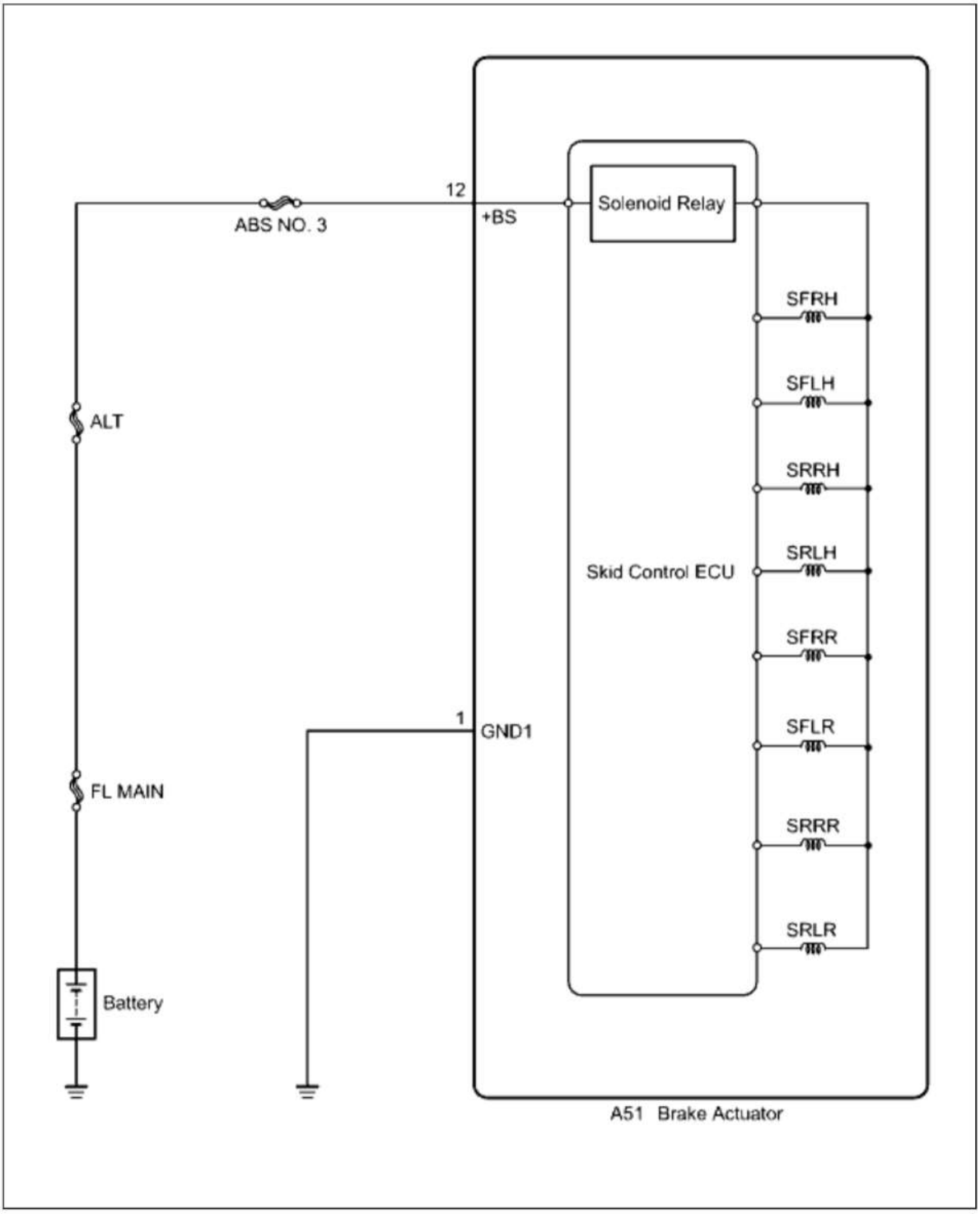
DESCRIPTION

These solenoids turn on when signals are received from the skid control ECU and they control the pressure acting on the wheel cylinders to control the braking force.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0226/21 C0236/22 C0246/23 C0256/24	When a solenoid relay is ON and the IG1 terminal voltage is 17.4 V or less, open or short in the solenoid circuit continues for 0.05 seconds or more.	• Solenoid circuit • Brake actuator assembly

WIRING DIAGRAM

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INSPECTION PROCEDURE

PROCEDURE

1.	**RECONFIRM DTC**

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HINT:

These codes are detected when a problem is determined in the brake actuator assembly.

The solenoid circuits are in the brake actuator assembly.

Therefore, solenoid circuit inspection and solenoid unit inspection cannot be performed. Be sure to check if any DTCs are output before replacing the brake actuator assembly.

(a) Clear the DTCs INFO.

(b) Start the engine.

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

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

Result:

RESULT	PROCEED TO
DTCs (C0226/21, C0236/22, C0246/23 and C0256/24) are not output	A
DTCs (C0226/21, C0236/22, C0246/23 and/or C0256/24) are output	B

HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harness, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIC04EX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C1235/35,C1236/36,C1238/38,C1239/39,C1275/75-C1278/78: Foreign Object is Attached on Tip of Front Speed Sensor RH (2010 Corolla)		

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

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

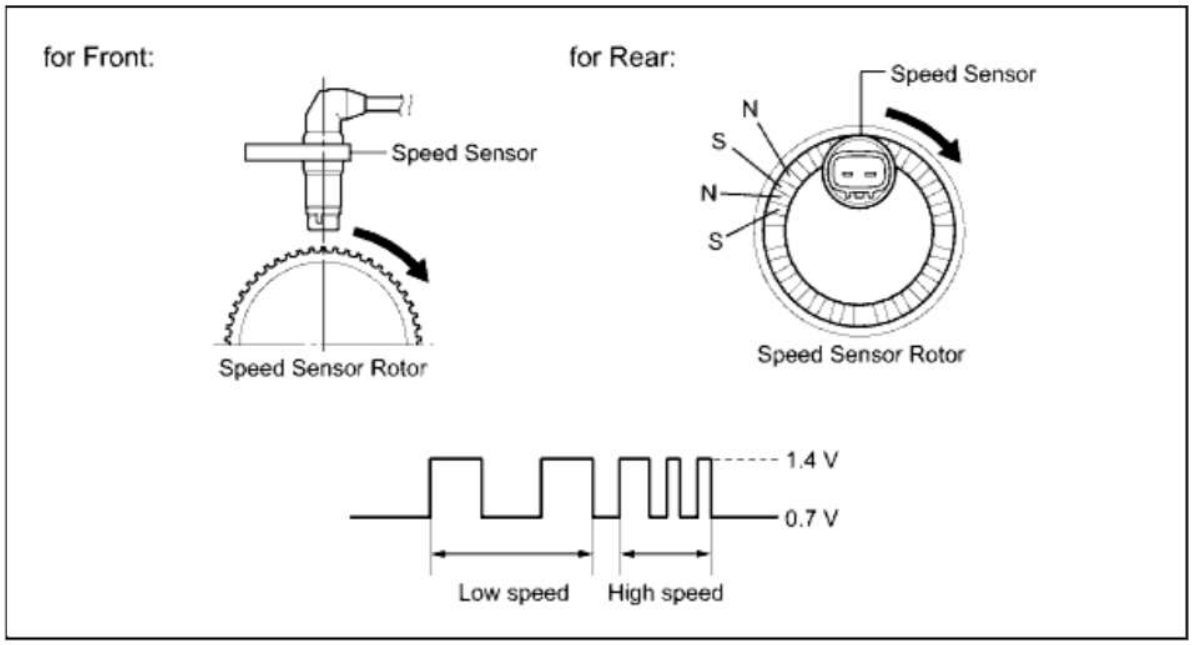
Speed sensor rotors have 48 serrations (for front) or rows of alternating N and S magnetic poles (for rear). The hall IC type speed sensor use the frequency of output pulses to detect the vehicle speed. Because the sensor outputs digital pulses, it can detect vehicle speeds even when the vehicle is nearly stationary.

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When foreign matter or oil 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 deleted when the speed sensor sends a vehicle speed signal or when Test Mode ends. DTCs C1275/75 to C1278/78 are output only in Test Mode.



DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1235/35 C1236/36 C1238/38 C1239/39	Either of the following is detected: 1. At a vehicle speed of 20 km/h (12 mph) or more, the IG1 terminal voltage is 17.4 V or less, and noise occurs in the sensor signal from the abnormal wheel for 5 seconds or more. 2. At a vehicle speed of 10 km/h (6 mph) or more, the IG1 terminal voltage is 17.4 V or less, and noise is input once per rotor rotation for 15 seconds or more.	• Speed sensor • Speed sensor rotor • Sensor installation • Brake actuator assembly (Skid control ECU)
C1275/75 C1276/76 C1277/77 C1278/78	Detected only during Test Mode.	Speed sensor rotor

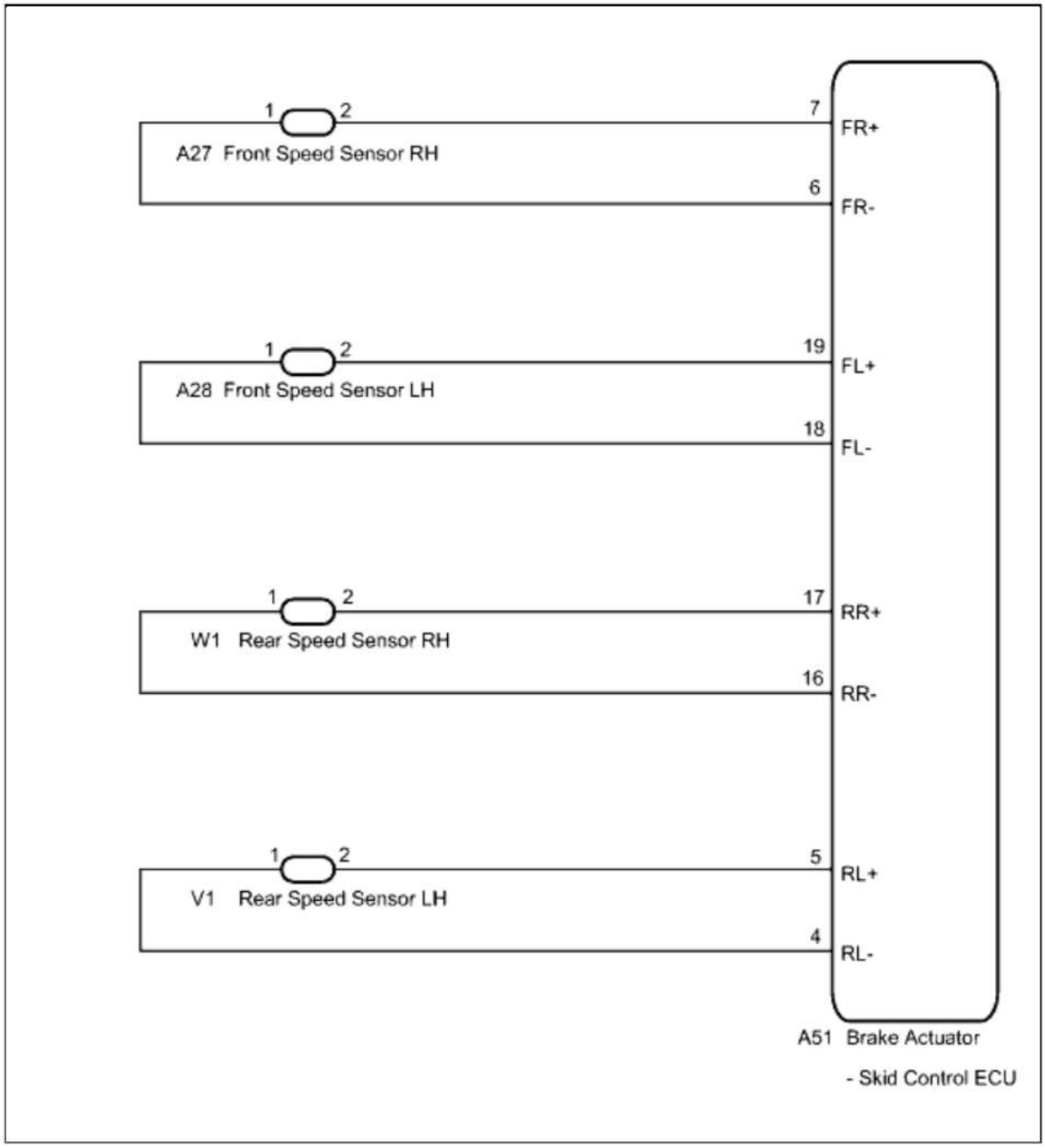
HINT:

- 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.

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- DTCs C1239/39 and C1278/78 are for the rear speed sensor LH.

WIRING DIAGRAM



INSPECTION PROCEDURE

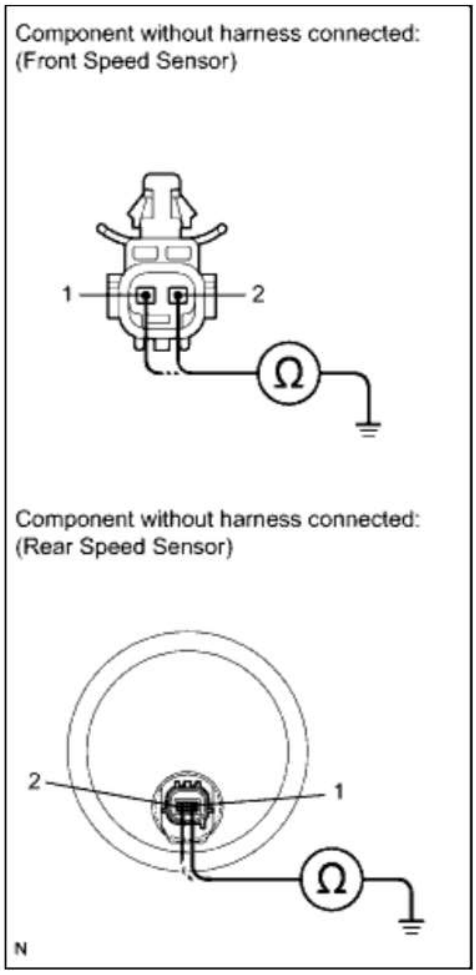
HINT:

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

PROCEDURE

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1.	INSPECT SPEED SENSOR



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

(b) Disconnect each speed sensor connector.

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

Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (FR+) - Body ground	Always	10 kΩ or higher
1 (FR-) - Body ground	Always	10 kΩ or higher
2 (RR+) - Body ground	Always	10 kΩ or higher
1 (RR-) - Body ground	Always	10 kΩ or higher

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (FL+) - Body ground	Always	10 kΩ or higher
1 (FL-) - Body ground	Always	10 kΩ or higher
2 (RL+) - Body ground	Always	10 kΩ or higher
1 (RL-) - Body ground	Always	10 kΩ or higher

Result:

RESULT	PROCEED TO
OK (for rear)	A
OK (for front)	B
NG	C

NOTICE:

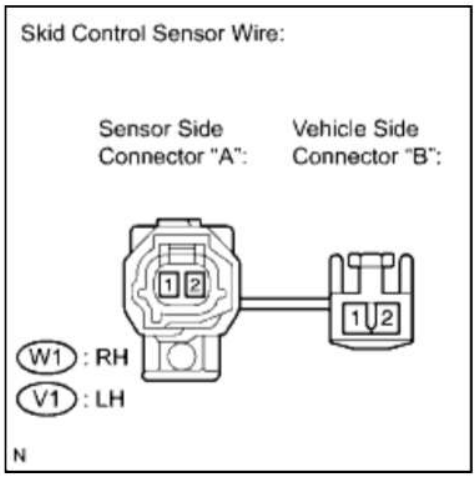
Check the speed sensor signal after replacement INFO .

C ▶ **REPLACE SPEED SENSOR**

B ▶ **CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - SPEED SENSOR)**

A ▼

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



(a) Disconnect the skid control sensor wire.

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

Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
W1 ("A"-2) - W1 ("B"-1)	Always	Below 1 Ω
W1 ("A"-2) - W1 ("B"-2)	Always	10 kΩ or higher
W1 ("A"-2) - Body ground	Always	10 kΩ or higher
W1 ("A"-1) - W1 ("B"-2)	Always	Below 1 Ω
W1 ("A"-1) - W1 ("B"-1)	Always	10 kΩ or higher
W1 ("A"-1) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
V1 ("A"-2) - V1 ("B"-1)	Always	Below 1 Ω
V1 ("A"-2) - V1 ("B"-2)	Always	10 kΩ or higher
V1 ("A"-2) - Body ground	Always	10 kΩ or higher
V1 ("A"-1) - V1 ("B"-2)	Always	Below 1 Ω
V1 ("A"-1) - V1 ("B"-1)	Always	10 kΩ or higher
V1 ("A"-1) - Body ground	Always	10 kΩ or higher

NOTICE:

Check the speed sensor signal after replacement INFO .

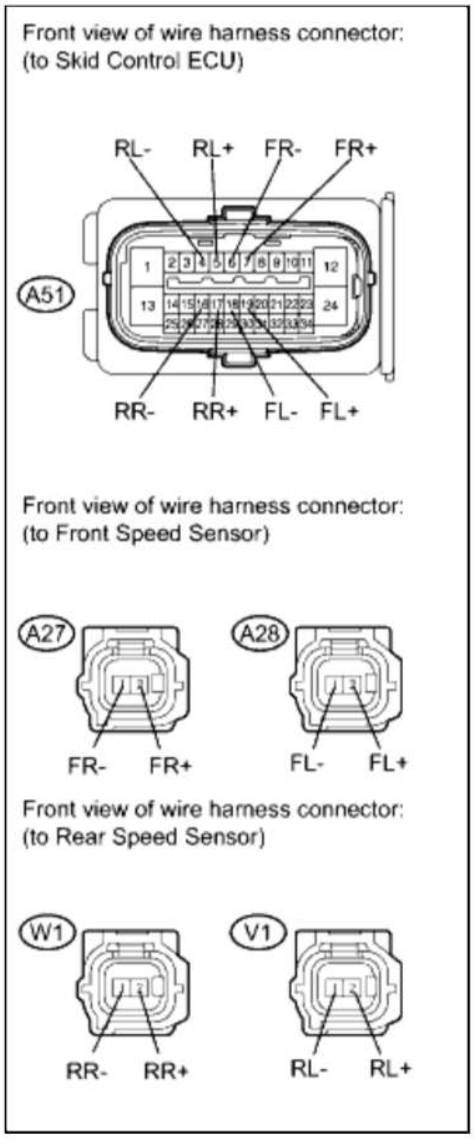
NG ▶ **REPLACE SKID CONTROL SENSOR WIRE**

OK ▼

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

(a) Reconnect the skid control sensor wire.

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(b) Disconnect the skid control ECU connector.

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

Standard Resistance:

for RH

for LH

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-7 (FR+) - A27-2 (FR+)	Always	Below 1 Ω
A51-7 (FR+) - Body ground	Always	10 kΩ or higher
A51-6 (FR-) - A27-1 (FR-)	Always	Below 1 Ω
A51-6 (FR-) - Body ground	Always	10 kΩ or higher
A51-17 (RR+) - W1-2 (RR+)	Always	Below 1 Ω
A51-17 (RR+) - Body ground	Always	10 kΩ or higher

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-16 (RR-) - W1-1 (RR-)	Always	Below 1 Ω
A51-16 (RR-) - Body ground	Always	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-19 (FL+) - A28-2 (FL+)	Always	Below 1 Ω
A51-19 (FL+) - Body ground	Always	10 kΩ or higher
A51-18 (FL-) - A28-1 (FL-)	Always	Below 1 Ω
A51-18 (FL-) - Body ground	Always	10 kΩ or higher
A51-5 (RL+) - V1-2 (RL+)	Always	Below 1 Ω
A51-5 (RL+) - Body ground	Always	10 kΩ or higher
A51-4 (RL-) - V1-1 (RL-)	Always	Below 1 Ω
A51-4 (RL-) - Body ground	Always	10 kΩ or higher

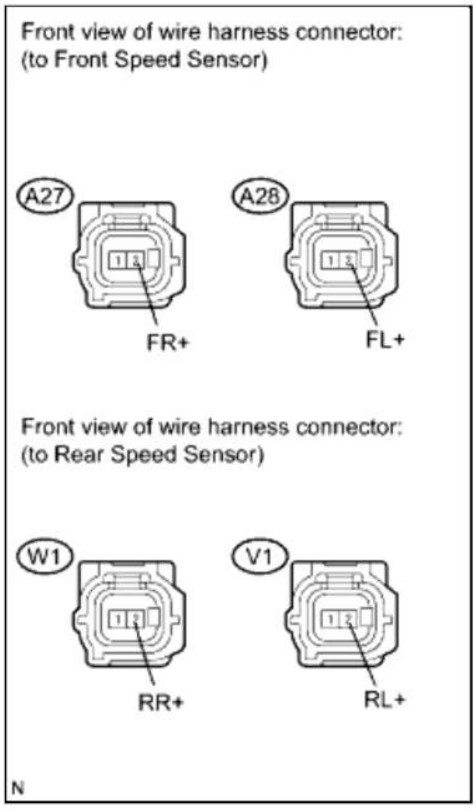
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**INSPECT SKID CONTROL ECU (SENSOR INPUT)**

(a) Reconnect the skid control ECU connector.

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(b) Turn the ignition switch to ON.

(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
A27-2 (FR+) - Body ground	Ignition switch ON	8 to 14 V
W1-2 (RR+) - Body ground	Ignition switch ON	8 to 14 V

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A28-2 (FL+) - Body ground	Ignition switch ON	8 to 14 V
V1-2 (RL+) - Body ground	Ignition switch ON	8 to 14 V

NG ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

OK ▼

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5.	RECONFIRM DTC

(a) Turn the ignition switch off.

(b) Reconnect the speed sensor connector.

(c) Clear the DTCs INFO .

(d) Start the engine.

(e) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.

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

Result:

RESULT	PROCEED TO
DTCs (C1235/35, C1236/36, C1238/38 and/or C1239/39) are output (for front)	A
DTCs (C1235/35, C1236/36, C1238/38 and/or C1239/39) are output (for rear)	B
DTCs (C1235/35, C1236/36, C1238/38 and C1239/39) are not output	C

C ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

B ▶ **REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR**

A ▼

6.	CHECK FRONT SPEED SENSOR TIP

(a) Turn the ignition switch off.

(b) Remove the front speed sensor INFO .

(c) Check the speed sensor tip.

OK:

No scratches or foreign matter on the sensor tip.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

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NG ▶ CLEAN OR REPLACE FRONT SPEED SENSOR

OK ▼

7.	CHECK FRONT SPEED SENSOR ROTOR

(a) Remove the front speed sensor rotor INFO .

(b) Check the speed sensor rotors.

OK:

No scratches, oil, or foreign matter on the rotors.

NOTICE:

Check the speed sensor signal after cleaning or replacement INFO .

HINT:

If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.

NG ▶ CLEAN OR REPLACE FRONT SPEED SENSOR ROTOR

OK ▼

8.	RECONFIRM DTC

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

(b) Clear the DTCs INFO .

(c) Start the engine.

(d) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.

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

Result:

RESULT	PROCEED TO

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RESULT	PROCEED TO
DTCs (C1235/35, C1236/36, C1238/38 and/or C1239/39) are output	A
DTCs (C1235/35, C1236/36, C1238/38 and C1239/39) are not output	B

B ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

A

▼

9.	REPLACE FRONT SPEED SENSOR

(a) Turn the ignition switch off.

(b) Replace the front speed sensor INFO .

NOTICE:

Check the speed sensor signal after replacement INFO .

NEXT

▼

10.	RECONFIRM DTC

(a) Clear the DTCs INFO .

(b) Start the engine.

(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.

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

Result:

RESULT	PROCEED TO
DTCs (C1235/35, C1236/36, C1238/38 and/or C1239/39) are output	A
DTCs (C1235/35, C1236/36, C1238/38 and C1239/39) are not output	B

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B ▶ END

A ▼

11.	REPLACE FRONT SPEED SENSOR ROTOR

(a) Turn the ignition switch off.

(b) Remove the front drive shaft assembly INFO .

(c) Replace the front axle outboard joint shaft assembly (front speed sensor rotor) INFO .

HINT:

If the front speed sensor rotor needs to be replaced, replace it together with the front axle outboard joint shaft assembly.

NOTICE:

Check the speed sensor signal after replacement INFO .

NEXT ▼

12.	RECONFIRM DTC

(a) Install the front drive shaft assembly.

(b) Clear the DTCs INFO .

(c) Start the engine.

(d) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.

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

Result:

RESULT	PROCEED TO
DTCs (C1235/35, C1236/36, C1238/38 and/or C1239/39) are output	A
DTCs (C1235/35, C1236/36, C1238/38 and C1239/39) are not output	B

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B ▶ END

A ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

13.	REPLACE REAR SPEED SENSOR AND REAR SPEED SENSOR ROTOR

(a) Turn the ignition switch off.

(b) Replace the rear speed sensor INFO .

(c) Replace 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

14.	RECONFIRM DTC

(a) Clear the DTCs INFO .

(b) Start the engine.

(c) Drive the vehicle at a speed of 20 km/h (12 mph) or more for at least 60 seconds.

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

Result:

RESULT	PROCEED TO
DTCs (C1235/35, C1236/36, C1238/38 and/or C1239/39) are output	A
DTCs (C1235/35, C1236/36, C1238/38 and C1239/39) are not output	B

B ▶ END

A ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000001JD603EX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C0273/13,C0274/14: Open in ABS Motor Relay Circuit (2010 Corolla)		

DTC	**C0273/13**	**Open in ABS Motor Relay Circuit**

DTC	**C0274/14**	**Short to B+ in ABS Motor Relay Circuit**

DESCRIPTION

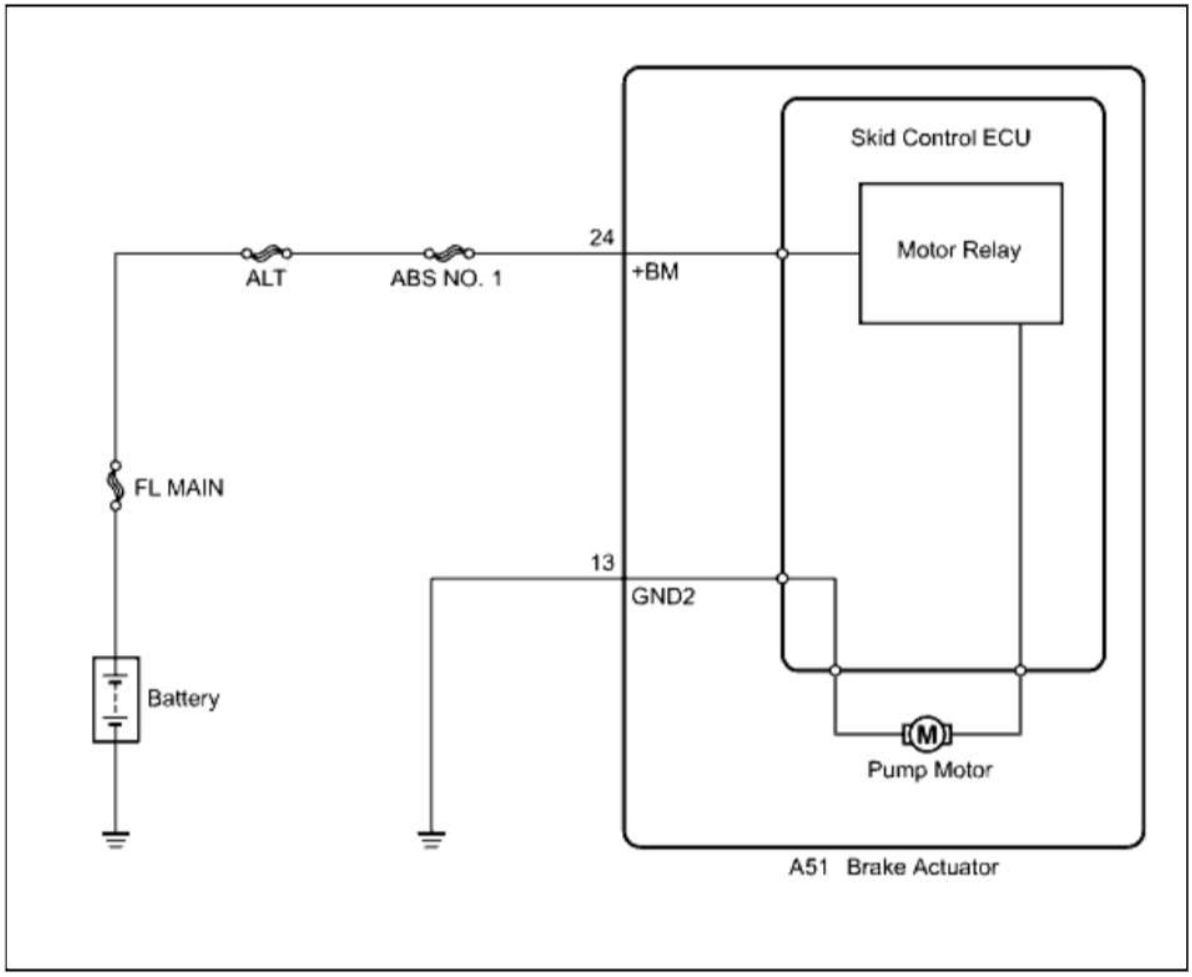
The ABS motor relay supplies power to the ABS pump motor. While the ABS is activated, the ECU turns the motor relay on and operates the ABS pump motor.

