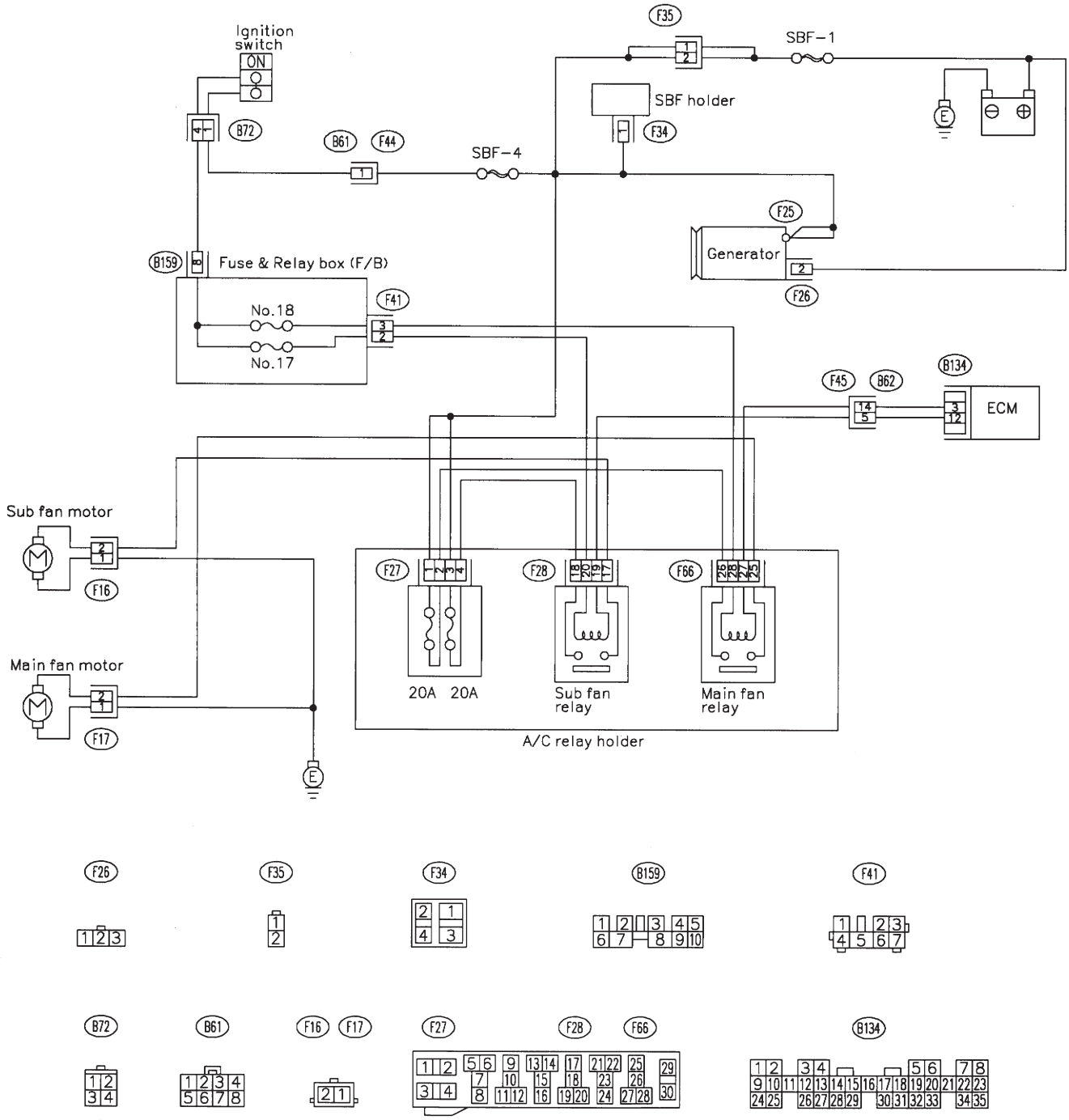
ENGINE COOLING SYSTEM 2-5

Page

T **DIAGNOSTICS** 2
1. Wiring Diagram 2
2. Radiator Main Fan 3
3. Radiator Sub Fan (With A/C model only) 7

1. Wiring Diagram



H2M2938

2. Radiator Main Fan

A: OPERATION

DETECTING CONDITION:

Condition:
- Engine coolant temperature is above 95°C (203°F).
- Vehicle speed is below 19 km/h (12 MPH).

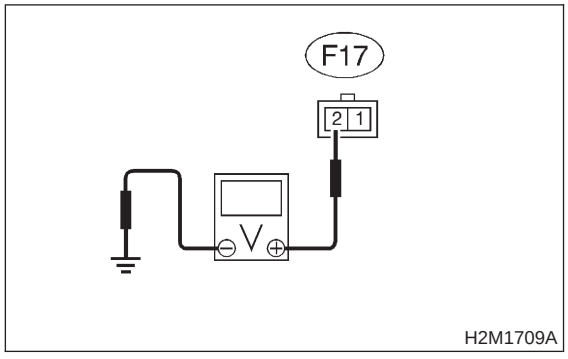
TROUBLE SYMPTOM:
- Radiator main fan does not rotate under the above conditions.

2A1 : CHECK POWER SUPPLY TO MAIN FAN MOTOR.

CAUTION:
Be careful not to overheat engine during repair.

1) Turn ignition switch to OFF.
2) Disconnect connector from main fan motor.
3) Start the engine, and warm it up until engine coolant temperature increases over 95°C (203°F).
4) Stop the engine and turn ignition switch to ON.
5) Measure voltage between main fan motor connector and chassis ground.

Connector & terminal
(F17) No. 2 (+) — Chassis ground (−):

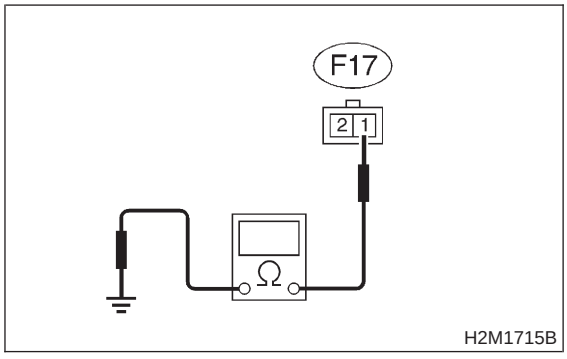


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **2A2**.
NO : Go to step **2A5**.

2A2 : CHECK GROUND CIRCUIT OF MAIN FAN MOTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between main fan motor connector and chassis ground.

Connector & terminal
(F17) No. 1 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **2A3**.
NO : Repair open circuit in harness between main fan motor connector and chassis ground.

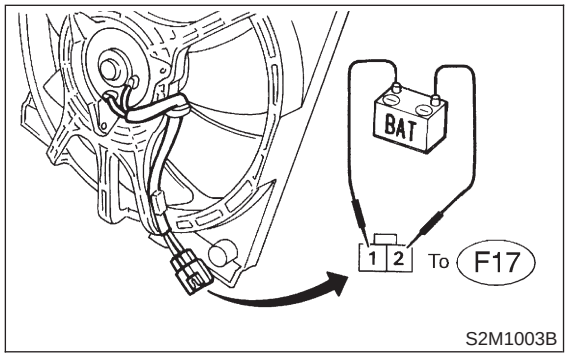
2A3 : CHECK POOR CONTACT.

Check poor contact in main fan motor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in main fan motor connector?***
YES : Repair poor contact in main fan motor connector.
NO : Go to step **2A4**.

2A4 : CHECK MAIN FAN MOTOR.

Connect battery positive (+) terminal to terminal No. 2, and negative (−) terminal to terminal No. 1 of main fan motor connector.

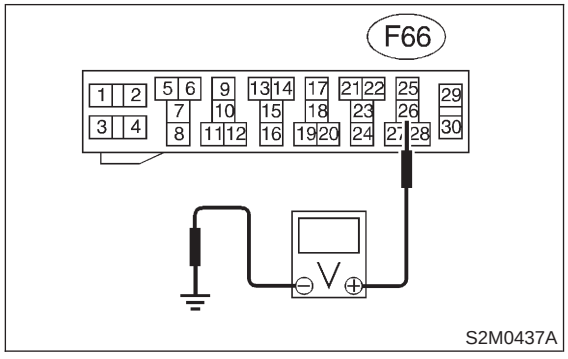


CHECK : ***Does the main fan rotate?***
YES : Repair poor contact in main fan motor connector.
NO : Replace main fan motor with a new one.

2A5 : CHECK POWER SUPPLY TO MAIN FAN RELAY.

1) Turn ignition switch to OFF.
2) Remove main fan relay from A/C relay holder.
3) Measure voltage between main fan relay terminal and chassis ground.

Connector & terminal
(F66) No. 26 (+) — Chassis ground (−):

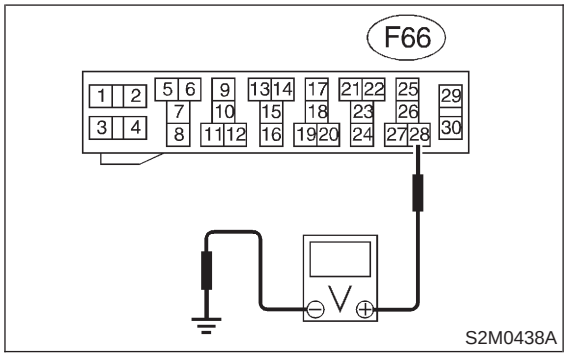


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **2A6**.
NO : Go to step **2A7**.

2A6 : CHECK POWER SUPPLY TO MAIN FAN RELAY.

1) Turn ignition switch to ON.
2) Measure voltage between main fan relay terminal and chassis ground.

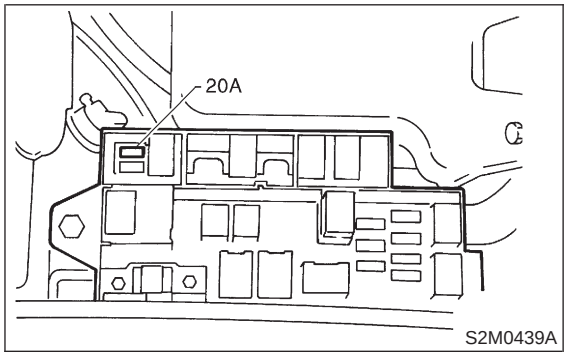
Connector & terminal
(F66) No. 28 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **2A16**.
NO : Go to step **2A12**.

2A7 : CHECK 20 A FUSE.

1) Remove 20 A fuse from A/C relay holder.
2) Check condition of fuse.

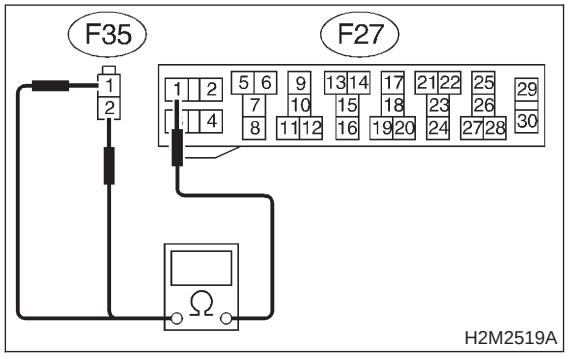


CHECK : ***Is the fuse blown-out?***
YES : Replace fuse.
NO : Go to step **2A8**.

2A8 : CHECK HARNESS CONNECTOR BETWEEN MAIN FUSE BOX AND A/C RELAY HOLDER 20 A FUSE.

1) Disconnect connector from main fuse box.
2) Disconnect connectors (F25) and (F26) from generator, and (F34) from SBF holder.
3) Measure resistance of harness connector between main fuse box connector and A/C relay holder 20 A fuse terminals.

Connector & terminal
(F35) No. 1 — (F27) No. 1:
(F35) No. 2 — (F27) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **2A9**.
NO : Repair open circuit in harness between main fuse box connector and 20 A fuse terminal.

2A9 : CHECK POOR CONTACT.

Check poor contact in main fuse box connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in main fuse box connector?***
YES : Repair poor contact in main fuse box connector.
NO : Go to step **2A10**.

2A10 : CHECK POOR CONTACT.

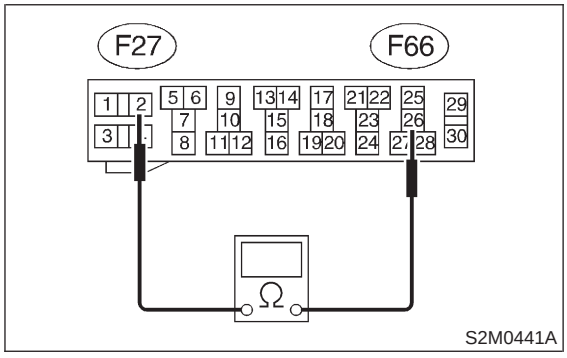
Check poor contact in A/C relay holder 20 A fuse connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in A/C relay holder 20 A fuse connector?***
YES : Repair poor contact in 20 A fuse
NO : Go to step **2A11**.

2A11 : CHECK HARNESS CONNECTOR BETWEEN 20 A FUSE AND MAIN FAN RELAY IN A/C RELAY HOLDER.

Measure resistance of harness between 20 A fuse and main fan relay terminal.

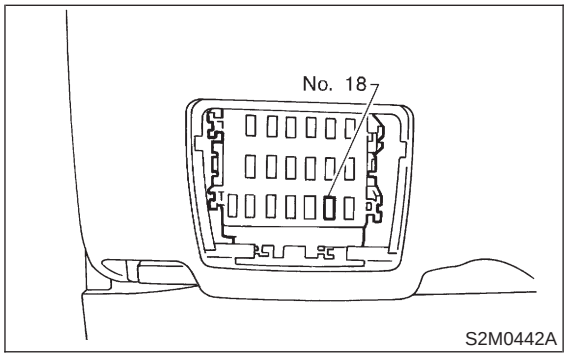
Connector & terminal
(F27) No. 2 — (F66) No. 26:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair poor contact in main fan relay connector.
NO : Repair open circuit in harness between 20 A fuse and main fan relay connector.

2A12 : CHECK FUSE.

1) Turn ignition switch to OFF.
2) Remove fuse No. 18 from joint box.
3) Check condition of fuse.

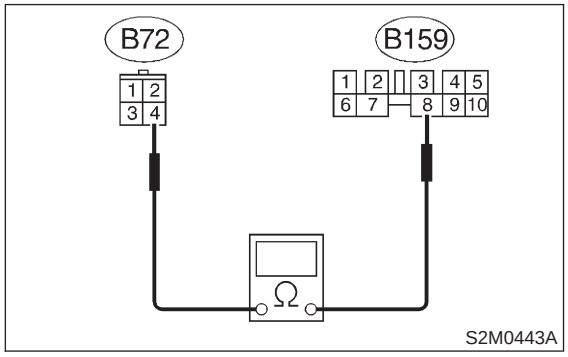


CHECK : ***Is the fuse blown-out?***
YES : Replace fuse.
NO : Go to step **2A13**.

2A13 : CHECK HARNESS CONNECTOR BETWEEN IGNITION SWITCH AND JOINT BOX.

1) Disconnect connector from ignition switch.
2) Separate connectors (F44) and (B61).
3) Disconnect connector (B159) from joint box.
4) Measure resistance of harness between ignition switch connector and joint box.

Connector & terminal
(B72) No. 4 — (B159) No. 8:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **2A14**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ignition switch connector and joint box.
- Poor contact in coupling connector (B61).

2A14 : CHECK POOR CONTACT.

Check poor contact in ignition switch connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ignition switch connector?***
YES : Repair poor contact in ignition switch connector.
NO : Go to step **2A15**.

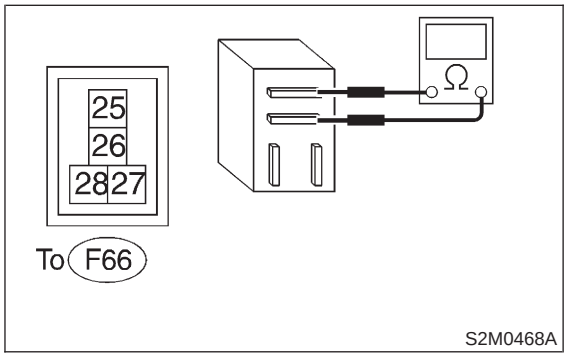
2A15 : CHECK POOR CONTACT.

Check poor contact in joint box 10 A fuse connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in joint box 10 A fuse connector?***
YES : Repair poor contact in joint box connector.
NO : Go to step **2A16**.

2A16 : CHECK MAIN FAN RELAY.

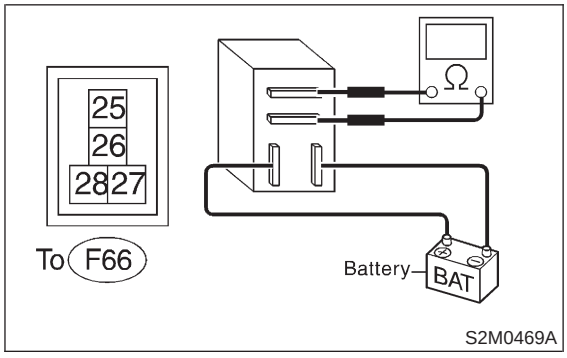
1) Turn ignition switch to OFF.
2) Check continuity between main fan relay terminals.



CHECK : ***Does no continuity exist between terminals No. 25 and No. 26?***
YES : Go to step **2A17**.
NO : Replace main fan relay.

2A17 : CHECK MAIN FAN RELAY.

1) Connect battery to terminals No. 27 and No. 28 of main fan relay.
2) Check continuity between main fan relay terminals.

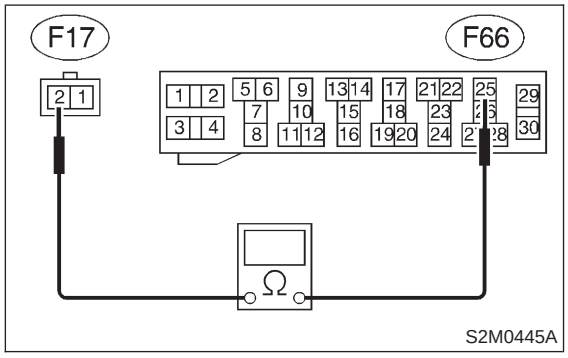


CHECK : ***Does continuity exist between terminals No. 25 and No. 26?***
YES : Go to step **2A18**.
NO : Replace main fan relay.

2A18 : CHECK HARNESS CONNECTOR BETWEEN MAIN FAN RELAY AND MAIN FAN MOTOR.

Measure resistance of harness between main fan motor connector and main fan relay terminal.

Connector & terminal
(F17) No. 2 — (F66) No. 25:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **2A19**.
NO : Repair open circuit in harness between main fan motor and main fan relay connector.

2A19 : CHECK POOR CONTACT.

Check poor contact in main fan relay connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in main fan relay connector?***
YES : Repair poor contact in main fan relay connector.
NO : Go to step **2A20**.

2A20 : CHECK POOR CONTACT.

Check poor contact in main fan relay connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in main fan motor connector?***
YES : Repair poor contact in main fan motor connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

3. Radiator Sub Fan (With A/C model only)

A: OPERATION

DETECTING CONDITION:

Condition (1):
- Engine coolant temperature is below 95°C (203°F).
- A/C switch is turned ON.
- Vehicle speed is below 19 km/h (12 MPH).

Condition (2):
- Engine coolant temperature is above 100°C (212°F).
- A/C switch is turned OFF.
- Vehicle speed is below 19 km/h (12 MPH).

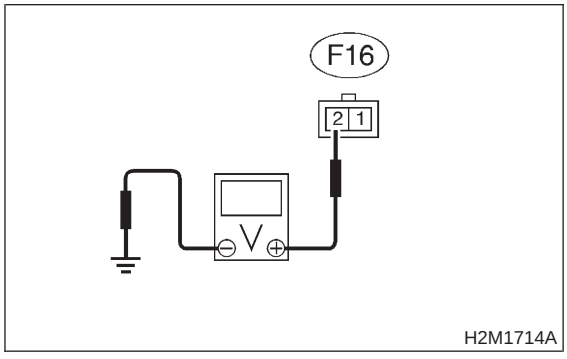
TROUBLE SYMPTOM:
- Radiator sub fan does not rotate under conditions (1) and (2) above.

3A1 : CHECK POWER SUPPLY TO SUB FAN MOTOR.

CAUTION:
Be careful not to overheat engine during repair.

1) Turn ignition switch to OFF.
2) Disconnect connector from sub fan motor.
3) Start the engine, and warm it up until engine coolant temperature increases over 100°C (212°F).
4) Stop the engine and turn ignition switch to ON.
5) Measure voltage between sub fan motor connector and chassis ground.

Connector & terminal
(F16) No. 2 (+) — Chassis ground (−):

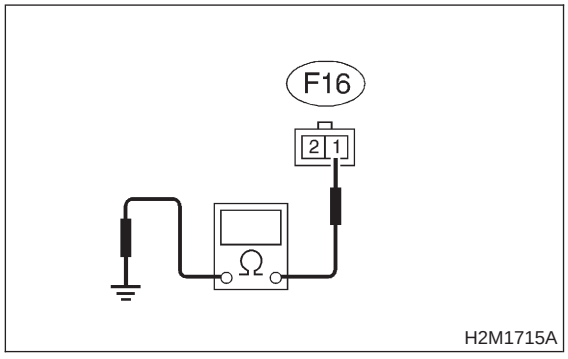


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **3A2**.
NO : Go to step **3A5**.

3A2 : CHECK GROUND CIRCUIT OF SUB FAN MOTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between sub fan motor connector and chassis ground.

Connector & terminal
(F16) No. 1 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **3A3**.
NO : Repair open circuit in harness between sub fan motor connector and chassis ground.

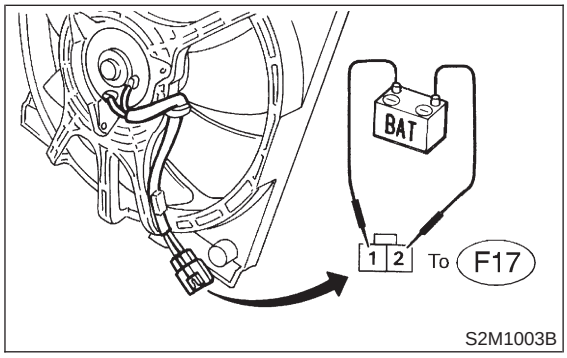
3A3 : CHECK POOR CONTACT.

Check poor contact in sub fan motor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in sub fan motor connector?***
YES : Repair poor contact in sub fan motor connector.
NO : Go to step **3A4**.

3A4 : CHECK SUB FAN MOTOR.

Connect battery positive (+) terminal to terminal No. 2, and negative (−) terminal to terminal No. 1 of sub fan motor connector.

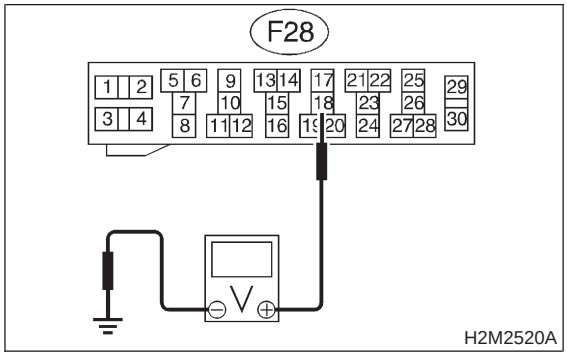


CHECK : ***Does the sub fan rotate?***
YES : Repair poor contact in sub fan motor connector.
NO : Replace sub fan motor with a new one.

3A5 : CHECK POWER SUPPLY TO SUB FAN RELAY.

1) Turn ignition switch to OFF.
2) Remove sub fan relay from A/C relay holder.
3) Measure voltage between sub fan relay terminal and chassis ground.

Connector & terminal
(F28) No. 18 (+) — Chassis ground (−):

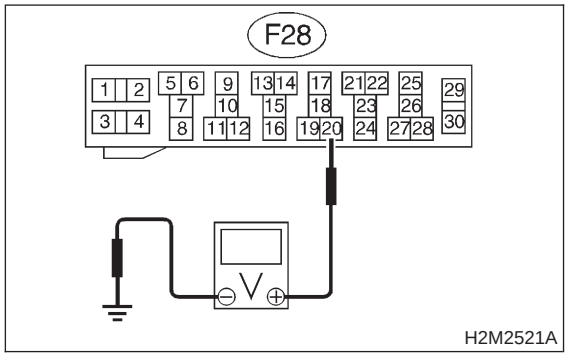


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **3A6**.
NO : Go to step **3A7**.

3A6 : CHECK POWER SUPPLY TO SUB FAN RELAY.

1) Turn ignition switch to ON.
2) Measure voltage between sub fan relay terminal and chassis ground.

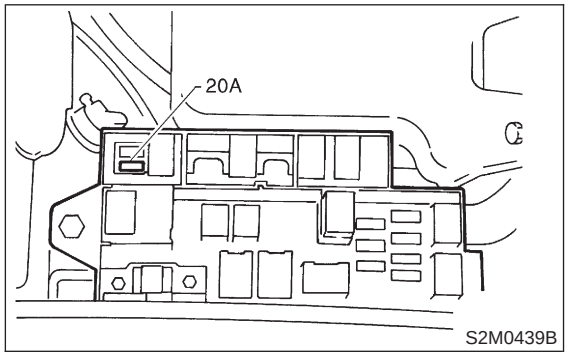
Connector & terminal
(F28) No. 20 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **3A16**.
NO : Go to step **3A12**.

3A7 : CHECK 20 A FUSE.

1) Remove 20 A fuse from A/C relay holder.
2) Check condition of fuse.

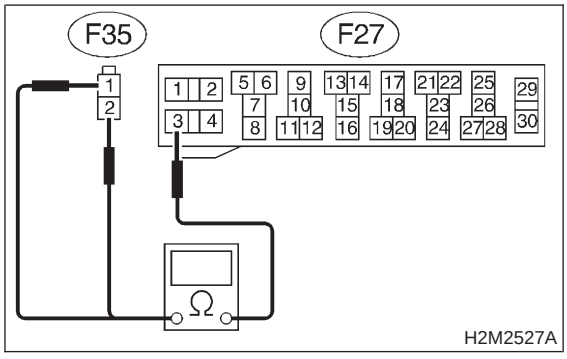


CHECK : ***Is the fuse blown-out?***
YES : Replace fuse.
NO : Go to step **3A8**.

3A8 : CHECK HARNESS CONNECTOR BETWEEN MAIN FUSE BOX AND A/C RELAY HOLDER 20 A FUSE.

1) Disconnect connector from main fuse box.
2) Disconnect connectors (F25) and (F26) from generator, and (F34) from SBF holder.
3) Measure resistance of harness connector between main fuse box connector and A/C relay holder 20 A fuse terminals.

Connector & terminal
(F35) No. 1 — (F27) No. 3:
(F35) No. 2 — (F27) No. 3:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **3A9**.
NO : Repair open circuit in harness between main fuse box connector and 20 A fuse terminal.

3A9 : CHECK POOR CONTACT.

Check poor contact in main fuse box connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in main fuse box connector?***
YES : Repair poor contact in main fuse box connector.
NO : Go to step **3A10**.

3A10 : CHECK POOR CONTACT.

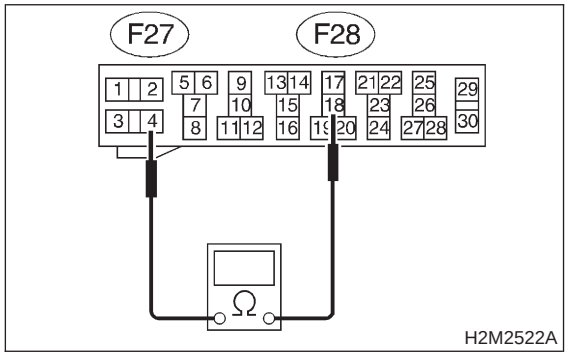
Check poor contact in A/C relay holder 20 A fuse connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in A/C relay holder 20 A fuse connector?***
YES : Repair poor contact in 20 A fuse
NO : Go to step **3A11**.

3A11 : CHECK HARNESS CONNECTOR BETWEEN 20 A FUSE AND SUB FAN RELAY IN A/C RELAY HOLDER.

Measure resistance of harness between 20 A fuse and sub fan relay terminal.

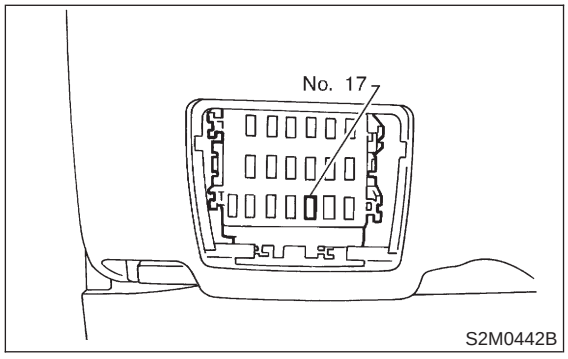
Connector & terminal
(F27) No. 4 — (F28) No. 18:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair poor contact in sub fan relay connector.
NO : Repair open circuit in harness between 20 A fuse and sub fan relay connector.

3A12 : CHECK FUSE.

1) Turn ignition switch to OFF.
2) Remove fuse No. 17 from joint box.
3) Check condition of fuse.

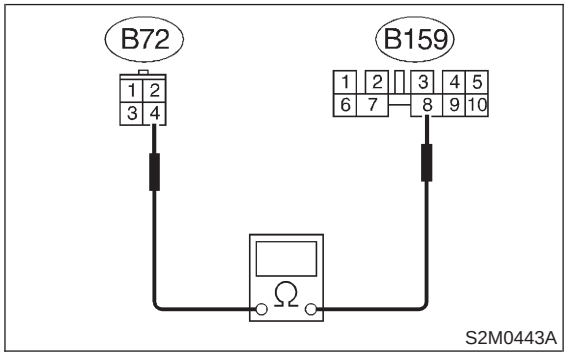


CHECK : ***Is the fuse blown-out?***
YES : Replace fuse.
NO : Go to step **3A13**.

3A13 : CHECK HARNESS CONNECTOR BETWEEN IGNITION SWITCH AND JOINT BOX.

1) Disconnect connector from ignition switch.
2) Separate connectors (F44) and (B61).
3) Disconnect connector (B159) from joint box.
4) Measure resistance of harness between ignition switch connector and joint box.

Connector & terminal
(B72) No. 4 — (B159) No. 8:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **3A14**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ignition switch connector and joint box.
- Poor contact in coupling connector (B61).

3A14 : CHECK POOR CONTACT.

Check poor contact in ignition switch connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ignition switch connector?***
YES : Repair poor contact in ignition switch connector.
NO : Go to step **3A15**.

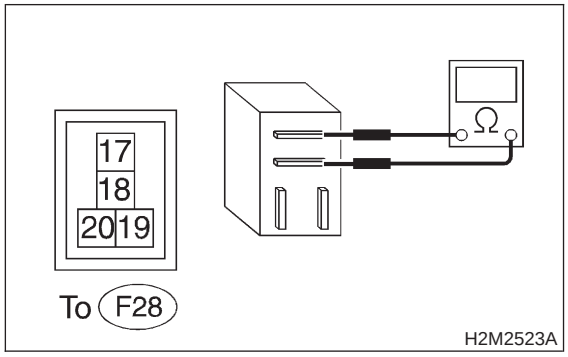
3A15 : CHECK POOR CONTACT.

Check poor contact in joint box 10 A fuse connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in joint box 10 A fuse connector?***
YES : Repair poor contact in joint box connector.
NO : Go to step **3A16**.

3A16 : CHECK SUB FAN RELAY.

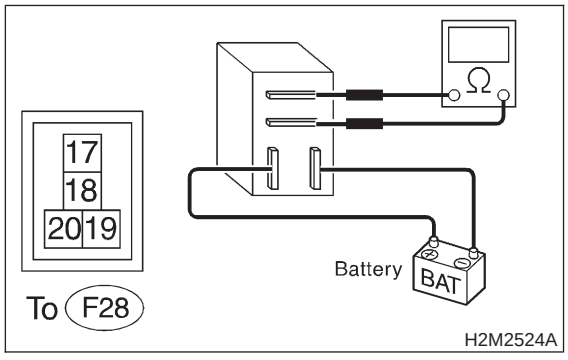
1) Turn ignition switch to OFF.
2) Check continuity between sub fan relay terminals.



CHECK : ***Does no continuity exist between terminals No. 17 and No. 18?***
YES : Go to step **3A17**.
NO : Replace sub fan relay.

3A17 : CHECK SUB FAN RELAY.

1) Connect battery to terminals No. 19 and No. 20 of sub fan relay.
2) Check continuity between sub fan relay terminals.

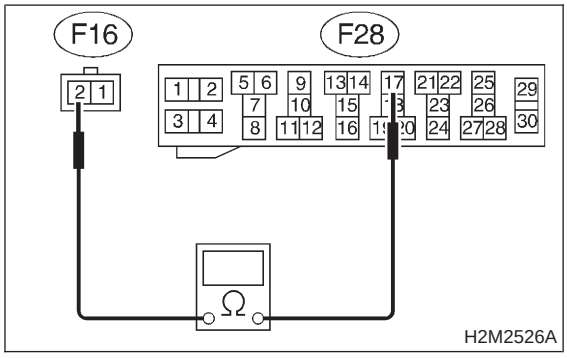


CHECK : ***Does continuity exist between terminals No. 17 and No. 18?***
YES : Go to step **3A18**.
NO : Replace sub fan relay.

3A18 : CHECK HARNESS CONNECTOR BETWEEN SUB FAN RELAY AND SUB FAN MOTOR.

Measure resistance of harness between sub fan motor connector and sub fan relay terminal.

Connector & terminal
(F16) No. 2 — (F28) No. 17:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **3A19**.
NO : Repair open circuit in harness between sub fan motor and sub fan relay connector.

3A19 : CHECK POOR CONTACT.

Check poor contact in sub fan relay connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in sub fan relay connector?***
YES : Repair poor contact in sub fan relay connector.
NO : Go to step **3A20**.

3A20 : CHECK POOR CONTACT.

Check poor contact in sub fan relay connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in sub fan motor connector?***
YES : Repair poor contact in sub fan motor connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

MEMO:

ON-BOARD DIAGNOSTICS II SYSTEM 2-7

Page

T DIAGNOSTICS AIRBAG 2
1. General 2
2. Electrical Components Location 3
3. Diagnosis System 31
4. Cautions 47
5. Specified Data 50
6. Basic Diagnostic Procedure 60
7. Diagnostics for CHECK ENGINE Malfunction Indicator Lamp (MIL) 64
8. Diagnostics for Engine Starting Failure 77
9. General Diagnostic Table 108
10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles 110
11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles 390

1. General

A: GENERAL DESCRIPTION

● The on-board diagnostics (OBD) system detects and indicates a fault in various inputs and outputs of the complex electronic control. CHECK ENGINE malfunction indicator lamp (MIL) in the combination meter indicates occurrence of a fault or trouble.
● Further, against such a failure or sensors as may disable the drive, the fail-safe function is provided to ensure the minimal driveability.
● The OBD system incorporated with the vehicles within this engine family complies with Section 1968.1, California Code of Regulations (OBD-II regulation). The OBD system monitors the components and the system malfunction listed in Engine Section which affects on emissions.
● When the system decides that a malfunction occurs, MIL illuminates. At the same time of the MIL illumination or blinking, a diagnostic trouble code (DTC) and a freeze frame engine conditions are stored into on-board computer.
● The OBD system stores freeze frame engine condition data (engine load, engine coolant temperature, fuel trim, engine speed and vehicle speed, etc.) into on-board computer when it detects a malfunction first.
● If the OBD system detects the various malfunctions including the fault of fuel trim or misfire, the OBD system first stores freeze frame engine conditions about the fuel trim or misfire.
● When the malfunction does not occur again for three consecutive driving cycles, MIL is turned off, but DTC remains at on-board computer.
● The OBD-II system is capable of communication with a general scan tool (OBD-II general scan tool) formed by ISO 9141 CARB.
● The OBD-II diagnostics procedure is different from the usual diagnostics procedure. When troubleshooting OBD-II vehicles, connect Subaru Select Monitor or the OBD-II general scan tool to the vehicle.

B: ENGINE

1. ENGINE AND EMISSION CONTROL SYSTEM

● The Multipoint Fuel Injection (MFI) system is a system that supplies the optimum air-fuel mixture to the engine for all the various operating conditions through the use of the latest electronic technology.
With this system fuel, which is pressurized at a constant pressure, is injected into the intake air passage of the cylinder head. The injection quantity of fuel is controlled by an intermittent injection system where the electro-magnetic injection valve (fuel injector) opens only for a short period of time, depending on the quantity of air required for one cycle of operation. In actual operation, the injection quantity is determined by the duration of an electric pulse applied to the fuel injector and this permits simple, yet highly precise metering of the fuel.
● Further, all the operating conditions of the engine are converted into electric signals, and this results in additional features of the system, such as large improved adaptability, easier addition of compensating element, etc.
The MFI system also has the following features:
- Reduced emission of harmful exhaust gases.
- Reduced in fuel consumption.
- Increased engine output.
- Superior acceleration and deceleration.
- Superior startability and warm-up performance in cold weather since compensation is made for coolant and intake air temperature.

C: AUTOMATIC TRANSMISSION

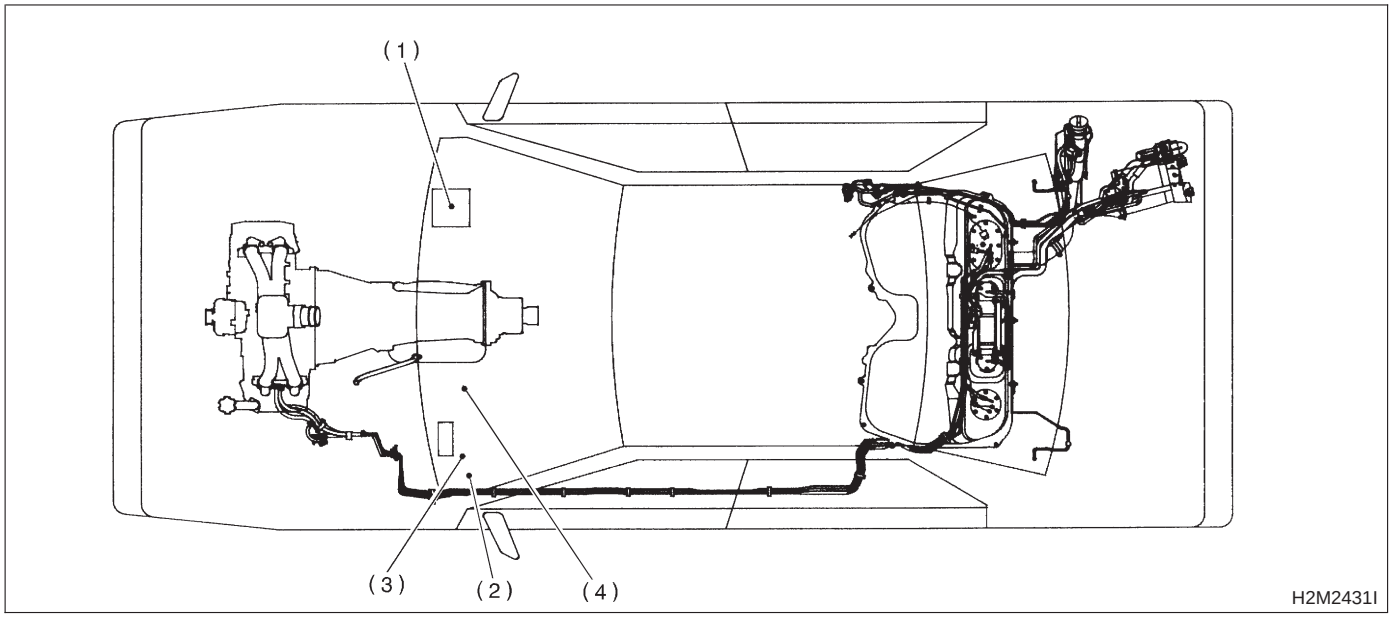
1. ELECTRONIC-HYDRAULIC CONTROL SYSTEM

The electronic-hydraulic control system consists of various sensors and switches, a transmission control module (TCM) and the hydraulic controller including solenoid valves. The system controls the transmission proper including shift control, lock-up control, overrunning clutch control, line pressure control and shift timing control. It also controls the AWD transfer clutch. In other words, the system detects various operating conditions from various input signals and sends output signals to shift solenoids 1, 2 and low clutch timing solenoid and 2-4 brake timing solenoid and duty solenoids A, B, C, D (a total of eight solenoids).

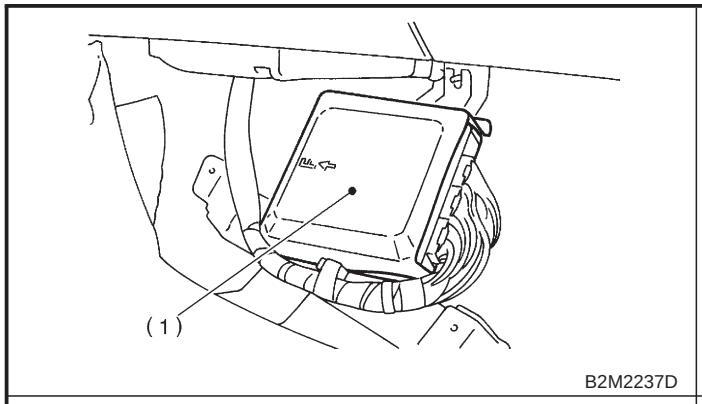
2. Electrical Components Location

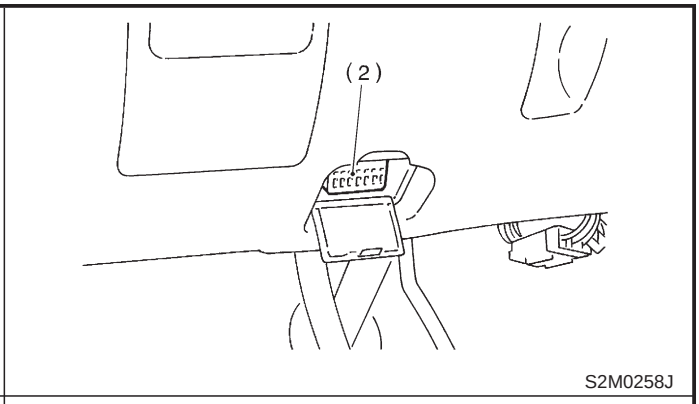
A: ENGINE (2200 cc CALIFORNIA SPEC. VEHICLES)

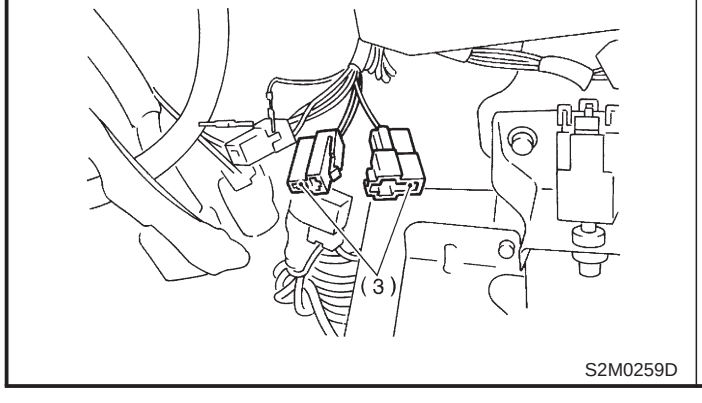
1. MODULE

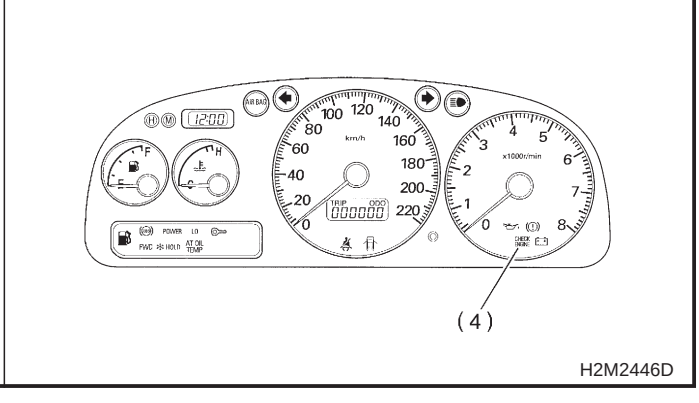


(1) Engine control module (ECM)
(2) Data link connector (for Subaru Select Monitor and OBD-II general scan tool)
(3) Test mode connector
(4) CHECK ENGINE malfunction indicator lamp (MIL)

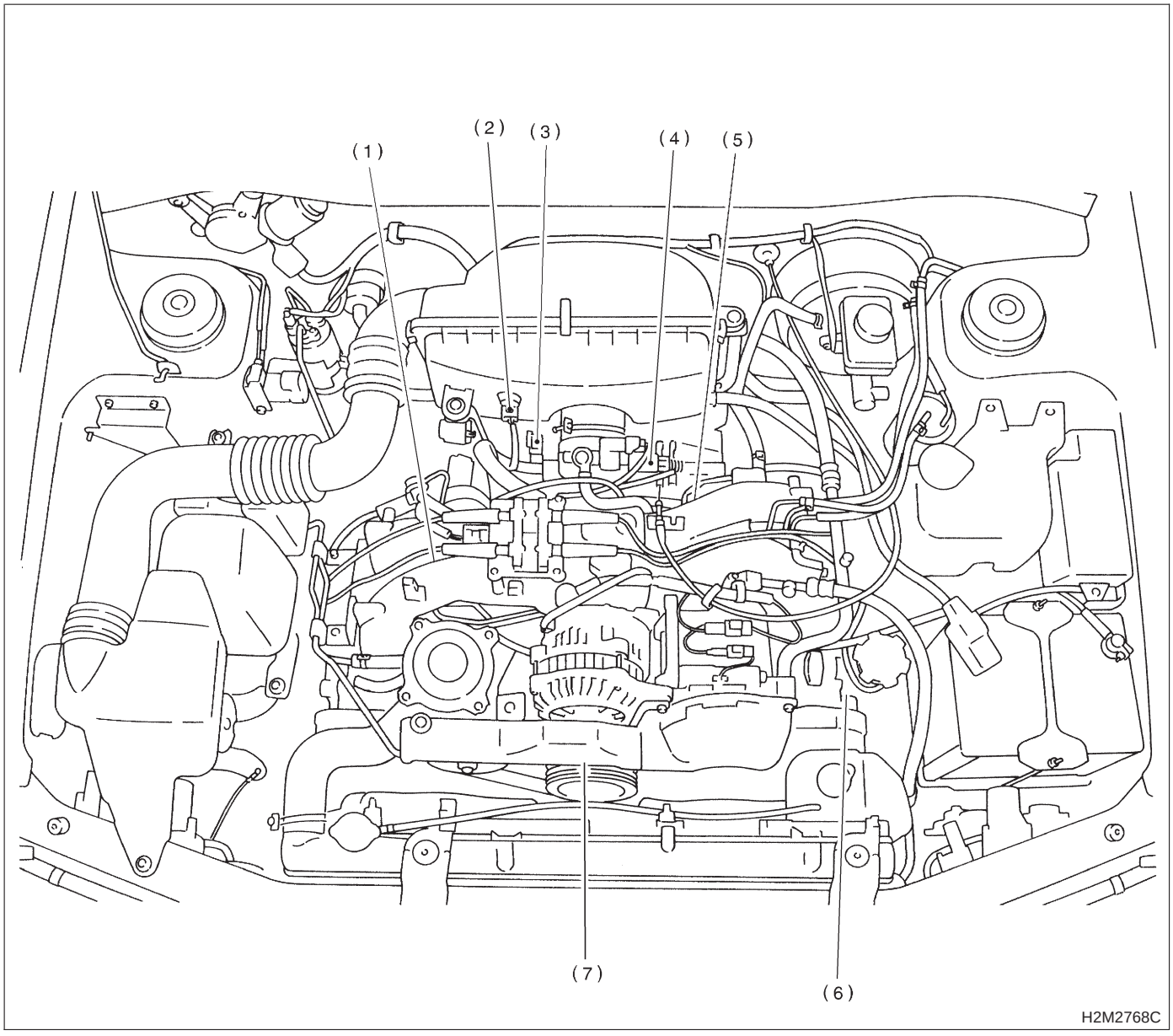




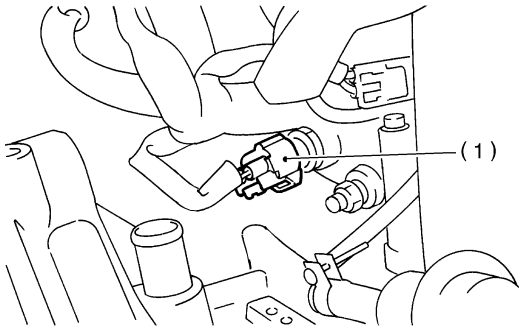




2. SENSOR



(1) Engine coolant temperature sensor
(2) Intake air temperature sensor
(3) Throttle position sensor
(4) Intake manifold pressure sensor
(5) Knock sensor
(6) Camshaft position sensor
(7) Crankshaft position sensor



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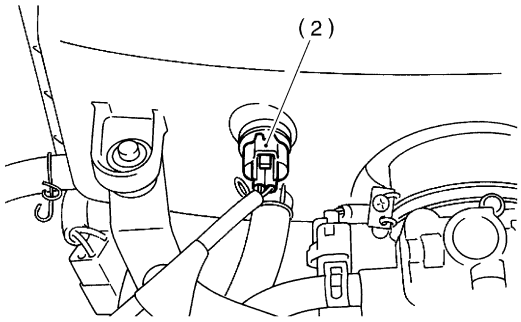

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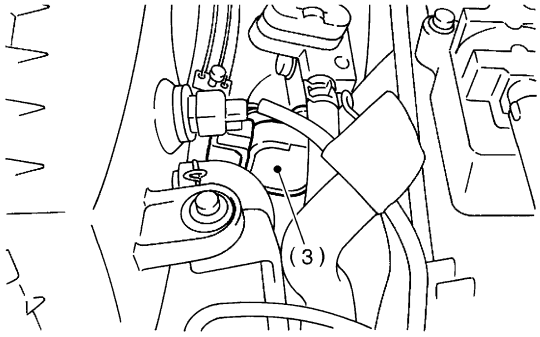

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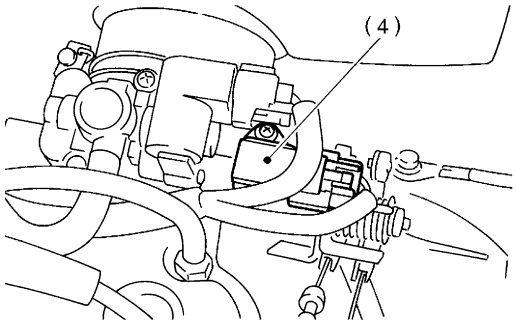

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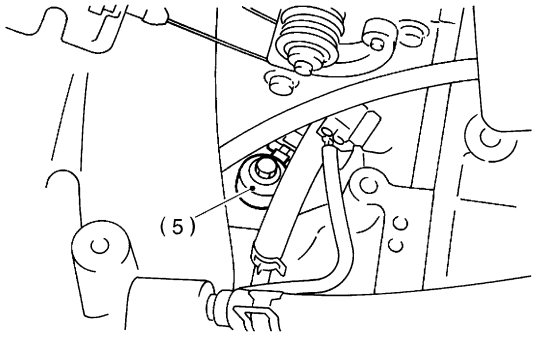

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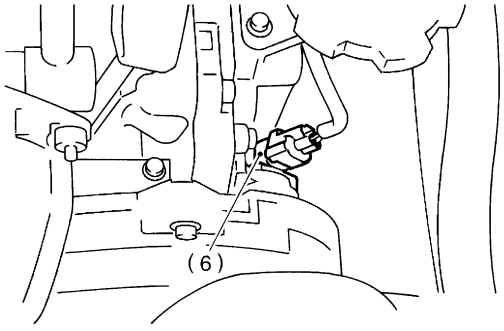

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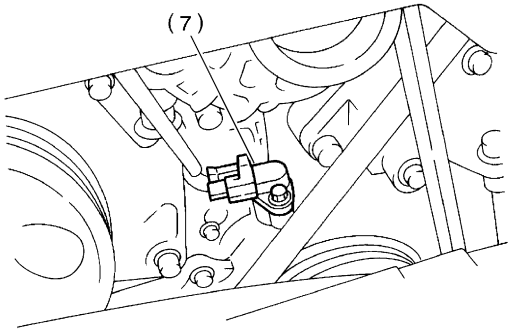

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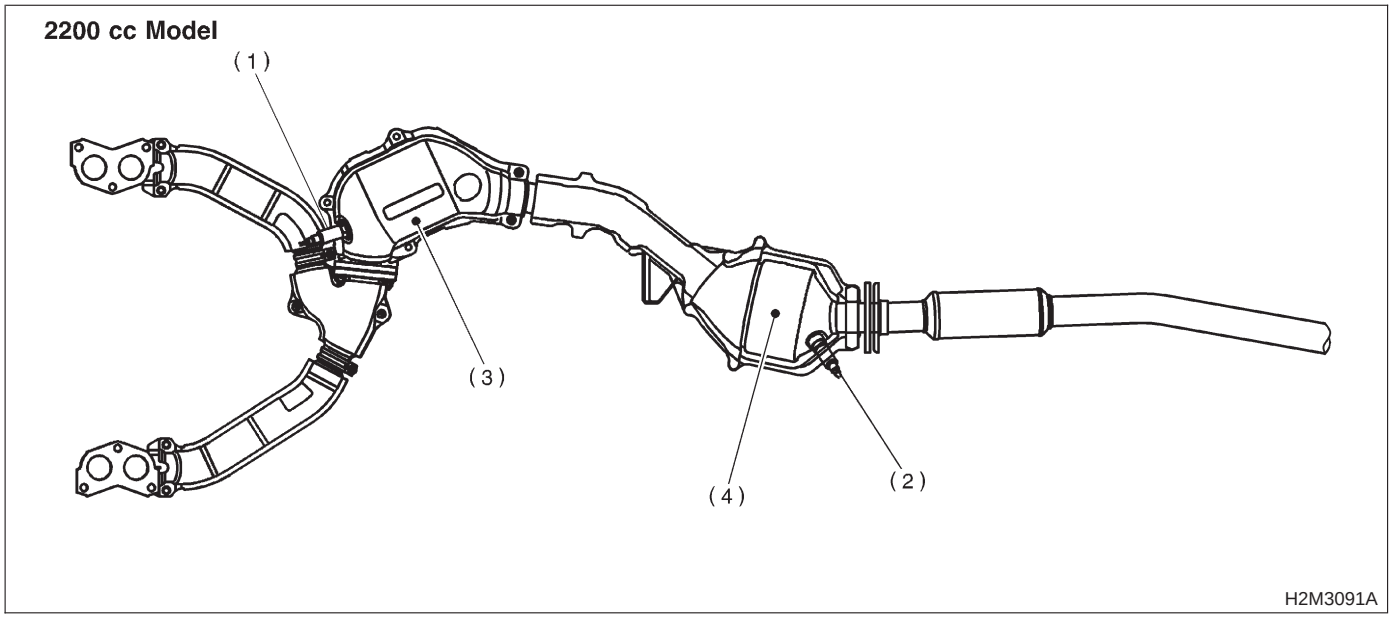
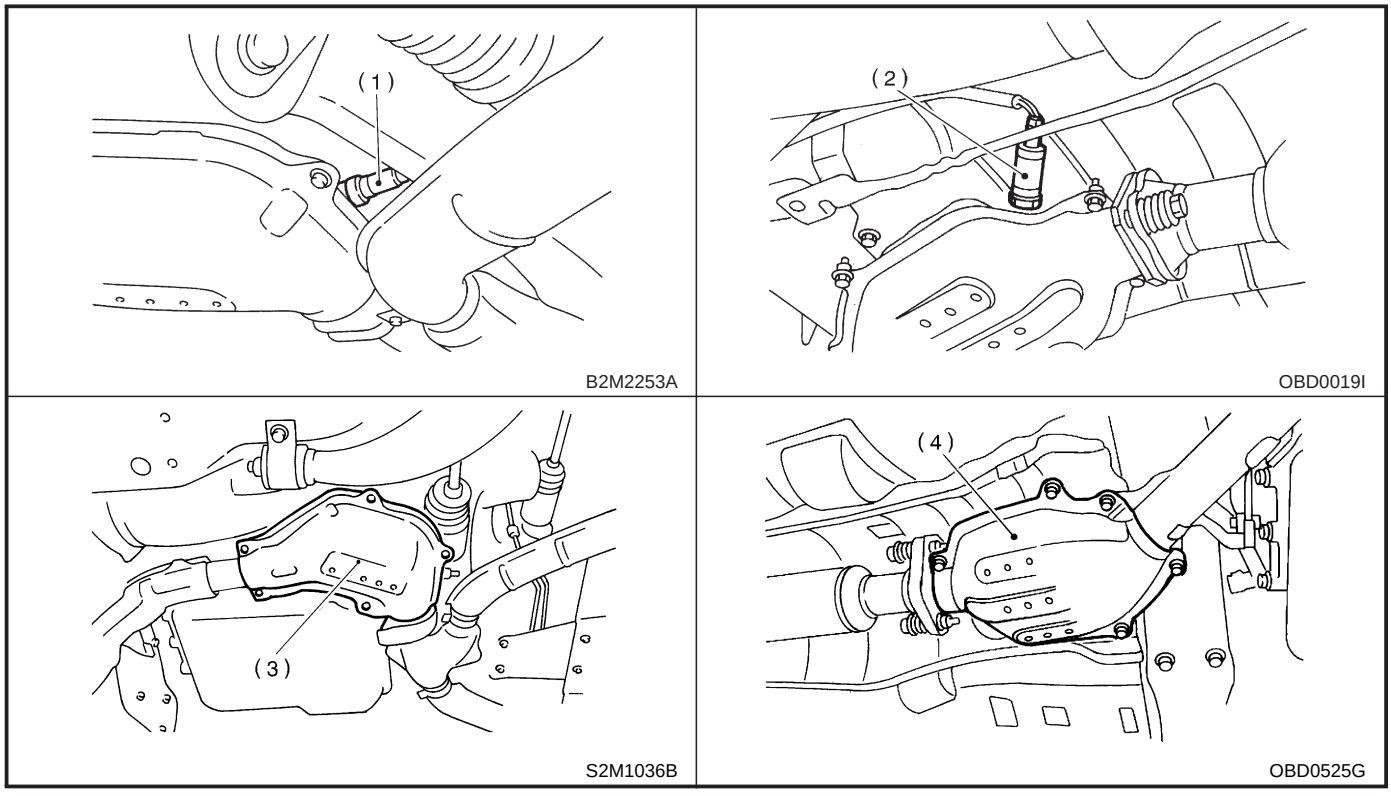
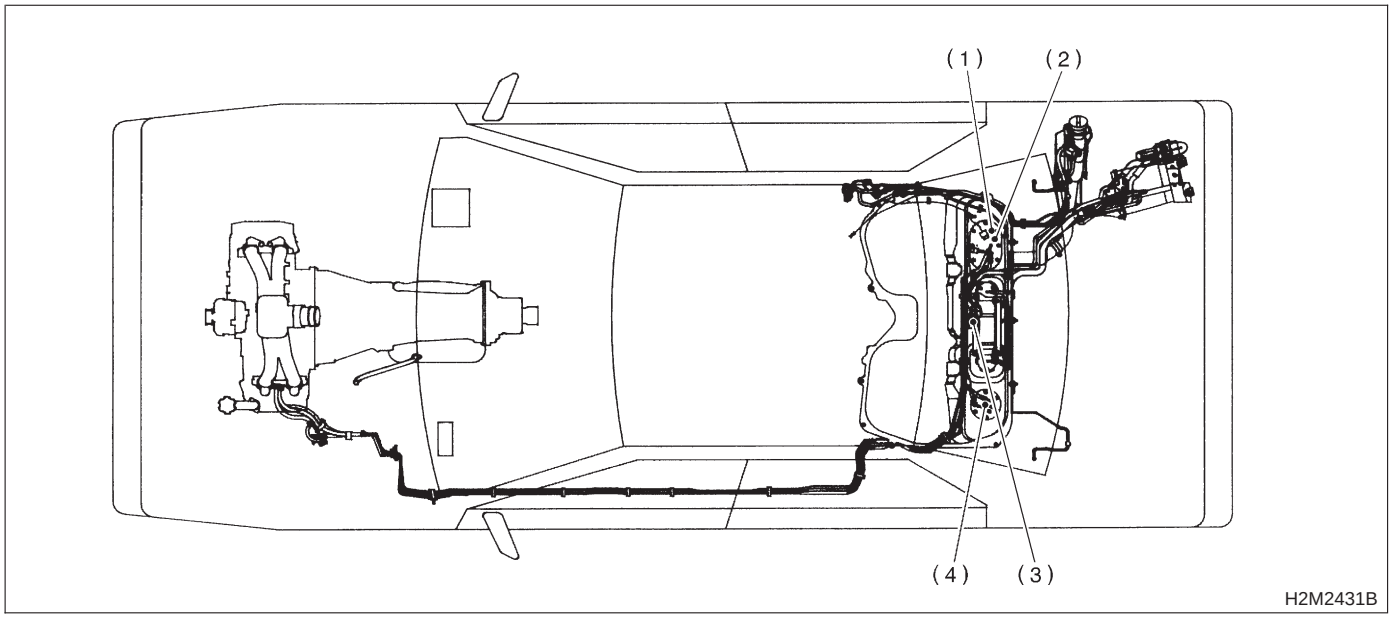
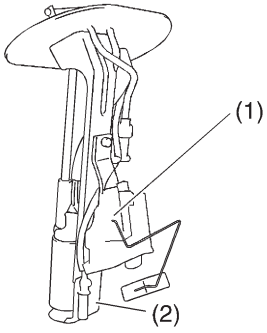


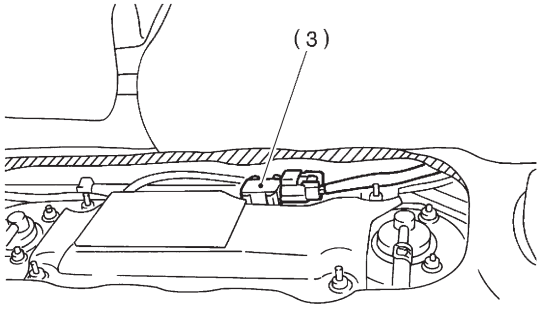
(1) Front oxygen (A/F) sensor
(2) Rear oxygen sensor
(3) Front catalytic converter
(4) Rear catalytic converter

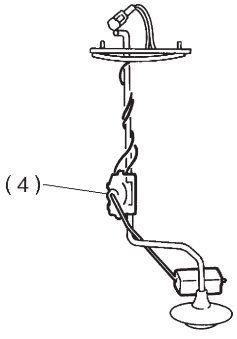




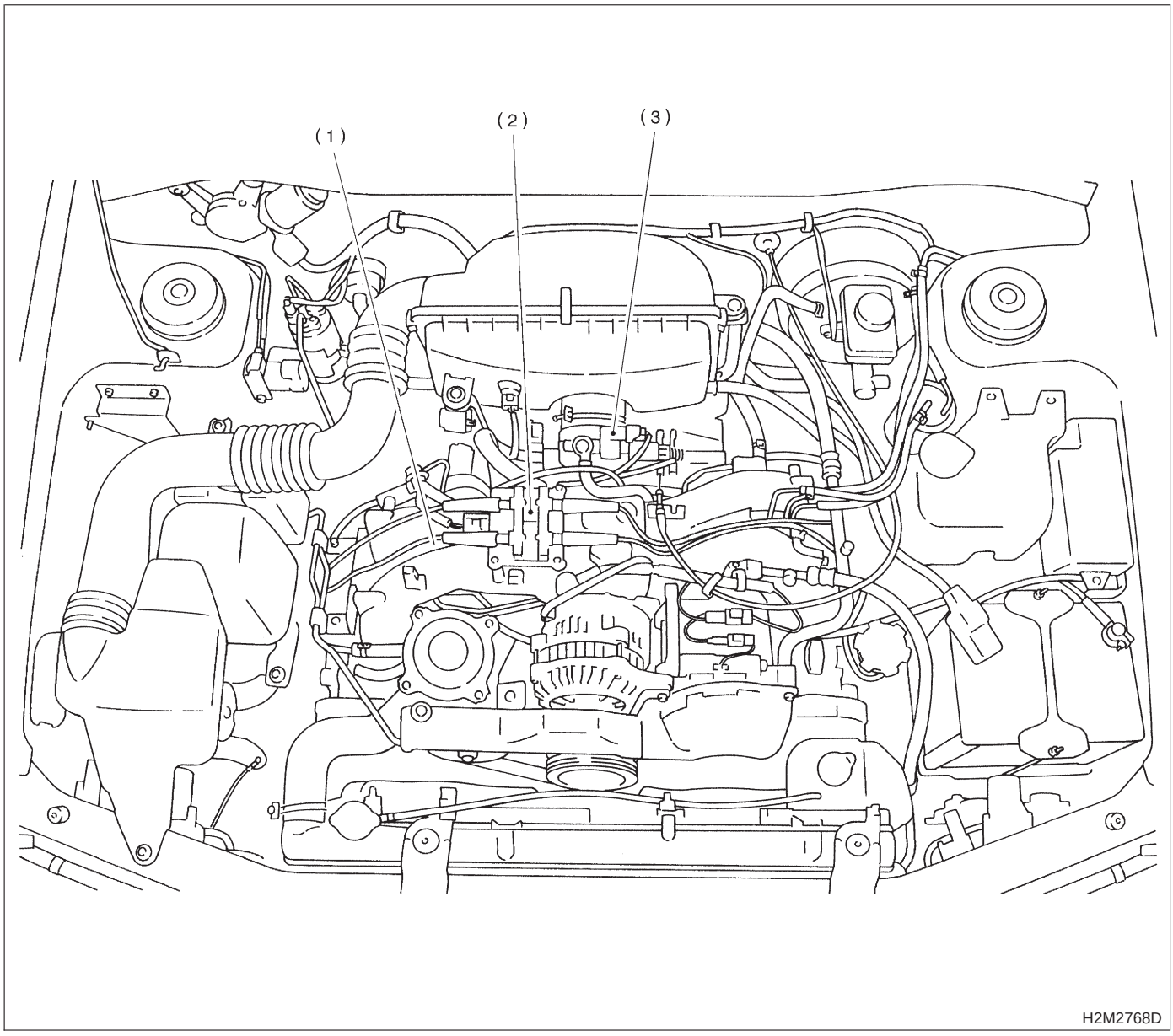
(1) Fuel level sensor
(2) Fuel temperature sensor
(3) Fuel tank pressure sensor
(4) Fuel sub level sensor



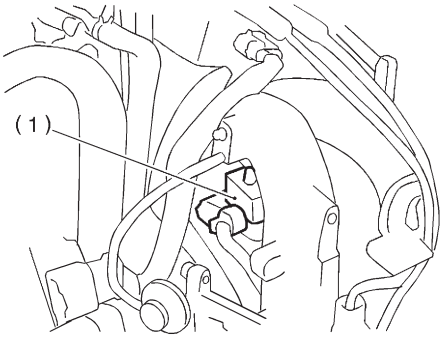




3. SOLENOID VALVE, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS



(1) Purge control solenoid valve
(2) Ignition coil & ignitor ASSY
(3) Idle air control solenoid valve



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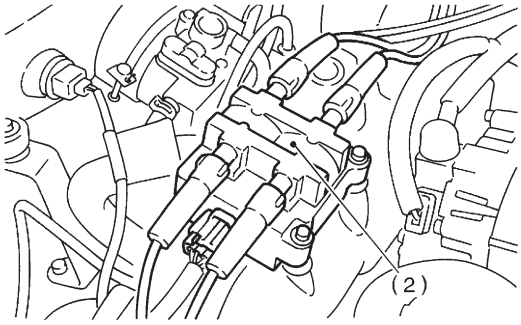

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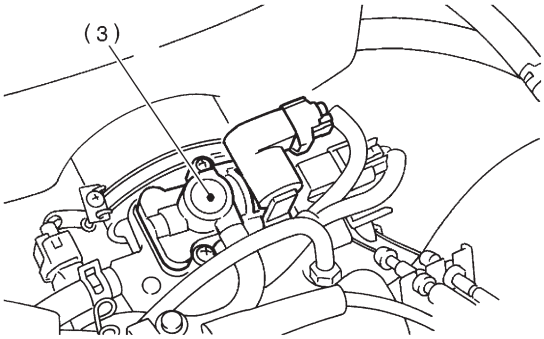

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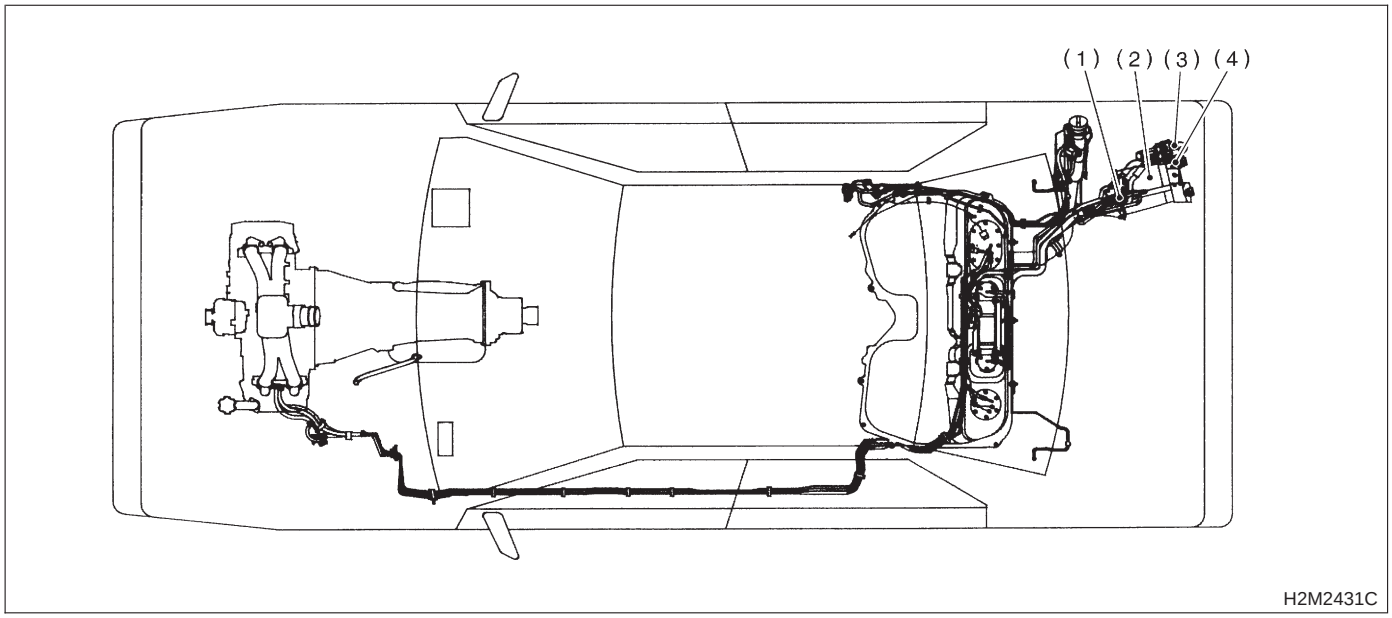
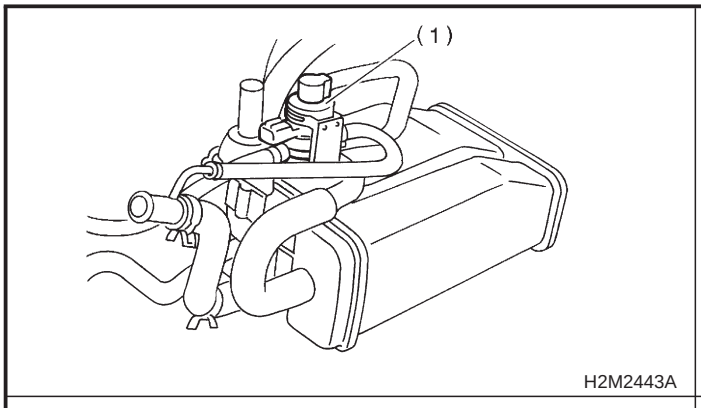
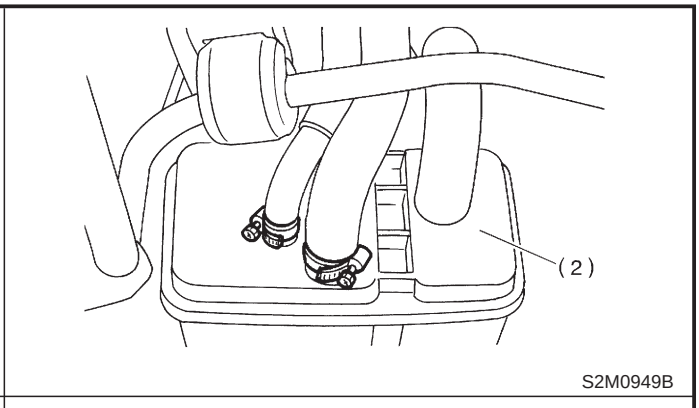
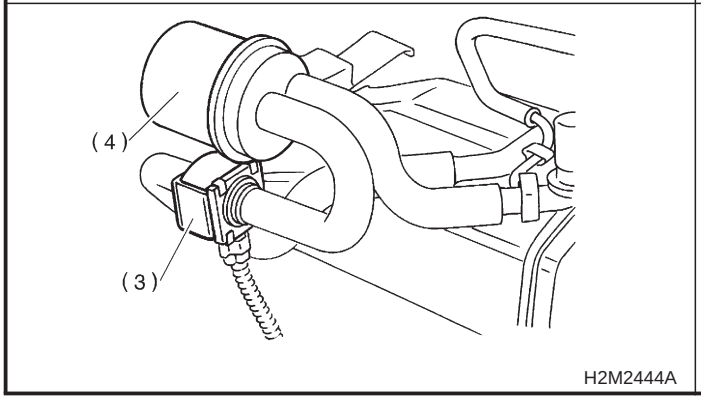


(1) Pressure control solenoid valve
(2) Canister
(3) Drain valve
(4) Air filter







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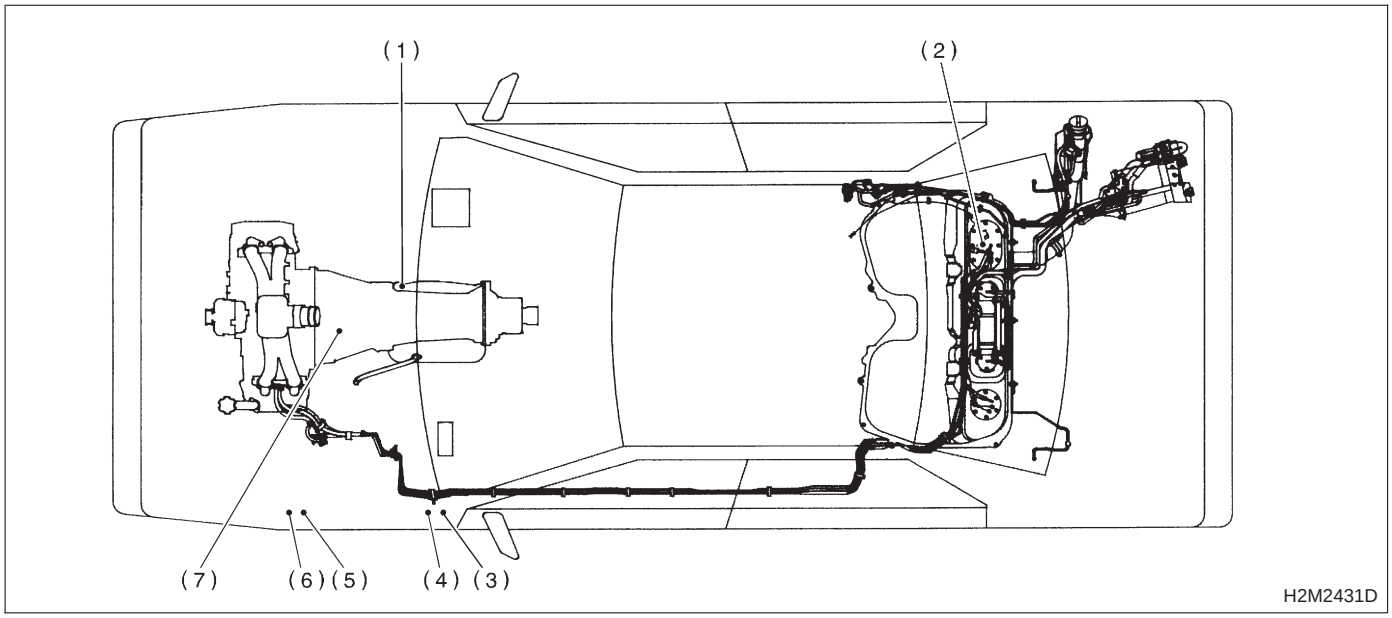
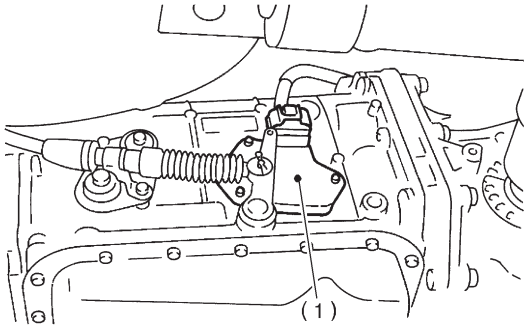
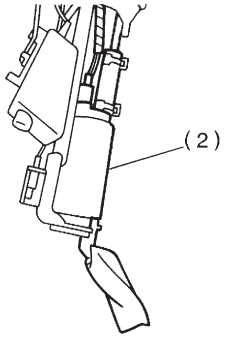
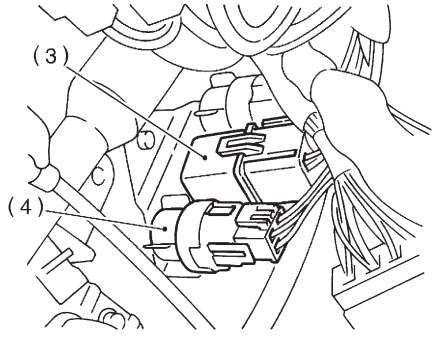
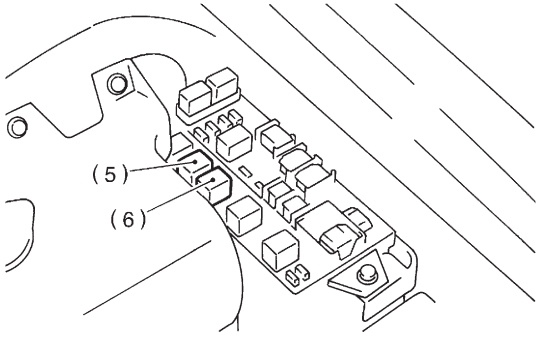


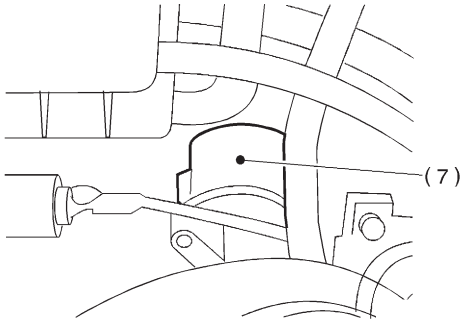
(1) Inhibitor switch (AT vehicles only)
(2) Fuel pump
(3) Main relay
(4) Fuel pump relay
(5) Radiator main fan relay
(6) Radiator sub fan relay
(7) Starter







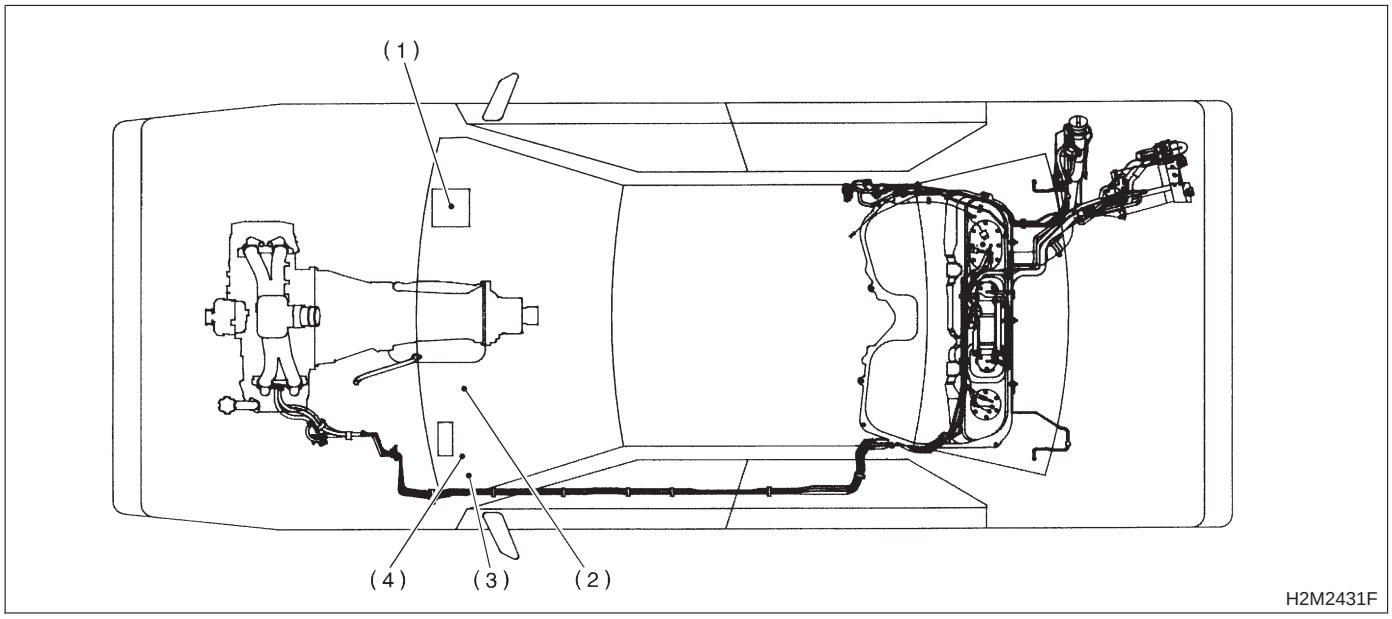




B2M2247B

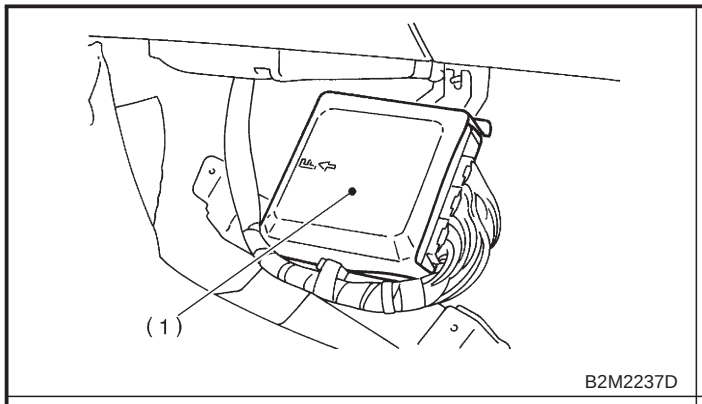
B: ENGINE (EXCEPT 2200 cc CALIFORNIA SPEC. VEHICLES)

1. MODULE

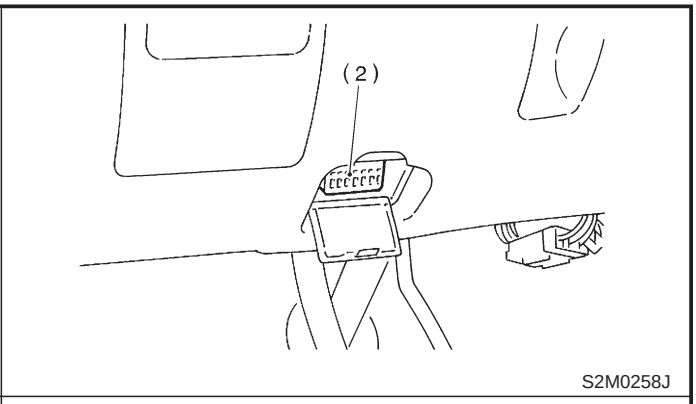


H2M2431F

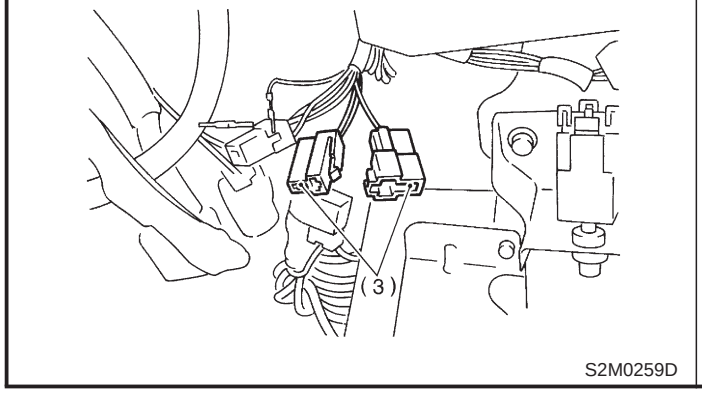
(1) Engine control module (ECM)
(2) Data link connector (for Subaru Select Monitor and OBD-II general scan tool)
(3) Test mode connector
(4) CHECK ENGINE malfunction indicator lamp (MIL)



B2M2237D



S2M0258J



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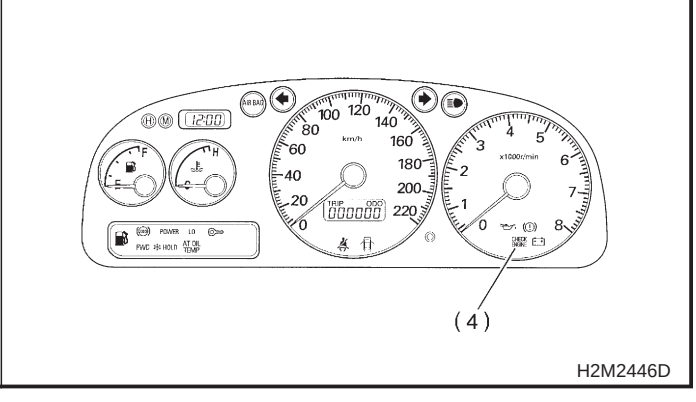

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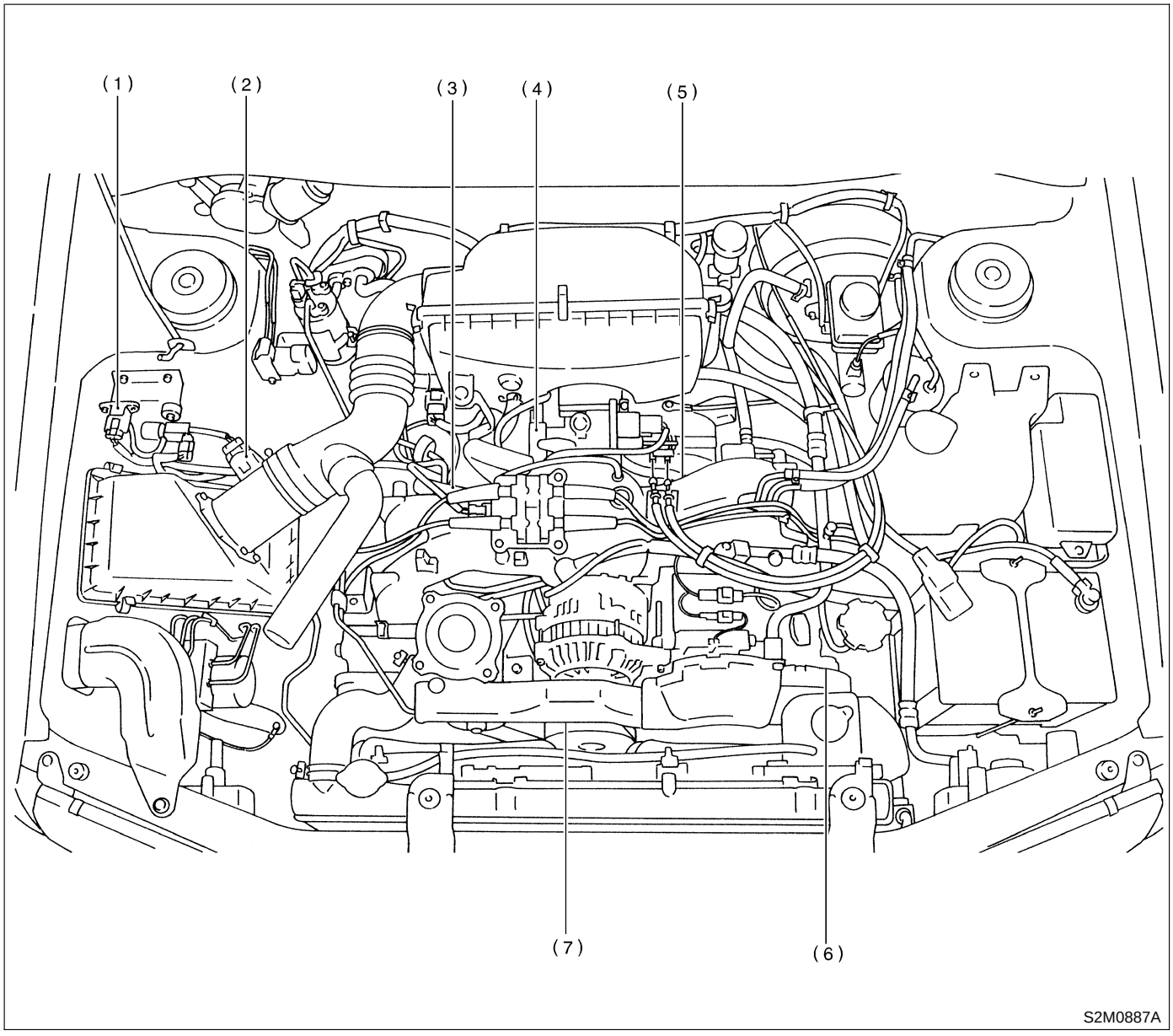
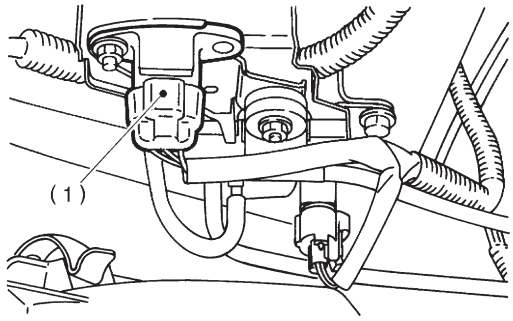
MEMO:

2. SENSOR



(1) Pressure sensor
(2) Mass air flow sensor
(3) Engine coolant temperature sensor
(4) Throttle position sensor
(5) Knock sensor
(6) Camshaft position sensor
(7) Crankshaft position sensor



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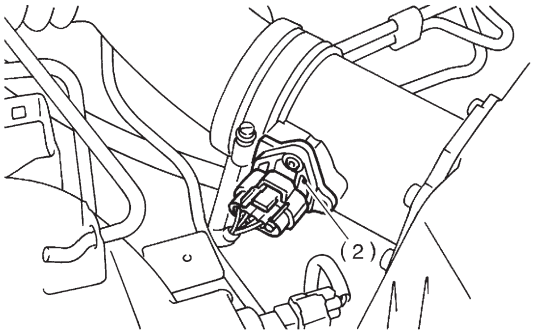

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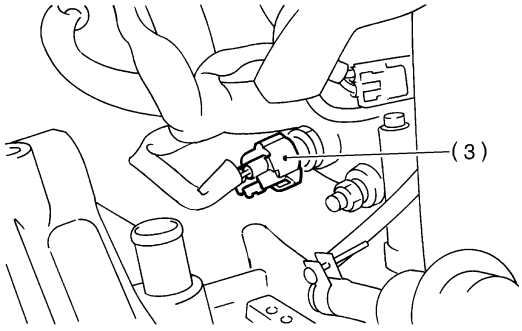

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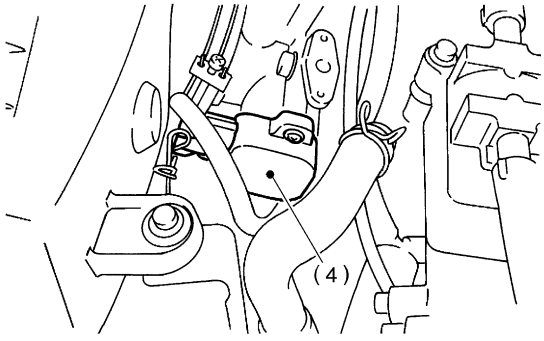

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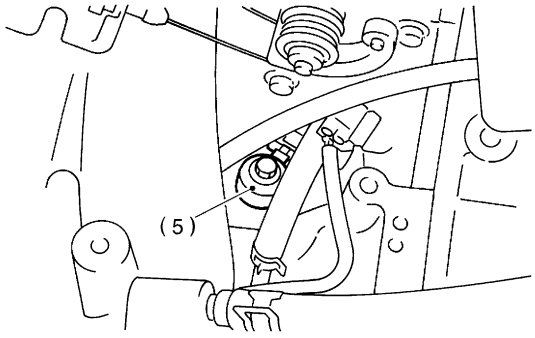

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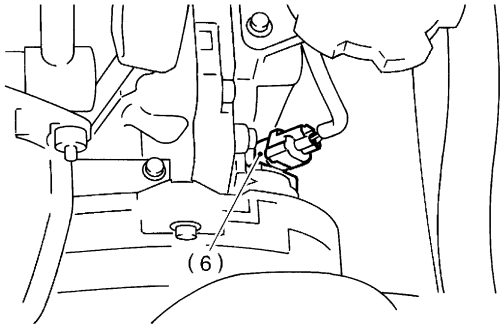
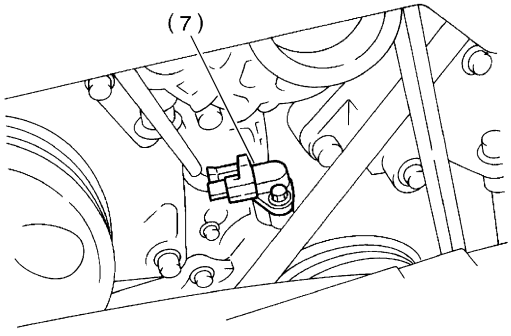
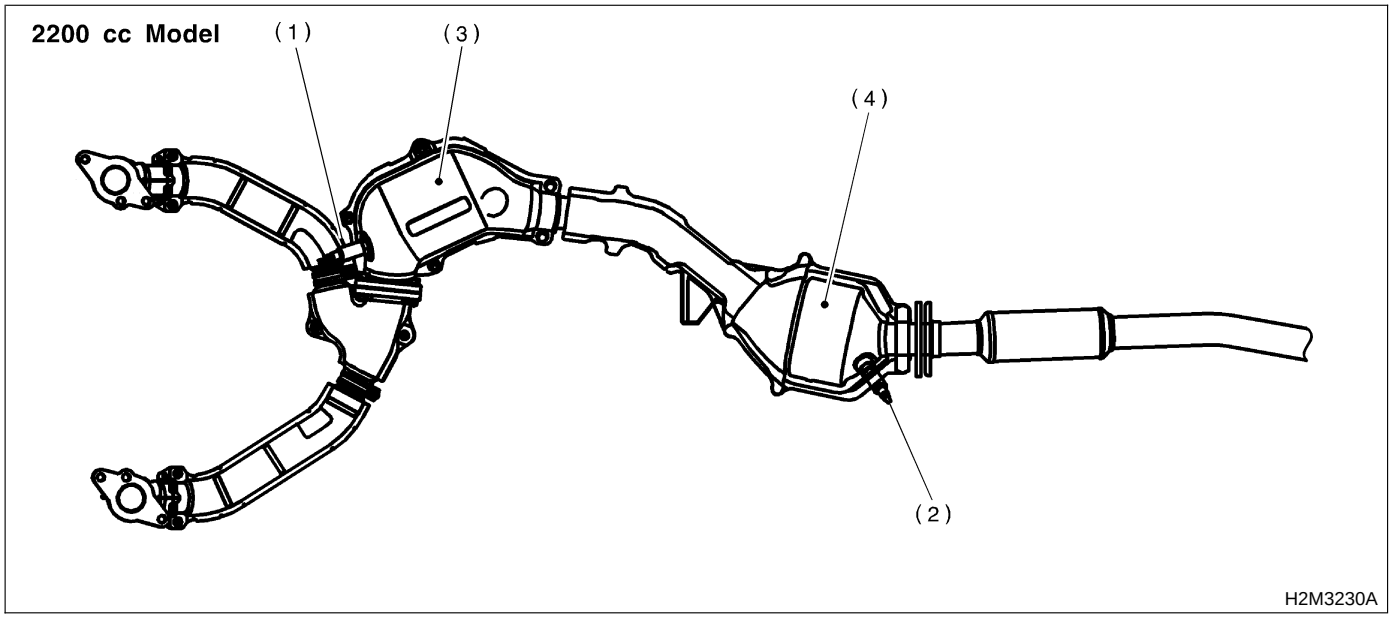
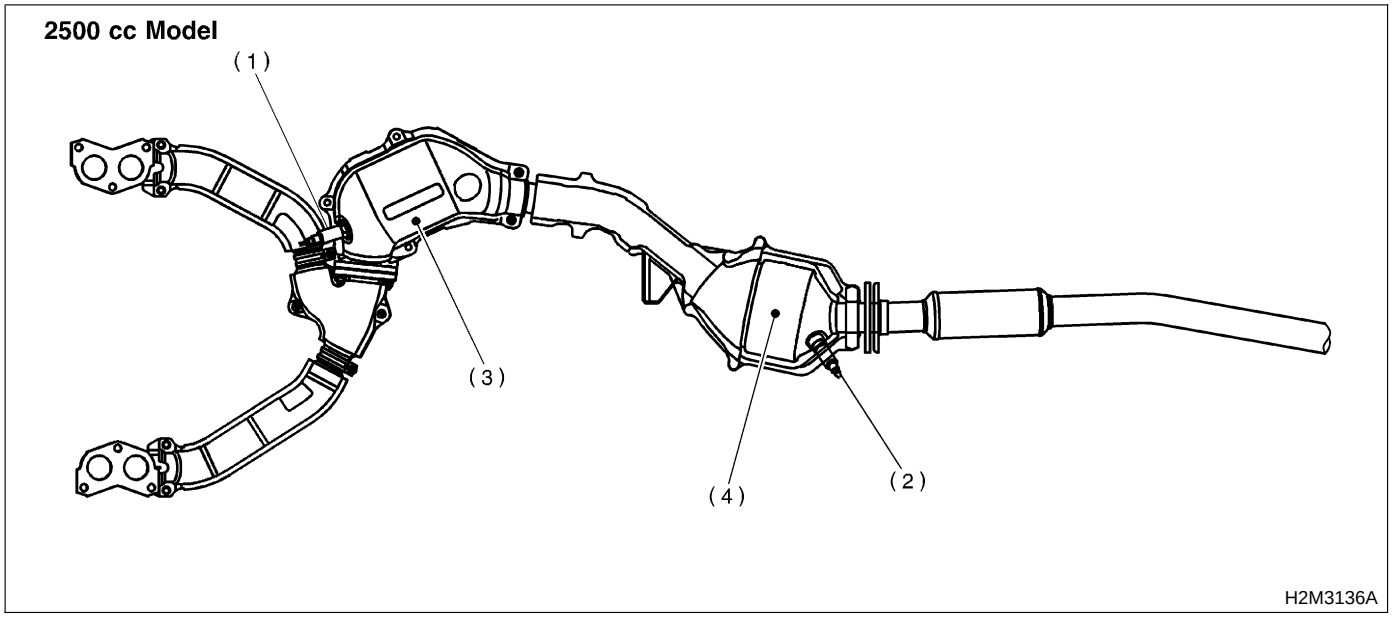


B2M2242A

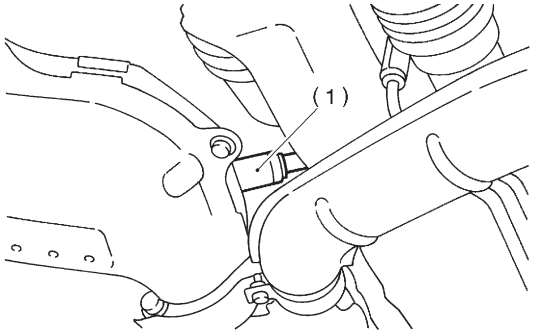


B2M0213J

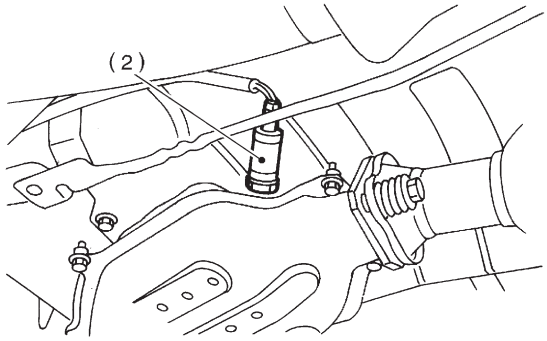




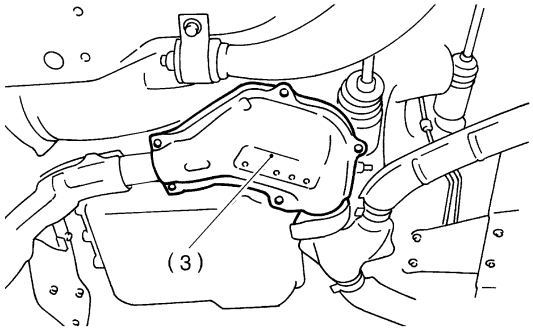
(1) Front oxygen sensor
(2) Rear oxygen sensor
(3) Front catalytic converter
(4) Rear catalytic converter



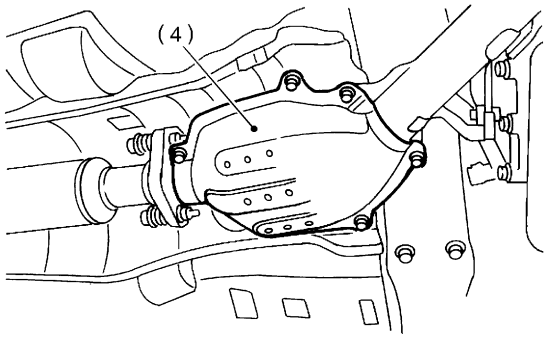
S2M0264A



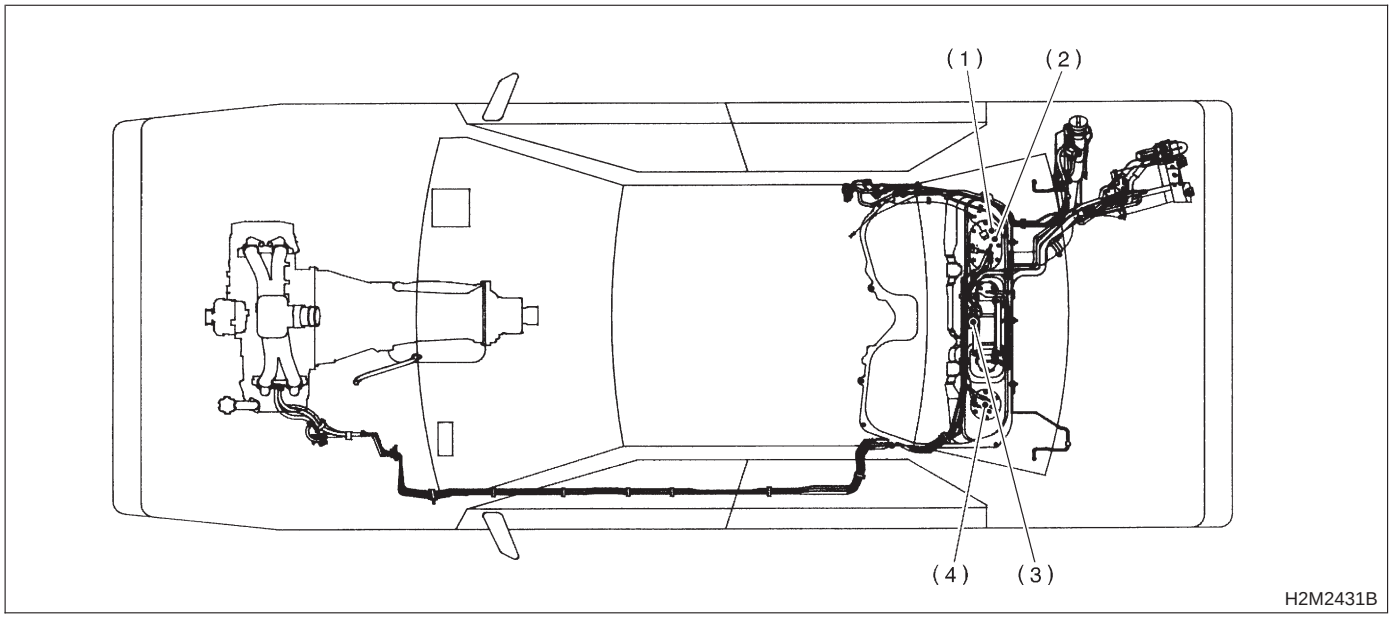
OBD0019I



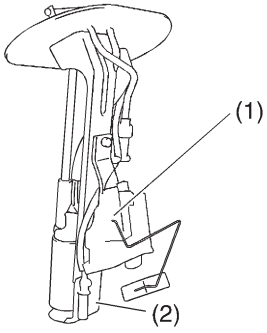
S2M1036B

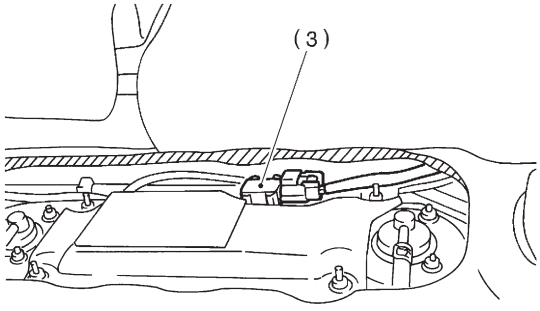


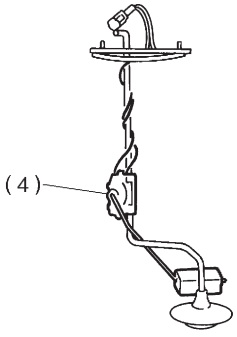
OBD0525G



(1) Fuel level sensor
(2) Fuel temperature sensor
(3) Fuel tank pressure sensor
(4) Fuel sub level sensor

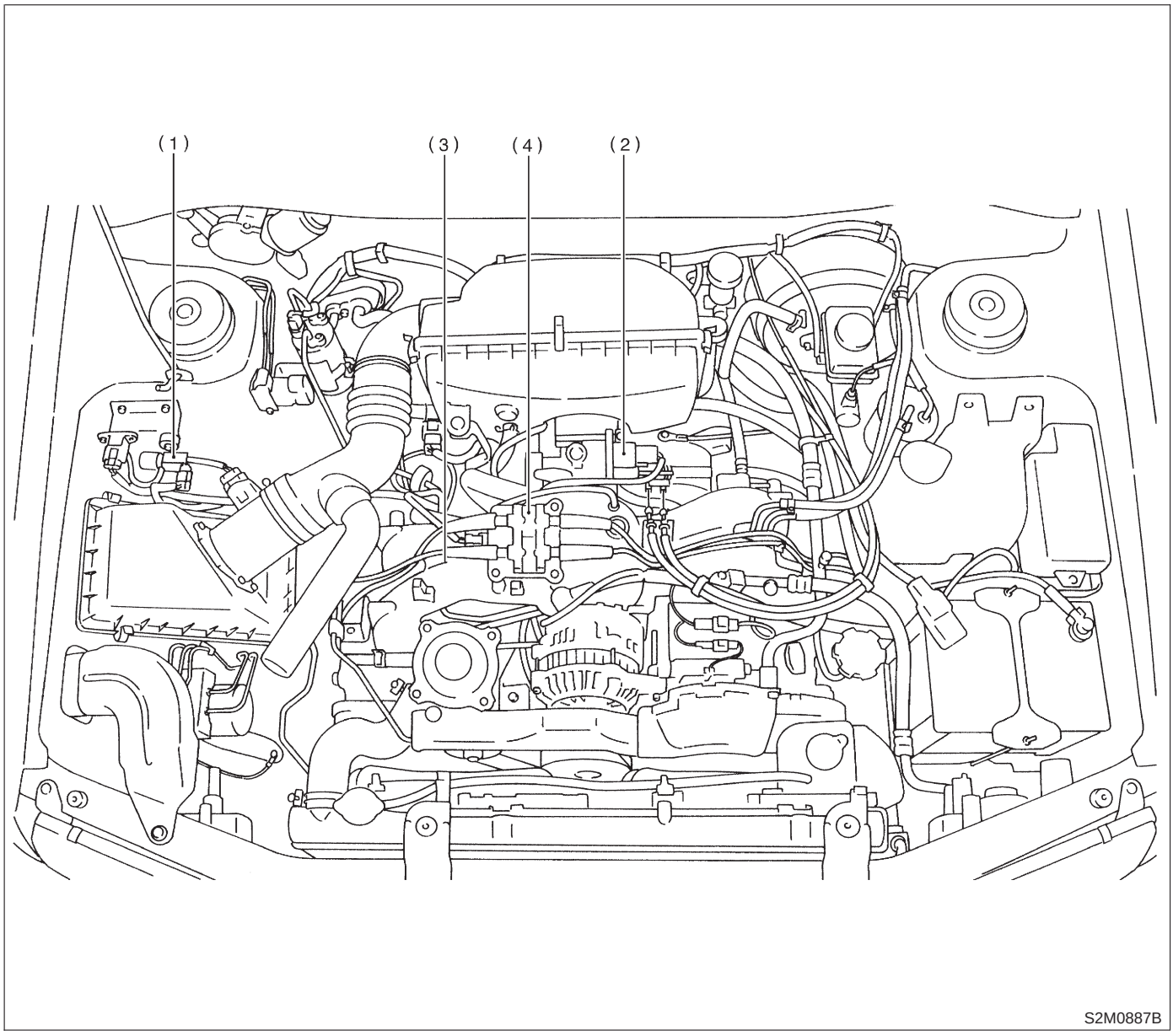




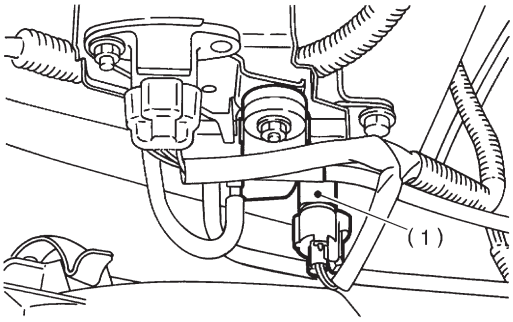


MEMO:

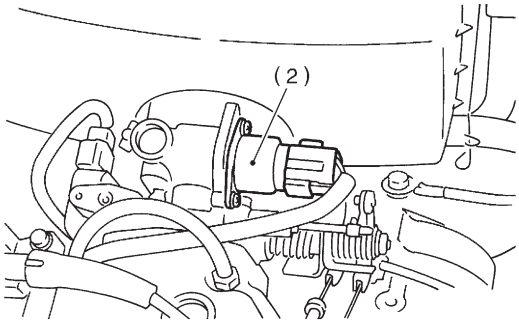
3. SOLENOID VALVE, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS



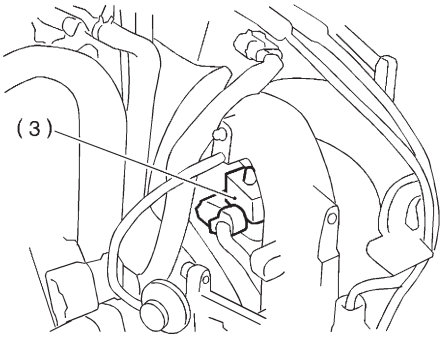
(1) Pressure sources switching solenoid valve
(2) Idle air control solenoid valve
(3) Purge control solenoid valve
(4) Ignition coil & ignitor ASSY



B2M0777B



B2M2243A



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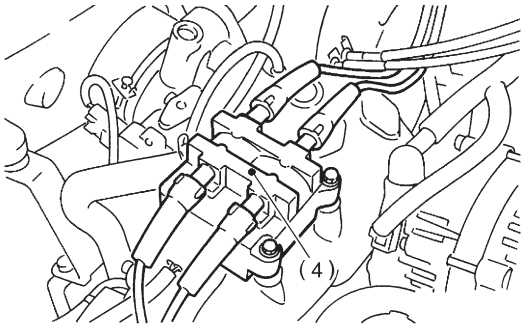
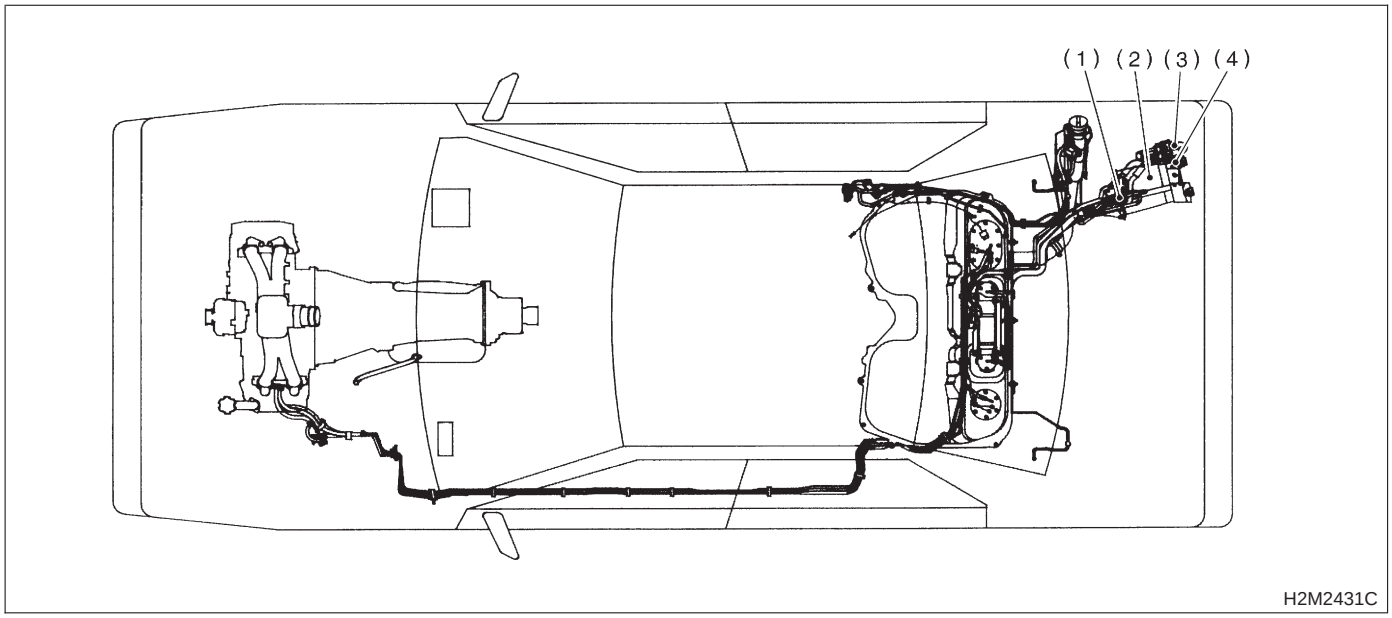
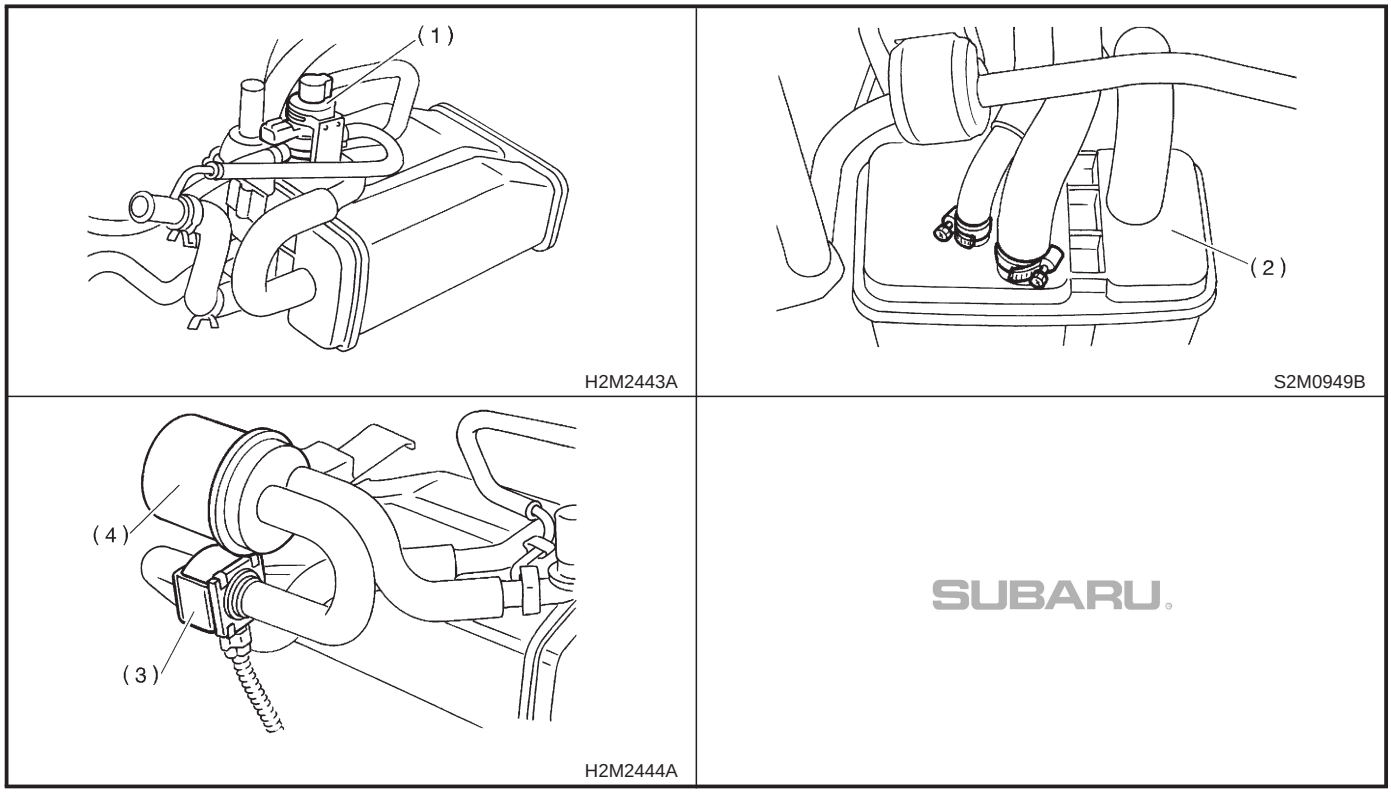


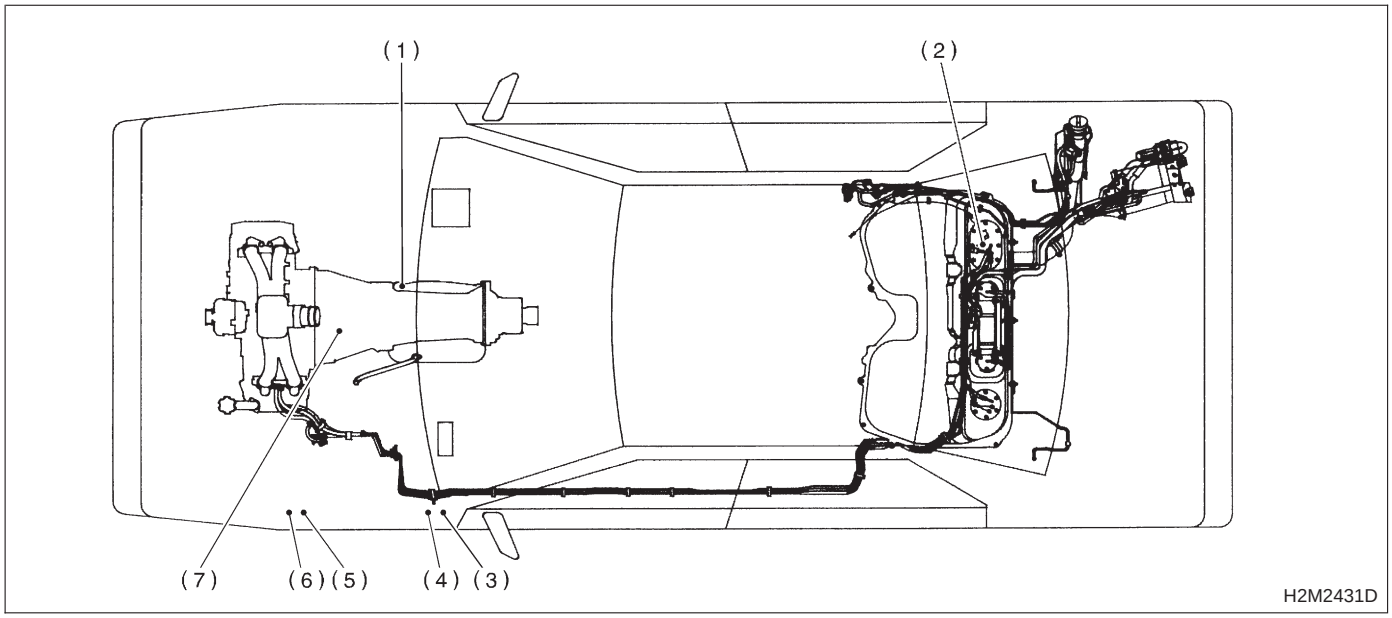
B2M2245A



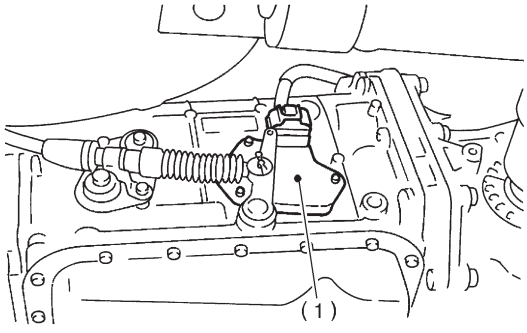
(1) Pressure control solenoid valve
(2) Canister
(3) Drain valve
(4) Air filter

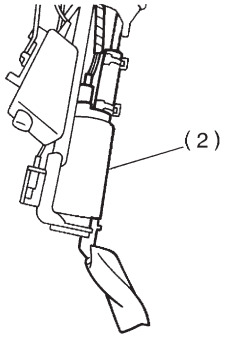


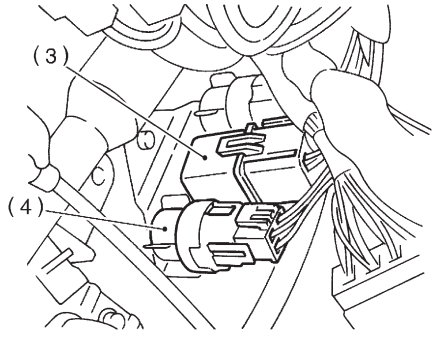
MEMO:

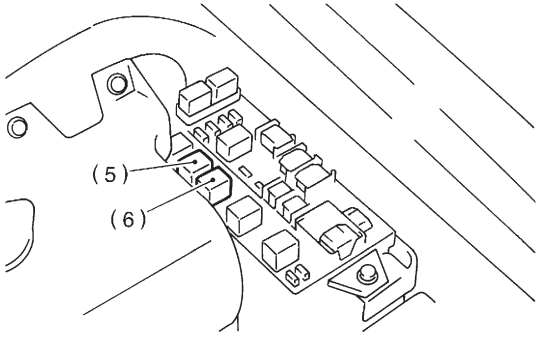


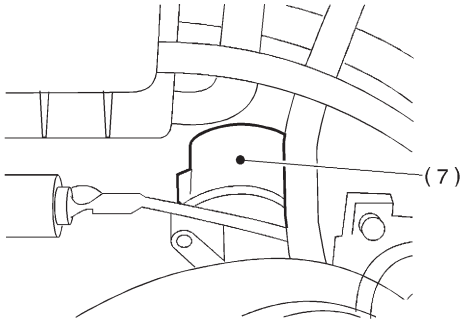
(1) Inhibitor switch (AT vehicles only)
(2) Fuel pump
(3) Main relay
(4) Fuel pump relay
(5) Radiator main fan relay
(6) Radiator sub fan relay
(7) Starter







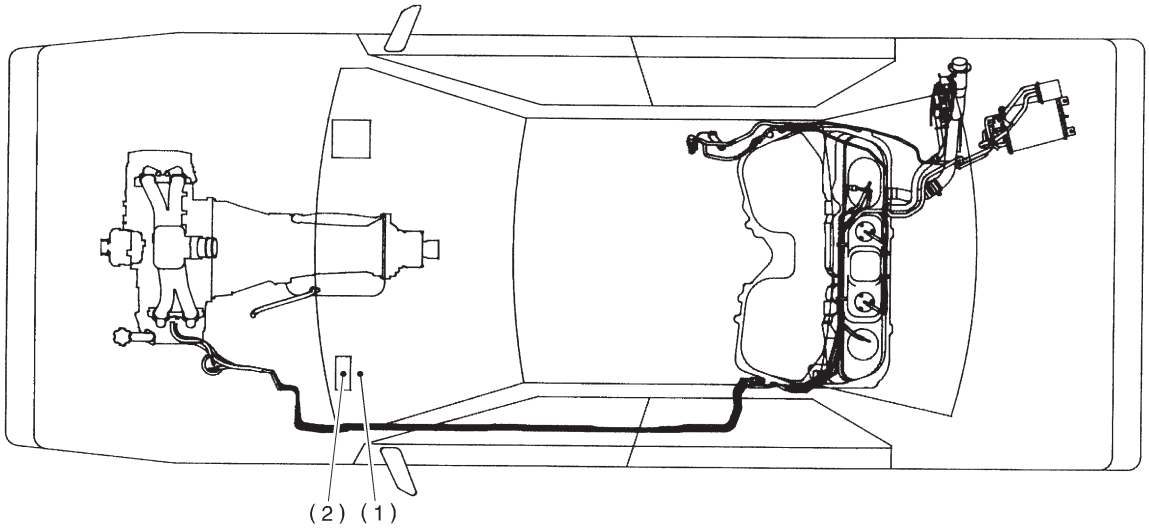




B2M2247B

C: TRANSMISSION

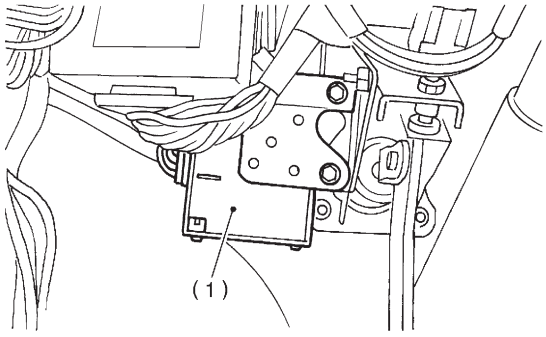
1. MODULE



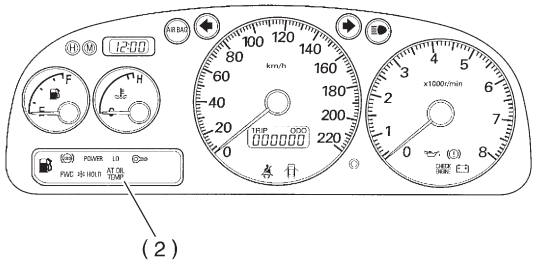
H2M2445E

(1) Transmission Control Module (TCM) (for AT vehicles)

(2) AT diagnostic indicator light (for AT vehicles)

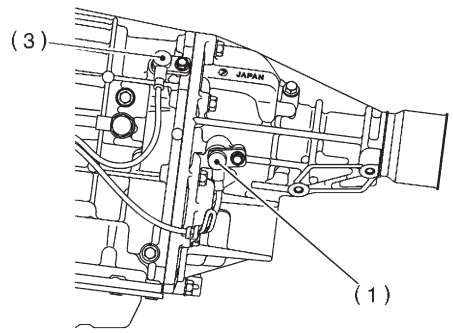


B3M0443O

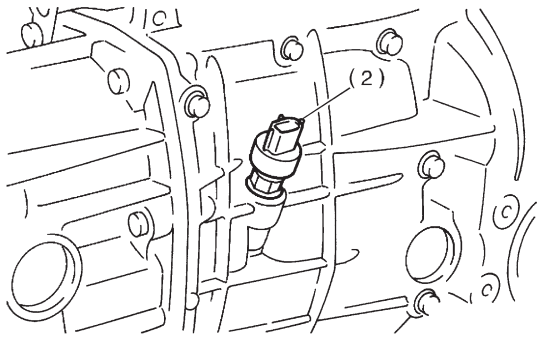


H2M2446E

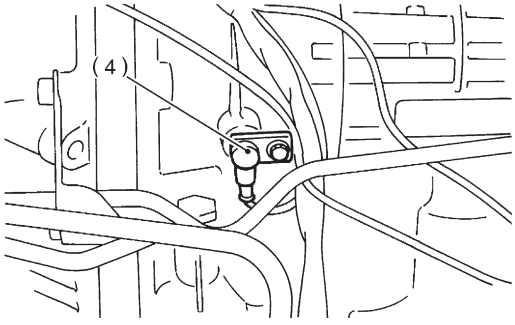
2. SENSOR



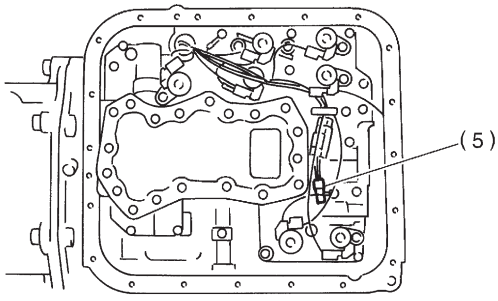
B2M2258A



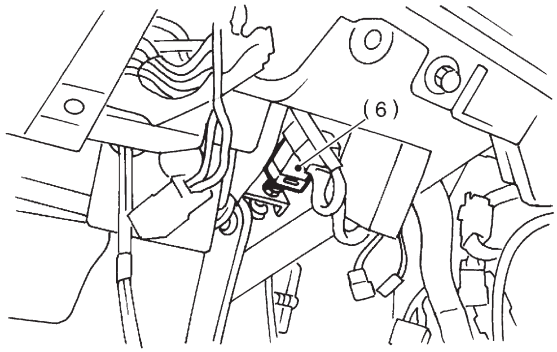
B2M2259A



B2M2260A



B2M2261A

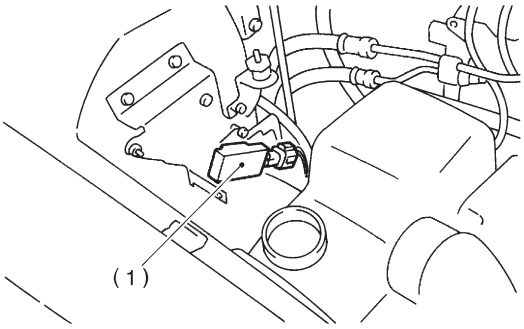


OBD0653B

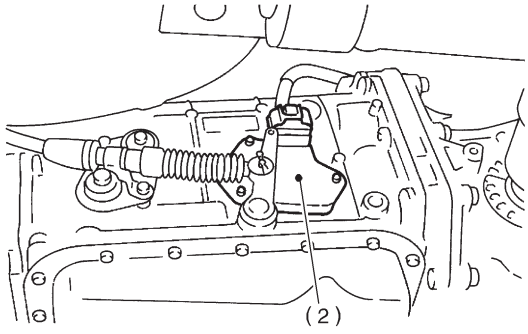
(1) Vehicle speed sensor 1 (for AT AWD vehicles)
(2) Vehicle speed sensor 2 (for MT vehicles)
(3) Vehicle speed sensor 2 (for AT AWD vehicles)
(4) Torque converter turbine speed sensor
(5) ATF temperature sensor (for AT vehicles)
(6) Brake light switch

3. SOLENOID VALVE AND RELAY

- **For AT vehicles**



B2M2262A



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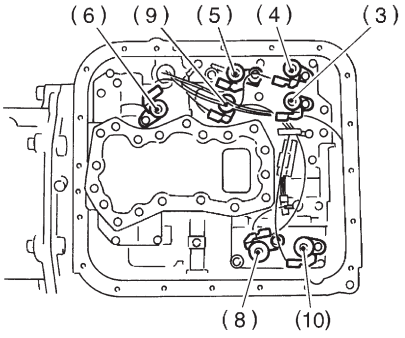
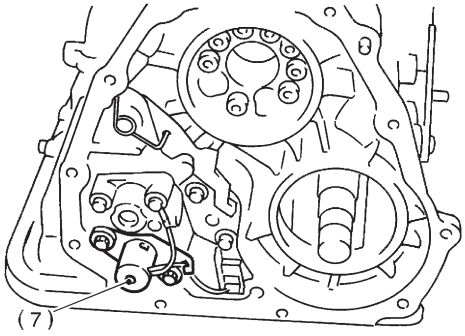


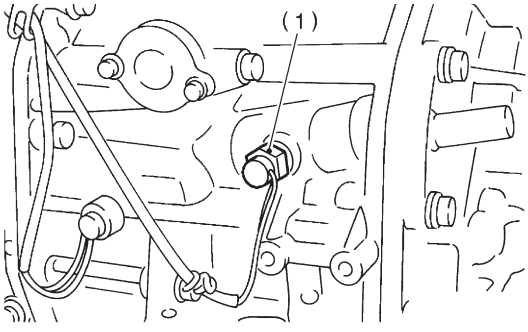
B2M2263A



B2M2264A

(1) Dropping resistor
(2) Inhibitor switch
(3) Shift solenoid valve 1
(4) Shift solenoid valve 2
(5) Duty solenoid valve A
(6) Duty solenoid valve B
(7) Duty solenoid valve C
(8) Duty solenoid valve D
(9) Low clutch timing solenoid valve
(10) 2-4 brake timing solenoid valve

- **For MT vehicles**



B2M2265A

(1) Neutral position switch

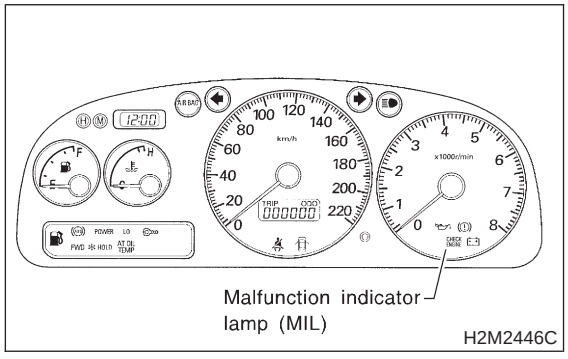
3. Diagnosis System

A: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL)

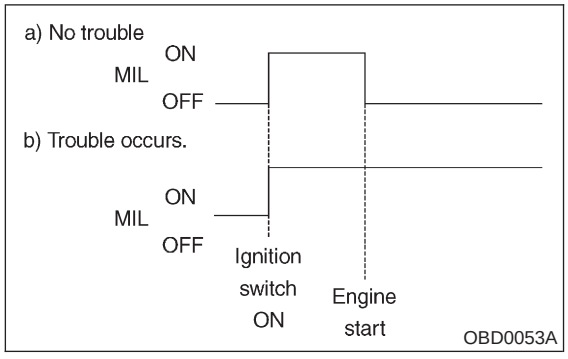
1. ACTIVATION OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL)

1) When ignition switch is turned to ON (engine off), the CHECK ENGINE malfunction indicator lamp (MIL) in the combination meter illuminates.

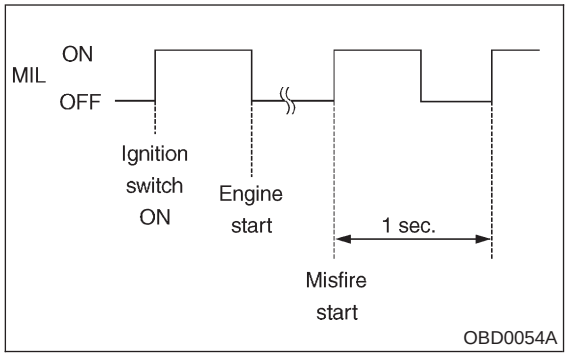
NOTE:
If the MIL does not illuminate, perform diagnostics of the CHECK ENGINE light circuit or the combination meter circuit. <Ref. to 2-7 [T700].>



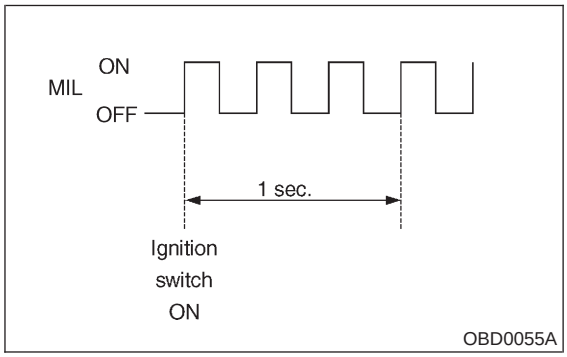
2) After starting the engine, the MIL goes out. If it does not, either the engine or the emission control system is malfunctioning.



3) If the diagnosis system senses a misfire which could damage the catalyzer, the MIL will blink at a cycle of 1 Hz.



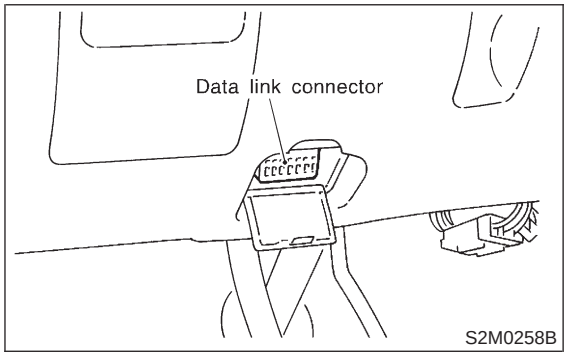
4) When ignition switch is turned to ON (engine off) or to “START” with the test mode connector connected, the MIL blinks at a cycle of 3 Hz.



B: OBD-II GENERAL SCAN TOOL

1. HOW TO USE OBD-II GENERAL SCAN TOOL

1) Prepare a general scan tool (OBD-II general scan tool) required by SAE J1978.
2) Open the cover and connect the OBD-II general scan tool to the data link connector located in the lower portion of the instrument panel (on the driver’s side), to the lower cover.



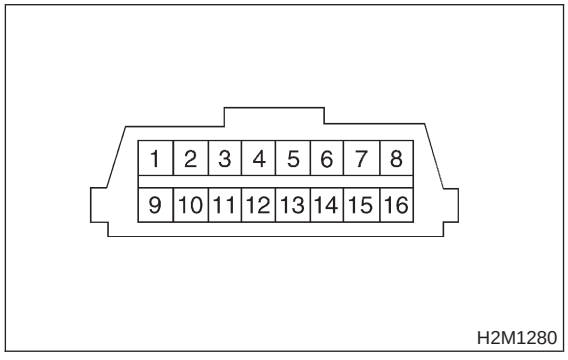
3) Using the OBD-II general scan tool, call up diagnostic trouble code(s) and freeze frame data.
OBD-II general scan tool functions consist of:
(1) MODE $01: Current powertrain diagnostic data
(2) MODE $02: Powertrain freeze frame data
(3) MODE $03: Emission-related powertrain diagnostic trouble codes
(4) MODE $04: Clear/Reset emission-related diagnostic information
(5) MODE $05: Oxygen sensor monitoring test results
Read out data according to repair procedures. (For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.)

NOTE:
For details concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST.
● 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
● Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>

2. DATA LINK CONNECTOR (FOR OBD-II GENERAL SCAN TOOL AND SUBARU SELECT MONITOR)

1) This connector is used both for OBD-II general scan tools and the Subaru Select Monitor.
2) Terminal No. 4 to No. 6 of the data link connector is used for the Subaru Select Monitor signal.

CAUTION:
Do not connect any scan tools other than the OBD-II general scan tools and the Subaru Select Monitor, because the circuit for the Subaru Select Monitor may be damaged.



Terminal No.	Contents	Terminal No.	Contents
1	Power supply	9	Blank
2	Blank	10	K line of ISO 9141 CARB
3	Blank	11	Blank
4	Subaru Select Monitor signal (ECM to Subaru Select Monitor)*	12	Ground
5	Subaru Select Monitor signal (Subaru Select Monitor to ECM)*	13	Ground
6	Line end check signal 1	14	Blank
7	Blank	15	Blank
8	Line end check signal 2	16	Blank

*: Circuit only for Subaru Select Monitor

3. CURRENT POWERTRAIN DIAGNOSTIC DATA (MODE $01)

Refers to data denoting the current operating condition of analog input/output, digital input/output and/or the powertrain system.
A list of the support data and PID (Parameter Identification) codes are shown in the following table.

PID	Data	Unit of measure
01	Number of emission-related powertrain trouble codes and MIL status	ON/OFF
03	Fuel system control status	—
04	Calculated engine load value	%
05	Engine coolant temperature	°C
06	Short term fuel trim	%
07	Long term fuel trim	%
0B	Intake manifold absolute pressure	kPa
0C	Engine revolution	rpm
0D	Vehicle speed	km/h
0E	Ignition timing advance	°
10	Air flow rate from mass air flow sensor*1	g/sec
10	Air flow rate from pressure sensor*2	g/sec
11	Throttle valve opening angle	%
13	Check whether oxygen sensor is installed.	—
14	Oxygen sensor output voltage and short term fuel trim associated with oxygen sensor—bank 1	V and %
15	Oxygen sensor output voltage and short term fuel trim associated with oxygen sensor—bank 2	V and %
1C	On-board diagnosis system	—

*1: Except 2200 cc California spec. vehicles
*2: 2200 cc California spec. vehicles

NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to access generic OBD-II PIDs (MODE $01).

4. POWERTRAIN FREEZE FRAME DATA (MODE $02)

Refers to data denoting the operating condition when trouble is sensed by the on-board diagnosis system.
A list of the support data and PID (Parameter Identification) codes are shown in the following table.

PID	Data	Unit of measure
02	Trouble code that caused CARB required freeze frame data storage	—
03	Fuel system control status	—
04	Calculated engine load value	%
05	Engine coolant temperature	°C
06	Short term fuel trim	%
07	Long term fuel trim	%
0B	Intake manifold absolute pressure	kPa
0C	Engine revolution	rpm
0D	Vehicle speed	km/h

NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to access freeze frame data (MODE $02).

5. EMISSION-RELATED POWERTRAIN DIAGNOSTIC TROUBLE CODE (MODE $03)

Refers to data denoting emission-related powertrain diagnostic trouble codes.
For details concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST.
- 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
- Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>

NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to access emission-related powertrain diagnostic trouble codes (MODE $03).

6. CLEAR/RESET EMISSION-RELATED DIAGNOSTIC INFORMATION (MODE $04)

Refers to the mode used to clear or reset emission-related diagnostic information (OBD-II trouble diagnostic information).

NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to clear or reset emission-related diagnostic information (MODE $04).

7. OXYGEN SENSOR MONITORING TEST RESULTS (MODE $05)

Refers to the mode using oxygen sensor output data while the on-board diagnosis system is performing diagnosis on the oxygen sensor.
A list of the support data of oxygen sensor output and test ID (identification) are shown in the following table.

NOTE:
This system is not applicable to the front oxygen (A/F) sensor of the 2200 cc California spec. vehicles.

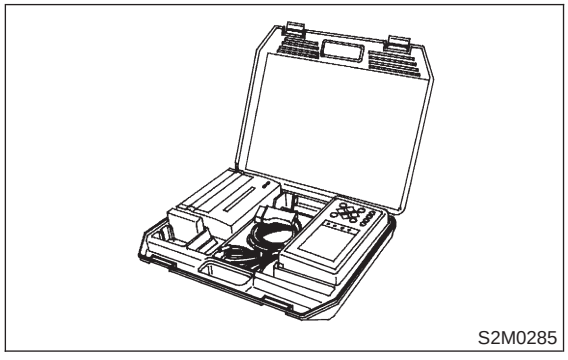
Test ID	Data	Unit of measure
01	Rich to lean sensor threshold voltage (constant)	V
02	Lean to rich sensor threshold voltage (constant)	V
03	Low sensor voltage for switch time calculation (constant)	V
04	High sensor voltage for switch time calculation (constant)	V
05	Rich to lean sensor switch time (calculated)	sec.
06	Lean to rich sensor switch time (calculated)	sec.
07	Minimum sensor voltage for test cycle (calculated)	V
08	Maximum sensor voltage for test cycle (calculated)	V

NOTE:
Refer to OBD-II general scan tool manufacturer's instruction manual to access oxygen sensor monitoring test results (MODE $05).

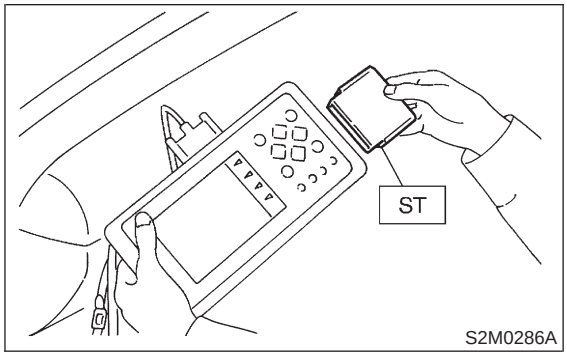
C: SUBARU SELECT MONITOR

1. HOW TO USE SUBARU SELECT MONITOR

1) Prepare Subaru Select Monitor kit.


S2M0285

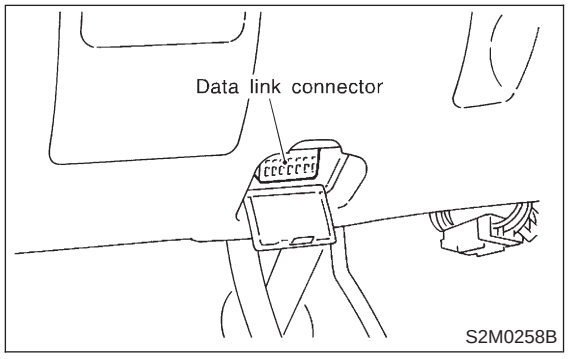
2) Connect diagnosis cable to Subaru Select Monitor.
3) Insert cartridge into Subaru Select Monitor. <Ref. to 1-6 [G1100].>



S2M0286A

4) Connect Subaru Select Monitor to data link connector.

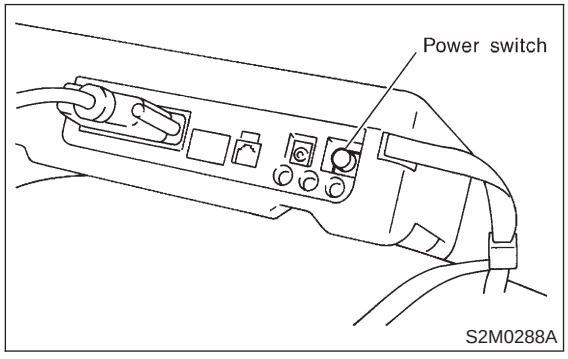
(1) Open the cover data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.



(2) Connect diagnosis cable to data link connector.

CAUTION:
Do not connect scan tools except for Subaru Select Monitor and OBD-II general scan tool.

5) Turn ignition switch to ON (engine OFF) and Subaru Select Monitor switch to ON.



6) Using Subaru Select Monitor, call up diagnostic trouble code(s) and various data, then record them.

2. READ DIAGNOSTIC TROUBLE CODE (DTC) SHOWN ON DISPLAY FOR ENGINE. (NORMAL MODE)

1) On the 「Main Menu」 display screen, select the {1. All System Diagnosis} and press the [YES] key.
2) Make sure that a diagnostic trouble code (DTC) is shown on the {Engine Control System} display screen.

NOTE:
● For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
● For detailed concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST.
  ● 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
  ● Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>

3. READ DIAGNOSTIC TROUBLE CODE (DTC) SHOWN ON DISPLAY FOR ENGINE. (OBD MODE)

1) On the 「Main Menu」 display screen, select the {2. Each System Check} and press the [YES] key.
2) On the 「System Selection Menu」 display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the 「Engine Control System Diagnosis」 display screen, select the {7. OBD System} and press the [YES] key.
5) On the 「OBD Menu」 display screen, select the {3. Diagnosis Code(s) Display} and press the [YES] key.
6) Make sure that a diagnostic trouble code (DTC) is shown on the display screen.

NOTE:
● For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
● For detailed concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST.
  ● 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
  ● Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>

4. READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE. (NORMAL MODE)

1) On the 「Main Menu」 display screen, select the {2. Each System Check} and press the [YES] key.
2) On the 「System Selection Menu」 display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the 「Engine Control System Diagnosis」 display screen, select the {1. Current Data Display & Save} and press the [YES] key.
5) On the 「Data Display Menu」 display screen, select the {1. 12 Data Display} and press the [YES] key.
6) Using the scroll key, move the display screen up or down until the desired data is shown.

● A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Battery voltage	Battery Voltage	V
Vehicle speed signal	Vehicle Speed	km/h or MPH
Engine speed signal	Engine Speed	rpm
Engine coolant temperature signal	Coolant Temp.	°C or °F
Ignition timing signal	Ignition Timing	deg
Mass air flow signal*1	Mass Air Flow	g/s or lb/m
Mass air flow signal*1	Air Flow Sensor Voltage	V
Throttle position signal	Throttle Opening Angle	%
Throttle position signal	Throttle Sensor Voltage	V
Injection pulse width	Fuel Injection #1 Pulse	ms
Idle air control signal*2	ISC Valve Duty Ratio	%
Idle air control signal*1	ISC Valve Step	STEP
Engine load data	Engine Load	%
Front oxygen sensor output signal*1	Front O2 Sensor #1	V
Front oxygen (A/F) sensor output signal*2	A/F Sensor #1	—
Front oxygen (A/F) sensor resistance*2	A/F Sensor #1 Resistance	Ω
Rear oxygen sensor output signal	Rear O2 Sensor	V
Short term fuel trim	A/F Correction #1	%
Knock sensor signal	Knocking Correction	deg
Atmospheric absolute pressure signal	Atmosphere Pressure	mmHg or kPa or inHg or psi
Intake manifold relative pressure signal	Mani. Relative Pressure	mmHg or kPa or inHg or psi
Intake manifold absolute pressure signal	Mani. Absolute Pressure	mmHg or kPa or inHg or psi
A/F correction (short term fuel trim) by rear oxygen sensor	A/F Correction #3	%
Long term whole fuel trim	A/F Learning #1	%
Front oxygen sensor heater current*1	Front O2 Heater #1	A
Front oxygen (A/F) sensor heater current*2	A/F Heater #1	A
Rear oxygen sensor heater current*1	Rear O2 Heater Current	A
Rear oxygen sensor heater voltage*2	Rear O2 Heater Voltage	V
Canister purge control solenoid valve duty ratio	CPC Valve Duty Ratio	%
Fuel tank pressure signal	Fuel Tank Pressure	mmHg or kPa or inHg or psi
Fuel temperature signal	Fuel Temp.	°C or °F
Fuel level signal	Fuel Level	V
Intake air temperature signal*2	Intake Air Temp.	°C or °F
Ignition switch signal	Ignition Switch	ON or OFF
Automatic transmission vehicle identification signal*1	AT Vehicle ID Signal	ON or OFF
Test mode connector signal	Test Mode Signal	ON or OFF
Neutral position switch signal	Neutral Position Switch	ON or OFF
Air conditioning switch signal	A/C Switch	ON or OFF

Contents	Display	Unit of measure
Air conditioning relay signal	A/C Relay	ON or OFF
Radiator main fan relay signal	Radiator Fan Relay #1	ON or OFF
Fuel pump relay signal	Fuel Pump Relay	ON or OFF
Knocking signal	Knocking Signal	ON or OFF
Radiator sub fan relay signal	Radiator Fan Relay #2	ON or OFF
Engine torque control signal #1	Torque Control Signal #1	ON or OFF
Engine torque control signal #2	Torque Control Signal #2	ON or OFF
Engine torque control permission signal	Torque Control Permit	ON or OFF
Pressure sources switching solenoid valve*1	Pressure Sources Change	ON or OFF
Front oxygen sensor rich signal*1	Front O2 Rich Signal #1	ON or OFF
Rear oxygen sensor rich signal	Rear O2 Rich Signal	ON or OFF
Pressure control solenoid valve	PCV Solenoid Valve	ON or OFF
Drain valve	Vent. Solenoid Valve	ON or OFF
Starter switch signal	Starter Switch Signal	ON or OFF
Idle switch signal	Idle Switch Signal	ON or OFF
Crankshaft position sensor signal	Crankshaft Position Sig.	ON or OFF
Camshaft position sensor signal	Camshaft Position Sig.	ON or OFF

*1: Except 2200 cc California spec. vehicles
*2: 2200 cc California spec. vehicles

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

5. READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE. (OBD MODE)

1) On the ┌Main Menu┘ display screen, select the {2. Each System Check} and press the [YES] key.
2) On the ┌System Selection Menu┘ display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the ┌Engine Control System Diagnosis┘ display screen, select the {7. OBD System} and press the [YES] key.
5) On the ┌OBD Menu┘ display screen, select the {1. Current Data Display & Save} and press the [YES] key.
6) On the ┌Data Display Menu┘ display screen, select the {1. 12 Data Display} and press the [YES] key.
7) Using the scroll key, move the display screen up or down until the desired data is shown.

● A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Number of diagnosis code	Number of Diagnosis Code	—
Malfunction indicator lamp status	MIL Status	ON or OFF
Monitoring test of misfire	Misfire monitoring	ON or OFF
Monitoring test of fuel system	Fuel system monitoring	ON or OFF
Monitoring test of comprehensive component	Component monitoring	ON or OFF
Test of catalyst	Catalyst Diagnosis	ON or OFF
Test of heated catalyst	Heated catalyst	ON or OFF
Test of evaporative emission purge control system	Evaporative purge system	ON or OFF
Test of secondary air system	Secondary air system	ON or OFF
Test of air conditioning system refrigerant	A/C system refrigerant	ON or OFF
Test of oxygen sensor	Oxygen sensor	ON or OFF
Test of oxygen sensor heater	Oxygen sensor heater	ON or OFF
Test of exhaust gas recirculation system	EGR System Diagnosis	ON or OFF
Air fuel ratio control system for bank 1	Fuel System for Bank 1	ON or OFF
Engine load data	Engine Load	%
Engine coolant temperature signal	Coolant Temp.	°C or °F
Short term fuel trim by front oxygen (A/F) sensor	Short term fuel trim B1	%
Long term fuel trim by front oxygen (A/F) sensor	Long term fuel trim B1	%
Intake manifold absolute pressure signal	Mani. Absolute Pressure	mmHg or kPa or inHg or psi
Engine speed signal	Engine Speed	rpm
Vehicle speed signal	Vehicle Speed	km/h or MPH
Ignition timing advance for #1 cylinder	Ignition timing adv. #1	°
Intake air temperature signal*1	Intake Air Temp.	°C or °F
Mass air flow signal	Mass Air Flow	g/s or lb/m
Throttle position signal	Throttle Opening Angle	%
A/F sensor equipment*1	A/F sensor	ON or OFF
Front oxygen sensor output signal*2	Oxygen Sensor #11	V
Air fuel ratio correction by front oxygen sensor*2	Short term fuel trim #11	%
Rear oxygen sensor output signal	Oxygen Sensor #12	V
Air fuel ratio correction by rear oxygen sensor	Short term fuel trim #12	%
On-board diagnostic system	OBD System	—

*1: 2200 cc California spec. vehicles
*2: Except 2200 cc California spec. vehicles

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

6. READ FREEZE FRAME DATA SHOWN ON DISPLAY FOR ENGINE. (OBD MODE)

1) On the ┌Main Menu┘ display screen, select the {2. Each System Check} and press the [YES] key.
2) On the ┌System Selection Menu┘ display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the ┌Engine Control System Diagnosis┘ display screen, select the {7. OBD System} and press the [YES] key.
5) On the ┌OBD Menu┘ display screen, select the {2. Freeze Frame Data} and press the [YES] key.
● A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Diagnostic trouble code (DTC) for freeze frame data	Freeze frame data	DTC
Air fuel ratio control system for bank 1	Fuel system for Bank1	ON or OFF
Engine load data	Engine Load	%
Engine coolant temperature signal	Coolant Temp.	°C or °F
Short term fuel trim by front oxygen (A/F) sensor	Short term fuel trim B1	%
Long term fuel trim by front oxygen (A/F) sensor	Long term fuel trim B1	%
Intake manifold absolute pressure signal	Mani. Absolute Pressure	mmHg or kPa or inHg or psi
Engine speed signal	Engine Speed	rpm
Vehicle speed signal	Vehicle Speed	km/h or MPH

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

7. READ OXYGEN SENSOR MONITORING TEST RESULTS DATA SHOWN ON DISPLAY FOR ENGINE. (OBD MODE)

1) On the ┌Main Menu┘ display screen, select the {2. Each System Check} and press the [YES] key.
2) On the ┌System Selection Menu┘ display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the ┌Engine Control System Diagnosis┘ display screen, select the {7. OBD System} and press the [YES] key.
5) On the ┌OBD Menu┘ display screen, select the {5. O2 Sensor Monitor} and press the [YES] key.
6) On the ┌O2 Sensor Select┘ display screen, select the {Bank 1-Sensor1} or {Bank 1-Sensor2} and press the [YES] key.
● Bank 1-Sensor1 indicates the front oxygen or A/F sensor, and Bank 1-Sensor2 indicates the rear oxygen sensor.
● A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Oxygen sensor for monitoring test	<O2 Sensor Monitor (-------)>	—
Rich to lean oxygen sensor threshold voltage	Rich to lean sensor volt	V
Lean to rich oxygen sensor threshold voltage	Lean to rich sensor volt	V
Low oxygen sensor voltage for switch time calculation	Low sensor voltage	V
High oxygen sensor voltage for switch time calculation	High sensor voltage	V
Rich to lean oxygen sensor switch time	Rich to lean switch time	sec
Lean to rich oxygen sensor switch time	Lean to rich switch time	sec
Maximum oxygen sensor voltage for test cycle	Maximum sensor Voltage	V
Minimum oxygen sensor voltage for test cycle	Minimum sensor Voltage	V

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

8. LED OPERATION MODE FOR ENGINE

1) On the ⌜Main Menu⌟ display screen, select the {2. Each System Check} and press the [YES] key.
2) On the ⌜System Selection Menu⌟ display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the ⌜Engine Control System Diagnosis⌟ display screen, select the {1. Current Data Display & Save} and press the [YES] key.
5) On the ⌜Data Display Menu⌟ display screen, select the {2. 6 Data & LED Display} and press the [YES] key.
6) Using the scroll key, move the display screen up or down until the desired data is shown.

● A list of the support data is shown in the following table.

Contents	Display	Message	LED "ON" requirements
Ignition switch signal	Ignition Switch	ON or OFF	When ignition switch is turned ON.
Automatic transmission vehicle identification signal*	AT Vehicle ID Signal	ON or OFF	When AT identification signal is entered.
Test mode connector signal	Test Mode Signal	ON or OFF	When test mode connector is connected.
Neutral position switch signal	Neutral Position Switch	ON or OFF	When neutral position signal is entered.
Air conditioning switch signal	A/C Switch	ON or OFF	When air conditioning switch is turned ON.
Air conditioning relay signal	A/C Relay	ON or OFF	When air conditioning relay is in function.
Radiator main fan relay signal	Radiator Fan Relay #1	ON or OFF	When radiator main fan relay is in function.
Fuel pump relay signal	Fuel Pump Relay	ON or OFF	When fuel pump relay is in function.
Knocking signal	Knocking Signal	ON or OFF	When knocking signal is entered.
Radiator sub fan relay signal	Radiator Fan Relay #2	ON or OFF	When radiator sub fan relay is in function.
Engine torque control signal #1	Torque Control Signal #1	ON or OFF	When engine torque control signal 1 is entered.
Engine torque control signal #2	Torque Control Signal #2	ON or OFF	When engine torque control signal 2 is entered.
Engine torque control permission signal	Torque Control Permit	ON or OFF	When engine torque control permission signal is entered.
Pressure sources switching solenoid valve*	Pressure Sources Change	ON or OFF	When pressure sources switching solenoid valve is in function.
Front oxygen sensor rich signal*	Front O2 Rich Signal #1	ON or OFF	When front oxygen sensor mixture ratio is rich.
Rear oxygen sensor rich signal	Rear O2 Rich Signal	ON or OFF	When rear oxygen sensor mixture ratio is rich.
Pressure control solenoid valve	PCV Solenoid Valve	ON or OFF	When pressure control solenoid valve is in function.
Drain valve	Vent. Solenoid Valve	ON or OFF	When drain valve is in function.
Starter switch signal	Starter Switch Signal	ON or OFF	When starter switch signal is entered.
Idle switch signal	Idle Switch Signal	ON or OFF	When idle switch signal is entered.
Crankshaft position sensor signal	Crankshaft Position Sig.	ON or OFF	When crankshaft position sensor signal is entered.
Camshaft position sensor signal	Camshaft Position Sig.	ON or OFF	When camshaft position sensor signal is entered.

*: Except 2200 cc California spec. vehicles

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

9. READ CURRENT DATA SHOWN ON DISPLAY FOR AT.

1) On the ┌Main Menu┘ display screen, select the {2. Each System Check} and press the [YES] key.
2) On the ┌System Selection Menu┘ display screen, select the {AT/ECVT} and press the [YES] key.
3) Press the [YES] key after displayed the information of transmission type.
4) On the ┌E-4AT/ECVT Diagnosis┘ display screen, select the {1. Current Data Display & Save} and press the [YES] key.
5) On the ┌Data Display Menu┘ display screen, select the {1. 12 Data Display} and press the [YES] key.
6) Using the scroll key, move the display screen up or down until the desired data is shown.

● A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Battery voltage	Battery Voltage	V
Vehicle speed sensor 1 signal	Vehicle Speed #1	km/h or MPH
Vehicle speed sensor 2 signal	Vehicle Speed #2	km/h or MPH
Engine speed signal	Engine Speed	rpm
Automatic transmission fluid temperature signal	ATF Temp.	°C or °F
Throttle position signal	Throttle Sensor Voltage	V
Gear position	Gear Position	—
Line pressure control duty ratio	Line Pressure Duty Ratio	%
Lock up clutch control duty ratio	Lock Up Duty Ratio	%
Transfer clutch control duty ratio	Transfer Duty Ratio	%
Power supply for throttle position sensor	Throttle Sensor Power	V
Mass air flow signal*	Air Flow Sensor Voltage	V
Torque converter turbine speed signal	AT Turbine Speed	rpm
2-4 brake timing pressure control duty ratio	2-4B Duty Ratio	%
Intake manifold pressure sensor voltage	Mani. Pressure Voltage	V
2 wheel drive switch signal	2WD Switch	ON or OFF
Kick down switch signal	Kick Down Switch	ON or OFF
Stop lamp switch signal	Stop Lamp Switch	ON or OFF
Anti lock brake system signal	ABS Signal	ON or OFF
Cruise control system signal	Cruise Control Signal	ON or OFF
Neutral/Parking range signal	N/P Range Signal	ON or OFF
Reverse range signal	R Range Signal	ON or OFF
Drive range signal	D Range Signal	ON or OFF
3rd range signal	3rd Range Signal	ON or OFF
2nd range signal	2nd Range Signal	ON or OFF
1st range signal	1st Range Signal	ON or OFF
Shift control solenoid A	Shift Solenoid #1	ON or OFF
Shift control solenoid B	Shift Solenoid #2	ON or OFF
Torque control output signal #1	Torque Control Signal #1	ON or OFF
Torque control output signal #2	Torque Control Signal #2	ON or OFF
Torque control cut signal	Torque Control Cut Sig.	ON or OFF
2-4 brake timing control solenoid valve	2-4 Brake Timing Sol.	ON or OFF
Low clutch timing control solenoid valve	Low Clutch Timing Sol.	ON or OFF
Automatic transmission diagnosis indicator lamp	AT Diagnosis Lamp	ON or OFF

*: Except 2200 cc California spec. vehicles

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

D: CLEAR MEMORY MODE

1. SUBARU SELECT MONITOR (NORMAL MODE)

1) On the ⌜Main Menu⌟ display screen, select the {2. Each System Check} and press the [YES] key.
2) On the ⌜System Selection Menu⌟ display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the ⌜Engine Control System Diagnosis⌟ display screen, select the {3. Clear Memory} and press the [YES] key.
5) When the 'Done' and 'Turn Ignition Switch OFF' are shown on the display screen, turn the Subaru Select Monitor and ignition switch to OFF.

NOTE:
● After the memory has been cleared, the ISC must be initialized. To do this, turn the ignition switch to the ON position. Wait 3 seconds before starting the engine. (Except 2200 cc California spec. vehicles only)
● For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

2. SUBARU SELECT MONITOR (OBD MODE)

1) On the ⌜Main Menu⌟ display screen, select the {2. Each System Check} and press the [YES] key.
2) On the ⌜System Selection Menu⌟ display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the ⌜Engine Control System Diagnosis⌟ display screen, select the {7. OBD System} and press the [YES] key.
5) On the ⌜OBD Menu⌟ display screen, select the {4. Diagnosis Code(s) Cleared} and press the [YES] key.
6) When the 'Clear Diagnostic Code?' is shown on the display screen, press the [YES] key.
7) Turn Subaru Select Monitor and ignition switch to OFF.

NOTE:
● After the memory has been cleared, the ISC must be initialized. To do this, turn the ignition switch to the ON position. Wait 3 seconds before starting the engine. (Except 2200 cc California spec. vehicles only)
● For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

3. OBD-II GENERAL SCAN TOOL

For clear memory procedures using the OBD-II general scan tool, refer to the OBD-II General Scan Tool Instruction Manual.
After the memory has been cleared, the ISC must be initialized. To do this, turn the ignition switch to the ON position. Wait 3 seconds before starting the engine. (Except 2200 cc California spec. vehicles only)

E: INSPECTION MODE

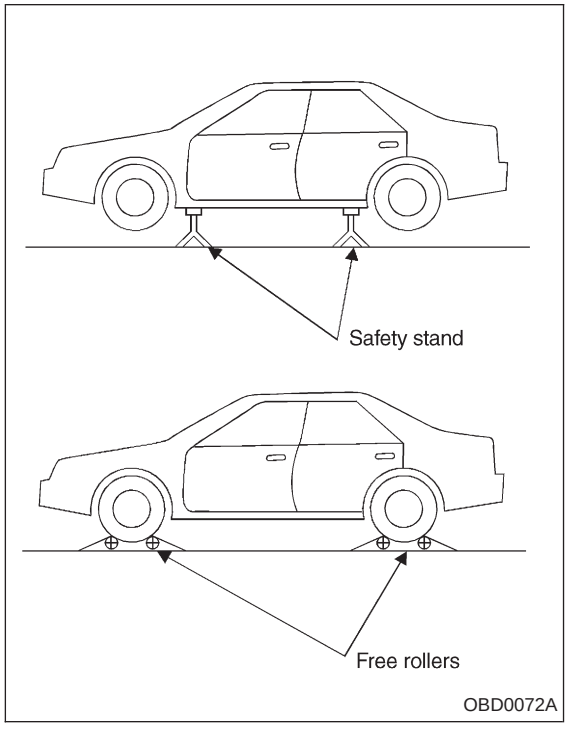
1. PREPARATIONS FOR THE INSPECTION MODE

Raise the vehicle using a garage jack and place on safety stands or drive the vehicle onto free rollers.

- **FULL-TIME AWD MODELS**

WARNING:

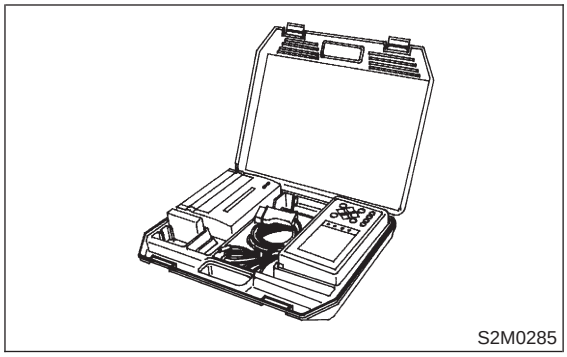
- **Before raising the vehicle, ensure parking brakes are applied.**
- **Do not use a pantograph jack in place of a safety stand.**
- **Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runout of front wheels.**
- **Do not abruptly depress/release clutch pedal or accelerator pedal during works even when engine is operating at low speeds since this may cause vehicle to jump off free rollers.**
- **In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.**
- **Since the rear wheels will also rotate, do not place anything near them. Also, make sure that nobody goes in front of the vehicle.**



2. SUBARU SELECT MONITOR

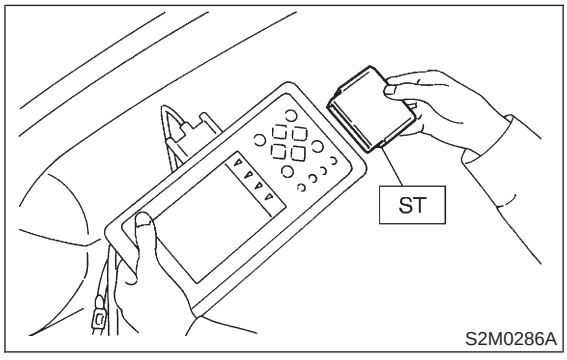
After performing diagnostics and clearing the memory, check for any remaining unresolved trouble data.

1) Prepare Subaru Select Monitor kit.

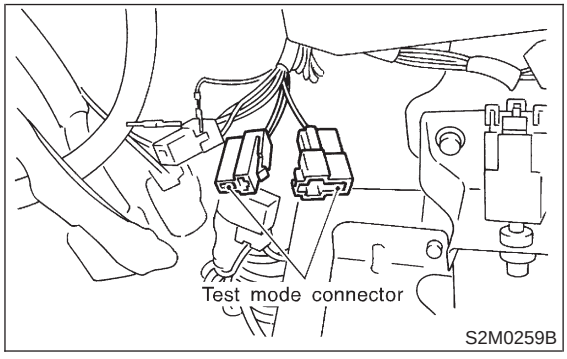


2) Connect diagnosis cable to Subaru Select Monitor.

3) Insert cartridge into Subaru Select Monitor. <Ref. to 1-6 [G1100].>

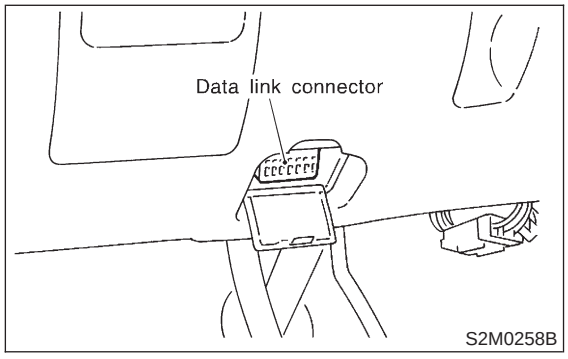


4) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



5) Connect Subaru Select Monitor to data link connector.

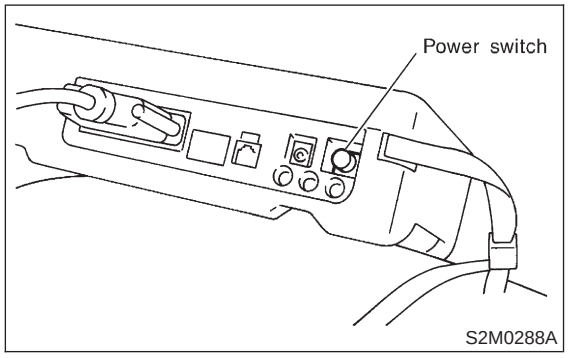
(1) Open the cover and connect Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.



(2) Connect diagnosis cable to data link connector.

CAUTION:
Do not connect scan tools except for Subaru Select Monitor and OBD-II general scan tool.

6) Turn ignition switch to ON (engine OFF) and Subaru Select Monitor switch to ON.



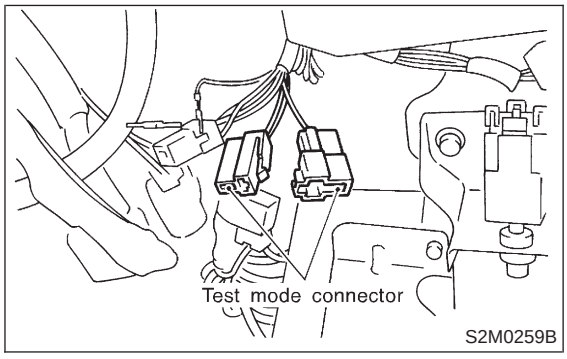
7) On the 「Main Menu」 display screen, select the {2. Each System Check} and press the [YES] key.
8) On the 「System Selection Menu」 display screen, select the {Engine Control System} and press the [YES] key.
9) Press the [YES] key after displayed the information of engine type.
10) On the 「Engine Control System Diagnosis」 display screen, select the {6. Dealer Check Mode Procedure} and press the [YES] key.
11) When the "Perform Inspection (Dealer Check) Mode?" is shown on the display screen, press the [YES] key.
12) Perform subsequent procedures as instructed on the display screen.

- If trouble still remains in the memory, the corresponding diagnostic trouble code (DTC) appears on the display screen.

NOTE:
- For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
- For detailed concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST.
  - 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
  - Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>
- On AWD vehicles, release the parking brake.
- The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system.

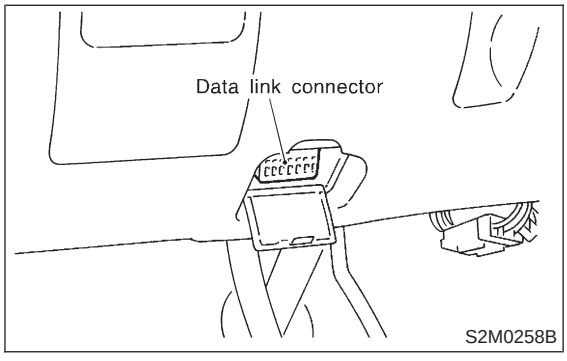
3. OBD-II GENERAL SCAN TOOL

After performing diagnostics and clearing the memory, check for any remaining unresolved trouble data:
1) Connect test mode connector at the lower side of the instrument panel (on the driver's side), to the side of the center console box.



2) Open the cover and connect the OBD-II general scan tool to its data link connector in the lower portion of the instrument panel (on the driver's side), to the lower cover.

CAUTION:
Do not connect the scan tools except for Subaru Select Monitor and OBD-II general scan tool.



3) Start the engine.

NOTE:
● Ensure the selector lever is placed in the “P” position before starting. (AT vehicles)
● Depress clutch pedal when starting the engine. (MT vehicles)

4) Using the selector lever or shift lever, turn the “P” position switch and the “N” position switch to ON.
5) Depress the brake pedal to turn the brake switch ON. (AT vehicles)
6) Keep engine speed in the 2,500 — 3,000 rpm range for 40 seconds.

NOTE:
On models without tachometer, use the tachometer (Secondary pickup type).

7) Place the selector lever or shift lever in the “D” position (AT vehicles) or “1st” gear (MT vehicles) and drive the vehicle at 5 to 10 km/h (3 to 6 MPH).

NOTE:
● On AWD vehicles, release the parking brake.
● The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system.

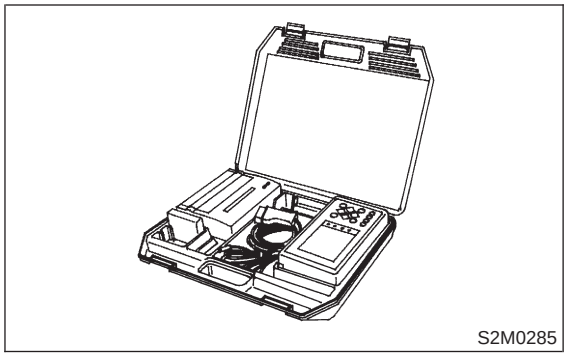
8) Using the OBD-II general scan tool, check for diagnostic trouble code(s) and record the result(s).

NOTE:
● For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.
● For detailed concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST.
  ● 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
  ● Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>

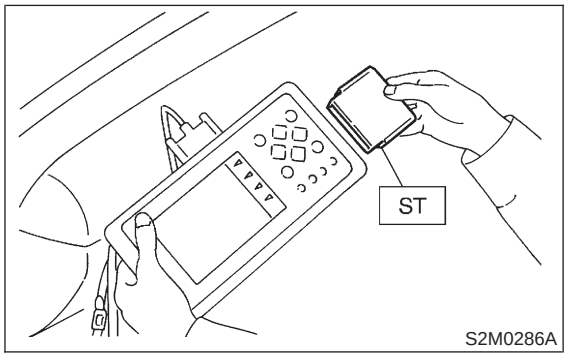
F: COMPULSORY VALVE OPERATION CHECK MODE

1. SUBARU SELECT MONITOR

1) Prepare Subaru Select Monitor kit.

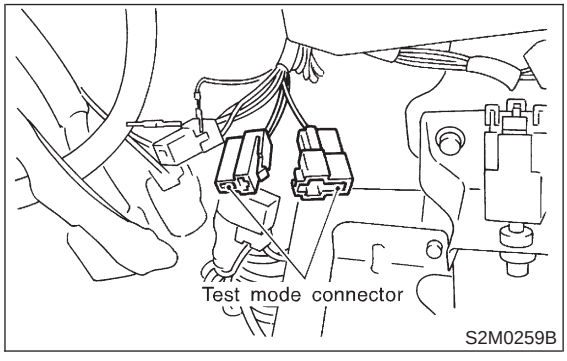

S2M0285

2) Connect diagnosis cable to Subaru Select Monitor.
3) Insert cartridge into Subaru Select Monitor. <Ref. to 1-6 [G1100].>



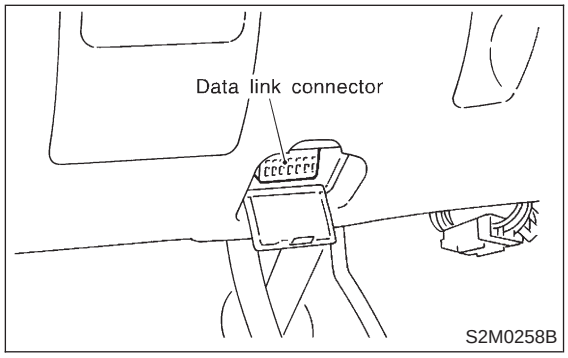
S2M0286A

4) Connect test mode connector at the lower portion of instrument panel (on the driver’s side), to the side of the center console box.



S2M0259B

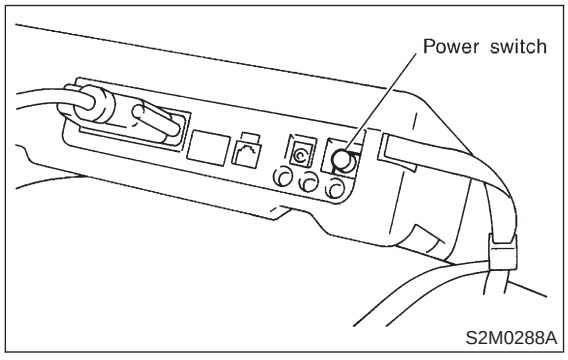
5) Connect Subaru Select Monitor to data link connector.
(1) Open the cover and connect Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.



(2) Connect diagnosis cable to data link connector.

CAUTION:
Do not connect scan tools except for Subaru Select Monitor and OBD-II general scan tool.

6) Turn ignition switch to ON (engine OFF) and Subaru Select Monitor switch to ON.



7) On the ┌Main Menu┘ display screen, select the {2. Each System Check} and press the [YES] key.
8) On the ┌System Selection Menu┘ display screen, select the {Engine Control System} and press the [YES] key.
9) Press the [YES] key after displayed the information of engine type.
10) On the ┌Engine Control System Diagnosis┘ display screen, select the {4. System Operation Check Mode} and press the [YES] key.
11) On the ┌System Operation Check Mode┘ display screen, select the {Actuator ON/OFF Operation} and press the [YES] key.
12) Select the desired compulsory actuator on the ┌Actuator ON/OFF Operation┘ display screen and press the [YES] key.
13) Pressing the [NO] key completes the compulsory operation check mode. The display will then return to the ┌Actuator ON/OFF Operation┘ screen.

● A list of the support data is shown in the following table.

Contents	Display
Compulsory fuel pump relay operation check	Fuel Pump Relay
Compulsory radiator fan relay operation check	Radiator Fan Relay
Compulsory air conditioning relay operation check	A/C Relay
Compulsory pressure control solenoid valve operation check	PCV Solenoid Valve
Compulsory drain valve operation check	Vent Control Solenoid Valve
Compulsory pressure sources switching solenoid valve operation check*	Pressure Switching Sol.1

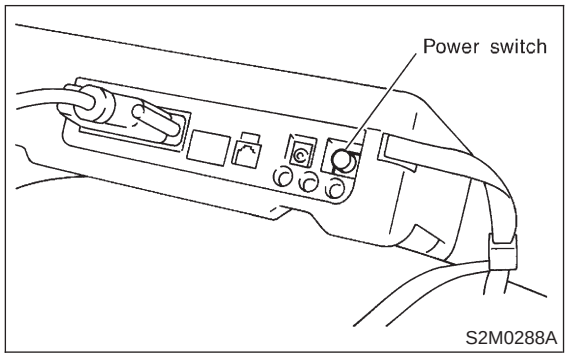
*: Except 2200 cc California spec. vehicles

NOTE:
● Because ASV solenoid valve, FICD solenoid valve and air injection system diagnosis solenoid valve are not installed, ASV Solenoid Valve, FICD Solenoid Valve and Pressure Switching Sol.2 will be displayed but non-functional.
● For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

G: FINISHING DIAGNOSIS OPERATION

1. SUBARU SELECT MONITOR

1) Turn ignition switch to OFF.
2) Turn Subaru Select Monitor switch to OFF.



3) Disconnect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.
4) Disconnect Subaru Select Monitor from its data link connector.

4. Cautions

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

Airbag system wiring harness is routed near the engine control module (ECM), main relay and fuel pump relay.

CAUTION:
● All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.
● Be careful not to damage Airbag system wiring harness when servicing the engine control module (ECM), transmission control module (TCM), main relay and fuel pump relay.

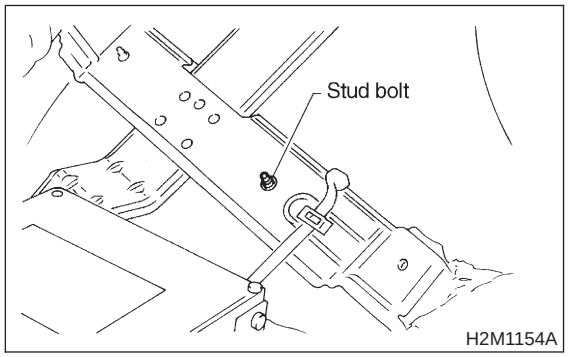
B: PRECAUTIONS

1) Never connect the battery in reverse polarity.
● The ECM will be destroyed instantly.
● The fuel injector and other part will be damaged in just a few minutes more.
2) Do not disconnect the battery terminals while the engine is running.
● A large counter electromotive force will be generated in the alternator, and this voltage may damage electronic parts such as ECM, etc.
3) Before disconnecting the connectors of each sensor and the ECM, be sure to turn OFF the ignition switch.
4) Poor contact has been identified as a primary cause of this problem. To measure the voltage and/or resistance of individual sensors or all electrical control modules at the harness side connector, 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) into the part.
5) Before removing ECM from the located position, disconnect two cables on battery.
● Otherwise, the ECM may be damaged.

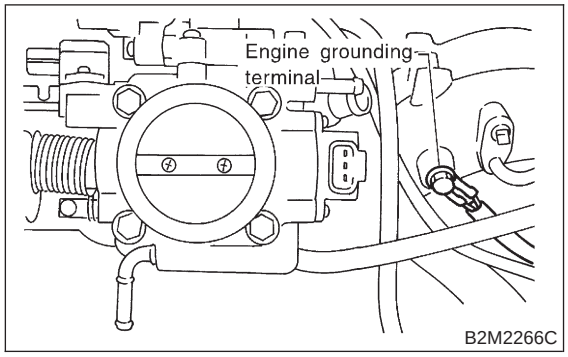
CAUTION:
When replacing ECM, be careful not to use the wrong spec. ECM to avoid any damage on fuel injection system.

6) The connectors to each sensor in the engine compartment and the harness connectors on the engine side and body side are all designed to be waterproof. However, it is still necessary to take care not to allow water to get into the connectors when washing the vehicle, or when servicing the vehicle on a rainy day.

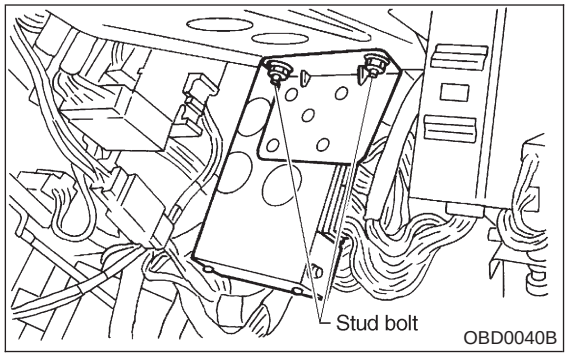
7) Use ECM mounting stud bolts at the body head grounding point when measuring voltage and resistance inside the passenger compartment.



8) Use engine grounding terminal or engine proper as the grounding point to the body when measuring voltage and resistance in the engine compartment.



9) Use TCM mounting stud bolts at the body head grounding point when measuring voltage and resistance inside the passenger compartment.



10) Every MFI-related part is a precision part. Do not drop them.
11) Observe the following cautions when installing a radio in MFI equipped models.

CAUTION:
● The antenna must be kept as far apart as possible from the control unit.
(The ECM is located under the steering column, inside of the instrument panel lower trim panel.)
● The antenna feeder must be placed as far apart as possible from the ECM and MFI harness.
● Carefully adjust the antenna for correct matching.
● When mounting a large power type radio, pay special attention to the three items above mentioned.
● Incorrect installation of the radio may affect the operation of the ECM.

12) Before disconnecting the fuel hose, disconnect the fuel pump connector and crank the engine for more than five seconds to release pressure in the fuel system. If engine starts during this operation, run it until it stops.
13) Problems in the electronic-controlled automatic transmission may be caused by failure of the engine, the electronic control system, the transmission proper, or by a combination of these. These three causes must be distinguished clearly when performing diagnostics.
14) Diagnostics should be conducted by rotating with simple, easy operations and proceeding to complicated, difficult operations. The most important thing in diagnostics is to understand the customer's complaint, and distinguish between the three causes.
15) In AT vehicles, do not continue the stall for more than five seconds at a time (from closed throttle, fully open throttle to stall engine speed).
16) On ABS vehicle, when performing driving test in jacked-up or lifted-up position, sometimes the warning light may be lit, but this is not a malfunction of the system. The reason for this is the speed difference between the front and rear wheels. After diagnosis of engine control system, perform the ABS memory clearance procedure of self-diagnosis system.

C: PRE-INSPECTION

Before performing diagnostics, check the following items which might affect engine problems:

1. POWER SUPPLY

1) Measure battery voltage and specific gravity of electrolyte.

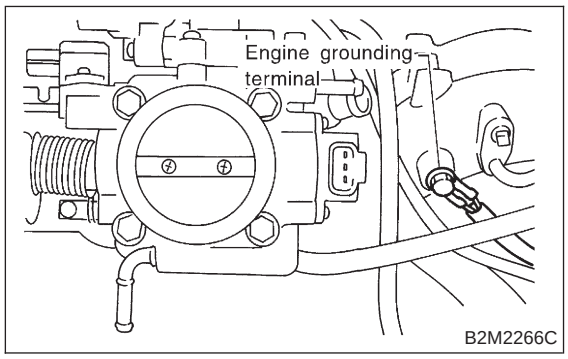
Standard voltage: 12 V

Specific gravity: Above 1.260

2) Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

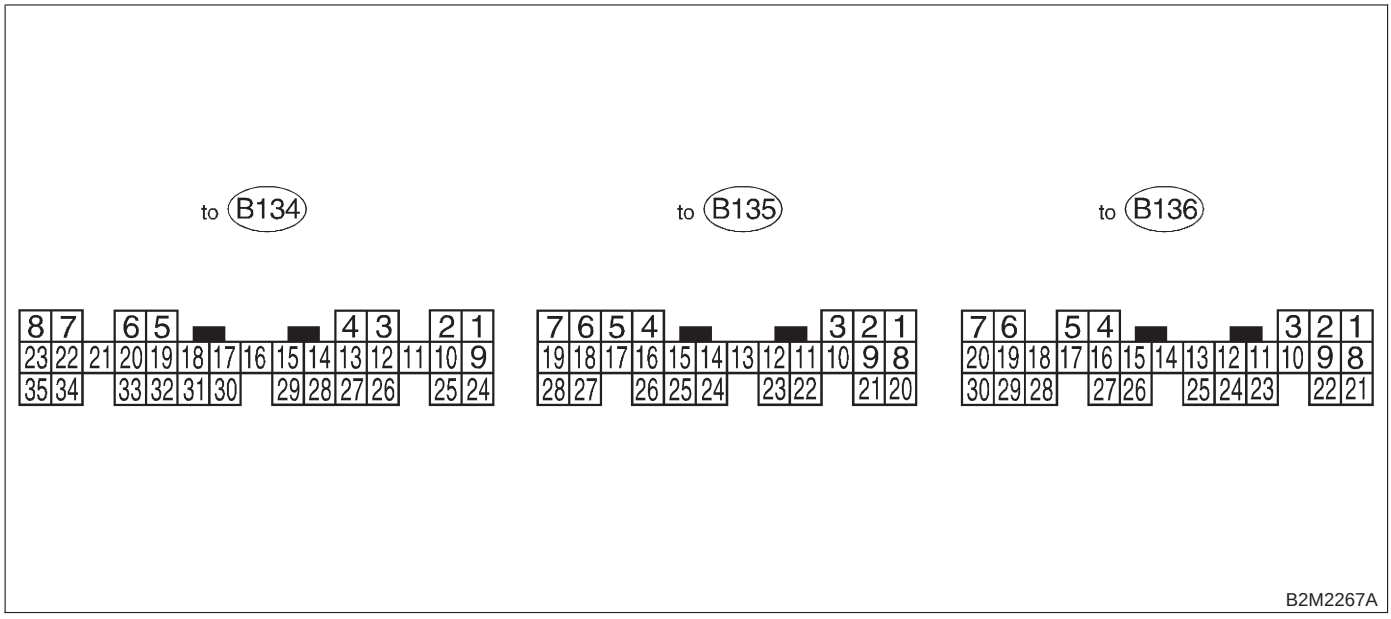
2. ENGINE GROUNDING

Make sure the engine grounding terminal is properly connected to the engine.



5. Specified Data

A: ENGINE CONTROL MODULE (ECM) I/O SIGNAL FOR 2200 cc CALIFORNIA SPEC. VEHICLES

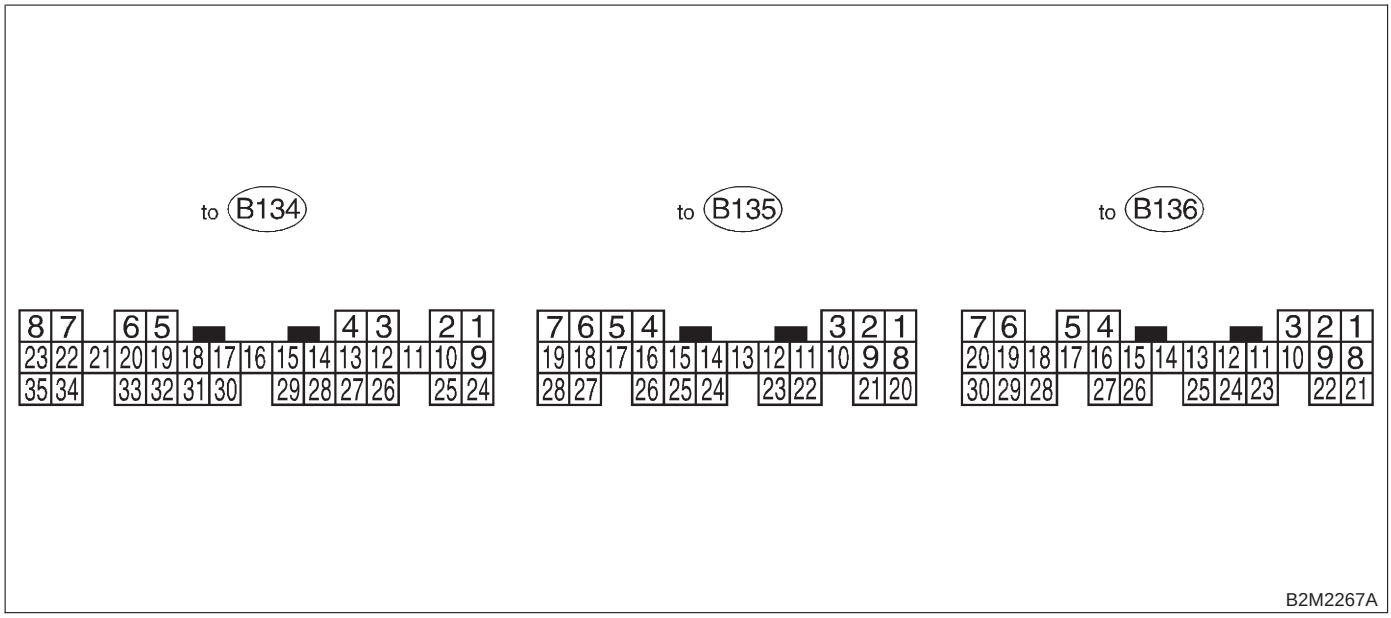


Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Crankshaft position sensor	Signal (+)	B135	1	0	−7 — +7	Sensor output waveform
	Signal (−)	B135	8	0	0	—
	Shield	B135	10	0	0	—
Camshaft position sensor	Signal (+)	B135	2	0	−7 — +7	Sensor output waveform
	Signal (−)	B135	9	0	0	—
	Shield	B135	10	0	0	—
Throttle position sensor	Signal	B136	17	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—
	Power supply	B136	15	5	5	—
	GND (sensor)	B136	16	0	0	—
Rear oxygen sensor	Signal	B136	18	0	0 — 0.9	—
	Shield	B136	24	0	0	—
	GND sensor	B136	16	0	0	—
Front oxygen sensor heater	Signal 1	B134	22	0.5 — 13	0.5 — 14	Waveform
	Signal 2	B134	23	0.5 — 13	0.5 — 14	Waveform
	Power supply monitor	B136	3	10 — 13	13 — 14	—
Rear oxygen sensor heater	Signal	B134	21	0.5 — 13	0.5 — 14	Waveform
	Power supply monitor	B136	3	10 — 13	13 — 14	—

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Engine coolant temperature sensor	Signal	B136	14	1.0 — 1.4	1.0 — 1.4	After warm-up the engine.
	GND (sensor)	B136	16	0	0	After warm-up the engine.
Vehicle speed signal		B135	24	0 or 5	0 or 5	“5” and “0” are repeatedly displayed when vehicle is driven.
Starter switch		B135	28	0	0	Cranking: 8 — 14
A/C switch		B135	27	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—
Ignition switch		B135	7	10 — 13	13 — 14	—
Neutral position switch (MT)		B135	26	ON: 5.0±0.5 OFF: 0		On MT vehicle; switch is ON when gear is in neutral position.
Neutral position switch (AT)		B135	26	ON: 0 OFF: 5.0±0.5		On AT vehicle; switch is ON when shift is in “N” or “P” position.
Test mode connector		B135	14	5	5	When connected: 0
Knock sensor	Signal	B136	4	2.5	2.5	—
	Shield	B136	25	0	0	—
Back-up power supply		B136	9	10 — 13	13 — 14	Ignition switch “OFF”: 10 — 13
Control unit power supply		B136	1	10 — 13	13 — 14	—
		B136	2	10 — 13	13 — 14	—
Sensor power supply		B136	15	5	5	—
Line end check 1		B135	20	0	0	—
Ignition control	#1, #2	B134	25	0	1 — 3.4	Waveform
	#3, #4	B134	26	0	1 — 3.4	Waveform
Fuel injector	#1	B134	4	10 — 13	1 — 14	Waveform
	#2	B134	13	10 — 13	1 — 14	Waveform
	#3	B134	14	10 — 13	1 — 14	Waveform
	#4	B134	15	10 — 13	1 — 14	Waveform
Idle air control solenoid valve	Signal	B134	5	—	1 — 13	Waveform
	Power supply	B136	2	10 — 13	13 — 14	—
	GND (power)	B134	8	0	0	—
Fuel pump relay control		B134	16	ON: 0.5, or less OFF: 10 — 13	0.5, or less	—
A/C relay control		B134	17	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 1 control		B134	3	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 2 control		B134	2	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	With A/C vehicles only
Self-shutoff control		B135	19	10 — 13	13 — 14	—
Malfunction indicator lamp		B134	11	—	—	Light “ON”: 1, or less Light “OFF”: 10 — 14
Engine speed output		B134	30	—	0 — 13, or more	Waveform
Torque control 1 signal		B135	16	5	5	—
Torque control 2 signal		B135	17	5	5	—
Torque control cut signal		B134	31	8	8	—

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Intake manifold pressure signal for AT		B136	11	3.5 — 3.8	1.2 — 1.8	—
Purge control solenoid valve		B134	2	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Power steering switch		B135	13	10 — 13	ON: 0 OFF: 13 — 14	Switch is ON when turning steering wheel.
Intake manifold pressure sensor	Signal	B136	5	3.5 — 3.8	1.2 — 1.8	—
	Power supply	B136	15	5	5	—
	GND (sensor)	B136	16	0	0	—
Fuel temperature sensor		B136	26	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (75°F)
Fuel level sensor		B136	27	0.12 — 4.75	0.12 — 4.75	—
Fuel tank pressure sensor	Signal	B136	12	2.3 — 2.7	2.3 — 2.7	The value obtained after the fuel filler cap was removed once and recapped.
	Power supply	B136	15	5	5	—
	GND (sensor)	B136	16	0	0	—
Fuel tank pressure control solenoid valve		B134	1	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Drain valve		B134	10	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
AT diagnosis input signal		B135	4	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	Waveform
Intake air temperature sensor		B136	13	3.0 — 3.4	3.0 — 3.4	Intake air temperature: 25°C (75°F)
Line end check 2		B135	21	5	5	—
GND (sensors)		B136	16	0	0	—
GND (injectors)		B134	7	0	0	—
GND (ignition system)		B134	27	0	0	—
GND (power supply)		B134	8	0	0	—
GND (control systems)		B136	21	0	0	—
		B136	22	0	0	—
GND (oxygen sensor heater 1)		B134	35	0	0	—
GND (oxygen sensor heater 2)		B134	34	0	0	—

B: ENGINE CONTROL MODULE (ECM) I/O SIGNAL FOR EXCEPT 2200 cc CALIFORNIA SPEC. VEHICLES



Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Crankshaft position sensor	Signal (+)	B135	1	0	−7 — +7	Sensor output waveform
	Signal (−)	B135	8	0	0	—
	Shield	B135	10	0	0	—
Camshaft position sensor	Signal (+)	B135	2	0	−7 — +7	Sensor output waveform
	Signal (−)	B135	9	0	0	—
	Shield	B135	10	0	0	—
Mass air flow sensor	Signal	B136	5	0 — 0.3	0.8 — 1.2	—
	Power supply	B136	15	5	5	—
	Shield	B136	25	0	0	—
	GND	B136	8	0	0	—
Throttle position sensor	Signal	B136	17	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—
	Power supply	B136	15	5	5	—
	GND (sensor)	B136	16	0	0	—
Front oxygen sensor	Signal (+)	B136	7	0	0 — 0.9	—
	Signal (–)	B136	20	0		—
	Shield	B136	23	0	0	—
Rear oxygen sensor	Signal	B136	18	0	0 — 0.9	—
	Shield	B136	24	0	0	—
	GND (sensor)	B136	16	0	0	—
Front oxygen sensor heater	Signal 1	B134	22	0 — 1.0	0 — 1.0	—
	Signal 2	B134	23	0 — 1.0	0 — 1.0	—
Rear oxygen sensor heater signal		B134	21	0 — 1.0	0 — 1.0	—

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Engine coolant temperature sensor	Signal	B136	14	1.0 — 1.4	1.0 — 1.4	After warm-up the engine.
	GND (sensor)	B136	16	0	0	After warm-up the engine.
Vehicle speed signal		B135	24	0 or 5	0 or 5	“5” and “0” are repeatedly displayed when vehicle is driven.
Starter switch		B135	28	0	0	Cranking: 8 — 14
A/C switch		B135	27	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—
Ignition switch		B135	7	10 — 13	13 — 14	—
Neutral position switch (MT)		B135	26	ON: 5.0±0.5 OFF: 0		On MT vehicle; switch is ON when gear is in neutral position.
Neutral position switch (AT)		B135	26	ON: 0 OFF: 5.0±0.5		On AT vehicle; switch is ON when shift is in “N” or “P” position.
Test mode connector		B135	14	5	5	When connected: 0
Knock sensor	Signal	B136	4	2.8	2.8	—
	Shield	B136	25	0	0	—
AT/MT identification		B135	25	AT: 5 MT: 0	AT: 5 MT: 0	When measuring voltage between ECM and chassis ground.
Back-up power supply		B136	9	10 — 13	13 — 14	Ignition switch “OFF”: 10 — 13
Control unit power supply		B136	1	10 — 13	13 — 14	—
		B136	2	10 — 13	13 — 14	—
Sensor power supply		B136	15	5	5	—
Line end check 1		B135	20	0	0	—
Ignition control	#1, #2	B134	25	0	1 — 3.4	Waveform
	#3, #4	B134	26	0	1 — 3.4	Waveform
Fuel injector	#1	B134	4	10 — 13	1 — 14	Waveform
	#2	B134	13	10 — 13	1 — 14	Waveform
	#3	B134	14	10 — 13	1 — 14	Waveform
	#4	B134	15	10 — 13	1 — 14	Waveform
Idle air control solenoid valve	Signal 1	B134	5	—	1 — 13	Waveform
	Signal 2	B134	6	—	1 — 13	Waveform
	Signal 3	B134	19	—	1 — 13	Waveform
	Signal 4	B134	20	—	1 — 13	Waveform
	Power supply	B136	2	10 — 13	13 — 14	—
Fuel pump relay control		B134	16	ON: 0.5, or less OFF: 10 — 13	0.5, or less	—
A/C relay control		B134	17	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 1 control		B134	3	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 2 control		B134	2	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	With A/C vehicles only
Self-shutoff control		B135	19	10 — 13	13 — 14	—
Malfunction indicator lamp		B134	11	—	—	Light “ON”: 1, or less Light “OFF”: 10 — 14
Engine speed output		B134	30	—	0 — 13, or more	Waveform

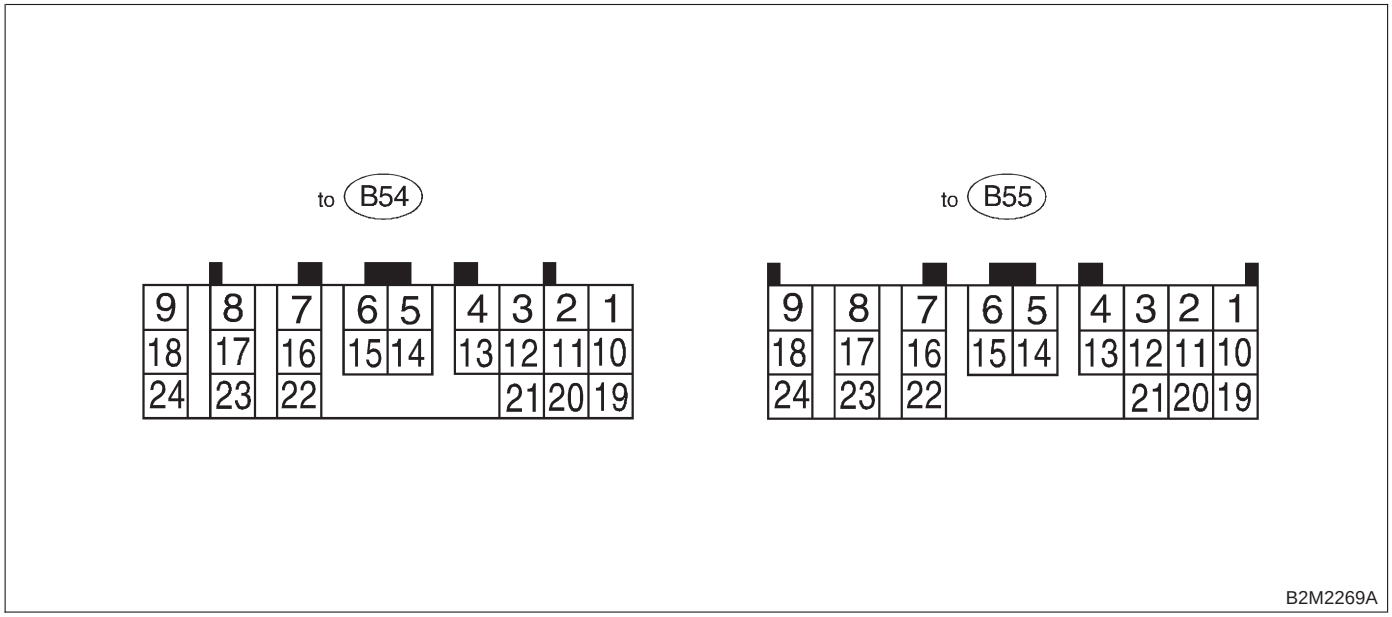
Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Torque control 1 signal		B135	16	5	5	—
Torque control 2 signal		B135	17	5	5	—
Torque control cut signal		B134	31	8	8	—
Mass air flow signal for AT		B136	11	0 — 0.3	0.8 — 1.2	—
Purge control solenoid valve		B134	2	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Power steering switch		B135	13	10 — 13	ON: 0 OFF: 13 — 14	Switch is ON when turning steering wheel.
Atmospheric pressure sensor	Signal	B136	29	3.5 — 3.8	1.2 — 1.8	—
	Power supply	B136	15	5	5	
	GND (sensor)	B136	16	0	0	
Pressure sources switching solenoid valve		B134	9	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Fuel temperature sensor		B136	26	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (75°F)
Fuel level sensor		B136	27	0.12 — 4.75	0.12 — 4.75	—
Fuel tank pressure sensor	Signal	B136	12	2.3 — 2.7	2.3 — 2.7	The value obtained after the fuel filler cap was removed once and recapped.
	Power supply	B136	15	5	5	—
	GND (sensor)	B136	16	0	0	—
Fuel tank pressure control solenoid valve		B134	1	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Drain valve		B134	10	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
AT diagnosis input signal		B135	4	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	Waveform
Line end check 2		B135	21	5	5	—
GND (sensors)		B136	16	0	0	—
GND (injectors)		B134	7	0	0	—
GND (ignition system)		B134	27	0	0	—
GND (power supply)		B134	8	0	0	—
GND (control systems)		B136	21	0	0	—
		B136	22	0	0	—
GND (oxygen sensor heater 1)		B134	35	0	0	—
GND (oxygen sensor heater 2)		B134	34	0	0	—

C: ENGINE CONDITION DATA

Content	Model	Specified data
Mass air flow	2200 cc except California spec. vehicles	1.7 — 3.3 (g/sec): Idling
		7.1 — 14.2 (g/sec): 2,500 rpm racing
	2500 cc	2.2 — 4.2 (g/sec): Idling
		8.6 — 14.2 (g/sec): 2,500 rpm racing
Engine load	2200 cc California spec. vehicles	1.6 — 2.9 (%): Idling
		6.4 — 12.8 (%): 2,500 rpm racing
	2200 cc except California spec. vehicles	1.6 — 2.9 (%): Idling
		6.4 — 12.8 (%): 2,500 rpm racing
	2500 cc	1.9 — 3.5 (%): Idling
		7.2 — 12.1 (%): 2,500 rpm racing

Measuring condition:
- After warm-up the engine.
- Gear position is in “N” or “P” position.
- A/C is turned OFF.
- All accessory switches are turned OFF.

D: TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL



NOTE:
Check with ignition switch ON.

Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)
Back-up power supply		B55	6	Ignition switch OFF	10 — 16
Ignition power supply		B54	23	Ignition switch ON (with engine OFF)	10 — 16
		B54	24		
Inhibitor switch	“P” range switch	B55	23	Selector lever in “P” range	Less than 1
				Selector lever in any other than “P” range	More than 8
	“N” range switch	B55	22	Selector lever in “N” range	Less than 1
				Selector lever in any other than “N” range	More than 8
	“R” range switch	B55	17	Selector lever in “R” range	Less than 1
				Selector lever in any other than “R” range	More than 9.5
	“D” range switch	B55	8	Selector lever in “D” range	Less than 1
				Selector lever in any other than “D” range	More than 9.5
	“3” range switch	B55	18	Selector lever in “3” range	Less than 1
				Selector lever in any other than “3” range	More than 9.5
	“2” range switch	B54	10	Selector lever in “2” range	Less than 1
				Selector lever in any other than “2” range	More than 9.5
	“1” range switch	B54	1	Selector lever in “1” range	Less than 1
				Selector lever in any other than “1” range	More than 9.5
Brake switch		B55	24	Brake pedal depressed	More than 10.5
				Brake pedal released	Less than 1
ABS signal		B54	19	ABS switch ON	Less than 1
				ABS switch OFF	More than 6.5

Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Throttle position sensor	B55	1	Throttle fully closed.	0.3 — 0.7	—
			Throttle fully open.	4.3 — 4.9	
Throttle position sensor power supply	B55	2	Ignition switch ON (with engine OFF)	4.8 — 5.3	—
ATF temperature sensor	B55	11	ATF temperature 20°C (68°F)	2.9 — 4.0	2.1 k — 2.9 k
			ATF temperature 80°C (176°F)	1.0 — 1.4	275 — 375
Vehicle speed sensor 1	B55	3	Vehicle stopped.	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed sensor 2	B55	5	Vehicle speed at most 10 km/h (6 MPH)	Less than 1←→More than 4	—
Torque converter turbine speed sensor	B55	12	Vehicle stopped.	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed output signal	B55	13	Vehicle speed at most 10 km/h (6 MPH)	Less than 1←→More than 4	—
Engine speed signal	B55	4	Ignition switch ON (with engine OFF).	More than 10.5	—
			Ignition switch ON (with engine ON).	8 — 11	
Cruise set signal	B54	11	When cruise control is set (SET lamp ON).	Less than 1	—
			When cruise control is not set (SET lamp OFF).	More than 6.5	
Torque control 1 signal	B54	13	Ignition switch ON (with engine ON)	More than 9	—
Torque control 2 signal	B54	21	Ignition switch ON (with engine ON)	More than 9	—
Torque control cut signal	B54	2	Ignition switch ON	8	—
AT load signal	B55	20	Engine idling after warm-up	1.2 — 1.8*1	—
				0.5 — 1.2*2	
Shift solenoid 1	B54	7	1st or 4th gear	More than 9	10 — 16
			2nd or 3rd gear	Less than 1	
Shift solenoid 2	B54	6	1st or 2nd gear	More than 9	10 — 16
			3rd or 4th gear	Less than 1	
Duty solenoid A	B54	9	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
Dropping resistor	B54	18	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	9 — 15
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
Duty solenoid B	B54	16	When lock up occurs.	More than 8.5	10 — 17
			When lock up is released.	Less than 0.5	
Duty solenoid C (AWD models only)	B54	15	Fuse on FWD switch	More than 8.5	10 — 17
			Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	

Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Duty solenoid D	B54	8	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
2-4 brake duty solenoid resistor	B54	17	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	9 — 15
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
2-4 brake timing solenoid	B54	5	3rd gear	More than 9	10 — 16
			1st gear	Less than 1	
Low clutch timing solenoid	B54	14	2nd gear	Less than 1	10 — 16
			4th gear	More than 9	
Sensor ground line 1	B55	10	—	0	Less than 1
Sensor ground line 2	B55	21	—	0	Less than 1
System ground line	B55	9	—	0	Less than 1
		19			
FWD switch	B55	14	Fuse removed.	6 — 9.1	—
			Fuse installed.	Less than 1	
FWD indicator lamp	B54	12	Fuse on FWD switch	Less than 1	—
			Fuse removed from FWD switch.	More than 9	
Data link signal (Subaru Select Monitor)	B55	7	—	—	—
		16	—	—	
AT diagnosis signal	B54	4	Ignition switch ON	Less than 1 ←→ More than 4	—

6. Basic Diagnostic Procedure

A: BASIC DIAGNOSTIC PROCEDURE FOR ENGINE

6A1 : CHECK ENGINE START FAILURE.

1) Ask the customer when and how the trouble occurred using the interview check list. <Ref. to 2-7 [T6C0].>
2) Start the engine.

CHECK : ***Does the engine start?***
YES : Go to step **6A2**.
NO : Inspection using “Diagnostics for Engine Start Failure”. <Ref. to 2-7 [T800].>

6A2 : CHECK ILLUMINATION OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).

CHECK : ***Does CHECK ENGINE malfunction indicator lamp illuminate?***
YES : Go to step **6A3**.
NO : Inspection using “9. General Diagnostics Table”. <Ref. to 2-7 [T900].>

6A3 : CHECK INDICATION OF DTC ON DISPLAY.

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and the Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Read DTC on the Subaru Select Monitor or OBD-II general scan tool.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC?***
YES : Go to step **6A4**.
NO : Repair the related parts.

NOTE:
If DTC is not shown on display although the MIL illuminates, perform diagnostics of MIL (CHECK ENGINE malfunction indicator lamp) circuit or combination meter. <Ref. to 2-7 [T800].>

6A4 : PERFORM THE DIAGNOSIS.

1) Inspect using “Diagnostics Chart with Trouble Code (DTC)”.

NOTE:
● 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
● Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>

NOTE:
Carry out the basic check, only when DTC about automatic transmission is shown on display. <Ref. to 2-7 [T6B0].>

2) Repair the trouble cause.
3) Perform the clear memory mode. <Ref. to 2-7 [T3D0].>
4) Perform the inspection mode. <Ref. to 2-7 [T3E0].>

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC?***
YES : Inspect using “Diagnostics Chart with Trouble Code (DTC)”.

NOTE:
● 2200 cc California spec. vehicles: <Ref. to 2-7 [T10A0].>
● Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].>

NO : Complete the diagnosis.

B: BASIC CHECK ITEMS FOR AT

When trouble code about automatic transmission is shown on display, carry out the following basic check. After that, carry out the replacement or repair work.
1) ATF level check <Ref. to 3-2 [W1B1].>
2) Differential gear oil level check <Ref. to 3-2 [W1B2].>
3) ATF leak check <Ref. to 3-2 [W1B3].>
4) Differential gear oil leak check <Ref. to 3-2 [W1B3].>
5) Stall test <Ref. to 3-2 [W7A0].>
6) Line pressure test <Ref. to 3-2 [W9A0].>
7) Transfer clutch pressure test <Ref. to 3-2 [W10A0].>
8) Time lag test <Ref. to 3-2 [W8A0].>
9) Road test <Ref. to 3-2 [W6A0].>
10) Shift characteristics <Ref. to 3-2 [W6A0].>

C: CHECK LIST FOR INTERVIEW

1. CHECK LIST NO. 1

Check the following items when problem has occurred.

NOTE:
Use copies of this page for interviewing customers.

Customer's name		Engine no.	
Date of sale		Fuel brand	
Date of repair		Odometer reading	km
Vin no.			miles
Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others:		
Outdoor temperature	°F (°C)		
	☐ Hot ☐ Warm ☐ Cool ☐ Cold		
Place	☐ Highway ☐ Suburbs ☐ Inner city ☐ Uphill ☐ Downhill ☐ Rough road ☐ Others:		
Engine temperature	☐ Cold ☐ Warming-up ☐ After warming-up ☐ Any temperature ☐ Others:		
Engine speed	rpm		
Vehicle speed	MPH		
Driving conditions	☐ Not affected ☐ At starting ☐ While idling ☐ At racing ☐ While accelerating ☐ While cruising ☐ While decelerating ☐ While turning (RH/LH)		
Headlight	☐ ON/☐ OFF	Rear defogger	☐ ON/☐ OFF
Blower	☐ ON/☐ OFF	Radio	☐ ON/☐ OFF
A/C compressor	☐ ON/☐ OFF	CD/Cassette	☐ ON/☐ OFF
Cooling fan	☐ ON/☐ OFF	Car phone	☐ ON/☐ OFF
Front wiper	☐ ON/☐ OFF	CB	☐ ON/☐ OFF
Rear wiper	☐ ON/☐ OFF		

2. CHECK LIST NO. 2

Check the following items about the vehicle's state when MIL turns on.

NOTE:
Use copies of this page for interviewing customers.

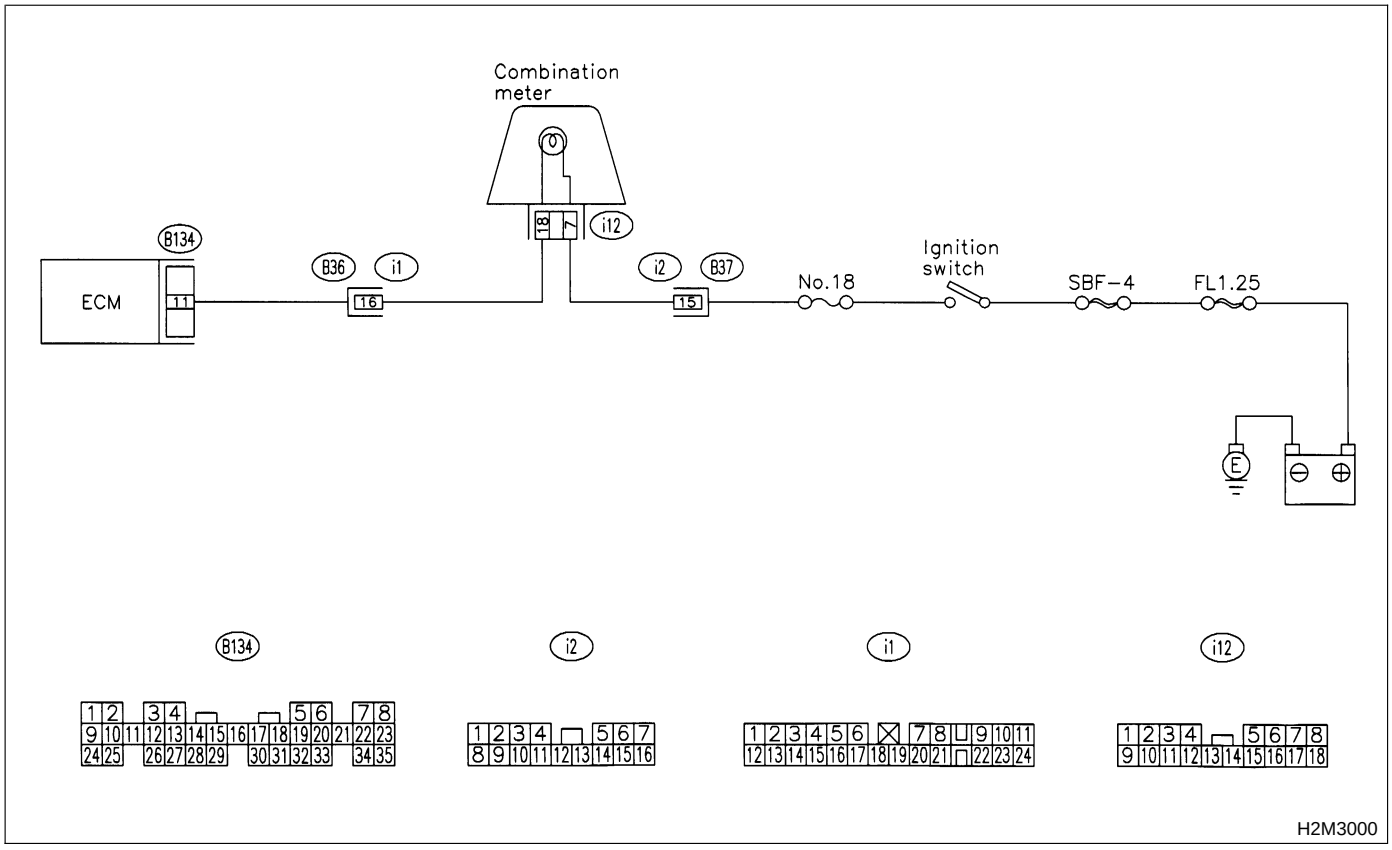
a) Other warning lights or indicators turn on. ☐ Yes/☐ No
☐ Low fuel warning light ☐ Charge indicator light ☐ AT diagnostics indicator light ☐ ABS warning light ☐ TCS warning light ☐ Engine oil pressure warning light
b) Fuel level
• Lack of gasoline: ☐ Yes/☐ No • Indicator position of fuel gauge:
c) Intentional connecting or disconnecting of harness connectors or spark plug cords: ☐ Yes/☐ No
• What:
d) Intentional connecting or disconnecting of hoses: ☐ Yes/☐ No
• What:
e) Installing of parts other than genuine parts: ☐ Yes/☐ No
• What: • Where:
f) Occurrence of noise: ☐ Yes/☐ No
• From where: • What kind:
g) Occurrence of smell: ☐ Yes/☐ No
• From where: • What kind:
h) Intrusion of water into engine compartment or passenger compartment: ☐ Yes/☐ No
i) Troubles occurred
☐ Engine does not start. ☐ Engine stalls during idling. ☐ Engine stalls while driving. ☐ Engine speed decreases. ☐ Engine speed does not decrease. ☐ Rough idling ☐ Poor acceleration ☐ Back fire ☐ After fire ☐ No shift ☐ Excessive shift shock

MEMO:

7. Diagnostics for CHECK ENGINE Malfunction Indicator Lamp (MIL)

A: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL) DOES NOT COME ON.

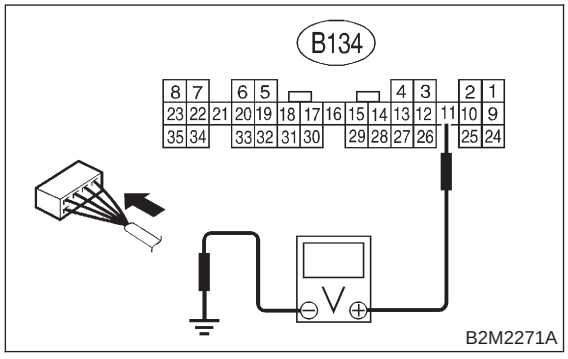
- **DIAGNOSIS:**
  - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.
- **TROUBLE SYMPTOM:**
  - When ignition switch is turned ON (engine OFF), MIL does not come on.
- **WIRING DIAGRAM:**



7A1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 11 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **7A2**.
NO : Go to step **7A4**.

7A2 : CHECK POOR CONTACT.

CHECK : ***Does the MIL come on when shaking or pulling ECM connector and harness?***
YES : Repair poor contact in ECM connector.
NO : Go to step **7A3**.

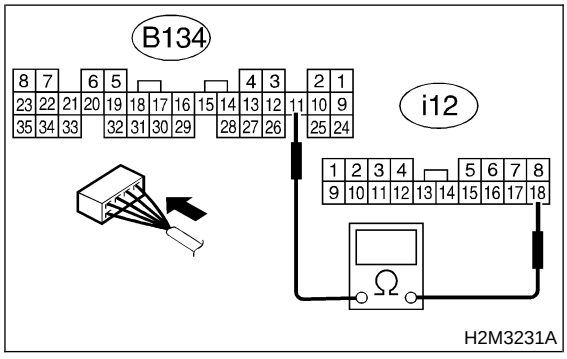
7A3 : CHECK ECM CONNECTOR.

CHECK : ***Is ECM connector correctly connected?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : Repair connection of ECM connector.

7A4 : CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove combination meter. <Ref. to 6-2 [W8A0].>
3) Disconnect connector from ECM and combination meter.
4) Measure resistance of harness between ECM and combination meter connector.

Connector & terminal
(B134) No. 11 — (i12) No. 18:



CHECK : ***Is resistance less than 1 Ω?***
YES : Go to step **7A5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in coupling connector (i1)

7A5 : CHECK POOR CONTACT.

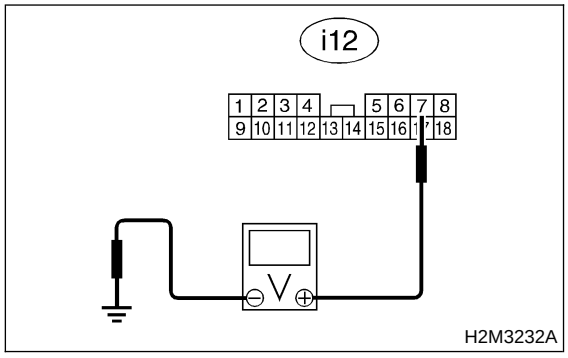
Check poor contact in combination meter connector.
<Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in combination meter connector?***
YES : Repair poor contact in combination meter connector.
NO : Go to step **7A6**.

7A6 : CHECK HARNESS BETWEEN COMBINATION METER AND IGNITION SWITCH CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 7 (+) — Chassis ground (−):



CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7A7**.
NO : Check the following and repair if necessary.

NOTE:
- Blown out fuse (No. 18).
- If replaced fuse (No. 18) is blown easily, check the harness for short circuit of harness between fuse (No. 18) and combination meter connector.
  - Open or short circuit in harness between fuse (No. 18) and combination meter connector
  - Open or short circuit in harness between fuse (No. 18) and ignition switch connector
  - Poor contact in ignition switch connector

7A7 : CHECK POOR CONTACT.

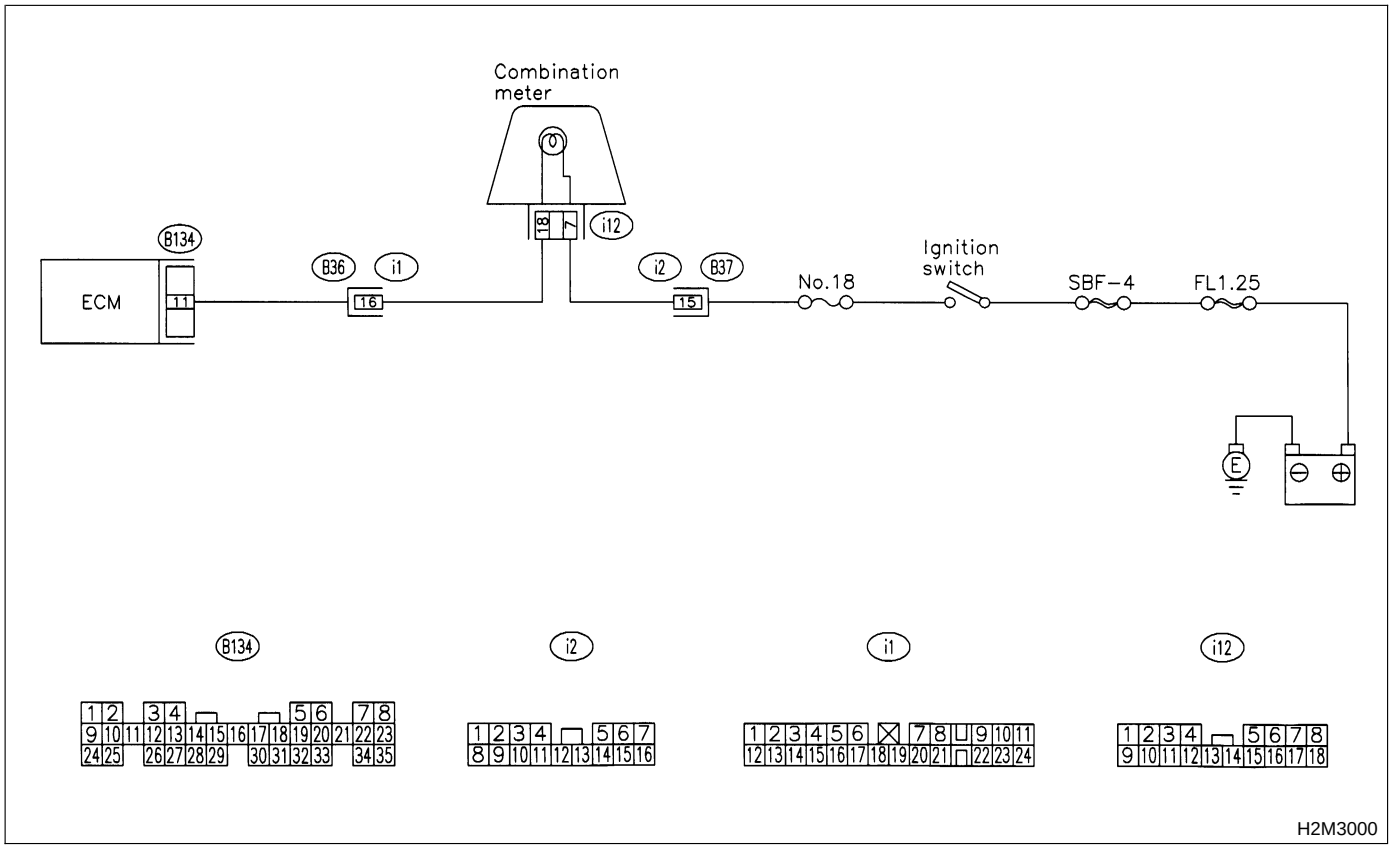
Check poor contact in combination meter connector.
<Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in combination meter connector?***
YES : Repair poor contact in combination meter connector.
NO : Replace bulb or combination meter. <Ref. to 6-2 [W800].>

MEMO:

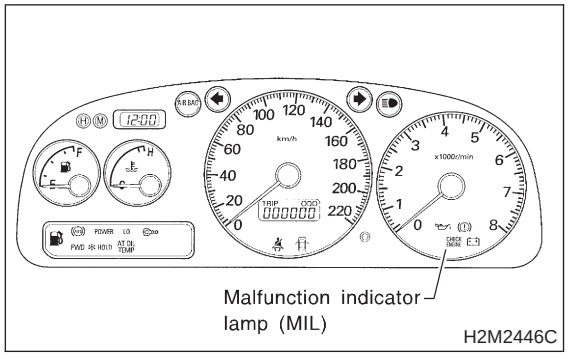
B: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL) DOES NOT GO OFF.

- **DIAGNOSIS:**
  - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is shorted.
- **TROUBLE SYMPTOM:**
  - Although MIL comes on when engine runs, trouble code is not shown on Subaru Select Monitor or OBD-II general scan tool display.
- **WIRING DIAGRAM:**



7B1 : CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Turn ignition switch to ON.



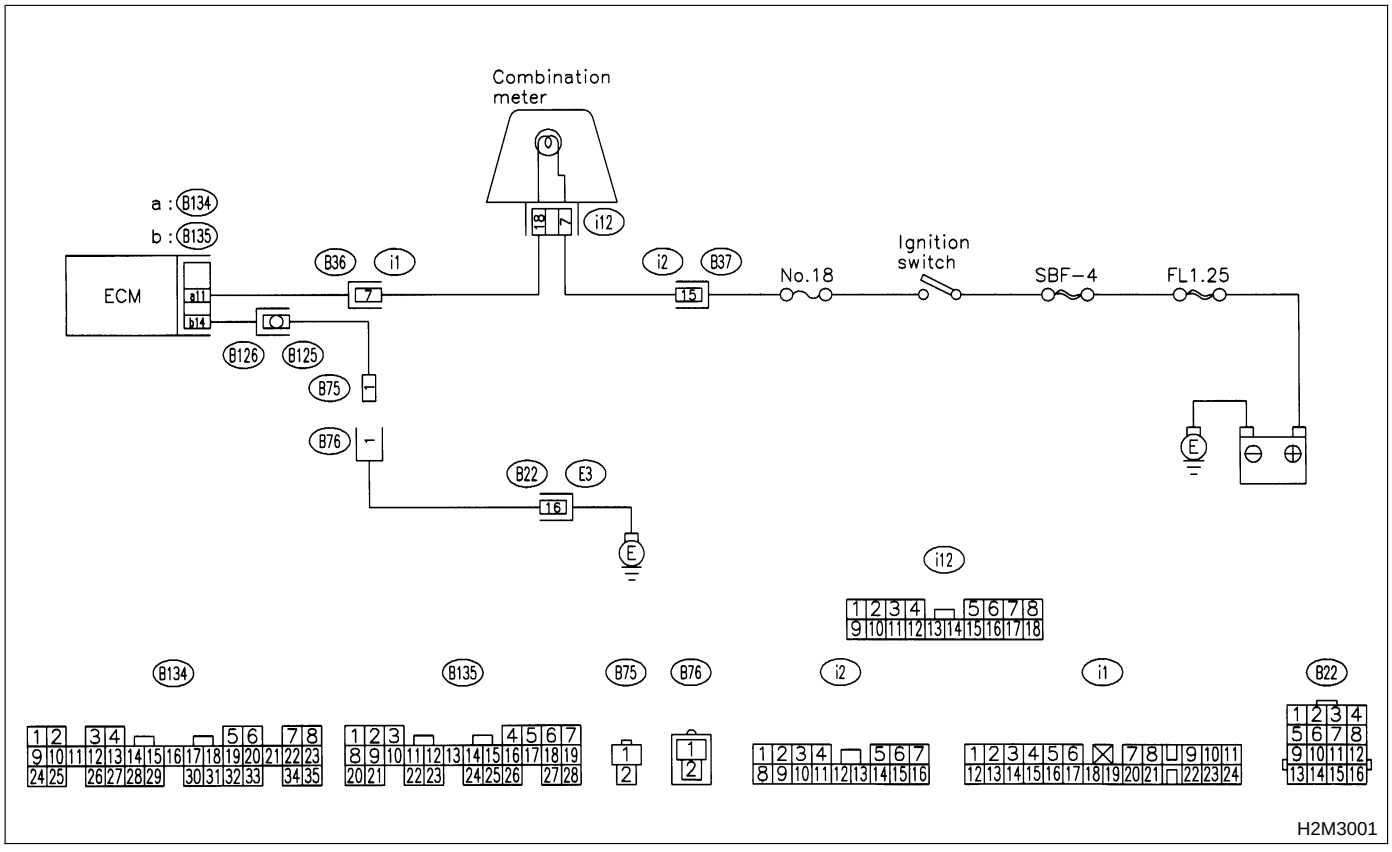
CHECK : ***Does the MIL come on?***

YES : Repair ground short circuit in harness between combination meter and ECM connector.

NO : Replace ECM. <Ref. to 2-7 [W15A0].>

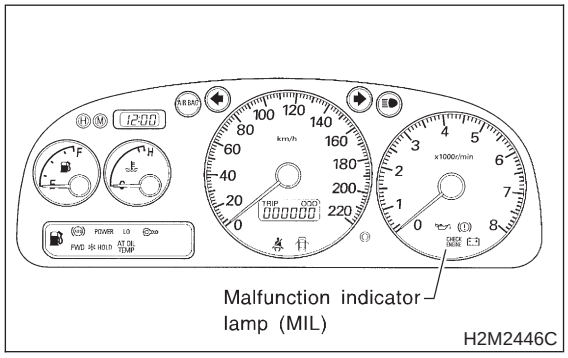
C: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL) DOES NOT BLINK AT A CYCLE OF 3 Hz.

- **DIAGNOSIS:**
  - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.
  - Test mode connector circuit is in open.
- **TROUBLE SYMPTOM:**
  - When inspection mode, MIL does not blink at a cycle of 3 Hz.
- **WIRING DIAGRAM:**



7C1 : CHECK OPERATION OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).

1) Turn ignition switch to OFF.
2) Disconnect test mode connector.
3) Turn ignition switch to ON.

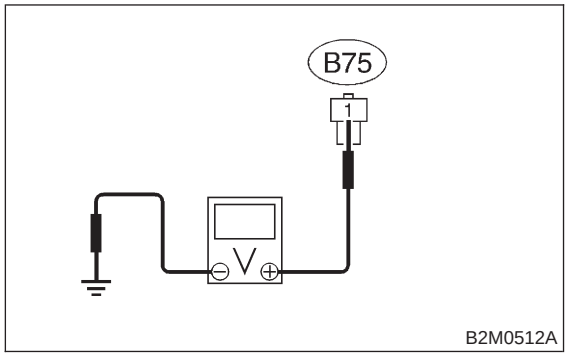


CHECK : ***Does the MIL come on?***
YES : Go to step **7C2**.
NO : Repair the MIL circuit. <Ref. to 2-7 [T7A0].>

7C2 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between test mode connector and chassis ground.

Connector & terminal
(B75) No. 1 (+) — Chassis ground (−):

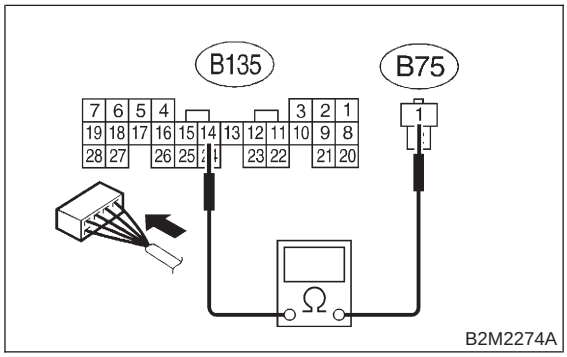


CHECK : ***Is voltage less than 1 V?***
YES : Go to step **7C3**.
NO : Go to step **7C5**.

7C3 : CHECK HARNESS BETWEEN ECM AND TEST MODE CONNECTOR.

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

Connector & terminal
(B135) No. 14 — (B75) No. 1:



CHECK : ***Is resistance less than 1 Ω?***
YES : Go to step **7C4**.
NO : Repair open circuit in harness between ECM and test mode connector.

7C4 : CHECK POOR CONTACT.

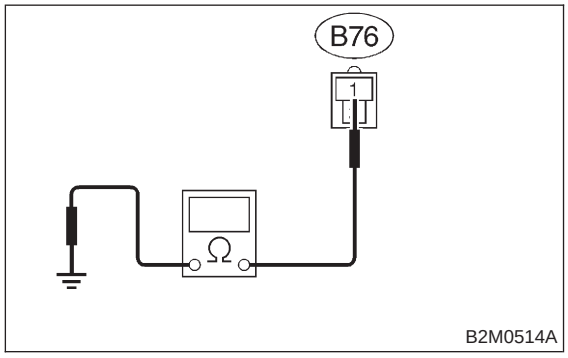
Check poor contact in ECM connector.
<Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

7C5 : CHECK GROUND CIRCUIT.

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

Connector & terminal
(B76) No. 1 — Chassis ground:



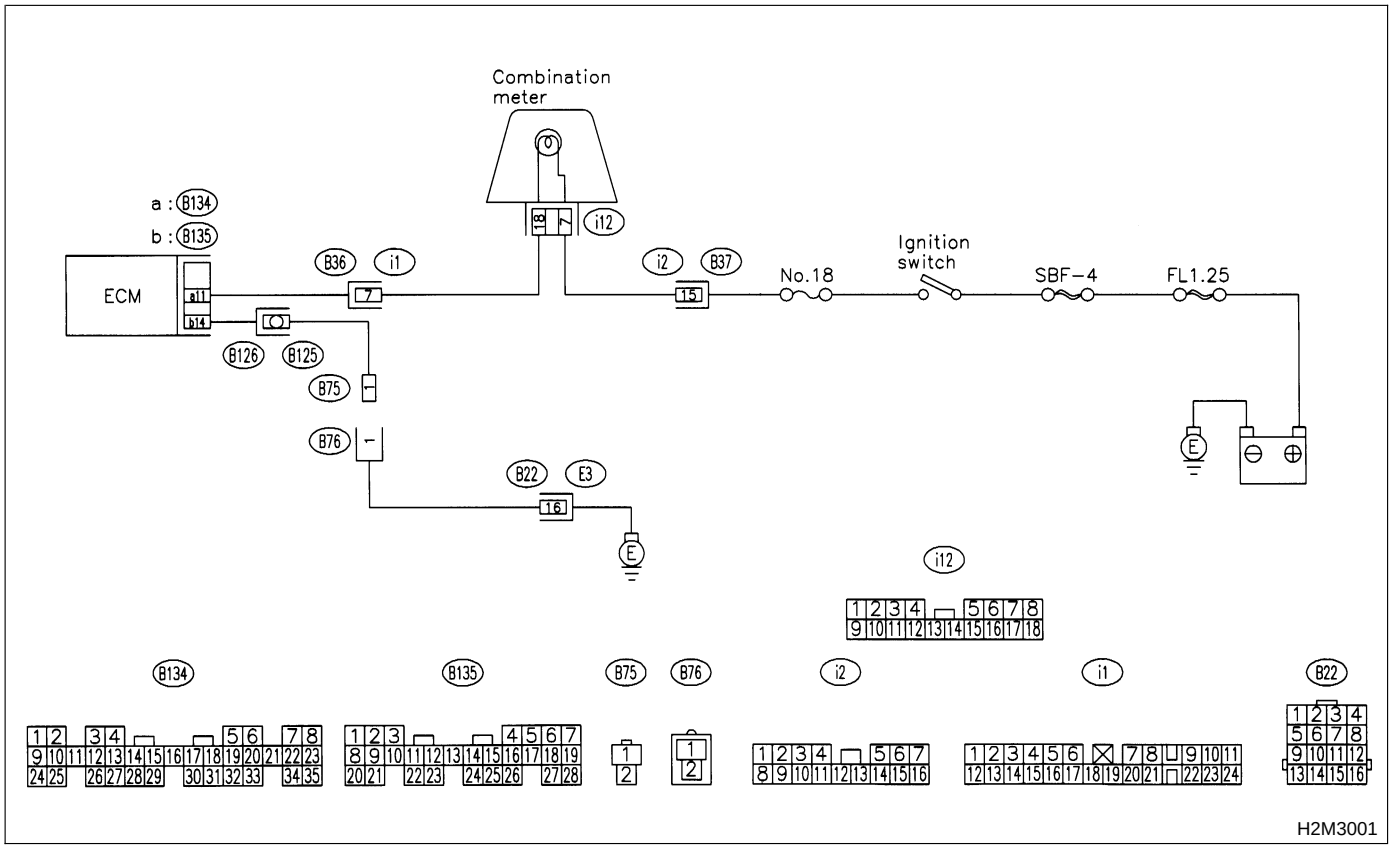
CHECK : ***Is resistance less than 5 Ω?***
YES : Repair poor contact in test mode connector.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between test mode and coupling connector (B22)
- Open circuit in harness between coupling connector (B22) and engine grounding terminal
- Poor contact in coupling connector (B22)

MEMO:

D: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL) REMAINS BLINKING AT A CYCLE OF 3 Hz.

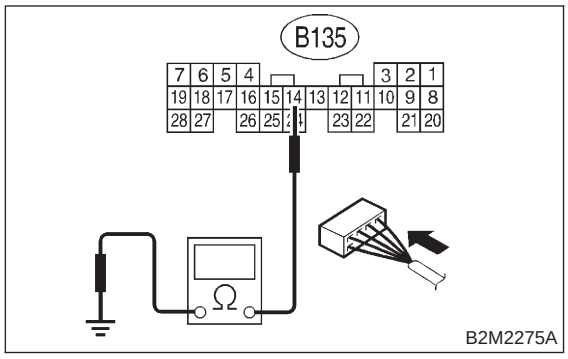
- **DIAGNOSIS:**
  - Test mode connector circuit is shorted.
- **TROUBLE SYMPTOM:**
  - Even though test mode connector is disconnected, MIL blinks at a cycle of 3 Hz when ignition switch is turned to ON.
- **WIRING DIAGRAM:**



7D1 : CHECK HARNESS BETWEEN ECM CONNECTOR AND ENGINE GROUNDING TERMINAL.

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

Connector & terminal
(B135) No. 14 — Chassis ground:



CHECK : ***Is resistance less than 5 Ω?***
YES : Repair short circuit in harness between ECM and test mode connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

MEMO:

8. Diagnostics for Engine Starting Failure

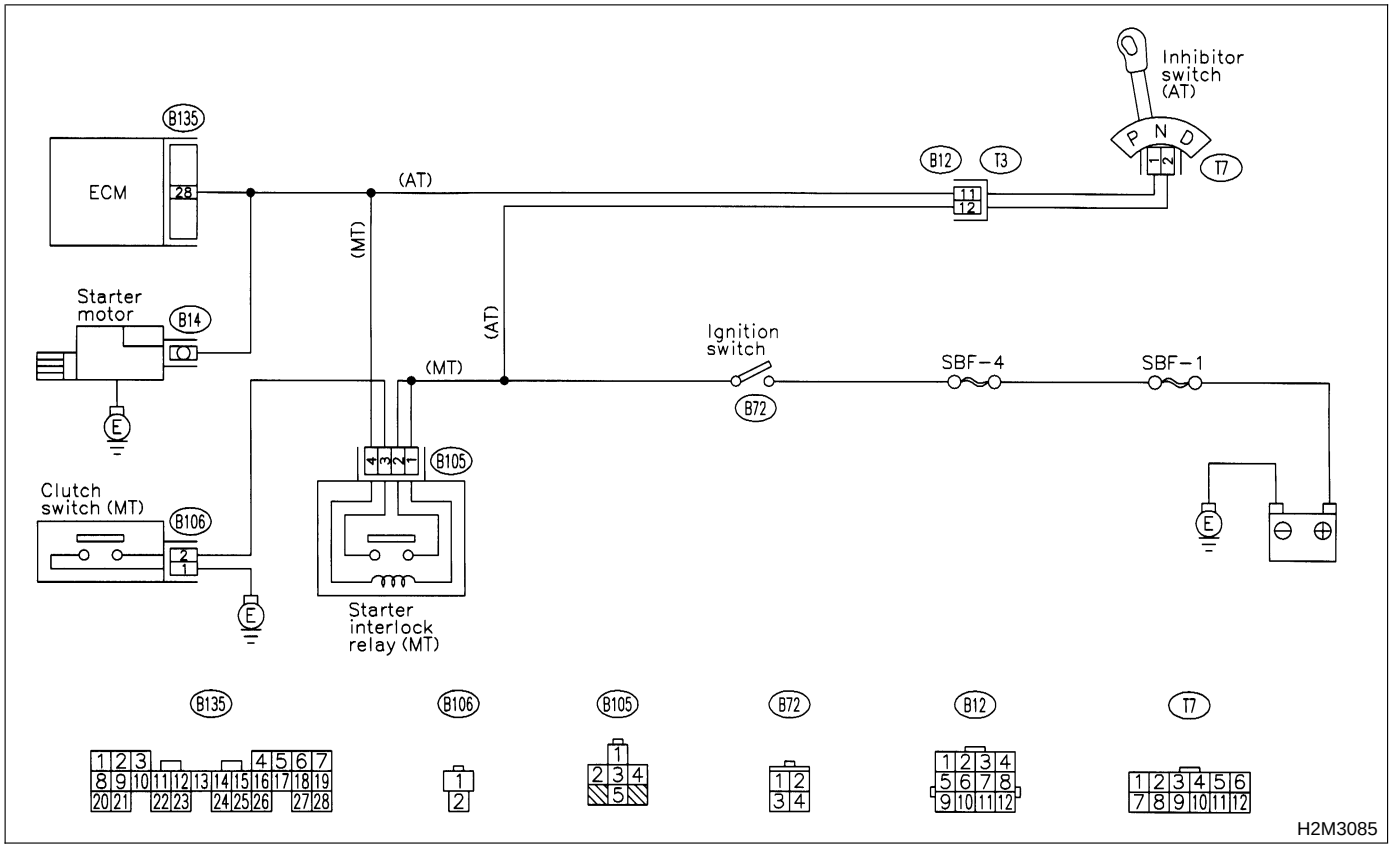
A: BASIC DIAGNOSTICS CHART

1. Inspection of starter motor circuit. <Ref. to 2-7 [T8B0].>
↓
2. Inspection of ECM power supply and ground line. <Ref. to 2-7 [T8C0].>
↓
3. Inspection of ignition control system. <Ref. to 2-7 [T8D0].>
↓
4. Inspection of fuel pump circuit. <Ref. to 2-7 [T8E0].>
↓
5. Inspection of fuel injector circuit. <Ref. to 2-7 [T8F0].>
↓
6. Inspection of crankshaft position sensor circuit. <Ref. to 2-7 [T8G0].> or <Ref. to 2-7 [T8H0].>
↓
7. Inspection of camshaft position sensor circuit. <Ref. to 2-7 [T8I0].>
↓
8. Inspection using Subaru Select Monitor or OBD-II general scan tool (California spec. vehicles: <Ref. to 2-7 [T10A0].>, and except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11A0].> or inspection using “9. General Diagnostics Table”. <Ref. to 2-7 [T900].>

B: STARTER MOTOR CIRCUIT

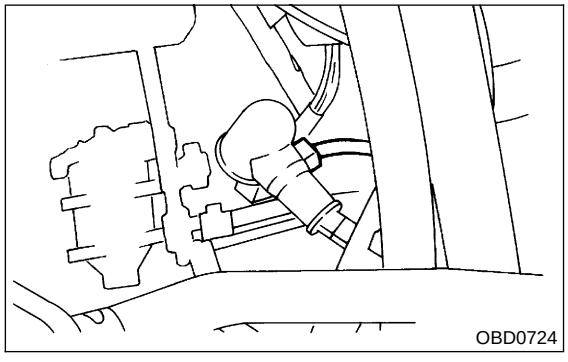
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



8B1 : CHECK INPUT SIGNAL FOR STARTER MOTOR.

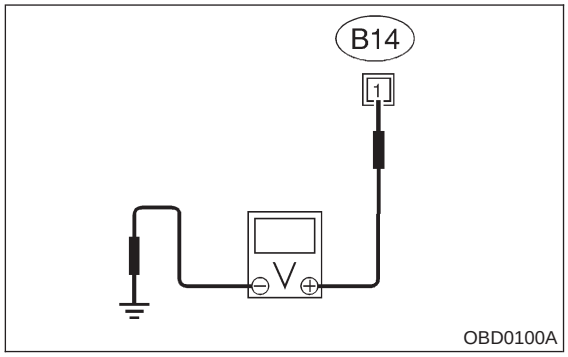
1) Turn ignition switch to OFF.
2) Disconnect connector from starter motor.



3) Turn ignition switch to ST.

4) Measure power supply voltage between starter motor connector terminal and engine ground.

Connector & terminal
(B14) No. 1 (+) — Engine ground (−):



NOTE:
● On AT vehicles, place the selector lever in the "P" or "N" position.
● On MT vehicles, depress the clutch pedal.

CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8B2**.
NO : Go to step **8B3**.

8B2 : CHECK GROUND CIRCUIT OF STARTER MOTOR.

1) Turn ignition switch to OFF.
2) Disconnect terminal from starter motor.

3) Measure resistance of ground cable between ground cable terminal and engine ground.

CHECK : ***Is resistance less than 5 Ω?***
YES : Check starter motor. <Ref. to 6-1 [K100].>
NO : Repair open circuit of ground cable.

8B3 : CHECK HARNESS BETWEEN BATTERY AND IGNITION SWITCH CONNECTOR.

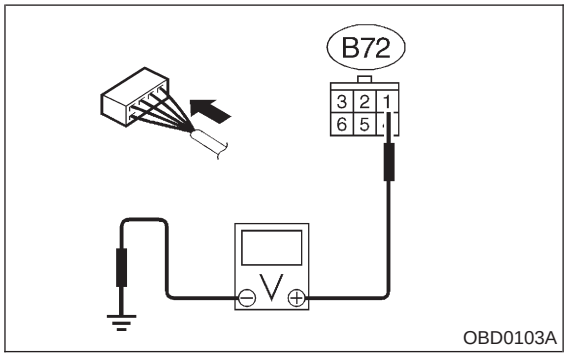
1) Turn ignition switch to OFF.
2) Remove SBF No. 4 from main fuse box.
3) Measure resistance of fuse.

CHECK : ***Is resistance less than 1 Ω?***
YES : Replace SBF No. 4. <Ref. to 6-3 [D5A0].>
NO : Go to step **8B4**.

8B4 : CHECK HARNESS BETWEEN BATTERY AND IGNITION SWITCH CONNECTOR.

1) Install SBF No. 4 to main fuse box.
2) Turn ignition switch to ON.
3) Measure power supply voltage between ignition switch connector and chassis ground.

Connector & terminal
(B72) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8B5**.
NO : Repair open circuit in harness between ignition switch and SBF No. 4 connector.

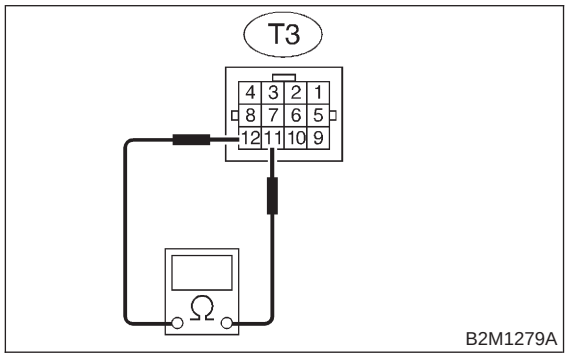
8B5 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **8B6**.
NO : Go to step **8B10**.

8B6 : CHECK INHIBITOR SWITCH CIRCUIT.

1) Turn ignition switch to OFF.
2) Place the selector lever in the “P” or “N” position.
3) Measure resistance between transmission harness connector receptacle’s terminals.

Connector & terminal
(T3) No. 11 — No. 12:

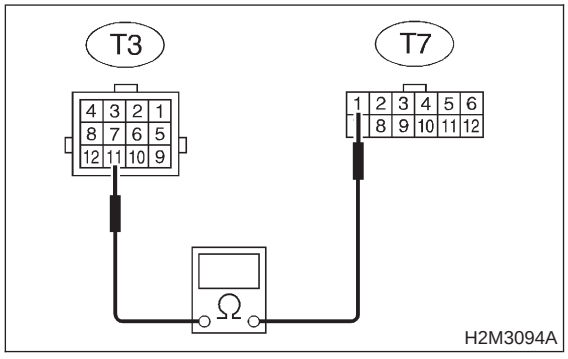


CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair open circuit in harness between starter motor and ignition switch connector.
NO : Go to step **8B7**.

8B7 : CHECK TRANSMISSION HARNESS.

1) Disconnect connector from inhibitor switch.
2) Measure resistance of harness between transmission harness and inhibitor switch connector.

Connector & terminal
(T3) No. 11 — (T7) No. 1:

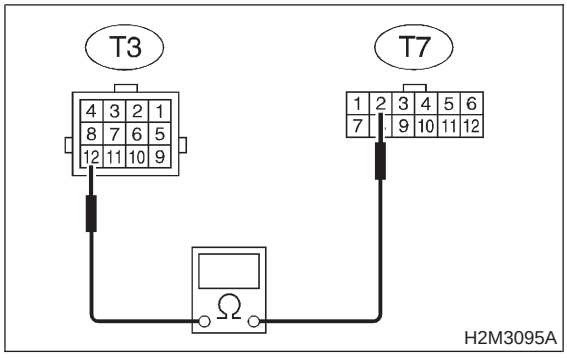


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8B8**.
NO : Repair open circuit in harness between transmission harness and inhibitor switch connector.

8B8 : CHECK TRANSMISSION HARNESS.

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

Connector & terminal
(T3) No. 12 — (T7) No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8B9**.
NO : Repair open circuit in harness between transmission harness and inhibitor switch connector.

8B9 : CHECK POOR CONTACT.

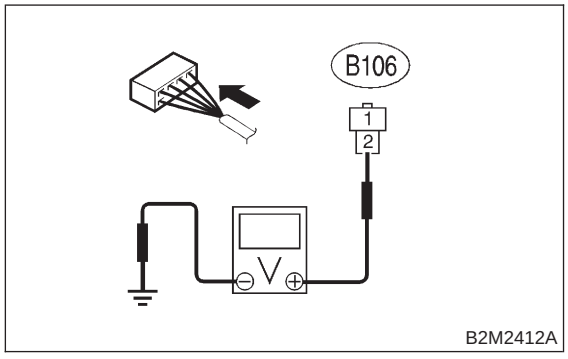
Check poor contact in inhibitor switch connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in inhibitor switch connector?***
YES : Repair poor contact in inhibitor switch connector.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

8B10 : CHECK STARTER INTERLOCK CIRCUIT.

1) Turn ignition switch to “ST”.
2) Measure voltage between clutch switch connector and chassis ground.

Connector & terminal
(B106) No. 2 (+) — Chassis ground (−):

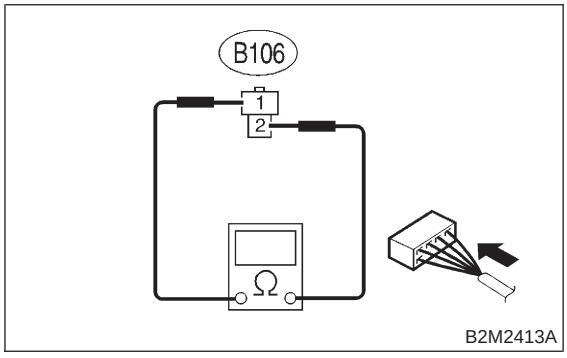


CHECK : ***Is the voltage more than 10 V?***
YES : Replace starter interlock relay. <Ref. to 6-3 [D6D0].>
NO : Go to step **8B11**.

8B11 : CHECK STARTER INTERLOCK CIRCUIT.

1) Turn ignition switch to OFF.
2) Measure resistance between clutch switch connector terminals while depressing the clutch pedal.

Connector & terminal
(B106) No. 1 — No. 2:

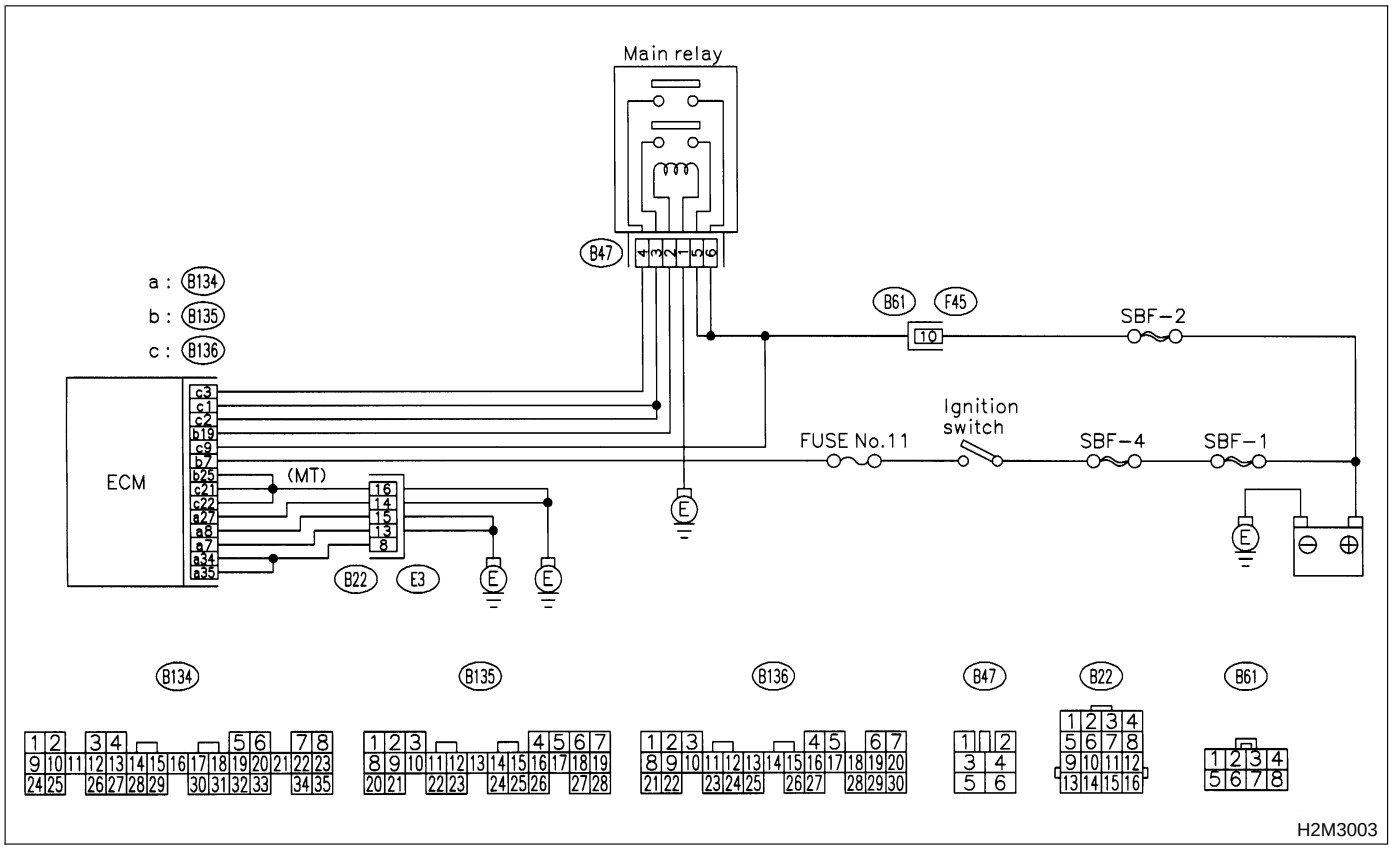


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair open circuit in harness between starter motor and ignition switch connector.
NO : Replace clutch switch. <Ref. to 4-5 [C1A0].>

C: CONTROL MODULE POWER SUPPLY AND GROUND LINE

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

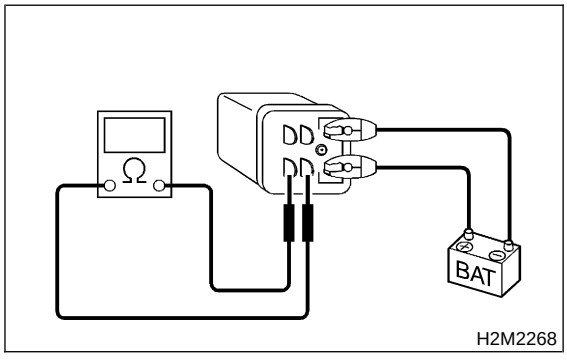
- **WIRING DIAGRAM:**



8C1 : CHECK MAIN RELAY.

1) Turn the ignition switch to OFF.
2) Remove main relay.
3) Connect battery to main relay terminals No. 1 and No. 2.
4) Measure resistance between main relay terminals.

Terminals
No. 3 — No. 5:

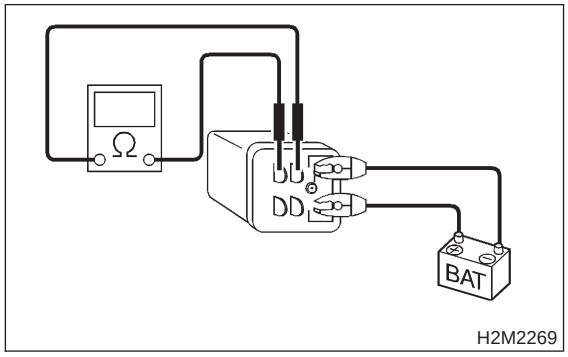


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8C2**.
NO : Replace main relay. <Ref. to 2-7 [W16A0].>

8C2 : CHECK MAIN RELAY.

Measure resistance between main relay terminals.

Terminals
No. 4 — No. 6:

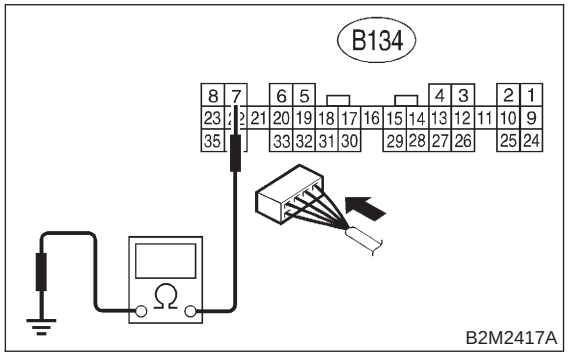


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8C3**.
NO : Replace main relay. <Ref. to 2-7 [W16A0].>

8C3 : CHECK GROUND CIRCUIT OF ECM.

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

Connector & terminal
(B134) No. 7 — Chassis ground:

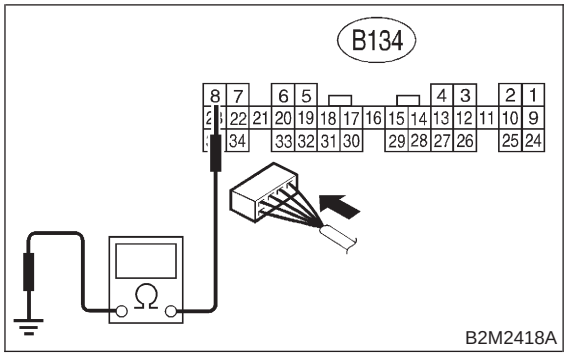


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C4**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C4 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B134) No. 8 — Chassis ground:

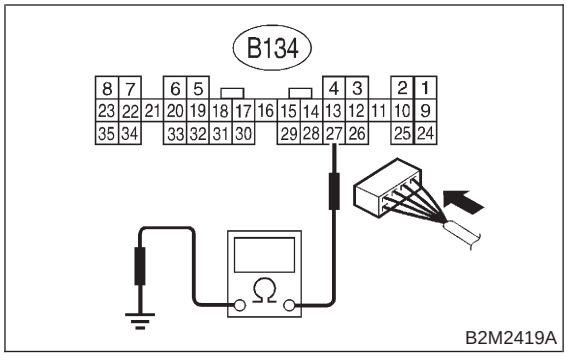


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C5**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C5 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B134) No. 27 — Chassis ground:

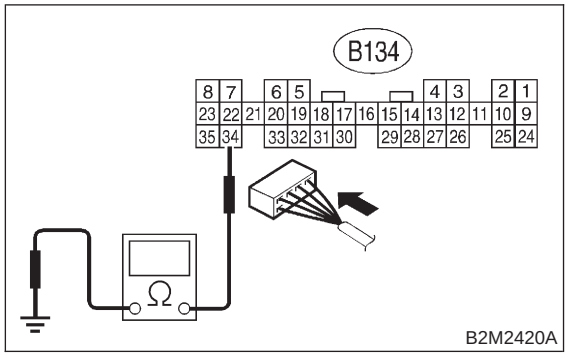


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C6**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C6 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B134) No. 34 — Chassis ground:

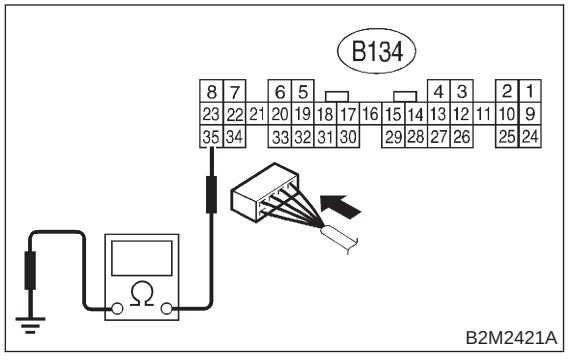


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C7**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C7 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B134) No. 35 — Chassis ground:

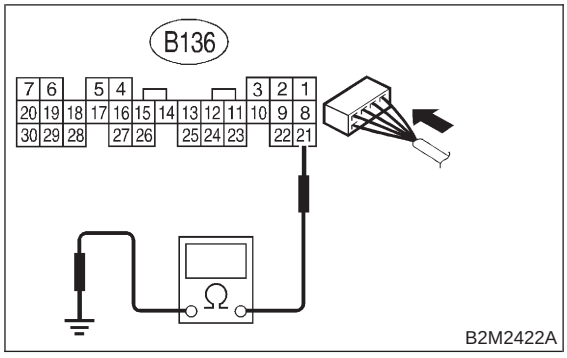


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C8**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C8 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B136) No. 21 — Chassis ground:

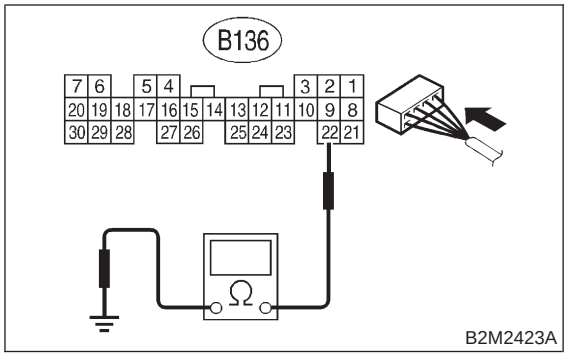


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C9**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C9 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B136) No. 22 — Chassis ground:

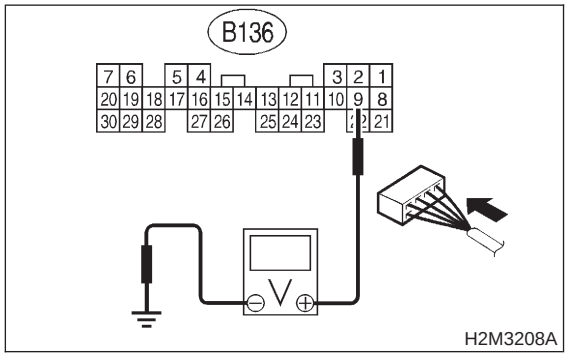


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C10**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C10 : CHECK INPUT VOLTAGE OF ECM.

1) Disconnect connector from ECM.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 9 (+) — Chassis ground (–):

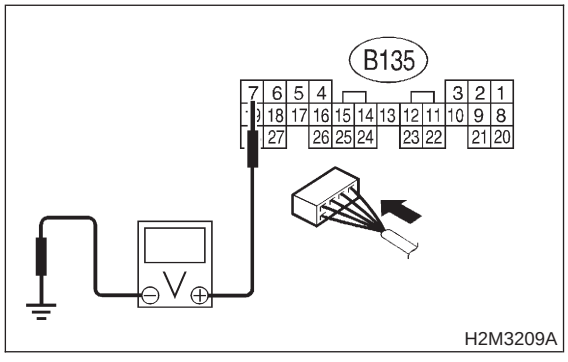


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C11**.
NO : Repair open or ground short circuit of power supply circuit.

8C11 : CHECK INPUT VOLTAGE OF ECM.

1) Ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 7 (+) — Chassis ground (–):

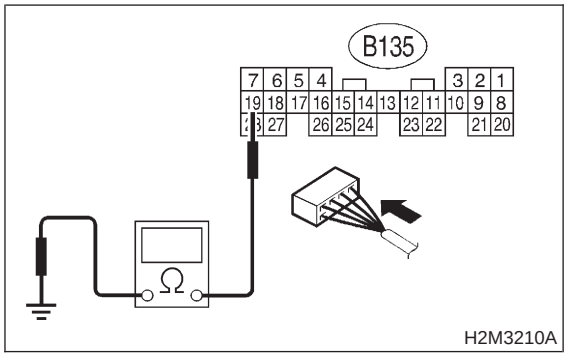


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C12**.
NO : Repair open or ground short circuit of power supply circuit.

8C12 : CHECK HARNESS BETWEEN ECM AND MAIN RELAY CONNECTOR.

1) Ignition switch to OFF.
2) Measure resistance between ECM and chassis ground.

Connector & terminal
(B135) No. 19 — Chassis ground:

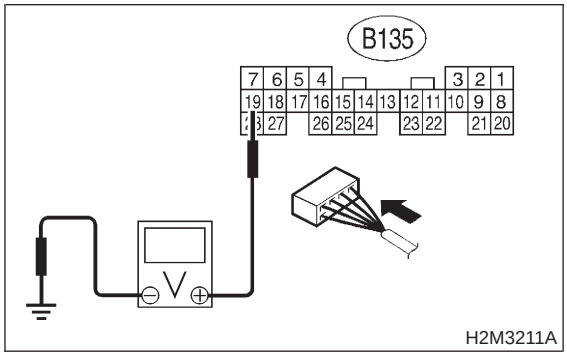


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8C13**.
NO : Repair ground short circuit in harness between ECM connector and main relay connector, then replace ECM.

8C13 : CHECK OUTPUT VOLTAGE FROM ECM.

1) Connect connector to ECM.
2) Ignition switch to ON.
3) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 19 (+) — Chassis ground (–):

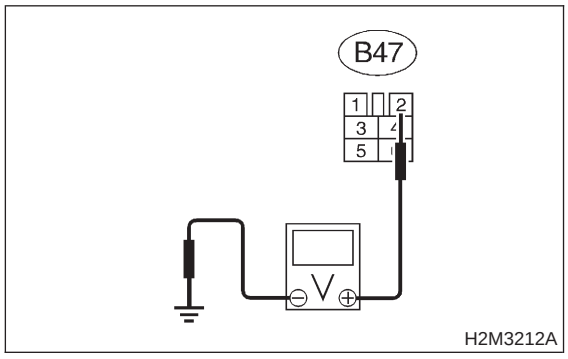


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C14**.
NO : Replace ECM.

8C14 : CHECK INPUT VOLTAGE OF MAIN RELAY.

Check voltage between main relay connector and chassis ground.

Connector & terminal
(B47) No. 2 (+) — Chassis ground (–):

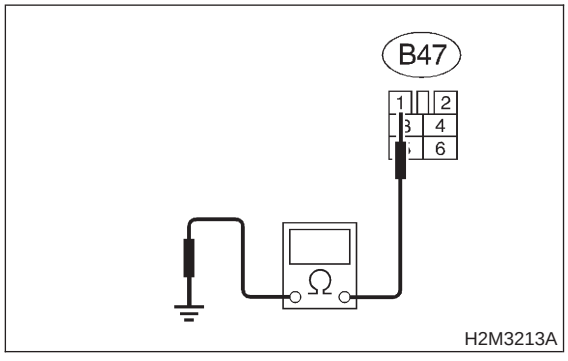


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C15**.
NO : Repair open circuit in harness between ECM connector and main relay connector.

8C15 : CHECK GROUND CIRCUIT OF MAIN RELAY.

1) Ignition switch to OFF.
2) Measure resistance between main relay connector and chassis ground.

Connector & terminal
(B47) No. 1 — Chassis ground:

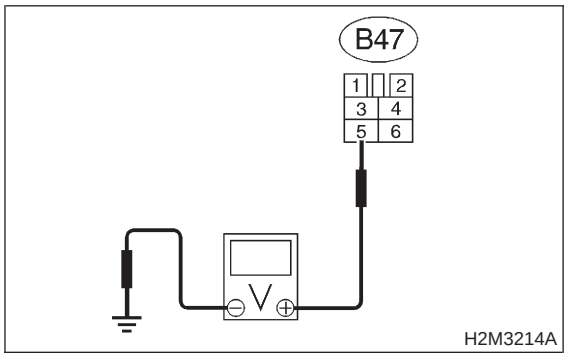


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C16**.
NO : Repair open circuit between main relay and chassis ground.

8C16 : CHECK INPUT VOLTAGE OF MAIN RELAY.

Measure voltage between main relay connector and chassis ground.

Connector & terminal
(B47) No. 5 (+) — Chassis ground (–):

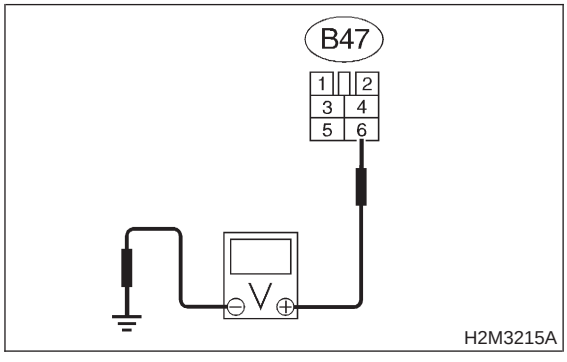


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C17**.
NO : Repair open or ground short circuit in harness of power supply circuit.

8C17 : CHECK INPUT VOLTAGE OF MAIN RELAY.

Measure voltage between main relay connector and chassis ground.

Connector & terminal
(B47) No. 6 (+) — Chassis ground (–):

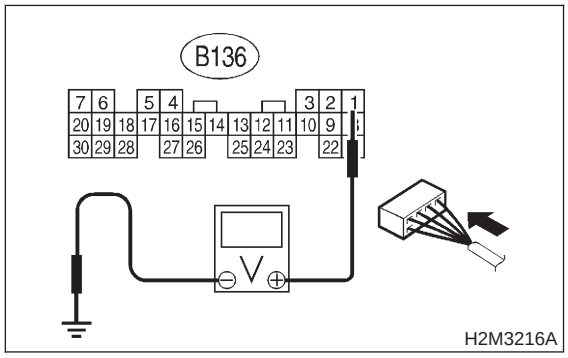


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C18**.
NO : Repair open or ground short circuit in harness of power supply circuit.

8C18 : CHECK INPUT VOLTAGE OF ECM.

1) Connect main relay connector.
2) Ignition switch to ON.
3) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 1 (+) — Chassis ground (–):

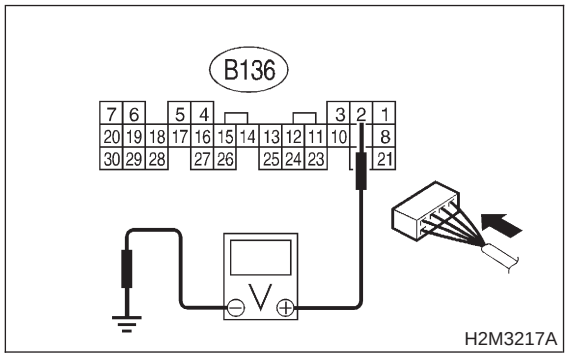


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C19**.
NO : Repair open or ground short circuit in harness between ECM connector and main relay connector.

8C19 : CHECK INPUT VOLTAGE OF ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 2 (+) — Chassis ground (–):

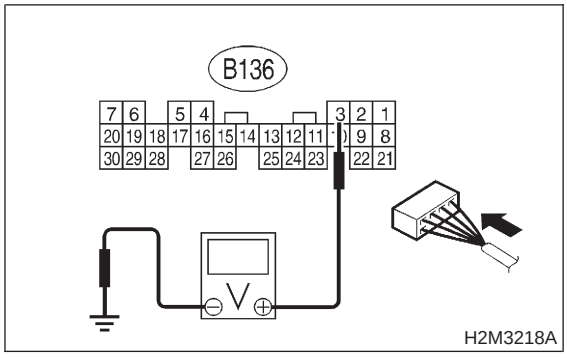


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C20**.
NO : Repair open or ground short circuit in harness between ECM connector and main relay connector.

8C20 : CHECK INPUT VOLTAGE OF ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 3 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C21**.
NO : Repair open or ground short circuit in harness between ECM connector and main relay connector.

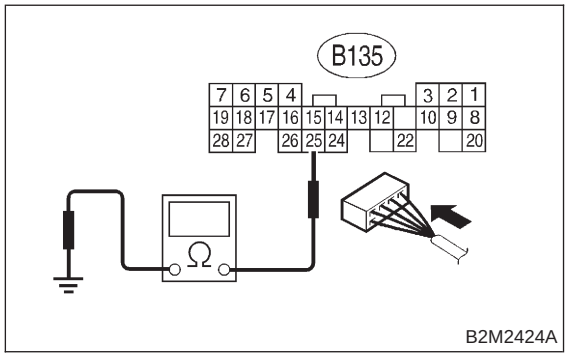
8C21 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Check ignition control system. <Ref. to 2-7 [T8D0].>
NO : Go to step **8C22**.

8C22 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B135) No. 25 — Chassis ground:



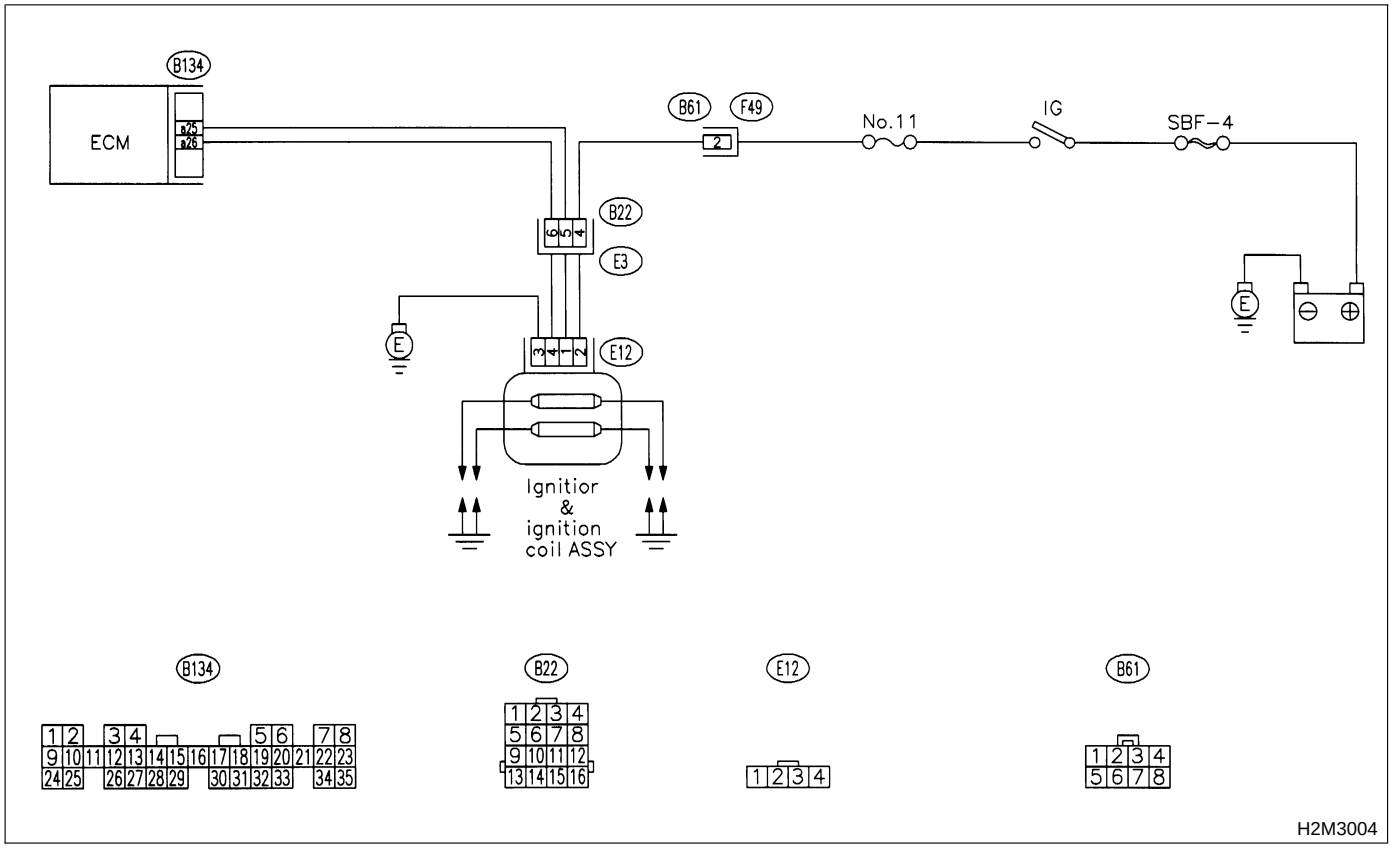
CHECK : ***Is the resistance less than 5 Ω?***
YES : Check ignition control system. <Ref. to 2-7 [T8D0].>
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

MEMO:

D: IGNITION CONTROL SYSTEM

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**

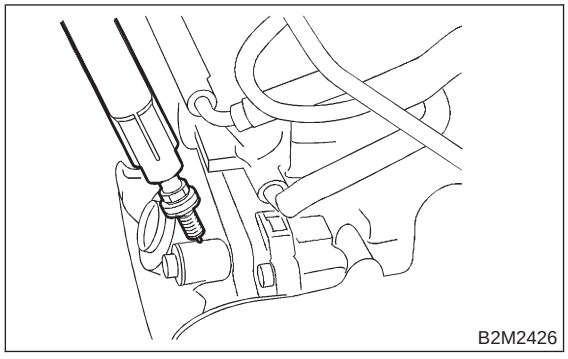


8D1 : CHECK IGNITION SYSTEM FOR SPARKS.

1) Remove plug cord cap from each spark plug.
2) Install new spark plug on plug cord cap.

CAUTION:
Do not remove spark plug from engine.

3) Contact spark plug's thread portion on engine.
4) While opening throttle valve fully, crank engine to check that spark occurs at each cylinder.

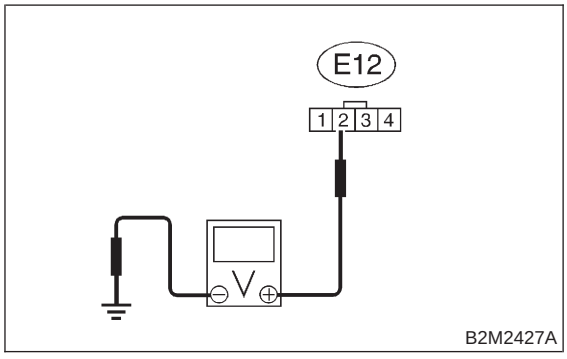


CHECK : ***Does spark occur at each cylinder?***
YES : Check fuel pump system. <Ref. to 2-7 [T8E0].>
NO : Go to step **8D2**.

8D2 : CHECK POWER SUPPLY CIRCUIT FOR IGNITION COIL & IGNITOR ASSEMBLY.

1) Turn ignition switch to OFF.
2) Disconnect connector from ignition coil & ignitor assembly.
3) Turn ignition switch to ON.
4) Measure power supply voltage between ignition coil & ignitor assembly connector and engine ground.

Connector & terminal
(E12) No. 2 (+) — Engine ground (−):



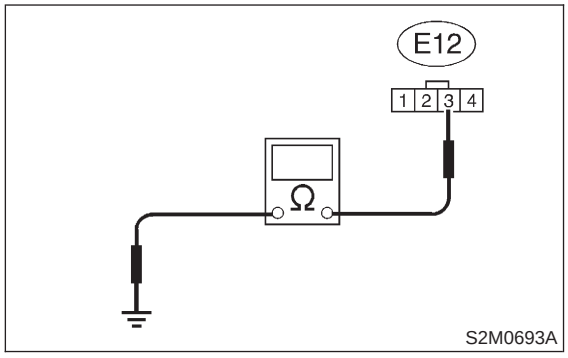
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8D3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ignition coil & ignitor assembly, and ignition switch connector
● Poor contact in coupling connectors (B22) and (F44)

8D3 : CHECK HARNESS OF IGNITION COIL & IGNITOR ASSEMBLY GROUND CIRCUIT.

1) Turn ignition switch to OFF.
2) Measure resistance between ignition coil & ignitor assembly connector and engine ground.

Connector & terminal
(E12) No. 3 — Engine ground:



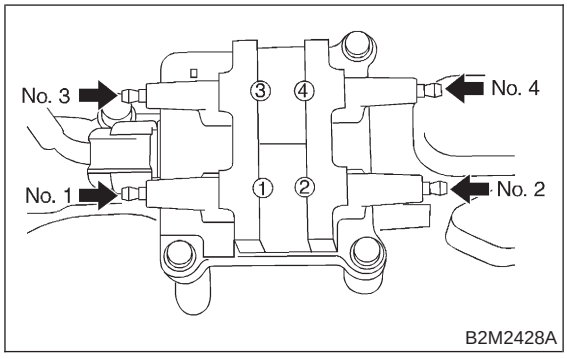
CHECK : ***Is the resistance between less than 5 Ω?***
YES : Go to step **8D4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ignition coil & ignitor assembly connector and engine grounding terminal

8D4 : CHECK IGNITION COIL & IGNITOR ASSEMBLY.

1) Remove spark plug cords.
2) Measure resistance between spark plug cord contact portions to check secondary coil.

Terminals
No. 1 — No. 2:

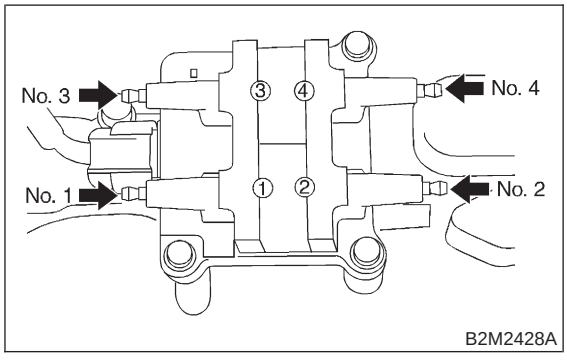


CHECK : ***Is the resistance between 10 and 15 kΩ?***
YES : Go to step **8D5**.
NO : Replace ignition coil & ignitor assembly. <Ref. to 6-1 [W4A0].>

8D5 : CHECK IGNITION COIL & IGNITOR ASSEMBLY.

Measure resistance between spark plug cord contact portions to check secondary coil.

Terminals
No. 3 — No. 4:

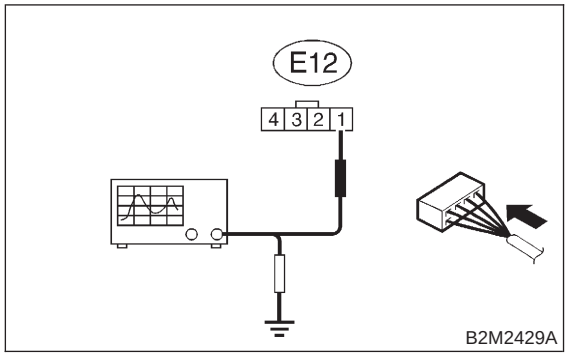


CHECK : ***Is the resistance between 10 and 15 kΩ?***
YES : Go to step **8D6**.
NO : Replace ignition coil & ignitor assembly. <Ref. to 6-1 [W4A0].>

8D6 : CHECK INPUT SIGNAL FOR IGNITION COIL & IGNITOR ASSEMBLY.

1) Connect connector to ignition coil & ignitor assembly.
2) Check if voltage varies synchronously with engine speed when cranking, while monitoring voltage between ignition coil & ignitor assembly connector and engine ground.

Connector & terminal
(E12) No. 1 (+) — Engine ground (–):

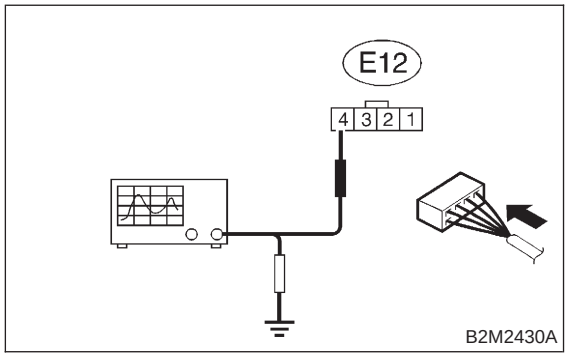


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8D7**.
NO : Replace ignition coil & ignitor assembly. <Ref. to 6-1 [W4A0].>

8D7 : CHECK INPUT SIGNAL FOR IGNITION COIL & IGNITOR ASSEMBLY.

Check if voltage varies synchronously with engine speed when cranking, while monitoring voltage between ignition coil & ignitor assembly connector and engine ground.

Connector & terminal
(E12) No. 4 (+) — Engine ground (–):

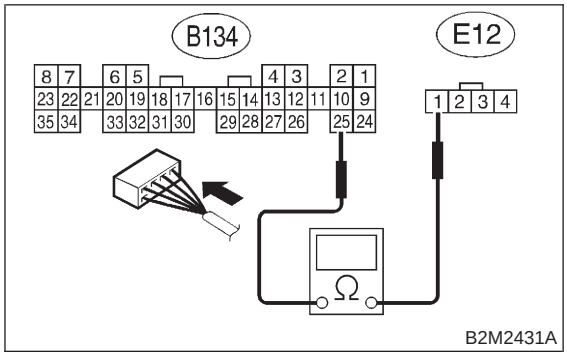


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8D8**.
NO : Replace ignition coil & ignitor assembly. <Ref. to 6-1 [W4A0].>

8D8 : CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Disconnect connector from ignition coil & ignitor assembly.
4) Measure resistance of harness between ECM and ignition coil & ignitor assembly connector.

Connector & terminal
(B134) No. 25 — (E12) No. 1:



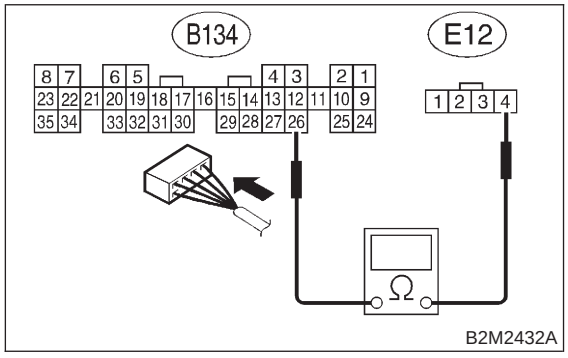
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8D9**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and ignition coil & ignitor assembly connector
- Poor contact in coupling connector (B22)

8D9 : CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR.

Measure resistance of harness between ECM and ignition coil & ignitor assembly connector.

Connector & terminal
(B134) No. 26 — (E12) No. 4:



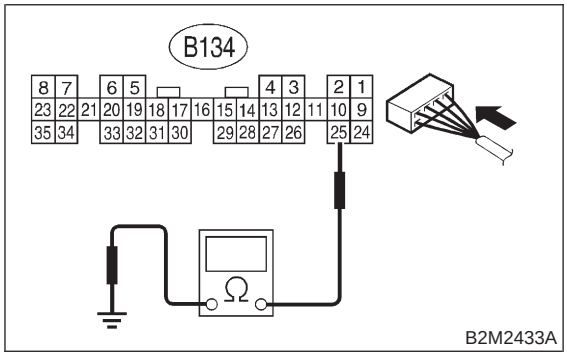
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8D10**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and ignition coil & ignitor assembly connector
- Poor contact in coupling connector (B22)

8D10 : CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR.

Measure resistance of harness between ECM and engine ground.

Connector & terminal:
(B134) No. 25 — Engine ground:

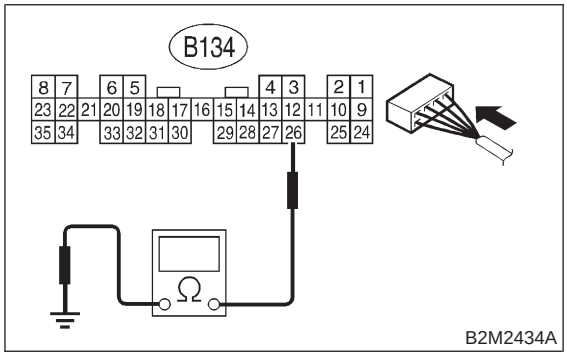


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8D11**.
NO : Repair ground short circuit in harness between ECM and ignition coil & ignitor assembly connector.

8D11 : CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR.

Measure resistance of harness between ECM and engine ground.

Connector & terminal
(B134) No. 26 — Engine ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8D12**.
NO : Repair ground short circuit in harness between ECM and ignition coil & ignitor assembly connector.

8D12 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***

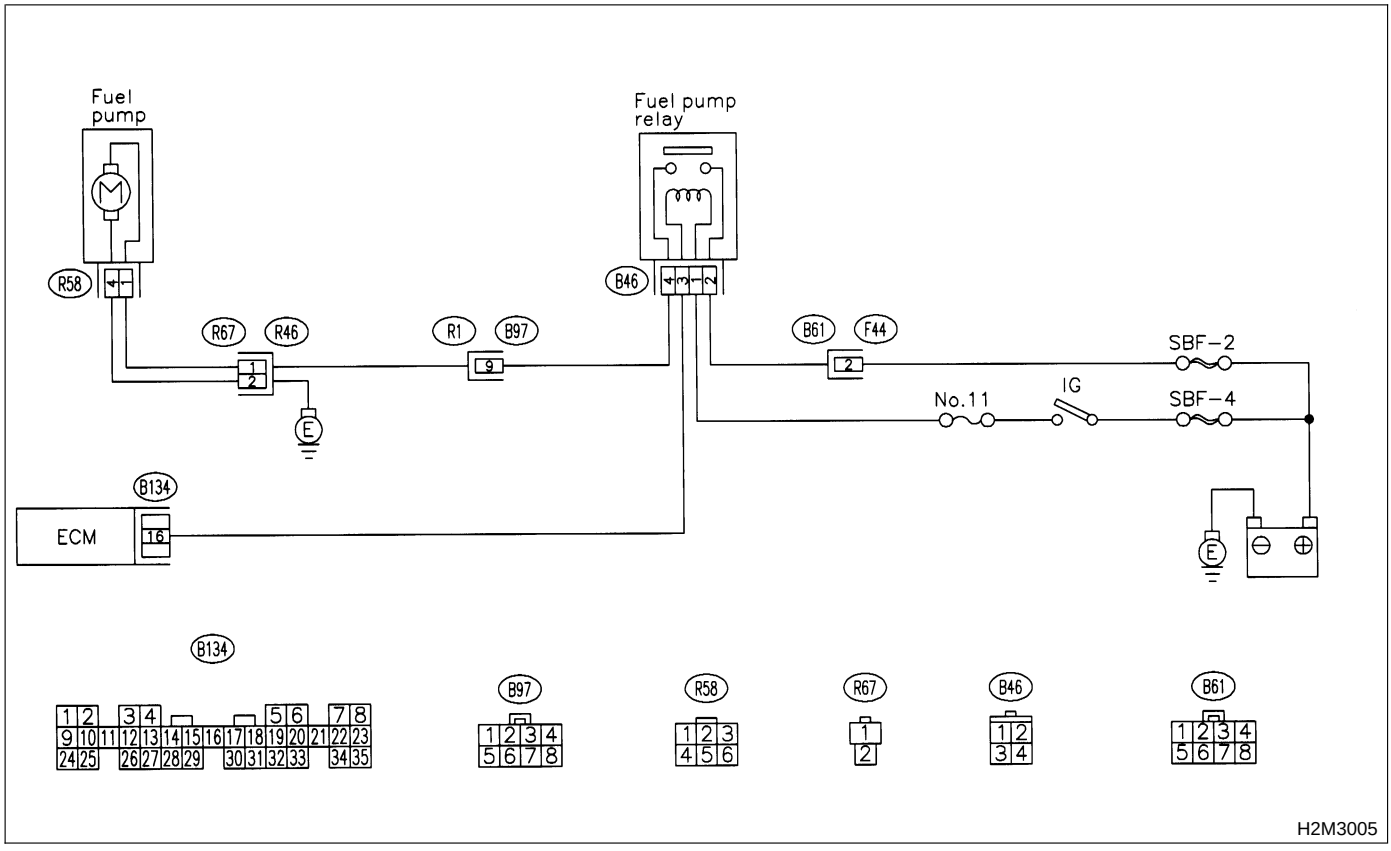
YES : Repair poor contact in ECM connector.

NO : Check fuel pump circuit. <Ref. to 2-7 [T8E0].>

E: FUEL PUMP CIRCUIT

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



8E1 : CHECK OPERATING SOUND OF FUEL PUMP.

Make sure that fuel pump is in operation for two seconds when turning ignition switch to ON.

NOTE:
Fuel pump operation check can also be executed using Subaru Select Monitor (Function mode: FD01).
For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>

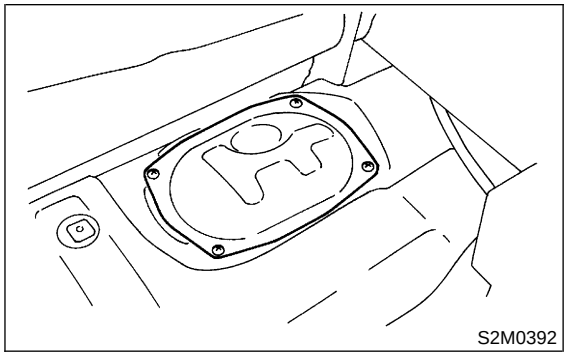
CHECK : ***Does fuel pump produce operating sound?***

YES : Check fuel injector circuit. <Ref. to 2-7 [T8F0].>

NO : Go to step **8E2**.

8E2 : CHECK GROUND CIRCUIT OF FUEL PUMP.

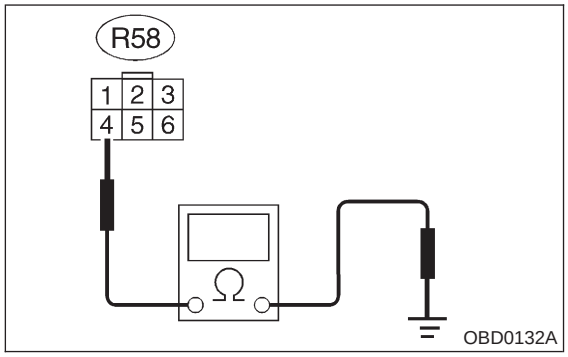
1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



3) Disconnect connector from fuel pump.

4) Measure resistance of harness connector between fuel pump and chassis ground.

Connector & terminal
(R58) No. 4 — Chassis ground:



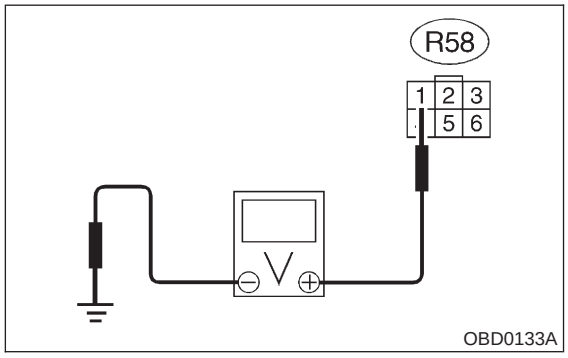
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8E3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and chassis grounding terminal
- Poor contact in coupling connector (R67)

8E3 : CHECK POWER SUPPLY TO FUEL PUMP.

1) Turn ignition switch to ON.
2) Measure voltage of power supply circuit between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 1 (+) — Chassis ground (−):

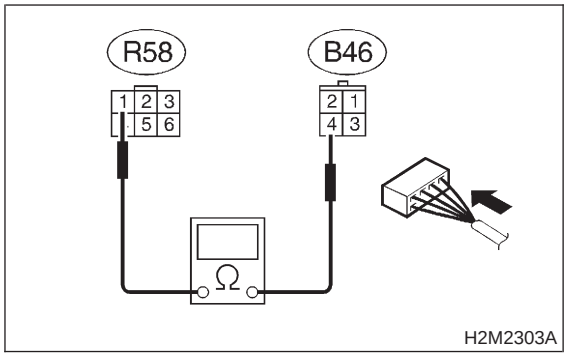


CHECK : ***Is the voltage more than 10 V?***
YES : Replace fuel pump. <Ref. to 2-8 [W5A0].>
NO : Go to step **8E4**.

8E4 : CHECK HARNESS BETWEEN FUEL PUMP AND FUEL PUMP RELAY CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance of harness connector between fuel pump and fuel pump relay.

Connector & terminal
(R58) No. 1 — (B46) No. 4:



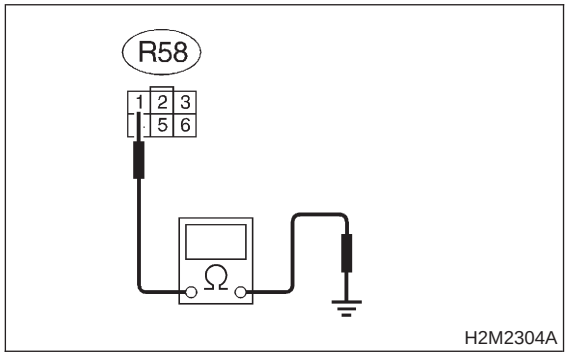
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and chassis grounding terminal
- Poor contact in coupling connectors (R67) and (B97)

8E5 : CHECK HARNESS BETWEEN FUEL PUMP AND FUEL PUMP RELAY CONNECTOR.

Measure resistance of harness between fuel pump and fuel pump relay connector.

Connector & terminal
(R58) No. 1 — Chassis ground:

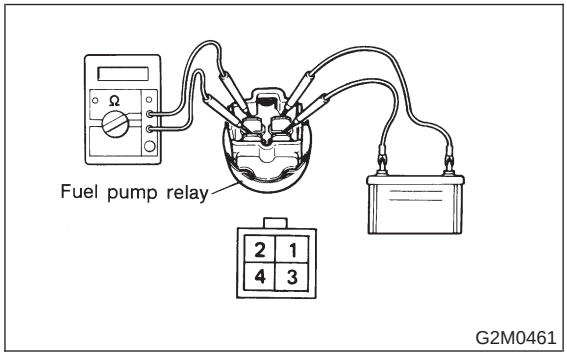


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E6**.
NO : Repair short circuit in harness between fuel pump and fuel pump relay connector.

8E6 : CHECK FUEL PUMP RELAY.

1) Disconnect connectors from fuel pump relay and main relay.
2) Remove fuel pump relay and main relay with bracket.
3) Connect battery to fuel pump relay connector terminals No. 1 and No. 3.
4) Measure resistance between connector terminals of fuel pump relay.

Terminals
No. 2 — No. 4:

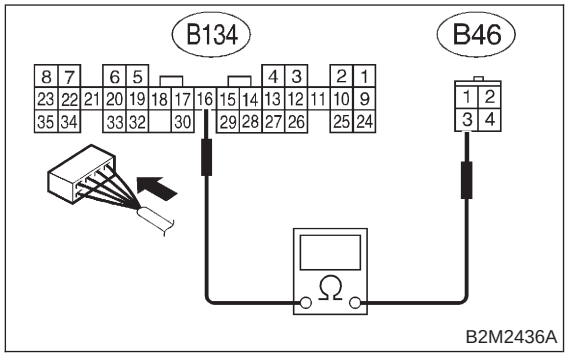


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8E7**.
NO : Replace fuel pump relay. <Ref. to 2-7 [W17A0].>

8E7 : CHECK HARNESS BETWEEN ECM AND FUEL PUMP RELAY CONNECTOR.

1) Disconnect connectors from ECM.
2) Measure resistance of harness between ECM and fuel pump relay connector.

Connector & terminal
(B134) No. 16 — (B46) No. 3:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E8**.
NO : Repair open circuit in harness between ECM and fuel pump relay connector.

8E8 : CHECK POOR CONTACT.

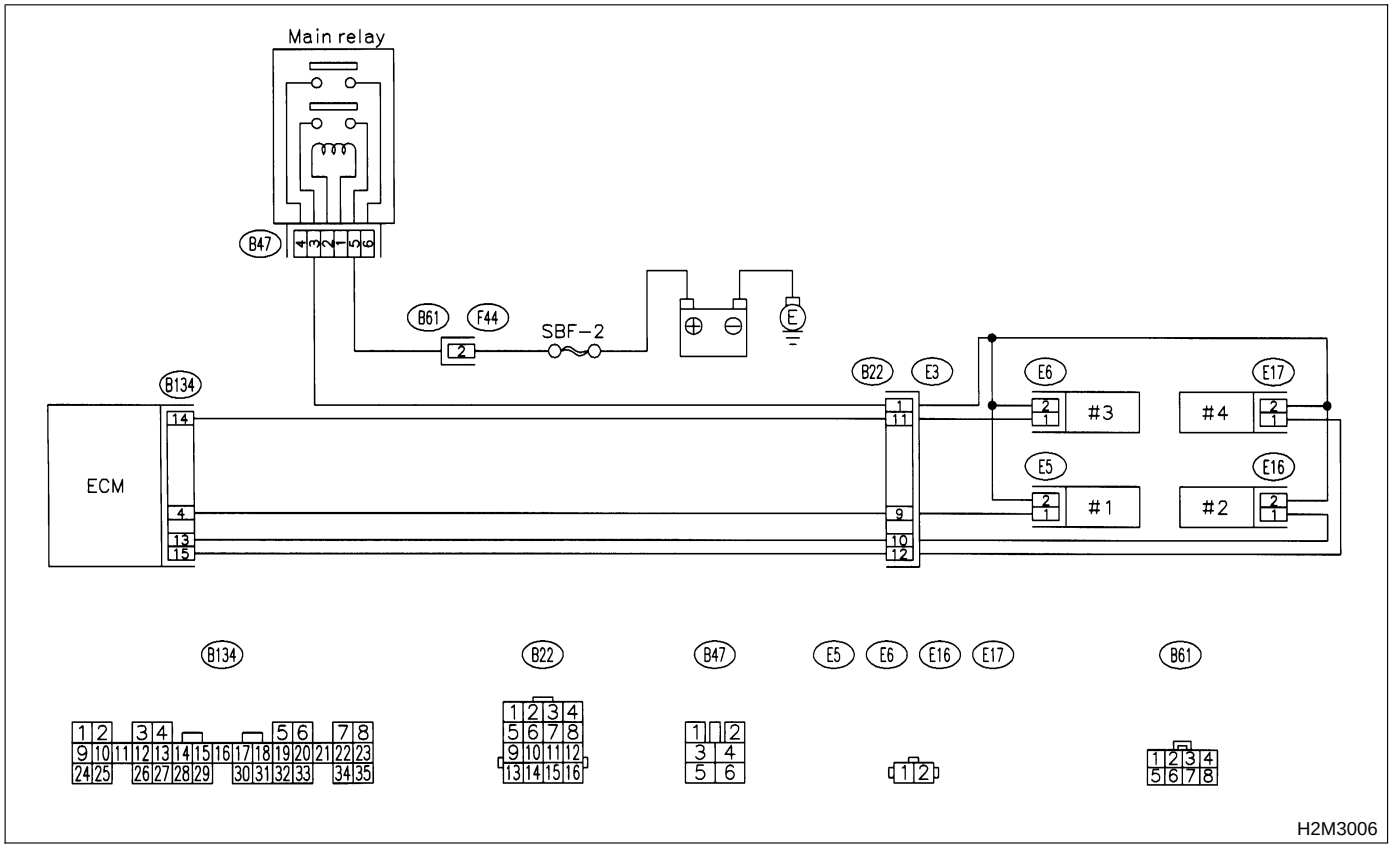
Check poor contact in ECM connector.
<Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Check fuel injector circuit. <Ref. to 2-7 [T8F0].>

F: FUEL INJECTOR CIRCUIT

CAUTION:
- **Check or repair only faulty parts.**
- **After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.**

- **WIRING DIAGRAM:**

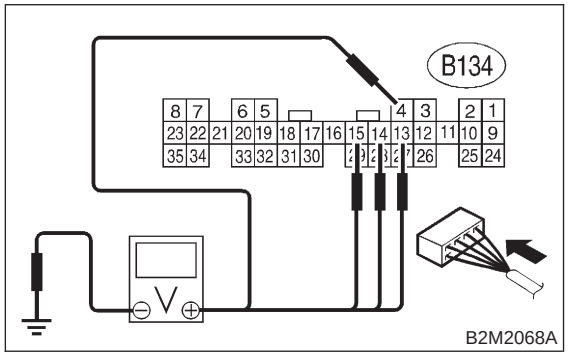


8F1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal

#1 (B134) No. 4 (+) — Chassis ground (−):
#2 (B134) No. 13 (+) — Chassis ground (−):
#3 (B134) No. 14 (+) — Chassis ground (−):
#4 (B134) No. 15 (+) — Chassis ground (−):



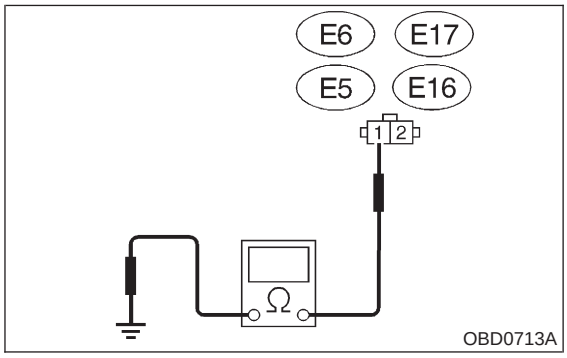
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8F6**.
NO : Go to step **8F2**.

8F2 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinders.
3) Measure voltage between ECM connector and engine ground on faulty cylinders.

Connector & terminal

#1 (E5) No. 1 — Engine ground:
#2 (E16) No. 1 — Engine ground:
#3 (E6) No. 1 — Engine ground:
#4 (E17) No. 1 — Engine ground:



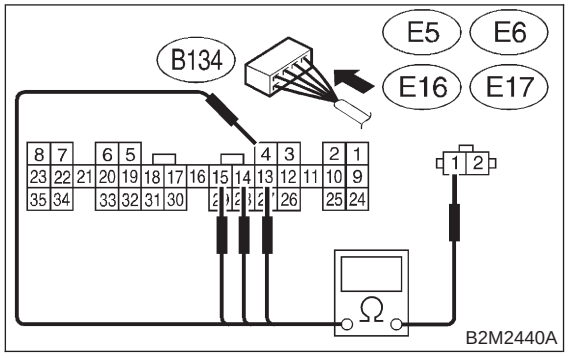
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between fuel injector and ECM connector.
NO : Go to step **8F3**.

8F3 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

Measure resistance of harness connector between ECM connector and fuel injector on faulty cylinders.

Connector & terminal

#1 (B134) No. 4 — (E5) No. 1:
#2 (B134) No. 13 — (E16) No. 1:
#3 (B134) No. 14 — (E6) No. 1:
#4 (B134) No. 15 — (E17) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F4**.
NO : Repair harness and connector.

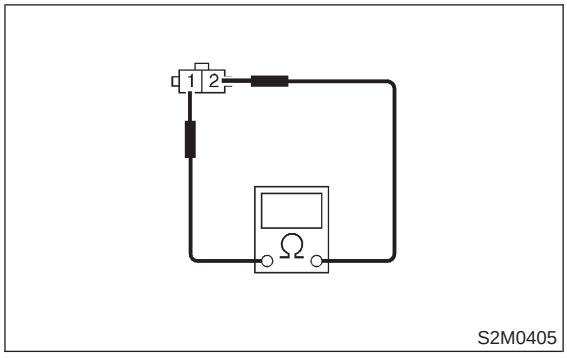
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel injector connector
- Poor contact in coupling connector (B22)

8F4 : CHECK FUEL INJECTOR.

Measure resistance between fuel injector terminals on faulty cylinder.

Terminals

No. 1 — No. 2:



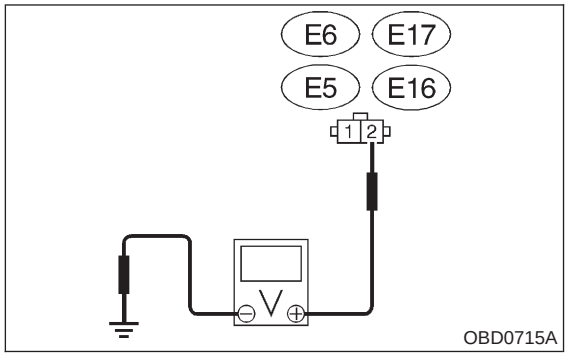
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **8F5**.
NO : Replace faulty fuel injector. <Ref. to 2-7 [W14A0].>

8F5 : CHECK POWER SUPPLY LINE.

1) Turn ignition switch to ON.
2) Measure voltage between fuel injector and engine ground on faulty cylinders.

Connector & terminal

#1 (E5) No. 2 (+) — Engine ground (−):
#2 (E16) No. 2 (+) — Engine ground (−):
#3 (E6) No. 2 (+) — Engine ground (−):
#4 (E17) No. 2 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair poor contact in all connectors in fuel injector circuit.
NO : Repair harness and connector.

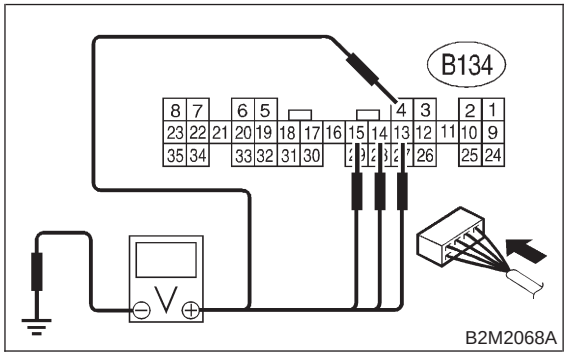
NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and fuel injector connector on faulty cylinders
- Poor contact in coupling connector (B22)
- Poor contact in main relay connector
- Poor contact in fuel injector connector on faulty cylinders

8F6 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinder.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal

#1 (B134) No. 4 (+) — Chassis ground (−):
#2 (B134) No. 13 (+) — Chassis ground (−):
#3 (B134) No. 14 (+) — Chassis ground (−):
#4 (B134) No. 15 (+) — Chassis ground (−):

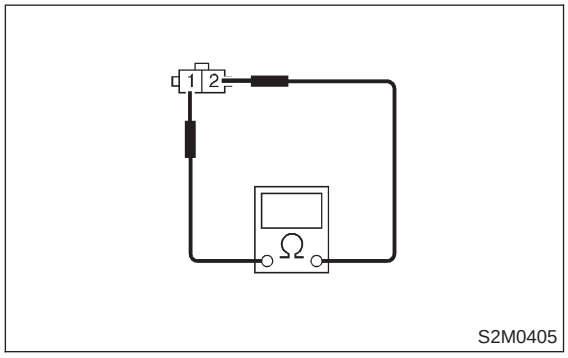


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel injector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **8F7**.

