

Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSQ00KX
Title: METER: METER / GAUGE SYSTEM: CUSTOMIZE PARAMETERS (2011 RAV4)		

CUSTOMIZE PARAMETERS

1. METER / GAUGE SYSTEM

(a) CUSTOMIZING FUNCTION WITH THE TECHSTREAM (REFERENCE)

HINT:

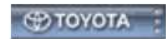
The following item can be customized.

NOTICE:

- 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.

Combination Meter

TESTER DISPLAY	DEFAULT	FUNCTION	SETTING
Seat-belt Warning Buzzer	D/P ON	Seat belt warning buzzer ON / OFF setting	D/P ON: Driver and passenger buzzer ON D ON: Driver buzzer ON P ON: Passenger buzzer ON D/P OFF: Driver and passenger buzzer OFF



Last Modified: 9-7-2011	6.4 U	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSU00GX
Title: METER: METER / GAUGE SYSTEM: DATA LIST / ACTIVE TEST (2011 RAV4)		

DATA LIST / ACTIVE TEST

1. Data List

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

- (a) Warm up the engine.
- (b) Ignition switch off.
- (c) Connect Techstream to the DLC3.
- (d) Turn the ignition switch to ON.
- (e) Turn the Techstream on.
- (f) Enter the following menus:
 - (1) for Combination Meter: Body Electrical / Combination Meter / Data List.
 - (2) for ABS/TRAC/VSC: Chassis / ABS/VSC/TRAC / Data List.
 - (3) for Engine and ECT: Powertrain / Engine and ECT / Data List.
 - (4) for Main Body: Body Electrical / Main Body / Data List.
- (g) Check values by referring to the table below.

Combination Meter:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Tail Cancel SW	Tail cancel switch is OFF/ON	OFF: Turn the light control rheostat knob is not fully downwards	-
		ON: Turn the light control rheostat knob fully upwards	-
Tail Relay SW	Illumination switch OFF/ON	OFF: Tail switch OFF	-
		ON: Tail switch ON	-
Check Engine SW (*1)	Check engine switch OFF/ON	OFF: Check engine switch off	-
		ON: Check engine switch on (IG)	-
Multi Display Select Switch	DISP switch in the steering pad switch OFF/ON	ON: DISP switch pressed	-
		OFF: DISP switch released	-
TPMS Operation State (*2)	Tire pressure indicator is OFF/ON/Unknown	ON: Low tire pressure	-
		OFF: Tire pressure is normal	-

METER: METER / GAUGE SYSTEM: DATA LIST / ACTIVE TEST (... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		Unknown: ECU connector not connected properly	The tire pressure indicator blinks for 1 minute and then remains on
ODO/TRIP Change SW	ODO/TRIP switch is OFF/ON	OFF: Switch is released	-
		ON: Switch is pushed	-
P-Seatbelt Buckle SW	Front passenger buckle switch is OFF/ON	OFF: Seat belt is fastened	-
		ON: Seat belt is unfastened	-
Vehicle Speed Meter	Vehicle speed/Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Almost same as actual vehicle speed (When driving)	-
Engine Rpm	Engine speed/Min.: 0 rpm, Max.: 12750 rpm	Almost same as the meter rpm (When engine is running)	-
Coolant Temperature	Engine coolant temperature: 0°C (32°F) to 127.5°C (261.5°F)	After warming up: 80 to 95°C (176 to 203°F)	-
Oil Level SW	Oil level switch is OFF/ON	OFF: Washer level is not low	-
		ON: Washer level is low	-
+B Voltage	Battery voltage/Min.: 0 V, Max.: 255 V	11 to 14 V	-
+B Voltage Value	Battery voltage/Min.: 0 V, Max.: 25.5 V	11 to 14 V	-
Integrated value for Oil Maintenance (*)	Oil maintenance warning value: Min.: 0, Max. 25500 (mile)	The running distance after performing oil maintenance resetting procedure is displayed	If the value is 5000 (mile) or more, perform oil maintenance resetting procedure after changing the oil
Fuel Input (A/D)	Fuel input signal Min.: 0, Max. 255	Fuel gauge indicates (E): 33	-
		Fuel gauge indicates (3/4): 98	-
		Fuel gauge indicates (1/2): 144	-
		Fuel gauge indicates (1/4): 179	-
		Fuel gauge indicates (F): 206	-
Ambient Temperature (A/D)	Outside temperature: Min.: -40°C (-40°F) to 50°C (122°F)	Almost same as actual outside temperature	The temperature displayed on the multi-information display is -40 to 50°C (-40 to 122°F)
Rheostat value (A/D)	Light Control Rheostat/Min.: 0%, Max.: 100%	Light control rheostat switch is Dark (0%) → Bright (100%)	-

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Quantity of Outside Light	Quantity of outside light/Min.: 0%, Max.: 100%	Outside light is Dark (0%) → Bright (100%)	-
Communication ECM/Meter DTC 1 to 3	Communication error: not occurred/occurred	Unrec: No Error has occurred	-
		Rec: Error has occurred	-
ECM ODO (History 1 to 3)	Distance when DTC is output Min.: 0, Max.: 999999	-	-
Communication ABS/Meter DTC 1 to 3	Communication error: not occurred/occurred	Unrec: No Error has occurred	-
		Rec: Error has occurred	-
ABS/VSC ODO (History 1 to 3)	Distance when DTC is output Min.: 0, Max.: 999999	-	-
Seat-belt Warning Buzzer	The condition of the seat belt warning buzzer	ON: The driver side seat belt warning buzzer sounds at the vehicle speed is 20 km/h (12 mph) or more when the driver side seat belt is unfastened	-
		OFF: The driver side seat belt warning buzzer does not sound at the vehicle speed is 20 km/h (12 mph) or more when the driver side seat belt is unfastened	-
Number of Trouble Code	The number of the DTC which is currently output	0	-

*1: w/ Smart Key System

*2: w/ Tire Pressure Warning System

2. Active Test

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

- (a) Connect Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.
- (d) Enter the following menus: Body Electrical / Combination Meter / Active Test.
- (e) Check the operation by referring to the table below.

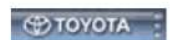
Combination Meter:

METER: METER / GAUGE SYSTEM: DATA LIST / ACTIVE TEST (... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Speed Meter Operation	Speedometer	0, 40, 80, 120 mph (*1)	-
		0, 40, 80, 120, 160, 200, 240 km/h (*2)	-
Tacho Meter Operation	Tachometer	0, 1000, 2000, 3000, 4000, 5000, 6000, 7000 (rpm)	-
Fuel Meter Operation	Fuel receiver gauge	EMPTY, 1/2, FULL	Confirm that the vehicle is stopped, engine idling
Water Temperature Meter Operation	Engine coolant temperature receiver gauge	Low, Normal, High	Confirm that the vehicle is stopped, engine idling
A/T Indicator Operation 1	A/T shift indicator light	A/T shift indicator light D, N, R, P is OFF/ON	Confirm that the vehicle is stopped, engine idling
Meter Display 1	Multi-information display	All the dots in the multi-information display OFF/ON	Confirm that the vehicle is stopped, engine idling
Meter Display 2	A/T shift indicator display	The segments in the A/T shift indicator display OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Airbag	Airbag warning light	SRS warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Front Passenger Side Seat Belt	Front passenger side seat belt warning light	Front passenger side seat belt warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Driver Side Seat Belt	Driver side seat belt warning light	Driver side seat belt warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp ABS	ABS warning light	ABS warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
VSC TRC Indicator	TRC OFF warning light	TRC OFF warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Tire Pressure Warning System (*6)	Tire Pressure warning light	Tire Pressure warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Charge	Charge warning light	Charge warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Slip	Slip indicator light	Slip indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Beam	Hi-beam indicator light	Hi-beam indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Head (*1)	Head indicator light	Head indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Tail (*2)	Tail indicator light	Tail indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Indicat. Lamp Fr FOG	Front fog indicator light	Front fog indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Driver Side Door Open	Open door warning light	Open door warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Doors All Open	Open door warning light	Open door warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Fuel	Low fuel warning light	Fuel level warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
A/T Oil Temperature Operation	A/T fluid temperature indicator light	A/T fluid temperature warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Cruise	Cruise indicator light	Cruise indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Lamp Brake	Brake warning light	Brake warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. EPS	EPS warning light	EPS warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. KEY (*3)	Smart key warning light is OFF/ON	Smart key warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Oil Maintenance	Oil replacement reminder light	Oil replacement reminder light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Master Warning	Master caution indicator light	Master caution indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Downhill Assist Control (*4)	Downhill assist control indicator light	Downhill assist control indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
4WD Warning Indicator (*5)	4WD indicator light	4WD indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. Auto LSD (*5)	Auto LSD indicator light	Auto LSD indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling
Indicat. 4WD Lock (*5)	4WD lock indicator light	4WD lock indicator light is OFF/ON	Confirm that the vehicle is stopped, engine idling

- *1: for U.S.A.
- *2: except U.S.A.
- *3: w/ Smart Key System
- *4: w/ Downhill Assist Control Switch
- *5: for 4WD
- *6: w/ Tire Pressure Warning System



Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XST007X
Title: METER: METER / GAUGE SYSTEM: DIAGNOSIS SYSTEM (2011 RAV4)		

DIAGNOSIS SYSTEM

1. DESCRIPTION

- (a) When troubleshooting a vehicle with the diagnosis system, the only difference from the usual troubleshooting procedure is connecting the Techstream to the vehicle and reading various data output from the vehicle's combination meter ECU.

The combination meter ECU records DTCs when the computer detects a malfunction in the computer itself or in its circuits.

To check the DTCs, connect the Techstream to the DLC3 on the vehicle. The Techstream enables you to erase the DTCs, activate the various actuators, and check the freeze frame data and Data List.

2. CHECK DLC3

- (a) The vehicle uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.

SYMBOLS (TERMINAL NO.)	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	CAN bus line	Ignition switch off*	54 to 69 Ω
CANH (6) - CG (4)	HIGH-level CAN bus line	Ignition switch off*	200 Ω or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Ignition switch off*	200 Ω or higher
CANH (6) - BAT (16)	HIGH-level CAN bus line	Ignition switch off*	6 k Ω or higher
CANL (14) - BAT (16)	LOW-level CAN bus line	Ignition switch off*	6 k Ω or higher

NOTICE:

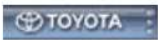
***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches or the doors.**

- If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the Techstream to the DLC3, turn the ignition switch to ON and attempt to use the tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem may be in the tester itself. Consult the Service Department listed in the tester's instruction manual.



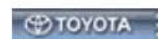
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Last Modified: 9-7-2011	6.4 S	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM0000020Q000KX
Title: METER: METER / GAUGE SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2011 RAV4)		

DIAGNOSTIC TROUBLE CODE CHART

Combination meter

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
U0100	Lost Communication with ECM / PCM "A"	- ECM - CAN Communication system	INFO
U0129	Lost Communication with Skid Control ECU	- Brake actuator (Skid control ECU) - CAN communication system	INFO



Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM0000020Q100GX
Title: METER: METER / GAUGE SYSTEM: DTC CHECK / CLEAR (2011 RAV4)		

DTC CHECK / CLEAR

1. CHECK DTC

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON and turn the Techstream on.
- Select the following menu items: Body Electrical / Trouble Codes.
- Check for DTCs and then write them down.

HINT:

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

- Confirm the details of the DTCs  .

2. CLEAR DTC

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON (do not start the engine) and turn the Techstream on.
- Select the following menu items: Body Electrical / Trouble Codes.

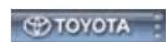
HINT:

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

- Erase DTCs.

HINT:

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



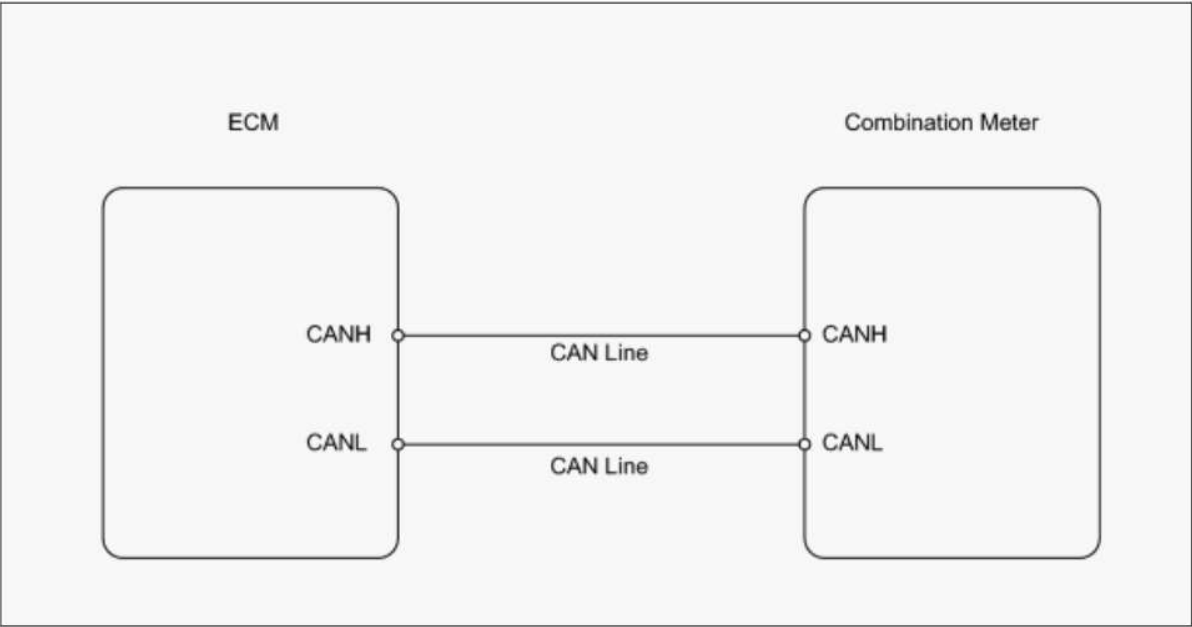
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001YO000XX
Title: METER: METER / GAUGE SYSTEM: Engine Coolant Temperature Receiver Gauge Malfunction (2011 RAV4)		

Engine Coolant Temperature Receiver Gauge Malfunction

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



INSPECTION PROCEDURE

HINT:

- If DTC U0100 has been stored, troubleshoot the CAN communication system first.
- If there is an open or short in the engine coolant temperature sensor circuit, an SFI system DTC is output. If output, perform troubleshooting for the SFI system.

PROCEDURE

1.	PERFORM ACTIVE TEST USING TECHSTREAM (WATER TEMPERATURE METER OPERATION)
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- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.
- (d) Enter the following menus: Body Electrical / Combination Meter / Active Test.
- (e) Check the operation by referring to the values in the table below.

Combination Meter:

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Water Temperature Meter Operation	Engine coolant temperature receiver gauge	Low, Normal, Hi	-

OK:

Needle indication is normal.

NG  **REPLACE COMBINATION METER ASSEMBLY****OK****2. READ VALUE USING DATA LIST (COOLANT TEMPERATURE)**

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.
- (d) Enter the following menus: Body Electrical / Combination Meter / Data List.
- (e) Check the values by referring to the table below.

Combination Meter:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Coolant Temperature	Engine coolant temperature/Min.: 0°C (32°F), Max.: 127.5°C (261.5°F)	After warming up: 80 to 100°C (176 to 212°F)	• If -40°C (-40°F): Sensor circuit open • If 140°C (284°F) or more: Sensor circuit shorted

METER: METER / GAUGE SYSTEM: Engine Coolant Temperature Re... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

OK:

Engine coolant temperature value displayed on the tester is almost the same as needle indication.