If the voltage supplied to the motor relay (+BM) is below the DTCs detection threshold due to low voltage from the battery or alternator, these DTCs may be stored.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0273/13	Either of the following is detected: 1. All of the following conditions continue for 0.1 seconds or more. o The IG1 terminal voltage is 9.5 V or more. o While initial check, or ABS or BA is operating. o Relay contact is open when the relay is ON. 2. Both of the following conditions continue for 0.1 seconds. o The IG1 terminal voltage is less than 9.5 V. o Relay contact remains open when the relay is ON.	• ABS NO. 1 fuse • ABS motor relay circuit • Brake actuator assembly (ABS motor relay)
C0274/14	When the motor relay is OFF, the motor relay remains closed for 4 seconds or more.	• ABS motor relay circuit • Brake actuator assembly (ABS motor relay)

WIRING DIAGRAM

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INSPECTION PROCEDURE

HINT:

When C1241/41 is output together with C0273/13 and/or C0274/13, inspect and repair the trouble areas indicated by C1241/41 first INFO **.**

PROCEDURE

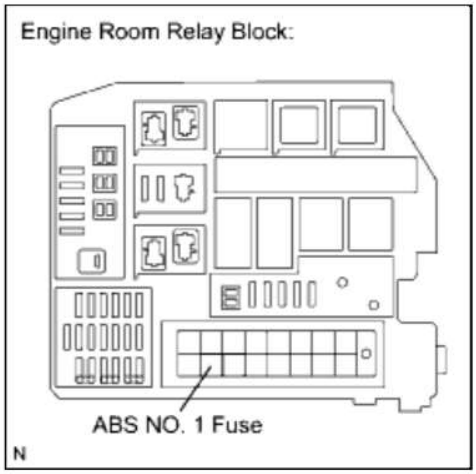
1.	**INSPECT ABS NO. 1 FUSE**

(a) Remove the ABS NO. 1 fuse from the engine room relay block.

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

Standard Resistance:

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
ABS NO. 1 (50 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE ABS NO. 1 FUSE**

OK ▼

2.	**PERFORM ACTIVE TEST USING TECHSTREAM (ABS MOTOR RELAY)**

(a) Install the ABS NO. 1 fuse.

(b) Connect the Techstream to the DLC3.

(c) Start the engine.

(d) Select Active Test mode on the Techstream INFO.

ABS/VSC/TRAC

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Motor Relay	ABS motor relay	Relay ON/OFF	Operating sound of motor can be heard

(e) Check the operating sound of the ABS motor relay when operating it with the Techstream.

Result:

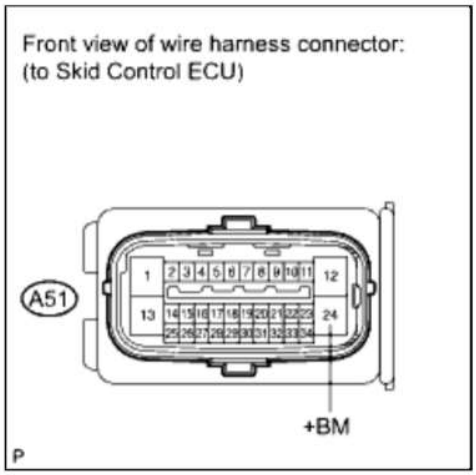
RESULT	PROCEED TO
The operating sound is not heard	A
The operating sound is heard	B

B ▶ **RECONFIRM DTC**

A

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3.	INSPECT SKID CONTROL ECU (+BM TERMINAL)



(a) Turn the ignition switch off.

(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
A51-24 (+BM) - Body ground	Always	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (+BM CIRCUIT)**

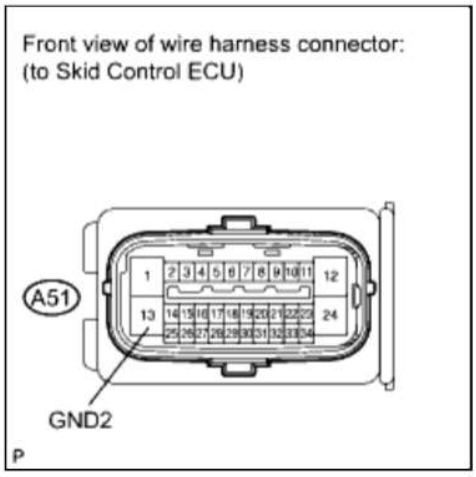
OK

4.	INSPECT SKID CONTROL ECU (GND2 TERMINAL)

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

Standard Resistance:

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-13 (GND2) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND2 CIRCUIT)**

OK ▼

5.	RECONFIRM DTC

HINT:

This code is detected when a problem is identified in the brake actuator assembly.

The ABS motor relay is in the brake actuator assembly.

Therefore, ABS motor relay inspection and motor relay unit inspection cannot be performed. Be sure to check if the DTC is output before replacing the brake actuator assembly.

(a) Turn the ignition switch off.

(b) Reconnect the skid control ECU connector.

(c) Clear the DTCs INFO .

(d) Start the engine.

(e) Drive the vehicle at a speed of 20 km/h (12 mph) or more for 30 seconds or more.

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

Result:

RESULT	PROCEED TO
DTCs (C0273/13 and C0274/14) are not output	A

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RESULT	PROCEED TO
DTCs (C0273/13 and/or C0274/14) are output	B

HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harness, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XI7043X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C0278/11,C0279/12: Open in ABS Solenoid Relay Circuit (2010 Corolla)		

DTC	**C0278/11**	**Open in ABS Solenoid Relay Circuit**

DTC	**C0279/12**	**Short to B+ in ABS Solenoid Relay Circuit**

DESCRIPTION

The ABS solenoid relay supplies power to the ABS solenoid.

The solenoid relay is turned on 1.5 seconds after the ignition switch is turned to ON, and is turned off if an open or short in the solenoid is detected by self diagnosis performed when the vehicle starts running.

The ABS solenoid relay is housed in the skid control ECU in the actuator assembly.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C0278/11	Either of the following is detected: 1. Both of the following conditions continue for 0.2 seconds or more. o The IG1 terminal voltage is 9.5 V or more. o The solenoid relay contact is open when the relay is ON. 2. Both of the following conditions continue for 0.2 seconds or more. o The IG1 terminal voltage becomes lower than 9.5 V when the relay is turned on. o The relay contact remains open.	• ABS NO. 3 fuse • ABS solenoid relay circuit • Brake actuator assembly (ABS solenoid relay)
C0279/12	Immediately after the ignition switch is turned to ON, the solenoid relay contact is closed for 4.5 seconds when the relay is turned off.	• ABS solenoid relay circuit • Brake actuator assembly (ABS solenoid relay)

WIRING DIAGRAM

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Refer to DTCs C0226/21, C0236/22, C0246/23 and C0256/24 INFO .

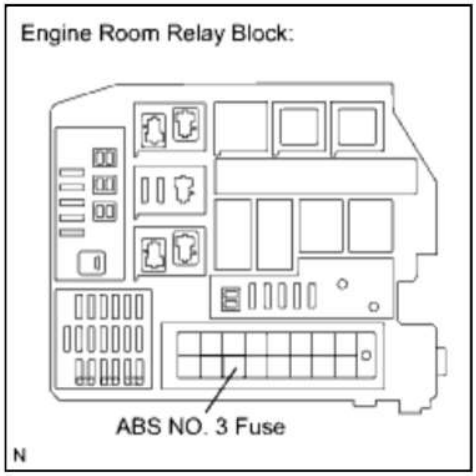
INSPECTION PROCEDURE

HINT:

When C1241/41 is output together with C0278/11 and/or C0279/12, inspect and repair the trouble areas indicated by C1241/41 first INFO .

PROCEDURE

1.	**INSPECT ABS NO. 3 FUSE**



(a) Remove the ABS NO. 3 fuse from the engine room relay block.

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

Standard Resistance:

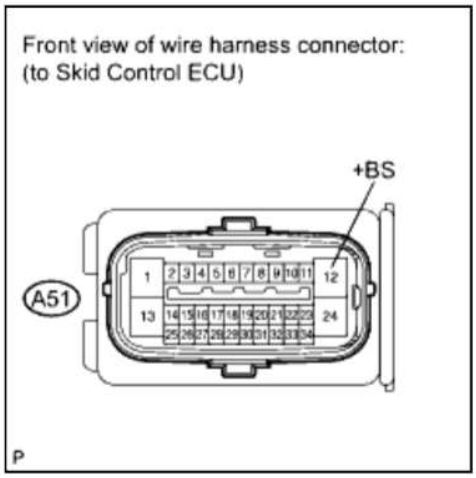
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
ABS NO. 3 (30 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE ABS NO. 3 FUSE**

OK ▼

2.	**INSPECT SKID CONTROL ECU (+BS TERMINAL)**

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(a) Install the ABS NO. 3 fuse.

(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
A51-12 (+BS) - Body ground	Always	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (+BS CIRCUIT)**

OK ▼

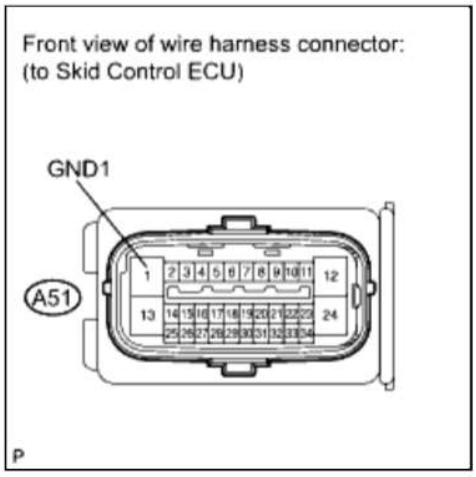
3.	**INSPECT SKID CONTROL ECU (GND1 TERMINAL)**

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-1 (GND1) - Body ground	Always	Below 1 Ω

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NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

4.	**RECONFIRM DTC**

HINT:

This code is detected when a problem is identified in the brake actuator assembly.

The solenoid circuit is in the brake actuator assembly.

Therefore, solenoid circuit inspection and solenoid unit inspection cannot be performed. Be sure to check if the DTC is output before replacing the brake actuator assembly.

(a) Reconnect the skid control ECU connector.

(b) Clear the DTCs INFO.

(c) Start the engine.

(d) Drive the vehicle at a speed of 20 km/h (12 mph) or more for 30 seconds or more.

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

Result:

RESULT	PROCEED TO
DTCs (C0278/11 and C0279/12) are not output	A
DTCs (C0278/11 and/or C0279/12) are output	B

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HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU, with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harnesses, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**



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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XW604YX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C1241/41: Low Battery Positive Voltage or Abnormally High Battery Positive Voltage (2010 Corolla)		

DTC	**C1241/41**	**Low Battery Positive Voltage or Abnormally High Battery Positive Voltage**

DESCRIPTION

If a malfunction is detected in the power supply circuit, the skid control ECU (housed in the actuator assembly) stores this DTC and the fail safe function prohibits ABS operation.

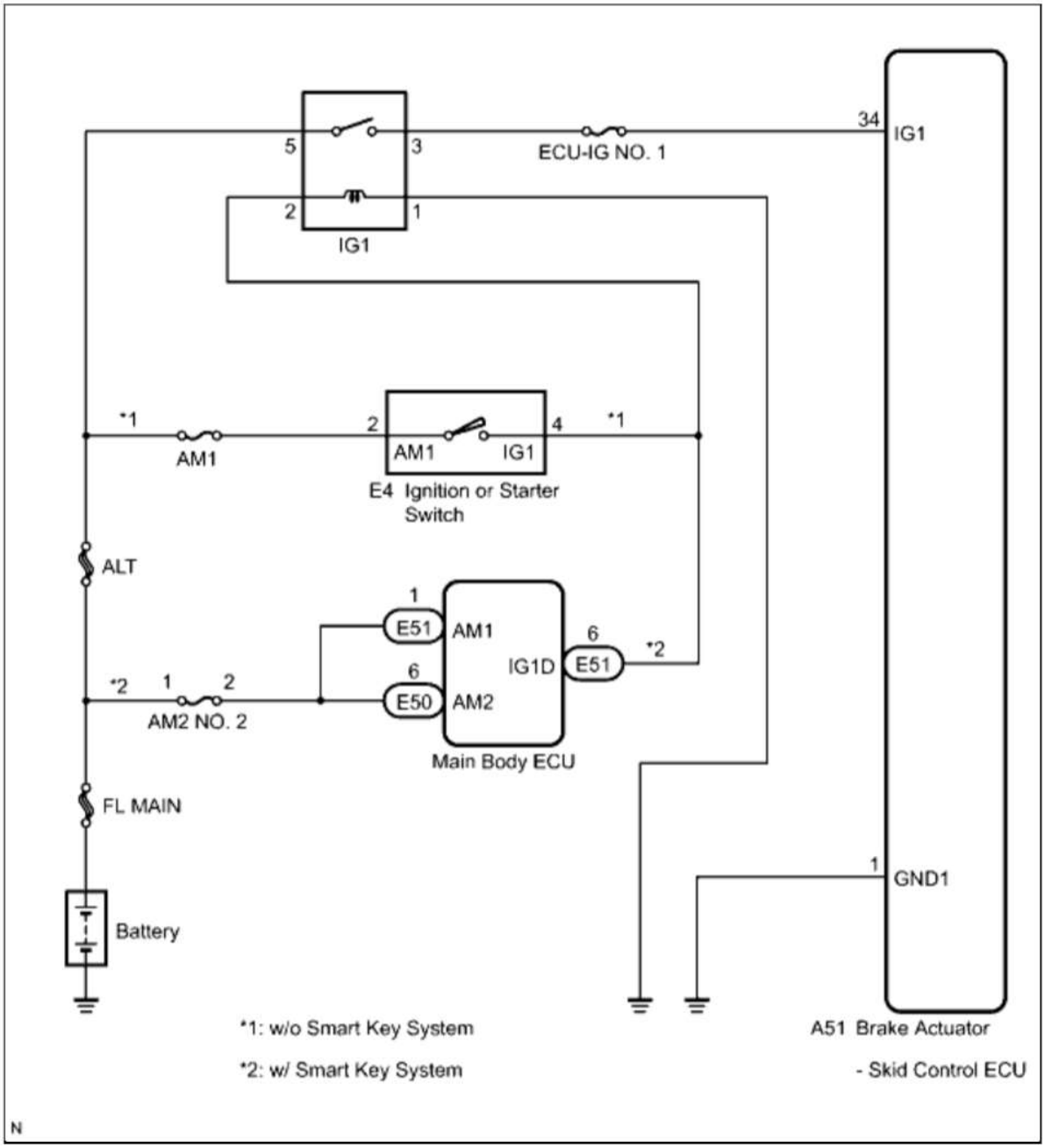
This DTC is stored when the IG1 terminal voltage deviates from the DTC detection condition due to a malfunction in the power supply or charging circuit such as the battery or alternator circuit, etc.

The DTC is cancelled when the IG1 terminal voltage returns to normal.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1241/41	Any of the following is detected: 1. At a vehicle speed of 3 km/h (2 mph) or more, the IG1 terminal voltage is less than 9.5 V for 10 seconds or more. 2. When the solenoid relay remains ON and the IG1 terminal voltage is less than 9.5 V, the relay contact is open for 0.2 seconds or more. 3. When the motor relay remains on and the IG1 terminal voltage is less than 9.5 V, the relay contact is open for 0.2 seconds or more. 4. The IG1 terminal voltage is more than 17.4 V for 0.8 seconds or more.	• ECU-IG NO. 1 fuse • Battery • Charging system • Power source circuit • Internal power supply circuit of the skid control ECU

WIRING DIAGRAM

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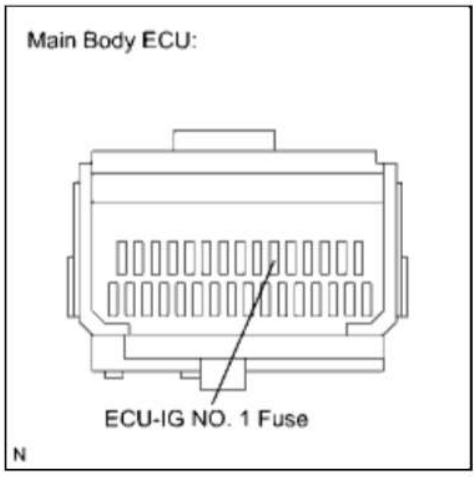
INSPECTION PROCEDURE

PROCEDURE

1.	**INSPECT ECU-IG NO. 1 FUSE**

(a) Remove the ECU-IG NO. 1 fuse from the main body ECU (instrument panel junction block).

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
ECU-IG NO. 1 (10 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE ECU-IG NO. 1 FUSE**

OK ▼

2.	**CHECK BATTERY**

(a) Install the ECU-IG NO. 1 fuse.

(b) Check the battery voltage.

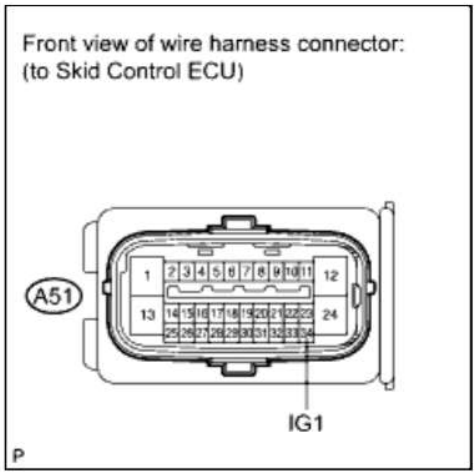
Standard Voltage:
11 to 14 V

NG ▶ **CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)**

OK ▼

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3.	INSPECT SKID CONTROL ECU (IG1 TERMINAL)



(a) Disconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A51-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

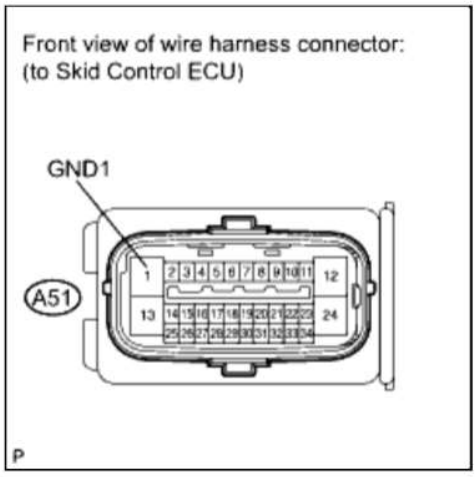
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)**

OK ▼

4.	INSPECT SKID CONTROL ECU (GND1 TERMINAL)

(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

5.	**RECONFIRM DTC**

(a) Reconnect the skid control ECU connector.

(b) Clear the DTCs INFO.

(c) Start the engine.

(d) Drive the vehicle at a speed of 6 km/h (4 mph) or more.

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

Result:

RESULT	PROCEED TO
DTC (C1241/41) is not output	A
DTC (C1241/41) is output	B

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HINT:

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

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**



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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIE05RX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C1249/49: Open in Stop Light Switch Circuit (2010 Corolla)		

DTC	**C1249/49**	**Open in Stop Light Switch Circuit**

DESCRIPTION

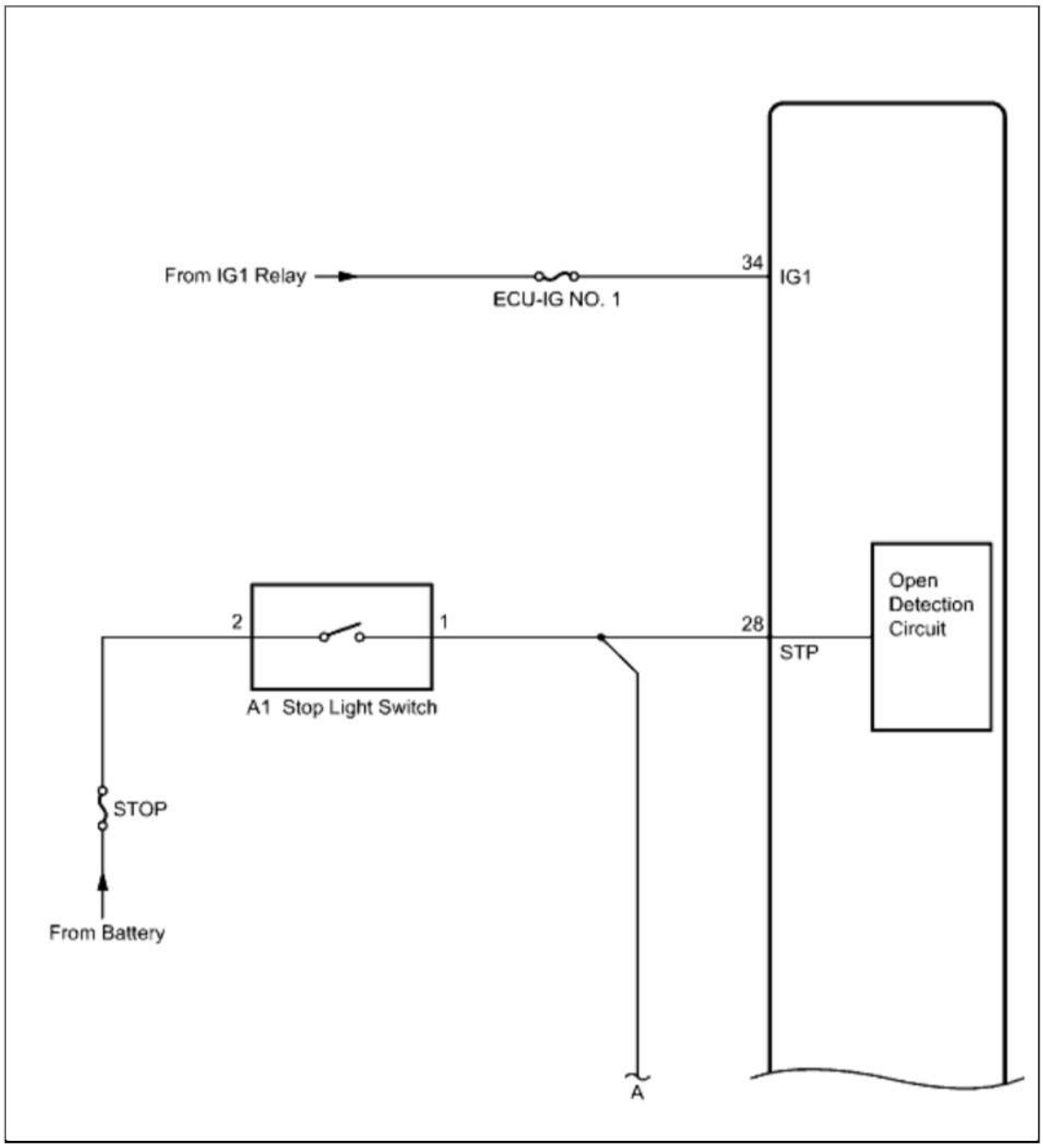
The skid control ECU (housed in the actuator assembly) inputs the stop light switch signal and the condition of brake operation.

The skid control ECU has an open detection circuit, which outputs this DTC when detecting an open in the stop light input line or the ground line of the stop light circuit with the stop light switch off (brake pedal not depressed).

