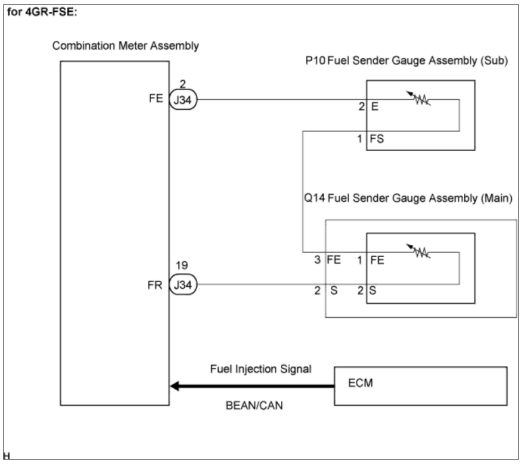
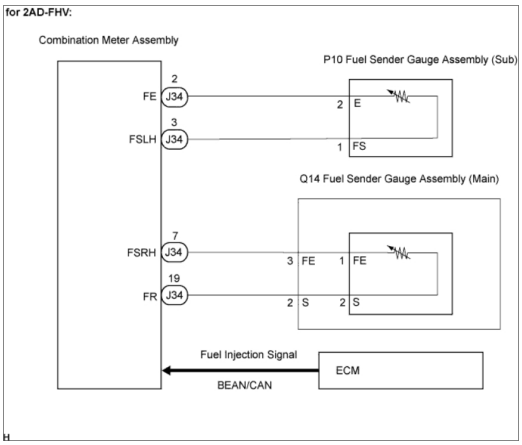
for Preparation Click here

DESCRIPTION

The meter CPU receives fuel level signals from this circuit. The fuel sender controls the resistance value in accordance with changes in sender gauge position. The meter CPU detects the fuel level from the transformed voltage. The meter CPU outputs a constant voltage of 12 V to the fuel sender. In the fuel sender, the voltage is changed due to the resistance. The changed voltage is output from the fuel sender to the meter CPU, thus the fuel level is determined by fuel injection signals transmitted using the BEAN lines.

WIRING DIAGRAM





INSPECTION PROCEDURE

1.CHECK CAN COMMUNICATION SYSTEM

a. Check if CAN communication DTC is output (Click here(for LHD), Click here (for RHD)).

Result:

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

B → REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A

2.CHECK MULTIPLEX COMMUNICATION SYSTEM

a. Check if MULTIPLEX communication DTC is output (Click here).

Result:

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

B → REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

A

3.PERFORM ACTIVE TEST BY INTELLIGENT TESTER

a. Connect the intelligent tester to the DLC3.

b. Turn the engine switch on (IG).

c. Turn the tester ON.

d. Enter the following menus: Diagnosis / Body / Combination Meter / Active Test.

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

Combination Meter:

Item	Test Details	Diagnostic Note
Fuel Meter Operation	EMPTY, 1/2, FULL	-

OK:
Needle indication is normal.

NG → REPLACE COMBINATION METER ASSEMBLY

OK

4.READ VALUE OF INTELLIGENT TESTER

a. Connect the intelligent tester to the DLC3.

b. Turn the engine switch on (IG).

c. Turn the tester ON.

d. Enter the following menus: Diagnosis / Body / Combination Meter / Data Test.

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

Combination Meter (for 4GR-FSE / 2AD-FHV)

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
Fuel Input	Fuel input signal Min.: 0, Max.: 255	Fuel gauge indicates (F): 47 Fuel gauge indicates (1/2): 148 Fuel gauge indicates (E): 205	-

Combination Meter (for 2AD-FHV)

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
Sub Fuel Gauge	Fuel input signal Min.: 0, Max.: 255	Fuel gauge indicates (F): 47 Fuel gauge indicates (1/2): 148 Fuel gauge indicates (E): 205	-

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

NG → Go to step 5

OK →

REPLACE COMBINATION METER ASSEMBLY

5.INSPECT FUEL SENDER GAUGE ASSEMBLY

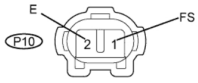
a. Disconnect the connectors from the fuel sender gauges.

