

ACCESSORIES & EQUIPMENT

Meter / Gauge System (Diagnostic Codes & Symptom Tests) - Sienna

METER / GAUGE SYSTEM

ON-VEHICLE INSPECTION

ON-VEHICLE INSPECTION

1. INSPECT SPEEDOMETER

- a. Check speedometer operation.

NOTE:

- The meter ECU receives the vehicle speed signal from the skid control ECU via CAN communication. Therefore, perform the following inspection referring to values on the Data List of the skid control ECU because it is the source of the vehicle speed signal.
- The Data List values of the skid control ECU are used for this inspection. Therefore, make sure to perform the inspection after confirming that no DTCs are output from the brake control system.
- If the tire size or tire inflation pressure is not within the specified range, or the tires are excessively worn, the speedometer indication error will increase. Therefore, make sure to perform the inspection after checking that the tire size, tire inflation pressure and tire wear are in the specified range.

1. Before starting the following inspection, check if the Brake Control System outputs the DTCs.
2. Check the values by referring to the table below.

ABS/VSC/TRC

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Vehicle Speed	Maximum wheel speed sensor reading/ Min.: 0 km/h (0 mph), Max.: 326.4 km/h (202 mph)	Vehicle stopped: 0 km/h (0 mph)	When driving at constant speed: No large fluctuations

REFERENCE (INDICATOR TYPE: MPH)

Techstream Indication (mph)	Acceptable Range (mph)
20	20 to 23
40	40 to 43.5
60	60 to 64
80	80 to 84.5
100	100 to 105

REFERENCE (INDICATOR TYPE: KM/H)

Techstream Indication (km/h)	Acceptable Range (km/h)
20	17.5 to 21.5
40	38 to 42
60	58 to 63
80	78 to 84
100	98.5 to 104.5
120	119 to 125
140	139 to 146
160	159 to 167

2. INSPECT TACHOMETER

- a. Check the operation.
 1. Connect the Techstream, and start the engine.
 2. Compare the test results with the tachometer indications.

REFERENCE

Techstream Indication (RPM)	Acceptable Range (RPM) Data in () is for Reference
700	630 to 770
1000	(900 to 1100)
2000	(1850 to 2150)
3000	2800 to

	3200
4000	(3800 to 4200)
5000	4800 to 5200
6000	(5750 to 6250)
7000	6700 to 7300

DTC B1500: FUEL SENDER OPEN DETECTED

DESCRIPTION

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

DTC No.	DTC Detection Condition	Trouble Area
B1500	When either of the following conditions is detected: - IG voltage is 9.5 V or more - Fuel sender gauge operation malfunction	- Harness or connector - Combination meter assembly - Fuel sender gauge assembly

WIRING DIAGRAM

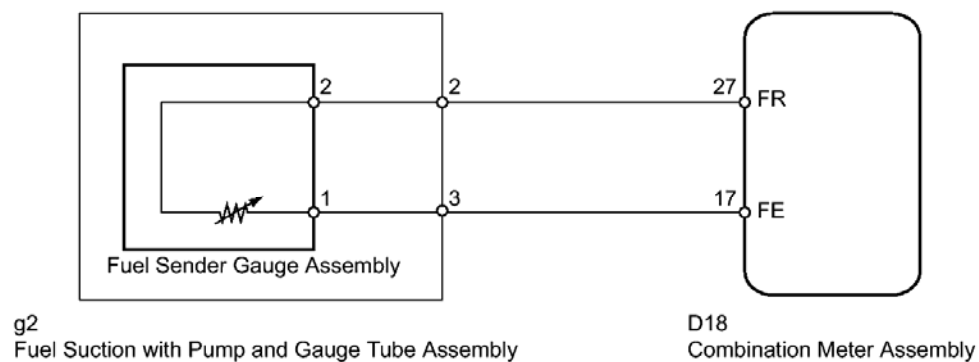


Fig. 1: Fuel Gauge Circuit - Wiring Diagram

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

INSPECTION PROCEDURE

PROCEDURE

1. READ VALUE USING TECHSTREAM (FUEL INPUT)

- 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. According to the display on the Techstream, read the Data List.

COMBINATION METER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Fuel Input	Fuel input signal/ Min.: 0, Max.: 127.5	Current fuel level displayed	Unit: Liter

RESULT

Result	Proceed to
Fuel level data can be displayed on the Techstream and DTC B1500 is output.	A
Fuel level data cannot be displayed on the Techstream.	B

B --> See step 2

A --> See step 6

2. INSPECT FUEL SENDER GAUGE ASSEMBLY

- a. Disconnect the D18 combination meter assembly connector.

*a

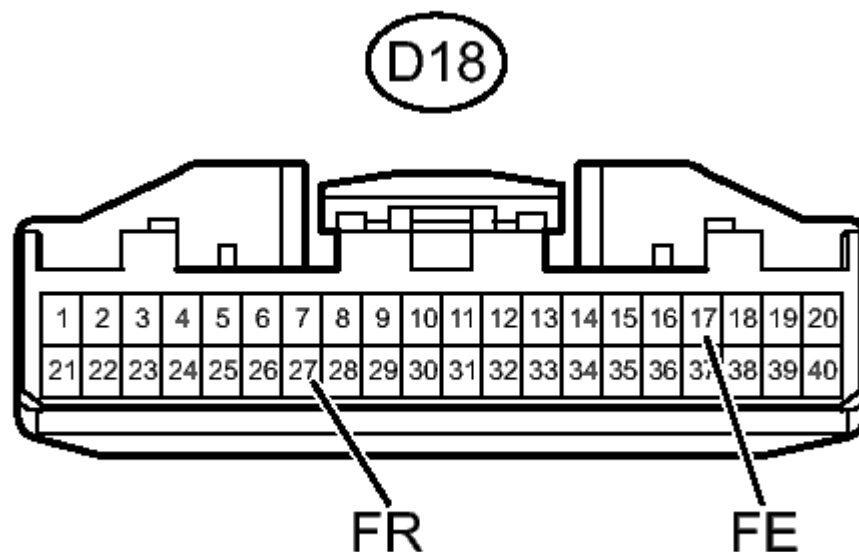


Fig. 2: Inspecting D18 Combination Meter Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-27 (FR) - D18-17 (FE)	Always	13.5 to 414.5 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter Assembly)
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NG --> See step 3

OK --> See step 6

3. CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY)

- Disconnect the D18 combination meter assembly connector.
- Disconnect the g2 fuel suction with pump and gauge tube assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-27 (FR) - g2-2	Always	Below 1 ohms
D18-27 (FR) or g2-2 - Body ground	Always	10 kohms or higher
D18-17 (FE) - g2-3	Always	Below 1 ohms
D18-17 (FE) or g2-3 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. INSPECT FUEL SENDER GAUGE ASSEMBLY

*a

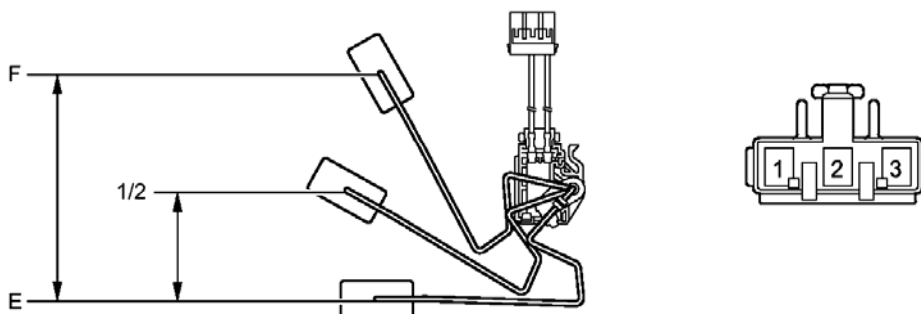


Fig. 3: Inspecting Fuel Sender Gauge Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Component without harness connected (Fuel Sender Gauge Assembly)	--
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- Remove the fuel sender gauge assembly. Refer to **2GR-FE - REMOVAL** or **1AR-FE - REMOVAL**.
- Check that the float moves smoothly between E and F.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Float Level	Float Position (mm (in.))	Specified Condition
1 - 2	F	114.2 (4.496)	13.5 to 16.5 ohms
	1/2	66.1 (2.602)	202 to 223 ohms
	E	0 (0)	405.5 to 414.5 ohms

RESULT

Result	Proceed to
OK	A
NG (for 2GR-FE)	B
NG (for 1AR-FE)	C

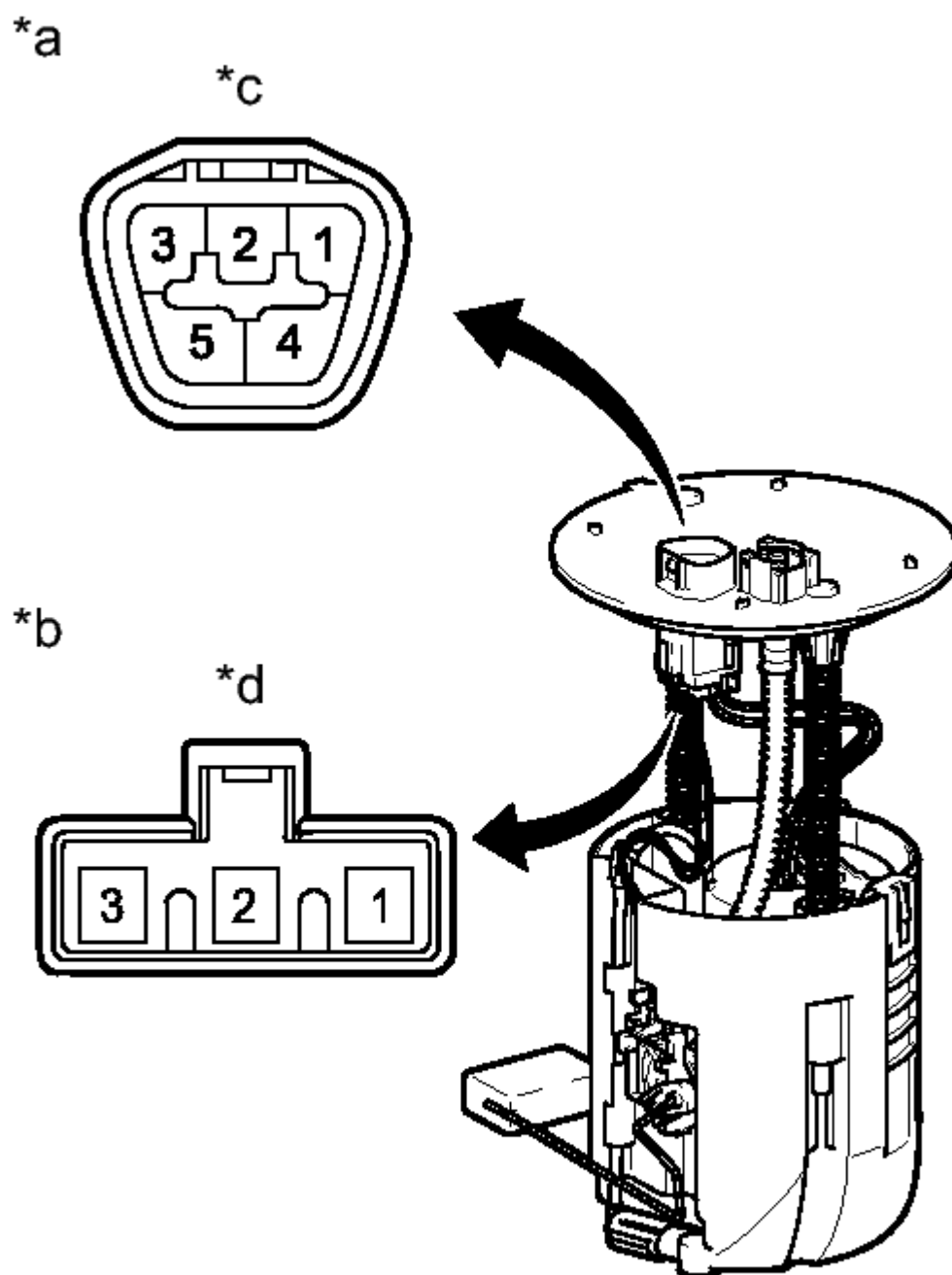
B --> See step 7

C --> See step 9

A: Go to next step

5. INSPECT FUEL SUCTION PUMP AND GAUGE TUBE ASSEMBLY

- a. Remove the fuel suction pump and gauge tube assembly. Refer to **2GR-FE - REMOVAL** or **1AR-FE - REMOVAL** .



P

Fig. 4: Checking Fuel Suction Pump And Gauge Tube Assembly & Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
A-2 - B-2	Always	Below 1 ohms
A-3 - B-1		

TEXT IN ILLUSTRATION

*a	Upper Side
*b	Lower Side (to Fuel Sender Gauge Assembly)
*c	Connector A
*d	Connector B

RESULT

Result	Proceed to
OK	A
NG (for 2GR-FE)	B
NG (for 1AR-FE)	C

B --> See step 8

C --> See step 10

A --> See step 6

6. **REPLACE COMBINATION METER ASSEMBLY.** Refer to REMOVAL
7. **REPLACE FUEL SENDER GAUGE ASSEMBLY (for 2GR-FE).** Refer to REMOVAL
8. **REPLACE FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY (for 2GR-FE).** Refer to REMOVAL
9. **REPLACE FUEL SENDER GAUGE ASSEMBLY (for 1AR-FE).** Refer to REMOVAL

10. REPLACE FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY (for 1AR-FE).
Refer to REMOVAL

DTC U0100: LOST COMMUNICATION WITH ECM / PCM "A"; DTC U0129: LOST COMMUNICATION WITH BRAKE SYSTEM CONTROL MODULE; DTC U0131: LOST COMMUNICATION WITH POWER STEERING CONTROL MODULE; DTC U0151: LOST COMMUNICATION WITH AIRBAG ECU

DESCRIPTION

The combination meter communicates with the ECM, skid control ECU, power steering ECU, main body ECU and center airbag sensor via the CAN communication system.

DTC No.	DTC Detection Condition	Trouble Area
U0100	When IG voltage is 9.5 V or more and the following condition is detected: • No communication with ECM continues for 2 seconds or more	• ECM • CAN communication system • Combination meter assembly
U0129	When IG voltage is 9.5 V or more and the following condition is detected: • No communication with skid control ECU continues for 3 seconds or more	• Brake actuator assembly (skid control ECU) • CAN communication system • Combination meter assembly
U0131	When IG voltage is 9.5 V or more and the following condition is detected: • No communication with power steering ECU continues for 3 seconds or more	• Steering column assembly (power steering ECU) • CAN communication system • Combination meter assembly
U0151	When the following condition is detected: • No communication with center airbag sensor assembly continues for 10 seconds or more	• Center airbag sensor assembly • CAN communication system • Combination meter assembly

INSPECTION PROCEDURE

PROCEDURE

1. CONFIRM DTC OUTPUT

- Connect the Techstream to the DLC3.
- Turn the ignition switch ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Combination Meter / Trouble Codes.

- e. Clear DTCs. Refer to **DTC CHECK / CLEAR** .
- f. Drive the vehicle at more than 5 km/h (3.1 mph) for at least 60 seconds.
- g. Stop the vehicle.
- h. Check DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

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

HINT:

If CAN communication system DTC U0100, U0129, U0131, or U0151 and another DTC are output at the same time, perform troubleshooting for CAN communication system DTC U0100, U0129, U0131, or U0151 first.

B --> See step 3

A --> See step 2

2. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
3. **USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**

SYMPTOM TESTS

Entire Combination Meter does not Operate

DESCRIPTION

This circuit is the power source circuit for the meter. This circuit provides two types of power sources, one is a constant power source mainly used as a backup power source, and the other is an IG power source mainly used for signal transmission. The constant power source is mainly used as a backup power source for the meter CPU, however, it is also used for CAN communication. If a voltage of 12 V is not applied to terminal IG+ when turn the ignition switch ON, the indicators will not operate.

WIRING DIAGRAM

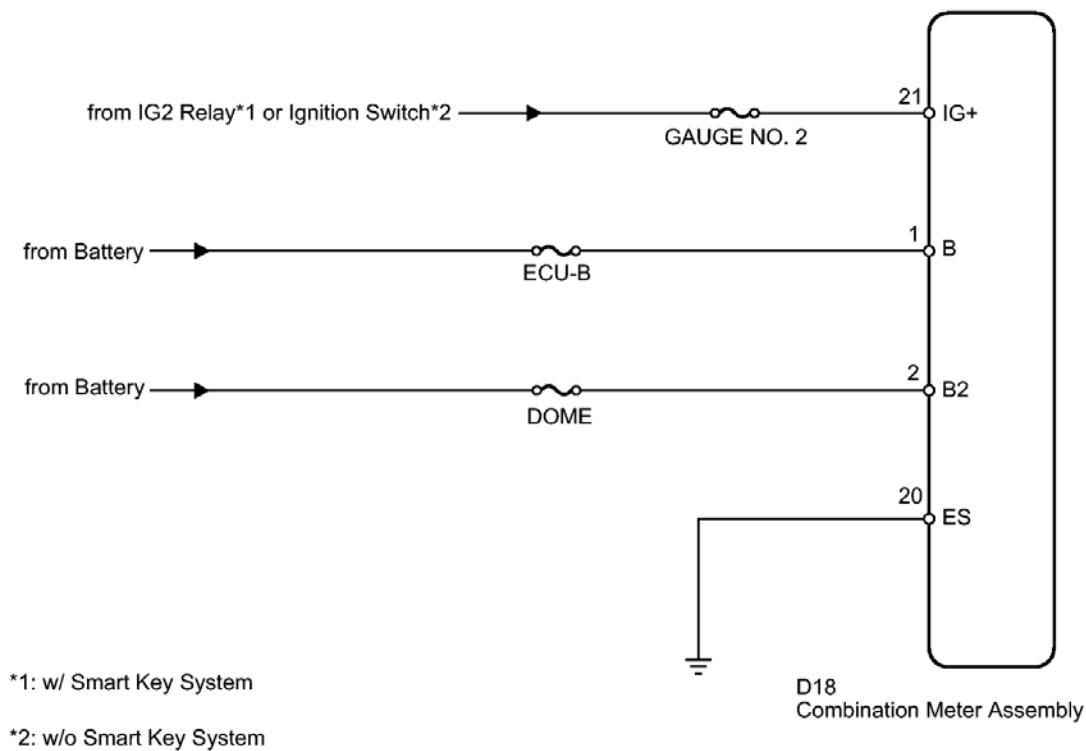


Fig. 5: Combination Meter Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

WARNING: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. **CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - BATTERY AND BODY GROUND)**
 - a. Disconnect the D18 combination meter assembly connector.

*a

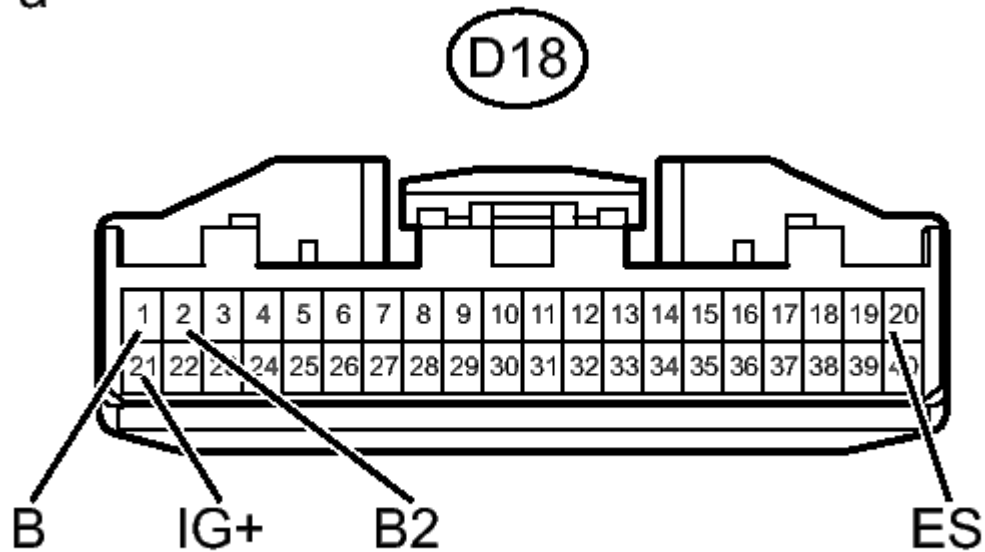


Fig. 6: D18 Combination Meter Assembly Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D18-21 (IG+) - Body ground	Ignition switch ON	11 to 14 V
D18-1 (B) - Body ground	Always	11 to 14 V
D18-2 (B2) - Body ground	Always	11 to 14 V

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

Standard Resistance

Tester Connection	Condition	Specified Condition

D18-20 (ES) - Body ground	Always	Below 1 ohms
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TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter Assembly)
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NG --> **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK --> **See step 2**

2. REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL

Speedometer Malfunction

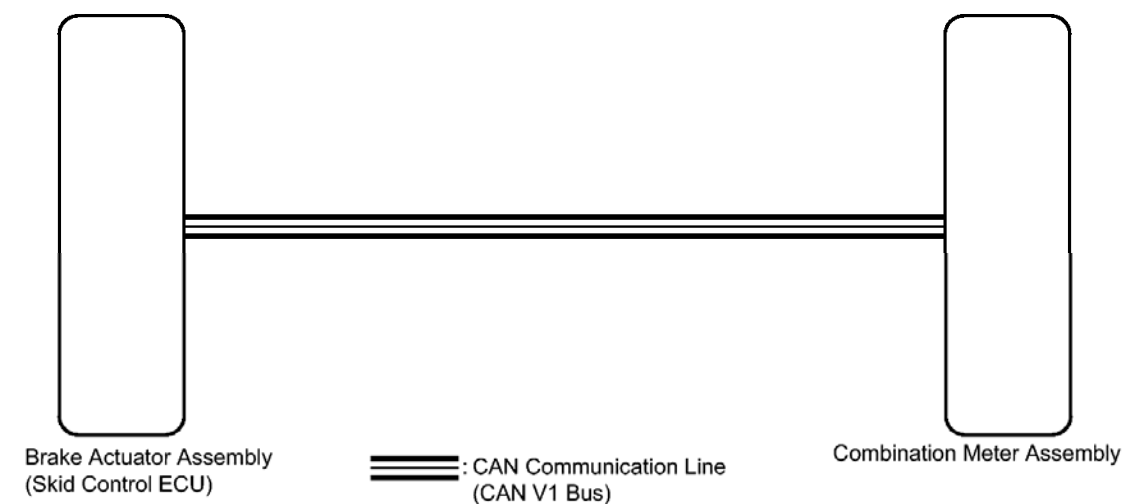
DESCRIPTION

The meter CPU receives vehicle speed signals from the skid control ECU via the CAN communication system (CAN V1 Bus). The speed sensor detects the wheel speed and sends the appropriate signals to the skid control ECU. 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.

HINT:

- Factors that affect the indicated vehicle speed include tire size, tire inflation, and tire wear. The speed indicated on the speedometer has an allowable margin of error. This can be tested using a speedometer tester (calibrated chassis dynamometer). For details about testing and the margin of error, see the reference chart. Refer to **ON-VEHICLE INSPECTION**.
- If the vehicle speed sensor circuit has a malfunction, the skid control ECU stores the DTCs. Troubleshoot the Brake Control System. Refer to **DTC C1401: Front Speed Sensor RH Malfunction; DTC C1402: Front Speed Sensor LH Malfunction** .

WIRING DIAGRAM



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Fig. 7: Speedometer Circuit - Wiring Diagram

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

INSPECTION PROCEDURE

WARNING: If the vehicle speed is outside the allowable range when tested, perform the on-vehicle inspection. Refer to ON-VEHICLE INSPECTION.

HINT:

Before starting the following inspection, check tire size and tire air pressure.

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Check if a CAN communication DTC is output. Refer to DIAGNOSIS SYSTEM.

RESULT

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

B --> See step 5

A: Go to next step

2. 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. According to the display on the Techstream, perform the Active Test.

COMBINATION METER

Tester Display	Test Part	Control Range	Diagnostic Note
Speed Meter Operation	Speedometer	0, 40, 80, 120*1, 160*1	Operate with IG ON and the vehicle is stopped.

*1: except U.S.A.

OK

Speedometer indication is normal.

NG --> See step 6

OK: Go to next step

3. READ VALUE USING TECHSTREAM (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. According to the display on the Techstream, read the Data List.

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	Approximately same as actual vehicle speed (When vehicle is being	-

	mph)	driven)	
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OK

Vehicle speed displayed on the Techstream is almost the same as the speedometer indication.

NG --> See step 6

OK: Go to next step

4. CHECK BRAKE CONTROL SYSTEM

- Check if a brake control DTC is output. Refer to DTC CHECK / CLEAR .