8F7 : CHECK FUEL INJECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between fuel injector terminals on faulty cylinder.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace faulty fuel injector <Ref. to 2-7 [W14A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **8F8**.

8F8 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

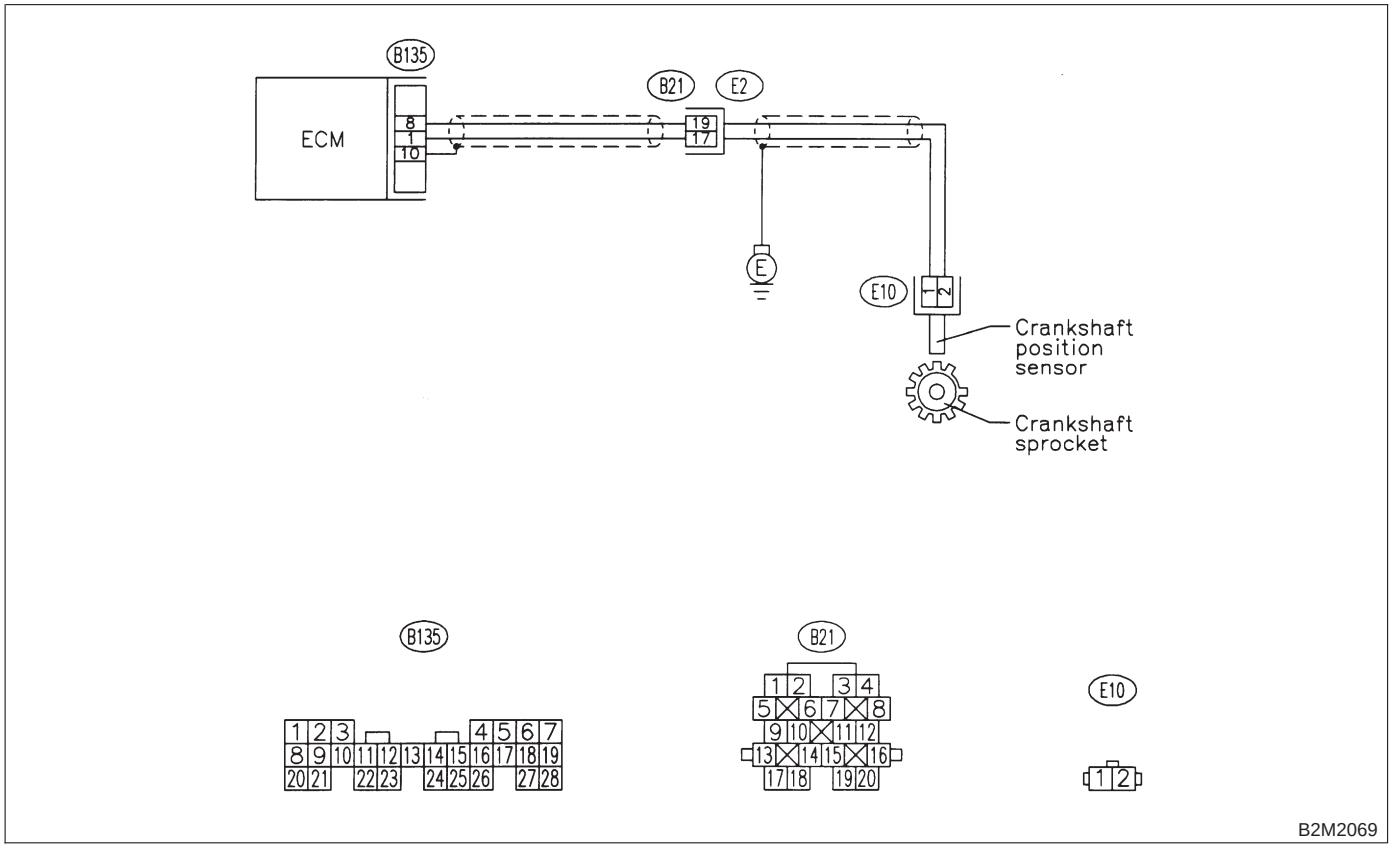
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Check crankshaft position sensor circuit. <Ref. to 2-7 [T8G0].>

G: CRANKSHAFT POSITION SENSOR CIRCUIT (2200 cc CALIFORNIA SPEC. VEHICLES)

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

NOTE:
Check crankshaft position sensor circuit. <Ref. to 2-7 [T10AD0].>

- **WIRING DIAGRAM:**

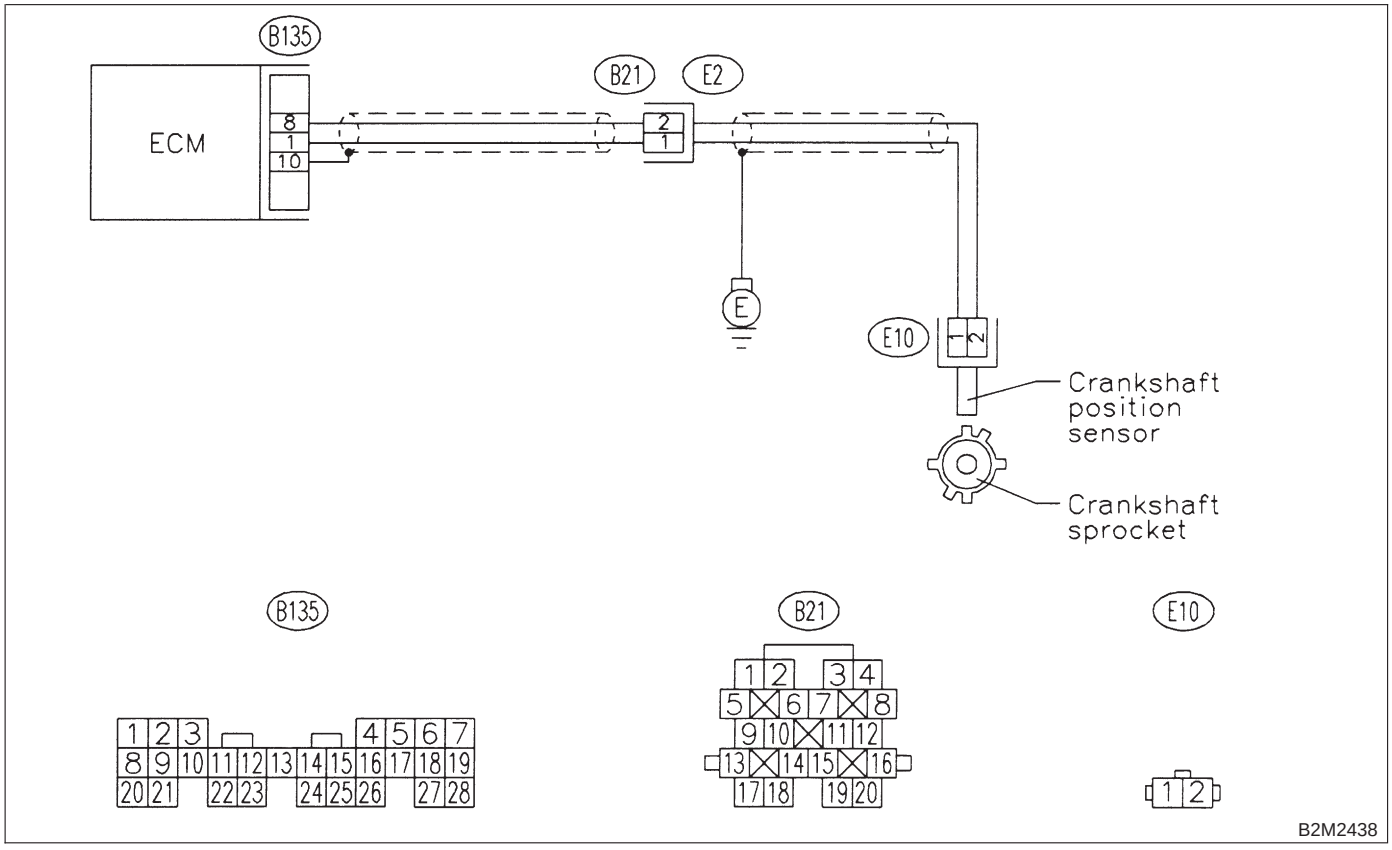


H: CRANKSHAFT POSITION SENSOR CIRCUIT (EXCEPT 2200 cc CALIFORNIA SPEC. VEHICLES)

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

NOTE:
Check crankshaft position sensor circuit. <Ref. to 2-7 [T11AC0].>

- **WIRING DIAGRAM:**

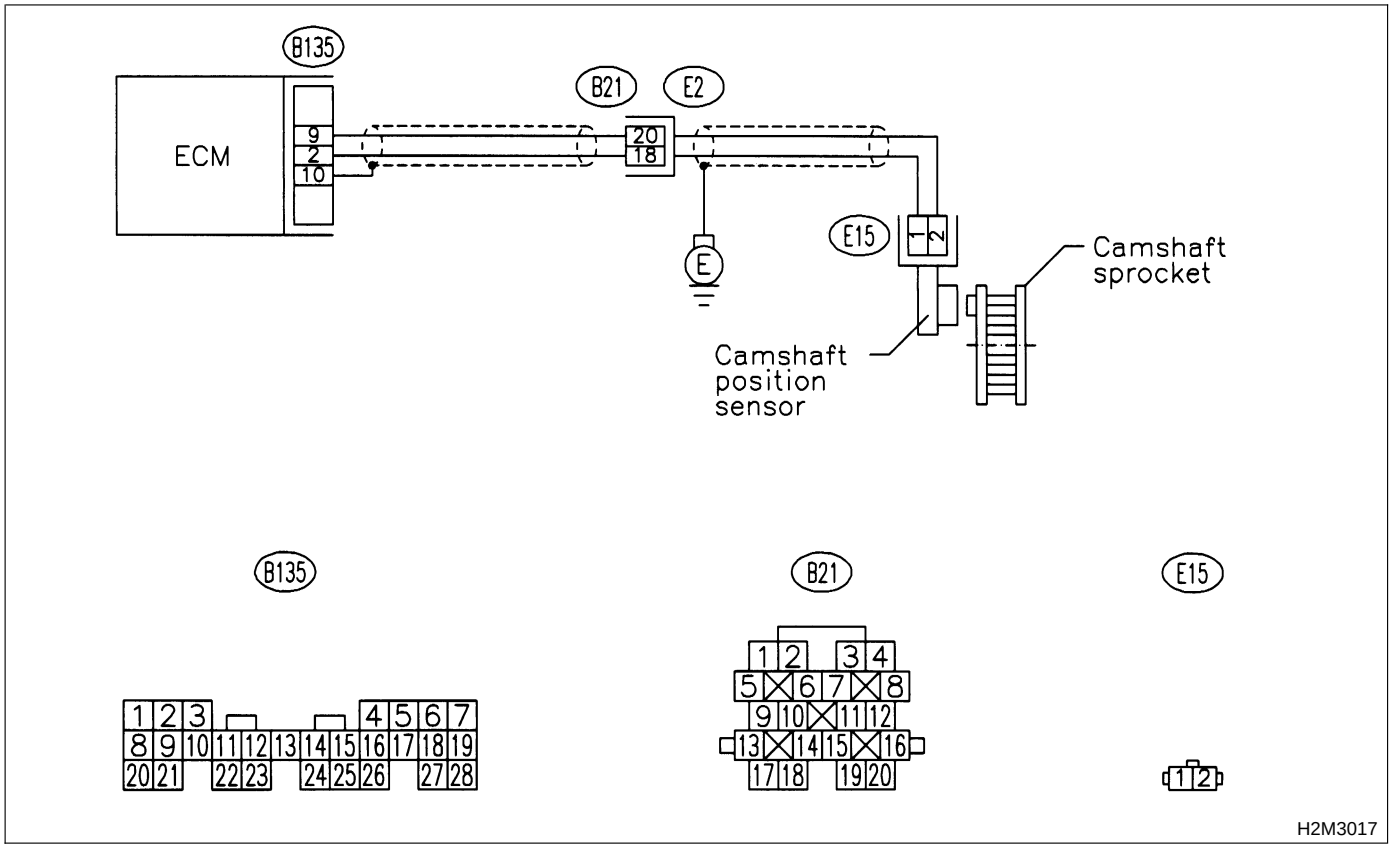


I: CAMSHAFT POSITION SENSOR CIRCUIT

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

NOTE:
Check camshaft position sensor circuit.
- 2200 cc California spec. vehicles: <Ref. to 2-7 [T10AF0].>
- Except 2200 cc California spec. vehicles: <Ref. to 2-7 [T11AE0].>

- **WIRING DIAGRAM:**



9. General Diagnostic Table

A: GENERAL DIAGNOSTICS TABLE WITH NON-CONFORMITY SYMPTOM FOR ENGINE

NOTE:
Malfunction of parts other than those listed is also possible. <Ref. to 2-3 [K100].>

Symptom	Problem parts
1. Engine stalls during idling.	1) Idle air control solenoid valve 2) Mass air flow sensor 3) Intake manifold pressure sensor 4) Intake air temperature sensor 5) Ignition parts (*1) 6) Engine coolant temperature sensor (*2) 7) Crankshaft position sensor (*3) 8) Camshaft position sensor (*3) 9) Fuel injection parts (*4)
2. Rough idling	1) Idle air control solenoid valve 2) Mass air flow sensor 3) Intake manifold pressure sensor 4) Intake air temperature sensor 5) Engine coolant temperature sensor (*2) 6) Ignition parts (*1) 7) Air intake system (*5) 8) Fuel injection parts (*4) 9) Throttle position sensor 10) Crankshaft position sensor (*3) 11) Camshaft position sensor (*3) 12) Oxygen sensor 13) Fuel pump and fuel pump relay
3. Engine does not return to idle.	1) Idle air control solenoid valve 2) Engine coolant temperature sensor 3) Accelerator cable (*6) 4) Throttle position sensor 5) Mass air flow sensor 6) Intake manifold pressure sensor 7) Intake air temperature sensor
4. Poor acceleration	1) Mass air flow sensor 2) Intake manifold pressure sensor 3) Intake air temperature sensor 4) Throttle position sensor 5) Fuel injection parts (*4) 6) Fuel pump and fuel pump relay 7) Engine coolant temperature sensor (*2) 8) Crankshaft position sensor (*3) 9) Camshaft position sensor (*3) 10) A/C switch and A/C cut relay 11) Engine torque control signal circuit 12) Ignition parts (*1)
5. Engine stalls or engine sags or hesitates at acceleration.	1) Mass air flow sensor 2) Intake manifold pressure sensor 3) Intake air temperature sensor 4) Engine coolant temperature sensor (*2) 5) Crankshaft position sensor (*3) 6) Camshaft position sensor (*3) 7) Purge control solenoid valve 8) Fuel injection parts (*4) 9) Throttle position sensor 10) Fuel pump and fuel pump relay

Symptom	Problem parts
6. Surge	1) Mass air flow sensor 2) Intake manifold pressure sensor 3) Intake air temperature sensor 4) Engine coolant temperature sensor (*2) 5) Crankshaft position sensor (*3) 6) Camshaft position sensor (*3) 7) Fuel injection parts (*4) 8) Throttle position sensor 9) Fuel pump and fuel pump relay
7. Spark knock	1) Mass air flow sensor 2) Intake manifold pressure sensor 3) Intake air temperature sensor 4) Engine coolant temperature sensor 5) Knock sensor 6) Fuel injection parts (*4) 7) Fuel pump and fuel pump relay
8. After burning in exhaust system	1) Mass air flow sensor 2) Intake manifold pressure sensor 3) Intake air temperature sensor 4) Engine coolant temperature sensor (*2) 5) Fuel injection parts (*4) 6) Fuel pump and fuel pump relay

*1: Check ignition coil & ignitor assembly and spark plug.
*2: Indicate the symptom occurring only in cold temperatures.
*3: Ensure the secure installation.
*4: Check fuel injector, fuel pressure regulator and fuel filter.
*5: Inspect air leak in air intake system.
*6: Adjust accelerator cable.

B: GENERAL DIAGNOSTICS TABLE WITH NON-CONFORMITY SYMPTOM FOR AUTOMATIC TRANSMISSION

NOTE:
Check general diagnostics table with non-conformity symptom for automatic transmission. <Ref. to 3-2 [T1000].>

10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles

A: DIAGNOSTIC TROUBLE CODE (DTC) LIST

DTC No.	Item	Index
P0106	Intake manifold pressure sensor circuit range/performance problem	<Ref. to 2-7 [T10B0].>
P0107	Intake manifold pressure sensor circuit low input	<Ref. to 2-7 [T10C0].>
P0108	Intake manifold pressure sensor circuit high input	<Ref. to 2-7 [T10D0].>
P0111	Intake air temperature sensor circuit range/performance problem	<Ref. to 2-7 [T10E0].>
P0112	Intake air temperature sensor circuit low input	<Ref. to 2-7 [T10F0].>
P0113	Intake air temperature sensor circuit high input	<Ref. to 2-7 [T10G0].>
P0116	Engine coolant temperature sensor circuit low input	<Ref. to 2-7 [T10H0].>
P0117	Engine coolant temperature sensor circuit high input	<Ref. to 2-7 [T10I0].>
P0121	Throttle position sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T10J0].>
P0122	Throttle position sensor circuit low input	<Ref. to 2-7 [T10K0].>
P0123	Throttle position sensor circuit high input	<Ref. to 2-7 [T10L0].>
P0125	Insufficient coolant temperature for closed loop fuel control	<Ref. to 2-7 [T10M0].>
P0131	Front oxygen (A/F) sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T10N0].>
P0132	Front oxygen (A/F) sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T10O0].>
P0133	Front oxygen (A/F) sensor circuit slow response	<Ref. to 2-7 [T10P0].>
P0136	Rear oxygen sensor circuit malfunction	<Ref. to 2-7 [T10Q0].>
P0139	Rear oxygen sensor circuit slow response	<Ref. to 2-7 [T10R0].>
P0141	Rear oxygen sensor heater circuit low input	<Ref. to 2-7 [T10S0].>
P0171	Fuel trim malfunction (A/F too lean)	<Ref. to 2-7 [T10T0].>
P0172	Fuel trim malfunction (A/F too rich)	<Ref. to 2-7 [T10U0].>
P0181	Fuel temperature sensor A circuit range/performance problem	<Ref. to 2-7 [T10V0].>
P0182	Fuel temperature sensor A circuit low input	<Ref. to 2-7 [T10W0].>
P0183	Fuel temperature sensor A circuit high input	<Ref. to 2-7 [T10X0].>
P0301	Cylinder 1 misfire detected	<Ref. to 2-7 [T10Y0].>
P0302	Cylinder 2 misfire detected	<Ref. to 2-7 [T10Z0].>

DTC No.	Item	Index
P0303	Cylinder 3 misfire detected	<Ref. to 2-7 [T10AA0].>
P0304	Cylinder 4 misfire detected	<Ref. to 2-7 [T10AB0].>
P0325	Knock sensor circuit malfunction	<Ref. to 2-7 [T10AC0].>
P0335	Crankshaft position sensor circuit malfunction	<Ref. to 2-7 [T10AD0].>
P0336	Crankshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T10AE0].>
P0340	Camshaft position sensor circuit malfunction	<Ref. to 2-7 [T10AF0].>
P0341	Camshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T10AG0].>
P0420	Catalyst system efficiency below threshold	<Ref. to 2-7 [T10AH0].>
P0440	Evaporative emission control system malfunction	<Ref. to 2-7 [T10AI0].>
P0443	Evaporative emission control system purge control valve circuit low input	<Ref. to 2-7 [T10AJ0].>
P0446	Evaporative emission control system vent control low input	<Ref. to 2-7 [T10AK0].>
P0451	Evaporative emission control system pressure sensor range/performance problem	<Ref. to 2-7 [T10AL0].>
P0452	Evaporative emission control system pressure sensor low input	<Ref. to 2-7 [T10AM0].>
P0453	Evaporative emission control system pressure sensor high input	<Ref. to 2-7 [T10AN0].>
P0461	Fuel level sensor circuit range/performance problem	<Ref. to 2-7 [T10AO0].>
P0462	Fuel level sensor circuit low input	<Ref. to 2-7 [T10AP0].>
P0463	Fuel level sensor circuit high input	<Ref. to 2-7 [T10AQ0].>
P0480	Cooling fan relay 1 circuit low input	<Ref. to 2-7 [T10AR0].>
P0483	Cooling fan function problem	<Ref. to 2-7 [T10AS0].>
P0500	Vehicle speed sensor malfunction	<Ref. to 2-7 [T10AT0].>
P0505	Idle control system circuit low input	<Ref. to 2-7 [T10AU0].>
P0506	Idle control system RPM lower than expected	<Ref. to 2-7 [T10AV0].>
P0507	Idle control system RPM higher than expected	<Ref. to 2-7 [T10AW0].>
P0601	Internal control module memory check sum error	<Ref. to 2-7 [T10AX0].>
P0703	Brake switch input malfunction	<Ref. to 2-7 [T10AY0].>
P0705	Transmission range sensor circuit malfunction	<Ref. to 2-7 [T10AZ0].>
P0710	Transmission fluid temperature sensor circuit malfunction	<Ref. to 2-7 [T10BA0].>

DTC No.	Item	Index
P0715	Torque converter turbine speed sensor circuit malfunction	<Ref. to 2-7 [T10BB0].>
P0720	Output speed sensor (vehicle speed sensor 2) circuit malfunction	<Ref. to 2-7 [T10BC0].>
P0725	Engine speed input circuit malfunction	<Ref. to 2-7 [T10BD0].>
P0731	Gear 1 incorrect ratio	<Ref. to 2-7 [T10BE0].>
P0732	Gear 2 incorrect ratio	<Ref. to 2-7 [T10BF0].>
P0733	Gear 3 incorrect ratio	<Ref. to 2-7 [T10BG0].>
P0734	Gear 4 incorrect ratio	<Ref. to 2-7 [T10BH0].>
P0740	Torque converter clutch system malfunction	<Ref. to 2-7 [T10BI0].>
P0743	Torque converter clutch system (Duty solenoid B) electrical	<Ref. to 2-7 [T10BJ0].>
P0748	Pressure control solenoid (Duty solenoid A) electrical	<Ref. to 2-7 [T10BK0].>
P0753	Shift solenoid A (shift solenoid 1) electrical	<Ref. to 2-7 [T10BL0].>
P0758	Shift solenoid B (shift solenoid 2) electrical	<Ref. to 2-7 [T10BM0].>
P1100	Starter switch circuit low input	<Ref. to 2-7 [T10BN0].>
P1101	Neutral position switch circuit low input [MT vehicles]	<Ref. to 2-7 [T10BO0].>
P1101	Neutral position switch circuit high input [AT vehicles]	<Ref. to 2-7 [T10BP0].>
P1103	Engine torque control signal 1 circuit malfunction	<Ref. to 2-7 [T10BQ0].>
P1106	Engine torque control signal 2 circuit malfunction	<Ref. to 2-7 [T10BR0].>
P1110	Atmospheric pressure sensor circuit low input	<Ref. to 2-7 [T10BS0].>
P1111	Atmospheric pressure sensor circuit high input	<Ref. to 2-7 [T10BT0].>
P1112	Atmospheric pressure sensor circuit range/performance problem	<Ref. to 2-7 [T10BU0].>
P1115	Engine torque control cut signal circuit high input	<Ref. to 2-7 [T10BV0].>
P1116	Engine torque control cut signal circuit low input	<Ref. to 2-7 [T10BW0].>
P1120	Starter switch circuit high input	<Ref. to 2-7 [T10BX0].>
P1121	Neutral position switch circuit high input [MT vehicles]	<Ref. to 2-7 [T10BY0].>
P1121	Neutral position switch circuit low input [AT vehicles]	<Ref. to 2-7 [T10BZ0].>
P1130	Front oxygen (A/F) sensor circuit malfunction (open circuit)	<Ref. to 2-7 [T10CA0].>
P1131	Front oxygen (A/F) sensor circuit malfunction (short circuit)	<Ref. to 2-7 [T10CB0].>

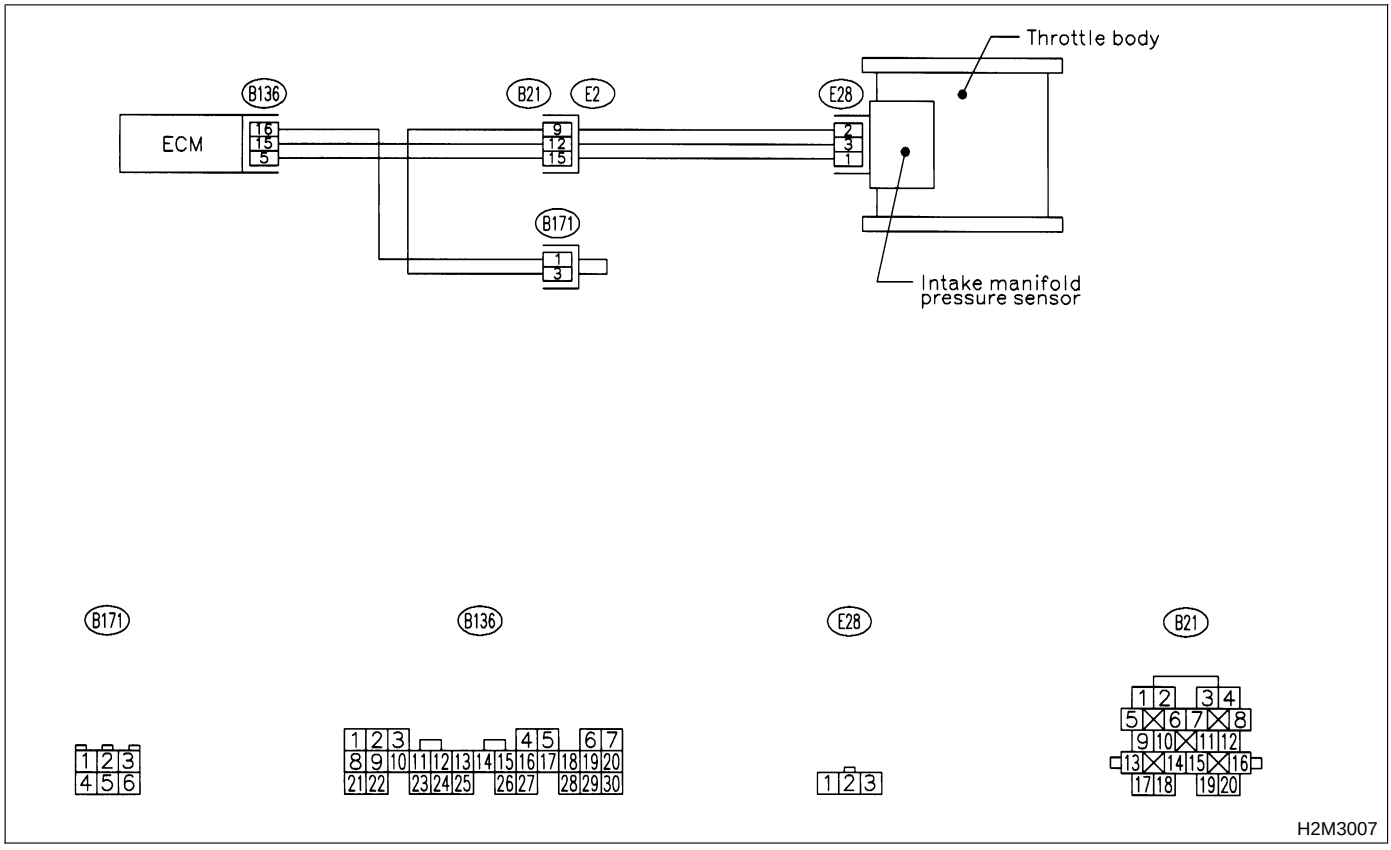
DTC No.	Item	Index
P1132	Front oxygen (A/F) sensor heater circuit low input	<Ref. to 2-7 [T10CC0].>
P1133	Front oxygen (A/F) sensor heater circuit high input	<Ref. to 2-7 [T10CD0].>
P1134	Front oxygen (A/F) sensor micro-computer problem	<Ref. to 2-7 [T10CE0].>
P1139	Front oxygen (A/F) sensor #1 heater circuit range/performance problem	<Ref. to 2-7 [T10CF0].>
P1142	Throttle position sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T10CG0].>
P1151	Rear oxygen sensor heater circuit high input	<Ref. to 2-7 [T10CH0].>
P1400	Fuel tank pressure control solenoid valve circuit low input	<Ref. to 2-7 [T10CI0].>
P1420	Fuel tank pressure control solenoid valve circuit high input	<Ref. to 2-7 [T10CJ0].>
P1422	Evaporative emission control system purge control valve circuit high input	<Ref. to 2-7 [T10CK0].>
P1423	Evaporative emission control system vent control high input	<Ref. to 2-7 [T10CL0].>
P1443	Evaporative emission control system vent control function problem	<Ref. to 2-7 [T10CM0].>
P1505	Idle control system circuit high input	<Ref. to 2-7 [T10CN0].>
P1507	Idle control system malfunction (fail-safe)	<Ref. to 2-7 [T10CO0].>
P1520	Cooling fan relay 1 circuit high input	<Ref. to 2-7 [T10CP0].>
P1560	Back-up voltage circuit malfunction	<Ref. to 2-7 [T10CQ0].>
P1700	Throttle position sensor circuit malfunction for automatic transmission	<Ref. to 2-7 [T10CR0].>
P1701	Cruise control set signal circuit malfunction for automatic transmission	<Ref. to 2-7 [T10CS0].>
P1702	Automatic transmission diagnosis input signal circuit low input	<Ref. to 2-7 [T10CT0].>
P1703	Low clutch timing control solenoid valve circuit malfunction	<Ref. to 2-7 [T10CU0].>
P1704	2-4 brake timing control solenoid valve circuit malfunction	<Ref. to 2-7 [T10CV0].>
P1705	2-4 brake pressure control solenoid valve (Duty solenoid D) circuit malfunction	<Ref. to 2-7 [T10CW0].>
P1722	Automatic transmission diagnosis input signal circuit high input	<Ref. to 2-7 [T10CX0].>
P1742	Automatic transmission diagnosis input signal circuit malfunction	<Ref. to 2-7 [T10CY0].>

B: DTC P0106 — INTAKE MANIFOLD PRESSURE SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

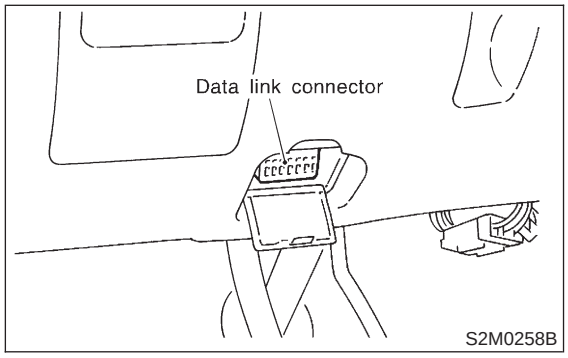
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10B1 : CHECK IDLE SWITCH SIGNAL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
4) Operate the LED operation mode for engine using Subaru Select Monitor.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “LED OPERATION MODE FOR ENGINE”. <Ref. to 2-7 [T3C8].>

CHECK : ***Does the LED of {Idle Switch Signal} come on?***
YES : Go to step **10B2**.
NO : Check throttle position sensor circuit. <Ref. to 2-7 [T10K0].>

NOTE:
In this case, it is not necessary to inspect DTC P0106.

10B2 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0107 or P0108?***
YES : Inspect DTC P0107 or P0108 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0106.

NO : Go to step **10B3**.

10B3 : CHECK CONDITION OF INTAKE MANIFOLD PRESSURE SENSOR.

CHECK : ***Is the intake manifold pressure sensor installation bolt tightened securely?***
YES : Go to step **10B4**.
NO : Tighten intake manifold pressure sensor installation bolt securely.

10B4 : CHECK CONDITION OF THROTTLE BODY.

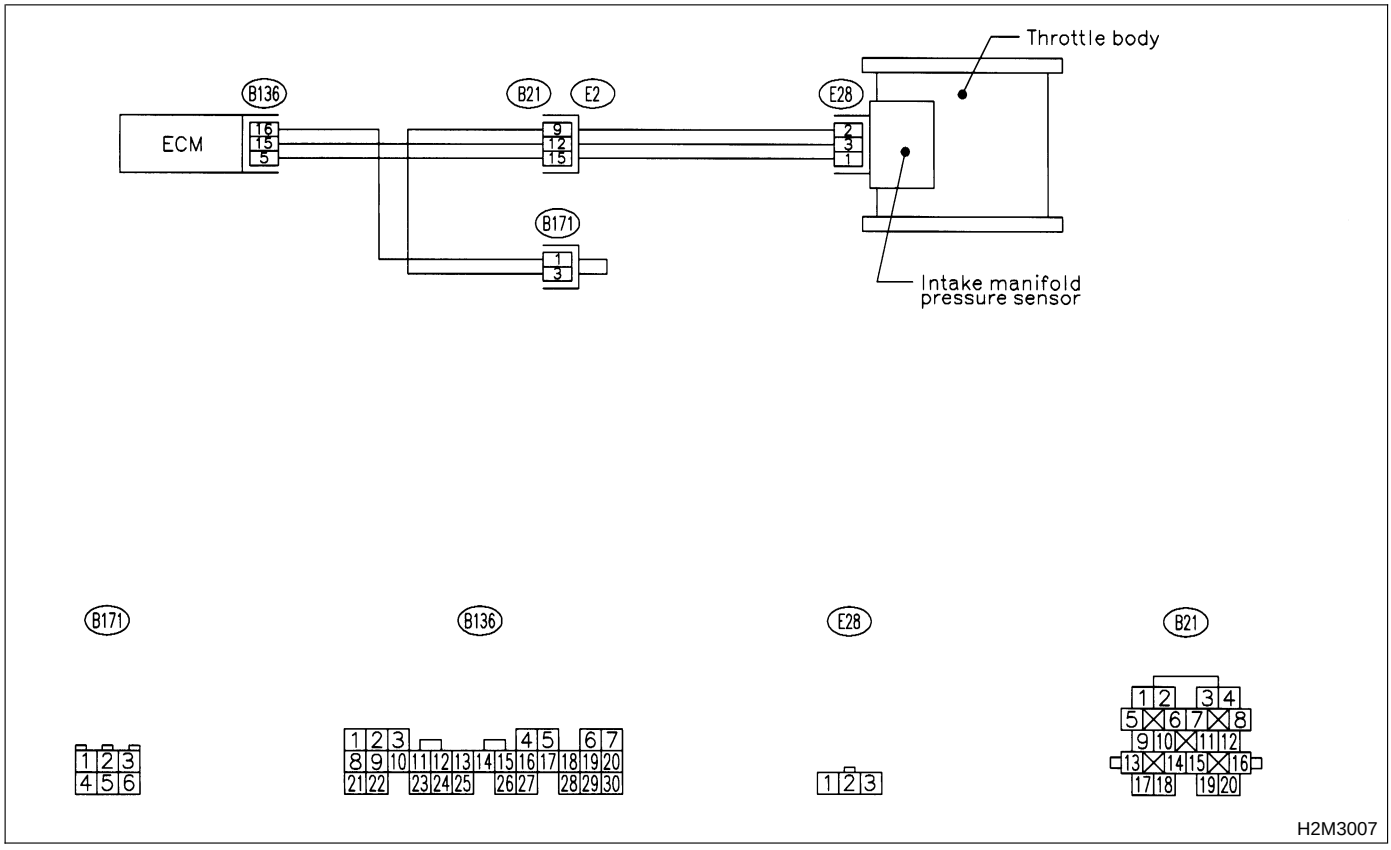
CHECK : ***Is the throttle body installation bolt tightened securely?***
YES : Replace intake manifold pressure sensor. <Ref. to 2-7 [W20A0].>
NO : Tighten throttle body installation bolt securely.

C: DTC P0107 — INTAKE MANIFOLD PRESSURE SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

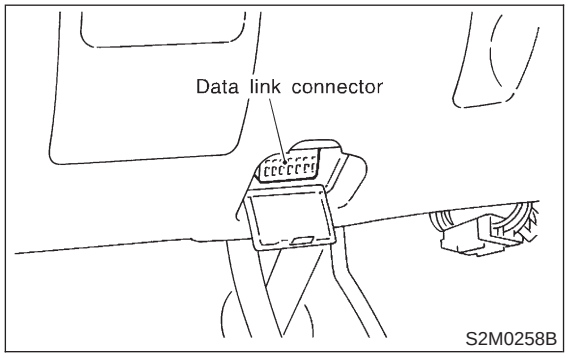
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10C1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than 3.3 kPa (25 mmHg, 0.98 inHg)?***
YES : Go to step **10C3**.
NO : Go to step **10C2**.

10C2 : CHECK POOR CONTACT.

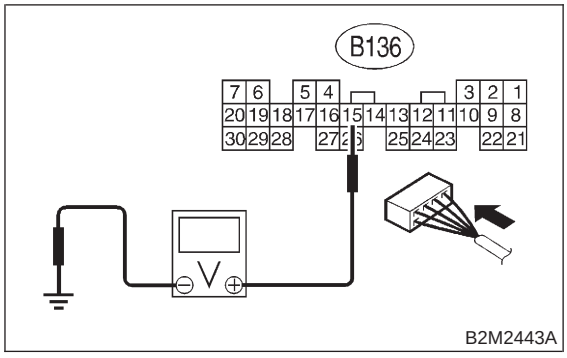
Check poor contact in ECM and pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM or pressure sensor connector?***
YES : Repair poor contact in ECM or pressure sensor connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

10C3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

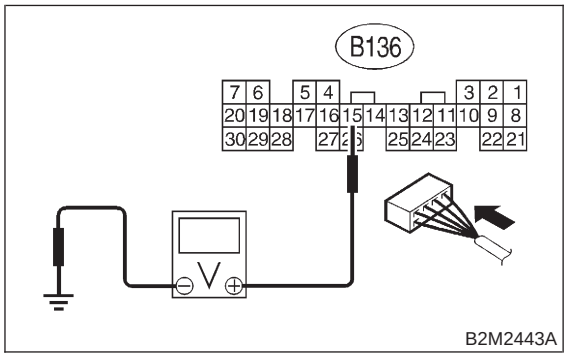


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10C5**.
NO : Go to step **10C4**.

10C4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



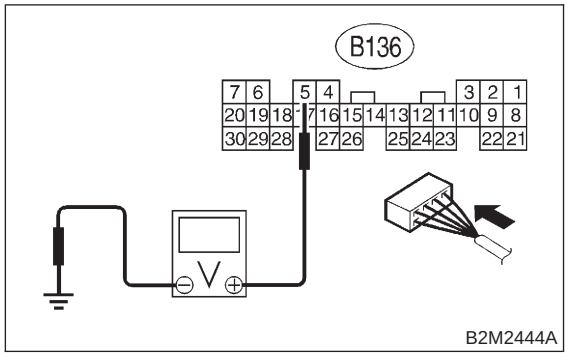
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10C5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 5 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.7 V?***
YES : Go to step **10C7**.
NO : Go to step **10C6**.

10C6 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of atmospheric absolute pressure signal using Subaru Select Monitor.

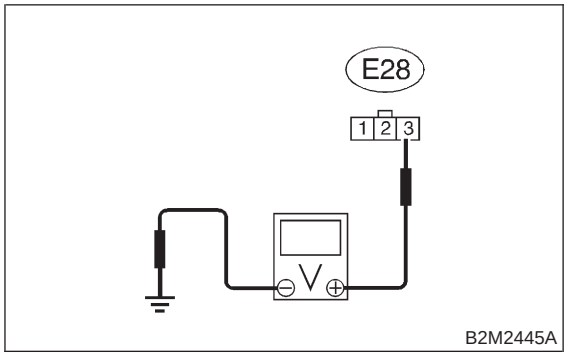
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 3.3 kPa (25 mmHg, 0.98 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10C7**.

10C7 : CHECK HARNESS BETWEEN ECM AND INTAKE MANIFOLD PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from intake manifold pressure sensor.
3) Turn ignition switch to ON.
4) Measure voltage between intake manifold pressure sensor connector and engine ground.

Connector & terminal
(E28) No. 3 (+) — Engine ground (−):

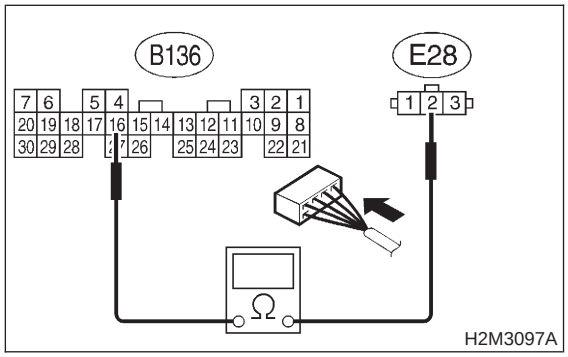


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10C8**.
NO : Repair open circuit in harness between ECM and intake manifold pressure sensor connector.

10C8 : CHECK HARNESS BETWEEN ECM AND INTAKE MANIFOLD PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and intake manifold pressure sensor connector.

Connector & terminal
(B136) No. 16 — (E28) No. 2:

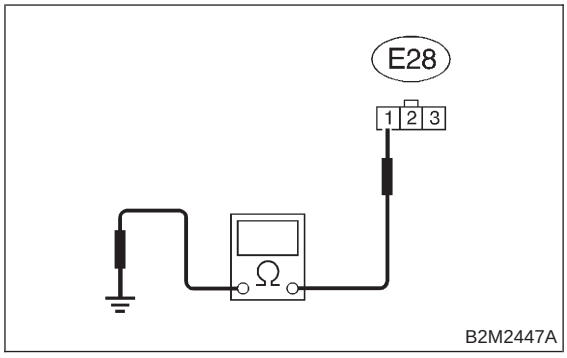


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10C9**.
NO : Repair open circuit in harness between ECM and intake manifold pressure sensor connector.

10C9 : CHECK HARNESS BETWEEN ECM AND INTAKE MANIFOLD PRESSURE SENSOR CONNECTOR.

Measure resistance of harness between intake manifold pressure sensor connector and engine ground.

Connector & terminal
(E28) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **10C10**.
NO : Repair ground short circuit in harness between ECM and intake manifold pressure sensor connector.

10C10 : CHECK POOR CONTACT.

Check poor contact in intake manifold pressure sensor connector. <Ref. to FOREWORD [T3C1].>

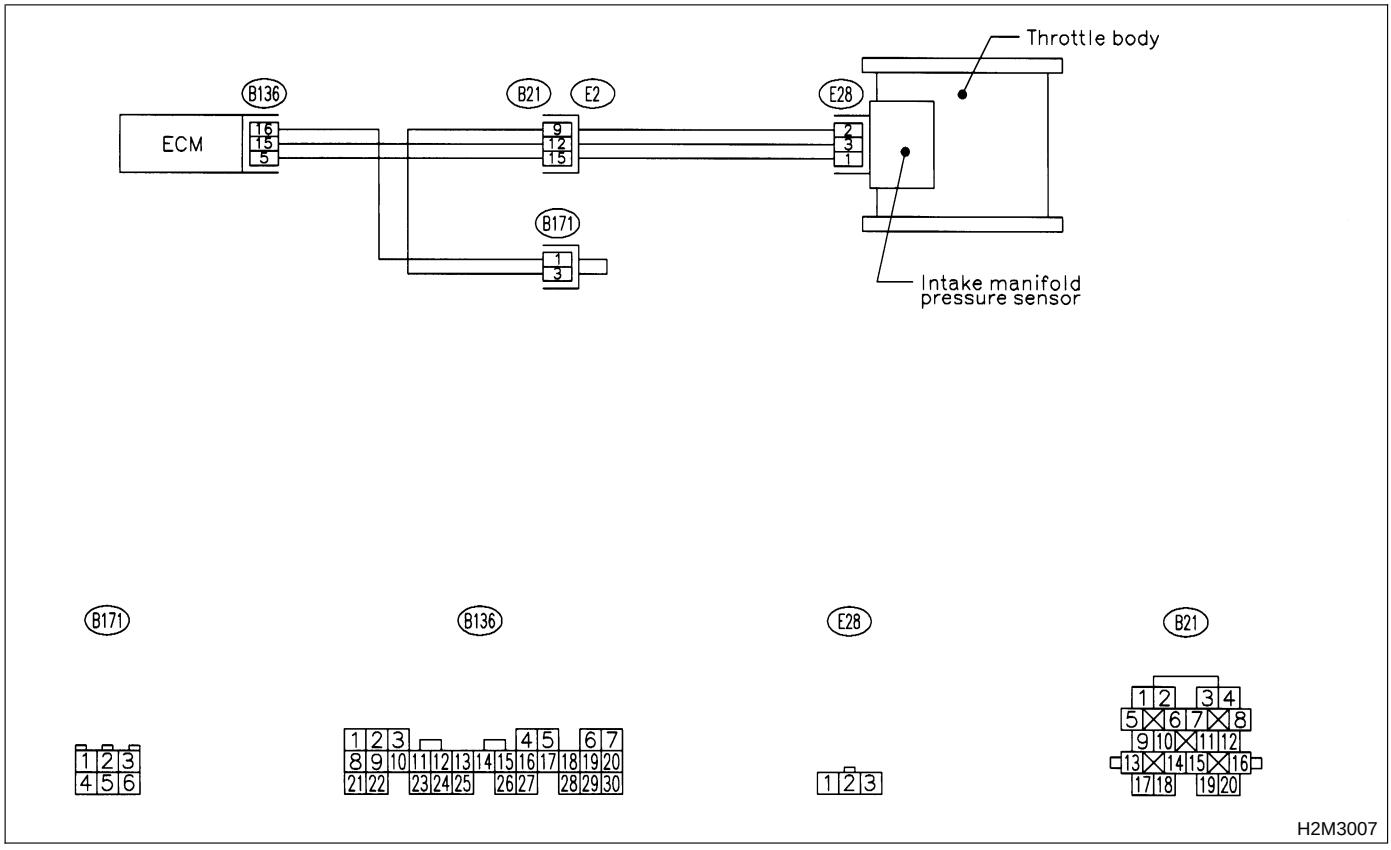
CHECK : ***Is there poor contact in intake manifold pressure sensor connector?***
YES : Repair poor contact in intake manifold pressure sensor connector.
NO : Replace intake manifold pressure sensor. <Ref. to 2-7 [W20A0].>

D: DTC P0108 — INTAKE MANIFOLD PRESSURE SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

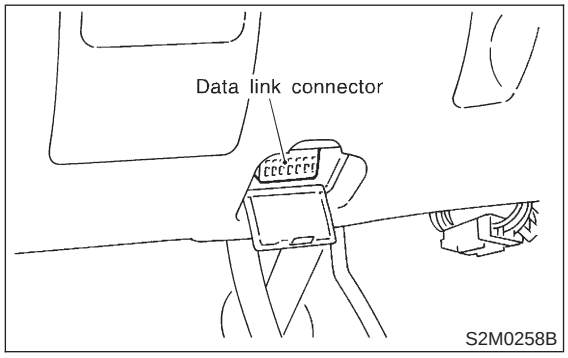
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10D1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

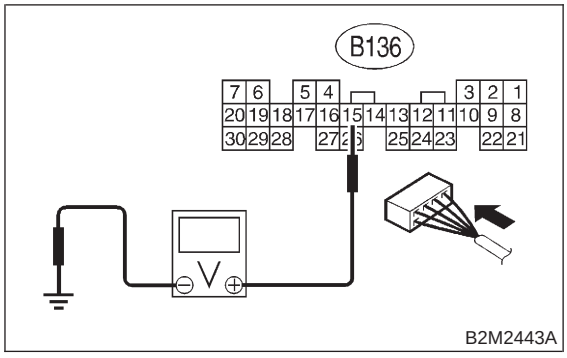
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 130 kPa (975 mmHg, 38.39 inHg)?***
YES : Go to step **10D10**.
NO : Go to step **10D2**.

10D2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

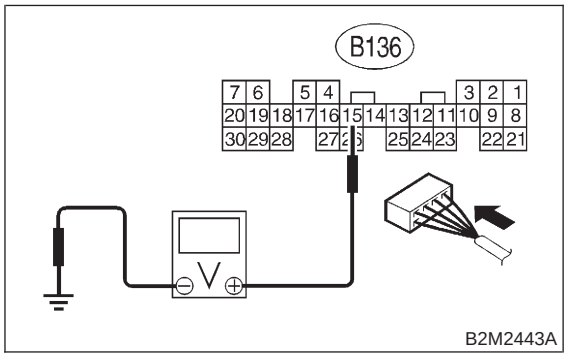


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10D4**.
NO : Go to step **10D3**.

10D3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



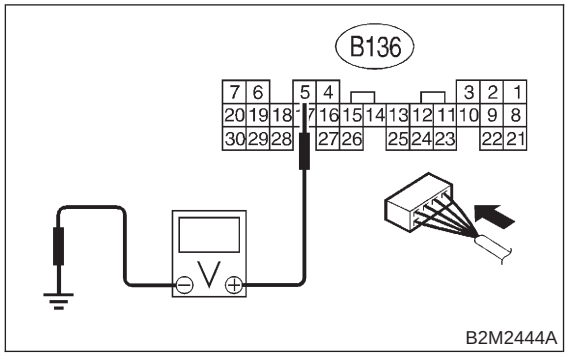
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10D4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 5 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.7 V?***
YES : Go to step **10D6**.
NO : Go to step **10D5**.

10D5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of atmospheric absolute pressure signal using Subaru Select Monitor.

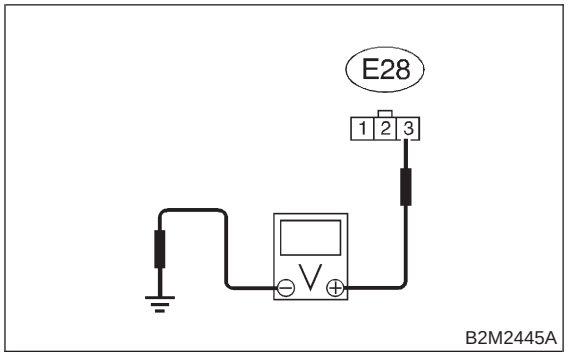
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 3.3 kPa (25 mmHg, 0.98 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10D6**.

10D6 : CHECK HARNESS BETWEEN ECM AND INTAKE MANIFOLD PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from intake manifold pressure sensor.
3) Turn ignition switch to ON.
4) Measure voltage between intake manifold pressure sensor connector and engine ground.

Connector & terminal
(B28) No. 3 (+) — Engine ground (−):

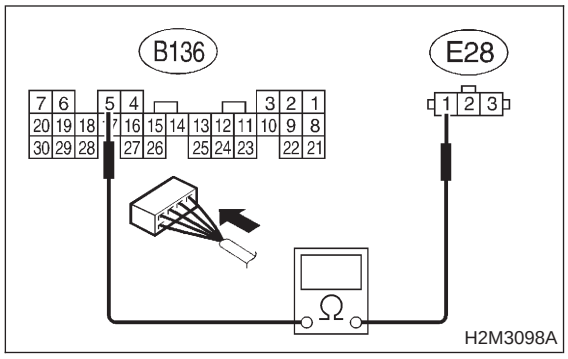


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10D7**.
NO : Repair open circuit in harness between ECM and intake manifold pressure sensor connector.

10D7 : CHECK HARNESS BETWEEN ECM AND INTAKE MANIFOLD PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and intake manifold pressure sensor connector.

Connector & terminal
(B136) No. 5 — (E28) No. 1:

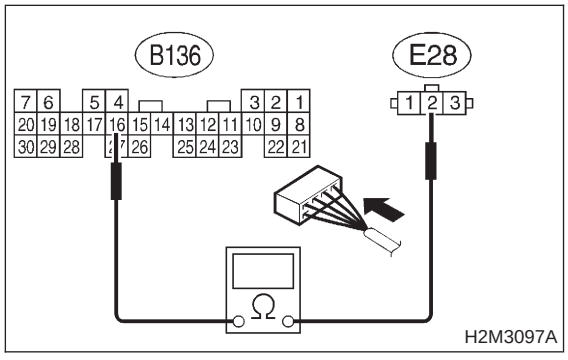


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10D8**.
NO : Repair open circuit in harness between ECM and intake manifold pressure sensor connector.

10D8 : CHECK HARNESS BETWEEN ECM AND INTAKE MANIFOLD PRESSURE SENSOR CONNECTOR.

Measure resistance of harness between ECM and intake manifold pressure sensor connector.

Connector & terminal
(B136) No. 16 — (E28) No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10D9**.
NO : Repair open circuit in harness between ECM and intake manifold pressure sensor connector.

10D9 : CHECK POOR CONTACT.

Check poor contact in intake manifold pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in intake manifold pressure sensor connector?***
YES : Repair poor contact in intake manifold pressure sensor connector.
NO : Replace intake manifold pressure sensor. <Ref. to 2-7 [W20A0].>

10D10 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Disconnect connector from pressure sensor.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Read data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 130 kPa (975 mmHg, 38.39 inHg)?***
YES : Repair battery short circuit in harness between ECM and intake manifold pressure sensor connector.
NO : Replace intake manifold pressure sensor. <Ref. to 2-7 [W20A0].>

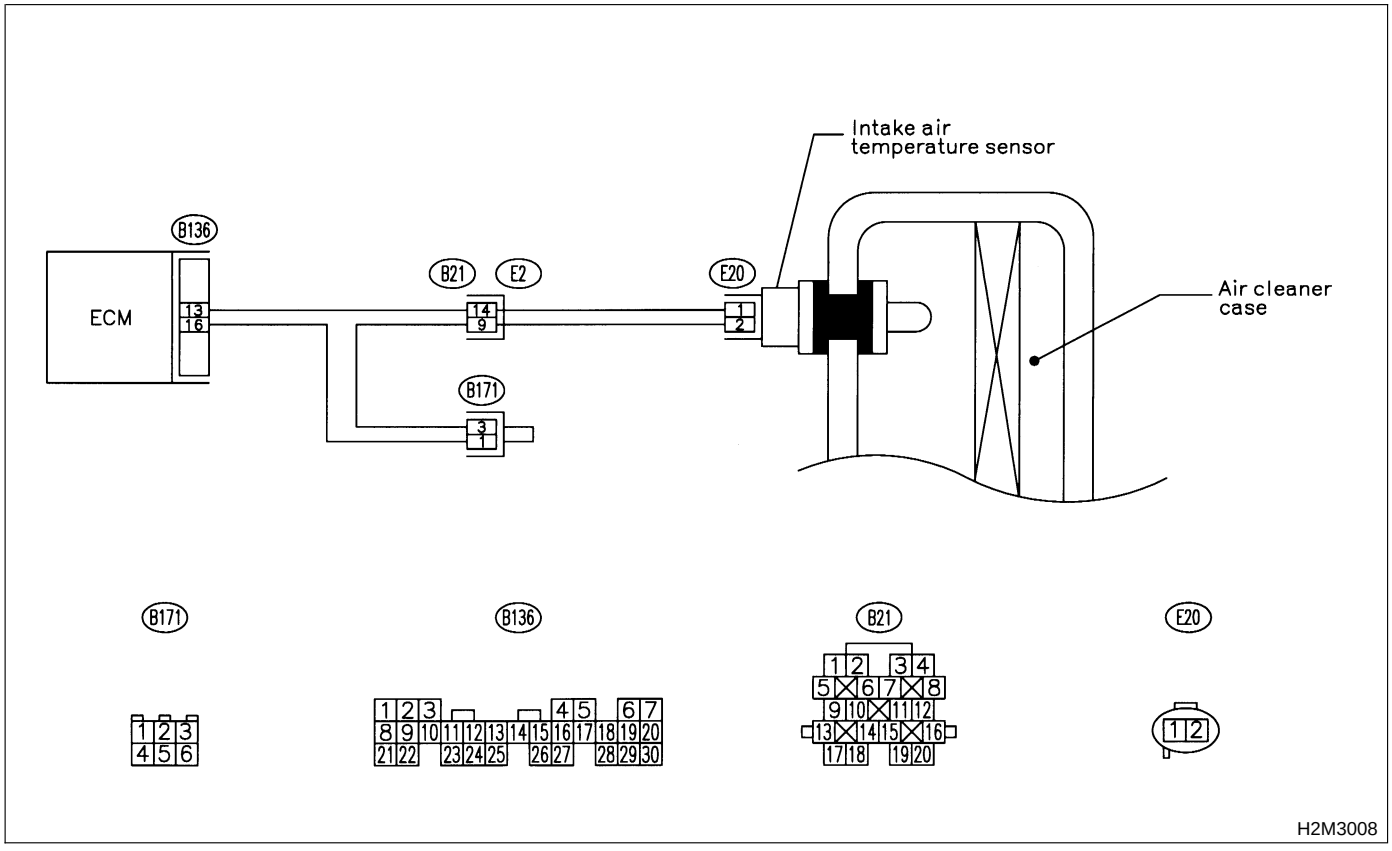
E: DTC P0111 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10E1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0112 or P0113?***

YES : Inspect DTC P0112 or P0113 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0111.

NO : Replace intake air temperature sensor. <Ref. to 2-7 [W21A0].>

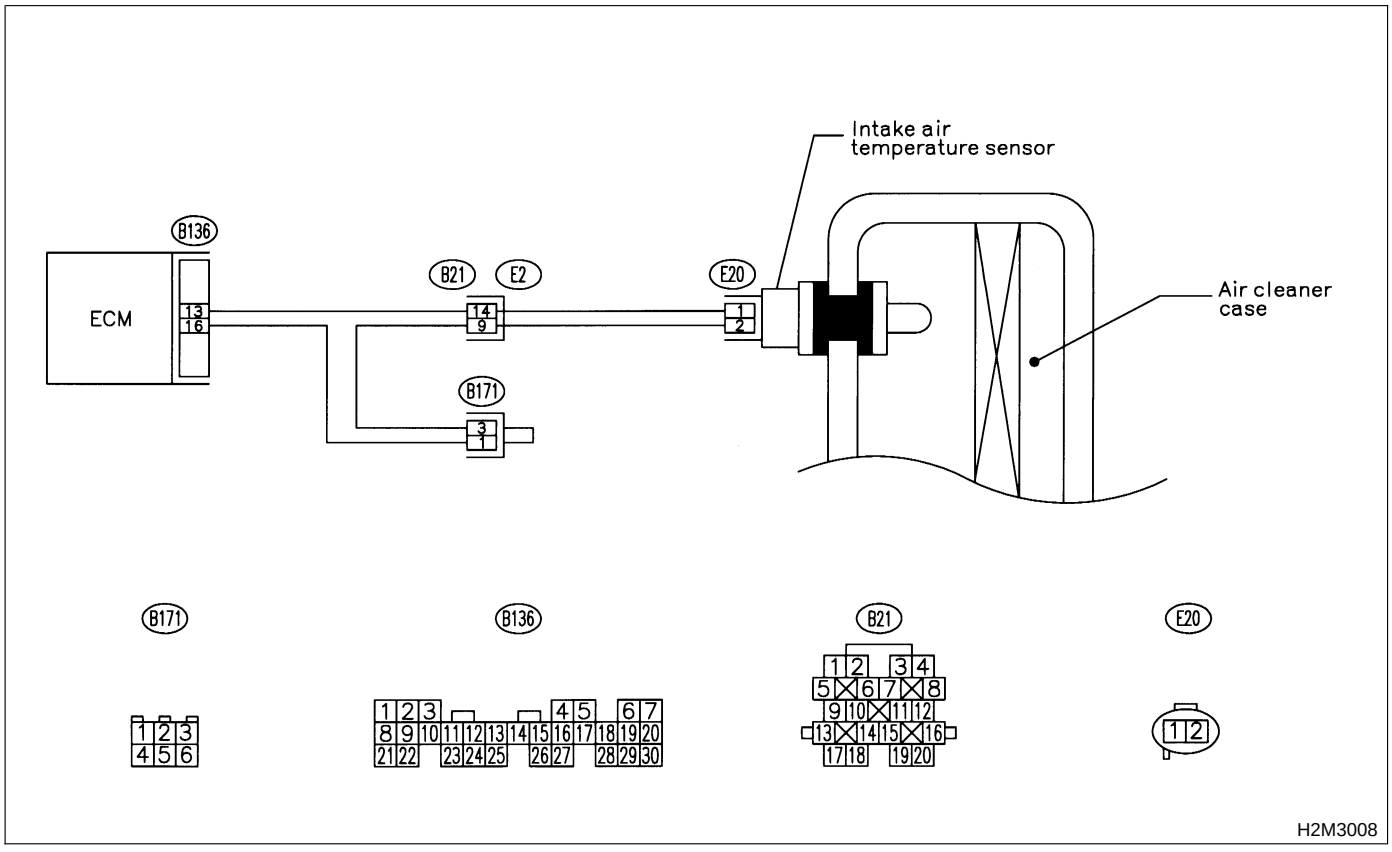
F: DTC P0112 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Poor driving performance

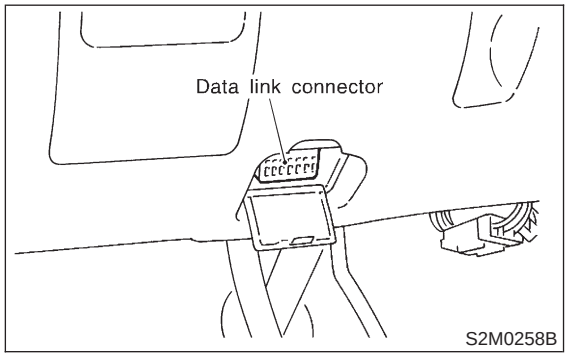
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10F1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON.
4) Start engine.
5) Read data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value greater than 120°C (248°F)?***
YES : Go to step **10F2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in intake air temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21) and (B171)

10F2 : CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from intake air temperature sensor.
3) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Read data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace intake air temperature sensor. <Ref. to 2-7 [W21A0].>
NO : Repair ground short circuit in harness between intake air temperature sensor and ECM connector.

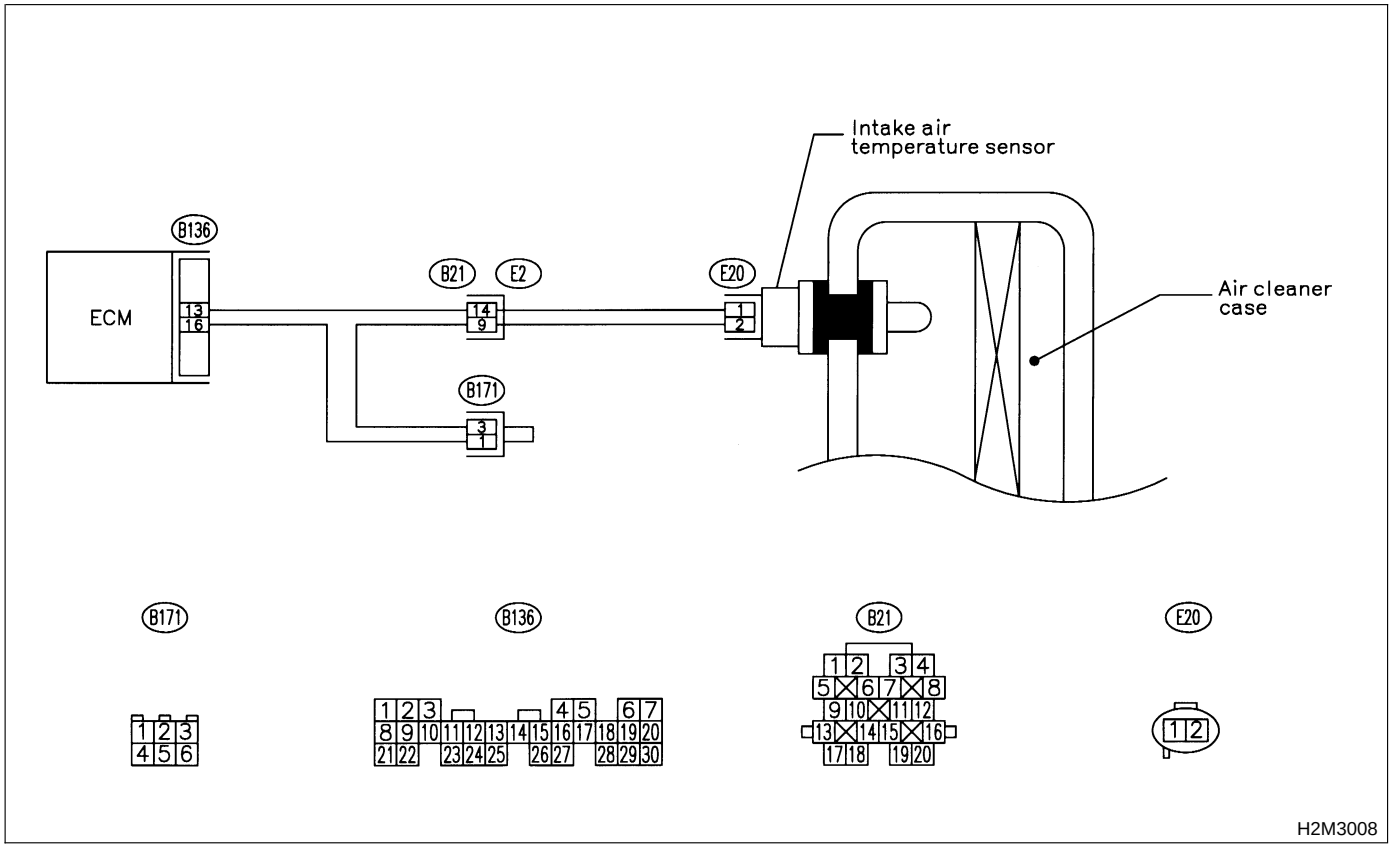
G: DTC P0113 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Poor driving performance

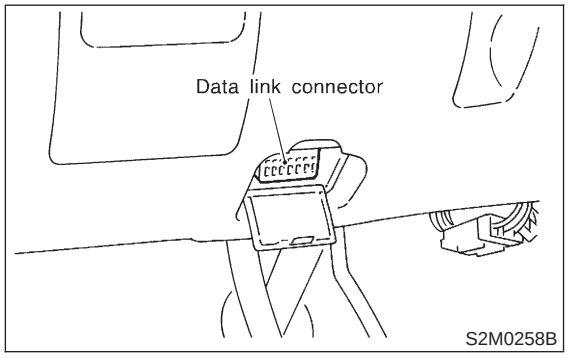
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10G1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON.
4) Start engine.
5) Read data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

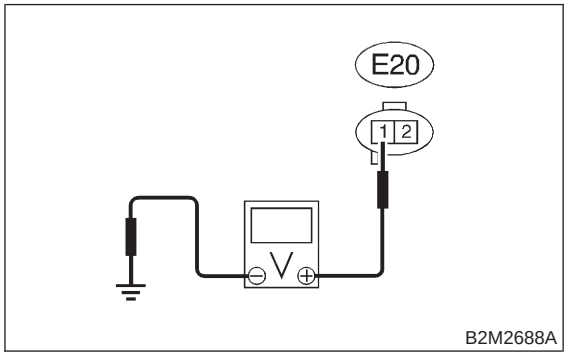
CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **10G2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in intake air temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21) and (B171)

10G2 : CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from intake air temperature sensor.
3) Measure voltage between intake air temperature sensor connector and engine ground.

Connector & terminal
(E20) No. 1 (+) — Engine ground (−):

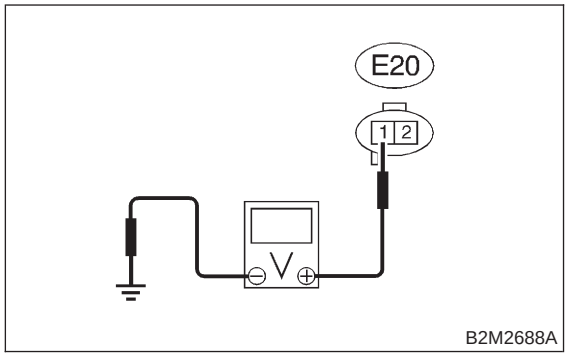


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between intake air temperature sensor and ECM connector.
NO : Go to step **10G3**.

10G3 : CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between intake air temperature sensor connector and engine ground.

Connector & terminal
(E20) No. 1 (+) — Engine ground (−):

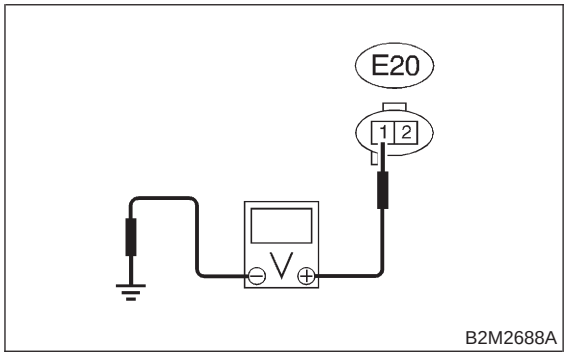


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between intake air temperature sensor and ECM connector.
NO : Go to step **10G4**.

10G4 : CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.

Measure voltage between intake air temperature sensor connector and engine ground.

Connector & terminal
(E20) No. 1 (+) — Engine ground (−):



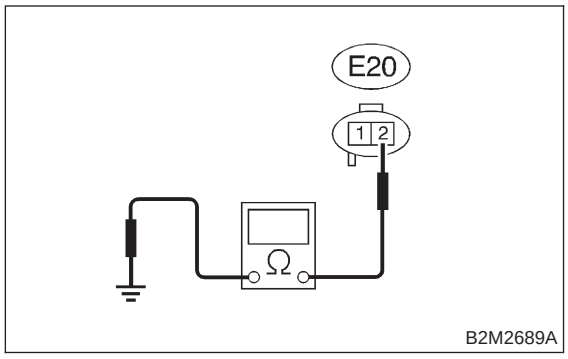
CHECK : ***Is the voltage more than 3 V?***
YES : Go to step **10G5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between intake air temperature sensor and ECM connector
- Poor contact in intake air temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)

10G5 : CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance of harness between intake air temperature sensor connector and engine ground.

Connector & terminal
(E20) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace intake air temperature sensor. <Ref. to 2-7 [W21A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between intake air temperature sensor and ECM connector
- Poor contact in intake air temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21) and (B171)

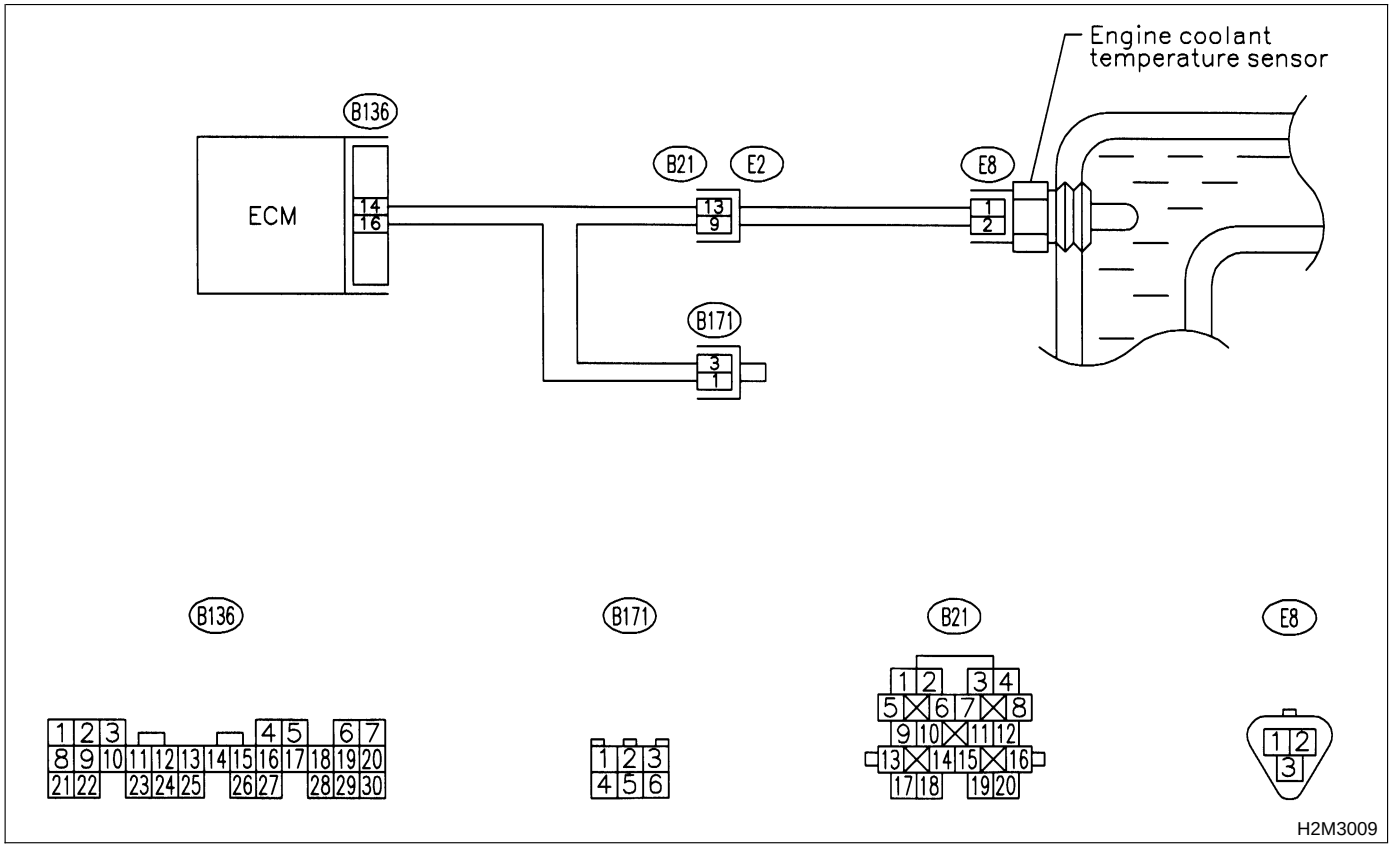
H: DTC P0116 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Hard to start
  - Erroneous idling
  - Poor driving performance

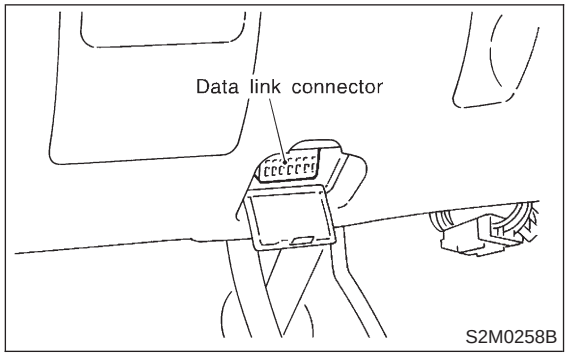
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10H1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

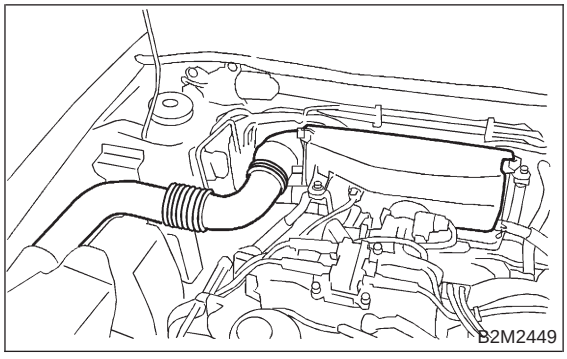
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value greater than 120°C (248°F)?***
YES : Go to step **10H2**.
NO : Repair poor contact.

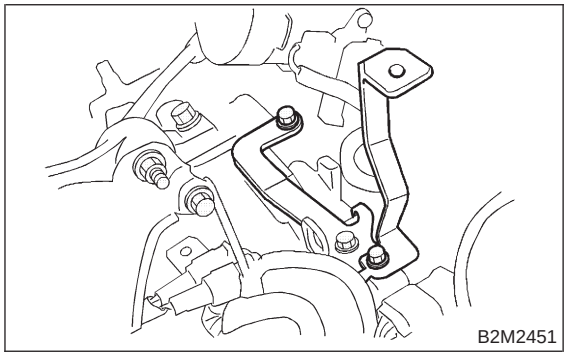
NOTE:
In this case, repair the following:
● Poor contact in engine coolant temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21) and (B171)

10H2 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

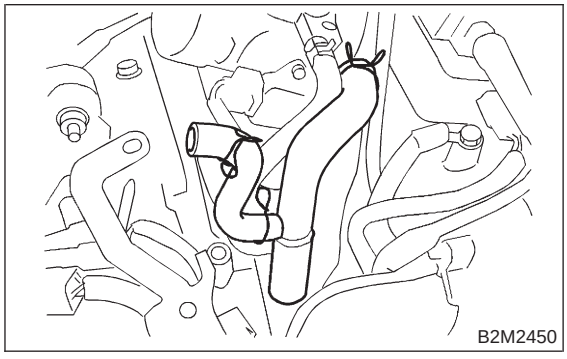
1) Turn ignition switch to OFF.
2) Remove air intake duct and air cleaner case assembly as a unit.



3) Remove engine harness connector bracket from cylinder block.



4) Remove blow-by hoses.



5) Disconnect connector from engine coolant temperature sensor.
6) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.
7) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A1].>
NO : Repair ground short circuit in harness between engine coolant temperature sensor and ECM connector.

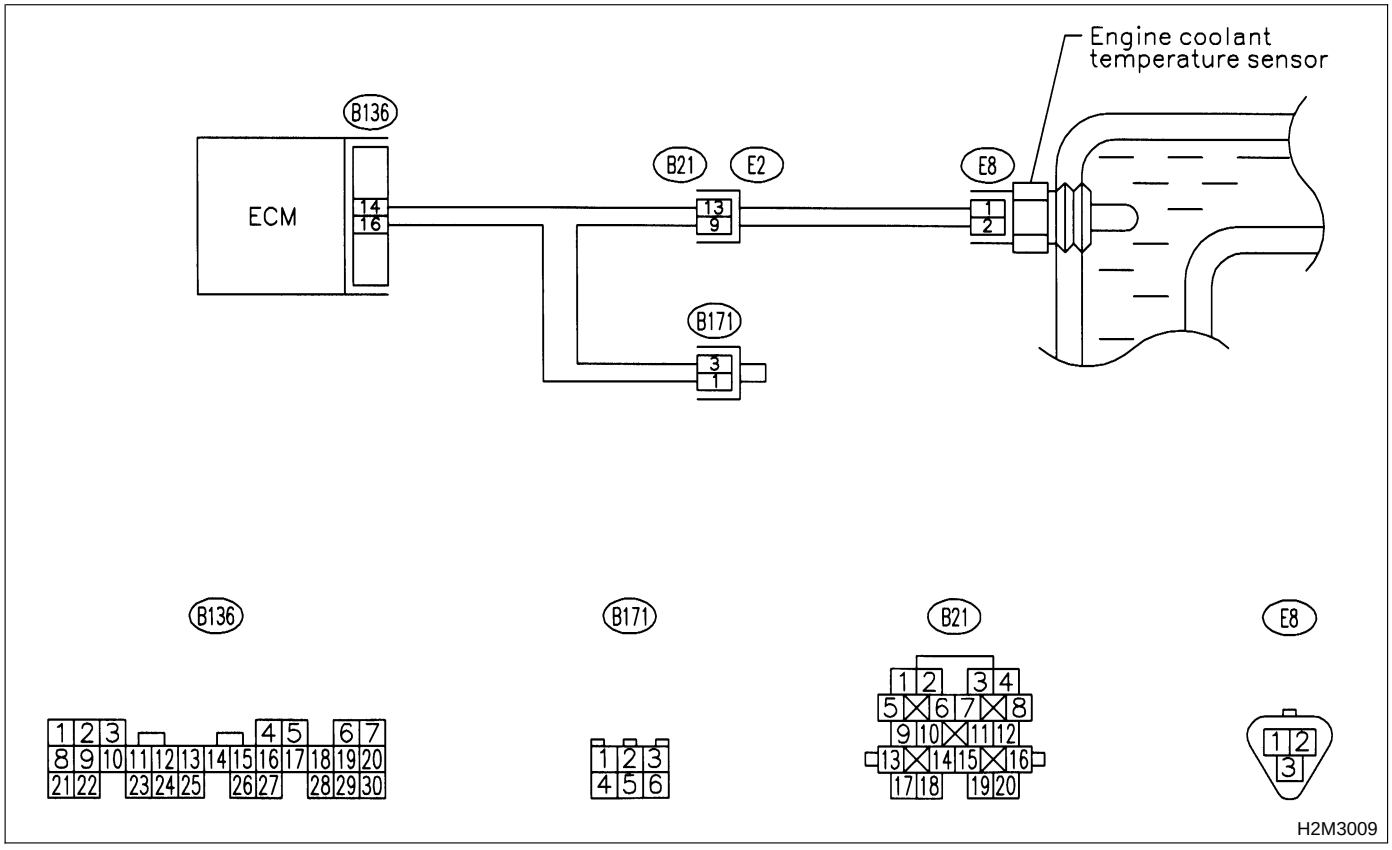
MEMO:

I: DTC P0117 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Hard to start
  - Erroneous idling
  - Poor driving performance

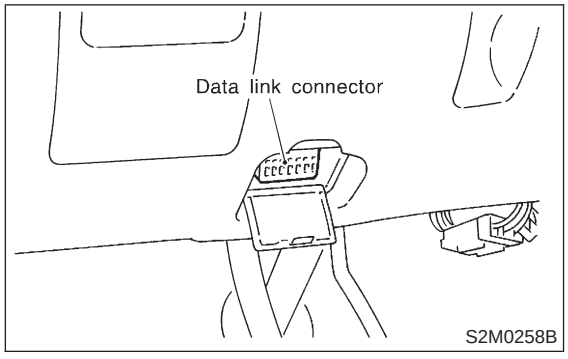
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10I1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

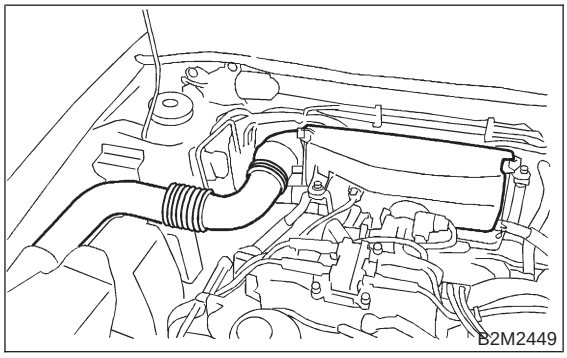
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **10I2**.
NO : Repair poor contact.

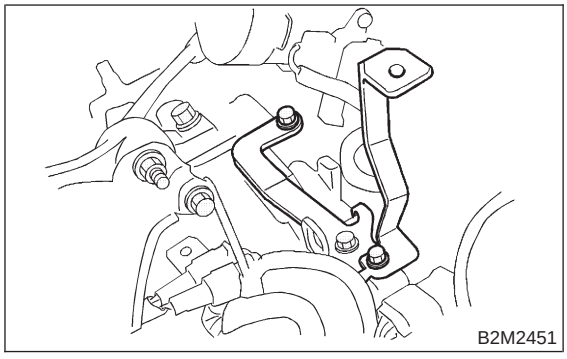
NOTE:
In this case, repair the following:
● Poor contact in engine coolant temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21) and (B171)

10I2 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

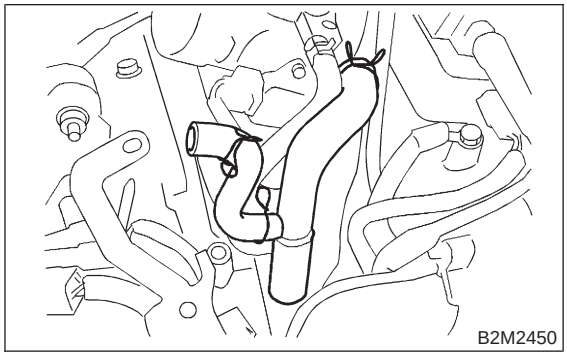
1) Turn ignition switch to OFF.
2) Remove air intake duct and air cleaner case assembly as a unit.



3) Remove engine harness connector bracket from cylinder block.



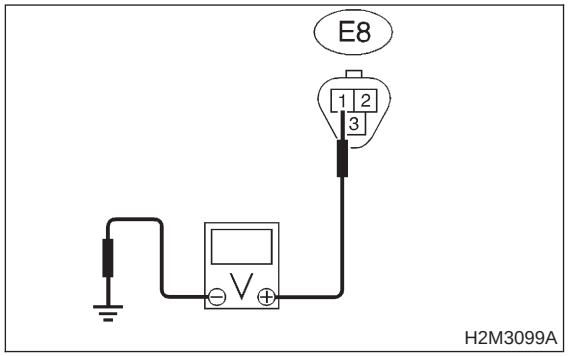
4) Remove blow-by hoses.



5) Disconnect connector from engine coolant temperature sensor.

6) Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (−):

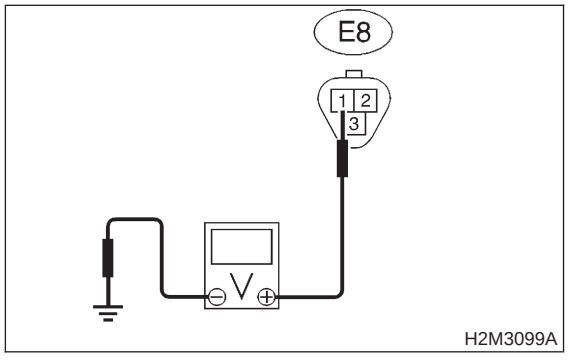


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.
NO : Go to step **10I3**.

10I3 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (−):

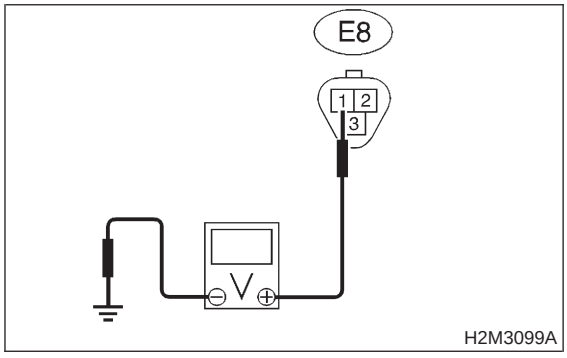


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.
NO : Go to step **10I4**.

10I4 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (−):



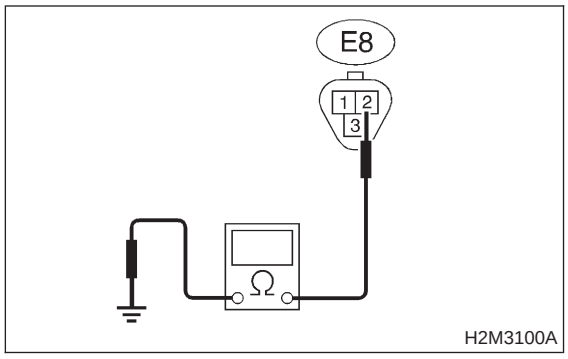
CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **10I5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

10I5 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance of harness between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A1].>
NO : Repair harness and connector.

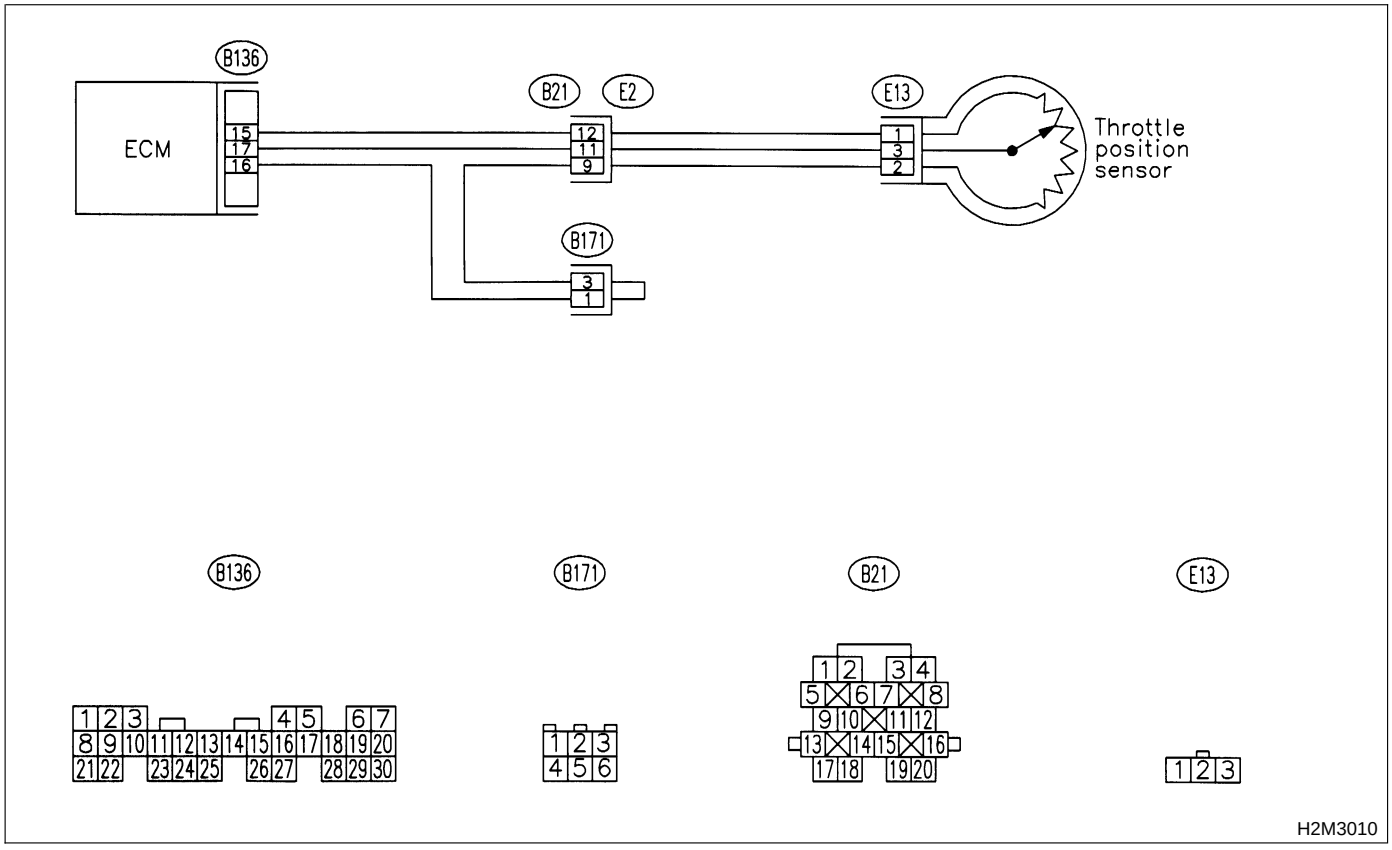
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) and (B171)

J: DTC P0121 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10J1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0107, P0108, P0122 or P0123?***

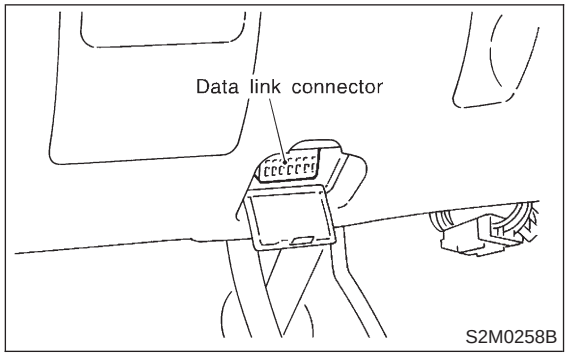
YES : Inspect DTC P0107, P0108, P0122 or P0123 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0121.

NO : Go to step **10J2**.

10J2 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 53.3 kPa (400 mmHg, 15.75 inHg)?***

YES : Replace intake manifold pressure sensor. <Ref. to 2-7 [W20A0].>

NO : Replace throttle position sensor. <Ref. to 2-7 [W9A1].>

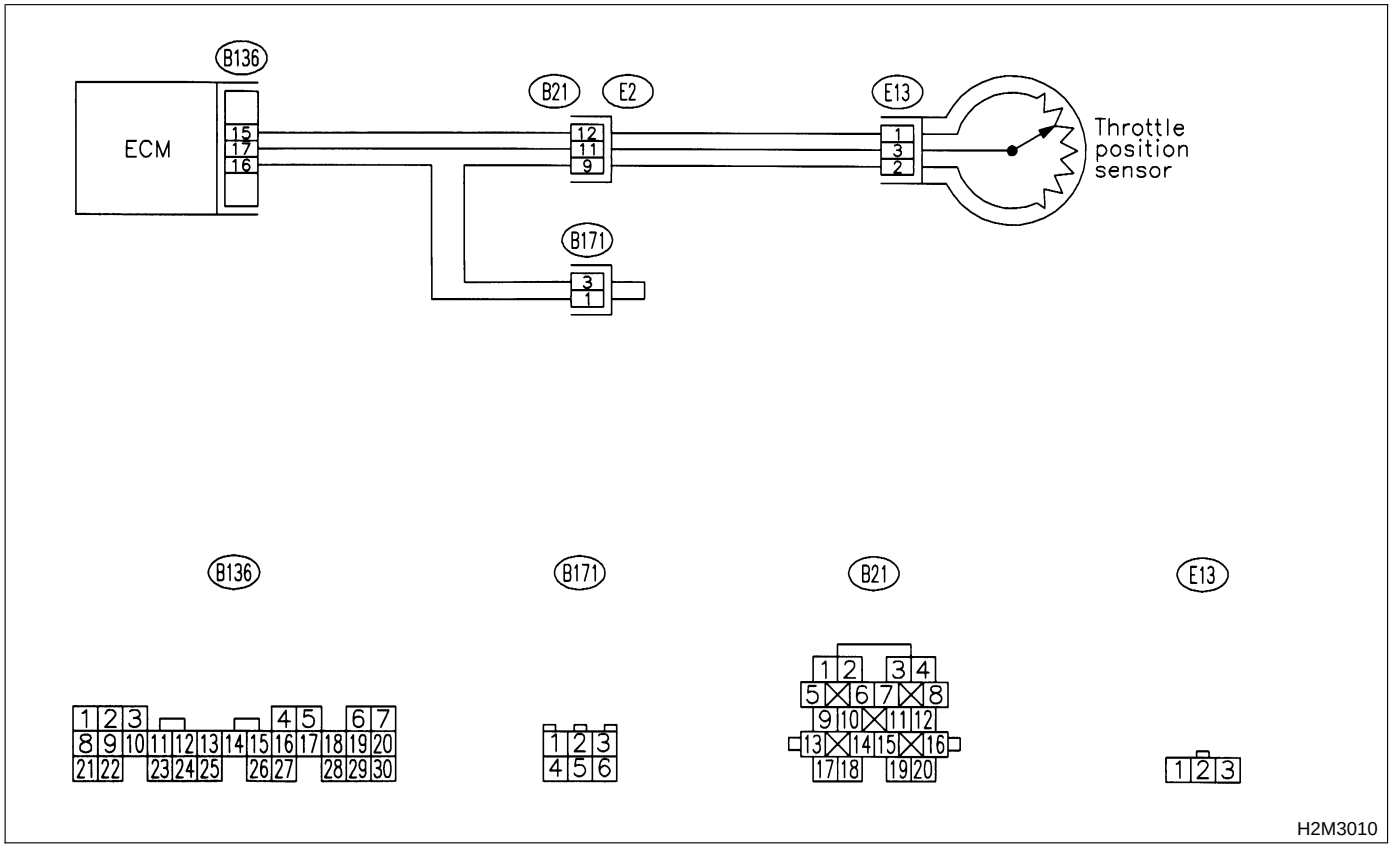
K: DTC P0122 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

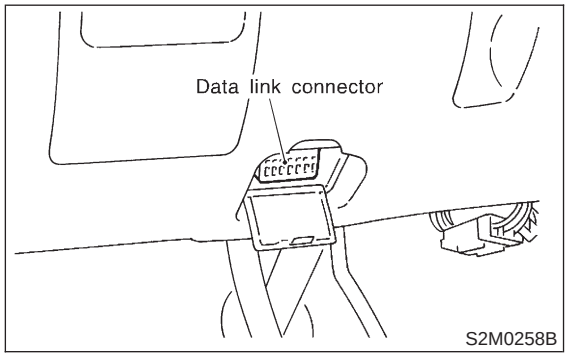
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10K1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

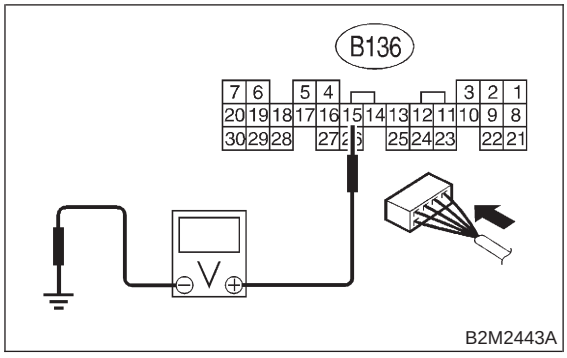
CHECK : ***Is the value less than 0.1 V?***
YES : Go to step **10K2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
● Poor contact in throttle position sensor connector
● Poor contact in ECM connector
● Poor contact in coupling connector (B21) and (B171)

10K2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground while throttle valve is fully closed.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

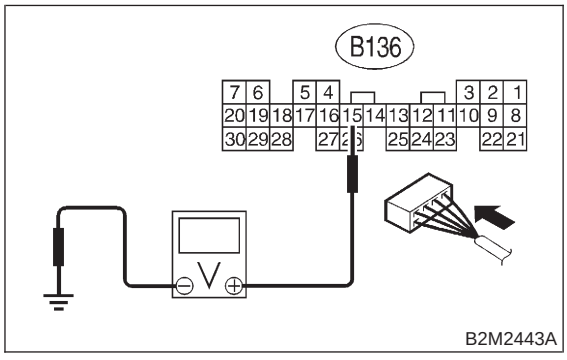


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10K4**.
NO : Go to step **10K3**.

10K3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



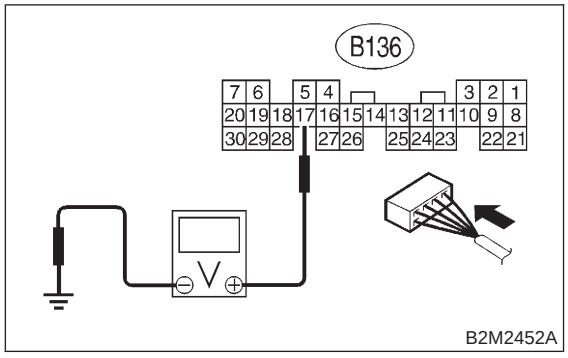
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10K4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 17 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.1 V?***
YES : Go to step **10K6**.
NO : Go to step **10K5**.

10K5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

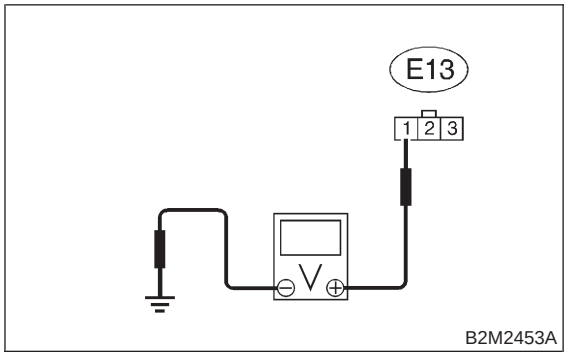
Measure voltage between ECM connector and chassis ground.

CHECK : ***Does the voltage change more than 0.1 V by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10K6**.

10K6 : CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from throttle position sensor.
3) Turn ignition switch to ON.
4) Measure voltage between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 1 (+) — Engine ground (−):



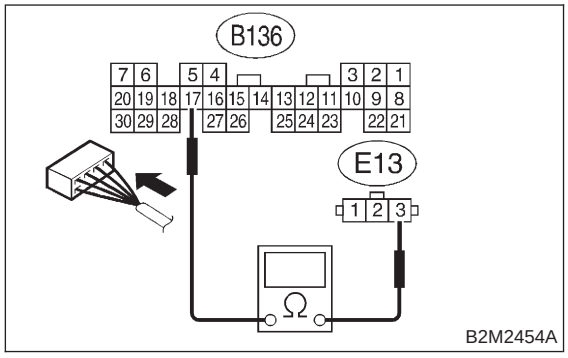
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10K7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in throttle position sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

10K7 : CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance of harness between ECM connector and throttle position sensor connector.

Connector & terminal
(B136) No. 17 — (E13) No. 3:



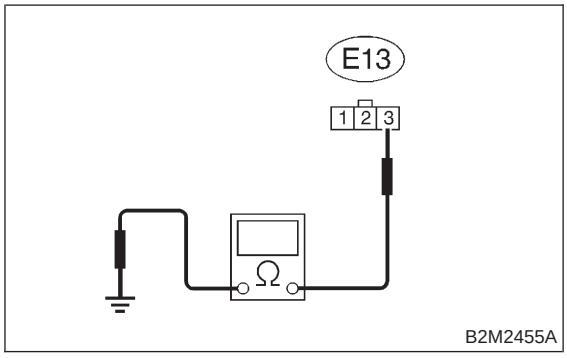
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10K8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in throttle position sensor connector
- Poor contact in coupling connector (B21) and (B171)

10K8 : CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.

Measure resistance of harness between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 3 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between throttle position sensor and ECM connector.
NO : Go to step **10K9**.

10K9 : CHECK POOR CONTACT.

Check poor contact in throttle position sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in throttle position sensor connector?***
YES : Repair poor contact in throttle position sensor connector.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A1].>

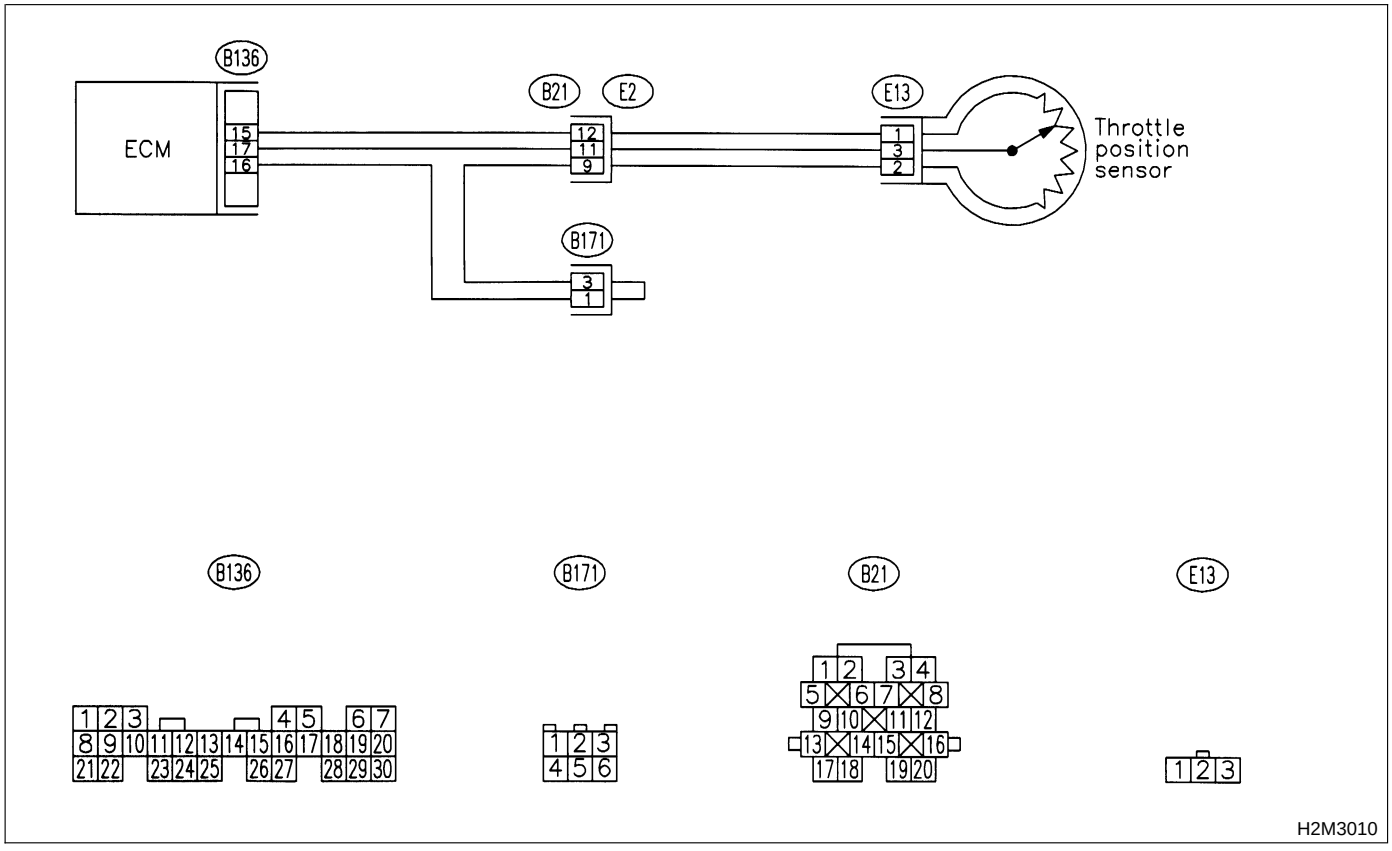
L: DTC P0123 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

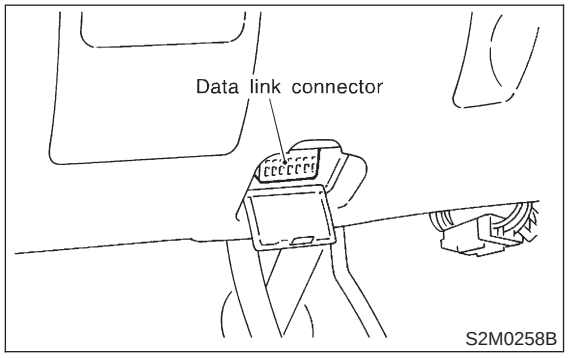
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10L1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

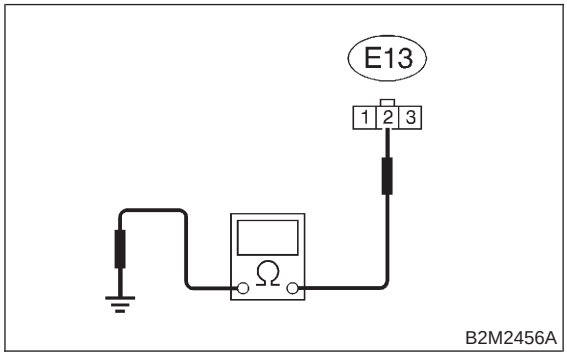
CHECK : ***Is the value more than 4.9 V?***
YES : Go to step **10L2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
● Poor contact in throttle position sensor connector
● Poor contact in ECM connector
● Poor contact in coupling connector (B21) and (B171)

10L2 : CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance of harness between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 2 — Engine ground:



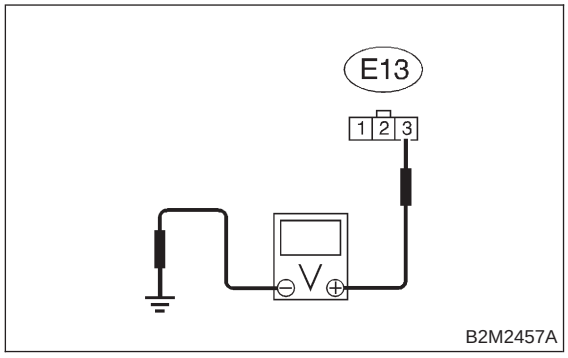
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10L3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between throttle position sensor and ECM connector
● Poor contact in coupling connector (B21) and (B171)

10L3 : CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 3 (+) — Engine ground (−):



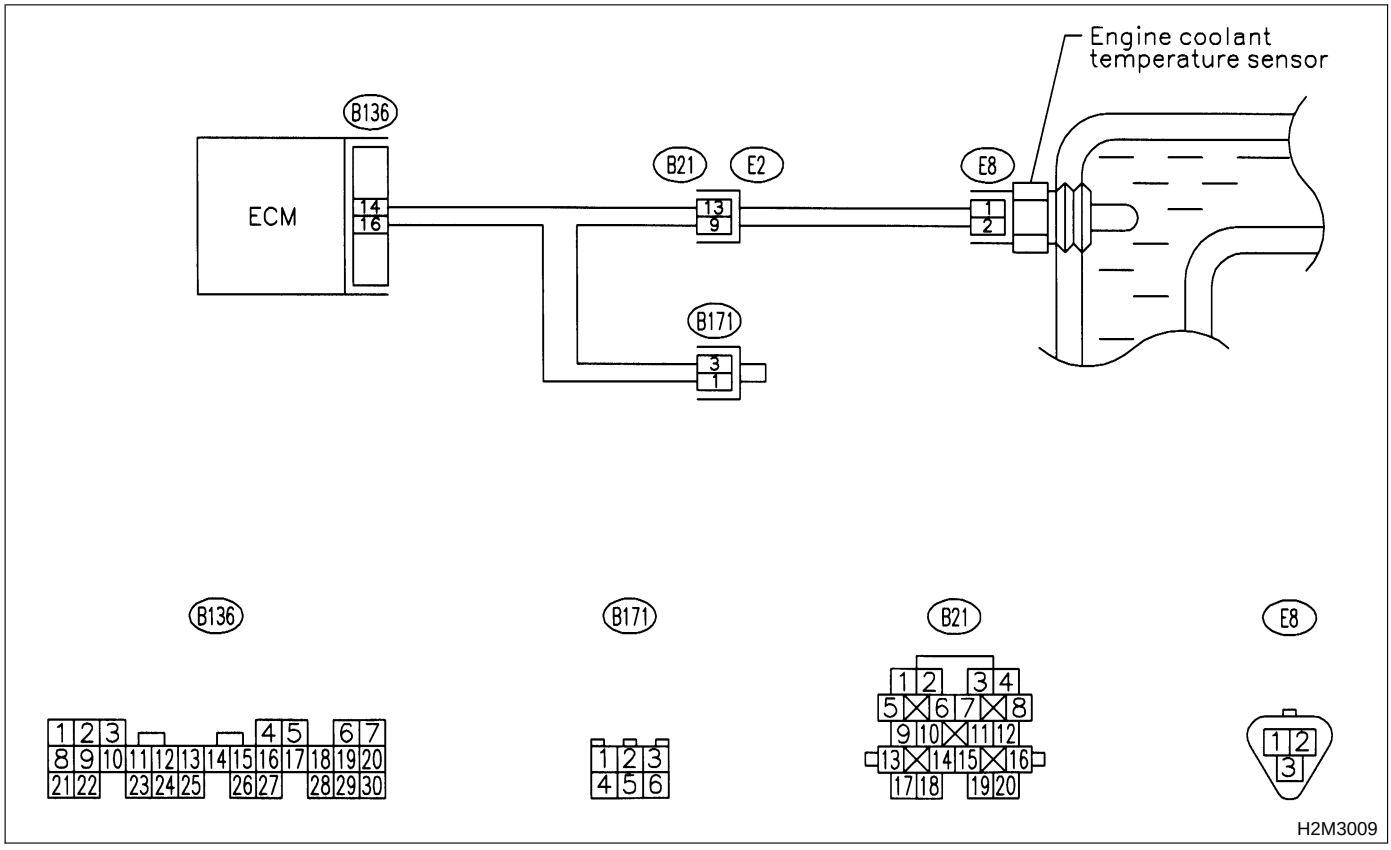
CHECK : ***Is the voltage more than 4.9 V?***
YES : Repair battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A1].>

M: DTC P0125 — INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine would not return to idling.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10M1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0116 or P0117?***

YES : Inspect DTC P0116 or P0117 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0125.

NO : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A1].>

N: DTC P0131 — FRONT OXYGEN (A/F) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

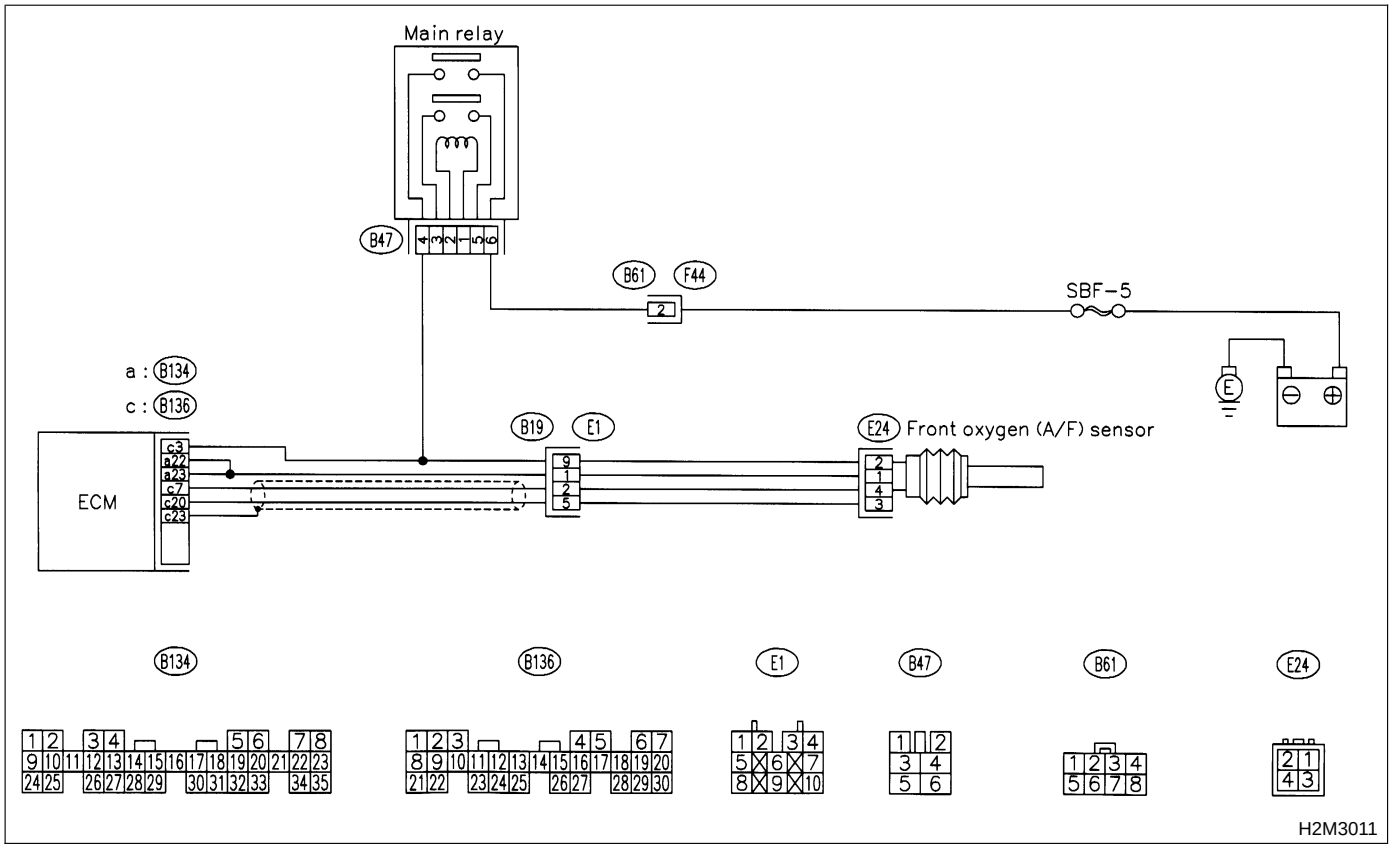
NOTE:
For the diagnostic procedure, refer to 2-7 [T10O0]. <Ref. to 2-7 [T10O0].>

O: DTC P0132 — FRONT OXYGEN (A/F) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10O1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

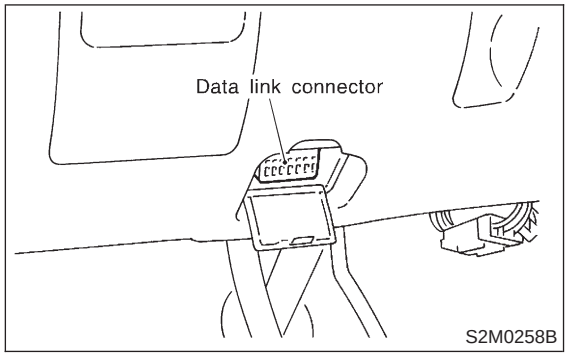
CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1130 or P1131?***

YES : Inspect DTC P1130 or P1131 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10O2**.

10O2 : CHECK FRONT (A/F) OXYGEN SENSOR DATA.

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Start engine and Turn the Subaru Select Monitor and the OBD-II general scan tool switch to ON.
4) Warm-up the engine until coolant temperature is above 70°C (160°F).
5) Read data of front oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value equal to or more than 0.85 and equal to less than 1.15?***
YES : Go to step **10O3**.
NO : Go to step **10O4**.

10O3 : CHECK REAR OXYGEN SENSOR SIGNAL.

1) Race engine at speeds from idling to 5,000 rpm for a total of 5 cycles.
2) Operate the LED operation mode for engine.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <Ref. to 2-7 [T3C8].>

CHECK : ***Does the LED of {Rear O2 Rich Signal} blink?***
YES : Repair poor contact in front oxygen (A/F) sensor and rear oxygen sensor connector.
NO : Check rear oxygen sensor circuit. <Ref. to 2-7 [T10Q0].>

10O4 : CHECK EXHAUST SYSTEM.

Check exhaust system parts.

NOTE:
Check the following items.
● Loose installation of portions
● Damage (crack, hole etc.) of parts
● Looseness of front oxygen (A/F) sensor
● Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor

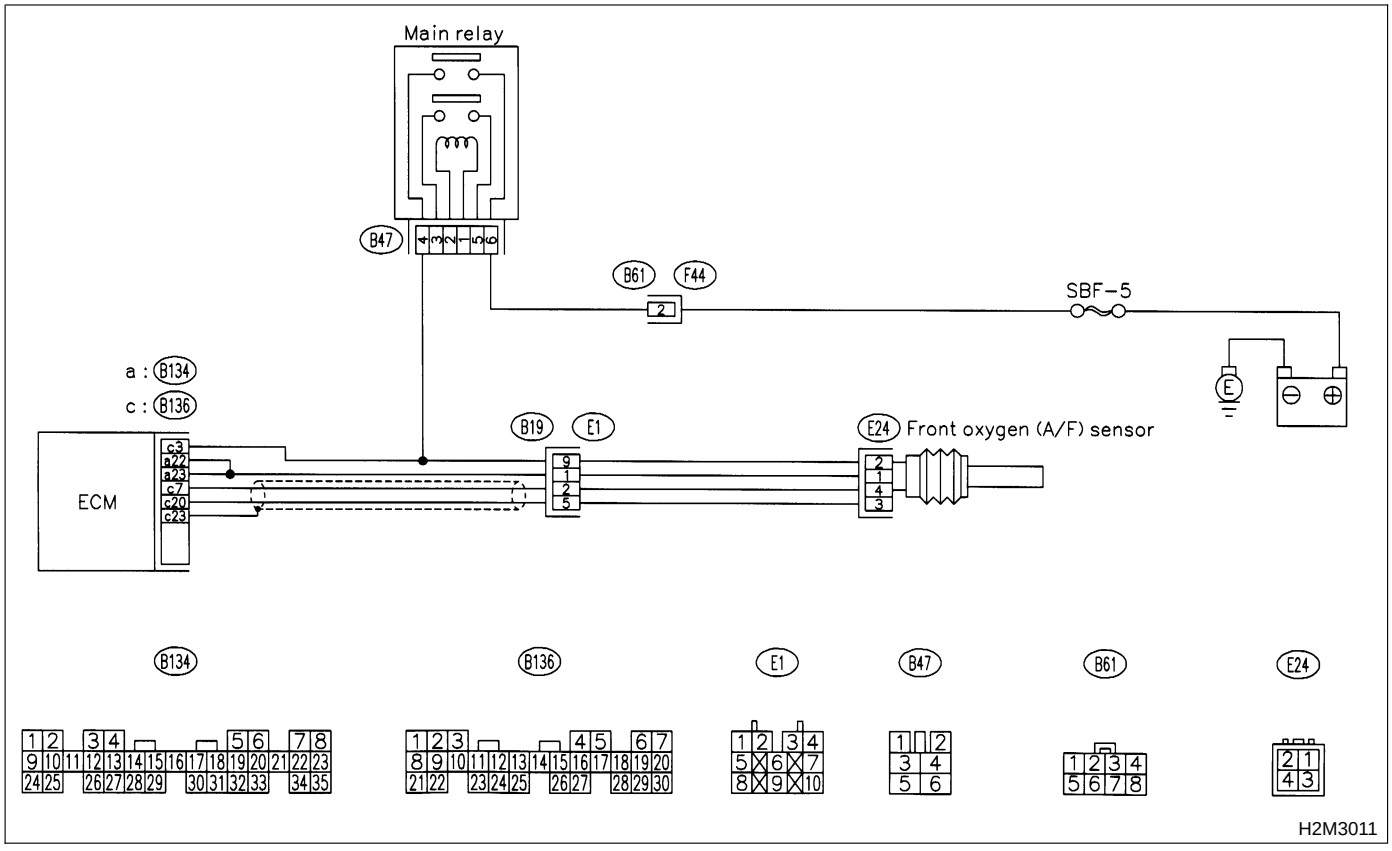
CHECK : ***Is there a fault in exhaust system?***
YES : Repair or replace faulty parts.
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W7A0].>

P: DTC P0133 — FRONT OXYGEN (A/F) SENSOR CIRCUIT SLOW RESPONSE —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10P1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1130 or P1131?***

YES : Inspect DTC P1130 or P1131 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0133.

NO : Go to step **10P2**.

10P2 : CHECK EXHAUST SYSTEM.

NOTE:
Check the following items.
- Loose installation of front portion of exhaust pipe onto cylinder heads
- Loose connection between front exhaust pipe and front catalytic converter
- Damage of exhaust pipe resulting in a hole

CHECK : ***Is there a fault in exhaust system?***

YES : Repair exhaust system.

NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W7A0].>

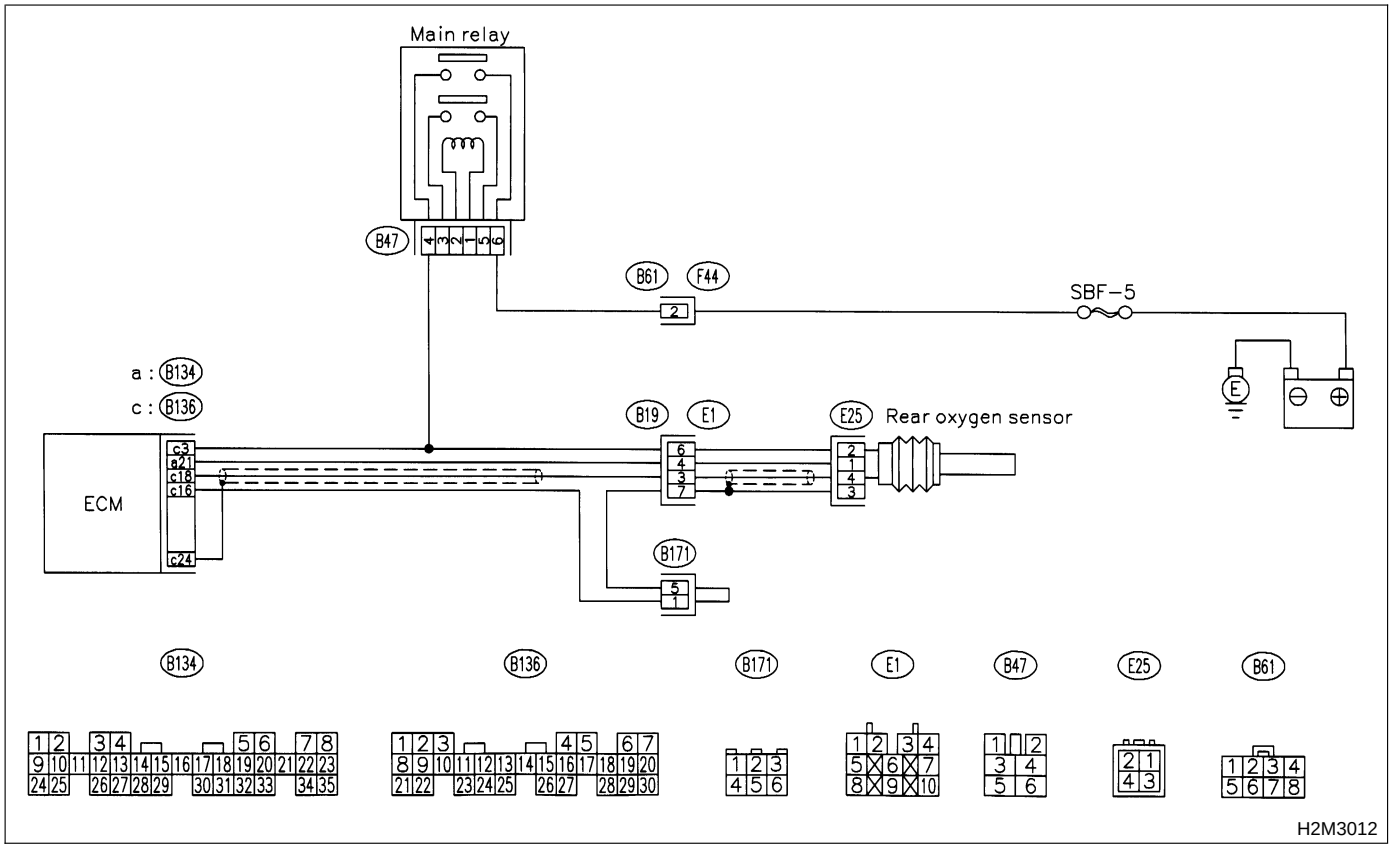
MEMO:

Q: DTC P0136 — REAR OXYGEN SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10Q1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1130 or P1131?***

YES : Go to step **10Q2**.

NO : Go to step **10Q3**.

10Q2 : CHECK FAILURE CAUSE OF P1130 OR P1131.

Inspect DTC P1130 or P1131 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

CHECK : ***Is the failure cause of P1130 or P1131 in the fuel system?***

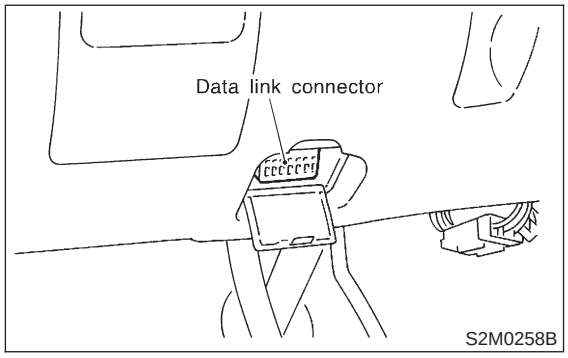
YES : Check fuel system.

NOTE:
In this case, it is not necessary to inspect DTC P0136.

NO : Go to step **10Q3**.

10Q3 : CHECK REAR OXYGEN SENSOR DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or OBD-II general scan tool to data link connector.



3) Start the engine, and turn Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Warm-up the engine until engine coolant temperature is above 70°C (160°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes.
5) Read data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Does the value fluctuate?***
YES : Go to step **10Q7**.
NO : Go to step **10Q4**.

10Q4 : CHECK REAR OXYGEN SENSOR DATA.

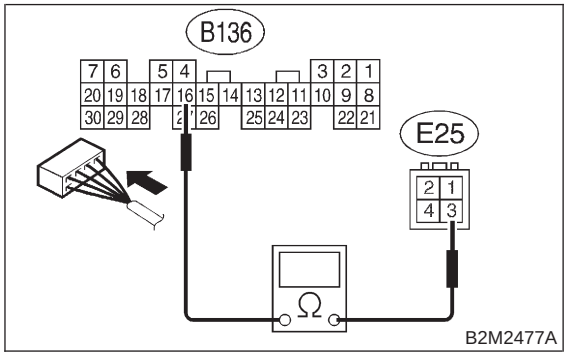
Read data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II General Scan Tool.

CHECK : ***Is the value fixed between 0.2 and 0.4 V?***
YES : Go to step **10Q5**.
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

10Q5 : CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 16 — (E25) No. 3:

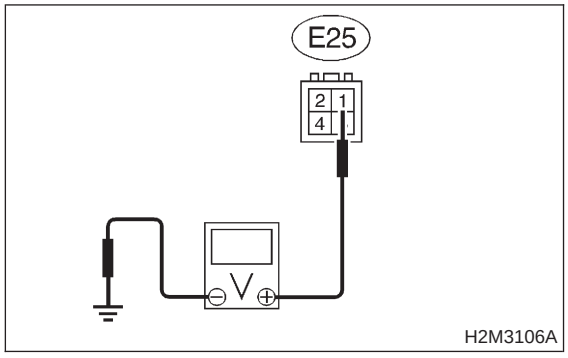


CHECK : ***Is the resistance more than 3 Ω?***
YES : Repair open circuit in harness between ECM and rear oxygen sensor connector.
NO : Go to step **10Q6**.

10Q6 : CHECK HARNESS BETWEEN REAR OXYGEN SENSOR AND ECM CONNECTOR.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between rear oxygen sensor harness connector and engine ground or chassis ground.

Connector & terminal
(E25) No. 1 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 0.2 V?***
YES : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
- Poor contact in rear oxygen sensor connector
- Poor contact in ECM connector

10Q7 : CHECK EXHAUST SYSTEM.

Check exhaust system parts.

NOTE:
Check the following items.
- Loose installation of portions
- Damage (crack, hole etc.) of parts
- Looseness and ill fitting of parts between front oxygen sensor and rear oxygen sensor

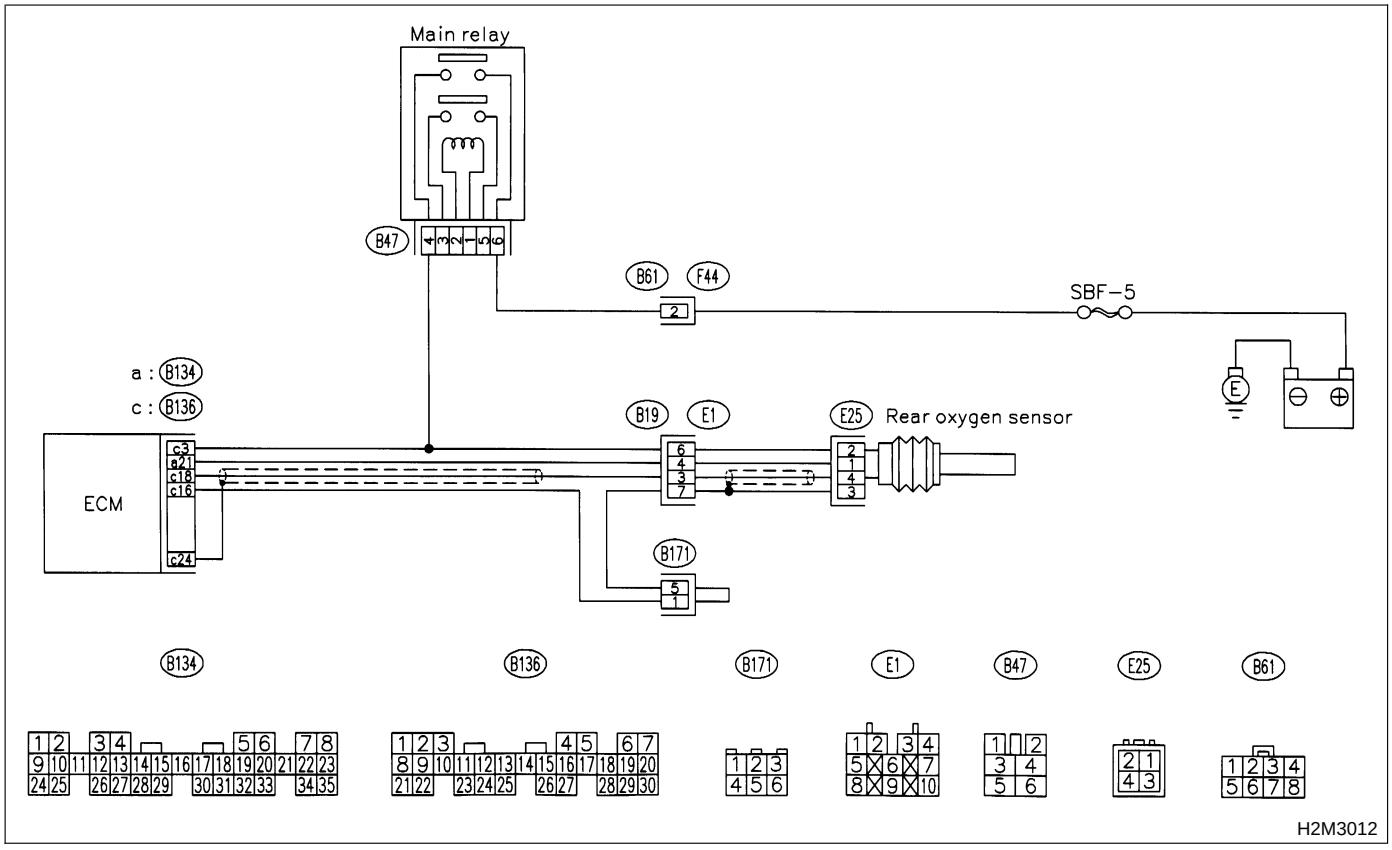
CHECK : ***Is there a fault in exhaust system?***
YES : Repair or replace faulty parts.
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

R: DTC P0139 — REAR OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10R1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0136?***

YES : Inspect DTC P0136 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0139.

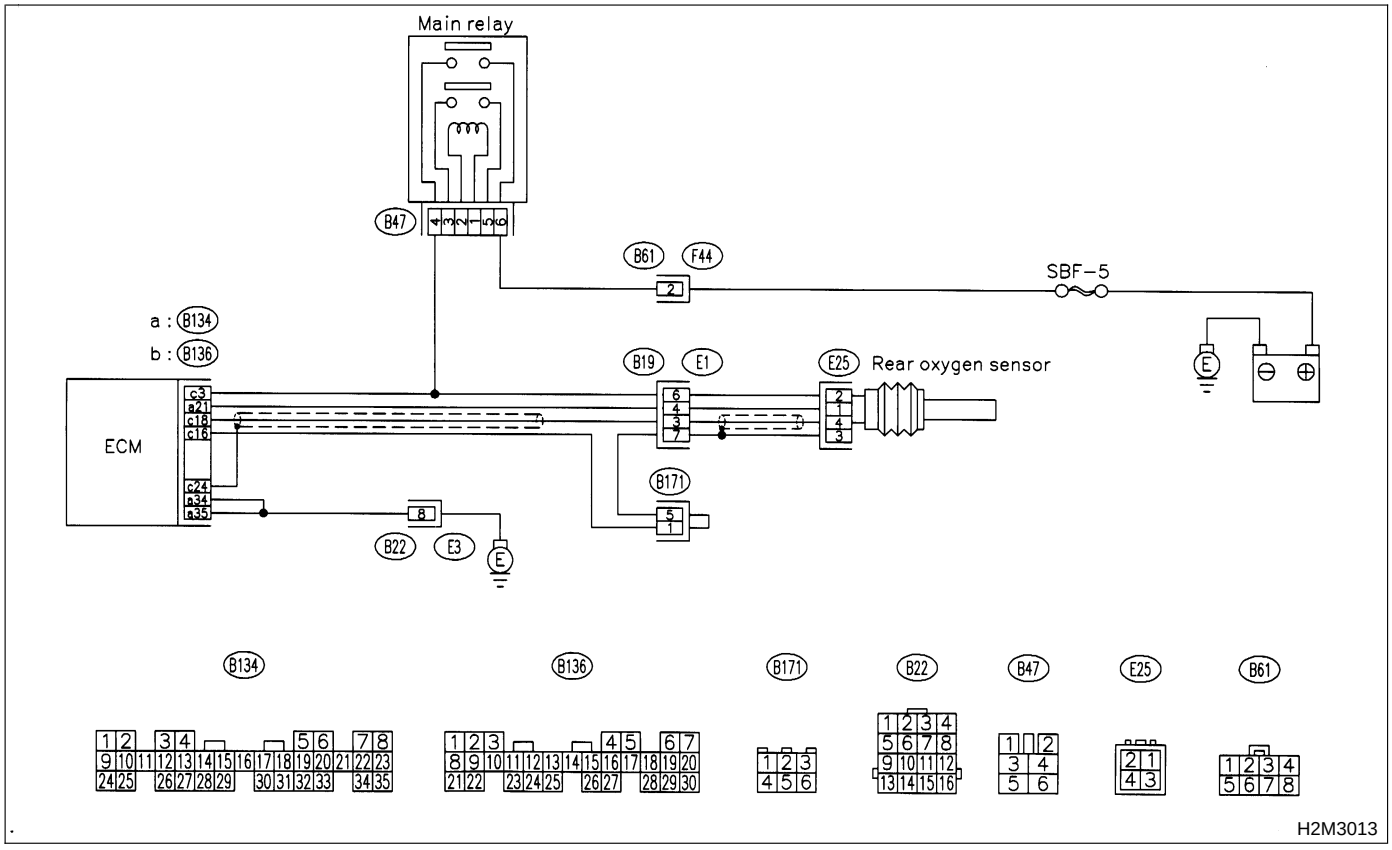
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

S: DTC P0141 — REAR OXYGEN SENSOR HEATER CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10S1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0141 and P0135 at the same time?***

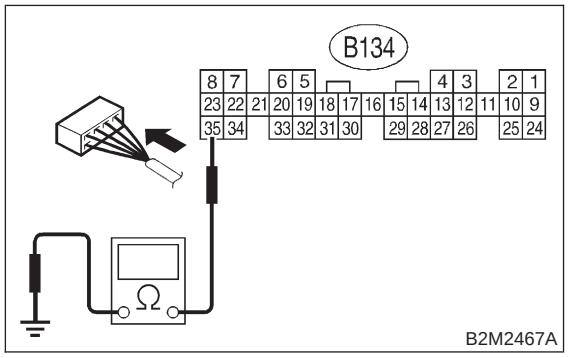
YES : Go to step **10S2**.

NO : Go to step **10S3**.

10S2 : CHECK GROUND CIRCUIT OF ECM.

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

Connector & terminal
(B134) No. 35 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10S4**.
NO : Go to step **10S3**.

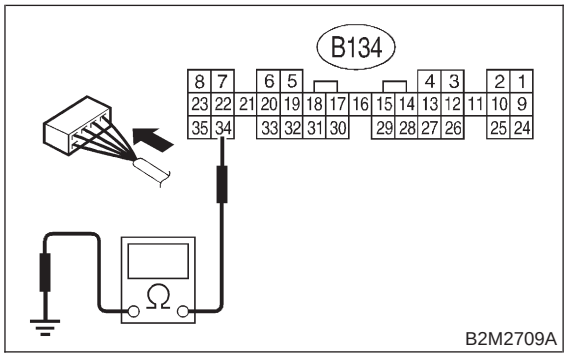
10S3 : CHECK GROUND CIRCUIT OF ECM.

1) Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

2) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B134) No. 34 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10S4**.
NO : Repair harness and connector.

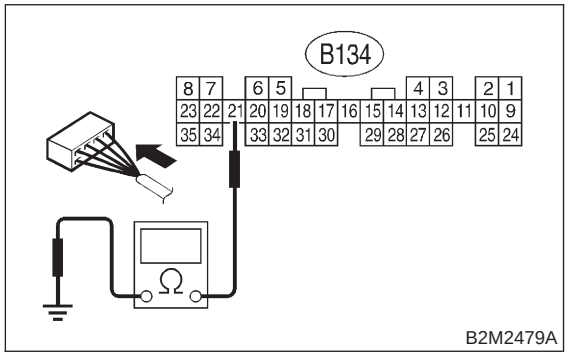
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector

Poor contact in coupling connector (B22)

10S4 : CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 — Chassis ground:

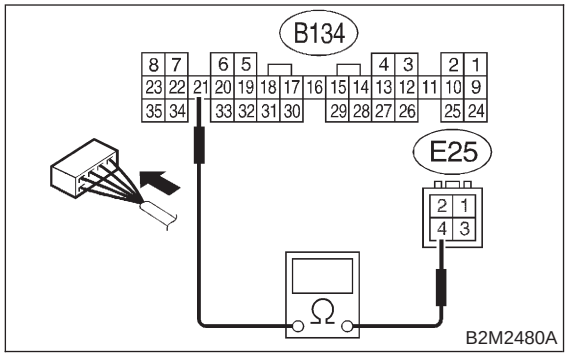


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and rear oxygen sensor connector.
NO : Go to step **10S5**.

10S5 : CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.

1) Disconnect connector from rear oxygen sensor.
2) Measure resistance of harness between ECM and rear oxygen sensor connector.

Connector & terminal
(B134) No. 21 — (E25) No. 4:

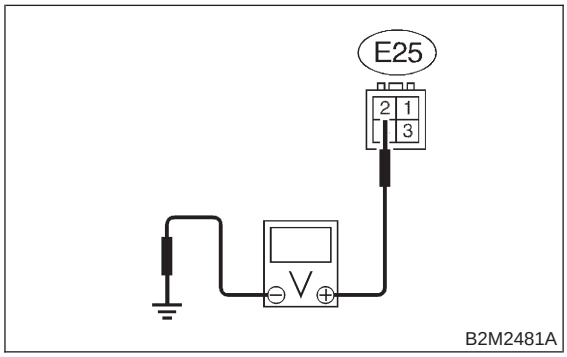


CHECK : ***Is the resistance less than 3 Ω?***
YES : Go to step **10S6**.
NO : Repair open circuit in harness between ECM and rear oxygen sensor connector.

10S6 : CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between rear oxygen sensor connector and engine ground or chassis ground.

Connector & terminal
(E25) No. 2 (+) — Engine ground (−):



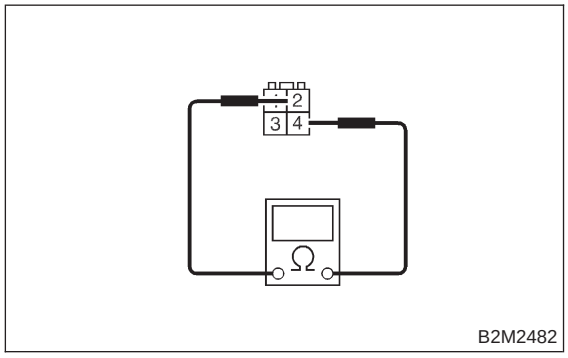
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10S7**.
NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and rear oxygen sensor connector
- Poor contact in rear oxygen sensor connector
- Poor contact in coupling connector (E1)

10S7 : CHECK REAR OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between rear oxygen sensor connector terminals.

Terminals
No. 2 — No. 4:



CHECK : ***Is the resistance less than 30 Ω?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
- Poor contact in rear oxygen sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (E1)

NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

T: DTC P0171 — FUEL TRIM MALFUNCTION (A/F TOO LEAN) —

NOTE:
For the diagnostic procedure, refer to 2-7 [T10U0]. <Ref. to 2-7 [T10U0].>

U: DTC P0172 — FUEL TRIM MALFUNCTION (A/F TOO RICH) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

10U1 : CHECK EXHAUST SYSTEM.

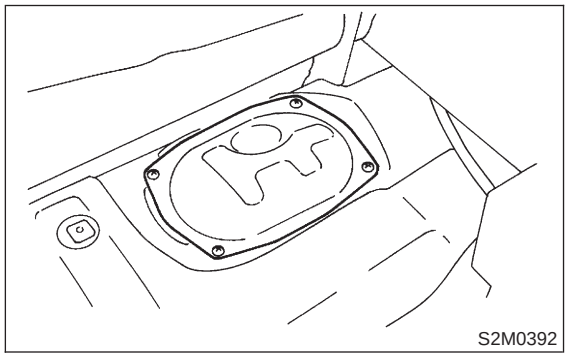
CHECK : ***Are there holes or loose bolts on exhaust system?***
YES : Repair exhaust system.
NO : Go to step **10U2**.

10U2 : CHECK AIR INTAKE SYSTEM.

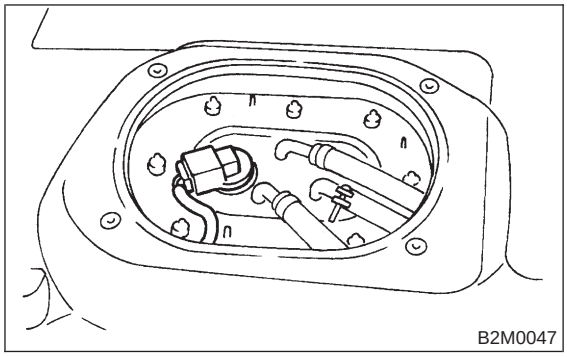
CHECK : ***Are there holes, loose bolts or disconnection of hose on air intake system?***
YES : Repair air intake system.
NO : Go to step **10U3**.

10U3 : CHECK FUEL PRESSURE.

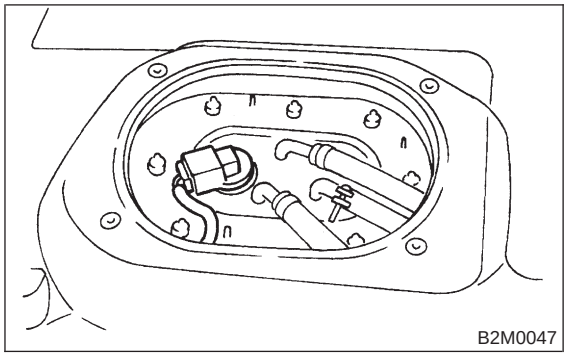
1) Release fuel pressure.
   (1) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


S2M0392

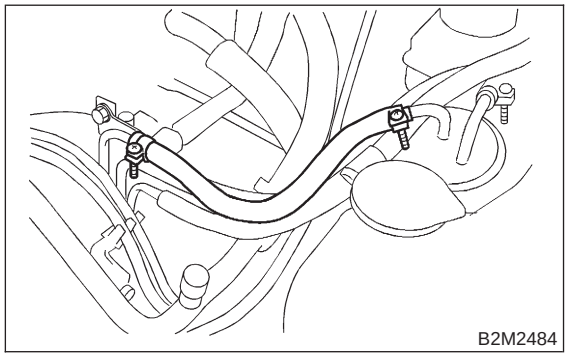
   (2) Disconnect connector from fuel tank.


B2M0047

   (3) Start the engine, and run it until it stalls.
   (4) After stopping the engine, crank the engine for 5 to 7 seconds to reduce fuel pressure.
   (5) Turn ignition switch to OFF.
   (6) Remove fuel filler cap.
2) Connect connector to fuel tank.


B2M0047

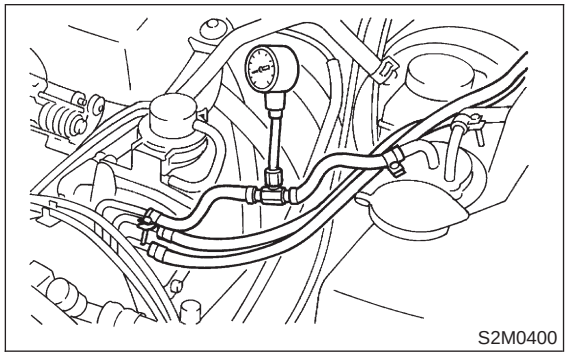
3) Disconnect fuel delivery hose from fuel filter, and connect fuel pressure gauge.


B2M2484

4) Install fuel filler cap.
5) Start the engine and idle while gear position is neutral.
6) Measure fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.

WARNING:
Before removing fuel pressure gauge, release fuel pressure.

NOTE:
If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.


S2M0400

CHECK : ***Is fuel pressure between 284 and 314 kPa (2.9 — 3.2 kg/cm^2, 41 — 46 psi)?***
YES : Go to step **10U4**.
NO : Repair the following items.

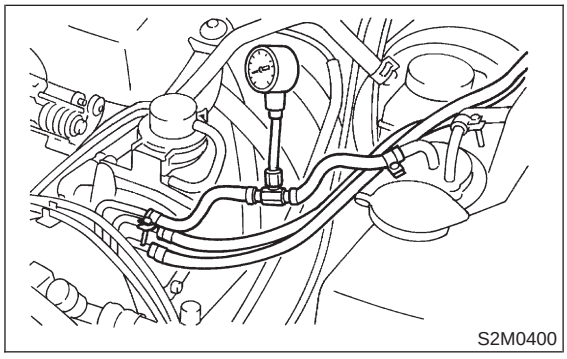
Fuel pressure too high	● Clogged fuel return line or bent hose
Fuel pressure too low	● Improper fuel pump discharge ● Clogged fuel supply line

10U4 : CHECK FUEL PRESSURE.

After connecting pressure regulator vacuum hose, measure fuel pressure.

WARNING:
Before removing fuel pressure gauge, release fuel pressure.

NOTE:
● If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.
● If out of specification as measured at this step, check or replace pressure regulator and pressure regulator vacuum hose.


S2M0400

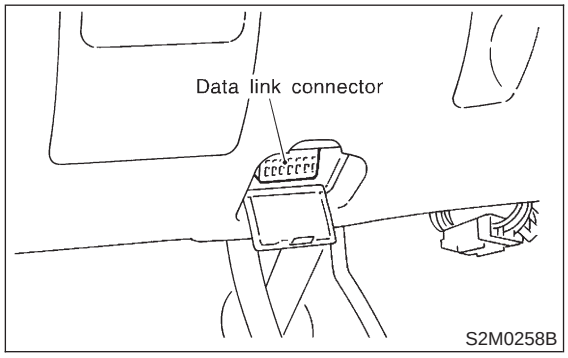
CHECK : ***Is fuel pressure between 206 and 235 kPa (2.1 — 2.4 kg/cm^2, 30 — 34 psi)?***
YES : Go to step **10U5**.
NO : Repair the following items.

Fuel pressure too high	● Faulty pressure regulator ● Clogged fuel return line or bent hose
Fuel pressure too low	● Faulty pressure regulator ● Improper fuel pump discharge ● Clogged fuel supply line

NOTE:
The fuel pressure gauge resisters 10 to 20 kPa (0.1 to 0.2 kg/cm^2, 1.4 to 2.8 psi) higher than standard values during high-altitude operations.

10U5 : CHECK ENGINE COOLANT TEMPERATURE SENSOR. < REF. TO 2-7 [T10H0].> OR <REF. TO 2-7 [T10I0].>

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Start the engine and warm-up completely.
4) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is temperature greater than 60°C (140°F)?***
YES : Go to step **10U6**.
NO : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A1].>

10U6 : CHECK INTAKE MANIFOLD PRESSURE SENSOR.

1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).
2) Place the shift lever in neutral position (MT vehicles) or the selector lever in "N" or "P" position (AT vehicles).
3) Turn A/C switch to OFF.
4) Turn all accessory switches to OFF.
5) Read data of intake manifold pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

Specification:
● Intake manifold absolute pressure

Engine speed	Specified value
Idling	20.0 — 46.7 kPa (150 — 350 mmHg, 5.91 — 13.78 inHg)
2,500 rpm	20.0 — 46.7 kPa (150 — 350 mmHg, 5.91 — 13.78 inHg)

CHECK : ***Is the value within the specifications?***
YES : Go to step **10U7**.
NO : Replace intake manifold pressure sensor. <Ref. to 2-7 [W20A0].>

10U7 : CHECK INTAKE AIR TEMPERATURE SENSOR.

1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).
2) Place the shift lever in neutral position (MT vehicles) or the selector lever in “N” or “P” position (AT vehicles).
3) Turn A/C switch to OFF.
4) Turn all accessory switches to OFF.
5) Open front hood.
6) Measure ambient temperature.
7) Read data of intake manifold pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is value obtained when ambient temperature is subtracted from intake air temperature greater than −10°C (14°F) and less than 50°C (122°F)?***

YES : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

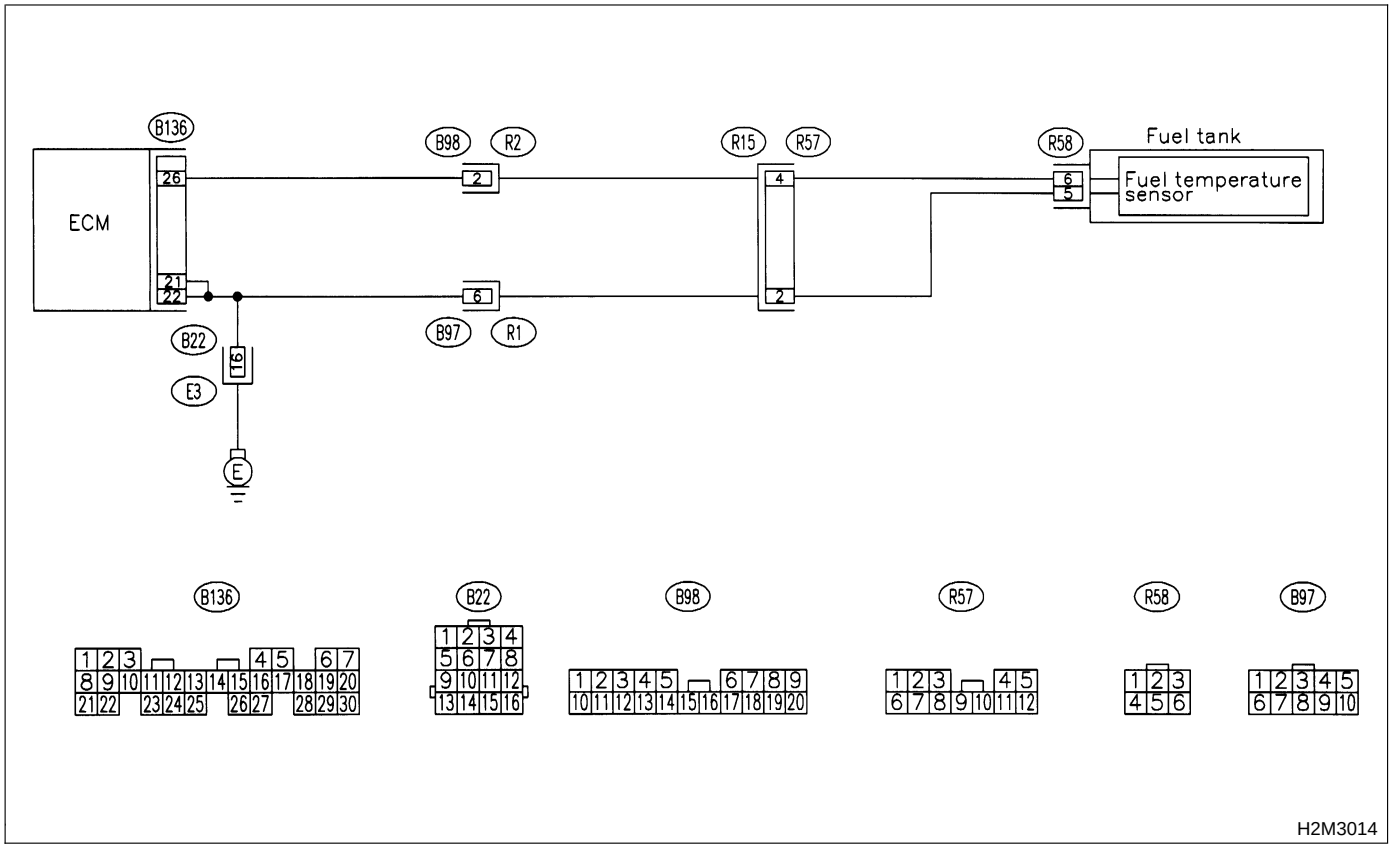
NO : Check intake air temperature sensor. <Ref. to 2-7 [T10E0].>

V: DTC P0181 — FUEL TEMPERATURE SENSOR A CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10V1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0182 or P0183?***

YES : Inspect DTC P0182 or P0183 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0181.

NO : Replace fuel temperature sensor. <Ref. to 2-1 [W5A0].>

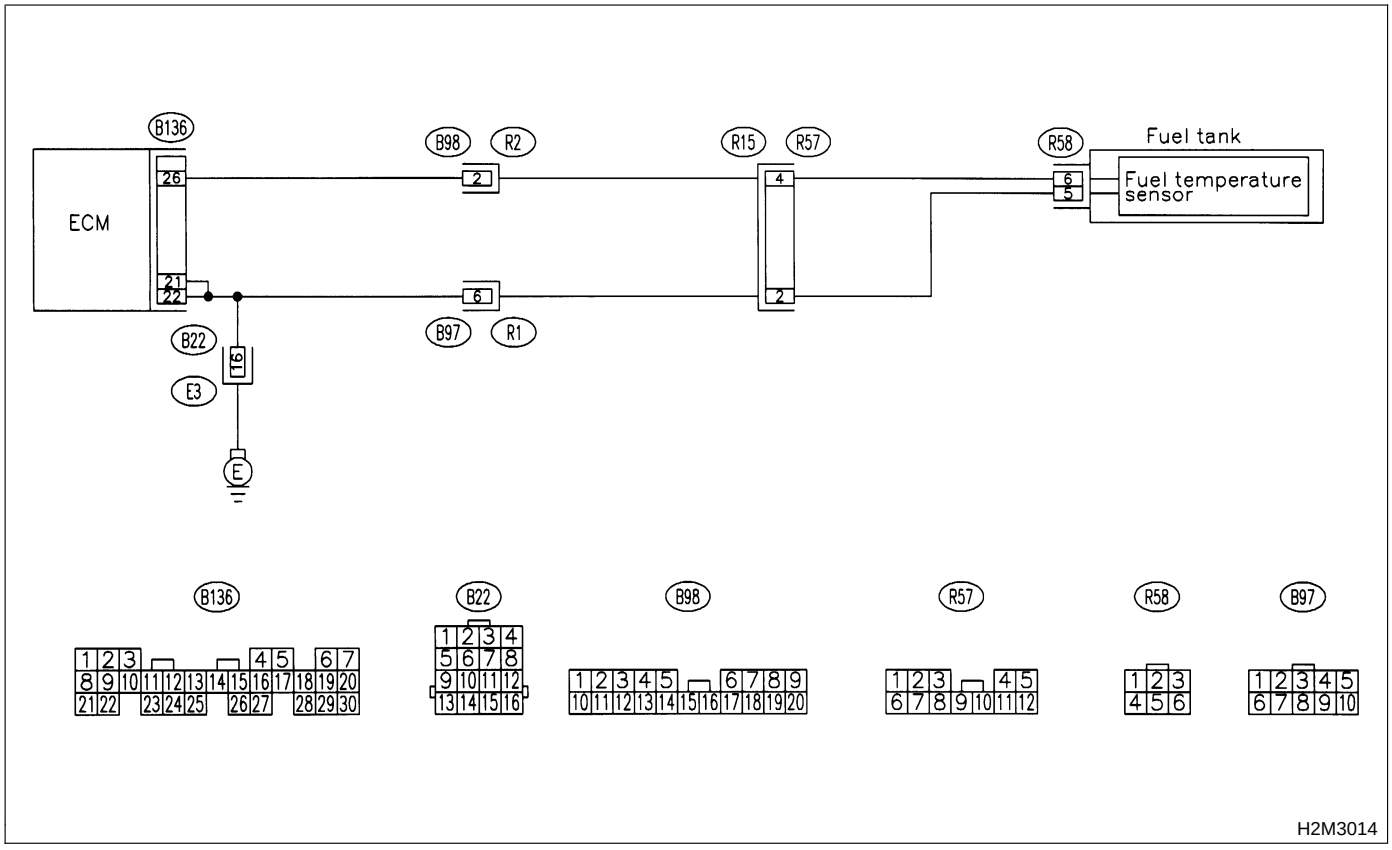
MEMO:

W: DTC P0182 — FUEL TEMPERATURE SENSOR A CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

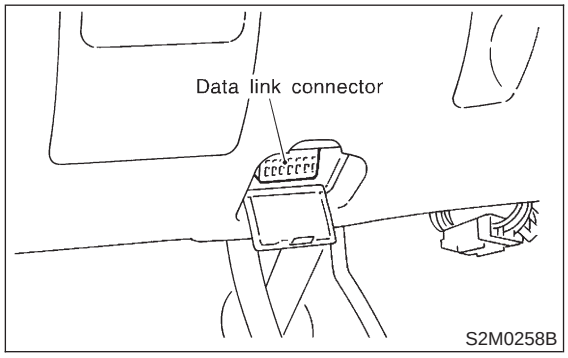
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10W1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



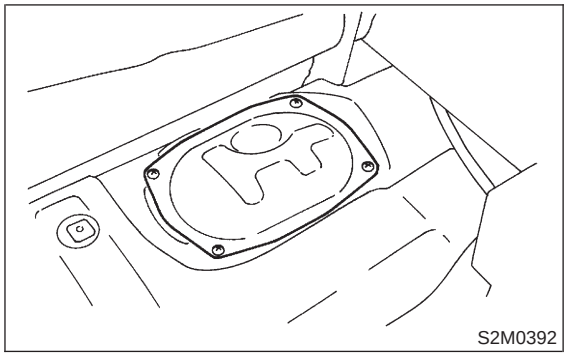
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

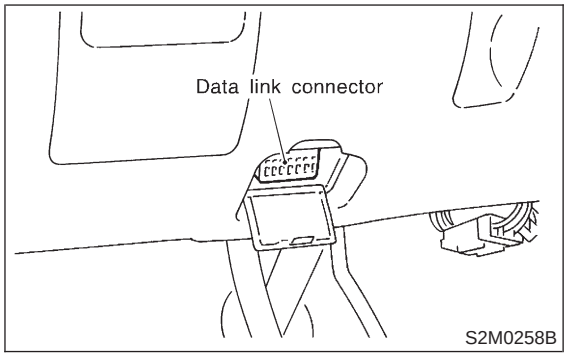
CHECK : ***Is the value greater than 150°C (300°F)?***
YES : Go to step **10W2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

10W2 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.



3) Disconnect connector from fuel pump.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



5) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.
6) Read data of fuel temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

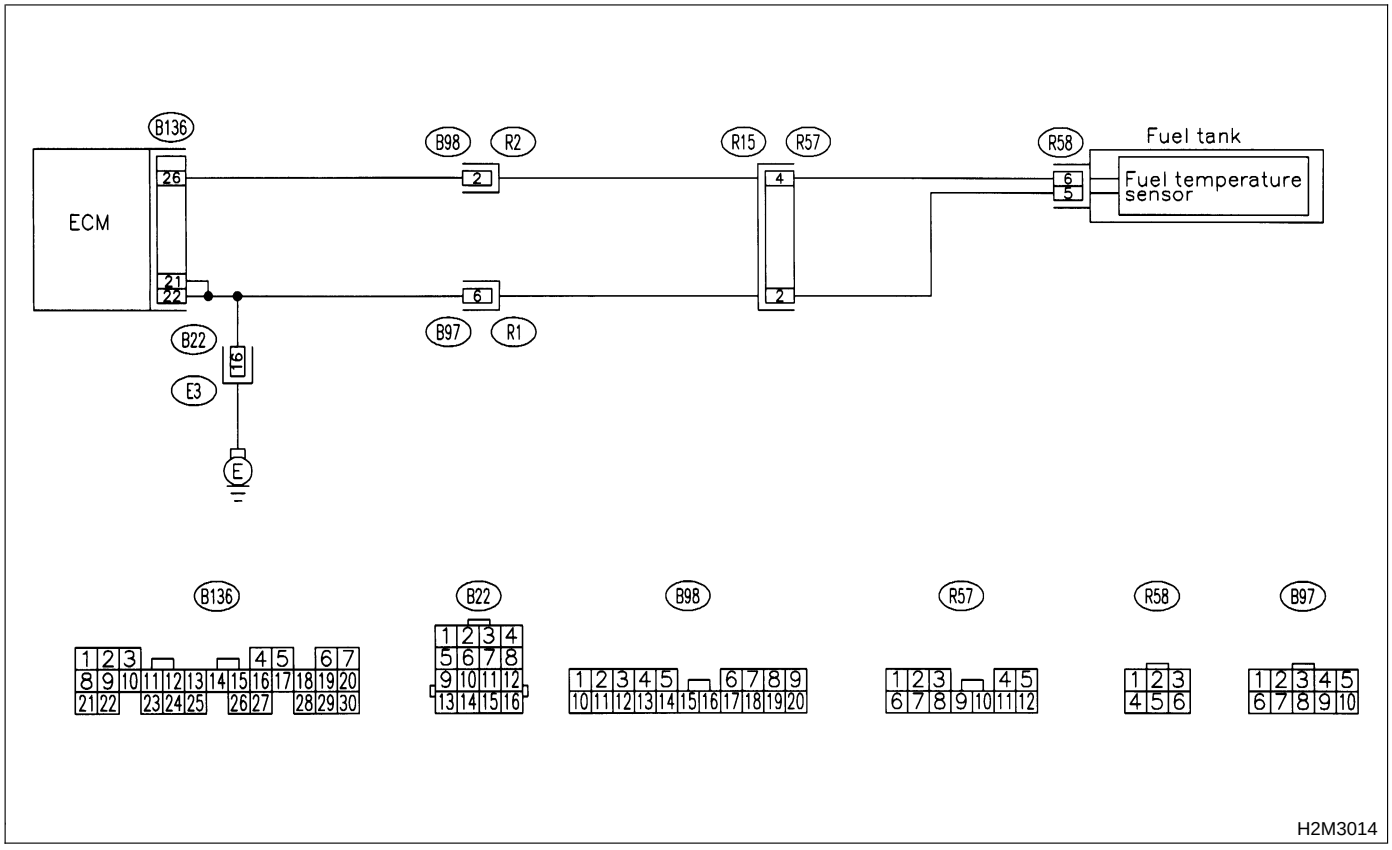
CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace fuel temperature sensor. <Ref. to 2-1 [W5A0].>
NO : Repair ground short circuit in harness between fuel pump and ECM connector.

X: DTC P0183 — FUEL TEMPERATURE SENSOR A CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

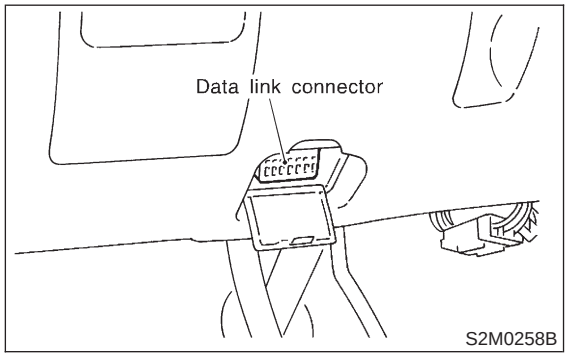
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10X1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

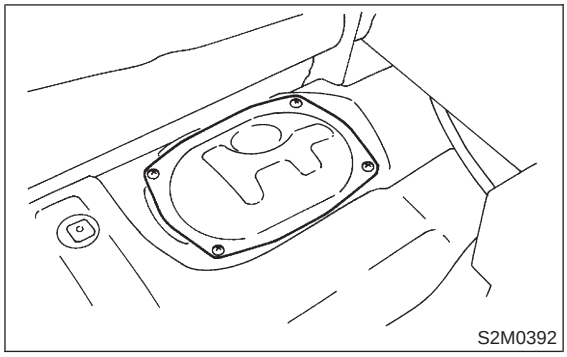
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **10X2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in fuel pump connector
● Poor contact in ECM connector
● Poor contact in coupling connectors (B22), (B98), (B97) and (R57)

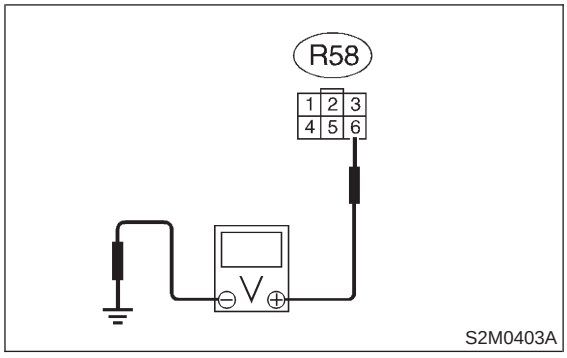
10X2 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.



3) Disconnect connector from fuel pump.
4) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 6 (+) — Chassis ground (−):

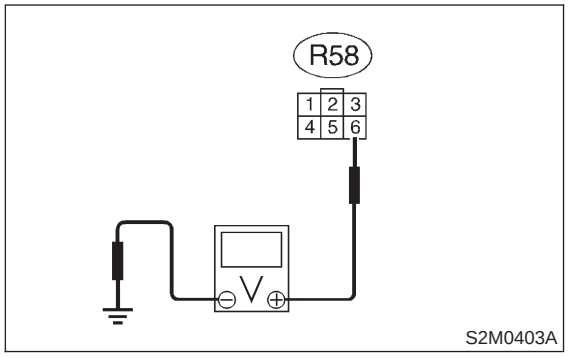


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel pump connector.
NO : Go to step **10X3**.

10X3 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 6 (+) — Chassis ground (−):

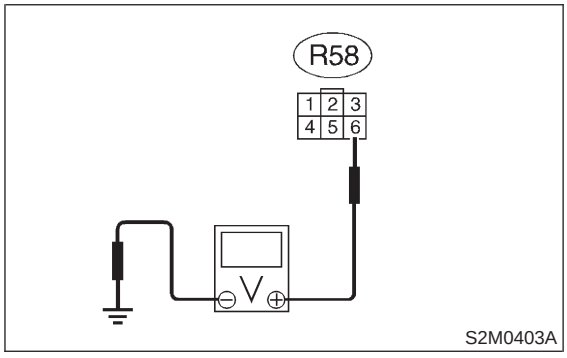


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel pump connector.
NO : Go to step **10X4**.

10X4 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 6 (+) — Chassis ground (−):



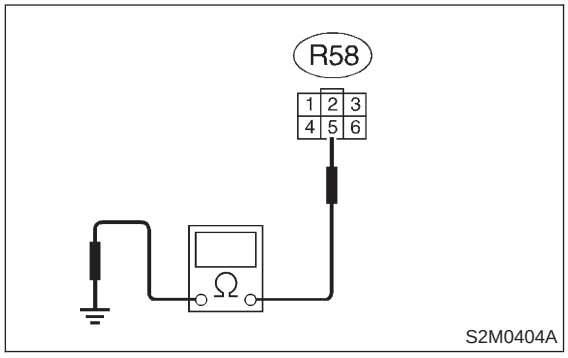
CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **10X5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B98) and (R57)

10X5 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(R58) No. 5 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace fuel temperature sensor. <Ref. to 2-1 [W5A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B22), (B98), (B97) and (R57)

Y: DTC P0301 — CYLINDER 1 MISFIRE DETECTED —

NOTE:
For the diagnostic procedure, refer to 2-7 [T10AB1]. <Ref. to 2-7 [T10AB1].>

Z: DTC P0302 — CYLINDER 2 MISFIRE DETECTED —

NOTE:
For the diagnostic procedure, refer to 2-7 [T10AB1]. <Ref. to 2-7 [T10AB1].>

AA: DTC P0303 — CYLINDER 3 MISFIRE DETECTED —

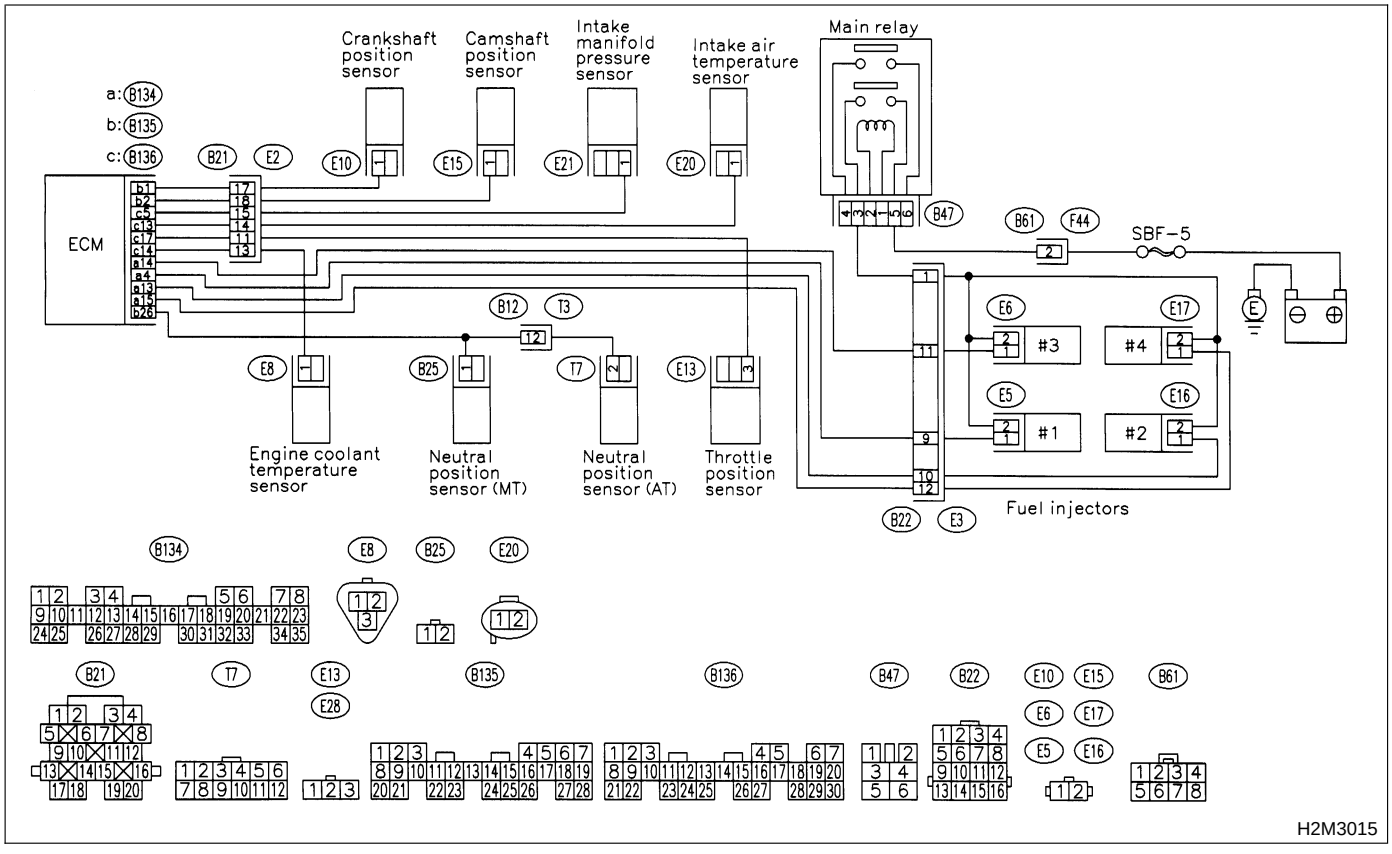
NOTE:
For the diagnostic procedure, refer to 2-7 [T10AB1]. <Ref. to 2-7 [T10AB1].>

AB: DTC P0304 — CYLINDER 4 MISFIRE DETECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
  - Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Erroneous idling
  - Rough driving

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AB1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0116, P0117 or P0125?***

YES : Inspect DTC P0106, P0107, P0108, P0116, P0117 or P0125 using "10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles". <Ref. to 2-7 [T10A0].>

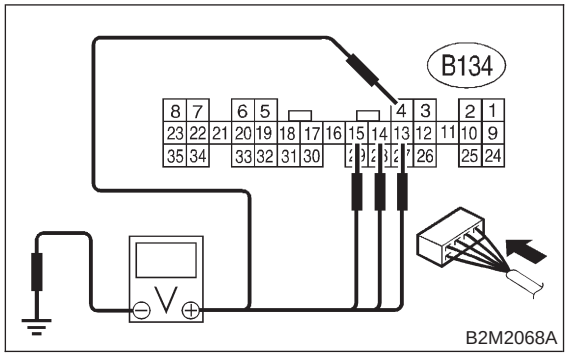
NOTE:
In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.

NO : Go to step **10AB2**.

10AB2 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal
#1 (B134) No. 4 (+) — Chassis ground (−):
#2 (B134) No. 13 (+) — Chassis ground (−):
#3 (B134) No. 14 (+) — Chassis ground (−):
#4 (B134) No. 15 (+) — Chassis ground (−):

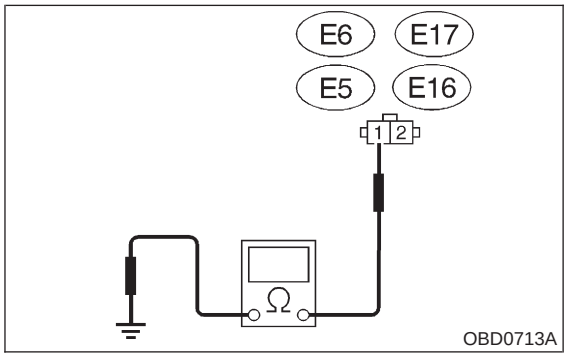


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AB7**.
NO : Go to step **10AB3**.

10AB3 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinders.
3) Measure voltage between ECM connector and engine ground on faulty cylinders.

Connector & terminal
#1 (E5) No. 1 — Engine ground:
#2 (E16) No. 1 — Engine ground:
#3 (E6) No. 1 — Engine ground:
#4 (E17) No. 1 — Engine ground:



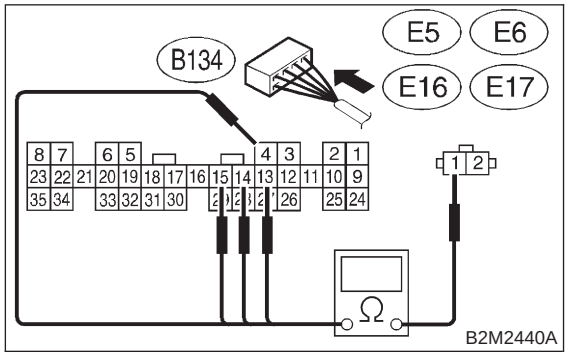
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between fuel injector and ECM connector.
NO : Go to step **10AB4**.

10AB4 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

Measure resistance of harness connector between ECM connector and fuel injector on faulty cylinders.

Connector & terminal

#1 (B134) No. 4 — (E5) No. 1:
#2 (B134) No. 13 — (E16) No. 1:
#3 (B134) No. 14 — (E6) No. 1:
#4 (B134) No. 15 — (E17) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AB5**.
NO : Repair harness and connector.

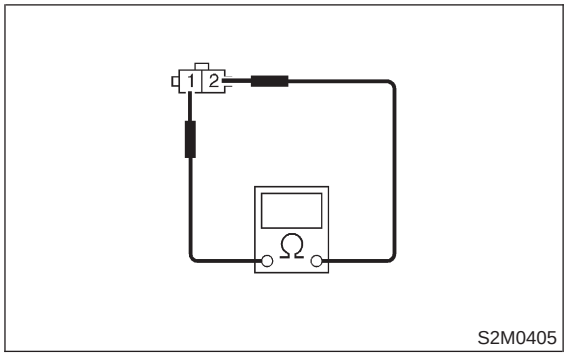
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel injector connector
- Poor contact in coupling connector (B22)

10AB5 : CHECK FUEL INJECTOR.

Measure resistance between fuel injector terminals on faulty cylinder.

Terminals

No. 1 — No. 2:



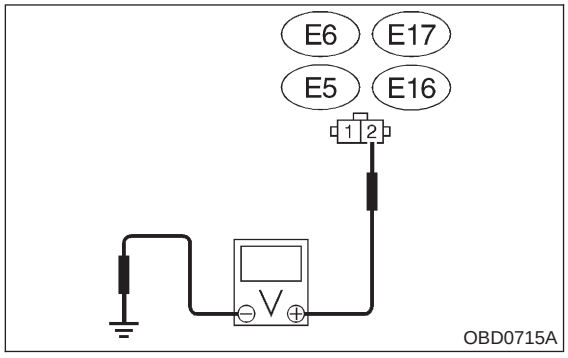
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **10AB6**.
NO : Replace faulty fuel injector. <Ref. to 2-7 [W14A0].>

10AB6 : CHECK POWER SUPPLY LINE.

1) Turn ignition switch to ON.
2) Measure voltage between fuel injector and engine ground on faulty cylinders.

Connector & terminal

#1 (E5) No. 2 (+) — Engine ground (−):
#2 (E16) No. 2 (+) — Engine ground (−):
#3 (E6) No. 2 (+) — Engine ground (−):
#4 (E17) No. 2 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair poor contact in all connectors in fuel injector circuit.
NO : Repair harness and connector.

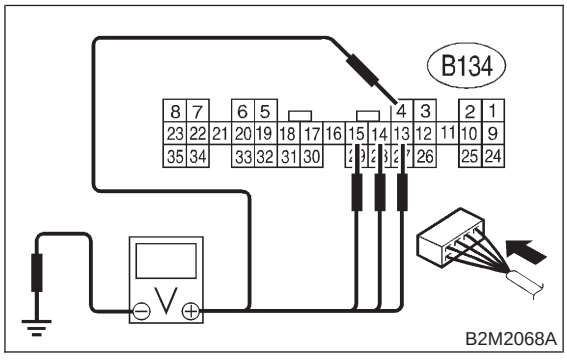
NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and fuel injector connector on faulty cylinders
- Poor contact in coupling connector (B22)
- Poor contact in main relay connector
- Poor contact in fuel injector connector on faulty cylinders

10AB7 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinder.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal

#1 (B134) No. 4 (+) — Chassis ground (−):
#2 (B134) No. 13 (+) — Chassis ground (−):
#3 (B134) No. 14 (+) — Chassis ground (−):
#4 (B134) No. 15 (+) — Chassis ground (−):

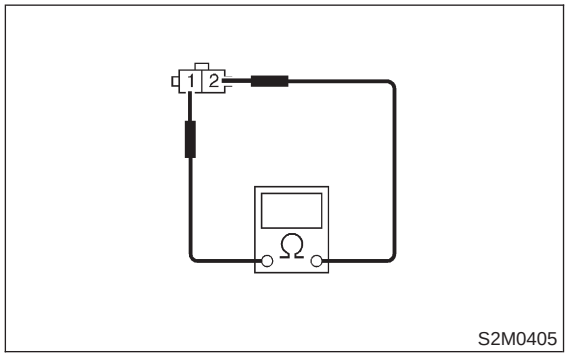


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel injector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **10AB8**.

10AB8 : CHECK FUEL INJECTOR.

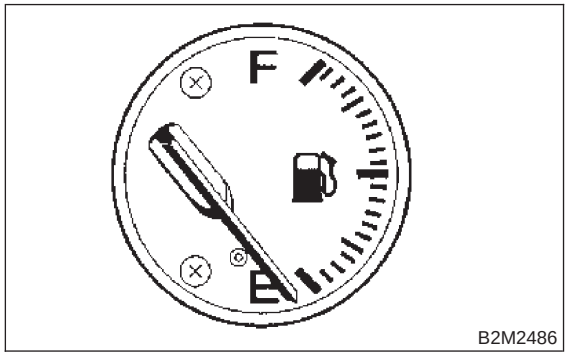
1) Turn ignition switch to OFF.
2) Measure resistance between fuel injector terminals on faulty cylinder.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace faulty fuel injector <Ref. to 2-7 [W14A1].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **10AB9**.

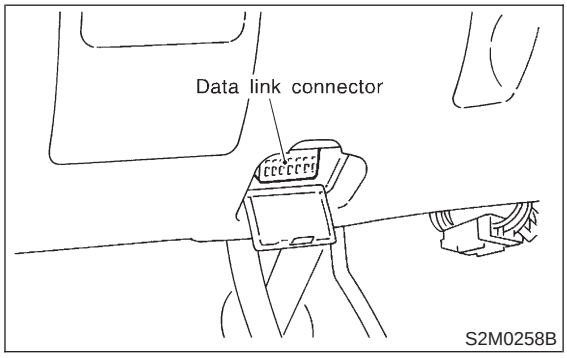
10AB9 : CHECK FUEL LEVEL.



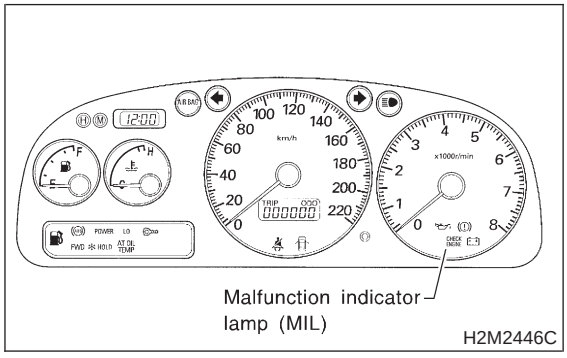
CHECK : ***Is the fuel meter indication higher than the "Lower" level?***
YES : Go to step **10AB10**.
NO : Replenish fuel so fuel meter indication is higher than the "Lower" level. After replenishing fuel, Go to step **10AB10**. <Ref. to 2-7 [T10AB10].>

10AB10 : CHECK STATUS OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to the data link connector.



3) Clear memory using Subaru Select Monitor. <Ref. to 2-7 [T3D0].>
4) Start engine, and drive the vehicle more than 10 minutes.



CHECK : ***Is the MIL coming on or blinking?***
YES : Go to step **10AB12**.
NO : Go to step **10AB11**.

10AB11 : CHECK CAUSE OF MISFIRE DIAGNOSED.

CHECK : ***Was the cause of misfire diagnosed when the engine is running?***

YES : Finish diagnostics operation, if the engine has no abnormality.

NOTE:
Ex. Remove spark plug cord, etc.

NO : Repair poor contact.

NOTE:
In this case, repair the following:
- Poor contact in ignitor connector
- Poor contact in ignition coil connector
- Poor contact in fuel injector connector on faulty cylinders
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

10AB12 : CHECK AIR INTAKE SYSTEM.

CHECK : ***Is there a fault in air intake system?***

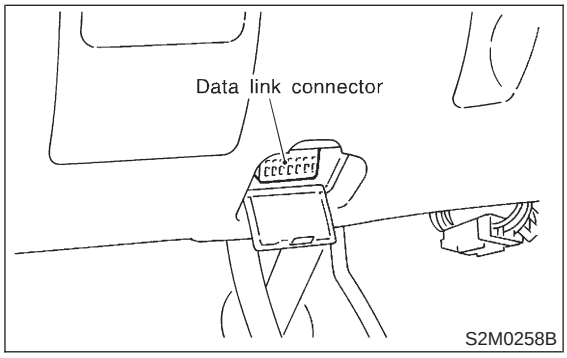
YES : Repair air intake system.

NOTE:
Check the following items:
- Are there air leaks or air suction caused by loose or dislocated nuts and bolts?
- Are there cracks or any disconnection of hoses?

NO : Go to step **10AB13**.

10AB13 : CHECK MISFIRE SYMPTOM.

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON, and turn Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Read diagnostic trouble code (DTC).
- Subaru Select Monitor

<Ref. to 2-7 [T3C2].>
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.

NOTE:
Perform diagnosis according to the items listed below.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate only one DTC?***

YES : Go to step **10AB18**.

NO : Go to step **10AB14**.

10AB14 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0302?***

YES : Go to step **10AB19**.

NO : Go to step **10AB15**.

10AB15 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0303 and P0304?***

YES : Go to step **10AB20**.

NO : Go to step **10AB16**.

10AB16 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0303?***
YES : Go to step **10AB21**.
NO : Go to step **10AB17**.

10AB17 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0302 and P0304?***
YES : Go to step **10AB22**.
NO : Go to step **10AB23**.

10AB18 : ONLY ONE CYLINDER

CHECK : ***Is there a fault in that cylinder?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plug
- Spark plug cord
- Fuel injector
- Compression ratio

NO : Go to DTC P0171 <Ref. to 2–7 [T10T0].> and P0172. <Ref. to 2-7 [T10U0].>

10AB19 : GROUP OF #1 AND #2 CYLINDERS

CHECK : ***Are there faults in #1 and #2 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
- Check the following items.
  - Spark plugs
  - Fuel injectors
  - Ignition coil
  - Compression ratio
- If no abnormal is discovered, check for “9. D: IGNITION CONTROL SYSTEM” of #1 and #2 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to DTC P0171 <Ref. to 2-7 [T10T0].> and P0172. <Ref. to 2-7 [T10U0].>

10AB20 : GROUP OF #3 AND #4 CYLINDERS

CHECK : ***Are there faults in #3 and #4 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
- Check the following items.
  - Spark plugs
  - Fuel injectors
  - Ignition coil
- If no abnormal is discovered, check for “9. D: IGNITION CONTROL SYSTEM” of #3 and #4 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to DTC P0171 <Ref. to 2–7 [T10T0].> and P0172. <Ref. to 2-7 [T10U0].>

10AB21 : GROUP OF #1 AND #3 CYLINDERS

CHECK : ***Are there faults in #1 and #3 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Skipping timing belt teeth

NO : Go to DTC P0171 <Ref. to 2-7 [T10T0].> and P0172. <Ref. to 2-7 [T10U0].>

10AB22 : GROUP OF #2 AND #4 CYLINDERS

CHECK : ***Are there faults in #2 and #4 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Compression ratio
- Skipping timing belt teeth

NO : Go to DTC P0171 <Ref. to 2-7 [T10T0].> and P0172. <Ref. to 2-7 [T10U0].>

10AB23 : CYLINDER AT RANDOM

CHECK : ***Is the engine idle rough?***
YES : Go to DTC P0171 <Ref. to 2–7 [T10T0].> and P0172. <Ref. to 2-7 [T10U0].>
NO : Repair or replace faulty parts.

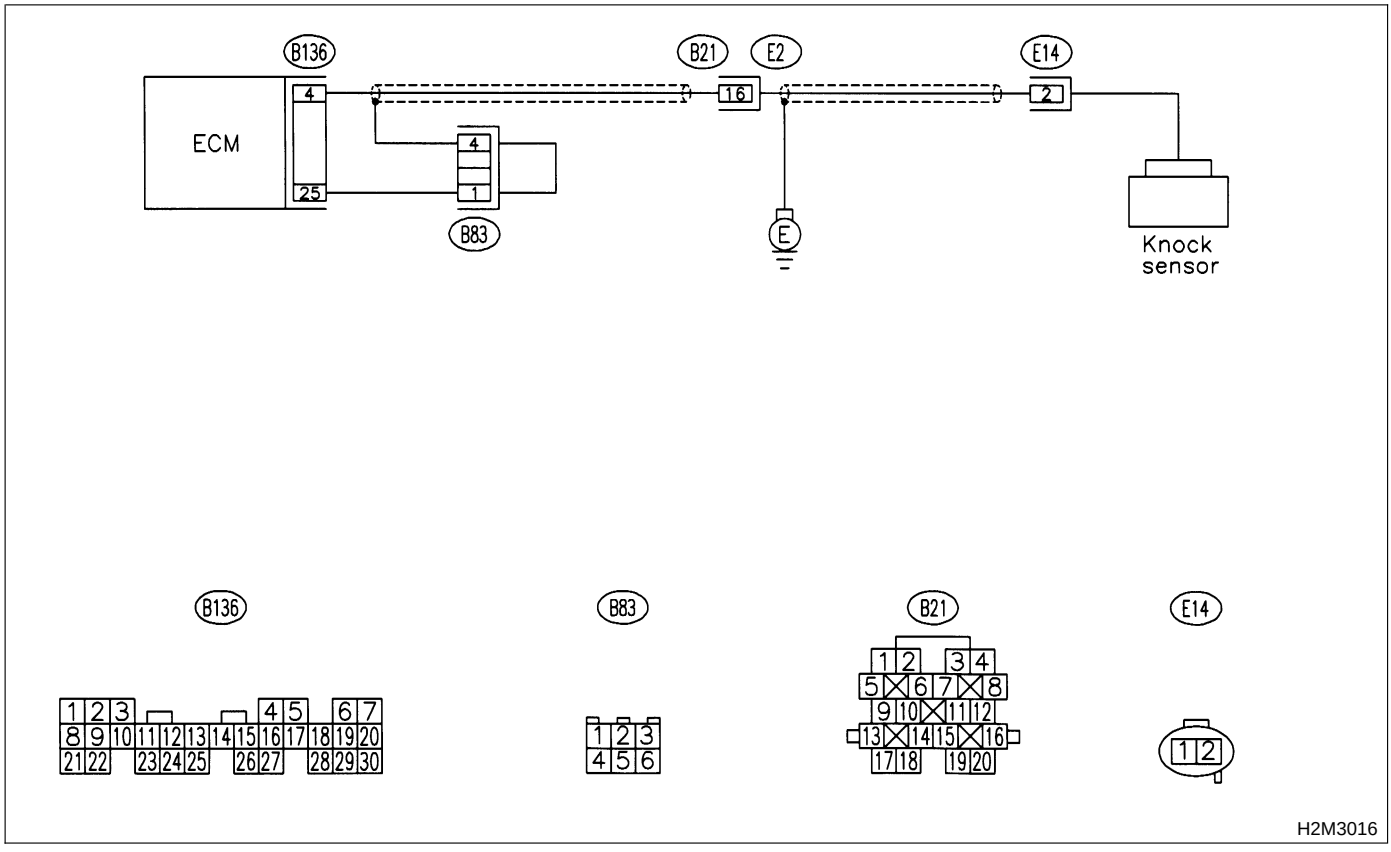
NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Compression ratio

AC: DTC P0325 — KNOCK SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Poor driving performance
  - Knocking occurs.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

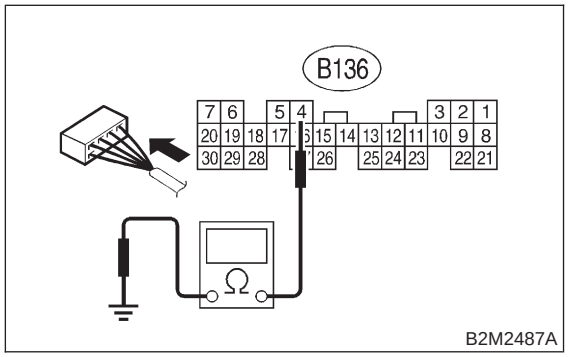
- **WIRING DIAGRAM:**



10AC1 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance between ECM harness connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

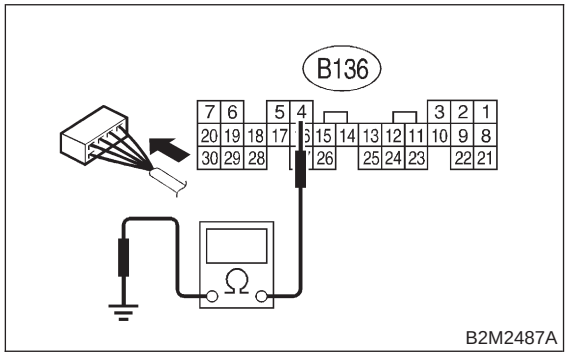


CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **10AC3**.
NO : Go to step **10AC2**.

10AC2 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

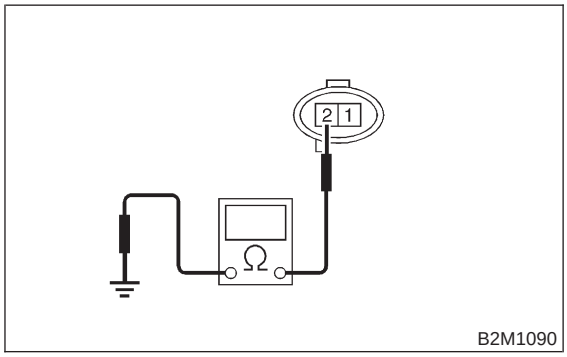


CHECK : ***Is the resistance less than 400 kΩ?***
YES : Go to step **10AC5**.
NO : Go to step **10AC6**.

10AC3 : CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

Terminal
No. 2 — Engine ground:



CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **10AC4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between knock sensor and ECM connector
- Poor contact in knock sensor connector
- Poor contact in coupling connector (B21) and (B83)

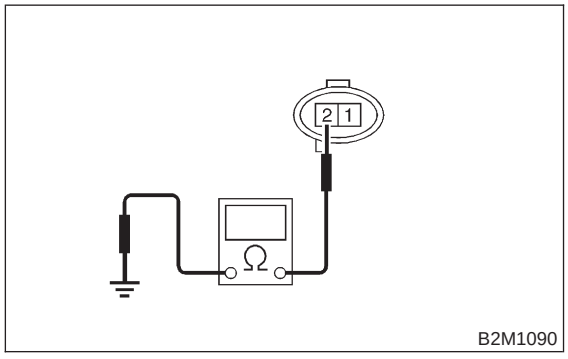
10AC4 : CHECK CONDITION OF KNOCK SENSOR INSTALLATION.

CHECK : ***Is the knock sensor installation bolt tightened securely?***
YES : Replace knock sensor. <Ref. to 2-7 [W19A0].>
NO : Tighten knock sensor installation bolt securely.

10AC5 : CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

Terminal
No. 2 — Engine ground:



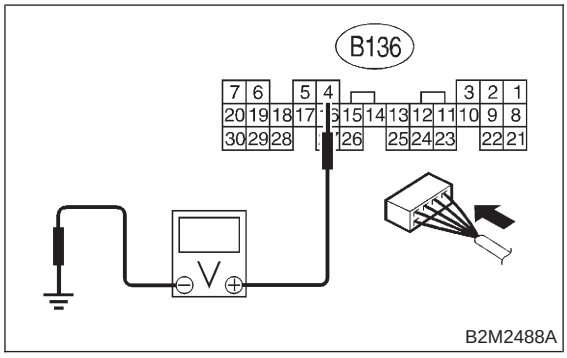
CHECK : ***Is the resistance less than 400 kΩ?***
YES : Replace knock sensor. <Ref. to 2-7 [W19A0].>
NO : Repair ground short circuit in harness between knock sensor connector and ECM connector.

NOTE:
The harness between both connectors is shielded. Repair short circuit of harness together with shield.

10AC6 : CHECK INPUT SIGNAL FOR ECM.

1) Connect connectors to ECM and knock sensor.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in knock sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) and (B83)

NO : Repair poor contact in ECM connector.

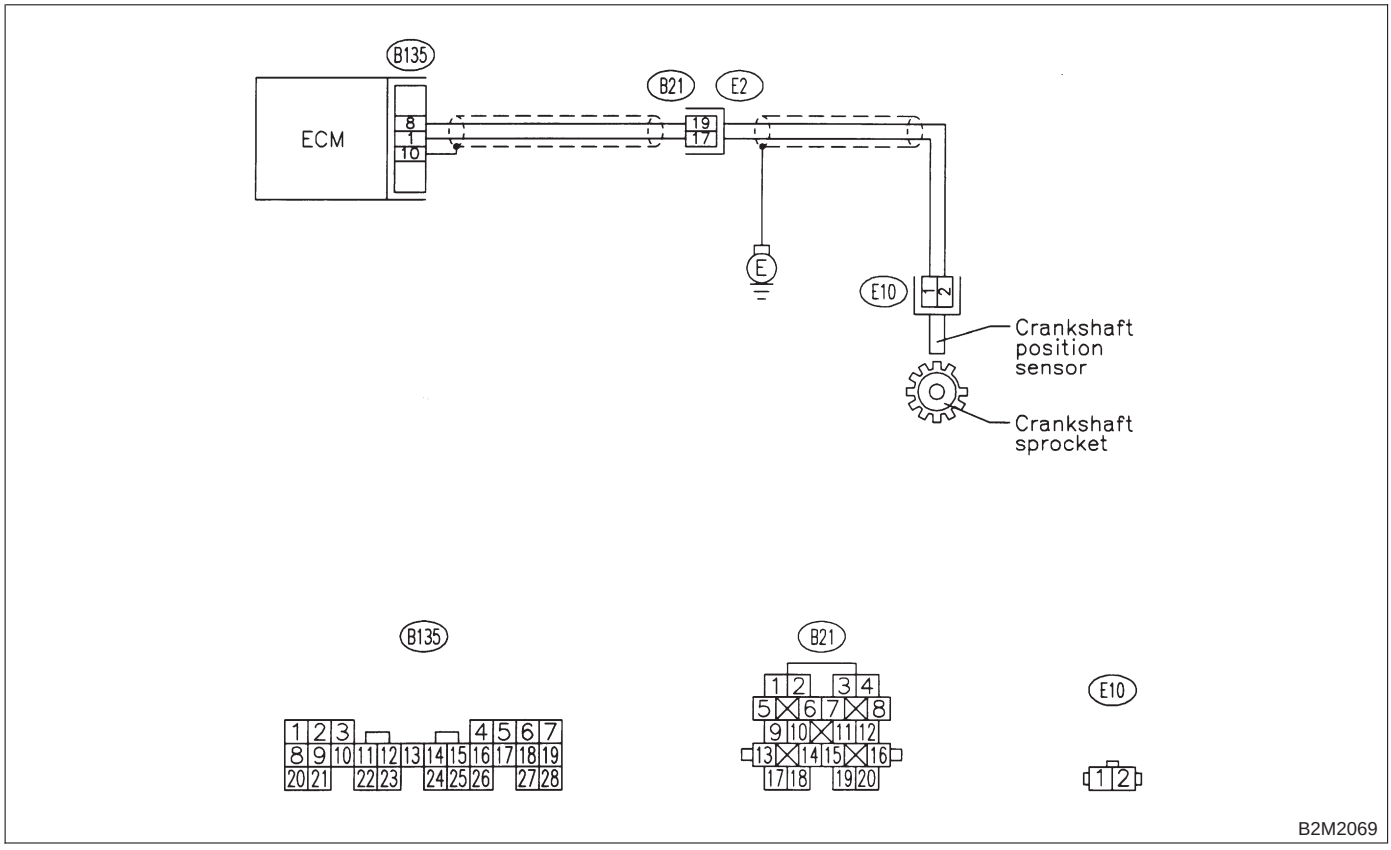
MEMO:

AD: DTC P0335 — CRANKSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

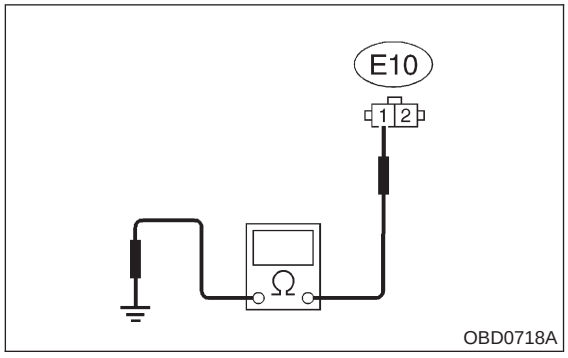
- **WIRING DIAGRAM:**



10AD1 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from crankshaft position sensor.
3) Measure resistance of harness between crankshaft position sensor connector and engine ground.

Connector & terminal
(E10) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

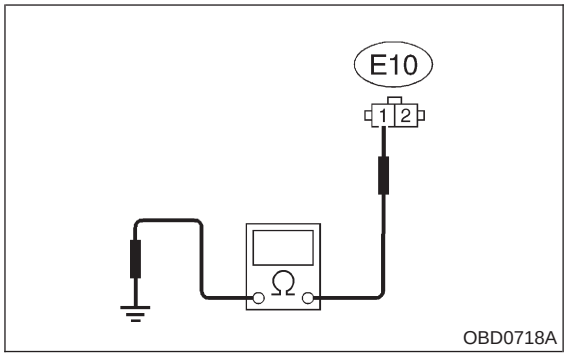
NOTE:
In this case, repair the following:
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **10AD2**.

10AD2 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between crankshaft position sensor connector and engine ground.

Connector & terminal
(E10) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between crankshaft position sensor and ECM connector.

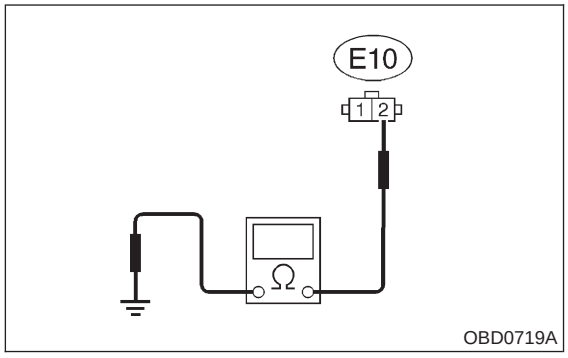
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **10AD3**.

10AD3 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between crankshaft position sensor connector and engine ground.

Connector & terminal
(E10) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AD4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

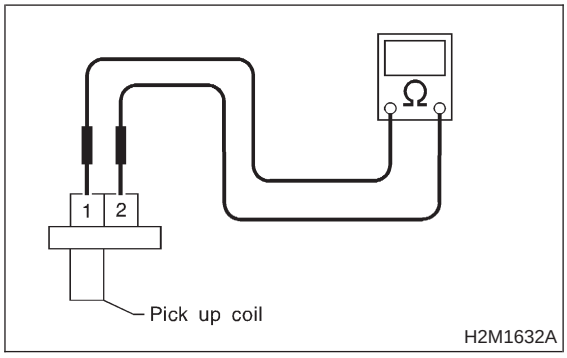
10AD4 : CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.

CHECK : ***Is the crankshaft position sensor installation bolt tightened securely?***
YES : Go to step **10AD5**.
NO : Tighten crankshaft position sensor installation bolt securely.

10AD5 : CHECK CRANKSHAFT POSITION SENSOR.

1) Remove crankshaft position sensor.
2) Measure resistance between connector terminals of crankshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Repair poor contact in crankshaft position sensor connector.
NO : Replace crankshaft position sensor. <Ref. to 2-7 [W6A0].>

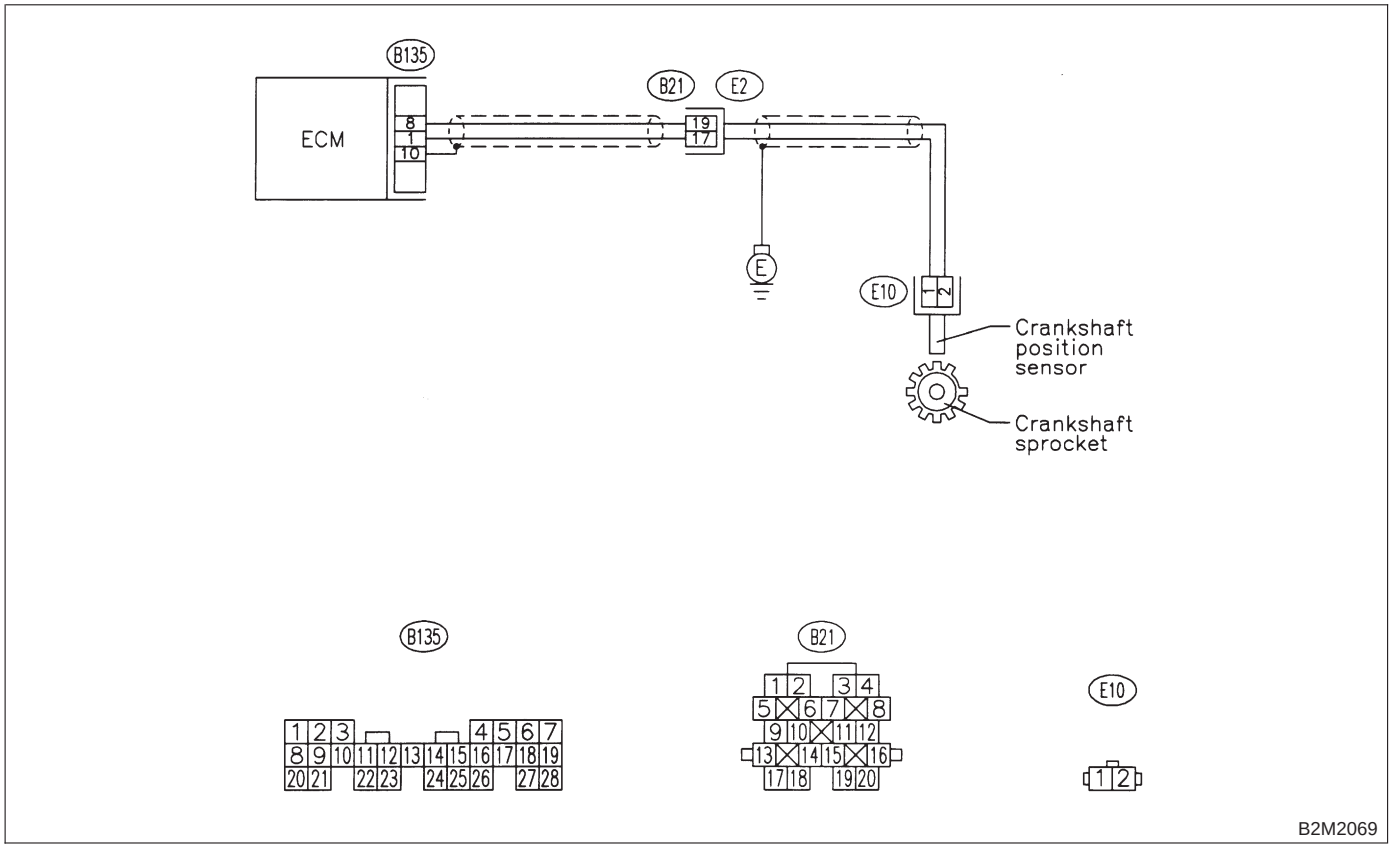
MEMO:

AE: DTC P0336 — CRANKSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AE1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0335?***

YES : Inspect DTC P0335 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10AE2**.

10AE2 : CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.

Turn ignition switch to OFF.

CHECK : ***Is the crankshaft position sensor installation bolt tightened securely?***

YES : Go to step **10AE3**.

NO : Tighten crankshaft position sensor installation bolt securely.

10AE3 : CHECK CRANKSHAFT SPROCKET.

Remove front belt cover. <Ref. to 2-3 [W2A1].>

CHECK : ***Are crankshaft sprocket teeth cracked or damaged?***

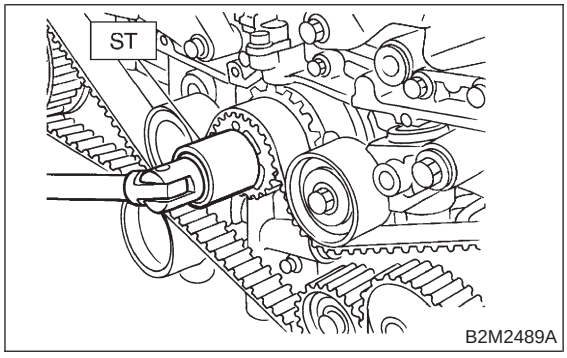
YES : Replace crankshaft sprocket. <Ref. to 2-3 [W2A0].>

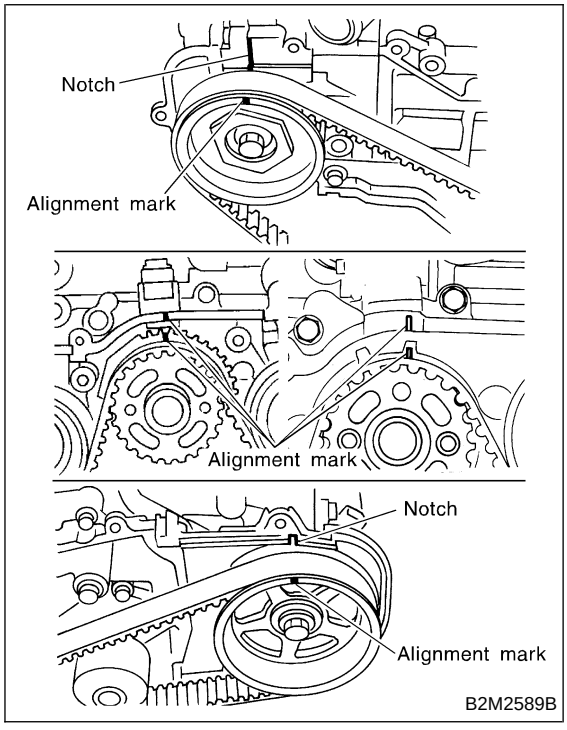
NO : Go to step **10AE4**.

10AE4 : CHECK INSTALLATION CONDITION OF TIMING BELT.

Turn crankshaft using ST, and align alignment mark on crankshaft sprocket. Then, make sure left and right camshaft sprockets are matched with notches (alignment marks of belt cover and cylinder head).

ST 499987500 CRANKSHAFT SOCKET





CHECK : ***Is timing belt installed properly in accordance with the correct position of crankshaft and camshaft sprockets?***

YES : Repair installation condition of timing belt. <Ref. to 2-3 [W2A0].>

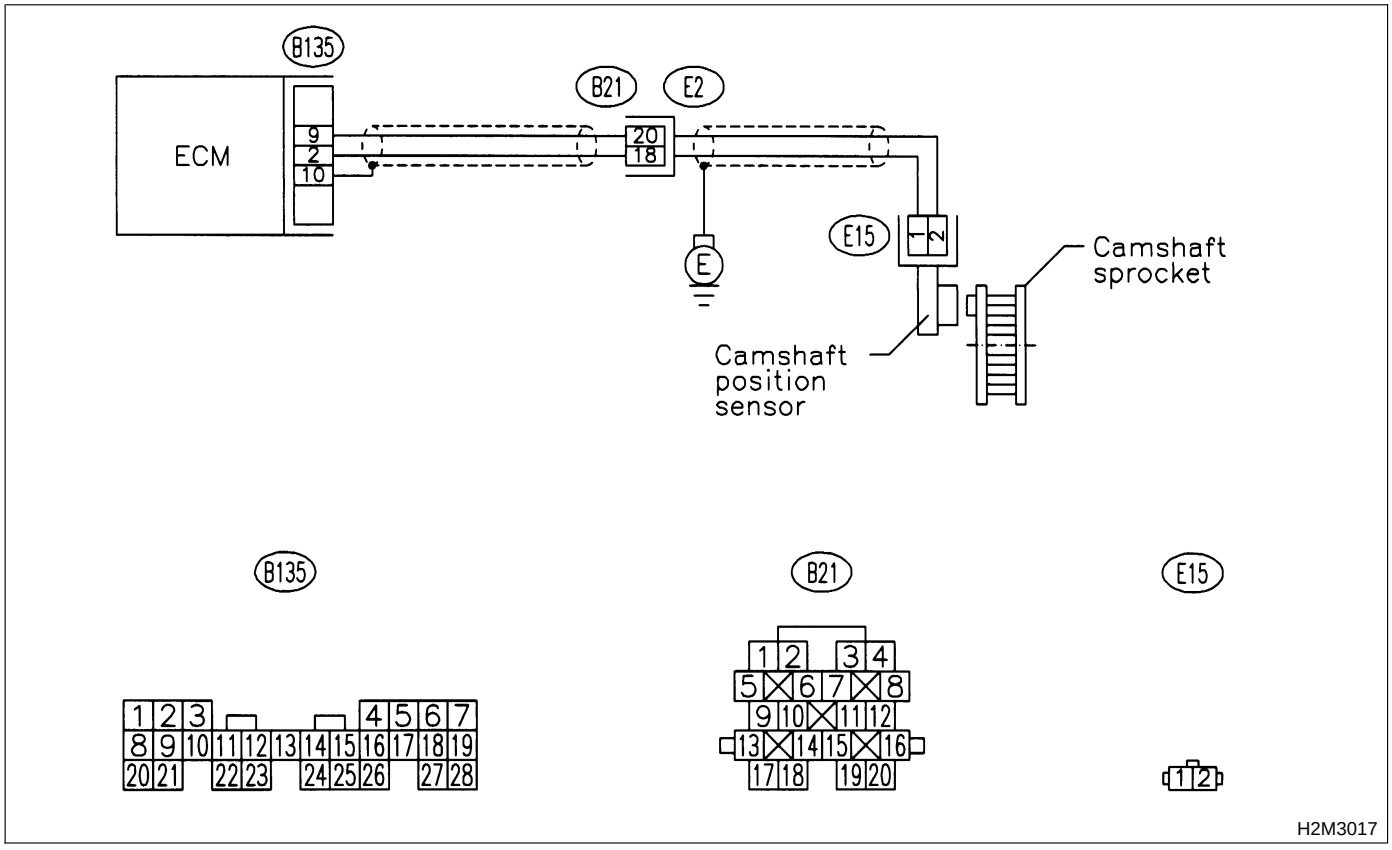
NO : Replace crankshaft position sensor. <Ref. to 2-7 [W6A0].>

AF: DTC P0340 — CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

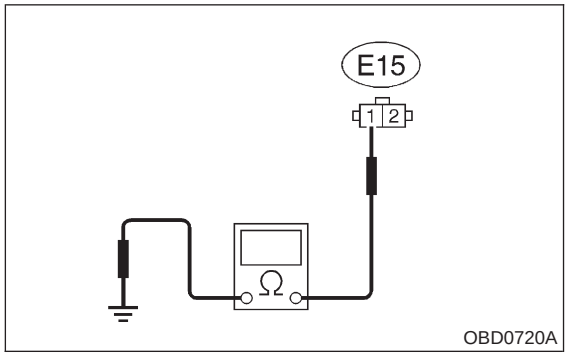
- **WIRING DIAGRAM:**



10AF1 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from camshaft position sensor.
3) Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

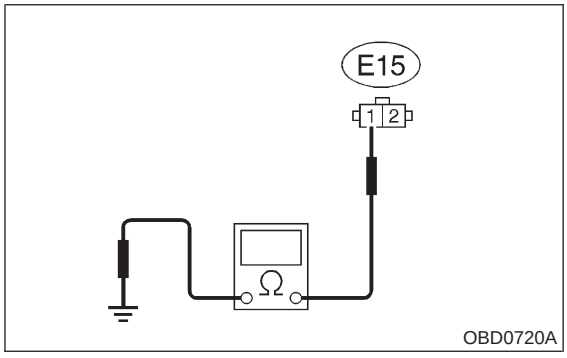
NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **10AF2**.

10AF2 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between camshaft position sensor and ECM connector.

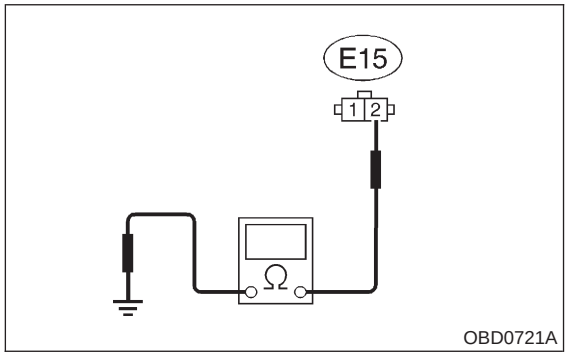
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **10AF3**.

10AF3 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AF4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

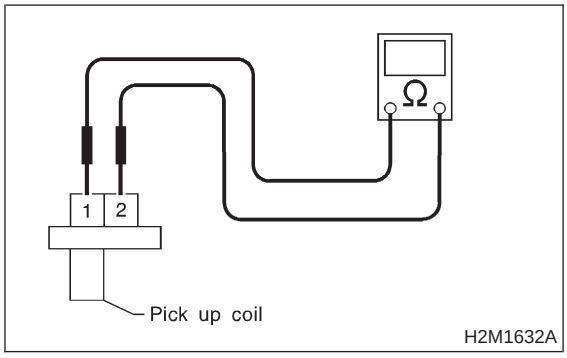
10AF4 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR.

CHECK : ***Is the camshaft position sensor installation bolt tightened securely?***
YES : Go to step **10AF5**.
NO : Tighten camshaft position sensor installation bolt securely.

10AF5 : CHECK CAMSHAFT POSITION SENSOR.

1) Remove camshaft position sensor.
2) Measure resistance between connector terminals of camshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Repair poor contact in camshaft position sensor connector.
NO : Replace camshaft position sensor. <Ref. to 2-7 [W10A0].>

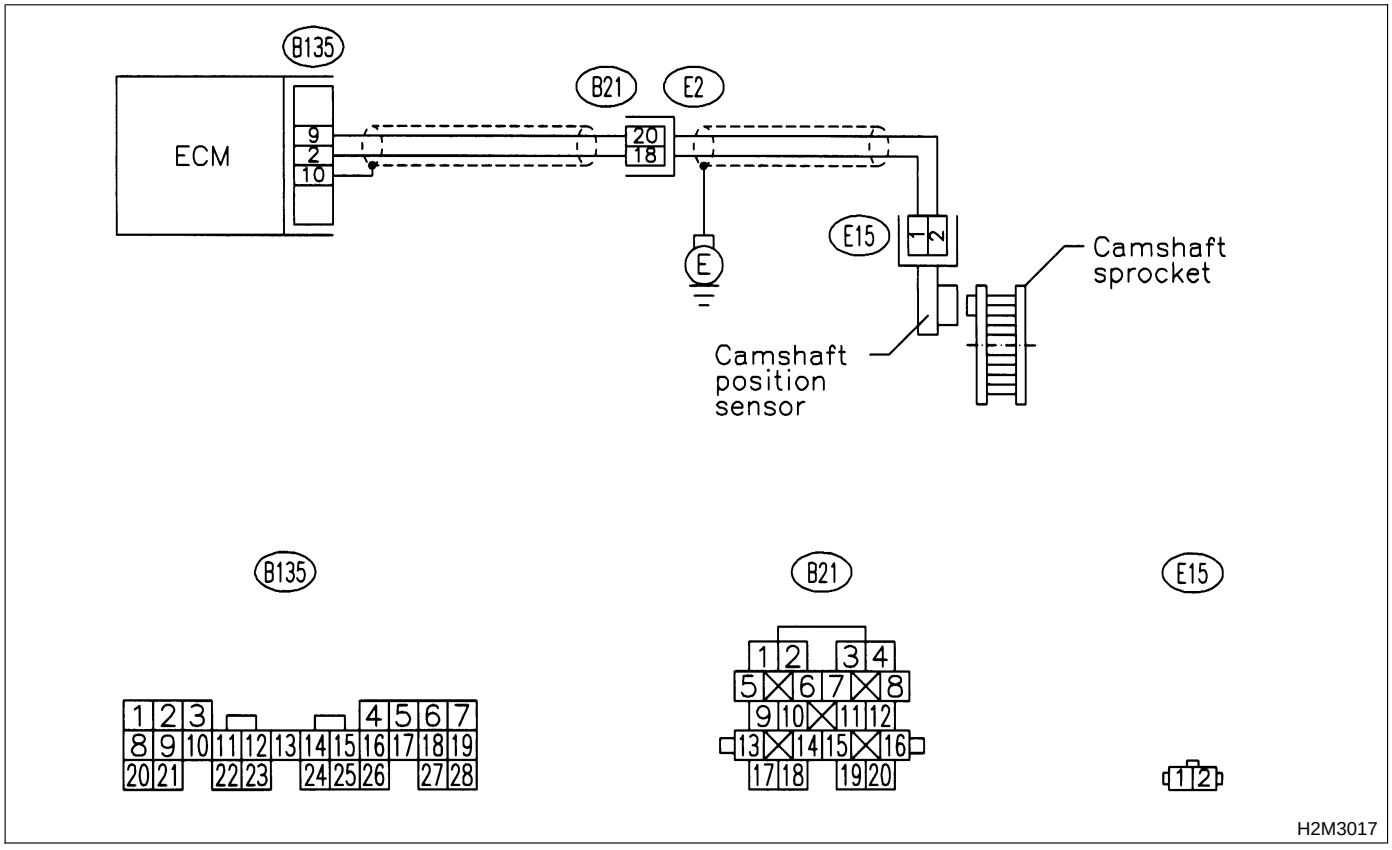
MEMO:

AG: DTC P0341 — CAMSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AG1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0340?***

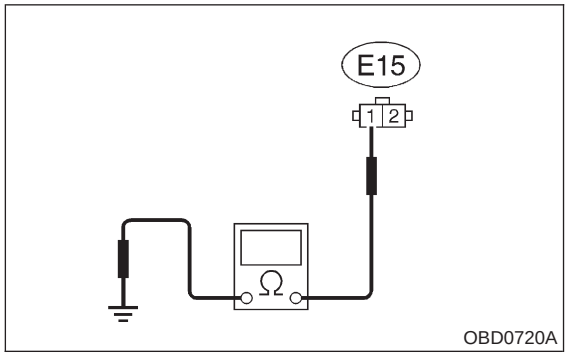
YES : Inspect DTC P0340 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10AG2**.

10AG2 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from camshaft position sensor.
3) Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

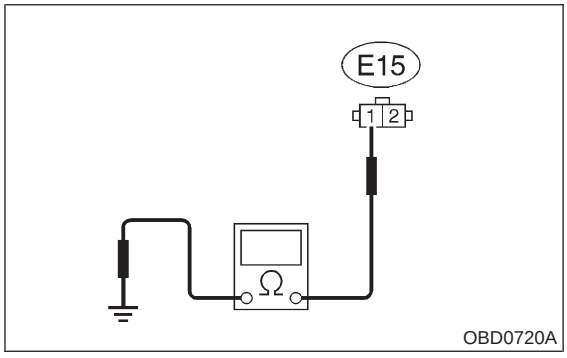
NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **10AG3**.

10AG3 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between camshaft position sensor and ECM connector.

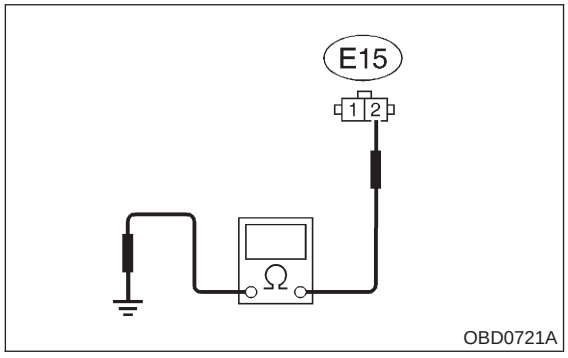
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **10AG4**.

10AG4 : CHECK HARNESS BETWEEN CAMSHFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 2 — Engine ground:



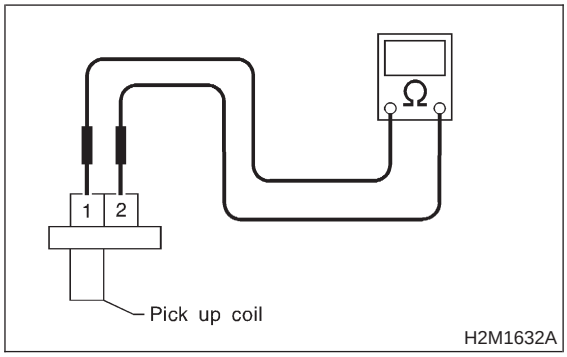
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AG5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

10AG5 : CHECK CAMSHAFT POSITION SENSOR.

1) Remove camshaft position sensor.
2) Measure resistance between connector terminals of camshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Go to step **10AG6**.
NO : Replace camshaft position sensor. <Ref. to 2-7 [W10A0].>

10AG6 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR.

Turn ignition switch to OFF.

CHECK : ***Is the camshaft position sensor installation bolt tightened securely?***
YES : Go to step **10AG7**.
NO : Tighten camshaft position sensor installation bolt securely.

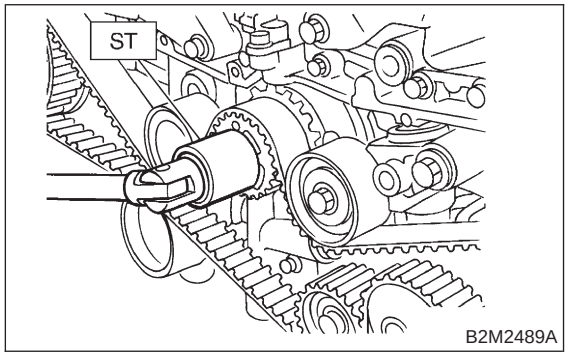
10AG7 : CHECK CAMSHAFT SPROCKET.

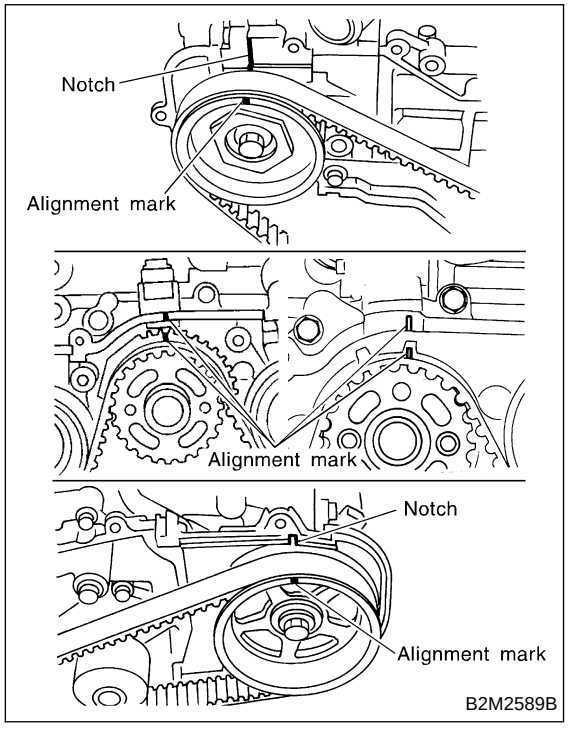
Remove front belt cover. <Ref. to 2-3 [W2A1].>

CHECK : ***Are camshaft sprocket teeth cracked or damaged?***
YES : Replace camshaft sprocket. <Ref. to 2-3 [W2A4].>
NO : Go to step **10AG8**.

10AG8 : CHECK INSTALLATION CONDITION OF TIMING BELT.

Turn crankshaft using ST, and align alignment mark on crankshaft sprocket. Then, make sure left and right camshaft sprockets are matched with notches (alignment marks of belt cover and cylinder head).
ST 499987500 CRANKSHAFT SOCKET





CHECK : ***Is timing belt installed properly in accordance with the correct position of crankshaft and camshaft sprockets?***

YES : Repair installation condition of timing belt. <Ref. to 2-3 [W2A0].>

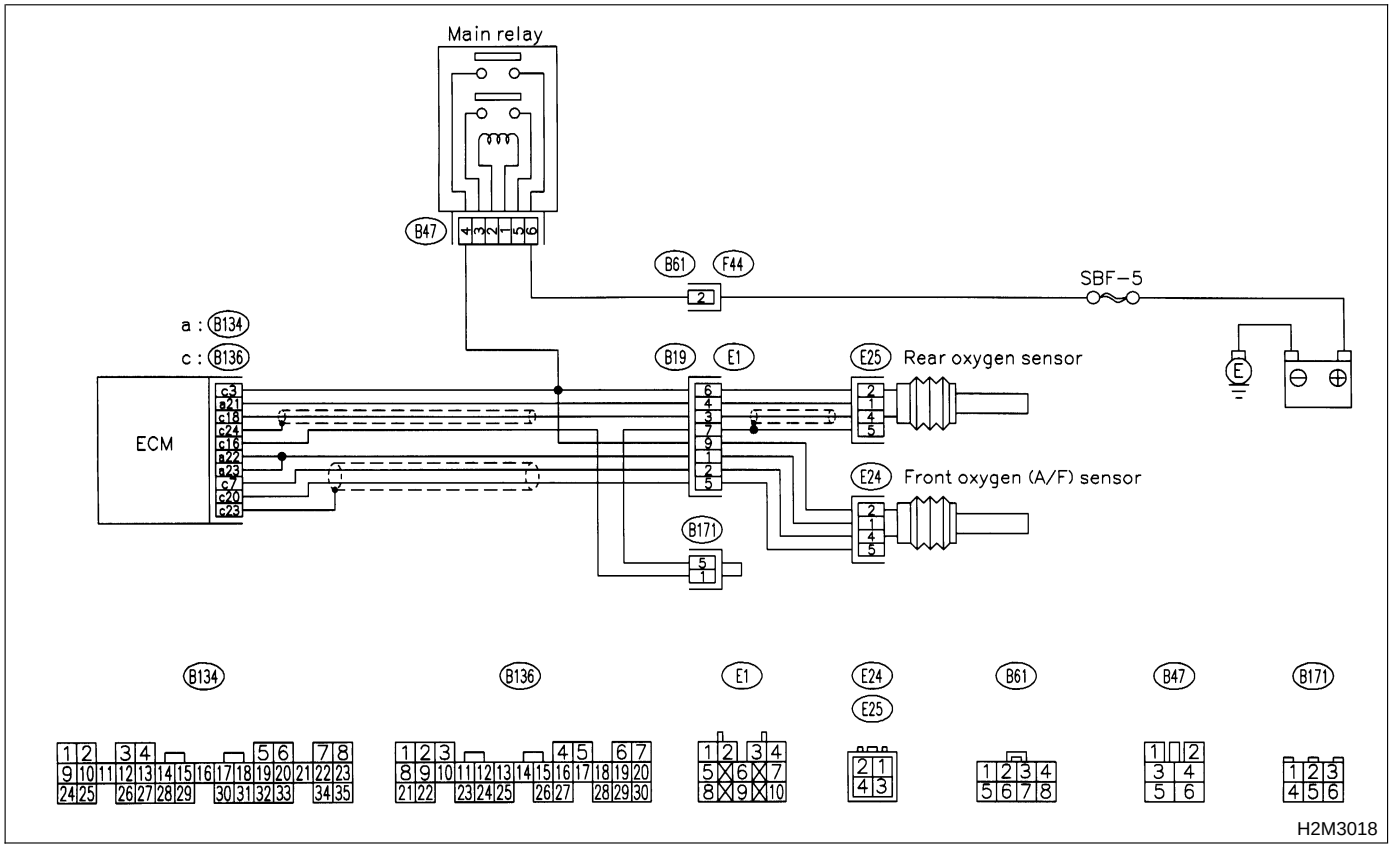
NO : Replace camshaft position sensor. <Ref. to 2-7 [W10A0].>

AH: DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Idle mixture is out of specifications.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AH1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0131, P0132, P0133, P0135, P0136, P0139, P0141, P0301, P0302, P0303, P0304, P1130, P1131, P1134, P1139, P1150 and P1151?***

YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0420.

NO : Go to step **10AH2**.

10AH2 : CHECK EXHAUST SYSTEM.

Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes.

NOTE:
Check the following positions.
- Between cylinder head and front exhaust pipe
- Between front exhaust pipe and front catalytic converter
- Between front catalytic converter and rear catalytic converter

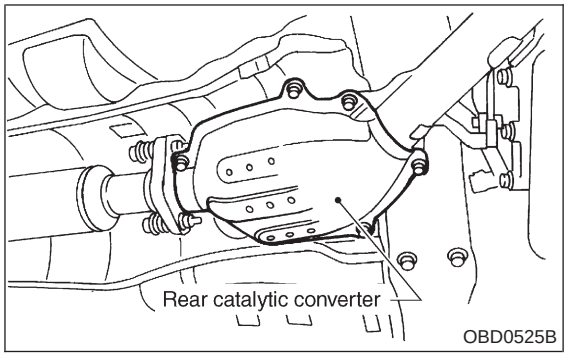
CHECK : ***Is there a fault in exhaust system?***

YES : Repair or replace exhaust system. <Ref. to 2-9 [W1A0].>

NO : Go to step **10AH3**.

10AH3 : CHECK REAR CATALYTIC CONVERTER.

Separate rear catalytic converter from rear exhaust pipe.



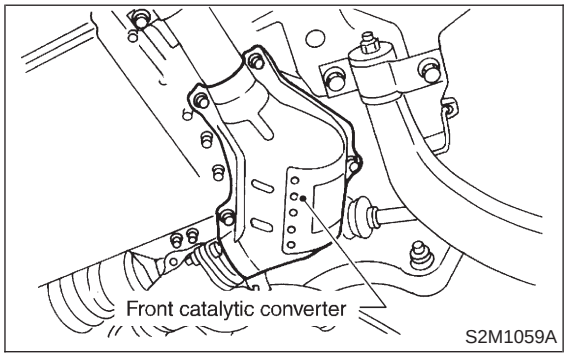
CHECK : ***Is there damage at rear face of rear catalyst?***

YES : Replace front catalytic converter <Ref. to 2-1 [W1A0].> and rear catalytic converter <Ref. to 2-1 [W2A0].>.

NO : Go to step **10AH4**.

10AH4 : CHECK FRONT CATALYTIC CONVERTER.

Remove front catalytic converter.



CHECK : ***Is there damage at rear face or front face of front catalyst?***

YES : Replace front catalytic converter. <Ref. to 2-1 [W1A0].>

NO : Contact with SOA service.

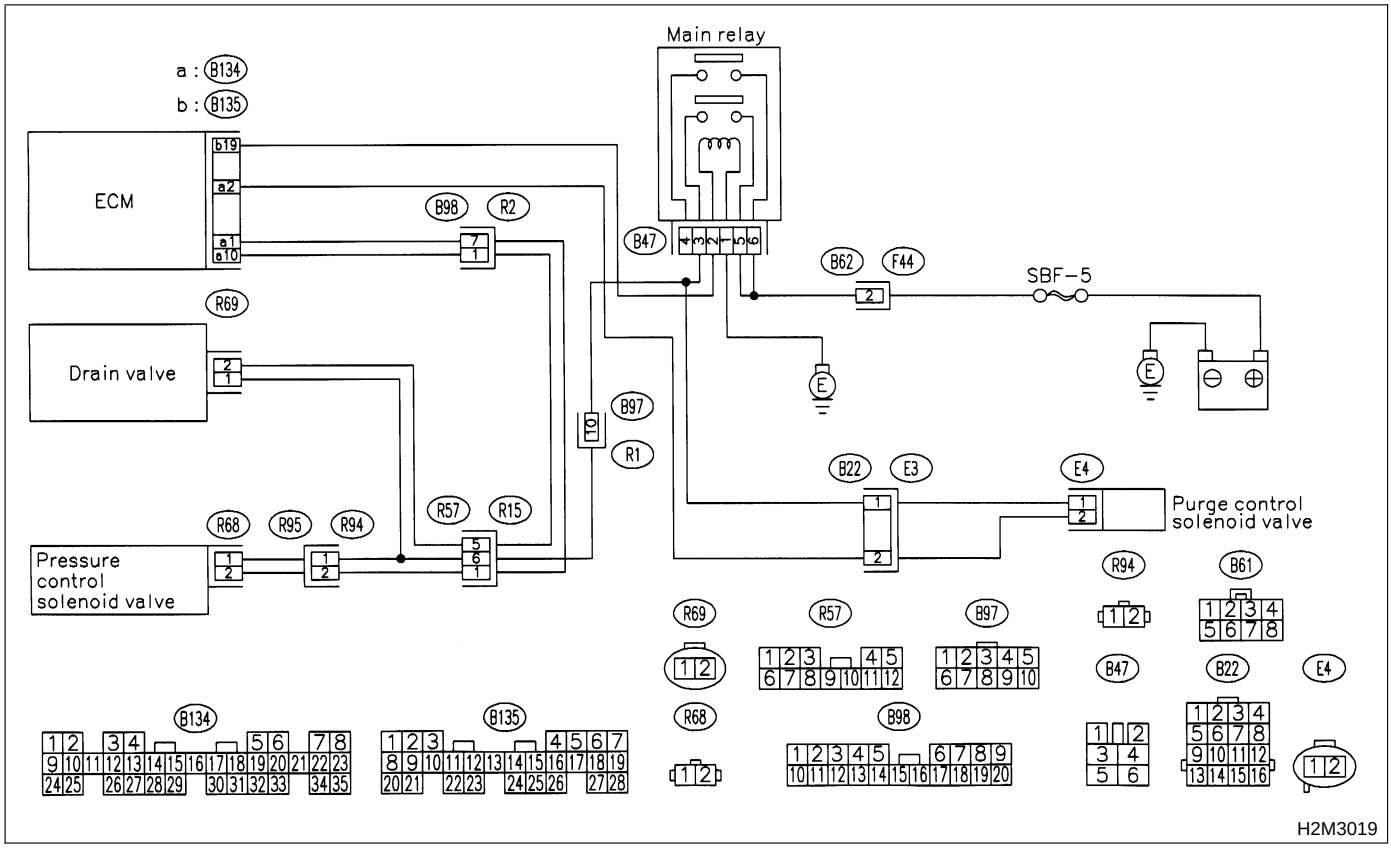
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

AI: DTC P0440 — EVAPORATIVE EMISSION CONTROL SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Gasoline smell

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AI1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***
YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>
NO : Go to step **10AI2**.

10AI2 : CHECK FUEL FILLER CAP.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK : ***Is the fuel filler cap tightened securely?***
YES : Go to step **10AI3**.
NO : Tighten fuel filler cap securely.

10AI3 : CHECK FUEL FILLER PIPE PACKING.

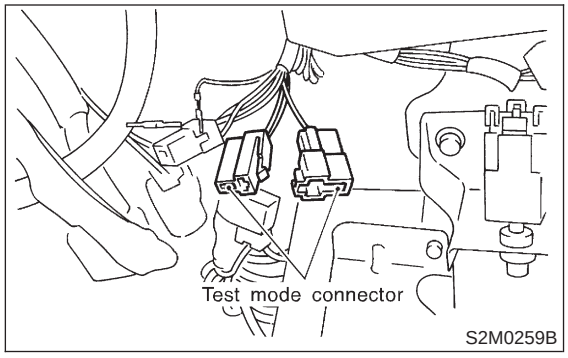
CHECK : ***Is there any damage to the seal between fuel filler cap and fuel filler pipe?***

YES : Repair or replace fuel filler cap and fuel filler pipe. <Ref. to 2-8 [W3A0].>

NO : Go to step **10AI4**.

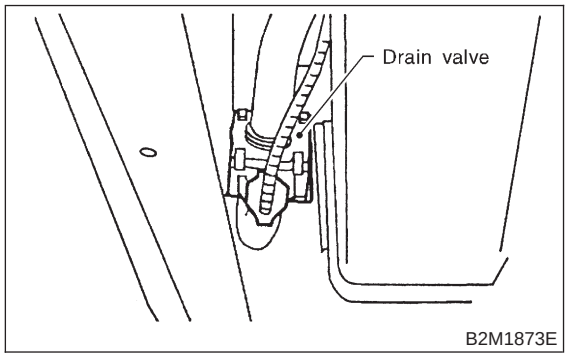
10AI4 : CHECK DRAIN VALVE OR VENT CONTROL SOLENOID VALVE.

1) Connect test mode connector.



2) Turn ignition switch to ON.

NOTE:
Drain valve or vent control solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



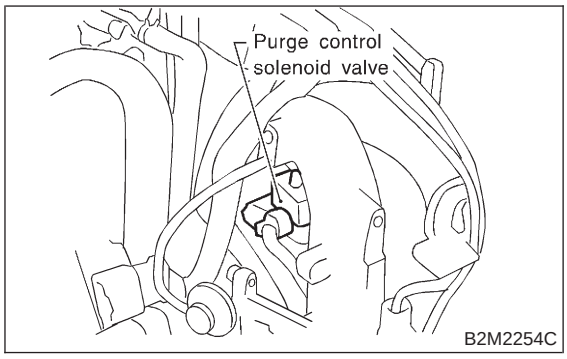
CHECK : ***Does drain valve produce operating sound?***

YES : Go to step **10AI5**.

NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

10AI5 : CHECK PURGE CONTROL SOLENOID VALVE.

NOTE:
Purge control solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



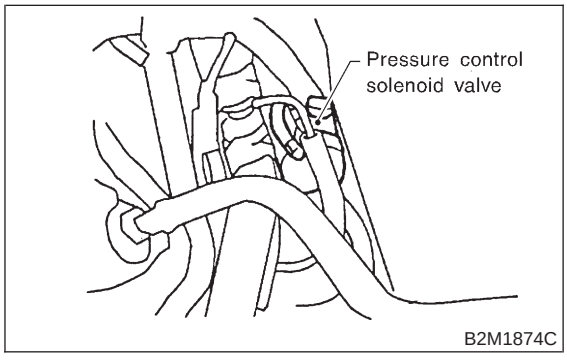
CHECK : ***Does purge control solenoid valve produce operating sound?***

YES : Go to step **10AI6**.

NO : Replace purge control solenoid valve. <Ref. to 2-1 [W4A0].>

10AI6 : CHECK PRESSURE CONTROL SOLENOID VALVE.

NOTE:
Pressure control solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



CHECK : ***Does pressure control solenoid valve produce operating sound?***

YES : Go to step **10AI7**.

NO : Replace pressure control solenoid valve. <Ref. to 2-1 [W7A0].>

10AI7 : CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK : ***Does fuel leak in fuel line?***
YES : Repair or replace fuel line. <Ref. to 2-8 [W7A0].>
NO : Go to step **10AI8**.

10AI8 : CHECK CANISTER.

CHECK : ***Is there any damage at canister?***
YES : Repair or replace canister. <Ref. to 2-1 [W3A0].>
NO : Go to step **10AI9**.

10AI9 : CHECK FUEL TANK.

CHECK : ***Is there any damage at fuel tank?***
YES : Repair or replace fuel tank. <Ref. to 2-8 [W2A0].>
NO : Go to step **10AI10**.

10AI10 : CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.

CHECK : ***Are there holes, cracks, clogging or disconnections of hoses or pipes in evaporative emission control system?***
YES : Repair or replace hoses or pipes.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

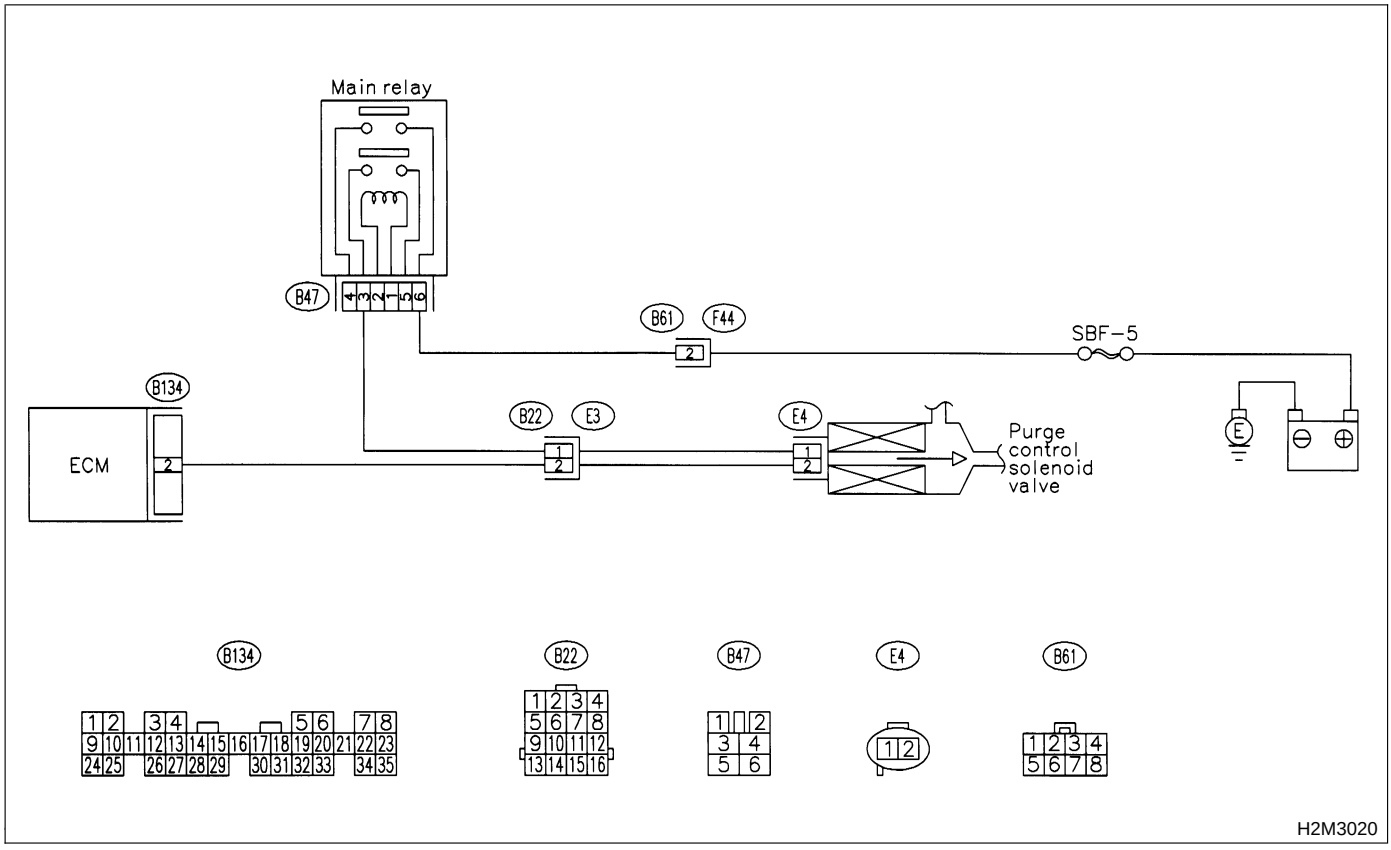
MEMO:

AJ: DTC P0443 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

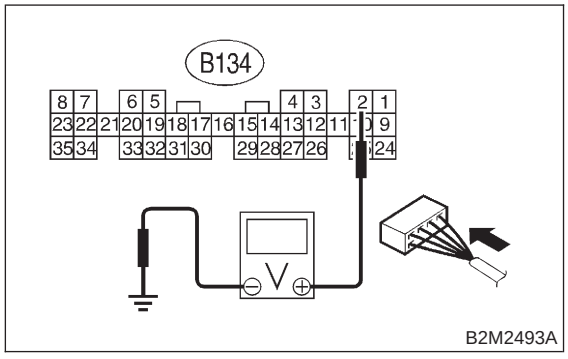
- **WIRING DIAGRAM:**



10AJ1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

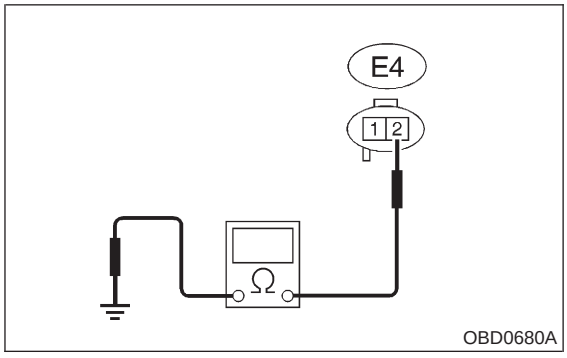
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

NO : Go to step **10AJ2**.

10AJ2 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from purge control solenoid valve and ECM.
3) Measure resistance of harness between purge control solenoid valve connector and engine ground.

Connector & terminal
(E4) No. 2 — Engine ground:



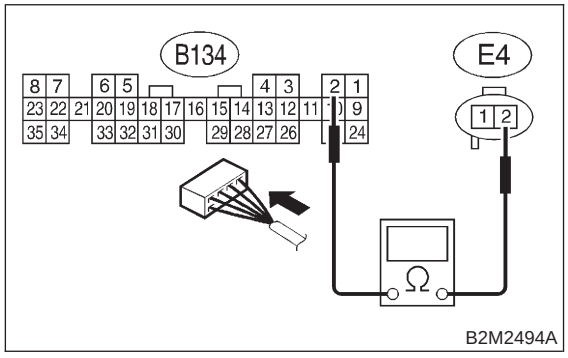
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and purge control solenoid valve connector.

NO : Go to step **10AJ3**.

10AJ3 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and purge control solenoid valve of harness connector.

Connector & terminal
(B134) No. 2 — (E4) No. 2:



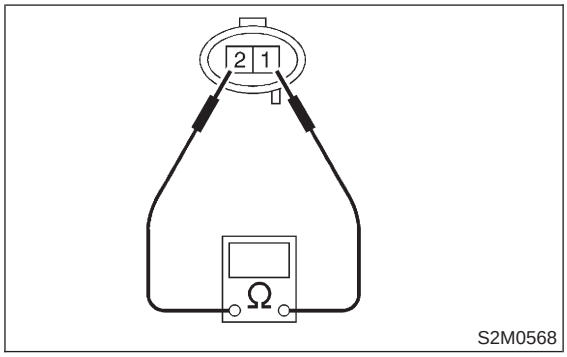
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AJ4**.
NO : Repair open circuit in harness between ECM and purge control solenoid valve connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and purge control solenoid valve connector
- Poor contact in coupling connector (B22)

10AJ4 : CHECK PURGE CONTROL SOLENOID VALVE.

1) Remove purge control solenoid valve.
2) Measure resistance between purge control solenoid valve terminals.

Terminals
No. 1 — No. 2:

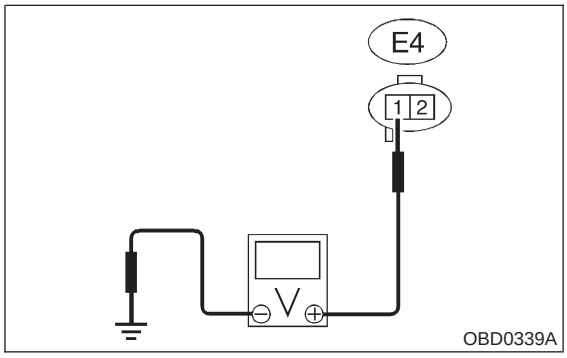


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **10AJ5**.
NO : Replace purge control solenoid valve. <Ref. to 2-1 [W4A0].>

10AJ5 : CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between purge control solenoid valve and engine ground.

Connector & terminal
(E4) No. 1 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AJ6**.
NO : Repair open circuit in harness between main relay and purge control solenoid valve connector.

10AJ6 : CHECK POOR CONTACT.

Check poor contact in purge control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in purge control solenoid valve connector?***

YES : Repair poor contact in purge control solenoid valve connector.

NO : Contact with SOA service.

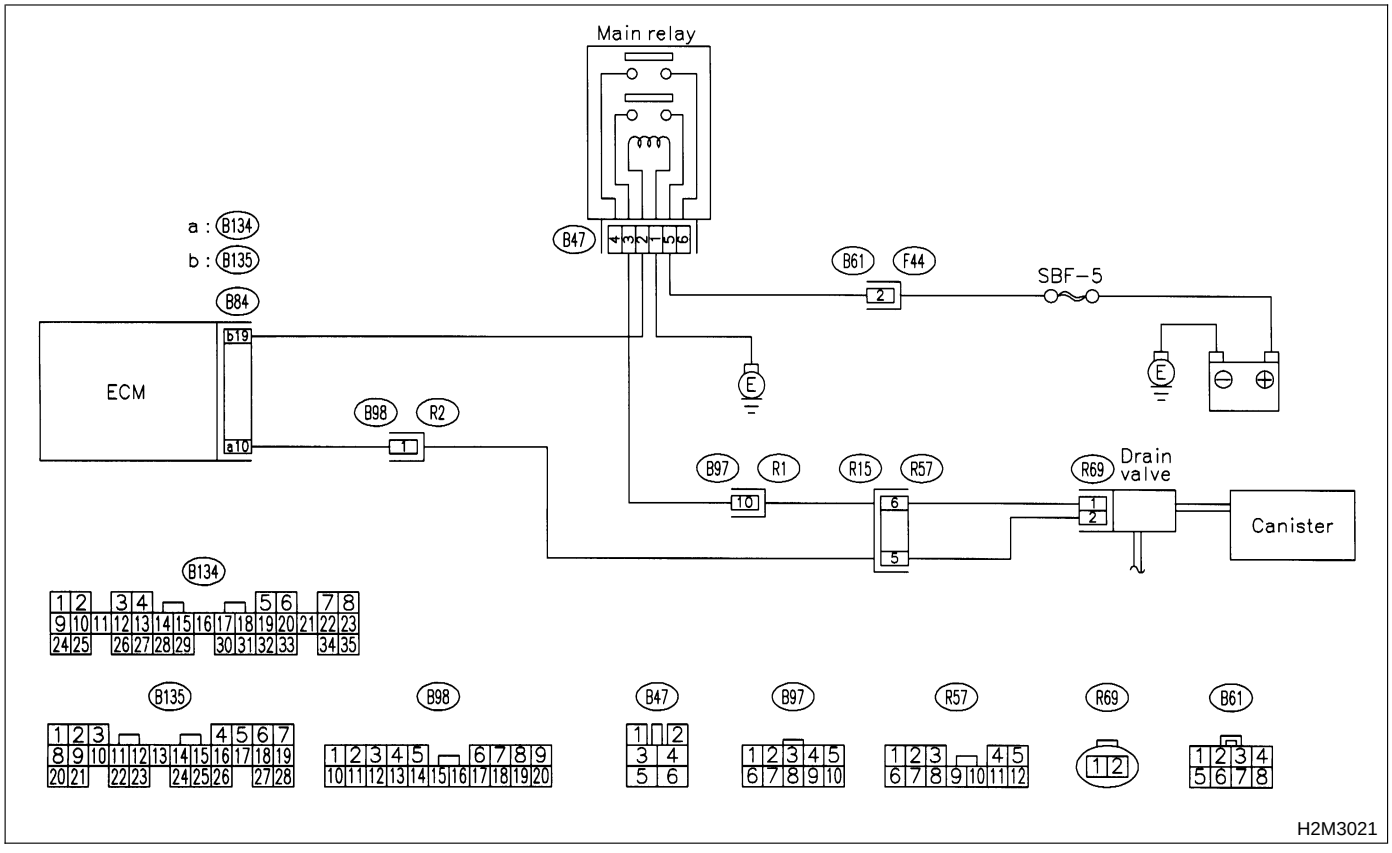
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

AK: DTC P0446 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

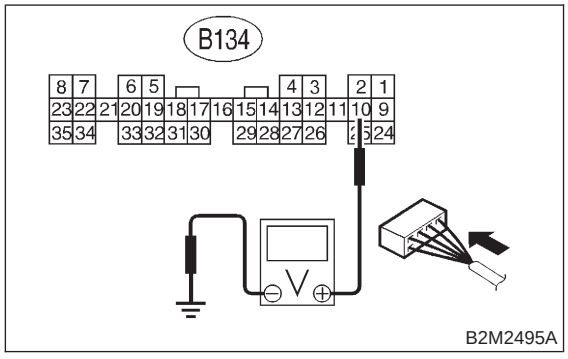
- **WIRING DIAGRAM:**



10AK1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AK2**.
NO : Go to step **10AK3**.

10AK2 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

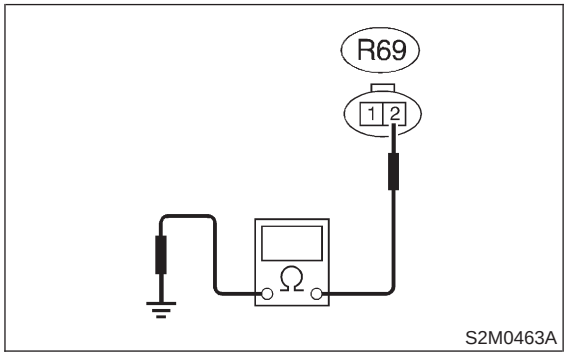
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in drain valve connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B98) and (R57)

10AK3 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

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

Connector & terminal
(R69) No. 2 — Chassis ground:

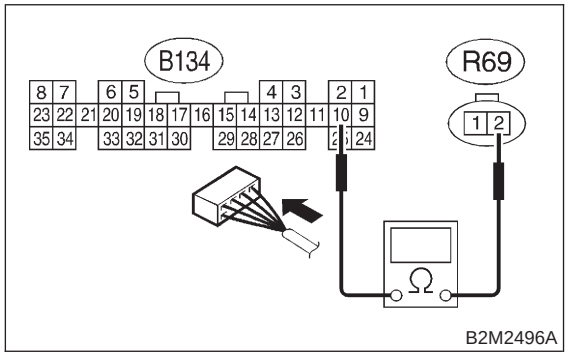


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and drain valve connector.
NO : Go to step **10AK4**.

10AK4 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and drain valve connector.

Connector & terminal
(B134) No. 10 — (R69) No. 2:



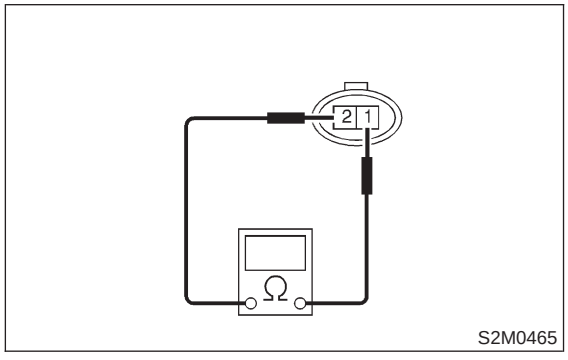
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AK5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and drain valve connector
● Poor contact in coupling connectors (B98) and (R57)

10AK5 : CHECK DRAIN VALVE.

Measure resistance between drain valve terminals.

Terminals
No. 1 — No. 2:

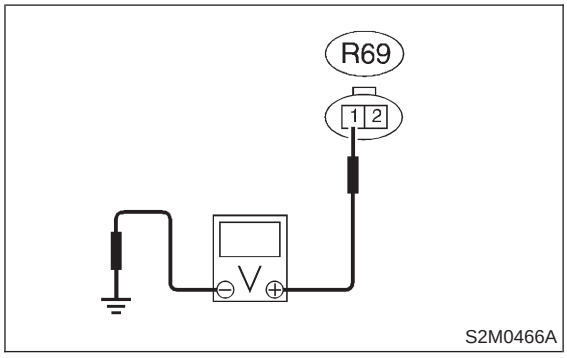


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **10AK6**.
NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

10AK6 : CHECK POWER SUPPLY TO DRAIN VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between drain valve and chassis ground.

Connector & terminal
(R69) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AK7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between main relay and drain valve
● Poor contact in coupling connectors (B97) and (R57)
● Poor contact in main relay connector

10AK7 : CHECK POOR CONTACT.

Check poor contact in drain valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in drain valve connector?***
YES : Repair poor contact in drain valve connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

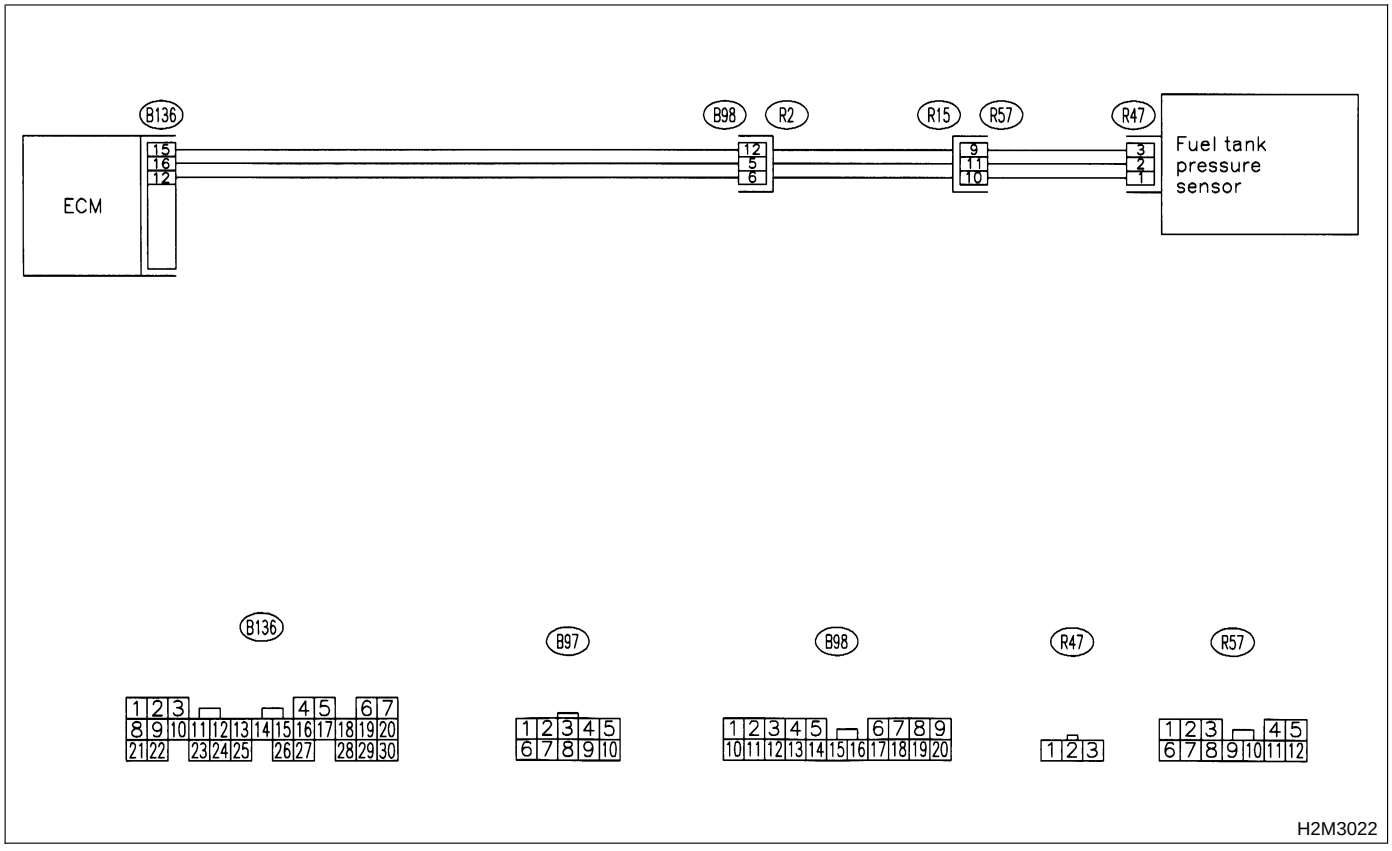
MEMO:

AL: DTC P0451 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AL1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any DTC on display?***
YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>
NO : Go to step **10AL2**.

10AL2 : CHECK FUEL FILLER CAP.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK : ***Is the fuel filler cap tightened securely?***
YES : Go to step **10AL3**.
NO : Tighten fuel filler cap securely.

10AL3 : CHECK PRESSURE/VACUUM LINE.

NOTE:
Check the following items.
● Disconnection, leakage and clogging of the vacuum hoses and pipes between fuel tank pressure sensor and fuel tank
● Disconnection, leakage and clogging of air ventilation hoses and pipes between fuel filler pipe and fuel tank

CHECK : ***Is there a fault in pressure/vacuum line?***

YES : Repair or replace hoses and pipes.

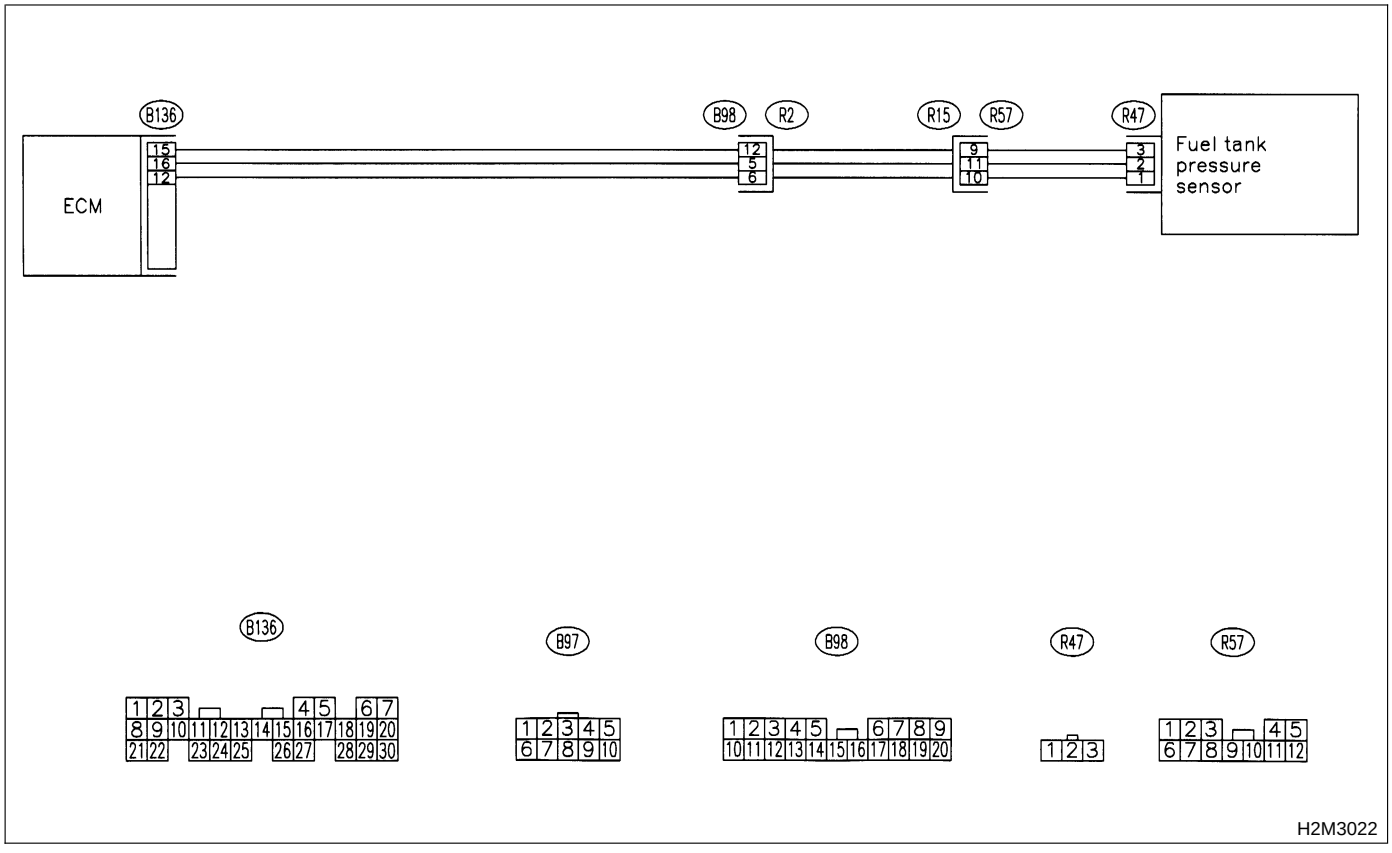
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

AM: DTC P0452 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

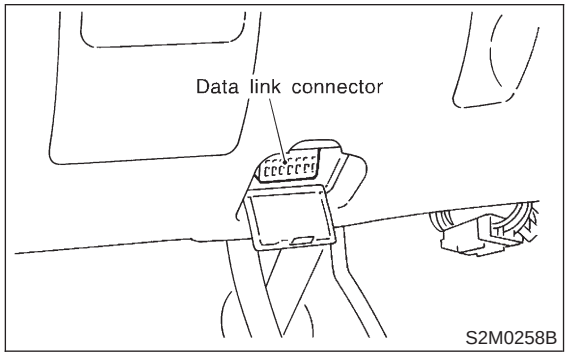
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AM1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



5) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
6) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

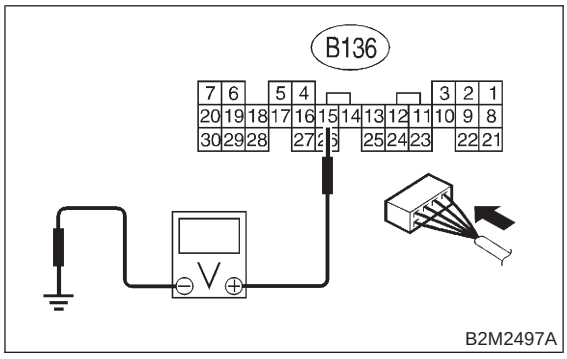
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −2.8 kPa (−21.0 mmHg, −0.827 inHg)?***
YES : Go to step **10AM2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

10AM2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

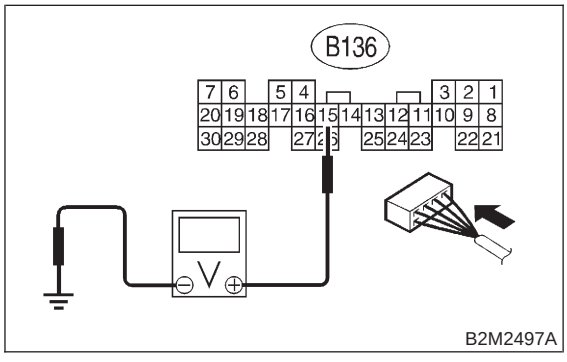


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AM4**.
NO : Go to step **10AM3**.

10AM3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



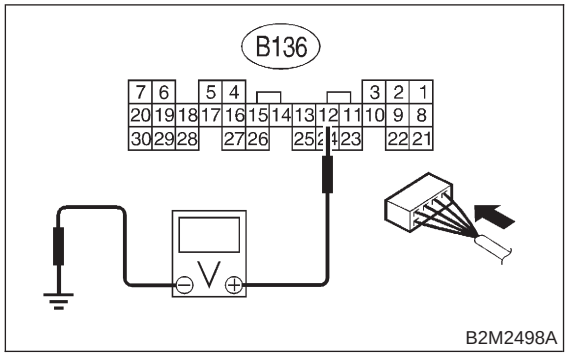
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10AM4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 12 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10AM6**.
NO : Go to step **10AM5**.

10AM5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel tank pressure sensor signal using Subaru Select Monitor.

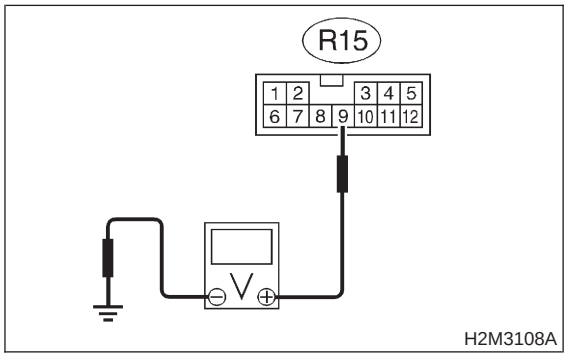
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than −2.8 kPa (−21.0 mmHg, −0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10AM6**.

10AM6 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Remove rear seat cushion (Sedan) or move rear seat cushion (Wagon).
3) Separate rear wiring harness and fuel tank cord.
4) Turn ignition switch to ON.
5) Measure voltage between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 9 (+) — Chassis ground (−):



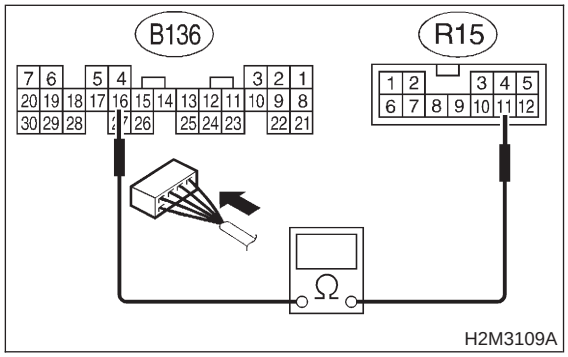
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AM7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R15)
● Poor contact in coupling connector (B98)

10AM7 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

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

Connector & terminal
(B136) No. 16 — (R15) No. 11:



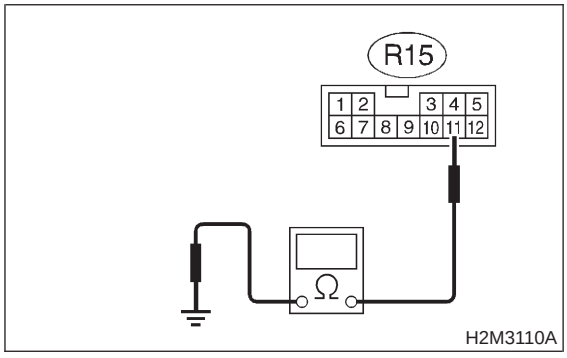
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AM8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

10AM8 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 11 — Chassis ground:

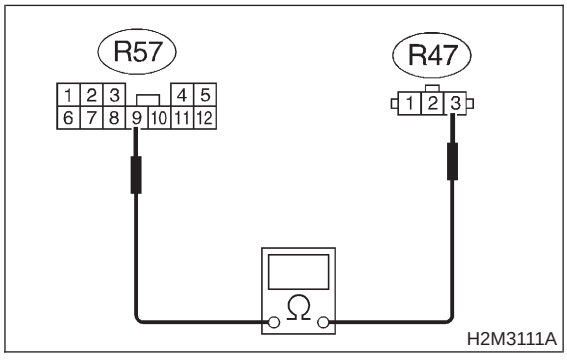


CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **10AM9**.
NO : Repair ground short circuit in harness between ECM and rear wiring harness connector (R15).

10AM9 : CHECK FUEL TANK CORD.

1) Remove fuel tank. <Ref. to 2-8 [W2A0].>
2) Disconnect connector from fuel tank pressure sensor.
3) Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 9 — (R47) No. 3:

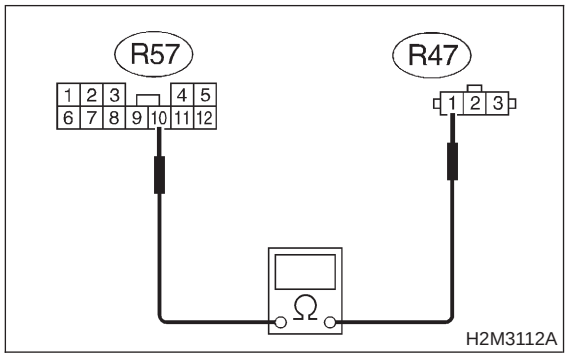


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AM10**.
NO : Repair open circuit in fuel tank cord.

10AM10 : CHECK FUEL TANK CORD.

Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 10 — (R47) No. 1:

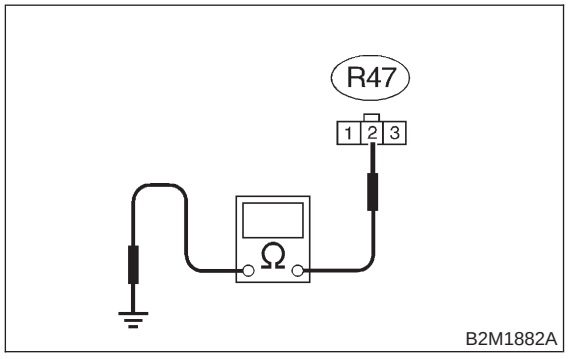


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AM11**.
NO : Repair open circuit in fuel tank cord.

10AM11 : CHECK FUEL TANK CORD.

Measure resistance of harness between fuel tank pressure sensor connector and chassis ground.

Connector & terminal
(R47) No. 2 — Chassis ground:



CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **10AM12**.
NO : Repair ground short circuit in fuel tank cord.

10AM12 : CHECK POOR CONTACT.

Check poor contact in fuel tank pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in fuel tank pressure sensor connector?***
YES : Repair poor contact in fuel tank pressure sensor connector.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

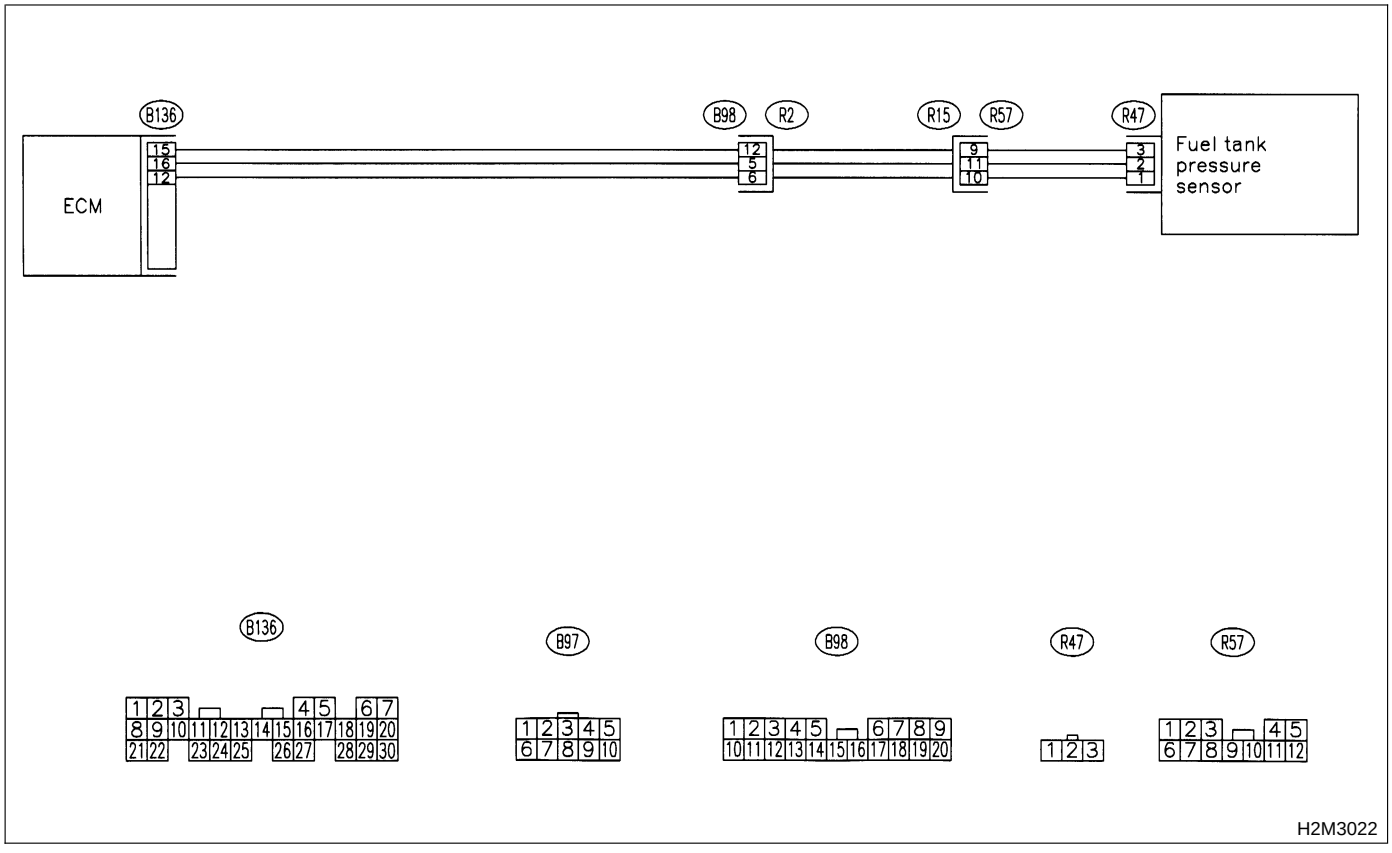
MEMO:

AN: DTC P0453 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

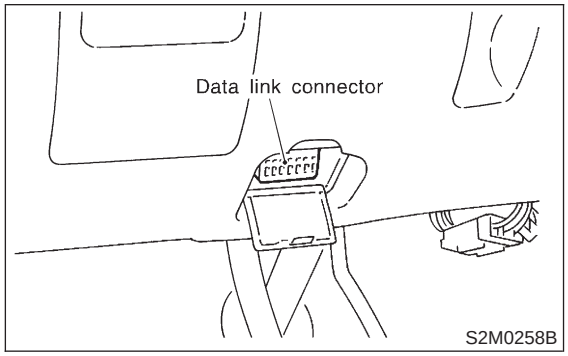
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AN1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



5) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
6) Read data of fuel tank pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool.

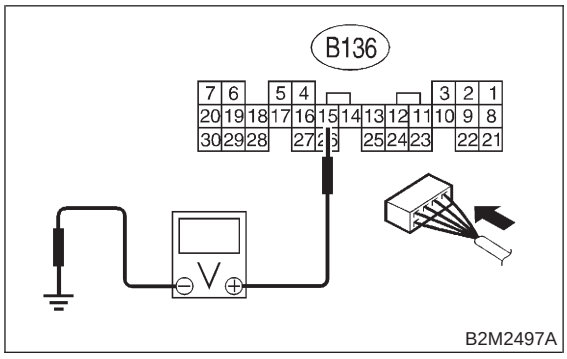
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?***
YES : Go to step **10AN12**.
NO : Go to step **10AN2**.

10AN2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

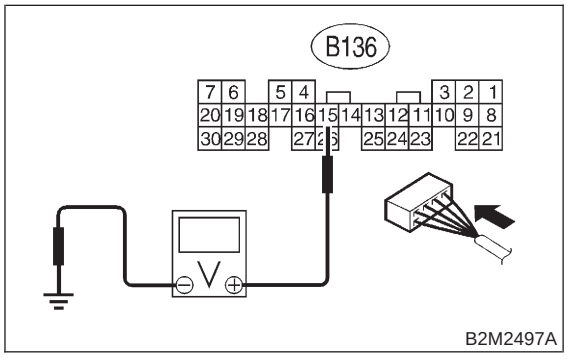


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AN4**.
NO : Go to step **10AN3**.

10AN3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

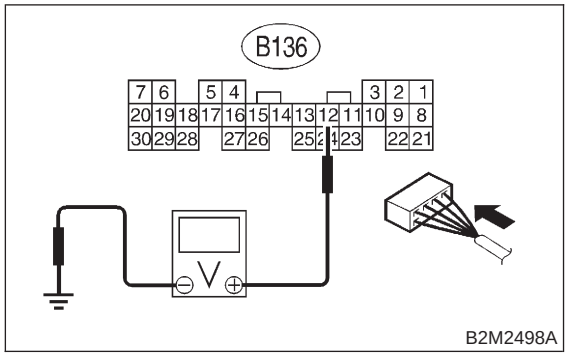


CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

10AN4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 12 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10AN6**.
NO : Go to step **10AN5**.

10AN5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel tank pressure sensor signal using Subaru Select Monitor.

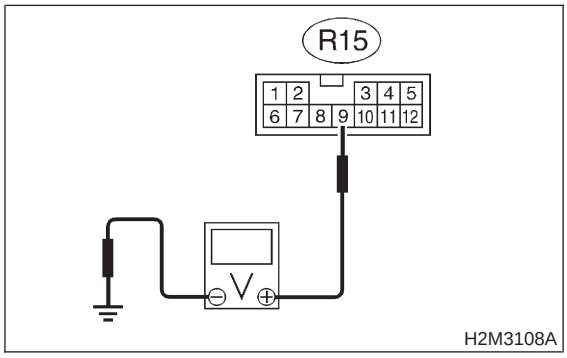
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than −2.8 kPa (−21.0 mmHg, −0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10AN6**.

10AN6 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Remove rear seat cushion (Sedan) or move rear seat cushion (Wagon).
3) Separate rear wiring harness and fuel tank cord.
4) Turn ignition switch to ON.
5) Measure voltage between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 9 (+) — Chassis ground (−):



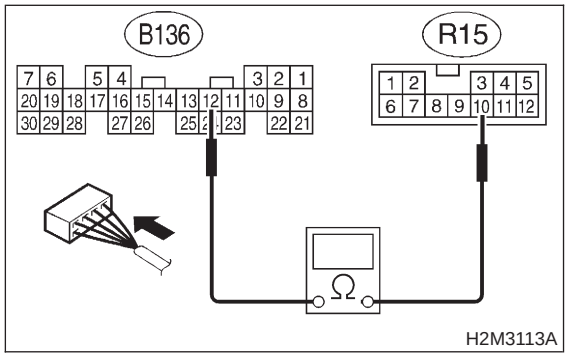
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AN7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R15)
● Poor contact in coupling connector (B98)

10AN7 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

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

Connector & terminal
(B136) No. 12 — (R15) No. 10:



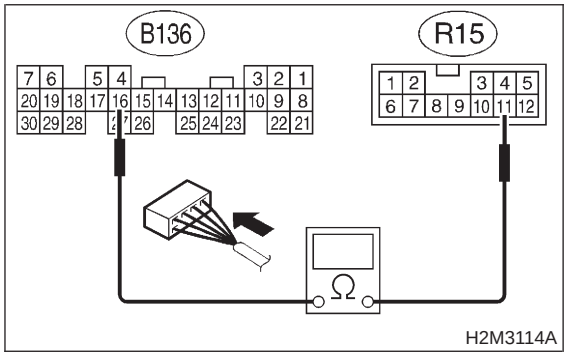
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AN8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

10AN8 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(B136) No. 16 — (R15) No. 11:

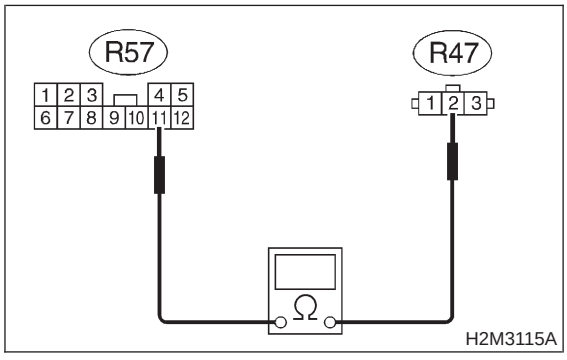


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AN9**.
NO : Repair ground short circuit in harness between ECM and rear wiring harness connector (R15).

10AN9 : CHECK FUEL TANK CORD.

1) Remove fuel tank. <Ref. to 2-8 [W2A0].>
2) Disconnect connector from fuel tank pressure sensor.
3) Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 11 — (R47) No. 2:

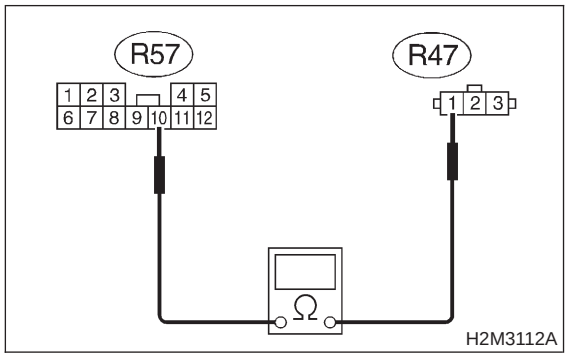


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AN10**.
NO : Repair open circuit in fuel tank cord.

10AN10 : CHECK FUEL TANK CORD.

Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 10 — (R47) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AN11**.
NO : Repair open circuit in fuel tank cord.

10AN11 : CHECK POOR CONTACT.

Check poor contact in fuel tank pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in fuel tank pressure sensor connector?***
YES : Repair poor contact in fuel tank pressure sensor connector.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

10AN12 : CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Remove fuel tank. <Ref. to 2-8 [W2A0].>
3) Remove fuel tank cord from fuel tank.
4) Connect fuel tank cord to rear wiring harness.
5) Remove fuel filler cap.
6) Install fuel filler cap.
7) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
8) Read data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

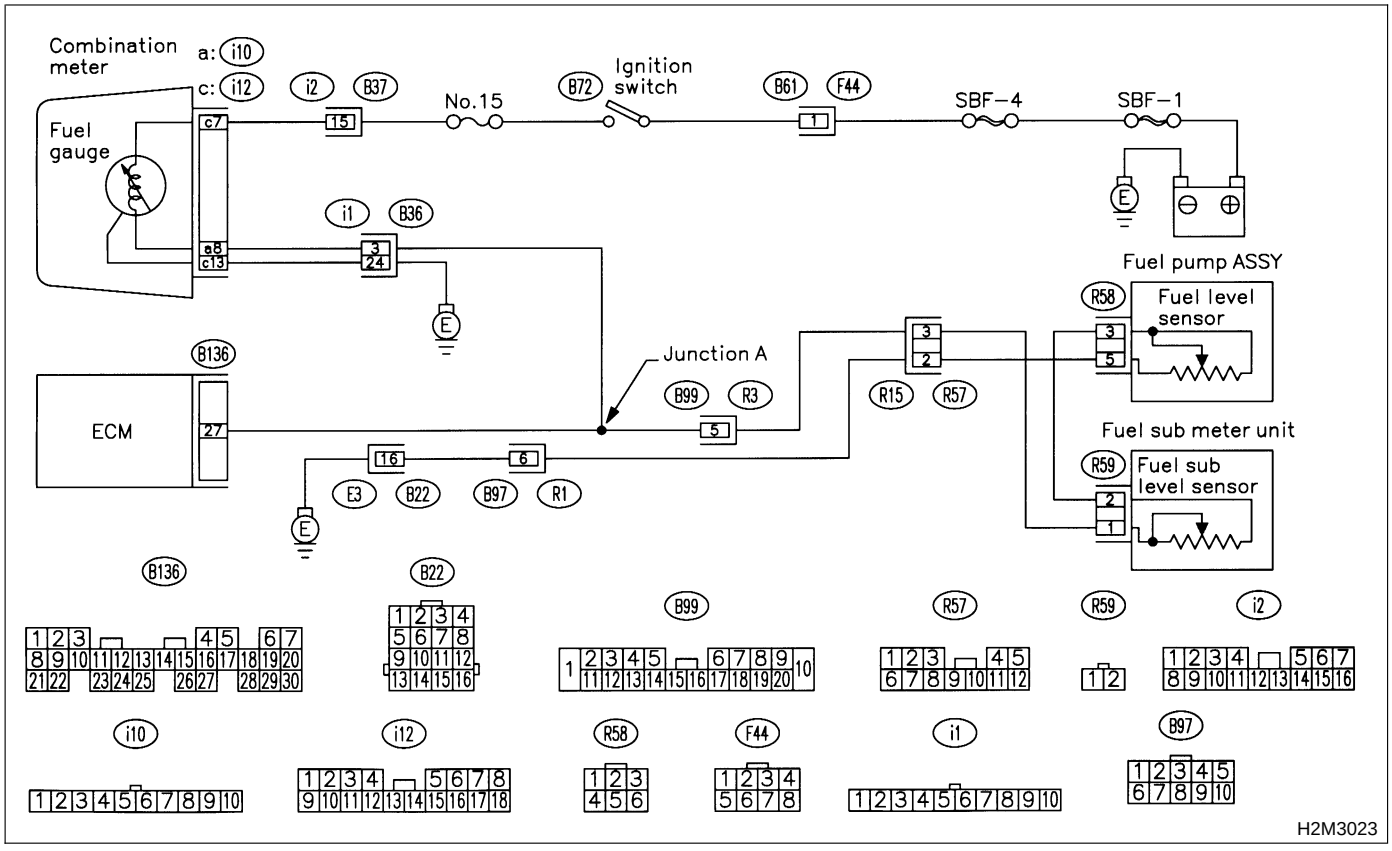
CHECK : ***Is the value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?***
YES : Repair battery short circuit in harness between ECM and fuel tank pressure sensor connector.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

AO: DTC P0461 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AO1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0462 or P0463?***

YES : Inspect DTC P0462 or P0463 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect this trouble.

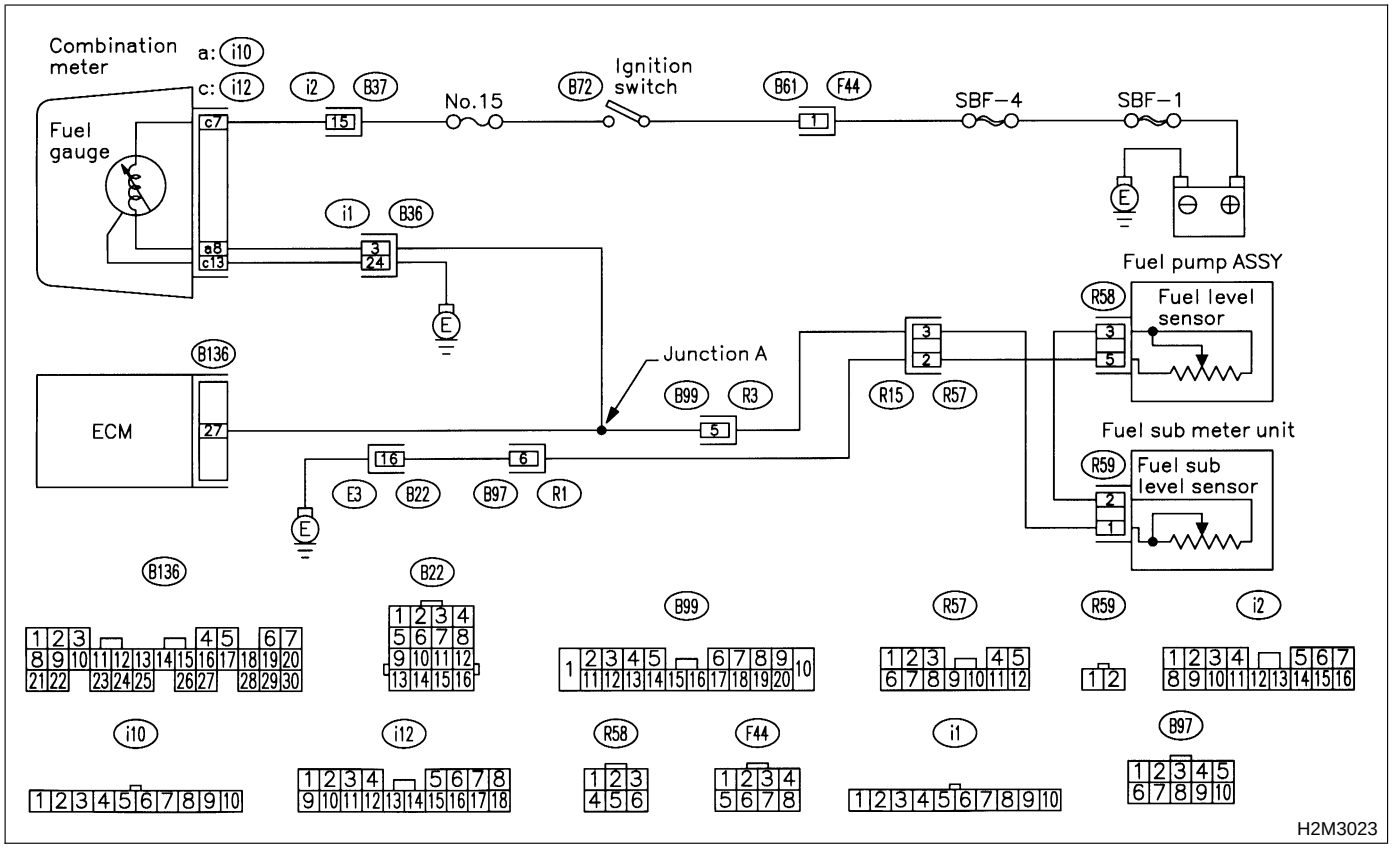
NO : Replace fuel sending unit <Ref. to 2-1 [W8A0].> and fuel sub meter unit <Ref. to 2-1 [W10A0].>.

AP: DTC P0462 — FUEL LEVEL SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AP1 :	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

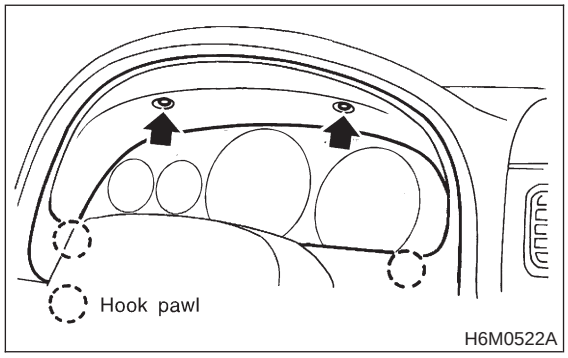
CHECK : ***Does speedometer and tachometer operate normally?***

YES : Go to step **10AP3**.

NO : Go to step **10AP2**.

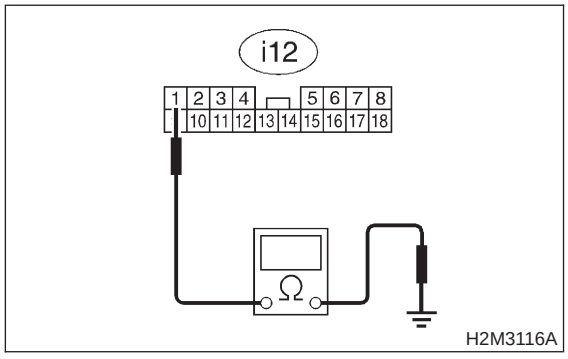
10AP2 : CHECK GROUND CIRCUIT OF COMBINATION METER.

1) Turn ignition switch to OFF.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



3) Disconnect connector from combination meter.
4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 1 — Chassis ground:



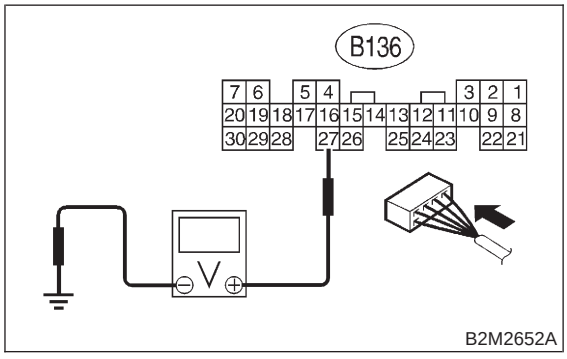
CHECK : ***Is resistance less than 5 Ω?***
YES : Repair or replace combination meter. <Ref. to 6-2 [W8A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal

10AP3 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON. (Engine OFF)
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.12 V?***
YES : Go to step **10AP5**.
NO : Go to step **10AP4**.

10AP4 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel level sensor signal using Subaru Select Monitor.

NOTE:
- Subaru Select Monitor

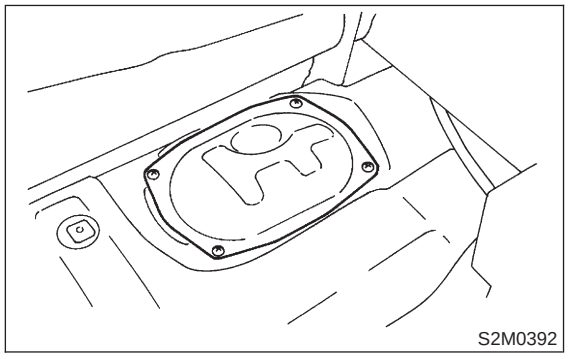
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change less than 0.12 V by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (i1), (B22), (B99), (B97) and (R57)

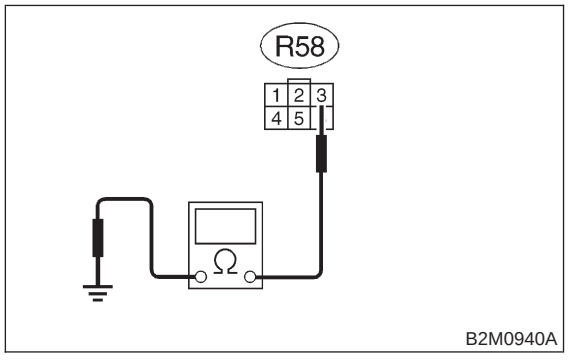
10AP5 : CHECK HARNESS BETWEEN ECM, COMBINATION METER AND FUEL PUMP CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



3) Disconnect connector from fuel pump.
4) Measure resistance of harness between fuel pump connector and chassis ground.

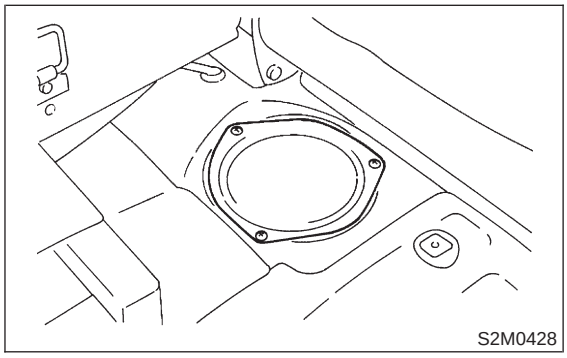
Connector & terminal
(R58) No. 3 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10AP6**.
NO : Go to step **10AP11**.

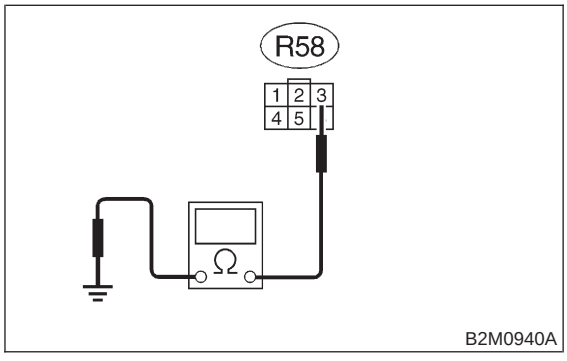
10AP6 : CHECK FUEL TANK CORD.

1) Remove service hole cover located on the left rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



2) Disconnect connector from fuel sub meter unit.
3) Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 3 — Chassis ground:

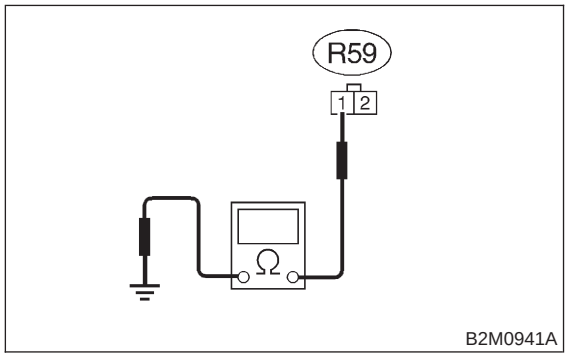


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between fuel pump and fuel sub meter unit connector.
NO : Go to step **10AP7**.

10AP7 : CHECK REAR WIRING HARNESS.

1) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15).
2) Measure resistance of harness between fuel sub meter unit connector and chassis ground.

Connector & terminal
(R59) No. 1 — Chassis ground:

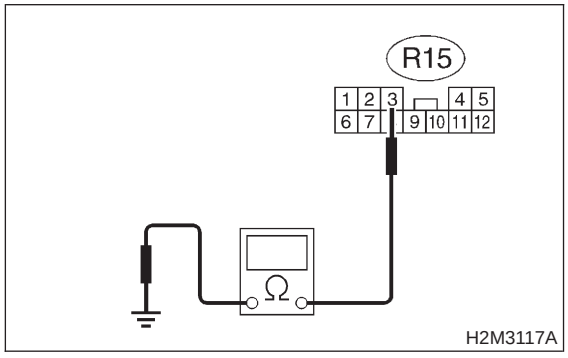


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in fuel tank cord.
NO : Go to step **10AP8**.

10AP8 : CHECK REAR, BULKHEAD AND INSTRUMENT PANEL WIRING HARNESS.

1) Separate rear wiring harness connector (R1) and bulkhead wiring harness connector (B97).
2) Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 3 — Chassis ground:

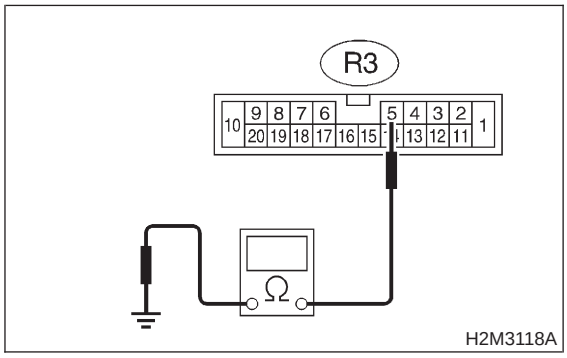


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10AP9**.
NO : Repair ground short circuit in bulkhead wiring harness.

10AP9 : CHECK REAR WIRING HARNESS.

1) Separate rear wiring harness connector (R3) and bulkhead wiring harness connector (B99).
2) Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R3) No. 5 — Chassis ground:

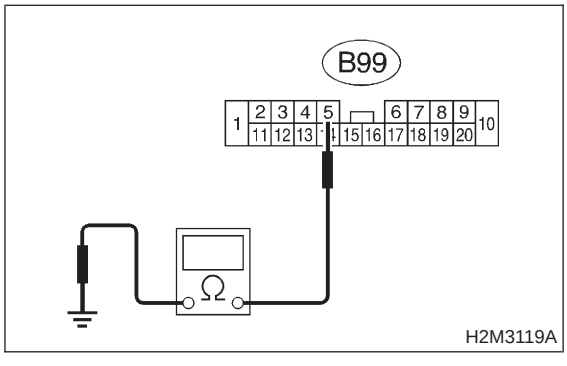


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in rear wiring harness.
NO : Go to step **10AP10**.

10AP10 : CHECK BULKHEAD WIRING HARNESS.

1) Separate bulkhead wiring harness connector (B36) and instrument panel wiring harness connector (i1).
2) Measure resistance of harness between bulkhead wiring harness connector and chassis ground.

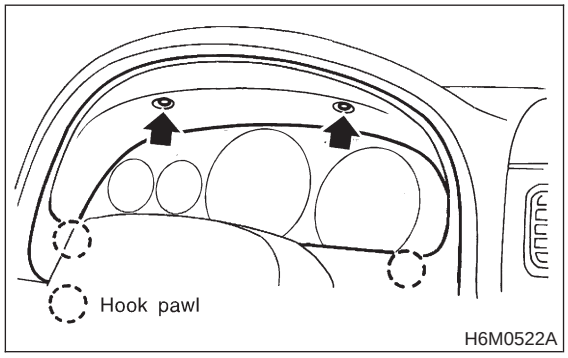
Connector & terminal
(B99) No. 5 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in bulkhead wiring harness.
NO : Repair ground short circuit in instrument panel wiring harness.

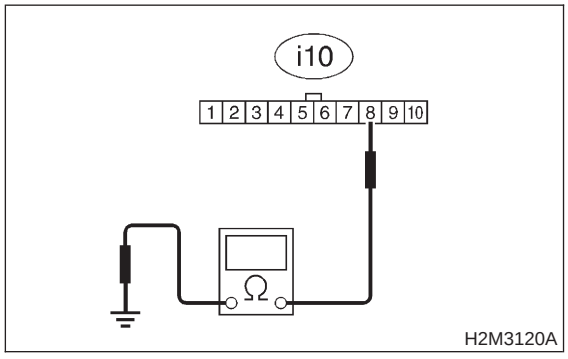
10AP11 : CHECK HARNESS BETWEEN COMBINATION METER AND FUEL PUMP CONNECTOR.

1) Connect connector to fuel pump.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



3) Disconnect connector from combination meter.
4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i10) No. 8 — Chassis ground:



CHECK : ***Is the resistance less than 200 Ω?***
YES : Go to step **10AP12**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between combination meter connector and junction A on rear wiring harness
● Poor contact in coupling connectors (i1) and (B99)

10AP12 : CHECK COMBINATION METER.

Disconnect connector from combination meter and remove combination meter.

CHECK : ***Is the fuel meter installation screw tightened securely?***
YES : Go to step **10AP13**.
NO : Tighten fuel meter installation screw securely.

10AP13 : CHECK COMBINATION METER PRINTED CIRCUIT PLATE.

Remove printed circuit plate assembly from combination meter assembly.

CHECK : ***Is there flaw or burning on printed circuit plate assembly?***
YES : Replace printed circuit plate assembly.
NO : Replace fuel meter assembly. <Ref. to 6-2 [W8A0].>

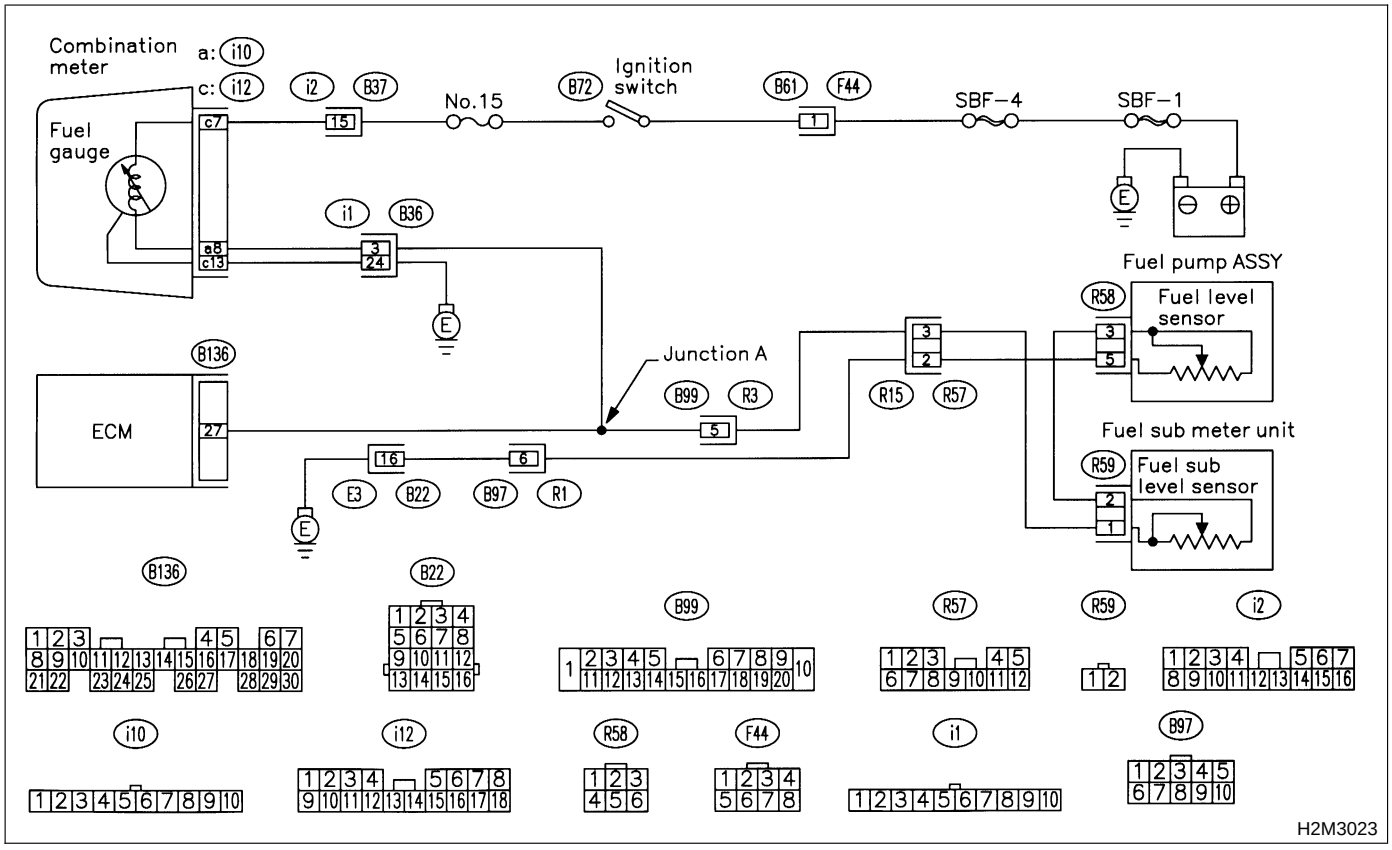
MEMO:

AQ: DTC P0463 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**

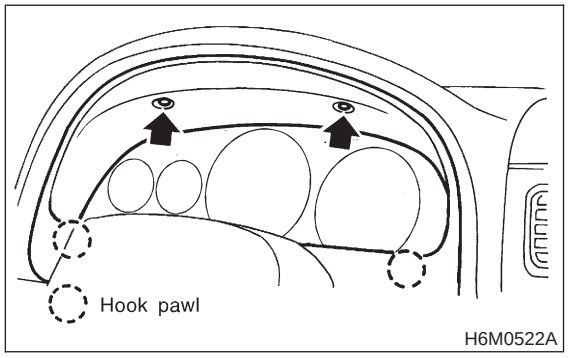


10AQ1 : CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer and tachometer operate normally?***
YES : Go to step **10AQ3**.
NO : Go to step **10AQ2**.

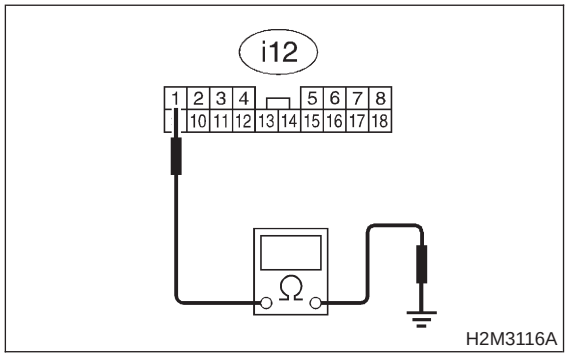
10AQ2 : CHECK GROUND CIRCUIT OF COMBINATION METER.

