1. Combination Meter

A: DIAGNOSTICS PROCEDURE

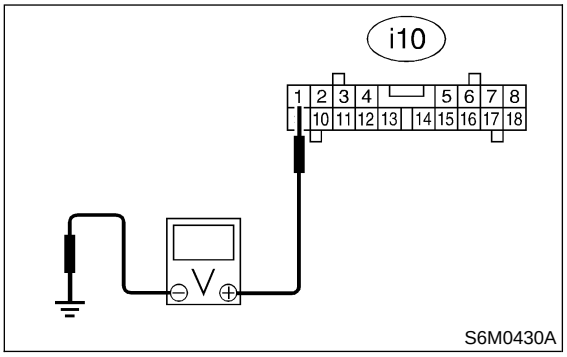
If speedometer does not operate, or operates abnormally, check combination meter circuit.

CAUTION:
Make sure that trouble code of vehicle speed sensor system appears in electrical system on-board diagnosis.

1A1 : CHECK POWER SUPPLY FOR COMBINATION METER.

1) Remove combination meter. <Ref. to 6-2 [W8A0].>
2) Turn ignition switch to ON.
3) Measure voltage between combination meter connector and chassis ground.

Connector & terminal
(i10) No. 1 (+) — Chassis ground (−):



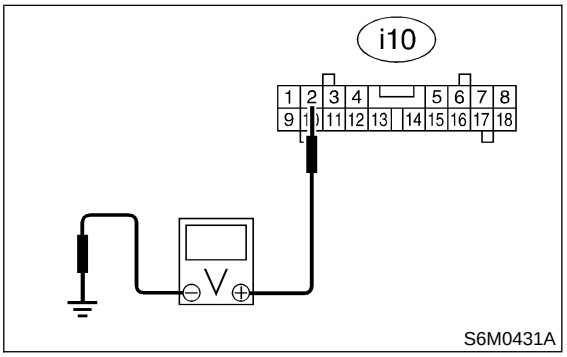
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **1A2**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between combination meter and battery.
● Poor contact in coupling connectors (i10) and combination meter connector. <Ref. to FOREWORD [W3C0].>

1A2 : CHECK POWER SUPPLY FOR COMBINATION METER.

Measure voltage between combination meter connector and chassis ground.

Connector & terminal
(i10) No. 2 (+) — Chassis ground (−):



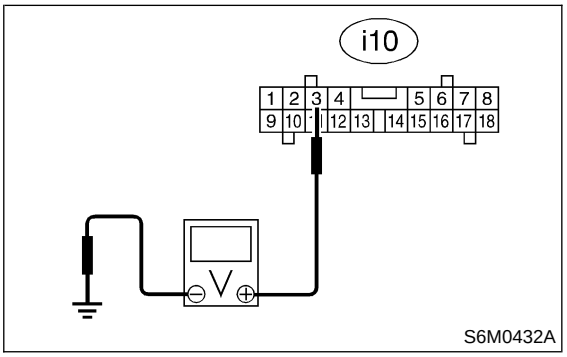
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **1A3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between combination meter and battery.
● Poor contact in coupling connectors (i10) and combination meter connector. <Ref. to FOREWORD [W3C0].>

1A3 : CHECK GROUND CIRCUIT OF COMBINATION METER.

1) Turn ignition switch to OFF.
2) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i10) No. 3 (+) — Chassis ground (−):



CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **1A4**.
NO : Repair harness and connector.

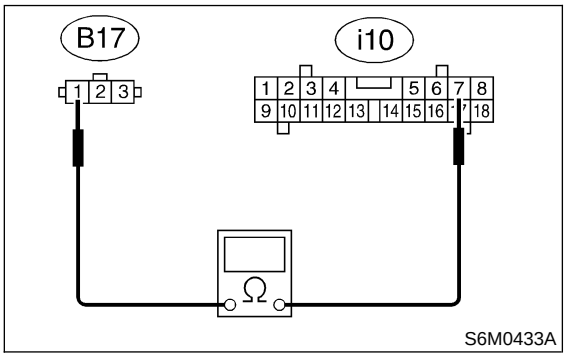
1A4 : CHECK TRANSMISSION TYPE.