NG ► **REPLACE COMBINATION METER ASSEMBLY**

OK ► **GO TO SFI SYSTEM**



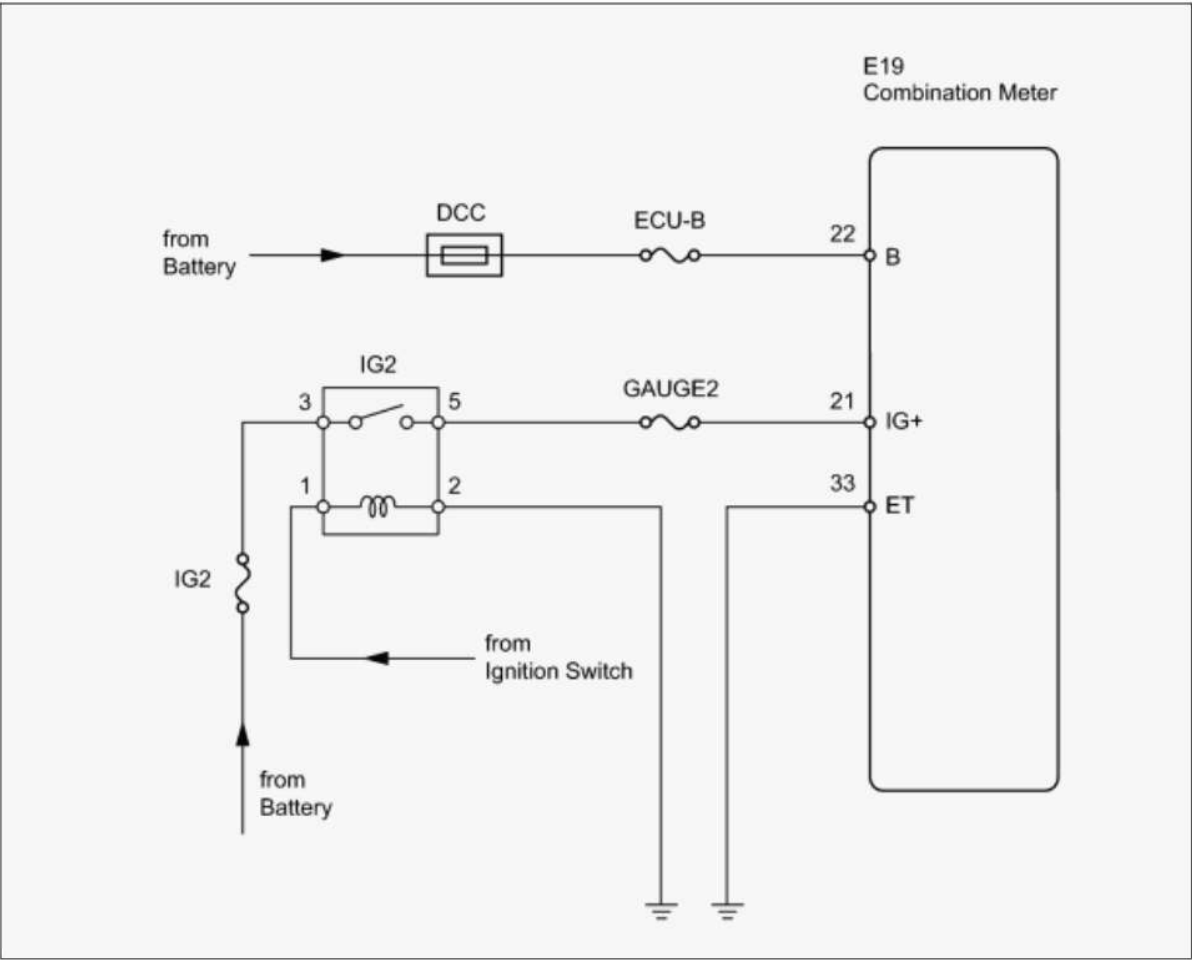
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSZ00PX
Title: METER: METER / GAUGE SYSTEM: Entire Combination Meter does not Operate (2011 RAV4)		

Entire Combination Meter does not Operate

DESCRIPTION

This circuit provides power to the combination meter assembly.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1. INSPECT FUSE (GAUGE2, ECU-B, IG2)

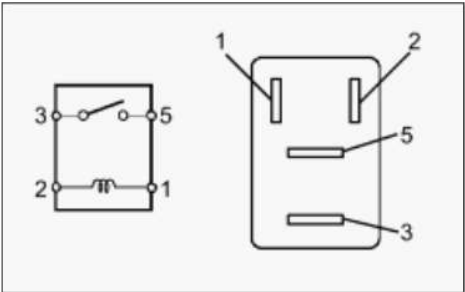
- (a) Remove the GAUGE2 fuse from the instrument panel junction block.
- (b) Remove the ECU-B fuse from the engine room No. 2 relay block.
- (c) Remove the IG2 fuse from the engine room No. 1 relay block.
- (d) Measure the resistance of the fuses.

Standard resistance:
Below 1 Ω

NG REPLACE FUSE

OK

2. INSPECT IG2 RELAY



(a) Remove the IG2 relay from the No. 1 relay block.

- (b) Measure the resistance of the relay.
Standard resistance:

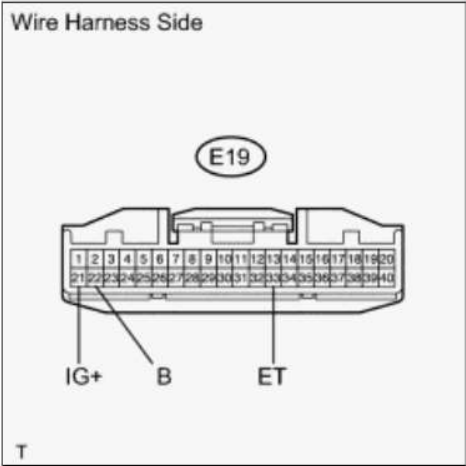
TESTER CONNECTION	SPECIFIED CONDITION
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG REPLACE IG2 RELAY

OK

▼

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



(a) Disconnect the E19 meter connector.

(b) Measure the voltage of the wire harness side connector.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E19-22 (B) - Body ground	Always	11 to 14 V
E19-21 (IG+) - Body ground	Ignition switch ON	11 to 14 V

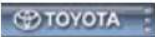
(c) Measure the resistance of the wire harness side connector.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
E19-33 (ET) - Body ground	Below 1 Ω

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ► REPLACE COMBINATION METER ASSEMBLY



Last Modified: 9-7-2011	6.4 U	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSV007X
Title: METER: METER / GAUGE SYSTEM: FAIL-SAFE CHART (2011 RAV4)		

FAIL-SAFE CHART

Speedometer

CONDITION	RESPONSE	RECOVERY
Speed data is interrupted for 0.12 seconds	Gauge needle indicates below 0 km/h (0 mph)	Normal data is received

Tachometer

CONDITION	RESPONSE	RECOVERY
Tachometer data is interrupted for 0.12 seconds	Gauge needle indicates below 0 rpm	Normal data is received

Water temperature

CONDITION	RESPONSE	RECOVERY
Water temperature data is interrupted for 3.1 seconds	Gauge needle indicates below "C"	Normal data is received

Shift indicator

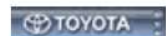
CONDITION	RESPONSE	RECOVERY
"P" to "D" data is interrupted for 3 seconds	All shift indicators go off	Normal data is received

Light control rheostat

CONDITION	RESPONSE	RECOVERY
Variable resistance malfunction	Light control output 100%	Normal data is received

ODO / TRIP

CONDITION	RESPONSE	RECOVERY
Regular data is interrupted for 0.12 seconds	Calculation stops	Normal data is received



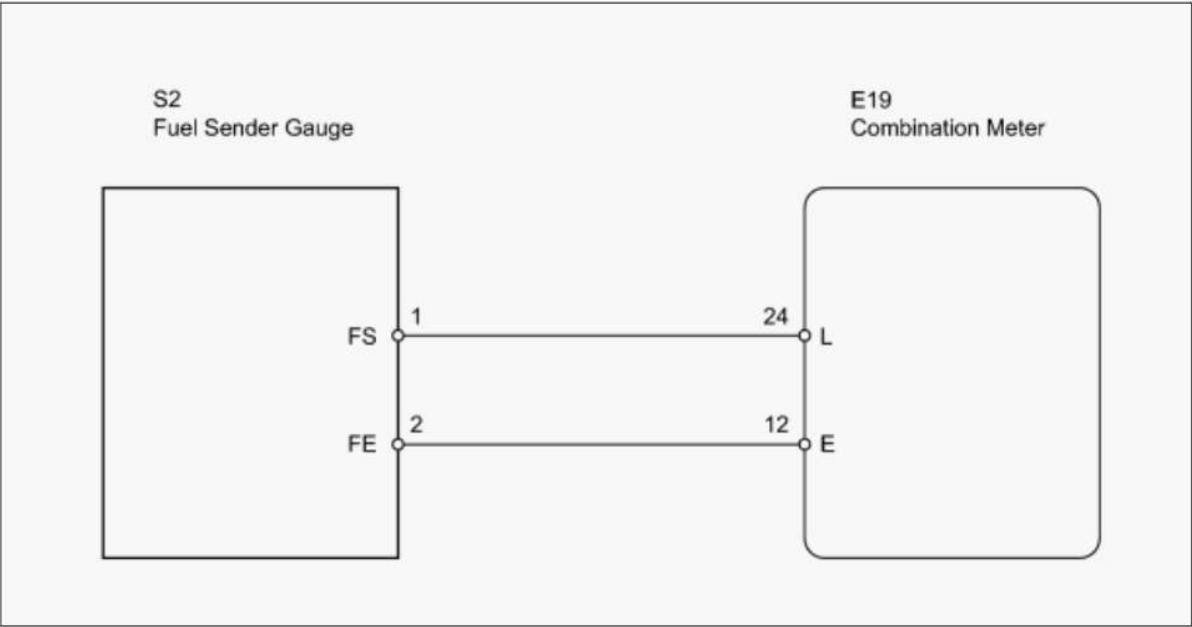
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001YNZ007X
Title: METER: METER / GAUGE SYSTEM: Fuel Receiver Gauge Malfunction (2011 RAV4)		

Fuel Receiver 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



INSPECTION PROCEDURE

PROCEDURE

1.	PERFORM ACTIVE TEST USING TECHSTREAM (FUEL METER OPERATION)
----	---

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.
- (d) Enter following menus: Body Electrical / Combination Meter / Active Test.

(e) Check the operation by referring to the table below.

Combination Meter:

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Fuel Meter Operation	Fuel receiver gauge	EMPTY, 1/2, FULL	-

OK:

Needle indication is normal.

NG  **REPLACE COMBINATION METER ASSEMBLY**

OK



2.	READ VALUE USING DATA LIST (FUEL INPUT)
-----------	--

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Turn the Techstream on.

(d) Enter following menus: Body Electrical / Combination Meter / Data List.

(e) Check the values by referring to the table below.

Combination Meter:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Fuel Input	Fuel input signal/Min.: 0, Max.: 255	Fuel gauge indicates (F): 33 Fuel gauge indicates (3/4): 98 Fuel gauge indicates (1/2): 144 Fuel gauge indicates (1/4): 179 Fuel gauge indicates (E): 206	-

OK:

Fuel value signal displayed on the tester is almost the same as needle indication.

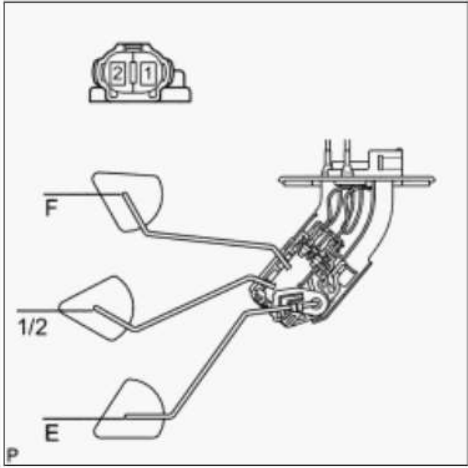
NG  **REPLACE COMBINATION METER ASSEMBLY**

OK



3.

INSPECT FUEL SENDER GAUGE ASSEMBLY



(a) Remove the fuel sender gauge.

(b) Measure the resistance of the gauge.
Standard resistance:

TESTER CONNECTION	FLOAT LEVEL	SPECIFIED CONDITION
1 - 2	F	15.0 +-1.5 Ω
1 - 2	1/2	212.5 +-12.3 Ω
1 - 2	E	410.0 +-4.5 Ω

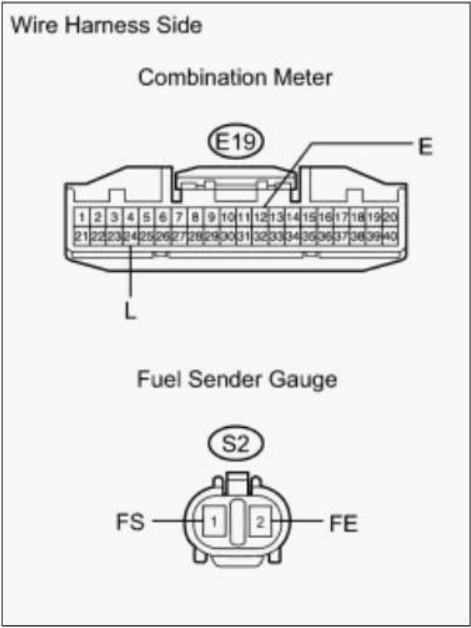
NG  REPLACE FUEL SENDER GAUGE ASSEMBLY

OK


4.

CHECK WIRE HARNESS (COMBINATION METER - FUEL SENDER GAUGE ASSEMBLY)

(a) Disconnect the E19 meter connector.



- (b) Disconnect the S2 gauge connector
 - (c) Measure the resistance of the wire harness side connectors.
- Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
E19-24 (L) - S2-1 (FS)	Below 1 Ω
E19-12 (E) - S2-2 (FE)	Below 1 Ω
E19-24 (L) or S2-1 (FS) - Body ground	10 k Ω or higher
E19-12 (E) or S2-2 (FE) - Body ground	10 k Ω or higher

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ► REPLACE COMBINATION METER ASSEMBLY



Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSL00HX
Title: METER: METER / GAUGE SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2011 RAV4)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

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

1.	VEHICLE BROUGHT TO WORKSHOP
----	-----------------------------

NEXT



2.	INSPECT BATTERY VOLTAGE
----	-------------------------

Standard voltage:
11 to 14 V

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

NEXT



3.	CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM (CAN)*
----	---

(a) Use the Techstream to check if the CAN communication system is functioning normally.

Result

RESULT	PROCEED TO
CAN DTC is not output	A
CAN DTC is output	B

B GO TO CAN COMMUNICATION SYSTEM



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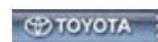
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Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSP007X
Title: METER: METER / GAUGE SYSTEM: INITIALIZATION (2011 RAV4)		

INITIALIZATION

1. RESET OIL REPLACEMENT REMINDER LIGHT (INDICATOR)

- Set the liquid crystal display (LCD) to TRIP A.
- Turn the ignition switch off.
- Press and hold the ODO / TRIP switch, and turn the ignition switch ON.
- After turning the ignition switch to ON, keep holding the switch for at least 5 seconds. The reset procedure is complete.



Last Modified: 9-7-2011	6.4 G	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSW00LX
Title: METER: METER / GAUGE SYSTEM: ON-VEHICLE INSPECTION (2011 RAV4)		

ON-VEHICLE INSPECTION

1. CHECK SPEEDOMETER

(a) Check the operation.

- (1) Connect the Techstream to the DLC3 connector.
- (2) Turn the ignition switch ON
- (3) Turn the Techstream on.
- (4) Enter the following menus: Chassis / ABS/VSC/TRAC / Data List.
- (5) According to the display on Techstream, read the "Data List."

Reference: km/h (except U.S.A. and Korea)

TECHSTREAM DISPLAY	SPEEDOMETER DISPLAY
20 km/h	17.5 to 21.5 km/h
40 km/h	38 to 42 km/h
60 km/h	58 to 63 km/h
80 km/h	78 to 84 km/h
100 km/h	98.5 to 104.5 km/h
120 km/h	119 to 125 km/h
140 km/h	139 to 146 km/h
160 km/h	159 to 167 km/h
180 km/h	179 to 188 km/h
200 km/h	199 to 209 km/h
220 km/h	219 to 230 km/h
240 km/h*1	239 to 251 km/h

Reference: mph (for U.S.A.)

TECHSTREAM DISPLAY	SPEEDOMETER DISPLAY
20 mph	20 to 23.0 mph
40 mph	40 to 43.5 mph
60 mph	60 to 64.0 mph
80 mph	80 to 84.5 mph
100 mph	100 to 105.0 mph
120 mph	120 to 125.5 mph
140 mph*1	140 to 146.0 mph

Reference: km/h (for Korea)

TECHSTREAM DISPLAY	SPEEDOMETER DISPLAY
(20 km/h)*2	(21 to 25 km/h)*2
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
180 km/h	186.9 to 194.5 km/h
200 km/h	207.7 to 215.7 km/h
220 km/h	228.4 to 236.8 km/h
240 km/h	249.2 to 258 km/h

*1: for 2GR-FE

*2: Data in () is for reference

CAUTION:**Do not use worn, underinflated or overinflated tires, as the speedometer reading will be inaccurate.**

(6) Check the deflection width of the speedometer indicator.