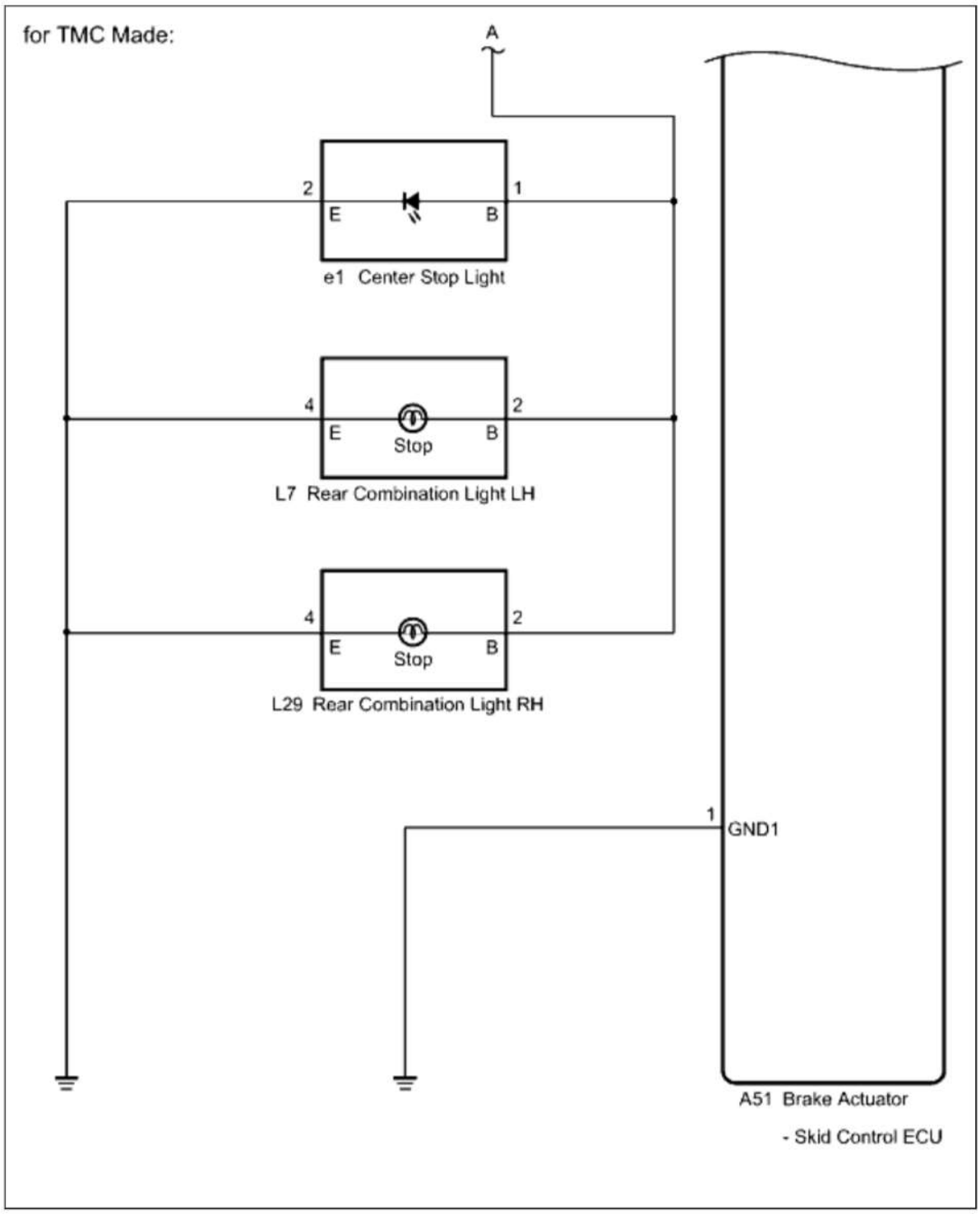
DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1249/49	When IG1 terminal voltage is 9.5 V or more, an open stop light switch circuit continues for 0.3 seconds or more.	• STOP fuse • Stop light switch • Stop light switch circuit • Brake actuator assembly (Skid control ECU)

WIRING DIAGRAM

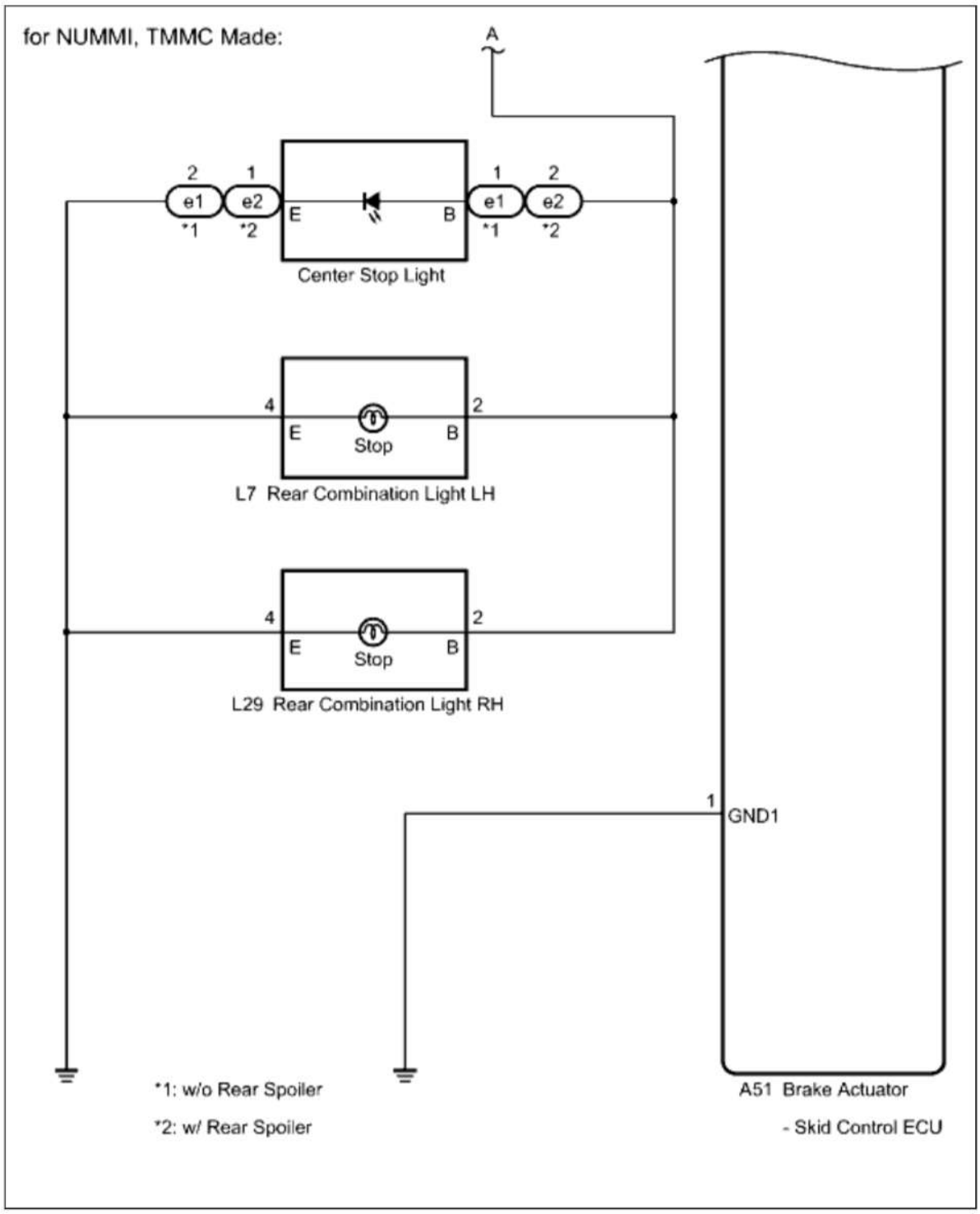
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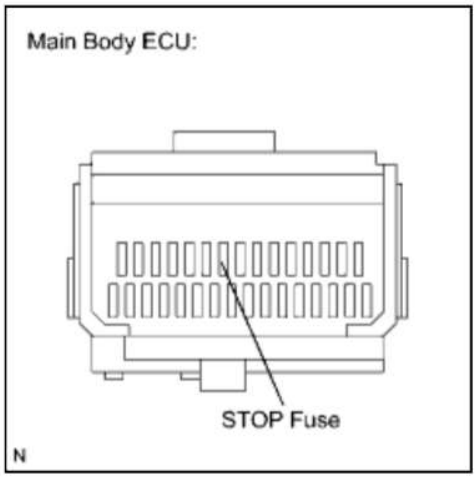


INSPECTION PROCEDURE

PROCEDURE

1.	**INSPECT STOP FUSE**

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(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.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
STOP (10 A) fuse	Always	Below 1 Ω

NG ▶ **REPLACE STOP FUSE**

OK ▼

2.	**CHECK STOP LIGHT OPERATION**

(a) Install the STOP fuse.

(b) Check that the stop lights come on when the brake pedal is depressed, and go off when the brake pedal is released.

OK:

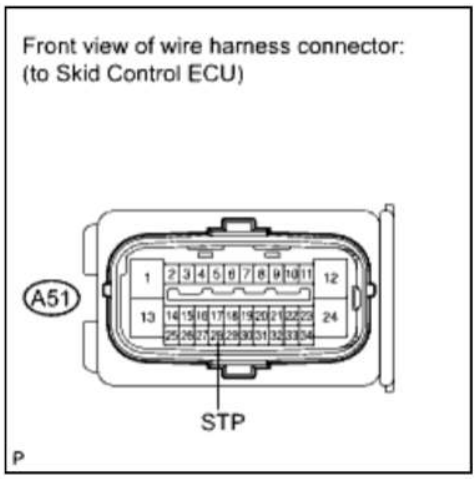
CONDITION	ILLUMINATION CONDITION
Brake pedal depressed	ON
Brake pedal released	OFF

NG ▶ **INSPECT STOP LIGHT SWITCH (POWER SOURCE TERMINAL)**

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OK

3.	**INSPECT SKID CONTROL ECU (STP TERMINAL)**



(a) Disconnect the skid control ECU connector.

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

Standard Voltage:

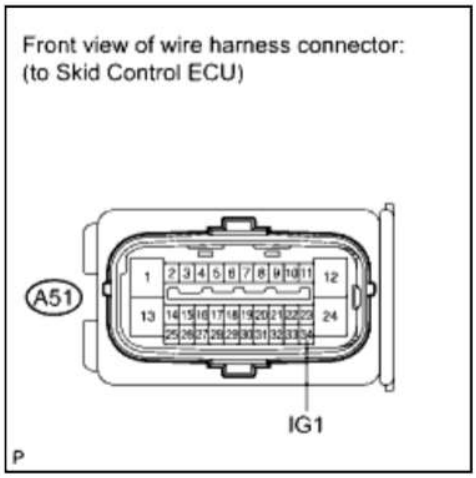
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A51-28 (STP) - Body ground	Stop light switch ON (Brake pedal depressed)	8 to 14 V
A51-28 (STP) - Body ground	Stop light switch OFF (Brake pedal released)	Below 1.5 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (STP CIRCUIT)**

OK

4.	**INSPECT SKID CONTROL ECU (IG1 TERMINAL)**

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(a) Turn the ignition switch to ON.

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

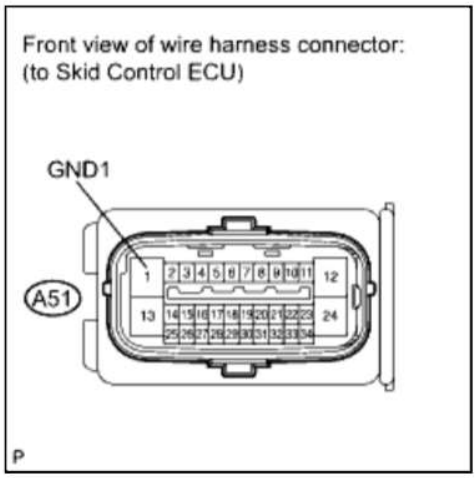
Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A51-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)**

OK ▼

5.	**INSPECT SKID CONTROL ECU (GND1 TERMINAL)**



(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

6.	RECONFIRM DTC

(a) Reconnect the skid control ECU connector.

(b) Clear the DTCs INFO.

(c) Start the engine.

(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 (C1249/49) is not output	A
DTC (C1249/49) is output	B

HINT:

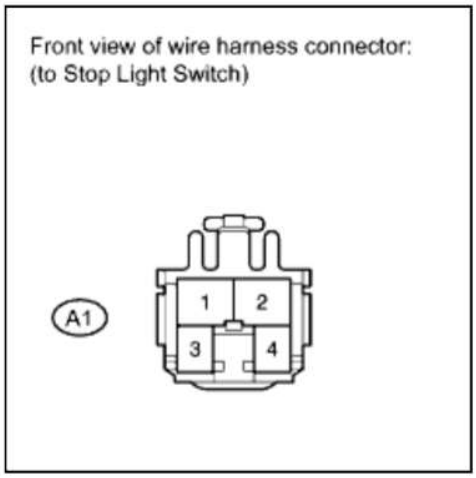
If troubleshooting has been carried out according to the Problem Symptoms Table, refer back to the table and proceed to the next step INFO.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

7.	INSPECT STOP LIGHT SWITCH (POWER SOURCE TERMINAL)

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(a) Disconnect the stop light switch connector.

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

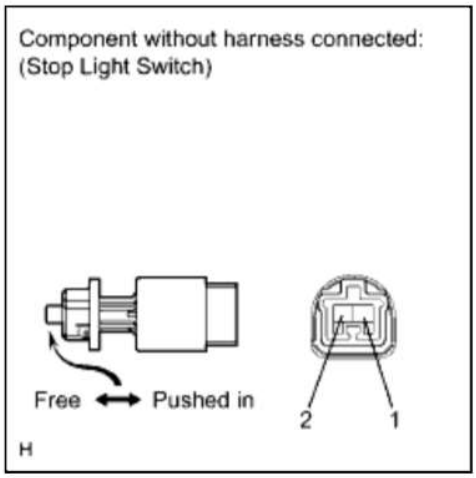
Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A1-2 - Body ground	Always	11 to 14 V

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

OK ▼

8.	**INSPECT STOP LIGHT SWITCH**



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

Standard Resistance:

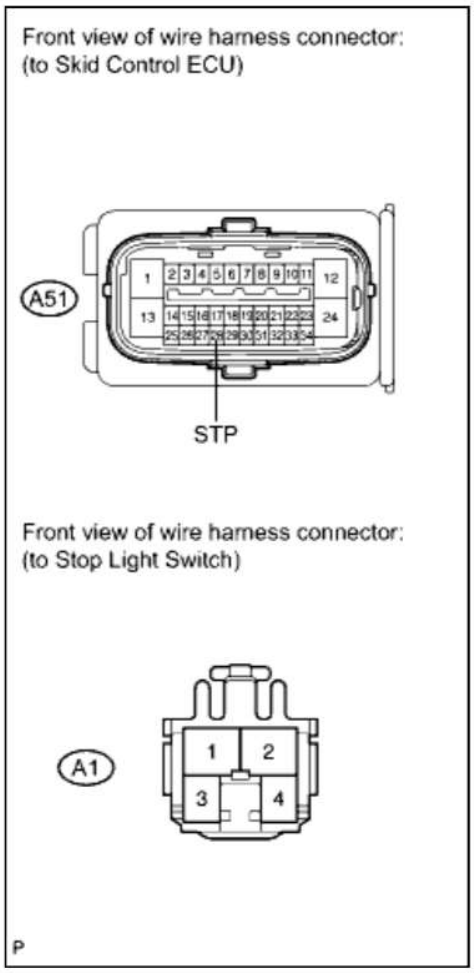
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 - 2	Switch pin free	Below 1 Ω
1 - 2	Switch pin pushed in	10 kΩ or higher

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NG ▶ REPLACE STOP LIGHT SWITCH

OK ▼

9.	CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - STOP LIGHT SWITCH)



(a) Disconnect the skid control ECU connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-28 (STP) - A1-1	Always	Below 1 Ω

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

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OK

10.	RECONFIRM DTC

(a) Reconnect the skid control ECU connector and the stop light switch connector.

(b) Clear the DTCs INFO .

(c) Start the engine.

(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 (C1249/49) is not output	A
DTC (C1249/49) is output	B

HINT:

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

B ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

A ▶ INSPECT LIGHTING SYSTEM (STOP LIGHT CIRCUIT)

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIF04AX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: C1251/51: Open in Pump Motor Circuit (2010 Corolla)		

DTC	**C1251/51**	**Open in Pump Motor Circuit**

DESCRIPTION

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
C1251/51	Either of the following is detected: 1. Actuator pump motor does not operate properly. 2. Open in actuator pump motor circuit continues for at least 2 seconds.	• Brake actuator assembly (Ground circuit) • Brake actuator assembly (Motor circuit)

WIRING DIAGRAM

Refer to DTCs C0273/13 and C0274/14 INFO .

INSPECTION PROCEDURE

PROCEDURE

1.	**PERFORM ACTIVE TEST USING TECHSTREAM (ABS MOTOR RELAY)**

(a) Connect the Techstream to the DLC3.

(b) Start the engine.

(c) Select Active Test mode on the Techstream INFO .

ABS/VSC/TRAC

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Motor Relay	ABS motor relay	Relay ON/OFF	Operating sound of motor can be heard

(d) Check the operating sound of the ABS motor relay when operating it with the Techstream.

Result:

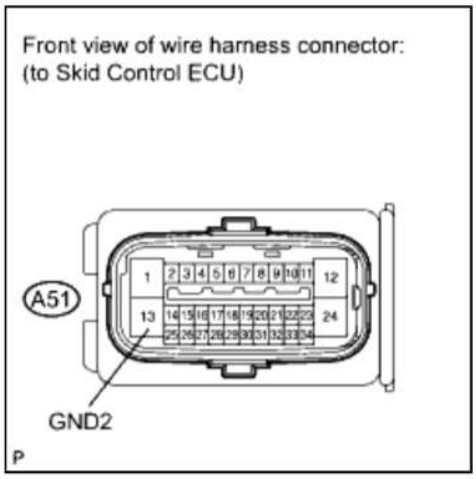
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RESULT	PROCEED TO
The operating sound is not heard	A
The operating sound is heard	B

B ▶ **RECONFIRM DTC**

A ▼

2.	INSPECT SKID CONTROL ECU (GND2 TERMINAL)



(a) Turn the ignition switch off.

(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
A51-13 (GND2) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND2 CIRCUIT)**

OK ▼

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3.	RECONFIRM DTC

HINT:

This code is detected when a problem is identified in the brake actuator assembly.

The ABS motor relay is in the brake actuator assembly.

Therefore, ABS motor relay inspection and motor relay unit inspection cannot be performed. Be sure to check if the DTC is output before replacing the brake actuator assembly.

(a) Turn the ignition switch off.

(b) Reconnect the skid control ECU connector.

(c) Clear the DTCs INFO.

(d) Start the engine.

(e) Drive the vehicle at a speed of 20 km/h (12 mph) or more for 30 seconds or more.

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

Result:

RESULT	PROCEED TO
DTC (C1251/51) is not output	A
DTC (C1251/51) is output	B

HINT:

- If a speed signal of 6 km/h (4 mph) or more is input to the skid control ECU, with the ignition switch ON and the stop light switch off, the ECU performs self diagnosis of the motor and solenoid circuits.
- If the normal system code is output (no trouble codes are output), slightly jiggle the connectors, wire harness, and fuses of the brake actuator assembly. Make sure that no DTCs are output.
- If any DTCs are output while jiggling a connector or wire harness of the brake actuator assembly (skid control ECU), inspect and repair the connector or wire harness.
- It is suspected that the DTCs were output due to a bad connection of the connector terminal.

B ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

A ▶ **CHECK FOR INTERMITTENT PROBLEMS (SYMPTOM SIMULATION)**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIH054X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: ABS Warning Light Remains ON (2010 Corolla)		

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:

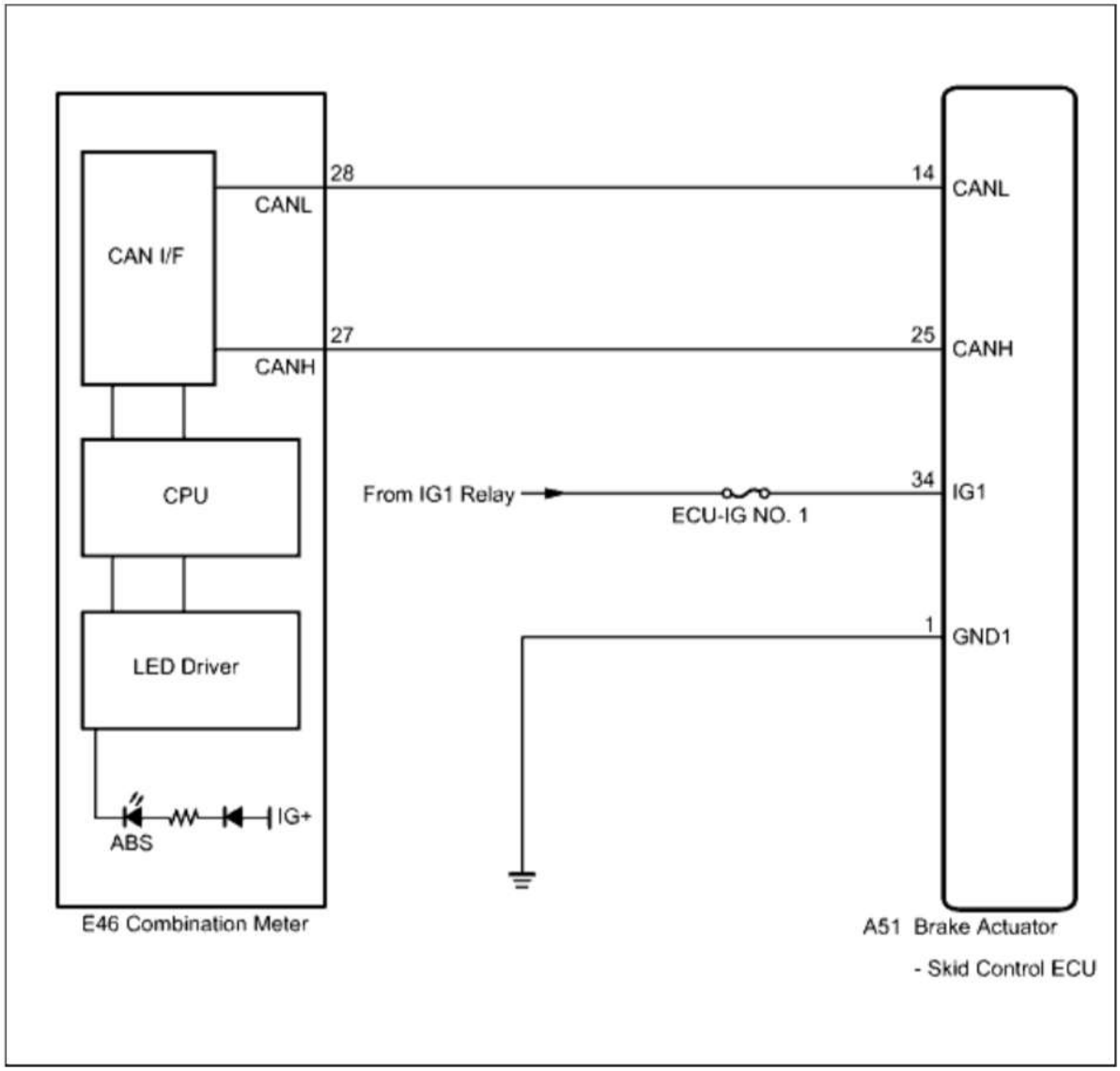
- The skid control ECU connectors are disconnected from the skid control ECU.
- There is a malfunction in the skid control ECU internal circuit.
- There is an open in the harness between the combination meter and the skid control ECU.
- The ABS control system is defective.

HINT:

In some cases, the Techstream cannot be used when the skid control ECU is abnormal.

WIRING DIAGRAM

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INSPECTION PROCEDURE

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

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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 BATTERY

(a) Check the battery voltage.

Standard Voltage:
11 to 14 V

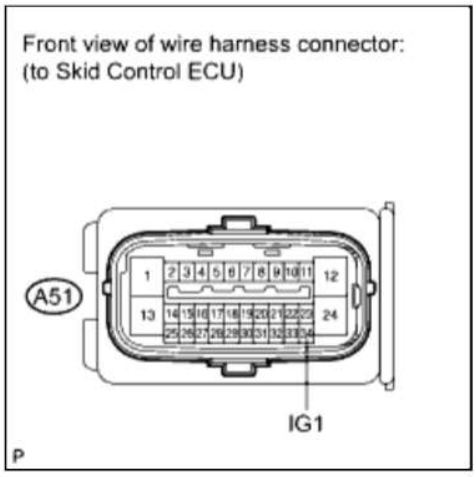
NG ▶ CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)

OK ▼

4.	INSPECT SKID CONTROL ECU (IG1 TERMINAL)

(a) Disconnect the skid control ECU connector.

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(b) Turn the ignition switch to ON.

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

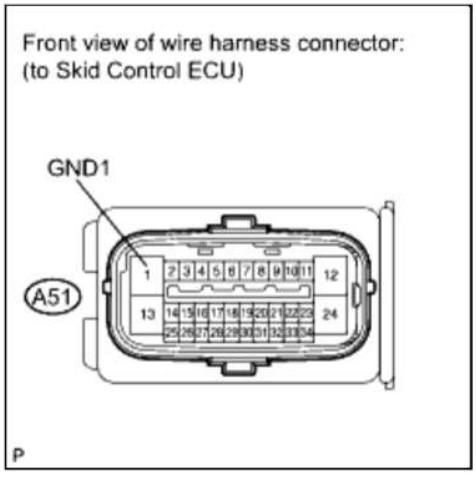
Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A51-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)**

OK ▼

5.	**INSPECT SKID CONTROL ECU (GND1 TERMINAL)**



(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

6.	INSPECT COMBINATION METER ASSEMBLY

(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:

The ABS warning light turns on or off in accordance with the Techstream.

HINT:

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

NG ▶ **REPLACE COMBINATION METER ASSEMBLY**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YHG052X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: Brake Warning Light Remains ON (2010 Corolla)		

Brake Warning Light Remains ON

DESCRIPTION

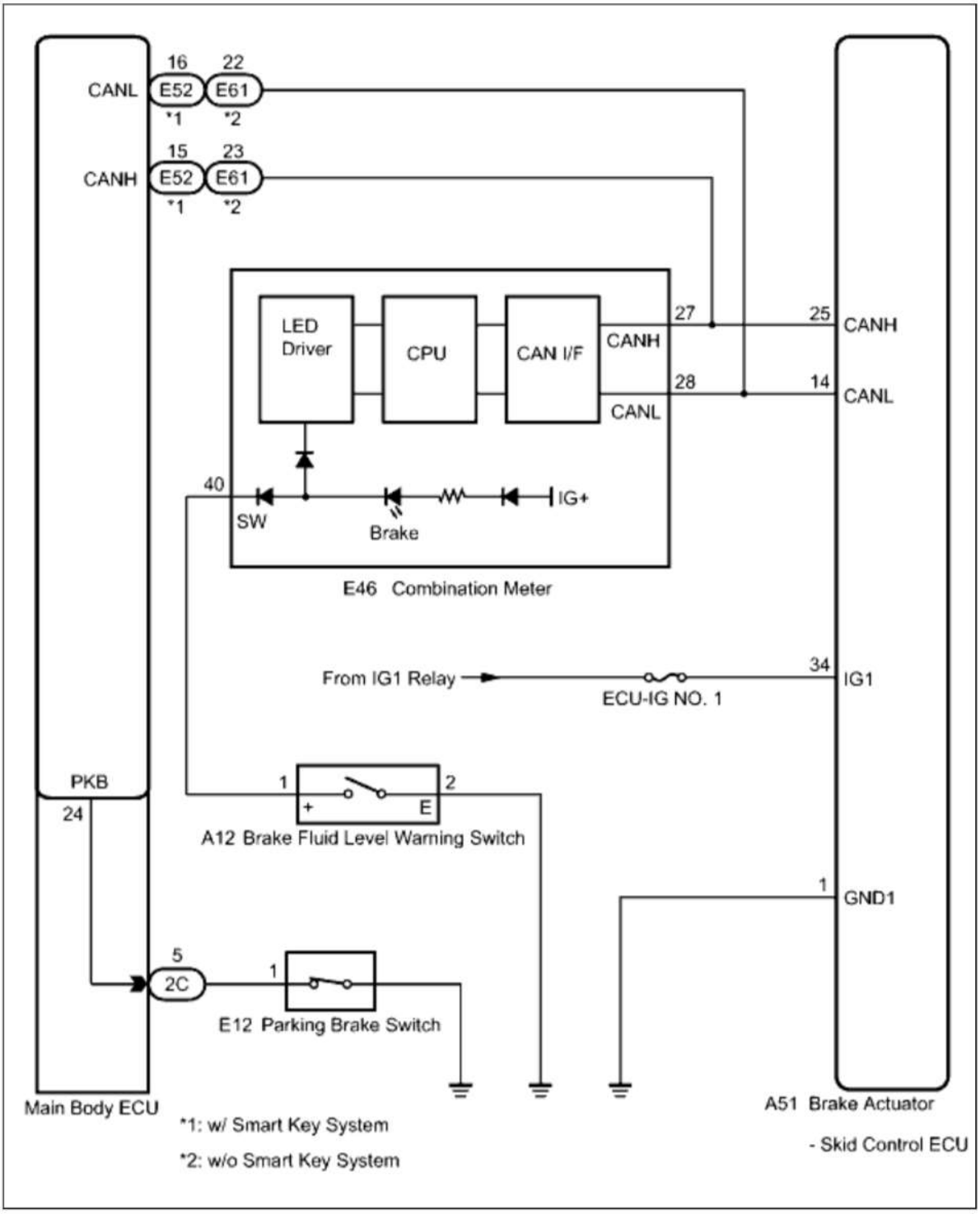
The skid control ECU is connected to the combination meter via CAN communication.

If any of the following is detected, the brake warning light 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

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INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK CAN COMMUNICATION SYSTEM**

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(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 BATTERY

(a) Check the battery voltage.

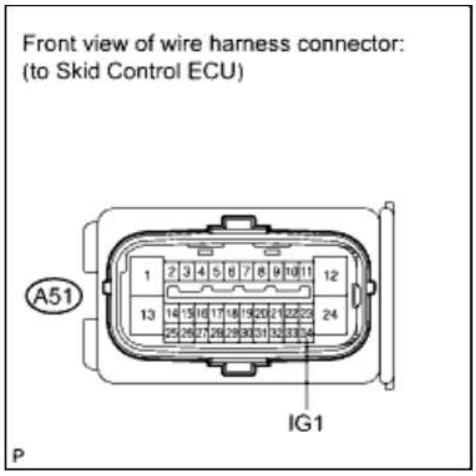
Standard Voltage:
11 to 14 V

NG ▶ CHECK OR REPLACE CHARGING SYSTEM OR BATTERY (for 2ZR-FE)

OK ▼

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4.	INSPECT SKID CONTROL ECU (IG1 TERMINAL)



(a) Disconnect the skid control ECU connector.

(b) Turn the ignition switch to ON.

