K: TROUBLE CODE (33)
— VEHICLE SPEED SENSOR 2 —

DIAGNOSIS:

- The vehicle speed sensor 2 is not in function.
- The harness connector between ECM and vehicle speed sensor 2 is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

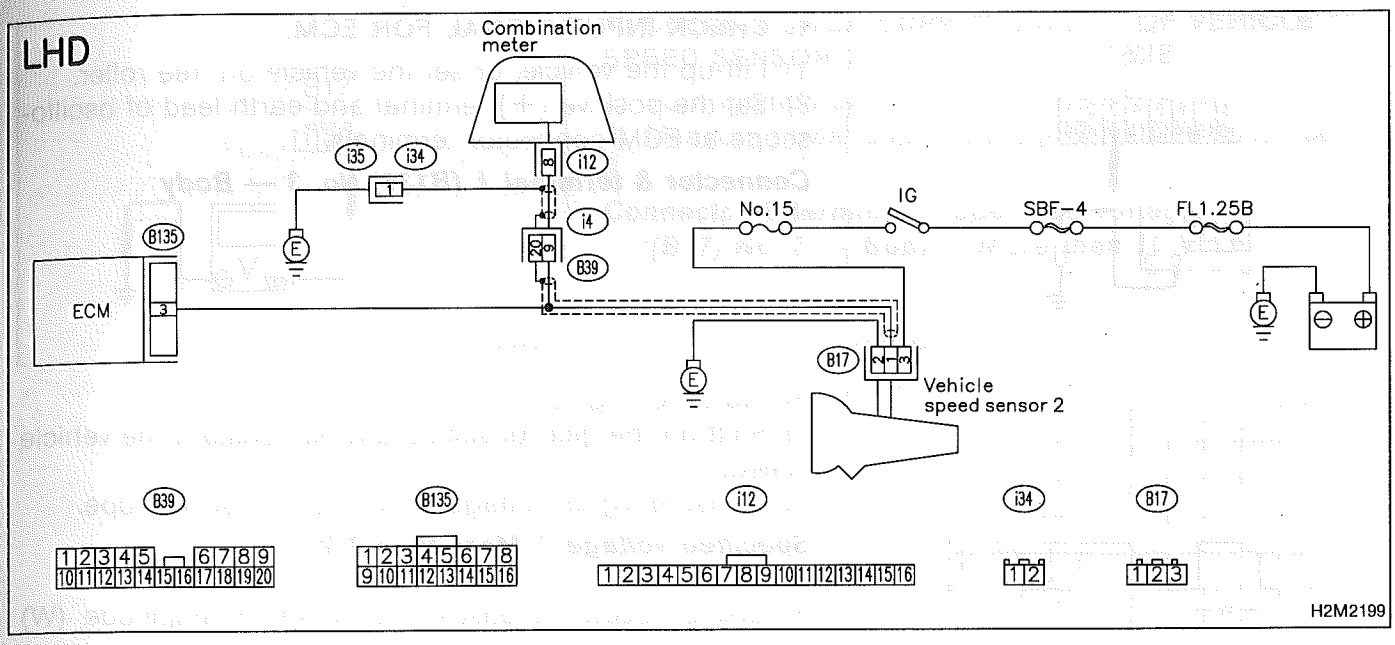
1. Check input signal for ECM.
- O.K. → Check poor contact in ECM connectors. <Ref. to FOREWORD [T3C1].>
- Not O.K. ↓

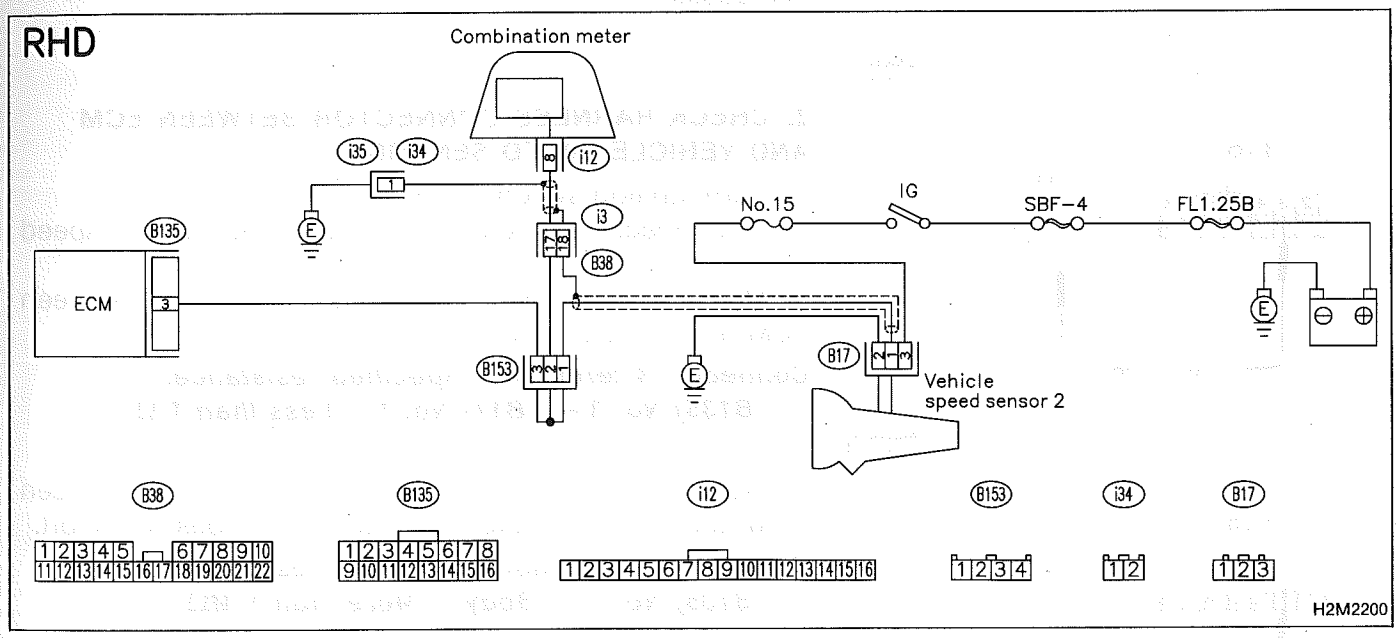
2. Check harness connector between ECM and vehicle speed sensor 2.
- Not O.K. → Repair or replace harness connector.
- O.K. ↓

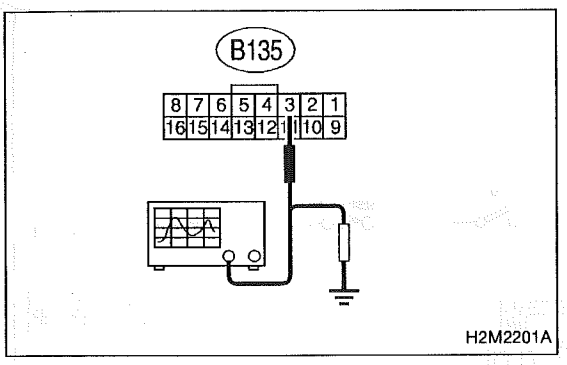
3. Check ground circuit of vehicle speed sensor 2.
- Not O.K. → Repair or replace harness connector.
- O.K. ↓

4. Check power supply circuit of vehicle speed sensor 2.
- Not O.K. → Repair or replace harness connector.
- O.K. ↓

- Mechanical trouble between vehicle speed sensor 2 and speedometer shaft in transmission.
- Failure of the vehicle speed sensor 2
  → Replace vehicle speed sensor 2.


