

2008 Scion xD

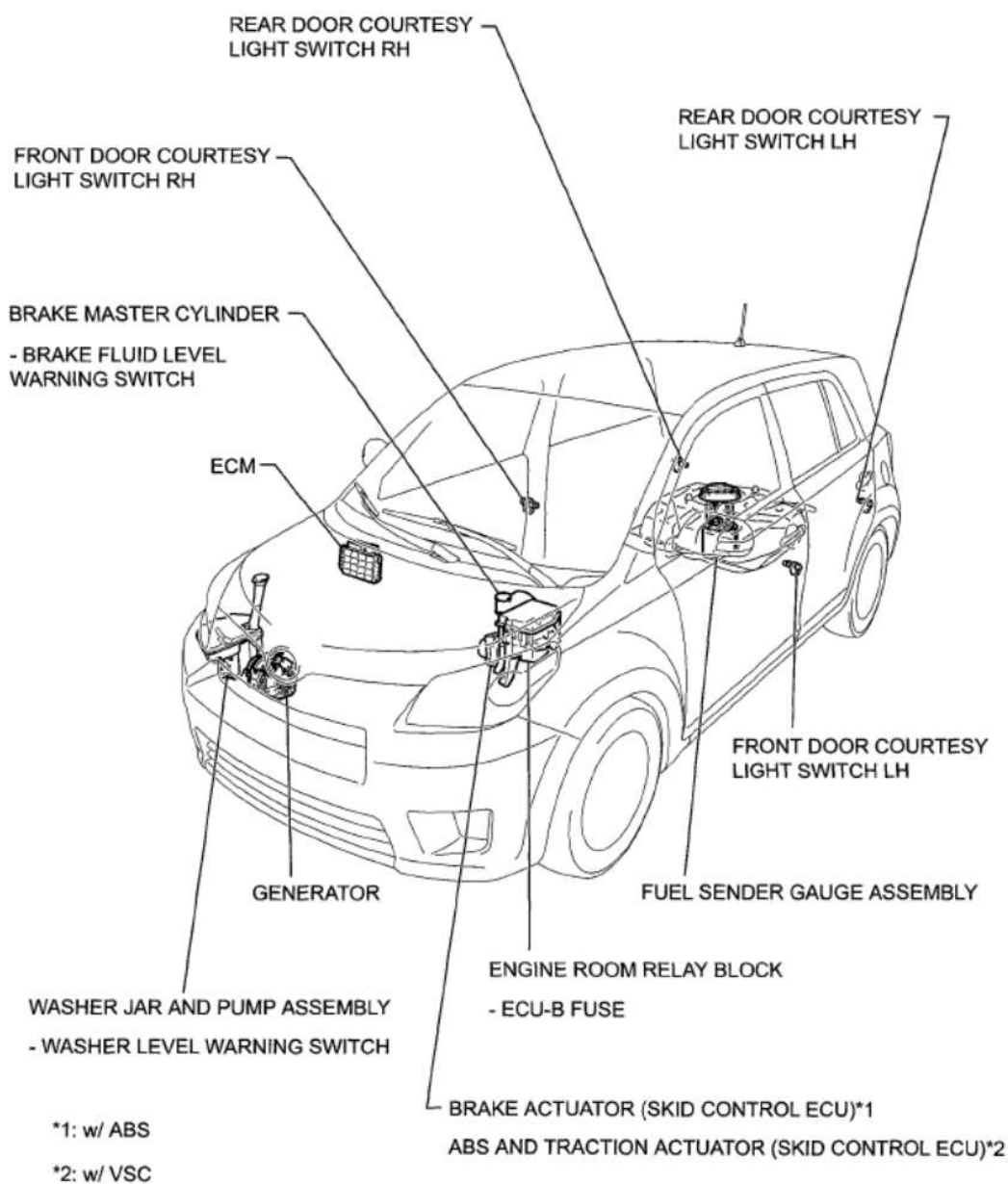
2008 ACCESSORIES AND EQUIPMENT Meter - xD

2008 ACCESSORIES AND EQUIPMENT

Meter - xD

METER / GAUGE SYSTEM

PARTS LOCATION



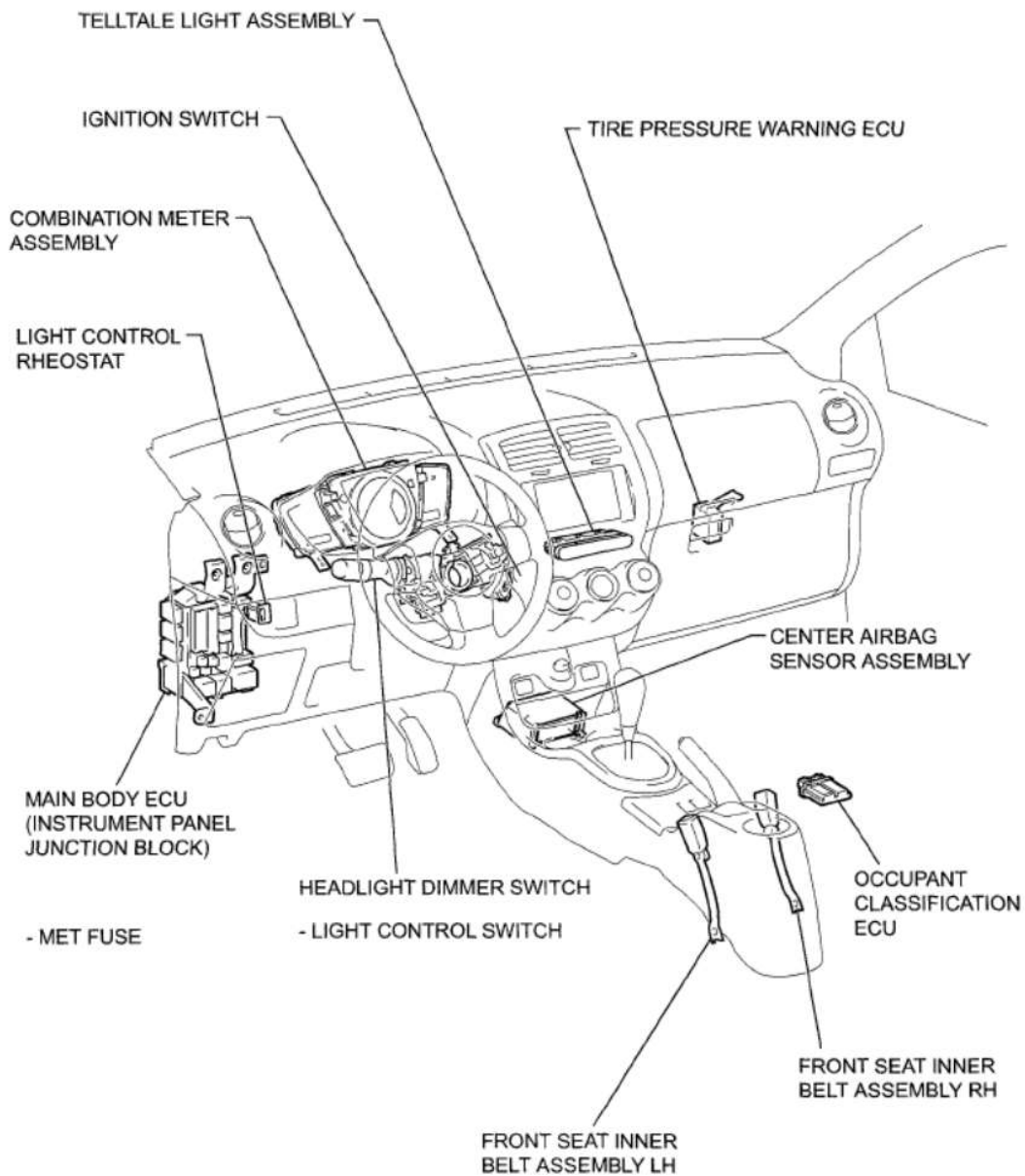
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Fig. 1: Identifying Meter / Gauge System Components (1 Of 3)

2008 Scion xD

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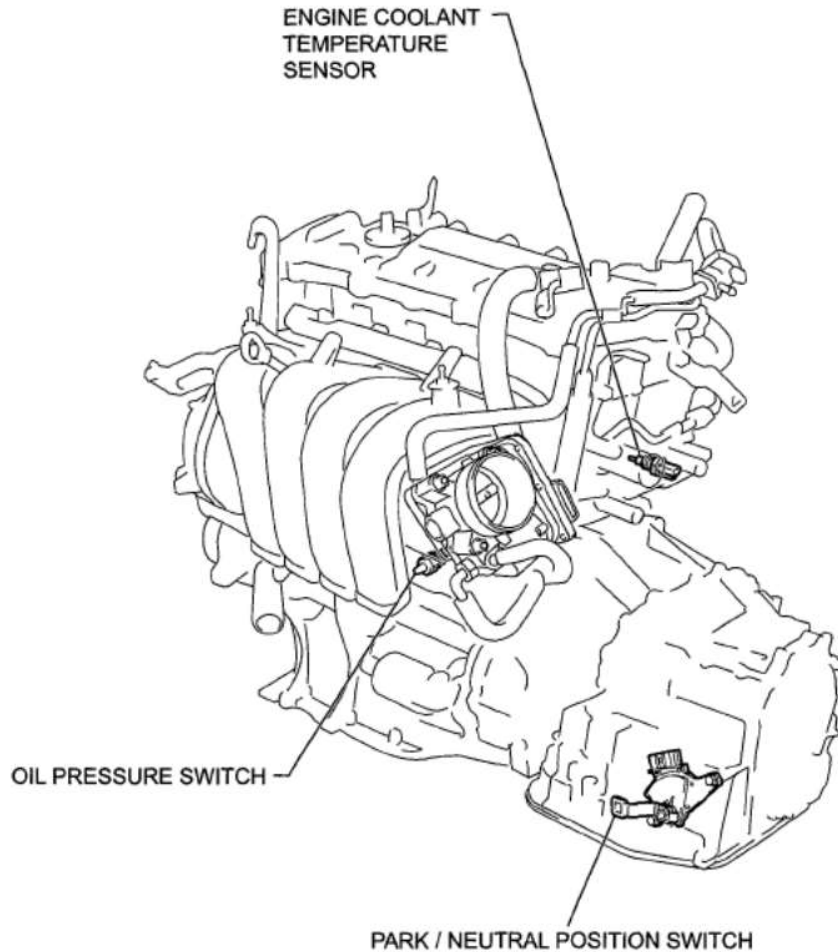
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Fig. 2: Identifying Meter / Gauge System Components (2 Of 3)

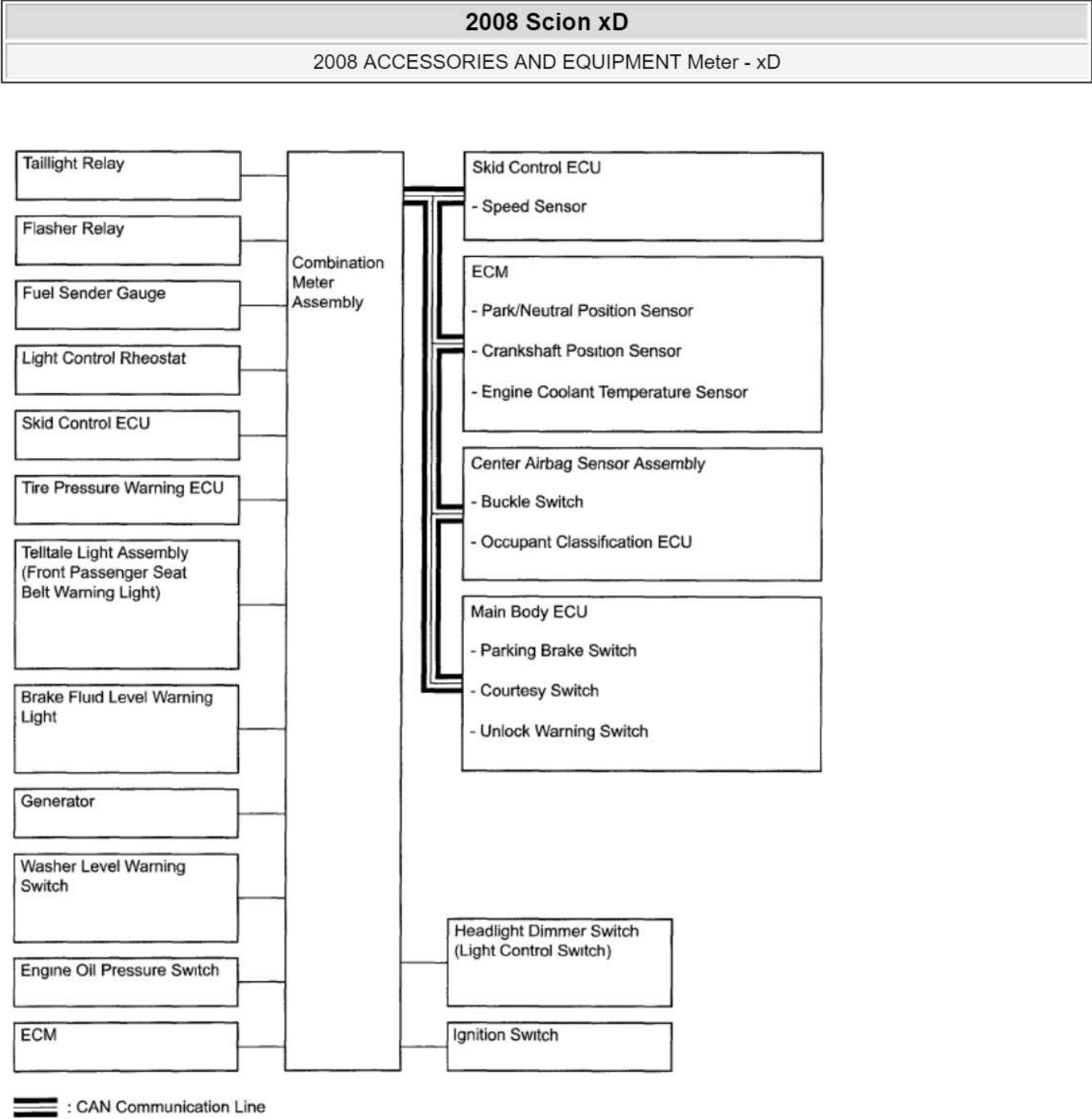
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Fig. 3: Identifying Meter / Gauge System Components (3 Of 3)
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SYSTEM DIAGRAM



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Fig. 4: Meter / Gauge System Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DESCRIPTION

1. METER GAUGE AND WARNING / INDICATOR

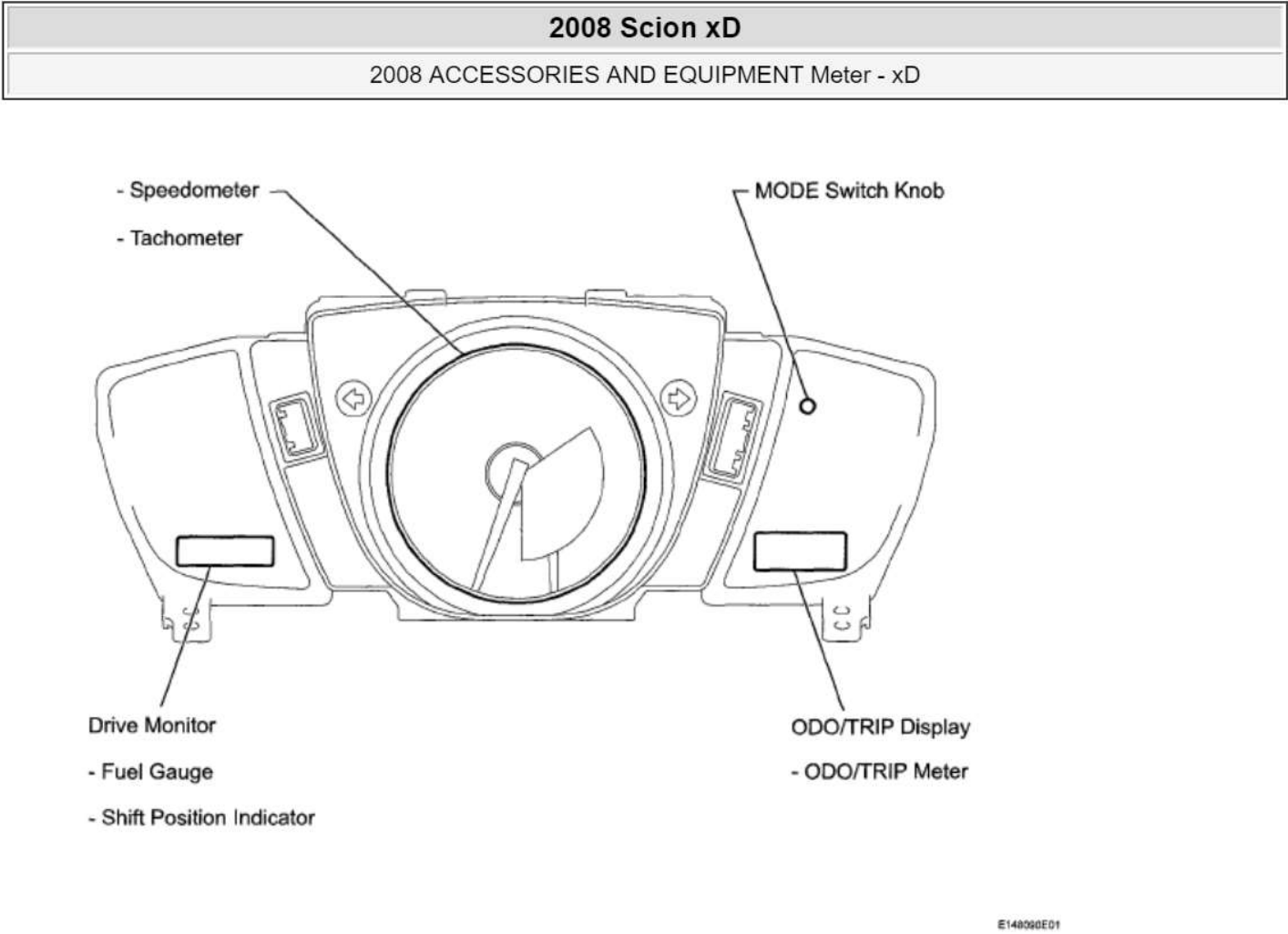


Fig. 5: Identifying Meter Gauge And Warning / Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Gauge:

SYSTEM DESCRIPTION

Item	Detail
Speedometer	Based on signals received from the wheel speed sensor, skid control ECU calculates vehicle speed and transmits data to meter (CAN line)
Tachometer	ECM transmits engine speed to meter (CAN line)
Fuel Gauge	Fuel sender gauge transmits signal to meter (Direct line)

Warning / Indicator:

WARNING / INDICATOR DESCRIPTION

Item	Detail
TURN SIGNAL	Receives turn signal from flasher relay (Direct line)
HAZARD SIGNAL	Receives hazard warning signal from flasher relay (Direct line)
BEAM	Receives high beam signal from DIMMER relay (Direct line)
CHARGE	Receives malfunction charge signal from ECM (CAN line and direct line)

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

MIL	Receives malfunction check signal from ECM (Direct line)
DOOR	Open door indicator illuminates when receiving signal from main body ECU (CAN line)
DRIVER'S SEAT BELT	Receives driver seat belt signal (unfastened) from center airbag sensor (CAN line)
BRAKE	- Receives parking brake switch signal from main body ECU (CAN line) - Receives brake fluid level warning signal from brake fluid level warning switch (Direct line) - Receives malfunction signal from skid control ECU (CAN line)
CRUISE	Receives malfunction signal from ECM (CAN line)
SRS	Receives malfunction signal from center airbag sensor (CAN line)
SLIP	- Receives signal from ABS and traction actuator (skid control ECU) (CAN line) (Flashes when downhill assist control and hill-start assist control operate)
ABS	Receives malfunction signal from skid control ECU (CAN line)
VSC OFF	Receives VSC control off signal or VSC system fail-safe control signal from ABS and traction actuator (skid control ECU) (CAN line)
TAIL	Receives headlight dimmer switch condition signal from T-LP relay (Direct line)
EPS	Receives malfunction signal from power steering ECU (CAN line)
TIRE PRESSURE	Receives malfunction signal from tire pressure warning ECU (Direct line)
OIL PRESSURE	Receives warning signal from engine oil pressure switch (Direct line)
MAINT REQD	- Illuminates when oil is changed and vehicle is driven about 8,000 km (5,000 miles) - Blinks when oil is changed and vehicle is driven about 7,242 km (4,500 miles) to 8,000 km (5,000 miles)
HEAD	Receives headlight signal from light control switch (Direct line)
WASH	Receives washer level warning signal from washer level warning switch (Direct line)
COOL HOT	Receives water temperature signal from ECM (CAN line)

Warning / Buzzer:

WARNING / BUZZER DESCRIPTION

Item	Detail
KEY Reminder	Buzzer ON When ignition switch off, key is in ignition key cylinder, and driver side door is open
Seat belt warning	Buzzer ON When ignition switch on, driver or passenger seat belt is unfastened, and vehicle speed is 20 km/h (12.4 mph) or more
LIGHT Reminder	Buzzer ON When ignition switch off, light control switch in TAIL position, and driver side door open
VSC	Buzzer ON When skid control ECU detects strong understeer or oversteer
PKB	Buzzer ON When ignition switch on, parking brake is operating, and vehicle speed is 5

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

|km/h (3 1 mph) or more.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the meter / gauge system.
- *: Use a Techstream.

1. **VEHICLE BROUGHT TO WORKSHOP**
2. **INSPECT BATTERY VOLTAGE**

Standard voltage:

11 to 14 V

HINT:

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

3. **CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM (CAN)***
 - a. Use a Techstream to check if the CAN communication system is functioning normally.

Result

RESULT DESCRIPTION

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

B: Go to **CAN COMMUNICATION SYSTEM**

A: Go to Next Step

4. **PROBLEM SYMPTOMS TABLE**

Result

PROBLEM SYMPTOMS CHART

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B: Go to step 6

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

A: Go to Next Step

5. OVERALL ANALYSIS AND TROUBLESHOOTING*

- a. DATA LIST / ACTIVE TEST (see **DATA LIST / ACTIVE TEST**)
- b. Terminals of ECU (see **TERMINALS OF ECU**)
- c. On-vehicle Inspection (see **ON-VEHICLE INSPECTION**)

6. REPAIR OR REPLACE

7. CONFIRMATION TEST

NEXT : END

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH TECHSTREAM (REFERENCE)

HINT:

The following items can be customized.

NOTE:

- When the customer requests a change in a function, first make sure that the function can be customized.
- Record the current settings before customizing.
- When troubleshooting a function, first make sure that the function is set to the default setting.

CUSTOMIZING FUNCTION WITH TECHSTREAM (REFERENCE)

Display (Item)	Default	Contents	Setting
Key Remind Sound	SLOW	Changes key reminder buzzer intervals	FAST / NORMAL / SLOW
D-Seatbelt Warning Buzzer	ON	Seat belt warning buzzer ON / OFF setting	ON Driver buzzer ON OFF Driver buzzer OFF
P-Seatbelt Warning Buzzer	ON	Seat belt warning buzzer ON / OFF setting	ON Passenger buzzer ON OFF Passenger buzzer OFF

2. CUSTOMIZE OPENING MODE

- a. Opening Mode flow chart:

HINT:

- Opening Mode is a function where, upon engine start, the meter needles (speedometer and tachometer) move and, after a slight delay, the scales illuminate.
- By setting the Opening Mode to OFF, the movement of the needles can be canceled.