1) Turn ignition switch to OFF.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



3) Disconnect connector from combination meter.
4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 1 — Chassis ground:



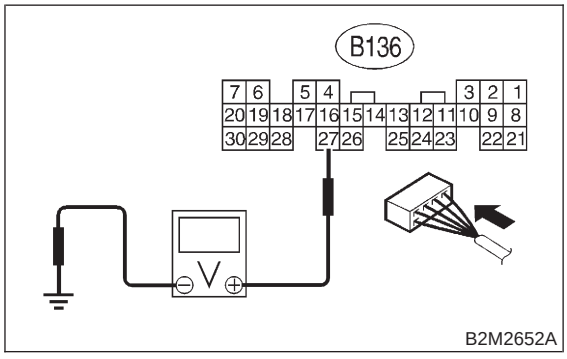
CHECK : ***Is resistance less than 5 Ω?***
YES : Repair or replace combination meter. <Ref. to 6-2 [W8A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal

10AQ3 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON. (Engine OFF)
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):

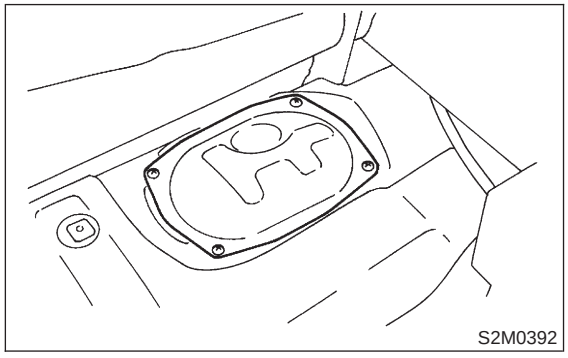


CHECK : ***Is the voltage more than 4.75 V?***
YES : Go to step **10AQ4**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connector (i1), (B99), (B22), (B97) and (R57)

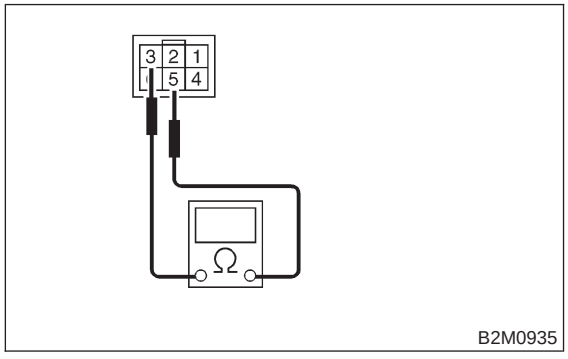
10AQ4 : CHECK FUEL LEVEL SENSOR.

1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


S2M0392

3) Disconnect connector from fuel pump.
4) Measure resistance between connector terminals of fuel pump.

Terminals
No. 3 — No. 5:

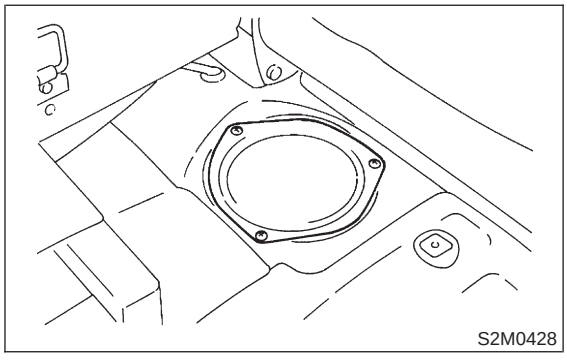


B2M0935

CHECK : ***Is the resistance less than 100 Ω?***
YES : Go to step **10AQ5**.
NO : Replace fuel sending unit. <Ref. to 2-1 [W8A0].>

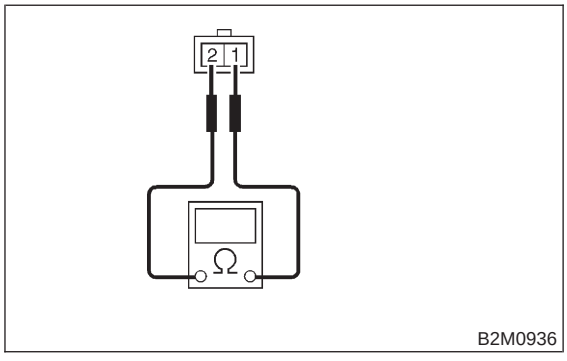
10AQ5 : CHECK FUEL SUB LEVEL SENSOR.

1) Remove service hole cover located on the left rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


S2M0428

2) Disconnect connector from fuel sub meter unit.
3) Measure resistance between connector terminals of fuel sub meter unit.

Terminals
No. 1 — No. 2:



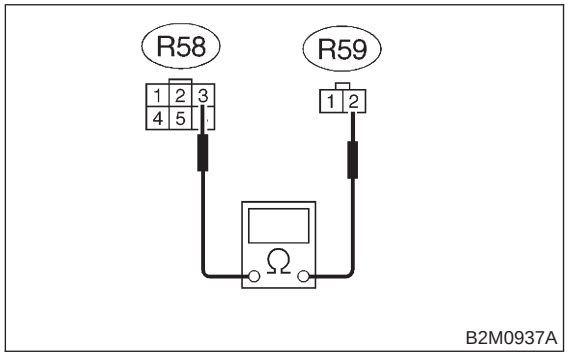
B2M0936

CHECK : ***Is the resistance less than 100 Ω?***
YES : Go to step **10AQ6**.
NO : Replace fuel sub meter unit. <Ref. to 2-1 [W10A0].>

10AQ6 : CHECK HARNESS BETWEEN FUEL PUMP AND FUEL SUB METER UNIT CONNECTOR.

Measure resistance of harness between fuel pump and fuel sub meter unit connector.

Connector & terminal
(R58) No. 3 — (R59) No. 2:

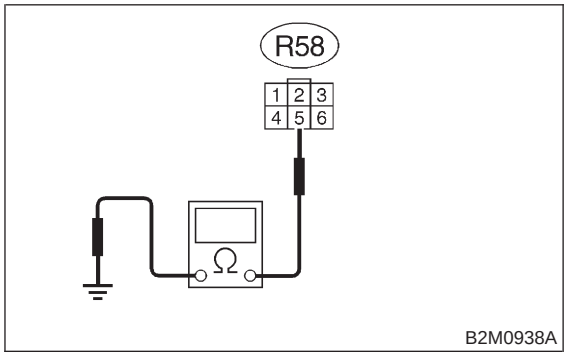


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AQ7**.
NO : Repair open circuit in harness between fuel pump and fuel sub meter unit connector.

10AQ7 : CHECK GROUND CIRCUIT OF FUEL LEVEL SENSOR.

Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 5 — Chassis ground:



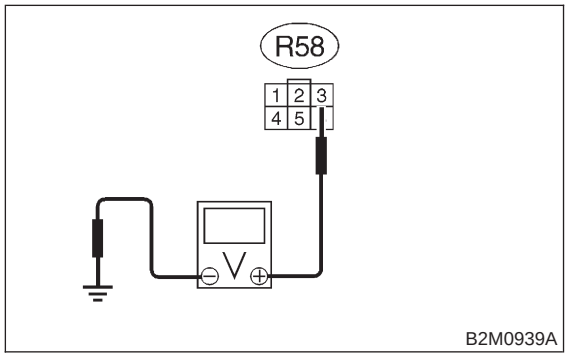
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AQ8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and chassis grounding terminal
- Poor contact in fuel pump connector
- Poor contact in coupling connectors (R57), (B97) and (B22)

10AQ8 : CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONNECTOR.

1) Connect connector to fuel sub meter unit.
2) Turn ignition switch to ON.
3) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 3 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Repair harness and connector.

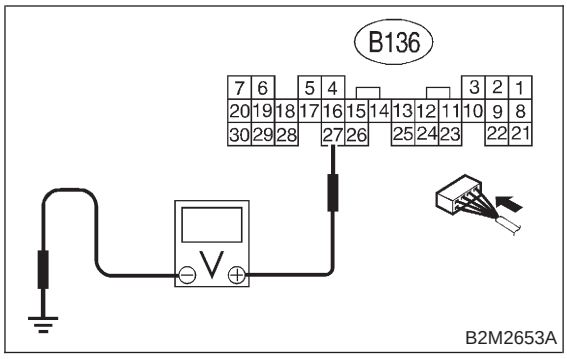
NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and junction A on rear wiring harness
- Poor contact in fuel sub meter unit connector
- Poor contact in fuel pump connector
- Poor contact in coupling connector (R57) and (R59)

NO : Go to step **10AQ9**.

10AQ9 : CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM connector and junction A on rear wiring harness
- Poor contact in coupling connector (B97)

NO : Repair connector.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in fuel sub meter unit
- Poor contact in ECM connector

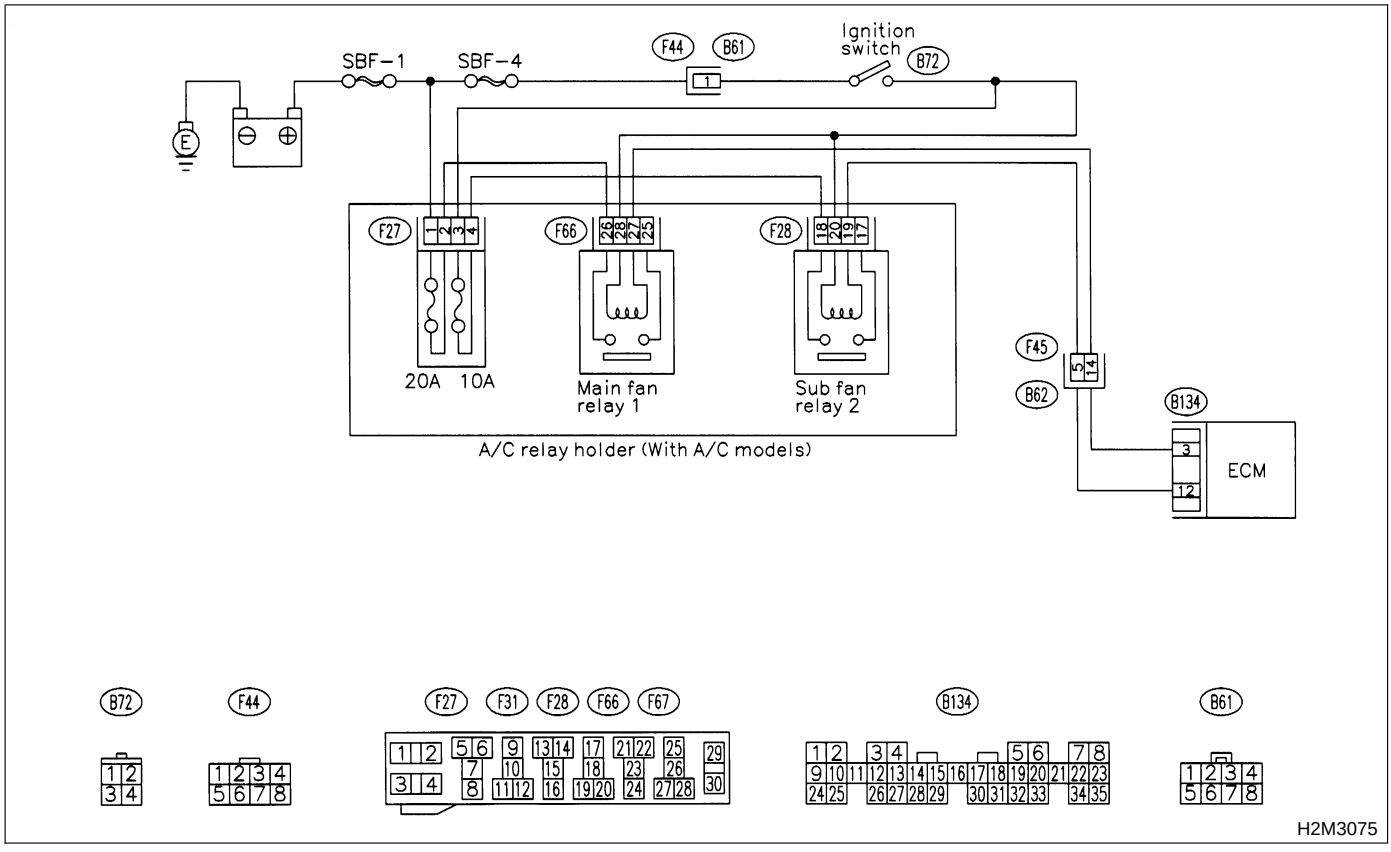
MEMO:

AR: DTC P0480 — COOLING FAN RELAY 1 CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Radiator fan does not operate properly.
  - Overheating

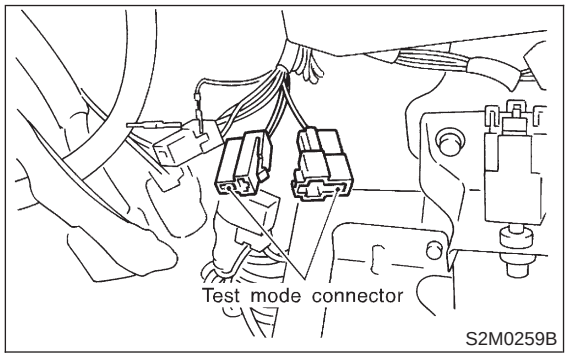
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AR1 : CHECK OUTPUT SIGNAL FROM ECM.

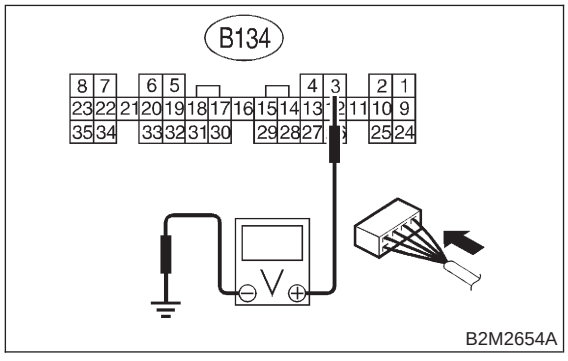
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Radiator fan relay operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):

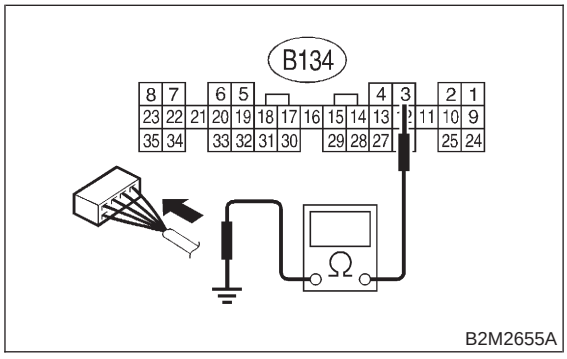


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10AR2**.

10AR2 : CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

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

Connector & terminal
(B134) No. 3 — Chassis ground:

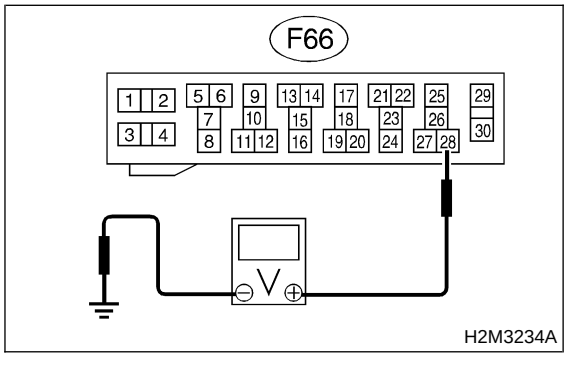


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in radiator fan relay 1 control circuit.
NO : Go to step **10AR3**.

10AR3 : CHECK POWER SUPPLY FOR RELAY.

1) Remove main fan relay from A/C relay holder.
2) Turn ignition switch to ON.
3) Measure voltage between fuse and relay box (F/B) connector and chassis ground.

Connector & terminal
(F66) No. 28 (+) — Chassis ground (−):

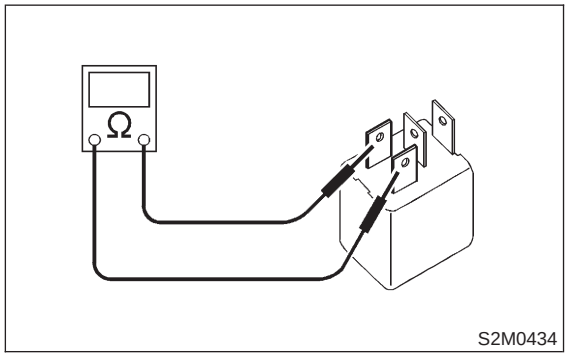


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AR4**.
NO : Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.

10AR4 : CHECK MAIN FAN RELAY 1.

1) Turn ignition switch to OFF.
2) Measure resistance between main fan relay 1 terminals.

Terminal
No. 27 — No. 28:

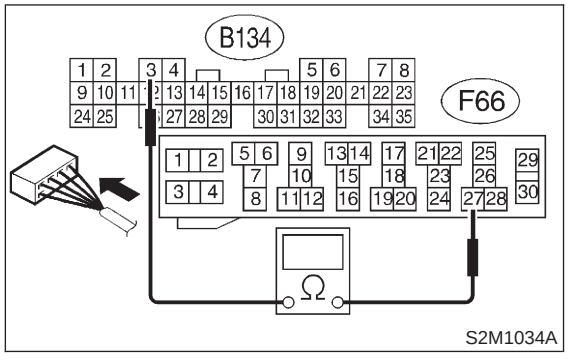


CHECK : ***Is the resistance between 87 and 107 Ω?***
YES : Go to step **10AR5**.
NO : Replace main fan relay 1.

10AR5 : CHECK OPEN CIRCUIT IN MAIN FAN RELAY 1 CONTROL CIRCUIT.

Measure resistance of harness between ECM and main fan relay 1 connector.

Connector & terminal
(B134) No. 3 — (F66) No. 27:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AR6**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and main fan relay 1 connector
- Poor contact in coupling connector (F45)

10AR6 : CHECK POOR CONTACT.

Check poor contact in ECM or main fan relay 1 connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM or main fan relay 1 connector?***
YES : Repair poor contact in ECM or main fan relay 1 connector.
NO : Contact with SOA service.

MEMO:

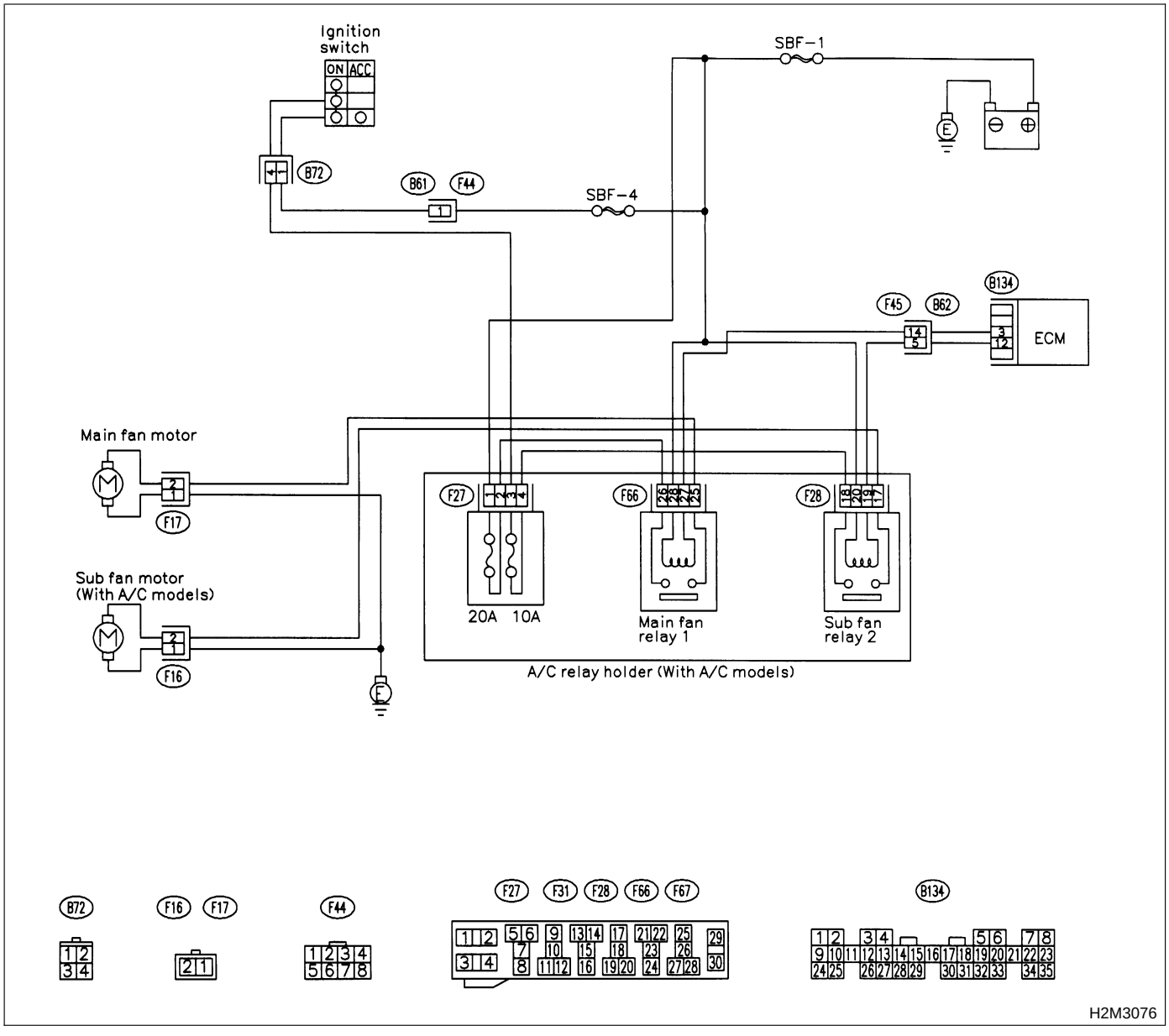
AS: DTC P0483 — COOLING FAN FUNCTION PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Occurrence of noise
  - Overheating

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

NOTE:
If the vehicle, with the engine idling, is placed very close to a wall or another vehicle, preventing normal cooling function, the OBD system may detect malfunction.

- **WIRING DIAGRAM:**



10AS1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

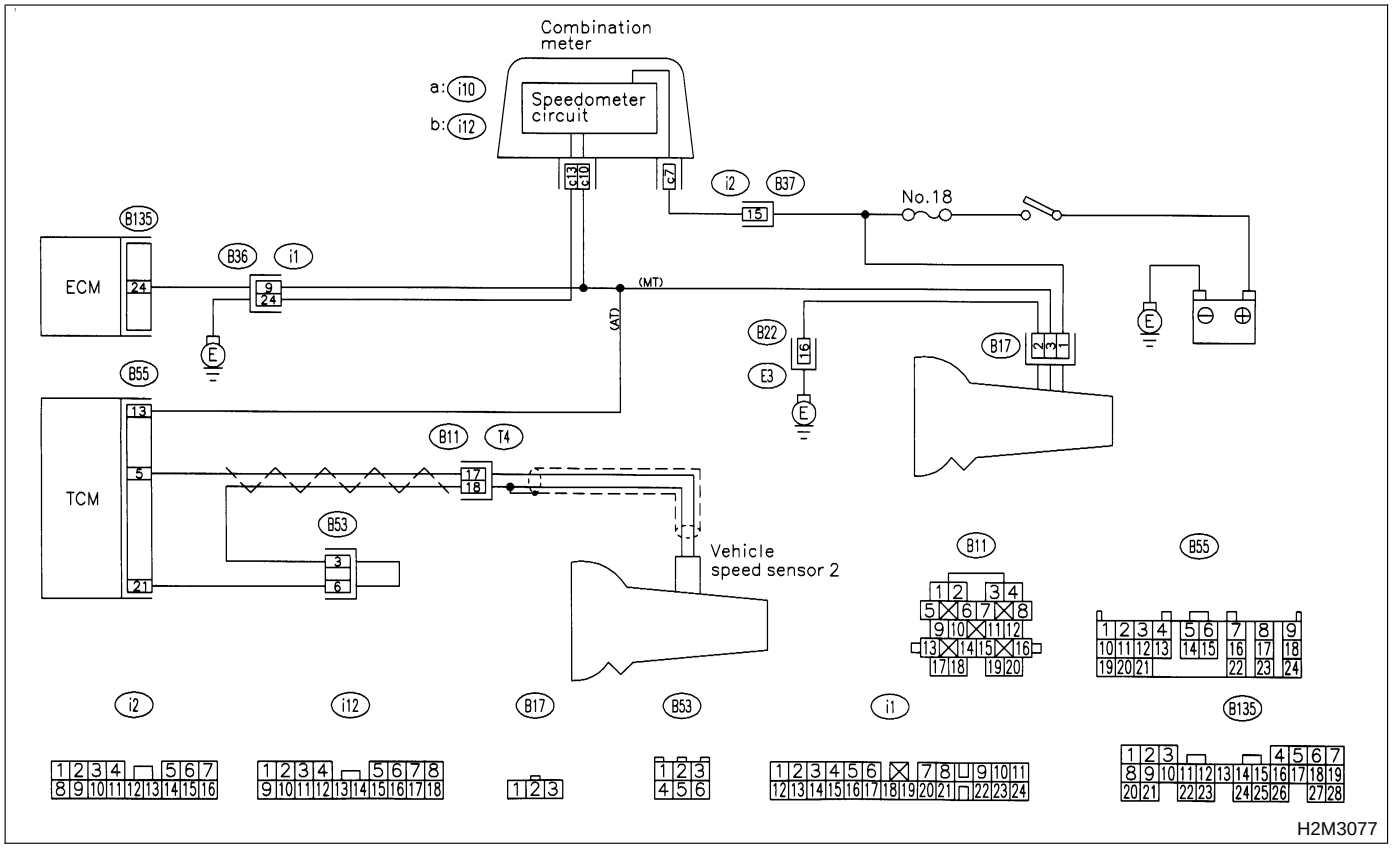
NO : Check engine cooling system. <Ref. to 2-5 [T100].>

AT: DTC P0500 — VEHICLE SPEED SENSOR MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AT1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **10AT2**.
NO : Go to step **10AT3**.

10AT2 : CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?***
YES : Check vehicle speed sensor 2 signal circuit. <Ref. to 3-2 [T8G0].>
NO : Go to step **10AT3**.

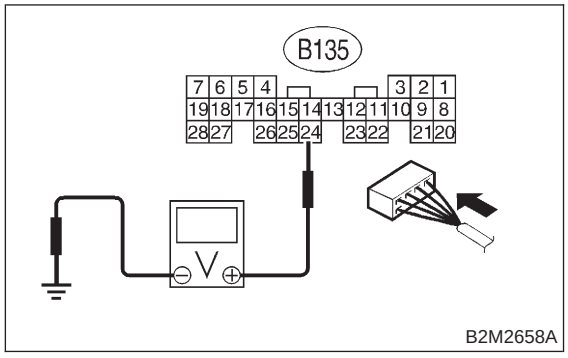
10AT3 : CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer operate normally?***
YES : Go to step **10AT4**.
NO : Check speedometer and vehicle speed sensor. <Ref. to 6-2 [K2A4].>

10AT4 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 24 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Repair harness and connector.

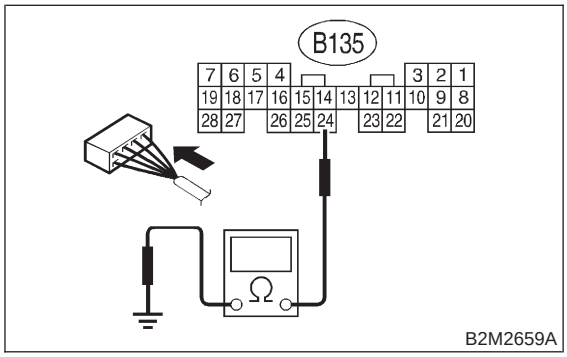
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector
- Poor contact in coupling connector (B37)

NO : Go to step **10AT5**.

10AT5 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

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

Connector & terminal
(B135) No. 24 — Chassis ground:



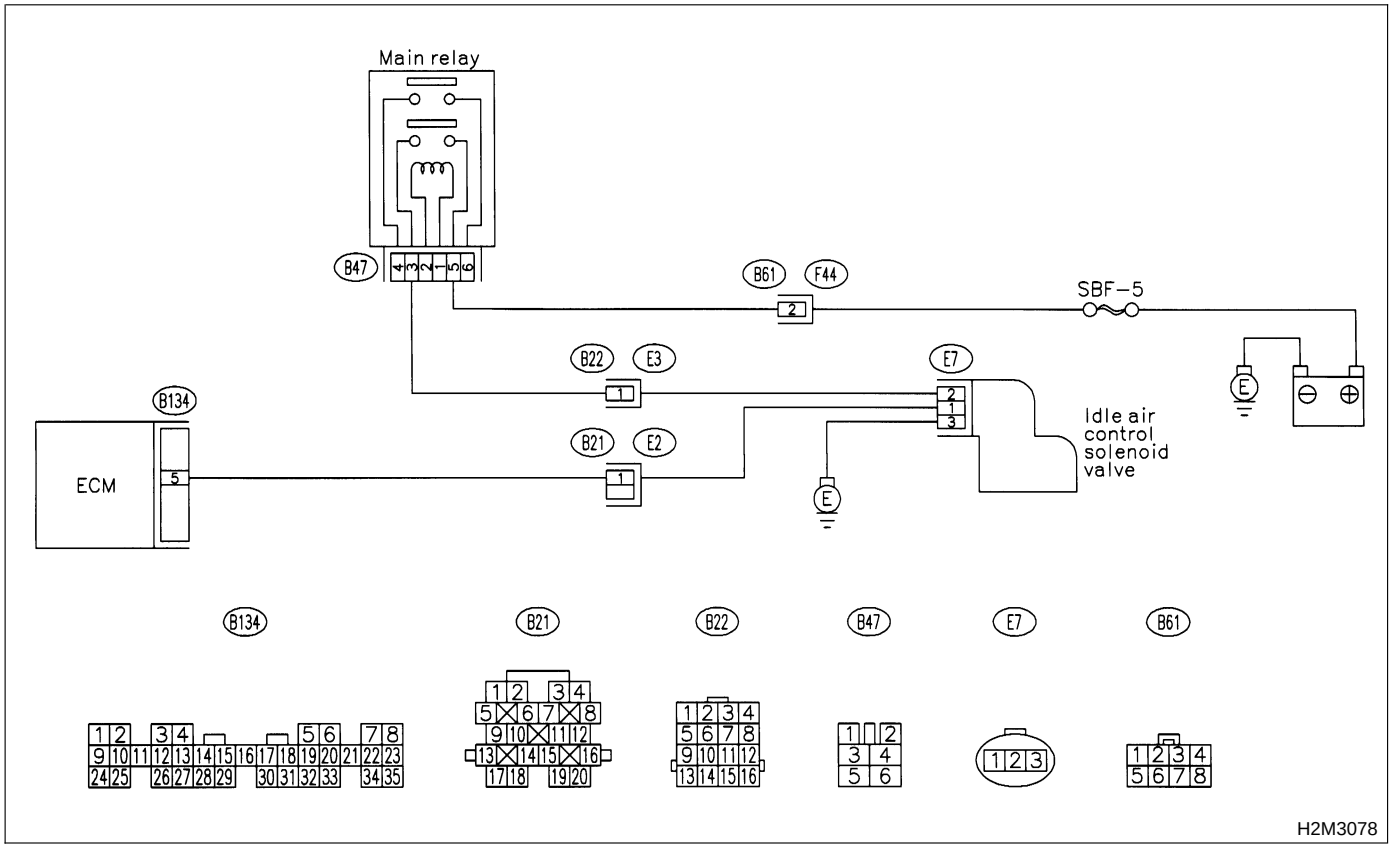
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and combination meter connector.
NO : Repair poor contact in ECM connector.

AU: DTC P0505 — IDLE CONTROL SYSTEM CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

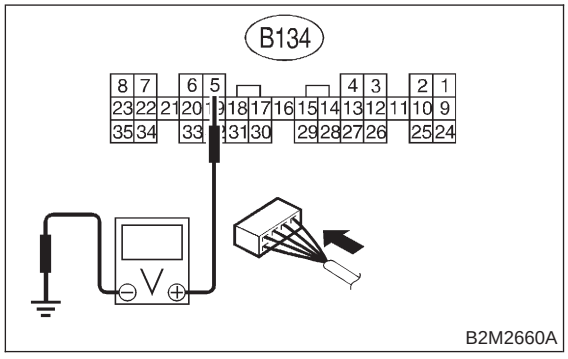
- **WIRING DIAGRAM:**



10AU1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 5 (+) — Chassis ground (−):

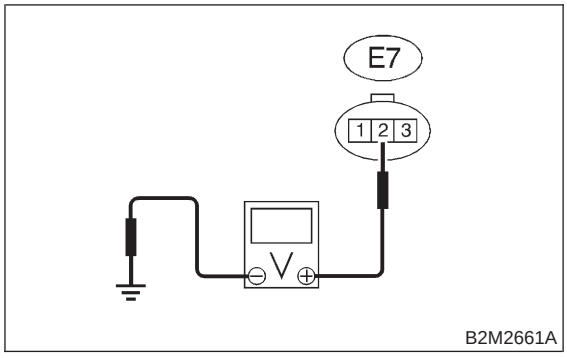


CHECK : ***Is the voltage more than 3 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10AU2**.

10AU2 : CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between idle air control solenoid valve and engine ground.

Connector & terminal
(E7) No. 2 (+) — Engine ground (−):



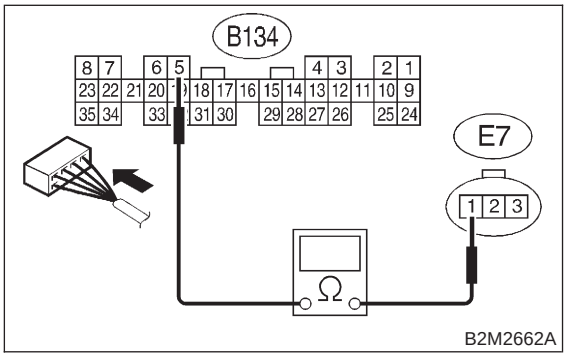
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AU3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between idle air control solenoid valve and main relay connector
- Poor contact in coupling connector (B22)

10AU3 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and idle air control solenoid valve connector.

Connector & terminal
(B134) No. 5 — (E7) No. 1:



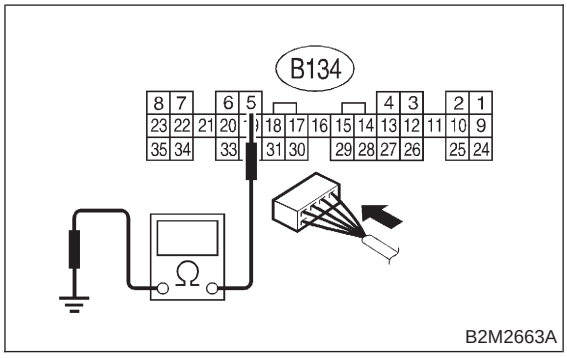
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AU4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B21)

10AU4 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B134) No. 5 — Chassis ground:

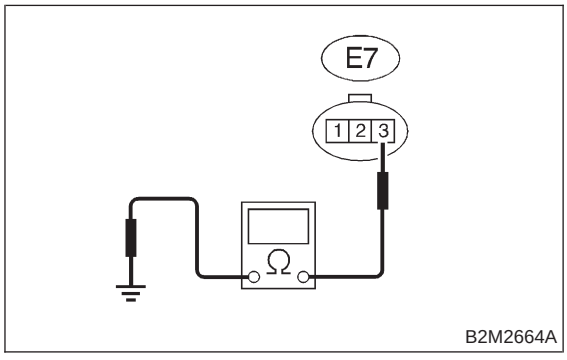


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and idle air control solenoid valve connector.
NO : Go to step **10AU5**.

10AU5 : CHECK GROUND CIRCUIT OF IDLE AIR CONTROL SOLENOID VALVE.

Measure resistance of harness between idle air control solenoid valve connector and engine ground.

Connector & terminal
(E7) No. 3 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AU6**.
NO : Repair open circuit in harness between idle air control solenoid valve connector and engine ground terminal.

10AU6 : CHECK POOR CONTACT.

Check poor contact in ECM and idle air control solenoid valve connectors. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM and idle air control solenoid valve connectors?***

YES : Repair poor contact in ECM and idle air control solenoid valve connectors.

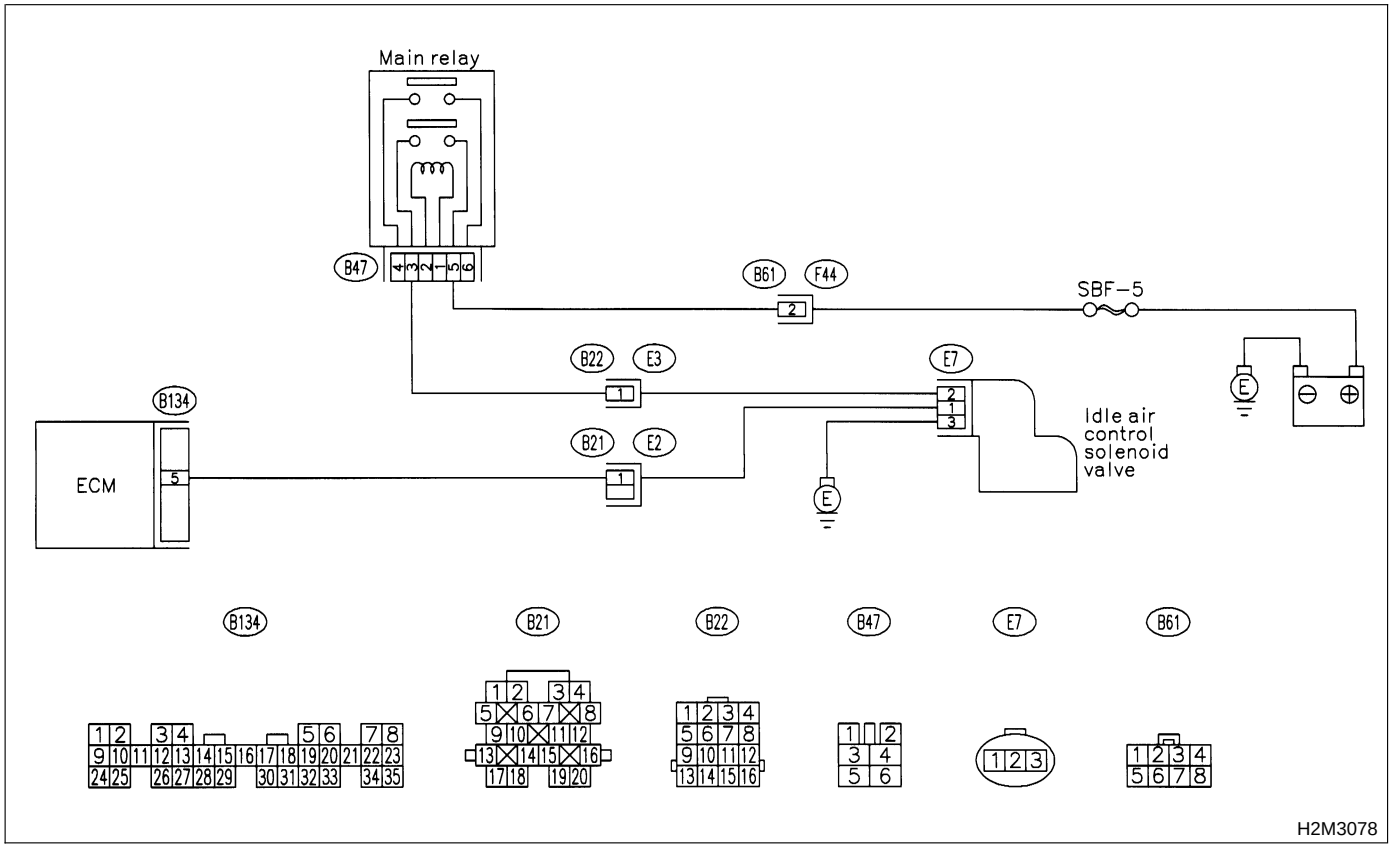
NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A1].>

AV: DTC P0506 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine is difficult to start.
  - Engine does not start.
  - Erroneous idling
  - Engine stalls.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AV1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0505 or P1505?***

YES : Inspect DTC P0505 or P1505 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0506.

NO : Go to step **10AV2**.

10AV2 : CHECK IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Remove idle air control solenoid valve from throttle body. <Ref. to 2-7 [W12A1].>
3) Using an air gun, force air into idle air control solenoid valve by-pass air inlet. Confirm that forced air subsequently escapes from both main air passage and assist air passage.

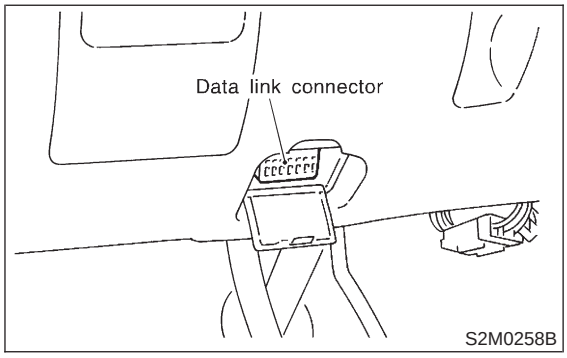
CHECK : ***Does air flow out?***

YES : Go to step **10AV4**.

NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A1].> After replace, Go to step **10AV3**.

10AV3 : CHECK IDLE AIR CONTROL SOLENOID VALVE DUTY RATIO.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine, and warm-up the engine.
5) Turn all accessory switches to OFF.
6) Read data of idle air control solenoid valve duty ratio using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedures, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 60%?***

YES : Go to step **10AV4**.

NO : END.

10AV4 : CHECK BY-PASS AIR LINE.

1) Turn ignition switch to OFF.
2) Remove idle air control solenoid valve from throttle body. <Ref. to 2-7 [W12A1].>
3) Remove throttle body to intake manifold. <Ref. to 2-7 [W3A1].>
4) Confirm that there is no foreign matter stuck in the air by-pass line.
5) Using an air gun, force air into solenoid valve installation area and throttle valve interior. Confirm that forced air subsequently escapes from both these areas.

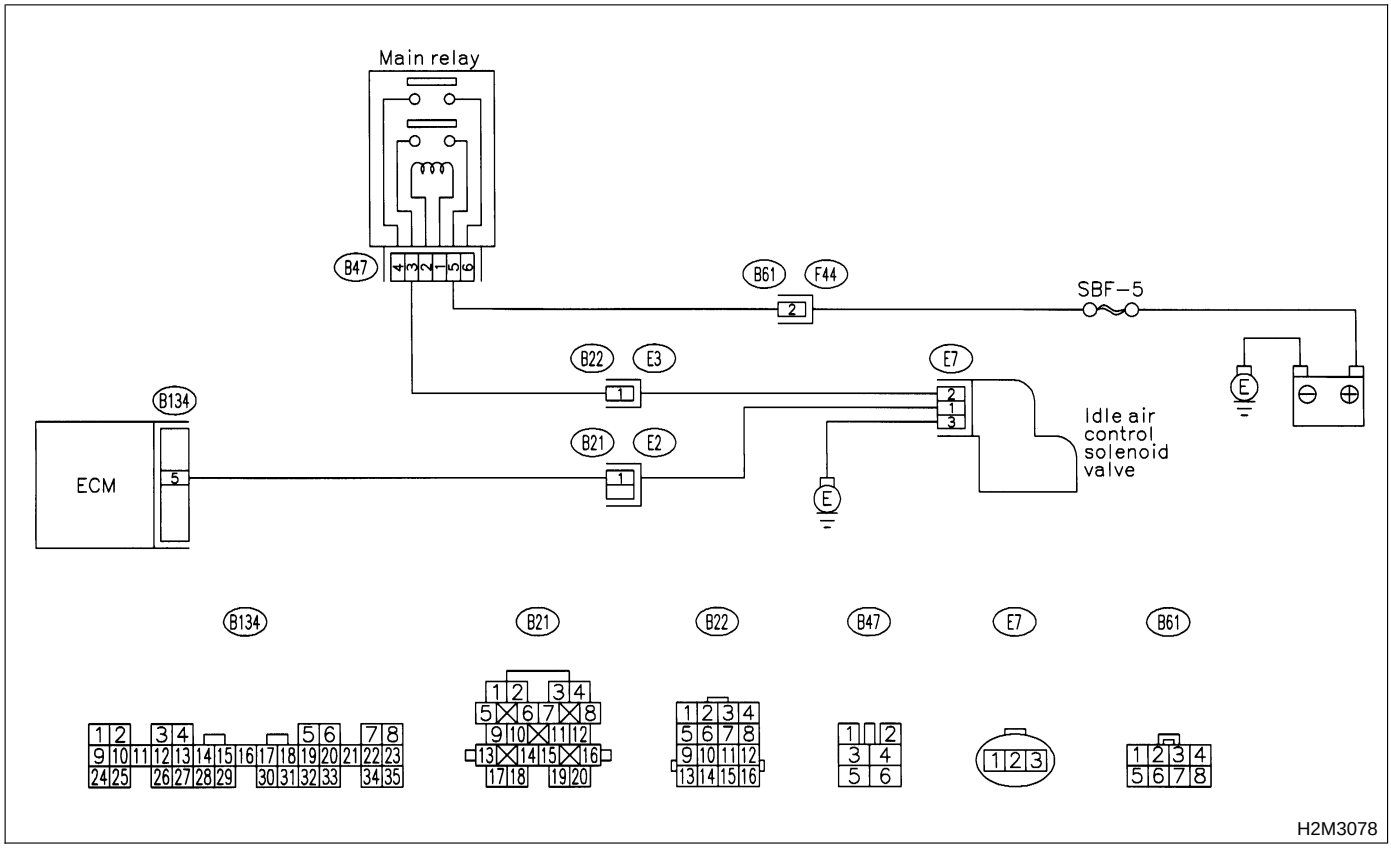
CHECK : ***Does air flow out?***
YES : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A1].>
NO : Replace throttle body. <Ref. to 2-7 [W3A1].>

AW: DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine keeps running at higher revolution than specified idling revolution.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AW1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0505 or P1505?***

YES : Inspect DTC P0505 or P1505 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0507.

NO : Go to step **10AW2**.

10AW2 : CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.
3) Check the following items.

- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Disconnections of vacuum hoses

CHECK : ***Is there a fault in air intake system?***

YES : Repair air suction and leaks.

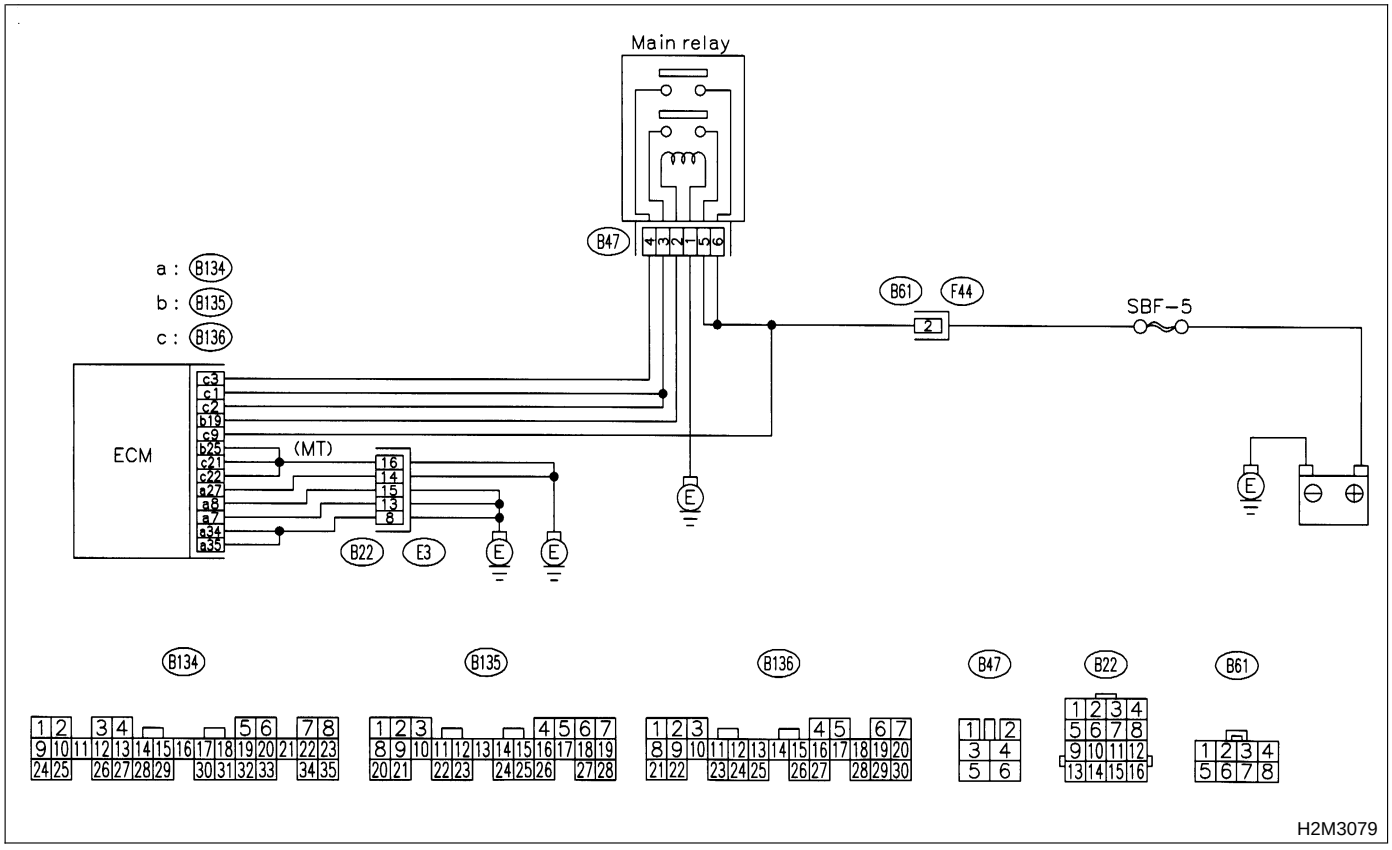
NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A1].>

AX: DTC P0601 — INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine does not start.
  - Engine stalls.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AX1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0601?***

YES : Replace ECM. <Ref. to 2-7 [W15A0].>

NO : It is not necessary to inspect DTC P0601.

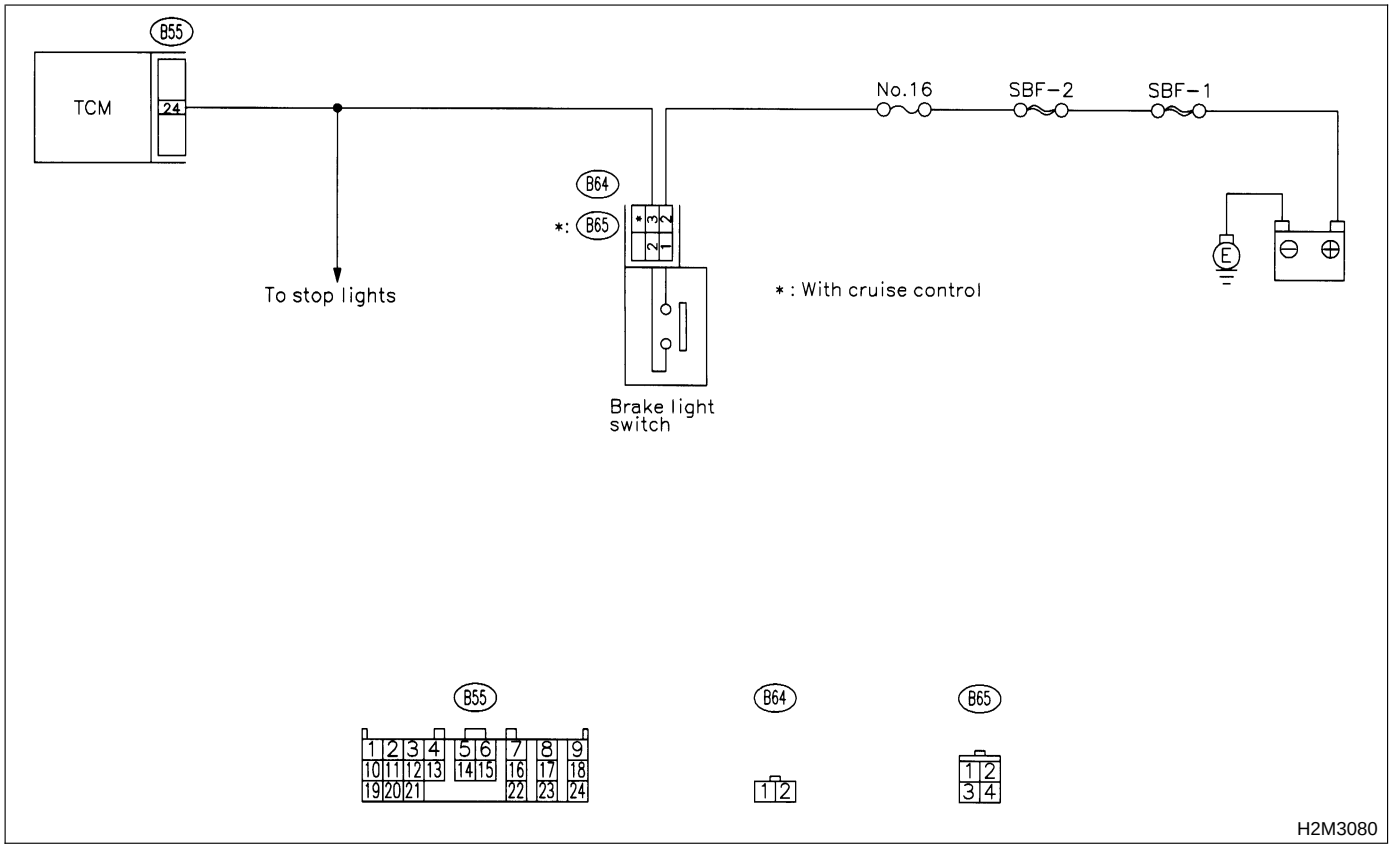
MEMO:

AY: DTC P0703 — BRAKE SWITCH INPUT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AY1 : CHECK OPERATION OF BRAKE LIGHT.

CHECK : ***Does brake light come on when depressing the brake pedal?***

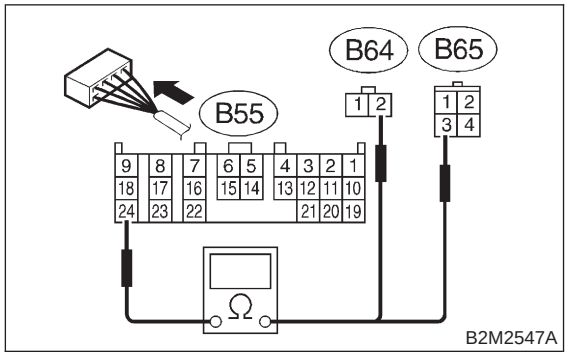
YES : Go to step **10AY2**.

NO : Repair or replace brake light circuit.

10AY2 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

1) Disconnect connectors from TCM and brake light switch.
2) Measure resistance of harness between TCM and brake light switch connector.

Connector & terminal
(B55) No. 24 — (B64) No. 2:
(B55) No. 24 — (B65) No. 3 (With cruise control):



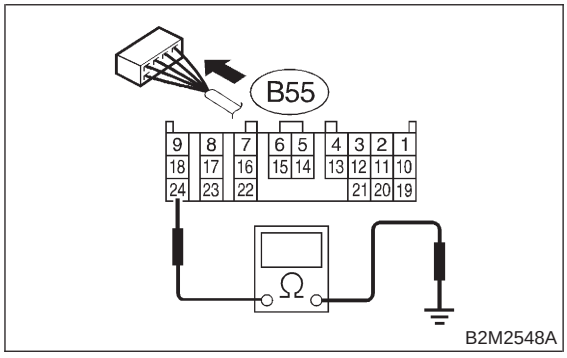
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AY3**.
NO : Repair or replace harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and brake light switch connector
- Poor contact in TCM connector
- Poor contact in brake light switch connector

10AY3 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 24 — Chassis ground:

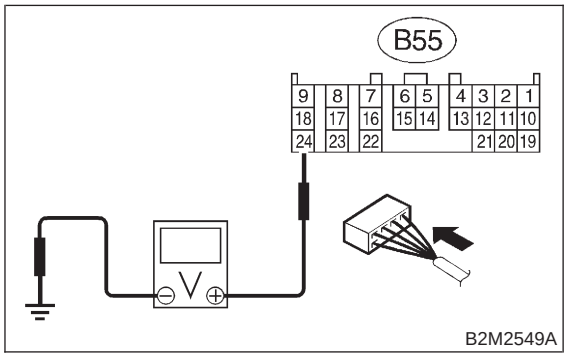


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AY4**.
NO : Repair ground short circuit in harness between TCM and brake light switch connector.

10AY4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and brake light switch.
2) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 24 (+) — Chassis ground (−):

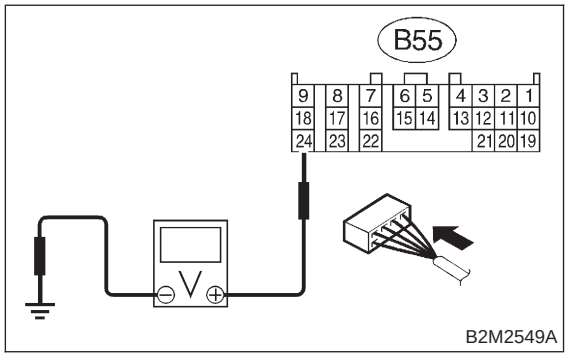


CHECK : ***Is the voltage less than 1 V when releasing the brake pedal?***
YES : Go to step **10AY5**.
NO : Adjust or replace brake light switch. <Ref. to 4-5 [W1A1].>

10AY5 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 24 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V when depressing the brake pedal?***
YES : Go to step **10AY6**.
NO : Adjust or replace brake light switch. <Ref. to 4-5 [W1A1].>

10AY6 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

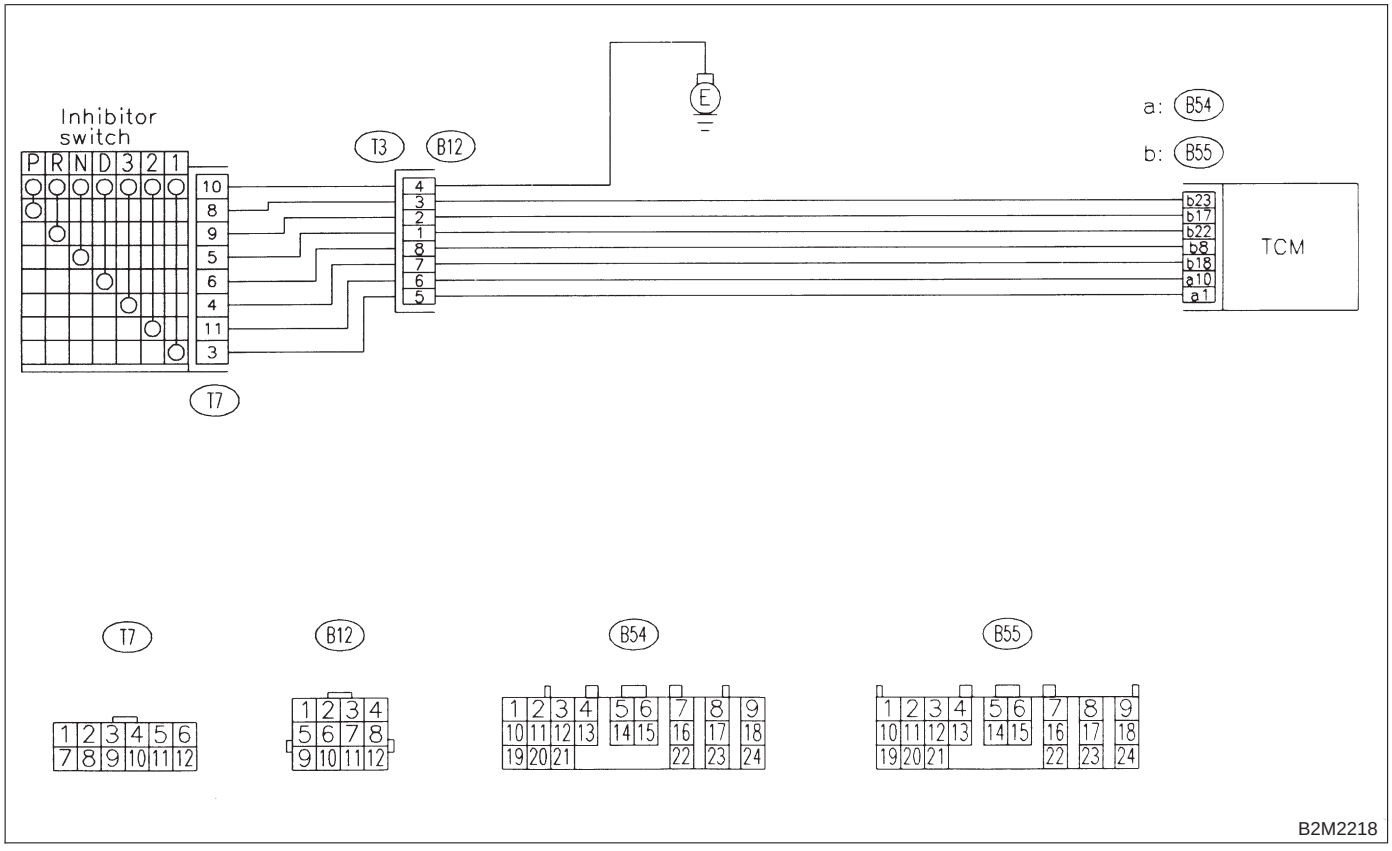
MEMO:

AZ: DTC P0705 — TRANSMISSION RANGE SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Starter does not rotate when selector lever is in “P” or “N” range.
  - Starter rotates when selector lever is in “R”, “D”, “3”, “2” or “1” range.
  - Engine brake is not effected when selector lever is in “3” range.
  - Shift characteristics are erroneous.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

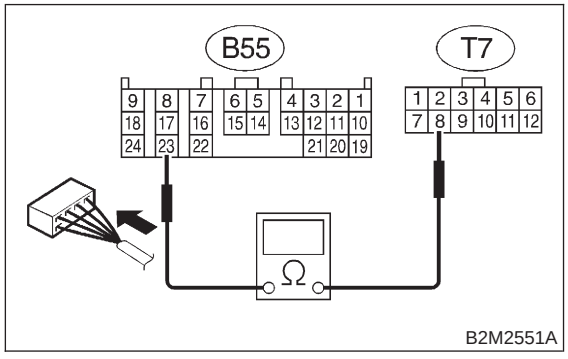
- **WIRING DIAGRAM:**



10AZ1 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

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

Connector & terminal
(B55) No. 23 — (T7) No. 8:



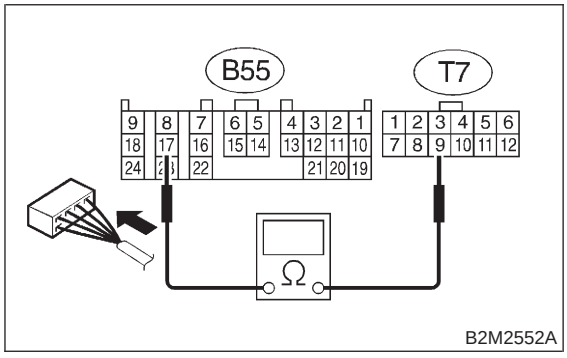
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ2**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and inhibitor switch connector
● Poor contact in coupling connector (B12)

10AZ2 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 17 — (T7) No. 9:



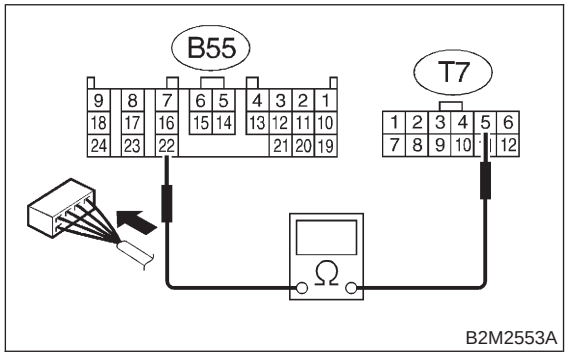
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and inhibitor switch connector
● Poor contact in coupling connector (B12)

10AZ3 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 22 — (T7) No. 5:



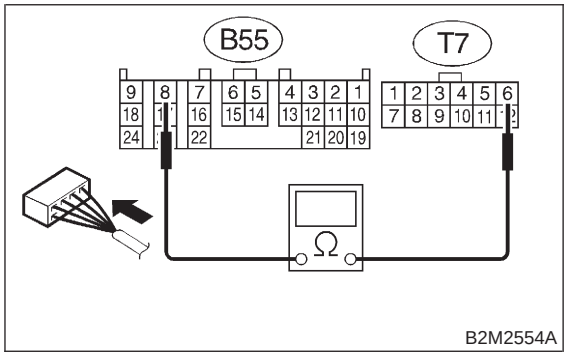
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

10AZ4 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 8 — (T7) No. 6:



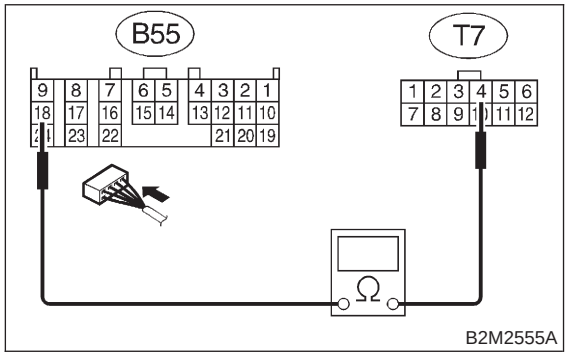
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

10AZ5 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 18 — (T7) No. 4:



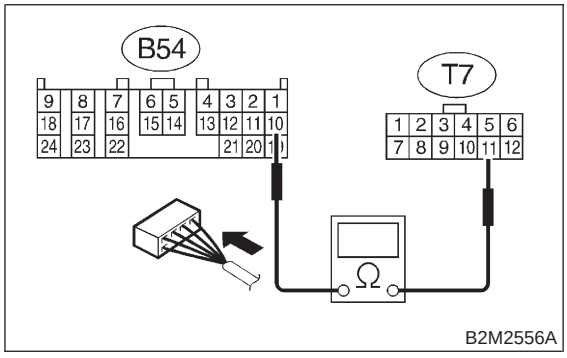
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ6**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

10AZ6 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 10 — (T7) No. 11:



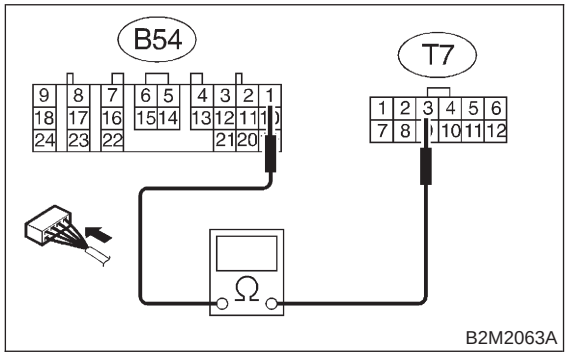
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

10AZ7 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 1 — (T7) No. 3:



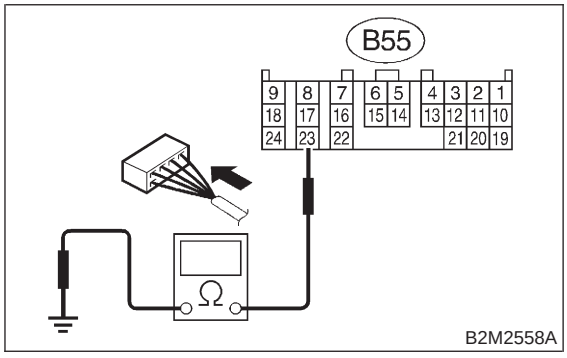
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

10AZ8 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 23 — Chassis ground:

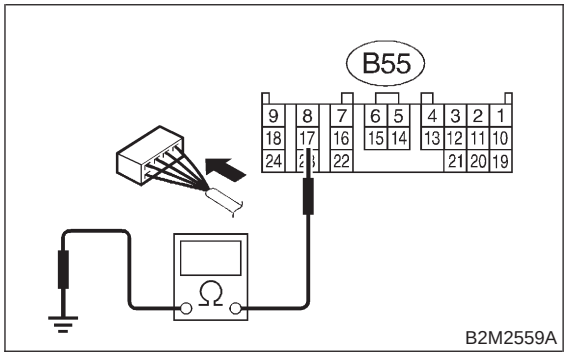


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ9**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

10AZ9 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 17 — Chassis ground:

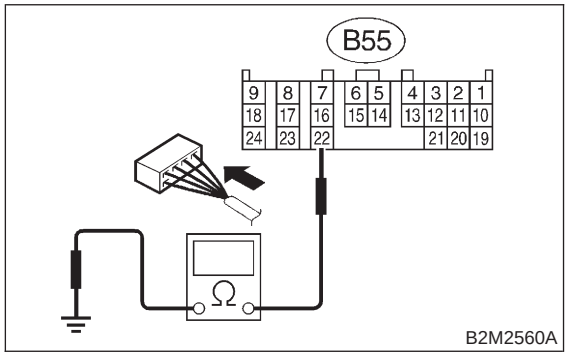


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ10**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

10AZ10 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 22 — Chassis ground:

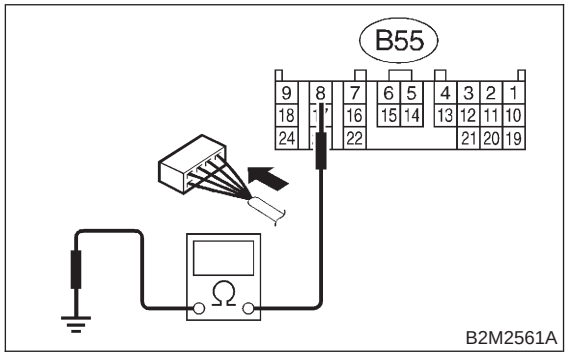


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ11**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

10AZ11 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 8 — Chassis ground:

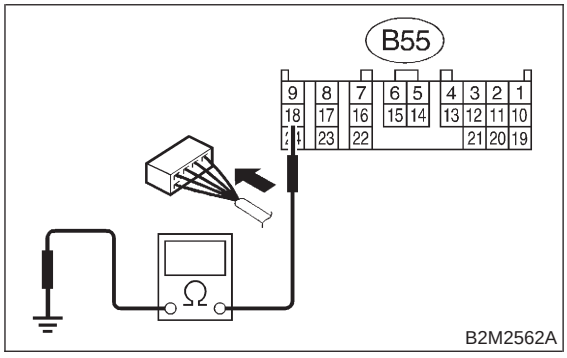


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ12**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

10AZ12 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 18 — Chassis ground:

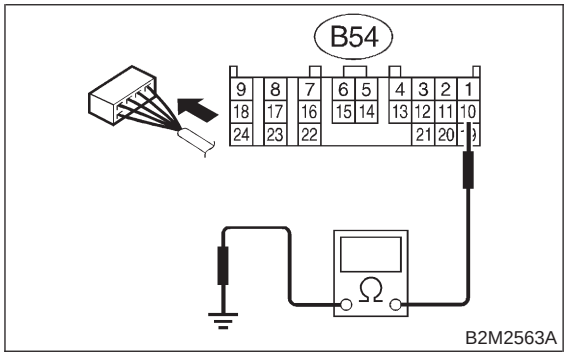


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ13**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

10AZ13 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 10 — Chassis ground:

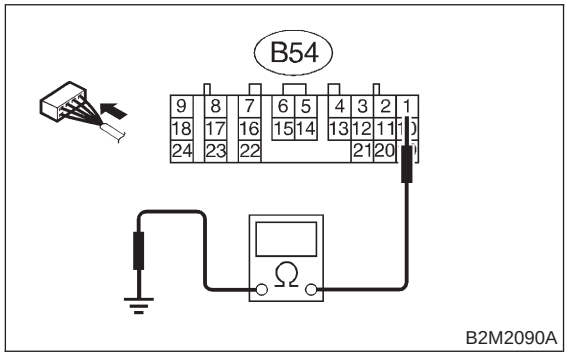


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ14**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

10AZ14 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 1 — Chassis ground:

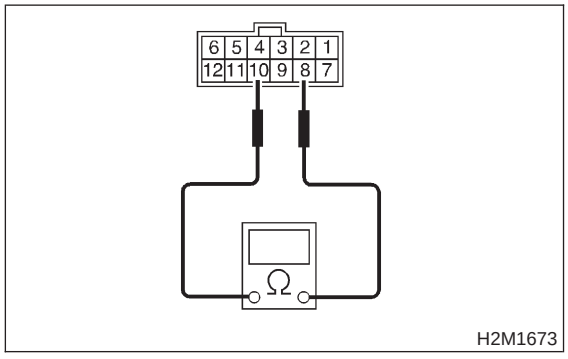


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ15**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

10AZ15 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "P" position.

Terminals
No. 8 — No. 10:

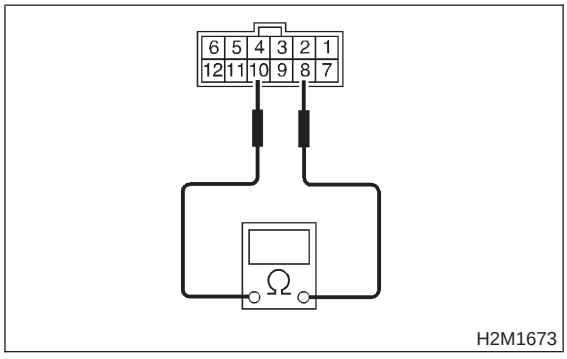


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ16**.
NO : Go to step **10AZ29**.

10AZ16 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "P" position.

Terminals
No. 8 — No. 10:

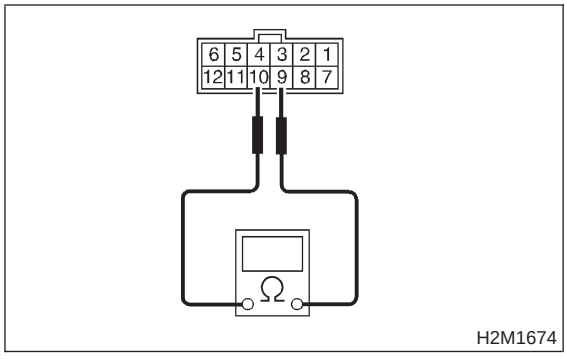


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ17**.
NO : Go to step **10AZ29**.

10AZ17 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever for "R" position.

Terminals
No. 9 — No. 10:

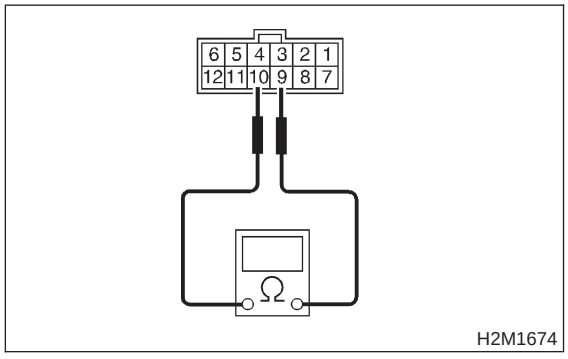


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ18**.
NO : Go to step **10AZ29**.

10AZ18 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "R" position.

Terminals
No. 9 — No. 10:

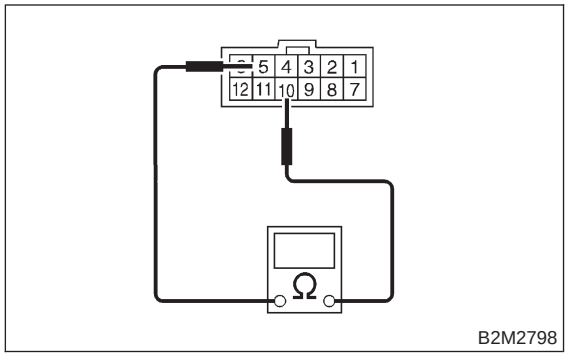


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ19**.
NO : Go to step **10AZ29**.

10AZ19 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever for "N" position.

Terminals
No. 5 — No. 10:

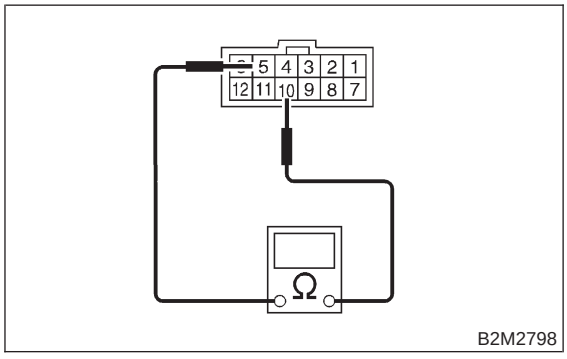


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ20**.
NO : Go to step **10AZ29**.

10AZ20 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "N" position.

Terminals
No. 5 — No. 10:

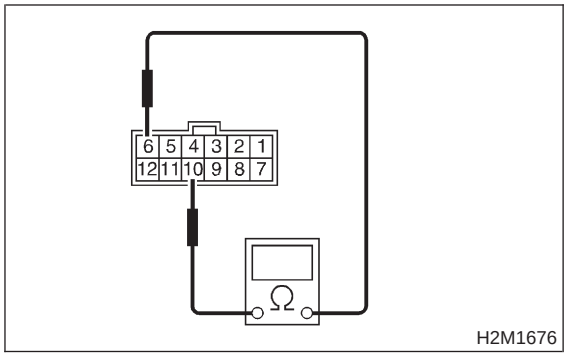


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ21**.
NO : Go to step **10AZ29**.

10AZ21 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "D" position.

Terminals
No. 6 — No. 10:

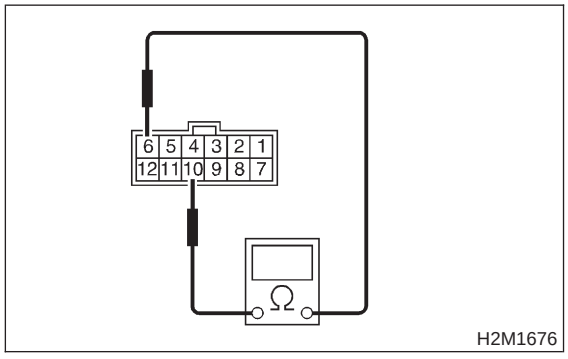


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ22**.
NO : Go to step **10AZ29**.

10AZ22 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "D" position.

Terminals
No. 6 — No. 10:

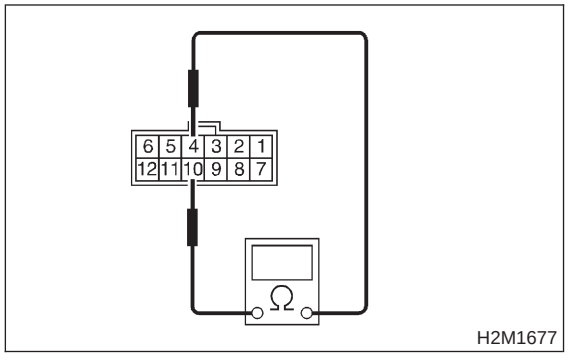


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ23**.
NO : Go to step **10AZ29**.

10AZ23 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever for "3" position.

Terminals
No. 4 — No. 10:

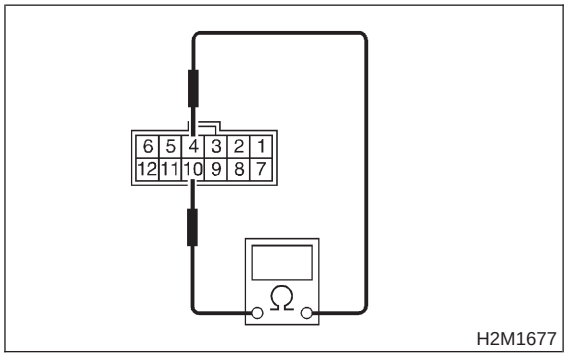


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ24**.
NO : Go to step **10AZ29**.

10AZ24 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "3" position.

Terminals
No. 4 — No. 10:

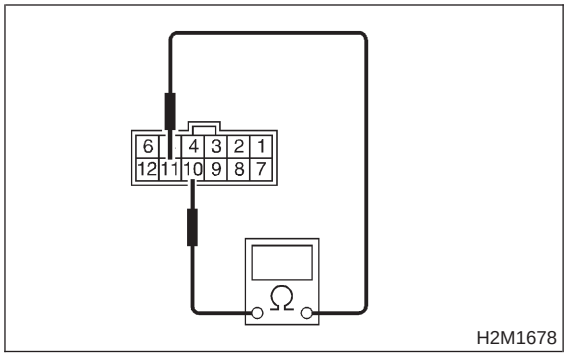


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ25**.
NO : Go to step **10AZ29**.

10AZ25 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "2" position.

Terminals
No. 11 — No. 10:

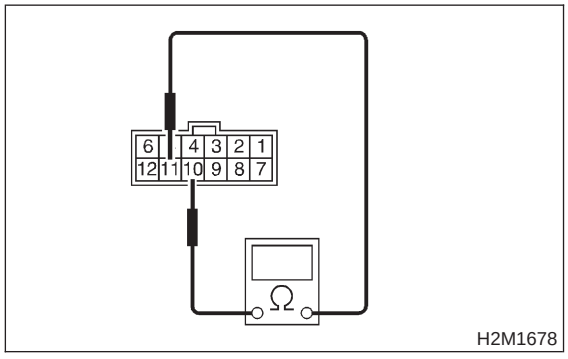


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ26**.
NO : Go to step **10AZ29**.

10AZ26 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "R" position.

Terminals
No. 11 — No. 10:

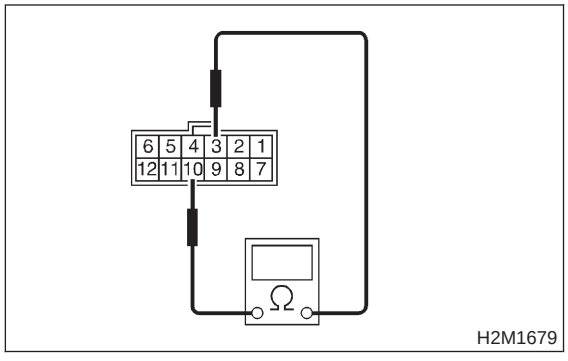


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ27**.
NO : Go to step **10AZ29**.

10AZ27 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "1" position.

Terminals
No. 3 — No. 10:

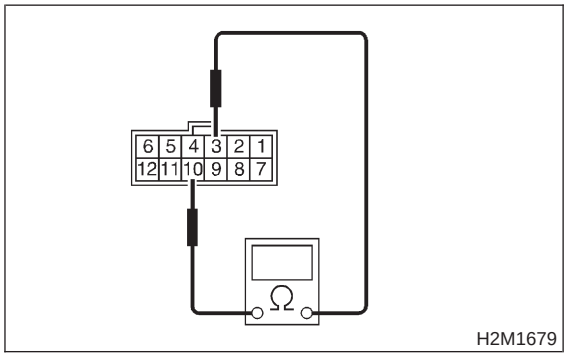


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AZ28**.
NO : Go to step **10AZ29**.

10AZ28 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "1" position.

Terminals
No. 3 — No. 10:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AZ30**.
NO : Go to step **10AZ29**.

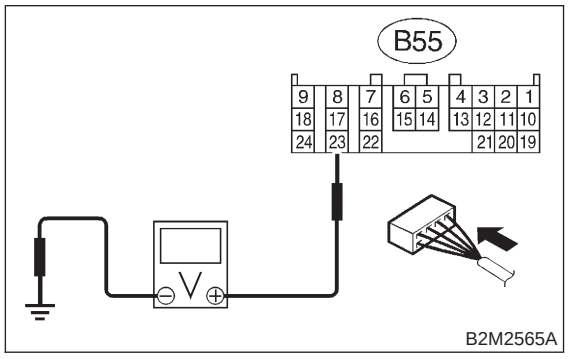
10AZ29 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

10AZ30 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and transmission.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (−):

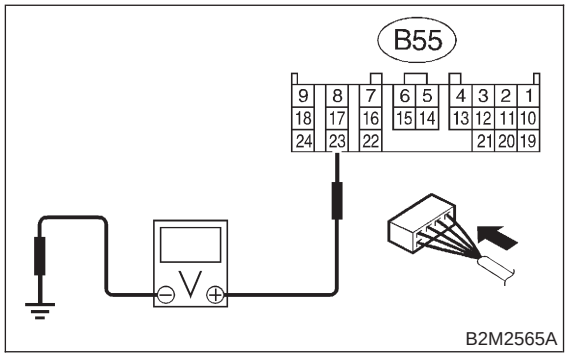


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AZ31**.
NO : Go to step **10AZ44**.

10AZ31 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “P” and “N” positions.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (−):

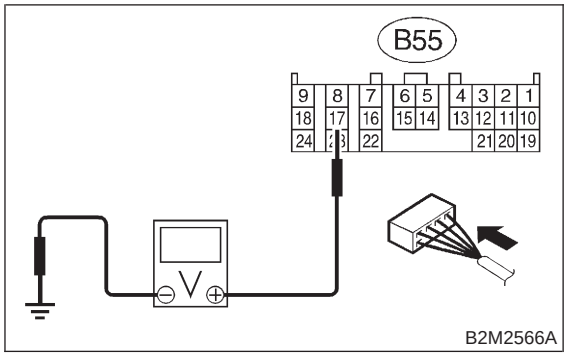


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10AZ32**.
NO : Go to step **10AZ44**.

10AZ32 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “R” position.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (−):

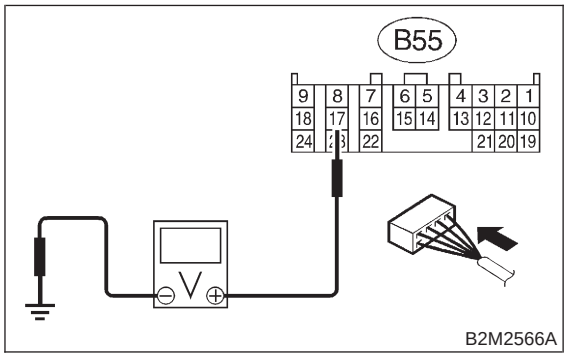


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AZ33**.
NO : Go to step **10AZ44**.

10AZ33 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “R” position.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (−):

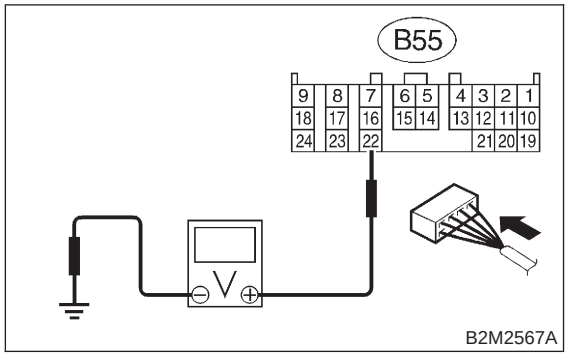


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **10AZ34**.
NO : Go to step **10AZ44**.

10AZ34 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “P” and “N” positions.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (−):

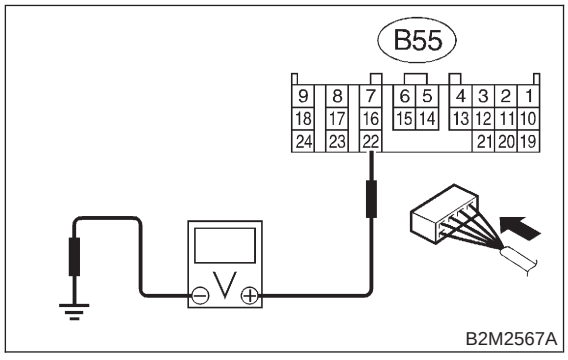


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AZ35**.
NO : Go to step **10AZ44**.

10AZ35 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “N” and “P” positions.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (−):

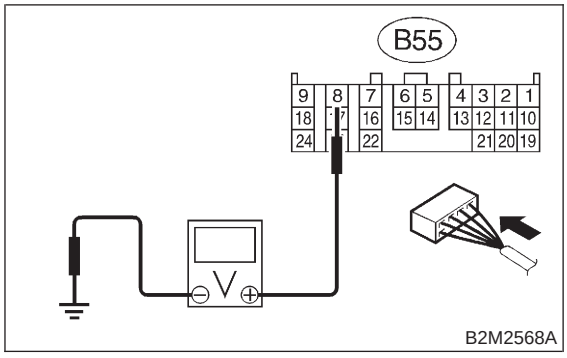


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10AZ36**.
NO : Go to step **10AZ44**.

10AZ36 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever “D” position.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (−):

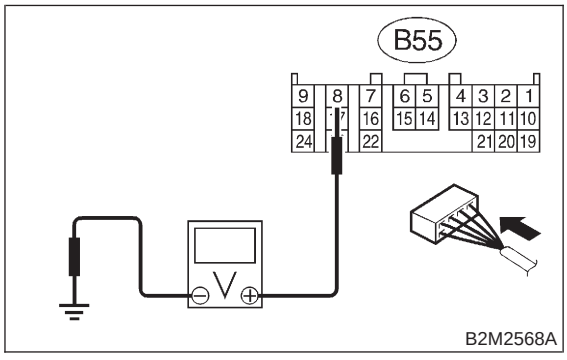


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AZ37**.
NO : Go to step **10AZ44**.

10AZ37 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “N” and “P” positions.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (−):

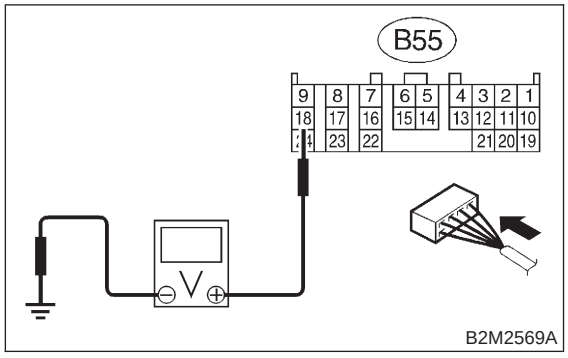


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **10AZ38**.
NO : Go to step **10AZ44**.

10AZ38 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “3” position.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (−):

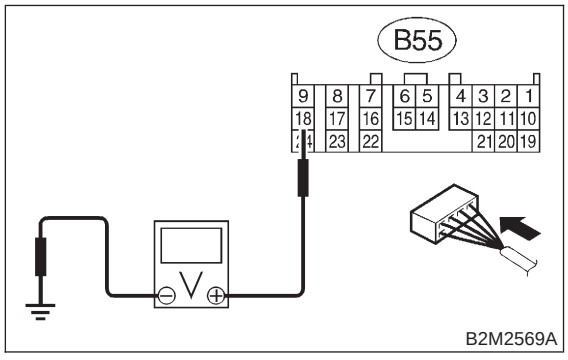


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AZ39**.
NO : Go to step **10AZ44**.

10AZ39 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for “3” position.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (−):

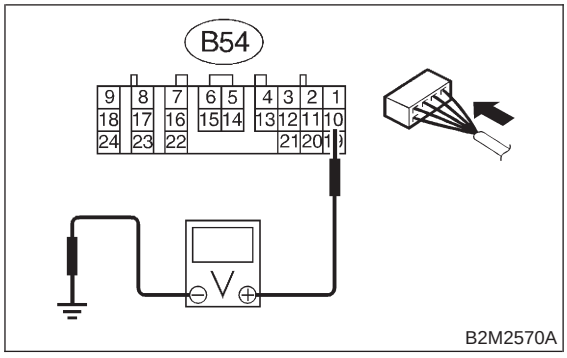


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **10AZ40**.
NO : Go to step **10AZ44**.

10AZ40 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “2” position.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (−):

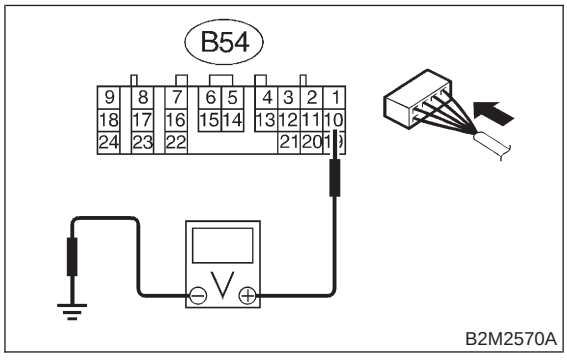


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AZ41**.
NO : Go to step **10AZ44**.

10AZ41 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for “2” position.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (−):

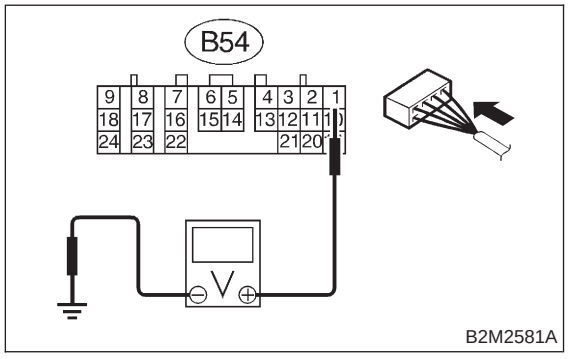


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **10AZ42**.
NO : Go to step **10AZ44**.

10AZ42 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “1” position.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (−):

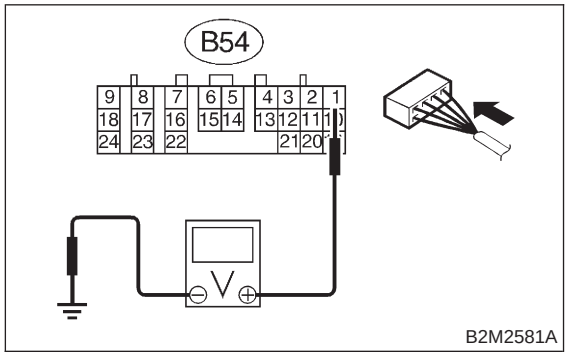


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AZ43**.
NO : Go to step **10AZ44**.

10AZ43 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “1” position.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 6 V?***
YES : Repair poor contact in TCM connector.
NO : Go to step **10AZ44**.

10AZ44 : CHECK POOR CONTACT.

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

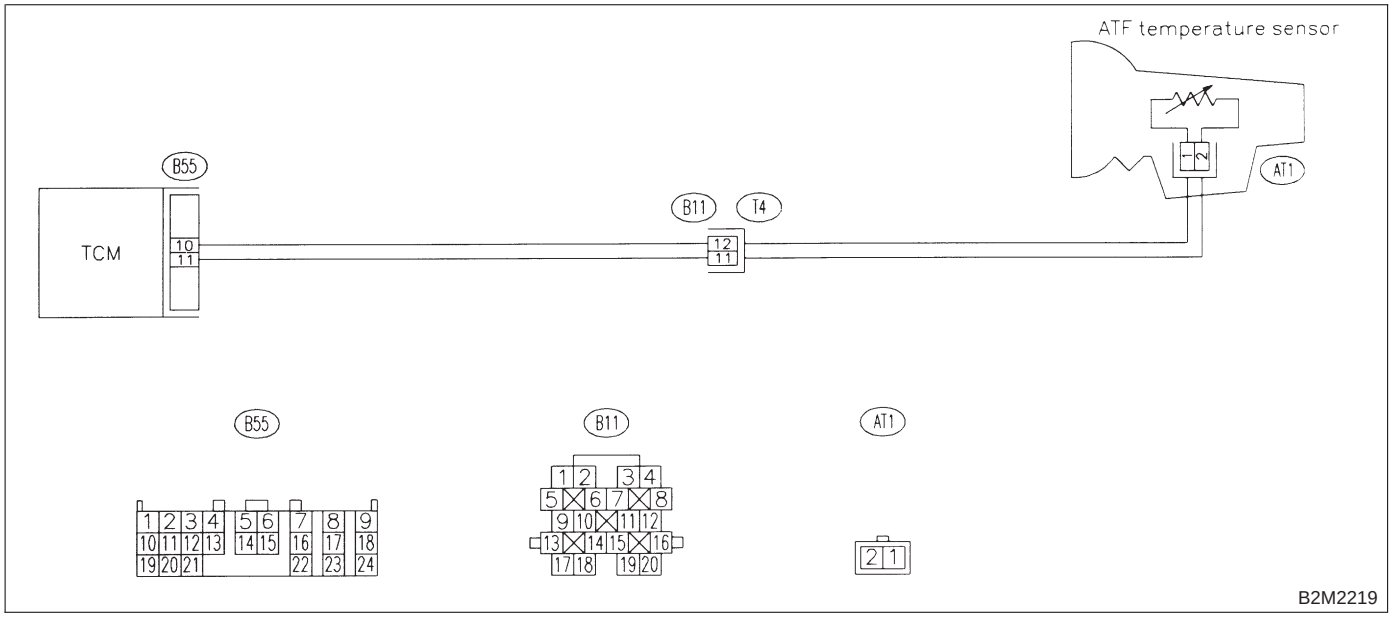
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

BA: DTC P0710 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift up to 4th speed (after engine warm-up)
  - No lock-up (after engine warm-up)
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BA1 : CHECK DTC P0710 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0710?***

YES : Check ATF temperature sensor circuit. <Ref. to 3-2 [T8E0].>

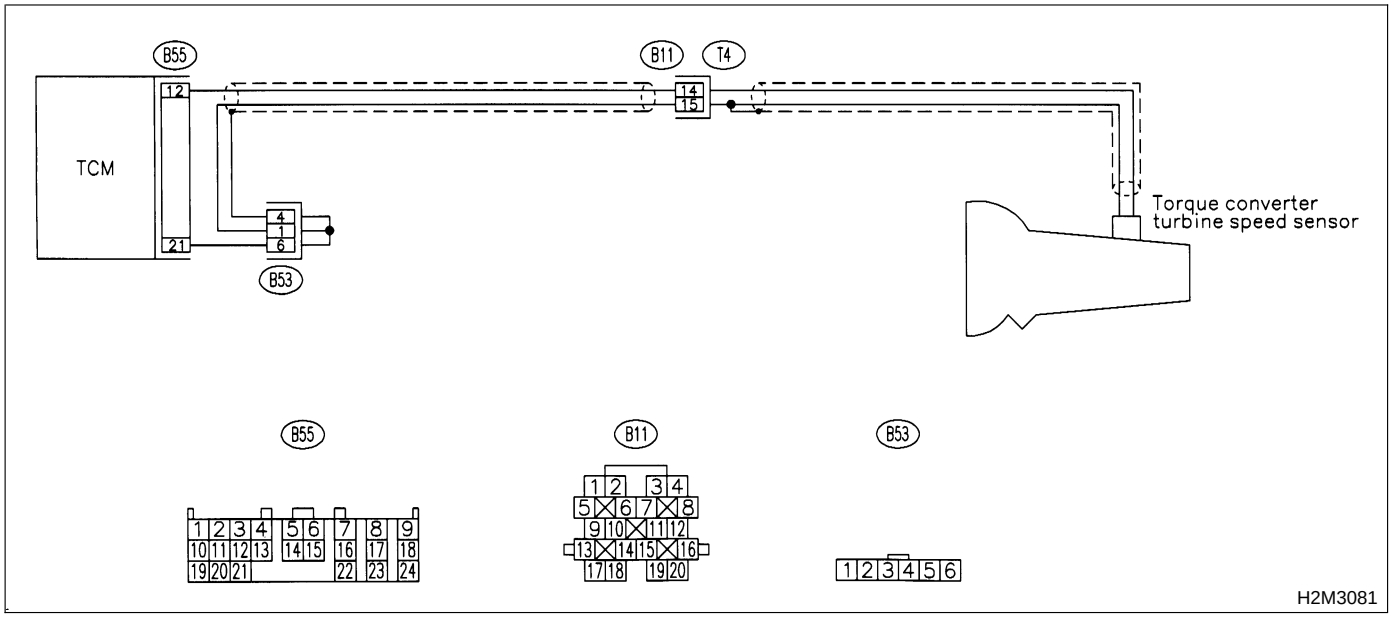
NO : It is not necessary to inspect DTC P0710.

BB: DTC P0715 — TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BB1 : CHECK DTC P0715 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0715?***

YES : Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

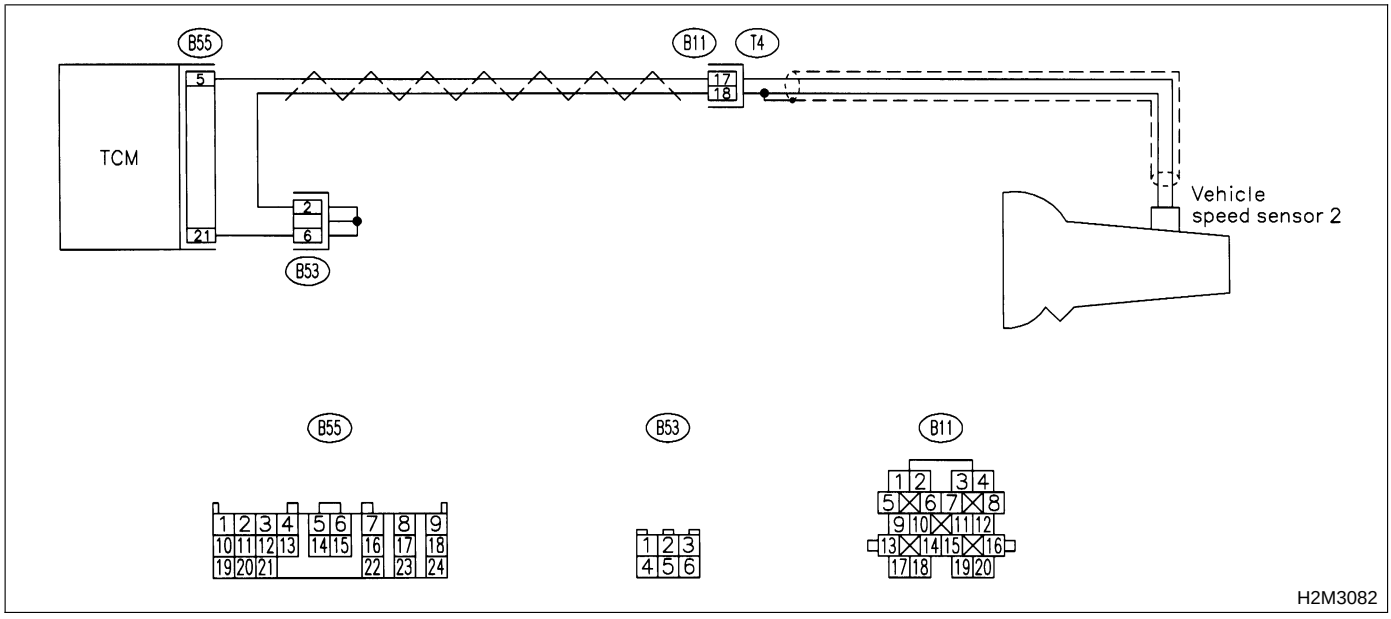
NO : It is not necessary to inspect DTC P0715.

BC: DTC P0720 — OUTPUT SPEED SENSOR (VEHICLE SPEED SENSOR 2) CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift or excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BC1 : CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?***

YES : Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8G0].>

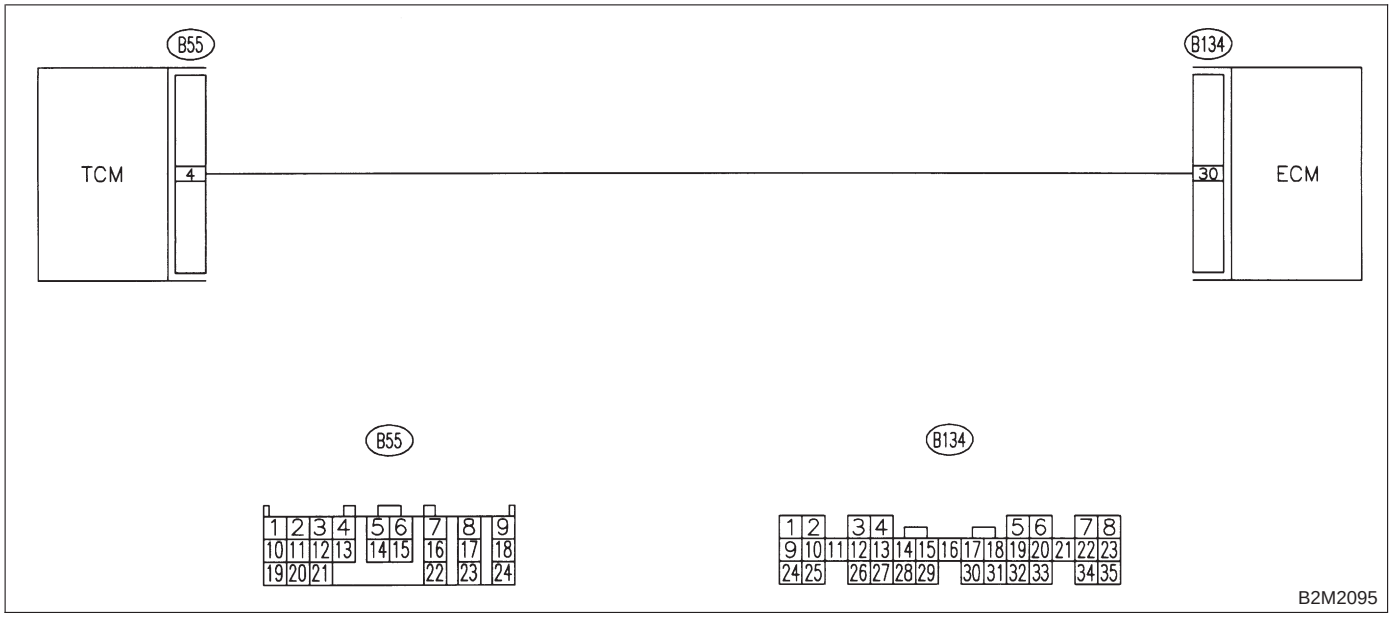
NO : It is not necessary to inspect DTC P0720.

BD: DTC P0725 — ENGINE SPEED INPUT CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)
  - AT diagnostic indicator light (AT OIL TEMP indicator light) remains on when vehicle speed is “0”.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BD1 : CHECK DTC P0725 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0725?***

YES : Check engine speed input signal circuit. <Ref. to 3-2 [T8C0].>

NO : It is not necessary to inspect DTC P0725.

BE: DTC P0731 — GEAR 1 INCORRECT RATIO —

NOTE:
For the diagnostic procedure, refer to 2-7 [T10BH0]. <Ref. to 2-7 [T10BH0].>

BF: DTC P0732 — GEAR 2 INCORRECT RATIO —

NOTE:
For the diagnostic procedure, refer to 2-7 [T10BH0]. <Ref. to 2-7 [T10BH0].>

BG: DTC P0733 — GEAR 3 INCORRECT RATIO —

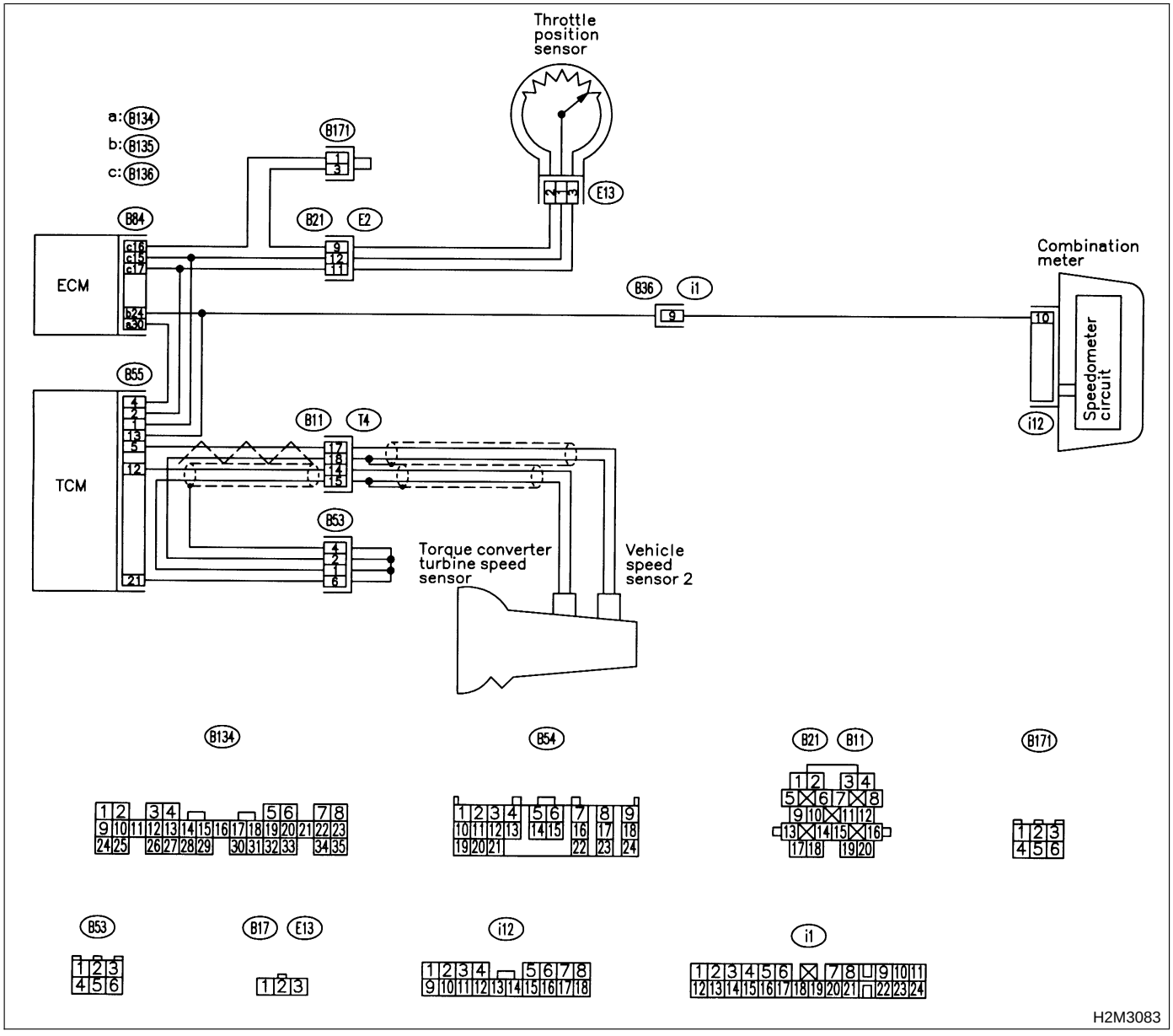
NOTE:
For the diagnostic procedure, refer to 2-7 [T10BH0]. <Ref. to 2-7 [T10BH0].>

BH: DTC P0734 — GEAR 4 INCORRECT RATIO —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

● **WIRING DIAGRAM:**



10BH1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***

YES : Inspect relevant DTC using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10BH2**.

10BH2 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

CHECK : ***Is there any trouble in throttle position sensor circuit?***

YES : Repair or replace throttle position sensor circuit.

NO : Go to step **10BH3**.

10BH3 : CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8G0].>

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***
YES : Repair or replace vehicle speed sensor 2 circuit.
NO : Go to step **10BH4**.

10BH4 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.

Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

CHECK : ***Is there any trouble in torque converter turbine speed sensor circuit?***
YES : Repair or replace torque converter turbine speed sensor circuit.
NO : Go to step **10BH5**.

10BH5 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Go to step **10BH6**.

10BH6 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : ***Is there any mechanical trouble in automatic transmission?***
YES : Repair or replace automatic transmission. <Ref. to 3-2 [T1000].>
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

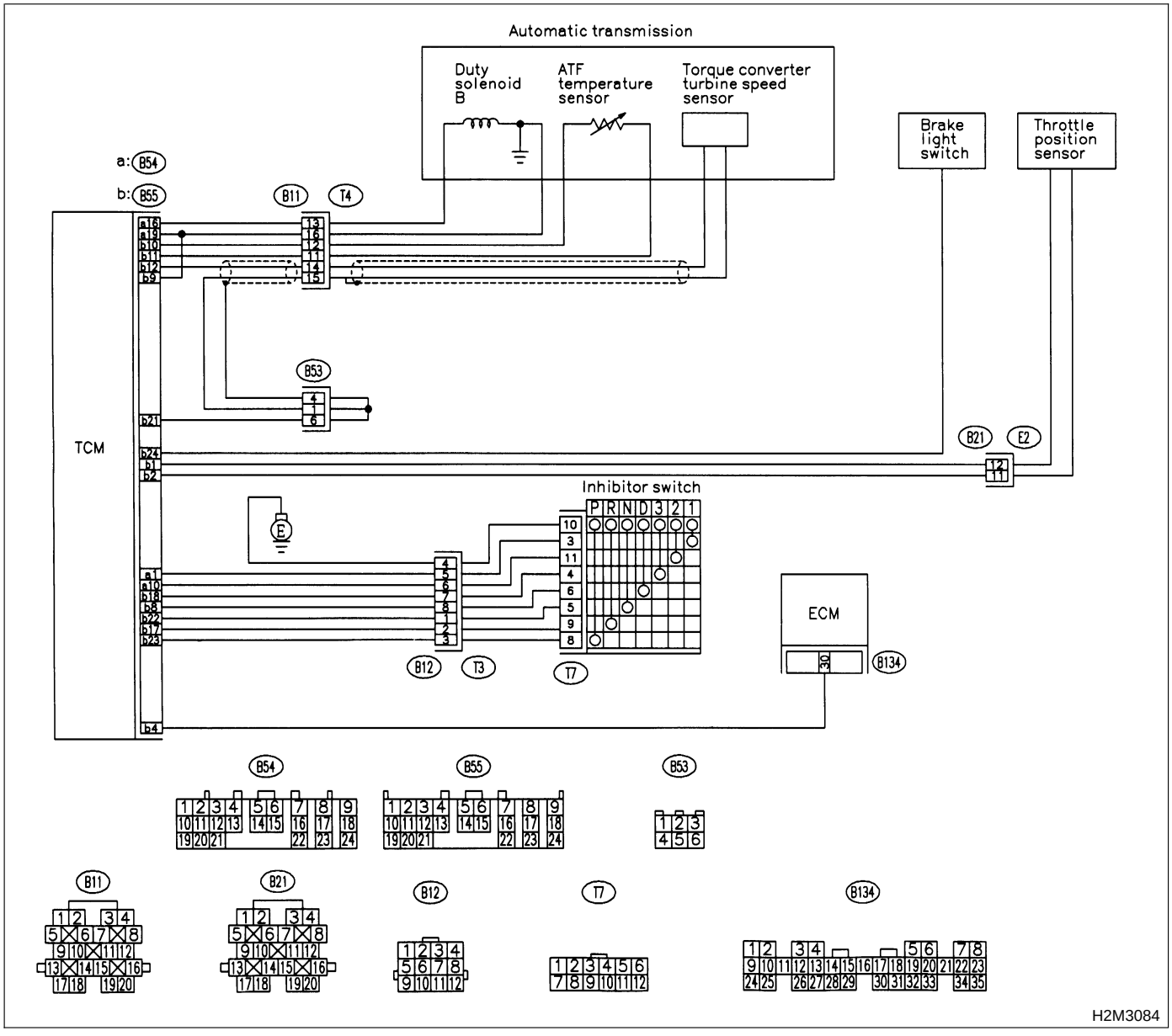
MEMO:

BI: DTC P0740 — TORQUE CONVERTER CLUTCH SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)
  - No shift or excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BI1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***
YES : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles". <Ref. to 2-7 [T10A0].>
NO : Go to step **10BI2**.

10BI2 : CHECK DUTY SOLENOID B CIRCUIT.

Check duty solenoid B circuit. <Ref. to 3-2 [T8Q0].>

CHECK : ***Is there any trouble in duty solenoid B circuit?***
YES : Repair or replace duty solenoid B circuit.
NO : Go to step **10BI3**.

10BI3 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit.
NO : Go to step **10BI4**.

10BI4 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.

Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

CHECK : ***Is there any trouble in torque converter turbine speed sensor circuit?***
YES : Repair or replace torque converter turbine speed sensor circuit.
NO : Go to step **10BI5**.

10BI5 : CHECK INHIBITOR SWITCH CIRCUIT.

Check inhibitor switch circuit. <Ref. to 2-7 [T10AZ0].>

CHECK : ***Is there any trouble in inhibitor switch circuit?***
YES : Repair or replace inhibitor switch circuit.
NO : Go to step **10BI6**.

10BI6 : CHECK BRAKE LIGHT SWITCH CIRCUIT.

Check brake light switch circuit. <Ref. to 2-7 [T10AY0].>

CHECK : ***Is there any trouble in brake light switch circuit?***
YES : Repair or replace brake light switch circuit.
NO : Go to step **10BI7**.

10BI7 : CHECK ATF TEMPERATURE SENSOR CIRCUIT.

Check ATF temperature sensor circuit. <Ref. to 3-2 [T8E0].>

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit.
NO : Go to step **10BI8**.

10BI8 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Go to step **10BI9**.

10BI9 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : ***Is there any mechanical trouble in automatic transmission?***

YES : Repair or replace automatic transmission. <Ref. to 3-2 [T1000].>

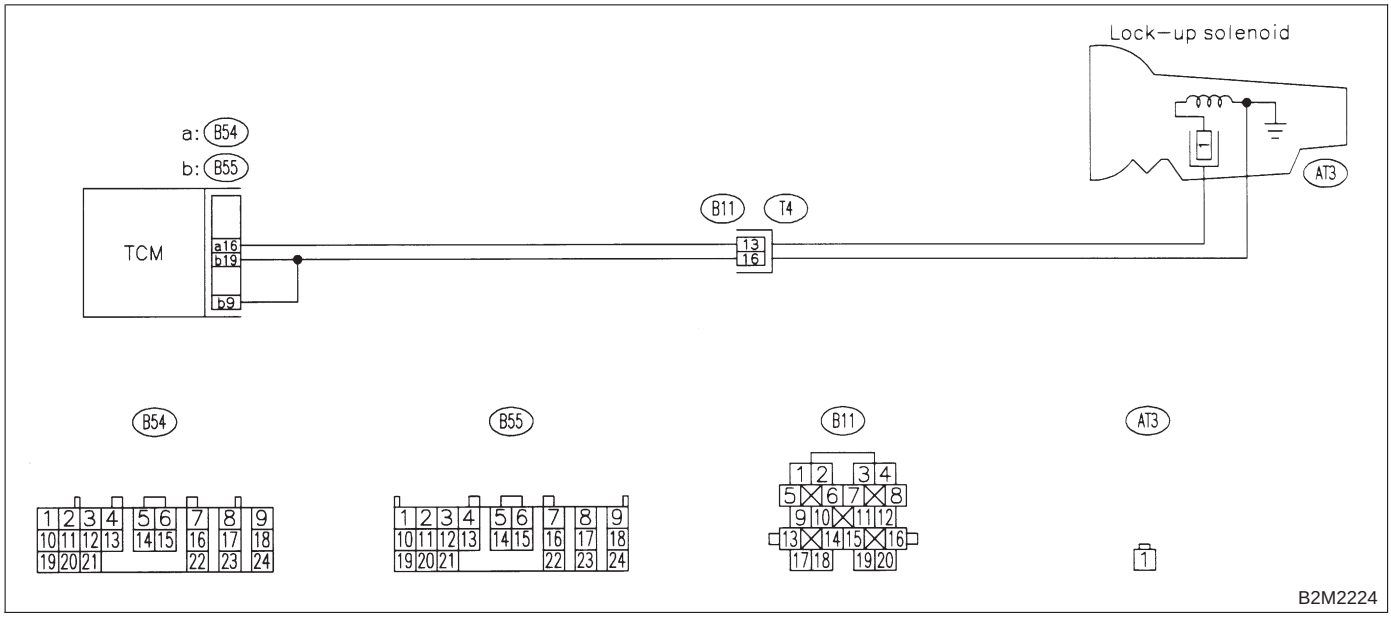
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

BJ: DTC P0743 — TORQUE CONVERTER CLUTCH SYSTEM (DUTY SOLENOID B) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BJ1 : CHECK DTC P0743 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0743?***

YES : Check duty solenoid B circuit. <Ref. to 3-2 [T8Q0].>

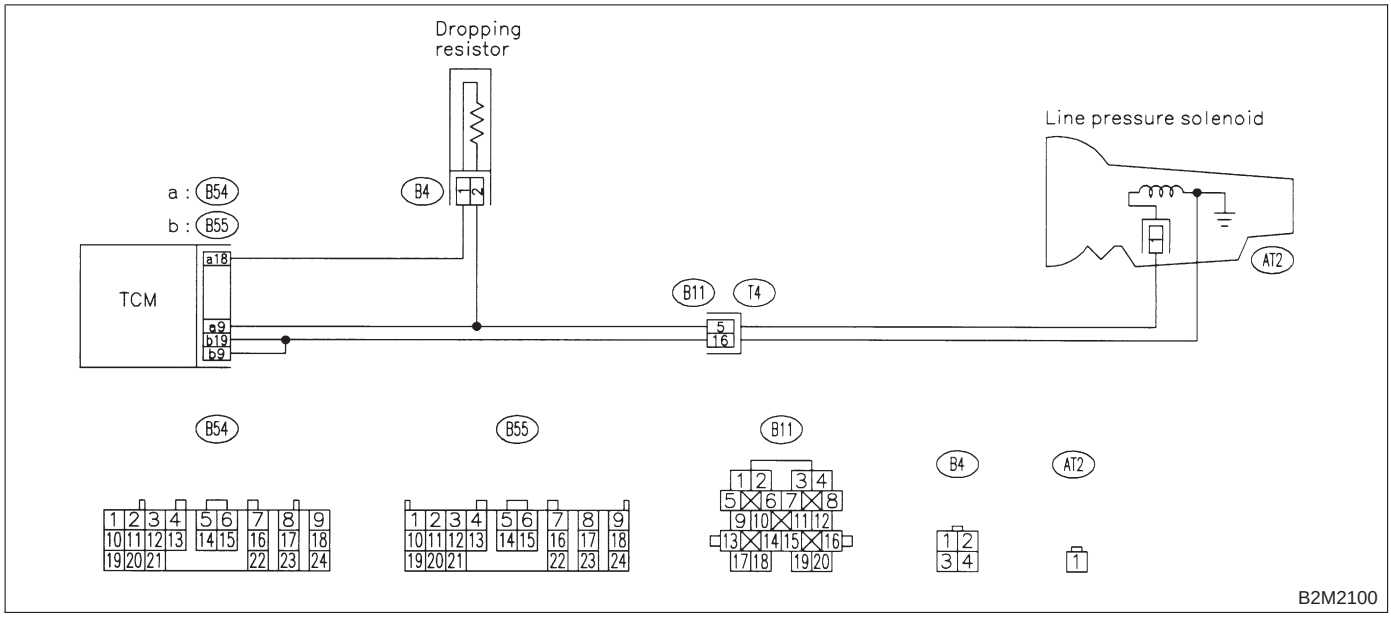
NO : It is not necessary to inspect DTC P0743.

BK: DTC P0748 — PRESSURE CONTROL SOLENOID (DUTY SOLENOID A) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BK1 : CHECK DTC P0748 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0748?***

YES : Check duty solenoid A circuit. <Ref. to 3-2 [T8O0].>

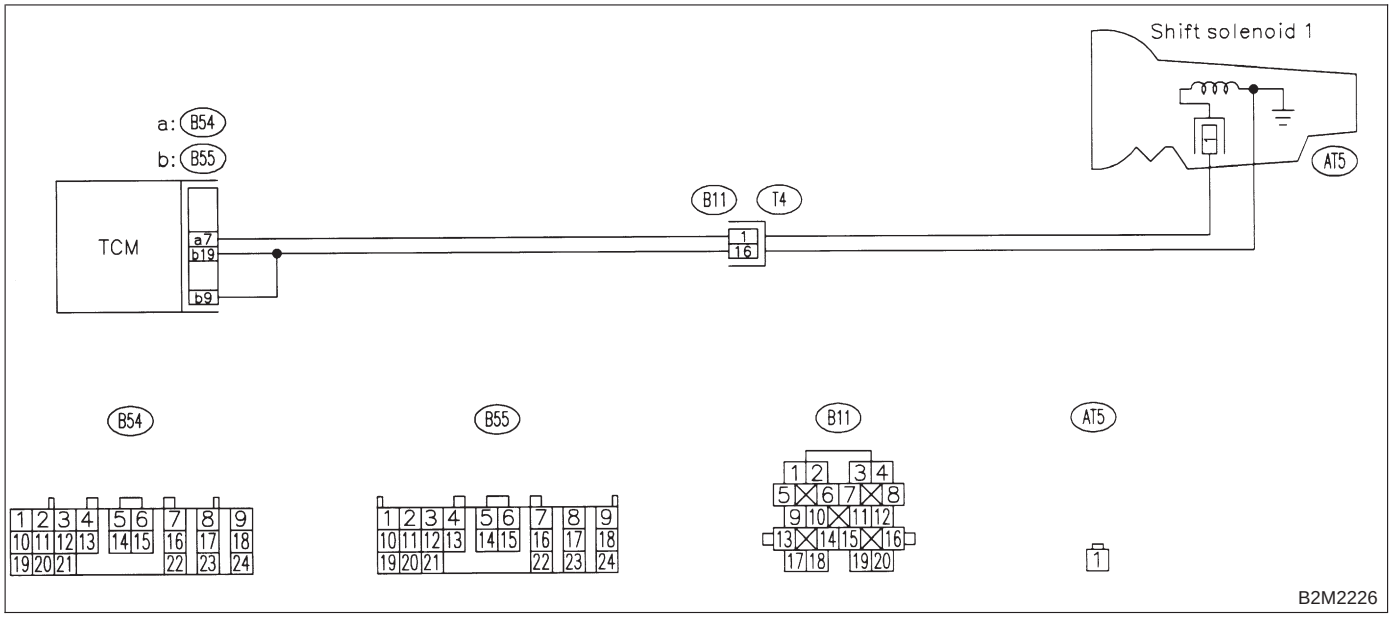
NO : It is not necessary to inspect DTC P0748.

BL: DTC P0753 — SHIFT SOLENOID A (SHIFT SOLENOID 1) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BL1 : CHECK DTC P0753 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0753?***

YES : Check shift solenoid 1 circuit. <Ref. to 3-2 [T8K0].>

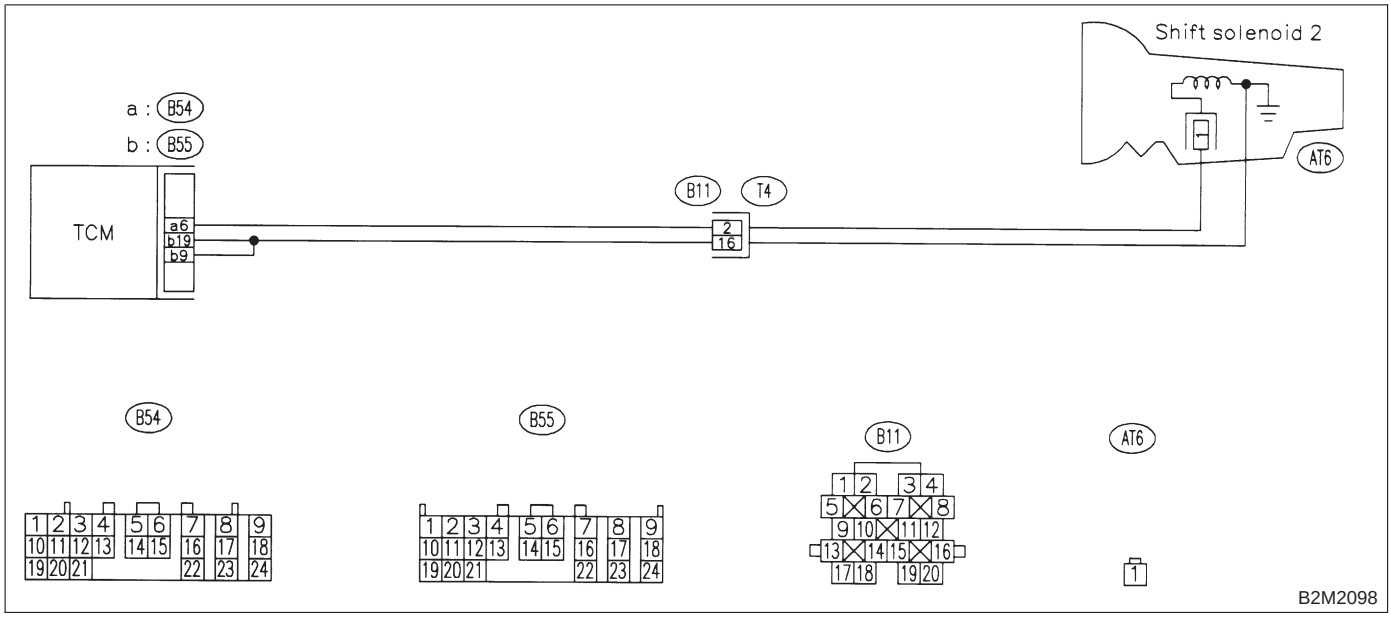
NO : It is not necessary to inspect DTC P0753.

BM: DTC P0758 — SHIFT SOLENOID B (SHIFT SOLENOID 2) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BM1 : CHECK DTC P0758 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0758?***

YES : Check shift solenoid 2 circuit. <Ref. to 3-2 [T8L0].>

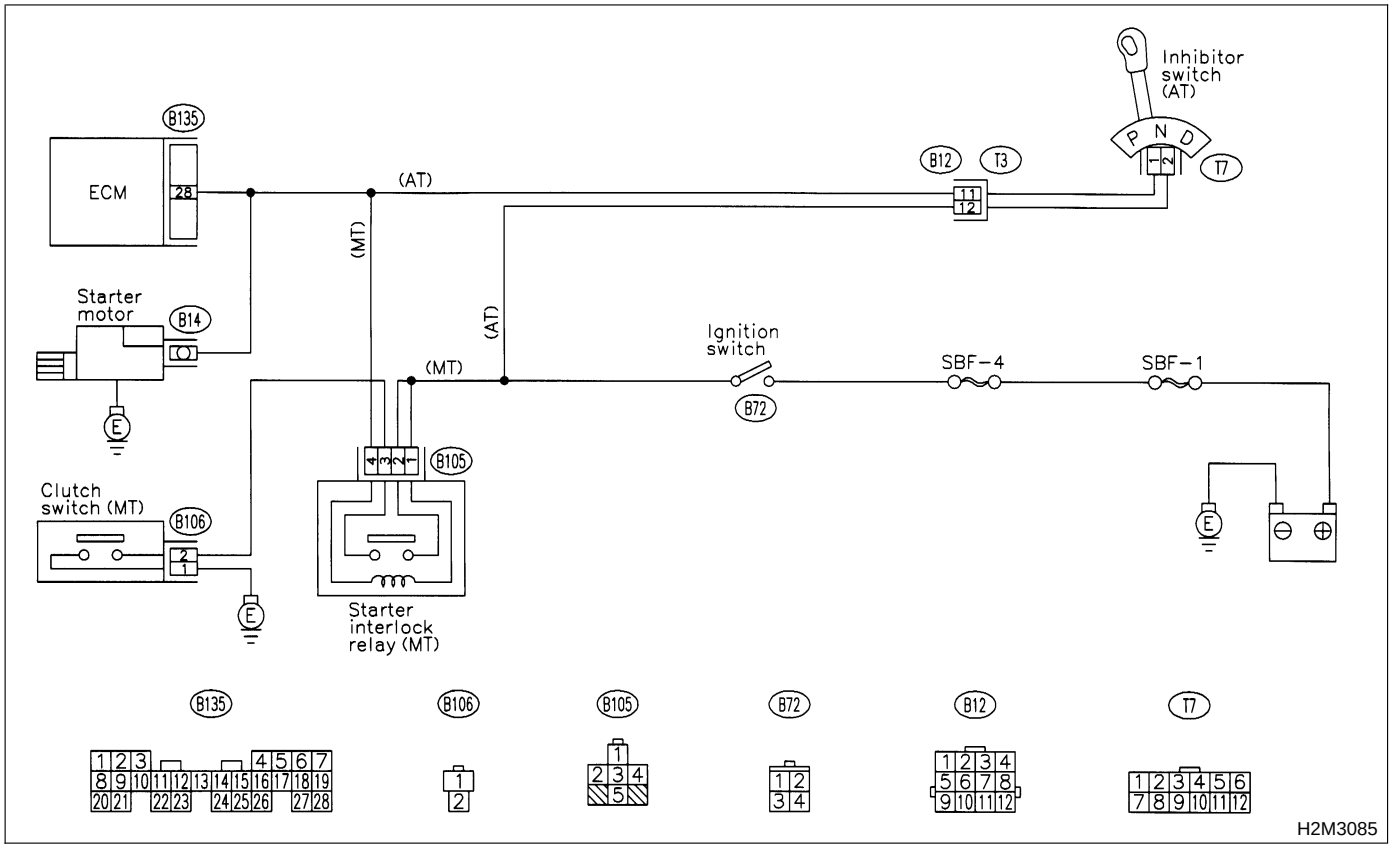
NO : It is not necessary to inspect DTC P0758.

BN: DTC P1100 — STARTER SWITCH CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BN1 : CHECK OPERATION OF STARTER MOTOR.

NOTE:
- On AT vehicles, place the inhibitor switch in the "P" or "N" position.
- On MT vehicles, depress the clutch pedal.

CHECK : ***Does starter motor operate when ignition switch to "ST"?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between ECM and starter motor connector.
- Poor contact in ECM connector.

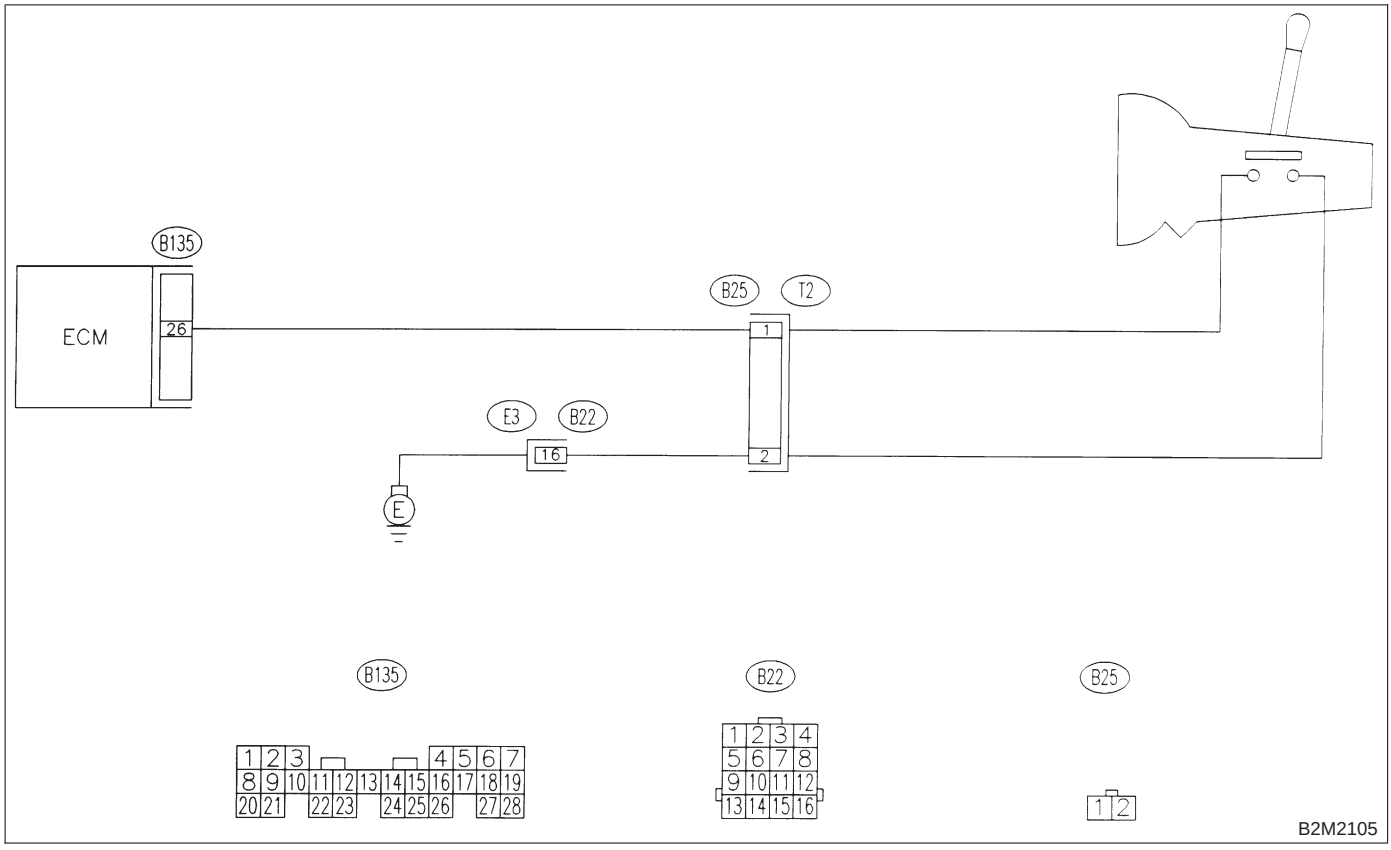
NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

BO: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [MT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

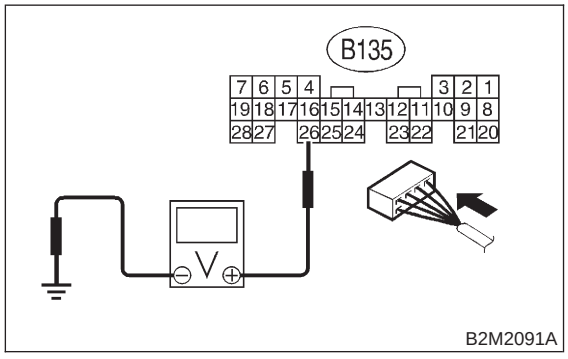
- **WIRING DIAGRAM:**



10BO1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

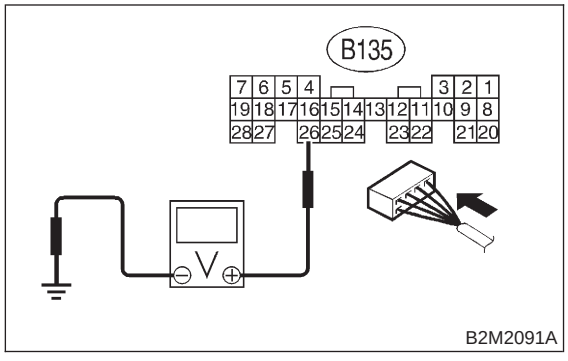


CHECK : ***Is the voltage more than 10 V in neutral position?***
YES : Go to step **10BO2**.
NO : Go to step **10BO4**.

10BO2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V in other positions?***
YES : Go to step **10BO3**.
NO : Go to step **10BO4**.

10BO3 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

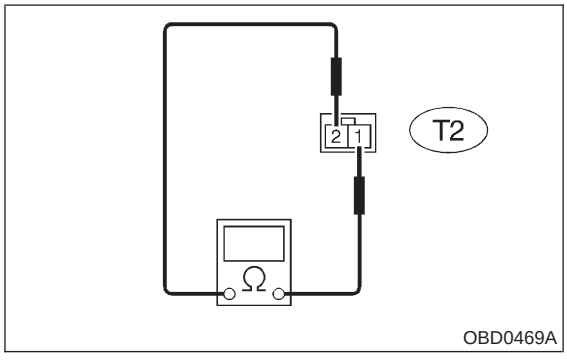
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10BO4 : CHECK NEUTRAL POSITION SWITCH.

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

Connector & terminal
(T2) No. 1 — No. 2:

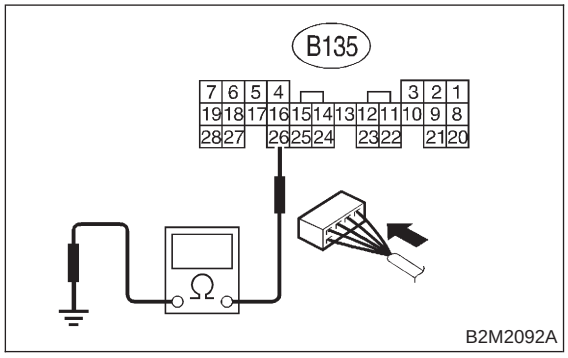


CHECK : ***Is the resistance more than 1 MΩ in neutral position?***
YES : Go to step **10BO5**.
NO : Repair short circuit in transmission harness or replace neutral position switch.

10BO5 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

Measure resistance between ECM and chassis ground.

Connector & terminal
(B135) No. 26 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and transmission harness connector.
NO : Go to step **10BO6**.

10BO6 : CHECK POOR CONTACT.

Check poor contact in transmission harness connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in transmission harness connector?***
YES : Repair poor contact in transmission harness connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

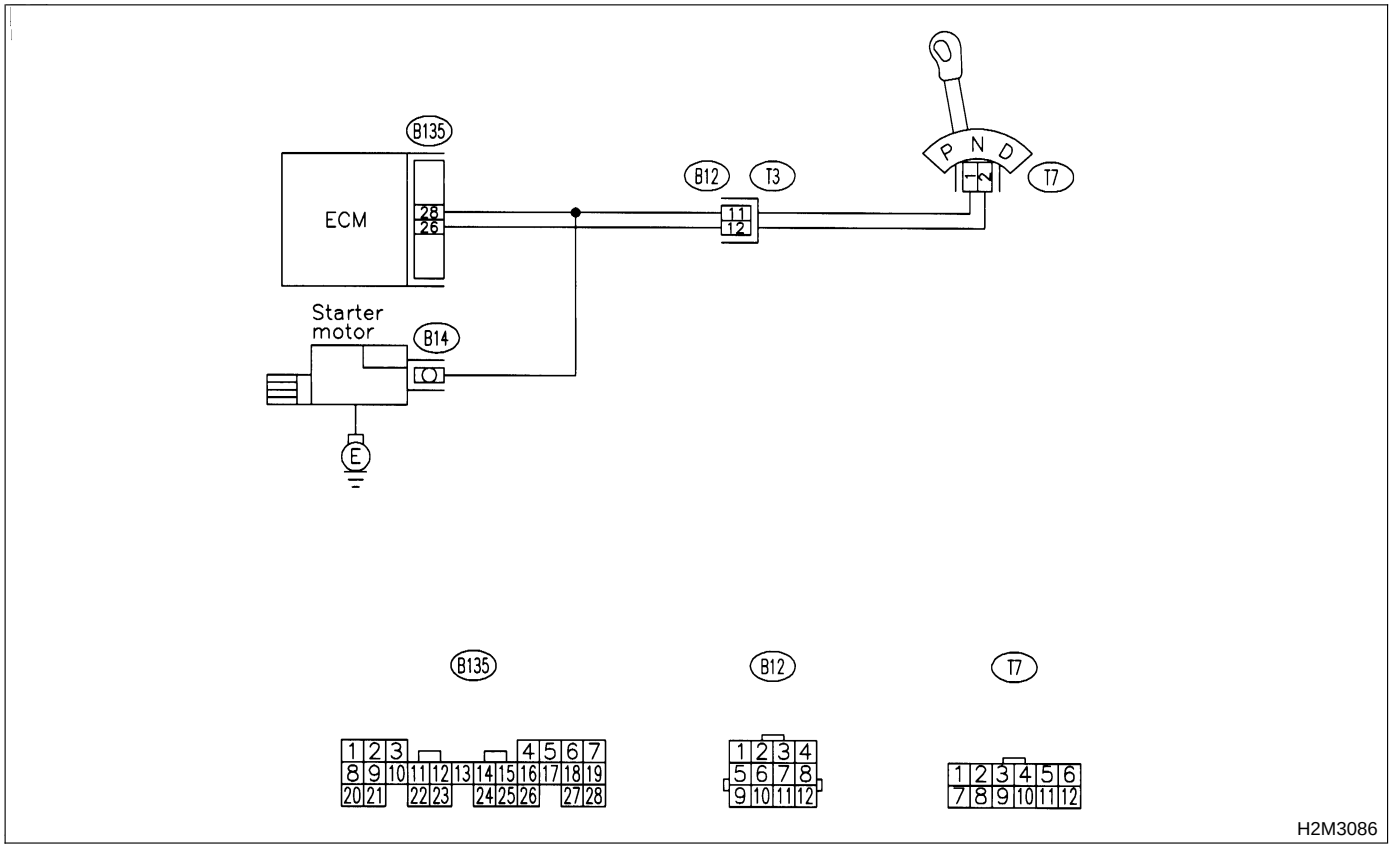
MEMO:

BP: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [AT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BP1 : CHECK DTC P0705 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0705?***

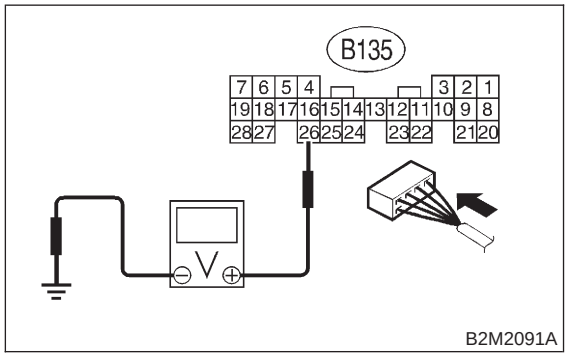
YES : Inspect DTC P0705 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10BP2**.

10BP2 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground in selector lever “N” and “P” positions.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

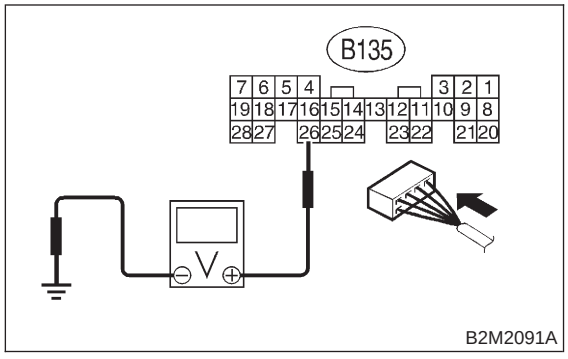


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10BP3**.
NO : Go to step **10BP5**.

10BP3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground in selector lever except for “N” and “P” positions.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10BP4**.
NO : Go to step **10BP5**.

10BP4 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

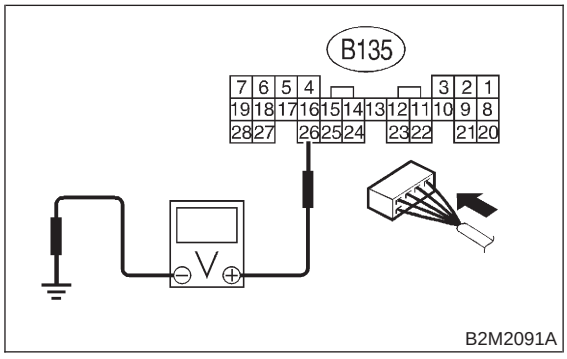
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10BP5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

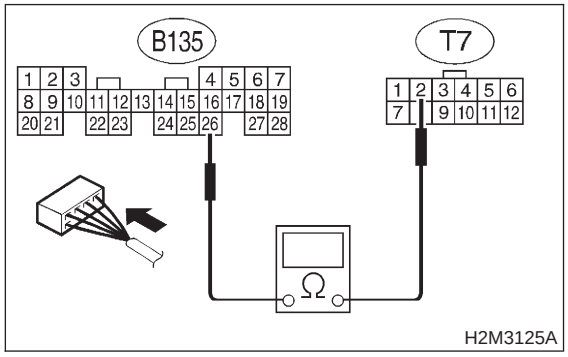


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and inhibitor switch connector.
NO : Go to step **10BP6**.

10BP6 : CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR.

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

Connector & terminal
(B135) No. 26 — (T7) No. 2:



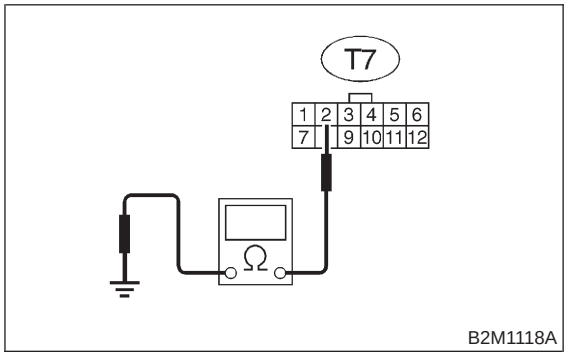
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BP7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)
- Poor contact in inhibitor switch connector
- Poor contact in ECM connector

10BP7 : CHECK INHIBITOR SWITCH GROUND LINE.

Measure resistance of harness between inhibitor switch connector and engine ground.

Connector & terminal
(T7) No. 2 — Engine ground:

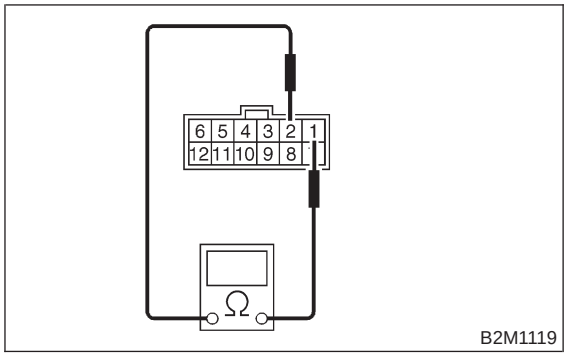


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10BP8**.
NO : Repair open circuit in inhibitor switch ground line.

10BP8 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "N" and "P" positions.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BP9**.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

10BP9 : CHECK SELECTOR CABLE CONNECTION.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***

YES : Repair selector cable connection. <Ref. to 3-2 [W2A0].>

NO : Contact with SOA service.

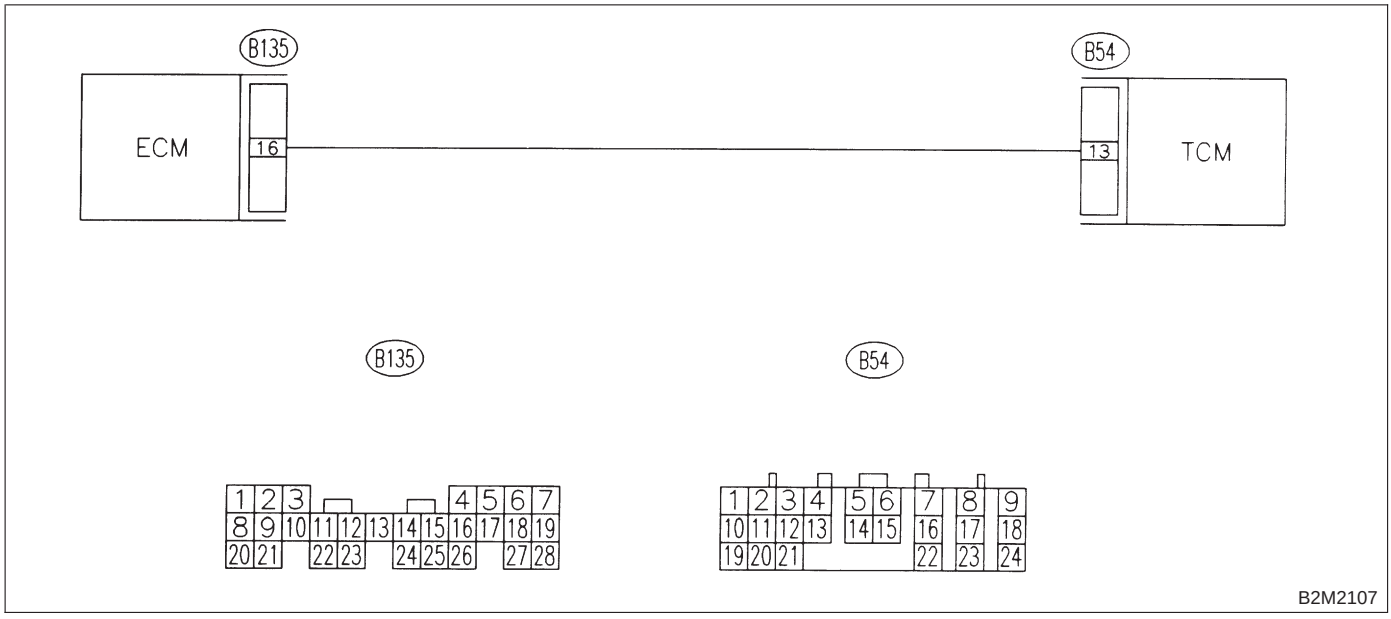
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BQ: DTC P1103 — ENGINE TORQUE CONTROL SIGNAL 1 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

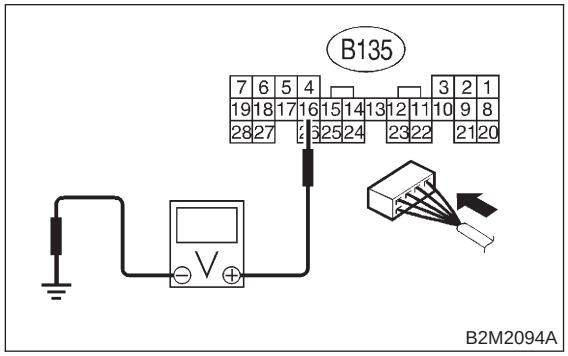
- **WIRING DIAGRAM:**



10BQ1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 16 (+) — Chassis ground (−):

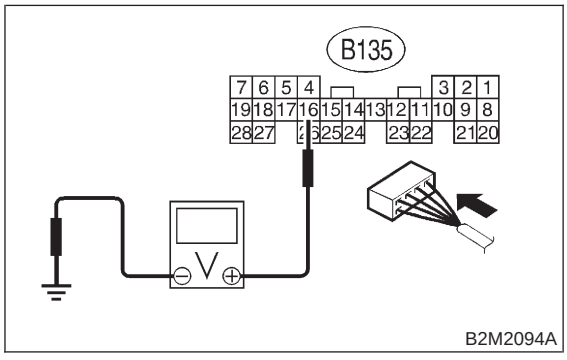


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BQ2**.
NO : Go to step **10BQ4**.

10BQ2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 16 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector.
NO : Go to step **10BQ3**.

10BQ3 : CHECK POOR CONTACT.

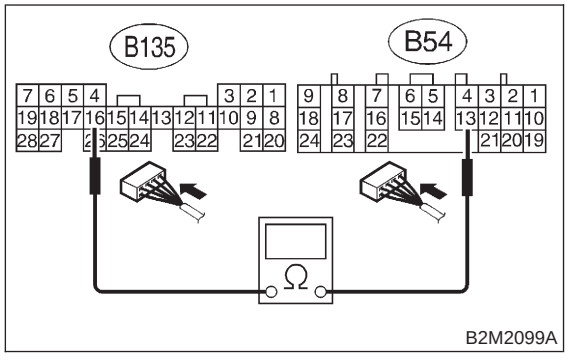
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

10BQ4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 16 — (B54) No. 13:

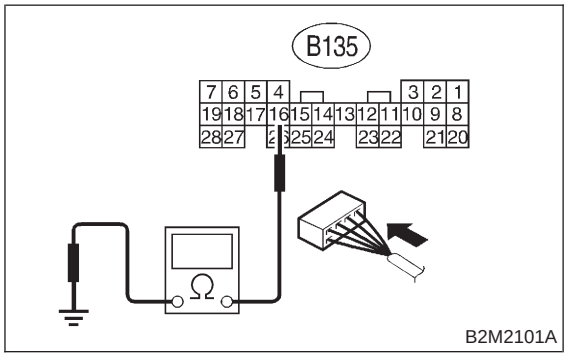


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BQ5**.
NO : Repair open circuit in harness between ECM and TCM connector.

10BQ5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B135) No. 16 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10BQ6**.

10BQ6 : CHECK POOR CONTACT.

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

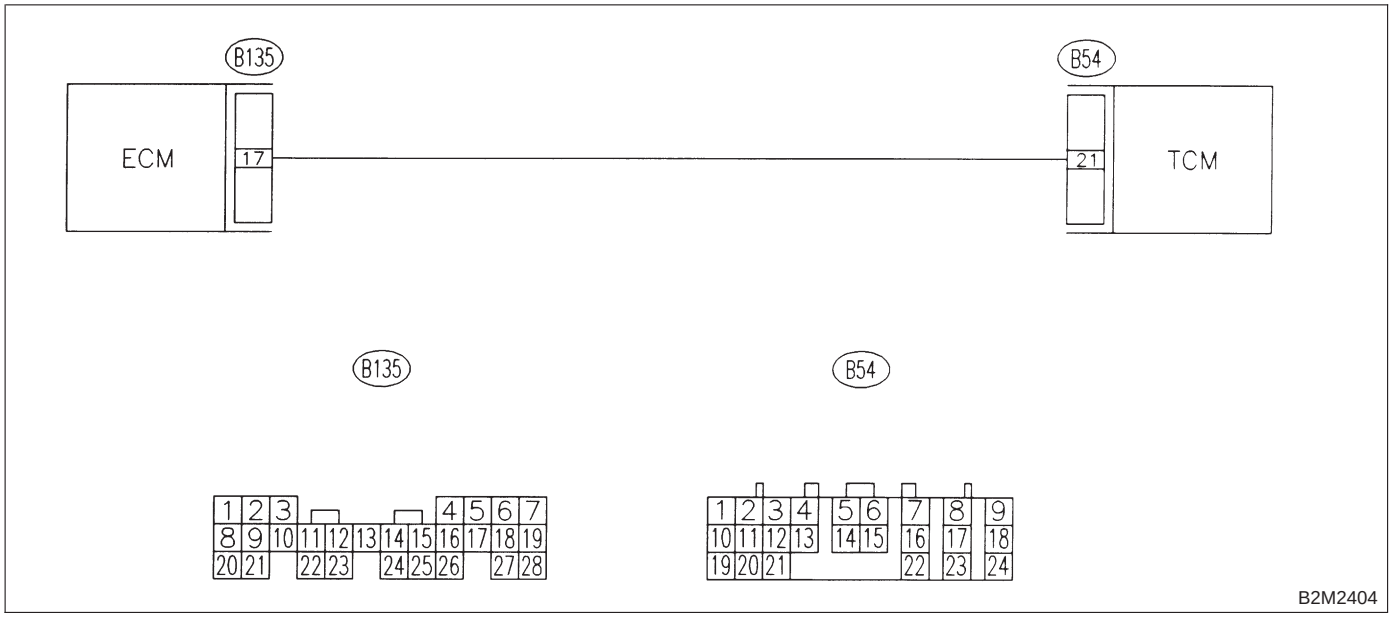
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

BR: DTC P1106 — ENGINE TORQUE CONTROL SIGNAL 2 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

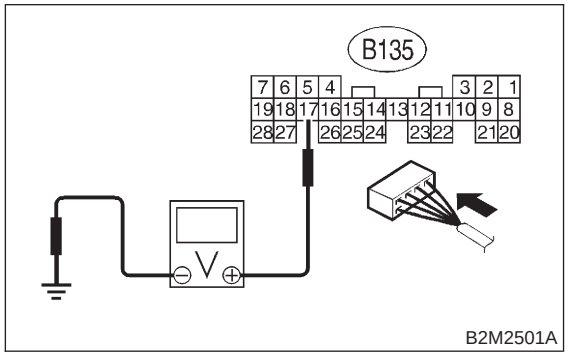
- **WIRING DIAGRAM:**



10BR1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 17 (+) — Chassis ground (−):

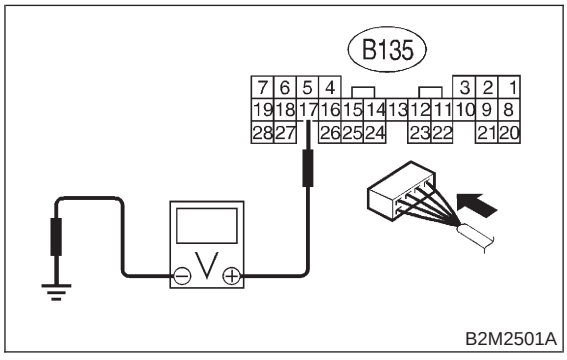


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BR2**.
NO : Go to step **10BR4**.

10BR2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 17 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector.
NO : Go to step **10BR3**.

10BR3 : CHECK POOR CONTACT.

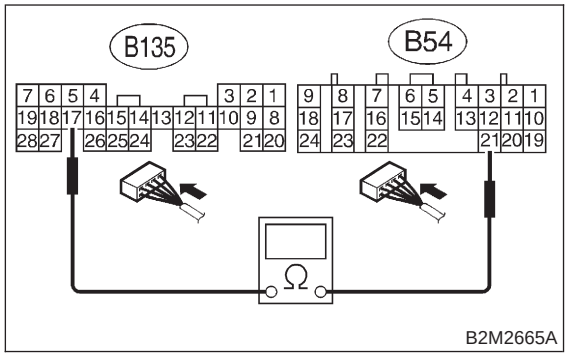
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

10BR4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 17 — (B54) No. 21:

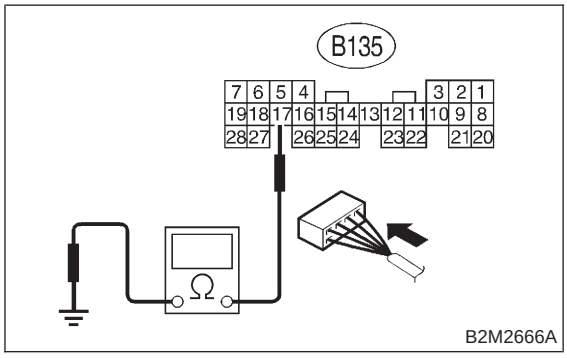


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BR5**.
NO : Repair open circuit in harness between ECM and TCM connector.

10BR5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B135) No. 17 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10BR6**.

10BR6 : CHECK POOR CONTACT.

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

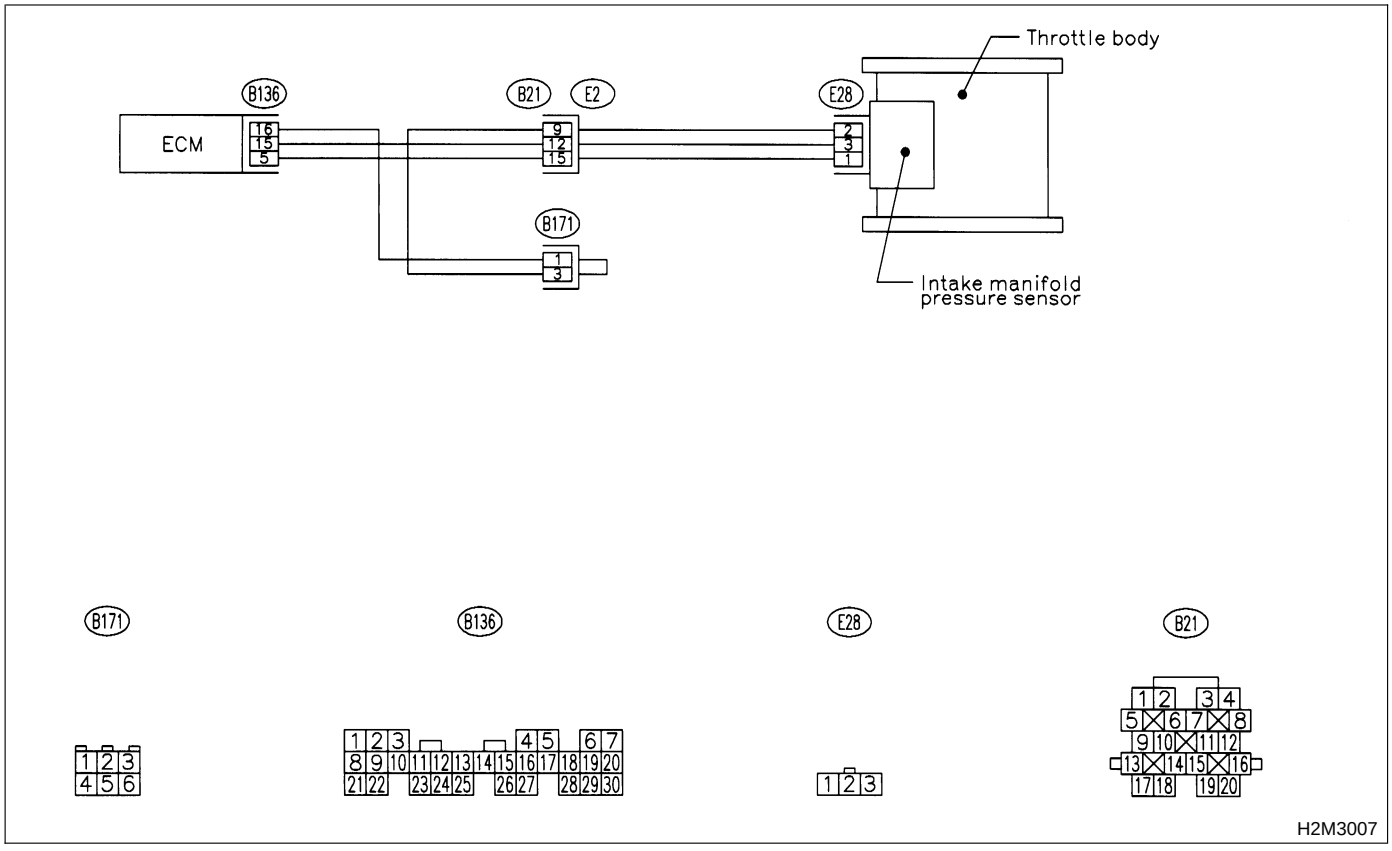
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

BS: DTC P1110 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



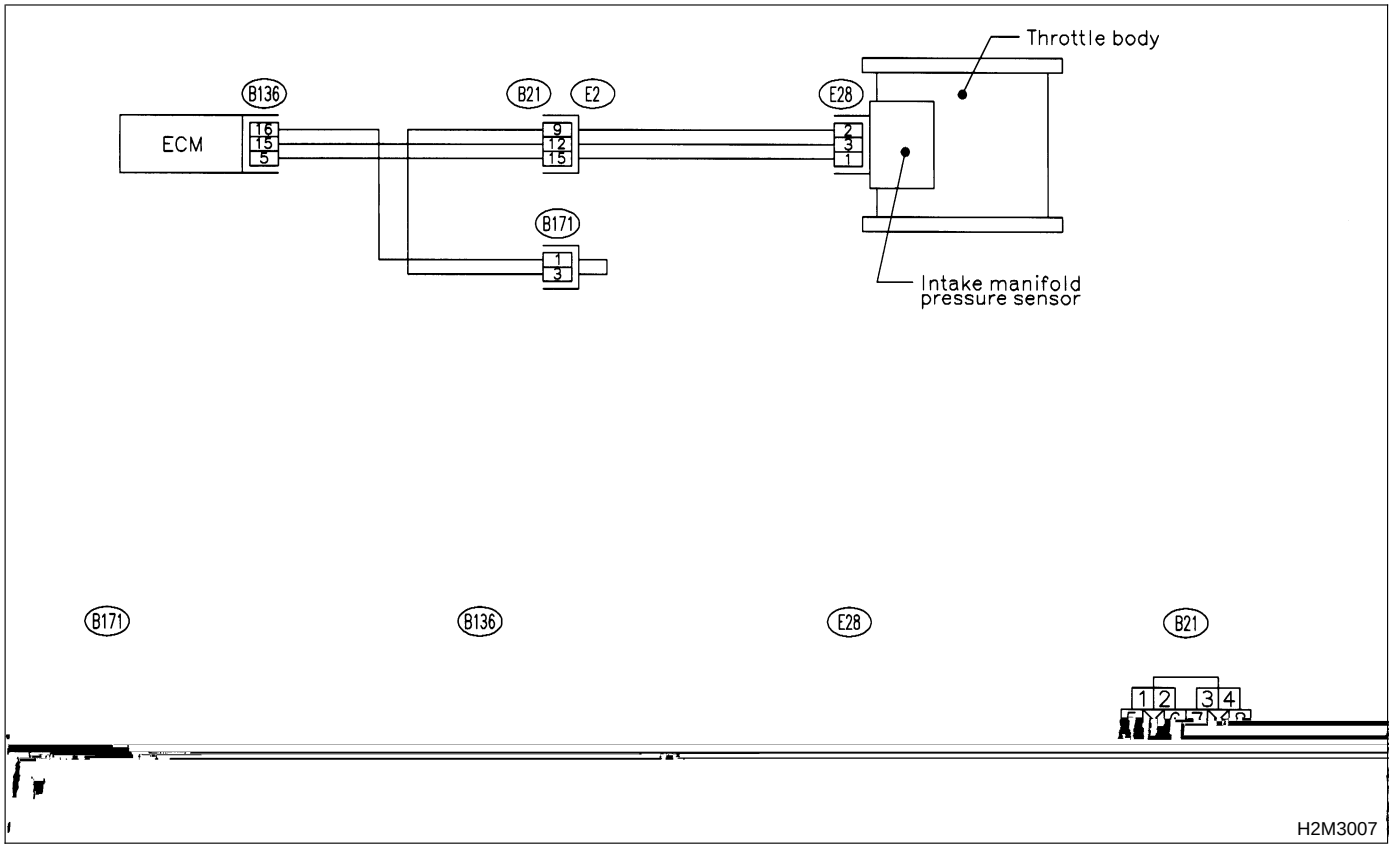
10BS1 : CHECK ANY OTHER DTC ON DISPLAY.	
CHECK	: ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1110?***
YES	: Replace ECM. <Ref. to 2-7 [W15A0].>
NO	: It is not necessary to inspect DTC P1110.

BT: DTC P1111 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BT1 :	CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1111?***

YES : Replace ECM. <Ref. to 2-7 [W15A0].>

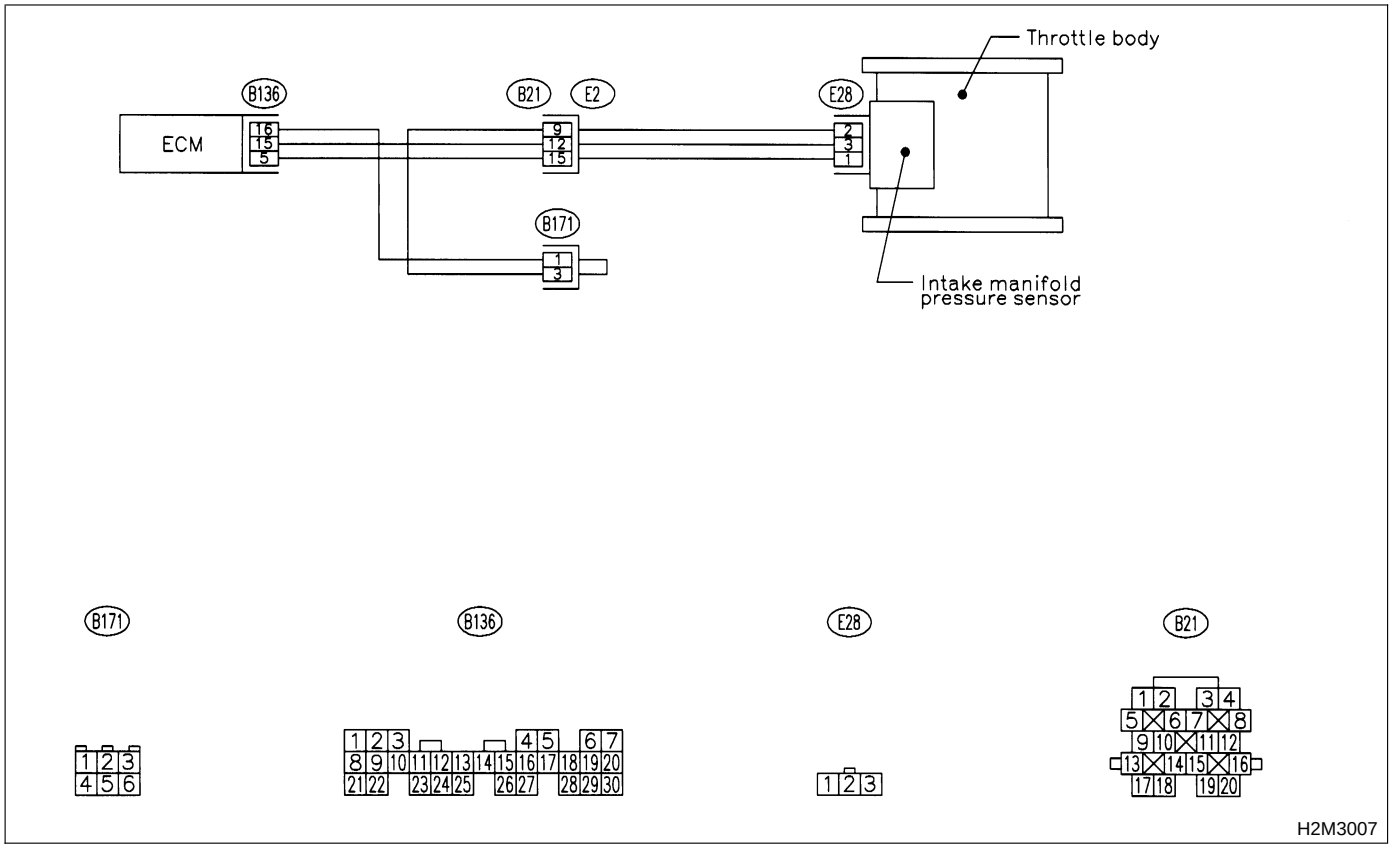
NO : It is not necessary to inspect DTC P1111.

BU: DTC P1112 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BU1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P1110 or P1111?***

YES : Inspect DTC P0106, P0107, P0108, P1110 or P1111 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Replace ECM. <Ref. to 2-7 [W15A0].>

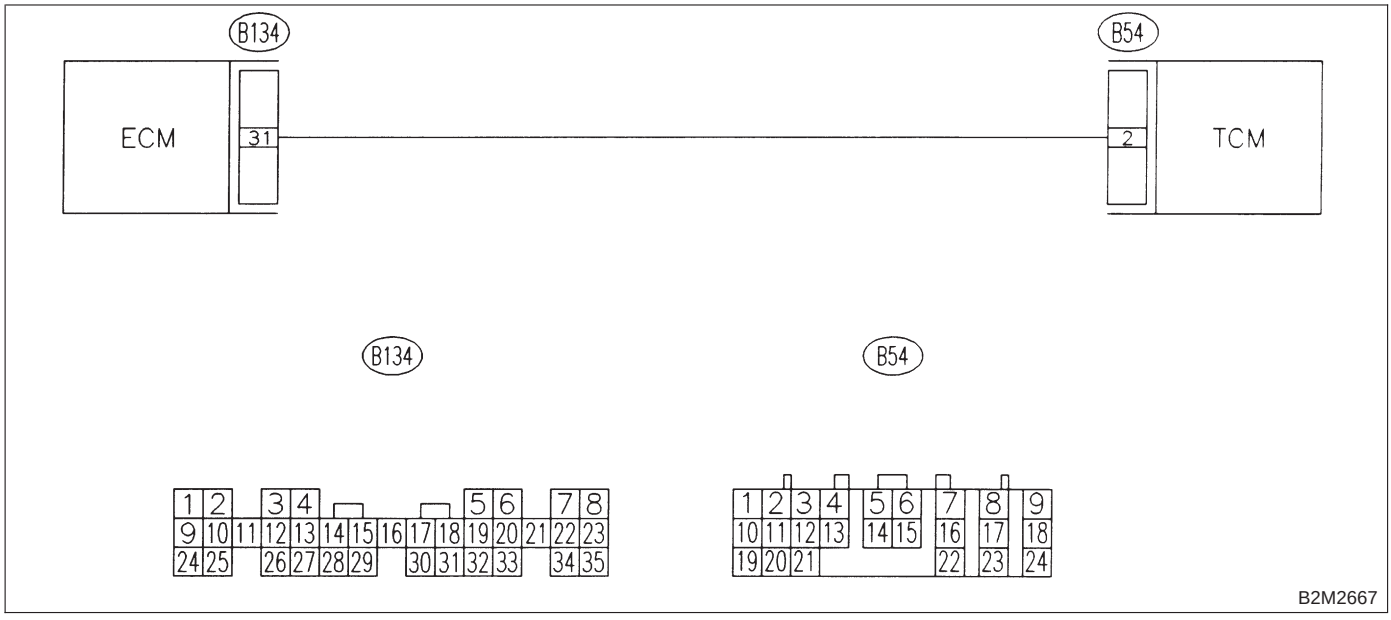
MEMO:

BV: DTC P1115 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

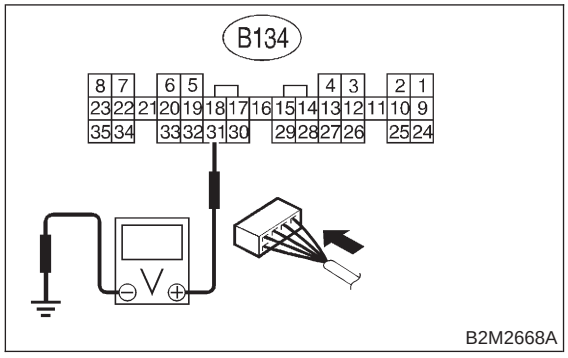
- **WIRING DIAGRAM:**



10BV1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start engine, and warm-up the engine.
2) Turn ignition swtich to OFF.
3) Disconnect connector from TCM.
4) Turn ignition switch to ON.
5) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):

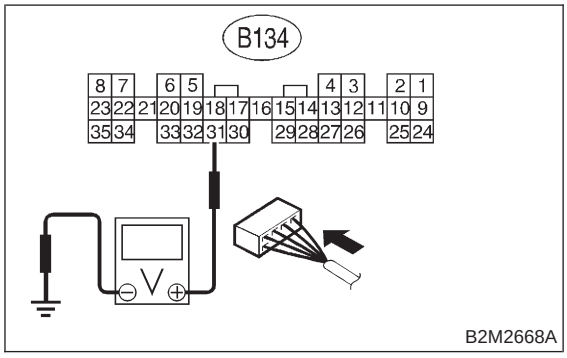


CHECK : ***Is the voltage less than 3 V?***
YES : Go to step **10BV2**.
NO : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

10BV2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 10 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Contact with SOA service.

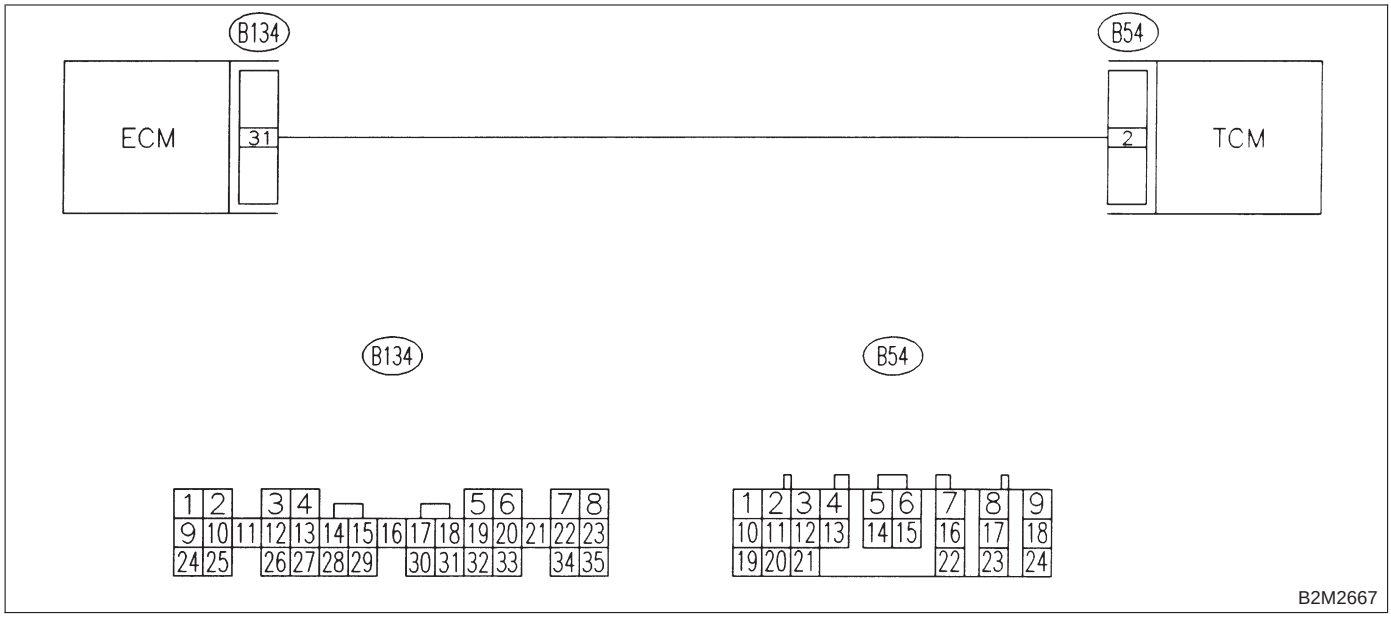
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BW: DTC P1116 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

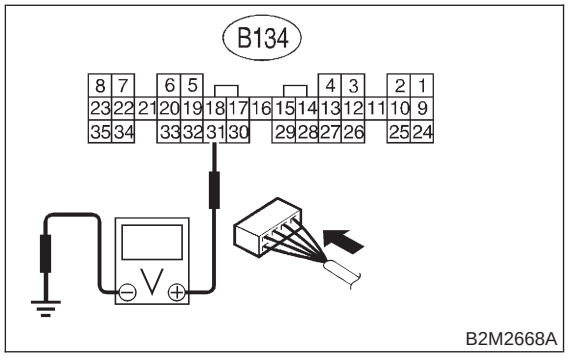
- **WIRING DIAGRAM:**



10BW1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start engine, and warm-up the engine.
2) Turn ignition switch to OFF.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):

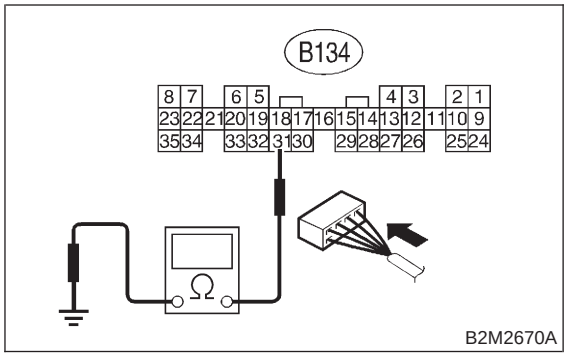


CHECK : ***Is the voltage more than 3 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10BW2**.

10BW2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B134) No. 31 — Chassis ground:

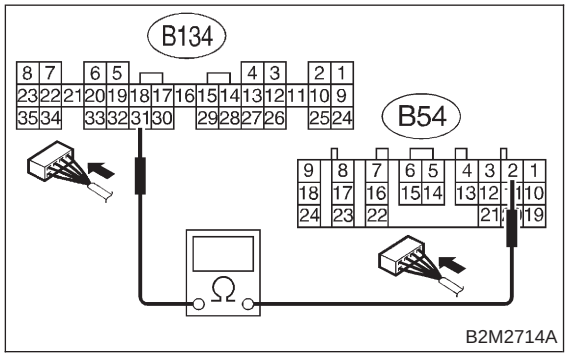


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10BW3**.

10BW3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness betwee ECM and TCM connector.

Connector & terminal
(B134) No. 31 — (B54) No. 2:



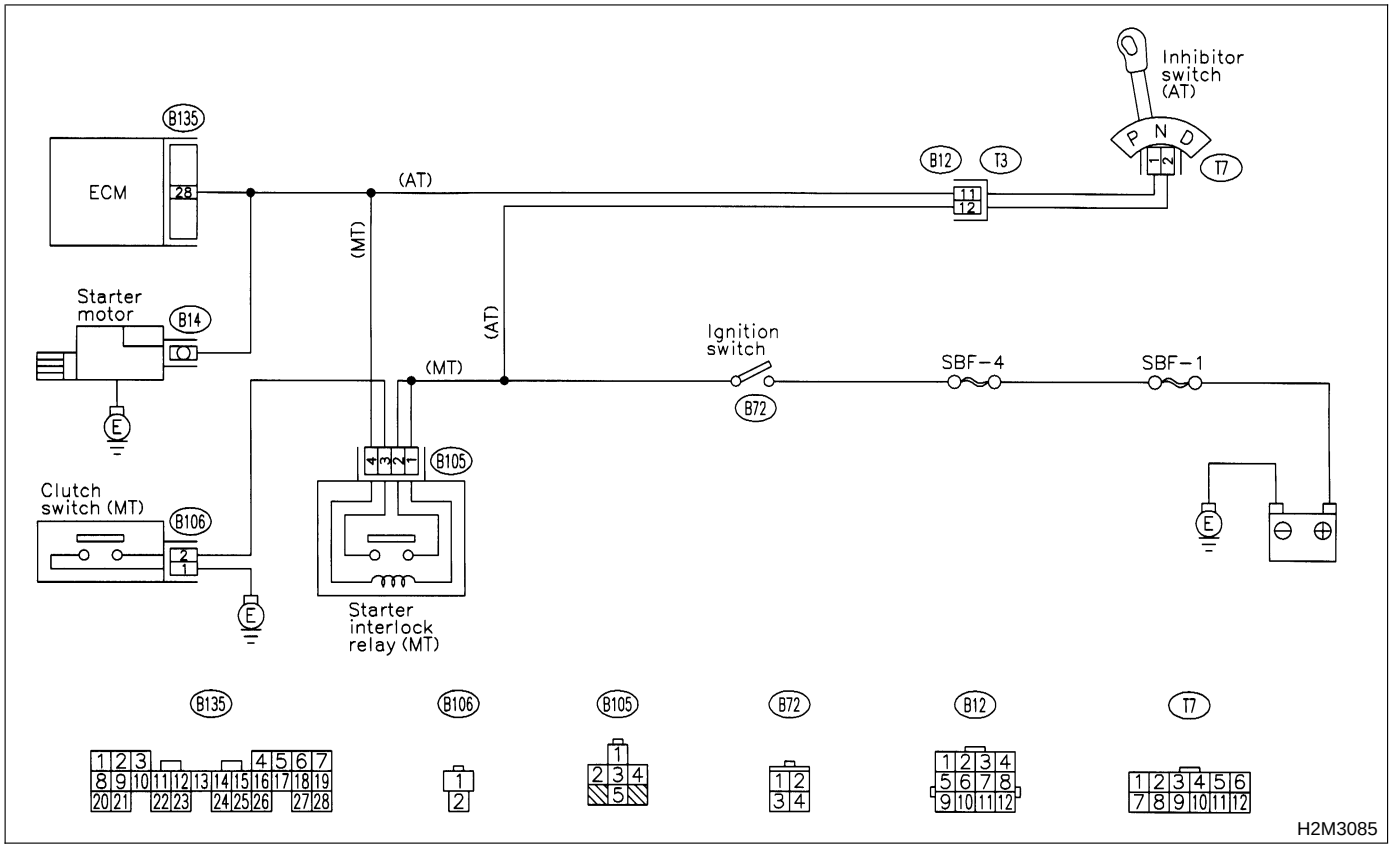
CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair poor contact in ECM or TCM connector.
NO : Repair open circuit in harness between ECM and TCM connector.

BX: DTC P1120 — STARTER SWITCH CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BX1 :	CHECK OPERATION OF STARTER MOTOR.

NOTE:
- On AT vehicles, place the inhibitor switch in each position.
- On MT vehicles, depress or release the clutch pedal.

CHECK : ***Does starter motor operate when ignition switch to "ON"?***

YES : Repair battery short circuit in starter motor circuit. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

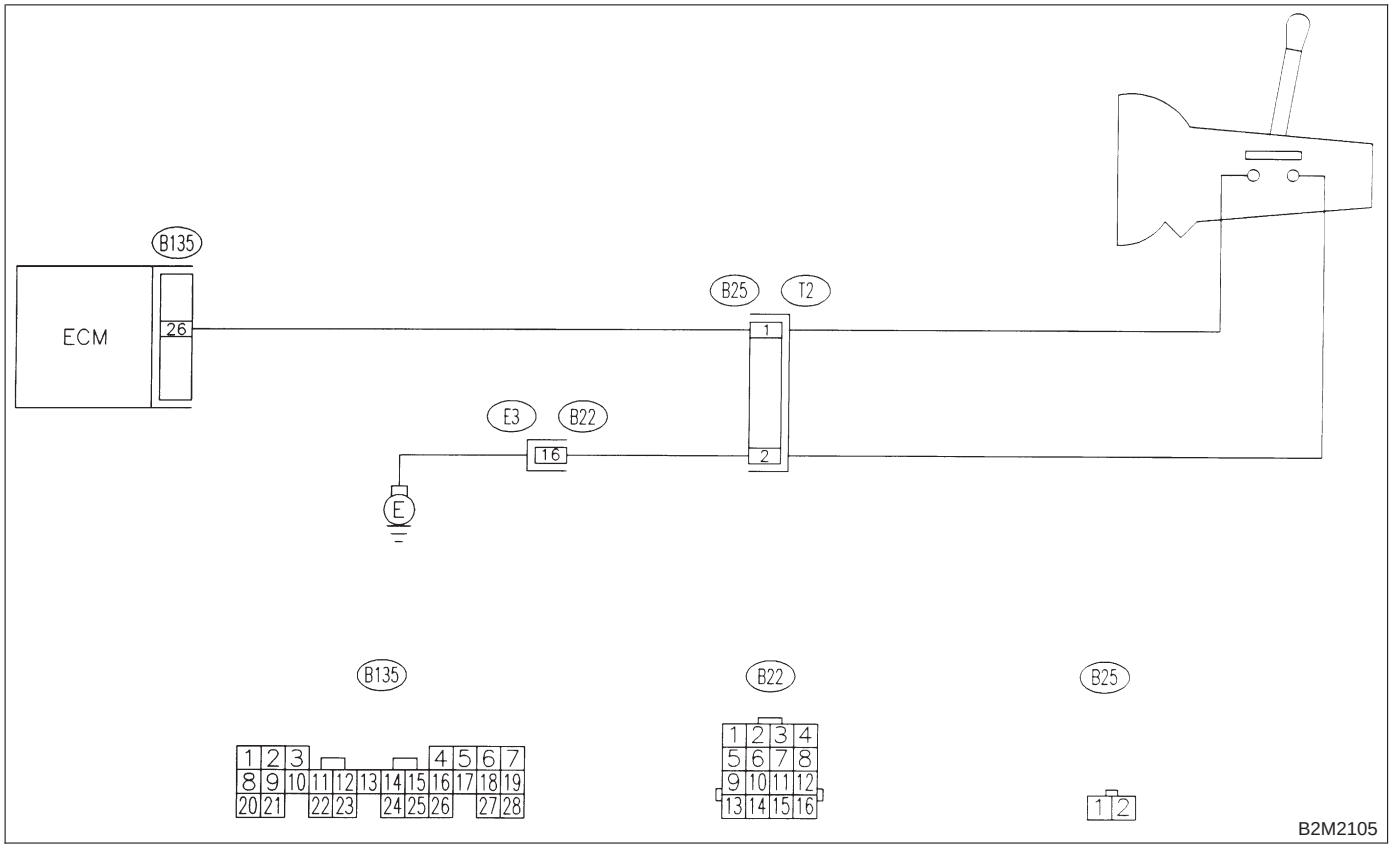
MEMO:

BY: DTC P1121 — NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [MT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

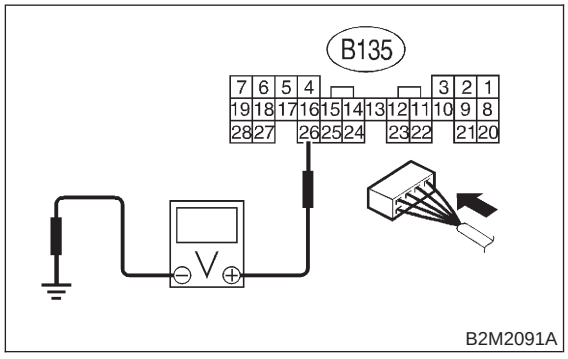
- **WIRING DIAGRAM:**



10BY1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

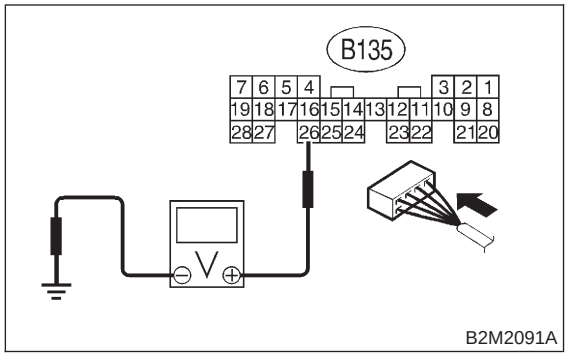


CHECK : ***Is the voltage more than 10 V in neutral position?***
YES : Go to step **10BY2**.
NO : Go to step **10BY4**.

10BY2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V in other positions?***
YES : Go to step **10BY3**.
NO : Go to step **10BY4**.

10BY3 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

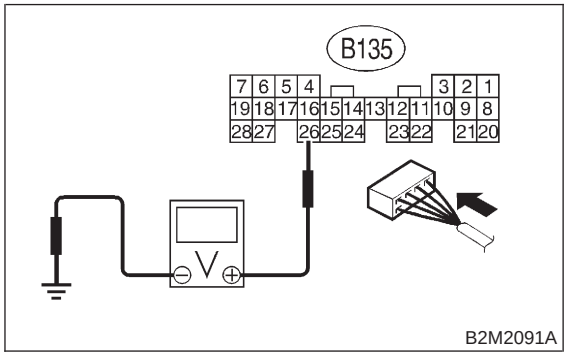
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10BY4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

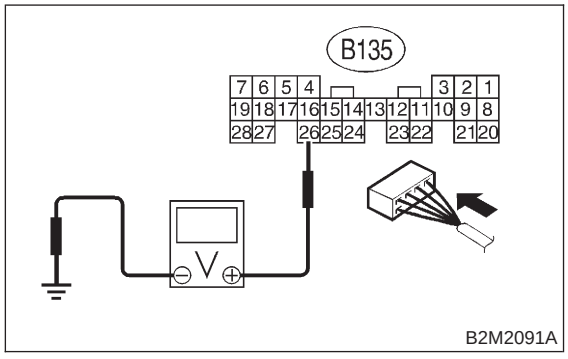


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and transmission harness connector.
NO : Go to step **10BY5**.

10BY5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

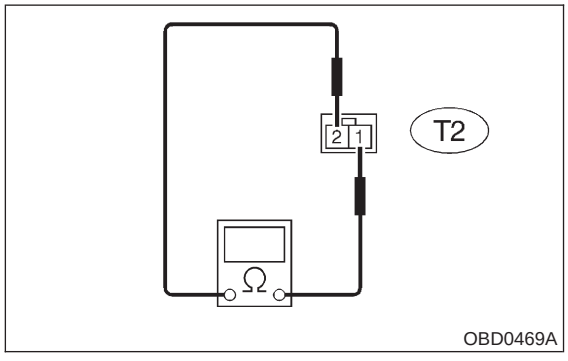


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and transmission harness connector.
NO : Go to step **10BY6**.

10BY6 : CHECK NEUTRAL POSITION SWITCH.

Measure resistance between transmission harness connector terminals.

Connector & terminal
(T2) No. 1 — No. 2:

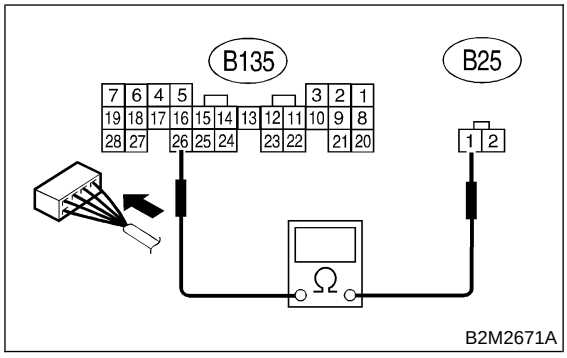


CHECK : ***Is the resistance less than 1 Ω in other positions?***
YES : Go to step **10BY7**.
NO : Repair open circuit in transmission harness or replace neutral position switch.

10BY7 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and transmission harness connector.

Connector & terminal
(B135) No. 26 — (B25) No. 1:

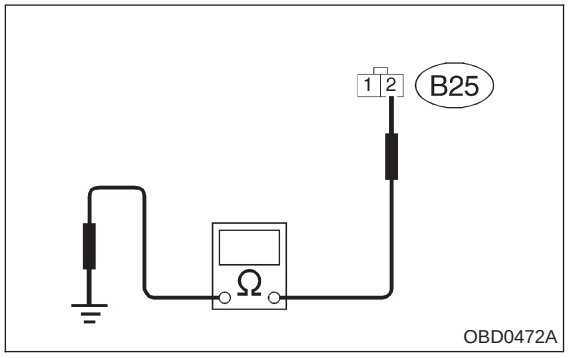


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BY8**.
NO : Repair open circuit in harness between ECM and transmission harness connector.

10BY8 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(B25) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10BY9**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between transmission harness connector and engine grounding terminal
- Poor contact in coupling connector (B22)

10BY9 : CHECK POOR CONTACT.

Check poor contact in transmission harness connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in transmission harness connector?***
YES : Repair poor contact in transmission harness connector.
NO : Contact with SOA service.

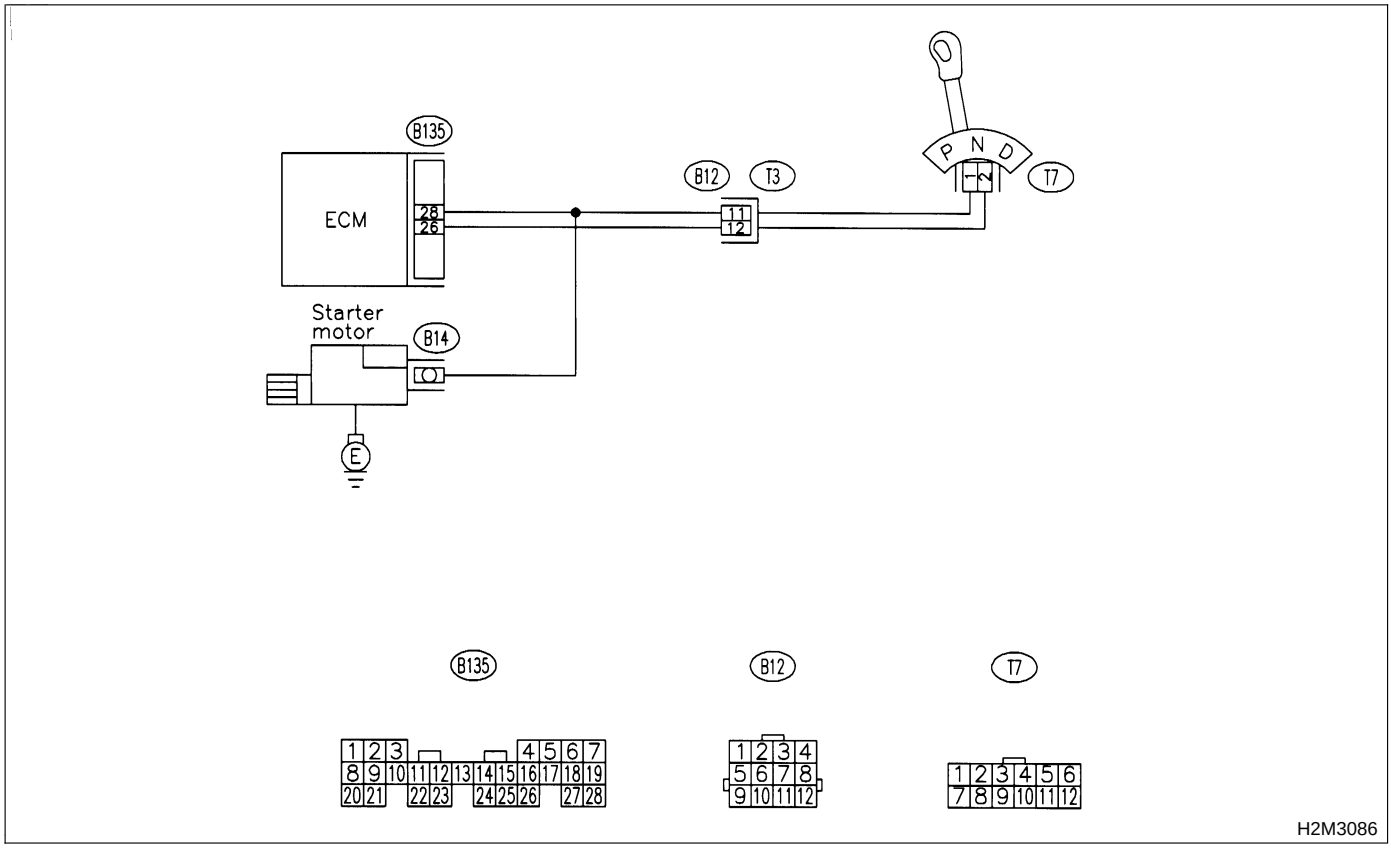
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BZ: DTC P1121 — NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [AT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10BZ1 : CHECK DTC P0705 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0705?***

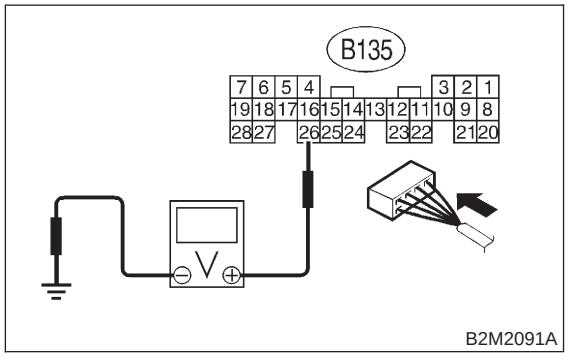
YES : Inspect DTC P0705 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10BZ2**.

10BZ2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V in other positions?***

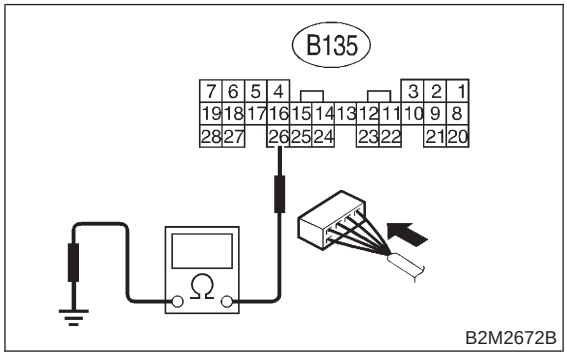
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NO : Go to step **10BZ3**.

10BZ3 : CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.

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

Connector & terminal
(B135) No. 26 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***

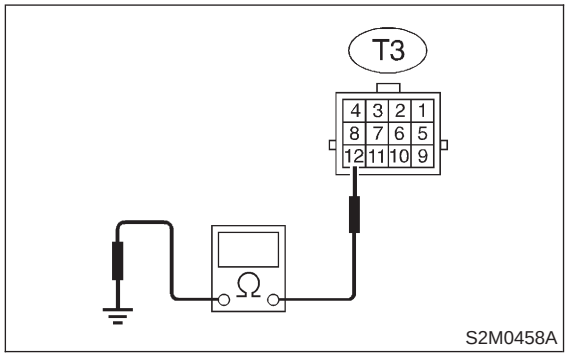
YES : Repair ground short circuit in harness between ECM and transmission harness connector.

NO : Go to step **10BZ4**.

10BZ4 : CHECK TRANSMISSION HARNESS CONNECTOR.

1) Disconnect connector from inhibitor switch.
2) Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(T3) No. 12 — Engine ground:

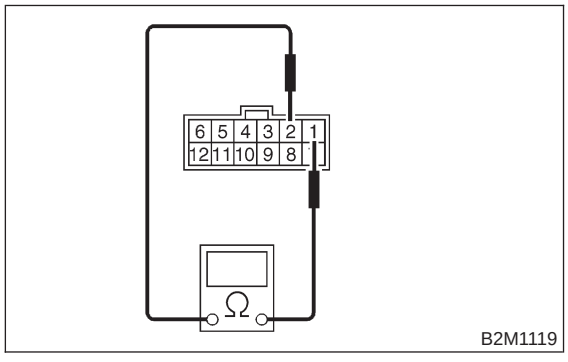


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between transmission harness and inhibitor switch connector.
NO : Go to step **10BZ5**.

10BZ5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "N" position.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance more than 1 MΩ in other positions?***
YES : Go to step **10BZ6**.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

10BZ6 : CHECK SELECTOR CABLE CONNECTION.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***
YES : Repair selector cable connection. <Ref. to 3-2 [W2A0].>
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

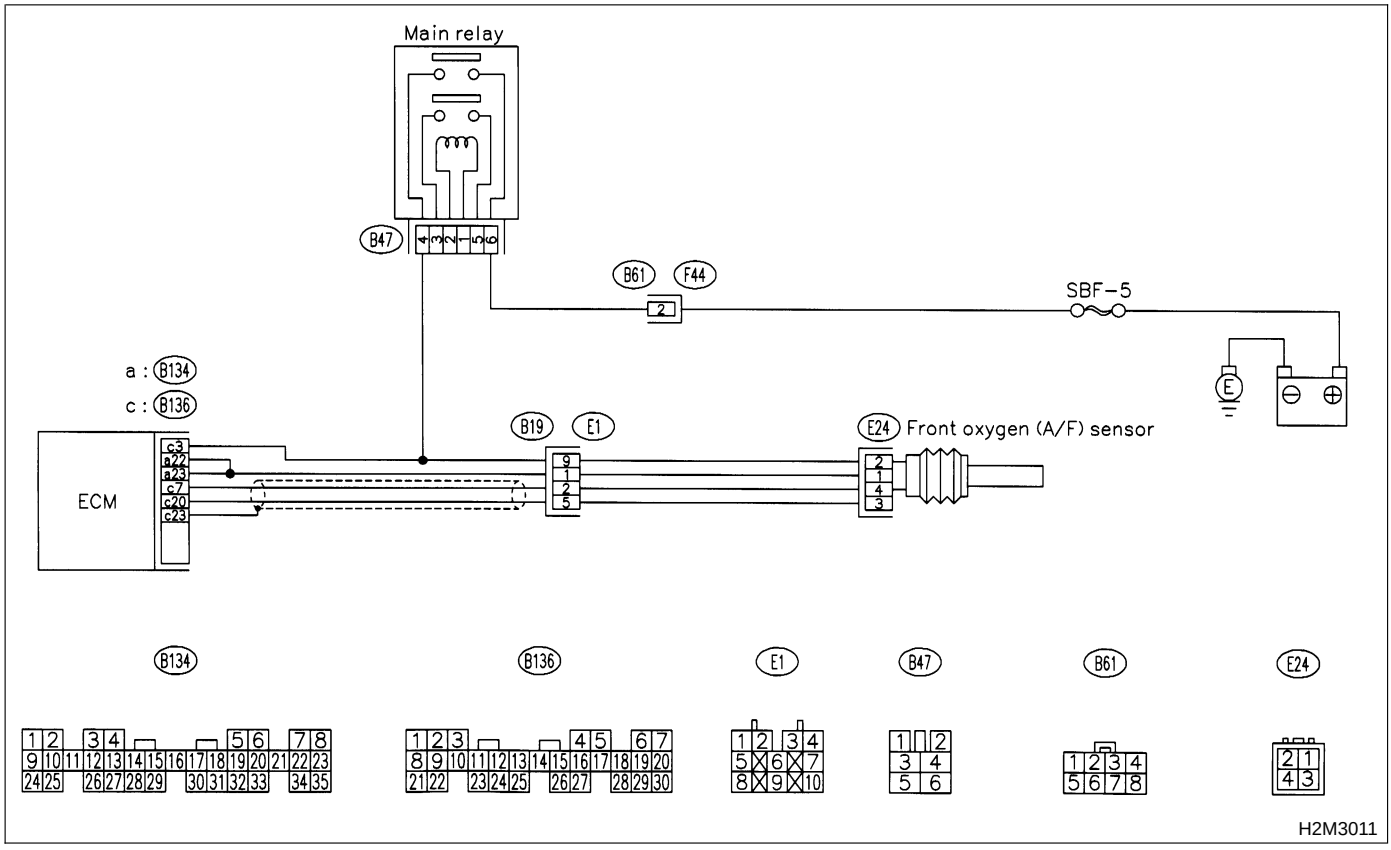
MEMO:

CA: DTC P1130 — FRONT OXYGEN (A/F) SENSOR CIRCUIT MALFUNCTION (OPEN CIRCUIT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

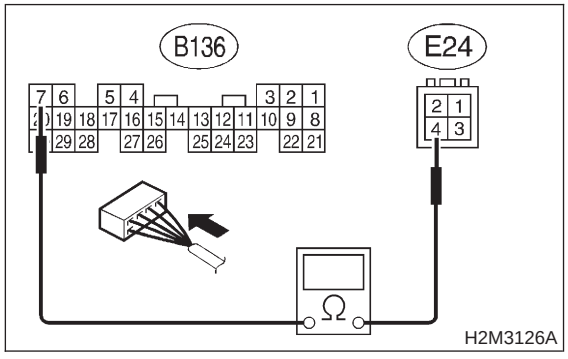
- **WIRING DIAGRAM:**



10CA1 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and front oxygen (A/F) sensor connector.
3) Measure resistance of harness between ECM and front oxygen (A/F) sensor connector.

Connector & terminal
(B136) No. 7 — (E24) No. 4:



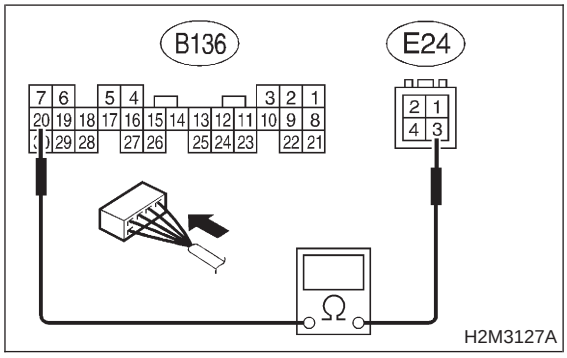
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CA2**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and coupling connector (E1)
- Open circuit in harness between coupling connector (E1) and front oxygen (A/F) sensor connector
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (E1)

10CA2 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

Measure resistance of harness between ECM and front oxygen (A/F) sensor connector.

Connector & terminal
(B136) No. 20 — (E24) No. 3:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CA3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and coupling connector (E1)
- Open circuit in harness between coupling connector (E1) and front oxygen (A/F) sensor connector
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (E1)

10CA3 : CHECK POOR CONTACT.

Check poor contact in front oxygen (A/F) sensor connector. <Ref. to FOREWORD [T3C1].>

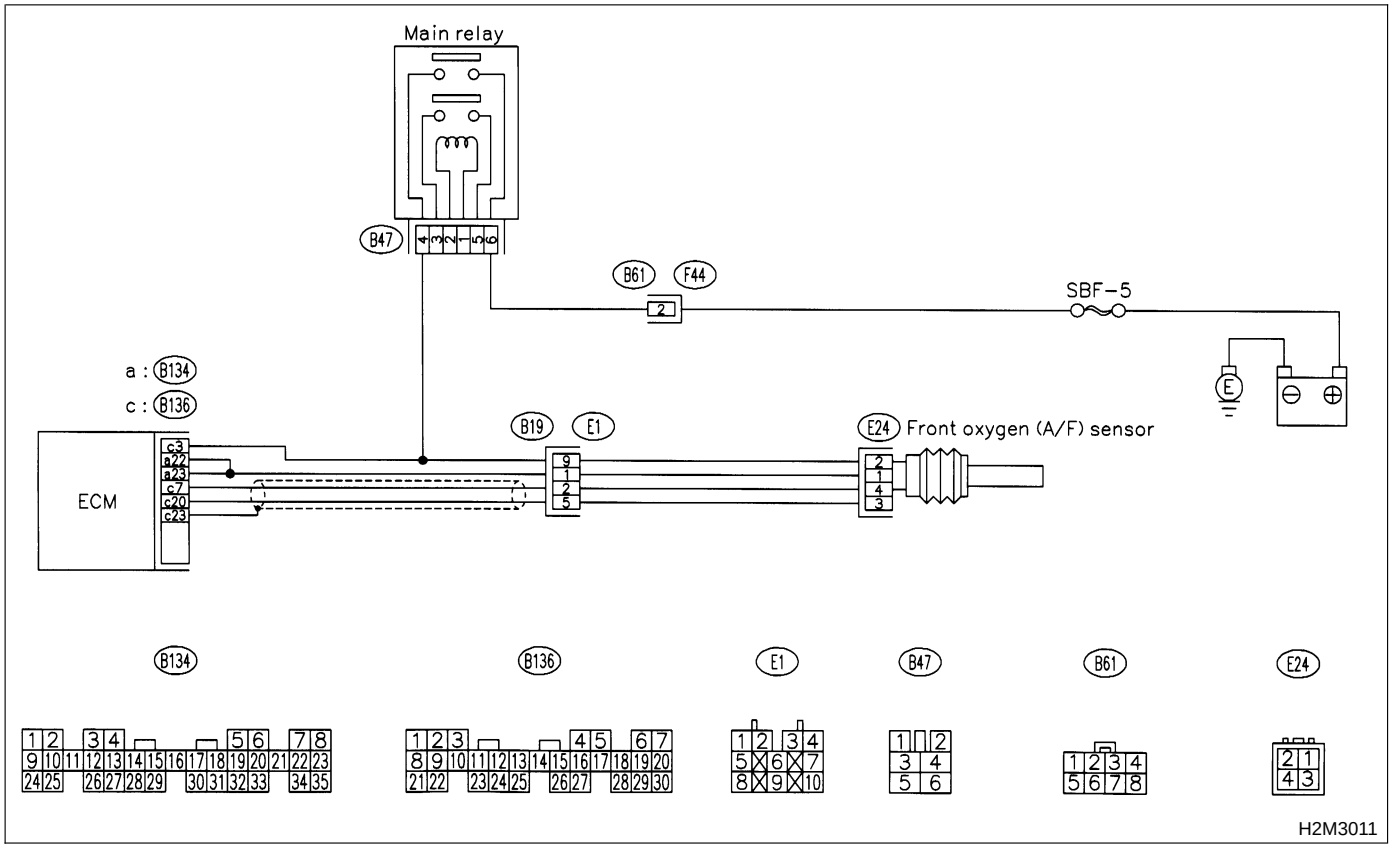
CHECK : ***Is there poor contact in front oxygen (A/F) sensor connector?***
YES : Repair poor contact in front oxygen (A/F) sensor connector.
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W7A0].>

CB: DTC P1131 — FRONT OXYGEN (A/F) SENSOR CIRCUIT MALFUNCTION (SHORT CIRCUIT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

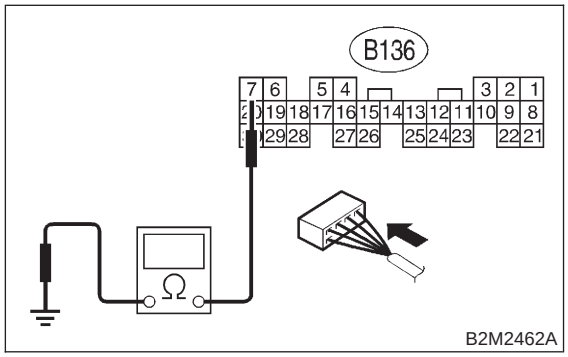
- **WIRING DIAGRAM:**



10CB1 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 7 — Chassis ground:

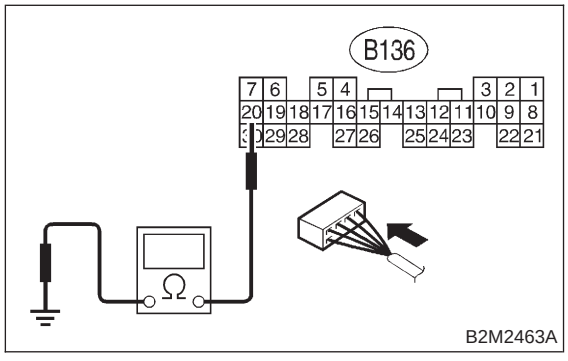


CHECK : ***Is the resistance more than 10 Ω?***
YES : Go to step **10CB2**.
NO : Repair ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.

10CB2 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 20 — Chassis ground:

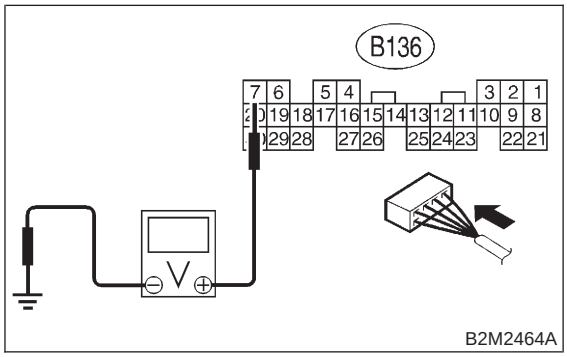


CHECK : ***Is the resistance more than 10 Ω?***
YES : Go to step **10CB3**.
NO : Repair ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.

10CB3 : CHECK OUTPUT SIGNAL FOR ECM.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 7 (+) — Chassis ground (−):

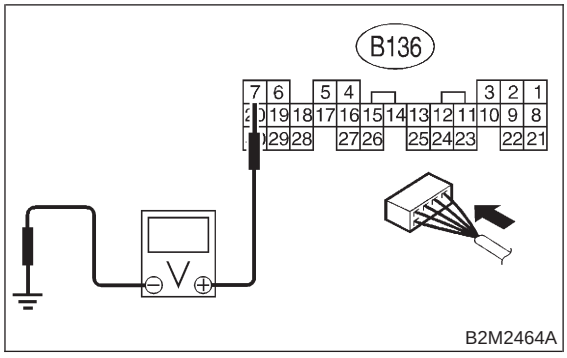


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10CB4**.
NO : Go to step **10CB5**.

10CB4 : CHECK OUTPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 7 (+) — Chassis ground (−):

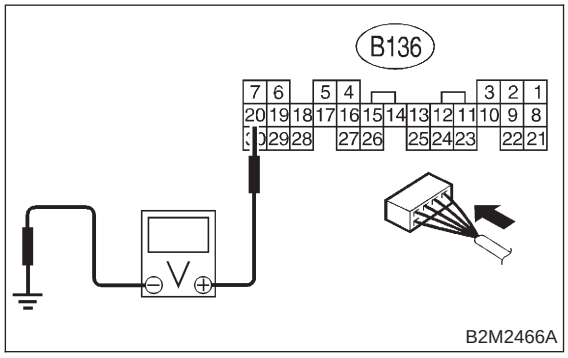


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Repair poor contact in ECM connector.

10CB5 : CHECK OUTPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 20 (+) — Chassis ground (−):

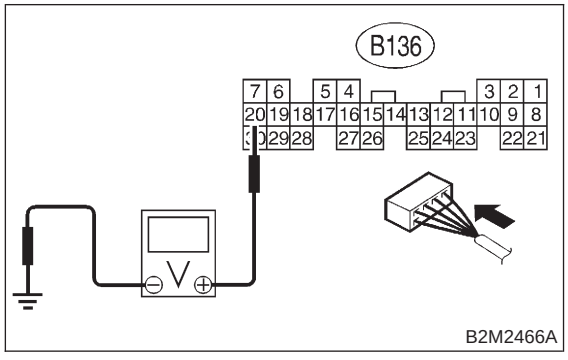


CHECK : ***Is the voltage more than 4.95 V?***
YES : Go to step **10CB6**.
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W7A0].>

10CB6 : CHECK OUTPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 20 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Repair poor contact in ECM connector.

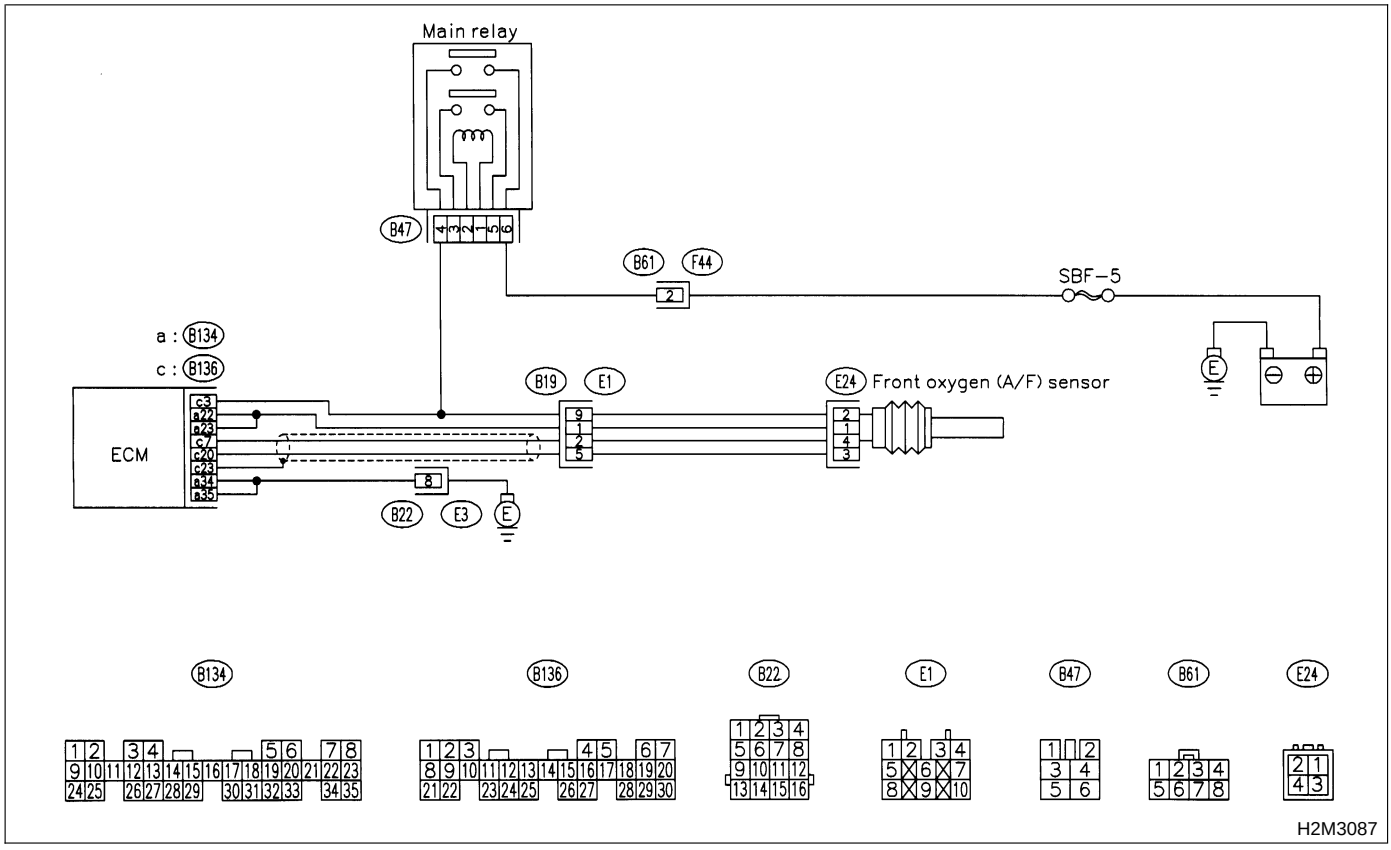
MEMO:

CC: DTC P1132 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CC1 :	CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1132 and P0141 at the same time?***

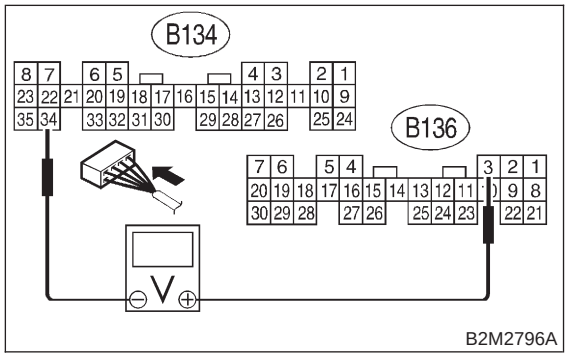
YES : Go to step **10CC2**.

NO : Go to step **10CC5**.

10CC2 : CHECK POWER SUPPLY CIRCUIT OF ECM.

1) Disconnect connectors from ECM.
2) Turn ignition switch to ON.
3) Measure power supply voltage between ECM connector terminals.

Connector & terminal
(B136) No. 3 (+) — (B134) No. 34 (−):

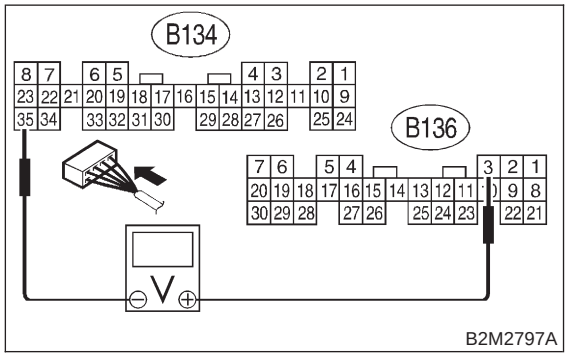


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10CC3**.
NO : Repair open or ground short circuit in harness of power supply circuit.

10CC3 : CHECK POWER SUPPLY CIRCUIT OF ECM.

Measure power supply voltage between ECM connector terminals.

Connector & terminal
(B136) No. 3 (+) — (B136) No. 35 (−):

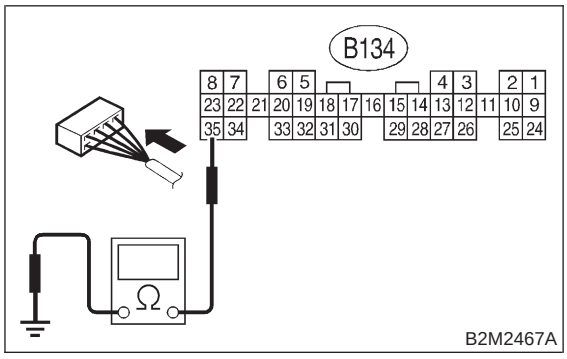


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10CC4**.
NO : Repair open or ground short circuit in harness of power supply circuit.

10CC4 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B134) No. 35 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10CC6**.
NO : Go to step **10CC5**.

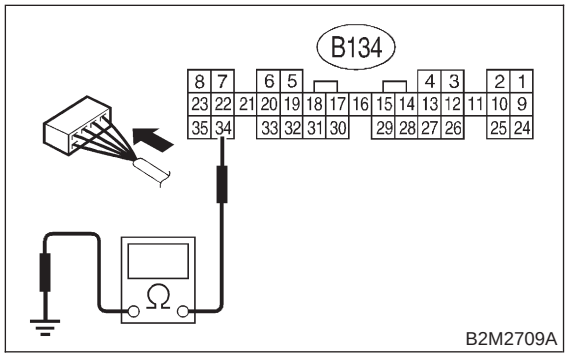
10CC5 : CHECK GROUND CIRCUIT OF ECM.

1) Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

2) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B134) No. 34 — Chassis ground:



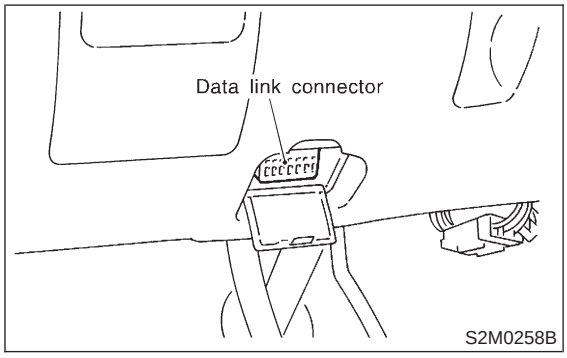
CHECK : ***Is there resistance less than 5 Ω?***
YES : Go to step **10CC6**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector

Poor contact in coupling connector (B22)

10CC6 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine
5) Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
- Subaru Select Monitor

For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
- OBD-II scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 0.2 A?***
YES : Repair poor contact in connector.

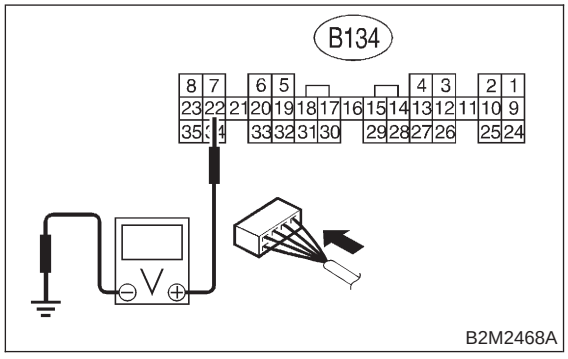
NOTE:
In this case, repair the following:
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in ECM connector

NO : Go to step **10CC7**.

10CC7 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start and idle the engine.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):

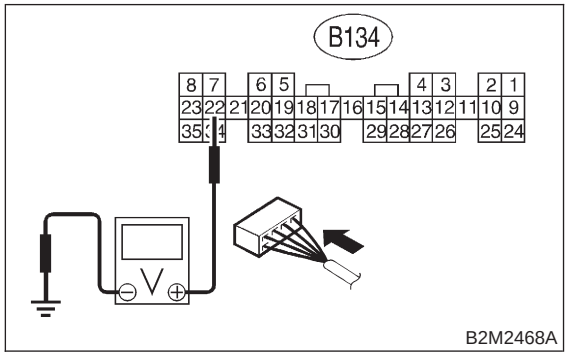


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **10CC9**.
NO : Go to step **10CC8**.

10CC8 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):

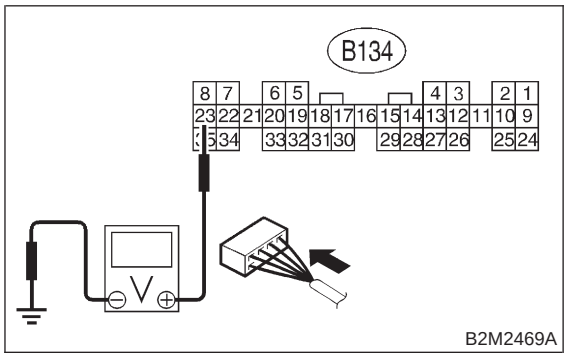


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10CC9**.

10CC9 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

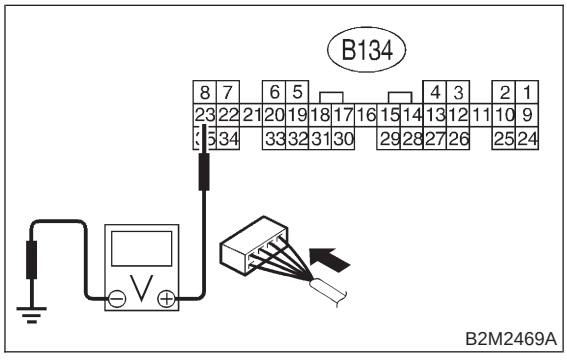


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **10CC11**.
NO : Go to step **10CC10**.

10CC10 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

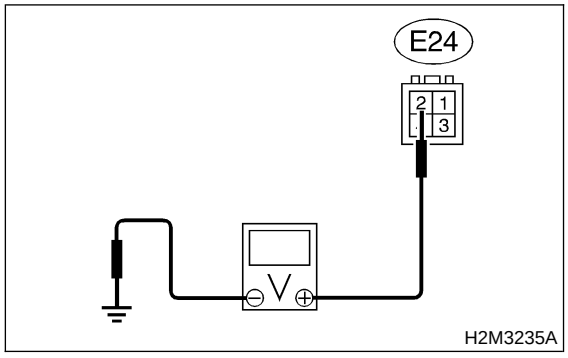


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10CC11**.

10CC11 : CHECK POWER SUPPLY TO FRONT OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from front oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between front oxygen sensor connector and engine ground.

Connector & terminal
(E24) No. 2 (+) — Engine ground (−):



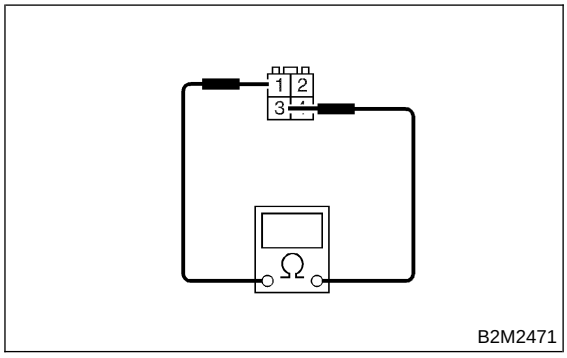
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CC12**.
NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and coupling connector (E1)
- Open circuit in harness between coupling connector (E1) and front oxygen (A/F) sensor connector
- Poor contact in front oxygen sensor connector
- Poor contact in main relay connector
- Poor contact in coupling connector (E1)

10CC12 : CHECK FRONT OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between front oxygen sensor connector terminals.

Terminals
No. 3 — No. 1:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between front oxygen (A/F) sensor and coupling connector (E1)
- Open or ground short circuit in harness between coupling connector (E1) and ECM connector
- Poor contact in front oxygen sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (E1)

NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W7A0].>

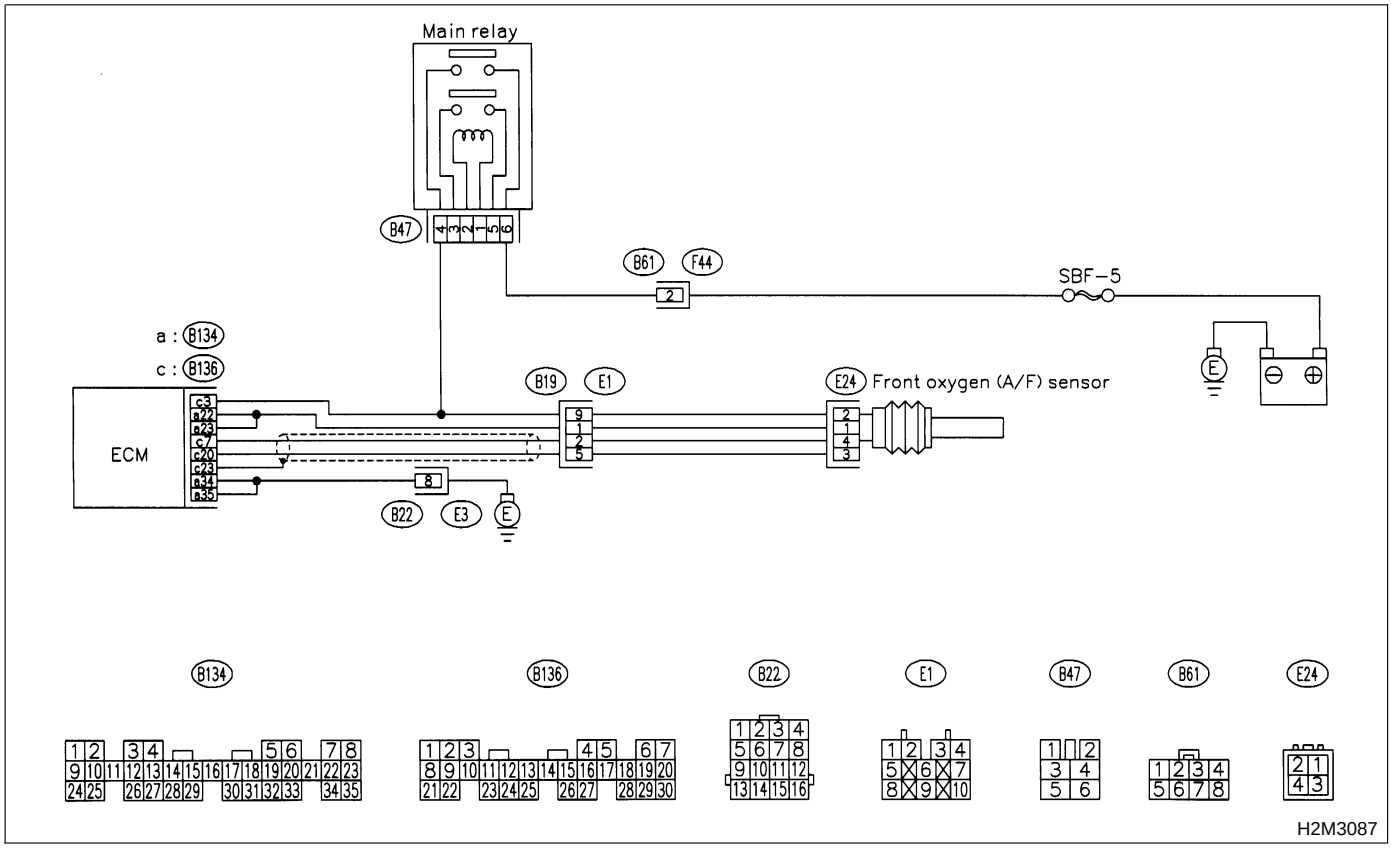
MEMO:

CD: DTC P1133 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

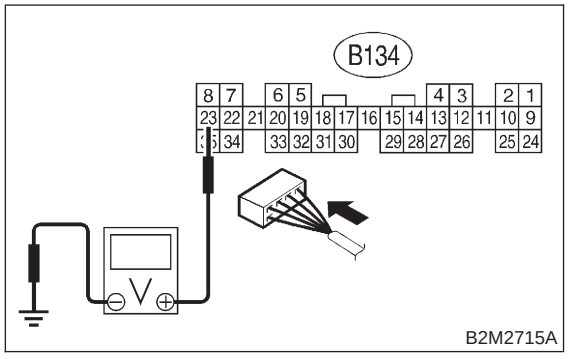
- **WIRING DIAGRAM:**



10CD1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

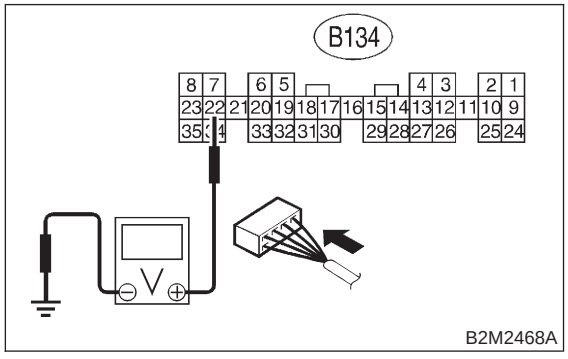


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10CD3**.
NO : Go to step **10CD2**.

10CD2 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

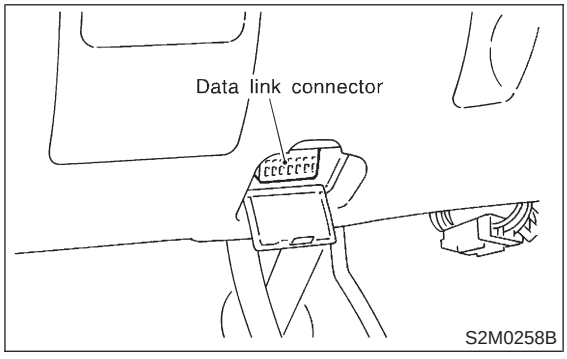
Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10CD3**.
NO : Go to step **10CD4**.

10CD3 : CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT.

1) Turn ignition switch to OFF.
2) Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.
3) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



4) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
5) Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or the OBD-II general scan tool.

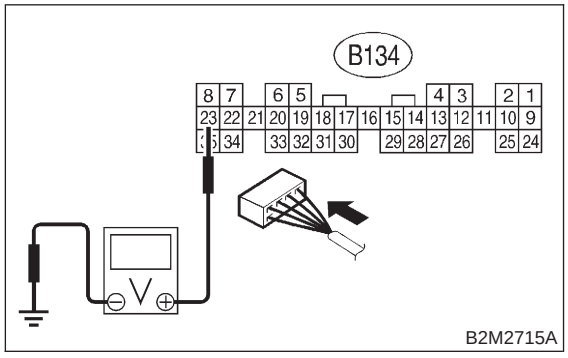
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 2.3 A?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : END

10CD4 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

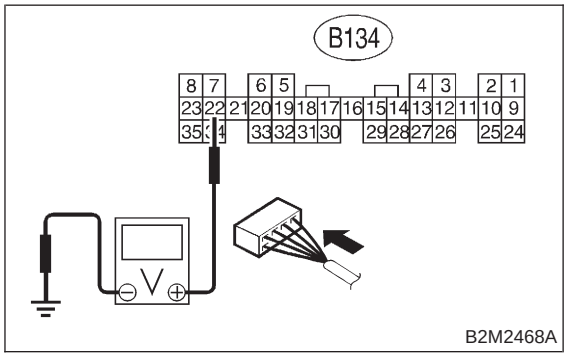
YES : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.

NO : Go to step **10CD5**.

10CD5 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.

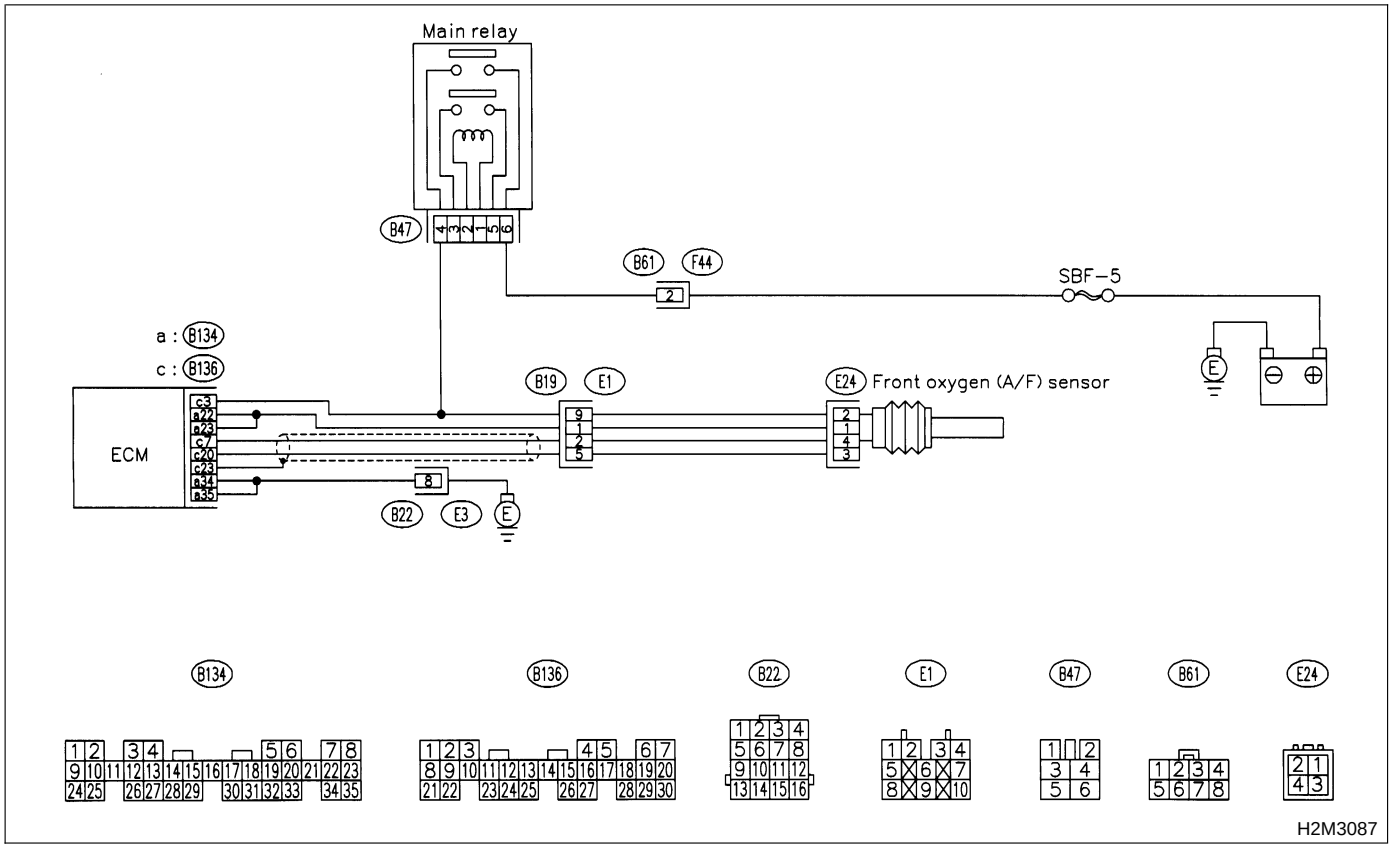
NO : END

CE: DTC P1134 — FRONT OXYGEN (A/F) SENSOR MICRO-COMPUTER PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CE1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1134?***

YES : Replace ECM. <Ref. to 2-7 [W15A0].>

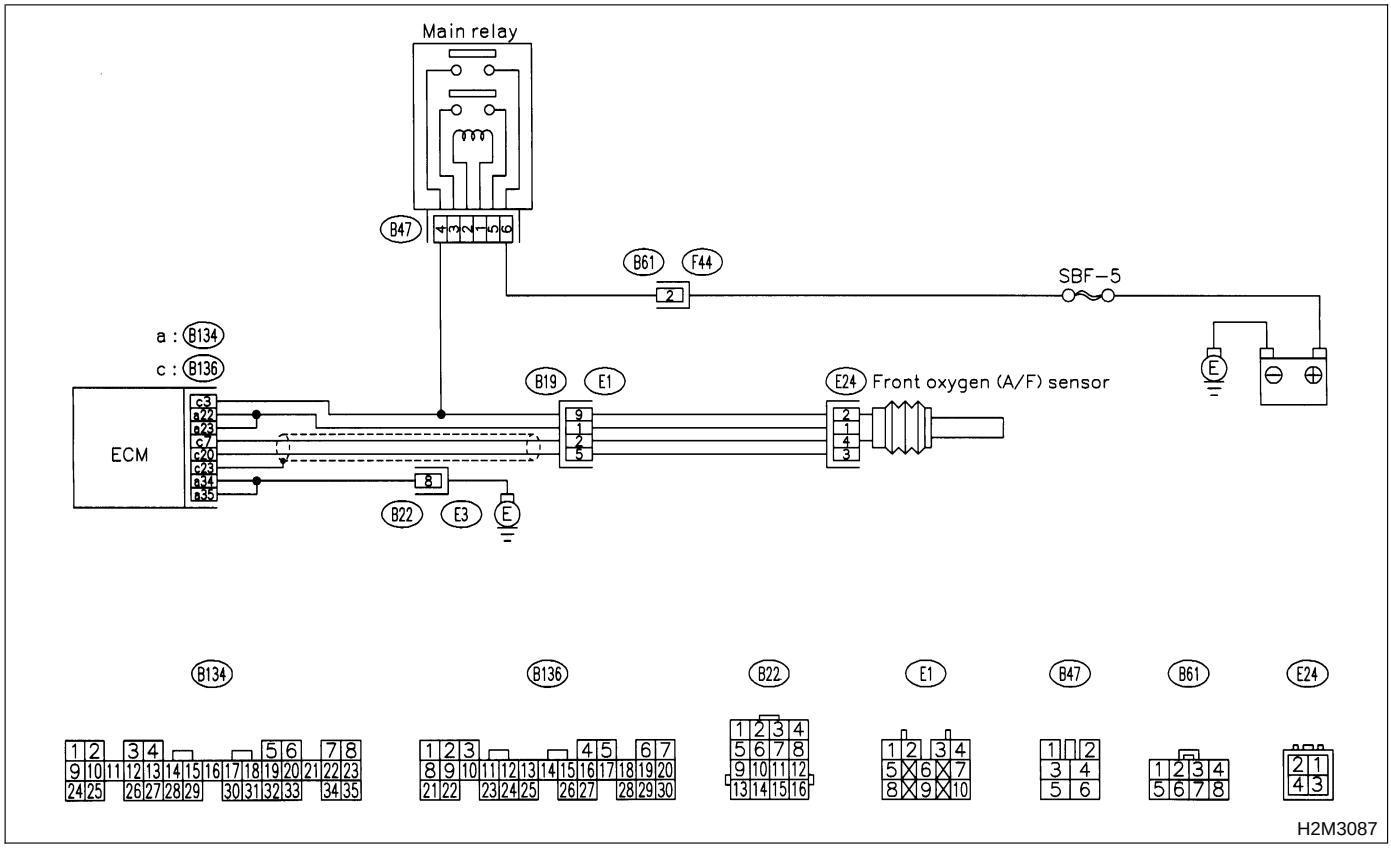
NO : It is not necessary to inspect DTC P1134.

CF: DTC P1139 — FRONT OXYGEN (A/F) SENSOR #1 HEATER CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

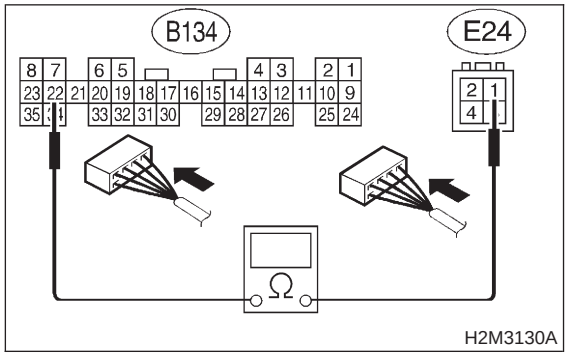
- **WIRING DIAGRAM:**



10CF1 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

1) Start engine, and warm-up the engine.
2) Turn ignition switch to OFF.
3) Disconnect connectors from ECM and front oxygen (A/F) sensor.
4) Measure resistance of harness between ECM and front oxygen (A/F) sensor connector.

Connector & terminal
(B134) No. 22 — (E24) No. 1:

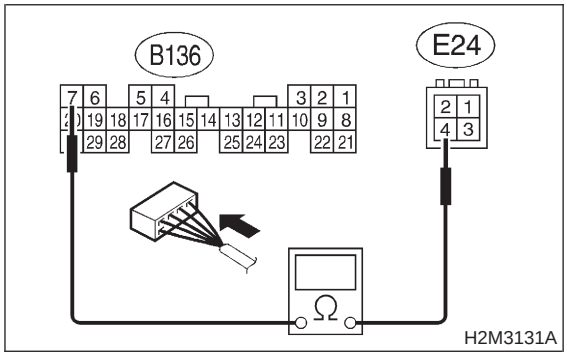


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CF2**.
NO : Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.

10CF2 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

Measure resistance of harness between ECM and front oxygen (A/F) sensor connector.

Connector & terminal
(B136) No. 7 — (E24) No. 4:

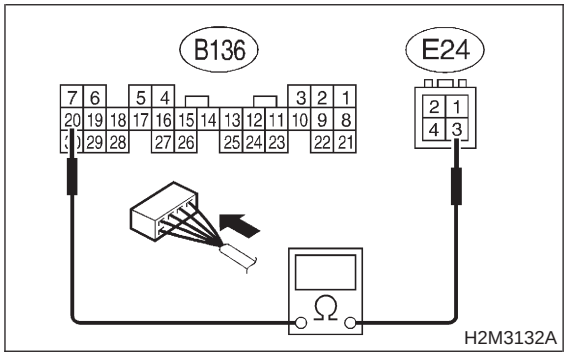


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CF3**.
NO : Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.

10CF3 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

Measure resistance of harness between ECM and front oxygen (A/F) sensor connector.

Connector & terminal
(B136) No. 20 — (E24) No. 3:

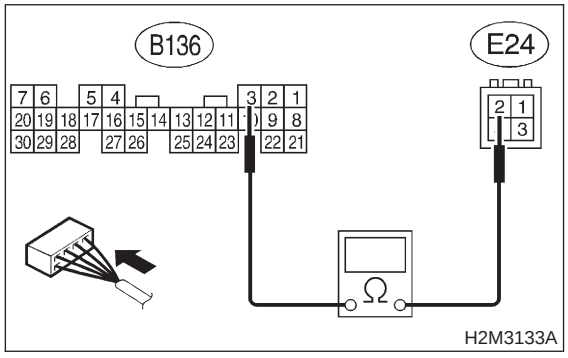


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CF4**.
NO : Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.

10CF4 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

Measure resistance of harness between ECM and front oxygen (A/F) sensor connector.

Connector & terminal
(B136) No. 3 — (E24) No. 2:

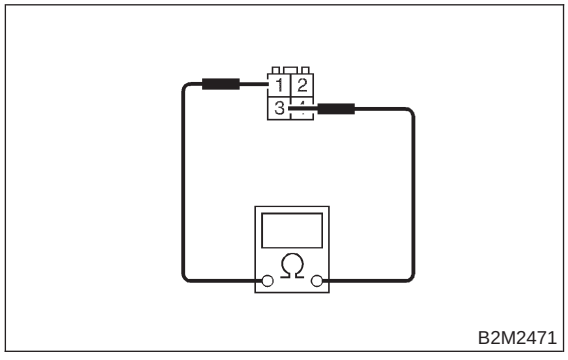


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CF5**.
NO : Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.

10CF5 : CHECK FRONT OXYGEN (A/F) SENSOR.

Measure resistance between front oxygen (A/F) sensor connector terminals.

Terminals
No. 3 — No. 1:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10CF6**.
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W7A0].>

10CF6 : CHECK POOR CONTACT.

Check poor contact in ECM and front oxygen (A/F) sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM or front oxygen (A/F) sensor connector?***
YES : Repair poor contact in ECM or front oxygen (A/F) sensor connector.
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W7A0].>

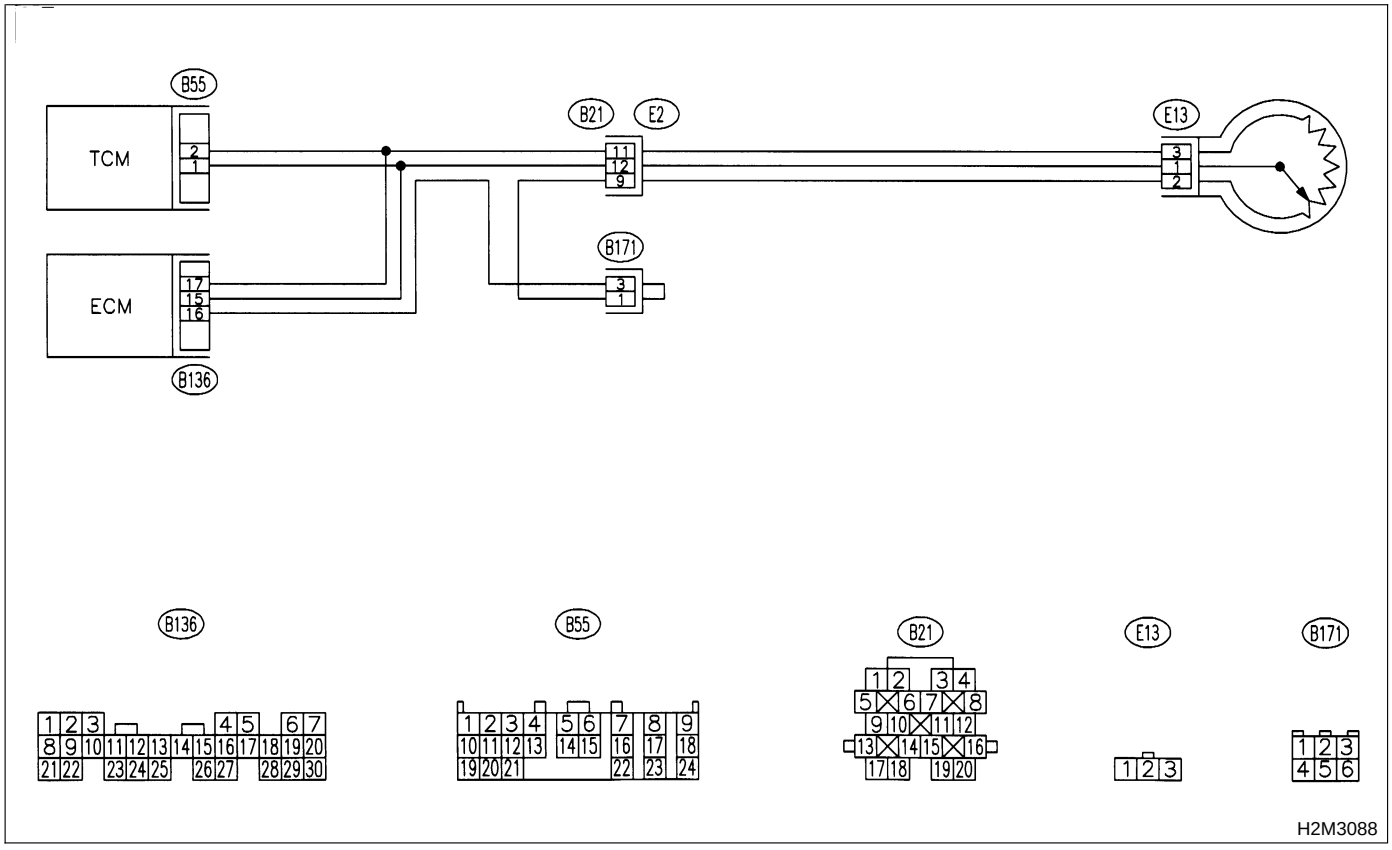
MEMO:

CG: DTC P1142 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CG1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0122 or P0123?***

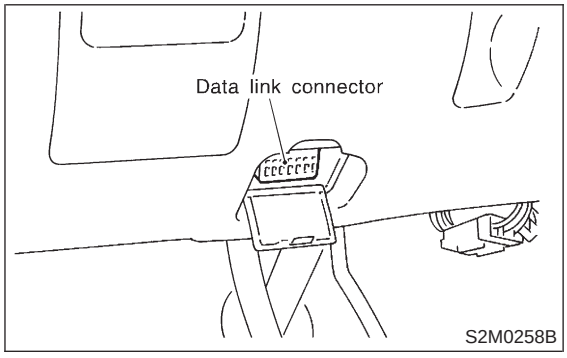
YES : Inspect DTC P0106, P0107, P0108, P0122 or P0123 using “12. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1142.

NO : Go to step **10CG2**.

10CG2 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than 0 kPa (0 mmHg, 0 inHg)?***

YES : Replace intake manifold pressure sensor. <Ref. to 2-7 [W20A0].>

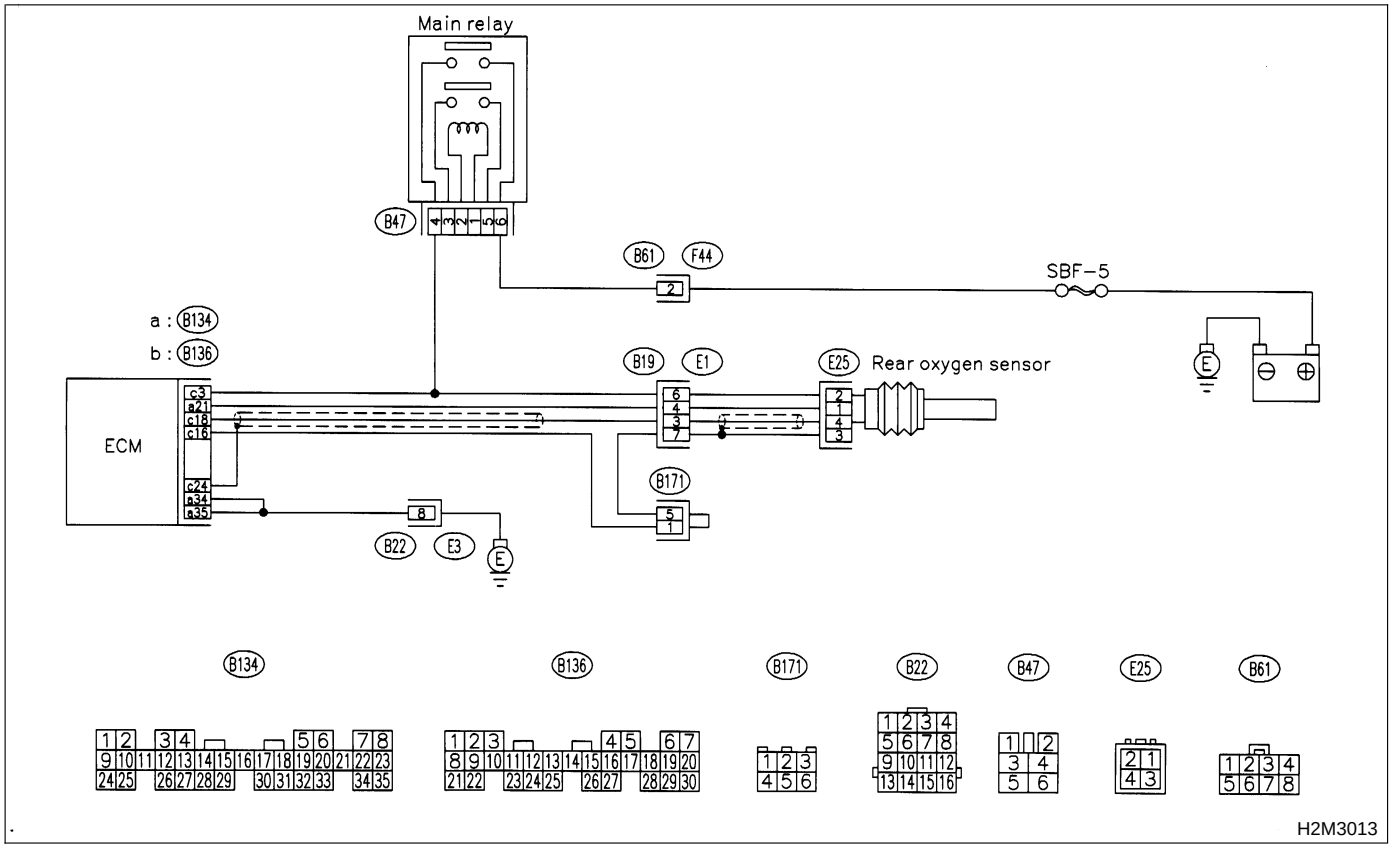
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A1].>

CH: DTC P1151 — REAR OXYGEN SENSOR HEATER CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

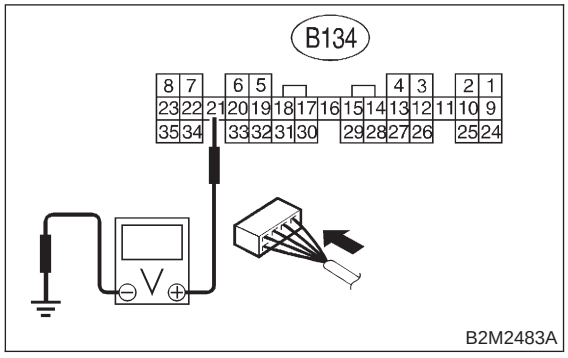
- **WIRING DIAGRAM:**



10CH1 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10CH2**.
NO : Go to step **10CH3**.

10CH2 : CHECK DTC P1151 ON DISPLAY.

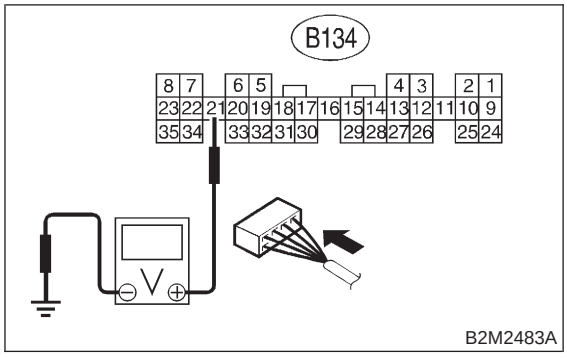
1) Turn ignition switch to OFF.
2) Repair battery short circuit in harness between ECM and rear oxygen sensor connector.
3) Operate the INSPECTION MODE. <Ref. to 2-7 [T3E1].>

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1151?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : END

10CH3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

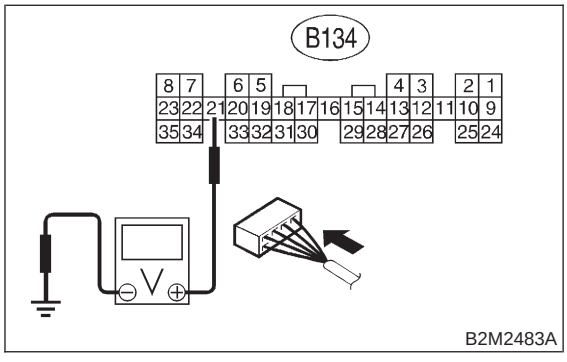


CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10CH4**.

10CH4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

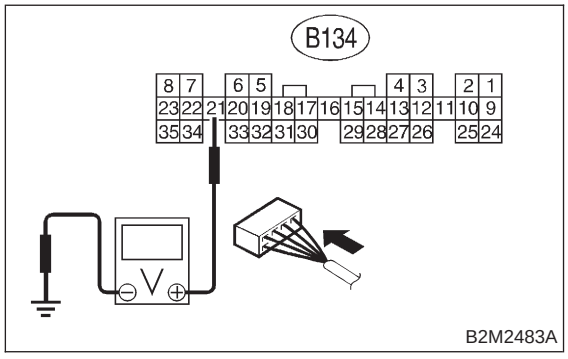


CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of rear oxygen sensor while monitoring the value with voltage meter?***
YES : Repair poor contact in rear oxygen sensor connector.
NO : Go to step **10CH5**.

10CH5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 8 V by shaking coupling connector (E1) while monitoring the value with voltage meter?***

YES : Repair poor contact in coupling connector.

NO : Even if MIL lights up, the circuit has returned to normal condition at this time.

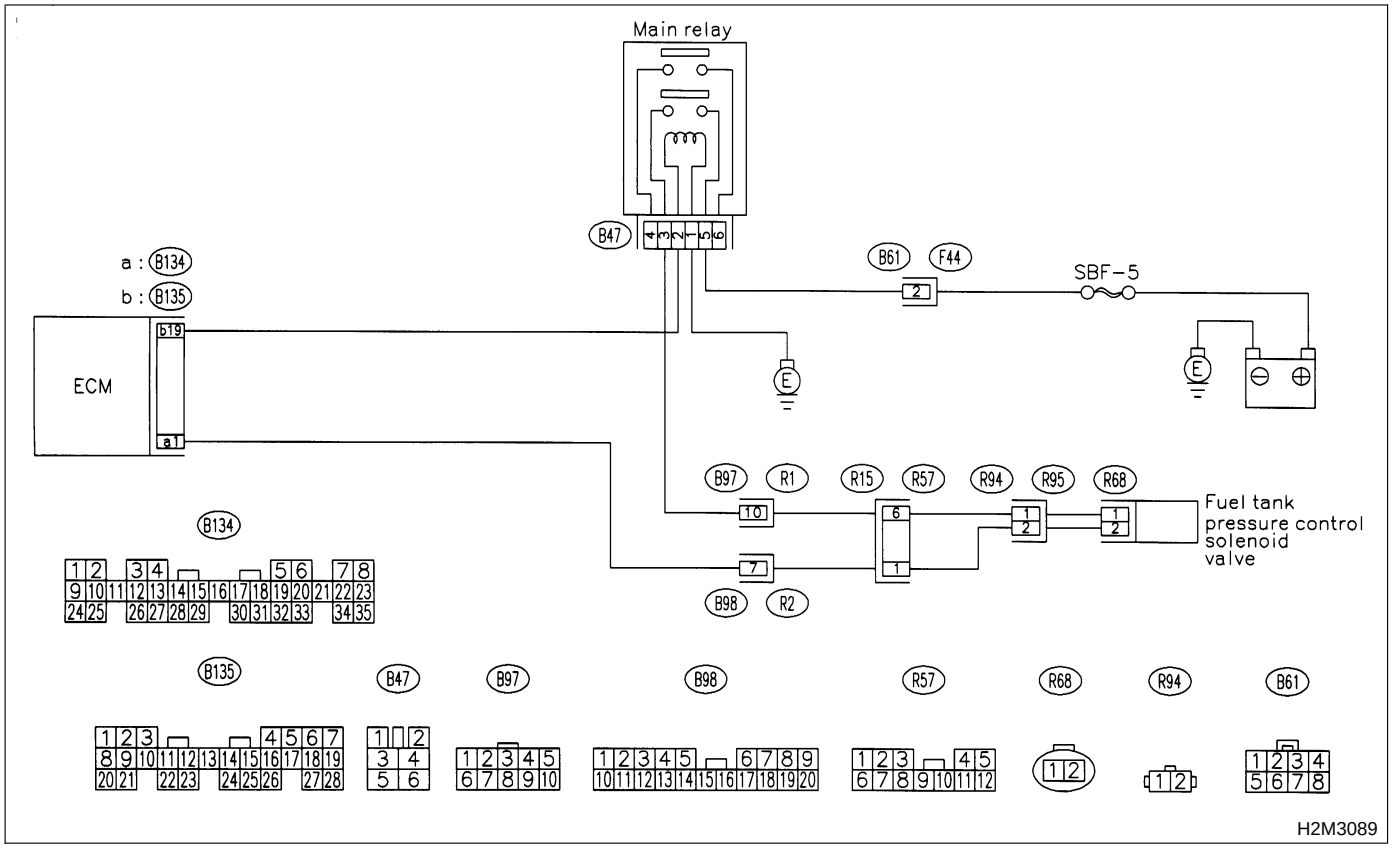
MEMO:

CI: DTC P1400 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

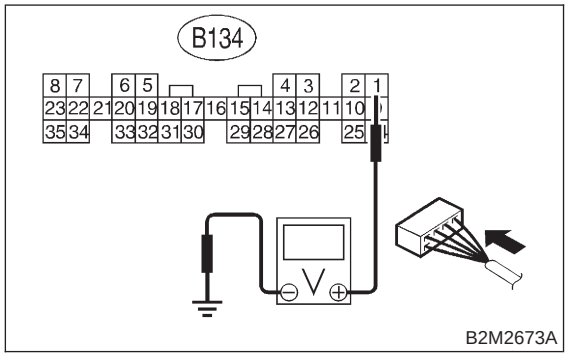
- **WIRING DIAGRAM:**



10CI1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CI2**.
NO : Go to step **10CI3**.

10CI2 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

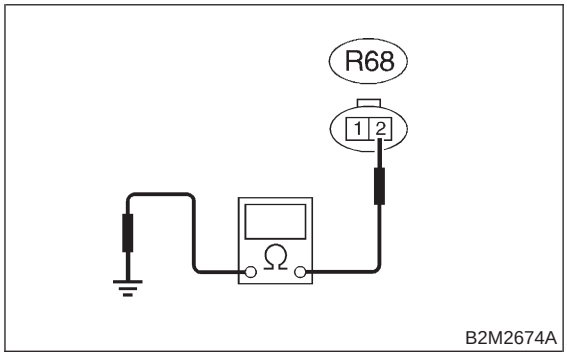
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10CI3 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from fuel tank pressure control solenoid valve and ECM.
3) Measure resistance of harness between fuel tank pressure control solenoid valve connector and chassis ground.

Connector & terminal
(R68) No. 2 — Chassis ground:

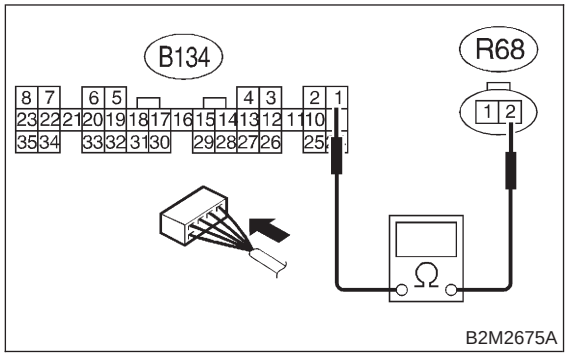


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and fuel tank pressure control solenoid valve connector.
NO : Go to step **10CI4**.

10CI4 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and fuel tank pressure control solenoid valve connector.

Connector & terminal
(B134) No. 1 — (R68) No. 2:



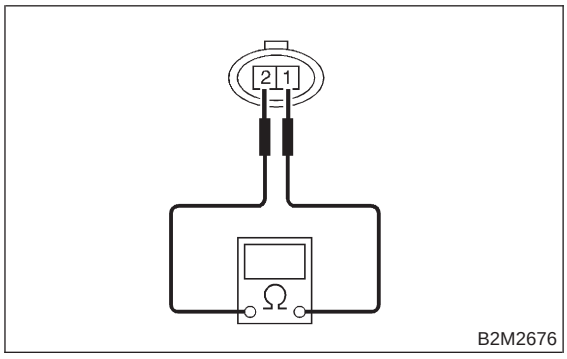
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CI5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and fuel tank pressure control solenoid valve connector
● Poor contact in coupling connectors (B98), (R94) and (R57)

10CI5 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:

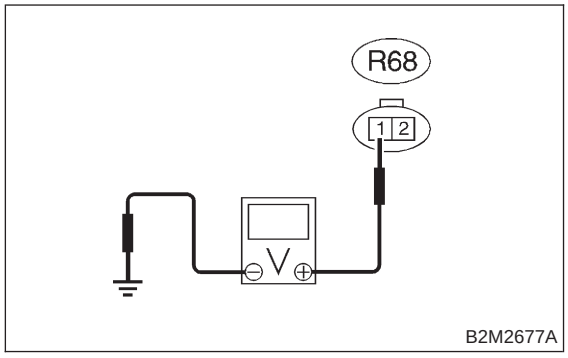


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **10CI6**.
NO : Replace fuel tank pressure control solenoid valve. <Ref. to 2-1 [W6A0].>

10CI6 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between fuel tank pressure control solenoid valve and chassis ground.

Connector & terminal
(R68) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CI7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between main relay and fuel tank pressure control solenoid valve connector
● Poor contact in coupling connectors (B97), (R94) and (R57)
● Poor contact in main relay connector

10CI7 : CHECK POOR CONTACT.

Check poor contact in fuel tank pressure control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in fuel tank pressure control solenoid valve connector?***
YES : Repair poor contact in fuel tank pressure control solenoid valve connector.
NO : Contact with SOA service.

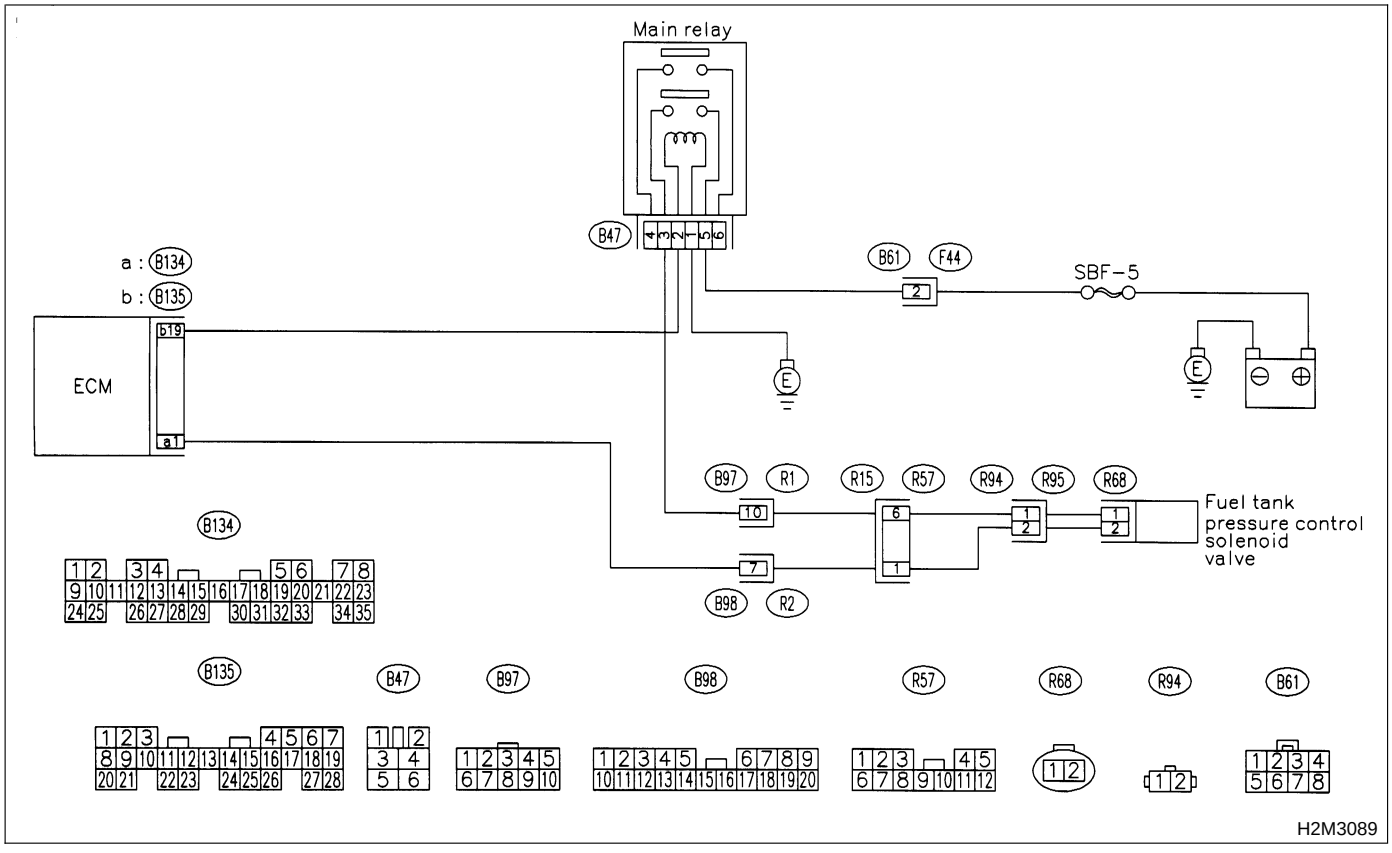
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

CJ: DTC P1420 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

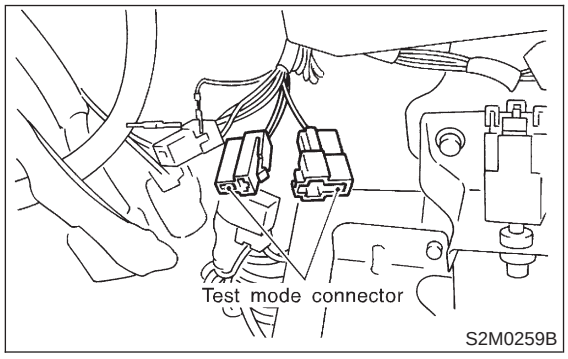
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CJ1 : CHECK OUTPUT SIGNAL FROM ECM.

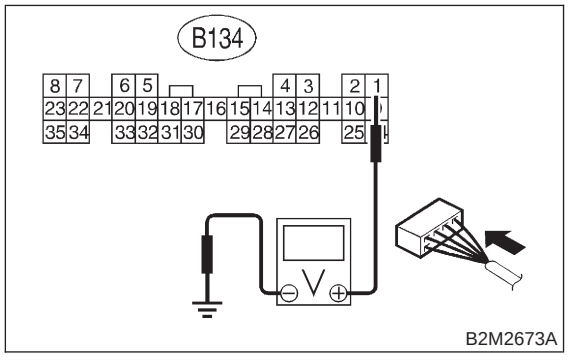
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Fuel tank pressure control solenoid valve operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):

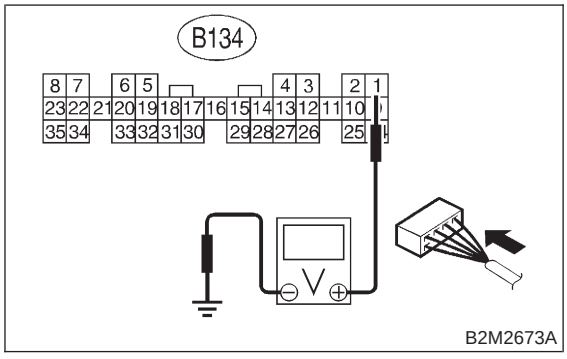


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Go to step **10CJ2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

10CJ2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CJ4**.
NO : Go to step **10CJ3**.

10CJ3 : CHECK POOR CONTACT.

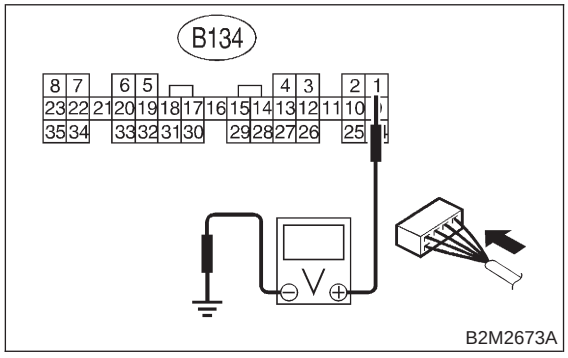
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

10CJ4 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel tank pressure control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):

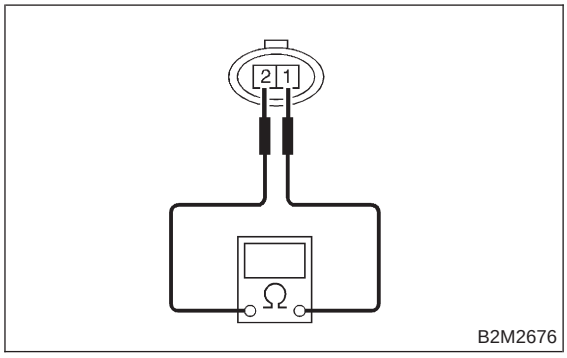


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel tank pressure control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **10CJ5**.

10CJ5 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace fuel tank pressure control solenoid valve <Ref. to 2-1 [W7A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **10CJ6**.

10CJ6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

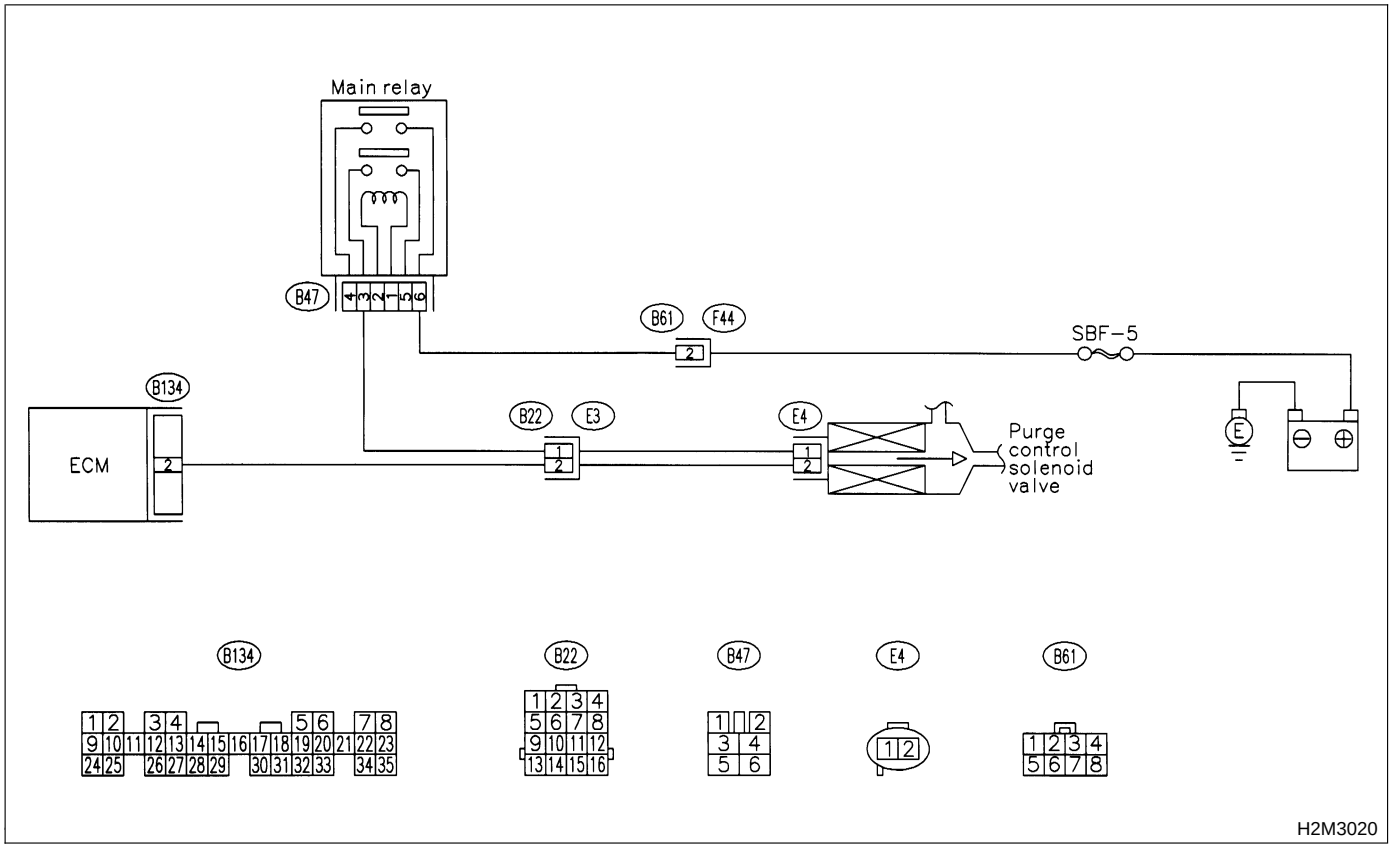
MEMO:

CK: DTC P1422 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

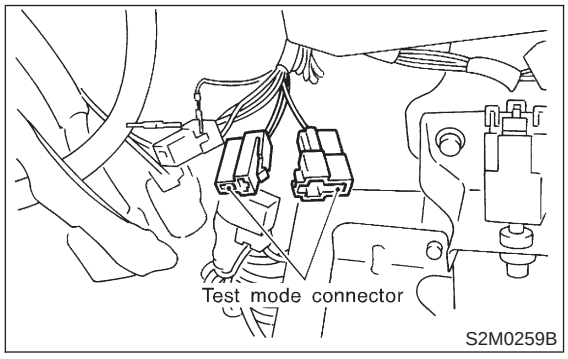
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CK1 : CHECK OUTPUT SIGNAL FROM ECM.

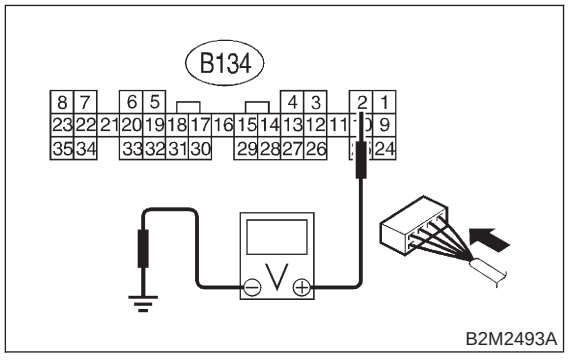
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Purge control solenoid valve operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):

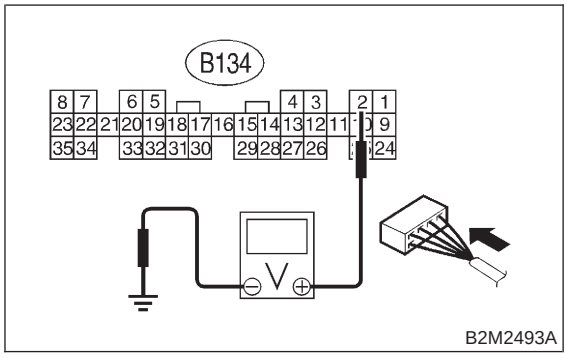


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Go to step **10CK2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

10CK2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CK4**.
NO : Go to step **10CK3**.

10CK3 : CHECK POOR CONTACT.

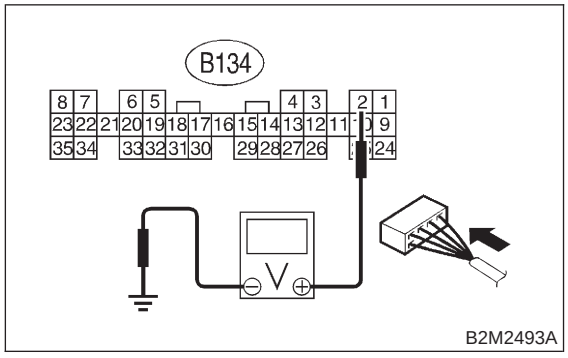
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

10CK4 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from purge control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):

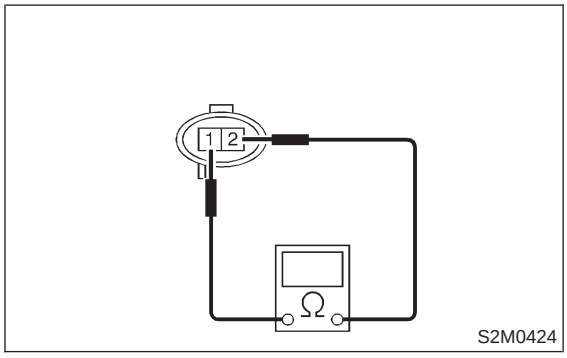


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **10CK5**.

10CK5 : CHECK PURGE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between purge control solenoid valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace purge control solenoid valve <Ref. to 2-1 [W4A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **10CK6**.

10CK6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

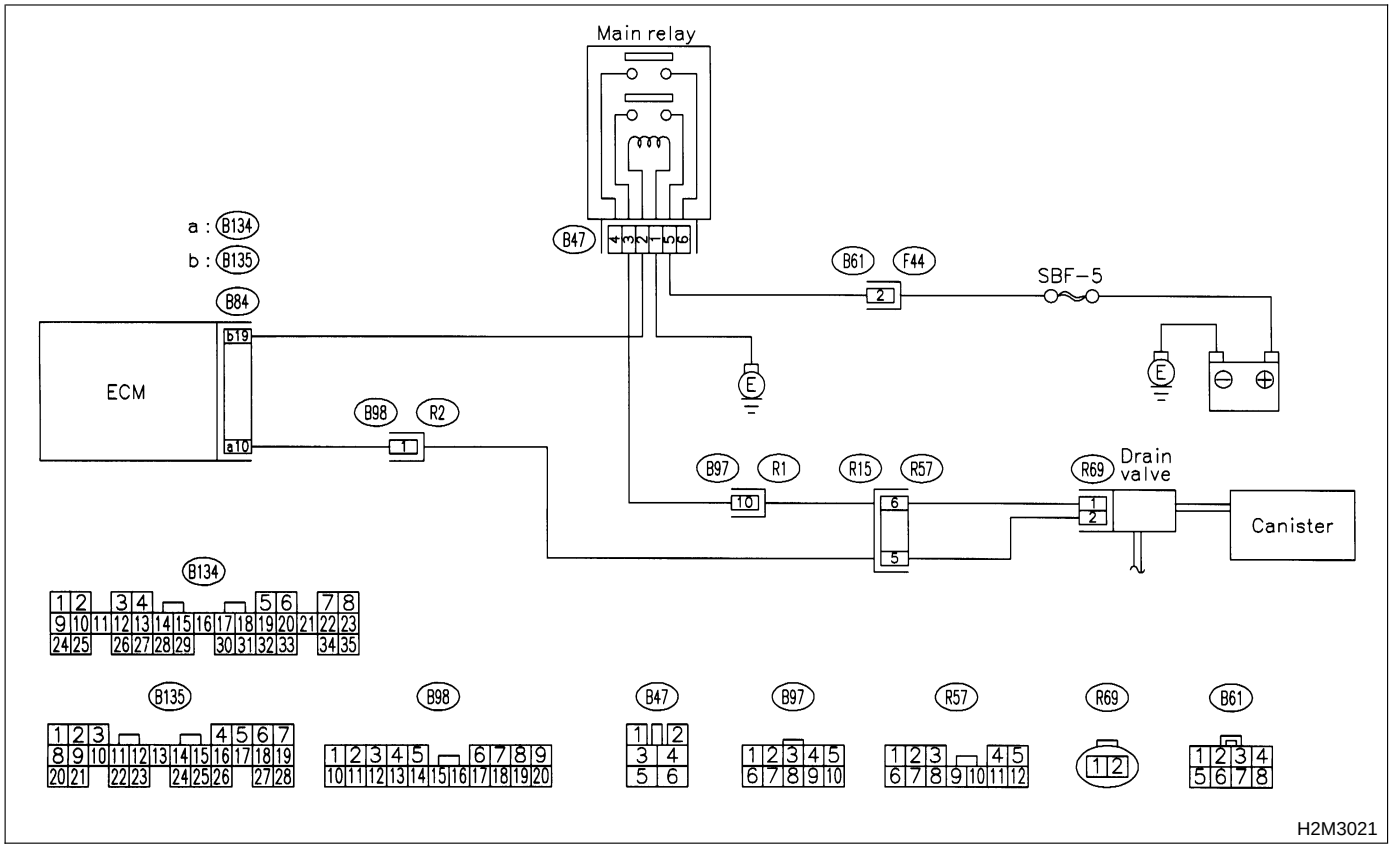
MEMO:

CL: DTC P1423 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

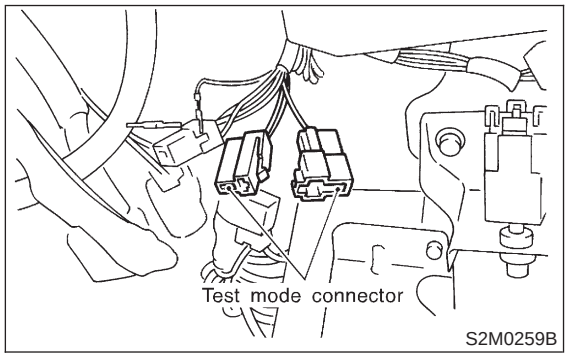
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CL1 : CHECK OUTPUT SIGNAL FROM ECM.

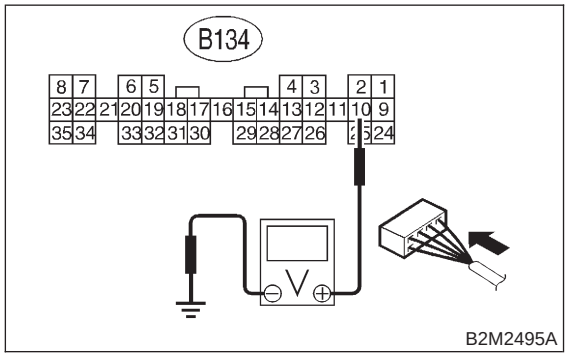
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Drain valve operation check can be excecuted using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):

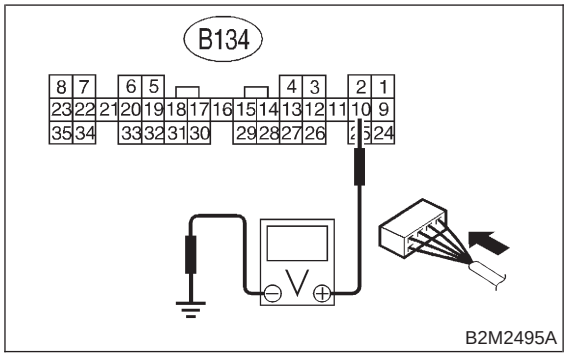


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Go to step **10CL2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

10CL2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CL4**.
NO : Go to step **10CL3**.

10CL3 : CHECK POOR CONTACT.

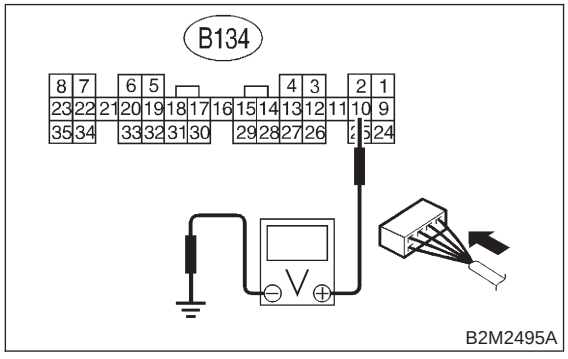
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

10CL4 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from drain valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):

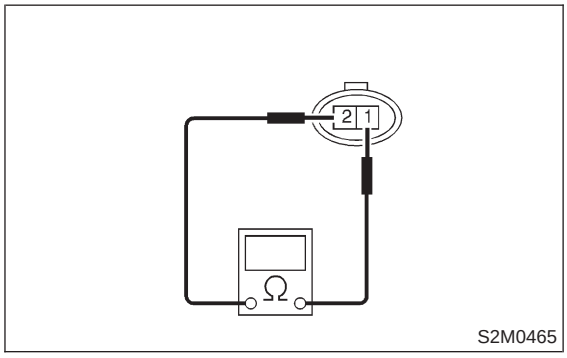


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and drain valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **10CL5**.

10CL5 : CHECK DRAIN VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between drain valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace drain valve <Ref. to 2-1 [W13A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **10CL6**.

10CL6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

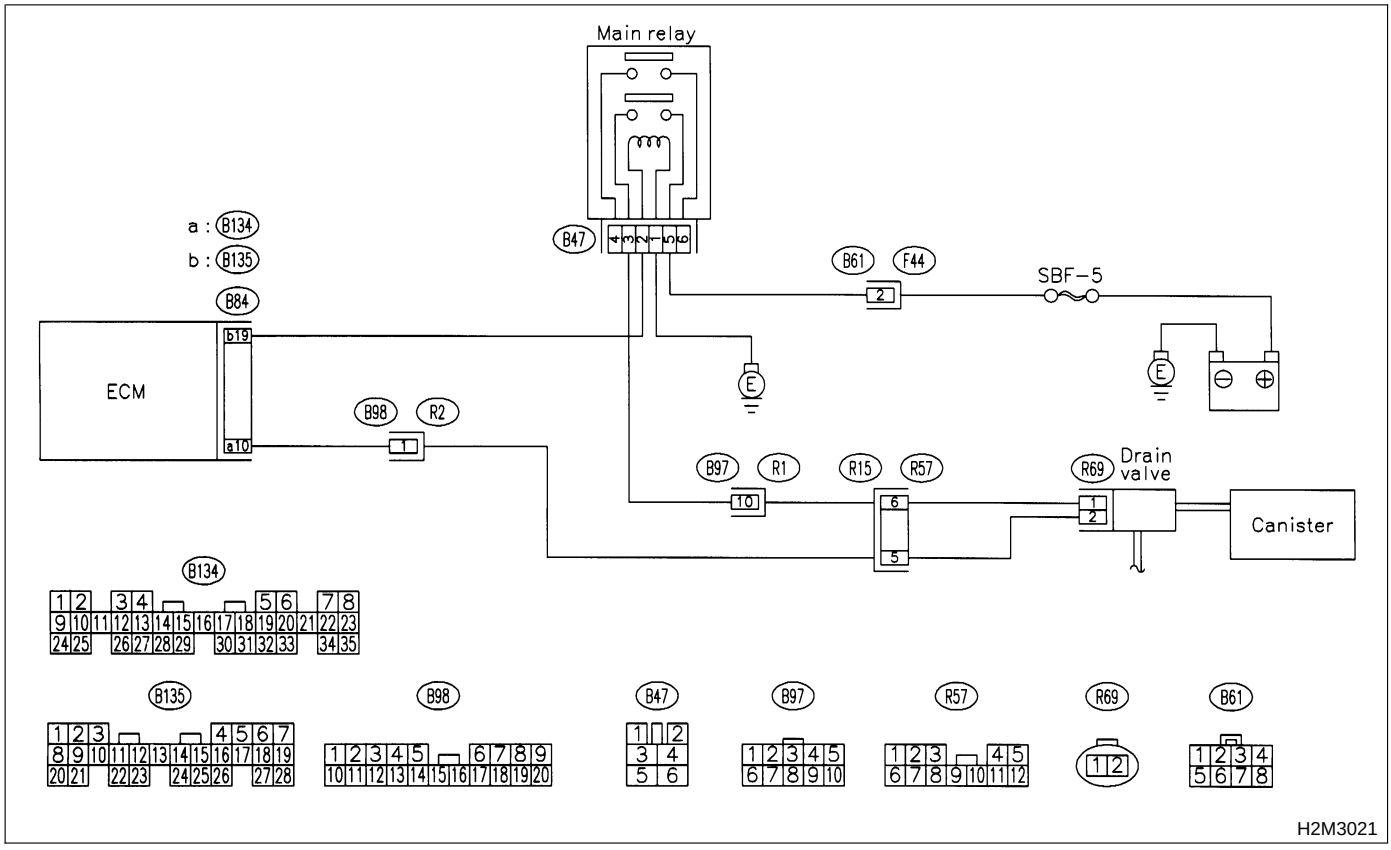
MEMO:

CM: DTC P1443 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL FUNCTION PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately after fault occurrence
- **TROUBLE SYMPTOM:**
  - Improper fuel supply

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CM1 : CHECK ANY OTHER DTC ON DISPLAY.

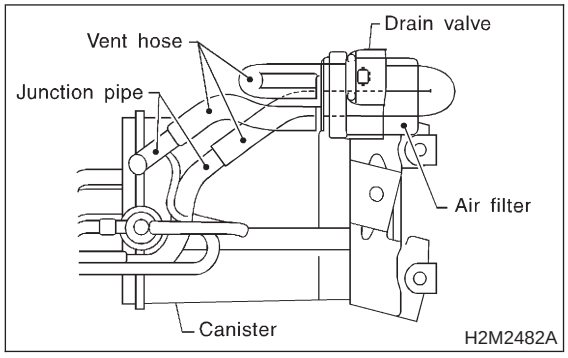
CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10CM2**.

10CM2 : CHECK VENT LINE HOSES.

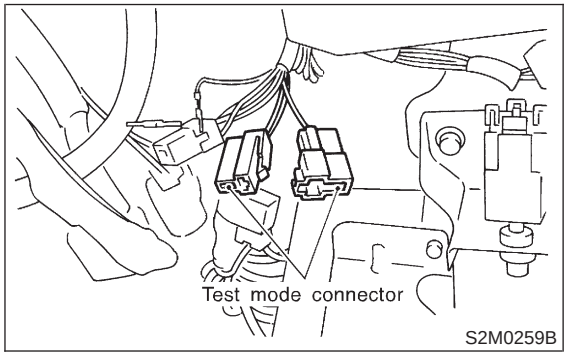
Check the following items.
- Clogging of vent hoses between canister and drain valve
- Clogging of vent hose between drain valve and air filter
- Clogging of vent hose between air filter and junction pipe
- Clogging of junction pipe
- Clogging of air filter



CHECK : ***Is there a fault in vent line?***
YES : Repair or replace the faulty part.
NO : Go to step **10CM3**.

10CM3 : CHECK DRAIN VALVE OPERATION.

1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.

NOTE:
Drain valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to the "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

CHECK : ***Does drain valve produce operating sound?***
YES : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

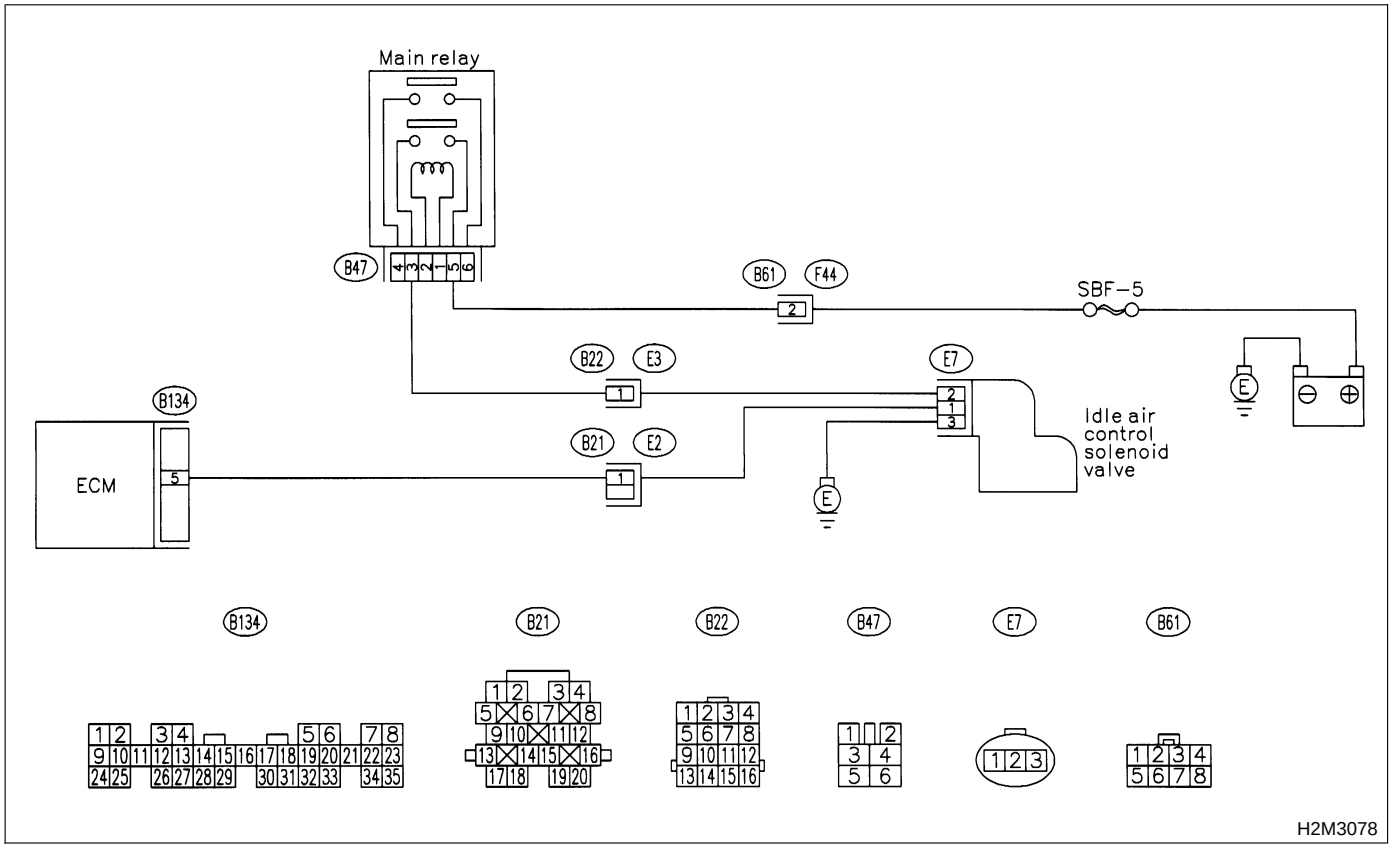
NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

CN: DTC P1505 — IDLE CONTROL SYSTEM CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

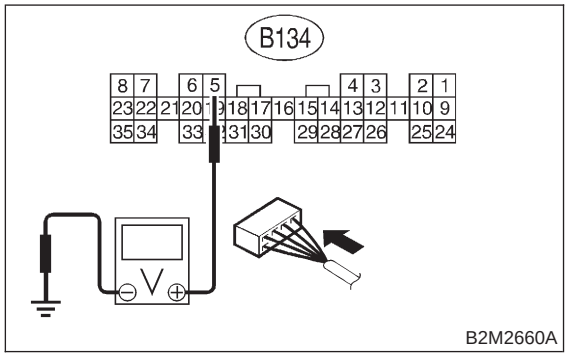
- **WIRING DIAGRAM:**



10CN1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 5 (+) — Chassis ground (−):

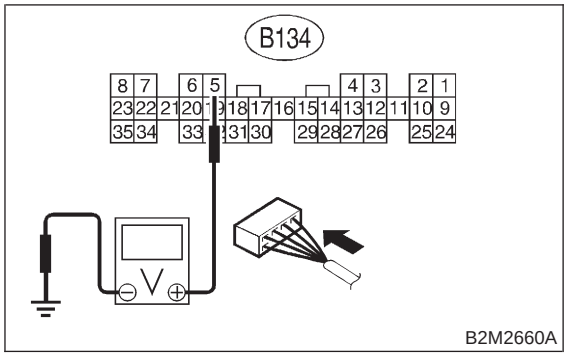


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CN2**.
NO : Go to step **10CN3**.

10CN2 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 5 (+) — Chassis ground (−):

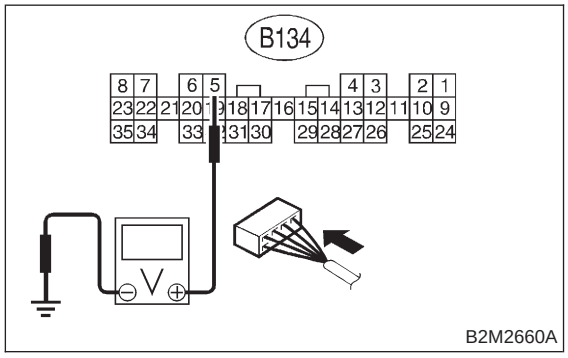


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Replace idle air control solenoid valve <Ref. to 2-7 [W12A1].> and ECM <Ref. to 2-7 [W15A0].>.

10CN3 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 5 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 10 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

NO : Contact with SOA service.

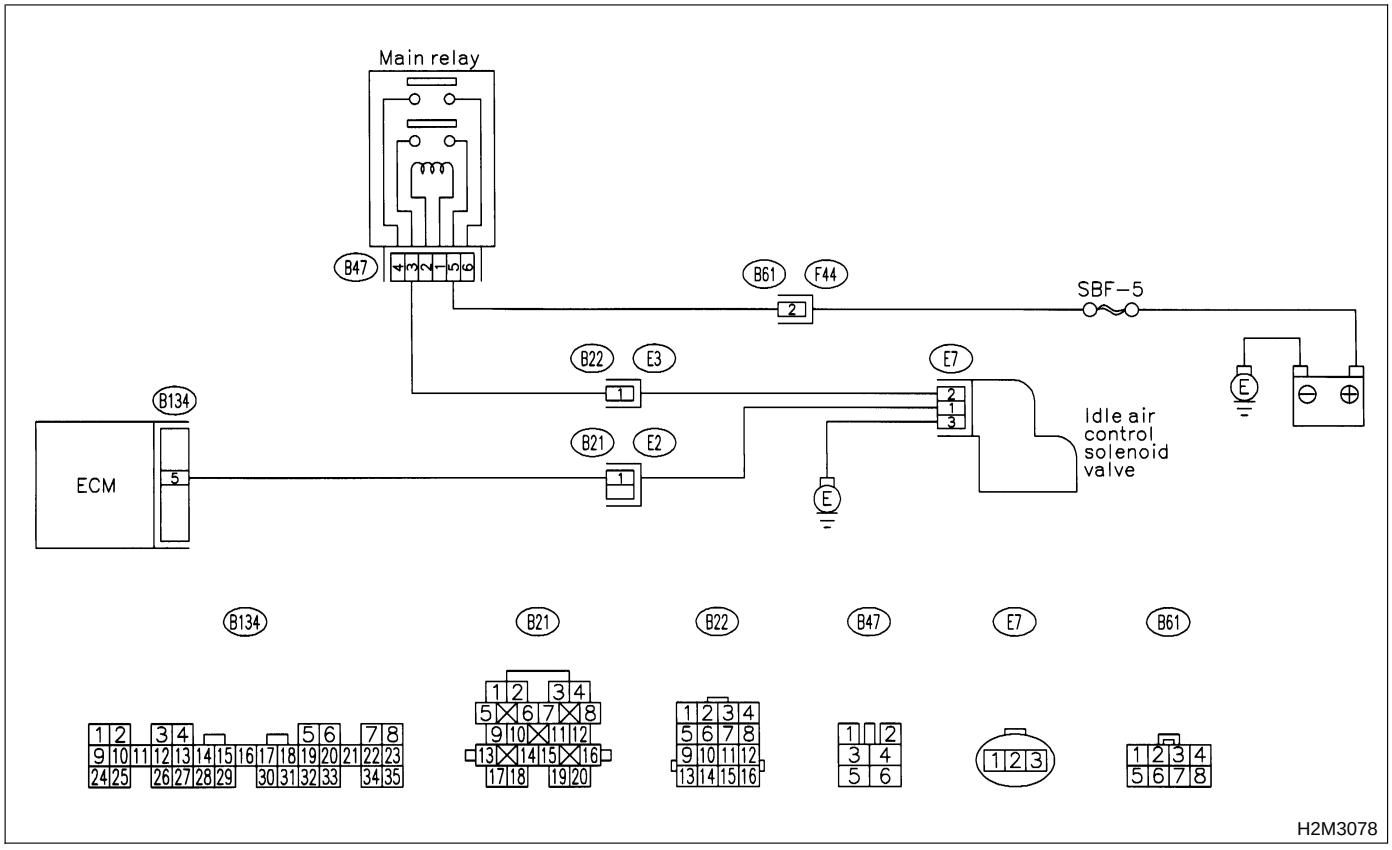
NOTE:
Insepction by DTM is required, because probable cause is deterioration of multiple parts.

CO: DTC P1507 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine keeps running at higher revolution than specified idling revolution.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CO1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0116 or P0117 or P0505 or P1505?***

YES : Inspect DTC P0116 or P0117 or P0505 or P1505 using “10. Diagnostics Chart with Trouble Code for 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1507.

NO : Go to step **10CO2**.

10CO2 : CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.
3) Check the following items.

- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Disconnections of vacuum hoses

CHECK : ***Is there a fault in air intake system?***

YES : Repair air suction and leaks.

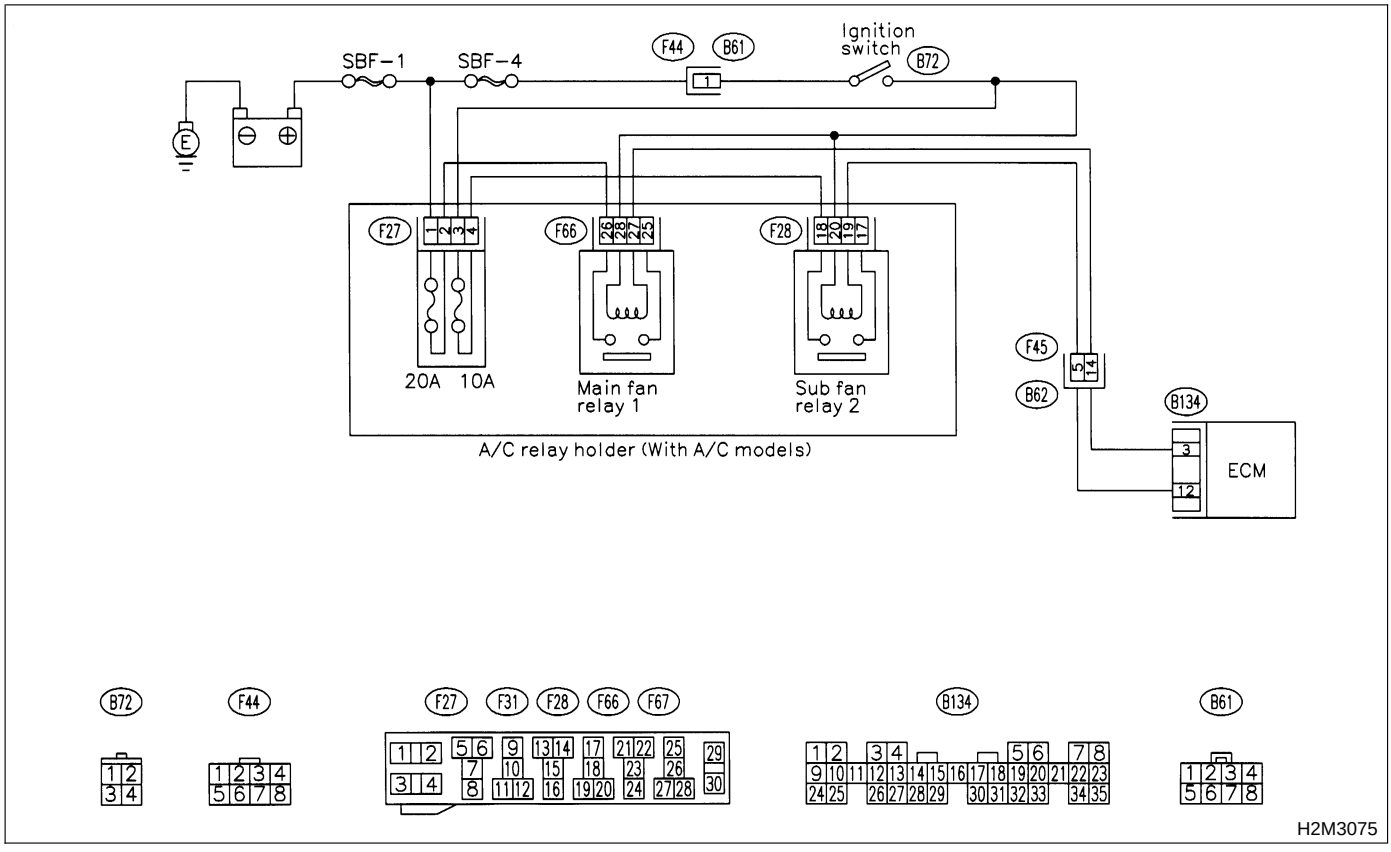
NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A1].>

CP: DTC P1520 — COOLING FAN RELAY 1 CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Radiator fan does not operate properly.
  - Overheating

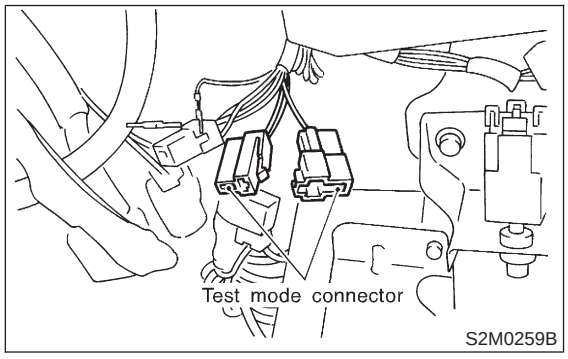
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CP1 : CHECK OUTPUT SIGNAL FROM ECM.