Reference:

Below 0.5 km/h (0.3 mph)

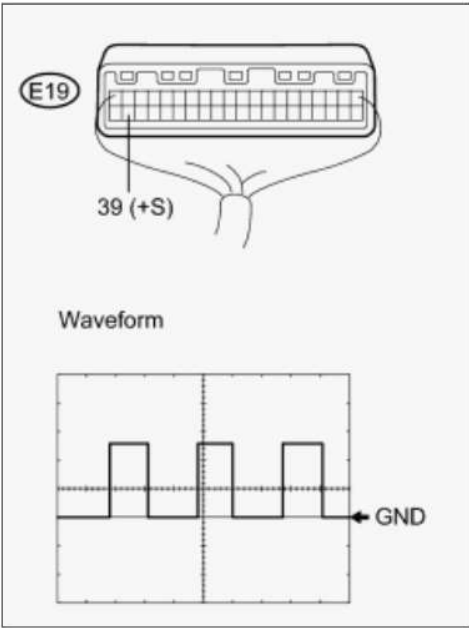
2. CHECK OUTPUT SIGNAL OF VEHICLE SPEED SENSOR

(a) Check the output signal waveform.

- (1) Remove the combination meter, but do not disconnect the connector.
- (2) Connect an oscilloscope to terminal E19-39 and the body ground.
- (3) Start the engine.
- (4) Check the signal waveform according to the condition(s) in the table below.

ITEM	CONDITION
Tool setting	5 V/DIV, 20 ms/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. CHECK TACHOMETER

- (a) Check the operation.
- (1) Connect the tune-up test tachometer, and start the engine.

CAUTION:

- Reversing the connection of the tachometer will damage the transistors and the insides of the diodes.
- When removing or installing the tachometer, be careful not to drop or strike it.

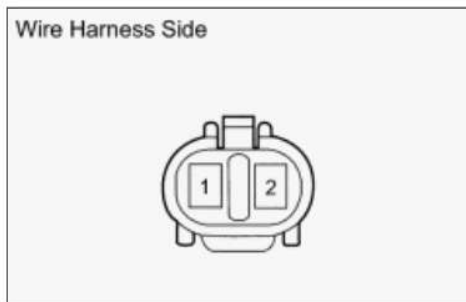
- (2) Compare the result of the test with the standard indication.

Reference: DC 13.5 V, at 25°C (77°F)

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. CHECK FUEL RECEIVER GAUGE

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



(b) Turn the ignition switch ON, then check the position of the receiver gauge needle.

OK:

Needle position is on EMPTY.

(c) Connect terminals 1 and 2 on the wire harness side connector of the fuel sender gauge.

(d) Turn the ignition switch to ON, then check the position of the receiver gauge needle.

OK:

Needle position is on FULL.

5. CHECK FUEL LEVEL WARNING LIGHT

(a) Disconnect the connector from the sender gauge.

(b) Turn the ignition switch to ON, check that the fuel level needle indicates EMPTY and fuel level warning light comes on.

OK:

Fuel level warning light comes on.

6. CHECK BRAKE WARNING LIGHT

(a) Inspect the parking brake warning light.

(1) Disconnect the connector from the parking brake switch.

(2) Turn the ignition switch to ON.

(3) Ground the terminal of the wire harness side connector, and then check that the parking brake warning light illuminates.

OK:

Parking brake warning light illuminates.

7. CHECK OIL PRESSURE WARNING LIGHT

(a) Disconnect the connector from the engine oil pressure switch.

(b) Turn the ignition switch to 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 comes on.

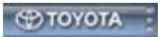
8. CHECK WASHER LEVEL WARNING SWITCH

(a) Disconnect the connector from the washer level warning switch.

(b) Turn the ignition switch to ON.

(c) Ground the terminal of the wire harness side connector, then check the washer level warning light.

OK:
Washer level warning light comes on.



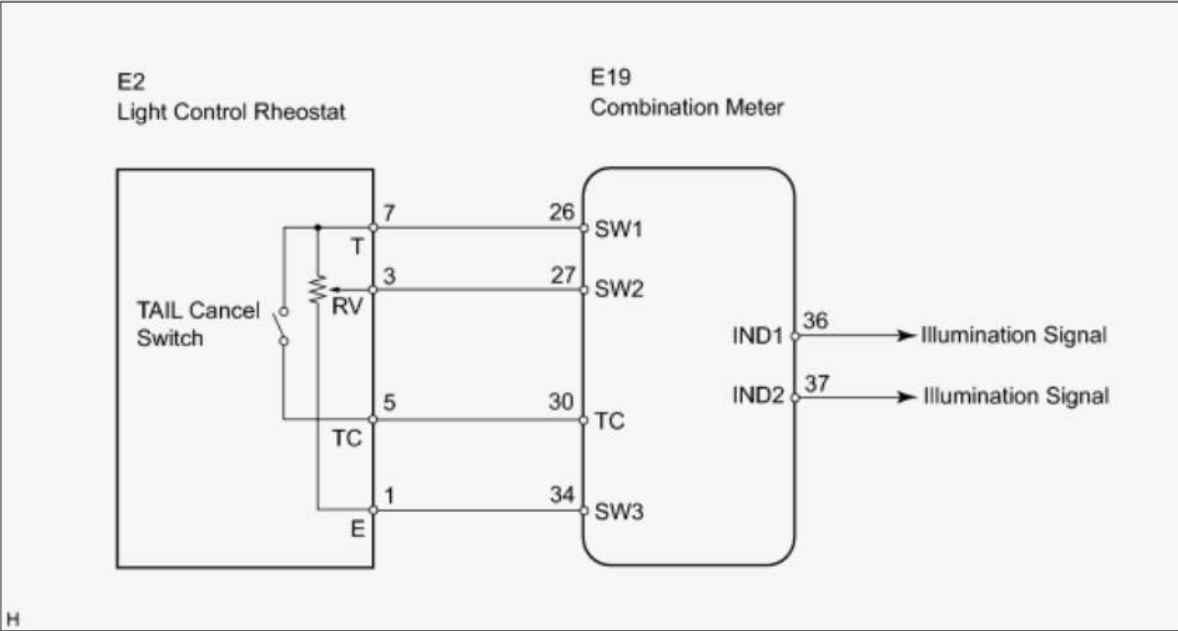
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM0000020PJ00GX
Title: METER: METER / GAUGE SYSTEM: Operating Light Control Rheostat does not Change Light Brightness (2011 RAV4)		

Operating Light Control Rheostat does not Change Light Brightness

DESCRIPTION

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

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	READ VALUE USING DATA LIST (RHEOSTAT VALUE)
-----------	--

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.

(d) Enter the following menus: Body Electrical / Combination Meter / Date List.

(e) Check the values by referring to the table below.

Combination Meter:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Rheostat value	Light control rheostat/Min.: 0%, Max.: 100%	Light control rheostat switch is Dark (0%) → Bright (100%)	-
Tail Cancel SW	Tail cancel switch is OFF/ ON	OFF: Turn the light control rheostat knob is not fully downwards	-
		ON: Turn the light control rheostat knob fully upwards	-

OK:

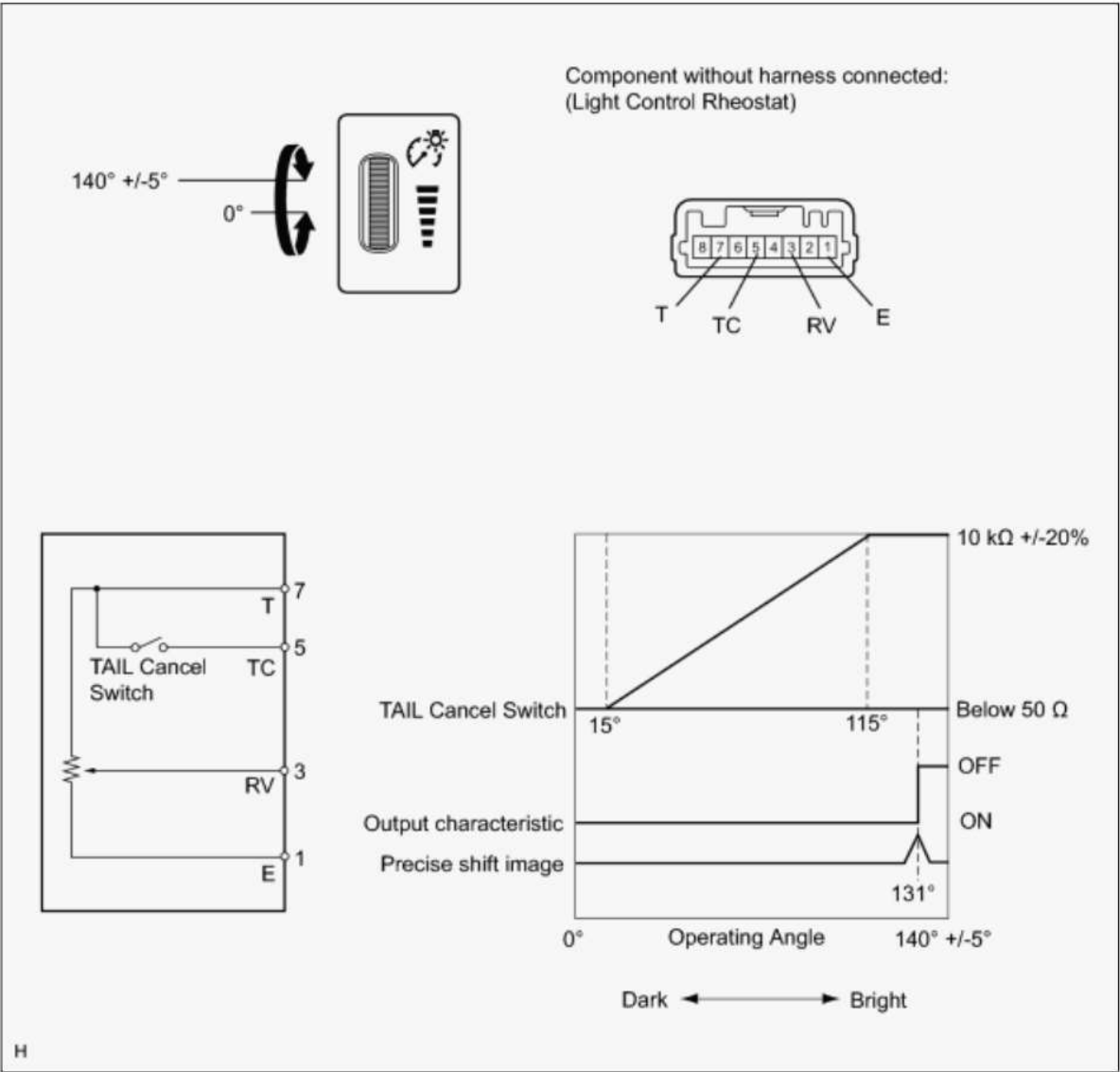
The value displayed on the tester gradually changes as the actual rheostat operation.

NG  **REPLACE COMBINATION METER ASSEMBLY**

OK



2.	INSPECT LIGHT CONTROL RHEOSTAT
-----------	---------------------------------------



(a) Inspect the light control rheostat.

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

Standard resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
7 (T) - 1 (E)	Always	10 +/- 2 kΩ
3 (RV) - 1 (E)	Knob turned fully upward	10 +/- 2 kΩ
3 (RV) - 1 (E)	Knob turned fully downward	Below 50 Ω
3 (RV) - 1 (E)	Knob turned from fully upward to fully downward	10 +/- 2 kΩ → Below 50 Ω

(b) Inspect the TAIL cancel switch.

HINT:

The TAIL cancel switch is built into the light control rheostat.

(1) Measure the resistance of the rheostat.

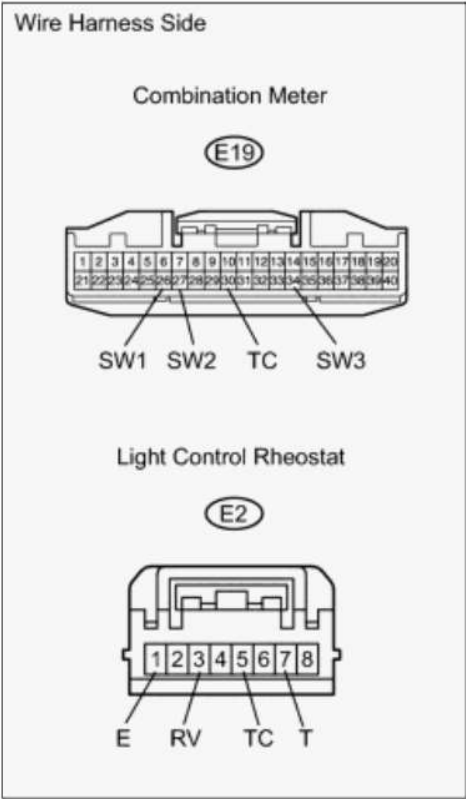
Standard resistance:

TESTER CONNECTION	RHEOSTAT POSITION	SPECIFIED CONDITION
7 (T) - 5 (TC)	Knob turned fully upward (TAIL cancel condition)	10 kΩ or higher
7 (T) - 5 (TC)	Knob not turned fully upward	Below 50 Ω

NG  **REPLACE LIGHT CONTROL RHEOSTAT**

OK


3.	CHECK WIRE HARNESS (COMBINATION METER - LIGHT CONTROL RHEOSTAT)
----	--



(a) Disconnect the E19 meter connector.

(b) Disconnect the E2 rheostat connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E19-26 (SW1) - E2-7 (T)	Always	Below 1 Ω
E19-27 (SW2) - E2-3 (RV)	Always	Below 1 Ω
E19-30 (TC) - E2-5 (TC)	Always	Below 1 Ω
E19-34 (SW3) - E2-1 (E)	Always	Below 1 Ω

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK



4.	REPLACE COMBINATION METER ASSEMBLY
-----------	---

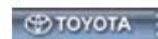
(a) Replace the combination meter assembly with a new or normally operating one. Perform an operation inspection.

OK:

Combination meter assembly operates normally.