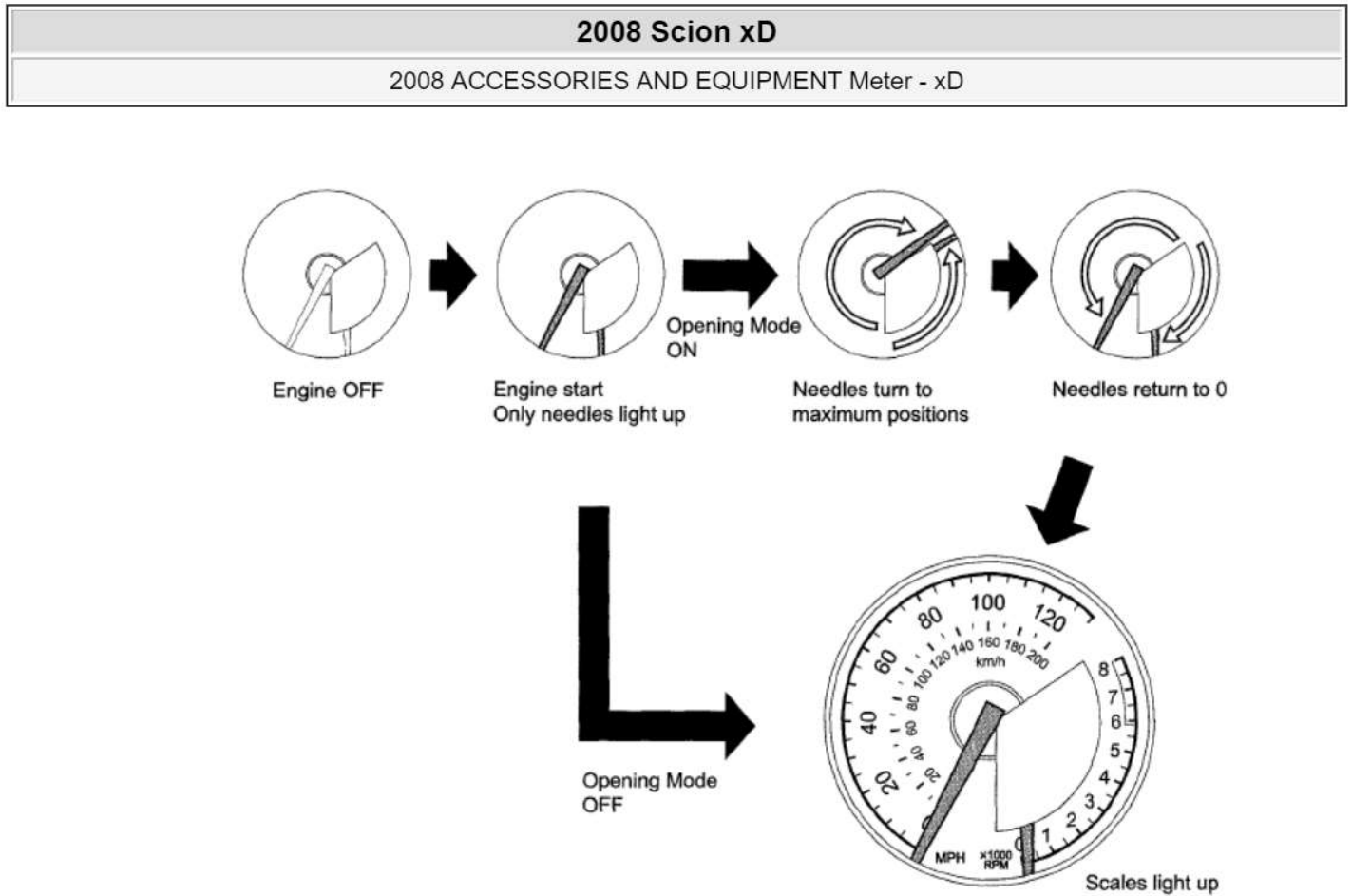
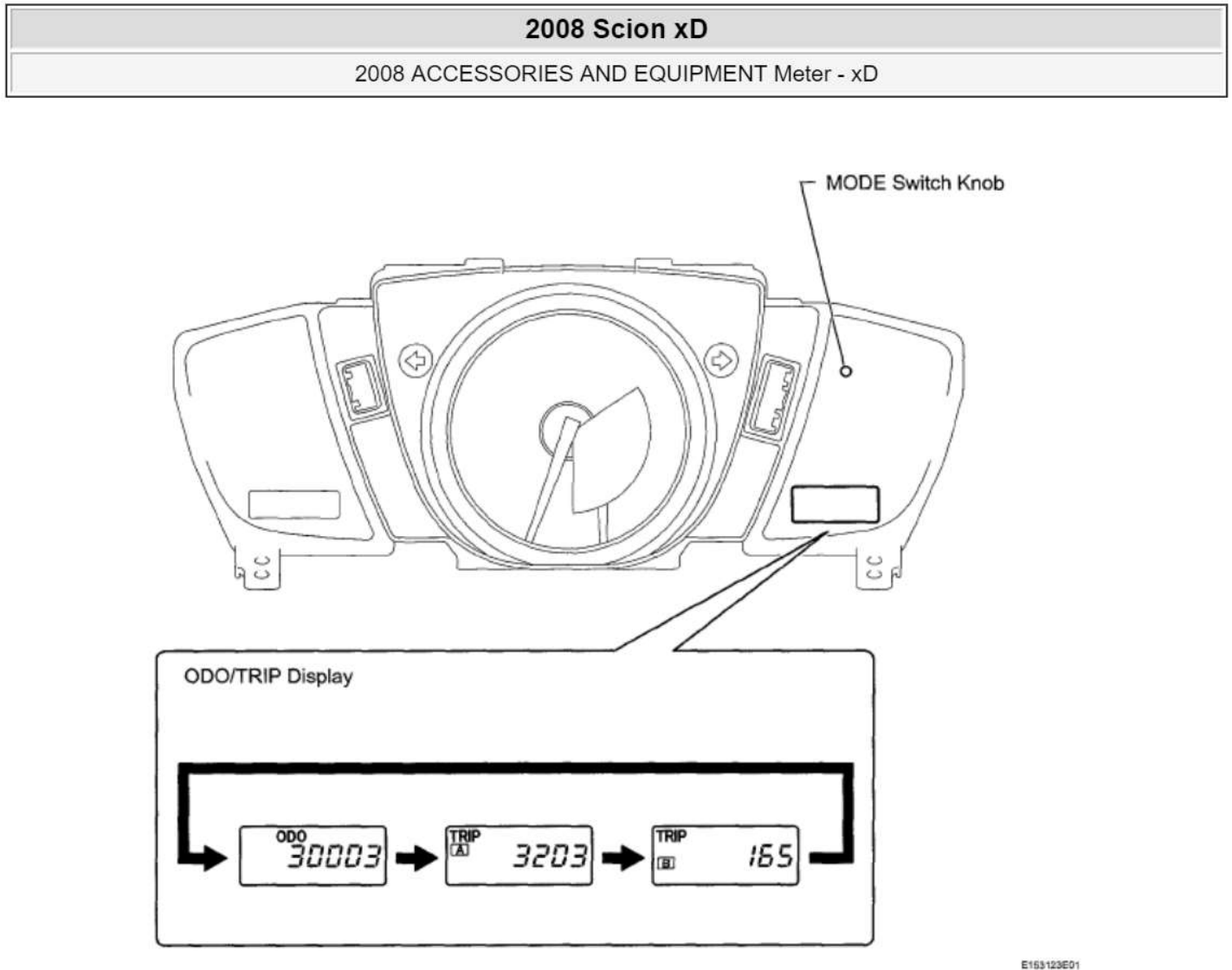


Fig. 6: Opening Mode Flow Chart
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Procedure for customizing Opening Mode:



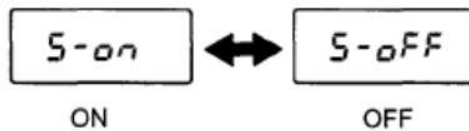
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Fig. 7: Procedure For Customizing Opening Mode
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Turn the ignition switch on.
2. Press the MODE switch knob on the upper right side of the combination meter until the odometer displays "ODO".
3. Turn the ignition switch off.
4. Turn the ignition switch on while pressing and holding the MODE switch knob. Hold down the MODE switch knob for 5 seconds or more.
5. Release the MODE switch knob. The mode will change to Cancel Mode.
6. While in Cancel Mode, the setting will toggle between ON and OFF each time the MODE switch knob is pressed.
7. Press and hold the MODE switch knob for 5 seconds or more to terminate the Cancel Mode.

2008 Scion xD
2008 ACCESSORIES AND EQUIPMENT Meter - xD

ODO/TRIP Display (Cancel Mode):



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Fig. 8: Identifying ODO/TRIP Display
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INITIALIZATION

1. OIL MAINTENANCE INFORMATION MODE RESET OPERATION

NOTE:

- If the oil change reminder light is on, change the engine oil and then perform this procedure.
- To prevent the oil change reminder light from coming on after changing the engine oil, perform this procedure.

HINT:

- In the oil maintenance management system, soot volume in the engine oil is calculated from the engine operating conditions.

Based on the calculated volume, the engine oil change reminder light turns on to inform the driver when to change the engine oil.

- The ECM calculates the volume of the soot in the engine oil from the vehicle speed, engine speed, injection volume, injection timing, and intake air volume in order to control this system.
 - The trip meter reset knob is located on the upper right side of the combination meter assembly.
- a. Turn the ignition switch on.

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

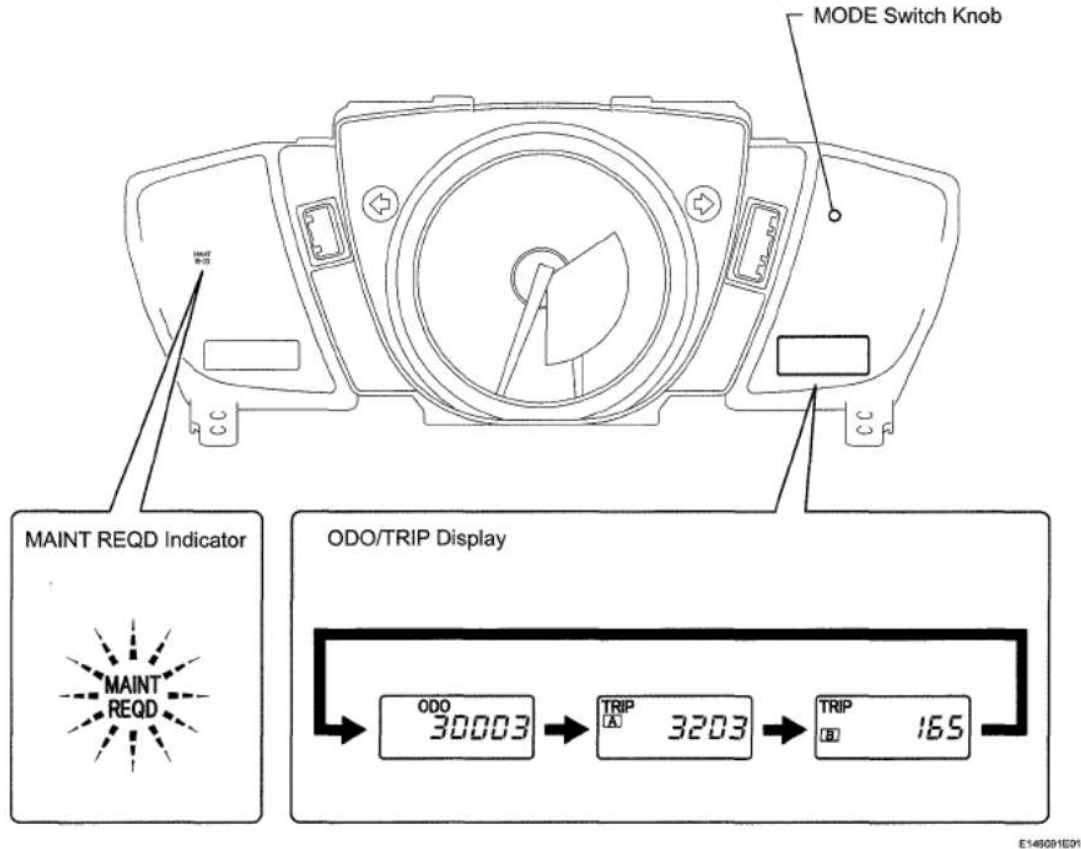


Fig. 9: Oil Maintenance Information Mode Reset Operation - Ignition Switch On
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Press the MODE switch knob on the upper right side of the combination meter until the odometer displays "TRIP A".
- Turn the ignition switch off.
- Turn the ignition switch on while pressing and holding the MODE switch knob. The LCD counts down by the dashes for 5 seconds, as shown in the illustration, to complete the reset procedure.

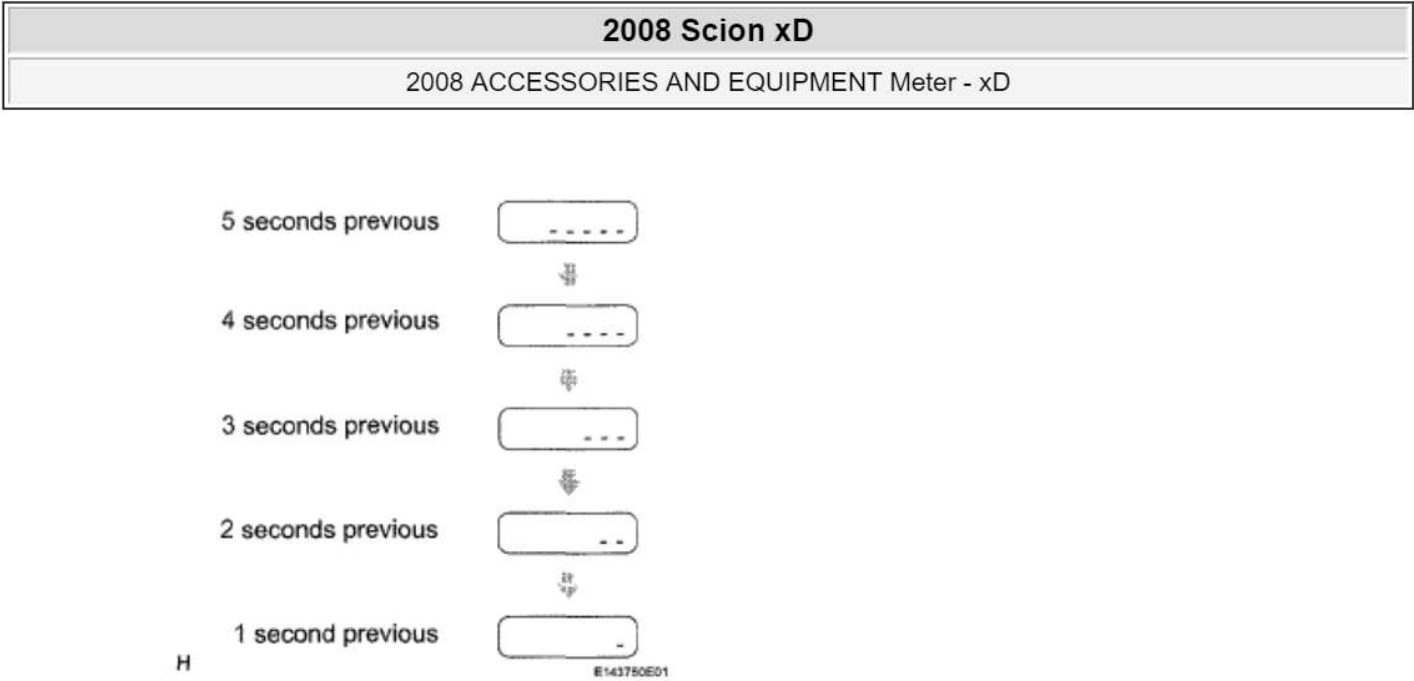


Fig. 10: Information Mode Reset Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Release the MODE switch knob.
- f. After the reset procedure is complete, the LCD displays "000000" for 1 second. The LCD displays the odometer.

HINT:

If the oil change reminder light was on before performing this reset procedure, the reminder light goes off at this point.

- g. Turn the ignition switch off

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help determine the causes 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 area in the order they are listed. Replace parts as necessary.

Malfunction system

PROBLEM SYMPTOMS CHART

Symptom	Suspected Area	See
Entire combination meter does not operate	Refer to troubleshooting	<u>ENTIRE COMBINATION METER DOES NOT OPERATE</u>
Operating light control rheostat does not change light brightness	Refer to troubleshooting	<u>OPERATING LIGHT CONTROL RHEOSTAT DOES NOT CHANGE LIGHT BRIGHTNESS</u>

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Meter illumination is always dark	Light control rheostat	<u>OPERATING LIGHT CONTROL RHEOSTAT DOES NOT CHANGE LIGHT BRIGHTNESS</u>
	Wire harness or connector	-
	Combination meter assembly	<u>TERMINALS OF ECU</u>
Opening mode is not functioning	Check if opening mode is on or off	<u>CUSTOMIZE PARAMETERS</u>
	Combination meter assembly	<u>REMOVAL</u>

Meter gauges**PROBLEM SYMPTOMS CHART - METER GAUGES**

Symptom	Suspected Area	See
Malfunction in speedometer	Refer to troubleshooting	<u>SPEEDOMETER MALFUNCTION</u>
Malfunction in tachometer	Refer to troubleshooting	<u>TACHOMETER MALFUNCTION</u>
Malfunction in fuel receiver gauge	Refer to troubleshooting	<u>FUEL GAUGE MALFUNCTION</u>
Malfunction in water temperature warning light	Refer to troubleshooting	<u>MALFUNCTION IN WATER TEMPERATURE WARNING LIGHT</u>

Warning light**PROBLEM SYMPTOMS CHART - WARNING LIGHT**

Symptom	Suspected Area	See
MIL does not come on	Refer to troubleshooting	<u>MIL CIRCUIT INSPECTION</u>
Charge warning light does not come on	Generator	-
	Wire harness or connector	-
	Combination meter assembly	<u>TERMINALS OF ECU</u>
Brake warning light does not come on	Refer to troubleshooting (Vehicle with ABS)	-
	Refer to troubleshooting (Vehicle with VSC)	<u>BRAKE WARNING LIGHT DOES NOT COME ON</u>
Brake warning light remains on	Refer to troubleshooting (Vehicle with ABS)	-
	Refer to troubleshooting (Vehicle with VSC)	<u>BRAKE WARNING LIGHT REMAINS ON</u>
ABS warning light does not	Refer to troubleshooting (Vehicle with ABS)	-

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come on	Refer to troubleshooting (Vehicle with VSC)	<u>ABS WARNING LIGHT DOES NOT COME ON</u>
ABS warning light remains on	Refer to troubleshooting (Vehicle with ABS)	-
	Refer to troubleshooting (Vehicle with VSC)	<u>ABS WARNING LIGHT REMAINS ON</u>
SRS warning light does not come on	Refer to troubleshooting	<u>SRS WARNING LIGHT DOES NOT COME ON</u>
SRS warning light remains on	Refer to troubleshooting	<u>SRS WARNING LIGHT REMAINS ON</u>
Open door warning light does not come on	CAN communication system	<u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Door courtesy switch circuit	<u>DOOR COURTESY SWITCH CIRCUIT</u>
	Combination meter assembly	<u>TERMINALS OF ECU</u>
Seat belt warning light for driver seat does not operate	Refer to troubleshooting	<u>DRIVER SIDE SEAT BELT WARNING LIGHT DOES NOT OPERATE</u>
Seat belt warning light for front passenger seat does not operate	Refer to troubleshooting	<u>FRONT PASSENGER SIDE SEAT BELT WARNING LIGHT MALFUNCTION</u>

Indicator light**PROBLEM SYMPTOMS CHART - INDICATOR LIGHT**

Symptom	Suspected Area	See
VSC OFF indicator light does not come on	Refer to troubleshooting	<u>VSC OFF INDICATOR LIGHT DOES NOT COME ON</u>
VSC OFF indicator light remains on	Refer to troubleshooting	<u>VSC OFF INDICATOR LIGHT REMAINS ON</u>
Turn indicator light does not come on	Turn signal light circuit	<u>TURN SIGNAL LIGHT CIRCUIT</u>
	Combination meter assembly	<u>TERMINALS OF ECU</u>
High beam indicator light does not come on	Headlight relay circuit	<u>HEADLIGHT RELAY CIRCUIT</u>
	Combination meter assembly	<u>TERMINALS OF ECU</u>
CRUISE indicator light does not come on	CAN communication system	<u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Cruise main indicator light circuit	<u>CRUISE MAIN INDICATOR LIGHT CIRCUIT</u>
	Combination meter assembly	<u>TERMINALS OF ECU</u>
SLIP indicator light does not come on	Refer to troubleshooting	<u>SLIP INDICATOR LIGHT DOES NOT COME ON</u>
SLIP indicator light remains on	Refer to troubleshooting	<u>SLIP INDICATOR LIGHT REMAINS ON</u>
P/S indicator light does not		

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come on	Refer to troubleshooting	<u>EPS WARNING LIGHT CIRCUIT</u>
Tire pressure indicator light does not come on	Tire pressure warning light circuit	<u>TIRE PRESSURE WARNING LIGHT CIRCUIT</u>
	Combination meter assembly	<u>TERMINALS OF ECU</u>
Engine oil indicator light does not come on	Engine oil pressure switch	<u>OIL PRESSURE SWITCH</u>
	Wire harness or connector	-
	Combination meter assembly	<u>TERMINALS OF ECU</u>
Oil change remainder light does not go off	Replace engine oil	<u>INITIALIZATION</u>
	Combination meter assembly	<u>TERMINALS OF ECU</u>
WASH indicator light does not come on	Washer level warning switch	<u>ON-VEHICLE INSPECTION</u>
	Wire harness or connector	-
	Combination meter assembly	<u>TERMINALS OF ECU</u>
HEAD indicator light does not come on	Headlight dimmer switch (Light control switch)	<u>INSPECTION</u>
	Wire harness or connector	-
	Combination meter assembly	<u>TERMINALS OF ECU</u>

Buzzer**PROBLEM SYMPTOMS CHART - BUZZER**

Symptom	Suspected Area	See
BELT buzzer does not sound	Refer to troubleshooting	<u>WARNING BUZZER DOES NOT SOUND</u>
VSC buzzer does not sound	Refer to troubleshooting	<u>SKID CONTROL BUZZER CIRCUIT</u>
Key reminder buzzer does not sound	Refer to troubleshooting	<u>KEY REMINDER BUZZER DOES NOT SOUND</u>
Light reminder buzzer does not sound	Refer to troubleshooting	<u>WARNING BUZZER DOES NOT SOUND</u>
Parking brake unreleased warning buzzer does not sound	Refer to troubleshooting	<u>WARNING BUZZER DOES NOT SOUND</u>

TERMINALS OF ECU**1. CHECK COMBINATION METER ASSEMBLY (METER ECU)**

2008 Scion xD
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Fig. 11: Identifying Combination Meter Assembly Connector Terminals (Meter ECU)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Disconnect the F1 combination meter assembly connector.
- Measure the voltage according to the value(s) in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATIONS

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
F1-1 (IG2) - Body ground	B - Body ground	Ignition switch signal	Ignition switch OFF --> ON	Below 1 V --> 11 to 14 V
F1-2 (ECUB) - Body ground	L - Body ground	Battery	Always	11 to 14 V
F1-13 (ET) - Body ground	BR - Body ground	Ground	Always	Below 1 V

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

- Reconnect the F1 combination meter assembly connector.
- Measure the voltage according to the value(s) in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATIONS

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
F2-1 (TIRE) - Body ground	O - Body ground	Tire pressure warning light signal	Ignition switch on, Tire pressure warning light ON	0.9 to 3.2 V
			Ignition switch on, Tire	3.2 V or higher

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

			pressure warning light OFF	
F2-2 (IND) - Body ground	G - Body ground	Taillight indicator signal	Headlight dimmer switch (TAIL) OFF --> ON	Below 1 V --> 11 to 14 V
F2-6 (ILL-) - Body ground	GR - Body ground	Light control rheostat signal	Ignition switch OFF --> ON	Pulse generation (See 1 waveform 1)
F2-7 (ILL+) - Body ground	G - Body ground	Tail switch signal	Tail switch OFF --> ON	Below 1 V --> 11 to 14 V
F2-8 (TC) - Body ground	Y - Body ground	Tail cancel switch signal	Ignition switch on, tail cancel switch OFF	4 to 6 V
			Ignition switch on, tail cancel switch ON	Below 1 V
F2-9 (L) - Body ground	V - Body ground	Fuel signal	Ignition switch on, Fuel level is FULL	Below 1 V
			Ignition switch on, Fuel level is EMPTY	3 to 7 V
F2-11 (B) - Body ground	LG - Body ground	Left turn signal	Left turn indicator light OFF --> ON	Below 1 V --> 11 to 14 V
F2-15 (CANH) - Body ground	G - Body ground	CAN communication line	Ignition switch on	Pulse generation
F2-16 (CANL) - Body ground	W - Body ground	CAN communication line	Ignition switch on	Pulse generation
F1-5 (S) - Body ground	Y - Body ground	Engine oil pressure signal	Engine oil pressure signal OFF --> ON	Below 1 V --> 11 to 14 V
F1-6 (CHG-) - Body ground	L - Body ground	Charge warning light signal	Engine start, Charge warning light OFF --> ON	Below 1 V --> 11 to 14 V
F1-7 (SW) - Body ground	V - Body ground	Brake fluid level warning light signal	Ignition switch on, Brake fluid level warning light OFF --> ON	Below 1 V --> 11 to 14 V
F1-8 (HEAD) - Body ground	L - Body ground	Headlight indicator signal	Headlight dimmer switch (HEAD) OFF --> ON	Below 1 V --> 11 to 14 V
F1-9 (EFI) - Body ground	B - Body ground	Check engine warning light signal	Check engine warning light OFF --> ON	Below 1 V --> 11 to 14 V
F1-10 (-) - Body ground	P - Body ground	Hi beam signal	BEAM indicator light signal OFF --> ON	Below 1 V --> 11 to 14 V
F1-16 (B) - Body ground	BR - Body ground	Right turn signal	Right turn indicator light OFF --> ON	Below 1 V --> 11 to 14 V
F1-17 (+S) - Body ground	SB - Body ground	Vehicle speed signal (Output)	Vehicle is driven	Pulse generation (See 2 waveform 2)
F1-18 (SI) - Body ground	P - Body ground	Vehicle speed signal (Input)	Ignition switch on, Slowly turn wheel	Pulse generation (See 2 waveform 2)

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

				2)
F1-19 (WVLV) - Body ground	W - Body ground	Washer level warning signal	Washer level warning light OFF --> ON	Below 1 V --> 11 to 14 V
F1-21 (+) - Body ground	GR - Body ground	Hi beam signal	BEAM indicator light signal OFF --> ON	Below 1 V --> 11 to 14 V
F1-23 (PBLT) - Body ground	O - Body ground	Seat belt warning signal (Passenger side)	Ignition switch on, Front passenger seat belt warning light OFF --> ON --> OFF	Below 1 V --> 11 to 14 V --> Below 1 V

If the result is not as specified, the combination meter may be malfunctioning.