LHD
Combination meter
i35
i34
i12
i4
B39
B135
ECM
No.15
IG
SBF-4
FL1.25B
B17
Vehicle speed sensor 2
H2M2199

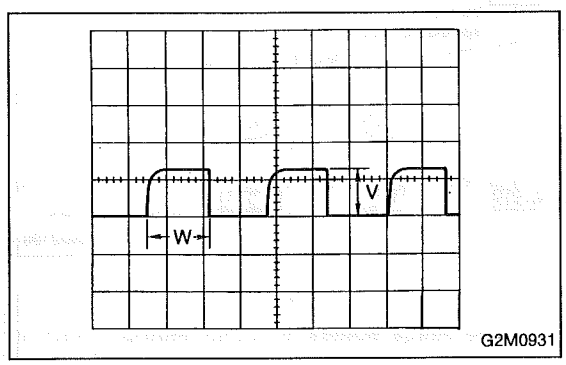

RHD
Combination meter
i35
i34
i12
i3
B38
B135
ECM
B153
No.15
IG
SBF-4
FL1.25B
B17
Vehicle speed sensor 2
H2M2200



1. CHECK INPUT SIGNAL FOR ECM.

1) Lift-up the vehicle, or set the vehicle on free roller.
2) Set the positive (+) terminal and earth lead of oscilloscope at ECM connector terminals.

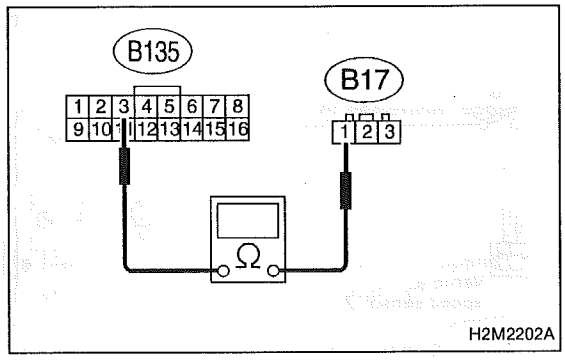
Connector & terminal / (B135) No. 3 — Body



3) Start the engine.
4) Shift on the gear position, and be constant the vehicle speed.
5) Measure signal voltage indicated on oscilloscope.

Specified voltage / More than 3 V

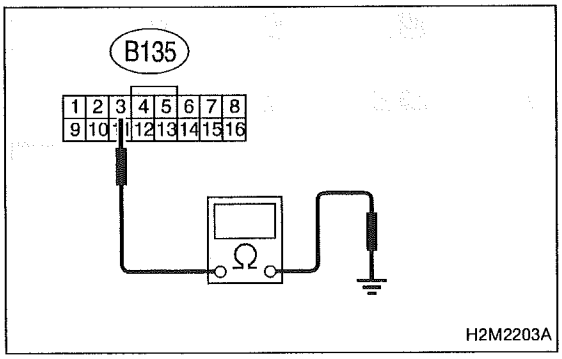
NOTE:
If vehicle speed increases, the width of amplitude (W) decreases.



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND VEHICLE SPEED SENSOR 2.

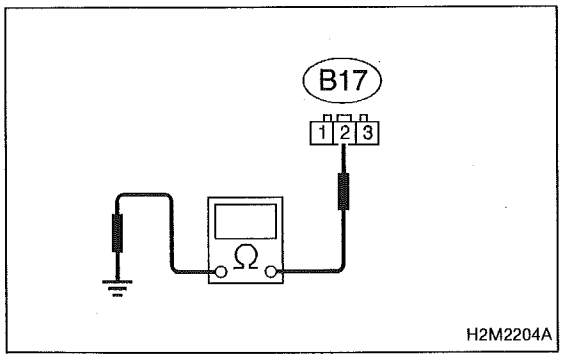
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and vehicle speed sensor 2.
3) Measure resistance of harness connector between ECM and vehicle speed sensor 2.

Connector & terminal / Specified resistance:
(B135) No. 3 — (B17) No. 1 / Less than 1 Ω



4) Measure resistance of harness connector between ECM and body to make sure that circuit does not short.

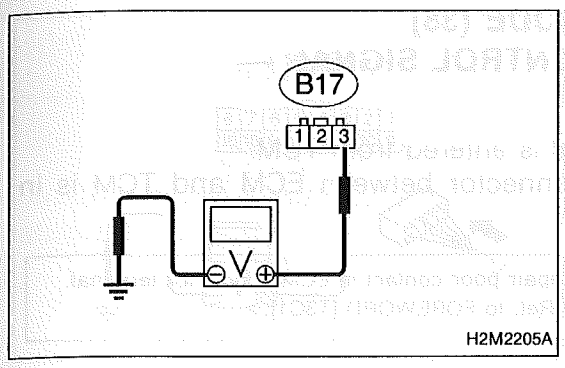
Connector & terminal / Specified resistance:
(B135) No. 3 — Body / More than 1 MΩ



3. CHECK GROUND CIRCUIT OF VEHICLE SPEED SENSOR 2.

Measure resistance of harness connector between vehicle speed sensor 2 and body.

Connector & terminal / Specified resistance:
(B17) No. 2 — Body / Less than 5 Ω



4. CHECK POWER SUPPLY CIRCUIT OF VEHICLE SPEED SENSOR 2.

1) Turn ignition switch to ON.
2) Measure power supply voltage to vehicle speed sensor 2.

Connector & terminal / Specified voltage:
(B17) No. 3 — Body / More than 10 V

L: TROUBLE CODE (38)
— TORQUE CONTROL SIGNAL —

DIAGNOSIS:

- Abnormal signal is entered from TCM.
- The harness connector between ECM and TCM is in short or open.

1. Check output signal from ECM.

O.K. → Repair poor contact in ECM connector terminal. <Ref. to FOREWORD [T3C1].>

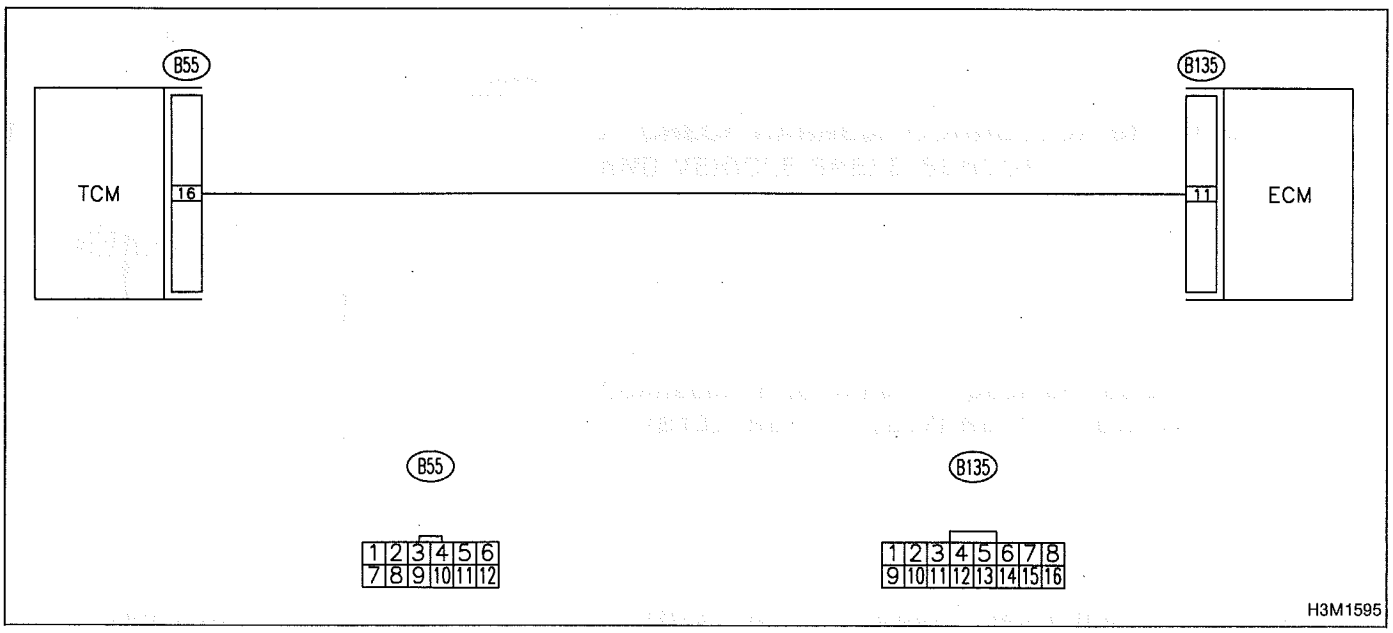
Not O.K. ↓

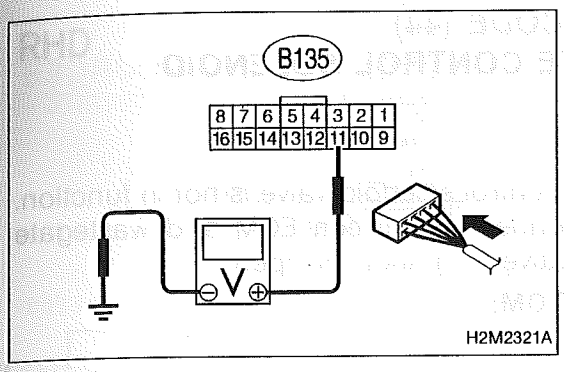
2. Check harness connector between ECM and TCM.