NG ► GO TO LIGHTING SYSTEM

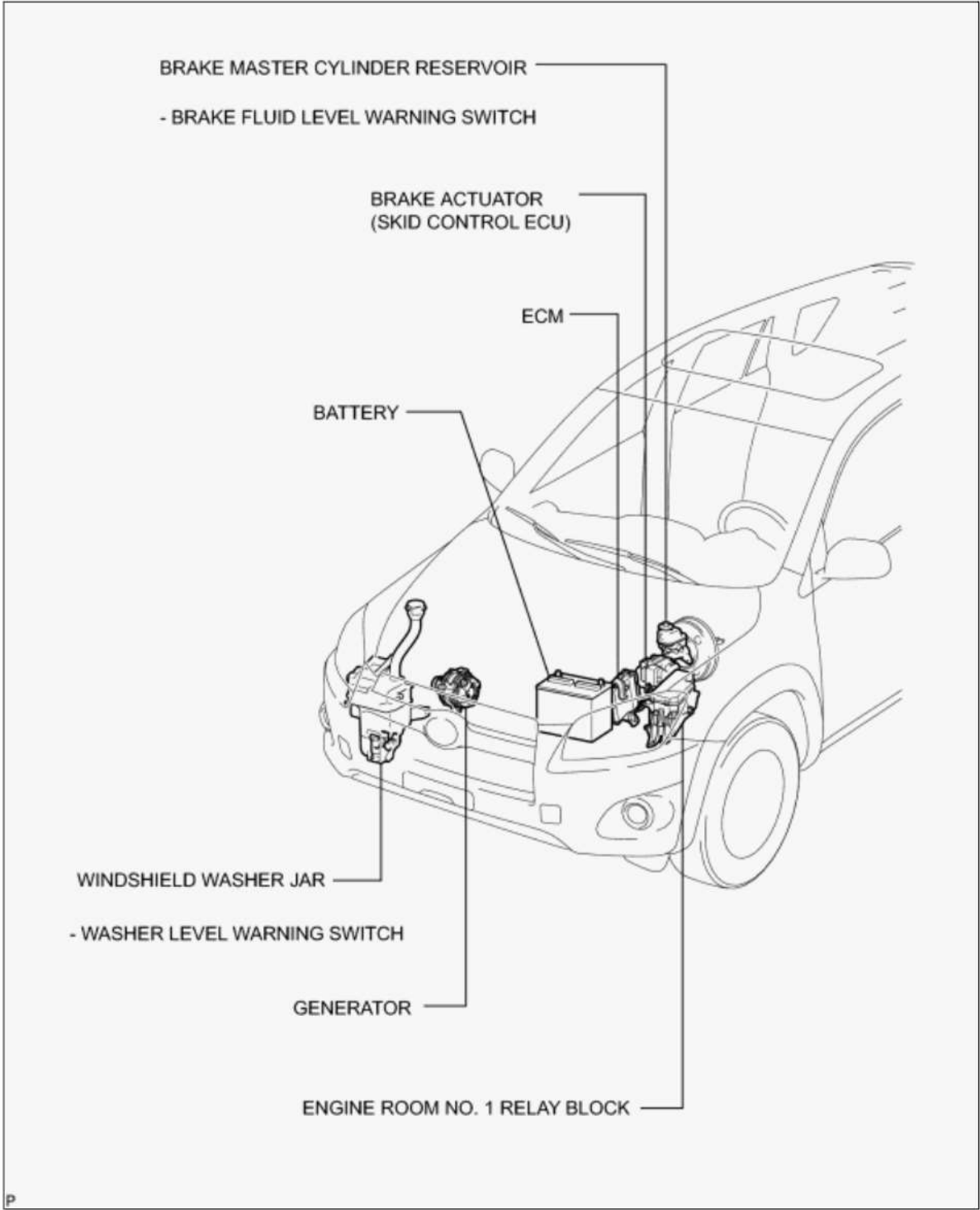
OK ► END (COMBINATION METER IS DEFECTIVE)



Last Modified: 9-7-2011	6.4 R	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000002B5E00EX
Title: METER: METER / GAUGE SYSTEM: PARTS LOCATION (2011 RAV4)		

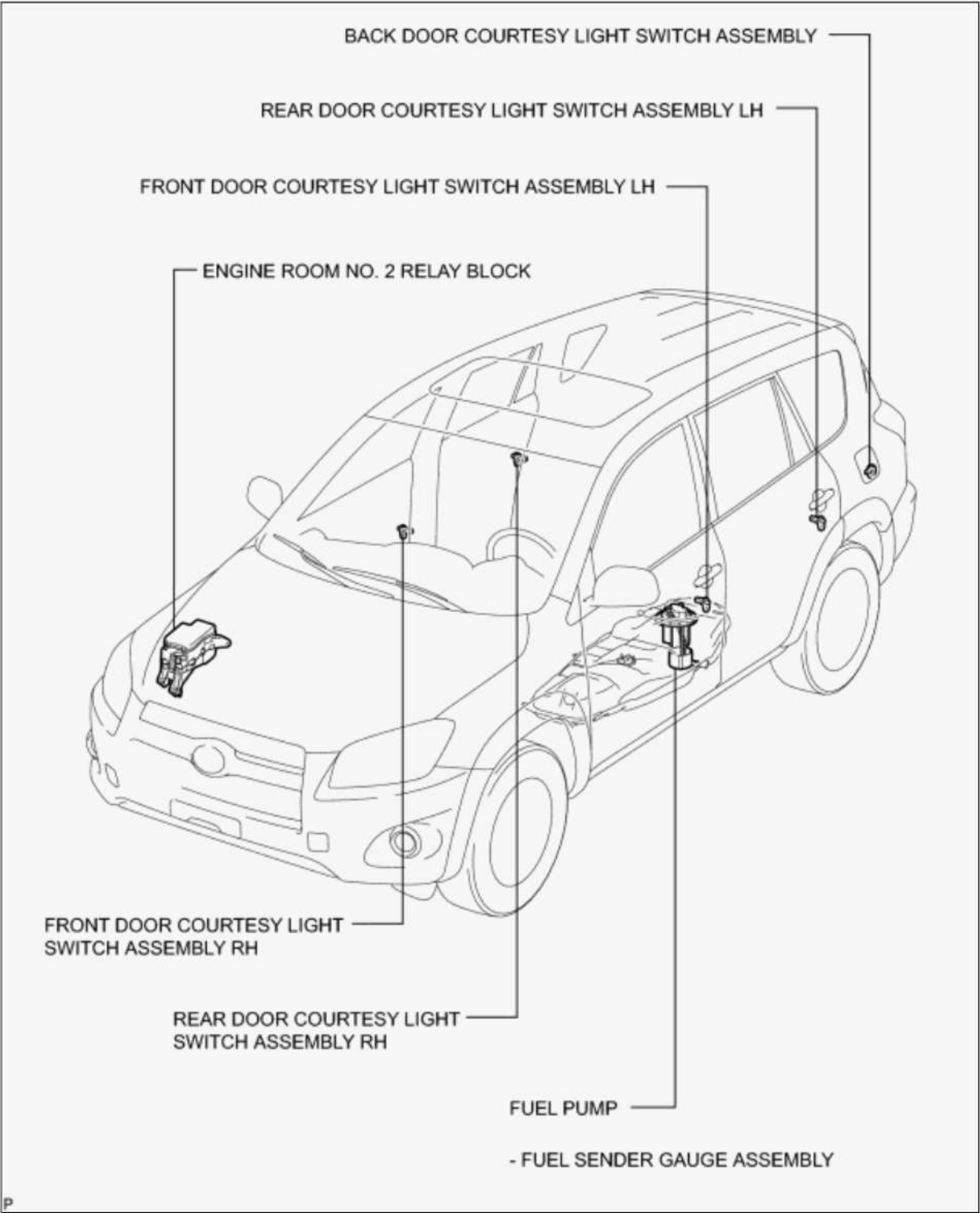
PARTS LOCATION

ILLUSTRATION

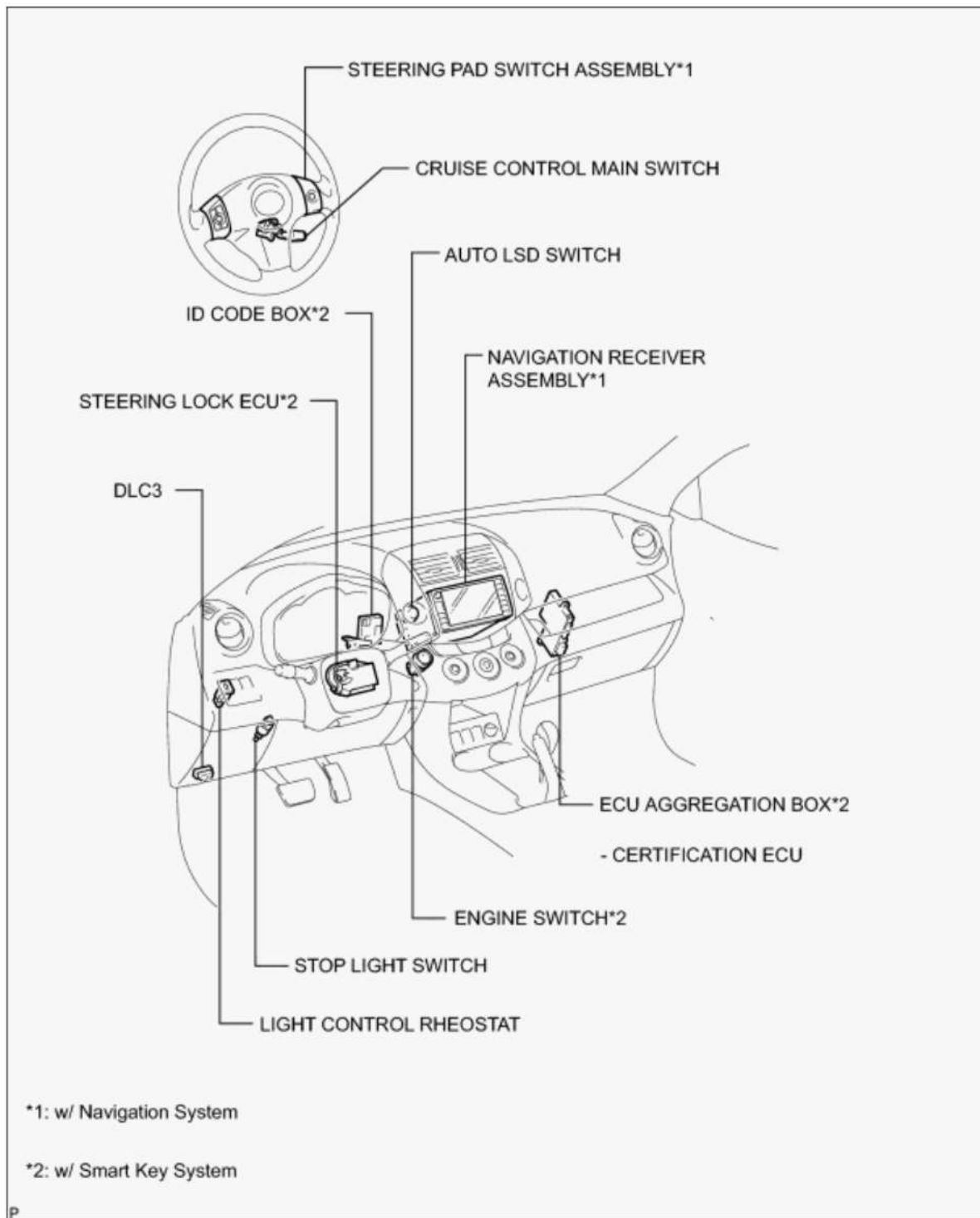


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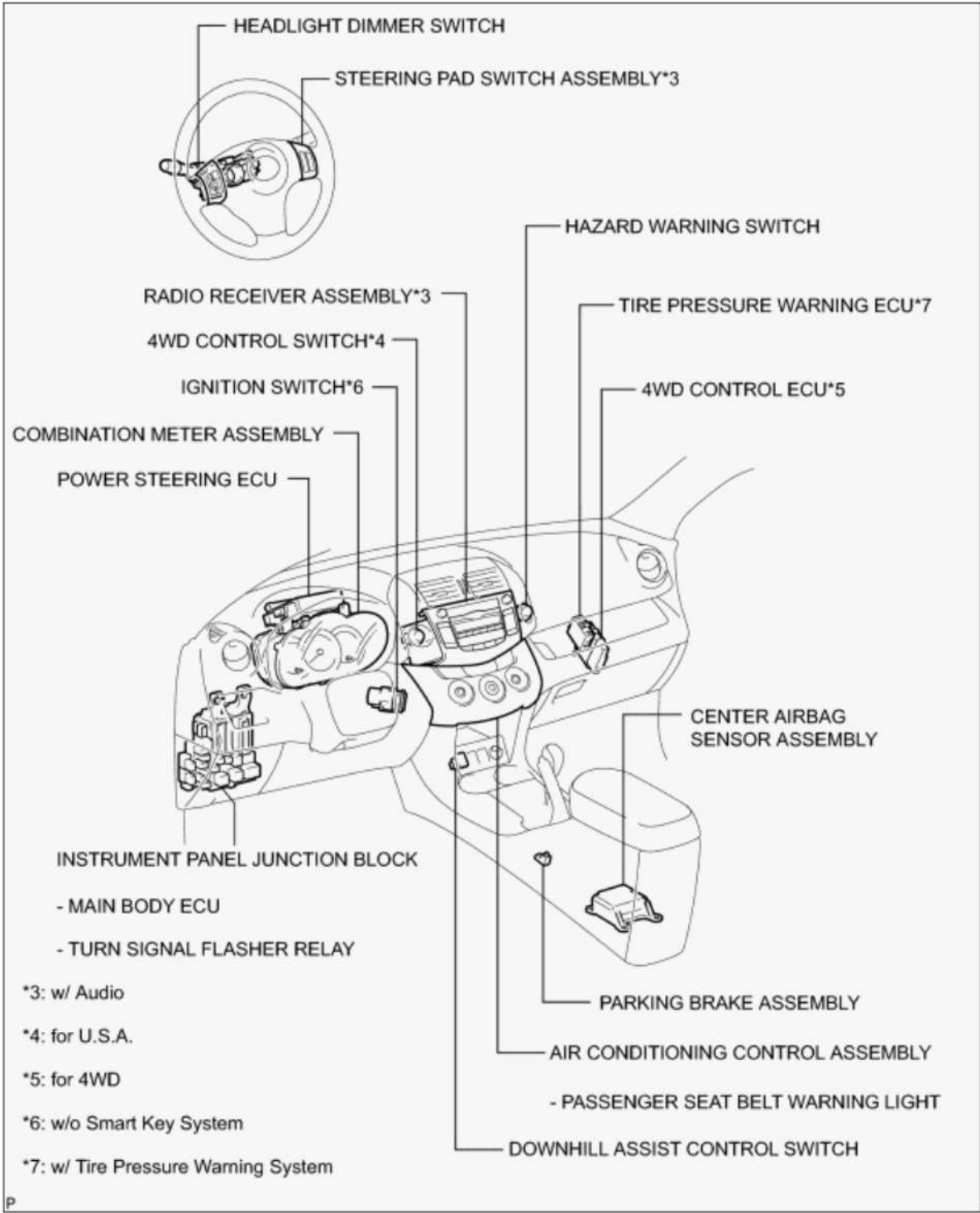
ILLUSTRATION