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A51-34 (IG1) - Body ground	Ignition switch ON	11 to 14 V

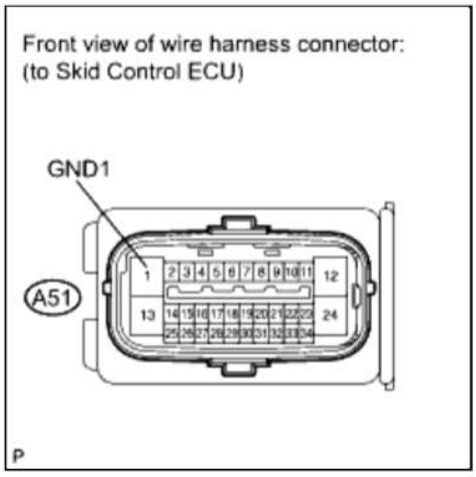
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 CIRCUIT)**

OK ▼

5.	INSPECT SKID CONTROL ECU (GND1 TERMINAL)

(a) Turn the ignition switch off.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-1 (GND1) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND1 CIRCUIT)**

OK ▼

6.	READ VALUE USING TECHSTREAM (PARKING BRAKE SWITCH)

(a) Reconnect the skid control ECU connector.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Select Data List mode 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	-

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(e) Using the Techstream, check the switch operation when the parking brake is operated.

OK:

When the parking brake is operated, the display changes as shown above.

NG ▶ **INSPECT PARKING BRAKE SWITCH**

OK ▼

7.	INSPECT BRAKE FLUID LEVEL WARNING SWITCH

(a) Turn the ignition switch off.

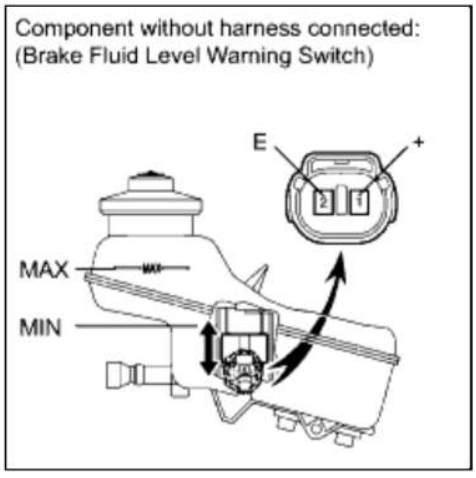
(b) Remove the reservoir filler cap and strainer.

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

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

HINT:

A float is located inside the reservoir. Its position can be changed by increasing or decreasing the level of brake fluid.



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (+) - 2 (E)	Switch OFF (Float up)	1.9 to 2.1 kΩ
1 (+) - 2 (E)	Switch ON (Float down)	Below 1 Ω

HINT:

If there is no problem after finishing the above check, adjust the brake fluid level to the MAX level.

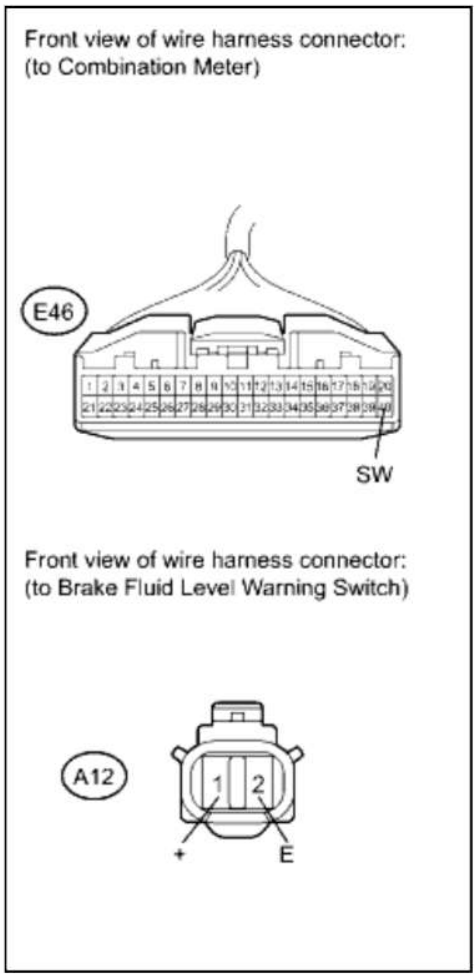
NG ▶ **REPLACE BRAKE MASTER CYLINDER**

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RESERVOIR ASSEMBLY (BRAKE FLUID LEVEL WARNING SWITCH)

OK

8.	CHECK HARNESS AND CONNECTOR (COMBINATION METER - BRAKE FLUID LEVEL WARNING SWITCH)



(a) Disconnect the combination meter connector.

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

Standard Resistance:

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E46-40 (SW) - A12-1 (+)	Always	Below 1 Ω
E46-40 (SW) - Body ground	Always	10 kΩ or higher
A12-2 (E) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK
▼

9.	INSPECT COMBINATION METER ASSEMBLY

(a) Perform the Active Test of the combination meter (meter CPU) using the Techstream INFO .

(b) Check the combination meter.

HINT:

Reinstall the connectors and restore the vehicle to its prior condition before checking the combination meter.

OK:
The brake warning light turns on or off in accordance with the Techstream.

HINT:

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

NG ▶ **REPLACE COMBINATION METER ASSEMBLY**

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

10.	INSPECT PARKING BRAKE SWITCH

(a) Turn the ignition switch off.

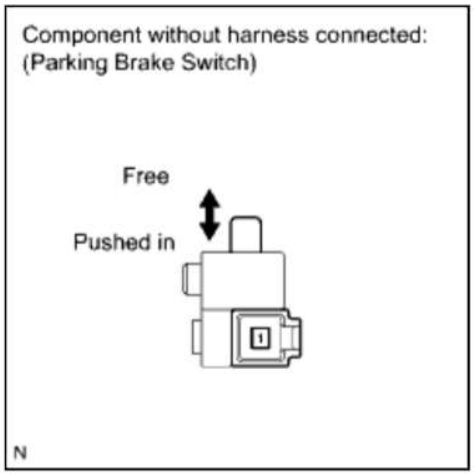
(b) Disconnect the parking brake switch connector.

(c) Measure the resistance according to the value(s) in

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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

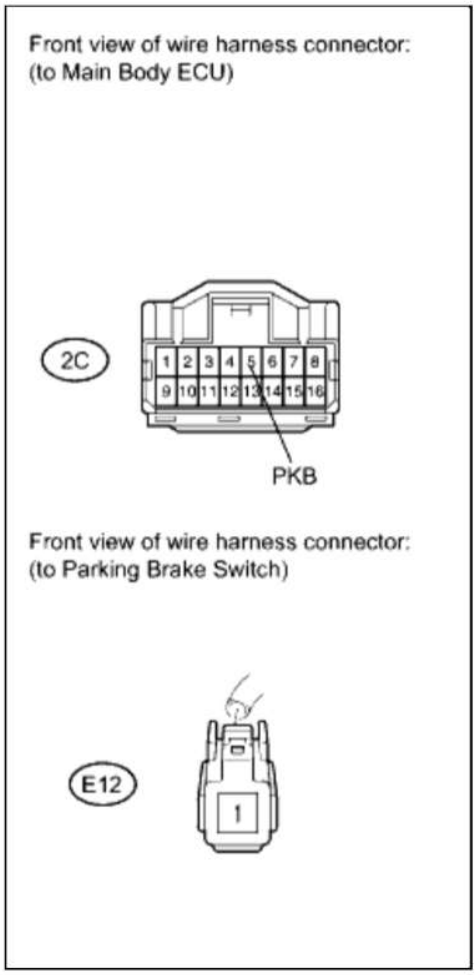
NG ▶ **REPLACE PARKING BRAKE SWITCH**

OK ▼

11.	**CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - PARKING BRAKE SWITCH)**

(a) Disconnect the main body ECU connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2C-5 (PKB) - E12-1	Always	Below 1 Ω
2C-5 (PKB) - Body ground	Always	10 kΩ or higher

HINT:

If troubleshooting has been carried out according to the 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)**

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Last Modified: 3-10-2010	6.4 C	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000024PB01NX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: U0073/94: Control Module Communication Bus OFF (2010 Corolla)		

DTC	**U0073/94**	**Control Module Communication Bus OFF**

DESCRIPTION

The skid control ECU receives signals sent from the ECM via the CAN communication system.

When DTCs indicating a CAN communication system malfunction are output, repair the CAN communication system before repairing each corresponding sensor.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
U0073/94	Either of the following is detected: 1. When the IG1 terminal voltage is between 10 and 17.4 V, after the output of data from the skid control ECU is completed, the sending continues for 5 seconds or more. 2. When the IG1 terminal voltage is between 10 and 17.4 V, the condition that bus OFF state occurs once or more within 0.1 seconds occurs 10 times in succession. (Sent signals cannot be received.)	CAN communication system

INSPECTION PROCEDURE

Proceed to CAN communication system INFO .

HINT:

When DTCs indicating a CAN communication system malfunction are output, repair the CAN communication system before performing troubleshooting for each corresponding sensor.

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIQ053X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: ABS Warning Light does not Come ON (2010 Corolla)		

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

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.

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(b) Turn the ignition switch to ON.

(c) Check that the ABS warning light comes on.

OK:
The ABS warning light comes on.

HINT:

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

NG ▶ INSPECT COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

3.	INSPECT COMBINATION METER ASSEMBLY

(a) Turn the ignition 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.

HINT:

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

NG ▶ REPLACE COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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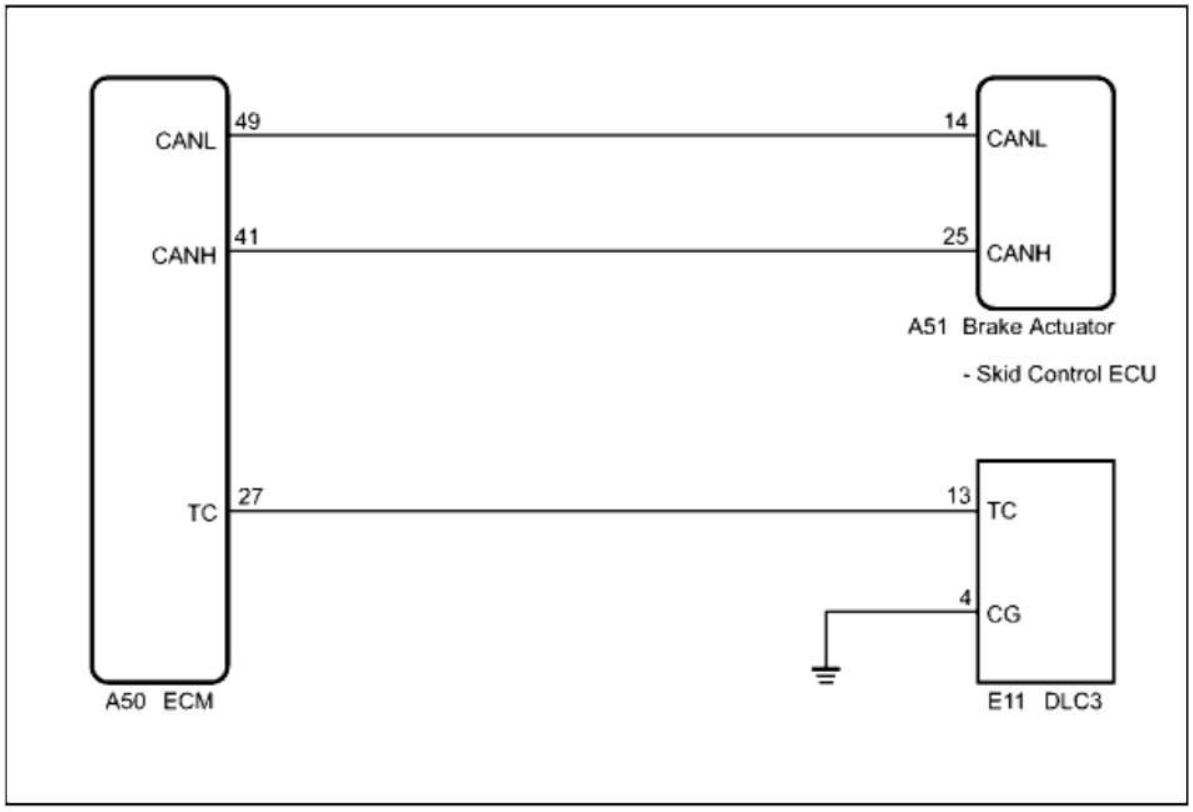
Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIU05KX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: TC and CG Terminal Circuit (2010 Corolla)		

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:

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

PROCEDURE

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1.	CHECK CAN COMMUNICATION SYSTEM

(a) Check if the CAN communication system DTC is output INFO.

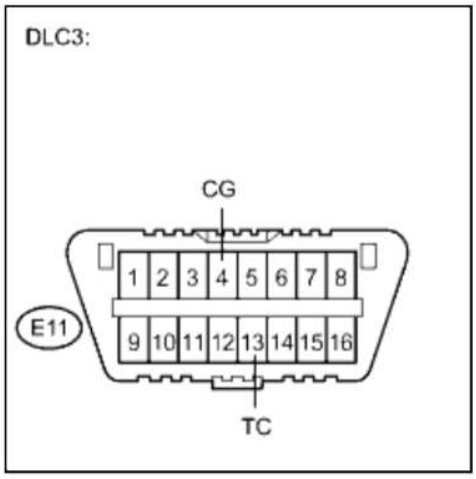
Result:

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ INSPECT CAN COMMUNICATION SYSTEM

A ▼

2.	INSPECT DLC3



(a) Turn the ignition switch to ON.

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

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E11-13 (TC) - E11-4 (CG)	Ignition switch ON	11 to 14 V

Result:

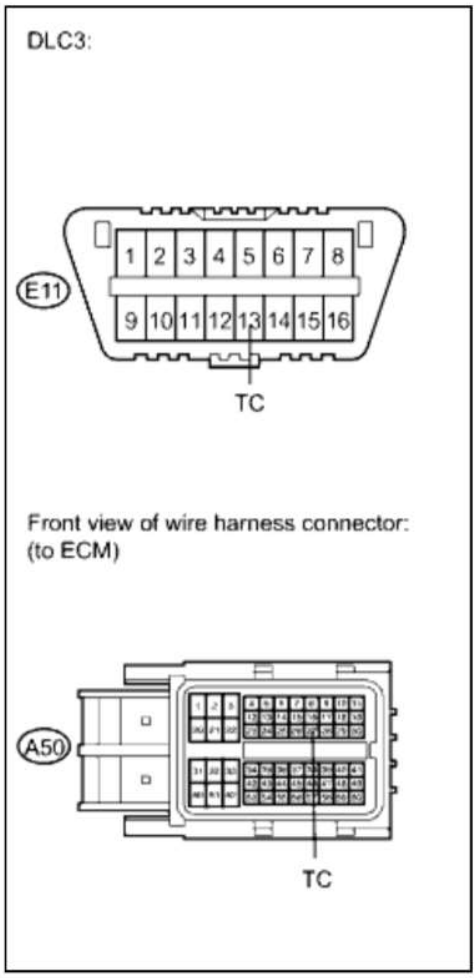
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RESULT	PROCEED TO
NG	A
OK	B

B ▶ CHECK ECM (TC of DLC3 INPUT)

A ▼

3.	CHECK HARNESS AND CONNECTOR (TC of DLC3 - ECM)



(a) Turn the ignition switch off.

(b) Disconnect the ECM connector.

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

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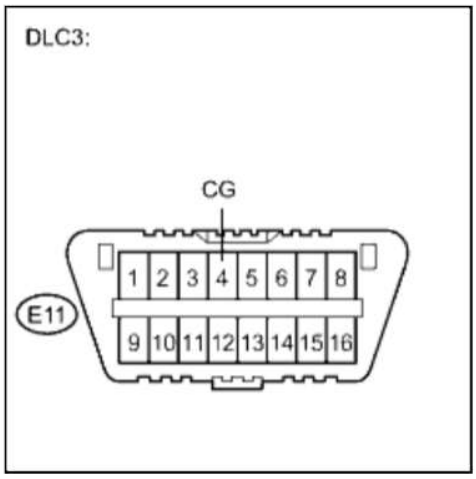
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-13 (TC) - A50-27 (TC)	Always	Below 1 Ω
E11-13 (TC) - Body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	CHECK HARNESS AND CONNECTOR (CG of DLC3 - BODY GROUND)



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-4 (CG) - Body ground	Always	Below 1 Ω

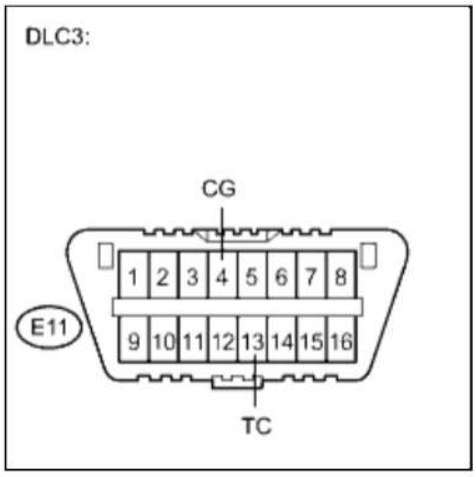
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

5.	CHECK ECM (TC of DLC3 INPUT)

(a) Turn the ignition switch off.

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(b) Reconnect the ECM connector.

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

SST: 09843-18040

(d) Turn the ignition switch to ON.

(e) Check that the check engine warning light is blinking.

Result:

RESULT	PROCEED TO
Check engine warning light is blinking	A
Check engine warning light is not blinking	B

HINT:

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

B ▶ **REPAIR OR REPLACE WIRE HARNESS OR ECM (TC of ECM CIRCUIT)**

A ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY**

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000YHH052X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: Brake Warning Light does not Come ON (2010 Corolla)		

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

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**

(a) Disconnect the skid control ECU connector.

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(b) Turn the ignition switch to ON.

(c) Check that the brake warning light comes on.

OK:
The brake warning light comes on.

HINT:

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

NG ▶ INSPECT COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

3.	INSPECT COMBINATION METER ASSEMBLY

(a) Turn the ignition 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 turns on or off in accordance with the Techstream.

HINT:

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

NG ▶ REPLACE COMBINATION METER ASSEMBLY

OK ▶ REPLACE BRAKE ACTUATOR ASSEMBLY

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Last Modified: 3-10-2010	6.4 J	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000000XIV04ZX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ANTI-LOCK BRAKE SYSTEM: TS and CG Terminal Circuit (2010 Corolla)		

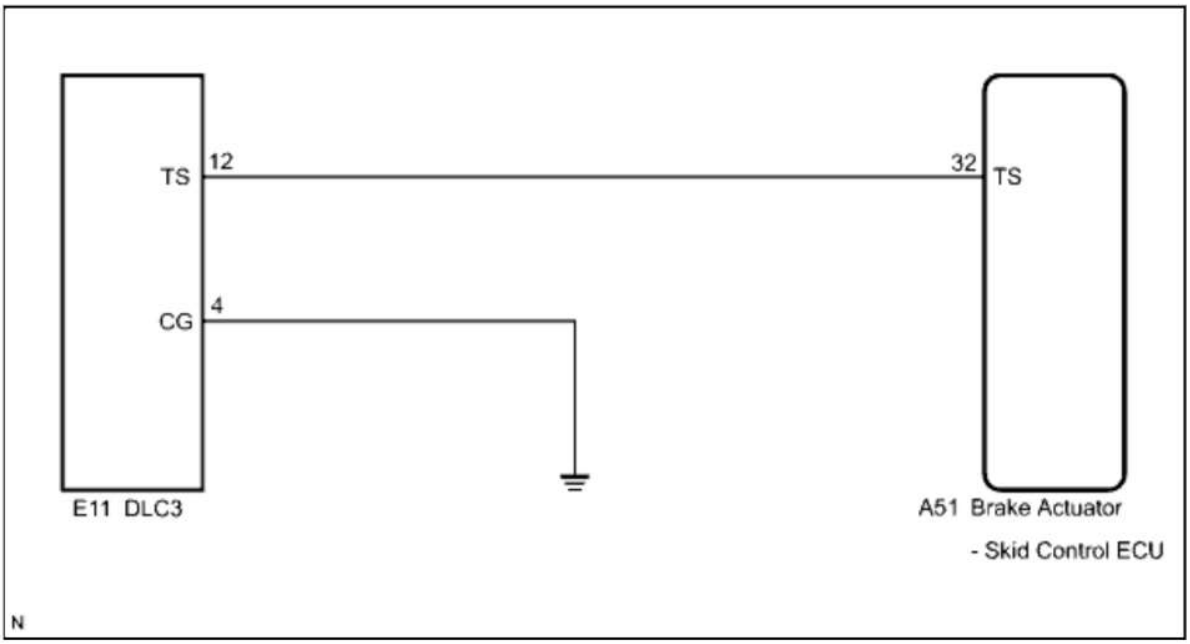
TS and CG Terminal Circuit

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 ignition switch from off to ON.

WIRING DIAGRAM



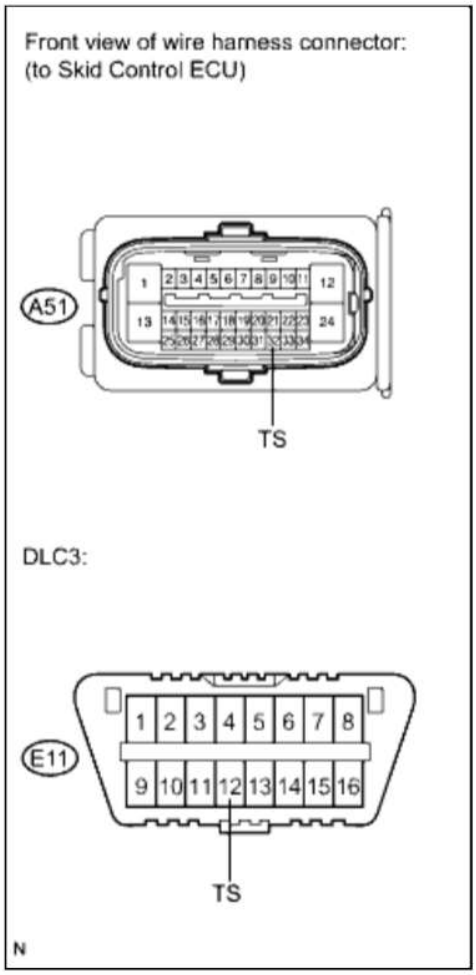
INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - TS of DLC3)**

(a) Disconnect the skid control ECU connector.

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A51-32 (TS) - E11-12 (TS)	Always	Below 1 Ω

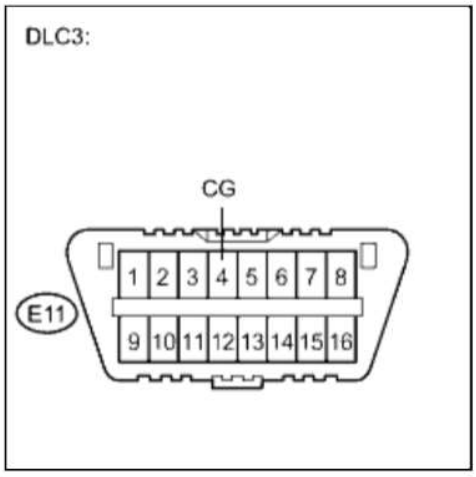
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

2.	**CHECK HARNESS AND CONNECTOR (CG of DLC3 - BODY GROUND)**

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

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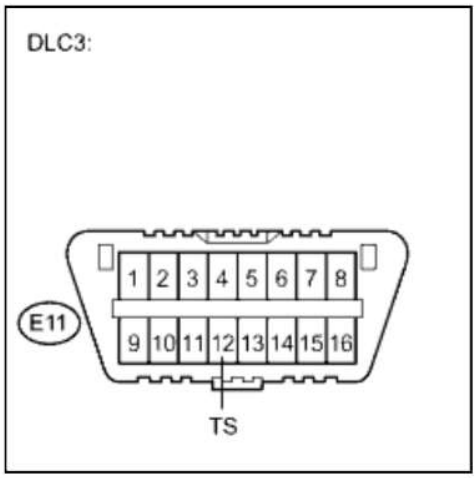
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-4 (CG) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

3.	CHECK HARNESS AND CONNECTOR (TS of DLC3 - BODY GROUND)



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E11-12 (TS) - Body ground	Always	10 kΩ or higher

HINT:

If troubleshooting has been carried out according to the 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 ACTUATOR ASSEMBLY**

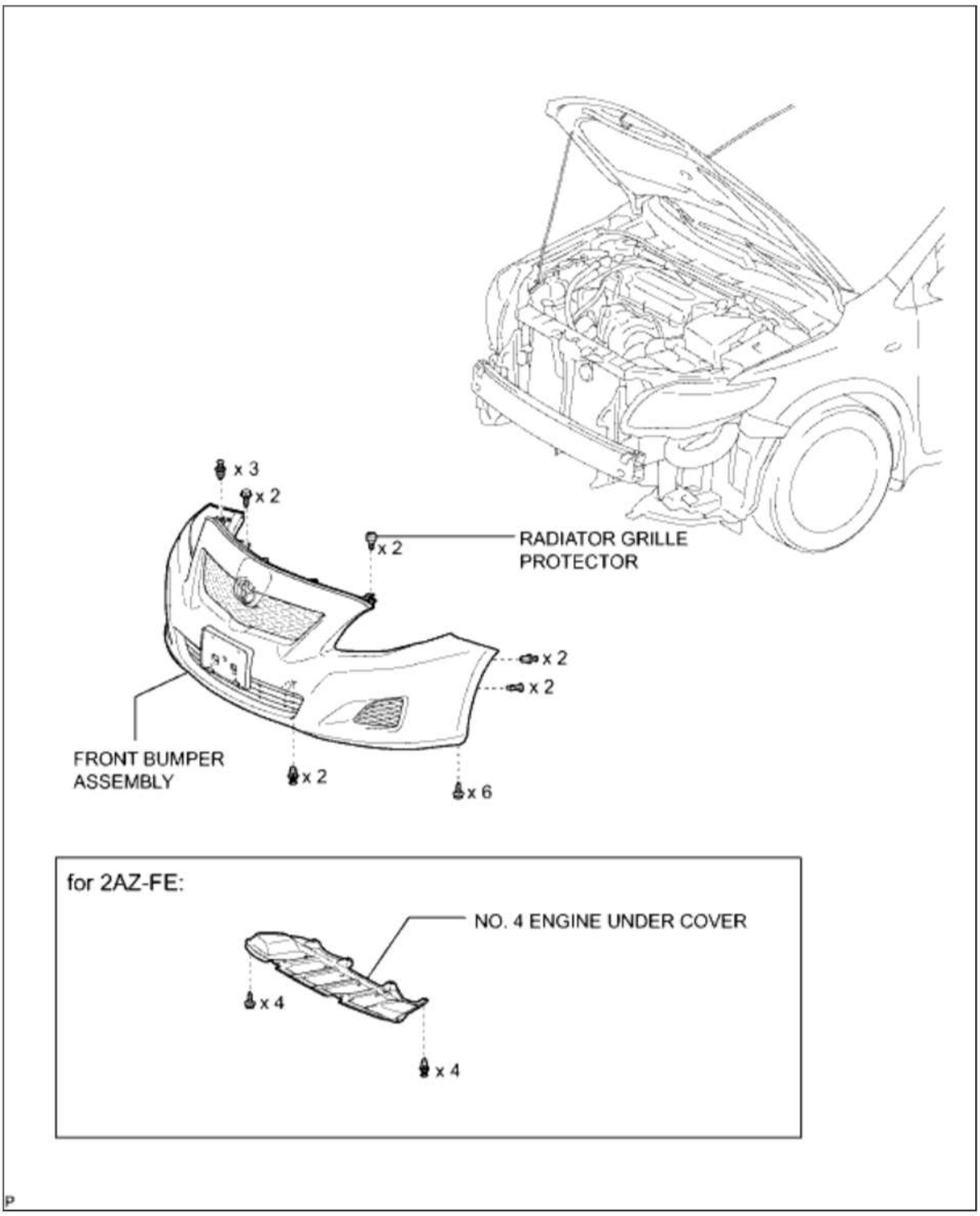
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Last Modified: 3-10-2010	6.4 K	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003FA3005X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/ VSC): COMPONENTS (2010 Corolla)		