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

i. Inspect the fuel sender gauge for 4GR-FSE.

Fuel Sender Gauge Assembly (Main) Wire Harness View:

Fuel Sender Gauge Assembly (Sub) Wire Harness View:



Standard resistance:
Fuel sender gauge for 4GR-FSE (Main):

Tester Connection	Condition	Specified Condition
Q14-2 (S) - Q14-3 (FE)	Always	6.5 to 242.6 Ω

Fuel sender gauge for 4GR-FSE (Sub):

Tester Connection	Condition	Specified Condition
P10-1 (FS) - P10-2 (E)	Always	6.5 to 171.9 Ω

ii. Inspect the fuel sender gauge for 2AD-FHV.

Standard resistance:
Fuel sender gauge for 2AD-FHV (Main):

Tester Connection	Condition	Specified Condition
Q14-2 (S) - Q14-3 (FE)	Always	6.5 to 233.0 Ω

Fuel sender gauge for 2AD-FHV (Sub):

Tester Connection	Condition	Specified Condition
P10-1 (FS) - P10-2 (E)	Always	6.5 to 181.5 Ω

NG → REPLACE FUEL SENDER GAUGE ASSEMBLY

OK →

6.CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - FUEL SENDER GAUGE ASSEMBLY)

a. Disconnect the fuel tank wires from the fuel sender gauge assembly.

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

Standard resistance for 4GR-FSE:

Tester Connection	Condition	Specified Condition
J34-19 (FR) - Q14-2 (S)	Always	Below 1 Ω
Q14-3 (FE) - P10-1(FS)	Always	Below 1 Ω
P10-2 (E) - J34-2 (FE)	Always	Below 1 Ω
Q14-2 (S) - Body ground	Always	10 kΩ or higher
P10-1 (FS) - Body ground	Always	10 kΩ or higher
J34-2 (FE) - Body ground	Always	10 kΩ or higher

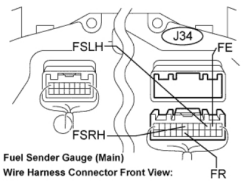
Standard resistance for 2AD-FHV:

Tester Connection	Condition	Specified Condition
J34-2 (FE) - P10-2 (E)	Always	Below 1 Ω
J34-3 (FSLH) - P10-1(FS)	Always	Below 1 Ω
J34-7 (FSRH) - Q14-3 (FE)	Always	Below 1 Ω
J34-19 (FR) - Q14-2 (S)	Always	Below 1 Ω
P10-2 (E) - Body ground	Always	10 kΩ or higher
P10-1 (FS) - Body ground	Always	10 kΩ or higher
Q14-3 (FE) - Body ground	Always	10 kΩ or higher
Q14-2 (S) - Body ground	Always	10 kΩ or higher

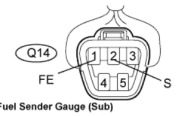
Result:

Result	Proceed to
OK (for 4GR-FSE)	A
OK (for 2AD-FHV)	B
NG	C

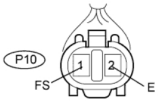
Combination Meter Assembly Wire Harness View:



Fuel Sender Gauge (Main) Wire Harness Connector Front View:



Fuel Sender Gauge (Sub) Wire Harness Connector Front View:



B → Go to step 8

C → REPAIR OR REPLACE HARNESS OR CONNECTOR

A →

7.INSPECT FUEL SENDER GAUGE ASSEMBLY

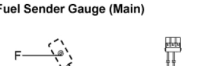
a. Disconnect the fuel sender gauge connector.

b. Inspect the fuel sender gauge assembly (main).

i. Remove the fuel sender gauge assembly (main).

ii. Check that the float moves smoothly between F and E.