RESULT

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

B --> See step 7

A --> See step 6

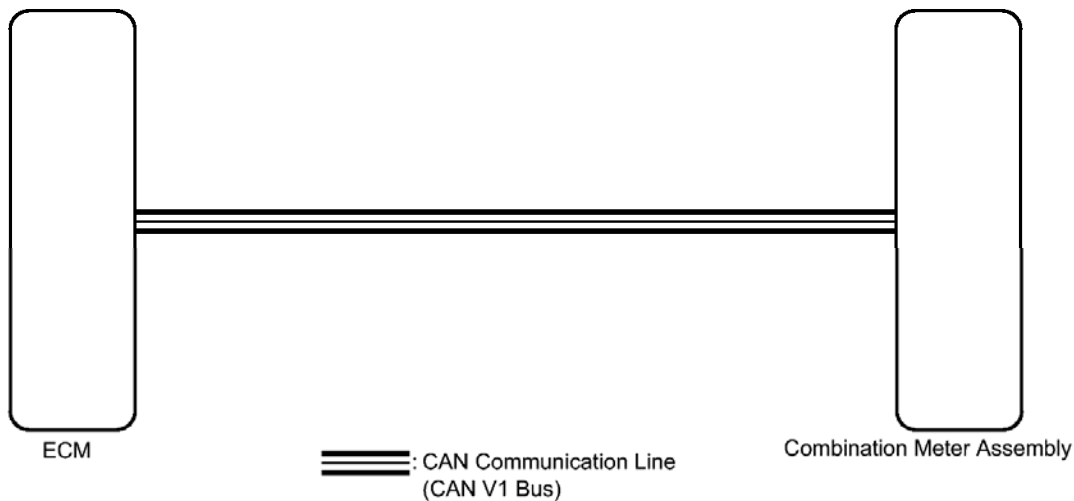
- GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING
- REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL
- GO TO BRAKE CONTROL SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

Tachometer Malfunction

DESCRIPTION

In this circuit, the meter CPU receives engine speed signals from the ECM using the CAN communication system (CAN V1 Bus). The meter CPU displays the engine speed calculated based on the data received from the ECM.

WIRING DIAGRAM



C

Fig. 8: Tachometer Circuit - Wiring Diagram

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

INSPECTION PROCEDURE

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Check if a CAN communication DTC is output. Refer to **DIAGNOSIS SYSTEM**.

RESULT

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

B --> See step 5

A: Go to next step

2. PERFORM ACTIVE TEST USING TECHSTREAM (TACHOMETER OPERATION)

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.

- d. Enter the following menus: Body Electrical / Combination Meter / Active Test.
- e. According to the display on the Techstream, perform the Active Test.

COMBINATION METER

Tester Display	Test Part	Control Range	Diagnostic Note
TachoMeter Operation	Tachometer	0, 1000, 2000, 3000, 4000, 5000, 6000, 7000	Operate with IG ON and the vehicle is stopped.

OK

Tachometer indication is normal.

NG --> See step 6

OK: Go to next step

3. READ VALUE USING TECHSTREAM (ENGINE RPM)

- a. Connect the Techstream to the DLC3.
- b. Start the engine.
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Combination Meter / Data List.
- e. According to the display on the Techstream, read the Data List.

COMBINATION METER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Engine RPM	Engine speed/ Min.: 0 RPM, Max.: 12750 RPM	600 to 700 RPM: Idling	-

OK

Engine speed displayed on the Techstream is almost the same as the tachometer indication.

HINT:

Check the engine speed when the engine is fully warmed up, and the air conditioning and all electrical accessories are off.

NG --> See step 6

OK: Go to next step

4. **CHECK ENGINE CONTROL SYSTEM**

- a. Check if a engine control DTC is output. Refer to **DTC CHECK / CLEAR** for 2GR-FE. Refer to **DTC CHECK / CLEAR** for 1AR-FE.

RESULT

Result	Proceed to
Engine control DTC is not output	A
Engine control DTC is output (for 2GR-FE)	B
Engine control DTC is output (for 1AR-FE)	C

B --> See step 7

C --> See step 8

A --> See step 6

5. **GO TO CAN COMMUNICATION SYSTEM.** Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**
6. **REPLACE COMBINATION METER ASSEMBLY.** Refer to **REMOVAL**
7. **GO TO SFI SYSTEM (for 2GR-FE).** Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**
8. **GO TO SFI SYSTEM (for 1AR-FE).** Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**

Fuel Receiver Gauge Malfunction

DESCRIPTION

The meter CPU uses the fuel sender gauge assembly to determine the level of the fuel in the fuel tank. The resistance of the fuel sender gauge will vary between approximately 13.5 ohms with the float at the full position, and 414.5 ohms with the float at the empty position. The meter outputs battery voltage through two 820 ohms resistors that are mounted in parallel inside the meter CPU. The meter CPU measures the voltage between the variable resistor in the fuel sender gauge and the two resistors mounted in parallel in the meter. Voltage measured at this point will vary as the float of the fuel sender gauge is moved. The highest voltage observed should be approximately half of the battery voltage.

WIRING DIAGRAM

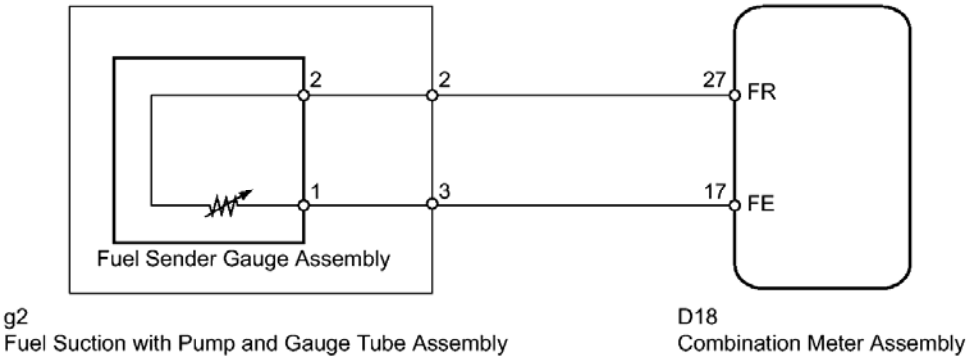


Fig. 9: Fuel Gauge Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

- 1. CHECK CAN COMMUNICATION SYSTEM
 - a. Check if a CAN communication DTC is output. Refer to DIAGNOSIS SYSTEM .

RESULT

Result	Proceed to
CAN communication DTC is not output	A

CAN communication B DTC is output	
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B --> See step 7

A: Go to next step

2. PERFORM ACTIVE TEST USING TECHSTREAM (FUEL METER OPERATION)

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

COMBINATION METER

Tester Display	Test part	Control Range	Diagnostic Note
Fuel Meter Operation	Fuel receiver gauge	EMPTY, 1/2, FULL	Operate with IG ON and the vehicle is stopped.

OK

Fuel receiver gauge indication is normal.

NG --> See step 8

OK: Go to next step

3. READ VALUE USING TECHSTREAM (FUEL INPUT)

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Combination Meter / Data List.
- According to the display on the Techstream, read the Data List.

COMBINATION METER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Fuel	Fuel input signal/	Current	

Input	Min.: 0, Max.: 127.5	fuel level displayed	Unit: Liter
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OK

Fuel level signal displayed on the Techstream is almost the same as fuel receiver gauge indication.

NG --> See step 8

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY)

- Disconnect the D18 combination meter assembly connector.
- Disconnect the g2 fuel suction with pump and gauge tube assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-27 (FR) - g2-2	Always	Below 1 ohms
D18-27 (FR) or g2-2 - Body ground	Always	10 kohms or higher
D18-17 (FE) - g2-3	Always	Below 1 ohms
D18-17 (FE) or g2-3 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. INSPECT FUEL SENDER GAUGE ASSEMBLY

*a

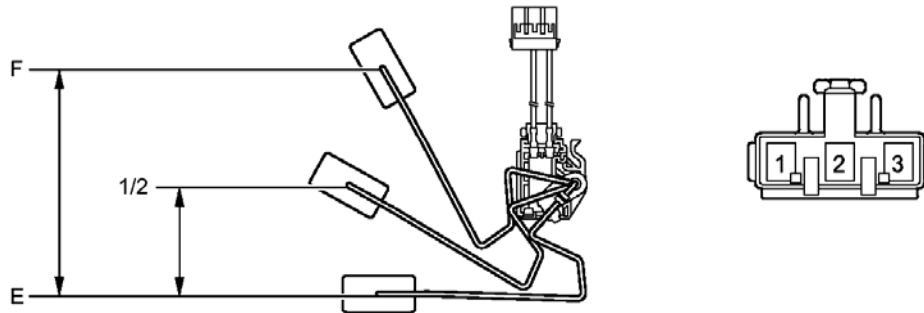


Fig. 10: Inspecting Fuel Sender Gauge Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Component without harness connected (Fuel Sender Gauge Assembly)	--
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- Remove the fuel sender gauge assembly. Refer to **2GR-FE - REMOVAL** or **1AR-FE - REMOVAL**.
- Check that the float moves smoothly between E and F.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Float Level	Float Position (mm (in.))	Specified Condition
1 - 2	F	114.2 (4.496)	13.5 to 16.5 ohms
	1/2	66.1 (2.602)	202 to 223 ohms
			405.5 to

	E	0 (0)	414.5 ohms
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RESULT

Result	Proceed to
OK	A
NG (for 2GR- FE)	B
NG (for 1AR- FE)	C

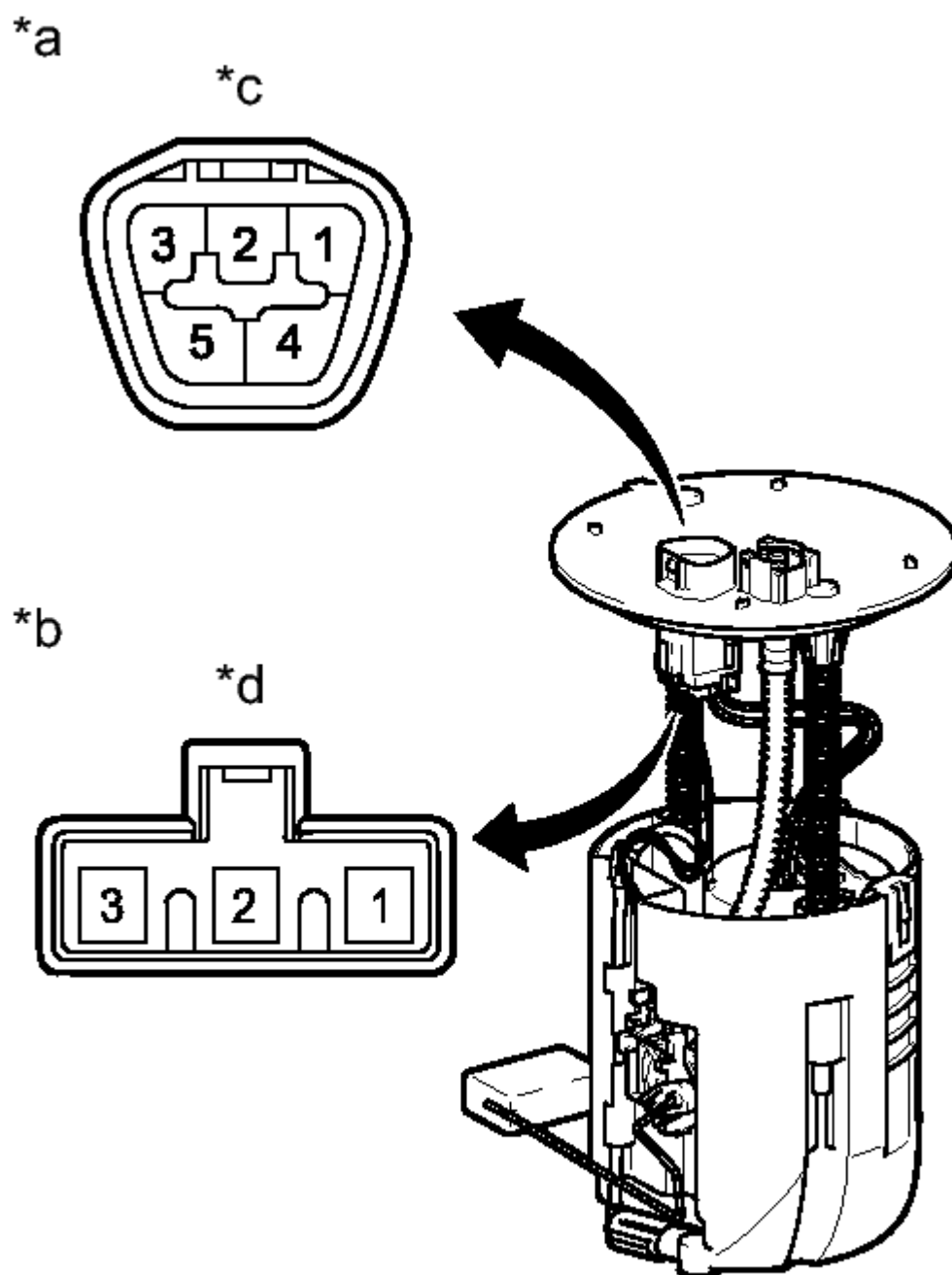
B --> See step 9

C --> See step 11

A: Go to next step

6. INSPECT FUEL SUCTION PUMP AND GAUGE TUBE ASSEMBLY

- a. Remove the fuel suction pump and gauge tube assembly. Refer to **2GR-FE - REMOVAL** or **1AR-FE - REMOVAL** .



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Fig. 11: Checking Fuel Suction Pump And Gauge Tube Assembly & Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
A-2 - B-2	Always	Below 1 ohms
A-3 - B-1		

TEXT IN ILLUSTRATION

*a	Upper Side
*b	Lower Side (to Fuel Sender Gauge Assembly)
*c	Connector A
*d	Connector B

RESULT

Result	Proceed to
OK	A
NG (for 2GR-FE)	B
NG (for 1AR-FE)	C

B --> See step 10

C --> See step 12

A --> See step 8

7. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
8. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
9. **REPLACE FUEL SENDER GAUGE ASSEMBLY (for 2GR-FE). Refer to REMOVAL**
10. **REPLACE FUEL SUCTION PUMP AND GAUGE TUBE ASSEMBLY (for 2GR-FE). Refer to**

REMOVAL

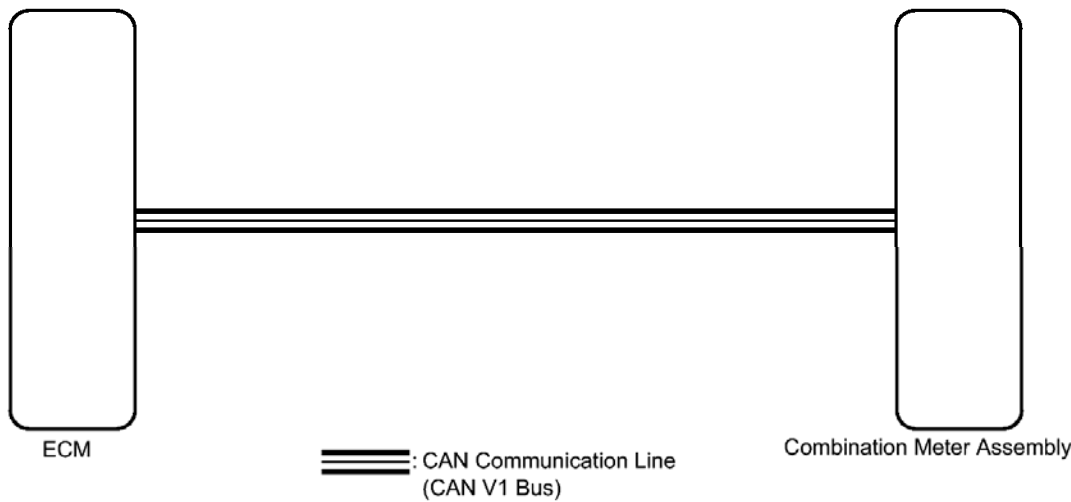
11. **REPLACE FUEL SENDER GAUGE ASSEMBLY (for 1AR-FE). Refer to REMOVAL**
12. **REPLACE FUEL SUCTION PUMP AND GAUGE TUBE ASSEMBLY (for 1AR-FE). Refer to REMOVAL**

Engine Coolant Temperature Receiver Gauge Malfunction

DESCRIPTION

In this circuit, the meter CPU receives engine coolant temperature signals from the ECM using the CAN communication system (CAN V1 Bus). The meter CPU displays engine coolant temperature that is calculated based on the data received from the ECM.

WIRING DIAGRAM



C

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

INSPECTION PROCEDURE

HINT:

If there is an open or short in the engine coolant temperature sensor circuit, the ECM stores the DTCs. Troubleshoot the SFI System. Refer to **DIAGNOSTIC TROUBLE CODE CHART** for 2GR-FE. Refer to **DIAGNOSTIC TROUBLE CODE CHART** for 1AR-FE.

PROCEDURE

1. **CHECK CAN COMMUNICATION SYSTEM**
 - a. Check if a CAN communication DTC is output. Refer to **DIAGNOSIS SYSTEM** .

RESULT

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

B --> See step 5

A: Go to next step

2. PERFORM ACTIVE TEST USING TECHSTREAM (WATER TEMPERATURE METER OPERATION)

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

COMBINATION METER

Tester Display	Test Part	Control Range	Diagnostic Note
Water Temperature Meter Operation	Engine coolant temperature receiver gauge	LOW, NORMAL, HIGH	Operate with IG ON and the vehicle is stopped.

OK

Engine coolant temperature receiver gauge indication is normal.

NG --> See step 6

OK: Go to next step

3. READ VALUE USING TECHSTREAM (COOLANT TEMPERATURE)

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.

- d. Enter the following menus: Body Electrical / Combination Meter / Data List.
- e. According to the display on the Techstream, read the Data List.

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)	80 to 100°C (176 to 212°F); After warming up	-

OK

Engine coolant temperature value displayed on the Techstream is almost the same as the engine coolant temperature receiver gauge indication.

NG --> See step 6

OK: Go to next step

4. CHECK ENGINE CONTROL SYSTEM

- a. Check if a engine control DTC is output. Refer to **DTC CHECK / CLEAR** for 2GR-FE. Refer to **DTC CHECK / CLEAR** for 1AR-FE.

RESULT

Result	Proceed to
Engine control DTC is not output	A
Engine control DTC is output (for 2GR-FE)	B
Engine control DTC	

is output (for 1AR- FE)	C
-------------------------------------	---

B --> See step 7

C --> See step 8

A --> See step 6

5. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
6. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
7. **GO TO SFI SYSTEM (for 2GR-FE). Refer to REMOVAL**
8. **GO TO SFI SYSTEM (for 1AR-FE). Refer to REMOVAL**

Meter Illumination is Always Dark

DESCRIPTION

In this circuit, the meter CPU receives auto dimmer signals from the main body ECU using the CAN communication system (CAN V1 Bus). When the meter CPU receives an auto dimmer signal, it dims the meter illumination (warning and indicator lights). The main body ECU determines whether it is daytime, twilight, or nighttime based on the waveform transmitted from the automatic light control sensor. If the main body ECU determines that it is daytime, the ECU does not send an auto dimmer signal. Therefore, the meter illumination will not dim even if the driver accidentally turns the light control switch to the tail or head position in daytime.

HINT:

When the meter illumination is always dark, there may be a malfunction in the automatic light control sensor, main body ECU, CAN communication system, harness or connector, or combination meter assembly.

WIRING DIAGRAM

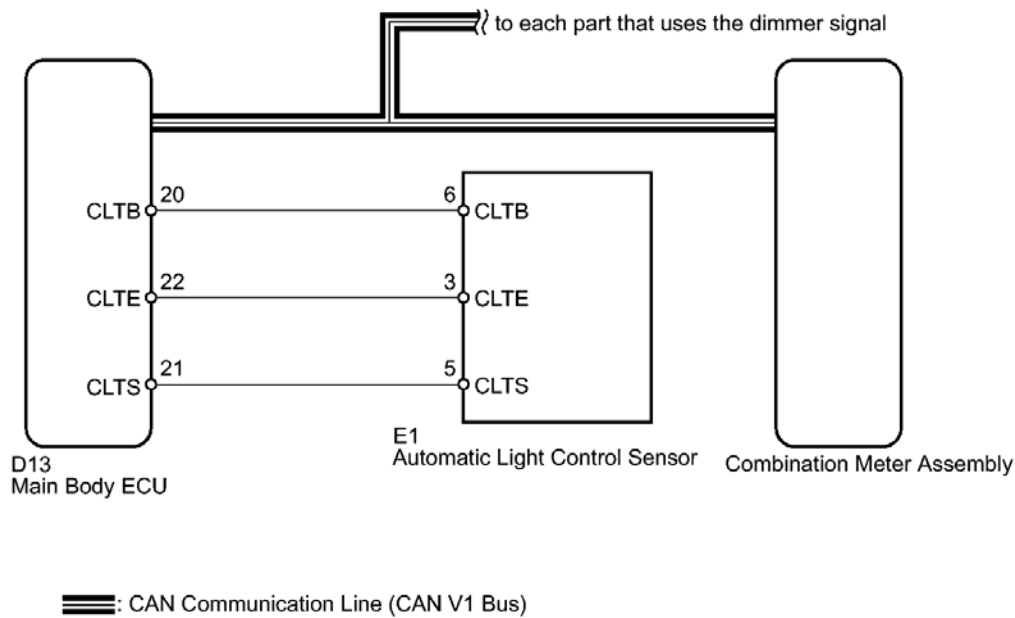


Fig. 13: Meter Illumination Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1.

INSPECTION PROCEDURE

HINT:

- The meter illumination can be customized by pressing the turning the light control rheostat knob in the combination meter assembly.
- If the light control rheostat knob is turned fully clockwise and the light control switch is turned to the tail, head or AUTO position at night, the meter illumination goes off.

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- Check if a CAN communication DTC is output. Refer to **DIAGNOSIS SYSTEM** .

RESULT

Result	Proceed to
CAN communication DTC is not output.	A

CAN communication DTC is output.	B
--	---

B --> See step 6

A: Go to next step

2. CONFIRM DTC OUTPUT (LIGHT CONTROL SENSOR CIRCUIT)

- Check if DTC B1244 is output. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
B1244 is not output.	A
B1244 is output.	B

B --> See step 7

A: Go to next step

3. CHECK OPERATION (ACCESSORY METER ASSEMBLY)

- Turn the ignition switch to ON.
- Turn the light control switch to the tail, head or AUTO position.
- Cover the automatic light control sensor.
- Check the accessory meter assembly illumination.

RESULT

Result	Proceed to
Accessory meter assembly illumination does not operate normally.	A
Accessory meter assembly illumination	B

operates normally.	
--------------------	--

HINT:

The accessory meter assembly illumination dims according to the dimmer signal as the combination meter assembly does. Therefore, when only the meter illumination is always dark, there may be a malfunction in the combination meter assembly.

B --> See step 8

A: Go to next step

4. CHECK OPERATION (AUTOMATIC LIGHT CONTROL SYSTEM)

- a. Turn the ignition switch to ON.
- b. Turn the light control switch to the AUTO position.
- c. Cover the automatic light control sensor.
- d. Check the taillights and low beam headlights.

OK

The taillights and low beam headlights come on.

- e. Uncover the automatic light control sensor.
- f. Check the low beam headlights and taillights.

OK

The low beam headlights and taillights go off.

RESULT

Result	Proceed to
Automatic light control system operates normally.	A
Automatic light control system does not operate	B

normally.

B --> See step 9

A: Go to next step

5. REPLACE MAIN BODY ECU

- a. Replace the main body ECU with a new or a normal one. Refer to **REMOVAL** .

OK

The operation of the combination meter assembly returns to normal.

HINT:

The meter CPU controls the meter illumination based on an auto dimmer signal from the main body ECU. When the meter illumination is always dark (very dim), it may be due to the main body ECU sending an auto dimmer signal to the meter CPU because of a malfunction in the main body ECU.

NG --> See step 8

OK --> END

6. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
7. **GO TO LIGHTING SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART**
8. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
9. **CHECK LIGHTING SETTING. Refer to CUSTOMIZE PARAMETERS**

Meter Illumination does not Dim at Night

DESCRIPTION

In this circuit, the meter CPU receives auto dimmer signals from the main body ECU using the CAN communication system (CAN V1 Bus). When the meter CPU receives an auto dimmer signal, it dims the meter illumination (warning and indicator lights). The main body ECU determines whether it is daytime, twilight, or nighttime based on the waveform transmitted from the automatic light control sensor. If the main body ECU determines that it is nighttime and the light control switch is in the tail, head, or AUTO, the ECU sends an auto dimmer signal. According to the signal, the combination meter assembly dims the meter illumination.

HINT:

When the meter illumination does not dim at night, there may be a malfunction in the automatic light control sensor, main body ECU, CAN communication system, harness or connector, or combination meter assembly.

WIRING DIAGRAM

Refer to Meter Illumination is Always Dark. Refer to **WIRING DIAGRAM**.

INSPECTION PROCEDURE

HINT:

- The automatic light control sensor sensitiveness can be customized. Refer to **CUSTOMIZE PARAMETERS** .
- Setting the meter illumination to maximum brightness prevents the meter illumination from dimming when the light control switch is changed to the tail, head or AUTO position at night. Therefore, check the meter illumination setting before proceeding to the following steps.

PROCEDURE

1. CHECK CAN COMMUNICATION SYSTEM

- a. Check if a CAN communication DTC is output. Refer to **DIAGNOSIS SYSTEM** .

