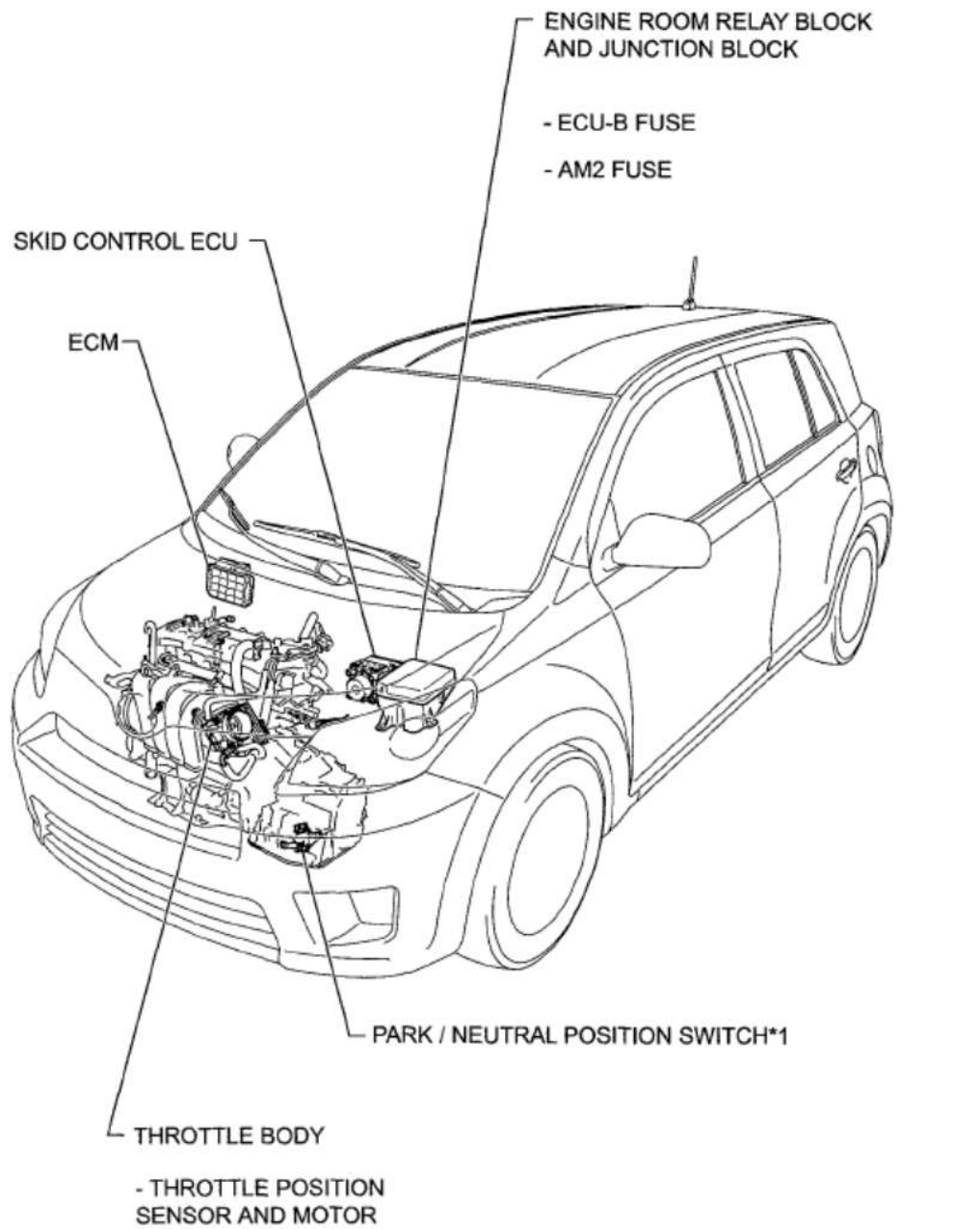


2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD****2008 ACCESSORIES AND EQUIPMENT****Cruise Control - xD****CRUISE CONTROL SYSTEM****PRECAUTION****1. HANDLING PRECAUTIONS FOR CRUISE CONTROL SYSTEM**

- a. Turn the cruise control main switch off when not using the cruise control system.
- b. Be careful as the vehicle speed increases when driving downhill with the cruise control system on.
- c. The + (ACCEL)/RES (RESUME) operation changes according to the cruise control system status. When the cruise control system is operating, the + (ACCEL) function operates. When the cruise control system is not operating, the RES (RESUME) function operates.
- d. If the CRUISE main indicator light blinks while the cruise control system is operating, turn the cruise control main switch off to reset the cruise control system. After the reset, if the cruise control main switch cannot be turned on, or the cruise control system is canceled immediately after turning the cruise control main switch on, the system may have a malfunction.
- e. Do not use the cruise control system where the road conditions are as follows:
 - Heavy traffic
 - Steep decline
 - Roads with sharp turns
 - Icy or snowy roads
 - Slippery roads

PARTS LOCATION

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD**

*1: for Automatic Transaxle

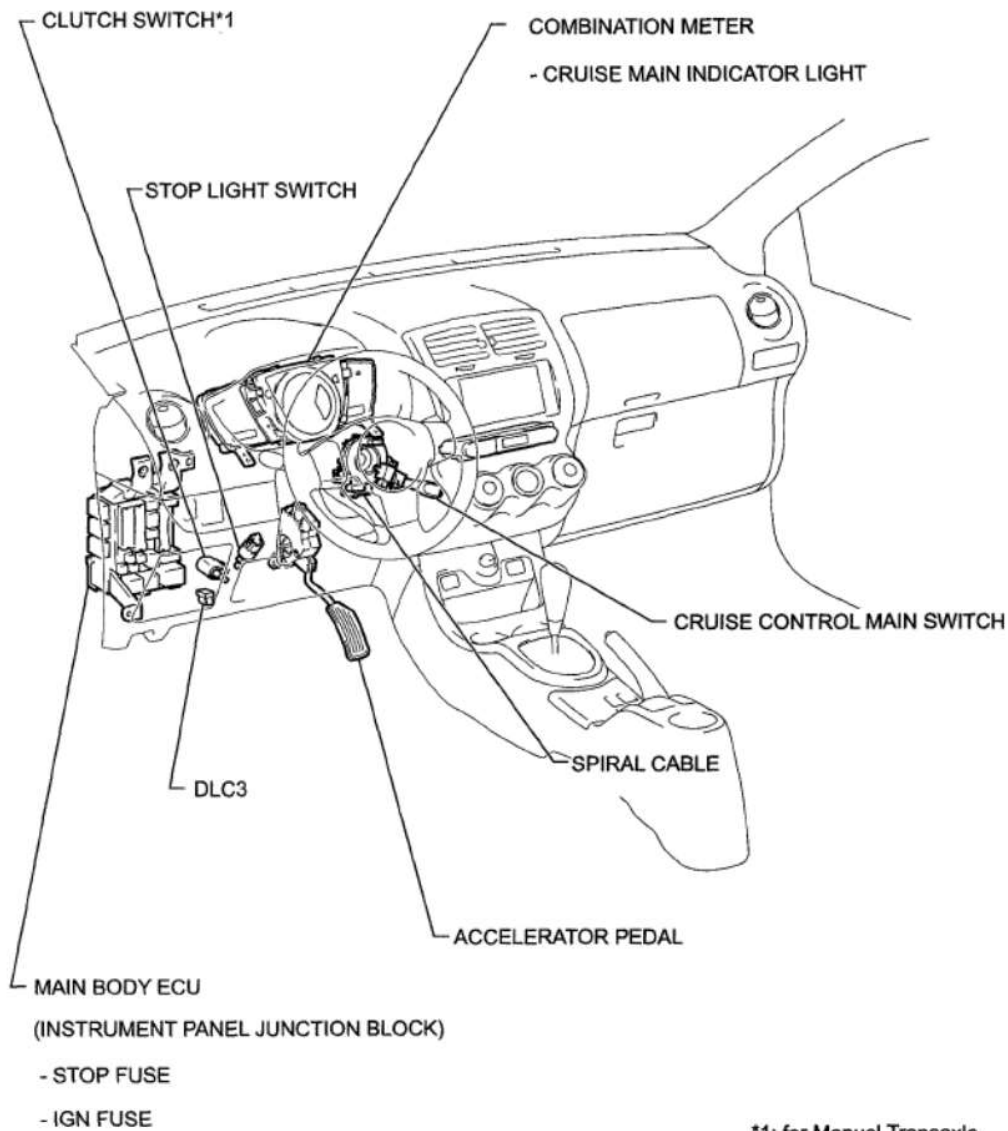
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Fig. 1: Identifying Cruise Control System Parts Location (1 Of 2)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD



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Fig. 2: Identifying Cruise Control System Parts Location (2 Of 2)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