Not O.K. → Repair or replace harness connectors.

O.K. ↓

Repair poor contact in TCM connector terminal. <Ref. to FOREWORD [T3C1].>

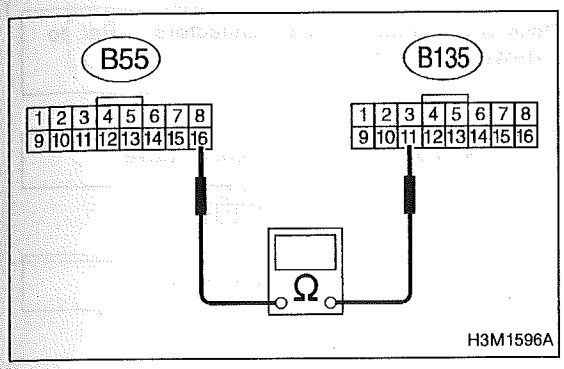




1. CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure signal voltage between ECM and body.

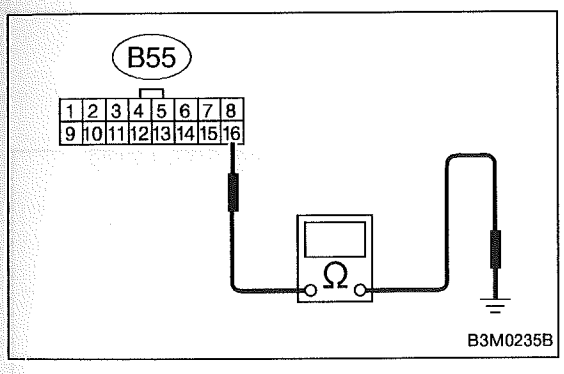
Connector & terminal / Specified voltage:
(B135) No. 11 — Body / 5±1 V



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND TCM.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness connector between ECM and TCM.

Connector & terminal / Specified resistance:
(B135) No. 11 — (B55) No. 16 / Less than 1 Ω



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(B55) No. 16 — Body / More than 1 MΩ

M: TROUBLE CODE (44) — WASTEGATE CONTROL SOLENOID VALVE —

DIAGNOSIS:

- The wastegate control solenoid valve is not in function.
- The harness connector between ECM and wastegate control solenoid valve is in short or open.

TROUBLE SYMPTOM:

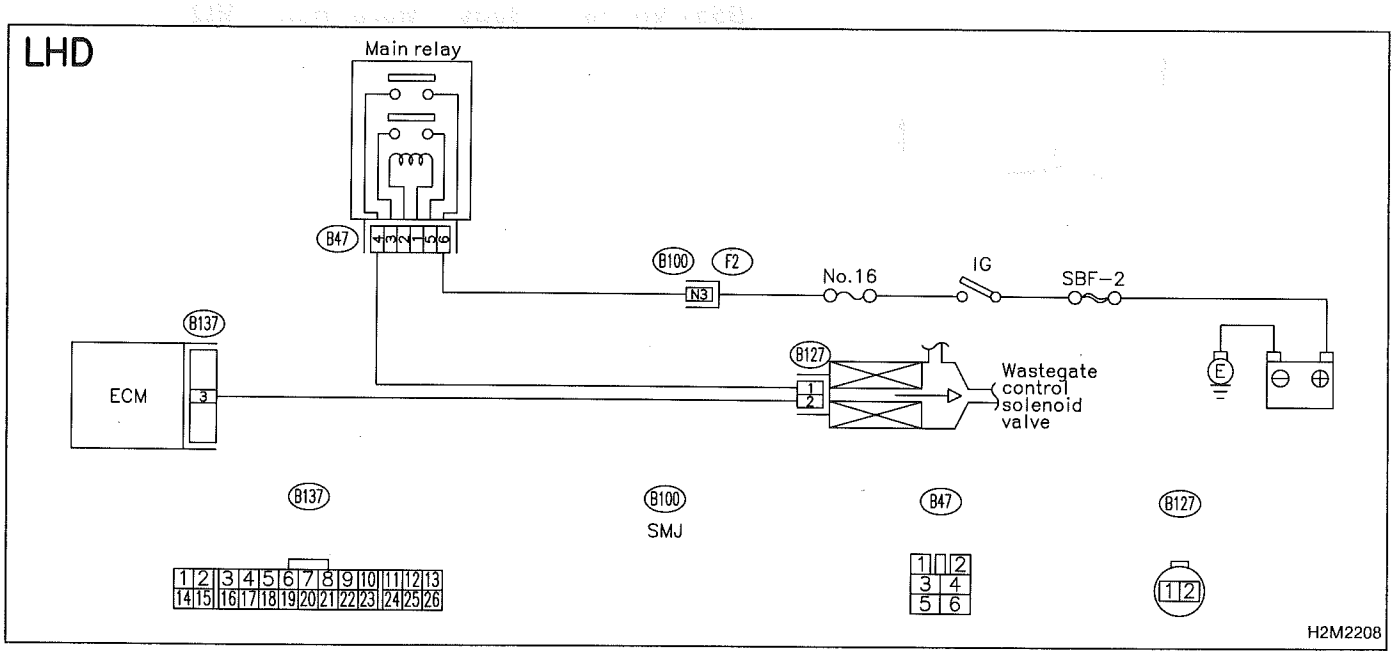
- Poor driving performance

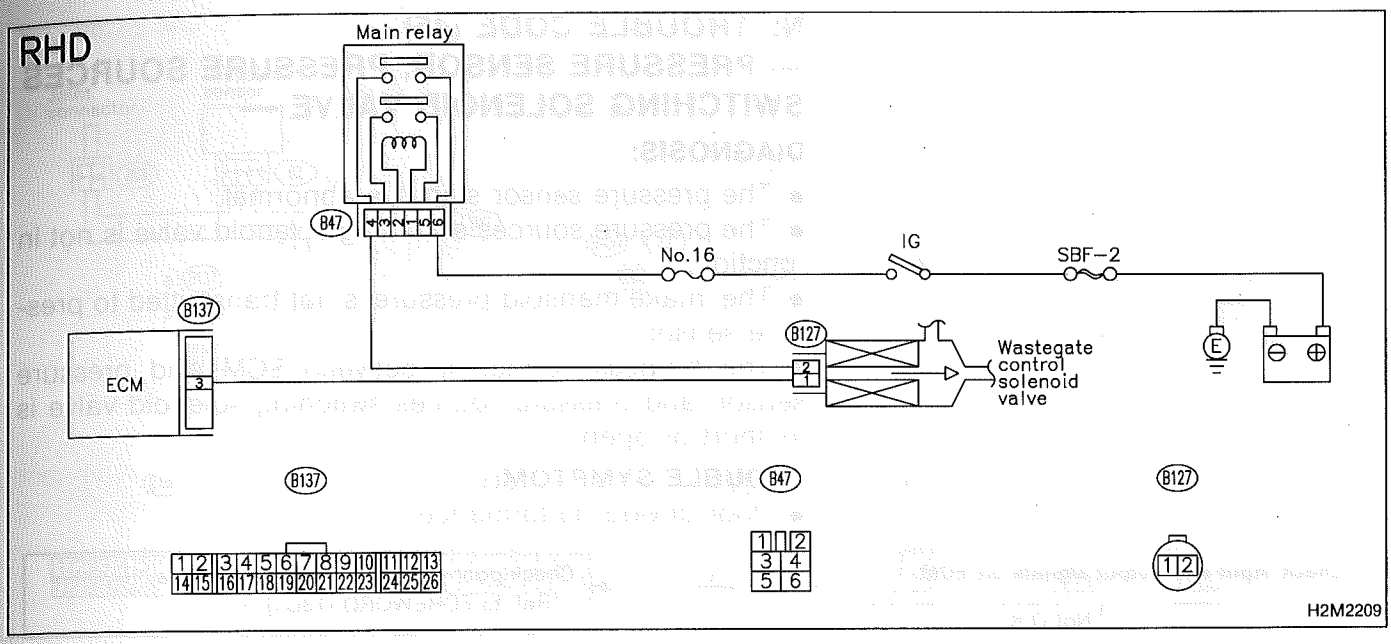
1. Check input signal for ECM.
- O.K. → Check poor contact in ECM connectors. <Ref. to FOREWORD [T3C1].>
- Not O.K. ↓