RESULT

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

B --> See step 6

A: Go to next step

2. CONFIRM DTC OUTPUT (LIGHT CONTROL SENSOR CIRCUIT)

- a. Check if DTC B1244 is output. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
B1244 is not output.	A
B1244 is output.	B

B --> See step 7

A: Go to next step

3. CHECK OPERATION (ACCESSORY METER ASSEMBLY)

- a. Turn the ignition switch to ON.
- b. Turn the light control switch to the tail, head or AUTO position.
- c. Cover the light control switch.
- d. Check the accessory meter assembly illumination.

RESULT

Result	Proceed to
Accessory meter assembly illumination does not operate normally.	A
Accessory meter assembly illumination operates normally.	B

HINT:

The accessory meter assembly illumination dims according to the dimmer signal as the combination meter assembly does. Therefore, when only the meter illumination does not dim at night, replace the combination meter assembly.

B --> See step 8

A: Go to next step

4. CHECK OPERATION (AUTOMATIC LIGHT CONTROL SYSTEM)

- a. Turn the ignition switch to ON.
- b. Turn the light control switch to the AUTO position.
- c. Cover the automatic light control sensor.
- d. Check that the taillights and low beam headlights.

OK

The taillights and low beam headlights come on.

- e. Uncover the automatic light control sensor.
- f. Check that the low beam headlights and taillights.

OK

The low beam headlights and taillights go off.

RESULT

Result	Proceed to
Automatic light control system operates normally.	A
Automatic light control system does not operate normally.	B

B --> See step 9

A: Go to next step

5. REPLACE MAIN BODY ECU

- a. Replace the main body ECU with a new or a normal one. Refer to **REMOVAL** .

OK

The operation of the combination meter assembly returns to normal.

HINT:

The meter CPU controls the meter illumination based on an auto dimmer signal from the main body ECU. If the meter does not dim when the light control switch is in the tail, head, or AUTO position at night, it may be for either of 2 reasons. The first reason is that the main body ECU does not send an auto dimmer signal. The second is that the meter CPU does not dim the meter illumination even though the meter CPU receives an auto dimmer signal.

NG --> See step 8

OK --> END

- 6. GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
- 7. GO TO LIGHTING SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART**
- 8. REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
- 9. CHECK LIGHTING SETTING. Refer to CUSTOMIZE PARAMETERS**

Accessory Meter does not Illuminate

DESCRIPTION

- This circuit provides power to the accessory meter assembly.
- The cruise information display of the accessory meter shows the vehicle information input into the combination meter assembly. The display can be changed by using the drive monitor switch.

WIRING DIAGRAM

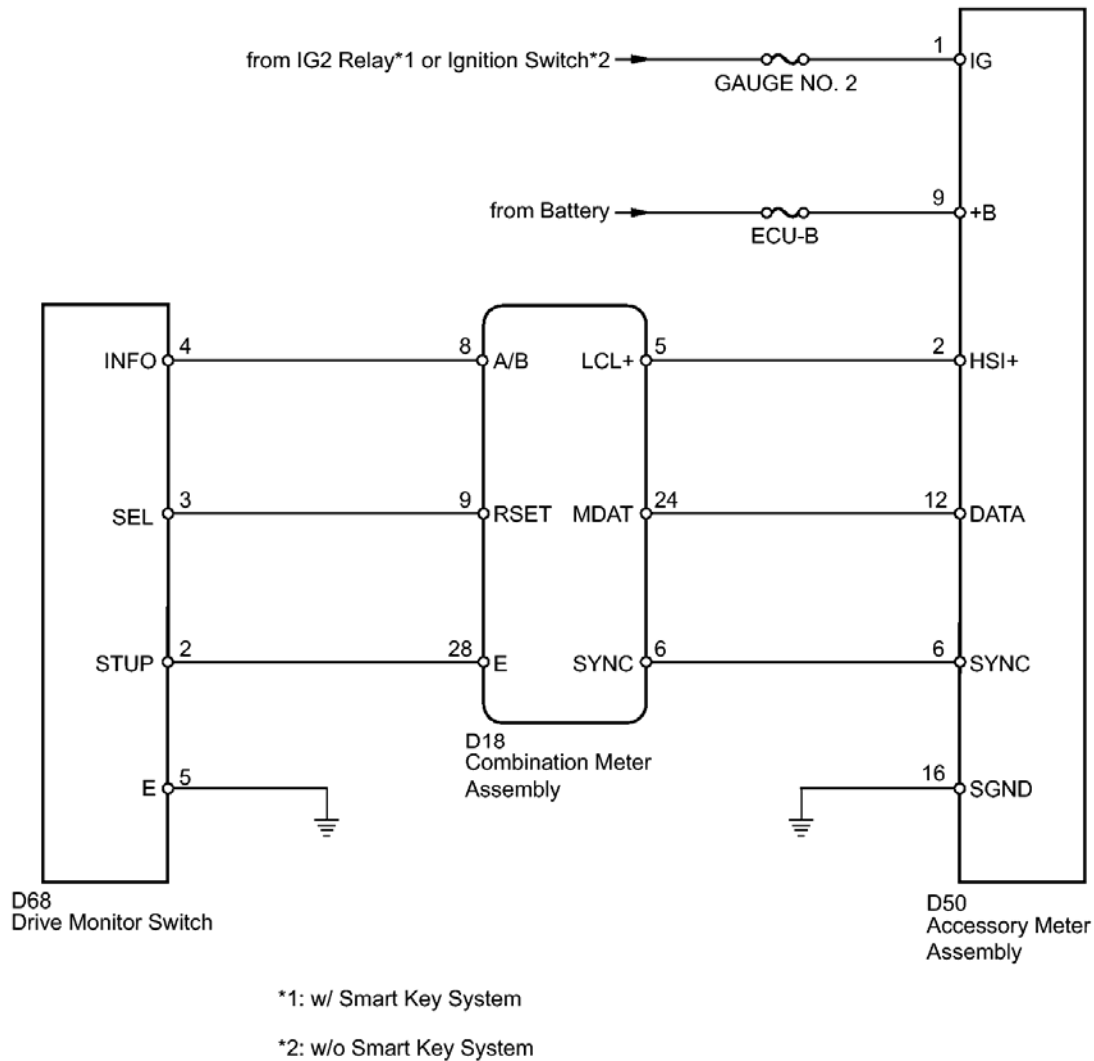


Fig. 14: Accessory Meter Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

WARNING: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. **CHECK ACCESSORY METER ASSEMBLY**
 - a. Check the malfunction of the accessory meter.

RESULT

Result	Proceed to
Accessory meter does not display at all	A
Cruise information display does not change	B

B --> See step 3

A: Go to next step

2. **CHECK HARNESS AND CONNECTOR (ACCESSORY METER ASSEMBLY - BATTERY AND BODY GROUND)**
 - a. Disconnect D50 the accessory meter assembly connector.

***a**

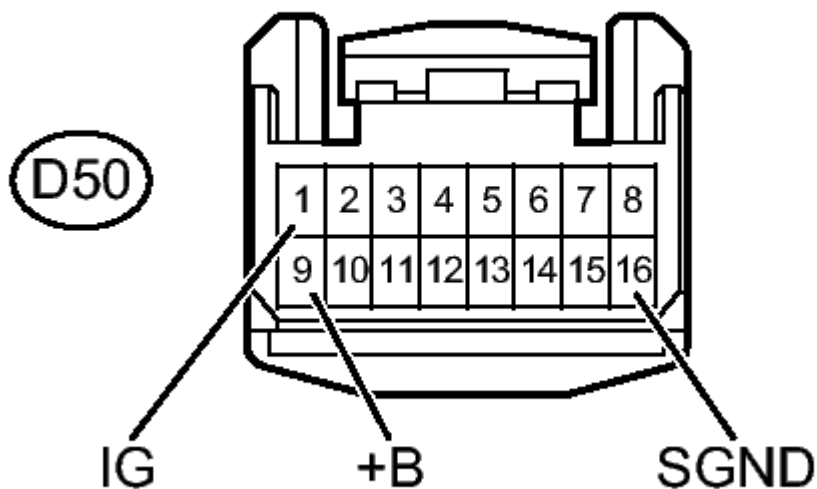


Fig. 15: Checking D50 Accessory Meter Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D50-1 (IG) - Body ground	Ignition switch ON	11 to 14 V
D50-9 (+B) - Body ground	Always	11 to 14 V

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D50-16 (SGND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Accessory Meter Assembly)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 9

3. INSPECT DRIVE MONITOR SWITCH

- a. Remove the drive monitor switch. Refer to REMOVAL .

*a

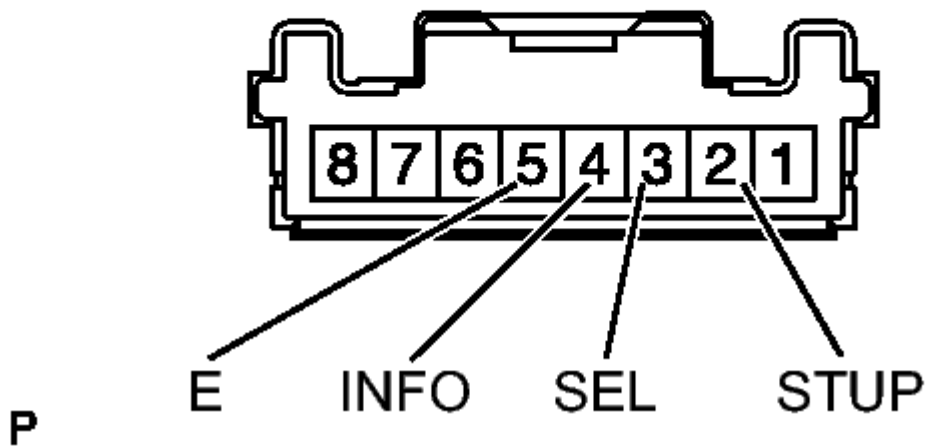


Fig. 16: Inspecting Drive Monitor Switch Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
4 (INFO) - 5 (E)	INFO switch pressed	Below 1 ohms
	INFO switch not pressed	10 kohms or higher
3 (SEL) - 5 (E)	SELECT RESET switch pressed	Below 1 ohms
	SELECT RESET switch not pressed	10 kohms or higher
2 (STUP) -	SETUP switch pressed	Below 1 ohms

5 (E)	SETUP switch not pressed	10 kohms or higher
-------	--------------------------------	-----------------------

TEXT IN ILLUSTRATION

*a	Component without harness connected (Drive Monitor Switch)
----	--

NG --> See step 8

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (DRIVE MONITOR SWITCH - COMBINATION METER ASSEMBLY AND BODY GROUND)

- Disconnect the D68 drive monitor switch connector.
- Disconnect the D18 combination meter assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D68-4 (INFO) - D18-8 (A/B)	Always	Below 1 ohms
D68-4 (INFO) - Body ground	Always	10 kohms or higher
D68-2 (STUP) - D18-28 (E)	Always	Below 1 ohms
D68-2 (STUP) - Body ground	Always	10 kohms or higher
D68-3 (SEL) - D18-9	Always	Below 1 ohms

(REST)		
D68-3 (SEL) - Body ground	Always	10 kohms or higher
D68-5 (E) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (ACCESSORY METER ASSEMBLY - COMBINATION METER ASSEMBLY)

- Disconnect the D50 accessory meter assembly connector.
- Disconnect the D18 combination meter assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D50-2 (HSI+) - D18-5 (LCL+)	Always	Below 1 ohms
D50-2 (HSI+) - Body ground	Always	10 kohms or higher
D50-12 (DATA) - D18-24 (MDAT)	Always	Below 1 ohms
D50-12 (DATA) - Body ground	Always	10 kohms or higher
D50-6 (SYNC) - D18-6 (SYNC)	Always	Below 1 ohms
D50-6 (SYNC) -	Always	10 kohms

Body ground		or higher
D50-16 (SGND) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

6. REPLACE ACCESSORY METER ASSEMBLY

- a. Replace the accessory meter assembly with a new or a known good one. Refer to **REMOVAL** .

OK

The operation of accessory meter assembly returns to normal.

NG --> See step 7

OK --> END

7. REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL

8. REPLACE DRIVE MONITOR SWITCH. Refer to REMOVAL

9. REPLACE ACCESSORY METER ASSEMBLY. Refer to REMOVAL

CIRCUIT TESTS

Speed Signal Circuit

DESCRIPTION

The combination meter assembly receives the vehicle speed signal from this circuit. The wheel speed sensors produce an output that varies according to the vehicle speed. The wheel speed sensor output is received by the skid control ECU, which uses this information to create the vehicle speed sensor signal*1. The vehicle speed sensor signal consists of pulses sent to the combination meter assembly from the skid control ECU. To create this signal, 12 V is output from IG2, which is behind a resistor in the combination meter assembly. This voltage is sent to the skid control ECU. The pulse signal is created by switching the transistor in the skid control ECU on and off, making the voltage on the wire drop to 0 V. A similar system is used for the output of this signal from the combination meter assembly via terminal +S. A voltage of 12 V or 5 V is applied to terminal +S from each ECU or relay that is connected to this terminal. The transistor in the combination meter assembly is controlled by the signal from the skid control ECU. When this transistor is turned on, this transistor makes the voltage supplied by the various ECUs (via their respective internal resistors) drop to 0 V. Each ECU connected to terminal +S of the combination meter assembly controls its respective system based on the pulse signal.

- *1: This vehicle speed sensor signal is created by the skid control ECU. There is no actual component that is referred to as the vehicle speed sensor. In addition, for some other systems, vehicle speed

information may be exchanged using CAN communication.

HINT:

This circuit is used for the systems connected to terminal +S. This signal is not used for combination meter assembly operation. Combination meter assembly components such as the speedometer operate using data received via CAN communication.

WIRING DIAGRAM

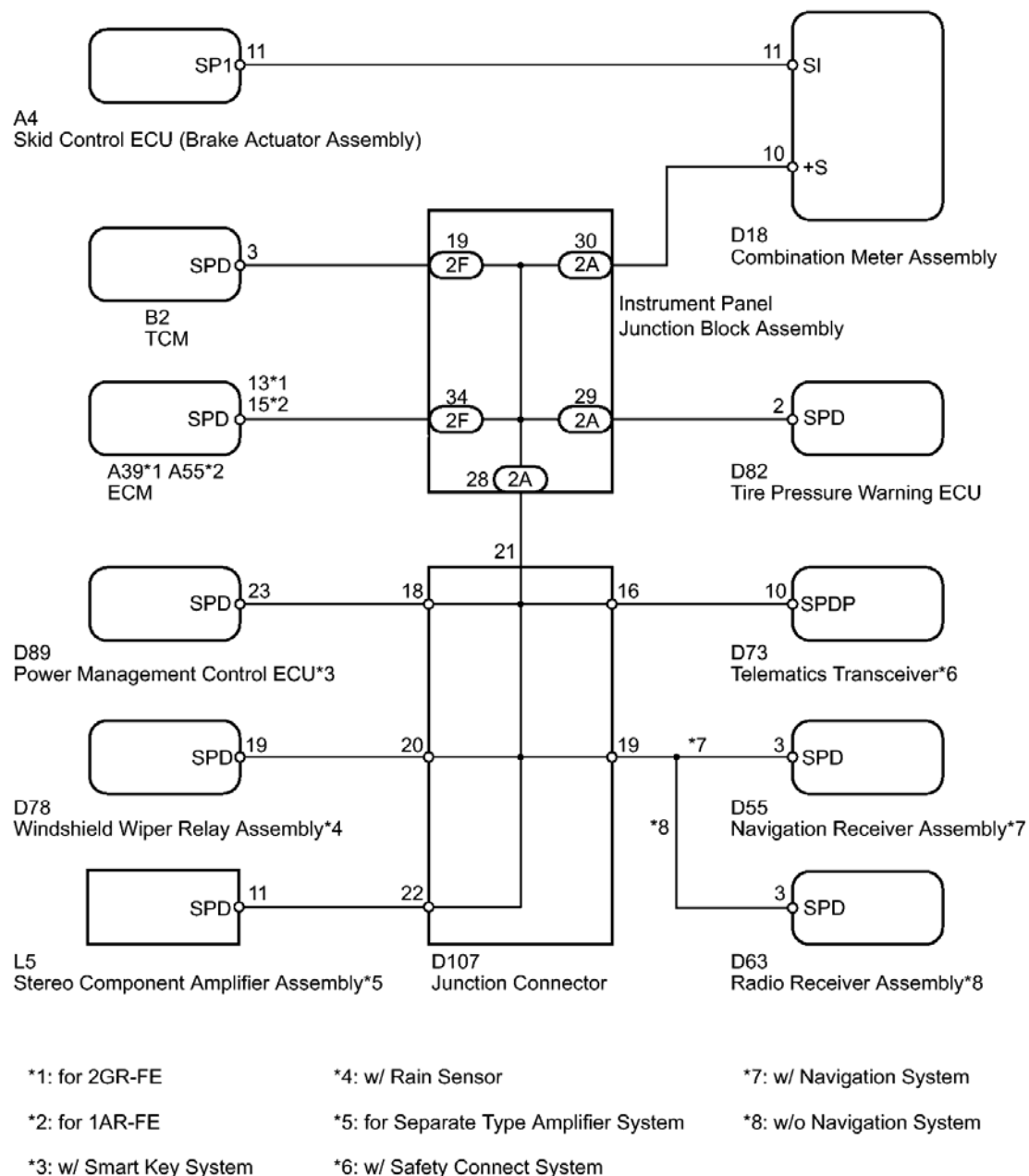


Fig. 17: Speed Signal Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. **INSPECT COMBINATION METER ASSEMBLY (INPUT VOLTAGE)**
 - a. Disconnect the D18 combination meter assembly connector.

*a

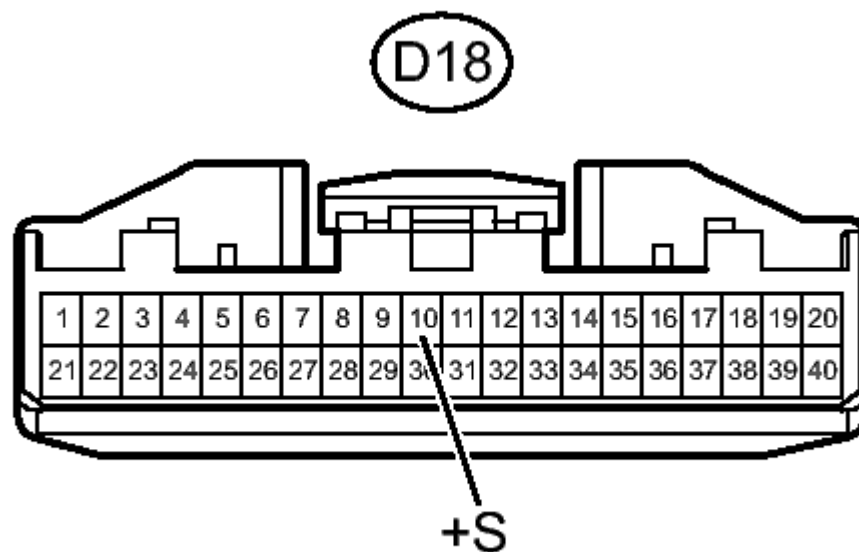


Fig. 18: Inspecting D18 Combination Meter Assembly Connector
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D18-10 (+S) - Body ground	Ignition switch ON	4.5 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Combination Meter Assembly)
----	--

HINT:

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

NG --> See step 5

OK: Go to next step

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

- a. Disconnect the A4 brake actuator assembly connector.

*a

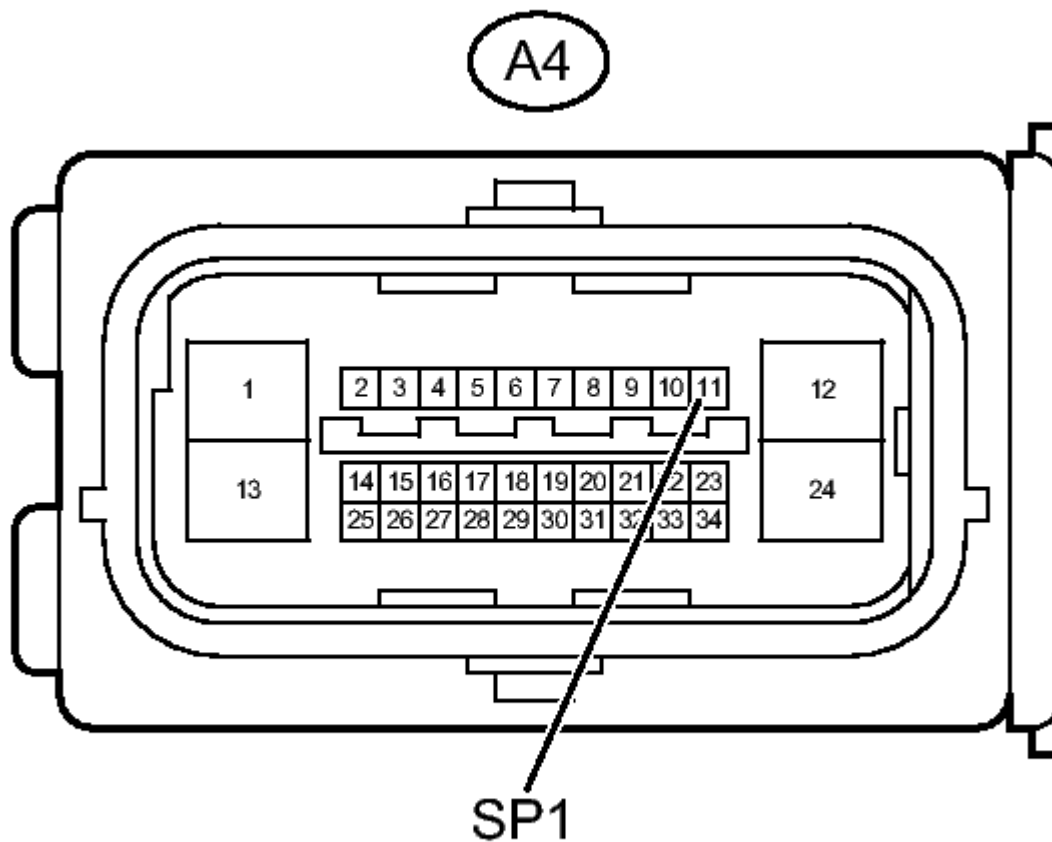


Fig. 19: A4 Brake Actuator Assembly Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
----------------------	---------------------	------------------------

A4-11 (SP1) - Body ground	Ignition switch ON	11 to 14 V
------------------------------------	--------------------------	------------

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Brake Actuator Assembly)
----	--

NG --> **See step 4**

OK: Go to next step

3. INSPECT BRAKE ACTUATOR ASSEMBLY (INPUT WAVEFORM)

- a. Check the input waveform.

*a

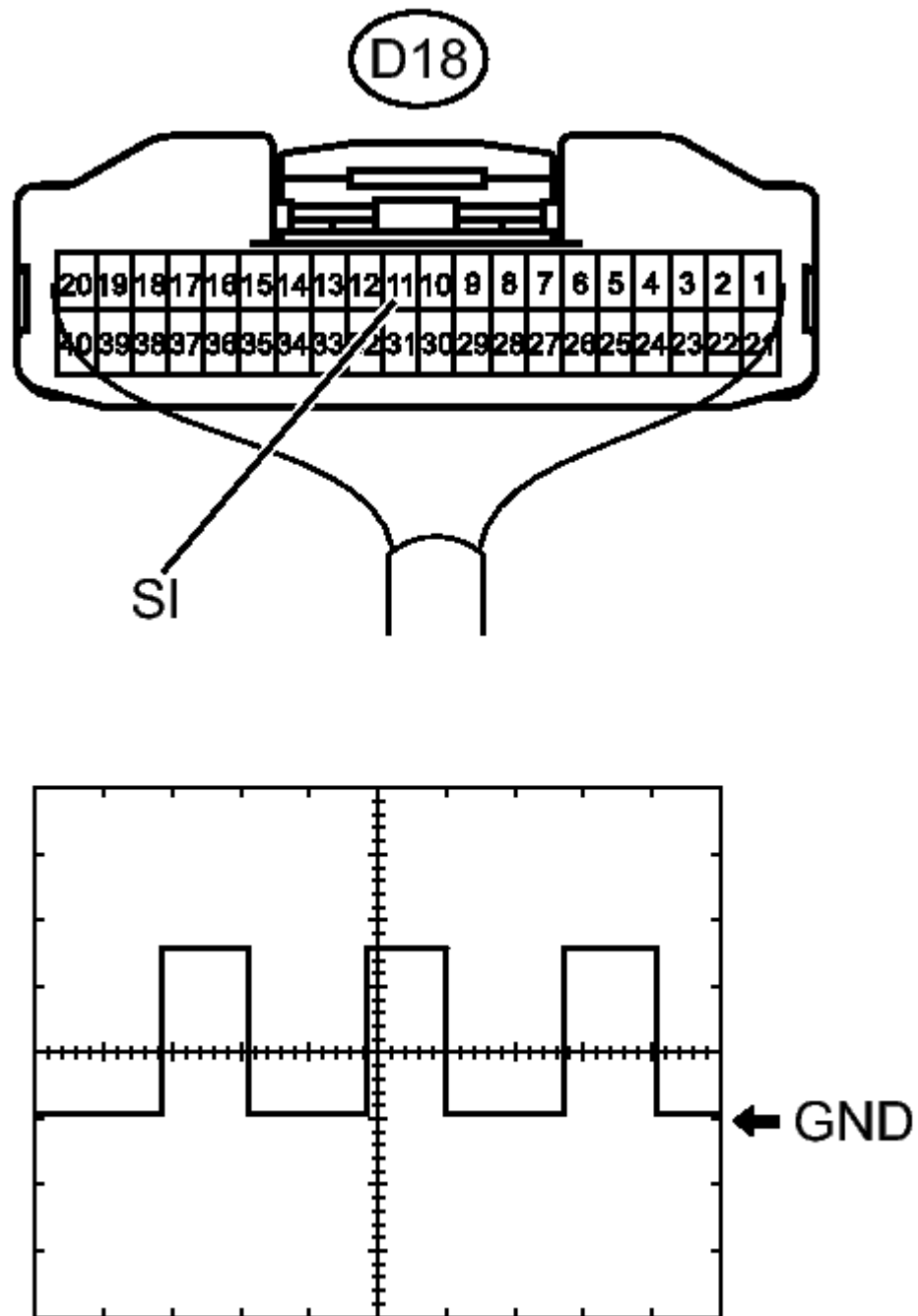


Fig. 20: Inspecting D18 Combination Meter Assembly Connector With Waveform
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Remove the combination meter assembly with the connector(s) still connected.
2. Connect an oscilloscope to terminal D18-11 (SI) and body ground.