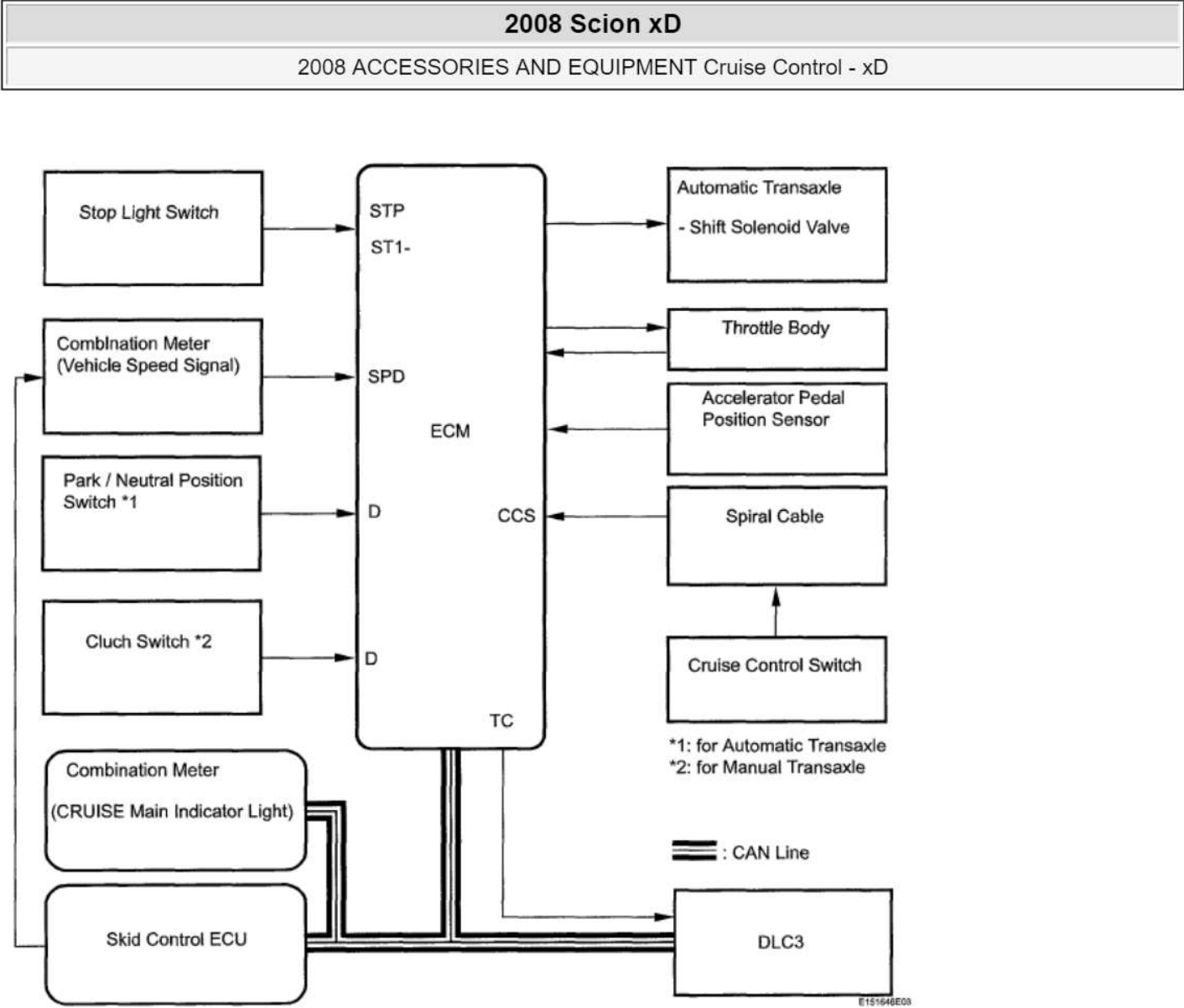


Fig. 3: Cruise Control System Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Communication Table:

COMMUNICATION TABLE

Sender	Receiver	Signal	Line
ECM	Skid control ECU with actuator	VSC operation signal	CAN
ECM	Combination Meter ECU	CRUISE main indicator operation signal	CAN

SYSTEM DESCRIPTION

1. CRUISE CONTROL SYSTEM

This system is controlled by the ECM, and is activated by the throttle position sensor and motor. The ECM controls the following functions: ON-OFF, - (COAST)/SET, + (ACCEL)/RES (RESUME), CANCEL, vehicle speed operation, motor output control, and overdrive control.

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- The ECM compares the vehicle driving speed from the speed sensor with the stored vehicle speed set through the cruise control main switch. The ECM instructs the throttle valve motor of the throttle body assembly to close the valve when the driving speed is greater than the stored speed, and instructs it to open the valve when the driving speed is less than the stored speed.
- The ECM receives signals such as ON-OFF, -(COAST)/SET, + (ACCEL)/RES (RESUME), and CANCEL from the cruise control main switch and executes the command.
- The ECM illuminates the combination meter's CRUISE main indicator light when it receives a cruise control main switch ON signal.
- The ECM cancels the cruise control system when the brake pedal is depressed and the ECM receives a stop light switch signal.
- The ECM cancels the cruise control system when the shift lever is moved from the D or 3 position to the N, 2 or L position, (for AUTOMATIC TRANSAXLE)
- The ECM cancels the cruise control system when the clutch pedal is depressed and the ECM receives a clutch switch signal (for MANUAL TRANSAXLE).

2. LIMIT CONTROL

a. Low speed limit

The lowest possible limit of the speed setting range is set at approximately 40 km/h (25 mph). The cruise control system cannot be set when the driving vehicle speed is below the low speed limit. The cruise control operation will be automatically canceled but the stored vehicle speed will be retained when the vehicle speed drops below the low speed limit 40 km/h (25 mph) while the cruise control is in operation.

b. High speed limit

The highest possible limit of the speed setting range is set at approximately 200 km/h (125 mph). The cruise control system cannot be set when the driving vehicle speed is over the high speed limit. Also, + (ACCEL)/RES (RESUME) cannot be used to increase speed beyond the high speed limit.

3. OPERATION OF CRUISE CONTROL

The cruise control main switch operates 7 functions: SET, - (COAST), TAP-DOWN, RES (RESUME), + (ACCEL), TAP-UP, and CANCEL. The SET, TAP-DOWN, and - (COAST) functions, and the RES (RESUME), TAP-UP, and + (ACCEL) functions are operated with the same switch. The cruise control main switch is an automatic return type switch which turns on only while operating it in the direction of each arrow and turns off after releasing it.

a. SET CONTROL

The vehicle speed is stored and constant speed control is maintained when pushing the cruise control main switch to - (COAST)/SET while driving with the main switch on (the CRUISE main indicator light is on), and the vehicle speed is within the set speed range (between the low and high speed limits).

b. - (COAST) CONTROL

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When the cruise control main switch is set to -(COAST)/SET and held in that position while the cruise control system is operating, the ECM sends a "throttle valve opening angle 0°" demand signal to the cruise control system. Then the vehicle speed, when the cruise control main switch is released, is stored and maintained.

HINT:

An actual throttle valve opening angle of 0° is not possible due to the idle speed control, etc.

c. TAP-DOWN CONTROL

When tapping down the cruise control main switch to - (COAST)/SET (for approximately 0.6 seconds) while the cruise control system is in operation, the stored vehicle speed decreases each time by approximately 1.6 km/h (1.0 mph). When the cruise control main switch is released from - (COAST)/SET and the difference between the driving and stored vehicle speed is more than 5 km/h (3 mph), the vehicle driving speed is stored and constant speed control is maintained.

d. ACCELERATION CONTROL

The throttle valve motor of the throttle body assembly is instructed by the ECM to open the throttle valve when + (ACCEL)/RES (RESUME) on the cruise control main switch is pressed and held while the cruise control system is in operation. When the cruise control main switch is released from + (ACCEL)/RES (RESUME), the vehicle speed is stored and the vehicle is maintained at a constant speed.

e. TAP-UP CONTROL

When tapping up the cruise control main switch to + (ACCEL)/RES (RESUME) (for approximately 0.6 seconds) while the cruise control system is in operation, the stored vehicle speed increases each time by approximately 1.6 km/h (1.0 mph). However, when the difference between the driving and the stored vehicle speed is more than approximately 5 km/h (3 mph), the stored vehicle speed will not be changed.

f. RESUME CONTROL

If cruise control operation was canceled with the stop light switch, the CANCEL switch, or the low speed limit control, and if the driving speed is within the limit range, pushing the cruise control main switch to + (ACCEL)/RES (RESUME) restores the vehicle speed memorized at the time of cancellation, and maintains constant speed control.

g. MANUAL CANCEL CONTROL

Performing any of the following cancels the cruise control system while in operation (the stored vehicle speed in the ECM is maintained).

- Depressing the brake pedal
- Depressing the clutch pedal (for Manual Transaxle)

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- The shift lever is moved from the D or 3 position to the N, 2 or 1 position (for Automatic Transaxle)
- Pulling the cruise control main switch to CANCEL
- Turning the cruise control main switch off (the stored vehicle speed in the ECM is not maintained).

4. AUTO CANCEL (FAIL-SAFE)

This system has an automatic cancellation function (fail-safe) (see **FAIL-SAFE CHART**).

HOW TO PROCEED WITH TROUBLESHOOTING

HINT.

- Use the following procedures to troubleshoot the cruise control system.
- *: Use a Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

2. INSPECT BATTERY VOLTAGE

Standard voltage:

11 to 14 V

If the voltage is below 11V, recharge or replace the battery before proceeding.

3. CHECK CAN COMMUNICATION SYSTEM*

- Use the Techstream to check if the CAN communication system is functioning normally.

Result

RESULT REFERENCE

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

B: Go to CAN COMMUNICATION SYSTEM (see **PROBLEM SYMPTOMS TABLE**)

A: Go to next step

4. CHECK INDICATOR

- Check the indicator (see **TERMINALS OF ECM**).

5. CHECK FOR DTC*

- Check for DTCs (see **FAIL-SAFE CHART**).

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- b. Clear the DTCs (see **FAIL-SAFE CHART**).
- c. Recheck for DTCs (see **FAIL-SAFE CHART**).

Result

RESULT REFERENCE

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

A: Go to STEP 7

B: Go to next step

6. DTC CHART*

Refer to **DIAGNOSTIC TROUBLE CODE CHART** .

NEXT: Go to STEP 10

7. PROBLEM SYMPTOM CONFIRMATION

Result

RESULT REFERENCE

Result	Proceed to
Symptom occurs	A
Symptom does not occur	B

A: Go to STEP 9

B: Go to next step

8. PROBLEM SYMPTOMS TABLE

Refer to the **PROBLEM SYMPTOMS TABLE** .

9. CIRCUIT INSPECTION

10. CHECK TERMINALS OF ECM

Refer to **TERMINALS OF ECM** .

11. IDENTIFICATION OF PROBLEM

12. REPAIR OR REPLACE

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13. CONFIRMATION TEST

NEXT : END

ROAD TEST

1. PROBLEM SYMPTOM CONFIRMATION

- a. Inspect the SET function.
 1. Turn the cruise control main switch on.
 2. Drive at the required speed (40 km/h (25 mph) or higher).
 3. Push the cruise control main switch to -(COAST)/SET.
 4. After releasing the switch, check that the vehicle cruises at the set speed.

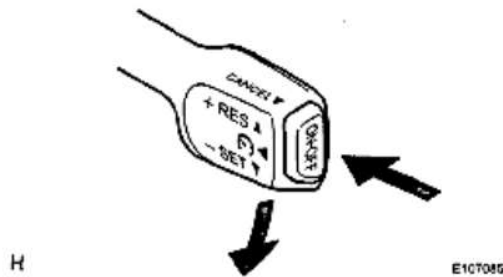


Fig. 4: Inspecting SET Function

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Inspect the ACCELERATION function.
 1. Turn the cruise control main switch on.
 2. Drive at the required speed (40 km/h (25 mph) or higher).
 3. Push the cruise control main switch to -(COAST)/SET.
 4. Check that vehicle speed increases while the cruise control main switch is pushed to + (ACCEL)/RES (RESUME), and that the vehicle cruises at the newly set speed when the switch is released.
 5. Push the cruise control main switch to + (ACCEL)/RES (RESUME) and then release it immediately. Check that vehicle speed increases by approximately 1.6 km/h (1.0 mph) (tap-up control).

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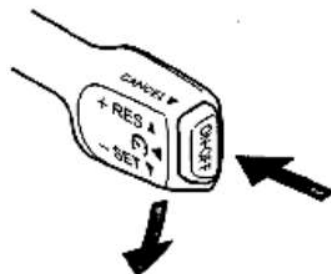


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Fig. 5: Inspecting ACCELERATION Function
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Inspect the-(COAST) function.
 1. Turn the cruise control main switch on.
 2. Drive at the required speed between 40 km/h (25 mph) and 200 km/h (125 mph).
 3. Push the cruise control main switch to -(COAST)/SET.
 4. Check that vehicle speed decreases while the cruise control main switch is pushed to -(COAST)/SET, and the vehicle cruises at the newly set speed when the switch is released.
 5. Push the cruise control main switch to -(COAST)/SET, and then release it immediately. Check that vehicle speed decreases by approximately 1.6 km/h (1.0 mph) (tap-down control).