1. Waveform 1: Using an oscilloscope

WAVEFORM 1 REFERENCE GRAPH

Terminal Connections	F2-6 (ILL-) - Body Ground
Tester Range	5V/DIV, 50msec/DIV
Vehicle Condition	Ignition switch on

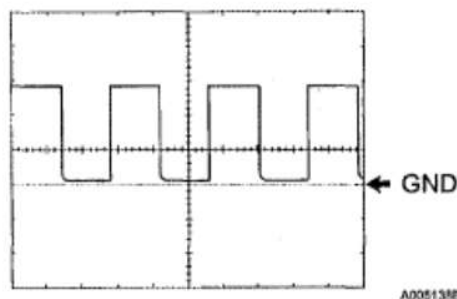


Fig. 12: Oscilloscope Waveform 1 Graph

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

2. Waveform 2: Using an oscilloscope

WAVEFORM 2 REFERENCE GRAPH

Terminal Connections	F1-18 (SI) - Body ground F1-27 (+S) - Body ground
Tester Range	5V/DIV, 20msec/DIV
Vehicle Condition	Driving at approximately 20km/h (12mph)

HINT:

As the vehicle speed increases, the cycle of the signal waveform narrows.

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

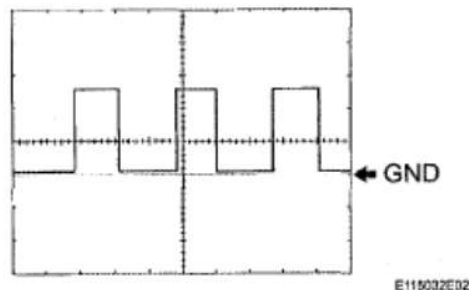
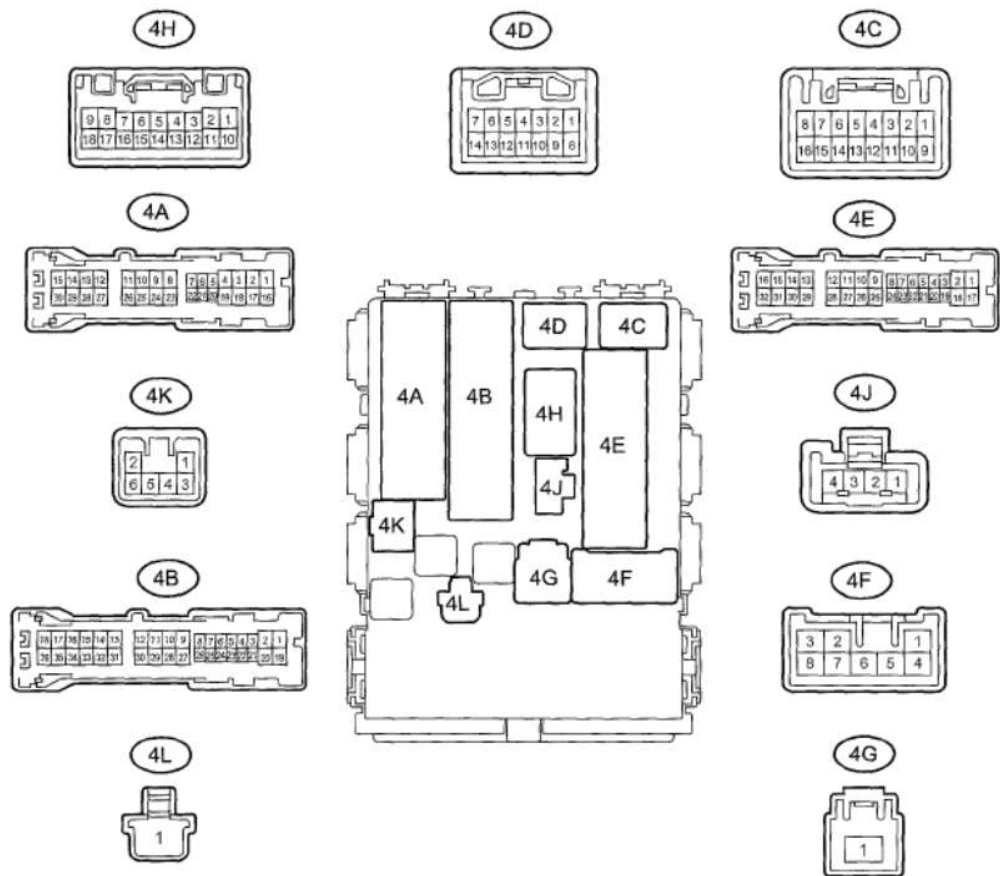


Fig. 13: Oscilloscope Waveform 2 Graph
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. CHECK MAIN BODY ECU

Component without harness connected:



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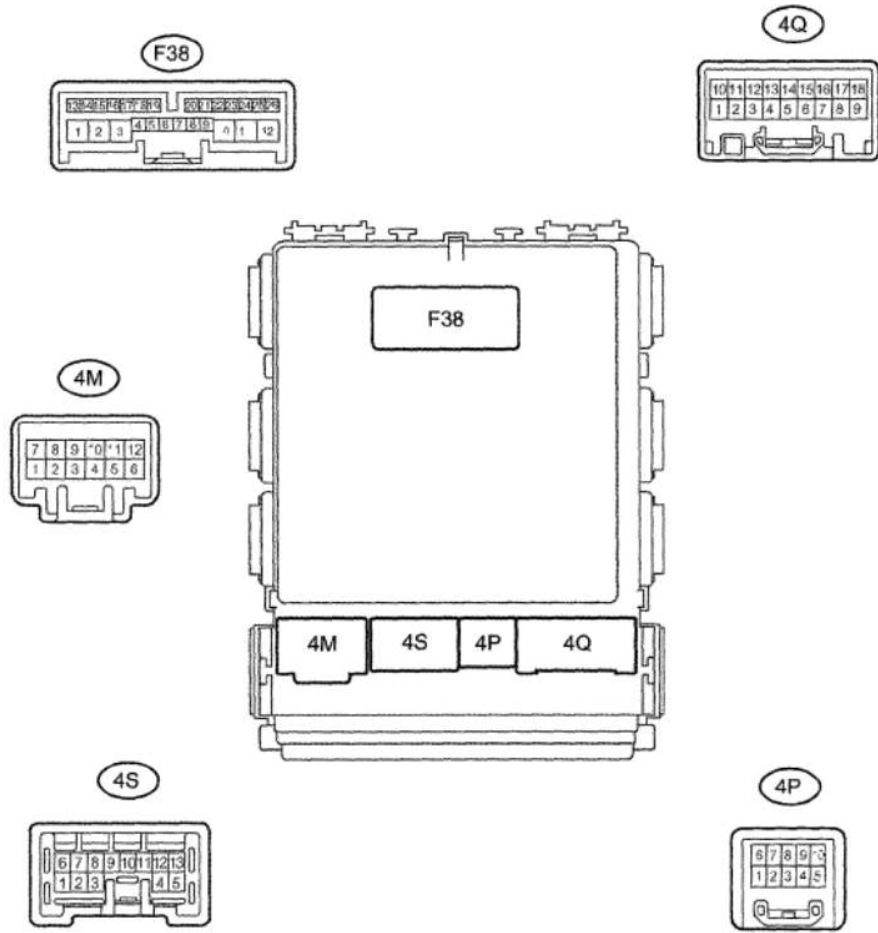
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Fig. 14: Identifying Main Body ECU Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Scion xD

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Component without harness connected:



B10E641E39

Fig. 15: Identifying Main Body ECU Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard voltage

STANDARD VOLTAGE SPECIFICATIONS

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
4A-5 (RRCY) - 4E-17 (GND1)	G - W-B	Rear door courtesy light switch signal (LH)	Rear door (LH) CLOSED --> OPEN	11 to 14 V --> Below 1 V
4A-7 (BCTY) - 4E-17 (GND1)	SB - W-B	Back door courtesy light switch signal	Back door CLOSED --> OPEN	11 to 14 V --> Below 1 V
4A-20 (RRCY) - 4E-17 (GND1)	L - W-B	Rear door courtesy light switch signal (RH)	Rear door (RH) CLOSED --> OPEN	11 to 14 V --> Below 1 V
4A-21 (DCTY) - 4E-17 (GND1)	R - W-B	Front door courtesy light switch signal (Driver side)	Front door (Driver side) CLOSED --> OPEN	11 to 14 V --> Below 1V

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

4A-24 (PCTY) - 4E-17 (GND1)	L - W-B	Front door courtesy light switch signal (Passenger side)	Front door (Passenger side) CLOSED --> OPEN	11 to 14 V --> Below 1 V
4C-2 (PKB) - 4E-17 (GND1)	Y - W-B	Parking brake signal	Parking brake warning light ON --> OFF	11 to 14 V --> Below 1 V
4D-7 (KSW) - 4E-17 (GND1)	Y - W-B	Key switch condition signal	Key inserted --> Removed	11 to 14 V --> Below 1 V
4E-17 (GND1) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
F38-9 (DBLK) - Body ground	W - Body ground	Seat belt condition signal (Driver side)	Driver seat belt warning light ON --> Off	11 to 14 V --> Below 1 V
F38-22 (CANL) - Body ground	W - Body ground	CAN communication line	Ignition switch on	Pulse generation
F38-23 (CANH) - Body ground	R - Body ground	CAN communication line	Ignition switch on	Pulse generation

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

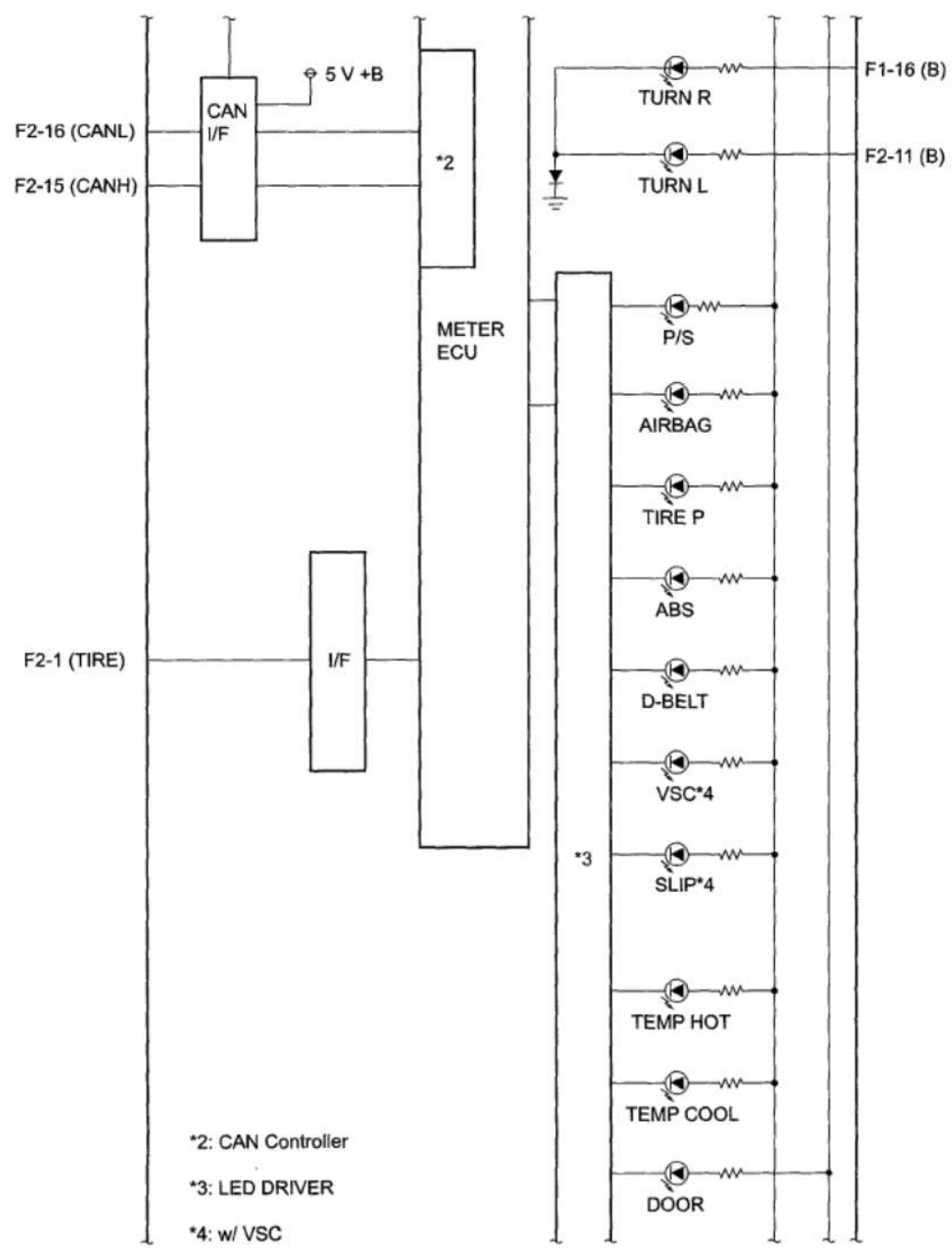
2008 ACCESSORIES AND EQUIPMENT Meter - xD



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

2008 Scion xD

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Fig. 17: Meter/Gauge System Circuit Diagram (2 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

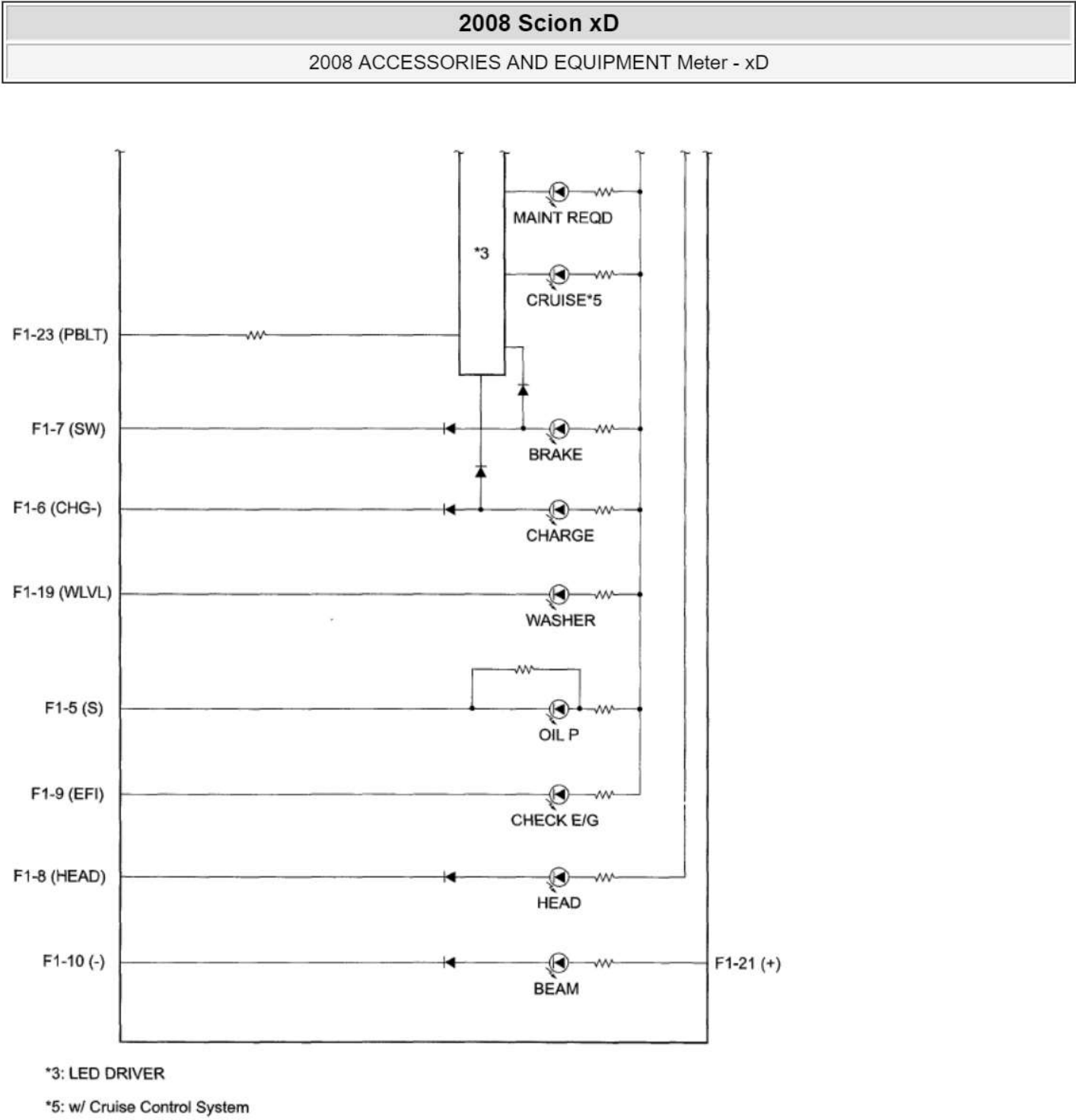


Fig. 18: Meter/Gauge System Circuit Diagram (3 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Table of terminal connection

TERMINAL CONNECTION CHART

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Terminal No. (Symbol)		Wire Harness Side
F1	1	Ignition switch
	2	Battery
	5	Engine oil pressure switch
	6	Generator (Alternator)
	7	Brake fluid level warning switch
	9	ECM
	10	Battery
	13	Body ground
	16	Turn signal flasher relay
	17	ECM (4P-OUT)
	18	Skid control ECU
	21	Battery
	23	Front passenger seat belt warning light
F2	1	Tire pressure warning ECU
	2	T-LP relay
	6	Light control rheostat
	7	T-LP relay
	8	Light control rheostat
	9	Fuel sender gauge assembly
	11	Turn signal flasher relay
	15	CAN communication line
	16	CAN communication line

DTC CHECK / CLEAR**1. CHECK DTC**

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and turn the tester on.
- Enter the following menu items: Body Electrical / (desired system) / Trouble Codes.
- Check for DTCs and then write them down.

HINT:

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

- Confirm the details of the DTCs (see **DIAGNOSTIC TROUBLE CODE CHART**).

2. CLEAR DTC

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and turn the tester on.
- Enter the following menu items: Body Electrical / (desired system) / Trouble Codes.

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HINT:

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

- d. Erase DTCs by pressing the YES button on the tester.

HINT:

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

FAIL-SAFE CHART**Speedometer gauge:****FAIL-SAFE CHART**

Condition	Response	Recovery
Malfunction in vehicle speed signal (SI, SP1)	Needle does not move	Normal data is received

Tachometer gauge:**FAIL-SAFE CHART - TACHOMETER GAUGE**

Condition	Response	Recovery
Malfunction in engine rpm signal (NE1)	Needle does not move	Normal data is received

Fuel gauge:**FAIL-SAFE CHART - FUEL GAUGE**

Condition	Response	Recovery
Vehicle speed signal (SP1) not input.	Controlled as input signal of "0km/h".	Normal data is received
Starter signal (ST) not input for 3 1 sec or more	Controlled as starter signal off	Normal data is received

Shift indicator:**FAIL-SAFE CHART - SHIFT INDICATOR**

Condition	Response	Recovery
No input of shift position signal	Shift display not illuminated	Normal data is received

AIRBAG:**FAIL-SAFE CHART - AIRBAG**

Condition	Response	Recovery
Center airbag sensor signal not input for 10 sec or	Remains illuminated until	Normal data is

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more while ignition switch is on	ignition switch is off	received
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DOOR:**FAIL-SAFE CHART - DOOR**

Condition	Response	Recovery
Courtesy switch signal not input for 10 sec or more while ignition switch is on	Remains illuminated until ignition switch is off	Normal data is received

DRIVER SIDE SEAT BELT:**FAIL-SAFE CHART - DRIVER SIDE SEAT BELT**

Condition	Response	Recovery
Driver seat buckle switch signal not input for 10 sec or more while ignition switch is on	Remains illuminated until ignition switch is off	Normal data is received

BRAKE:**FAIL-SAFE CHART - BRAKE**

Condition	Response	Recovery
Brake warning light signal not input for 1 sec or more at 9.5 V or more while ignition switch is on	Remains illuminated until ignition switch is off	Normal data is received
Parking brake switch signal not input for 10 sec or more while ignition switch is on	Remains illuminated until ignition switch is off	Normal data is received

CHARGE:**FAIL-SAFE CHART - CHARGE**

Condition	Response	Recovery
Charge light indicator signal not input while ignition switch is on	Remains illuminated until ignition switch is off	Normal data is received

EPS:**FAIL-SAFE CHART - EPS**

Condition	Response	Recovery
EPS warning light signal not input for 1 sec or more at 9.5 V or more while ignition switch is on	Remains illuminated until ignition switch is off	Normal data is received

ABS:**FAIL-SAFE CHART - ABS**

Condition	Response	Recovery
ABS warning light signal not input for 1 sec or more at	Remains illuminated until	Normal data is

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD**

9.5 V or more while ignition switch is on	ignition switch is off	received
---	------------------------	----------

SLIP:**FAIL-SAFE CHART - SLIP**

Condition	Response	Recovery
Slip indicator signal not input	Remains illuminated until ignition switch is off	Normal data is received

VSC OFF:**FAIL-SAFE CHART - VSC OFF**

Condition	Response	Recovery
VSC warning light signal not input	Remains illuminated until ignition switch is off	Normal data is received

CRUISE:**FAIL-SAFE CHART - CRUISE**

Condition	Response	Recovery
Cruise active signal not input	Remains illuminated until ignition switch is off	Normal data is received

COOL, HOT:**FAIL-SAFE CHART - COOL, HOT**

Condition	Response	Recovery
Engine coolant temperature signal not input for 3 sec or more while ignition switch is on	HOT indicator remains off until ignition switch is off COOL indicator blinks until ignition switch is off	Normal data is received

MAINT REQD:**FAIL-SAFE CHART - MAINT REQD**

Condition	Response	Recovery
ODO value not displayed when reset is performed	ODO display is "0"	Normal data is received
	MAINT REQD light illuminates	

TIRE PRESSURE:**FAIL-SAFE CHART - TIRE PRESSURE**

Condition	Response	Recovery
	Tire pressure warning light blinks for 60 seconds while ignition switch on	

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Tire pressure warning signal are interrupted while ignition switch on	Remains illuminated until ignition switch is off	Normal data is received
---	--	-------------------------

OIL PRESSURE:**FAIL-SAFE CHART - OIL PRESSURE**

Condition	Response	Recovery
Oil pressure switch signal input	Remains illuminated until ignition switch is off	Normal data is received

CHECK E/G:**FAIL-SAFE CHART - E/G**

Condition	Response	Recovery
Check engine warning signal input	Remains illuminated until ignition switch is off	Normal data is received

WASHER:**FAIL-SAFE CHART - WASHER**

Condition	Response	Recovery
Washer level warning signal input	Remains illuminated until ignition switch is off	Normal data is received

DATA LIST / ACTIVE TEST**1. READ DATA LIST****HINT**

Using the tester's "Data List" allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the "Data List" early in troubleshooting is one way to save time

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and turn the tester on.
- Enter the following menu items: Body Electrical / Combination Meter / Data List.
- Check the results by referring to the table below.