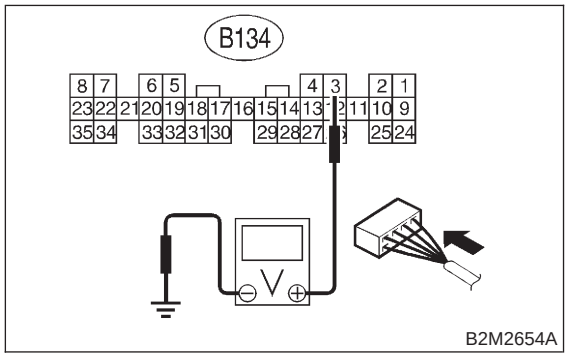
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Radiator fan relay operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):

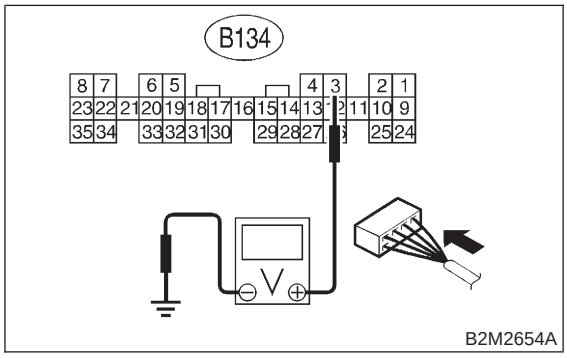


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.
NO : Go to step **10CP2**.

10CP2 : CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

1) Turn ignition switch to OFF.
2) Remove main fan relay 1 and sub fan relay 1. (with A/C models)
Remove main fan relay. (without A/C models)
3) Disconnect test mode connector.
4) Turn ignition switch to ON.
5) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in radiator fan relay 1 control circuit. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **10CP3**.

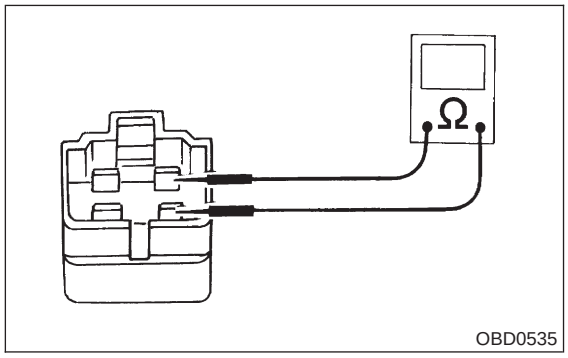
10CP3 : CHECK VEHICLE MODEL.

CHECK : ***Is the vehicle equipped with A/C?***
YES : Go to step **10CP4**.
NO : Go to step **10CP6**.

10CP4 : CHECK MAIN FAN RELAY 1.

1) Turn ignition switch to OFF.
2) Remove main fan relay 1.
3) Measure resistance between main fan relay 1 terminals.

Terminal
No. 1 — No. 3:

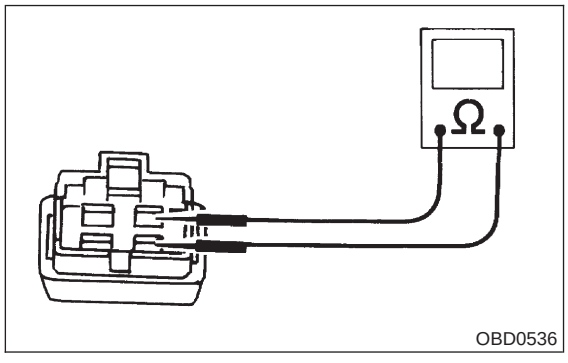


CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace main fan relay 1 and ECM <Ref. to 2-7 [W15A0].>
NO : Go to step **10CP5**.

10CP5 : CHECK SUB FAN RELAY 1.

1) Remove sub fan relay 1.
2) Measure resistance between sub fan relay 1 terminals.

Terminal
No. 1 — No. 3



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace sub fan relay 1 and ECM <Ref. to 2-7 [W15A0].>
NO : Go to step **10CP6**.

10CP6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

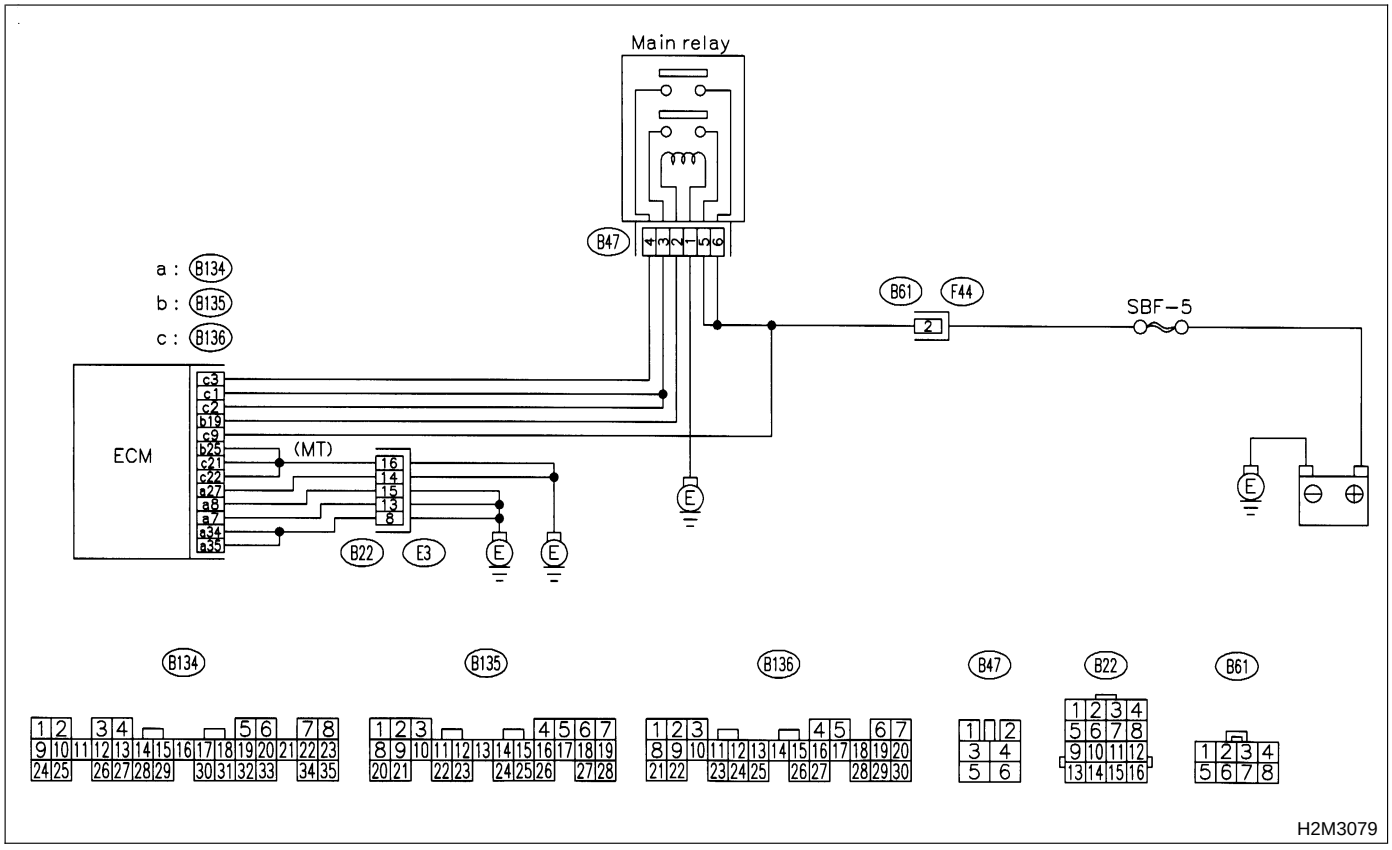
MEMO:

CQ: DTC P1560 — BACK-UP VOLTAGE CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

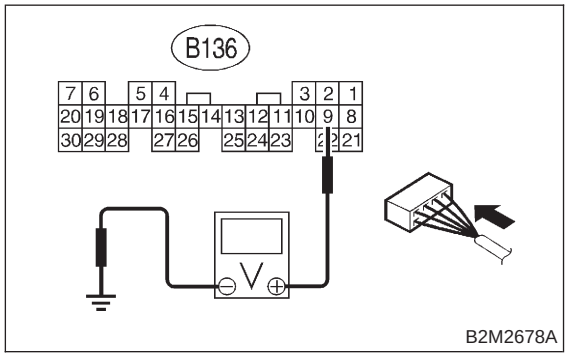
- **WIRING DIAGRAM:**



10CQ1 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to OFF.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 9 (+) — Chassis ground (−):

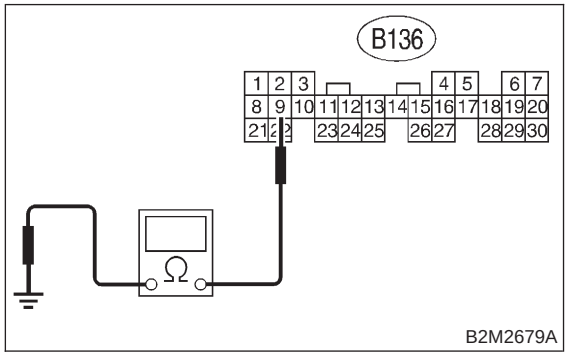


CHECK : ***Is the voltage more than 10 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10CQ2**.

10CQ2 : CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B136) No. 9 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM connector and battery terminal.
NO : Go to step **10CQ3**.

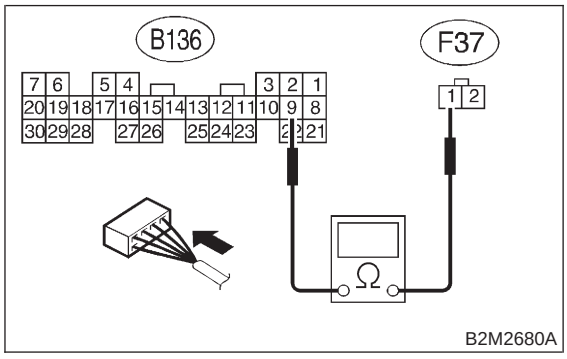
10CQ3 : CHECK FUSE SBF-2.

CHECK : ***Is fuse blown?***
YES : Replace fuse. <Ref. to 6-3 [D6B0].>
NO : Go to step **10CQ4**.

10CQ4 : CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR.

1) Disconnect connector from main fuse box.
2) Measure resistance of harness between ECM and main fuse box connector.

Connector & terminal
(B136) No. 9 — (F37) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair poor contact in ECM and main fuse box connector.
NO : Repair harness and connector.

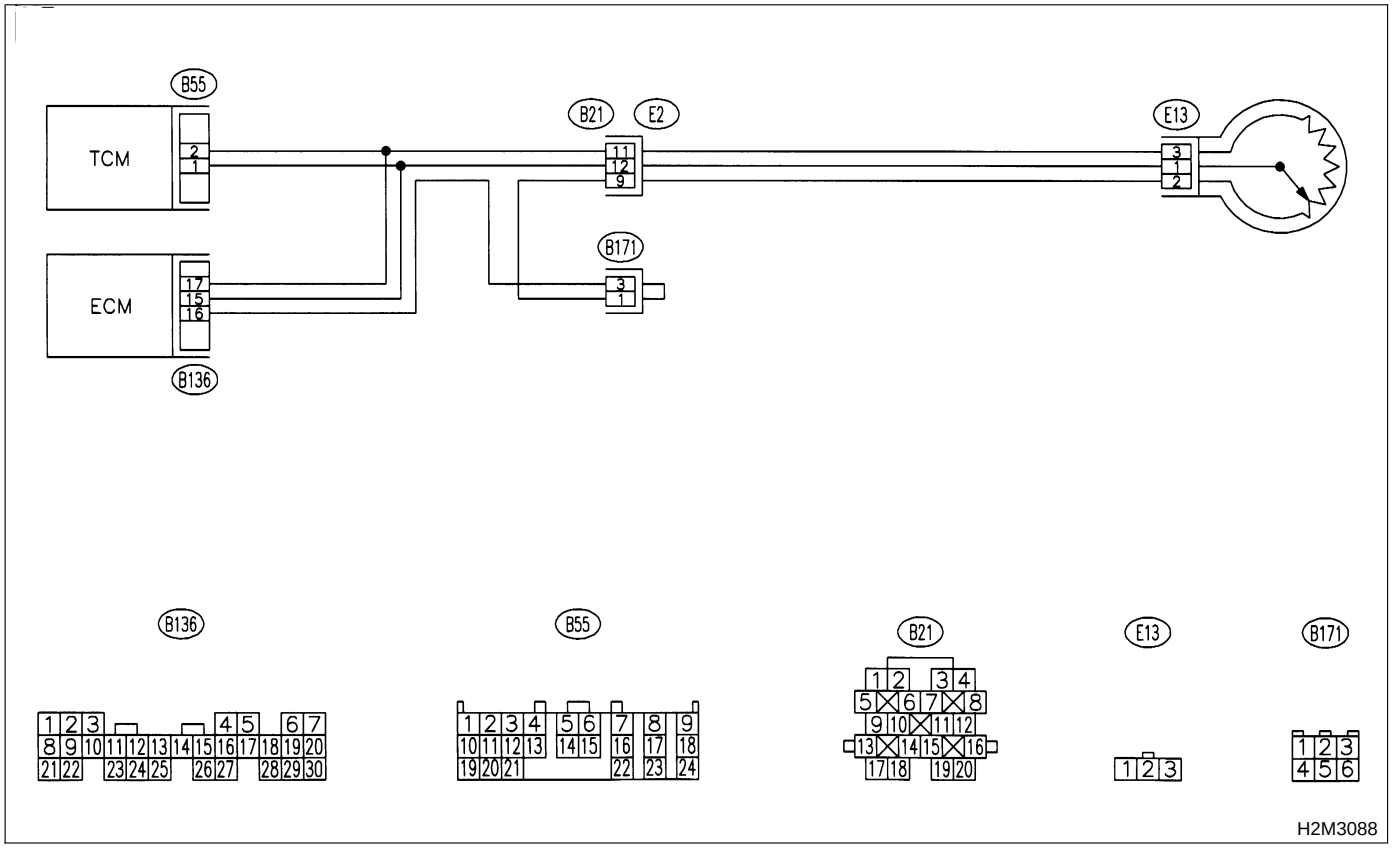
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and main fuse box connector
- Poor contact in coupling connector (F44)
- Poor contact in ECM connector
- Poor contact in main fuse box connector

CR: DTC P1700 — THROTTLE POSITION SENSOR CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CR1 : CHECK DTC P1700 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1700?***

YES : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

NO : It is not necessary to inspect DTC P1700.

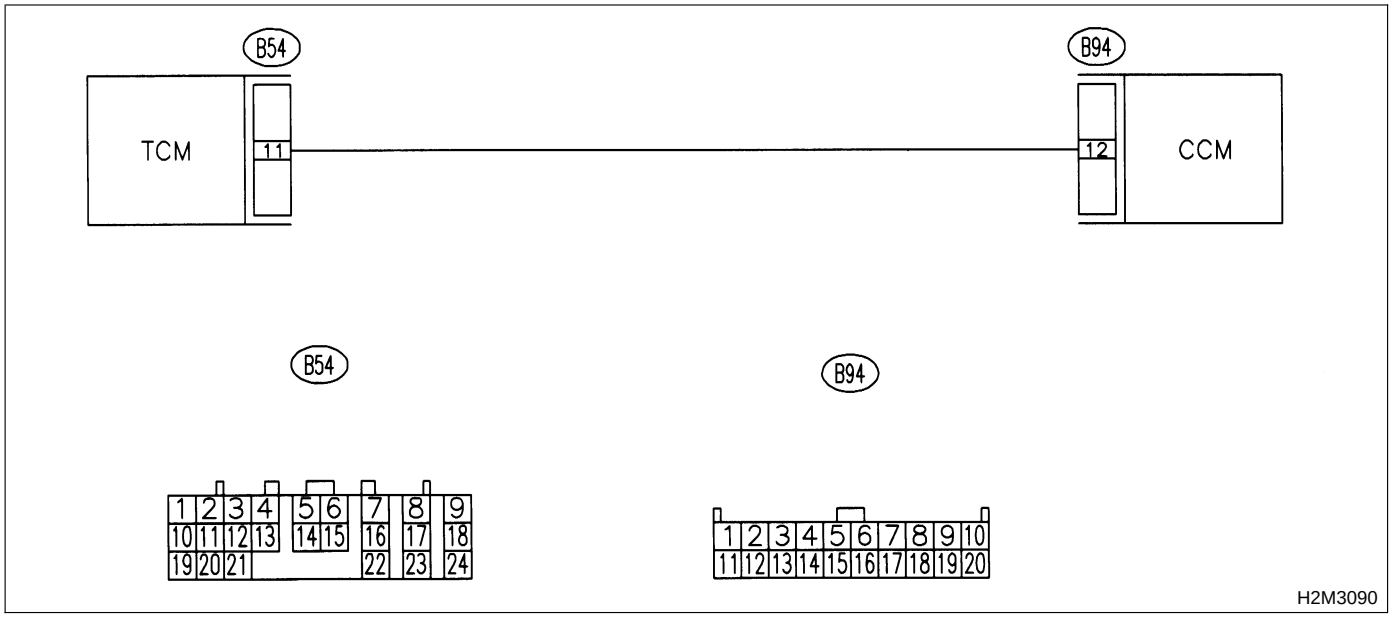
MEMO:

CS: DTC P1701 — CRUISE CONTROL SET SIGNAL CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

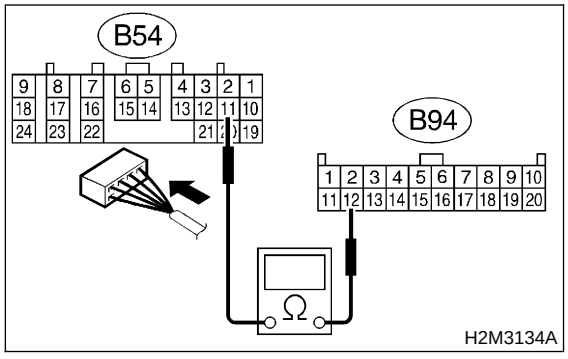
- **WIRING DIAGRAM:**



10CS1 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

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

Connector & terminal
(B54) No. 11 — (B94) No. 12:

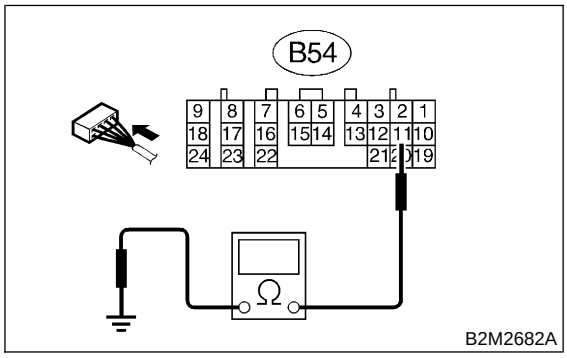


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CS2**.
NO : Repair open circuit in harness between TCM and CCM connector.

10CS2 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 11 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair short circuit in harness between TCM and CCM connector.
NO : Go to step **10CS3**.

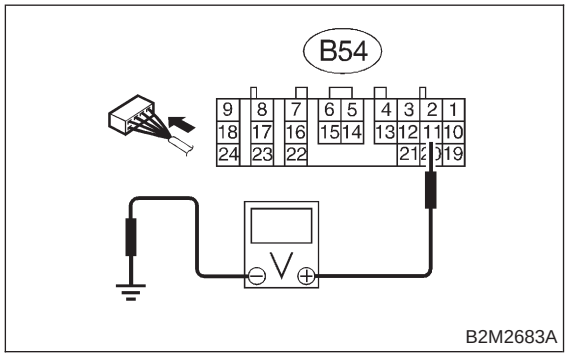
10CS3 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connector to TCM and CCM.
2) Lift-up the vehicle or set the vehicle on free rollers.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine.
4) Cruise control main switch to ON.
5) TCS OFF switch to ON. (with TCS models only)
6) Move selector lever to “D” and slowly increase vehicle speed to 50 km/h (31 MPH).
7) Cruise control set switch to ON.
8) Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 11 (+) — Chassis ground (−):



CHECK : ***Is the resistance less than 1 V?***
YES : Go to step **10CS4**.
NO : Check cruise control set circuit.

10CS4 : CHECK POOR CONTACT.

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

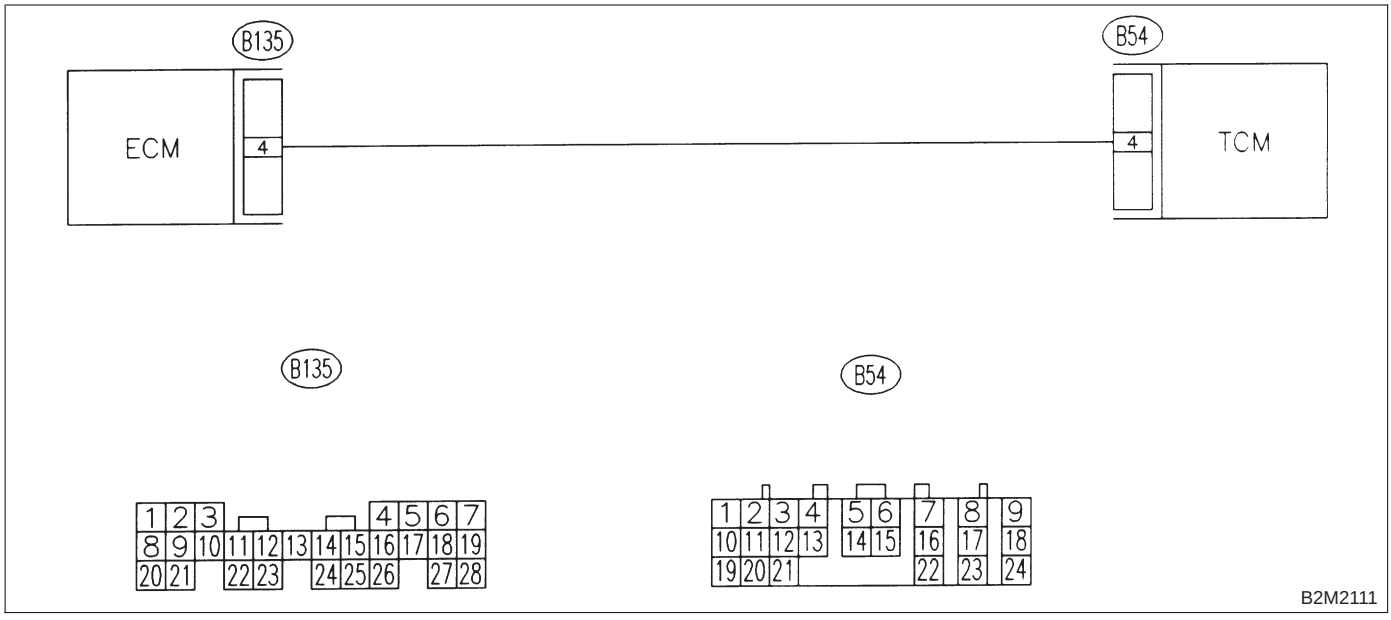
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

CT: DTC P1702 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

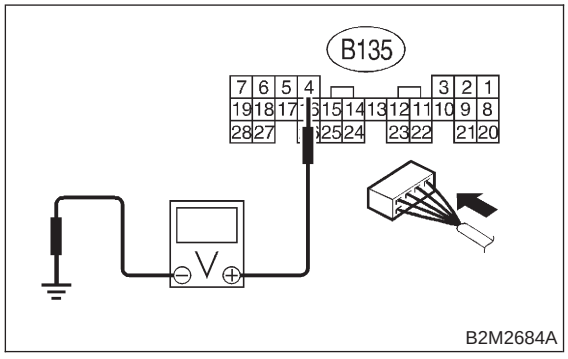
- **WIRING DIAGRAM:**



10CT1 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 (+) — Chassis ground (–):



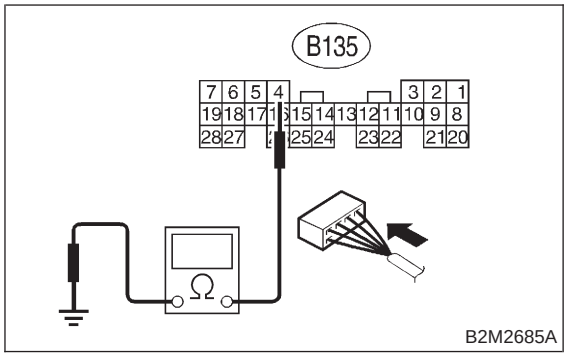
CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10CT2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM connector

10CT2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 — Chassis ground:

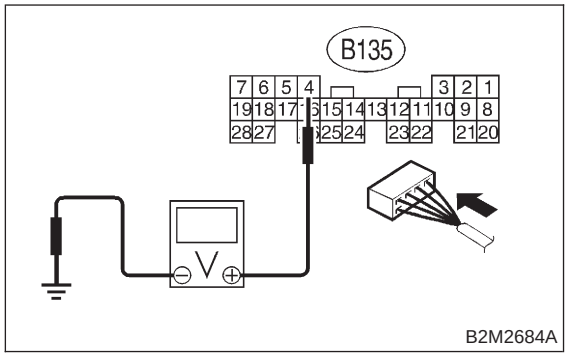


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10CT3**.

10CT3 : CHECK OUTPUT SIGNAL FOR ECM.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



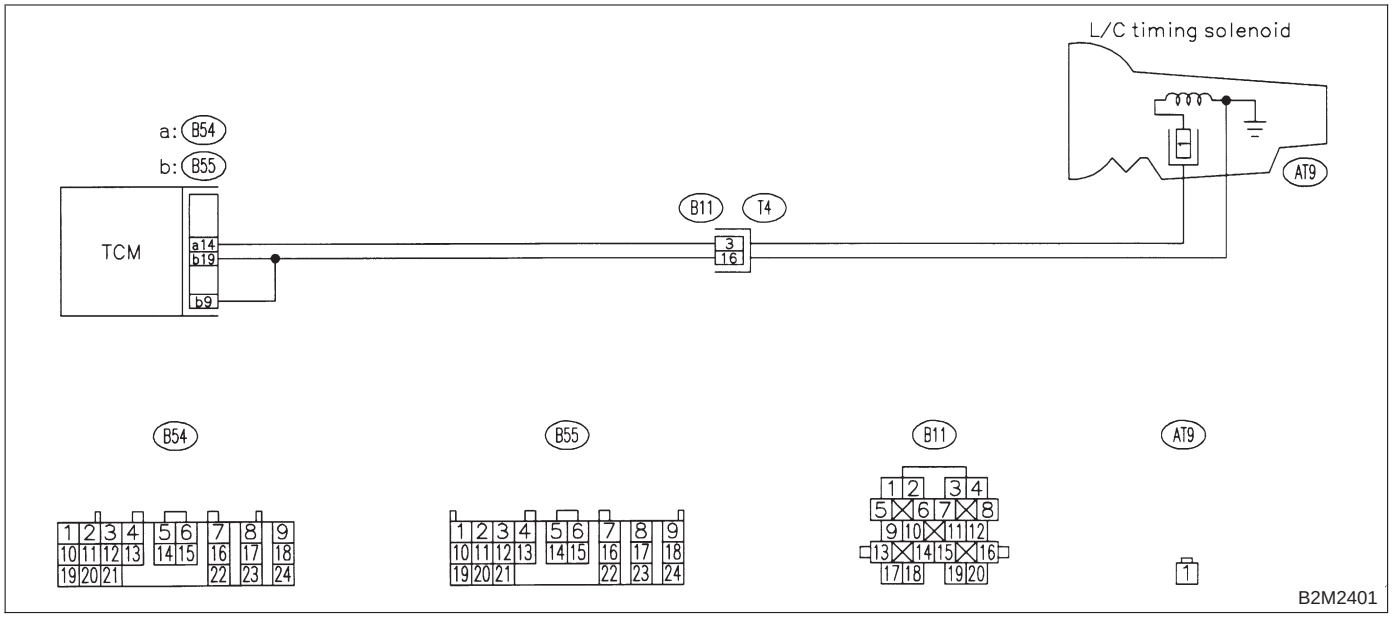
CHECK : ***Is the voltage more than 5 V?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Repair poor contact in ECM connector.

CU: DTC P1703 — LOW CLUTCH TIMING CONTROL SOLENOID VALVE CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CU1 : CHECK DTC P1703 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1703?***

YES : Check low clutch timing control solenoid valve circuit. <Ref. to 3-2 [T8M0].>

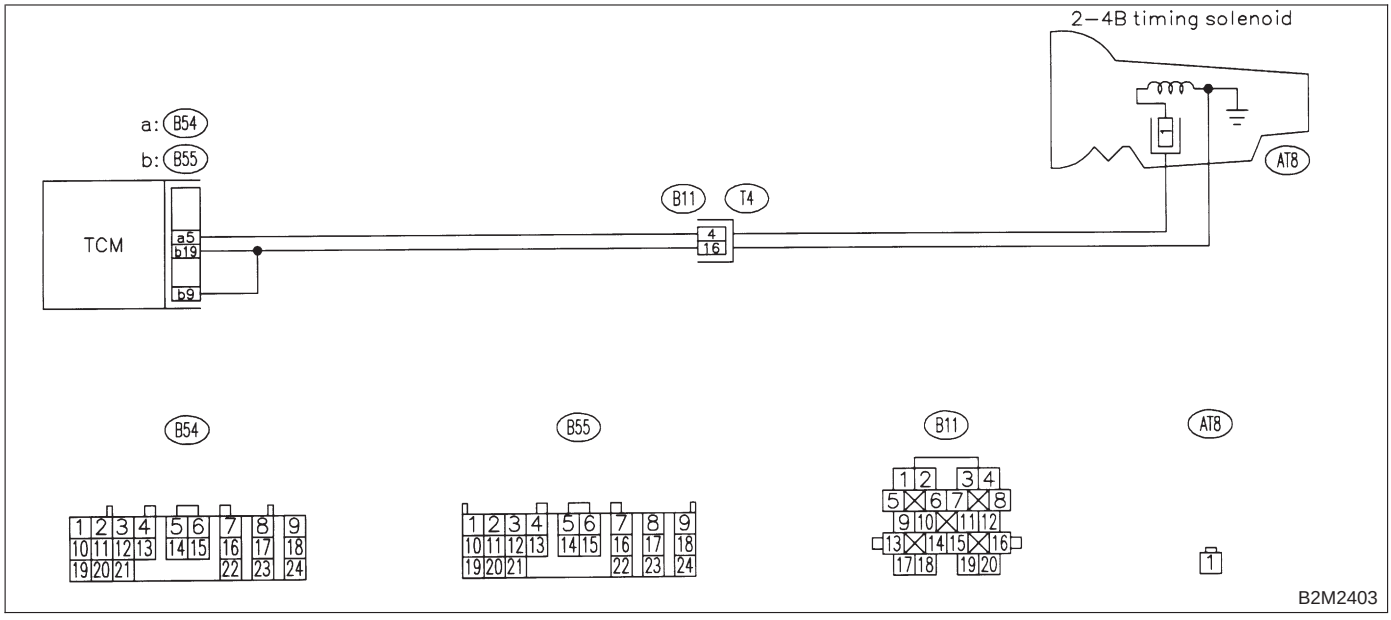
NO : It is not necessary to inspect DTC P1703.

CV: DTC P1704 — 2-4 BRAKE TIMING CONTROL SOLENOID VALVE CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CV1 : CHECK DTC P1704 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1704?***

YES : Check 2-4 brake timing control solenoid valve circuit. <Ref. to 3-2 [T8N0].>

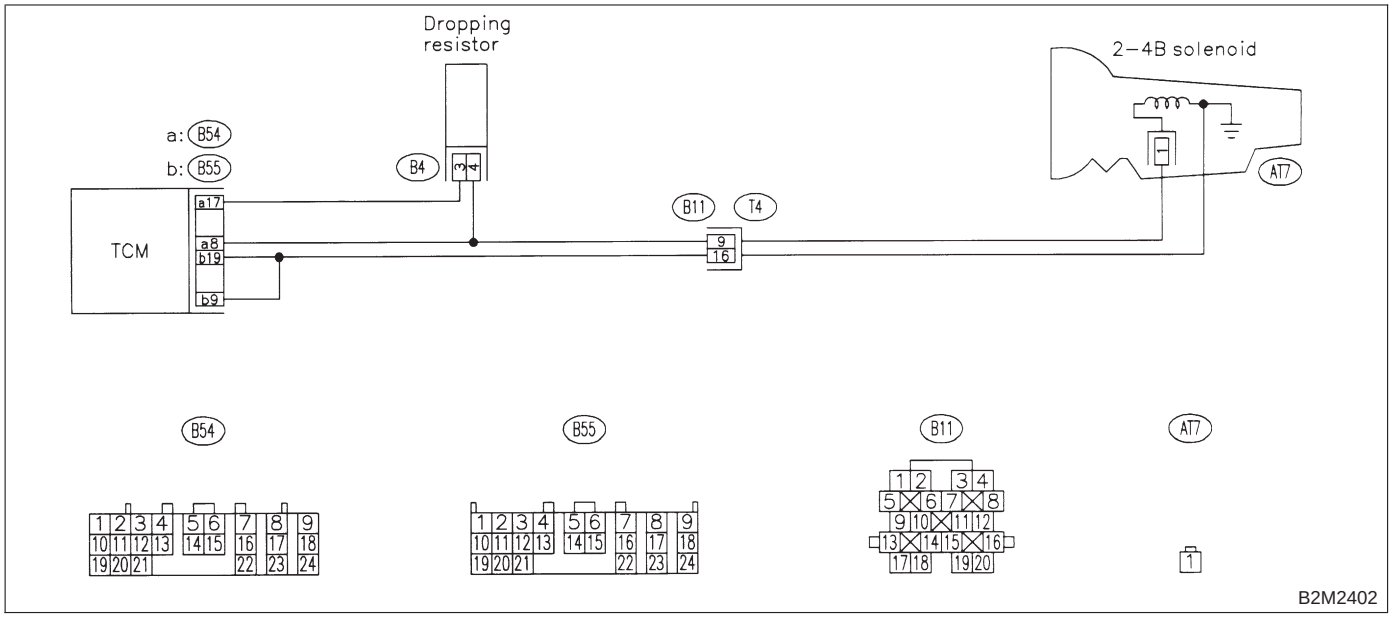
NO : It is not necessary to inspect DTC P1704.

CW: DTC P1705 — 2-4 BRAKE PRESSURE CONTROL SOLENOID VALVE (DUTY SOLENOID D) CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CW1 : CHECK DTC P1705 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1705?***

YES : Check 2-4 brake pressure control solenoid valve circuit. <Ref. to 3-2 [T8P0].>

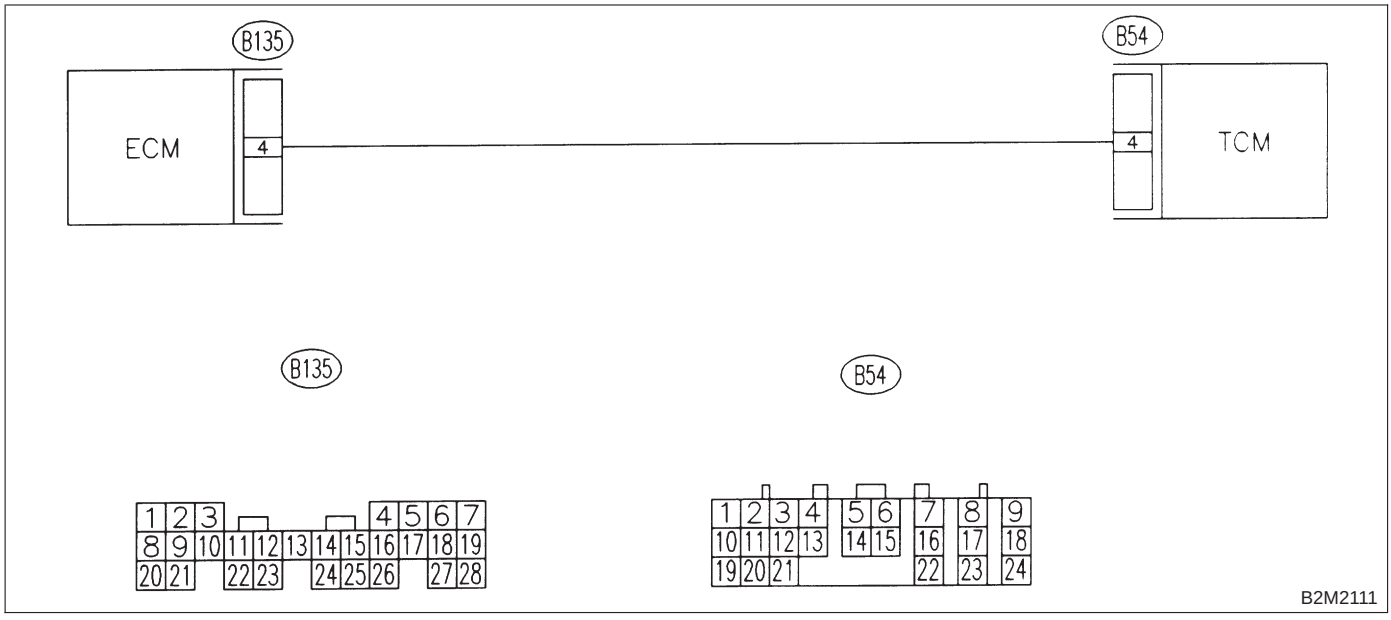
NO : It is not necessary to inspect DTC P1705.

CX: DTC P1722 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

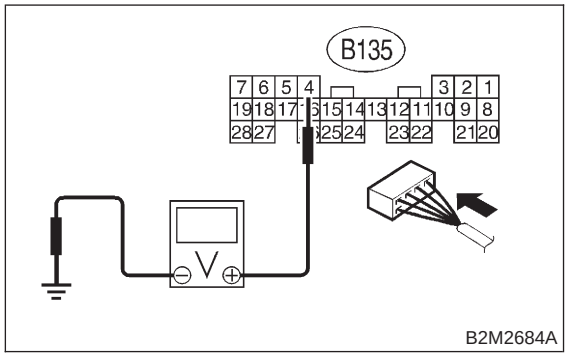
- **WIRING DIAGRAM:**



10CX1 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

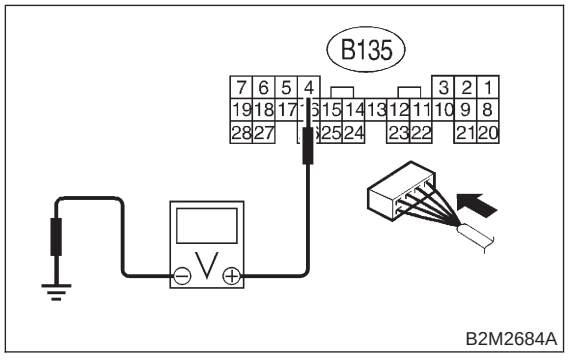


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **10CX2**.

10CX2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

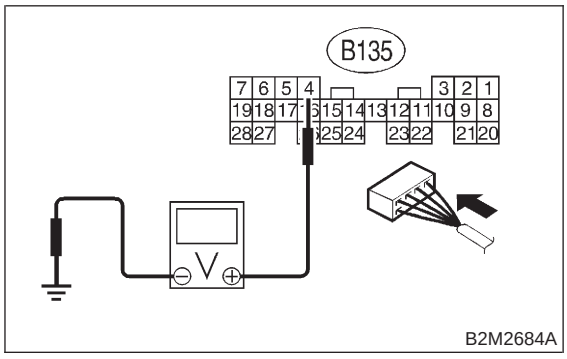


CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **10CX5**.
NO : Go to step **10CX3**.

10CX3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

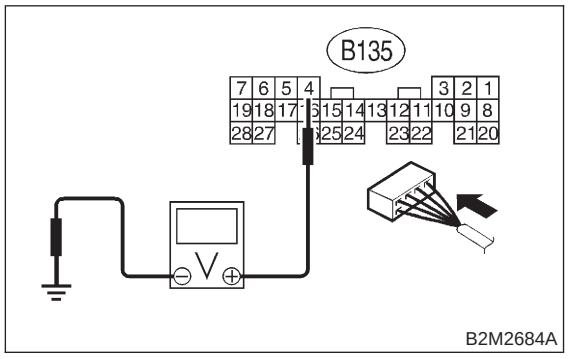


CHECK : ***Is the voltage less than 1 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10CX4**.

10CX4 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



CHECK : ***Does the voltage change from 1 V to 4 V while monitoring the value with voltage meter?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM connector

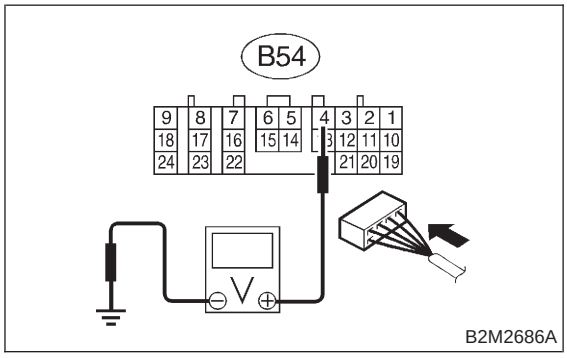
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10CX5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 4 V?***

YES : Go to step **10CX6**.

NO : Repair open circuit in harness between ECM and TCM connector.

10CX6 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

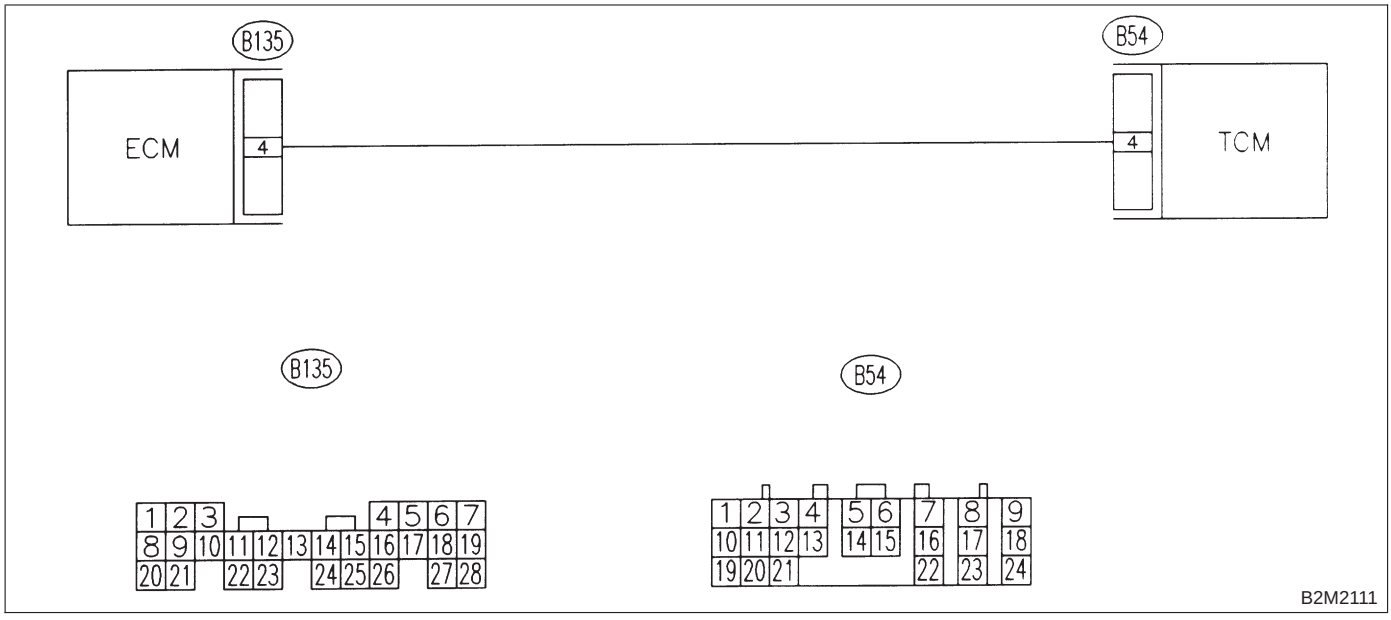
NO : Check TCM power supply line and grounding line.

CY: DTC P1742 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CY1 : CHECK DRIVING CONDITION.

1) Start and warm-up the engine until the radiator fan makes one complete rotation.
2) Drive the vehicle.

CHECK : ***Is AT shift control functioning properly?***
YES : Go to step **10CY2**.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

10CY2 : CHECK ACCESSORY.

CHECK : ***Are car phone and/or CB installed on vehicle?***
YES : Repair grounding line of car phone or CB system.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles

A: DIAGNOSTIC TROUBLE CODE (DTC) LIST

DTC No.	Item	Index
P0101	Mass air flow sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T11B0].>
P0102	Mass air flow sensor circuit low input	<Ref. to 2-7 [T11C0].>
P0103	Mass air flow sensor circuit high input	<Ref. to 2-7 [T11D0].>
P0106	Pressure sensor circuit range/performance problem	<Ref. to 2-7 [T11E0].>
P0107	Pressure sensor circuit low input	<Ref. to 2-7 [T11F0].>
P0108	Pressure sensor circuit high input	<Ref. to 2-7 [T11G0].>
P0116	Engine coolant temperature sensor circuit low input	<Ref. to 2-7 [T11H0].>
P0117	Engine coolant temperature sensor circuit high input	<Ref. to 2-7 [T11I0].>
P0121	Throttle position sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T11J0].>
P0122	Throttle position sensor circuit low input	<Ref. to 2-7 [T11K0].>
P0123	Throttle position sensor circuit high input	<Ref. to 2-7 [T11L0].>
P0125	Insufficient coolant temperature for closed loop fuel control	<Ref. to 2-7 [T11M0].>
P0130	Front oxygen sensor circuit malfunction	<Ref. to 2-7 [T11N0].>
P0133	Front oxygen sensor circuit slow response	<Ref. to 2-7 [T11O0].>
P0135	Front oxygen sensor heater circuit malfunction	<Ref. to 2-7 [T11P0].>
P0136	Rear oxygen sensor circuit malfunction	<Ref. to 2-7 [T11Q0].>
P0139	Rear oxygen sensor circuit slow response	<Ref. to 2-7 [T11R0].>
P0141	Rear oxygen sensor heater circuit malfunction	<Ref. to 2-7 [T11S0].>
P0170	Fuel trim malfunction	<Ref. to 2-7 [T11T0].>
P0181	Fuel temperature sensor A circuit range/performance problem	<Ref. to 2-7 [T11U0].>
P0182	Fuel temperature sensor A circuit low input	<Ref. to 2-7 [T11V0].>
P0183	Fuel temperature sensor A circuit high input	<Ref. to 2-7 [T11W0].>
P0301	Cylinder 1 misfire detected	<Ref. to 2-7 [T11X0].>
P0302	Cylinder 2 misfire detected	<Ref. to 2-7 [T11Y0].>
P0303	Cylinder 3 misfire detected	<Ref. to 2-7 [T11Z0].>

DTC No.	Item	Index
P0304	Cylinder 4 misfire detected	<Ref. to 2-7 [T11AA0].>
P0325	Knock sensor circuit high input	<Ref. to 2-7 [T11AB0].>
P0335	Crankshaft position sensor circuit malfunction	<Ref. to 2-7 [T11AC0].>
P0336	Crankshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T11AD0].>
P0340	Camshaft position sensor circuit malfunction	<Ref. to 2-7 [T11AE0].>
P0341	Camshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T11AF0].>
P0420	Catalyst system efficiency below threshold	<Ref. to 2-7 [T11AG0].>
P0440	Evaporative emission control system malfunction	<Ref. to 2-7 [T11AH0].>
P0443	Evaporative emission control system purge control valve circuit low input	<Ref. to 2-7 [T11AI0].>
P0446	Evaporative emission control system vent control low input	<Ref. to 2-7 [T11AJ0].>
P0451	Evaporative emission control system pressure sensor range/performance problem	<Ref. to 2-7 [T11AK0].>
P0452	Evaporative emission control system pressure sensor low input	<Ref. to 2-7 [T11AL0].>
P0453	Evaporative emission control system pressure sensor high input	<Ref. to 2-7 [T11AM0].>
P0461	Fuel level sensor circuit range/performance problem	<Ref. to 2-7 [T11AN0].>
P0462	Fuel level sensor circuit low input	<Ref. to 2-7 [T11AO0].>
P0463	Fuel level sensor circuit high input	<Ref. to 2-7 [T11AP0].>
P0480	Cooling fan relay 1 circuit low input	<Ref. to 2-7 [T11AQ0].>
P0483	Cooling fan function problem	<Ref. to 2-7 [T11AR0].>
P0500	Vehicle speed sensor malfunction	<Ref. to 2-7 [T11AS0].>
P0506	Idle control system RPM lower than expected	<Ref. to 2-7 [T11AT0].>
P0507	Idle control system RPM higher than expected	<Ref. to 2-7 [T11AU0].>
P0601	Internal control module memory check sum error	<Ref. to 2-7 [T11AV0].>
P0703	Brake switch input malfunction	<Ref. to 2-7 [T11AW0].>
P0705	Transmission range sensor circuit malfunction	<Ref. to 2-7 [T11AX0].>
P0710	Transmission fluid temperature sensor circuit malfunction	<Ref. to 2-7 [T11AY0].>
P0715	Torque converter turbine speed sensor circuit malfunction	<Ref. to 2-7 [T11AZ0].>
P0720	Output speed sensor (vehicle speed sensor 2) circuit malfunction	<Ref. to 2-7 [T11BA0].>

DTC No.	Item	Index
P0725	Engine speed input circuit malfunction	<Ref. to 2-7 [T11BB0].>
P0731	Gear 1 incorrect ratio	<Ref. to 2-7 [T11BC0].>
P0732	Gear 2 incorrect ratio	<Ref. to 2-7 [T11BD0].>
P0733	Gear 3 incorrect ratio	<Ref. to 2-7 [T11BE0].>
P0734	Gear 4 incorrect ratio	<Ref. to 2-7 [T11BF0].>
P0740	Torque converter clutch system malfunction	<Ref. to 2-7 [T11BG0].>
P0743	Torque converter clutch system (Solenoid B) electrical	<Ref. to 2-7 [T11BH0].>
P0748	Pressure control solenoid (Duty solenoid A) electrical	<Ref. to 2-7 [T11BI0].>
P0753	Shift solenoid A (Shift solenoid 1) electrical	<Ref. to 2-7 [T11BJ0].>
P0758	Shift solenoid B (Shift solenoid 2) electrical	<Ref. to 2-7 [T11BK0].>
P1100	Starter switch circuit low input	<Ref. to 2-7 [T11BL0].>
P1101	Neutral position switch circuit low input [MT vehicles]	<Ref. to 2-7 [T11BM0].>
P1101	Neutral position switch circuit high input [AT vehicles]	<Ref. to 2-7 [T11BN0].>
P1102	Pressure sources switching solenoid valve circuit low input	<Ref. to 2-7 [T11BO0].>
P1103	Engine torque control signal 1 circuit malfunction	<Ref. to 2-7 [T11BP0].>
P1106	Engine torque control signal 2 circuit malfunction	<Ref. to 2-7 [T11BQ0].>
P1115	Engine torque control cut signal circuit high input	<Ref. to 2-7 [T11BR0].>
P1116	Engine torque control cut signal circuit low input	<Ref. to 2-7 [T11BS0].>
P1120	Starter switch circuit high input	<Ref. to 2-7 [T11BT0].>
P1121	Neutral position switch circuit high input [MT vehicles]	<Ref. to 2-7 [T11BU0].>
P1121	Neutral position switch circuit low input [AT vehicles]	<Ref. to 2-7 [T11BV0].>
P1122	Pressure sources switching solenoid valve circuit high input	<Ref. to 2-7 [T11BW0].>
P1141	Mass air flow sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T11BX0].>
P1142	Throttle position sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T11BY0].>
P1143	Pressure sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T11BZ0].>
P1144	Pressure sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T11CA0].>
P1150	Front oxygen sensor heater circuit high input	<Ref. to 2-7 [T11CB0].>

DTC No.	Item	Index
P1151	Rear oxygen sensor heater circuit high input	<Ref. to 2-7 [T11CC0].>
P1325	Knock sensor circuit low input	<Ref. to 2-7 [T11CD0].>
P1400	Fuel tank pressure control solenoid valve circuit low input	<Ref. to 2-7 [T11CE0].>
P1420	Fuel tank pressure control solenoid valve circuit high input	<Ref. to 2-7 [T11CF0].>
P1422	Evaporative emission control system purge control valve circuit high input	<Ref. to 2-7 [T11CG0].>
P1423	Evaporative emission control system vent control high input	<Ref. to 2-7 [T11CH0].>
P1442	Fuel level sensor circuit range/performance problem 2	<Ref. to 2-7 [T11CI0].>
P1443	Evaporative emission control system vent control function problem	<Ref. to 2-7 [T11CJ0].>
P1507	Idle control system malfunction (fail-safe)	<Ref. to 2-7 [T11CK0].>
P1510	Idle air control solenoid valve signal 1 circuit low input	<Ref. to 2-7 [T11CL0].>
P1511	Idle air control solenoid valve signal 1 circuit high input	<Ref. to 2-7 [T11CM0].>
P1512	Idle air control solenoid valve signal 2 circuit low input	<Ref. to 2-7 [T11CN0].>
P1513	Idle air control solenoid valve signal 2 circuit high input	<Ref. to 2-7 [T11CO0].>
P1514	Idle air control solenoid valve signal 3 circuit low input	<Ref. to 2-7 [T11CP0].>
P1515	Idle air control solenoid valve signal 3 circuit high input	<Ref. to 2-7 [T11CQ0].>
P1516	Idle air control solenoid valve signal 4 circuit low input	<Ref. to 2-7 [T11CR0].>
P1517	Idle air control solenoid valve signal 4 circuit high input	<Ref. to 2-7 [T11CS0].>
P1520	Cooling fan relay 1 circuit high input	<Ref. to 2-7 [T11CT0].>
P1540	Vehicle speed sensor malfunction 2	<Ref. to 2-7 [T11CU0].>
P1560	Back-up voltage circuit malfunction	<Ref. to 2-7 [T11CV0].>
P1700	Throttle position sensor circuit malfunction for automatic transmission	<Ref. to 2-7 [T11CW0].>
P1701	Cruise control set signal circuit malfunction for automatic transmission	<Ref. to 2-7 [T11CX0].>
P1702	Automatic transmission diagnosis input signal circuit low input	<Ref. to 2-7 [T11CY0].>
P1703	Low clutch timing control solenoid valve circuit malfunction	<Ref. to 2-7 [T11CZ0].>
P1704	2-4 brake timing control solenoid valve circuit malfunction	<Ref. to 2-7 [T11DA0].>
P1705	2-4 brake pressure control solenoid valve (Duty solenoid D) circuit malfunction	<Ref. to 2-7 [T11DB0].>
P1722	Automatic transmission diagnosis input signal circuit high input	<Ref. to 2-7 [T11DC0].>

DTC No.	Item	Index
P1742	Automatic transmission diagnosis input signal circuit malfunction	<Ref. to 2-7 [T11DD0].>

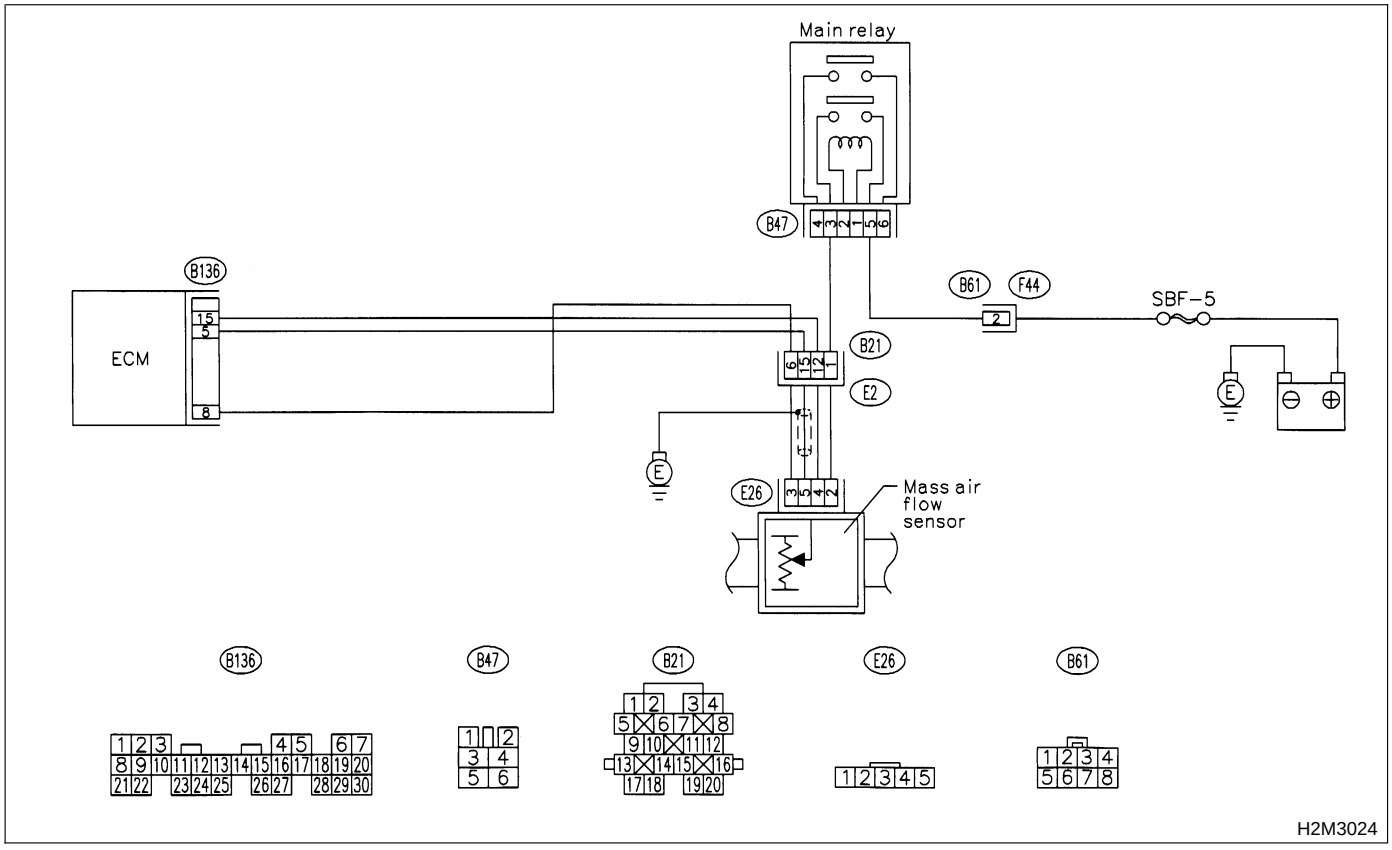
MEMO:

B: DTC P0101 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11B1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0102 or P0103?***

YES : Inspect DTC P0102 or P0103 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

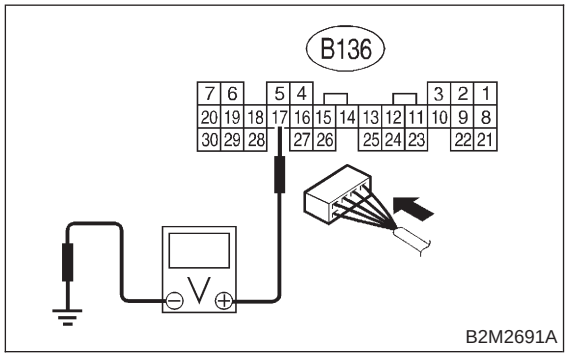
NOTE:
In this case, it is not necessary to inspect DTC P0101.

NO : Go to step **11B2**.

11B2 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground while throttle valve is fully closed.

Connector & terminal
(B136) No. 17 (+) — Chassis ground (−):

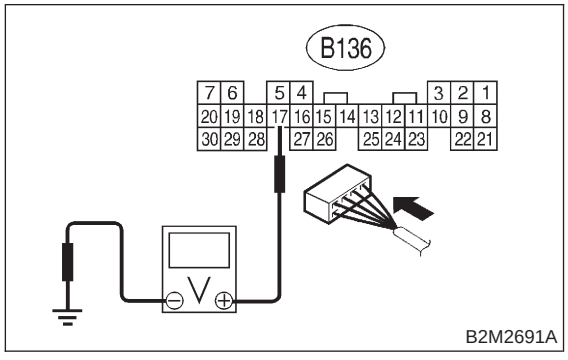


CHECK : ***Is the voltage between 0.2 V and 1.0 V?***
YES : Go to step **11B3**.
NO : Check throttle position sensor circuit. <Ref. to 2-7 [T11K0].>

11B3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground while throttle valve is fully opened.

Connector & terminal
(B136) No. 17 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 4.2 V and 4.7 V?***
YES : Replace mass air flow sensor. <Ref. to 2-7 [W2A0].>
NO : Check throttle position sensor circuit. <Ref. to 2-7 [T11K0].>

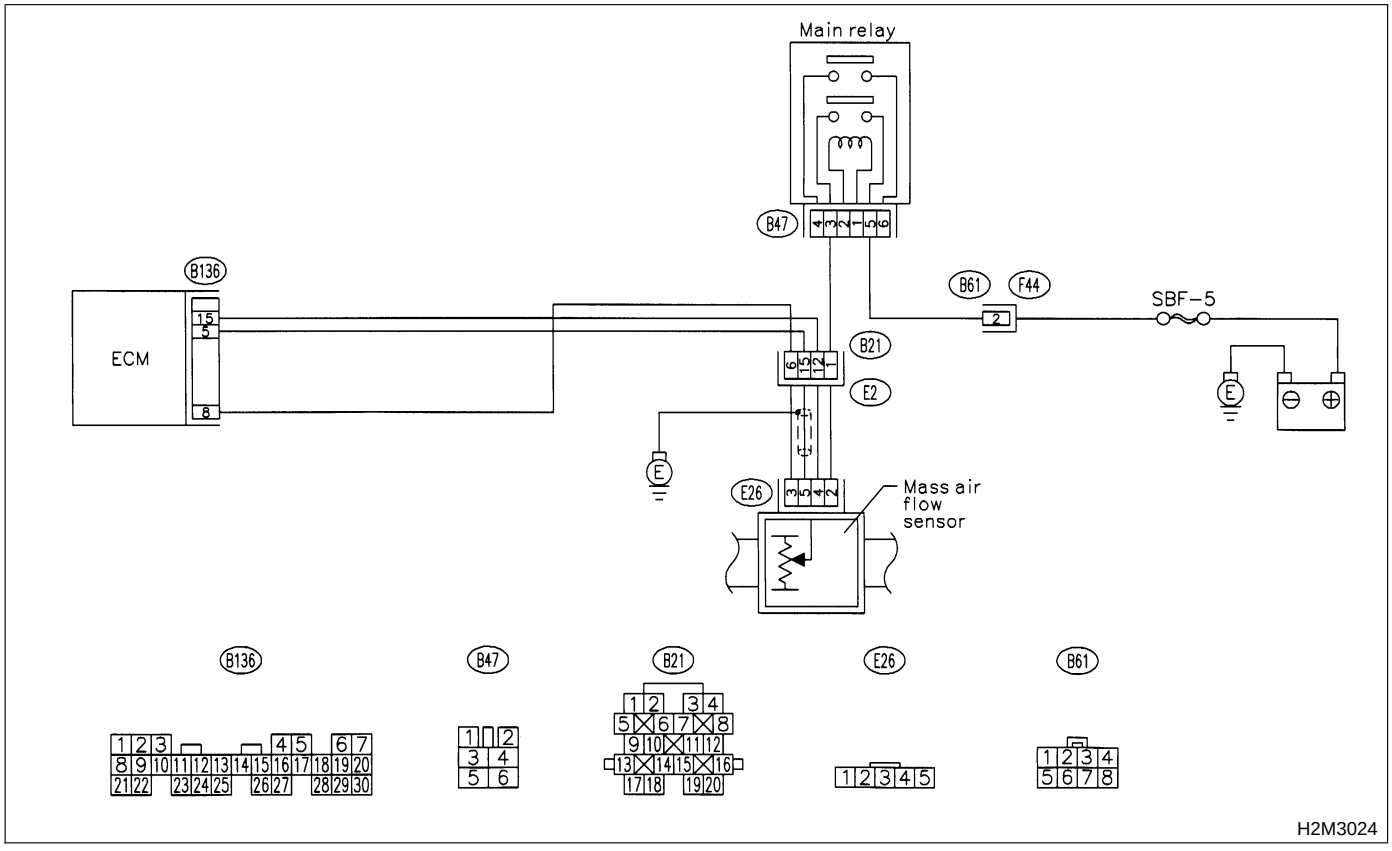
C: DTC P0102 — MASS AIR FLOW SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

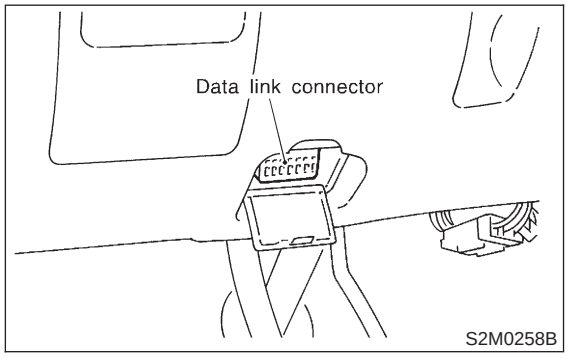
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11C1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of mass air flow sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value equal to or more than 0 g/sec (0 lb/min) or 0.3 V and equal to or less than 186 g/sec (25 lb/min) or 5.0 V?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the mass air flow sensor.

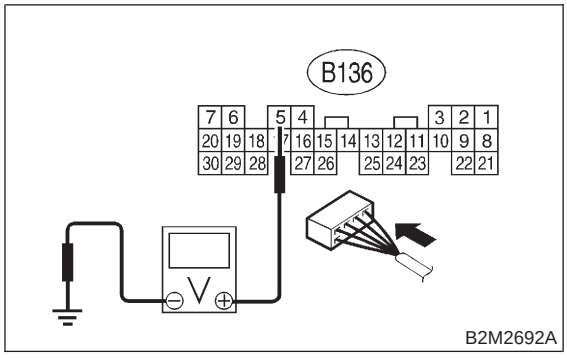
NOTE:
In this case, repair the following:
● Open or ground short circuit in harness between mass air flow sensor and ECM connector
● Poor contact in mass air flow sensor or ECM connector

NO : Go to step **11C2**.

11C2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground while engine is idling.

Connector & terminal
(B136) No. 5 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.3 V?***
YES : Go to step **11C4**.
NO : Go to step **11C3**.

11C3 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR)

Measure voltage between ECM connector and chassis ground while engine is idling.

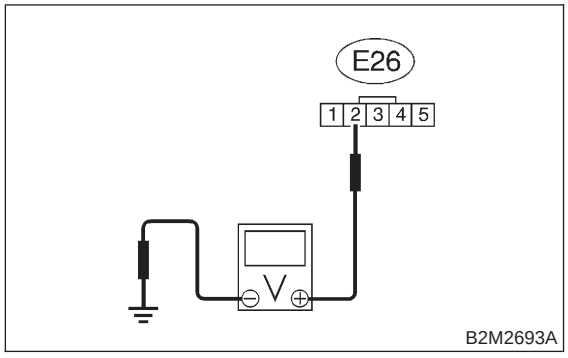
CHECK : ***Does the voltage change more than 0.3 V by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11C4 : CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from mass air flow sensor.
3) Turn ignition switch to ON.
4) Measure voltage between mass air flow sensor connector and engine ground.

Connector & terminal
(E26) No. 2 (+) — Engine ground (−):



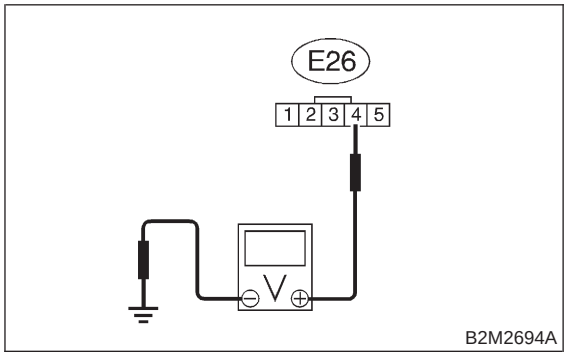
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11C5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between main relay and mass air flow sensor connector
- Poor contact in main relay connector
- Poor contact in coupling connector (B21)

11C5 : CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.

Measure voltage between mass air flow sensor connector and engine ground.

Connector & terminal
(E26) No. 4 (+) — Engine ground (−):



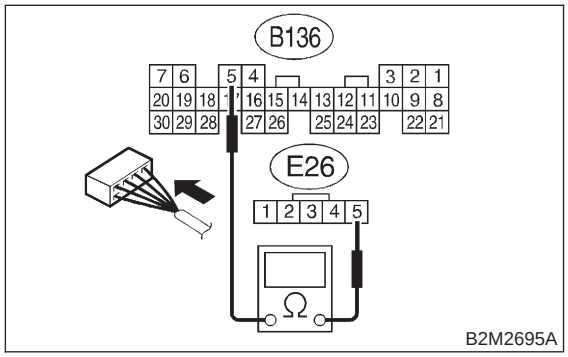
CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **11C6**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between ECM and mass air flow sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

11C6 : CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and mass air flow sensor connector.

Connector & terminal
(B136) No. 5 — (E26) No. 5:



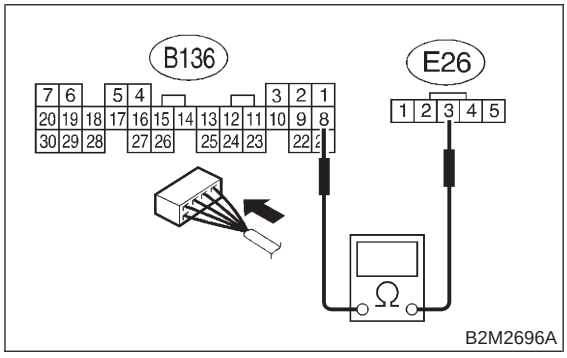
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11C7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and mass air flow sensor connector
- Poor contact in mass air flow sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

11C7 : CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

Measure resistance of harness between ECM and mass air flow sensor connector.

Connector & terminal
(B136) No. 8 — (E26) No. 3:



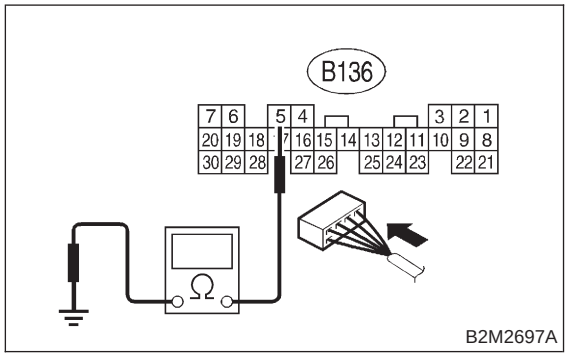
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11C8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and mass air flow sensor connector
- Poor contact in mass air flow sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

11C8 : CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 5 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Replace mass air flow sensor. <Ref. to 2-7 [W2A0].>
NO : Repair ground short circuit in harness between ECM and mass air flow sensor connector.

MEMO:

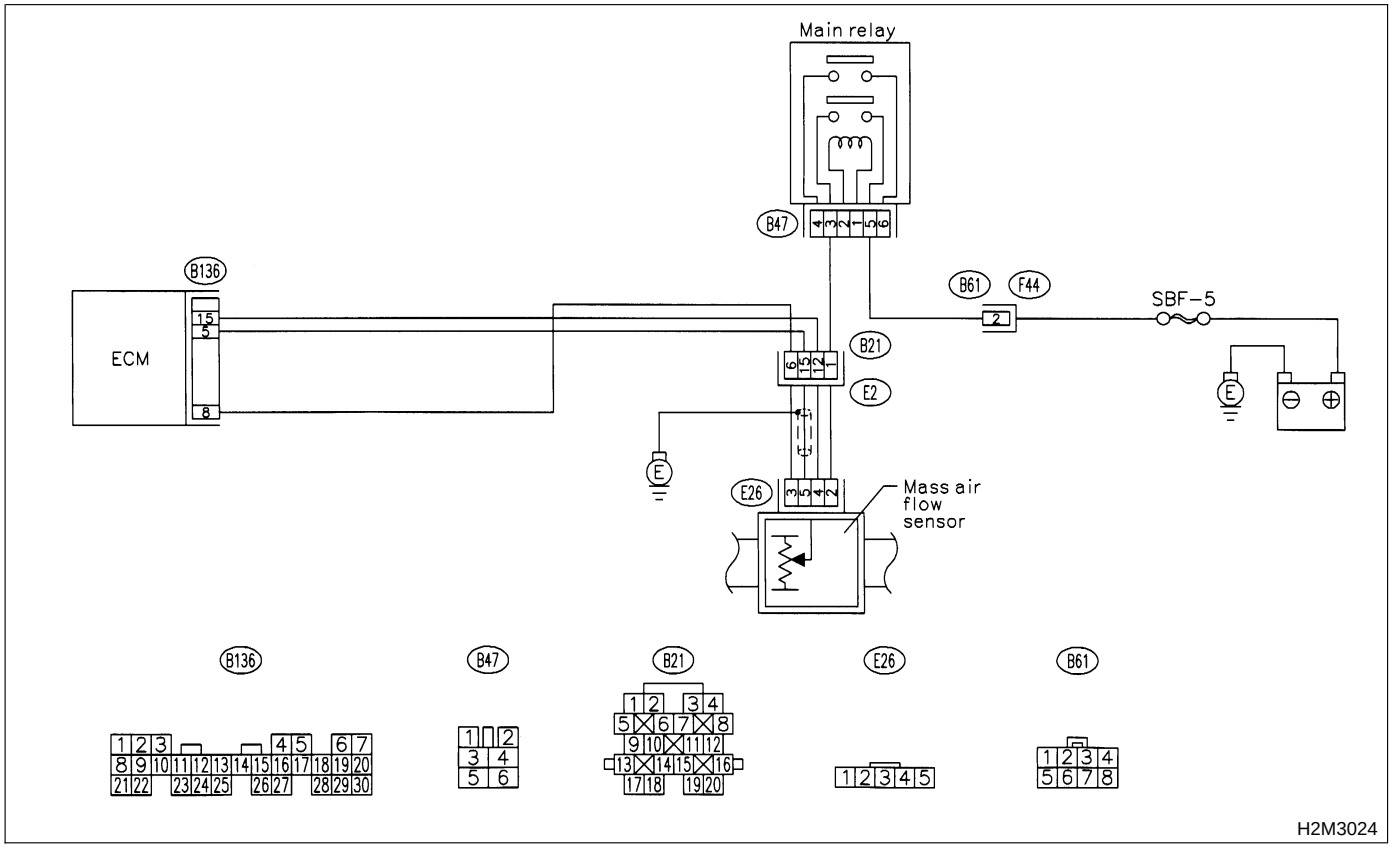
D: DTC P0103 — MASS AIR FLOW SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

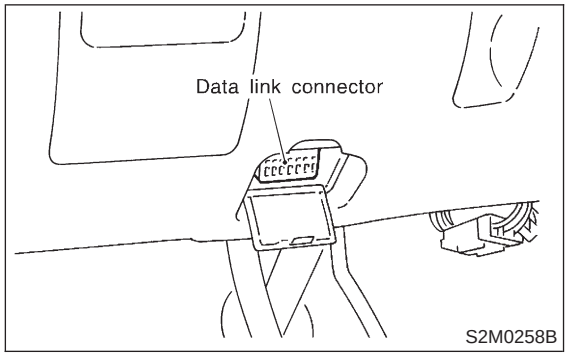
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11D1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of mass air flow sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value equal to or more than 0 g/sec (0 lb/min) or 0.3 V and equal to or less than 186 g/sec (25 lb/min) or 5.0 V?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NO : Go to step **11D2**.

11D2 : CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Disconnect connector from mass air flow sensor.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Read data of mass air flow sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 186 g/sec (25 lb/min) or 5 V?***

YES : Repair battery short circuit in harness between mass air flow sensor and ECM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

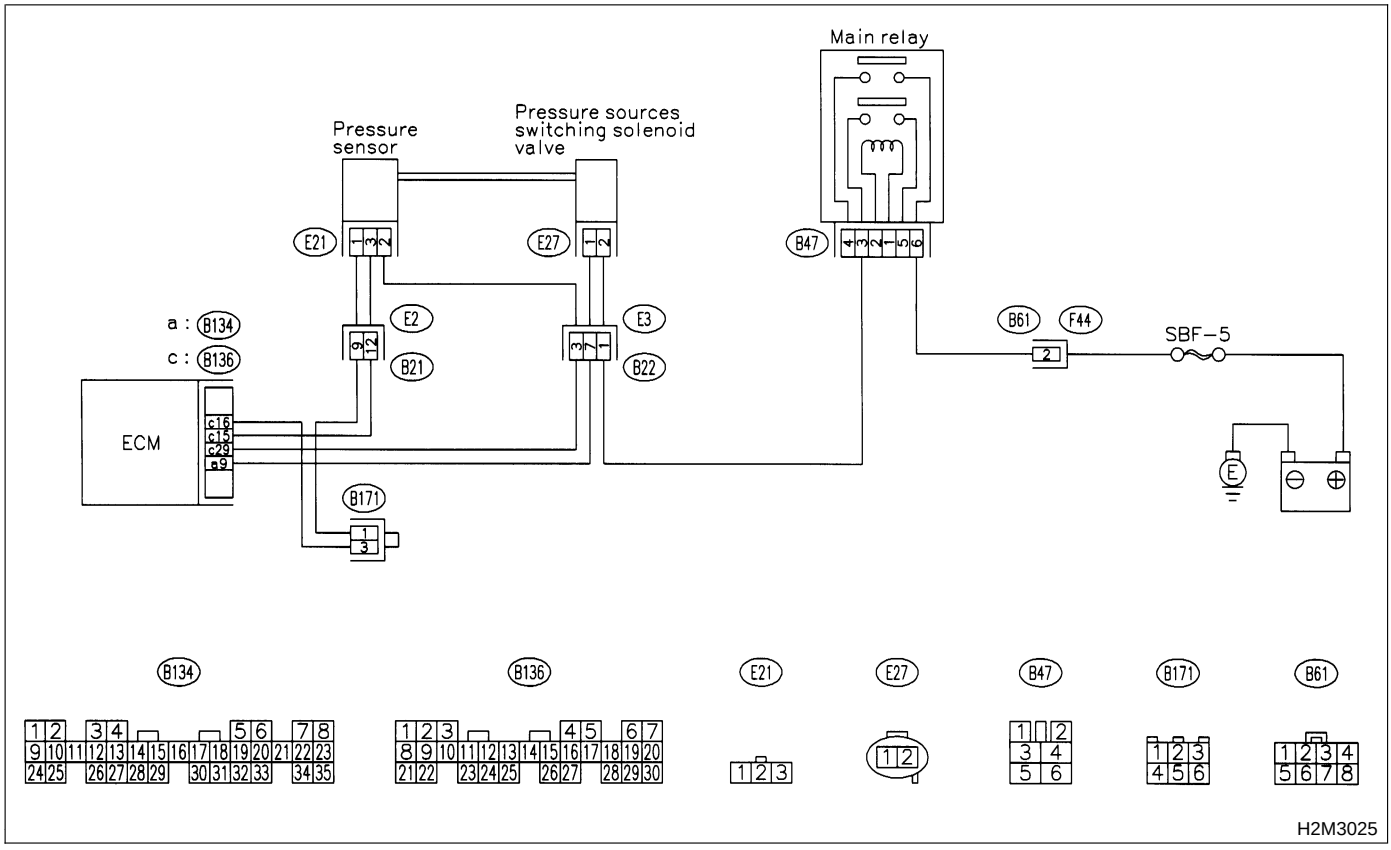
NO : Replace mass air flow sensor. <Ref. to 2-7 [W2A0].>

E: DTC P0106 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11E1 : CHECK ANY OTHER DTC ON DISPLAY.

NOTE:
In this case, it is not necessary to inspect DTC P0106.

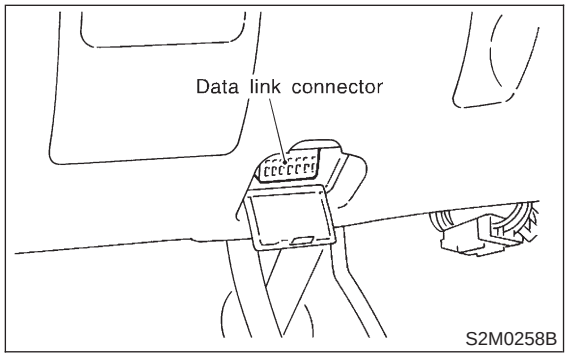
CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0107, P0108, P1102 OR P1122?***

YES : Inspect DTC P0107, P0108, P1102 OR P1122 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NO : Go to step **11E2**.

11E2 : CHECK IDLE SWITCH SIGNAL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
4) Operate the LED operation mode for engine using Subaru Select Monitor.

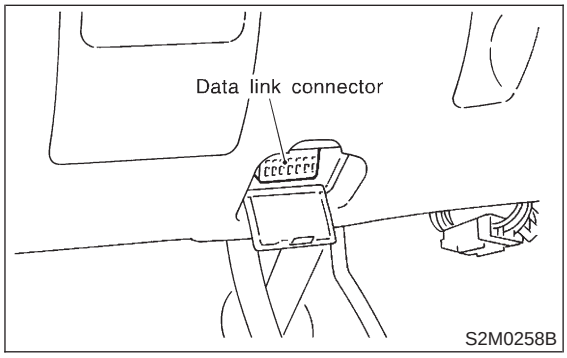
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “LED OPERATION MODE FOR ENGINE”. <Ref. to 2-7 [T3C8].>

CHECK : ***Does the LED of {Idle Switch Signal} come on?***
YES : Go to step **11E3**.
NO : Check throttle position sensor circuit. <Ref. to 2-7 [T11K0].>

NOTE:
In this case, it is not necessary to inspect DTC P0106.

11E3 : CHECK DATA FOR CONTROL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch ON and Subaru Select Monitor or the OBD-II general scan tool switch ON.
4) Start engine.
5) Read data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 85 kPa (638 mmHg, 25.12 inHg)?***
YES : Go to step **11E6**.
NO : Go to step **11E4**.

11E4 : CHECK DATA FOR CONTROL.

Read data of atmospheric absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

CHECK : ***Is the value less than 32 kPa (240 mmHg, 9.45 inHg)?***
YES : Go to step **11E7**.
NO : Go to step **11E5**.

11E5 : CHECK DATA FOR CONTROL.

Read data of atmospheric absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

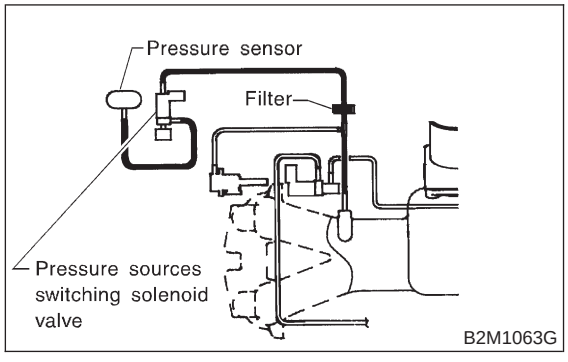
CHECK : ***Is the value more than 133 kPa (998 mmHg, 39.29 inHg)?***

YES : Replace pressure sensor. <Ref. to 2-7 [W11A0].>

NO : Repair poor contact in pressure sensor connector, pressure sources switching solenoid valve connector, and ECM connector.

11E6 : CHECK VACUUM HOSES.

Check the following items.
- Disconnection of the vacuum hose from pressure sources switching solenoid valve to intake manifold
- Holes in the vacuum hose between pressure sources switching solenoid valve to intake manifold
- Clogging of the vacuum hose between pressure sources switching solenoid valve to intake manifold
- Disconnection of the vacuum hose from pressure sensor to pressure sources switching solenoid valve
- Holes in the vacuum hose between pressure sensor and pressure sources switching solenoid valve
- Clogging of the vacuum hose between pressure sensor and pressure sources switching solenoid valve
- Clogging of the filter



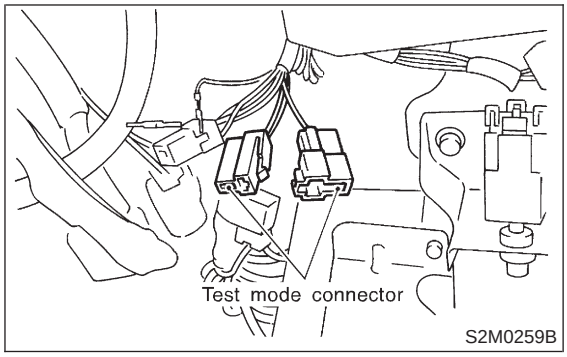
CHECK : ***Is there a fault in vacuum hose?***

YES : Repair or replace hoses or filter.

NO : Go to step **11E7**.

11E7 : CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Connect test mode connector.



3) Turn ignition switch to ON.

NOTE:
Pressure sources switching solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to the "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

CHECK : ***Does pressure sources switching solenoid valve produce operating sound? (ON ⇔ OFF each 1.5 sec.)***

YES : Replace pressure sensor. <Ref. to 2-7 [W11A0].>

NO : Replace pressure sources switching solenoid valve. <Ref. to 2-7 [W13A0].>

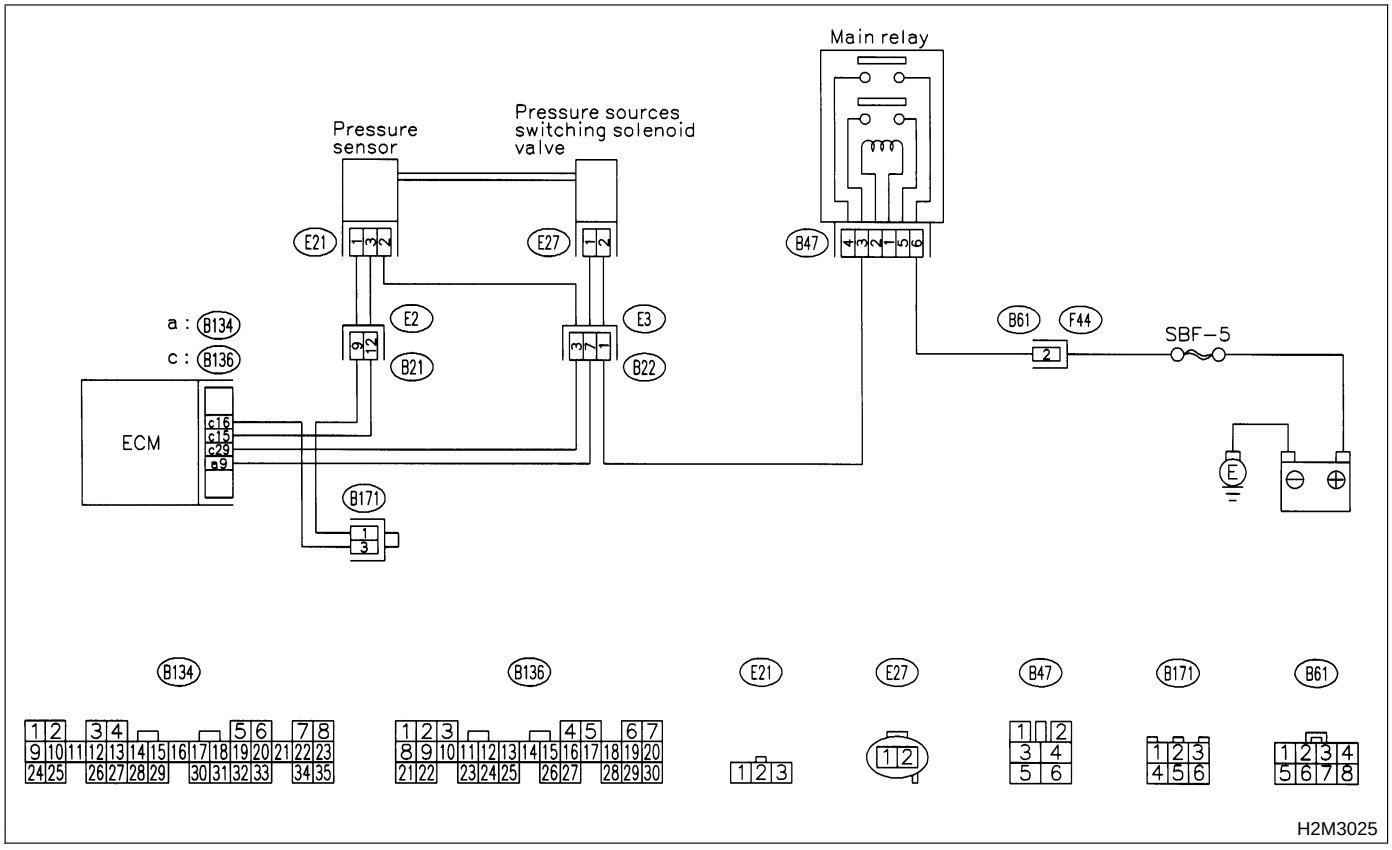
MEMO:

F: DTC P0107 — PRESSURE SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

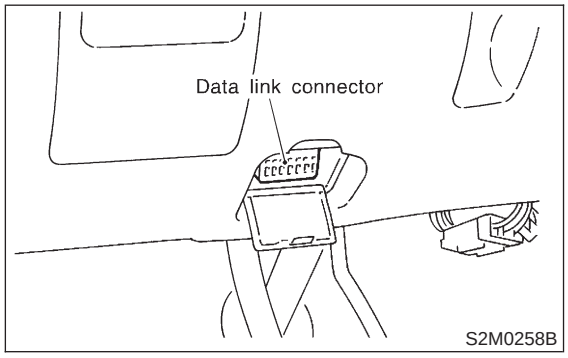
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11F1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than 0 kPa (0 mmHg, 0 inHg)?***
YES : Go to step **11F3**.
NO : Go to step **11F2**.

11F2 : CHECK POOR CONTACT.

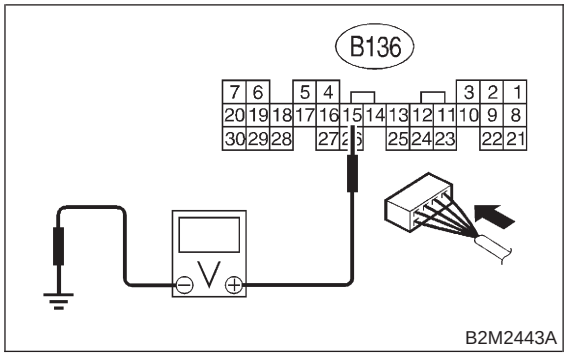
Check poor contact in ECM and pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM or pressure sensor connector?***
YES : Repair poor contact in ECM or pressure sensor connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

11F3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

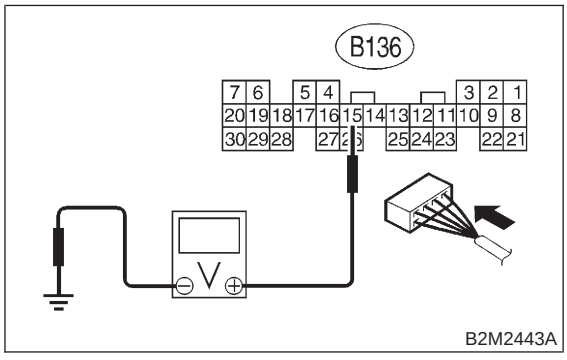


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11F5**.
NO : Go to step **11F4**.

11F4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



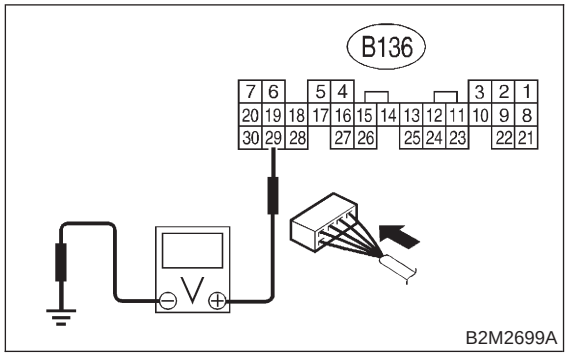
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11F5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 29 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **11F7**.
NO : Go to step **11F6**.

11F6 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of atmospheric absolute pressure signal using Subaru Select Monitor.

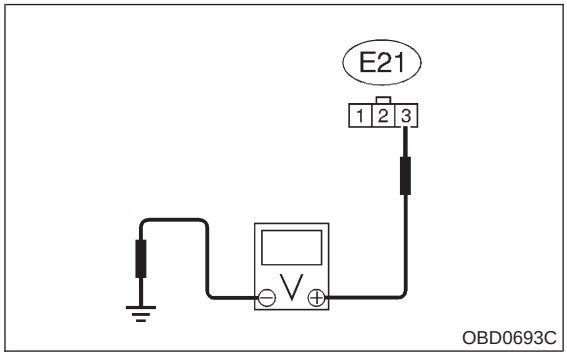
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 0 kPa (0 mmHg, 0 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11F7**.

11F7 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sensor.
3) Turn ignition switch to ON.
4) Measure voltage between pressure sensor connector and engine ground.

Connector & terminal
(E21) No. 3 (+) — Engine ground (−):



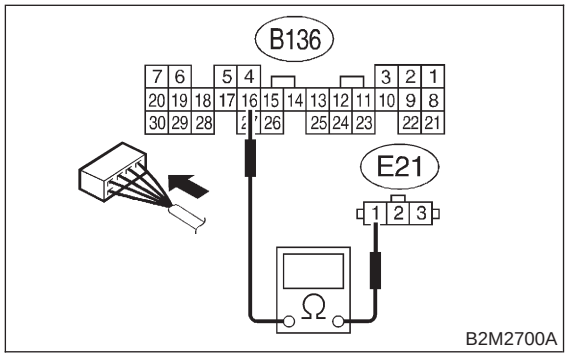
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11F8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and pressure sensor connector
● Poor contact in coupling connector (B21)

11F8 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 16 — (E21) No. 1:



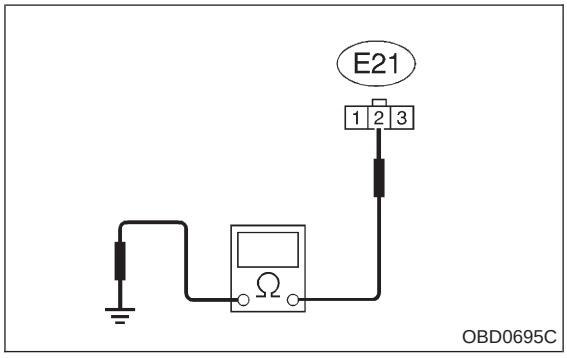
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11F9**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and pressure sensor connector
- Poor contact in coupling connector (B21)

11F9 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

Measure resistance of harness between pressure sensor connector and engine ground.

Connector & terminal
(E21) No. 2 — Engine ground:



CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **11F10**.
NO : Repair ground short circuit in harness between ECM and pressure sensor connector.

11F10 : CHECK POOR CONTACT.

Check poor contact in pressure sensor connector. <Ref. to FOREWORD [T3C1].>

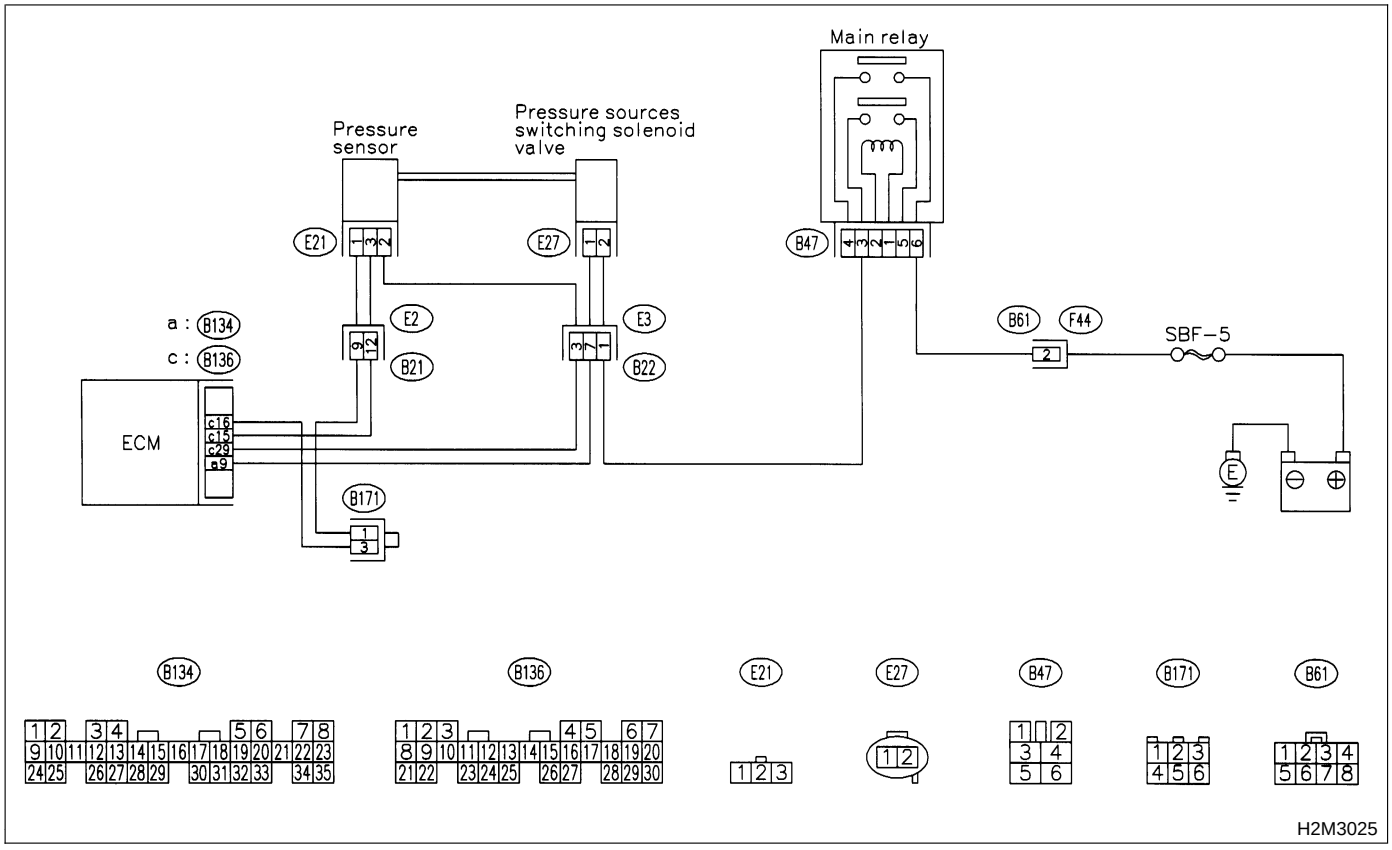
CHECK : ***Is there poor contact in pressure sensor connector?***
YES : Repair poor contact in pressure sensor connector.
NO : Replace pressure sensor. <Ref. to 2-7 [W11A0].>

G: DTC P0108 — PRESSURE SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

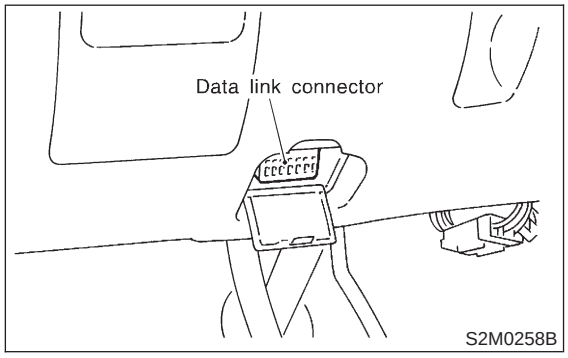
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11G1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.
5) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

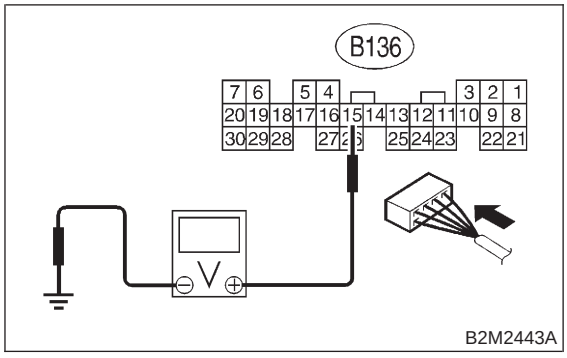
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 140 kPa (1,050 mmHg, 41.34 inHg)?***
YES : Go to step **11G10**.
NO : Go to step **11G2**.

11G2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

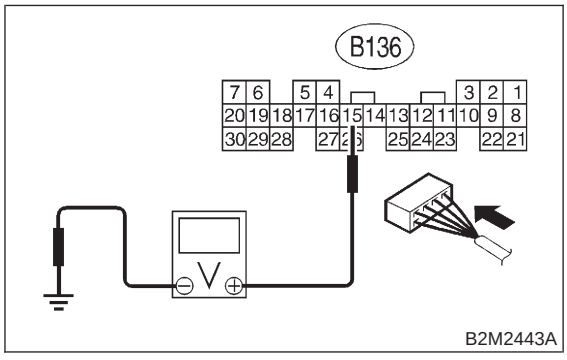


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11G4**.
NO : Go to step **11G3**.

11G3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



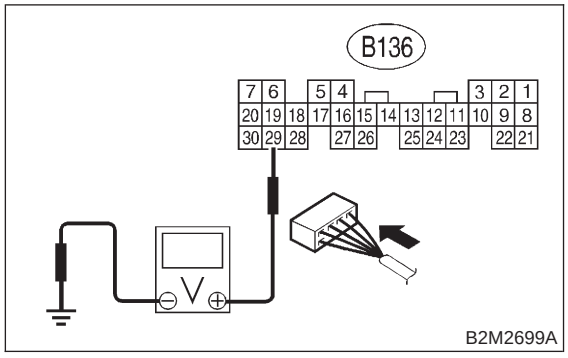
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11G4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 29 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **11G6**.
NO : Go to step **11G5**.

11G5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of atmospheric absolute pressure signal using Subaru Select Monitor.

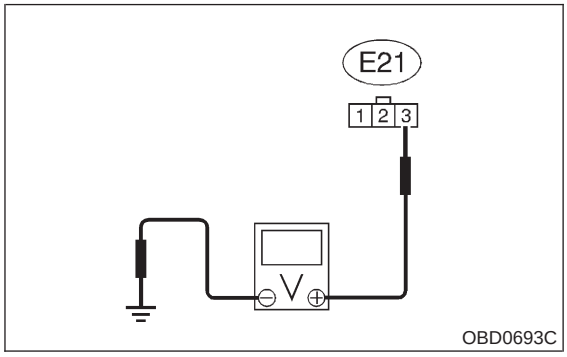
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 0 kPa (0 mmHg, 0 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11G6**.

11G6 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sensor.
3) Turn ignition switch to ON.
4) Measure voltage between pressure sensor connector and engine ground.

Connector & terminal
(E21) No. 3 (+) — Engine ground (−):



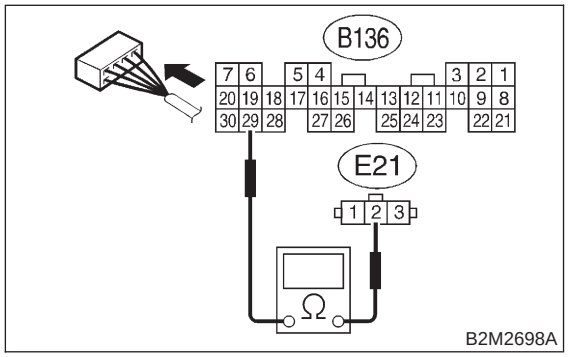
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11G7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and pressure sensor connector
● Poor contact in coupling connector (B21)

11G7 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 29 — (E21) No. 2:



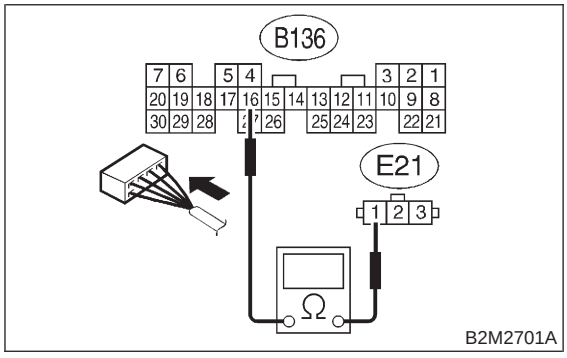
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11G8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and pressure sensor connector
- Poor contact in coupling connector (B22)

11G8 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

Measure resistance of harness between ECM and pressure sensor connector.

Connector & terminal
(B136) No. 16 — (E21) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11G9**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and pressure sensor connector
- Poor contact in coupling connector (B21)

11G9 : CHECK POOR CONTACT.

Check poor contact in pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in pressure sensor connector?***
YES : Repair poor contact in pressure sensor connector.
NO : Replace pressure sensor. <Ref. to 2-7 [W11A0].>

11G10 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Disconnect connector from pressure sensor.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Read data of intake manifold absolute pressure signal using Subaru select monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 140 kPa (1,050 mmHg, 41.34 inHg)?***

YES : Repair battery short circuit in harness between ECM and pressure sensor connector.

NO : Replace pressure sensor. <Ref. to 2-7 [W11A0].>

MEMO:

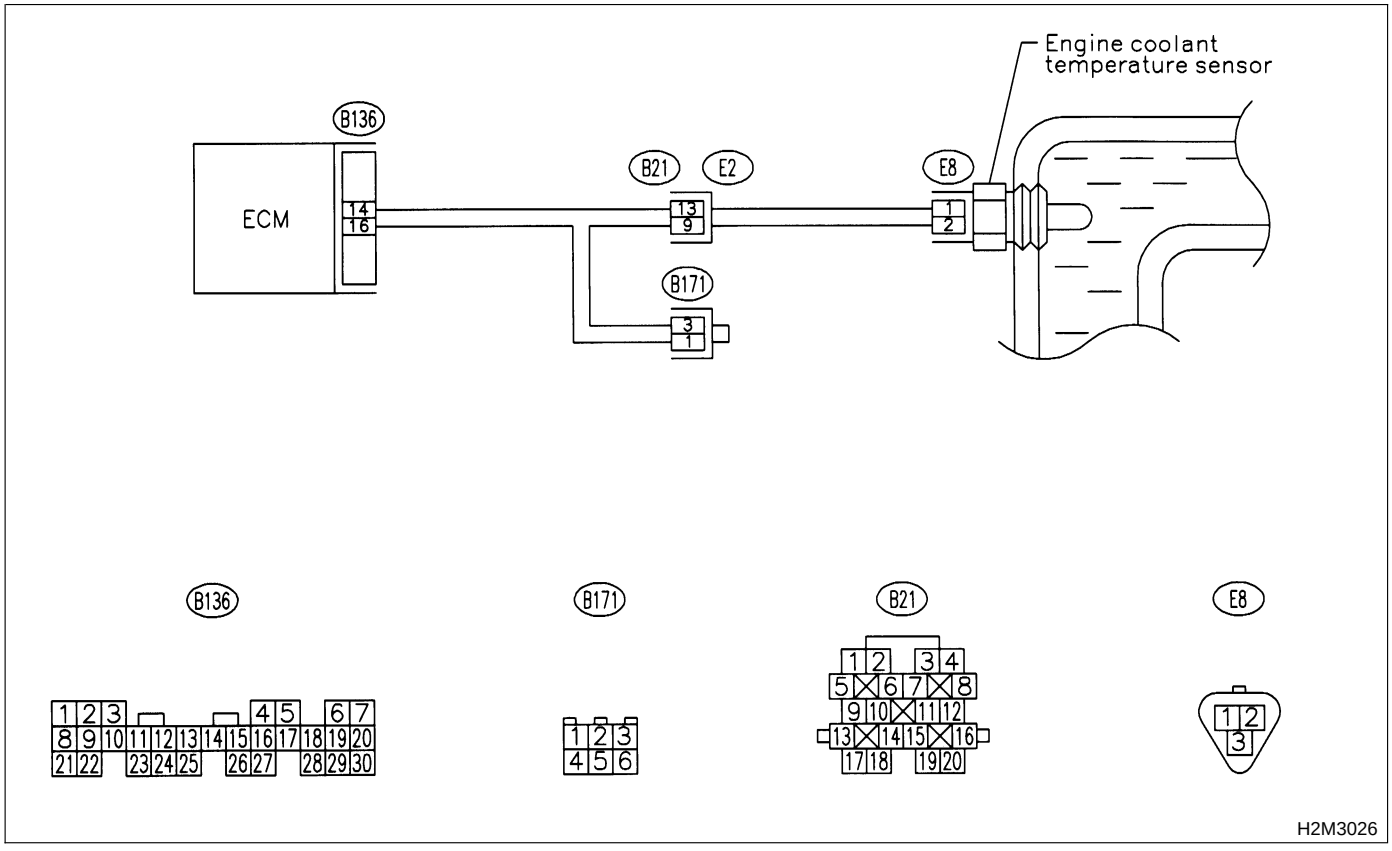
H: DTC P0116 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Hard to start
  - Erroneous idling
  - Poor driving performance

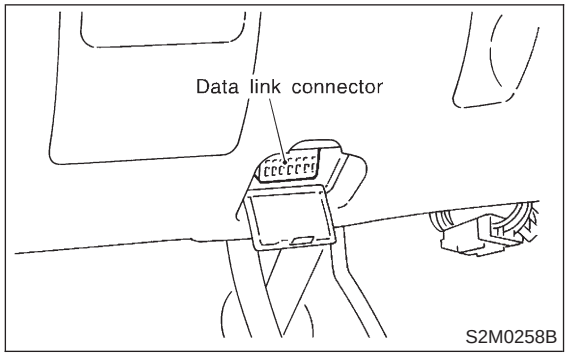
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11H1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

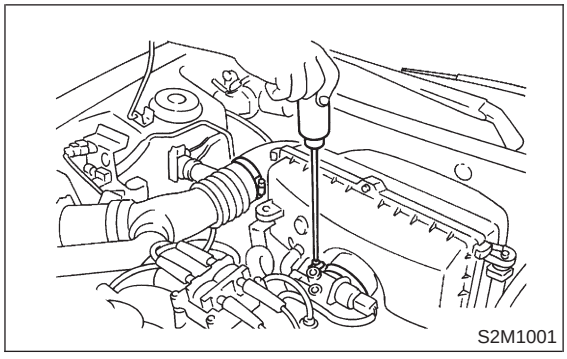
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value greater than 150°C (300°F)?***
YES : Go to step **11H2**.
NO : Repair poor contact.

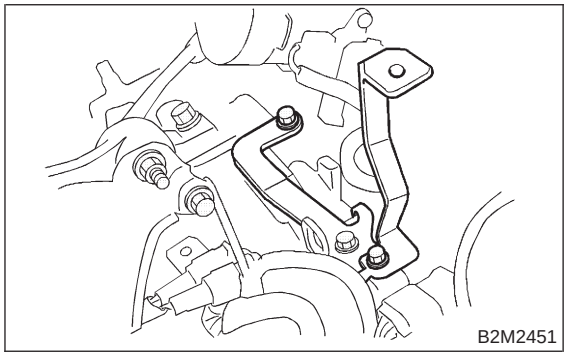
NOTE:
In this case, repair the following:
● Poor contact in engine coolant temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21)

11H2 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

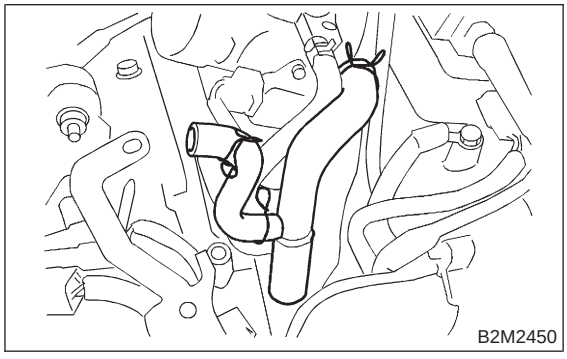
1) Turn ignition switch to OFF.
2) Remove air intake duct and air intake chamber assembly as a unit.



3) Remove engine harness connector bracket from cylinder block.



4) Remove blow-by hoses.



5) Disconnect connector from engine coolant temperature sensor.
6) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.
7) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A2].>
NO : Repair ground short circuit in harness between engine coolant temperature sensor and ECM connector.

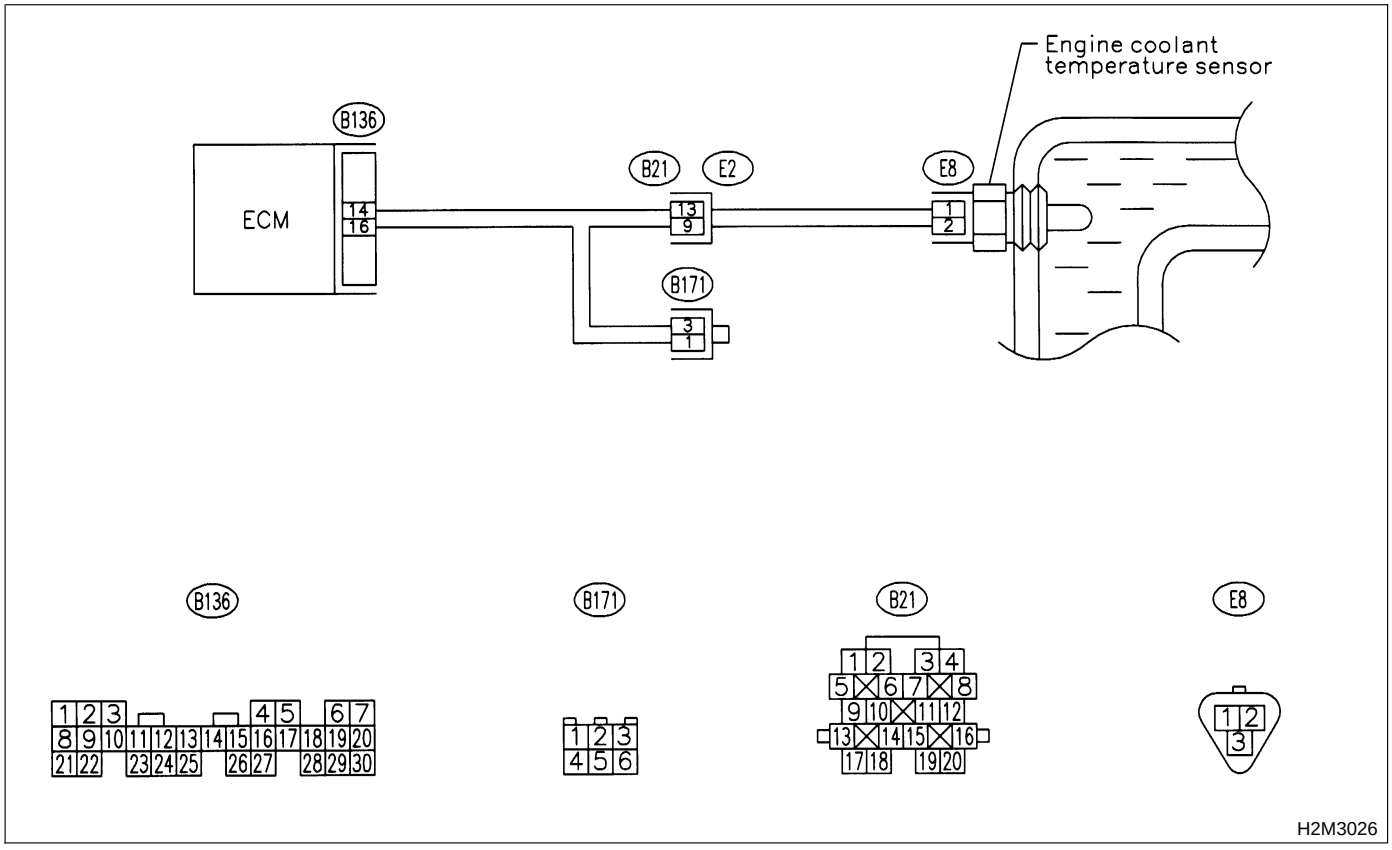
MEMO:

I: DTC P0117 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Hard to start
  - Erroneous idling
  - Poor driving performance

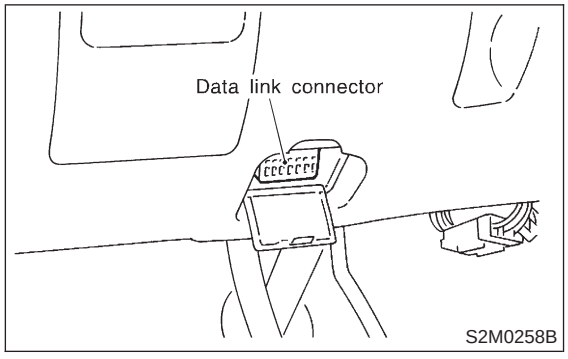
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11I1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

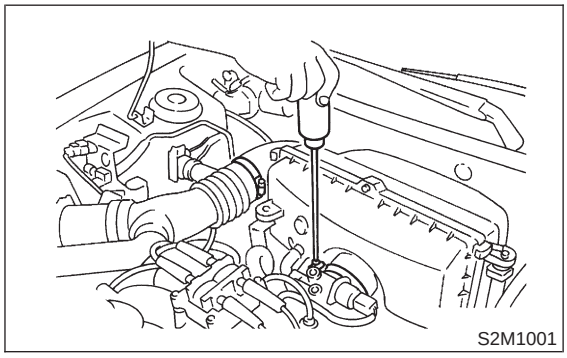
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **11I2**.
NO : Repair poor contact.

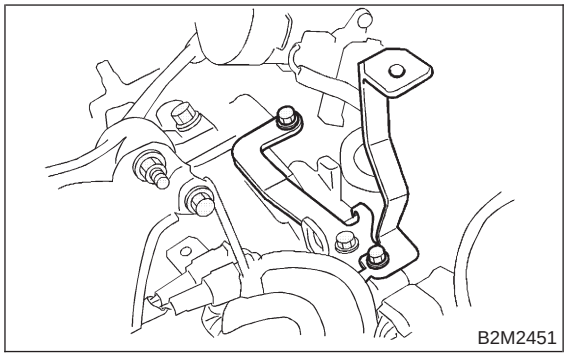
NOTE:
In this case, repair the following:
● Poor contact in engine coolant temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21)

11I2 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

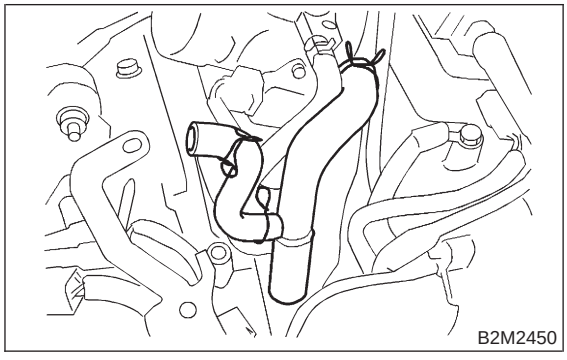
1) Turn ignition switch to OFF.
2) Remove air intake duct and air intake chamber assembly as a unit.



3) Remove engine harness connector bracket from cylinder block.



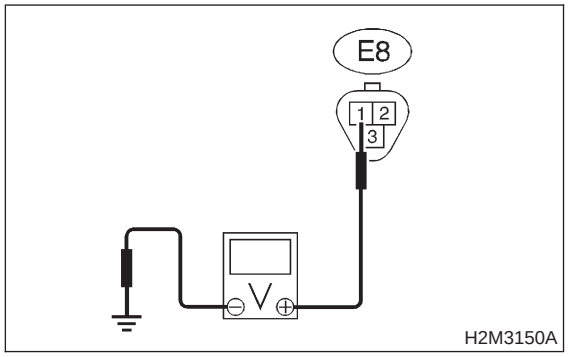
4) Remove blow-by hoses.



5) Disconnect connector from engine coolant temperature sensor.

6) Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (−):

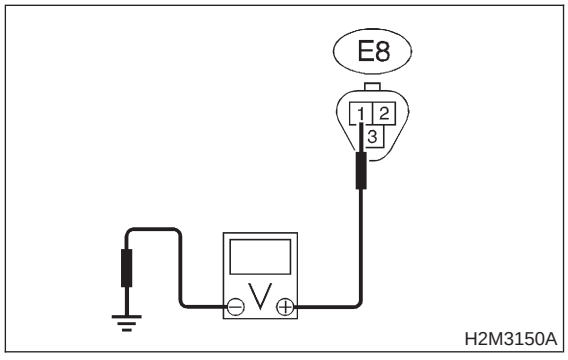


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.
NO : Go to step **11I3**.

11I3 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (−):

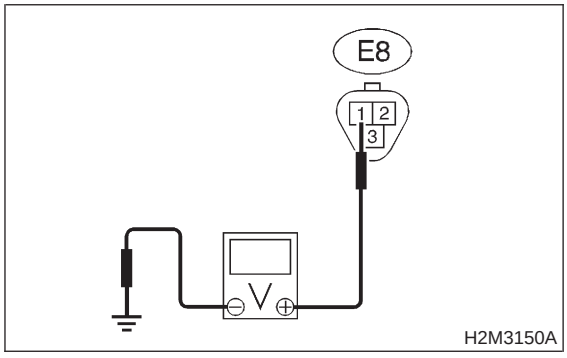


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.
NO : Go to step **11I4**.

11I4 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (−):



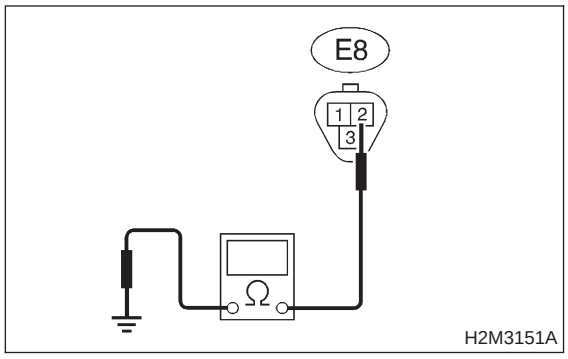
CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **11I5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

11I5 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance of harness between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A2].>
NO : Repair harness and connector.

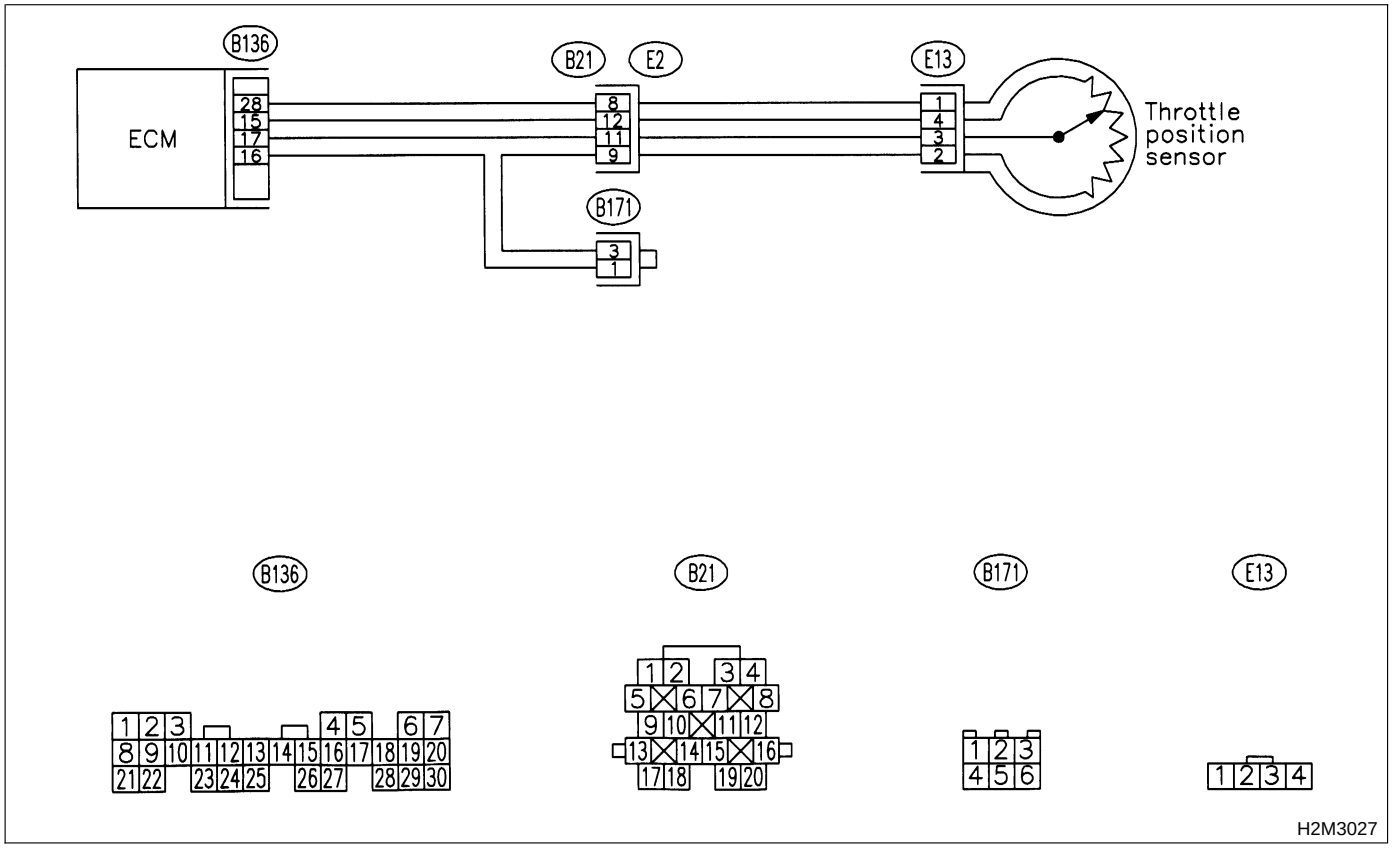
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

J: DTC P0121 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11J1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0122 or P0123?***

YES : Inspect DTC P0122 or P0123 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0121.

NO : Replace throttle position sensor. <Ref. to 2-7 [W9A2].>

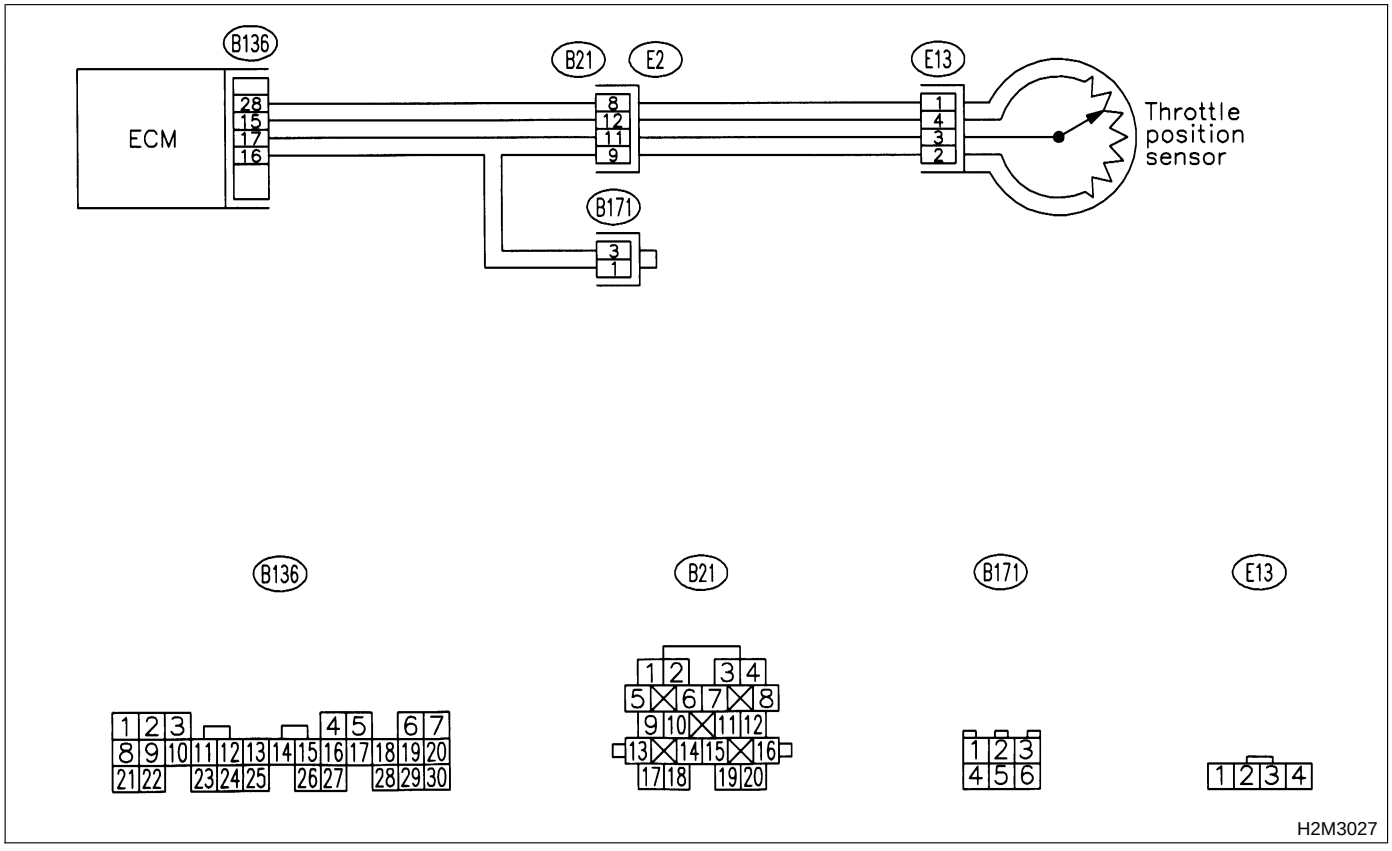
K: DTC P0122 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

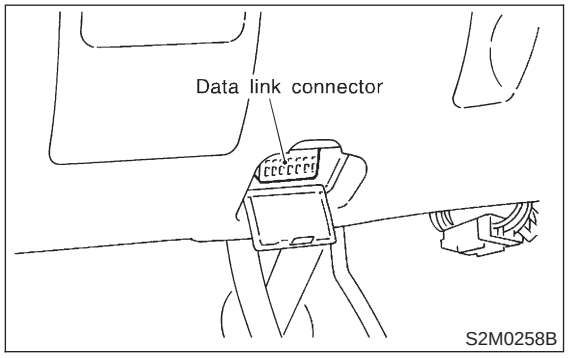
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11K1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

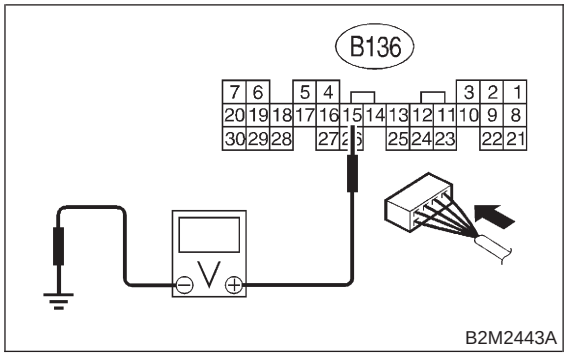
CHECK : ***Is the value less than 0.1 V?***
YES : Go to step **11K2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
● Poor contact in throttle position sensor connector
● Poor contact in ECM connector
● Poor contact in coupling connector (B21)

11K2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground while throttle valve is fully closed.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

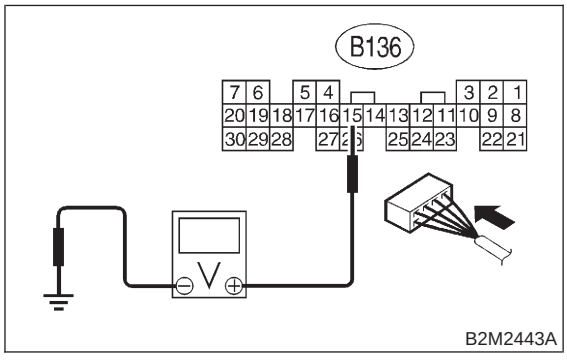


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11K4**.
NO : Go to step **11K3**.

11K3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



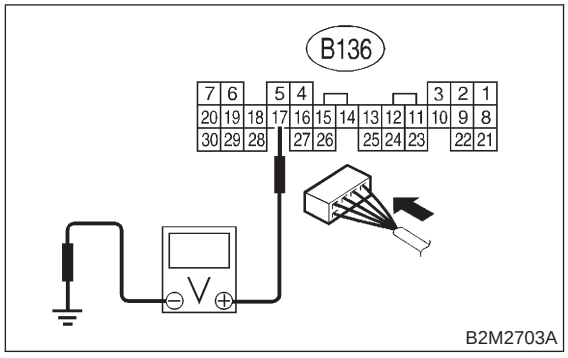
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11K4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 17 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.1 V?***
YES : Go to step **11K6**.
NO : Go to step **11K5**.

11K5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

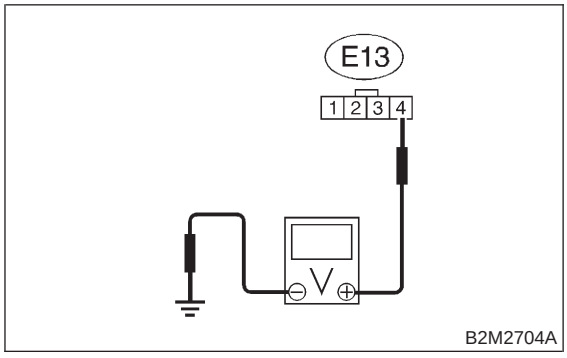
Measure voltage between ECM connector and chassis ground.

CHECK : ***Does the voltage change more than 0.1 V by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11K6**.

11K6 : CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from throttle position sensor.
3) Turn ignition switch to ON.
4) Measure voltage between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 4 (+) — Engine ground (−):



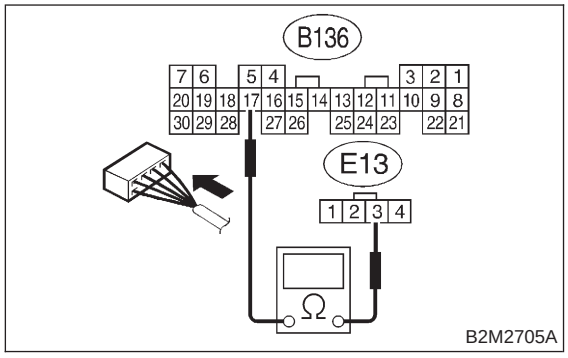
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11K7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in throttle position sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

11K7 : CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance of harness between ECM connector and throttle position sensor connector.

Connector & terminal
(B136) No. 17 — (E13) No. 3:



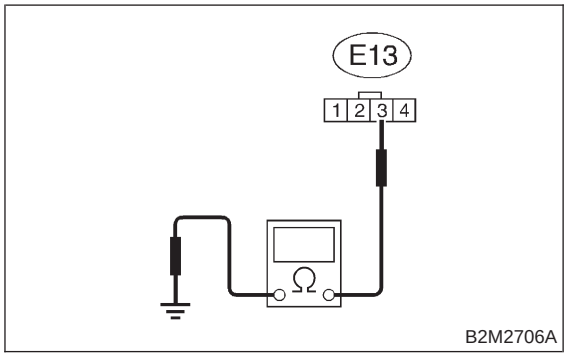
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11K8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in throttle position sensor connector
- Poor contact in coupling connector (B21)

11K8 : CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.

Measure resistance of harness between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 3 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between throttle position sensor and ECM connector.
NO : Go to step **11K9**.

11K9 : CHECK POOR CONTACT.

Check poor contact in throttle position sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in throttle position sensor connector?***
YES : Repair poor contact in throttle position sensor connector.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A2].>

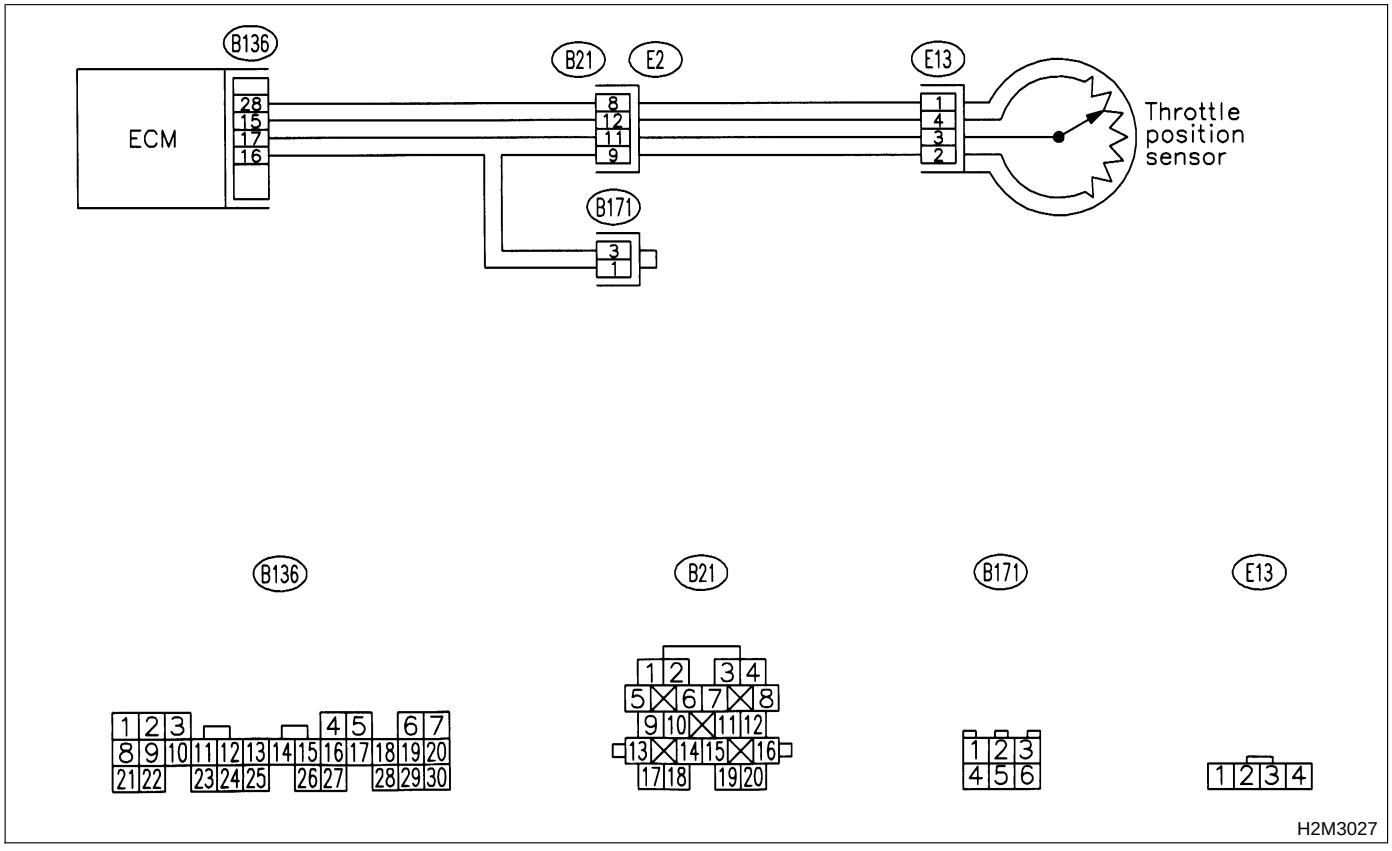
L: DTC P0123 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

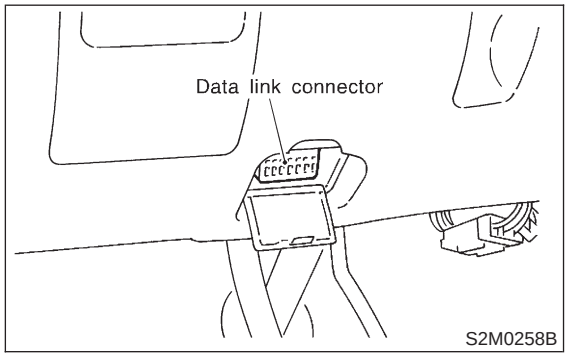
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11L1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

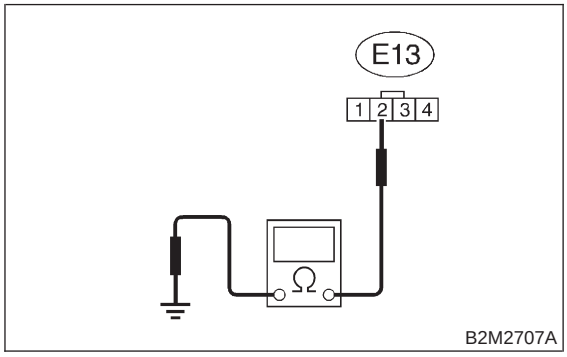
CHECK : ***Is the value more than 4.9 V?***
YES : Go to step **11L2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
● Poor contact in throttle position sensor connector
● Poor contact in ECM connector
● Poor contact in coupling connector (B21)
● Poor contact in joint connector (B171)

11L2 : CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance of harness between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 2 — Engine ground:



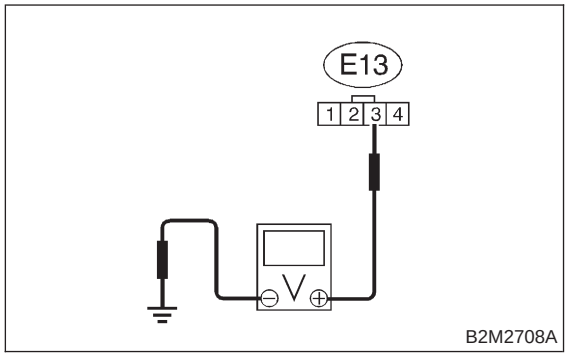
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11L3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between throttle position sensor and ECM connector
● Poor contact in coupling connector (B21)
● Poor contact in joint connector (B171)

11L3 : CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 3 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 4.9 V?***

YES : Repair battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

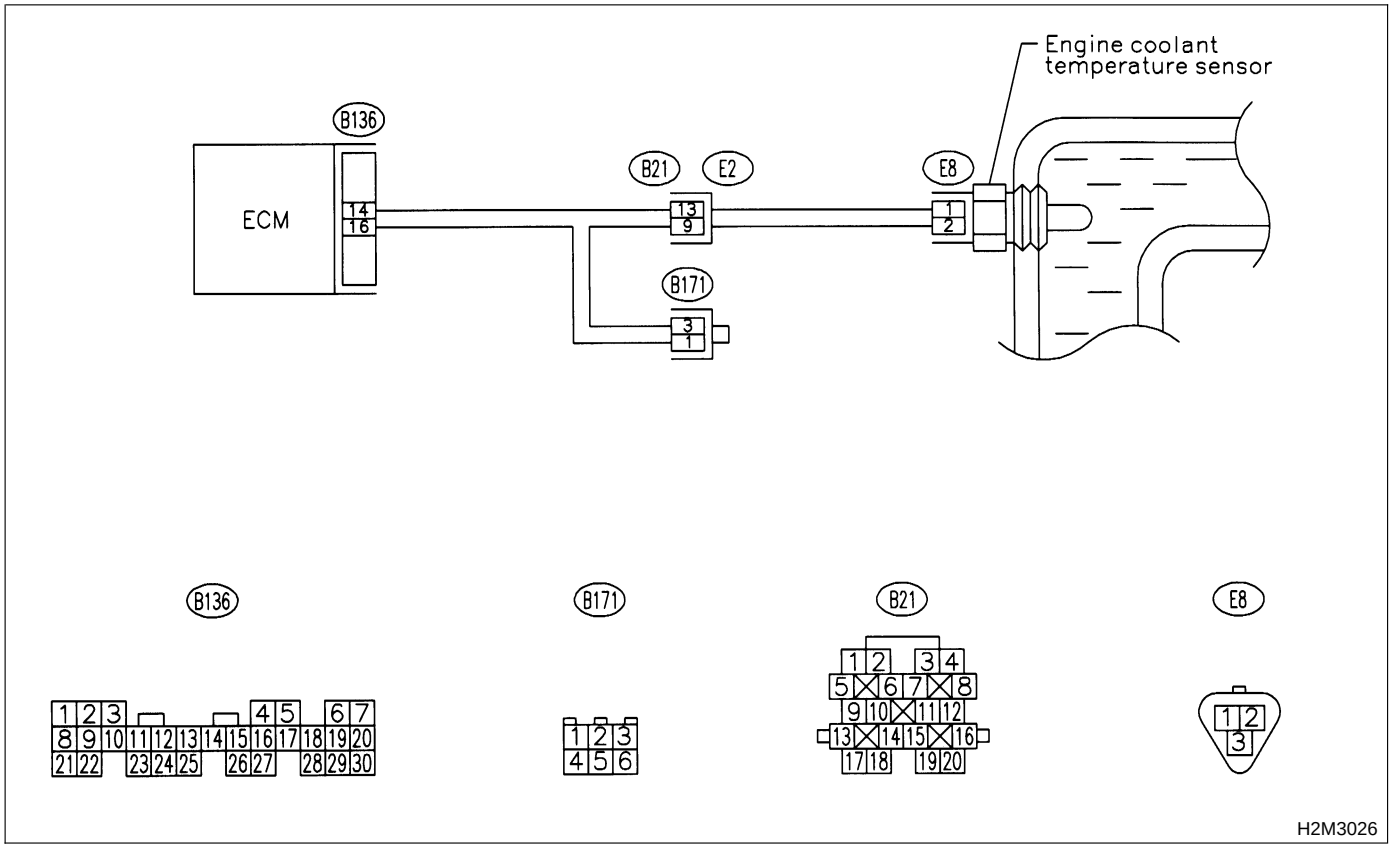
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A2].>

M: DTC P0125 — INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine would not return to idling.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11M1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0116 or P0117?***

YES : Inspect DTC P0116 or P0117 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0125.

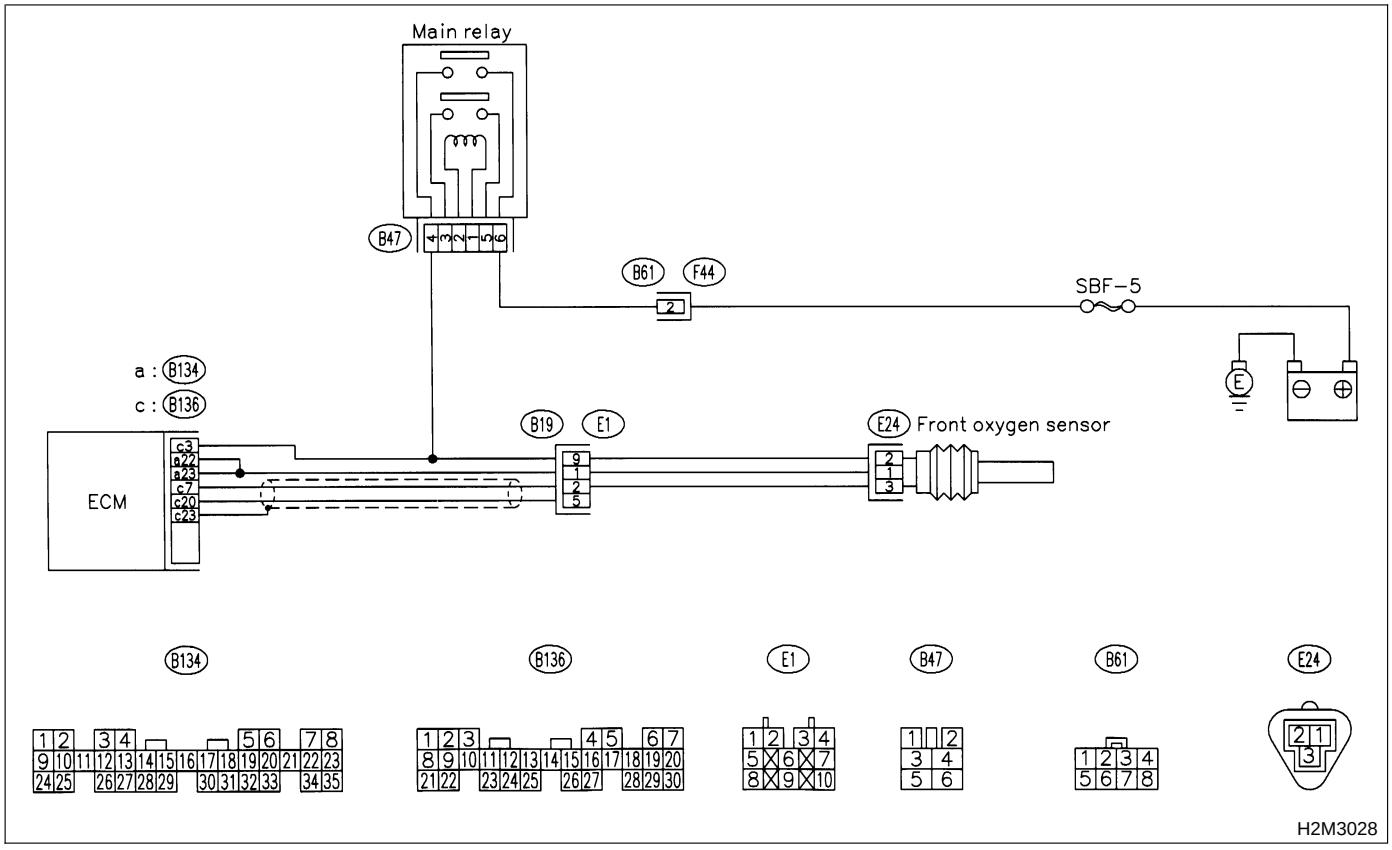
NO : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A2].>

N: DTC P0130 — FRONT OXYGEN SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



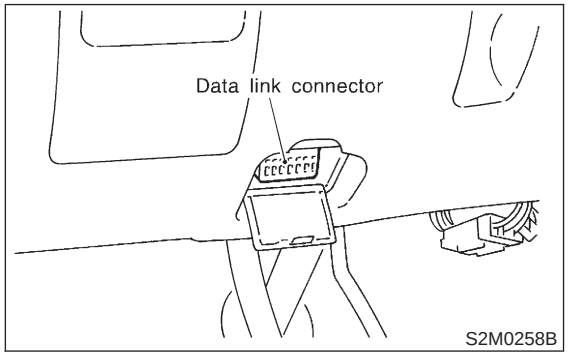
11N1 : CHECK FOR OTHER CAUSES AFFECTING EXHAUST GAS.

NOTE:
- Check for use of improper fuel.
- Check if engine oil or coolant level is extremely low.

CHECK : ***Is CO % more than 2 % after engine warm-up?***
YES : Check fuel system.
NO : Go to step **11N2**.

11N2 : CHECK FRONT OXYGEN SENSOR DATA.

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Start engine and Turn the Subaru Select Monitor and the OBD-II general scan tool switch to ON.
4) Warm-up the engine until coolant temperature is above 70°C (160°F) and keep the engine speed at 2,000 rpm to 3,000 rpm for one minute.
5) Read data of front oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.

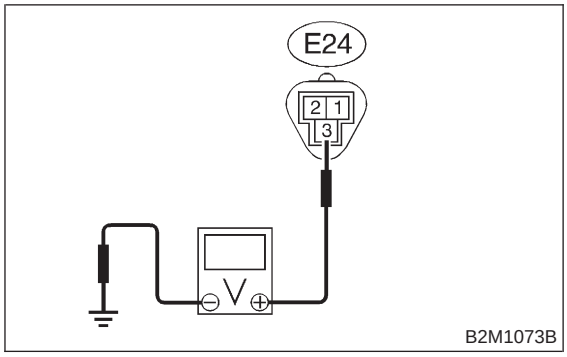
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ OXYGEN SENSOR MONITORING TEST RESULTS DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C7].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the difference of voltage less than 0.1 V between the value of max. output and min. output?***
YES : Go to step **11N3**.
NO : Replace front oxygen sensor. <Ref. to 2-7 [W7A0].>

11N3 : CHECK HARNESS BETWEEN FRONT OXYGEN SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from front oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between front oxygen sensor harness connector and engine ground.

Connector & terminal
(E24) No. 3 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 0.2 V?***
YES : Go to step **11N4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and front oxygen sensor connector
● Poor contact in the ECM connector

11N4 : CHECK POOR CONTACT.

Check poor contact in front oxygen sensor connector. <Ref. to FOREWORD [T3C1].>

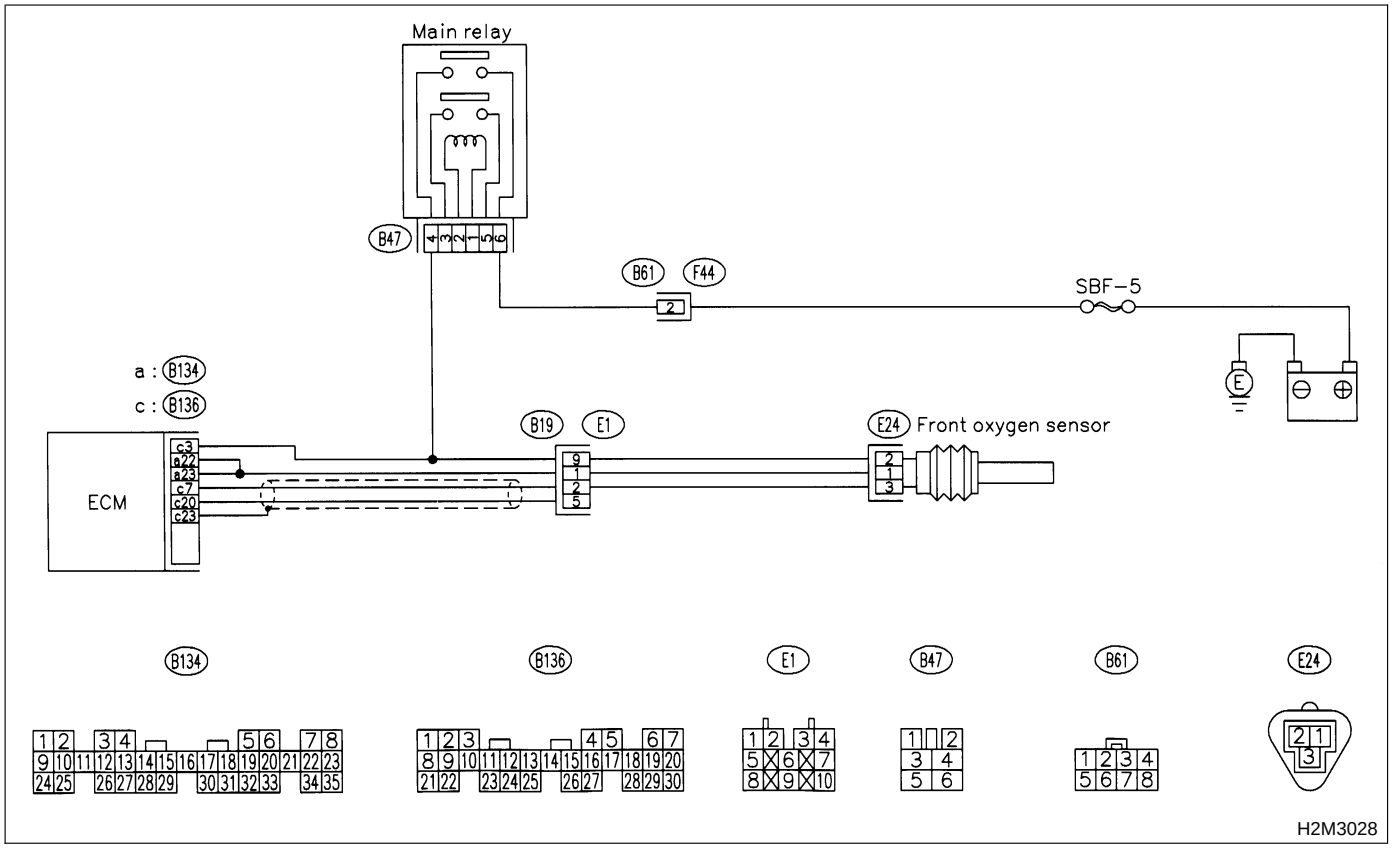
CHECK : ***Is there poor contact in front oxygen sensor connector?***
YES : Repair poor contact in front oxygen sensor connector.
NO : Replace front oxygen sensor. <Ref. to 2-7 [W7A0].>

O: DTC P0133 — FRONT OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11O1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0130?***

YES : Inspect DTC P0130 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0133.

NO : Go to step **11O2**.

11O2 : CHECK EXHAUST SYSTEM.

NOTE:
Check the following items.
- Loose installation of front portion of exhaust pipe onto cylinder heads
- Loose connection between front exhaust pipe and front catalytic converter
- Damage of exhaust pipe resulting in a hole

CHECK : ***Is there a fault in exhaust system?***

YES : Repair exhaust system.

NO : Replace front oxygen sensor. <Ref. to 2-7 [W7A0].>

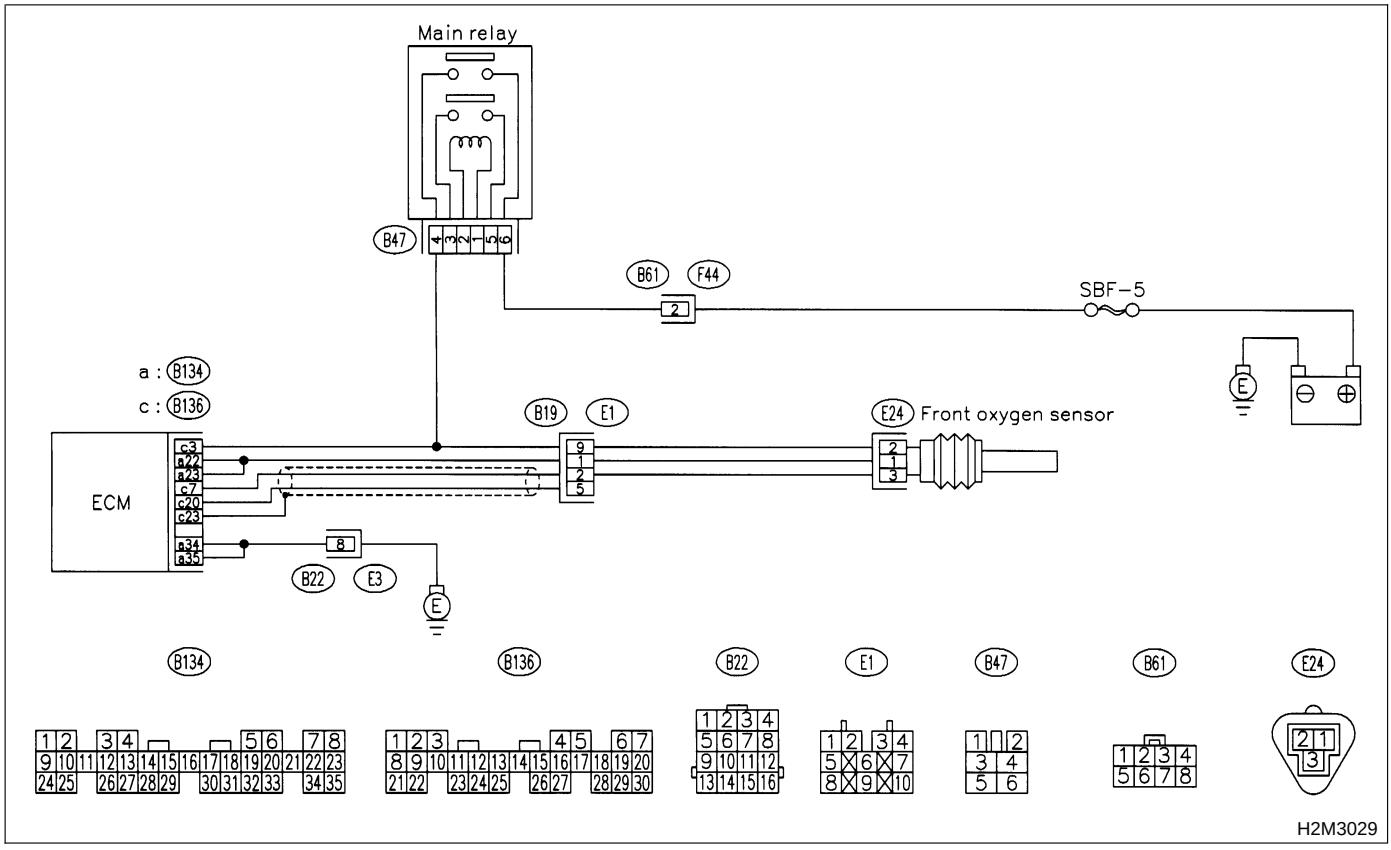
MEMO:

P: DTC P0135 — FRONT OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11P1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0135 and P0141 at the same time?***

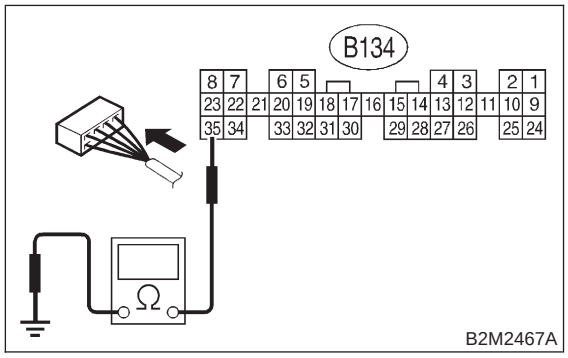
YES : Go to step **11P2**.

NO : Go to step **11P4**.

11P2 : CHECK GROUND CIRCUIT OF ECM.

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

Connector & terminal
(B134) No. 35 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11P4**.
NO : Go to step **11P3**.

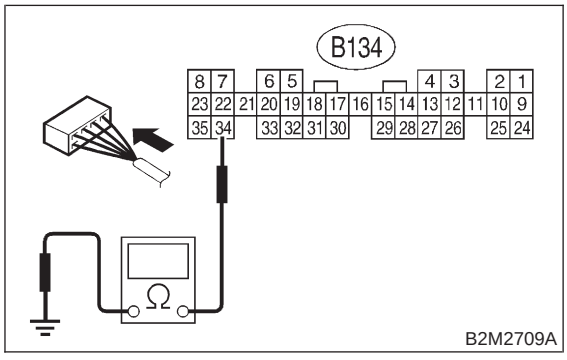
11P3 : CHECK GROUND CIRCUIT OF ECM.

1) Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

2) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B134) No. 34 — Chassis ground:



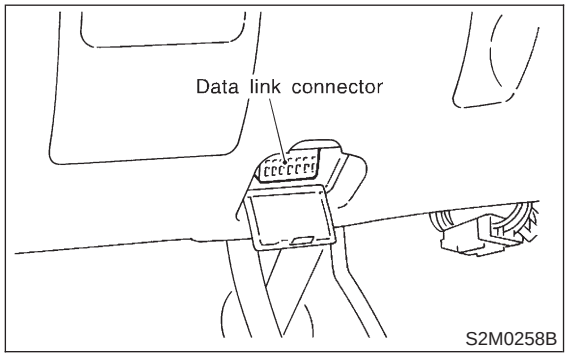
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11P4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector

Poor contact in coupling connector (B22)

11P4 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine
5) Read data of front oxygen sensor heater current using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 0.2 A?***
YES : Repair connector.

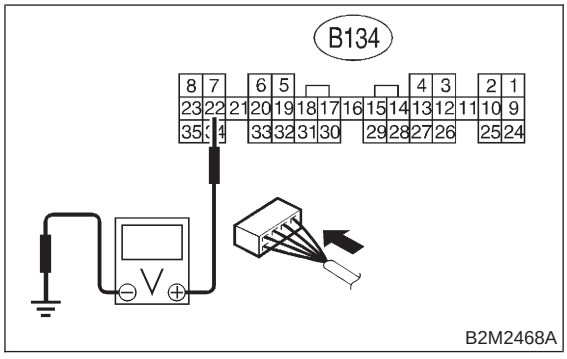
NOTE:
In this case, repair the following:
● Poor contact in front oxygen sensor connector
● Poor contact in ECM connector

NO : Go to step **11P5**.

11P5 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start and idle the engine.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):

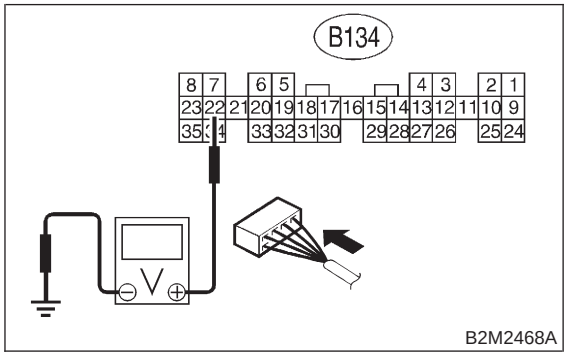


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **11P11**.
NO : Go to step **11P6**.

11P6 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):

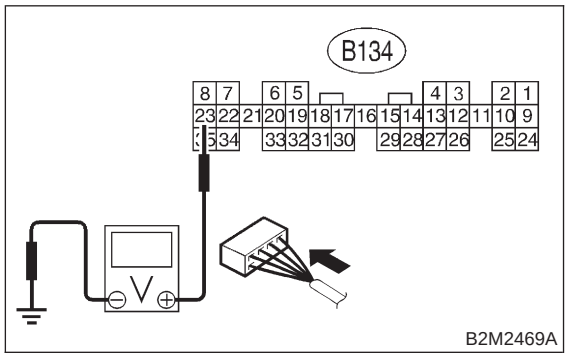


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11P7**.

11P7 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

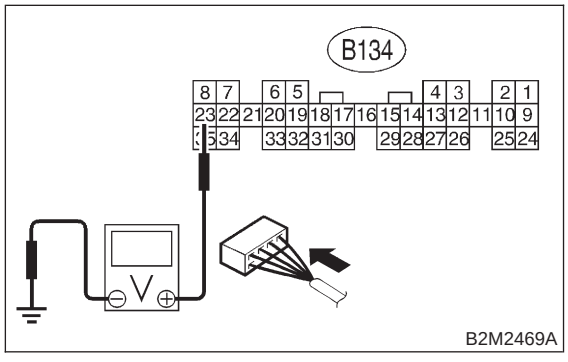


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **11P11**.
NO : Go to step **11P8**.

11P8 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

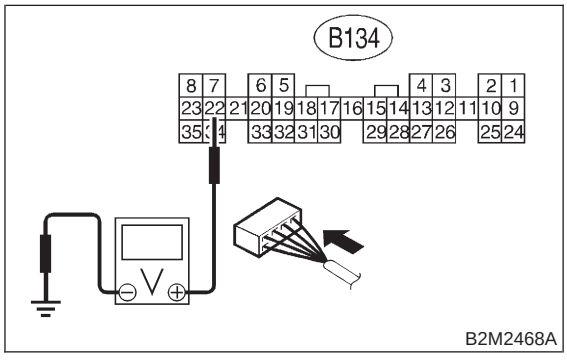


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11P9**.

11P9 : CHECK OUTPUT SIGNAL FROM ECM.

1) Disconnect connector from front oxygen sensor.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):

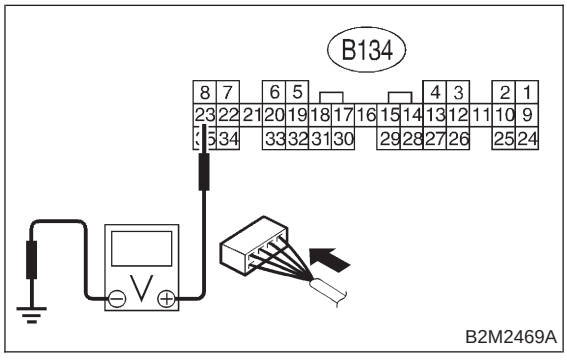


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **11P10**.
NO : Repair battery short circuit in harness between ECM and front oxygen sensor connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

11P10 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

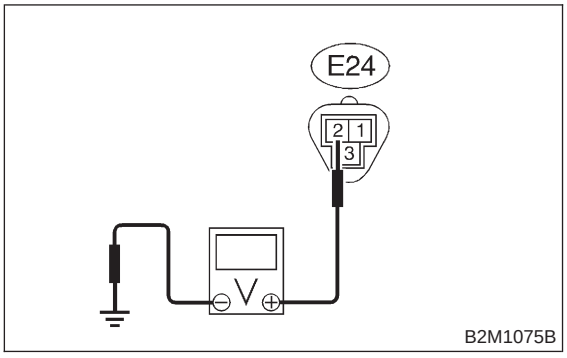


CHECK : ***Is the voltage less than 1.0 V?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : Repair battery short circuit in harness between ECM and front oxygen sensor connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

11P11 : CHECK POWER SUPPLY TO FRONT OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from front oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between front oxygen sensor connector and engine ground.

Connector & terminal
(E24) No. 2 (+) — Engine ground (−):



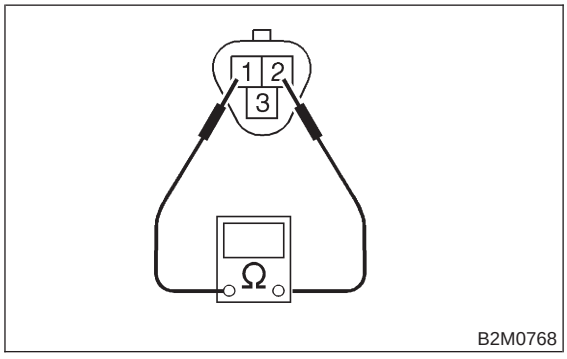
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11P12**.
NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and front oxygen sensor connector
- Poor contact in front oxygen sensor connector
- Poor contact in main relay connector

11P12 : CHECK FRONT OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between front oxygen sensor connector terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 30 Ω?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between front oxygen sensor and ECM connector
- Poor contact in front oxygen sensor connector
- Poor contact in ECM connector

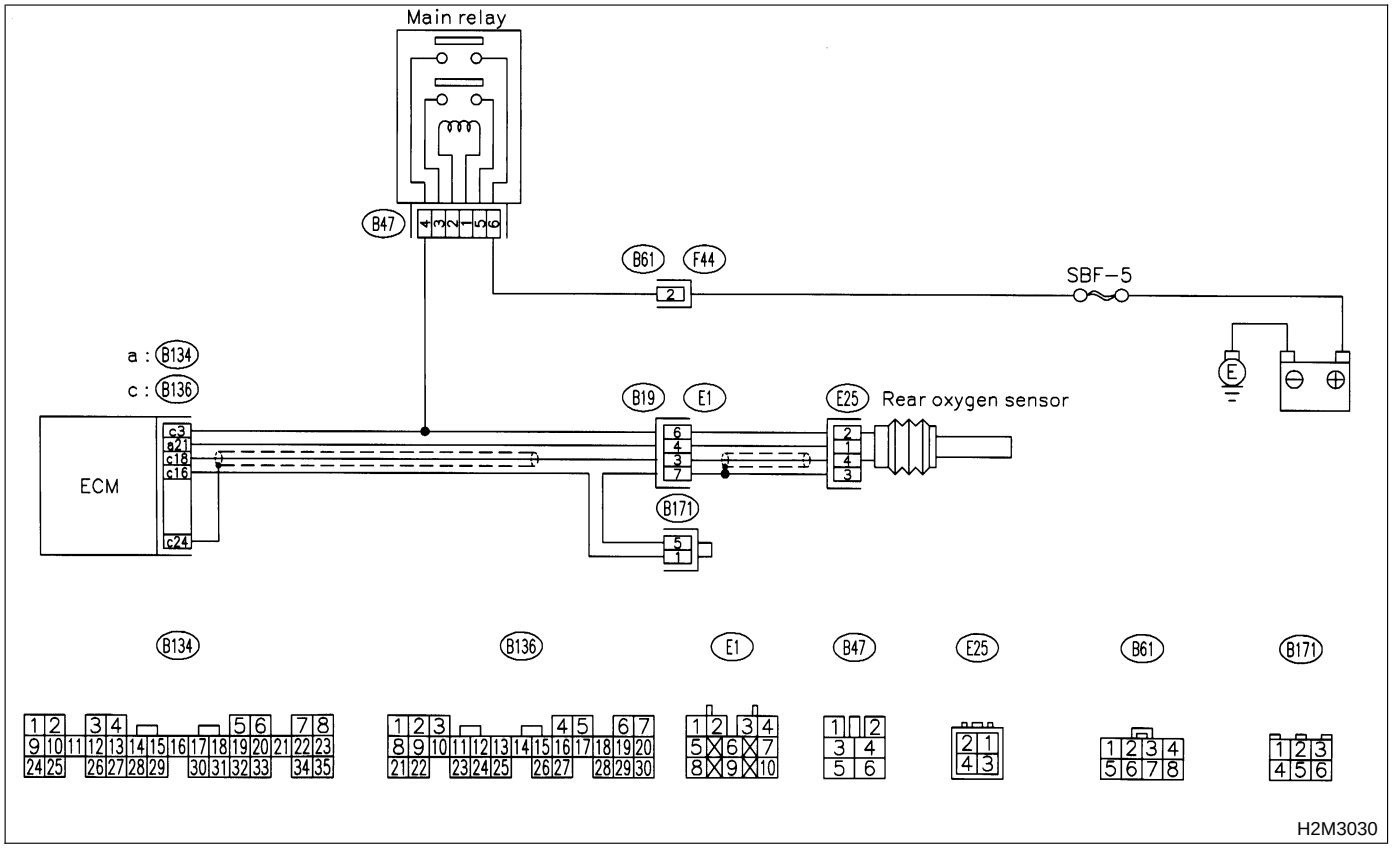
NO : Replace front oxygen sensor. <Ref. to 2-7 [W7A0].>

Q: DTC P0136 — REAR OXYGEN SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11Q1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0130?***
YES : Go to step **11Q2**.
NO : Go to step **11Q3**.

11Q2 : CHECK FAILURE CAUSE OF P0130.

Inspect DTC P0130 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

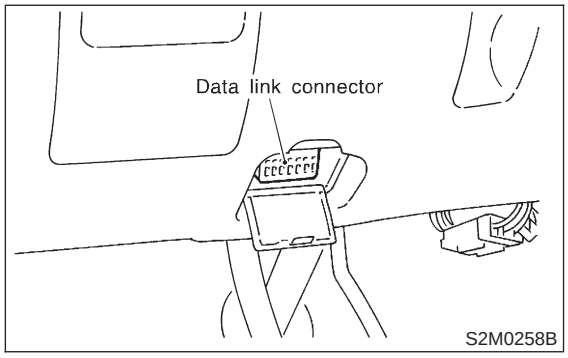
CHECK : ***Is the failure cause of P0130 in the fuel system?***
YES : Check fuel system.

NOTE:
In this case, it is not necessary to inspect DTC P0136.

NO : Go to step **11Q3**.

11Q3 : CHECK REAR OXYGEN SENSOR DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or OBD-II general scan tool to data link connector.



3) Start the engine, and turn Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Warm-up the engine until engine coolant temperature is above 70°C (160°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes.
5) Read data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Does the value fluctuate?***
YES : Go to step **11Q7**.
NO : Go to step **11Q4**.

11Q4 : CHECK REAR OXYGEN SENSOR DATA.

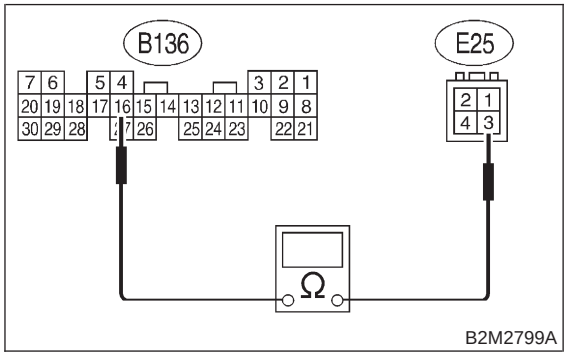
Read data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II General Scan Tool.

CHECK : ***Is the value fixed between 0.2 and 0.4 V?***
YES : Go to step **11Q5**.
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

11Q5 : CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 16 — (E25) No. 3:

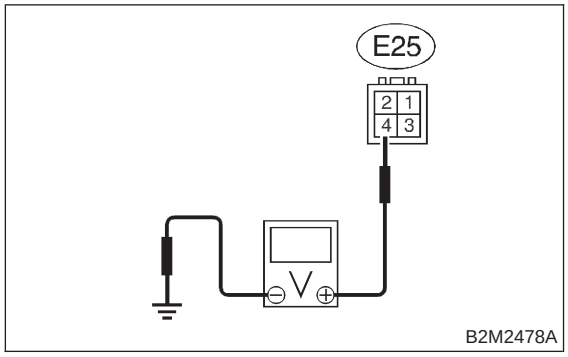


CHECK : ***Is the resistance more than 3 Ω?***
YES : Repair open circuit in harness between ECM and rear oxygen sensor connector.
NO : Go to step **11Q6**.

11Q6 : CHECK HARNESS BETWEEN REAR OXYGEN SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from rear oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between rear oxygen sensor harness connector and engine ground or chassis ground.

Connector & terminal
(E25) No. 4 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 0.2 V?***
YES : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
- Poor contact in rear oxygen sensor connector
- Poor contact in ECM connector

11Q7 : CHECK EXHAUST SYSTEM.

Check exhaust system parts.

NOTE:
Check the following items.
- Loose installation of portions
- Damage (crack, hole etc.) of parts
- Looseness and ill fitting of parts between front oxygen sensor and rear oxygen sensor

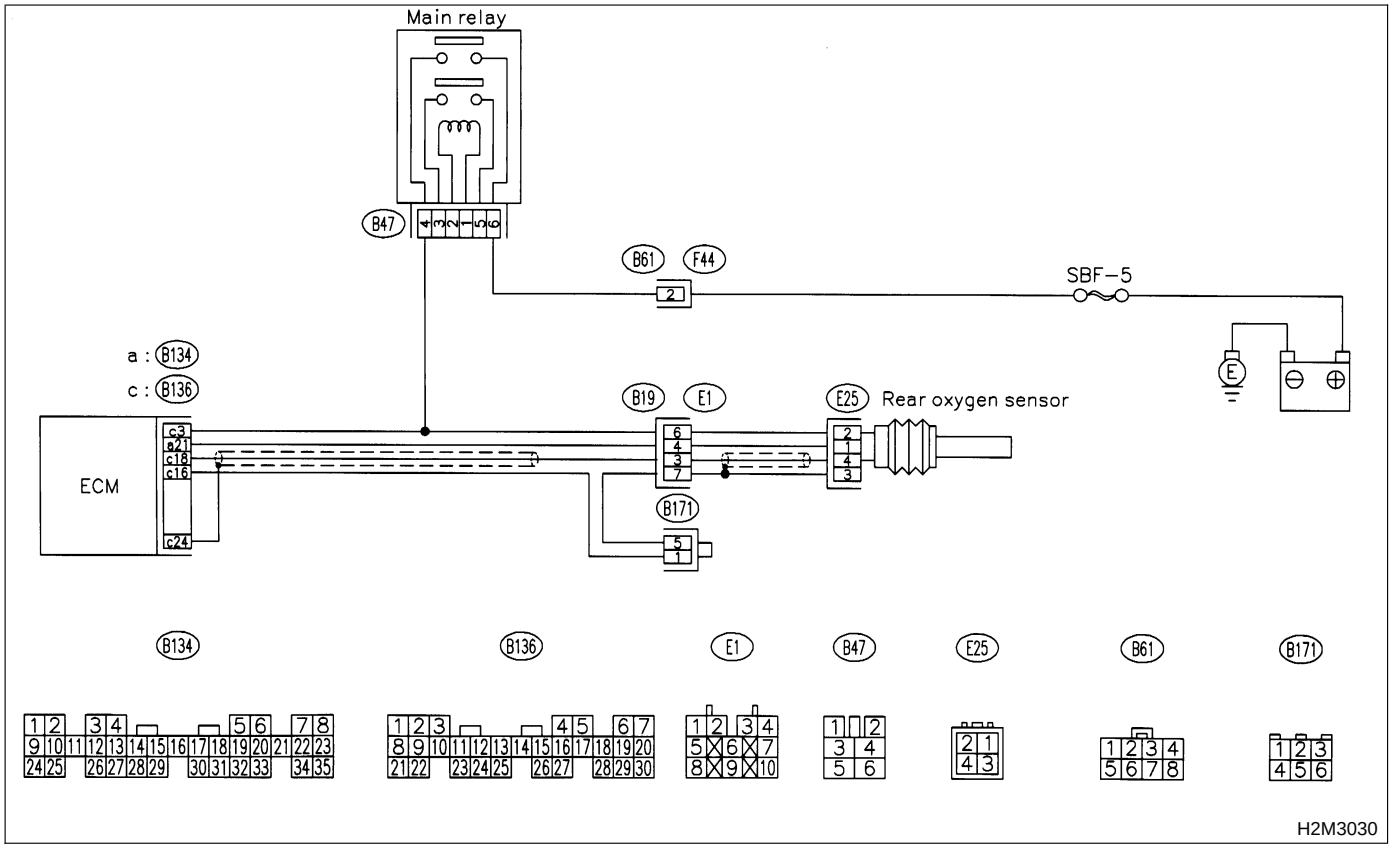
CHECK : ***Is there a fault in exhaust system?***
YES : Repair or replace faulty parts.
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

R: DTC P0139 — REAR OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11R1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0136?***

YES : Inspect DTC P0136 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0139.

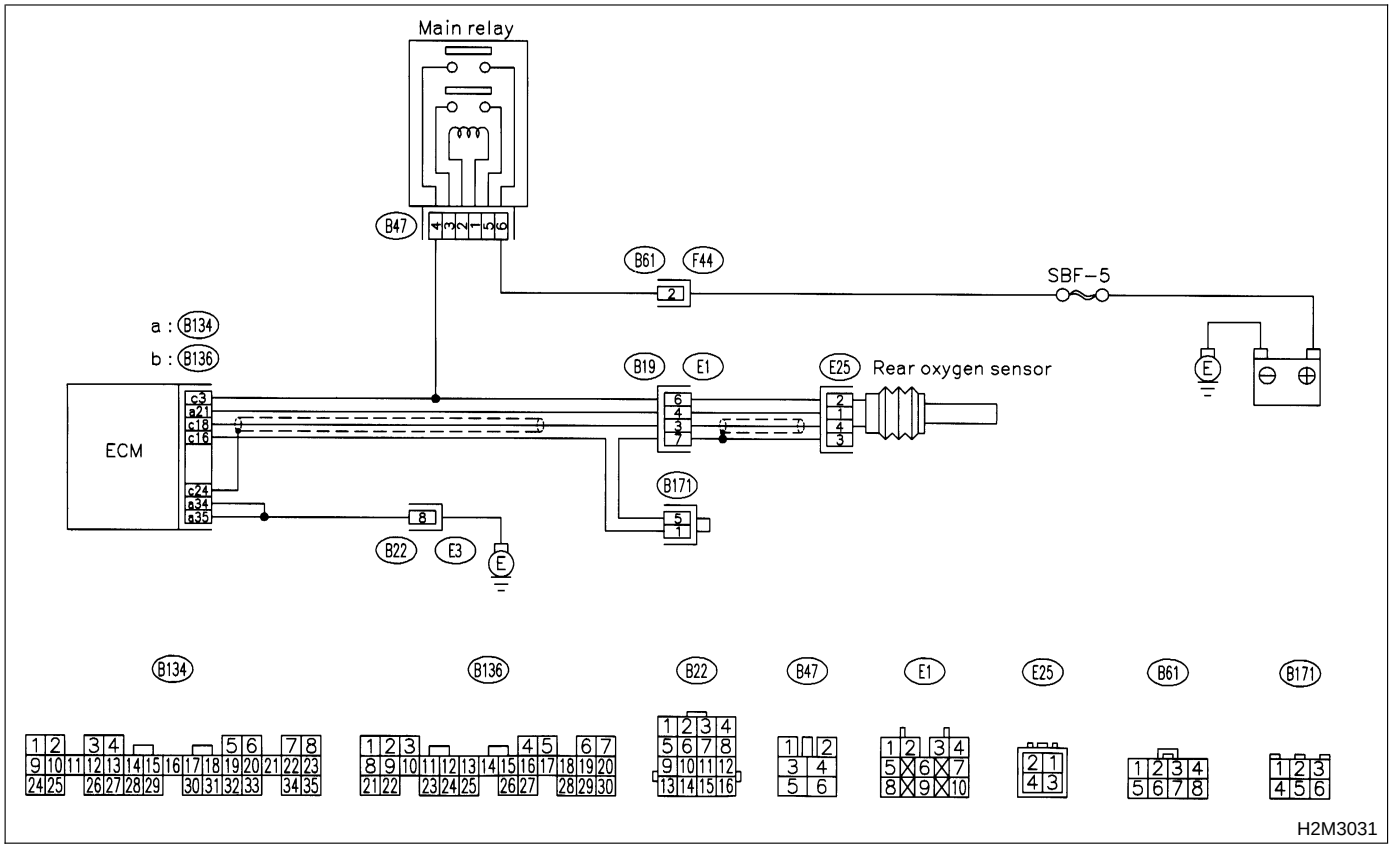
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

S: DTC P0141 — REAR OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11S1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0141 and P0135 at the same time?***

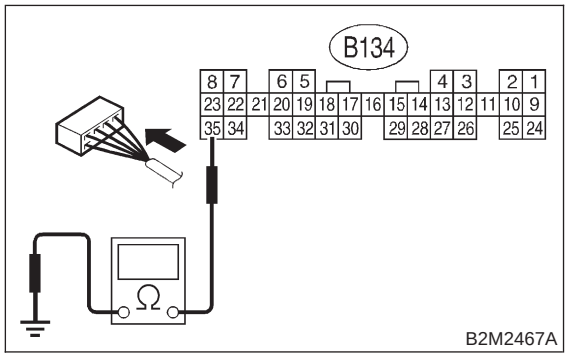
YES : Go to step **11S2**.

NO : Go to step **11S3**.

11S2 : CHECK GROUND CIRCUIT OF ECM.

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

Connector & terminal
(B134) No. 35 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11S4**.
NO : Go to step **11S3**.

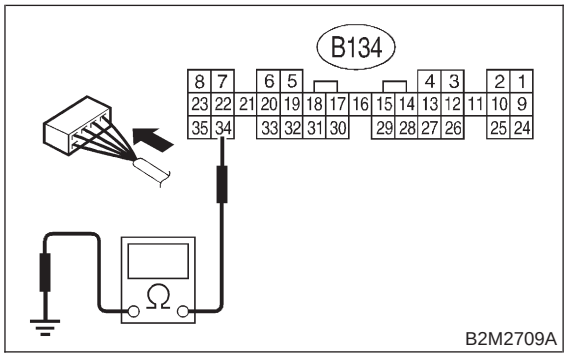
11S3 : CHECK GROUND CIRCUIT OF ECM.

1) Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

2) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B134) No. 34 — Chassis ground:

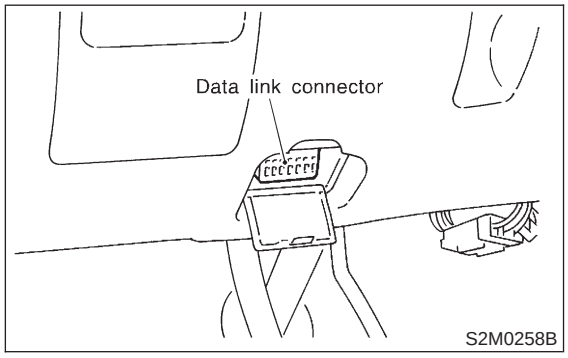


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11S4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

11S4 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of rear oxygen sensor heater current using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 0.2 A?***
YES : Repair connector.

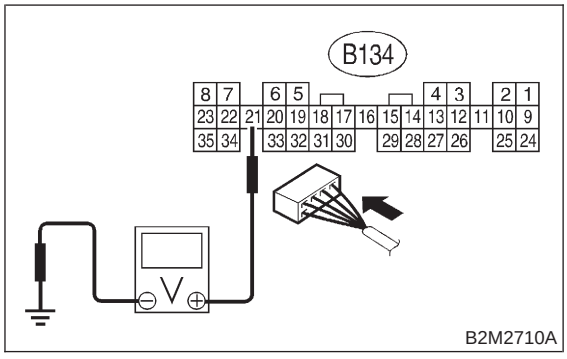
NOTE:
In this case, repair the following:
● Poor contact in rear oxygen sensor connector
● Poor contact in rear oxygen sensor connecting harness connector
● Poor contact in ECM connector

NO : Go to step **11S5**.

11S5 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start and idle the engine.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

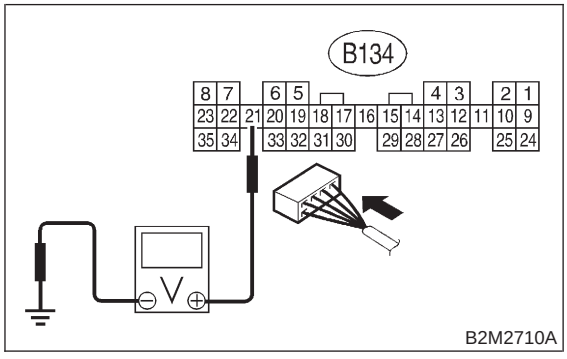


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **11S8**.
NO : Go to step **11S6**.

11S6 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

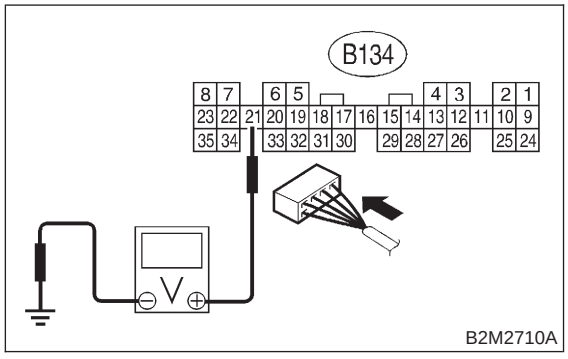


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11S7**.

11S7 : CHECK OUTPUT SIGNAL FROM ECM.

1) Disconnect connector from rear oxygen sensor.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

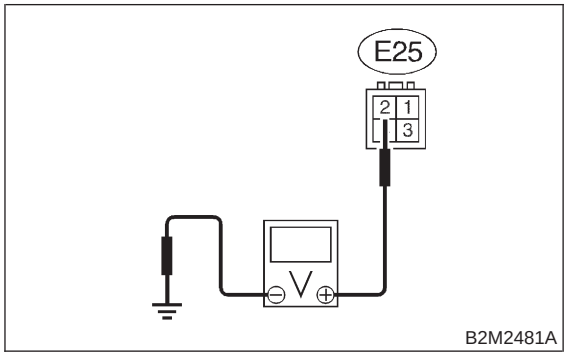


CHECK : ***Is the voltage less than 1.0 V?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : Repair battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

11S8 : CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from rear oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between rear oxygen sensor connector and engine ground or chassis ground.

Connector & terminal
(E25) No. 2 (+) — Chassis ground (−):



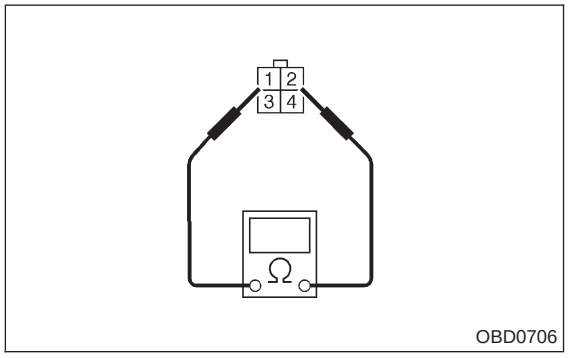
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11S9**.
NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and rear oxygen sensor connector
- Poor contact in rear oxygen sensor connector
- Poor contact in coupling connector (E1)

11S9 : CHECK REAR OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between rear oxygen sensor connector terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 30 Ω?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
- Poor contact in rear oxygen sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (E1)

NO : Replace rear oxygen sensor. <Ref. to 2-7 [W8A0].>

MEMO:

T: DTC P0170 — FUEL TRIM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

11T1 : CHECK EXHAUST SYSTEM.

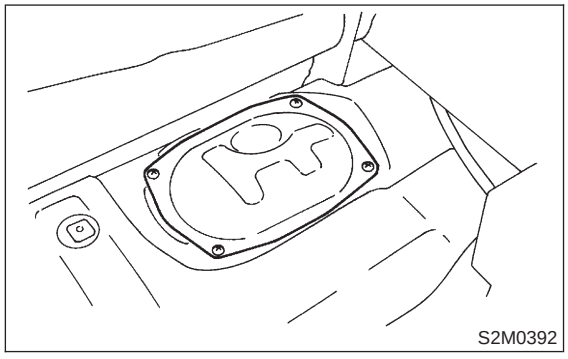
CHECK : ***Are there holes or loose bolts on exhaust system?***
YES : Repair exhaust system.
NO : Go to step **11T2**.

11T2 : CHECK AIR INTAKE SYSTEM.

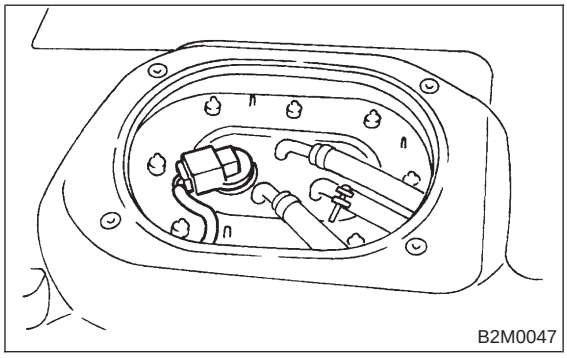
CHECK : ***Are there holes, loose bolts or disconnection of hose on air intake system?***
YES : Repair air intake system.
NO : Go to step **11T3**.

11T3 : CHECK FUEL PRESSURE.

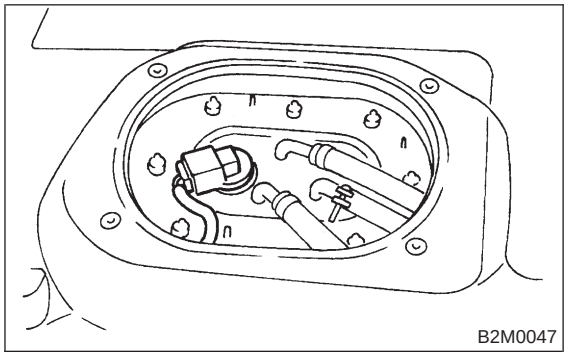
1) Release fuel pressure.
(1) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


S2M0392

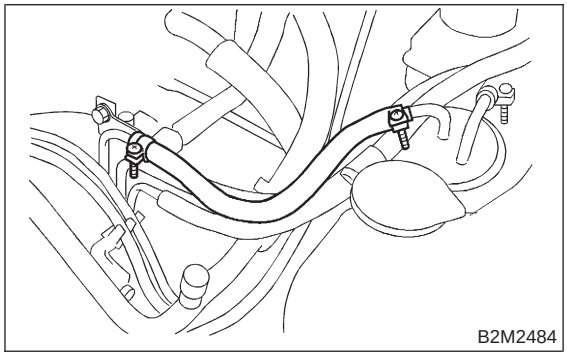
(2) Disconnect connector from fuel tank.


B2M0047

(3) Start the engine, and run it until it stalls.
(4) After stopping the engine, crank the engine for 5 to 7 seconds to reduce fuel pressure.
(5) Turn ignition switch to OFF.
(6) Remove fuel filler cap.
2) Connect connector to fuel tank.


B2M0047

3) Disconnect fuel delivery hose from fuel filter, and connect fuel pressure gauge.

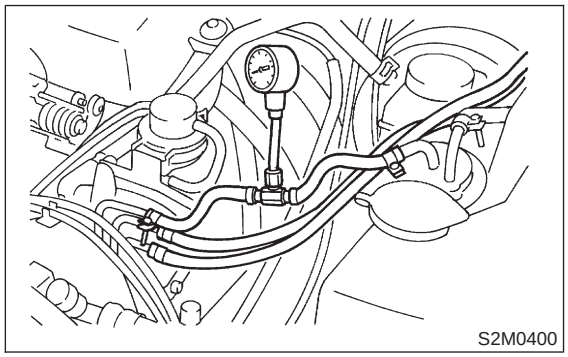

B2M2484

4) Install fuel filler cap.

5) Start the engine and idle while gear position is neutral.
6) Measure fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.

WARNING:
Before removing fuel pressure gauge, release fuel pressure.

NOTE:
If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.


S2M0400

CHECK : ***Is fuel pressure between 284 and 314 kPa (2.9 — 3.2 kg/cm^2, 41 — 46 psi)?***
YES : Go to step **11T4**.
NO : Repair the following items.

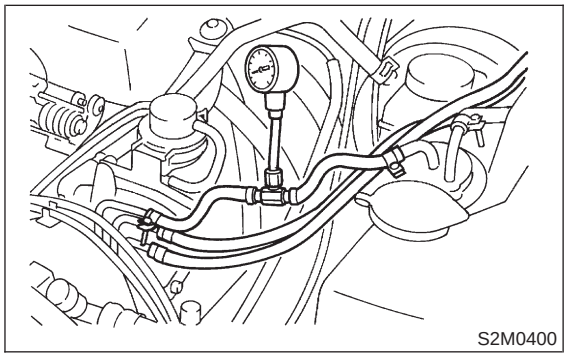
Fuel pressure too high	● Clogged fuel return line or bent hose
Fuel pressure too low	● Improper fuel pump discharge ● Clogged fuel supply line

11T4 : CHECK FUEL PRESSURE.

After connecting pressure regulator vacuum hose, measure fuel pressure.

WARNING:
Before removing fuel pressure gauge, release fuel pressure.

NOTE:
● If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.
● If out of specification as measured at this step, check or replace pressure regulator and pressure regulator vacuum hose.


S2M0400

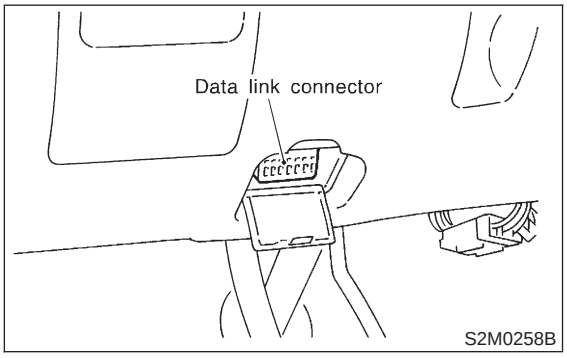
CHECK : ***Is fuel pressure between 206 and 235 kPa (2.1 — 2.4 kg/cm^2, 30 — 34 psi)?***
YES : Go to step **11T5**.
NO : Repair the following items.

Fuel pressure too high	● Faulty pressure regulator ● Clogged fuel return line or bent hose
Fuel pressure too low	● Faulty pressure regulator ● Improper fuel pump discharge ● Clogged fuel supply line

NOTE:
The fuel pressure gauge resisters 10 to 20 kPa (0.1 to 0.2 kg/cm^2, 1.4 to 2.8 psi) higher than standard values during high-altitude operations.

11T5 : CHECK ENGINE COOLANT TEMPERATURE SENSOR. < REF. TO 2-7 [T11H0].> OR <REF. TO 2-7 [T11I0].>

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Start the engine and warm-up completely.
4) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is temperature greater than 60°C (140°F)?***
YES : Go to step **11T6**.
NO : Replace engine coolant temperature sensor. <Ref. to 2-7 [W5A2].>

11T6 : CHECK MASS AIR FLOW SENSOR.

1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).
2) Place the selector lever in "N" or "P" position.
3) Turn A/C switch to OFF.
4) Turn all accessory switches to OFF.
5) Read data of mass flow sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

Specification:

Engine speed	Specified value
Idling	2.2 — 4.2 (g/sec)
2,500 rpm	8.6 — 14.5 (g/sec)

CHECK : ***Is the voltage within the specifications?***
YES : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

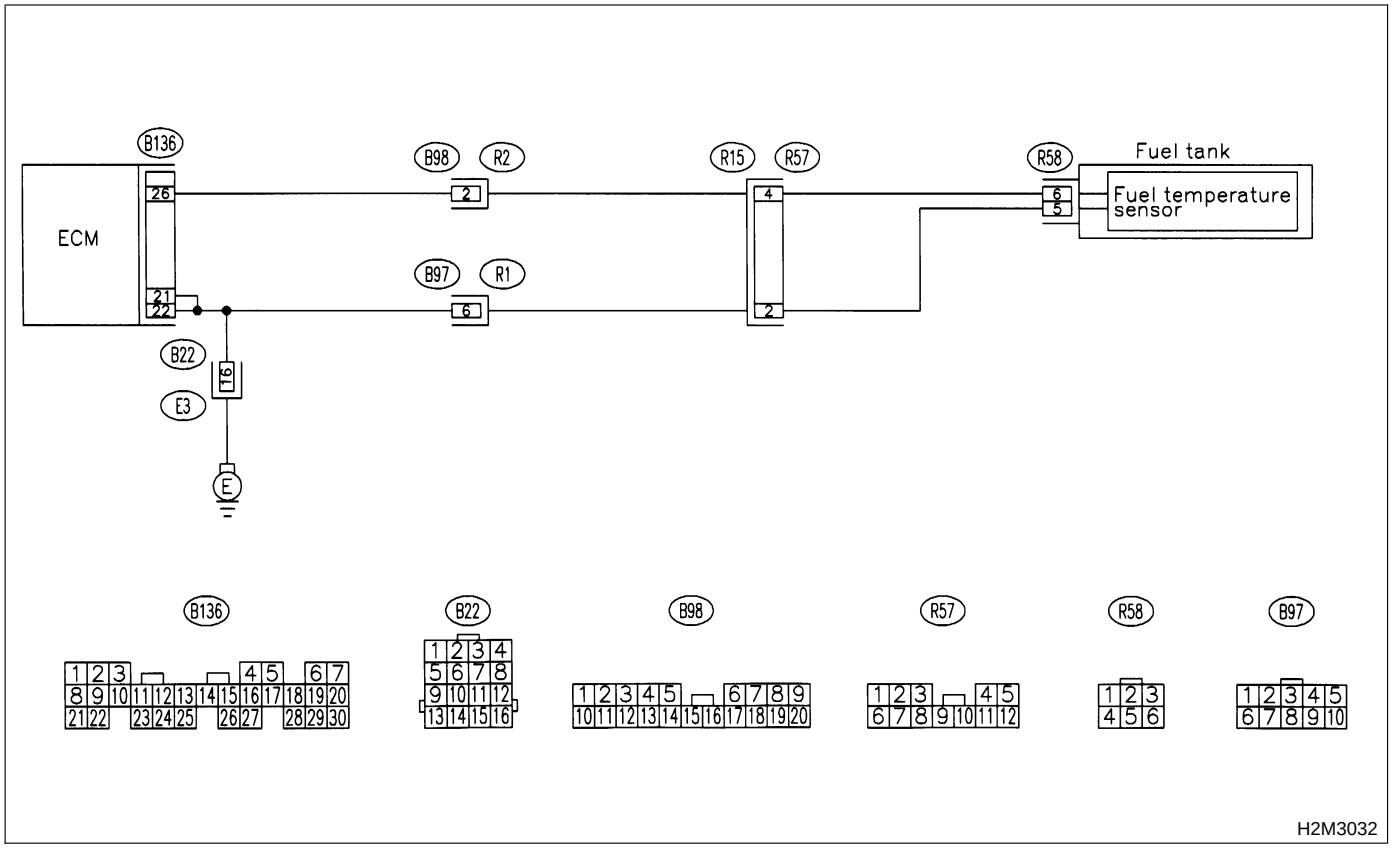
NO : Replace mass air flow sensor. <Ref. to 2-7 [W2A0].>

U: DTC P0181 — FUEL TEMPERATURE SENSOR A CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11U1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0182 or P0183?***

YES : Inspect DTC P0182 or P0183 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0181.

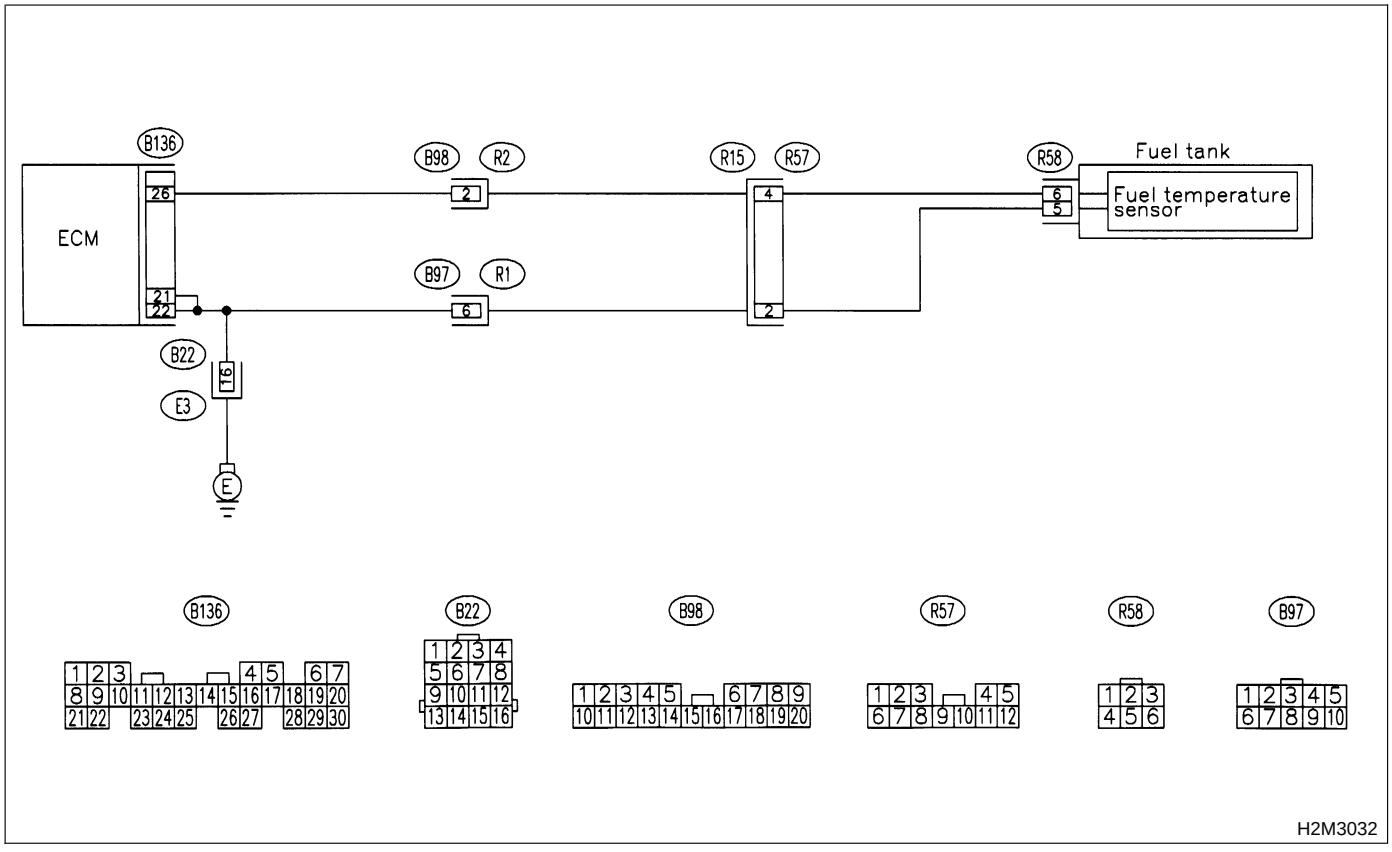
NO : Replace fuel temperature sensor. <Ref. to 2-1 [W5A0].>

V: DTC P0182 — FUEL TEMPERATURE SENSOR A CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

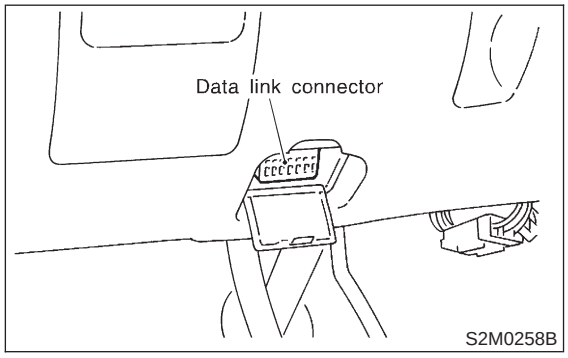
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11V1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



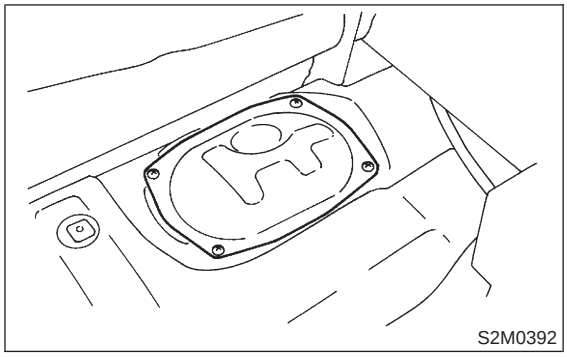
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

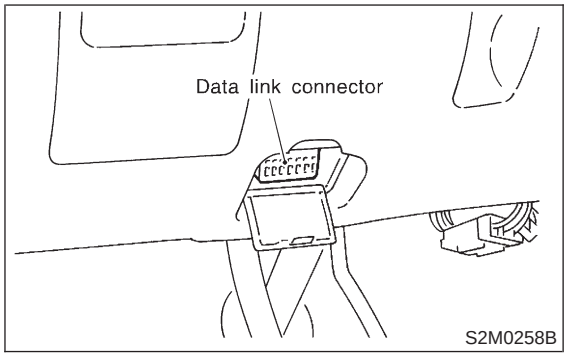
CHECK : ***Is the value greater than 150°C (300°F)?***
YES : Go to step **11V2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

11V2 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.



3) Disconnect connector from fuel pump.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



5) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.
6) Read data of fuel temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

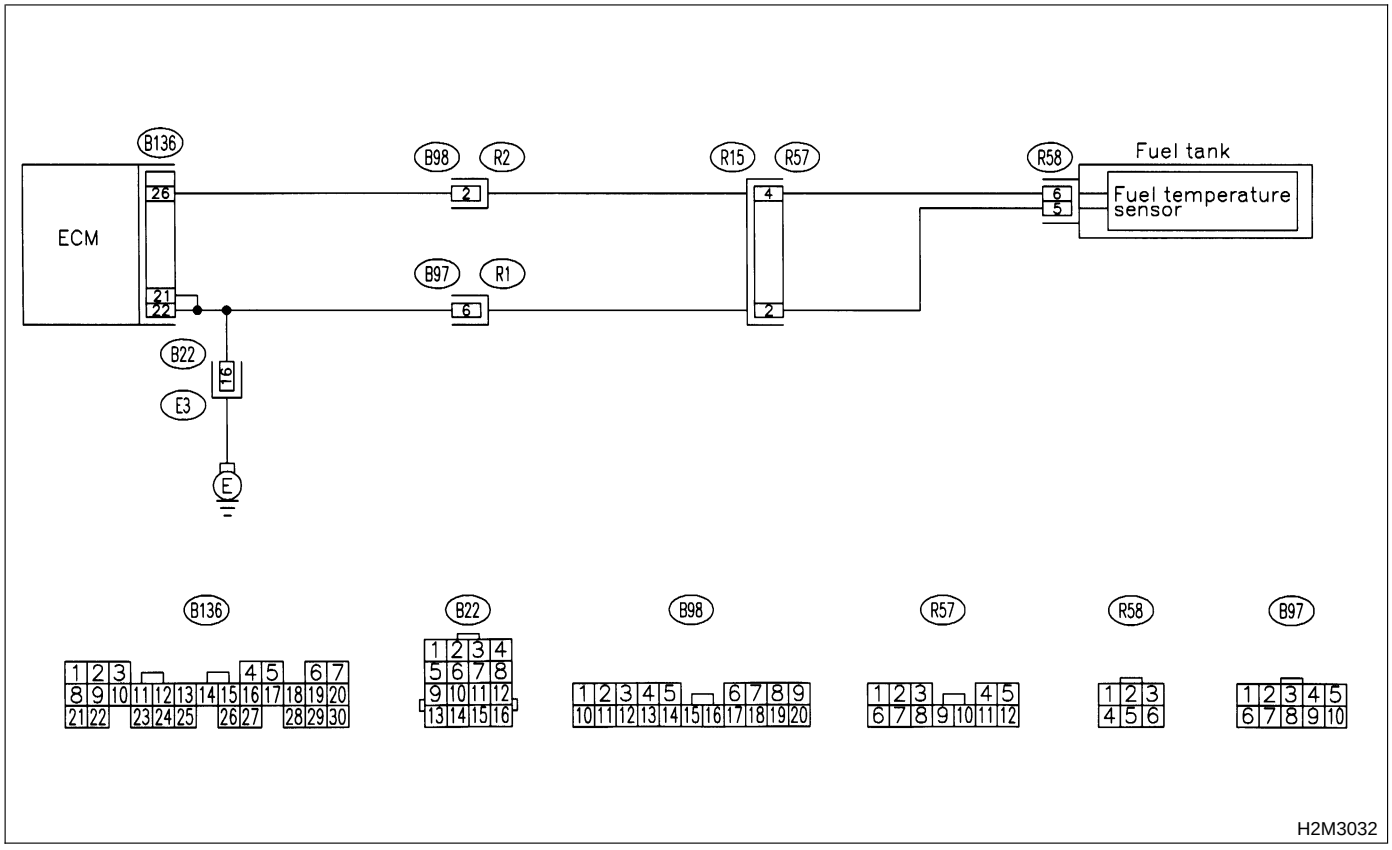
CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace fuel temperature sensor. <Ref. to 2-1 [W5A0].>
NO : Repair ground short circuit in harness between fuel pump and ECM connector.

W: DTC P0183 — FUEL TEMPERATURE SENSOR A CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

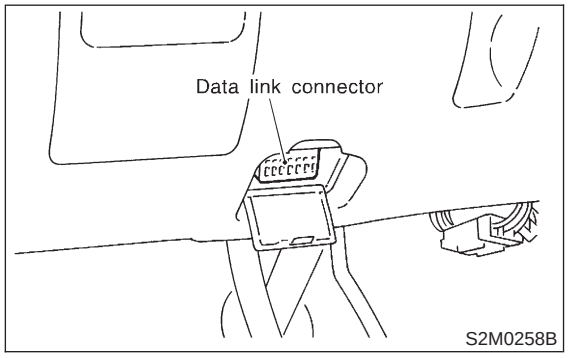
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11W1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.
5) Read data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

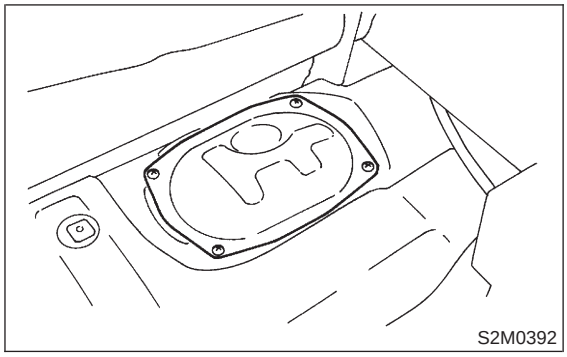
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **11W2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in fuel pump connector
● Poor contact in ECM connector
● Poor contact in coupling connectors (B22), (B98), (B97) and (R57)

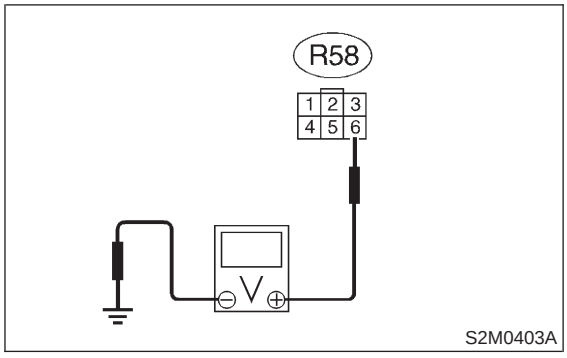
11W2 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.



3) Disconnect connector from fuel pump.
4) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 6 (+) — Chassis ground (−):

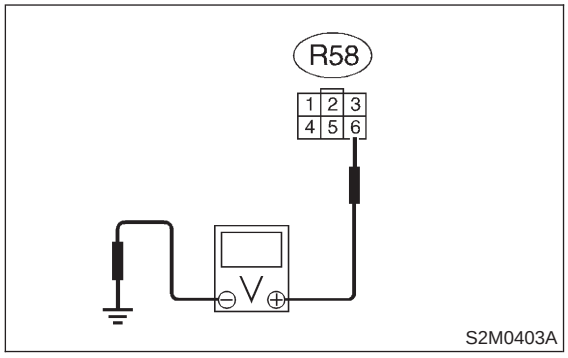


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel pump connector.
NO : Go to step **11W3**.

11W3 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 6 (+) — Chassis ground (−):

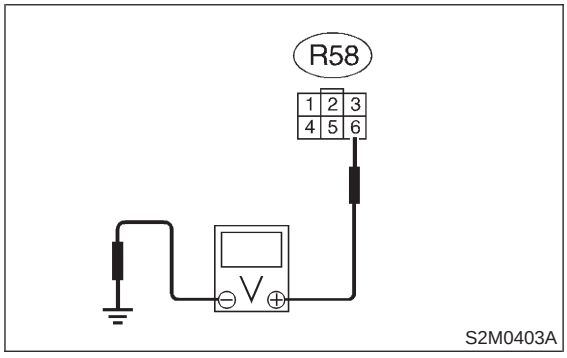


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel pump connector.
NO : Go to step **11W4**.

11W4 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 6 (+) — Chassis ground (−):



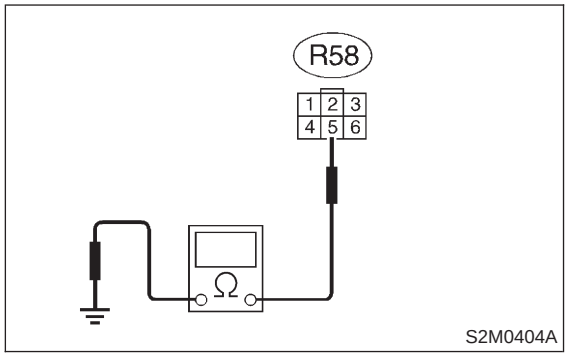
CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **11W5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B98) and (R57)

11W5 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(R58) No. 5 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace fuel temperature sensor. <Ref. to 2-1 [W5A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B22), (B97) and (R57)

X: DTC P0301 — CYLINDER 1 MISFIRE DETECTED —

NOTE:
For the diagnostic procedure, refer to 2-7 [T14AA1]. <Ref. to 2-7 [T11AA0].>

Y: DTC P0302 — CYLINDER 2 MISFIRE DETECTED —

NOTE:
For the diagnostic procedure, refer to 2-7 [T14AA1]. <Ref. to 2-7 [T11AA0].>

Z: DTC P0303 — CYLINDER 3 MISFIRE DETECTED —

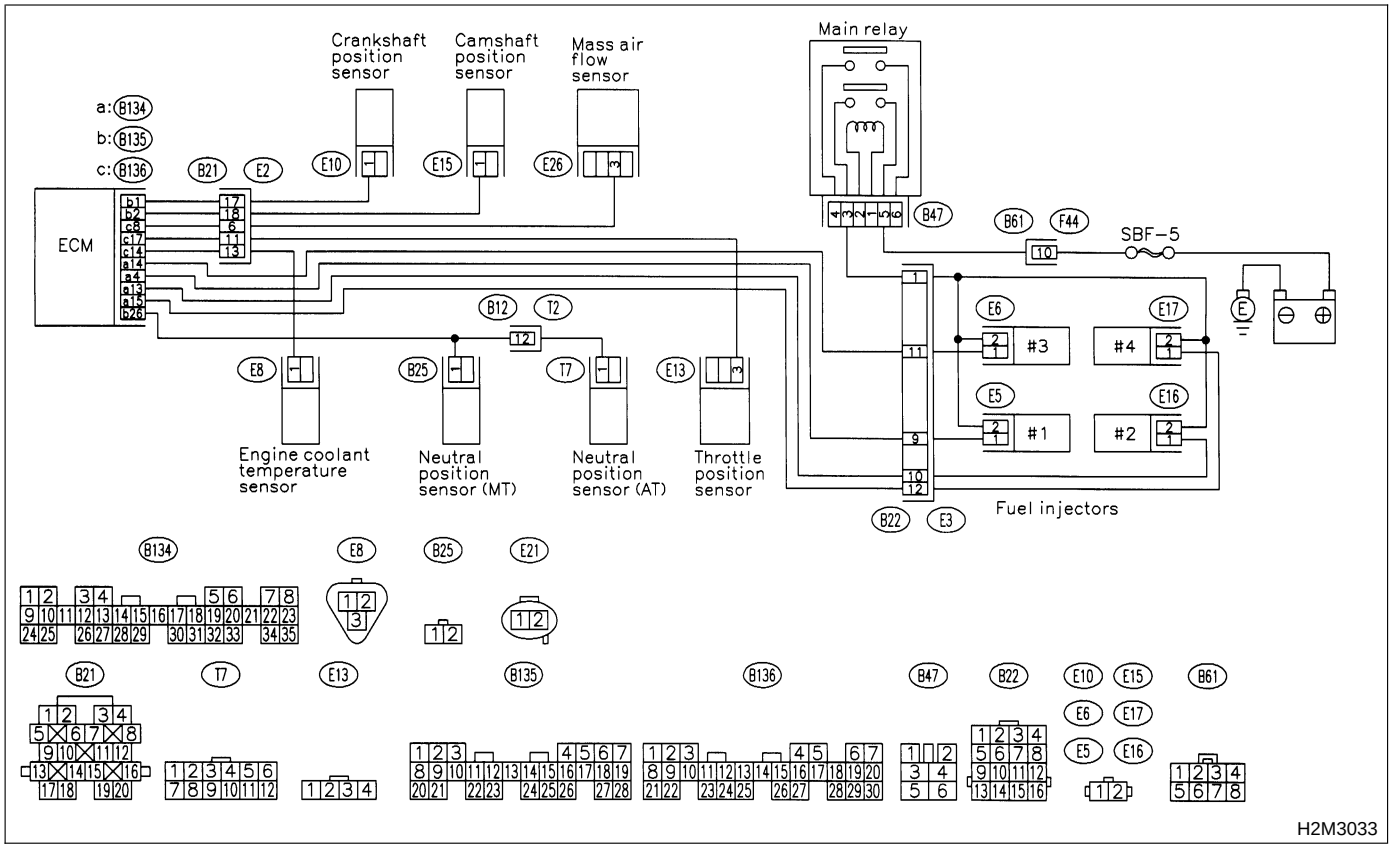
NOTE:
For the diagnostic procedure, refer to 2-7 [T14AA1]. <Ref. to 2-7 [T11AA0].>

AA: DTC P0304 — CYLINDER 4 MISFIRE DETECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
  - Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Erroneous idling
  - Rough driving

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AA1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0101, P0102, P0103, P0116, P0117 or P0125?***

YES : Inspect DTC P0101, P0102, P0103, P0116, P0117 or P0125 using "11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles". <Ref. to 2-7 [T11A0].>

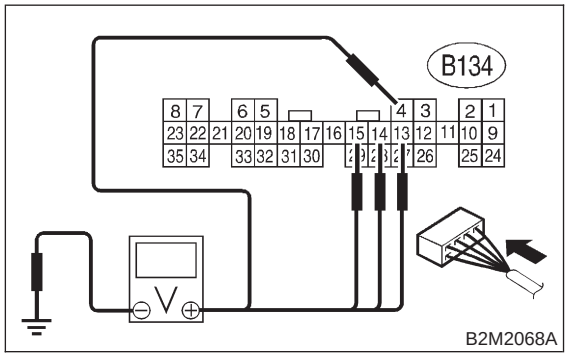
NOTE:
In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.

NO : Go to step **11AA2**.

11AA2 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal
#1; (B134) No. 4 (+) — Chassis ground (−):
#2; (B134) No. 13 (+) — Chassis ground (−):
#3; (B134) No. 14 (+) — Chassis ground (−):
#4; (B134) No. 15 (+) — Chassis ground (−):

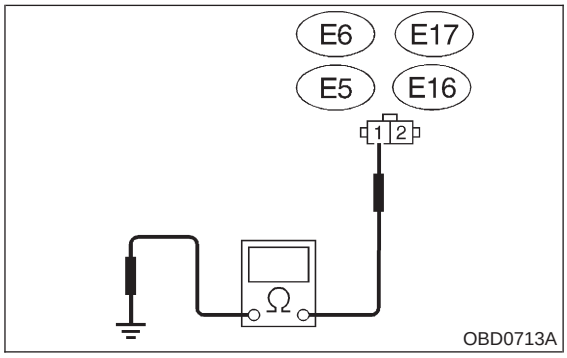


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11AA7**.
NO : Go to step **11AA3**.

11AA3 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinders.
3) Measure voltage between ECM connector and engine ground on faulty cylinders.

Connector & terminal
#1; (E5) No. 1 — Engine ground:
#2; (E16) No. 1 — Engine ground:
#3; (E6) No. 1 — Engine ground:
#4; (E17) No. 1 — Engine ground:

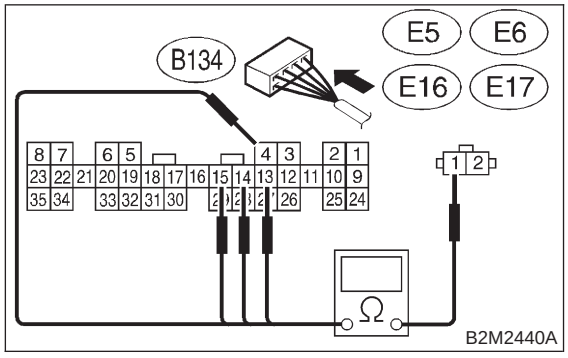


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between fuel injector and ECM connector.
NO : Go to step **11AA4**.

11AA4 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

Measure resistance of harness connector between ECM connector and fuel injector on faulty cylinders.

Connector & terminal
#1; (B134) No. 4 — (E5) No. 1:
#2; (B134) No. 13 — (E16) No. 1:
#3; (B134) No. 14 — (E6) No. 1:
#4; (B134) No. 15 — (E17) No. 1:



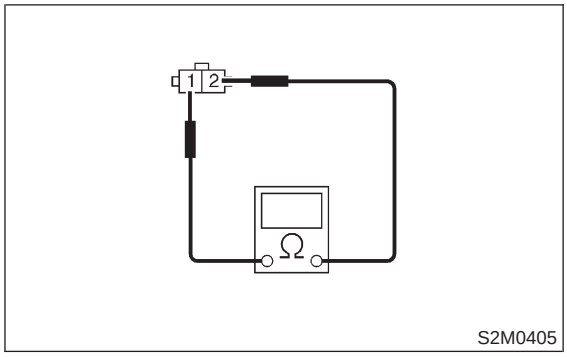
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AA5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel injector connector
- Poor contact in coupling connector (B22)

11AA5 : CHECK FUEL INJECTOR.

Measure resistance between fuel injector terminals on faulty cylinder.

Terminals
No. 1 — No. 2:



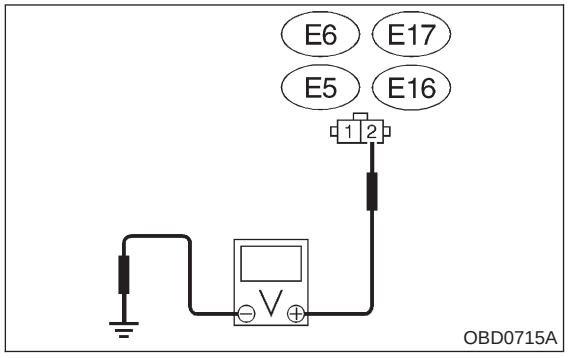
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **11AA6**.
NO : Replace faulty fuel injector. <Ref. to 2-7 [W14A0].>

11AA6 : CHECK POWER SUPPLY LINE.

1) Turn ignition switch to ON.
2) Measure voltage between fuel injector and engine ground on faulty cylinders.

Connector & terminal

#1; (E5) No. 2 (+) — Engine ground (−):
#2; (E16) No. 2 (+) — Engine ground (−):
#3; (E6) No. 2 (+) — Engine ground (−):
#4; (E17) No. 2 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair poor contact in all connectors in fuel injector circuit.
NO : Repair harness and connector.

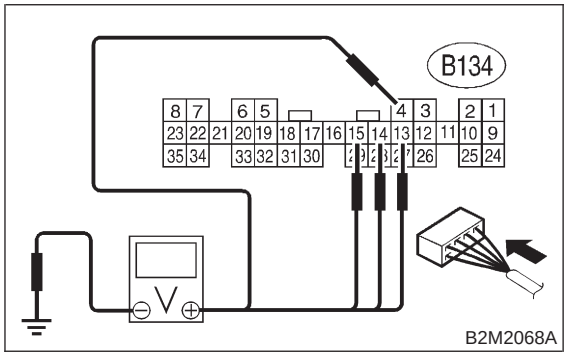
NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and fuel injector connector on faulty cylinders
- Poor contact in coupling connector (B22)
- Poor contact in main relay connector
- Poor contact in fuel injector connector on faulty cylinders

11AA7 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinder.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal

#1; (B134) No. 4 (+) — Chassis ground (−):
#2; (B134) No. 13 (+) — Chassis ground (−):
#3; (B134) No. 14 (+) — Chassis ground (−):
#4; (B134) No. 15 (+) — Chassis ground (−):

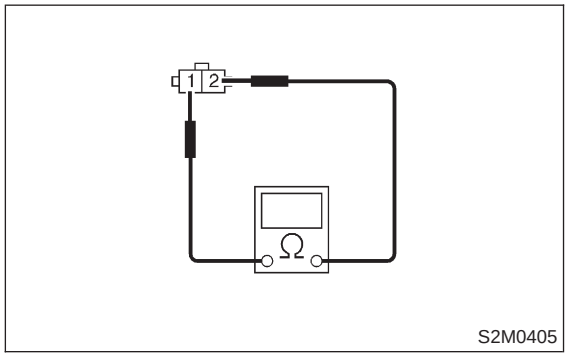


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel injector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **11AA8**.

11AA8 : CHECK FUEL INJECTOR.

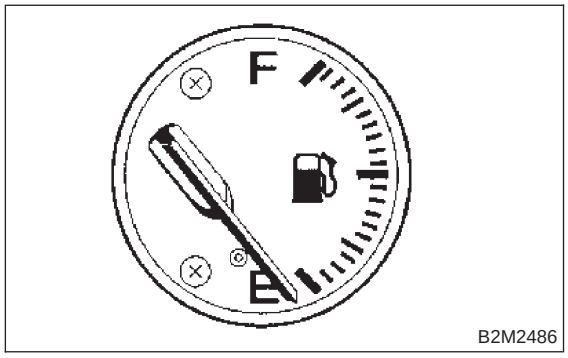
1) Turn ignition switch to OFF.
2) Measure resistance between fuel injector terminals on faulty cylinder.

Terminals
No. 1 — No. 2 :



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace faulty fuel injector <Ref. to 2-7 [W14A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **11AA9**.

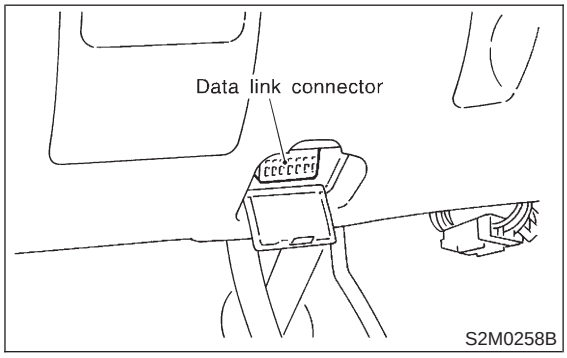
11AA9 : CHECK FUEL LEVEL.



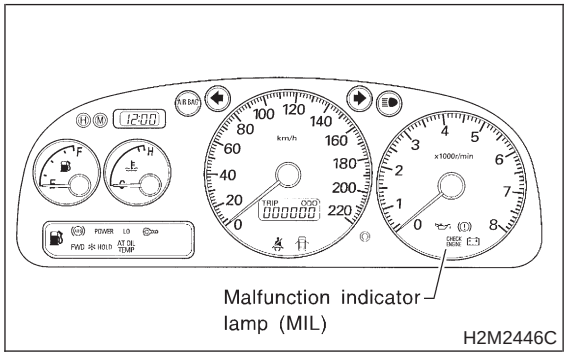
CHECK : ***Is fuel meter indication (in combination meter) higher than the "Lower" level?***
YES : Go to step **11AA10**.
NO : Replenish fuel so fuel meter indication is higher than the "Lower" level. After refuel, Go to step **11AA10**. <Ref. to 2-7 [T11AA10].>

11AA10 : CHECK STATUS OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to the data link connector.



3) Clear memory using Subaru Select Monitor. <Ref. to 2-7 [T3D0].>
4) Start engine, and drive the vehicle more than 10 minutes.



CHECK : ***Is the MIL coming on or blinking?***
YES : Go to step **11AA12**.
NO : Go to step **11AA11**.

11AA11 : CHECK CAUSE OF MISFIRE DIAGNOSED.

CHECK : ***Was the cause of misfire diagnosed when the engine is running?***

YES : Finish diagnostics operation, if the engine has no abnormality.

NOTE:
Ex. Remove spark plug cord, etc.

NO : Repair poor contact.

NOTE:
In this case, repair the following:
- Poor contact in ignitor connector
- Poor contact in ignition coil connector
- Poor contact in fuel injector connector on faulty cylinders
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

11AA12 : CHECK AIR INTAKE SYSTEM.

CHECK : ***Is there a fault in air intake system?***

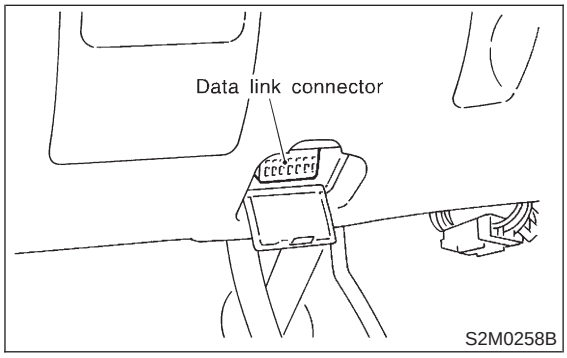
YES : Repair air intake system.

NOTE:
Check the following items:
- Are there air leaks or air suction caused by loose or dislocated nuts and bolts?
- Are there cracks or any disconnection of hoses?

NO : Go to step **11AA13**.

11AA13 : CHECK MISFIRE SYMPTOM.

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch to ON, and turn Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Read diagnostic trouble code (DTC).
- Subaru Select Monitor

<Ref. to 2-7 [T3C2].>
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.

NOTE:
Perform diagnosis according to the items listed below.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate only one DTC?***

YES : Go to step **11AA18**.

NO : Go to step **11AA14**.

11AA14 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0302?***

YES : Go to step **11AA19**.

NO : Go to step **11AA15**.

11AA15 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0303 and P0304?***

YES : Go to step **11AA20**.

NO : Go to step **11AA16**.

11AA16 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0303?***
YES : Go to step **11AA21**.
NO : Go to step **11AA17**.

11AA17 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0302 and P0304?***
YES : Go to step **11AA22**.
NO : Go to step **11AA18**.

11AA18 : ONLY ONE CYLINDER

CHECK : ***Is there a fault in that cylinder?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plug
- Spark plug cord
- Fuel injector
- Compression ratio

NO : Go to DTC P0170. <Ref. to 2-7 [T11T0].>

11AA19 : GROUP OF #1 AND #2 CYLINDERS

CHECK : ***Are there faults in #1 and #2 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
- Check the following items.
- Spark plugs
- Fuel injectors
- Ignition coil
- Compression ratio
- If no abnormal is discovered, check for “8. D: IGNITION CONTROL SYSTEM” of #1 and #2 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to DTC P0170. <Ref. to 2-7 [T11T0].>

11AA20 : GROUP OF #3 AND #4 CYLINDERS

CHECK : ***Are there faults in #3 and #4 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
- Check the following items.
- Spark plugs
- Fuel injectors
- Ignition coil
- If no abnormal is discovered, check for “8. D: IGNITION CONTROL SYSTEM” of #3 and #4 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to DTC P0170. <Ref. to 2-7 [T11T0].>

11AA21 : GROUP OF #1 AND #3 CYLINDERS

CHECK : ***Are there faults in #1 and #3 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Skipping timing belt teeth

NO : Go to DTC P0170. <Ref. to 2-7 [T11T0].>

11AA22 : GROUP OF #2 AND #4 CYLINDERS

CHECK : ***Are there faults in #2 and #4 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Compression ratio
- Skipping timing belt teeth

NO : Go to DTC P0170. <Ref. to 2-7 [T11T0].>

11AA23 : CYLINDER AT RANDOM

CHECK : ***Is the engine idle rough?***
YES : Go to DTC P0170. <Ref. to 2-7 [T11T0].>
NO : Repair or replace faulty parts.

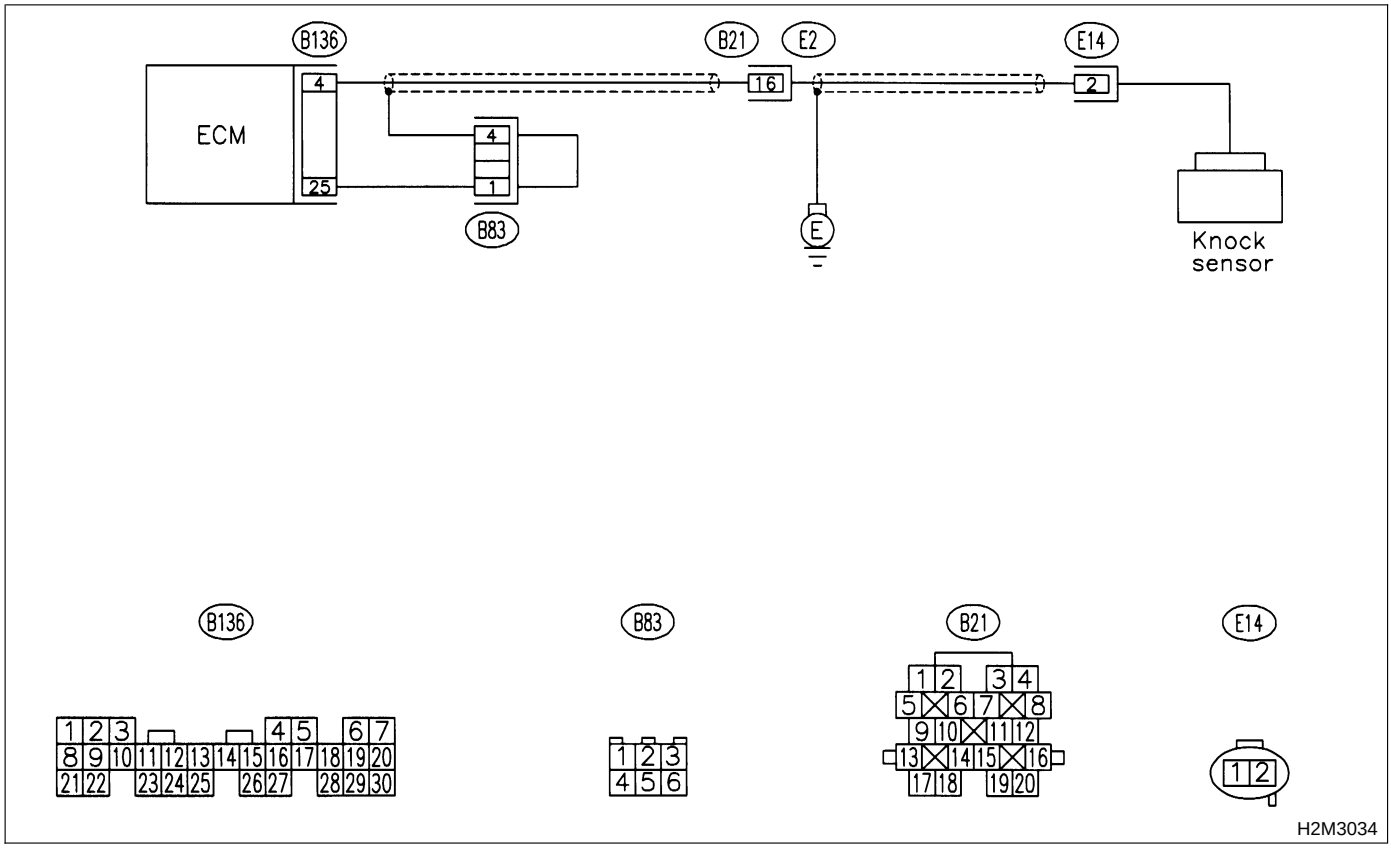
NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Compression ratio

AB: DTC P0325 — KNOCK SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Poor driving performance
  - Knocking occurs.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

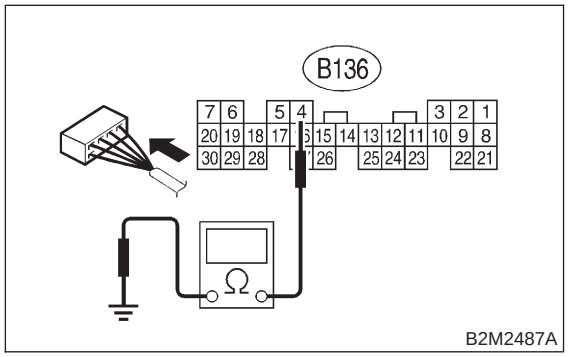
- **WIRING DIAGRAM:**



11AB1 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance between ECM harness connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

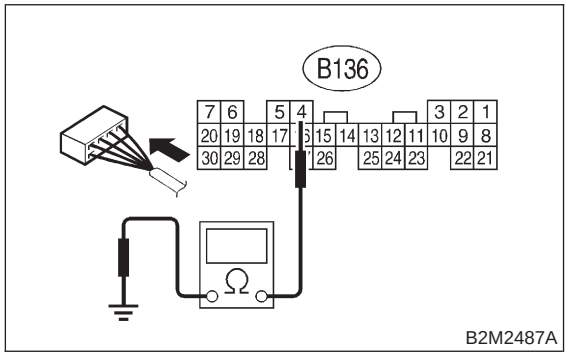


CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **11AB3**.
NO : Go to step **11AB2**.

11AB2 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

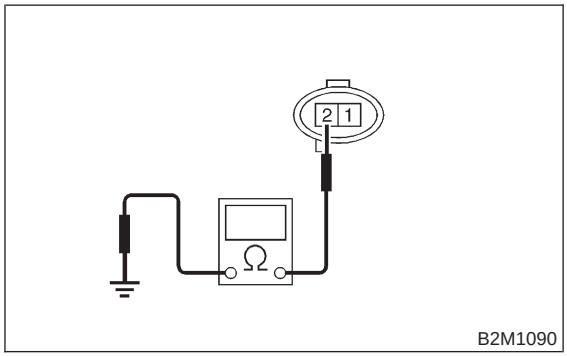


CHECK : ***Is the resistance less than 400 kΩ?***
YES : Go to step **11AB5**.
NO : Go to step **11AB6**.

11AB3 : CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

Terminal
No. 2 — Engine ground:



CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **11AB4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between knock sensor and ECM connector
- Poor contact in knock sensor connector
- Poor contact in coupling connector (B21)

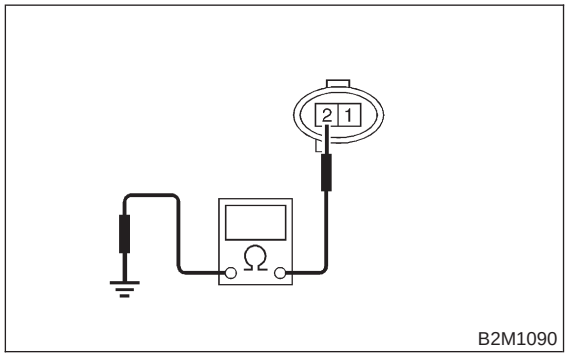
11AB4 : CHECK CONDITION OF KNOCK SENSOR INSTALLATION.

CHECK : ***Is the knock sensor installation bolt tightened securely?***
YES : Replace knock sensor. <Ref. to 2-7 [W19A0].>
NO : Tighten knock sensor installation bolt securely.

11AB5 : CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

Terminal
No. 2 — Engine ground:



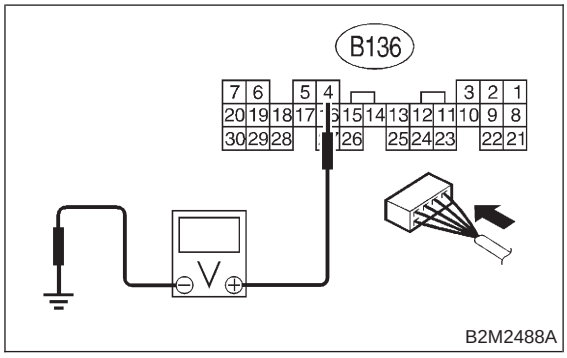
CHECK : ***Is the resistance less than 400 kΩ?***
YES : Replace knock sensor. <Ref. to 2-7 [W19A0].>
NO : Repair ground short circuit in harness between knock sensor connector and ECM connector.

NOTE:
The harness between both connectors is shielded. Repair short circuit of harness together with shield.

11AB6 : CHECK INPUT SIGNAL FOR ECM.

1) Connect connectors to ECM and knock sensor.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in knock sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Repair poor contact in ECM connector.

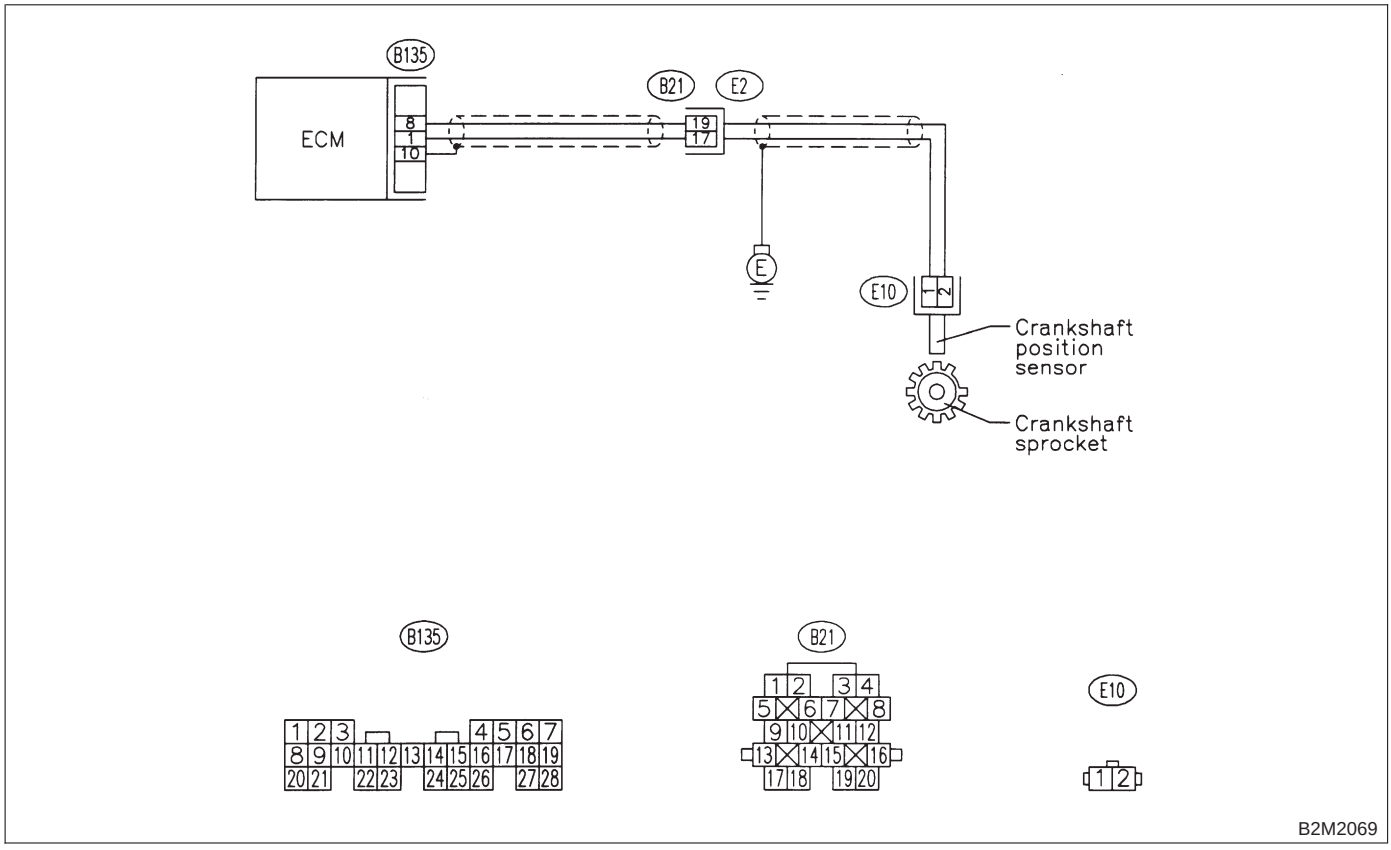
MEMO:

AC: DTC P0335 — CRANKSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

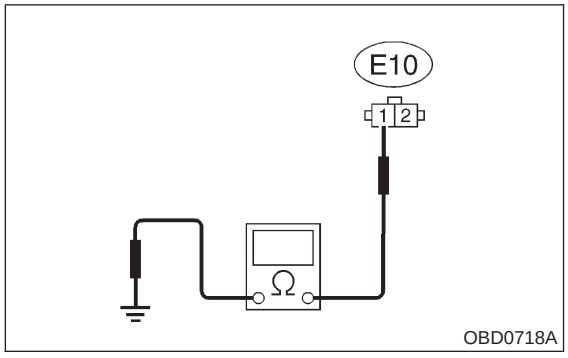
- **WIRING DIAGRAM:**



11AC1 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from crankshaft position sensor.
3) Measure resistance of harness between crankshaft position sensor connector and engine ground.

Connector & terminal
(E10) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

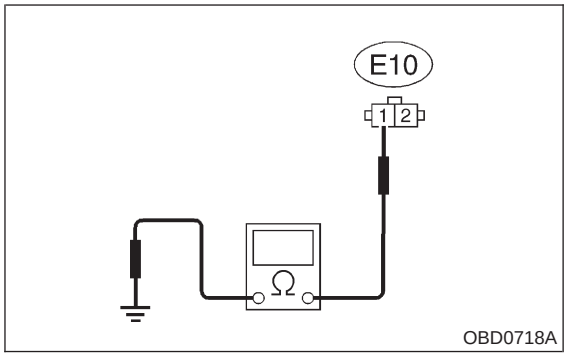
NOTE:
In this case, repair the following:
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **11AC2**.

11AC2 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between crankshaft position sensor connector and engine ground.

Connector & terminal
(E10) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between crankshaft position sensor and ECM connector.

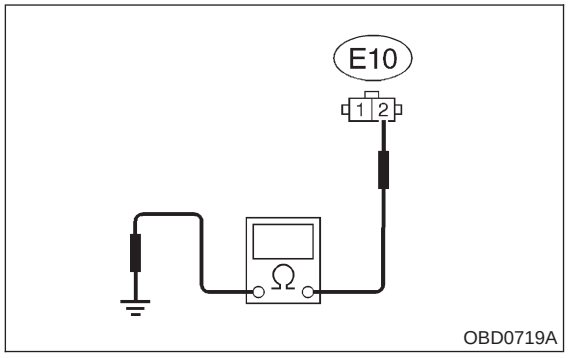
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **11AC3**.

11AC3 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between crankshaft position sensor connector and engine ground.

Connector & terminal
(E10) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11AC4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

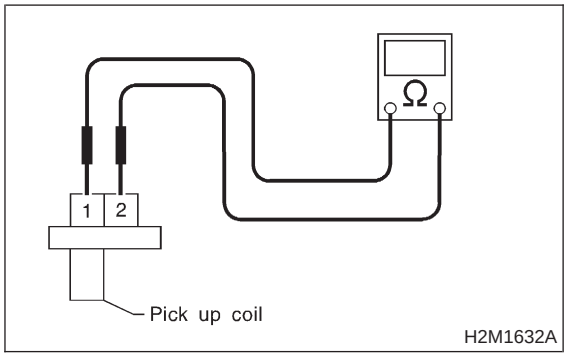
11AC4 : CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.

CHECK : ***Is the crankshaft position sensor installation bolt tightened securely?***
YES : Go to step **11AC5**.
NO : Tighten crankshaft position sensor installation bolt securely.

11AC5 : CHECK CRANKSHAFT POSITION SENSOR.

1) Remove crankshaft position sensor.
2) Measure resistance between connector terminals of crankshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Repair poor contact in crankshaft position sensor connector.
NO : Replace crankshaft position sensor. <Ref. to 2-7 [W6A0].>

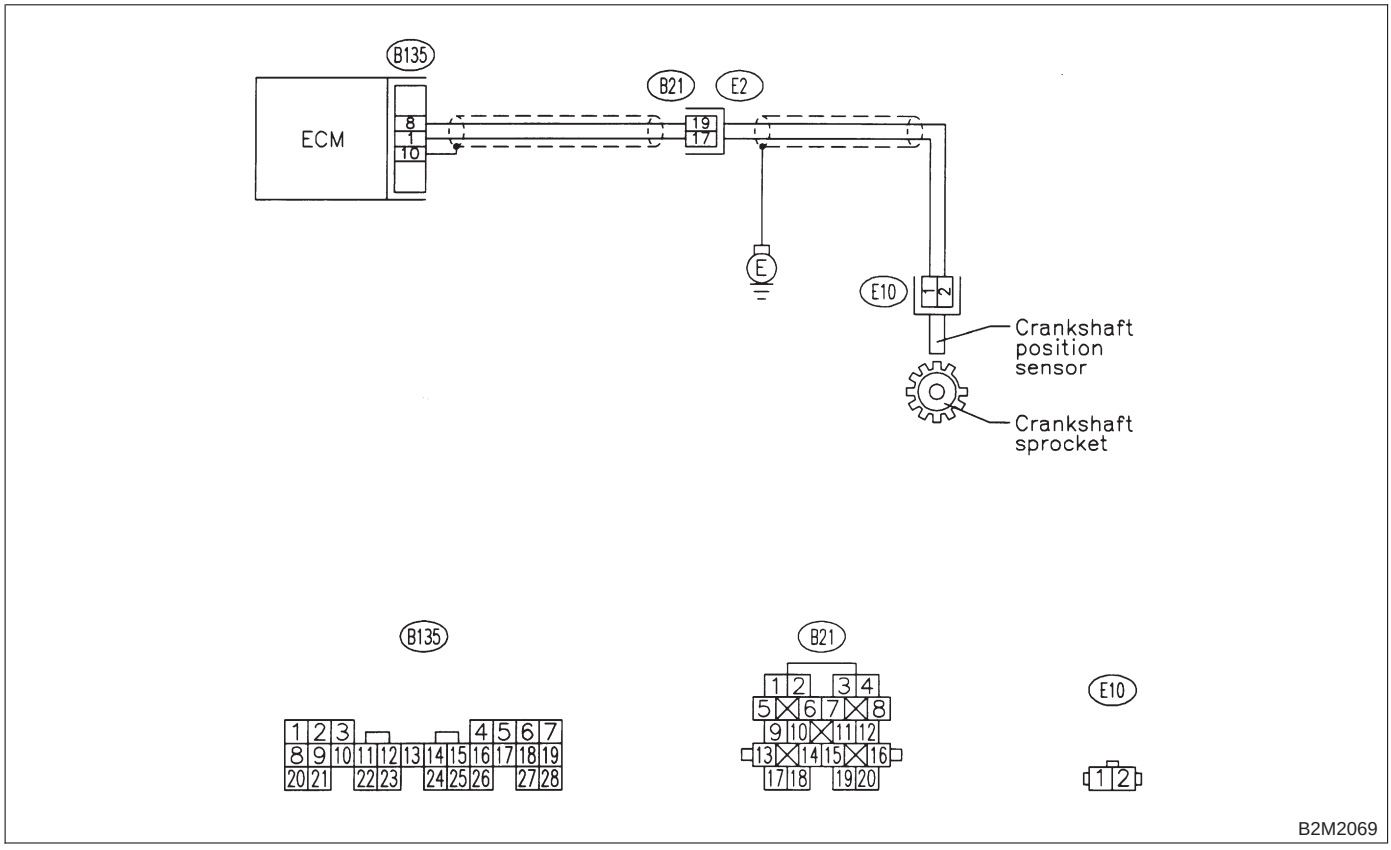
MEMO:

AD: DTC P0336 — CRANKSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AD1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0335?***

YES : Inspect DTC P0335 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NO : Go to step **11AD2**.

11AD2 : CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.

Turn ignition switch to OFF.

CHECK : ***Is the crankshaft position sensor installation bolt tightened securely?***

YES : Go to step **11AD3**.

NO : Tighten crankshaft position sensor installation bolt securely.

11AD3 : CHECK CRANKSHAFT SPROCKET.

Remove front belt cover. <Ref. to 2-3 [W2A1].>

CHECK : ***Are there any cracks or damages in the crankshaft sprocket teeth?***

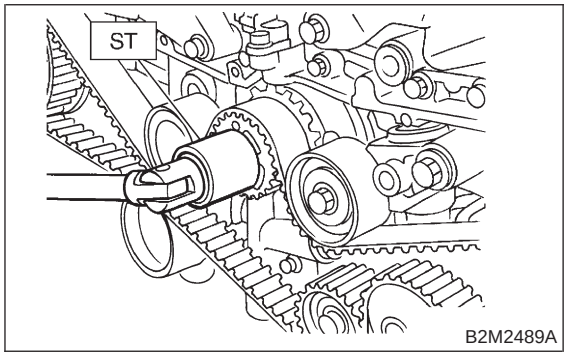
YES : Replace crankshaft sprocket. <Ref. to 2-3 [W2A4].>

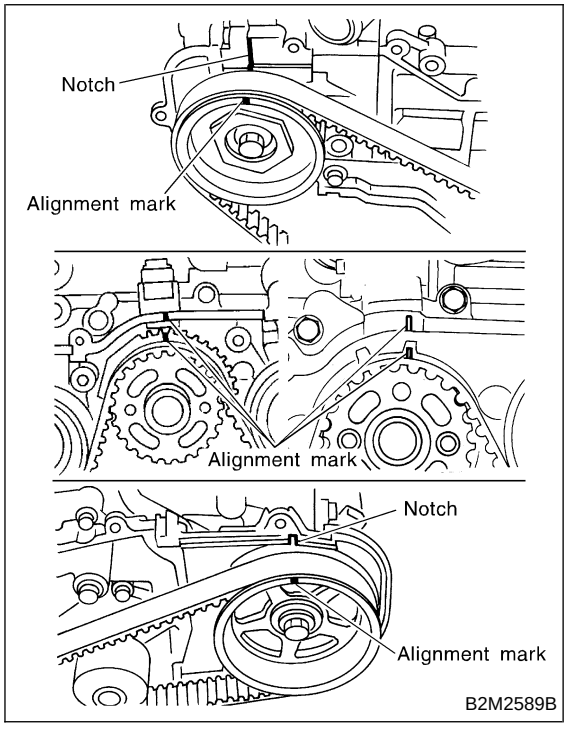
NO : Go to step **11AD4**.

11AD4 : CHECK INSTALLATION CONDITION OF TIMING BELT.

Turn crankshaft using ST, and align alignment mark on crankshaft sprocket. Then, make sure left and right camshaft sprockets are matched with notches (alignment marks of belt cover and cylinder head).

ST 499987500 CRANKSHAFT SOCKET





CHECK : ***Is timing belt installed properly in accordance with the correct position of crankshaft and camshaft sprockets?***

YES : Repair installation condition of timing belt. <Ref. to 2-3 [W2A0].>

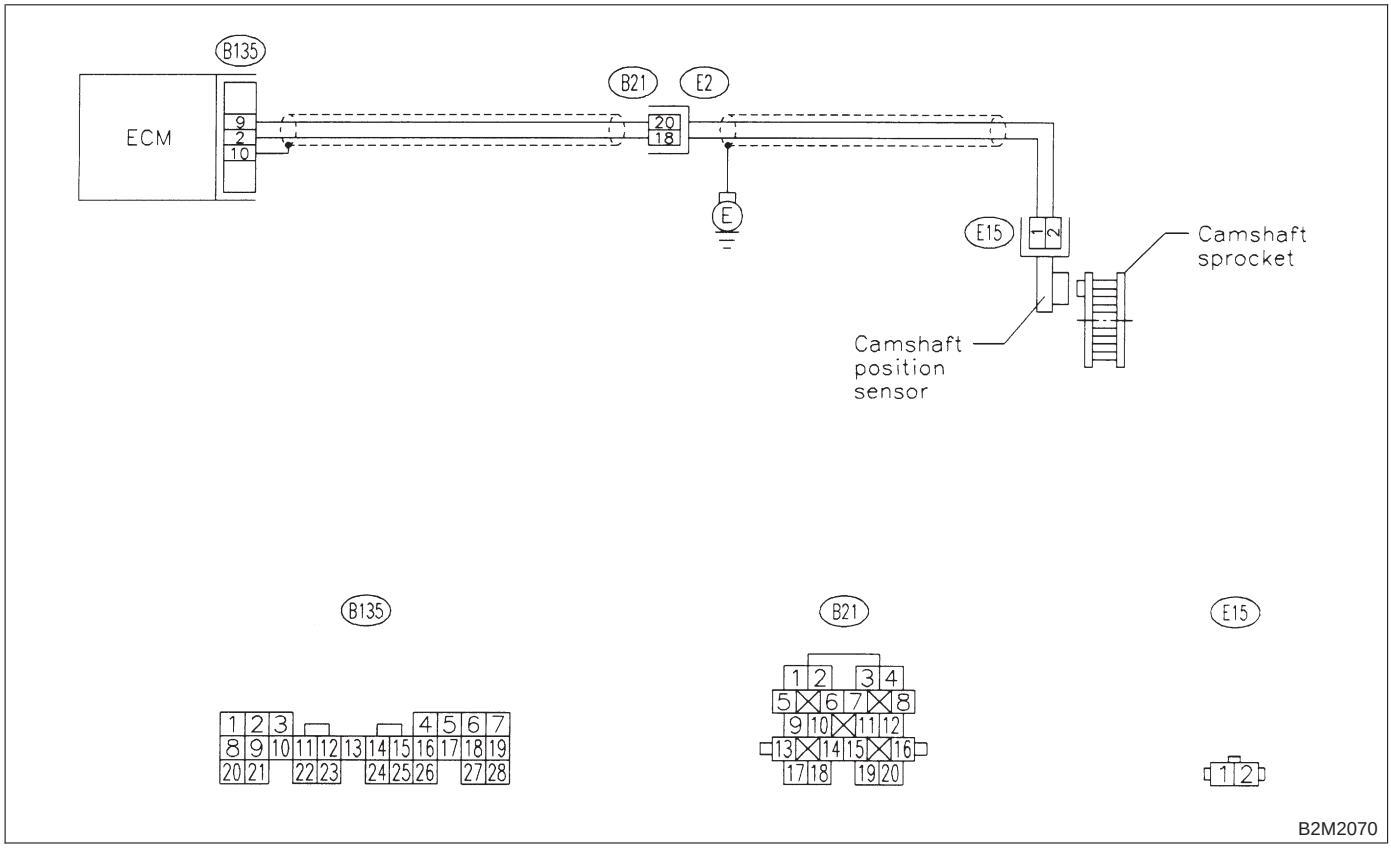
NO : Replace crankshaft position sensor. <Ref. to 2-7 [W6A0].>

AE: DTC P0340 — CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

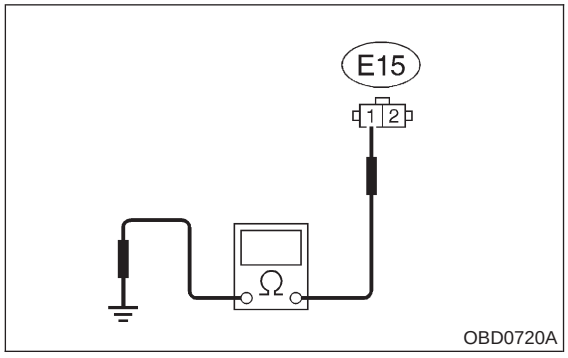
- **WIRING DIAGRAM:**



11AE1 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from camshaft position sensor.
3) Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

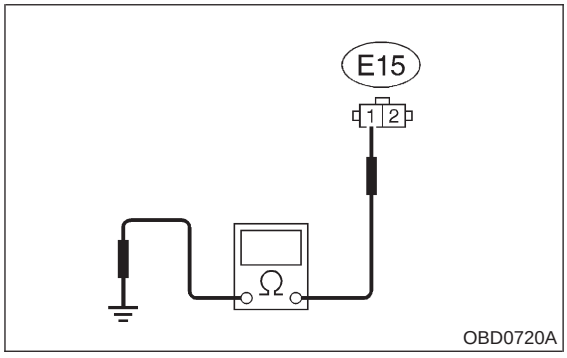
NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **11AE2**.

11AE2 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between camshaft position sensor and ECM connector.

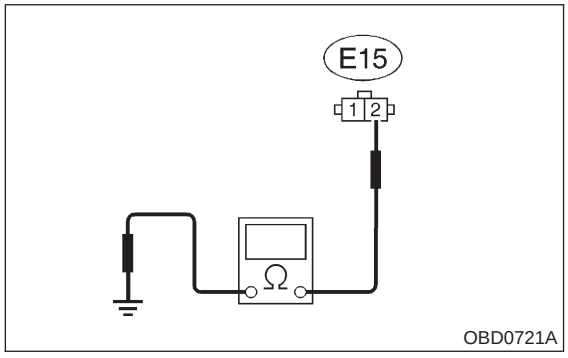
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **11AE3**.

11AE3 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11AE4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

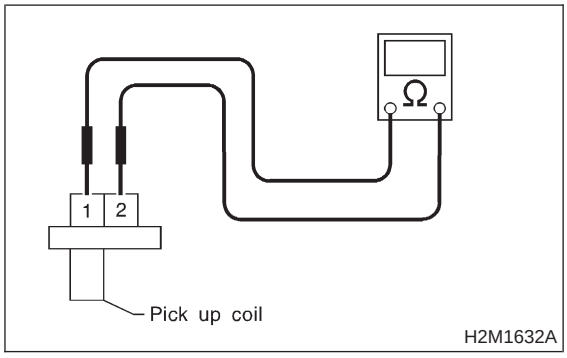
11AE4 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR.

CHECK : ***Is the camshaft position sensor installation bolt tightened securely?***
YES : Go to step **11AE5**.
NO : Tighten camshaft position sensor installation bolt securely.

11AE5 : CHECK CAMSHAFT POSITION SENSOR.

1) Remove camshaft position sensor.
2) Measure resistance between connector terminals of camshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Repair poor contact in camshaft position sensor connector.
NO : Replace camshaft position sensor. <Ref. to 2-7 [W10A0].>

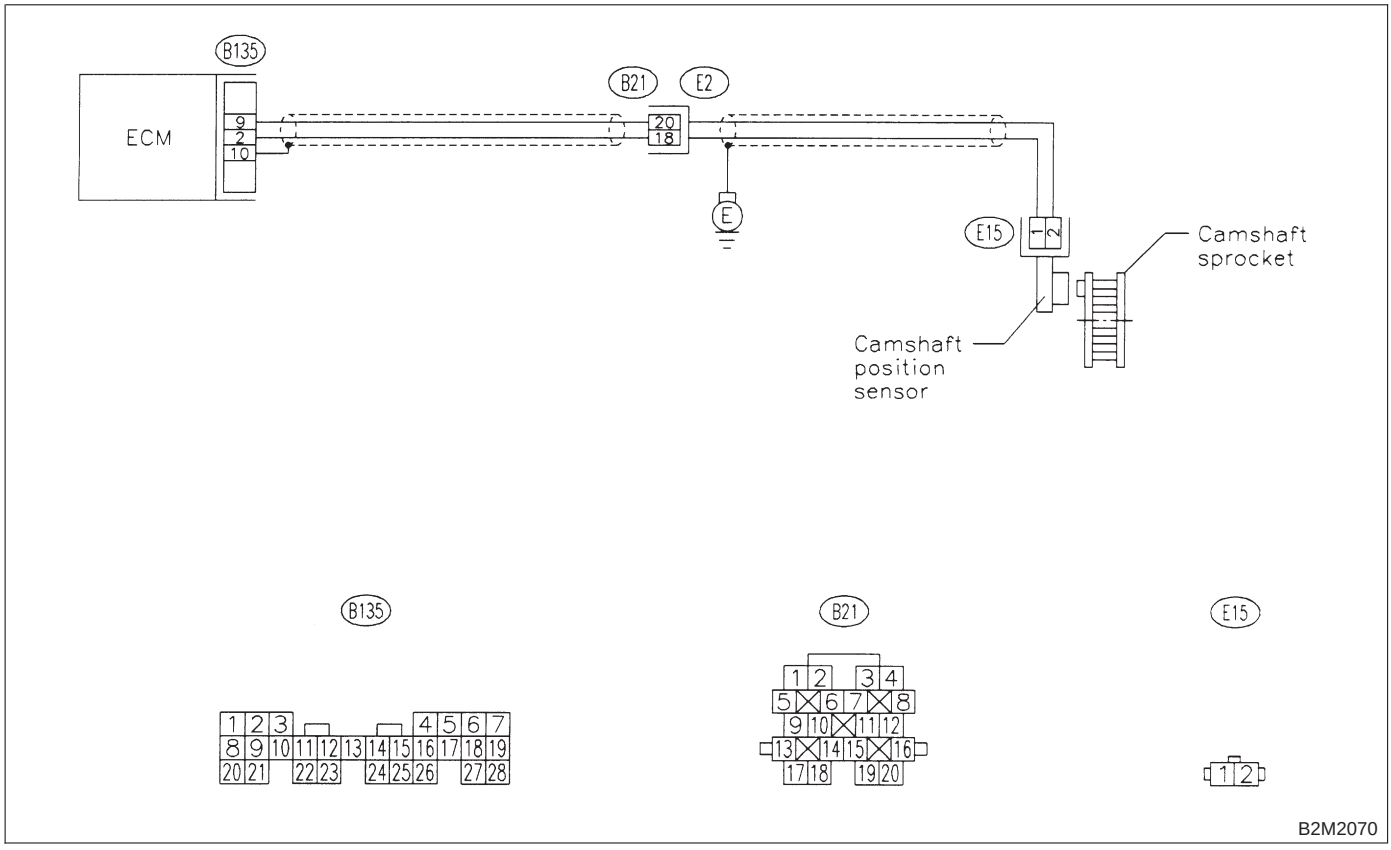
MEMO:

AF: DTC P0341 — CAMSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AF1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0340?***

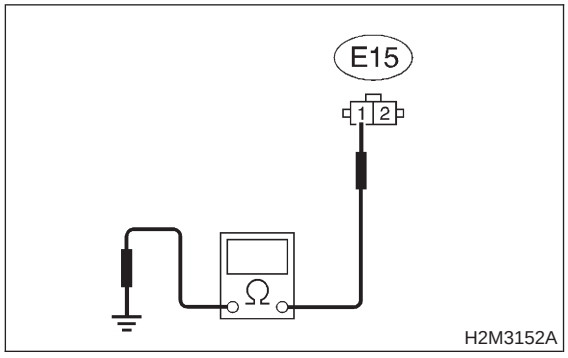
YES : Inspect DTC P0340 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NO : Go to step **11AF2**.

11AF2 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from camshaft position sensor.
3) Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

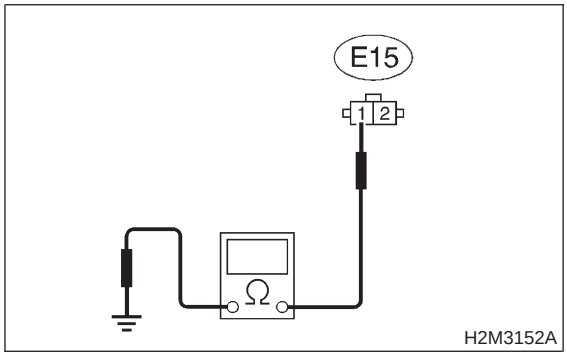
NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **11AF3**.

11AF3 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between camshaft position sensor and ECM connector.

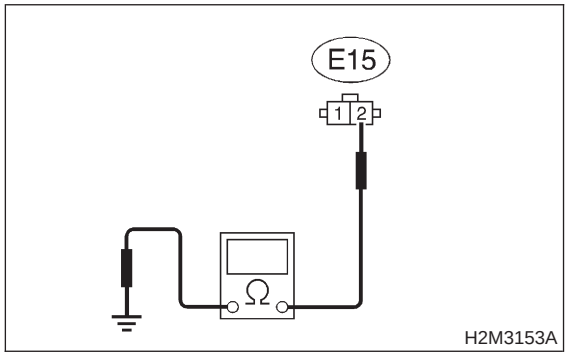
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **11AF4**.

11AF4 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 2 — Engine ground:



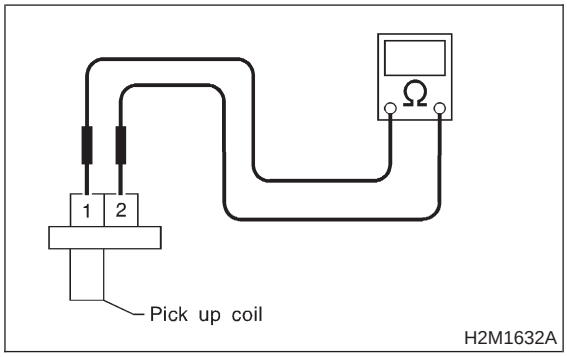
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11AF5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

11AF5 : CHECK CAMSHAFT POSITION SENSOR.

1) Remove camshaft position sensor.
2) Measure resistance between connector terminals of camshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Go to step **11AF6**.
NO : Replace camshaft position sensor. <Ref. to 2-7 [W10A0].>

11AF6 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR.

Turn ignition switch to OFF.

CHECK : ***Is the camshaft position sensor installation bolt tightened securely?***
YES : Go to step **11AF7**.
NO : Tighten camshaft position sensor installation bolt securely.

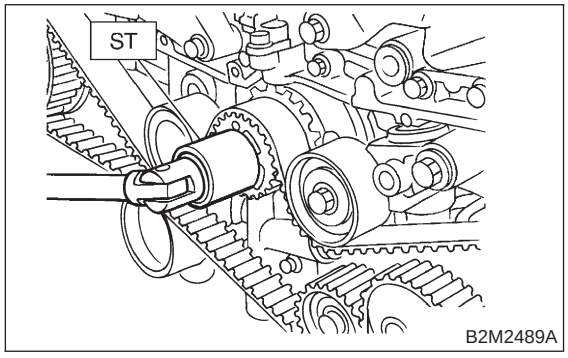
11AF7 : CHECK CAMSHAFT SPROCKET.

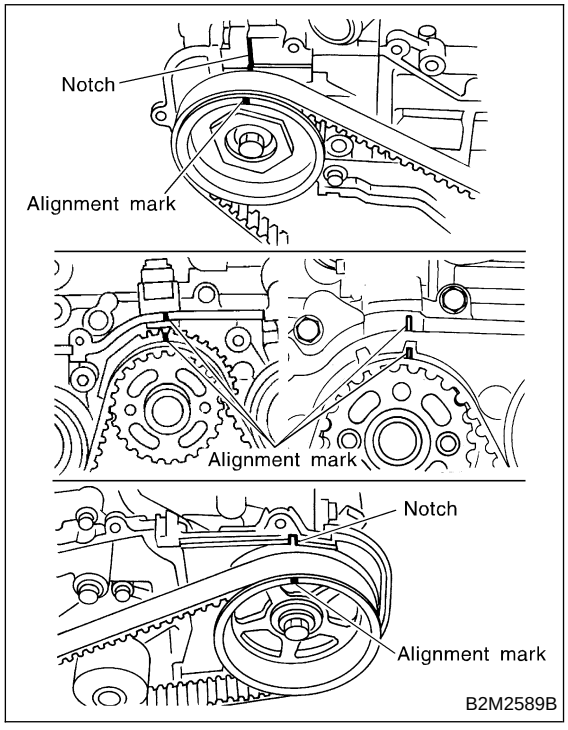
Remove front belt cover. <Ref. to 2-3 [W2A1].>

CHECK : ***Are there any cracks or damages in the camshaft sprocket teeth?***
YES : Replace camshaft sprocket. <Ref. to 2-3 [W2A4].>
NO : Go to step **11AF8**.

11AF8 : CHECK INSTALLATION CONDITION OF TIMING BELT.

Turn crankshaft using ST, and align alignment mark on crankshaft sprocket. Then, make sure left and right camshaft sprockets are matched with notches (alignment marks of belt cover and cylinder head).
ST 499987500 CRANKSHAFT SOCKET





CHECK : ***Is timing belt installed properly in accordance with the correct position of crankshaft and camshaft sprockets?***

YES : Repair installation condition of timing belt. <Ref. to 2-3 [W2A0].>

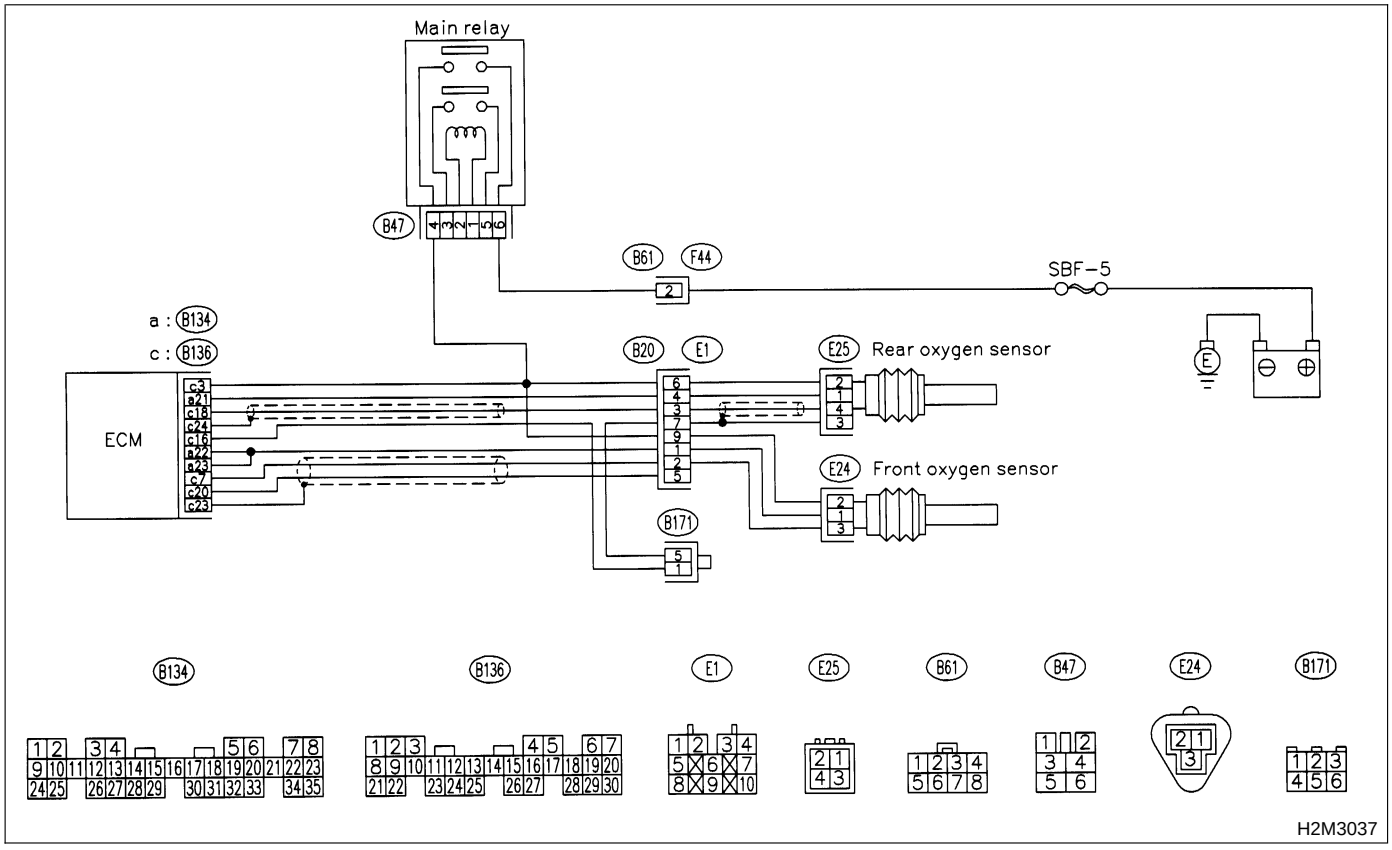
NO : Replace camshaft position sensor. <Ref. to 2-7 [W10A0].>

AG: DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Idle mixture is out of specifications.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AG1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0130, P0133, P0135, P0136, P0139, P0141, P0301, P0302, P0303, P0304, P1150 and P1151?***

YES : Inspect the relevant DTC using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0420.

NO : Go to step **11AG2**.

11AG2 : CHECK EXHAUST SYSTEM.

Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes.

NOTE:
Check the following positions.
- Between cylinder head and front exhaust pipe
- Between front exhaust pipe and front catalytic converter
- Between front catalytic converter and rear catalytic converter

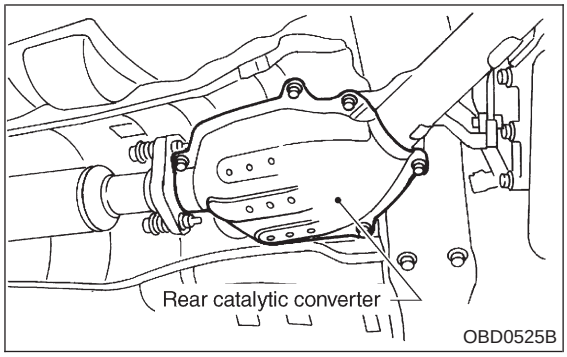
CHECK : ***Is there a fault in exhaust system?***

YES : Repair or replace exhaust system. <Ref. to 2-9 [W1A0].>

NO : Go to step **11AG3**.

11AG3 : CHECK REAR CATALYTIC CONVERTER.

Separate rear catalytic converter from rear exhaust pipe.



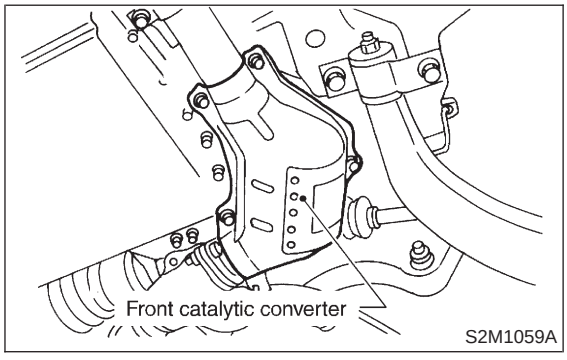
CHECK : ***Is there damage at rear face of rear catalyst?***

YES : Replace front catalytic converter <Ref. to 2-1 [W1A0].> and rear catalytic converter <Ref. to 2-1 [W2A0].>.

NO : Go to step **11AG4**.

11AG4 : CHECK FRONT CATALYTIC CONVERTER.

Remove front catalytic converter.



CHECK : ***Is there damage at rear face or front face of front catalyst?***

YES : Replace front catalytic converter. <Ref. to 2-1 [W1A0].>

NO : Contact with SOA service.

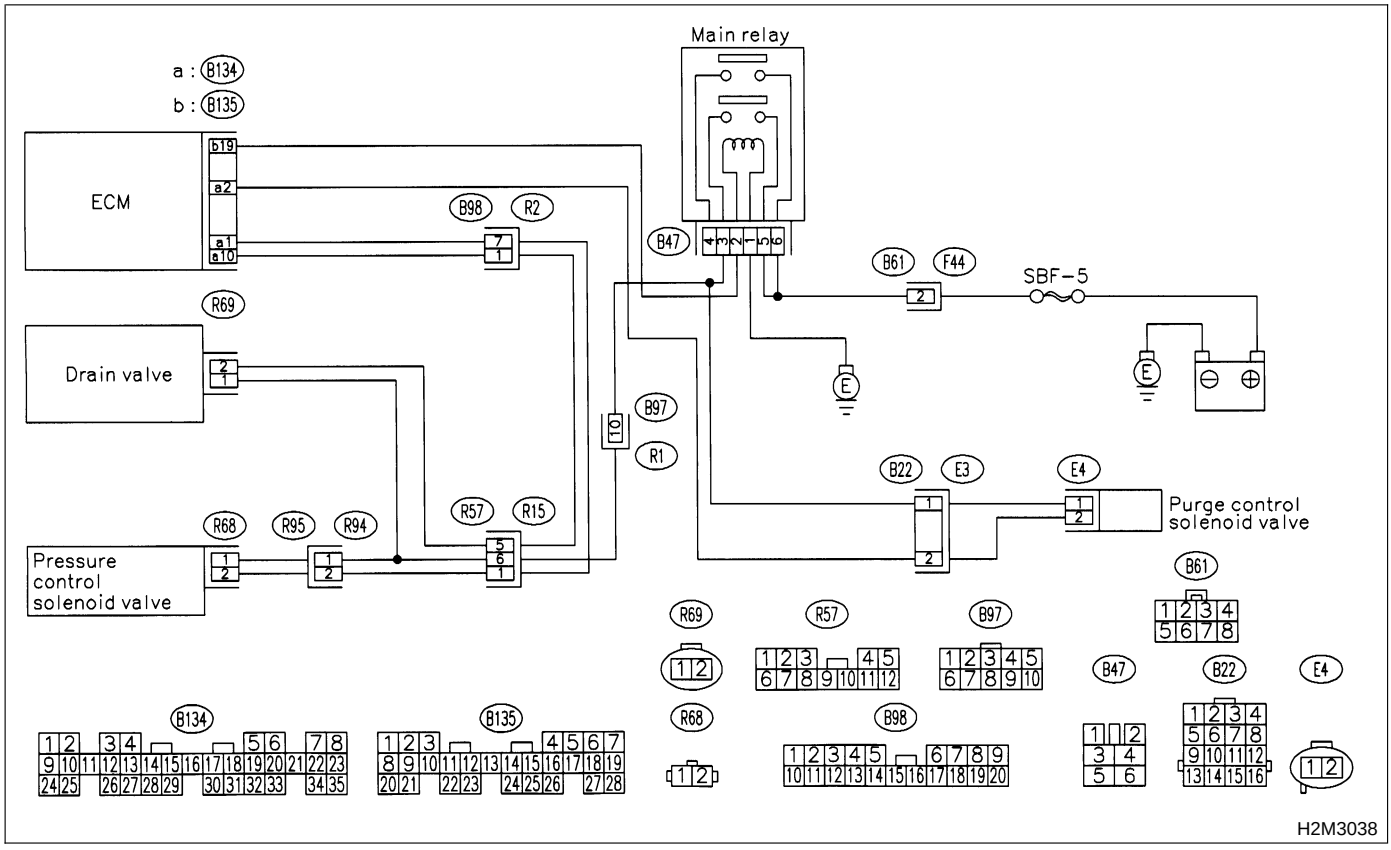
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

AH: DTC P0440 — EVAPORATIVE EMISSION CONTROL SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Gasoline smell

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AH1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***
YES : Inspect the relevant DTC using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>
NO : Go to step **11AH2**.

11AH2 : CHECK FUEL FILLER CAP.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK : ***Is the fuel filler cap tightened securely?***
YES : Go to step **11AH3**.
NO : Tighten fuel filler cap securely.

11AH3 : CHECK FUEL FILLER PIPE PACKING.

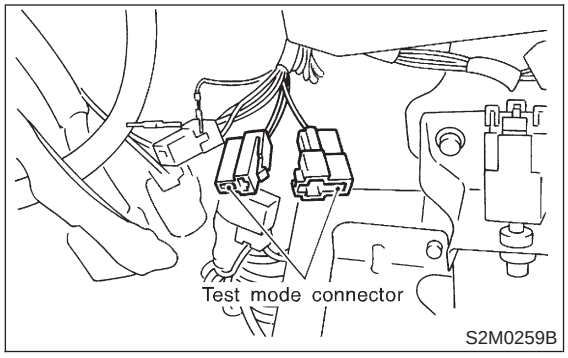
CHECK : ***Is there any damage to the seal between fuel filler cap and fuel filler pipe?***

YES : Repair or replace fuel filler cap and fuel filler pipe. <Ref. to 2-8 [W3A0].>

NO : Go to step **11AH4**.

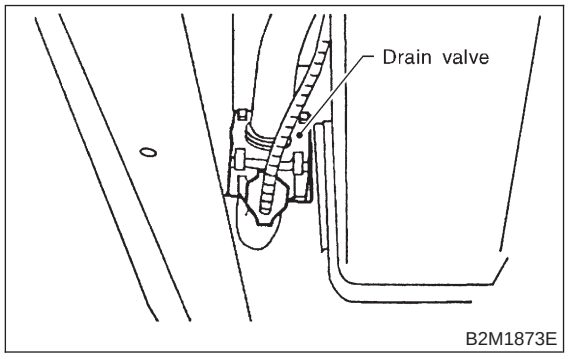
11AH4 : CHECK DRAIN VALVE OR VENT CONTROL SOLENOID VALVE.

1) Connect test mode connector.



2) Turn ignition switch to ON.

NOTE:
Drain valve or vent control solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



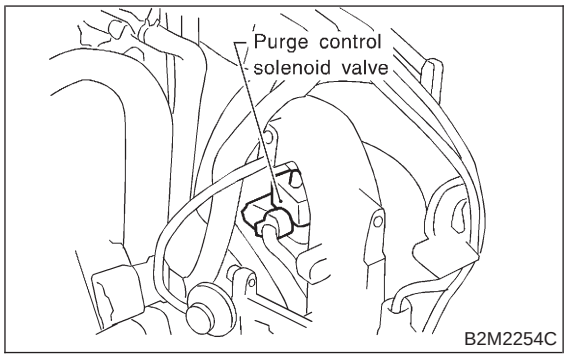
CHECK : ***Does drain valve produce operating sound?***

YES : Go to step **11AH5**.

NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

11AH5 : CHECK PURGE CONTROL SOLENOID VALVE.

NOTE:
Purge control solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



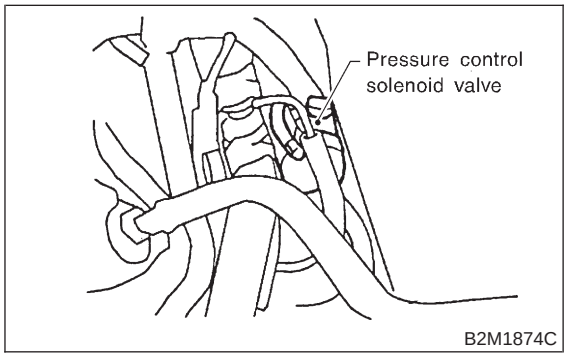
CHECK : ***Does purge control solenoid valve produce operating sound?***

YES : Go to step **11AH6**.

NO : Replace purge control solenoid valve. <Ref. to 2-1 [W4A0].>

11AH6 : CHECK PRESSURE CONTROL SOLENOID VALVE.

NOTE:
Pressure control solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



CHECK : ***Does pressure control solenoid valve produce operating sound?***

YES : Go to step **11AH7**.

NO : Replace pressure control solenoid valve. <Ref. to 2-1 [W7A0].>

11AH7 : CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK : ***Does fuel leak in fuel line?***
YES : Repair or replace fuel line. <Ref. to 2-8 [W7A0].>
NO : Go to step **11AH8**.

11AH8 : CHECK CANISTER.

CHECK : ***Is there any damage at canister?***
YES : Repair or replace canister. <Ref. to 2-1 [W3A0].>
NO : Go to step **11AH9**.

11AH9 : CHECK FUEL TANK.

CHECK : ***Is there any damage at fuel tank?***
YES : Repair or replace fuel tank. <Ref. to 2-8 [W2A0].>
NO : Go to step **11AH10**.

11AH10 : CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.

CHECK : ***Are there holes, cracks, clogging or disconnections of hoses or pipes in evaporative emission control system?***
YES : Repair or replace hoses or pipes.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

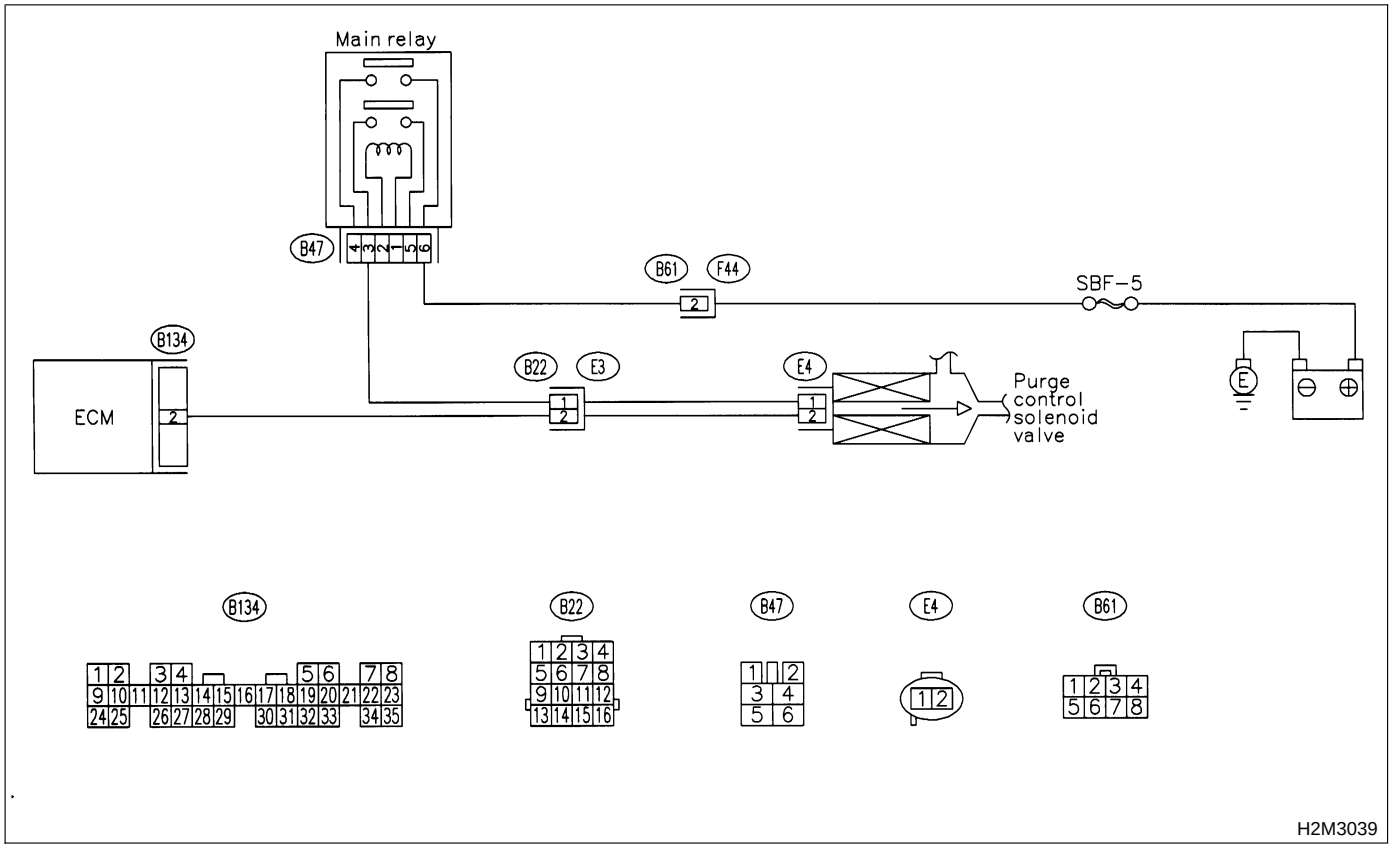
MEMO:

AI: DTC P0443 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

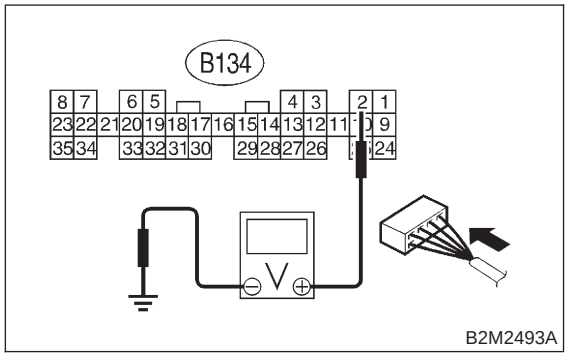
- **WIRING DIAGRAM:**



11AI1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

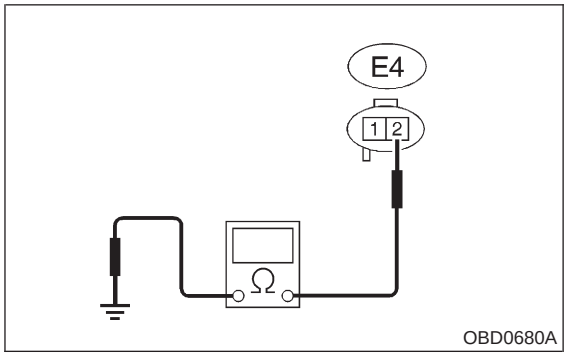
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

NO : Go to step **11AI2**.

11AI2 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from purge control solenoid valve and ECM.
3) Measure resistance of harness between purge control solenoid valve connector and engine ground.

Connector & terminal
(E4) No. 2 — Engine ground:



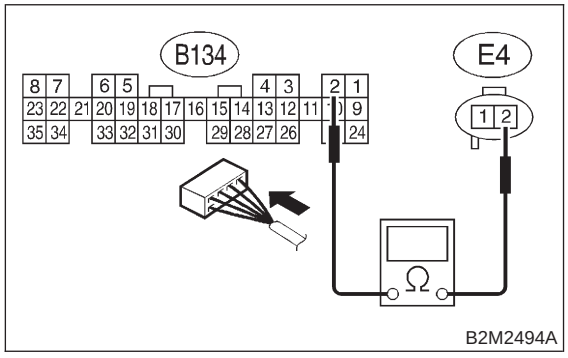
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and purge control solenoid valve connector.

NO : Go to step **11AI3**.

11AI3 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and purge control solenoid valve of harness connector.

Connector & terminal
(B134) No. 2 — (E4) No. 2:



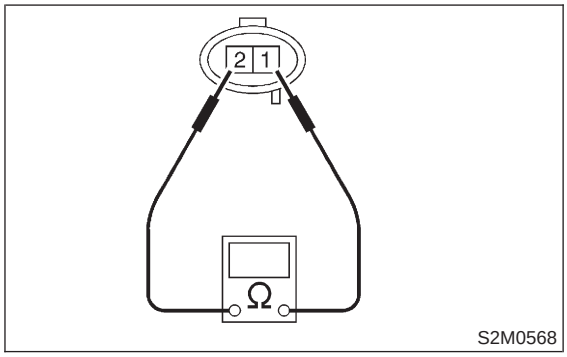
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AI4**.
NO : Repair open circuit in harness between ECM and purge control solenoid valve connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and purge control solenoid valve connector
- Poor contact in coupling connector (B22)

11AI4 : CHECK PURGE CONTROL SOLENOID VALVE.

1) Remove purge control solenoid valve.
2) Measure resistance between purge control solenoid valve terminals.

Terminals
No. 1 — No. 2:

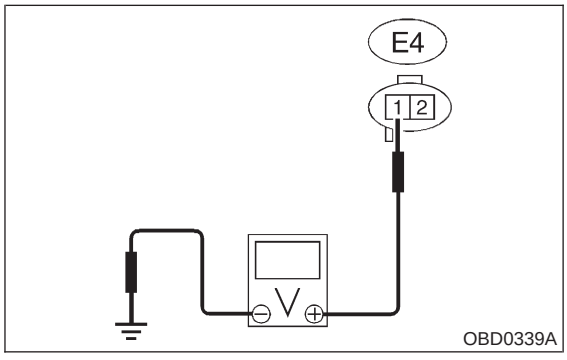


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **11AI5**.
NO : Replace purge control solenoid valve. <Ref. to 2-1 [W4A0].>

11AI5 : CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between purge control solenoid valve and engine ground.

Connector & terminal
(E4) No. 1 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11AI6**.
NO : Repair open circuit in harness between main relay and purge control solenoid valve connector.

11AI6 : CHECK POOR CONTACT.

Check poor contact in purge control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in purge control solenoid valve connector?***

YES : Repair poor contact in purge control solenoid valve connector.

NO : Contact with SOA service.

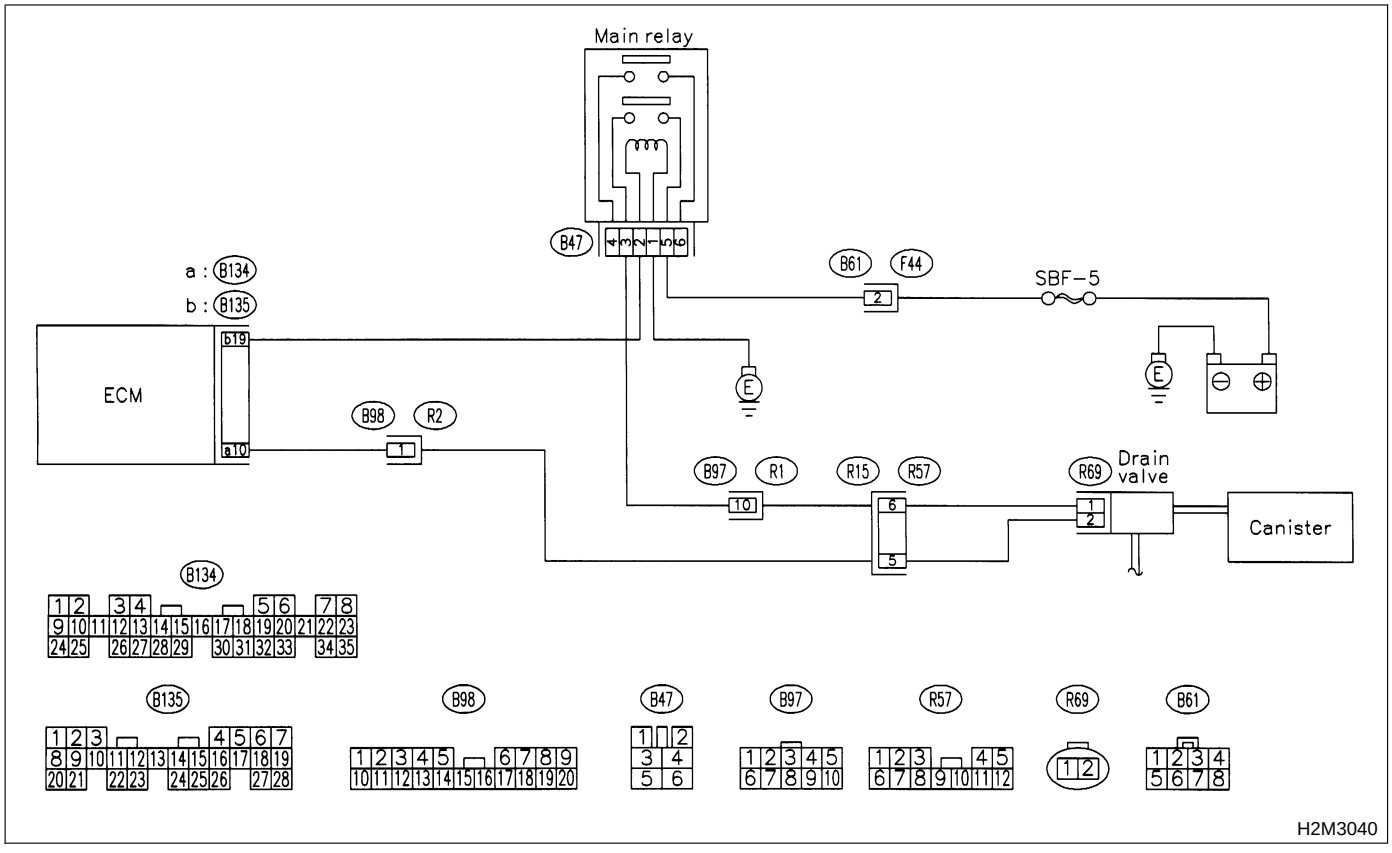
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

AJ: DTC P0446 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

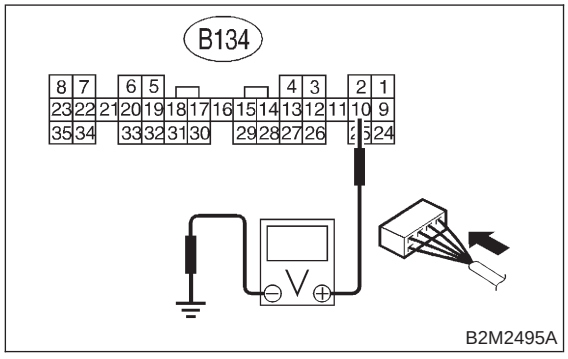
- **WIRING DIAGRAM:**



11AJ1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11AJ2**.
NO : Go to step **11AJ3**.

11AJ2 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

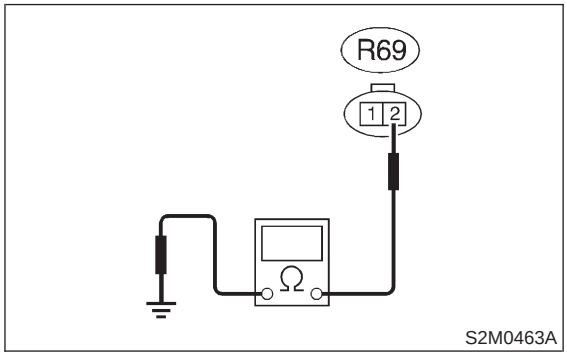
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in drain valve connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B97), (B98) and (R57)

11AJ3 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

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

Connector & terminal
(R69) No. 2 — Chassis ground:

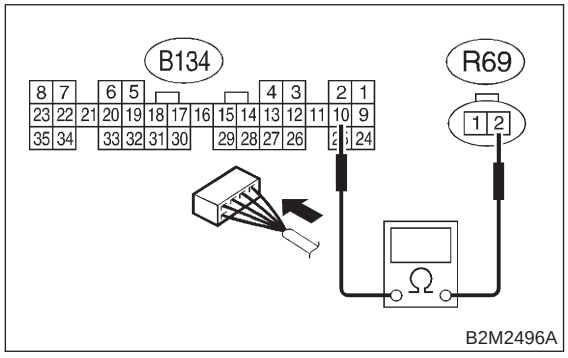


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and drain valve connector.
NO : Go to step **11AJ4**.

11AJ4 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and drain valve connector.

Connector & terminal
(B134) No. 10 — (R69) No. 2:



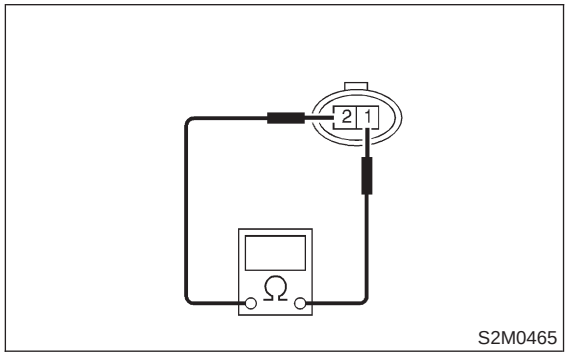
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AJ5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and drain valve connector
● Poor contact in coupling connectors (B98) and (R57)

11AJ5 : CHECK DRAIN VALVE.

Measure resistance between drain valve terminals.

Terminals
No. 1 — No. 2:

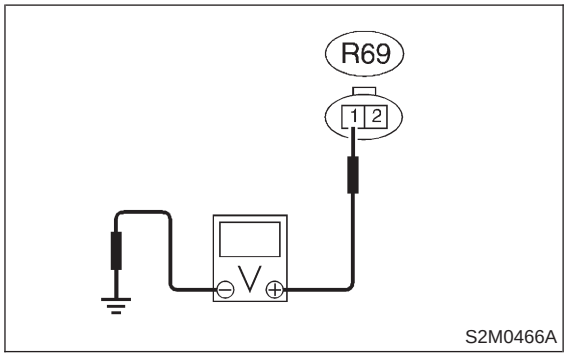


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **11AJ6**.
NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

11AJ6 : CHECK POWER SUPPLY TO DRAIN VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between drain valve and chassis ground.

Connector & terminal
(R69) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11AJ7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between main relay and drain valve
● Poor contact in coupling connectors (B97) and (R57)
● Poor contact in main relay connector

11AJ7 : CHECK POOR CONTACT.

Check poor contact in drain valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in drain valve connector?***
YES : Repair poor contact in drain valve connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

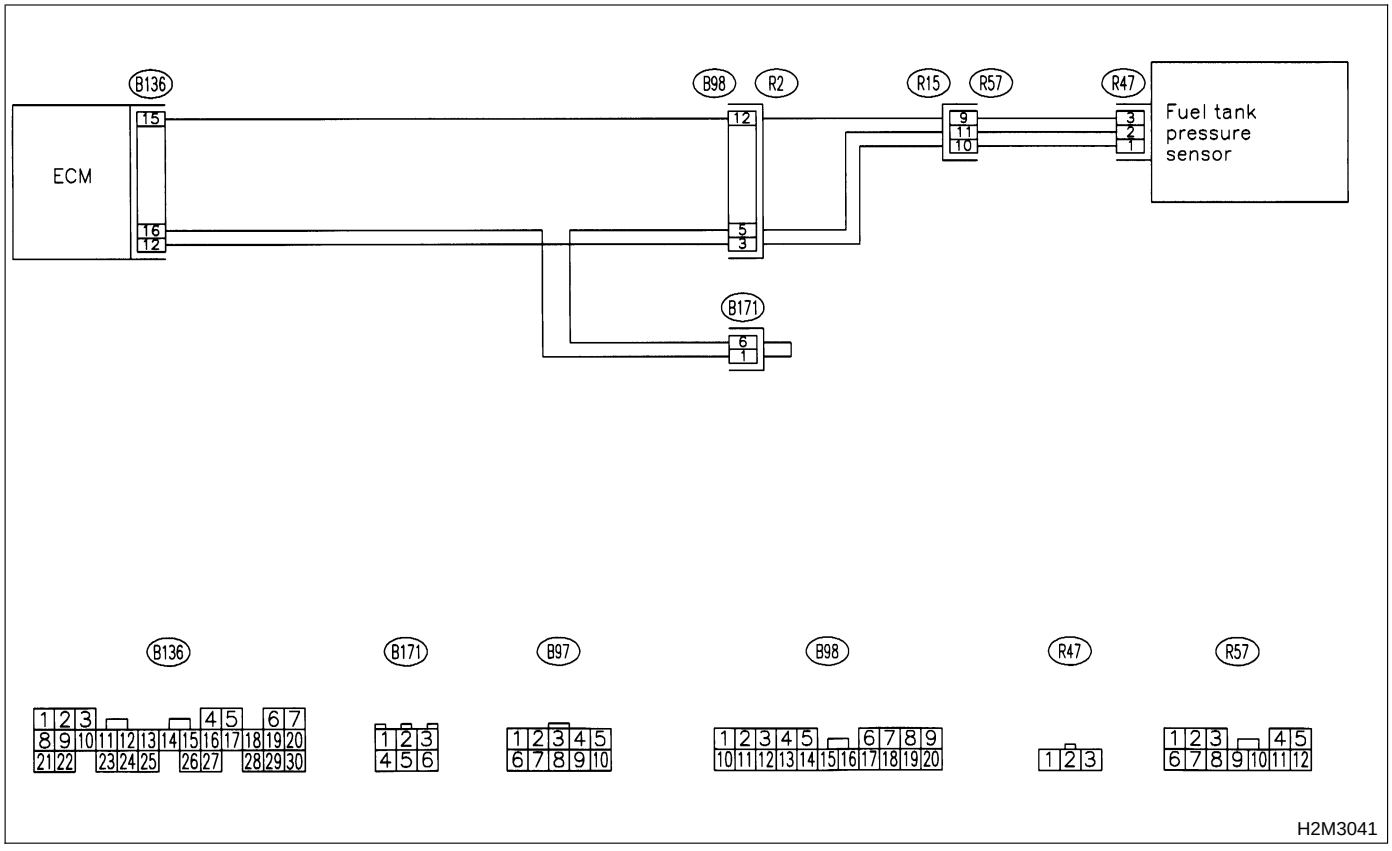
MEMO:

AK: DTC P0451 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR RANGE/PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AK1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any DTC on display?***
YES : Inspect the relevant DTC using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>
NO : Go to step **11AK2**.

11AK2 : CHECK FUEL FILLER CAP.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK : ***Is the fuel filler cap tightened securely?***
YES : Go to step **11AK3**.
NO : Tighten fuel filler cap securely.

11AK3 : CHECK PRESSURE/VACUUM LINE.

NOTE:
Check the following items.
● Disconnection, leakage and clogging of the vacuum hoses and pipes between fuel tank pressure sensor and fuel tank
● Disconnection, leakage and clogging of air ventilation hoses and pipes between fuel filler pipe and fuel tank

CHECK : ***Is there a fault in pressure/vacuum line?***

YES : Repair or replace hoses and pipes.