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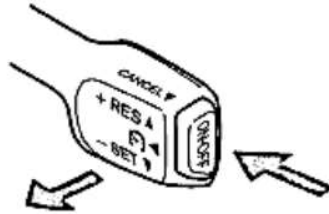
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Fig. 6: Inspecting -(COAST) Function
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Inspect the CANCEL function.
 1. Turn the cruise control main switch on.
 2. Drive at the required speed between 40 km/h (25 mph) and 200 km/h (125 mph).
 3. Push the cruise control main switch to -(COAST)/SET.
 4. When performing any one of the following, check that the cruise control system is canceled and that the normal driving mode is reset.
 - Depressing the brake pedal
 - Depressing the clutch pedal (MANUAL TRANSAXLE)

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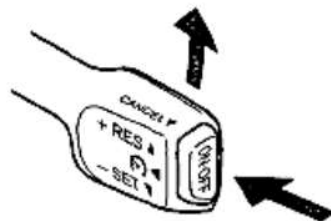
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Fig. 7: Inspecting CANCEL Function

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- The shift lever is moved from the D or 3 position to the N, 2 or 1 position (AUTOMATIC TRANSAXLE)
 - Turning the cruise control main switch off
 - Pulling the cruise control main switch to CANCEL
- e. Inspect the RES (RESUME) function.
1. Turn the cruise control main switch on.
 2. Drive at the required speed between 40 km/h (25 mph) and 200 km/h (125 mph).
 3. Push the cruise control main switch to -(COAST)/SET.
 4. Cancel the cruise control system by performing any of the above operations (other than turning the main switch off).
 5. After pushing the cruise control main switch to + (ACCEL)/RES (RESUME) at a driving speed of more than 40 km/h (25 mph), check that the vehicle resumes the speed set prior to the cancellation.



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Fig. 8: Inspecting RES (RESUME) Function

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of the problem symptom. 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.

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- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Cruise control system

PROBLEM SYMPTOMS - CRUISE CONTROL SYSTEM

Symptom	Suspected Area	See
Main switch cannot be turned ON (CRUISE main indicator light on combination meter does not illuminate.)	Cruise control switch circuit	<u>CRUISE CONTROL SWITCH CIRCUIT</u>
	Combination meter system	<u>PROBLEM SYMPTOMS TABLE</u>
	CRUISE main indicator light circuit	<u>CRUISE MAIN INDICATOR LIGHT CIRCUIT</u>
	ECM	<u>PROBLEM SYMPTOMS TABLE</u>
Vehicle speed setting cannot be done (CRUISE main indicator light on combination meter illuminates when main switch is turned ON, but turns off when operating SET function.)	Cruise control switch circuit	<u>CRUISE CONTROL SWITCH CIRCUIT</u>
	Combination meter system	<u>PROBLEM SYMPTOMS TABLE</u>
	ECM	<u>PROBLEM SYMPTOMS TABLE</u>
Vehicle speed setting cannot be done. (CRUISE main indicator light on combination meter illuminates when main switch is turned ON, and remains illuminated when operating SET function.)	Cruise control switch circuit	<u>CRUISE CONTROL SWITCH CIRCUIT</u>
	Vehicle speed sensor circuit	<u>DTC P0500 VEHICLE SPEED SENSOR MALFUNCTION; DTC P0503 VEHICLE SPEED SENSOR "A" INTERMITTENT / ERRATIC / HIGH</u>
	Stop light switch circuit	<u>STOP LIGHT CIRCUIT</u>
	Clutch switch circuit (for Manual Transaxle)	<u>CLUTCH SWITCH CIRCUIT</u>
	Park / neutral position switch circuit (for Automatic Transaxle)	<u>INSPECTION</u>
	Combination meter system	<u>PROBLEM SYMPTOMS TABLE</u>
	ECM	<u>PROBLEM SYMPTOMS TABLE</u>
	Cruise control switch circuit	<u>CRUISE CONTROL SWITCH CIRCUIT</u>
	Vehicle speed sensor circuit	<u>DTC P0500 VEHICLE SPEED SENSOR MALFUNCTION; DTC P0503 VEHICLE SPEED SENSOR</u>

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While the vehicle is driving with cruise control, the SET control is canceled (CRUISE main indicator light remains illuminated)		"A" INTERMITTENT / ERRATIC / HIGH
	Stop light switch circuit	<u>STOP LIGHT CIRCUIT</u>
	CRUISE main indicator light circuit	<u>CRUISE MAIN INDICATOR LIGHT CIRCUIT</u>
	Clutch switch circuit (for Manual Transaxle)	<u>CLUTCH SWITCH CIRCUIT</u>
	Park / neutral position switch circuit (for Automatic Transaxle)	<u>INSPECTION</u>
Hunting (Speed is not constant)	ECM	<u>PROBLEM SYMPTOMS TABLE</u>
	Vehicle speed sensor circuit	<u>REMOVAL</u>
Vehicle speed setting cannot be canceled (CANCEL function failure)	ECM	<u>PROBLEM SYMPTOMS TABLE</u>
	Cruise control switch circuit	<u>CRUISE CONTROL SWITCH CIRCUIT</u>
DTC is not output, or is output when it should not be	ECM	<u>PROBLEM SYMPTOMS TABLE</u>
	TC and CG terminal circuit	<u>TC AND CG TERMINAL CIRCUIT</u>
	ECM	<u>PROBLEM SYMPTOMS TABLE</u>

TERMINALS OF ECM

1. CHECK ECM

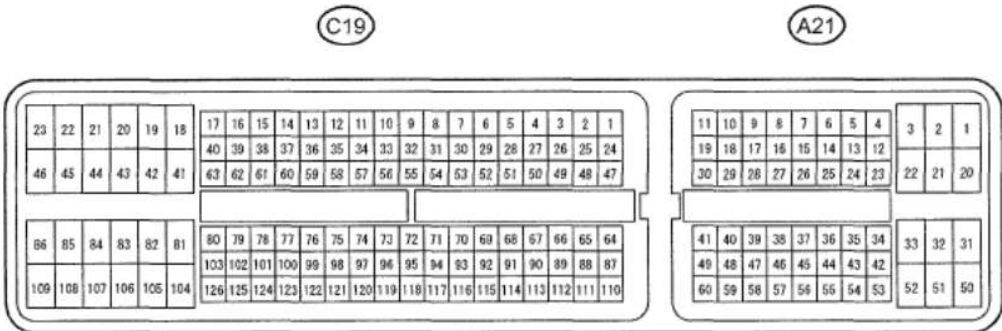


Fig. 9: Identifying Terminals Of ECM Connector Terminal
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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- a. Disconnect the A21 and C19 ECU connectors.
- b. Measure the voltage and resistance according to the value(s) in the table below.

CONNECTOR TERMINAL REFERENCE

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
A21-27 (TC) - C19-104 (E1)	P - W	Ground	Ignition switch ON	11 to 14 V
A21-27 (TC) - C19-104 (E1)	P - W	Ground	Connect terminals TC and CG of DLC3	Below 1 V
A21-36 (STP) - C19-104 (E1)	G - W	Stop light signal	Ignition switch ON, Depress brake pedal	11 to 14 V
A21-36 (STP) - C19-104 (E1)	G - W	Stop light signal	Ignition switch ON, Release brake pedal	Below 1 ohms
A21-40 (CCS) - C19-104 (E1)	L - W	Cruise control main switch circuit	Cruise control switch OFF	10 kohms or higher
A21-40 (CCS) - C19-104 (E1)	L - W	Cruise control main switch circuit	Cruise control switch ON	Below 1 ohms
A21-40 (CCS) - C19-104 (E1)	L - W	Cruise control main switch circuit	CANCEL switch ON	1386 to 1694 ohms
A21-40 (CCS) - C19-104 (E1)	L - W	Cruise control main switch circuit	-/SET switch ON	567 to 693 ohms
A21-40 (CCS) - C19-104 (E1)	L - W	Cruise control main switch circuit	+ /RES switch ON	216 to 264 ohms
A21-35 (ST1-) - C19-104 (E1)	Y - W	Stop light signal	Ignition switch ON, Depress brake pedal	Below 1 V
A21-35 (ST1-) - C19-104 (E1)	Y - W	Stop light signal	Ignition switch ON, Release brake pedal	11 to 14 V
C19-56 (D) - C19-104 (E1)*1	L - W	Clutch signal	Ignition switch ON, Depress clutch pedal	Below 1 V
C19-56 (D) - C19-104 (E1)*1	L - W	Clutch signal	Ignition switch ON, Release clutch pedal	11 to 14 V
C19-56 (D) - C19-104 (E1)*2	L - W	D shift position switch signal	Ignition switch ON, Shift lever not on D	Below 1 V
C19-56 (D) - C19-104 (E1)*2	L - W	D shift position switch signal	Ignition switch ON, Shift lever on D	11 to 14 V
HINT: • *1: for Manual Transaxle • *2: for Automatic Transaxle				

If the result is not as specified, there may be a malfunction on the wire harness side.

DIAGNOSIS SYSTEM

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1. DESCRIPTION

The ECU controls the cruise control system of the vehicle. The data and DTCs relating to the cruise control system can be read from the DLC3 of the vehicle. If any DTC is not displayed when checking for DTCs, there may be a problem with either the combination meter or the CAN communication system. Use a Techstream to check and solve the problem.

2. CHECK DLC3

- Check the DLC3 (See **HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS**).

3. CHECK INDICATOR

- Turn the ignition switch to ON.



CRUISE Indicator Light

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Fig. 10: Identifying Cruise Indicator Light

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Check that the CRUISE main indicator light illuminates when the cruise control main switch is turned on, and that the indicator light turns off when the main switch is turned off. If the results are not as specified, inspect the CRUISE main indicator light circuit (see **CRUISE MAIN INDICATOR LIGHT CIRCUIT**).

HINT:

While driving with the cruise control on, the ECM activates the cruise control system AUTO CANCEL cruise control system when a malfunction occurs in one of the following: vehicle speed sensors, stop light switch, or other related parts. When AUTO CANCEL is activated, the CRUISE main indicator light outputs the blinking pattern shown to the left. At the same time, the malfunction data is stored as a DTC.

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CRUISE Main Indicator Light

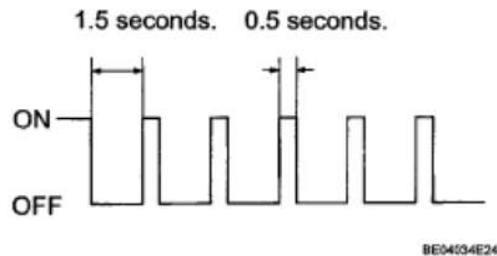


Fig. 11: CRUISE Main Indicator Light - Blinking Pattern
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DTC CHECK/CLEAR

1. CHECK DTC

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the tester on.
- d. Enter the following menus: Powertrain / Cruise Control / Trouble Code.
- e. Read the DTCs.