Body Electrical / Combination Meter / Data List:**BODY ELECTRICAL / COMBINATION METER / DATA LIST**

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
		ON. Headlight dimmer switch (Light control switch) --> TAIL	

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Tail Relay SW	Taillight relay ON or OFF	OFF: Headlight dimmer switch (Light control switch) --> OFF	-
Tail Cancel SW	Tail cancel switch ON or OFF	ON Headlight dimmer switch (Light control switch) --> OFF OFF Headlight dimmer switch (Light control switch) --> TAIL or HEAD	-
ODO/TRIP Change SW	ODO/TRIP switch ON or OFF	ON: ODO/TIRP switch pushed OFF ODO/TIRP switch not pushed	-
Vehicle Speed Meter	Vehicle speed Min. 0(0) Max: 158 (255)	Approximately same as vehicle speed (When vehicle is driving)	Unit: mph (km/h)
Engine RPM	Engine speed Min: 0 Max: 12, 750	Approximately same as actual engine speed	Unit, rpm
Coolant Temperature	Engine coolant temperature Min. 0 Max: 127.5 (261.5)	After warming up, 75 to 105 (167 to 221)	Unit: °C (°F)
+B Voltage Value	Battery voltage Min: 0 Max: 25.5	Between 1 V and 14 V	Unit. V
Integrated value for Oil Maintenance	Integrated value for Oil Maintenance warning Min 0 (0) Max: 25500 (41037)	0(0) to 25500 (41037)	Unit, mile (km/h)
Fuel Input	Fuel sender gauge input Min. 0 (0) Max: 127.5	Fuel sender input value	Unit: Liters
Ambient Temperature	Ambient Temperature Min: -40 (-40) Max -87.5 (189.5)	Same as outside temperature	Unit °C (°F)
Rheostat value	Rheostat value Min. 0 Max: 100	Light control rheostat switch is dark (0) --> bright (100)	Unit. %
Quantity of Outside Light	Outside dimmer output Min. 0 Max 100	0 to 100	Unit %
Communication ECM/Meter DTC 1	ECM communication stop history Rec or Unrec	Displays DTC history	-
ECM ODO (History 1)	ECM odometer history Min.: 0 Max. 999999	With history : 0 to 999999 Without history : FFFFFFh	-
Communication	ECM communication stop	Displays DTC history	-

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ECM/Meter DTC 2	history Rec or Unrec		
ECM ODO (History 2)	ECM odometer history Min. 0 Max.: 999999	With history : 0 to 999999 Without history : FFFFFFFh	-
Communication ECM/Meter DTC 3	ECM communication stop history Rec or Unrec	Displays DTC history	-
ECM ODO (History 3)	ECM odometer history Min.: 0 Max: 999999	With history 0 to 999999 Without history : FFFFFFFh	-
Communication ABS/Meter DTC 1	Skid control ECU communication stop history Rec or Unrec	Displays DTC history	-
ABS/VSC ODO (History 1)	Skid control ECU odometer history Min 0 Max 999999	With history 0 to 999999 Without history FFFFFFFh	-
Communication ABS/Meter DTC 2	Skid control ECU communication stop history Rec or Unrec	Displays DTC history	-
ABS/VSC ODO (History 2)	Skid control ECU odometer history Min 0 Max 999999	With history 0 to 999999 Without history FFFFFFFh	-
Communication ABS/Meter DTC 3	Skid control ECU communication stop history Rec or Unrec	Displays DTC history	-
ABS/VSC ODO (History 3)	Skid control ECU odometer history Min 0 Max 999999	With history 0 to 999999 Without history : FFFFFFFh	-
Key Remind Sound	Key remind sound FAST, NORMAL or SLOW	Display key reminder buzzer speed setting	-
D-Seatbelt Warning Buzzer	Front driver seat belt warning buzzer ON or OFF	ON Front driver side seat belt warning buzzer ON setting OFF Front driver side seat belt warning buzzer OFF setting	-
P-Seatbelt Warning Buzzer	Front passenger seat belt warning buzzer ON or OFF	ON Front passenger side seat belt warning buzzer ON setting OFF Front passenger side seat belt warning buzzer OFF setting	-
Number of Trouble Code	The number of the DTC which is currently output	-	-

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD****Body Electrical / Main Body / Data List:****BODY ELECTRICAL / MAIN BODY / DATA LIST**

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door Courtesy SW	Driver side door courtesy light switch signal ON or OFF	ON Driver side door is open OFF Driver side door is closed	-
Parking Brake SW	Parking brake switch signal ON or OFF	ON Parking brake lever is pulled OFF Parking brake lever is lowered	-

2. PERFORM ACTIVE TEST**HINT:**

Performing the tester's "Active Test" allows relay, VSV, actuator and other items to be operated without removing any parts.

Performing the "Active Test" early in troubleshooting is one way to save time.

The "Data List" can be displayed during the "Active Test".

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and turn the tester on.
- Enter the following menu items: Body Electrical / Combination Meter / Active Test.
- Perform the "Active Test" by referring to the table below.

Body Electrical / Combination Meter / Active Test:**BODY ELECTRICAL / COMBINATION METER / ACTIVE TEST**

Tester Display	Test Part	Control Range
Speed Meter Operation	0 / 64 (40) / 129 (80) / 193 (120) km/h (mph)	Value selected during Active Test is displayed
Tachometer Operation	0 / 1,000 / 2,000 / 3,000 / 4,000 / 5,000 / 6,000 / 7,000 rpm	Value selected during Active Test is displayed
Fuel Meter Operation	EMPTY/1/2/FULL	Value selected during Active Test is displayed
A/T Indicator Operation 1 *1	P/R/N/D/3/2/L	Position selected during Active Test illuminates
Meter Display 1	ALL/0/1/2/3/4/5/6	-
Meter Display 2	7/8/9	-
Indicat. Lamp Airbag	AIR BAG warning light ON / OFF	-

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Indicat Lamp Doors All Open	DOOR warning light ON / OFF	-
Indicat Lamp P-seat Belt	P-BELT warning light ON / OFF	-
Indicat Lamp D-seat Belt	D-BELT warning light ON / OFF	-
Indicat. Lamp ABS	ABS warning light ON / OFF	-
Indicat Lamp Charge	CHARGE indicator light ON / OFF	-
Indicat Lamp Slip *2	SLIP warning light ON / OFF	-
Indicat Lamp Coolant HOT	Engine coolant temperature indicator light ON/OFF	-
Indicat Lamp Coolant COOL	Engine coolant temperature indicator light ON/OFF	-
Indicat. Tire Pressure Warning System*3	TIRE PRESSURE warning light ON/OFF	-
Indicat Lamp Cruise	CRUISE indicator light ON/OFF	-
Indicat Lamp Brake	BRAKE warning light ON/OFF	-
Indicat. EPS	P/S warning light ON/OFF	-
Indicat. Oil maintenance	Oil maintenance indicator light ON/OFF	-
Indicat. VSC OFF *2	VSC OFF indicator light ON/OFF	-
HINT: *1: for Automatic Transaxle *2: for vehicles with VSC *3: for vehicles with Tire Pressure System		

DIAGNOSTIC TROUBLE CODE CHART**DIAGNOSTIC TROUBLE CODE CHART**

DTC Code	Detection Item	Trouble Area
<u>B1500</u>	Fuel Sender Open Detected	○ Combination meter assembly ○ Fuel sender gauge assembly ○ Wire harness
<u>U0100</u>	Lost Communication with ECM / PCM "A"	○ ECM ○ CAN communication system
<u>U0129</u>	Lost Communication with Skid Control ECU	○ Brake actuator (Skid control ECU) ○ ABS and traction actuator (Skid control ECU) ○ CAN communication system

ON-VEHICLE INSPECTION**1. INSPECT SPEEDOMETER**

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a. Check the operation.

1. Using a speedometer tester (calibrated chassis dynamometer), inspect the speedometer and confirm that the speedometer readings are within the acceptable range.

Reference: mph**SPEEDOMETER READINGS**

Standard indication	Acceptable range
20 mph	18.0 to 21.0 mph
40 mph	38.5 to 42.0 mph
60 mph	59.0 to 63.0 mph
80 mph	79.5 to 84.0 mph
100 mph	100.0 to 105.0 mph
120 mph	121.0 to 126.5 mph

Reference: km/h**STANDARD INDICATION**

Standard indication	Acceptable range
20 km/h	21 to 25 km/h
40 km/h	41.7 to 46.2 km/h
60 km/h	62.7 to 67.2 km/h
80 km/h	83.4 to 88.4 km/h
100 km/h	104.3 to 109.3 km/h
120 km/h	125.1 to 130.6 km/h
140 km/h	145.8 to 151.8 km/h
160 km/h	166.2 to 173.2 km/h

CAUTION: Tire wear and excessively high or low tire pressure affect speedometer indications.

2. Check the width of the speedometer needle deflection.

Reference:**Below 0.3 degrees.****2. INSPECT OUTPUT SIGNAL OF VEHICLE SPEED SENSOR**

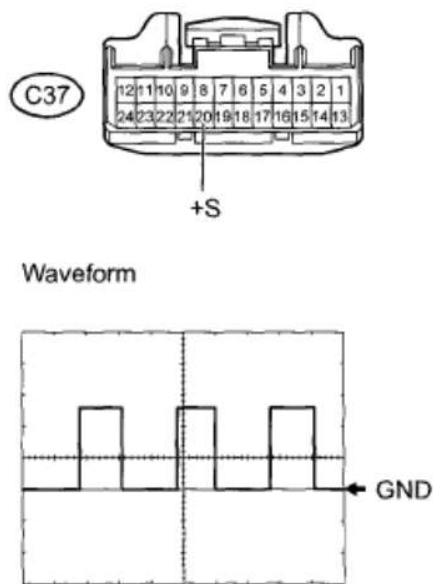
- a. Check the output signal waveform.

1. Remove the combination meter, but do not disconnect the connector.

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Component with harness connected:
(Combination Meter Assembly)



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Fig. 19: Identifying F1 Connector Terminals And Waveform Graph
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 2. Start the engine.
- 3. Check the signal waveform according to the condition(s) in the table below.

OUTPUT SIGNAL OF VEHICLE SPEED SENSOR

Item	Condition
Terminal connection	F1-17 (+S) - Body ground
Tool setting	5 V/DIV, 20 msec/DIV
Vehicle condition	Driving at approx 20 km/h (12.4 mph)

OK: Waveform is as shown in the illustration.

HINT:

As the vehicle speed increases, the cycle of the signal waveform narrows.

3. INSPECT TACHOMETER

- a. Check the operation.

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1. Connect a Techstream to the DLC3.
2. Start the engine.
3. Operate the Techstream according to the display and select "Data List" (See **DATA LIST / ACTIVE TEST**).

Body Electrical / Combination Meter / Data List:

BODY ELECTRICAL / COMBINATION METER / DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Engine RPM	Engine speed Min.: 0 Max.: 12,750	Approximately same as actual engine speed	Unit: rpm

4. Compare the engine speed displayed on the tester with the tachometer reading.

Reference

RANGE (RPM) DATA

Standard indication (rpm)	Acceptable range (rpm) Data in () are for reference
700	630 to 770
1,000	(900 to 1,100)
2,000	(1,850 to 2,150)
3,000	2,800 to 3,200
4,000	(3,800 to 4,200)
5,000	4,800 to 5,200
6,000	(5,750 to 6,250)
7,000	6,700 to 7,300

4. INSPECT FUEL RECEIVER GAUGE

- a. Disconnect the L7 fuel sender gauge connector.
- b. Check the fuel receiver gauge operation when the ignition switch is turned on.

OK: No.1 segment flashes.

- c. Connect terminals 2 and 3 on the wire harness side connector of the fuel sender gauge.

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Front view of wire harness connector:
(to Fuel Sender Gauge)

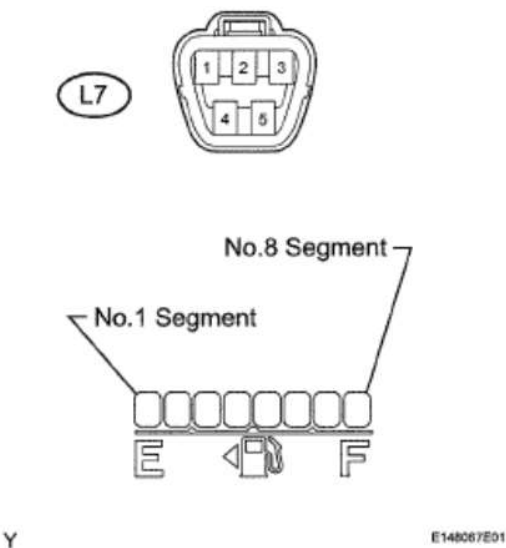


Fig. 20: Identifying L7 Fuel Sender Gauge Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Check the fuel receiver gauge operation when the ignition switch is turned from off to on.

OK: All segments, from No.1 to No.8, illuminate.

- e. Reconnect the fuel sender gauge connector.

5. INSPECT FUEL LEVEL WARNING LIGHT

- a. Disconnect the L7 fuel sender gauge connector.
b. Turn the ignition switch on and check that the fuel receiver gauge No.1 segment flashes when the fuel volume is less than 6.3 liters (less then 15 % of the total fuel tank capacity.)

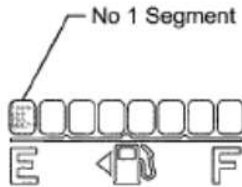
OK

FLASHING SPEED

Fuel Volume	Flashing Speed (Interval)
6.3 liters (Less than 15 % of total fuel tank capacity)	Flashes slowly (1.2 seconds)
4.2 liters (Less than 10 % of total fuel tank capacity)	Flashes quickly (0.6 seconds)

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Fig. 21: Identifying Fuel Receiver Gauge No.1 Segment Flash
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. INSPECT BRAKE WARNING LIGHT

- a. Inspect the parking brake warning light.
 1. Disconnect the F23 parking brake switch connector.

Front view of wire harness connector:
 (to Parking Brake Switch)



E148100E01

Fig. 22: Identifying F23 Parking Brake Switch Connector Terminals
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Turn the ignition switch on.
3. Ground the terminal of the wire harness side connector, then check the parking brake warning light.

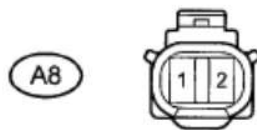
OK: Brake warning light illuminates.

4. Reconnect the parking brake switch connector.
- b. Inspect the brake fluid level warning light.
 1. Disconnect the A8 brake fluid level warning switch connector.

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



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Fig. 23: Identifying A8 Brake Fluid Level Warning Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Turn the ignition switch on.
3. Connect a terminal to the other terminal of the wire harness side connector, then check the brake fluid level warning light.

OK: Brake warning light illuminates.

4. Reconnect the brake fluid level warning switch connector.

7. INSPECT BRAKE FLUID LEVEL WARNING SWITCH

- a. Turn the ignition switch off.
- b. Remove the reservoir filler cap and strainer.
- c. Disconnect the A8 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.

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Component without harness connected:
(Brake Fluid Level Warning Switch)

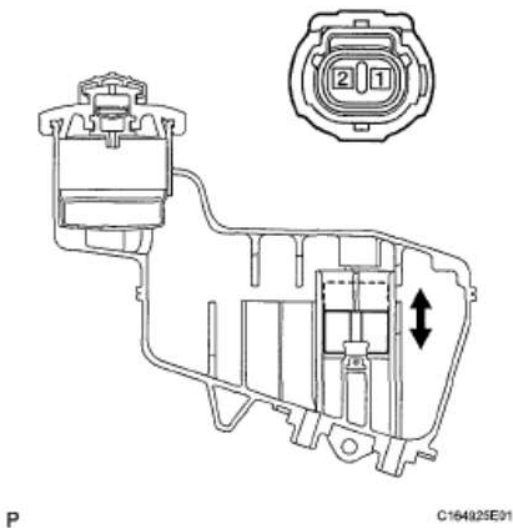


Fig. 24: Inspecting Brake Fluid Level Warning Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch off (Float up)	10 kohms or higher
1 - 2	Switch on (Float down)	Below 1 ohms

HINT:

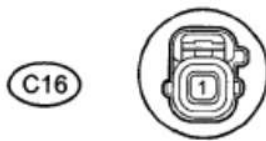
If there is no problem after finishing the above check, adjust the brake fluid level to the MAX level.

8. INSPECT OIL PRESSURE WARNING LIGHT

- a. Disconnect the C16 engine oil pressure switch connector.

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Front view of wire harness connector:
(to Engine Oil Pressure Switch)



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Fig. 25: Identifying C16 Engine Oil Pressure Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

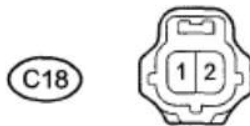
- b. Turn the ignition switch on.
- c. Ground the terminal of the wire harness side connector, then check the engine oil pressure warning light.

OK: Engine oil pressure warning light illuminates.

9. INSPECT ENGINE COOLANT TEMPERATURE WARNING LIGHT (FOR HOT INDICATOR)

- a. Disconnect the C18 engine coolant temperature sensor connector.

Front view of wire harness connector:
(to Engine Coolant Temperature
Sensor)



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Fig. 26: Identifying C18 Engine Coolant Temperature Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Turn the ignition switch on.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

- c. Connect the terminal to the other terminal of the wire harness side connector, then check the engine coolant temperature warning light.

OK: Engine coolant temperature warning light illuminates.

- d. Reconnect the engine coolant temperature sensor connector.

NOTE: DTCs may have been set. Check for DTCs and clear any that have been set.

10. INSPECT ENGINE COOLANT TEMPERATURE INDICATOR LIGHT (FOR COOL INDICATOR)

- a. Disconnect the C18 engine coolant temperature sensor connector.

Front view of wire harness connector:
(to Engine Coolant Temperature Sensor)



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Fig. 27: Identifying C18 Engine Coolant Temperature Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Turn the ignition switch on.

OK: Engine coolant temperature indicator light illuminates.

- c. Reconnect the engine coolant temperature sensor connector.

NOTE: DTCs may have been set. Check for DTCs and clear any that have been set.

DTC B1500 FUEL SENDER OPEN DETECTED

DESCRIPTION

This DTC is output when the combination meter detects the fuel sender gauge malfunction.

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FUEL SENDER OPEN DETECTED

DTC No.	DTC Detection Condition	Trouble Area
B1500	When combination meter detects fuel sender gauge malfunction	• Wire harness • Combination meter assembly • Fuel sender gauge assembly

WIRING DIAGRAM

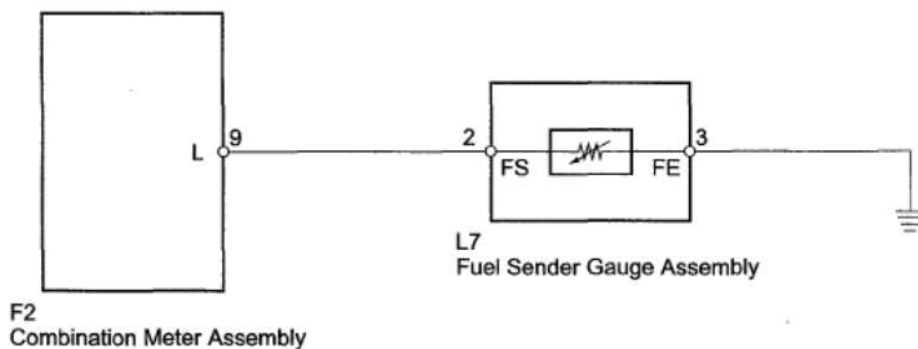


Fig. 28: Fuel Sender Open Detected - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. READ VALUE USING TECHSTREAM (FUEL SENDER GAUGE)

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and turn the tester on.
- Operate the Techstream according to the display and select "Active Test" (See **DATA LIST / ACTIVE TEST**).

Body Electrical / Combination Meter / Data List:

BODY ELECTRICAL / COMBINATION METER / DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Fuel Input	Fuel sender gauge input Min.: 0 (0) Max.: 127.5 (134.7,112.2)	Fuel sender input value	Unit: Liters (US qts, Imp, qts)

OK: Fuel value displayed on tester is approximately same as needle indication.

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NG: Go to step 2

OK : REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

2. INSPECT FUEL SENDER GAUGE ASSEMBLY

- a. Remove the fuel sender gauge assembly (See REMOVAL).
- b. Check that the float moves smoothly between E and F.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

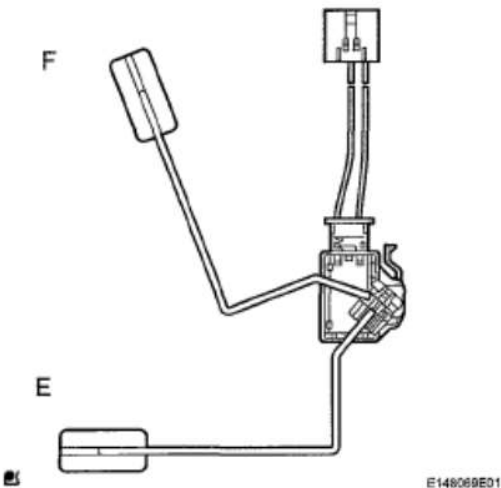
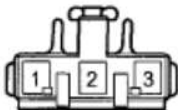
TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
1 - 2	Float level is F	12 to 18 ohms
1 - 2	Float level is E	405 to 415 ohms

- d. Reinstall the fuel sender gauge assembly.

NG: REPLACE FUEL SENDER GAUGE ASSEMBLY (See REMOVAL)

Front view of wire harness connector:
(to Fuel Sender Gauge Assembly)



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Fig. 29: Inspecting Fuel Sender Gauge Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

3. **CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - FUEL SENDER GAUGE ASSEMBLY)**
- a. Disconnect the F2 combination meter assembly connector.
 - b. Disconnect the L7 fuel sender gauge assembly.
 - c. Measure the resistance according to the value(s) in the table below.

Standard resistance

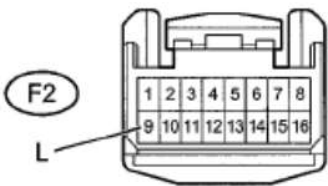
TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connector	Condition	Specified Condition
F2-9 (L) - L7-2 (FS)	Always	Below 1 ohms
F2-9 (L) or L7-2 (FS) -Body ground	Always	10 kohms or higher
L7-3 (FE) - Body ground	Always	Below 1 ohms

- d. Reconnect the fuel sender gauge assembly connector.
- e. Reconnect the combination meter assembly connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Combination Meter Assembly)



Front view of wire harness connector:
(to Fuel Sender Gauge Assembly)



E148094E01

Fig. 30: Identifving F2 Combination Meter Assembly Connector Terminals

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

OK : REPLACE COMBINATION METER ASSEMBLY (See **REMOVAL**)

DTC U0100 LOST COMMUNICATION WITH ECM / PCM "A"

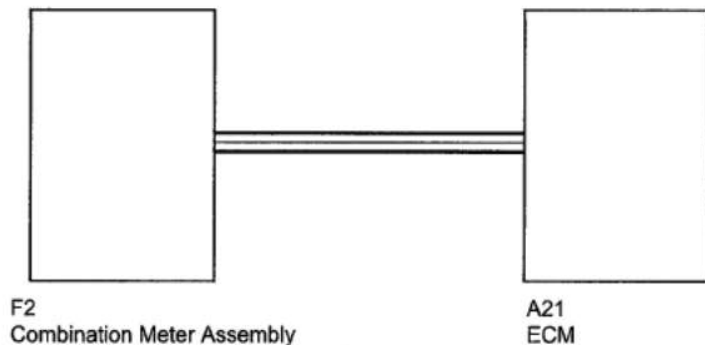
DESCRIPTION

The combination meter assembly and the ECM exchange signals through the CAN communication system.

DTC DETECTION CONDITIONS AND TROUBLE AREAS

DTC No.	DTC Detection Conditions	Trouble Areas
U0100	When either of following conditions detected 1. Vehicle speed 5 km/h (3.1 mph) or more and IG voltage 10.5 V or more 2. No communication with ECM continues for 3 seconds or more (No communication to ECM or skid control ECU continues for 60 seconds or more)	• CAN communication system • ECM

WIRING DIAGRAM



≡ : CAN Communication Line

C140681E07

Fig. 31: Lost Communication With ECM / PCM - Wiring Diagram

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

INSPECTION PROCEDURE

1. CONFIRM DTC OUTPUT

- a. Connect a Techstream to the DLC3.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DATA LIST / ACTIVE TEST**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTC (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
DTC output	A
DTC not output	B

B : USE SIMULATION METHOD TO CHECK (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

A: Go to CAN COMMUNICATION SYSTEM (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

DTC U0129 LOST COMMUNICATION WITH SKID CONTROL ECU

DESCRIPTION

The combination meter assembly receives signal from skid control ECU through the CAN communication system.