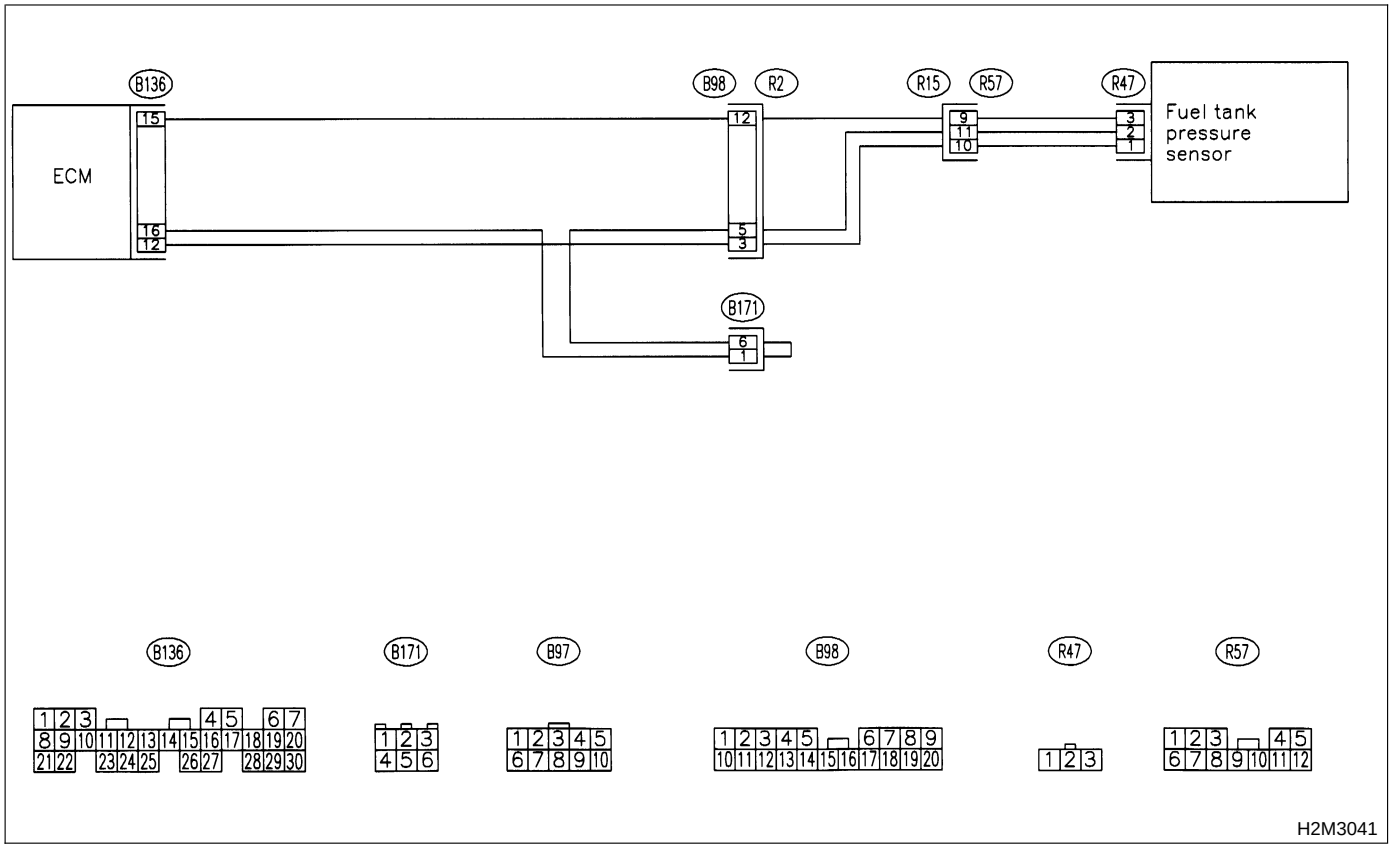
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

AL: DTC P0452 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

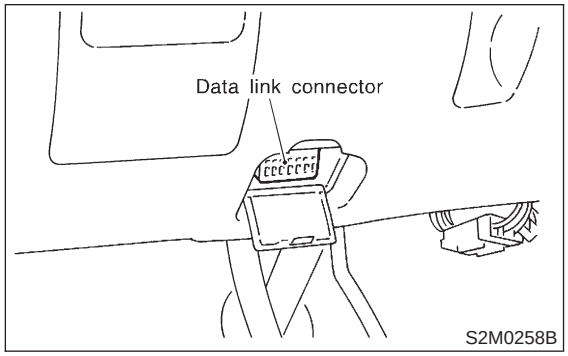
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AL1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



5) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
6) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

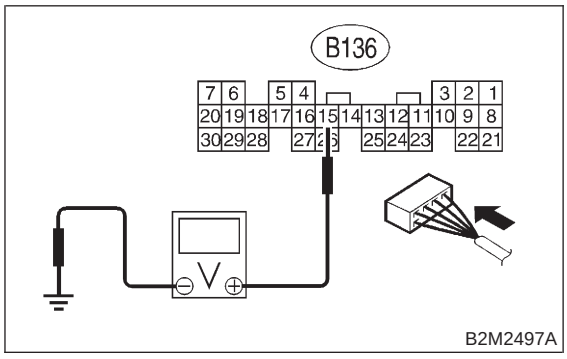
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −2.8 kPa (−21.0 mmHg, −0.827 inHg)?***
YES : Go to step **11AL2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

11AL2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

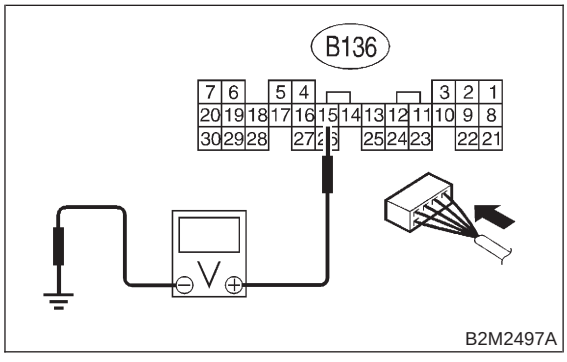


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11AL4**.
NO : Go to step **11AL3**.

11AL3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



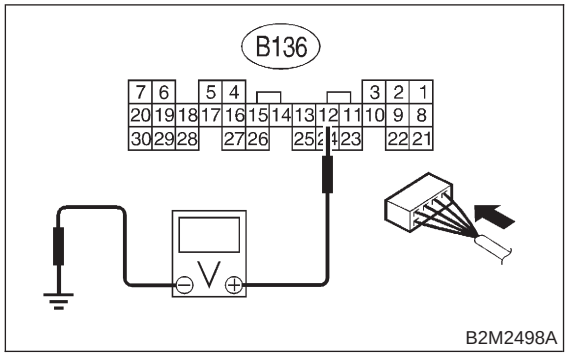
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11AL4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 12 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **11AL6**.
NO : Go to step **11AL5**.

11AL5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel tank pressure sensor signal using Subaru Select Monitor.

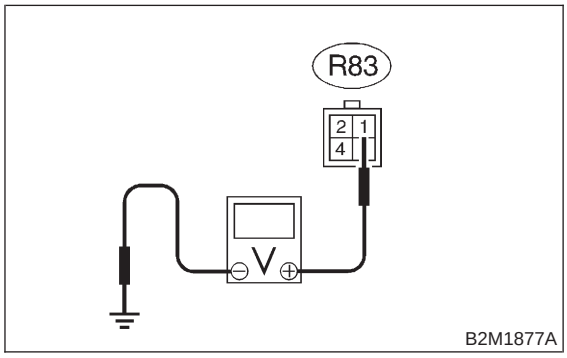
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than −2.8 kPa (−21.0 mmHg, −0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11AL6**.

11AL6 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Remove rear seat cushion (Sedan) or move rear seat cushion (Wagon).
3) Separate rear wiring harness and fuel tank cord.
4) Turn ignition switch to ON.
5) Measure voltage between rear wiring harness connector and chassis ground.

Connector & terminal
(R83) No. 1 (+) — Chassis ground (−):



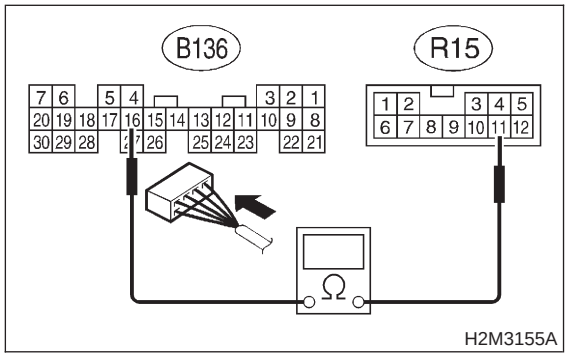
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11AL7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R83)
● Poor contact in coupling connector (B98)

11AL7 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

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

Connector & terminal
(B136) No. 16 — (R15) No. 11:



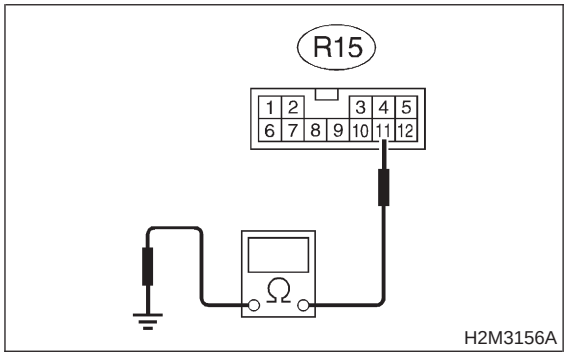
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AL8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

11AL8 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 11 — Chassis ground:

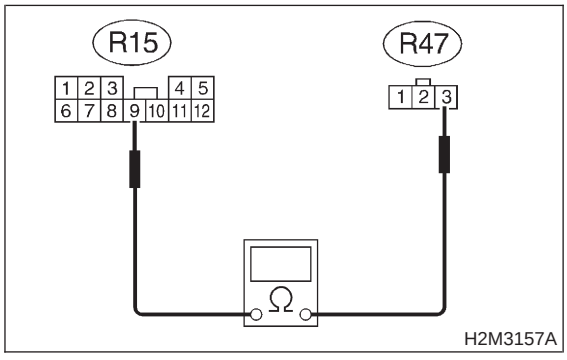


CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **11AL9**.
NO : Repair ground short circuit in harness between ECM and rear wiring harness connector (R15).

11AL9 : CHECK FUEL TANK CORD.

1) Remove fuel tank. <Ref. to 2-8 [W2A0].>
2) Disconnect connector from fuel tank pressure sensor.
3) Measure resistance of fuel tank cord.

Connector & terminal
(R15) No. 9 — (R47) No. 3:

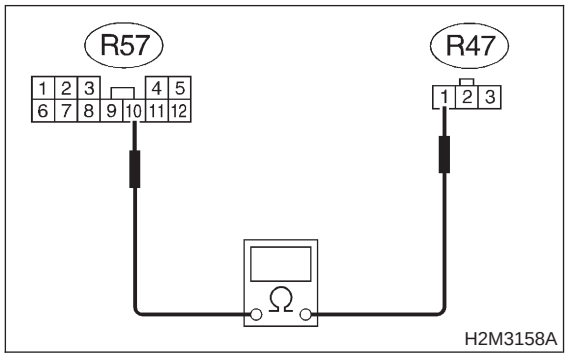


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AL10**.
NO : Repair open circuit in fuel tank cord.

11AL10 : CHECK FUEL TANK CORD.

Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 10 — (R47) No. 1:

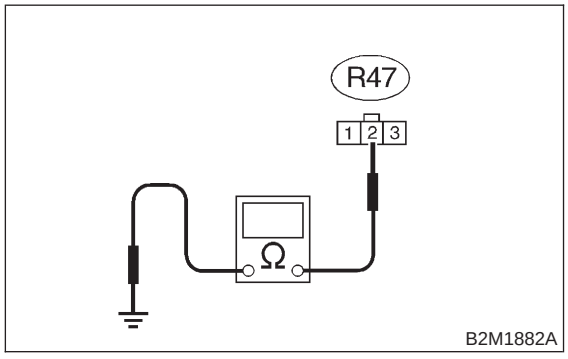


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AL11**.
NO : Repair open circuit in fuel tank cord.

11AL11 : CHECK FUEL TANK CORD.

Measure resistance of harness between fuel tank pressure sensor connector and chassis ground.

Connector & terminal
(R47) No. 2 — Chassis ground:



CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **11AL12**.
NO : Repair ground short circuit in fuel tank cord.

11AL12 : CHECK POOR CONTACT.

Check poor contact in fuel tank pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in fuel tank pressure sensor connector?***
YES : Repair poor contact in fuel tank pressure sensor connector.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

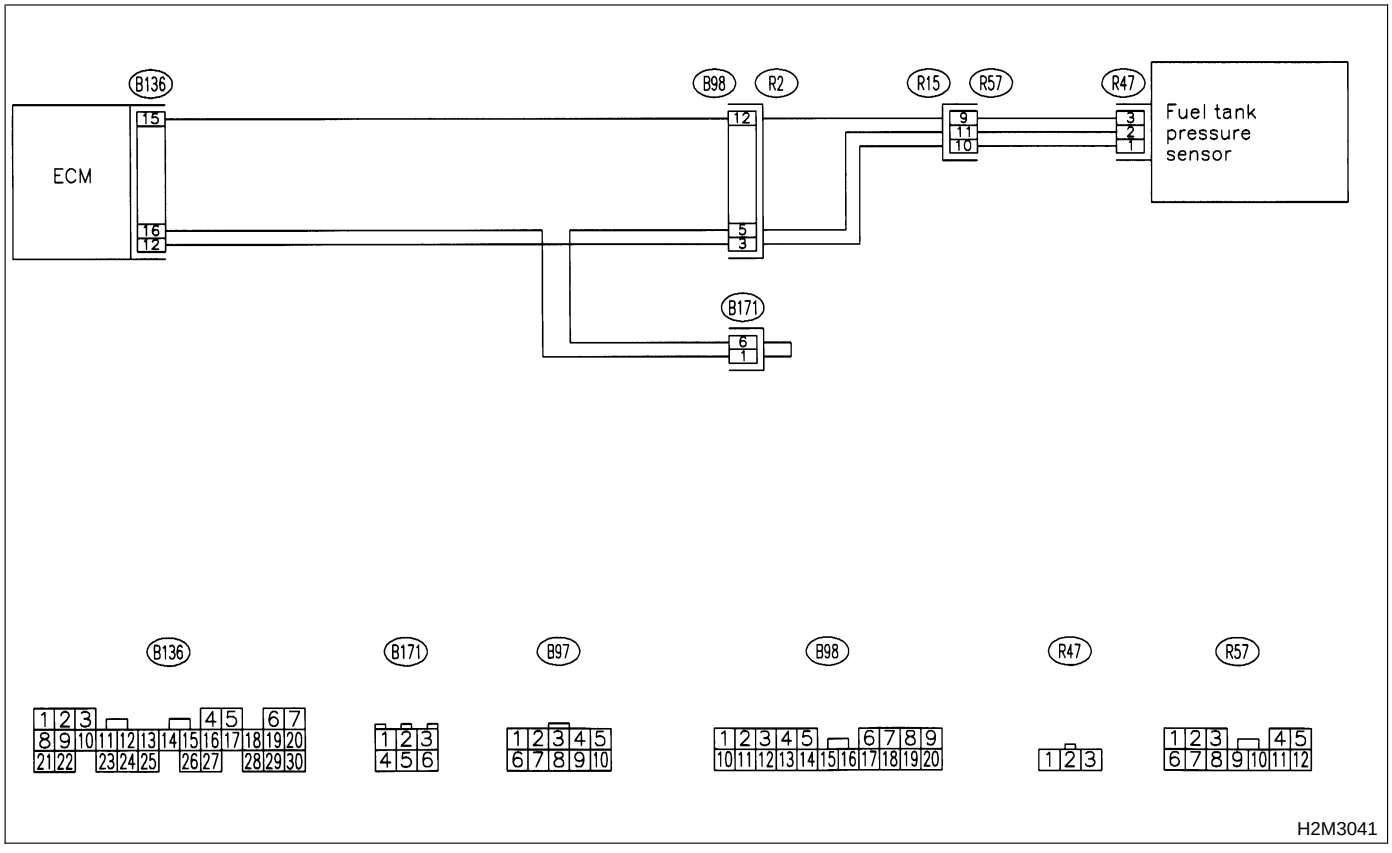
MEMO:

AM: DTC P0453 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

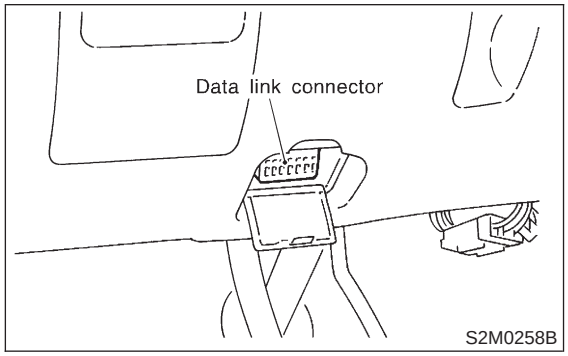
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AM1 : CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



5) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
6) Read data of fuel tank pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool.

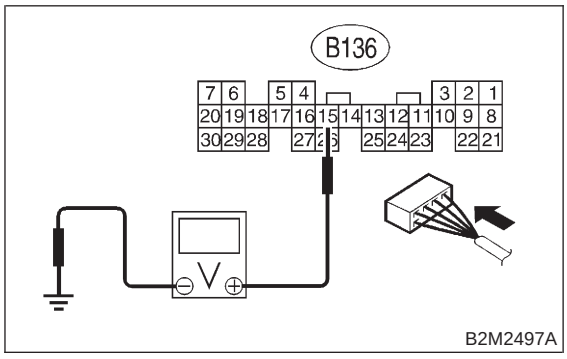
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?***
YES : Go to step **11AM12**.
NO : Go to step **11AM2**.

11AM2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

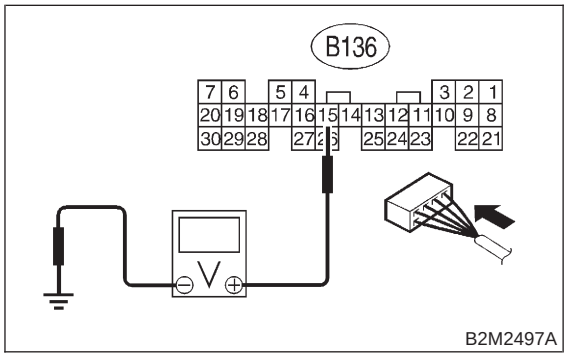


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11AM4**.
NO : Go to step **11AM3**.

11AM3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):

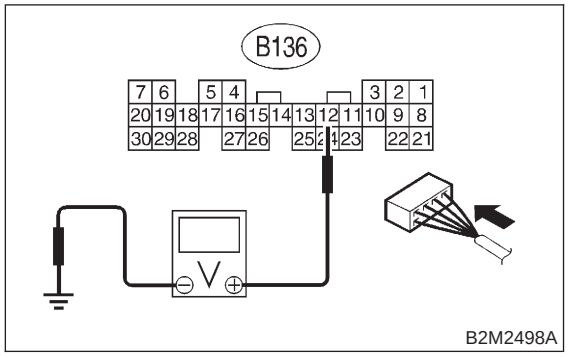


CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

11AM4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 12 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **11AM6**.
NO : Go to step **11AM5**.

11AM5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel tank pressure sensor signal using Subaru Select Monitor.

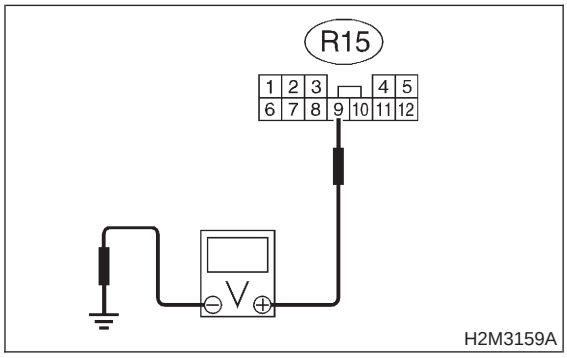
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than −2.8 kPa (−21.0 mmHg, −0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11AM6**.

11AM6 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Remove rear seat cushion (Sedan) or move rear seat cushion (Wagon).
3) Separate rear wiring harness and fuel tank cord.
4) Turn ignition switch to ON.
5) Measure voltage between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 9 (+) — Chassis ground (−):



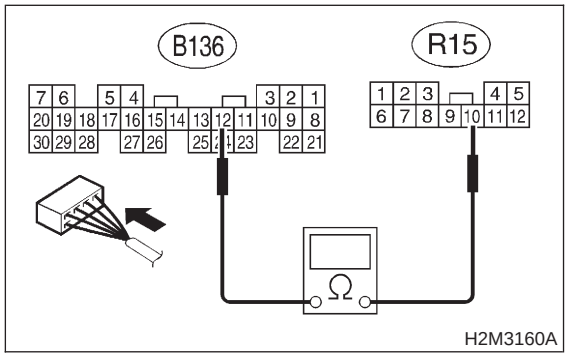
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11AM7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R15)
● Poor contact in coupling connector (B98)

11AM7 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

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

Connector & terminal
(B136) No. 12 — (R15) No. 10:



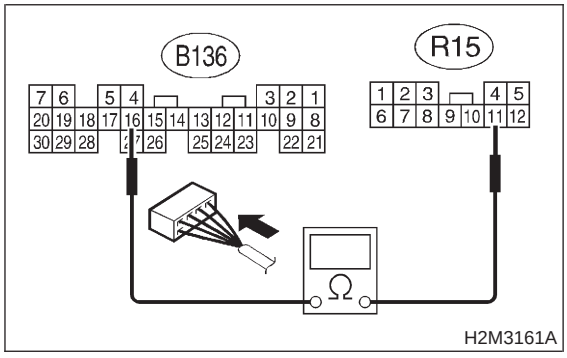
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AM8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

11AM8 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(B136) No. 16 — (R15) No. 11:

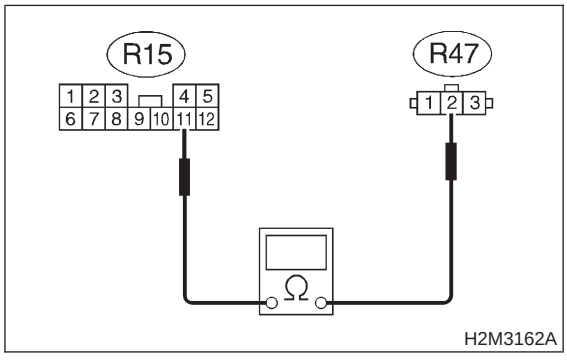


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AM9**.
NO : Repair ground short circuit in harness between ECM and rear wiring harness connector (R83).

11AM9 : CHECK FUEL TANK CORD.

1) Remove fuel tank. <Ref. to 2-8 [W2A0].>
2) Disconnect connector from fuel tank pressure sensor.
3) Measure resistance of fuel tank cord.

Connector & terminal
(R15) No. 11 — (R47) No. 2:

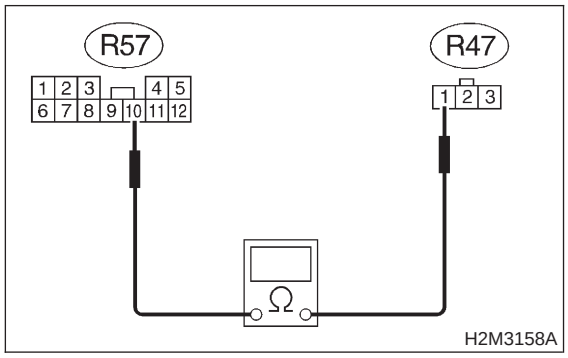


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AM10**.
NO : Repair open circuit in fuel tank cord.

11AM10 : CHECK FUEL TANK CORD.

Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 10 — (R47) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AM11**.
NO : Repair open circuit in fuel tank cord.

11AM11 : CHECK POOR CONTACT.

Check poor contact in fuel tank pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in fuel tank pressure sensor connector?***
YES : Repair poor contact in fuel tank pressure sensor connector.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

11AM12 : CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Remove fuel tank. <Ref. to 2-8 [W2A0].>
3) Remove fuel tank cord from fuel tank.
4) Connect fuel tank cord to rear wiring harness.
5) Remove fuel filler cap.
6) Install fuel filler cap.
7) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
8) Read data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

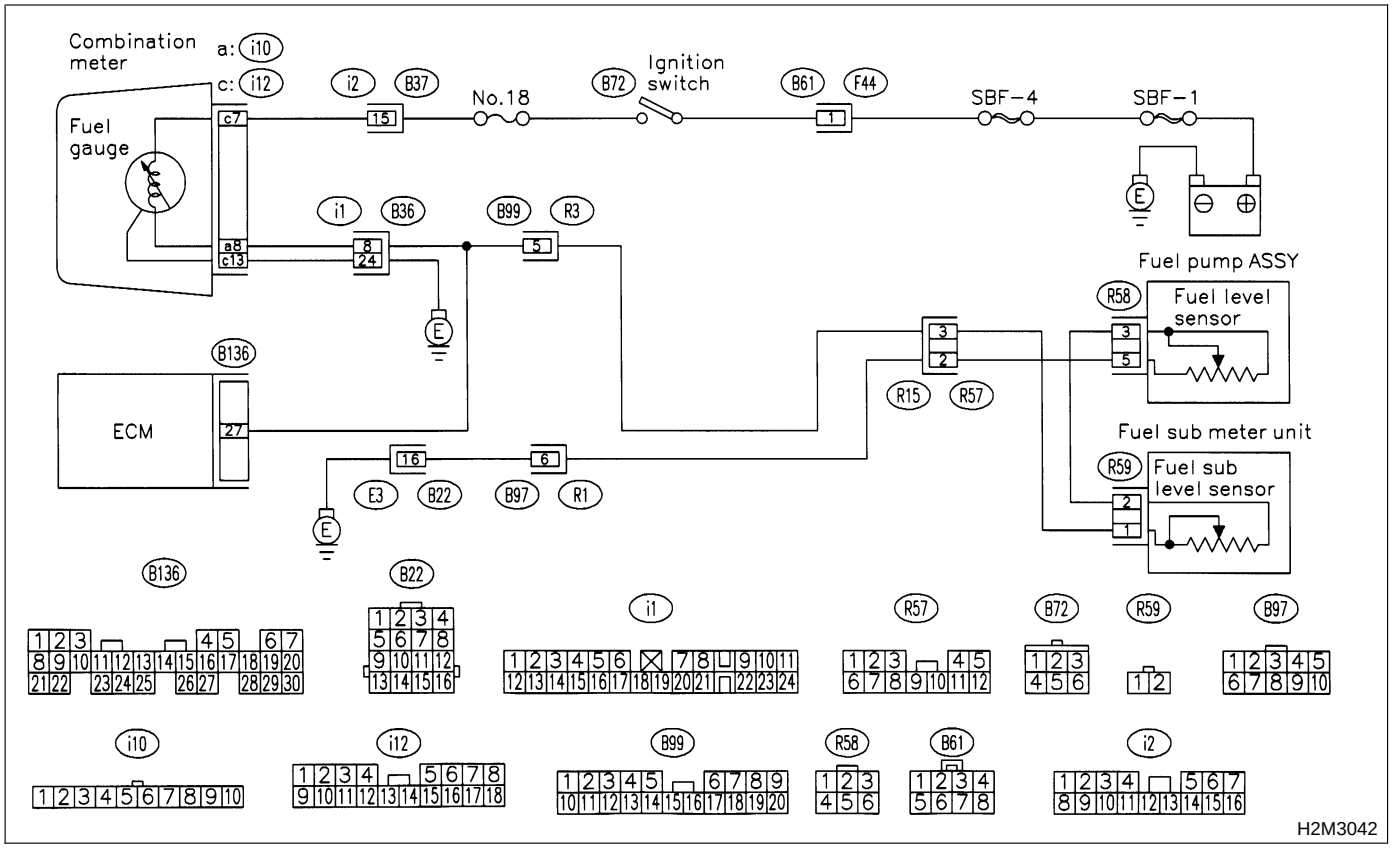
CHECK : ***Is the value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?***
YES : Repair battery short circuit in harness between ECM and fuel tank pressure sensor connector.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W6A0].>

AN: DTC P0461 — FUEL LEVEL SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AN1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0462 or P0463?***

YES : Inspect DTC P0462 or P0463 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect this trouble.

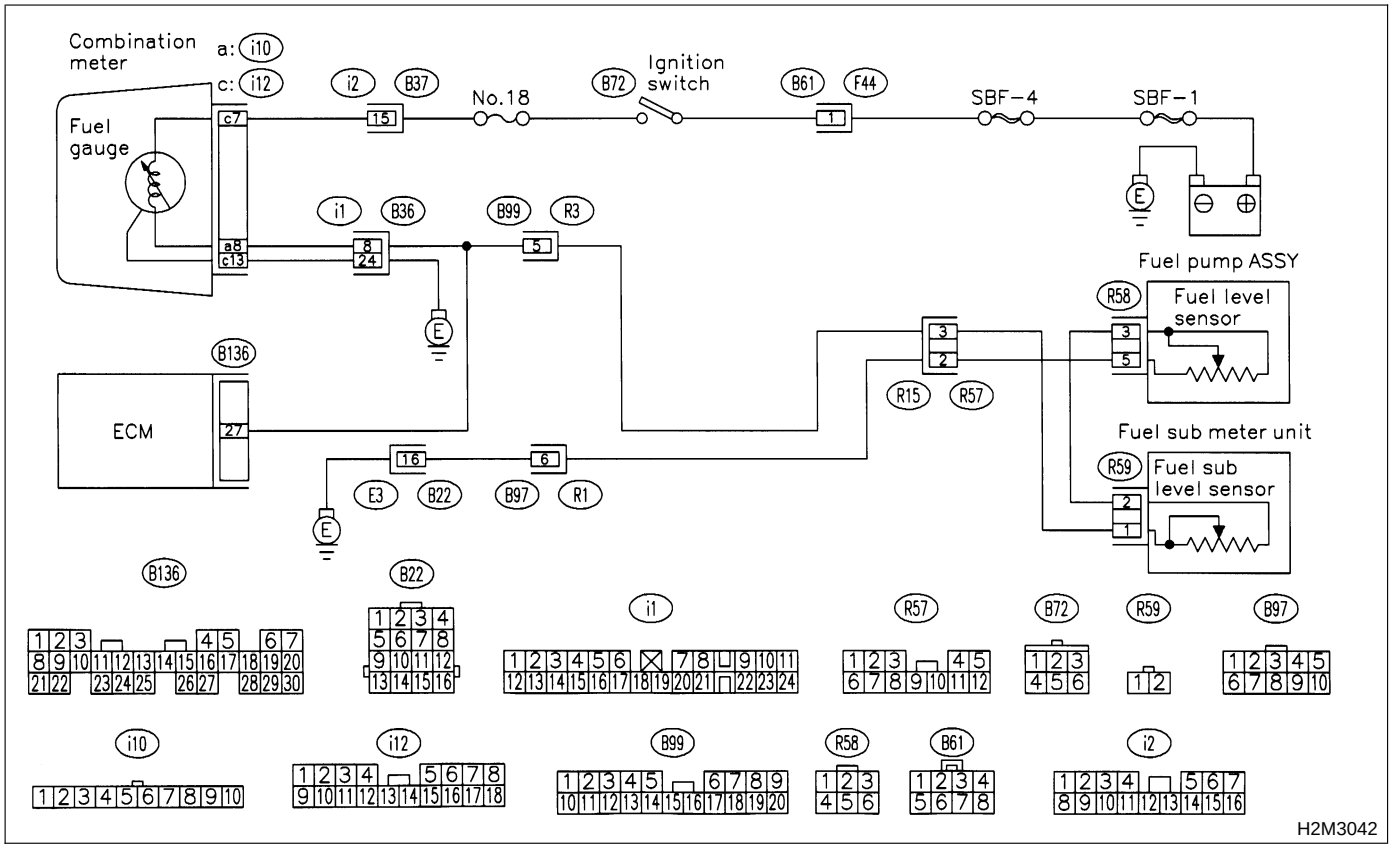
NO : Replace fuel sending unit <Ref. to 2-1 [W8A0].> and fuel sub meter unit <Ref. to 2-1 [W10A0].>.

AO: DTC P0462 — FUEL LEVEL SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**

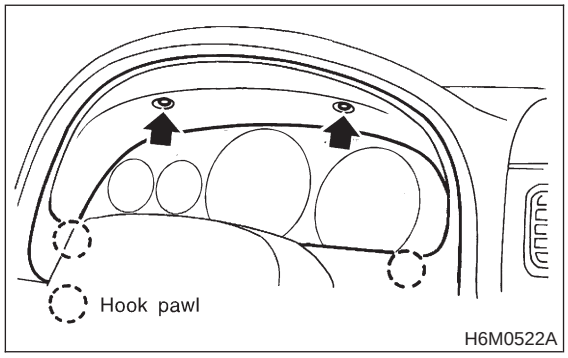


11AO1 :	**CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.**

CHECK : ***Does speedometer and tachometer operate normally?***
YES : Go to step **11AO3**.
NO : Go to step **11AO2**.

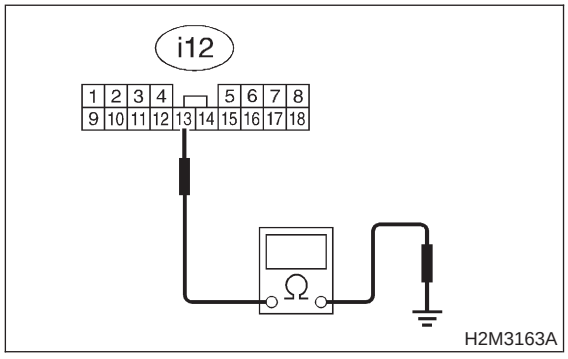
11AO2 : CHECK GROUND CIRCUIT OF COMBINATION METER.

1) Turn ignition switch to OFF.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



3) Disconnect connector from combination meter.
4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 13 — Chassis ground:



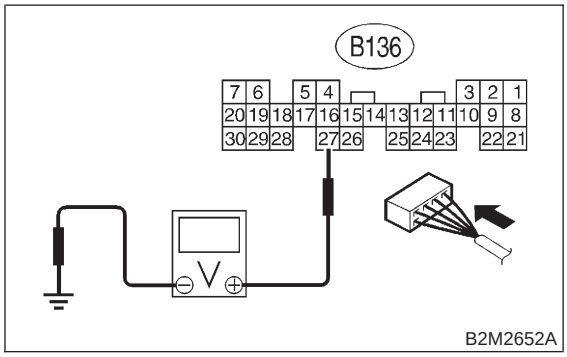
CHECK : ***Is resistance less than 5 Ω?***
YES : Repair or replace combination meter. <Ref. to 6-2 [W8A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal

11AO3 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON. (Engine OFF)
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.12 V?***
YES : Go to step **11AO5**.
NO : Go to step **11AO4**.

11AO4 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel level sensor signal using Subaru Select Monitor.

NOTE:
- Subaru Select Monitor

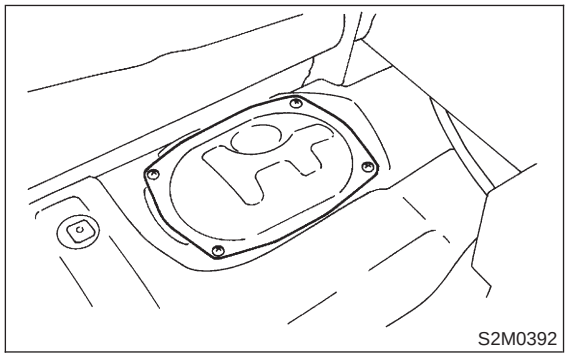
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change less than 0.12 V by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (i1), (B22), (B99), (B97) and (R57)

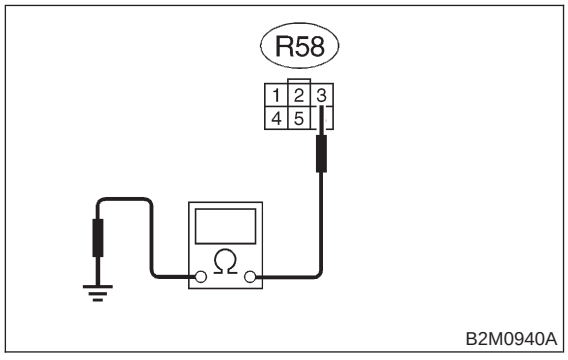
11AO5 : CHECK HARNESS BETWEEN ECM, COMBINATION METER AND FUEL PUMP CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


S2M0392

3) Disconnect connector from fuel pump.
4) Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 3 — Chassis ground:

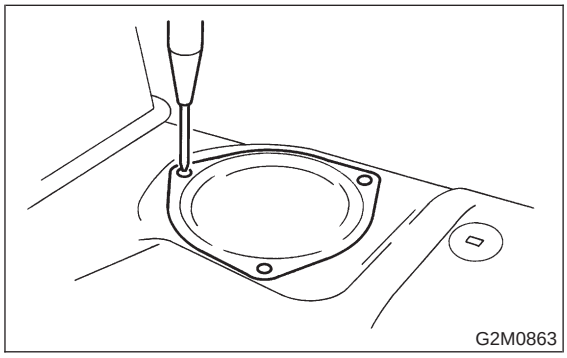


B2M0940A

CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **11AO6**.
NO : Go to step **11AO11**.

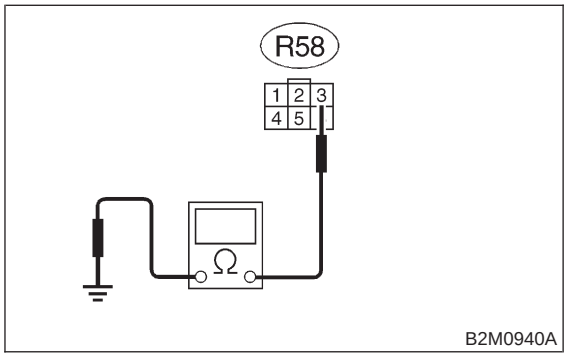
11AO6 : CHECK FUEL TANK CORD.

1) Remove service hole cover located on the left rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


G2M0863

2) Disconnect connector from fuel sub meter unit.
3) Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 3 — Chassis ground:



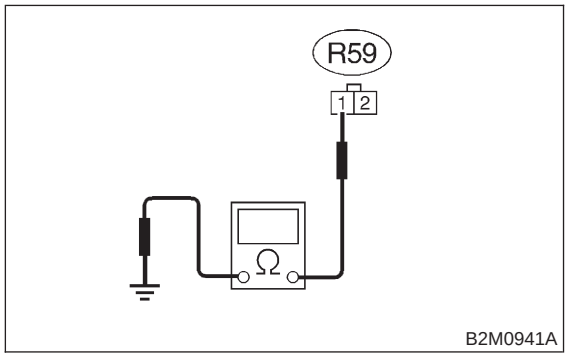
B2M0940A

CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between fuel pump and fuel sub meter unit connector.
NO : Go to step **11AO7**.

11AO7 : CHECK REAR WIRING HARNESS.

1) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15).
2) Measure resistance of harness between fuel sub meter unit connector and chassis ground.

Connector & terminal
(R59) No. 1 — Chassis ground:

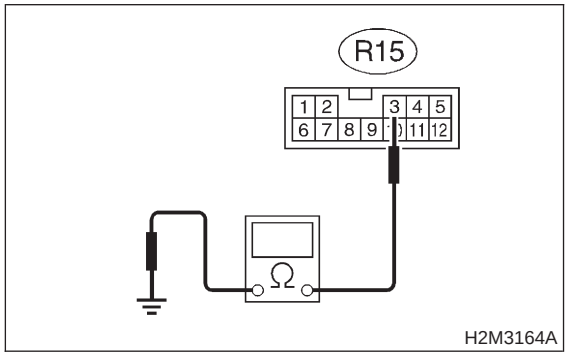


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in fuel tank cord.
NO : Go to step **11AO8**.

11AO8 : CHECK REAR, BULKHEAD AND INSTRUMENT PANEL WIRING HARNESS.

1) Separate rear wiring harness connector (R3) and bulkhead wiring harness connector (B99).
2) Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 3 — Chassis ground:

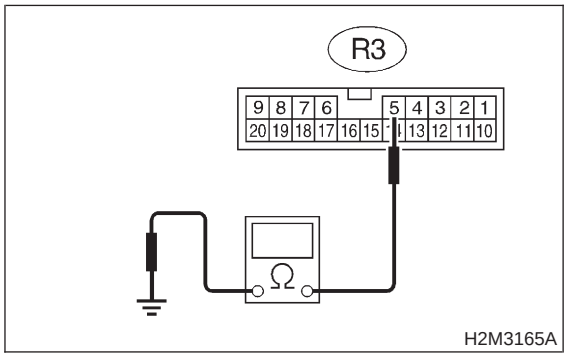


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **11AO9**.
NO : Repair ground short circuit in bulkhead wiring harness.

11AO9 : CHECK REAR WIRING HARNESS.

1) Separate rear wiring harness connector (R3) and bulkhead wiring harness connector (B99).
2) Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R3) No. 5 — Chassis ground:

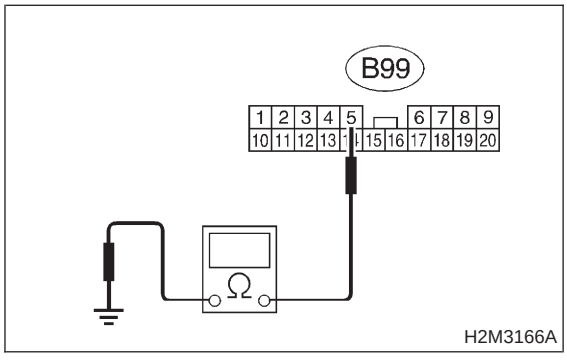


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in rear wiring harness.
NO : Go to step **11AO10**.

11AO10 : CHECK BULKHEAD WIRING HARNESS.

1) Separate bulkhead wiring harness connector (B38) and instrument panel wiring harness connector (i3).
2) Measure resistance of harness between bulkhead wiring harness connector and chassis ground.

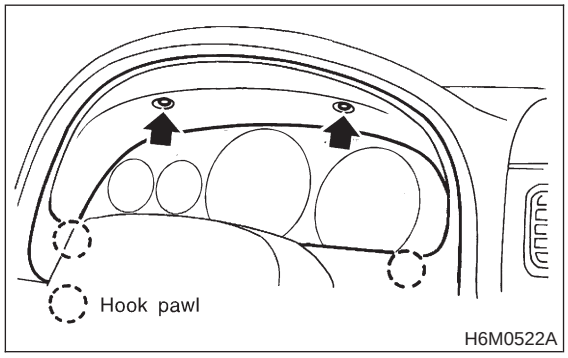
Connector & terminal
(B99) No. 5 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in bulkhead wiring harness.
NO : Repair ground short circuit in instrument panel wiring harness.

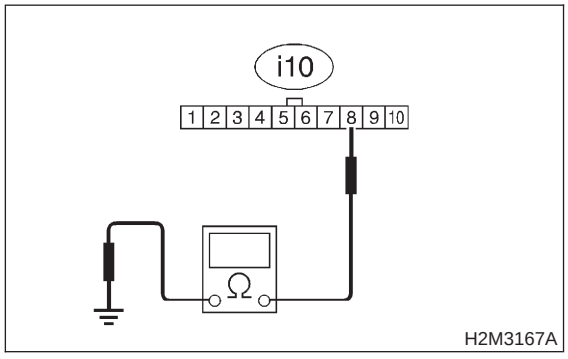
11AO11 : CHECK HARNESS BETWEEN COMBINATION METER AND FUEL PUMP CONNECTOR.

1) Connect connector to fuel pump.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



3) Disconnect connector from combination meter.
4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i10) No. 8 — Chassis ground:



CHECK : ***Is the resistance less than 200 Ω?***
YES : Go to step **11AO12**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between combination meter connector and junction A on rear wiring harness
● Poor contact in coupling connectors (i1) and (B99)

11AO12 : CHECK COMBINATION METER.

Disconnect connector from combination meter and remove combination meter.

CHECK : ***Is the fuel meter installation screw tightened securely?***
YES : Go to step **11AO13**.
NO : Tighten fuel meter installation screw securely.

11AO13 : CHECK COMBINATION METER PRINTED CIRCUIT PLATE.

Remove printed circuit plate assembly from combination meter assembly.

CHECK : ***Is there flaw or burning on printed circuit plate assembly?***
YES : Replace printed circuit plate assembly.
NO : Replace fuel meter assembly. <Ref. to 6-2 [W8A0].>

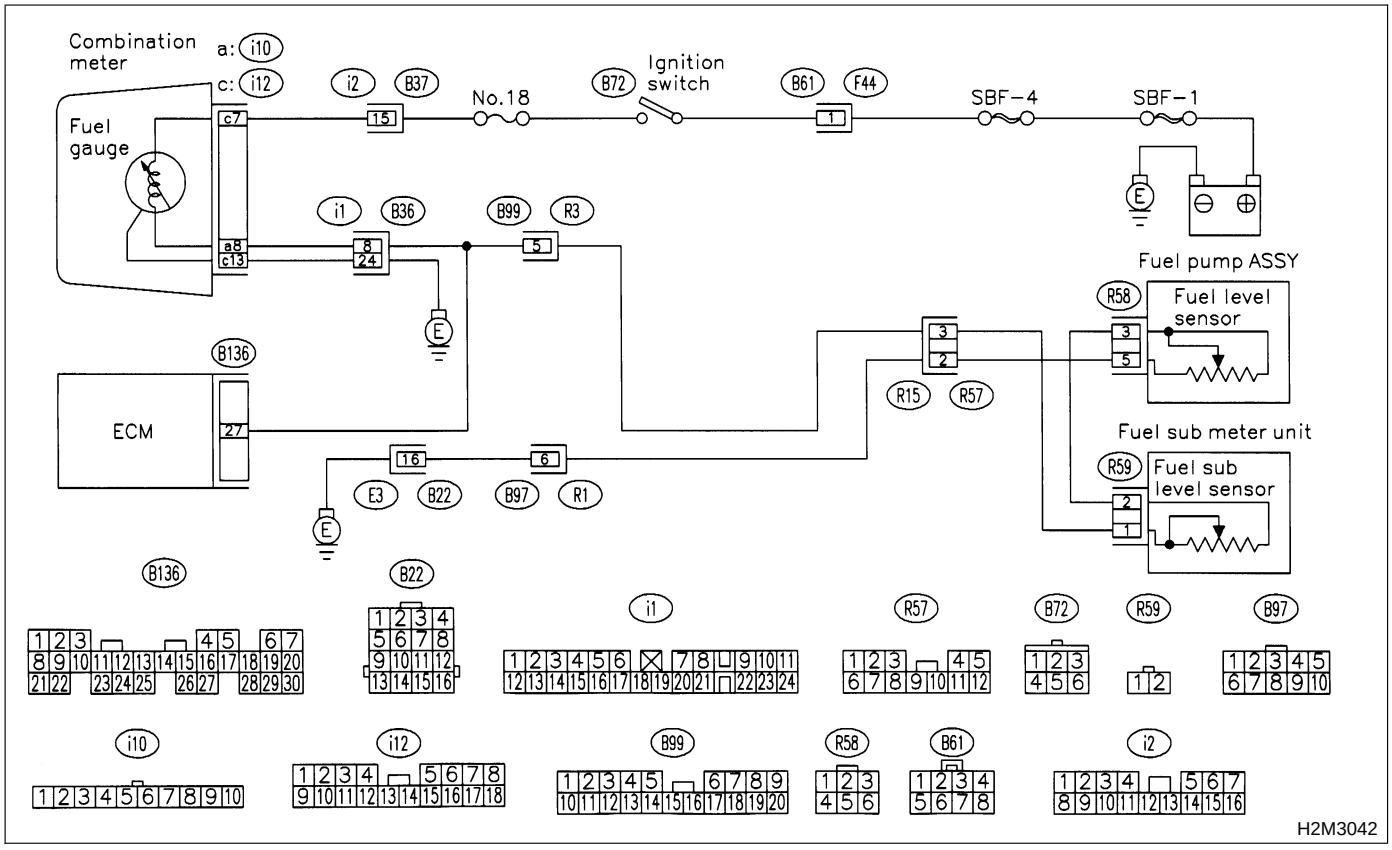
MEMO:

AP: DTC P0463 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**

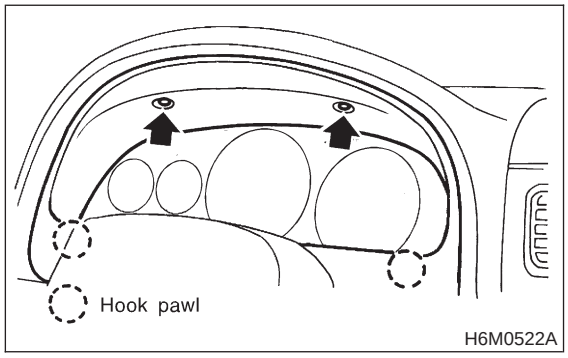


11AP1 :	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer and tachometer operate normally?***
YES : Go to step **11AP3**.
NO : Go to step **11AP2**.

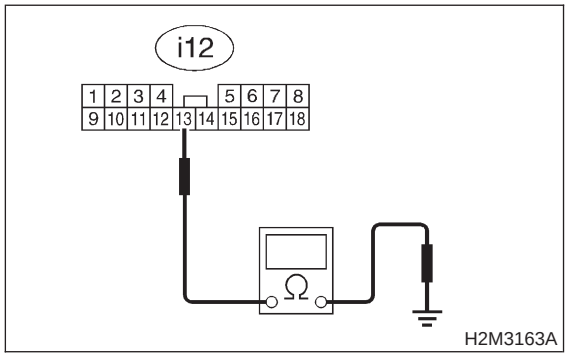
11AP2 : CHECK GROUND CIRCUIT OF COMBINATION METER.

1) Turn ignition switch to OFF.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



3) Disconnect connector from combination meter.
4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 13 — Chassis ground:



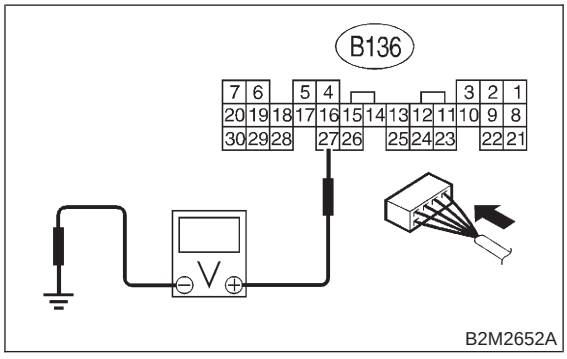
CHECK : ***Is resistance less than 5 Ω?***
YES : Repair or replace combination meter. <Ref. to 6-2 [W8A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal

11AP3 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON. (Engine OFF)
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):

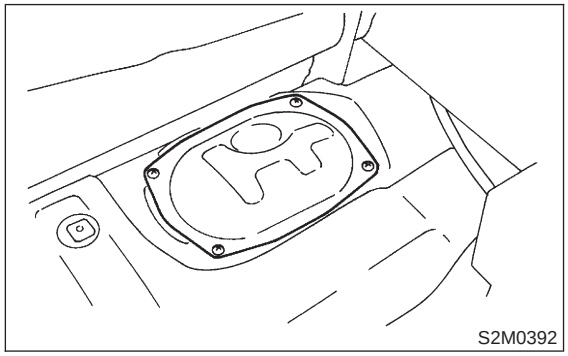


CHECK : ***Is the voltage more than 4.75 V?***
YES : Go to step **11AP4**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connector (i1), (B99), (B22), (B97) and (R57)

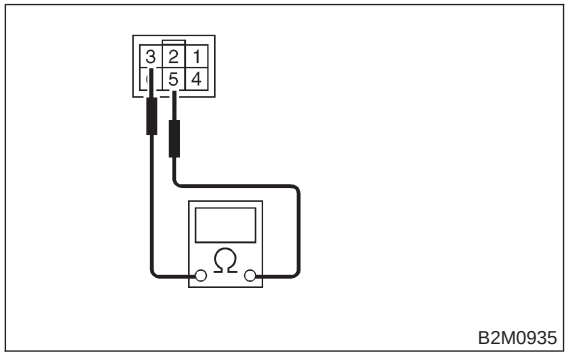
11AP4 : CHECK FUEL LEVEL SENSOR.

1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


S2M0392

3) Disconnect connector from fuel pump.
4) Measure resistance between connector terminals of fuel pump.

Terminals
No. 3 — No. 5:

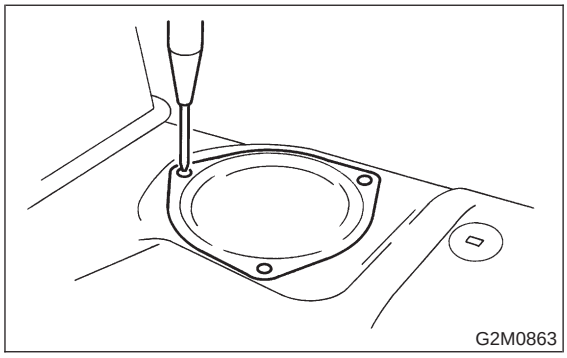


B2M0935

CHECK : ***Is the resistance less than 100 Ω?***
YES : Go to step **11AP5**.
NO : Replace fuel sending unit. <Ref. to 2-1 [W8A0].>

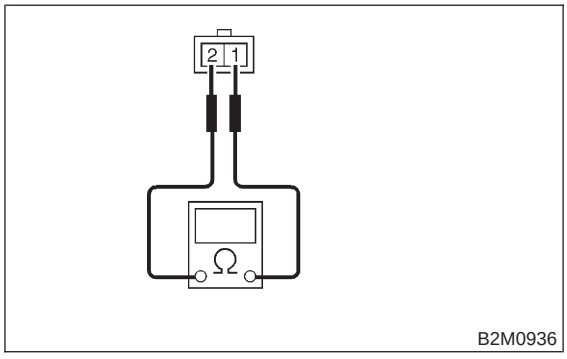
11AP5 : CHECK FUEL SUB LEVEL SENSOR.

1) Remove service hole cover located on the left rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).


G2M0863

2) Disconnect connector from fuel sub meter unit.
3) Measure resistance between connector terminals of fuel sub meter unit.

Terminals
No. 1 — No. 2:



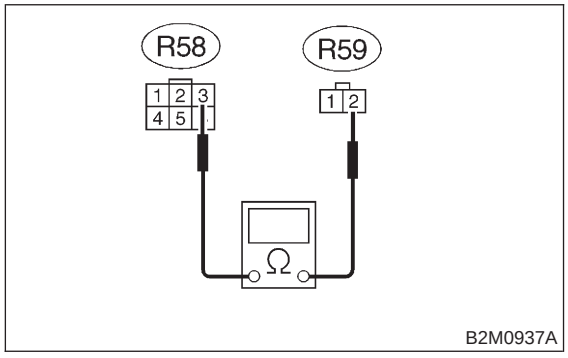
B2M0936

CHECK : ***Is the resistance less than 100 Ω?***
YES : Go to step **11AP6**.
NO : Replace fuel sub meter unit. <Ref. to 2-1 [W10A0].>

11AP6 : CHECK HARNESS BETWEEN FUEL PUMP AND FUEL SUB METER UNIT CONNECTOR.

Measure resistance of harness between fuel pump and fuel sub meter unit connector.

Connector & terminal
(R58) No. 3 — (R59) No. 2:

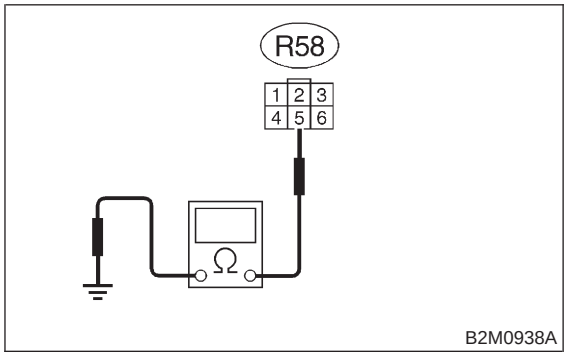


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AP7**.
NO : Repair open circuit in harness between fuel pump and fuel sub meter unit connector.

11AP7 : CHECK GROUND CIRCUIT OF FUEL LEVEL SENSOR.

Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 5 — Chassis ground:



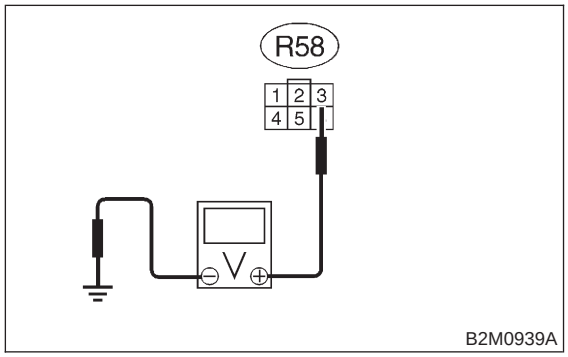
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11AP8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and chassis grounding terminal
- Poor contact in fuel pump connector
- Poor contact in coupling connectors (R57), (B97) and (B22)

11AP8 : CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONNECTOR.

1) Connect connector to fuel sub meter unit.
2) Turn ignition switch to ON.
3) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 3 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Repair harness and connector.

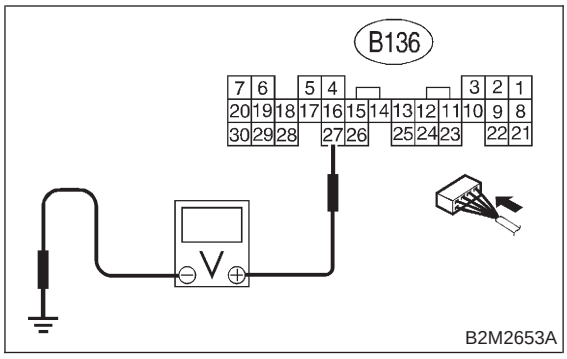
NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and junction A on rear wiring harness
- Poor contact in fuel sub meter unit connector
- Poor contact in fuel pump connector
- Poor contact in coupling connector (R57)

NO : Go to step **11AP9**.

11AP9 : CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM connector and junction A on rear wiring harness
- Poor contact in coupling connector (B97)

NO : Repair connector.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in fuel sub meter unit
- Poor contact in ECM connector

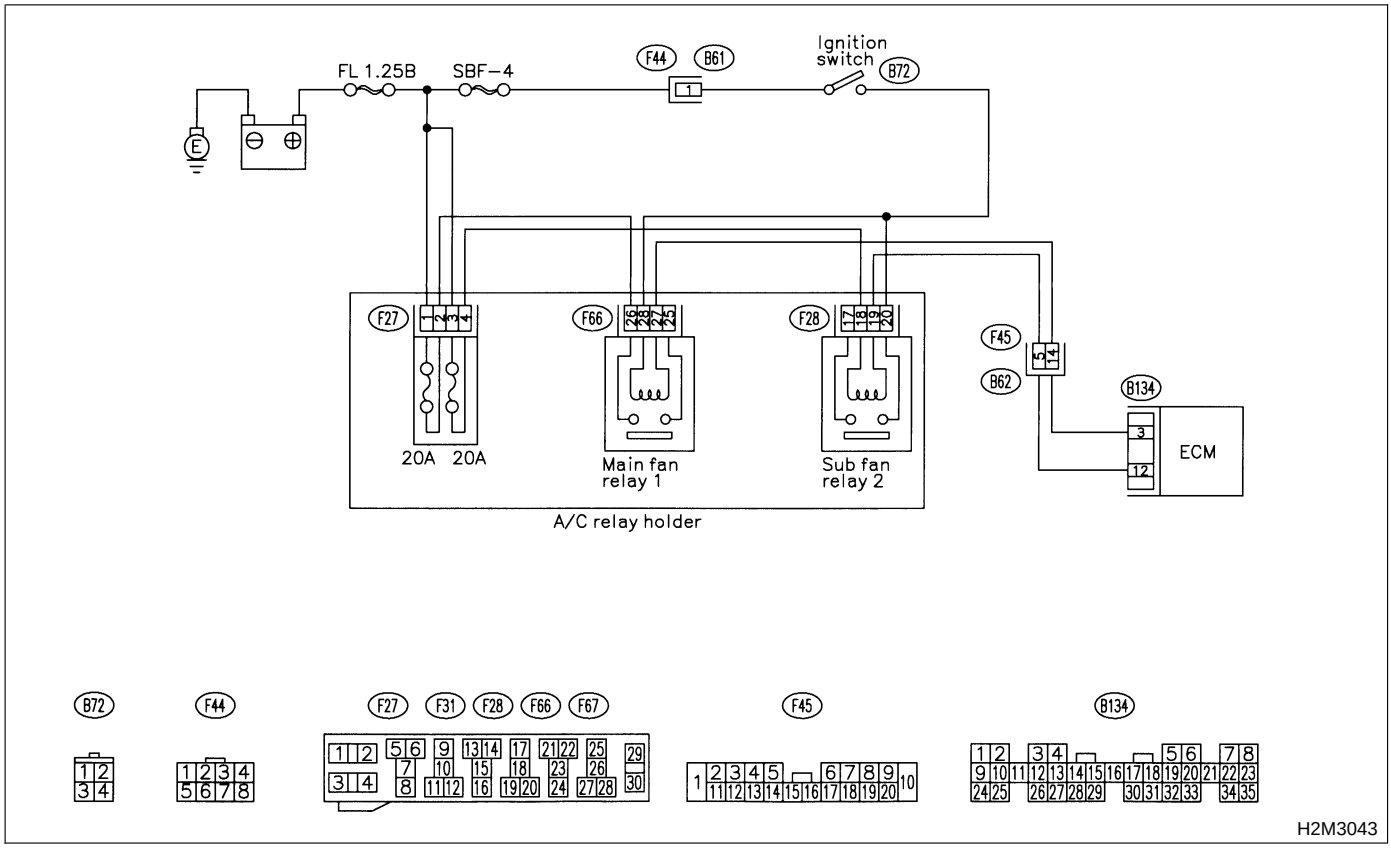
MEMO:

AQ: DTC P0480 — COOLING FAN RELAY 1 CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Radiator fan does not operate properly.
  - Overheating

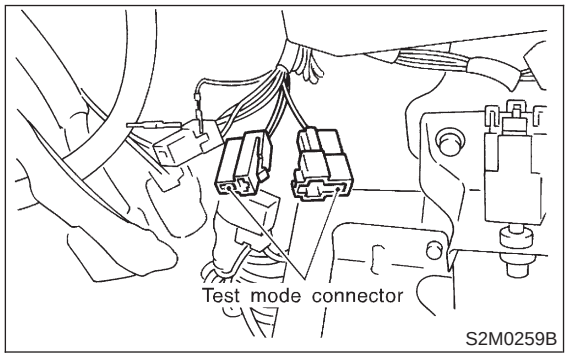
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AQ1 : CHECK OUTPUT SIGNAL FROM ECM.

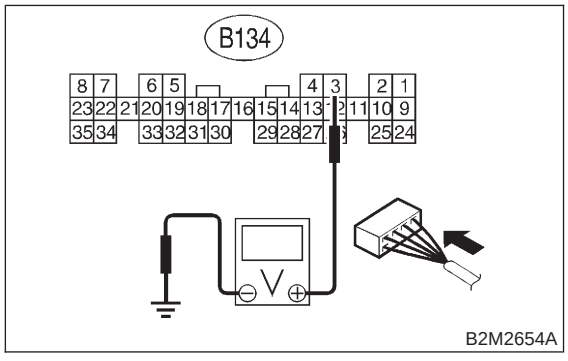
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Radiator fan relay operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):

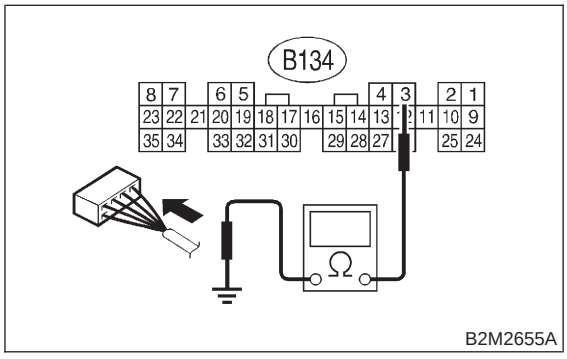


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11AQ2**.

11AQ2 : CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

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

Connector & terminal
(B134) No. 3 — Chassis ground:

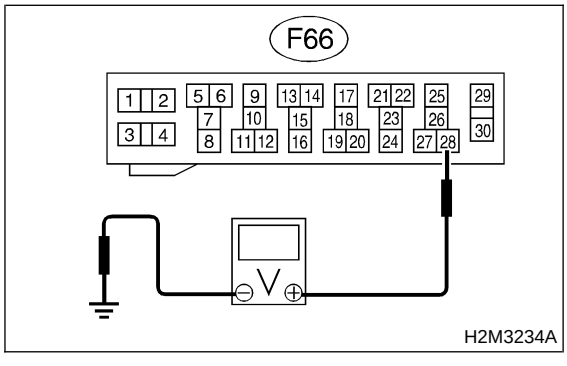


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in radiator fan relay 1 control circuit.
NO : Go to step **11AQ3**.

11AQ3 : CHECK POWER SUPPLY FOR RELAY.

1) Remove main fan relay from A/C relay holder.
2) Turn ignition switch to ON.
3) Measure voltage between fuse and relay box (F/B) connector and chassis ground.

Connector & terminal
(F66) No. 28 (+) — Chassis ground (−):

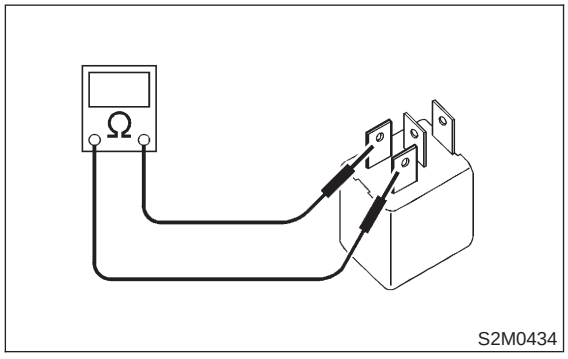


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11AQ4**.
NO : Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.

11AQ4 : CHECK MAIN FAN RELAY 1.

1) Turn ignition switch to OFF.
2) Measure resistance between main fan relay 1 terminals.

Terminal
No. 27 — No. 28:

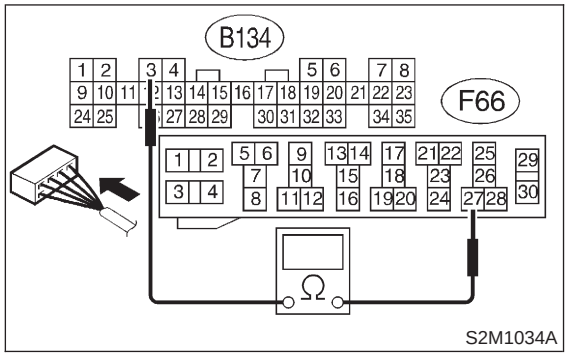


CHECK : ***Is the resistance between 87 and 107 Ω?***
YES : Go to step **11AQ5**.
NO : Replace main fan relay 1.

11AQ5 : CHECK OPEN CIRCUIT IN MAIN FAN RELAY CONTROL CIRCUIT.

Measure resistance of harness between ECM and main fan relay connector.

Connector & terminal
(B134) No. 3 — (F66) No. 27:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AQ6**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and main fan relay 1 connector
- Poor contact in coupling connector (F45)

11AQ6 : CHECK POOR CONTACT.

Check poor contact in ECM or main fan relay 1 connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM or main fan relay 1 connector?***
YES : Repair poor contact in ECM or main fan relay 1 connector.
NO : Contact with SOA service.

MEMO:

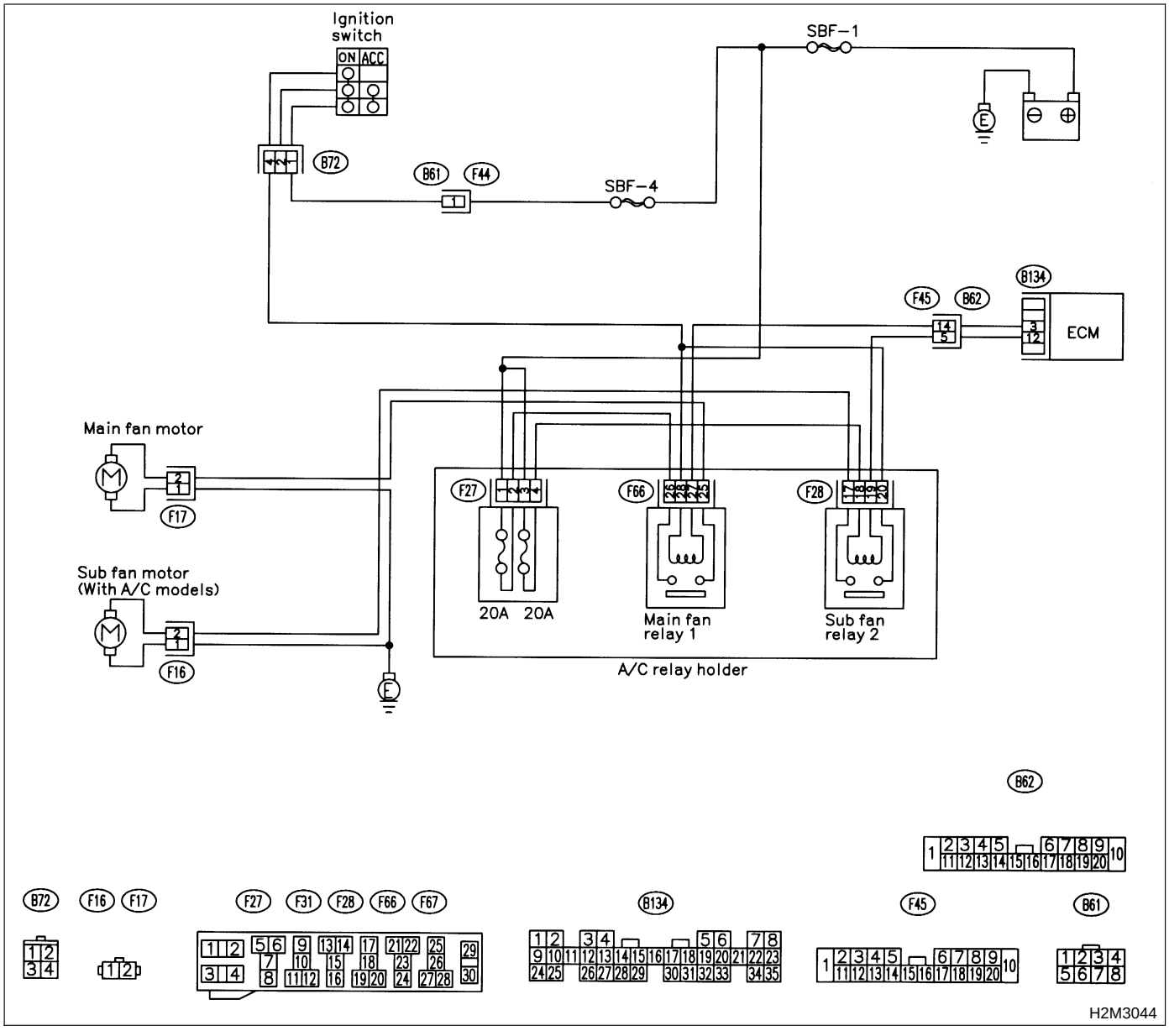
AR: DTC P0483 — COOLING FAN FUNCTION PROBLEM —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Occurrence of noise
  - Overheating

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

NOTE:
If the vehicle, with the engine idling, is placed very close to a wall or another vehicle, preventing normal cooling function, the OBD system may detect malfunction.

- **WIRING DIAGRAM:**



11AR1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

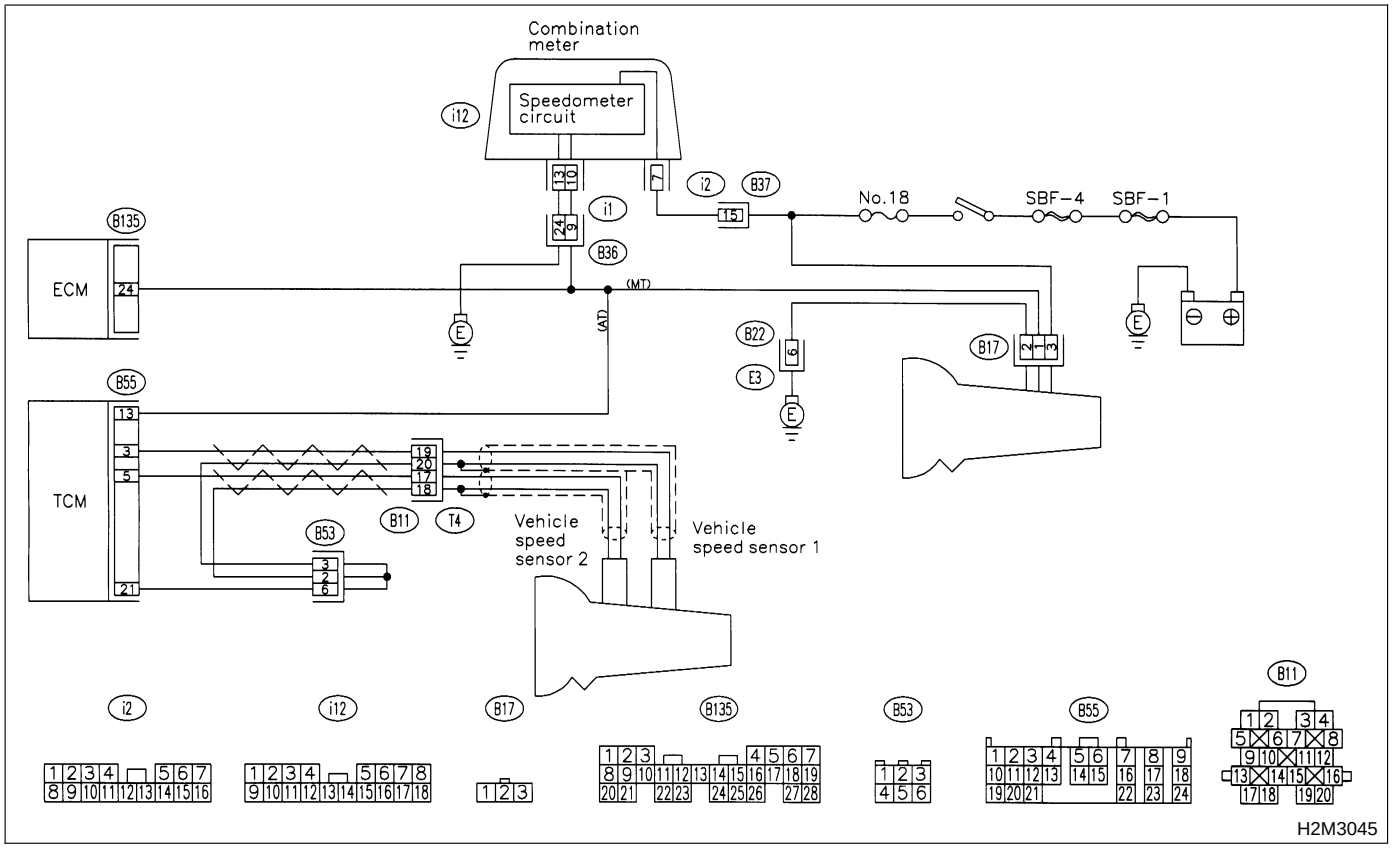
NO : Check engine cooling system. <Ref. to 2-5 [T100].>

AS: DTC P0500 — VEHICLE SPEED SENSOR MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



H2M3045

11AS1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **11AS2**.
NO : Go to step **11AS3**.

11AS2 : CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?***
YES : Check vehicle speed sensor 2 signal circuit. <Ref. to 3-2 [T8G0].>
NO : Go to step **11AS3**.

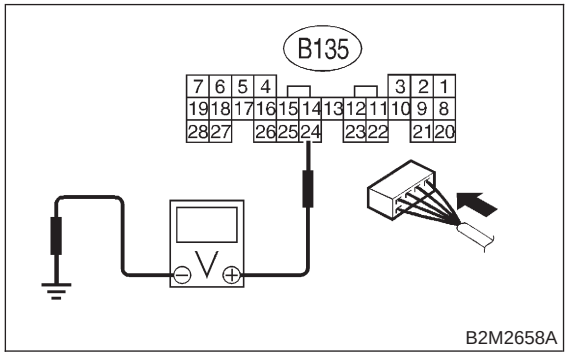
11AS3 : CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer operate normally?***
YES : Go to step **11AS4**.
NO : Check speedometer and vehicle speed sensor. <Ref. to 6-2 [K2A4].>

11AS4 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 24 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Repair harness and connector.

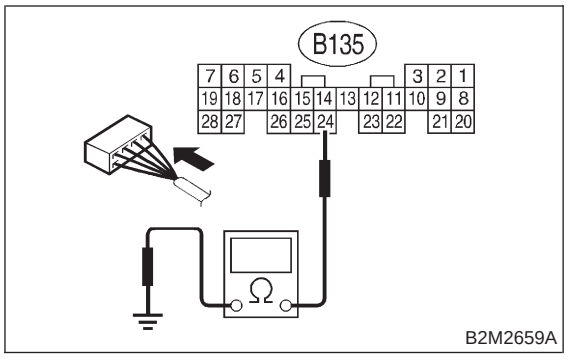
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector
- Poor contact in coupling connector (B36)

NO : Go to step **11AS5**.

11AS5 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

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

Connector & terminal
(B135) No. 24 — Chassis ground:



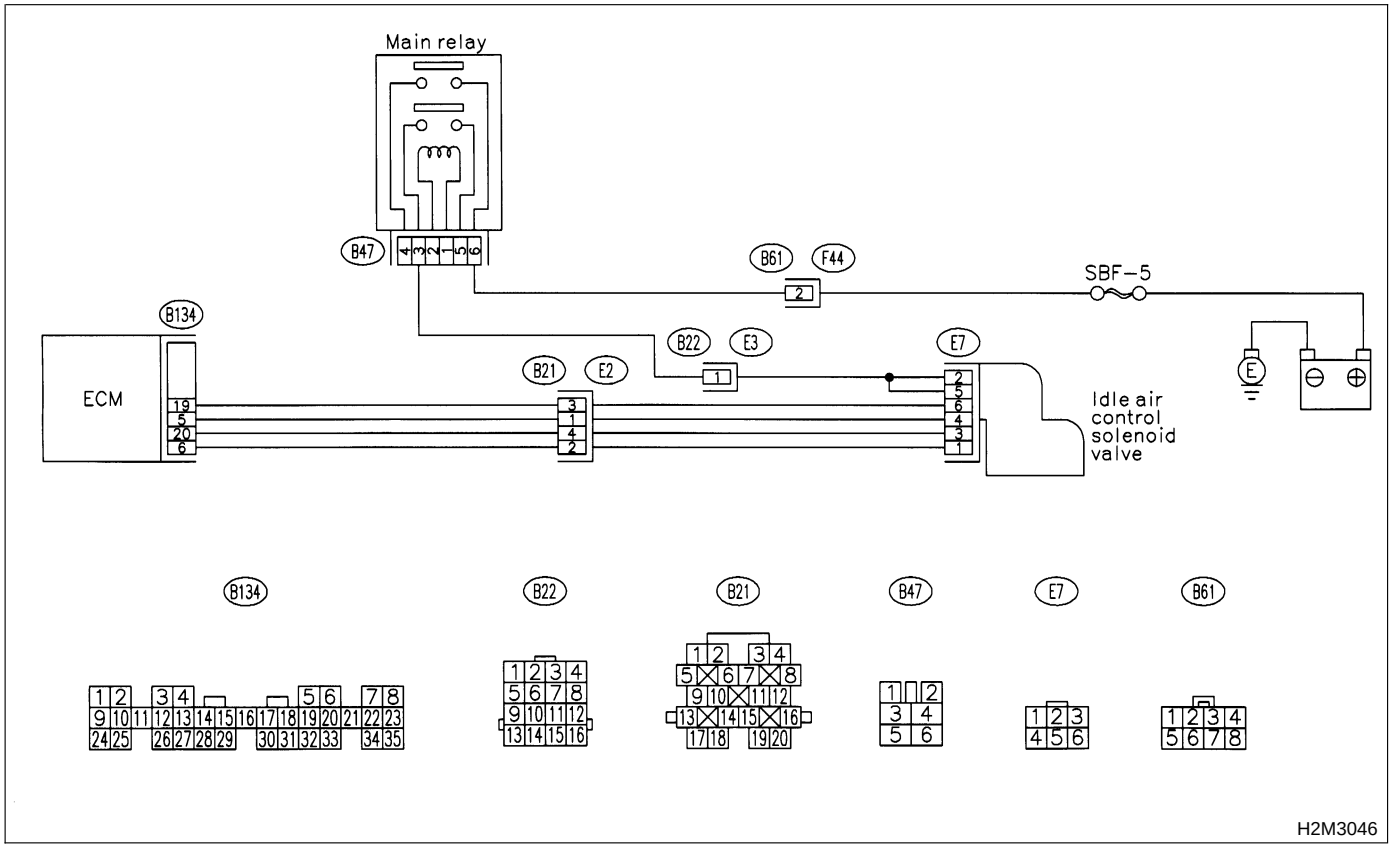
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and combination meter connector.
NO : Repair poor contact in ECM connector.

AT: DTC P0506 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine is difficult to start.
  - Engine does not start.
  - Erroneous idling
  - Engine stalls.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AT1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517?***

YES : Inspect DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0506.

NO : Go to step **11AT2**.

11AT2 : CHECK AIR BY-PASS LINE.

1) Turn ignition switch to OFF.
2) Remove idle air control solenoid valve from throttle body. <Ref. to 2-7 [W12A2].>
3) Remove throttle body from intake manifold. <Ref. to 2-7 [W3A2].>
4) Confirm that there is no foreign matter stuck in the air by-pass line.
5) Using an air gun, force air into idle air control solenoid valve installation area. Confirm that forced air subsequently escapes from throttle body interior.

CHECK : ***Does air flow out?***

YES : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A2].>

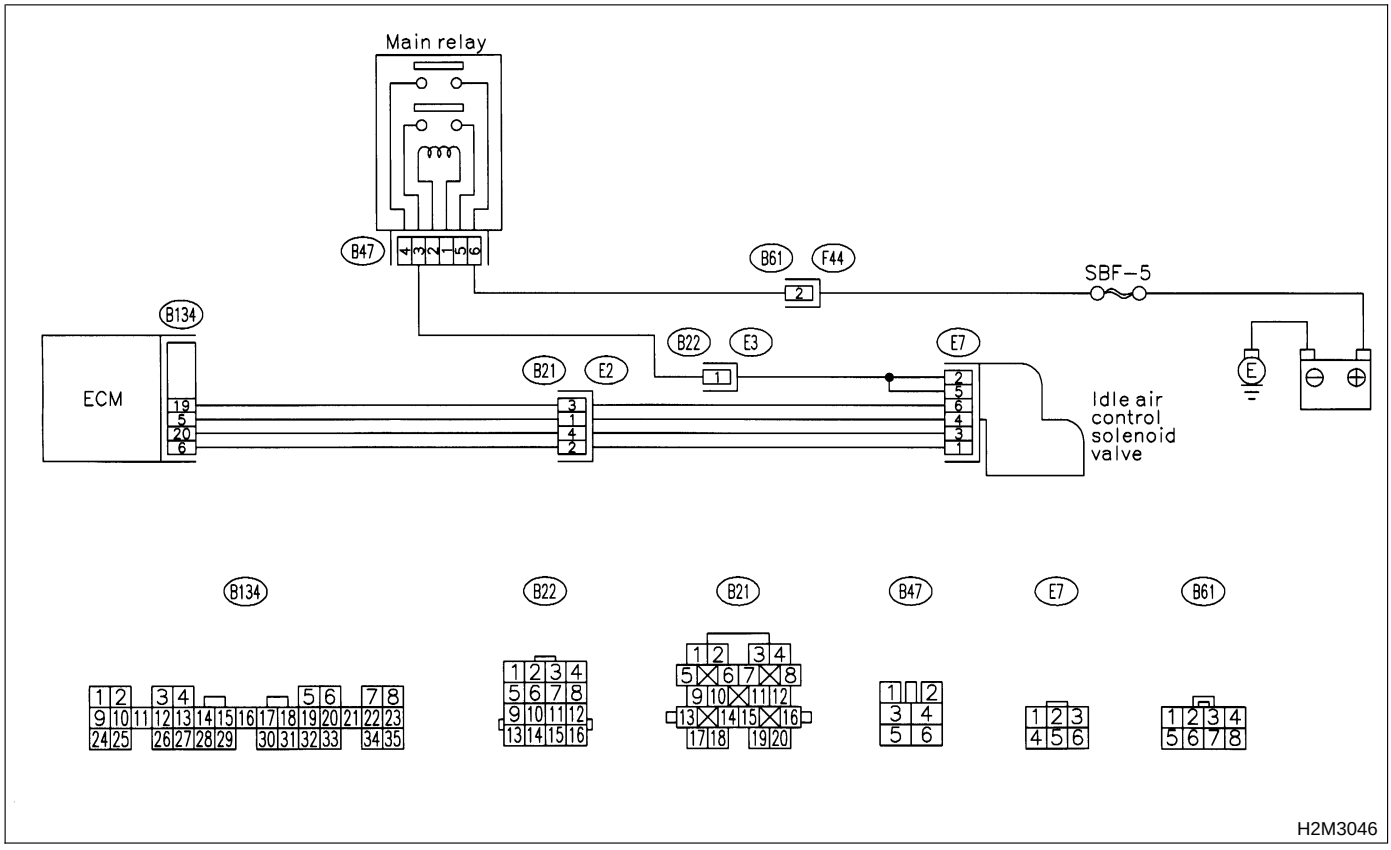
NO : Replace throttle body. <Ref. to 2-7 [W3A2].>

AU: DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine keeps running at higher revolution than specified idling revolution.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AU1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517?***

YES : Inspect DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517 using "11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles". <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0507.

NO : Go to step **11AU2**.

11AU2 : CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.
3) Check the following items.
● Loose installation of intake manifold, idle air control solenoid valve and throttle body
● Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
● Disconnections of vacuum hoses

CHECK : ***Is there a fault in air intake system?***

YES : Repair air suction and leaks.

NO : Go to step **11AU3**.

11AU3 : CHECK AIR BY-PASS LINE.

1) Turn ignition switch to OFF.
2) Remove idle air control solenoid valve from throttle body. <Ref. to 2-7 [W12A2].>
3) Confirm that there are no foreign particles in by-pass air line.

CHECK : ***Are foreign particles in by-pass air line?***

YES : Remove foreign particles from by-pass air line.

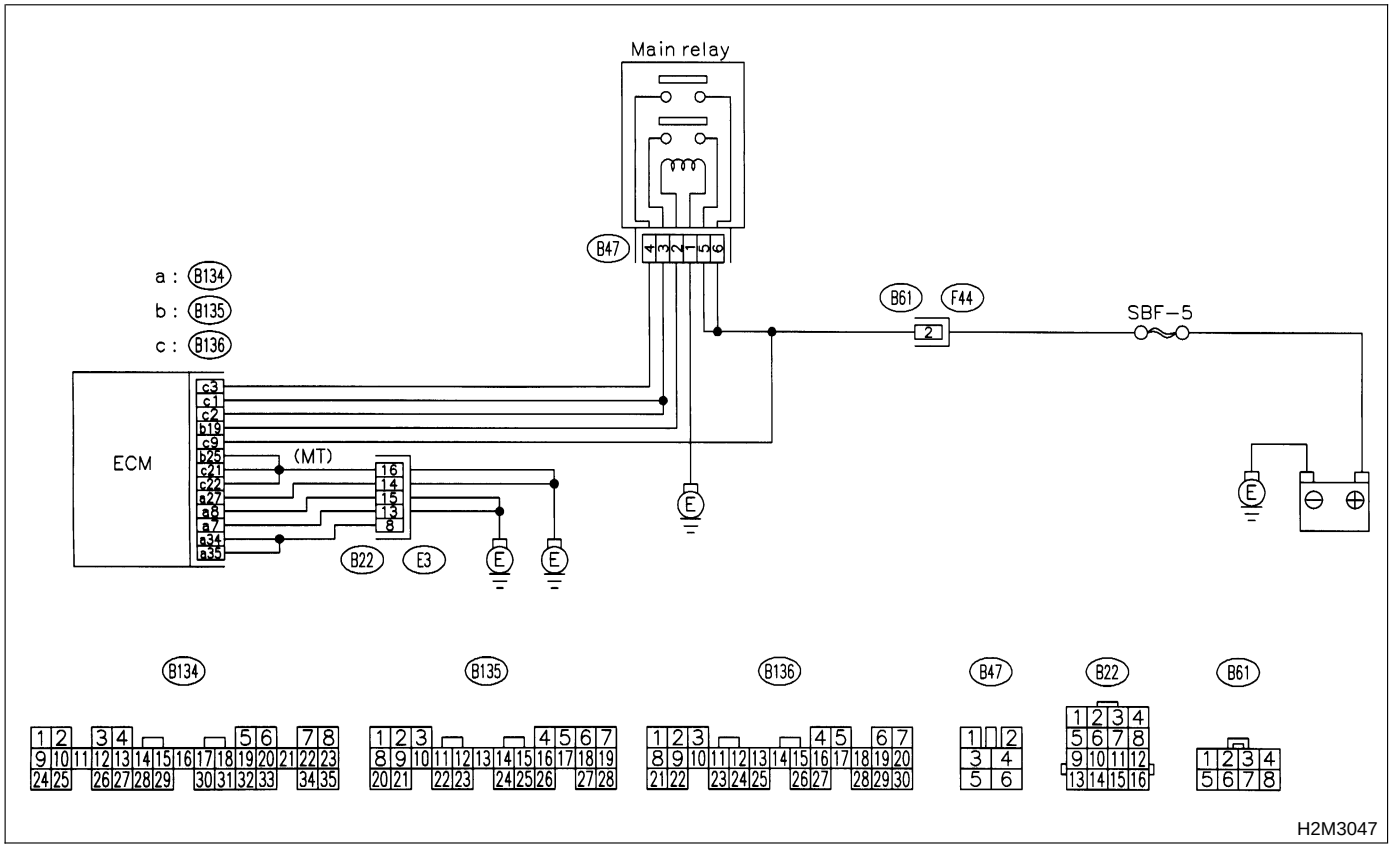
NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A2].>

AV: DTC P0601 — INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine does not start.
  - Engine stalls.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AV1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0601?***

YES : Replace ECM. <Ref. to 2-7 [W15A0].>

NO : It is not necessary to inspect DTC P0601.

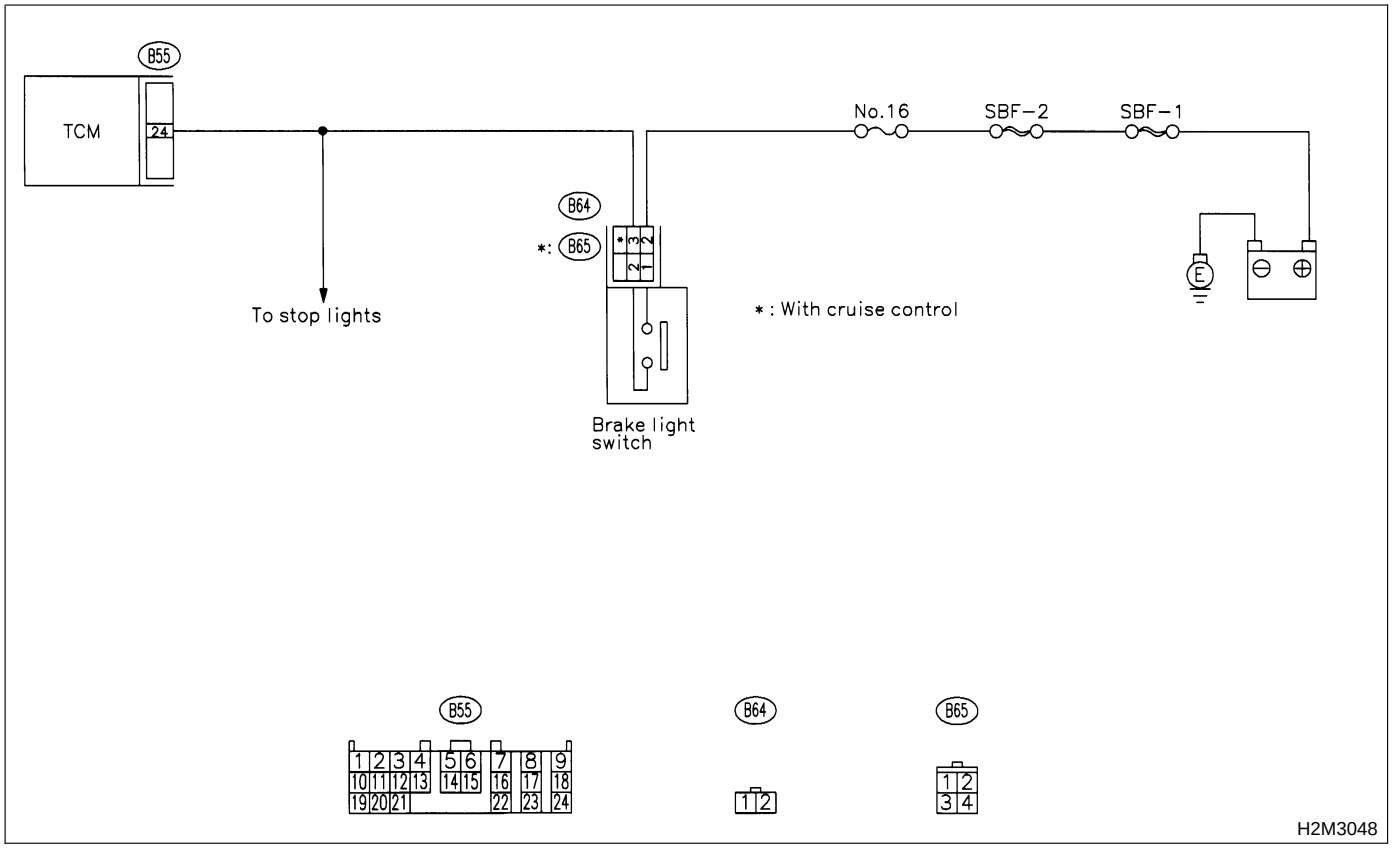
MEMO:

AW: DTC P0703 — BRAKE SWITCH INPUT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AW1 : CHECK OPERATION OF BRAKE LIGHT.

CHECK : ***Does brake light come on when depressing the brake pedal?***

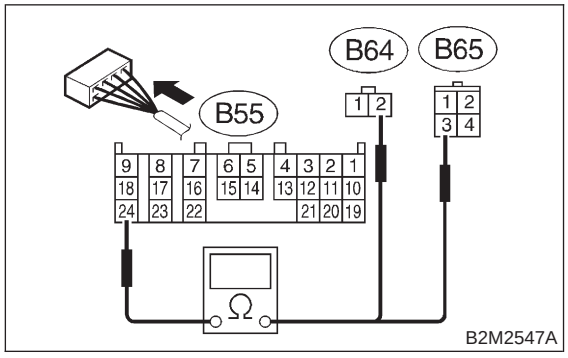
YES : Go to step **11AW2**.

NO : Repair or replace brake light circuit.

11AW2 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

1) Disconnect connectors from TCM and brake light switch.
2) Measure resistance of harness between TCM and brake light switch connector.

Connector & terminal
(B55) No. 24 — (B64) No. 2:
(B55) No. 24 — (B65) No. 3 (With cruise control):



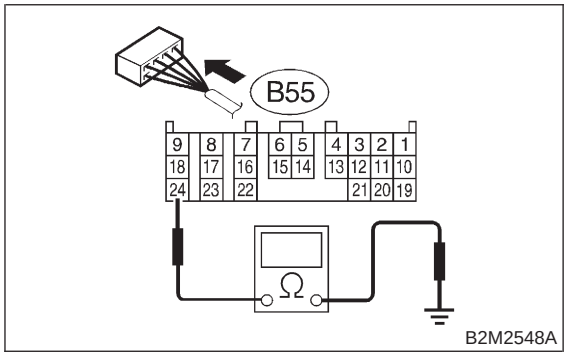
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AW3**.
NO : Repair or replace harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and brake light switch connector
- Poor contact in TCM connector
- Poor contact in brake light switch connector

11AW3 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 24 — Chassis ground:

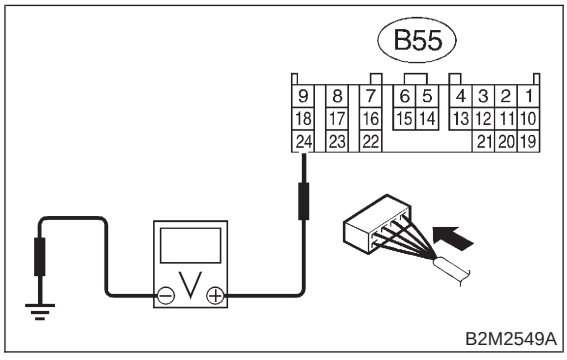


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AW4**.
NO : Repair ground short circuit in harness between TCM and brake light switch connector.

11AW4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and brake light switch.
2) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 24 (+) — Chassis ground (−):

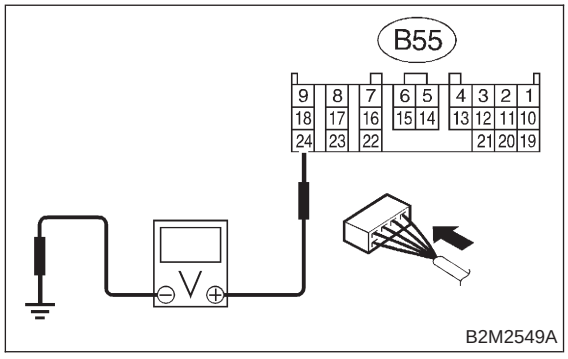


CHECK : ***Is the voltage less than 1 V when releasing the brake pedal?***
YES : Go to step **11AW5**.
NO : Adjust or replace brake light switch. <Ref. to 4-5 [W1A0].>

11AW5 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 24 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V when depressing the brake pedal?***
YES : Go to step **11AW6**.
NO : Adjust or replace brake light switch. <Ref. to 4-5 [W1A0].>

11AW6 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

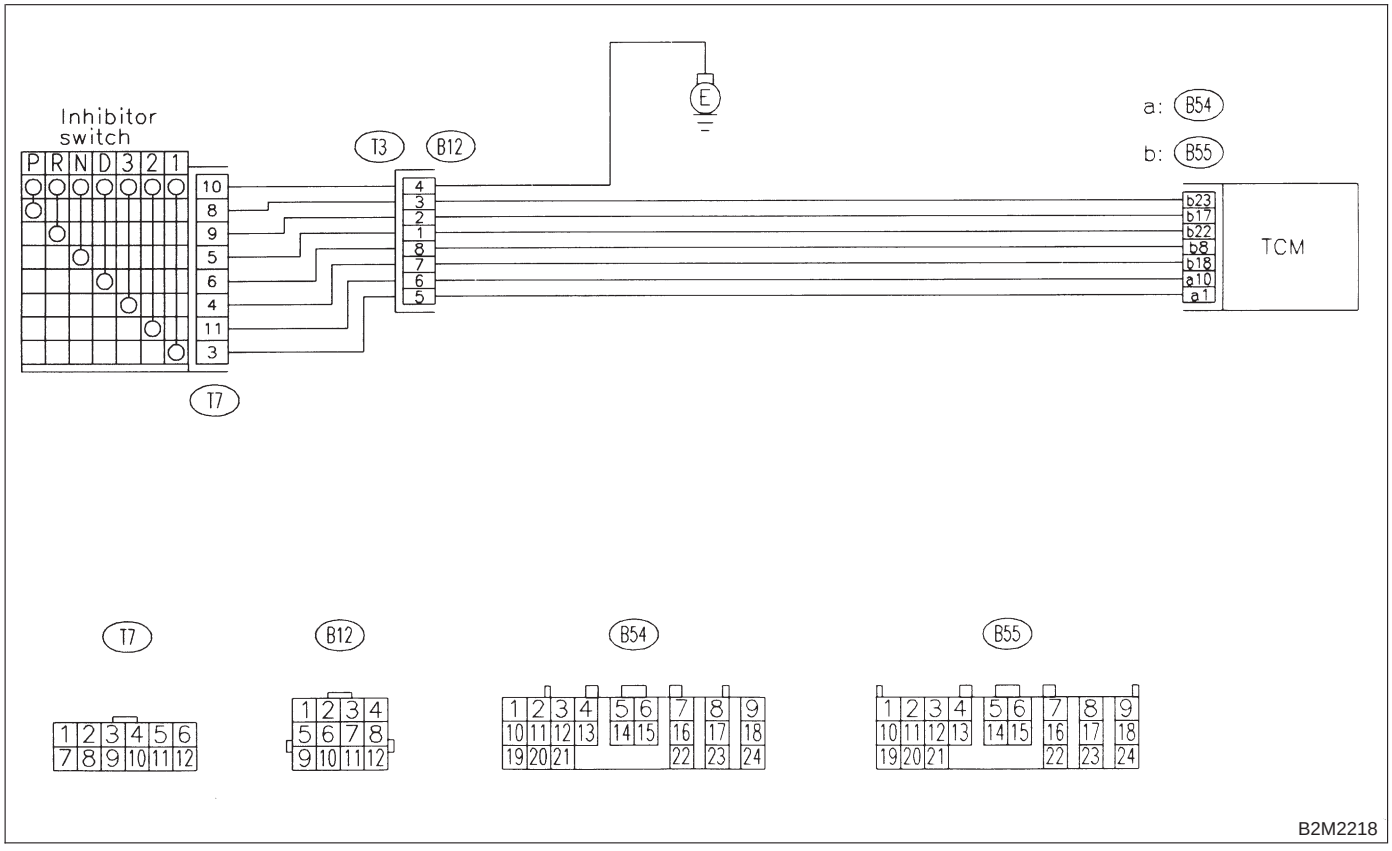
MEMO:

AX: DTC P0705 — TRANSMISSION RANGE SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Starter does not rotate when selector lever is in “P” or “N” range.
  - Starter rotates when selector lever is in “R”, “D”, “3”, “2” or “1” range.
  - Engine brake is not effected when selector lever is in “3” range.
  - Shift characteristics are erroneous.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

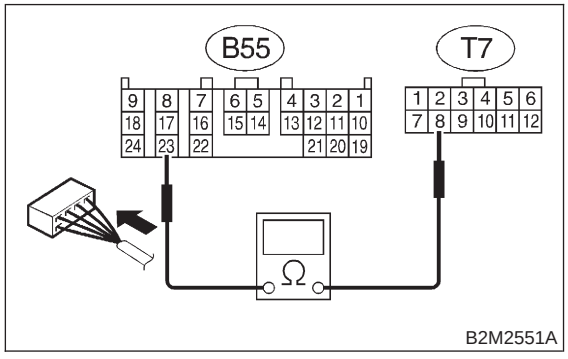
- **WIRING DIAGRAM:**



11AX1 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

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

Connector & terminal
(B55) No. 23 — (T7) No. 8:



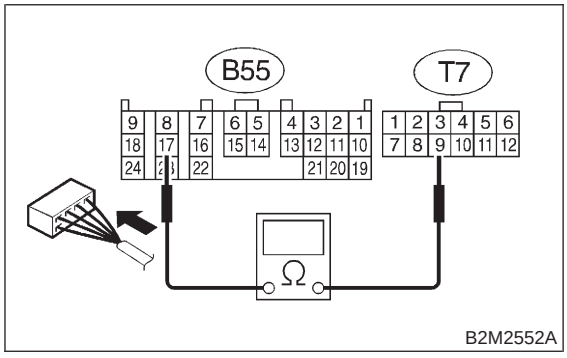
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX2**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and inhibitor switch connector
● Poor contact in coupling connector (B12)

11AX2 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 17 — (T7) No. 9:



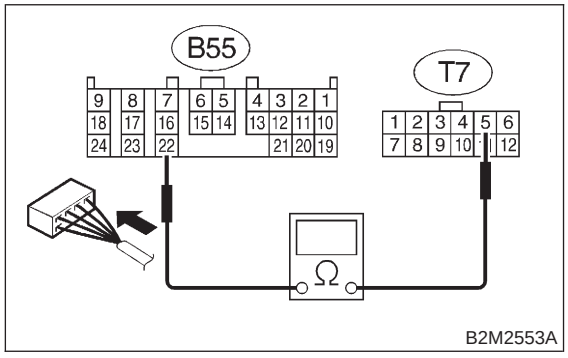
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and inhibitor switch connector
● Poor contact in coupling connector (B12)

11AX3 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 22 — (T7) No. 5:



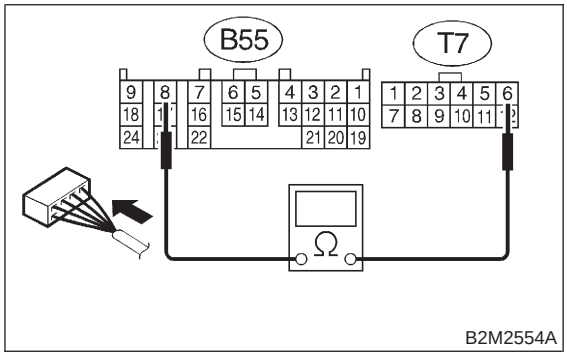
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

11AX4 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 8 — (T7) No. 6:



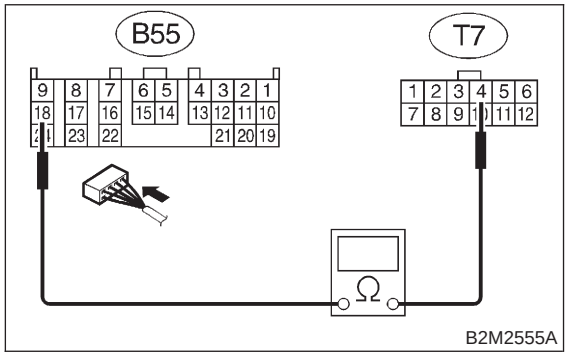
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

11AX5 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B55) No. 18 — (T7) No. 4:



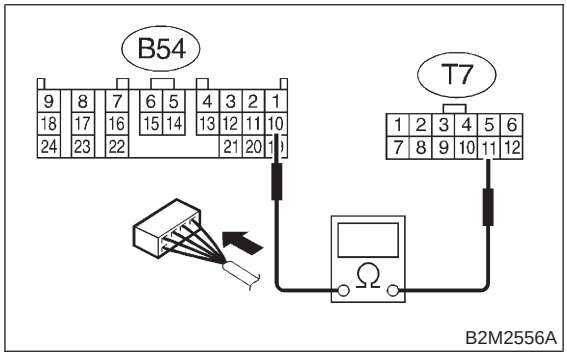
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX6**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

11AX6 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 10 — (T7) No. 11:



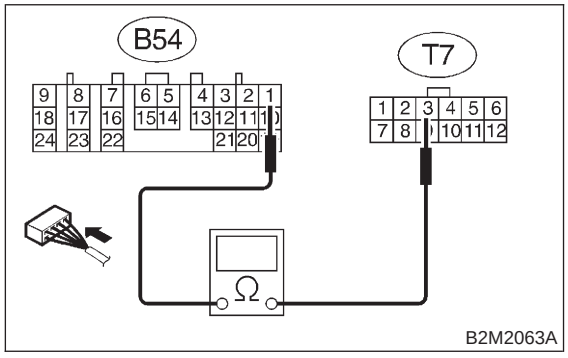
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

11AX7 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 1 — (T7) No. 3:



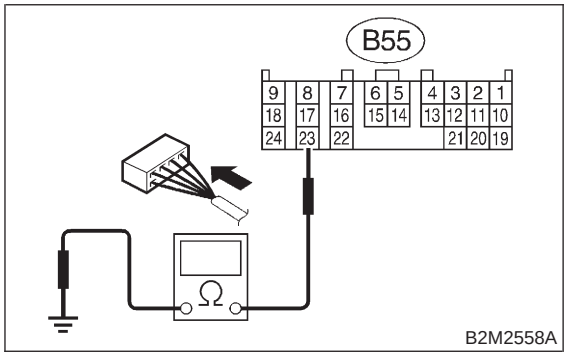
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

11AX8 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 23 — Chassis ground:

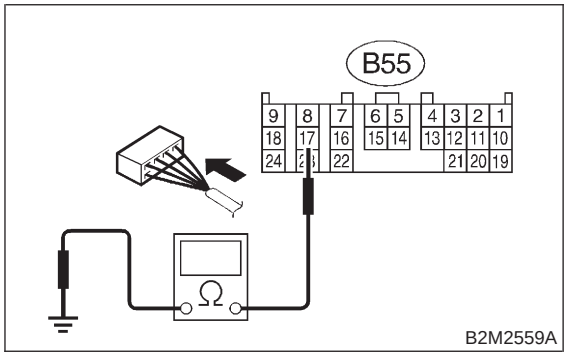


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX9**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

11AX9 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 17 — Chassis ground:

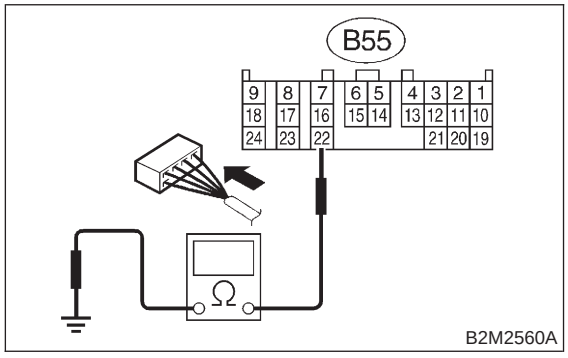


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX10**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

11AX10 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 22 — Chassis ground:

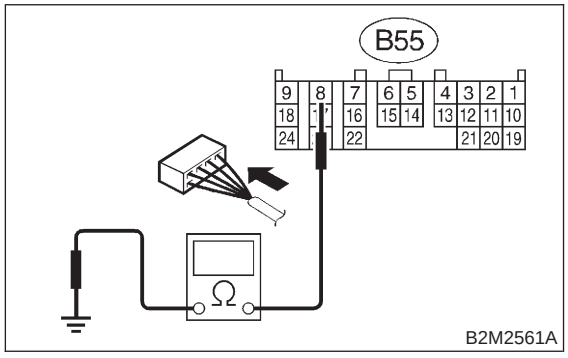


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX11**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

11AX11 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 8 — Chassis ground:

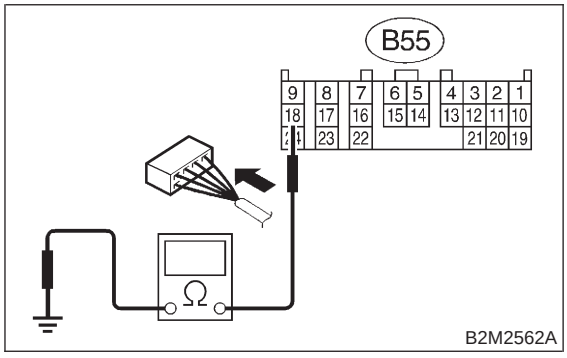


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX12**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

11AX12 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 18 — Chassis ground:

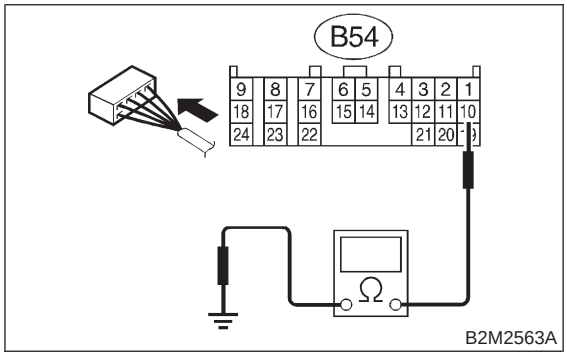


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX13**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

11AX13 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 10 — Chassis ground:

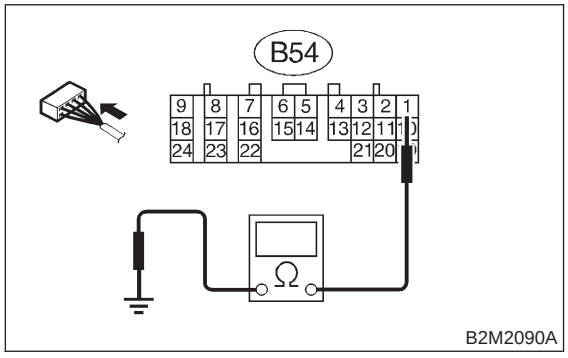


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX14**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

11AX14 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 1 — Chassis ground:

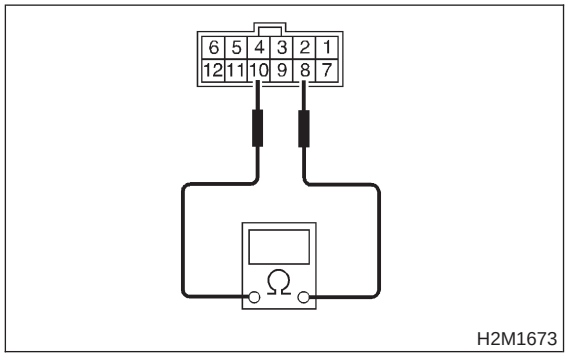


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX15**.
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

11AX15 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "P" position.

Terminals
No. 8 — No. 10:

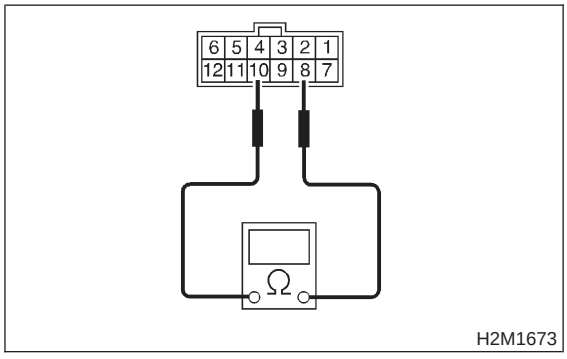


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX16**.
NO : Go to step **11AX29**.

11AX16 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "P" position.

Terminals
No. 8 — No. 10:

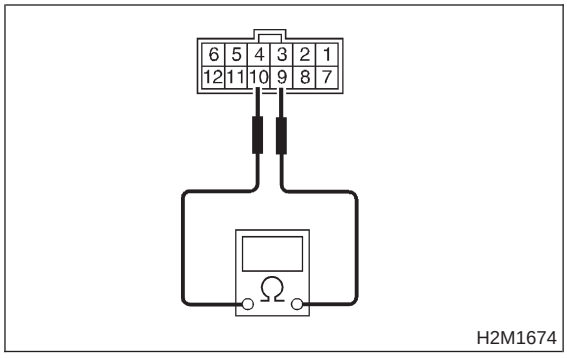


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX17**.
NO : Go to step **11AX29**.

11AX17 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever for "R" position.

Terminals
No. 9 — No. 10:

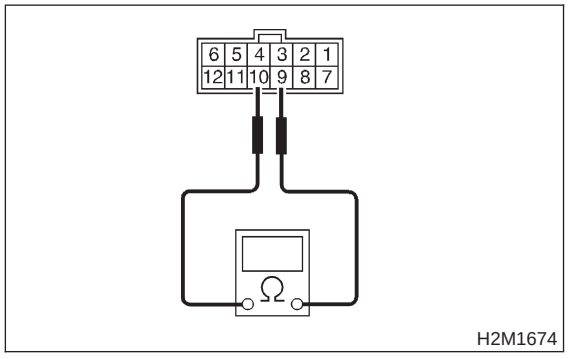


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX18**.
NO : Go to step **11AX29**.

11AX18 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "R" position.

Terminals
No. 9 — No. 10:

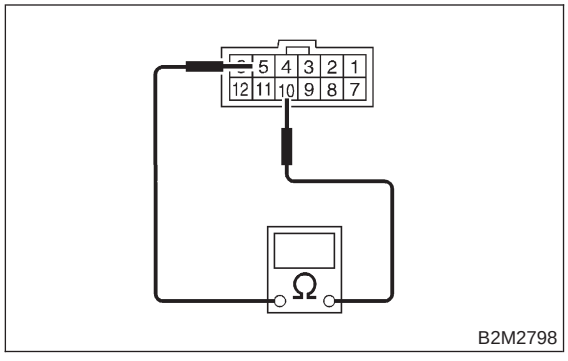


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX19**.
NO : Go to step **11AX29**.

11AX19 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever for "N" position.

Terminals
No. 5 — No. 10:

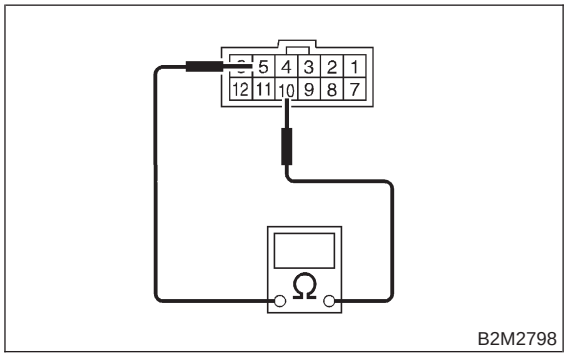


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX20**.
NO : Go to step **11AX29**.

11AX20 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "N" position.

Terminals
No. 5 — No. 10:

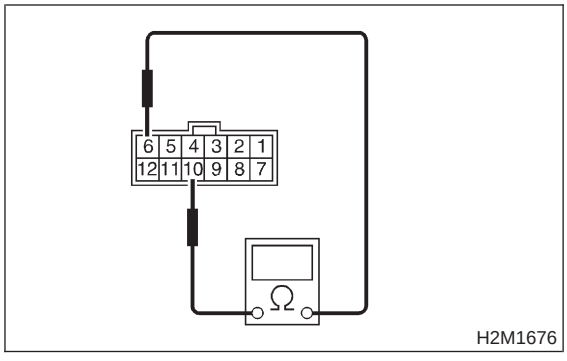


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX21**.
NO : Go to step **11AX29**.

11AX21 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "D" position.

Terminals
No. 6 — No. 10:

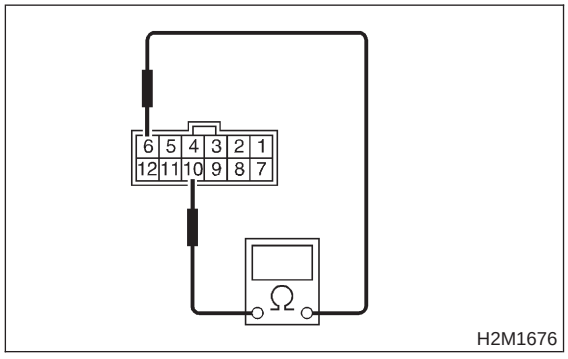


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX22**.
NO : Go to step **11AX29**.

11AX22 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "D" position.

Terminals
No. 6 — No. 10:

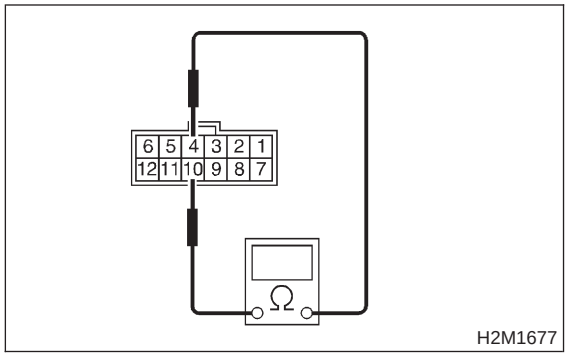


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX23**.
NO : Go to step **11AX29**.

11AX23 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever for "3" position.

Terminals
No. 4 — No. 10:

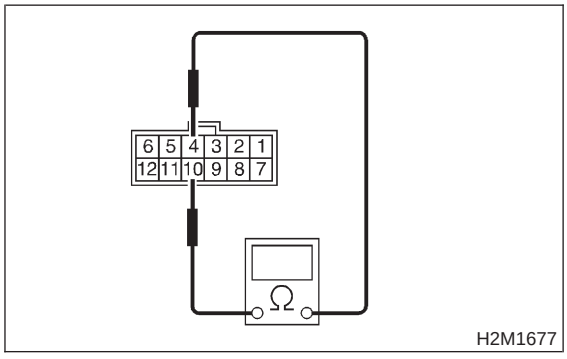


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX24**.
NO : Go to step **11AX29**.

11AX24 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "3" position.

Terminals
No. 4 — No. 10:

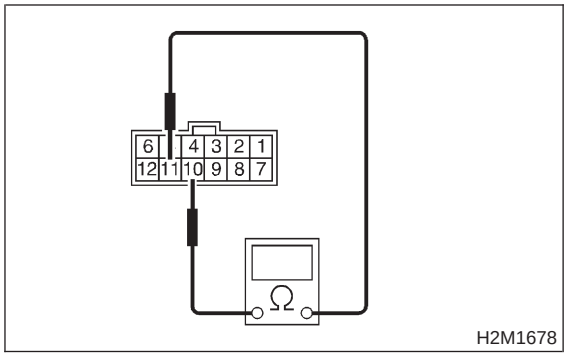


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX25**.
NO : Go to step **11AX29**.

11AX25 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "2" position.

Terminals
No. 11 — No. 10:

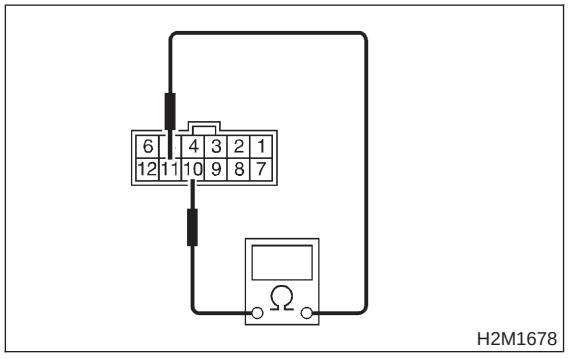


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX26**.
NO : Go to step **11AX29**.

11AX26 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "R" position.

Terminals
No. 11 — No. 10:

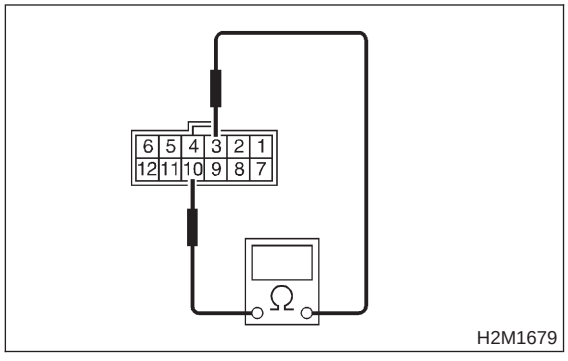


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX27**.
NO : Go to step **11AX29**.

11AX27 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "1" position.

Terminals
No. 3 — No. 10:

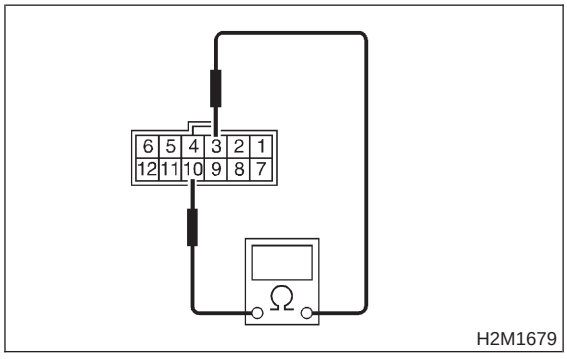


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11AX28**.
NO : Go to step **11AX29**.

11AX28 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "1" position.

Terminals
No. 3 — No. 10:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **11AX30**.
NO : Go to step **11AX29**.

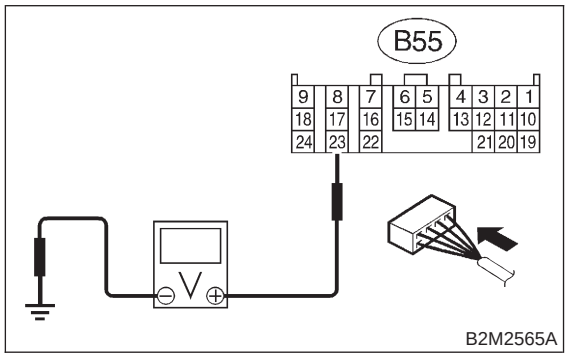
11AX29 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

11AX30 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and transmission.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (−):

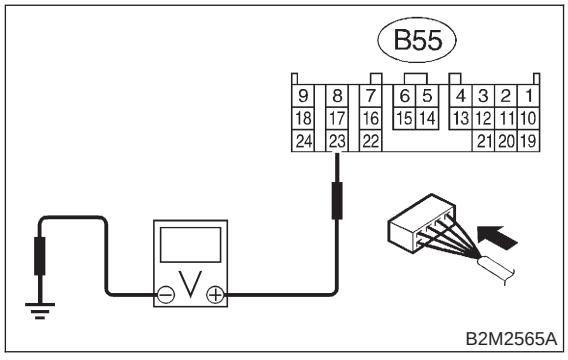


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11AX31**.
NO : Go to step **11AX44**.

11AX31 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “P” and “N” positions.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (−):

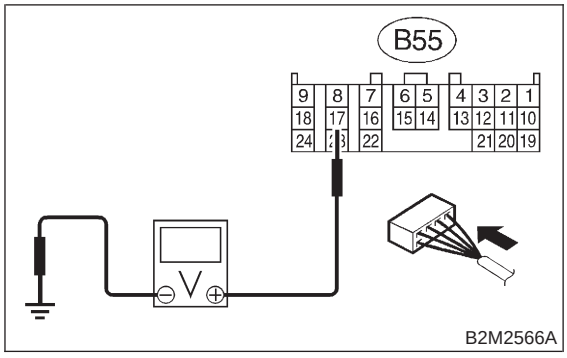


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **11AX32**.
NO : Go to step **11AX44**.

11AX32 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “R” position.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (−):

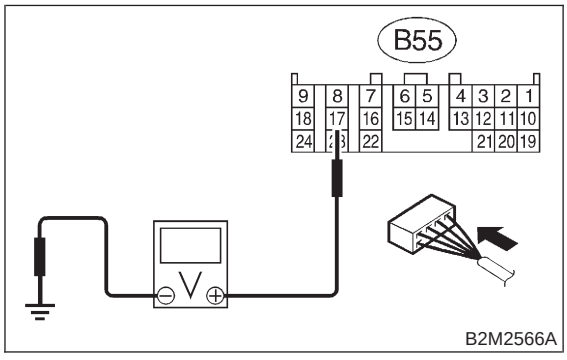


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11AX33**.
NO : Go to step **11AX44**.

11AX33 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “R” position.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (−):

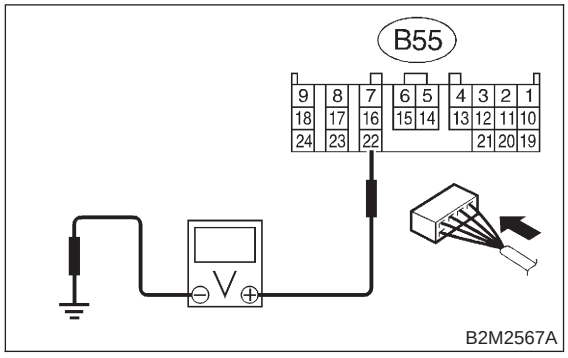


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **11AX34**.
NO : Go to step **11AX44**.

11AX34 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “P” and “N” positions.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (−):

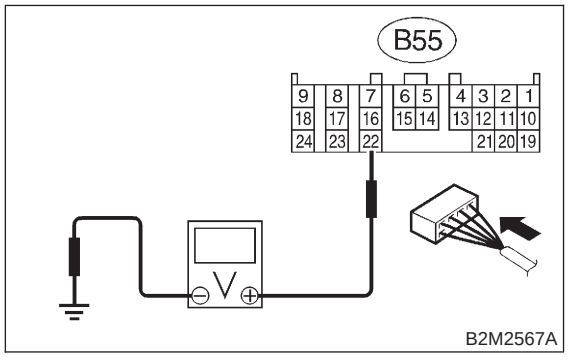


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11AX35**.
NO : Go to step **11AX44**.

11AX35 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “N” and “P” positions.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (−):

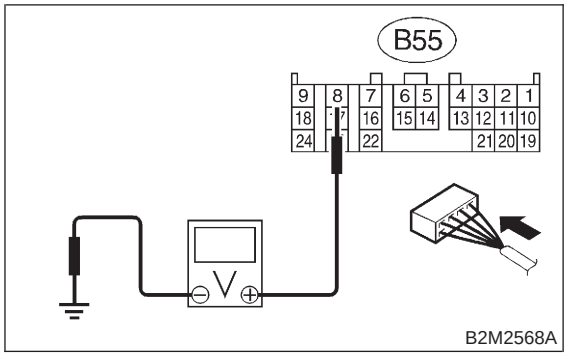


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **11AX36**.
NO : Go to step **11AX44**.

11AX36 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever “D” position.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (−):

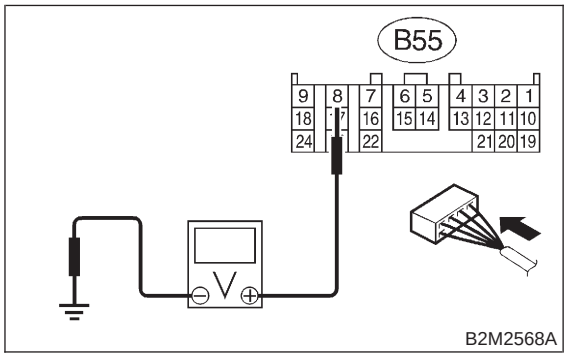


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11AX37**.
NO : Go to step **11AX44**.

11AX37 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “N” and “P” positions.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (−):

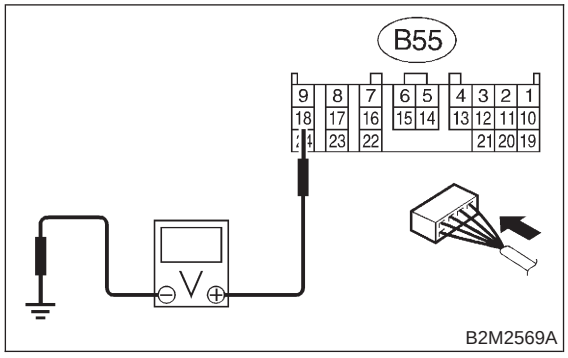


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **11AX38**.
NO : Go to step **11AX44**.

11AX38 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “3” position.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (−):

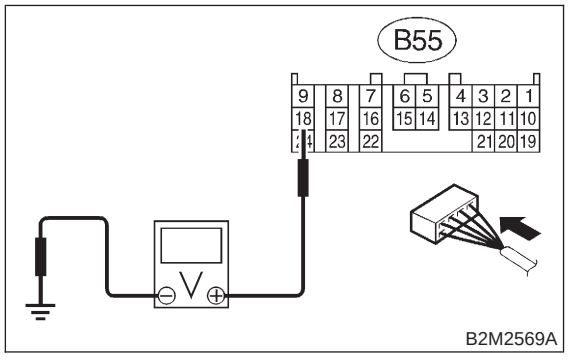


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11AX39**.
NO : Go to step **11AX44**.

11AX39 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for “3” position.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (−):

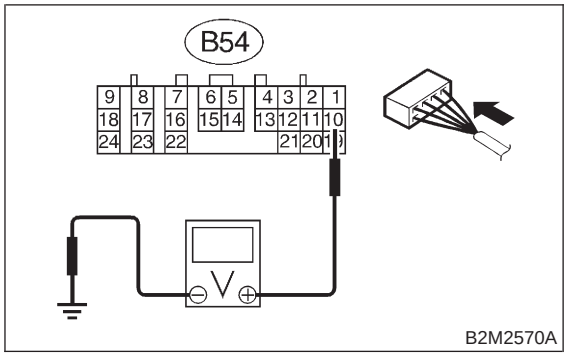


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **11AX40**.
NO : Go to step **11AX44**.

11AX40 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “2” position.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (−):

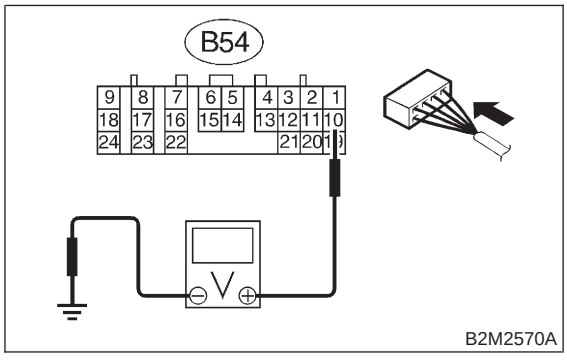


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11AX41**.
NO : Go to step **11AX44**.

11AX41 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for “2” position.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (−):

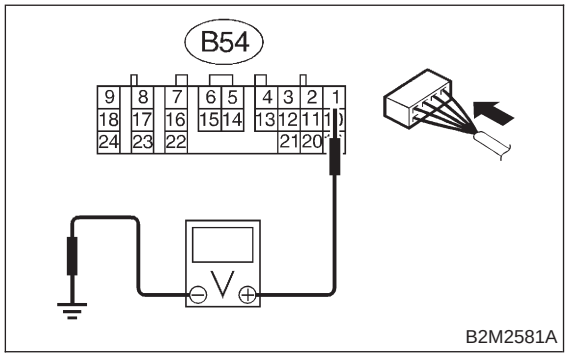


CHECK : ***Is the voltage more than 6 V?***
YES : Go to step **11AX42**.
NO : Go to step **11AX44**.

11AX42 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever “1” position.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (−):

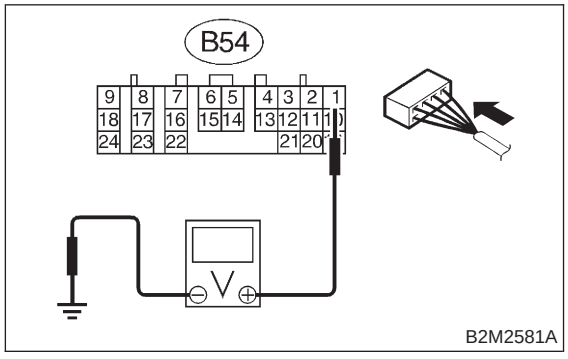


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11AX43**.
NO : Go to step **11AX44**.

11AX43 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM chassis ground in selector lever except for “1” position.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 6 V?***
YES : Repair poor contact in TCM connector.
NO : Go to step **11AX44**.

11AX44 : CHECK POOR CONTACT.

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

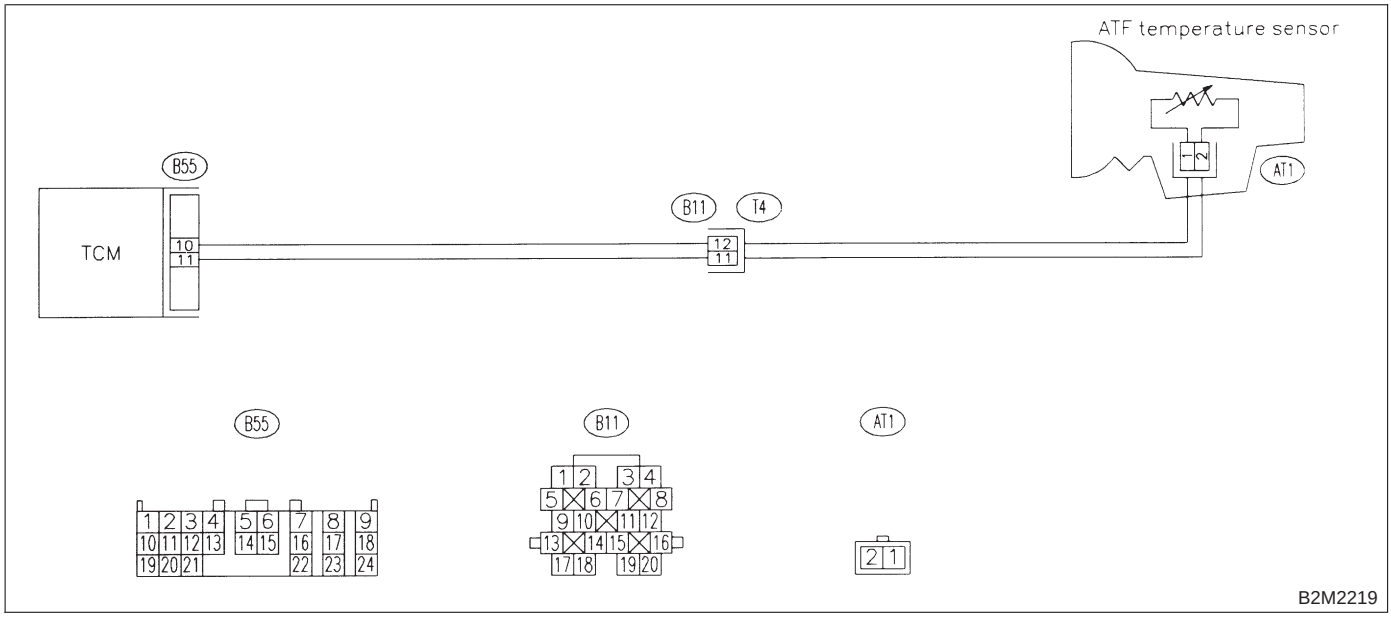
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

AY: DTC P0710 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift up to 4th speed (after engine warm-up)
  - No lock-up (after engine warm-up)
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AY1 : CHECK DTC P0710 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0710?***

YES : Check ATF temperature sensor circuit. <Ref. to 3-2 [T8E0].>

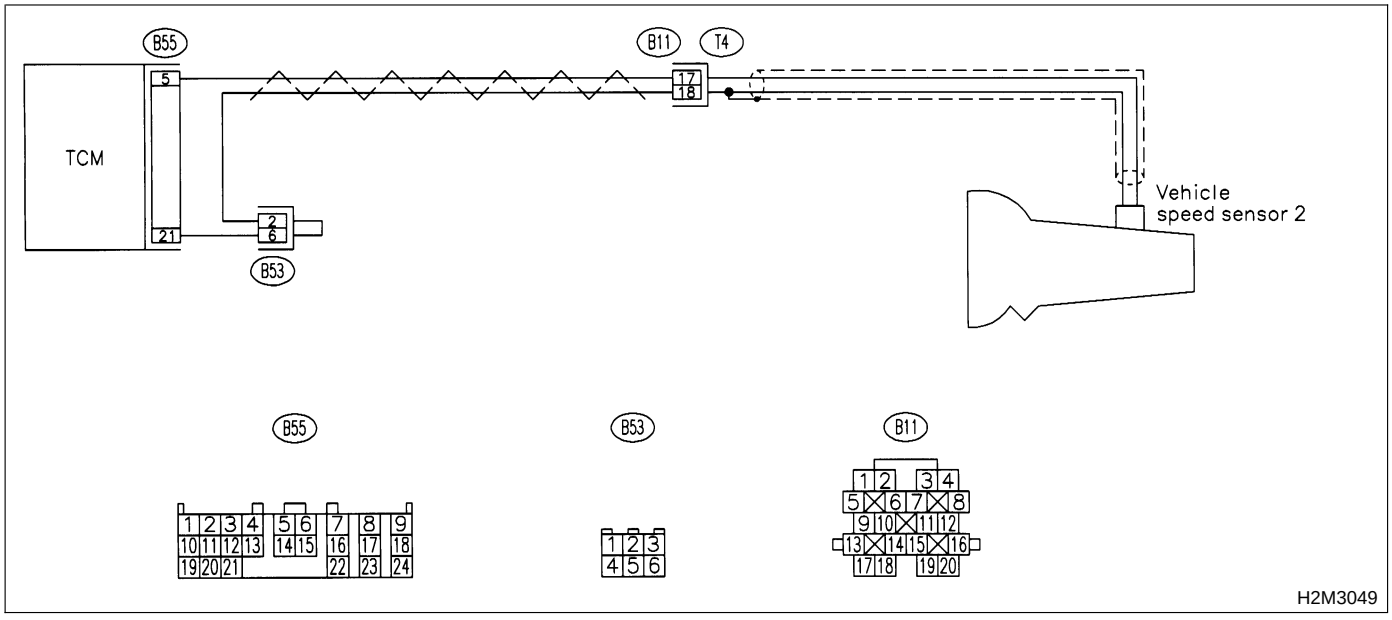
NO : It is not necessary to inspect DTC P0710.

AZ: DTC P0715 — TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11AZ1 : CHECK DTC P0715 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0715?***

YES : Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

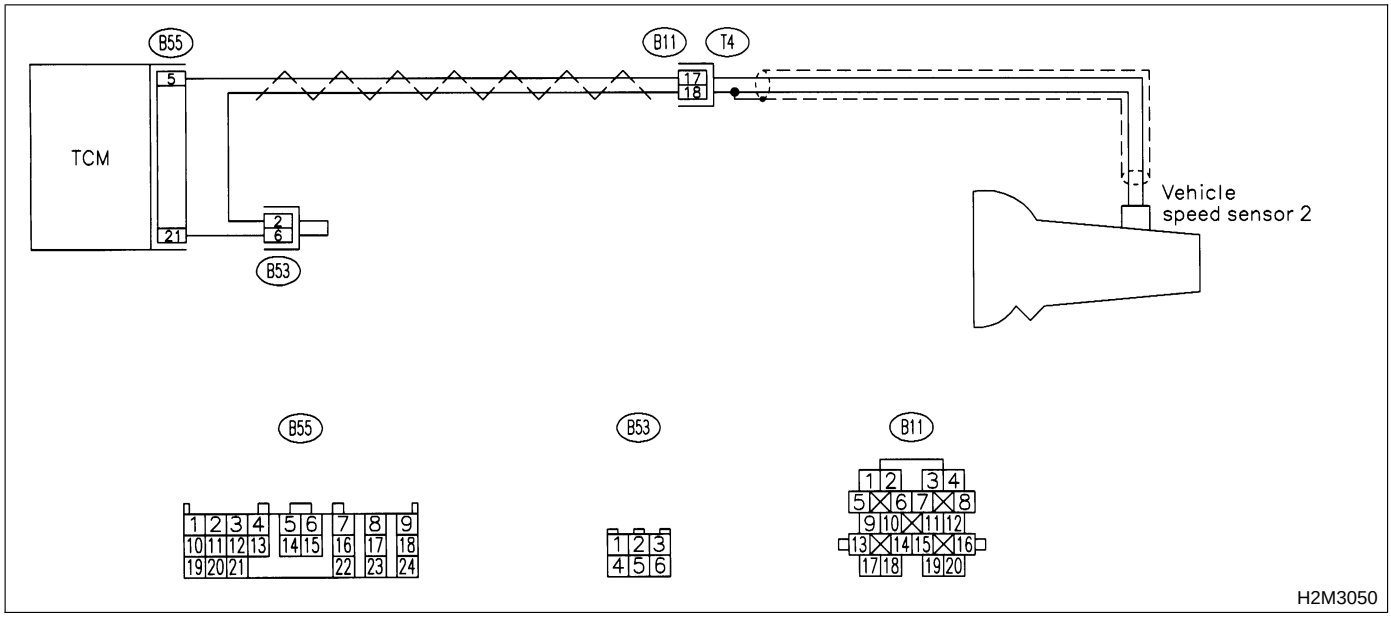
NO : It is not necessary to inspect DTC P0715.

BA: DTC P0720 — OUTPUT SPEED SENSOR (VEHICLE SPEED SENSOR 2) CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift or excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BA1 : CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?***

YES : Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8G0].>

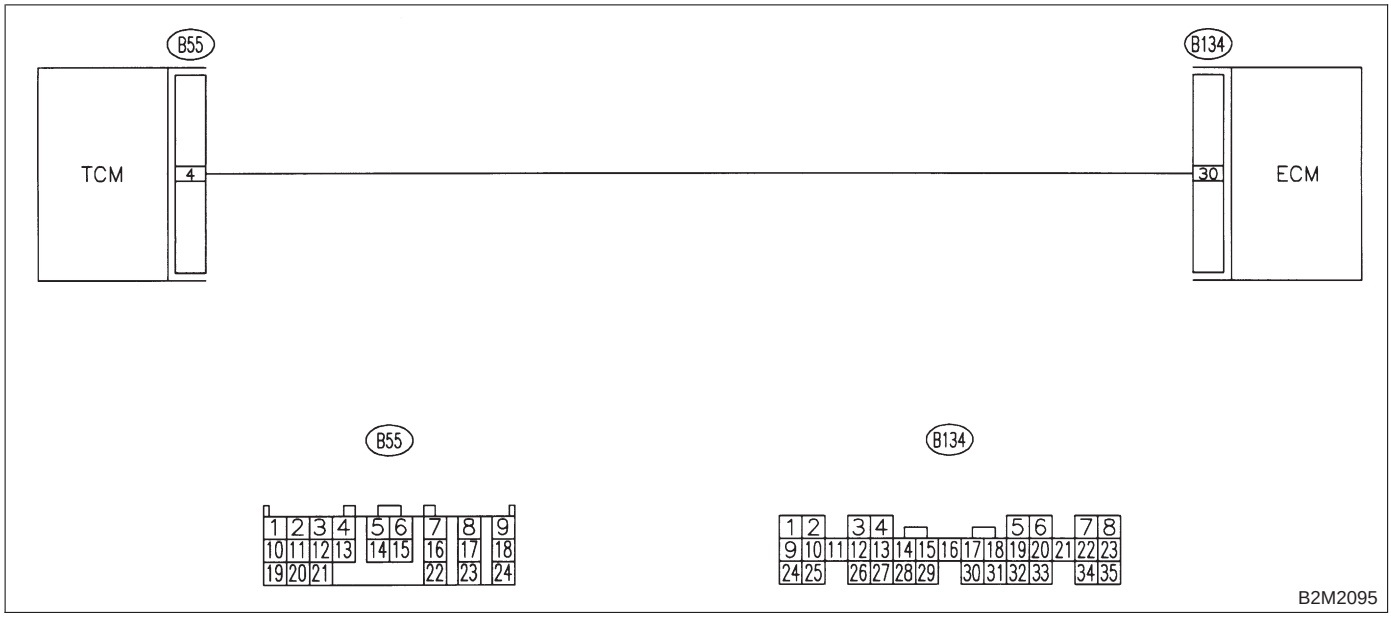
NO : It is not necessary to inspect DTC P0720.

BB: DTC P0725 — ENGINE SPEED INPUT CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)
  - AT diagnostic indicator light (AT OIL TEMP indicator light) remains on when vehicle speed is “0”.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BB1 : CHECK DTC P0725 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0725?***

YES : Check engine speed input signal circuit. <Ref. to 3-2 [T8C0].>

NO : It is not necessary to inspect DTC P0725.

BC: DTC P0731 — GEAR 1 INCORRECT RATIO —

NOTE:
For the diagnostic procedure, refer to 2-7 [T11BF0]. <Ref. to 2-7 [T11BF0].>

BD: DTC P0732 — GEAR 2 INCORRECT RATIO —

NOTE:
For the diagnostic procedure, refer to 2-7 [T11BF0]. <Ref. to 2-7 [T11BF0].>

BE: DTC P0733 — GEAR 3 INCORRECT RATIO —

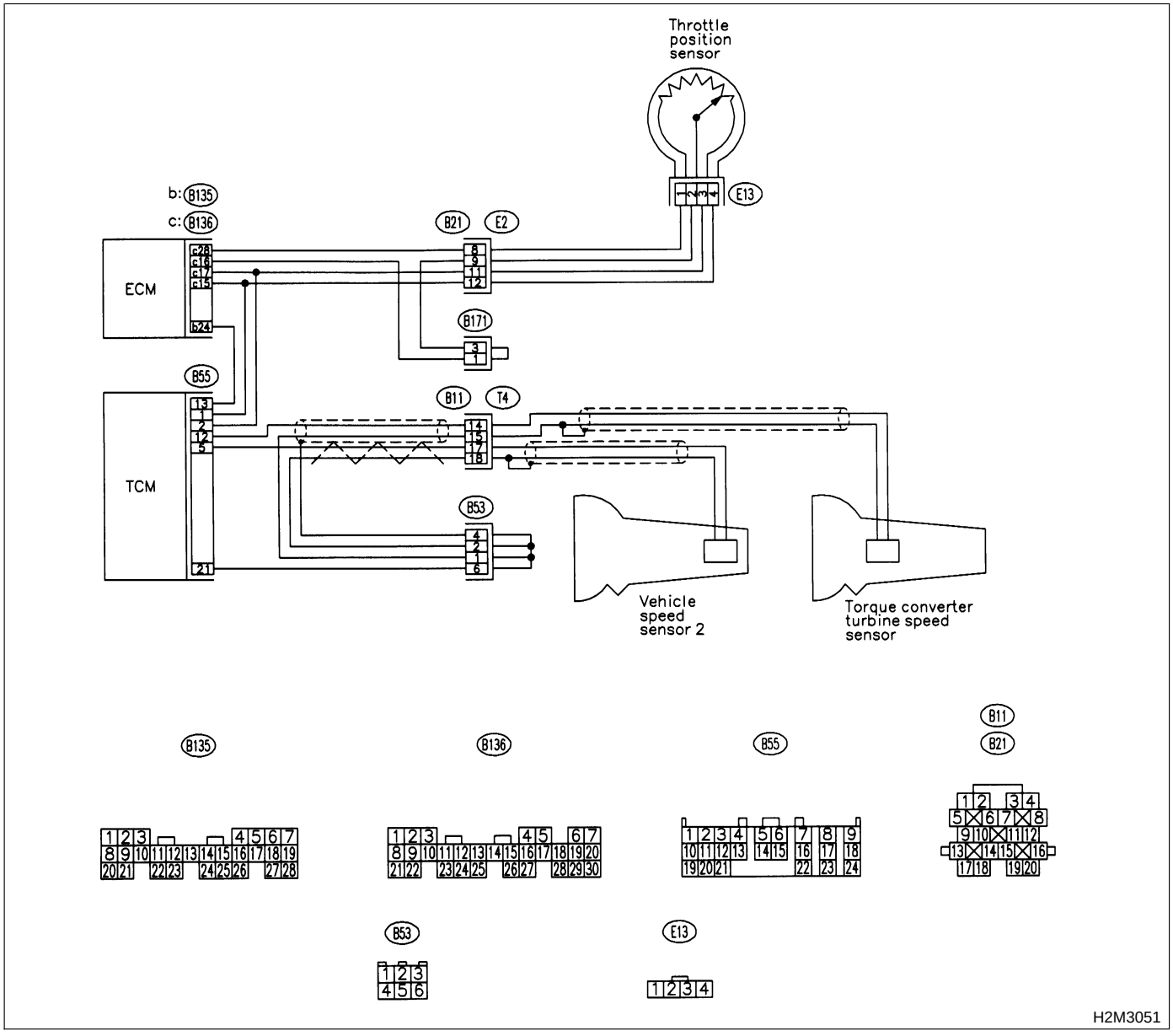
NOTE:
For the diagnostic procedure, refer to 2-7 [T11BF0]. <Ref. to 2-7 [T11BF0].>

BF: DTC P0734 — GEAR 4 INCORRECT RATIO —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

● **WIRING DIAGRAM:**



11BF1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***

YES : Inspect relevant DTC using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NO : Go to step **11BF2**.

11BF2 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

CHECK : ***Is there any trouble in throttle position sensor circuit?***

YES : Repair or replace throttle position sensor circuit.

NO : Go to step **11BF3**.

11BF3 : CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8G0].>

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***
YES : Repair or replace vehicle speed sensor 2 circuit.
NO : Go to step **11BF4**.

11BF4 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.

Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

CHECK : ***Is there any trouble in torque converter turbine speed sensor circuit?***
YES : Repair or replace torque converter turbine speed sensor circuit.
NO : Go to step **11BF5**.

11BF5 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Go to step **11BF6**.

11BF6 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : ***Is there any mechanical trouble in automatic transmission?***
YES : Repair or replace automatic transmission. <Ref. to 3-2 [T1000].>
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

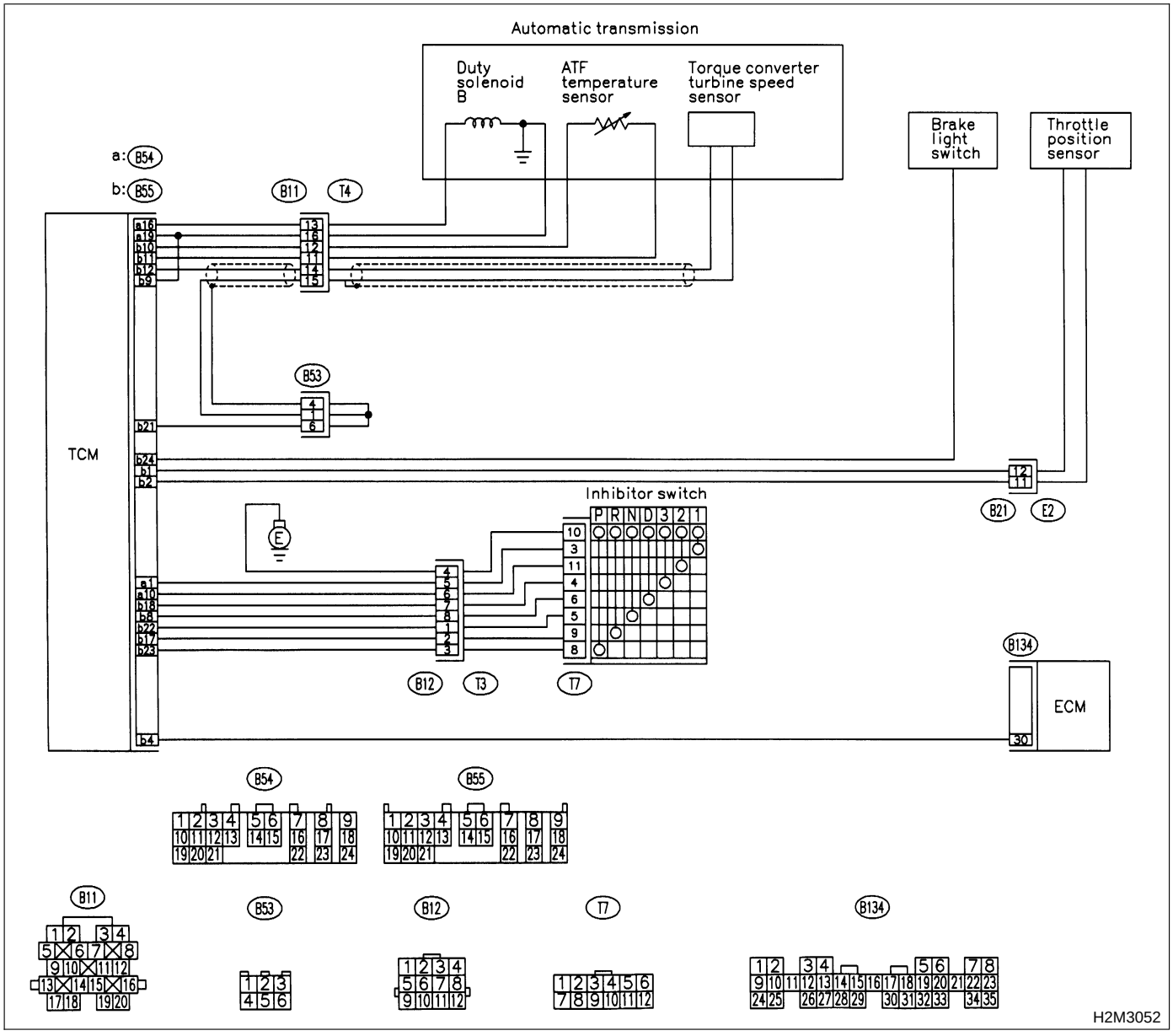
MEMO:

BG: DTC P0740 — TORQUE CONVERTER CLUTCH SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)
  - No shift or excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BG1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***
YES : Inspect the relevant DTC using "11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles". <Ref. to 2-7 [T11A0].>
NO : Go to step **11BG2**.

11BG2 : CHECK DUTY SOLENOID B CIRCUIT.

Check duty solenoid B circuit. <Ref. to 3-2 [T8Q0].>

CHECK : ***Is there any trouble in duty solenoid B circuit?***
YES : Repair or replace duty solenoid B circuit.
NO : Go to step **11BG3**.

11BG3 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit.
NO : Go to step **11BG4**.

11BG4 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.

Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

CHECK : ***Is there any trouble in torque converter turbine speed sensor circuit?***
YES : Repair or replace torque converter turbine speed sensor circuit.
NO : Go to step **11BG5**.

11BG5 : CHECK INHIBITOR SWITCH CIRCUIT.

Check inhibitor switch circuit. <Ref. to 2-7 [T11AX0].>

CHECK : ***Is there any trouble in inhibitor switch circuit?***
YES : Repair or replace inhibitor switch circuit.
NO : Go to step **11BG6**.

11BG6 : CHECK BRAKE LIGHT SWITCH CIRCUIT.

Check brake light switch circuit. <Ref. to 2-7 [T11AW0].>

CHECK : ***Is there any trouble in brake light switch circuit?***
YES : Repair or replace brake light switch circuit.
NO : Go to step **11BG7**.

11BG7 : CHECK ATF TEMPERATURE SENSOR CIRCUIT.

Check ATF temperature sensor circuit. <Ref. to 3-2 [T8E0].>

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit.
NO : Go to step **11BG8**.

11BG8 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Go to step **11BG9**.

11BG9 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : ***Is there any mechanical trouble in automatic transmission?***

YES : Repair or replace automatic transmission. <Ref. to 3-2 [T1000].>

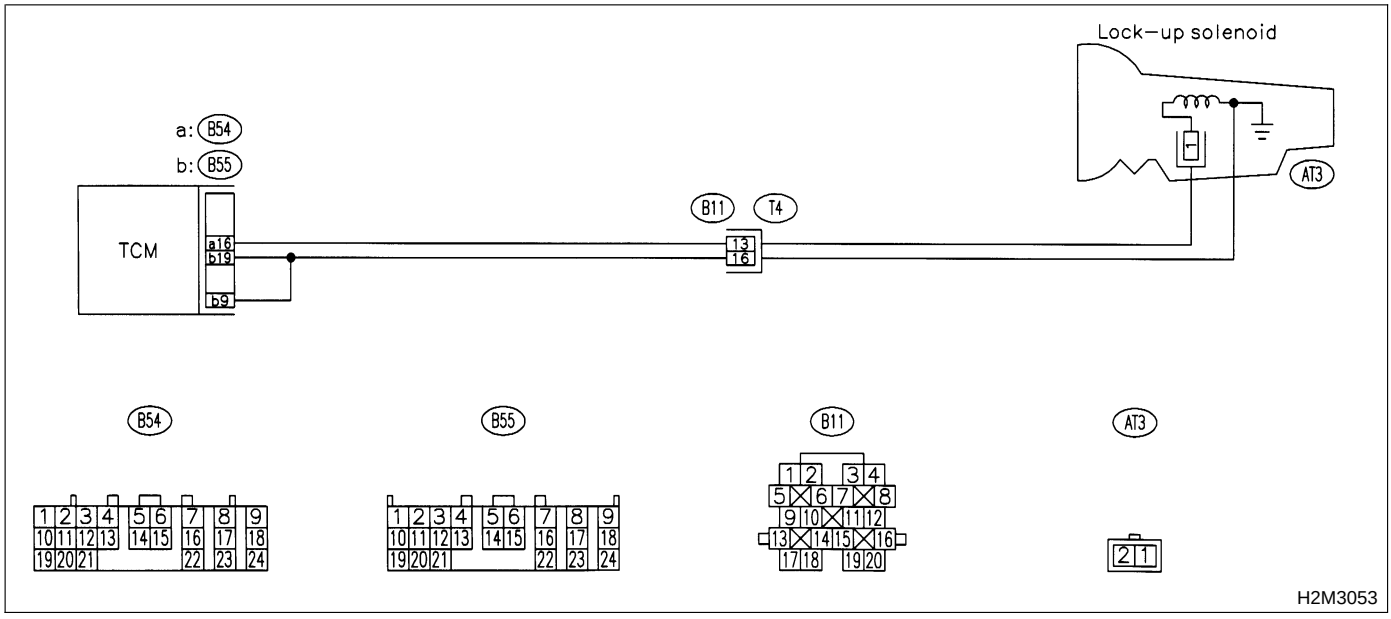
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

BH: DTC P0743 — TORQUE CONVERTER CLUTCH SYSTEM (DUTY SOLENOID B) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BH1 : CHECK DTC P0743 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0743?***

YES : Check duty solenoid B circuit. <Ref. to 3-2 [T8Q0].>

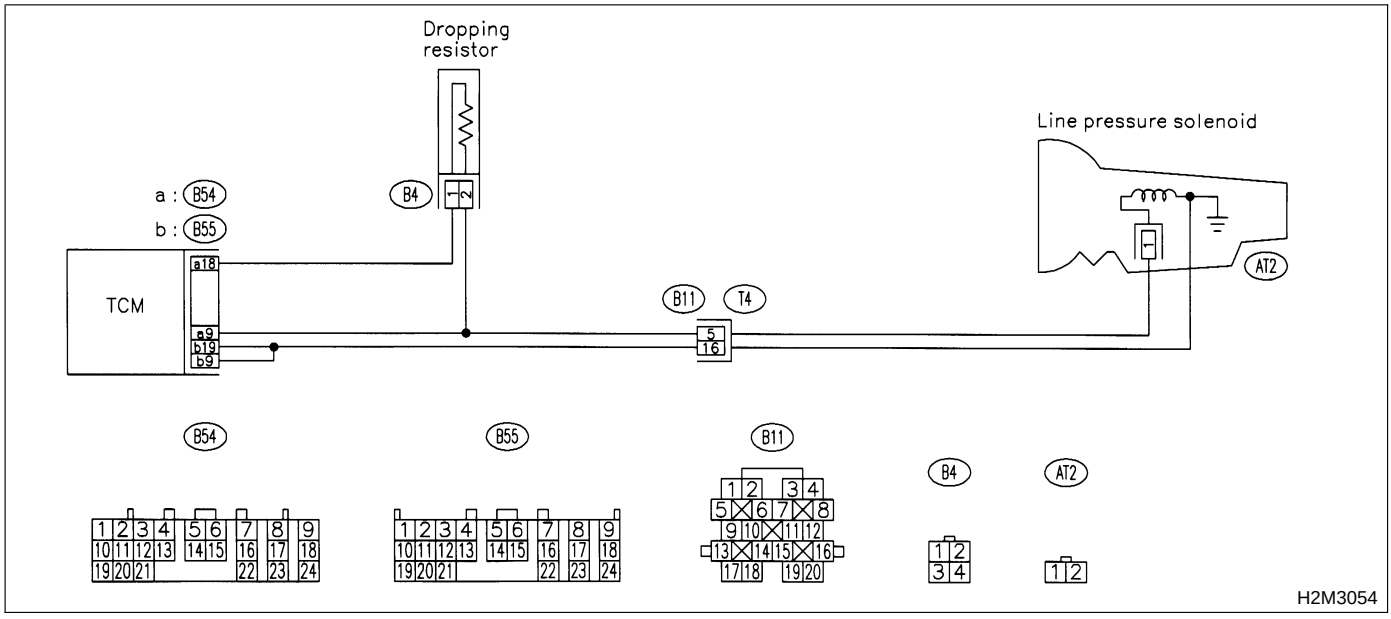
NO : It is not necessary to inspect DTC P0743.

BI: DTC P0748 — PRESSURE CONTROL SOLENOID (DUTY SOLENOID A) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BI1 : CHECK DTC P0748 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0748?***

YES : Check duty solenoid A circuit. <Ref. to 3-2 [T8O0].>

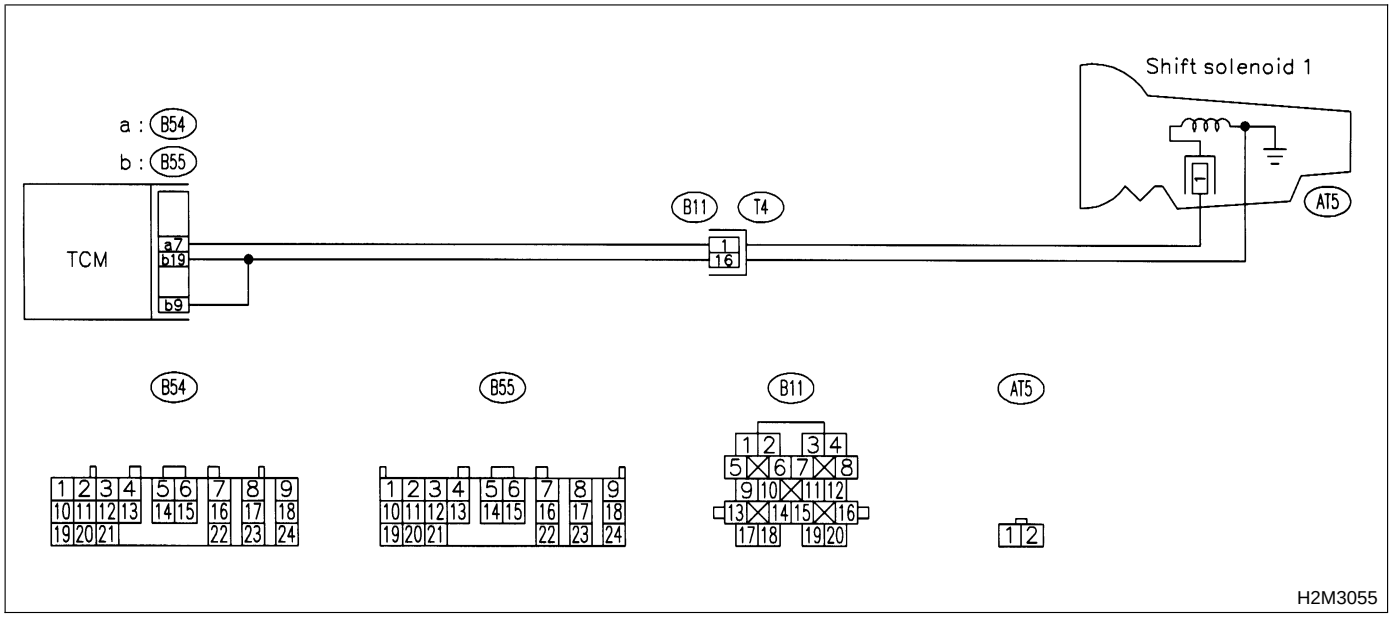
NO : It is not necessary to inspect DTC P0748.

BJ: DTC P0753 — SHIFT SOLENOID A (SHIFT SOLENOID 1) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BJ1 : CHECK DTC P0753 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0753?***

YES : Check shift solenoid 1 circuit. <Ref. to 3-2 [T8K0].>

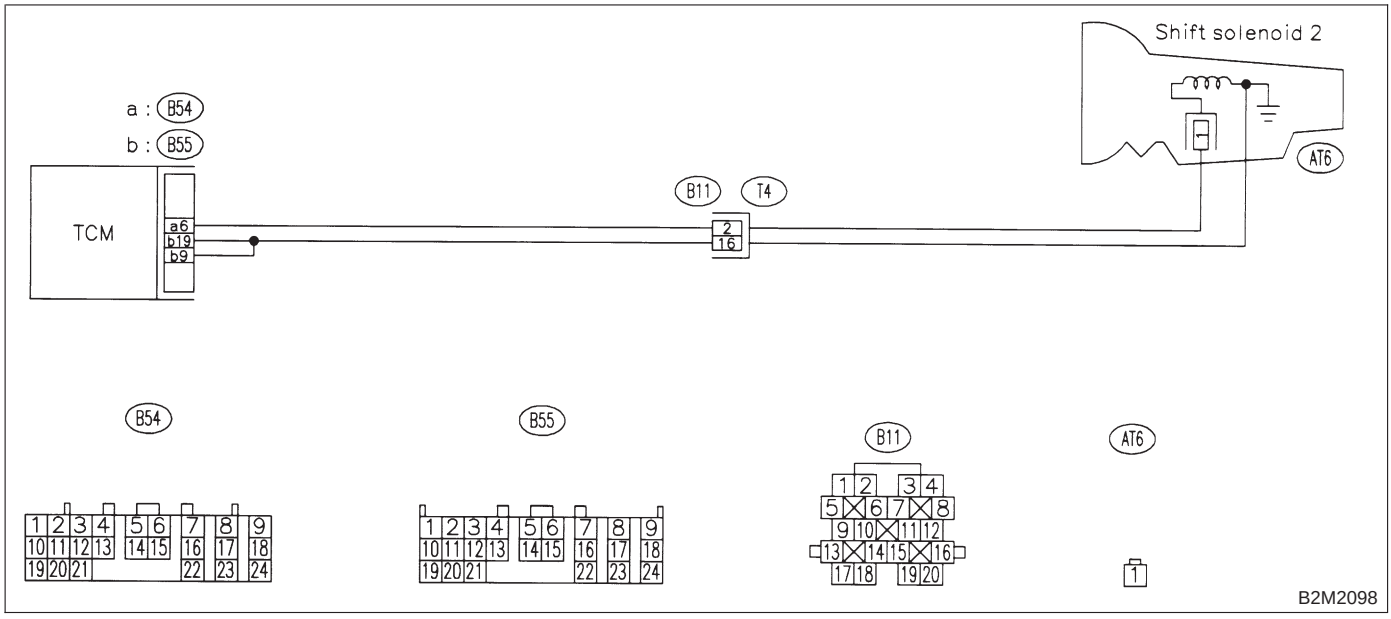
NO : It is not necessary to inspect DTC P0753.

BK: DTC P0758 — SHIFT SOLENOID B (SHIFT SOLENOID 2) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BK1 : CHECK DTC P0758 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0758?***

YES : Check shift solenoid 2 circuit. <Ref. to 3-2 [T8L0].>

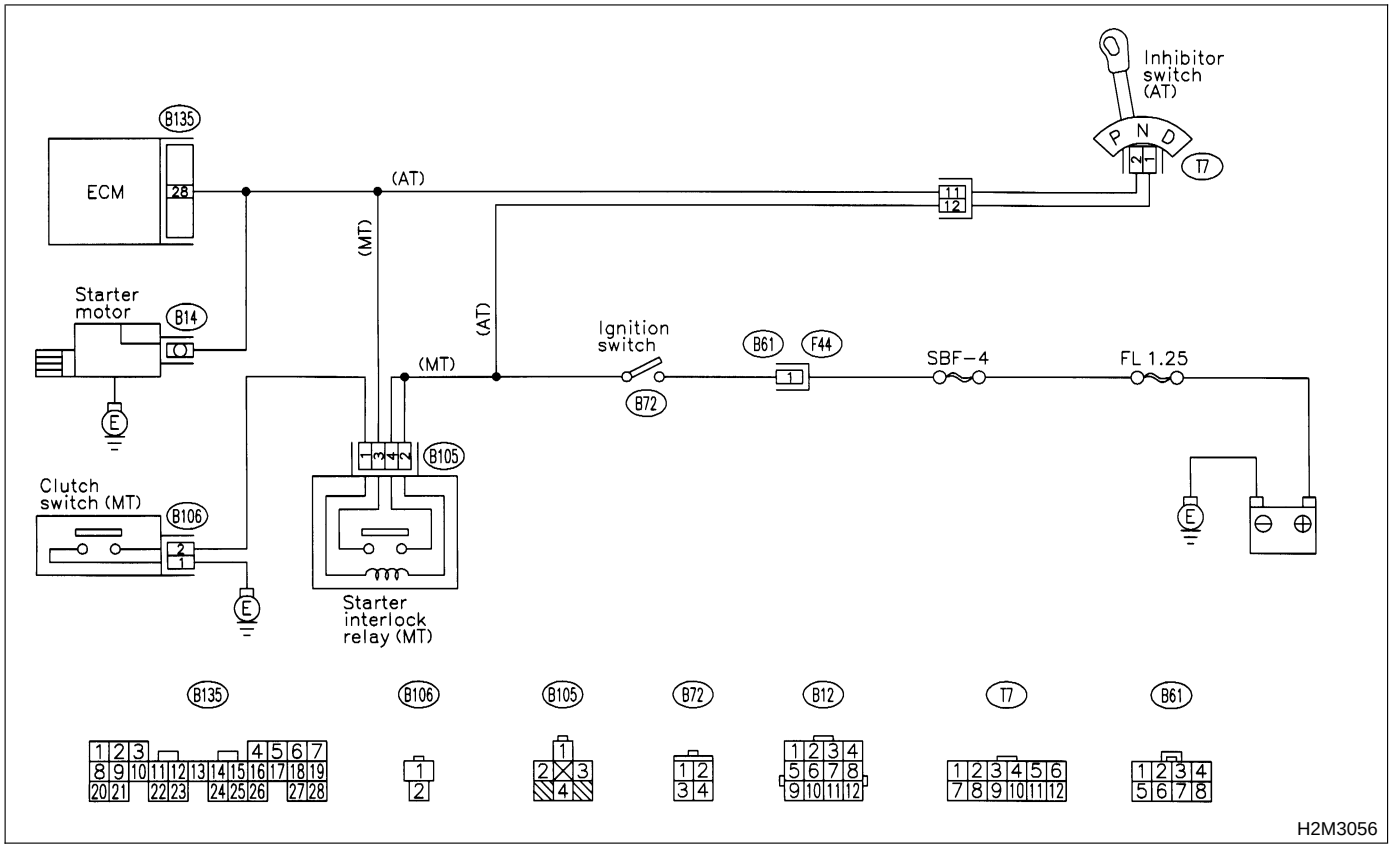
NO : It is not necessary to inspect DTC P0758.

BL: DTC P1100 — STARTER SWITCH CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BL1 : CHECK OPERATION OF STARTER MOTOR.

NOTE:
- On AT vehicles, place the inhibitor switch in the "P" or "N" position.
- On MT vehicles, depress the clutch pedal.

CHECK : ***Does starter motor operate when ignition switch to "ST"?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between ECM and starter motor connector.
- Poor contact in ECM connector.

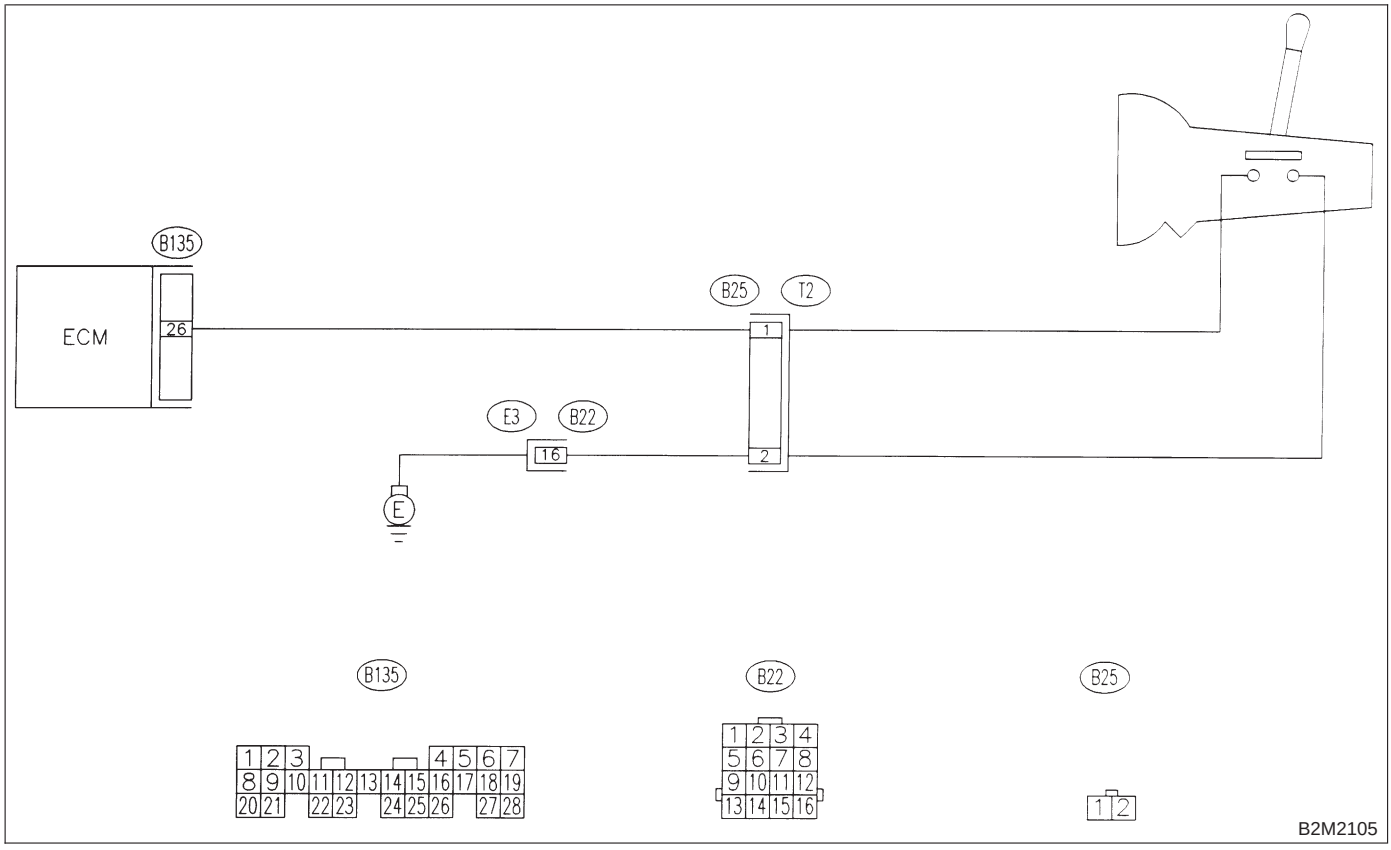
NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

BM: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [MT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

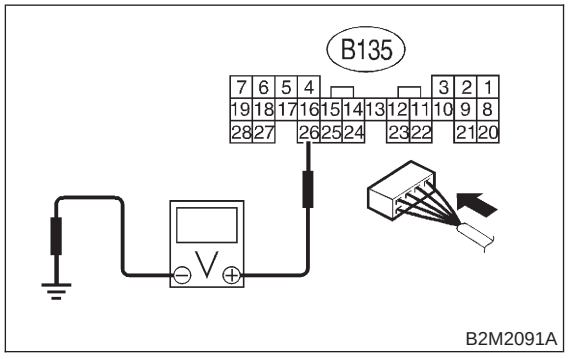
- **WIRING DIAGRAM:**



11BM1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

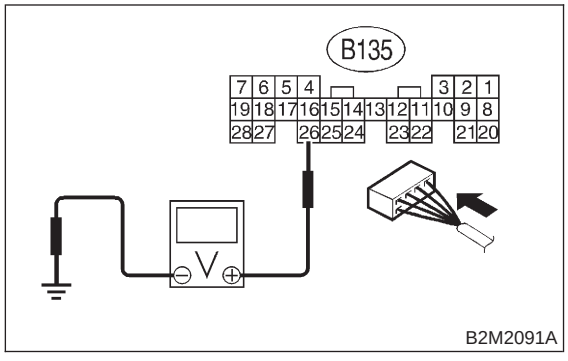


CHECK : ***Is the voltage more than 10 V in neutral position?***
YES : Go to step **11BM2**.
NO : Go to step **11BM4**.

11BM2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V in other positions?***
YES : Go to step **11BM3**.
NO : Go to step **11BM4**.

11BM3 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

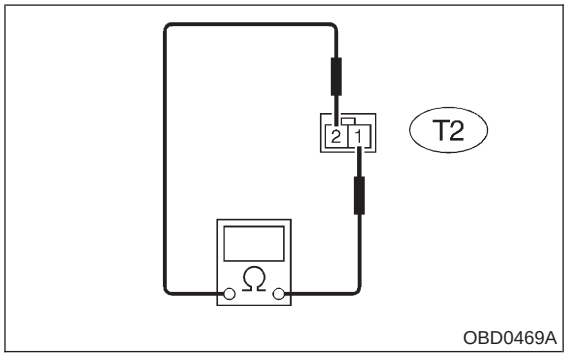
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11BM4 : CHECK NEUTRAL POSITION SWITCH.

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

Connector & terminal
(T2) No. 1 — No. 2:

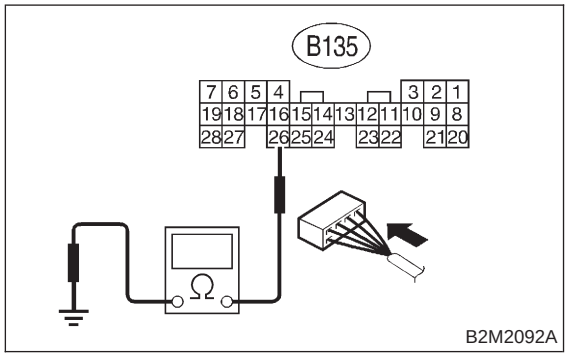


CHECK : ***Is the resistance more than 1 MΩ in neutral position?***
YES : Go to step **11BM5**.
NO : Repair short circuit in transmission harness or replace neutral position switch.

11BM5 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

Measure resistance between ECM and chassis ground.

Connector & terminal
(B135) No. 26 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and transmission harness connector.
NO : Go to step **11BM6**.

11BM6 : CHECK POOR CONTACT.

Check poor contact in transmission harness connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in transmission harness connector?***
YES : Repair poor contact in transmission harness connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

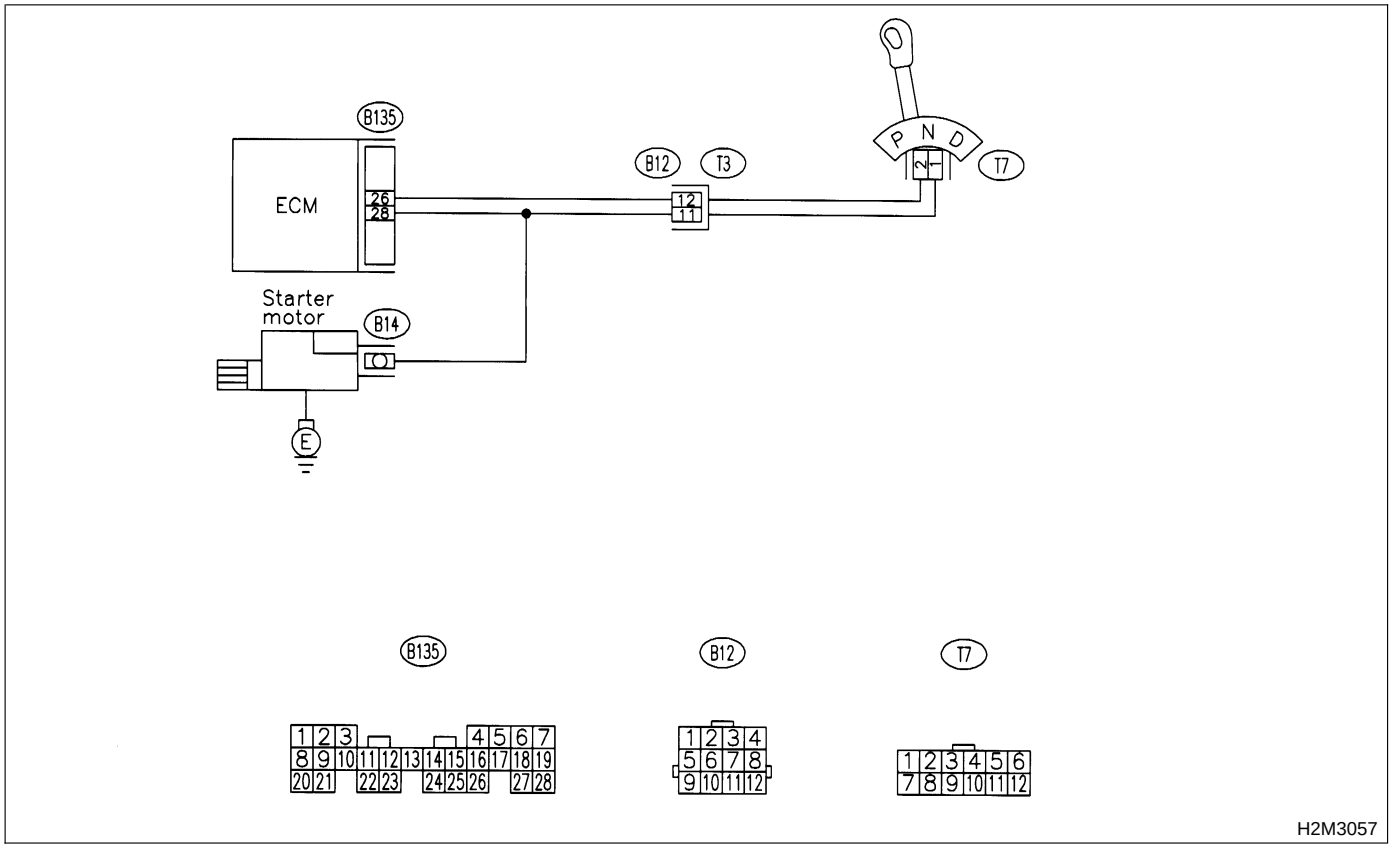
MEMO:

BN: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [AT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BN1 : CHECK DTC P0705 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0705?***

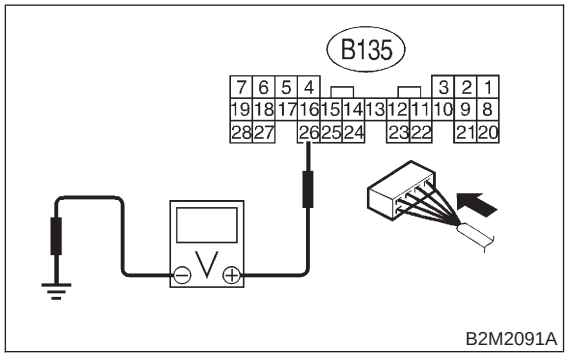
YES : Inspect DTC P0705 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NO : Go to step **11BN2**.

11BN2 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground in selector lever “N” and “P” positions.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

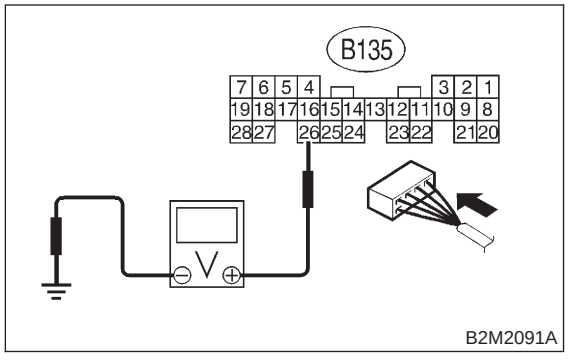


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11BN3**.
NO : Go to step **11BN5**.

11BN3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground in selector lever except for “N” and “P” positions.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 4.5 and 5.5 V?***
YES : Go to step **11BN4**.
NO : Go to step **11BN5**.

11BN4 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

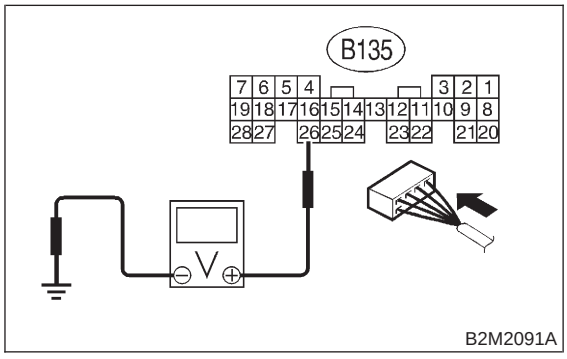
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11BN5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

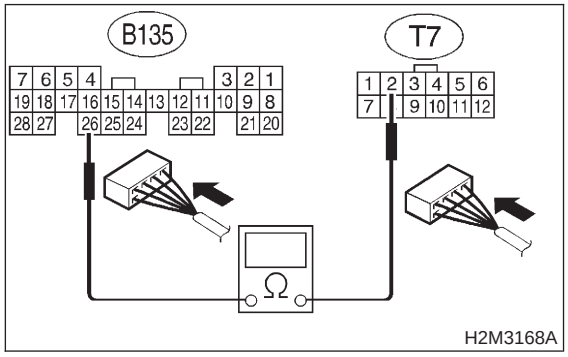


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and inhibitor switch connector.
NO : Go to step **11BN6**.

11BN6 : CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR.

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

Connector & terminal
(B135) No. 26 — (T7) No. 2:



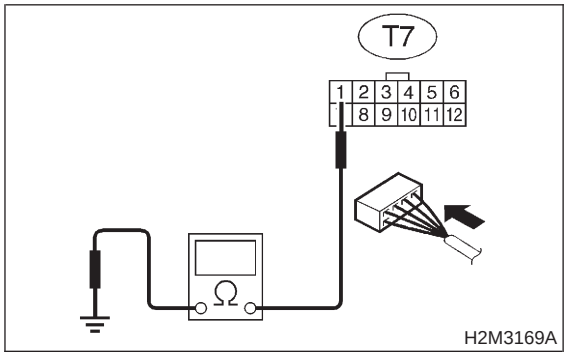
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11BN7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)
- Poor contact in inhibitor switch connector
- Poor contact in ECM connector

11BN7 : CHECK INHIBITOR SWITCH GROUND LINE.

Measure resistance of harness between inhibitor switch connector and engine ground.

Connector & terminal
(T7) No. 1 — Engine ground:

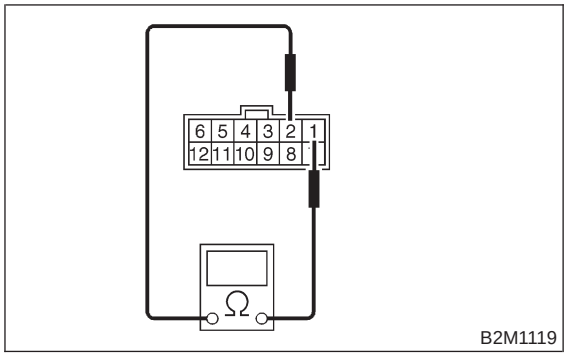


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11BN8**.
NO : Repair open circuit in inhibitor switch ground line.

11BN8 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "N" and "P" positions.

Terminals
No. 2 — No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11BN9**.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

11BN9 : CHECK SELECTOR CABLE CONNECTION.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***

YES : Repair selector cable connection. <Ref. to 3-2 [W2A0].>

NO : Contact with SOA service.

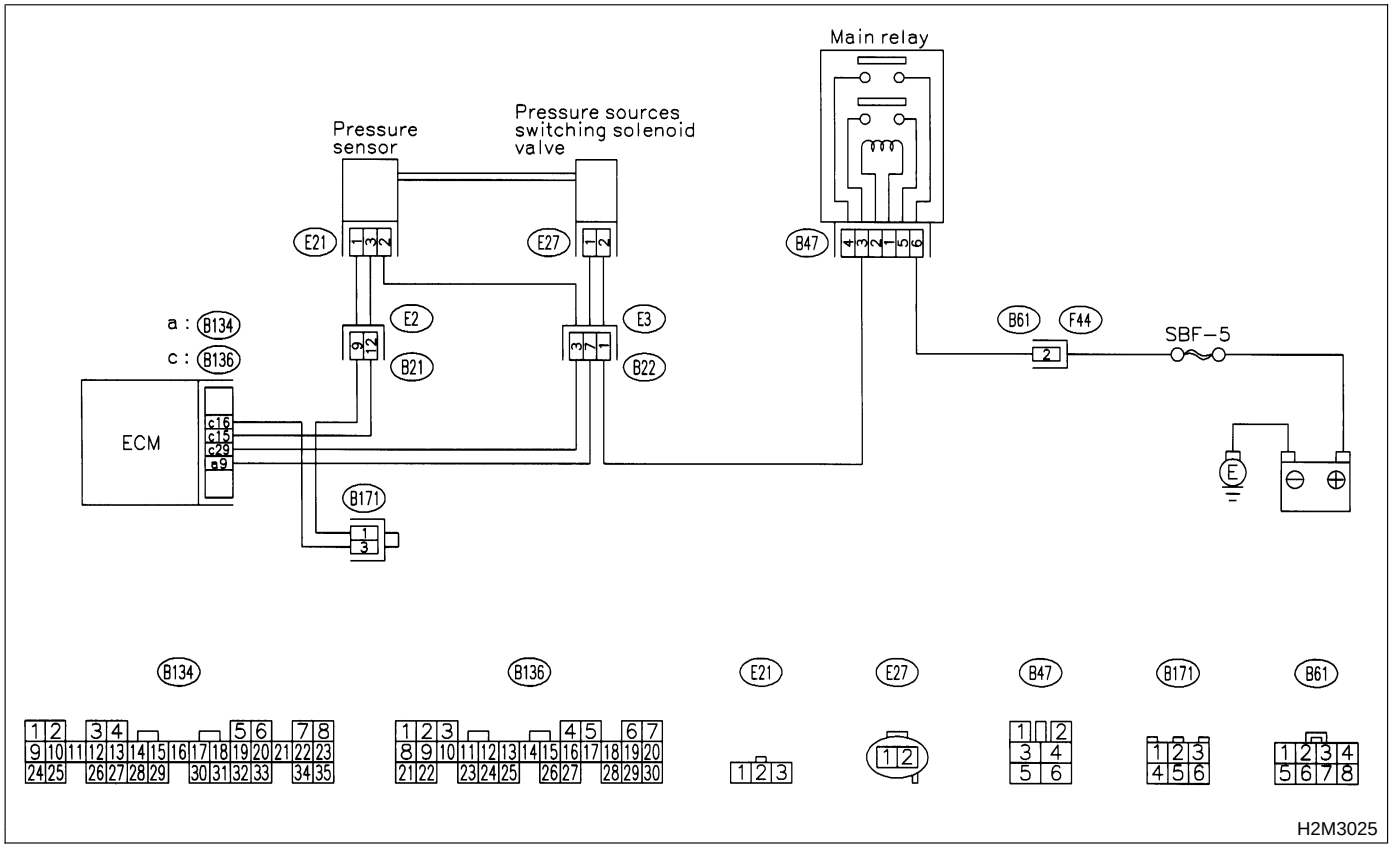
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BO: DTC P1102 — PRESSURE SOURCES SWITCHING SOLENOID VALVE CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

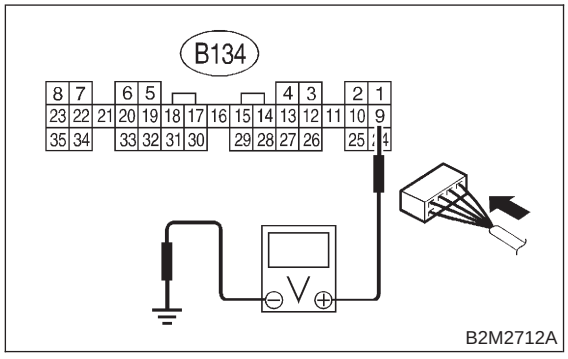
- **WIRING DIAGRAM:**



11BO1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 9 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11BO2**.
NO : Go to step **11BO3**.

11BO2 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

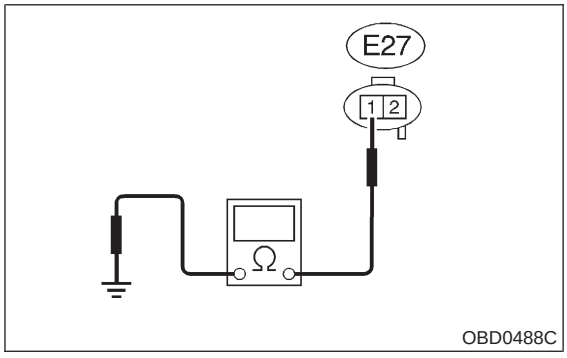
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11BO3 : CHECK HARNESS BETWEEN ECM AND PRESSURE SOURCES SWITCHING SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sources switching solenoid valve and ECM.
3) Measure resistance of harness between pressure sources switching solenoid valve connector and engine ground.

Connector & terminal
(E27) No. 1 — Engine ground:

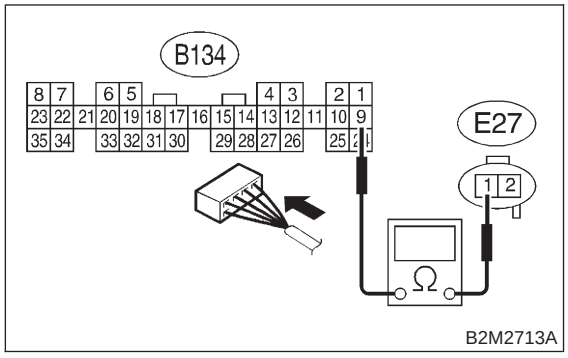


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and pressure sources switching solenoid valve connector.
NO : Go to step **11BO4**.

11BO4 : CHECK HARNESS BETWEEN ECM AND PRESSURE SOURCES SWITCHING SOLENOID VALVE CONNECTOR.

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

Connector & terminal
(B134) No. 9 — (E27) No. 1:

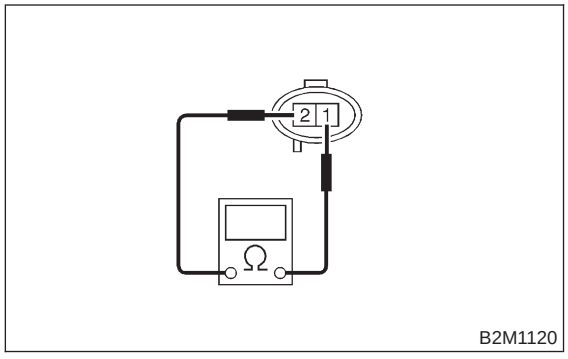


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11BO5**.
NO : Repair open circuit in harness between ECM and pressure sources switching solenoid valve connector.

11BO5 : CHECK PRESSURE SOURCES SWICTCHING SOLENOID VALVE.

Measure resistance between pressure sources switching solenoid valve connector terminals.

Terminals
No. 1 — No. 2:

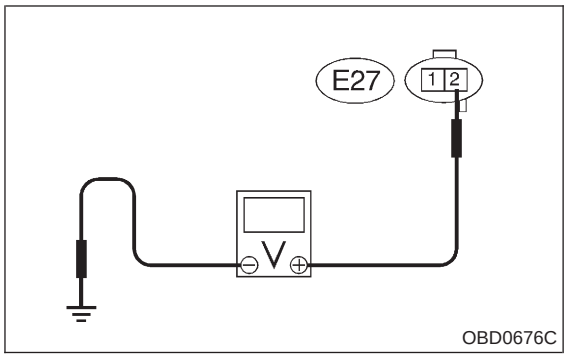


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **11BO6**.
NO : Replace pressure sources switching solenoid valve. <Ref. to 2-7 [W13A0].>

11BO6 : CHECK POWER SUPPLY TO PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between pressure sources switching solenoid valve harness connector and engine ground.

Connector & terminal
(E27) No. 2 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11BO7**.
NO : Repair open circuit in harness between main relay and pressure sources switching solenoid valve connector.

11BO7 : CHECK POOR CONTACT.

Check poor contact in pressure sources switching solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in pressure sources switching solenoid valve connector?***
YES : Repair poor contact in pressure sources switching solenoid valve connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

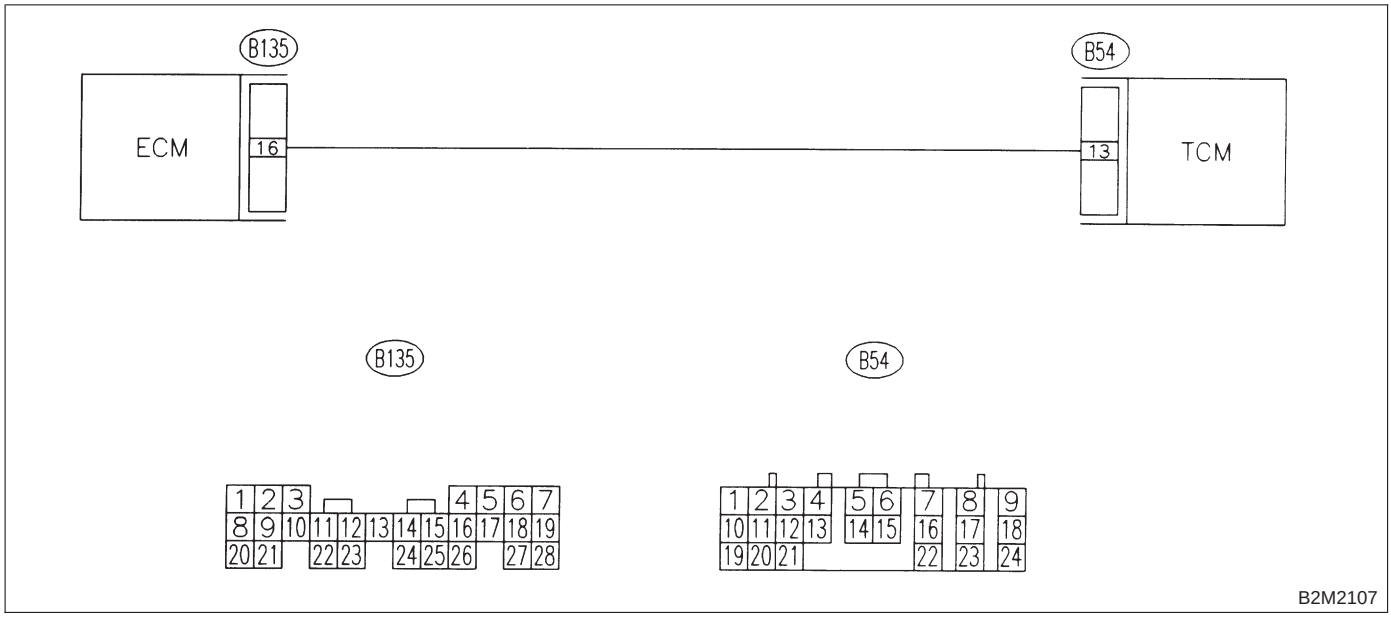
MEMO:

BP: DTC P1103 — ENGINE TORQUE CONTROL SIGNAL 1 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

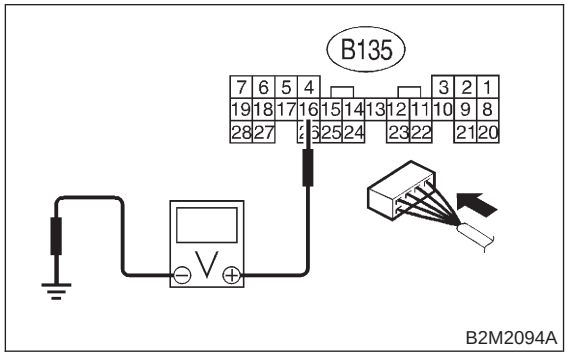
- **WIRING DIAGRAM:**



11BP1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 16 (+) — Chassis ground (−):

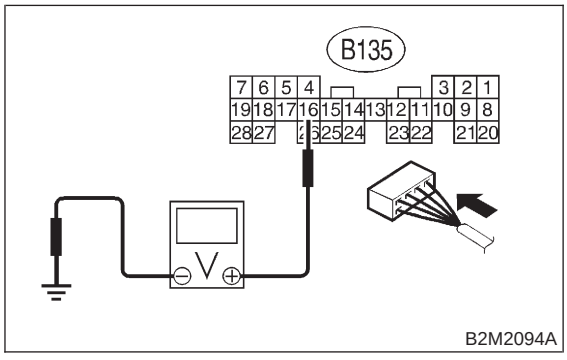


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11BP2**.
NO : Go to step **11BP4**.

11BP2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 16 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector.
NO : Go to step **11BP3**.

11BP3 : CHECK POOR CONTACT.

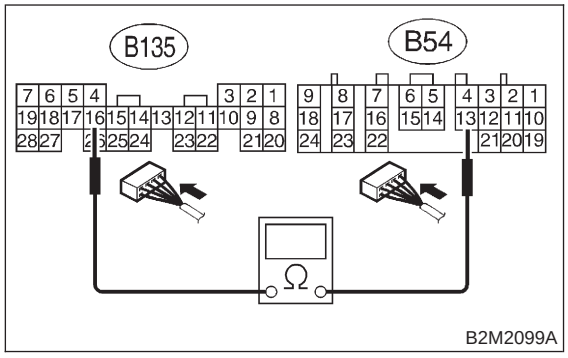
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

11BP4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 16 — (B54) No. 13:

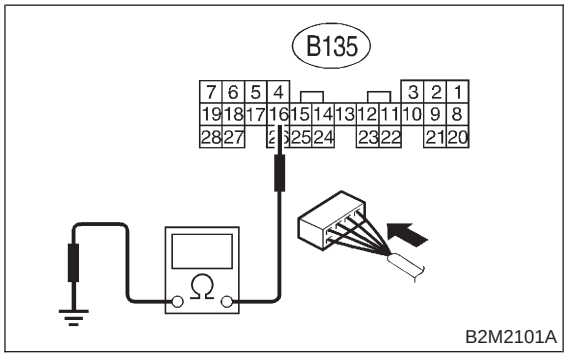


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11BP5**.
NO : Repair open circuit in harness between ECM and TCM connector.

11BP5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B135) No. 16 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **11BP6**.

11BP6 : CHECK POOR CONTACT.

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

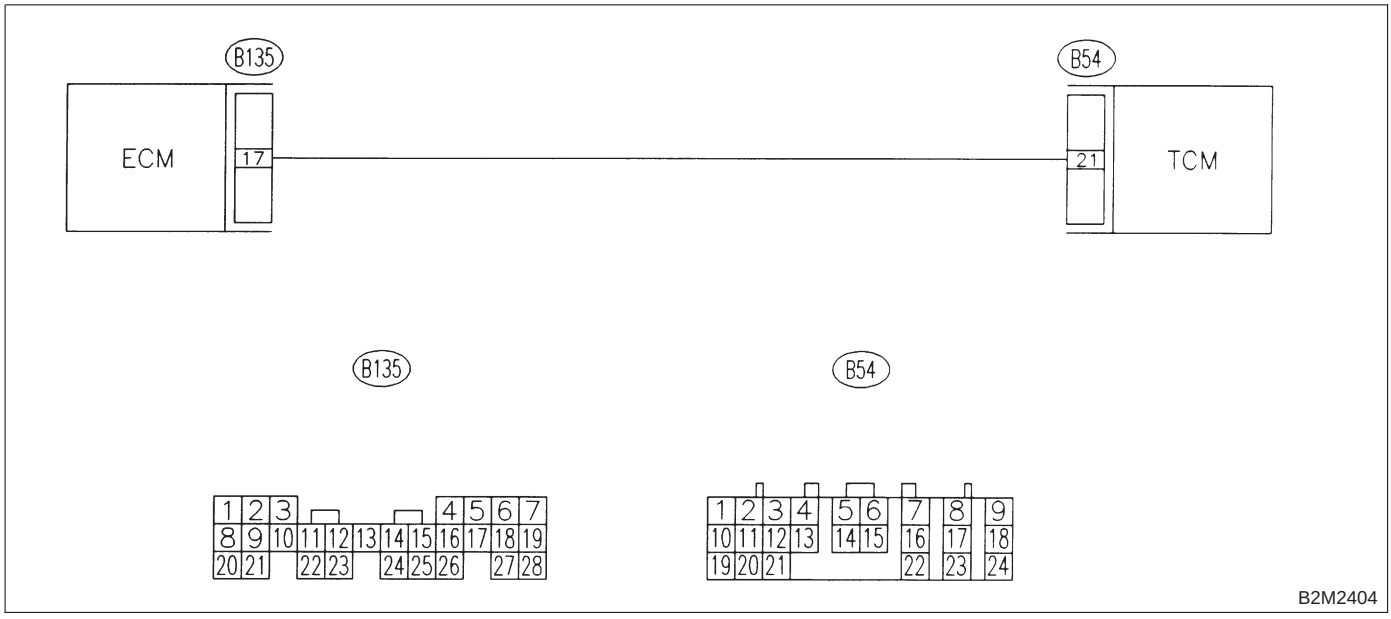
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

BQ: DTC P1106 — ENGINE TORQUE CONTROL SIGNAL 2 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

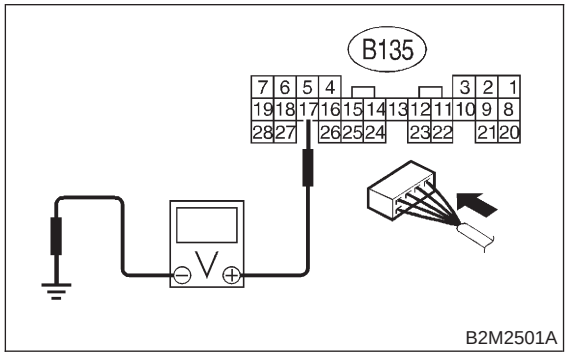
- **WIRING DIAGRAM:**



11BQ1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 17 (+) — Chassis ground (−):

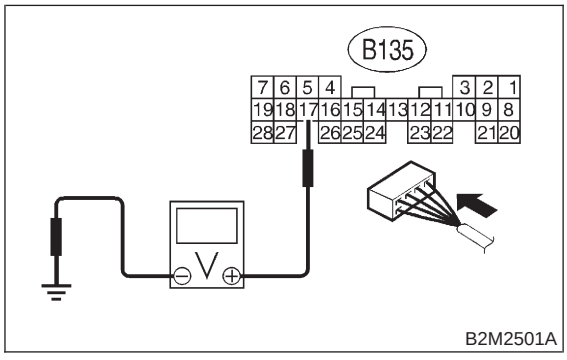


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **11BQ2**.
NO : Go to step **11BQ4**.

11BQ2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 17 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector.
NO : Go to step **11BQ3**.

11BQ3 : CHECK POOR CONTACT.

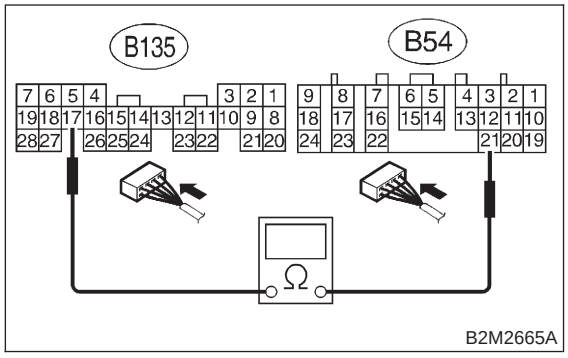
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

11BQ4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 17 — (B54) No. 21:

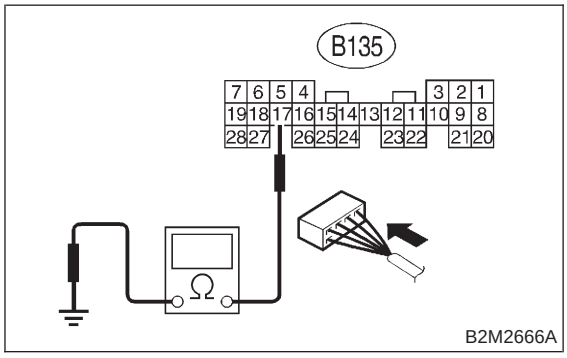


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11BQ5**.
NO : Repair open circuit in harness between ECM and TCM connector.

11BQ5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B135) No. 17 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **11BQ6**.

11BQ6 : CHECK POOR CONTACT.

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

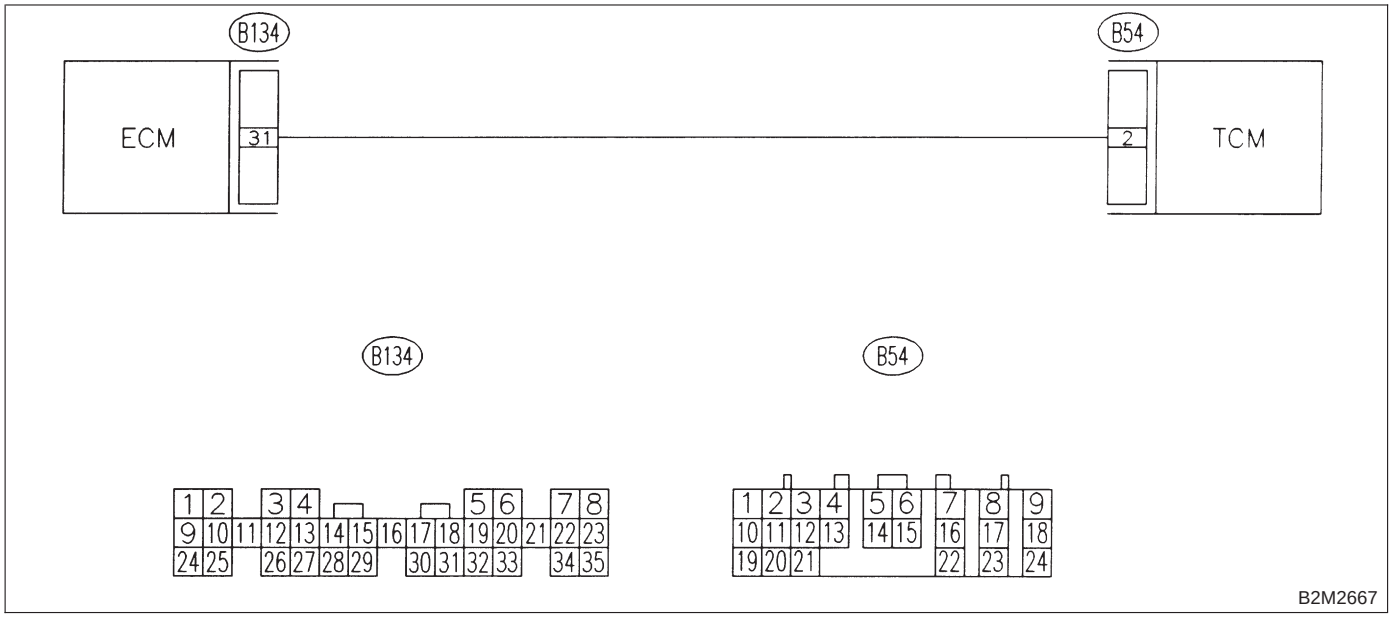
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

BR: DTC P1115 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

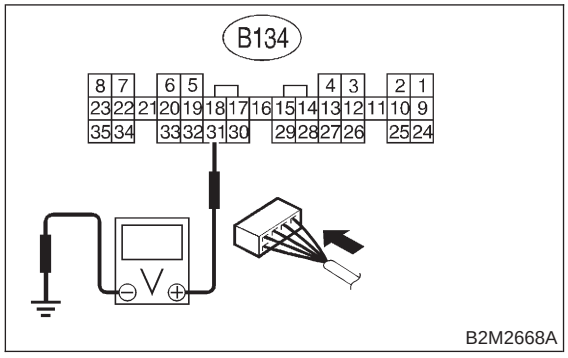
- **WIRING DIAGRAM:**



11BR1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start engine, and warm-up the engine.
2) Turn ignition swtich to OFF.
3) Disconnect connector from TCM.
4) Turn ignition switch to ON.
5) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):

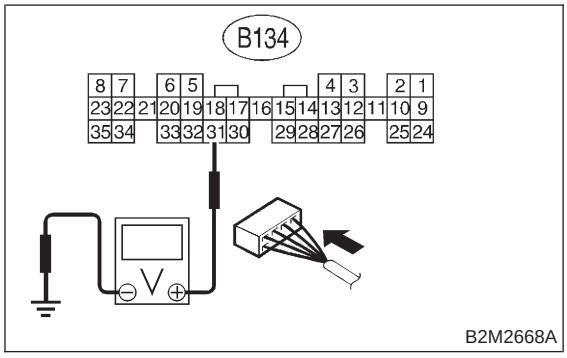


CHECK : ***Is the voltage less than 3 V?***
YES : Go to step **11BR2**.
NO : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

11BR2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 10 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Contact with SOA service.

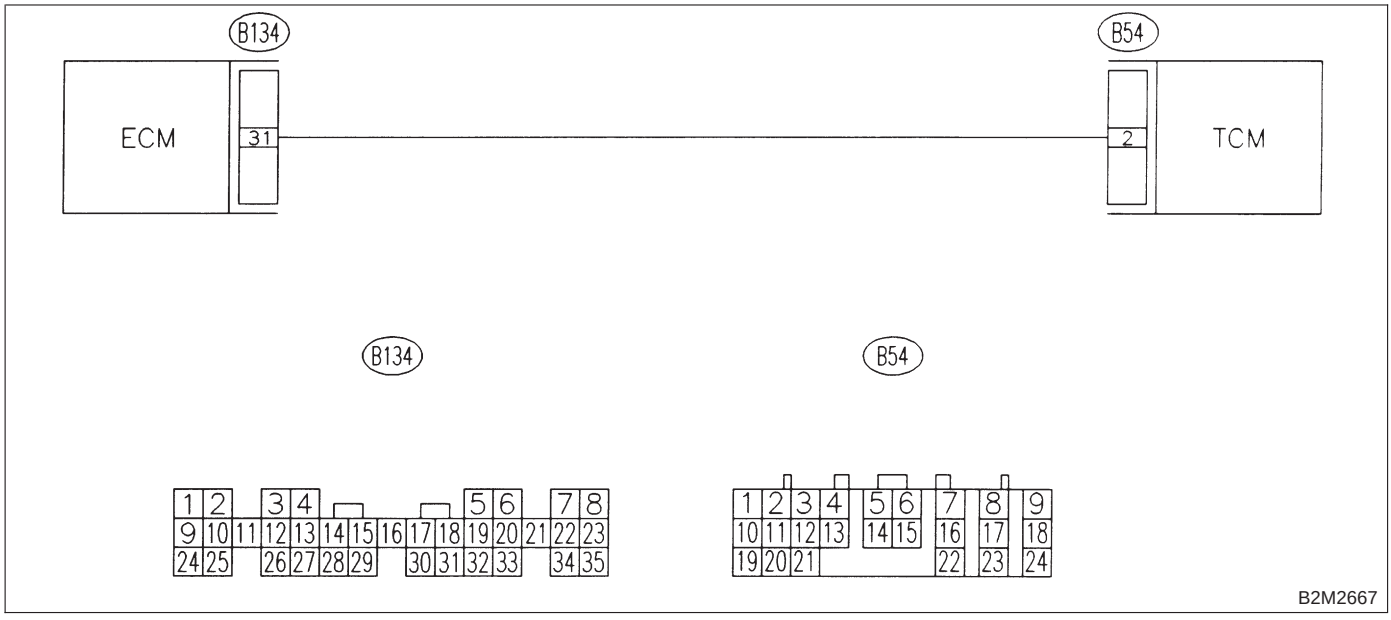
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BS: DTC P1116 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

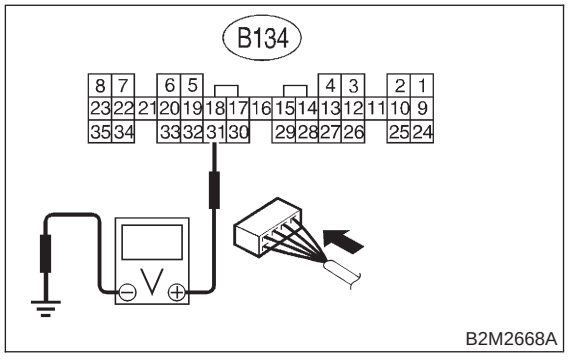
- **WIRING DIAGRAM:**



11BS1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start engine, and warm-up the engine.
2) Turn ignition switch to OFF.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):

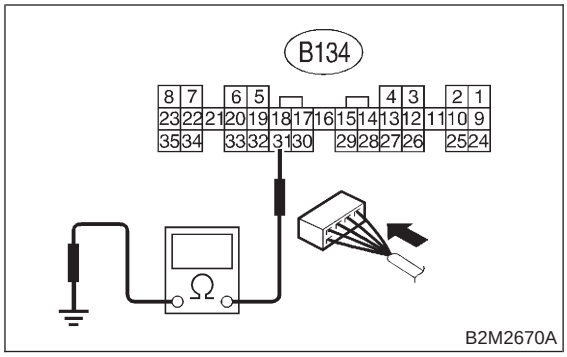


CHECK : ***Is the voltage more than 3 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11BS2**.

11BS2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B134) No. 31 — Chassis ground:

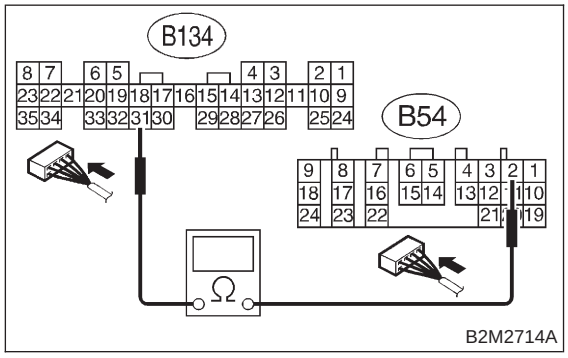


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **11BS3**.

11BS3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness betwee ECM and TCM connector.

Connector & terminal
(B134) No. 31 — (B54) No. 2:



CHECK : ***Is the resistance less than 1 Ω?***

YES : Repair poor contact in ECM or TCM connector.

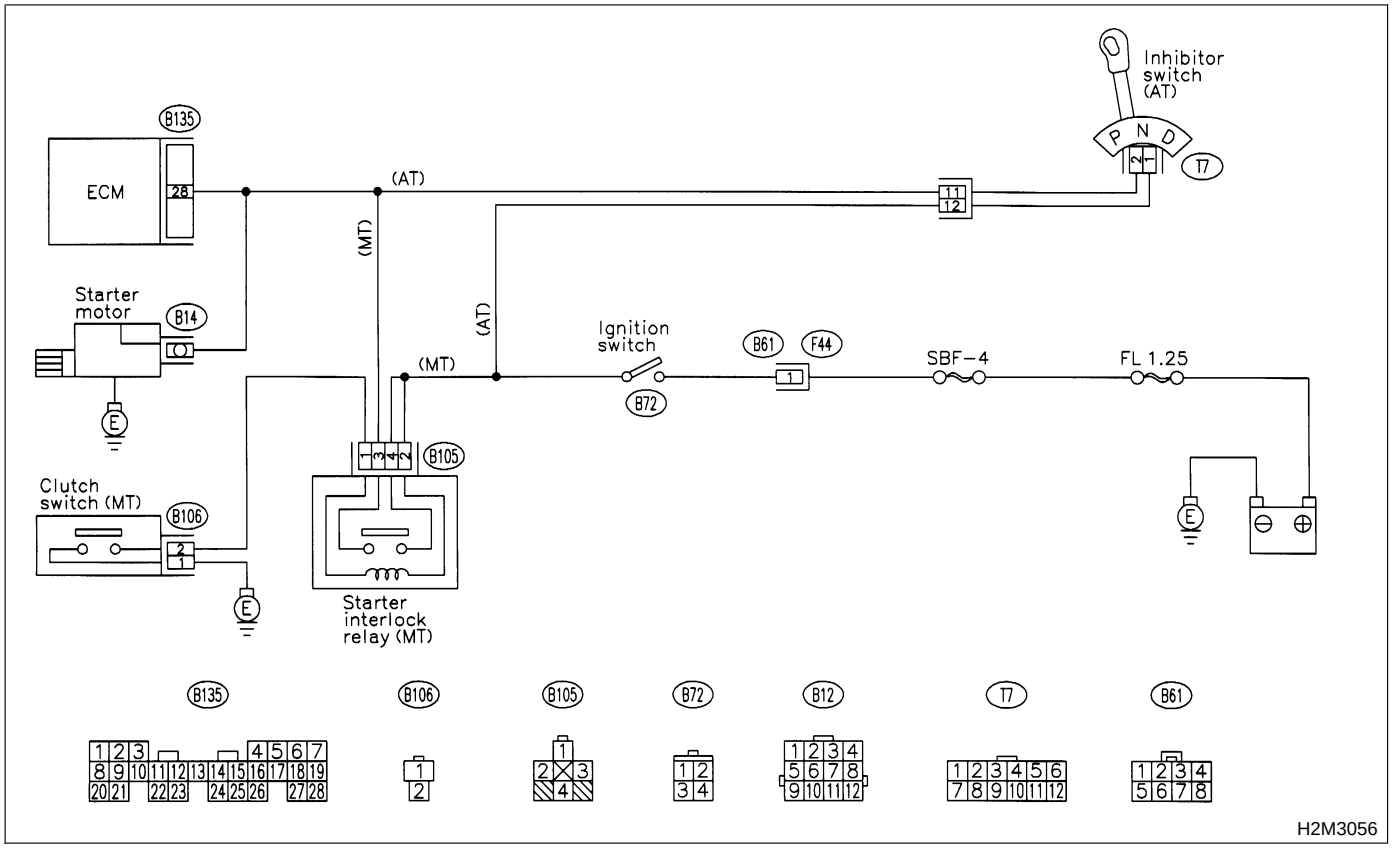
NO : Repair open circuit in harness between ECM and TCM connector.

BT: DTC P1120 — STARTER SWITCH CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BT1 : CHECK OPERATION OF STARTER MOTOR.

NOTE:
- On AT vehicles, place the inhibitor switch in each position.
- On MT vehicles, depress or release the clutch pedal.

CHECK : ***Does starter motor operate when ignition switch to "ON"?***

YES : Repair battery short circuit in starter motor circuit. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

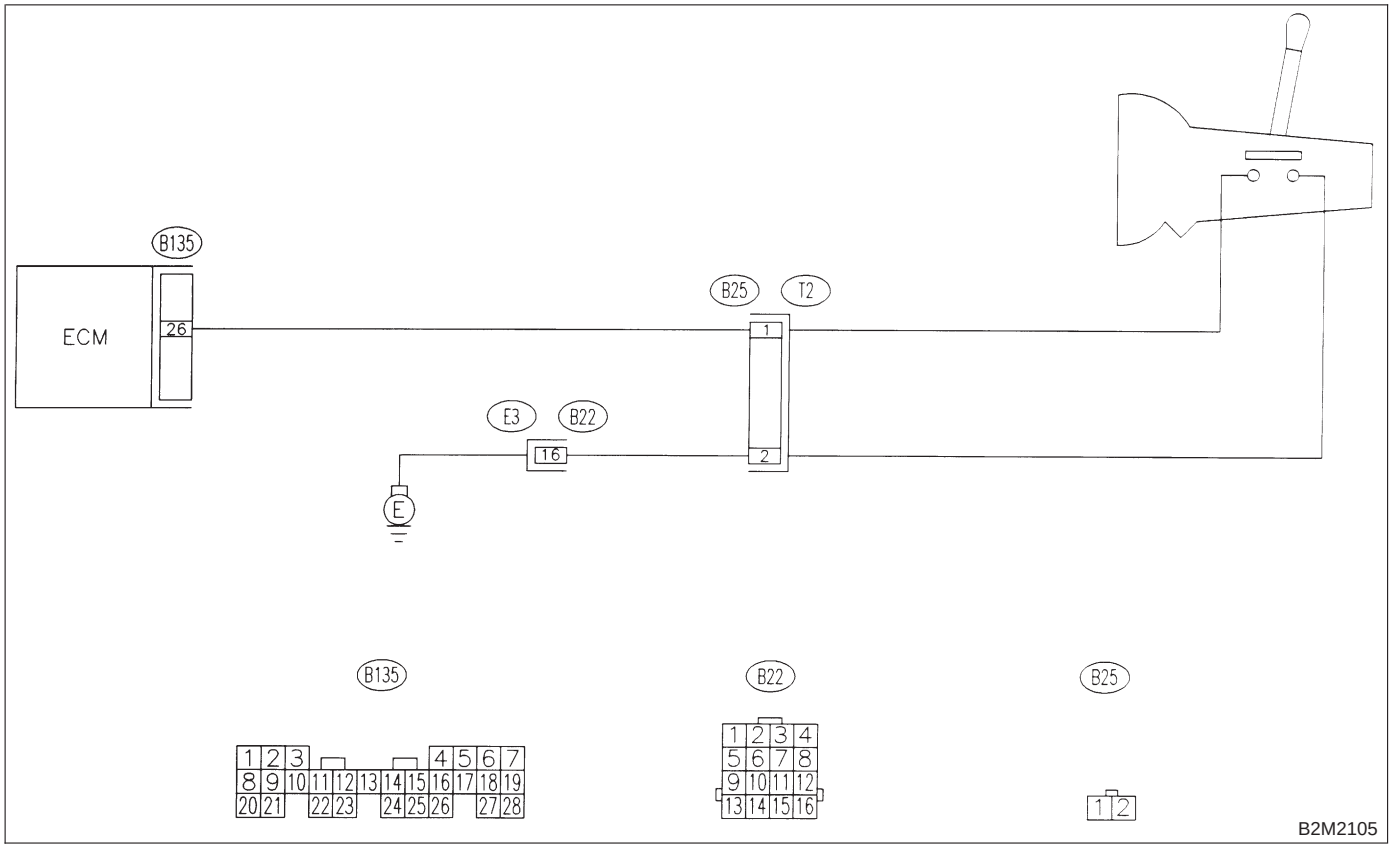
MEMO:

BU: DTC P1121 — NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [MT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

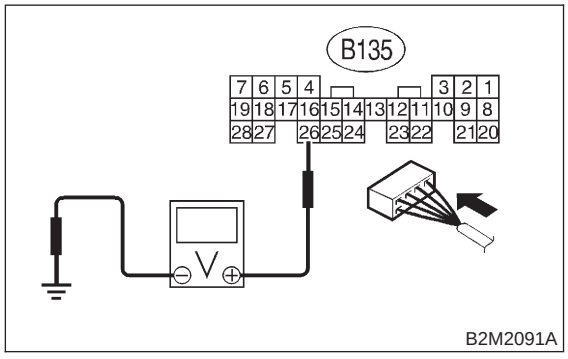
- **WIRING DIAGRAM:**



11BU1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

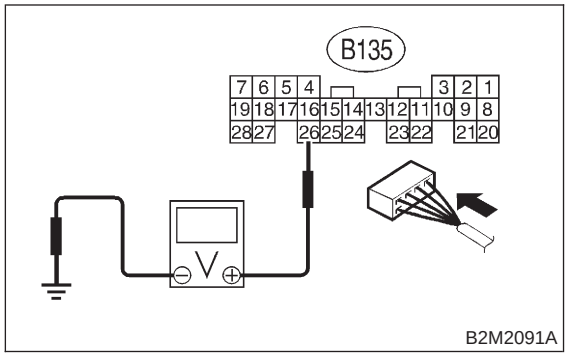


CHECK : ***Is the voltage between 4.5 and 5.5 V in neutral position?***
YES : Go to step **11BU2**.
NO : Go to step **11BU4**.

11BU2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V in other positions?***
YES : Go to step **11BU3**.
NO : Go to step **11BU4**.

11BU3 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

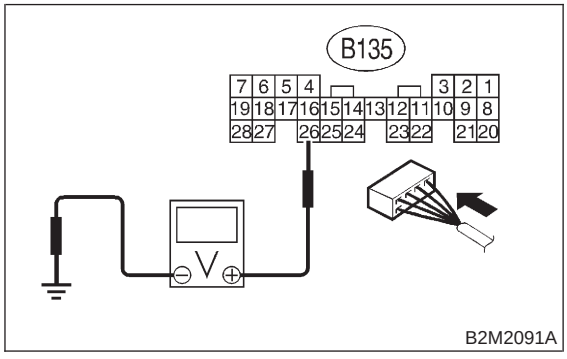
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11BU4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

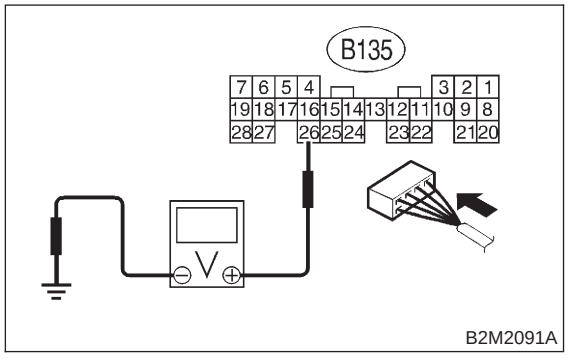


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and transmission harness connector.
NO : Go to step **11BU5**.

11BU5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (–):

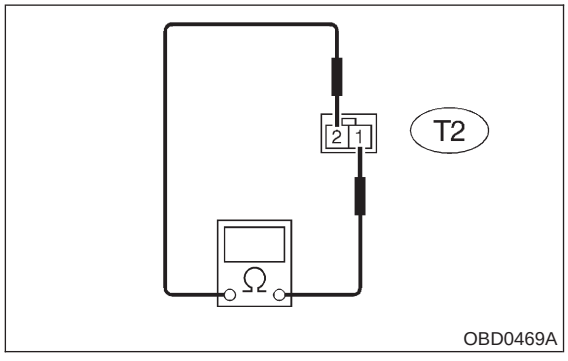


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and transmission harness connector.
NO : Go to step **11BU6**.

11BU6 : CHECK NEUTRAL POSITION SWITCH.

Measure resistance between transmission harness connector terminals.

Connector & terminal
(T2) No. 1 — No. 2:

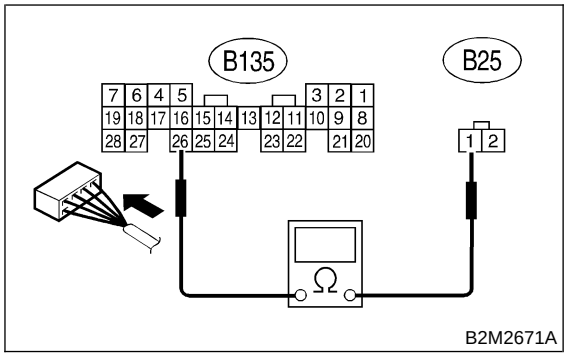


CHECK : ***Is the resistance less than 1 Ω in other positions?***
YES : Go to step **11BU7**.
NO : Repair open circuit in transmission harness or replace neutral position switch.

11BU7 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and transmission harness connector.

Connector & terminal
(B135) No. 26 — (B25) No. 1:

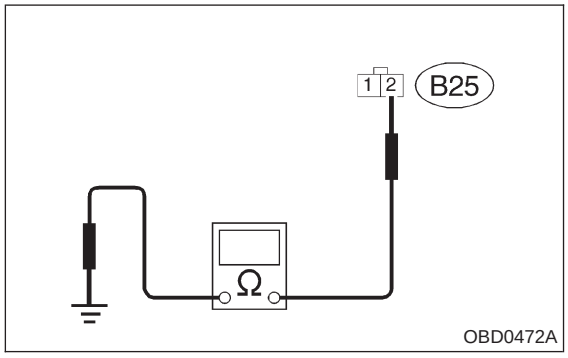


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11BU8**.
NO : Repair open circuit in harness between ECM and transmission harness connector.

11BU8 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(B25) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11BU9**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between transmission harness connector and engine grounding terminal
● Poor contact in coupling connector (B22)

11BU9 : CHECK POOR CONTACT.

Check poor contact in transmission harness connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in transmission harness connector?***
YES : Repair poor contact in transmission harness connector.
NO : Contact with SOA service.

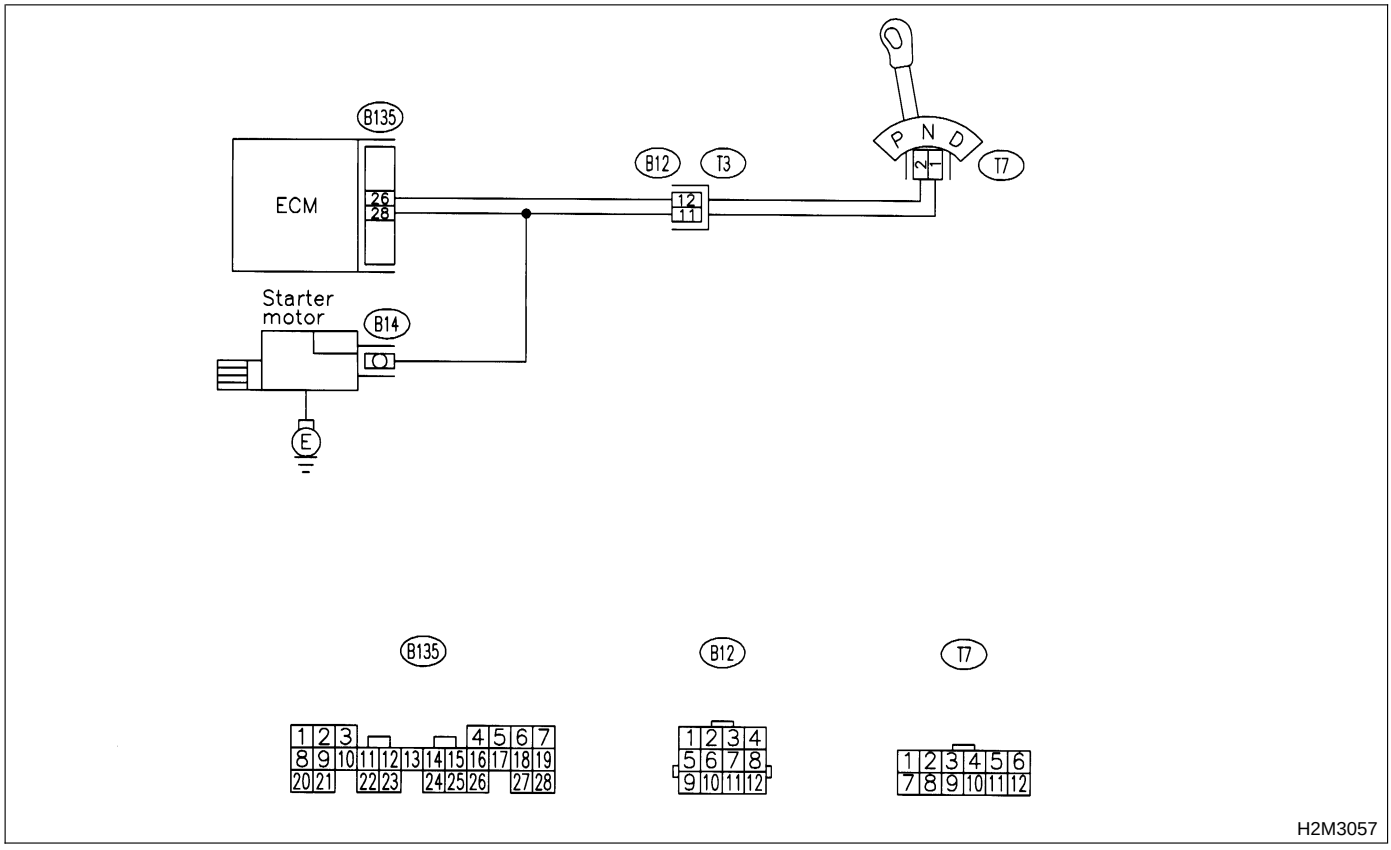
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BV: DTC P1121 — NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [AT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BV1 : CHECK DTC P0705 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0705?***

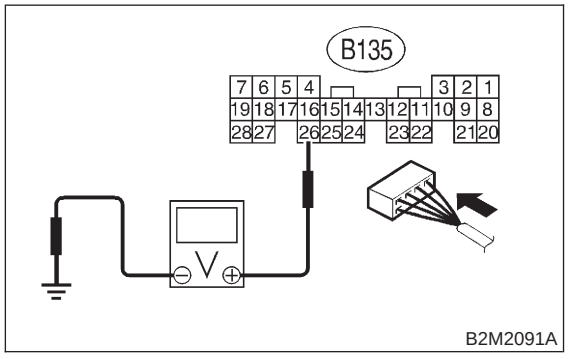
YES : Inspect DTC P0705 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NO : Go to step **11BV2**.

11BV2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

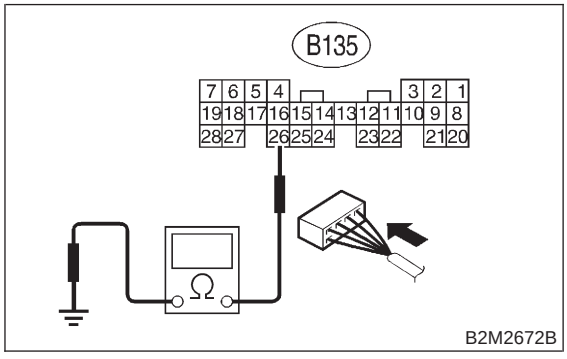


CHECK : ***Is the voltage between 4.5 and 5.5 V in other positions?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.
NO : Go to step **11BV3**.

11BV3 : CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.

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

Connector & terminal
(B135) No. 26 — Chassis ground:

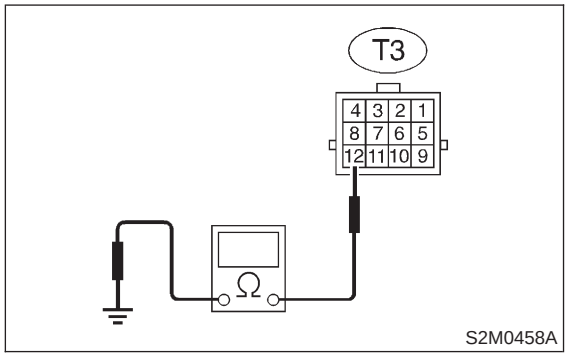


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and transmission harness connector.
NO : Go to step **11BV4**.

11BV4 : CHECK TRANSMISSION HARNESS CONNECTOR.

1) Disconnect connector from inhibitor switch.
2) Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(T3) No. 12 — Engine ground:

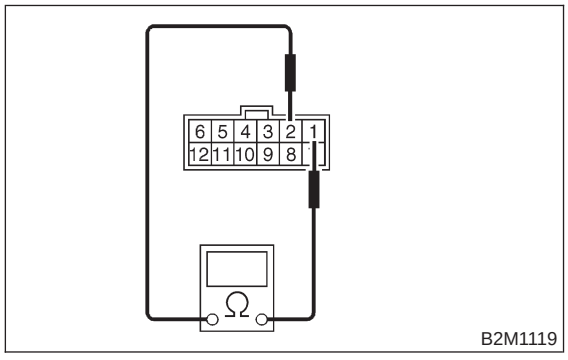


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between transmission harness and inhibitor switch connector.
NO : Go to step **11BV5**.

11BV5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "N" position.

Terminals
No. 2 — No. 1:



CHECK : ***Is the resistance more than 1 MΩ in other positions?***
YES : Go to step **11BV6**.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

11BV6 : CHECK SELECTOR CABLE CONNECTION.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***
YES : Repair selector cable connection. <Ref. to 3-2 [W2A0].>
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

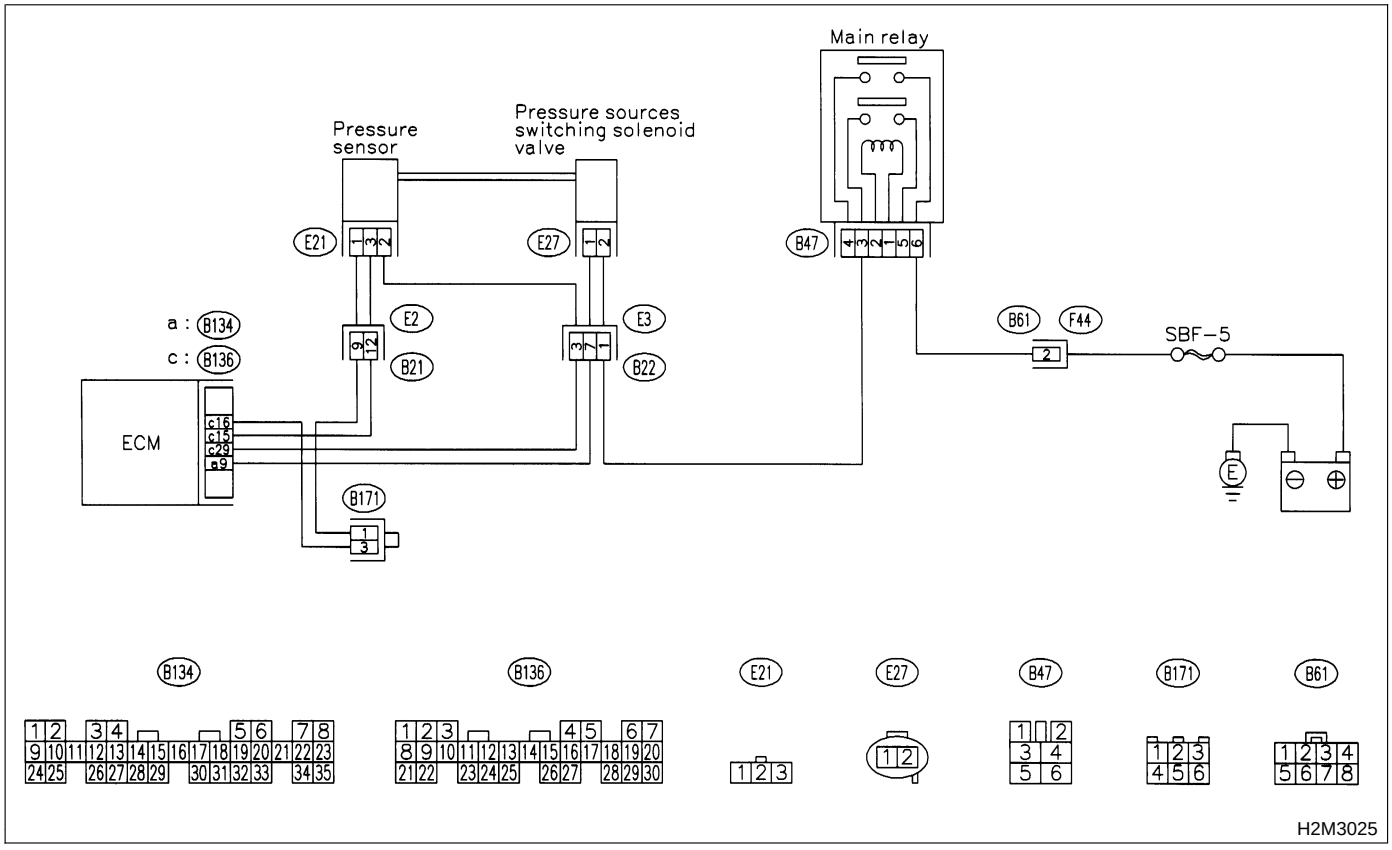
MEMO:

BW: DTC P1122 — PRESSURE SOURCES SWITCHING SOLENOID VALVE CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Failure of engine to start

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

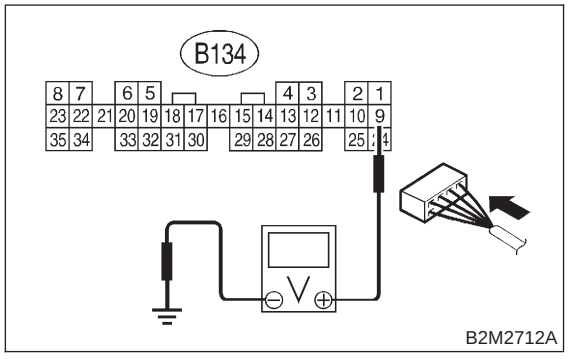
- **WIRING DIAGRAM:**



11BW1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 9 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11BW3**.
NO : Go to step **11BW2**.

11BW2 : CHECK POOR CONTACT.

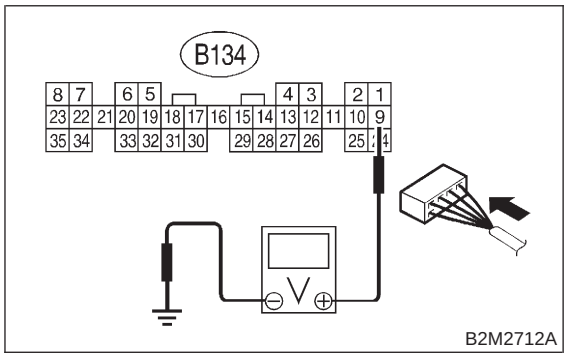
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

11BW3 : CHECK HARNESS BETWEEN ECM AND PRESSURE SOURCES SWITCHING SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sources switching solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 9 (+) — Chassis ground (−):

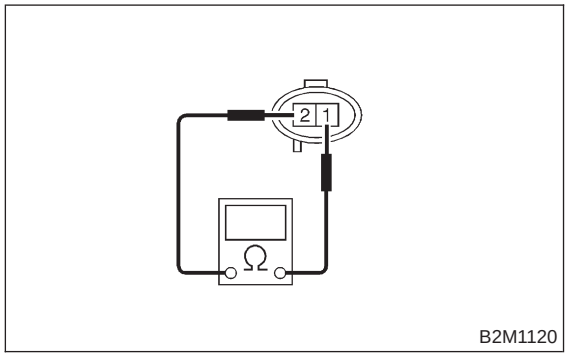


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and pressure sources switching solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **11BW4**.

11BW4 : CHECK PRESSURE SOURCES SWICTHING SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between pressure sources switching solenoid valve connector terminals.

Terminals
No. 2 — No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace pressure sources switching solenoid valve <Ref. to 2-7 [W13A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **11BW5**.

11BW5 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

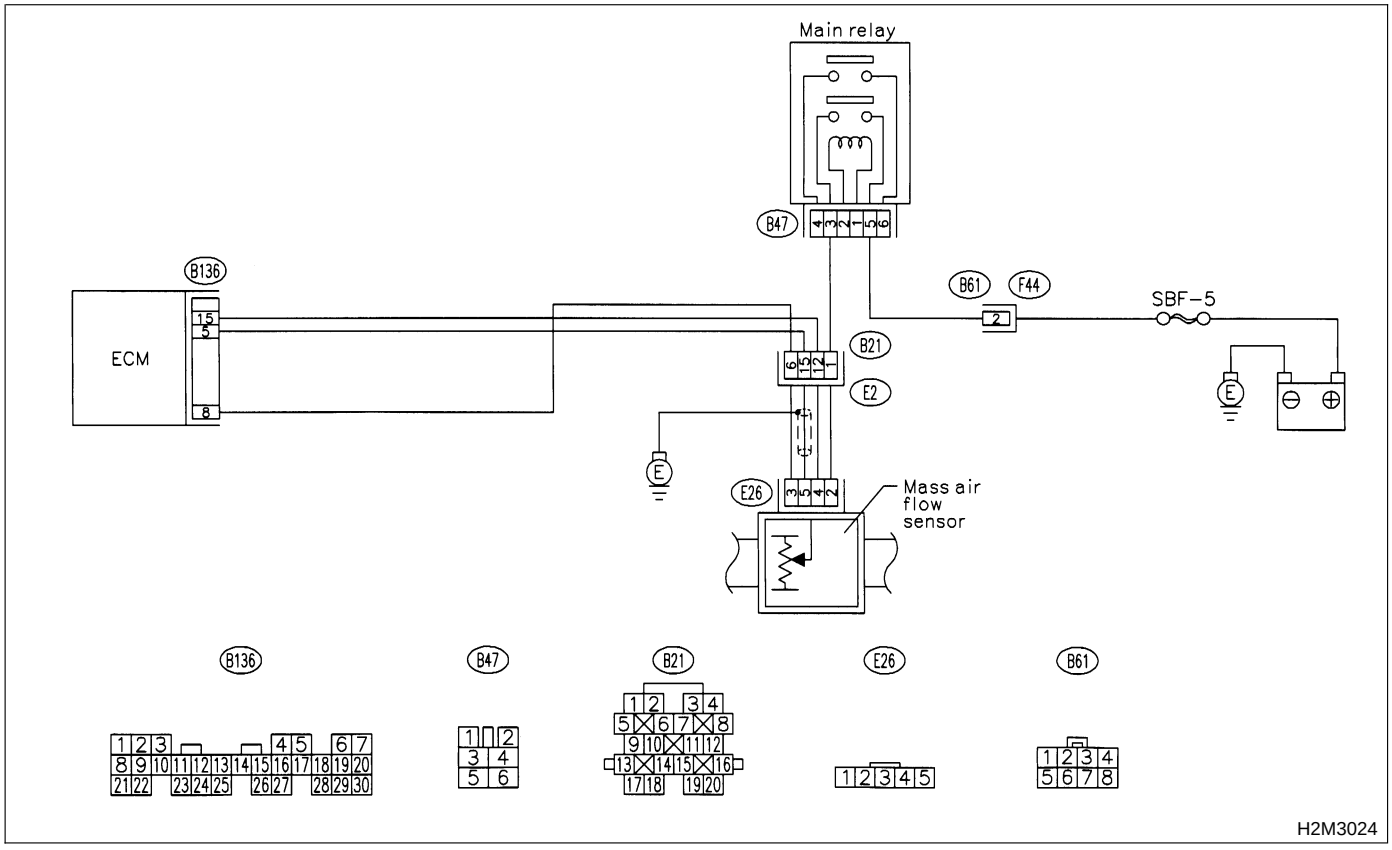
MEMO:

BX: DTC P1141 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BX1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0102, P0103 or P0122?***

YES : Inspect DTC P0102, P0103 or P0122 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

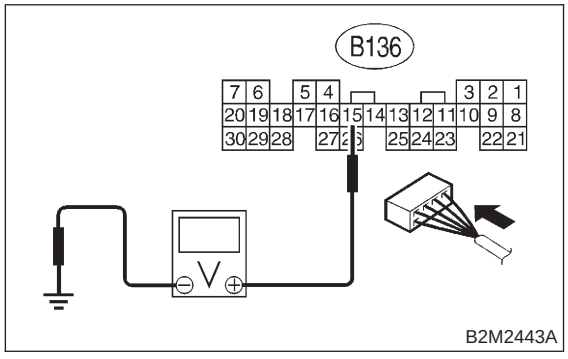
NOTE:
In this case, it is not necessary to inspect DTC P1141.

NO : Go to step **11BX2**.

11BX2 : CHECK THROTTLE POSITION SENSOR.

Measure voltage between ECM and chassis ground while throttle valve is fully closed.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.1 V?***

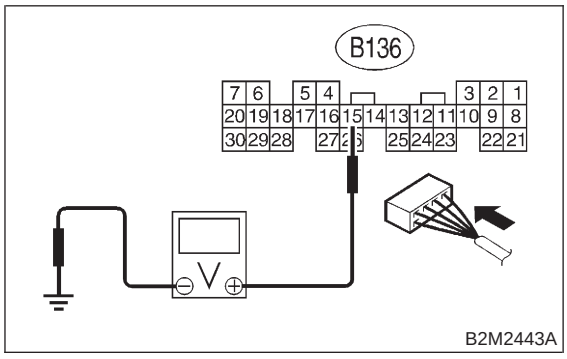
YES : Go to step **11BX3**.

NO : Check throttle position sensor circuit. <Ref. to 2-7 [T11K0].>

11BX3 : CHECK THROTTLE POSITION SENSOR.

Measure voltage between ECM and chassis ground while throttle valve is fully opened.

Connector & terminal
(B136) No. 15 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 4.5 V?***

YES : Replace mass air flow sensor. <Ref. to 2-7 [W2A1].>

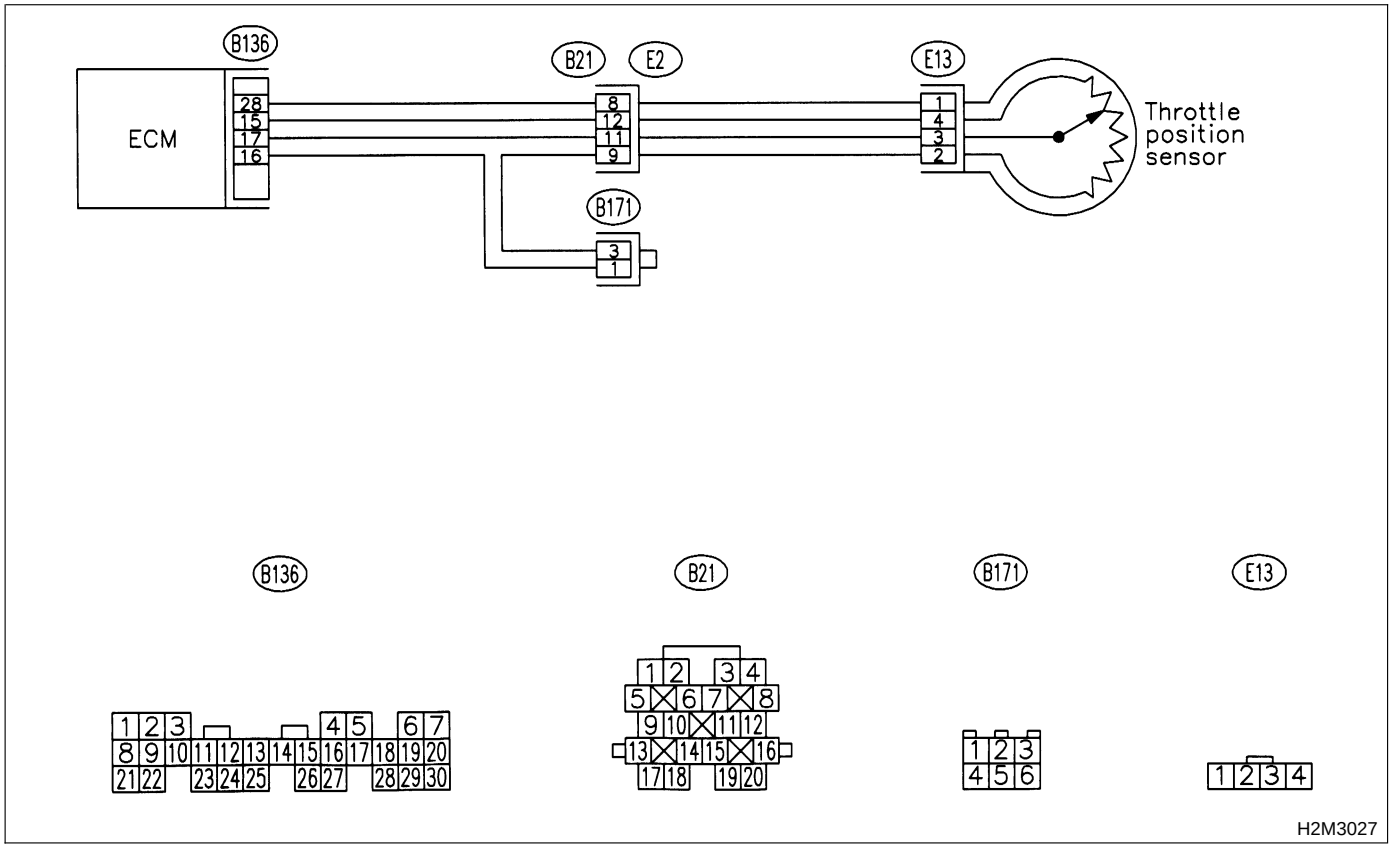
NO : Check throttle position sensor circuit. <Ref. to 2-7 [T11K0].>

BY: DTC P1142 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BY1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0122 or P0123?***

YES : Inspect DTC P0122 or P0123 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1142.

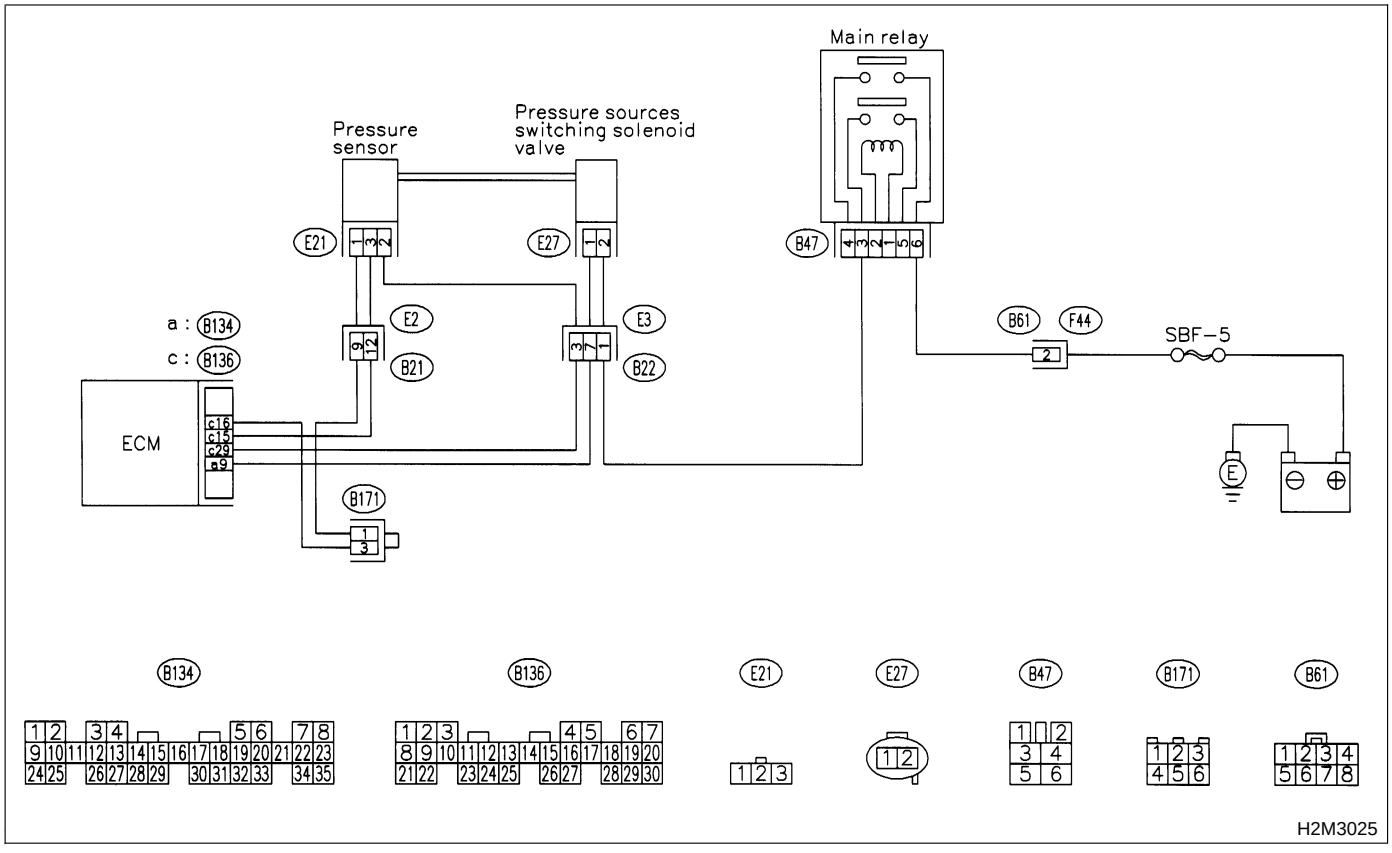
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

BZ: DTC P1143 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

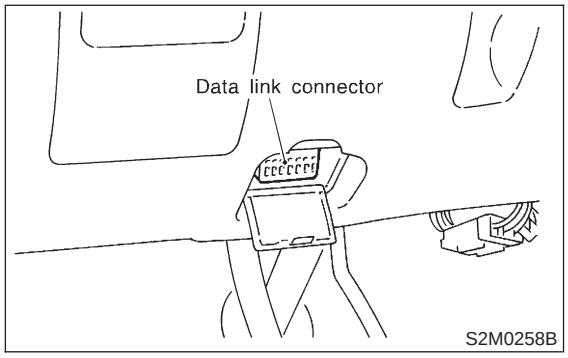
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11BZ1 : CHECK IDLE SWITCH SIGNAL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
4) Operate the LED operation mode for engine using Subaru Select Monitor.

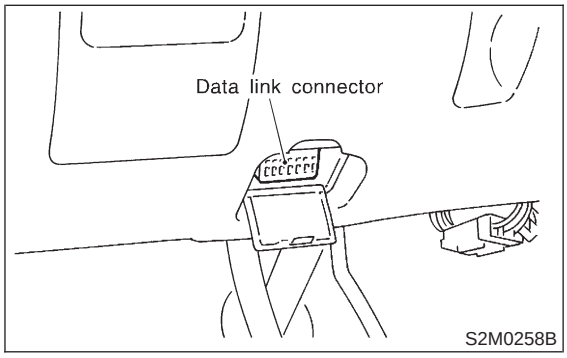
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “LED OPERATION MODE FOR ENGINE”. <Ref. to 2-7 [T3C8].>

CHECK : ***Does the LED of {Idle Switch Signal} come on?***
YES : Go to step **11BZ2**.
NO : Check throttle position sensor circuit. <Ref. to 2-7 [T11K0].>

NOTE:
In this case, it is not necessary to inspect DTC P1143.

11BZ2 : CHECK DATA FOR CONTROL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch ON and Subaru Select Monitor or the OBD-II general scan tool switch ON.
4) Start engine.
5) Read data of atmospheric absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than 32 kPa (240 mmHg, 9.45 inHg)?***
YES : Go to step **11BZ4**.
NO : Go to step **11BZ3**.

11BZ3 : CHECK PRESSURE SENSOR.

1) Measure actual atmospheric pressure.
2) Read data of atmospheric absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

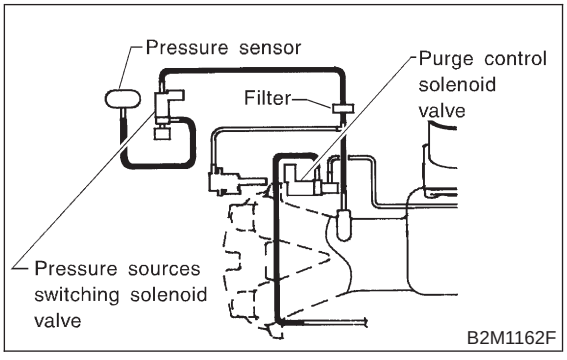
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Is the difference between absolute value of Subaru Selector Monitor indication and actual atmospheric pressure greater than 10 kPa (75 mmHg, 2.95 inHg)?***
YES : Replace pressure sensor.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11BZ4 : CHECK VACUUM HOSES.

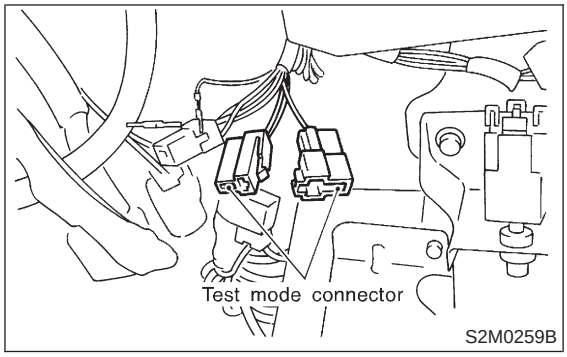
Check the following item. Incorrect hose connections in line between the pressure sources switching solenoid valve and pressure sensor, intake manifold and/or purge control solenoid valve.



CHECK : ***Is there a fault in vacuum hose?***
YES : Repair or replace hoses or filter.
NO : Go to step **11BZ5**.

11BZ5 : CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Connect test mode connector.



3) Turn ignition switch to ON.

NOTE:
Pressure sources switching solenoid valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to the "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

CHECK : ***Does pressure sources switching solenoid valve produce operating sound? (ON ⟷ OFF each 1.5 sec.)***
YES : Replace pressure sensor. <Ref. to 2-7 [W11A0].>
NO : Replace pressure sources switching solenoid valve. <Ref. to 2-7 [W13A0].>

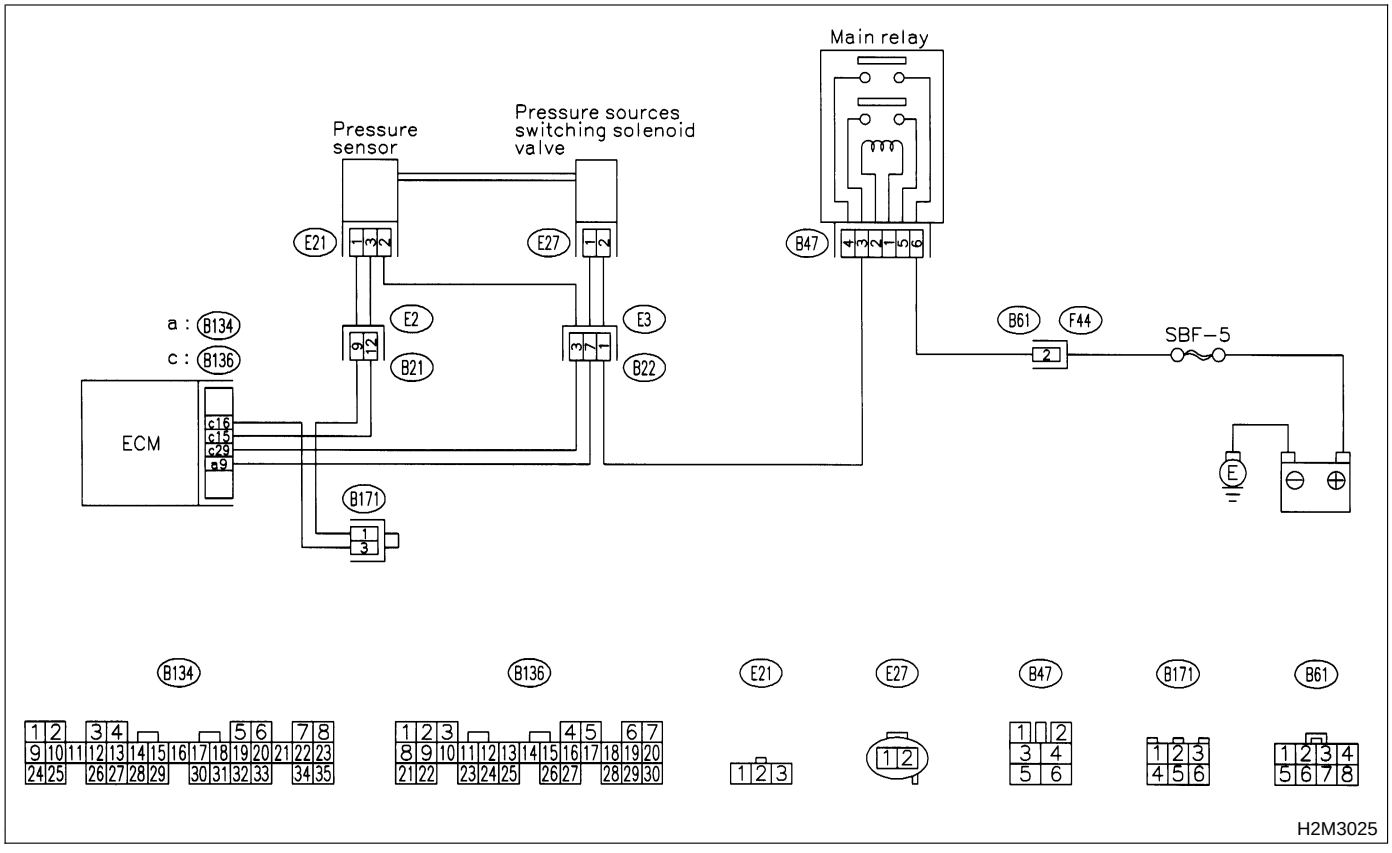
MEMO:

CA: DTC P1144 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

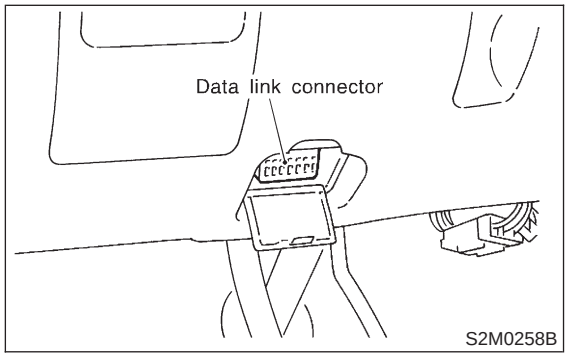
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CA1 : CHECK IDLE SWITCH SIGNAL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
4) Operate the LED operation mode for engine using Subaru Select Monitor.

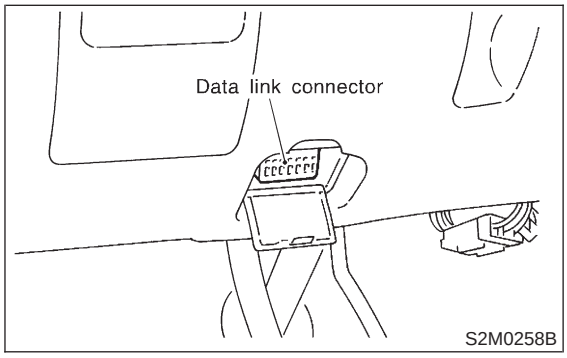
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “LED OPERATION MODE FOR ENGINE”. <Ref. to 2-7 [T3C8].>

CHECK : ***Does the LED of {Idle Switch Signal} come on?***
YES : Go to step **11CA2**.
NO : Check throttle position sensor circuit. <Ref. to 2-7 [T11K0].>

NOTE:
In this case, it is not necessary to inspect DTC P1144.

11CA2 : CHECK DATA FOR CONTROL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



3) Turn ignition switch ON and Subaru Select Monitor or the OBD-II general scan tool switch ON.
4) Start engine.
5) Read data of atmospheric absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 133 kPa (998 mmHg, 39.29 inHg)?***
YES : Replace pressure sensor. <Ref. to 2-7 [W11A0].>
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

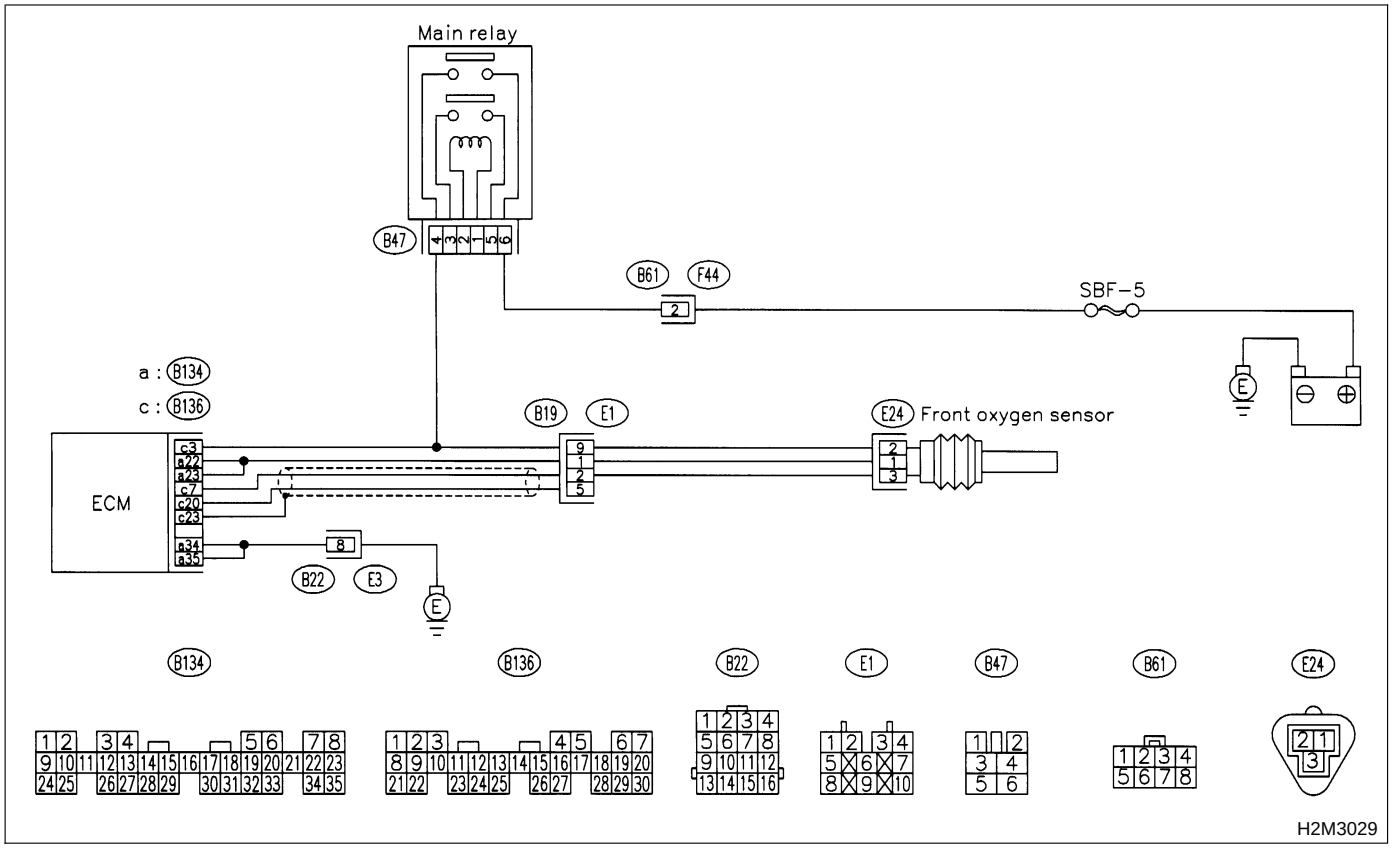
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

CB: DTC P1150 — FRONT OXYGEN SENSOR HEATER CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

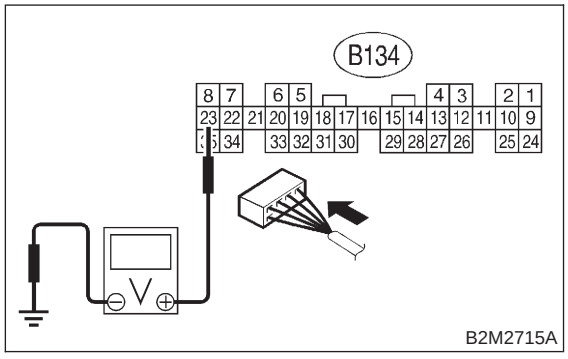
- **WIRING DIAGRAM:**



11CB1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

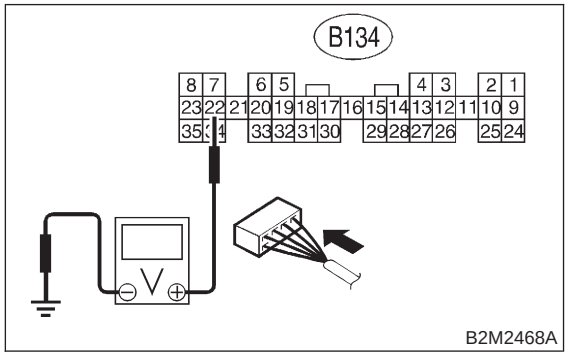


CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **11CB3**.
NO : Go to step **11CB2**.

11CB2 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

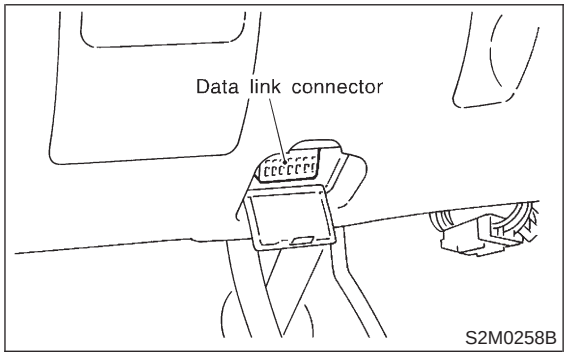
Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **11CB3**.
NO : Go to step **11CB4**.

11CB3 : CHECK FRONT OXYGEN SENSOR HEATER CURRENT.

1) Turn ignition switch to OFF.
2) Repair battery short circuit in harness between ECM and front oxygen sensor connector.
3) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



4) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
5) Read data of front oxygen sensor heater current using Subaru Select Monitor or the OBD-II general scan tool.

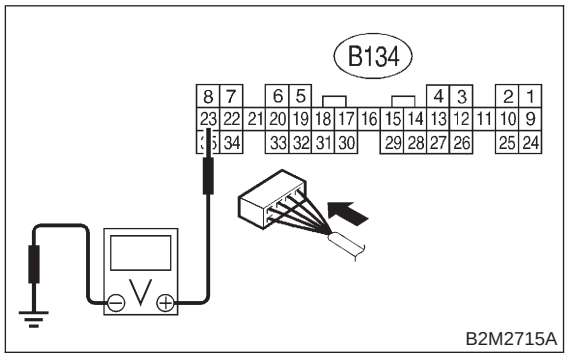
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 7 A?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : END

11CB4 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

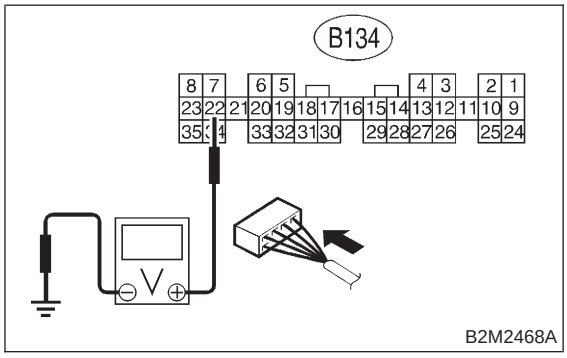
YES : Repair battery short circuit in harness between ECM and front oxygen sensor connector.

NO : Go to step **11CB5**.

11CB5 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair battery short circuit in harness between ECM and front oxygen sensor connector.

NO : END

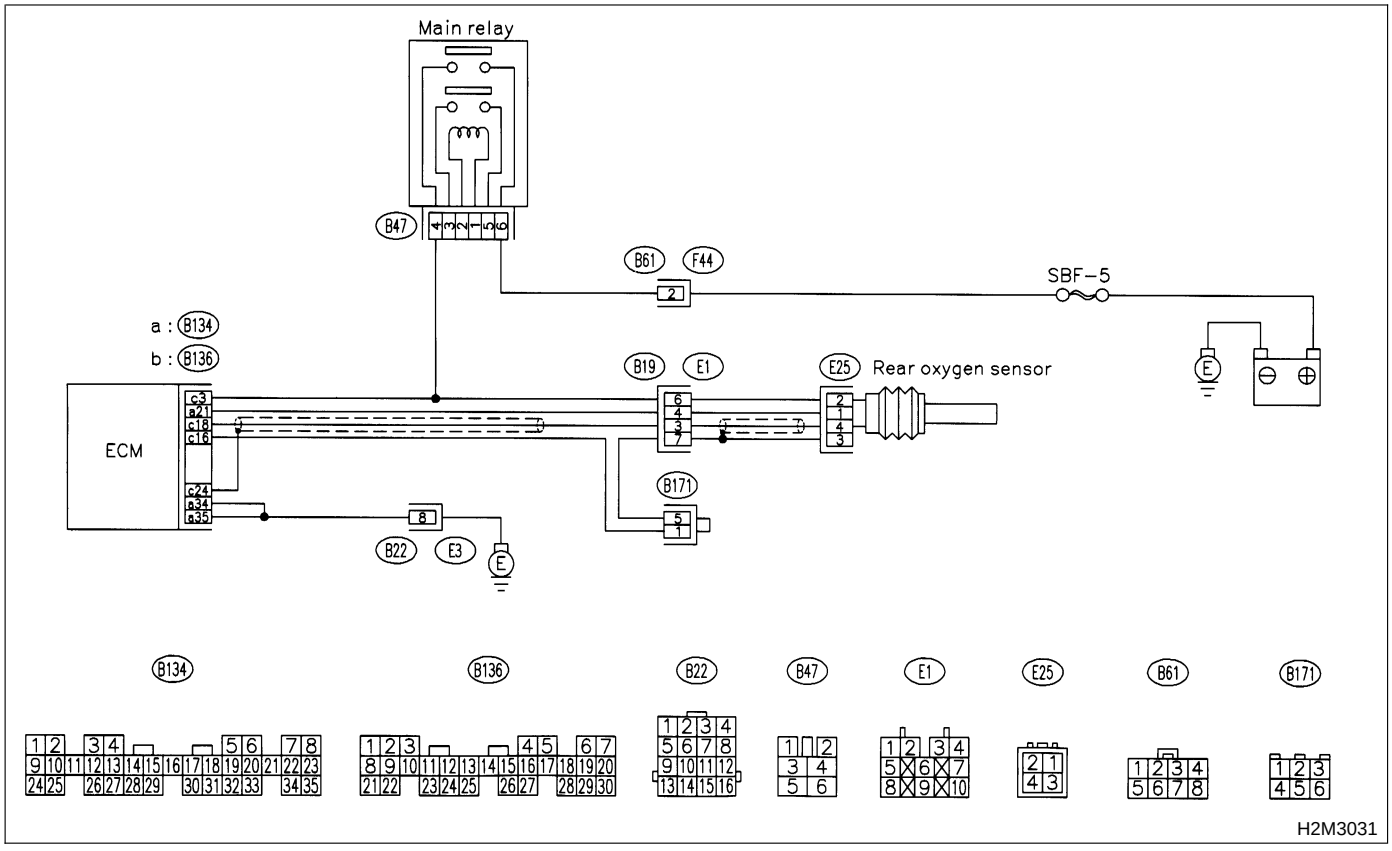
MEMO:

CC: DTC P1151 — REAR OXYGEN SENSOR HEATER CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

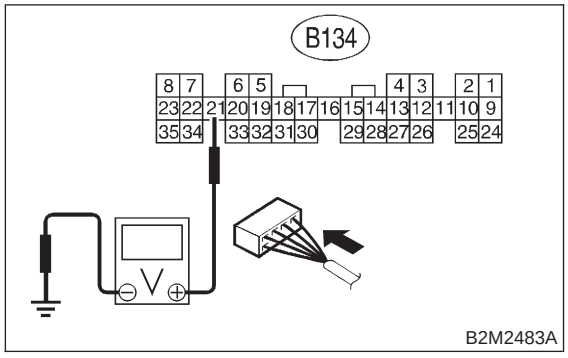
- **WIRING DIAGRAM:**



11CC1 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

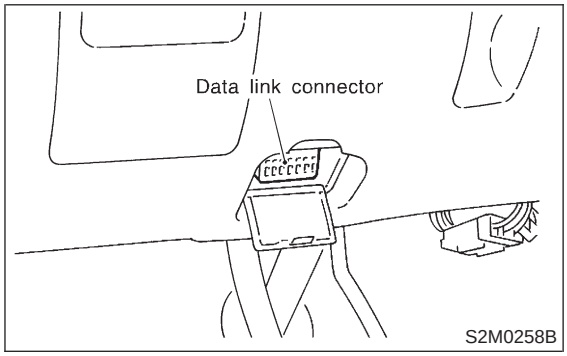
Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **11CC2**.
NO : Go to step **11CC3**.

11CC2 : CHECK FRONT OXYGEN SENSOR HEATER CURRENT.

1) Turn ignition switch to OFF.
2) Repair battery short circuit in harness between ECM and front oxygen sensor connector.
3) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.



4) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
5) Read data of rear oxygen sensor heater current using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 7 A?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : END

11CC3 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

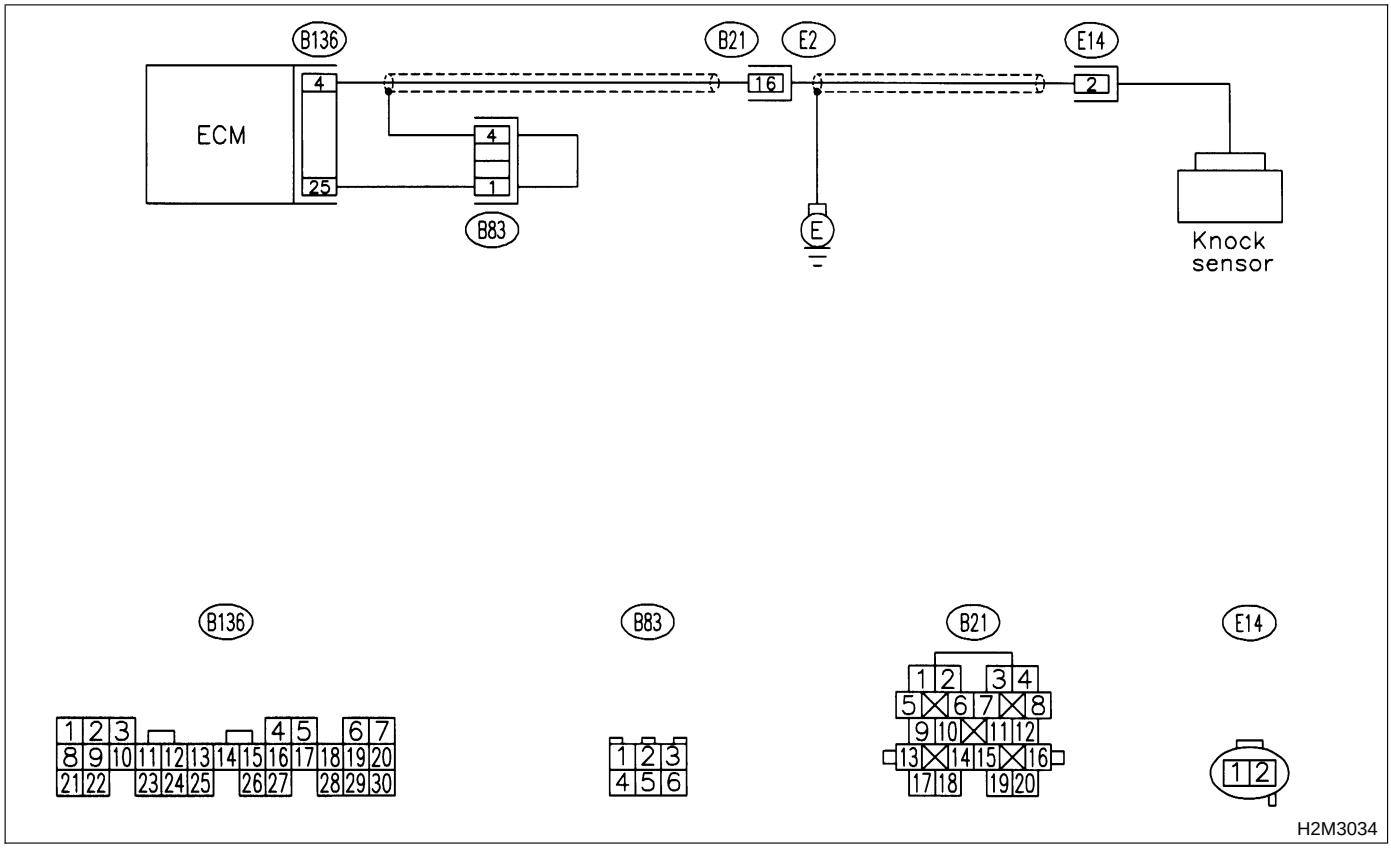
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : END.

CD: DTC P1325 — KNOCK SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Poor driving performance
  - Knocking occurs.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

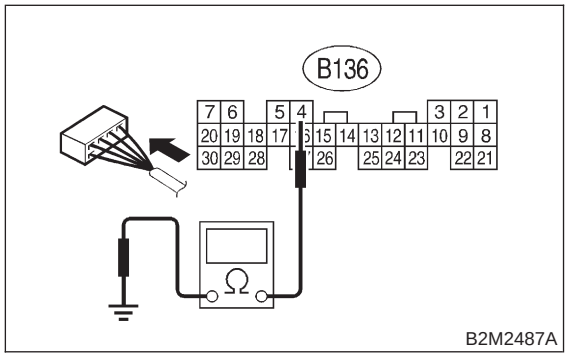
- **WIRING DIAGRAM:**



11CD1 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance between ECM harness connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

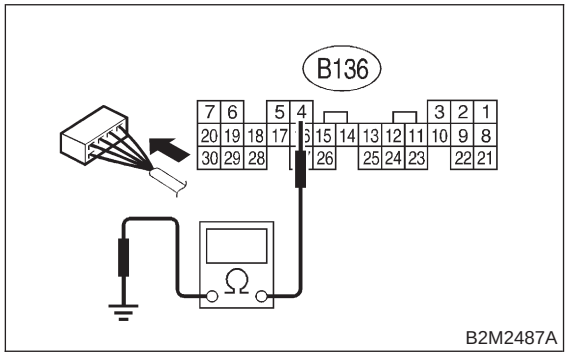


CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **11CD3**.
NO : Go to step **11CD2**.

11CD2 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

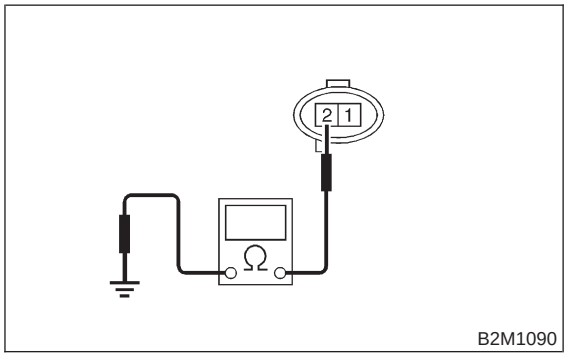


CHECK : ***Is the resistance less than 400 kΩ?***
YES : Go to step **11CD5**.
NO : Go to step **11CD6**.

11CD3 : CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

Terminal
No. 2 — Engine ground:



CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **11CD4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between knock sensor and ECM connector
- Poor contact in knock sensor connector
- Poor contact in coupling connector (B21)

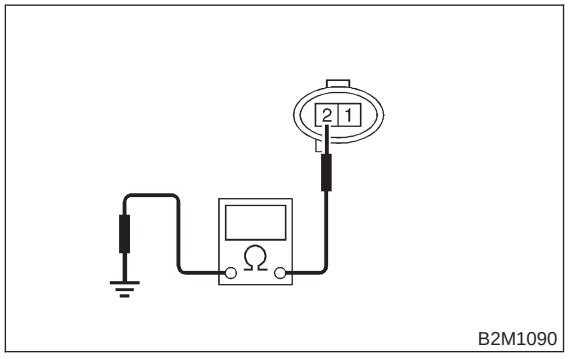
11CD4 : CHECK CONDITION OF KNOCK SENSOR INSTALLATION.

CHECK : ***Is the knock sensor installation bolt tightened securely?***
YES : Replace knock sensor. <Ref. to 2-7 [W19A0].>
NO : Tighten knock sensor installation bolt securely.

11CD5 : CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

Terminal
No. 2 — Engine ground:



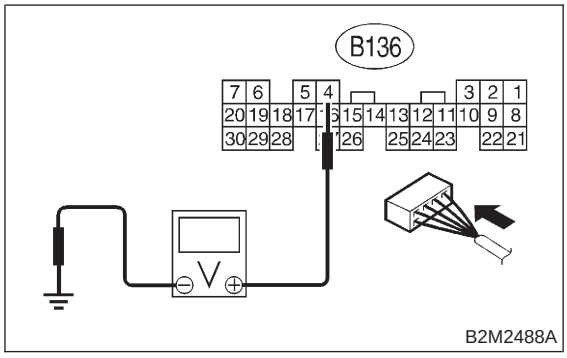
CHECK : ***Is the resistance less than 400 kΩ?***
YES : Replace knock sensor. <Ref. to 2-7 [W19A0].>
NO : Repair ground short circuit in harness between knock sensor connector and ECM connector.

NOTE:
The harness between both connectors is shielded. Repair short circuit of harness together with shield.

11CD6 : CHECK INPUT SIGNAL FOR ECM.

1) Connect connectors to ECM and knock sensor.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in knock sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Repair poor contact in ECM connector.

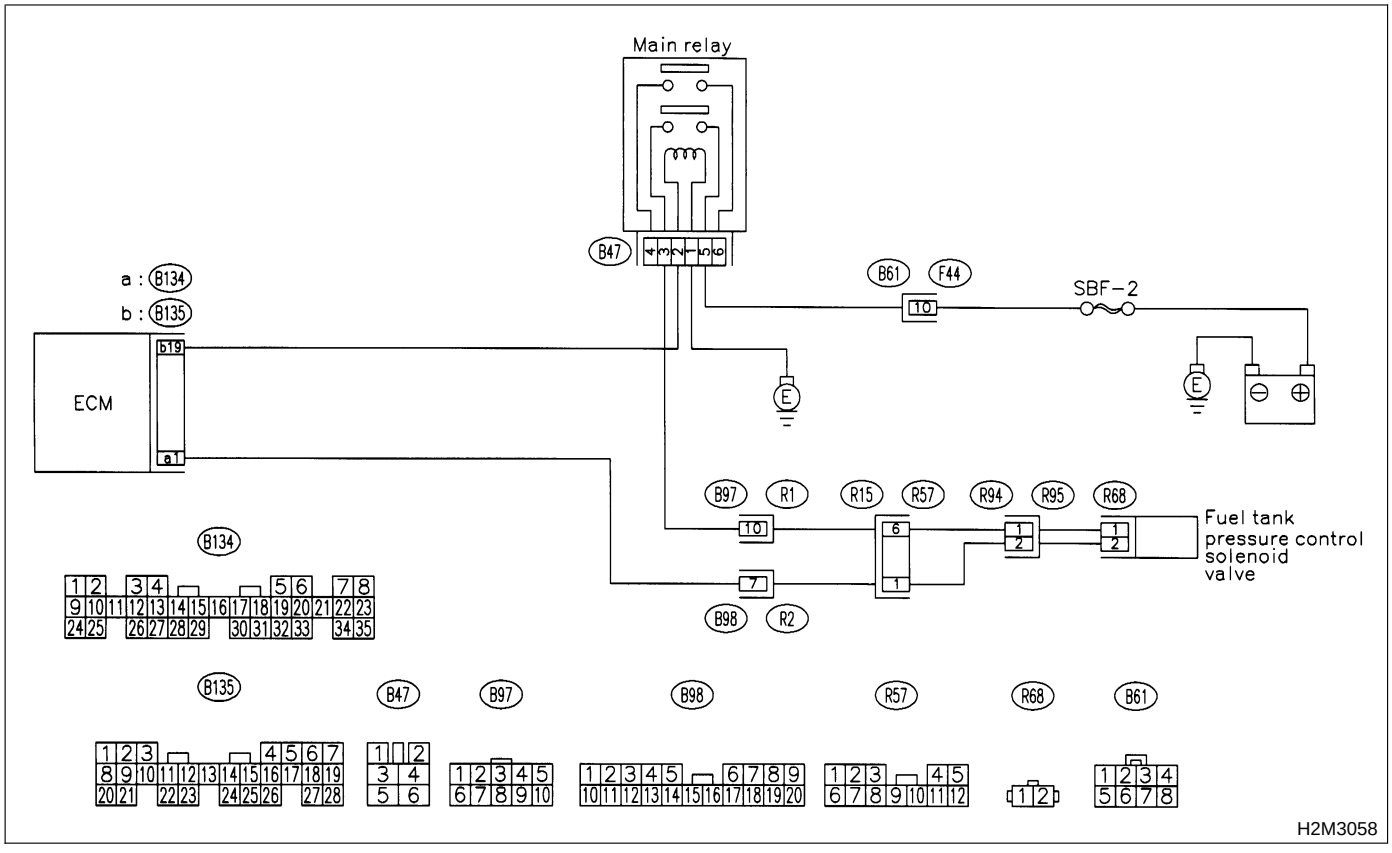
MEMO:

CE: DTC P1400 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

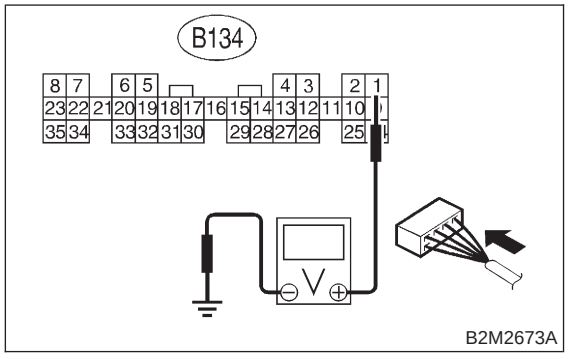
- **WIRING DIAGRAM:**



11CE1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11CE2**.
NO : Go to step **11CE3**.

11CE2 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

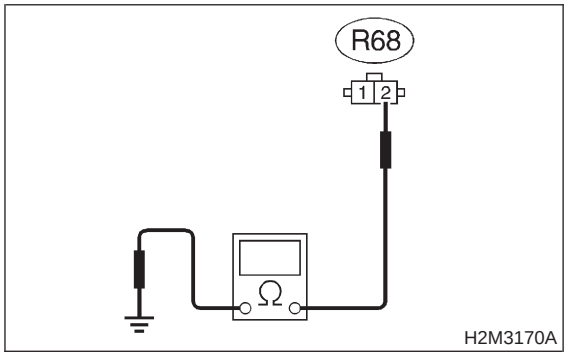
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11CE3 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from fuel tank pressure control solenoid valve and ECM.
3) Measure resistance of harness between fuel tank pressure control solenoid valve connector and chassis ground.

Connector & terminal
(R68) No. 2 — Chassis ground:

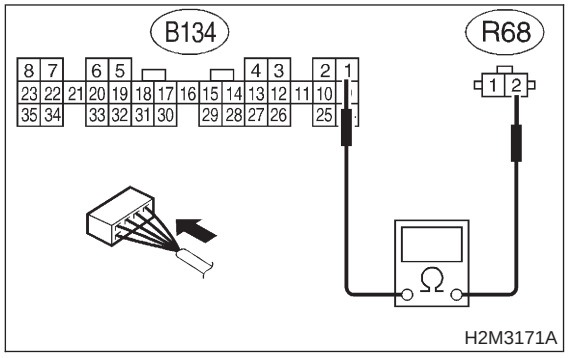


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and fuel tank pressure control solenoid valve connector.
NO : Go to step **11CE4**.

11CE4 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and fuel tank pressure control solenoid valve connector.

Connector & terminal
(B134) No. 1 — (R68) No. 2:



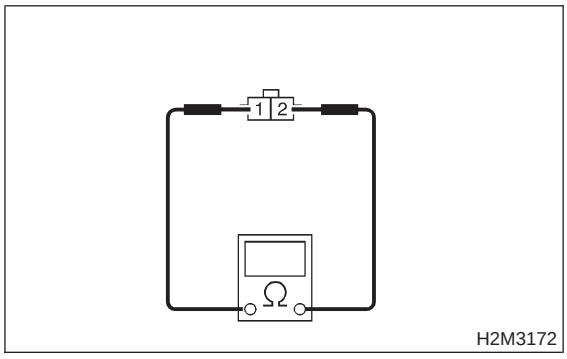
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11CE5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and fuel tank pressure control solenoid valve connector
● Poor contact in coupling connectors (R94), (B98) and (R57)

11CE5 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:

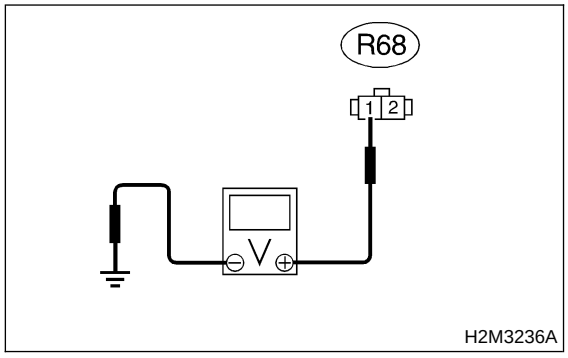


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **11CE6**.
NO : Replace fuel tank pressure control solenoid valve. <Ref. to 2-1 [W7A0].>

11CE6 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between fuel tank pressure control solenoid valve and chassis ground.

Connector & terminal
(R68) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11CE7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between main relay and fuel tank pressure control solenoid valve connector
● Poor contact in coupling connectors (R94), (B97) and (R57)
● Poor contact in main relay connector

11CE7 : CHECK POOR CONTACT.

Check poor contact in fuel tank pressure control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in fuel tank pressure control solenoid valve connector?***
YES : Repair poor contact in fuel tank pressure control solenoid valve connector.
NO : Contact with SOA service.

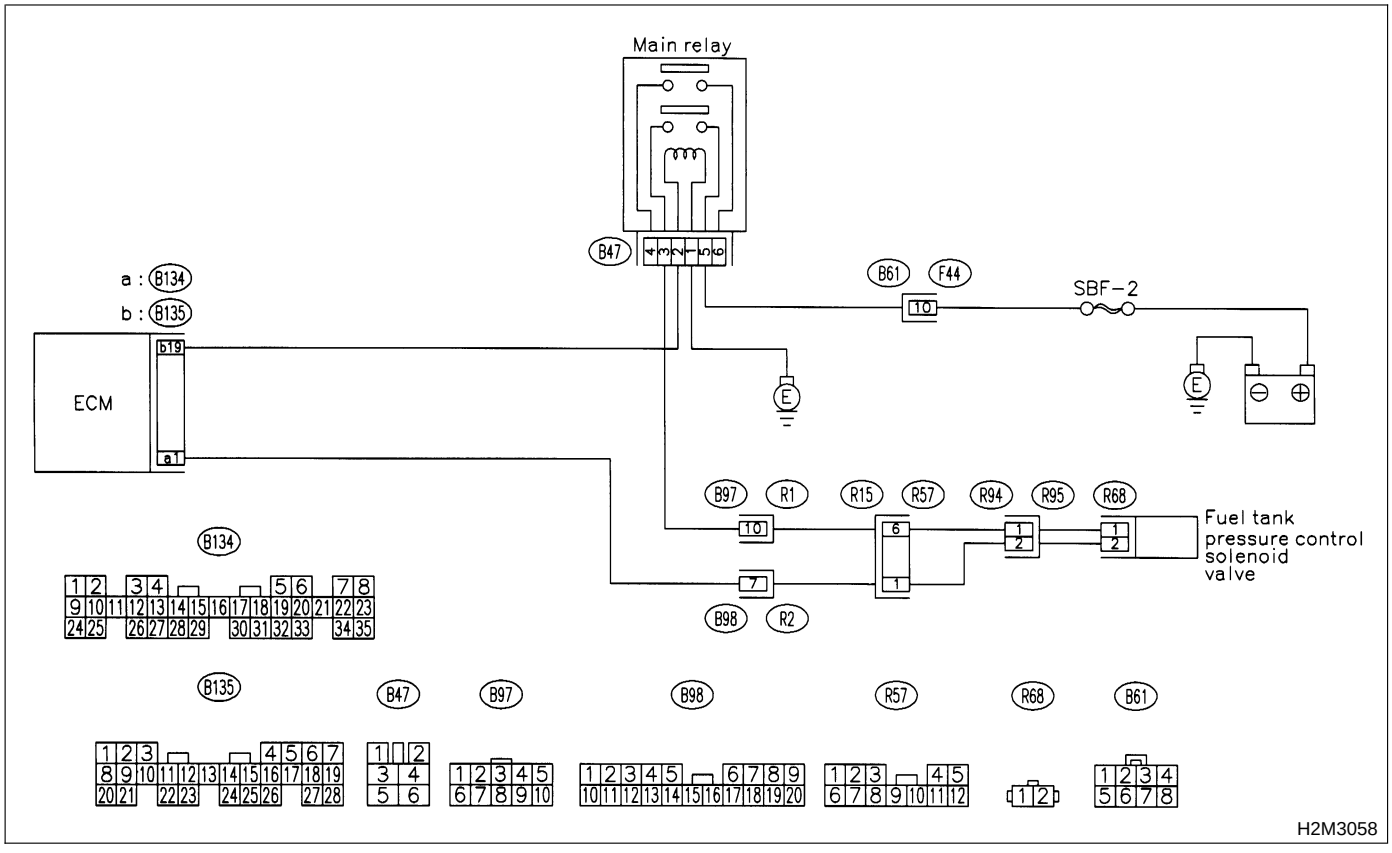
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

CF: DTC P1420 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

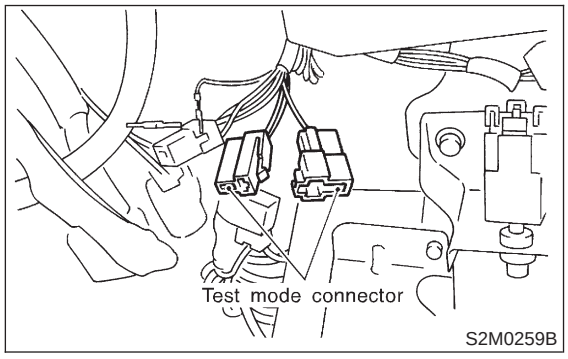
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CF1 : CHECK OUTPUT SIGNAL FROM ECM.

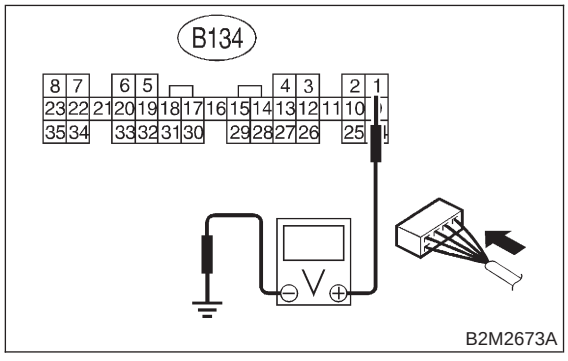
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Fuel tank pressure control solenoid valve operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):

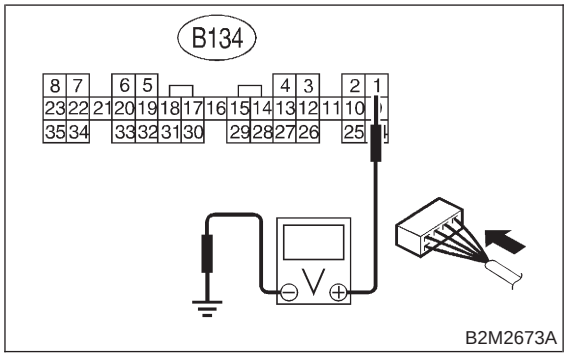


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Go to step **11CF2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

11CF2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11CF4**.
NO : Go to step **11CF3**.

11CF3 : CHECK POOR CONTACT.

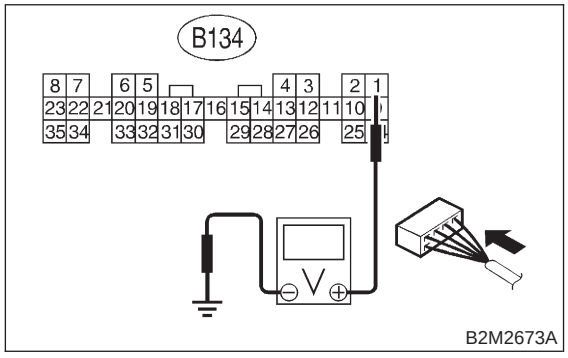
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

11CF4 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel tank pressure control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):

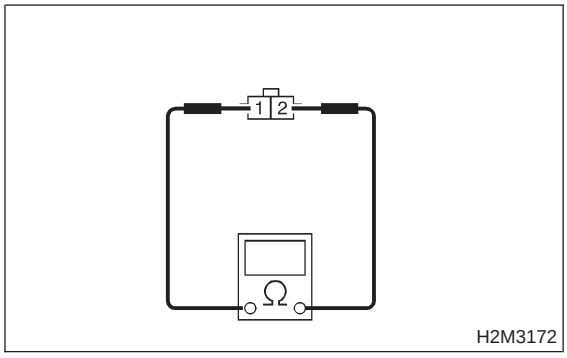


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel tank pressure control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **11CF5**.

11CF5 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace fuel tank pressure control solenoid valve <Ref. to 2-1 [W7A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **11CF6**.

11CF6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

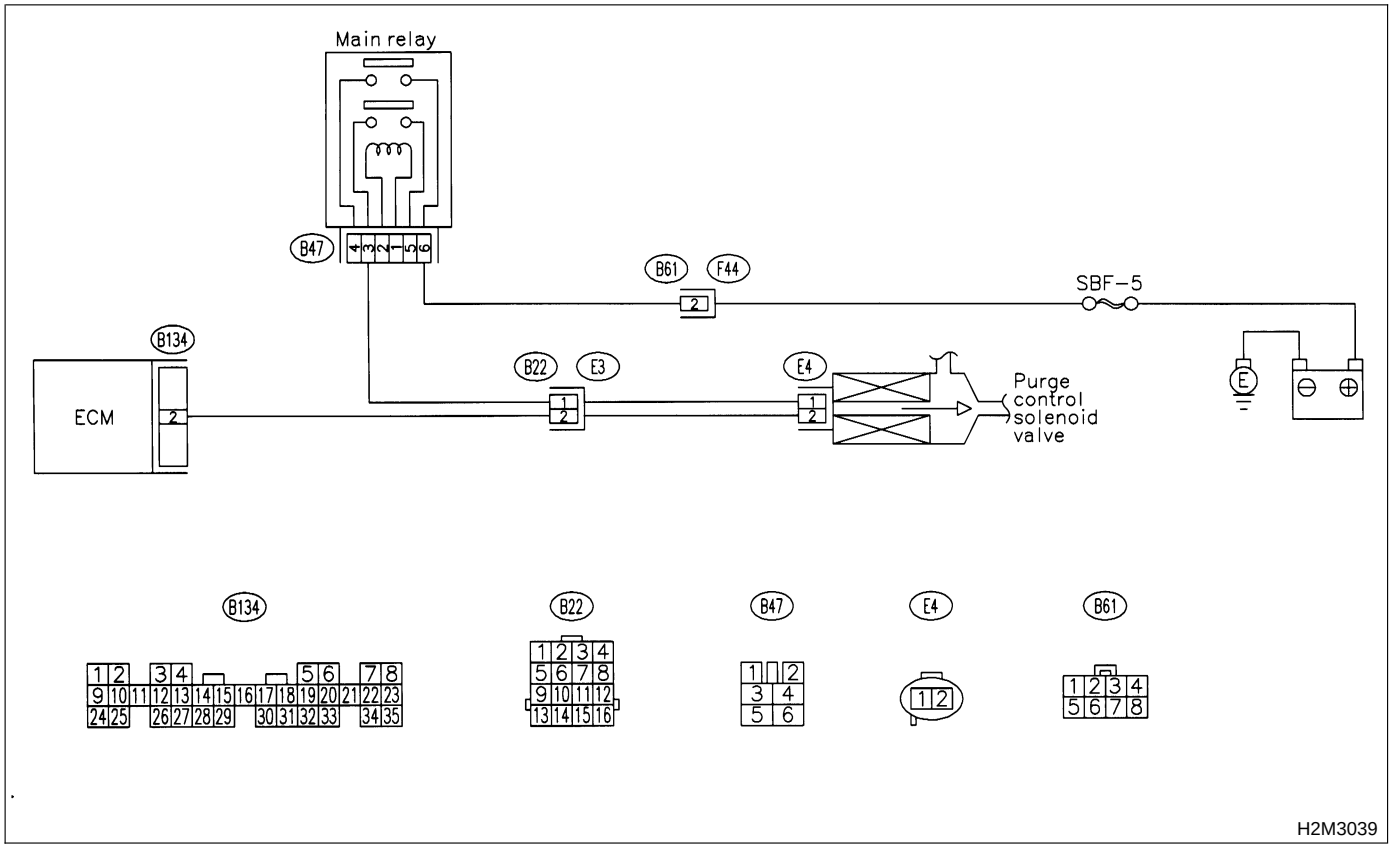
MEMO:

CG: DTC P1422 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Erroneous idling

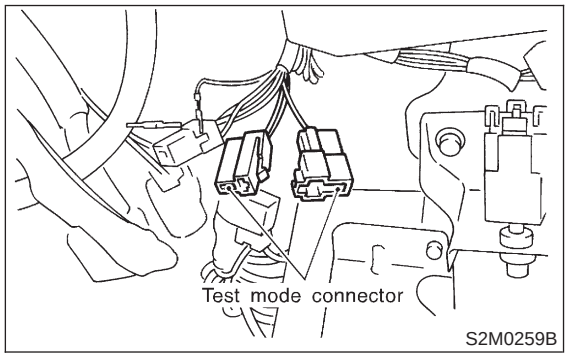
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CG1 : CHECK OUTPUT SIGNAL FROM ECM.

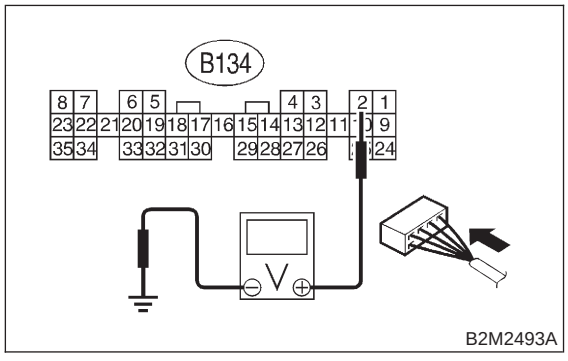
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Purge control solenoid valve operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):

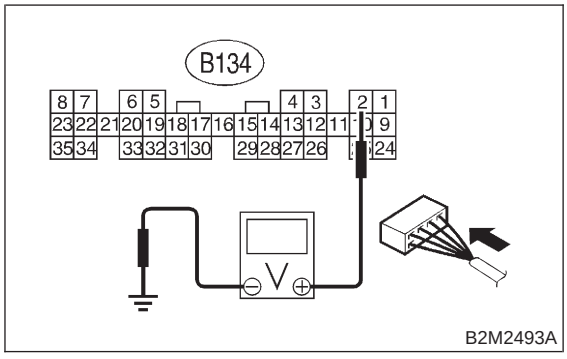


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Go to step **11CG2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

11CG2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11CG4**.
NO : Go to step **11CG3**.

11CG3 : CHECK POOR CONTACT.

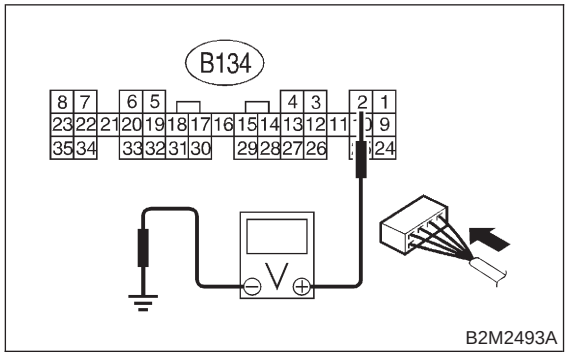
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

11CG4 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from purge control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):

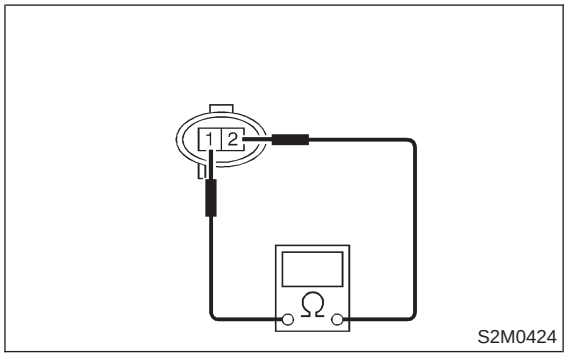


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **11CG5**.

11CG5 : CHECK PURGE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between purge control solenoid valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace purge control solenoid valve <Ref. to 2-1 [W4A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **11CG6**.