2. CLEAR DTC

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the tester on.
- d. Enter the following menus: Powertrain / Cruise Control / Trouble Code.
- e. Erase the DTCs.

FAIL-SAFE CHART

HINT:

If the following conditions are detected while the cruise control is in operation, the system clears the stored vehicle speed in the ECM and cancels the cruise control operation.

FAIL-SAFE CHART

Vehicle Condition	Auto Cancel Condition	Re-operation Condition
CRUISE main indicator light blinks	- There is open or short in stop light switch circuit - There is problem with vehicle speed signal - There is problem with throttle position sensor and motor	Turn cruise control main switch on again
		Turn cruise control

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2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD

CRUISE main indicator light blinks	- There is problem with input circuit of stop light switch circuit - There is problem with cancel circuit	main switch on again Turn ignition switch off then on again
CRUISE main indicator light remains on (Cruise control is canceled)	- Vehicle speed is lower than low speed limit (approximately 40 km/h (25 mph)) while running with cruise control on - VSC operates	Push cruise control main switch to + (ACCEL)/RES (RESUME)
	Vehicle speed is lower than stored speed by approximately 16 km/h (10 mph) or more	Push cruise control main switch to - (COAST)/ SET

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using a Techstream to read the DATA LIST allows 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.

NOTE: 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.

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the tester on.
- Enter the following menus: Powertrain / Cruise Control / Data List.
- According to the display on tester, read the "DATA LIST".

Cruise control

DATA LIST - CRUISE CONTROL

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
CCS Vehicle Spd	Vehicle speed / mm 0 km/h (0 mph), max 255 km/h (158 mph)	Actual vehicle speed	-
CCS Mem Vehicle Spd	Cruise control memorized speed / mm 0 km/h (0 mph), max 200 km/h (125 mph)	Actual stored vehicle speed	-
Throttle	Throttle opening angle / mm 0°,		

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Opening Angle	max 125°	Actual demanded throttle angle	-
Cruise Control	Cruise control system active condition / ON or OFF	ON Cruise control activated OFF Cruise control deactivated	-
CCS Main SW M-CPU	Main switch signal (Main CPU) / ON or OFF	ON Cruise control main switch on OFF Cruise control main switch off	"1"
CCS Ready M-CPU	Cruise control system standby condition (Main CPU) / ON or OFF	Each time main switch is pushed, ON is displayed and then OFF is displayed	"2"
CCS Indicator M-CPU	Cruise indicator signal (Main CPU)/ON or OFF	ON "CRUISE" on OFF "CRUISE" off	"3"
Cancel Switch	CANCEL switch signal / ON or OFF	ON CANCEL switch on OFF CANCEL switch off	-
SET/COAST Switch	-/SET switch signal / ON or OFF	ON. - (COAST) / SET switch on OFF - (COAST) / SET switch off	-
RES/ACC Switch	+ /RES switch signal / ON or OFF	ON + (ACCEL)/RES (RESUME) switch on OFF + (ACCEL)/RES (RESUME) switch off	-
Stp Light SW M-CPU	Stop light switch signal (Main CPU)/ON or OFF	ON Brake pedal depressed OFF Brake pedal released	-
Cruise Operation Status	Cruise control condition / ON or OFF	ON Cruise control operated OFF Cruise control operation stopped	-
# Codes	Number of diagnosis codes/Min 0, Max 255	-	-

HINT:

- "1" is OK but "2" is NG --> ECM failure
- "2" is OK but "3" is NG --> DTC output or ECM failure
- "1" is OK but cruise indicator dose not turn on --> CRUISE MAIN indicator, wire harness, or ECM failure

2. PERFORM ACTIVE TEST

HINT:

Using a 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.

- Connect the Techstream to the DLC3.

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2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD

- b. Turn the ignition switch to ON.
- c. Turn the tester on.
- d. Enter the following menus: Body Electrical/ Combination Meter / Active Test.
- e. According to the display on tester, perform the "ACTIVE TEST".

Combination meter

ACTIVE TEST - COMBINATION METER

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat Lamp Cruise	Turns CRUISE main indicator light	ON/OFF	-

DIAGNOSTIC TROUBLE CODE CHART

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

Cruise control system:

DIAGNOSTIC TROUBLE CODE CHART - CRUISE CONTROL SYSTEM

DTC Code	Detection Item	Trouble Area
<u>P0500</u>	Vehicle Speed Sensor Malfunction	• Vehicle speed sensor • Combination meter • Vehicle speed sensor signal circuit • ECM • Harness or connector
<u>P0503</u>	Vehicle Speed Sensor "A" Intermittent / Erratic / High	• Vehicle speed sensor • Combination meter • Vehicle speed sensor signal circuit • ECM • Harness or connector
<u>P0571</u>	Brake Switch "A" Circuit	• Stop light switch • Stop light switch circuit • ECM • Fuse (STOP, IGN)
<u>P0575</u>	Cruise Control Input Circuit	• ECM

DTC P0500 VEHICLE SPEED SENSOR MALFUNCTION; DTC P0503 VEHICLE SPEED SENSOR "A" INTERMITTENT / ERRATIC / HIGH

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD****DESCRIPTION**

Refer to DTC P0500 (see **DTC P0500 VEHICLE SPEED SENSOR "A"**).

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area
P0500	The vehicle speed signal from the vehicle speed sensor is cut for 0.14 seconds or more while cruise control is in operation	• Vehicle speed sensor • Vehicle speed sensor signal circuit • Combination meter • ECM • Harness or connector
P0503	Momentary interruption and noise are detected when a rapid change of vehicle speed occurs while cruise control is in operation	• Vehicle speed sensor • Vehicle speed sensor signal circuit • Combination meter • ECM • Harness or connector

WIRING DIAGRAM

Refer to DTC P0500 (see **DTC P0500 VEHICLE SPEED SENSOR "A"**).

INSPECTION PROCEDURE

Refer to DTC P0500 (see **DTC P0500 VEHICLE SPEED SENSOR "A"**).

DTC P0571 BRAKE SWITCH "A" CIRCUIT**DESCRIPTION**

When the brake pedal is depressed, the stop light switch sends a signal to the ECM. When the ECM receives this signal, it cancels the cruise control. The fail-safe function operates to enable normal driving even if there is a malfunction in the stop light signal circuit. The cancellation condition occurs when voltage is applied to terminal STP. When the brake is applied, voltage is normally applied to terminal STP of the ECM through the STOP SW fuse and the stop light switch, and the ECM turns the cruise control off.

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area
		• Stop light switch • Stop light switch

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P0571

When voltage of STP terminal and that of ST1- terminal of ECM are less than 1 V for 0.5 seconds or more

circuit

- ECM
- Fuse (STOP, IGN)

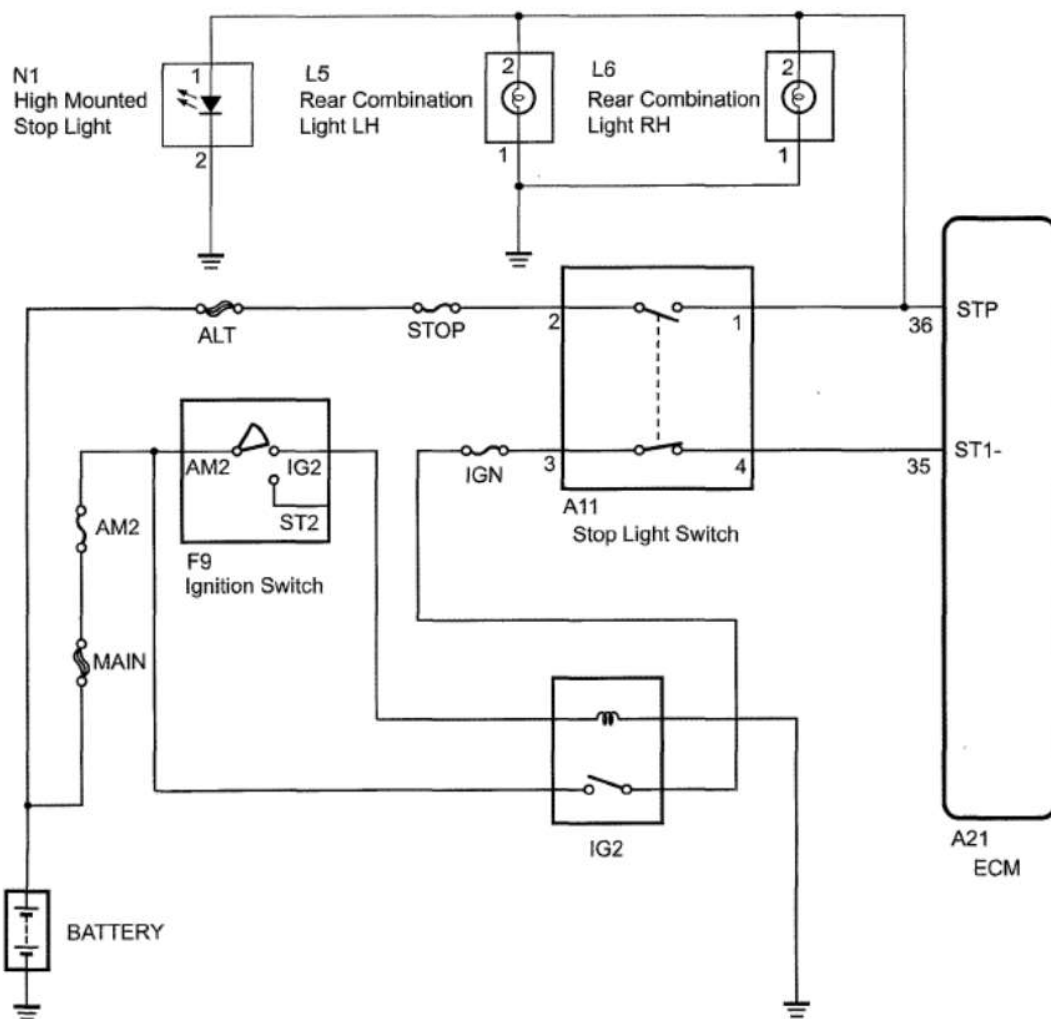
WIRING DIAGRAM

Fig. 12: Brake Switches - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE**1. INSPECT FUSES (STOP AND IGN)**

- Remove the STOP and IGN fuses from the main body ECU.
- Measure the resistance according to the value(s) in the table below.