COMPONENTS

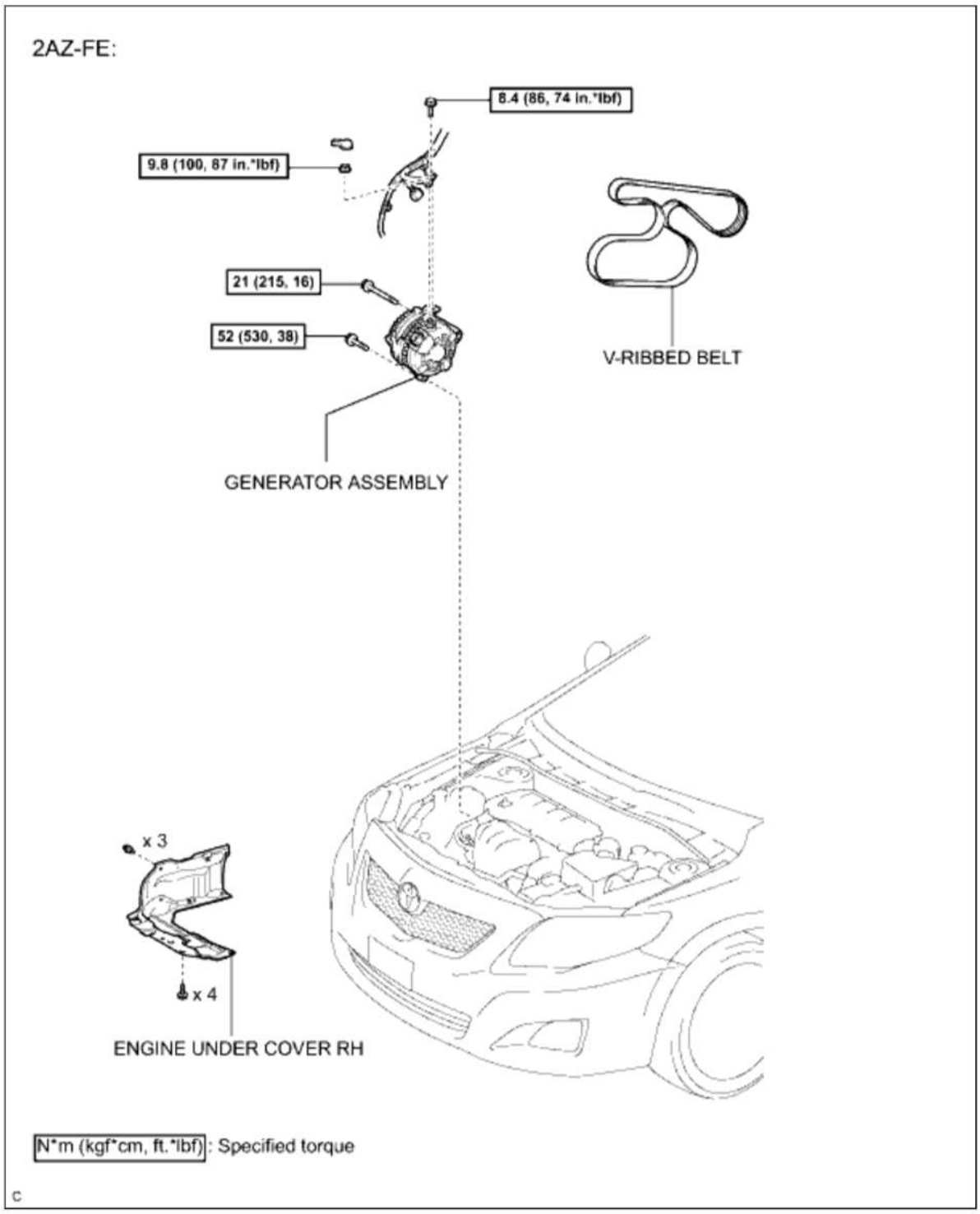
ILLUSTRATION

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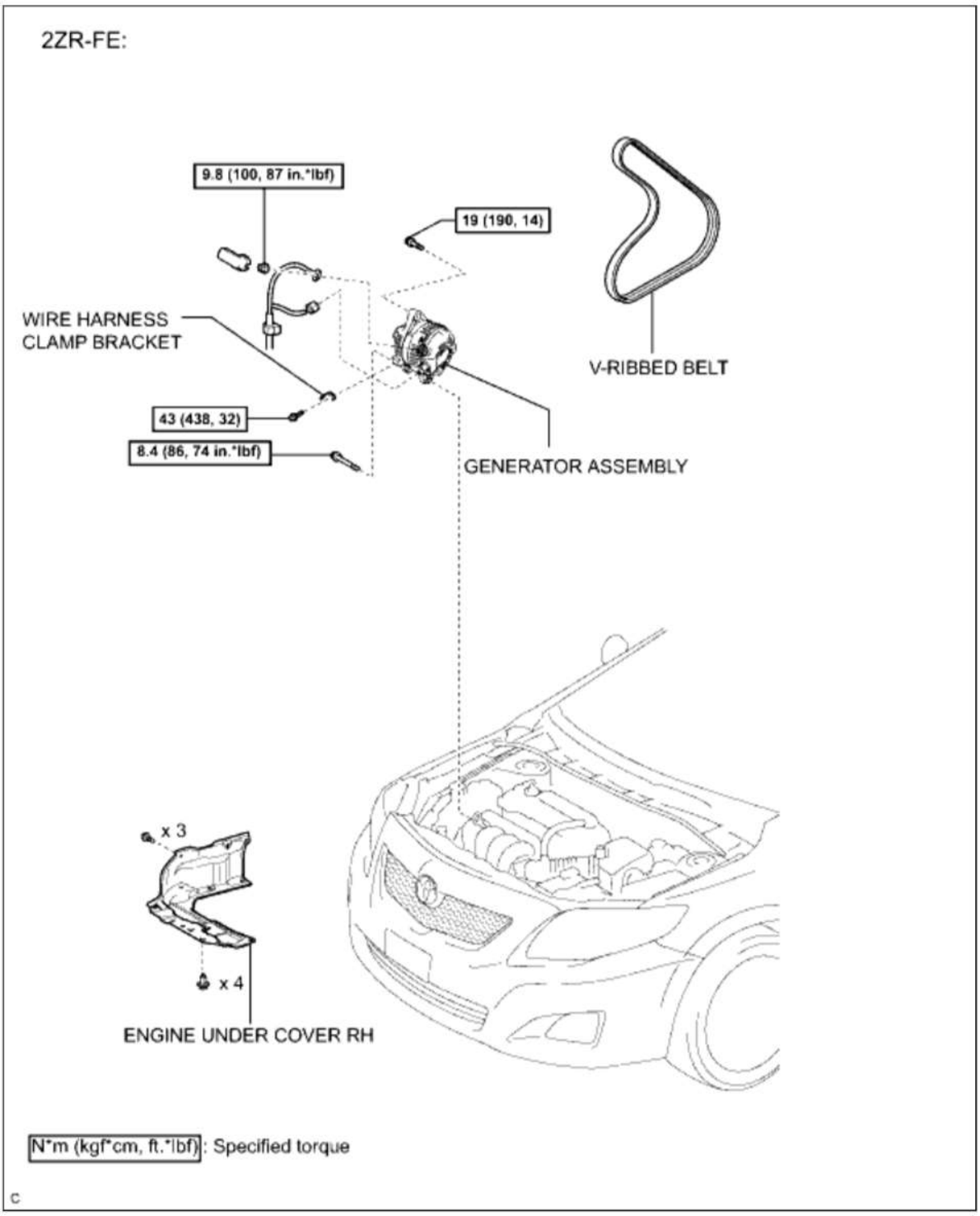
ILLUSTRATION

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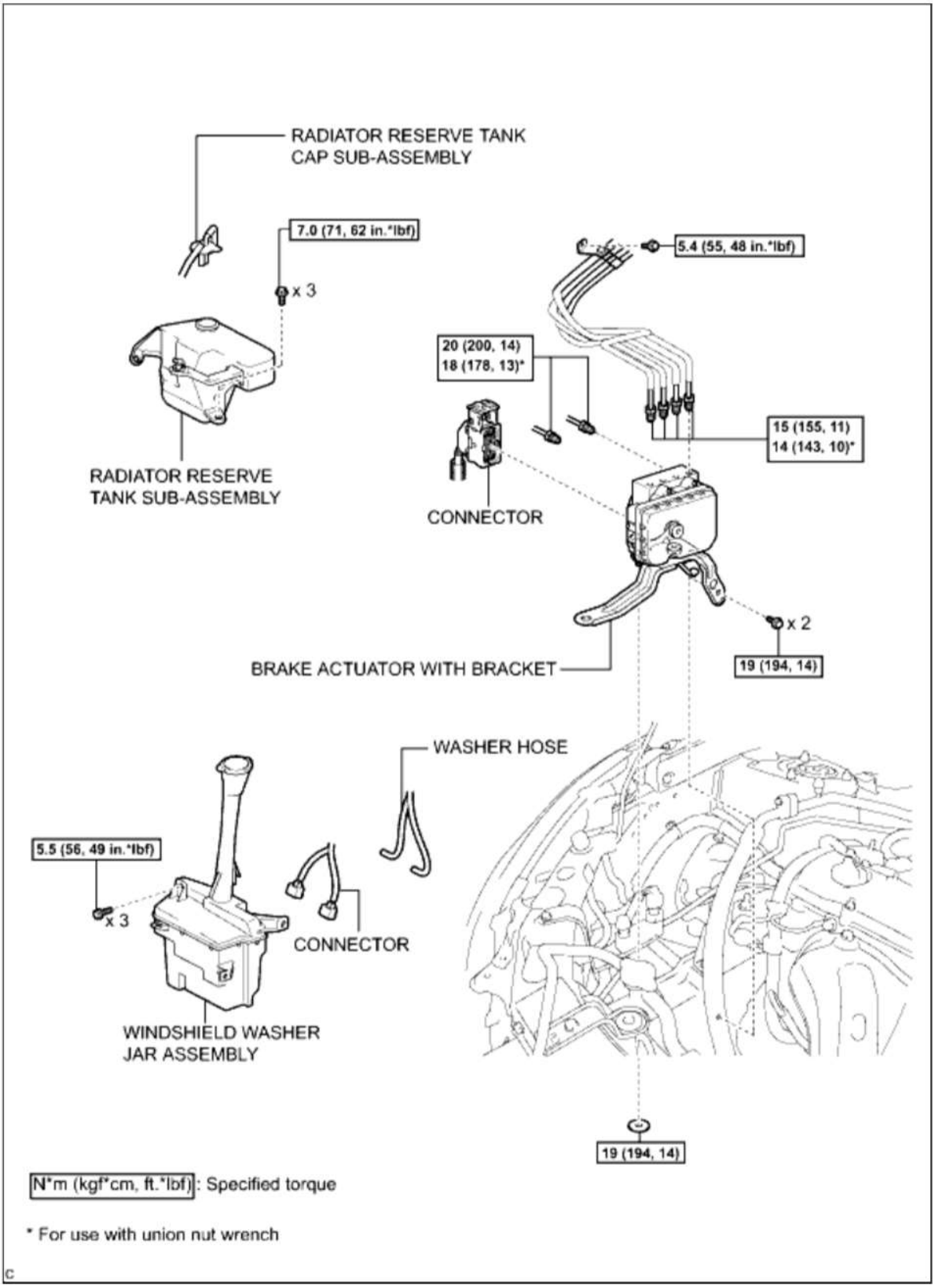
ILLUSTRATION

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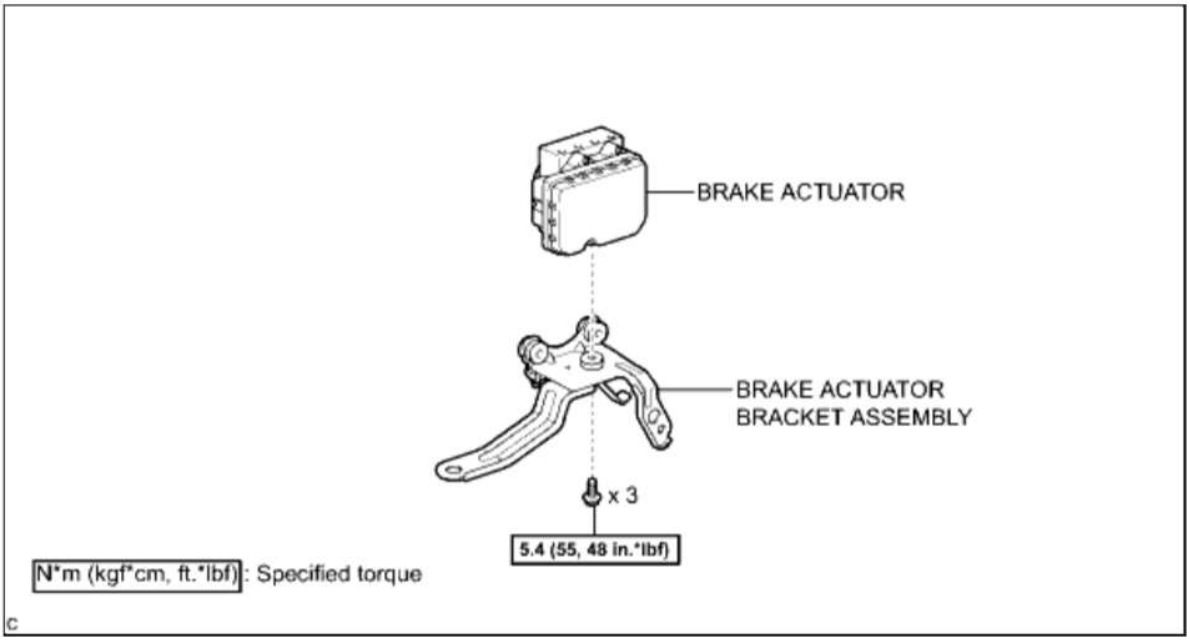
ILLUSTRATION

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ILLUSTRATION

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Last Modified: 3-10-2010	6.4 G	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VQ700LX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/ VSC): ON-VEHICLE INSPECTION (2010 Corolla)		

ON-VEHICLE INSPECTION

1. CONNECT TECHSTREAM

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON.

(e) Turn the Techstream on.

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

HINT:

Refer to the Techstream Operator's Manual for further details.

2. INSPECT ACTUATOR MOTOR OPERATION

NOTICE:

Do not keep the motor relay on continuously for more than 5 seconds. If it needs to be operated repeatedly, set an interval of more than 20 seconds between operations.

(a) Enter the following menus: Active Test / Motor Relay.

(b) Turn the motor relay on and check for the actuator motor operation sound.

(c) Turn the motor relay off.

(d) Fully depress the brake pedal and hold it for approximately 15 seconds. Check that the pedal's initial depth is maintained for the entire 15 seconds.

(e) With the pedal still depressed turn the motor relay on and check that the pedal does not pulsate.

(f) Turn the motor relay off and release the brake pedal.

3. INSPECT FRONT RIGHT WHEEL OPERATION

NOTICE:

Do not turn on a solenoid in a manner different than that shown in the following steps.

(a) Enter the following menus: Active Test / ABS Solenoid (SFRH) and ABS Solenoid (SFRR).

(b) Depress the brake pedal and hold it.

(c) Turn the SFRH and SFRR solenoids on simultaneously and check that the pedal cannot be depressed.

NOTICE:

Each solenoid operates for 2 seconds and turns off automatically. If it needs to be operated repeatedly, set an interval of more than 20 seconds between operations.

(d) Turn the SFRH and SFRR solenoids off simultaneously and check that the pedal can be depressed.

(e) Turn the motor relay on and check that the pedal returns.

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NOTICE:

Do not keep the motor relay on continuously for more than 5 seconds. If it needs to be operated repeatedly, set an interval of more than 20 seconds between operations.

(f) Turn the motor relay off and release the brake pedal.

4. INSPECT OTHER WHEEL OPERATION

(a) Using the same procedure, check the solenoids of the other wheels.

HINT:

- Front left wheel: SFLH, SFLR
- Rear right wheel: SRRH, SRRR
- Rear left wheel: SRLH, SRLR



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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003CZU00BX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/ VSC): REMOVAL (2010 Corolla)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

2. REMOVE FRONT WHEEL RH

3. REMOVE ENGINE UNDER COVER RH

4. REMOVE V-RIBBED BELT (for 2ZR-FE) INFO

5. REMOVE V-RIBBED BELT (for 2AZ-FE) INFO

6. REMOVE GENERATOR ASSEMBLY (for 2AZ-FE) INFO

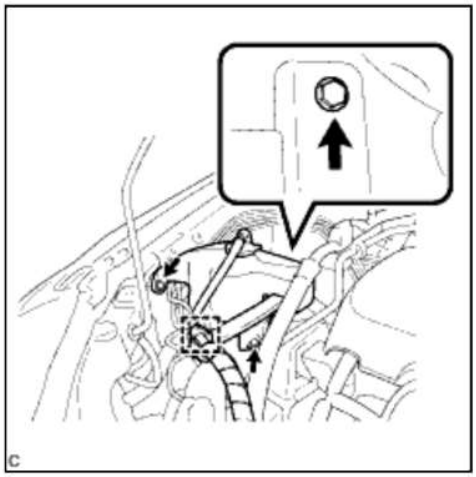
7. REMOVE GENERATOR ASSEMBLY (for 2ZR-FE) INFO

8. DRAIN BRAKE FLUID

NOTICE:

If brake fluid leaks onto any painted surface, immediately clean it off completely.

9. REMOVE RADIATOR RESERVE TANK SUB-ASSEMBLY



(a) Remove the 3 bolts and radiator reserve tank sub-assembly.

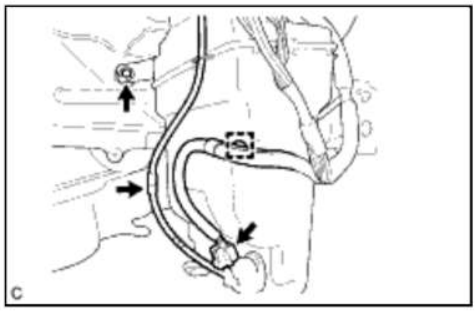
10. REMOVE RADIATOR GRILLE PROTECTOR INFO

11. REMOVE NO. 4 ENGINE UNDER COVER (for 2AZ-FE) INFO

12. REMOVE FRONT BUMPER ASSEMBLY INFO

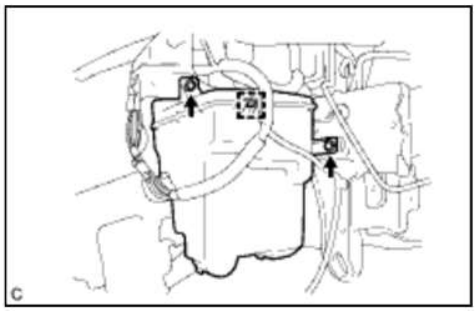
13. REMOVE WINDSHIELD WASHER JAR ASSEMBLY

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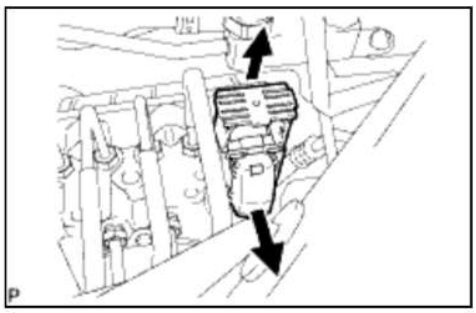
(a) Remove the bolt and disconnect the motor connectors.

(b) Separate the washer hoses from the windshield washer jar assembly.



(c) Remove the 2 bolts, clamp and windshield washer jar assembly from the body.

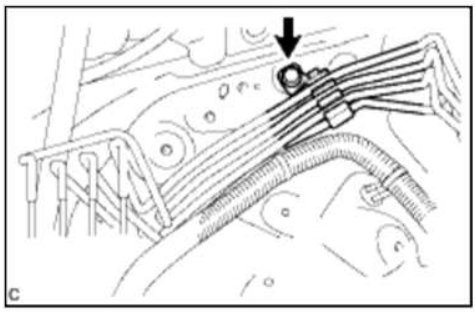
14. REMOVE BRAKE ACTUATOR WITH BRACKET



(a) Release the lock lever and disconnect the brake actuator connector.

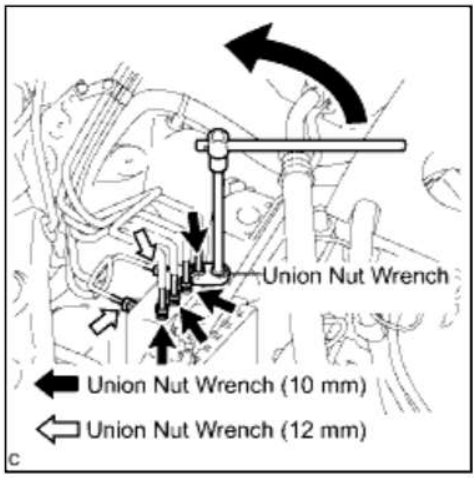
NOTICE:

Be careful not to allow brake fluid to enter the removed connector.

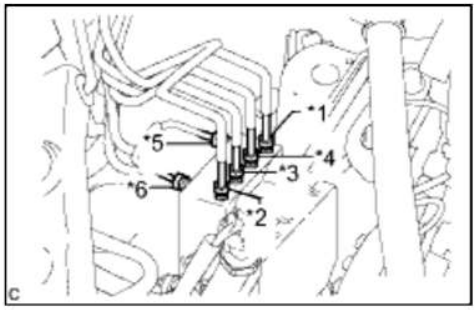


(b) Remove the bolt.

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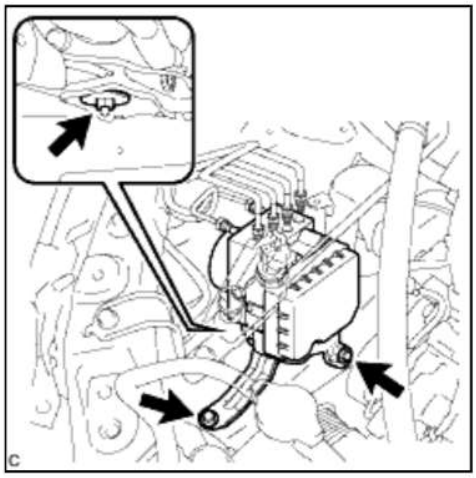
(c) Using a union nut wrench (10 mm), disconnect the 6 brake lines from the actuator assembly.



(d) Use tags or make a memo to identify the places to reconnect.

HINT:

- *1: To front wheel cylinder RH
- *2: To front wheel cylinder LH
- *3: To rear wheel cylinder RH
- *4: To rear wheel cylinder LH
- *5: From 1st master cylinder chamber
- *6: From 2nd master cylinder chamber



(e) Remove the 2 bolts, nut and the brake actuator with bracket from the body.

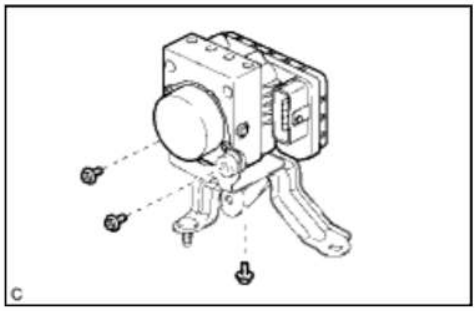
NOTICE:

- Do not damage the brake lines or wire harness.
- Do not carry the brake actuator assembly by the connector.

15. REMOVE BRAKE ACTUATOR

(a) Remove the 3 bolts and brake actuator from the brake actuator bracket assembly.

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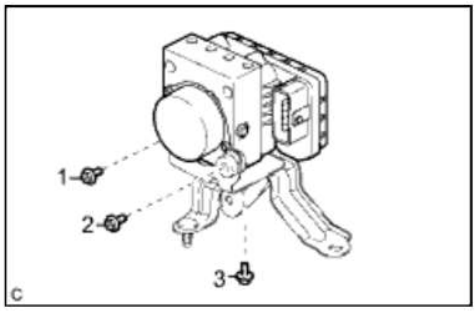


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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003CZT00BX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/ VSC): INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL BRAKE ACTUATOR



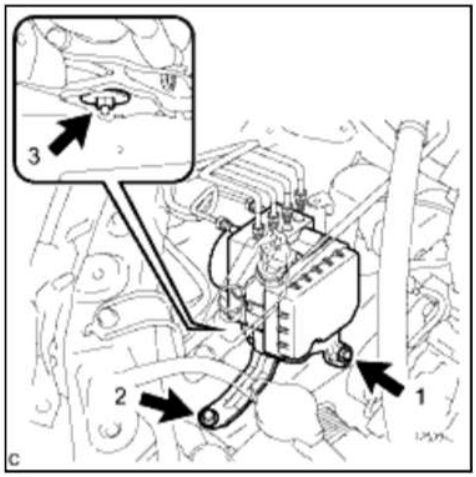
(a) Install the brake actuator to the brake actuator bracket assembly with the 3 bolts.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

NOTICE:

- If installing a new brake actuator, do not remove the hole plugs before connecting the brake lines because the new brake actuator is filled with brake fluid.
- Do not carry the brake actuator by the connector.
- Tighten the 3 bolts in the order shown in the illustration.

2. INSTALL BRAKE ACTUATOR WITH BRACKET



(a) Install the brake actuator with bracket to the body with the 2 bolts and nut.

Torque: 19 N·m (194 kgf·cm, 14ft·lbf)

NOTICE:

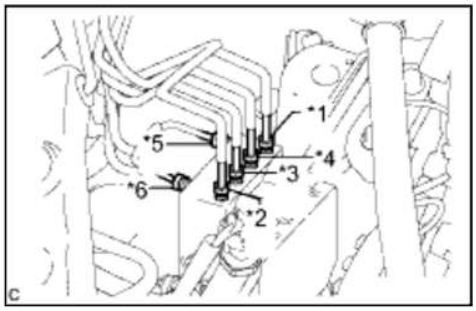
- Do not damage the brake lines or wire harness.
- Tighten the 2 bolts and nut in the order shown in the illustration.

(b) Temporarily tighten each brake line to the correct positions of the brake actuator with bracket as shown in the illustration.

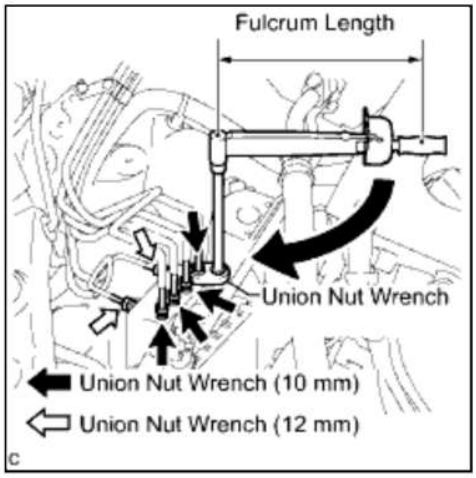
HINT:

- *1: To front wheel cylinder RH
- *2: To front wheel cylinder LH
- *3: To rear wheel cylinder RH

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- *4: To rear wheel cylinder LH
- *5: From 1st master cylinder chamber
- *6: From 2nd master cylinder chamber



(c) Using a union nut wrench (10 mm) and union nut wrench (12 mm), fully tighten each brake line.

without a union nut wrench (10 mm) - Torque: 15 N·m (155 kgf·cm, 11ft·lbf)

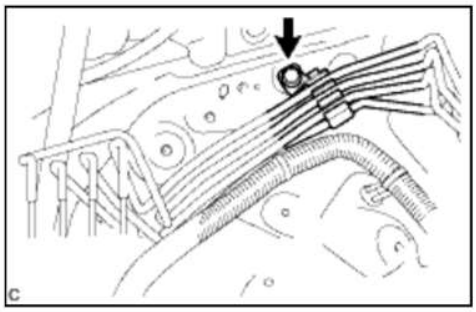
with a union nut wrench (10 mm) - Torque: 14 N·m (143 kgf·cm, 10ft·lbf)

without a union nut wrench (12 mm) - Torque: 20 N·m (200 kgf·cm, 14ft·lbf)

with a union nut wrench (12 mm) - Torque: 18 N·m (178 kgf·cm, 13ft·lbf)

NOTICE:

- Use a torque wrench with a fulcrum length of 250 mm (9.84 in.).
- This torque value is effective when the union nut wrench is parallel to the torque wrench.