3. Turn the ignition switch to ON.
4. Turn the wheel slowly.
5. Check the signal waveform according to the condition(s) in the table below.

Item	Condition
Tool setting	5 V/DIV., 20 ms./DIV.
Condition	Driving at approx. 20 km/h (12 mph)

OK

The waveform is displayed as shown in the illustration above.

HINT:

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

TEXT IN ILLUSTRATION

*a	Component with harness connected (Combination Meter Assembly)
----	--

NG --> See step 20

OK --> See step 19

4. CHECK HARNESS AND CONNECTOR (BRAKE ACTUATOR ASSEMBLY - COMBINATION METER ASSEMBLY)

- a. Disconnect the A4 brake actuator assembly connector.
- b. Disconnect the D18 combination meter assembly connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
A4-11		Below 1

(SP1) - D18-11 (SI)	Always	ohms
A4-11 (SP1) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 19

5. CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY)

- Disconnect the D18 combination meter assembly connector.
- Disconnect the 2A instrument panel junction block assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-10 (+S) - 2A- 30	Always	Below 1 ohms
D18-10 (+S) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

6. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY)

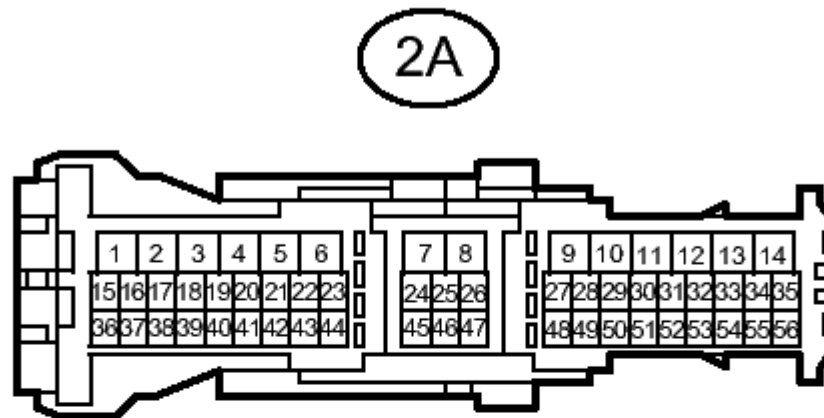
- Inspect for a short in the circuit that is connected to the instrument panel junction block assembly connector shown in the wiring diagram.

HINT:

If the voltage is not as specified, it is possible that an ECU or circuit has a malfunction. The malfunctioning ECU or circuit will be diagnosed in the following steps.

1. Disconnect the 2A and 2F instrument panel junction block assembly connectors.

*a



*a

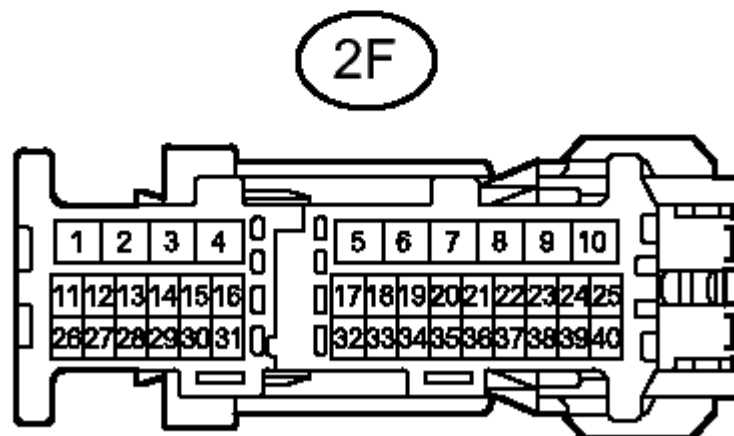


Fig. 21: 2A And 2F Instrument Panel Junction Block Assembly Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
2F-19 - Body ground	Ignition switch ON	4.5 to 14 V
2F-34 - Body ground	Ignition switch ON	4.5 to 14 V
2A-29 - Body ground	Ignition switch ON	4.5 to 14 V
2A-28 - Body ground	Ignition switch ON	4.5 to 14 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Instrument Panel Junction Block Assembly)
----	--

RESULT

Result	Proceed to
Voltage is not as specified in one circuit	A
Voltage is as specified in all circuits	B

B --> REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY

A: Go to next step

7. SYSTEM CHECK

- a. Select the circuit for which voltage was not as specified in the previous step 6.

RESULT

Tester Connection	System that Uses the Circuit	Proceed to
2F-19 - Body ground	Automatic transaxle system	A
2F-34 - Body ground	SFI system	B
2A-29 - Body ground	Tire pressure warning system	C
2A-28 - Body ground	Smart key system*1, wiper and washer system*2, separate type amplifier system*3, safety connect system*4, navigation system*5, audio and visual system*6	D

*1: w/ Smart Key System

*2: w/ Rain Sensor

*3: for Separate Type Amplifier System

*4: w/ Safety Connect System

*5: w/ Navigation System

*6: w/o Navigation System

B --> See step 9

C --> See step 10

D --> See step 11

A: Go to next step

8. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY - TCM)

- a. Disconnect the 2F instrument panel junction block assembly connector.
- b. Disconnect the B2 TCM connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
2F-19 - B2-3 (SPD)	Always	Below 1 ohms
2F-19 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 21

9. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY - ECM)

- a. Disconnect the 2F instrument panel junction block assembly connector.
- b. Disconnect the A39 or A55 ECM connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

FOR 2GR-FE

Tester Connection	Condition	Specified Condition
2F-34 - A39-13 (SPD)	Always	Below 1 ohms
2F-34 - Body ground	Always	10 kohms or higher

FOR 1AR-FE

Tester Connection	Condition	Specified Condition
2F-34 - A55-15 (SPD)	Always	Below 1 ohms
2F-34 - Body ground	Always	10 kohms or higher

RESULT

Result	Proceed to
NG	A
OK (for 2GR-FE)	B
OK (for 1AR-FE)	C

B --> See step 22

C --> See step 30

A --> REPAIR OR REPLACE HARNESS OR CONNECTOR

10. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY - TIRE PRESSURE WARNING ECU)

- Disconnect the 2A instrument panel junction block assembly connector.
- Disconnect the D82 tire pressure warning ECU connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
2A-29 - D82-2 (SPD)	Always	Below 1 ohms
2A-29 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 23

11. CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY - JUNCTION CONNECTOR)

- a. Disconnect the 2A instrument panel junction block assembly connector.
- b. Disconnect the D107 junction connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
2A-28 - D107-21	Always	Below 1 ohms
2A-28 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

12. CHECK HARNESS AND CONNECTOR (JUNCTION CONNECTOR)

- a. Inspect for a short in the circuit that is connected to the junction connector shown in the wiring diagram.
 1. Disconnect the D107 junction connector.

*a

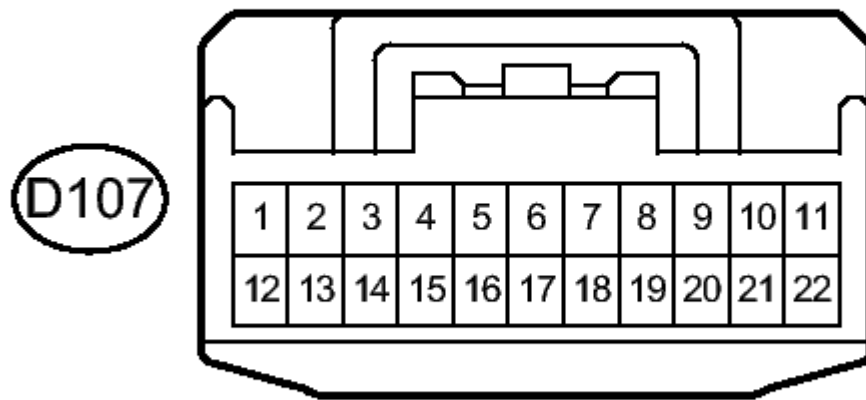


Fig. 22: D107 Junction Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D107-18 - Body ground*1	Ignition switch ON	4.5 to 14 V
D107-20 - Body ground*2	Ignition switch ON	4.5 to 14 V
D107-22 - Body ground*3	Ignition switch ON	4.5 to 14 V
D107-16 - Body ground*4	Ignition switch ON	4.5 to 14 V
D107-19 - Body ground	Ignition switch ON	4.5 to 14 V

*1: w/ Smart Key System

*2: w/ Rain Sensor

*3: for Separate Type Amplifier System

*4: w/ Safety Connect System

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Junction Connector)
----	--

RESULT

Result	Proceed to
Voltage is not as specified in one circuit	A
Voltage is as specified in all circuits	B

B --> REPLACE JUNCTION CONNECTOR

A: Go to next step

13. SYSTEM CHECK

- Select the circuit for which voltage was not as specified in the previous step 12.

RESULT

Tester Connection	System that Uses the Circuit	Proceed to
D107-18 - Body ground*1	Smart key system	A
D107-20 - Body ground*2	Wiper and washer system	B

D107-22 - Body ground*3	Separate Type Amplifier System	C
D107-16 - Body ground*4	Safety connect system	D
D107-19 - Body ground	Navigation system*5, audio and visual system*6	E

*1: w/ Smart Key System

*2: w/ Rain Sensor

*3: for Separate Type Amplifier System

*4: w/ Safety Connect System

*5: w/ Navigation System

*6: w/o Navigation System

B --> See step 15

C --> See step 16

D --> See step 17

E --> See step 18

A: Go to next step

14. CHECK HARNESS AND CONNECTOR (JUNCTION CONNECTOR - POWER MANAGEMENT CONTROL ECU)

- Disconnect the D107 junction connector.
- Disconnect the D89 power management control ECU connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D107-18 - D89-23 (SPD)	Always	Below 1 ohms
D107-18 -		10 kohms

Body ground	Always	or higher
-------------	--------	-----------

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 24

15. CHECK HARNESS AND CONNECTOR (JUNCTION CONNECTOR - WINDSHIELD WIPER RELAY ASSEMBLY)

- Disconnect the D107 junction connector.
- Disconnect the D78 windshield wiper relay assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D107-20 - D78-19 (SPD)	Always	Below 1 ohms
D107-20 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 25

16. CHECK HARNESS AND CONNECTOR (JUNCTION CONNECTOR - STEREO COMPONENT AMPLIFIER ASSEMBLY)

- Disconnect the D107 junction connector.
- Disconnect the L5 stereo component amplifier assembly connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D107-22 - L5-11 (SPD)	Always	Below 1 ohms
D107-22 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 26

17. CHECK HARNESS AND CONNECTOR (JUNCTION CONNECTOR - TELEMATICS TRANSCEIVER)

- a. Disconnect the D107 junction connector.
- b. Disconnect the D73 telematics transceiver connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D107-16 - D73-10 (SPDP)	Always	Below 1 ohms
D107-16 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 27

18. CHECK HARNESS AND CONNECTOR (JUNCTION CONNECTOR - NAVIGATION RECEIVER OR RADIO RECEIVER)

- a. w/ Navigation System
 1. Disconnect the D107 junction connector.
 2. Disconnect the D55 navigation receiver assembly connector.
 3. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D107-19 - D55-3 (SPD)	Always	Below 1 ohms
D107-19 - Body ground	Always	10 kohms or higher

- b. w/o Navigation System

1. Disconnect the D107 junction connector.
2. Disconnect the D63 radio receiver assembly connector.
3. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D107-19 - D63-3 (SPD)	Always	Below 1 ohms
D107-19 - Body ground	Always	10 kohms or higher

RESULT

Result	Proceed to
NG	A
OK (w/ Navigation System)	B
OK (w/o Navigation System)	C

B --> See step 28

C --> See step 29

A --> REPAIR OR REPLACE HARNESS OR CONNECTOR

19. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
20. **REPLACE BRAKE ACTUATOR ASSEMBLY. Refer to REMOVAL**
21. **REPLACE TCM. Refer to U660E - REMOVAL or U660F - REMOVAL or U760E - REMOVAL .**
22. **REPLACE ECM (for 2GR-FE). Refer to REMOVAL**
23. **REPLACE TIRE PRESSURE WARNING ECU. Refer to REMOVAL**
24. **REPLACE POWER MANAGEMENT CONTROL ECU. Refer to REMOVAL**
25. **REPLACE WINDSHIELD WIPER RELAY ASSEMBLY. Refer to REMOVAL**
26. **REPLACE STEREO COMPONENT AMPLIFIER ASSEMBLY. Refer to REMOVAL**
27. **REPLACE TELEMATICS TRANSCEIVER. Refer to REMOVAL**
28. **REPLACE NAVIGATION RECEIVER ASSEMBLY. Refer to REMOVAL**
29. **REPLACE RADIO RECEIVER ASSEMBLY. Refer to REMOVAL**

30. **REPLACE ECM (for 1AR-FE). Refer to REMOVAL**

ACCESSORIES & EQUIPMENT

Meter / Gauge System (Diagnostics - Introduction) - Sienna

METER / GAUGE SYSTEM

PRECAUTION

PRECAUTION

1. IGNITION SWITCH EXPRESSIONS

- a. 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 information.

Expression	Ignition Switch (Position)	Engine Switch (Condition)
Ignition switch off	LOCK	Off
Ignition switch ACC	ACC	On (ACC)
Ignition switch ON	ON	On (IG)
Engine start	START	Start

PARTS LOCATION

ILLUSTRATION

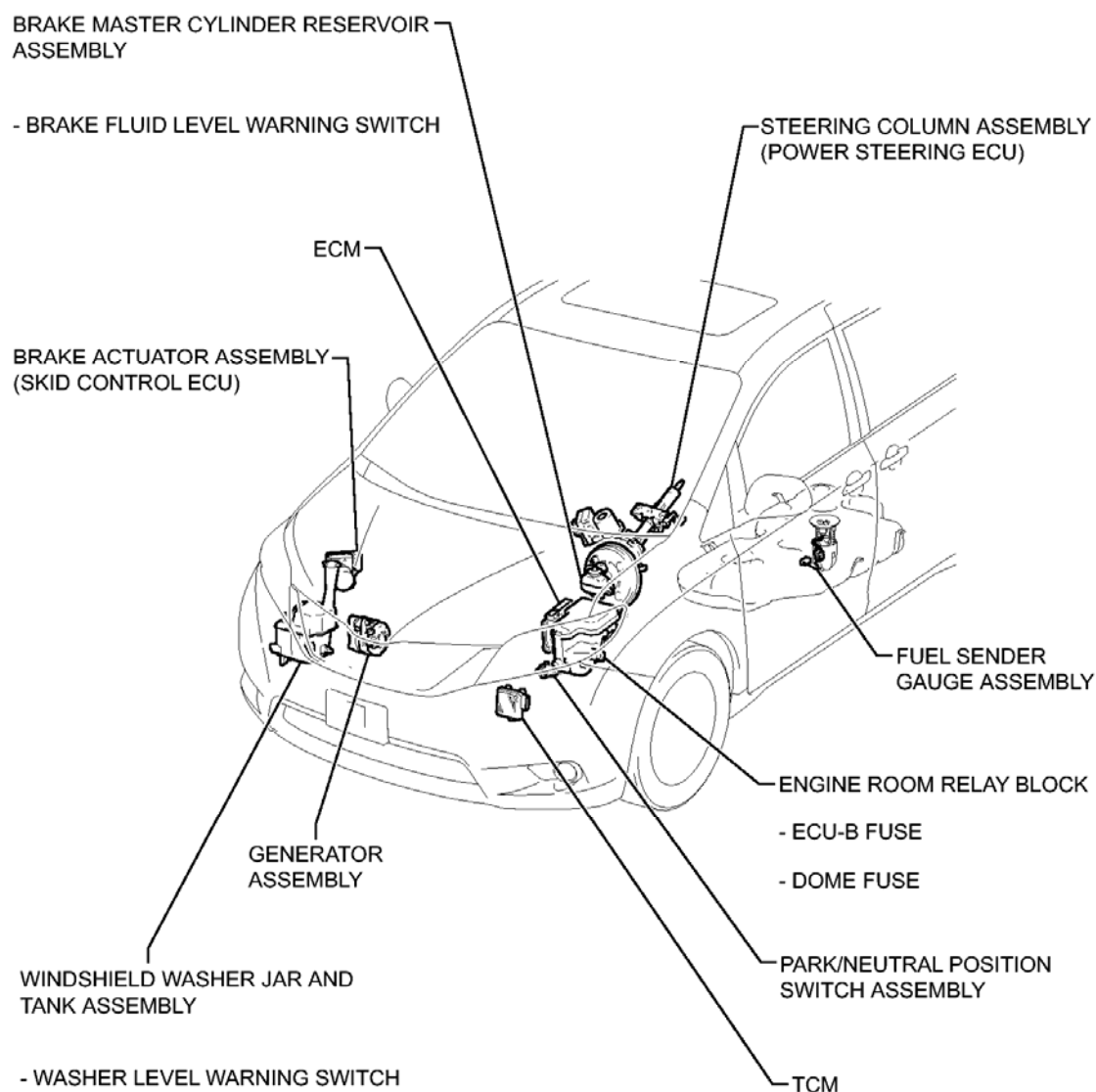
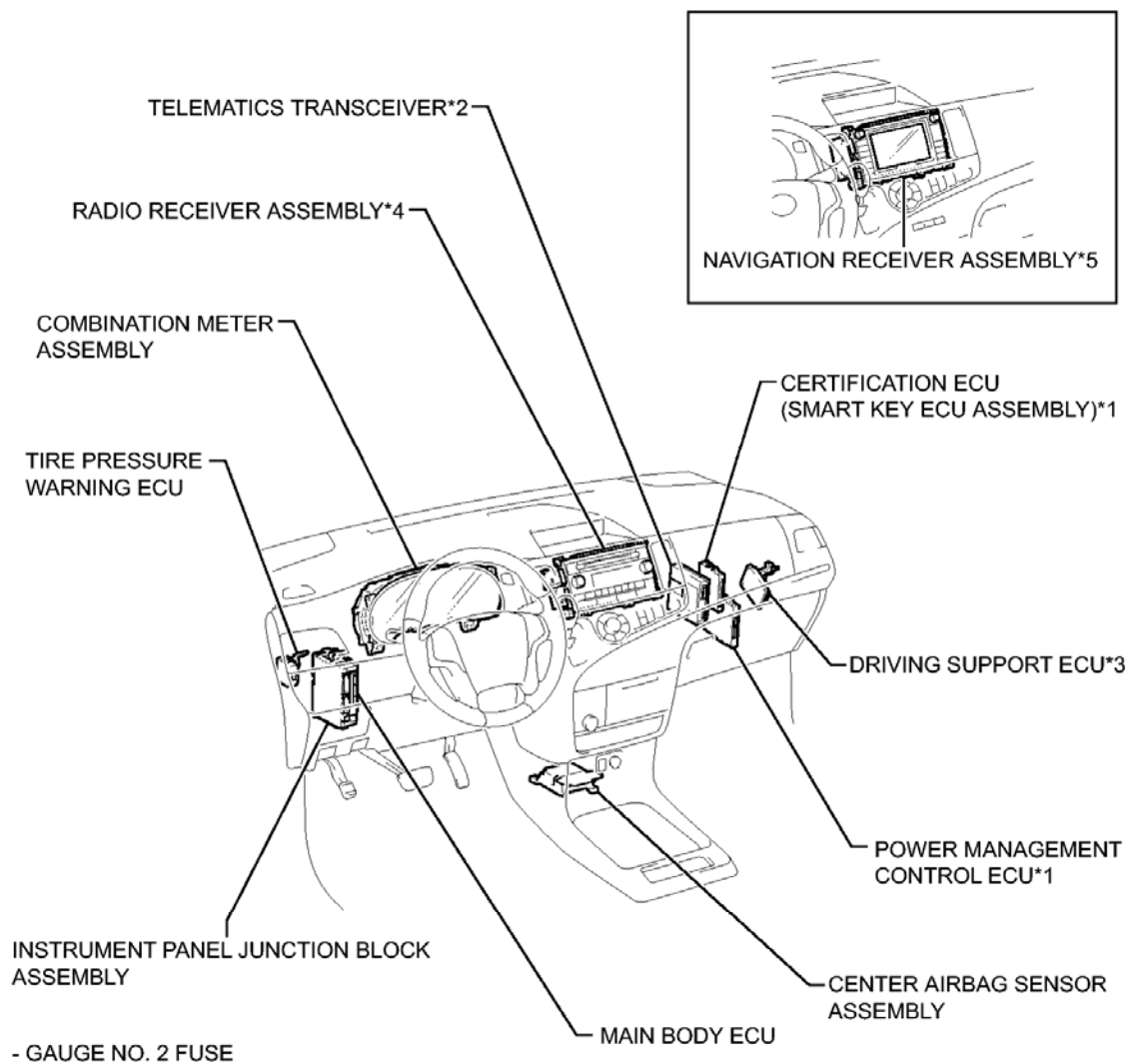


Fig. 1: Meter / Gauge / Display Components Location (1 Of 5)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



*1: w/ Smart Key System

*4: w/o Navigation System

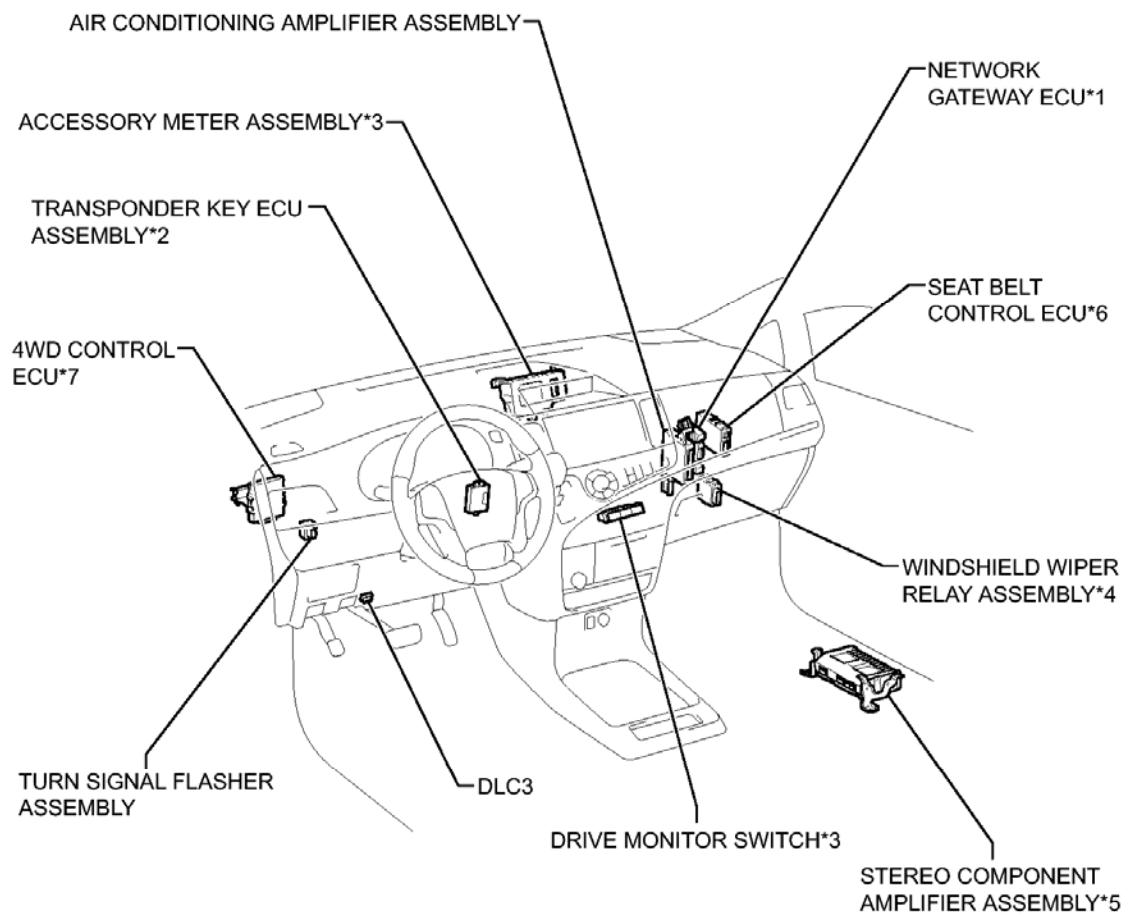
*2: w/ Safety Connect System

*5: w/ Navigation System

*3: w/ Dynamic Radar Cruise Control System

Fig. 2: Meter / Gauge / Display Components Location (2 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



