

METER / GAUGE SYSTEM > Tachometer Malfunction

DESCRIPTION

WIRING DIAGRAM

INSPECTION PROCEDURE

PERFORM ACTIVE TEST BY INTELLIGENT TESTER

READ VALUE OF INTELLIGENT TESTER (ENGINE SPEED SIGNAL)

READ VALUE OF INTELLIGENT TESTER (ENGINE SPEED SIGNAL)

CHECK HARNESS AND CONNECTOR (COMBINATION METER - ECM)

INSPECT COMBINATION METER ASSEMBLY

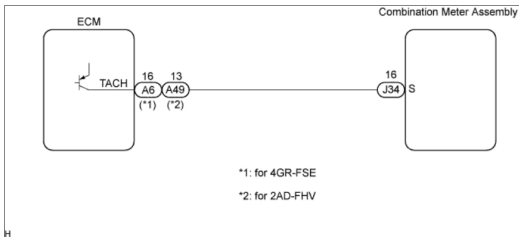
METER / GAUGE SYSTEM > Tachometer Malfunction

for Preparation [Click here](#)

DESCRIPTION

- The meter CPU receives engine speed signals from the ECM in this circuit.
- The ECM transmits engine speed signals as pulses to the meter CPU.
- The meter CPU calculates the engine speed converting 3 pulses to 1 revolution.

WIRING DIAGRAM



INSPECTION PROCEDURE

1.PERFORM ACTIVE TEST BY INTELLIGENT TESTER

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Turn the tester ON.
- Enter the following menus: Diagnosis / Body / Combination Meter / Active Test.
- Check the values by referring to the table below.

Combination Meter:

Item	Test Details	Diagnostic Note
Tacho Meter Operation	0, 1,000, 2,000, 3,000, 4,000, 5,000, 6,000, 7,000, 8,000 (rpm)	-

OK:

Needle indication is normal.



2.READ VALUE OF INTELLIGENT TESTER (ENGINE SPEED SIGNAL)

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Turn the tester ON.
- Enter the following menus: Diagnosis / Body / Combination Meter / Data Test.
- Check the values by referring to the table below.

Combination Meter:

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

OK:

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



REPLACE COMBINATION METER ASSEMBLY

3.READ VALUE OF INTELLIGENT TESTER (ENGINE SPEED SIGNAL)

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Turn the tester ON.
- Enter the following menus: Diagnosis / Power Train / Engine / Data Test.
- Check the values by referring to the table below.

Engine:

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
Engine Spd	Engine speed/Min.: 0 rpm, Max.: 16,383 rpm	Almost same as actual engine speed (When engine is running)	-



4.CHECK HARNESS AND CONNECTOR (COMBINATION METER - ECM)

- Disconnect the A6(*1) / E59 (*2) and J34 connectors.
- Measure the resistance according to the value(s) in the table below.

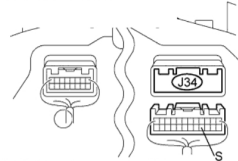
Standard resistance:

Tester Connection	Condition	Specified Condition
A6-16 (TACH) (*1) - J34-16 (S)	Always	Below 1 Ω
A6-16 (TACH) (*1) - Body ground	Always	10 kΩ or higher
A49-13 (TACH) (*2) - J34-16	Always	Below 1 Ω
A49-13 (TACH) (*2) - Body ground	Always	10 kΩ or higher

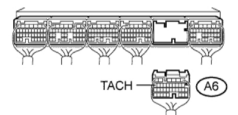
*1: for 4GR-FSE

*2: for 2AD-FHV

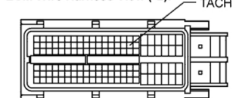
Combination Meter Assembly Wire Harness View:



ECM Wire Harness View (*1):



ECM Wire Harness View (*2):



OK

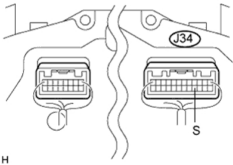
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

5.INSPECT COMBINATION METER ASSEMBLY

- a. Check the input signal waveform.
- i. Remove the combination meter with the connector still connected.
 - ii. Connect the oscilloscope to terminal J34-16 (S) and body ground.
 - iii. Start the engine.

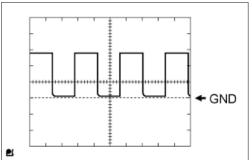
Combination Meter Assembly
Wire Harness View:



- iv. Check the signal waveform according to the condition(s) in the table below.

Item	Condition
Tool setting	5 V/DIV., 10 ms./DIV.
Vehicle condition	Engine idle speed

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



OK

REPLACE COMBINATION METER ASSEMBLY

NG

REPLACE ECM

Item	Test Details	Diagnostic Note
Tacho Meter Operation	0, 1,000, 2,000, 3,000, 4,000, 5,000, 6,000, 7,000, 8,000 (rpm)	-