(d) Install the brake line clamp with the bolt.

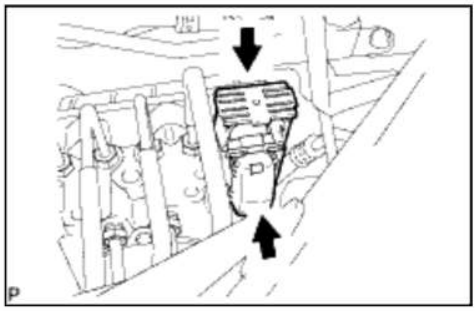
Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

(e) Connect the actuator connector.

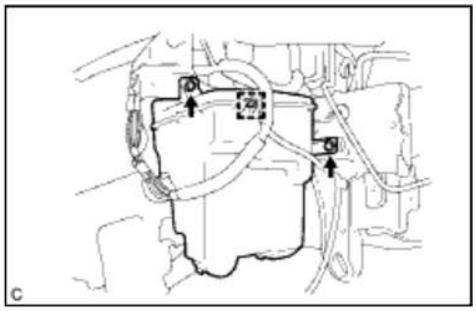
NOTICE:

Make sure that the connector is locked securely.

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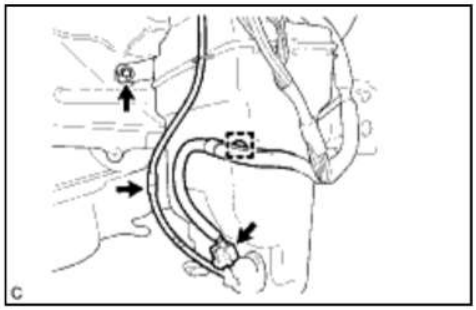


3. INSTALL WINDSHIELD WASHER JAR ASSEMBLY



(a) Install the windshield washer jar assembly and clamp to the body with the 2 bolts.

Torque: 5.5 N·m (56 kgf·cm, 49in·lbf)



(b) Install the bolt and connect the washer hoses and motor connectors.

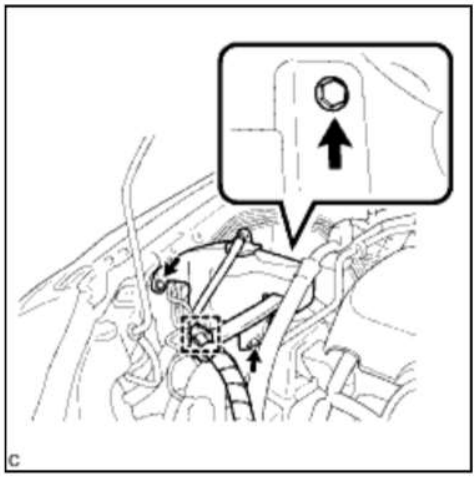
Torque: 5.5 N·m (56 kgf·cm, 49in·lbf)

4. INSTALL RADIATOR RESERVE TANK SUB-ASSEMBLY

(a) Install the radiator reserve tank sub-assembly with the 3 bolts.

Torque: 7.0 N·m (71 kgf·cm, 62in·lbf)

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5. INSTALL FRONT BUMPER ASSEMBLY INFO

6. INSTALL RADIATOR GRILLE PROTECTOR INFO

7. INSTALL NO. 4 ENGINE UNDER COVER INFO

8. INSTALL FRONT WHEEL RH

9. INSTALL GENERATOR ASSEMBLY (for 2ZR-FE) INFO

10. INSTALL GENERATOR ASSEMBLY (for 2AZ-FE) INFO

11. INSTALL V-RIBBED BELT (for 2ZR-FE) INFO

12. ADJUST V-RIBBED BELT (for 2ZR-FE) INFO

13. INSPECT V-RIBBED BELT (for 2ZR-FE) INFO

14. INSTALL V-RIBBED BELT (for 2AZ-FE) INFO

15. INSTALL ENGINE UNDER COVER RH

16. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

17. REMOVE CENTER COWL TOP VENTILATOR LOUVER INFO

18. FILL UP BRAKE FLUID RESERVOIR INFO

19. BLEED BRAKE MASTER CYLINDER INFO

20. BLEED BRAKE LINE INFO

21. BLEED BRAKE ACTUATOR INFO

22. INSPECT BRAKE FLUID LEVEL INFO

23. INSPECT FOR BRAKE FLUID LEAK

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24. INSTALL CENTER COWL TOP VENTILATOR LOUVER INFO

25. INSPECT ACTUATOR WITH TECHSTREAM

INFO

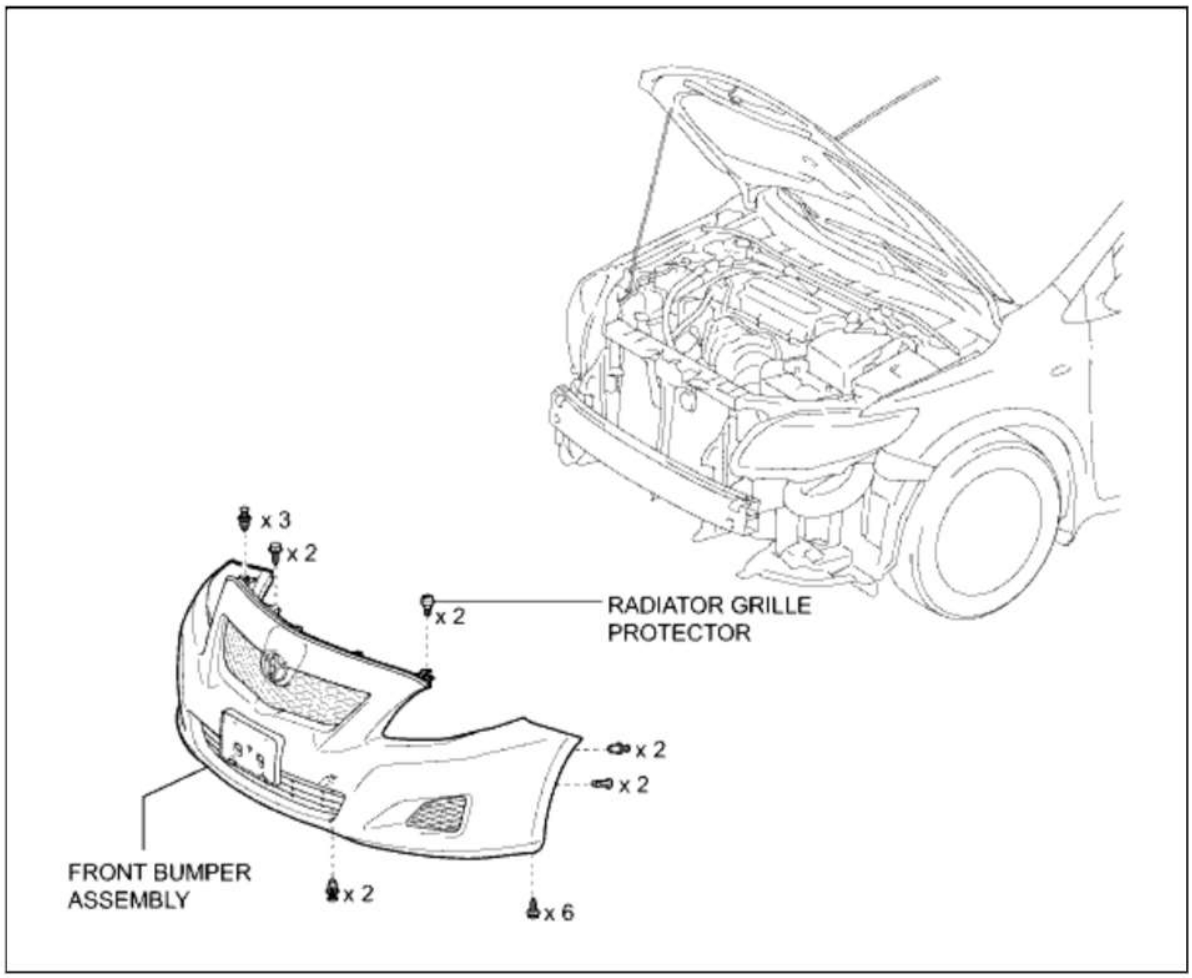


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Last Modified: 3-10-2010	6.4 K	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003F9Z004X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/o VSC): COMPONENTS (2010 Corolla)		

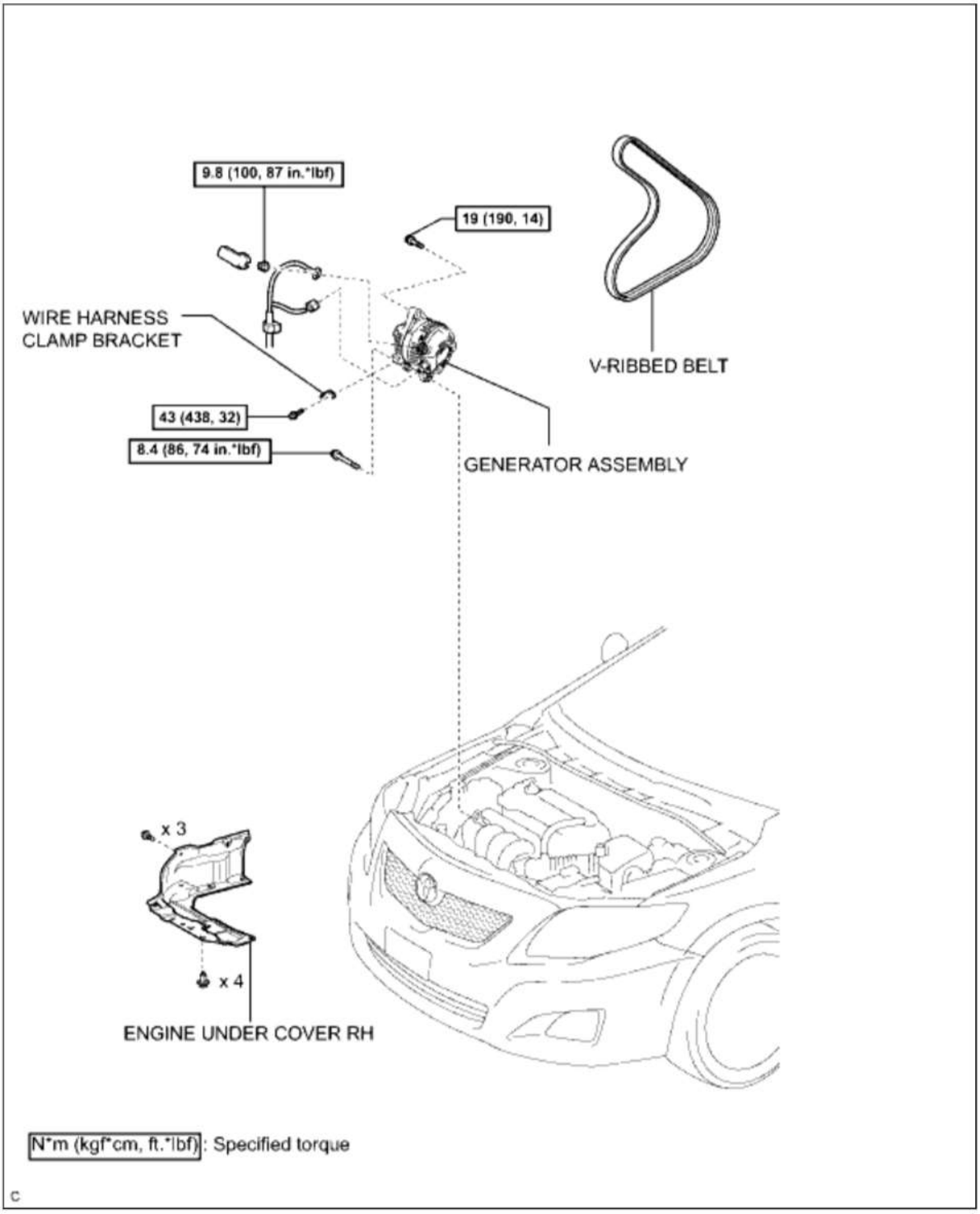
COMPONENTS

ILLUSTRATION



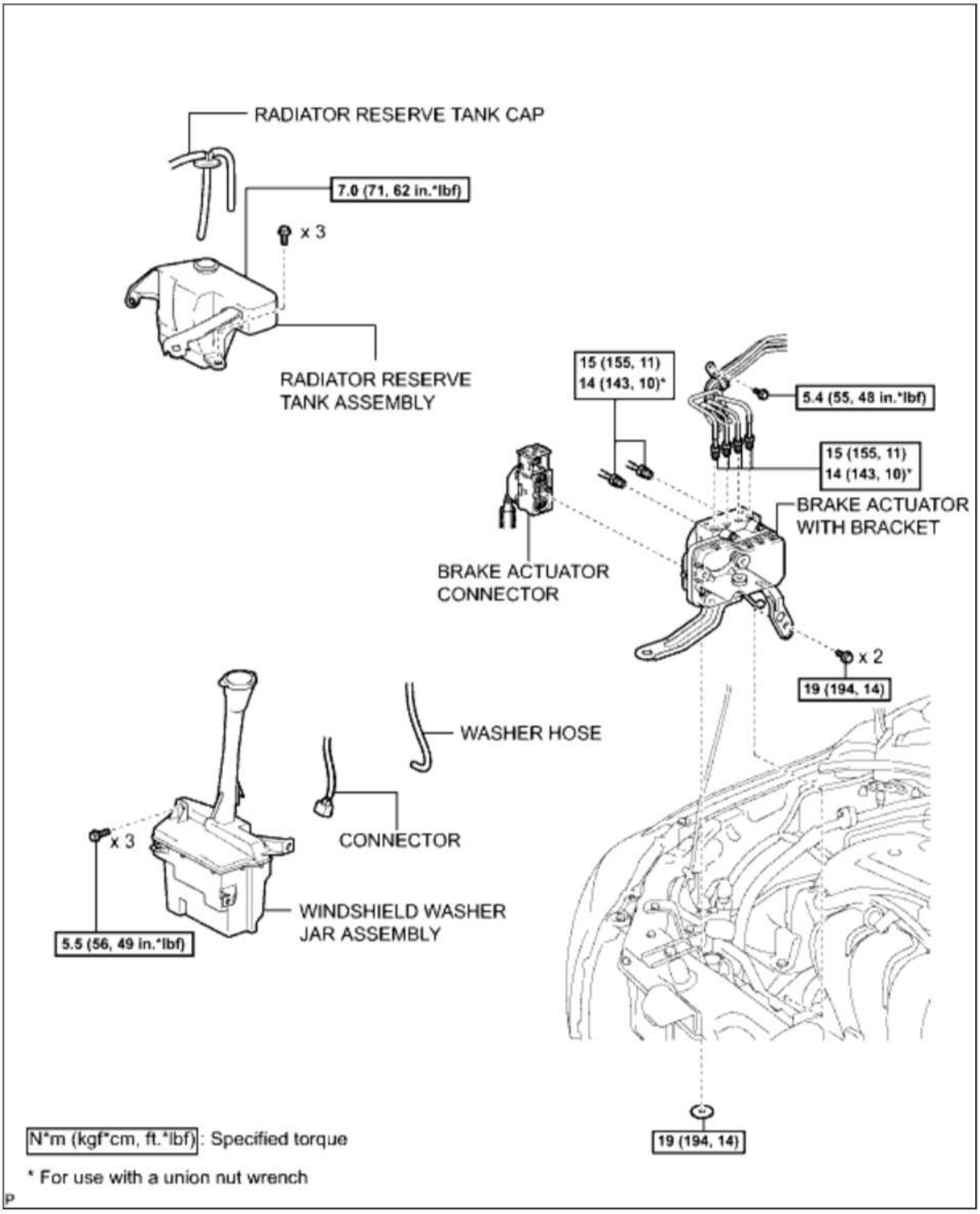
ILLUSTRATION

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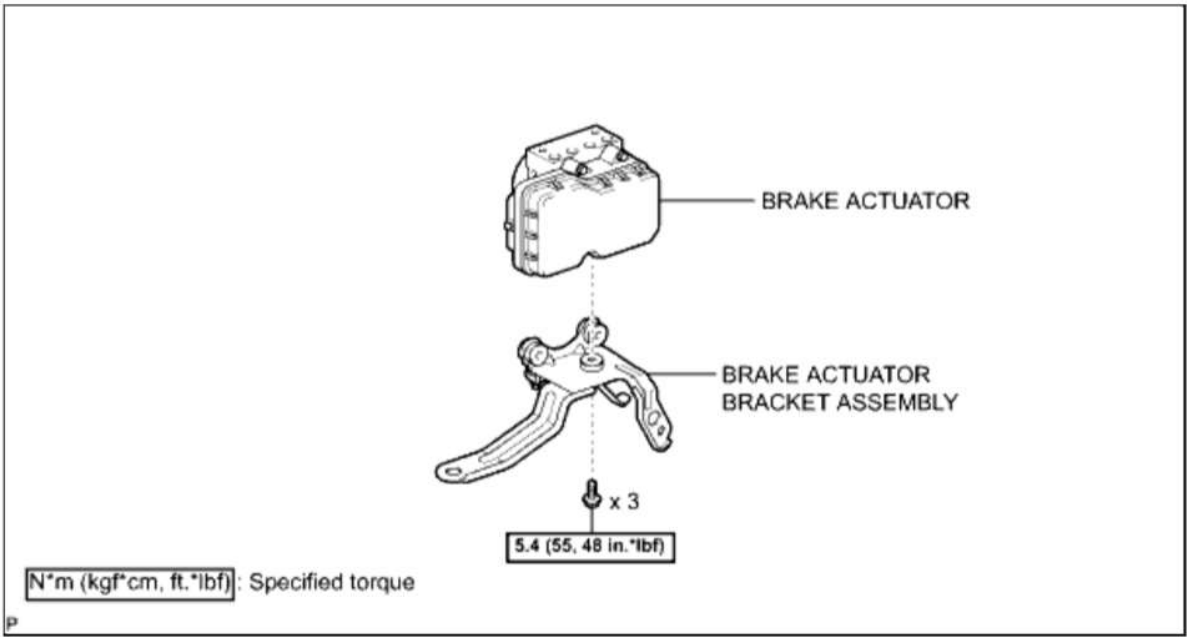
ILLUSTRATION

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ILLUSTRATION

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Last Modified: 3-10-2010	6.4 G	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VQP00GX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/o VSC): ON-VEHICLE INSPECTION (2010 Corolla)		

ON-VEHICLE INSPECTION

1. CONNECT TECHSTREAM

(a) Connect the Techstream to the DLC3.

(b) Start the engine and run it at idle.

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

HINT:

Refer to the Techstream Operator's Manual for further details.

2. INSPECT ACTUATOR MOTOR OPERATION

NOTICE:

Do not keep the motor relay on continuously for more than 5 seconds. If it needs to be operated repeatedly, set an interval of more than 20 seconds between operations.

(a) Enter the following menus: Active Test / Motor Relay.

(b) Turn the motor relay on and check for the actuator motor operation sound.

(c) Turn the motor relay off.

(d) Fully depress the brake pedal and hold it for approximately 15 seconds. Check that the pedal's initial depth is maintained for the entire 15 seconds.

(e) Turn the motor relay on and check that the pedal does not pulsate.

(f) Turn the motor relay off and release the brake pedal.

3. INSPECT FRONT RIGHT WHEEL OPERATION

NOTICE:

Do not turn on a solenoid in a manner different than that shown in the following steps.

(a) Depress the brake pedal and hold it.

(b) Turn the SFRH and SFRR solenoids on simultaneously and check that the pedal cannot be depressed.

NOTICE:

Each solenoid operates for 2 seconds and turns off automatically. If it needs to be operated repeatedly, set an interval of more than 20 seconds between operations.

(c) Turn the SFRH and SFRR solenoids off simultaneously and check that the pedal can be depressed.

(d) Turn the motor relay on and check that the pedal returns.

NOTICE:

Do not keep the motor relay on continuously for more than 5 seconds. If it needs to be operated repeatedly, set an interval of more than 20 seconds between operations.

(e) Turn the motor relay off and release the brake pedal.

4. INSPECT OTHER WHEEL OPERATION

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(a) Using the same procedure, check the solenoids of the other wheels.

- Left front wheel: SFLH, SFLR
- Right rear wheel: SRRH, SRRR
- Left rear wheel: SRLH, SRLR



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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000013P6018X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/o VSC): REMOVAL (2010 Corolla)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

2. REMOVE ENGINE UNDER COVER RH

3. REMOVE RADIATOR GRILLE PROTECTOR INFO

4. REMOVE FRONT BUMPER ASSEMBLY INFO

5. REMOVE V-RIBBED BELT INFO

6. REMOVE GENERATOR ASSEMBLY INFO

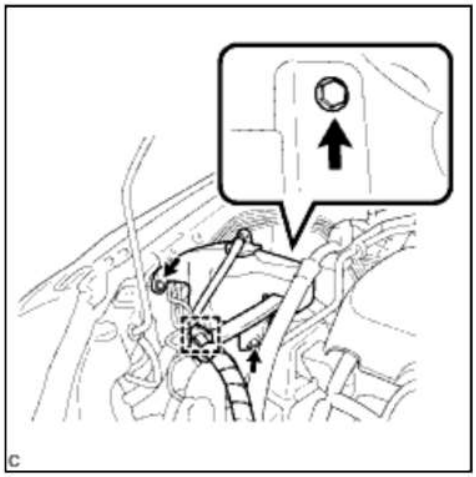
7. DRAIN BRAKE FLUID

NOTICE:

If brake fluid leaks onto any painted surface, immediately clean it off completely.

8. REMOVE FRONT WHEEL RH

9. REMOVE RADIATOR RESERVE TANK ASSEMBLY

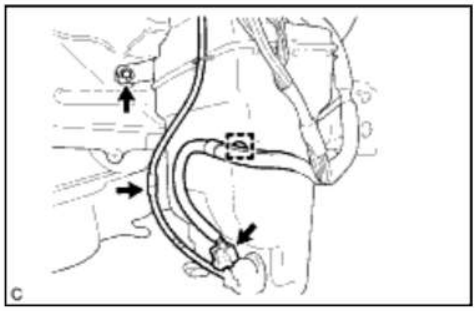


(a) Remove the 3 bolts and radiator reserve tank assembly.

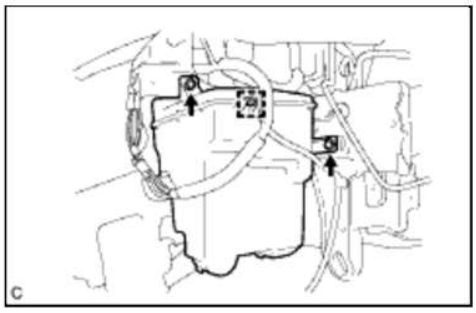
10. REMOVE WINDSHIELD WASHER JAR ASSEMBLY

(a) Remove the bolt and disconnect the motor connectors.

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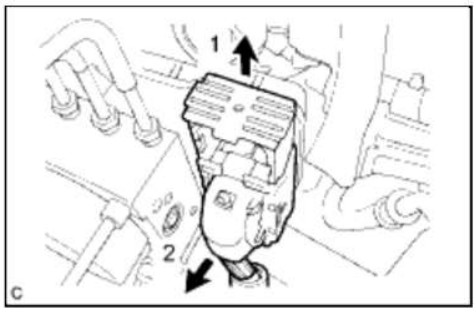


(b) Separate the washer hoses from the windshield washer jar assembly.



(c) Remove the 2 bolts, clamp and the windshield washer jar assembly from the body.

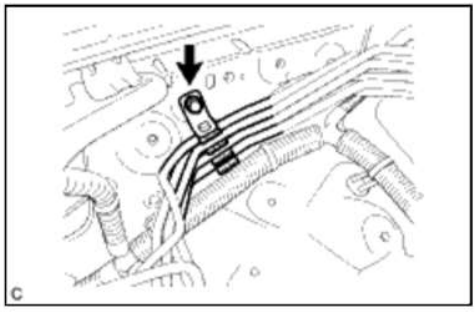
11. REMOVE BRAKE ACTUATOR WITH BRACKET



(a) Release the lock lever and disconnect the brake actuator connector.

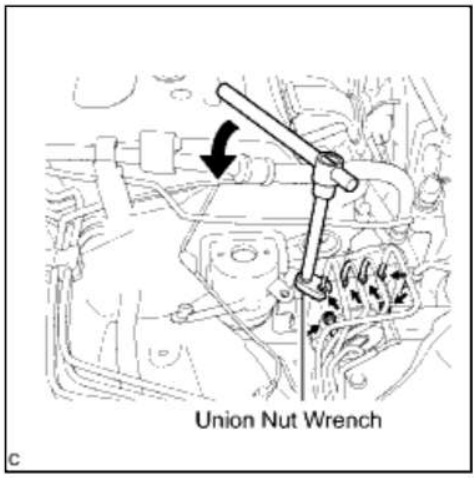
NOTICE:

Be careful not to allow brake fluid to enter the removed connector.

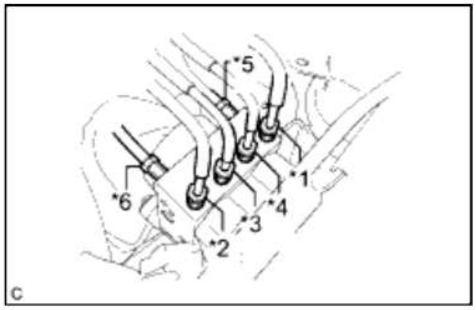


(b) Remove the bolt.

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(c) Using a union nut wrench (10 mm), disconnect the 6 brake lines from the actuator assembly.



(d) Use tags or make a memo to identify the places to reconnect.

HINT:

- *1: To front wheel cylinder RH
- *2: To front wheel cylinder LH
- *3: To rear wheel cylinder RH
- *4: To rear wheel cylinder LH
- *5: From 1st of master cylinder
- *6: From 2nd of master cylinder



(e) Remove the 2 bolts, nut and the brake actuator with bracket from the body.

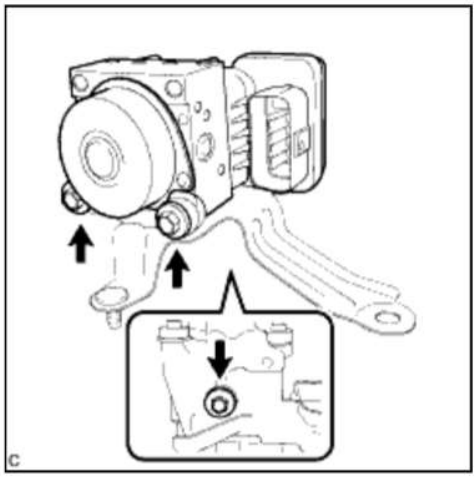
NOTICE:

- Do not damage the brake lines or wire harness.
- Do not carry the brake actuator assembly by the connector.

12. REMOVE BRAKE ACTUATOR

(a) Remove the 3 bolts and brake actuator assembly from the brake actuator bracket assembly.