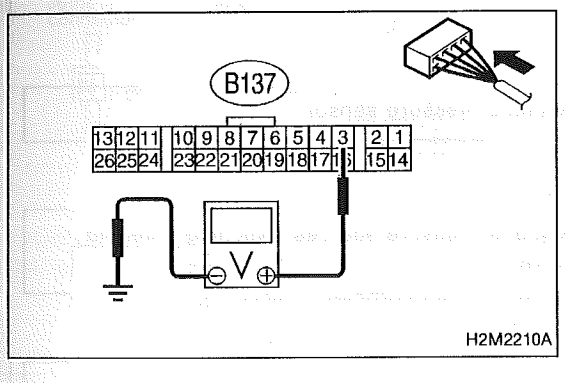
2. Check wastegate control solenoid valve.
- Not O.K. → Replace wastegate control solenoid valve.
- O.K. ↓

3. Check power supply circuit of wastegate control solenoid valve.
- Not O.K. → Repair or replace power supply circuit.
- O.K. ↓

Repair or replace harness connector between ECM and wastegate control solenoid valve.



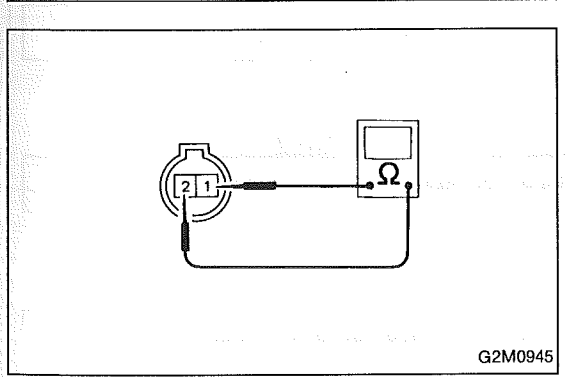




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure signal voltage between ECM and body.

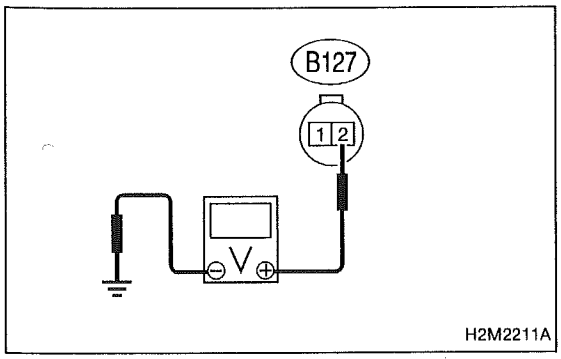
Connector & terminal / Specified voltage:
(B137) No. 3 — Body / More than 10 V



2. CHECK WASTEGATE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from wastegate control solenoid valve.
3) Measure resistance between connector terminals of wastegate control solenoid valve.

Terminals / Specified resistance:
No. 1 — No. 2 / 20 Ω



3. CHECK POWER SUPPLY CIRCUIT OF WASTEGATE CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between wastegate control solenoid valve connector and body.

Connector & terminal / Specified voltage:
(B127) No. 2 — Body / More than 10 V

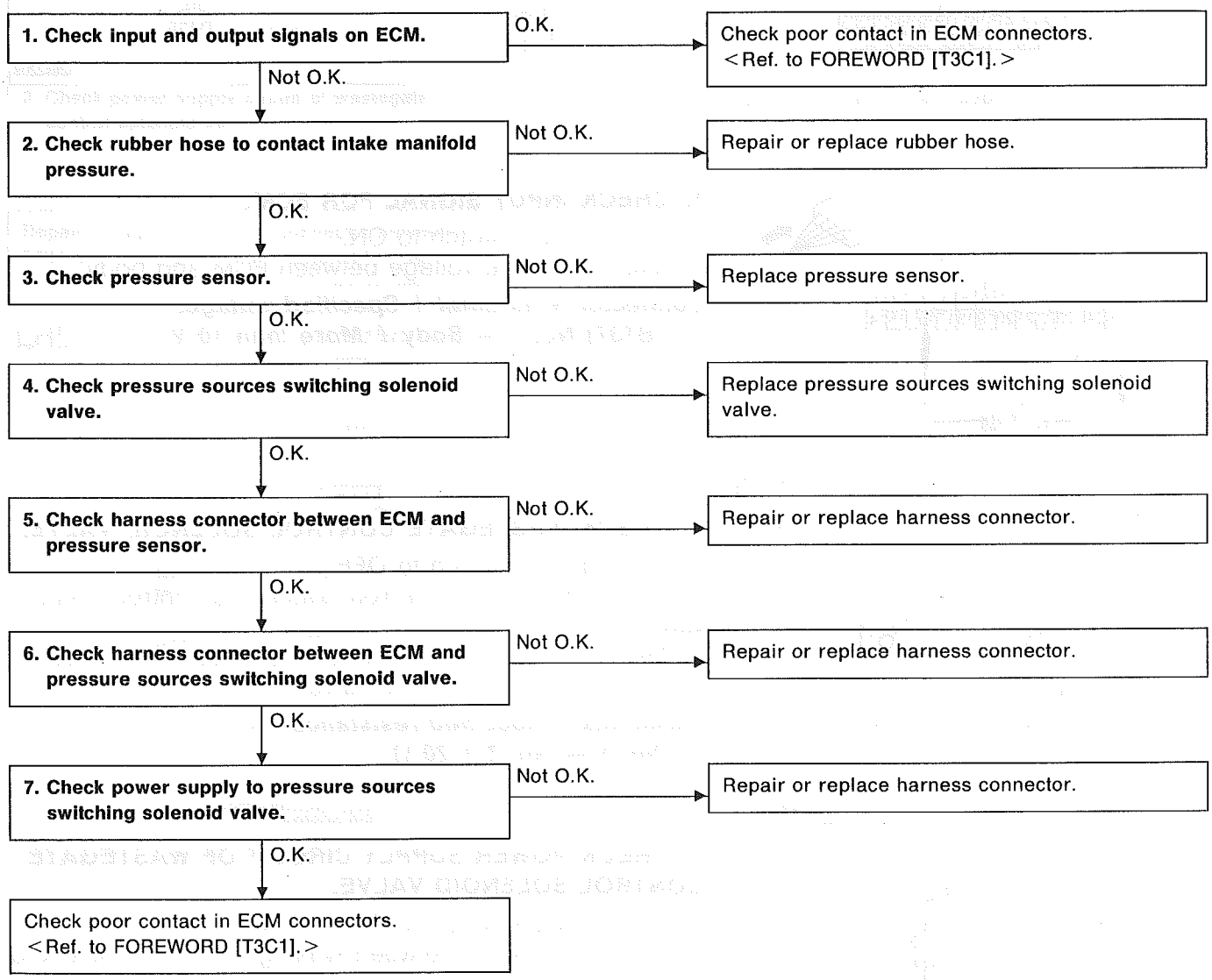
N: TROUBLE CODE (45) — PRESSURE SENSOR, PRESSURE SOURCES SWITCHING SOLENOID VALVE —