DTC DETECTION CONDITIONS AND TROUBLE AREAS

DTC No.	DTC Detection Conditions	Trouble Areas
U0129	When either of following conditions detected 1. 15 seconds have elapsed since engine started and IG voltage 10.5 V or more 2. No communication with skid control ECU continues for 3 seconds or more (No communication with ECM or skid control ECU continues for 60 seconds or more)	• Brake actuator (Skid control ECU)⁽¹⁾ • ABS and traction actuator (Skid control ECU)⁽²⁾ • CAN communication system
(1) for vehicles with ABS		
(2) for vehicles with VSC		

WIRING DIAGRAM

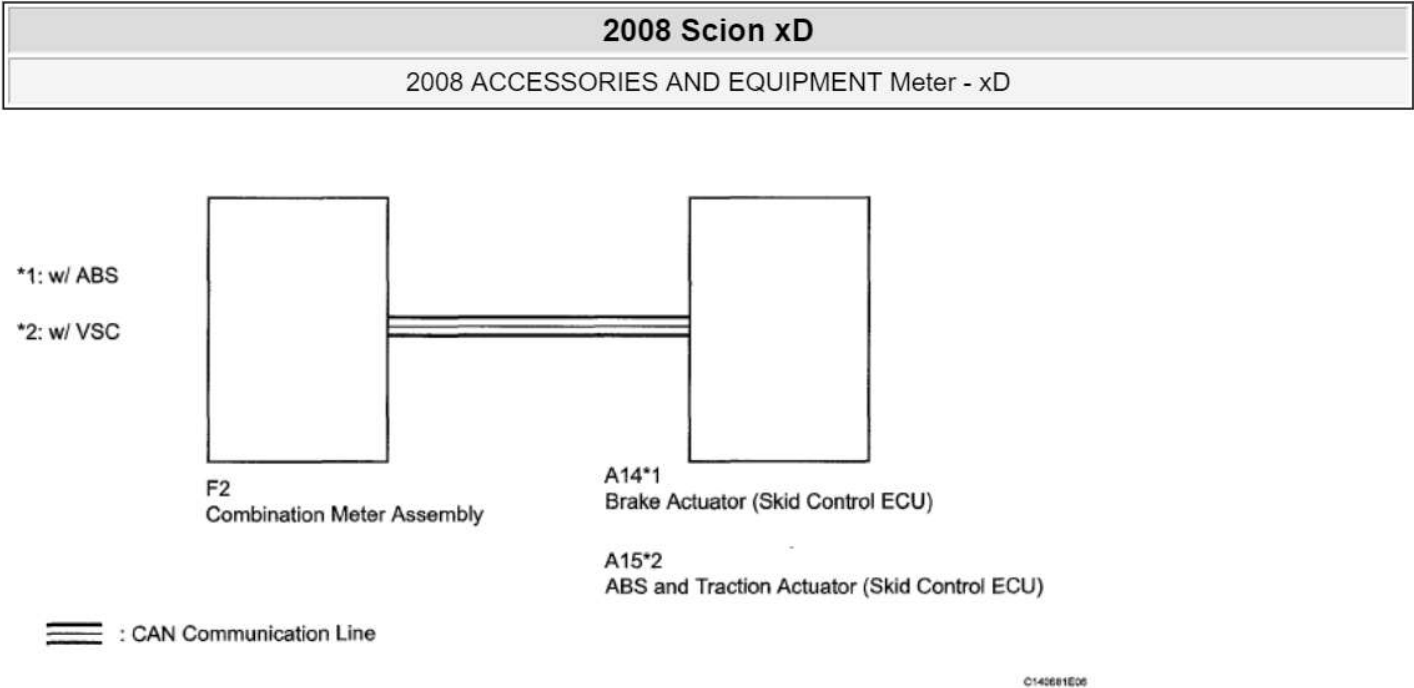


Fig. 32: Lost Communication With Skid Control ECU - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. CONFIRM DTC OUTPUT
- a. Connect a Techstream to the DLC3.

b. Turn the ignition switch on and turn the tester on.

c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).

d. Clear the DTC (See **DTC CHECK / CLEAR**).

e. Recheck for DTC (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION	
Result	Proceed to
DTC output	A
DTC not output	B

B : USE SIMULATION METHOD TO CHECK (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

A: Go to CAN COMMUNICATION SYSTEM (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

ENTIRE COMBINATION METER DOES NOT OPERATE

DESCRIPTION

This circuit is the power source circuit for the combination meter. This circuit provides two types of power

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

sources; one is a constant power source mainly used as a backup power source, and the other is a power source mainly used for signal transmission. The constant power source is mainly used as a backup power source of the meter CPU, however, it is also used for communication. If a voltage of 12 V is not applied to terminal IG2 when the ignition switch is turned on, the indicator will not operate.

WIRING DIAGRAM

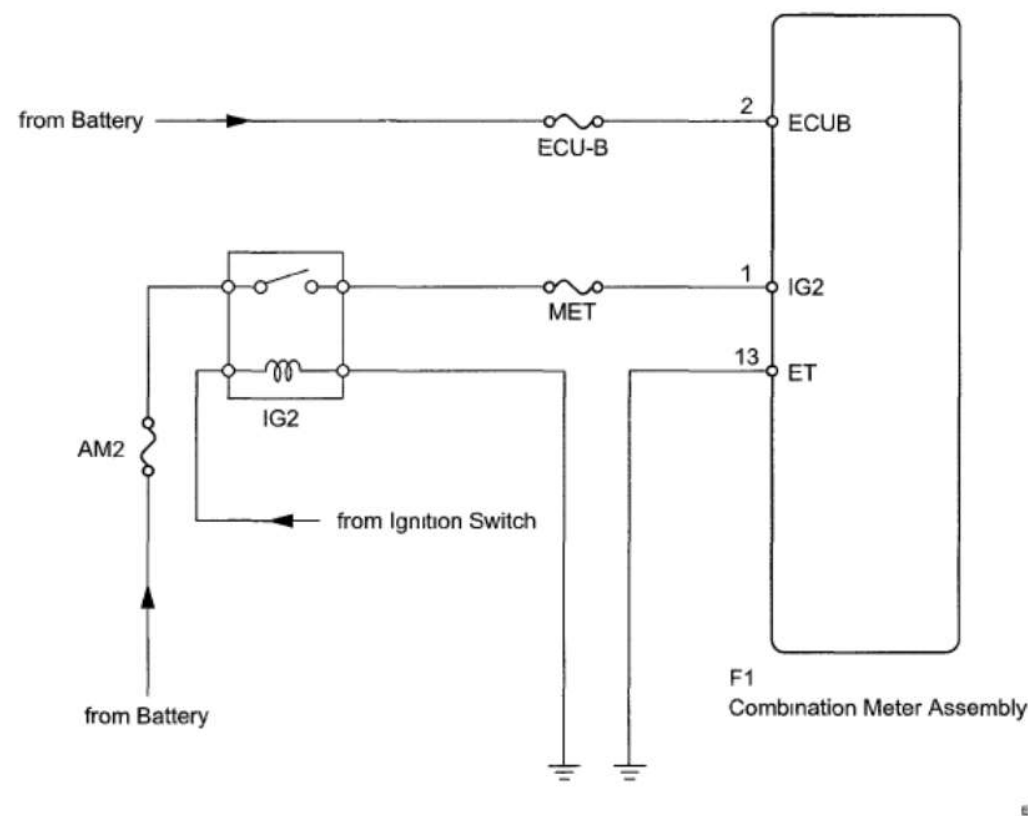


Fig. 33: Entire Combination Meter Does Not Operate - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. INSPECT FUSES (MET, ECU-B, AM2)
- a. Remove the MET fuse from the main body ECU.

b. Remove the ECU-B and AM2 fuse from the engine room relay block.

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

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
METER fuse	Always	Below 1 ohms

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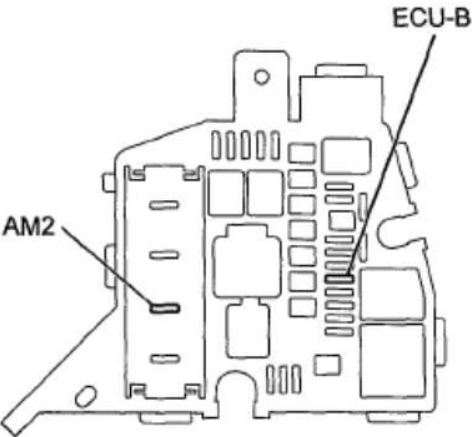
2008 ACCESSORIES AND EQUIPMENT Meter - xD

ECU-B fuse	Always	Below 1 ohms
AM2 fuse	Always	Below 1 ohms

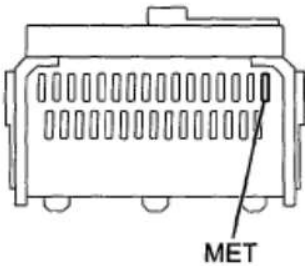
d. Reinstall the fuses.

NG: REPLACE FUSE

Engine Room Relay Block:



Main Body ECU:



0

E117120EG4

Fig. 34: Inspecting Fuses (MET, ECU-B, AM2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

2. INSPECT INTEGRATION RELAY (IG2 RELAY)

- a. Remove the integration relay from the engine room relay block (See **REMOVAL**).
- b. Measure the resistance to the value(s) in the table below.

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Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
1B-1 - 1B-4	Always	10 kohms or higher
	Battery voltage applied to terminals 1B-2 and 1B-3	Below 1 ohms

- c. Reinstall the integration relay.

Component without harness connected:
(Connector side of Integration Relay)

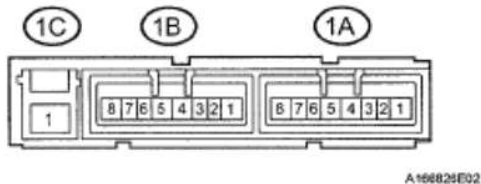


Fig. 35: Identifying 1C, 1B And 1A Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NG: REPLACE INTEGRATION RELAY (See **REMOVAL**)

OK: Go to Next Step

3. CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - BATTERY AND BODY GROUND)

- Disconnect the F1 combination meter assembly connector.
- Measure the voltage according to the value(s) in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
F1-2 (ECUB) - Body ground	Always	11 to 14 V
F1-1 (IG2)-Body ground	Ignition switch on	11 to 14 V

- c. Measure the resistance according to the value in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
F1-13 (ET) - Body ground	Always	Below 1 ohms

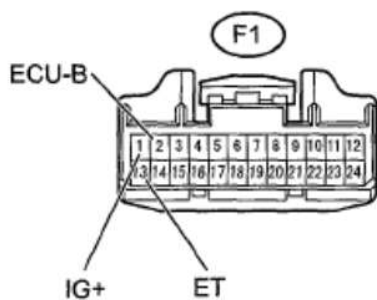
2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

- d. Reconnect the combination meter assembly connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Combination Meter Assembly)



C139156E20

Fig. 36: Identifying F1 Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

SPEEDOMETER MALFUNCTION

DESCRIPTION

The meter ECU receives vehicle speed signals from the skid control ECU via the CAN communication lines. The vehicle speed sensor detects the voltage that varies according to the vehicle speed. The skid control ECU supplies power to the vehicle speed sensor. The skid control ECU detects vehicle speed signals based on the pulses of the voltage.

WIRING DIAGRAM

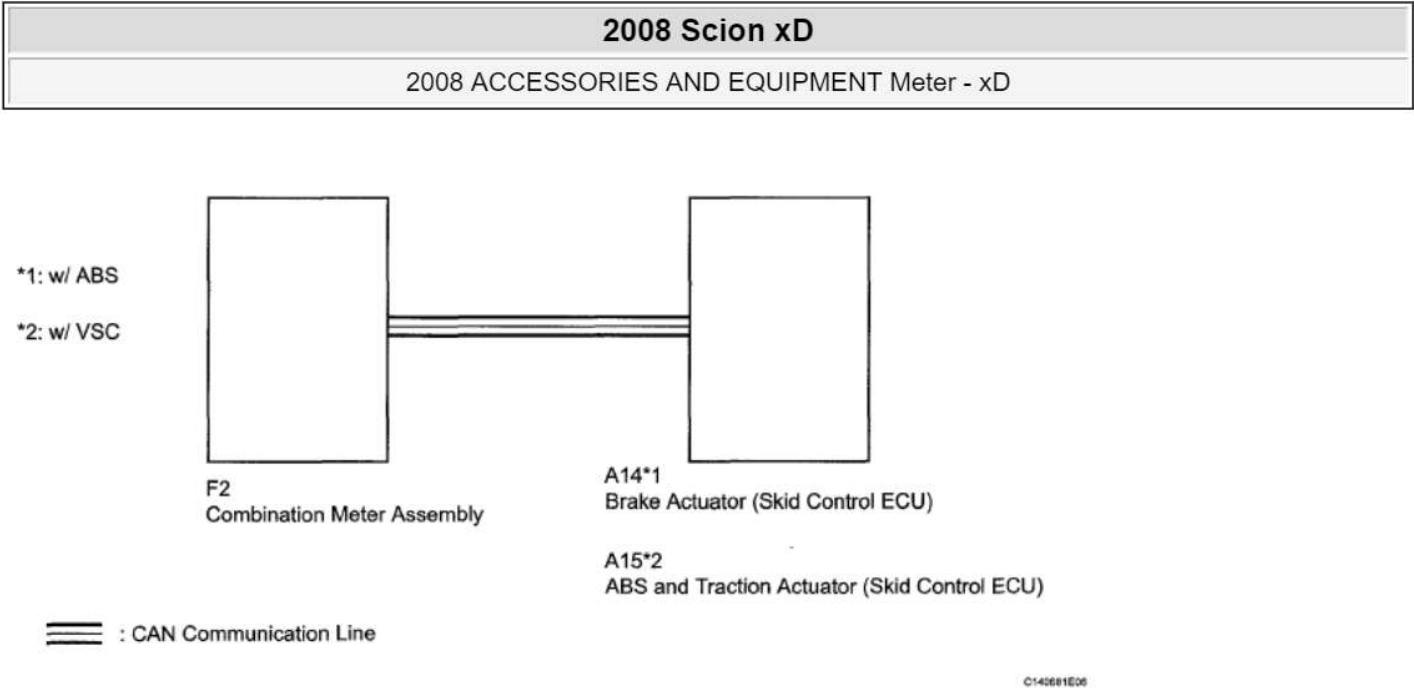


Fig. 37: Speedometer Malfunction - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **CONFIRM DTC OUTPUT (CAN COMMUNICATION SYSTEM)**

a. Connect a Techstream to the DLC3.
b. Turn the ignition switch on and turn the tester on.
c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
d. Clear the DTC (See **DTC CHECK / CLEAR**).
e. Recheck for DTC (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

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

B: Go to **DIAGNOSTIC TROUBLE CODE CHART**

A: Go to Next Step

2. **CONFIRM DTC OUTPUT (BRAKE CONTROL SYSTEM)**

a. Connect a Techstream to the DLC3.
b. Turn the ignition switch on and turn the tester on.
c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
d. Clear the DTC (See **DTC CHECK / CLEAR**).
e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD****Result****RESULT DESCRIPTION**

Result	Proceed to
Brake control DTC is not output	A
Brake control DTC is output (Vehicle with ABS)	B
Brake control DTC is output (Vehicle with VSC)	C

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See HOW TO PROCEED WITH TROUBLESHOOTING)

C: Go to DIAGNOSTIC TROUBLE CODE CHART (See DIAGNOSTIC TROUBLE CODE CHART)

A: Go to Next Step

3. PERFORM ACTIVE TEST USING TECHSTREAM (SPEED METER)

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and turn the tester on.
- Operate the Techstream according to the display and select "Active Test" (See DATA LIST / ACTIVE TEST).

Body Electrical / Combination meter / Active Test:

BODY ELECTRICAL / COMBINATION METER / ACTIVE TEST

Tester Display	Test Part	Control Range
Speed Meter Operation	0 / 64 (40) /129 (80) /193 (120) km/h (mph)	Value selected during Active Test is displayed

OK: Vehicle speed displayed on the tester is approximately the same as that of the speedometer reading.

NG: REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

OK: Go to Next Step

4. READ VALUE USING TECHSTREAM (SPEED METER)

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and the tester on.
- Operate the Techstream according to the display and select "Data List" (See DATA LIST / ACTIVE TEST).

Body Electrical / Combination meter/ Data List:

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

BODY ELECTRICAL / COMBINATION METER/ DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Vehicle Speed Meter	Vehicle speed Min.: 0 (0) Max.: 255 (158)	Approximately same as actual vehicle speed (When driving)	Unit: km/h (mph)

OK: Vehicle speed displayed on the tester is approximately the same as the actual vehicle speed

NOTE: Determine whether the value displayed on the tester is within the acceptable range by referring to reference values described in "ON-VEHICLE INSPECTION" (See ON-VEHICLE INSPECTION).

NG: Go to step 5

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

5. REPLACE COMBINATION METER ASSEMBLY

- a. Replace the combination meter assembly with a new or normal one (See REMOVAL).

OK: The operation of the speedometer returns to normal.

Result

RESULT DESCRIPTION

Result	Proceed to
OK	A
NG (Vehicle with ABS)	B
NG (Vehicle with VSC)	C

B : REPLACE BRAKE ACTUATOR (SKID CONTROL ECU) (See REMOVAL)

C : REPLACE ABS AND TRACTION ACTUATOR (SKID CONTROL ECU) (See REMOVAL)

A : END

TACHOMETER MALFUNCTION

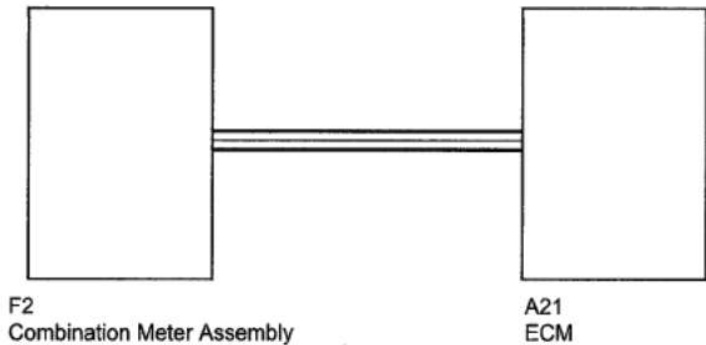
DESCRIPTION

The combination meter assembly controls the tachometer in accordance with engine speed signals from the ECM through the CAN communication system.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

WIRING DIAGRAM



≡ : CAN Communication Line

C140601E07

Fig. 38: Tachometer Malfunction - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **CONFIRM DTC OUTPUT (CAN COMMUNICATION SYSTEM)**

a. Connect a Techstream to the DLC3.
b. Turn the ignition switch on and turn the tester on.
c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
d. Clear the DTC (See **DTC CHECK / CLEAR**).
e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

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

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

A: Go to Next Step

2. **CONFIRM DTC OUTPUT (ENGINE CONTROL SYSTEM)**

a. Connect a Techstream to the DLC3.
b. Turn the ignition switch on and turn the tester on.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

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

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING)**

A: Go to Next Step

3. PERFORM ACTIVE TEST USING TECHSTREAM (TACHOMETER)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Operate the Techstream according to the display and select "Active Test" (See **DATA LIST / ACTIVE TEST**).

Body Electrical / Combination meter / Active Test:

BODY ELECTRICAL / COMBINATION METER / ACTIVE TEST

Tester Display	Test Part	Control Range
Tachometer Operation	0 / 1,000 / 2,000 / 3,000 / 4,000 / 5,000 / 6,000 / 7,000 rpm	Value selected during Active Test is displayed

OK: Engine speed displayed on the tester is approximately the same as that of the tachometer reading.

NG: REPLACE COMBINATION METER ASSEMBLY (See **REMOVAL)**

OK: Go to Next Step

4. READ VALUE USING TECHSTREAM (TACHOMETER)

- a. Connect a Techstream to the DLC3.
- b. Engine start and turn the tester on.
- c. Operate the Techstream according to the display and select "Data List" (See **DATA LIST / ACTIVE TEST**).

Body Electrical / Combination Meter / Data List:

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

BODY ELECTRICAL / COMBINATION METER / DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Engine RPM	Engine speed Min.: 0 Max.: 12,750	Approximately same as actual engine speed (When engine is running)	Unit: rpm

OK: Engine speed displayed on the tester is approximately the same as that displayed on the combination meter.

NOTE: Determine whether the value displayed on the tester is within the acceptable range by referring to reference values described in "ON-VEHICLE INSPECTION".

NG: REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

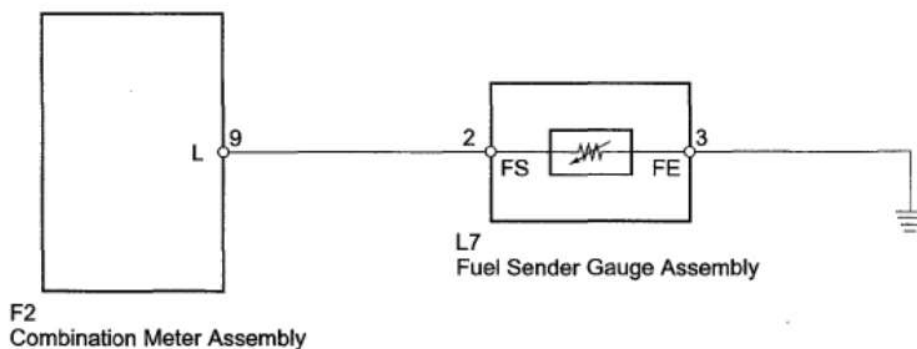
OK : USE SIMULATION METHOD TO CHECK (See HOW TO PROCEED WITH TROUBLESHOOTING)

FUEL GAUGE MALFUNCTION

DESCRIPTION

The combination meter assembly controls the fuel receiver gauge in accordance with the resistance of the fuel sender gauge that varies depending on the amount of fuel remaining in the fuel tank.

WIRING DIAGRAM



E148070E01

Fig. 39: Fuel Gauge Malfunction - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

1. CONFIRM DTC OUTPUT

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTC (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
DTC B1500 is not output	A
DTC B1500 is output	B

B: Go to **DTC B1500**

A: Go to Next Step

2. PERFORM ACTIVE TEST USING TECHSTREAM (FUEL METER)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Operate the Techstream according to the display and select "Active Test" (See **DATA LIST / ACTIVE TEST**).

Body Electrical / Combination Meter / Active Test:

BODY ELECTRICAL / COMBINATION METER / ACTIVE TEST

Tester Display	Test Part	Control Range
Fuel Meter Operation	EMPTY/1/2 /FULL	Value selected during Active Test is displayed

OK: Needle indication is normal.

NG: REPLACE COMBINATION METER ASSEMBLY (See **REMOVAL**)

OK: Go to Next Step

3. INSPECT FUEL SENDER GAGE ASSEMBLY

- a. Remove the fuel sender gauge assembly (See **REMOVAL**).
- b. Check that the float moves smoothly between E and F.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD****TESTER CONNECTION AND SPECIFIED CONDITION**

Tester Connection	Condition	Specified Condition
1-2	Float level is F	12 to 18 ohms
1-2	Float level is E	405 to 415 ohms

- d. Reinstall the fuel sender gauge assembly.

NG: REPLACE FUEL SENDER GAUGE ASSEMBLY (See REMOVAL)

Front view of wire harness connector:
(to Fuel Sender Gauge Assembly)

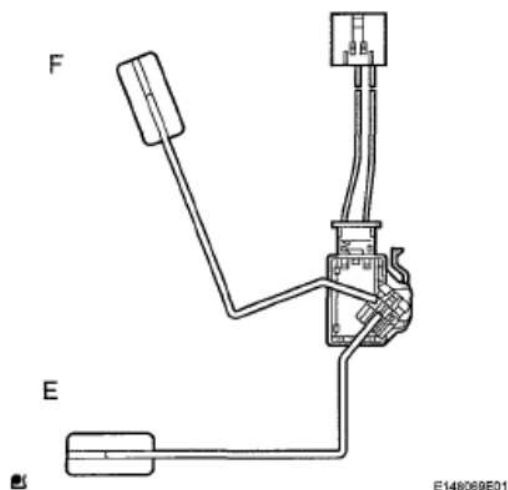


Fig. 40: Inspecting Fuel Sender Gauge Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

4. **CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - FUEL SENDER GAUGE ASSEMBLY)**
 - a. Disconnect the F2 combination meter assembly connector.
 - b. Disconnect the L7 fuel sender gauge assembly connector.
 - c. Measure the resistance according to the value(s) in the table below.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

Standard resistance

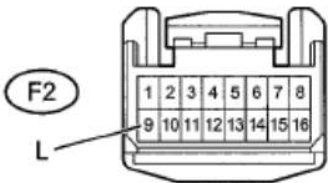
TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
F2-9 (L) - L7-2 (FS)	Always	Below 1 ohms
F2-9 (L) or L7-2 (FS) - Body ground	Always	10 kohms or higher
L7-3 (FE) - Body ground	Always	Below 1 ohms

- d. Reconnect the fuel sender gauge assembly connector.
- e. Reconnect the combination meter assembly connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Combination Meter Assembly)



Front view of wire harness connector:
(to Fuel Sender Gauge Assembly)



E148094E01

Fig. 41: Identifying F2 Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

5. REPLACE COMBINATION METER ASSEMBLY

- a. Replace the combination meter assembly with a new or a normal one (See **REMOVAL**).

OK: The operation of the fuel receiver gauge returns to normal.