CHECK : ***Is the transmission type MT?***
YES : Go to step **1A5**.
NO : Go to step **1A9**.

1A5 : CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND VEHICLE SPEED SENSOR.

1) Disconnect connector from vehicle speed sensor.
2) Measure resistance of harness connector between vehicle speed sensor and combination meter.

Connector & terminal
(B17) No. 1 — (i10) No. 7:

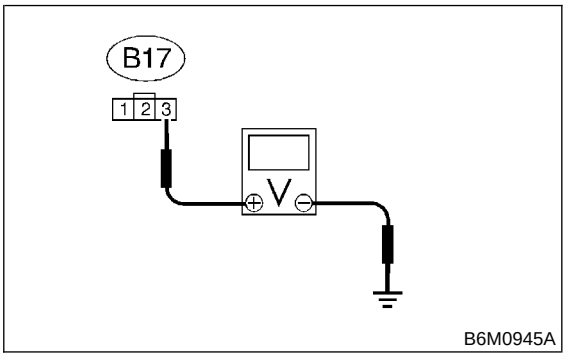


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **1A6**.
NO : Repair wiring harness.

1A6 : CHECK HARNESS CONNECTOR BETWEEN BATTERY AND VEHICLE SPEED SENSOR.

1) Turn ignition switch to ON.
2) Measure voltage between vehicle speed sensor connector (B17) and chassis ground.

Connector & terminal
(B17) No. 3 (+) — Chassis ground (−):

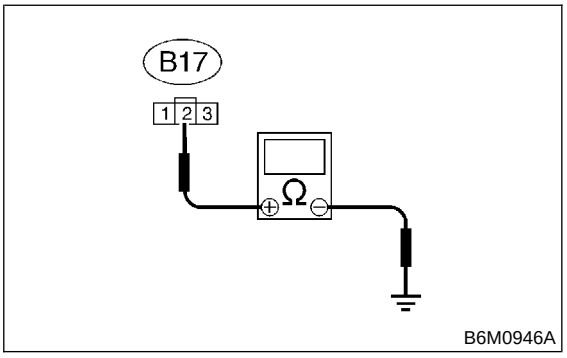


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **1A7**.
NO : Repair harness connector between battery and vehicle speed sensor.

1A7 : CHECK HARNESS CONNECTOR BETWEEN VEHICLE SPEED SENSOR AND ENGINE GROUND.

1) Turn ignition switch to OFF.
2) Measure resistance between vehicle speed sensor connector (B17) and engine ground.

Connector & terminal
(B17) No. 2 (+) — Engine ground (−):



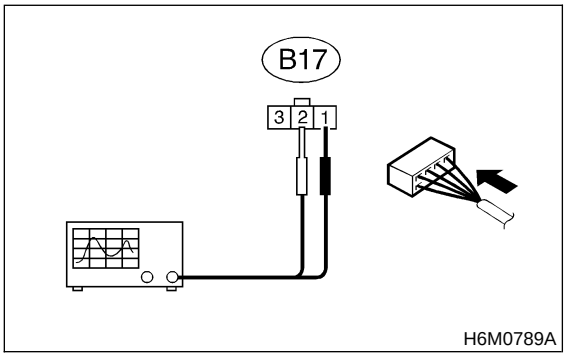
CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **1A8**.
NO : Repair harness connector between vehicle speed sensor and engine ground.

1A8 : CHECK VEHICLE SPEED SENSOR.