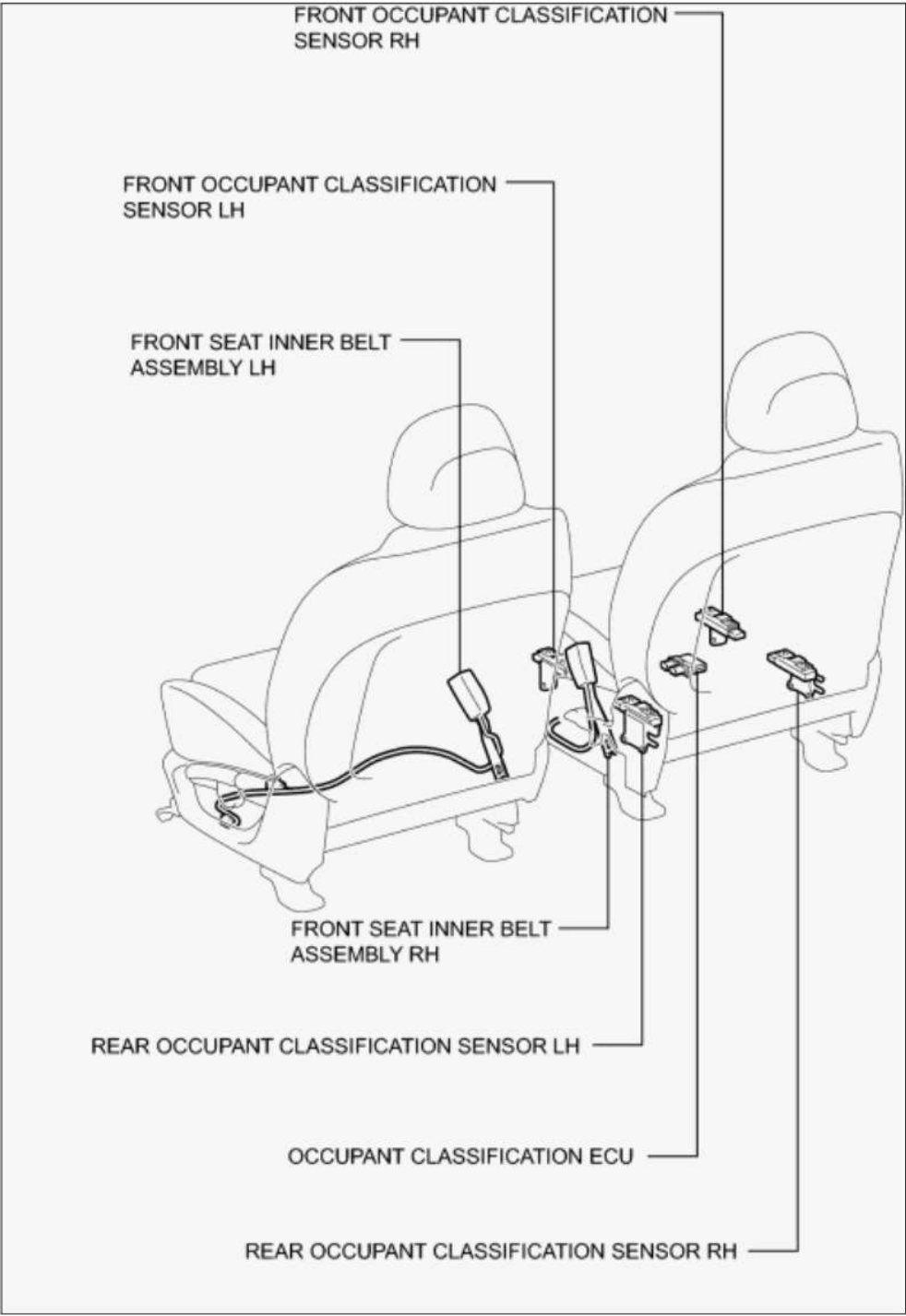
ILLUSTRATION



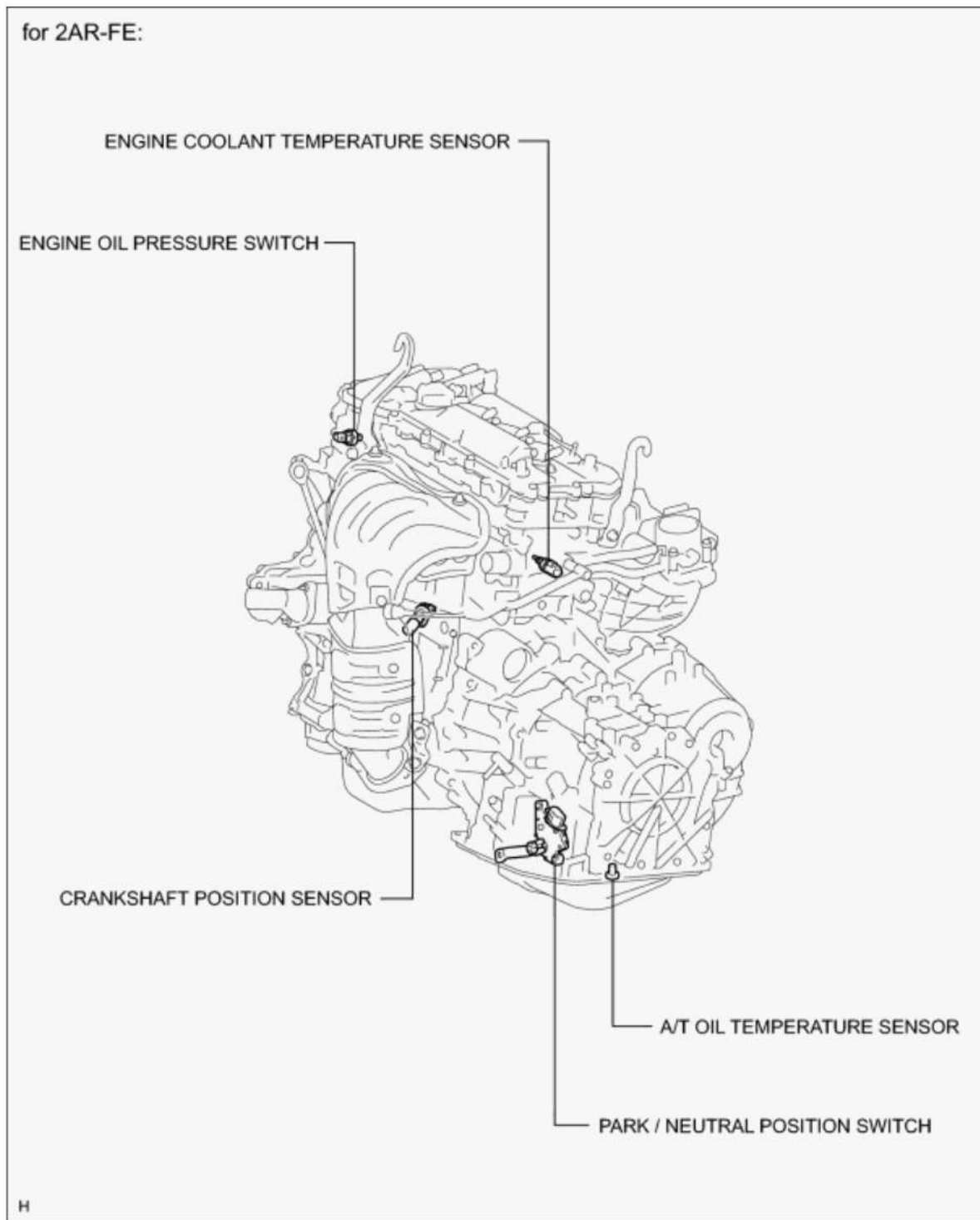
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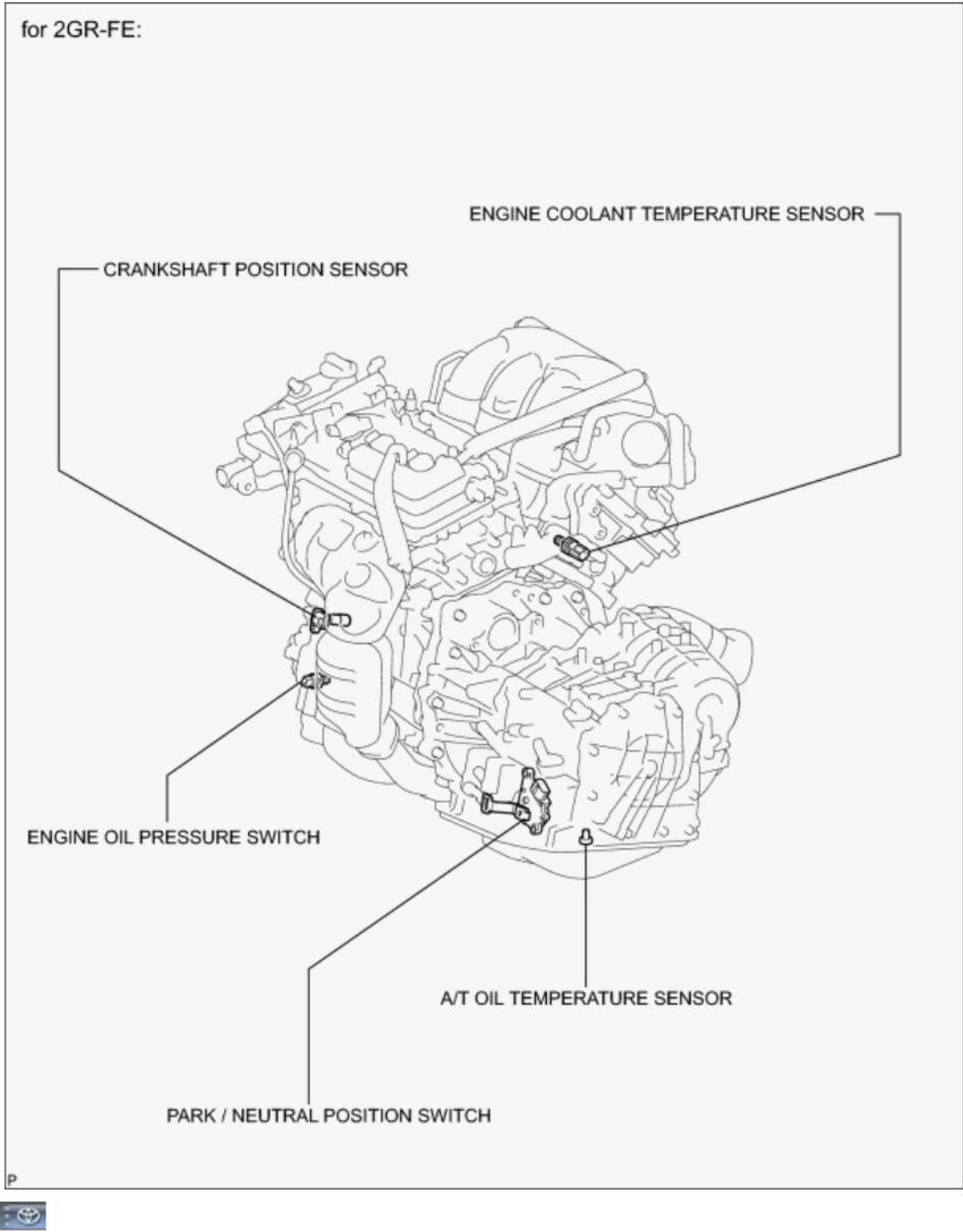
ILLUSTRATION



ILLUSTRATION



ILLUSTRATION



Last Modified: 9-7-2011	6.4 L	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003PP700DX
Title: METER: METER / GAUGE SYSTEM: PRECAUTION (2011 RAV4)		

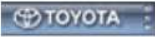
PRECAUTION

1. IGNITION SWITCH EXPRESSION

HINT:

The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

EXPRESSION	IGNITION SWITCH (POSITION)	ENGINE SWITCH (CONDITION)
Ignition Switch off	Off	Off
Ignition Switch ON	ON	On (IG)
Ignition Switch ACC	ACC	On (ACC)
Engine Start	START	Start



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Last Modified: 9-7-2011	6.4 T	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSS00MX
Title: METER: METER / GAUGE SYSTEM: PROBLEM SYMPTOMS TABLE (2011 RAV4)		

PROBLEM SYMPTOMS TABLE

Malfunction system

SYMPTOM	SUSPECTED AREA	SEE PAGE
Entire combination meter does not operate	Refer to troubleshooting	INFO
Operating light control rheostat does not change light brightness	Refer to troubleshooting	INFO

Meter gauges

SYMPTOM	SUSPECTED AREA	SEE PAGE
Malfunction in speedometer	Refer to troubleshooting	INFO
Malfunction in tachometer	Refer to troubleshooting	INFO
Malfunction in fuel receiver gauge	Refer to troubleshooting	INFO
Malfunction in water temperature receiver gauge	Refer to troubleshooting	INFO

Warning light

SYMPTOM	SUSPECTED AREA	SEE PAGE
MIL does not come on	Refer to troubleshooting (for 2AR-FE)	INFO
	Refer to troubleshooting (for 2GR-FE)	INFO
Discharge warning light does not come on	Wire harness	-
	ECM	-
	CAN communication system	INFO
Brake warning light does not come on	Refer to troubleshooting	INFO
ABS warning light does not come on	Refer to troubleshooting	INFO
VSC OFF warning light does not come on	Refer to troubleshooting	INFO
SRS warning light does not come on	Refer to troubleshooting	INFO
Open door warning light does not come on	Door courtesy switch	INFO
	Wire harness	INFO
	CAN communication system	INFO
	Combination meter	INFO
Seat belt warning light for drivers seat does not operate	Refer to troubleshooting	INFO
Seat belt warning light for passengers seat does not operate	Refer to troubleshooting	INFO

Indicator light

SYMPTOM	SUSPECTED AREA	SEE PAGE
Turn indicator light does not come on	Turn signal light circuit	INFO
	Wire harness	-
	Combination meter	INFO
High beam indicator light does not come on	Headlight (HI-BEAM) circuit	INFO
	Wire harness	-
	CAN communication system	INFO
	Combination meter	INFO
Fog light indicator light does not come on	Front fog light circuit	INFO
	Wire harness	-
	CAN communication system	INFO
	Combination meter	INFO
CRUISE indicator light does not come on	CAN communication system	INFO
	Combination meter	INFO
SLIP indicator light does not come on	Refer to troubleshooting	INFO
TAIL / HEAD indicator light does not come on	Taillight relay circuit	INFO
	Wire harness	-
	CAN communication system	INFO
	Combination meter	INFO
P/S indicator light does not come on	Power steering ECU	INFO
	CAN communication system	INFO
	Combination meter	INFO
Tire pressure indicator light does not come on*1	Tire pressure warning light circuit	INFO
	Wire harness	-
	Combination meter	INFO
TRAC OFF indicator light does not come on*2	Brake actuator (Skid control ECU)	INFO
	Wire harness	-
	Combination meter	INFO
Washer level indicator light does not come on	Washer level warning switch	INFO
	Wire harness	-
	Combination meter	INFO
Downhill assist control indicator light does not come on	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO

SYMPTOM	SUSPECTED AREA	SEE PAGE
Engine oil indicator light does not come on	Engine oil pressure switch (for 2AR-FE)	INFO
	Engine oil pressure switch (for 2GR-FE)	INFO
	Wire harness	-
	Combination meter	INFO
Diff. lock indicator light does not come on*2	4WD control ECU	INFO
	CAN communication system	INFO
	Combination meter	INFO
AUTO LSD indicator light does not come on*3	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO
4WD indicator light does not come on*2	4WD control ECU	INFO
	CAN communication system	INFO
	Combination meter	INFO
A/T oil temp indicator light does not come on	SFI system (for 2AR-FE)	INFO
	SFI system (for 2GR-FE)	INFO
	CAN communication system	INFO
	Combination meter	INFO
Fuel indicator light does not come on	Refer to troubleshooting	INFO

Buzzer

SYMPTOM	SUSPECTED AREA	SEE PAGE
D BELT (Seat belt warning) buzzer does not sound	Seat belt warning system	INFO
	Airbag system	INFO
	CAN communication system	INFO
	Combination meter	INFO
D BELT (Seat belt buzzer) buzzer does not sound	Seat belt warning system	INFO
	Airbag system	INFO
	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO
P BELT (Seat belt buzzer) buzzer does not sound	Seat belt warning system	INFO
	Occupant classification ECU	INFO

SYMPTOM	SUSPECTED AREA	SEE PAGE
	CAN communication system	INFO
	Combination meter	INFO
VSC (Slip) buzzer does not sound	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO
VSC (Continuous) buzzer does not sound	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO
TRC buzzer does not sound	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO
Hill-start assist control set buzzer does not sound	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO
Hill-start assist control cancel buzzer does not sound	Brake actuator (Skid control ECU)	INFO
	CAN communication system	INFO
	Combination meter	INFO
Key reminder buzzer does not sound*4	Refer to troubleshooting	INFO
Entry and start buzzer (continuous) does not sound*5	Smart key system	INFO
	CAN communication system	INFO
	Combination meter	INFO
Entry and start buzzer (intermittent) does not sound*5	Smart key system	INFO
	CAN communication system	INFO
	Combination meter	INFO
Driving with parking brake unreleased warning buzzer does not sound	Parking brake switch	INFO
	CAN communication system	INFO
	Combination meter	INFO

*1: w/ Tire Pressure Warning System

*2: for 4WD

- *3: for 2WD w/ VSC
- *4: w/o Smart Key System
- *5: w/ Smart Key System



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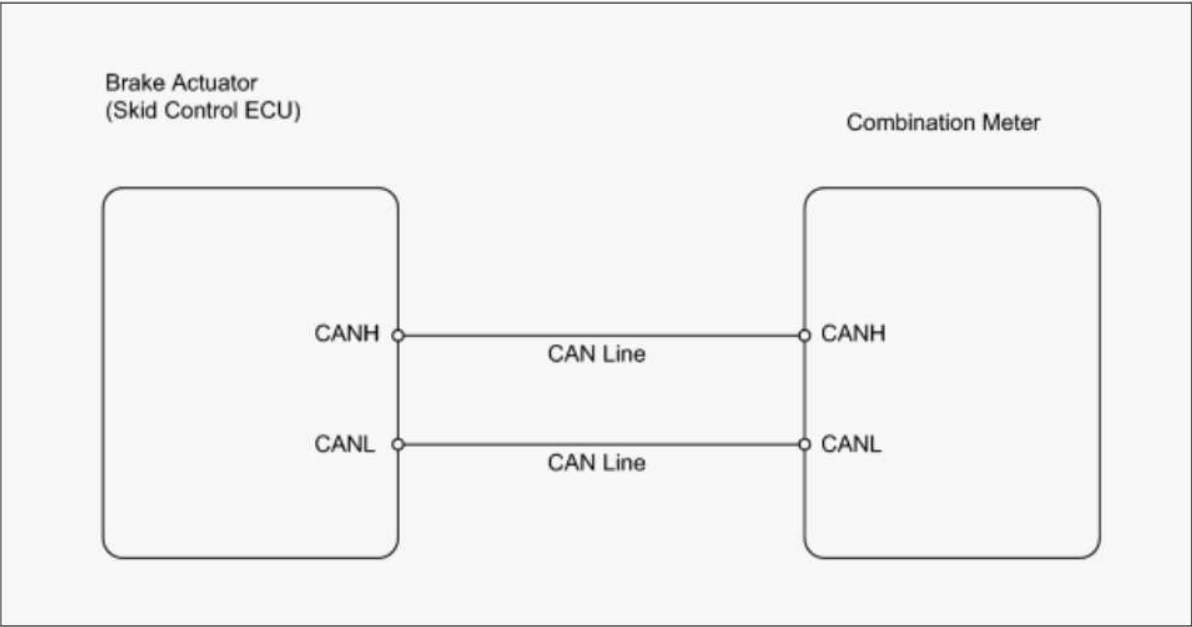
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001YNX00MX
Title: METER: METER / GAUGE SYSTEM: Speedometer Malfunction (2011 RAV4)		

Speedometer Malfunction

DESCRIPTION

The combination meter assembly controls the speedometer in accordance with vehicle speed signals from the brake actuator (skid control ECU) through the CAN communication system.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
If DTC U0129 has been stored, troubleshoot the CAN communication system first.