NG: REPLACE FUEL SENDER GAUGE ASSEMBLY (See **REMOVAL**)

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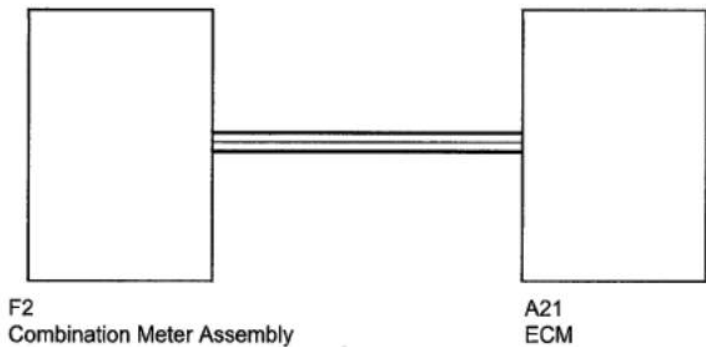
OK : END

MALFUNCTION IN WATER TEMPERATURE WARNING LIGHT

DESCRIPTION

The ECM sends engine coolant temperature sensor signals to the combination meter assembly via CAN communication. Then the combination meter assembly indicates the engine coolant temperature.

WIRING DIAGRAM



≡ : CAN Communication Line

C140601E07

Fig. 42: Malfunction In Water Temperature Warning Light - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. CONFIRM DTC OUTPUT (CAN COMMUNICATION SYSTEM)
- a. Connect a Techstream to the DLC3.

b. Turn the ignition switch on and turn the tester on.

c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).

d. Clear the DTC (See **DTC CHECK / CLEAR**).

e. Recheck for DTC (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

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

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See HOW TO PROCEED WITH TROUBLESHOOTING)

A: Go to Next Step

2. CONFIRM DTC OUTPUT (ENGINE CONTROL SYSTEM)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See DTC CHECK / CLEAR).
- d. Clear the DTC (See DTC CHECK / CLEAR).
- e. Recheck for DTC (See DTC CHECK / CLEAR).

Result

RESULT DESCRIPTION

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

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See HOW TO PROCEED WITH TROUBLESHOOTING)

A: Go to Next Step

3. PERFORM ACTIVE TEST USING TECHSTREAM (COOLANT TEMP)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Operate the Techstream according to the display and select "Active Test" (See DATA LIST / ACTIVE TEST).

Body Electrical / Combination Meter / Active Test:

BODY ELECTRICAL / COMBINATION METER / ACTIVE TEST

Tester Display	Test Part	Control Range
Water Temperature Meter Operation	LOW / NORMAL / HIGH	Value selected during Active Test is displayed

OK: Value selected during "Active Test" is displayed.

NG: REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

OK: Go to Next Step

4. READ VALUE USING TECHSTREAM (COOLANT TEMP)

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and the tester on.
- c. Operate the Techstream according to the display and select "Data List" (See **DATA LIST / ACTIVE TEST**).

Body Electrical / Combination meter / Data List:**BODY ELECTRICAL / COMBINATION METER / DATA LIST**

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Coolant Temperature	Engine coolant temperature Min.: 0 (0) Max.: 127.5 (261.5)	After warming up 75 to 105 (167 to 221)	Unit: °C (°F)

OK: Vehicle's coolant temperature and tester value are the same.

NG: REPLACE COMBINATION METER ASSEMBLY (See **REMOVAL**)

OK : USE SIMULATION METHOD TO CHECK (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

WARNING BUZZER DOES NOT SOUND**DESCRIPTION**

The combination meter assembly controls the buzzers in accordance with signals from the center airbag sensor assembly, the main body ECU and the taillight relay.

HINT:

The main body ECU receives signals from the center airbag sensor assembly and transmits them to the combination meter assembly.

WIRING DIAGRAM

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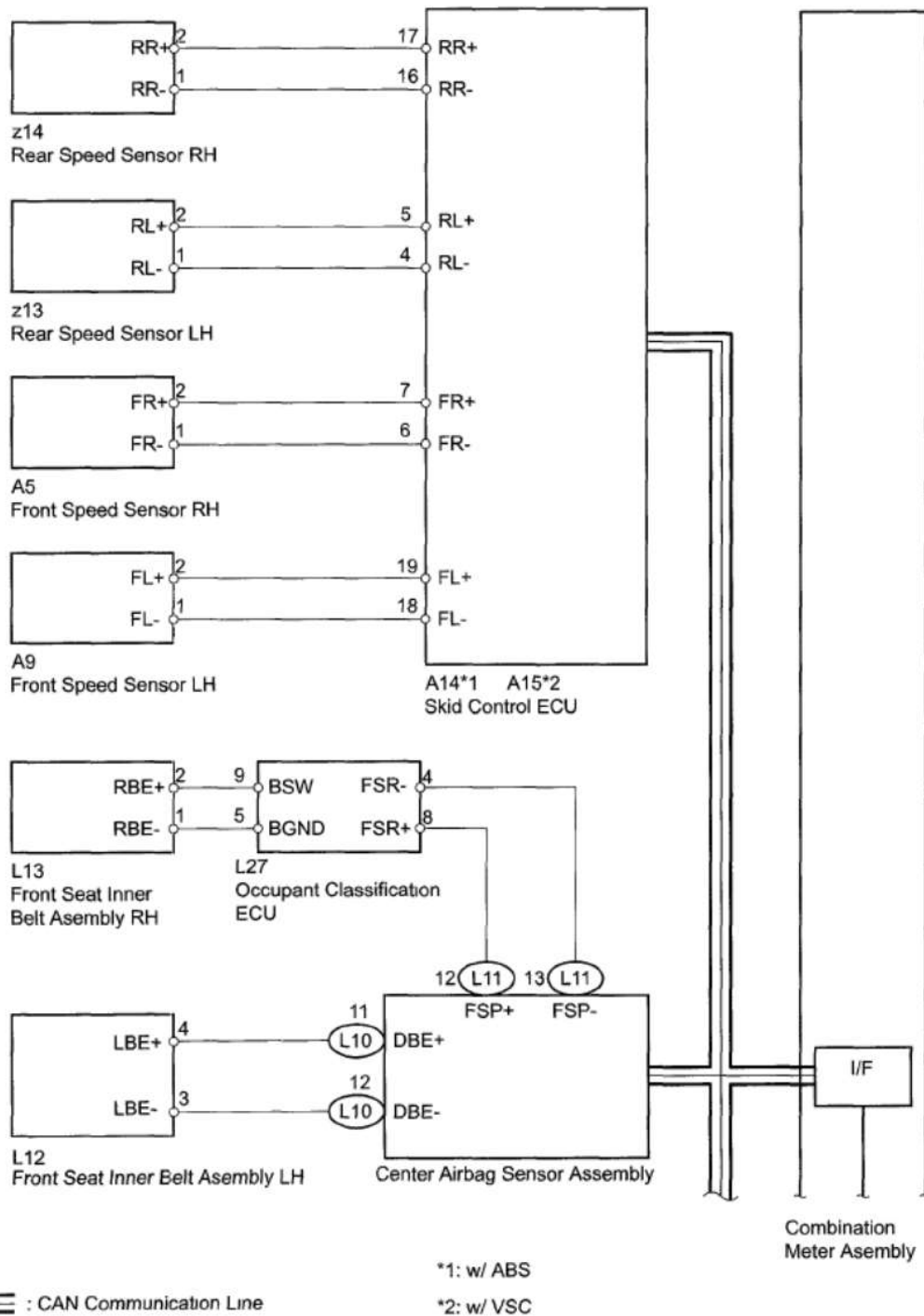


Fig. 43: Warning Buzzer Does Not Sound - Wiring Diagram (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

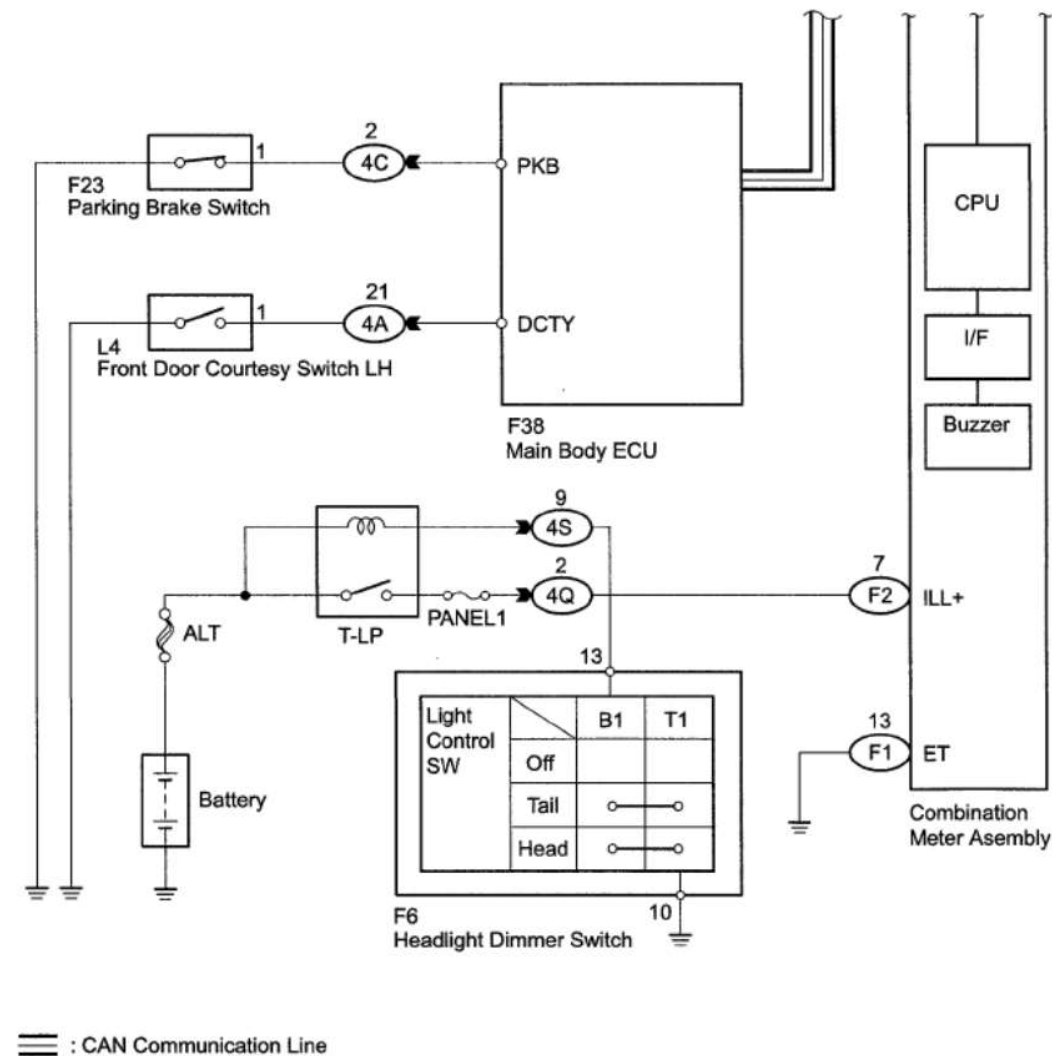


Fig. 44: Warning Buzzer Does Not Sound - Wiring Diagram (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

- CHECK BUZZERS (SEAT BELT, TAILLIGHT REMINDER, PARKING BRAKE)**
 - Check that the seat belt, taillight reminder and parking brake warning buzzers sound.

Result

RESULT DESCRIPTION

Result	Proceed to

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD**

Seat belt warning buzzer does not sound (where equipped with seat belt warning system)	A
Taillight reminder warning buzzer does not sound (Meter illuminations normal)	B
Parking brake warning buzzer does not sound	C
No warning buzzers sound	D

HINT:

- Seat belt warning buzzer on: Ignition switch is on, driver or front passenger seat belt is unfastened, and vehicle speed is 20 km/h (12.4 mph) or more.
- Taillight reminder warning buzzer on: Ignition switch is off, taillight relay switch is on, and driver side door is open.
- Parking brake warning buzzer on: Ignition switch is on, parking brake is operating, and vehicle speed is 5 km/h (3.1 mph) or more.

B: Go to step 6**C:** Go to step 12**D : REPLACE COMBINATION METER ASSEMBLY** (See **REMOVAL**)**A: Go to Next Step****2. CONFIRM DTC OUTPUT (CAN COMMUNICATION SYSTEM)**

- Connect a Techstream to the DLC3.
- Turn the ignition switch on and turn the tester on.
- Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- Clear the DTC (See **DTC CHECK / CLEAR**).
- Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result**RESULT DESCRIPTION**

Result	Proceed to
No CAN communication system DTCs are output	A
CAN communication system DTCs are output	B

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING**)**A: Go to Next Step****3. CONFIRM DTC OUTPUT (BRAKE CONTROL SYSTEM)**

2008 Scion xD

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- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
No brake control DTCs are output	A
Brake control system DTCs are output (Vehicle with ABS)	B
Brake control system DTCs are output (Vehicle with VSC)	C

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING)**

C: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING)**

A: Go to Next Step

4. CONFIRM DTC OUTPUT (SUPPLEMENTAL RESTRAINT SYSTEM)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
No SRS DTCs are output	A
SRS DTCs are output	B

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING)**

A: Go to Next Step

5. CONFIRM DTC OUTPUT (OCCUPANT CLASSIFICATION SYSTEM)

- a. Connect a Techstream to the DLC3

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- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
No occupant classification system DTCs are output	A
Occupant classification system DTCs are output	B

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING)**

A : REPLACE COMBINATION METER ASSEMBLY (See **REMOVAL)**

6. CONFIRM DTC OUTPUT (CAN COMMUNICATION SYSTEM)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
No CAN communication system DTCs are output	A
CAN communication system DTCs are output	B

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See **HOW TO PROCEED WITH TROUBLESHOOTING)**

A: Go to Next Step

7. READ VALUE USING TECHSTREAM (FRONT DOOR COURTESY LIGHT SWITCH (DRIVER SIDE))

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Operate the Techstream according to the display and select "Data List" (See **DATA LIST / ACTIVE TEST**).

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Body Electrical / Main Body / Data List:

BODY ELECTRICAL / MAIN BODY / DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door Courtesy SW	Driver side door courtesy light switch signal ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-

NG: Go to step 10

OK: Go to Next Step

8. INSPECT COMBINATION METER ASSEMBLY

- a. Disconnect the F2 combination meter assembly connector.
- b. Measure the voltage according to the value(s) in the table below.

Standard voltage

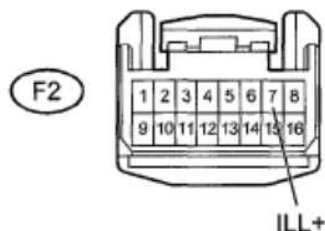
STANDARD VOLTAGE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
F2-7 (ILL+) - Body ground	Headlight dimmer switch Tail or Head position	11 to 14 V

- c. Reconnect the combination meter assembly connector.

NG: Go to step 9

Front view of wire harness connector:
(to Combination Meter Assembly)



C-105175E10

Fig. 45: Identifying F2 Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

OK : REPLACE COMBINATION METER ASSEMBLY (See **REMOVAL**)

9. **CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - MAIN BODY ECU)**
- a. Disconnect the F2 combination meter assembly connector.
 - b. Disconnect the 4Q main body ECU connector.
 - c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
F2-7 (ILL+) - 4Q-2	Always	Below 1 ohms
F2-7 (ILL+) or 4Q-2-Body ground	Always	10 kohms or higher

- d. Reconnect the combination meter assembly connector.
- e. Reconnect the main body ECU connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Combination Meter Assembly)



Front view of wire harness connector:
(to Main Body ECU)



E148095E01

Fig. 46: Identifying 4Q Main Body ECU Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to LIGHTING SYSTEM (TAILLIGHT ILLUMINATE) (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

10. INSPECT FRONT DOOR COURTESY LIGHT SWITCH (DRIVER SIDE)

- a. Disconnect the L4 front door courtesy light switch LH connector.
- b. Measure the resistance according to the value(s) in the table below.

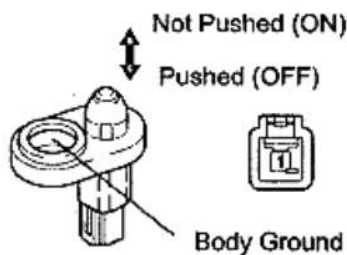
Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Switch Condition	Specified Condition
L4-1 - Body ground	Not pushed (ON)	Below 1 ohms
L4-1 - Body ground	Pushed (OFF)	10 kohms or higher

- c. Reconnect the front door courtesy light switch LH connector.

NG: REPLACE FRONT DOOR COURTESY LIGHT SWITCH (DRIVER SIDE) (See REMOVAL)



Y

B129105E01

Fig. 47: Inspecting Front Door Courtesy Light Switch (Driver Side)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

11. CHECK HARNESS AND CONNECTOR (FRONT DOOR COURTESY LIGHT SWITCH - MAIN BODY ECU)

- a. Disconnect the L4 front door courtesy light switch connector.
- b. Disconnect the 4A main body ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
L4-1 -4A-21 (DCTY)	Always	Below 1 ohms
L4-1 or 4A-21 (DCTY - Body ground)	Always	10 kohms or higher

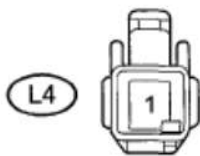
2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

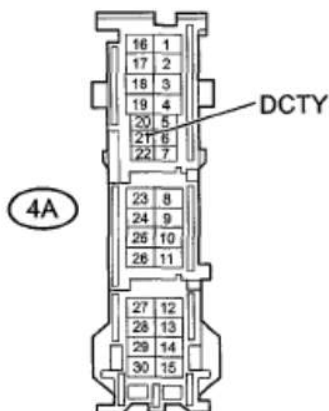
- d. Reconnect the front door courtesy light switch connector.
- e. Reconnect the main body ECU connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Front Door Courtesy Light Switch
Assembly LH)



Front view of wire harness connector:
(to Main Body ECU)



Y

B112021E29

Fig. 48: Identifying L4 Front Door Courtesy Light Switch Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE MAIN BODY ECU

12. CONFIRM DTC OUTPUT (CAN COMMUNICATION SYSTEM)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).

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- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
No CAN communication system DTCs are output	A
CAN communication system DTCs are output	B

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See HOW TO PROCEED WITH TROUBLESHOOTING)

A: Go to Next Step

13. CONFIRM DTC OUTPUT (BRAKE CONTROL SYSTEM)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Check for DTCs and note any codes that are output (See **DTC CHECK / CLEAR**).
- d. Clear the DTC (See **DTC CHECK / CLEAR**).
- e. Recheck for DTCs (See **DTC CHECK / CLEAR**).

Result

RESULT DESCRIPTION

Result	Proceed to
No brake control DTCs are output	A
Brake control system DTCs are output (Vehicle with ABS)	B
Brake control system DTCs are output (Vehicle with VSC)	C

B: Go to DIAGNOSTIC TROUBLE CODE CHART (See HOW TO PROCEED WITH TROUBLESHOOTING)

C: Go to DIAGNOSTIC TROUBLE CODE CHART (See HOW TO PROCEED WITH TROUBLESHOOTING)

A: Go to Next Step

14. READ VALUE USING TECHSTREAM (PARKING BRAKE SWITCH)

- a. Connect a Techstream to the DLC3.
- b. Turn the ignition switch on and turn the tester on.
- c. Operate the Techstream according to the display and select "Data List" (See **DATA LIST / ACTIVE TEST**).

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Body / Main body / Data List:**BODY / MAIN BODY / DATA LIST**

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Parking Brake SW	Parking brake switch signal ON / OFF	ON: Parking brake lever is pulled OFF: Parking brake lever is lowered	-

NG: Go to step 15**OK : REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)****15. INSPECT PARKING BRAKE SWITCH**

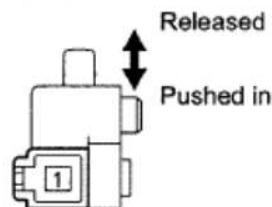
- Remove the parking brake switch (See REMOVAL).
- Measure the resistance according to the value(s) in the table below.

Standard resistance**TESTER CONNECTION AND SPECIFIED CONDITION**

Tester Connection	Switch Condition	Specified Condition
1 - Body ground	Parking brake switch on (Switch pin released)	Below 1 ohms
	Parking brake switch off (Switch pin pushed in)	10 kohms or higher

- Reinstall the parking brake switch.

Component without harness connected:
(Parking Brake Switch)



C159329E01

Fig. 49: Inspecting Parking Brake Switch

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

NG: REPLACE PARKING BRAKE SWITCH (See REMOVAL)**OK: Go to Next Step****16. CHECK HARNESS AND CONNECTOR (PARKING BRAKE SWITCH - MAIN BODY ECU)**

2008 Scion xD

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- a. Disconnect the F23 parking brake switch connector.
- b. Disconnect the 4C main body ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
F23-1 - 4C -2 (PKB)	Always	Below 1 ohms
F23-1 or 4C-2 (PKB) - Body ground	Always	10 kohms or higher

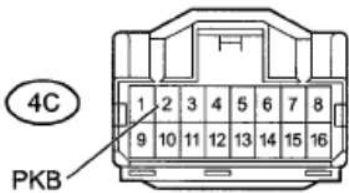
- d. Reconnect the parking brake switch connector.
- e. Reconnect the main body ECU connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Parking Brake Switch)



Front view of wire harness connector:
(to Main Body ECU)



E148077E01

Fig. 50: Identifying 4C Main Body ECU Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE MAIN BODY ECU

OPERATING LIGHT CONTROL RHEOSTAT DOES NOT CHANGE LIGHT BRIGHTNESS

DESCRIPTION

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The combination meter assembly controls the combination meter illumination in accordance with the light control signal from the light control rheostat.

WIRING DIAGRAM

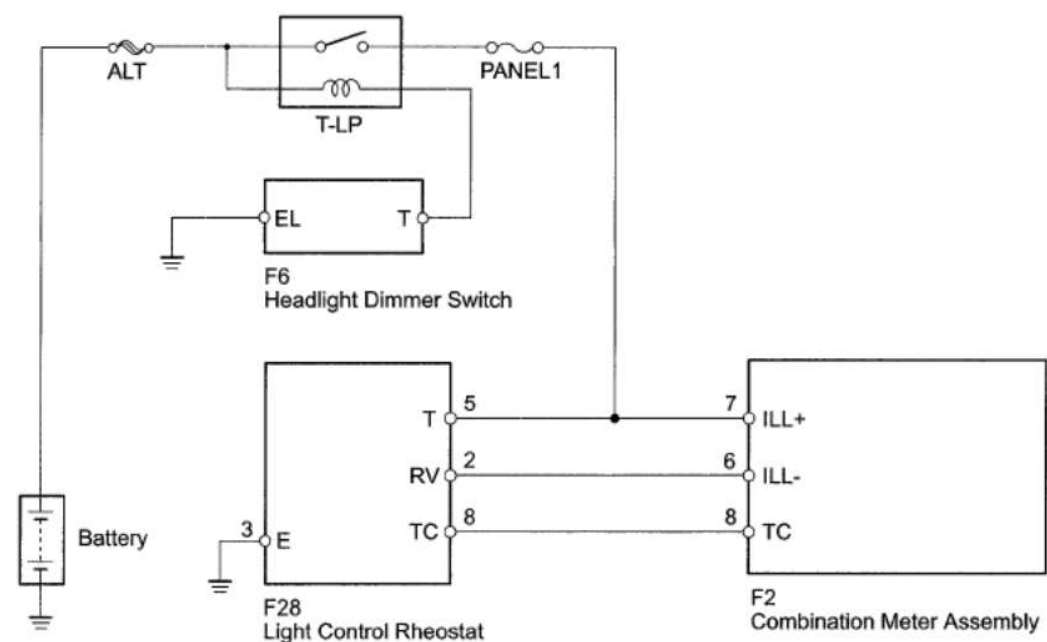


Fig. 51: Operating Light Control Rheostat Does Not Change Light Brightness - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **READ VALUE USING TECHSTREAM (RHEOSTAT)**
 - a. Connect a Techstream to the DLC3.
 - b. Turn the ignition switch on and the tester on.
 - c. Operate the Techstream according to the display and select "Data List" (See **DATA LIST / ACTIVE TEST**).

Body Electrical / Combination Meter / Data List:

BODY ELECTRICAL / COMBINATION METER / DATA LIST

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Tail Cancel SW	Tail cancel switch ON or OFF	ON: Headlight dimmer switch (Light control switch) --> OFF OFF: Headlight dimmer switch (Light control switch) --> TAIL or HEAD	-

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2008 ACCESSORIES AND EQUIPMENT Meter - xD			

Rheostat value	Rheostat volume Min.: 0 Max.: 100	Light control rheostat switch is dark (0) --> bright (100)	Unit: %
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OK: Light brightness can be changed within the specified range by actual operation.