*1: w/o Smart Key System

*3: w/ Multi-information Display

*6: w/ Pre-collision System

*2: w/ Engine Immobiliser System
and w/o Smart Key System

*4: w/ Rain Sensor

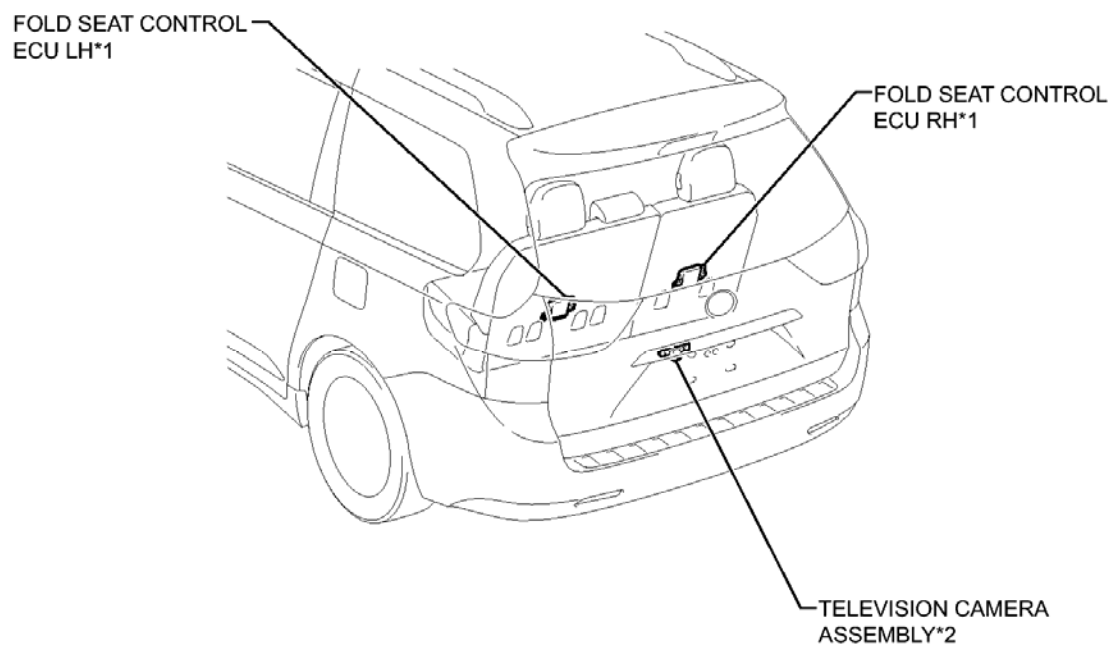
*7: for AWD

*5: for Separate Type Amplifier System

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Fig. 3: Meter / Gauge / Display Components Location (3 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



*1: w/ Power Seat Type

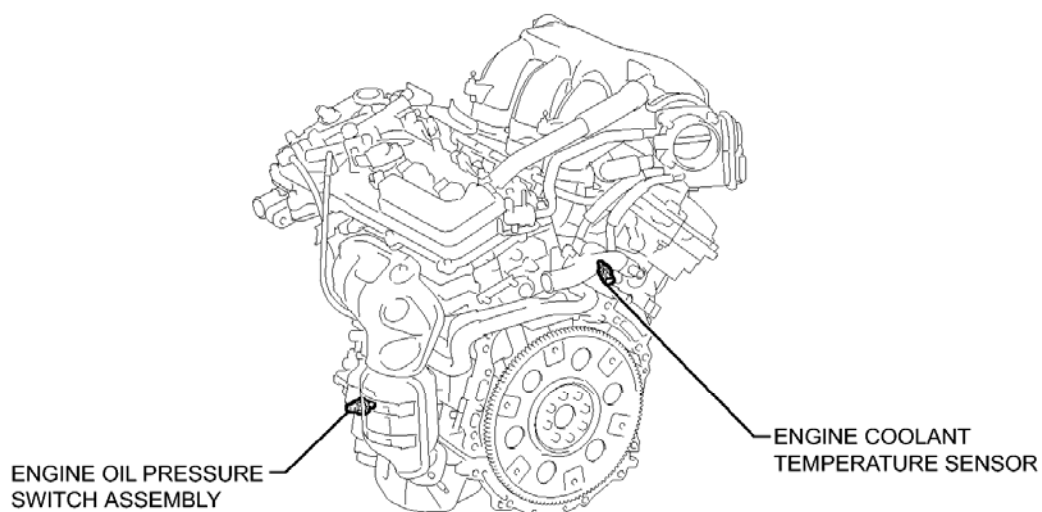
*2: w/ Multi-information Display

P

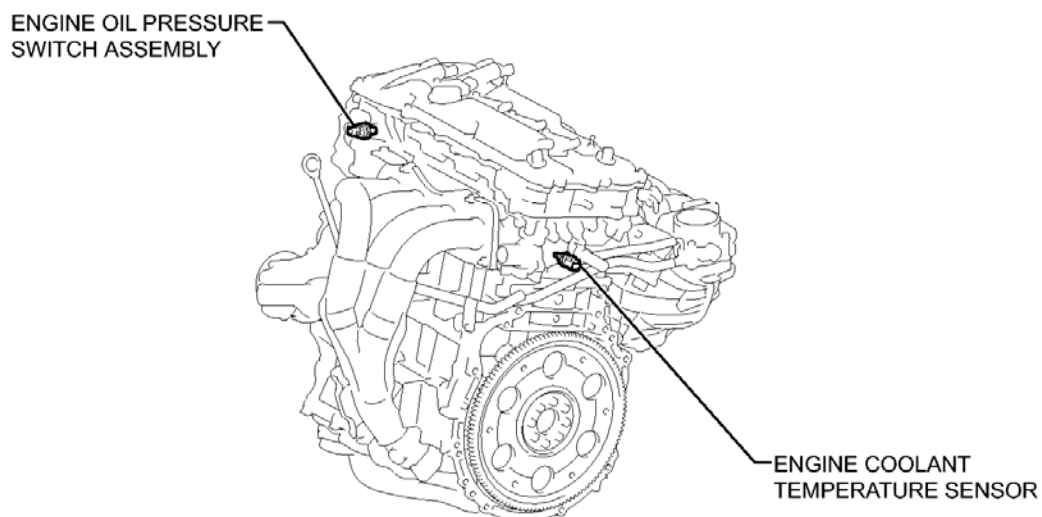
Fig. 4: Meter / Gauge / Display Components Location (4 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

for 2GR-FE:



for 1AR-FE:



P

Fig. 5: Meter / Gauge / Display Components Location (5 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

1. CAN SIGNAL

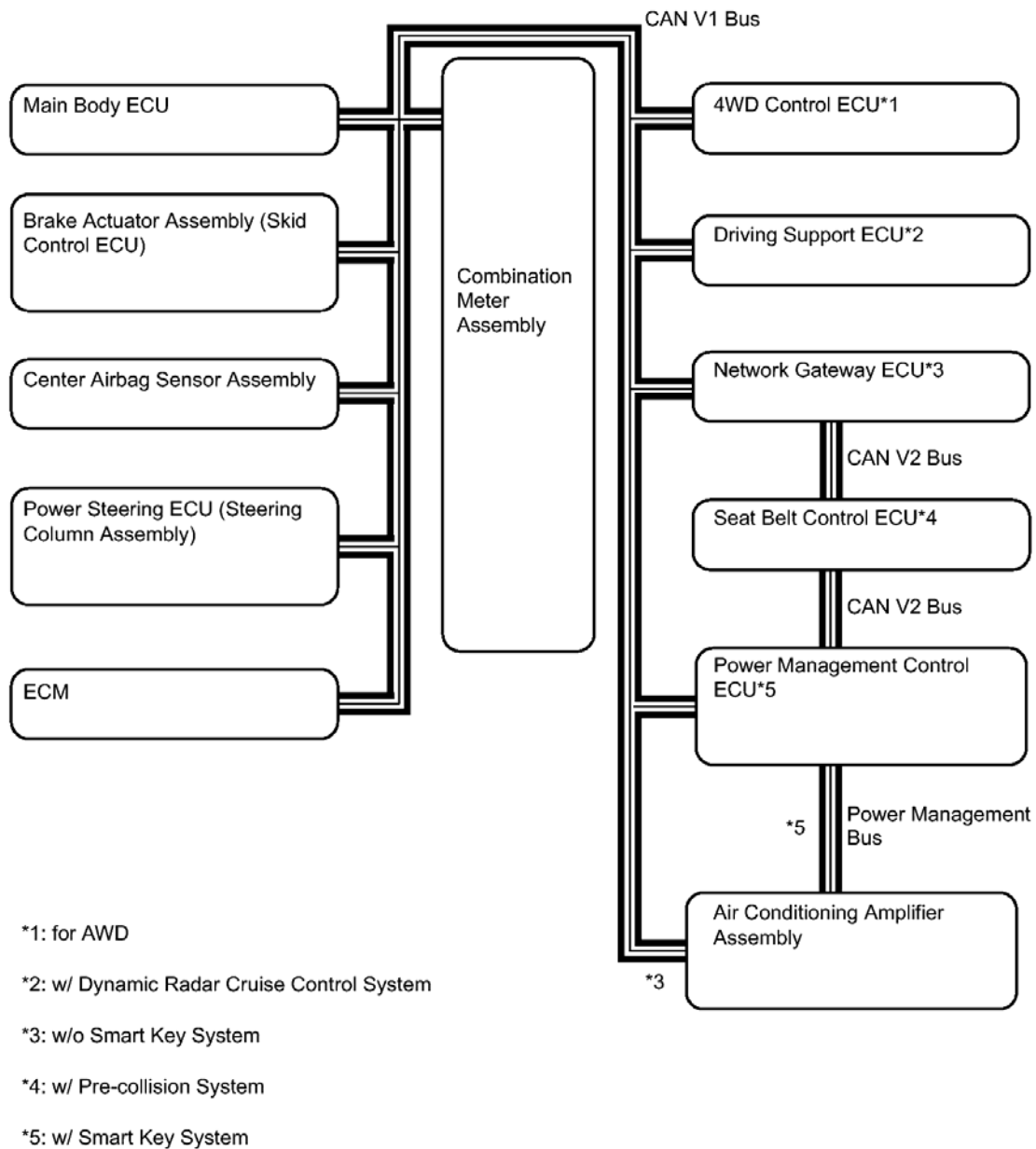


Fig. 6: Meter / Gauge / Display System Diagram (1 Of 4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. DIRECT LINE SIGNAL

a. Combination Meter Assembly

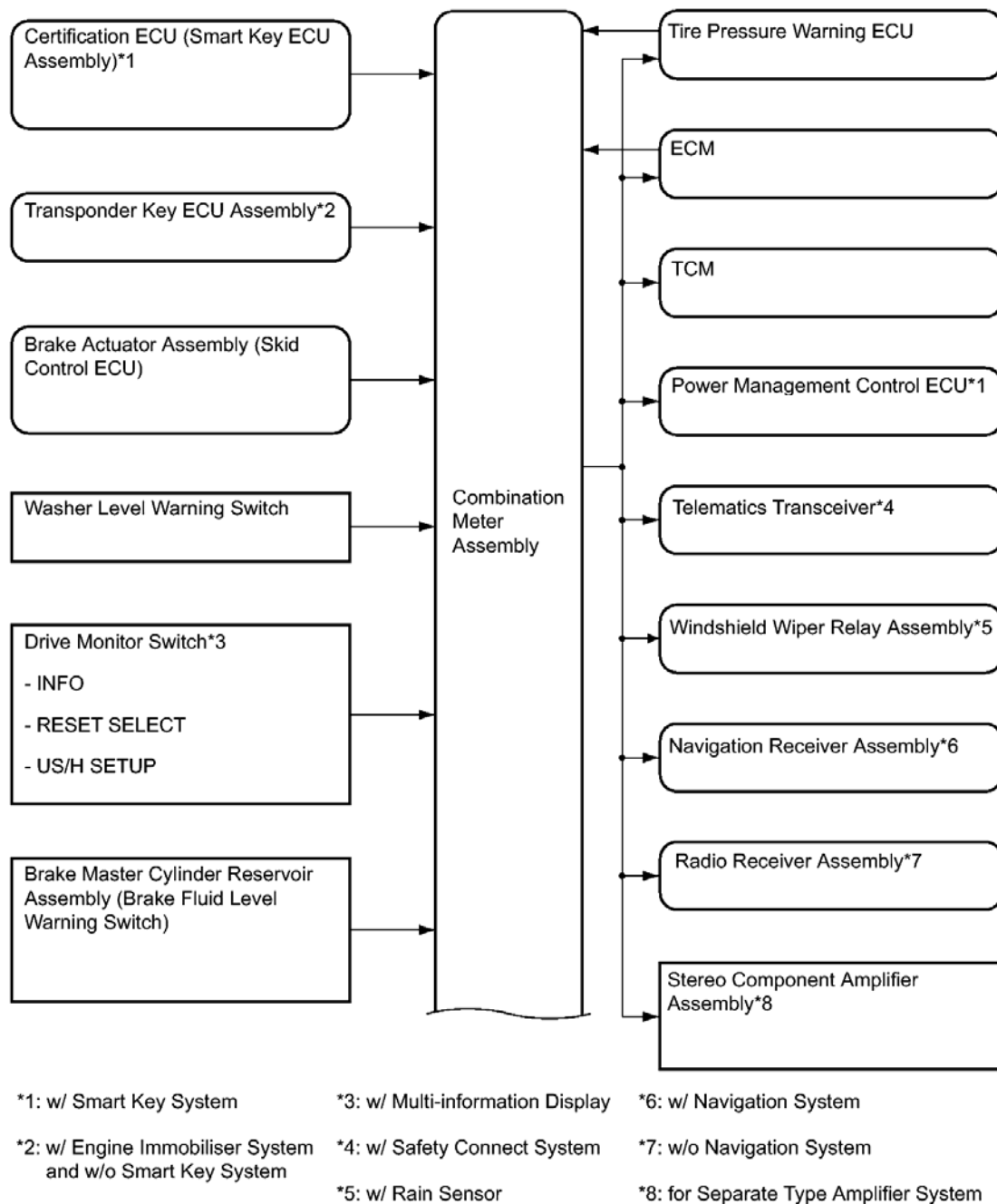


Fig. 7: Meter / Gauge / Display System Diagram (2 Of 4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

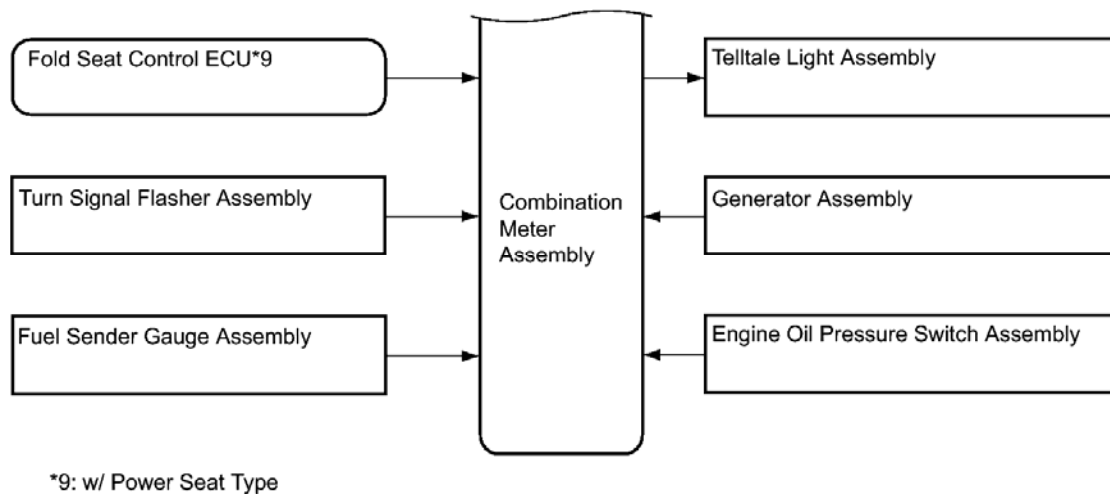


Fig. 8: Meter / Gauge / Display System Diagram (3 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Accessory Meter Assembly (w/ Multi-information Display)

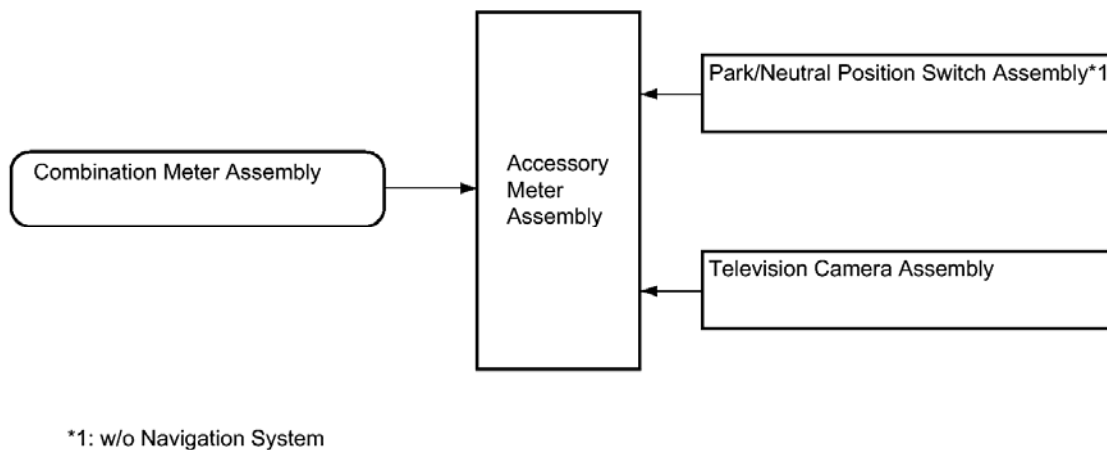
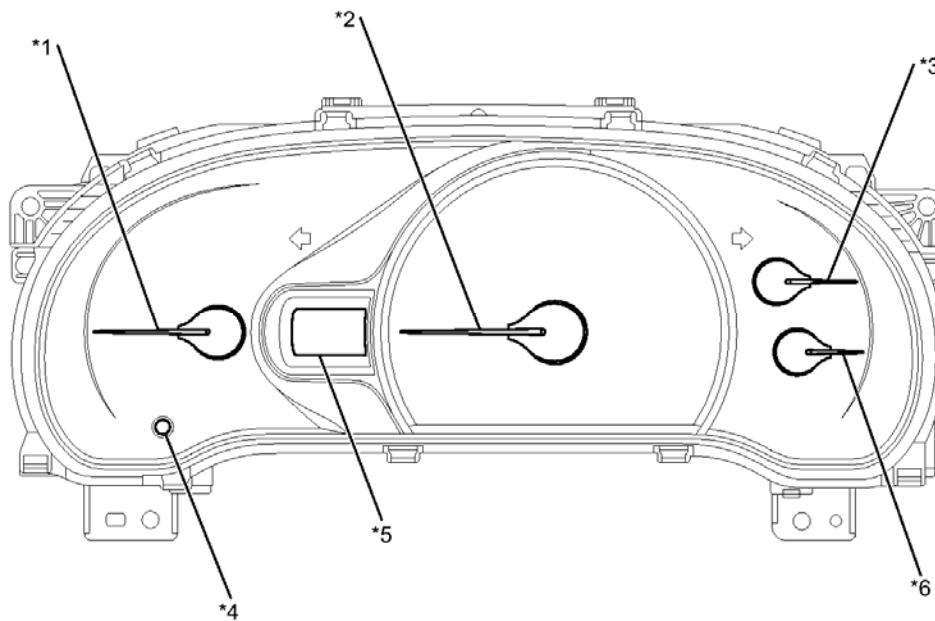


Fig. 9: Meter / Gauge / Display System Diagram (4 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. METER GAUGE AND WARNING INDICATOR



P

Fig. 10: Identifying Meter Gauge And Warning Indicator Components
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Tachometer	*2	Speedometer
*3	Fuel Receiver Gauge	*4	MODE Switch, Light Control Rheostat Knob
*5	Multi-information Display	*6	Engine Coolant Temperature Receiver Gauge

METER/GAUGE

Item	Signal Description
	Indicates vehicle speed based on signal received

Speedometer	from brake actuator assembly (skid control ECU) (CAN V1 Bus).
Tachometer	Indicates engine speed based on signal received from ECM (CAN V1 Bus).
Fuel receiver gauge	Indicates fuel level based on signal received from fuel sender gauge assembly (Direct Line).
Engine coolant temperature receiver gauge	Indicates engine coolant temperature based on signal received from ECM (CAN V1 Bus).

WARNING/INDICATOR

Item	Signal Description
BEAM	Receives beam indicator signal from main body ECU (CAN

	V1 Bus).
TURN	Receives turn indicator signal from turn signal flasher assembly (Direct Line).
FUEL	Receives fuel warning signal from fuel sender gauge assembly (Direct Line).
BRAKE	Receives brake signal from brake fluid level warning switch (Direct Line), main body ECU and brake actuator assembly (skid control ECU) (CAN V1 Bus).
SRS	Receives SRS warning signal from center airbag sensor assembly (CAN V1 Bus).
	Receives open door

DOOR	warning signal from main body ECU (CAN V1 Bus).
OIL PRESSURE	Receives engine oil pressure warning signal from engine oil pressure switch assembly (Direct Line).
CHARGE	Receives charge warning signal from generator assembly (Direct Line).
MIL (Check engine warning light)	Receives malfunction check engine warning signal from ECM (Direct Line).
D BELT	Receives driver side seat belt warning signal from main body ECU (CAN V1 Bus).
ABS	Receives ABS warning signal from brake actuator

	assembly (skid control ECU) (CAN V1 Bus).
POWER STEERING	Receives power steering warning signal from steering column assembly (power steering ECU) (CAN V1 Bus).
FRONT FOG*1	Receives front fog light indicator signal from main body ECU (CAN V1 Bus).
AUTOMATIC HIGH BEAM*2	Receives automatic high beam indicator signal from main body ECU (CAN V1 Bus).
HEAD*3	Receives head indicator signal from main body ECU (CAN V1 Bus).
TAIL*4	Receives tail indicator signal from main body ECU (CAN V1 Bus).

SET*5	Receives cruise set indicator signal from ECM (CAN V1 Bus).
MAINT REQD*3	Oil maintenance reminder light comes on or blinks to remind the driver to change the engine oil depending on the vehicle driving distance.
AWD*6	Receives AWD warning signal from 4WD control ECU (CAN V1 Bus).
TRAC OFF	Receives TRAC OFF indicator signal from brake actuator assembly (skid control ECU) (CAN V1 Bus).
TIRE PRESSURE	Receives tire pressure warning signal from tire pressure warning ECU (Direct

	Line).
WASHER	Receives washer level warning signal from washer level warning switch (Direct Line).
SECURITY*7	Receives signal from certification ECU (smart key ECU assembly)*8 or transponder key ECU assembly*9 (Direct Line).
MASTER WARNING	Receives signal from each ECU (CAN V1 Bus).
SLIP	Receives VSC indicator signal from skid control ECU (brake actuator assembly) (CAN V1 Bus).
CRUISE*5	Receives cruise main indicator signal from ECM (CAN V1 Bus).
ECO	Receives ecology light indicator

	signal from ECM (CAN V1 Bus).
PCS*10	Receives PCS indicator signal from seat belt control ECU (CAN V2 Bus).
3RD SEAT*11	Receives 3rd seat indicator signal from fold seat control ECU (Direct Line).
SLIP OFF	Receives VSC off indicator signal from brake actuator assembly (skid control ECU) (CAN V1 Bus).
DYNAMIC RADAR CRUISE*12	Receives dynamic radar cruise main indicator signal from driving support ECU (CAN V1 Bus).
READY*12	Receives dynamic radar cruise set indicator signal from driving

	support ECU (CAN V1 Bus).
--	---------------------------------

- *1: w/ Front Fog Light
- *2: w/ Automatic High Beam System
- *3: for U.S.A.
- *4: except U.S.A.
- *5: w/ Cruise Control System
- *6: for AWD
- *7: w/ Engine Immobiliser System
- *8: w/ Smart Key System
- *9: w/o Smart Key System
- *10: w/ Pre-collision System
- *11: w/ Power Seat Type
- *12: w/ Dynamic Radar Cruise Control System

BUZZER

Item	Signal Description
Seat belt warning	Buzzer ON: When ignition switch is ON, seat belt is unfastened, and vehicle speed is 20 km/h (12.4 mph) or more.
Power steering buzzer	Buzzer ON: Receives signal from steering column assembly (power steering ECU).
	Buzzer ON: Ignition switch is

Key reminder*1	off, key is inserted, and driver side door is open.
Smart key warning*2	Buzzer ON: Receives signal from certification ECU (smart key ECU assembly).
Immobiliser buzzer*3	Buzzer ON: Receives signal from transponder key ECU*1 or certification ECU (smart key ECU assembly) *2.
Master warning buzzer	Buzzer ON: Receives signal from each ECU.
Dynamic radar cruise low speed cancel buzzer*4	Buzzer ON: Receives signal from driving support ECU.
Dynamic radar cruise warning buzzer*4	Buzzer ON: Receives signal from driving support ECU.
PKB reminder	Buzzer ON: When ignition switch is ON, parking brake is operating,

	and vehicle speed is 5 km/h (3.1 mph) or more.
Driving with any door opened warning buzzer	Buzzer ON: When ignition switch is ON, door is open, and vehicle speed is 5 km/h (3.1 mph) or more.
Shift down reject buzzer	Buzzer ON: Receives signal from ECM.