PROCEDURE

1.	PERFORM ACTIVE TEST USING TECHSTREAM (SPEED METER OPERATION)
----	--

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.

- (c) Turn the Techstream on.
- (d) Enter the following menus: Body Electrical / Combination Meter / Active Test.
- (e) Check the operation by referring to the values in the table below.

Combination Meter:

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Speed Meter Operation	Speedometer	0, 40, 80, 120 mph (*1)	-
		0, 40, 80, 120, 160, 200, 240 km/h (*2)	

*1: for U.S.A.

*2: except U.S.A.

OK:

Needle indication is normal.

NG  REPLACE COMBINATION METER ASSEMBLY

OK


2.	READ VALUE USING DATA LIST (VEHICLE SPEED METER)
----	--

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.
- (d) Enter the following menus: Body Electrical / Combination Meter / Data List.
- (e) Check the values by referring to the values in the table below.

Combination Meter:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Vehicle Speed Meter	Vehicle speed/Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Almost same as actual speed (When driving)	-

OK:

Vehicle speed displayed on the tester is almost the same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG ► **REPLACE COMBINATION METER ASSEMBLY**

OK ► **GO TO BRAKE CONTROL SYSTEM**



Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSN00GX
Title: METER: METER / GAUGE SYSTEM: SYSTEM DESCRIPTION (2011 RAV4)		

SYSTEM DESCRIPTION

1. METER GAUGE AND WARNING / INDICATOR

Gauge:

ITEM	DETAIL
Speedometer	Based on signals received from the wheel speed sensor, Brake actuator (skid control ECU) calculates vehicle speed and transmits data to meter (CAN line)
Tachometer	ECM transmits engine speed to meter (CAN line)
Water Temperature Gauge	ECM transmits water temperature signal to meter (CAN line)
Fuel Gauge	Fuel sender gauge transmits signal to meter (Direct line)

Warning / Indicator:

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 main body ECU (CAN line)
FOG LIGHT	Receives fog light signal from main body ECU (CAN line)
CHARGE	Receives malfunction charge signal from ECM (CAN line and direct line)
CHECK E/G	Receives malfunction check signal from ECM (Direct line)
DOOR	Open door indicator illuminates when receiving signal from main body ECU (CAN line)
D 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 Brake actuator (skid control ECU) (CAN line)
CRUISE	Receives malfunction signal from ECM (CAN line)
AIR BAG	Receives malfunction signal from center airbag sensor (CAN line)
SLIP	- Receives signal from brake actuator (skid control ECU) (CAN line) (Flashes when downhill assist control and hill-start assist control operate)
ABS	Receives malfunction signal from brake actuator (skid control ECU) (CAN line)
VSC OFF	Receives malfunction signal from brake actuator (skid control ECU) (CAN line)
TRAC OFF*3	Receives TRAC OFF signal from brake actuator (skid control ECU) (CAN line)

METER: METER / GAUGE SYSTEM: SYSTEM DESCRIPTION (201... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

ITEM	DETAIL
TAIL*1 or HEAD*2	Receives headlight dimmer switch condition signal from main body ECU (CAN line)
P/S	Receives malfunction signal from power steering ECU (CAN line)
TIRE PRESSURE*6	Receives malfunction signal from tire pressure warning ECU (Direct line)
WASHER LEVEL	Receives warning signal from washer level warning switch (Direct line)
Downhill Assist Control	Receives set / reset signal from brake actuator (skid control ECU) (CAN line)
ENGINE OIL	Receives warning signal from engine oil pressure switch (Direct line)
DIF. LOCK*3	Receives lock / unlock signal from 4WD control ECU (CAN line)
AUTO LSD*4	Receives ON / OFF signal from brake actuator (skid control ECU) (CAN line)
MAINT REQD*2	• 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)
4WD*3	Receives ON / OFF signal from 4WD control ECU (CAN line)
A/T OIL TEMP	Receives warning signal from ECM (CAN line)
FUEL	Receives remaining fuel signal from fuel sender gauge (Direct line)
Smart Key*5	Receives smart key indicator light signal from certification ECU (CAN line)

*1: except U.S.A.

*2: for U.S.A.

*3: for 4WD

*4: for 2WD w/ VSC

*5: w/ Smart Key System

*6: w/ Tire Pressure Warning System

Warning / Buzzer:

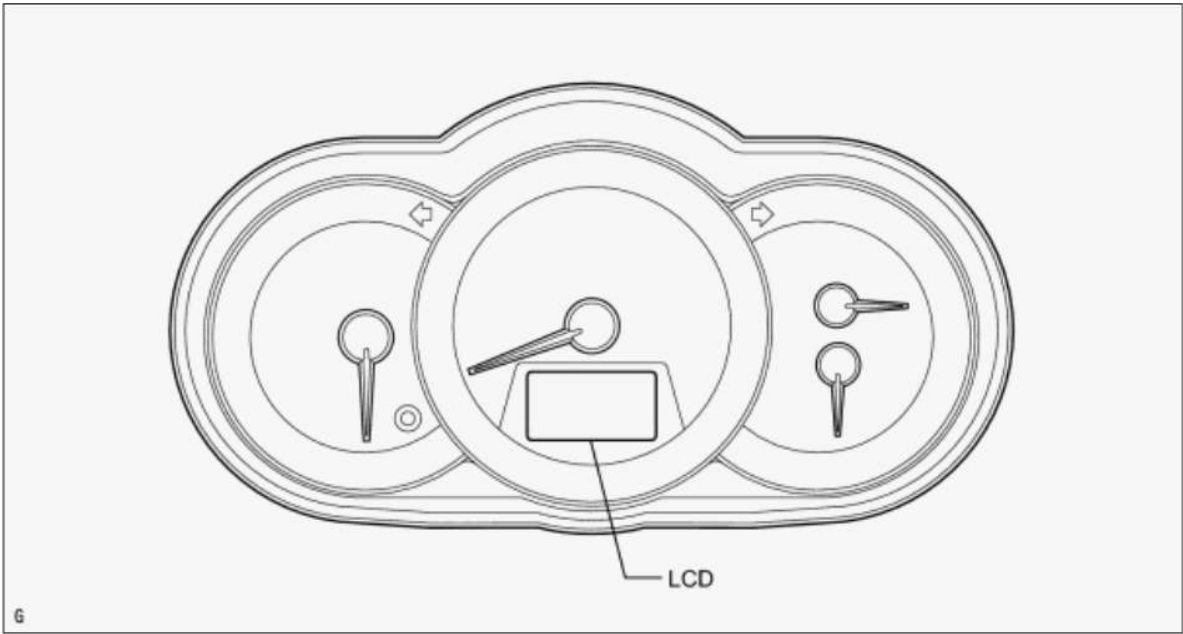
ITEM	DETAIL
D BELT (Seat belt buzzer)	Sounds when vehicle speed is 20 km/h (12.4 mph) or more and driver seat belt is unfastened
P BELT (Seat belt buzzer)	Sounds when vehicle speed is 20 km/h (12.4 mph) or more and passenger seat belt is unfastened
D BELT (Seat belt warning)	Sounds when ignition switch is ON and driver seat belt is unfastened
VSC	Sounds intermittently when skid control ECU detects strong understeer or oversteer
AUTO LSD	Sounds when solenoid motor temperature is high
KEY REM*1	Sounds if key is in ignition key cylinder and door is opened with ignition switch OFF
Hill-start assist control (Set)	Sounds once when hill-start assist control is set

ITEM	DETAIL
Hill-start assist control (Reset)	Sounds twice when hill-start assist control is canceled
Entry and start (Once)*2	Sounds when any of following conditions met: • Door opened with shift lever in P and power supply on • Key taken out of vehicle, door closed, and key carried away from vehicle • With power supply on or system activated, passenger takes key that was in bag, etc. out of vehicle • Vehicle driven using key with low battery
Entry and start (Continuous)*2	Sounds when door opened with shift lever in P and power supply on
Entry and start (Intermittent)*2	Sounds when door opened with shift lever not in P. Also, sounds when key taken out of vehicle, door closed, and key carried away from vehicle.
Parking brake drag (Intermittent)	Sounds when vehicle speed is 5 km/h (3.1 mph) or more and parking brake switch is on

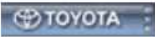
*1: w/o Smart Key System

*2: w/ Smart Key System

2. LIQUID CRYSTAL DISPLAY (LCD)

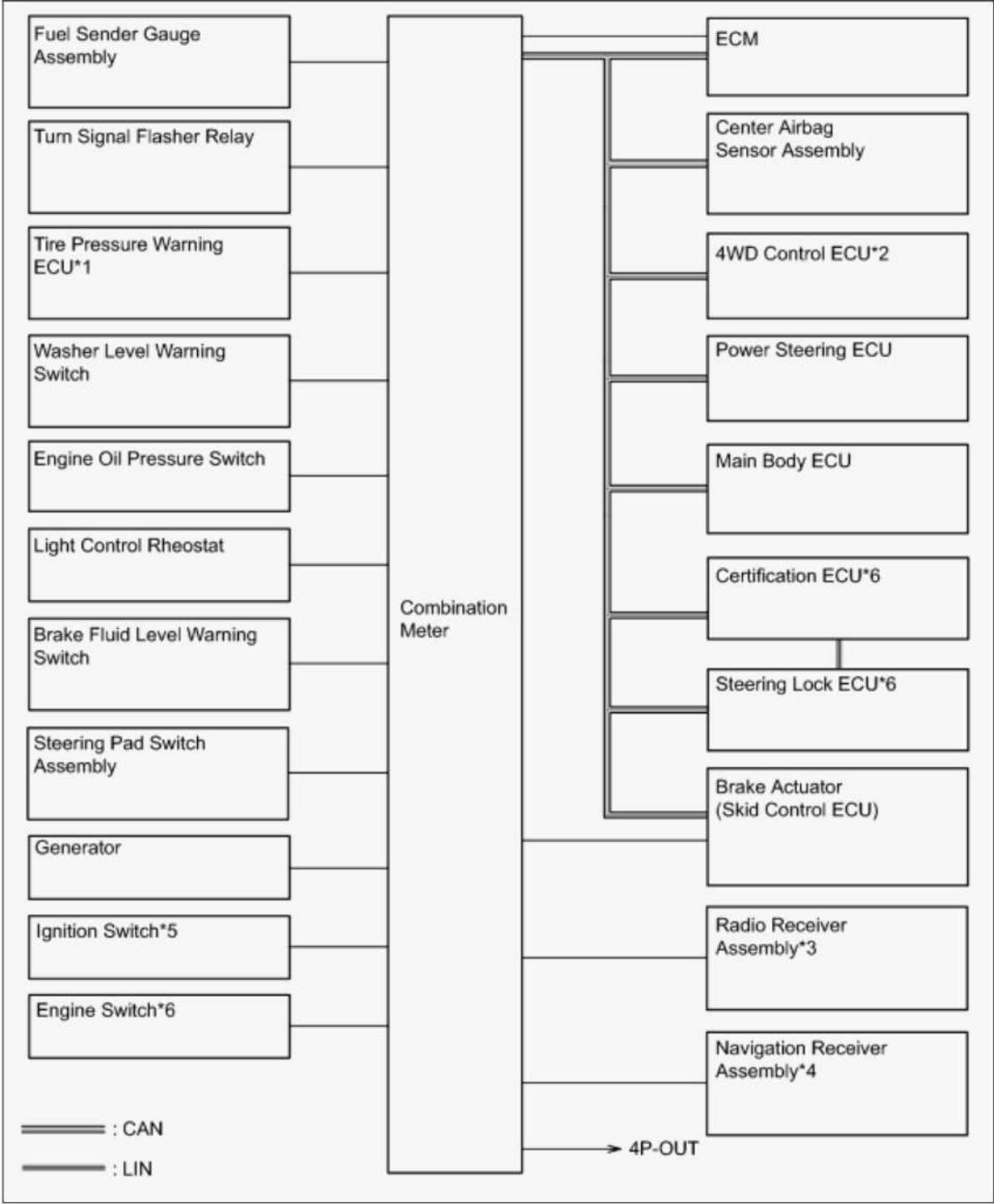


- Outside temperature display
- ODO/TRIP display
- Shift position display
- Drive monitor



Last Modified: 9-7-2011	6.4 U	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSO00DX
Title: METER: METER / GAUGE SYSTEM: SYSTEM DIAGRAM (2011 RAV4)		

SYSTEM DIAGRAM



*1: w/ Tire Pressure Warning System

METER: METER / GAUGE SYSTEM: SYSTEM DIAGRAM (2011 RAV4) <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

*2: for 4WD

*3: w/ Audio

*4: w/ Navigation System

*5: w/o Smart Key System

*6: w/ Smart Key System

Communication table

SENDER	RECEIVER	SIGNAL	COMMUNICATION LINE
ECM	Combination meter	Engine speed signal	CAN
ECM	Combination meter	Engine coolant temperature signal	CAN
ECM	Combination meter	Charging signal	CAN
ECM	Combination meter	Cruise control signal	CAN
ECM	Combination meter	Shift position signal	CAN
ECM	Combination meter	A/T oil temperature signal	CAN
Center airbag sensor assembly	Combination meter	Airbag warning signal	CAN
Center airbag sensor assembly	Combination meter	Driver side seat belt signal	CAN
4WD control ECU*1	Combination meter	Differential lock signal	CAN
4WD control ECU*1	Combination meter	4WD control signal	CAN
Power steering ECU	Combination meter	Power steering signal	CAN
Main body ECU	Combination meter	Headlight dimmer switch signal (light control, front fog, rear fog)	CAN
Main body ECU	Combination meter	Courtesy light switch signal (front, rear, back door)	CAN
Main body ECU	Combination meter	Parking brake signal	CAN
Brake actuator (Skid control ECU)	Combination meter	Vehicle speed signal	CAN

METER: METER / GAUGE SYSTEM: SYSTEM DIAGRAM (2011 RAV4) <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

SENDER	RECEIVER	SIGNAL	COMMUNICATION LINE
Brake actuator (Skid control ECU)	Combination meter	Slip condition signal	CAN
Brake actuator (Skid control ECU)	Combination meter	ABS signal	CAN
Brake actuator (Skid control ECU)	Combination meter	VSC signal	CAN
Brake actuator (Skid control ECU)	Combination meter	Downhill Assist Control signal	CAN
Brake actuator (Skid control ECU)	Combination meter	Hill-start Assist Control signal	CAN
Steering lock ECU*2	Combination meter	Steering LOCK / UNLOCK signal	CAN / LIN
Certification ECU*2	Combination meter	Key in vehicle / not in vehicle signal	CAN

*1: for 4WD

*2: w/ Smart Key System



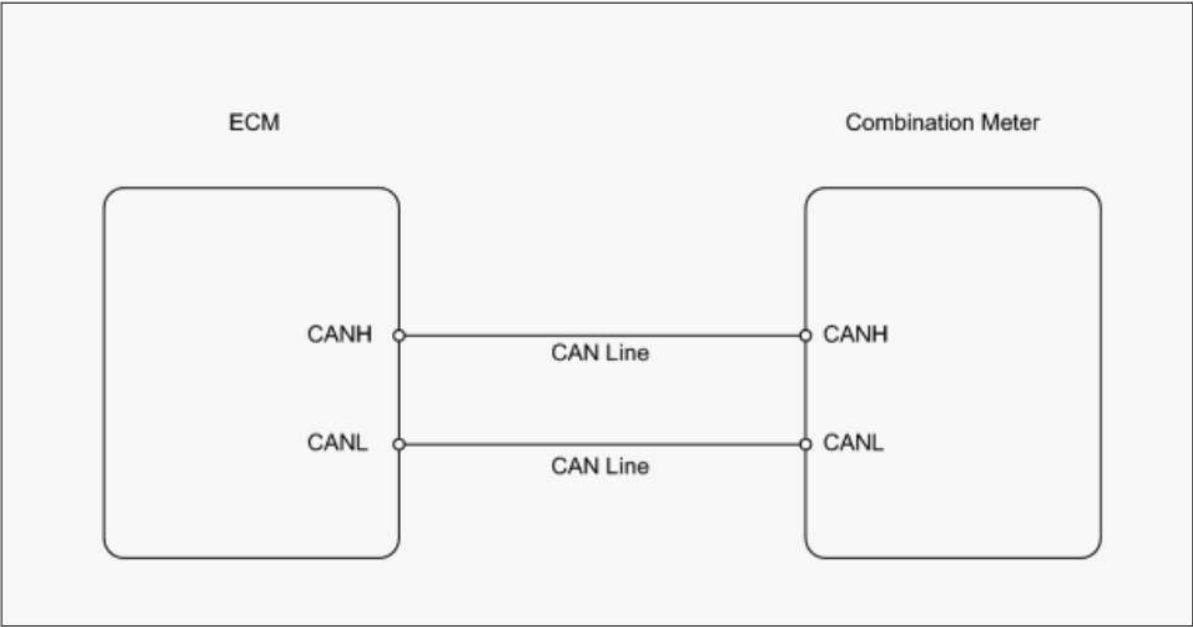
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001YNY00WX
Title: METER: METER / GAUGE SYSTEM: Tachometer Malfunction (2011 RAV4)		

Tachometer Malfunction

DESCRIPTION

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

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
If DTC U0100 has been stored, troubleshoot the CAN communication system first.