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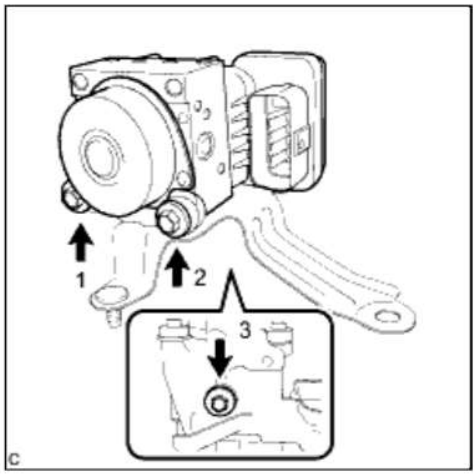
TOYOTA

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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM0000013P401MX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE ACTUATOR (w/o VSC): INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL BRAKE ACTUATOR



(a) Install the brake actuator assembly to the brake actuator bracket assembly with the 3 bolts.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

NOTICE:

- Do not remove the hole plugs before installing a new brake actuator because the brake actuator is filled with brake fluid.
- Do not carry the brake actuator assembly by the connector.
- Tighten the 3 bolts in the order shown in the illustration.

2. INSTALL BRAKE ACTUATOR WITH BRACKET



(a) Install the brake actuator with bracket to the body with the 2 bolts and nut.

Torque: 19 N·m (194 kgf·cm, 14ft·lbf)

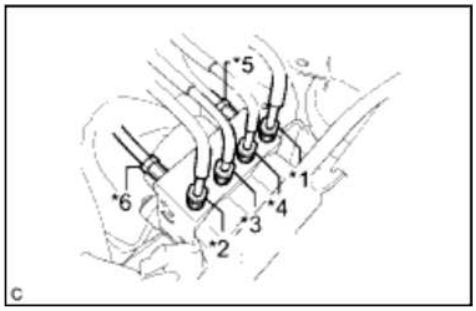
NOTICE:

- Do not damage the brake lines or wire harness.
- Tighten the 2 bolts and nut in the order shown in the illustration.

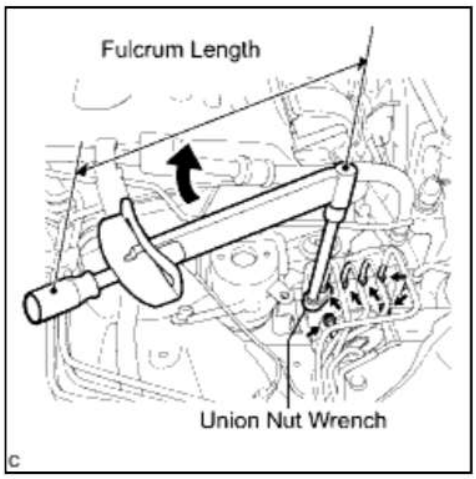
(b) Temporarily tighten each brake line to the correct positions of the brake actuator assembly with bracket as shown in the illustration.

HINT:

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- *1: To front wheel cylinder RH
- *2: To front wheel cylinder LH
- *3: To rear wheel cylinder RH
- *4: To rear wheel cylinder LH
- *5: From 1st of master cylinder
- *6: From 2nd of master cylinder



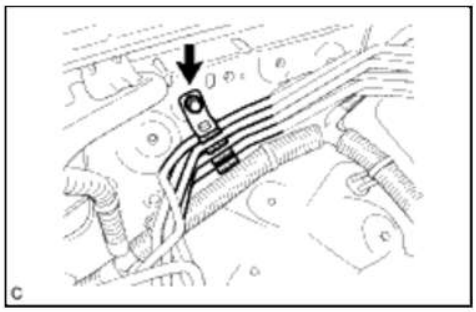
(c) Using a union nut wrench (10 mm), fully tighten each brake line.

without a union nut wrench - Torque: 15 N·m (155 kgf·cm, 11ft·lbf)

with a union nut wrench - Torque: 14 N·m (143 kgf·cm, 10ft·lbf)

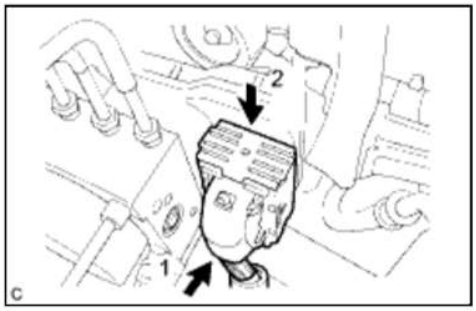
NOTICE:

- Use a torque wrench with a fulcrum length of 250 mm (9.84 in.).
- This torque value is effective when the union nut wrench is parallel to the torque wrench.



(d) Install the brake line clamp with the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)



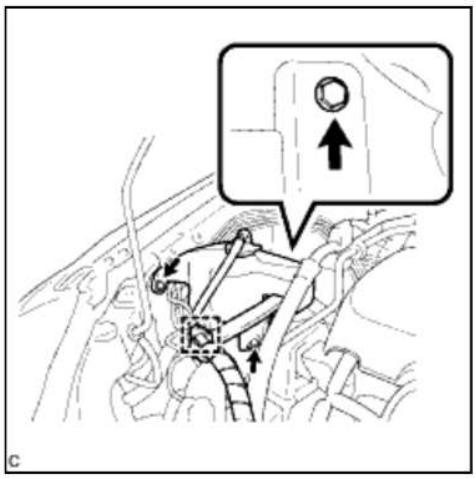
(e) Connect the actuator connector.

NOTICE:

Make sure that the connector is locked securely.

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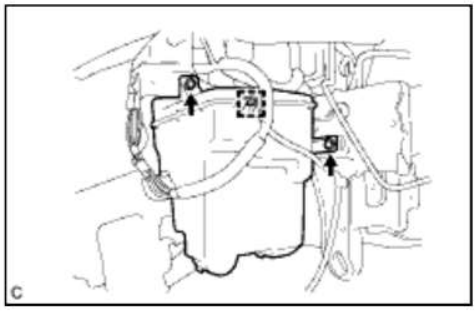
3. INSTALL RADIATOR RESERVE TANK ASSEMBLY



(a) Install the radiator reserve tank assembly with the 3 bolts.

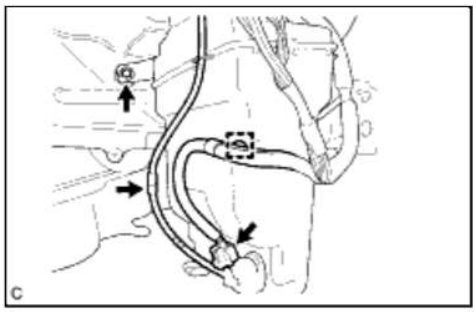
Torque: 7.0 N·m (71 kgf·cm, 62in·lbf)

4. INSTALL WINDSHIELD WASHER JAR ASSEMBLY



(a) Install the windshield washer jar assembly and clamp to the body with the 2 bolts.

Torque: 5.5 N·m (56 kgf·cm, 49in·lbf)



(b) Install the bolt and connect the washer hoses and 2 connectors.

Torque: 5.5 N·m (56 kgf·cm, 49in·lbf)

5. INSTALL FRONT BUMPER ASSEMBLY INFO

6. INSTALL RADIATOR GRILLE PROTECTOR INFO

7. INSTALL GENERATOR ASSEMBLY INFO

8. INSTALL V-RIBBED BELT INFO

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9. ADJUST V-RIBBED BELT INFO

10. INSPECT V-RIBBED BELT INFO

11. INSTALL ENGINE UNDER COVER RH

12. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

13. REMOVE CENTER COWL TOP VENTILATOR LOUVER INFO

14. FILL BRAKE FLUID RESERVOIR INFO

15. BLEED BRAKE MASTER CYLINDER INFO

16. BLEED BRAKE LINE INFO

17. INSPECT BRAKE FLUID LEVEL INFO

18. INSPECT FOR FLUID LEAK

19. INSTALL CENTER COWL TOP VENTILATOR LOUVER INFO

20. INSPECT ACTUATOR WITH TECHSTREAM

INFO

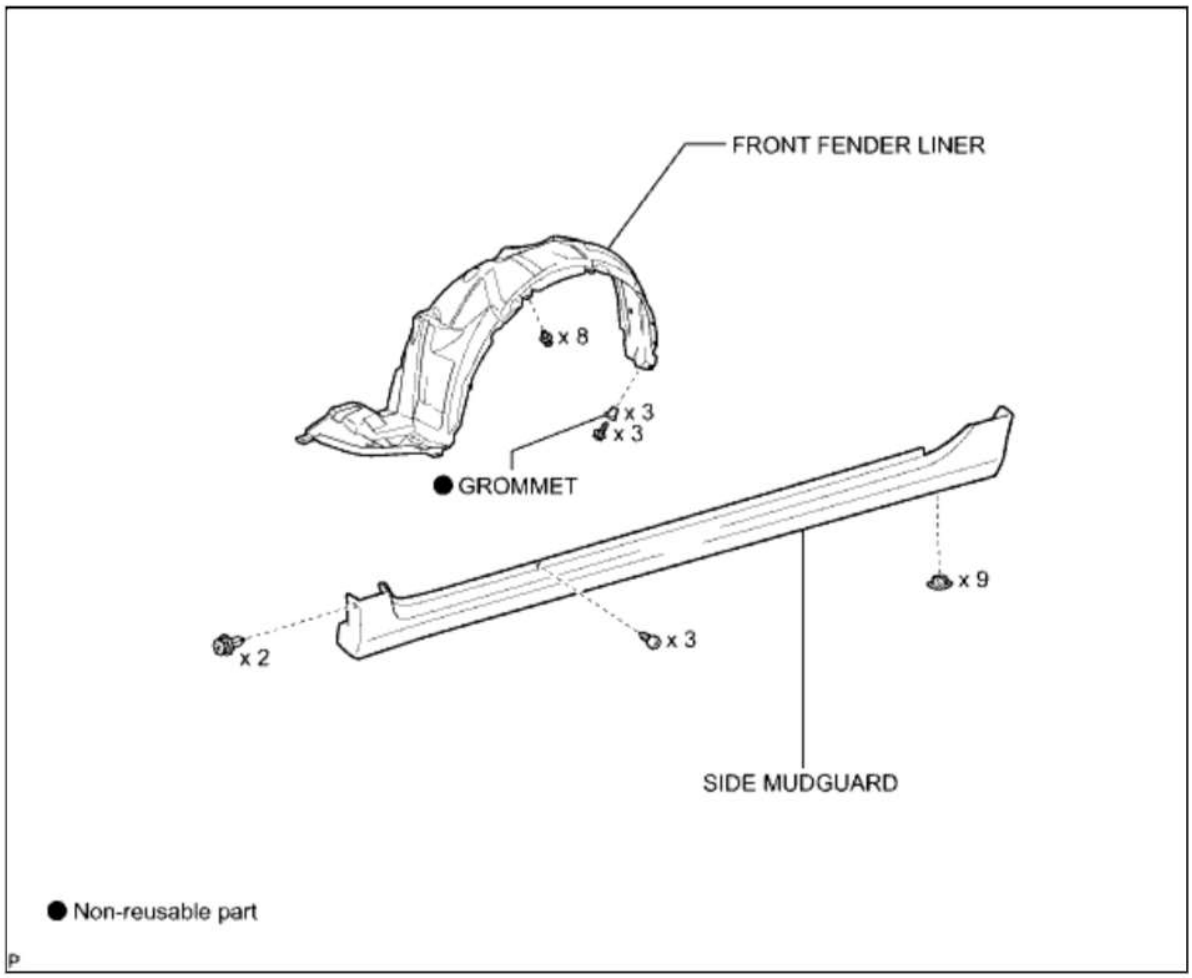


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Last Modified: 3-10-2010	6.4 K	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003FA0004X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: FRONT SPEED SENSOR: COMPONENTS (2010 Corolla)		

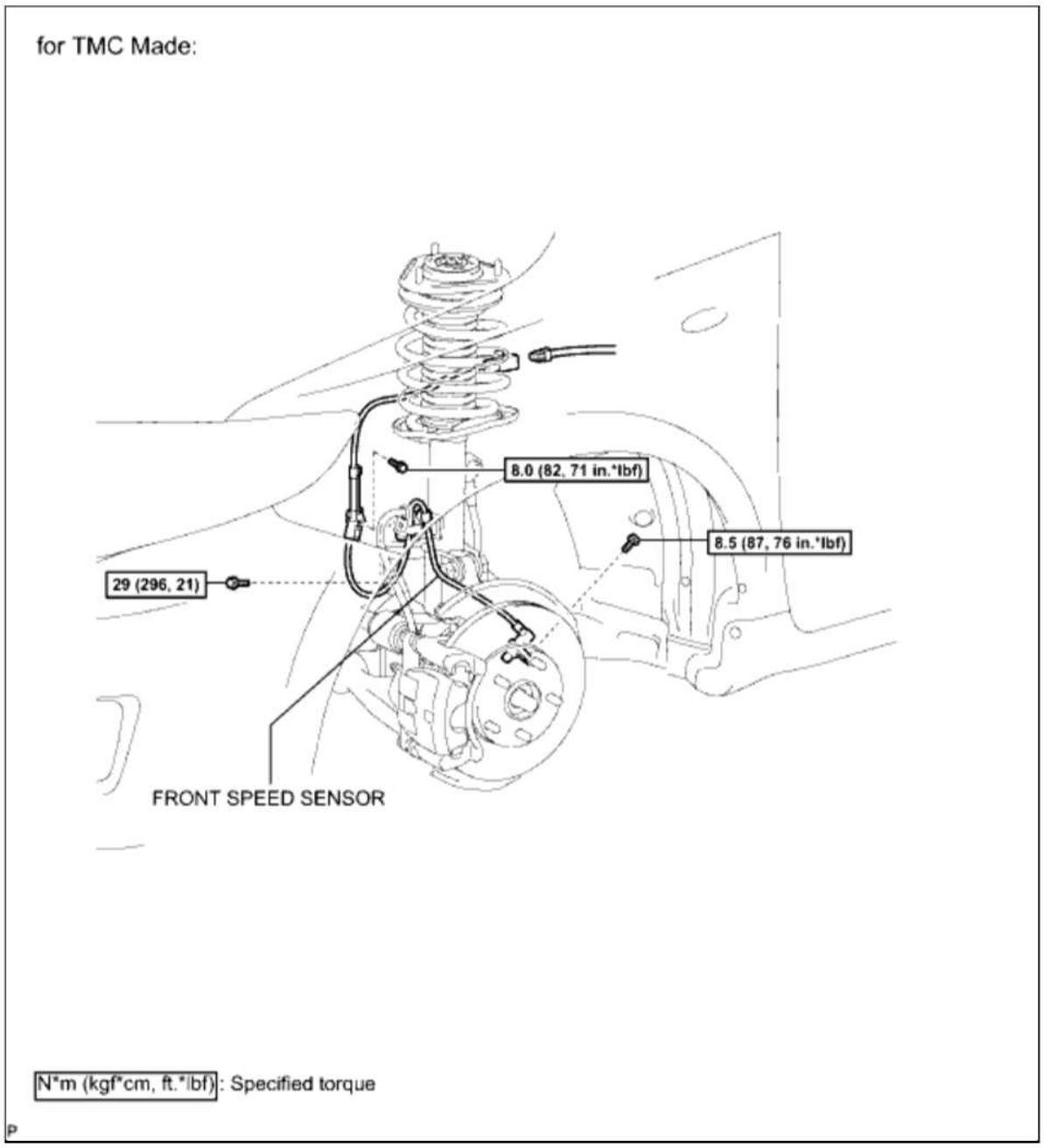
COMPONENTS

ILLUSTRATION



ILLUSTRATION

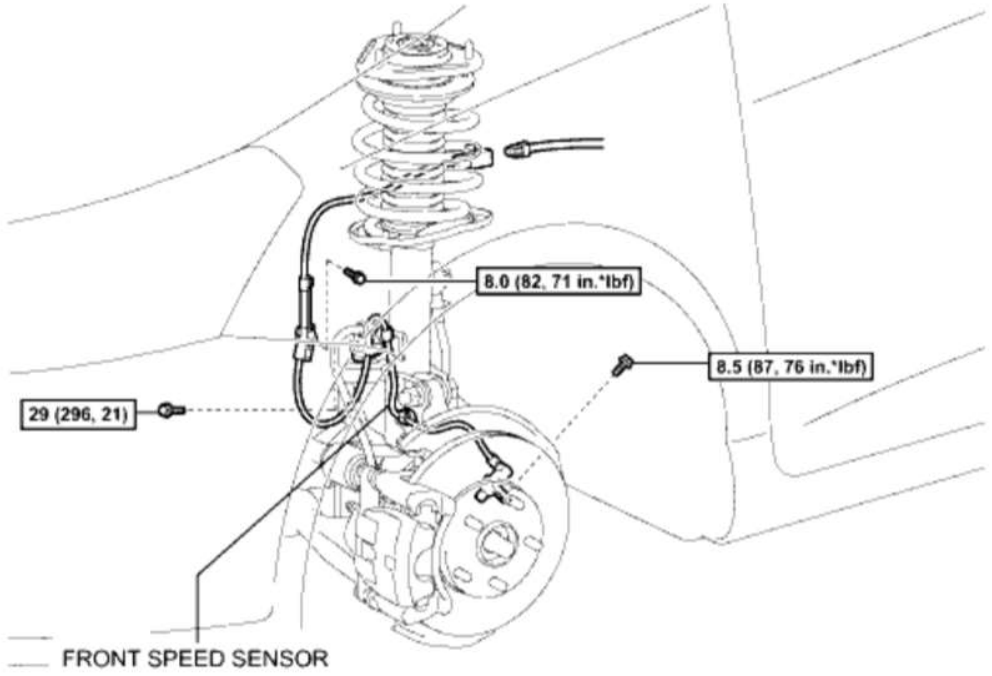
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ILLUSTRATION

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for NUMMI, TMMC Made:



N*m (kgf*cm, ft.*lbf): Specified torque

P

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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VPG00NX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: FRONT SPEED SENSOR: REMOVAL (2010 Corolla)		

REMOVAL

HINT:

- Use the same procedure for the RH side and LH side.
- The following procedure is for the LH side.
- If the sensor rotor needs to be replaced, replace it together with the front drive outboard joint shaft assembly. (for TMC Made)
- If the sensor rotor needs to be replaced, replace it together with the front drive shaft assembly. (for TMMC, NUMMI Made)

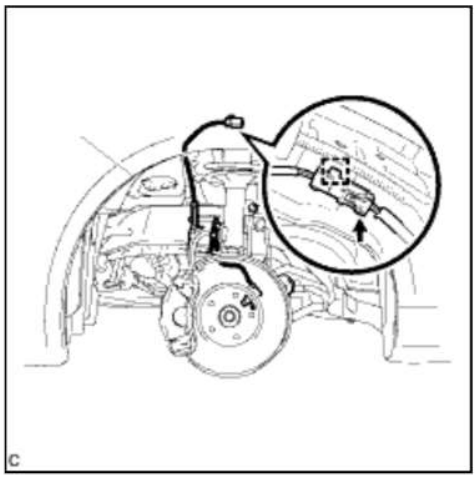
1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

2. REMOVE FRONT WHEEL

3. REMOVE SIDE MUDGUARD INFO

4. REMOVE FRONT FENDER LINER INFO

5. REMOVE FRONT SPEED SENSOR (for TMMC, NUMMI Made)

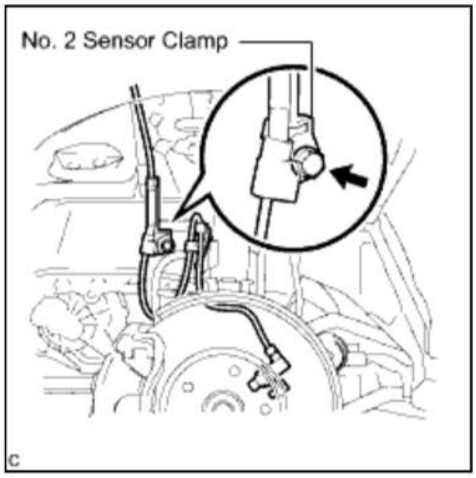


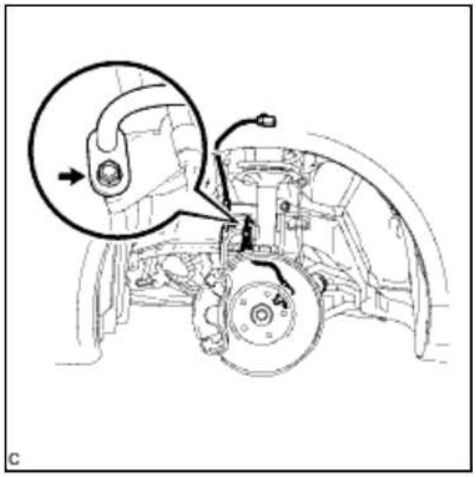
(a) Disconnect the front speed sensor connector.

(b) Remove the front speed sensor wire harness clamp from the body.

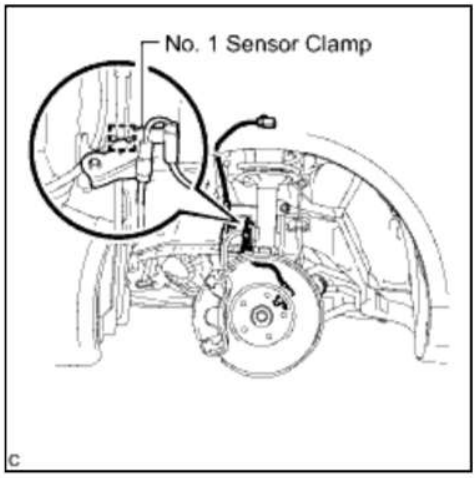
(c) Remove the bolt and the No. 2 sensor clamp from the body.

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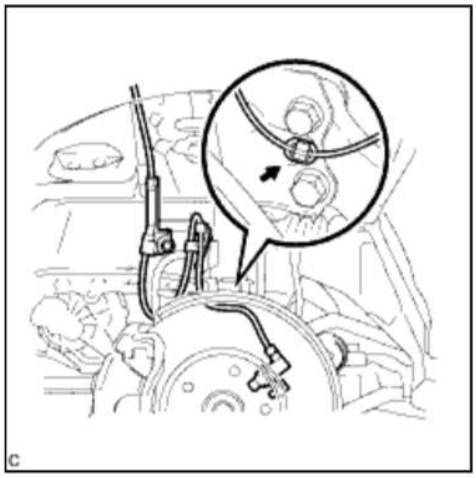
(d) Remove the bolt and separate the brake flexible hose.

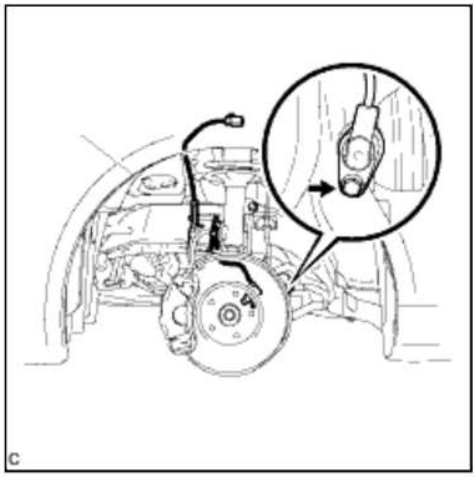


(e) Remove the No. 1 sensor clamp from the shock absorber.

(f) Remove the clamp from the shock absorber.

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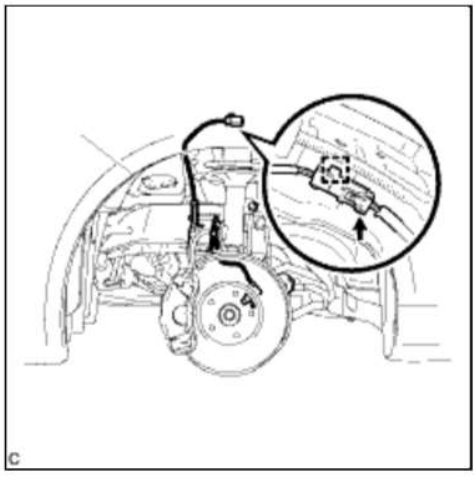
(g) Remove the bolt and the front speed sensor.

NOTICE:

- Prevent foreign matter from attaching to the sensor tip.
- Clean the installation hole and the surface for the front speed sensor every time the front speed sensor is removed.

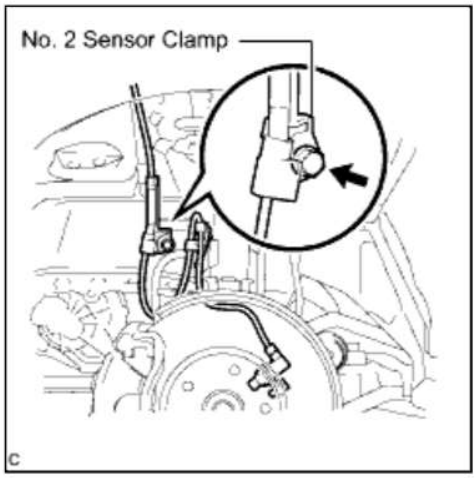
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6. REMOVE FRONT SPEED SENSOR (for TMC Made)

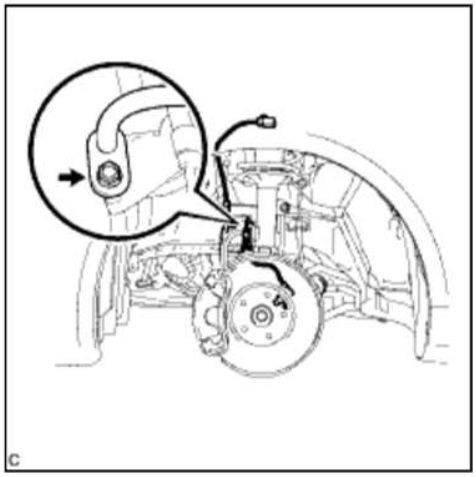


(a) Disconnect the front speed sensor connector.

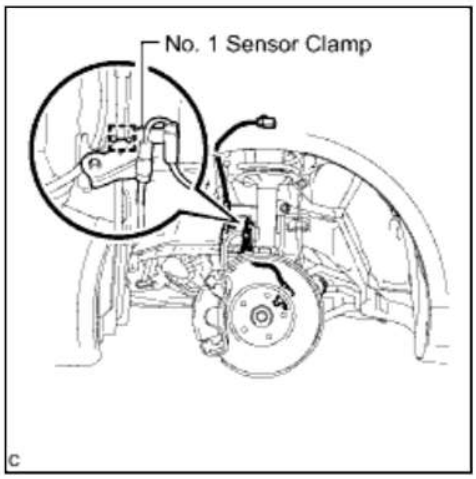
(b) Remove the front speed sensor wire harness clamp from the body.



(c) Remove the bolt and the No. 2 sensor clamp from the body.

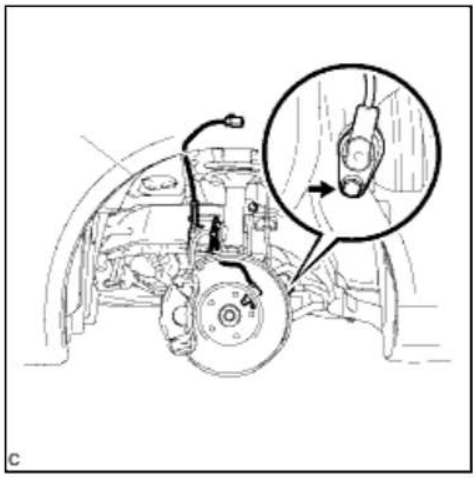


(d) Remove the bolt and separate the brake flexible hose.



(e) Remove the No. 1 sensor clamp from the shock absorber.

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(f) Remove the bolt and the front speed sensor.

NOTICE:

- Prevent foreign matter from attaching to the sensor tip.
- Clean the installation hole and the surface for the front speed sensor every time the front speed sensor is removed.