11CG6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

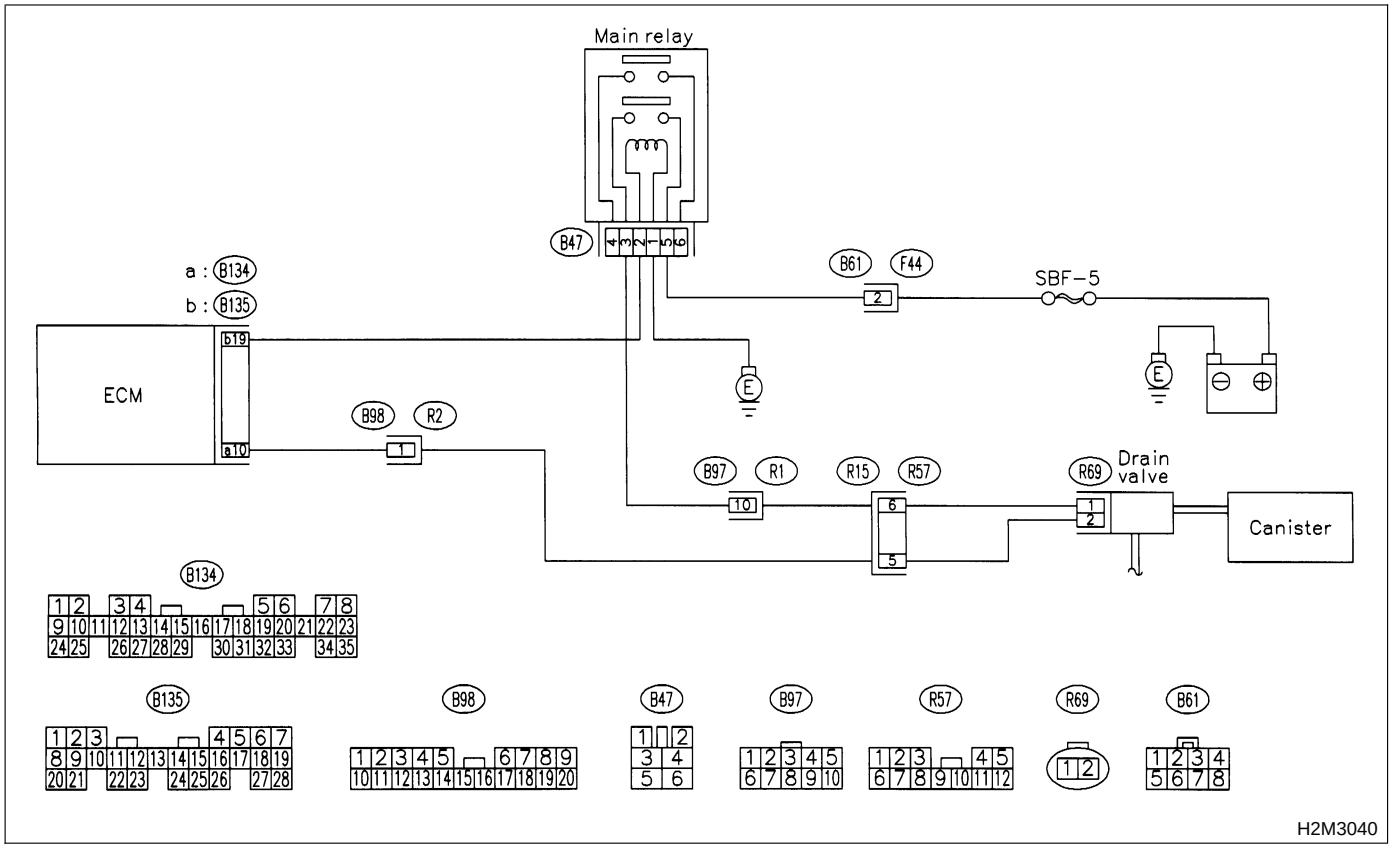
MEMO:

CH: DTC P1423 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

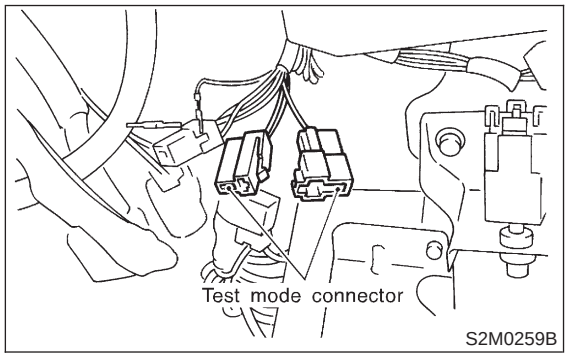
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CH1 : CHECK OUTPUT SIGNAL FROM ECM.

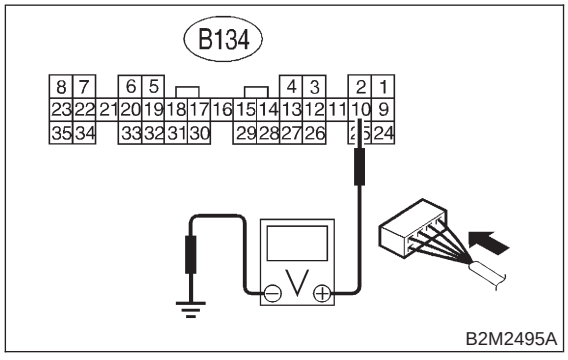
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Drain valve operation check can be excecuted using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):

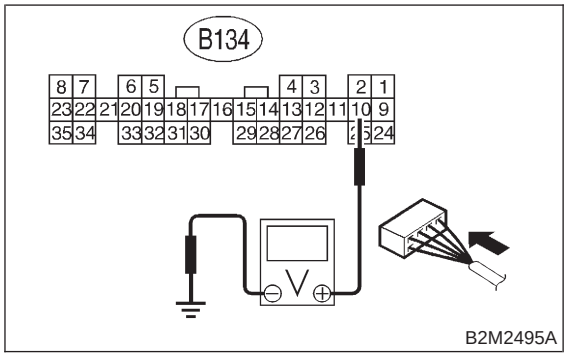


CHECK : ***Does voltage change between 0 and 10 volts?***
YES : Go to step **11CH2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

11CH2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11CH4**.
NO : Go to step **11CH3**.

11CH3 : CHECK POOR CONTACT.

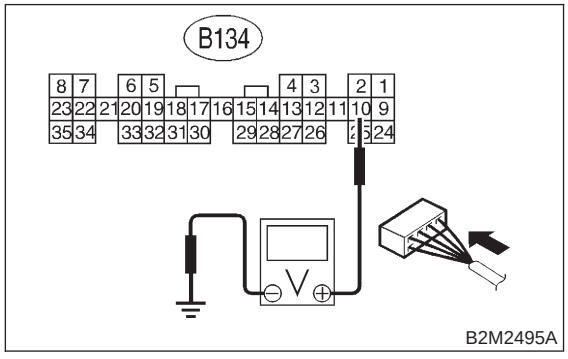
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

11CH4 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from drain valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):

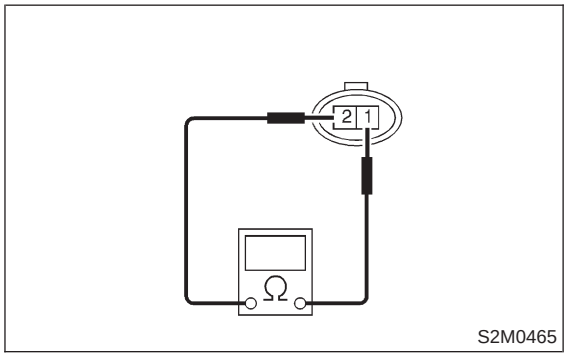


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and drain valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **11CH5**.

11CH5 : CHECK DRAIN VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between drain valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace drain valve <Ref. to 2-1 [W13A0].> and ECM <Ref. to 2-7 [W15A0].>.
NO : Go to step **11CH6**.

11CH6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

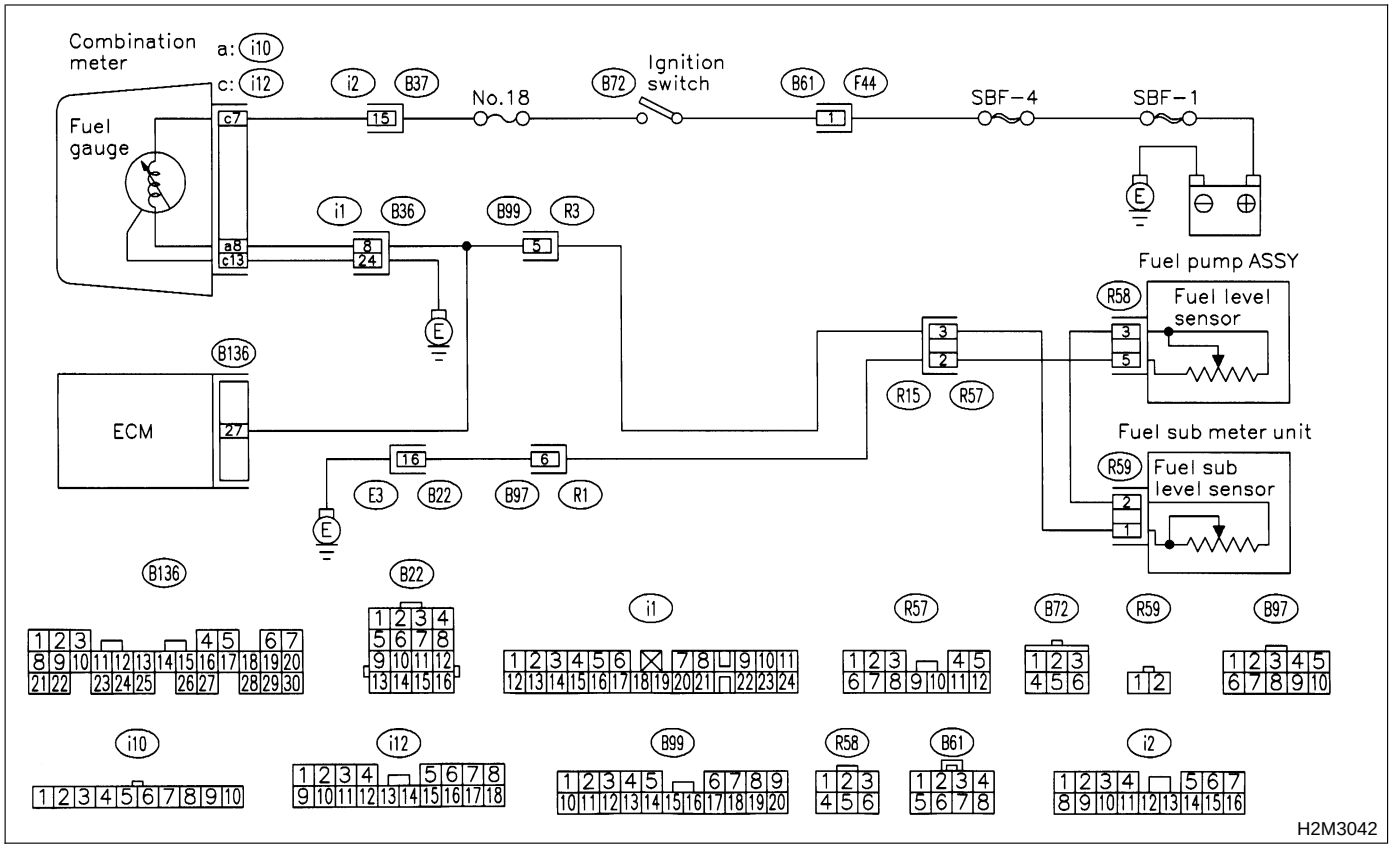
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

CI: DTC P1442 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM 2 —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CI1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0461, P0462 or P0463?***

YES : Inspect DTC P0461, P0462 or P0463 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect this trouble.

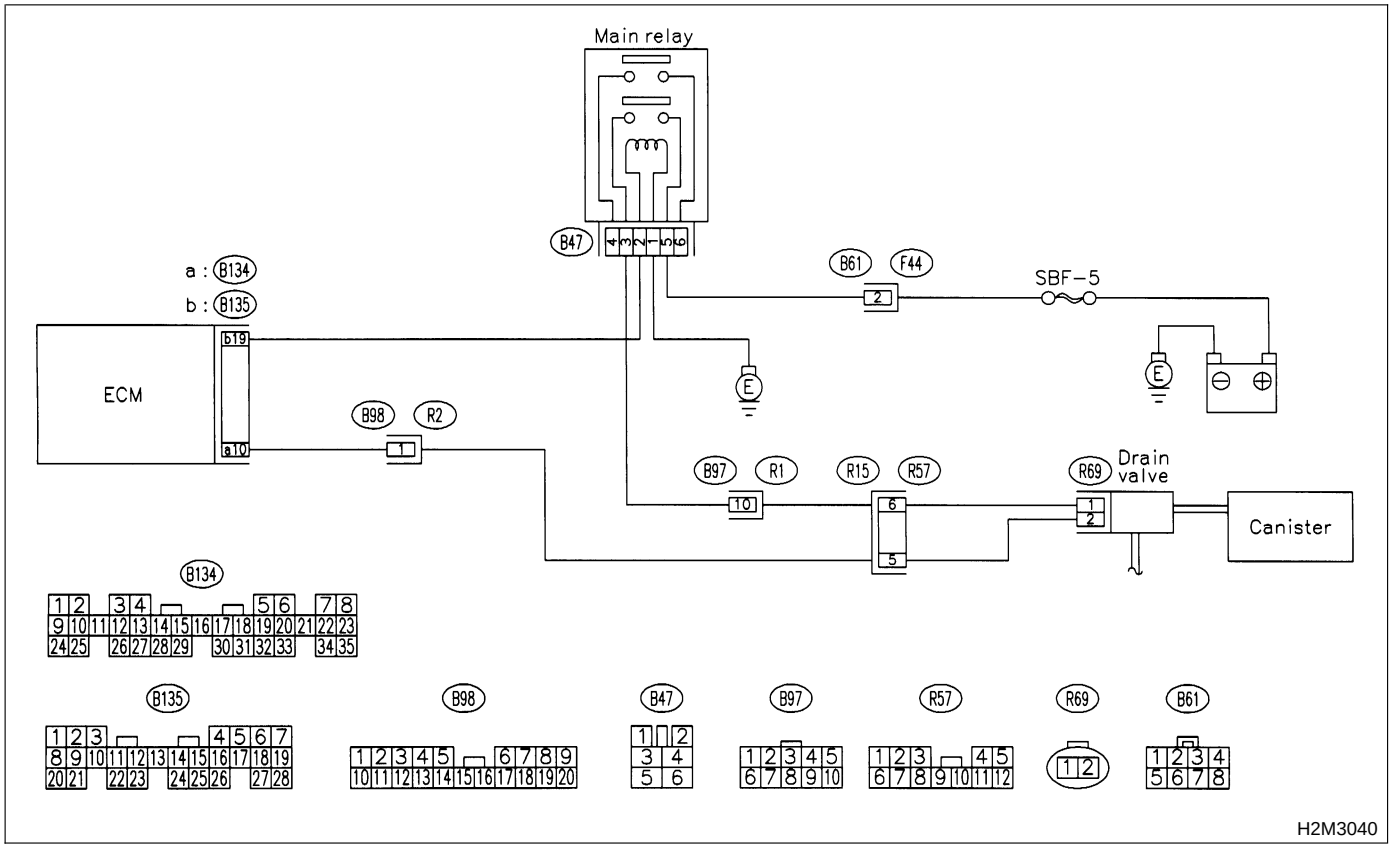
NO : Replace fuel sending unit <Ref. to 2-1 [W8A0].> and fuel sub meter unit.

CJ: DTC P1443 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL FUNCTION PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately after fault occurrence
- **TROUBLE SYMPTOM:**
  - Improper fuel supply

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CJ1 : CHECK ANY OTHER DTC ON DISPLAY.

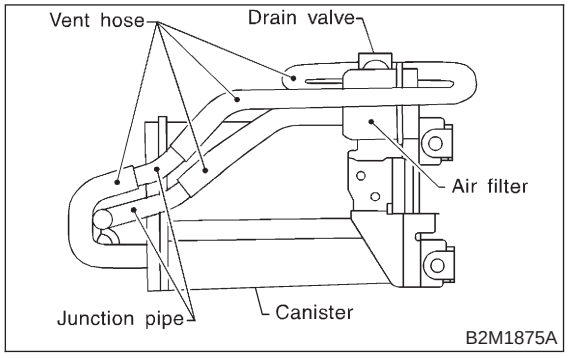
CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NO : Go to step **11CJ2**.

11CJ2 : CHECK VENT LINE HOSES.

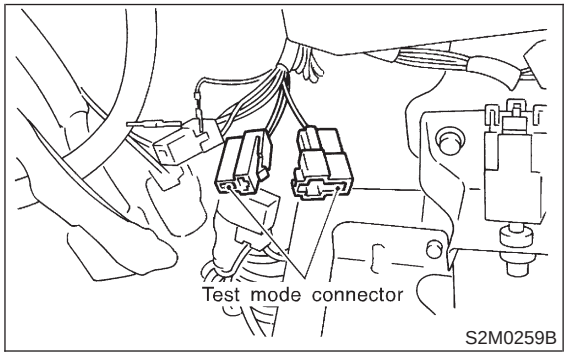
Check the following items.
- Clogging of vent hoses between canister and drain valve
- Clogging of vent hose between drain valve and air filter
- Clogging of vent hose between air filter and junction pipe
- Clogging of junction pipe
- Clogging of air filter



CHECK : ***Is there a fault in vent line?***
YES : Repair or replace the faulty part.
NO : Go to step **11CJ3**.

11CJ3 : CHECK DRAIN VALVE OPERATION.

1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.

NOTE:
Drain valve operation check can also be executed using Subaru Select Monitor. For the procedure, refer to the "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

CHECK : ***Does drain valve produce operating sound?***
YES : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

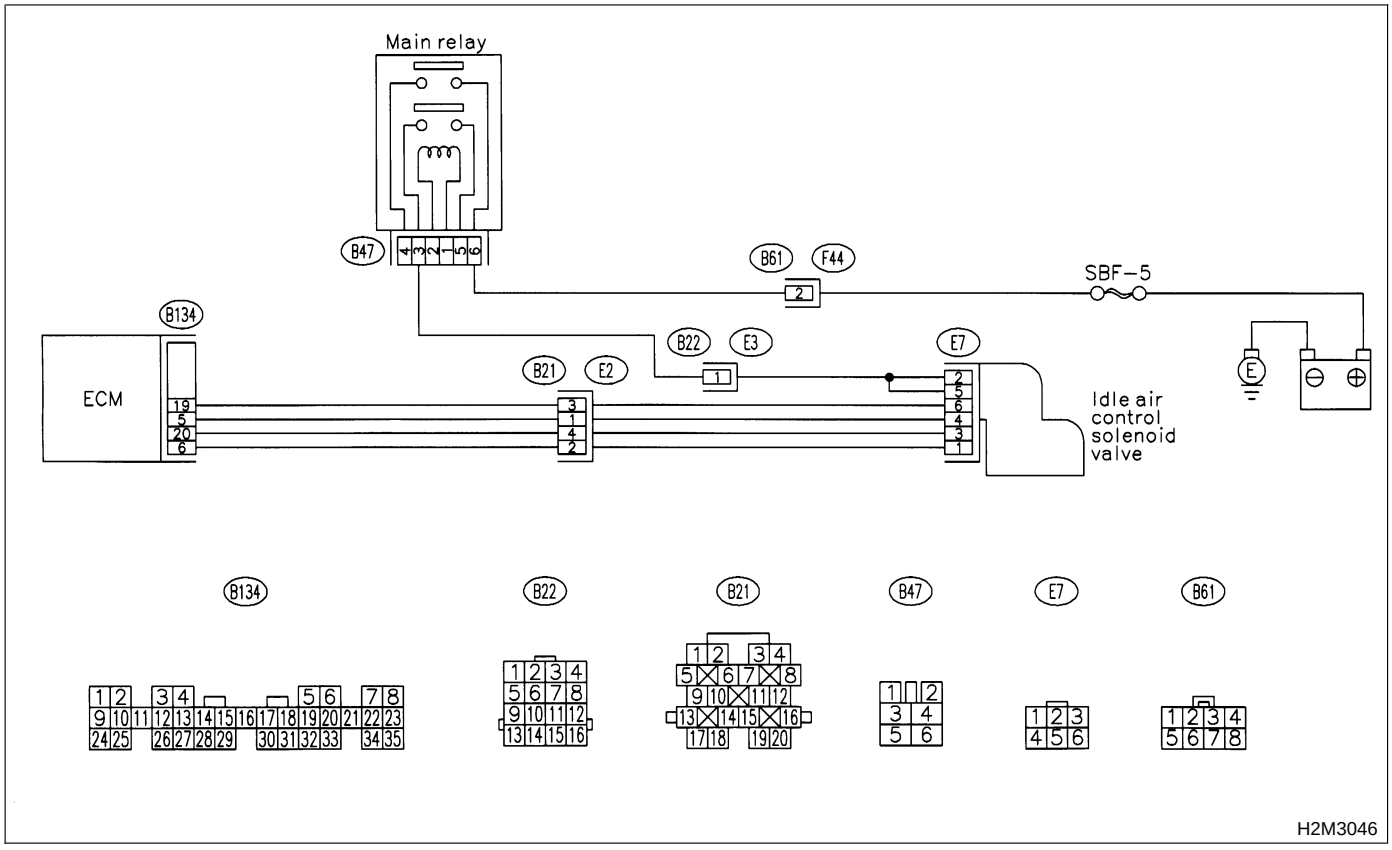
NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

CK: DTC P1507 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine keeps running at higher revolution than specified idling revolution.

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CK1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0116 or P0117 or P0505 or P1505?***

YES : Inspect DTC P0116 or P0117 or P0505 or P1505 using “11. Diagnostics Chart with Trouble Code for Except 2200 cc California Spec. Vehicles”. <Ref. to 2-7 [T11A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1507.

NO : Go to step **11CK2**.

11CK2 : CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.
3) Check the following items.

- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Disconnections of vacuum hoses

CHECK : ***Is there a fault in air intake system?***

YES : Repair air suction and leaks.

NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A2].>

MEMO:

CL: DTC P1510 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 1 CIRCUIT LOW INPUT —

NOTE:
For the diagnostic procedure, refer to 2-7 [T11CR0]. <Ref. to 2-7 [T11CR0].>

CM: DTC P1511 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 1 CIRCUIT HIGH INPUT —

NOTE:
For the diagnostic procedure, refer to 2-7 [T11CS0]. <Ref. to 2-7 [T11CS0].>

CN: DTC P1512 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 2 CIRCUIT LOW INPUT —

NOTE:
For the diagnostic procedure, refer to 2-7 [T11CR0]. <Ref. to 2-7 [T11CR0].>

CO: DTC P1513 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 2 CIRCUIT HIGH INPUT —

NOTE:
For the diagnostic procedure, refer to 2-7 [T11CR0]. <Ref. to 2-7 [T11CR0].>

CP: DTC P1514 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 3 CIRCUIT LOW INPUT —

NOTE:
For the diagnostic procedure, refer to 2-7 [T11CR0]. <Ref. to 2-7 [T11CR0].>

CQ: DTC P1515 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 3 CIRCUIT HIGH INPUT —

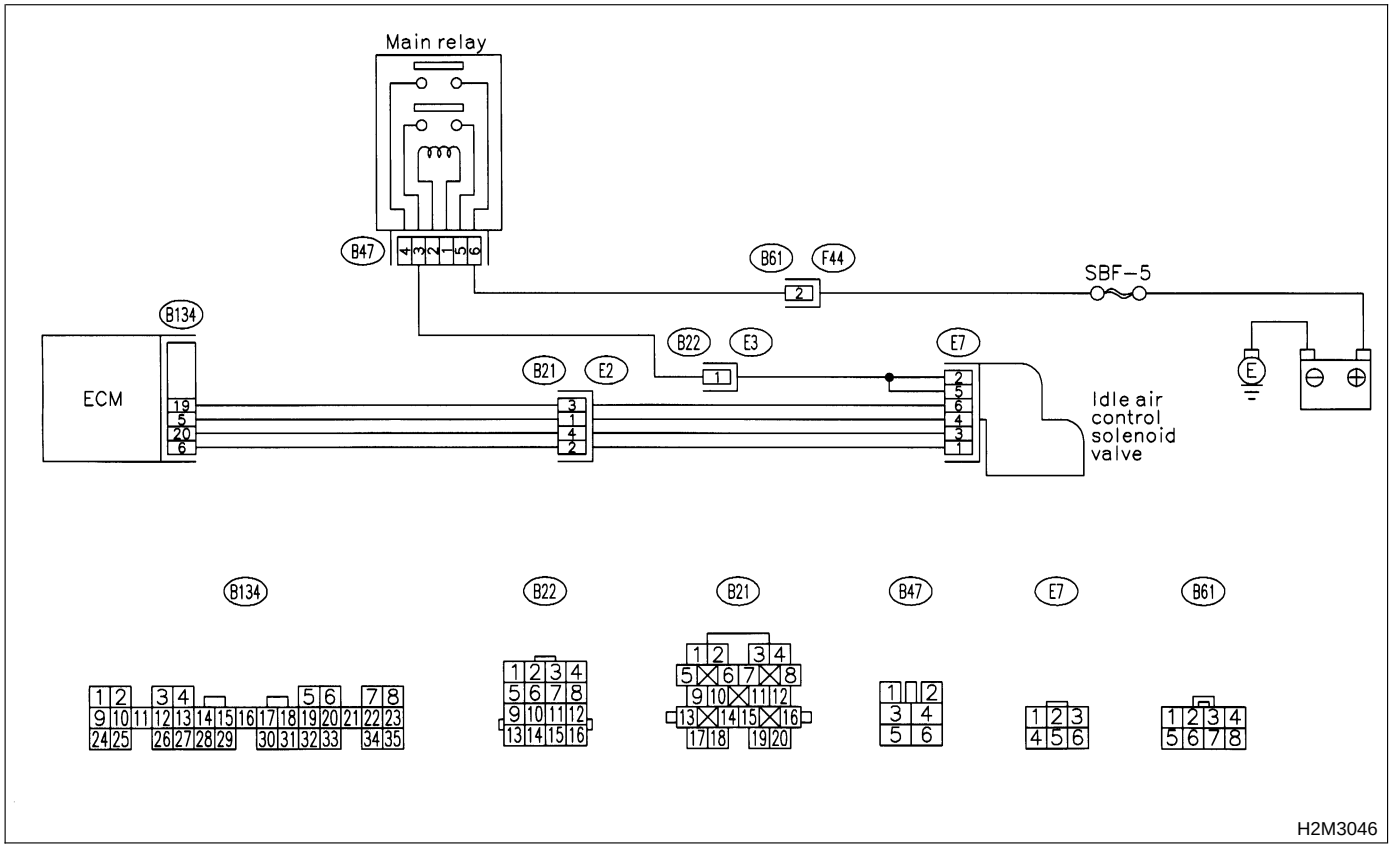
NOTE:
For the diagnostic procedure, refer to 2-7 [T11CR0]. <Ref. to 2-7 [T11CR0].>

CR: DTC P1516 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 4 CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

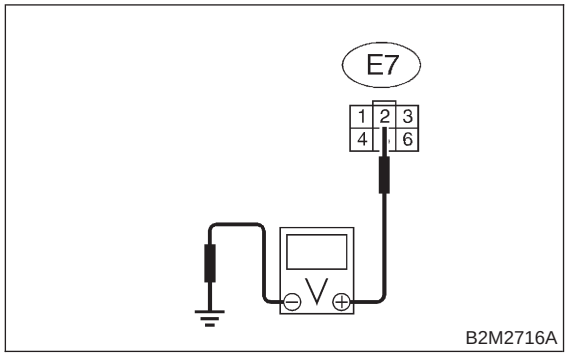
- **WIRING DIAGRAM:**



11CR1 : CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between idle air control solenoid valve connector and engine ground.

Connector & terminal
(E7) No. 2 (+) — Engine ground (−):



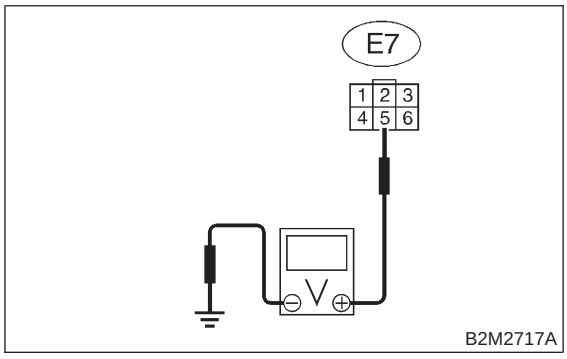
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11CR2**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between idle air control solenoid valve and main relay connector
- Poor contact in coupling connector (B22)

11CR2 : CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.

Measure voltage between idle air control solenoid valve connector and engine ground.

Connector & terminal
(E7) No. 5 (+) — Engine ground (−):



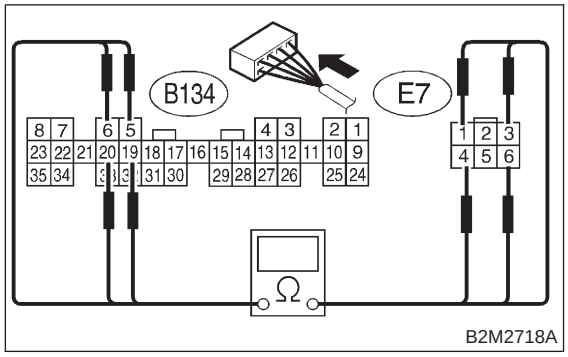
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **11CR3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between idle air control solenoid valve and main relay connector
- Poor contact in coupling connector (B22)

11CR3 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between ECM and idle air control solenoid valve connector.

Connector & terminal
#1; (B134) No. 5 — (E7) No. 4:
#2; (B134) No. 6 — (E7) No. 1:
#3; (B134) No. 19 — (E7) No. 6:
#4; (B134) No. 20 — (E7) No. 3:



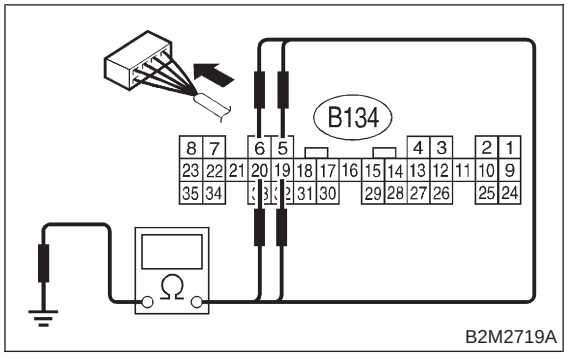
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11CR4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B21)

11CR4 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

1) Disconnect connector from ECM.
2) Measure resistance between ECM connector and chassis ground.

Connector & terminal
#1; (B134) No. 5 — Chassis ground:
#2; (B134) No. 6 — Chassis ground:
#3; (B134) No. 19 — Chassis ground:
#4; (B134) No. 20 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and idle air control solenoid valve connector.
NO : Go to step **11CR5**.

11CR5 : CHECK POOR CONTACT.

Check poor contact in ECM connector and idle air control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector or idle air control solenoid valve connector?***

YES : Repair poor contact in ECM connector or idle air control solenoid valve connector.

NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W12A0].>

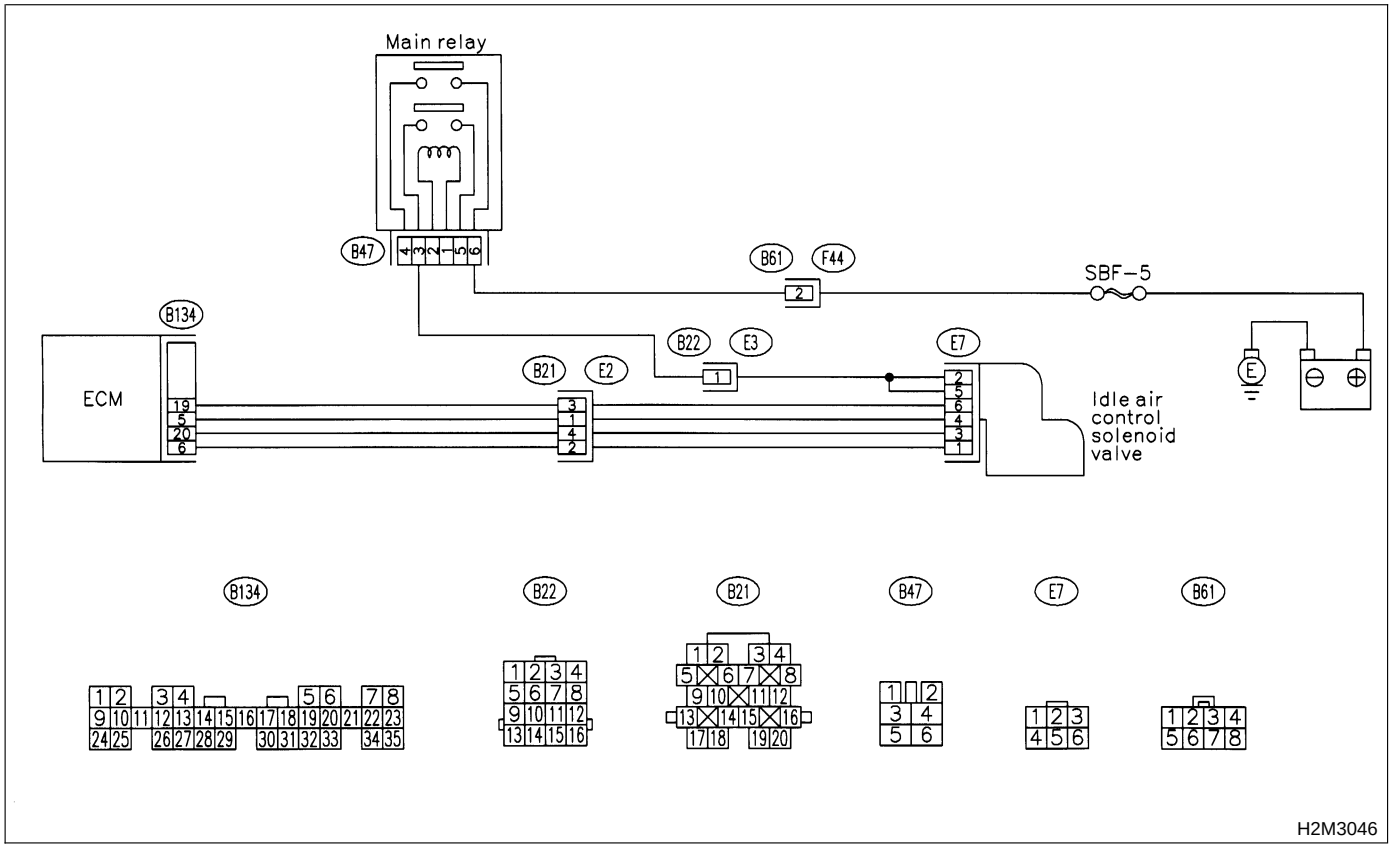
MEMO:

CS: DTC P1517 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 4 CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CS1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1511, P1513, P1515 and P1517 at same time?***

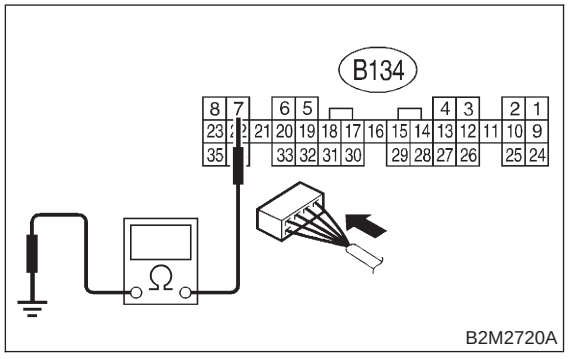
YES : Go to step **11CS2**.

NO : Go to step **11CS3**.

11CS2 : CHECK GROUND CIRCUIT FOR ECM.

1) Turn ignition switch to OFF.
2) Measure resistance between ECM connector and chassis ground.

Connector & terminal
(B134) No. 7 — Chassis ground:



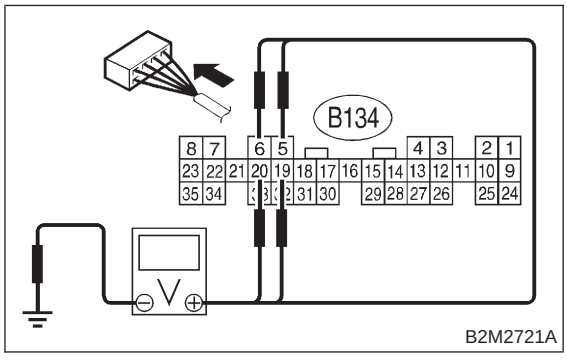
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **11CS3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM connector and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

11CS3 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground.

Connector & terminal
#1; (B134) No. 5 (+) — Chassis ground (–):
#2; (B134) No. 6 (+) — Chassis ground (–):
#3; (B134) No. 19 (+) — Chassis ground (–):
#4; (B134) No. 20 (+) — Chassis ground (–):



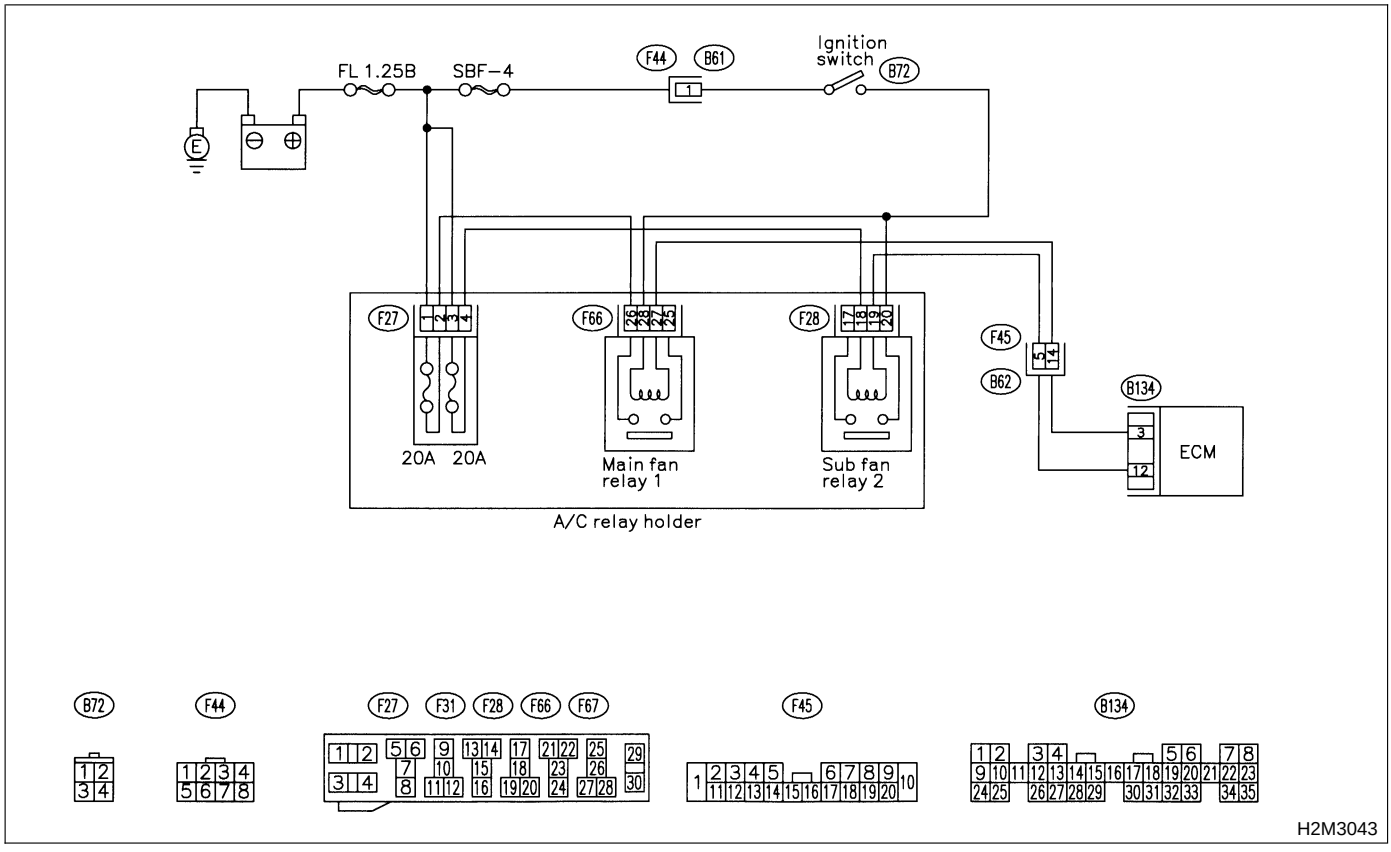
CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

CT: DTC P1520 — COOLING FAN RELAY 1 CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Radiator fan does not operate properly.
  - Overheating

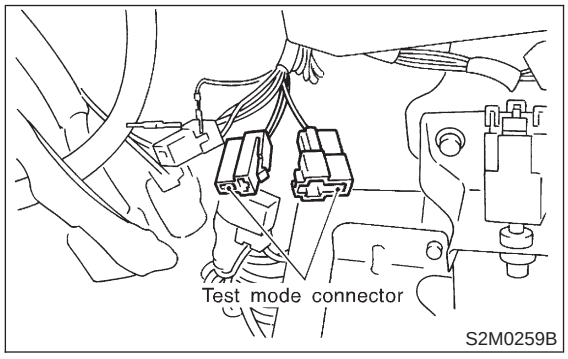
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CT1 : CHECK OUTPUT SIGNAL FROM ECM.

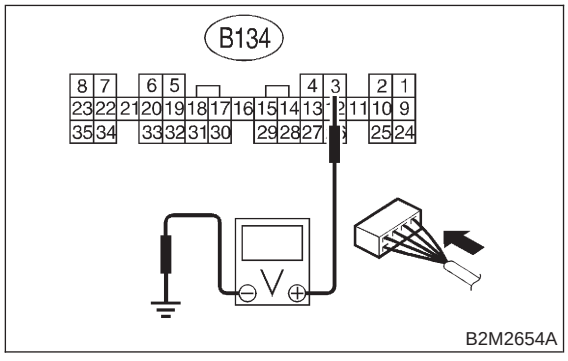
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

NOTE:
Radiator fan relay operation check can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):



CHECK : ***Does voltage change between 0 and 10 volts?***

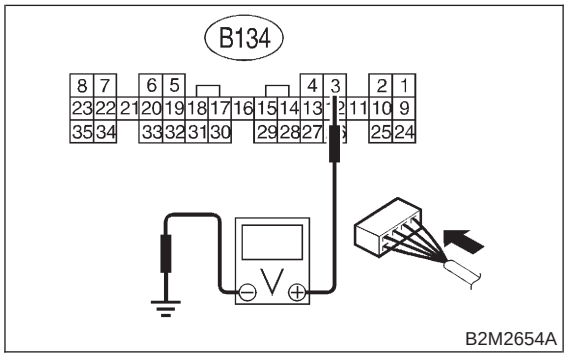
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

NO : Go to step **11CT2**.

11CT2 : CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

1) Turn ignition switch to OFF.
2) Remove main fan relay 1 and sub fan relay 1. (with A/C models)
Remove main fan relay. (without A/C models)
3) Disconnect test mode connector.
4) Turn ignition switch to ON.
5) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***

YES : Repair battery short circuit in radiator fan relay 1 control circuit. After repair, replace ECM. <Ref. to 2-7 [W15A0].>

NO : Go to step **11CT3**.

11CT3 : CHECK VEHICLE MODEL.

CHECK : ***Is the vehicle equipped with A/C?***

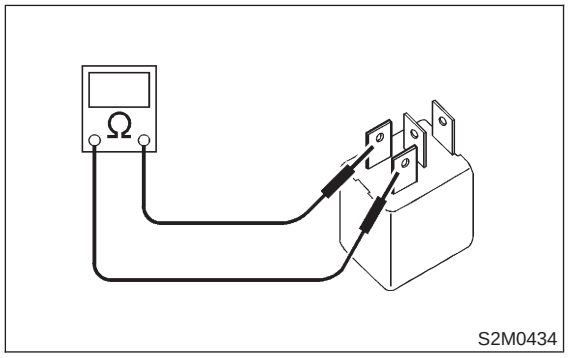
YES : Go to step **11CT4**.

NO : Go to step **11CT6**.

11CT4 : CHECK MAIN FAN RELAY 1.

1) Turn ignition switch to OFF.
2) Remove main fan relay 1.
3) Measure resistance between main fan relay 1 terminals.

Terminal
No. 27 — No. 28:

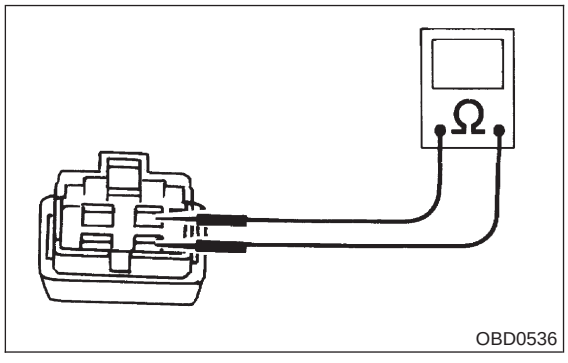


CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace main fan relay 1 and ECM <Ref. to 2-7 [W15A0].>
NO : Go to step **11CT5**.

11CT5 : CHECK SUB FAN RELAY 1.

1) Remove sub fan relay 1.
2) Measure resistance between sub fan relay 1 terminals.

Terminal
No. 20 — No. 19



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace sub fan relay 1 and ECM <Ref. to 2-7 [W15A0].>
NO : Go to step **11CT6**.

11CT6 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

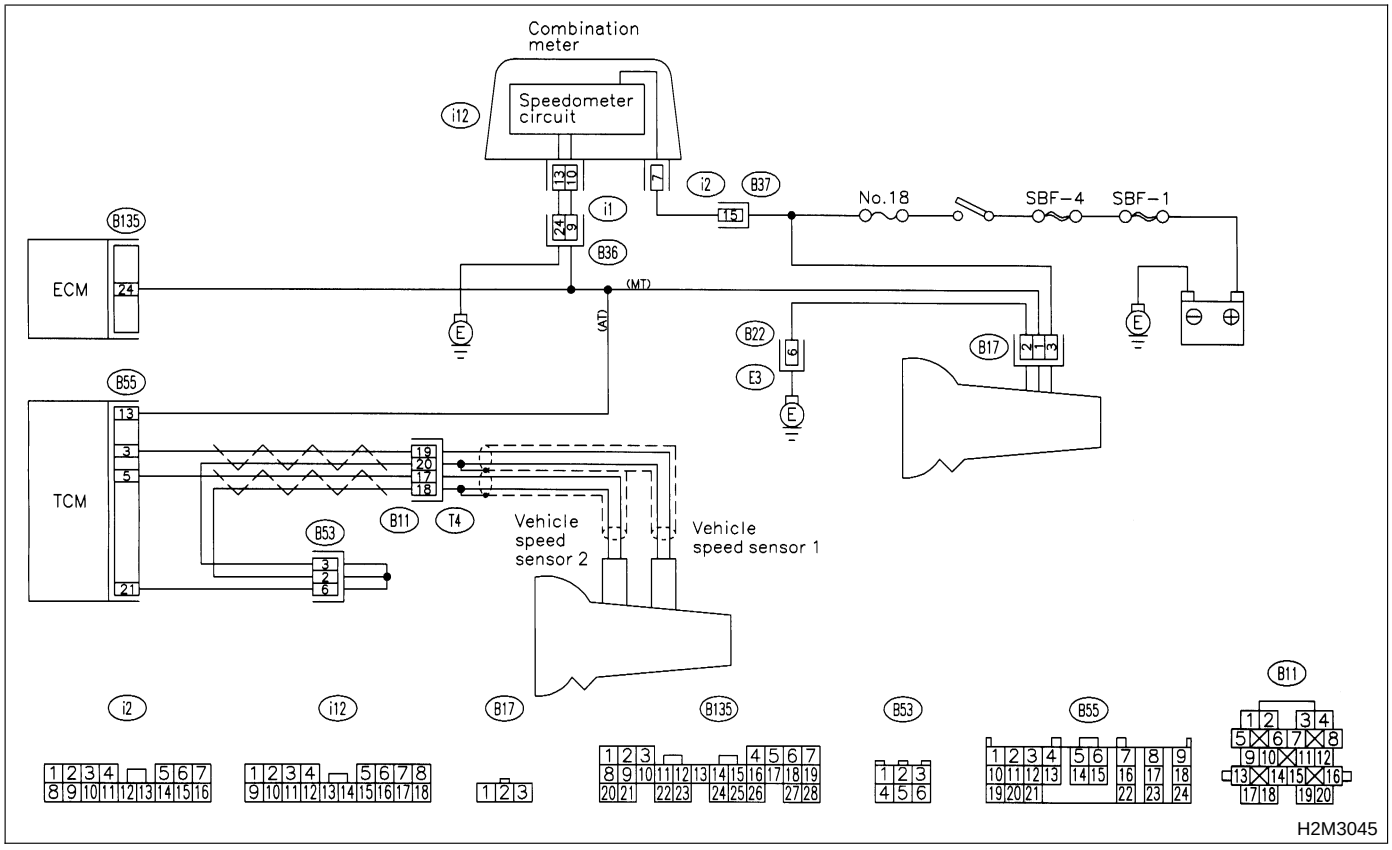
MEMO:

CU: DTC P1540 — VEHICLE SPEED SENSOR MALFUNCTION 2 —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CU1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **11CU2**.
NO : Go to step **11CU3**.

11CU2 : CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?***
YES : Check vehicle speed sensor 2 signal circuit. <Ref. to 3-2 [T8G0].>
NO : Go to step **11CU3**.

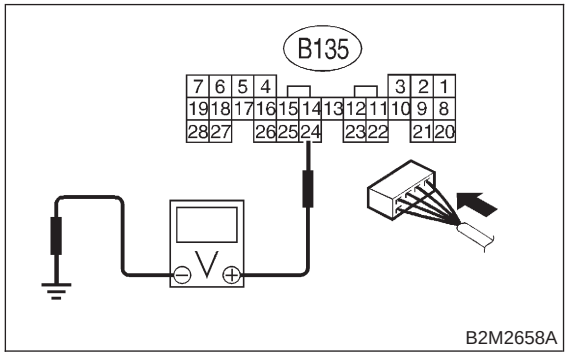
11CU3 : CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer operate normally?***
YES : Go to step **11CU4**.
NO : Check speedometer and vehicle speed sensor. <Ref. to 6-2 [K2A4].>

11CU4 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 24 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Repair harness and connector.

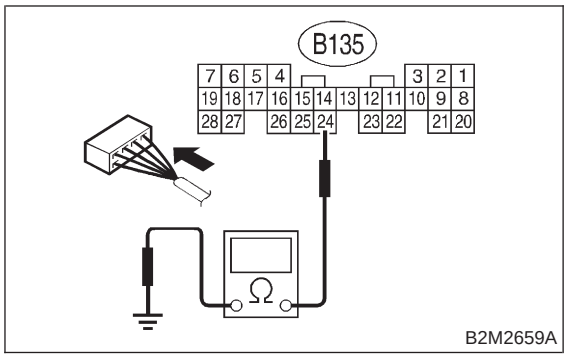
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector

NO : Go to step **11CU5**.

11CU5 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

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

Connector & terminal
(B135) No. 24 — Chassis ground:



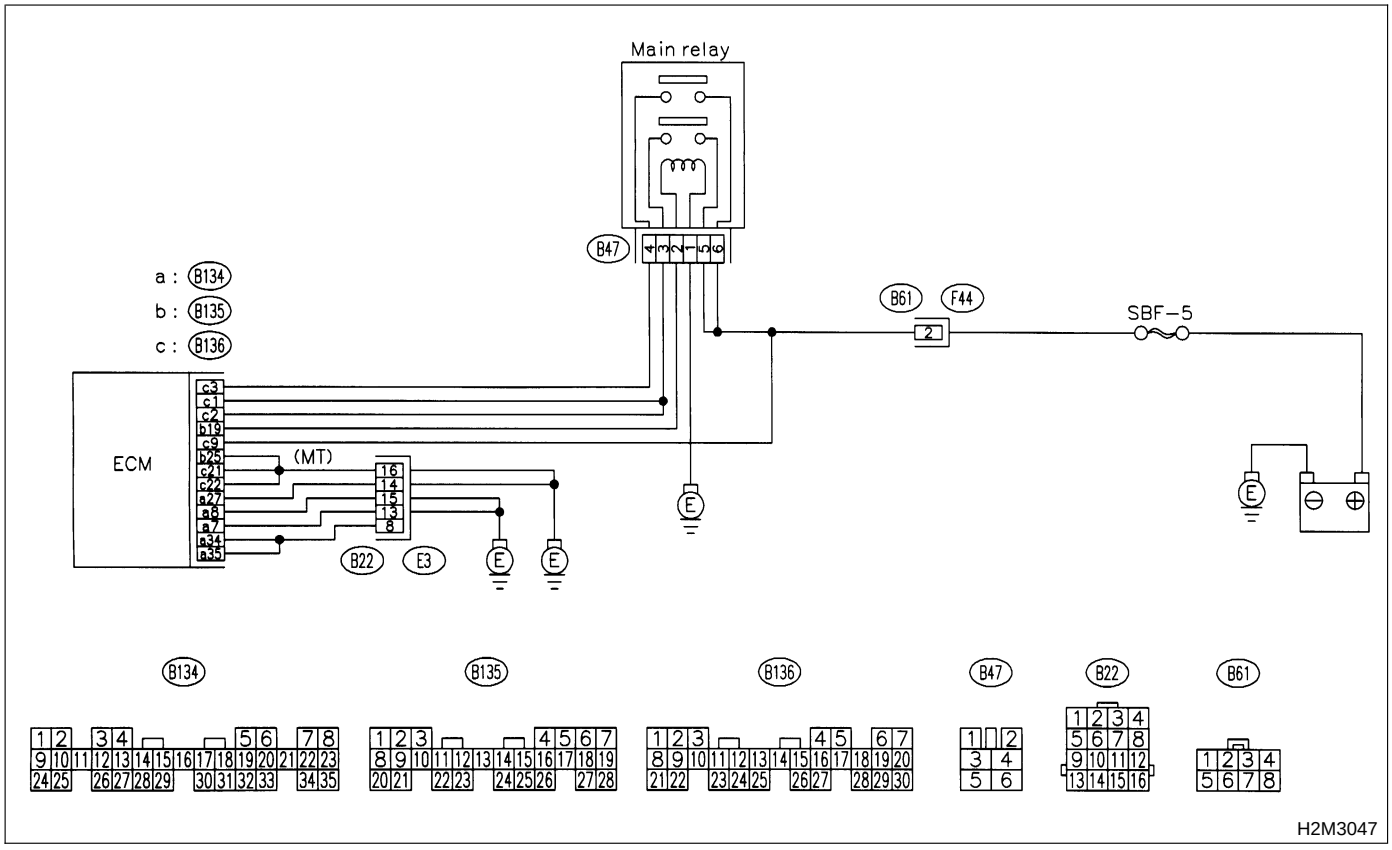
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and combination meter connector.
NO : Repair poor contact in ECM connector.

CV: DTC P1560 — BACK-UP VOLTAGE CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

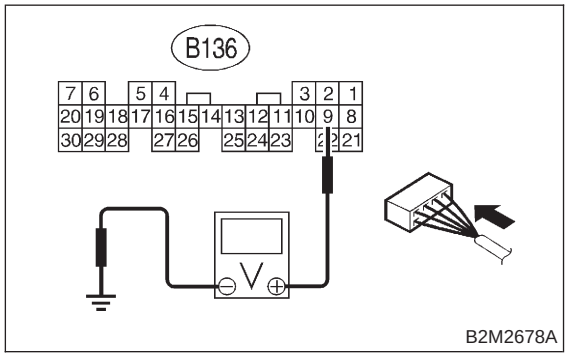
- **WIRING DIAGRAM:**



11CV1 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to OFF.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 9 (+) — Chassis ground (−):

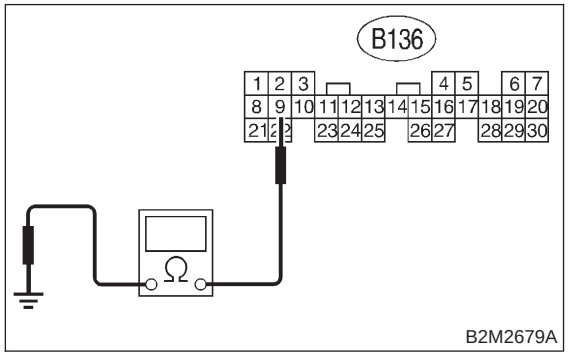


CHECK : ***Is the voltage more than 10 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11CV2**.

11CV2 : CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B136) No. 9 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM connector and battery terminal.
NO : Go to step **11CV3**.

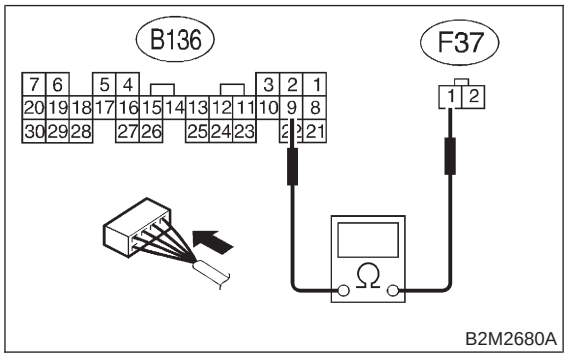
11CV3 : CHECK FUSE SBF-2.

CHECK : ***Is fuse blown?***
YES : Replace fuse. <Ref. to 6-3 [D6B1].>
NO : Go to step **11CV4**.

11CV4 : CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR.

1) Disconnect connector from main fuse box.
2) Measure resistance of harness between ECM and main fuse box connector.

Connector & terminal
(B136) No. 9 — (F37) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair poor contact in ECM and main fuse box connector.
NO : Repair harness and connector.

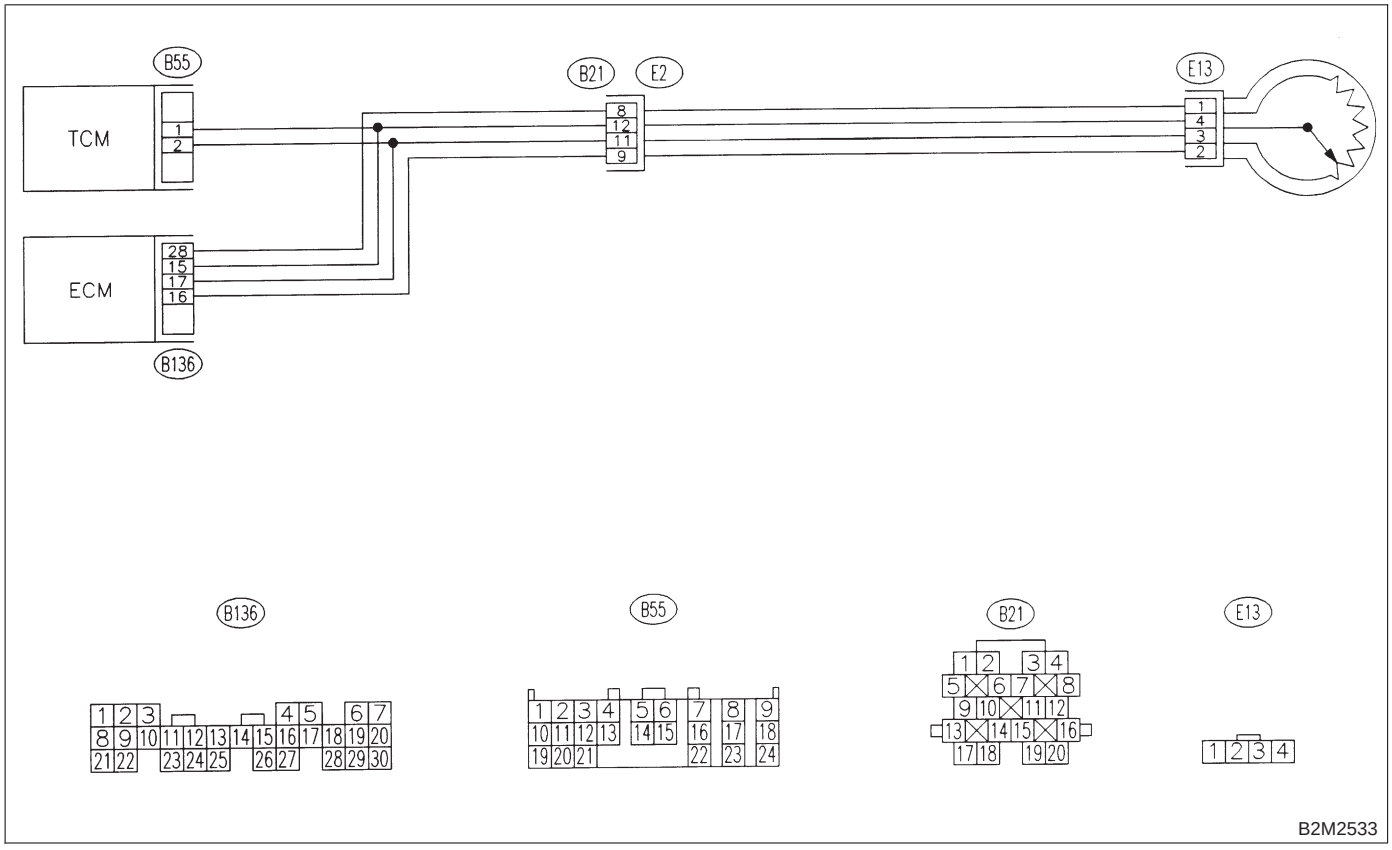
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and main fuse box connector
- Poor contact in coupling connector (F44)
- Poor contact in ECM connector
- Poor contact in main fuse box connector

CW: DTC P1700 — THROTTLE POSITION SENSOR CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CW1 : CHECK DTC P1700 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1700?***

YES : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

NO : It is not necessary to inspect DTC P1700.

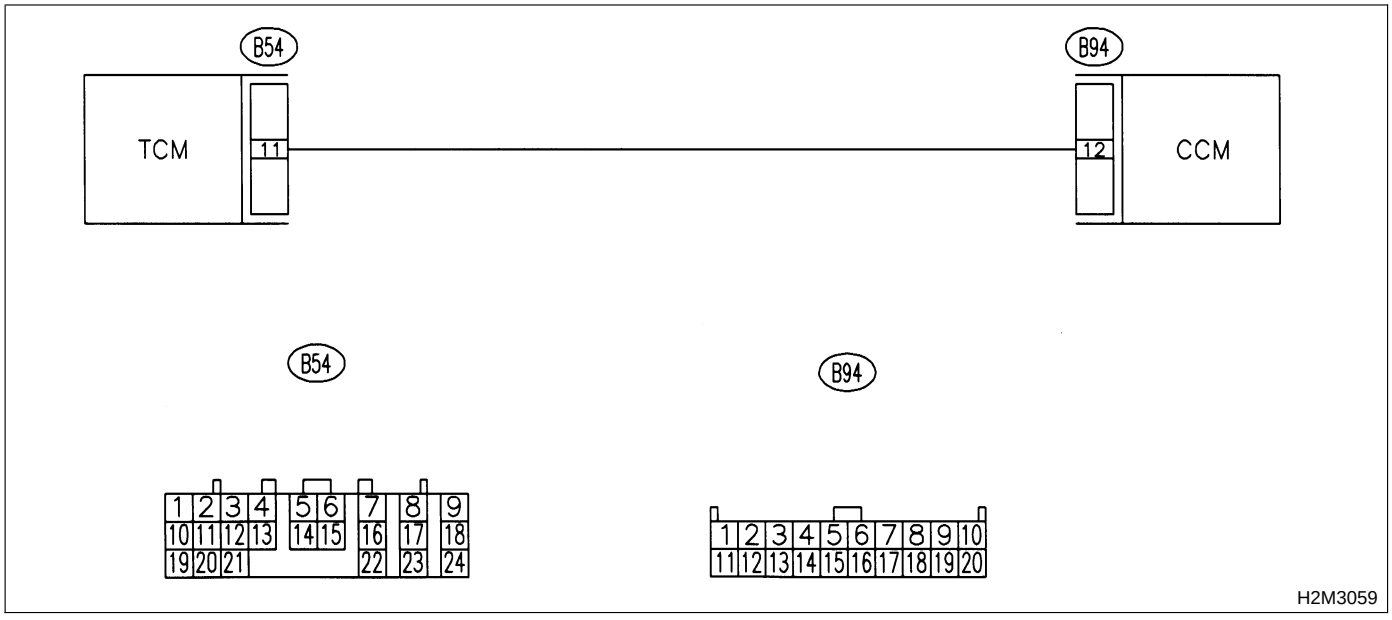
MEMO:

CX: DTC P1701 — CRUISE CONTROL SET SIGNAL CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

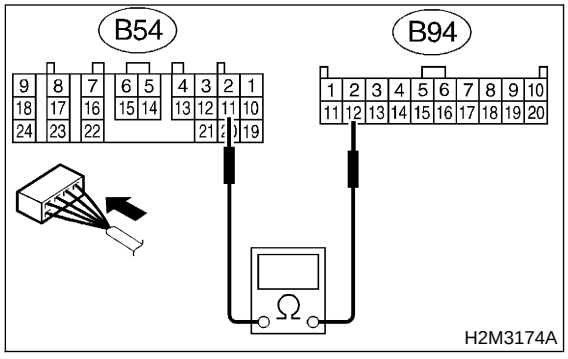
- **WIRING DIAGRAM:**



11CX1 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

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

Connector & terminal
(B54) No. 11 — (B94) No. 12:

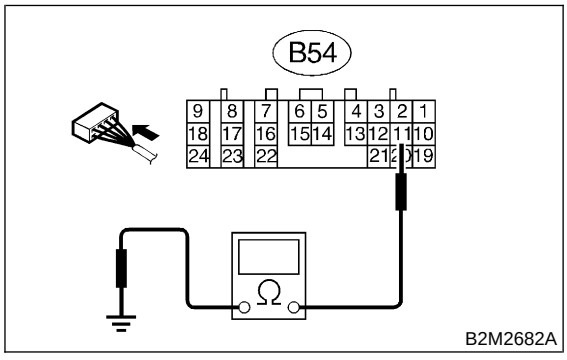


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **11CX2**.
NO : Repair open circuit in harness between TCM and CCM connector.

11CX2 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 11 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair short circuit in harness between TCM and CCM connector.
NO : Go to step **11CX3**.

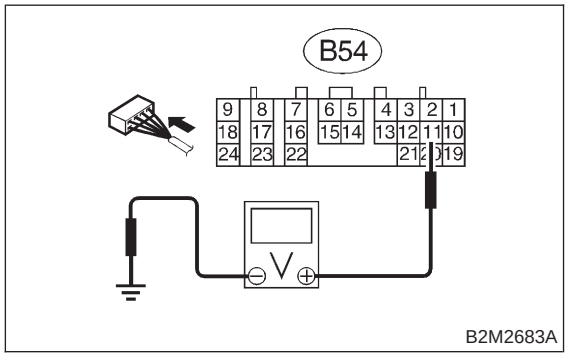
11CX3 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connector to TCM and CCM.
2) Lift-up the vehicle or set the vehicle on free rollers.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine.
4) Cruise control main switch to ON.
5) TCS OFF switch to ON. (with TCS models only)
6) Move selector lever to “D” and slowly increase vehicle speed to 50 km/h (31 MPH).
7) Cruise control set switch to ON.
8) Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 11 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11CX4**.
NO : Check cruise control set circuit.

11CX4 : CHECK POOR CONTACT.

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

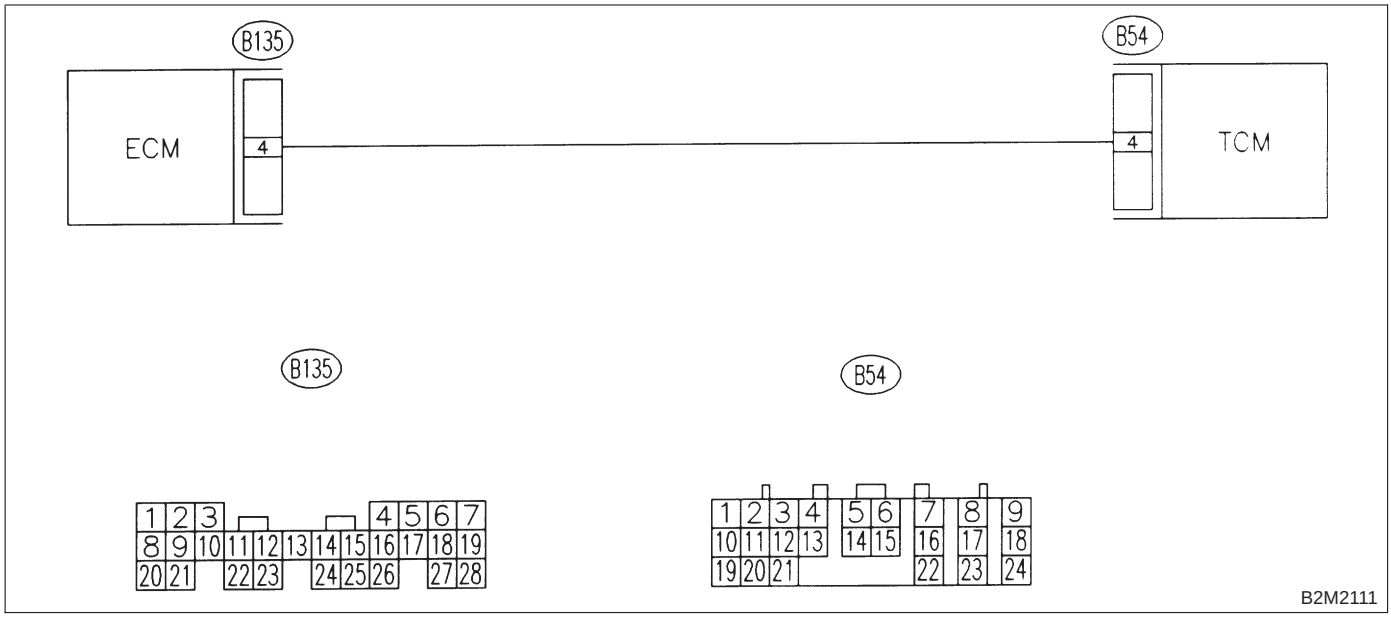
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

CY: DTC P1702 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



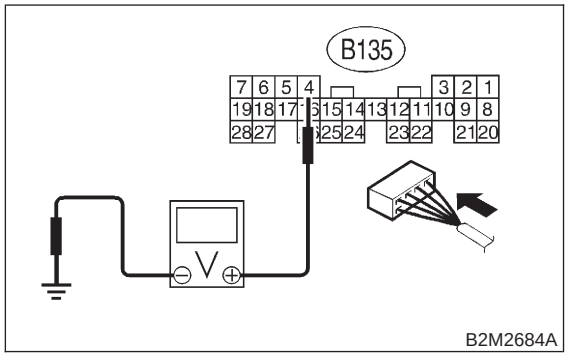
11CY1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **11CY2**.
NO : Check AT/MT identification circuit. <Ref. to 2-7 [T11DE0].>

11CY2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



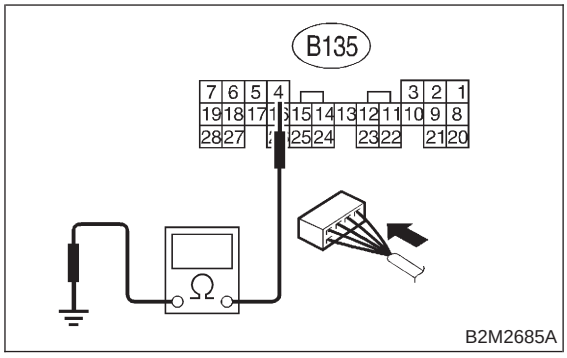
CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **11CY3**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM connector

11CY3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 — Chassis ground:

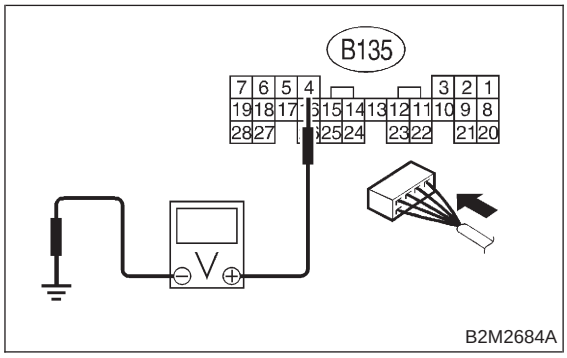


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **11CY4**.

11CY4 : CHECK OUTPUT SIGNAL FOR ECM.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



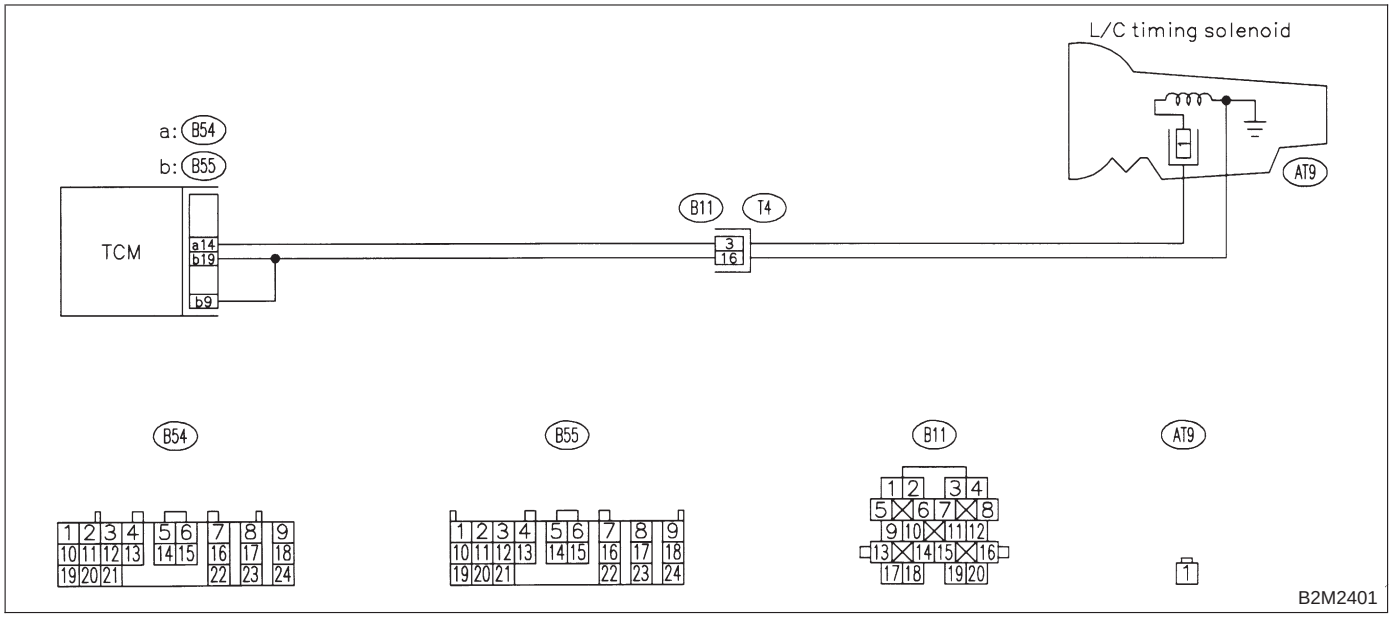
CHECK : ***Is the voltage more than 5 V?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Repair poor contact in ECM connector.

CZ: DTC P1703 — LOW CLUTCH TIMING CONTROL SOLENOID VALVE CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11CZ1 : CHECK DTC P1703 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1703?***

YES : Check low clutch timing control solenoid valve circuit. <Ref. to 3-2 [T8M0].>

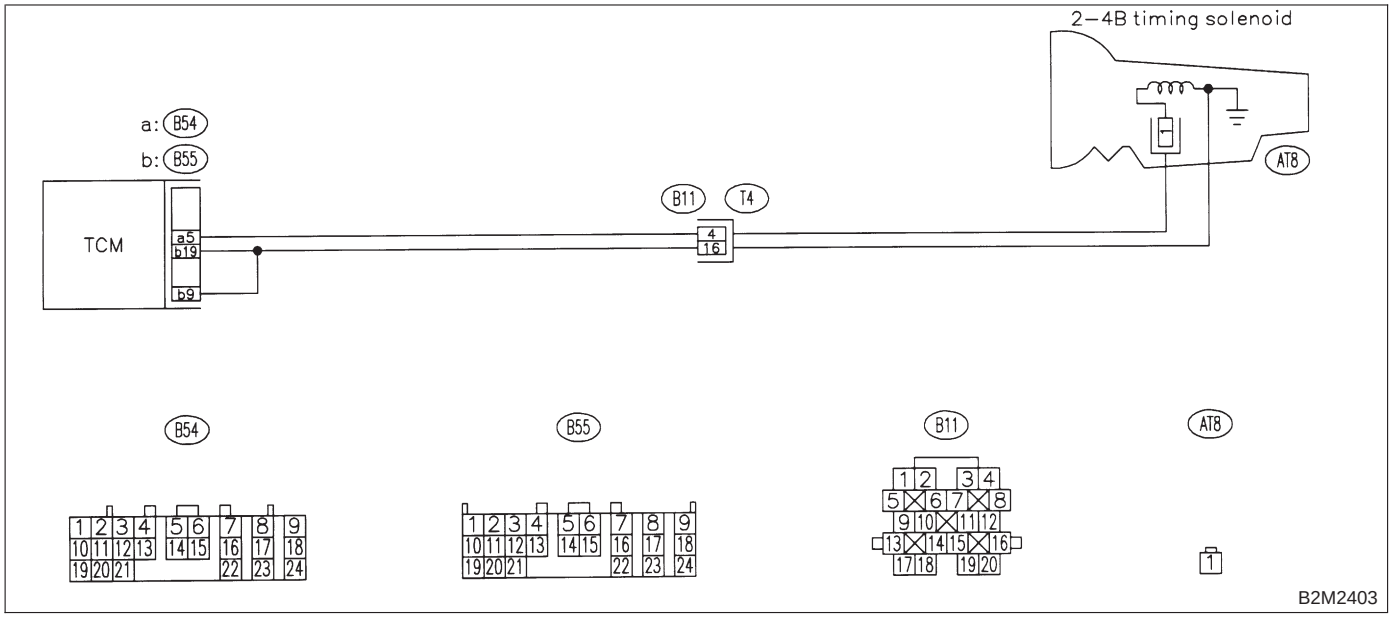
NO : It is not necessary to inspect DTC P1703.

DA: DTC P1704 — 2-4 BRAKE TIMING CONTROL SOLENOID VALVE CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11DA1 : CHECK DTC P1704 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1704?***

YES : Check 2-4 brake timing control solenoid valve circuit. <Ref. to 3-2 [T8N0].>

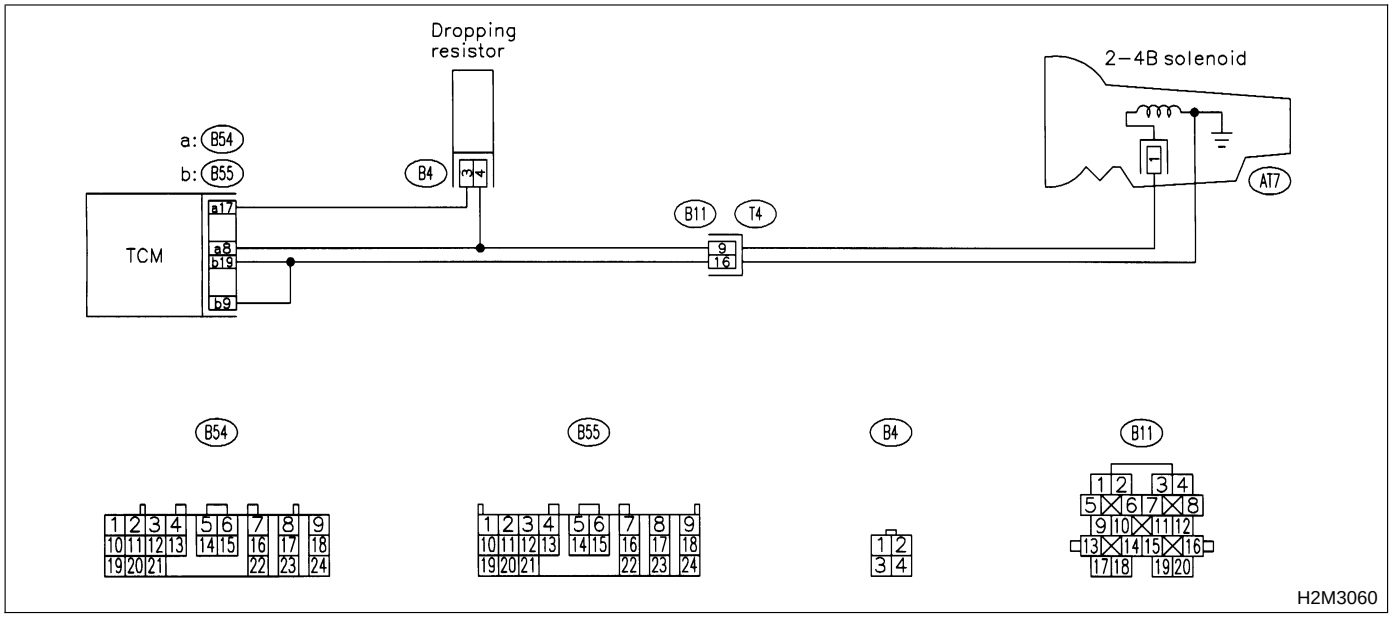
NO : It is not necessary to inspect DTC P1704.

DB: DTC P1705 — 2-4 BRAKE PRESSURE CONTROL SOLENOID VALVE (DUTY SOLENOID D) CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11DB1 : CHECK DTC P1705 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1705?***

YES : Check 2-4 brake pressure control solenoid valve circuit. <Ref. to 3-2 [T8P0].>

NO : It is not necessary to inspect DTC P1705.

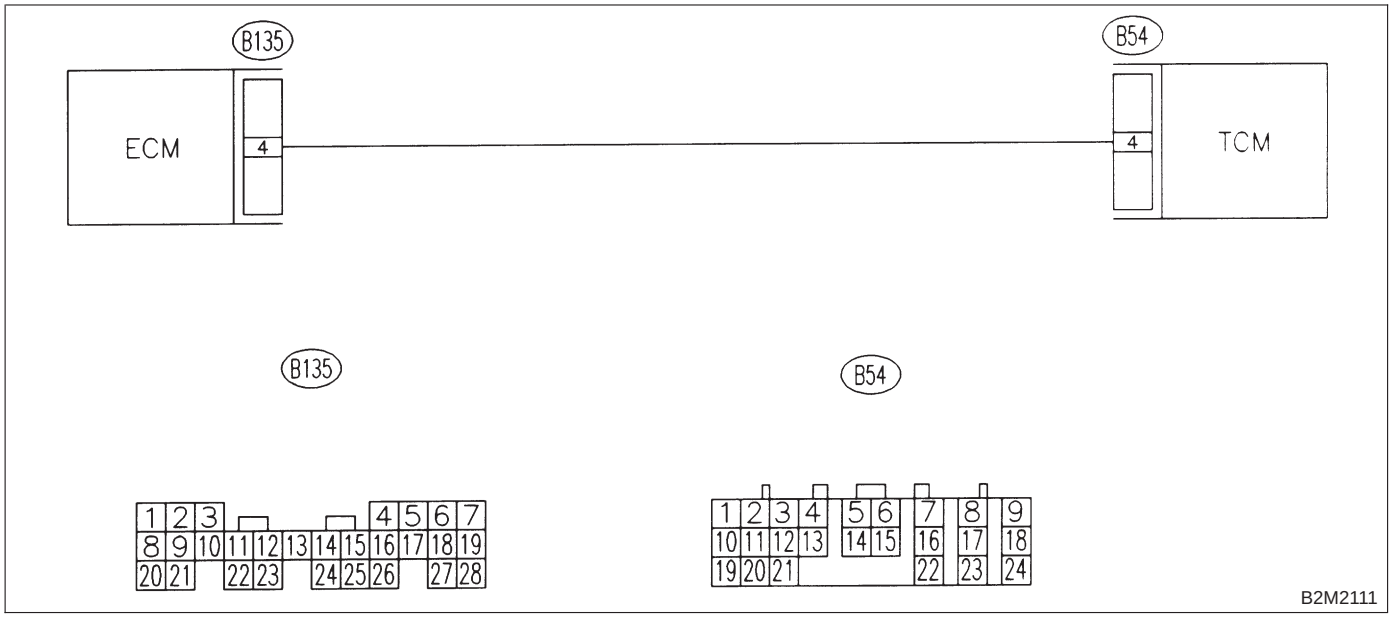
MEMO:

DC: DTC P1722 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



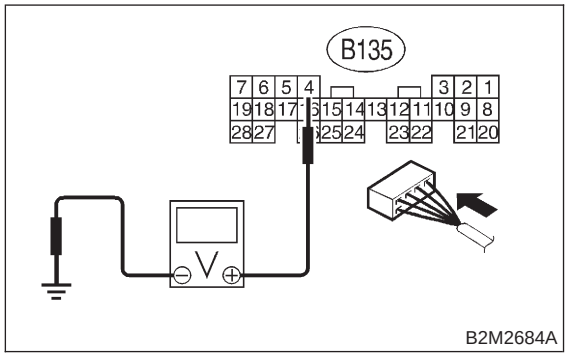
11DC1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **11DC2**.
NO : Check AT/MT identification circuit. <Ref. to 2-7 [T11DE0].>

11DC2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

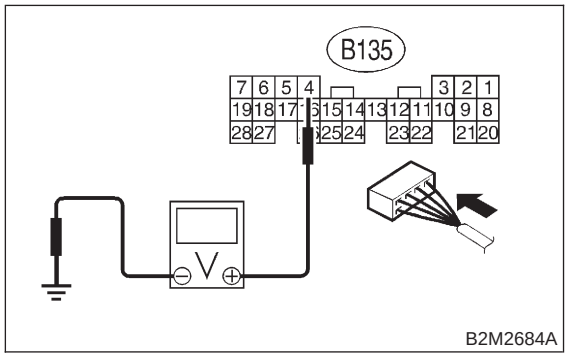


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **11DC3**.

11DC3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

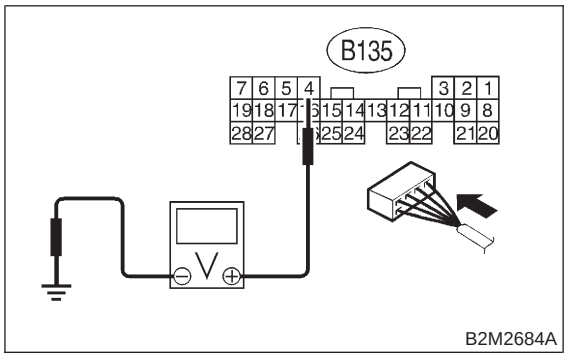


CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **11DC6**.
NO : Go to step **11DC4**.

11DC4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

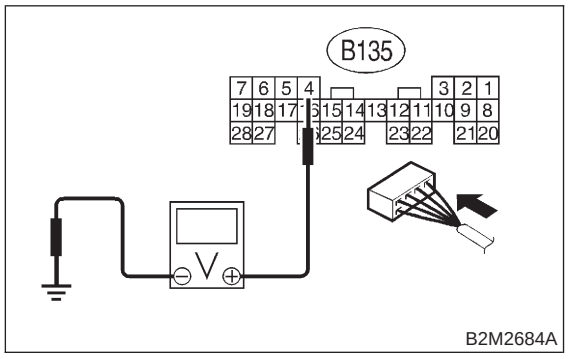


CHECK : ***Is the voltage less than 1 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **11DC5**.

11DC5 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



CHECK : ***Does the voltage change from 1 V to 4 V while monitoring the value with voltage meter?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM connector

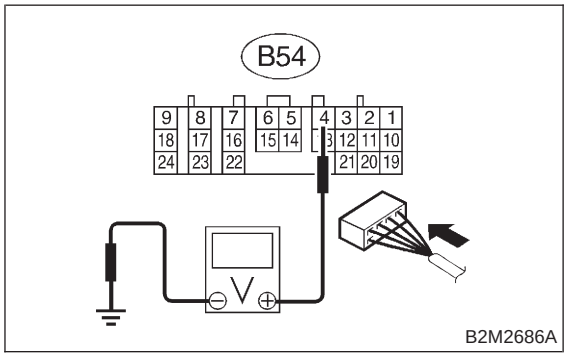
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

11DC6 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 4 V?***

YES : Go to step **11DC7**.

NO : Repair open circuit in harness between ECM and TCM connector.

11DC7 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

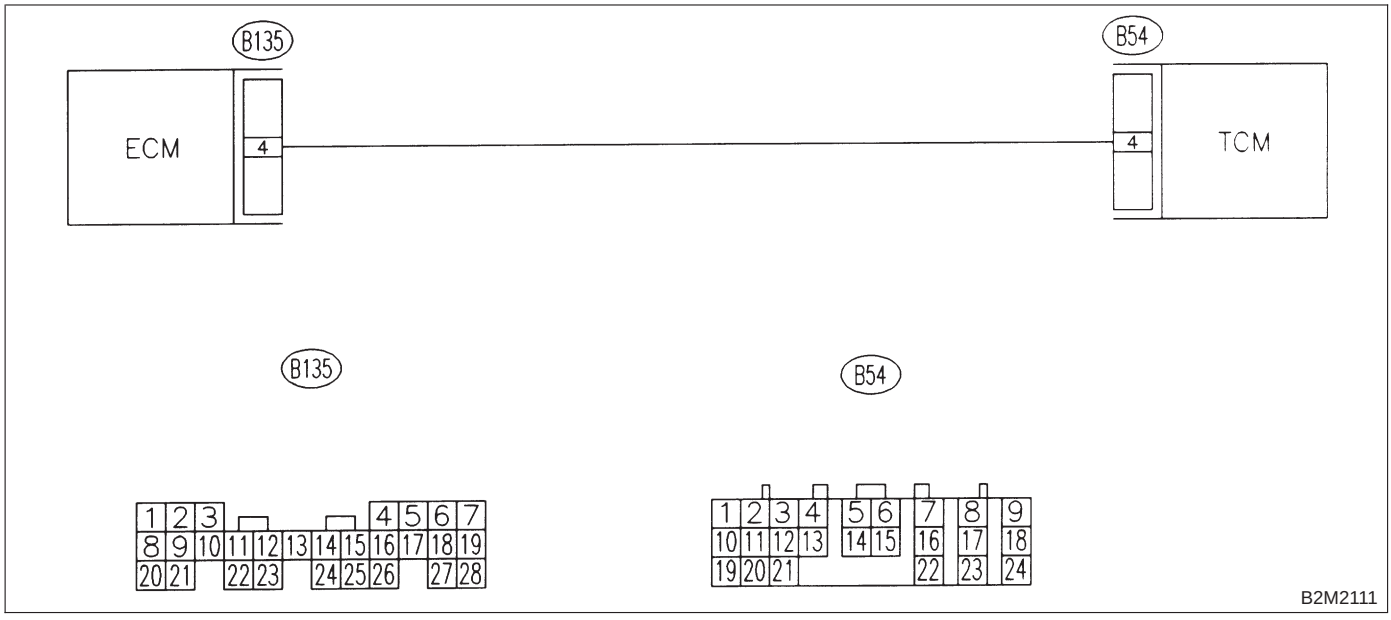
NO : Check TCM power supply line and grounding line.

DD: DTC P1742 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



11DD1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **11DD2**.
NO : Check AT/MT identification circuit. <Ref. to 2-7 [T11DE0].>

11DD2 : CHECK DRIVING CONDITION.

1) Start and warm-up the engine until the radiator fan makes one complete rotation.
2) Drive the vehicle.

CHECK : ***Is AT shift control functioning properly?***
YES : Go to step **11DD3**.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

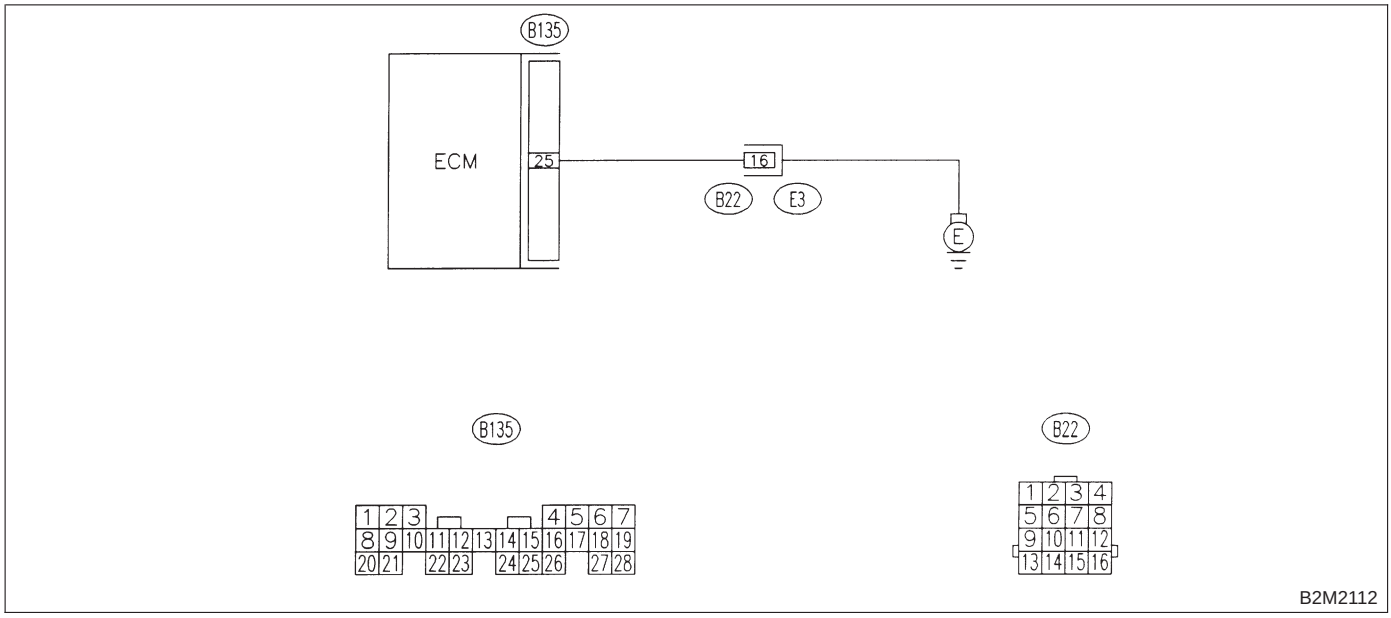
11DD3 : CHECK ACCESSORY.

CHECK : ***Are car phone and/or CB installed on vehicle?***
YES : Repair grounding line of car phone or CB system.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

DE: — AT/MT IDENTIFICATION CIRCUIT MALFUNCTION [MT VEHICLES] —

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

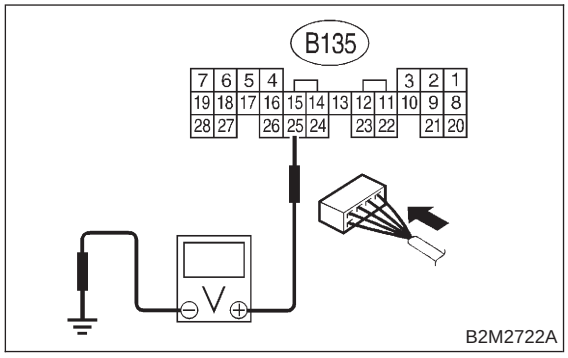
- **WIRING DIAGRAM:**



11DE1 : CHECK HARNESS BETWEEN ECM CONNECTOR AND ENGINE GROUNDING TERMINAL.

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

Connector & terminal
(B135) No. 25 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 2 V?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM connector and engine grounding terminal
- Poor contact in engine grounding terminal
- Poor contact in coupling connector (B22)

NO : Go to step **11DE2**.

11DE2 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

AUTOMATIC TRANSMISSION AND DIFFERENTIAL 3-2

Page

T DIAGNOSTICS 2
1. Precaution 2
2. Pre-inspection 2
3. Electrical Components Location 4
4. Schematic 9
5. Transmission Control Module (TCM) I/O Signal 10
6. Diagnostic Chart for On-board Diagnostics System 13
7. Diagnostics for On-board Diagnostics Failed 16
8. Diagnostic Chart with Trouble Code 23
9. Diagnostic Chart with Select Monitor 115
10. General Diagnostic Table 155

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM “AIRBAG”

Airbag system wiring harness is routed near the transmission control module (TCM).

CAUTION:
- **All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.**
- **Be careful not to damage Airbag system wiring harness when performing diagnostics and servicing the TCM.**

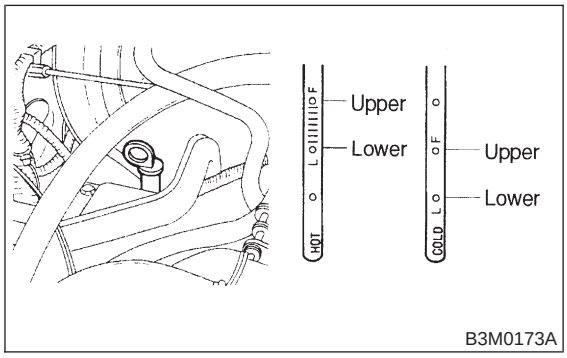
B: MEASUREMENT

When measuring voltage and resistance of the ECM, TCM or each sensor, use a tapered pin with a diameter of less than 0.64 mm (0.025 in) in order to avoid poor contact. Do not insert the pin more than 5 mm (0.20 in).

2. Pre-inspection

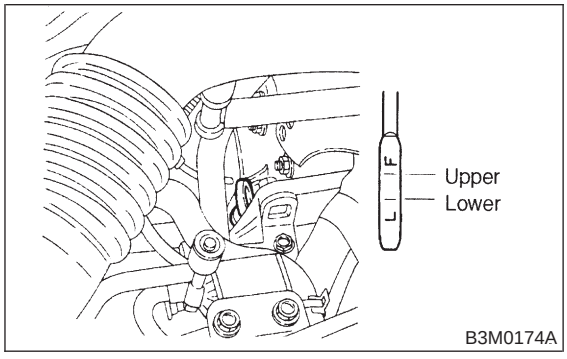
A: ATF LEVEL

Make sure that ATF level is in the specification.



B: FRONT DIFFERENTIAL OIL LEVEL

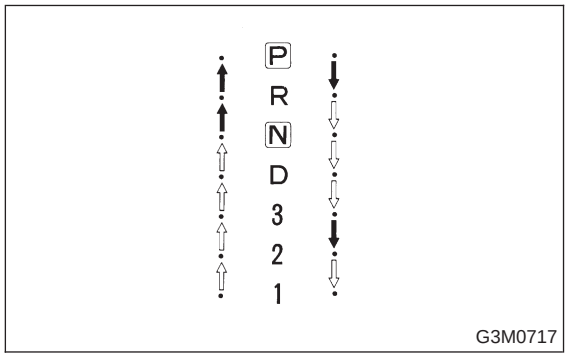
Make sure that front differential oil level is in the specification.



C: OPERATION OF SHIFT SELECTOR LEVER

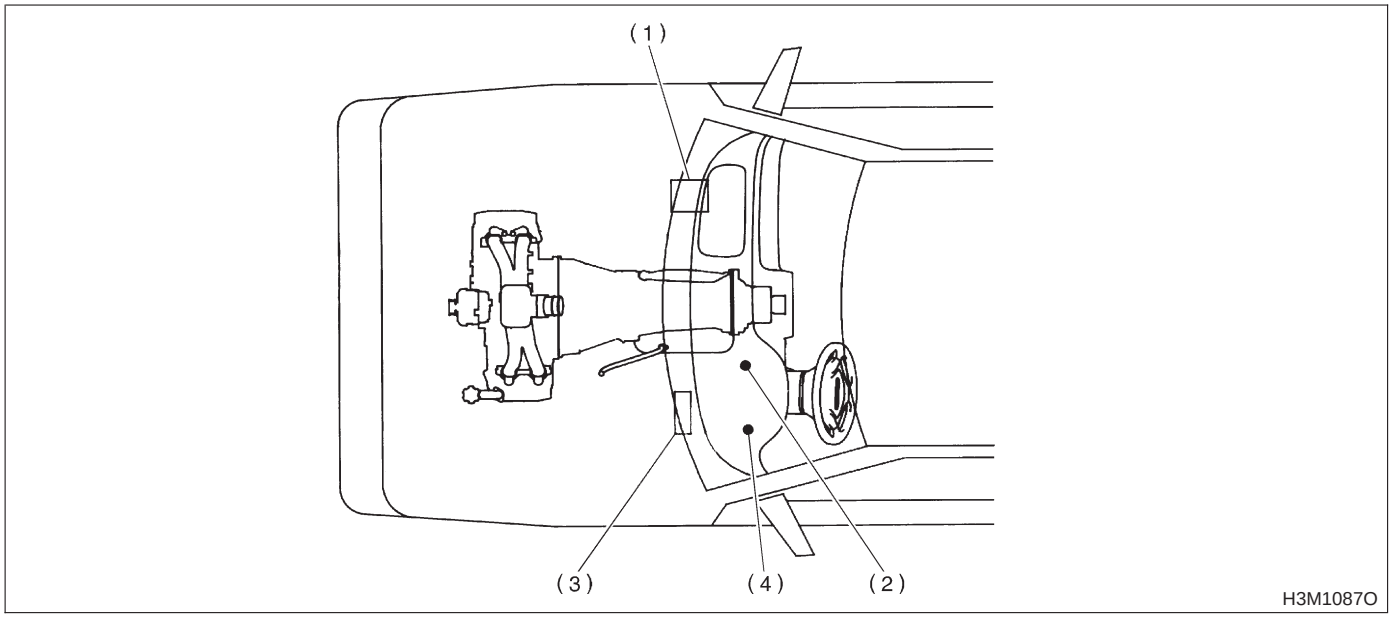
WARNING:
Stop the engine while checking operation of selector lever.

1) Check that selector lever does not move from “N” to “R” without pushing the button.
2) Check that selector lever does not move from “R” to “P” without pushing the button.
3) Check that selector lever does not move from “P” to “R” without pushing the button.
4) Check that selector lever does not move from “3” to “2” without pushing the button.

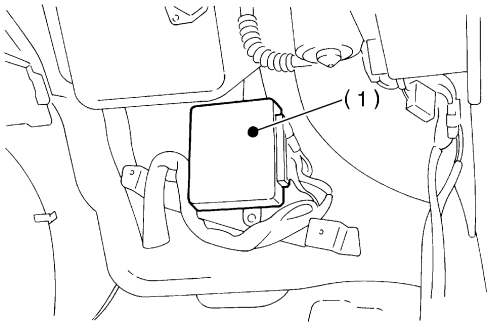


3. Electrical Components Location

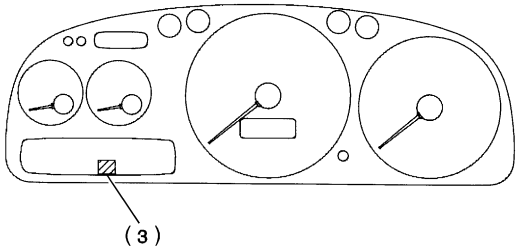
A: MODULE



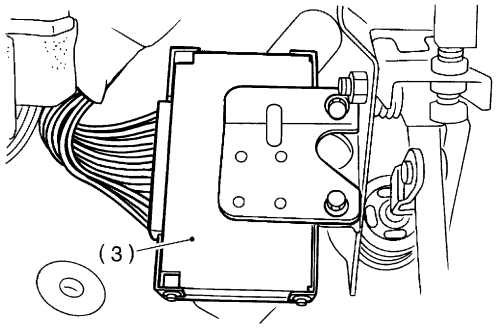
(1) ECM
(2) AT OIL TEMP indicator light (AT diagnostic indicator light)
(3) TCM
(4) Data link connector (for Subaru select monitor and OBD-II general scan tool)



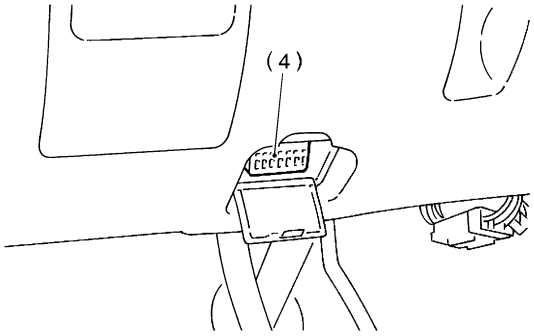
B3M0183E



H3M1675B

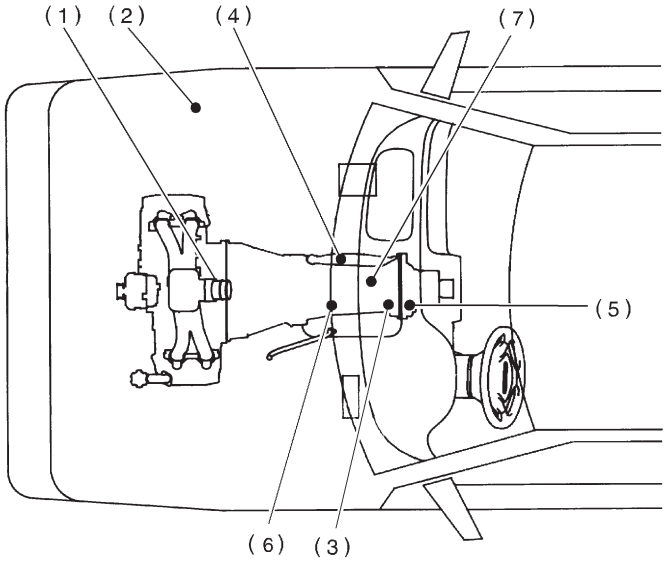


S3M0056D



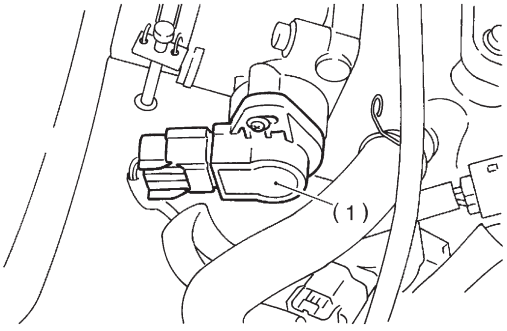
S2M0258C

B: SENSOR

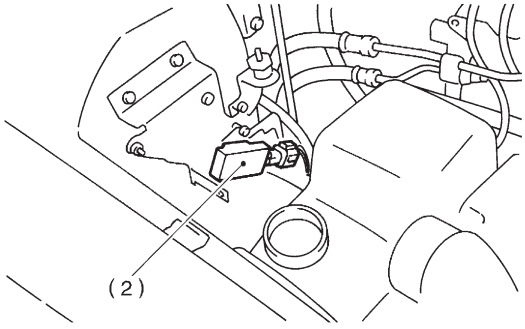


H3M1087P

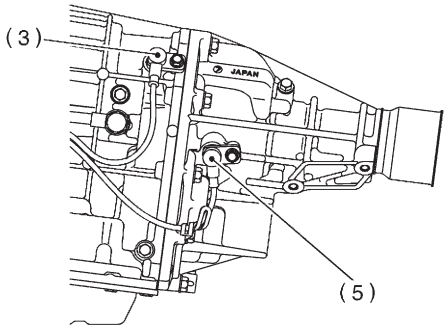
(1) Throttle position sensor
(2) Dropping resistor
(3) Vehicle speed sensor 2 (Front)
(4) Inhibitor switch
(5) Vehicle speed sensor 1 (Rear)
(6) Torque converter turbine speed sensor
(7) ATF temperature sensor



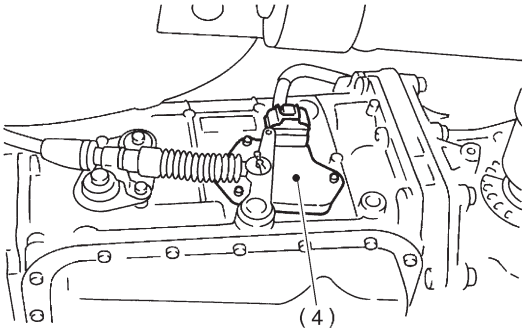
S2M0262B



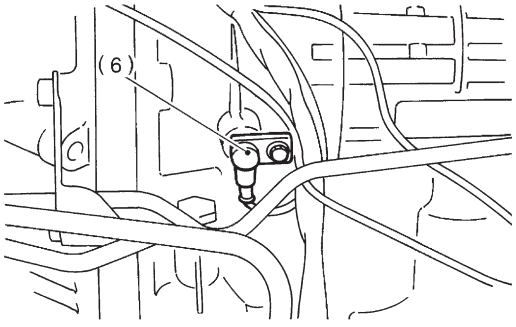
B2M2262C



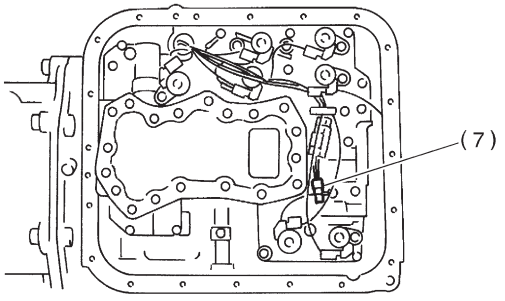
B2M2258C



B2M2246D

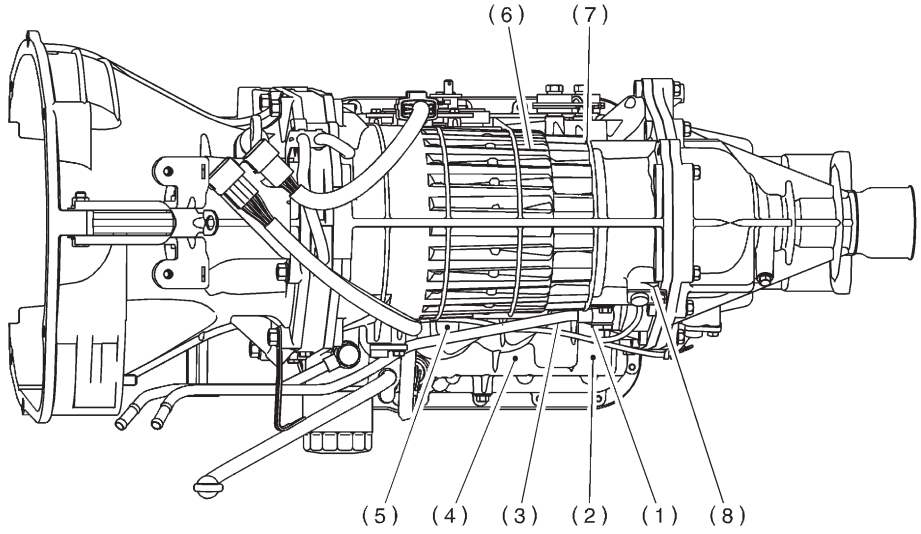


B2M2260C



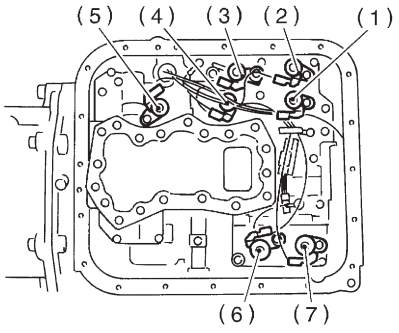
B2M2261C

C: SOLENOID

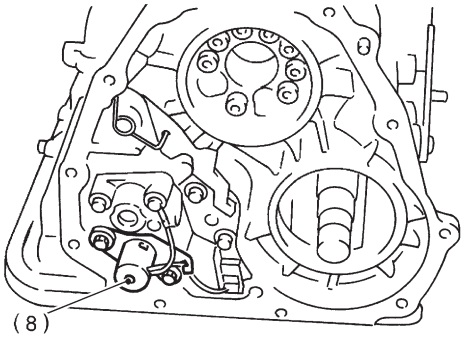


B3M1186A

(1) Solenoid 1
(2) Solenoid 2
(3) Duty solenoid A
(4) Low clutch timing solenoid
(5) Duty solenoid B
(6) Duty solenoid D
(7) 2-4 brake timing solenoid
(8) Duty solenoid C

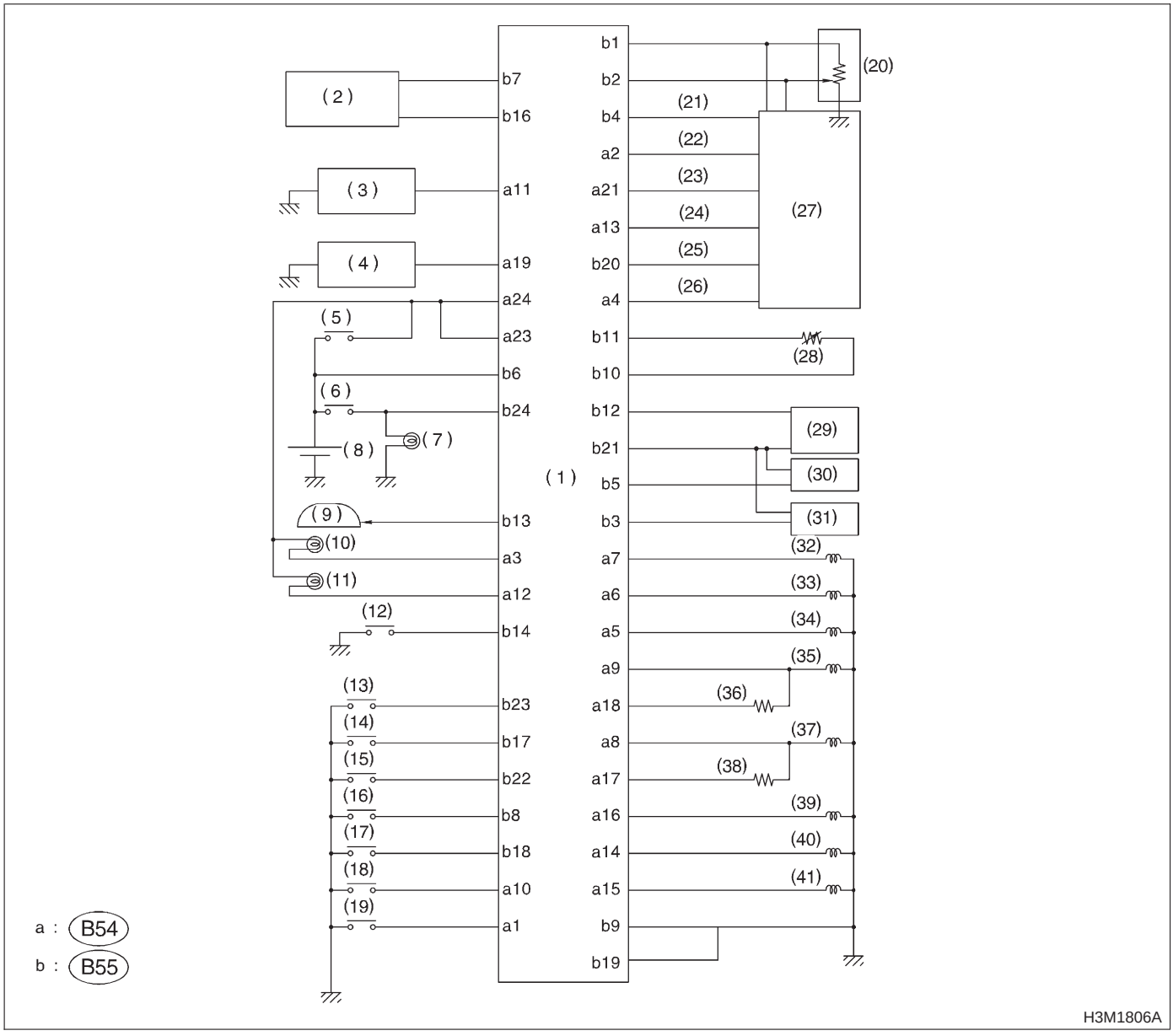


B2M2263D



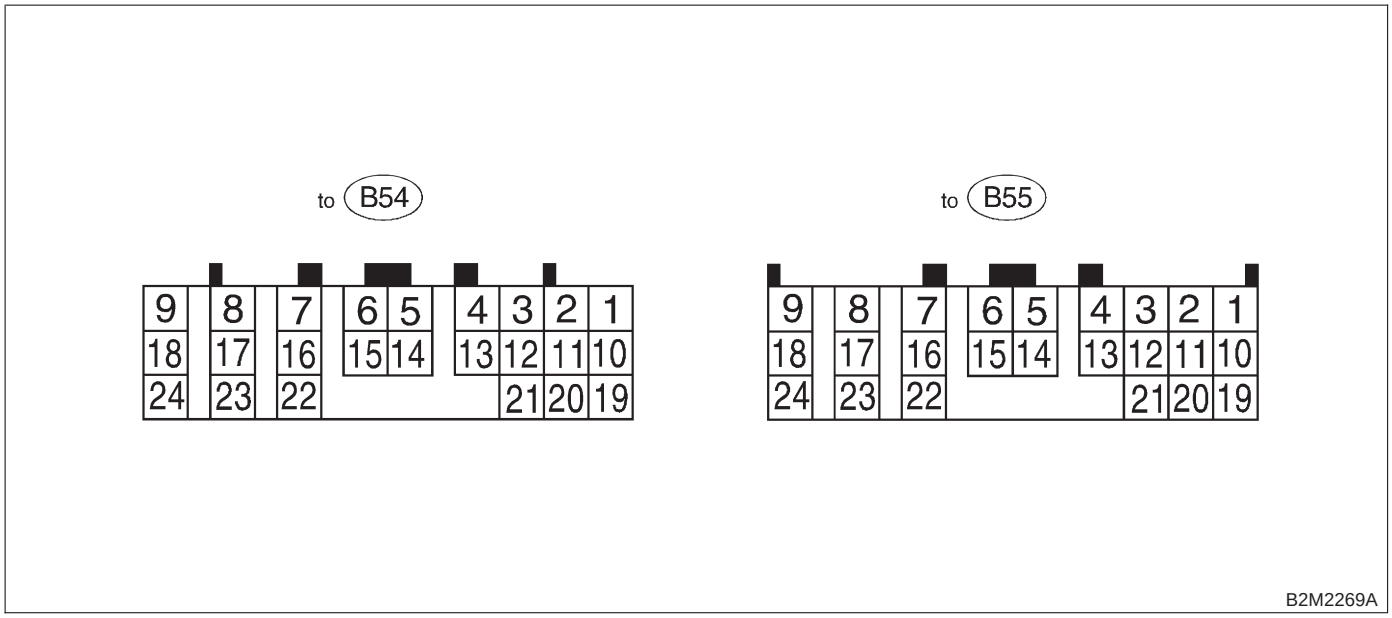
B2M2264E

4. Schematic



(1) Transmission control module
(2) Data link connector
(3) Cruise set switch
(4) ABS control module
(5) Ignition switch
(6) Brake switch
(7) Brake light
(8) Battery
(9) Combination meter
(10) AT OIL TEMP indicator light
(11) FWD indicator light
(12) FWD switch
(13) “P” range switch
(14) “R” range switch
(15) “N” range switch
(16) “D” range switch
(17) “3” range switch
(18) “2” range switch
(19) “1” range switch
(20) Throttle position sensor
(21) Engine speed signal
(22) Torque control cut signal
(23) Torque control signal 2
(24) Torque control signal 1
(25) AT load signal
(26) AT diagnostics signal
(27) Engine control module
(28) ATF temperature sensor
(29) Torque converter turbine speed sensor
(30) Vehicle speed sensor 2 (Front)
(31) Vehicle speed sensor 1 (Rear)
(32) Shift solenoid 1
(33) Shift solenoid 2
(34) 2-4 brake timing solenoid
(35) Duty solenoid A
(36) Line pressure dropping resistor
(37) Duty solenoid D
(38) 2-4 brake dropping resistor
(39) Duty solenoid B
(40) Low clutch timing solenoid
(41) Duty solenoid C

5. Transmission Control Module (TCM) I/O Signal



Check with ignition switch ON.						
Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Back-up power supply		B55	6	Ignition switch OFF	10 — 16	—
Ignition power supply		B54	23	Ignition switch ON (with engine OFF)	10 — 16	—
		B54	24			
Inhibitor switch	“P” range switch	B55	23	Select lever in “P” range	Less than 1	—
				Select lever in any other than “P” range (except “N” range)	More than 8	
	“N” range switch	B55	22	Select lever in “N” range	Less than 1	—
				Select lever in any other than “N” range (except “P” range)	More than 8	
	“R” range switch	B55	17	Select lever in “R” range	Less than 1	—
				Select lever in any other than “R” range	More than 9.5	
	“D” range switch	B55	8	Select lever in “D” range	Less than 1	—
				Select lever in any other than “D” range	More than 9.5	
	“3” range switch	B55	18	Select lever in “3” range	Less than 1	—
				Select lever in any other than “3” range	More than 9.5	
	“2” range switch	B54	10	Select lever in “2” range	Less than 1	—
				Select lever in any other than “2” range	More than 9.5	
	“1” range switch	B54	1	Select lever in “1” range	Less than 1	—
				Select lever in any other than “1” range	More than 9.5	
Brake switch		B55	24	Brake pedal depressed.	More than 10.5	—
				Brake pedal released.	Less than 1	
ABS signal		B54	19	ABS switch ON	Less than 1	—
				ABS switch OFF	6.5 — 15	

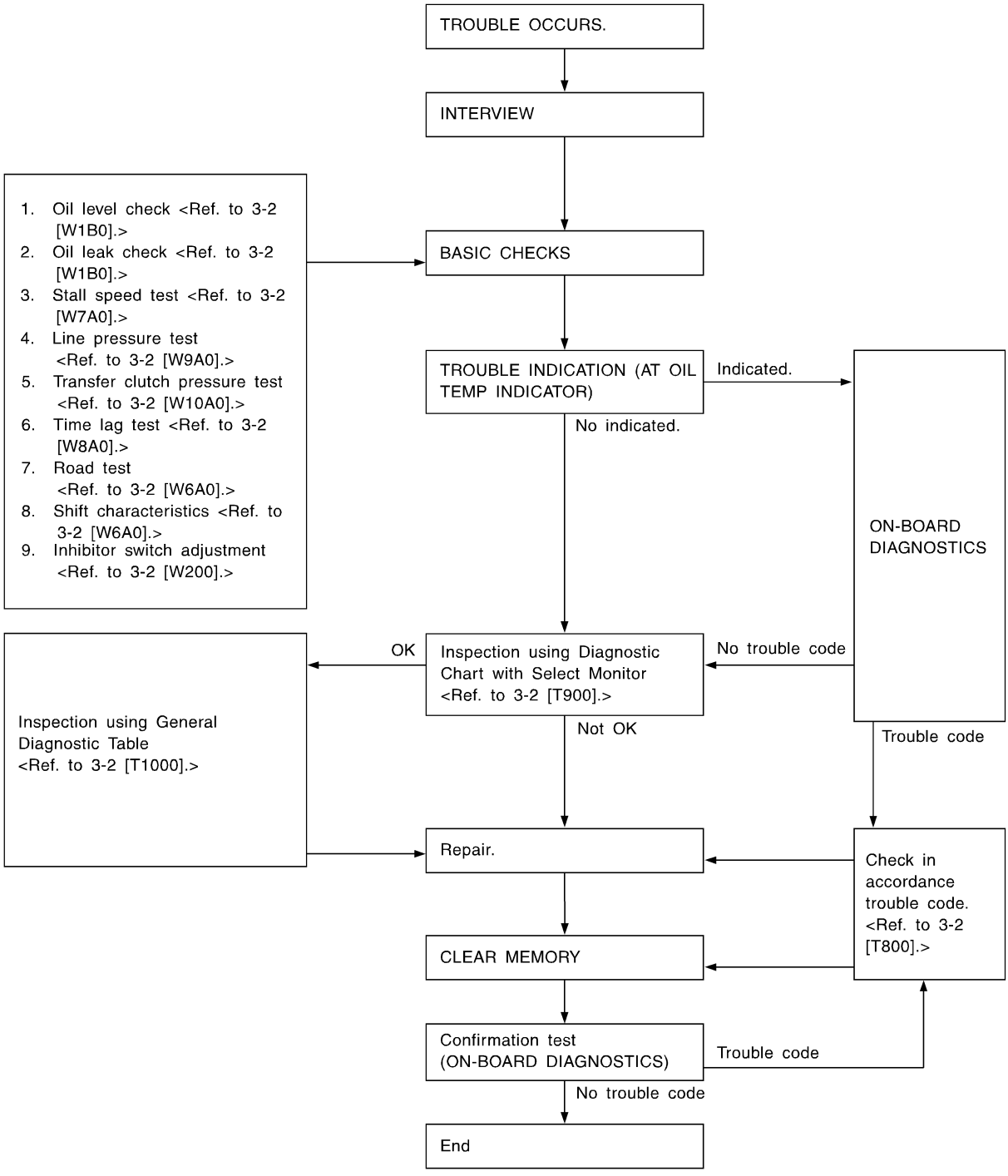
Check with ignition switch ON.					
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
AT OIL TEMP LAMP	B54	3	Lamp ON	Less than 1	—
			Lamp OFF	More than 9	
Throttle position sensor	B55	2	Throttle fully closed.	0.5±0.2	—
			Throttle fully open.	4.6±0.3	
Throttle position sensor power supply	B55	1	Ignition switch ON (With engine OFF)	5.05±0.25	—
ATF temperature sensor	B55	11	ATF temperature 20°C (68°F)	3.45±0.55	2.1 — 2.9 k
			ATF temperature 80°C (176°F)	1.2±0.2	272 — 374
Vehicle speed sensor 1 (Rear)	B55	3	Vehicle stopped.	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed sensor 2 (Front)	B55	5	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range) 4	450 — 650
Torque converter turbine speed sensor	B55	12	Vehicle stopped	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed output signal	B55	13	Vehicle speed at most 10 km/h (6 MPH)	Less than 1← →More than 4	—
Engine speed signal	B55	4	Ignition switch ON (with engine OFF)	More than 10.5	—
			Ignition switch ON (with engine ON)	8 — 11	
Cruise set signal	B54	11	When cruise control is set (SET lamp ON)	Less than 1	—
			When cruise control is not set (SET lamp OFF)	More than 6.5	
Torque control signal 1	B54	13	Ignition switch ON (with engine ON)	5±1	—
Torque control signal 2	B54	21	Ignition switch ON (with engine ON)	More than 9	—
Torque control cut signal	B54	2	Ignition switch ON	8	—
AT load signal	B55	20	Engine idling after warm-up.	1.2 — 1.8*1	—
				0.5 — 1.2*2	
Shift solenoid 1	B54	7	1st or 4th gear	More than 9	10 — 16
			2nd or 3rd gear	Less than 1	
Shift solenoid 2	B54	6	1st or 2nd gear	More than 9	10 — 16
			3rd or 4th gear	Less than 1	
Duty solenoid A	B54	9	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
Dropping resistor	B54	18	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	9 — 15
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
Duty solenoid B	B54	16	When lock up occurs.	More than 8.5	10 — 17
			When lock up is released.	Less than 0.5	

Check with ignition switch ON.					
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Duty solenoid C	B54	15	Fuse on FWD switch	More than 8.5	10 — 17
			Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	
Duty solenoid D	B54	8	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
2-4 brake dropping resistor	B54	17	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	9 — 15
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
2-4 brake timing solenoid	B54	5	1st gear	Less than 1	10 — 16
			3rd gear	More than 9	
Low clutch timing solenoid	B54	14	2nd gear	Less than 1	10 — 16
			4th gear	More than 9	
Sensor ground line 1	B55	10	—	0	Less than 1
Sensor ground line 2	B55	21	—	0	Less than 1
System ground line	B55	9	—	0	Less than 1
		19			
FWD switch	B55	14	Fuse removed.	6 — 9.1	—
			Fuse installed.	Less than 1	
FWD indicator lamp	B54	12	Fuse ON FWD switch	Less than 1	—
			Fuse removed from FWD switch	More than 9	
AT diagnosis signal	B54	4	Ignition switch ON	Less than 1← →More than 4	—
Data link signal (Subaru Select Monitor)	B55	7	—	—	—
		16	—	—	

*1: 2200 cc California spec. vehicles
*2: Except 2200 cc California spec. vehicles

6. Diagnostic Chart for On-board Diagnostics System

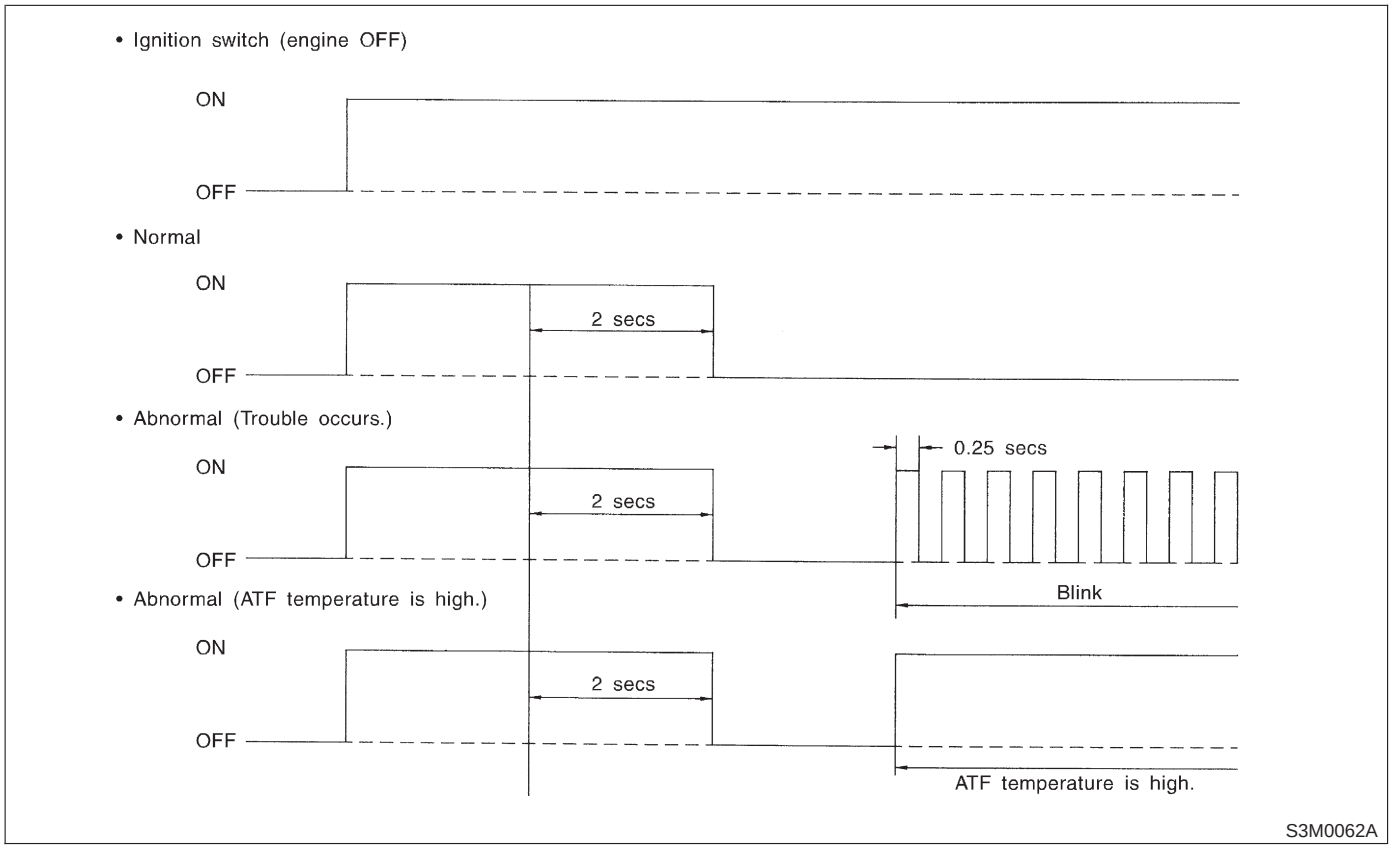
A: BASIC DIAGNOSTICS PROCEDURE



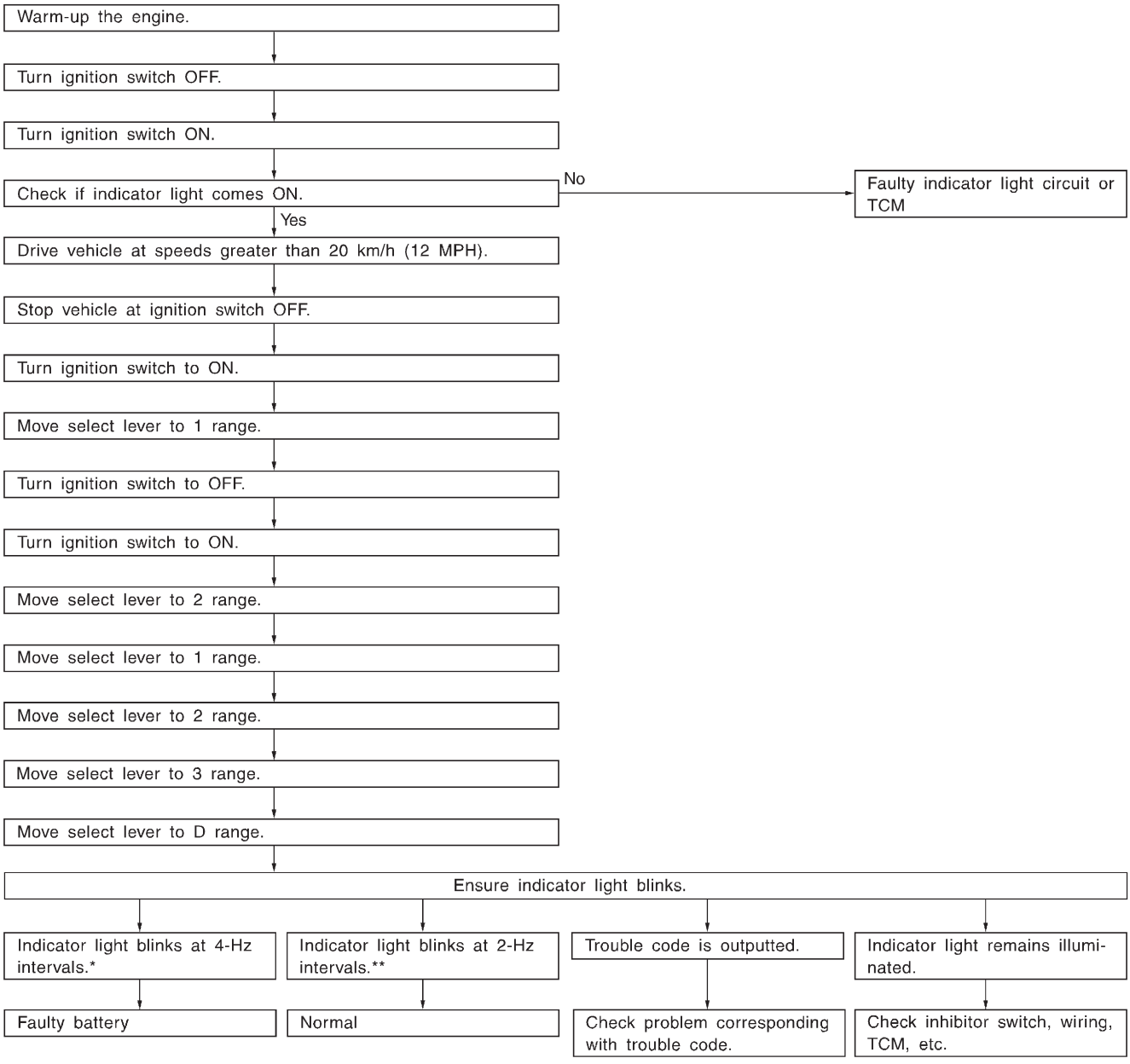
H3M1672G

B: ABNORMAL DISPLAY ON AT OIL TEMP INDICATOR

When any on-board diagnostics item is malfunctioning, the display on the AT OIL TEMP indicator lamp blinks from the time the malfunction is detected after starting the engine until the ignition switch is turned OFF. The malfunctioning part or unit can be determined by a trouble code during on-board diagnostics operation. Problems which occurred previously can also be identified through the memory function. If the AT OIL TEMP indicator does not show a problem (although a problem is occurring), the problem can be determined by checking the performance characteristics of each sensor using the select monitor. Indicator signal is as shown in the figure.



C: ON-BOARD DIAGNOSTICS



* : Blinks every 0.125 (1/8) seconds (until ignition switch is turned OFF).
** : Blinks every 0.25 (1/4) seconds (until ignition switch is turned OFF).

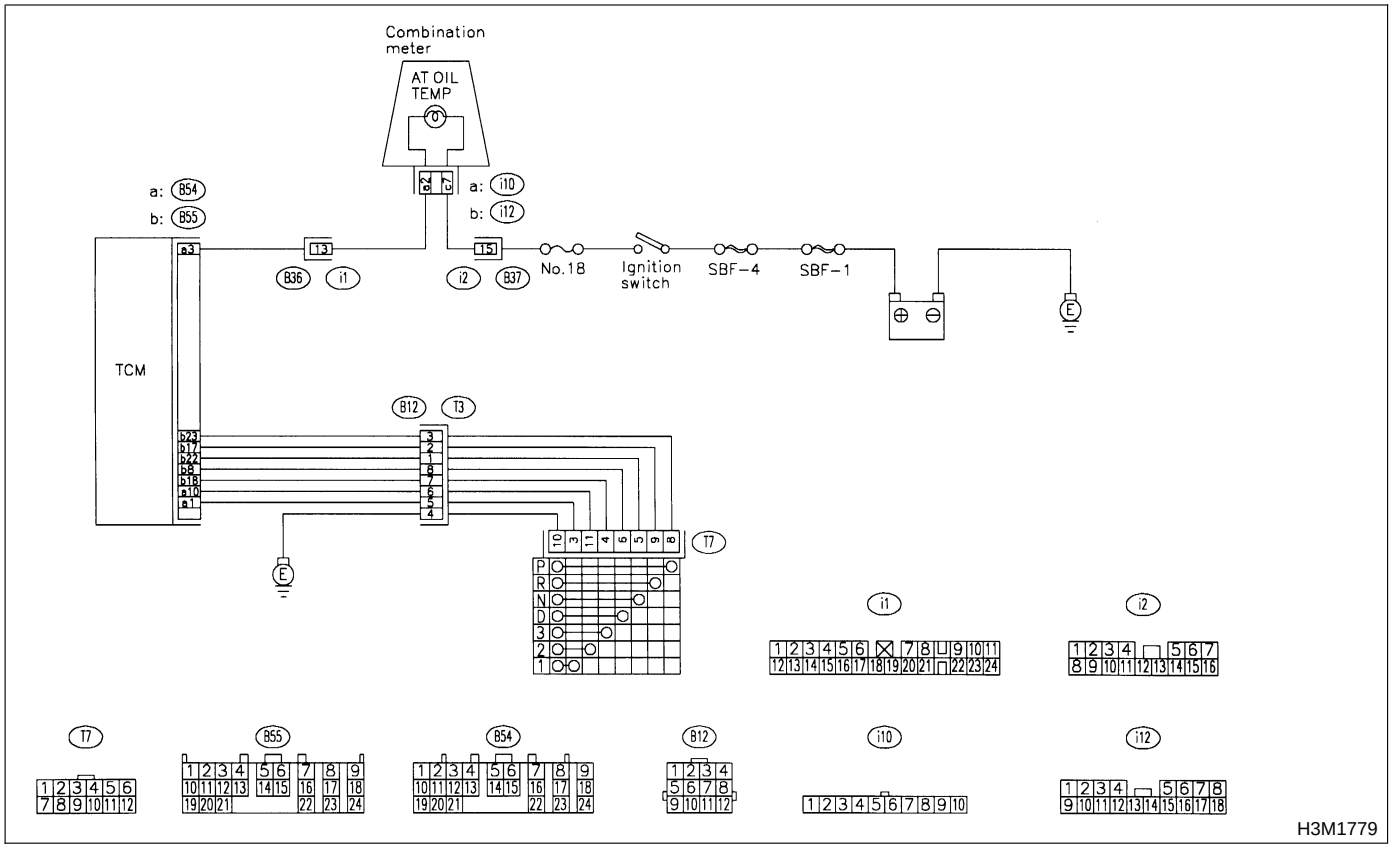
S3M0063A

7. Diagnostics for On-board Diagnostics Failed

A: AT OIL TEMP INDICATOR LIGHT

DIAGNOSIS:
The AT OIL TEMP indicator light circuit is open or shorted.
TROUBLE SYMPTOM:
- When ignition switch is turned to ON (engine OFF), AT OIL TEMP indicator light does not illuminate.
- When on-board diagnostics is performed, AT OIL TEMP indicator light remains illuminated.

WIRING DIAGRAM:



7A1 : CHECK AT OIL TEMP INDICATOR LIGHT.

Turn ignition switch to ON (engine OFF).

CHECK : ***Does AT OIL TEMP indicator light illuminate?***

YES : Go to step **7A2**.

NO : Go to step **7A3**.

7A2 : CHECK AT OIL TEMP INDICATOR LIGHT.

Perform on-board diagnostics. <Ref. to 3-2 [T6C0].>

CHECK : ***Does AT OIL TEMP indicator light blink?***

YES : A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM, inhibitor switch and combination meter.

NO : Go to step **7A8**.

7A3 : CHECK FUSE (NO. 18).

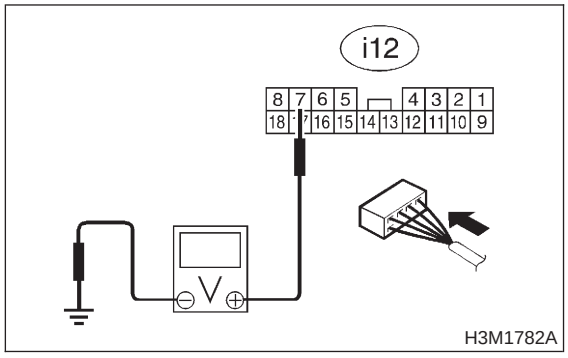
Remove fuse (No. 18).

CHECK : ***Is the fuse (No. 18) blown out?***
YES : Replace fuse (No. 18). If replaced fuse (No. 18) is blown out easily, repair short circuit in harness between fuse (No. 18) and combination meter.
NO : Go to step **7A4**.

7A4 : CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND IGNITION SWITCH.

1) Turn ignition switch to ON (engine OFF).
2) Measure voltage between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 7 (+) — Chassis ground (−):

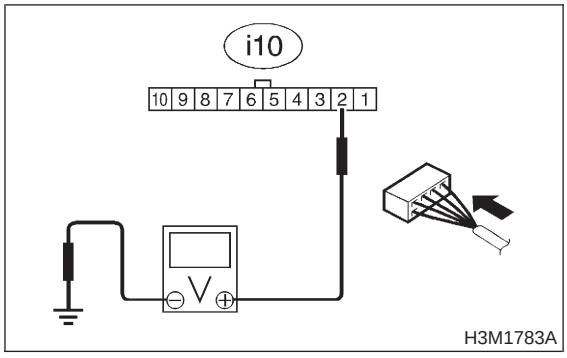


CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7A5**.
NO : Repair open circuit in harness between combination meter and fuse, and poor contact in coupling connector.

7A5 : CHECK COMBINATION METER.

Measure voltage between combination meter connector and chassis ground.

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

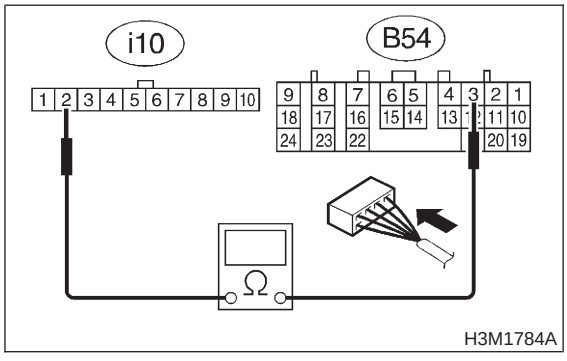


CHECK : ***Is voltage less than 1 V?***
YES : Go to step **7A6**.
NO : Replace combination meter. <Ref. to 6-2 [W800].>

7A6 : CHECK OPEN CIRCUIT OF HARNESS.

1) Disconnect connector from combination meter connector.
2) Measure resistance of harness between combination meter.

Connector & terminal
(B54) No. 3 — (i10) No. 2:

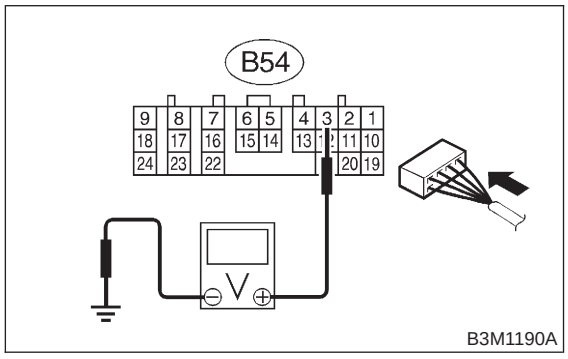


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7A7**.
NO : Repair open circuit in harness between TCM and combination meter, and poor contact in coupling connector.

7A7 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connector to TCM and combination meter.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector and chassis ground.

Connector & terminal
(B54) No. 3 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Even if AT OIL TEMP indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

7A8 : CHECK INHIBITOR SWITCH.

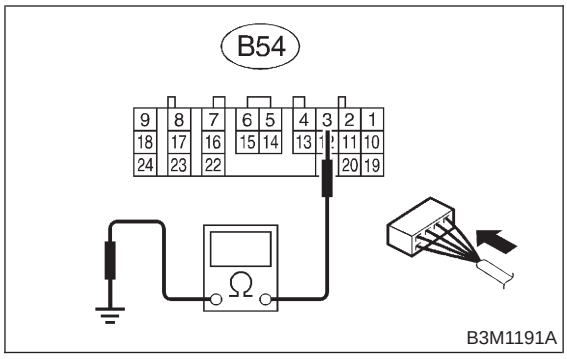
1) Connect Subaru Select Monitor to data link connector.
2) Turn ignition switch to ON.
3) Subaru Select Monitor to ON.
4) Read data of range switch using Subaru Select Monitor.
● Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of Subaru Select Monitor light up?***
YES : Go to step **7A9**.
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

7A9 : CHECK SHORT CIRCUIT OF HARNESS.

1) Disconnect connector from TCM.
2) Remove combination meter.
3) Disconnect connector from combination meter.
4) Measure resistance of harness connector between TCM and combination meter.

Connector & terminal/specified resistance
(B54) No. 3 — Chassis ground:

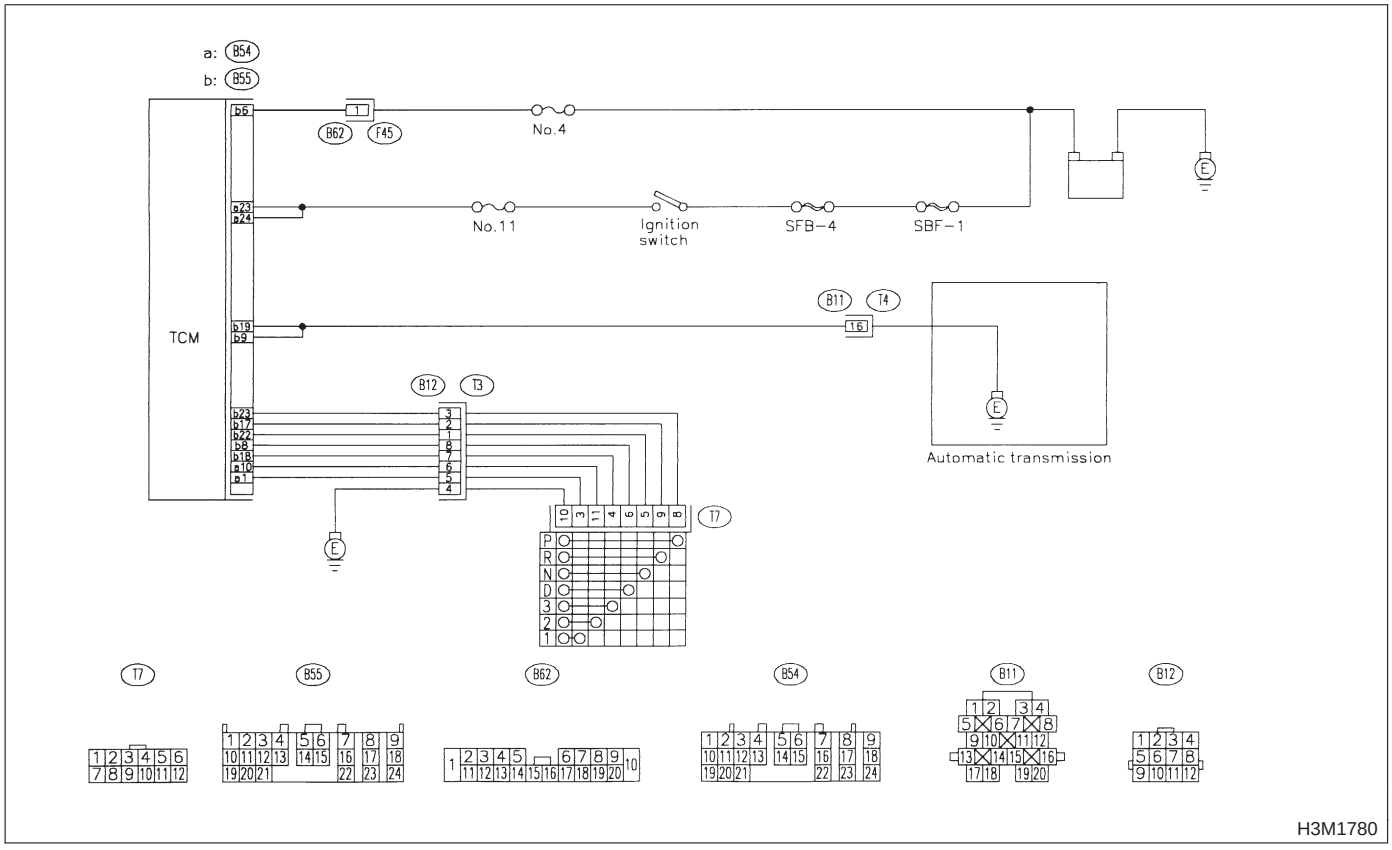


CHECK : ***Is the resistance less than 1 MΩ?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Repair short circuit in harness between combination meter connector and TCM connector.

MEMO:

B: CONTROL MODULE POWER SUPPLY AND GROUND LINE

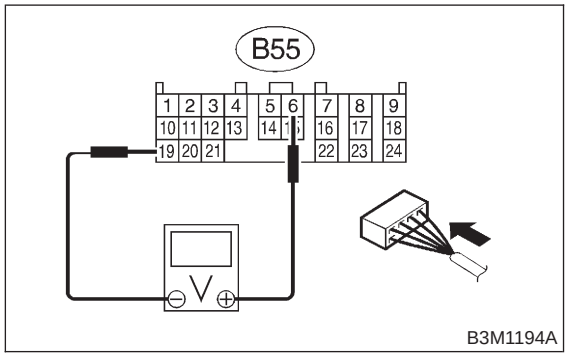
WIRING DIAGRAM:



7B1 : CHECK BACK-UP POWER SUPPLY CIRCUIT.

1) Turn ignition switch to ON.
2) Measure back-up power supply voltage between TCM connector terminal.

Connector & terminal
(B55) No. 6 (+) — No. 19 (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **7B3**.
NO : Go to step **7B2**.

7B2 : CHECK FUSE (NO. 4).

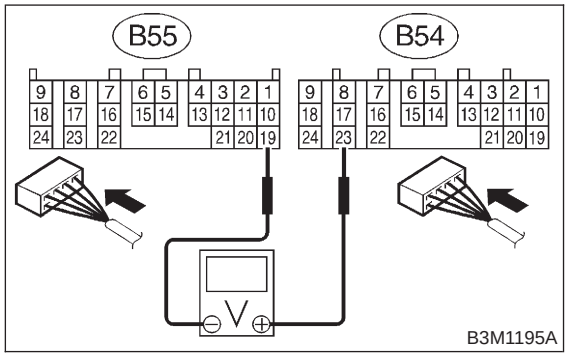
Remove fuse (No. 4).

CHECK : ***Is the fuse (No. 4) blown out?***
YES : Replace fuse (No. 4). If replaced fuse (No. 4) has blown out easily, repair short circuit in harness between fuse (No. 4) and TCM.
NO : Repair open circuit in harness between fuse (No. 4) and TCM, and poor contact in coupling connector.

7B3 : CHECK IGNITION POWER SUPPLY CIRCUIT.

1) Turn ignition switch to ON (engine OFF).
2) Measure ignition power supply voltage between TCM connector terminal.

Connector & terminal
(B54) No. 23 (+) — (B55) No. 19 (−):

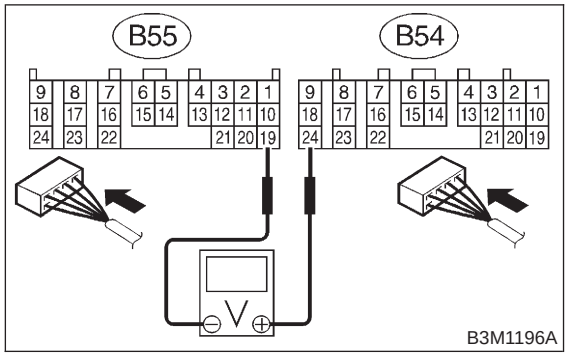


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **7B4**.
NO : Go to step **7B5**.

7B4 : CHECK IGNITION POWER SUPPLY CIRCUIT.

1) Turn ignition switch to ON (engine OFF).
2) Measure ignition power supply voltage between TCM connector terminal.

Connector & terminal
(B54) No. 24 (+) — (B55) No. 19:



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **7B6**.
NO : Go to step **7B5**.

7B5 : CHECK FUSE (NO. 11).

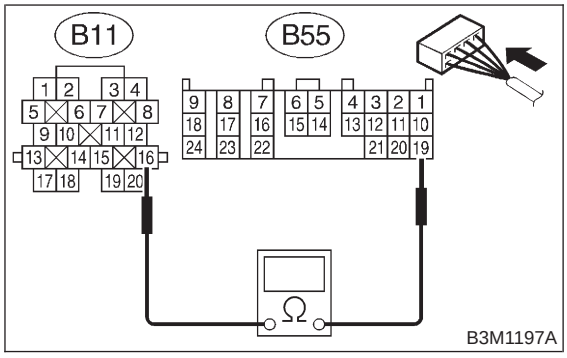
Remove fuse (No. 11).

CHECK : ***Is the fuse (No. 11) blown out?***
YES : Replace fuse (No. 11). If replaced fuse (No. 11) has blown out easily, repair short circuit in harness between fuse (No. 11) and TCM.
NO : Repair open circuit in harness between fuse (No. 11) and TCM, and poor contact in coupling connector.

7B6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

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

Connector & terminal
(B55) No. 19 — (B11) No. 16:

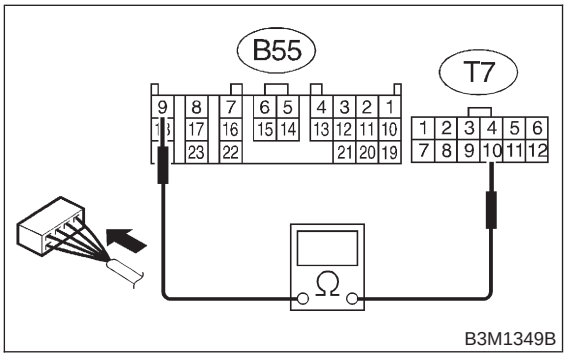


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7B7**.
NO : Repair open circuit in harness between TCM and transmission harness connector.

7B7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from inhibitor switch.
3) Measure resistance of harness between inhibitor switch side connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

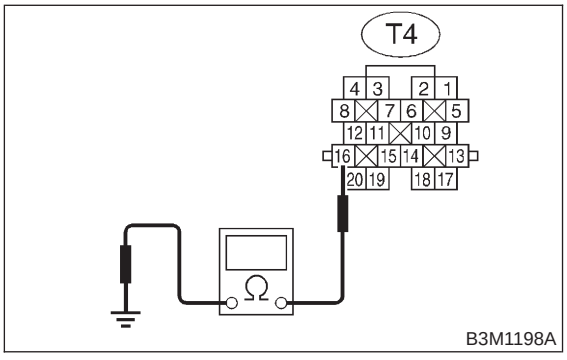


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7B8**.
NO : Repair open circuit in harness between TCM and inhibitor side connector, and poor contact in coupling connector.

7B8 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND.

Measure resistance of harness between transmission and transmission ground.

Connector & terminal
(T4) No. 16 — Transmission ground:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7B9**.
NO : Repair open circuit in harness between transmission and transmission ground.

7B9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in control module power supply and ground line?***
YES : Repair poor contact and ground terminal.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8. Diagnostic Chart with Trouble Code

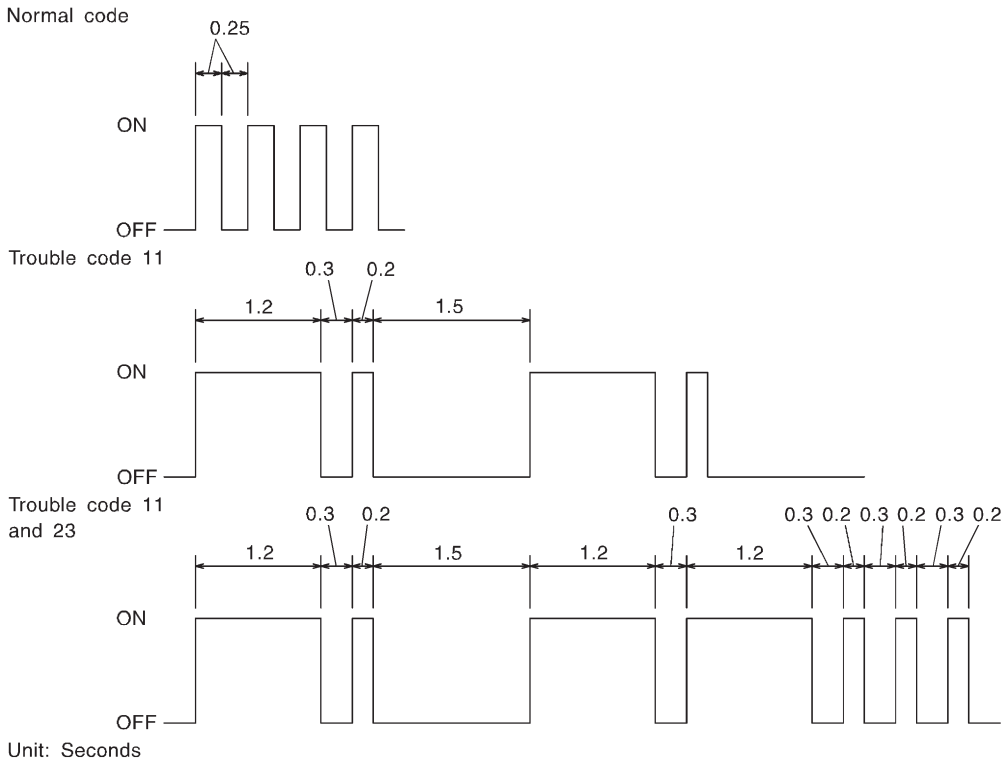
A: LIST OF TROUBLE CODE

1. TROUBLE CODE

Trouble code	Item	Content of diagnosis	Title index No.
11	Engine speed signal	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8C0].>
23	AT load signal (Except 2200 cc California spec. vehicles)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8D0].>
27	ATF temperature sensor	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8E0].>
31	Throttle position sensor	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8F0].>
33	Vehicle speed sensor 2 (Front)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8G0].>
36	Torque converter turbine speed sensor	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8H0].>
38	Torque control signal	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8I0].>
45	AT load signal (2200 cc California spec. vehicles)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8J0].>
71	Shift solenoid 1	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8K0].>
72	Shift solenoid 2	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8L0].>
73	Low clutch timing solenoid	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8M0].>
74	2-4 brake timing solenoid	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8N0].>
75	Duty solenoid A	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8O0].>
76	Duty solenoid D	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8P0].>
77	Duty solenoid B	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8Q0].>
79	Duty solenoid C	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8R0].>
93	Vehicle speed sensor 1 (Rear)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8S0].>

2. HOW TO READ TROUBLE CODE OF INDICATOR LIGHT

The AT OIL TEMP indicator light flashes the code corresponding to the faulty part.
The long segment (1.2 sec on) indicates a “ten”, and the short segment (0.2 sec on) signifies a “one”.



B: CLEAR MEMORY

Current trouble codes shown on the display are cleared by turning the ignition switch OFF after conducting on-board diagnostics operation. Previous trouble codes, however, cannot be cleared since they are stored in the TCM memory which is operating on the back-up power supply. These trouble codes can be cleared by removing the specified fuse (located under the light or left lower position of the instrument panel).

CLEAR MEMORY:

Removal of No. 4 fuse (for at least one minute)

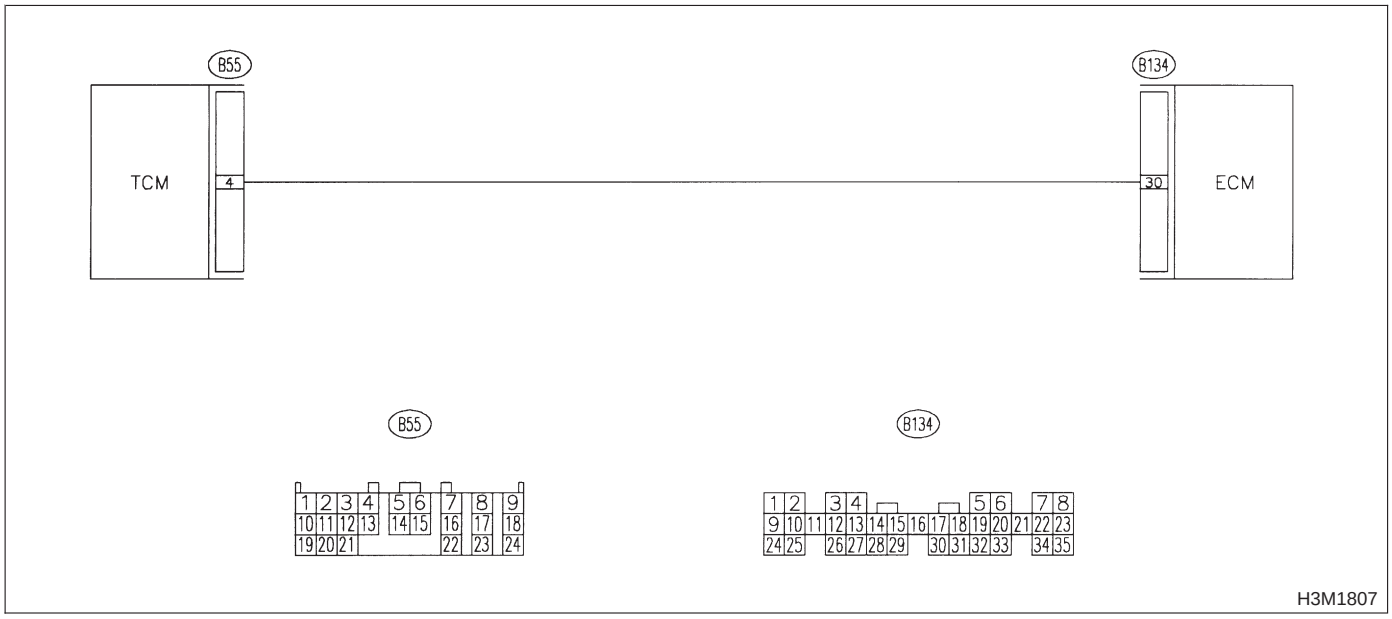
- The No. 4 fuse is located in the line to the memory back-up power supply of the TCM. Removal of this fuse clears the previous trouble codes stored in the TCM memory.
- Be sure to remove the No. 4 fuse for at least the specified length of time. Otherwise, trouble codes may not be cleared.

MEMO:

C: TROUBLE CODE 11 — ENGINE SPEED SIGNAL —

DIAGNOSIS:
Engine speed input signal circuit is open or shorted.
TROUBLE SYMPTOM:
- No lock-up (after engine warm-up).
- AT OIL TEMP indicator remains on when vehicle speed is “0”.

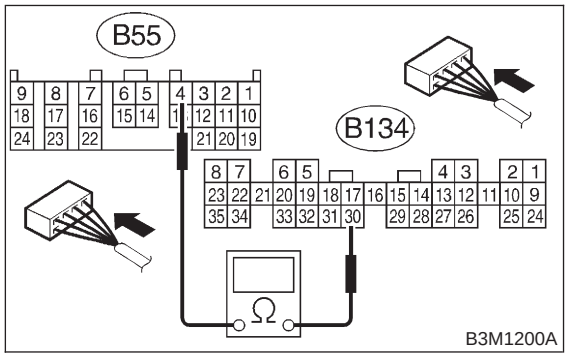
WIRING DIAGRAM:



8C1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

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

Connector & terminal
(B55) No. 4 — (B134) No. 30:

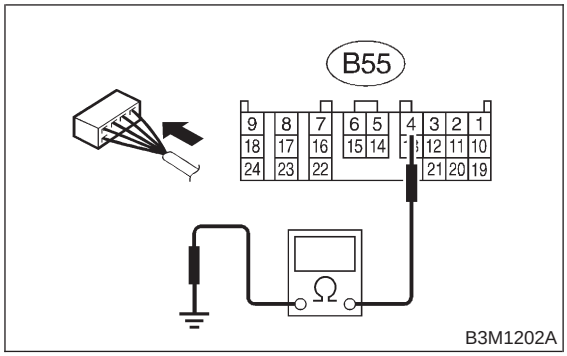


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8C2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8C2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 4 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8C3**.
NO : Repair short circuit in harness between TCM and ECM connector.

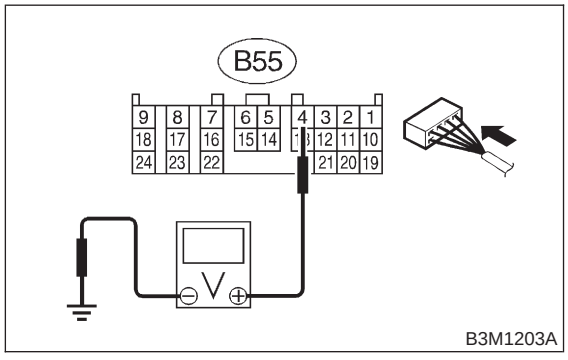
8C3 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8C5**.
NO : Go to step **8C4**.

8C4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector and chassis ground.

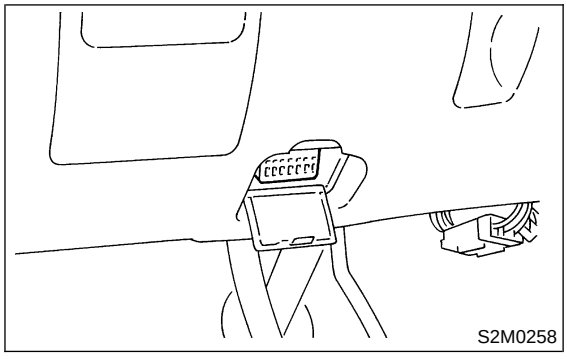
Connector & terminal
(B55) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10.5 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8C6**.

8C5 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and ECM.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
5) Engine idling.
6) Read data of engine speed using Subaru Select Monitor.
● Display shows engine speed signal value sent from ECM.

CHECK : ***Is the revolution value the same as the tachometer reading shown on the combination meter?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8C6**.

8C6 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in engine speed signal circuit?***
YES : Repair poor contact.
NO : Go to step **8C7**.

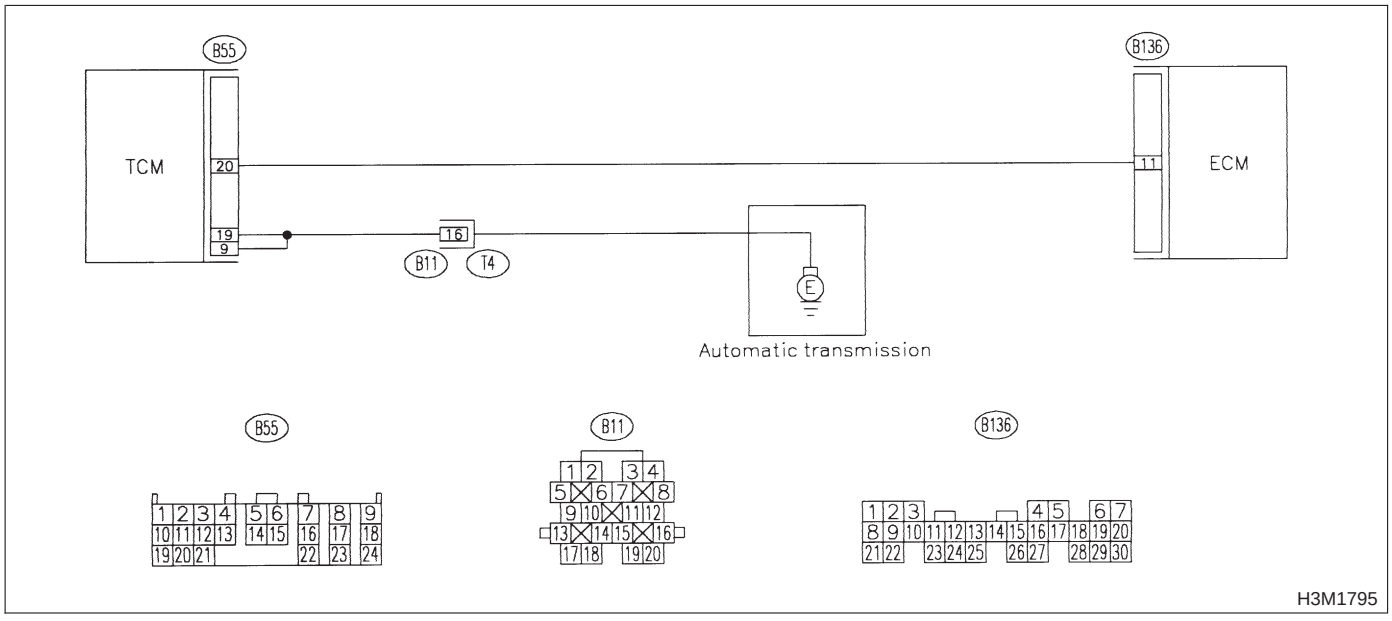
8C7 : CONFIRM TROUBLE CODE 11.

CHECK : ***Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

MEMO:

D: TROUBLE CODE 23 — AT LOAD SIGNAL (EXCEPT 2200 cc CALIFORNIA SPEC. VEHICLES) —

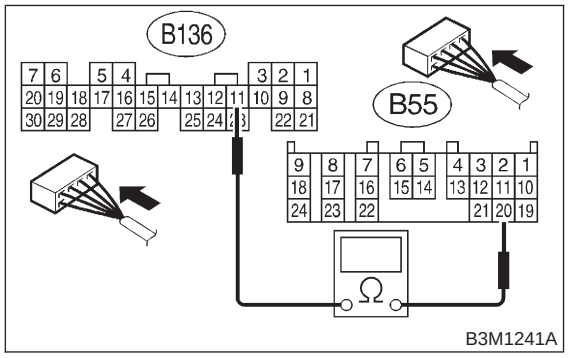
DIAGNOSIS:
Input signal circuit of TCM from ECM is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8D1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

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

Connector & terminal
(B55) No. 20 — (B136) No. 11:

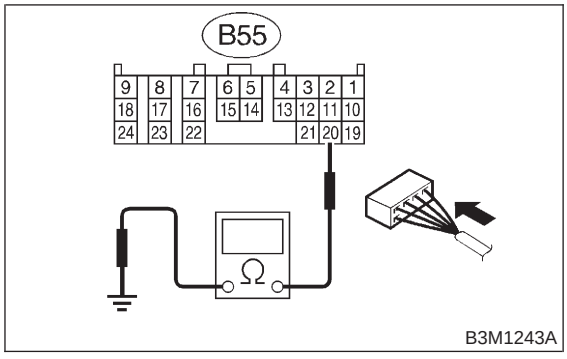


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8D2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8D2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 20 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8D3**.
NO : Repair short circuit in harness between TCM and ECM connector.

8D3 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8D5**.
NO : Go to step **8D4**.

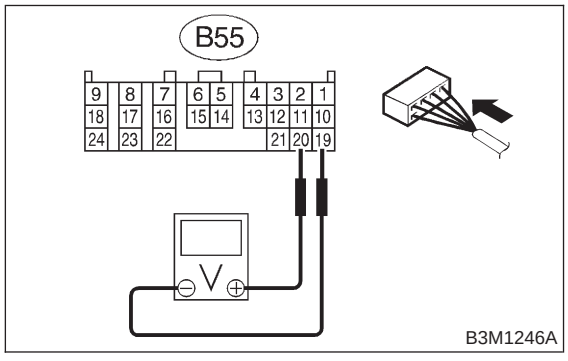
8D4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling.
4) Measure voltage between TCM connectors.

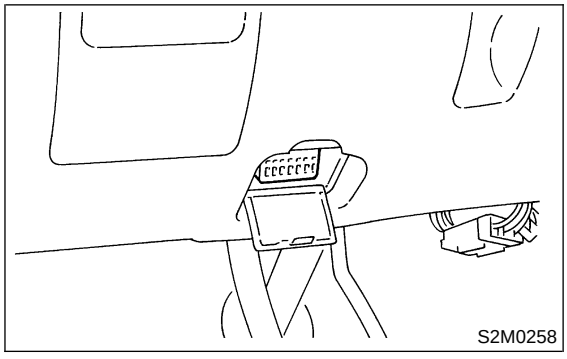
Connector & terminal
(B55) No. 20 (+) — No. 19 (−):



CHECK : ***Is the voltage between 0.5 and 1.2 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8D6**.

8D5 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to OFF.
3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select monitor switch to ON.
5) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
6) Engine idling.
7) Read data of mass air flow signal using Subaru Select Monitor.
● Display shows mass air flow signal value sent from ECM.

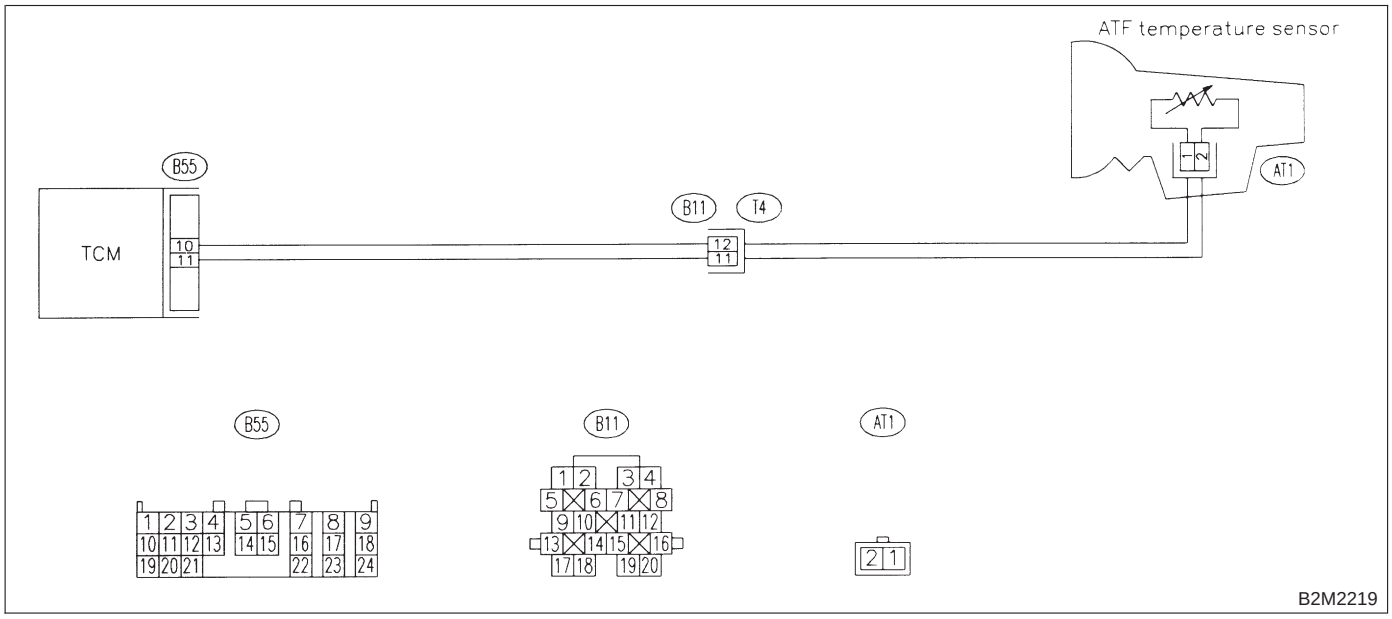
CHECK : ***Is the value between 0.5 and 1.2 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8D6**.

8D6 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in mass air flow signal circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

E: TROUBLE CODE 27 — ATF TEMPERATURE SENSOR —

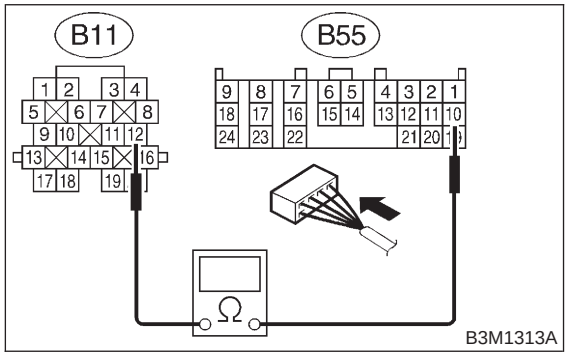
DIAGNOSIS:
Input signal circuit of TCM to ATF temperature sensor is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8E1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

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

Connector & terminal
(B55) No. 10 — (B11) No. 12:

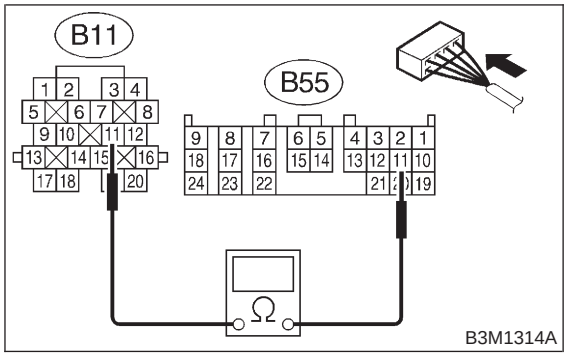


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E2**.
NO : Repair open circuit in harness between TCM and transmission connector.

8E2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 11 — (B11) No. 11:

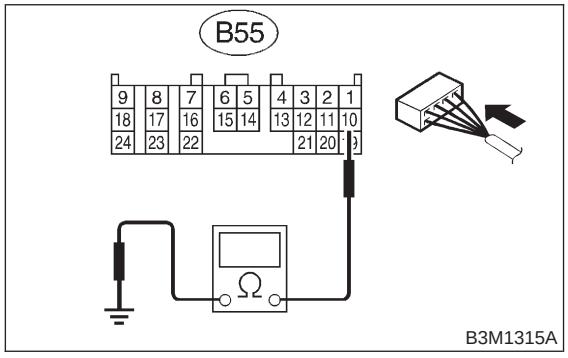


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8E3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 10 — Chassis ground:

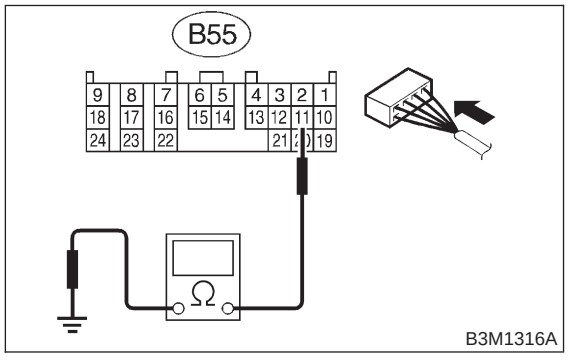


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E4**.
NO : Repair short circuit in harness between TCM and transmission connector.

8E4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 11 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E5**.
NO : Repair short circuit in harness between TCM and transmission connector.

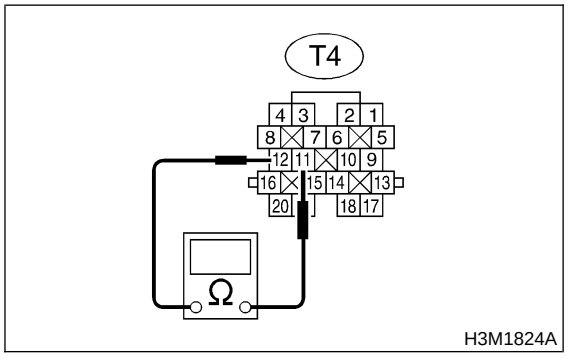
8E5 : CHECK ATF TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Connect connectors to transmission and TCM.
3) Turn ignition switch to ON and start engine.
4) Warm-up the transmission until ATF temperature reaches to 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Measure resistance between transmission connector terminals.
6) Disconnect connector from transmission.

Connector & terminal
(T4) No. 11 — No. 12:

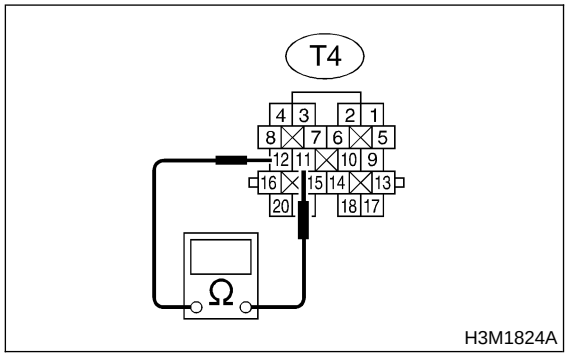


CHECK : ***Is the resistance between 275 and 375 Ω?***
YES : Go to step **8E6**.
NO : Go to step **8E13**.

8E6 : CHECK ATF TEMPERATURE SENSOR.

1) Turn ignition switch to ON (engine OFF).
2) Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 11 — No. 12:



CHECK : ***Does the resistance value increase while the ATF temperature decreases?***
YES : Go to step **8E7**.
NO : Go to step **8E13**.

8E7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8E10**.
NO : Go to step **8E8**.

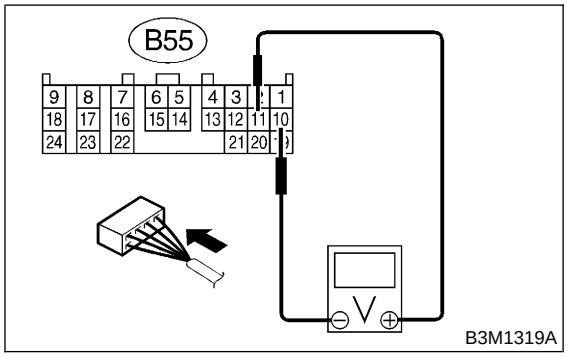
8E8 : CHECK INPUT SIGNAL FOR TCM.

1) Warm-up the transmission until ATF temperature is about 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

2) Measure voltage between TCM connector terminal.

Connector & terminal
(B55) No. 11 (+) — No. 10 (−):

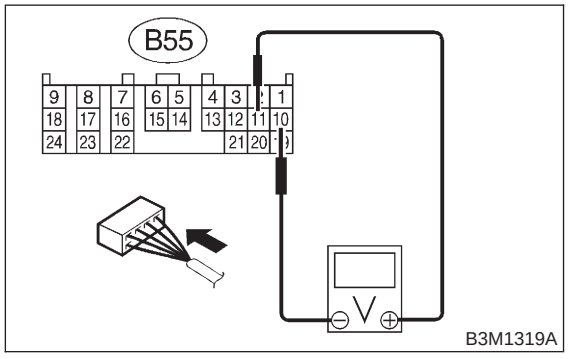


CHECK : ***Is the voltage between 2.9 and 4.0 V?***
YES : Go to step **8E9**.
NO : Go to step **8E12**.

8E9 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to ON (engine OFF).
2) Measure voltage between TCM connector terminal.

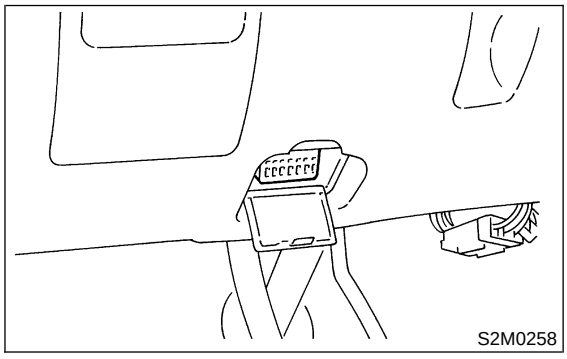
Connector & terminal
(B55) No. 11 (+) — No. 10 (−):



CHECK : ***Is the voltage between 1.0 and 1.4 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8E12**.

8E10 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

6) Read data of ATF temperature using Subaru Select Monitor.
- ATF temperature is indicated in “°F” or “°C”.

CHECK : ***Is the ATF temperature between 70 and 110°C (158 and 230°F).***
YES : Go to step **8E11**.
NO : Go to step **8E12**.

8E11 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

Turn ignition switch to ON (engine OFF).

CHECK : ***Does the ATF temperature gradually decrease?***
YES : Even if “AT OIL TEMP” light up, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the case. Repair harness or contact in the ATF temperature sensor and transmission connector.
NO : Go to step **8E12**.

8E12 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in ATF temperature sensor circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8E13 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Lift-up the vehicle and place safety stand.

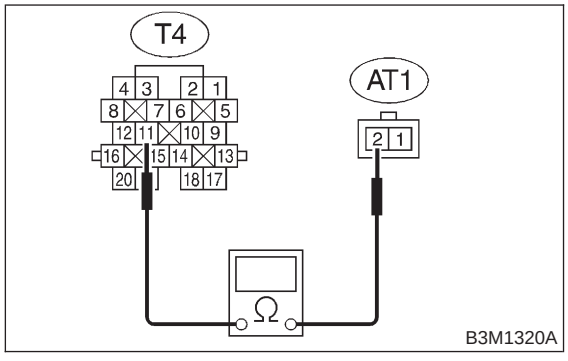
CAUTION:
On AWD models, raise all wheels off ground.

5) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

6) Remove oil pan, and disconnect connector from ATF temperature sensor connector.
7) Measure resistance of harness between ATF temperature sensor and transmission connector.

Connector & terminal
(T4) No. 11 — (AT1) No. 2:

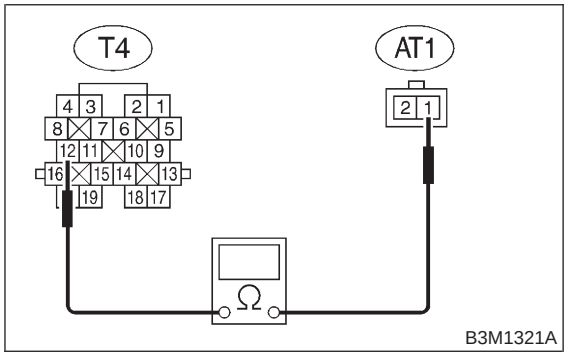


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E14**.
NO : Repair open circuit in harness between ATF temperature sensor and transmission connector.

8E14 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between ATF temperature sensor and transmission connector.

Connector & terminal
(T4) No. 12 — (AT1) No. 1:

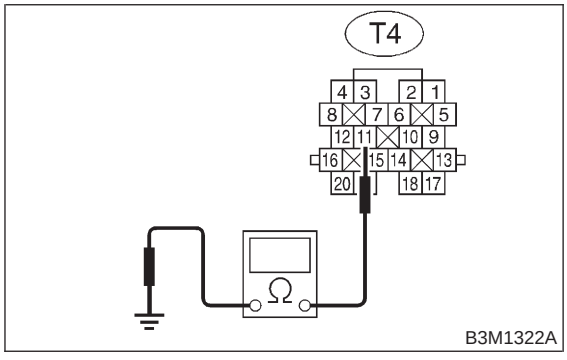


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E15**.
NO : Repair open circuit in harness between ATF temperature sensor and transmission connector.

8E15 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 11 — Transmission ground:

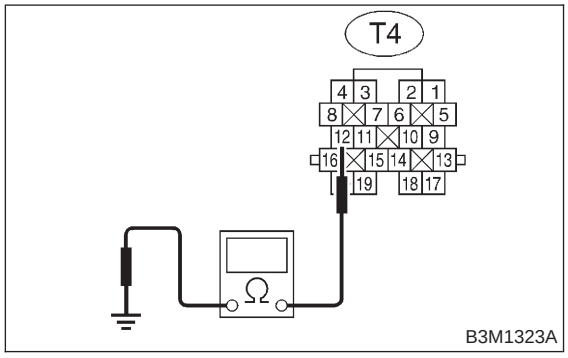


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E16**.
NO : Repair short circuit in harness between ATF temperature sensor and transmission connector.

8E16 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between transmission connector and transmission ground.

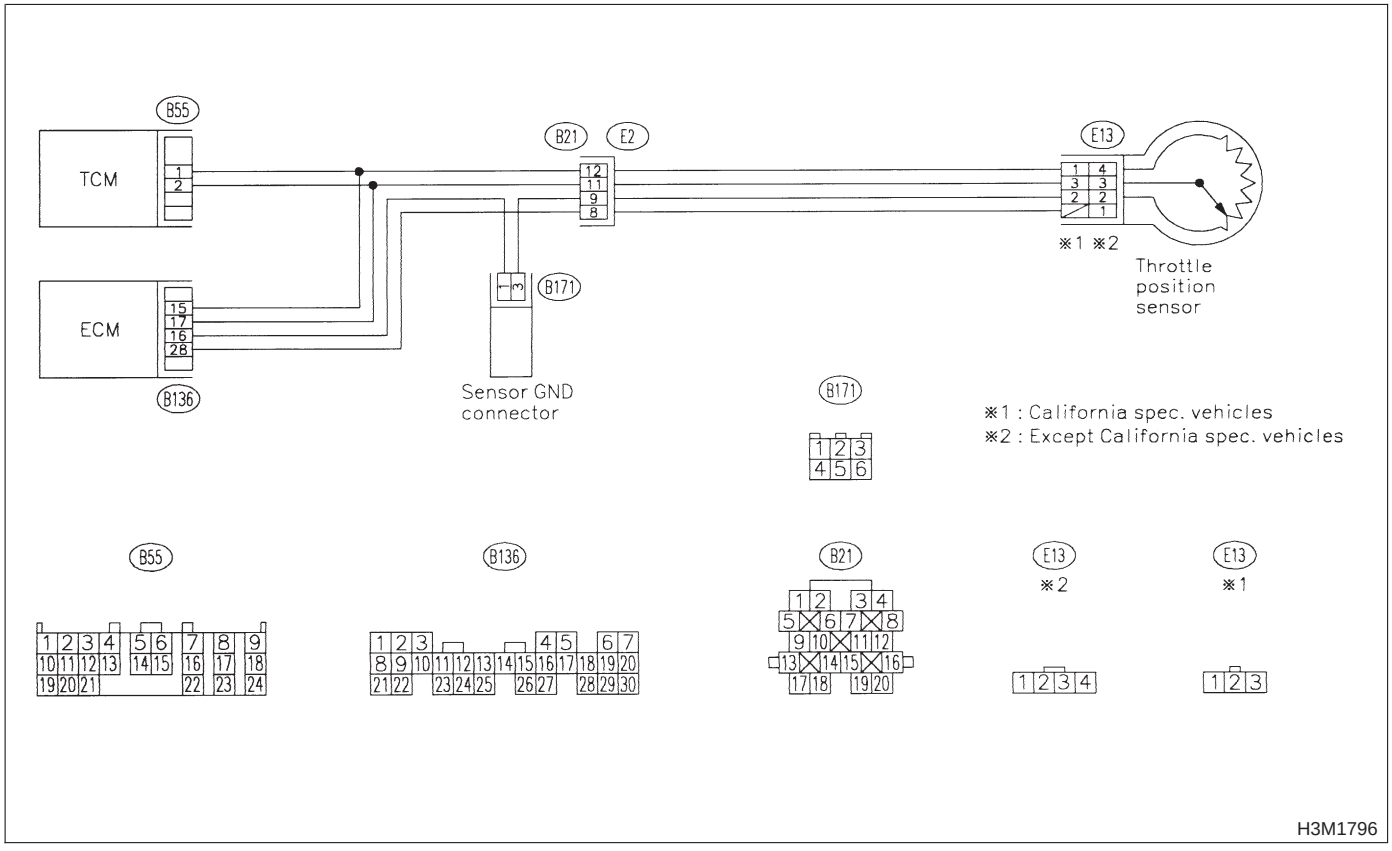
Connector & terminal
(T4) No. 12 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Replace ATF temperature sensor. <Ref. to 3-2 [W4A0].>
NO : Repair short circuit in harness between ATF temperature sensor and transmission connector.

F: TROUBLE CODE 31 — THROTTLE POSITION SENSOR —

DIAGNOSIS:
Input signal circuit of throttle position sensor is open or shorted.
TROUBLE SYMPTOM:
Shift point too high or too low; engine brake not effected in “3” range: excessive shift shock; excessive tight corner “braking”.
WIRING DIAGRAM:



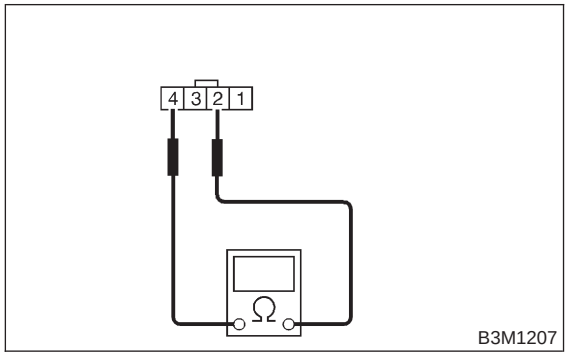
8F1 : CHECK CALIFORNIA SPEC. VEHICLES.

CHECK : ***Is the vehicle California spec. vehicle?***
YES : Go to step **8F6**.
NO : Go to step **8F2**.

8F2 : CHECK THROTTLE POSITION SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 4 — No. 2:

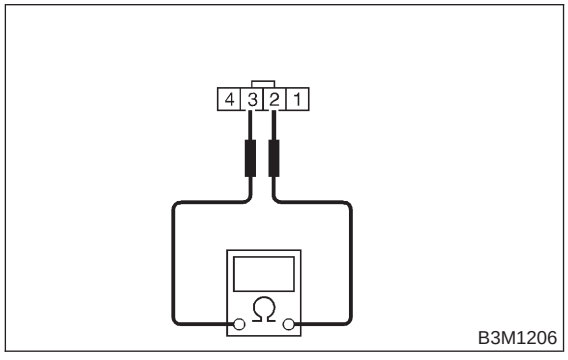


CHECK : ***Is the resistance between 0.3 and 0.7 kΩ?***
YES : Go to step **8F3**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F3 : CHECK THROTTLE POSITION SENSOR.

Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 2 — No. 3:

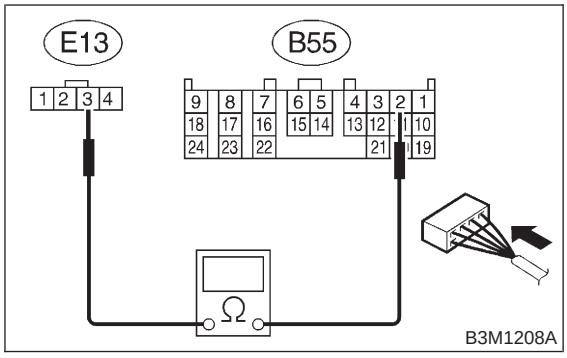


CHECK : ***Is the resistance between 3.5 and 6.5 kΩ?***
YES : Go to step **8F4**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 2 — (E13) No. 3:

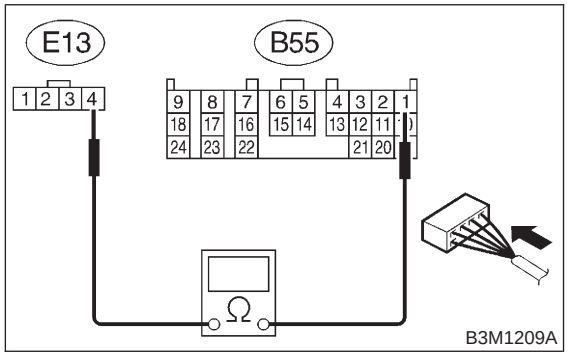


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F5**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 1 — (E13) No. 4:

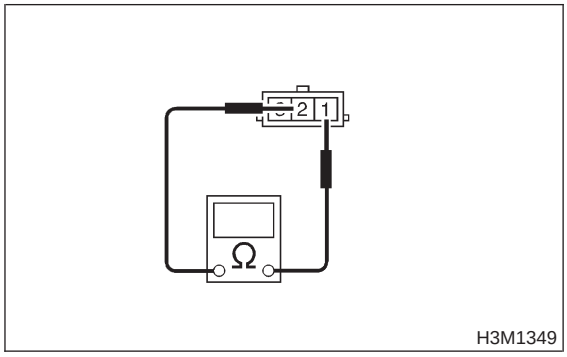


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F10**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F6 : CHECK THROTTLE POSITION SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 1 — No. 2:

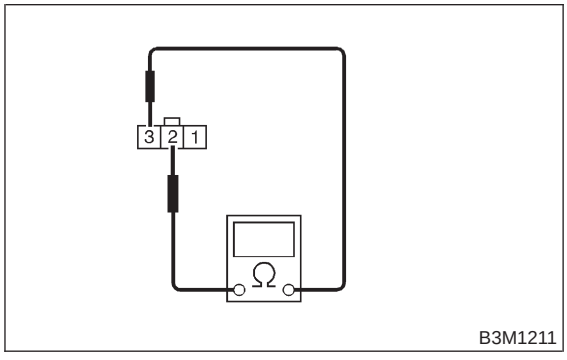


CHECK : ***Is the resistance between 0.3 and 0.7 kΩ?***
YES : Go to step **8F7**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F7 : CHECK THROTTLE POSITION SENSOR.

Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 2 — No. 3:

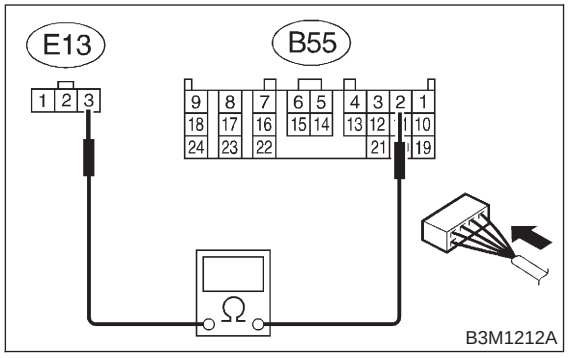


CHECK : ***Is the resistance between 3.5 and 6.5 kΩ?***
YES : Go to step **8F8**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 2 — (E13) No. 3:

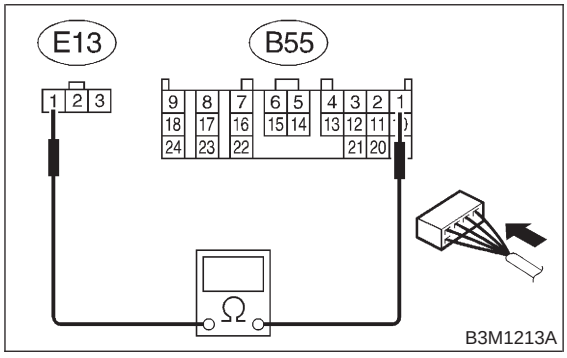


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F9**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F9 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 1 — (E13) No. 1:

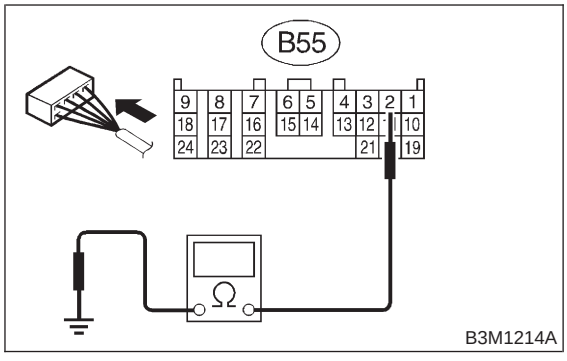


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F10**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F10 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 2 — Chassis ground:

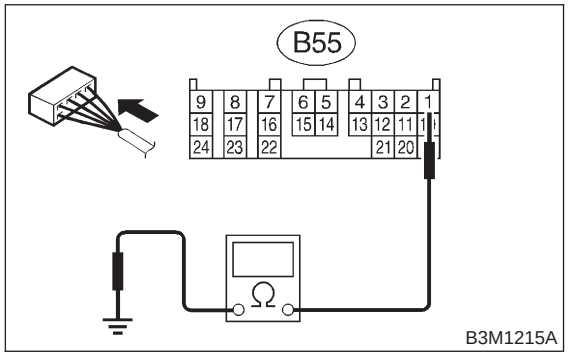


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8F11**.
NO : Repair short circuit in harness between TCM and throttle position sensor connector.

8F11 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 1 — Chassis ground:

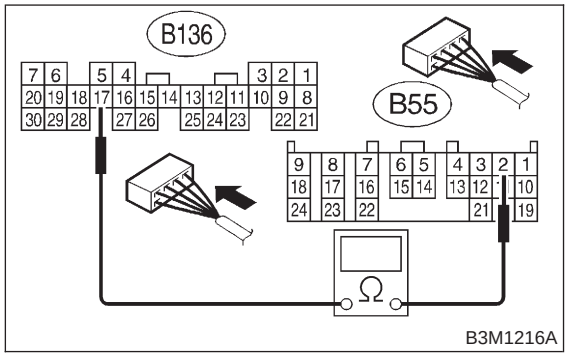


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8F12**.
NO : Repair short circuit in harness between TCM and throttle position sensor connector.

8F12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Disconnect connector from ECM.
2) Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 2 — (B136) No. 17:

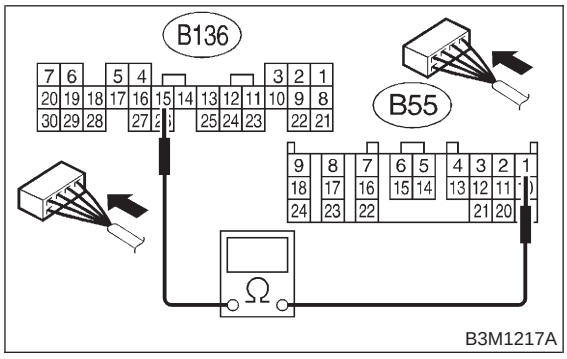


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F13**.
NO : Repair open circuit in harness between TCM and ECM connector.

8F13 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 1 — (B136) No. 15:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F14**.
NO : Repair open circuit in harness between TCM and ECM connector.

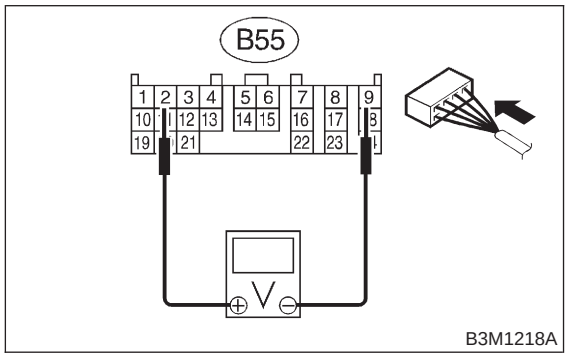
8F14 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8F17**.
NO : Go to step **8F15**.

8F15 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM, throttle position sensor and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 2 (+) — No. 9 (−):

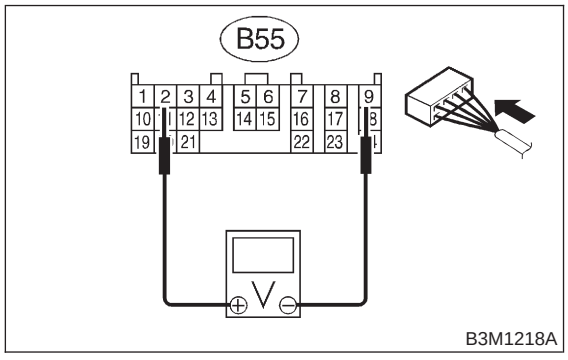


CHECK : ***Is the voltage between 0.3 and 0.7 V in throttle fully closed?***
YES : Go to step **8F16**.
NO : Go to step **8F21**.

8F16 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM connector terminals.

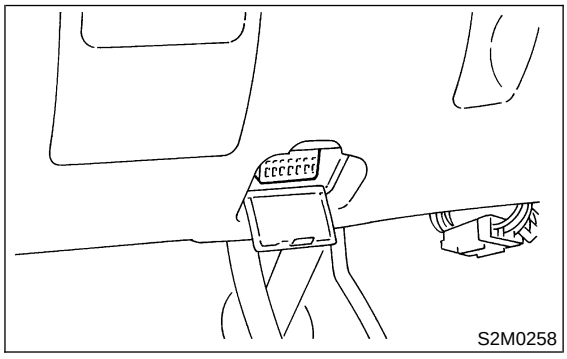
Connector & terminal
(B55) No. 2 (+) — No. 9 (−):



CHECK : ***Is the voltage between 4.3 and 4.9 V with throttle fully open?***
YES : Go to step **8F19**.
NO : Go to step **8F21**.

8F17 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM, throttle position sensor and ECM.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON (engine OFF).
4) Turn Subaru Select Monitor switch to ON.
5) Throttle fully closed.
6) Read data of throttle position sensor using Subaru Select Monitor.
- Throttle position sensor input signal is indicated.

CHECK : ***Is the value voltage between 0.3 and 0.7 V?***
YES : Go to step **8F18**.
NO : Go to step **8F21**.

8F18 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

Throttle fully open.

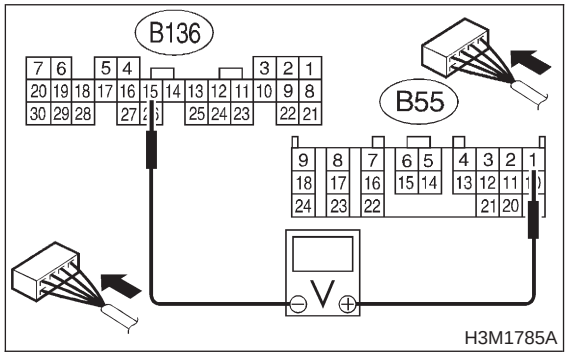
NOTE:
Must be changed correspondingly with accelerator pedal operation (from “released” to “depressed” position).

CHECK : ***Is the value voltage between 4.3 and 4.9 V ?***
YES : Go to step **8F20**.
NO : Go to step **8F21**.

8F19 : CHECK INPUT SIGNAL FOR TCM (THROTTLE POSITION SENSOR POWER SUPPLY).

Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 1 (+) — (B136) No. 15 (−):



CHECK : ***Is the voltage between 5.02 and 5.22 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.

NO : Go to step **8F21**.

8F20 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR (THROTTLE POSITION SENSOR POWER SUPPLY).

Read data of throttle position sensor power supply using Subaru Select Monitor.
● Throttle position sensor power supply voltage is indicated.

CHECK : ***Is the value voltage between 5.02 and 5.22 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.

NO : Go to step **8F21**.

8F21 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in throttle position sensor circuit?***

YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

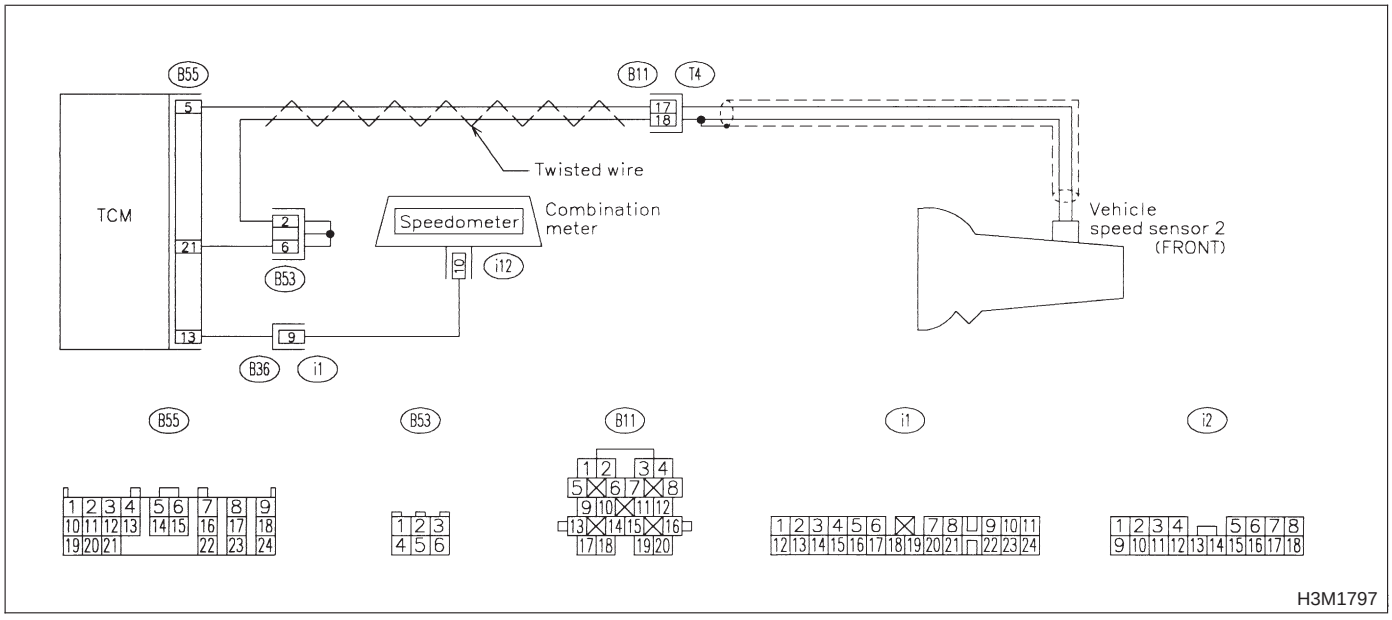
MEMO:

G: TROUBLE CODE 33 — VEHICLE SPEED SENSOR 2 (FRONT) —

DIAGNOSIS:
- The vehicle speed signal is abnormal.
- The circuit in combination meter is faulty.
- The harness connector between TCM and vehicle speed sensor is in short or open.

TROUBLE SYMPTOM:
- Erroneous idling.
- Engine stalls.
- Poor driving performance.

WIRING DIAGRAM:



8G1 : CHECK OPERATION OF SPEEDOMETER.

CHECK : ***Does speedometer operate normally?***

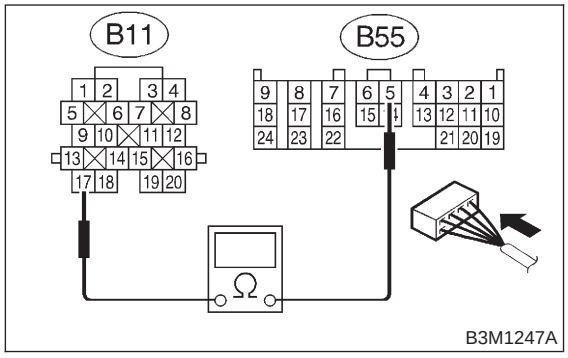
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.

NO : Go to step **8G2**.

8G2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 5 — (B11) No. 17:

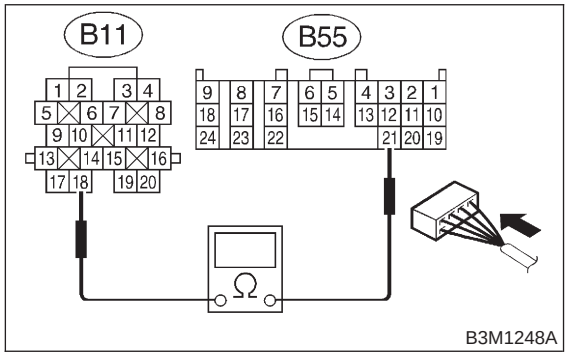


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8G3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8G3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — (B11) No. 18:

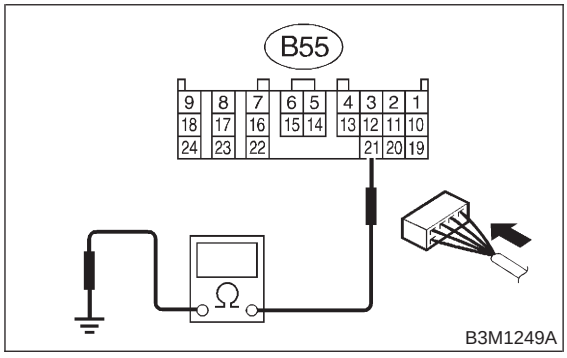


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8G4**.
NO : Repair open circuit in harness between TCM and transmission connector, and poor contact in coupling connector.

8G4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — Chassis ground:

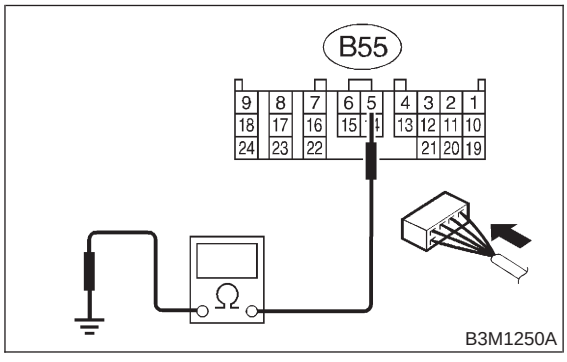


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8G5**.
NO : Repair short circuit in harness between TCM and transmission connector.

8G5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 5 — Chassis ground:

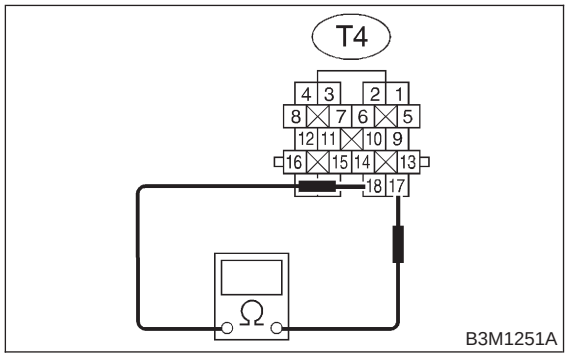


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8G6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8G6 : CHECK VEHICLE SPEED SENSOR 2.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 17 — No. 18:



CHECK : ***Is the resistance between 450 and 650 Ω?***
YES : Go to step **8G7**.
NO : Replace transmission harness connector. <Ref. to 3-2 [W11B0].>

8G7 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8G10**.
NO : Go to step **8G8**.

8G8 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8G11**.
NO : Go to step **8G9**.

8G9 : CHECK INPUT SIGNAL FOR TCM.

1) Connect all connectors.
2) Lift-up or raise the vehicle and place safety stands.

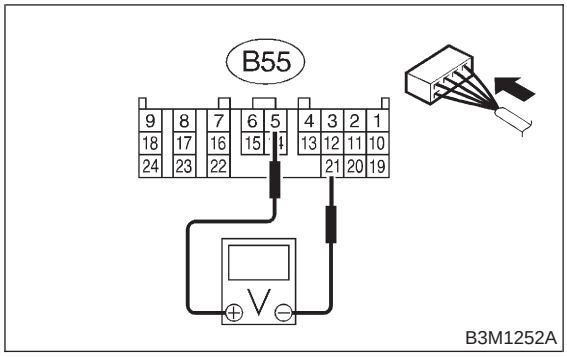
CAUTION:
On AWD models, raise all wheels off floor.

3) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 5 (+) — No. 21 (−):



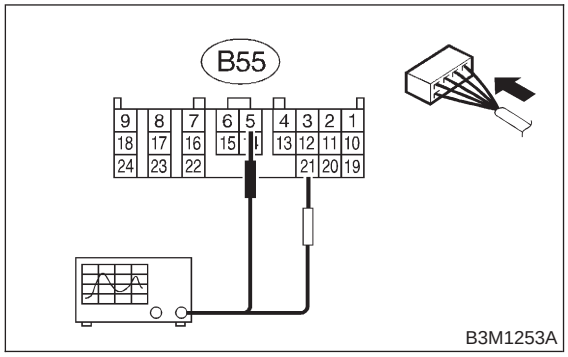
CHECK : ***Is the voltage more than AC 1 V?***
YES : Go to step **8G12**.
NO : Go to step **8G19**.

8G10 : CHECK VEHICLE SPEED SENSOR 2 USING OSCILLOSCOPE.

1) Connect all connectors.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

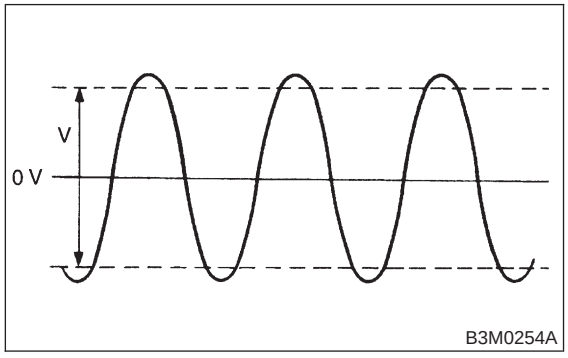
3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 5
Earth lead; (B55) No. 21



4) Start the engine, and drive the wheels slowly.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunctions. When AT control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <Ref. to 4-4 [T6D2].>

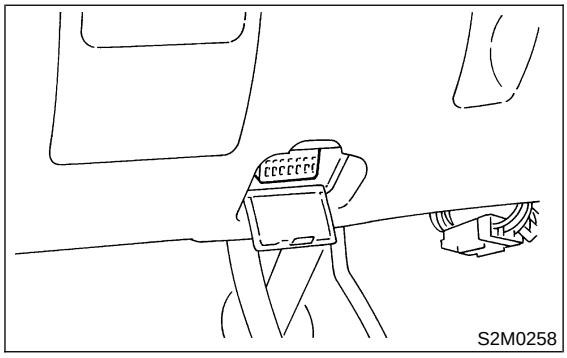
5) Measure signal voltage indicated on oscilloscope.



CHECK : ***Is the voltage more than AC 4 V?***
YES : Go to step **8G12**.
NO : Go to step **8G19**.

8G11 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect all connectors.
2) Connect Subaru Select Monitor to data link connector.



3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.
5) Start the engine.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 60 km/h or 37 MPH.

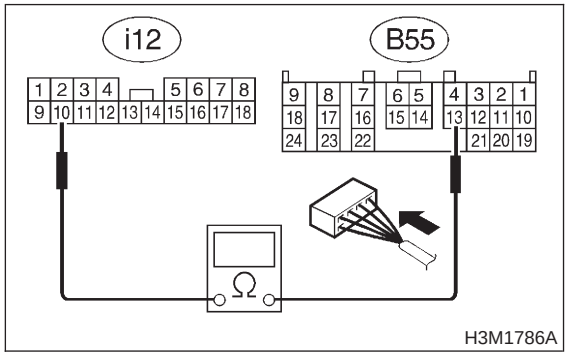
NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step **8G12**.
NO : Go to step **8G19**.

8G12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

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

Connector & terminal
(B55) No. 13 — (i12) No. 10:

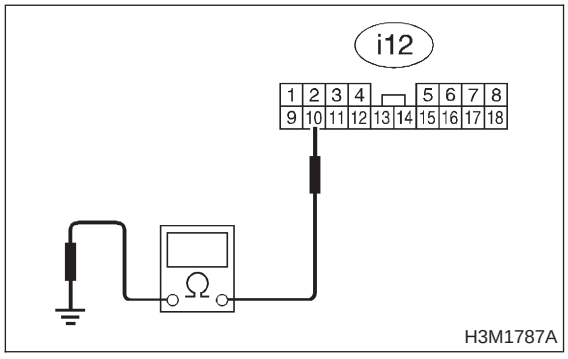


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8G13**.
NO : Repair open circuit in harness between TCM and combination meter connector, and poor contact in coupling connector.

8G13 : CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

Measure resistance of harness between combination meter and chassis ground.

Connector & terminal
(i12) No. 10 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8G14**.
NO : Repair short circuit in harness between TCM and combination meter connector.

8G14 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8G17**.
NO : Go to step **8G15**.

8G15 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8G18**.
NO : Go to step **8G16**.

8G16 : CHECK OUTPUT SIGNAL FOR TCM.

1) Connect all connectors.
2) Lift-up the vehicle and place safety stand.

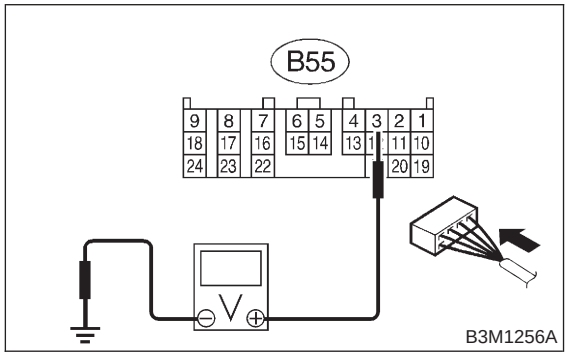
CAUTION:
On AWD models, raise all wheels off ground.

3) Set vehicle in 10 km/h (6 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure on on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 3 — Chassis ground:



CHECK : ***Is the voltage less than 1 V ←→ more than 4 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

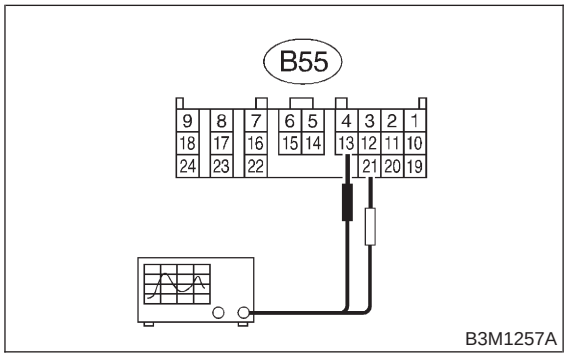
NO : Go to step **8G19**.

8G17 : CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.

1) Connect connectors to TCM and combination meter.
2) Lift-up or raise the vehicle and place safety stands.

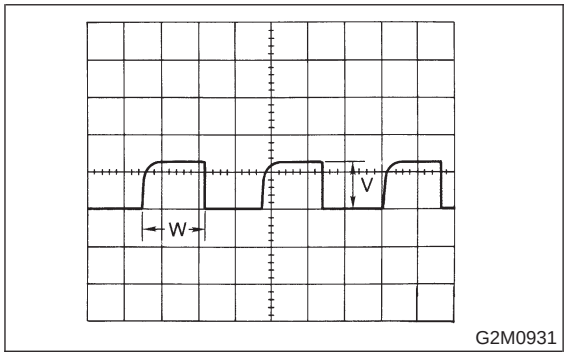
CAUTION:
On AWD models, raise all wheels off floor.

3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 13
Earth lead; (B55) No. 21



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

NOTE:
● If vehicle speed increases, the width of amplitude (W) decreases.
● The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>



CHECK : ***Is the voltage more than AC 2 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

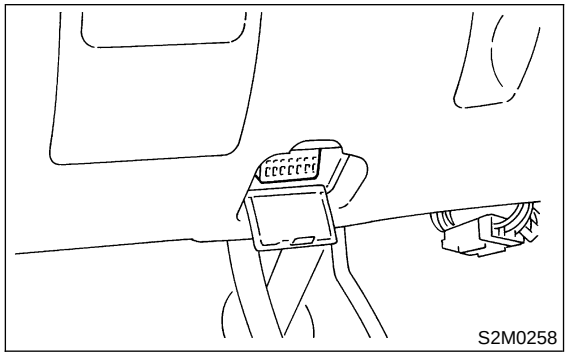
NO : Go to step **8G19**.

8G18 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect all connectors.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Connect Subaru Select Monitor to data link connector.



4) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
5) Start the engine, and drive all wheels.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 60 km/h or 37 MPH.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to step **8G19**.

8G19 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in vehicle speed sensor 2 circuit?***

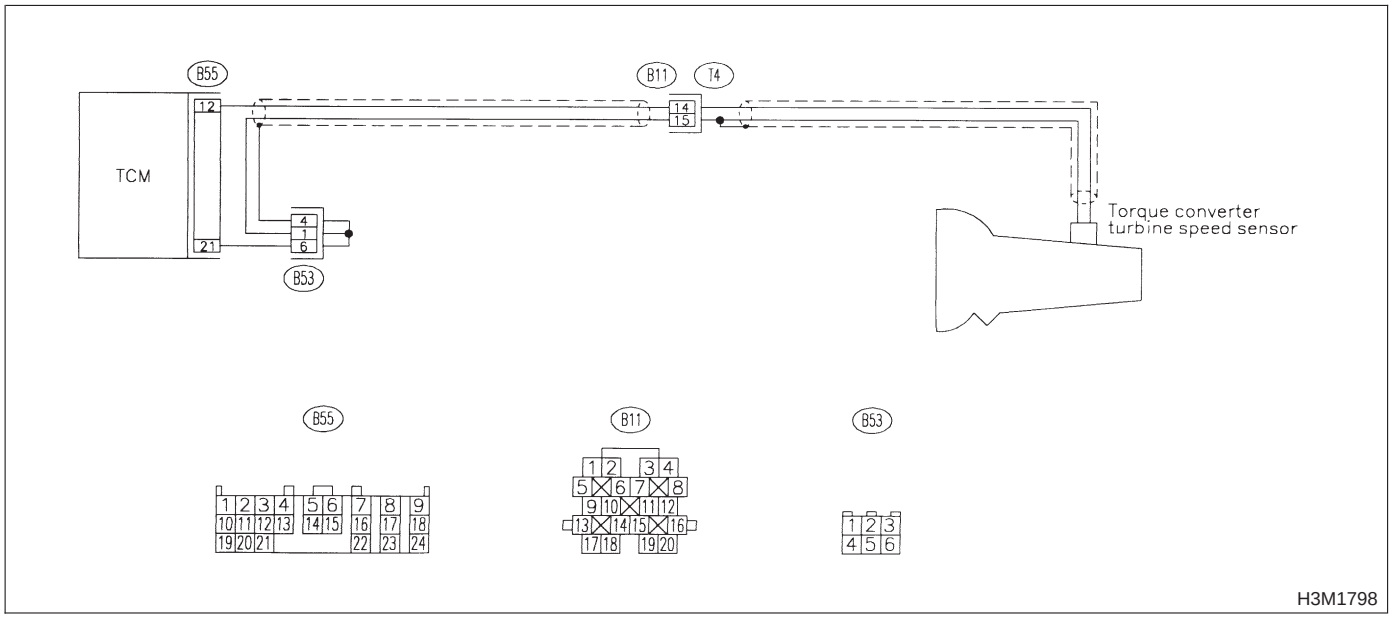
YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

MEMO:

H: TROUBLE CODE 36 — TORQUE CONVERTER TURBINE SPEED SENSOR —

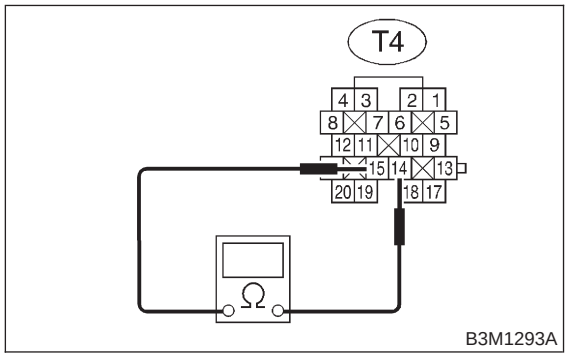
DIAGNOSIS:
Input signal circuit of TCM is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8H1 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR 1.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 14 — No. 15:

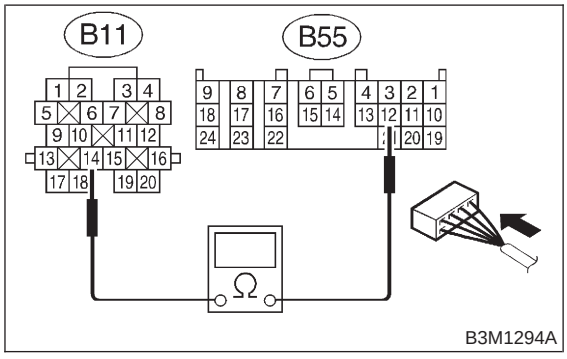


CHECK : ***Is the resistance between 450 and 650 Ω?***
YES : Go to step **8H2**.
NO : Replace turbine speed sensor. <Ref. to 3-2 [W11B0].>

8H2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 12 — (B11) No. 14:

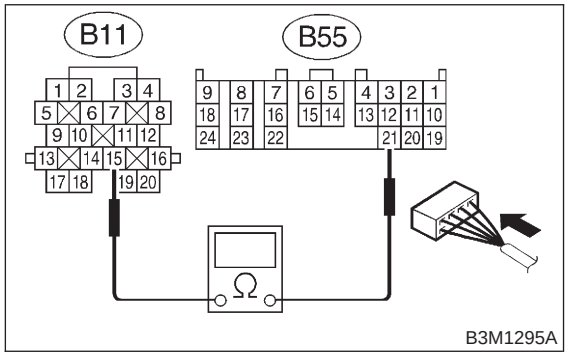


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8H3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8H3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — (B11) No. 15:

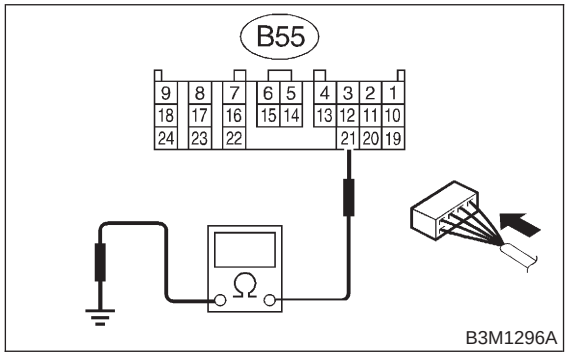


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8H4**.
NO : Repair open circuit in harness between TCM and transmission connector, and poor contact in coupling connector.

8H4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — Chassis ground:

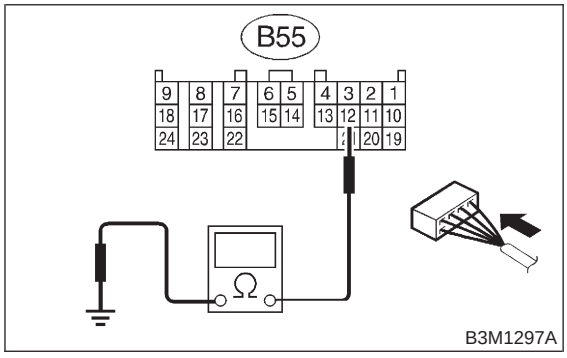


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8H5**.
NO : Repair short circuit in harness between TCM and transmission connector.

8H5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 12 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8H6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8H6 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8H10**.
NO : Go to step **8H7**.

8H7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8H9**.
NO : Go to step **8H8**.

8H8 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

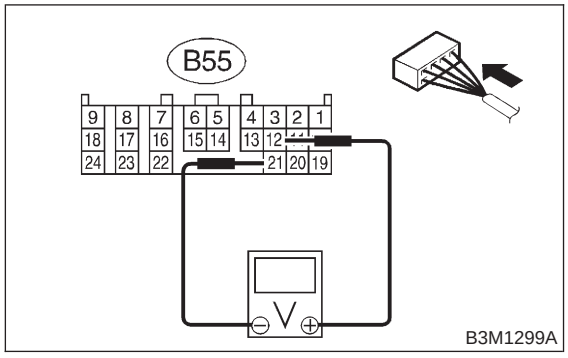
CAUTION:
Raise all wheels off floor.

3) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

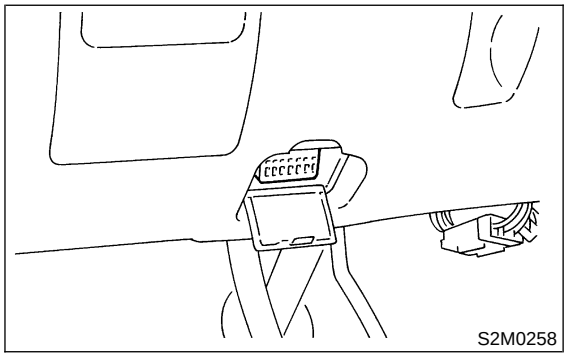
Connector & terminal
(B55) No. 12 (+) — No. 21 (−):



CHECK : ***Is the voltage more than AC 1 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8H11**.

8H9 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
Raise all wheels off floor.

4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.
5) Start the engine.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 20 km/h or 12 MPH.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

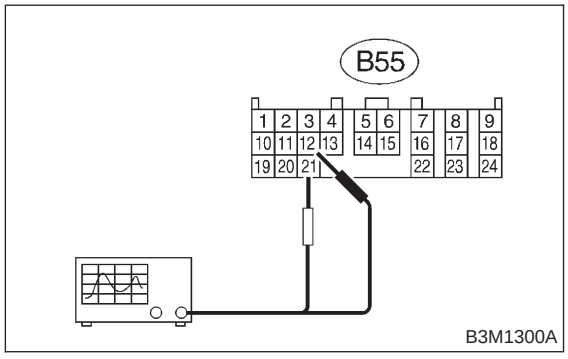
CHECK : ***Is the revolution value same as the tachometer reading shown on the combination meter?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8H11**.

8H10 : CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

CAUTION:
Raise all wheels off floor.

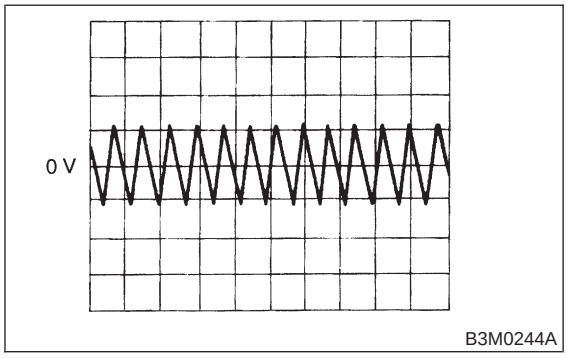
3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 12
Earth lead; (B55) No. 21



4) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure signal voltage indicated on oscilloscope.



CHECK : ***Is the signal voltage more than AC 1 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.

NO : Go to step **8H11**.

8H11 : CHECK POOR CONTACT.

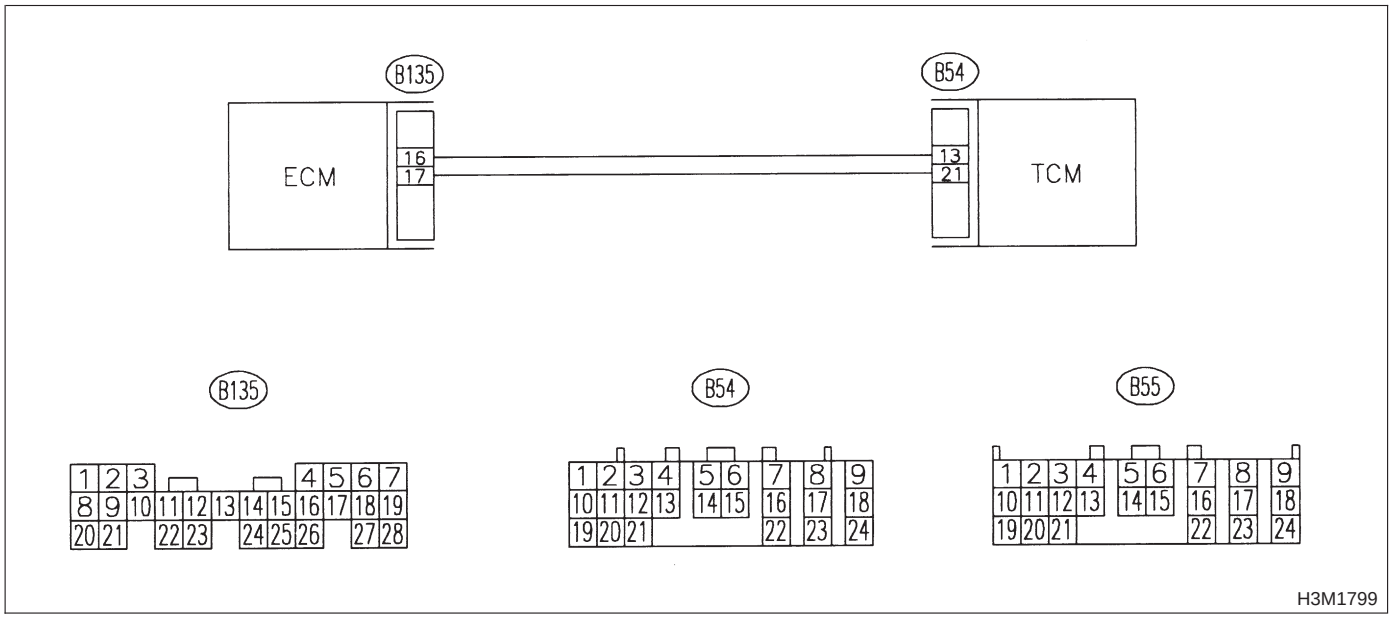
CHECK : ***Is there poor contact in vehicle speed sensor 1 circuit?***

YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

I: TROUBLE CODE 38 — TORQUE CONTROL SIGNAL —

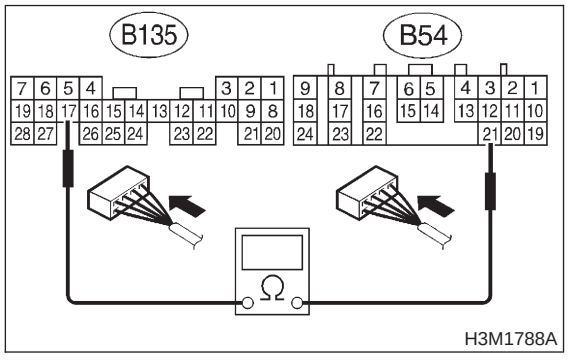
DIAGNOSIS:
● The signal circuit is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8I1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

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

Connector & terminal
(B54) No. 21 — (B135) No. 17:

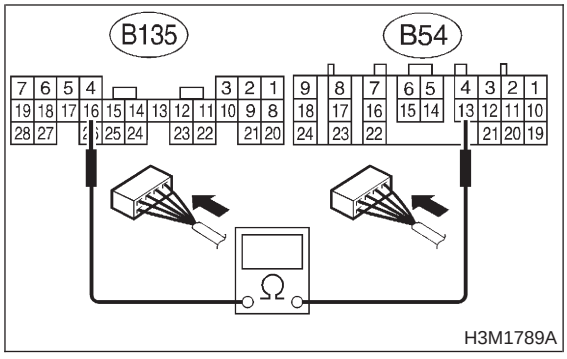


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8I2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8I2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B54) No. 13 — (B135) No. 16:

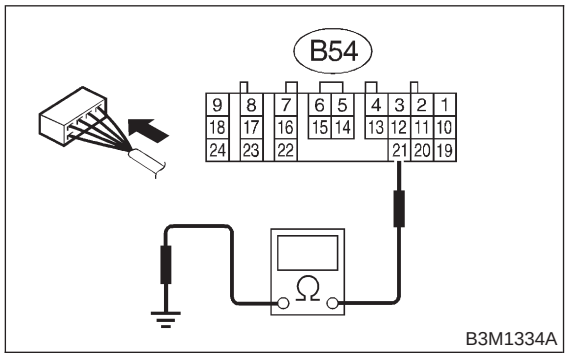


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8I3**.
NO : Repair open circuit in harness between TCM and ECM connector.

8I3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B54) No. 21 — Chassis ground:

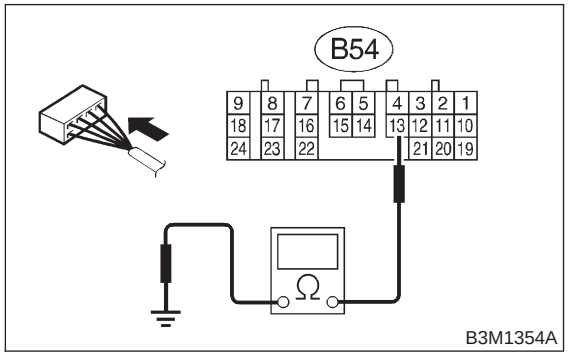


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8I4**.
NO : Repair short circuit in harness between TCM and ECM connector.

8I4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B54) No. 13 — Chassis ground:

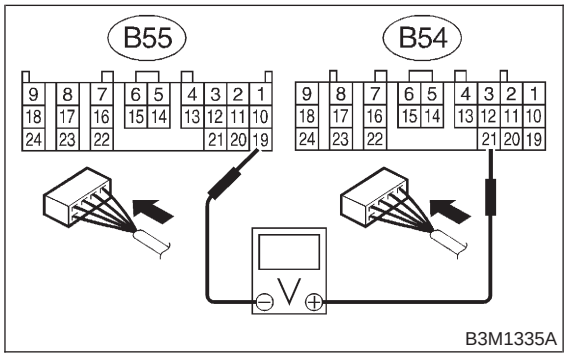


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8I5**.
NO : Repair short circuit in harness between TCM and ECM connector.

8I5 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 21 (+) — (B55) No. 19:

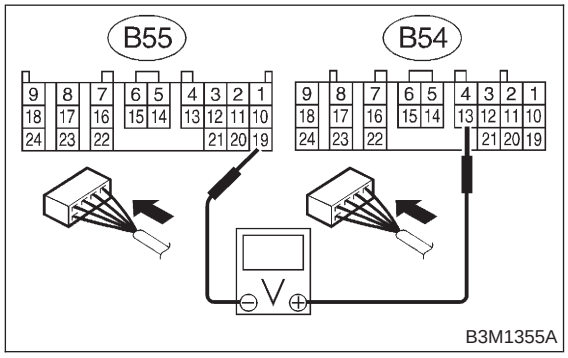


CHECK : ***Is the voltage more than 9 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8I6**.

8I6 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 13 (+) — (B55) No. 19 (–):



CHECK : ***Is the voltage more than 9 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8I7**.

8I7 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in torque control signal circuit?***
YES : Repair poor contact.
NO : Go to step **8I8**.

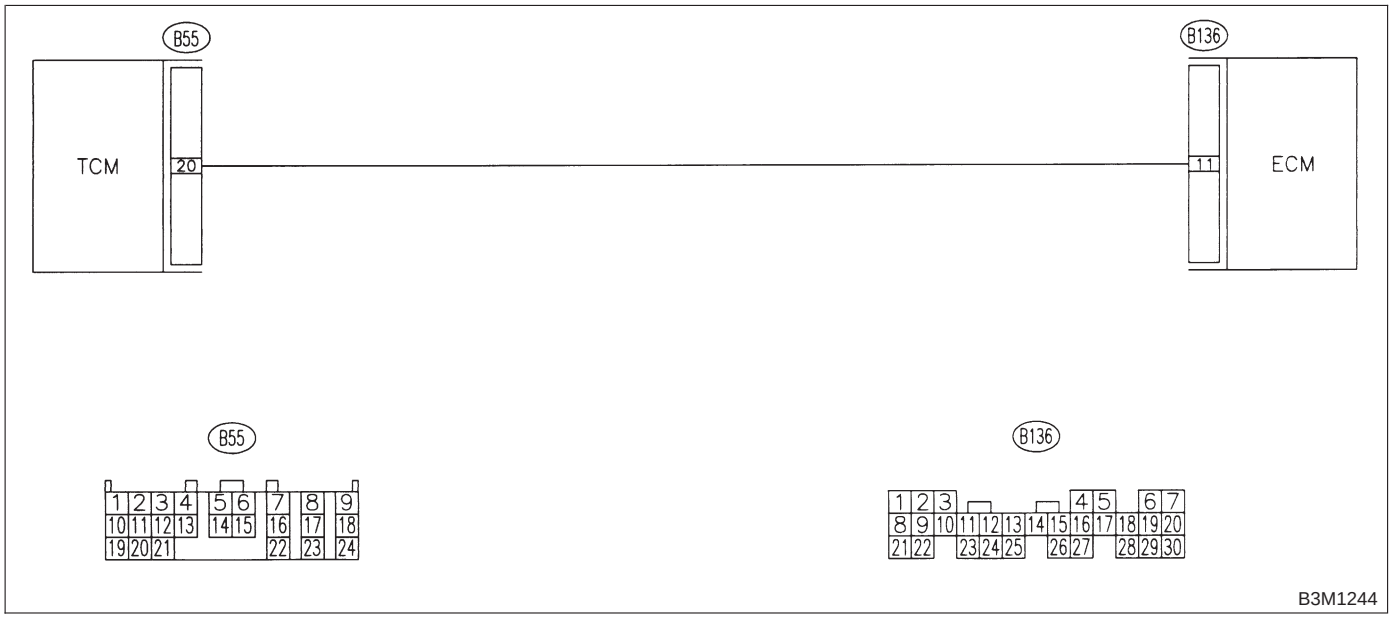
8I8 : CONFIRM TROUBLE CODE 38.

CHECK : ***Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

MEMO:

J: TROUBLE CODE 45 — AT LOAD SIGNAL (2200 cc CALIFORNIA SPEC. VEHICLES) —

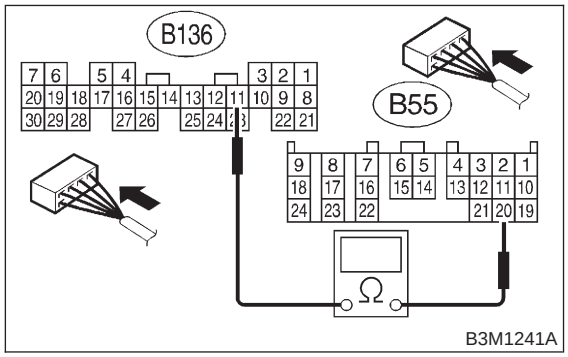
DIAGNOSIS:
Input signal circuit of TCM from ECM is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8J1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

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

Connector & terminal
(B55) No. 20 — (B136) No. 11:

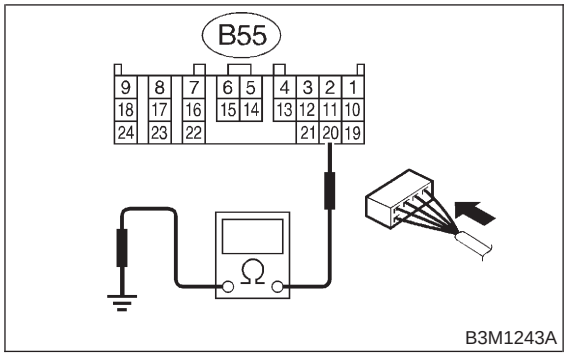


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8J2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8J2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 20 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8J3**.
NO : Repair short circuit in harness between TCM and ECM connector.

8J3 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8J5**.
NO : Go to step **8J4**.

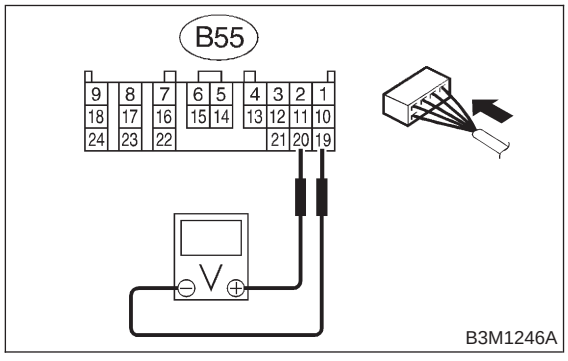
8J4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling.
4) Measure voltage between TCM connectors.

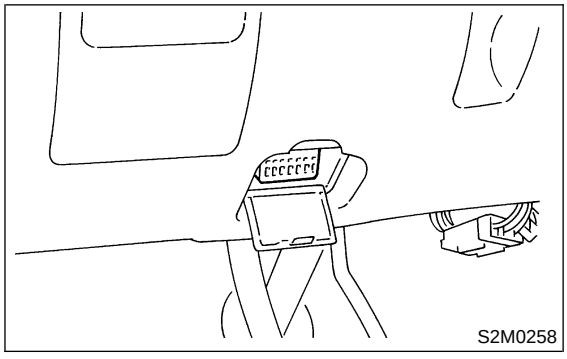
Connector & terminal
(B55) No. 20 (+) — No. 19 (−):



CHECK : ***Is the voltage between 1.2 and 1.8 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8J6**.

8J5 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to OFF.
3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select monitor switch to ON.
5) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
6) Engine idling.
7) Read data of mass air flow signal using Subaru Select Monitor.
● Display shows mass air flow signal value sent from ECM.

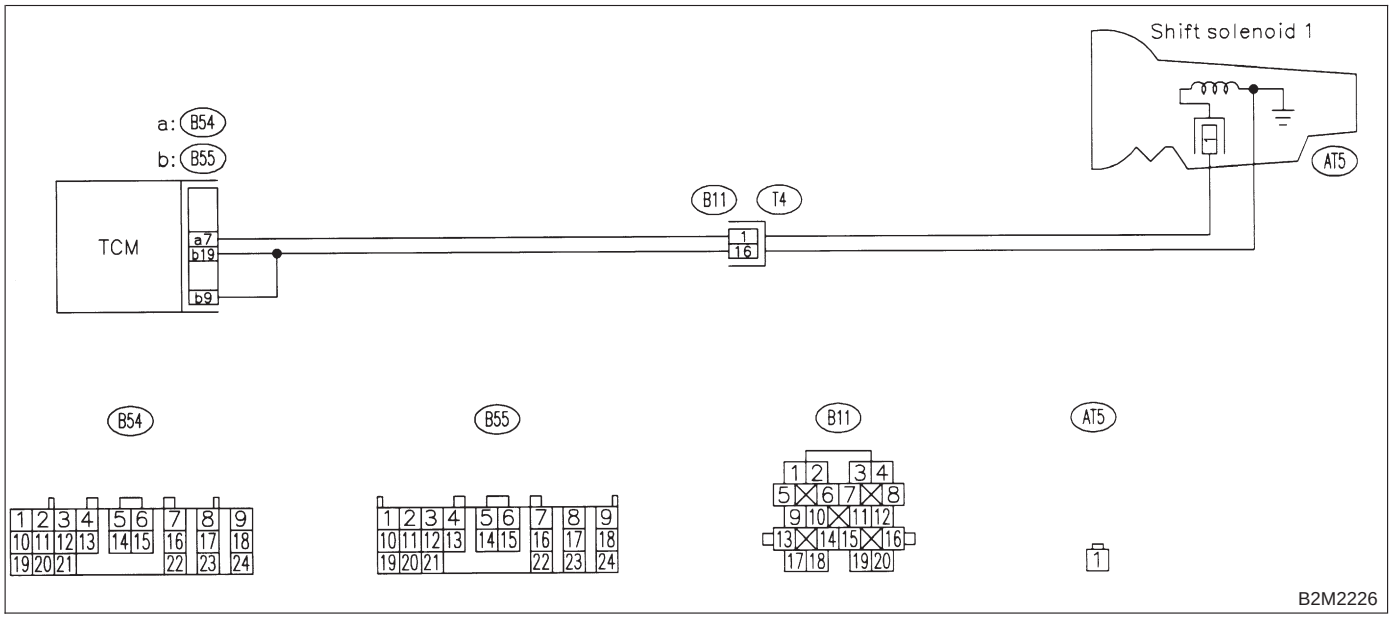
CHECK : ***Is the value between 1.2 and 1.8 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8J6**.

8J6 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in mass air flow signal circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

K: TROUBLE CODE 71 — SHIFT SOLENOID 1 —

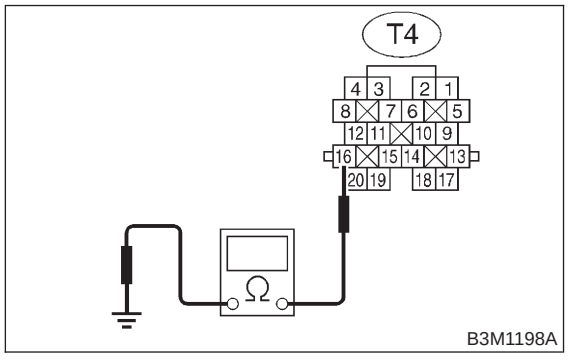
DIAGNOSIS:
Output signal circuit of shift solenoid 1 is open or shorted.
TROUBLE SYMPTOM:
Does not shift.
WIRING DIAGRAM:



8K1 : CHECK SHIFT SOLENOID 1 GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

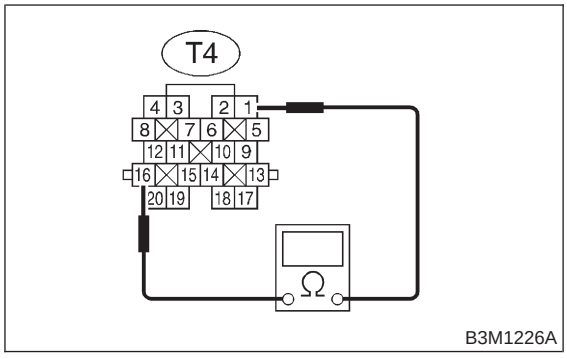


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K2**.
NO : Repair open circuit in transmission harness.

8K2 : CHECK SHIFT SOLENOID 1.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 1 — No. 16:

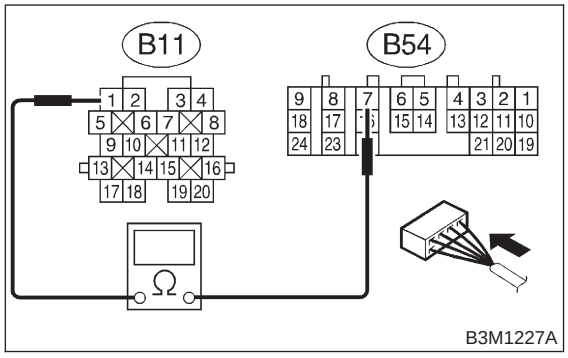


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8K3**.
NO : Go to step **8K9**.

8K3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and shift solenoid 1 connector.

Connector & terminal
(B54) No. 7 — (B11) No. 1:

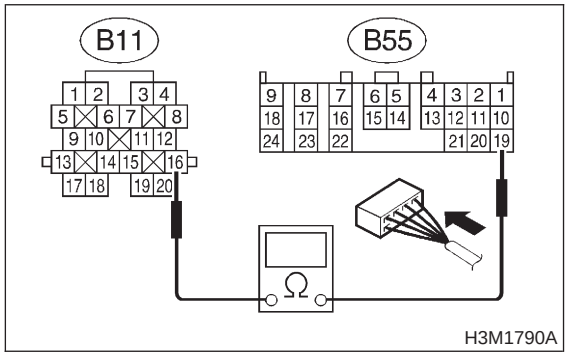


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8K4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and shift solenoid 1 connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

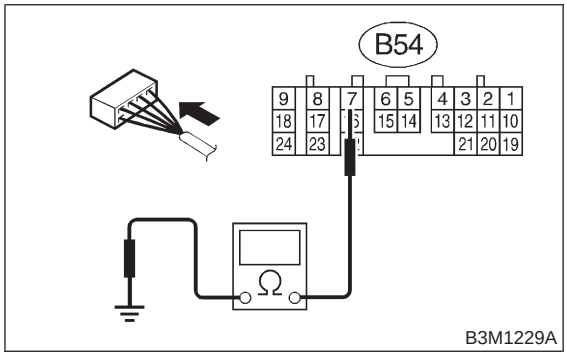


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8K5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 7 — Chassis ground:

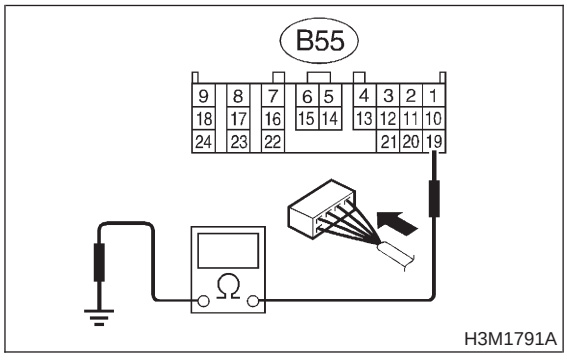


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8K6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8K6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8K7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8K7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

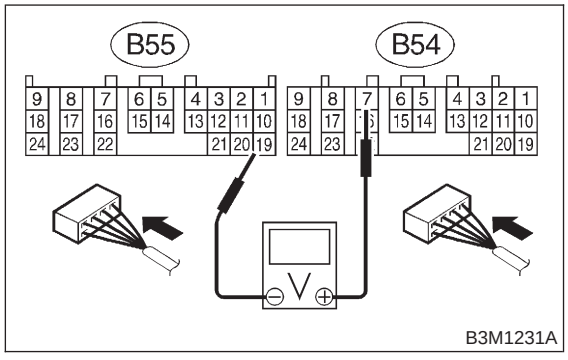
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 7 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage 1 V → 9 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.
NO : Go to step **8K8**.

8K8 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in shift solenoid 1 circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8K9 : CHECK SHIFT SOLENOID 1 (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Lift-up or raise the vehicle and support with safety stand.

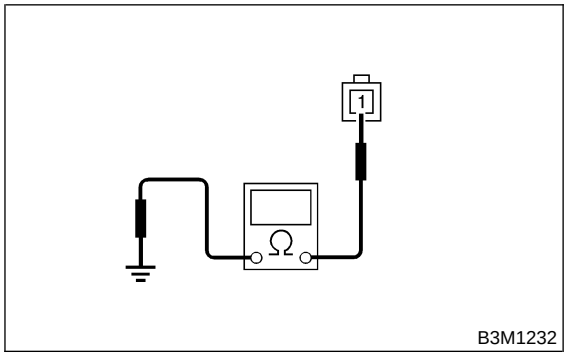
CAUTION:
On AWD models, raise all wheels off ground.

3) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

4) Remove oil pan, and disconnect connector from shift solenoid 1.
5) Measure resistance between shift solenoid 1 connector and transmission ground.

Terminal
No. 1 — Transmission ground:

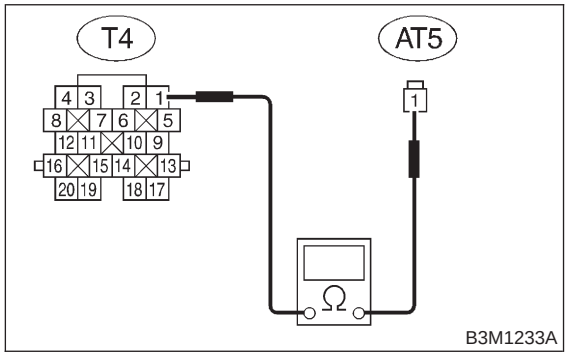


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8K10**.
NO : Replace shift solenoid 1. <Ref. to 3-2 [W4A0].>

8K10 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 1 and transmission connector.

Connector & terminal
(AT5) No. 1 — (T4) No. 1:

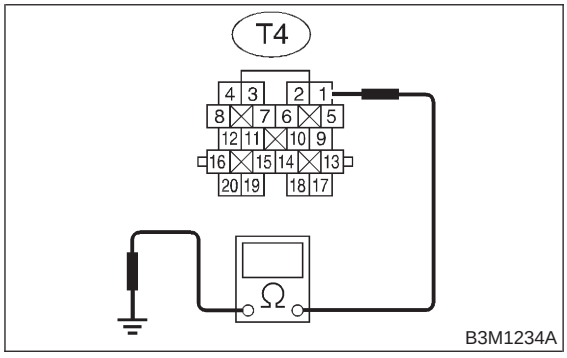


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K11**.
NO : Repair open circuit in harness between TCM and transmission connector.

8K11 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 1 connector and transmission ground.

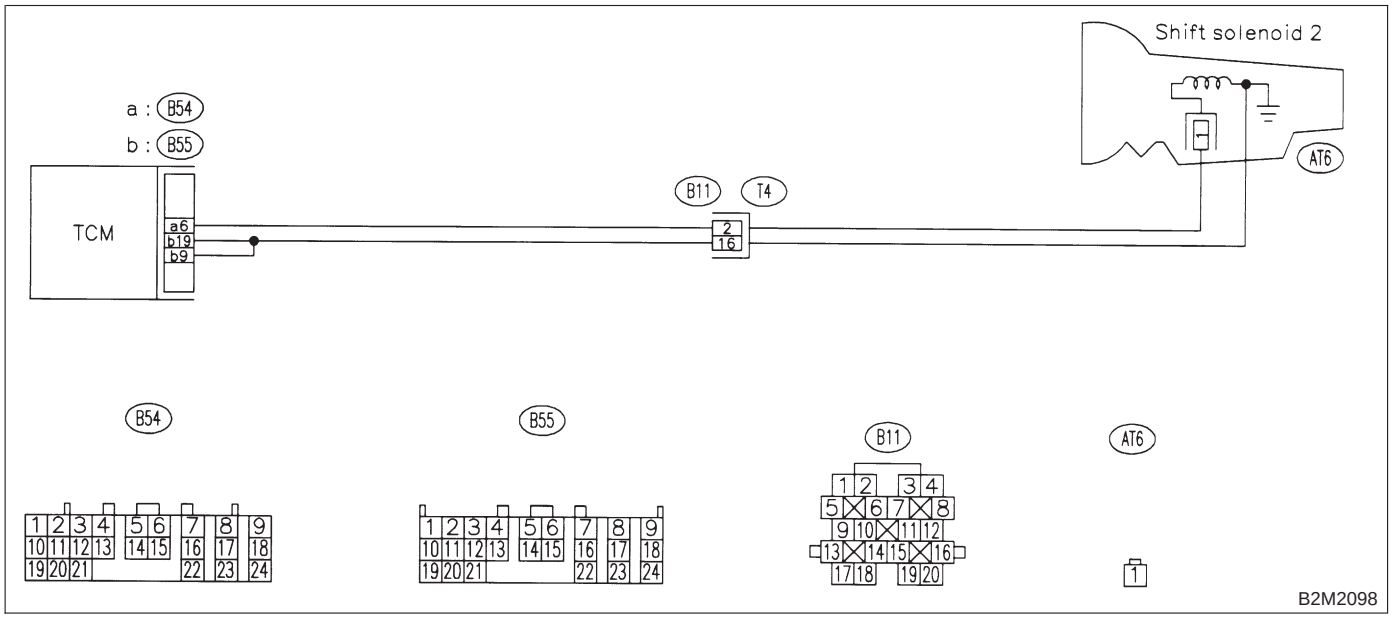
Connector & terminal
(T4) No. 1 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in shift solenoid 1 and transmission.
NO : Repair short circuit harness between TCM and transmission connector.

L: TROUBLE CODE 72 — SHIFT SOLENOID 2 —

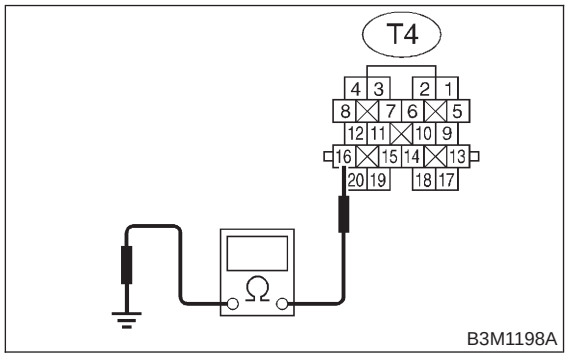
DIAGNOSIS:
Output signal circuit of shift solenoid 2 is open or shorted.
TROUBLE SYMPTOM:
Does not shift.
WIRING DIAGRAM:



8L1 : CHECK SHIFT SOLENOID 2 GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

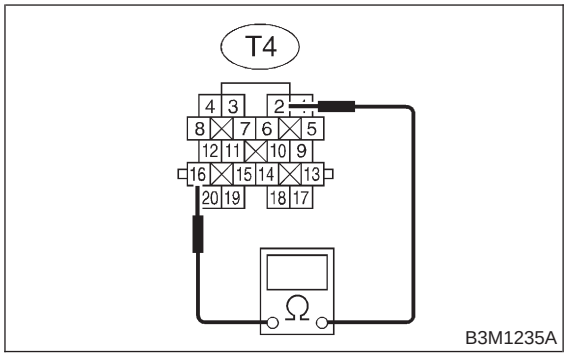


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L2**.
NO : Repair open circuit in transmission harness.

8L2 : CHECK SHIFT SOLENOID 2.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 2 — No. 16:

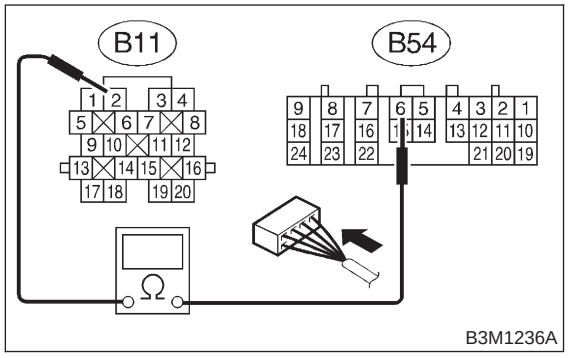


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8L3**.
NO : Go to step **8L9**.

8L3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and shift solenoid 2 connector.

Connector & terminal
(B54) No. 6 — (B11) No. 2:

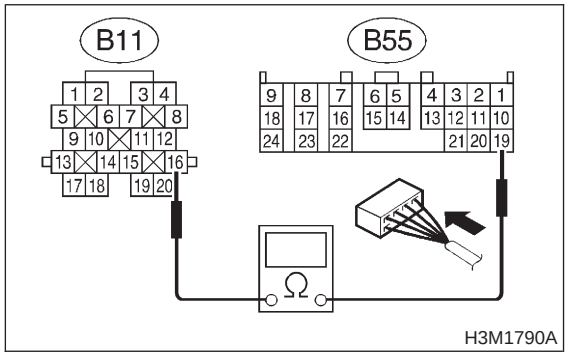


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8L4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and shift solenoid 2 connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

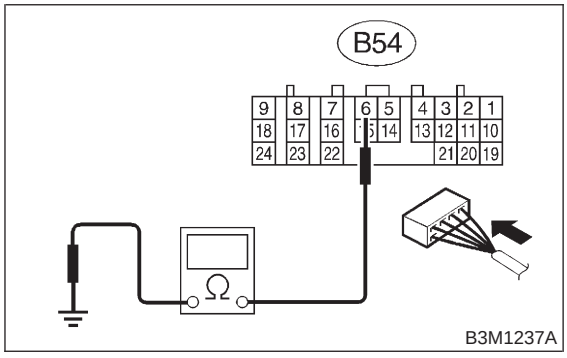


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8L5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 6 — Chassis ground:

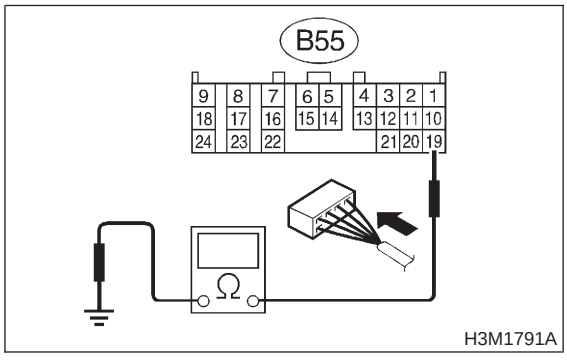


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8L6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8L6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8L7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8L7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

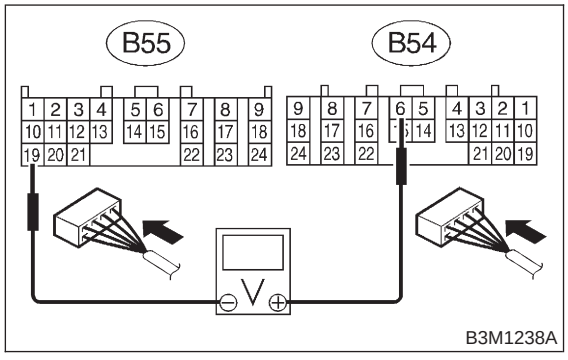
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 6 (+) — (B55) No. 19:



CHECK : ***Is the voltage 9 V → 1 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8L8**.

8L8 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in shift solenoid 2 circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

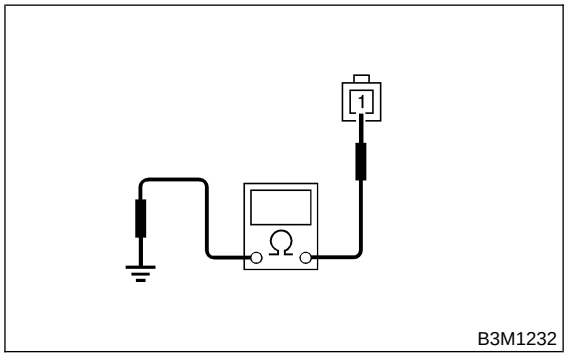
8L9 : CHECK SHIFT SOLENOID 2 (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from shift solenoid 2.
4) Measure resistance between shift solenoid 2 connector and transmission ground.

Connector & terminal
No. 1 — Transmission ground:

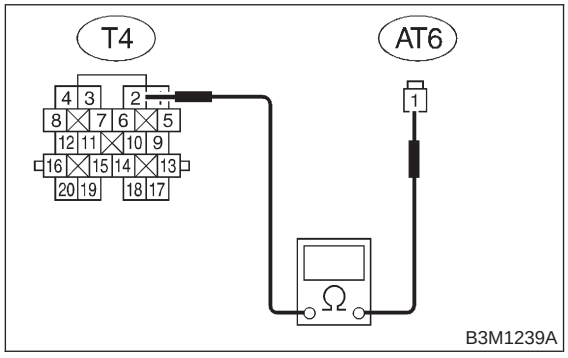


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8L10**.
NO : Replace shift solenoid assembly. <Ref. to 3-2 [W4A0].>

8L10 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 2 and transmission connector.

Connector & terminal
(AT6) No. 1 — (T4) No. 2:

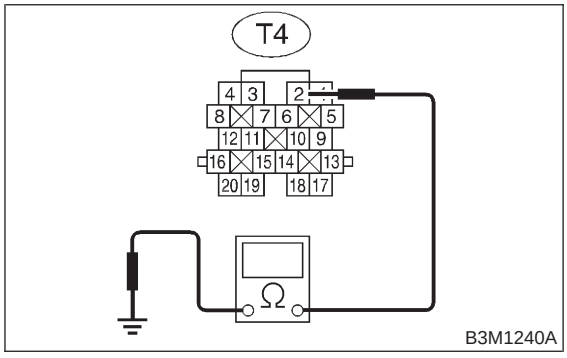


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L11**.
NO : Repair open circuit in harness between shift solenoid 2 and transmission connector.

8L11 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 2 connector and transmission ground.

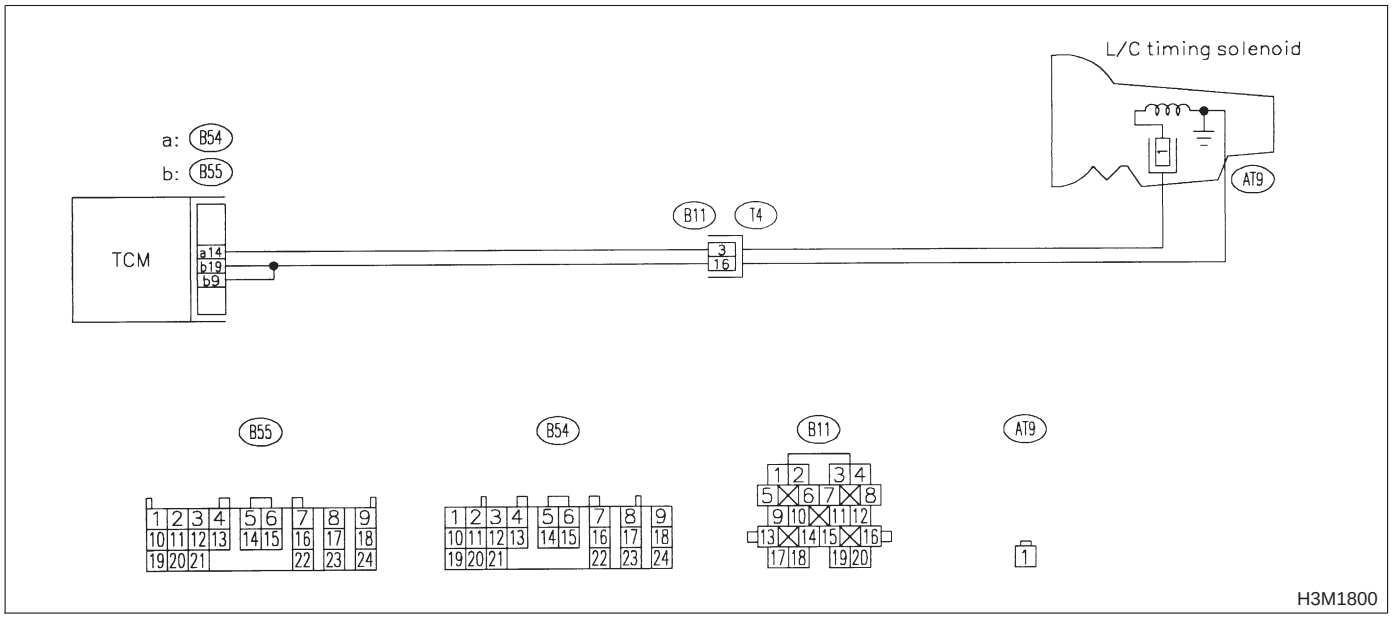
Connector & terminal
(T4) No. 2 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Repair short circuit harness between TCM and transmission connector.

M: TROUBLE CODE 73 — LOW CLUTCH TIMING SOLENOID —

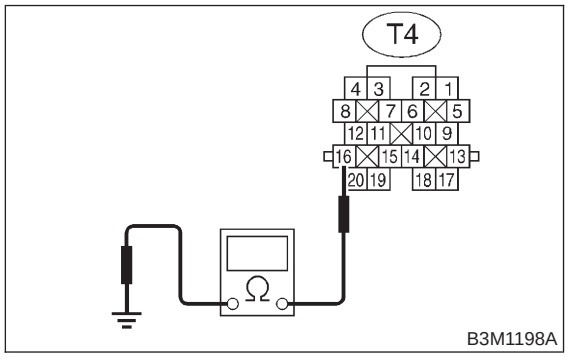
DIAGNOSIS:
Output signal circuit of low clutch timing solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8M1 : CHECK LOW CLUTCH TIMING SOLENOID GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

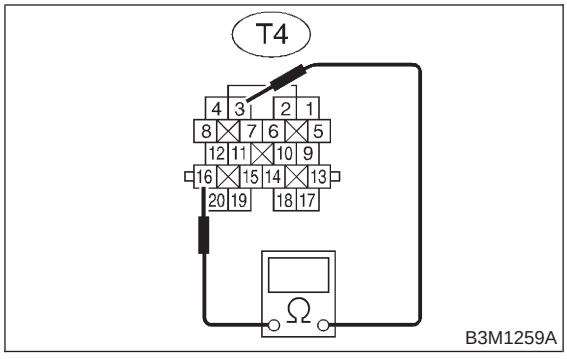


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M2**.
NO : Repair open circuit in transmission harness.

8M2 : CHECK LOW CLUTCH TIMING SOLENOID.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 3 — No. 16:

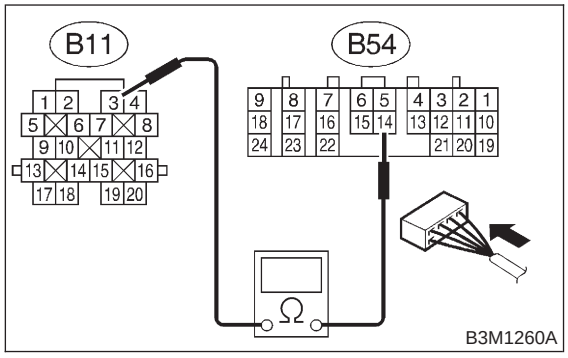


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8M3**.
NO : Go to step **8M10**.

8M3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 14 — (B11) No. 3:

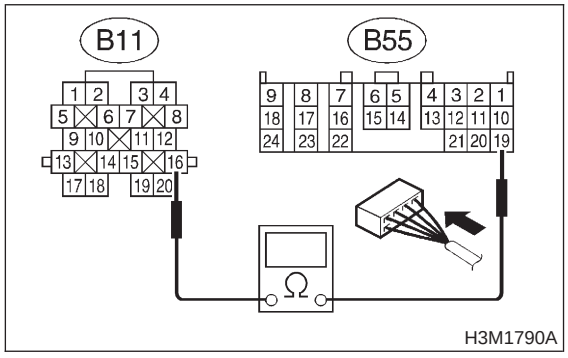


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8M4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

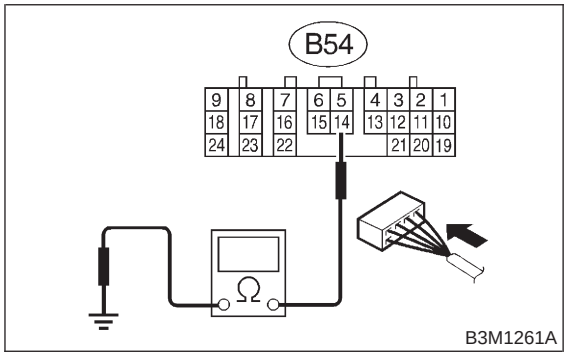


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8M5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 14 — Chassis ground:

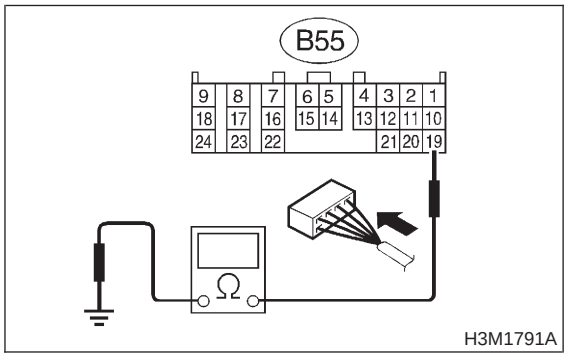


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8M6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8M6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8M7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8M7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

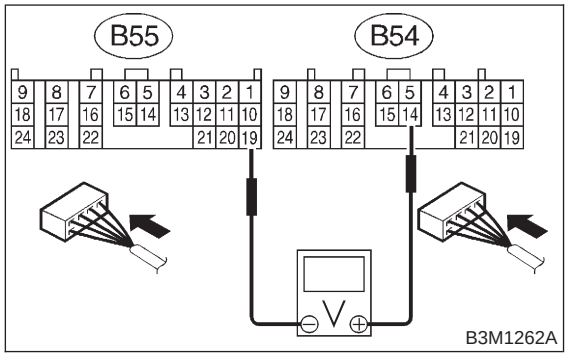
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "2", and slowly increase vehicle speed to 35 km/h (22 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 14 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8M8**.
NO : Go to step **8M9**.

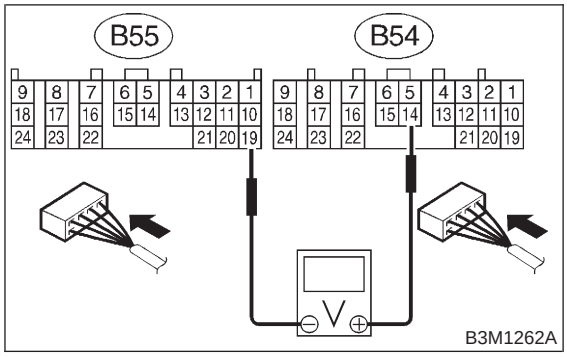
8M8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Move selector lever to "D", and slowly increase vehicle speed to 65 km/h (40 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

2) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 14 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage more than 9 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8M9**.

8M9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in low clutch timing solenoid circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8M10 : CHECK LOW CLUTCH TIMING SOLENOID (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Lift-up or raise the vehicle and support with safety stand.

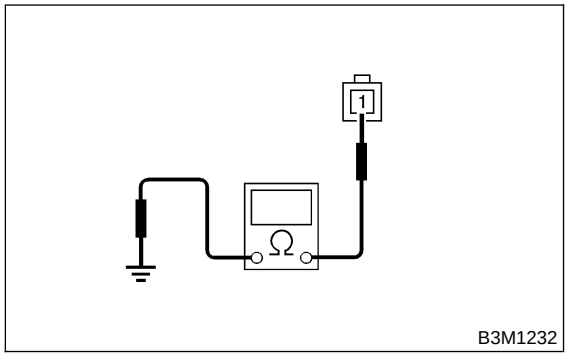
CAUTION:
On AWD models, raise all wheels off ground.

3) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

4) Remove oil pan, and disconnect connector from low clutch timing solenoid.
5) Measure resistance between low clutch timing solenoid connector and transmission ground.

Terminal
No. 1 — Transmission ground:

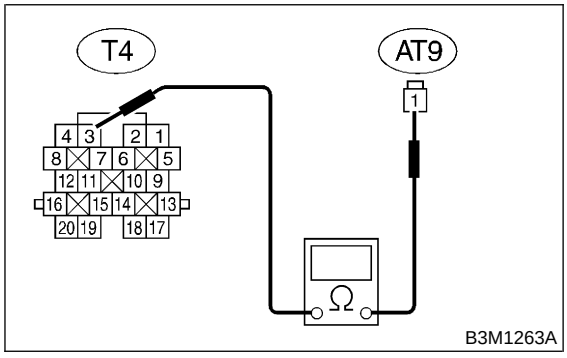


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8M11**.
NO : Replace low clutch timing solenoid. <Ref. to 3-2 [W4A0].>

8M11 : CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between low clutch timing solenoid and transmission connector.

Connector & terminal
(AT9) No. 1 — (T4) No. 3:

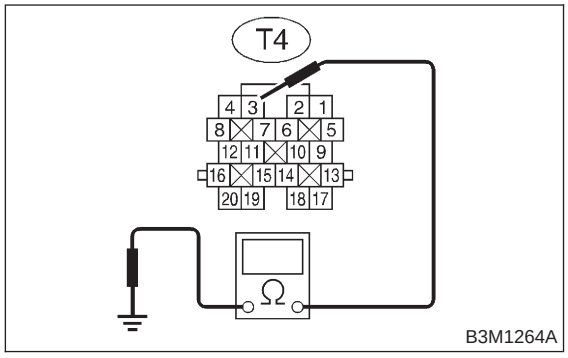


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M12**.
NO : Repair open circuit in harness between low clutch timing solenoid and transmission connector.

8M12 : CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between low clutch timing solenoid connector and transmission ground.

Connector & terminal
(T4) No. 3 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***

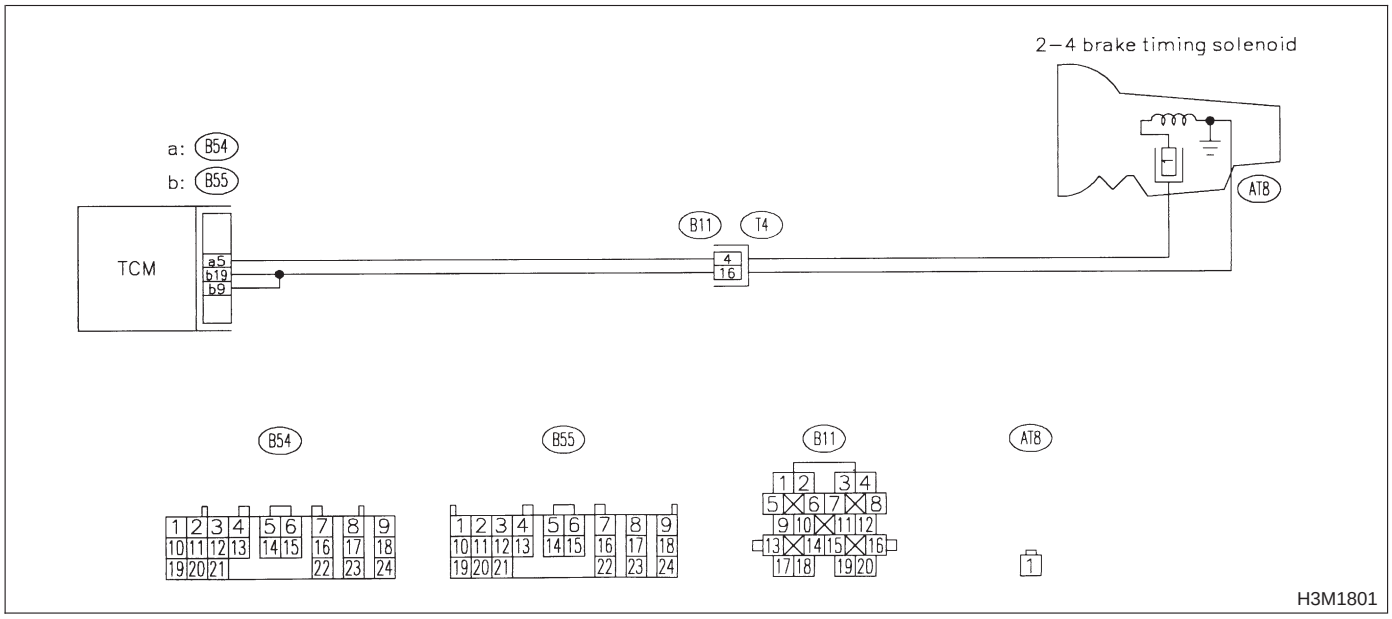
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in low clutch timing solenoid and transmission.

NO : Repair short circuit harness between TCM and transmission connector.

MEMO:

N: TROUBLE CODE 74 — 2-4 BRAKE TIMING SOLENOID —

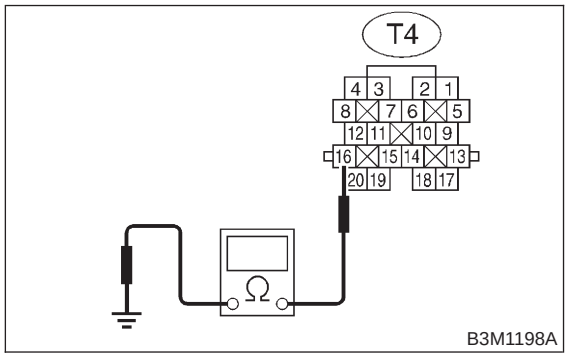
DIAGNOSIS:
Output signal circuit of 2-4 brake timing solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8N1 : CHECK 2-4 BRAKE TIMING SOLENOID GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

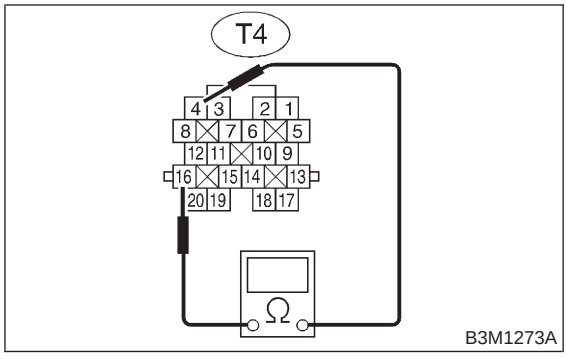


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N2**.
NO : Repair open circuit in transmission harness.

8N2 : CHECK 2-4 BRAKE TIMING SOLENOID.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 4 — No. 16:

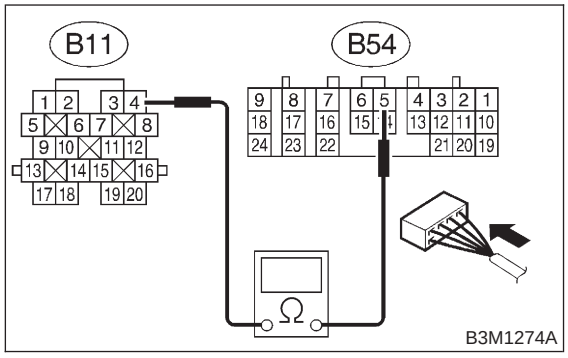


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8N3**.
NO : Go to step **8N10**.

8N3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 5 — (B11) No. 4:

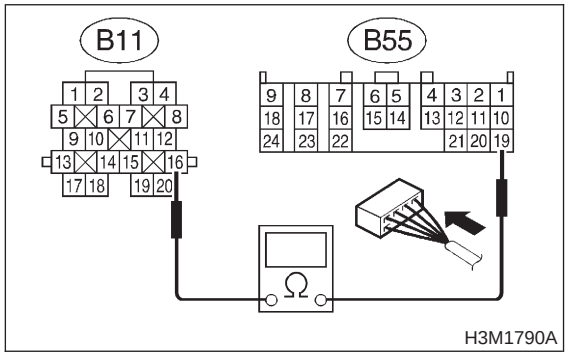


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8N4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

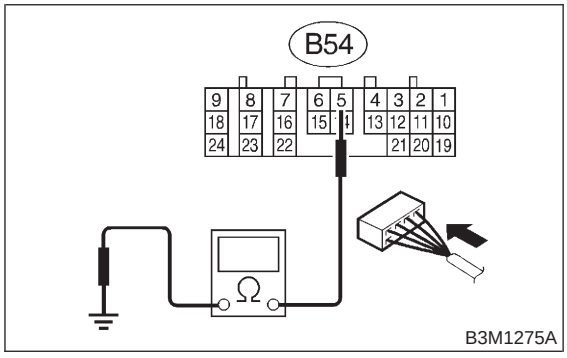


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8N5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 5 — Chassis ground:

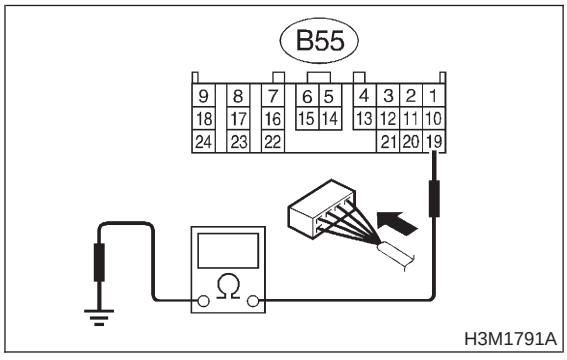


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8N6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8N6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8N7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8N7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

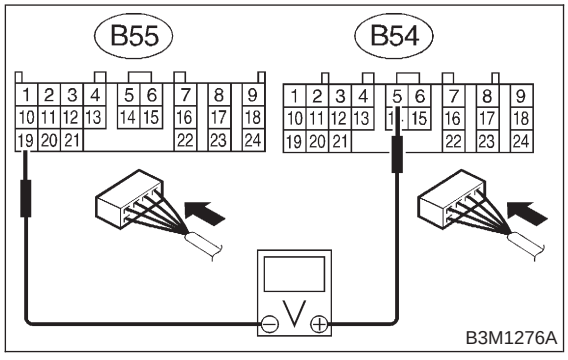
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "1", and slowly increase vehicle speed to 10 km/h (6 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 5 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8N8**.
NO : Go to step **8N9**.

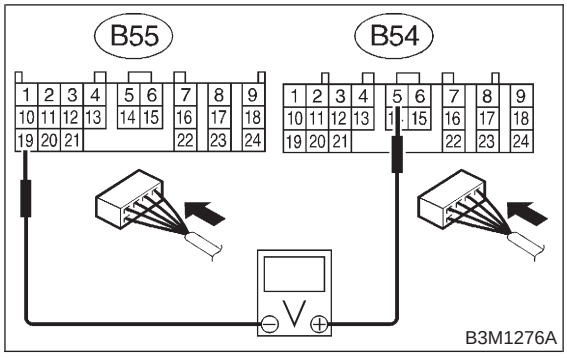
8N8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Move selector lever to "D", and slowly increase vehicle speed to 65 km/h (40 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

2) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 5 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage more than 9 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8N9**.

8N9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in 2-4 brake timing solenoid circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8N10 : CHECK 2-4 BRAKE TIMING SOLENOID (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Lift-up or raise the vehicle and support with safety stand.

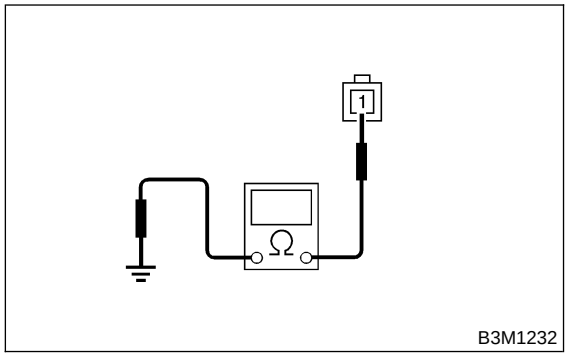
CAUTION:
On AWD models, raise all wheels off ground.

3) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

4) Remove oil pan, and disconnect connector from 2-4 brake timing solenoid.
5) Measure resistance between 2-4 brake timing solenoid connector and transmission ground.

Terminal
No. 1 — Transmission ground:

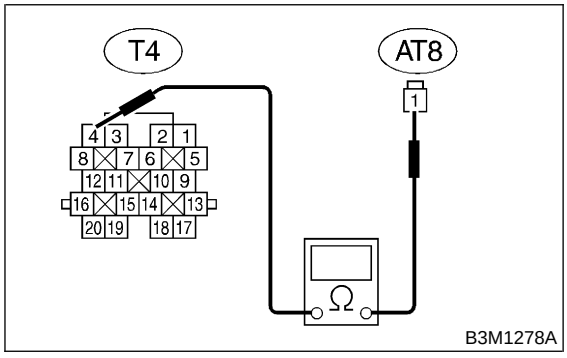


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8N11**.
NO : Replace 2-4 brake timing solenoid. <Ref. to 3-2 [W4A0].>

8N11 : CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between 2-4 brake timing solenoid and transmission connector.

Connector & terminal
(AT8) No. 1 — (T4) No. 4:

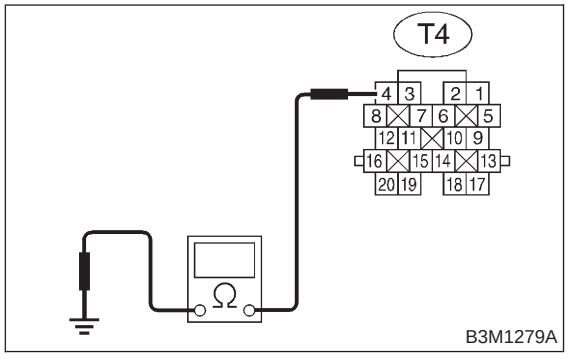


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N12**.
NO : Repair open circuit in harness between 2-4 brake timing solenoid and transmission connector.

8N12 : CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between 2-4 brake timing solenoid connector and transmission ground.

Connector & terminal
(T4) No. 4 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***

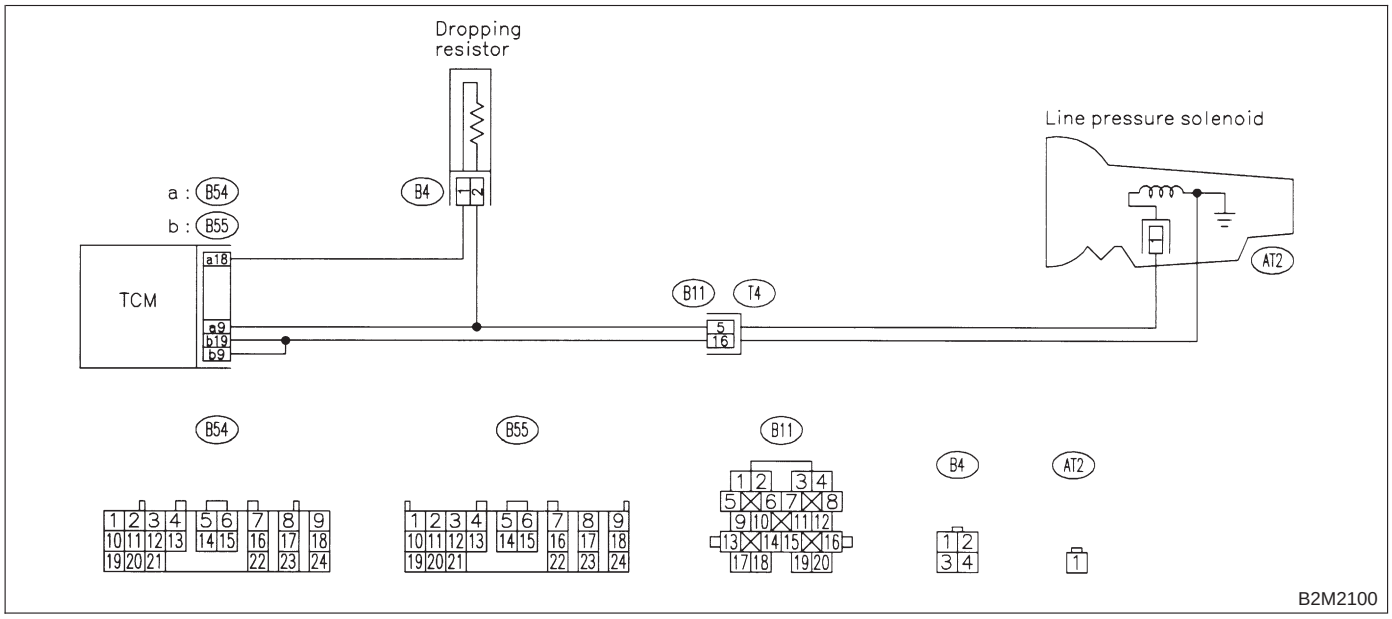
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in 2-4 brake timing solenoid and transmission.

NO : Repair short circuit harness between TCM and transmission connector.

MEMO:

O: TROUBLE CODE 75 — DUTY SOLENOID A —

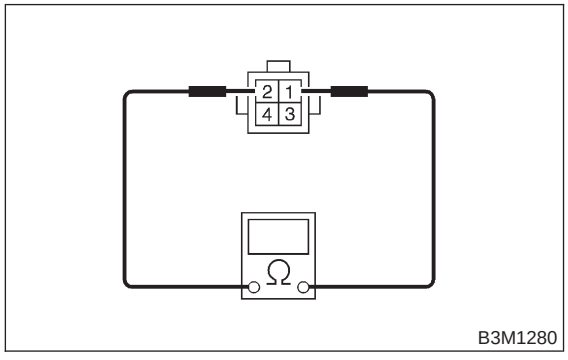
DIAGNOSIS:
Output signal circuit of duty solenoid A or resistor is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8O1 : CHECK RESISTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from dropping resistor.
3) Measure resistance between dropping resistor terminal.

Terminals
No. 1 — No. 2:

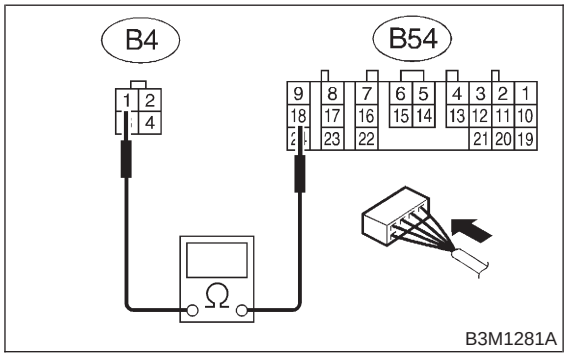


CHECK : ***Is the resistance between 9 and 15 Ω?***
YES : Go to step **8O2**.
NO : Replace dropping resistor. <Ref. to 3-2 [W23A0].>

8O2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM connector and dropping resistor connector.

Connector & terminal
(B54) No. 18 — (B4) No. 1:

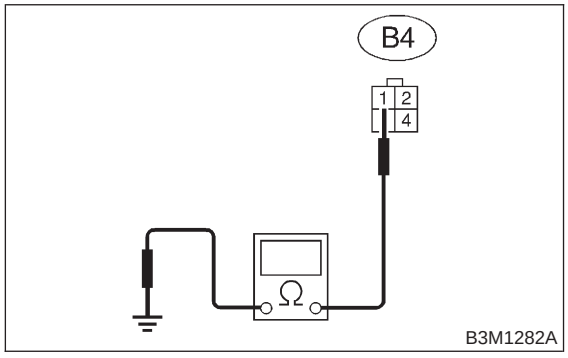


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O3**.
NO : Repair open circuit in harness between TCM and dropping resistor connector.

8O3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 1 — Chassis ground:

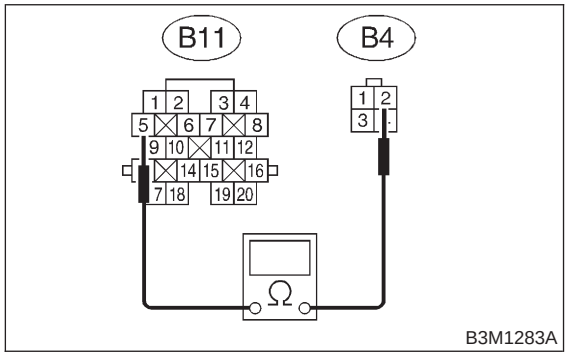


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O4**.
NO : Repair short circuit in harness between TCM and dropping resistor connector.

8O4 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

1) Disconnect connector from transmission.
2) Measure resistance of harness between transmission and dropping resistor connector.

Connector & terminal
(B4) No. 2 — (B11) No. 5:

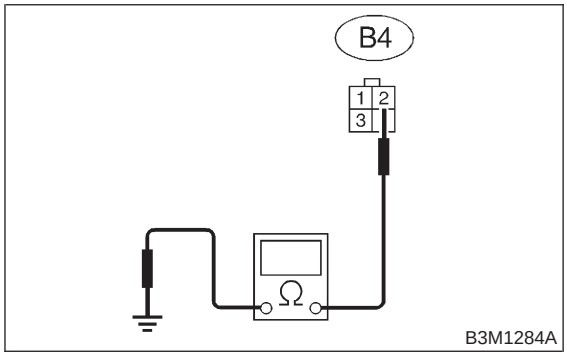


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O5**.
NO : Repair open circuit in harness between dropping resistor and transmission connector.

8O5 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 2 — Chassis ground:

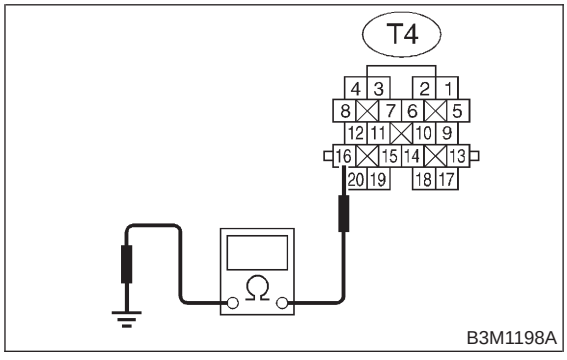


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O6**.
NO : Repair short circuit in harness between dropping resistor and transmission connector.

8O6 : CHECK DUTY SOLENOID A GROUND LINE.

Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Transmission ground:

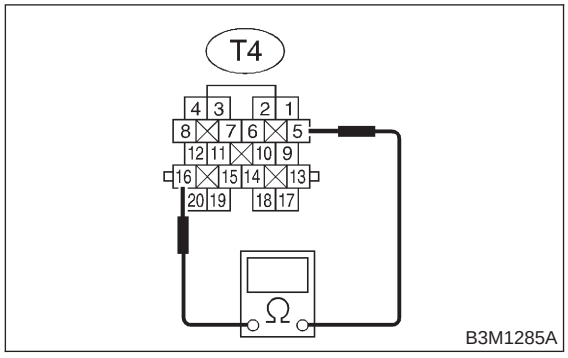


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O7**.
NO : Repair open circuit in transmission harness.

8O7 : CHECK DUTY SOLENOID A.

Measure resistance between transmission connector receptacle's terminals.

Terminal
(T4) No. 5 — No. 16:

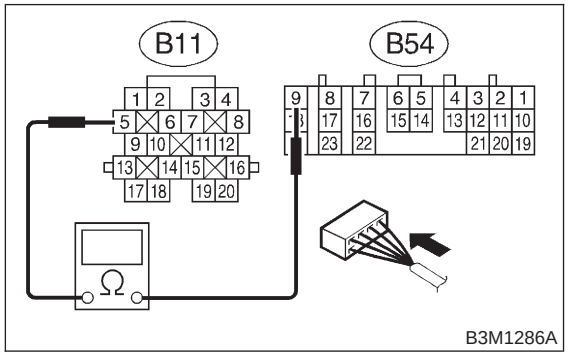


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8O8**.
NO : Go to step **8O20**.

8O8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 9 — (B11) No. 5:

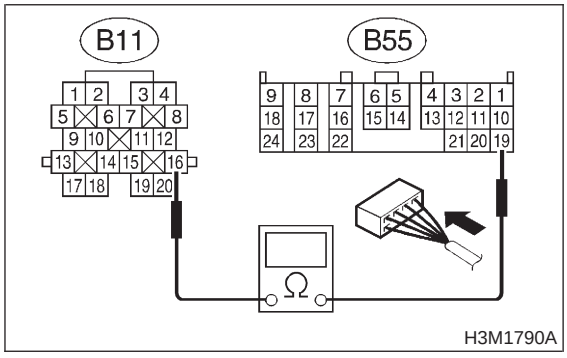


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O9**.
NO : Repair open circuit in harness between TCM and transmission connector.

8O9 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

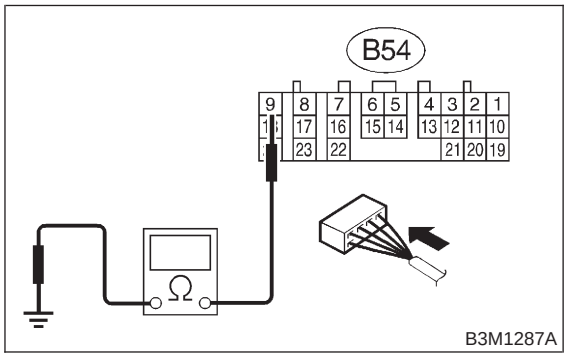


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O10**.
NO : Repair open circuit in harness between TCM and transmission connector.

8O10 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 9 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O11**.
NO : Repair short circuit in harness between TCM and transmission connector.

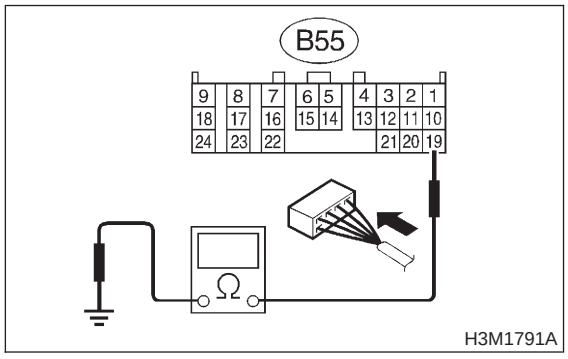
8O11 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8O17**.
NO : Go to step **8O12**.

8O12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O13**.
NO : Repair short circuit harness between TCM and transmission connector.

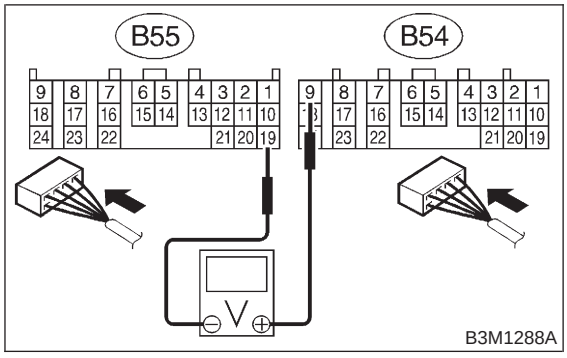
8O13 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect all connectors.
2) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Turn ignition switch to ON (engine OFF).
4) Move selector lever to “N”.
5) Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 9 (+) — (B55) No. 19 (−):

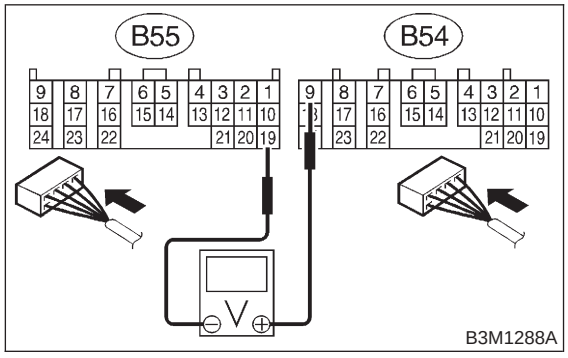


CHECK : ***Is the voltage between 1.5 and 4.0 V with throttle fully closed?***
YES : Go to step **8O14**.
NO : Go to step **8O19**.

8O14 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 9 (+) — (B55) No. 19 (−):

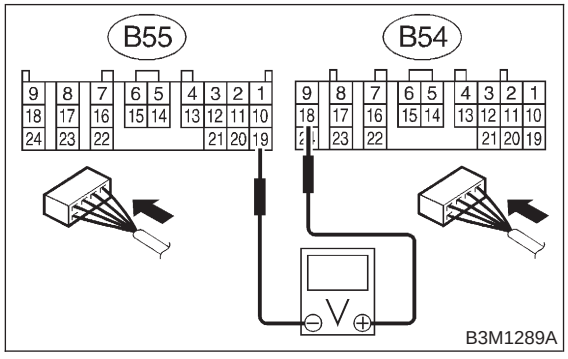


CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Go to step **8O15**.
NO : Go to step **8O19**.

8O15 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 18 (+) — (B55) No. 19 (−):

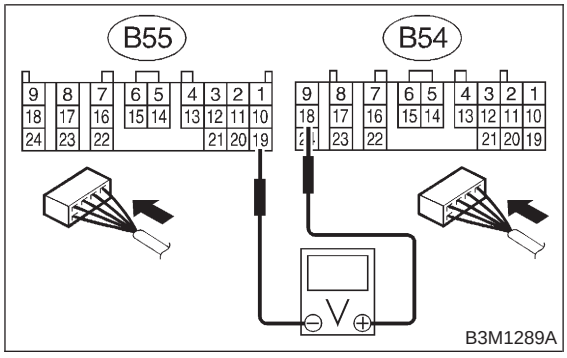


CHECK : ***Is the voltage more than 8.5 V with throttle fully closed?***
YES : Go to step **8O16**.
NO : Go to step **8O19**.

8O16 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

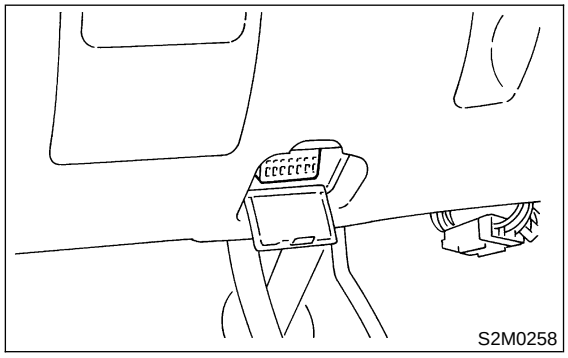
Connector & terminal
(B54) No. 18 (+) — (B55) No. 19:



CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8O19**.

8O17 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Stop the engine and turn ignition switch to ON (engine OFF).
6) Move selector lever to “N”.
7) Read data of duty solenoid A using Subaru Select Monitor.
● Line pressure duty is indicated in “%”.
8) Throttle is fully closed.

CHECK : ***Is the value 100%?***
YES : Go to step **8O18**.
NO : Go to step **8O19**.

8O18 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Turn ignition switch to ON (Engine OFF).
2) Throttle is fully open.

CHECK : ***Is the value between 10 and 20%?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8O19**.

8O19 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid A circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

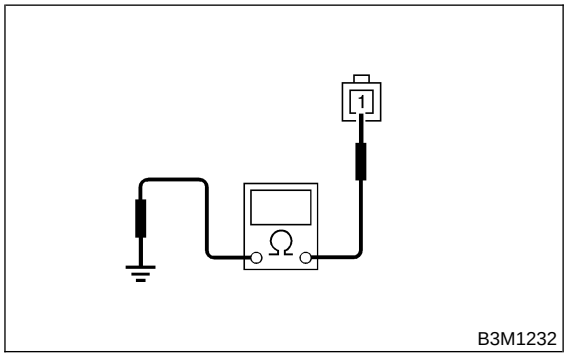
8O20 : CHECK DUTY SOLENOID A (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from duty solenoid A.
4) Measure resistance between duty solenoid A connector and transmission ground.

Terminal
No. 1 — Transmission ground:

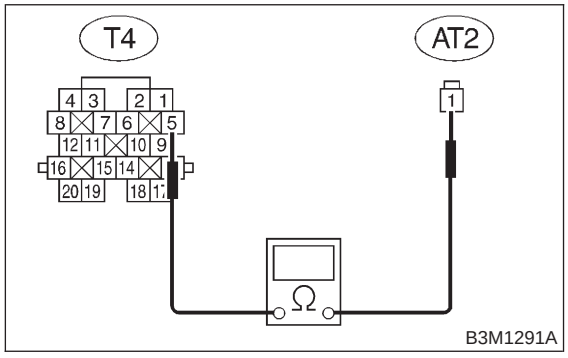


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8O21**.
NO : Replace duty solenoid A. <Ref. to 3-2 [W4A0].>

8O21 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID A.

Measure resistance of harness between duty solenoid A and transmission connector.

Connector & terminal
(T4) No. 5 — (AT2) No. 1:

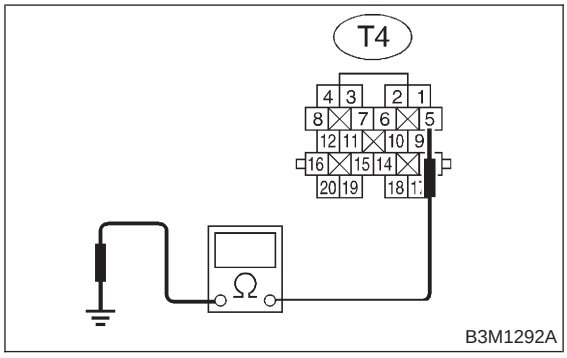


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O22**.
NO : Repair open circuit in harness between duty solenoid A and transmission connector.

8O22 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID A.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 5 — Transmission ground:

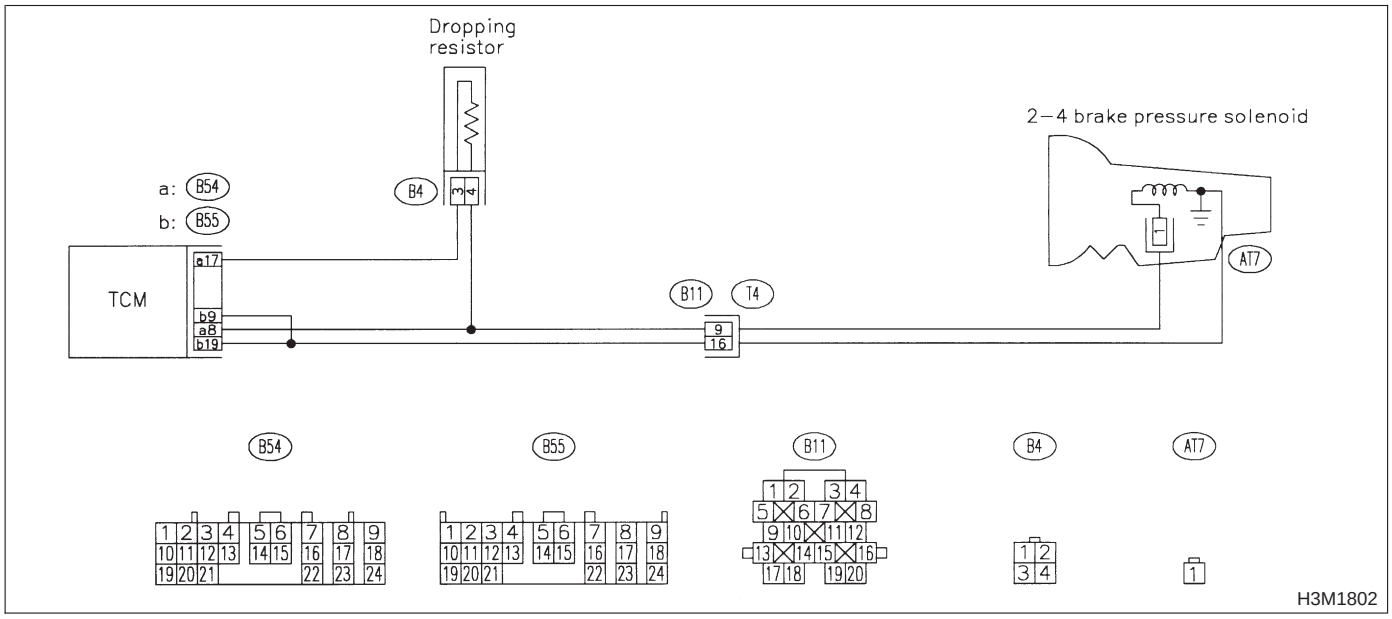


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid A and transmission connector.
NO : Repair short circuit in harness between duty solenoid A and transmission connector.

MEMO:

P: TROUBLE CODE 76 — DUTY SOLENOID D —

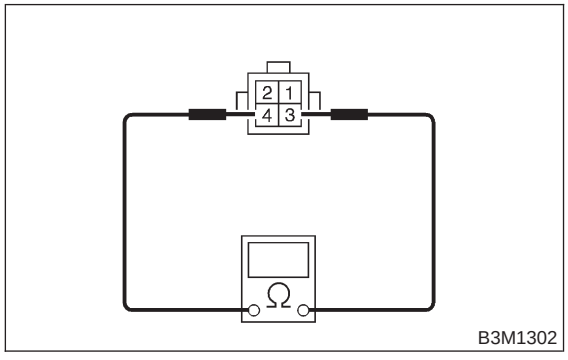
DIAGNOSIS:
Output signal circuit of duty solenoid D is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8P1 : CHECK RESISTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from dropping resistor.
3) Measure resistance between dropping resistor terminal.