PROCEDURE

1.	PERFORM ACTIVE TEST USING TECHSTREAM (TACHO METER OPERATION)
----	--

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.

- (c) Turn the Techstream on.
- (d) Enter the following menus: Body Electrical / Combination Meter / Active Test.
- (e) Check the operation by referring to the values in the table below.

Combination Meter:

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Tacho Meter Operation	Tachometer	0, 1000, 2000, 3000, 4000, 5000, 6000, 7000 (rpm)	-

OK:
Needle indication is normal.

NG▶ REPLACE COMBINATION METER ASSEMBLY

OK
▼

2.	READ VALUE USING DATA LIST (ENGINE RPM)
----	---

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON.
- (c) Turn the Techstream on.
- (d) Enter the following menus: Body Electrical / Combination Meter / Data List.
- (e) Check the values by referring to the values in the table below.

Combination Meter:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Engine Rpm	Engine speed/Min.: 0 rpm, Max.: 12750 rpm	Almost same as actual engine speed (When engine is running)	If data received from the ECM exceeds the range that can be displayed on the meter, the meter continues to display the maximum value of the range.

OK:
Engine speed displayed on the tester is almost the same as the actual engine speed.

NG▶ REPLACE COMBINATION METER ASSEMBLY

OK▶ GO TO SFI SYSTEM



METER: METER / GAUGE SYSTEM: Tachometer Malfunction (2011... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

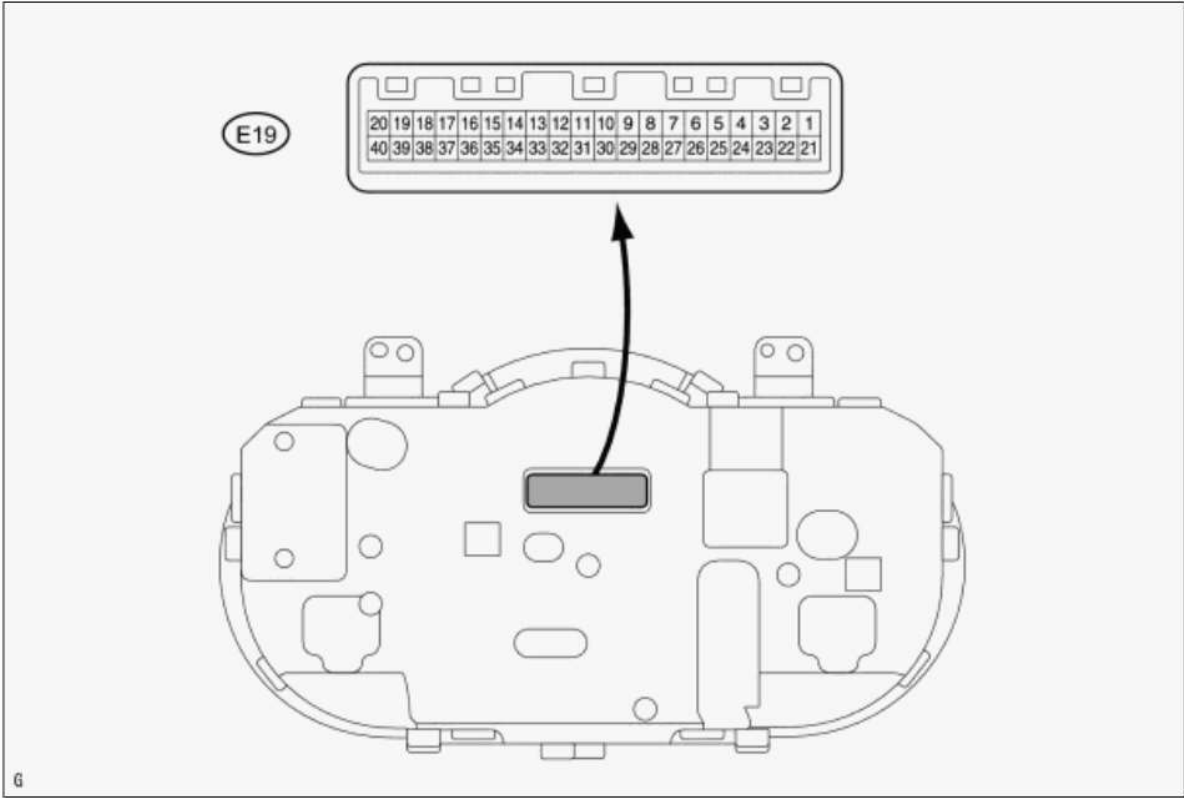


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Last Modified: 9-7-2011	6.4 U	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001XSR00LX
Title: METER: METER / GAUGE SYSTEM: TERMINALS OF ECU (2011 RAV4)		

TERMINALS OF ECU

1. CHECK COMBINATION METER ASSEMBLY (METER ECU)



- (a) Disconnect the E19 meter connector.
- (b) Measure the voltage and resistance of the wire harness side connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
TX1+ (E19-11) - Body ground	G - Body ground	Ground (ambient temperature sensor ground)	Always	10 kΩ or higher
E (E19-12) - Body ground	BR - Body ground	Ground (fuel gauge ground)	Always	10 kΩ or higher
IG+ (E19-21) - Body ground	B - Body ground	Ignition power supply	Ignition switch off	Below 1 V
IG+ (E19-21) - Body ground	B - Body ground	Ignition power supply	Ignition switch ON	11 to 14 V
B (E19-22) - Body ground	R - Body ground	Battery power supply	Always	11 to 14 V

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
ET (E19-33) - Body ground	BR - Body ground	Ground (meter ground)	Always	Below 1 Ω
SW3 (E19-34) - Body ground	P - Body ground	Ground (rheostat ground)	Always	10 k Ω or higher
ILL- (E19-35) - Body ground	BR - Body ground	Ground (illumination ground)	Always	Below 1 Ω

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

(c) Reconnect the E19 meter connector.

(d) Measure the voltage of the connector.

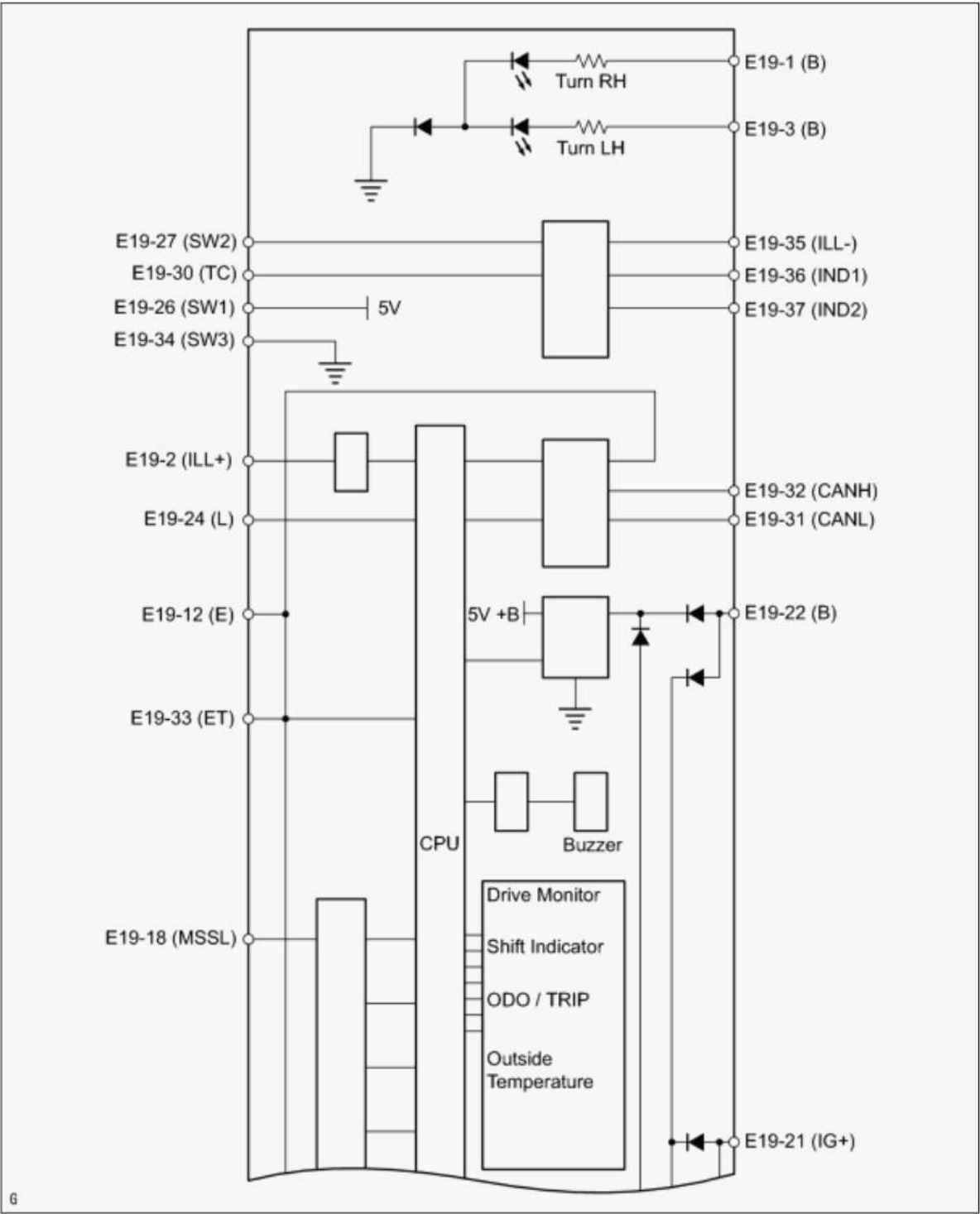
SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
B (E19-1) - Body ground	L - Body ground	Turn signal R	Ignition switch ON, turn signal RH indicator light OFF	Below 1 V
B (E19-1) - Body ground	L - Body ground	Turn signal R	Ignition switch ON, turn signal RH indicator light ON	11 to 14 V
ILL+ (E19-2) - Body ground	G - Body ground	Illumination signal	Taillight OFF	Below 1 V
ILL+ (E19-2) - Body ground	G - Body ground	Illumination signal	Taillight ON	11 to 14 V
B (E19-3) - Body ground	Y - Body ground	Turn signal L	Ignition switch ON, turn signal LH indicator light OFF	Below 1 V
B (E19-3) - Body ground	Y - Body ground	Turn signal L	Ignition switch ON, turn signal LH indicator light ON	11 to 14 V
TIRE (E19-5) - Body ground	P - Body ground	Tire pressure warning signal	Tire pressure warning indicator ON	0.9 to 3.2 V
TIRE (E19-5) - Body ground	P - Body ground	Tire pressure warning signal	Tire pressure warning indicator OFF	Below 0.9 V
S (E19-6) - Body ground	L - Body ground	Low engine oil pressure warning signal	Low engine oil pressure warning light ON	Below 1 V
S (E19-6) - Body ground	L - Body ground	Low engine oil pressure warning signal	Low engine oil pressure warning light OFF	11 to 14 V
EFI (E19-8) - Body ground	R - Body ground	MIL	MIL ON	Below 4.2 V
EFI (E19-8) - Body ground	R - Body ground	MIL	MIL OFF	11 to 14 V
MSCH (E19-9)* - Body ground	LG - Body ground	CAN communication line	Ignition switch ON	Pulse generation