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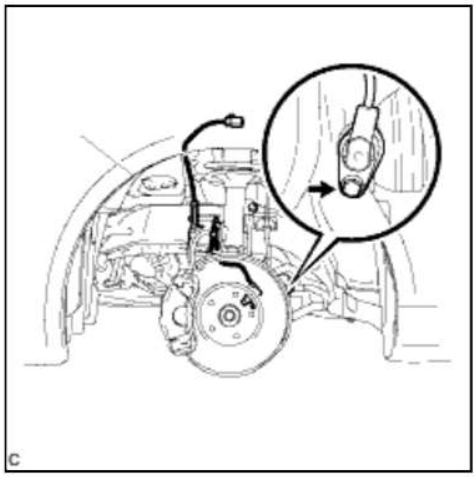
Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VPD00PX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: FRONT SPEED SENSOR: INSTALLATION (2010 Corolla)		

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 drive outboard joint shaft assembly. (for TMC Made)
- If the sensor rotor needs to be replaced, replace it together with the front drive shaft assembly. (for TMMC, NUMMI Made)

1. INSTALL FRONT SPEED SENSOR (for TMC Made)

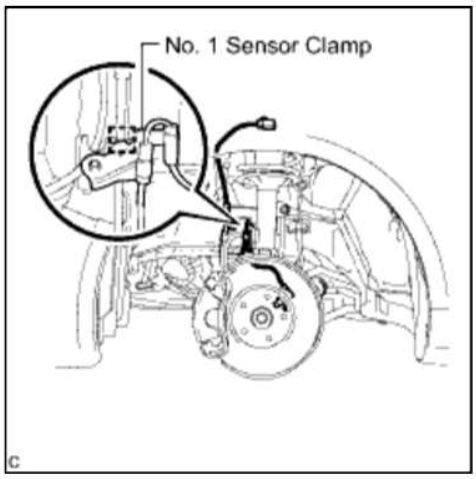


(a) Install the front speed sensor with the bolt.

Torque: 8.5 N·m (87 kgf·cm, 76in·lbf)

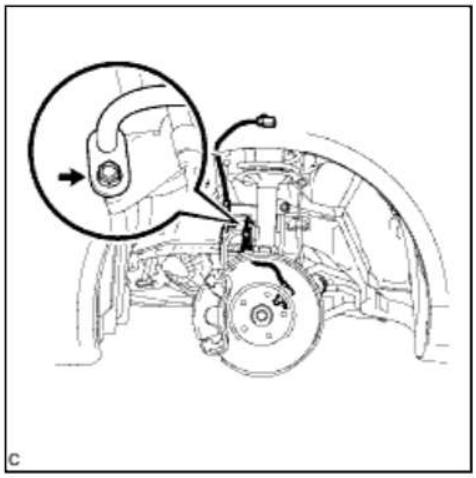
NOTICE:

- Prevent foreign matter from attaching to the sensor tip.
- Do not file the sensor installation hole or surface because the gap between the magnet rotor and front speed sensor is important.



(b) Temporarily install the No. 1 sensor clamp to the shock absorber.

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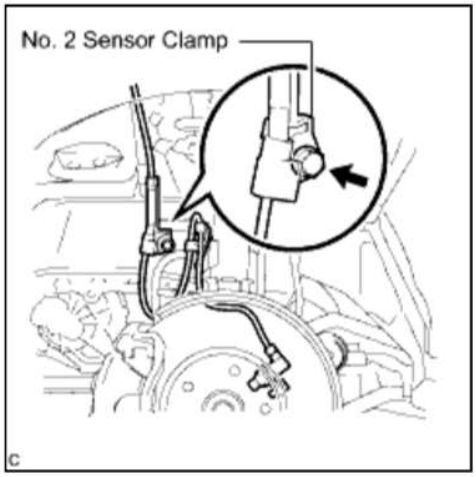


(c) Install the brake flexible hose with the bolt.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

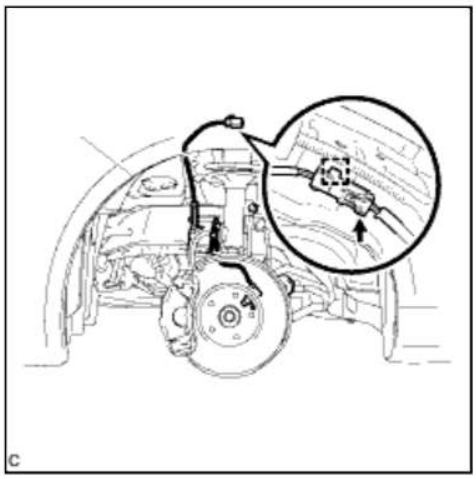
NOTICE:

- Do not twist the front speed sensor wire harness during installation.
- Tighten the brake flexible hose and front speed sensor together with the bolt. Make sure that the front speed sensor is positioned over the flexible hose.



(d) Install the No. 2 sensor clamp to the body with the bolt.

Torque: 8.0 N·m (82 kgf·cm, 71in·lbf)

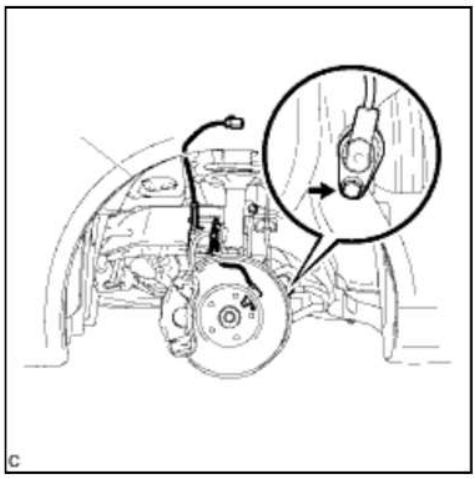


(e) Install the front speed sensor wire harness clamp.

(f) Connect the speed sensor connector.

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2. INSTALL FRONT SPEED SENSOR (for TMMC, NUMMI Made)

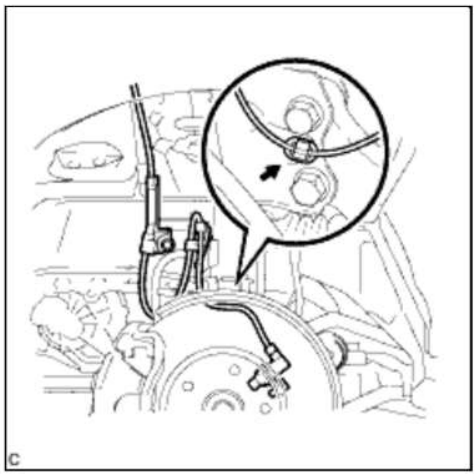


(a) Install the front speed sensor with the bolt.

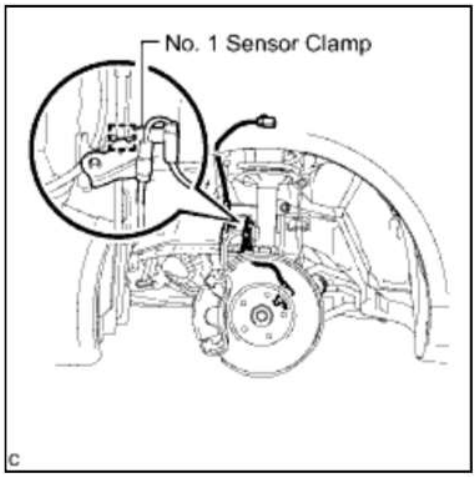
Torque: 8.5 N·m (87 kgf·cm, 76in·lbf)

NOTICE:

- Prevent foreign matter from attaching to the sensor tip.
- Do not file the sensor installation hole or surface because the gap between the magnet rotor and front speed sensor is important.

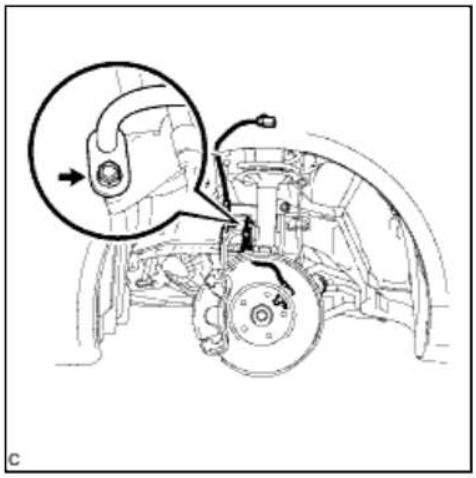


(b) Install with the clamp to the shock absorber.



(c) Temporarily install the No. 1 sensor clamp to the shock absorber.

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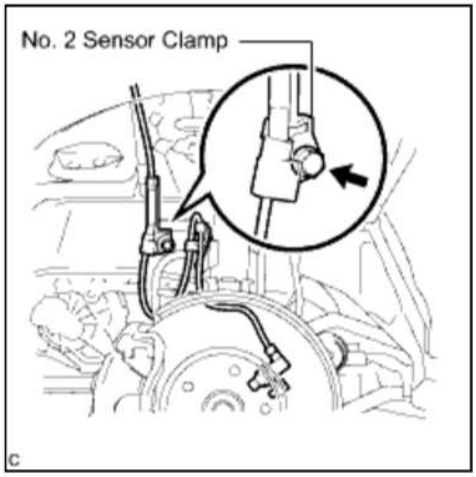


(d) Install the brake flexible hose with the bolt.

Torque: 29 N·m (296 kgf·cm, 21ft·lbf)

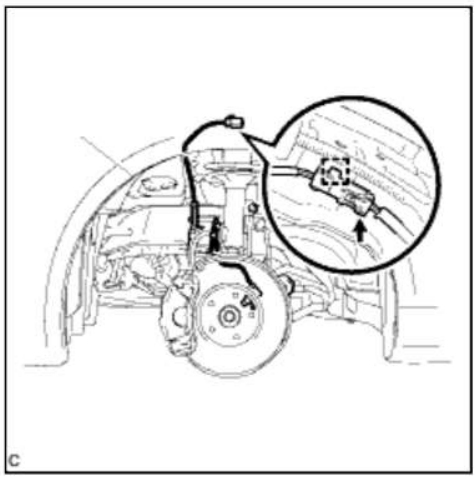
NOTICE:

- Do not twist the front speed sensor wire harness during installation.
- Tighten the brake flexible hose and front speed sensor together with the bolt. Make sure that the front speed sensor is positioned over the flexible hose.



(e) Install the No. 2 sensor clamp to the body with the bolt.

Torque: 8.0 N·m (82 kgf·cm, 71in·lbf)



(f) Install the front speed sensor wire harness clamp.

(g) Connect the speed sensor connector.

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3. INSTALL FRONT FENDER LINER INFO

4. INSTALL SIDE MUDGUARD INFO

5. INSTALL FRONT WHEEL

Torque: 103 N·m (1050 kgf·cm, 76ft·lbf)

6. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

7. CHECK FOR SPEED SENSOR SIGNAL

HINT:

- without VSC INFO
- with VSC INFO

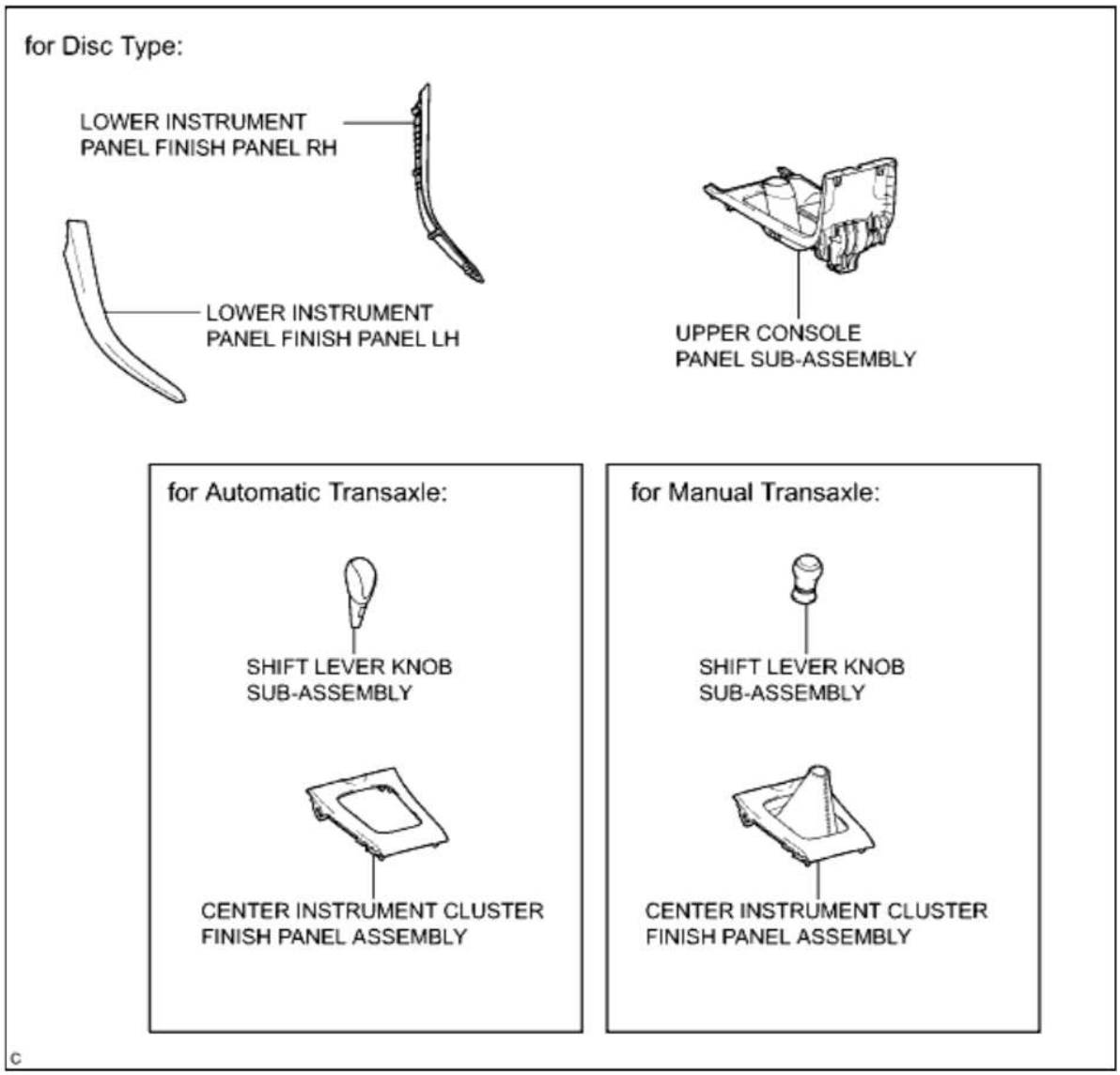


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Last Modified: 3-10-2010	6.4 K	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000003FA1004X
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: REAR SPEED SENSOR: COMPONENTS (2010 Corolla)		

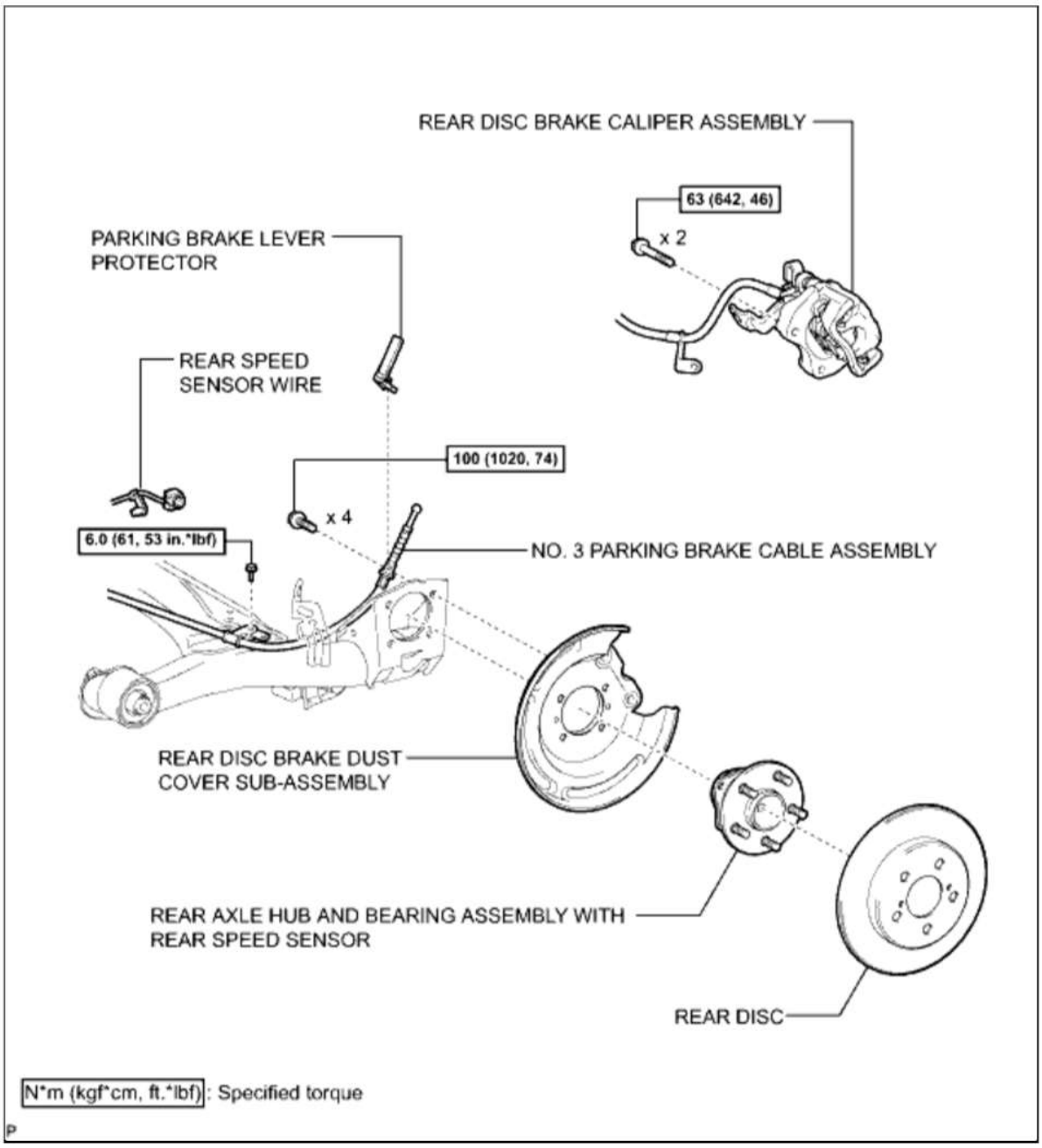
COMPONENTS

ILLUSTRATION



ILLUSTRATION

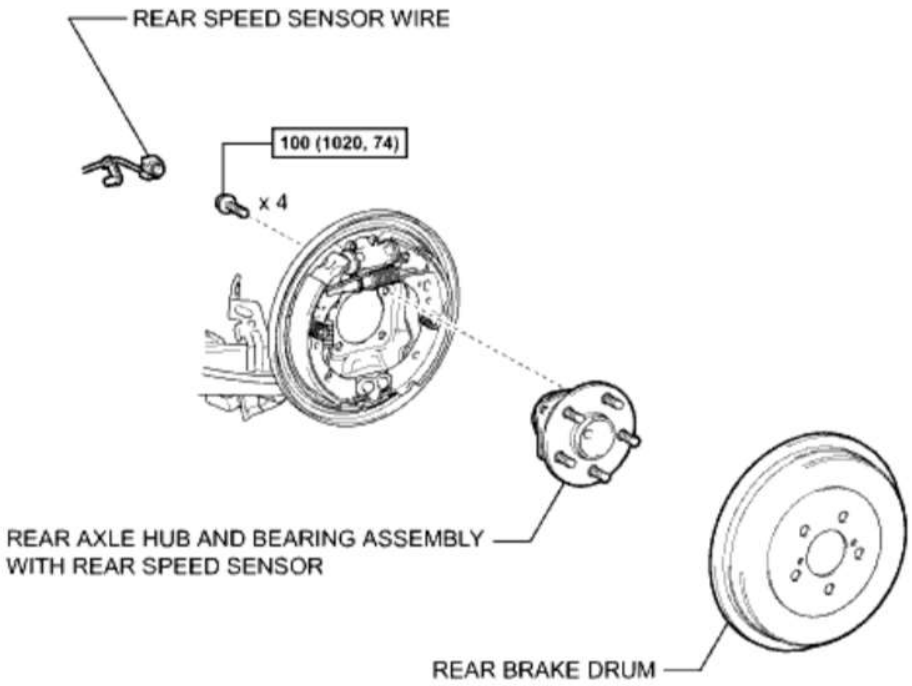
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ILLUSTRATION

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for Drum Type:



N*m (kgf*cm, ft.*lbf): Specified torque

TOYOTA

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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VPC00UX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: REAR SPEED SENSOR: REMOVAL (2010 Corolla)		

REMOVAL

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 with rear speed sensor.
- The rear speed sensor is a component of the rear axle hub and bearing assembly with rear speed sensor. If the sensor needs to be replaced, replace the rear axle hub and bearing assembly with rear speed sensor.

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

2. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (for Disc Type) INFO

3. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL RH (for Disc Type) INFO

4. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Disc Type) INFO

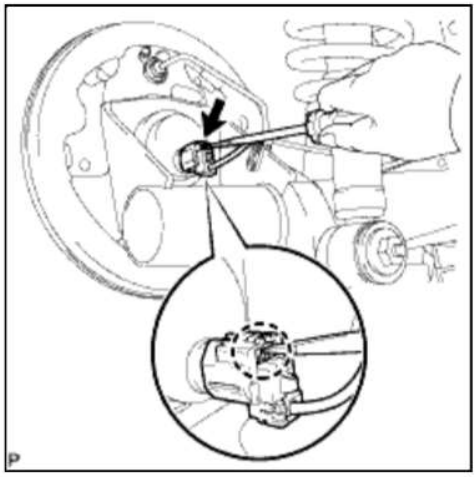
5. REMOVE CENTER INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY (for Disc Type) INFO

6. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (for Disc Type) INFO

7. REMOVE REAR WHEEL

8. LOOSEN PARKING BRAKE CABLE (for Disc Type) INFO

9. DISCONNECT REAR SPEED SENSOR WIRE (for Drum Type)



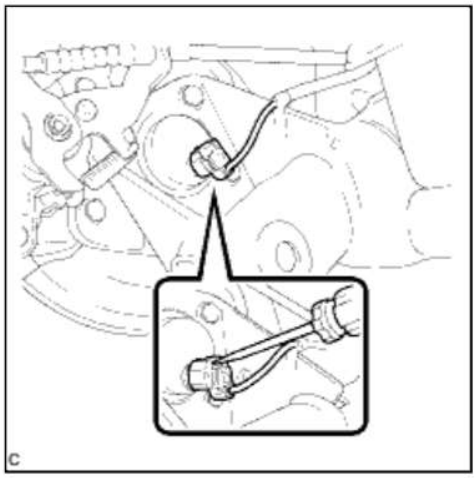
(a) Using a screwdriver, disconnect the connector from the rear speed sensor.

NOTICE:

Be careful not to damage the rear speed sensor.

10. DISCONNECT REAR SPEED SENSOR WIRE (for Disc Type)

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(a) Using a screwdriver, disconnect the connector from the rear speed sensor.

NOTICE:

Be careful not to damage the rear speed sensor.

11. REMOVE PARKING BRAKE LEVER PROTECTOR INFO

12. SEPARATE NO. 3 PARKING BRAKE CABLE ASSEMBLY (for Disc Type) INFO

13. SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY (for Disc Type) INFO

14. REMOVE REAR DISC (for Disc Type) INFO

15. REMOVE REAR BRAKE DRUM (for Drum Type) INFO

16. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY WITH REAR SPEED SENSOR (for Drum Type)

(a) Remove the rear axle hub and bearing assembly with rear speed sensor INFO .

HINT:

- The rear speed sensor is a component of the rear axle hub and bearing assembly with rear speed sensor. If the sensor needs to be replaced, replace the rear axle hub and bearing assembly with rear speed sensor.
- If the sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly with rear speed sensor.

17. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY WITH REAR SPEED SENSOR (for Disc Type)

(a) Remove the rear axle hub and bearing assembly with rear speed sensor INFO .

HINT:

- The rear speed sensor is a component of the rear axle hub and bearing assembly with rear speed sensor. If the sensor needs to be replaced, replace the rear axle hub and bearing assembly with rear speed sensor.
- If the sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly with rear speed sensor.

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Last Modified: 3-10-2010	6.4 A	**From:** 200901
Model Year: 2010	**Model:** Corolla	**Doc ID:** RM000002VP900UX
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: REAR SPEED SENSOR: INSTALLATION (2010 Corolla)		

INSTALLATION

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 with rear speed sensor.
- The rear speed sensor is a component of the rear axle hub and bearing assembly with rear speed sensor. If the sensor needs to be replaced, replace the rear axle hub and bearing assembly with rear speed sensor.

1. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY WITH REAR SPEED SENSOR (for Drum Type)

(a) Install the rear axle hub and bearing assembly with rear speed sensor INFO .

HINT:

- The rear speed sensor is a component of the rear axle hub and bearing assembly with rear speed sensor. If the sensor needs to be replaced, replace the rear axle hub and bearing assembly with rear speed sensor.
- If the sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly with rear speed sensor.

2. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY WITH REAR SPEED SENSOR (for Disc Type)

(a) Install the rear axle hub and bearing assembly with rear speed sensor INFO .

HINT:

- The rear speed sensor is a component of the rear axle hub and bearing assembly with rear speed sensor. If the sensor needs to be replaced, replace the rear axle hub and bearing assembly with rear speed sensor.
- If the sensor rotor needs to be replaced, replace it together with the rear axle hub and bearing assembly with rear speed sensor.

3. INSPECT REAR AXLE HUB BEARING LOOSENESS (for Disc Type) INFO

4. INSPECT REAR AXLE HUB RUNOUT (for Disc Type) INFO

5. INSPECT REAR AXLE HUB BEARING LOOSENESS (for Drum Type) INFO

6. INSPECT REAR AXLE HUB RUNOUT (for Drum Type) INFO

7. INSTALL REAR BRAKE DRUM (for Drum Type) INFO

8. ADJUST REAR BRAKE SHOE INFO

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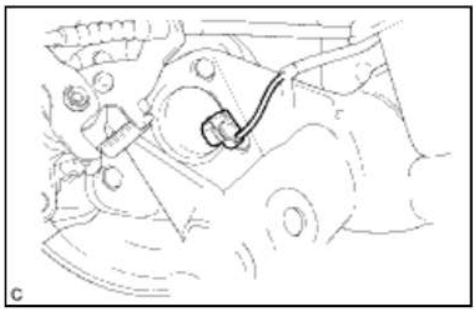
9. INSTALL REAR DISC (for Disc Type) INFO

10. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY (for Disc Type) INFO

11. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY (for Disc Type) INFO

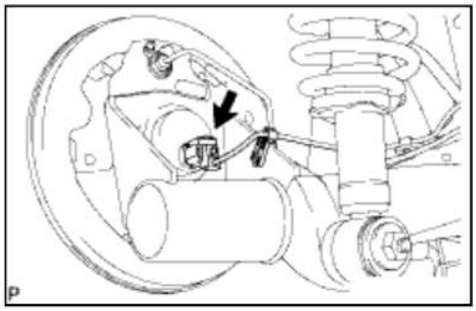
12. INSTALL PARKING BRAKE LEVER PROTECTOR (for Disc Type) INFO

13. CONNECT REAR SPEED SENSOR WIRE (for Disc Type)



(a) Connect the rear speed sensor wire connector to the rear speed sensor.

14. CONNECT REAR SPEED SENSOR WIRE (for Drum Type)



(a) Connect the rear speed sensor wire connector to the rear speed sensor.

15. ADJUST PARKING BRAKE LEVER TRAVEL (for Disc Type) INFO

16. INSPECT REAR DISC BRAKE CYLINDER OPERATION LEVER AND STOPPER CLEARANCE (for Disc Type) INFO

17. INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (for Disc Type) INFO

18. INSTALL CENTER INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY (for Disc Type) INFO

19. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Disc Type) INFO

20. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (for Disc Type) INFO

21. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL RH (for Disc Type) INFO

22. INSTALL REAR WHEEL

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Torque: 103 N·m (1050 kgf·cm, 76ft·lbf)

23. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

24. INSPECT REAR WHEEL ALIGNMENT

INFO

25. CHECK FOR SPEED SENSOR SIGNAL

without VSC INFO

with VSC INFO



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