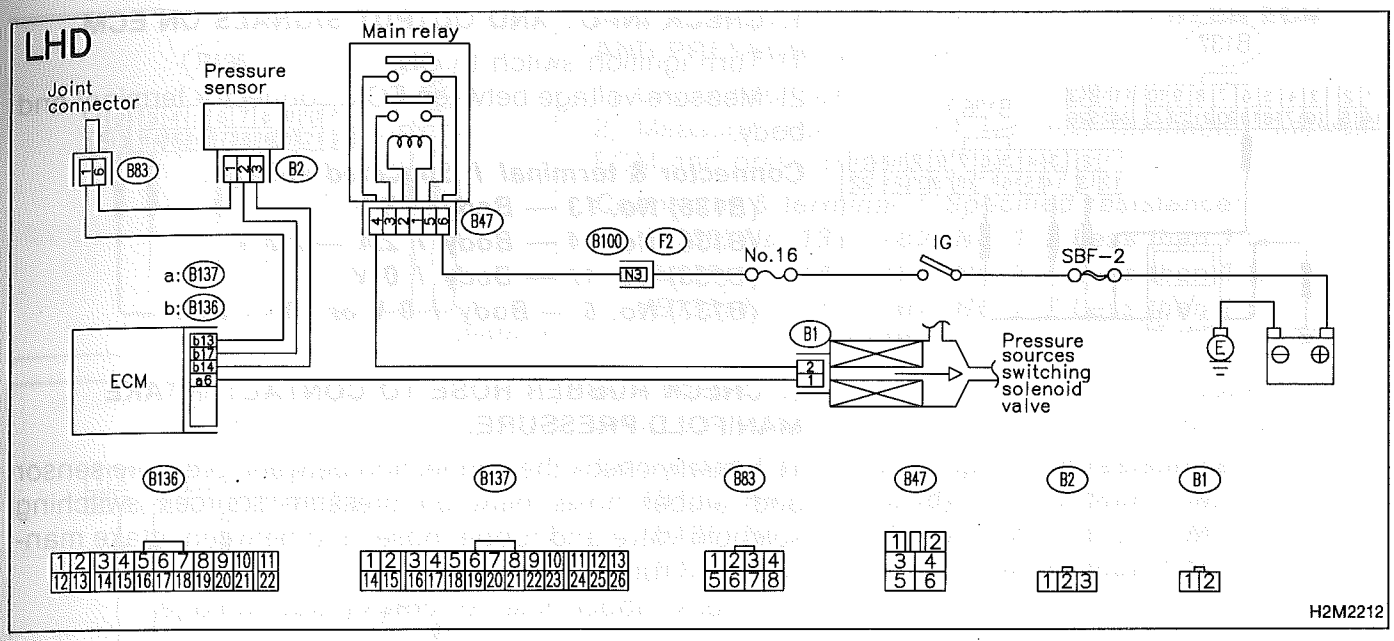
DIAGNOSIS:

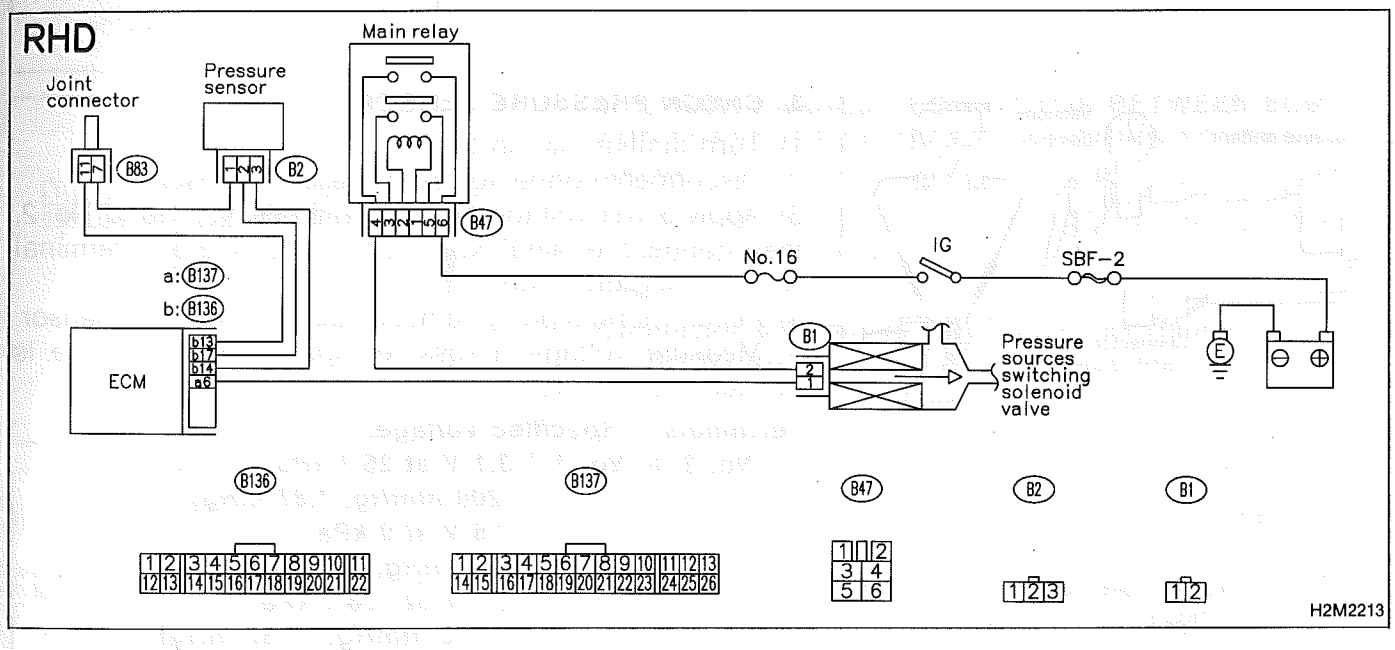
- The pressure sensor signal is abnormal.
- The pressure sources switching solenoid valve is not in function.
- The intake manifold pressure is not transmitted to pressure sensor.
- The harness connector between ECM and pressure sensor, and pressure sources switching solenoid valve is in short or open.

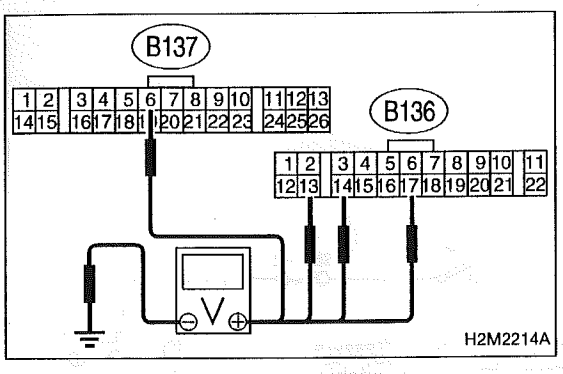
TROUBLE SYMPTOM:

- Poor driving performance




LHD
Joint connector
Pressure sensor
Main relay
B83
B2
B47
B100
F2
N3
No.16
IG
SBF-2
a: B137
b: B136
ECM
b13
b17
b14
a6
B1
Pressure sources switching solenoid valve
E
B136
B137
B83
B47
B2
B1
H2M2212


RHD
Joint connector
Pressure sensor
Main relay
B83
B2
B47
No.16
IG
SBF-2
a: B137
b: B136
ECM
b13
b17
b14
a6
B1
Pressure sources switching solenoid valve
E
B136
B137
B47
B2
B1
H2M2213