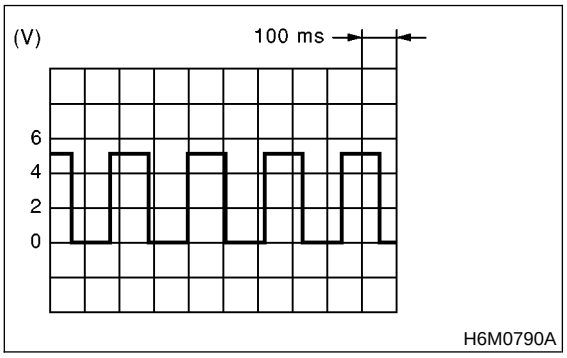
1) Connect connector to vehicle speed sensor.
2) Set the vehicle on a free roller, or lift-up the vehicle and support with safety stands.

WARNING:
Be careful not to get caught in the rotating wheels.

3) Set oscilloscope to vehicle speed sensor connector terminals.
Positive probe; (B17) No. 1
Earth lead; (B17) No. 2



4) Drive the vehicle at speed greater than 20 km/h (12 MPH).
5) Measure signal voltage indicated on oscilloscope.



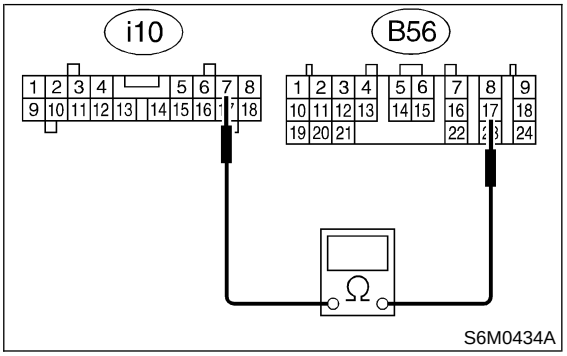
CHECK : ***Is the voltage more than 5 V?***
YES : Repair or replace speedometer.
NO : Replace vehicle speed sensor. <Ref. to 6-2 [W1100].>

1A9 : CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND AUTOMATIC TRANSMISSION CONTROL MODULE.

1) Disconnect connector from automatic transmission control module.
2) Measure resistance between combination meter connector (i10) and automatic transmission control module connector (B56).

CAUTION:
To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal
(i10) No. 7 — (B56) No. 17:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **1A10**.
NO : Repair harness connector between combination meter and automatic transmission control module.

1A10 : CHECK AUTOMATIC TRANSMISSION CONTROL MODULE.

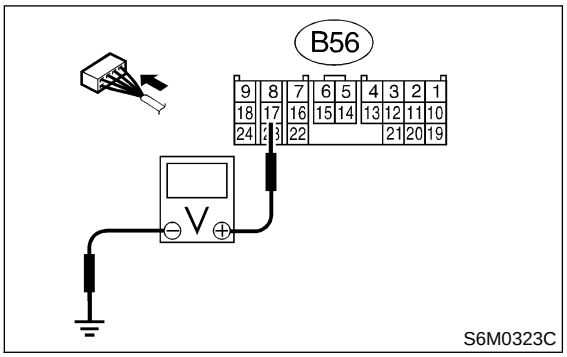
1) Connect connector to automatic transmission control module.
2) Set the vehicle on a free roller, or lift-up the vehicle and support with safety stands.

WARNING:
Be careful not to get caught in the rotating wheels.

3) Drive the vehicle faster than 10 km/h (6 MPH).
4) Measure voltage between automatic transmission control module connector (B56) and chassis ground.

CAUTION:
To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in).

Connector & terminal
(B56) No. 17 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V ←→ more than 4 V?***
YES : Go to step **1A11**.
NO : Replace automatic transmission control module. <Ref. to 3-2 [W2300].>

1A11 : APPEARANCE INSPECTION

Conduct appearance inspection on combination meter.