*1: w/o Smart Key System

*2: w/ Smart Key System

*3: w/ Engine Immobiliser System

*4: w/ Dynamic Radar Cruise Control System

OTHER

Item		Signal Description
Cruise information	ODO meter	The display can be switched using the MODE switch located on the lower left of the combination meter assembly.
	TRIP meter	
	Eco Driving Indicator Light customize screen	
Shift position indicator display		Display the shift position and shift range.
		Display the

Dynamic radar cruise control display*1	operating condition of the dynamic radar cruise control.
--	--

*1: w/ Dynamic Radar Cruise Control System

2. ACCESSORY METER ASSEMBLY (w/ Multi-information Display)

Item		Signal Description
Cruise information display	Average fuel economy	Six types of information (average fuel economy, Eco Driving Indicator Zone Display, current fuel economy, driving range, average speed, trip timer) can be displayed.
	Eco Driving Indicator Zone Display	
	Current fuel economy	
	Driving range	
	Average speed	
	Trip timer	
Multi-information display	Each system warning	Interrupts the multi-information display immediately when a warning occurs.
	Custom setting display	Displays the customized setting of each item.
	Rear view monitor display*1	Displays the image of the area behind the vehicle.
		Displays the

Outside temperature	outside temperature.
Illumination control	Displays the current illumination level and adjust the combination meter assembly brightness.
Air conditioning	Interrupts the multi-information display immediately when air conditioning is operated.

*1: w/o Navigation System

3. MULTI-INFORMATION DISPLAY FLOW CHART

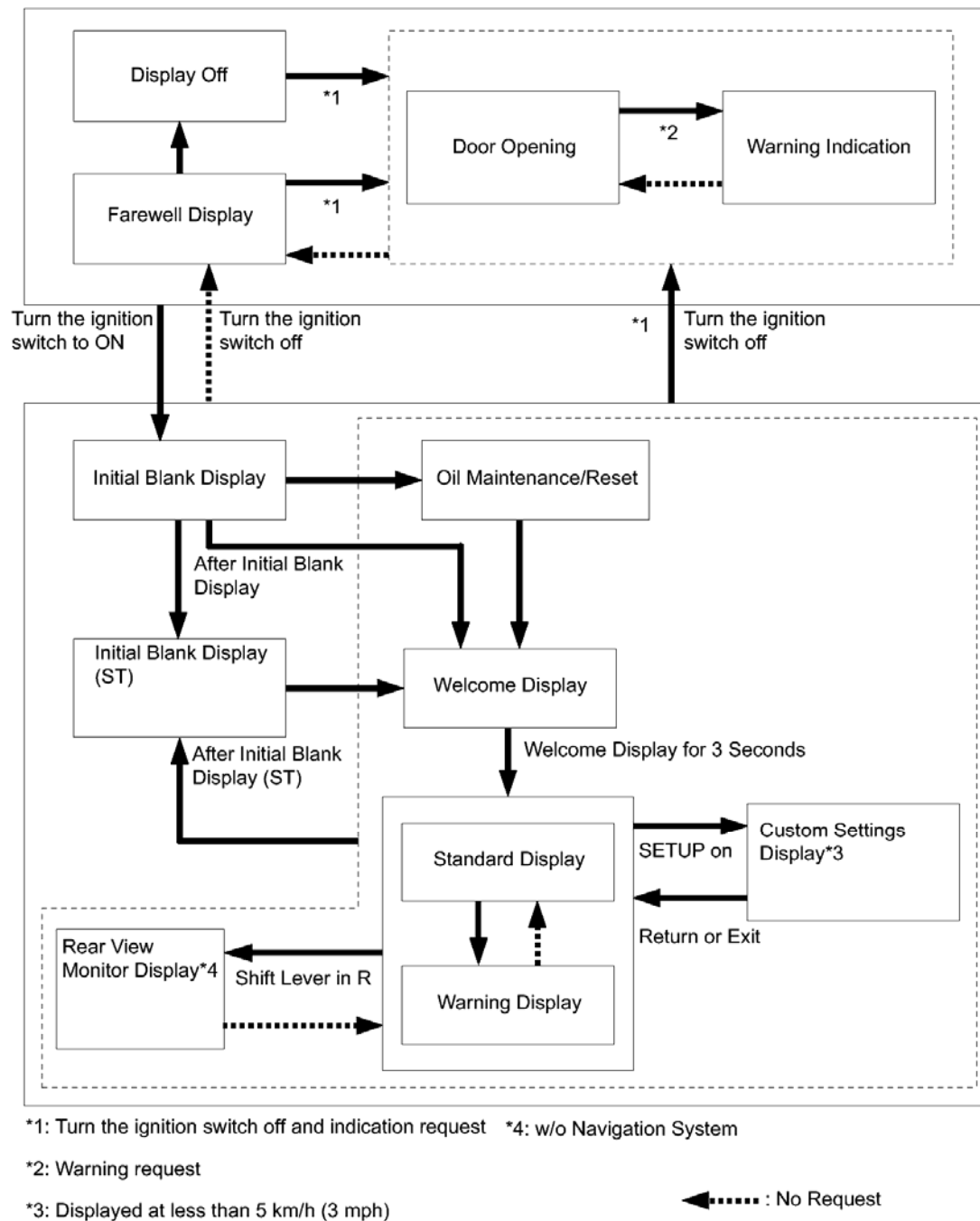


Fig. 11: Multi-Information Display Flow Chart
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. LED CHECK

- Check the indicator/warning light operation according to the condition(s) in the table below.

Indicator/Warning Light	Specification

BRAKE, ABS, MAINT REQD*1, SLIP, SLIP OFF, TRAC OFF, WASHER, TIRE PRESSURE, ECO, READY*2, PCS*3	Indicator/Warning light comes on for about 3 seconds after turning the ignition switch to ON.
AWD*4	Warning light comes on for about 4 seconds after turning the ignition switch to ON.
SRS	Warning light comes on for about 6 seconds after turning the ignition switch to ON.
CHARGE, POWER STEERING, OIL PRESSURE, MIL, MASTER WARNING	Indicator/Warning light comes on after turning the ignition switch to ON and the indicator light goes off after the engine starts.

*1: for U.S.A.

*2: w/ Dynamic Radar Cruise Control System

*3: w/ Pre-collision System

*4: for AWD

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the combination meter.
- *: Use the Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

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: Go to next step

3. CHECK CAN COMMUNICATION SYSTEM*

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

RESULT

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

B --> GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

A: Go to next step

4. REFER TO PROBLEM SYMPTOMS TABLE

RESULT

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

A: Go to next step

5. CONDUCT OVERALL ANALYSIS AND TROUBLESHOOTING*

- a. Data List/Active Test. Refer to **DATA LIST / ACTIVE TEST**
- b. Terminals of ECU. Refer to **TERMINALS OF ECU**
- c. On-vehicle Inspection. Refer to **ON-VEHICLE INSPECTION**

NEXT: Go to next step

6. ADJUST, REPAIR OR REPLACE

NEXT: Go to next step

7. CONDUCT CONFIRMATION TEST*

NEXT --> END

CUSTOMIZE PARAMETERS

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH TECHSTREAM

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.

WARNING

Display	Default	Content	Setting
Key Remind Volume*1	LARGE	Changes key reminder buzzer volume	LARGE MEDIUM SMALL
Key Remind	SLOW	Changes key reminder	NORMAL SLOW

Sound*1		buzzer intervals	SMALL
Driver Side Seatbelt Warning Buzzer	ON	Changes seat belt warning buzzer	ON/OFF
Front Passenger Side Seatbelt Warning Buzzer	ON	Changes seat belt warning buzzer	ON/OFF

*1: w/o Smart Key System

DISPLAY

Display	Default	Content	Setting
ECO Drive Indicator	ON	Change Eco Driving Indicator Zone Display	ON/OFF

INITIALIZATION

INITIALIZATION

1. OIL MAINTENANCE REMINDER RESETTING PROCEDURE

HINT:

The MODE switch knob is located on the lower left side of the combination meter assembly.

- Turn the ignition switch to ON.
- Press the MODE switch knob until the TRIP A meter appears.
- Turn the ignition switch off.
- Turn the ignition switch to ON while pressing and holding the MODE switch knob. Hold the MODE switch knob until the following conditions are met and 5 seconds have passed.
 - The TRIP A meter shows "000000".
 - The master warning light illuminates.
 - When "000000" disappears and the master warning light turns off, the resetting procedure is complete.

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

MALFUNCTION SYSTEM

Symptom	Suspected Area	See
Entire combination meter does not operate	Refer to troubleshooting	Refer to <u>Entire Combination Meter does not Operate</u>
Meter illumination is always dark*1	Refer to troubleshooting	Refer to <u>Meter Illumination is Always Dark</u>
Meter illumination does not dim at night*1	Refer to troubleshooting	Refer to <u>Meter Illumination does not Dim at Night</u>
Accessory meter does not illuminate*2	Refer to troubleshooting	Refer to <u>Accessory Meter does not Illuminate</u>

*1: w/ Automatic Light Control System

*2: w/ Multi-information Display

METER OR GAUGE

Symptom	Suspected Area	See
Speedometer malfunction	Refer to troubleshooting	Refer to <u>Speedometer Malfunction</u>
Tachometer malfunction	Refer to troubleshooting	Refer to <u>Tachometer Malfunction</u>
Fuel receiver gauge malfunction	Refer to troubleshooting	Refer to <u>Fuel Receiver Gauge Malfunction</u>
Engine coolant temperature receiver gauge malfunction	Refer to troubleshooting	Refer to <u>Engine Coolant Temperature Receiver Gauge Malfunction</u>

WARNING/INDICATOR

Symptom	Suspected Area	See
Beam indicator light does not come on	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Headlight (HI-BEAM) circuit	Refer to <u>Headlight (HI-BEAM) Circuit</u>
	Light control switch circuit	Refer to <u>Light Control Switch Circuit</u>

	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Turn indicator light does not come on	Headlight dimmer switch assembly	Refer to <u>REMOVAL</u>
	Turn signal flasher assembly	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
Fuel level warning light does not come on	Fuel sender gauge assembly (for 2GR-FE)	Refer to <u>INSPECTION</u>
	Fuel sender gauge assembly (for 1AR-FE)	Refer to <u>INSPECTION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
Brake warning light does not come on	Refer to troubleshooting	Refer to <u>Brake Warning Light does not Come ON</u>
Brake warning light remains on	Refer to troubleshooting	Refer to <u>Brake Warning Light Remains ON</u>
SRS warning light does not come on	Refer to troubleshooting	Refer to <u>SRS Warning Light does not Come ON</u>
SRS warning light remains on	Refer to troubleshooting	Refer to <u>SRS Warning Light Remains ON</u>
Open door warning light does not come on	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Door courtesy switch circuit	Refer to <u>Door Courtesy Switch Circuit</u>
	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Engine oil pressure warning light does not come on	Engine oil pressure switch assembly (for 2GR-FE)	Refer to <u>INSPECTION</u>
	Engine oil pressure switch assembly (for 1AR-FE)	Refer to <u>INSPECTION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
Charge warning light does not come on	Generator assembly (for 2GR-FE)	Refer to <u>INSPECTION</u>
	Generator assembly (for 1AR-FE)	Refer to <u>INSPECTION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
MIL does not come on	MIL circuit (for 2GR-FE)	Refer to <u>MIL Circuit</u>
	MIL circuit (for 1AR-FE)	Refer to <u>MIL Circuit</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
Driver side seat belt		Refer to <u>Driver Side Seat Belt Warning Light</u>

warning light operates	Refer to troubleshooting	<u>does not Operate</u>
ABS warning light does not come on	Refer to troubleshooting	Refer to <u>ABS Warning Light does not Come ON</u>
ABS warning light remains on	Refer to troubleshooting	Refer to <u>ABS Warning Light Remains ON</u>
Power steering warning light remains on	Refer to troubleshooting	Refer to <u>PS Warning Light Remains ON</u>
Front fog light indicator light does not come on*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Front fog light circuit	Refer to <u>Front Fog Light Circuit</u>
	Light control switch circuit	Refer to <u>Light Control Switch Circuit</u>
	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Automatic high beam indicator light does not come on*2	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Headlight (HI-BEAM) circuit	Refer to <u>Headlight (HI-BEAM) Circuit</u>
	Light control switch circuit	Refer to <u>Light Control Switch Circuit</u>
	Headlight swivel ECU assembly	Refer to <u>REMOVAL</u>
	Inner rear view mirror assembly	Refer to <u>INSPECTION</u>
	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
HEAD indicator light does not come on*3	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Headlight relay circuit	Refer to <u>Headlight Relay Circuit</u>
	Light control switch circuit	Refer to <u>Light Control Switch Circuit</u>
	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
TAIL indicator light does not come on*4	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Taillight relay circuit	Refer to <u>Taillight Relay Circuit</u>
	Light control switch circuit	Refer to <u>Light Control Switch Circuit</u>
	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Cruise set indicator light does not come on*5	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Cruise set indicator light circuit	Refer to <u>Cruise SET Indicator Light Circuit</u>
	ECM (for 2GR-FE)	Refer to <u>REMOVAL</u>
	ECM (for 1AR-FE)	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Oil maintenance	Oil maintenance reminder	

reminder indicator light does not come on*3	reset procedure undone	Refer to <u>INITIALIZATION</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
AWD warning light does not come on*6	Refer to troubleshooting	Refer to <u>AWD Warning Light does not Come ON</u>
AWD warning light remains on*6	Refer to troubleshooting	Refer to <u>AWD Warning Light Remains ON</u>
TRAC OFF indicator light does not come on	Refer to troubleshooting	Refer to <u>TRAC OFF Indicator Light does not Come ON</u>
TRAC OFF indicator light remains on	Refer to troubleshooting	Refer to <u>TRAC OFF Indicator Light Remains ON</u>
Tire pressure warning light does not come on	Tire pressure warning light circuit	Refer to <u>Tire Pressure Warning Light Circuit</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Washer level warning light does not come on	Washer level warning switch	Refer to <u>INSPECTION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
Security indicator light does not come on*7	CAN communication system (w/ Smart Key System)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Security indicator light circuit (w/ Smart Key System)	Refer to <u>Security Indicator Light Circuit</u>
	Security indicator light circuit (w/o Smart Key System)	Refer to <u>Security Indicator Light Circuit</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Master warning light does not come on	Combination meter assembly	Refer to <u>REMOVAL</u>
Slip indicator light does not come on	Refer to troubleshooting	Refer to <u>Slip Indicator Light does not Come ON</u>
Slip indicator light remains on	Refer to troubleshooting	Refer to <u>Slip Indicator Light Remains ON</u>
Cruise main indicator light does not come on*5	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Cruise main indicator light circuit	Refer to <u>Cruise Main Indicator Light Circuit</u>
	ECM (for 2GR-FE)	Refer to <u>REMOVAL</u>
	ECM (for 1AR-FE)	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Eco Driving Indicator Light does not turn on	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	ECM (for 2GR-FE)	Refer to <u>REMOVAL</u>
	ECM (for 1AR-FE)	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
PCS indicator light does	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>

not come on*8	Pre-collision system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
3rd seat indicator light does not come on*9	Fold seat control ECU	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
VSC off indicator light does not come on	Refer to troubleshooting	Refer to <u>TRAC OFF Indicator Light does not Come ON</u>
VSC off indicator light remains on	Refer to troubleshooting	Refer to <u>VSC OFF Indicator Light Remains ON</u>
Dynamic radar cruise main indicator light does not come on*10	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Cruise main indicator light circuit	Refer to <u>Cruise Main Indicator Light Circuit</u>
	Driving support ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Dynamic radar cruise ready indicator light does not come on*10	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Cruise set indicator light circuit	Refer to <u>Cruise READY Indicator Light Circuit</u>
	Driving support ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>

*1: w/ Front Fog Light

*2: w/ Automatic High Beam System

*3: for U.S.A.

*4: except U.S.A.

*5: w/ Cruise Control System

*6: for AWD

*7: w/ Engine Immobiliser System

*8: w/ Pre-collision System

*9: w/ Power Seat Type

*10: w/ Dynamic Radar Cruise Control System

OTHER

Symptom	Suspected Area	See
ODO/TRIP meter malfunction	Combination meter assembly	Refer to <u>REMOVAL</u>
Eco Driving Indicator Light customize screen malfunction	Combination meter assembly	Refer to <u>REMOVAL</u>

Shift position indicator malfunction	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660F)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U760E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	ECM (for 2GR-FE)	Refer to <u>REMOVAL</u>
	ECM (for 1AR-FE)	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Dynamic radar cruise control display malfunction*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Dynamic radar cruise control system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	ECM (for 2GR-FE)	Refer to <u>REMOVAL</u>
	ECM (for 1AR-FE)	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Operating MODE switch does not change cruise information display	Combination meter assembly	Refer to <u>REMOVAL</u>

*1: w/ Dynamic Radar Cruise Control System

BUZZER

Symptom	Suspected Area	See
No buzzer sound	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
Seat belt warning buzzer does not sound	Seat belt warning buzzer setting	Refer to <u>CUSTOMIZE PARAMETERS</u>
	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Seat belt warning system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Power steering warning buzzer does not sound	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Power steering system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>

Entry interior alarm does not sound*1	Certification ECU (smart key ECU assembly)	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Key reminder buzzer does not sound*2	Refer to troubleshooting	Refer to <u>Key Reminder Buzzer does not Sound</u>
Immobiliser buzzer does not sound*3	CAN communication system (w/ Smart Key System)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Engine immobiliser system (w/ Smart Key System)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Engine immobiliser system (w/o Smart Key System)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Master warning buzzer does not sound	Combination meter assembly	Refer to <u>REMOVAL</u>
Radar cruise low-speed cancel buzzer does not sound*4	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Dynamic radar cruise control system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Radar cruise warning buzzer does not sound*4	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Dynamic radar cruise control system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Parking brake unreleased warning buzzer does not sound	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Parking brake switch assembly	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Driving with any door opened warning buzzer does not sound	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Door courtesy switch circuit	Refer to <u>Door Courtesy Switch Circuit</u>
	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
Shift down reject buzzer does not sound	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660F)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U760E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>

Combination meter assembly

Refer to **REMOVAL**

*1: w/ Smart Key System

*2: w/o Smart Key System

*3: w/ Engine Immobiliser System

*4: w/ Dynamic Radar Cruise Control System

ACCESSORY METER (W/ MULTI-INFORMATION DISPLAY)

Symptom	Suspected Area	See
Average fuel economy malfunction	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Vehicle stability control system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	ECM (for 2GR-FE)	Refer to <u>REMOVAL</u>
	ECM (for 1AR-FE)	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Drive monitor switch	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
Eco Driving Indicator Zone Display malfunction	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	ECM (for 2GR-FE)	Refer to <u>REMOVAL</u>
	ECM (for 1AR-FE)	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
Driving range malfunction	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Vehicle stability control system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	SFI system (for 2GR-FE)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	SFI system (for 1AR-FE)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Fuel sender gauge assembly (for 2GR-FE)	Refer to <u>INSPECTION</u>
	Fuel sender gauge assembly (for 1AR-FE)	Refer to <u>INSPECTION</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>

	Accessory meter assembly	Refer to <u>REMOVAL</u>
Average speed	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Vehicle stability control system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	SFI system (for 2GR-FE)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	SFI system (for 1AR-FE)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Drive monitor switch	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
Trip timer	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	SFI system (for 2GR-FE)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	SFI system (for 1AR-FE)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Drive monitor switch	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
Operating drive monitor switch does not change multi-information display	Harness or connector	-
	Drive monitor switch	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
Door open display malfunction	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Door courtesy switch circuit	Refer to <u>Door Courtesy Switch Circuit</u>
	Harness or connector	-
	Main body ECU	Refer to <u>TERMINALS OF ECU</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Parking brake engaged" message is displayed when it should not be, not displayed when it should	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Parking brake switch assembly	Refer to <u>REMOVAL</u>
	Harness or connector	-

be, or not displayed correctly	Main body ECU	Refer to <u>REMOVAL</u>
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Oil Maintenance Required" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Oil maintenance reminder reset procedure undone	Refer to <u>INITIALIZATION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Oil Maintenance Required Soon" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Oil maintenance reminder reset procedure undone	Refer to <u>INITIALIZATION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Resetting Oil Maintenance Data" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Oil maintenance reminder reset procedure undone	Refer to <u>INITIALIZATION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Low Washer Fluid" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Washer level warning switch	Refer to <u>INSPECTION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Check VSC System" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Refer to slip indicator light does not come on	Refer to <u>Slip Indicator Light does not Come ON</u>
	Refer to slip indicator light remains on	Refer to <u>Brake Warning Light Remains ON</u>
	Refer to VSV off indicator light does not come on	Refer to <u>VSC OFF Indicator Light does not Come ON</u>
	Refer to VSV off indicator light remains on	Refer to <u>VSC OFF Indicator Light Remains ON</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Low Oil Pressure" message is displayed when	Engine oil pressure switch assembly (for 2GR-FE)	Refer to <u>INSPECTION</u>
	Engine oil pressure switch	Refer to <u>INSPECTION</u>

it should not be, not displayed when it should be, or not displayed correctly	assembly (for 1AR-FE)	
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Engine Coolant Hot" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Refer to engine coolant temperature receiver gauge malfunction	Refer to <u>Engine Coolant Temperature Receiver Gauge Malfunction</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Key is not detected" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Low Smart Key Battery" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Depress brake pedal and push engine switch to start" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660F)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>

"Shift to P position" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	Automatic transaxle system (for U760E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Park/neutral position switch assembly (for U660F)	Refer to <u>ON-VEHICLE INSPECTION</u>
	Park/neutral position switch assembly (for U660E)	Refer to <u>ON-VEHICLE INSPECTION</u>
	Park/neutral position switch assembly (for U760E)	Refer to <u>ON-VEHICLE INSPECTION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Check Steering Lock System" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Steering lock system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Steering Lock is still active" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Steering lock system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Check Tire Pressure System" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Tire pressure warning light circuit	Refer to <u>Tire Pressure Warning Light Circuit</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Check SRS Airbag System" message is displayed when it should not be, not displayed when it should be, or not	Refer to SRS warning light does not come on	Refer to <u>SRS Warning Light does not Come ON</u>
	Refer to SRS warning light remains on	Refer to <u>SRS Warning Light Remains ON</u>
	Harness or connector	-
	Combination meter	

displayed correctly	assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Check Brake System" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Refer to brake warning light does not come on	Refer to <u>Brake Warning Light does not Come ON</u>
	Refer to brake warning light remains on	Refer to <u>Brake Warning Light Remains ON</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Check ABS" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	Refer to ABS warning light does not come on	Refer to <u>ABS Warning Light does not Come ON</u>
	Refer to ABS warning light remains on	Refer to <u>ABS Warning Light Remains ON</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Key Detected in Vehicle" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Turn Power Off Key not Detected" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Depress brake pedal, touch engine switch with key" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Stop light switch	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>

"Please Stop Vehicle to Change Settings" message is displayed when it should not be, not displayed when it should be, or not displayed correctly	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Vehicle stability control system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Auto power off to conserve battery" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Shift to P position and push engine switch to turn power off" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*1	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Smart key system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660F)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U660E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Automatic transaxle system (for U760E)	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Park/neutral position switch assembly (for U660F)	Refer to <u>ON-VEHICLE INSPECTION</u>
	Park/neutral position switch assembly (for U660E)	Refer to <u>ON-VEHICLE INSPECTION</u>
	Park/neutral position switch assembly (for U760E)	Refer to <u>ON-VEHICLE INSPECTION</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
"Check PCS System" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*2	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Pre-collision system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>

"PCS Temporarily not Available" message is displayed when it should not be, not displayed when it should be, or not displayed correctly*2	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Pre-collision system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>
Customize setting display malfunction	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
	Drive monitor switch	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
Rear view monitor display malfunction*3	Accessory meter assembly	Refer to <u>REMOVAL</u>
	Rear view monitor system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Harness or connector	-
Outside temperature display malfunction	Accessory meter assembly	Refer to <u>REMOVAL</u>
	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Ambient temperature sensor	-
	Air conditioning amplifier assembly	Refer to <u>REMOVAL</u>
	Harness or connector	-
	Combination meter assembly	Refer to <u>REMOVAL</u>
	Accessory meter assembly	Refer to <u>REMOVAL</u>