NG: Go to step 2

OK : REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

2. **INSPECT FUSE (PANEL1)**

- a. Remove the PANEL1 fuse from the main body ECU.
- b. Measure the resistance according to the value in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
PANEL1 fuse	Always	Below 1 ohms

- c. Reinstall the PANEL1 fuse.

NG: REPLACE FUSE

Main Body ECU:

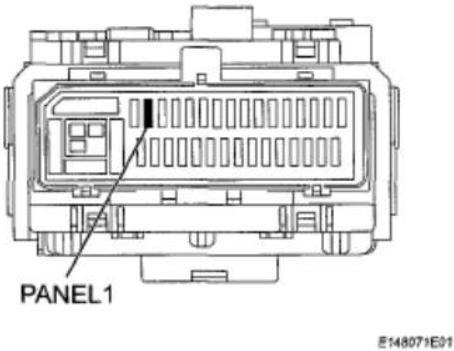


Fig. 52: Identifying PANEL1 Fuse In Main Body ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

3. **CHECK HARNESS AND CONNECTOR (PANEL1 FUSE - LIGHT CONTROL RHEOSTAT)**

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- a. Disconnect the F28 light control rheostat connector.
- b. Measure the voltage according to the value in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
F28-5 (T) - Body ground	Ignition switch on, light control switch on (TAIL or HEAD)	11 to 14 V

- c. Reconnect the light control rheostat connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Light Control Rheostat)



A159864E02

Fig. 53: Identifying F28 Light Control Rheostat Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

- 4. **CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - LIGHT CONTROL RHEOSTAT)**
 - a. Disconnect the F2 combination meter assembly connector.
 - b. Disconnect the F28 light control rheostat connector.
 - c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
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F28-5 (T) - F2-7 (ILL+)	Always	Below 1 ohms
F28-2 (RV) - F2-6 (ILL-)	Always	Below 1 ohms
F28-8 (TC) - F2-8 (TC)	Always	Below 1 ohms
F28-3 (E) - Body ground	Always	Below 1 ohms
F28-5 (T) or F2-7 (ILL+) - Body ground	Always	10 kohms or higher
30-2 (RV) or F2-6 (ILL-) - Body ground	Always	10 kohms or higher
F28-8 (TC) or F2-8 (TC) - Body ground	Always	10 kohms or higher

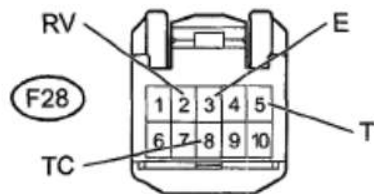
- d. Reconnect the combination meter assembly connector.
- e. Reconnect the light control rheostat connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Combination Meter Assembly)



Front view of wire harness connector:
(to Light Control Rheostat)



E148096E01

Fig. 54: Identifying F2 Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

5. INSPECT LIGHT CONTROL RHEOSTAT

- a. Remove the light control rheostat but without disconnecting the connector.

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- b. Turn the ignition switch on.
- c. Using an oscilloscope, check the signal waveform of the light control rheostat.

WAVEFORM SIGNAL REFERENCE CHART

Item	Contents
Terminal connection	F28-2 (RV) - Body ground
Tool setting	5V/DIV, 50 ms /DIV
Vehicle condition	Ignition switch on

OK: Waveform is as shown in the illustration.

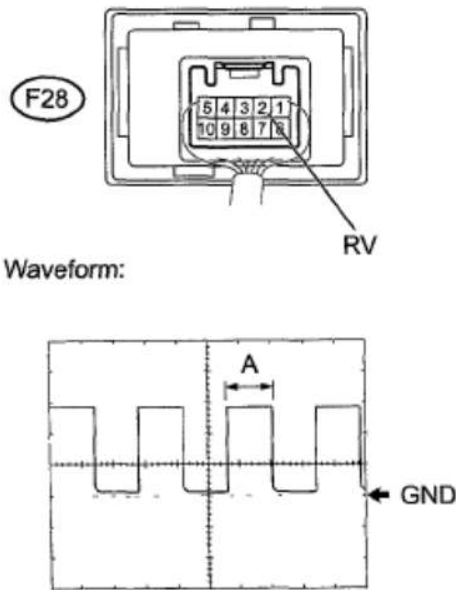
HINT:

Duty ratio changes as the illumination dims. (A becomes longer)

- d. Reinstall the light control rheostat.

NG: REPLACE LIGHT CONTROL RHEOSTAT (See LIGHT CONTROL RHEOSTAT)

Component with harness connected:
(Light Control Rheostat)



A106667E02

Fig. 55: Identifying F28 Connector Terminals And Waveform Graph

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

OK : REPLACE COMBINATION METER ASSEMBLY (See **REMOVAL**)

SPEED SIGNAL CIRCUIT**DESCRIPTION**

The meter CPU receives vehicle speed signals from this circuit. The vehicle speed sensor detects the voltage that varies according to the vehicle speed. The skid control ECU supplies power to the vehicle speed sensor. The skid control ECU detects vehicle speed signals based on the pulses of the voltage. The skid control ECU transmits vehicle speed signals as pulses to the meter CPU. A voltage of 12 V is output from the combination meter assembly and then input to the skid control ECU. The signal is changed to a pulse signal at the transistor in the combination meter assembly.

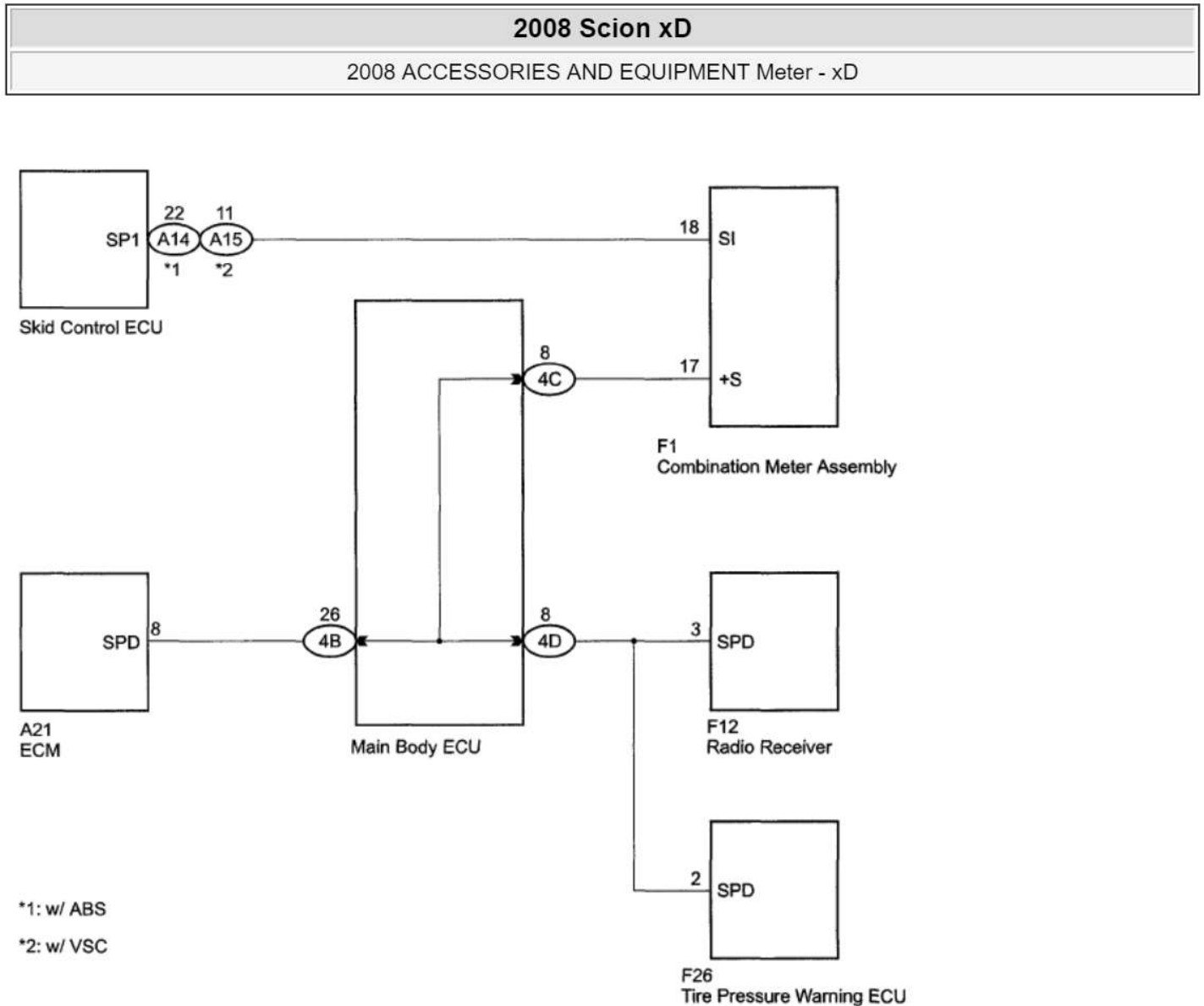
A voltage of 12 V or 5 V is output from each ECU or relay and then input to the combination meter assembly.

Each ECU controls the respective system based on the pulse signal.

HINT:

This circuit is used for another system, and is not used for combination meter operation.

WIRING DIAGRAM

**Fig. 56: Speed Signal Wiring Diagram**

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

INSPECTION PROCEDURE**1. INSPECT COMBINATION METER ASSEMBLY (OUTPUT WAVEFORM)**

- a. Remove the combination meter assembly, but do not disconnect the connector.
- b. Connect an oscilloscope to terminal F1 -17 (+S) and the body ground.
- c. Shift the transmission gear selector lever to the neutral position.
- d. Jack up the vehicle.
- e. Turn the ignition switch on.
- f. Turn the wheel slowly.

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g. Check the signal waveform according to the condition in the table below.

WAVEFORM SIGNAL REFERENCE CHART

Item	Condition
Tester Range	5V/DIV, 20 msec/DIV
Vehicle Condition	Driving at approximately 20 km/h (12 mph)

OK: The waveform is displayed as shown in the illustration.

HINT:

As the vehicle speed increases, the cycle of the waveform narrows.

NG: Go to step 2

Component with harness connected:
(Combination Meter Assembly)

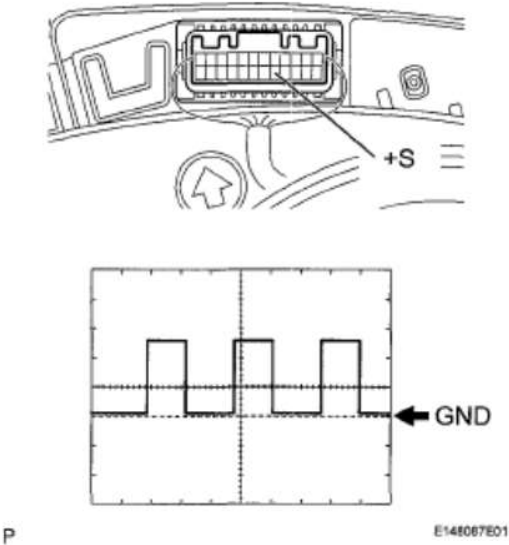


Fig. 57: Identifying Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : RETURN TO THE ORIGINAL INSPECTION FOR OTHER SYSTEM

2. **INSPECT COMBINATION METER ASSEMBLY (INPUT VOLTAGE)**

- a. Disconnect the F1 combination meter assembly connector.
- b. Measure the voltage according to the value in the table below.

Standard voltage

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STANDARD VOLTAGE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
F1-17 (+S) - Body ground	Ignition switch on	4.5 to 14 V

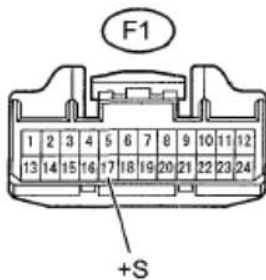
HINT:

If any of the ECUs specified in the wiring diagram supplied power to the combination meter, the combination meter will output a waveform.

- c. Reconnect the combination meter assembly connector.

NG: Go to step 5

Front view of wire harness connector:
(to Combination Meter Assembly)



C13B155E19

Fig. 58: Identifying F1 Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

3. INSPECT COMBINATION METER ASSEMBLY (OUTPUT VOLTAGE)

- a. Disconnect the A14 brake actuator (skid control ECU) connector or the A15 ABS and traction actuator (skid control ECU) connector.
- b. Measure the voltage according to the value(s) in the table below.

Standard voltage

Vehicles with ABS::

STANDARD VOLTAGE SPECIFICATIONS

Tester Connection	Switch Condition	Specified Condition
A14-22 (SP1) - Body ground	Ignition switch on	11 to 14 V

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Vehicles with VSC:

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Switch Condition	Specified Condition
A15-11 (SP1) - Body ground	Ignition switch on	11 to 14 V

- c. Reconnect the brake actuator (skid control ECU) connector or the ABS and traction actuator (skid control ECU) connector.

NG: Go to step 8

Front view of wire harness connector:
(to Brake actuator (Skid Control ECU))

w/ ABS:



Front view of wire harness connector:
(to ABS and Traction actuator (Skid Control ECU))

w/ VSC:



E148062E01

Fig. 59: Identifying A14 Brake Actuator (Skid Control ECU) Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

4. INSPECT COMBINATION METER ASSEMBLY (INPUT WAVEFORM)

- a. Reconnect the A14 brake actuator (skid control ECU) connector or A15 ABS and traction actuator (skid control ECU) connector.
- b. Remove the combination meter assembly, but do not disconnected the connector.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

- c. Connect an oscilloscope to terminal F1-18 (SI) and the body ground.
- d. Shift the transmission gear selector lever to the neutral position.
- e. Jack up the vehicle.
- f. Turn the ignition switch on.
- g. Turn the wheel slowly.
- h. Check the signal waveform according to the condition in the table below.

WAVEFORM SIGNAL REFERENCE CHART

Item	Condition
Tester Range	5V/DIV, 20 msec/DIV
Vehicle Condition	Driving at approximately 20 km/h (12 mph)

OK: The waveform is displayed as shown in the illustration.

Component with harness connected:
(Combination Meter Assembly)

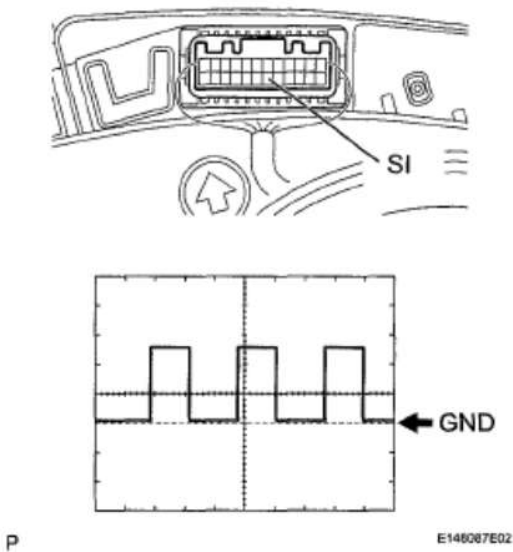


Fig. 60: Identifying Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

As the vehicle speed increases, the cycle of the waveform narrows.

Result

RESULT DESCRIPTION

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Result	Proceed to
OK	A
NG (Vehicle with ABS)	B
NG (Vehicle with VSC)	C

B : REPLACE BRAKE ACTUATOR (SKID CONTROL ECU) (See REMOVAL)

C : REPLACE ABS AND TRACTION ACTUATOR (SKID CONTROL ECU) (See REMOVAL)

A : REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

5. CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - MAIN BODY ECU)

- a. Disconnect the 4C main body ECU connector.
- b. Disconnect the F1 combination meter assembly connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
F1-17 (+S) - 4C-8	Always	Below 1 ohms
F1-17 (+S) or 4C-8 - Body ground	Always	10 kohms or higher

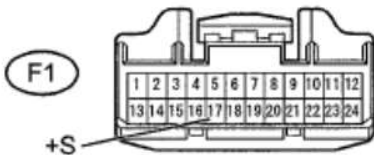
- d. Reconnect the main body ECU connector.
- e. Reconnect the combination meter assembly connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

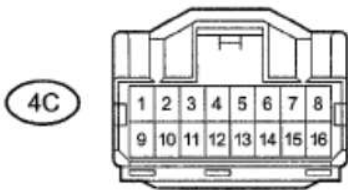
2008 Scion xD

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Front view of wire harness connector:
(to Combination Meter Assembly)



Front view of wire harness connector:
(to Main Body ECU)



E148083E01

Fig. 61: Identifying F1 Combination Meter Assembly Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to Next Step

- 6. CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY MALFUNCTIONING ECU)

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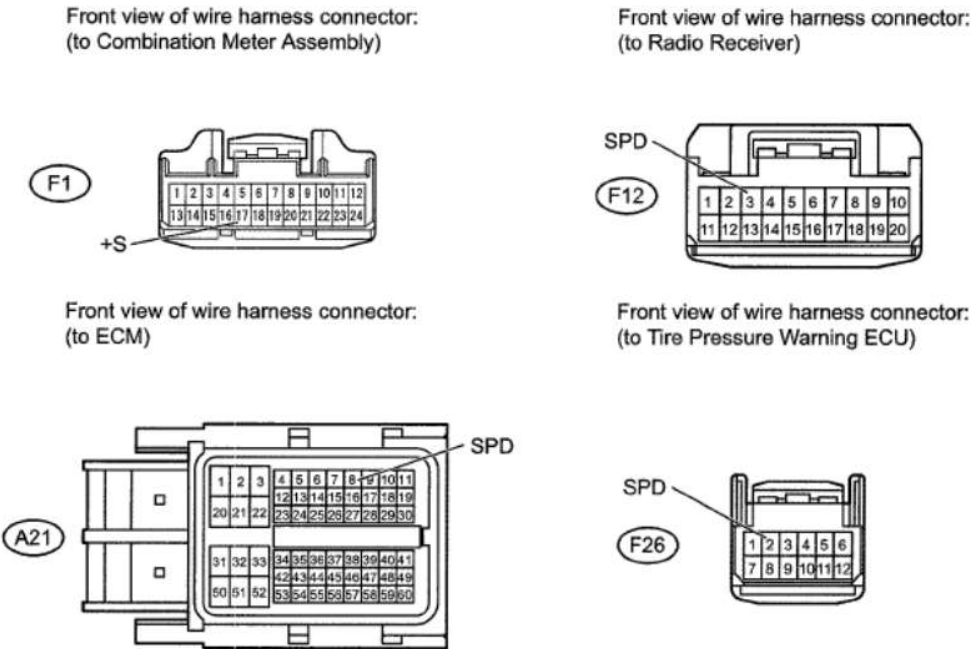


Fig. 62: Identifying Combination Meter Assembly Malfunctioning ECU Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Disconnect the F1 combination meter assembly connector.
- b. Disconnect the A21 ECM connector, F12 radio receiver connector or F26 tire pressure warning ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
F1-17 (+S) - A21-8 (SPD)	Always	Below 1 ohms
F1-17 (+S) - F12-3 (SPD)	Always	Below 1 ohms
F1-17 (+S) - F26-2 (SPD)	Always	Below 1 ohms
F1-17 (+S) or A21-8 (SPD) - Body ground	Always	10 kohms or higher
F1-17 (+S) or F12-3 (SPD) - Body ground	Always	10 kohms or higher
F1-17 (+S) or F26-2 (SPD) - Body ground	Always	10 kohms or higher

- d. Reconnect the combination meter assembly connector.
- e. Reconnect the ECM connector, the radio receiver connector or the tire pressure warning ECU connector.

NG: Go to step 7

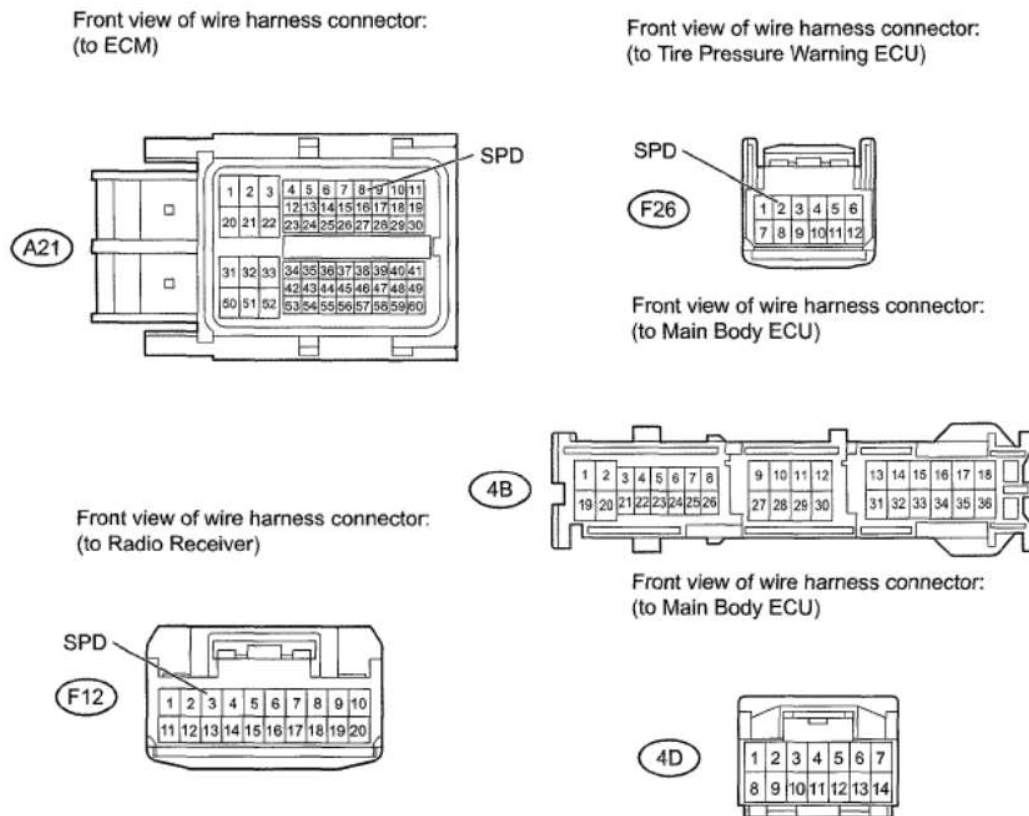
2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

OK : REPLACE MALFUNCTIONING ECU

7. CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - MALFUNCTIONING ECU)

- a. Disconnect the 4B, 4C or 4D main body ECU connector(s).



E14801RED1

Fig. 63: Identifying Main Body ECU - Malfunctioning ECU Connectors Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the A21 ECM connector, the F12 radio receiver connector or F26 tire pressure warning ECU connector.
- c. Measure the resistance according to the values in the table below.

Standard resistance

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
A21-8 (SPD) - 4B-26	Always	Below 1 ohms
F12-3 (SPD) - 4D-8	Always	Below 1 ohms
F26-2 (SPD) - 4D-8	Always	Below 1 ohms
A21-8 (SPD) or 4B-26 - Body ground	Always	10 kohms or higher

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F12-3 (SPD) or 4D-8 - Body ground	Always	10 kohms or higher
F26-2 (SPD) or 4D-8 - Body ground	Always	10 kohms or higher

- d. Reconnect the main body ECU connector.
- e. Reconnect the ECM connector, the radio receiver connector or the tire pressure warning ECU connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR**OK : REPLACE MAIN BODY ECU****8. CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - SKID CONTROL ECU)**

- a. Disconnect the F1 combination meter assembly connector.
- b. Disconnect the A14 brake actuator (skid control ECU) connector or the A15 ABS and traction actuator (skid control ECU) connector.
- c. Measure the resistance according to the values in the table below.