Terminals
No. 3 — No. 4:

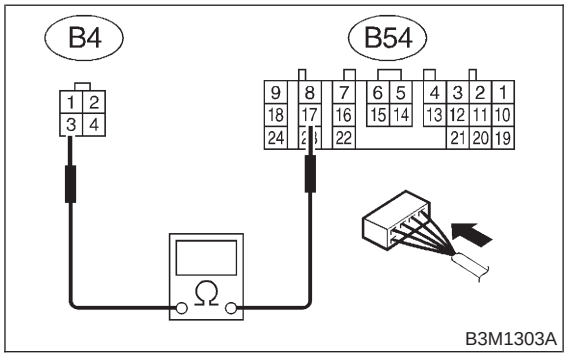


CHECK : ***Is the resistance between 9 and 15 Ω?***
YES : Go to step **8P2**.
NO : Replace dropping resistor. <Ref. to 3-2 [W23A0].>

8P2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM connector and dropping resistor connector.

Connector & terminal
(B54) No. 17 — (B4) No. 3:

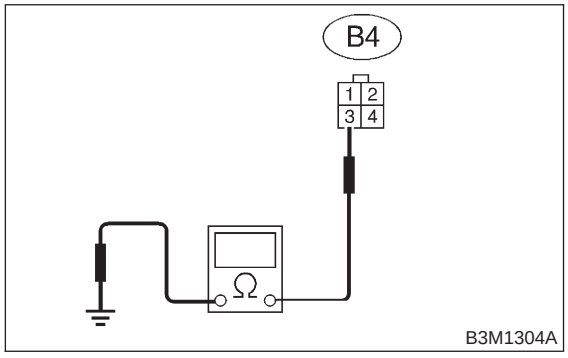


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P3**.
NO : Repair open circuit in harness between TCM and dropping resistor connector.

8P3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 3 — Chassis ground:

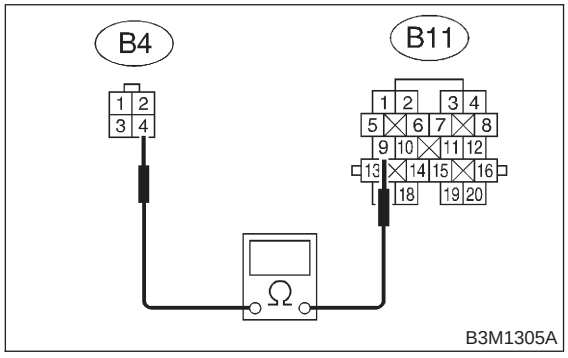


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P4**.
NO : Repair short circuit in harness between TCM and dropping resistor connector.

8P4 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

1) Disconnect connector from transmission.
2) Measure resistance of harness between transmission and dropping resistor connector.

Connector & terminal
(B4) No. 4 — (B11) No. 9:

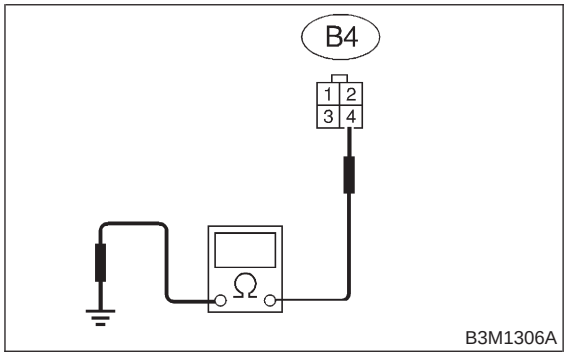


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P5**.
NO : Repair open circuit in harness between dropping resistor and transmission connector.

8P5 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 4 — Chassis ground:

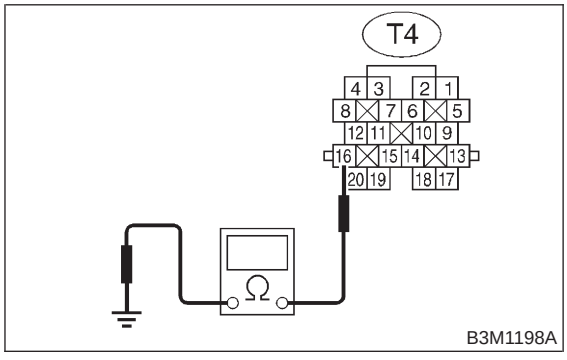


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P6**.
NO : Repair short circuit in harness between dropping resistor and transmission connector.

8P6 : CHECK DUTY SOLENOID D GROUND LINE.

Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Transmission ground:

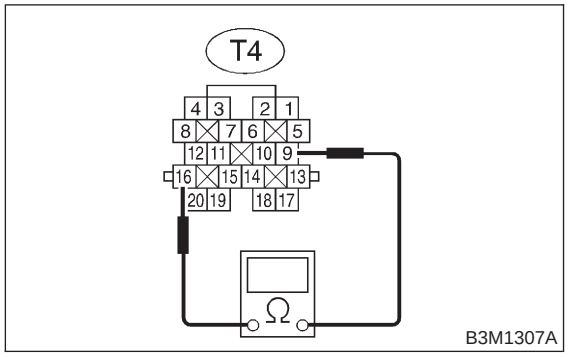


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P7**.
NO : Repair open circuit in transmission harness.

8P7 : CHECK DUTY SOLENOID D.

Measure resistance between transmission connector receptacle's terminals.

Terminal
(T4) No. 16 — No. 9:

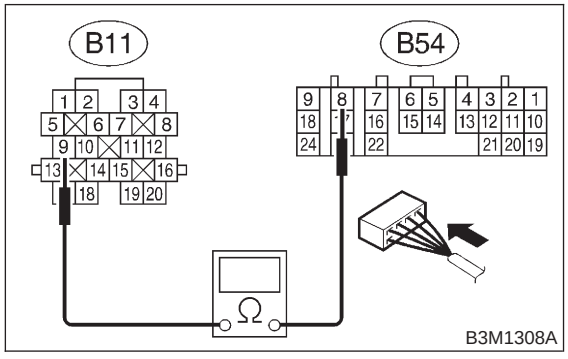


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8P8**.
NO : Go to step **8P20**.

8P8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 8 — (B11) No. 9:

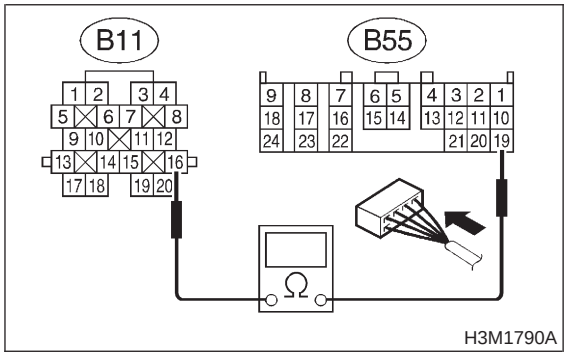


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P9**.
NO : Repair open circuit in harness between TCM and transmission connector.

8P9 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

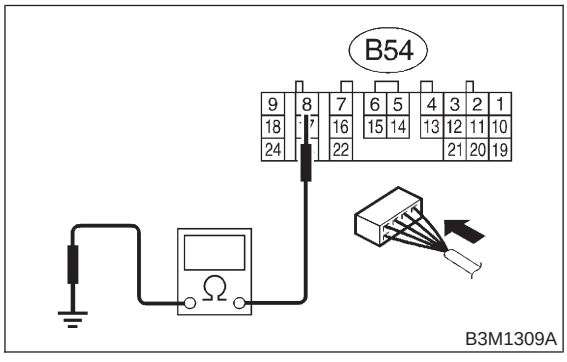


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P10**.
NO : Repair open circuit in harness between TCM and transmission connector.

8P10 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 8 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P11**.
NO : Repair short circuit in harness between TCM and transmission connector.

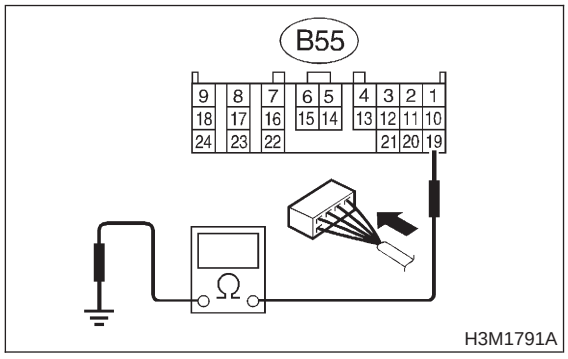
8P11 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8P17**.
NO : Go to step **8P12**.

8P12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P13**.
NO : Repair short circuit harness between TCM and transmission connector.

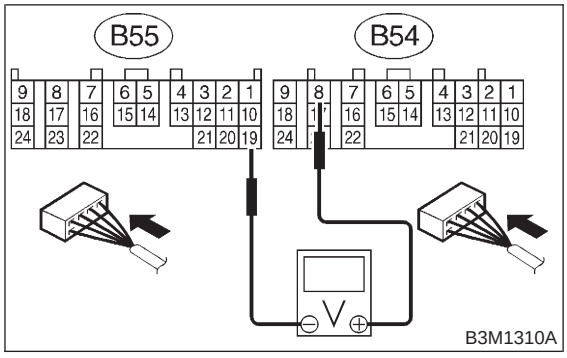
8P13 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect all connectors.
2) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Turn ignition switch to ON (engine OFF).
4) Move selector lever to “N”.
5) Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 8 (+) — (B55) No. 19 (−):

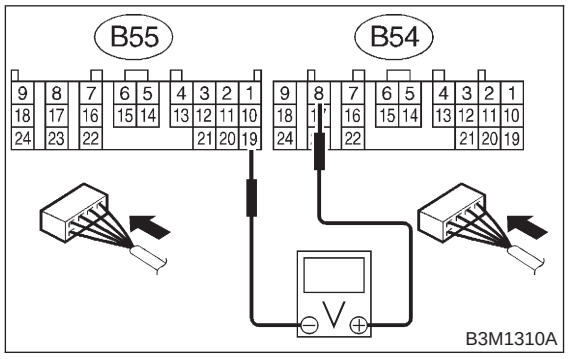


CHECK : ***Is the voltage between 1.5 and 4.0 V with throttle fully closed?***
YES : Go to step **8P14**.
NO : Go to step **8P19**.

8P14 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 8 (+) — (B55) No. 19 (−):

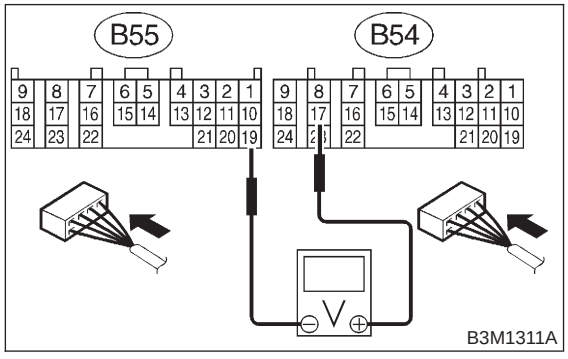


CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Go to step **8P15**.
NO : Go to step **8P19**.

8P15 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 17 (+) — (B55) No. 19 (−):

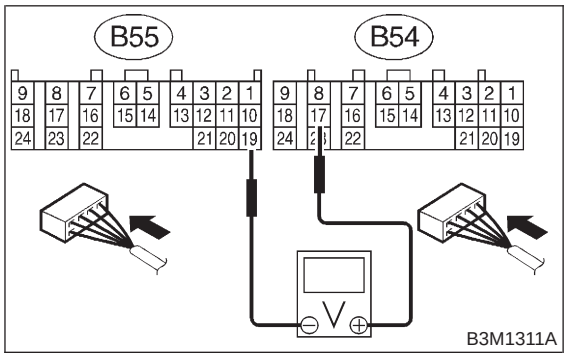


CHECK : ***Is the voltage more than 8.5 V with throttle fully closed?***
YES : Go to step **8P16**.
NO : Go to step **8P19**.

8P16 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

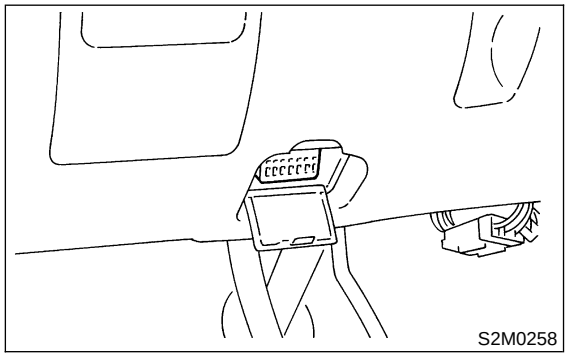
Connector & terminal
(B54) No. 17 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8P19**.

8P17 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect all connectors.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Stop the engine and turn ignition switch to ON (engine OFF).
6) Move selector lever to “N”.
7) Read data of duty solenoid D using Subaru Select Monitor.
● Line pressure duty is indicated in “%”.
8) Throttle is fully closed.

CHECK : ***Is the value 100%?***
YES : Go to step **8P18**.
NO : Go to step **8P19**.

8P18 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Turn ignition switch to ON (Engine OFF).
2) Throttle is fully open.

CHECK : ***Is the value between 10 and 20%?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8P19**.

8P19 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid A circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

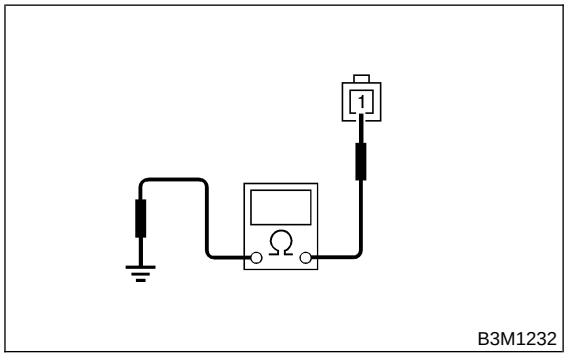
8P20 : CHECK DUTY SOLENOID D (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from duty solenoid D.
4) Measure resistance between duty solenoid D connector and transmission ground.

Terminal
No. 1 — Transmission ground:

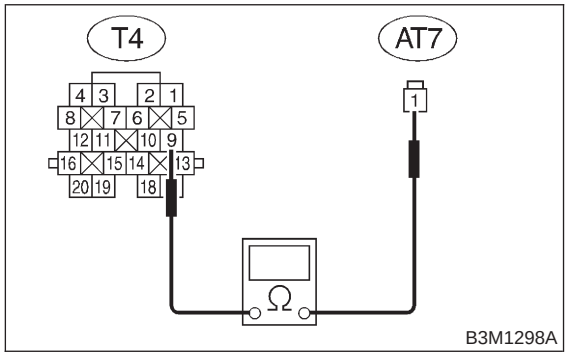


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8P21**.
NO : Replace duty solenoid D. <Ref. to 3-2 [W4A0].>

8P21 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID D.

Measure resistance of harness between duty solenoid D and transmission connector.

Connector & terminal
(T4) No. 9 — (AT7) No. 1:

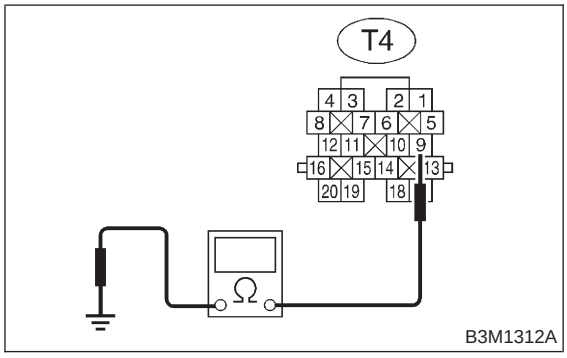


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P22**.
NO : Repair open circuit in harness between duty solenoid D and transmission connector.

8P22 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID D.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 9 — Transmission ground:

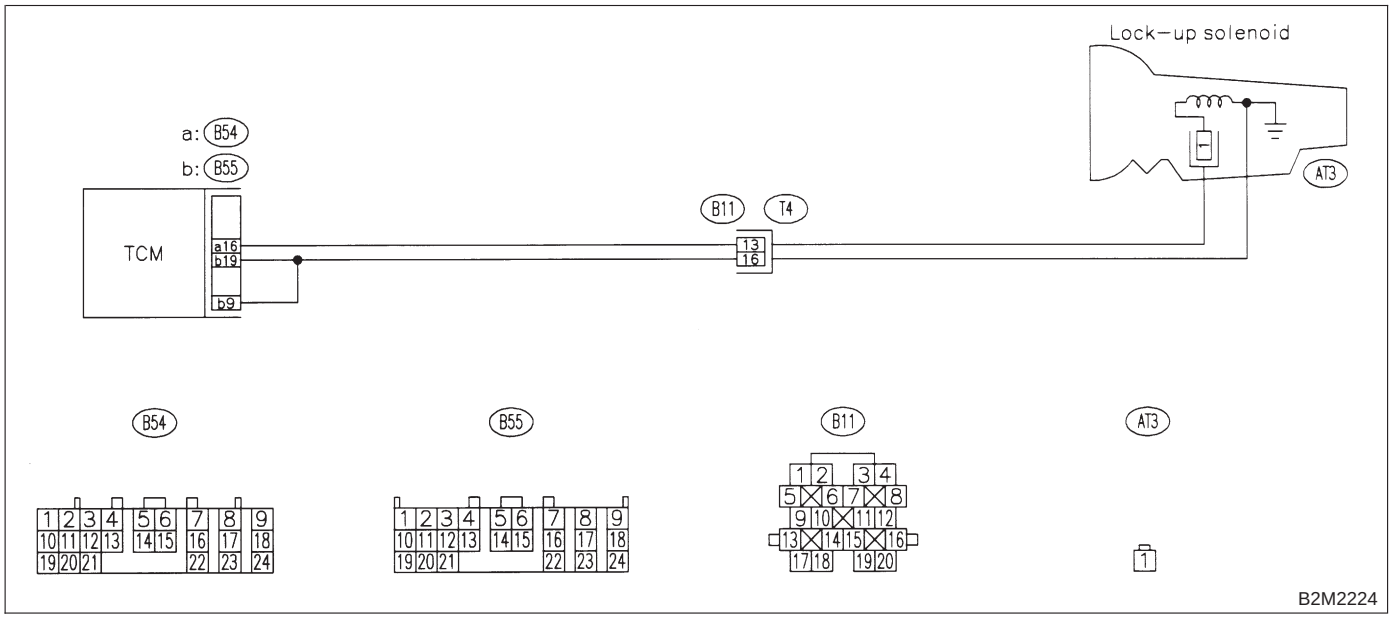


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid A and transmission connector.
NO : Repair short circuit in harness between duty solenoid D and transmission connector.

MEMO:

Q: TROUBLE CODE 77 — DUTY SOLENOID B —

DIAGNOSIS:
Output signal circuit of duty solenoid B is open or shorted.
TROUBLE SYMPTOM:
No “lock-up” (after engine warm-up).
WIRING DIAGRAM:



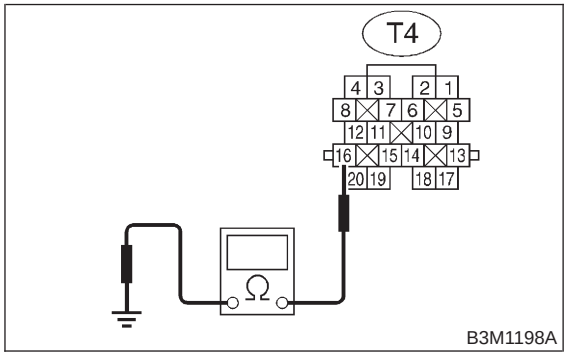
8Q1 : CHECK TROUBLE CODE.

CHECK : ***Do multiple trouble codes appear in the on-board diagnostics test mode?***
YES : Go to another trouble code.
NO : Go to step **8Q2**.

8Q2 : CHECK DUTY SOLENOID B GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle’s terminals.

Connector & terminal
(T4) No. 16 — Chassis ground:

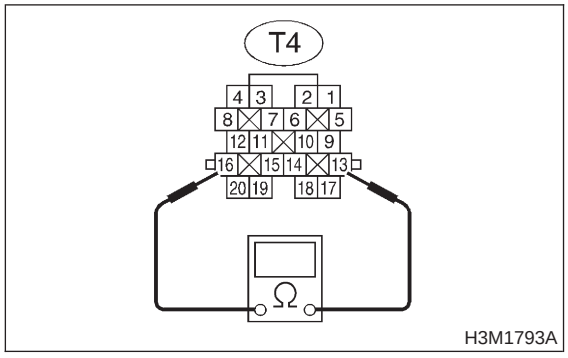


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q3**.
NO : Repair open circuit in transmission harness.

8Q3 : CHECK DUTY SOLENOID B.

Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 13 — No. 16:

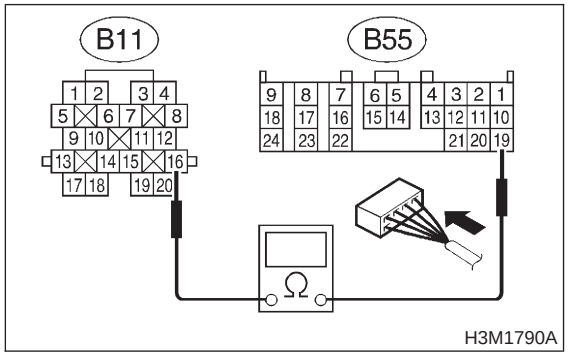


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q4**.
NO : Go to step **8Q14**.

8Q4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

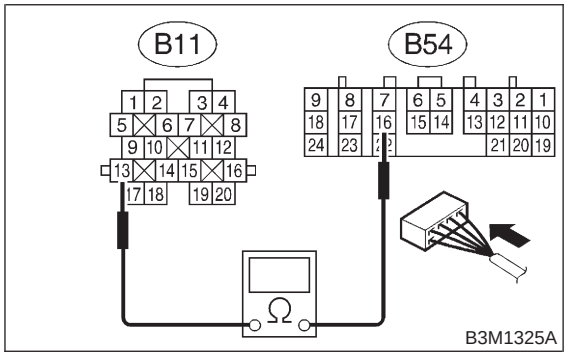


CHECK : ***Is the resistance than 1 Ω?***
YES : Go to step **8Q5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8Q5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness connector between TCM and transmission.

Connector & terminal
(B54) No. 16 — (B11) No. 13:

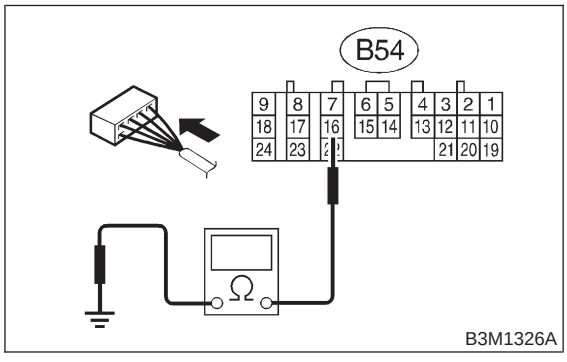


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q6**.
NO : Repair open circuit in harness between TCM and transmission connector.

8Q6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness connector between TCM and chassis ground.

Connector & terminal
(B54) No. 16 — Chassis ground:

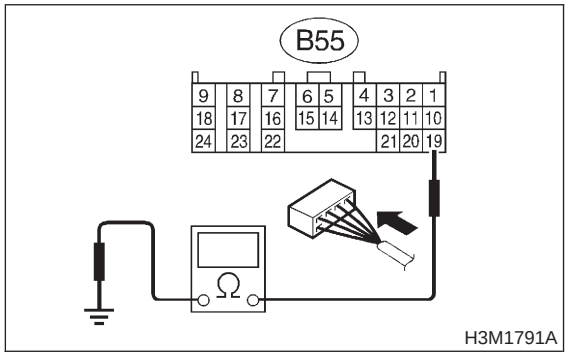


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8Q7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8Q7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness connector between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8Q8**.
NO : Repair short circuit in harness between TCM and transmission connector.

8Q8 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8Q11**.
NO : Go to step **8Q9**.

8Q9 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

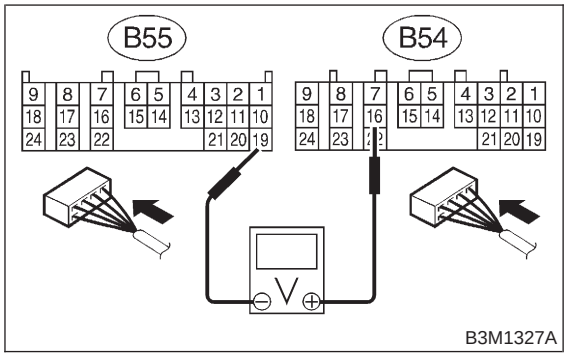
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to “D” and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 16 (+) — (B55) No. 19 (−):

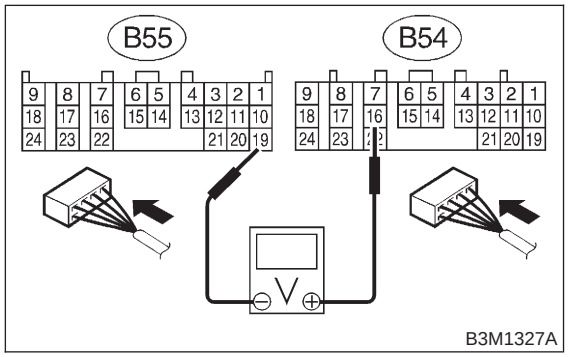


CHECK : ***Is the voltage more than 8.5 V?***
YES : Go to step **8Q10**.
NO : Go to step **8Q13**.

8Q10 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Return the engine to idling speed and move selector lever to “N”.
2) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 16 (+) — (B55) No. 19 (−):



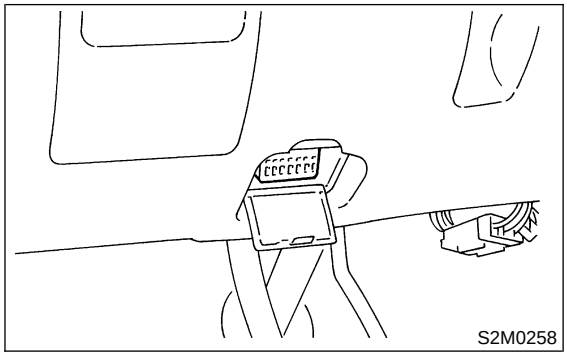
CHECK : ***Is the voltage less than 0.5 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8Q13**.

8Q11 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

6) Read data of duty solenoid B using Subaru Select Monitor.
● Lock-up duty is indicated in “%”.
7) Move selector lever to “D” and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Is the value 95%?***
YES : Go to step **8Q12**.
NO : Go to step **8Q13**.

8Q12 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

Return the engine to idling speed and move selector lever to “N”.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Is the value 5%?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8Q13**.

8Q13 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid B circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

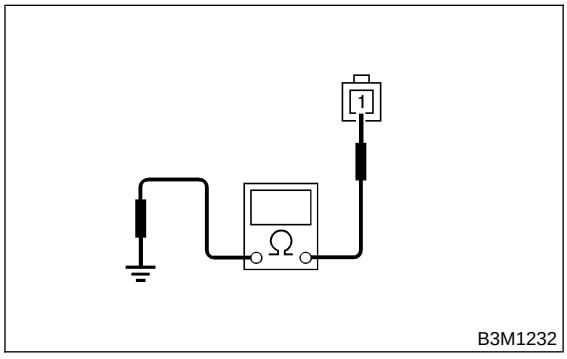
8Q14 : CHECK DUTY SOLENOID B (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from duty solenoid B.
4) Measure resistance between duty solenoid B connector and transmission ground.

Terminal
No. 1 — Transmission ground:

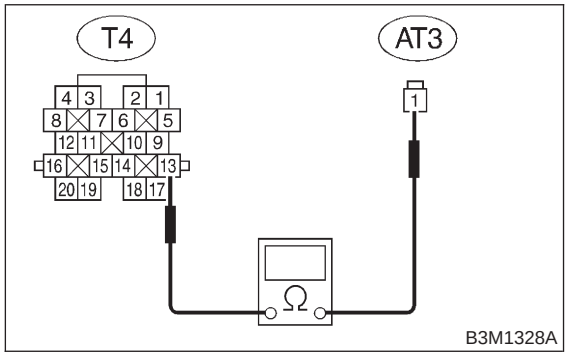


CHECK : ***Is the resistance between 10 and 17 Ω?***
YES : Go to step **8Q15**.
NO : Replace duty solenoid B. <Ref. to 3-2 [W4A0].>

8Q15 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID B AND TRANSMISSION.

Measure resistance of harness between duty solenoid B and transmission connector.

Connector & terminal
(T4) No. 13 — (AT3) No. 1:

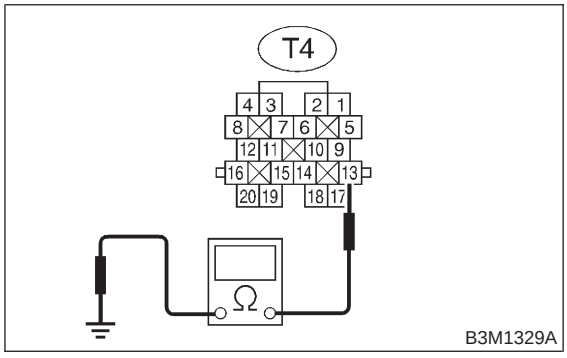


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q16**.
NO : Repair open circuit in harness between TCM and transmission connector.

8Q16 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID B AND TRANSMISSION.

Measure resistance of harness between transmission connector and transmission ground.

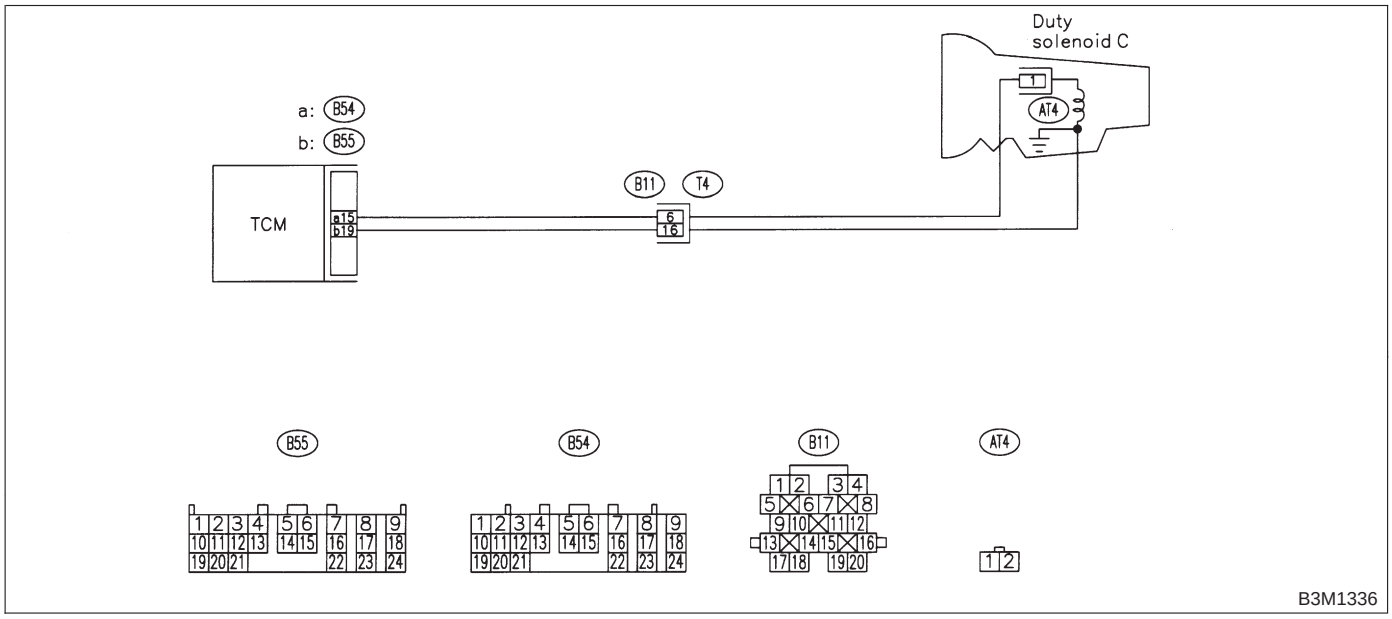
Connector & terminal
(T4) No. 13 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid B and transmission.
NO : Repair short circuit in harness between TCM and transmission connector.

R: TROUBLE CODE 79 — DUTY SOLENOID C —

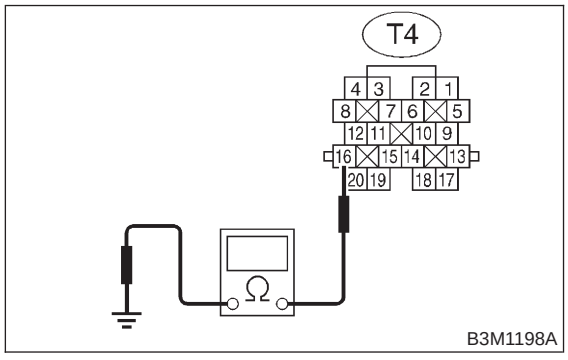
DIAGNOSIS:
Output signal circuit of duty solenoid C is open or shorted.
TROUBLE SYMPTOM:
Excessive “braking” in tight corners.
WIRING DIAGRAM:



8R1 : CHECK DUTY SOLENOID C GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

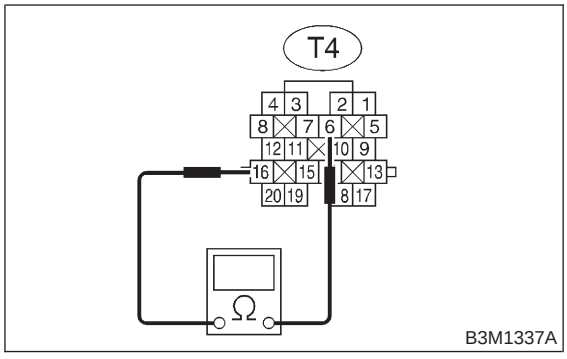


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R2**.
NO : Repair open circuit in transmission harness.

8R2 : CHECK DUTY SOLENOID C.

Measure resistance between transmission connector and transmission terminals.

Connector & terminal
(T4) No. 6 — No. 16:

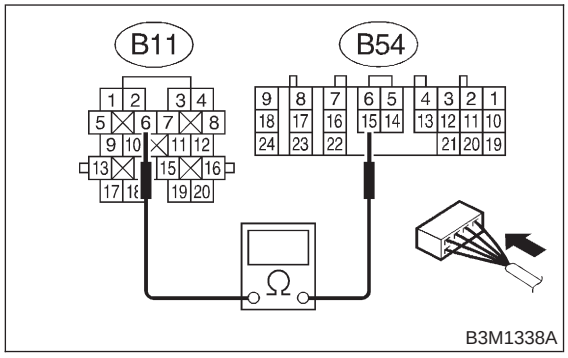


CHECK : ***Is the resistance between 10 and 17 Ω?***
YES : Go to step **8R3**.
NO : Go to step **8R13**.

8R3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 15 — (B11) No. 6:

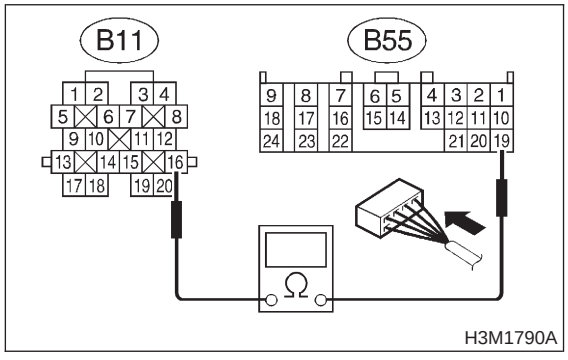


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8R4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance harness connector between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

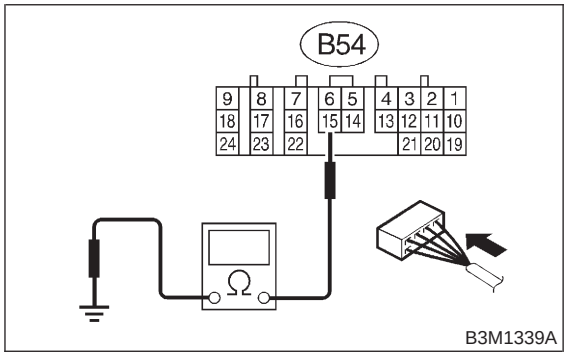


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8R5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance harness connector between TCM and chassis ground.

Connector & terminal
(B54) No. 15 — Chassis ground:

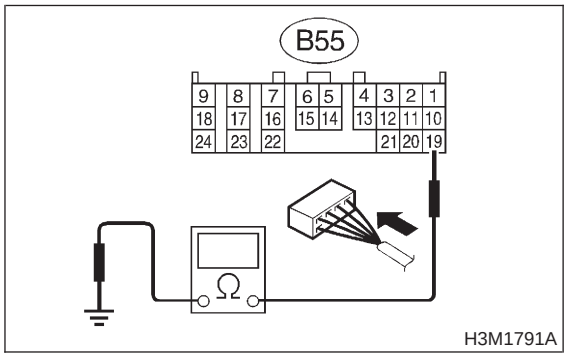


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8R6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8R6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance harness connector between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8R7**.
NO : Repair short circuit in harness between TCM and transmission connector.

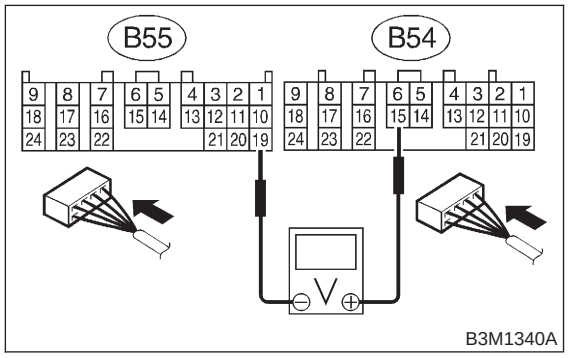
8R7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8R10**.
NO : Go to step **8R8**.

8R8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Turn ignition switch to ON (engine OFF).
3) Throttle is fully closed.
4) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 15 (+) — (B55) No. 19 (−):

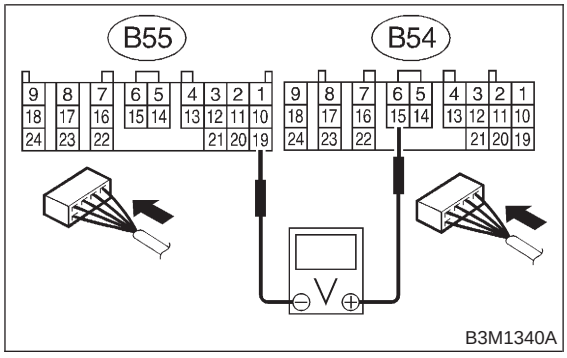


CHECK : ***Is the voltage less than 1 V in "P" range?***
YES : Go to step **8R9**.
NO : Go to step **8R12**.

8R9 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminals.

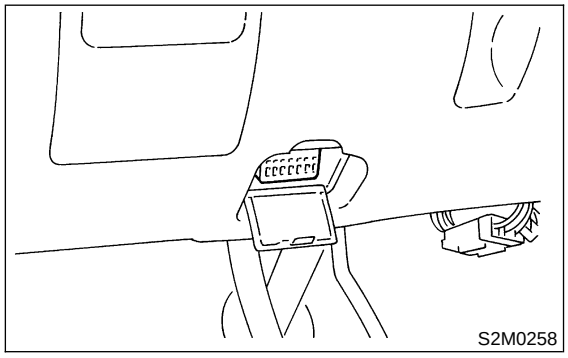
Connector & terminal
(B54) No. 15 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage between 5 and 7 V in "D" range?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the duty solenoid C and TCM connector.
NO : Go to step **8R12**.

8R10 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON (engine OFF) and turn Subaru Select Monitor switch to ON.
4) Move selector lever to "D" with throttle fully open (vehicle speed 0 km/h or 0 MPH).
5) Read data of duty solenoid C using Subaru Select Monitor.
● Duty solenoid C is indicated in "%".

CHECK : ***Is the value between 5 and 10%?***
YES : Go to step **8R11**.
NO : Go to step **8R12**.

8R11 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Set FWD mode.
2) Throttle fully closed.

CHECK : ***Is the value 95%?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the duty solenoid C and TCM connector.
NO : Go to step **8R12**.

8R12 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid C circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8R13 : CHECK DUTY SOLENOID C (IN TRANSMISSION).

1) Lift-up the vehicle and place safety stand.

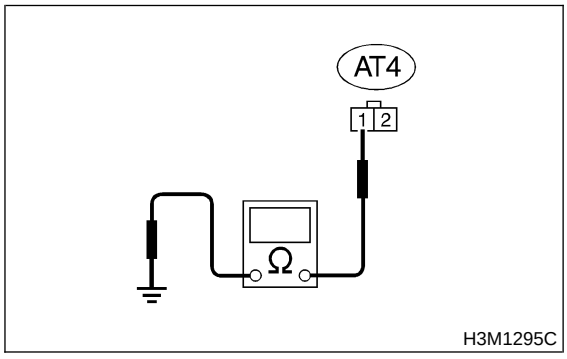
CAUTION:
On AWD models, raise all wheels off ground.

2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove extension case, and disconnect connector from duty solenoid C.
4) Measure resistance between duty solenoid C connector and transmission ground.

Connector & terminal
(AT4) No. 1 — Transmission ground:

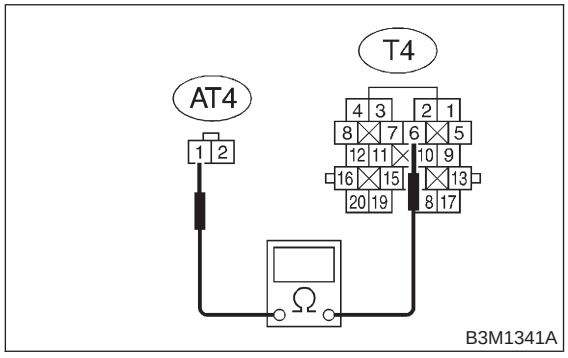


CHECK : ***Is the resistance between 10 and 17 Ω?***
YES : Go to step **8R14**.
NO : Replace duty solenoid C. <Ref. to 3-2 [W5A0].>

8R14 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID C AND TRANSMISSION.

Measure resistance of harness between duty solenoid C and transmission connector.

Connector & terminal
(T4) No. 6 — (AT4) No. 1:

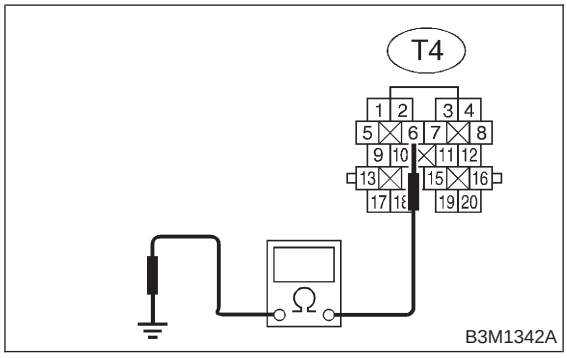


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R15**.
NO : Repair open circuit in harness between duty solenoid C and transmission connector.

8R15 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID C AND TRANSMISSION.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 6 — Transmission ground:

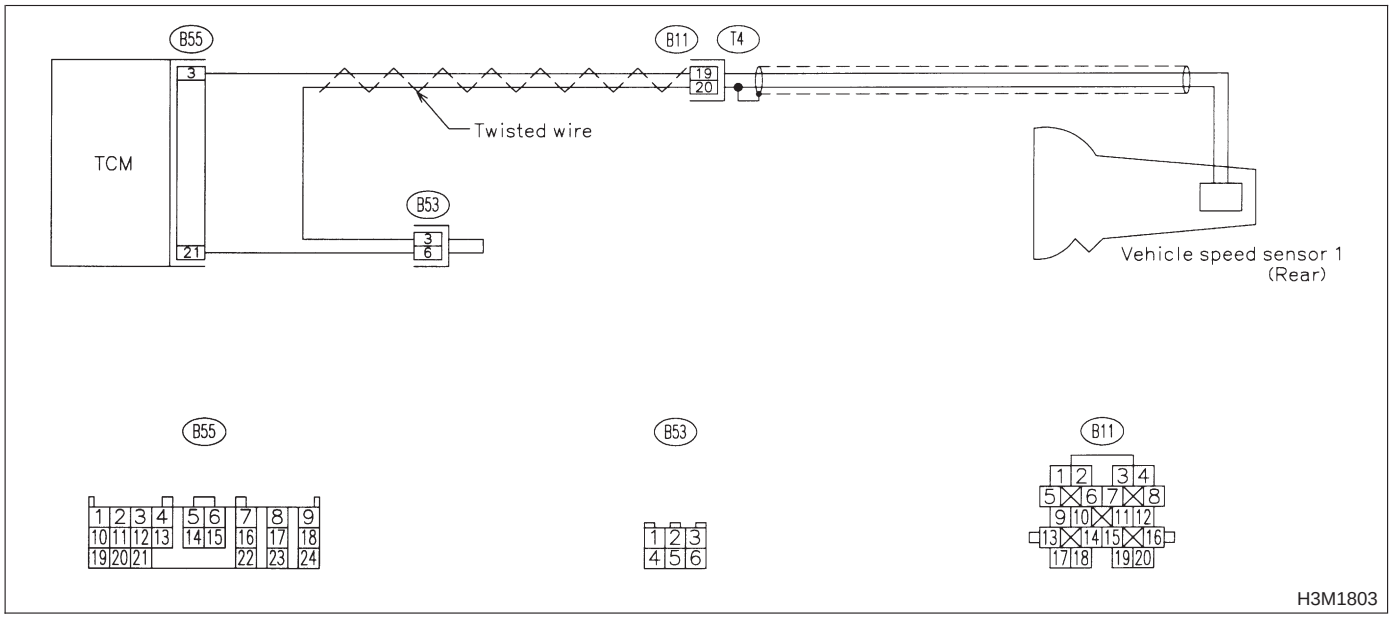


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the duty solenoid C and transmission connector.
NO : Repair short circuit in harness between duty solenoid C and transmission connector.

MEMO:

S: TROUBLE CODE 93 — VEHICLE SPEED SENSOR 1 (REAR) —

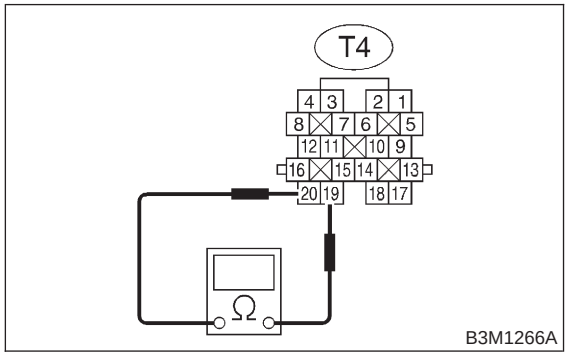
DIAGNOSIS:
Input signal circuit of TCM is open or shorted.
TROUBLE SYMPTOM:
No lock-up or excessive tight corner “braking”.
WIRING DIAGRAM:



8S1 : CHECK VEHICLE SPEED SENSOR 1.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle’s terminals.

Connector & terminal
(T4) No. 19 — No. 20:

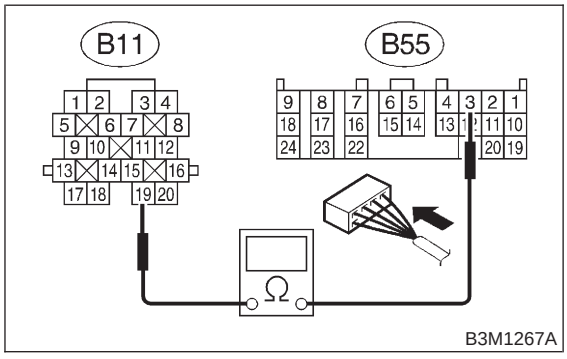


CHECK : ***Is the resistance between 450 and 650 Ω?***
YES : Go to step **8S1**.
NO : Replace transmission harness connector. <Ref. to 3-2 [W11B0].>

8S2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 3 — (B11) No. 19:

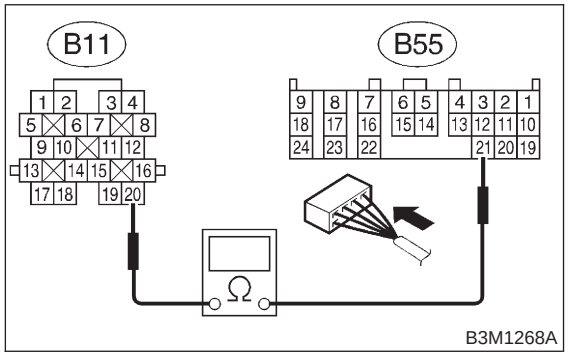


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8S3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8S3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — (B11) No. 20:

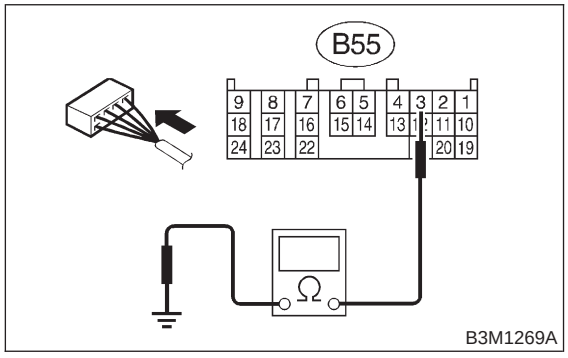


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8S4**.
NO : Repair open circuit in harness between TCM and transmission, and poor contact in coupling connector.

8S4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 3 — Chassis ground:

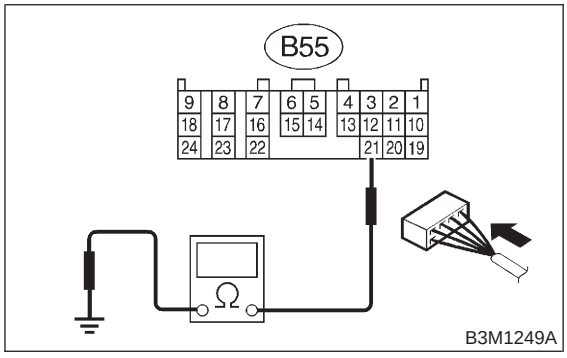


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8S5**.
NO : Repair short circuit in harness between TCM and transmission connector.

8S5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8S6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8S6 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8S10**.
NO : Go to step **8S7**.

8S7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8S9**.
NO : Go to step **8S8**.

8S8 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

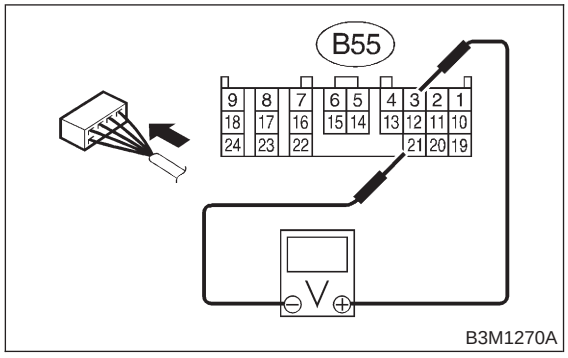
CAUTION:
On AWD models, raise all wheels off floor.

3) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

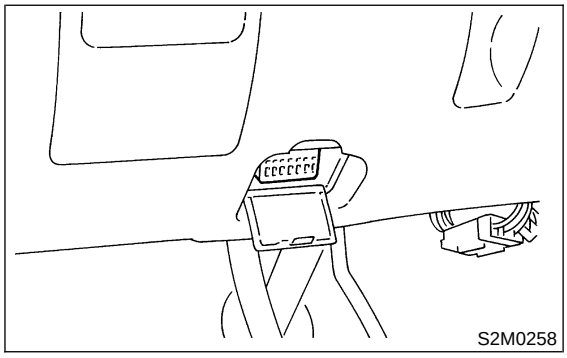
Connector & terminal
(B55) No. 3 (+) — No. 21 (−):



CHECK : ***Is the voltage more than AC 1 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8S11**.

8S9 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.
5) Start the engine.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 60 km/h or 37 MPH.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

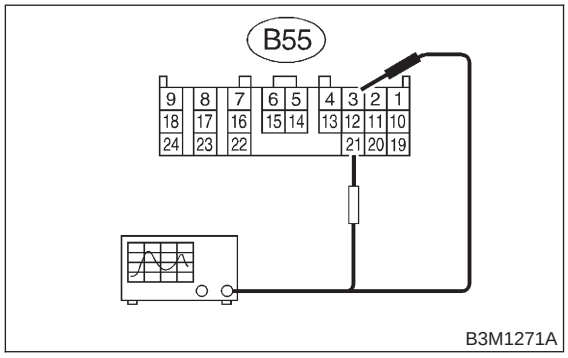
CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8S11**.

8S10 : CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

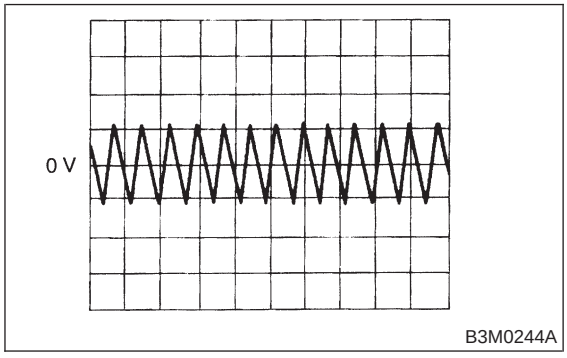
3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 3
Earth lead; (B55) No. 21



4) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure signal voltage indicated on oscilloscope.



CHECK : ***Is the signal voltage more than AC 1 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.

NO : Go to step **8S11**.

8S11 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in vehicle speed sensor 1 circuit?***

YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9. Diagnostic Chart with Select Monitor

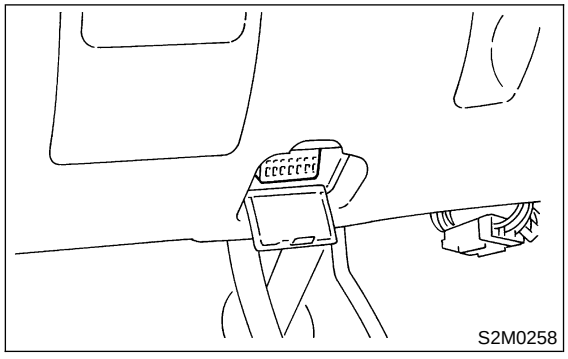
A: BASIC DIAGNOSTIC CHART

If no trouble codes appear in the on-board diagnostics operation (although problems have occurred or are occurring), measure performance characteristics of sensors, actuators, etc., in the Subaru Select Monitor and compare with the "basic data" to determine the cause of problems.
1) Trouble occurs.
2) No trouble codes appear in on-board diagnostics operation.
3) Measure each item using Subaru Select Monitor.
4) Compare measured values with basic data.
5) Determine item which is outside basic data specifications.
6) Check sensor and actuator affected.

B: BATTERY VOLTAGE

9B1 : CHECK BATTERY VOLTAGE.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and engine idling after warm-up.
4) Turn Subaru Select Monitor switch to ON.
5) Read data of battery voltage using Subaru Select Monitor.
● Battery voltage applied to TCM.

CHECK : ***Is voltage between 10 and 16 V?***
YES : Go to step VEHICLE SPEED SENSOR 1. <Ref. to 3-2 [T9C0].>
NO : Check battery voltage and specification of electrolyte, regulating voltage under no loads and generator (as a single unit).

C: CHECK VEHICLE SPEED SENSOR 1.

9C1 : CHECK VEHICLE SPEED SENSOR 1.

1) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

2) Read data of vehicle speed #1 using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in "MPH" or "km/h".

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step VEHICLE SPEED SENSOR 2. <Ref. to 3-2 [T9D0].>
NO : Check vehicle speed sensor 1 circuit. <Ref. to 3-2 [T8S0].>

D: CHECK VEHICLE SPEED SENSOR 2.

9D1 : CHECK VEHICLE SPEED SENSOR 2.

Read data of vehicle speed #2 using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in "MPH" or "km/h".

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step ENGINE SPEED SIGNAL. <Ref. to 3-2 [T9E0].>
NO : Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8G0].>

E: CHECK ENGINE SPEED SIGNAL.

9E1 : CHECK ENGINE SPEED SIGNAL.

1) Turn A/C switch to OFF (with A/C models).
2) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Read data of engine speed using Subaru Select Monitor.
- Engine speed is indicated in “rpm”.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the tachometer revolution increase as the Subaru Select Monitor revolution data increases?***
YES : Go to step ATF TEMPERATURE SENSOR. <Ref. to 3-2 [T9F0].>
NO : Check engine speed signal circuit. <Ref. to 3-2 [T8C0].>

F: CHECK ATF TEMPERATURE SENSOR.

9F1 : CHECK AT OIL TEMP WARNING LIGHT.

CHECK : ***Does the AT OIL TEMP warning light remain on 2 seconds after the engine has been started?***
YES : Go to step **9F2**.
NO : Check ATF temperature sensor and TCM circuit. <Ref. to 3-2 [T8E0].>

9F2 : CHECK ATF TEMPERATURE SENSOR.

1) Read data of ATF temperature using Subaru Select Monitor.
- ATF temperature is indicated in “°F” or “°C”.

2) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Turn ignition switch to ON (engine OFF).

CHECK : ***Does the ATF temperature change from 80°C (176°F)?***
YES : Go to step THROTTLE POSITION SENSOR. <Ref. to 3-2 [T9G0].>
NO : Check ATF temperature sensor circuit. <Ref. to 3-2 [T8E0].>

G: CHECK THROTTLE POSITION SENSOR.

9G1 : CHECK INPUT SIGNAL FOR TCM.

Read data of throttle position sensor using Subaru Select Monitor.
- Throttle position sensor input signal is indicated.

CHECK : ***Is voltage between 0.3 and 0.7 V when the accelerator pedal is completely released?***
YES : Go to step **9G2**.
NO : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

9G2 : CHECK INPUT SIGNAL FOR TCM.

CHECK : ***Is voltage between 4.4 and 4.8 V when the accelerator pedal is completely depressed?***
YES : Go to step **9G3**.
NO : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

9G3 : CHECK INPUT SIGNAL FOR TCM.

CHECK : ***Does voltage decrease smoothly when the accelerator pedal is fully depressed and then fully released?***

YES : Go to step GEAR POSITION. <Ref. to 3-2 [T9H0].>

NO : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

H: CHECK GEAR POSITION.

9H1 : CHECK GEAR POSITION.

1) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

2) Start the engine.
3) Move select lever to “D”, and drive vehicle.
4) Read data of gear position using Subaru Select Monitor.
- Gear position is indicated.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the transmission gear correspond to the gear which is shown on display?***

YES : Go to step LINE PRESSURE DUTY. <Ref. to 3-2 [T9I0].>

NO : Check shift solenoid 1 and shift solenoid 2 signal circuit. <Ref. to 3-2 [T8K0].> and <Ref. to 3-2 [T8L0].>

I: CHECK LINE PRESSURE DUTY.

9I1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

2) Stop the engine and turn ignition switch to ON (engine OFF).
3) Move selector lever to “N”.
4) Read data of line pressure duty ratio using Subaru Select Monitor.
- Line pressure duty is indicated in “%”.

CHECK : ***Does the Subaru Select Monitor indicate 100% when the accelerator pedal is completely released?***

YES : Go to step **9I2**.

NO : Go to step **9I4**.

9I2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor indicate between 10 and 20% when the accelerator pedal is completely depressed?***

YES : Go to step **9I3**.

NO : Go to step **9I4**.

9I3 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor change smoothly when the accelerator pedal is fully depressed and then fully released?***

YES : Go to step LOCK-UP DUTY. <Ref. to 3-2 [T9J0].>

NO : Go to step **9I4**.

9I4 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref. to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9I5**.

9I5 : CHECK ENGINE SPEED SIGNAL.

NOTE:
For the diagnostics procedure on engine speed signal circuit, <Ref. to 3-2 [T9E0].>.

CHECK : ***Is there any trouble in engine speed signal circuit?***
YES : Repair or replace engine speed signal circuit, <Ref. to 3-2 [T8C0].>.
NO : Go to step **9I6**.

9I6 : CHECK ATF TEMPERATURE SENSOR.

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit, <Ref. to 3-2 [T9F1].>.

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit, <Ref. to 3-2 [T8E0].>.
NO : Go to step **9I7**.

9I7 : CHECK INHIBITOR SWITCH.

1) Turn ignition switch and Subaru Select Monitor to ON.
2) Read data of range switch using Subaru Select Monitor.
- Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***
YES : Go to step LOCK-UP DUTY. <Ref. to 3-2 [T9J0].>
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

J: CHECK LOCK-UP DUTY.

9J1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Read data of lock-up duty ratio using Subaru Select Monitor.
- Lock-up duty ratio is indicated in “%”.

CHECK : ***Does the Subaru Select Monitor indicate 5%?***
YES : Go to step **9J2**.
NO : Go to step **9J3**.

9J2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Move selector lever to “D” and slowly increase vehicle speed to 75 km/h (47 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the Subaru Select Monitor indicate 95%?***
YES : Go to step TRANSFER DUTY RATIO. <Ref. to 3-2 [T9K0].>
NO : Go to step **9J3**.

9J3 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref. to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9J4**.

9J4 : CHECK VEHICLE SPEED SENSOR 1.

NOTE:
For the diagnostics procedure on vehicle speed sensor 1 circuit, <Ref. to 3-2 [T9C0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 1 circuit?***
YES : Repair or replace vehicle speed sensor 1 circuit, <Ref. to 3-2 [T8S0].>.
NO : Go to step **9J5**.

9J5 : CHECK VEHICLE SPEED SENSOR 2.

NOTE:
For the diagnostics procedure on vehicle speed sensor 2 circuit, <Ref. to 3-2 [T9D0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***
YES : Repair or replace vehicle speed sensor 2 circuit, <Ref. to 3-2 [T8G0].>.
NO : Go to step **9J6**.

9J6 : CHECK ENGINE SPEED SIGNAL.

NOTE:
For the diagnostics procedure on engine speed signal circuit, <Ref. to 3-2 [T9E0].>.

CHECK : ***Is there any trouble in engine speed signal circuit?***
YES : Repair or replace engine speed signal circuit, <Ref. to 3-2 [T8C0].>.
NO : Go to step **9J7**.

9J7 : CHECK INHIBITOR SWITCH.

Read data of range switch using Subaru Select Monitor.
- Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***
YES : Go to step TRANSFER DUTY. <Ref. to 3-2 [T9K0].>
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

K: CHECK TRANSFER DUTY.

9K1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to ON (engine OFF).
2) Move selector lever to “D”.
3) Read data of transfer duty ratio using Subaru Select Monitor.
- Transfer duty ratio is indicated in “%”.

CHECK : ***Does the duty ratio change in response to the depress-release motion of the accelerator pedal?***
YES : Go to step **9K2**.
NO : Go to step **9K3**.

9K2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to OFF.
2) Set FWD mode.
3) Turn ignition switch to ON (engine OFF).

CHECK : ***Does the Subaru Select Monitor indicate 95%?***
YES : Go to step THROTTLE POSITION SENSOR POWER SUPPLY. <Ref. to 3-2 [T9L0].>
NO : Go to step **9K3**.

9K3 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9K4**.

9K4 : CHECK VEHICLE SPEED SENSOR 1.

NOTE:
For the diagnostics procedure on vehicle speed sensor 1 circuit, <Ref. to 3-2 [T9C0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 1 circuit?***
YES : Repair or replace vehicle speed sensor 1 circuit, <Ref to 3-2 [T8S0].>.
NO : Go to step **9K5**.

9K5 : CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

NOTE:
For the diagnostics procedure on vehicle speed sensor 2 circuit, <Ref. to 3-2 [T9D0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***
YES : Repair or replace vehicle speed sensor 2 circuit, <Ref. to 3-2 [T8G0].>.
NO : Go to step **9K6**.

9K6 : CHECK ATF TEMPERATURE SENSOR.

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit, <Ref. to 3-2 [T9F0].>.

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit, <Ref. to 3-2 [T8E0].>.
NO : Go to step **9K7**.

9K7 : CHECK INHIBITOR SWITCH.

Read data of range switch using Subaru Select Monitor.
● Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of range switch on Subaru Select Monitor light up?***
YES : Go to step **9K8**.
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

9K8 : CHECK ABS SIGNAL.

1) Start the engine, and turn Subaru Select Monitor switch to ON.
2) Read data of ABS signal using Subaru Select Monitor.
● ABS switch is indicated in ON ⇔ OFF.

CHECK : ***Does the LED of ABS switch light up?***
YES : Check ABS signal circuit. <Ref. to 4-4 [T10A0].> and <Ref. to 4-4 [T10U0].>
NO : Go to step THROTTLE POSITION SENSOR POWER SUPPLY. <Ref. to 3-2 [T9L0].>

L: CHECK THROTTLE POSITION SENSOR POWER SUPPLY.

9L1 : CHECK THROTTLE POSITION POWER SUPPLY.

Read data of throttle position sensor power supply using Subaru Select Monitor.
● Throttle position sensor power supply voltage is indicated.

CHECK : ***Is the value fixed between 5.02 and 5.22 V?***
YES : Go to step MASS AIR FLOW SIGNAL. <Ref. to 3-2 [T9M0].>
NO : Check throttle position sensor power supply circuit. <Ref. to 3-2 [T8F0].>

M: CHECK MASS AIR FLOW SIGNAL. (EXCEPT 2200 cc CALIFORNIA SPEC. VEHICLES)

9M1 : CHECK VEHICLE MARKET.

CHECK : ***Is it 2200 cc California spec. vehicle?***
YES : Go to step INTAKE MANIFOLD PRESSURE SIGNAL. <Ref. to 3-2 [T9N0].>
NO : Go to step **9M2**.

9M2 : CHECK INPUT SIGNAL FOR TCM.

1) Start the engine.
2) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling after warm-up.
4) Move selector lever to “N”.
5) Read data of mass air flow signal using Subaru Select Monitor.
● Display shows mass air flow signal value sent from ECM.

CHECK : ***Does voltage change in response to the depress-release motion of the accelerator pedal?***
YES : Go to step **9M3**.
NO : Check mass air flow signal circuit. <Ref. to 3-2 [T8D0].>

9M3 : CHECK ECM.

CHECK : ***Has trouble been eliminated after ECM replacement?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **9M4**.

9M4 : CHECK TCM.

NOTE:
Install former ECM.

CHECK : ***Has trouble been eliminated after TCM replacement?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Go to step TURBINE SPEED SENSOR. <Ref. to 3-2 [T9O0].>

N: CHECK INTAKE MANIFOLD PRESSURE SIGNAL. (2200 cc CALIFORNIA SPEC. VEHICLES)

9N1 : CHECK INPUT SIGNAL FOR TCM.

1) Start the engine.
2) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling after warm-up.
4) Move selector lever to “N”.
5) Read data of intake manifold pressure signal using Subaru Select Monitor.
● Display shows intake manifold pressure signal value sent from ECM.

CHECK : ***Does voltage change in response to the depress-release motion of the accelerator pedal?***
YES : Go to step **9N2**.
NO : Check intake manifold pressure signal circuit. <Ref. to 3-2 [T8J0].>

9N2 : CHECK ECM.

CHECK : ***Has trouble been eliminated after ECM replacement?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **9N3**.

9N3 : CHECK TCM.

NOTE:
Install former ECM.

CHECK : ***Has trouble been eliminated after TCM replacement?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Go to step TORQUE CONVERTER TURBINE SPEED SENSOR. <Ref. to 3-2 [T9O0].>

O: CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.

9O1 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.

1) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

2) Read data of torque converter turbine speed sensor using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “MPH” or “km/h”.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step 2-4 BRAKE PRESSURE DUTY. <Ref. to 3-2 [T9P0].>
NO : Check turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

P: CHECK 2-4 BRAKE PRESSURE DUTY.

9P1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

2) Stop the engine and turn ignition switch to ON (engine OFF).
3) Move selector lever to “N”.
4) Read data of 2-4 brake pressure duty ratio using Subaru Select Monitor.
● 2-4 brake pressure duty is indicated in “%”.

CHECK : ***Does the Subaru Select Monitor indicate 100% when the accelerator pedal is completely released?***
YES : Go to step **9P2**.
NO : Go to step **9P4**.

9P2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor indicate between 10 and 20% when the accelerator pedal is completely depressed?***
YES : Go to step **9P3**.
NO : Go to step **9P4**.

9P3 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor change smoothly when the accelerator pedal is fully depressed and then fully released?***
YES : Go to step FWD SWITCH. <Ref. to 3-2 [T9Q0].>
NO : Go to step **9P4**.

9P4 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref. to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9P5**.

9P5 : CHECK ENGINE SPEED SIGNAL.

NOTE:
For the diagnostics procedure on engine speed signal circuit, <Ref. to 3-2 [T9E0].>.

CHECK : ***Is there any trouble in engine speed signal circuit?***
YES : Repair or replace engine speed signal circuit, <Ref. to 3-2 [T8C0].>.
NO : Go to step **9P6**.

9P6 : CHECK ATF TEMPERATURE SENSOR.

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit, <Ref. to 3-2 [T9F0].>.

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit, <Ref. to 3-2 [T8E0].>.
NO : Go to step **9P7**.

9P7 : CHECK INHIBITOR SWITCH.

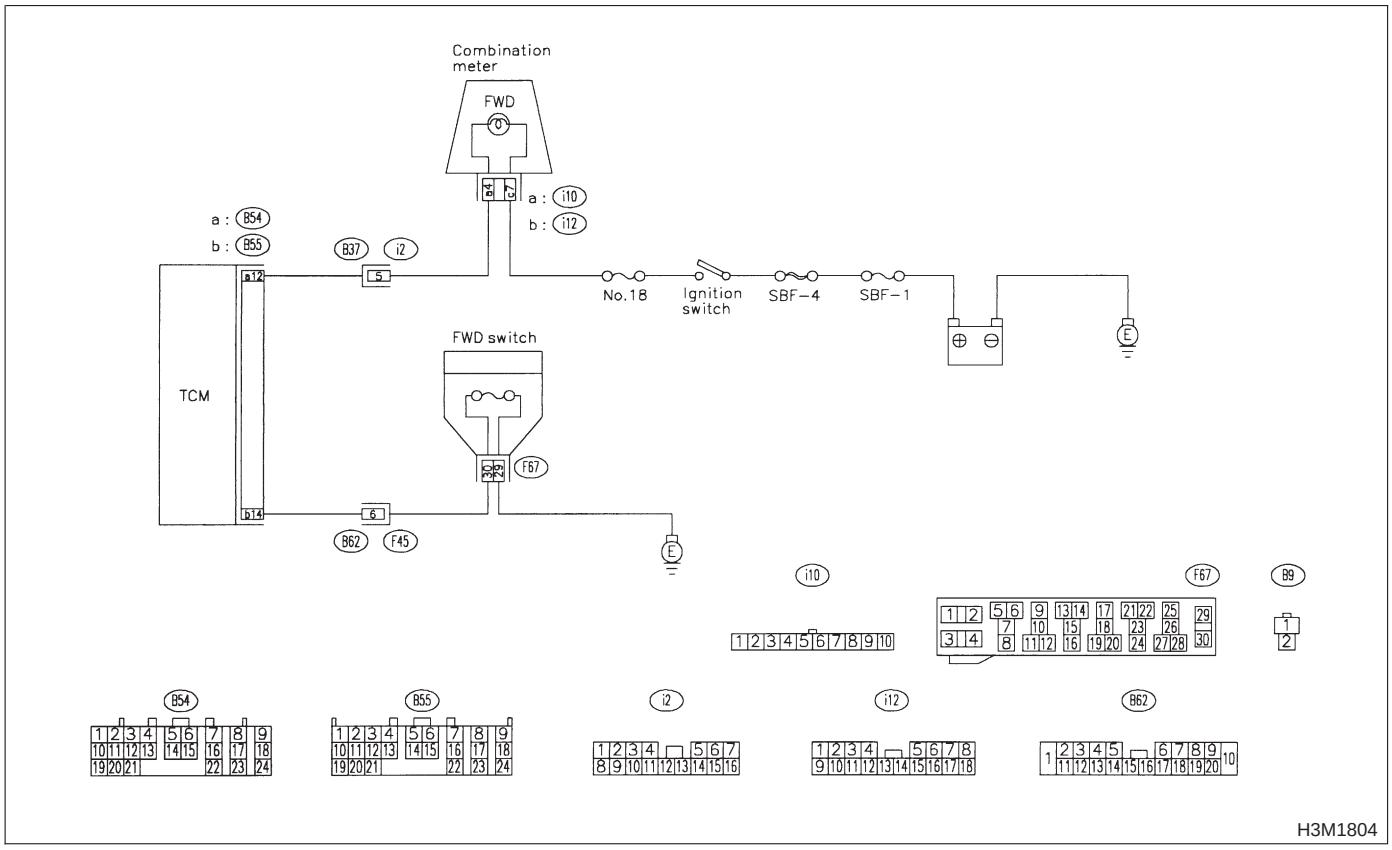
1) Turn ignition switch and Subaru Select Monitor to ON.
2) Read data of range switch using Subaru Select Monitor.
● Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***
YES : Go to step FWD SWITCH. <Ref. to 3-2 [T9Q0].>
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

Q: CHECK FWD SWITCH.

DIAGNOSIS:
- LED does not come on even if FWD switch is ON.
- FWD switch circuit is open or short.

WIRING DIAGRAM:



9Q1 : CHECK FWD SWITCH.

CHECK : ***When fuse is inserted to FWD switch, does LED light up?***

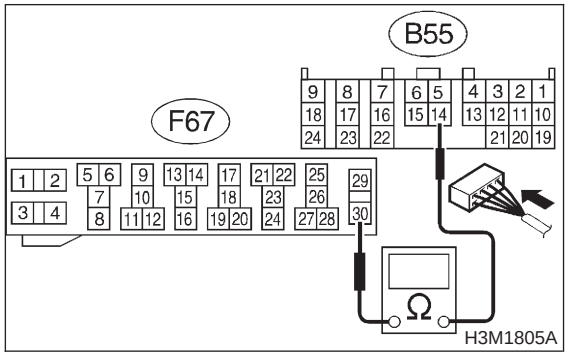
YES : Go to step BRAKE SWITCH. <Ref. to 3-2 [T9R0].>

NO : Go to step **9Q2**.

9Q2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH.

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

Connector & terminal
(F67) No. 30 — (B55) No. 14:

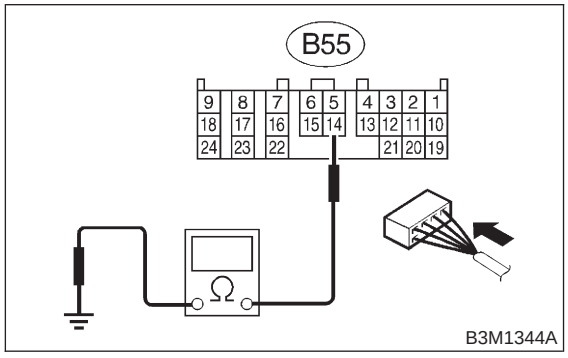


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Q3**.
NO : Repair open circuit in harness between TCM and FWD switch connector.

9Q3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH.

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

Connector & terminal
(B55) No. 14 — Chassis ground:

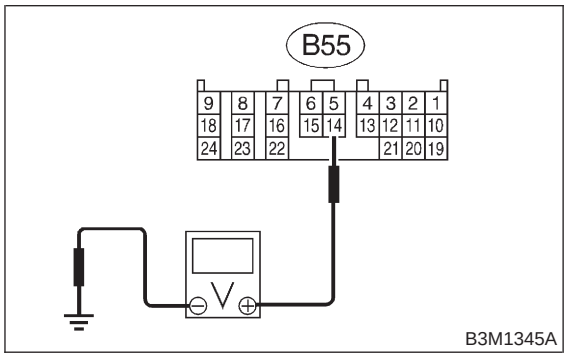


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Q4**.
NO : Repair short circuit in harness connector between TCM and chassis ground.

9Q4 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and FWD switch.
3) Turn ignition switch to ON.
4) Measure signal voltage for TCM while installing the fuse to FWD switch connector.

Connector & terminal
(B55) No. 14 (+) — Chassis ground (−):

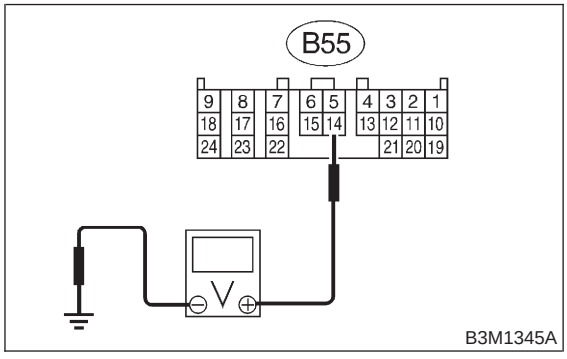


CHECK : ***Is the voltage less than 1 V in FWD switch while installing?***
YES : Go to step **9Q5**.
NO : Go to step **9Q10**.

9Q5 : CHECK INPUT SIGNAL FOR TCM.

Measure signal voltage for TCM while removing the fuse from FWD switch connector.

Connector & terminal
(B55) No. 14 (+) — Chassis ground (−):

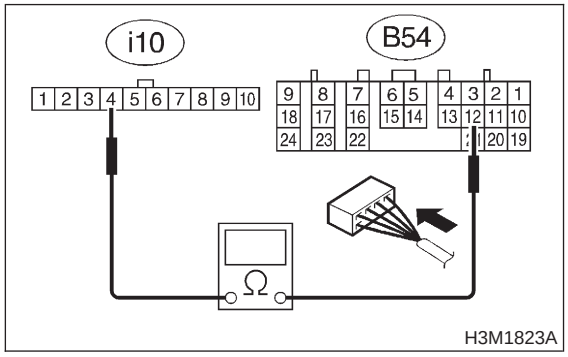


CHECK : ***Is the voltage more than 10 V in FWD switch while removing?***
YES : Go to step **9Q6**.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9Q6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

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

Connector & terminal
(B54) No. 12 — (i10) No. 4:

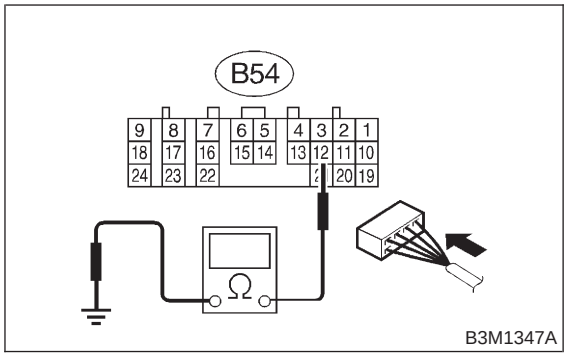


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Q7**.
NO : Repair open circuit in harness between TCM and combination meter and poor contact in coupling connector.

9Q7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

Measure resistance of harness connector between TCM and chassis ground to make sure that circuit does not short.

Connector & terminal
(B54) No. 12 — Chassis ground:

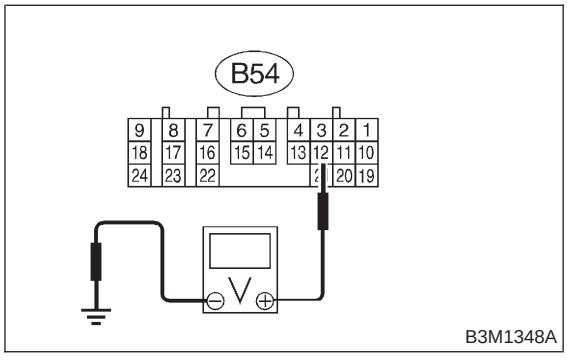


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Q8**.
NO : Repair short circuit in harness between TCM and combination meter connector.

9Q8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and combination meter.
3) Turn ignition switch to ON.
4) Measure signal voltage for TCM while installing and removing the fuse to FWD switch connector.

Connector & terminal
(B54) No. 12 — Chassis ground:

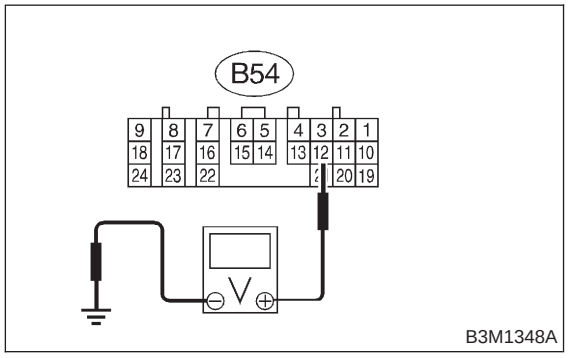


CHECK : ***Is the voltage less than 1 V in FWD switch while installing?***
YES : Go to step **9Q9**.
NO : Go to step **9Q10**.

9Q9 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure signal voltage for TCM while removing the fuse from FWD switch connector.

Connector & terminal
(B54) No. 12 — Chassis ground:



CHECK : ***Is the voltage more than 10 V in FWD switch while removing?***
YES : Go to step **9Q10**.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9Q10 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in FWD switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

R: CHECK BRAKE SWITCH.

9R1 : CHECK BRAKE SWITCH.

CHECK : ***When the brake pedal is depressed, does LED light up?***
YES : Go to step ABS SWITCH. <Ref. to 3-2 [T9S0].>
NO : Check brake switch circuit. <Ref. to 2-7 [T10AZ0].>

S: CHECK ABS SWITCH.

9S1 : CHECK ABS SWITCH.

CHECK : ***Does the LED of ABS switch light up?***
YES : Check ABS switch circuit. <Ref. to 4-4 [T10A0].> and <Ref. to 4-4 [T10U0].>
NO : Go to step CRUISE CONTROL SWITCH. <Ref. to 3-2 [T9T0].>

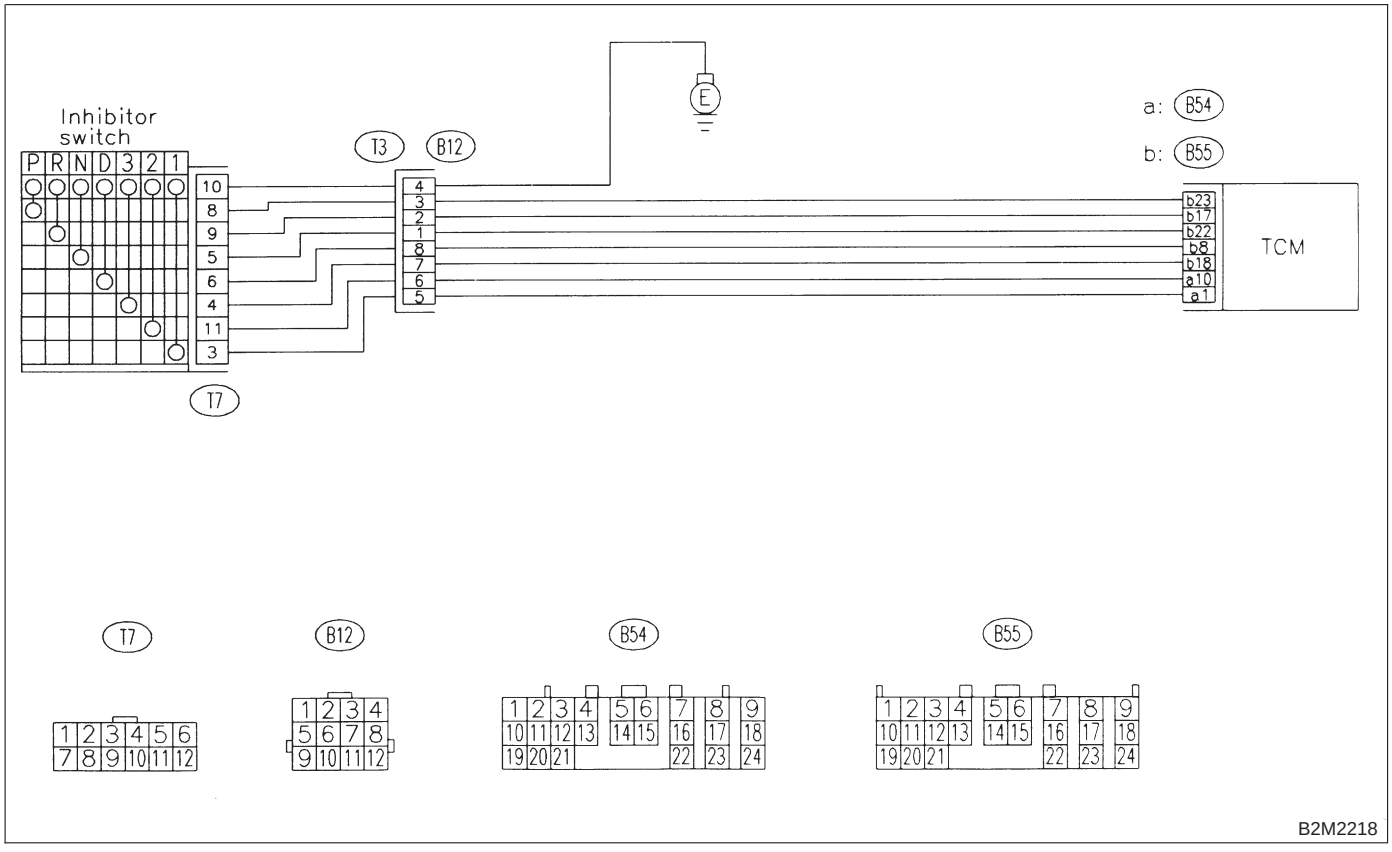
T: CHECK CRUISE CONTROL SWITCH.

9T1 : CHECK CRUISE CONTROL SWITCH.

CHECK : ***When cruise control is set, does LED light up?***
YES : Go to step “N/P” RANGE SWITCH. <Ref. to 3-2 [T9U0].>
NO : Check cruise control. <Ref. to 6-2 [W1100].>

U: CHECK “N/P” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “P” or “N” range is open or shorted.
WIRING DIAGRAM:



9U1 : CHECK “P” RANGE SWITCH.

CHECK : ***When “P” range is selected, does LED light up?***
YES : Go to step **9U2**.
NO : Go to step **9U3**.

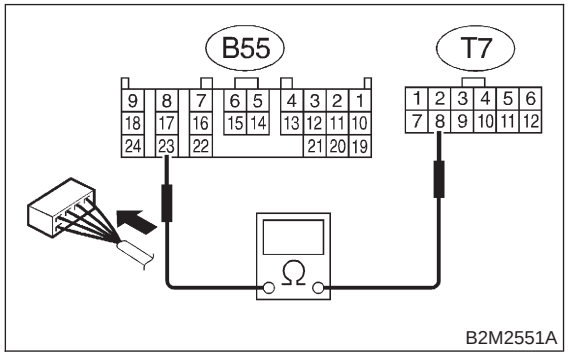
9U2 : CHECK “N” RANGE SWITCH.

CHECK : ***When the “N” range is selected, does LED light up?***
YES : Go to step “R” RANGE SWITCH. <Ref. to 3-2 [T9V0].>
NO : Go to step **9U5**.

9U3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

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

Connector & terminal
(B55) No. 23 — (T7) No. 8:

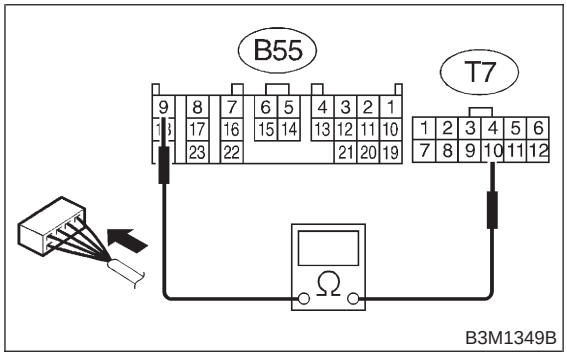


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

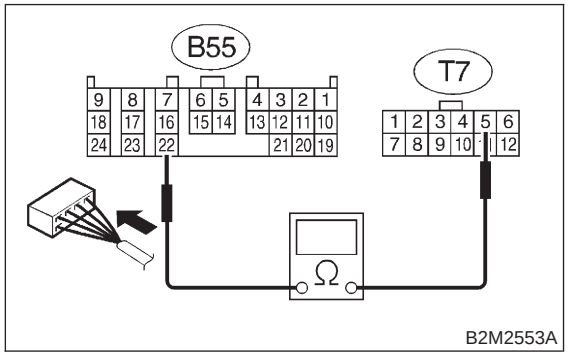


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U7**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

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

Connector & terminal
(B55) No. 22 — (T7) No. 5:

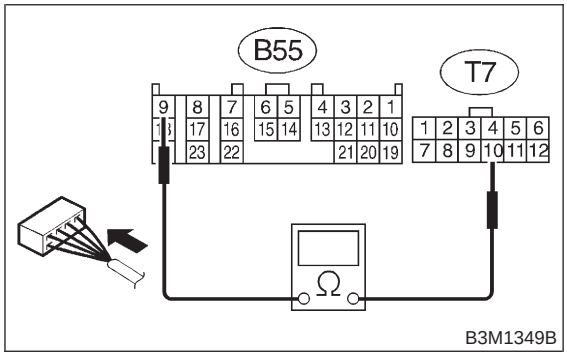


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U6**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

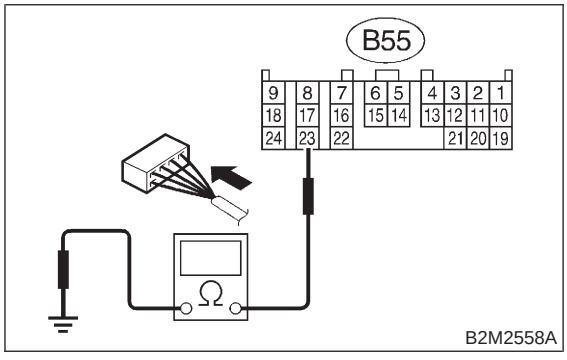


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U8**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 23 — Chassis ground:

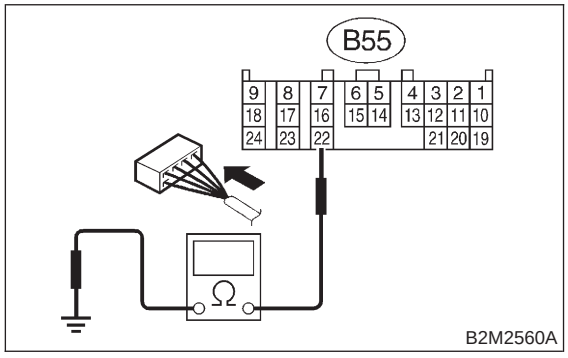


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9U9**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9U8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 22 — Chassis ground:

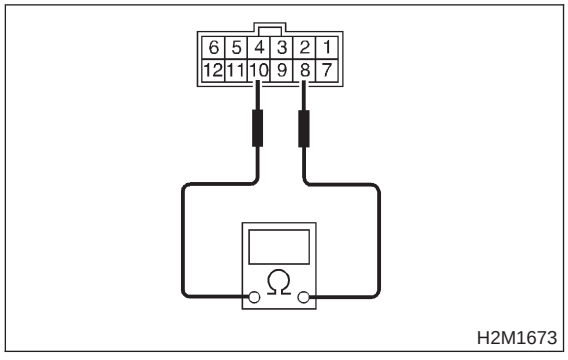


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9U11**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9U9 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 8 — No. 10:

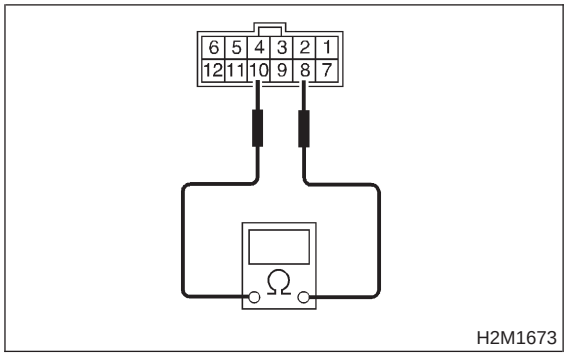


CHECK : ***Is the resistance less than 1 Ω in "P" range?***
YES : Go to step **9U10**.
NO : Go to step **9U18**.

9U10 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 8 — No. 10:

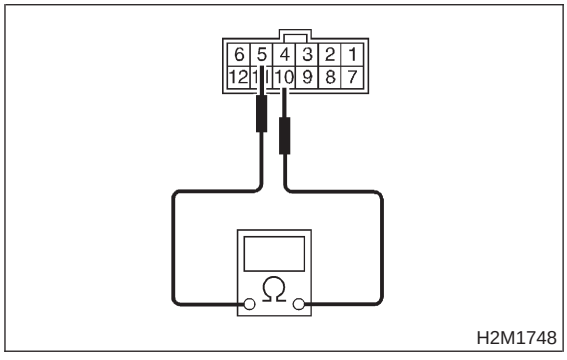


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9U13**.
NO : Go to step **9U18**.

9U11 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 5 — No. 10:

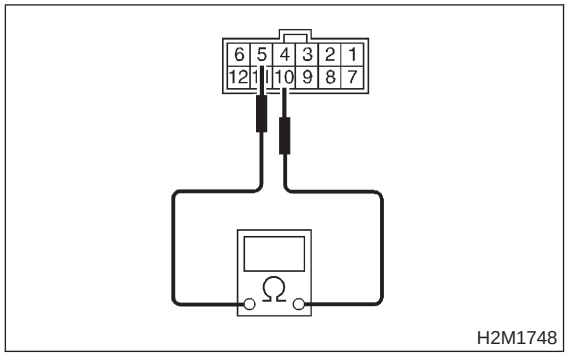


CHECK : ***Is the resistance less than 1 Ω in "N" range?***
YES : Go to step **9U12**.
NO : Go to step **9U18**.

9U12 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 5 — No. 10:

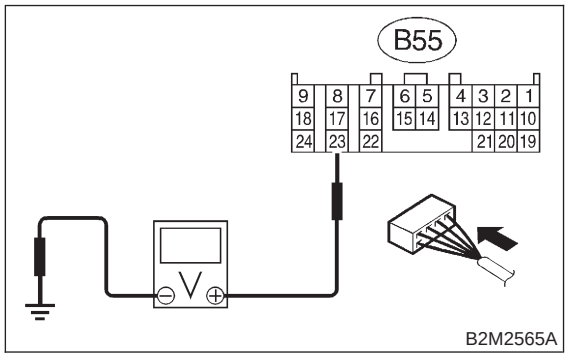


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9U15**.
NO : Go to step **9U18**.

9U13 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (–):

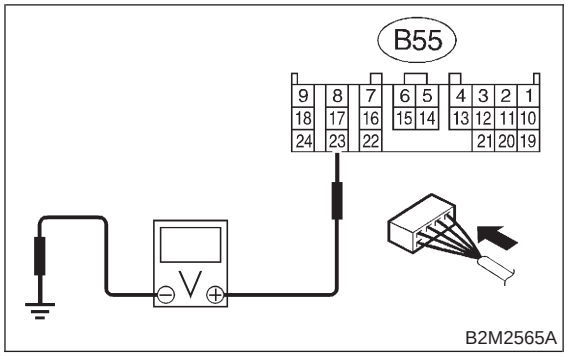


CHECK : ***Is the voltage less than 1 V in "P" range?***
YES : Go to step **9U14**.
NO : Go to step **9U17**.

9U14 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (–):

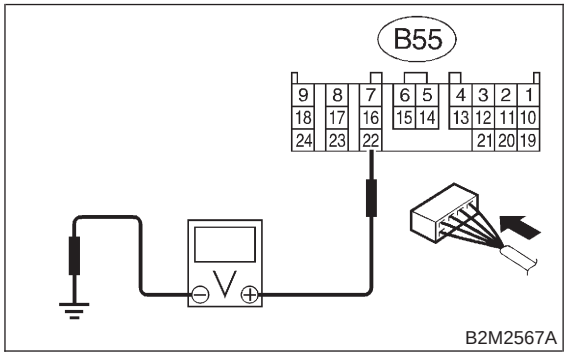


CHECK : ***Is the voltage more than 8 V in other ranges?***
YES : Go to step **9U17**.
NO : Go to step **9U18**.

9U15 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (–):

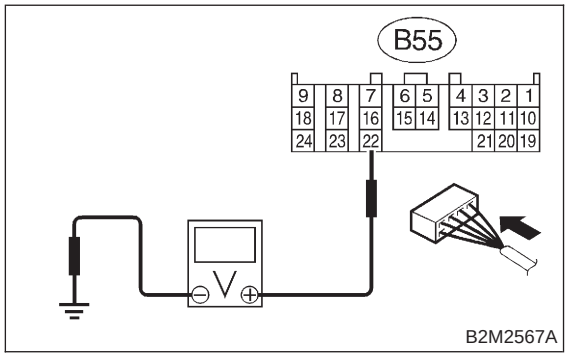


CHECK : ***Is the voltage less than 1 V in "N" range?***
YES : Go to step **9U16**.
NO : Go to step **9U17**.

9U16 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 8 V in other ranges?***
YES : Go to step **9U17**.
NO : Go to step **9U18**.

9U17 : CHECK POOR CONTACT.

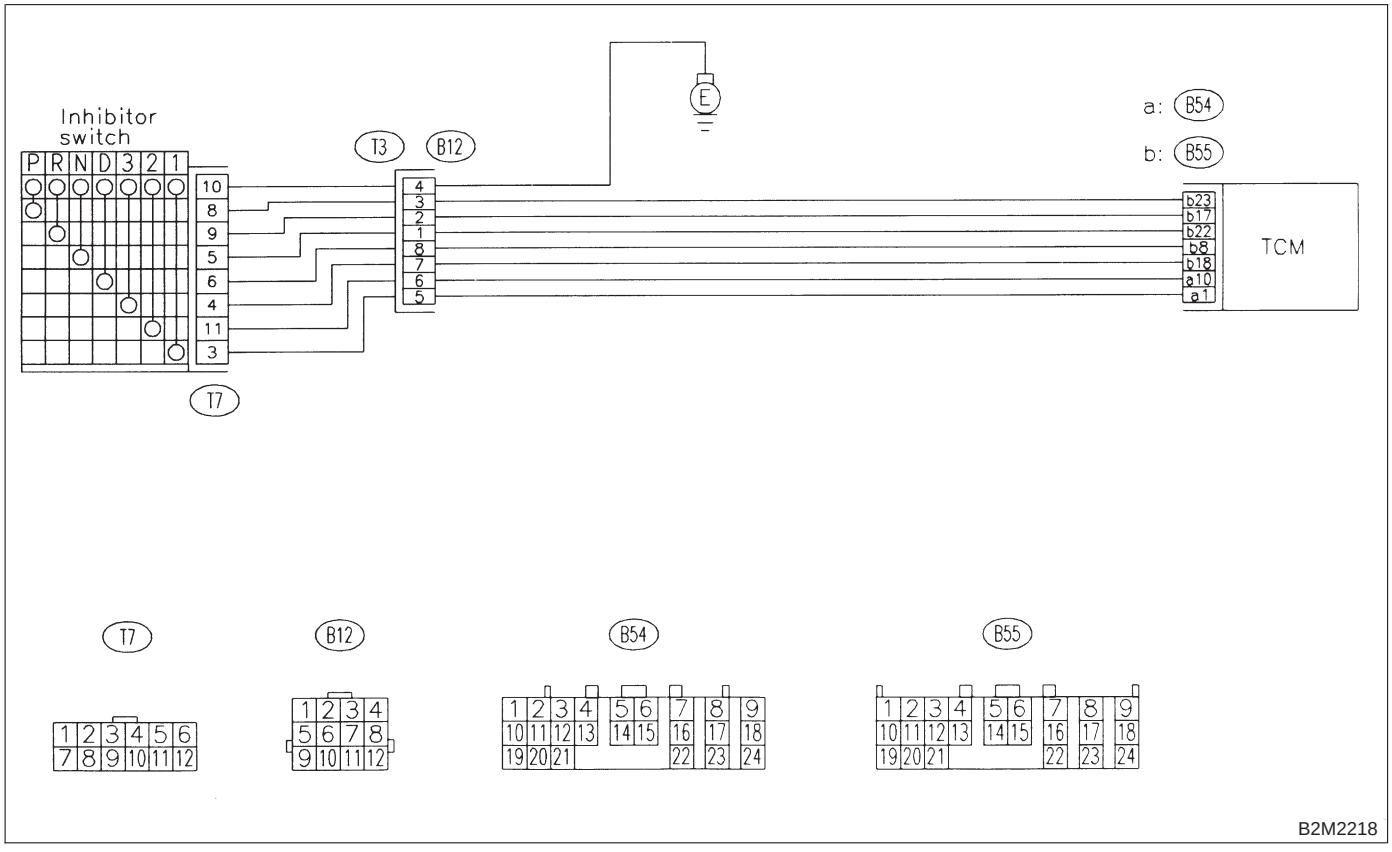
CHECK : ***Is there poor contact in "N/P" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9U18 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

V: CHECK “R” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “R” range is open or shorted.
WIRING DIAGRAM:



9V1 : CHECK “R” RANGE SWITCH.

CHECK : ***When the “R” range is selected, does LED light up?***

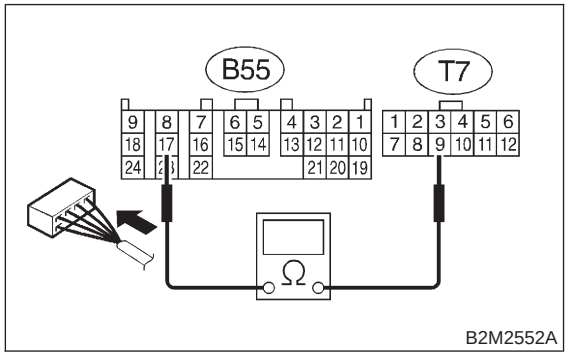
YES : Go to step “D” RANGE SWITCH. <Ref. to 3-2 [T9W0].>

NO : Go to step **9V2**.

9V2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

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

Connector & terminal
(B55) No. 17 — (T7) No. 9:

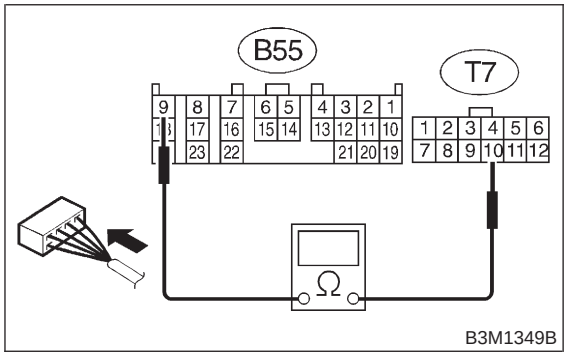


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9V3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9V3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

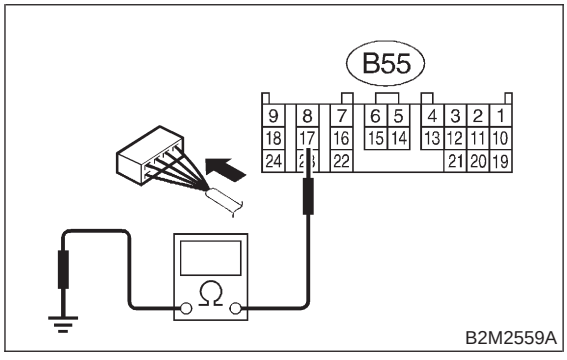


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9V4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9V4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 17 — Chassis ground:

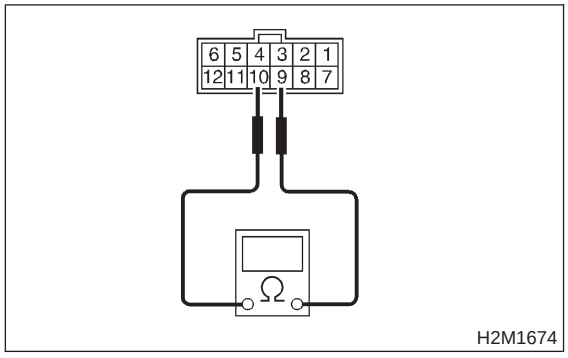


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9V5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9V5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 9 — No. 10:

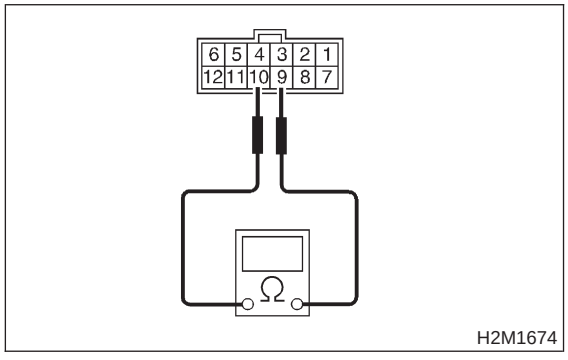


CHECK : ***Is the resistance less than 1 Ω in "R" range?***
YES : Go to step **9V6**.
NO : Go to step **9V10**.

9V6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 9 — No. 10:

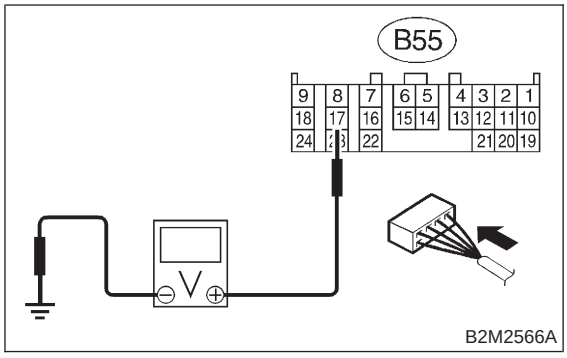


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9V7**.
NO : Go to step **9V10**.

9V7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (–):

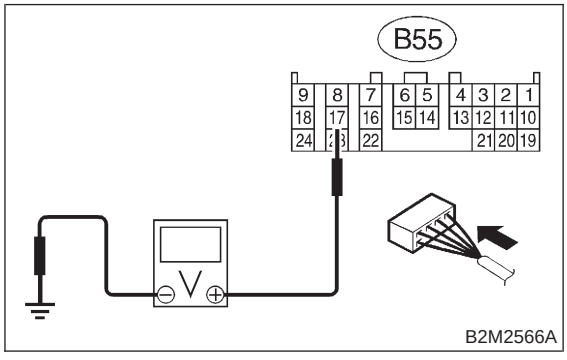


CHECK : ***Is the voltage less than 1 V in "R" range?***
YES : Go to step **9V8**.
NO : Go to step **9V9**.

9V8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9V9**.
NO : Go to step **9V10**.

9V9 : CHECK POOR CONTACT.

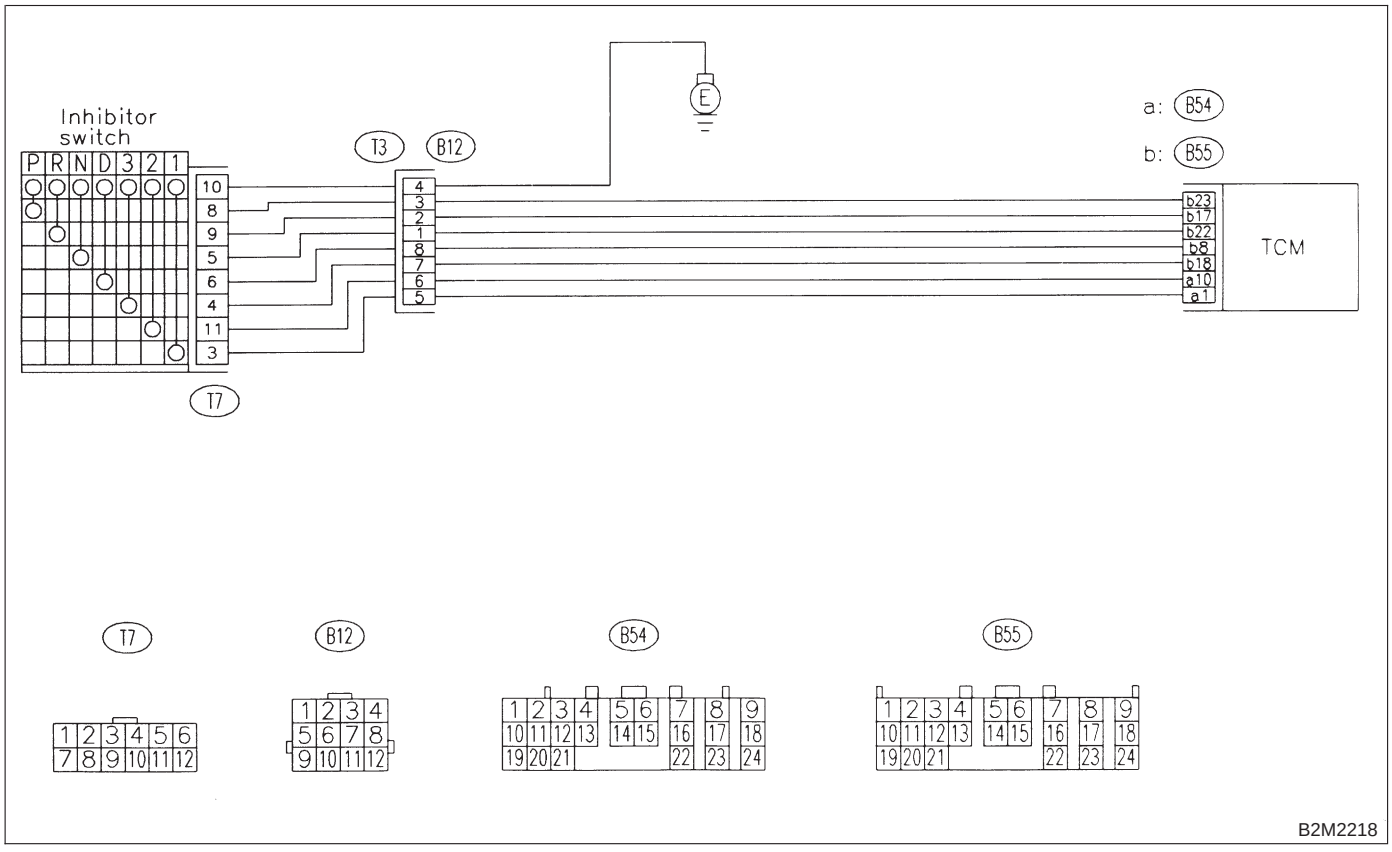
CHECK : ***Is there poor contact in "R" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9V10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

W: CHECK “D” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “D” range is open or shorted.
TROUBLE SYMPTOM:
Shift characteristics are erroneous.
WIRING DIAGRAM:



9W1 : CHECK “D” RANGE SWITCH.

CHECK : ***When the “D” range is selected, does LED light up?***

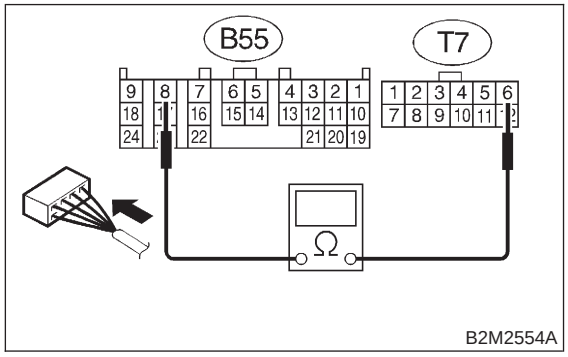
YES : Go to step “3” RANGE SWITCH. <Ref. to 3-2 [T9X0].>

NO : Go to step **9W2**.

9W2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

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

Connector & terminal
(B55) No. 8 — (T7) No. 6:

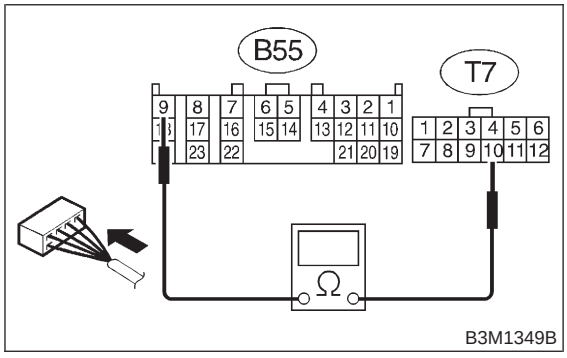


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9W3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9W3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

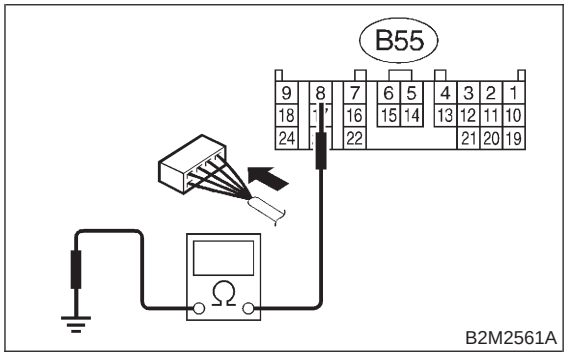


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9W4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9W4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 8 — Chassis ground:

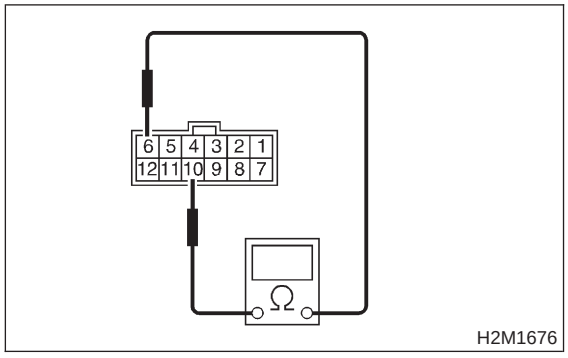


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9W5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9W5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 6 — No. 10:

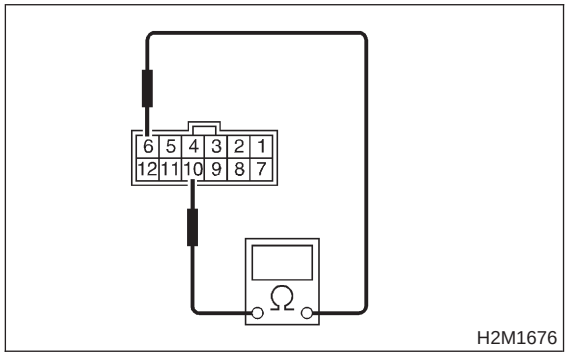


CHECK : ***Is the resistance less than 1 Ω in "D" range?***
YES : Go to step **9W6**.
NO : Go to step **9W10**.

9W6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 6 — No. 10:

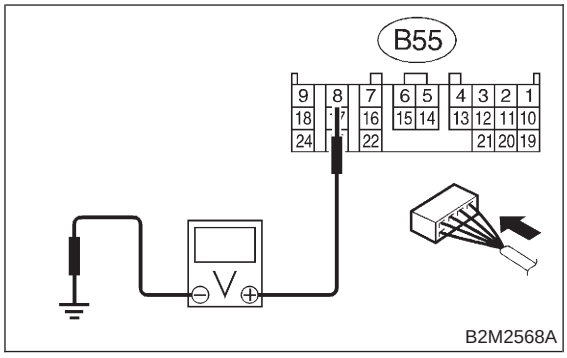


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9W7**.
NO : Go to step **9W10**.

9W7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (–):

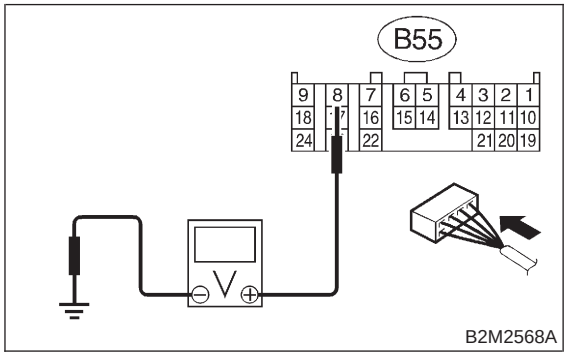


CHECK : ***Is the voltage less than 1 V in "D" range?***
YES : Go to step **9W8**.
NO : Go to step **9W9**.

9W8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9W9**.
NO : Go to step **9W10**.

9W9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "D" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

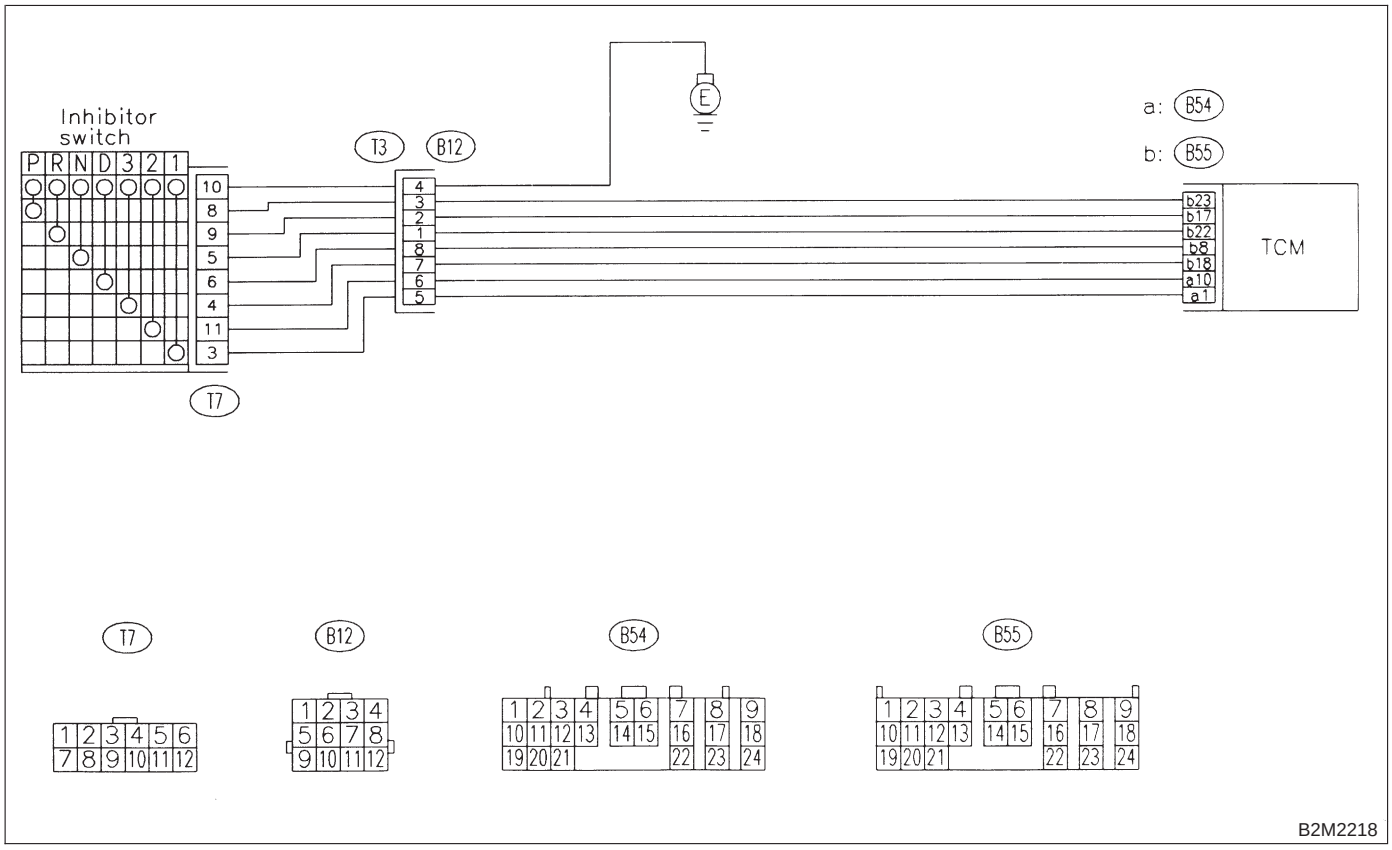
9W10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

X: CHECK “3” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “3” range is open or shorted.
TROUBLE SYMPTOM:
- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in “3” range.

WIRING DIAGRAM:



9X1 : CHECK “3” RANGE SWITCH.

CHECK : ***When the “3” range is selected, does LED light up?***

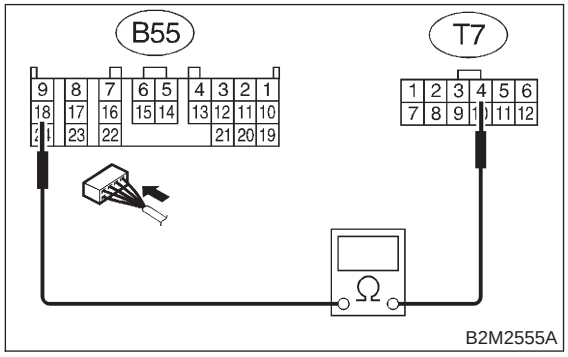
YES : Go to step “2” RANGE SWITCH. <Ref. to 3-2 [T9Y0].>

NO : Go to step **9X2**.

9X2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

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

Connector & terminal
(B55) No. 18 — (T7) No. 4:

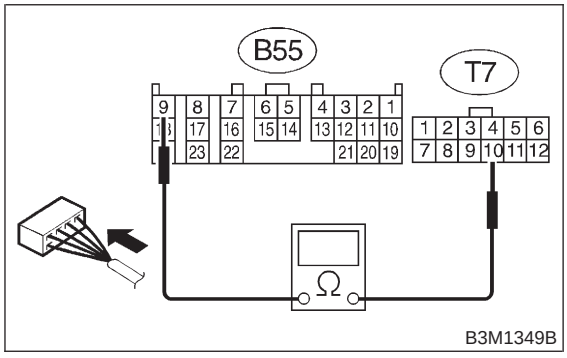


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9X3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9X3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

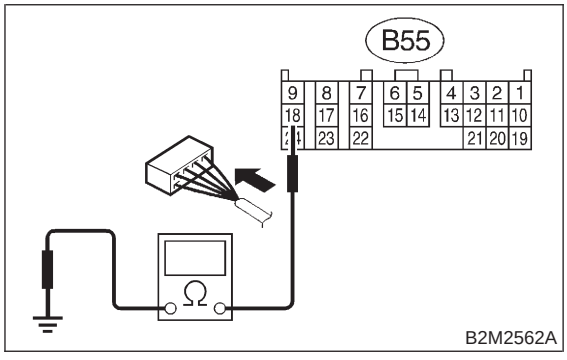


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9X4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9X4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 18 — Chassis ground:

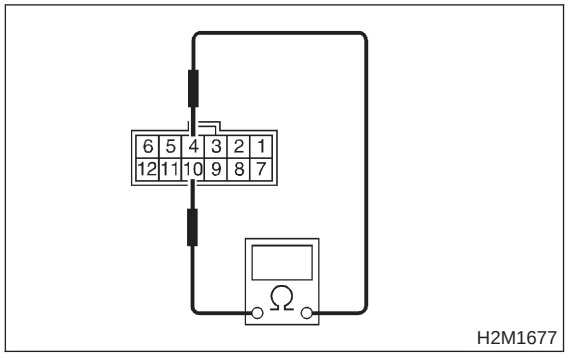


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9X5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9X5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 4 — No. 10:

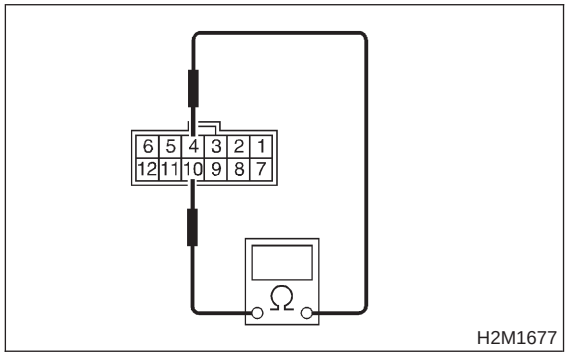


CHECK : ***Is the resistance less than 1 Ω in "3" range?***
YES : Go to step **9X6**.
NO : Go to step **9X7**.

9X6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 4 — No. 10:

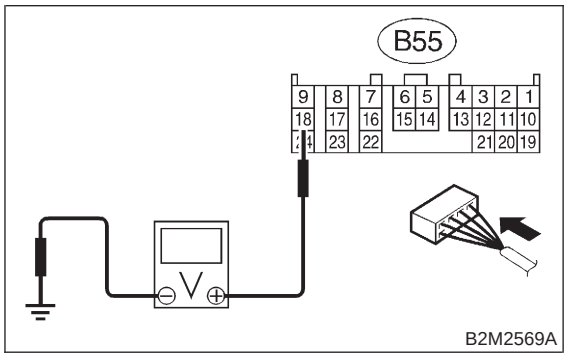


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9X7**.
NO : Go to step **9X10**.

9X7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (–):

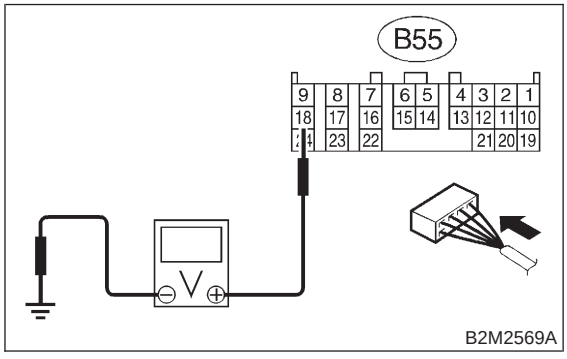


CHECK : ***Is the voltage less than 1 V in "3" range?***
YES : Go to step **9X8**.
NO : Go to step **9X9**.

9X8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9X9**.
NO : Go to step **9X10**.

9X9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "3" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

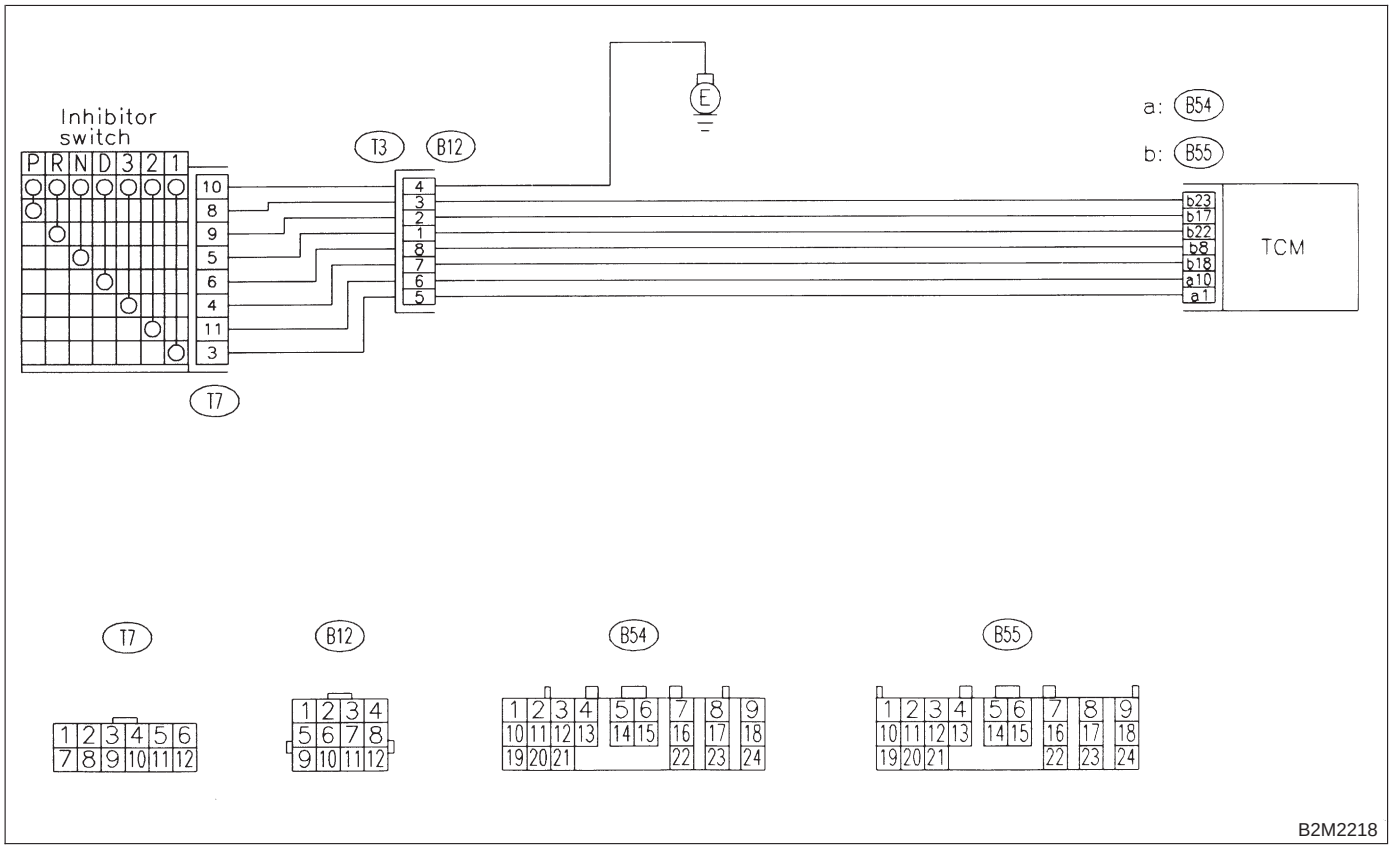
9X10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

Y: CHECK “2” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “2” range is open or shorted.
TROUBLE SYMPTOM:
- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in “2” range.

WIRING DIAGRAM:



9Y1 : CHECK “2” RANGE SWITCH.

CHECK : ***When the “2” range is selected, does LED light up?***

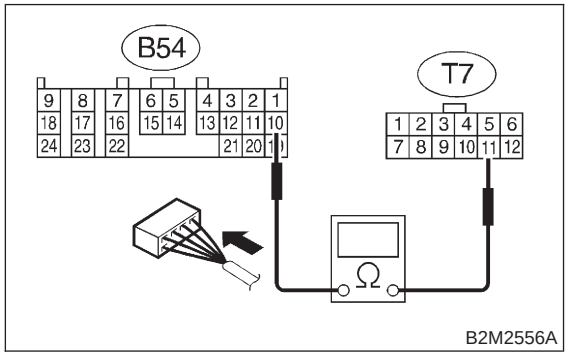
YES : Go to step “1” RANGE SWITCH. <Ref. to 3-2 [T9Z0].>

NO : Go to step **9Y2**.

9Y2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

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

Connector & terminal
(B54) No. 10 — (T7) No. 11:

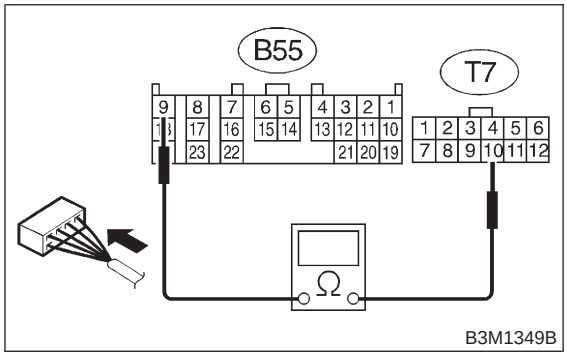


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Y3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Y3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

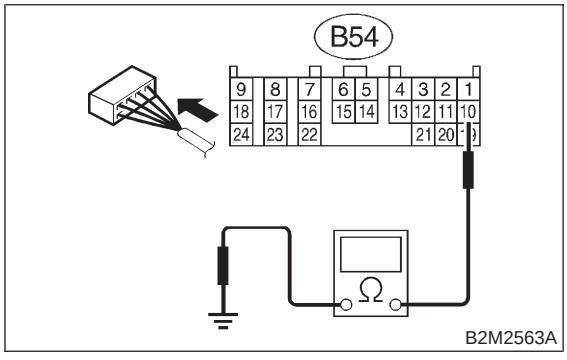


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Y4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Y4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 10 — Chassis ground:

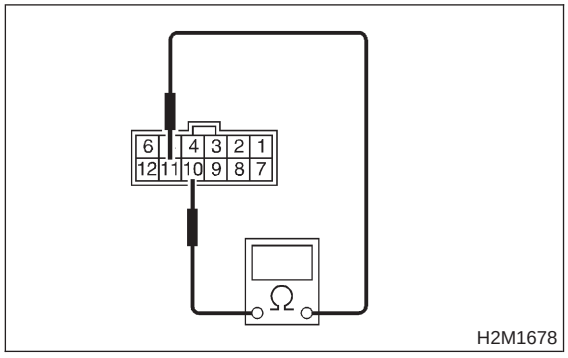


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Y5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9Y5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 11 — No. 10:

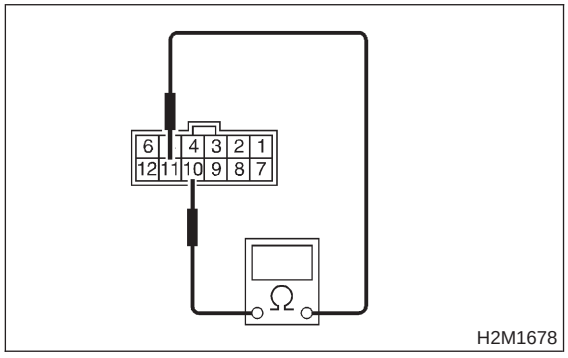


CHECK : ***Is the resistance less than 1 Ω in "2" range?***
YES : Go to step **9Y6**.
NO : Go to step **9Y10**.

9Y6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 11 — No. 10:

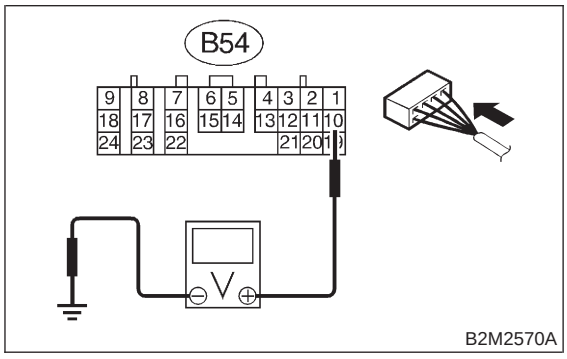


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9Y7**.
NO : Go to step **9Y10**.

9Y7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (–):

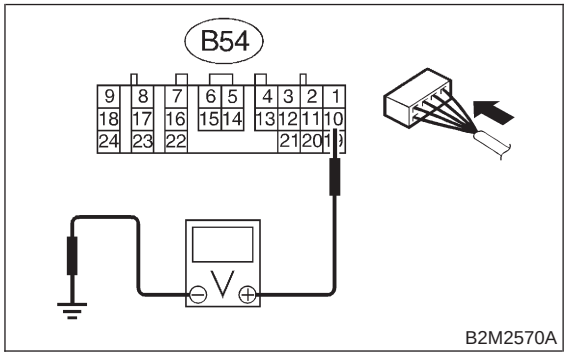


CHECK : ***Is the voltage less than 1 V in "2" range?***
YES : Go to step **9Y8**.
NO : Go to step **9Y9**.

9Y8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9Y9**.
NO : Go to step **9Y10**.

9Y9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "2" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

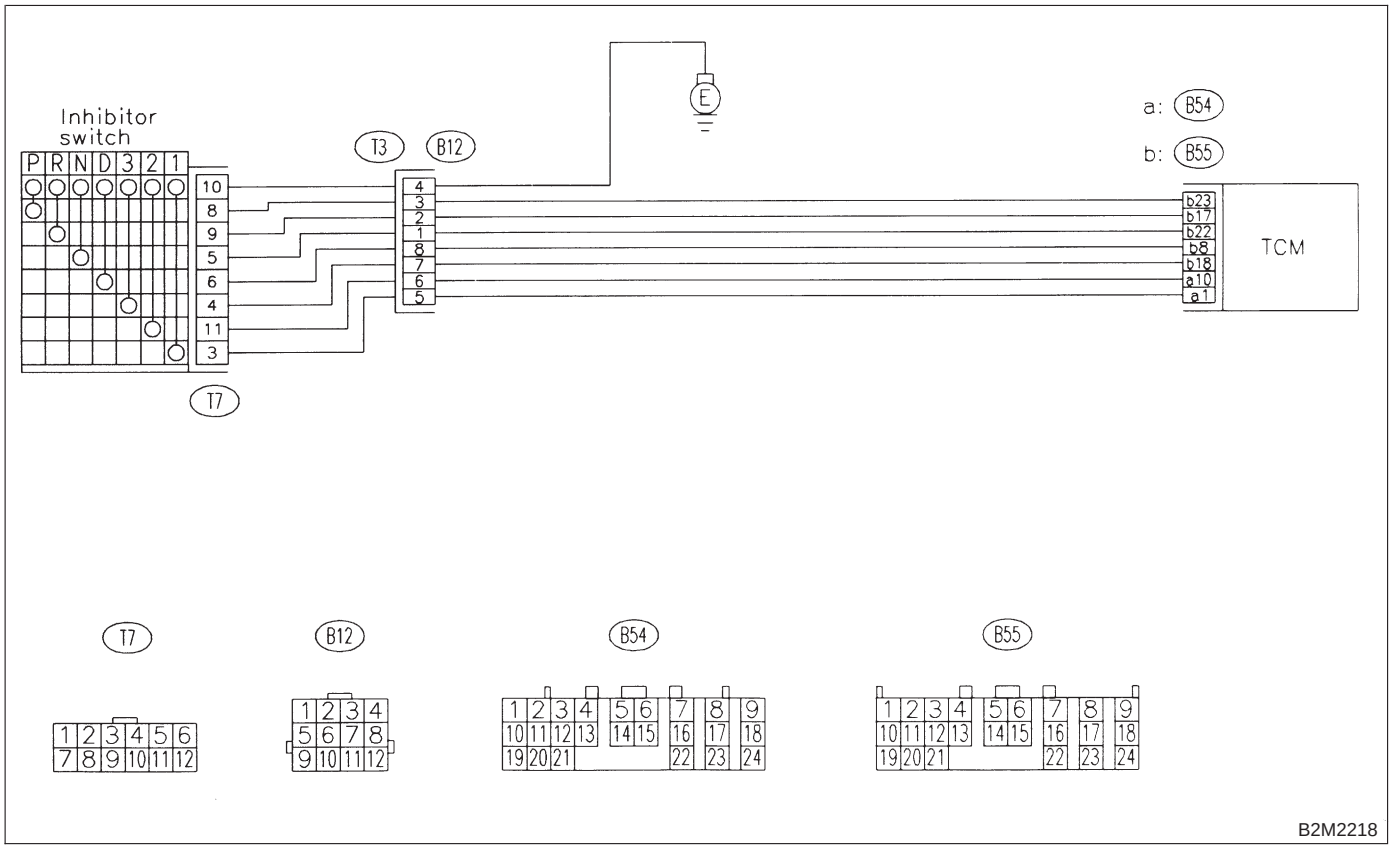
9Y10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

Z: CHECK “1” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “1” range is open or shorted.
TROUBLE SYMPTOM:
- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in “1” range.

WIRING DIAGRAM:



9Z1 : CHECK “1” RANGE SWITCH.

CHECK : ***When the “1” range is selected, does LED light up?***

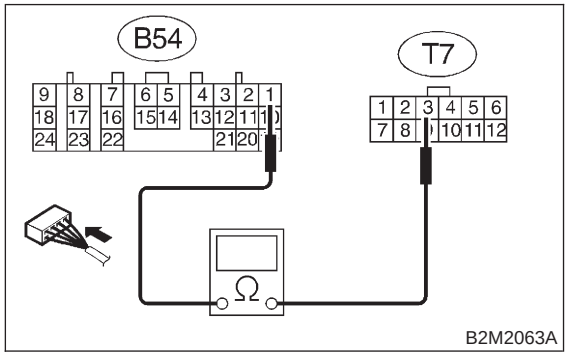
YES : Go to step SHIFT SOLENOID 1. <Ref. to 3-2 [T9AA0].>

NO : Go to step **9Z2**.

9Z2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

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

Connector & terminal
(B54) No. 1 — (T7) No. 3:

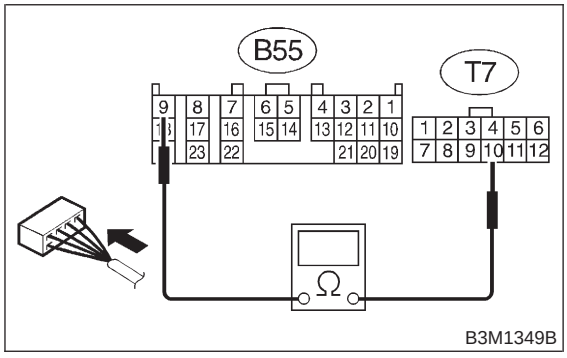


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Z3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Z3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

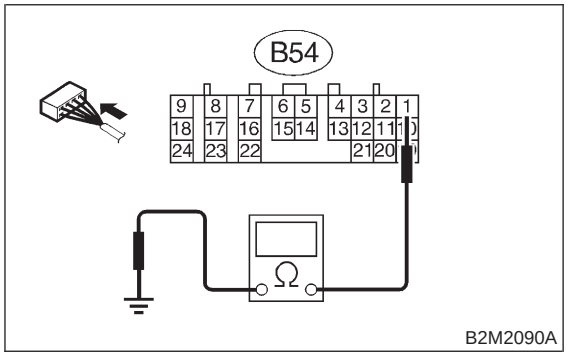


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Z4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Z4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 1 — Chassis ground:

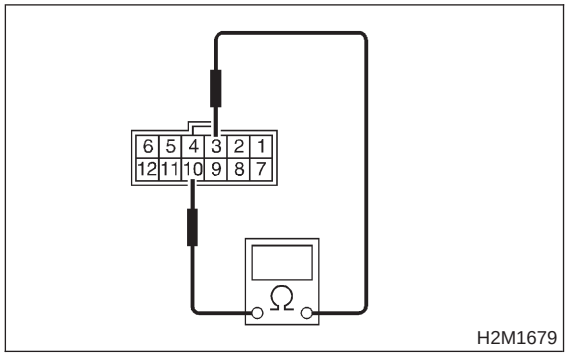


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Z5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9Z5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 3 — No. 10:

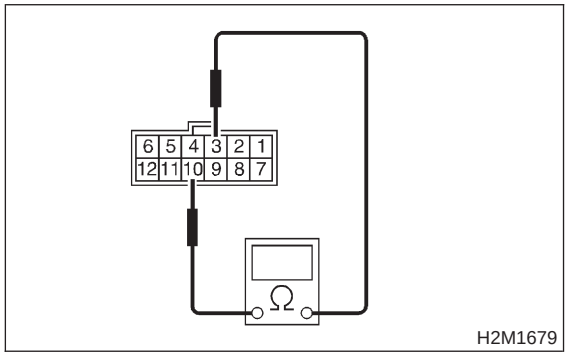


CHECK : ***Is the resistance less than 1 Ω in "1" range?***
YES : Go to step **9Z6**.
NO : Go to step **9Z10**.

9Z6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 3 — No. 10:

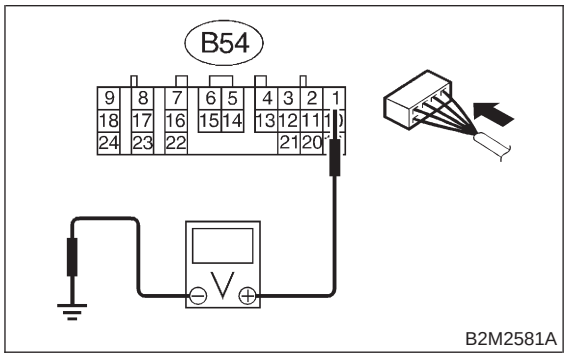


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9Z7**.
NO : Go to step **9Z10**.

9Z7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (–):

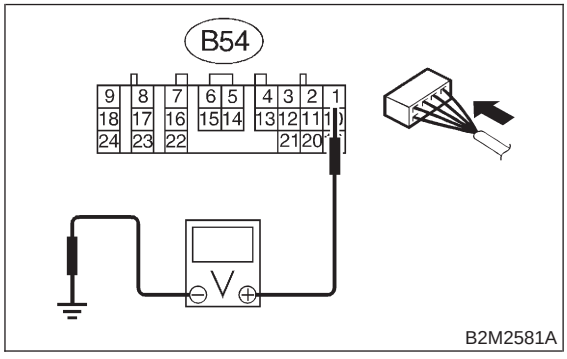


CHECK : ***Is the voltage less than 1 V in "1" range?***
YES : Go to step **9Z8**.
NO : Go to step **9Z9**.

9Z8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9Z9**.
NO : Go to step **9Z10**.

9Z9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "1" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9Z10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

AA: CHECK SHIFT SOLENOID 1.

9AA1 :	CHECK SHIFT SOLENOID 1.

CHECK : ***Does the LED of shift solenoid 1 light up?***
YES : Go to step SHIFT SOLENOID 2. <Ref. to 3-2 [T9AB0].>
NO : Check shift solenoid 1 circuit. <Ref. to 3-2 [T8K0].>

AB: CHECK SHIFT SOLENOID 2.

9AB1 :	CHECK SHIFT SOLENOID 2.

CHECK : ***Does the LED of shift solenoid 2 light up?***
YES : Go to step TORQUE CONTROL 1 SIGNAL. <Ref. to 3-2 [T9AC0].>
NO : Check shift solenoid 2 circuit. <Ref. to 3-2 [T8L0].>

AC: CHECK TORQUE CONTROL 1 SIGNAL.

9AC1 :	CHECK TORQUE CONTROL 1 SIGNAL.

Turn ignition switch to ON (engine ON).

CHECK : ***Does the LED of torque control 1 signal light up?***
YES : Go to step TORQUE CONTROL SIGNAL 2 CIRCUIT. <Ref. to 3-2 [T9AD0].>
NO : Check torque control 1 signal circuit. <Ref. to 3-2 [T8I0].>

AD: CHECK TORQUE CONTROL 2 SIGNAL.

9AD1 :	CHECK TORQUE CONTROL 2 SIGNAL.

Turn ignition switch to ON (engine ON).

CHECK : ***Does the LED of torque control 2 signal light up?***
YES : Go to step 2-4 BRAKE TIMING SOLENOID. <Ref. to 3-2 [T9AE0].>
NO : Check torque control 2 signal circuit. <Ref. to 3-2 [T8I0].>

AE: CHECK 2-4 BRAKE TIMING SOLENOID.

9AE1 :	CHECK 2-4 BRAKE TIMING SOLENOID.

Turn ignition switch to ON, and select 1 range.

CHECK : ***Does the LED of 2-4 brake timing solenoid light up?***
YES : Go to step LOW CLUTCH TIMING SOLENOID. <Ref. to 3-2 [T9AF0].>
NO : Check 2-4 brake timing solenoid circuit. <Ref. to 3-2 [T8N0].>

AF: CHECK LOW CLUTCH TIMING SOLENOID.

9AF1 :	CHECK LOW CLUTCH TIMING SOLENOID.

Turn ignition switch to ON, and select 2 range.

CHECK : ***Does the LED of low clutch timing solenoid light up?***
YES : Go to step DIAGNOSIS LAMP. <Ref. to 3-2 [T9AG0].>
NO : Check low clutch timing solenoid circuit. <Ref. to 3-2 [T8M0].>

AG: CHECK DIAGNOSIS LAMP.

9AG1 :	CHECK DIAGNOSIS LAMP.

Turn ignition switch to ON (engine OFF).

CHECK : ***Does diagnosis lamp light up?***
YES : Go to step FWD LAMP. <Ref. to 3-2 [T9AH0].>
NO : Check diagnosis lamp circuit.

AH: CHECK FWD LAMP.

9AH1 :	CHECK FWD LAMP.

CHECK : ***Does the LED of FWD lamp light up?***
YES : Check FWD lamp circuit. <Ref. to 3-2 [T9Q0].>
NO : Go to step General Diagnostic Table. <Ref. to 3-2 [T1000].>

MEMO:

10. General Diagnostic Table

Symptom	Problem parts
Starter does not rotate when select lever is in “P” or “N”; starter rotates when select lever is in “R”, “D”, “3” or “2”.	1) Inhibitor switch 2) Select cable 3) Select lever 4) Starter motor and harness
Abnormal noise when select lever is in “P” or “N”.	1) Strainer 2) Duty solenoid C 3) Oil pump 4) Drive plate 5) ATF level too high or too low
Hissing noise occurs during standing start.	1) Strainer 2) ATF level too high or too low
Noise occurs while driving in “D1”.	1) Final gear 2) Planetary gear 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in “D2”.	
Noise occurs while driving in “D3”.	1) Final gear 2) Low & reverse brake 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in “D4”.	1) Final gear 2) Low & reverse brake 3) Planetary gear 4) Reduction gear 5) Differential gear oil level too high or too low
Engine stalls while shifting from one range to another.	1) Control valve 2) Lock-up damper 3) Engine performance 4) Input shaft
Vehicle moves when select lever is in “N”.	1) Control module 2) Low clutch
Shock occurs when select lever is moved from “N” to “D”.	1) Control module 2) Harness 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from “N” to “D”.	1) Control valve 2) Low clutch 3) Duty solenoid A 4) Seal ring 5) Front gasket transmission case
Shock occurs when select lever is moved from “N” to “R”.	1) Control module 2) Harness 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from “N” to “R”.	1) Control valve 2) Low & reverse clutch 3) Reverse clutch 4) Duty solenoid A 5) Seal ring 6) Front gasket transmission case
Vehicle does not start in any shift range (engine stalls).	1) Parking brake mechanism 2) Planetary gear

Symptom	Problem parts
Vehicle does not start in any shift range (engine revving up).	1) Strainer 2) Duty solenoid A 3) Control valve 4) Drive pinion 5) Hypoid gear 6) Axle shaft 7) Differential gear 8) Oil pump 9) Input shaft 10) Output shaft 11) Planetary gear 12) Drive plate 13) ATF level too low 14) Front gasket transmission case
Vehicle does not start in “R” range only (engine revving up).	1) Select cable 2) Select lever 3) Control valve 4) Low & reverse clutch 5) Reverse clutch
Vehicle does not start in “R” range only (engine stalls).	1) Low clutch 2) 2-4 brake 3) Planetary gear 4) Parking brake mechanism
Vehicle does not start in “D”, “3” range only (engine revving up).	1) Low clutch 2) One-way clutch
Vehicle does not start in “D”, “3” or “2” range only (engine revving up).	1) Low clutch
Vehicle does not start in “D”, “3” or “2” range only (engine stalls).	1) Reverse clutch
Vehicle starts in “R” range only (engine revving up).	1) Control valve
Acceleration during standing starts is poor (high stall rpm).	1) Control valve 2) Low clutch 3) Reverse clutch 4) ATF level too low 5) Front gasket transmission case 6) Differential gear oil level too high or too low
Acceleration during standing starts is poor (low stall rpm).	1) Oil pump 2) Torque converter one-way clutch 3) Engine performance
Acceleration is poor when select lever is in “D”, “3” or “2” range (normal stall rpm).	1) Control module 2) Control valve 3) High clutch 4) 2-4 brake 5) Planetary gear
Acceleration is poor when select lever is in “R” (normal stall rpm).	1) Control valve 2) High clutch 3) 2-4 brake 4) Planetary gear
No shift occurs from 1st to 2nd gear.	1) Control module 2) Vehicle speed sensor 1 (Rear) 3) Vehicle speed sensor 2 (Front) 4) Throttle position sensor 5) Shift solenoid 1 6) Control valve 7) 2-4 brake
No shift occurs from 2nd to 3rd gear.	1) Control module 2) Control valve 3) High clutch 4) Shift solenoid 2

Symptom	Problem parts
No shift occurs from 3rd to 4th gear.	1) Control module 2) Shift solenoid 1 3) ATF temperature sensor 4) Control valve 5) 2-4 brake
Engine brake is not effected when select lever is in “3” range.	1) Inhibitor switch 2) Control module 3) Throttle position sensor 4) Control valve
Engine brake is not effected when select lever is in “3” or “2” range.	1) Control valve
Engine brake is not effected when select lever is in “1” range.	1) Control valve 2) Low & reverse brake
Shift characteristics are erroneous.	1) Inhibitor switch 2) Control module 3) Vehicle speed sensor 1 (Front) 4) Vehicle speed sensor 2 (Rear) 5) Throttle position sensor 6) Control valve 7) Ground earth
No lock-up occurs.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Control valve 5) Lock-up facing 6) Engine speed signal
Parking brake is not effected.	1) Select cable 2) Select lever 3) Parking mechanism
Shift lever cannot be moved or is hard to move from “P” range.	
ATF spurts out.	1) ATF level too high
Differential oil spurts out.	1) Differential gear oil too high
Differential oil level changes excessively.	1) Seal pipe 2) Double oil seal
Odor is produced from ATF supply pipe.	1) High clutch 2) 2-4 brake 3) Low & reverse clutch 4) Reverse clutch 5) Lock-up facing 6) ATF deterioration
Shock occurs from 1st to 2nd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake 8) ATF deterioration 9) Engine performance 10) Dropping resistor 11) 2-4 brake timing solenoid
Slippage occurs from 1st to 2nd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake 8) 2-4 brake timing solenoid 9) High clutch

Symptom	Problem parts
Shock occurs from 2nd to 3rd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) 2-4 brake 9) ATF deterioration 10) Engine performance 11) 2-4 brake timing solenoid
Slippage occurs from 2nd to 3rd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) 2-4 brake 9) 2-4 brake timing solenoid
Shock occurs from 3rd to 4th gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake timing solenoid 8) 2-4 brake 9) ATF deterioration 10) Engine performance 11) Low clutch timing solenoid 12) Low clutch
Slippage occurs from 3rd to 4th gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake 8) 2-4 brake timing solenoid
Shock occurs when select lever is moved from “3” to “2” range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Duty solenoid D 7) 2-4 brake 8) ATF deterioration 9) 2-4 brake timing solenoid
Shock occurs when select lever is moved from “D” to “1” range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) ATF deterioration 7) Duty solenoid D 8) 2-4 brake timing solenoid 9) Low clutch timing solenoid

Symptom	Problem parts
Shock occurs when select lever is moved from “2” to “1” range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Low & reverse clutch 7) ATF deterioration 8) Duty solenoid D 9) 2-4 brake timing solenoid 10) Low clutch timing solenoid
Shock occurs when accelerator pedal is released at medium speeds.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Lock-up damper 7) Engine performance 8) Duty solenoid D 9) 2-4 brake timing solenoid 10) Low clutch timing solenoid
Vibration occurs during straight-forward operation.	1) Control module 2) Duty solenoid B 3) Lock-up facing 4) Lock-up damper
Vibration occurs during turns (tight corner “braking” phenomenon).	1) Control module 2) Vehicle speed sensor 1 (Front) 3) Vehicle speed sensor 2 (Rear) 4) Throttle position sensor 5) ATF temperature sensor 6) Transfer clutch 7) Transfer valve 8) Duty solenoid C 9) ATF deterioration 10) Harness
Front wheel slippage occurs during standing starts.	1) Control module 2) Vehicle speed sensor 2 (Front) 3) FWD switch 4) Throttle position sensor 5) ATF temperature sensor 6) Control valve 7) Transfer clutch 8) Transfer valve 9) Transfer pipe 10) Duty solenoid C
Vehicle is not set in FWD mode.	1) Control module 2) FWD switch 3) Transfer clutch 4) Transfer valve 5) Duty solenoid C
Select lever is hard to move.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate
Select lever is too high to move (unreasonable resistance).	1) Detent spring 2) Manual plate
Select lever slips out of operation during acceleration or while driving on rough terrain.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate

MEMO:

BRAKES 4-4

Page

T DIAGNOSTICS AIRBAG 2
1. Supplemental Restraint System “Airbag” 2
2. Pre-inspection 2
3. Electrical Components Location 4
4. Schematic 6
5. Control Module I/O Signal 8
6. Diagnostics Chart for On-board Diagnosis System 11
7. Diagnostics Chart for ABS Warning Light Circuit and Diagnosis Circuit Failure 18
8. Diagnostics Chart with Trouble Code by ABS Warning Light 29
9. Select Monitor Function Mode 76
10. Diagnostics Chart with Select Monitor 78
11. General Diagnostic Table 162

1. Supplemental Restraint System “Airbag”

Airbag system wiring harness is routed near the ABS sensor, ABS control module and hydraulic control unit.

CAUTION:
● All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.
● Be careful not to damage Airbag system wiring harness when servicing the ABS sensor, ABS control module and hydraulic control unit.

2. Pre-inspection

Before performing diagnostics, check the following items which might affect ABS problems:

A: MECHANICAL INSPECTION

1. POWER SUPPLY

1) Measure battery voltage and specific gravity of electrolyte.

Standard voltage: 12 V, or more

Specific gravity: Above 1.260

2) Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

2. BRAKE FLUID

1) Check brake fluid level.
2) Check brake fluid leakage.

3. BRAKE DRAG

Check brake drag. <Ref. to 4-4 [K100].>

4. BRAKE PAD AND ROTOR

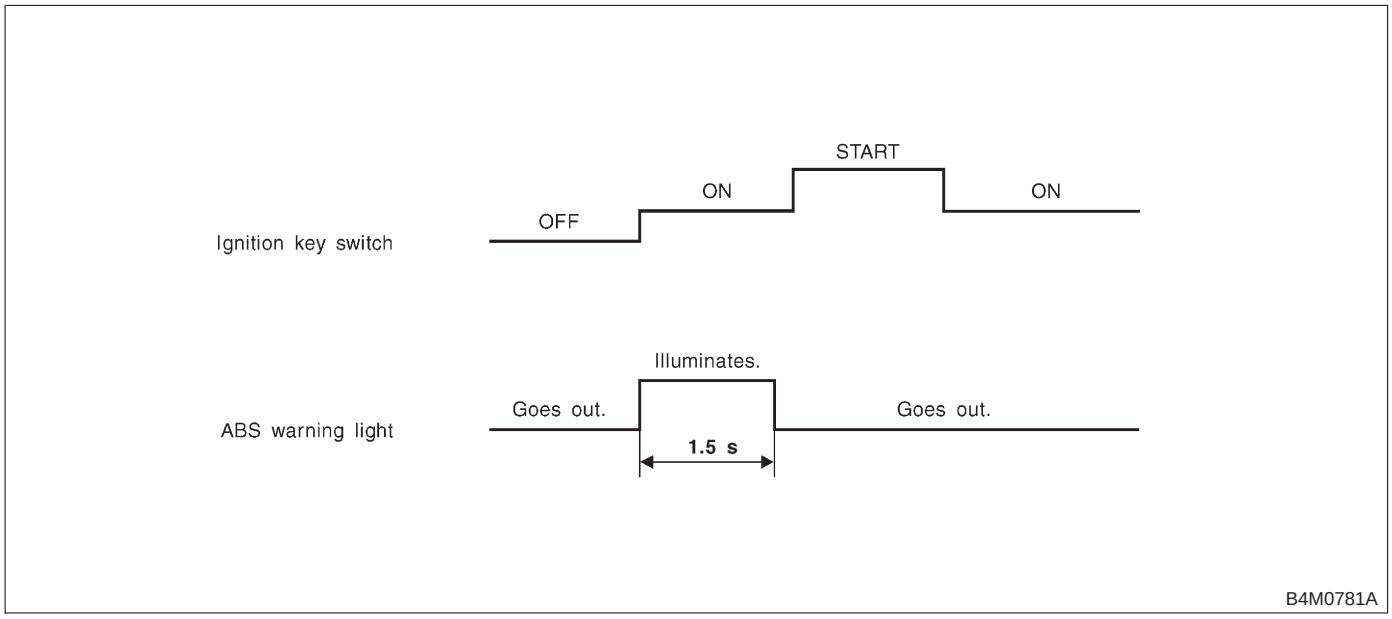
Check brake pad and rotor. <Ref. to 4-4 [K100].>

5. TIRE SPECIFICATIONS, TIRE WEAR AND AIR PRESSURE

Check tire specifications, tire wear and air pressure. <Ref. to 4-2 [S100].>, <Ref. to 4-2 [S200].>

B: ELECTRICAL INSPECTION

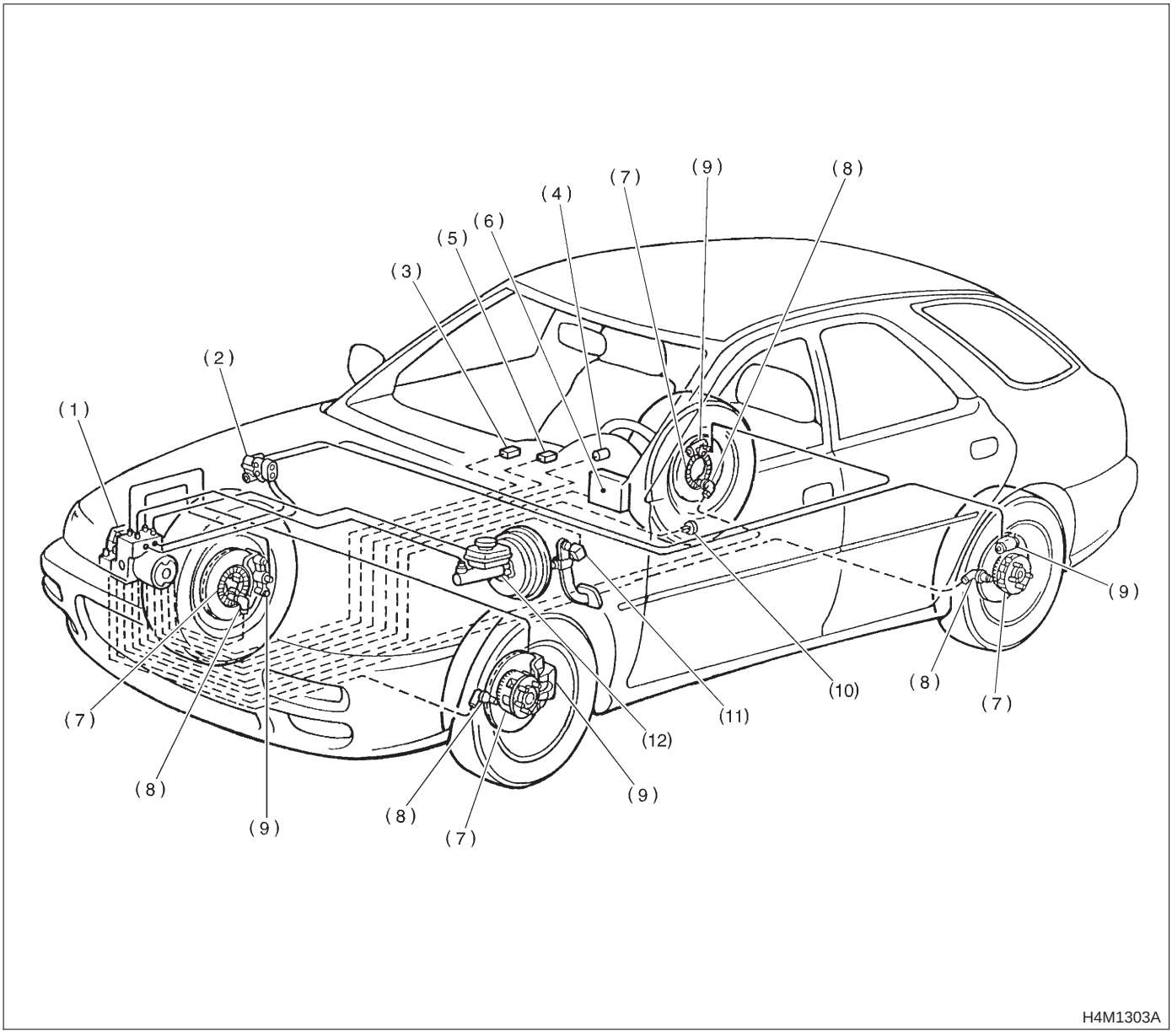
1. WARNING LIGHT ILLUMINATION PATTERN



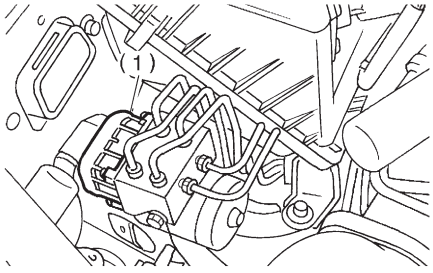
1) When the ABS warning light does not illuminate in accordance with this illumination pattern, there must be an electrical malfunction.
2) When the ABS warning light remains constantly OFF, repair the ABS warning light circuit or diagnosis circuit. <Ref. to 4-4 [T7A0].>

NOTE:
Even though the ABS warning light does not go out 1.5 seconds after it illuminates, the ABS system operates normally when the warning light goes out while driving at approximately 12 km/h (7 MPH). However, the Anti-lock brakes do not work while the ABS warning light is illuminated.

3. Electrical Components Location



(1) ABS control module and hydraulic control unit (ABSCM&H/U)
(2) Proportioning valve
(3) Diagnosis connector
(4) ABS warning light
(5) Data link connector (for Subaru select monitor)
(6) Transmission control module (only AT vehicle)
(7) Tone wheel
(8) ABS sensor
(9) Wheel cylinder
(10) G sensor
(11) Brake switch
(12) Master cylinder



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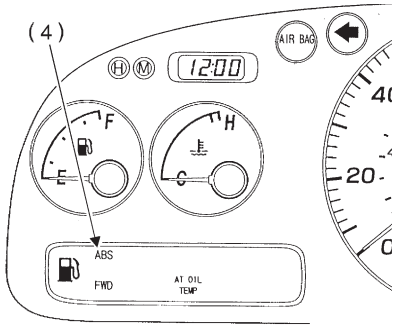

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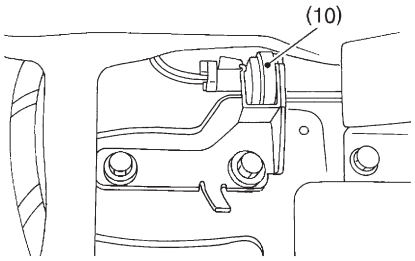
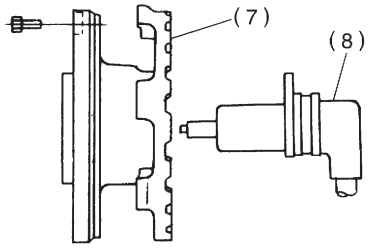
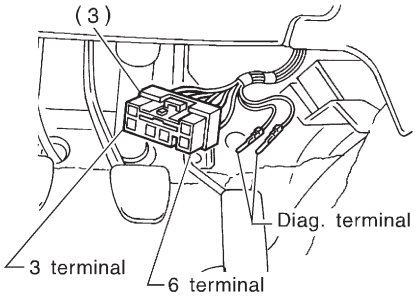


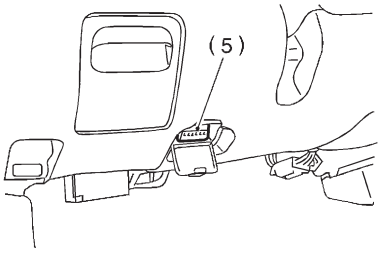
S4M0055A



B4M0646E

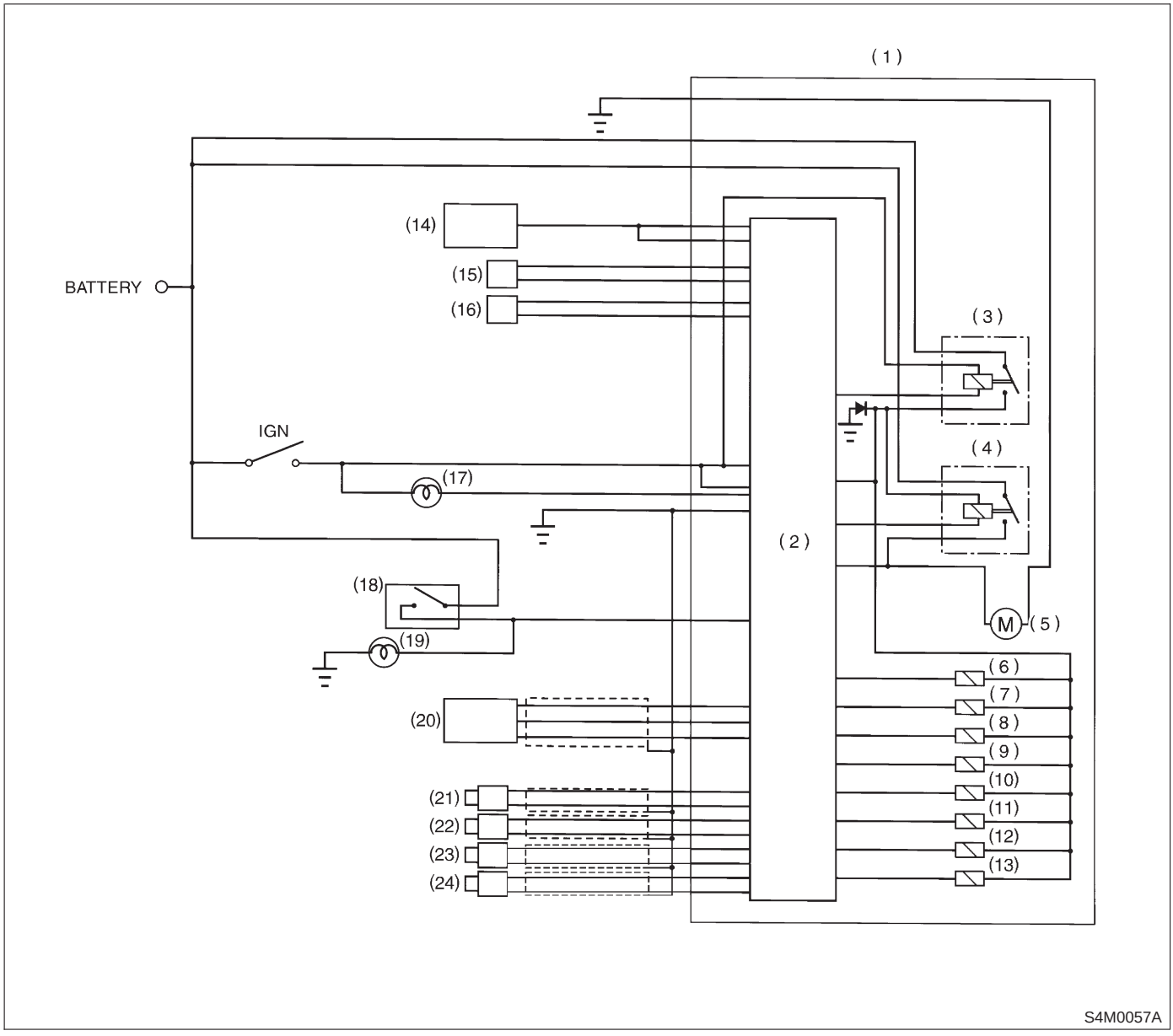


B4M0231E



S4M0056A

4. Schematic

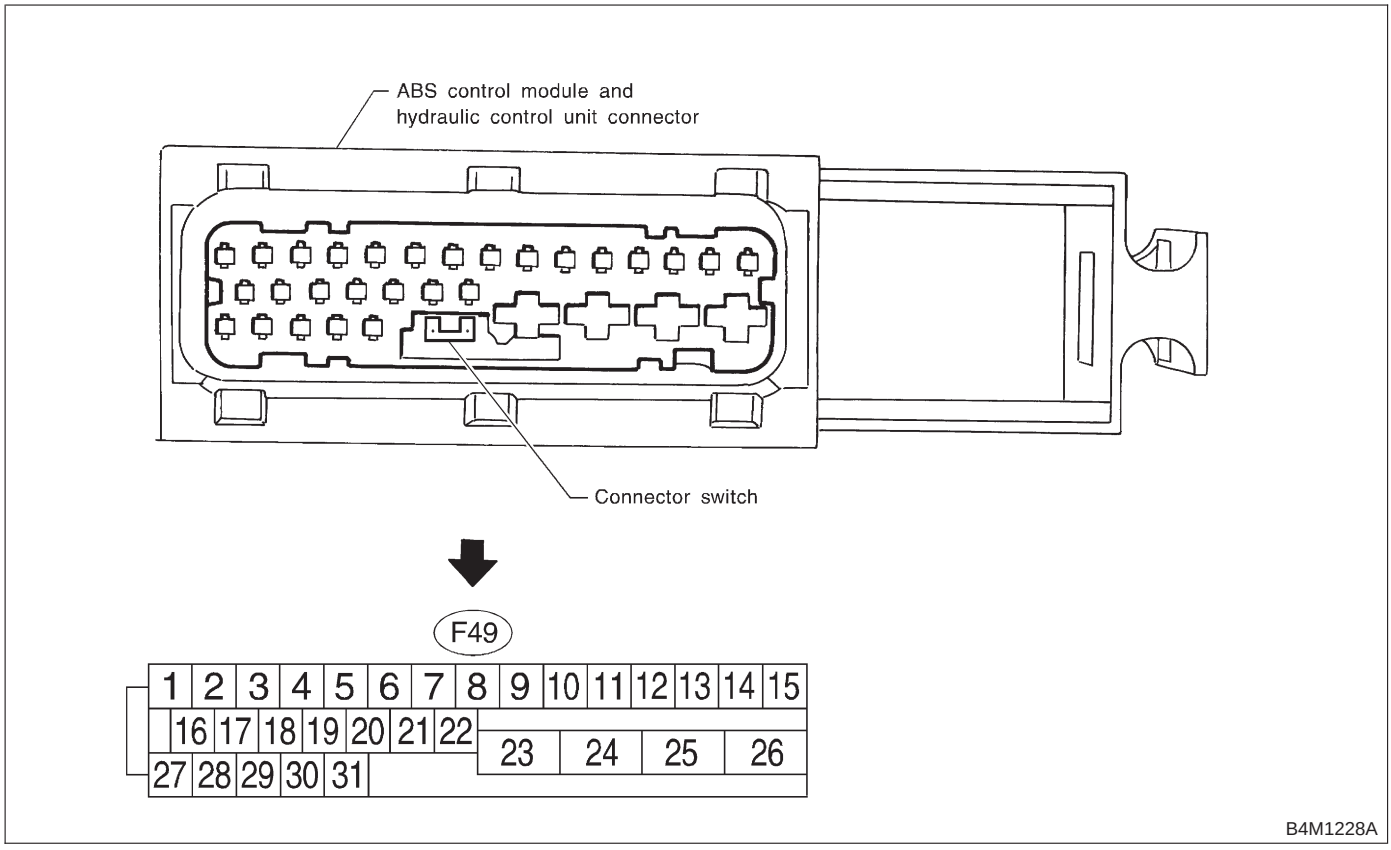


(1) ABS control module and hydraulic control unit (ABSCM&H/U)
(2) ABS control module area
(3) Valve relay
(4) Motor relay
(5) Motor
(6) Front left inlet solenoid valve
(7) Front left outlet solenoid valve
(8) Front right inlet solenoid valve
(9) Front right outlet solenoid valve
(10) Rear left inlet solenoid valve
(11) Rear left outlet solenoid valve
(12) Rear right inlet solenoid valve
(13) Rear right outlet solenoid valve
(14) Transmission control module (only AT model)
(15) Diagnosis connector
(16) Data link connector
(17) ABS warning light
(18) Stop light switch
(19) Stop light
(20) G sensor
(21) Front left ABS sensor
(22) Front right ABS sensor
(23) Rear left ABS sensor
(24) Rear right ABS sensor

MEMO:

5. Control Module I/O Signal

A: I/O SIGNAL VOLTAGE

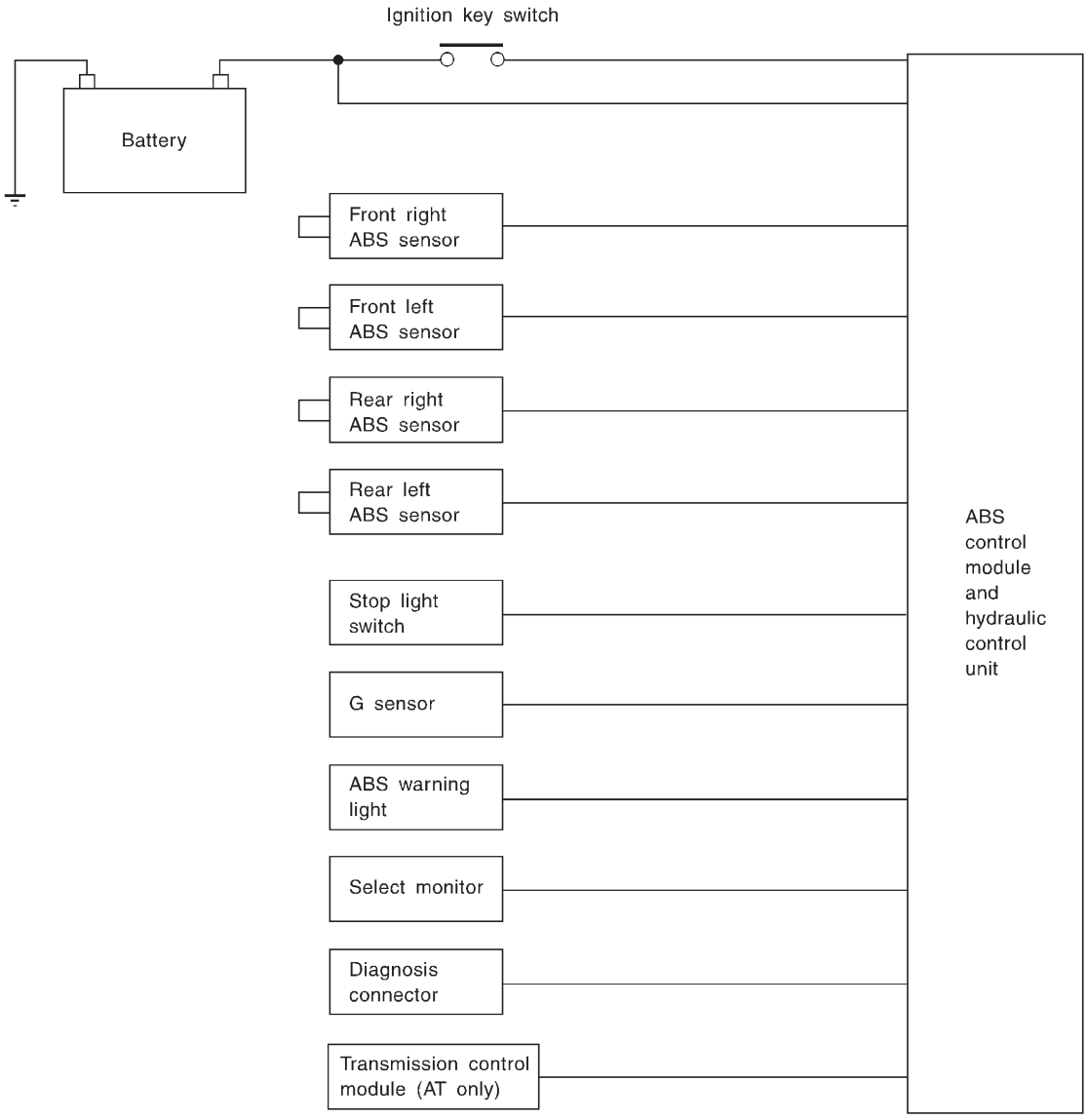


NOTE:
- The terminal numbers in the ABS control module and hydraulic control unit connector are as shown in the figure.
- When the connector is removed from the ABSCM&H/U, the connector switch closes the circuit between terminal No. 21 and No. 23. The ABS warning light illuminates.

Contents		Terminal No. (+)—(−)	Input/Output signal Measured value and measuring conditions
ABS sensor*2 (Wheel speed sensor)	Front left wheel	9—10	0.12 — 1 V (When it is 20 Hz.)
	Front right wheel	11—12	
	Rear left wheel	7—8	
	Rear right wheel	14—15	
Valve relay power supply*1		24—23	10 — 15 V when ignition switch is ON.
Motor relay power supply*1		25—23	10 — 15 V when ignition switch is ON.
G sensor*2 (AWD model only)	power supply	30—28	4.75 — 5.25 V
	ground	28	—
	output	6—28	2.3±0.2 V when vehicle is in horizontal position.
Stop light switch*1		2—23	Less than 1.5 V when the stop light is OFF and, 10 — 15 V when the stop light is ON.
ABS warning light*2		21—23	Less than 1.5 V during 1.5 seconds when ignition switch is ON, and 10 — 15 V after 1.5 seconds.
AT ABS signal*2 (AT model only)		31—23	Less than 1.5 V when the ABS control does not operate still and more than 5.5 V when ABS operates.
ABS operation signal monitor*2		3—23	Less than 1.5 V when the ABS control does not operate still and more than 5.5 V when ABS operates.
Select monitor*2	Data is received.	20—23	Less than 1.5 V when no data is received.
	Data is sent.	5—23	4.75 — 5.25 V when no data is sent.
ABS diagnosis connector*2	Terminal No. 3	29—23	10 — 15 V when ignition switch is ON.
	Terminal No. 6	4—23	10 — 15 V when ignition switch is ON.
Power supply*1		1—23	10 — 15 V when ignition switch is ON.
Grounding line		23	—
Grounding line		26	—

*1: Measure the I/O signal voltage after removing the connector from the ABSCM&H/U terminal.
*2: Measure the I/O signal voltage at connector (F2) or (F55).

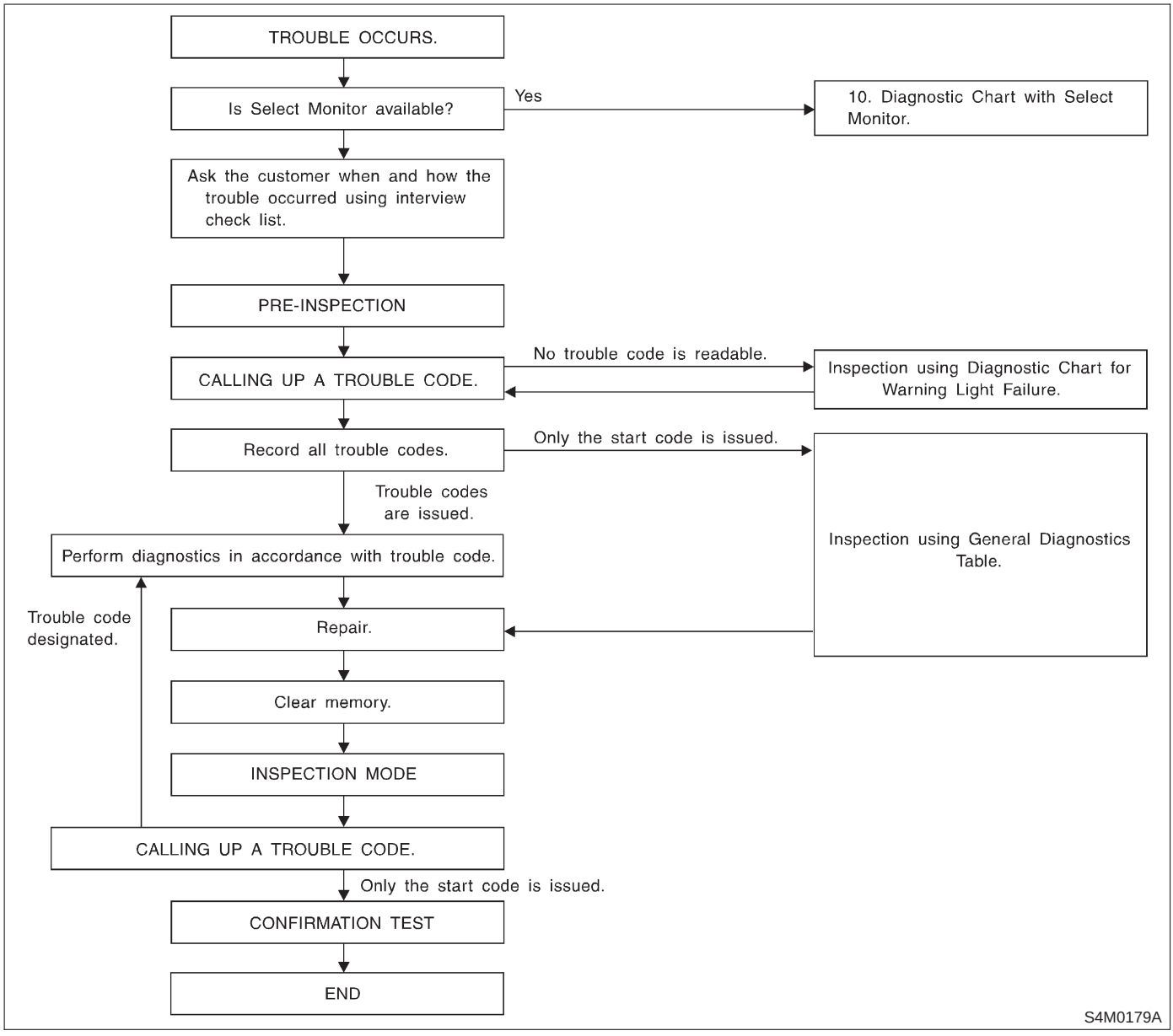
B: I/O SIGNAL DIAGRAM



B4M1229B

6. Diagnostics Chart for On-board Diagnosis System

A: BASIC DIAGNOSTICS PROCEDURE



CAUTION:
Remove foreign matter (dust, water, etc.) from the ABSCM&H/U connector during removal and installation.

NOTE:
- To check harness for broken wires or short circuits, shake it while holding it or the connector.
- When ABS warning light illuminates, read and record trouble code indicated by ABS warning light.

B: CHECK LIST FOR INTERVIEW

Check The Following Items About The Vehicle's State.

1. THE STATE OF THE ABS WARNING LIGHT

ABS warning light comes on.	☐ Always ☐ Sometimes ☐ Only once ☐ Does not come on ● When / how long does it come on?:		
Ignition key position	☐ LOCK ☐ ACC ☐ ON (before starting engine) ☐ START ☐ On after starting (Engine is running) ☐ On after starting (Engine is stop)		
Timing	☐ Immediately after ignition is ON. ☐ Immediately after ignition starts.		
	☐ When advancing	km/h to	km/h
		MPH to	MPH
	☐ While traveling at a constant speed	km/h	MPH
	☐ When decelerating	km/h to	km/h
		MPH to	MPH
	☐When turning to right	Steering angle :	deg
		Steering time :	sec
	☐ When turning to left	Steering angle :	deg
		Steering time :	sec
	☐ When moving other electrical parts		
	● Parts name : ● Operating condition :		

2. SYMPTOMS

ABS operating condition	☐ Performs no work.		
	☐ Operates only when abruptly applying brakes.	Vehicle speed :	km/h
			MPH
	● How to step on brake pedal :		
	a) Operating time :		sec
	b) Operating noise : ☐ Produce / ☐ Does not produce		
	● What kind of noise?	☐ Knock ☐ Gong gong ☐ Bong ☐ Buzz ☐ Gong gong buzz ☐ Others :	
	c) Reaction force of brake pedal		
		☐ Stick ☐ Press down once with a clunk ☐ Press and released ☐ Others :	

Behavior of vehicle	a) Directional stability cannot be obtained or steering arm refuses to work when applying brakes : ☐ Yes / ☐ No	
	● When :	☐ Vehicle turns to right ☐ Vehicle turns to left ☐ Spins ☐ Others :
	b) Directional stability cannot be obtained or steering arm refuses to work when accelerating : ☐ Yes / ☐ No	
	● When :	☐ Vehicle turns to right ☐ Vehicle turns to left ☐ Spins ☐ Others :
	c) Brakes are out of order : ☐ Yes / ☐ No	
	● What :	☐ Braking distance is long ☐ Brakes lock or drag ☐ Pedal stroke is long ☐ Pedal sticks ☐ Others :
	d) Poor acceleration : ☐ Yes / ☐ No	
	● What :	☐ Fails to accelerate ☐ Engine stalls ☐ Others :
	e) Occurrence of vibration : ☐ Yes / ☐ No	
	● Where ● What kind :	
	f) Occurrence of abnormal noise : ☐ Yes / ☐ No	
	● Where ● What kind :	
	g) Occurrence of other phenomena : ☐ Yes / ☐ No	
	● What kind :	

3. CONDITIONS UNDER WHICH TROUBLE OCCURS

Environment	a) Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others :
	b) Ambient temperature	°F (°C)
	c) Road	☐ Urban area ☐ Suburbs ☐ Highway ☐ General road ☐ Ascending slope ☐ Descending slope ☐ Paved road ☐ Gravel road ☐ Muddy road ☐ Sandy place ☐ Others :
	d) Road surface	☐ Dry ☐ Wet ☐ New-fallen snow ☐ Compressed snow ☐ Frozen slope ☐ Others :

Condition	a) Brakes	Deceleration :	g
		☐ Continuous / ☐ Intermittent	
	b) Accelerator	Acceleration :	g
		☐ Continuous / ☐ Intermittent	
	c) Vehicle speed	km/h	MPH
		☐ Advancing ☐ Accelerating ☐ Reducing speed ☐ Low speed ☐ Turning ☐ Others :	
	d) Tire inflation pressure	Front RH tire :	kPa
		Front LH tire :	kPa
		Rear RH tire :	kPa
		Rear LH tire :	kPa
	e) Degree of wear	Front RH tire :	
		Front LH tire :	
		Rear RH tire :	
		Rear LH tire :	
	f) Genuine parts are used. : ☐Yes / ☐ No		
	g) Chain is passed around tires. : ☐Yes / ☐ No		
	h) T tire is used. : ☐Yes / ☐ No		
	i) Condition of suspension alignment :		
	j) Loading state :		
	k) Repair parts are used. : ☐Yes / ☐ No		
	● What :		
	l) Others :		

C: INSPECTION MODE

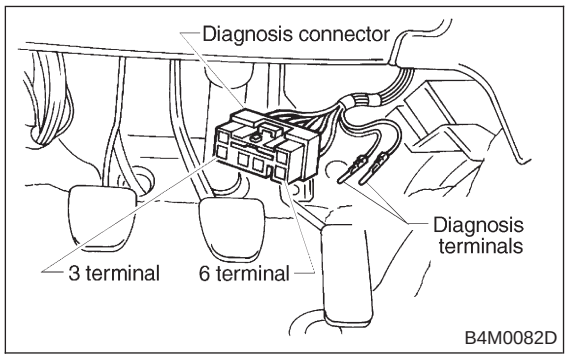
Reproduce the condition under which the problem has occurred as much as possible.
Drive the vehicle at a speed more than 40 km/h (25 MPH) for at least one minute.

D: TROUBLE CODES

When on-board diagnosis of the ABS control module detects a problem, the information (up to a maximum of three) will be stored in the EEP ROM as a trouble code. When there are more than three, the most recent three will be stored. (Stored codes will stay in memory until they are cleared.)

1. CALLING UP A TROUBLE CODE

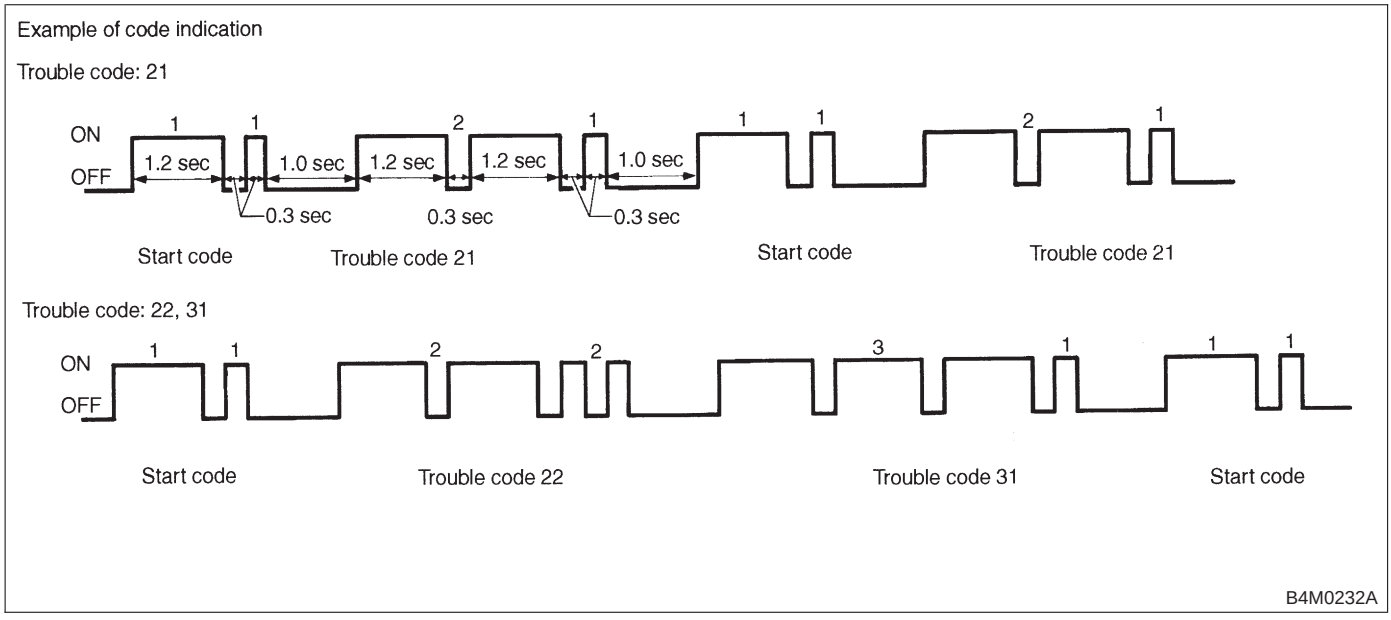
1) Take out diagnosis connector from side of driver's seat heater unit.



2) Turn ignition switch OFF.
3) Connect diagnosis connector terminal 6 to diagnosis terminal.
4) Turn ignition switch ON.
5) ABS warning light is set in the diagnostic mode and blinks to identify trouble code.

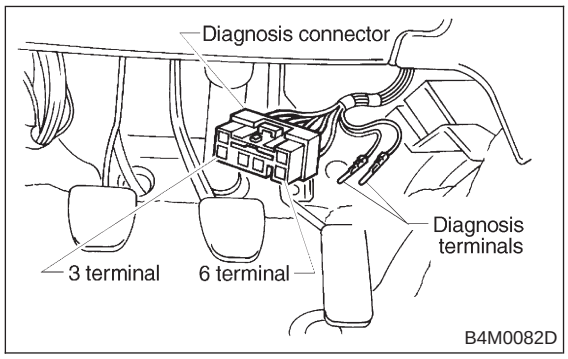
6) After the start code (11) is shown, the trouble codes will be shown in order of the last information first. These repeat for a maximum of 5 minutes.

NOTE:
When there are no trouble codes in memory, only the start code (11) is shown.

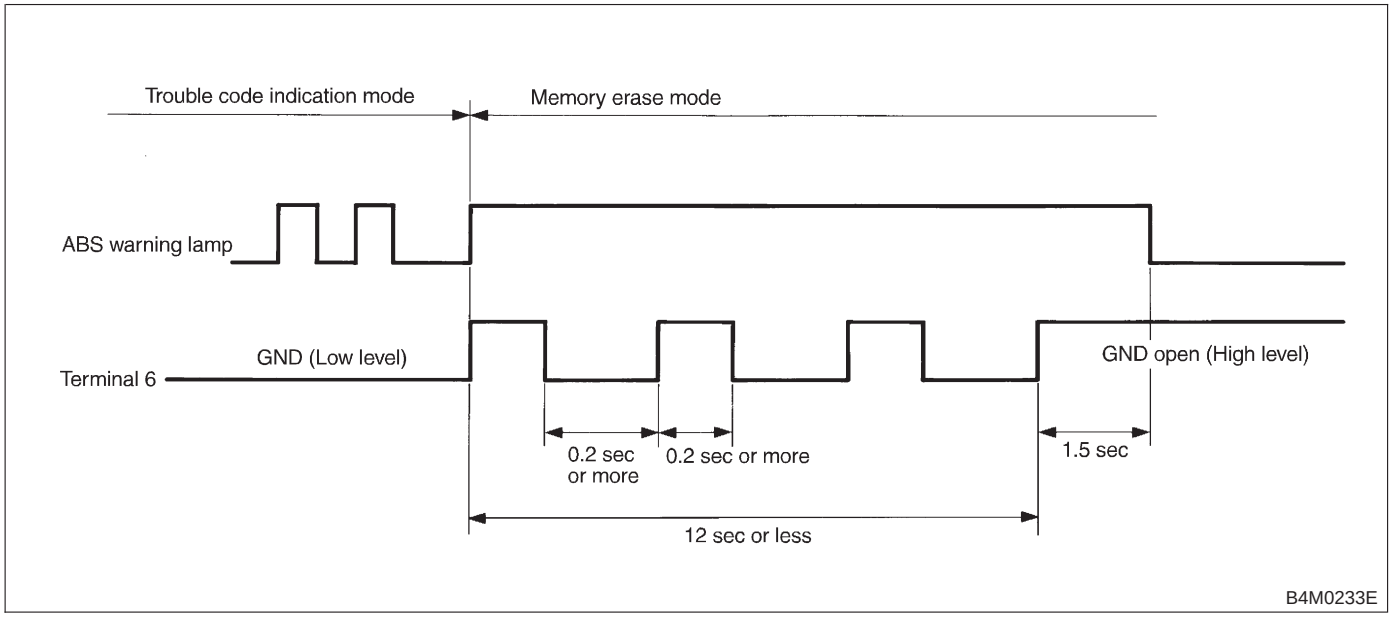


2. CLEARING MEMORY

1) After calling up a trouble code, disconnect diagnosis connector terminal 6 from diagnosis terminal.



2) Repeat 3 times within approx. 12 seconds; connecting and disconnecting terminal 6 and diagnosis terminal for at least 0.2 seconds each time.



NOTE:
After diagnostics is completed, make sure to clear memory. Make sure only start code (11) is shown after memory is cleared.

MEMO:

7. Diagnostics Chart for ABS Warning Light Circuit and Diagnosis Circuit Failure

A: ABS WARNING LIGHT DOES NOT COME ON.

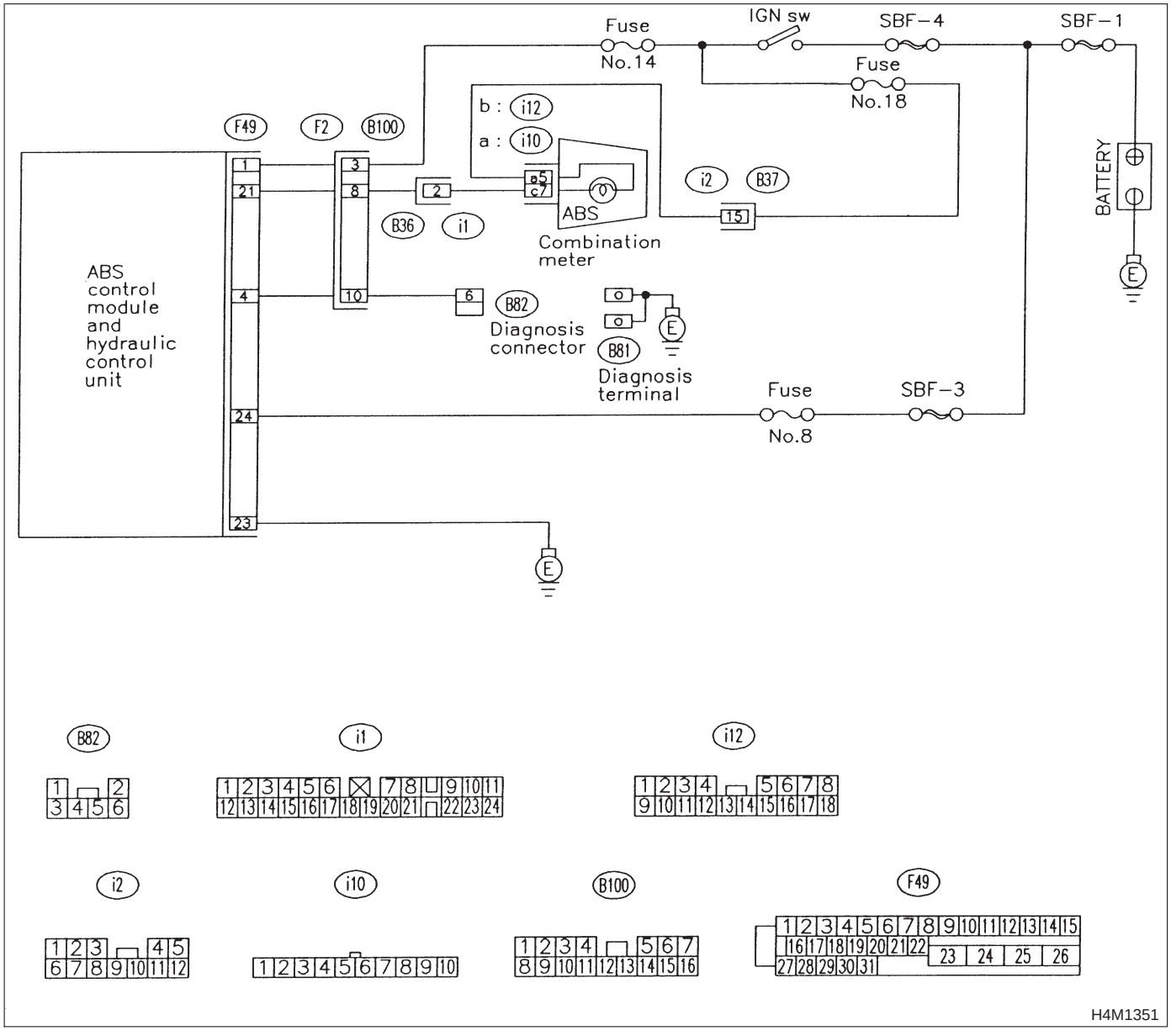
DIAGNOSIS:

- ABS warning light circuit is open or shorted.

TROUBLE SYMPTOM:

- When ignition switch is turned ON (engine OFF), ABS warning light does not come on.

WIRING DIAGRAM:



7A1 : CHECK IF OTHER WARNING LIGHTS TURN ON.

Turn ignition switch to ON (engine OFF).

CHECK : ***Do other warning lights turn on?***
YES : Go to step **7A2**.
NO : Repair combination meter.

7A2 : CHECK ABS WARNING LIGHT BULB.

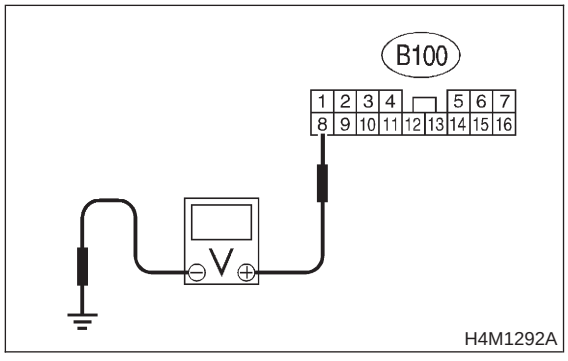
1) Turn ignition switch to OFF.
2) Remove combination meter.
3) Remove ABS warning light bulb from combination meter.

CHECK : ***Is ABS warning light bulb OK?***
YES : Go to step **7A3**.
NO : Replace ABS warning light bulb.

7A3 : CHECK BATTERY SHORT OF ABS WARNING LIGHT HARNESS.

1) Disconnect connector (B100) from connector (F2).
2) Measure voltage between connector (B100) and chassis ground.

Connector & terminal
(B100) No. 8 (+) — Chassis ground (−):

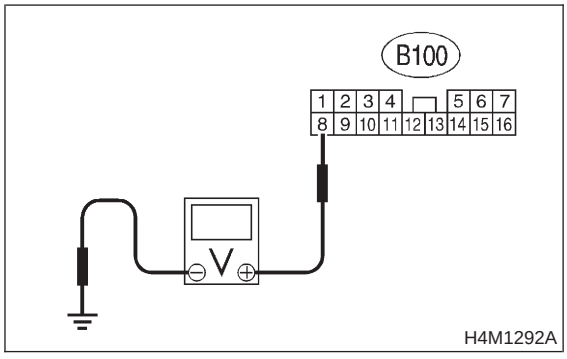


CHECK : ***Is the voltage less than 3 V?***
YES : Go to step **7A4**.
NO : Repair warning light harness.

7A4 : CHECK BATTERY SHORT OF ABS WARNING LIGHT HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between connector (B100) and chassis ground.

Connector & terminal
(B100) No. 8 (+) — Chassis ground (−):

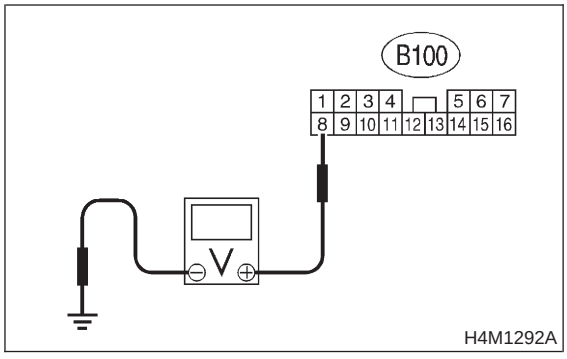


CHECK : ***Is voltage less than 3 V?***
YES : Go to step **7A5**.
NO : Repair warning light harness.

7A5 : CHECK WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Install ABS warning light bulb from combination meter.
3) Install combination meter.
4) Turn ignition switch to ON.
5) Measure voltage between connector (B100) and chassis ground.

Connector & terminal
(B100) No. 8 (+) — Chassis ground (−):

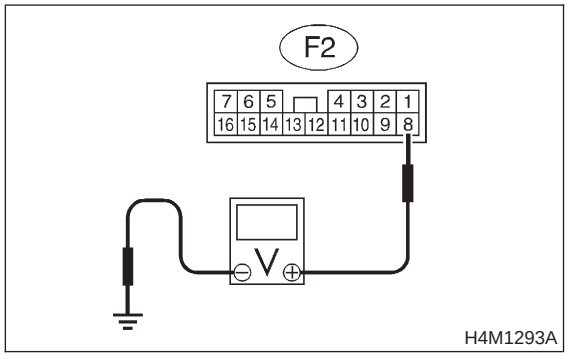


CHECK : ***Is voltage between 10 V and 15 V?***
YES : Go to step **7A6**.
NO : Repair wiring harness.

7A6 : CHECK BATTERY SHORT OF ABS WARNING LIGHT HARNESS.

1) Turn ignition switch to OFF.
2) Measure voltage between connector (F2) and chassis ground.

Connector & terminal
(F2) No. 8 (+) — Chassis ground (−):

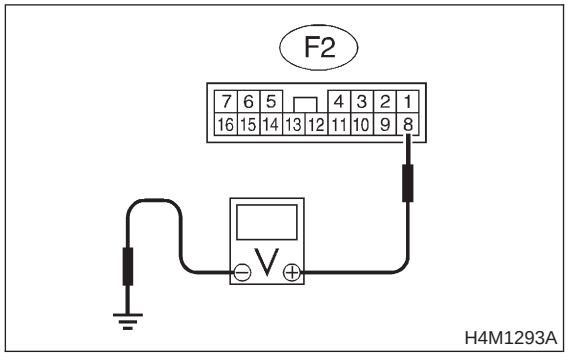


CHECK : ***Is the voltage less than 3 V?***
YES : Go to step **7A7**.
NO : Repair wiring harness.

7A7 : CHECK BATTERY SHORT OF ABS WARNING LIGHT HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between connector (F2) and chassis ground.

Connector & terminal
(F2) No. 8 (+) — Chassis ground (−):

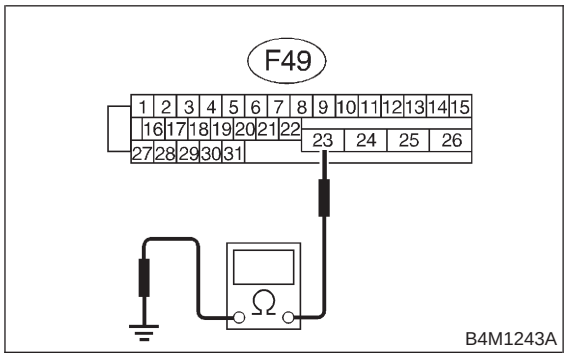


CHECK : ***Is voltage less than 3 V?***
YES : Go to step **7A8**.
NO : Repair wiring harness.

7A8 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

Measure resistance between ABSCM&H/U and chassis ground.

Connector & terminal
(F49) No. 23 — GND:

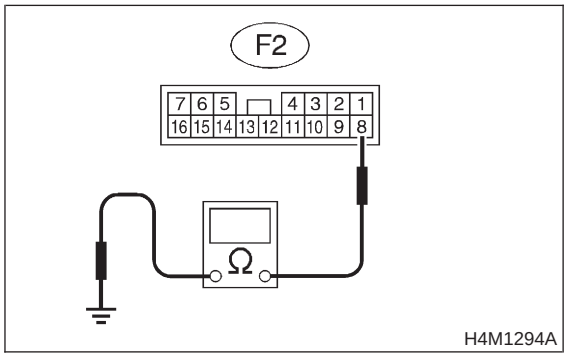


CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **7A9**.
NO : Repair ABSCM&H/U ground harness.

7A9 : CHECK WIRING HARNESS.

Measure resistance between connector (F2) and chassis ground.

Connector & terminal
(F2) No. 8 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **7A10**.
NO : Repair harness/connector.

7A10 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between combination meter and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

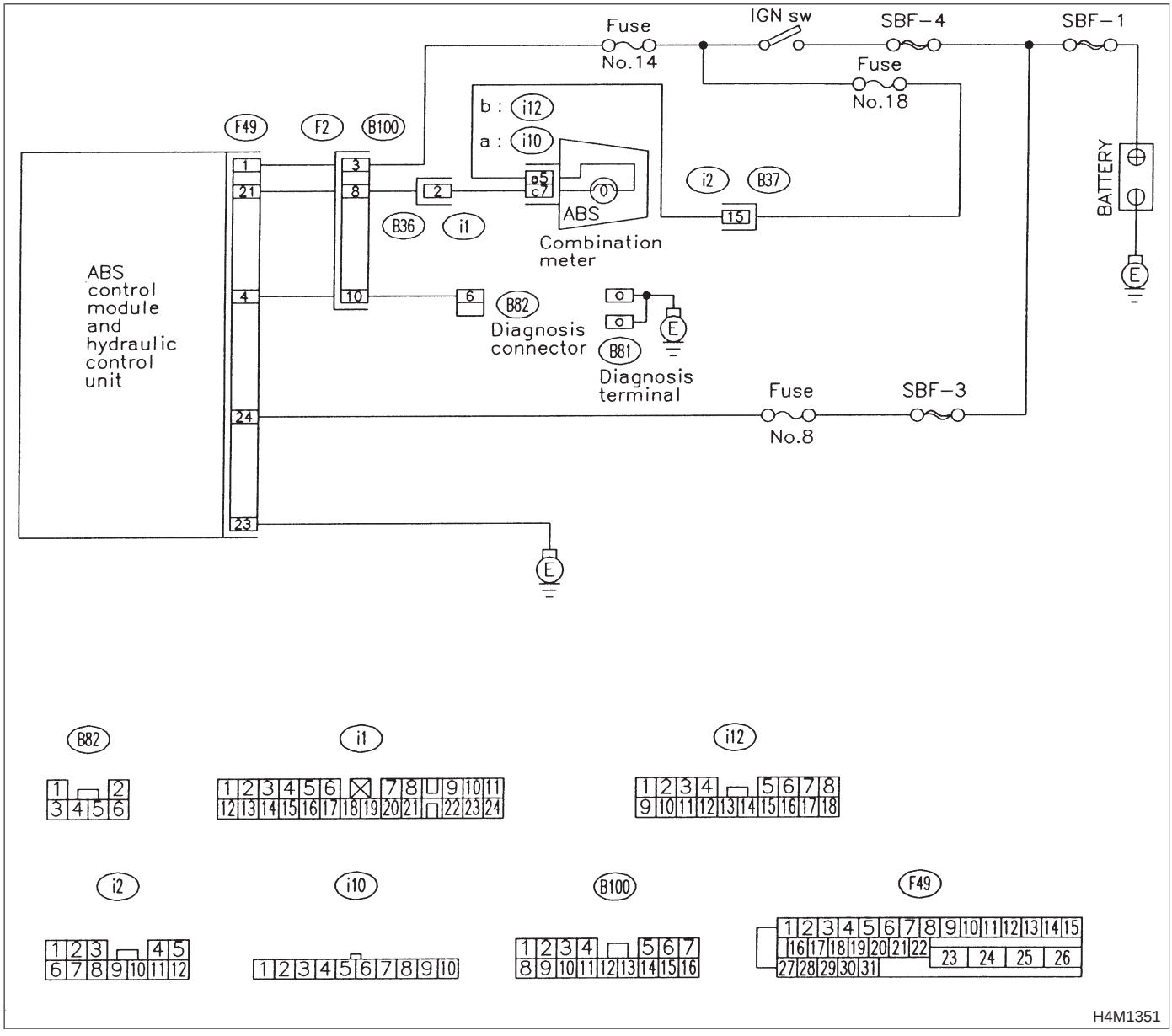
NO : Replace ABSCM&H/U.

B: ABS WARNING LIGHT DOES NOT GO OFF.

DIAGNOSIS:
- ABS warning light circuit is open or shorted.

TROUBLE SYMPTOM:
- When starting the engine and while ABS warning light is kept ON.

WIRING DIAGRAM:



7B1 : CHECK INSTALLATION OF ABSCM&H/U CONNECTOR.

Turn ignition switch to OFF.

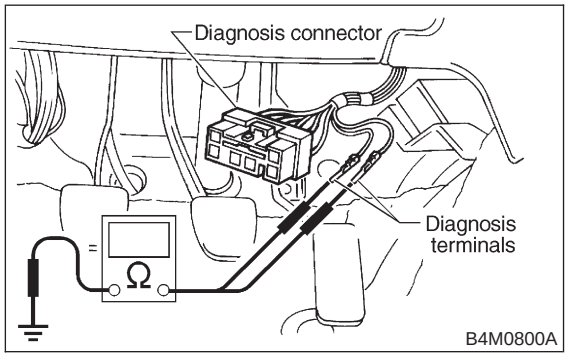
CHECK : ***Is ABSCM&H/U connector inserted into ABSCM until the clamp locks onto it?***

YES : Go to step **7B2**.

NO : Insert ABSCM&H/U connector into ABSCM&H/U until the clamp locks onto it.

7B2 : CHECK DIAGNOSIS TERMINAL.

Measure resistance between diagnosis terminals (B81) and chassis ground.



Terminals

Diagnosis terminal (A) — Chassis ground:

Diagnosis terminal (B) — Chassis ground:

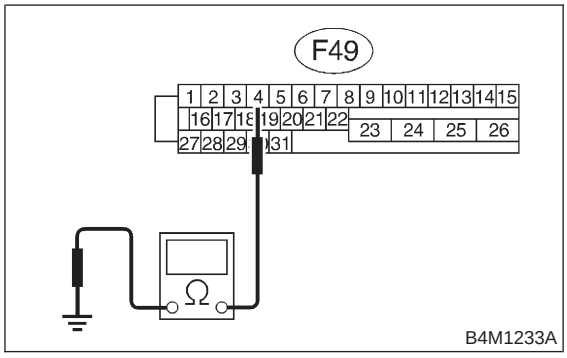
CHECK : ***Is the resistance less than 0.5 Ω?***

YES : Go to step **7B3**.

NO : Repair diagnosis terminal harness.

7B3 : CHECK DIAGNOSIS LINE.

1) Turn ignition switch to OFF.
2) Connect diagnosis terminal (B81) to diagnosis connector (B82) No. 6.
3) Disconnect connector from ABSCM&H/U.
4) Measure resistance between ABSCM&H/U connector and chassis ground.



Connector & terminal

(F49) No. 4 — Chassis ground:

CHECK : ***Is the resistance less than 0.5 Ω?***

YES : Go to step **7B4**.

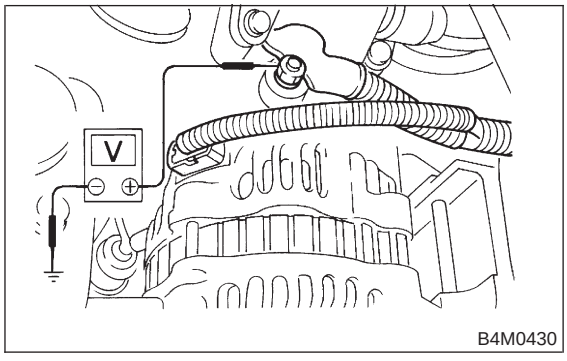
NO : Repair harness connector between ABSCM&H/U and diagnosis connector.

7B4 : CHECK GENERATOR.

1) Start the engine.
2) Idle the engine.
3) Measure voltage between generator and chassis ground.

Terminal

Generator B terminal (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 and 15 V?***

YES : Go to step **7B5**.

NO : Repair generator.

7B5 : CHECK BATTERY TERMINAL.

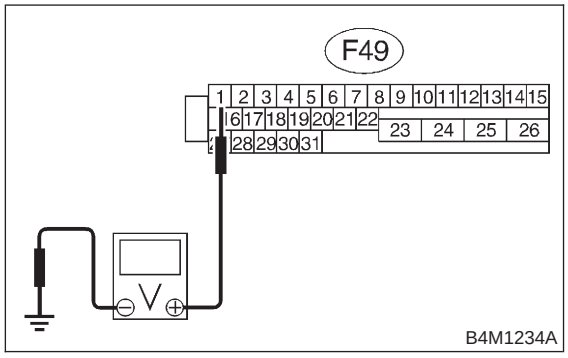
Turn ignition switch to OFF.

CHECK : ***Is there poor contact at battery terminal?***
YES : Repair battery terminal.
NO : Go to step **7B6**.

7B6 : CHECK POWER SUPPLY OF ABSCM.

1) Disconnect connector from ABSCM&H/U.
2) Start engine.
3) Idle the engine.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 and 15 V?***
YES : Go to step **7B7**.
NO : Repair ABSCM&H/U power supply circuit.

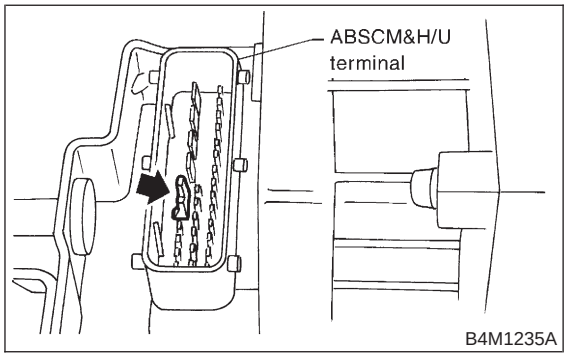
7B7 : CHECK WIRING HARNESS.

1) Disconnect connector (F2) from connector (B100).
2) Turn ignition switch to ON.

CHECK : ***Does the ABS warning light remain off?***
YES : Go to step **7B8**.
NO : Repair front wiring harness.

7B8 : CHECK PROJECTION AT ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Check for broken projection at the ABSCM&H/U terminal.

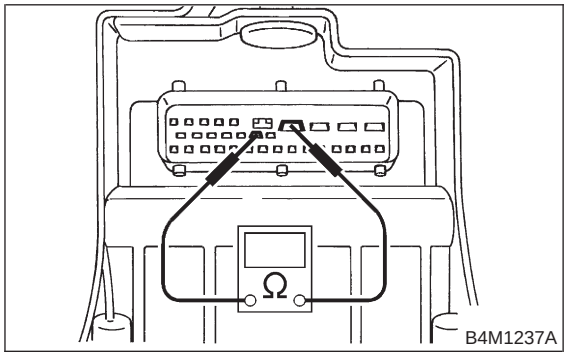


CHECK : ***Are the projection broken?***
YES : Go to step **7B9**.
NO : Replace ABSCM&H/U.

7B9 : CHECK ABSCM&H/U.

Measure resistance between ABSCM&H/U terminals.

Terminal
No. 21 — No. 23:

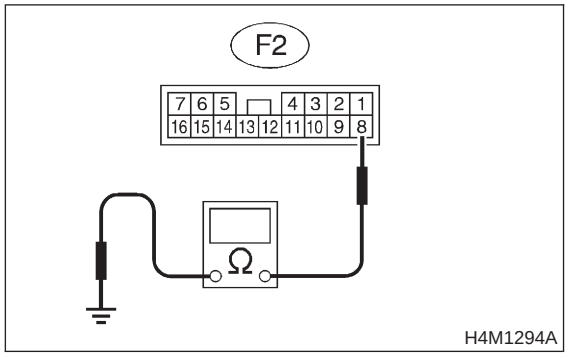


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **7B10**.
NO : Replace ABSCM&H/U.

7B10 : CHECK WIRING HARNESS.

Measure resistance between connector (F2) and chassis ground.

Connector & terminal
(F2) No. 8 — Chassis ground:

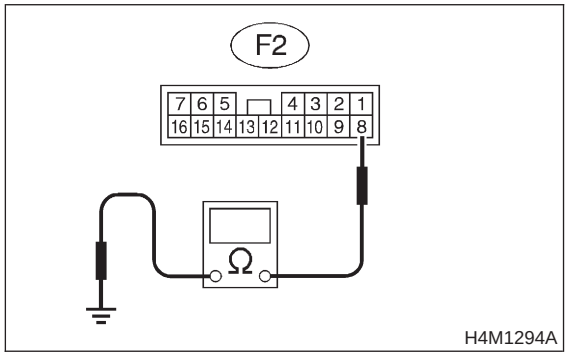


CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **7B11**.
NO : Repair harness.

7B11 : CHECK WIRING HARNESS.

1) Connect connector to ABSCM&H/U.
2) Measure resistance between connector (F2) and chassis ground.

Connector & terminal
(F2) No. 8 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **7B12**.
NO : Repair harness.

7B12 : CHECK POOR CONTACT IN ABSCM&H/U CONNECTOR.

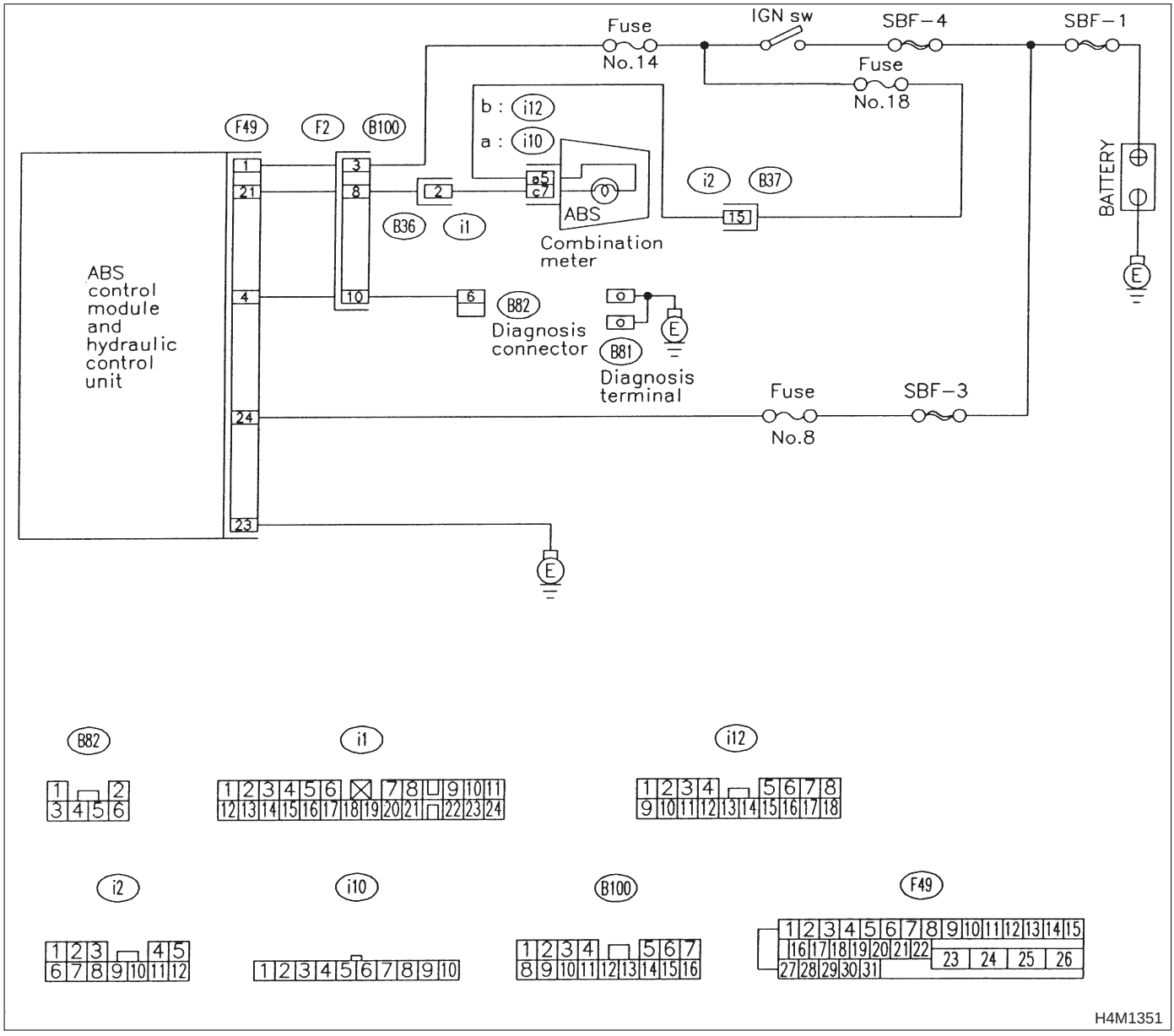
CHECK : ***Is there poor contact in ABSCM&H/U connector? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Replace ABSCM&H/U.

C: TROUBLE CODE DOES NOT APPEAR.

DIAGNOSIS:
- Diagnosis circuit is open.

TROUBLE SYMPTOM:
- The ABS warning light turns on or off normally but the start code cannot be read out in the diagnostic mode.

WIRING DIAGRAM:



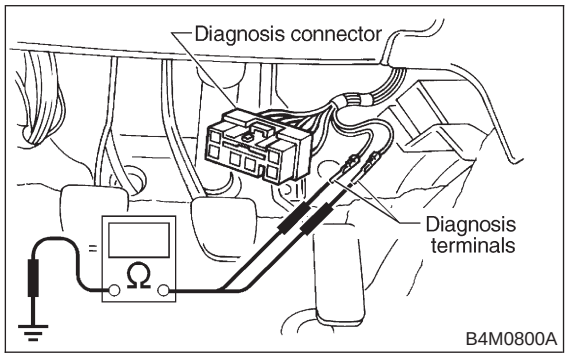
7C1 : CHECK DIAGNOSIS TERMINAL.

Measure resistance between diagnosis terminals (B81) and chassis ground.

Terminals

Diagnosis terminal (A) — Chassis ground:

Diagnosis terminal (B) — Chassis ground:



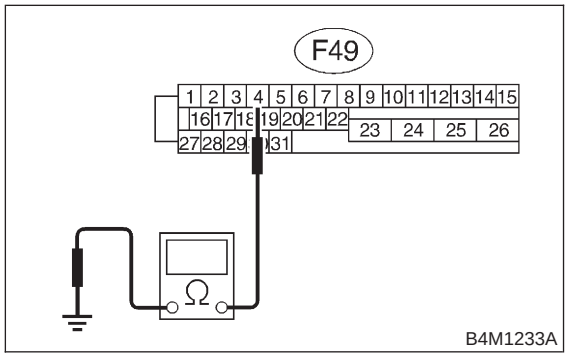
CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **7C2**.
NO : Repair diagnosis terminal harness.

7C2 : CHECK DIAGNOSIS LINE.

1) Turn ignition switch to OFF.
2) Connect diagnosis terminal (B81) to diagnosis connector (B82) No. 6.
3) Disconnect connector from ABSCM&H/U.
4) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal

(F49) No. 4 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **7C3**.
NO : Repair harness connector between ABSCM&H/U and diagnosis connector.

7C3 : CHECK POOR CONTACT IN ABSCM&H/U CONNECTOR.

CHECK : ***Is there poor contact in ABSCM&H/U connector? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Replace ABSCM&H/U.

MEMO:

8. Diagnostics Chart with Trouble Code by ABS Warning Light

A: LIST OF TROUBLE CODE

Trouble code	Contents of diagnosis		Index No.
11	Start code ● Trouble code is shown after start code. ● Only start code is shown in normal condition.		—
21	Abnormal ABS sensor (Open circuit or input voltage too high)	Front right ABS sensor	<Ref. to 4-4 [T8B0].>
23		Front left ABS sensor	<Ref. to 4-4 [T8C0].>
25		Rear right ABS sensor	<Ref. to 4-4 [T8D0].>
27		Rear left ABS sensor	<Ref. to 4-4 [T8E0].>
22	Abnormal ABS sensor (Abnormal ABS sensor signal)	Front right ABS sensor	<Ref. to 4-4 [T8F0].>
24		Front left ABS sensor	<Ref. to 4-4 [T8G0].>
26		Rear right ABS sensor	<Ref. to 4-4 [T8H0].>
28		Rear left ABS sensor	<Ref. to 4-4 [T8I0].>
29		Any one of four	<Ref. to 4-4 [T8J0].>
31	Abnormal solenoid valve circuit(s) in ABS control module and hydraulic unit	Front right inlet valve	<Ref. to 4-4 [T8K0].>
32		Front right outlet valve	<Ref. to 4-4 [T8O0].>
33		Front left inlet valve	<Ref. to 4-4 [T8L0].>
34		Front left outlet valve	<Ref. to 4-4 [T8P0].>
35		Rear right inlet valve	<Ref. to 4-4 [T8M0].>
36		Rear right outlet valve	<Ref. to 4-4 [T8Q0].>
37		Rear left inlet valve	<Ref. to 4-4 [T8N0].>
38		Rear left outlet valve	<Ref. to 4-4 [T8R0].>
41	Abnormal ABS control module		<Ref. to 4-4 [T8S0].>
42	Source voltage is abnormal.		<Ref. to 4-4 [T8T0].>
44	A combination of AT control abnormal		<Ref. to 4-4 [T8U0].>
51	Abnormal valve relay		<Ref. to 4-4 [T8V0].>
52	Abnormal motor and/or motor relay		<Ref. to 4-4 [T8W0].>
54	Abnormal stop light switch		<Ref. to 4-4 [T8X0].>
56	Abnormal G sensor output voltage		<Ref. to 4-4 [T8Y0].>

B: TROUBLE CODE 21 (FRONT RH)

C: TROUBLE CODE 23 (FRONT LH)

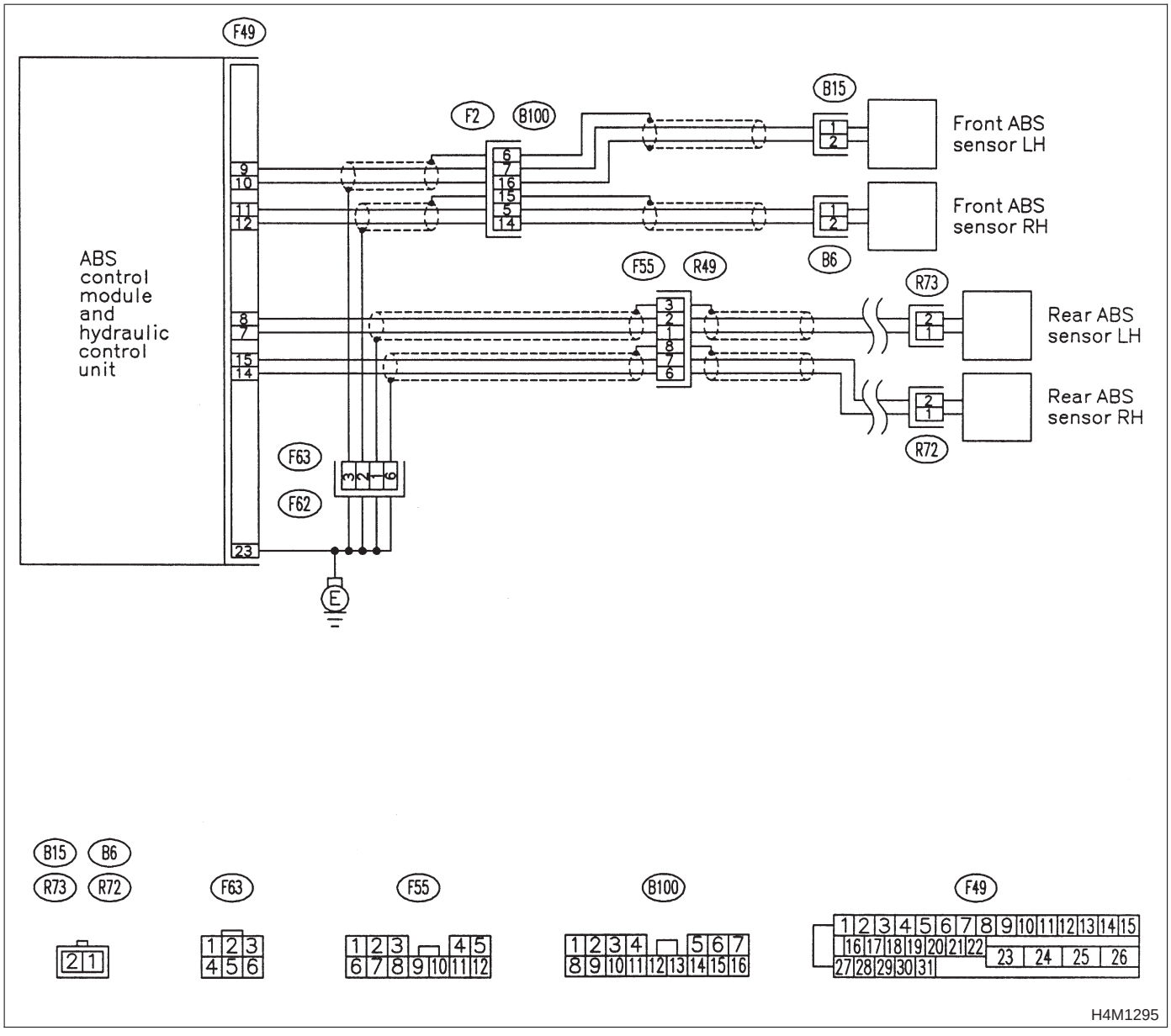
D: TROUBLE CODE 25 (REAR RH)

E: TROUBLE CODE 27 (REAR LH) — ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

DIAGNOSIS:
- Faulty ABS sensor (Broken wire, input voltage too high)
- Faulty harness connector

TROUBLE SYMPTOM:
- ABS does not operate.

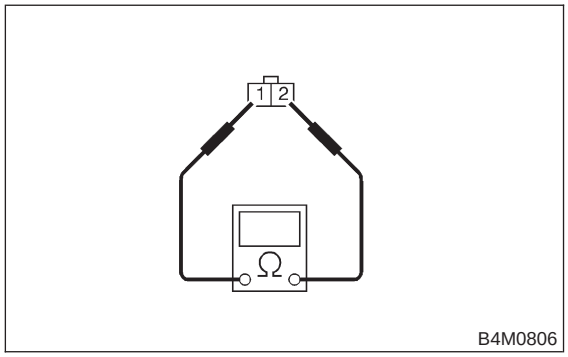
WIRING DIAGRAM:



8E1 : CHECK ABS SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance of ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:

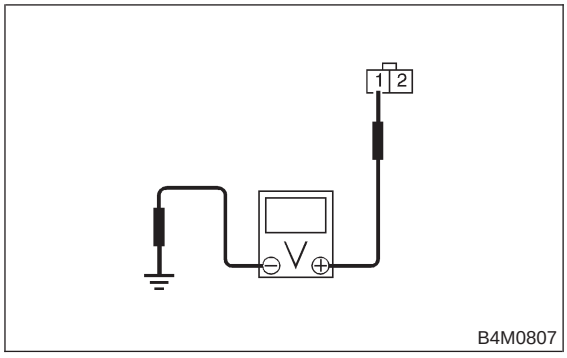


CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **8E2**.
NO : Replace ABS sensor.

8E2 : CHECK BATTERY SHORT OF ABS SENSOR.

1) Disconnect connector from ABSCM&H/U.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (−):
Front LH No. 1 (+) — Chassis ground (−):
Rear RH No. 1 (+) — Chassis ground (−):
Rear LH No. 1 (+) — Chassis ground (−):

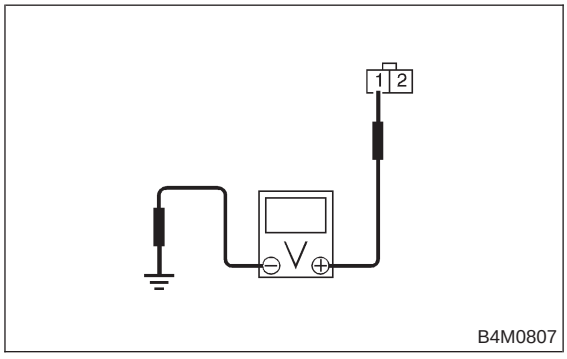


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8E3**.
NO : Replace ABS sensor.

8E3 : CHECK BATTERY SHORT OF ABS SENSOR.

1) Turn ignition switch to ON.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (−):
Front LH No. 1 (+) — Chassis ground (−):
Rear RH No. 1 (+) — Chassis ground (−):
Rear LH No. 1 (+) — Chassis ground (−):



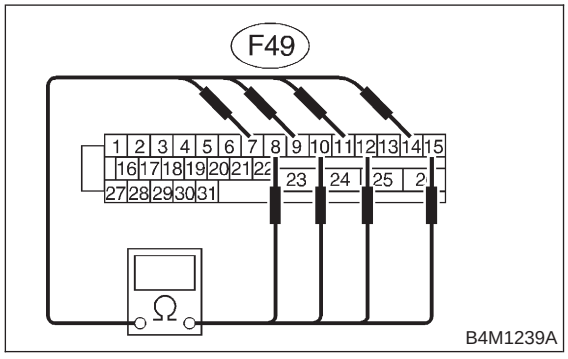
CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8E4**.
NO : Replace ABS sensor.

8E4 : CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND ABS SENSOR.

1) Turn ignition switch to OFF.
2) Connect connector to ABS sensor.
3) Measure resistance between ABSCM&H/U connector terminals.

Connector & terminal

Trouble code 21 / (F49) No. 11 — No. 12:
Trouble code 23 / (F49) No. 9 — No. 10:
Trouble code 25 / (F49) No. 14 — No. 15:
Trouble code 27 / (F49) No. 7 — No. 8:



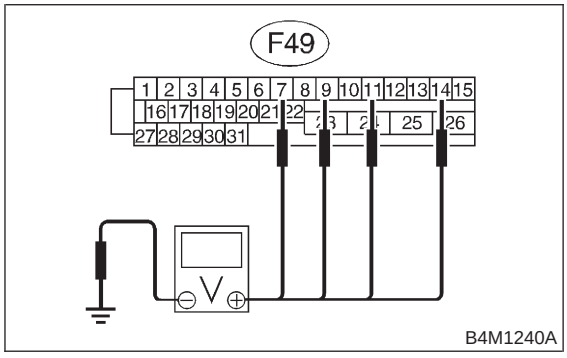
CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **8E5**.
NO : Repair harness/connector between ABSCM&H/U and ABS sensor.

8E5 : CHECK BATTERY SHORT OF HARNESS.

Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal

Trouble code 21 / (F49) No. 11 (+) — Chassis ground (−):
Trouble code 23 / (F49) No. 9 (+) — Chassis ground (−):
Trouble code 25 / (F49) No. 14 (+) — Chassis ground (−):
Trouble code 27 / (F49) No. 7 (+) — Chassis ground (−):

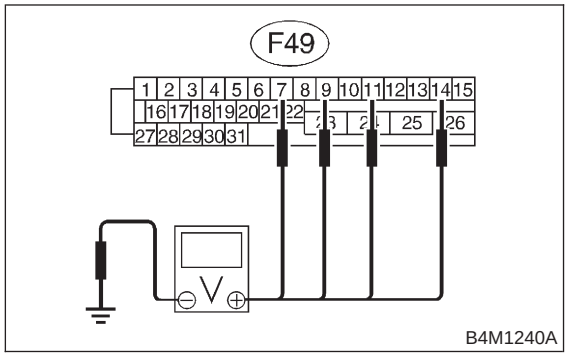


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8E6**.
NO : Repair harness between ABSCM&H/U and ABS sensor.

8E6 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
Trouble code 21 / (F49) No. 11 (+) — Chassis ground (−):
Trouble code 23 / (F49) No. 9 (+) — Chassis ground (−):
Trouble code 25 / (F49) No. 14 (+) — Chassis ground (−):
Trouble code 27 / (F49) No. 7 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8E7**.
NO : Repair harness between ABSCM&H/U and ABS sensor.

8E7 : CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32±10 N·m (3.3±1.0 kg-m, 24±7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***
YES : Go to step **8E8**.
NO : Tighten ABS sensor installation bolts securely.

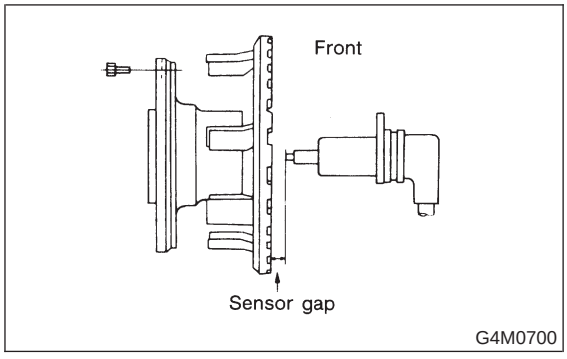
8E8 : CHECK INSTALLATION OF TONE WHEEL.

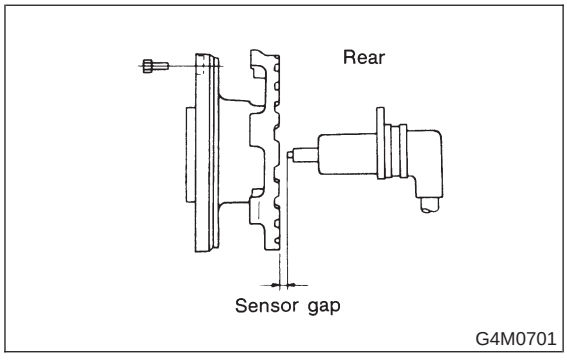
Tightening torque:
13±3 N·m (1.3±0.3 kg-m, 9±2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***
YES : Go to step **8E9**.
NO : Tighten tone wheel installation bolts securely.

8E9 : CHECK ABS SENSOR GAP.

Measure tone wheel-to-pole piece gap over entire perimeter of the wheel.





	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

CHECK : ***Is the gap within the specifications?***
YES : Go to step **8E10**.
NO : Adjust the gap.

NOTE:
Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

8E10 : CHECK HUB RUNOUT.

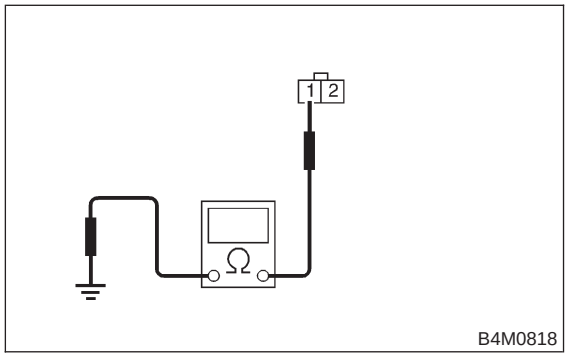
Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***
YES : Go to step **8E11**.
NO : Repair hub.

8E11 : CHECK GROUND SHORT OF ABS SENSOR.

1) Turn ignition switch to ON.
2) Measure resistance between ABS sensor and chassis ground.

Terminal
Front RH No. 1 — Chassis ground:
Front LH No. 1 — Chassis ground:
Rear RH No. 1 — Chassis ground:
Rear LH No. 1 — Chassis ground:

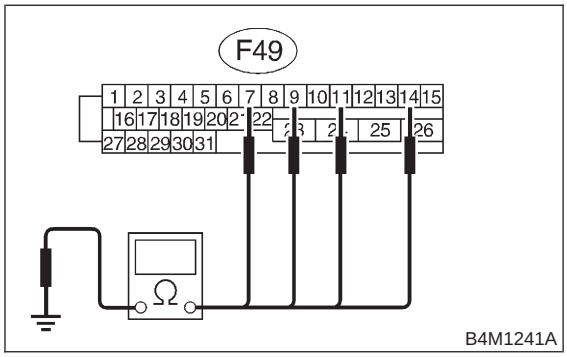


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E12**.
NO : Replace ABS sensor and ABSCM&H/U.

8E12 : CHECK GROUND SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Connect connector to ABS sensor.
3) Measure resistance between ABSCM&H/U connector terminal and chassis ground.

Connector & terminal
Trouble code 21 / (F49) No. 11 — Chassis ground:
Trouble code 23 / (F49) No. 9 — Chassis ground:
Trouble code 25 / (F49) No. 14 — Chassis ground:
Trouble code 27 / (F49) No. 7 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E13**.
NO : Repair harness between ABSCM&H/U and ABS sensor.
Replace ABSCM&H/U.

8E13 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM&H/U and ABS sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8E14**.

8E14 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **8E15**.

8E15 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

NOTE:
Check harness and connectors between ABSCM&H/U and ABS sensor.

F: TROUBLE CODE 22 (FRONT RH)

G: TROUBLE CODE 24 (FRONT LH)

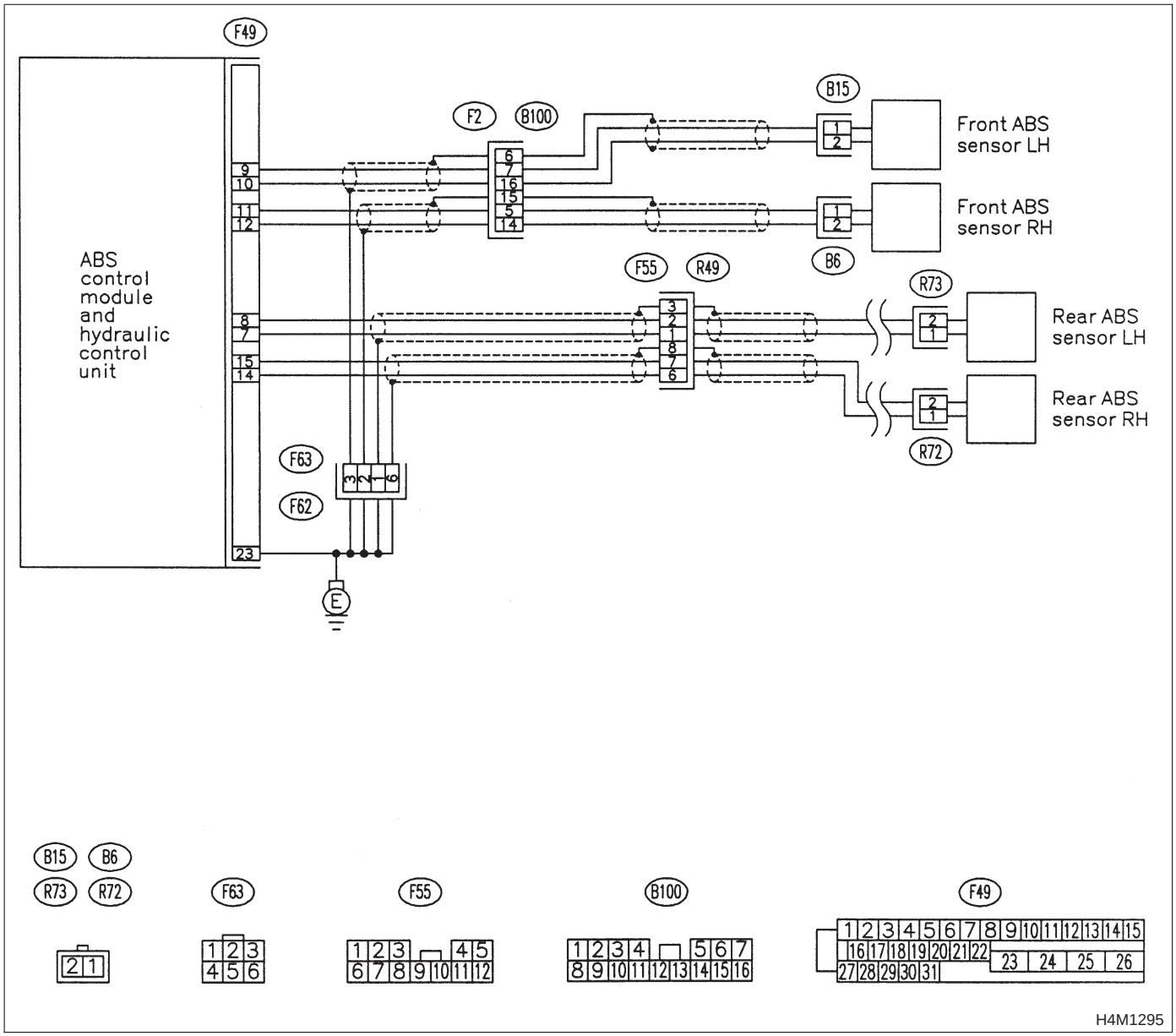
H: TROUBLE CODE 26 (REAR RH)

I: TROUBLE CODE 28 (REAR LH) — ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) —

DIAGNOSIS:
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty harness/connector

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



8I1 : CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32±10 N·m (3.3±1.0 kg-m, 24±7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***
YES : Go to step **8I2**.
NO : Tighten ABS sensor installation bolts securely.

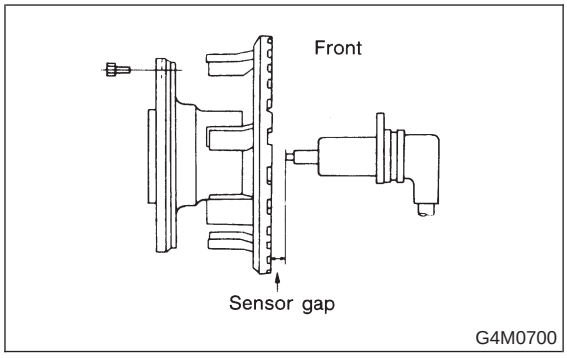
8I2 : CHECK INSTALLATION OF TONE WHEEL.

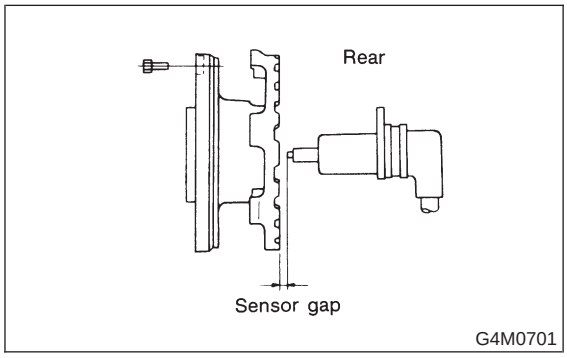
Tightening torque:
13±3 N·m (1.3±0.3 kg-m, 9±2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***
YES : Go to step **8I3**.
NO : Tighten tone wheel installation bolts securely.

8I3 : CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.





	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

CHECK : ***Is the gap within the specifications?***
YES : Go to step **8I4**.
NO : Adjust the gap.

NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

8I4 : CHECK OSCILLOSCOPE.

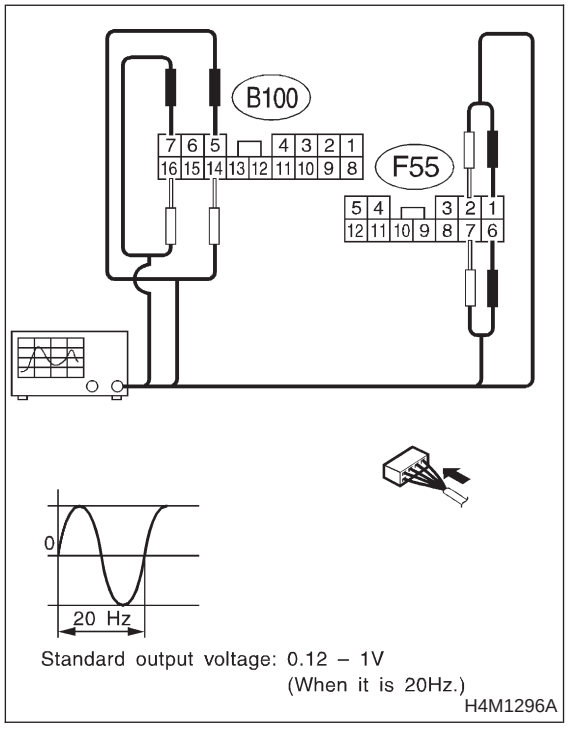
CHECK : ***Is an oscilloscope available?***
YES : Go to step **8I5**.
NO : Go to step **8I6**.

8I5 : CHECK ABS SENSOR SIGNAL.

1) Raise all four wheels of ground.
2) Turn ignition switch OFF.
3) Connect the oscilloscope to the connector.
4) Turn ignition switch ON.
5) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABSCM&H/U sometimes stores the trouble code 29.

Connector & terminal
Trouble code 22 / (B100) No. 5 (+) — No. 14 (−):
Trouble code 24 / (B100) No. 7 (+) — No. 16 (−):
Trouble code 26 / (F55) No. 6 (+) — No. 7 (−):
Trouble code 28 / (F55) No. 1 (+) — No. 2 (−):



Standard output voltage: 0.12 – 1V
(When it is 20Hz.)
H4M1296A

CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***
YES : Go to step **8I9**.
NO : Go to step **8I6**.

8I6 : CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor or drum from hub in accordance with trouble code.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***
YES : Thoroughly remove dirt or other foreign matter.
NO : Go to step **8I7**.

8I7 : CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged in the ABS sensor pole piece or the tone wheel?***
YES : Replace ABS sensor or tone wheel.
NO : Go to step **8I8**.

8I8 : CHECK HUB RUNOUT.

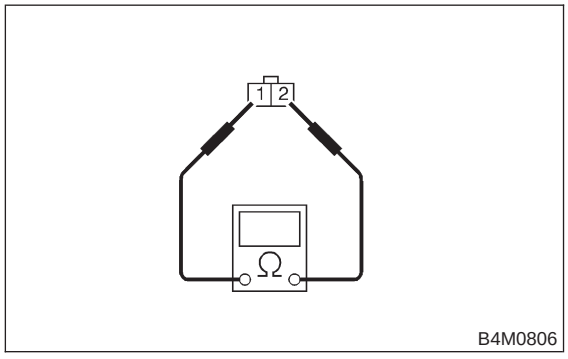
Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***
YES : Go to step **8I9**.
NO : Repair hub.

8I9 : CHECK RESISTANCE OF ABS SENSOR.

1) Turn ignition switch OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance between ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:

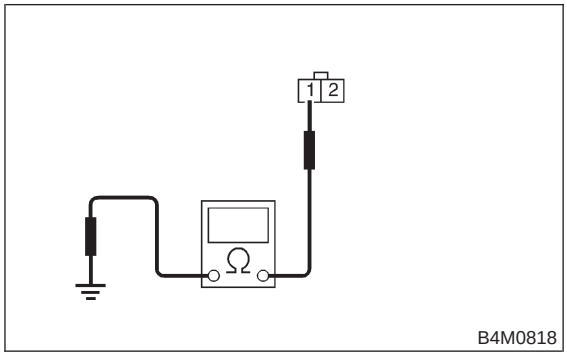


CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **8I10**.
NO : Replace ABS sensor.

8I10 : CHECK GROUND SHORT OF ABS SENSOR.

Measure resistance between ABS sensor and chassis ground.

Terminal
Front RH No. 1 — Chassis ground:
Front LH No. 1 — Chassis ground:
Rear RH No. 1 — Chassis ground:
Rear LH No. 1 — Chassis ground:

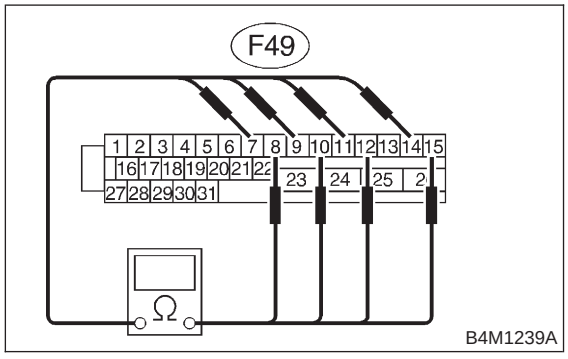


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8I11**.
NO : Replace ABS sensor.

8I11 : CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND ABS SENSOR.

1) Connect connector to ABS sensor.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance at ABSCM&H/U connector terminals.

Connector & terminal
Trouble code 22 / (F49) No. 11 — No. 12:
Trouble code 24 / (F49) No. 9 — No. 10:
Trouble code 26 / (F49) No. 14 — No. 15:
Trouble code 28 / (F49) No. 7 — No. 8:

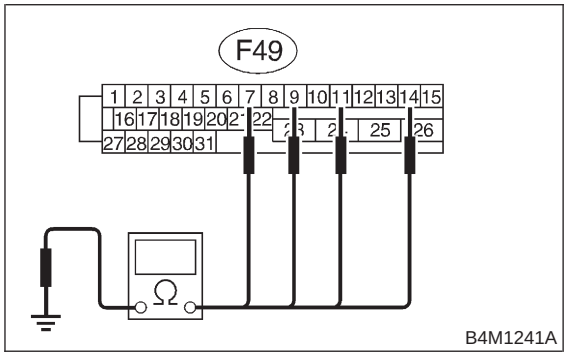


CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **8I12**.
NO : Repair harness/connector between ABSCM&H/U and ABS sensor.

8I12 : CHECK GROUND SHORT OF HARNESS.

Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
Trouble code 22 / (F49) No. 11 — Chassis ground:
Trouble code 24 / (F49) No. 9 — Chassis ground:
Trouble code 26 / (F49) No. 14 — Chassis ground:
Trouble code 28 / (F49) No. 7 — Chassis ground:

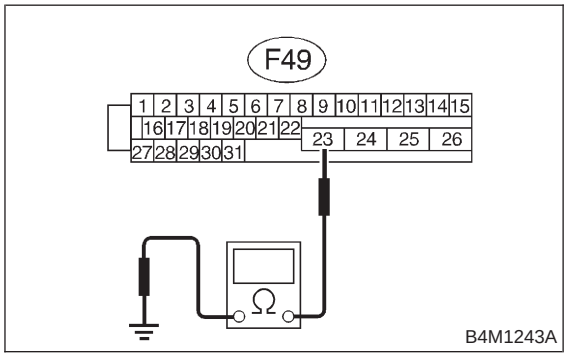


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8I13**.
NO : Repair harness/connector between ABSCM&H/U and ABS sensor.

8I13 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

Measure resistance between ABSCM&H/U and chassis ground.

Connector & terminal
(F49) No. 23 — GND:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8I14**.
NO : Repair ABSCM&H/U ground harness.

8I14 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM&H/U and ABS sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8I15**.

8I15 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***
YES : Go to step **8I16**.
NO : Properly install the car telephone or the wireless transmitter.

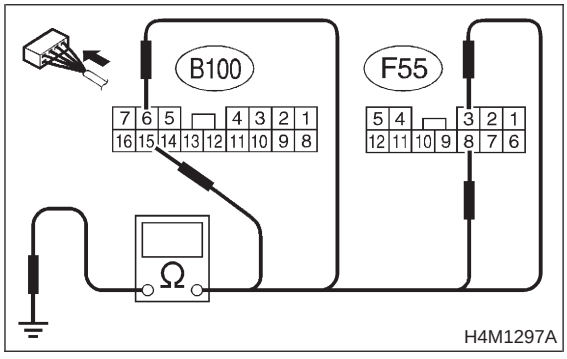
8I16 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***
YES : Install the noise sources apart from the sensor harness.
NO : Go to step **8I17**.

8I17 : CHECK SHIELD CIRCUIT.

1) Connect all connectors.
2) Measure resistance between shield connector and chassis ground.

Connector & terminal
Trouble code 22 / (B100) No. 15 — Chassis ground:
Trouble code 24 / (B100) No. 6 — Chassis ground:
Trouble code 26 / (F55) No. 8 — Chassis ground:
Trouble code 28 / (F55) No. 3 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8I18**.
NO : Repair shield harness.

8I18 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8I19**.

8I19 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

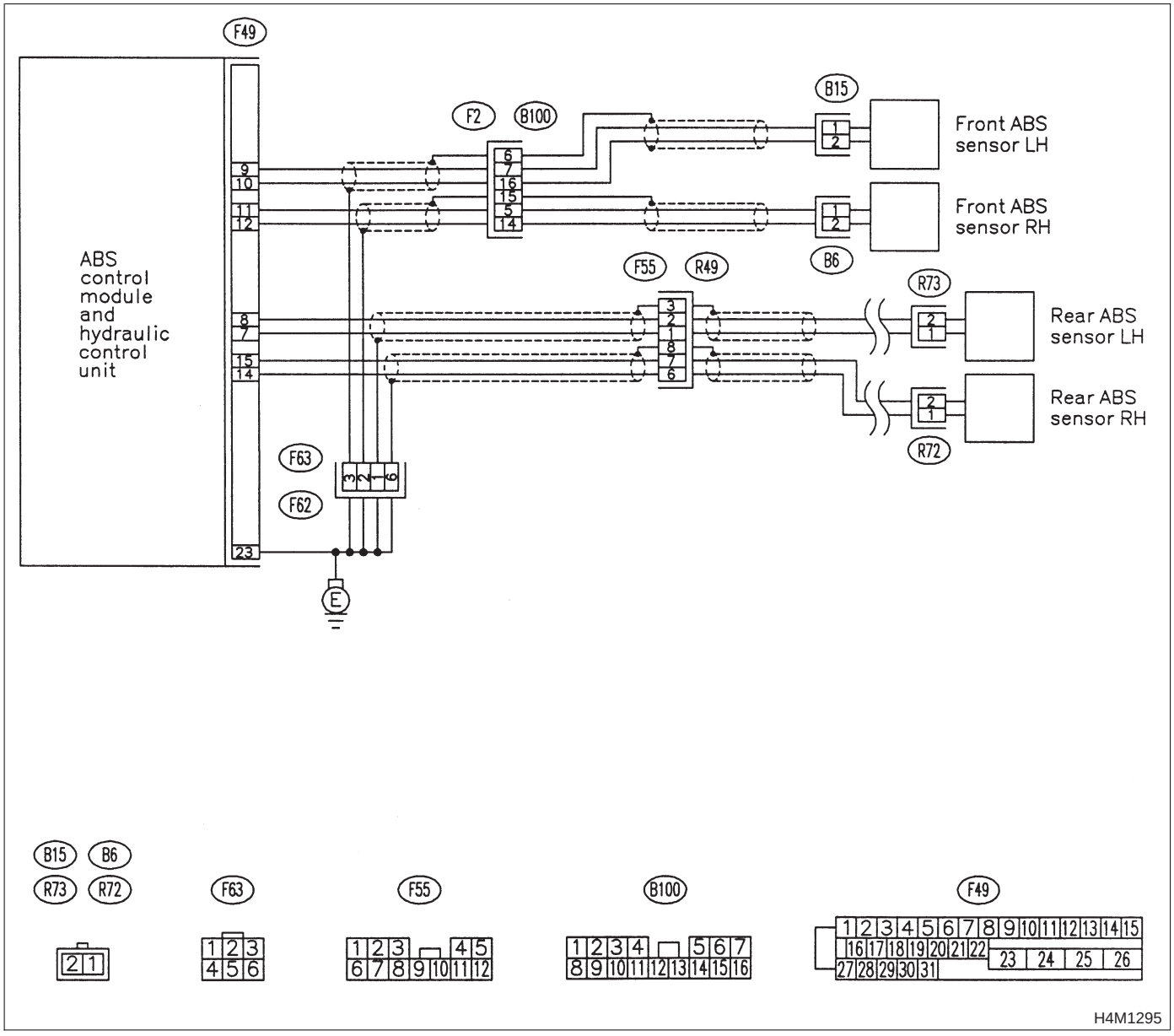
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary noise interference.

J: TROUBLE CODE 29
— ABNORMAL ABS SENSOR SIGNAL (ANY ONE OF FOUR) —

DIAGNOSIS:
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty tone wheel
- Wheels turning freely for a long time

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



8J1 : CHECK IF THE WHEELS HAVE TURNED FREELY FOR A LONG TIME.

CHECK : ***Check if the wheels have been turned freely for more than one minute, such as when the vehicle is jacked-up, under full-lock cornering or when tire is not in contact with road surface.***

YES : The ABS is normal. Erase the trouble code.

NOTE:
When the wheels turn freely for a long time, such as when the vehicle is towed or jacked-up, or when steering wheel is continuously turned all the way, this trouble code may sometimes occur.

NO : Go to step **8J2**.

8J2 : CHECK TIRE SPECIFICATIONS.

CHECK : ***Are the tire specifications correct?***

YES : Go to step **8J3**.

NO : Replace tire.

8J3 : CHECK WEAR OF TIRE.

CHECK : ***Is the tire worn excessively?***

YES : Replace tire.

NO : Go to step **8J4**.

8J4 : CHECK TIRE PRESSURE.

CHECK : ***Is the tire pressure correct?***

YES : Go to step **8J5**.

NO : Adjust tire pressure.

8J5 : CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32±10 N·m (3.3±1.0 kg-m, 24±7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***

YES : Go to step **8J6**.

NO : Tighten ABS sensor installation bolts securely.

8J6 : CHECK INSTALLATION OF TONE WHEEL.

Tightening torque:
13±3 N·m (1.3±0.3 kg-m, 9±2.2 ft-lb)

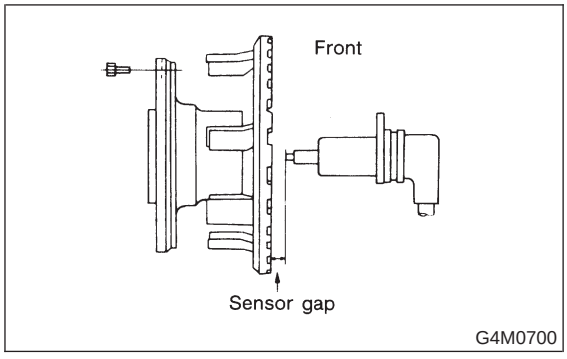
CHECK : ***Are the tone wheel installation bolts tightened securely?***

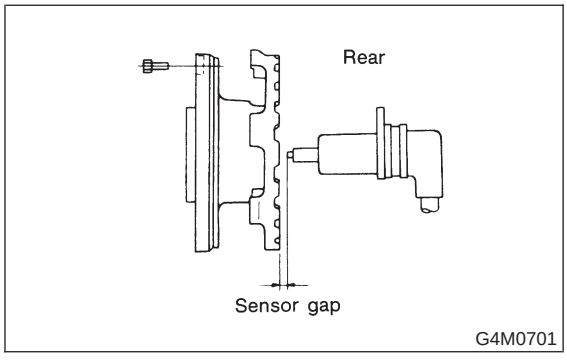
YES : Go to step **8J7**.

NO : Tighten tone wheel installation bolts securely.

8J7 : CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.





	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

CHECK : ***Is the gap within the specifications?***

YES : Go to step **8J8**.

NO : Adjust the gap.

NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

8J8 : CHECK OSCILLOSCOPE.

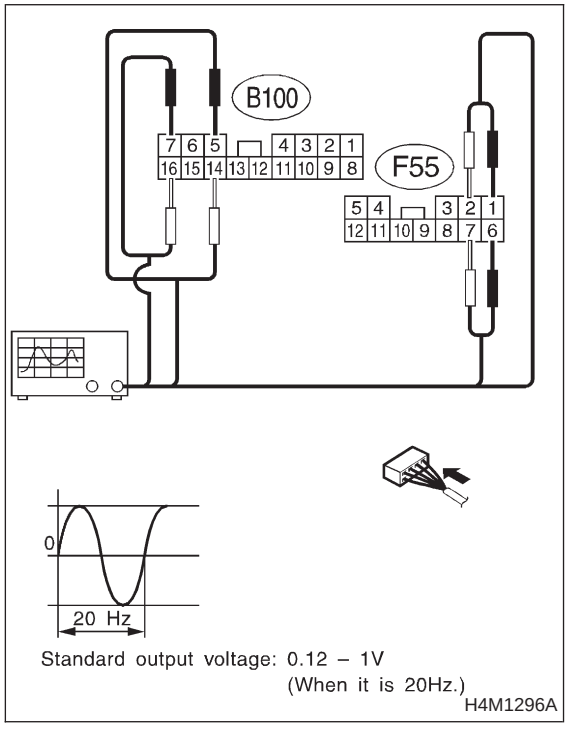
CHECK : ***Is an oscilloscope available?***
YES : Go to step **8J9**.
NO : Go to step **8J10**.

8J9 : CHECK ABS SENSOR SIGNAL.

1) Raise all four wheels of ground.
2) Turn ignition switch OFF.
3) Connect the oscilloscope to the connector.
4) Turn ignition switch ON.
5) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABSCM&H/U sometimes stores the trouble code 29.

Connector & terminal
(B100) No. 5 (+) — No. 14 (−) (Front RH):
(B100) No. 7 (+) — No. 16 (−) (Front LH):
(F55) No. 6 (+) — No. 7 (−) (Rear RH):
(F55) No. 1 (+) — No. 2 (−) (Rear LH):



CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***
YES : Go to step **8J13**.
NO : Go to step **8J10**.

8J10 : CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor from hub.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***
YES : Thoroughly remove dirt or other foreign matter.
NO : Go to step **8J11**.

8J11 : CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged teeth in the ABS sensor pole piece or the tone wheel?***
YES : Replace ABS sensor or tone wheel.
NO : Go to step **8J12**.

8J12 : CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***
YES : Go to step **8J13**.
NO : Repair hub.

8J13 : CHECK ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8J14**.

8J14 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

MEMO:

K: TROUBLE CODE 31 (FRONT RH)

L: TROUBLE CODE 33 (FRONT LH)

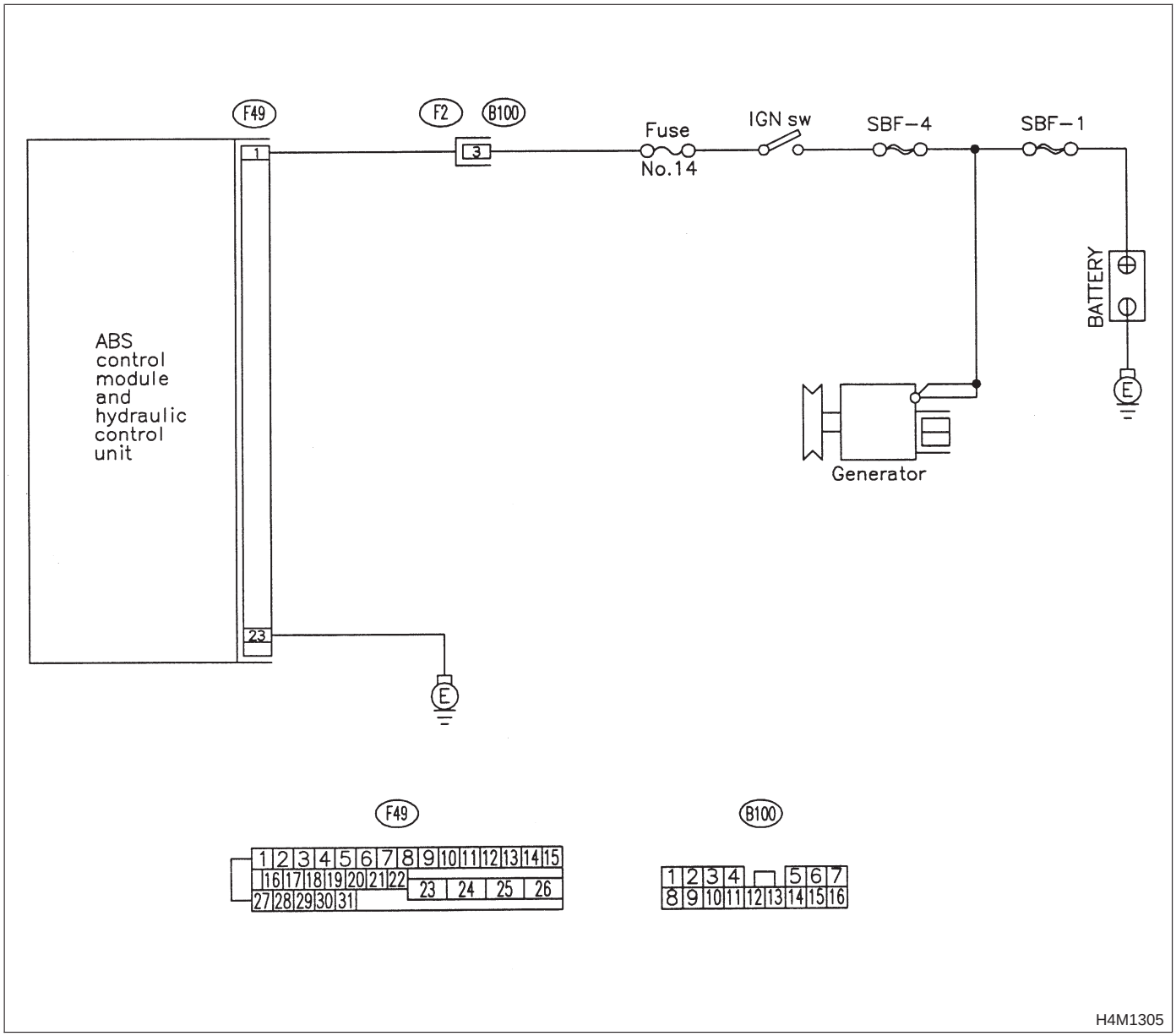
M: TROUBLE CODE 35 (REAR RH)

N: TROUBLE CODE 37 (REAR LH)
— ABNORMAL INLET SOLENOID VALVE CIRCUIT(S) IN ABSCM&H/U —

DIAGNOSIS:
- Faulty harness/connector
- Faulty inlet solenoid valve in ABSCM&H/U

TROUBLE SYMPTOM:
- ABS does not operate.

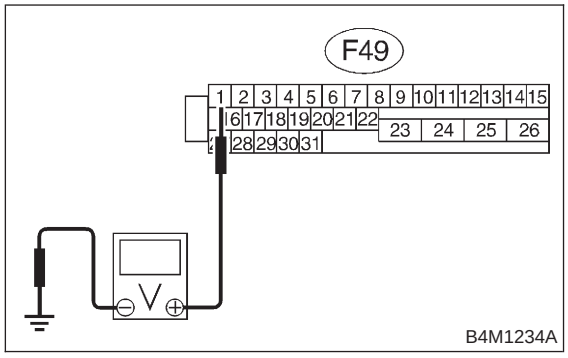
WIRING DIAGRAM:



8N1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Disconnect connector from ABSCM&H/U.
2) Run the engine at idle.
3) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

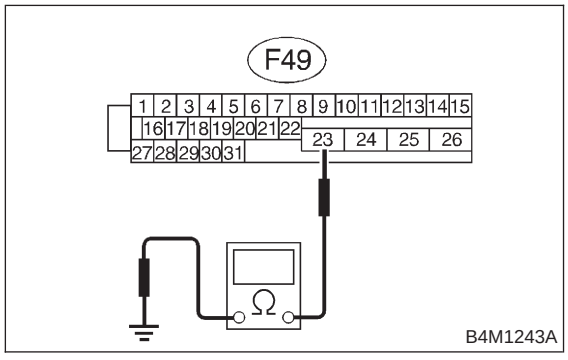


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8N2**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

8N2 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8N3**.
NO : Repair ABSCM&H/U ground harness.

8N3 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8N4**.

8N4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8N5**.

8N5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

O: TROUBLE CODE 32 (FRONT RH)

P: TROUBLE CODE 34 (FRONT LH)

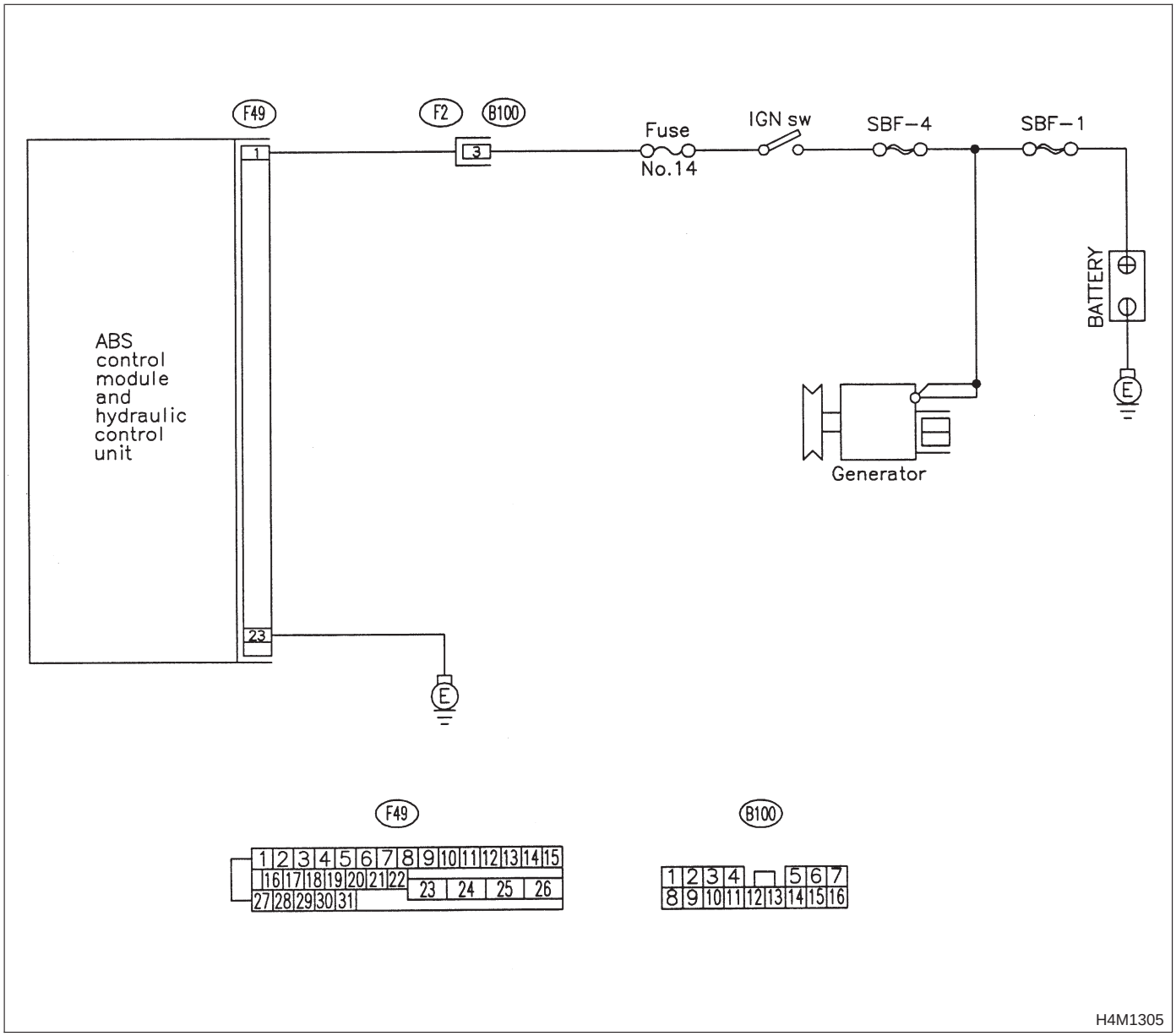
Q: TROUBLE CODE 36 (REAR RH)

R: TROUBLE CODE 38 (REAR LH)
— ABNORMAL OUTLET SOLENOID VALVE CIRCUIT(S) IN ABSCM&H/U —

DIAGNOSIS:
- Faulty harness/connector
- Faulty outlet solenoid valve in ABSCM&H/U

TROUBLE SYMPTOM:
- ABS does not operate.

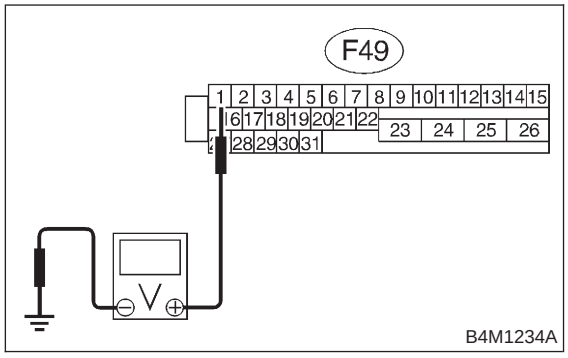
WIRING DIAGRAM:



8R1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Disconnect connector from ABSCM&H/U.
2) Run the engine at idle.
3) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

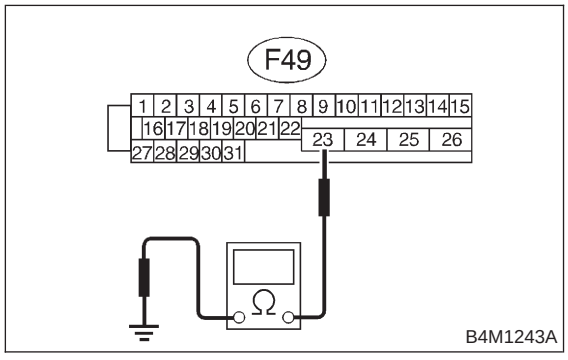


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8R2**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

8R2 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8R3**.
NO : Repair ABSCM&H/U ground harness.

8R3 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8R4**.

8R4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8R5**.

8R5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

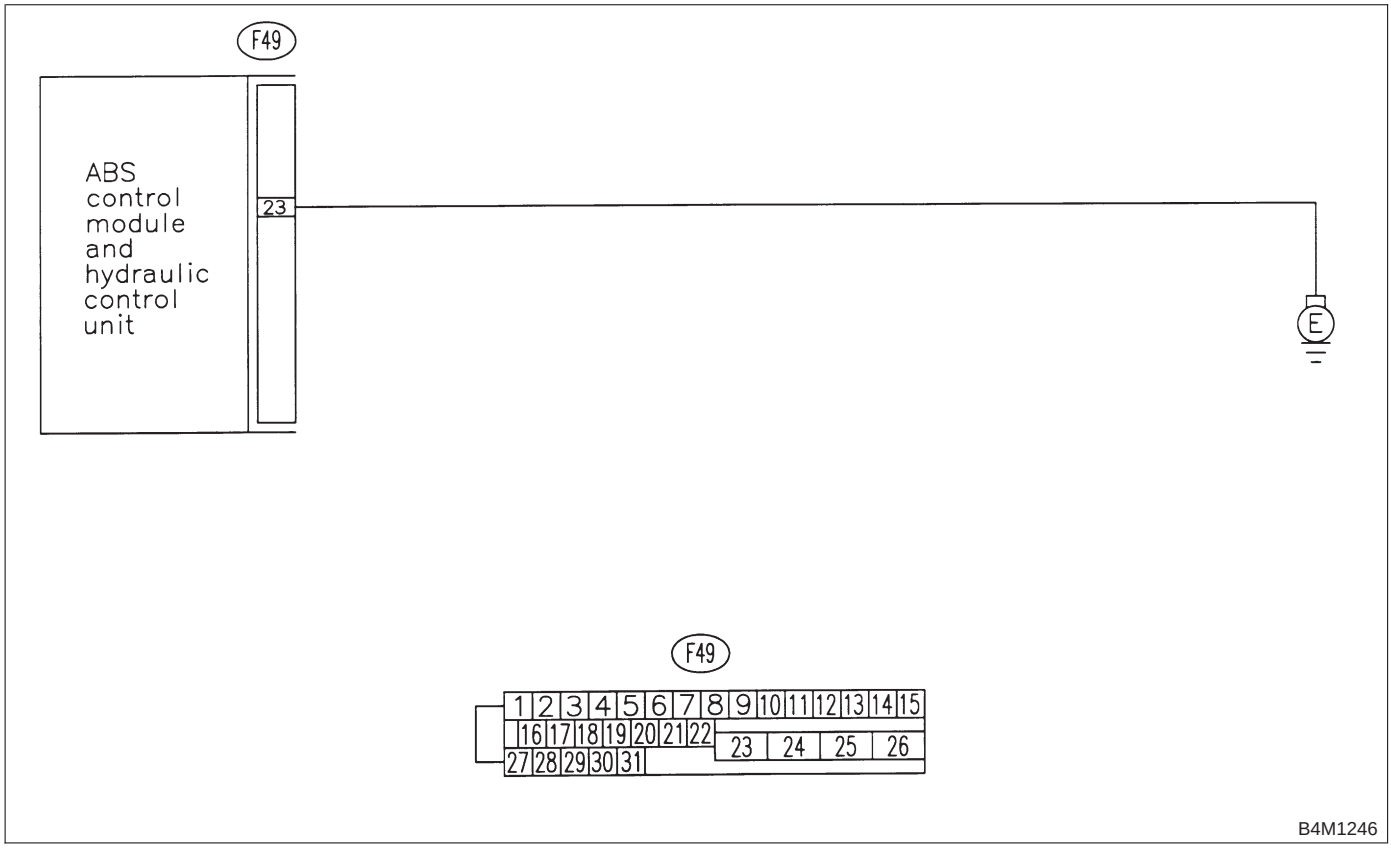
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

S: TROUBLE CODE 41
— ABNORMAL ABS CONTROL MODULE —

DIAGNOSIS:
- Faulty ABSCM&H/U

TROUBLE SYMPTOM:
- ABS does not operate.

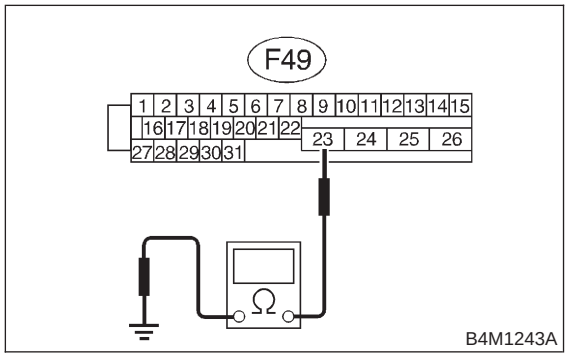
WIRING DIAGRAM:



8S1 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance between ABSCM&H/U and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8S2**.
NO : Repair ABSCM&H/U ground harness.

8S2 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between battery, ignition switch and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8S3**.

8S3 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***
YES : Go to step **8S4**.
NO : Properly install the car telephone or the wireless transmitter.

8S4 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***
YES : Install the noise sources apart from the sensor harness.
NO : Go to step **8S5**.

8S5 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8S6**.

8S6 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

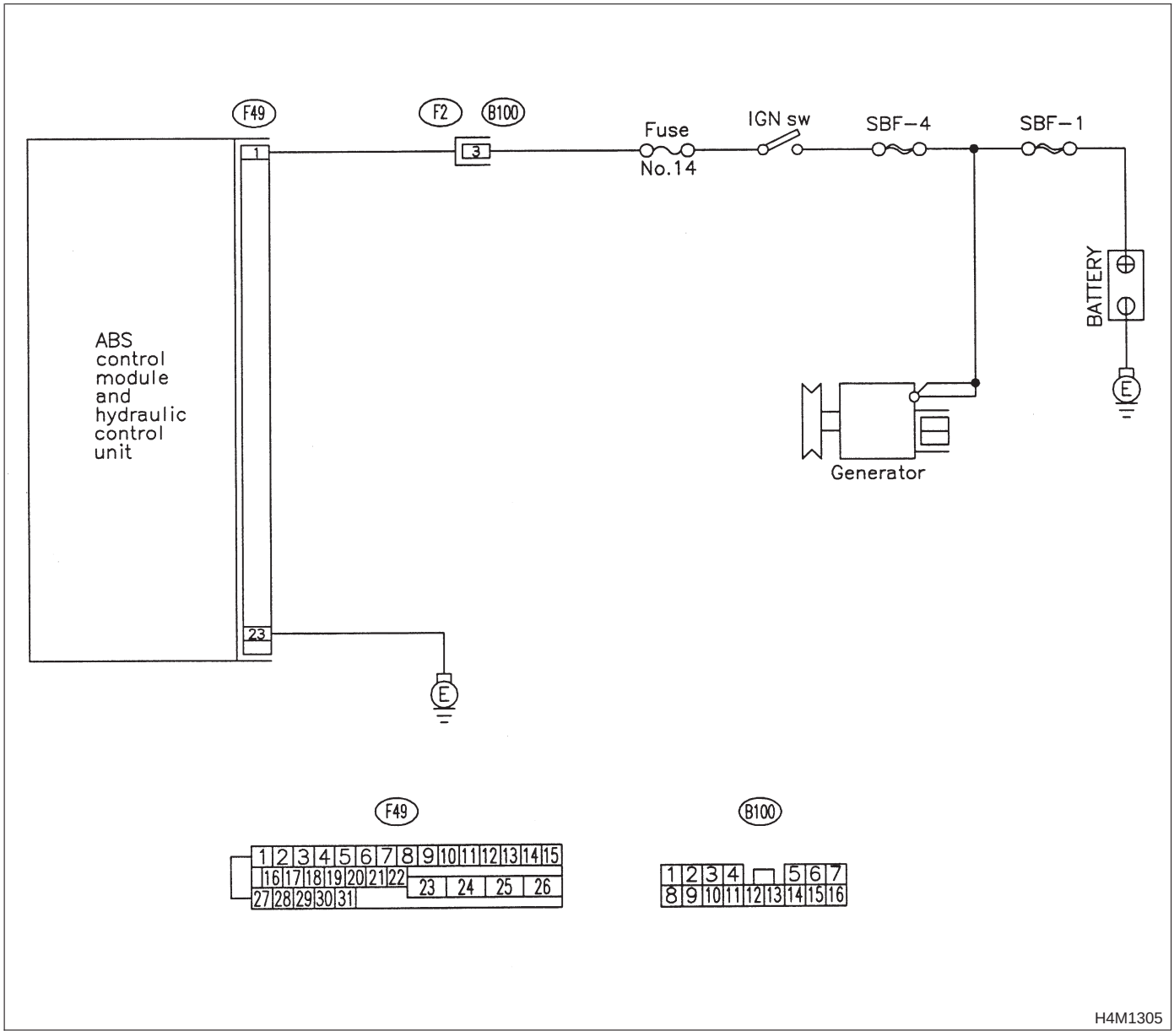
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

T: TROUBLE CODE 42
— SOURCE VOLTAGE IS ABNORMAL. —

DIAGNOSIS:
- Power source voltage of the ABSCM&H/U is low or high.

TROUBLE SYMPTOM:
- ABS does not operate.

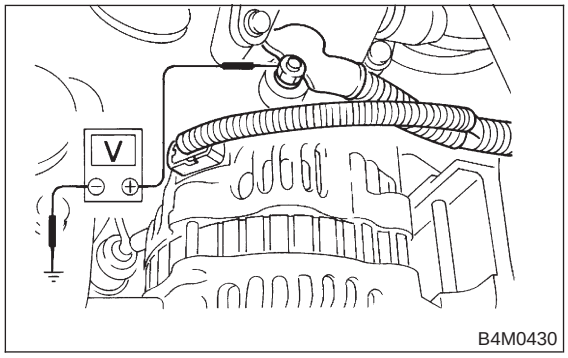
WIRING DIAGRAM:



8T1 : CHECK GENERATOR.

1) Start engine.
2) Idling after warm-up.
3) Measure voltage between generator B terminal and chassis ground.

Terminal
Generator B terminal — Chassis ground:



CHECK : ***Is the voltage between 10 V and 17 V?***
YES : Go to step **8T2**.
NO : Repair generator.

8T2 : CHECK BATTERY TERMINAL.

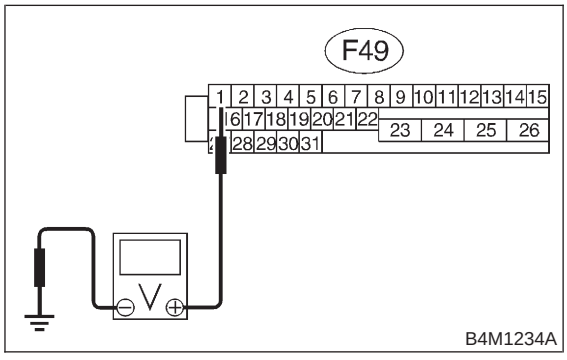
Turn ignition switch to OFF.

CHECK : ***Are the positive and negative battery terminals tightly clamped?***
YES : Go to step **8T3**.
NO : Tighten the clamp of terminal.

8T3 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Disconnect connector from ABSCM&H/U.
2) Run the engine at idle.
3) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

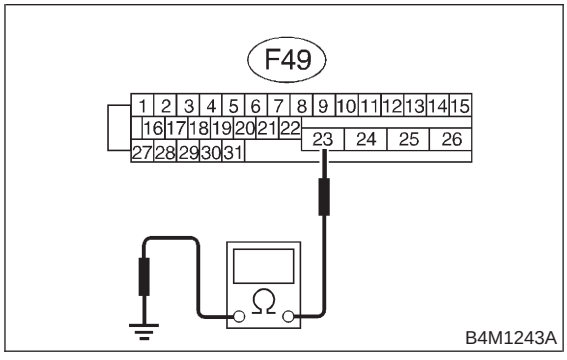


CHECK : ***Is the voltage between 10 V and 17 V?***
YES : Go to step **8T4**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

8T4 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8T5**.
NO : Repair ABSCM&H/U ground harness.

8T5 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8T6**.

8T6 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **8T7**.

8T7 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

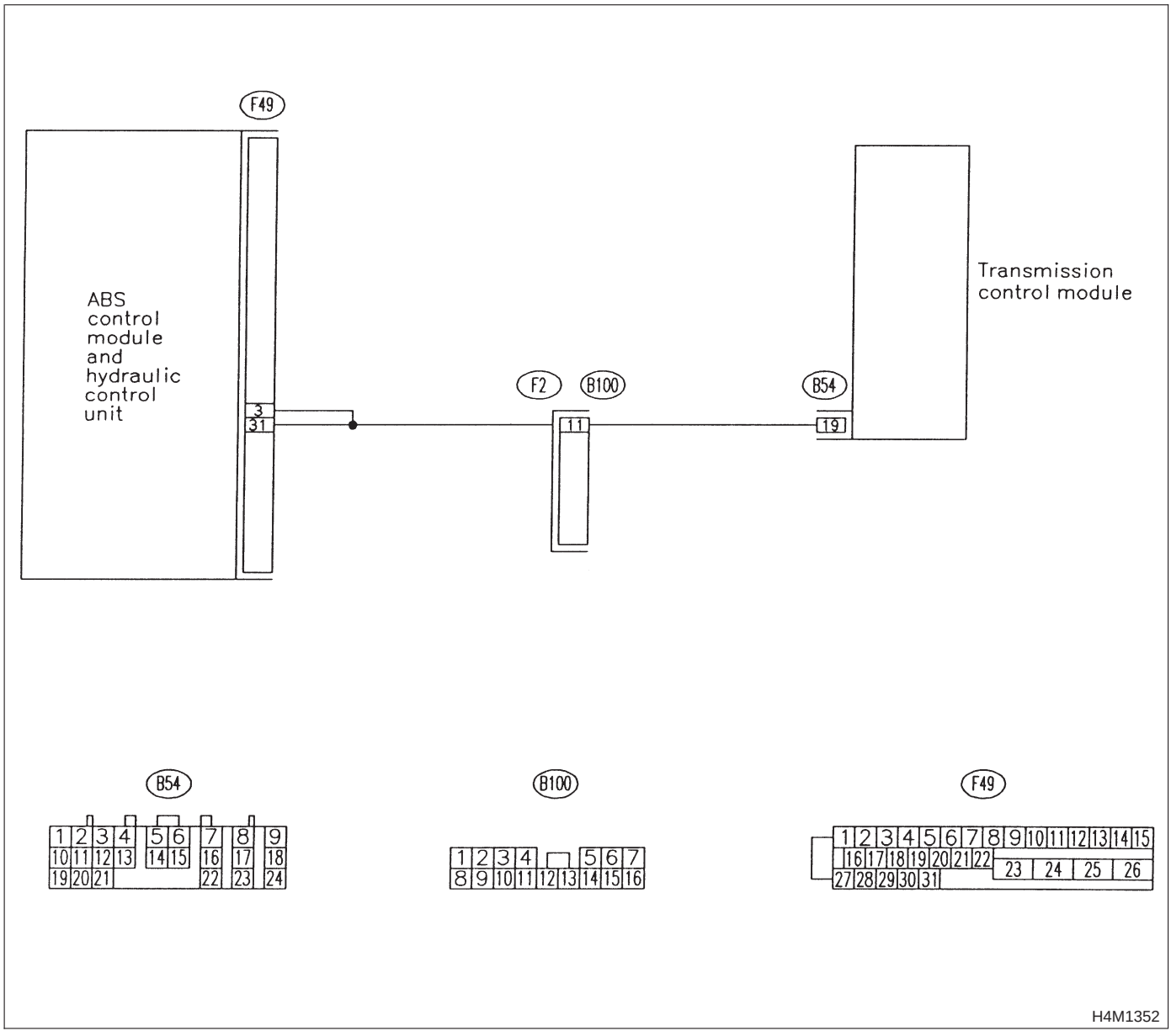
MEMO:

U: TROUBLE CODE 44
— A COMBINATION OF AT CONTROL ABNORMAL —

DIAGNOSIS:
- Combination of AT control faults

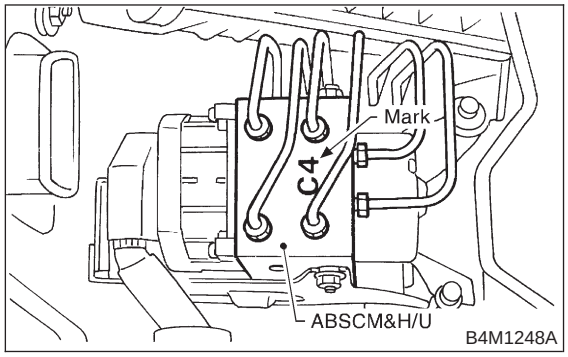
TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



8U1 : CHECK SPECIFICATIONS OF THE ABSCM&H/U.

Check specifications of the mark to the ABSCM&H/U.



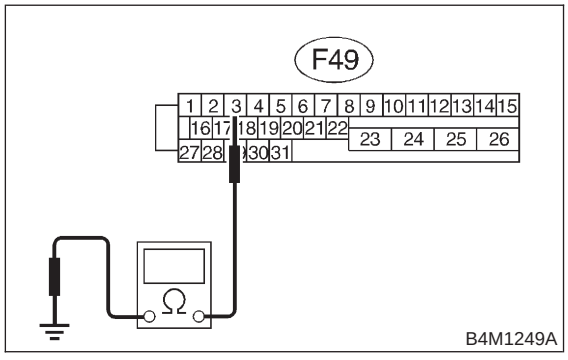
Mark	Model
C5	AWD AT
C6	AWD MT

CHECK : ***Is an ABSCM&H/U for AT model installed on a MT model?***
YES : Replace ABSCM&H/U.
NO : Go to step **8U2**.

8U2 : CHECK GROUND SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect two connectors from TCM.
3) Disconnect connector from ABSCM&H/U.
4) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 — Chassis ground:

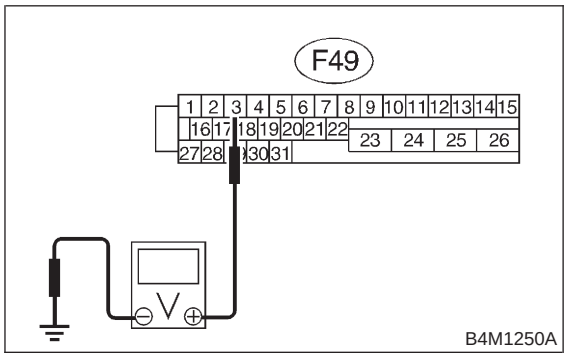


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8U3**.
NO : Repair harness between TCM and ABSCM&H/U.

8U3 : CHECK BATTERY SHORT OF HARNESS.

Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 (+) — Chassis ground (−):

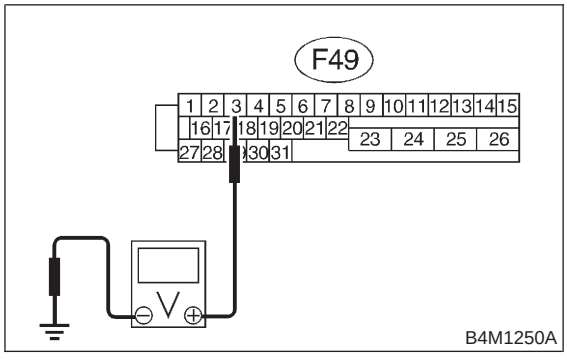


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8U4**.
NO : Repair harness between TCM and ABSCM&H/U.

8U4 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 (+) — Chassis ground (−):

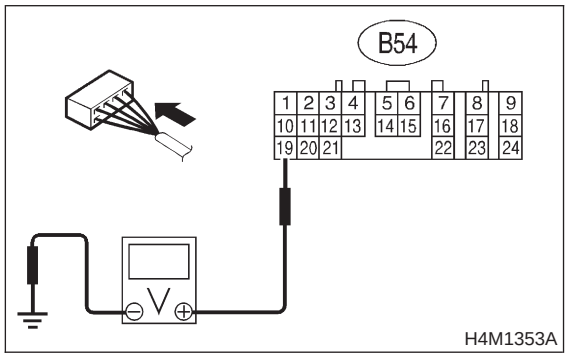


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8U5**.
NO : Repair harness between TCM and ABSCM&H/U.

8U5 : CHECK TCM.

1) Turn ignition switch to OFF.
2) Connect all connectors to TCM.
3) Turn ignition switch to ON.
4) Measure voltage between TCM connector terminal and chassis ground.

Connector & terminal
(B54) No. 19 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8U7**.
NO : Go to step **8U6**.

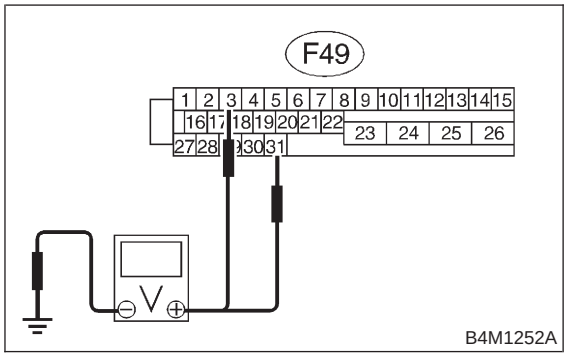
8U6 : CHECK AT.

CHECK : ***Is the AT functioning normally?***
YES : Replace TCM.
NO : Repair AT.

8U7 : CHECK OPEN CIRCUIT OF HARNESS.

Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 (+) — Chassis ground (−):
(F49) No. 31 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8U8**.
NO : Repair harness/connector between TCM and ABSCM&H/U.

8U8 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between TCM and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8U9**.

8U9 : CHECK ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8U10**.

8U10 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

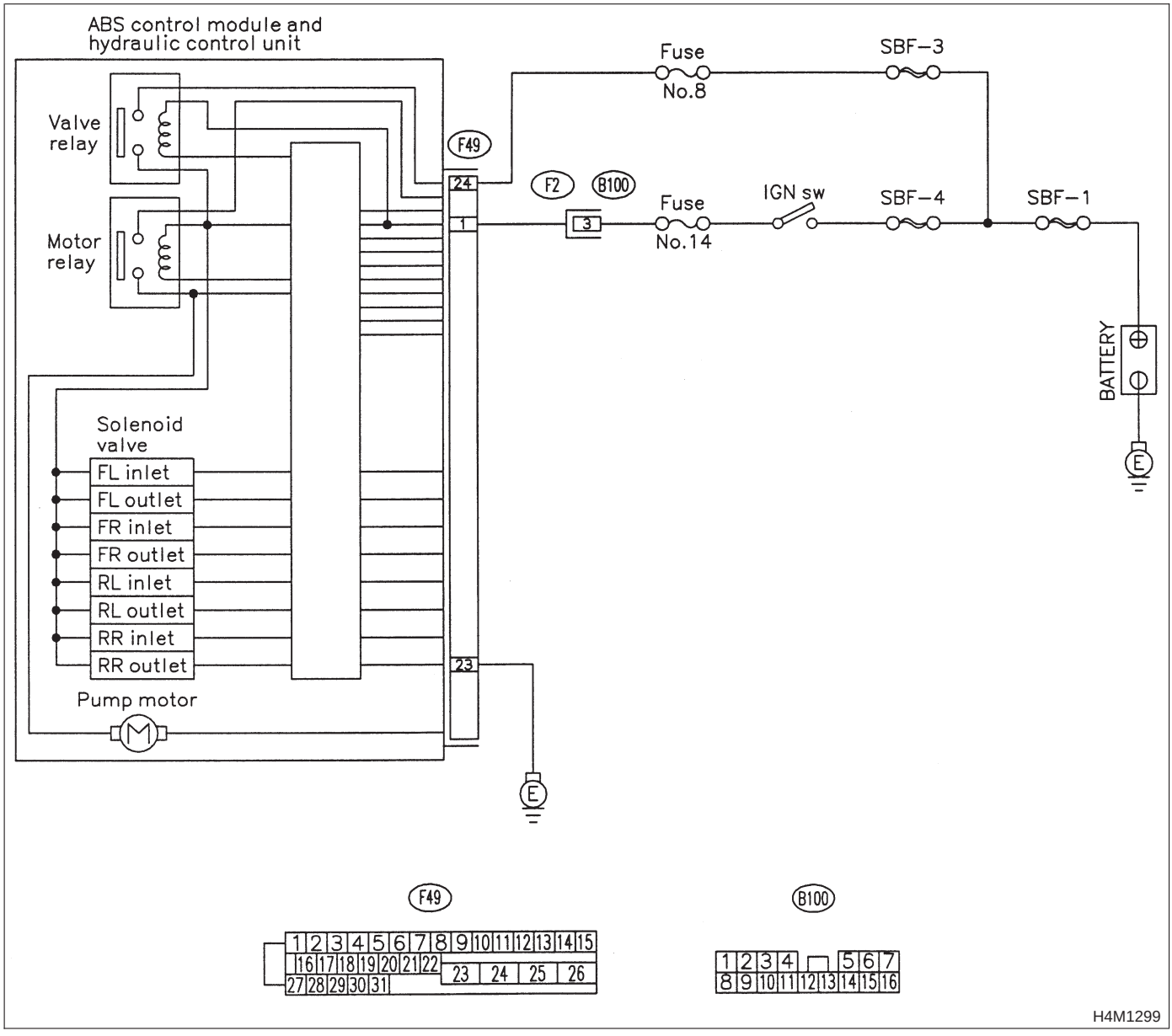
NO : A temporary poor contact.

V: TROUBLE CODE 51
— ABNORMAL VALVE RELAY —

DIAGNOSIS:
- Faulty valve relay

TROUBLE SYMPTOM:
- ABS does not operate.

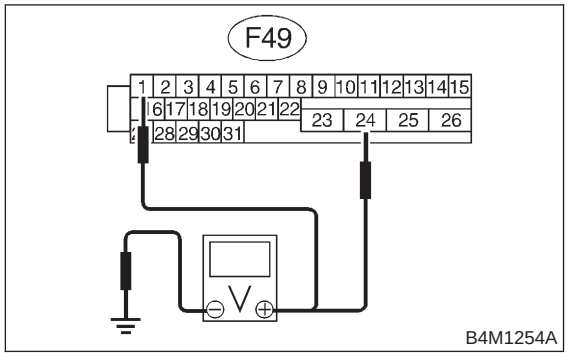
WIRING DIAGRAM:



8V1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Run the engine at idle.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):
(F49) No. 24 (+) — Chassis ground (−):

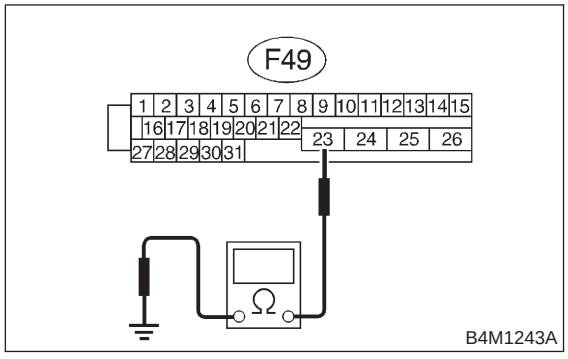


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8V2**.
NO : Repair harness connector between battery and ABSCM&H/U.

8V2 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:

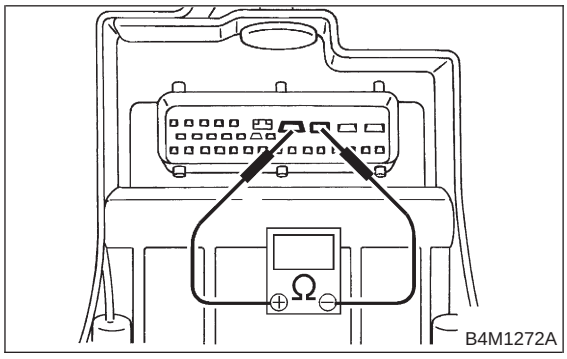


CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8V3**.
NO : Repair ABSCM&H/U ground harness.

8V3 : CHECK VALVE RELAY IN ABSCM&H/U.

Measure resistance between ABSCM&H/U and terminals.

Terminals
No. 23 (+) — No. 24 (−):



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8V4**.
NO : Replace ABSCM&H/U.

8V4 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8V5**.

8V5 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8V6**.

8V6 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

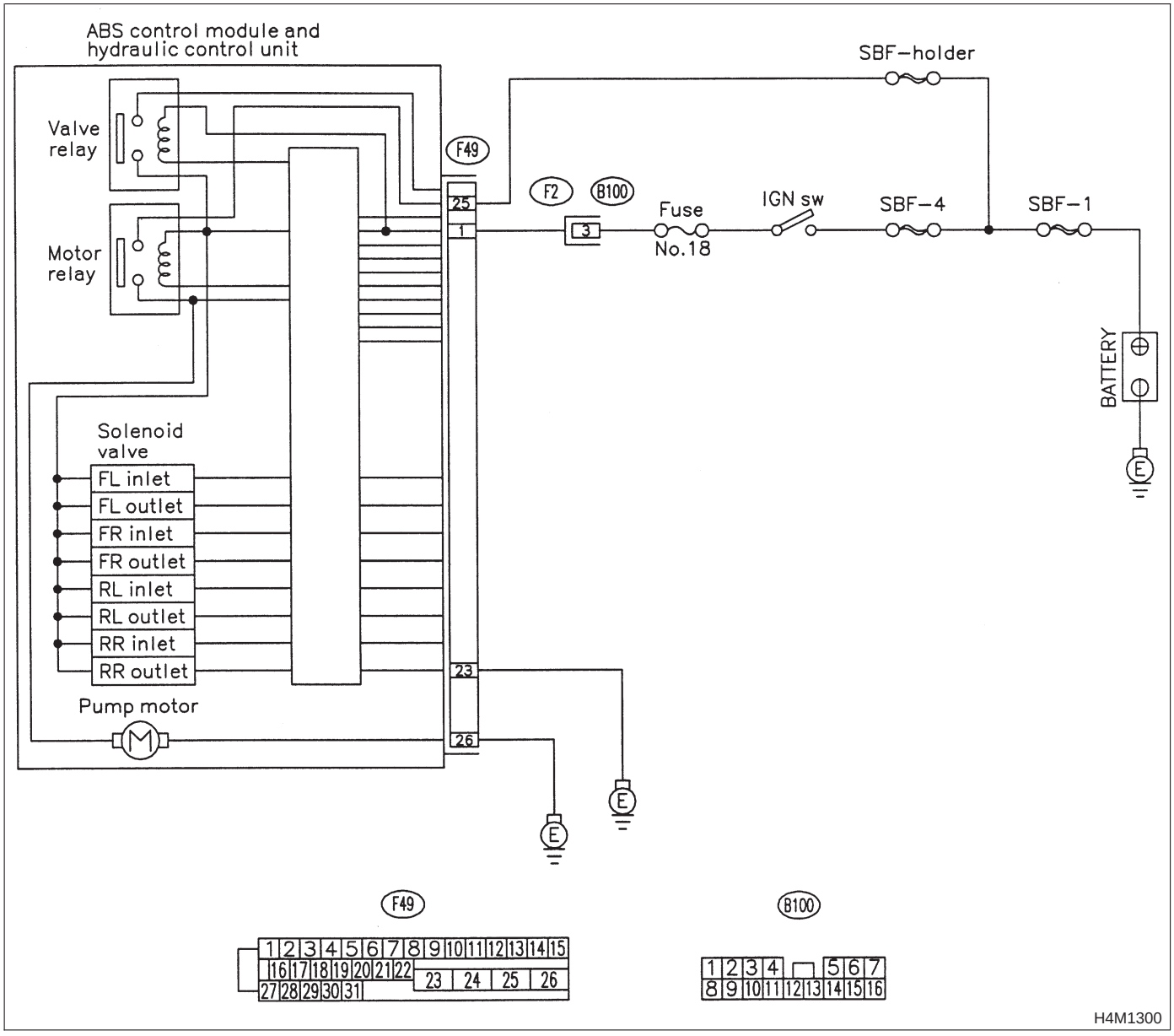
MEMO:

W: TROUBLE CODE 52
— ABNORMAL MOTOR AND/OR MOTOR RELAY —

DIAGNOSIS:
- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:
- ABS does not operate.

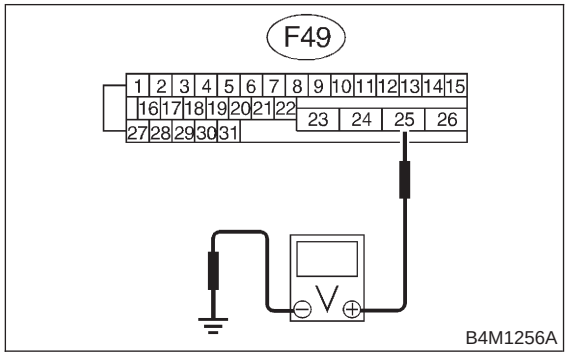
WIRING DIAGRAM:



8W1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Turn ignition switch to ON.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 25 (+) — Chassis ground (−):

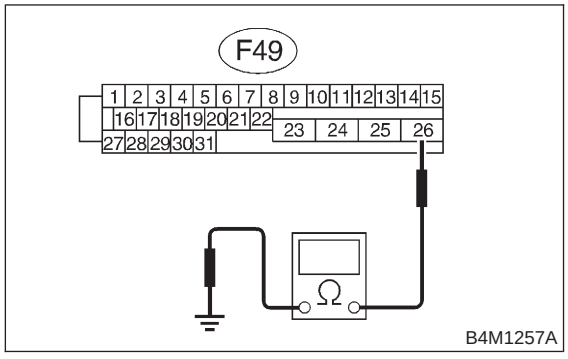


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8W2**.
NO : Repair harness/connector between battery and ABSCM&H/U and check fuse SBF-holder.

8W2 : CHECK GROUND CIRCUIT OF MOTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 26 — Chassis ground:

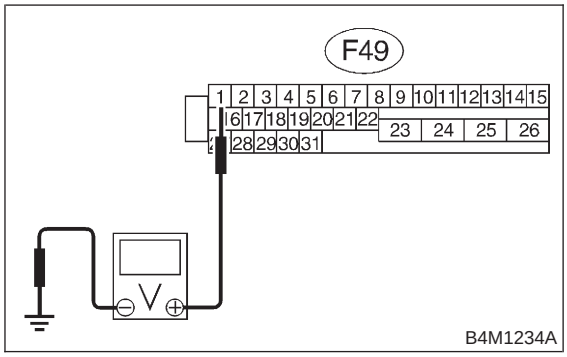


CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8W3**.
NO : Repair ABSCM&H/U ground harness.

8W3 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Run the engine at idle.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

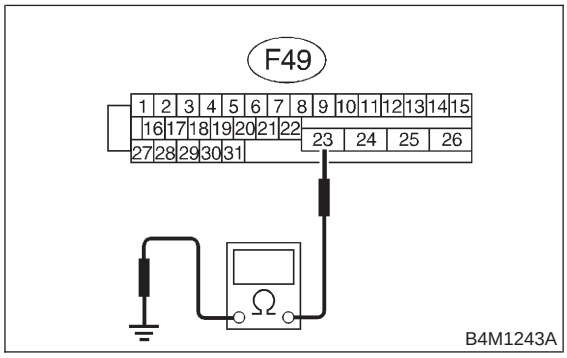


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8W4**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

8W4 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **8W5**.
NO : Repair ABSCM&H/U ground harness.

8W5 : CHECK MOTOR OPERATION.

Operate the sequence control. <Ref. to 4-4 [W14D1].>

NOTE:
Use the diagnosis connector to operate the sequence control.