*1: w/ Smart Key System

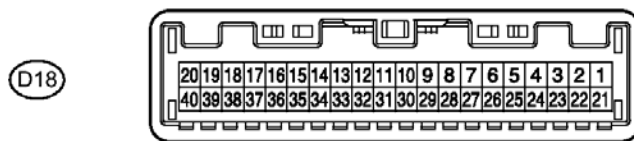
*2: w/ Pre-collision System

*3: w/o Navigation System

TERMINALS OF ECU

TERMINALS OF ECU

1. COMBINATION METER ASSEMBLY



P

Fig. 12: Combination Meter Assembly Connector Terminal Identification
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D18-1 (B) - Body ground	W - Body ground	Battery	Always	11 to 14 V
D18-2 (B2) - Body ground	R - Body ground	Battery	Always	11 to 14 V
D18-3 (LP)*1 - Body ground	B - Body ground	Security indicator light	Ignition switch ON, security indicator light off	Below 1 V
			Ignition switch ON, security indicator light blinks	11 to 14 V
D18-5 (LCL+) *2 - Body ground	V - Body ground	Accessory meter assembly communication signal	Always	Pulse generation
D18-6 (SYNC) *2 - Body ground	R - Body ground	Accessory meter assembly communication signal	Always	Pulse generation
D18-7 (MGND)	BR - Body	Ground	Always	Below 1

- Body ground	ground			V
D18-8 (A/B)*2 - Body ground	G - Body ground	Drive monitor switch signal (INFO switch)	Ignition switch ON, INFO switch pressed	Below 1 V
			Ignition switch ON, INFO switch not pressed	11 to 14 V
D18-9 (RSET)*2 - Body ground	P - Body ground	Drive monitor switch signal (SELECT RESET switch)	Ignition switch ON, SELECT RESET switch pressed	Below 1 V
			Ignition switch ON, SELECT RESET switch not pressed	11 to 14 V
D18-10 (+S) - Body ground	LG - Body ground	Speed signal for other systems (Output)	Driving at approximately 20 km/h (12 mph)	Pulse generation (See Fig. 13)
D18-11 (SI) - Body ground	GR - Body ground	Speed signal (Input)	Driving at approximately 20 km/h (12 mph)	Pulse generation (See Fig. 13)
D18-12 (MSCH) - Body ground	GR - Body ground	CAN communication signal	Ignition switch off	200 ohms or higher
D18-13 (MSCL) - Body ground	W - Body ground	CAN communication signal	Ignition switch off	200 ohms or higher
D18-14 (CHK) - Body ground	G - Body ground	MIL input signal	Ignition switch ON, MIL on	Below 3 V
			Ignition switch ON, MIL off	11 to 14 V
			Ignition switch ON,	

D18-16 (WLVL) - Body ground	L - Body ground	Washer level warning light signal	washer level warning light off	11 to 14 V
			Ignition switch ON, washer level warning light on	Below 1 V
D18-17 (FE) - Body ground	GR - Body ground	Ground (Fuel ground)	Always	Below 1 V
D18-18 (ILL-) - Body ground	GR - Body ground	Ground (Illumination ground)	Always	Below 1 V
D18-20 (ES) - Body ground	BR - Body ground	Ground (Signal ground)	Always	Below 1 V
D18-21 (IG+) - Body ground	GR - Body ground	Ignition switch signal	Ignition switch ON	11 to 14 V
D18-22 (B) - Body ground	G - Body ground	Turn indicator light signal	Ignition switch ON, turn RH indicator light off	11 to 14 V
			Ignition switch ON, turn RH indicator light blinks	Below 1 V
D18-23 (B) - Body ground	Y - Body ground	Turn indicator light signal	Ignition switch ON, turn LH indicator light off	11 to 14 V
			Ignition switch ON, turn LH indicator light blinks	Below 1 V
D18-24 (MDAT)	L -	Accessory meter		Pulse

*2 - Body ground	Body ground	assembly communication signal	Always	generation
D18-25 (LCL-) - Body ground	BR - Body ground	Ground	Always	Below 1 V
D18-26 (TIRE) - Body ground	GR - Body ground	Tire pressure warning light signal	Ignition switch ON, tire pressure warning light off	11 to 14 V
			Ignition switch ON, tire pressure warning light on	Below 1 V
D18-27 (FR) - Body ground	G - Body ground	Fuel level signal	Ignition switch ON, fuel level warning light off	Below 1 V
			Ignition switch ON, fuel level warning light on	3 to 7 V
D18-28 (E)*2 - Body ground	L - Body ground	Drive monitor switch signal (SETUP switch)	Ignition switch ON, SETUP switch pressed	Below 1 V
			Ignition switch ON, SETUP switch not pressed	11 to 14 V
D18-29 (CANL) - Body ground	W - Body ground	CAN communication signal	Ignition switch off	200 ohms or higher
D18-30 (CANH) - Body ground	P - Body ground	CAN communication signal	Ignition switch off	200 ohms or higher
			Ignition	

D18-34 (FLDS) *3 - Body ground	V - Body ground	3rd seat indicator signal	switch ON, 3rd seat indicator light on	Below 3 V
			Ignition switch ON, 3rd seat indicator light off	11 to 14 V
D18-35 (P/SB) - Body ground	W - Body ground	Front passenger side seat belt warning light signal	Ignition switch ON, front passenger side seat belt warning light off	11 to 14 V
			Ignition switch ON, front passenger side seat belt warning light on	Below 1 V
D18-36 (B/LE) - Body ground	Y - Body ground	Brake fluid level warning light signal	Ignition switch ON, brake fluid level warning light off	Below 1 V
			Ignition switch ON, brake fluid level warning light on	11 to 14 V
D18-37 (CHG-) - Body ground	W - Body ground	Charge warning light signal	Ignition switch ON, charge warning light off	11 to 14 V
			Ignition switch ON, charge warning light on	Below 1 V
D18-39 (E1) - Body ground	W-B - Body ground	Ground (Power ground)	Always	Below 1 V

D18-40 (S) - Body ground	Y - Body ground	Oil pressure switch signal	Ignition switch ON, oil pressure warning light off	Below 1 V
			Ignition switch ON, oil pressure warning light on	11 to 14 V

*1: w/ Engine Immobiliser System

*2: w/ Multi-information Display

*3: w/ Power Seat Type

1. Waveform 1: Using an oscilloscope

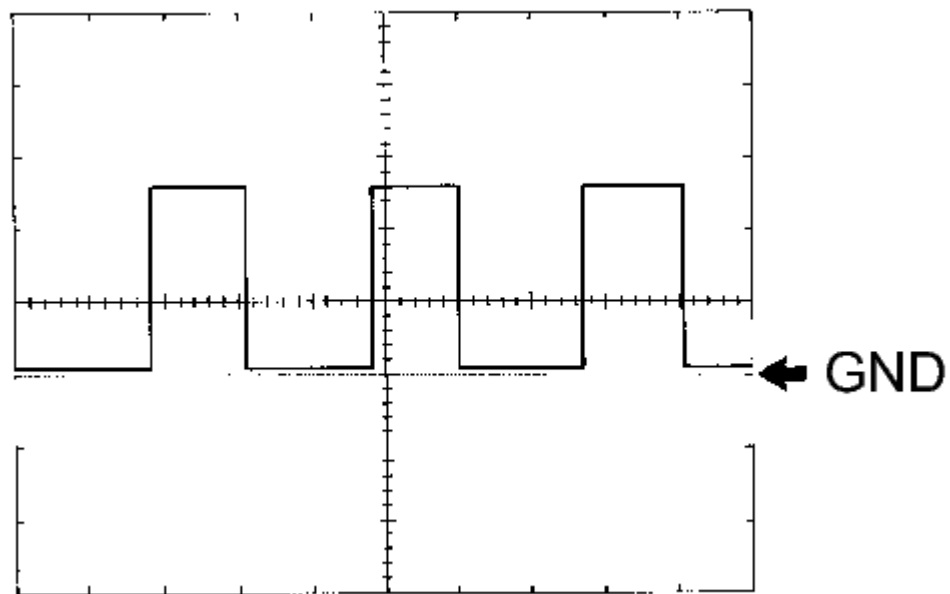


Fig. 13: Identifying Waveform 1

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

Terminal Connection	D18-10 (+S) - Body ground D18-11 (SI) - Body ground
Tool Setting	5 V/DIV., 20 ms./DIV.
	Driving at

Condition	approximately 20 km/h (12 mph)
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HINT:

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

2. COMBINATION METER ASSEMBLY INTERNAL CIRCUIT

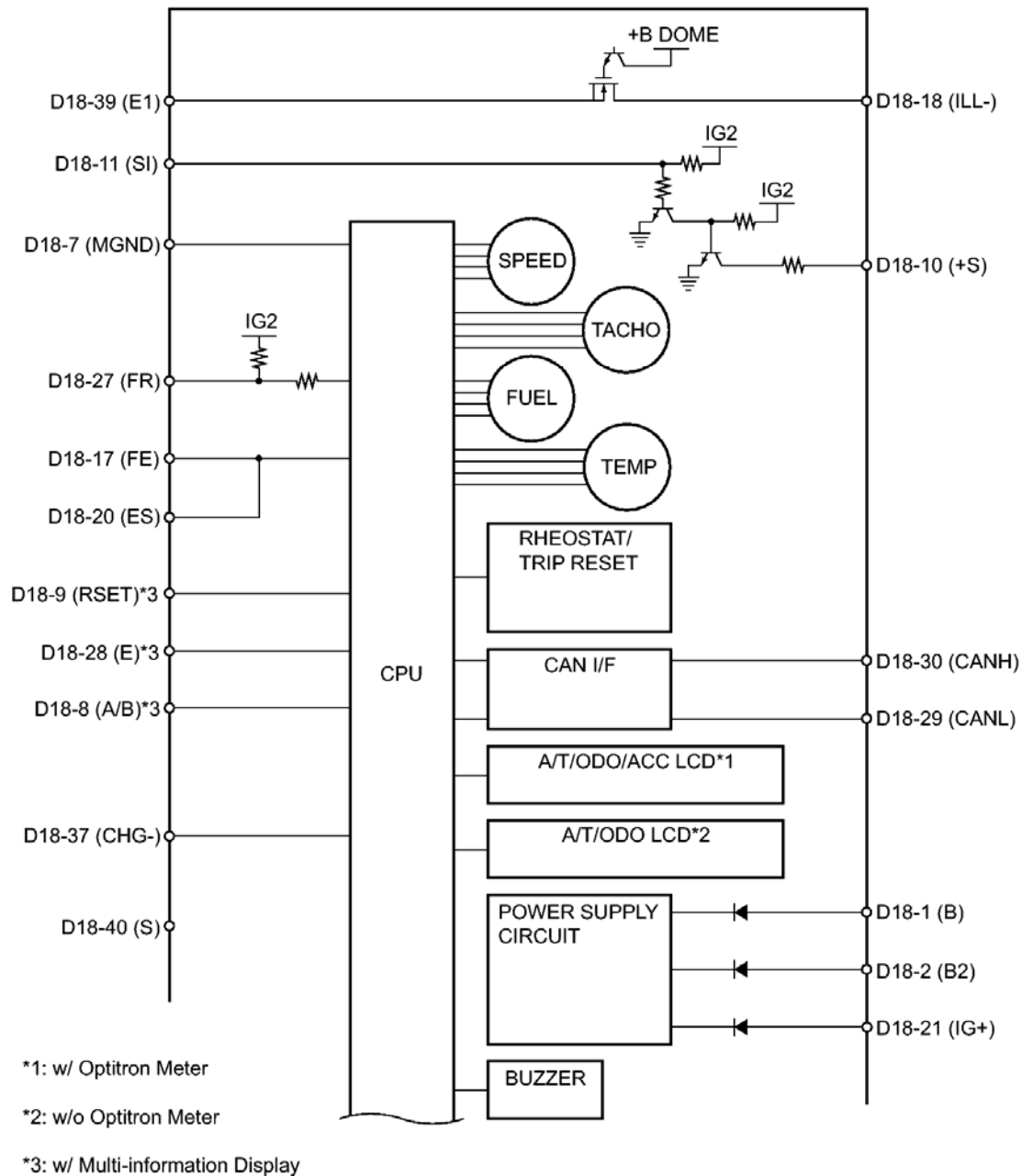


Fig. 14: Combination Meter Assembly Internal Circuit (1 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

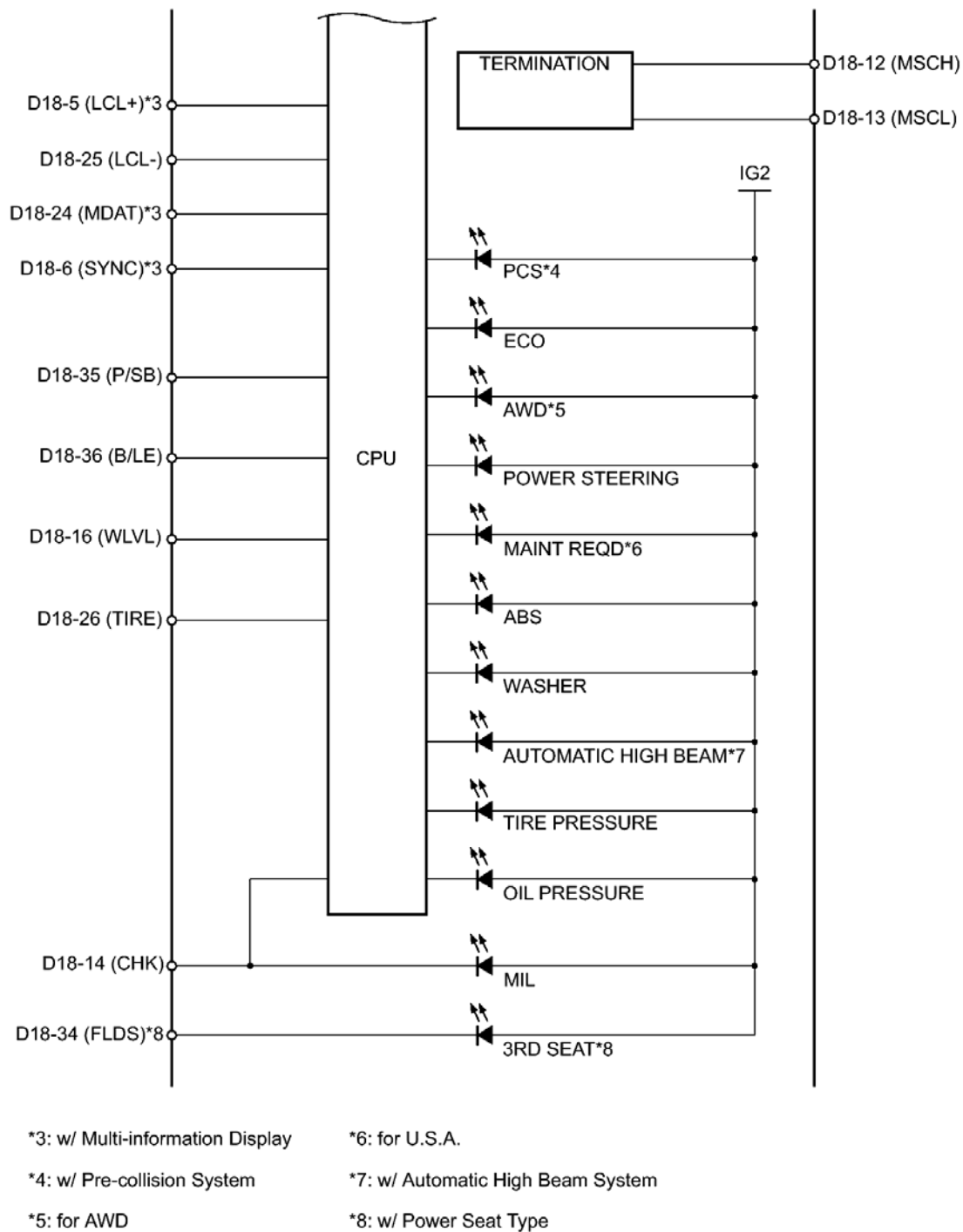
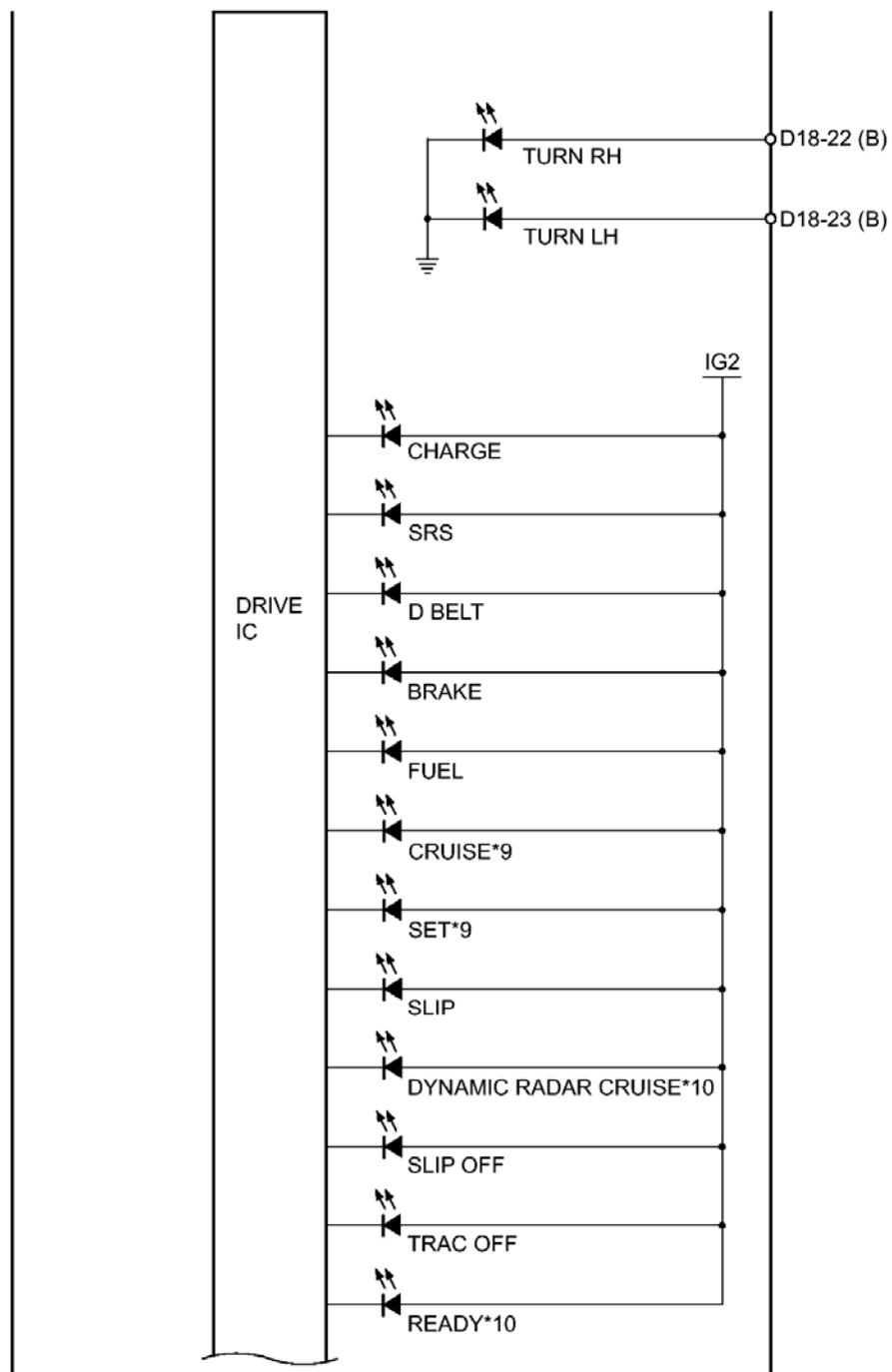


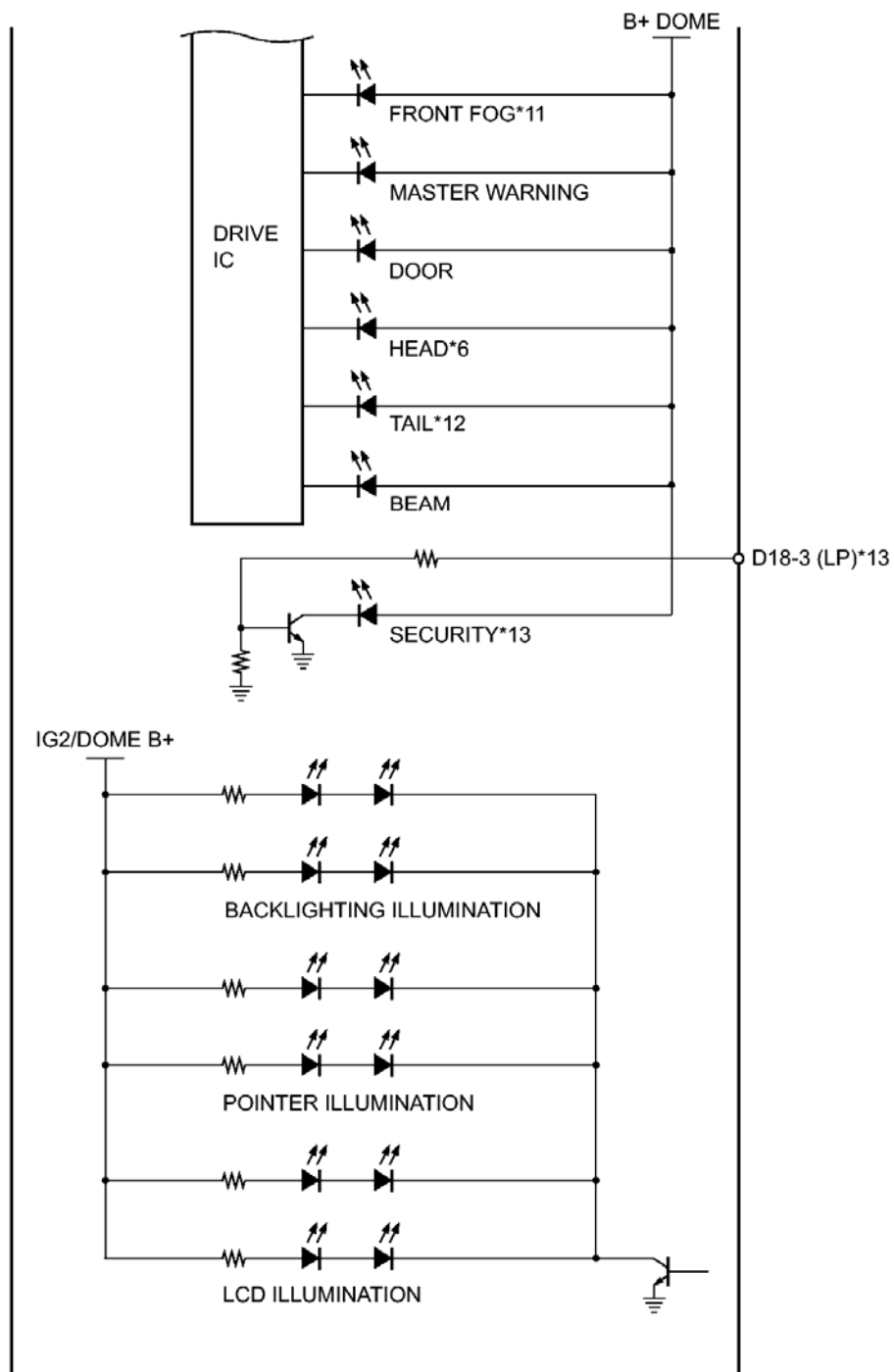
Fig. 15: Combination Meter Assembly Internal Circuit (2 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



*9: w/ Cruise Control System

*10: w/ Dynamic Radar Cruise Control System

Fig. 16: Combination Meter Assembly Internal Circuit (3 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



*6: for U.S.A.

*12: except U.S.A.