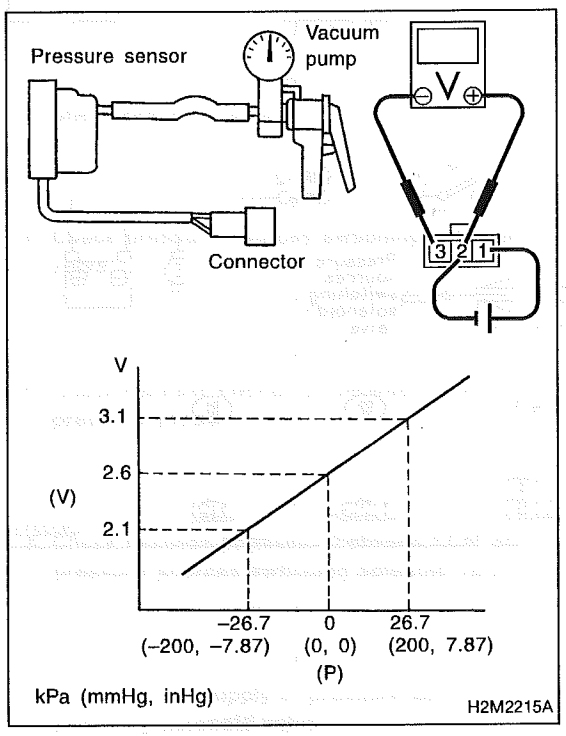
1. CHECK INPUT AND OUTPUT SIGNALS ON ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector terminal and body.

Connector & terminal / Specified voltage:
(B136) No. 13 — Body / 5 V
(B136) No. 14 — Body / 2.4 — 2.7 V
(B136) No. 17 — Body / 0 V
(B137) No. 6 — Body / 0 V or 10 — 13 V

2. CHECK RUBBER HOSE TO CONTACT INTAKE MANIFOLD PRESSURE.

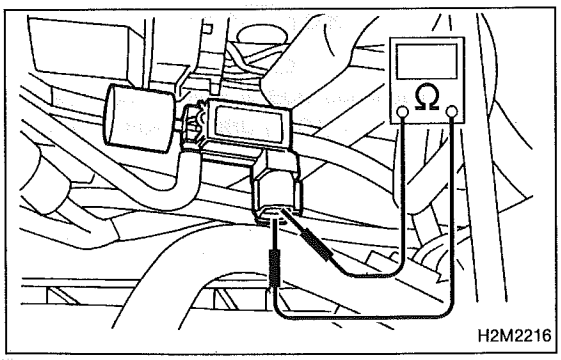
1) Visually check the connection between pressure sensor and rubber hose, between pressure sources switching solenoid valve and rubber hose, and between intake manifold and rubber hose.
2) Check rubber hose for cracks and damage.



3. CHECK PRESSURE SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sensor.
3) Apply 5 volt voltage across terminals No. 1 and No. 2, then connect terminal No. 1 to positive side and terminal No. 2 to negative side.
4) Install vacuum pump to hose fitting on pressure sensor.
5) Measure voltage across terminals when pressure is applied to pressure sensor.

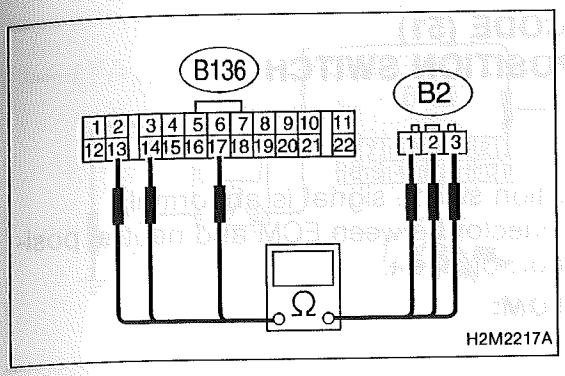
Terminals / Specified voltage:
No. 2 — No. 3 / 3.1 V at 26.7 kPa
(200 mmHg, 7.87 inHg)
2.6 V at 0 kPa
(0 mmHg, 0 inHg)
2.1 V at –26.7 kPa
(–200 mmHg, –7.87 inHg)



4. CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Disconnect connector from pressure sources switching solenoid valve.
2) Measure resistance across terminals.

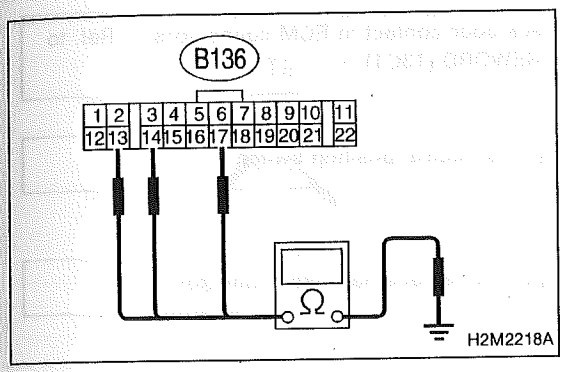
Terminals / Specified resistance:
No. 1 — No. 2 / 37 — 48 Ω



5. CHECK HARNESS CONNECTOR BETWEEN ECM AND PRESSURE SENSOR.

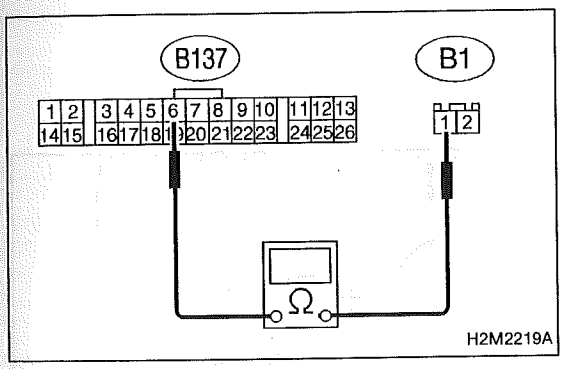
1) Disconnect connectors from ECM.
2) Measure resistance of harness connector between ECM and pressure sensor connector.

Connector & terminal / Specified resistance:
(B136) No. 13 — (B2) No. 1 / Less than 1 Ω
(B136) No. 14 — (B2) No. 3 / Less than 1 Ω
(B136) No. 17 — (B2) No. 2 / Less than 1 Ω



3) Measure resistance between ECM connector terminal and body to make sure that circuit does not short.

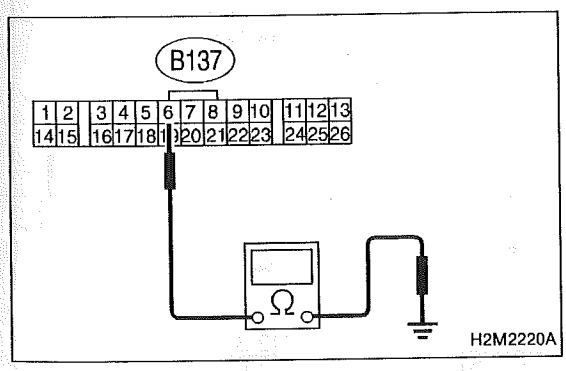
Connector & terminal / Specified resistance:
(B136) No. 13 — Body / More than 1 MΩ
(B136) No. 14 — Body / More than 1 MΩ
(B136) No. 17 — Body / More than 1 MΩ



6. CHECK HARNESS CONNECTOR BETWEEN ECM AND PRESSURE SOURCES SWITCHING SOLENOID VALVE.

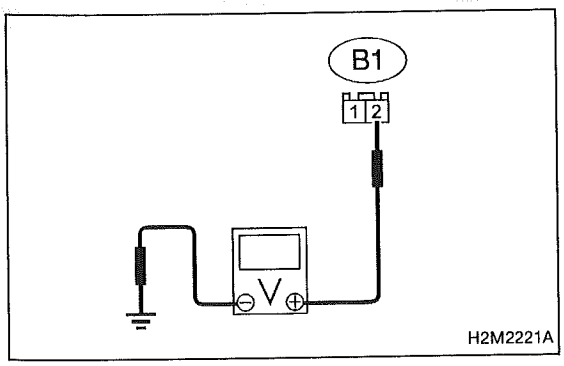
1) Measure resistance of harness connector between ECM and pressure sources switching solenoid valve connector.