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Standard resistance

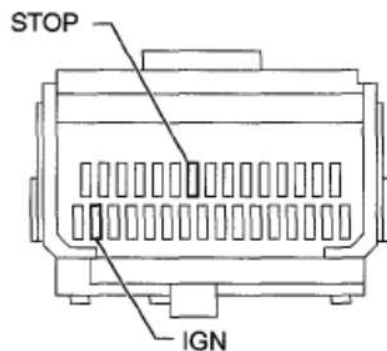
STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Condition	Specified Condition
STOP fuse	Always	Below 1 ohms
IGN fuse	Always	Below 1 ohms

- c. Reinstall the STOP and IGN fuses.

NG: REPLACE FUSE (See **PARTS LOCATION**)

Main Body ECU:



E148649E06

Fig. 13: Identifying STOP And IGN Fuses

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. READ VALUE USING TECHSTREAM

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the tester on.
- Enter the following menus: Powertrain / Cruise Control / Data List.
- According to the display on tester, read the "DATA LIST".

Cruise control

DATA LIST - CRUISE CONTROL

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
		ON. Brake pedal	

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Stop Light SW M-CPU	Stop light switch signal (Main CPU)/ON or OFF	depressed OFF Brake pedal released	-
---------------------	---	------------------------------------	---

OK:

Normal conditions listed above are displayed.

NG: Go to step 3

OK : REPLACE ECM (See REMOVAL)

3. CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH - BATTERY)

- a. Disconnect the A11 stop light switch connector.
- b. Measure the voltage according to the value(s) in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
A11-2 - Body ground	Always	11 to 14 V
A11-3 - Body ground	Ignition switch ON	11 to 14 V

- c. Reconnect the stop light switch connector. NG

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Stop Light Switch)

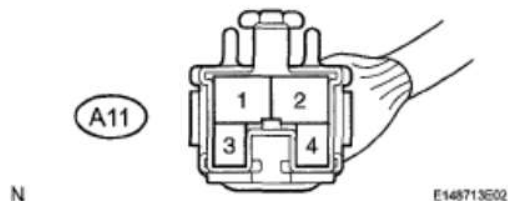


Fig. 14: Identifying A11 Stop Light Switch Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

4. INSPECT STOP LIGHT SWITCH

- a. Remove the stop light switch (See REMOVAL).
- b. Measure the resistance according to the value(s) in the table below.

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2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch pin not pushed	Below 1 ohms
3 - 4	Switch pin not pushed	10 kohms or higher
1 - 2	Switch pin pushed	10 kohms or higher
3 - 4	Switch pin pushed	Below 1 ohms

- c. Reinstall the stop light switch.

NG: REPLACE STOP LIGHT SWITCH (See REMOVAL)

Stop Light Switch:

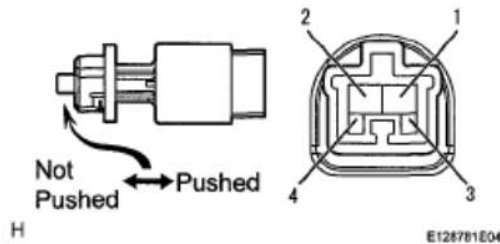


Fig. 15: Inspecting Stop Light Switch

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (ECM - STOP LIGHT SWITCH)

- a. Disconnect the A11 stop light switch connector.
- b. Disconnect the A21 ECM connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Condition	Specified Condition
A11-1 - A21-36 (STP)	Always	Below 1 ohms
A11-1 - Body ground	Always	10 kohms or higher
A11-4 - A21-35 (ST1-)	Always	Below 1 ohms
A11-4 - Body ground	Always	10 kohms or higher

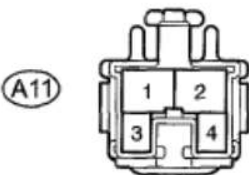
- d. Reconnect the stop light switch connector.
- e. Reconnect the ECM connector.

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NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Stop Light Switch)



Front view of wire harness connector:
(to ECM)

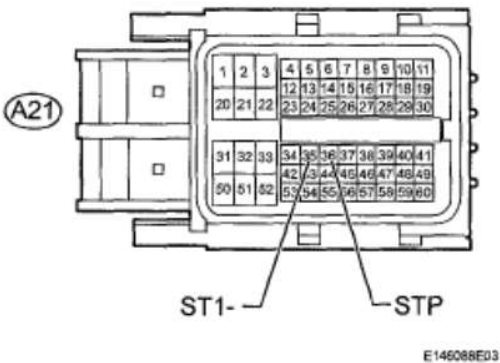


Fig. 16: Identifying A21 ECM And A11 Stop Light Switch Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE ECM (See REMOVAL)

DTC P0575 CRUISE CONTROL INPUT CIRCUIT

DESCRIPTION

This DTC indicates the internal abnormalities of the ECM.

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area

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P0575	When both of the following conditions are met • STP signals input to the ECM supervisory CPU and control ECU are different for 0.15 seconds or more • 0.4 seconds have passed after cruise cancel input signal (STP input) is input to the ECM	ECM
-------	--	-----

HINT:

If DTC P0575 is detected while the cruise control is in operation, the skid control ECU clears the stored vehicle speed in the ECM and cancels the cruise control operation. At the same time, the CRUISE main indicator light blinks to inform the driver of the malfunction. When this trouble code is detected, fail-safe remains on until the engine switch is turned off.

INSPECTION PROCEDURE

1. CHECK FOR DTC

- Clear the DTC (see FAIL-SAFE CHART).
- Recheck for DTC (see FAIL-SAFE CHART).

OK:

DTC P0575 is not output.

NG: REPLACE ECM (See REMOVAL)

OK : USE SIMULATION METHOD TO CHECK (See ELECTRONIC CIRCUIT INSPECTION PROCEDURE)

CLUTCH SWITCH CIRCUIT

DESCRIPTION

Clutch switch circuit inspection is necessary for manual transaxle vehicles.

When the clutch pedal is released, the ECM receives positive (+) battery voltage through the ECU-IG fuse. While depressing the clutch pedal, the clutch switch sends a signal to terminal D of the ECM. The ECM cancels cruise control drive when terminal D receives the signal.

WIRING DIAGRAM

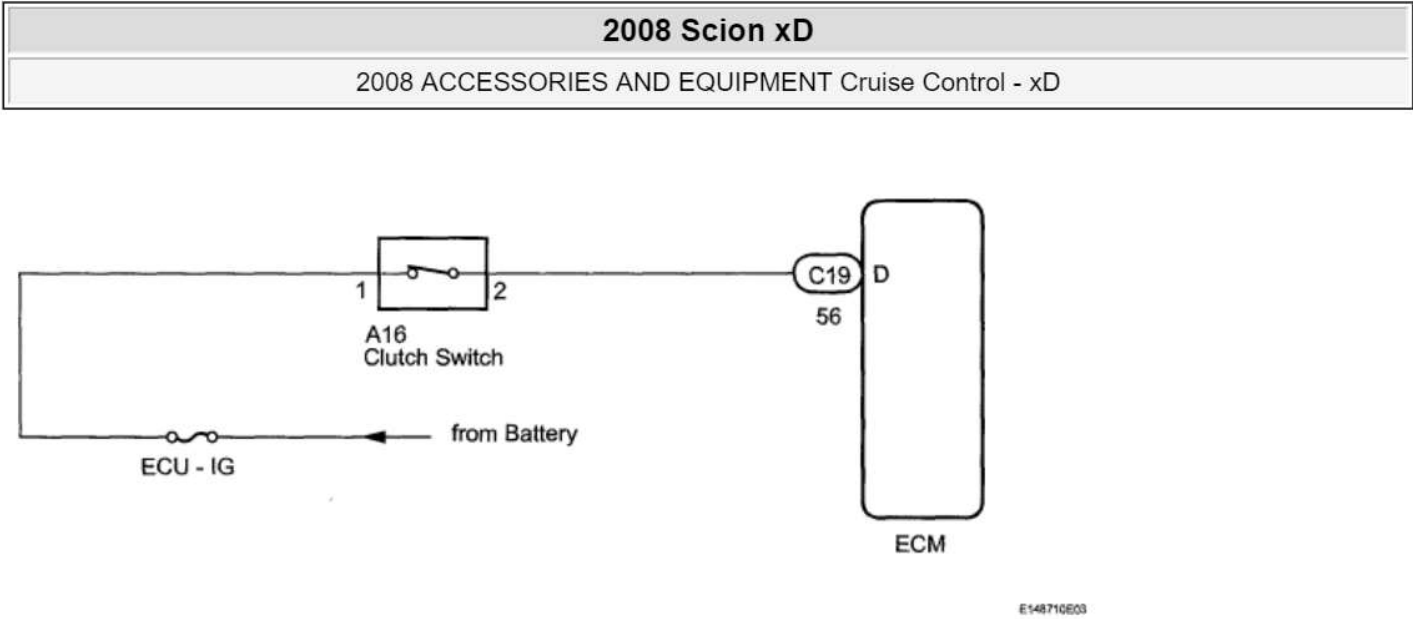


Fig. 17: Clutch Switch - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. INSPECT ECM
- a. Disconnect the C19 ECM connector.

Front view of wire harness connector:
(to ECM)

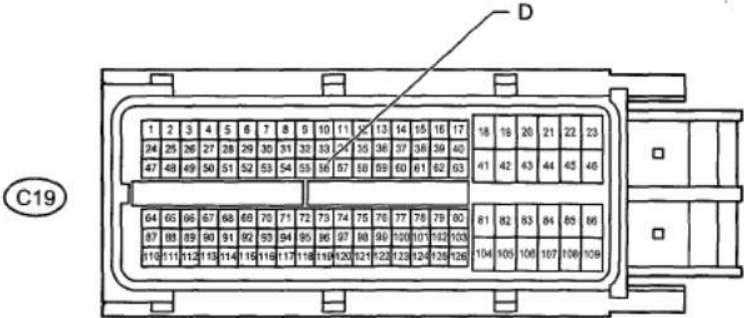


Fig. 18: Identifying C19 ECM Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Turn the ignition switch to ON.
- c. Measure the voltage according to the value(s) in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATIONS		
Tester Connection	Condition	Specified Condition
C19-56 (D) - Body ground	Clutch pedal depressed	Below 1 V
	Clutch pedal released	11 to 14 V

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NG: Go to step 2

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

2. INSPECT CLUTCH SWITCH

- a. Turn the ignition switch to OFF.
- b. Disconnect the A16 clutch switch connector.
- c. Remove the clutch switch, (see REMOVAL)
- d. Measure the resistance according to the value(s) in the table below.

Standard resistance

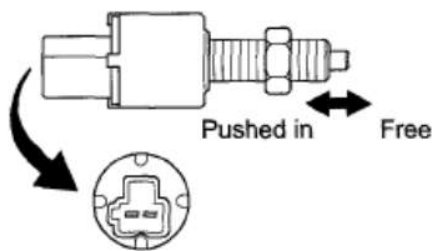
STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch pin free (Clutch pedal depressed)	10 kohms or higher
	Switch pin pushed in (Clutch pedal released)	Below 1 ohms

- e. Install the clutch switch.
- f. Reconnect the clutch switch connector.