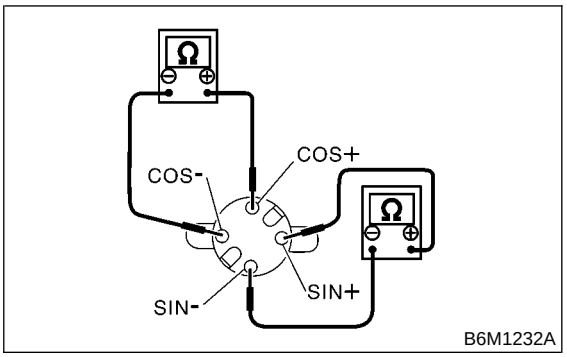
NOTE:
Check to see if the needle catches.

CHECK : ***Is there anything unusual about the appearance of combination meter?***
YES : Replace combination meter. <Ref. to 6-2 [W8A0].>
NO : Go to step **1A12**.

1A12 : SPEEDOMETER INSPECTION

1) Disassemble combination meter and then remove speedometer assembly.
2) Measure resistance between speedometer terminals.

Terminals
SIN+ — SIN–:

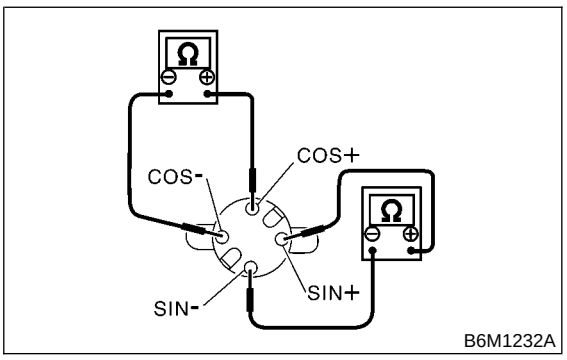


CHECK : ***Is the resistance 200±8 Ω?***
YES : Replace printed circuit.
NO : Go to step **1A13**.

1A13 : SPEEDOMETER INSPECTION

Measure resistance between speedometer terminals.

Terminals
COS+ — COS–:

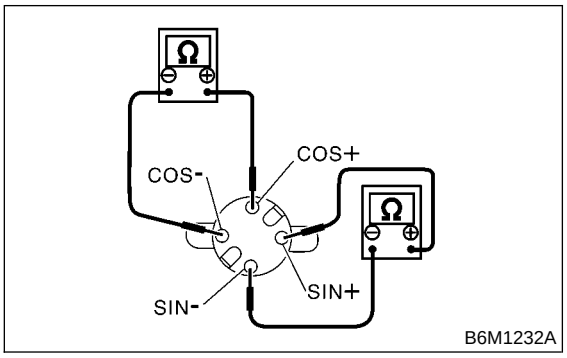


CHECK : ***Is the resistance 200±8 Ω?***
YES : Replace printed circuit.
NO : Replace speedometer assembly. Go to step **1A14**.

1A14 : TACHOMETER INSPECTION

1) Remove tachometer assembly from combination meter.
2) Measure resistance between tachometer terminals.

Terminals
SIN+ — SIN–:

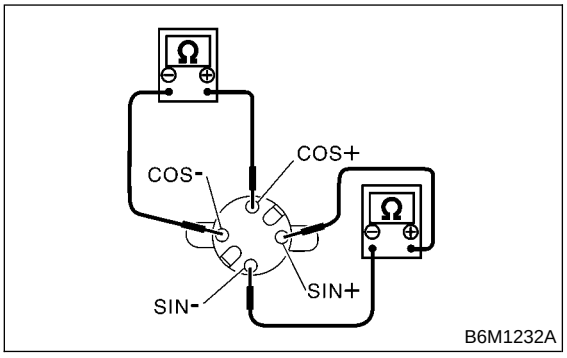


CHECK : ***Is the resistance 200±8 Ω?***
YES : Replace printed circuit.
NO : Go to step **1A15**.

1A15 : TACHOMETER INSPECTION

Measure resistance between tachometer terminals.

Terminals
COS+ — COS–:



CHECK : ***Is the resistance 200±8 Ω?***
YES : Replace printed circuit.
NO : Replace tachometer assembly.