Fuel Sender Gauge (Main)



ii. Check that the float moves smoothly between F and E.

iii. Measure the resistance between terminals 2 (S) and 3 (FE) of the connector according to the value(s) in the table below.

Standard resistance:
Fuel Sender Gauge Assembly (Main) (for 4GR-FSE):

Float Level	Resistance (Ω)
F	6.5 to 8.5
Between E and F	6.5 to 242.6 (Gradually changes)
E	237.6 to 242.6

c. Inspect the fuel sender gauge assembly (sub).

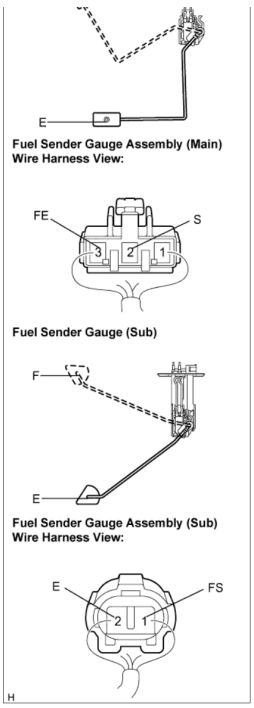
i. Remove the fuel sender gauge assembly (sub).

ii. Check that the float moves smoothly between F and E.

iii. Measure the resistance between terminals 1 (FS) and 2 (E) according to the value(s) in the table below.

Standard resistance:
Fuel Sender Gauge Assembly (Sub) (for 4GR-FSE):

Float Level	Resistance (Ω)
F	6.5 to 8.5
Between E and F	6.5 to 171.9 (Gradually changes)
E	167.9 to 171.9



NG → REPLACE FUEL SENDER GAUGE ASSEMBLY

OK

Go to step 9

8.INSPECT FUEL SENDER GAUGE ASSEMBLY

a. Disconnect the fuel sender gauge connector.

b. Inspect the fuel sender gauge assembly (main).

i. Remove the fuel sender gauge assembly (main).

ii. Check that the float moves smoothly between F and E.

iii. Measure the resistance between terminals 2 (S) and 3 (FE) of the connector according to the value(s) in the table below.

Standard resistance:
Fuel Sender Gauge Assembly (Main) (for 2AD-FHV):

Float Level	Resistance (Ω)
F	6.5 to 8.5
Between E and F	6.5 to 233.0 (Gradually changes)
E	228.0 to 233.0

c. Inspect the fuel sender gauge assembly (sub).

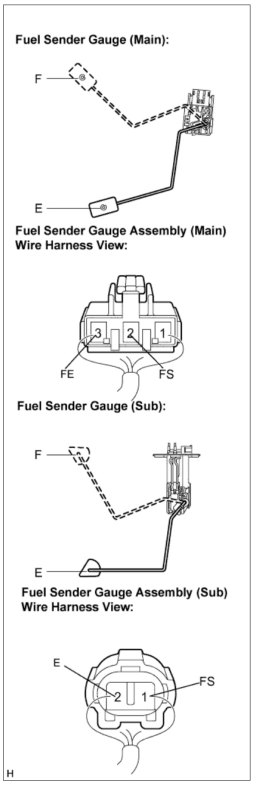
i. Remove the fuel sender gauge assembly (sub).

ii. Check that the float moves smoothly between F and E.

iii. Measure the resistance between terminals 1 (FS) and 2 (E) according to the value(s) in the table below.

Standard resistance:
Fuel Sender Gauge Assembly (Sub) (for 2AD-FHV):

Float Level	Resistance (Ω)
F	6.5 to 8.5
Between E and F	6.5 to 171.9 (Gradually changes)
E	177.5 to 181.5



NG → REPLACE FUEL SENDER GAUGE ASSEMBLY

OK

9.REPLACE COMBINATION METER ASSEMBLY

a. Replace the combination meter assembly to a new one or a normal one.

OK:
The operation of the combination meter assembly returns to normal.

NG → REPLACE ECM

OK

END