NG: REPLACE CLUTCH SWITCH (See REMOVAL)

Component without harness connected:
(Clutch Switch)



E101047ED1

Fig. 19: Inspecting Clutch Switch

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (ECM - CLUTCH SWITCH)

- a. Disconnect the C19 ECM connector.

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- b. Disconnect the A16 clutch switch connector.
- c. Measure the resistance according to the value(s) in the table below.

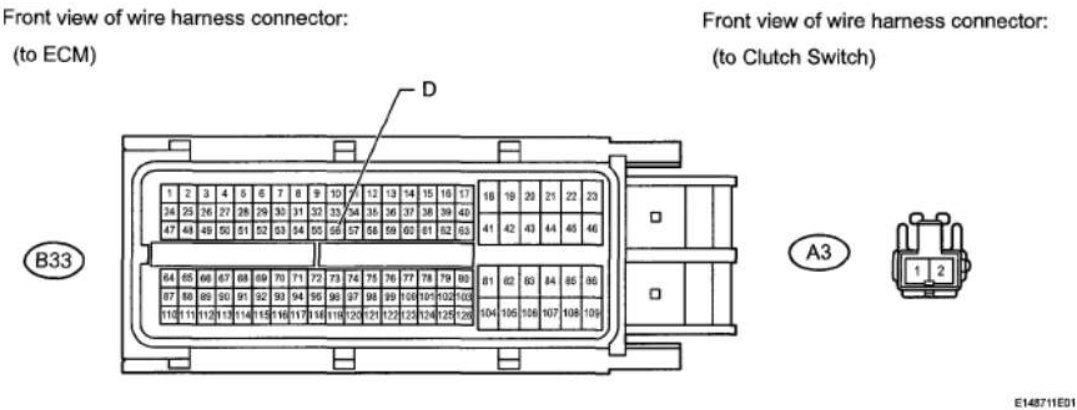


Fig. 20: Identifying C19 ECM And A16 Clutch Switch Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS		
Tester Connection	Condition	Specified Condition
C19-56 (D) - A16-2	Always	Below 1 ohms
C19-56 (D) - Body ground	Always	10 kohms or higher

- d. Reconnect the ECM connector.
- e. Reconnect the clutch switch connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

OK : REPAIR OR REPLACE HARNESS OR CONNECTOR (BATTERY - CLUTCH SWITCH)

CRUISE CONTROL SWITCH CIRCUIT

DESCRIPTION

The cruise control main switch operates 7 functions: SET, - (COAST), TAP-DOWN, RES (RESUME), + (ACCEL), TAP-UP, and CANCEL. The SET, TAP-DOWN, and - (COAST) functions, and the RES (RESUME), TAP-UP, and + (ACCEL) functions are operated with the same switch. The cruise control main switch is an automatic return type switch which turns on only while operating it in the direction of each arrow and turns off after releasing it. The internal contact point of the cruise control main switch is turned on with the switch operation. Then the ECM reads the voltage value that has been changed by the switch operation to control SET, - (COAST), RES (RESUME), + (ACCEL), and CANCEL.

WIRING DIAGRAM

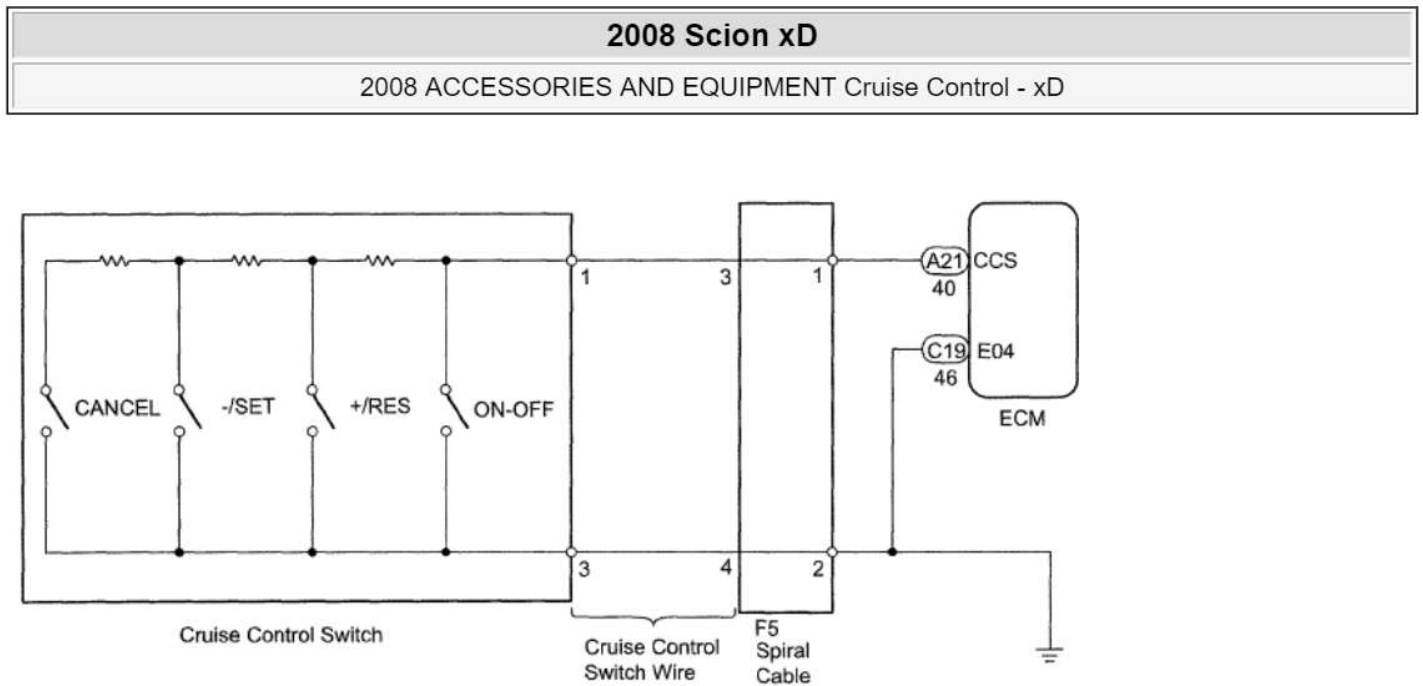


Fig. 21: Cruise Control Switch - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. READ VALUE USING TECHSTREAM

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the tester on.
- d. Enter the following menus: Powertrain / Cruise Control / Data List.
- e. According to the display on tester, read the "DATA LIST".

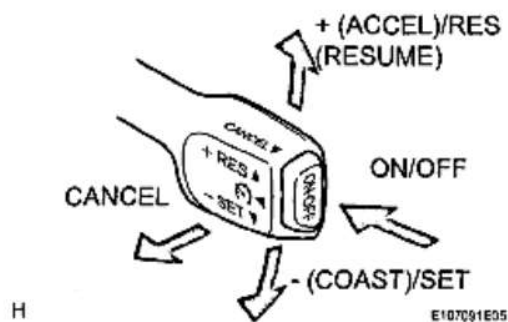


Fig. 22: Turning Ignition Switch
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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Cruise control:**DATA LIST - CRUISE CONTROL**

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
CCS Main SW M-CPU	Main switch signal (Main CPU)/ ON or OFF	ON. Cruise control main switch on OFF Cruise control main switch off	-
Cancel Switch	CANCEL switch signal/ON or OFF	ON. CANCEL switch on OFF. CANCEL switch off	-
SET/COAST Switch	-/SET switch signal/ON or OFF	ON. - (COAST)/SET switch on OFF: - (COAST)/SET switch off	-
RES/ACC Switch	+/RES switch signal/ON or OFF	ON. + (ACCEL)/RES (RESUME) switch on OFF + (ACCEL)/RES (RESUME) switch off	-

OK:

When cruise control main switch operation is performed, the results are the same as above.

NG: Go to step 2

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

2. INSPECT CRUISE CONTROL MAIN SWITCH

- a. Remove the cruise control main switch (see **REMOVAL**).
- b. Measure the resistance according to the value(s) in the table below.

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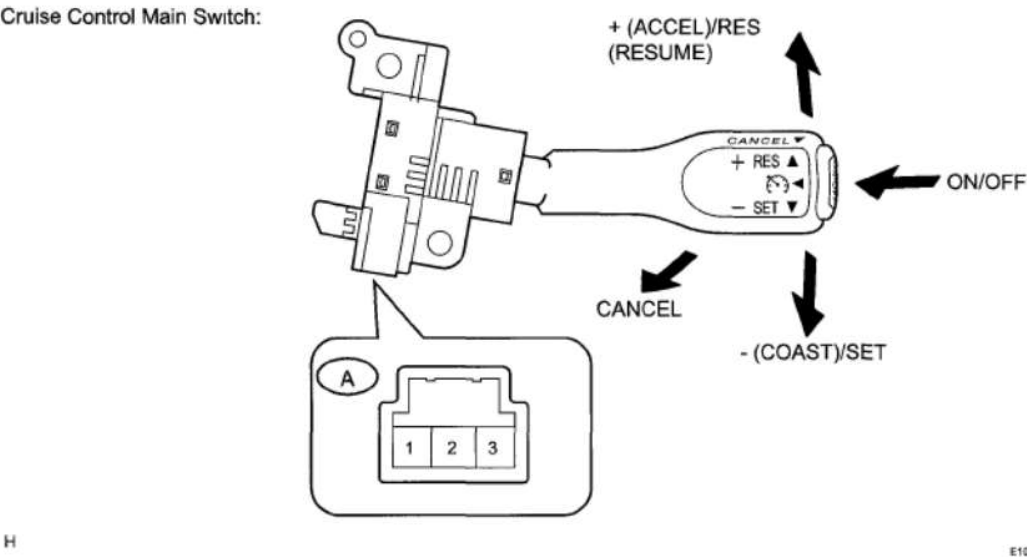


Fig. 23: Checking Cruise Control Main Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
A-1 (CCS) - A-3 (ECC)	Neutral	10 kohms or higher
A-1 (CCS) - A-3 (ECC)	+ (ACCEL)/RES (RESUME)	216 to 264 ohms
A-1 (CCS) - A-3 (ECC)	- (COAST)/SET	567 to 693 ohms
A-1 (CCS) - A-3 (ECC)	CANCEL	1386 to 1694 ohms
A-1 (CCS) - A-3 (ECC)	Main Switch on	Below 1 ohms

NG: REPLACE CRUISE CONTROL MAIN SWITCH (See **REMOVAL**)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (CRUISE CONTROL MAIN SWITCH - SPIRAL CABLE)**
- a. Disconnect the connector from the spiral cable.