Standard resistance**Vehicles with ABS:****TESTER CONNECTION AND SPECIFIED CONDITION**

Tester Connection	Condition	Specified Condition
F1-18 (SI) - A14-22 (SP1)	Always	Below 1 ohms
F1-18 (SI) or A14-22 (SP1) - Body ground	Always	10 kohms or higher

Vehicles with VSC:**TESTER CONNECTION AND SPECIFIED CONDITION**

Tester Connection	Condition	Specified Condition
F1-18 (SI) - A15-11 (SP1)	Always	Below 1 ohms
F1-18 (SI) or A15-11 (SP1) - Body ground	Always	10 kohms or higher

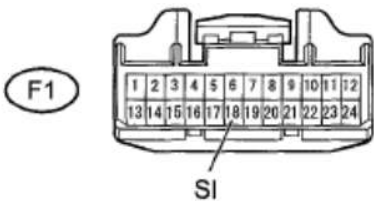
- d. Reconnect the combination meter assembly connector.
- e. Reconnect the brake actuator (skid control ECU) connector or the ABS and traction actuator (skid control ECU) connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Combination Meter Assembly)



w/ ABS:

Front view of wire harness connector:
(to Brake actuator (Skid Control ECU))



w/ VSC:

Front view of wire harness connector:
(to ABS and Traction actuator (Skid
Control ECU))



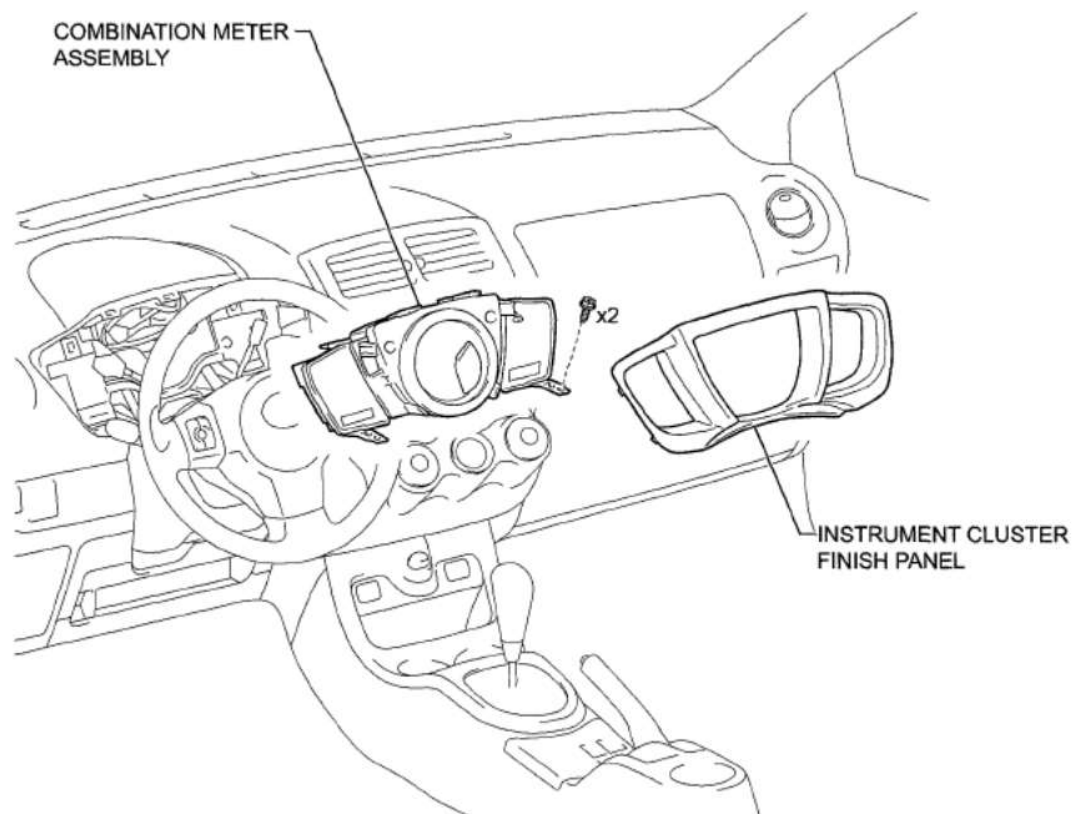
E148066E01

Fig. 64: Identifying A14 Brake Actuator (Skid Control ECU) Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE COMBINATION METER ASSEMBLY (See REMOVAL)

COMBINATION METER

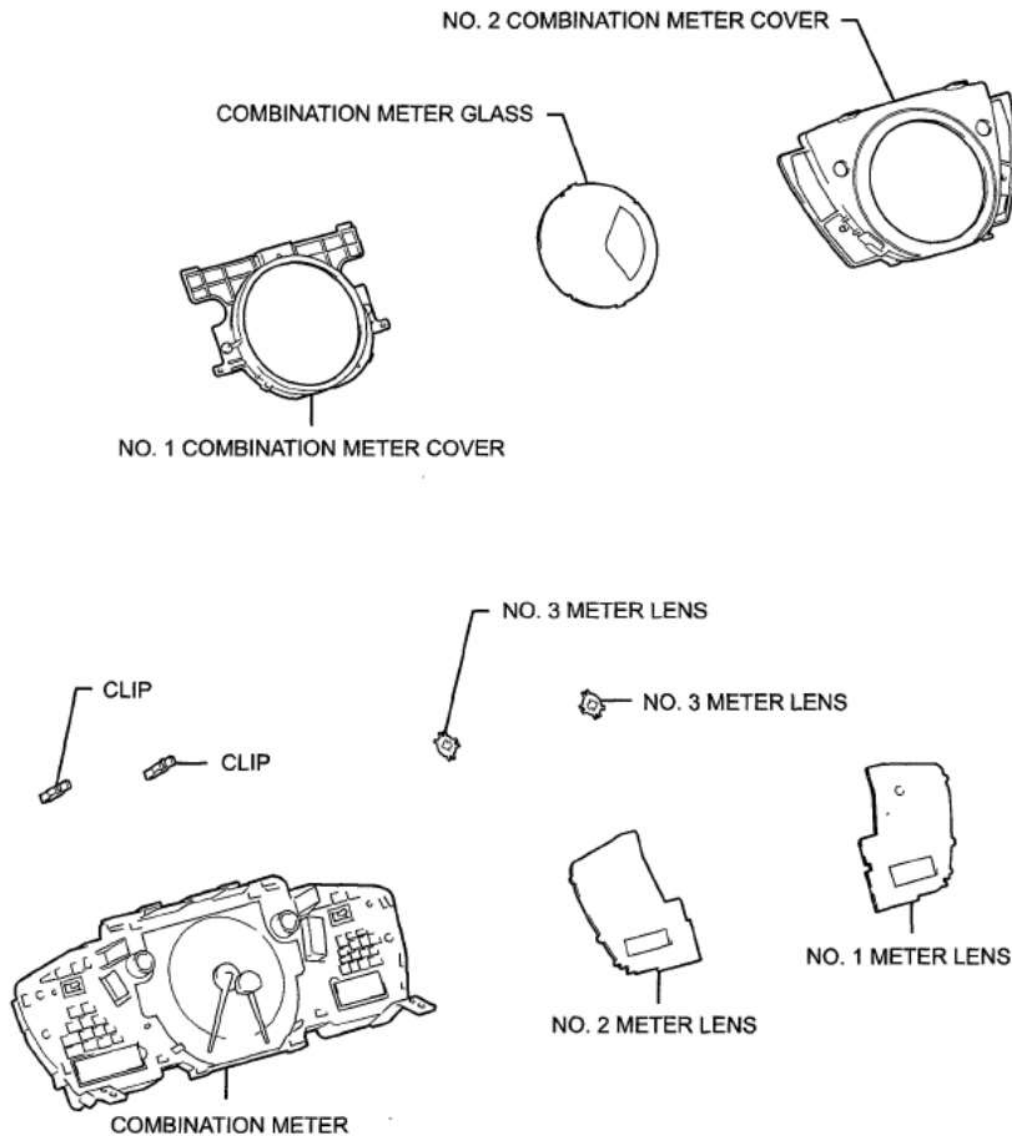
COMPONENTS

2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD**

E151947E03

Fig. 65: Identifying Combination Meter Components (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Scion xD
2008 ACCESSORIES AND EQUIPMENT Meter - xD



E151948E03

Fig. 66: Identifying Combination Meter Components (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE INSTRUMENT CLUSTER FINISH PANEL**
 - a. Disengage the 8 claws and 5 clips and remove the cluster finish panel.

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2008 ACCESSORIES AND EQUIPMENT Meter - xD

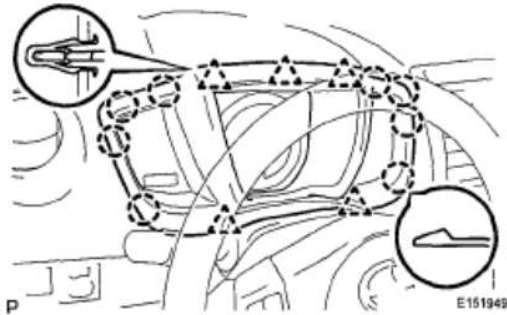


Fig. 67: Identifying Cluster Finish Panel Claws And Clips
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. REMOVE COMBINATION METER ASSEMBLY

- Disconnect the 2 connectors and remove the 2 screws.
- Disengage the 2 clips and remove the combination meter assembly.

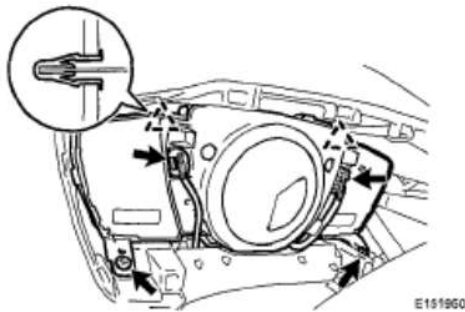


Fig. 68: Identifying Combination Meter Assembly Clips
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

1. REMOVE NO. 2 COMBINATION METER COVER

- Disengage the 6 claws and remove the No. 2 combination meter cover.

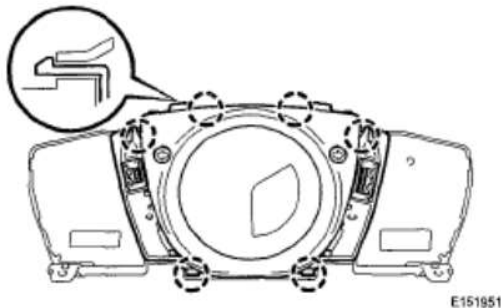


Fig. 69: Identifying No. 2 Combination Meter Cover Claws

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

2. REMOVE COMBINATION METER GLASS

- a. Remove the combination meter glass.

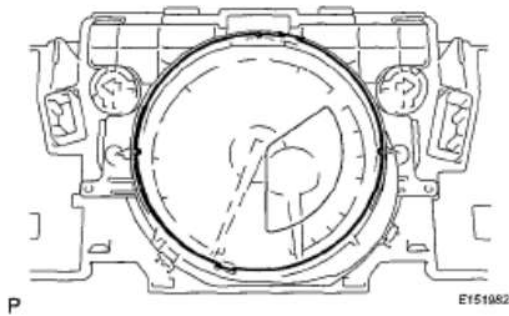


Fig. 70: Identifying Combination Meter Glass

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

3. REMOVE NO. 1 COMBINATION METER COVER

- a. Disengage the 4 claws and remove the No. 1 combination meter cover.

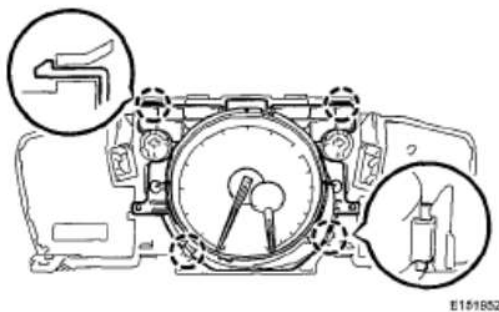
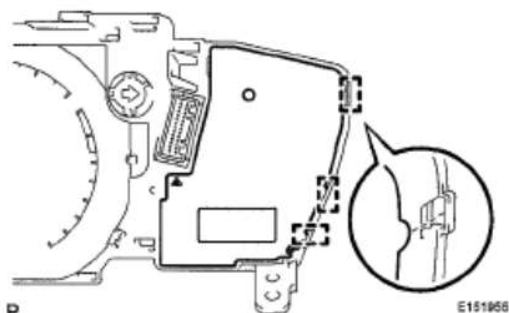


Fig. 71: Identifying No. 1 Combination Meter Cover Claws

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

4. REMOVE NO. 1 METER LENS

- a. Disengage the 3 guides and remove the No. 1 meter lens.



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Fig. 72: Identifying No. 1 Meter Lens Guides

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

5. REMOVE NO. 2 METER LENS

- a. Disengage the 3 guides and remove the No. 2 meter lens.

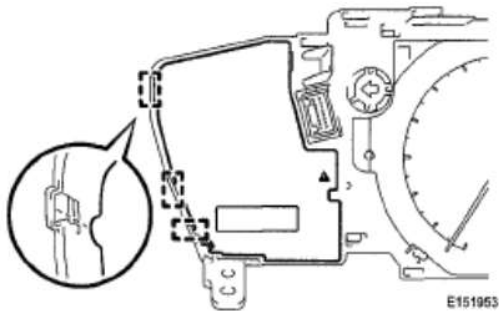


Fig. 73: Identifying No. 2 Meter Lens Guides

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

6. REMOVE NO. 3 METER LENS

- a. Remove the 2 No. 3 meter lenses.

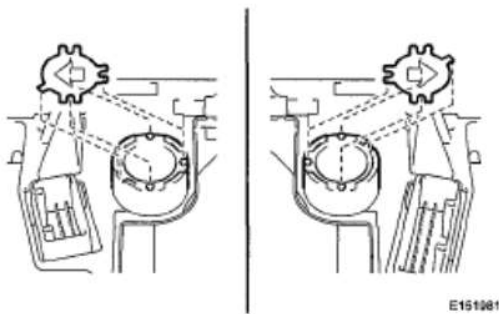
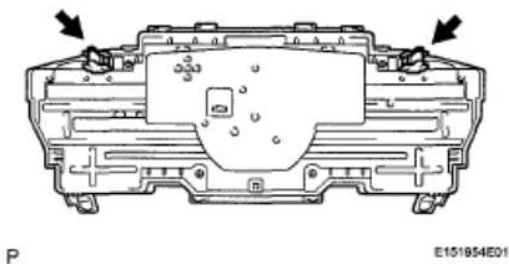


Fig. 74: Removing No. 3 Meter Lenses

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

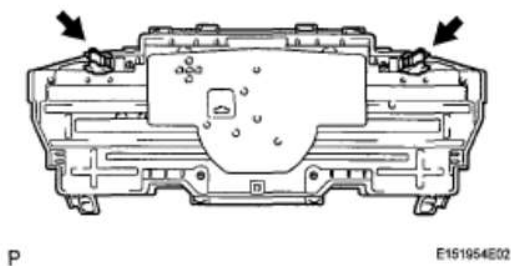
7. REMOVE CLIP

- a. Remove the 2 clips.

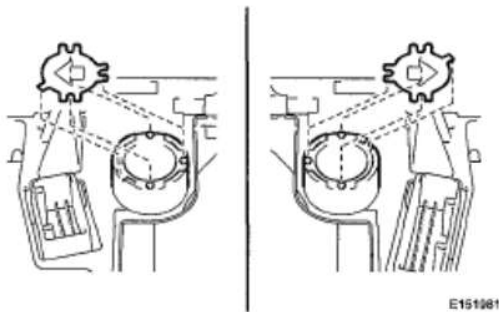


2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD****Fig. 75: Locating Clips****Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.****REASSEMBLY****1. INSTALL CLIP**

- a. Install the 2 clips.

**Fig. 76: Locating Clips****Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.****2. INSTALL NO. 3 METER LENS**

- a. Align the protrusion of the combination meter with the cutout of the 2 No. 3 meter lenses and install the 2 No. 3 meter lenses.

**Fig. 77: Installing No. 3 Meter Lens****Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.****3. INSTALL NO. 2 METER LENS**

- a. Engage the 3 guides and install the No. 2 meter lens.

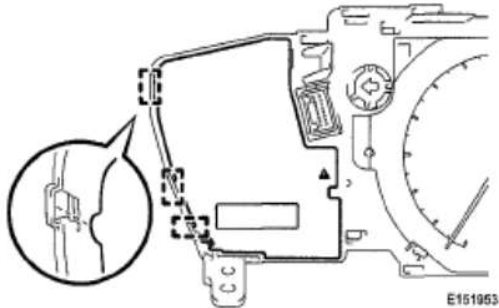
2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD**

Fig. 78: Identifying No. 2 Meter Lens Guides
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. INSTALL NO. 1 METER LENS

- a. Engage the 3 guides and install the No. 1 meter lens.

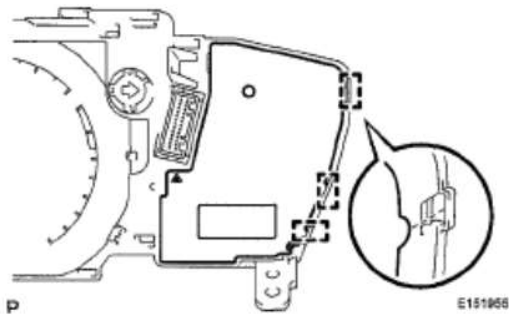


Fig. 79: Identifying No. 1 Meter Lens Guides
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. INSTALL NO. 1 COMBINATION METER COVER

- a. Engage the 4 claws and install the No. 1 combination meter cover.

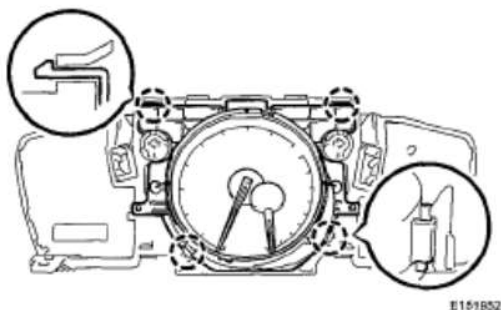


Fig. 80: Identifying No. 1 Combination Meter Cover Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. INSTALL COMBINATION METER GLASS

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

- a. Align the protrusion of the No. 2 combination meter cover with the cutout of the combination meter glass and install the combination meter glass.

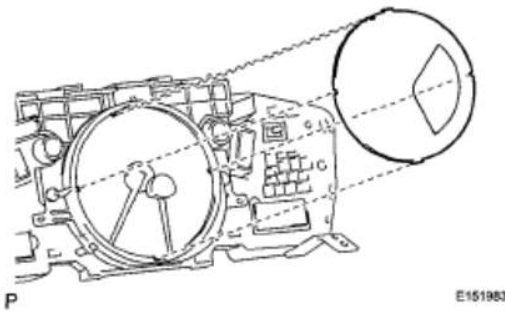


Fig. 81: Installing Combination Meter Glass

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

7. INSTALL NO. 2 COMBINATION METER COVER

- a. Engage the 6 claws and install the No. 2 combination meter cover.

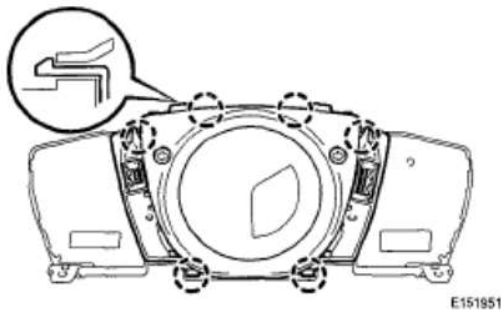


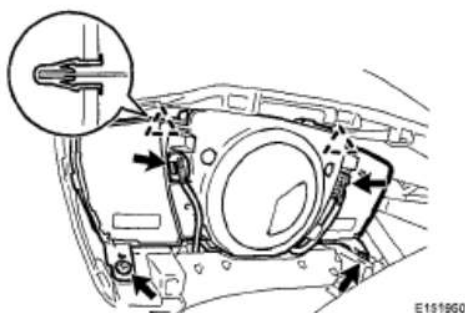
Fig. 82: Identifying No. 2 Combination Meter Cover Claws

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

INSTALLATION

1. INSTALL COMBINATION METER ASSEMBLY

- a. Engage the 2 clips and install the combination meter.



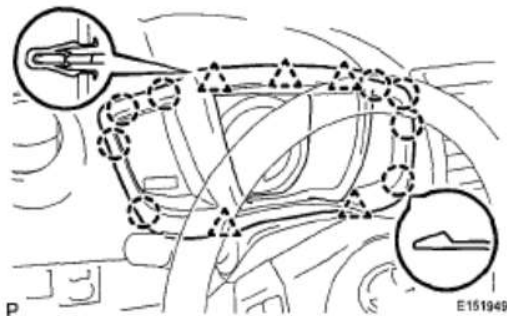
2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD****Fig. 83: Locating Combination Meter Clips**

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

- b. Install the 2 screws and connect the 2 connectors.

2. INSTALL INSTRUMENT CLUSTER FINISH PANEL

- a. Engage the 8 claws and the 5 clips and install the cluster finish panel.

**Fig. 84: Identifying Cluster Finish Panel Claws And Clips**

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

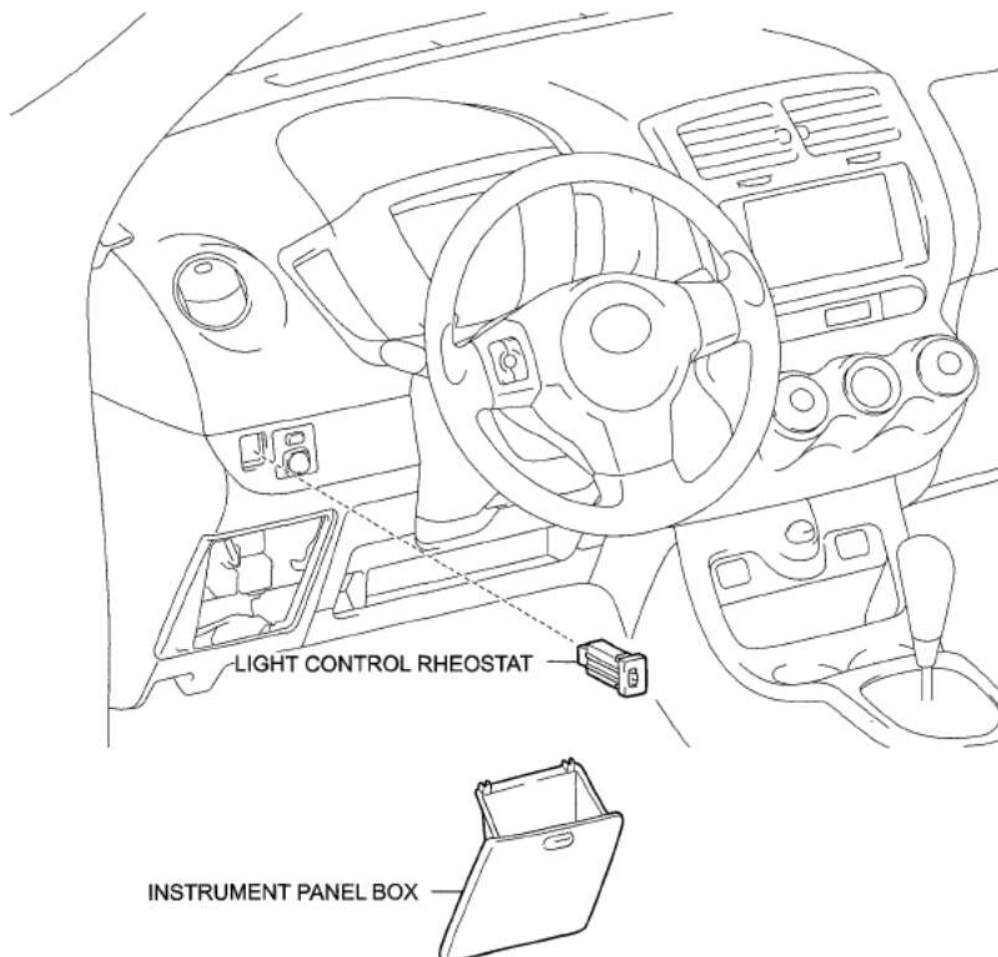
3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

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

LIGHT CONTROL RHEOSTAT**COMPONENTS**

2008 Scion xD

2008 ACCESSORIES AND EQUIPMENT Meter - xD

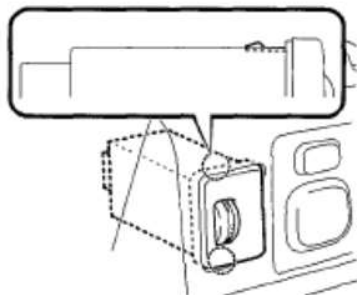


0101002E02

Fig. 85: Identifying Light Control Rheostat Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE INSTRUMENT PANEL BOX** (See **REMOVAL**)
2. **REMOVE LIGHT CONTROL RHEOSTAT**
 - a. Disconnect the connector.
 - b. Disengage the 2 claws and remove the light control rheostat.

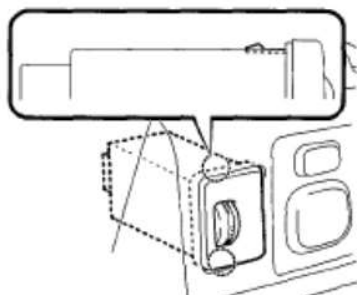
2008 Scion xD**2008 ACCESSORIES AND EQUIPMENT Meter - xD**

E151964

Fig. 86: Identifying Light Control Rheostat Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION**1. INSTALL LIGHT CONTROL RHEOSTAT**

- a. Engage the 2 claws and install the light control rheostat.



E151964

Fig. 87: Identifying Light Control Rheostat Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Connect the connector.

2. INSTALL INSTRUMENT PANEL BOX (See INSTALLATION)