Connector & terminal / Specified resistance:
(B137) No. 6 — (B1) No. 1 / Less than 1 Ω



2) Measure resistance of harness connector between ECM terminal and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(B137) No. 6 — Body / More than 1 MΩ



7. CHECK POWER SUPPLY TO PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between connector terminal of pressure sources switching solenoid valve and body.

Connector & terminal / Specified voltage:
(B1) No. 2 — body / More than 10 V

O: TROUBLE CODE (51) — NEUTRAL POSITION SWITCH (MT VEHICLE) —

DIAGNOSIS:

- The neutral position switch signal is abnormal.
- The harness connector between ECM and neutral position switch is in short or open.

TROUBLE SYMPTOM:

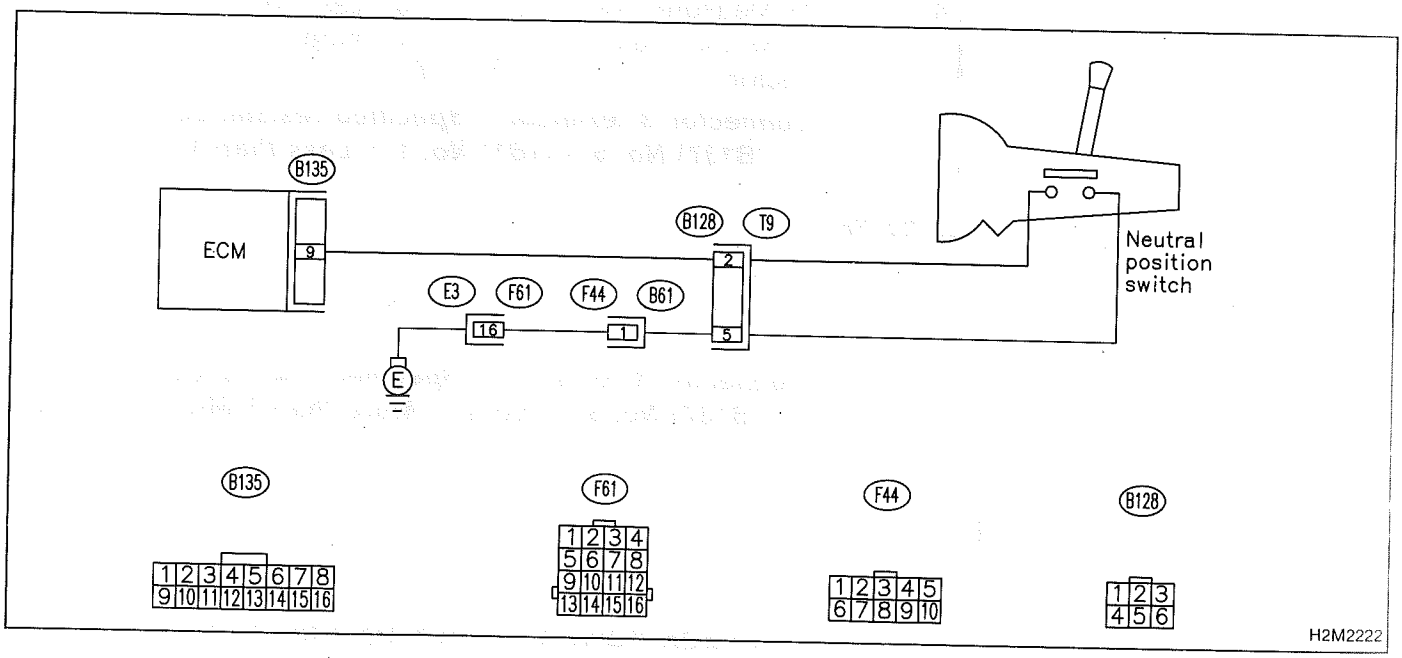
- Erroneous idling

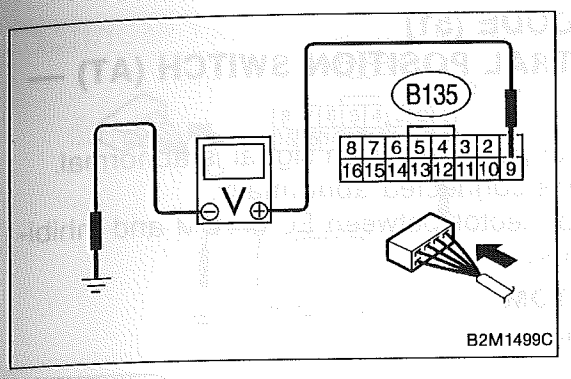
1. Check input signal for ECM.
- O.K. → Check poor contact in ECM connectors. <Ref. to FOREWORD [T3C1].>
- Not O.K. ↓

2. Check neutral position switch.
- Not O.K. → Replace neutral position switch.
- O.K. ↓

3. Check harness connector between ECM and neutral position switch.
- Not O.K. → Repair or replace harness connector.
- O.K. ↓

Repair or replace harness connector of ground line.

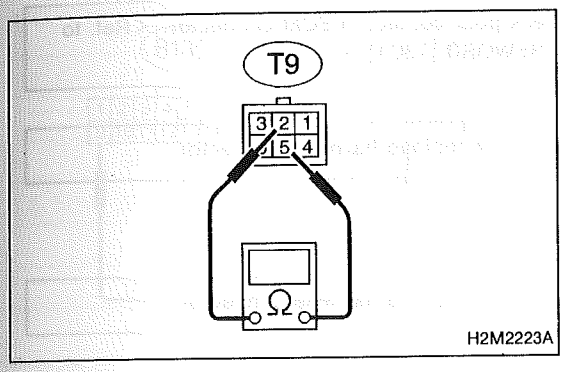




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and body.

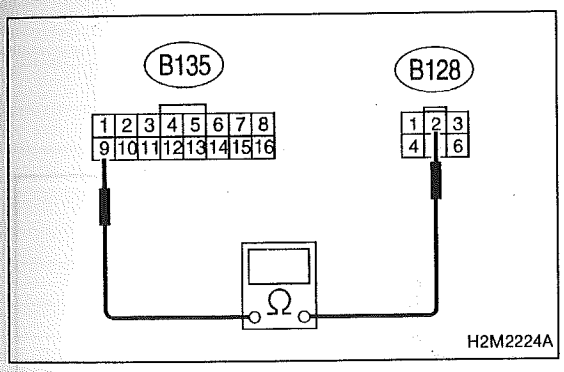
Connector & terminal / Specified voltage:
(B135) No. 9 — Body / 5 V (Neutral position) / 0 V (Other positions)



2. CHECK NEUTRAL POSITION SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission harness.
3) Measure resistance between connector terminals of transmission harness.

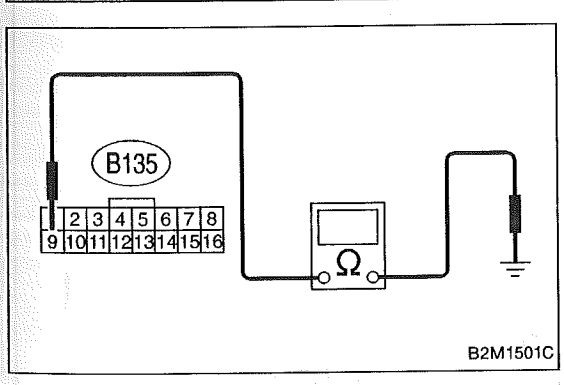
Connector & terminal / Specified resistance:
(T9) No. 2 — (T9) No. 5 / More than 1 MΩ (Neutral position) / Less than 10 Ω (Other positions)



3. CHECK HARNESS CONNECTOR BETWEEN ECM AND NEUTRAL POSITION SWITCH.

1) Disconnect connectors from ECM.
2) Measure resistance of harness connector between ECM and neutral position switch.