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

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester connection	Condition	Specified condition
A-1 - 3	Always	Below 1 ohms
A-3 - 4	Always	Below 1 ohms

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NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Spiral Cable Side)

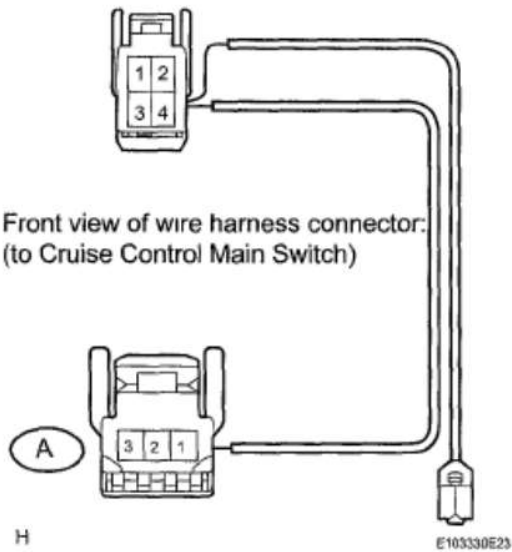


Fig. 24: Checking Harness And Connector (Cruise Control Main Switch - Spiral Cable)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

4. INSPECT SPIRAL CABLE

NOTE: The spiral cable is an important part of the SRS airbag system. Incorrect removal or installation of the spiral cable may prevent the airbag from deploying. Be sure to read the page shown in the brackets.

HINT:

- Removal (see **REMOVAL**)
- Installation (See **INSTALLATION**)
 - a. Remove the spiral cable.
 - b. Measure the resistance according to the value(s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Spiral Cable Position	Specified Condition
	Center	

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3 - F5-1 (CCS)	2.5 rotations to the left	Below 1 ohms
	2.5 rotations to the right	
4 - F5-2 (ECC)	Center	Below 1 ohms
	2.5 rotations to the left	
	2.5 rotations to the right	

HINT:

The spiral cable makes a maximum of approximately 5 rotations.

NG: REPLACE SPIRAL CABLE (See **REMOVAL**)

Cruise Control Main Switch Side:

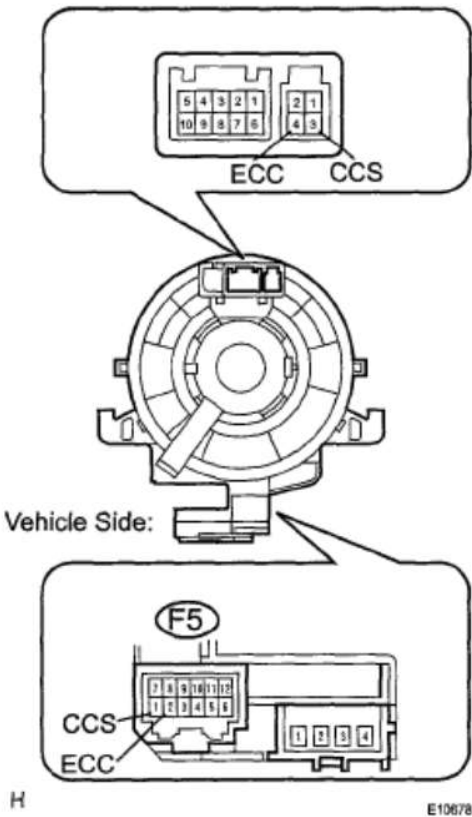


Fig. 25: Identifying Cruise Control Main Switch Connector Terminal
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

5. **CHECK HARNESS AND CONNECTOR (SPIRAL CABLE - ECM AND BODY GROUND)**
- a. Disconnect the A21 ECM connector.
 - b. Disconnect the F5 spiral cable connector.

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

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Condition	Specified Condition
F5-1 - A21-40 (CCS)	Always	Below 1 ohms
A21-40 (CCS) - Body ground	Always	10 kohms or higher
F5-2 (ECC) - Body ground	Always	Below 1 ohms

d. Reconnect the ECM connector.

e. Reconnect the spiral cable connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Spiral Cable)

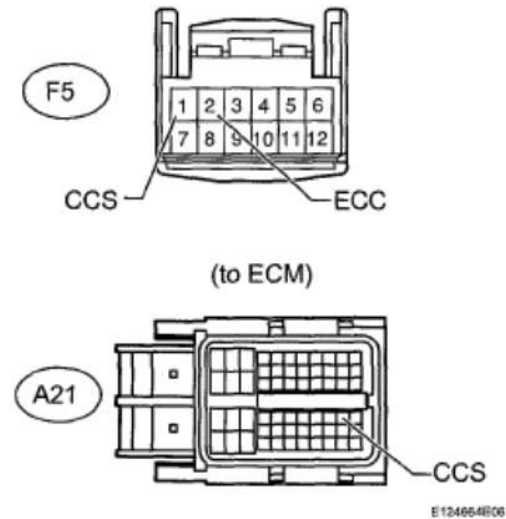


Fig. 26: Identifying A21 ECM And F5 Spiral Cable Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE ECM (See **REMOVAL**)

CRUISE MAIN INDICATOR LIGHT CIRCUIT

DESCRIPTION

- The ECM detects a cruise control switch signal and sends it to the combination meter through CAN. Then

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the CRUISE main indicator light comes on.

- The CRUISE main indicator light circuit uses CAN for communication. If there is a malfunction in this circuit, check for DTCs in the CAN communication system before troubleshooting this circuit.

INSPECTION PROCEDURE

1. PERFORM ACTIVE TEST USING TECHSTREAM

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the tester on.
- Enter the following menus: Body Electrical/ Combination Meter / Active Test.
- According to the display on tester, perform the "ACTIVE TEST".

Combination Meter

ACTIVE TEST - COMBINATION METER

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat Lamp Cruise	Turns on CRUISE main indicator light	ON/OFF	-

OK:

Indicator light comes on/goes off.

NG: REPLACE COMBINATION METER (See REMOVAL)

OK: Go to next step

2. READ VALUE USING TECHSTREAM

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the tester on.
- Enter the following menus: Powertrain / Cruise Control / Data List.
- According to the display on tester, read the "DATA LIST".

Cruise control

DATA LIST - CRUISE CONTROL

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
CCS Indicator M-CPU	Cruise indicator signal (Main CPU)/ON or OFF	ON "CRUISE" on OFF "CRUISE" off	-

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OK:

When cruise control main switch operation is performed, the result will be same as above.

NG: REPLACE ECM (See REMOVAL)

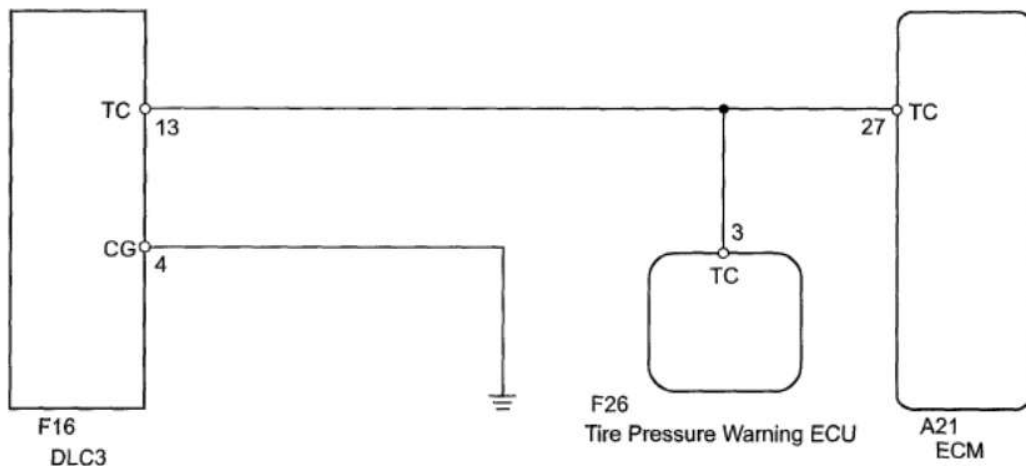
OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

TC AND CG TERMINAL CIRCUIT

DESCRIPTION

Connecting terminals TC and CG of the DLC3 causes the system to enter self-diagnostic mode. If a malfunction is present, DTCs will be output.

WIRING DIAGRAM



E149198EC2

Fig. 27: TC And CG Terminal - Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

When each warning light keeps blinking, a ground short in the warning of terminal TC of the DLC3 or an internal ground short in each ECU is suspected.

INSPECTION PROCEDURE

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2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD

1. CHECK HARNESS AND CONNECTOR (DLC3 - ECM AND BODY GROUND)

- a. Disconnect the A21 connector from the ECM.
- b. Measure the resistance according to the value(s) in the table below.

Standard resistance

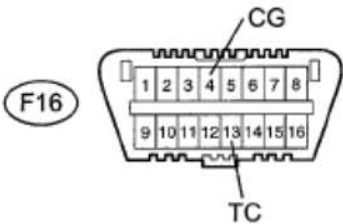
STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Condition	Specified Condition
A21-27 (TC) - F16-13 (TC) F16-4 (CG) - Body ground	Always	Below 1 ohms
F16-13 (TC) - Body ground	Always	10 kohms or higher

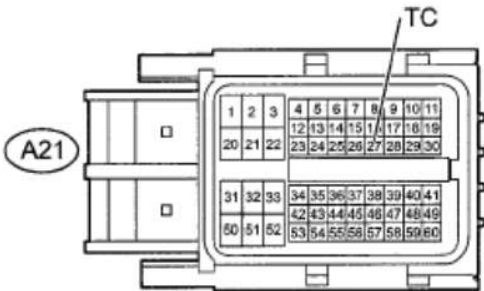
- c. Reconnect the connector from the ECM.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR OR EACH ECU

Front view of DLC3:



Front view of wire harness connector:
(ECM)



E148093E06

Fig. 28: Identifying A21 Connector And DLC3 Connector Terminal

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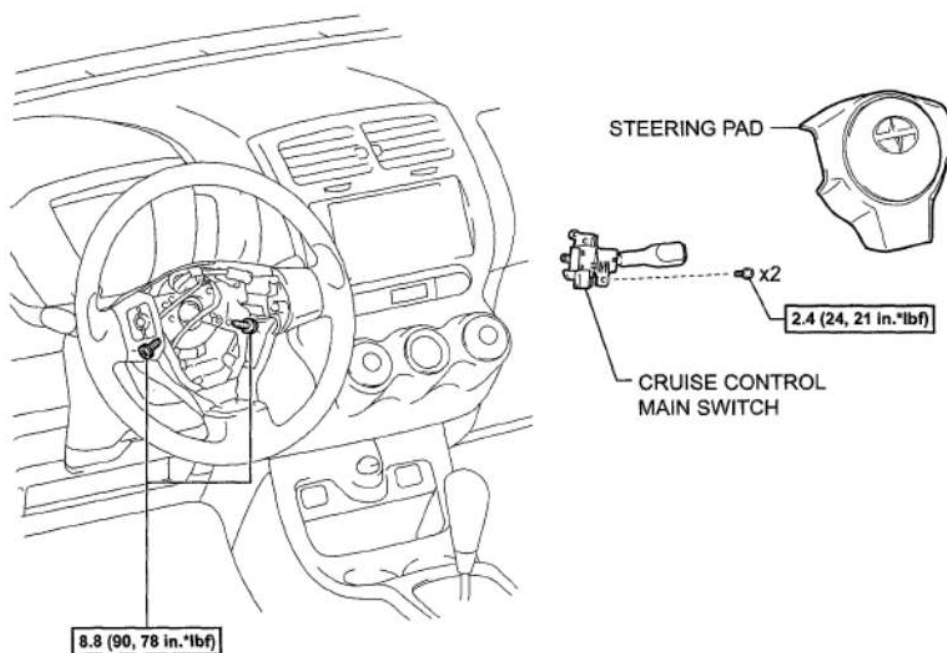
2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See PROBLEM SYMPTOMS TABLE)

CRUISE CONTROL MAIN SWITCH

COMPONENTS



N*m (kgf*cm, ft*lbf) : Specified torque

P

E141107E01

Fig. 29: Identifying Cruise Control Main Switch Components With Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION: Wait for at least 90 seconds after disconnecting the cable to prevent the airbag from working.