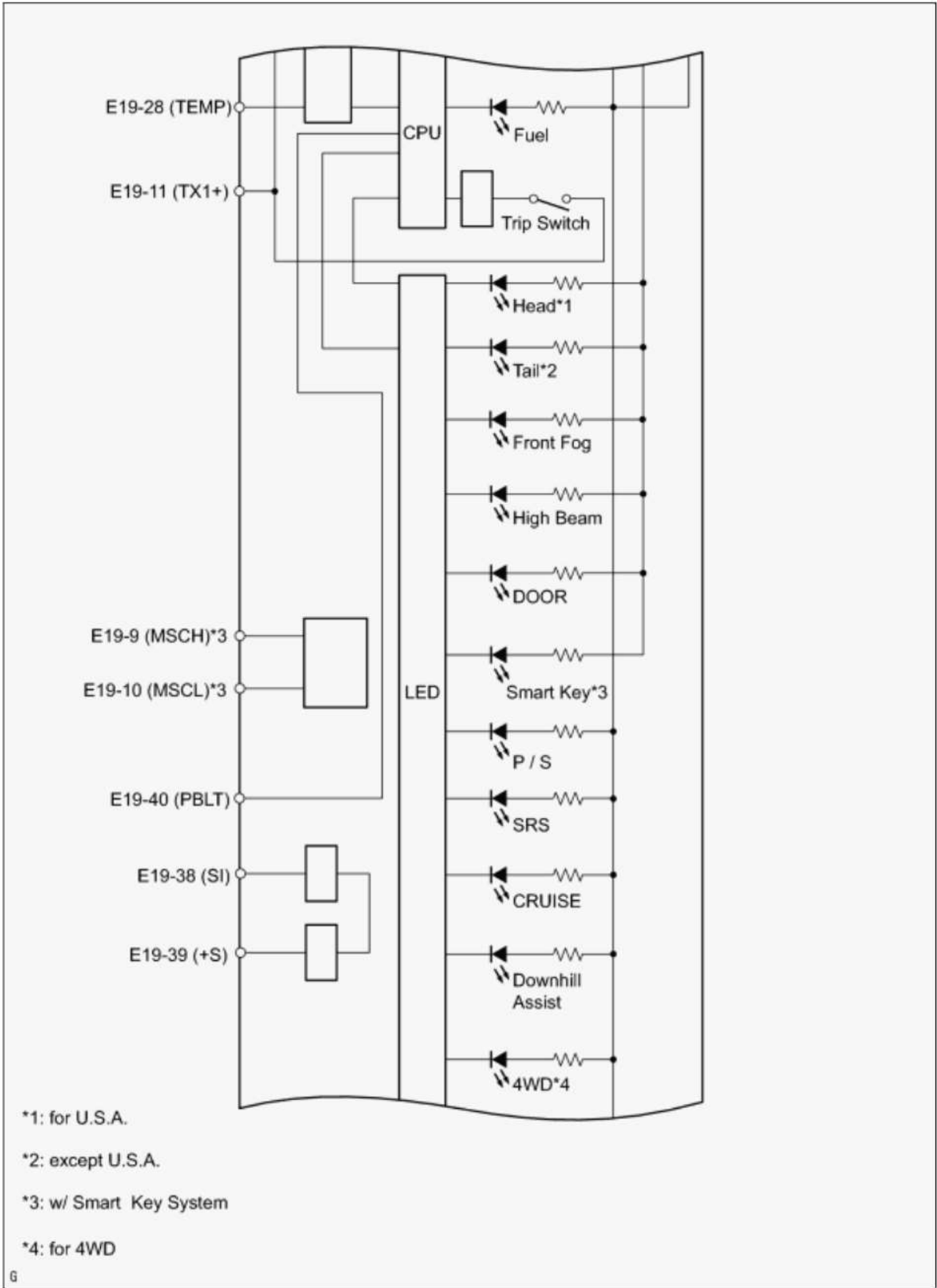
SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
MSCL (E19-10)* - Body ground	W - Body ground	CAN communication line	Ignition switch ON	Pulse generation
CHG- (E19-13) - Body ground	L - Body ground	MIL	MIL ON	Below 1.5 V
CHG- (E19-13) - Body ground	L - Body ground	MIL	MIL OFF	11 to 14 V
SW (E19-14) - Body ground	Y - Body ground	Brake fluid level signal	Brake fluid level warning light ON	Below 1 V
SW (E19-14) - Body ground	Y - Body ground	Brake fluid level signal	Brake fluid level warning light OFF	11 to 14 V
WLVL (E19-15) - Body ground	LG - Body ground	Washer level signal	Washer level warning light ON	Below 1 V
WLVL (E19-15) - Body ground	LG - Body ground	Washer level signal	Washer level warning light OFF	11 to 14 V
MSSL (E19-18) - Body ground	P - Body ground	Spiral cable signal	Ignition switch ON, steering pad switch signal DISP off	Below 1 V
MSSL (E19-18) - Body ground	P - Body ground	Spiral cable signal	Ignition switch ON, steering pad switch signal DISP on	11 to 14 V
L (E19-24) - Body ground	Y - Body ground	Fuel level signal	Ignition switch ON, fuel level is FULL	Below 1 V
L (E19-24) - Body ground	Y - Body ground	Fuel level signal	Ignition switch ON, fuel level is EMPTY	4 to 7 V
SW1 (E19-26) - Body ground	V - Body ground	Light control rheostat signal	Ignition switch ON	4 to 6 V
SW2 (E19-27) - Body ground	GR - Body ground	Light control rheostat signal	Ignition switch ON, rheostat knob position MIN → MAX	Below 1 V → 4 to 6 V
TEMP (E19-28) - Body ground	W - Body ground	Ambient temperature sensor signal	Ignition switch ON	1 to 2 V (25°C (77°F))
TC (E19-30) - Body ground	G - Body ground	Tail cancel switch signal	Ignition switch ON, tail cancel switch OFF	4 to 6 V
TC (E19-30) - Body ground	G - Body ground	Tail cancel switch signal	Ignition switch ON, tail cancel switch ON	Below 1 V
CANL (E19-31) - Body ground	W - Body ground	CAN communication line	Ignition switch ON	Pulse generation
CANH (E19-32) - Body ground	G - Body ground	CAN communication line	Ignition switch ON	Pulse generation
SW3 (E19-34) - Body ground	P - Body ground	Light control rheostat signal	Always	Below 1 V
IND1 (E19-36) - Body ground	L - Body ground	Illumination signal	Light control rheostat position Mid.	Pulse generation

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
IND2 (E19-37) - Body ground	LG - Body ground	Illumination signal	Light control rheostat position Mid.	Pulse generation
SI (E19-38) - Body ground	V - Body ground	Speed signal (input)	Ignition switch ON, slowly turn wheel	Pulse generation
+S (E19-39) - Body ground	V - Body ground	Speed signal (output) (4P-OUT)	Ignition switch ON, slowly turn wheel	Pulse generation
PBLT (E19-40) - Body ground	LG - Body ground	Front passenger side seat belt condition output signal	Seat belt indicator OFF	11 to 14 V
PBLT (E19-40) - Body ground	LG - Body ground	Front passenger side seat belt condition output signal	Seat belt indicator blinking	Below 1 V ↔ 11 to 14 V

*: w/ Smart Key System

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





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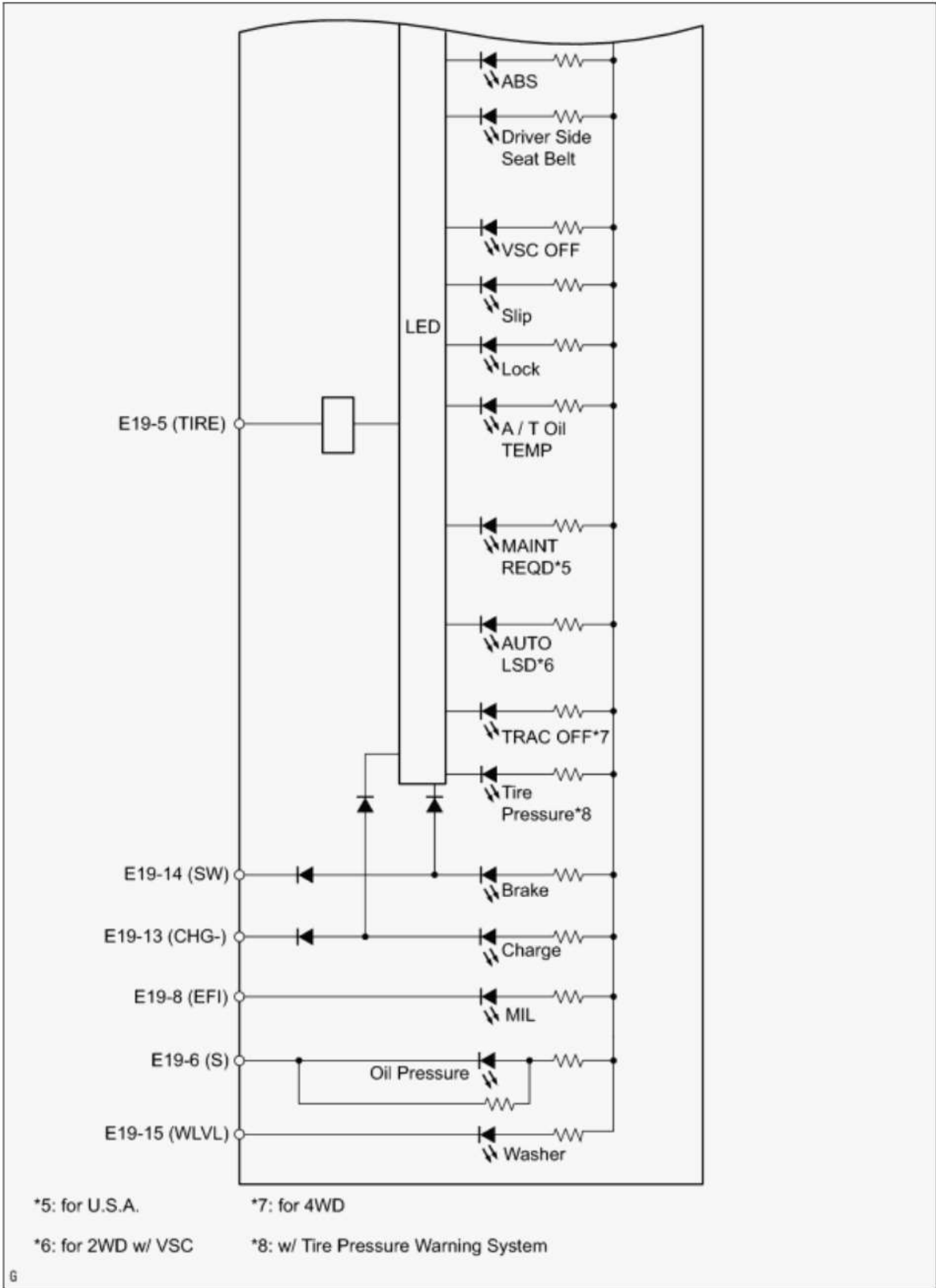
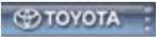


Table of terminal connection

TERMINAL NO.		WIRE HARNESS SIDE
E19	1	Turn Signal Flasher

TERMINAL NO.	WIRE HARNESS SIDE
2	ILL+
3	Turn Signal Flasher
4	-
5	Tire Pressure Warning ECU
6	Low Oil Pressure Warning Switch
7	-
8	ECM
9	CAN-Hi
10	CAN-Lo
11	Ambient Temperature Sensor (GND)
12	Fuel Sender Gauge (GND)
13	Generator Assembly
14	Brake Fluid Level Warning Switch
15	Washer Level Warning Switch
16	-
17	-
18	Steering Pad Switch
19	-
20	-
21	Ignition Switch
22	Battery
23	-
24	Fuel Sender Gauge
25	-
26	Rheostat (Output)
27	Rheostat (Input)
28	Ambient Temperature Sensor
29	-
30	Tail Cancel
31	CAN-Lo
32	CAN-Hi
33	GND
34	Rheostat (GND)
35	Other Devices (GND)

TERMINAL NO.		WIRE HARNESS SIDE
	36	Other Devices (BULB)
	37	Other Devices (LED)
	38	Brake Actuator (Skid Control ECU) (SP)
	39	ECM (4P-OUT)
	40	Seat Belt Warning Light for Passenger's Seat



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Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM0000020PU00LX
Title: METER: METER / GAUGE SYSTEM: U0100: Lost Communication with ECM / PCM "A" (2011 RAV4)		

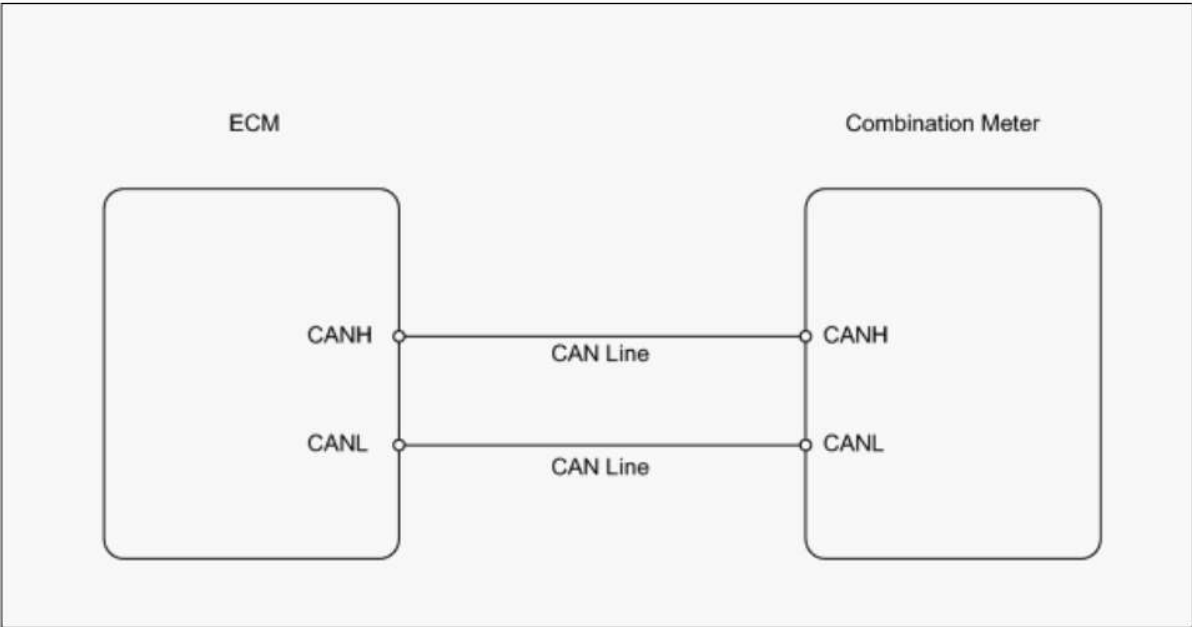
DTC	U0100	Lost Communication with ECM / PCM "A"
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DESCRIPTION

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

DTC CODE	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 and skid control ECU continues for 60 seconds or more)	• CAN communication system • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CONFIRM DTC OUTPUT
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- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON and turn the Techstream on.
- (c) Clear the stored DTCs.
- (d) Drive the vehicle at more than 5 km/h (3.1 mph) for at least 60 seconds.
- (e) Stop the vehicle.
- (f) Check for DTCs.

Result

RESULT	PROCEED TO
DTC output	A
DTC not output	B

B ► **USE SIMULATION METHOD TO CHECK**

A ► **GO TO CAN COMMUNICATION SYSTEM**



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Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM0000020PV00HX
Title: METER: METER / GAUGE SYSTEM: U0129: Lost Communication with Skid Control ECU (2011 RAV4)		

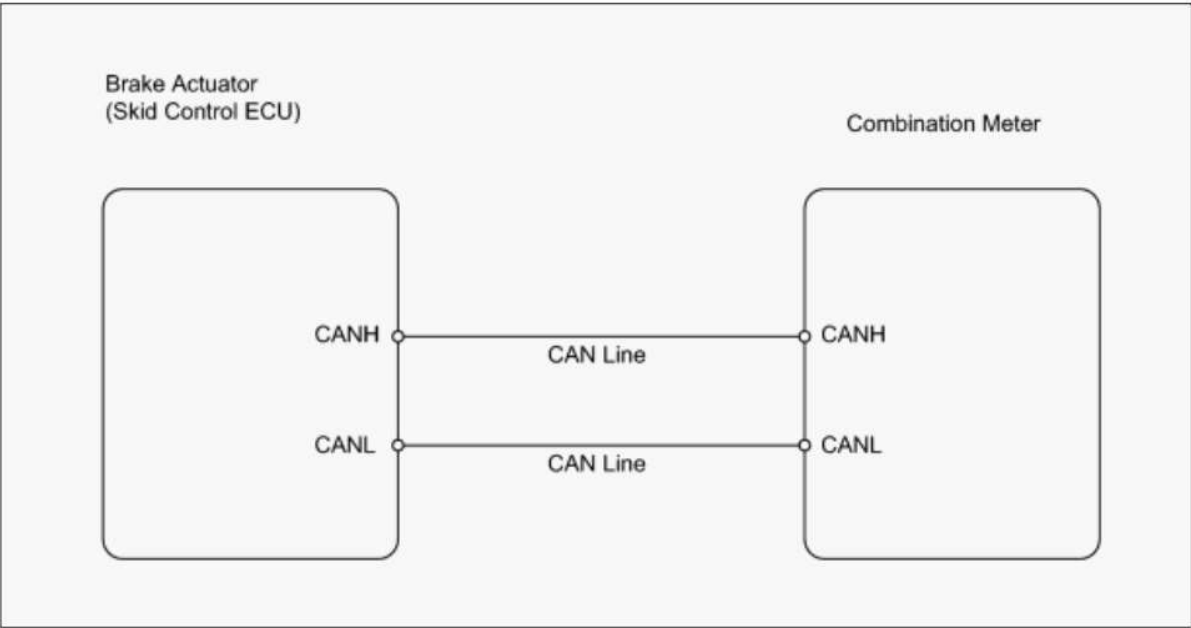
DTC	U0129	Lost Communication with Skid Control ECU
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DESCRIPTION

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

DTC CODE	DTC DETECTION CONDITIONS	TROUBLE AREAS
U0129	When either of following conditions detected: 15 seconds have elapsed since engine started and IG voltage 10.5 V or more - No communication with brake actuator (skid control ECU) continues for 3 seconds or more (No communication with ECM and skid control ECU continues for 60 seconds or more)	- Brake actuator (Skid control ECU) - CAN communication system

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CONFIRM DTC OUTPUT
-----------	---------------------------

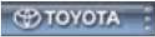
- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON and turn the Techstream on.
- (c) Clear the stored DTCs.
- (d) Start the engine and wait for at least 60 seconds.
- (e) Check for DTCs.

Result

RESULT	PROCEED TO
DTC output	A
DTC not output	B

B ► **USE SIMULATION METHOD TO CHECK**

A ► **GO TO CAN COMMUNICATION SYSTEM**



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