Connector & terminal / Specified resistance:
(B135) No. 9 — (B128) No. 2 / Less than 1 Ω



3) Measure resistance of harness connector between ECM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(B135) No. 9 — Body / More than 1 MΩ

P: TROUBLE CODE (51)
— PARK/NEUTRAL POSITION SWITCH (AT) —

DIAGNOSIS:

- The park/neutral position switch signal is abnormal.
- The shift cable is connected abnormally.
- The harness connector between ECM/TCM and inhibitor switch is in short or open.

TROUBLE SYMPTOM:

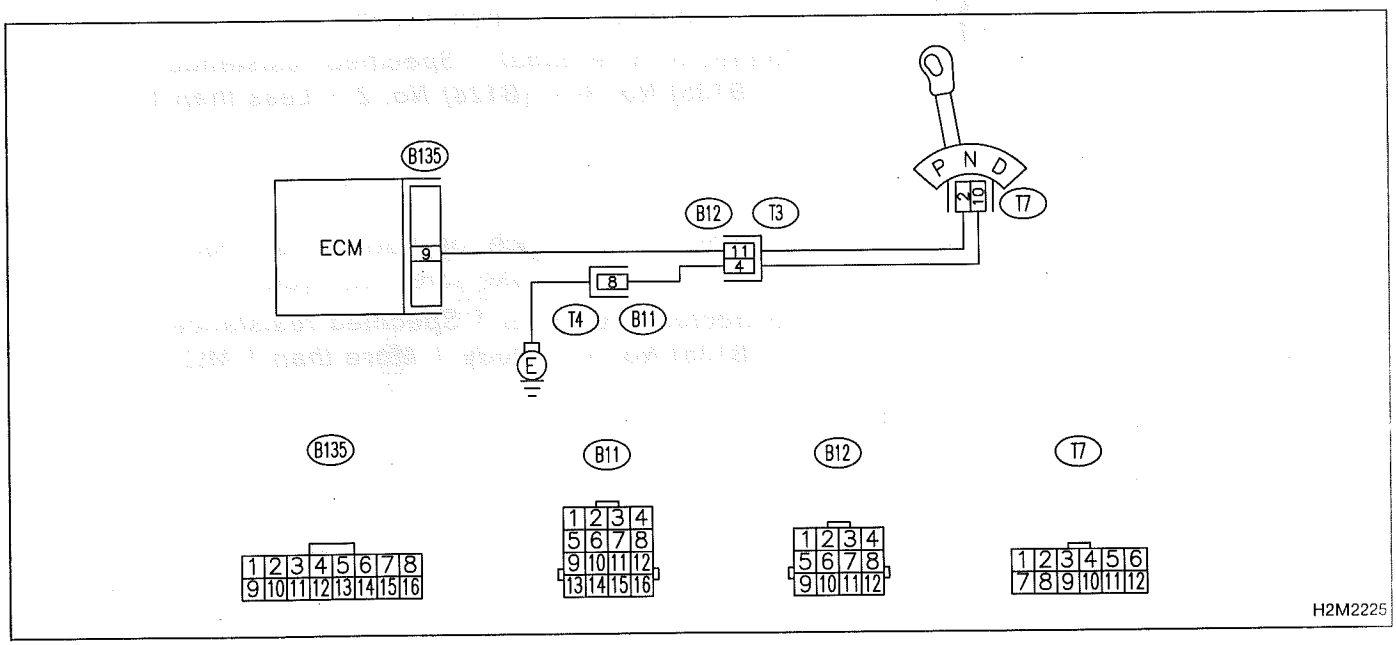
- Erroneous idling

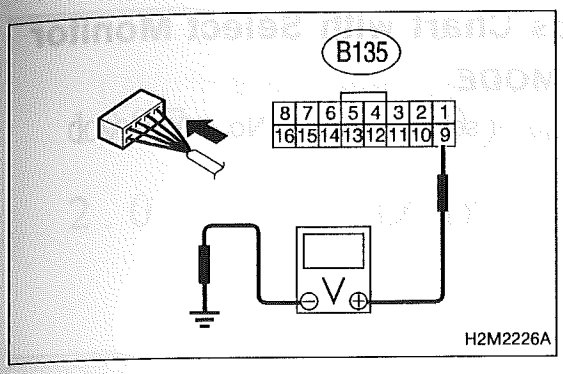
1. Check input signal for ECM.
- O.K. → Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>
- Not O.K. ↓

2. Check harness connector between ECM and inhibitor switch.
- Not O.K. → Repair or replace harness connector.
- O.K. ↓

3. Check inhibitor switch ground circuit.
- Not O.K. → Repair or replace harness connector.
- O.K. ↓

- Check selector cable connection to inhibitor switch.
- Replace inhibitor switch.

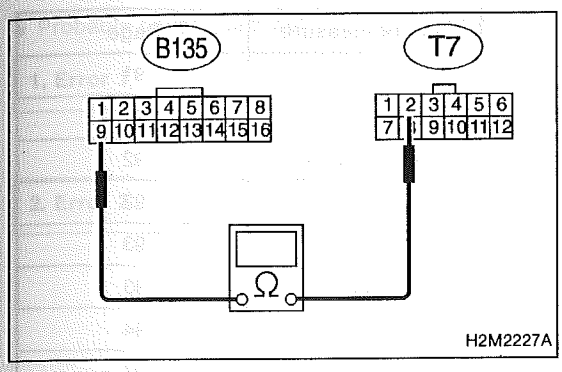




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and body.

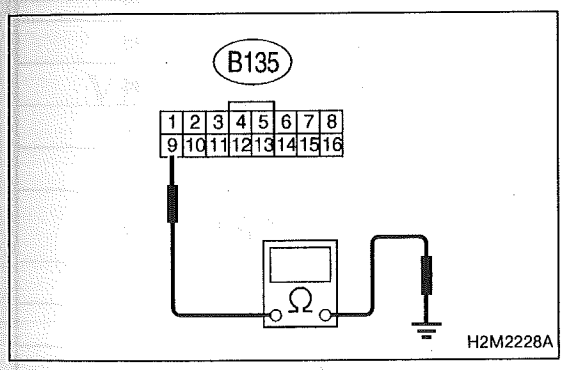
Connector & terminal / Specified voltage:
(B135) No. 9 — Body / 0 V ("P" or "N" position)



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND INHIBITOR SWITCH.

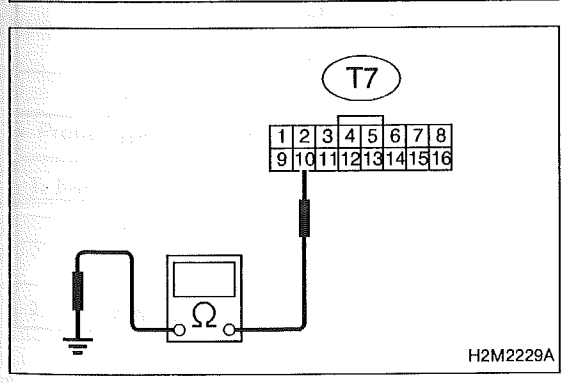
1) Turn ignition switch to OFF.
2) Disconnect connector from ECM and transmission harness or inhibitor switch.
3) Measure resistance of harness connector between ECM and transmission harness or inhibitor switch.

Connector & terminal / Specified resistance:
(B135) No. 9 — (T7) No. 2 / Less than 1 Ω



4) Measure resistance harness connector between ECM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(B135) No. 9 — Body / More than 1 MΩ



3. CHECK INHIBITOR SWITCH GROUND CIRCUIT.

Measure resistance of harness between transmission harness or inhibitor switch connector and body.

Connector & terminal / Specified resistance:
(T7) No. 10 — Body / Less than 5 Ω