2. REMOVE STEERING PAD (See REMOVAL)

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3. REMOVE CRUISE CONTROL MAIN SWITCH

- a. Disconnect the connector.
- b. Remove the 2 screws and remove the cruise control main switch.



Fig. 30: Identifying Cruise Control Main Switch Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. INSPECT CRUISE CONTROL MAIN SWITCH

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

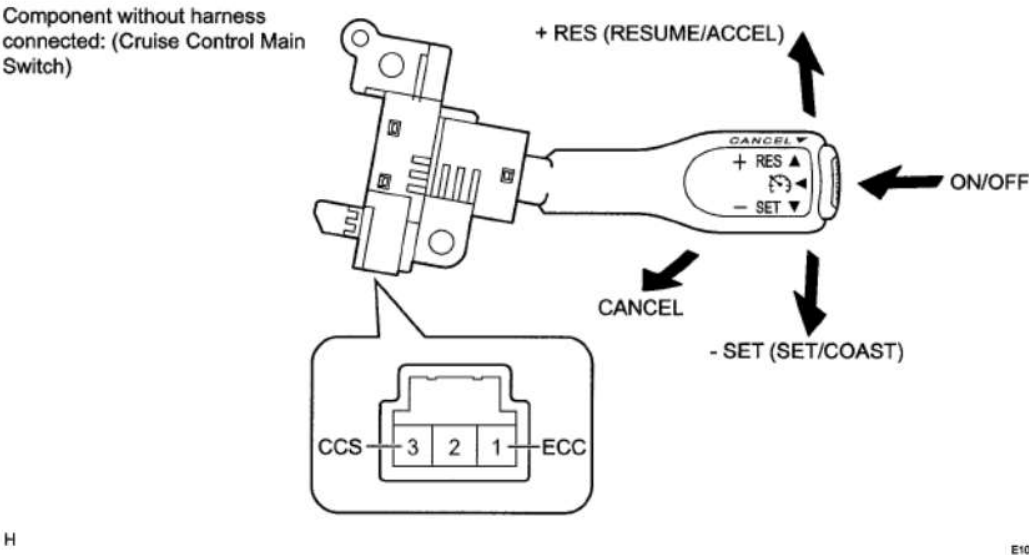


Fig. 31: Inspecting Cruise Control Main Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
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2008 Scion xD

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3 (CCS) - 1 (ECC)	Neutral	10 kohms or higher
3 (CCS) - 1 (ECC)	+ RES (RESUME/ACCEL)	216 to 264 ohms
3 (CCS) - 1 (ECC)	- SET (SET/COAST)	567 to 693 ohms
3 (CCS) - 1 (ECC)	CANCEL	1386 to 1694 ohms
3 (CCS) - 1 (ECC)	Main Switch ON	Below 1 ohms

If the result is not as specified, replace the cruise control main switch.

INSTALLATION

1. INSTALL CRUISE CONTROL MAIN SWITCH

- Install the cruise control main switch with the 2 screws.

Torque: 2.4 N*m (24 kgf*cm, 21 in.*lbf)

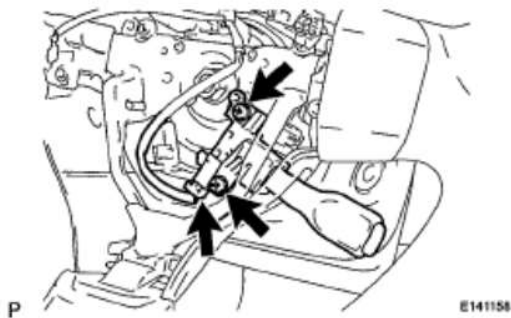


Fig. 32: Locating Cruise Control Main Switch With Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Connect the connector.

2. INSTALL STEERING PAD (See INSTALLATION)

3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

4. INSPECT SRS WARNING LIGHT

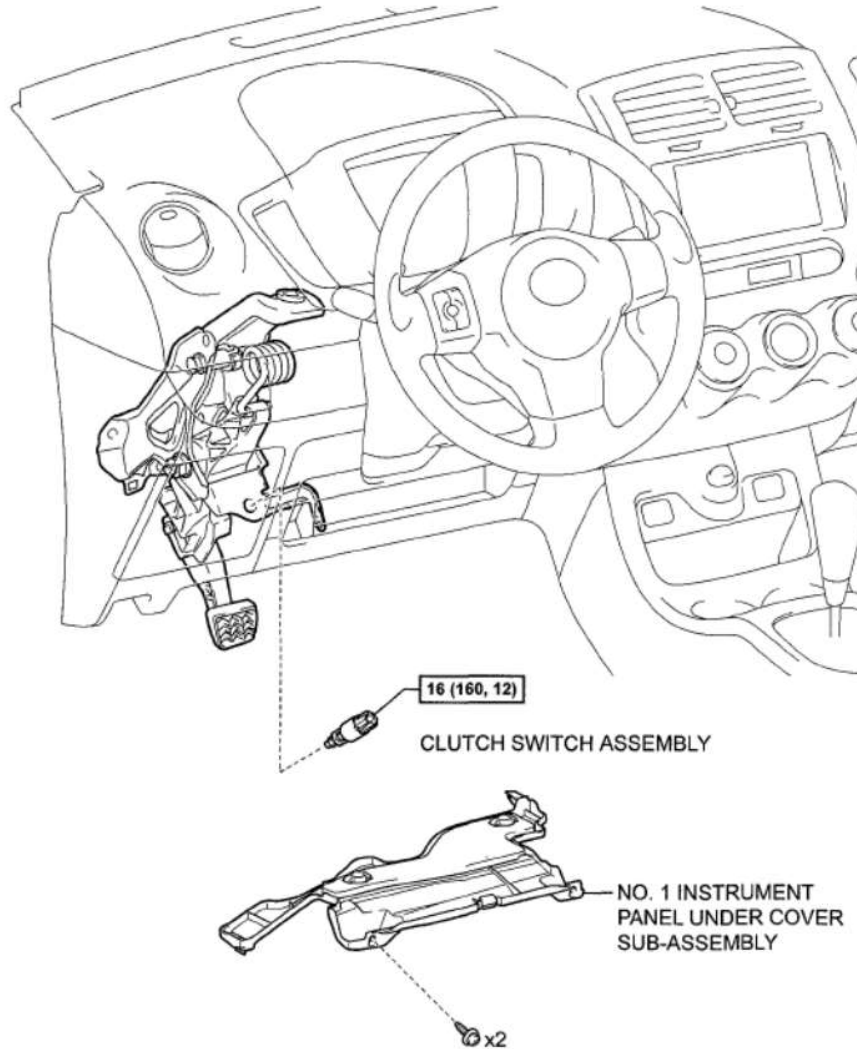
(See DIAGNOSIS SYSTEM)

CLUTCH SWITCH

COMPONENTS

2008 Scion xD

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N*m (kgf*cm, ft*lbf) : Specified torque

P

E141582E01

Fig. 33: Identifying Clutch Switch Components With Torque Specification

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
2. **REMOVE CLUTCH SWITCH ASSEMBLY**
 - a. Disconnect the connector.
 - b. Loosen the nut and remove the clutch switch assembly.

2008 Scion xD

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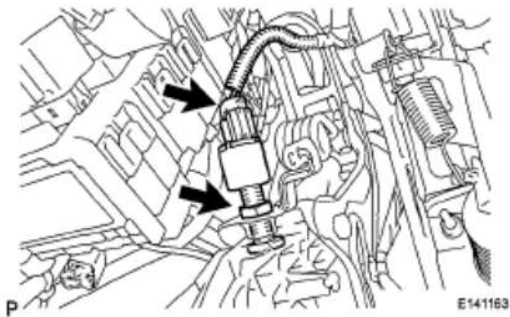


Fig. 34: Locating Clutch Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. INSPECT CLUTCH SWITCH ASSEMBLY

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

Standard resistance

STANDARD RESISTANCE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch pin free (Clutch pedal depressed)	10 kohms or higher
	Switch pin pushed in (Clutch pedal released)	Below 1 ohms

If the result is not as specified, replace the clutch switch.

Component without harness connected:
(Clutch Switch)

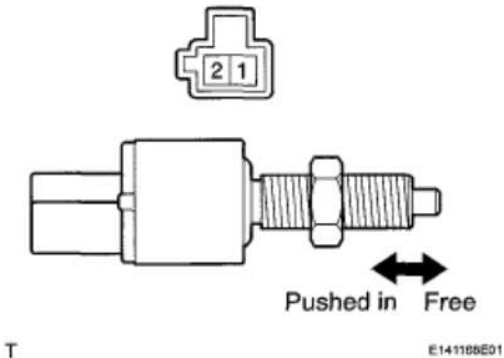


Fig. 35: Inspecting Clutch Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Cruise Control - xD****1. INSTALL CLUTCH SWITCH ASSEMBLY**

- a. Fully loosen the lock nut of the clutch switch assembly.
- b. Adjust the clutch switch until the threaded portion comes into contact with the cushion. Tighten the lock nut and ensure that the threaded portion is in contact with the cushion.

Torque: 16 N*m (160 kgf*cm, 12 ft.*lbf)

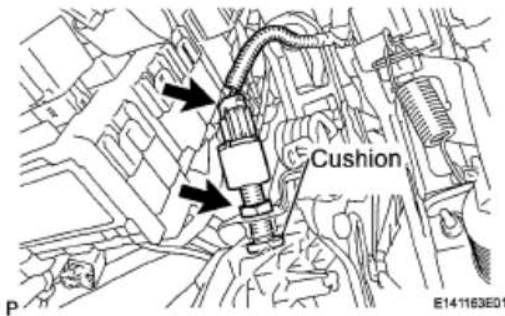


Fig. 36: Adjusting Clutch Switch Lock Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Connect the connector.
- 2. INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)