*11: w/ Front Fog Lights

*13: w/ Engine Immobiliser System

Fig. 17: Combination Meter Assembly Internal Circuit (4 Of 4)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Terminal	Wire Harness
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No. (Symbol)	Side
1 (B)	ECU-B Fuse
2 (B2)	DOVE Fuse
3 (LP)	Certification ECU (Smart Key ECU Assembly)*1 Transponder Key ECU Assembly*2
4	-
5 (LCL+)	Accessory Meter Assembly*3
6 (SYNC)	Accessory Meter Assembly*3
7 (MGND)	Ground
8 (A/B)	Drive Monitor Switch*3
9 (REST)	Drive Monitor Switch*3
10 (+S)	Each part that uses the speed signal
11 (SI)	Brake Actuator Assembly (Skid Control ECU)
12 (MSCH)	CAN Communication Line (MS Bus)
13 (MSCL)	CAN Communication Line (MS Bus)
14 (CHK)	ECM
15	-
16 (WLVL)	Washer Level Warning Switch
17 (FE)	Ground (Fuel Sender Gauge Assembly Ground)

18 (ILL-)	Each illumination part
19	-
20 (ES)	Ground
21 (IG+)	GAUGE NO. 2 Fuse
22 (B)	Turn Signal Flasher Assembly
23 (B)	Turn Signal Flasher Assembly
24 (MDAT)	Accessory Meter Assembly*3
25 (LCL-)	Ground
26 (TIRE)	Tire Pressure Warning ECU
27 (FR)	Fuel Sender Gauge Assembly
28 (E)	Drive Monitor Switch*3
29 (CANL)	CAN Communication Line (V1 Bus)
30 (CANH)	CAN Communication Line (V1 Bus)
31	-
32	-
33	-
34 (FLDS)	Fold Seat Control ECU*4
35 (P/SB)	Telltale Light Assembly
36 (B/LE)	Brake Master Cylinder Reservoir Assembly (Brake Fluid Level Warning Switch)

D18	37 (CHG-)	Generator Assembly
	38	-
	39 (E1)	Ground
	40 (S)	Engine Oil Pressure Switch Assembly

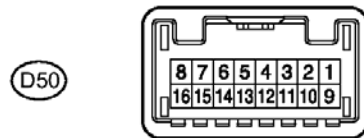
*1: w/ Smart Key System

*2: w/o Smart Key System

*3: w/ Multi-information Display

*4: w/ Power Seat Type

3. ACCESSORY METER ASSEMBLY (w/ Multi-information Display)



P

Fig. 18: Accessory Meter Assembly (w/ Multi-Information Display) Connector Terminal Identification

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

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

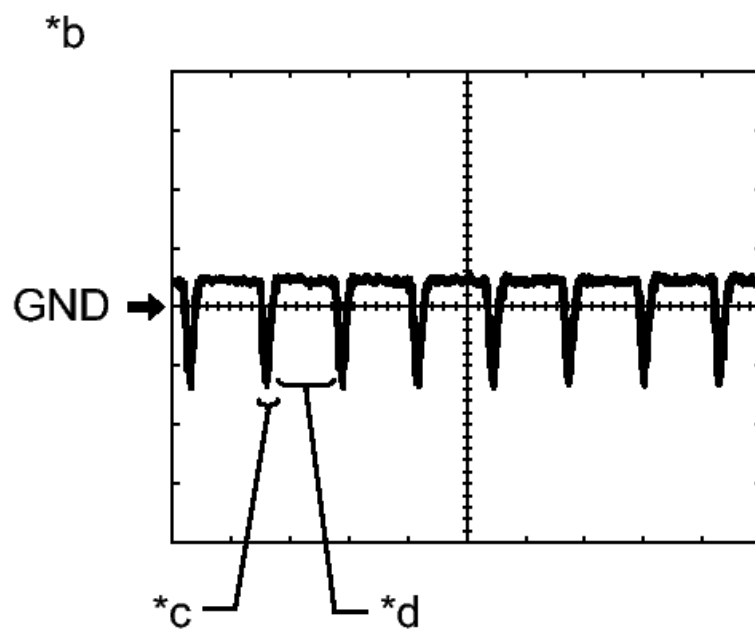
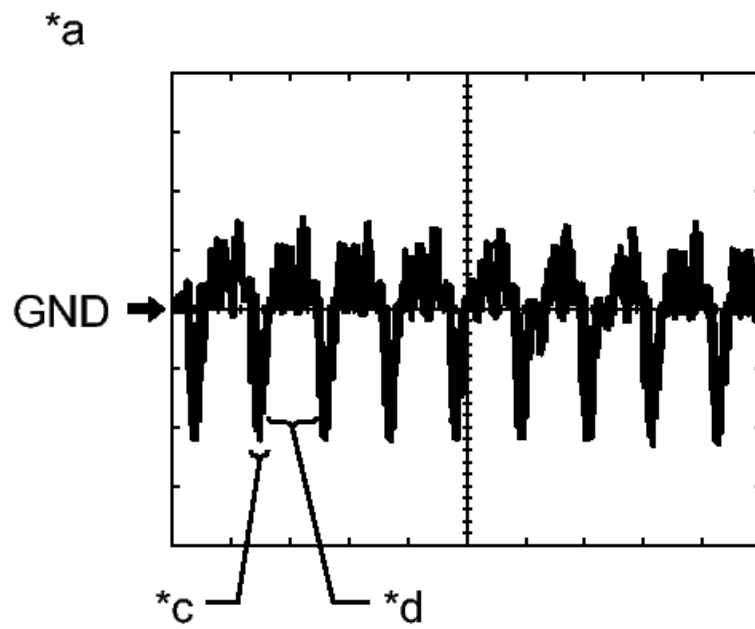
Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D50-1 (IG) - Body ground	GR - Body ground	Ignition switch signal	Ignition switch off	Below 1 V
			Ignition switch ON	11 to 14 V
D50-2 (HSI+) - Body ground	V - Body ground	Communication signal	Ignition switch off	Below 1 V
D50-3	B -		Ignition switch ON, shift lever in any	Below 1 V

(REV)*1 - Body ground	Body ground	Reverse signal	position except R Ignition switch ON, shift lever in R	11 to 14 V
D50-6 (SYNC) - Body ground	R - Body ground	Communication signal	Always	Pulse generation
D50-8 (CGND) - Body ground	Shielded - Body ground	Ground	Always	Below 1 V
D50-9 (+B) - Body ground	L - Body ground	Battery	Always	11 to 14 V
D50-10 (CA+) - Body ground	R - Body ground	Power source to television camera	Ignition switch ON, shift lever in R	11 to 14 V
D50-12 (DATA) - Body ground	L - Body ground	Communication signal	Always	Pulse generation
D50-14 (V+) - Body ground	B - Body ground	Television camera display signal (Input)	Ignition switch ON, shift lever in R, and under normal conditions	Pulse generation (See Fig. 19)
			Ignition switch ON, shift lever in R, and camera lens covered, blacking out the screen	Pulse generation (See Fig. 19)
D50-15 (V-) -	W - Body	Television camera ground	Always	Below 1

Body ground	ground	(Shielded)		V
D50-16 (SGND) - Body ground	BR - Body ground	Ground	Always	Below 1 V

*1: w/o Navigation System

1. Waveform 1 (Reference: under normal conditions): Using an oscilloscope



H

Fig. 19: Identifying Waveform 1

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

Terminal Connection	(V+) - Body ground
Tool Setting	0.2 V/DIV., 50 μ sec./DIV.
Condition	Ignition switch ON, shift lever in R, and under normal conditions

HINT:

The video waveform changes according to the image that the television camera assembly projects.

2. Waveform 2 (Reference: camera lens covered, blacking out the screen): Using an oscilloscope

Terminal Connection	D50-14 (V+) - Body ground
Tool Setting	0.2 V/DIV., 50 μ sec./DIV.
Condition	Ignition switch ON, shift lever in R, and camera lens covered, blacking out the screen

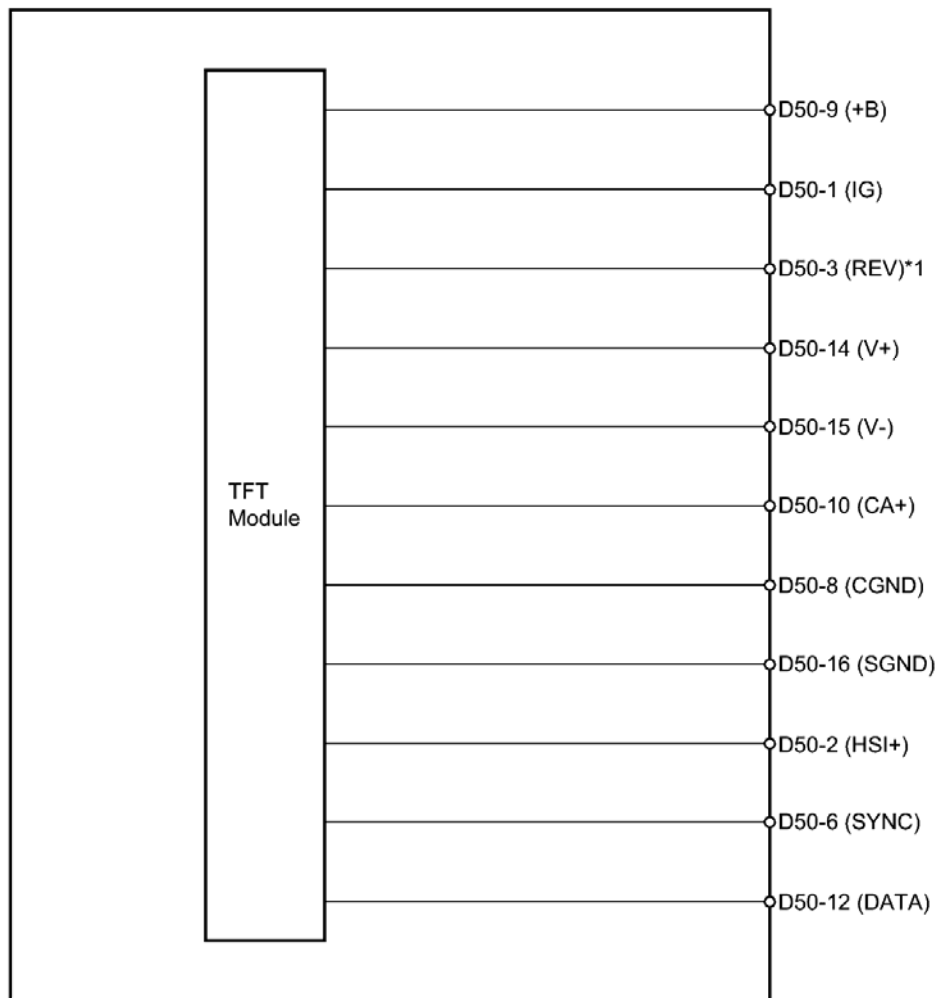
HINT:

The video waveform changes according to the image that the television camera assembly projects.

TEXT IN ILLUSTRATION

*a	Waveform 1 (under normal conditions)
*b	Waveform 2 (camera lens is covered, blacking out the screen)
*c	Synchronized Signal
*d	Video Waveform

4. ACCESSORY METER ASSEMBLY INTERNAL CIRCUIT (w/ Multi-information Display)



*1: w/o Navigation System

Fig. 20: Accessory Meter Assembly Internal Circuit (w/ Multi-Information Display)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Terminal No. (Symbol)	Wire Harness Side
1 (IG)	GAUGE NO. 2 Fuse
2 (HSI+)	Combination Meter Assembly
	Park/Neutral

D50	3 (REV)	Position Switch Assembly*1
	4	-
	5	-
	6 (SYNC)	Combination Meter Assembly
	7	-
	8 (CGND)	Television Camera Assembly
	9 (+B)	ECU-B Fuse
	10 (CA+)	Television Camera Assembly
	11	-
	12 (DATA)	Combination Meter Assembly
	13	-
	14 (V+)	Television Camera Assembly
	15 (V-)	Television Camera Assembly
	16 (SGND)	Ground

*1: w/o Navigation System

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. CHECK DLC3

- Check the DLC3. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** .

2. INSPECT BATTERY VOLTAGE

- Measure the battery voltage.

Standard voltage

11 to 14 V

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

DTC CHECK / CLEAR

DTC CHECK / CLEAR

1. CHECK DTC

- 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 / (desired system) / Trouble Codes.
- e. Check DTCs and then write them down.

HINT:

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

- f. Confirm the details of the DTCs.

2. CLEAR DTC

- 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 / (desired system) / Trouble Codes.

HINT:

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

- e. Clear DTCs.

HINT:

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

FAIL-SAFE CHART

FAIL-SAFE CHART

SPEEDOMETER

Condition	Response	Recovery
Malfunction in vehicle speed signal	Controls input signals as 0 km/h (0 mph)	Normal data is received

TACHOMETER

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Condition	Response	Recovery
Malfunction in engine revolution signal	Controls input signals as 0 RPM	Normal data is received

ENGINE COOLANT TEMPERATURE GAUGE

Condition	Response	Recovery
Engine coolant temperature signal not input for 3.1 seconds or more	Gauge needle indicates below "C"	Normal data is received

FUEL GAUGE

Condition	Response	Recovery
While ignition switch is ON, sender signal is interrupted for 60 seconds and malfunction signal is received from one of gauges for 10 to 20 seconds	Needle indicates "E", and warning light comes on	Ignition switch is turned from off to ON and normal data is received

ODO/TRIP METER

Condition	Response	Recovery
Vehicle speed pulse signal integrated value not input for 0.12 seconds or more	Data received most recently remains displayed	Normal data is received

SHIFT POSITION

Condition	Response	Recovery
Shift signal not input and gear position input	Shift display not illuminated	Normal data is received
Shift signal not input for 3.1 seconds	Gear display not illuminated	Normal data is received

BEAM

Condition	Response	Recovery
Beam signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

SRS

Condition	Response	Recovery
SRS warning signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

DOOR

Condition	Response	Recovery
Open door warning signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

D BELT

Condition	Response	Recovery
Driver side seat belt warning not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

BRAKE

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

CHARGE

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

POWER STEERING

Condition	Response	Recovery
Power steering warning signal not input for 1 second at 9.5 V or more	Remains illuminated until ignition switch off	Normal data is received

OIL PRESSURE

Condition	Response	Recovery
Engine oil warning signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received
Engine RPM signal not input for 3 seconds	Control while engine on	Normal data is received

AWD*1

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

ABS

Condition	Response	Recovery
ABS warning signal not input for 1 second at 9.5 V or more	Remains illuminated until ignition switch off	Normal data is received

MAINT REQD*2

Condition	Response	Recovery
When odometer reading upon reset cannot be determined	Control assuming odometer display of 0 upon reset	Normal data is received

When the current odometer reading cannot be determined	Indicator is turned on	Normal data is received
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SLIP

Condition	Response	Recovery
VSC signal not input for 1 second at 9.5 V or more	Remains illuminated until ignition switch off	Normal data is received

SLIP OFF

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

CRUISE*3

Condition	Response	Recovery
Cruise signal not input for 3.1 seconds	Remains illuminated until ignition switch off	Normal data is received

DYNAMIC RADAR CRUISE*4

Condition	Response	Recovery
Dynamic radar cruise signal not input for 3.1 seconds	Remains illuminated until ignition switch off	Normal data is received

ECO

Condition	Response	Recovery
Ecology light indicator signal not input for 3 seconds	Remains illuminated until ignition switch off	Normal data is received

FRONT FOG*5

Condition	Response	Recovery
Front fog light signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

HEAD*2

Condition	Response	Recovery
Head signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

TAIL*6

Condition	Response	Recovery
Tail signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

AUTOMATIC HIGH BEAM*7

Condition	Response	Recovery
Automatic high beam signal not input for 10 seconds	Remains illuminated until ignition switch off	Normal data is received

PCS*8

Condition	Response	Recovery
PCS signal not input for 3.1 seconds	Remains illuminated until ignition switch off	Normal data is received

*1: for AWD

*2: for U.S.A.

*3: w/ Cruise Control System

*4: w/ Dynamic Radar Cruise Control System

*5: w/ Front Fog Light

*6: except U.S.A.

*7: w/ Automatic High Beam System

*8: w/ Pre-collision System

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

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

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

- a. Warm up the engine.
- b. Turn the ignition switch off.
- c. Connect the Techstream to the DLC3.
- d. Turn the ignition switch to ON.
- e. Turn the Techstream on.
- f. Enter the following menus: Body Electrical / Combination Meter / Data List.
- g. According to the display on the Techstream, read the Data List.

COMBINATION METER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Tail Cancel SW	Tail Cancel switch/ OFF or ON	OFF: Light control rheostat knob not turned fully clockwise	-
		ON: Light control rheostat knob turned fully clockwise	
ODO/TRIP Change SW	ODO/TRIP switch/ OFF or ON	OFF: Switch released	-
		ON: Switch pushed	-
P-Seatbelt Buckle SW	Front passenger side seat belt buckle switch/ OFF or ON	OFF: Front passenger side seat belt unfastened	-
		ON: Front passenger side seat belt fastened	
Vehicle Speed Meter	Vehicle speed/ Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Approximately same as actual vehicle speed (When vehicle is being driven)	-
Engine RPM	Engine speed/ Min.: 0 RPM, Max.: 12750 RPM	600 to 700 RPM: Idling	-
Coolant Temperature	Engine coolant temperature/ Min.: 0°C (32°F), Max.: 127.5°C (261.5°F)	80 to 100°C (176 to 212°F): After warming up	-
	Washer level	OFF: Washer level warning	

Washer Switch	warning switch/ OFF or ON	switch off	-
		ON: Washer level warning switch on	
Check Engine SW	MIL/ OFF or ON	OFF: MIL off	-
		ON: MIL on	
+B Voltage Value	Battery voltage/ Min.: 0 V, Max.: 25.5 V	11 to 14 V	-
Integrated value for Oil Maintenance*1	Oil maintenance information integrated value/ Min.: 0, Max.: 25500 (mile)	Driving distance after performing oil maintenance resetting procedure displayed	If the value is 5000 (miles) or more, perform the oil maintenance resetting procedure after changing the oil.
Fuel Input	Fuel input signal/ Min.: 0, Max.: 127.5	Current fuel level displayed	Unit: Liter
Ambient Temperature	Outside temperature/ Min.: -40°C (-40°F), Max.: 87.5°C (189.5°F)	Almost the same as actual outside temperature	The temperature displayed on the multi-information display is -40 to 50°C (-40 to 122°F).
Rheostat value	MODE switch input/ Min.: 0, Max.: 100	MODE switch is fully turned right (0) --> fully turned left (100)	Unit: %
		OFF: Tire pressure warning system not operating	

TPMS Operation State	Condition of tire pressure warning system/ OFF, ON or Unknown	ON: Tire pressure warning system operating	-
		Unknown: Wire harness between combination meter assembly and tire pressure warning ECU open	
Multi Switch (Up)*2	Drive monitor switch (INFO)/ OFF or ON	OFF: Drive monitor switch (INFO) released	-
		ON: Drive monitor switch (INFO) pushed	
Multi Switch (Down)*2	Drive monitor switch (SETUP)/ OFF or ON	OFF: Drive monitor switch (SETUP) released	-
		ON: Drive monitor switch (SETUP) pushed	
Multi Switch (Enter)*2	Drive monitor switch (SELECT RESET)/ OFF or ON	OFF: Drive monitor switch (SELECT RESET) released	-
		ON: Drive monitor switch (SELECT RESET) pushed	
Oil Pressure Switch	Engine oil pressure switch/ OFF or ON	OFF: Engine oil pressure low	-
		ON: Engine oil pressure except above	

Key Remind Sound*3	Cycle of key reminder warning buzzer/ Fast, Normal or Slow	Cycle of key reminder warning buzzer is Fast, Normal or Slow	The current setting of the cycle of the key reminder warning buzzer is displayed.
Key Remind Volume*3	Cycle of key reminder warning buzzer/ Large, Medium or Small	Cycle of key reminder warning buzzer is Large, Medium or Small	The current setting of the cycle of the key reminder warning buzzer is displayed.
Driver Side Seatbelt Warning Buzzer	Condition of the driver side seat belt warning buzzer/ OFF or ON	ON: Driver side seat belt warning buzzer sounds at a vehicle speed of 20 km/h (12 mph) or more when driver side seat belt unfastened OFF: Driver side seat belt warning buzzer does not sound at a vehicle speed of 20 km/h (12 mph) or more when driver side seat belt unfastened	The customized setting of the driver side seat belt warning buzzer is displayed.
		ON: Front passenger side seat belt warning buzzer sounds at a vehicle speed of 20 km/h (12 mph) or more when	The

P-Seatbelt Warning Buzzer	Condition of the front passenger side seat belt warning buzzer/ OFF or ON	front passenger side seat belt unfastened	customized setting of the front passenger side seat belt warning buzzer is displayed.
		OFF: Front passenger side seat belt warning buzzer does not sound at a vehicle speed of 20 km/h (12 mph) or more when front passenger side seat belt unfastened	
Language	Language of display setting/ English, French, Spanish or Chinese	Displays language setting	-
ECO Drive Indicator	Condition of Eco Driving Indicator Zone Display in the multi-information display/ OFF or ON	OFF: Eco Driving Indicator Zone Display in the multi-information display is disabled	-
		ON: Eco Driving Indicator Zone Display in the multi-information display is enabled	
Number of Trouble Code	The number of the DTC which is currently output	0	-

*1: for U.S.A.

*2: w/ Multi-information Display

*3: w/o Smart Key System

2. ACTIVE TEST

HINT:

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

- a. Warm up the engine.
- b. Turn the ignition switch off.
- c. Connect the Techstream to the DLC3.
- d. Turn the ignition switch to ON.
- e. Turn the Techstream on.
- f. Enter the following menus: Body Electrical / Combination Meter / Active Test.
- g. According to the display on the Techstream, perform the Active Test.

COMBINATION METER

Tester Display	Test Part	Control Range	Diagnostic Note
Speed Meter Operation	Speedometer	0, 40, 80, 120*1, 160*1	Operate with IG ON and the vehicle is stopped.
TachoMeter Operation	Tachometer	0, 1000, 2000, 3000, 4000, 5000, 6000, 7000	Operate with IG ON and the vehicle is stopped.
Fuel Meter Operation	Fuel receiver gauge	EMPTY, 1/2, FULL	Operate with IG ON and the vehicle is stopped.
A/T Indicator Operation 1	A/T shift indicator light (D, P, N, R, 4, 3, 2, L)	P, R, N, D, 4 (M/S), 3 (M/S), 2, L	Operate with IG ON and the vehicle is stopped.

A/T Indicator Operation 2	A/T gear range indicator light (S, 6, 5)	5, 6, Es	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Airbag	SRS warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Doors All Open	Door indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Front Passenger Side Seat Belt	Front passenger side seat belt warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Driver Side Seat Belt	Driver side seat belt warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp ABS	ABS warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Charge	Charge warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Slip	Slip indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Beam	High beam indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
			Operate

Indicat. Lamp Head*1	Head indicator light	OFF or ON	with IG ON and the vehicle is stopped.
Indicat. Lamp Tail*2	Tail indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Fr FOG*3	Front fog indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Precrash*4	PCS warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Washer	Washer level warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Fuel	Fuel level warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
VSC TRC Indicator	VSC TRC indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
4WD Warning Indicator*5	AWD warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Tire Pressure Warning System	Tire Pressure warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Oil	Oil pressure	OFF or	Operate with IG

Pressure	warning light	ON	ON and the vehicle is stopped.
Indicat. ECONO	Eco Driving Indicator Light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Cruise*6	Cruise main indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Radar Cruise Ready Indicator*7	Dynamic radar cruise ready indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Lamp Brake	Brake warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. EPS	Power steering warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Oil Maintenance*1	Oil maintenance reminder indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Master Warning	Master warning light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. SET*6	Cruise set indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Indicat. Radar Cruise*7	Dynamic radar cruise main	OFF or ON	Operate with IG ON and

	indicator light		the vehicle is stopped.
Indicat. VSC OFF	VSC OFF indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Automatic High Beam Indicator*8	Automatic high beam indicator light	OFF or ON	Operate with IG ON and the vehicle is stopped.
Water Temperature Meter Operation	Engine coolant temperature receiver gauge	LOW, NORMAL, HIGH	Operate with IG ON and the vehicle is stopped.
Meter Display 1	Multi-information display	ALL, 0, 1, 2, 3, 4, 5, 6	Operate with IG ON and the vehicle is stopped.
Meter Display 2	Multi-information display	7, 8, 9	Operate with IG ON and the vehicle is stopped.

*1: for U.S.A.

*2: except U.S.A.

*3: w/ Front Fog Light

*4: w/ Pre-collision System

*5: for AWD

*6: w/ Cruise Control System

*7: w/ Dynamic Radar Cruise Control System

*8: w/ Automatic High Beam System

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

HINT:

If a trouble code is output during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the appropriate information below.

DTC Code	Detection Item	Trouble Area	See
B1500	Fuel Sender Open Detected	- Harness or connector - Combination meter assembly - Fuel sender gauge assembly	Refer to <u>DTC B1500: Fuel Sender Open Detected</u>
U0100	Lost Communication with ECM / PCM "A"	- ECM - CAN communication system - Combination meter assembly	Refer to <u>DTC U0100: Lost Communication with ECM / PCM "A"; DTC U0129: Lost Communication with Brake System Control Module; DTC U0131: Lost Communication with Power Steering Control Module; DTC U0151: Lost Communication with Airbag ECU</u>
U0129	Lost Communication with Brake System Control Module	- Brake actuator assembly (skid control ECU) - CAN communication system - Combination meter assembly	Refer to <u>DTC U0100: Lost Communication with ECM / PCM "A"; DTC U0129: Lost Communication with Brake System Control Module; DTC U0131: Lost Communication with Power Steering Control Module; DTC U0151: Lost Communication with Airbag ECU</u>
U0131	Lost Communication with Power Steering Control Module	- Steering column assembly (power steering ECU) - CAN communication system - Combination meter assembly	Refer to <u>DTC U0100: Lost Communication with ECM / PCM "A"; DTC U0129: Lost Communication with Brake System Control Module; DTC U0131: Lost Communication with Power Steering Control Module; DTC U0151: Lost Communication with Airbag ECU</u>
U0151	Lost Communication with Airbag ECU	- Center airbag sensor assembly - CAN communication system - Combination meter assembly	Refer to <u>DTC U0100: Lost Communication with ECM / PCM "A"; DTC U0129: Lost Communication with Brake System Control Module; DTC U0131: Lost Communication with Power Steering Control Module; DTC U0151: Lost Communication with Airbag ECU</u>