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the sequence control?***
YES : Go to step **8W6**.
NO : Replace ABSCM&H/U.

8W6 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8W7**.

8W7 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8W8**.

8W8 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

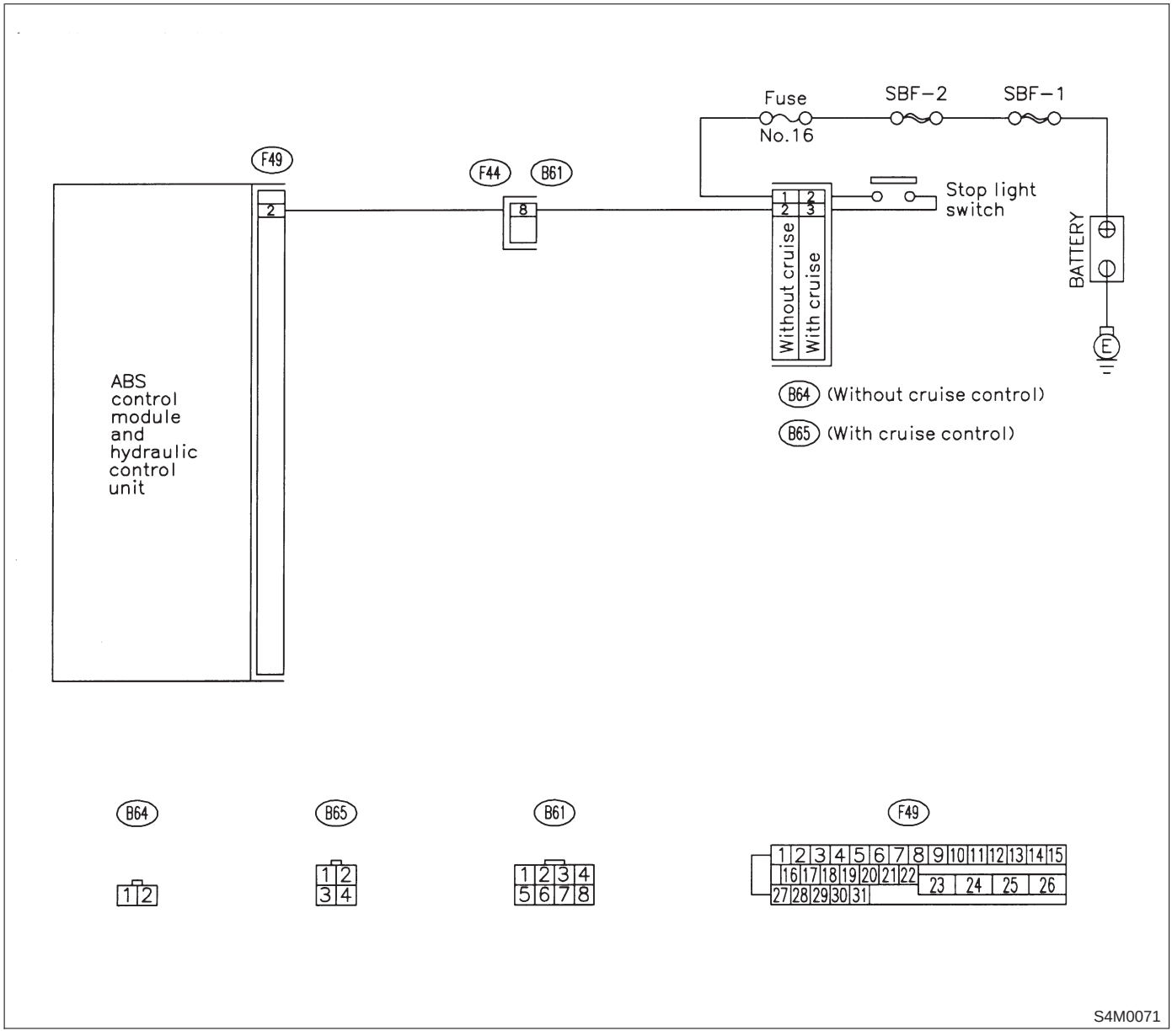
MEMO:

X: TROUBLE CODE 54
— ABNORMAL STOP LIGHT SWITCH —

DIAGNOSIS:
- Faulty stop light switch

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



8X1 : CHECK STOP LIGHTS COME ON.

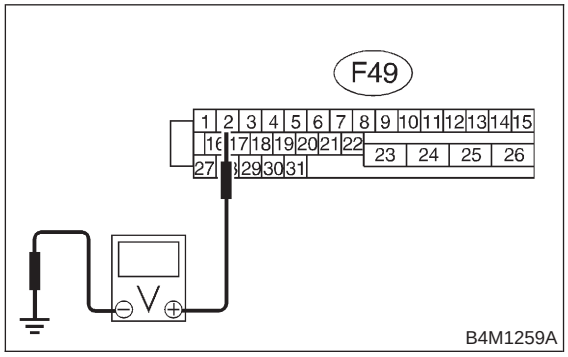
Depress the brake pedal.

CHECK : ***Do stop lights come on?***
YES : Go to step **8X2**.
NO : Repair stop lights circuit.

8X2 : CHECK OPEN CIRCUIT IN HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Depress brake pedal.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 2 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **8X3**.
NO : Repair harness between stop light switch and ABSCM&H/U.

8X3 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connector between stop light switch and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8X4**.

8X4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8X5**.

8X5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

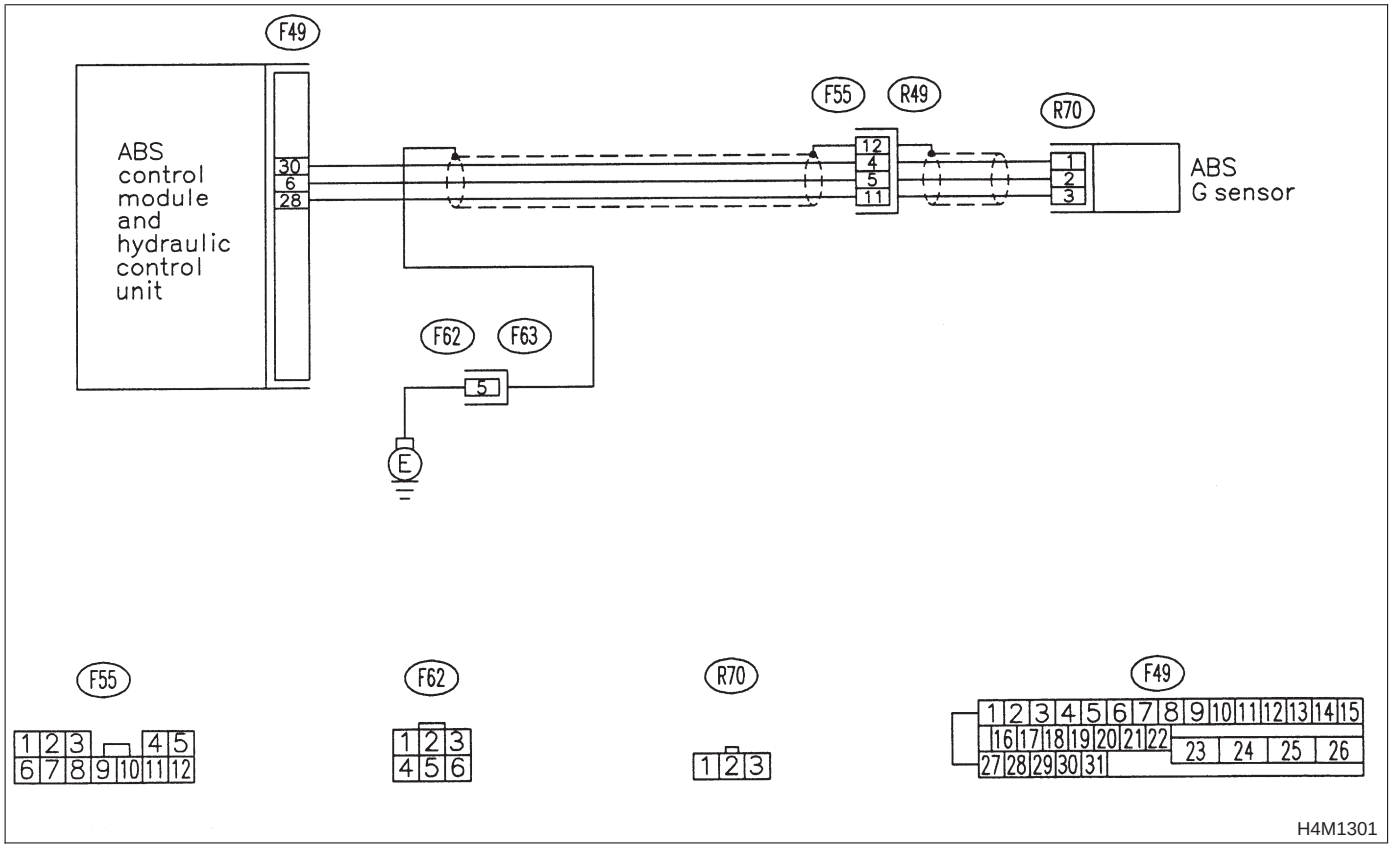
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

Y: TROUBLE CODE 56
— ABNORMAL G SENSOR OUTPUT VOLTAGE —

DIAGNOSIS:
- Faulty G sensor output voltage

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



8Y1 : CHECK ALL FOUR WHEELS FOR FREE TURNING.

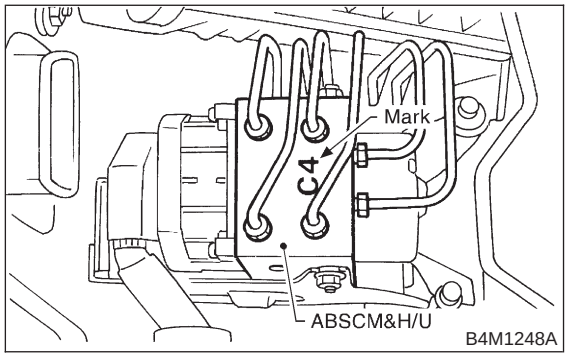
CHECK : ***Have the wheels been turned freely such as when the vehicle is lifted up, or operated on a rolling road?***

YES : The ABS is normal. Erase the trouble code.

NO : Go to step **8Y2**.

8Y2 : CHECK SPECIFICATIONS OF ABSCM&H/U.

Check specifications of the mark to the ABSCM&H/U.



Mark	Model
C5	AWD AT
C6	AWD MT

CHECK : ***Is an ABSCM for AWD model installed on a FWD model?***

YES : Replace ABSCM&H/U.

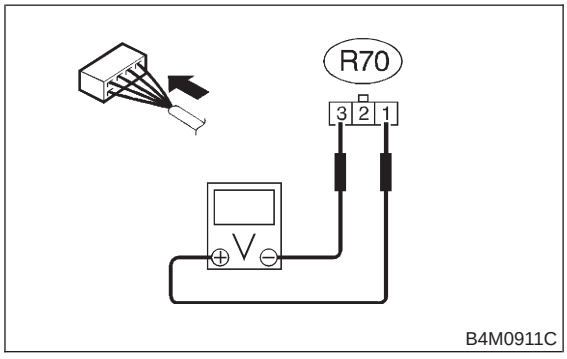
CAUTION:
Be sure to turn ignition switch to OFF when removing ABSCM&H/U.

NO : Go to step **8Y3**.

8Y3 : CHECK INPUT VOLTAGE OF G SENSOR.

1) Turn ignition switch to OFF.
2) Remove console box.
3) Disconnect G sensor from body. (Do not disconnect connector.)
4) Turn ignition switch to ON.
5) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 1 (+) — No. 3 (−):



CHECK : ***Is the voltage between 4.75 and 5.25 V?***

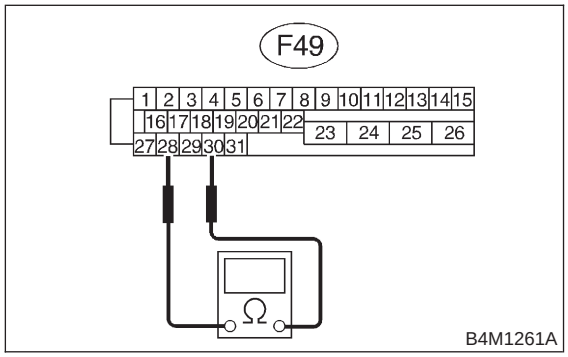
YES : Go to step **8Y4**.

NO : Repair harness/connector between G sensor and ABSCM&H/U.

8Y4 : CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance between ABSCM&H/U connector terminals.

Connector & terminal
(F49) No. 30 — No. 28:

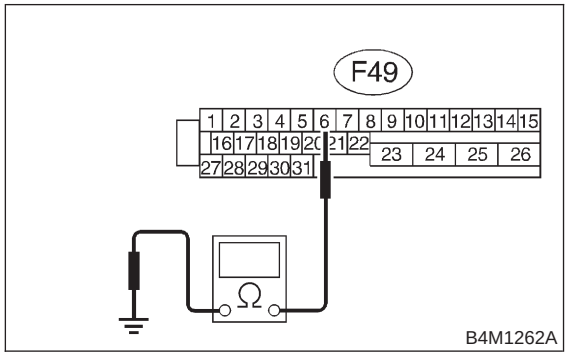


CHECK : ***Is the resistance between 4.3 and 4.9 kΩ?***
YES : Go to step **8Y5**.
NO : Repair harness/connector between G sensor and ABSCM&H/U.

8Y5 : CHECK GROUND SHORT IN G SENSOR OUTPUT HARNESS.

1) Disconnect connector from G sensor.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 6 — Chassis ground:

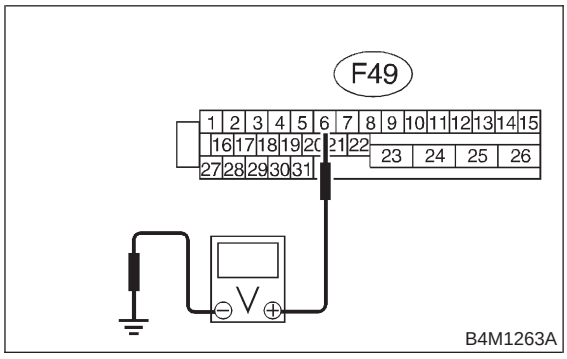


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8Y6**.
NO : Repair harness between G sensor and ABSCM&H/U.

8Y6 : CHECK BATTERY SHORT OF HARNESS.

Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 6 (+) — Chassis ground (−):

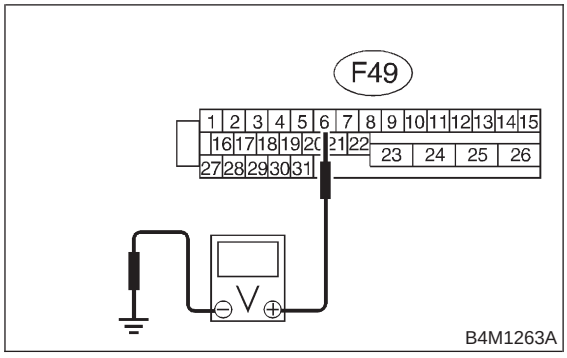


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8Y7**.
NO : Repair harness between G sensor and ABSCM&H/U.

8Y7 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 6 (+) — Chassis ground (−):

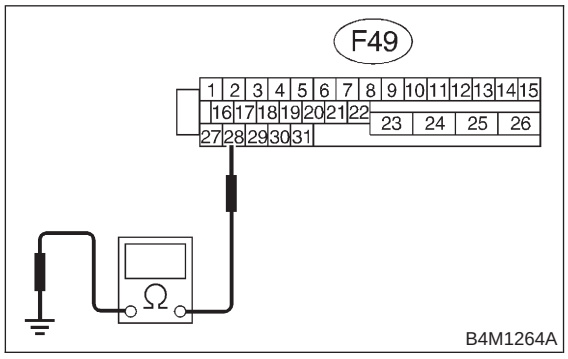


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8Y8**.
NO : Repair harness between G sensor and ABSCM&H/U.

8Y8 : CHECK GROUND SHORT OF HARNESS.

Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 28 — Chassis ground:

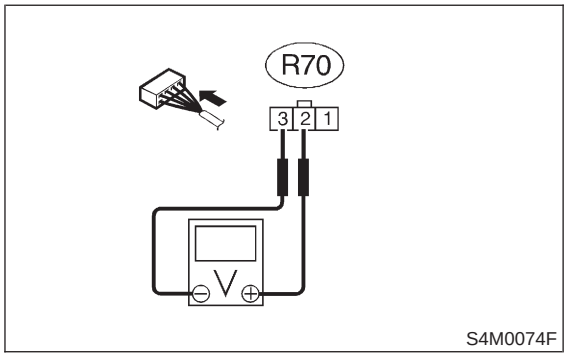


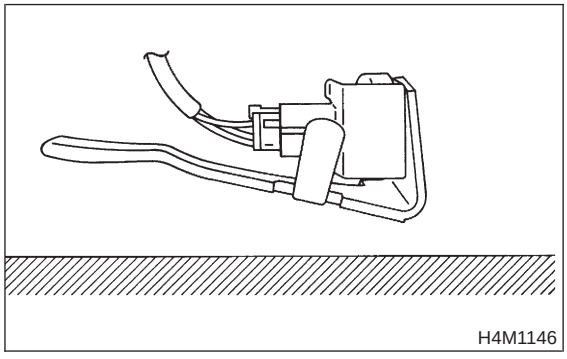
CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8Y9**.
NO : Repair harness between G sensor and ABSCM&H/U.
Replace ABSCM&H/U.

8Y9 : CHECK G SENSOR.

1) Turn ignition switch to OFF.
2) Remove G sensor from vehicle.
3) Connect connector to G sensor.
4) Connect connector to ABSCM&H/U.
5) Turn ignition switch to ON.
6) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):



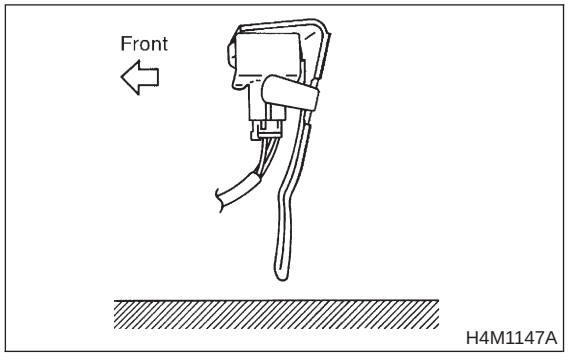


CHECK : ***Is the voltage between 2.1 and 2.5 V when G sensor is horizontal?***
YES : Go to step **8Y10**.
NO : Replace G sensor.

8Y10 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):

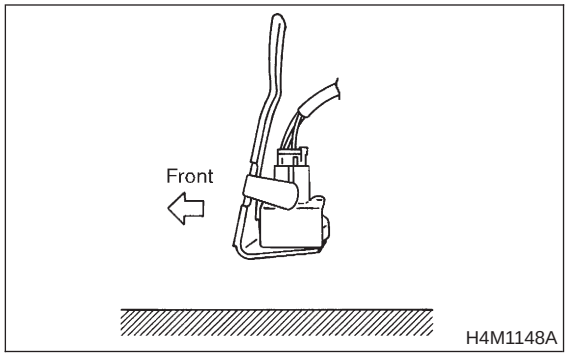


CHECK : ***Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***
YES : Go to step **8Y11**.
NO : Replace G sensor.

8Y11 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):



CHECK : ***Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***
YES : Go to step **8Y12**.
NO : Replace G sensor.

8Y12 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connector between ABSCM&H/U and G sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8Y13**.

8Y13 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **8Y14**.

8Y14 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

MEMO:

9. Select Monitor Function Mode

Applicable cartridge of select monitor: No. 24082AA090

NOTE:
For basic handling of the select monitor, refer to its Operation Manual.

A: LIST OF FUNCTION MODE

1. ANALOG DATA ARE DISPLAYED.

Display screen	Contents to be monitored
FR wheel speed	Wheel speed detected by the Front Right ABS sensor is displayed in km/h or mile/h.
FL wheel speed	Wheel speed detected by the Front Left ABS sensor is displayed in km/h or mile/h.
RR wheel speed	Wheel speed detected by the Rear Right ABS sensor is displayed in km/h or mile/h.
RL wheel speed	Wheel speed detected by the Rear Left ABS sensor is displayed in km/h or mile/h.
Stop light switch	Stop light switch monitor voltage is displayed.
G sensor output voltage	Refers to vehicle acceleration detecting by the analog G sensor. It appears on the select monitor display in volts.

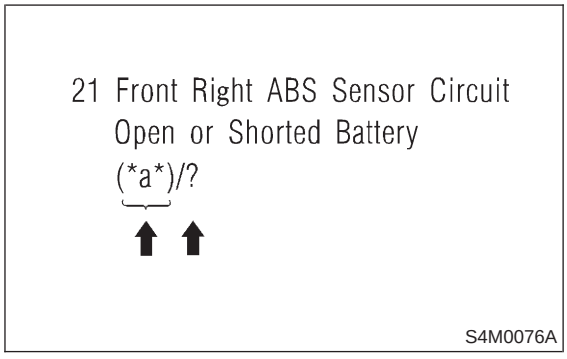
2. ON/OFF DATA ARE DISPLAYED.

Display screen	Contents to be monitored
Stop light switch	Stop light switch signal
Valve relay signal	Valve relay signal
Motor relay signal	Motor relay signal
ABS signal to TCM	ABS operation signal from ABS control module to TCM
ABS warning light	ABS warning light
Valve relay monitor	Valve relay operation monitor signal
Motor relay monitor	Motor relay operation monitor signal
CCM signal	ABS operation signal from ABS control module to TCM

3. TROUBLE CODES ARE DISPLAYED.

A maximum of 3 trouble codes are displayed in order of occurrence.

● If a particular trouble code is not properly stored in memory (due to a drop in ABSCM&H/U power supply, etc.) when a problem occurs, the trouble code, followed by a question mark "?", appears on the select monitor display. This shows it may be an unreliable reading.



● *a* refers to the troubles in order of occurrence (Latest, Old, Older and Reference).

Display screen	Contents to be monitored
Latest	The most recent trouble code appears on the select monitor display.
Old	The second most recent trouble code appears on the select monitor display.
Older	The third most recent trouble code appears on the select monitor display.
Reference	A specified period of time proceeding trouble code appears on the select monitor display.

4. CLEAR MEMORY

Display screen	Contents to be monitored
Clear memory?	Function of clearing trouble code and freeze frame data.

5. ABS SEQUENCE CONTROL

Display screen	Contents to be monitored	Index No.
ABS sequence control	Perform ABS sequence control by operating valve and pump motor sequentially.	<Ref. to 4-4 [W14D0].>

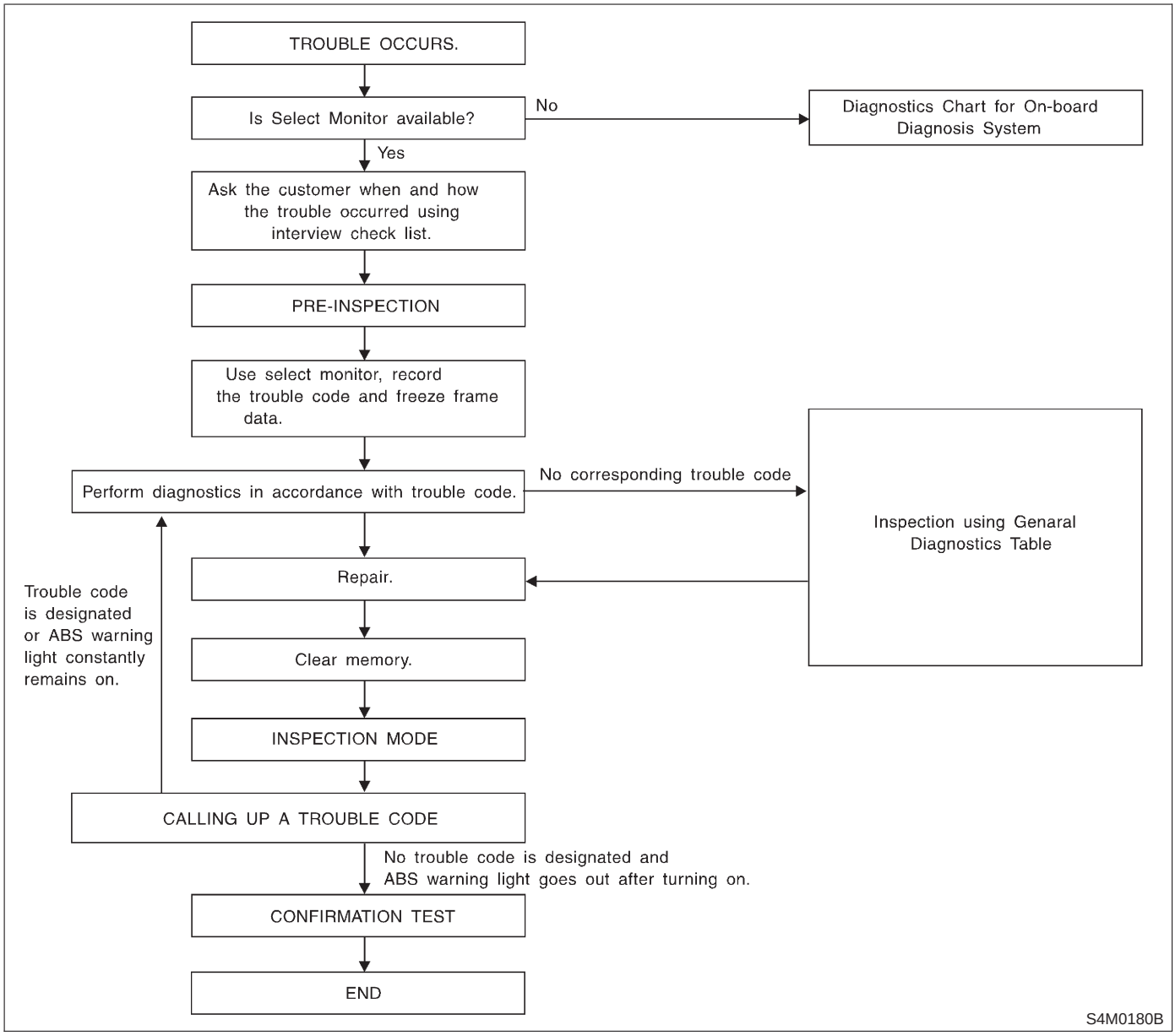
6. FREEZE FRAME DATA

NOTE:
- Data stored at the time of trouble occurrence is shown on display.
- Each time trouble occurs, the latest information is stored in the freeze frame data in memory.
- If freeze frame data is not properly stored in memory (due to a drop in ABSCM power supply, etc.), a trouble code, preceded by a question mark "?", appears on the select monitor display. This shows it may be an unreliable reading.

Display screen	Contents to be monitored
FR wheel speed	Wheel speed detected by the Front Right ABS sensor is displayed in km/h or mile/h.
FL wheel speed	Wheel speed detected by the Front Left ABS sensor is displayed in km/h or mile/h.
RR wheel speed	Wheel speed detected by the Rear Right ABS sensor is displayed in km/h or mile/h.
RL wheel speed	Wheel speed detected by the Rear Left ABS sensor is displayed in km/h or mile/h.
ABSCM power voltage	Power (in volts) supplied to ABSCM&H/U appears on the select monitor display.
G sensor output voltage	Refers to vehicle acceleration detected by the analog G sensor. It appears on the select monitor display in volts.
Motor relay monitor	Motor relay operation monitor signal
Stop light switch	Stop light switch signal
ABS signal to TCM	ABS operation signal from ABS control module to TCM
ABS-AT control	ABS operation signal from ABS control module to TCM
ABS operation signal	ABS operation signal

10. Diagnostics Chart with Select Monitor

A: BASIC DIAGNOSTIC CHART



CAUTION:
Remove foreign matter (dust, water, etc.) from the ABSCM&H/U connector during removal and installation.

NOTE:
- To check harness for broken wires or short circuits, shake it while holding it or the connector.
- Check list for interview. <Ref. to 4-4 [T6B0].>

B: LIST OF DIAGNOSTIC TROUBLE CODE

Code	Display screen	Contents of diagnosis	Index No.
—	Communication for initializing impossible	Select monitor communication failure	<Ref. to 4-4 [T10C0].>
—	No trouble code	Although no trouble code appears on the select monitor display, the ABS warning light remains on.	<Ref. to 4-4 [T10D0].>
21	Open or short circuit in front right ABS sensor circuit	Open or short circuit in front right ABS sensor circuit	<Ref. to 4-4 [T10E0].>
22	Front right ABS sensor abnormal signal	Front right ABS sensor abnormal signal	<Ref. to 4-4 [T10I0].>
23	Open or short circuit in front left ABS sensor circuit	Open or short circuit in front left ABS sensor circuit	<Ref. to 4-4 [T10F0].>
24	Front left ABS sensor abnormal signal	Front left ABS sensor abnormal signal	<Ref. to 4-4 [T10J0].>
25	Open or short circuit in rear right ABS sensor circuit	Open or short circuit in rear right ABS sensor circuit	<Ref. to 4-4 [T10G0].>
26	Rear right ABS sensor abnormal signal	Rear right ABS sensor abnormal signal	<Ref. to 4-4 [T10K0].>
27	Open or short circuit in rear left ABS sensor circuit	Open or short circuit in rear left ABS sensor circuit	<Ref. to 4-4 [T10H0].>
28	Rear left ABS sensor abnormal signal	Rear left ABS sensor abnormal signal	<Ref. to 4-4 [T10L0].>
29	Abnormal ABS sensor signal on any one of four sensor	Abnormal ABS sensor signal on any one of four	<Ref. to 4-4 [T10M0].>
31	Front right inlet valve malfunction	Front right inlet valve malfunction	<Ref. to 4-4 [T10N0].>
32	Front right outlet valve malfunction	Front right outlet valve malfunction	<Ref. to 4-4 [T10R0].>
33	Front left inlet valve malfunction	Front left inlet valve malfunction	<Ref. to 4-4 [T10O0].>
34	Front left outlet valve malfunction	Front left outlet valve malfunction	<Ref. to 4-4 [T10S0].>
35	Rear right inlet valve malfunction	Rear right inlet valve malfunction	<Ref. to 4-4 [T10P0].>
36	Rear right outlet valve malfunction	Rear right outlet valve malfunction	<Ref. to 4-4 [T10T0].>
37	Rear left inlet valve malfunction	Rear left inlet valve malfunction	<Ref. to 4-4 [T10Q0].>
38	Rear left outlet valve malfunction	Rear left outlet valve malfunction	<Ref. to 4-4 [T10U0].>
41	ABS control module malfunction	ABS control module and hydraulic control unit malfunction	<Ref. to 4-4 [T10V0].>
42	Power supply voltage too low	Power supply voltage too low	<Ref. to 4-4 [T10W0].>
42	Power supply voltage too high	Power supply voltage too high	<Ref. to 4-4 [T10X0].>
44	ABS-AT control (Non Controlled)	ABS-AT control (Non Controlled)	<Ref. to 4-4 [T10Y0].>
44	ABS-AT control (Controlled)	ABS-AT control (Controlled)	<Ref. to 4-4 [T10Z0].>
51	Valve relay malfunction	Valve relay malfunction	<Ref. to 4-4 [T10AA0].>
51	Valve relay ON failure	Valve relay ON failure	<Ref. to 4-4 [T10AB0].>
52	Open circuit in motor relay circuit	Open circuit in motor relay circuit	<Ref. to 4-4 [T10AC0].>
52	Motor relay ON failure	Motor relay ON failure	<Ref. to 4-4 [T10AD0].>
52	Motor malfunction	Motor malfunction	<Ref. to 4-4 [T10AE0].>
54	Stop light switch signal circuit malfunction	Stop light switch signal circuit malfunction	<Ref. to 4-4 [T10AF0].>
56	Open or short circuit in G sensor circuit	Open or short circuit in G sensor circuit	<Ref. to 4-4 [T10AG0].>
56	Battery short in G sensor circuit	Battery short in G sensor circuit	<Ref. to 4-4 [T10AH0].>
56	Abnormal G sensor high μ output	Abnormal G sensor high μ output	<Ref. to 4-4 [T10AI0].>
56	Detection of G sensor stick	Detection of G sensor stick	<Ref. to 4-4 [T10AJ0].>

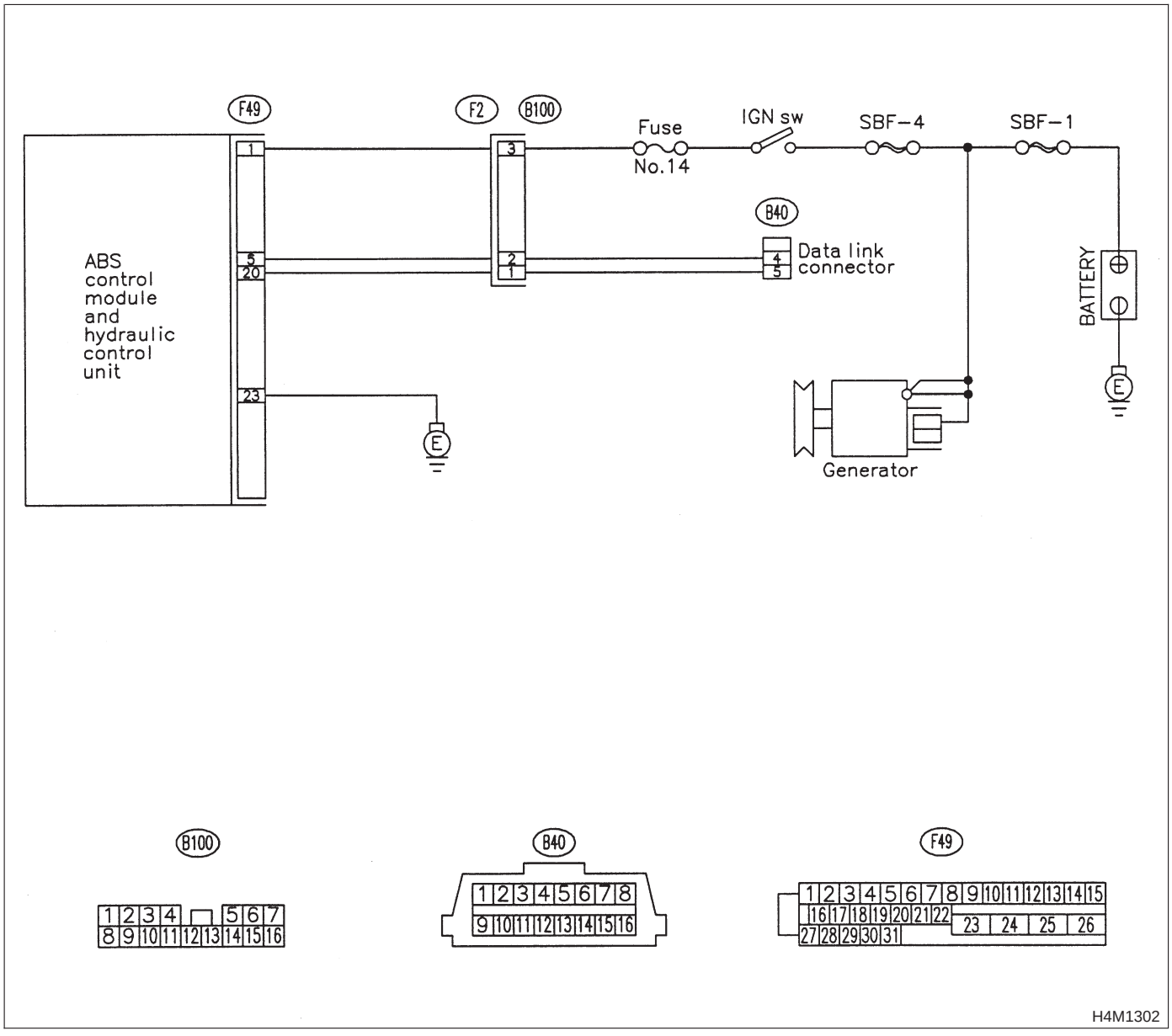
NOTE:
High μ means high friction coefficient against road surface.

C: COMMUNICATION FOR INITIALIZING IMPOSSIBLE — SELECT MONITOR COMMUNICATION FAILURE —

DIAGNOSIS:
- Faulty harness connector

TROUBLE SYMPTOM:
- ABS warning light remains on.

WIRING DIAGRAM:



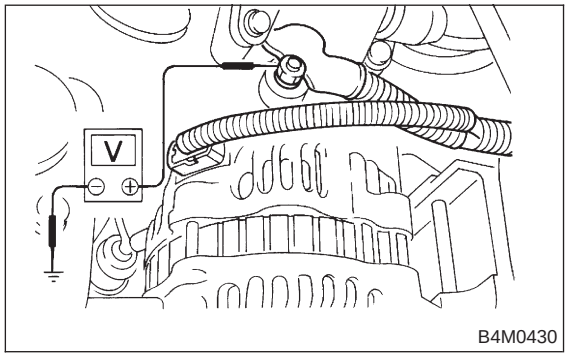
10C1 : CHECK IGNITION SWITCH.

CHECK : ***Is ignition switch ON?***
YES : Go to step **10C2**.
NO : Turn ignition switch ON, and select ABS/TCS mode using the select monitor.

10C2 : CHECK GENERATOR.

1) Start the engine.
2) Idle the engine.
3) Measure voltage between generator and chassis ground.

Terminal
Generator B terminal (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 and 15 V?***
YES : Go to step **10C3**.
NO : Repair generator.

10C3 : CHECK BATTERY TERMINAL.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact at battery terminal?***
YES : Repair battery terminal.
NO : Go to step **10C4**.

10C4 : CHECK COMMUNICATION OF SELECT MONITOR.

Using the select monitor, check whether communication to other system (such as engine, AT, etc.) can be executed normally.

CHECK : ***Are the name and year of the system displayed on the select monitor?***
YES : Go to step **10C5**.
NO : Repair select monitor communication cable and connector.

10C5 : CHECK INSTALLATION OF ABSCM&H/U CONNECTOR.

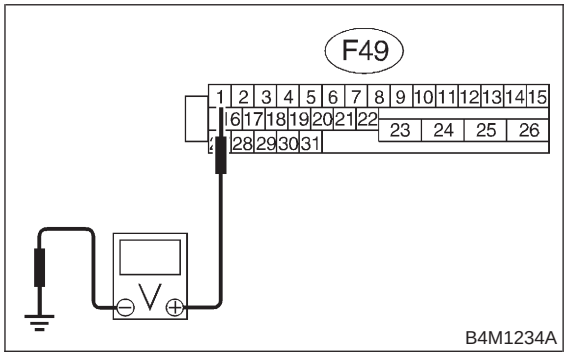
Turn ignition switch to OFF.

CHECK : ***Is ABSCM&H/U connector inserted into ABSCM&H/U until the clamp locks onto it?***
YES : Go to step **10C6**.
NO : Insert ABSCM&H/U connector into ABSCM&H/U until the clamp locks onto it.

10C6 : CHECK POWER SUPPLY OF ABSCM&H/U.

1) Disconnect connector from ABSCM&H/U.
2) Start engine.
3) Idle the engine.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

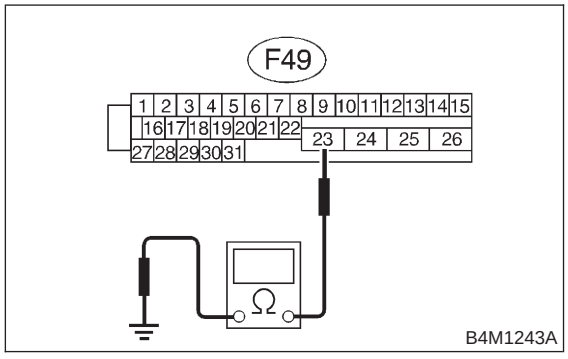


CHECK : ***Is the voltage between 10 and 15 V?***
YES : Go to step **10C7**.
NO : Repair ABSCM&H/U power supply circuit.

10C7 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:

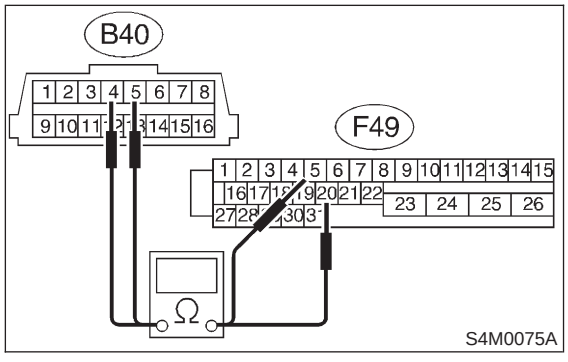


CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Repair harness/connector between ABSCM&H/U and select monitor.
NO : Go to step **10C8**.

10C8 : CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND DATA LINK CONNECTOR.

1) Turn ignition switch OFF.
2) Measure resistance between ABSCM&H/U connector and data link connector.

Connector & terminal
(F49) No. 20 — (B40) No. 5:
(F49) No. 5 — (B40) No. 4:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Repair harness and connector between ABSCM&H/U and data link connector.
NO : Go to step **10C9**.

10C9 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM&H/U and data link connector? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Replace ABSCM&H/U.

MEMO:

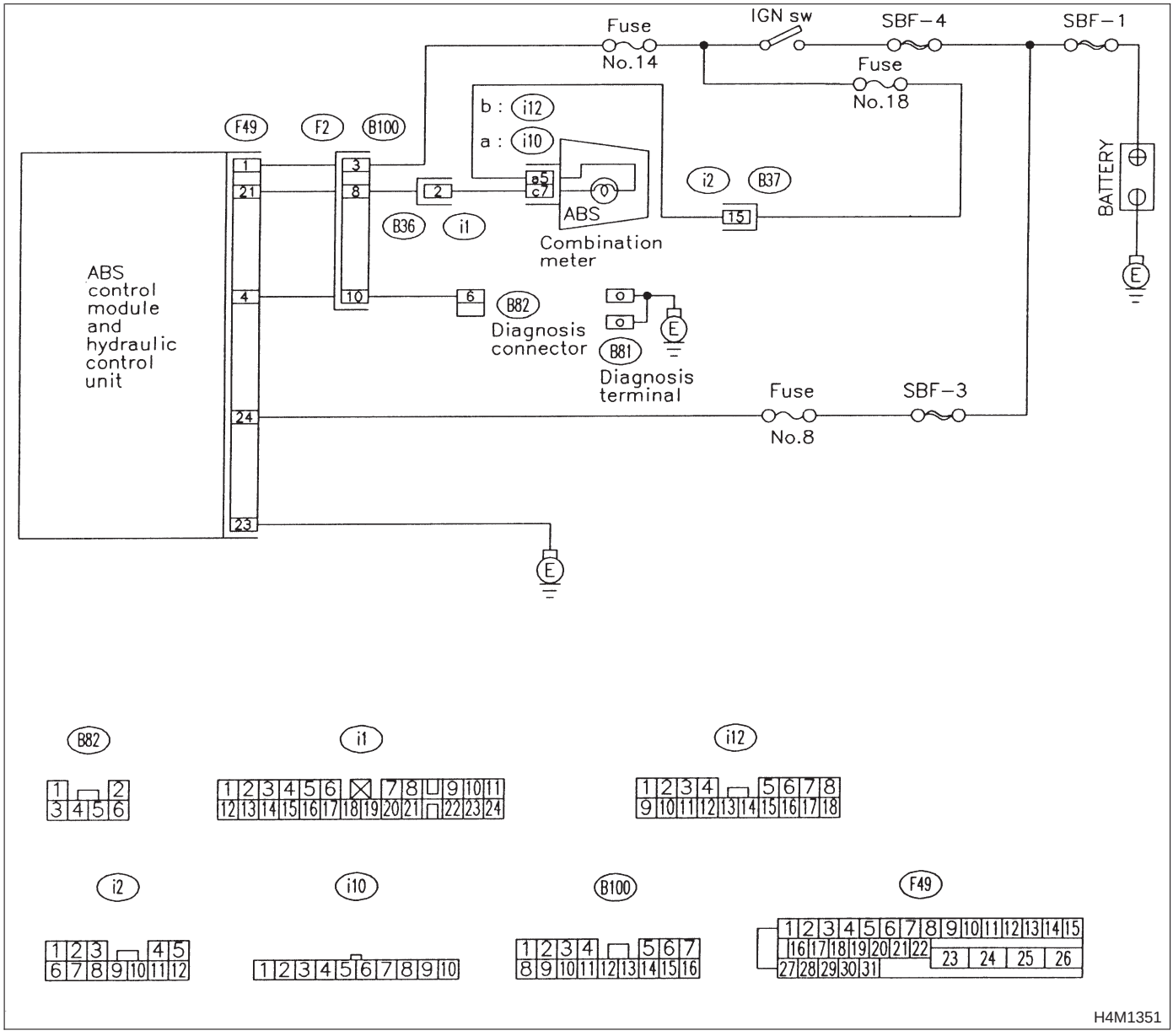
D: NO TROUBLE CODE
— ALTHOUGH NO TROUBLE CODE APPEARS ON THE SELECT MONITOR DISPLAY, THE ABS WARNING LIGHT REMAINS ON. —

DIAGNOSIS:
- ABS warning light circuit is shorted.

TROUBLE SYMPTOM:
- ABS warning light remains on.
- NO TROUBLE CODE displayed on the select monitor.

NOTE:
When the ABS warning light is OFF and “NO TROUBLE CODE” is displayed on the select monitor, the system is in normal condition.

WIRING DIAGRAM:



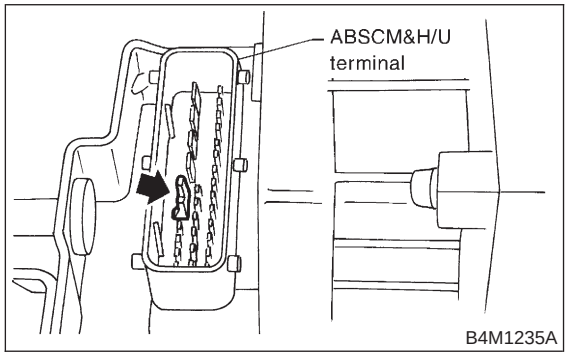
10D1 : CHECK WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector (F2) from connector (B100).
3) Turn ignition switch to ON.

CHECK : ***Does the ABS warning light remain off?***
YES : Go to step **10D2**.
NO : Repair front wiring harness.

10D2 : CHECK PROJECTION AT ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Check for broken projection at the ABSCM&H/U terminal.

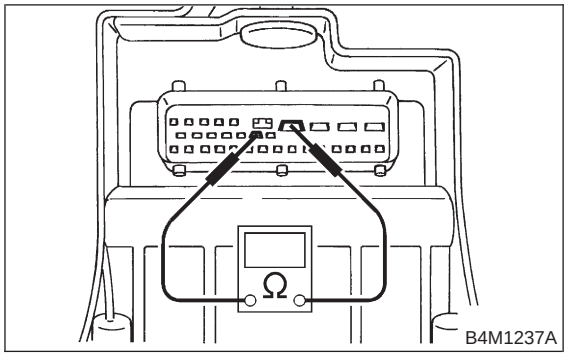


CHECK : ***Are the projection broken?***
YES : Go to step **10D3**.
NO : Replace ABSCM&H/U.

10D3 : CHECK ABSCM&H/U.

Measure resistance between ABSCM&H/U terminals.

Terminals
No. 21 — No. 23:

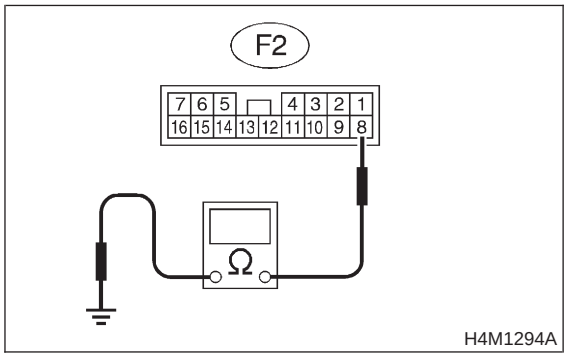


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10D4**.
NO : Replace valve relay.

10D4 : CHECK WIRING HARNESS.

Measure resistance between connector (F2) and chassis ground.

Connector & terminal
(F2) No. 8 — Chassis ground:

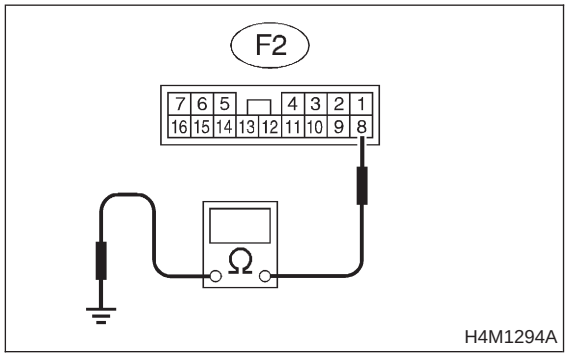


CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10D5**.
NO : Repair harness.

10D5 : CHECK WIRING HARNESS.

1) Connect connector to ABSCM&H/U.
2) Measure resistance between connector (F2) and chassis ground.

Connector & terminal
(F2) No. 8 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10D6**.
NO : Repair harness.

10D6 : CHECK POOR CONTACT IN ABSCM&H/U CONNECTOR.

CHECK : ***Is there poor contact in ABSCM&H/U connector? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Replace ABSCM&H/U.

MEMO:

E: TROUBLE CODE 21 OPEN OR SHORT CIRCUIT IN FRONT RIGHT ABS SENSOR CIRCUIT

F: TROUBLE CODE 23 OPEN OR SHORT CIRCUIT IN FRONT LEFT ABS SENSOR CIRCUIT

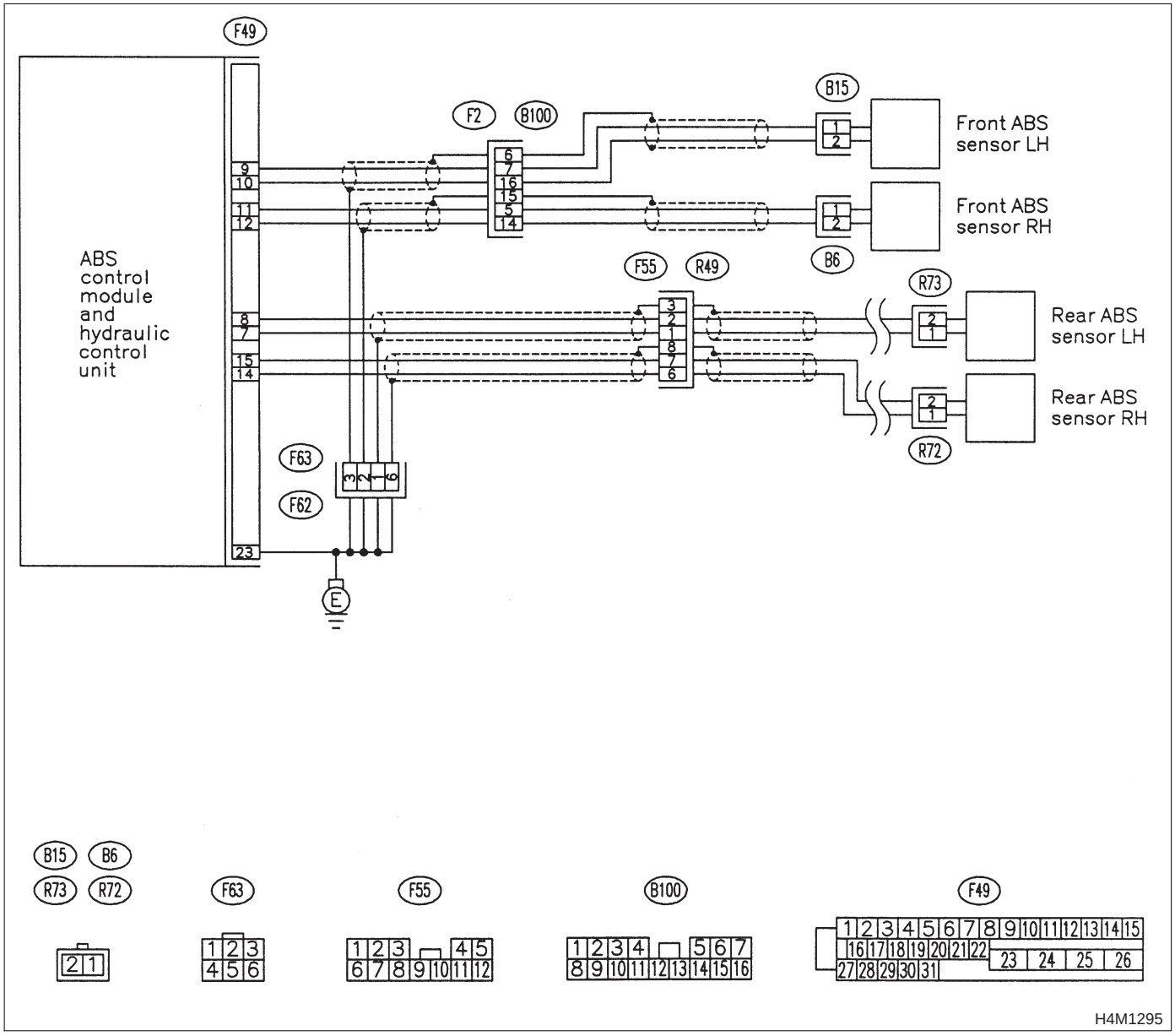
G: TROUBLE CODE 25 OPEN OR SHORT CIRCUIT IN REAR RIGHT ABS SENSOR CIRCUIT

H: TROUBLE CODE 27 OPEN OR SHORT CIRCUIT IN REAR LEFT ABS SENSOR CIRCUIT
— ABNORMAL ABS SENSOR (OPEN OR SHORT CIRCUIT IN ABS SENSOR CIRCUIT) —

DIAGNOSIS:
- Faulty ABS sensor (Broken wire, input voltage too high)
- Faulty harness connector

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10H1 : CHECK OUTPUT OF ABS SENSOR USING SELECT MONITOR.

1) Select “Current data display & Save” on the select monitor.
2) Read the ABS sensor output corresponding to the faulty system in the select monitor data display mode.

CHECK : ***Does the speed indicated on the display change in response to the speedometer reading during acceleration/deceleration when the steering wheel is in the straight-ahead position?***
YES : Go to step **10H2**.
NO : Go to step **10H9**.

10H2 : CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32±10 N·m (3.3±1.0 kg-m, 24±7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***
YES : Go to step **10H3**.
NO : Tighten ABS sensor installation bolts securely.

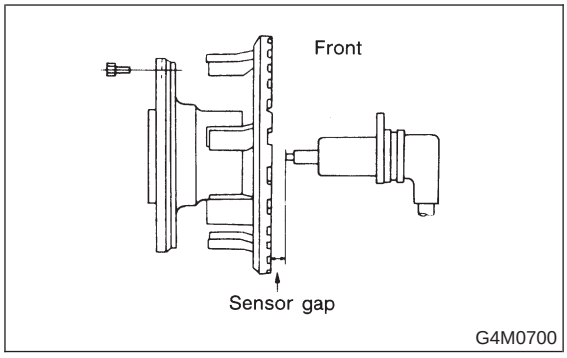
10H3 : CHECK INSTALLATION OF TONE WHEEL.

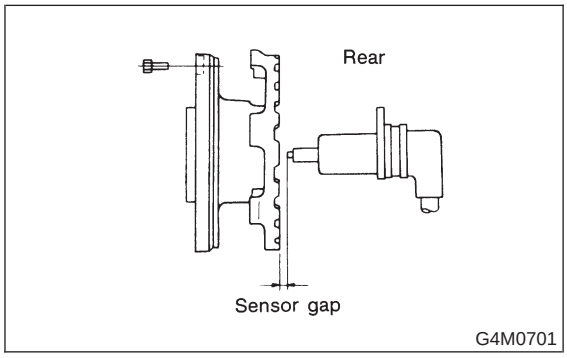
Tightening torque:
13±3 N·m (1.3±0.3 kg-m, 9±2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***
YES : Go to step **10H4**.
NO : Tighten tone wheel installation bolts securely.

10H4 : CHECK ABS SENSOR GAP.

Measure tone wheel-to-pole piece gap over entire perimeter of the wheel.





	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

CHECK : ***Is the gap within the specifications?***
YES : Go to step **10H5**.
NO : Adjust the gap.

NOTE:
Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10H5 : CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***
YES : Go to step **10H6**.
NO : Repair hub.

10H6 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between ABSCM&H/U and ABS sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10H7**.

10H7 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **10H8**.

10H8 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

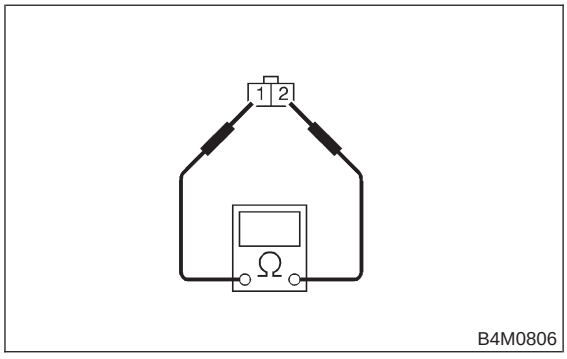
NO : A temporary poor contact.

NOTE:
Check harness and connectors between ABSCM&H/U and ABS sensor.

10H9 : CHECK ABS SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance of ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:



CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***

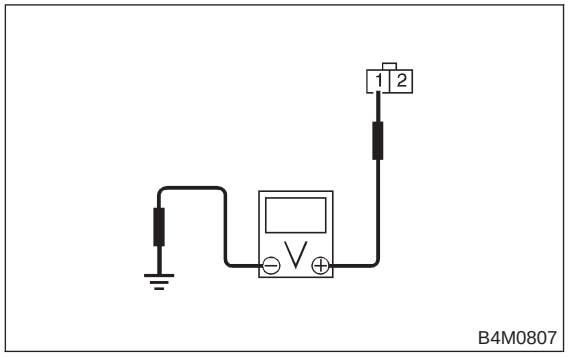
YES : Go to step **10H10**.

NO : Replace ABS sensor.

10H10 : CHECK BATTERY SHORT OF ABS SENSOR.

1) Disconnect connector from ABSCM&H/U.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (−):
Front LH No. 1 (+) — Chassis ground (−):
Rear RH No. 1 (+) — Chassis ground (−):
Rear LH No. 1 (+) — Chassis ground (−):

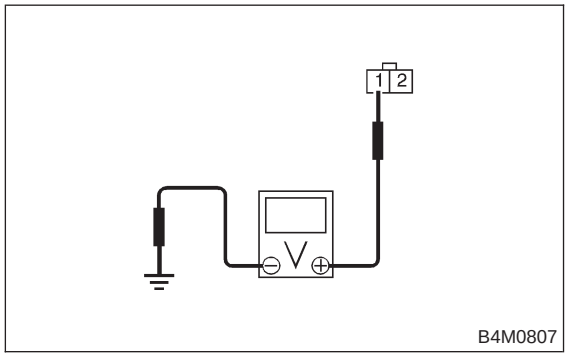


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10H11**.
NO : Replace ABS sensor.

10H11 : CHECK BATTERY SHORT OF ABS SENSOR.

1) Turn ignition switch to ON.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (−):
Front LH No. 1 (+) — Chassis ground (−):
Rear RH No. 1 (+) — Chassis ground (−):
Rear LH No. 1 (+) — Chassis ground (−):

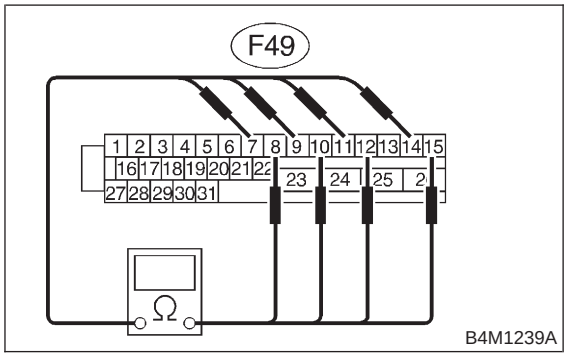


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10H12**.
NO : Replace ABS sensor.

10H12 : CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND ABS SENSOR.

1) Turn ignition switch to OFF.
2) Connect connector to ABS sensor.
3) Measure resistance between ABSCM&H/U connector terminals.

Connector & terminal
Trouble code 21 / (F49) No. 11 — No. 12:
Trouble code 23 / (F49) No. 9 — No. 10:
Trouble code 25 / (F49) No. 14 — No. 15:
Trouble code 27 / (F49) No. 7 — No. 8:



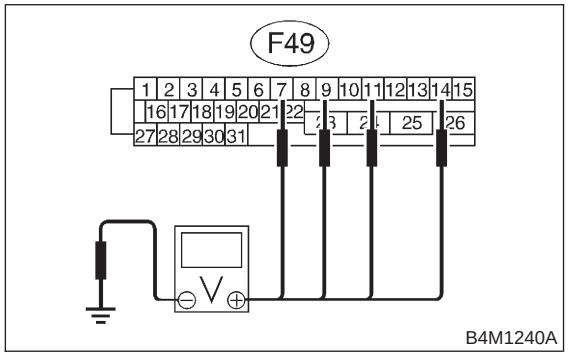
CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **10H13**.
NO : Repair harness/connector between ABSCM&H/U and ABS sensor.

10H13 : CHECK BATTERY SHORT OF HARNESS.

Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal

Trouble code 21 / (F49) No. 11 (+) — Chassis ground (−):
Trouble code 23 / (F49) No. 9 (+) — Chassis ground (−):
Trouble code 25 / (F49) No. 14 (+) — Chassis ground (−):
Trouble code 27 / (F49) No. 7 (+) — Chassis ground (−):



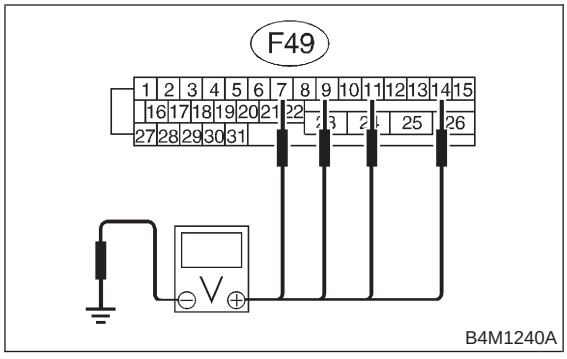
CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10H14**.
NO : Repair harness between ABSCM&H/U and ABS sensor.

10H14 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal

Trouble code 21 / (F49) No. 11 (+) — Chassis ground (−):
Trouble code 23 / (F49) No. 9 (+) — Chassis ground (−):
Trouble code 25 / (F49) No. 14 (+) — Chassis ground (−):
Trouble code 27 / (F49) No. 7 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10H15**.
NO : Repair harness between ABSCM&H/U and ABS sensor.

10H15 : CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32±10 N·m (3.3±1.0 kg-m, 24±7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***
YES : Go to step **10H16**.
NO : Tighten ABS sensor installation bolts securely.

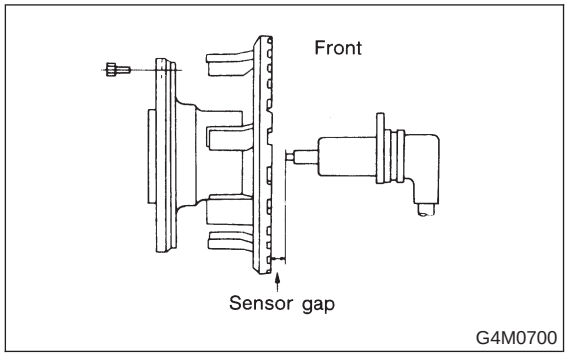
10H16 : CHECK INSTALLATION OF TONE WHEEL.

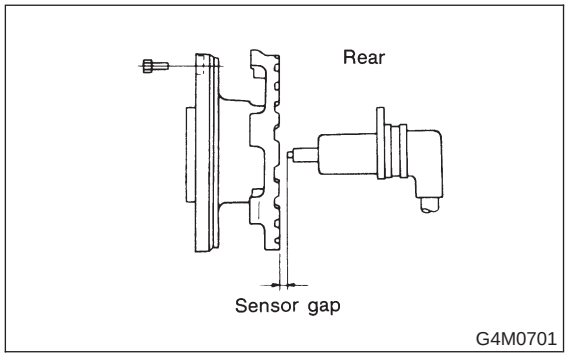
Tightening torque:
13±3 N·m (1.3±0.3 kg-m, 9±2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***
YES : Go to step **10H17**.
NO : Tighten tone wheel installation bolts securely.

10H17 : CHECK ABS SENSOR GAP.

Measure tone wheel-to-pole piece gap over entire perimeter of the wheel.





	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

CHECK : ***Is the gap within the specificationss?***
YES : Go to step **10H18**.
NO : Adjust the gap.

NOTE:
Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10H18 : CHECK HUB RUNOUT.

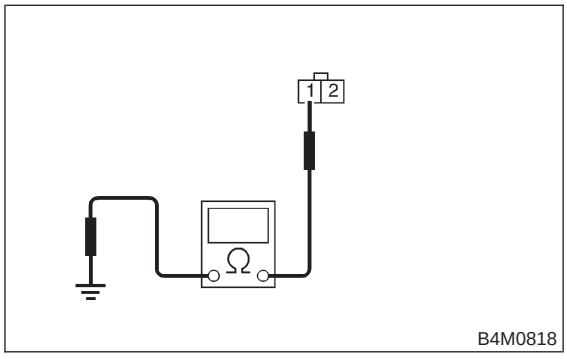
Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***
YES : Go to step **10H19**.
NO : Repair hub.

10H19 : CHECK GROUND SHORT OF ABS SENSOR.

1) Turn ignition switch to ON.
2) Measure resistance between ABS sensor and chassis ground.

Terminal
Front RH No. 1 — Chassis ground:
Front LH No. 1 — Chassis ground:
Rear RH No. 1 — Chassis ground:
Rear LH No. 1 — Chassis ground:

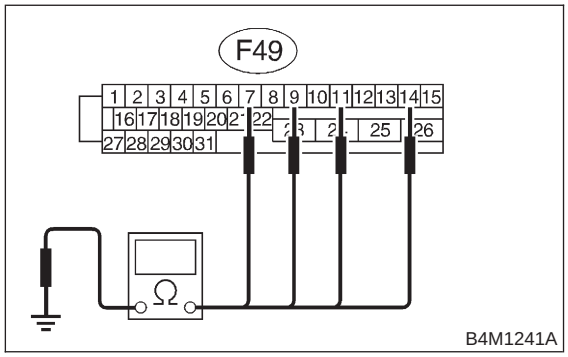


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10H20**.
NO : Replace ABS sensor and ABSCM&H/U.

10H20 : CHECK GROUND SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Connect connector to ABS sensor.
3) Measure resistance between ABSCM&H/U connector terminal and chassis ground.

Connector & terminal
Trouble code 21 / (F49) No. 11 — Chassis ground:
Trouble code 23 / (F49) No. 9 — Chassis ground:
Trouble code 25 / (F49) No. 14 — Chassis ground:
Trouble code 27 / (F49) No. 7 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10H21**.
NO : Repair harness between ABSCM&H/U and ABS sensor.
And replace ABSCM&H/U.

10H21 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM&H/U and ABS sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10H22**.

10H22 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10H23**.

10H23 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

NOTE:
Check harness and connectors between ABSCM&H/U and ABS sensor.

I: TROUBLE CODE 22 FRONT RIGHT ABS SENSOR ABNORMAL SIGNAL

J: TROUBLE CODE 24 FRONT LEFT ABS SENSOR ABNORMAL SIGNAL

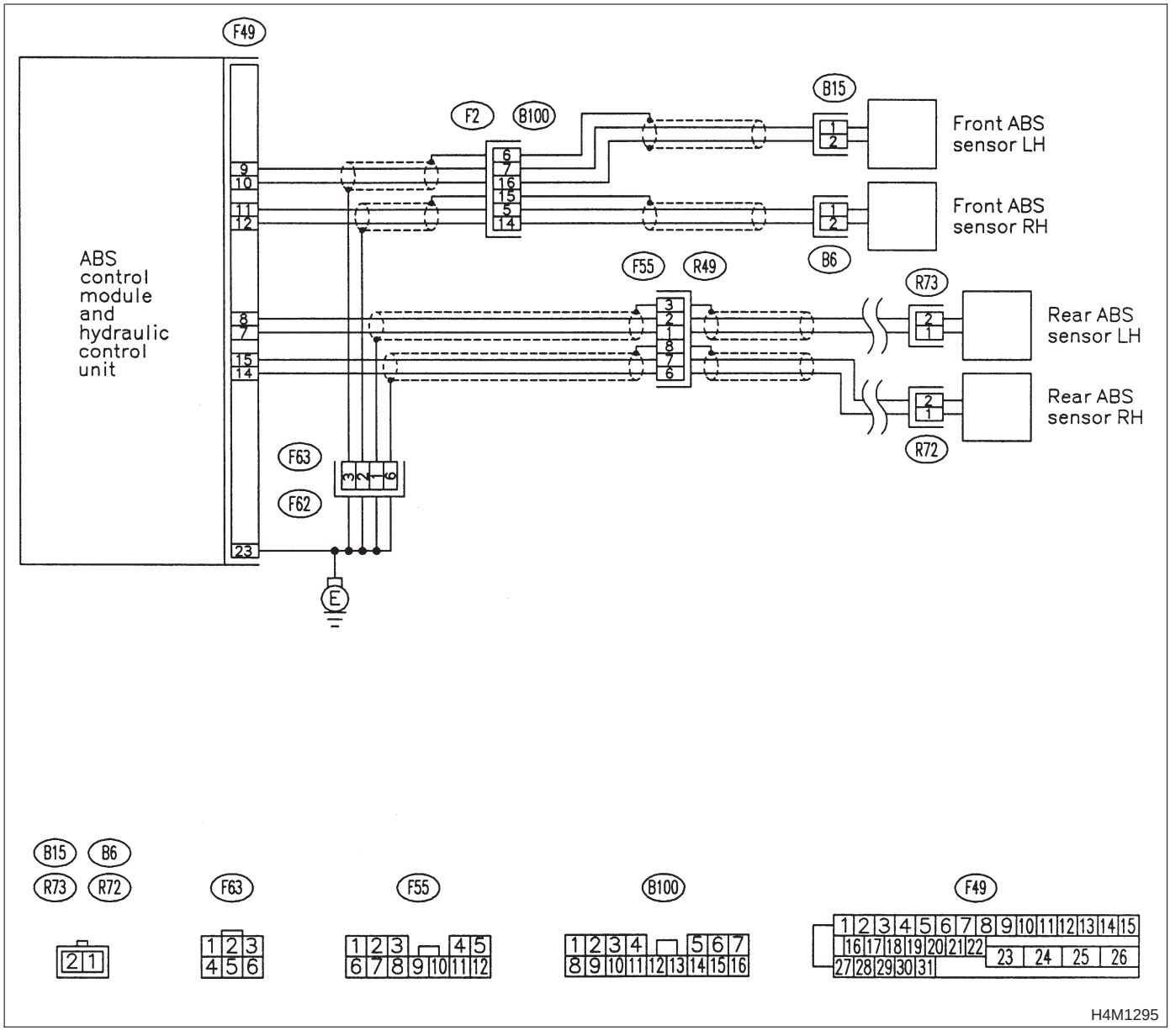
K: TROUBLE CODE 26 REAR RIGHT ABS SENSOR ABNORMAL SIGNAL

L: TROUBLE CODE 28 REAR LEFT ABS SENSOR ABNORMAL SIGNAL — ABNORMAL ABS SENSOR (ABS SENSOR ABNORMAL SIGNAL) —

DIAGNOSIS:
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty harness/connector

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10L1 : CHECK OUTPUT OF ABS SENSOR USING SELECT MONITOR.

1) Select “Current data display & Save” on the select monitor.
2) Read the ABS sensor output corresponding to the faulty system in the select monitor data display mode.

CHECK : ***Does the speed indicated on the display change in response to the speedometer reading during acceleration/deceleration when the steering wheel is in the straight-ahead position?***
YES : Go to step **10L2**.
NO : Go to step **10L8**.

10L2 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between ABSCM&H/U and ABS sensor?***
YES : Repair connector.
NO : Go to step **10L3**.

10L3 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***
YES : Go to step **10L4**.
NO : Properly install the car telephone or the wireless transmitter.

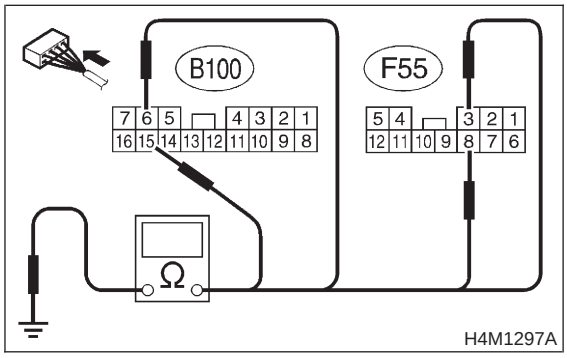
10L4 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***
YES : Install the noise sources apart from the sensor harness.
NO : Go to step **10L5**.

10L5 : CHECK SHIELD CIRCUIT.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Measure resistance between shield connector and chassis ground.

Connector & terminal
Trouble code 22 / (B100) No. 15 — Chassis ground:
Trouble code 24 / (B100) No. 6 — Chassis ground:
Trouble code 26 / (F55) No. 8 — Chassis ground:
Trouble code 28 / (F55) No. 3 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10L6**.
NO : Repair shield harness.

10L6 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10L7**.

10L7 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary noise interference.

10L8 : CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32±10 N·m (3.3±1.0 kg-m, 24±7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***
YES : Go to step **10L9**.
NO : Tighten ABS sensor installation bolts securely.

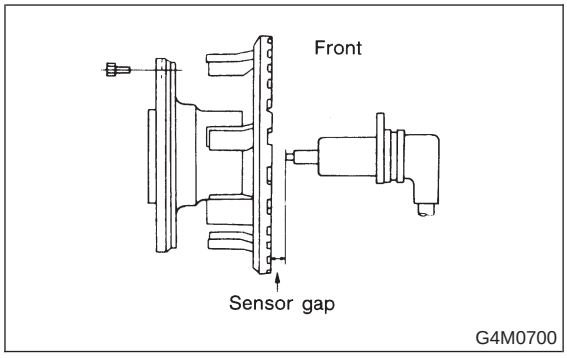
10L9 : CHECK INSTALLATION OF TONE WHEEL.

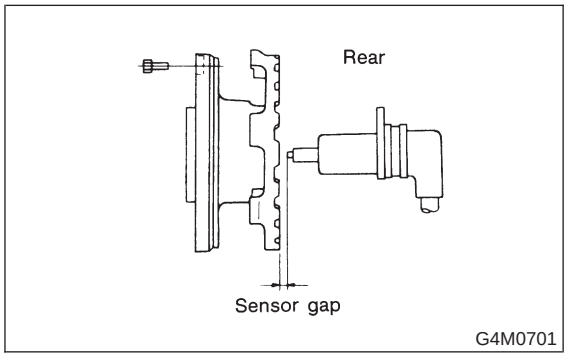
Tightening torque:
13±3 N·m (1.3±0.3 kg-m, 9±2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***
YES : Go to step **10L10**.
NO : Tighten tone wheel installation bolts securely.

10L10 : CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.





	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

CHECK : ***Is the gap within the specifications?***
YES : Go to step **10L11**.
NO : Adjust the gap.

NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10L11 : CHECK OSCILLOSCOPE.

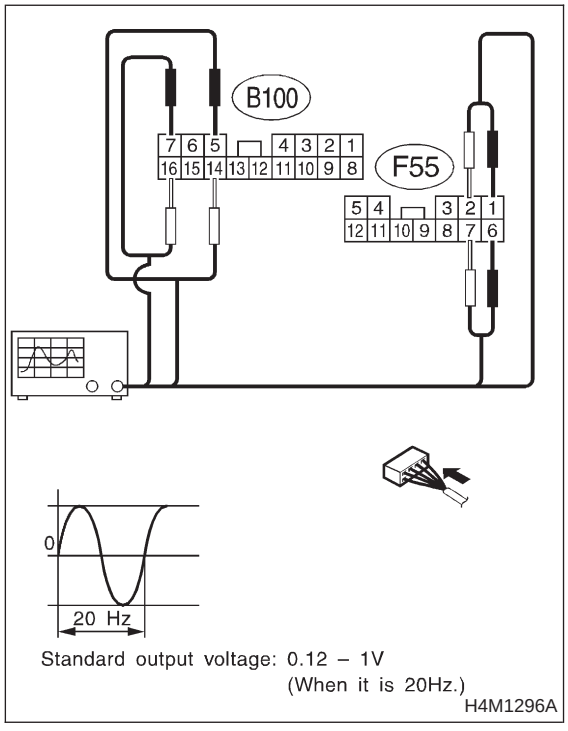
CHECK : ***Is an oscilloscope available?***
YES : Go to step **10L12**.
NO : Go to step **10L13**.

10L12 : CHECK ABS SENSOR SIGNAL.

1) Raise all four wheels of ground.
2) Turn ignition switch OFF.
3) Connect the oscilloscope to the connector.
4) Turn ignition switch ON.
5) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABSCM&H/U sometimes stores the trouble code 29.

Connector & terminal
Trouble code 22 / (B100) No. 5 (+) — No. 14 (−):
Trouble code 24 / (B100) No. 7 (+) — No. 16 (−):
Trouble code 26 / (F55) No. 6 (+) — No. 7 (−):
Trouble code 28 / (F55) No. 1 (+) — No. 2 (−):



CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***
YES : Go to step **10L16**.
NO : Go to step **10L13**.

10L13 : CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor or drum from hub in accordance with trouble code.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***
YES : Thoroughly remove dirt or other foreign matter.
NO : Go to step **10L14**.

10L14 : CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged in the ABS sensor pole piece or the tone wheel?***
YES : Replace ABS sensor or tone wheel.
NO : Go to step **10L15**.

10L15 : CHECK HUB RUNOUT.

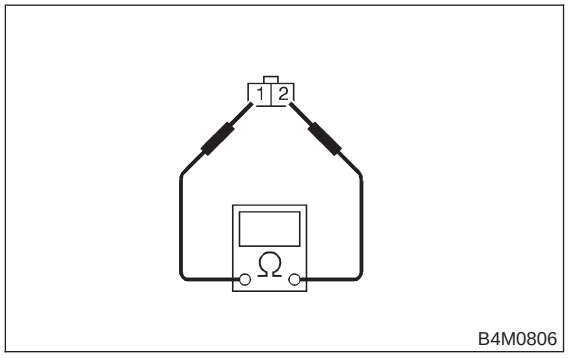
Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***
YES : Go to step **10L16**.
NO : Repair hub.

10L16 : CHECK RESISTANCE OF ABS SENSOR.

1) Turn ignition switch OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance between ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:

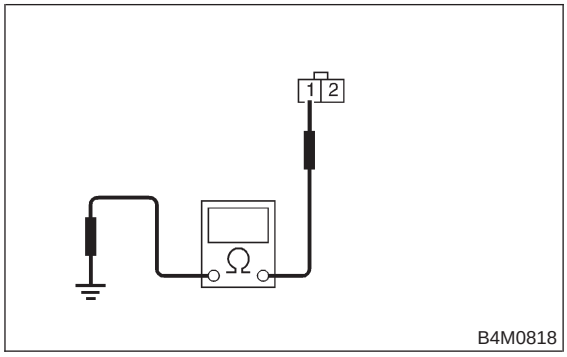


CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **10L17**.
NO : Replace ABS sensor.

10L17 : CHECK GROUND SHORT OF ABS SENSOR.

Measure resistance between ABS sensor and chassis ground.

Terminal
Front RH No. 1 — Chassis ground:
Front LH No. 1 — Chassis ground:
Rear RH No. 1 — Chassis ground:
Rear LH No. 1 — Chassis ground:

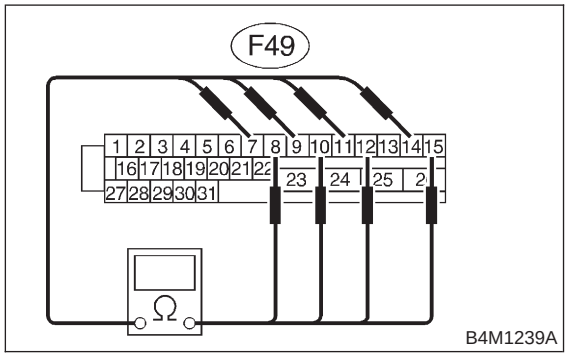


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10L18**.
NO : Replace ABS sensor.

10L18 : CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND ABS SENSOR.

1) Connect connector to ABS sensor.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance at ABSCM&H/U connector terminals.

Connector & terminal
Trouble code 22 / (F49) No. 11 — No. 12:
Trouble code 24 / (F49) No. 9 — No. 10:
Trouble code 26 / (F49) No. 14 — No. 15:
Trouble code 28 / (F49) No. 7 — No. 8:

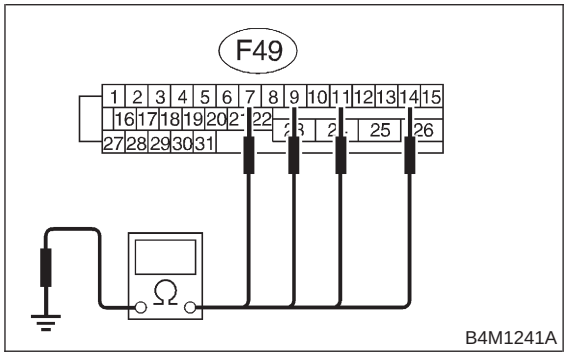


CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **10L19**.
NO : Repair harness/connector between ABSCM&H/U and ABS sensor.

10L19 : CHECK GROUND SHORT OF HARNESS.

Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
Trouble code 22 / (F49) No. 11 — Chassis ground:
Trouble code 24 / (F49) No. 9 — Chassis ground:
Trouble code 26 / (F49) No. 14 — Chassis ground:
Trouble code 28 / (F49) No. 7 — Chassis ground:

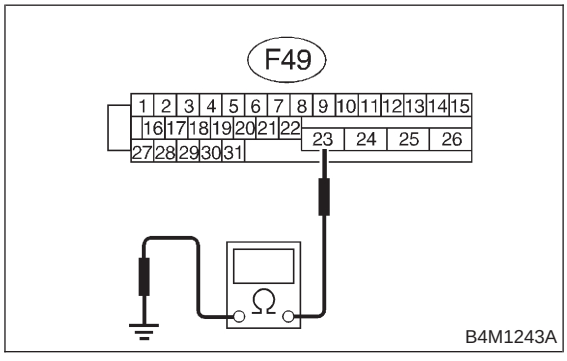


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10L20**.
NO : Repair harness/connector between ABSCM&H/U and ABS sensor.

10L20 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

Measure resistance between ABSCM&H/U and chassis ground.

Connector & terminal
(F49) No. 23 — GND:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10L21**.
NO : Repair ABSCM&H/U ground harness.

10L21 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM&H/U and ABS sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10L22**.

10L22 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***
YES : Go to step **10L23**.
NO : Properly install the car telephone or the wireless transmitter.

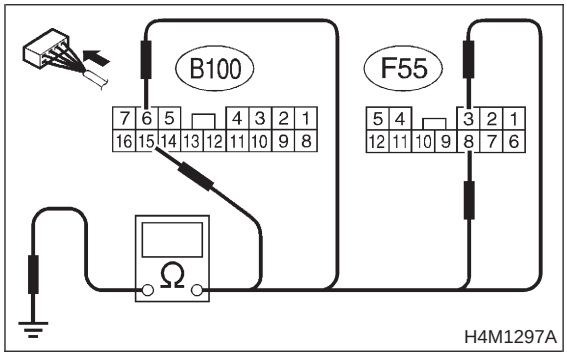
10L23 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***
YES : Install the noise sources apart from the sensor harness.
NO : Go to step **10L24**.

10L24 : CHECK SHIELD CIRCUIT.

1) Connect all connectors.
2) Measure resistance between shield connector and chassis ground.

Connector & terminal
Trouble code 22 / (B100) No. 15 — Chassis ground:
Trouble code 24 / (B100) No. 6 — Chassis ground:
Trouble code 26 / (F55) No. 8 — Chassis ground:
Trouble code 28 / (F55) No. 3 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10L25**.
NO : Repair shield harness.

10L25 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10L26**.

10L26 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary noise interference.

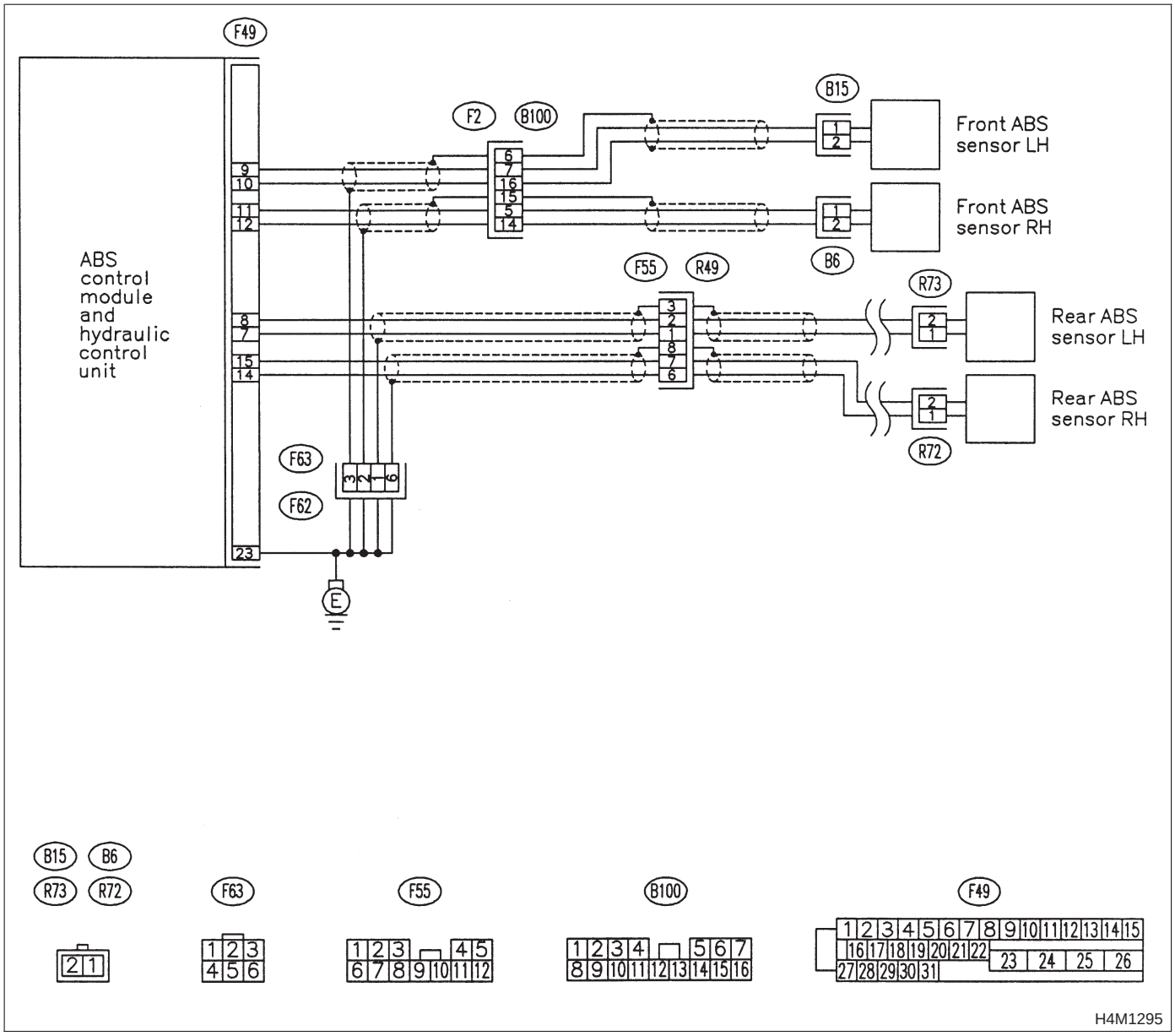
MEMO:

M: TROUBLE CODE 29 ABNORMAL ABS SENSOR SIGNAL ON ANY ONE OF FOUR SENSOR
— ABNORMAL ABS SENSOR SIGNAL ON ANY ONE OF FOUR —

DIAGNOSIS:
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty tone wheel
- Wheels turning freely for a long time

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10M1 : CHECK IF THE WHEELS HAVE TURNED FREELY FOR A LONG TIME.

CHECK : ***Check if the wheels have been turned freely for more than one minute, such as when the vehicle is jacked-up, under full-lock cornering or when tire is not in contact with road surface.***

YES : The ABS is normal. Erase the trouble code.

NOTE:
When the wheels turn freely for a long time, such as when the vehicle is towed or jacked-up, or when steering wheel is continuously turned all the way, this trouble code may sometimes occur.

NO : Go to step **10M2**.

10M2 : CHECK TIRE SPECIFICATIONS.

Turn ignition switch to OFF.

CHECK : ***Are the tire specifications correct?***

YES : Go to step **10M3**.

NO : Replace tire.

10M3 : CHECK WEAR OF TIRE.

CHECK : ***Is the tire worn excessively?***

YES : Replace tire.

NO : Go to step **10M4**.

10M4 : CHECK TIRE PRESSURE.

CHECK : ***Is the tire pressure correct?***

YES : Go to step **10M5**.

NO : Adjust tire pressure.

10M5 : CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32±10 N·m (3.3±1.0 kg-m, 24±7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***

YES : Go to step **10M6**.

NO : Tighten ABS sensor installation bolts securely.

10M6 : CHECK INSTALLATION OF TONE WHEEL.

Tightening torque:
13±3 N·m (1.3±0.3 kg-m, 9±2.2 ft-lb)

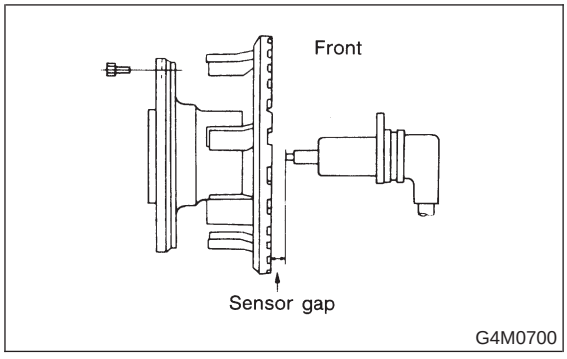
CHECK : ***Are the tone wheel installation bolts tightened securely?***

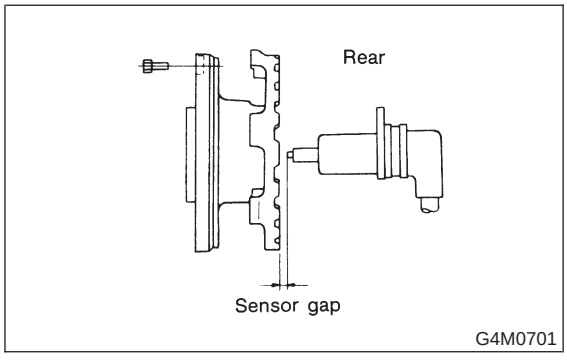
YES : Go to step **10M7**.

NO : Tighten tone wheel installation bolts securely.

10M7 : CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.





	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

CHECK : ***Is the gap within the specifications?***

YES : Go to step **10M8**.

NO : Adjust the gap.

NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10M8 : CHECK OSCILLOSCOPE.

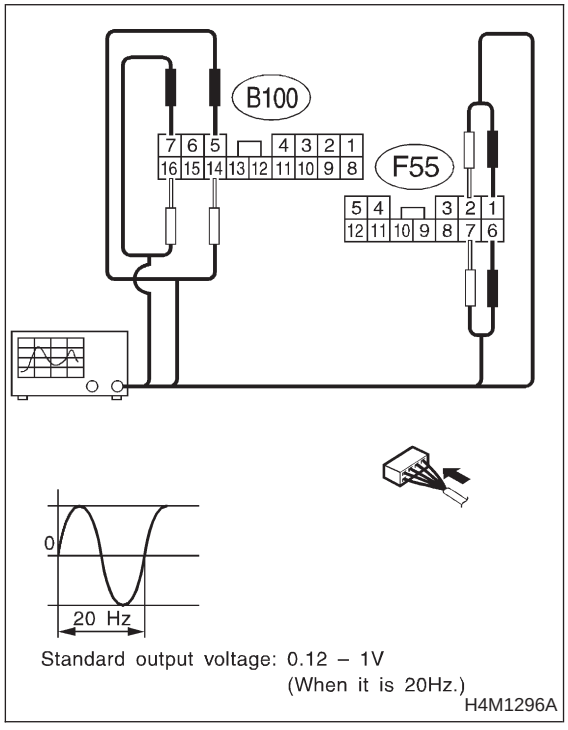
CHECK : ***Is an oscilloscope available?***
YES : Go to step **10M9**.
NO : Go to step **10M10**.

10M9 : CHECK ABS SENSOR SIGNAL.

1) Raise all four wheels of ground.
2) Turn ignition switch OFF.
3) Connect the oscilloscope to the connector.
4) Turn ignition switch ON.
5) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABSCM&H/U sometimes stores the trouble code 29.

Connector & terminal
(B100) No. 5 (+) — No. 14 (−) (Front RH):
(B100) No. 7 (+) — No. 16 (−) (Front LH):
(F55) No. 6 (+) — No. 7 (−) (Rear RH):
(F55) No. 1 (+) — No. 2 (−) (Rear LH):



CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***
YES : Go to step **10M13**.
NO : Go to step **10M10**.

10M10 : CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor from hub.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***
YES : Thoroughly remove dirt or other foreign matter.
NO : Go to step **10M11**.

10M11 : CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged teeth in the ABS sensor pole piece or the tone wheel?***
YES : Replace ABS sensor or tone wheel.
NO : Go to step **10M12**.

10M12 : CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***
YES : Go to step **10M13**.
NO : Repair hub.

10M13 : CHECK ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10M14**.

10M14 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

MEMO:

N: TROUBLE CODE 31 FRONT RIGHT INLET VALVE MALFUNCTION

O: TROUBLE CODE 33 FRONT LEFT INLET VALVE MALFUNCTION

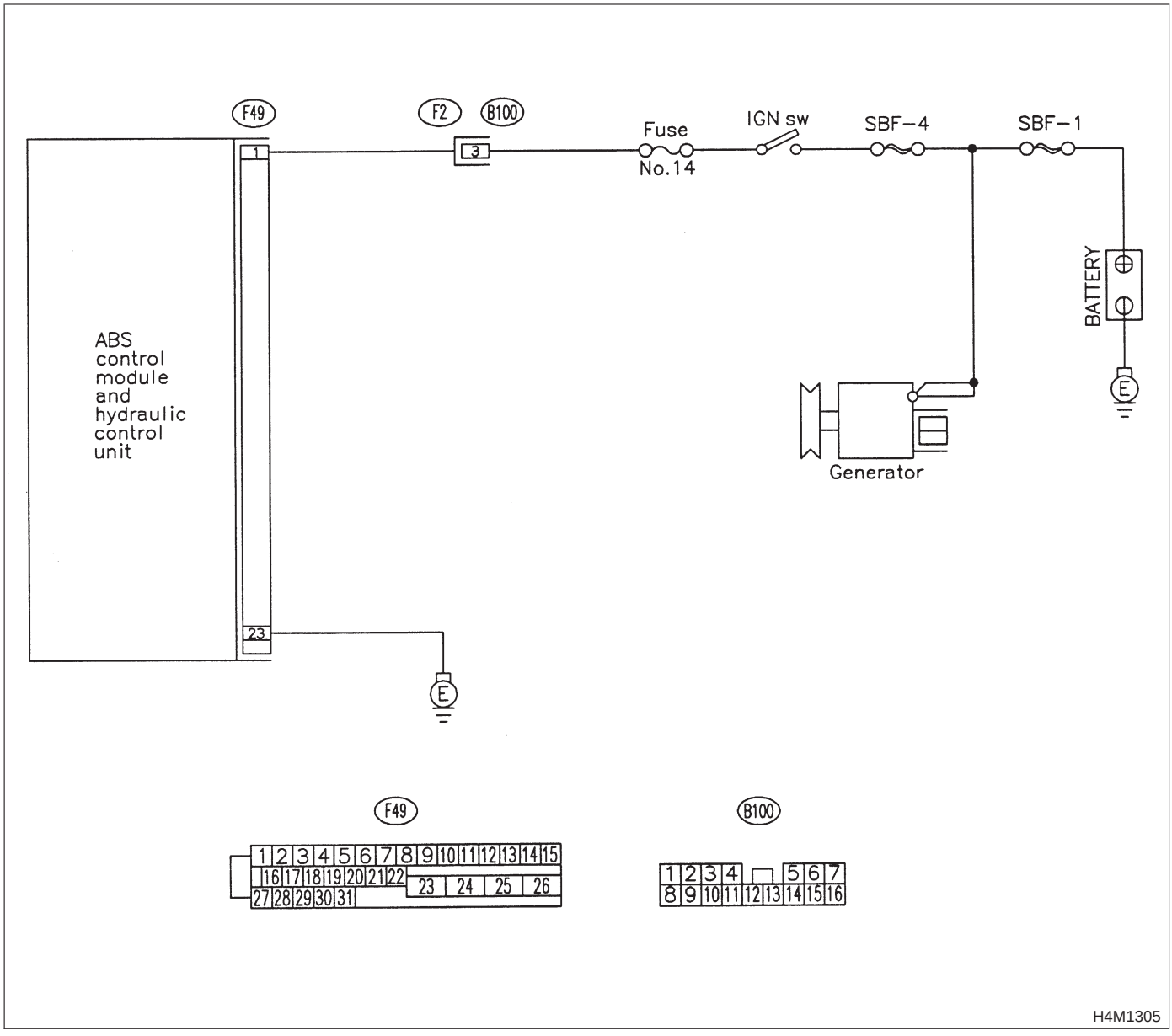
P: TROUBLE CODE 35 REAR RIGHT INLET VALVE MALFUNCTION

Q: TROUBLE CODE 37 REAR LEFT INLET VALVE MALFUNCTION — INLET SOLENOID VALVE MALFUNCTION —

DIAGNOSIS:
- Faulty harness/connector
- Faulty inlet solenoid valve

TROUBLE SYMPTOM:
- ABS does not operate.

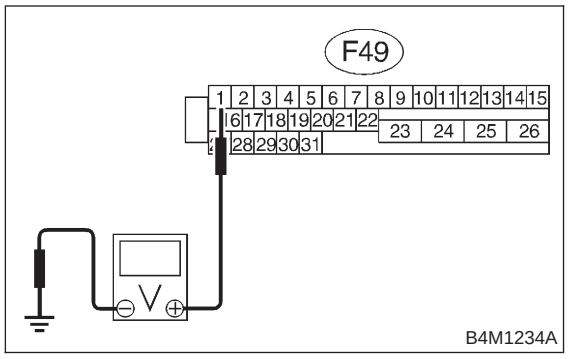
WIRING DIAGRAM:



10Q1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Run the engine at idle.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

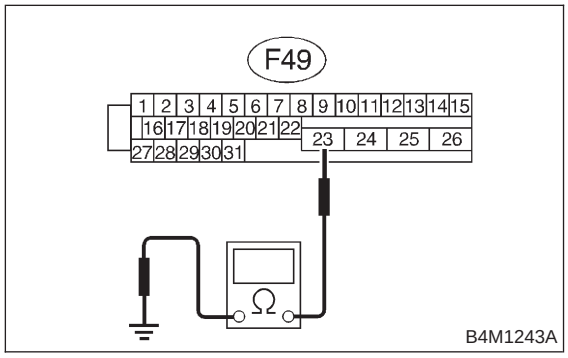


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10Q2**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

10Q2 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10Q3**.
NO : Repair ABSCM&H/U ground harness.

10Q3 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10Q4**.

10Q4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10Q5**.

10Q5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

R: TROUBLE CODE 32 FRONT RIGHT OUTLET VALVE MALFUNCTION

S: TROUBLE CODE 34 FRONT LEFT OUTLET VALVE MALFUNCTION

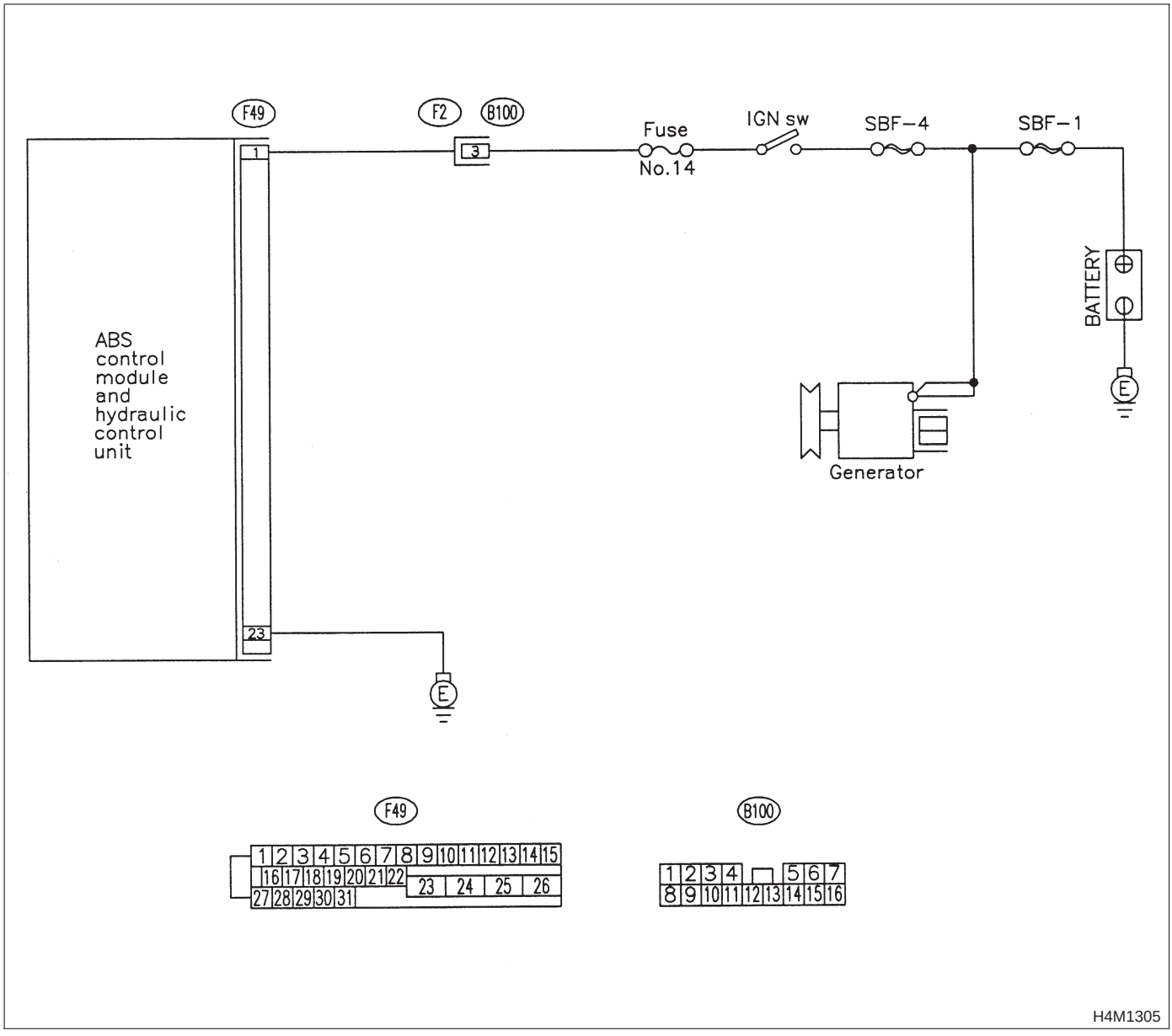
T: TROUBLE CODE 36 REAR RIGHT OUTLET VALVE MALFUNCTION

U: TROUBLE CODE 38 REAR LEFT OUTLET VALVE MALFUNCTION — OUTLET SOLENOID VALVE MALFUNCTION —

DIAGNOSIS:
- Faulty harness/connector
- Faulty outlet solenoid valve

TROUBLE SYMPTOM:
- ABS does not operate.

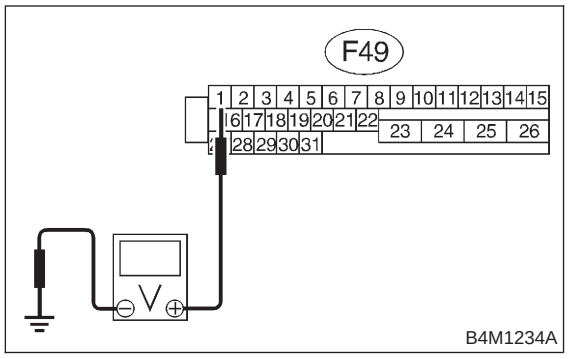
WIRING DIAGRAM:



10U1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Run the engine at idle.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

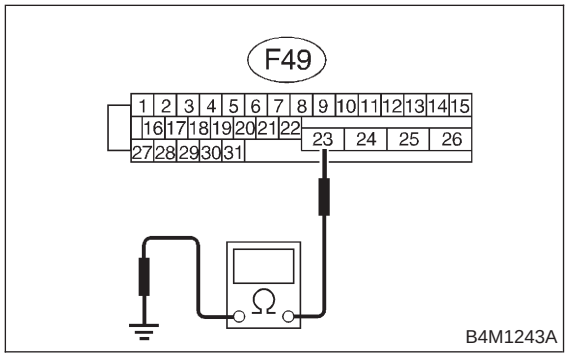


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10U2**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

10U2 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10U3**.
NO : Repair ABSCM&H/U ground harness.

10U3 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10U4**.

10U4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10U5**.

10U5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

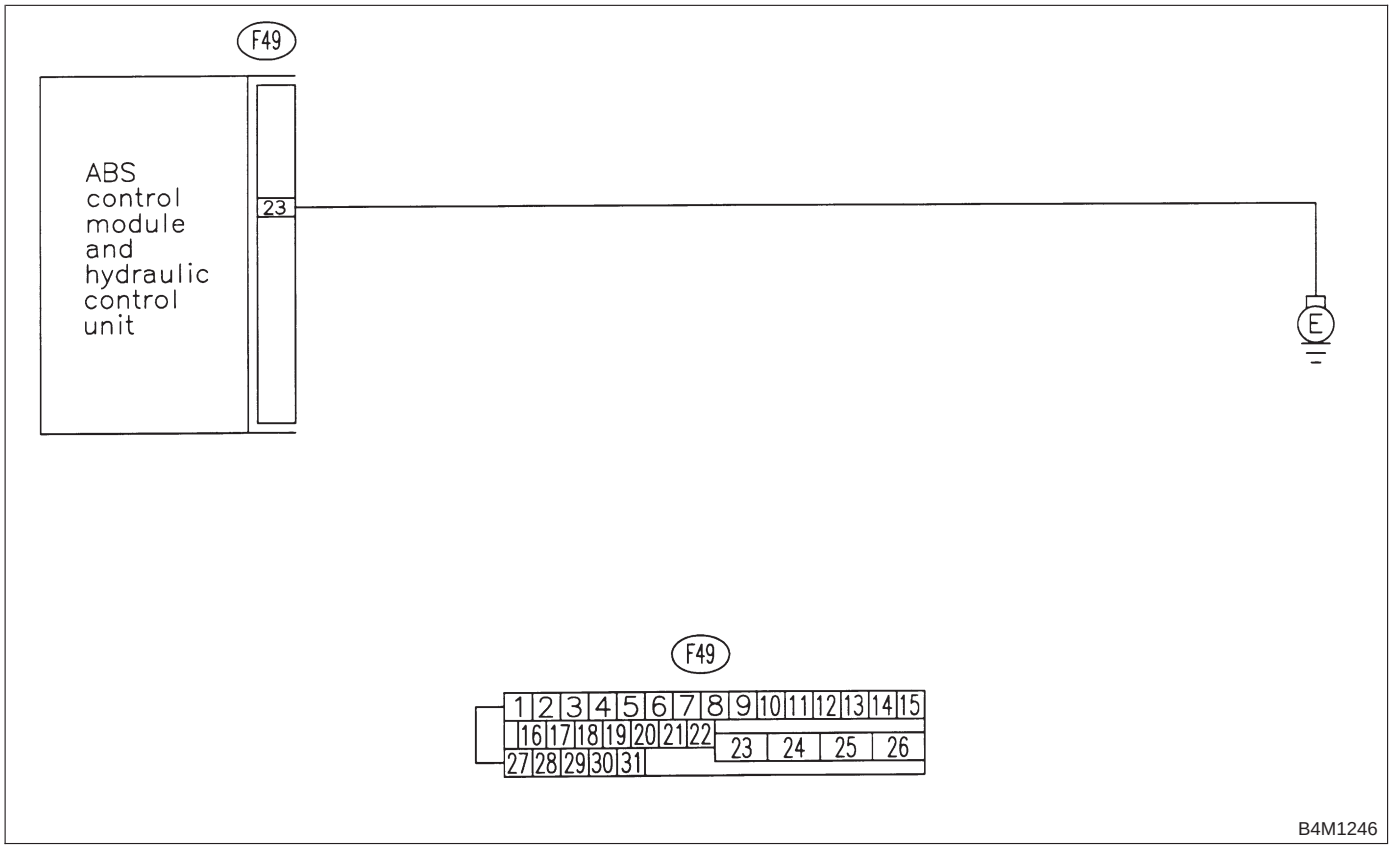
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

V: TROUBLE CODE 41 ABS CONTROL MODULE MALFUNCTION — ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT MALFUNCTION—

DIAGNOSIS:
- Faulty ABSCM&H/U

TROUBLE SYMPTOM:
- ABS does not operate.

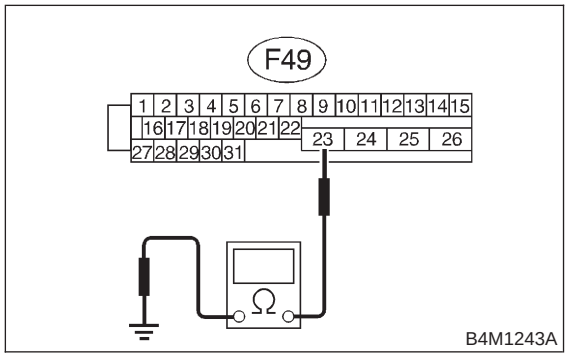
WIRING DIAGRAM:



10V1 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance between ABSCM&H/U and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10V2**.
NO : Repair ABSCM&H/U ground harness.

10V2 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between battery, ignition switch and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10V3**.

10V3 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***
YES : Go to step **10V4**.
NO : Properly install the car telephone or the wireless transmitter.

10V4 : CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***
YES : Install the noise sources apart from the sensor harness.
NO : Go to step **10V5**.

10V5 : CHECK ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10V6**.

10V6 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

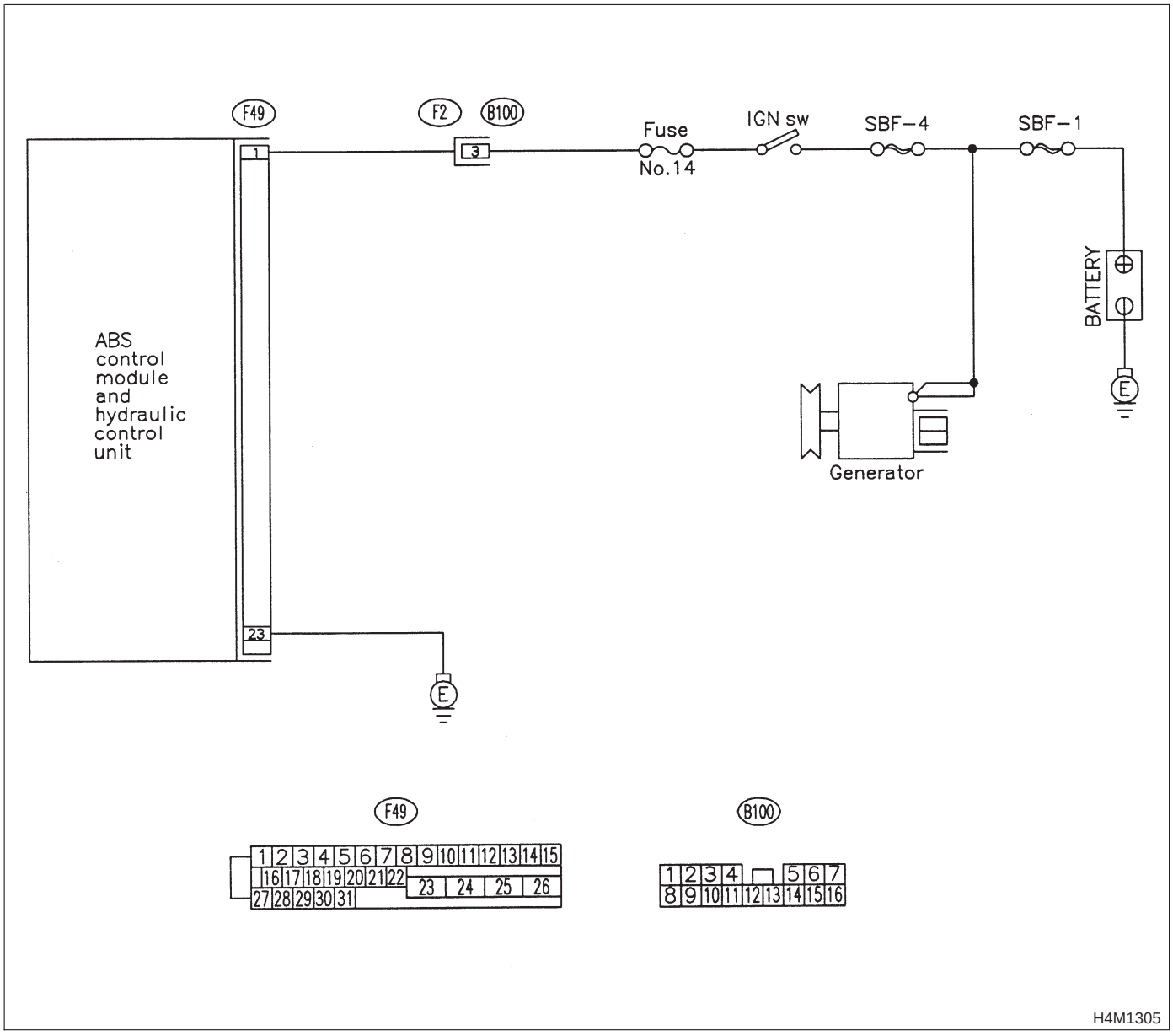
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

W: TROUBLE CODE 42 POWER SUPPLY VOLTAGE TOO LOW — POWER SUPPLY VOLTAGE TOO LOW —

DIAGNOSIS:
- Power source voltage of the ABSCM&H/U is low.

TROUBLE SYMPTOM:
- ABS does not operate.

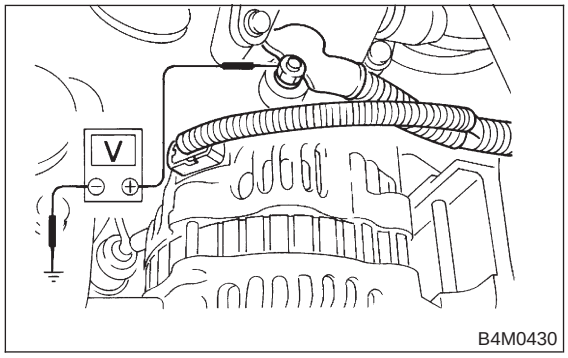
WIRING DIAGRAM:



10W1 : CHECK GENERATOR.

1) Start engine.
2) Idling after warm-up.
3) Measure voltage between generator B terminal and chassis ground.

Terminal
Generator B terminal — Chassis ground:



CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10W2**.
NO : Repair generator.

10W2 : CHECK BATTERY TERMINAL.

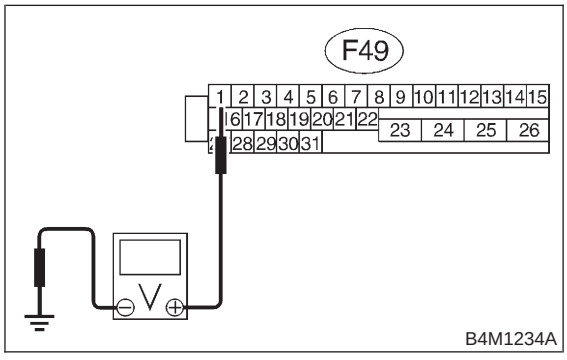
Turn ignition switch to OFF.

CHECK : ***Are the positive and negative battery terminals tightly clamped?***
YES : Go to step **10W3**.
NO : Tighten the clamp of terminal.

10W3 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Disconnect connector from ABSCM&H/U.
2) Run the engine at idle.
3) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

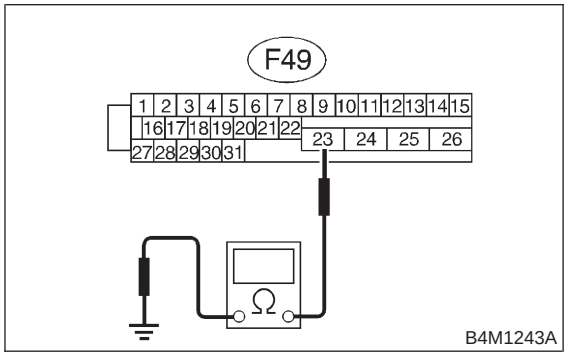


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10W4**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

10W4 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10W5**.
NO : Repair ABSCM&H/U ground harness.

10W5 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10W6**.

10W6 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **10W7**.

10W7 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

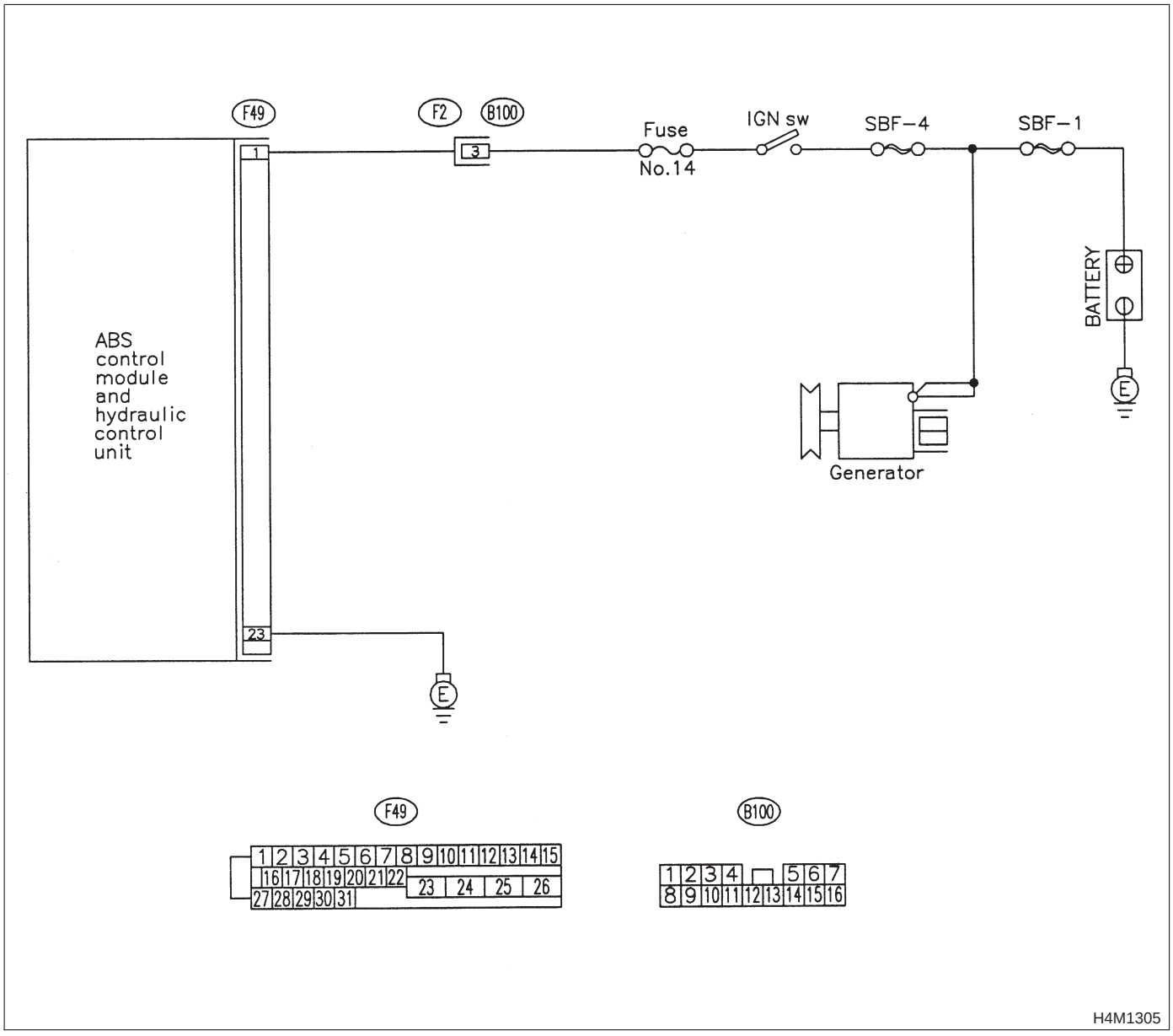
MEMO:

X: TROUBLE CODE 42 POWER SUPPLY VOLTAGE TOO HIGH — POWER SUPPLY VOLTAGE TOO HIGH —

DIAGNOSIS:
- Power source voltage of the ABSCM&H/U is high.

TROUBLE SYMPTOM:
- ABS does not operate.

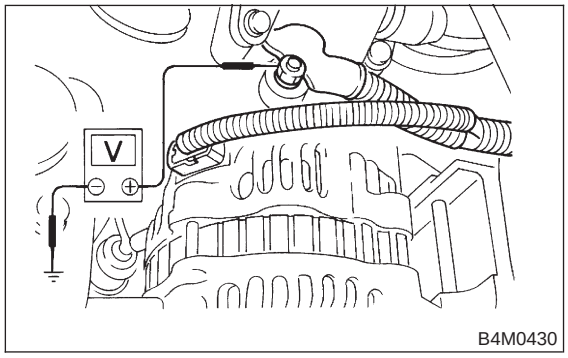
WIRING DIAGRAM:



10X1 : CHECK GENERATOR.

1) Start engine.
2) Idling after warm-up.
3) Measure voltage between generator B terminal and chassis ground.

Terminal
Generator B terminal — Chassis ground:



CHECK : ***Is the voltage between 10 V and 17 V?***
YES : Go to step **10X2**.
NO : Repair generator.

10X2 : CHECK BATTERY TERMINAL.

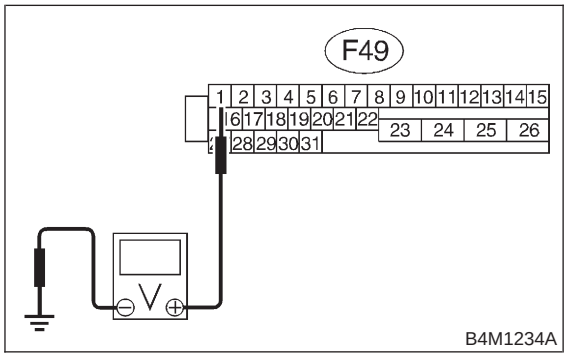
Turn ignition switch to OFF.

CHECK : ***Are the positive and negative battery terminals tightly clamped?***
YES : Go to step **10X3**.
NO : Tighten the clamp of terminal.

10X3 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Disconnect connector from ABSCM&H/U.
2) Run the engine at idle.
3) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

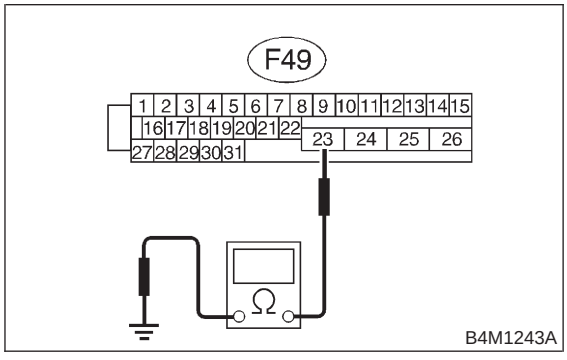


CHECK : ***Is the voltage between 10 V and 17 V?***
YES : Go to step **10X4**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

10X4 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10X5**.
NO : Repair ABSCM&H/U ground harness.

10X5 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10X6**.

10X6 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **10X7**.

10X7 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

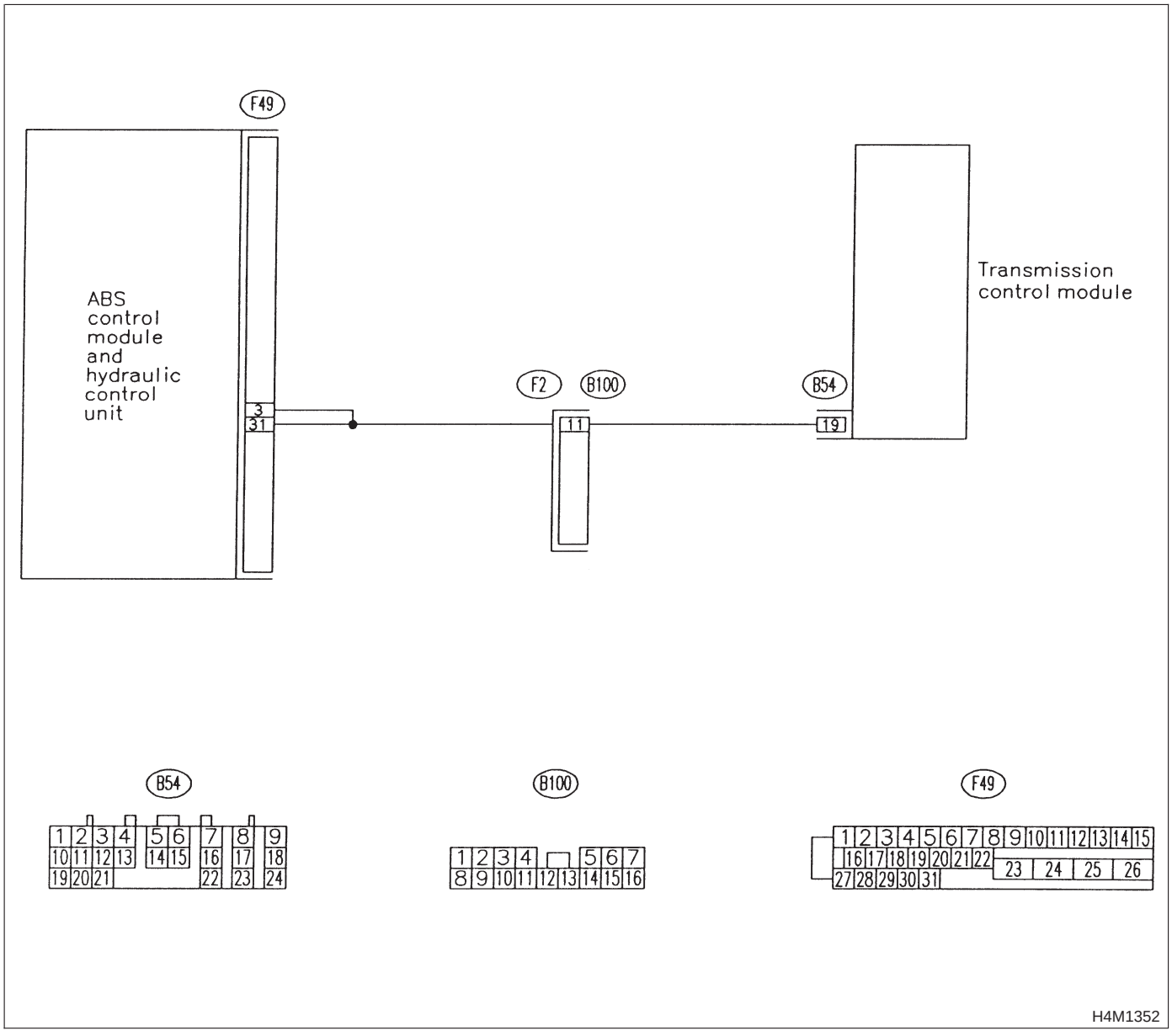
MEMO:

Y: TROUBLE CODE 44 ABS-AT CONTROL (NON CONTROLLED) — ABS-AT CONTROL (NON CONTROLLED) —

DIAGNOSIS:
- Combination of AT control faults

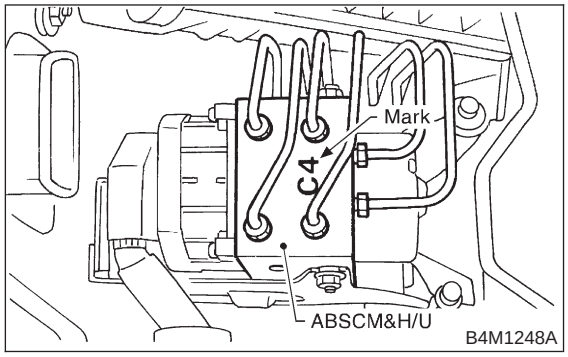
TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10Y1 : CHECK SPECIFICATIONS OF THE ABSCM&H/U.

Check specifications of the mark to the ABSCM&H/U.



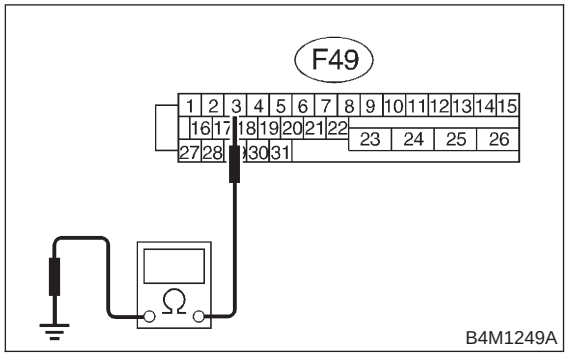
Mark	Model
C5	AWD AT
C6	AWD MT

CHECK : ***Is an ABSCM&H/U for AT model installed on a MT model?***
YES : Replace ABSCM&H/U.
NO : Go to step **10Y2**.

10Y2 : CHECK GROUND SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect two connectors from TCM.
3) Disconnect connector from ABSCM&H/U.
4) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 — Chassis ground:

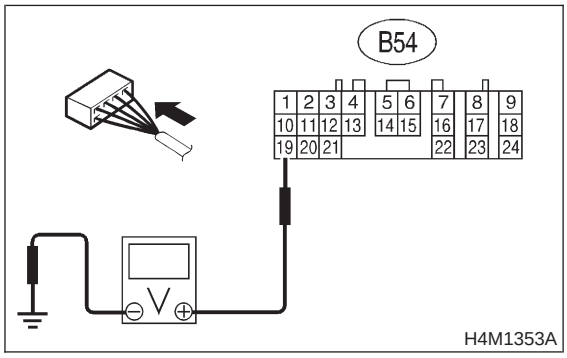


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10Y3**.
NO : Repair harness between TCM and ABSCM&H/U.

10Y3 : CHECK TCM.

1) Connect all connectors to TCM.
2) Turn ignition switch to ON.
3) Measure voltage between TCM connector terminal and chassis ground.

Connector & terminal
(B54) No. 19 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10Y5**.
NO : Go to step **10Y4**.

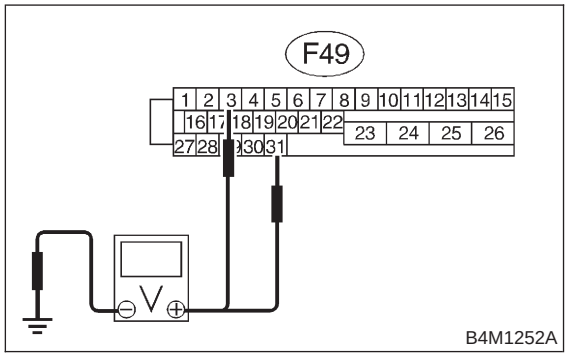
10Y4 : CHECK AT.

CHECK : ***Is the AT functioning normally?***
YES : Replace TCM.
NO : Repair AT.

10Y5 : CHECK OPEN CIRCUIT OF HARNESS.

Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 (+) — Chassis ground (−):
(F49) No. 31 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10Y6**.
NO : Repair harness/connector between AT control module and ABSCM&H/U.

10Y6 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between AT control module and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10Y7**.

10Y7 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10Y8**.

10Y8 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

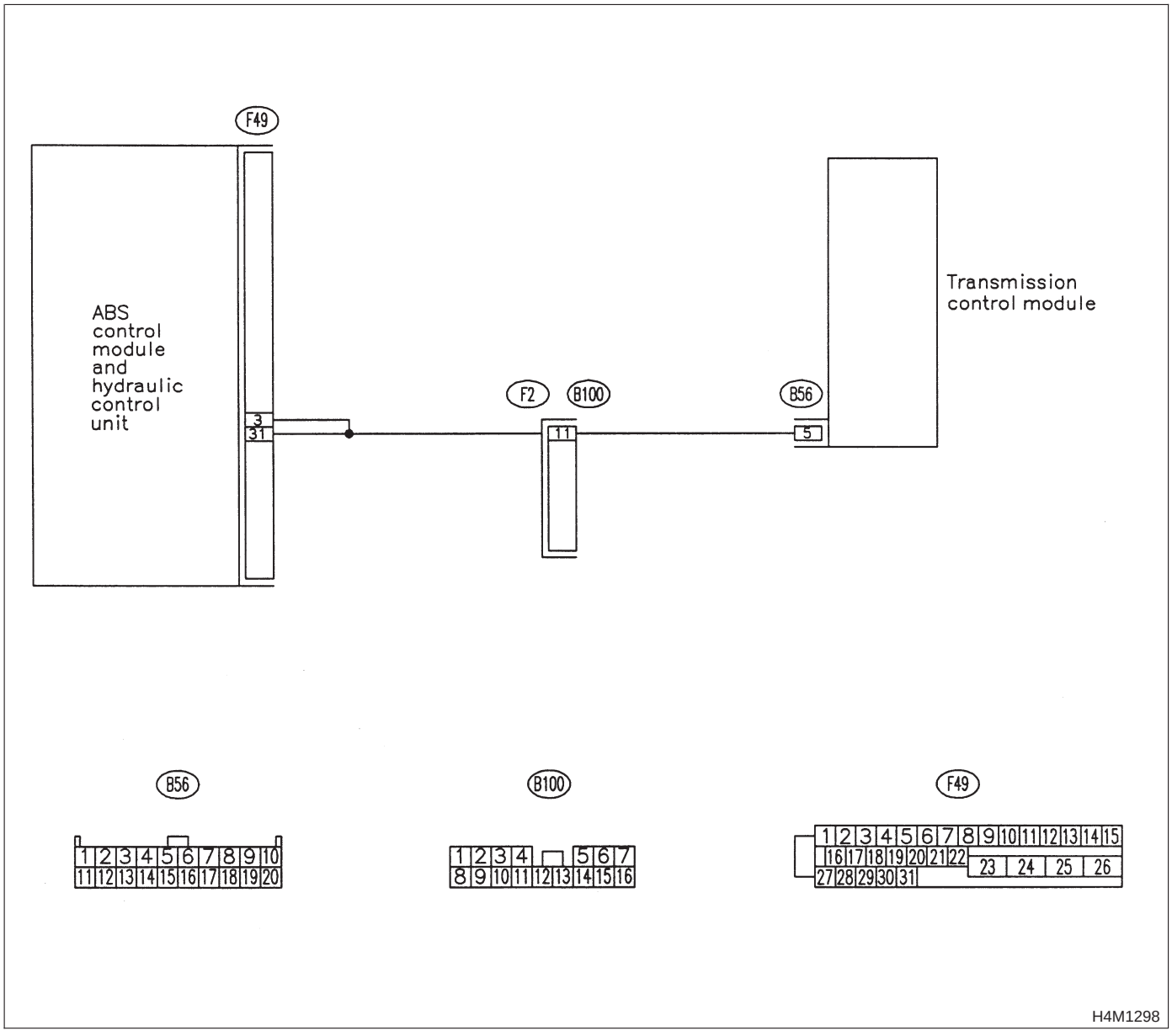
MEMO:

Z: TROUBLE CODE 44 ABS-AT CONTROL (CONTROLLED) — ABS-AT CONTROL (CONTROLLED) —

DIAGNOSIS:
- Combination of AT control faults

TROUBLE SYMPTOM:
- ABS does not operate.

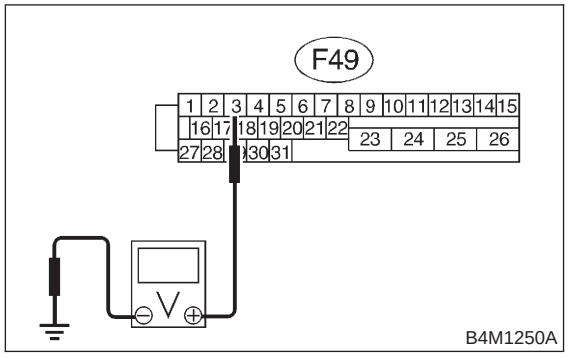
WIRING DIAGRAM:



10Z1 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect two connectors from AT control module.
3) Disconnect connector from ABSCM&H/U.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 (+) — Chassis ground (−):

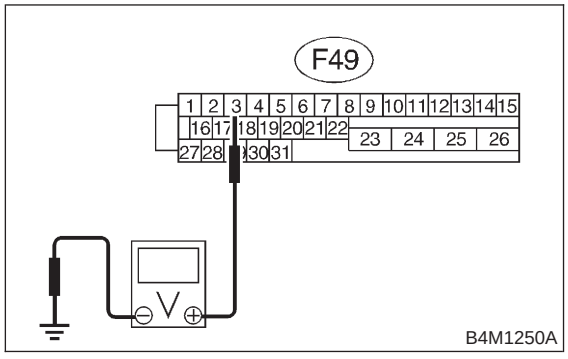


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10Z2**.
NO : Repair harness between AT control module and ABSCM&H/U.

10Z2 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 (+) — Chassis ground (−):

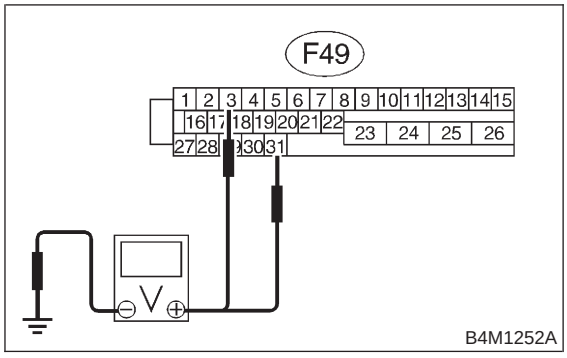


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10Z3**.
NO : Repair harness between AT control module and ABSCM&H/U.

10Z3 : CHECK OPEN CIRCUIT OF HARNESS.

1) Turn ignition switch to OFF.
2) Connect all connectors to TCM.
3) Turn ignition switch to ON.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 3 (+) — Chassis ground (−):
(F49) No. 31 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 10 V and 13 V?***
YES : Go to step **10Z4**.
NO : Repair harness/connector between TCM and ABSCM&H/U.

10Z4 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between AT control module and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10Z5**.

10Z5 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10Z6**.

10Z6 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

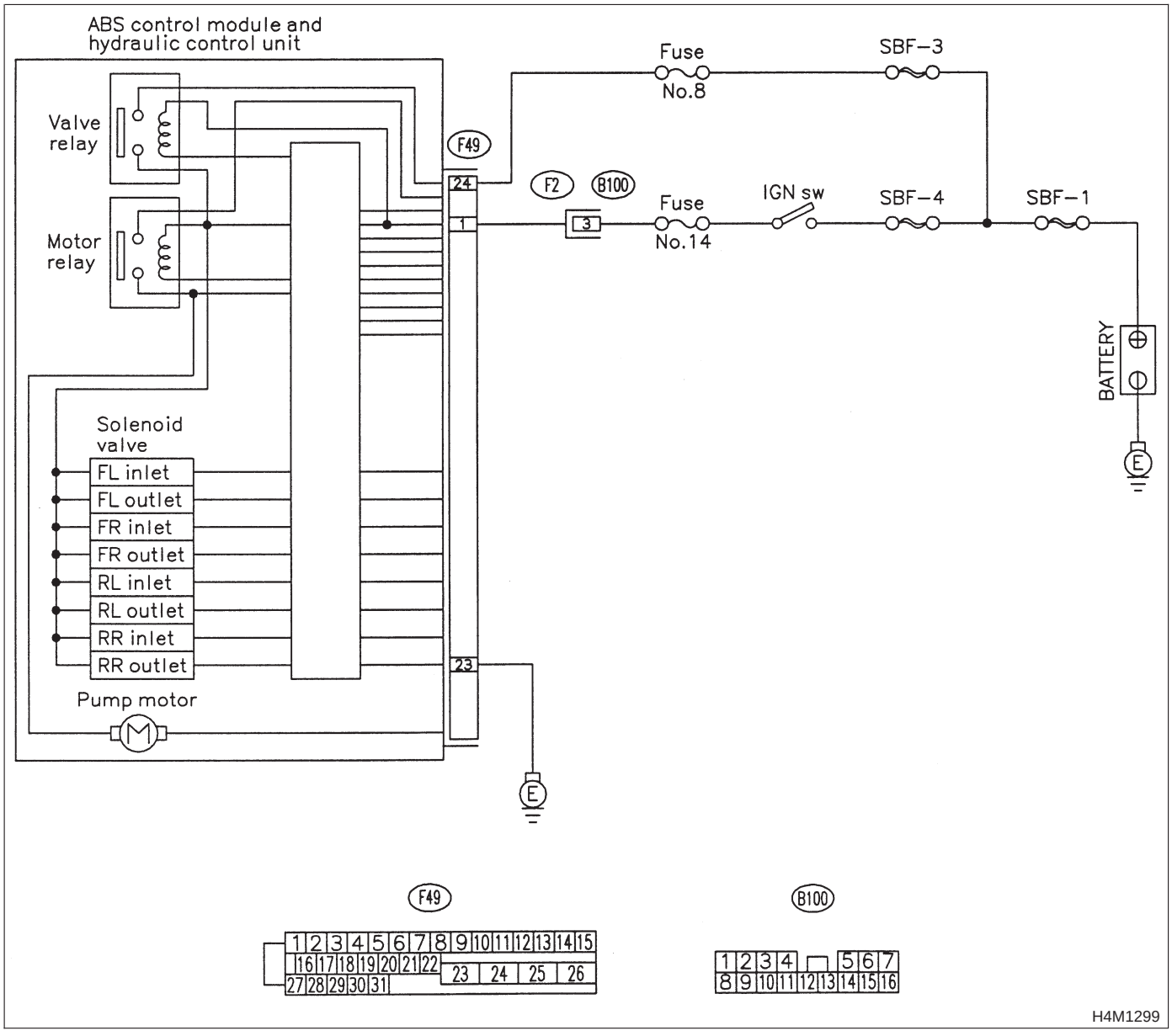
MEMO:

AA: TROUBLE CODE 51 VALVE RELAY MALFUNCTION — VALVE RELAY MALFUNCTION —

DIAGNOSIS:
- Faulty valve relay

TROUBLE SYMPTOM:
- ABS does not operate.

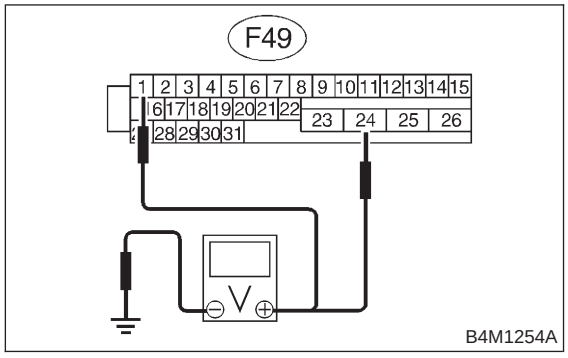
WIRING DIAGRAM:



10AA1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Run the engine at idle.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):
(F49) No. 24 (+) — Chassis ground (−):

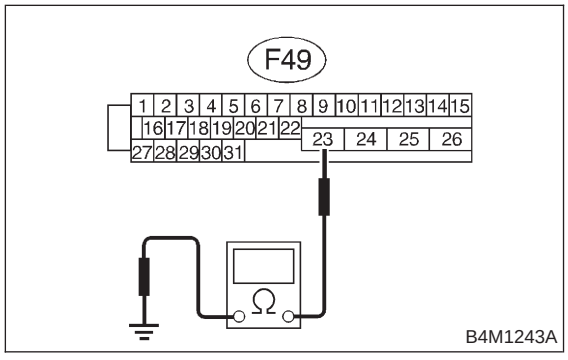


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10AA2**.
NO : Repair harness connector between battery and ABSCM&H/U.

10AA2 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10AA3**.
NO : Repair ABSCM&H/U ground harness.

10AA3 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AA4**.

10AA4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AA5**.

10AA5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

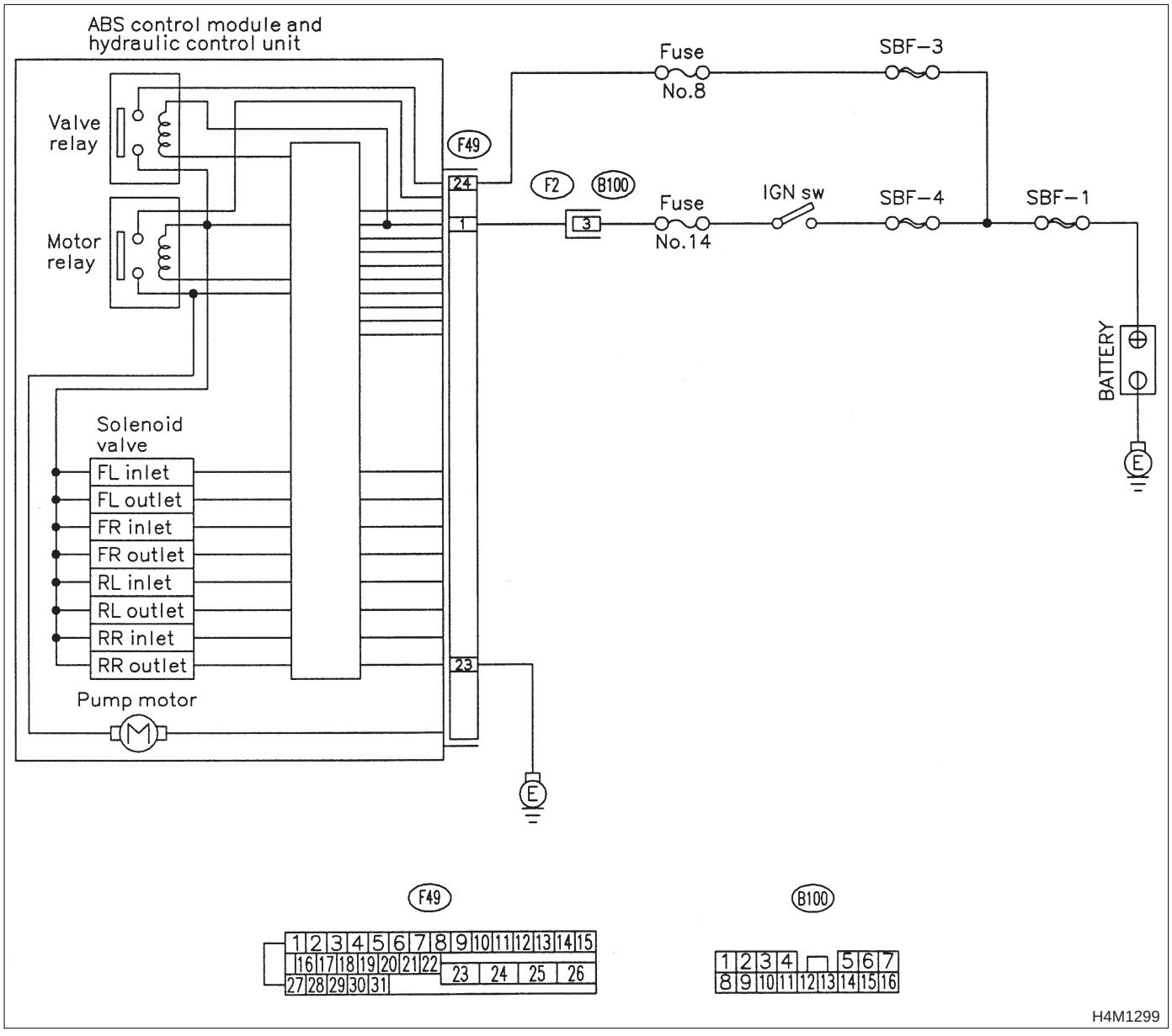
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

AB: TROUBLE CODE 51 VALVE RELAY ON FAILURE — VALVE RELAY ON FAILURE —

DIAGNOSIS:
- Faulty valve relay

TROUBLE SYMPTOM:
- ABS does not operate.

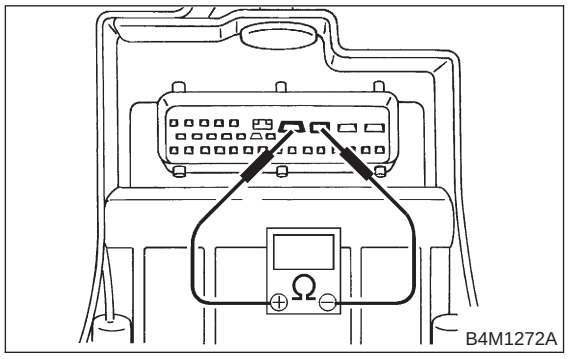
WIRING DIAGRAM:



10AB1 : CHECK VALVE RELAY IN ABSCM&H/U.

Measure resistance between ABSCM&H/U terminals.

Terminals
No. 23 (+) — No. 24 (−):



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AB2**.
NO : Replace ABSCM&H/U.

10AB2 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AB3**.

10AB3 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AB4**.

10AB4 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

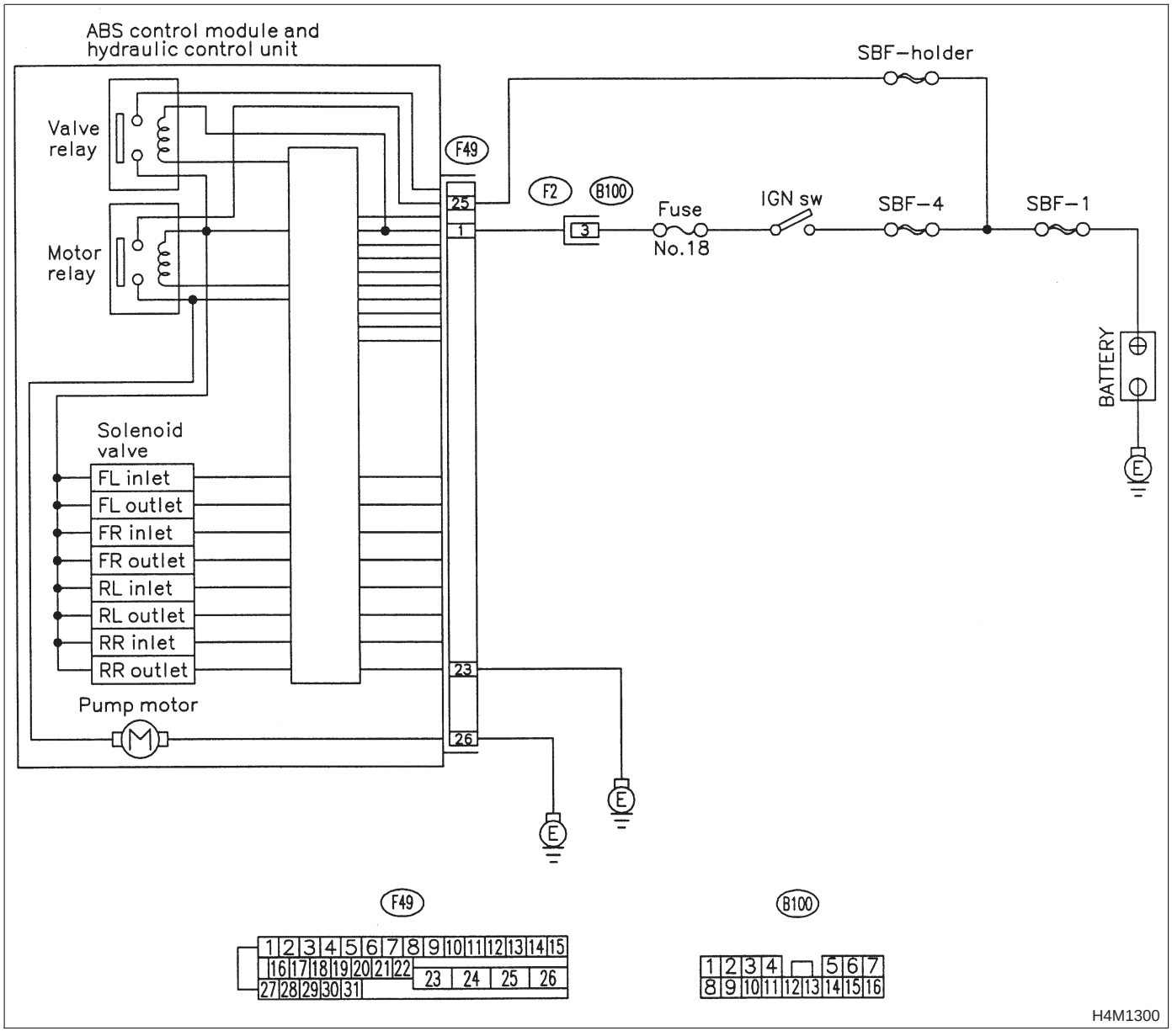
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

AC: TROUBLE CODE 52 OPEN CIRCUIT IN MOTOR RELAY CIRCUIT — OPEN CIRCUIT IN MOTOR RELAY CIRCUIT —

DIAGNOSIS:
- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:
- ABS does not operate.

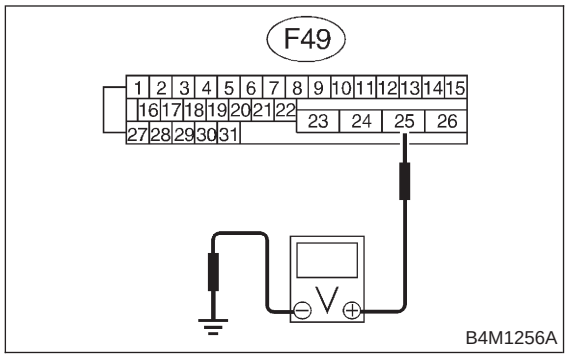
WIRING DIAGRAM:



10AC1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Turn ignition switch to ON.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 25 (+) — Chassis ground (−):

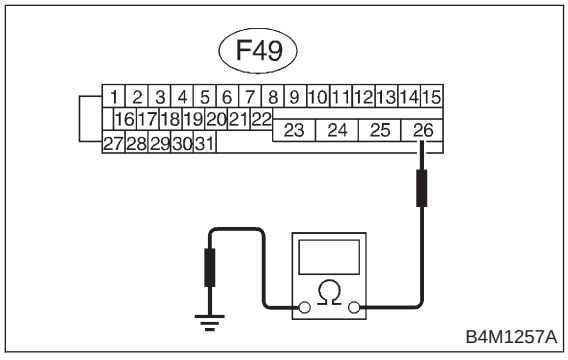


CHECK : ***Is the voltage between 10 V and 13 V?***
YES : Go to step **10AC2**.
NO : Repair harness/connector between battery and ABSCM&H/U and check fuse SBF-holder.

10AC2 : CHECK GROUND CIRCUIT OF MOTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 26 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10AC3**.
NO : Repair ABSCM&H/U ground harness.

10AC3 : CHECK MOTOR OPERATION.

Operate the sequence control. <Ref. to 4-4 [W14D0].>

NOTE:
Use the diagnosis connector to operate the sequence control.

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the check sequence?***
YES : Go to step **10AC4**.
NO : Replace ABSCM&H/U.

10AC4 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between hydraclic unit, relay box and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AC5**.

10AC5 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AC6**.

10AC6 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

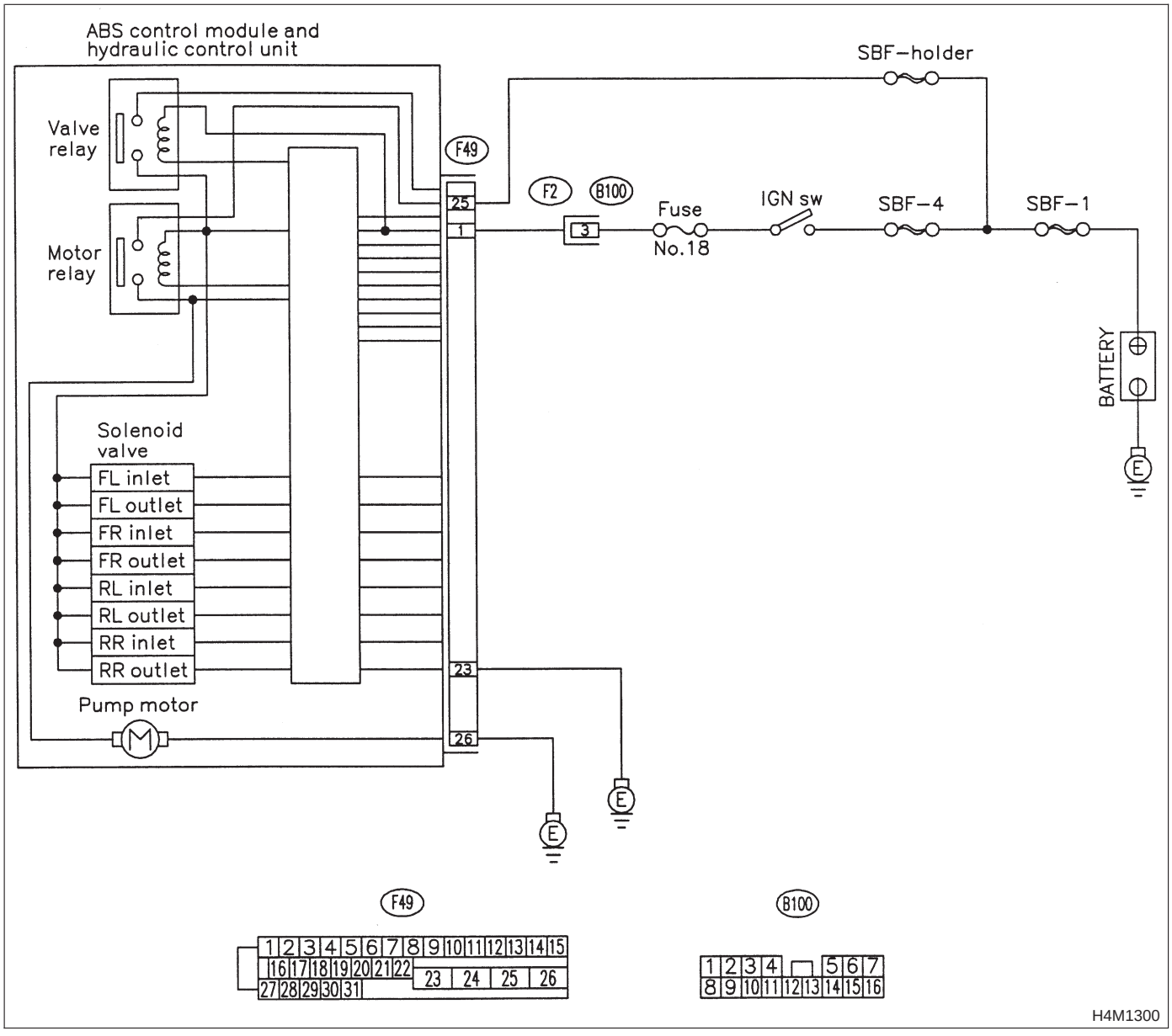
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

AD: TROUBLE CODE 52 MOTOR RELAY ON FAILURE — MOTOR RELAY ON FAILURE —

DIAGNOSIS:
- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:
- ABS does not operate.

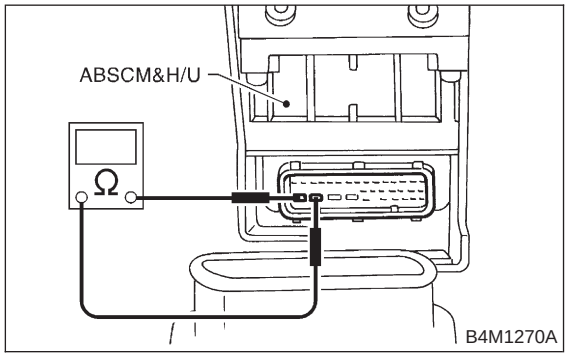
WIRING DIAGRAM:



10AD1 : CHECK MOTOR RELAY IN ABSCM&H/U.

Measure resistance between ABSCM&H/U terminals.

Terminals
No. 25 — No. 26:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AD2**.
NO : Replace ABSCM&H/U.

10AD2 : CHECK MOTOR OPERATION.

Operate the sequence control. <Ref. to 4-4 [W14D0].>

NOTE:
Use the diagnosis connector to operate the sequence control.

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the sequence control?***
YES : Go to step **10AD3**.
NO : Replace ABSCM&H/U.

10AD3 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between hydraulic unit, relay box and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AD4**.

10AD4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AD5**.

10AD5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

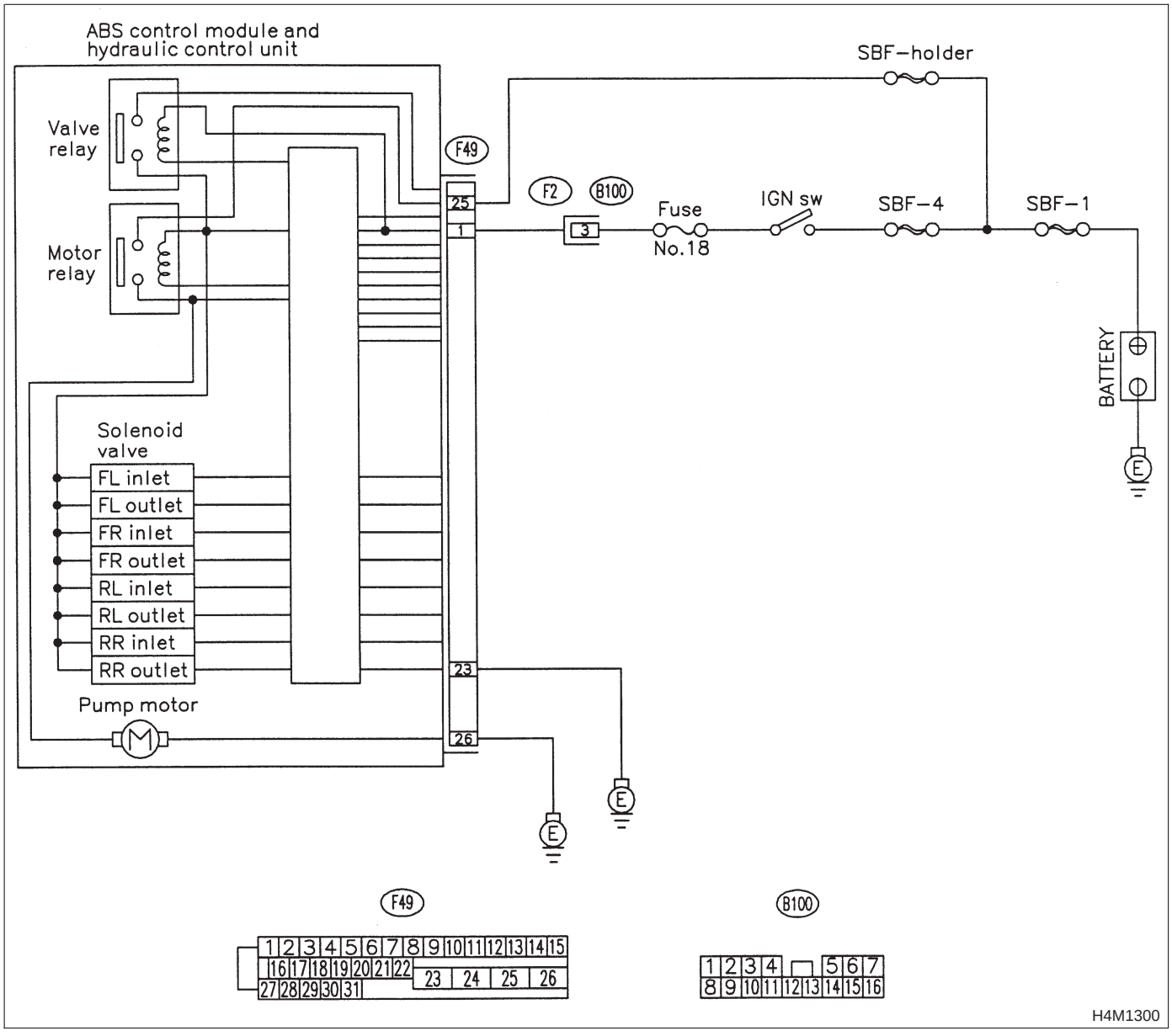
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

AE: TROUBLE CODE 52 MOTOR MALFUNCTION — MOTOR MALFUNCTION —

DIAGNOSIS:
- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:
- ABS does not operate.

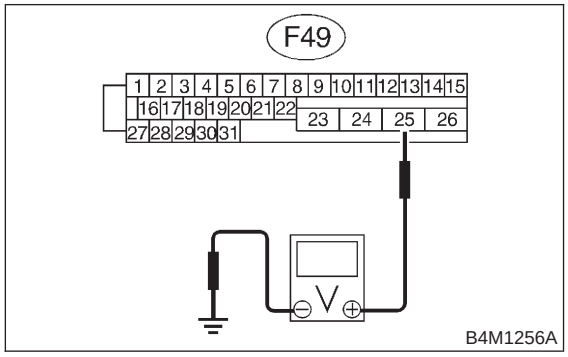
WIRING DIAGRAM:



10AE1 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Turn ignition switch to ON.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 25 (+) — Chassis ground (−):

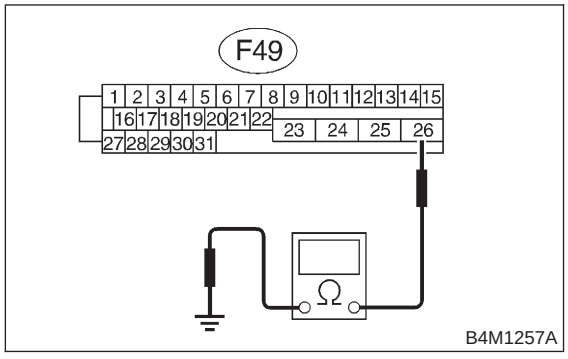


CHECK : ***Is the voltage between 10 V and 13 V?***
YES : Go to step **10AE2**.
NO : Repair harness/connector between battery and ABSCM&H/U and check fuse SBF-holder.

10AE2 : CHECK GROUND CIRCUIT OF MOTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 26 — Chassis ground:

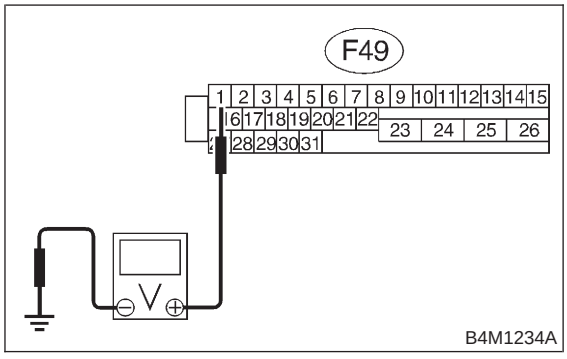


CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10AE3**.
NO : Repair ABSCM&H/U ground harness.

10AE3 : CHECK INPUT VOLTAGE OF ABSCM&H/U.

1) Run the engine at idle.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 1 (+) — Chassis ground (−):

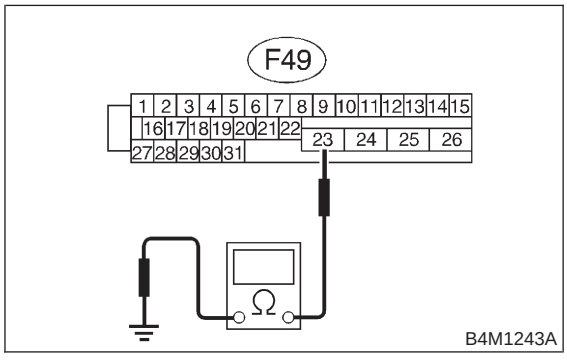


CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10AE4**.
NO : Repair harness connector between battery, ignition switch and ABSCM&H/U.

10AE4 : CHECK GROUND CIRCUIT OF ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 23 — Chassis ground:



CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10AE5**.
NO : Repair ABSCM&H/U ground harness.

10AE5 : CHECK MOTOR OPERATION.

Operate the sequence control. <Ref. to 4-4 [W14D0].>

NOTE:
Use the diagnosis connector to operate the sequence control.

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the sequence control?***
YES : Go to step **10AE6**.
NO : Replace hydraulic unit.

10AE6 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between generator, battery and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AE7**.

10AE7 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AE8**.

10AE8 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

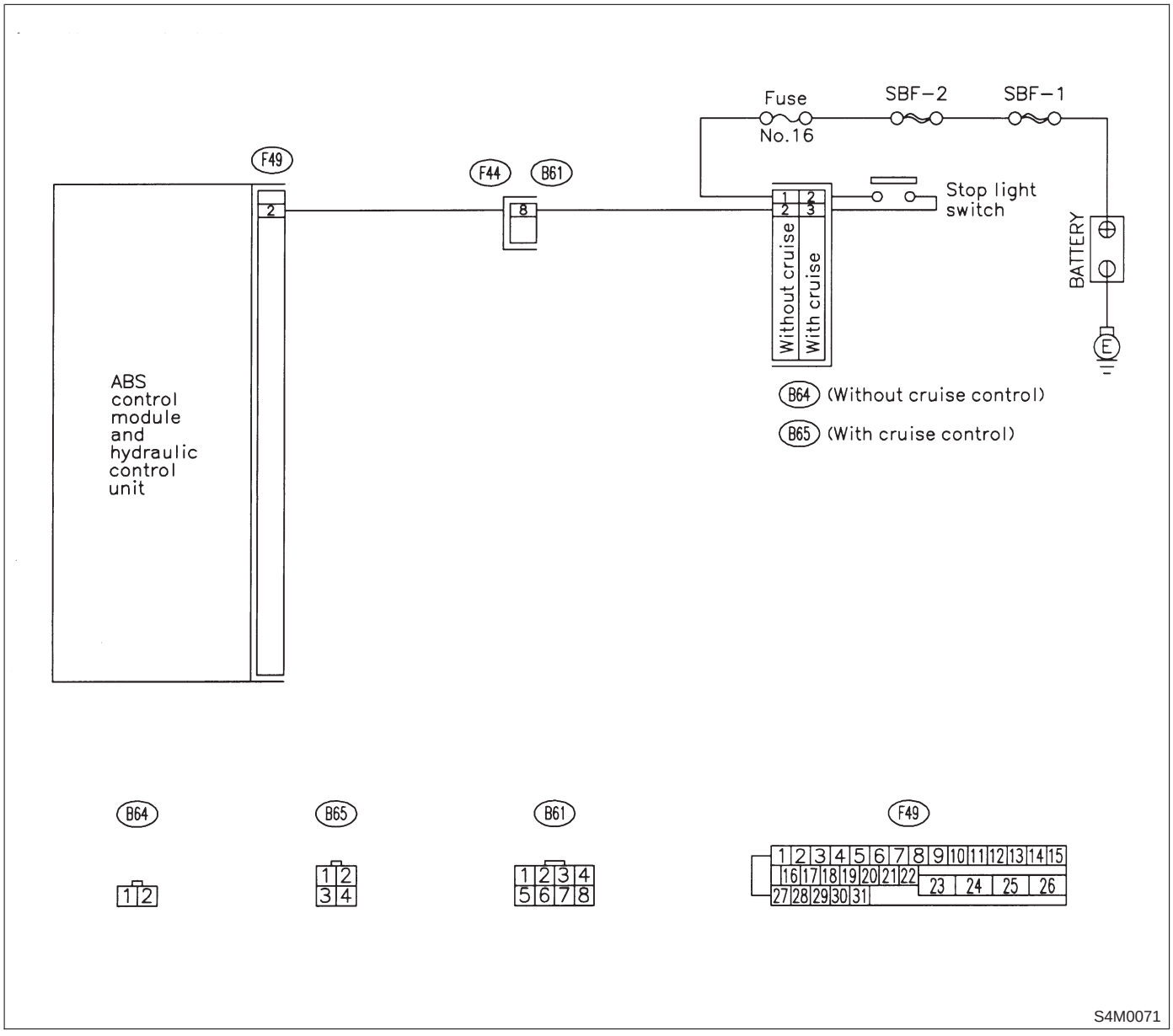
MEMO:

AF: TROUBLE CODE 54 STOP LIGHT SWITCH SIGNAL CIRCUIT MALFUNCTION
— STOP LIGHT SWITCH SIGNAL CIRCUIT MALFUNCTION —

DIAGNOSIS:
- Faulty stop light switch

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10AF1 : CHECK OUTPUT OF STOP LIGHT SWITCH USING SELECT MONITOR.

1) Select “Current data display & Save” on the select monitor.
2) Release the brake pedal.
3) Read the stop light switch output in the select monitor data display.

CHECK : ***Is the reading indicated on monitor display less than 1.5 V?***
YES : Go to step **10AF2**.
NO : Go to step **10AF3**.

10AF2 : CHECK OUTPUT OF STOP LIGHT SWITCH USING SELECT MONITOR.

1) Depress the brake pedal.
2) Read the stop light switch output in the select monitor data display.

CHECK : ***Is the reading indicated on monitor display between 10 V and 15 V?***
YES : Go to step **10AF5**.
NO : Go to step **10AF3**.

10AF3 : CHECK IF STOP LIGHTS COME ON.

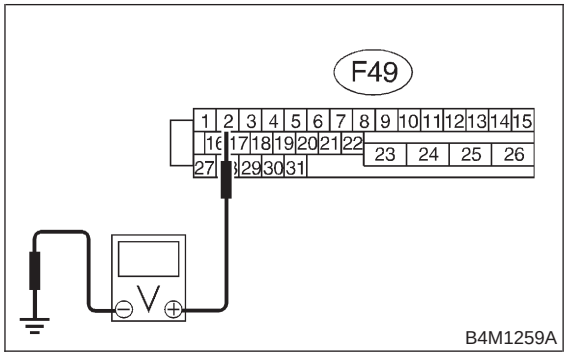
Depress the brake pedal.

CHECK : ***Do stop lights turn on?***
YES : Go to step **10AF4**.
NO : Repair stop lights circuit.

10AF4 : CHECK OPEN CIRCUIT IN HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Depress brake pedal.
4) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 2 — Chassis ground:



CHECK : ***Is the voltage between 10 V and 15 V?***
YES : Go to step **10AF5**.
NO : Repair harness between stop light switch and ABSCM&H/U connector.

10AF5 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connector between stop light switch and ABSCM&H/U? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AF6**.

10AF6 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AF7**.

10AF7 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

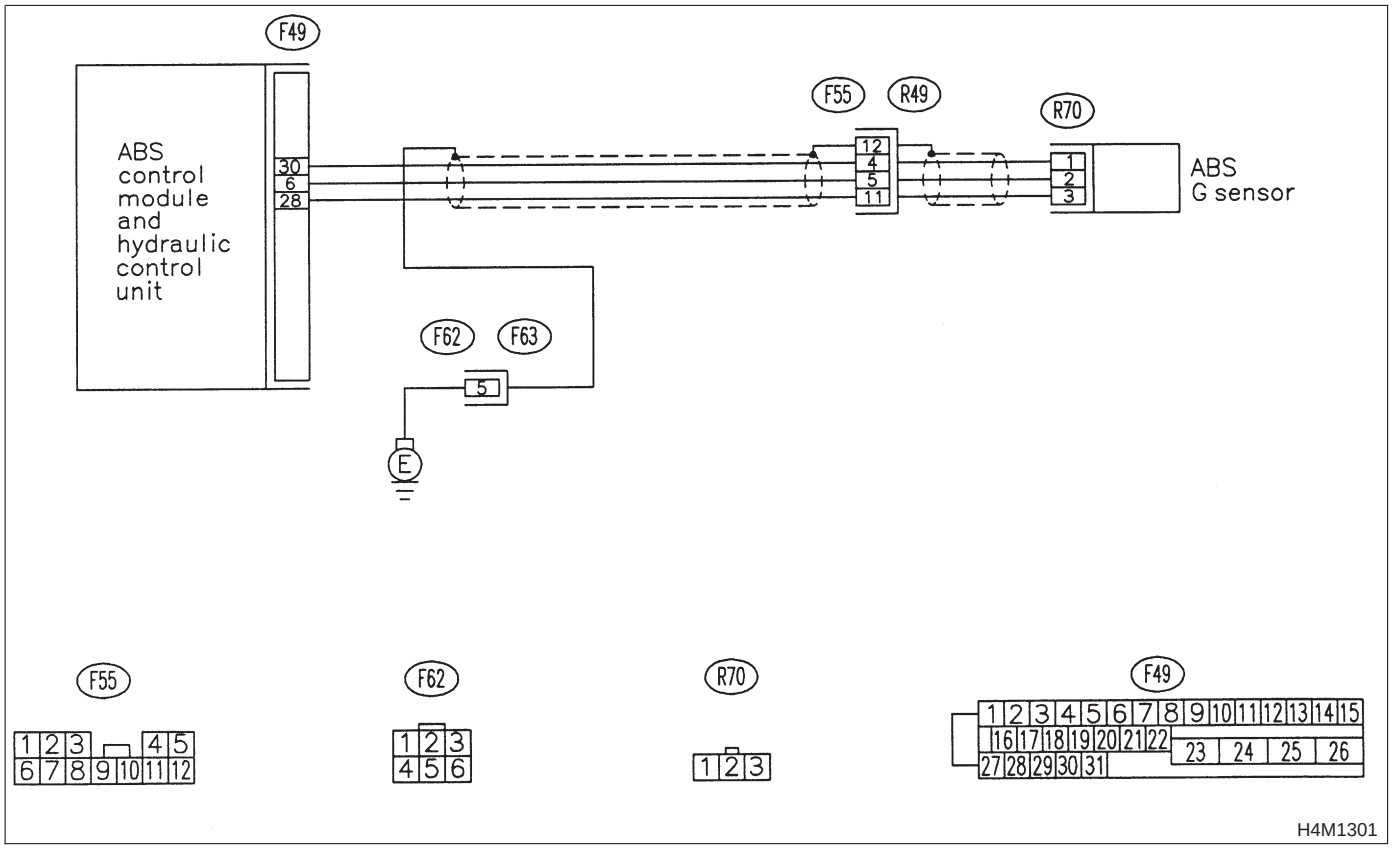
MEMO:

AG: TROUBLE CODE 56 OPEN OR SHORT CIRCUIT IN G SENSOR CIRCUIT — OPEN OR SHORT CIRCUIT IN G SENSOR CIRCUIT —

DIAGNOSIS:
- Faulty G sensor output voltage

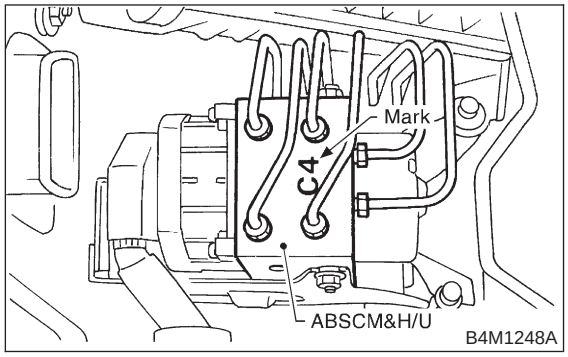
TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10AG1 : CHECK SPECIFICATIONS OF ABSCM&H/U.

Check specifications of the mark to the ABSCM&H/U.



Mark	Model
C5	AWD AT
C6	AWD MT

CHECK : ***Is an ABSCM for AWD model installed on a FWD model?***

YES : Replace ABSCM&H/U.

CAUTION:
Be sure to turn ignition switch to OFF when removing ABSCM&H/U.

NO : Go to step **10AG2**.

10AG2 : CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

1) Select “Current data display & Save” on the select monitor.
2) Read the G sensor output in select monitor data display.

CHECK : ***Is the G sensor output on the monitor display between 2.1 and 2.5 V when the G sensor is in horizontal position?***

YES : Go to step **10AG3**.

NO : Go to step **10AG6**.

10AG3 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connector between ABSCM&H/U and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AG4**.

10AG4 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **10AG5**.

10AG5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

10AG6 : CHECK FREEZE FRAME DATA.

1) Select “Freeze frame data” on the select monitor.
2) Read front right wheel speed on the select monitor display.

CHECK : ***Is the front right wheel speed on monitor display 0 km?***

YES : Go to step **10AG7**.

NO : Go to step **10AG15**.

10AG7 : CHECK FREEZE FRAME DATA.

Read front left wheel speed on the select monitor display.

CHECK : ***Is the front left wheel speed on monitor display 0 km?***

YES : Go to step **10AG8**.

NO : Go to step **10AG15**.

10AG8 : CHECK FREEZE FRAME DATA.

Read rear right wheel speed on the select monitor display.

CHECK : ***Is the rear right wheel speed on monitor display 0 km?***

YES : Go to step **10AG9**.

NO : Go to step **10AG15**.

10AG9 : CHECK FREEZE FRAME DATA.

Read rear left wheel speed on the select monitor display.

CHECK : ***Is the rear left wheel speed on monitor display 0 km?***
YES : Go to step **10AG10**.
NO : Go to step **10AG15**.

10AG10 : CHECK FREEZE FRAME DATA.

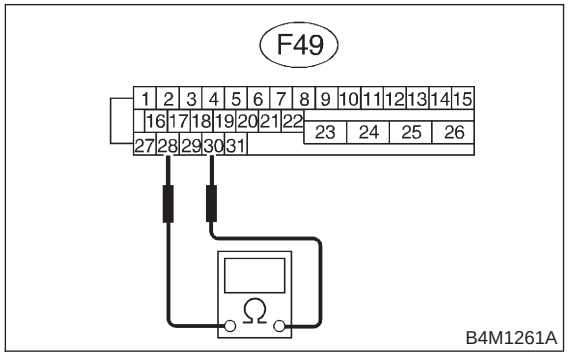
Read G sensor output on the select monitor display.

CHECK : ***Is the G sensor output on monitor display more than 3.65 V?***
YES : Go to step **10AG11**.
NO : Go to step **10AG15**.

10AG11 : CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance between ABSCM&H/U connector terminals.

Connector & terminal
(F49) No. 30 — No. 28:



CHECK : ***Is the resistance between 4.3 and 4.9 kΩ?***
YES : Go to step **10AG12**.
NO : Repair harness/connector between G sensor and ABSCM&H/U.

10AG12 : CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connector between ABSCM&H/U and G sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AG13**.

10AG13 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AG14**.

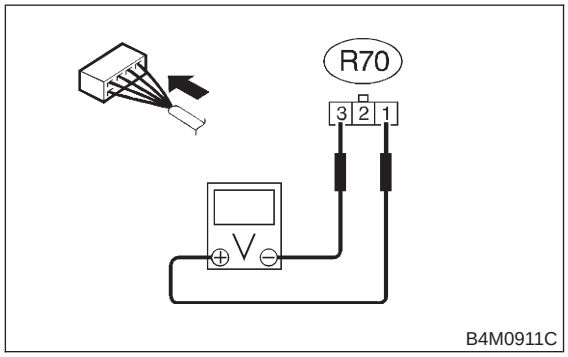
10AG14 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

10AG15 : CHECK INPUT VOLTAGE OF G SENSOR.

1) Turn ignition switch to OFF.
2) Remove console box.
3) Disconnect G sensor from body. (Do not disconnect connector.)
4) Turn ignition switch to ON.
5) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 1 (+) — No. 3 (−):

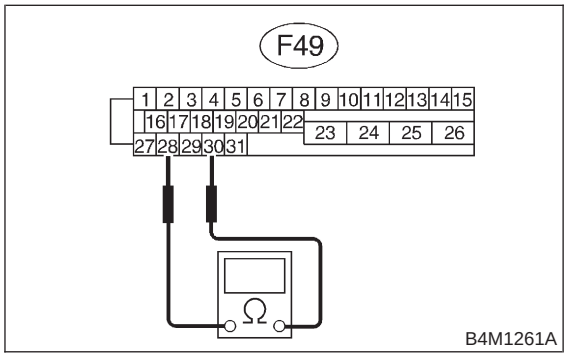


CHECK : ***Is the voltage between 4.75 and 5.25 V?***
YES : Go to step **10AG16**.
NO : Repair harness/connector between G sensor and ABSCM&H/U.

10AG16 : CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance between ABSCM&H/U connector terminals.

Connector & terminal
(F49) No. 30 — No. 28:

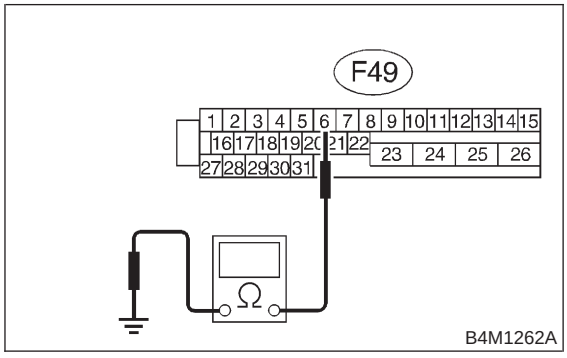


CHECK : ***Is the resistance between 4.3 and 4.9 kΩ?***
YES : Go to step **10AG17**.
NO : Repair harness/connector between G sensor and ABSCM&H/U.

10AG17 : CHECK GROUND SHORT IN G SENSOR OUTPUT HARNESS.

1) Disconnect connector from G sensor.
2) Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 6 — Chassis ground:

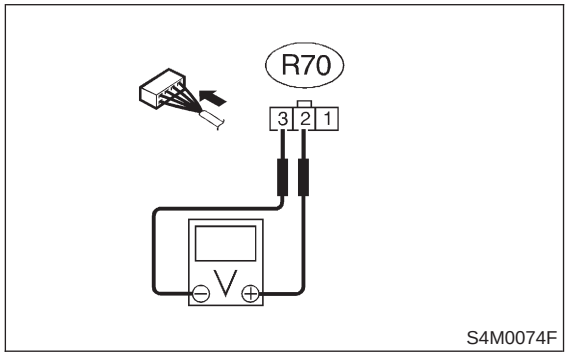


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AG18**.
NO : Repair harness between G sensor and ABSCM&H/U.

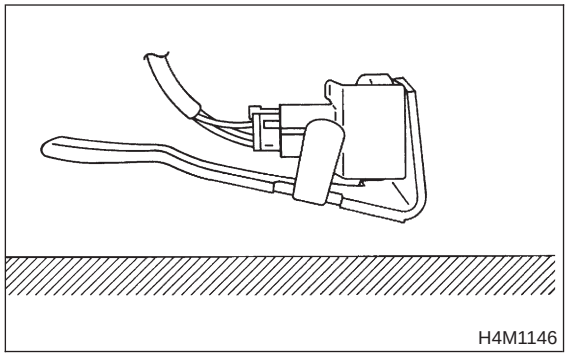
10AG18 : CHECK G SENSOR.

1) Connect connector to G sensor.
2) Connect connector to ABSCM&H/U.
3) Turn ignition switch to ON.
4) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):



S4M0074F

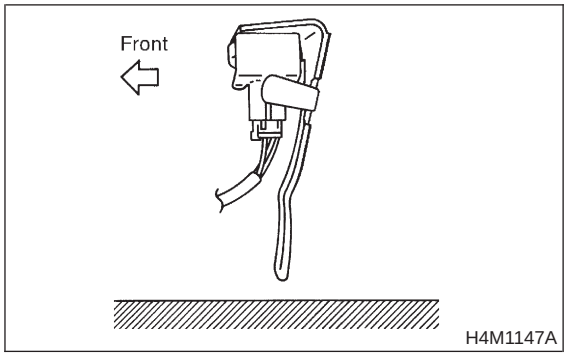

H4M1146

CHECK : ***Is the voltage between 2.1 and 2.5 V when G sensor is horizontal?***
YES : Go to step **10AG19**.
NO : Replace G sensor.

10AG19 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):



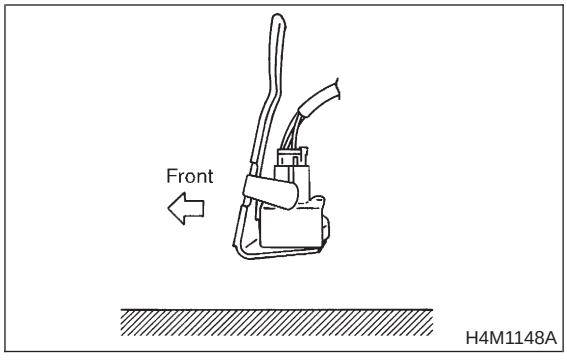
H4M1147A

CHECK : ***Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***
YES : Go to step **10AG20**.
NO : Replace G sensor.

10AG20 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):



H4M1148A

CHECK : ***Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***
YES : Go to step **10AG21**.
NO : Replace G sensor.

10AG21 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between ABSCM&H/U and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AG22**.

10AG22 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **10AG23**.

10AG23 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

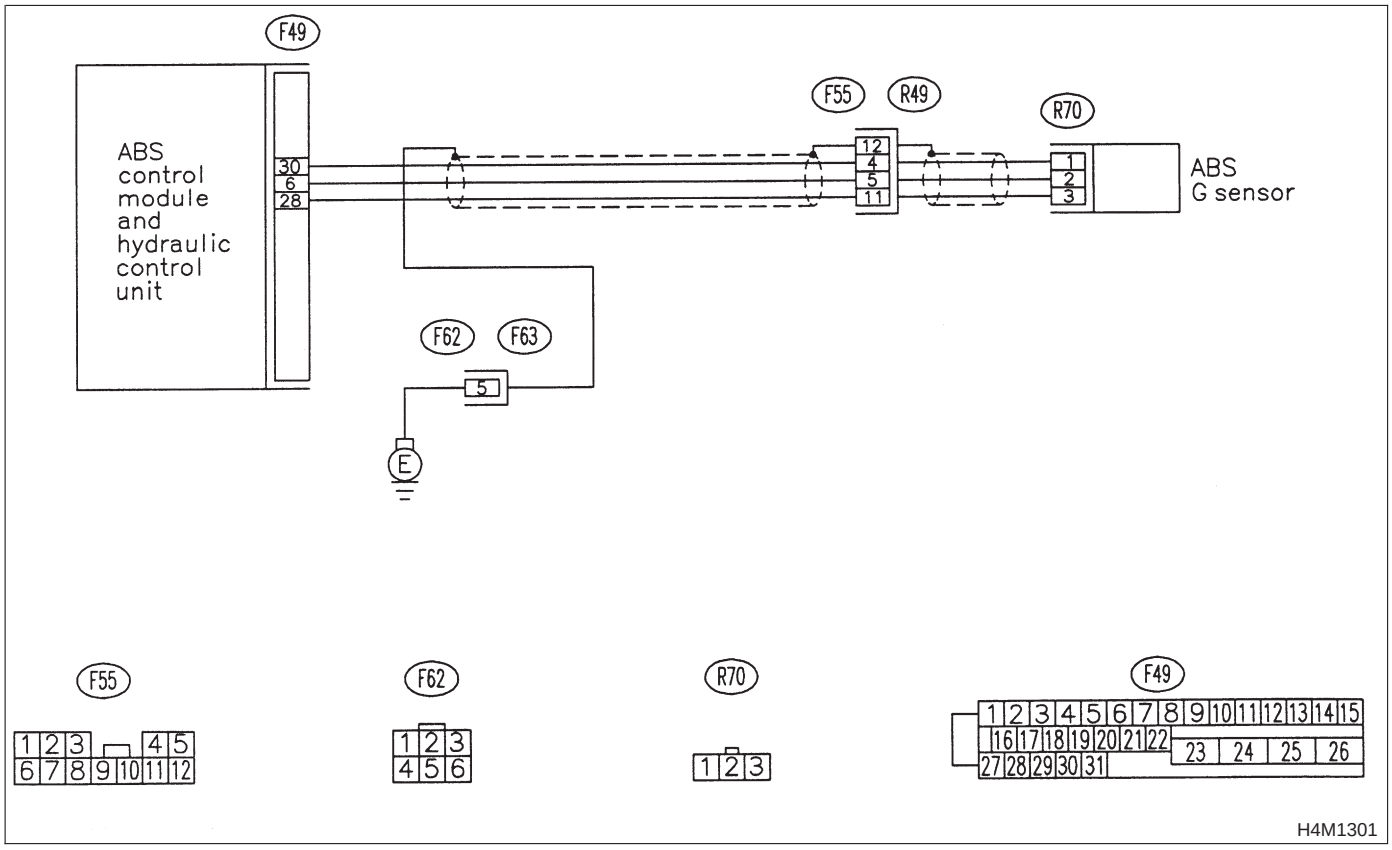
NO : A temporary poor contact.

AH: TROUBLE CODE 56 BATTERY SHORT IN G SENSOR CIRCUIT — BATTERY SHORT IN G SENSOR CIRCUIT —

DIAGNOSIS:
- Faulty G sensor output voltage

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10AH1 : CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

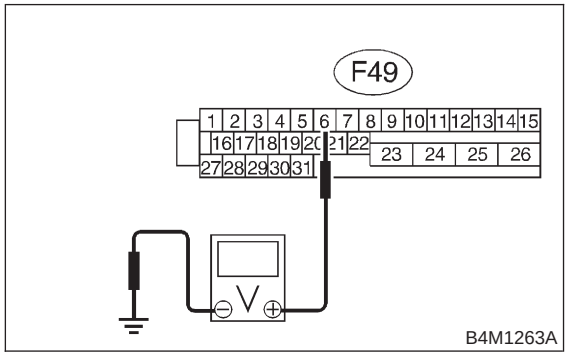
1) Select “Current data display & Save” on the select monitor.
2) Read G sensor output on the select monitor display.

CHECK : ***Is the G sensor output on monitor display between 2.1 and 2.5 V when the G sensor is in horizontal position?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AH2**.

10AH2 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Remove console box.
3) Disconnect connector from G sensor.
4) Disconnect connector from ABSCM&H/U.
5) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 6 (+) — Chassis ground (−):

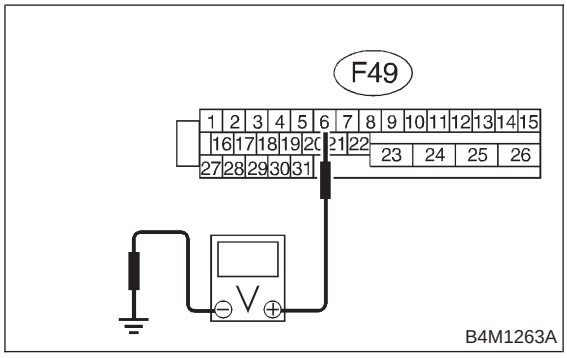


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AH3**.
NO : Repair harness between G sensor and ABSCM&H/U.

10AH3 : CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 6 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10AH4**.
NO : Repair harness between G sensor and ABSCM&H/U.

10AH4 : CHECK ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AH5**.

10AH5 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

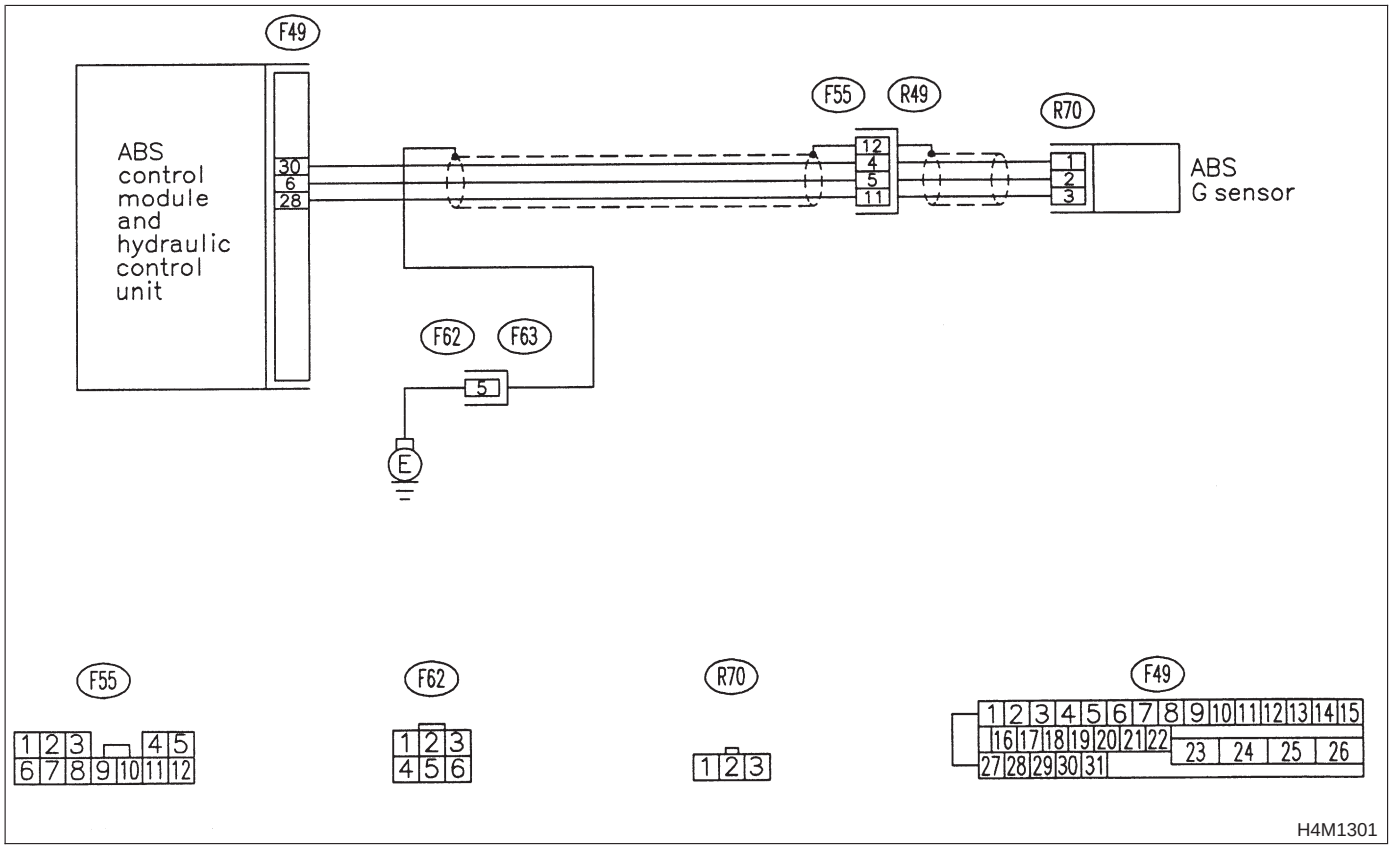
CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

AI: TROUBLE CODE 56 ABNORMAL G SENSOR HIGH µ OUTPUT — ABNORMAL G SENSOR HIGH µ OUTPUT —

DIAGNOSIS:
- Faulty G sensor output voltage

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10AI1 : CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

1) Select “Current data display & Save” on the select monitor.
2) Read G sensor output on the select monitor display.

CHECK : ***Is the G sensor output on monitor display 2.3±0.2 V when the G sensor is in horizontal position?***
YES : Go to step **10AI2**.
NO : Go to step **10AI6**.

10AI2 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between ABSCM&H/U and G sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AI3**.

10AI3 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AI4**.

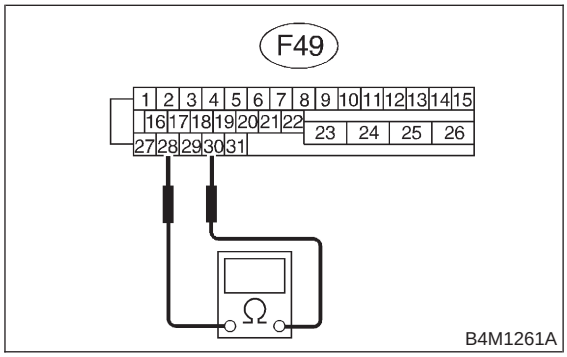
10AI4 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

10AI5 : CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance between ABSCM&H/U connector terminals.

Connector & terminal
(F49) No. 30 — No. 28:

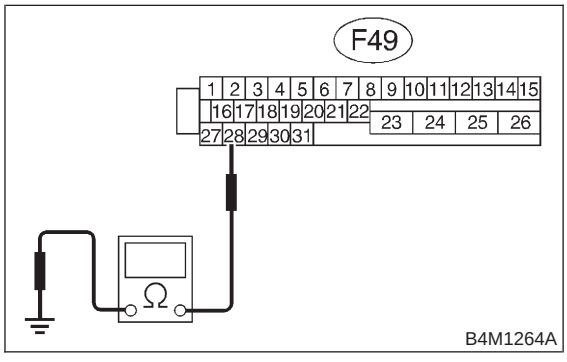


CHECK : ***Is the resistance between 4.3 and 4.9 kΩ?***
YES : Go to step **10AI6**.
NO : Repair harness/connector between G sensor and ABSCM&H/U.

10AI6 : CHECK GROUND SHORT OF HARNESS.

Measure resistance between ABSCM&H/U connector and chassis ground.

Connector & terminal
(F49) No. 28 — Chassis ground:

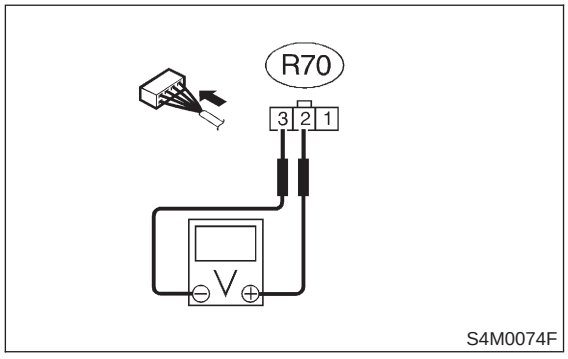


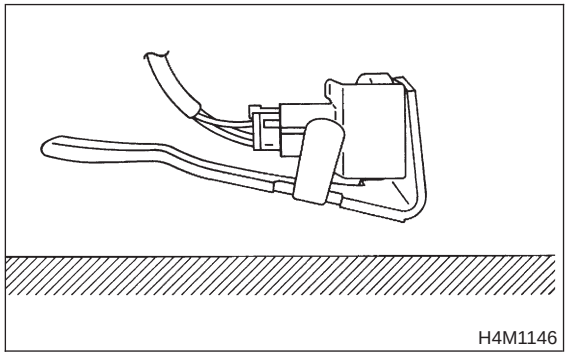
CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AI7**.
NO : Repair harness between G sensor and ABSCM&H/U.
Replace ABSCM&H/U.

10AI7 : CHECK G SENSOR.

1) Remove console box.
2) Remove G sensor from vehicle.
3) Connect connector to G sensor.
4) Connect connector to ABSCM&H/U.
5) Turn ignition switch to ON.
6) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):



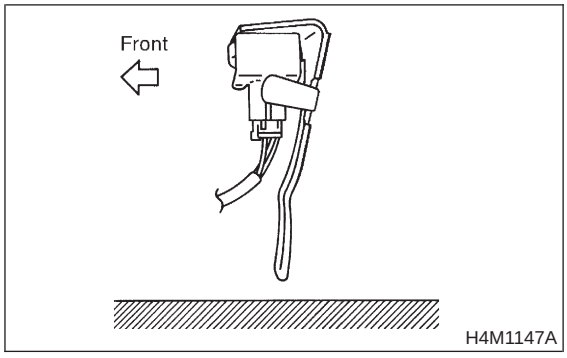


CHECK : ***Is the voltage between 2.1 and 2.5 V when G sensor is horizontal?***
YES : Go to step **10AI8**.
NO : Replace G sensor.

10AI8 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):

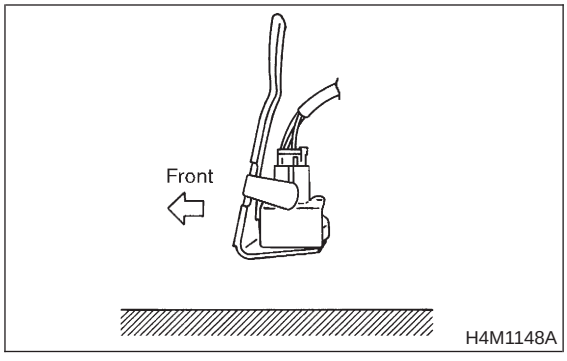


CHECK : ***Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***
YES : Go to step **10AI9**.
NO : Replace G sensor.

10AI9 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 3 (−):



CHECK : ***Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***
YES : Go to step **10AI10**.
NO : Replace G sensor.

10AI10 : CHECK ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM&H/U.

NO : Go to step **10AI11**.

10AI11 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

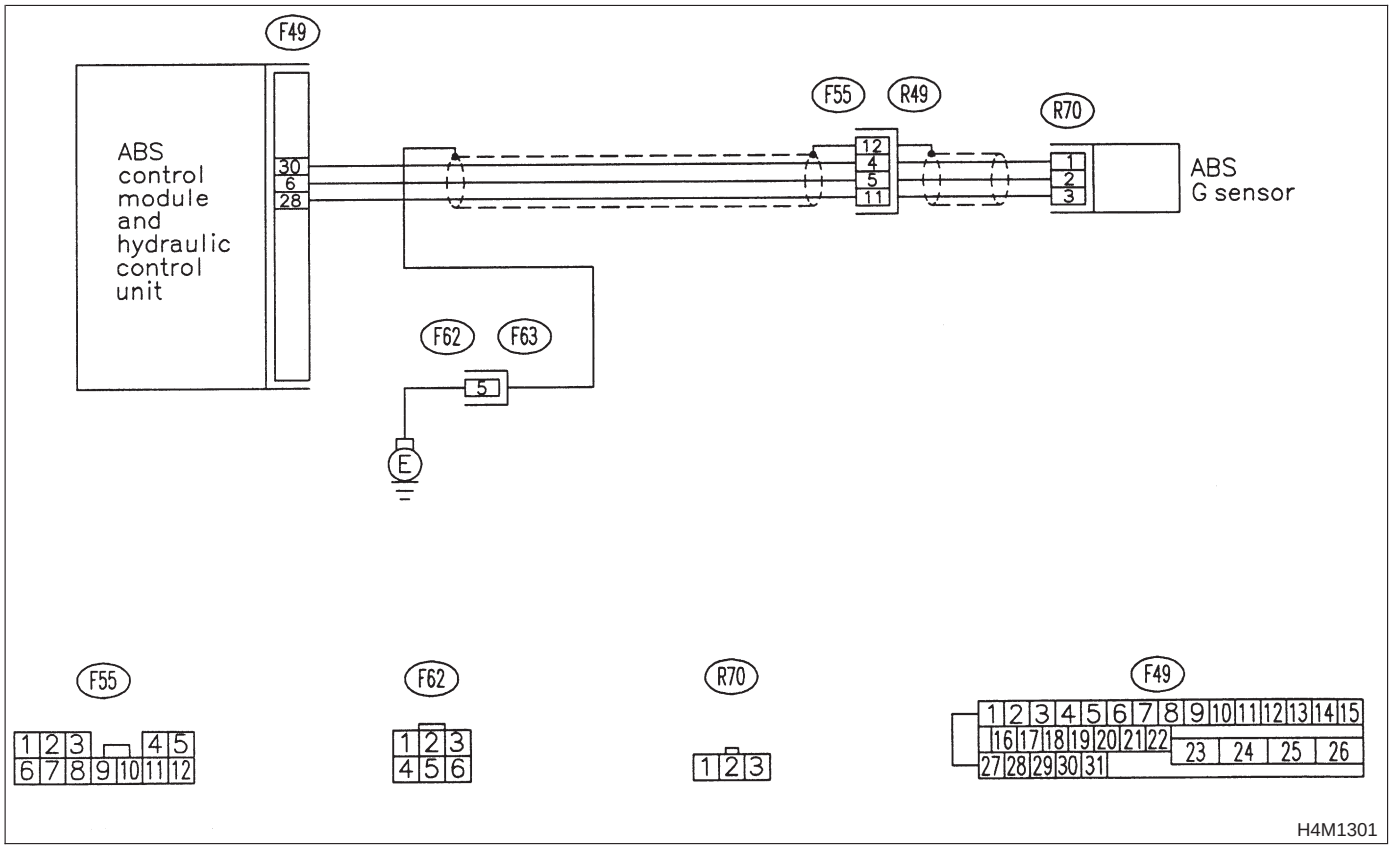
NO : A temporary poor contact.

AJ: TROUBLE CODE 56 DETECTION OF G SENSOR STICK — DETECTION OF G SENSOR STICK —

DIAGNOSIS:
- Faulty G sensor output voltage

TROUBLE SYMPTOM:
- ABS does not operate.

WIRING DIAGRAM:



10AJ1 : CHECK ALL FOUR WHEELS FOR FREE TURNING.

CHECK : ***Have the wheels been turned freely such as when the vehicle is lifted up, or operated on a rolling road?***
YES : The ABS is normal. Erase the trouble code.
NO : Go to step **10AJ2**.

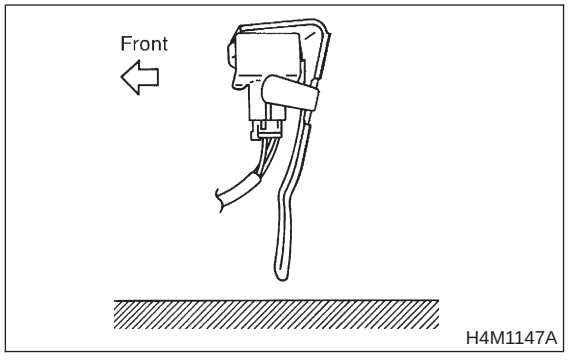
10AJ2 : CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

1) Select “Current data display & Save” on the select monitor.
2) Read the select monitor display.

CHECK : ***Is the G sensor output on the monitor display between 2.1 and 2.5 V when the vehicle is in horizontal position?***
YES : Go to step **10AJ3**.
NO : Go to step **10AJ8**.

10AJ3 : CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

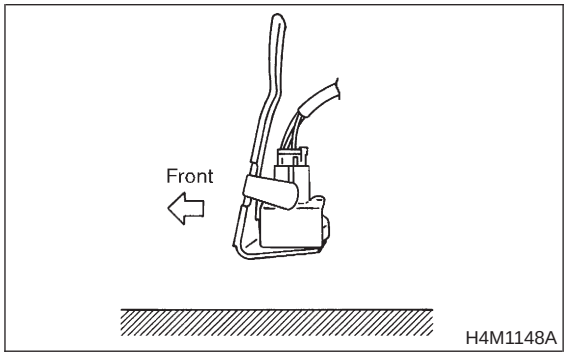
1) Turn ignition switch to OFF.
2) Remove console box.
3) Remove G sensor from vehicle. (Do not disconnect connector.)
4) Turn ignition switch to ON.
5) Select “Current data display & Save” on the select monitor.
6) Read the select monitor display.



CHECK : ***Is the G sensor output on the monitor display between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***
YES : Go to step **10AJ4**.
NO : Replace G sensor.

10AJ4 : CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

Read the select monitor display.



CHECK : ***Is the G sensor output on the monitor display between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***
YES : Go to step **10AJ5**.
NO : Replace G sensor.

10AJ5 : CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between ABSCM&H/U and G sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AJ6**.

10AJ6 : CHECK ABSCM&H/U.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AJ7**.

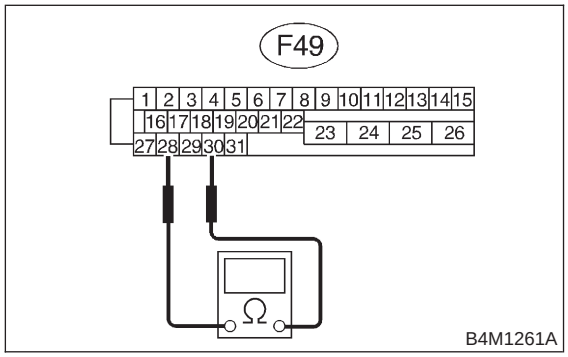
10AJ7 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

10AJ8 : CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM&H/U.
3) Measure resistance between ABSCM&H/U connector terminals.

Connector & terminal
(F49) No. 30 — No. 28:

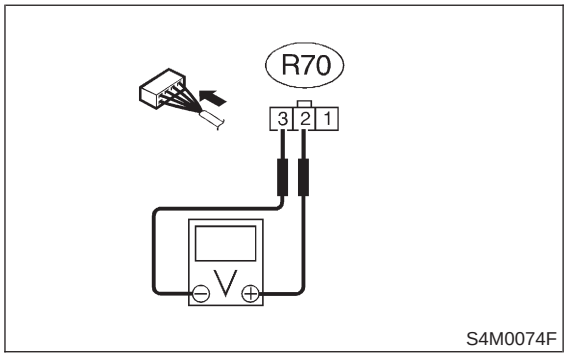


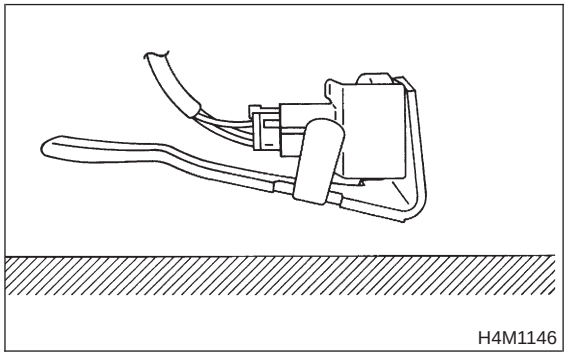
CHECK : ***Is the resistance between 4.3 and 4.9 kΩ?***
YES : Go to step **10AJ9**.
NO : Repair harness/connector between G sensor and ABSCM&H/U.

10AJ9 : CHECK G SENSOR.

1) Remove console box.
2) Remove G sensor from vehicle.
3) Connect connector to G sensor.
4) Connect connector to ABSCM&H/U.
5) Turn ignition switch to ON.
6) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (−):



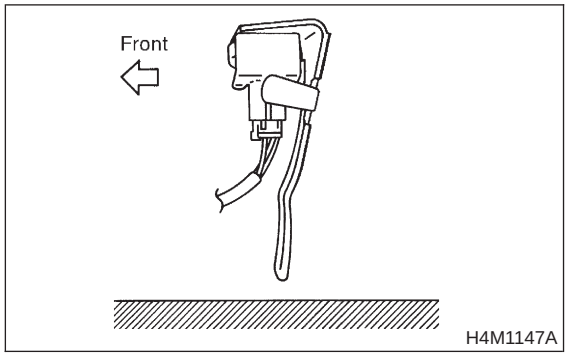


CHECK : ***Is the voltage between 2.1 and 2.5 V when G sensor is horizontal?***
YES : Go to step **10AJ10**.
NO : Replace G sensor.

10AJ10 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (−):

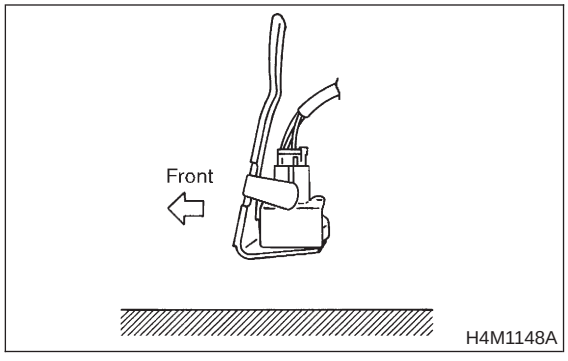


CHECK : ***Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***
YES : Go to step **10AJ11**.
NO : Replace G sensor.

10AJ11 : CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (−):



CHECK : ***Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***
YES : Go to step **10AJ12**.
NO : Replace G sensor.

10AJ12 : CHECK ABSCM&H/U.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM&H/U.
NO : Go to step **10AJ13**.

10AJ13 : CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

11. General Diagnostic Table

A: SYMPTOMS AND PROBABLE CAUSES

Symptom		Probable faulty units/parts
Vehicle instability during braking	Vehicle pulls to either side.	● ABSCM&H/U (solenoid valve) ● ABS sensor ● Brake (caliper & piston, pads) ● Wheel alignment ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections ● Road surface (uneven, camber)
	Vehicle spins.	● ABSCM&H/U (solenoid valve) ● ABS sensor ● Brake (pads) ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections
Poor braking	Long braking/stopping distance	● ABSCM&H/U (solenoid valve) ● Brake (pads) ● Air in brake line ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections
	Wheel locks.	● ABSCM&H/U (solenoid valve, motor) ● ABS sensor ● Incorrect wiring or piping connections
	Brake dragging	● ABSCM&H/U (solenoid valve) ● ABS sensor ● Master cylinder ● Brake (caliper & piston) ● Parking brake ● Axle & wheels ● Brake pedal play
	Long brake pedal stroke	● Air in brake line ● Brake pedal play
	Vehicle pitching	● Suspension play or fatigue (reduced damping) ● Incorrect wiring or piping connections ● Road surface (uneven)
	Unstable or uneven braking	● ABSCM&H/U (solenoid valve) ● ABS sensor ● Brake (caliper & piston, pads) ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections ● Road surface (uneven)
Vibration and/or noise (while driving on slippery roads)	Excessive pedal vibration	● Incorrect wiring or piping connections ● Road surface (uneven)
	Noise from ABSCM&H/U	● ABSCM&H/U (mount bushing) ● ABS sensor ● Brake piping
	Noise from front of vehicle	● ABSCM&H/U (mount bushing) ● ABS sensor ● Master cylinder ● Brake (caliper & piston, pads, rotor) ● Brake piping ● Brake booster & check valve ● Suspension play or fatigue
	Noise from rear of vehicle	● ABS sensor ● Brake (caliper & piston, pads, rotor) ● Parking brake ● Brake piping ● Suspension play or fatigue

B: CHECKING THE HYDRAULIC UNIT OPERATION

11B1 : PREPARING THE BRAKE TESTER.

CHECK : ***Is the brake tester available?***

YES : CHECKING THE HYDRAULIC UNIT ABS OPERATION WITH BRAKE TESTER <Ref. to 4-4 [W14C2].>

NO : CHECKING THE HYDRAULIC UNIT ABS OPERATION BY PRESSURE GAUGE <Ref. to 4-4 [W14C1].>

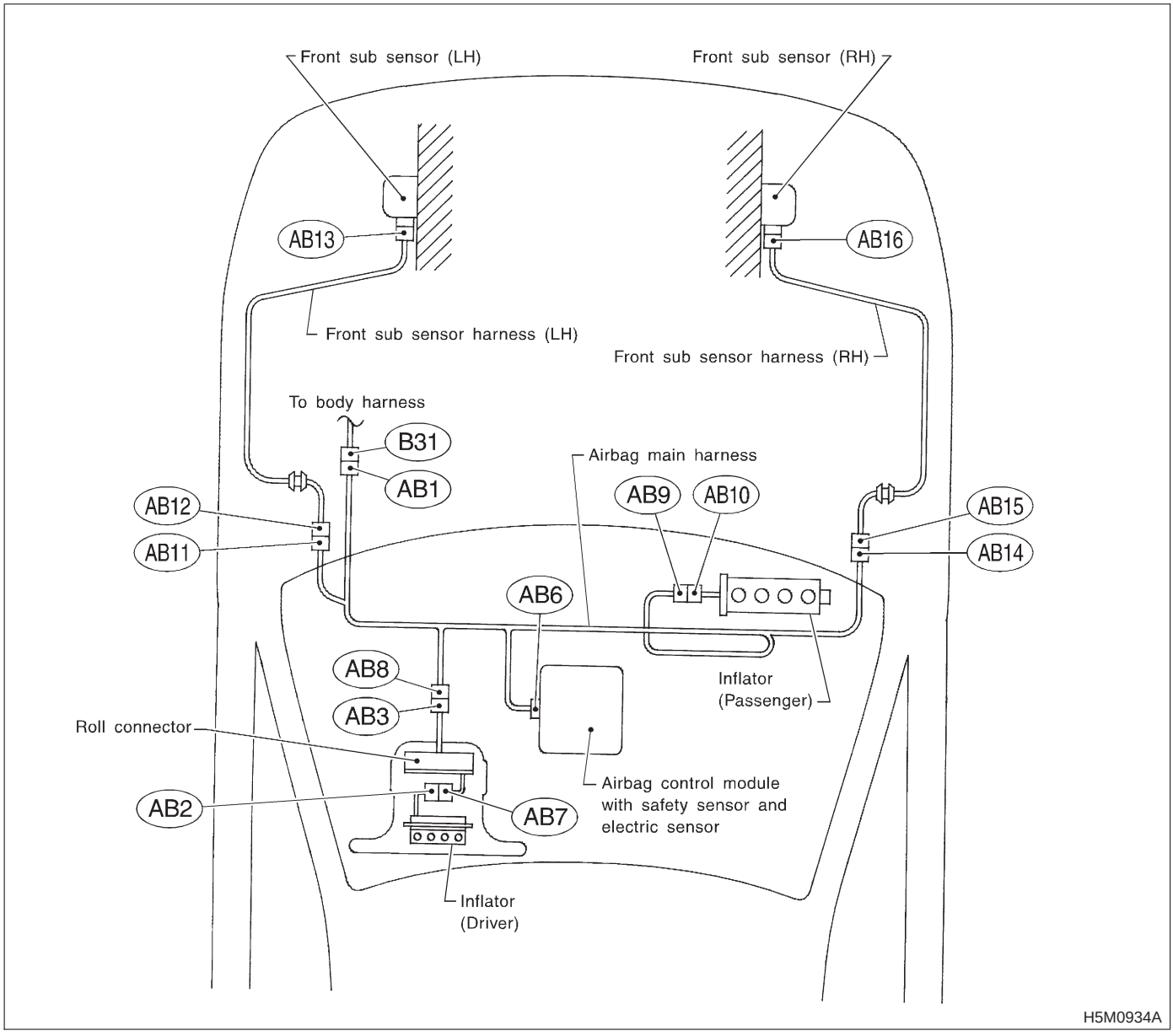
MEMO:

SUPPLEMENTAL RESTRAINT SYSTEM 5-5

Page

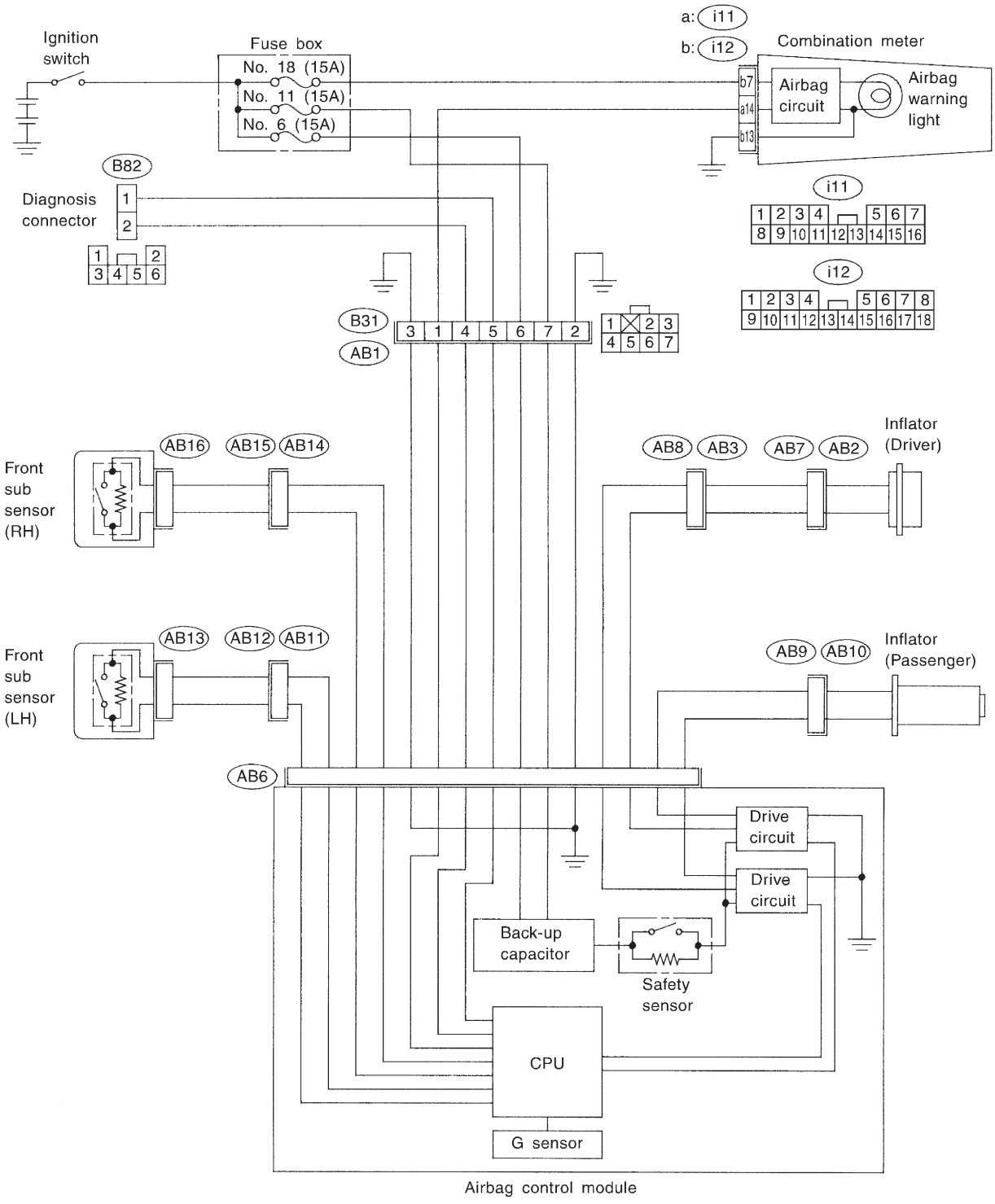
T DIAGNOSTICS 2
1. Electrical Components Location 2
2. Schematic 3
3. Tools for Diagnostics 4
4. Diagnostics Chart for On-board Diagnostic System 9
5. Diagnostics Chart with Trouble Code 13

1. Electrical Components Location



Connector No.	(AB1)	(AB2)	(AB3)	(AB6)	(AB7)	(AB8)	(AB9)
Pole	7	2	2	28	2	2	2
Color	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Male/Female	Male	Male	Male	Female	Female	Female	Female
Connector No.	(AB10)	(AB11)	(AB12)	(AB13)	(AB14)	(AB15)	(AB16)
Pole	2	2	2	2	2	2	2
Color	Yellow	Blue	Blue	Yellow	Blue	Blue	Yellow
Male/Female	Male	Female	Male	Female	Female	Male	Female

2. Schematic



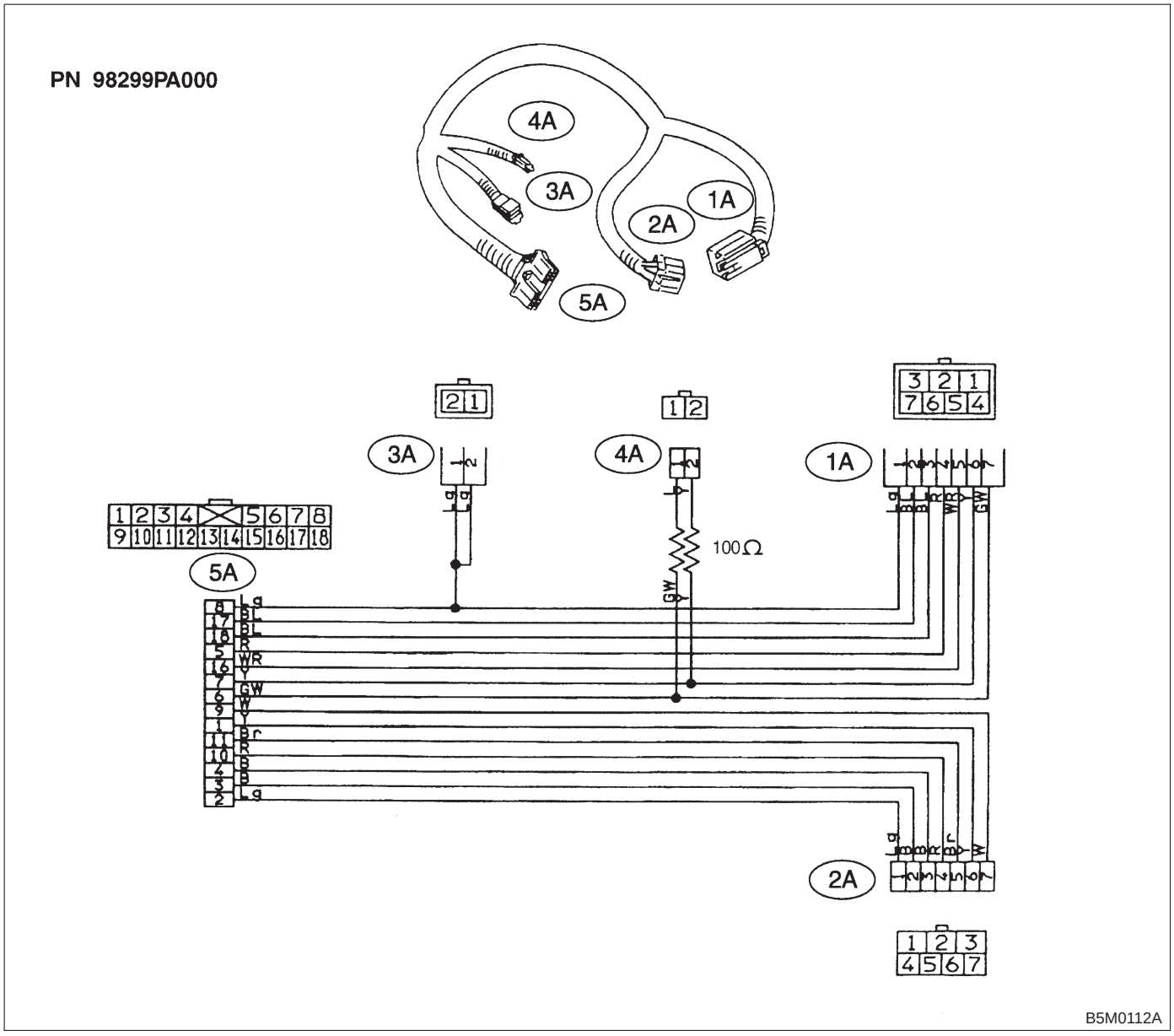
H5M0942A

3. Tools for Diagnostics

CAUTION:
Be sure to use specified test harness A, E, F and H when measuring voltage, resistance, etc. of AIRBAG system component parts.

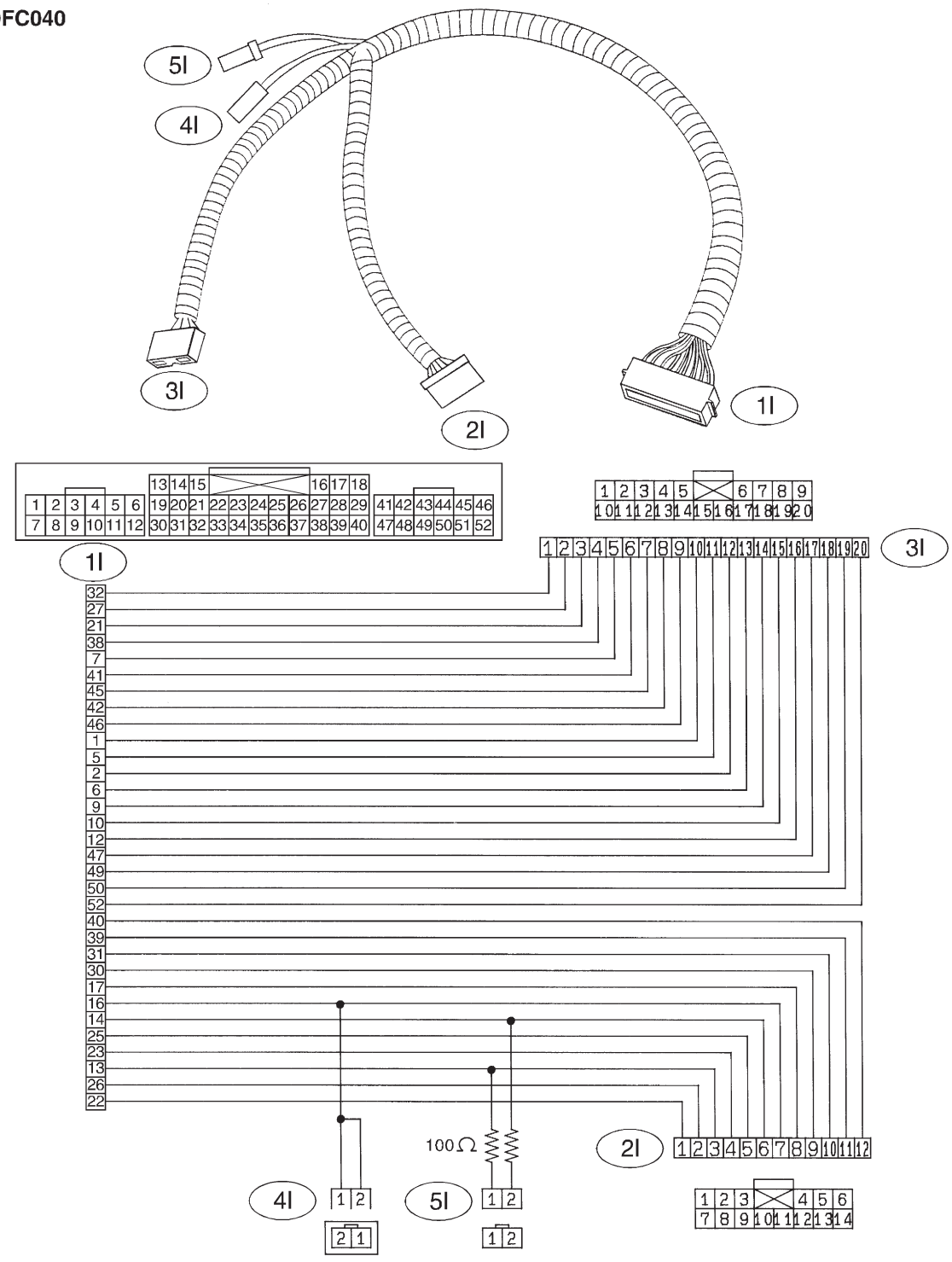
A: TEST HARNESS A

PN 98299PA000



B: TEST HARNESS I

PN 98299FC040



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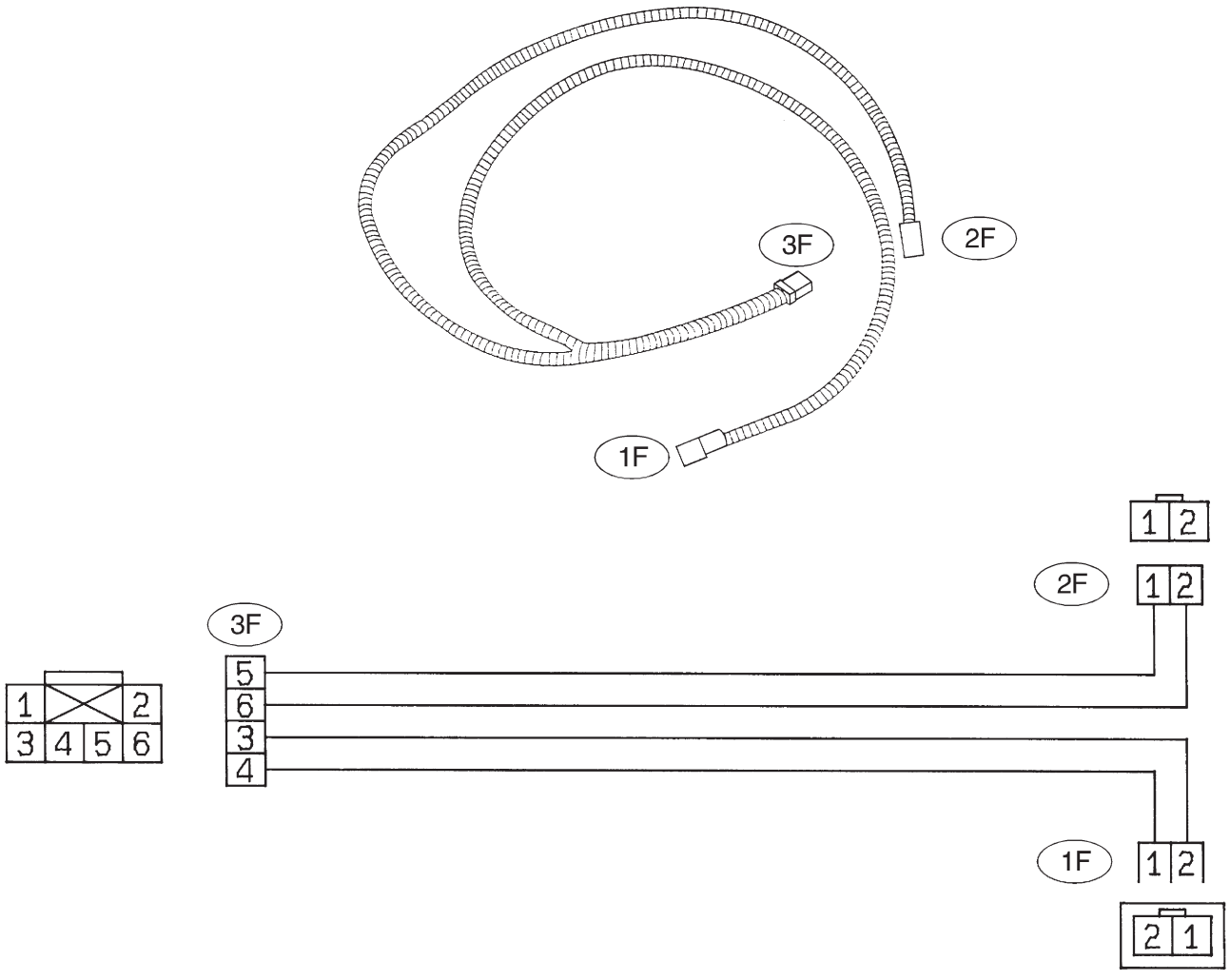
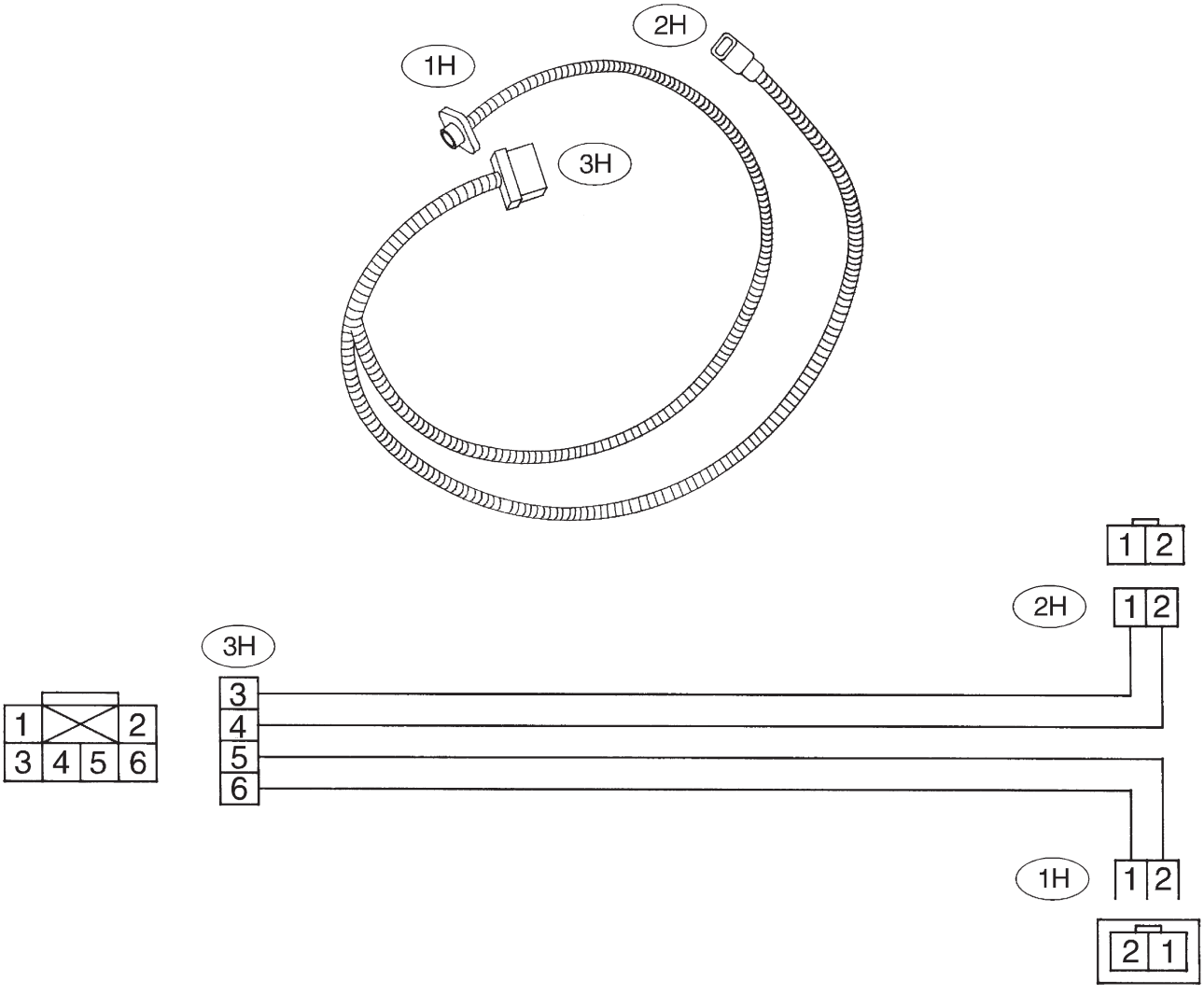
C: TEST HARNESS F

PN 98299FC010



D: TEST HARNESS H

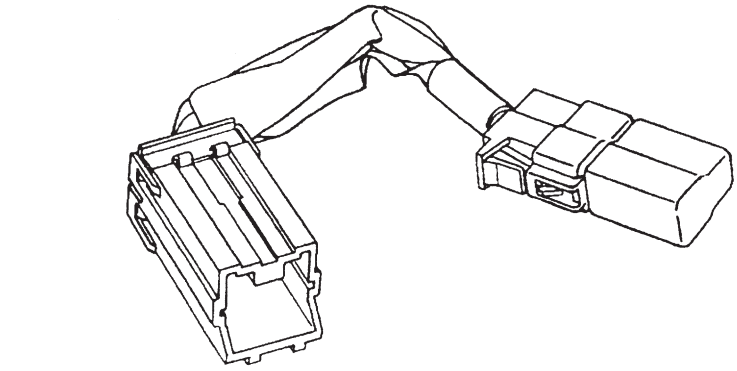
PN 98299FC030

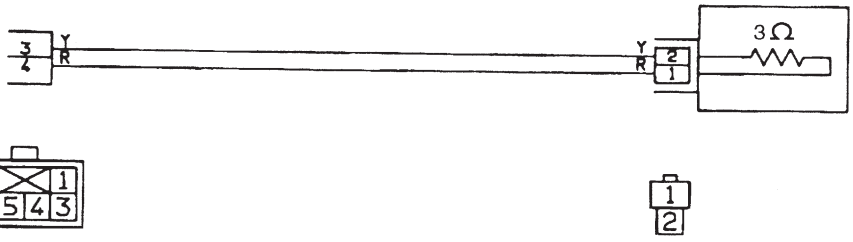


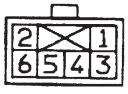
E: AIRBAG RESISTOR

The airbag resistor is used during diagnostics. The airbag resistor has the same resistance as the airbag module and thus provides safety when used instead of the airbag module. It also makes it possible to finish, diagnostics in less time.

PN 98299PA040







B5M0114A

4. Diagnostics Chart for On-board Diagnostic System

A: BASIC DIAGNOSTICS PROCEDURE

4A1 : CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Airbag warning light comes ON.
2) Turn ignition switch to ON (engine OFF).
3) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light stay ON after about 7 seconds or remain OFF, or come back ON after 30 seconds?***

YES : Repair and replace. <Ref. to 5-5 [T4D0].>

NO : Go to step **4A2**.

4A2 : CHECK TROUBLE CODE INDICATES.

Perform ON-BOARD DIAGNOSTICS. <Ref. to 5-5 [T4B0].>

CHECK : ***Does trouble code indicate? <Ref. to 5-5 [T5A0].>***

YES : Repair and replace. <Ref. to 5-5 [T5O0].> Go to step **4A3**.

NO : Repair and replace. <Ref. to 5-5 [T5P0].> Go to step **4A3**.

4A3 : CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to ON (engine OFF).
2) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light stay ON after about 7 seconds or come back ON after 30 seconds?***

YES : Repair and replace. <Ref. to 5-5 [T4D0].>

NO : Go to step **4A4**.

4A4 : CHECK AIRBAG WARNING LIGHT ILLUMINATES.

Check airbag warning light illuminates.

CHECK : ***Does airbag warning light come ON for about 7 seconds, then go out and stay out?***

YES : Perform clear memory. <Ref. to 5-5 [T4C0].>

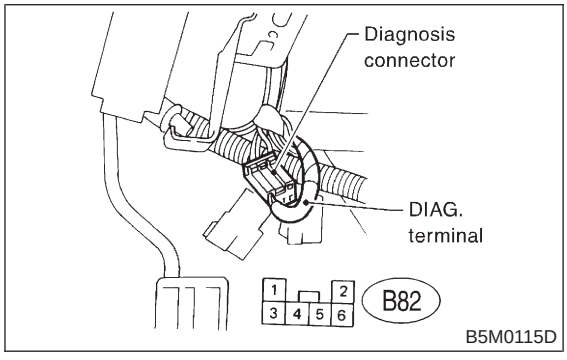
NO : Go to step **4A1**.

B: ON-BOARD DIAGNOSTIC

When the airbag system is in functioning condition, the airbag warning light will remain on for about 7 seconds and go out when the ignition switch is set to ON.

If there is any malfunction, the airbag warning light will either stay on or off continuously. In such cases, perform on-board diagnostic in accordance with the specified procedure to determine trouble codes.

1) Turn ignition switch ON (with engine OFF).
2) Connect DIAG. terminal to No. 1 terminal of diagnosis connector located inside lower cover.

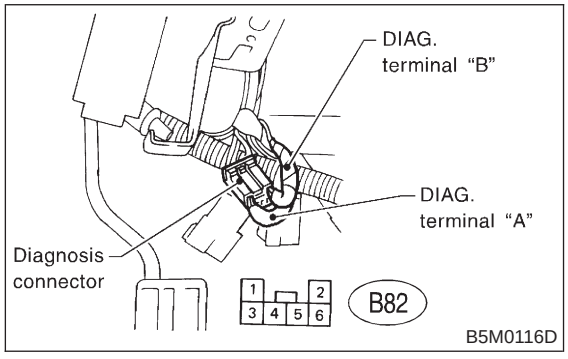


3) Check in accordance with the trouble code indicated by the AIRBAG warning light, and record the trouble codes.
4) Turn the ignition switch “OFF” and remove the DIAG. terminal from No.1 terminal of diagnosis connector.

C: CLEAR MEMORY

After eliminating problem as per trouble code, clear memory as follows:

1) Make sure ignition switch is ON (and engine off). Connect one DIAG. terminal “A” on diagnosis connector terminal No. 1.
While warning light is flashing, connect the other DIAG. terminal “B” on terminal No. 2 for at least three seconds.



2) After memory is cleared, normal warning light flashing rate resumes. (Warning light flashes every 0.6 seconds ON-OFF operation.) Memory cannot be cleared if any problem exists.
3) After clear memory and then DIAG. terminals “A” and “B”, extract from diagnosis connector.

D: DIAGNOSTICS PROCEDURE

4D1 : CHECK TROUBLE CODE INDICATES.

1) Perform on-board diagnostic. <Ref. to 5-5 [T4B0].>
2) Check trouble code indicates.

CHECK : ***Are trouble codes 11, 12, 15 or 16 indicated? <Ref. to 5-5 [T5A2].>***
YES : Go to step **4D2**.
NO : Perform diagnostics and repair according to indicated trouble code. <Ref. to 5-5 [T5A0].>

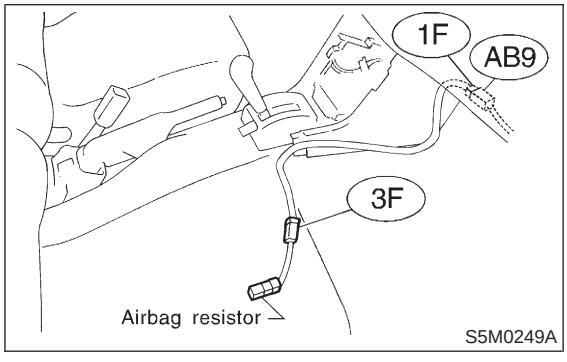
4D2 : CHECK TROUBLE CODE INDICATES.

Check trouble code indicates.

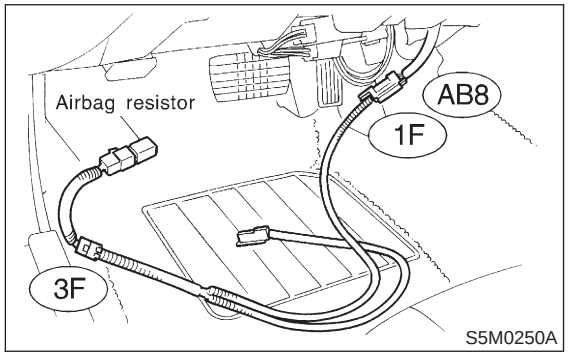
CHECK : ***Are trouble codes 12, 16 indicated? <Ref. to 5-5 [T5A2].>***
YES : Go to step **4D3**.
NO : Go to step **4D4**.

4D3 : CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to OFF. Disconnect battery ground cable, and wait 20 seconds.
2) Remove glove box <Ref. to 5-4 [W1A0].> and disconnect passenger’s airbag module connector (AB9) to (AB10). <Ref. to 5-5 [W3A2].>
3) Connect test harness F connector (1F) to (AB9).
4) Connect airbag resistor to test harness F connector (3F).



5) Remove lower cover panel <Ref. to 5-4 [W1A0].> and connect test harness F connector (1F) to (AB8) with airbag resistor attached to test harness F connector (3F).



6) Connect battery ground cable and turn ignition switch to ON.
7) Check airbag warning light illuminates.

NOTE:
In some cases the airbag warning light will go OFF after about 7 seconds but will turn ON again within 30 seconds. In this case continue diagnostics with the basic diagnostics procedures or trouble code procedures.

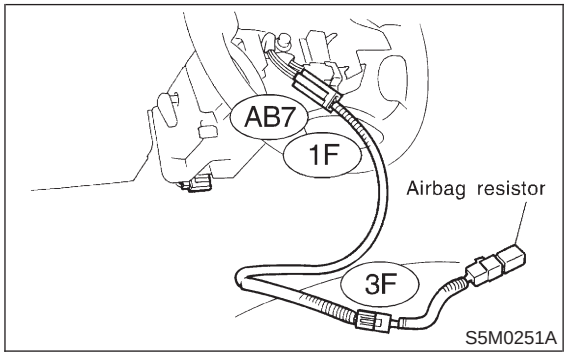
CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds?***

YES : Replace with a new passenger's airbag module. <Ref. to 5-5 [W3A2].> Go to step **4D6**.

NO : Perform diagnostics and repair according to indicated trouble code. <Ref. to 5-5 [T5A0].>

4D4 : CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to "OFF". Disconnect battery ground cable, and wait 20 seconds.
2) Connect connector (AB8) to (AB3).
3) Remove driver's airbag module and connect test harness F connector (1F) to (AB7). <Ref. to 5-5 [W3A1].>
4) Connect airbag resistor to test harness F connector (3F).



5) Connect battery ground cable and turn ignition switch to ON.
6) Check airbag warning light illuminates.

NOTE:
In some cases the airbag warning light will go OFF after about 7 seconds but will turn ON again within 30 seconds. In this case continue diagnostics with the basic diagnostics procedures or trouble code procedures.

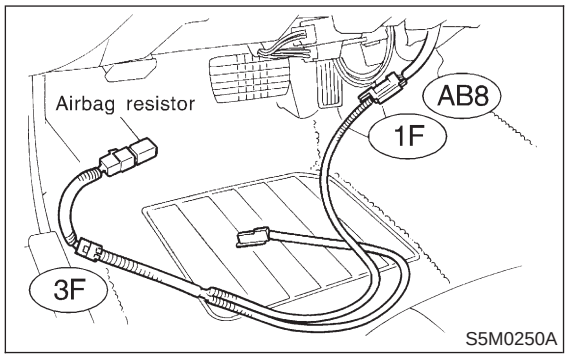
CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds?***

YES : Replace with a new driver's airbag module. <Ref. to 5-5 [W3A1].> Go to step **4D6**.

NO : Go to step **4D5**.

4D5 : CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to OFF. Disconnect battery ground cable, and wait 20 seconds.
2) Remove lower cover panel and connect test harness F connector (1F) to (AB8) <Ref. to 5-4 [W1A0].> with airbag resistor attached to test harness F connector (3F).



3) Connect battery ground cable and turn ignition switch to ON.
4) Check airbag warning light illuminates.

NOTE:
In some cases the airbag warning light will go OFF after about 7 seconds but will turn ON again within 30 seconds. In this case continue diagnostics with the basic diagnostics procedures or trouble code procedures.

CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds?***

YES : Replace with a new combination switch. <Ref. to 5-5 [W600].> Go to step **4D6**.

NO : Perform diagnostics and repair according to indicated trouble code. <Ref. to 5-5 [T5A0].>

4D6 : CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Connect battery ground cable and turn ignition switch to ON.
2) Check airbag warning light illuminates.

NOTE:
In some cases the airbag warning light will go OFF after about 7 seconds but will turn ON again within 30 seconds. In this case continue diagnostics with the basic diagnostics procedures or trouble code procedures.

CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds?***

YES : Perform clear memory. <Ref. to 5-5 [T4C0].>

NO : Go to step **4D1**.

5. Diagnostics Chart with Trouble Code

A: TROUBLE CODES

1. LIST OF TROUBLE CODES

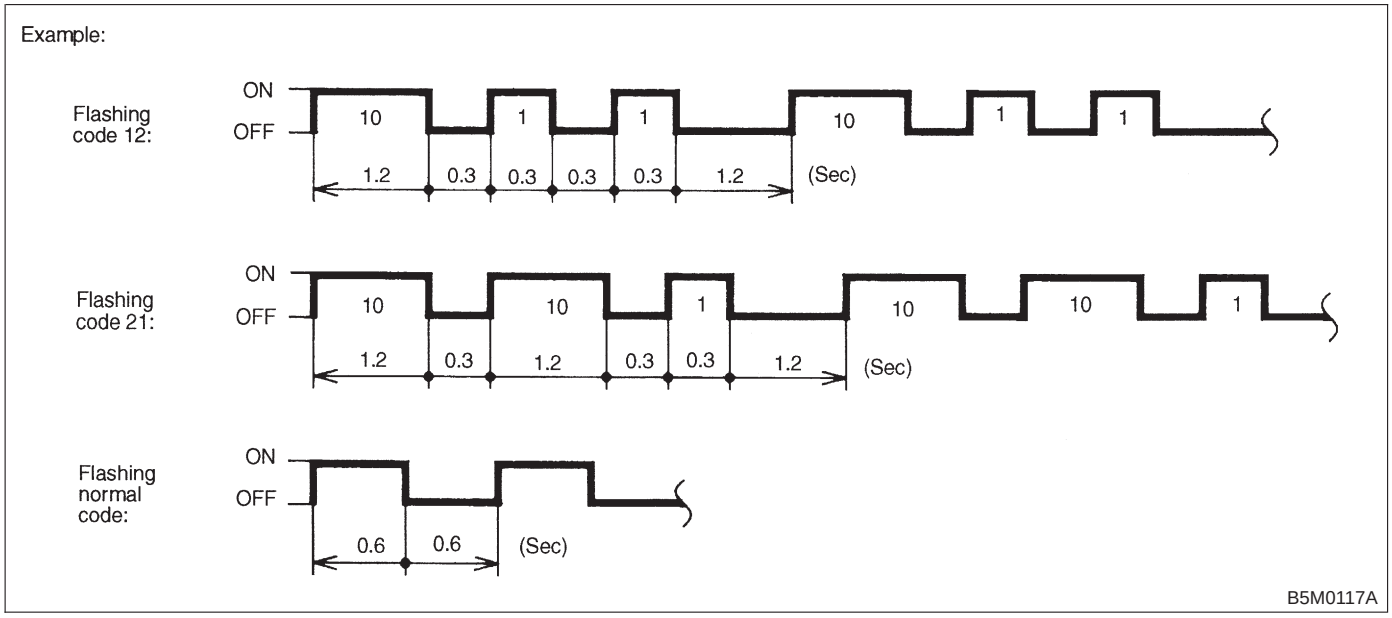
Trouble code/ Contents of troubles	Memory function	Contents of diagnosis	Index No.
11	Provided.	● Airbag main harness circuit is open, shorted or shorted to ground. ● Airbag module harness (driver) circuit is open, shorted or shorted to ground. ● Roll connector circuit is open, shorted or shorted to ground. ● Airbag control module is faulty.	<Ref. to 5-5 [T5B0].>
12	Provided.	● Airbag main harness circuit is open, shorted or shorted to ground. ● Airbag module harness (passenger) circuit is open, shorted or shorted to ground. ● Airbag control module is faulty.	<Ref. to 5-5 [T5C0].>
15	Provided.	● Airbag main harness circuit (driver) is shorted to power supply. ● Airbag module harness (driver) is shorted to power supply. ● Roll connector is shorted to power supply. ● Airbag control module is faulty.	<Ref. to 5-5 [T5D0].>
16	Provided.	● Airbag main harness circuit (passenger) is shorted to power supply. ● Airbag module harness (passenger) is shorted to power supply. ● Airbag control module is faulty.	<Ref. to 5-5 [T5E0].>
21	Provided.	Airbag control module is faulty.	<Ref. to 5-5 [T5F0].>
22	Provided.	Front airbag module is inflated.	<Ref. to 5-5 [T5G0].>
23	Not provided.	(AB6) is not connected properly to airbag control module.	<Ref. to 5-5 [T5H0].>
24	Not provided.	● Airbag control module is faulty. ● Airbag main harness circuit is open. ● Fuse No. 11 (in joint box) is blown. ● Body harness circuit is open.	<Ref. to 5-5 [T5I0].>
25	Provided.	● Airbag control module is faulty. ● Airbag main harness circuit is open. ● Fuse No. 6 (in joint box) is blown. ● Body harness circuit is open.	<Ref. to 5-5 [T5J0].>
31	Provided.	● Front sub sensor harness (RH) circuit is shorted. ● Front sub sensor harness (RH) circuit is open. ● Front sub sensor (RH) is faulty. ● Airbag control module is faulty.	<Ref. to 5-5 [T5K0].>
32	Provided.	● Front sub sensor harness (LH) circuit is shorted. ● Front sub sensor harness (LH) circuit is open. ● Front sub sensor (LH) is faulty. ● Airbag control module is faulty.	<Ref. to 5-5 [T5L0].>
Airbag warning light remains on.	Not provided.	● Airbag warning light is faulty. ● Airbag control module to airbag warning light harness circuit is shorted or open. ● Grounding circuit is faulty. ● Airbag control module is faulty. ● (AB1) and (B31) are not connected properly. ● (AB6) is not connected properly to airbag control module.	<Ref. to 5-5 [T5M0].>

Trouble code/ Contents of troubles	Memory function	Contents of diagnosis	Index No.
Airbag warning light remains off.	Not provided.	● Fuse No. 18 (in joint box) is blown. ● Body harness circuit is open. ● Airbag warning light is faulty. ● Airbag main harness is faulty. ● Airbag control module is faulty.	<Ref. to 5-5 [T5N0].>
Warning light indicates trouble code, then normal code. (Flashing trouble code.)	Provided.	Airbag system component parts are faulty.	<Ref. to 5-5 [T5O0].>
Warning light indicates trouble code, then normal code. (Flashing normal code.)	Not provided.	● Airbag connector is faulty. ● Fuse No. 11 (in joint box) is blown. ● Airbag main harness is faulty. ● Airbag control module is faulty. ● Body harness is faulty.	<Ref. to 5-5 [T5P0].>

2. HOW TO READ TROUBLE CODES

The AIRBAG warning light flashes a code corresponding to the faulty parts.

The long segment (1.2 sec on) indicates a “ten”, and the short segment (0.3 sec on) indicates a “one”.



B: TROUBLE CODE 11

DIAGNOSIS:

- Airbag main harness circuit is open, shorted or shorted to ground.
- Airbag module harness (Driver) circuit is open, shorted or shorted to ground.
- Roll connector circuit is open, shorted or shorted to ground.
- Airbag control module is faulty.

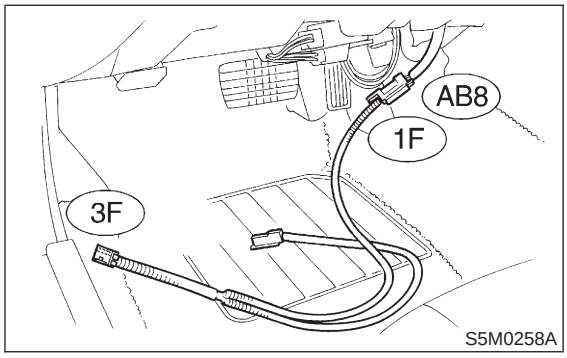
CAUTION:

Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.

After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).

5B1 : AIRBAG MAIN HARNESS INSPECTION

1) Remove lower cover panel <Ref. to 5-4 [W1A0].>, and connect connector (AB8) below steering column to test harness F connector (1F).

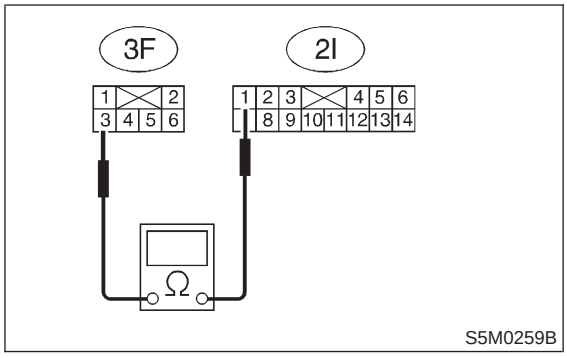


2) Disconnect connector (AB6) <Ref. to 5-5 [W5A0].> from airbag control module, and connect it to test harness I connector (1I) terminal.

3) Measure resistance between test harness I connector (2I) and test harness F connector (3F) terminals.

Connector & terminal

(2I) No. 1 — (3F) No. 3:



CHECK : ***Is resistance less than 10 Ω?***

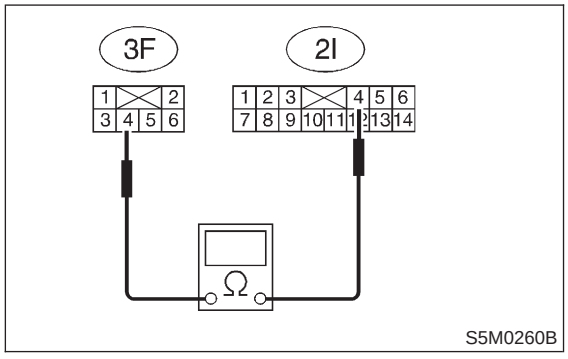
YES : Go to step **5B2**.

NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5B2 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness I connector (2I) and test harness F connector (3F) terminals.

Connector & terminal
(2I) No. 4 — (3F) No. 4:

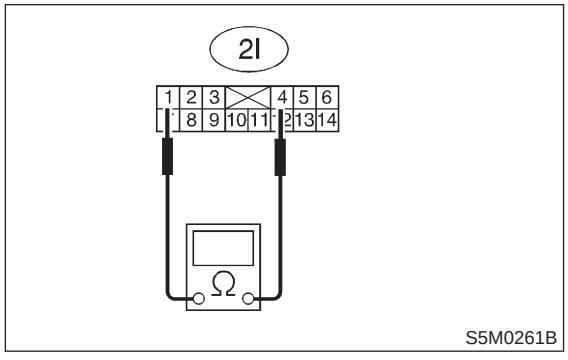


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5B3**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5B3 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Measure resistance between test harness I connector (2I) terminal.

Connector & terminal
(2I) No. 1 — No. 4:

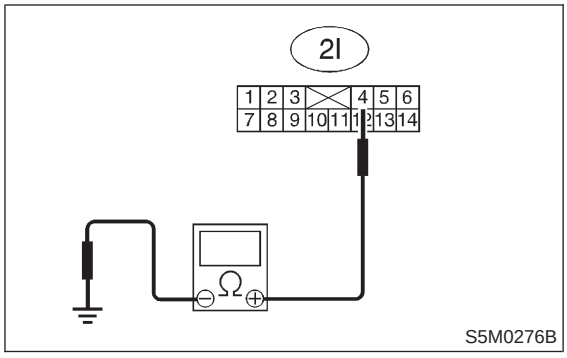


CHECK : ***Is resistance more than 10 kΩ?***
YES : Go to step **5B4**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5B4 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Measure resistance between test harness I connector (2I) terminals and chassis ground.

Connector & terminal
(2I) No. 4 (+) — Chassis ground (−):

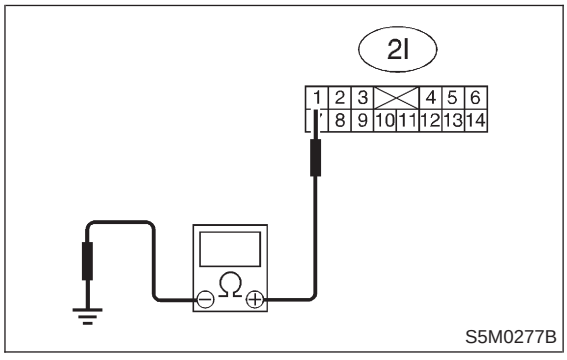


CHECK : ***Is resistance more than 200 Ω?***
YES : Go to step **5B5**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5B5 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness I connector (2I) terminals and chassis ground.

Connector & terminal
(2I) No. 1 (+) — Chassis ground (−):



CHECK : ***Is resistance more than 200 Ω?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

C: TROUBLE CODE 12

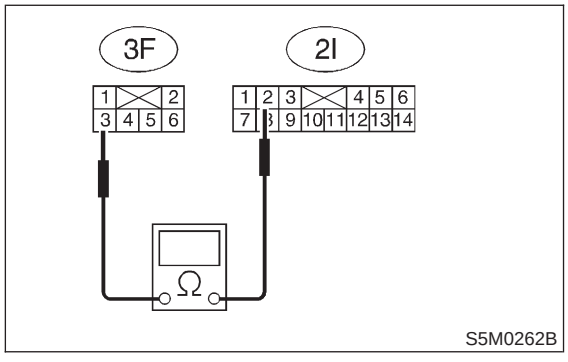
DIAGNOSIS:
- Airbag main harness circuit is open, shorted or shorted to ground.
- Airbag module harness (Passenger) circuit is open, shorted or shorted to ground.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).

5C1 : AIRBAG MAIN HARNESS INSPECTION

1) Remove glove box. <Ref. to 5-4 [W1A0].>
2) Disconnect connector (AB9) and (AB10) <Ref. to 5-5 [W3A2].> and connect connector (AB9) to test harness F connector (1F).
3) Disconnect connector (AB6) <Ref. to 5-5 [W5A0].> from airbag control module, and connect it to test harness I connector (1I) terminal.
4) Measure resistance between test harness I connector (2I) and test harness F connector (3F) terminals.

Connector & terminal
(2I) No. 2 — (3F) No. 3:

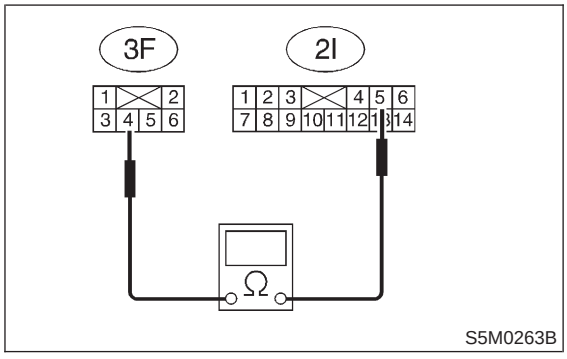


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5C2**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5C2 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness I connector (2I) and test harness F connector (3F) terminals.

Connector & terminal
(2I) No. 5 — (3F) No. 4:

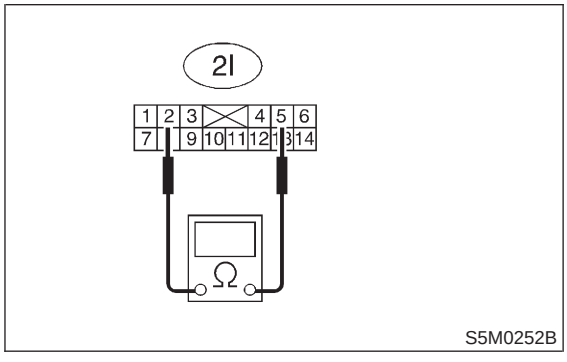


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5C3**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5C3 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Measure resistance between test harness I connector (2I) terminal.

Connector & terminal
(2I) No. 2 — No. 5:

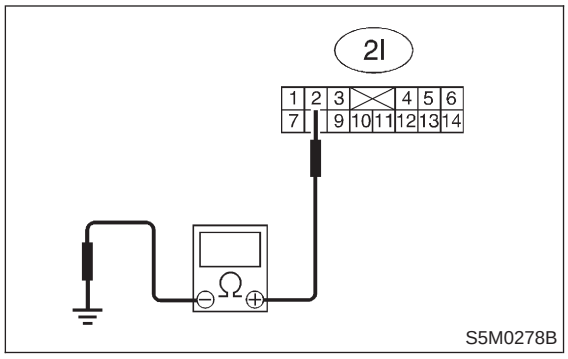


CHECK : ***Is resistance more than 10 kΩ?***
YES : Go to step **5C4**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5C4 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Measure resistance between test harness I connector (2I) terminals and chassis ground.

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

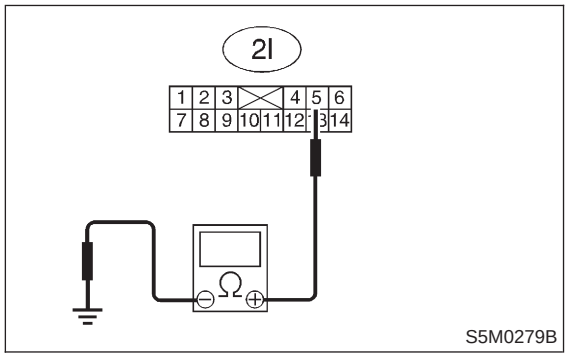


CHECK : ***Is resistance more than 200 Ω?***
YES : Go to step **5C5**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5C5 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness I connector (2I) terminals and chassis ground.

Connector & terminal
(2I) No. 5 (+) — Chassis ground (−):



CHECK : ***Is resistance more than 200 Ω?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

D: TROUBLE CODE 15

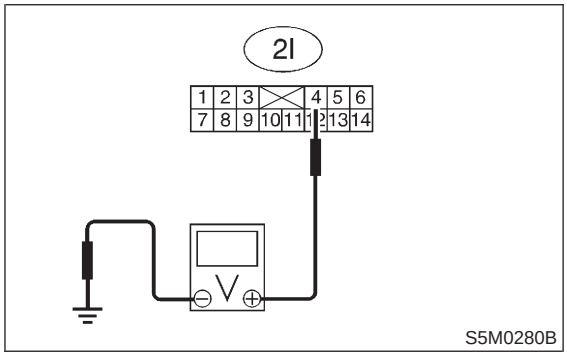
DIAGNOSIS:
- Airbag main harness circuit (Driver) is shorted to power supply.
- Airbag module harness (Driver) is shorted to power supply.
- Roll connector is shorted to power supply.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).

5D1 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Connect battery ground cable and turn ignition switch "ON" (engine off).
3) Measure voltage across each test harness I connector (2I) terminal and chassis ground.

Connector & terminal
(2I) No. 4 (+) — Chassis ground (−):

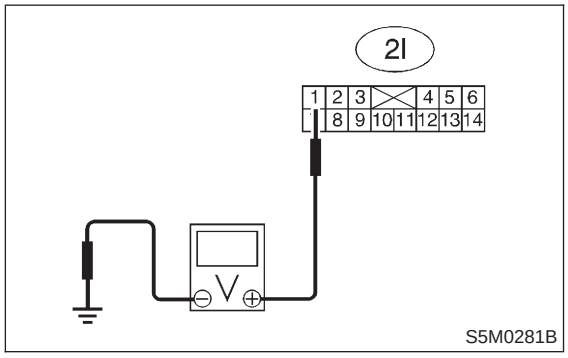


CHECK : ***Is voltage less than 1 V?***
YES : Go to step **5D2**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5D2 : AIRBAG MAIN HARNESS INSPECTION

Measure voltage across each test harness I connector (2I) terminal and chassis ground.

Connector & terminal
(2I) No. 1 (+) — Chassis ground (−):



CHECK : ***Is voltage less than 1 V?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

E: TROUBLE CODE 16

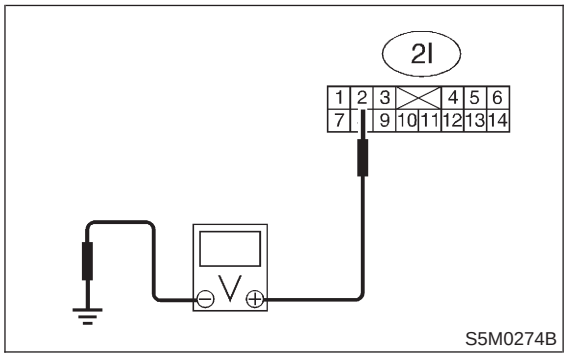
DIAGNOSIS:
- Airbag main harness circuit (Passenger) is shorted to power supply.
- Airbag module harness (Passenger) is shorted to power supply.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).

5E1 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Connect battery ground cable and turn ignition switch "ON" (engine off).
3) Measure voltage across each test harness I connector (2I) terminal and chassis ground.

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

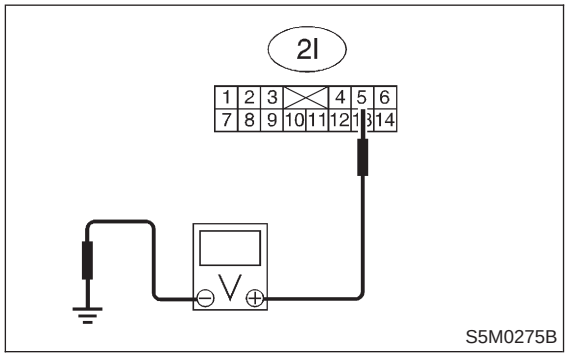


CHECK : ***Is voltage less than 1 V?***
YES : Go to step **5E2**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5E2 : AIRBAG MAIN HARNESS INSPECTION

Measure voltage across each test harness I connector (2I) terminal and chassis ground.

Connector & terminal
(2I) No. 5 (+) — Chassis ground (−):



CHECK : ***Is voltage less than 1 V?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

F: TROUBLE CODE 21

DIAGNOSIS:
Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds.

5F1 : CHECK IF TROUBLE CODE 21 IS INDICATED.

Confirm flashing trouble code according to "BASIC DIAGNOSTICS PROCEDURE". <Ref. to 5-5 [T4A0].>

CHECK : ***Is airbag warning light trouble code 21 indicated?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Perform clear memory. <Ref. to 5-5 [T4C0].>

G: TROUBLE CODE 22

DIAGNOSIS:
Front airbag module is inflated.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds.

5G1 :	**CHECK IF TROUBLE CODE 22 IS INDICATED.**

Confirm flashing trouble code according to "BASIC DIAGNOSTICS PROCEDURE". <Ref. to 5-5 [T4A0].>

CHECK : ***Is airbag warning light trouble code 22 indicated?***

YES : Replace airbag control module <Ref. to 5-5 [W5A0].>, front sub sensor <Ref. to 5-5 [W7A0].>, driver's airbag module <Ref. to 5-5 [W3A1].> and passenger's airbag module. <Ref. to 5-5 [W3A2].>

NO : Perform clear memory. <Ref. to 5-5 [T4C0].>

H: TROUBLE CODE 23

DIAGNOSIS:
(AB6) is not connected properly to airbag control module.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.

5H1 :	**CHECK POOR CONTACT IN CONNECTOR (AB6).**

Check connector (AB6) connected to airbag control module. <Ref. to 5-5 [W5A0].>

CHECK : ***Is there poor contact in connector (AB6)?***

YES : Repair poor contact in connector (AB6).

NO : Replace airbag control module. <Ref. to 5-5 [W5A0].>

I: TROUBLE CODE 24

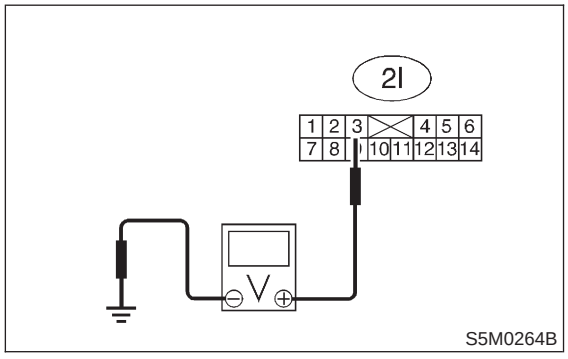
DIAGNOSIS:
- Airbag control module is faulty.
- Airbag main harness circuit is open.
- Fuse No. 11 (in joint box) is blown.
- Body harness circuit is open.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).

5I1 : AIRBAG CONTROL MODULE INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Connect battery ground cable and turn ignition switch "ON" (engine off).
3) Measure voltage across connector (2I) terminal and chassis ground.

Connector & terminal
(2I) No. 3 (+) — Chassis ground (−):

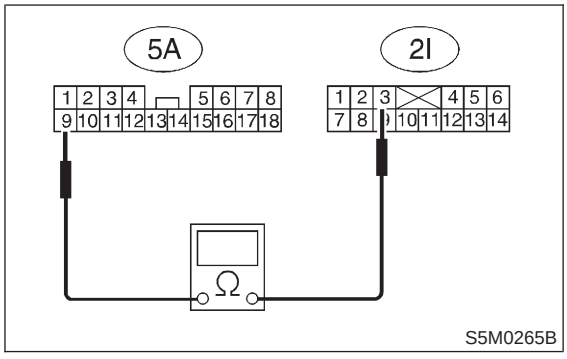


CHECK : ***Is voltage more than 10 V?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5I2**.

5I2 : AIRBAG MAIN HARNESS INSPECTION

1) Go to following procedure after performing diagnostics on airbag system as per diagnosis procedure under "5I1 AIRBAG CONTROL MODULE INSPECTION" <Ref. to 5-5 [T5I1].> previously outlined.
2) Turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
3) Disconnect connector (AB1) from body harness connector (B31) at front lower pillar (driver side), and connect connector (AB1) to test harness A connector (2A).
4) Measure resistance between test harness A connector (5A) and test harness I connector (2I) terminals.

Connector & terminal
(5A) No. 9 — (2I) No. 3:

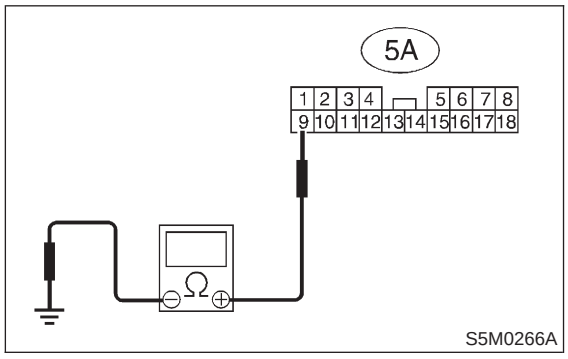


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5I3**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5I3 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between each terminal of connectors (5A) and chassis ground.

Connector & terminal
(5A) No. 9 (+) — Chassis ground (−):

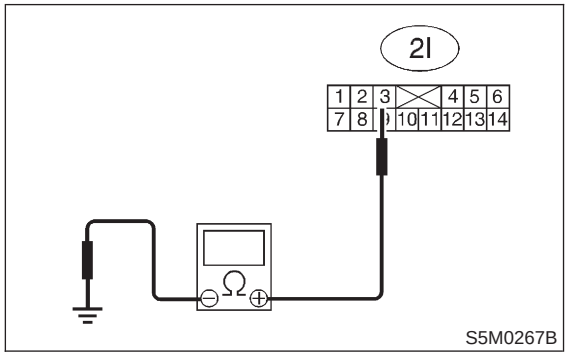


CHECK : ***Is resistance more than 10 kΩ?***
YES : Go to step **5I4**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5I4 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between each terminal of connectors (2I) and chassis ground.

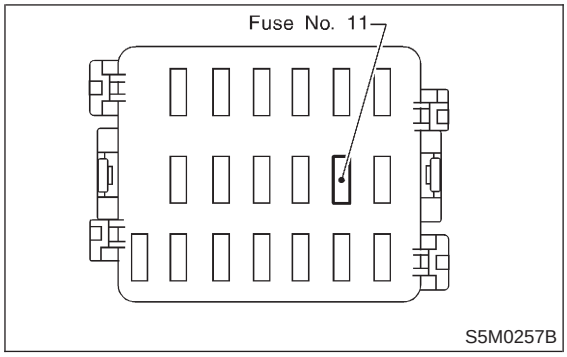
Connector & terminal
(2I) No. 3 (+) — Chassis ground (−):



CHECK : ***Is resistance more than 10 kΩ?***
YES : Go to step **5I5**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5I5 : FUSE NO. 11 (IN JOINT BOX) INSPECTION

Make sure ignition switch is turned “OFF”, then remove and visually check fuse No. 11 (in joint box).



CHECK : ***Is fuse No. 11 blown?***
YES : Replace fuse No. 11. If fuse No. 11 blows again, repair body harness.
NO : Repair body harness.

J: TROUBLE CODE 25

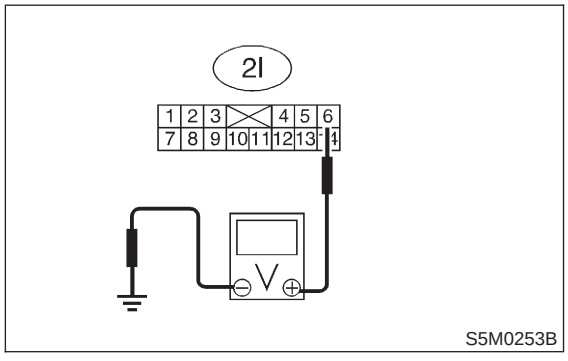
DIAGNOSIS:
- Airbag control module is faulty.
- Airbag main harness circuit is open.
- Fuse No. 6 (in joint box) is blown.
- Body harness circuit is open.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).

5J1 : AIRBAG CONTROL MODULE INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].> and connect it to test harness I connector (1I).
2) Connect battery ground cable and turn ignition switch "ON". (engine off)
3) Measure voltage across connector (2I) terminal and chassis ground.

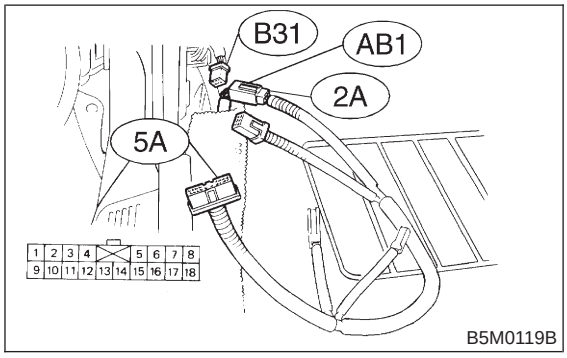
Connector & terminal
(2I) No. 6 (+) — Chassis ground (−):



CHECK : ***Is voltage more than 10 V?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5J2**.

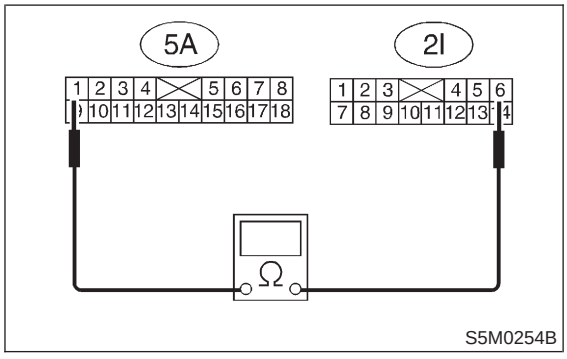
5J2 : AIRBAG MAIN HARNESS INSPECTION

1) Go to following procedure after performing diagnostics on airbag system as per diagnosis procedure under "5J1 AIRBAG CONTROL MODULE INSPECTION" <Ref. to 5-5 [T5J1].> previously outlined.
2) Turn ignition switch "OFF", disconnect battery ground terminal and then wait at least 20 seconds.
3) Disconnect body harness connector (B31) from connector (AB1) at front lower pillar, and connect connector (AB1) to test harness A connector (2A).



4) Measure resistance between test harness A connector (5A) terminal and test harness I connector (2I) terminal.

Connector & terminal
(5A) No. 1 — (2I) No. 6:

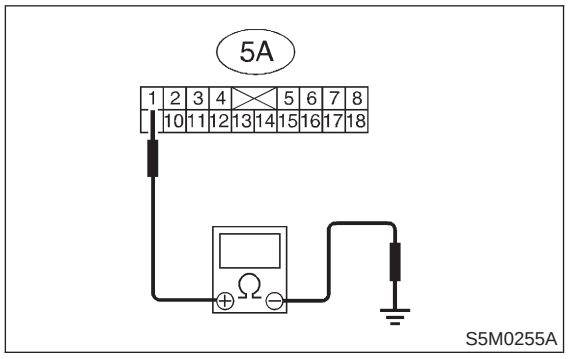


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5J3**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5J3 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between (5A) connector terminal and chassis ground.

Connector & terminal
(5A) No. 1 (+) — Chassis ground (−):

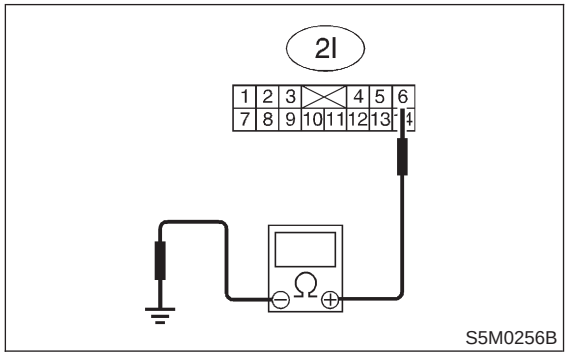


CHECK : ***Is resistance more than 10 kΩ?***
YES : Go to step **5J4**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5J4 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between (2I) connector terminal and chassis ground.

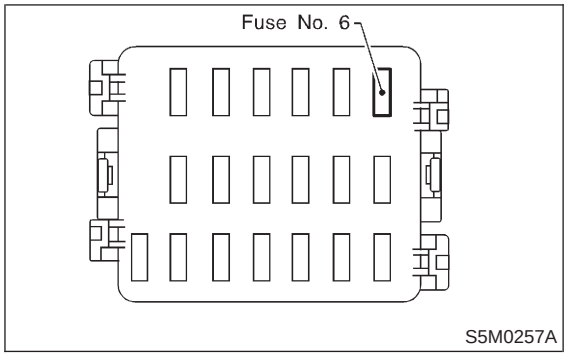
Connector & terminal
(2I) No. 6 (+) — Chassis ground (−):



CHECK : ***Is resistance more than 10 kΩ?***
YES : Go to step **5J5**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5J5 : FUSE NO. 6 (IN JOINT BOX) INSPECTION

1) Turn ignition switch “OFF”.
2) Remove and visually check fuse No. 6 (in joint box).



CHECK : ***Is fuse No. 6 blown?***
YES : Replace fuse No. 6 if fuse No. 6 blows again, repair body harness.
NO : Repair body harness.

K: TROUBLE CODE 31

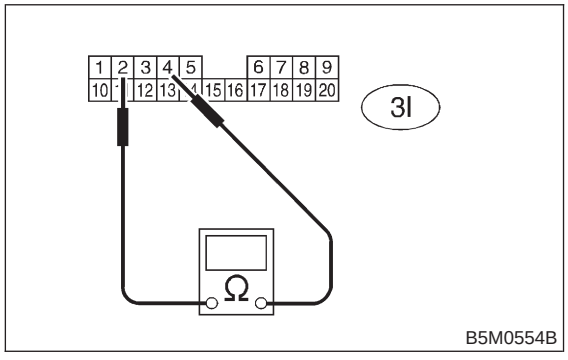
DIAGNOSIS:
- Front sub sensor harness (RH) circuit is shorted.
- Front sub sensor harness (RH) circuit is open.
- Front sub sensor (RH) is faulty.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds.

5K1 : FRONT SUB SENSOR (RH) AND FRONT SUB SENSOR HARNESS (RH) INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Measure resistance between test harness I connector (3I) terminal.

Connector & terminal
(3I) No. 2 — No. 4:

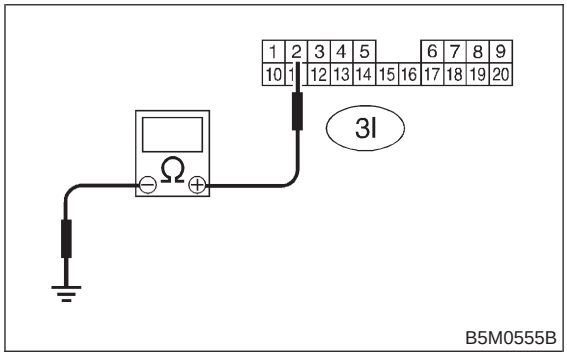


CHECK : ***Is the resistance between 750 Ω and 1 kΩ?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5K2**.

5K2 : FRONT SUB SENSOR (RH) AND FRONT SUB SENSOR HARNESS (RH) INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

Connector & terminal
(3I) No. 2 (+) — Chassis ground (−):

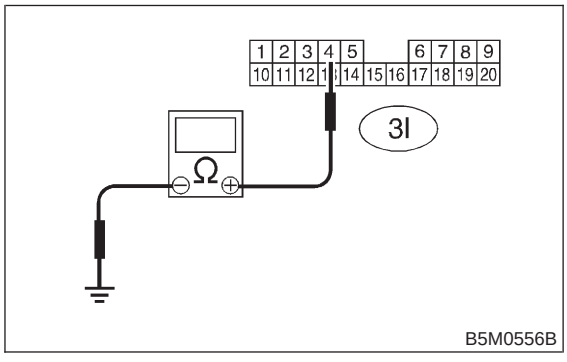


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5K3**.

5K3 : FRONT SUB SENSOR (RH) AND FRONT SUB SENSOR HARNESS (RH) INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

Connector & terminal
(3I) No. 4 (+) — Chassis ground (−):

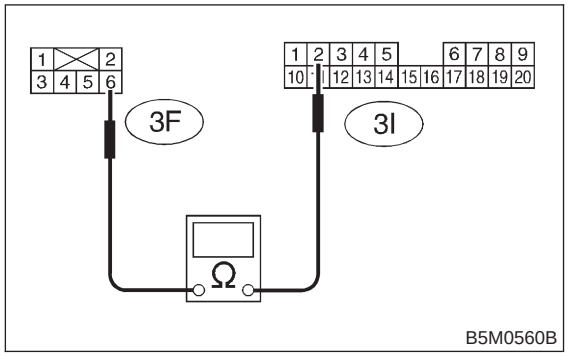


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5K4**.

5K4 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB14) and (AB15), then connect test harness F connector (2F) and connector (AB14).
2) Measure resistance between test harness I connector (3I) terminal and test harness F connector (3F) terminal.

Connector & terminal
(3I) No. 2 — (3F) No. 6:

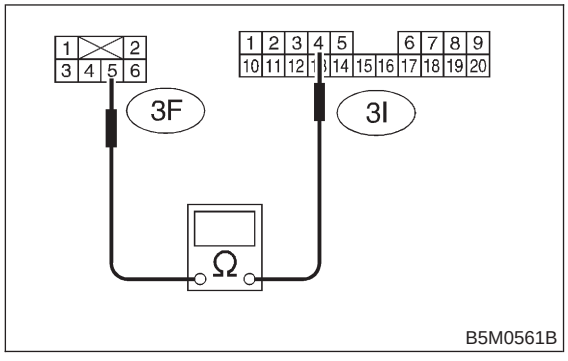


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5K5**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5K5 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness I connector (3I) terminal and test harness F connector (3F) terminal.

Connector & terminal
(3I) No. 4 — (3F) No. 5:

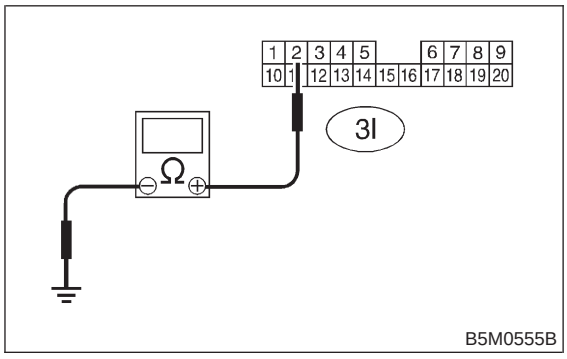


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5K6**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5K6 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

Connector & terminal
(3I) No. 2 (+) — Chassis ground (−):

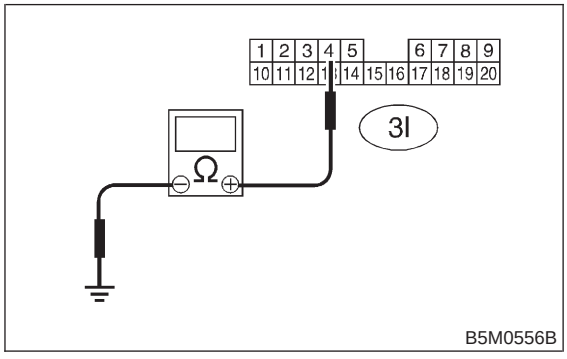


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5K7**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5K7 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

Connector & terminal
(3I) No. 4 (+) — Chassis ground (−):

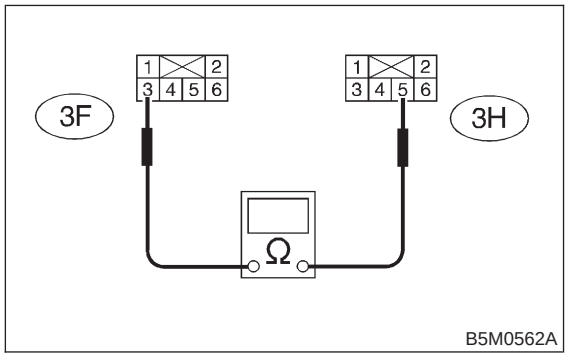


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5K8**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5K8 : FRONT SUB SENSOR HARNESS (RH) INSPECTION

1) Connect test harness F connector (1F) and connector (AB15).
2) Disconnect connector (AB16) from front sub sensor (RH) <Ref. to 5-5 [W7A0].> and then test harness H connector (1H) and connector (AB16).
3) Measure resistance between test harness F connector (3F) terminal and test harness H connector (3H) terminal.

Connector & terminal
(3F) No. 3 — (3H) No. 5:

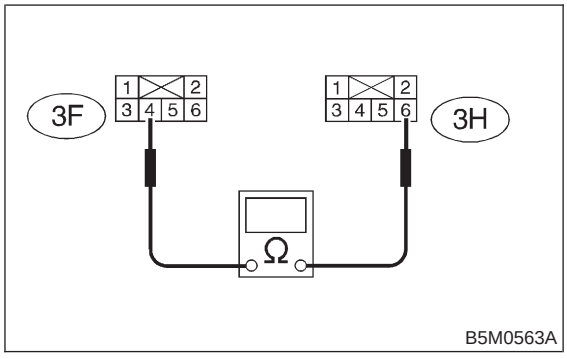


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5K9**.
NO : Replace front sub sensor harness (RH). <Ref. to 5-5 [W7A0].>

5K9 : FRONT SUB SENSOR HARNESS (RH) INSPECTION

Measure resistance between test harness F connector (3F) terminal and test harness H connector (3H) terminal.

Connector & terminal
(3F) No. 4 — (3H) No. 6:

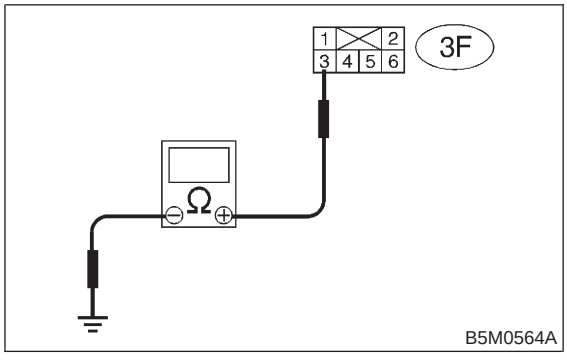


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5K10**.
NO : Replace front sub sensor harness (RH). <Ref. to 5-5 [W7A0].>

5K10 : FRONT SUB SENSOR HARNESS (RH) INSPECTION

Measure resistance across test harness F connector (3F) terminal and chassis ground.

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

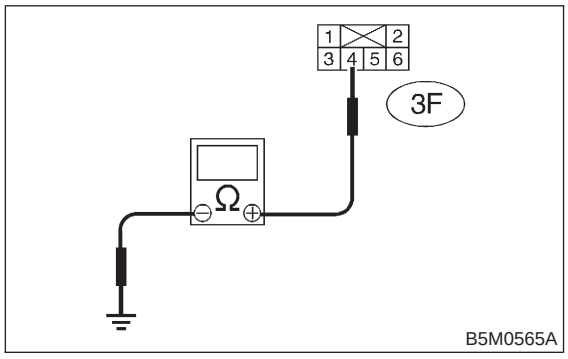


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5K11**.
NO : Replace front sub sensor harness (RH). <Ref. to 5-5 [W7A0].>

5K11 : FRONT SUB SENSOR HARNESS (RH) INSPECTION

Measure resistance across test harness F connector (3F) terminal and chassis ground.

Connector & terminal
(3F) No. 4 (+) — Chassis ground (−):

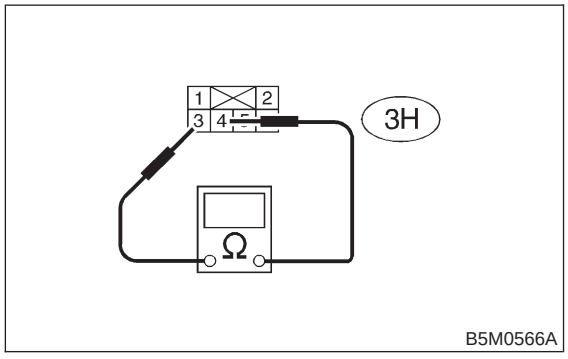


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5K12**.
NO : Replace front sub sensor harness (RH). <Ref. to 5-5 [W7A0].>

5K12 : FRONT SUB SENSOR (RH) INSPECTION

1) Connect test harness H connector (2H) and front sub sensor (RH).
2) Measure resistance between test harness H connector (3H) terminal.

Connector & terminal
(3H) No. 3 — No. 4:

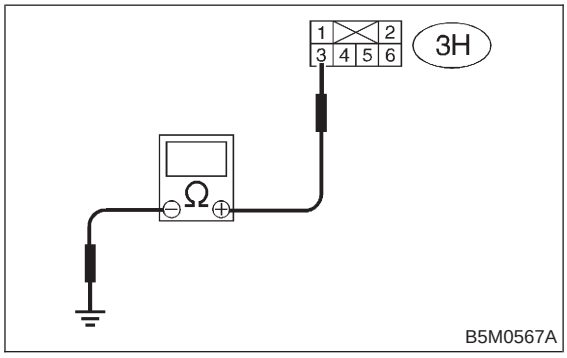


CHECK : ***Is the resistance between 750 Ω and 1 kΩ?***
YES : Go to step **5K13**.
NO : Replace front sub sensor (RH). <Ref. to 5-5 [W7A0].>

5K13 : FRONT SUB SENSOR (RH) INSPECTION

Measure resistance across test harness H connector (3H) terminal and chassis ground.

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

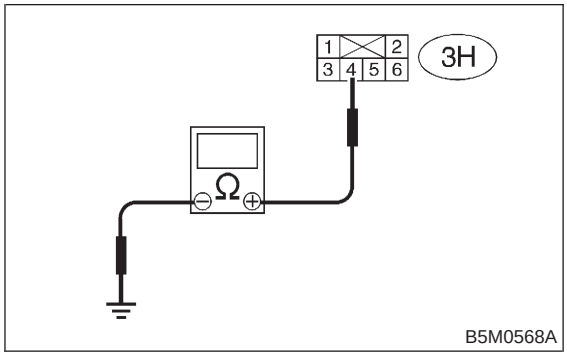


CHECK : ***Is the resistance less than 10 kΩ?***
YES : Go to step **5K14**.
NO : Replace front sub sensor (RH). <Ref. to 5-5 [W7A0].>

5K14 : FRONT SUB SENSOR (RH) INSPECTION

Measure resistance across test harness H connector (3H) terminal and chassis ground.

Connector & terminal
(3H) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the resistance less than 10 kΩ?***
YES : Perform clear memory. <Ref. to 5-5 [T4C0].>
NO : Replace front sub sensor (RH). <Ref. to 5-5 [W7A0].>

L: TROUBLE CODE 32

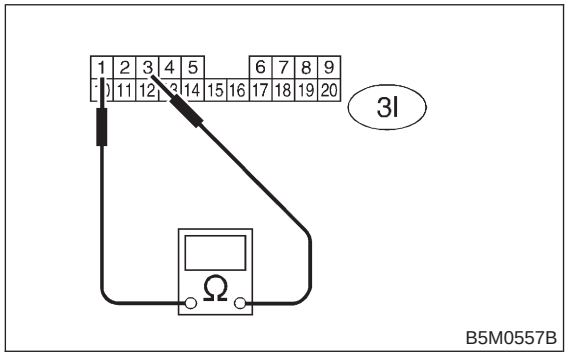
DIAGNOSIS:
- Front sub sensor harness (LH) circuit is shorted.
- Front sub sensor harness (LH) circuit is open.
- Front sub sensor (LH) is faulty.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds.

5L1 : FRONT SUB SENSOR (LH) AND FRONT SUB SENSOR HARNESS (LH) INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Measure resistance between test harness I connector (3I) terminal.

Connector & terminal
(3I) No. 1 — No. 3:

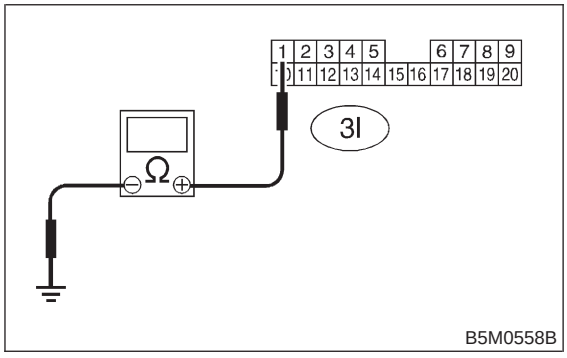


CHECK : ***Is the resistance between 750 Ω and 1 kΩ?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5L2**.

5L2 : FRONT SUB SENSOR (LH) AND FRONT SUB SENSOR HARNESS (LH) INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

Connector & terminal
(3I) No. 1 (+) — Chassis ground (−):

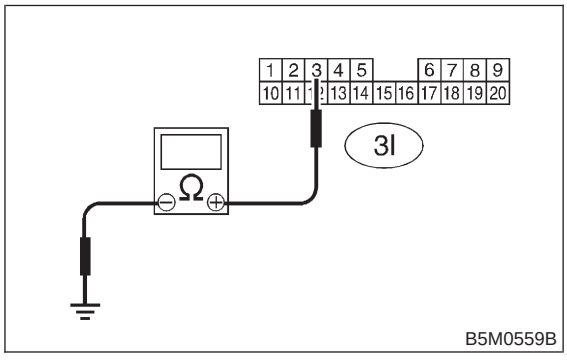


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5L3**.

5L3 : FRONT SUB SENSOR (LH) AND FRONT SUB SENSOR HARNESS (LH) INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

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

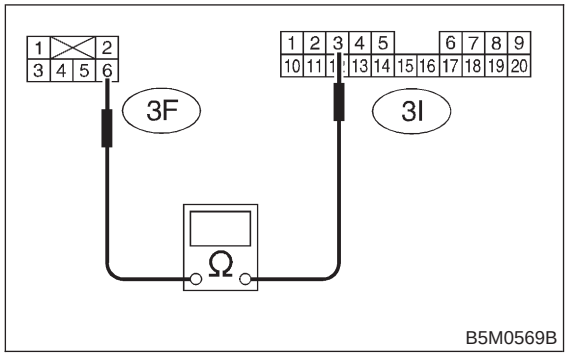


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Go to step **5L4**.

5L4 : AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB11) and (AB12), then connect test harness F connector (2F) and connector (AB11).
2) Measure resistance between test harness I connector (3I) terminal and test harness F connector (3F) terminal.

Connector & terminal
(3I) No. 3 — (3F) No. 6:

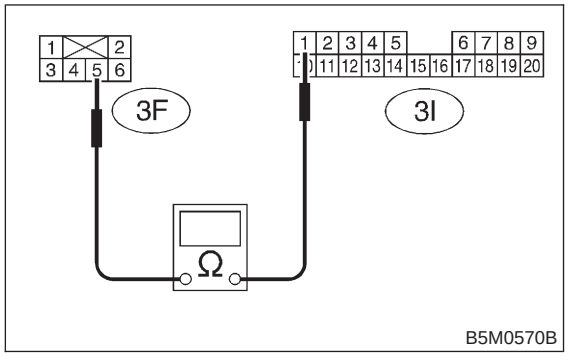


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5L5**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5L5 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness I connector (3I) terminal and test harness F connector (3F) terminal.

Connector & terminal
(3I) No. 1 — (3F) No. 5:

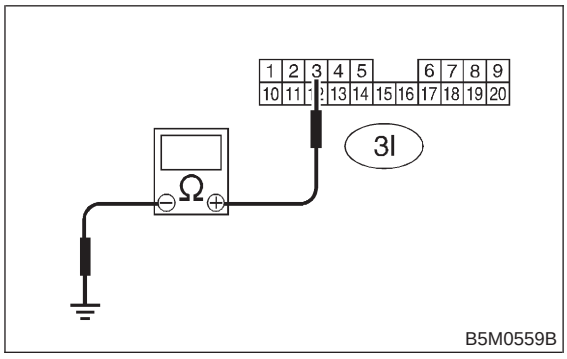


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5L6**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5L6 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

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

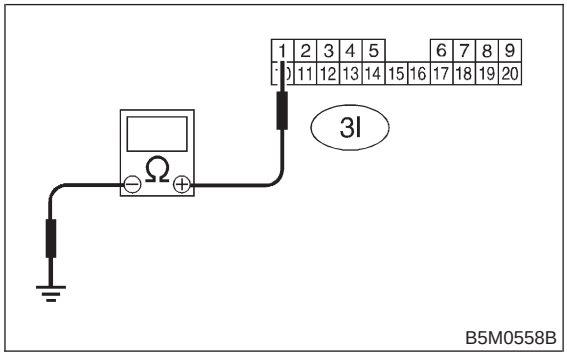


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5L7**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5L7 : AIRBAG MAIN HARNESS INSPECTION

Measure resistance across test harness I connector (3I) terminal and chassis ground.

Connector & terminal
(3I) No. 1 (+) — Chassis ground (−):

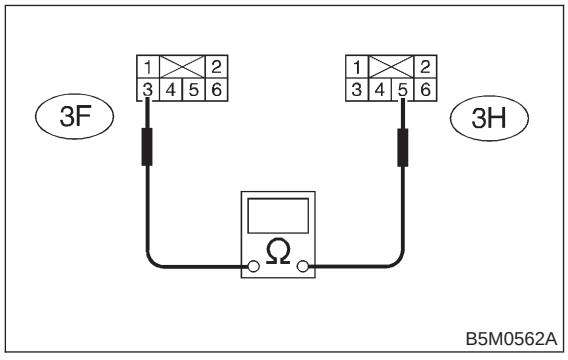


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5L8**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5L8 : FRONT SUB SENSOR HARNESS (LH) INSPECTION

1) Connect test harness F connector (1F) and connector (AB12).
2) Disconnect connector (AB13) from front sub sensor (LH) <Ref. to 5-5 [W7A0].> and then test harness H connector (1H) and connector (AB13).
3) Measure resistance between test harness F connector (3F) terminal and test harness H connector (3H) terminal.

Connector & terminal
(3F) No. 3 — (3H) No. 5:

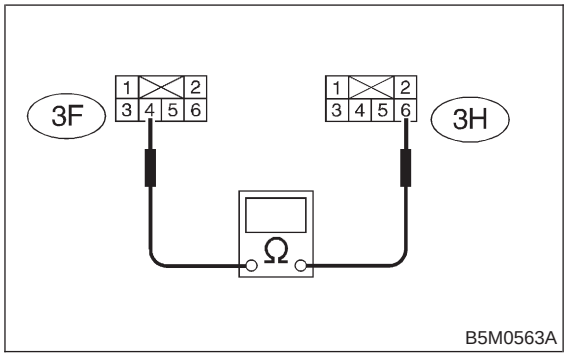


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5L9**.
NO : Replace front sub sensor harness (LH). <Ref. to 5-5 [W7A0].>

5L9 : FRONT SUB SENSOR HARNESS (LH) INSPECTION

Measure resistance between test harness F connector (3F) terminal and test harness H connector (3H) terminal.

Connector & terminal
(3F) No. 4 — (3H) No. 6:

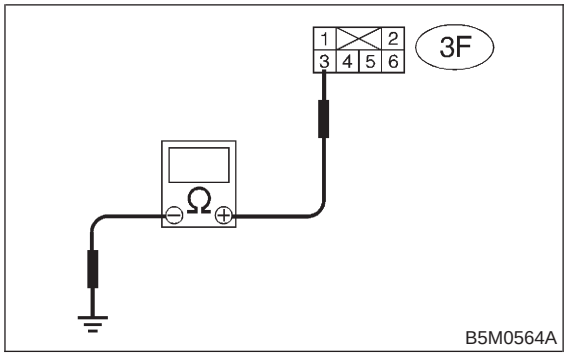


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **5L10**.
NO : Replace front sub sensor harness (LH). <Ref. to 5-5 [W7A0].>

5L10 : FRONT SUB SENSOR HARNESS (LH) INSPECTION

Measure resistance across test harness F connector (3F) terminal and chassis ground.

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

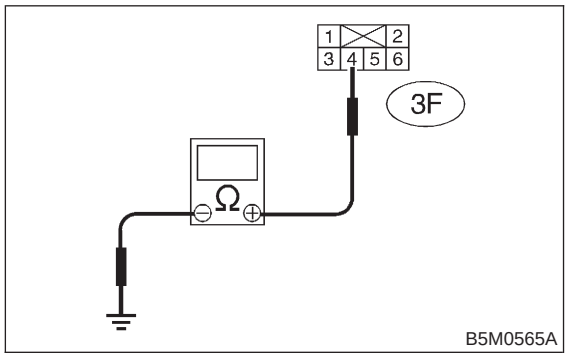


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5L11**.
NO : Replace front sub sensor harness (LH). <Ref. to 5-5 [W7A0].>

5L11 : FRONT SUB SENSOR HARNESS (LH) INSPECTION

Measure resistance across test harness F connector (3F) terminal and chassis ground.

Connector & terminal
(3F) No. 4 (+) — Chassis ground (−):

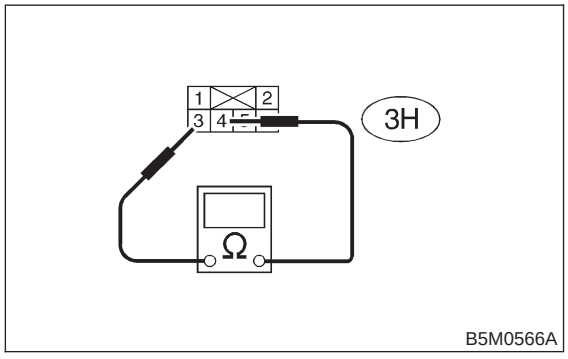


CHECK : ***Is the resistance more than 10 kΩ?***
YES : Go to step **5L12**.
NO : Replace front sub sensor harness (LH). <Ref. to 5-5 [W7A0].>

5L12 : FRONT SUB SENSOR (LH) INSPECTION

1) Connect test harness H connector (2H) and front sub sensor (LH).
2) Measure resistance between test harness H connector (3H) terminal.

Connector & terminal
(3H) No. 3 — No. 4:

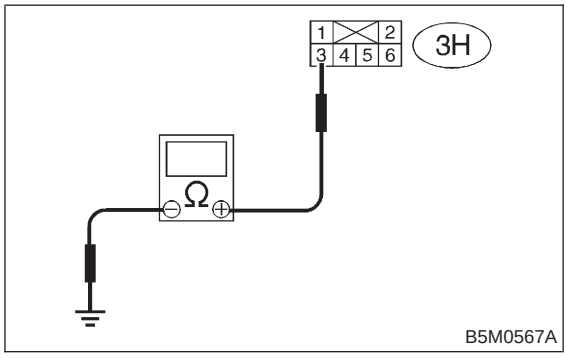


CHECK : ***Is the resistance between 750 Ω and 1 kΩ?***
YES : Go to step **5L13**.
NO : Replace front sub sensor (LH). <Ref. to 5-5 [W7A0].>

5L13 : FRONT SUB SENSOR (LH) INSPECTION

Measure resistance across test harness H connector (3H) terminal and chassis ground.

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

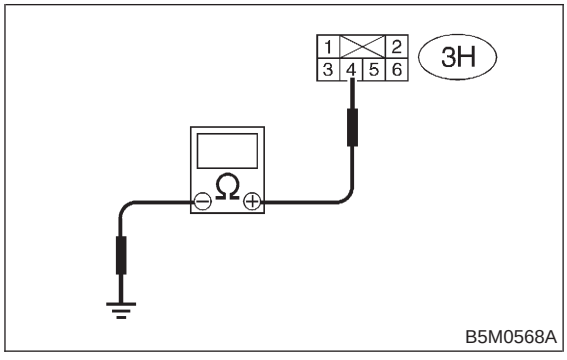


CHECK : ***Is the resistance less than 10 kΩ?***
YES : Go to step **5L14**.
NO : Replace front sub sensor (LH). <Ref. to 5-5 [W7A0].>

5L14 : FRONT SUB SENSOR (LH) INSPECTION

Measure resistance across test harness H connector (3H) terminal and chassis ground.

Connector & terminal
(3H) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the resistance less than 10 kΩ?***
YES : Perform clear memory. <Ref. to 5-5 [T4C0].>
NO : Replace front sub sensor (LH). <Ref. to 5-5 [W7A0].>

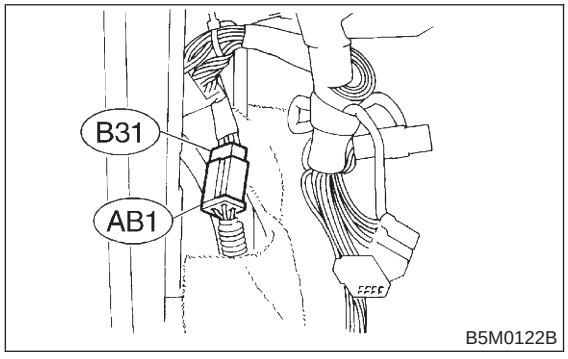
M: AIRBAG WARNING LIGHT REMAINS ON.

DIAGNOSIS:
- Airbag warning light is faulty.
- Airbag control module to airbag warning light harness circuit is shorted or open.
- Grounding circuit is faulty.
- Airbag control module is faulty.
- (AB1) and (B31) are not connected properly.
- (AB6) is not connected properly to airbag control module.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.

5M1 : CHECK POOR CONTACT IN CONNECTORS (AB1) AND (B31).

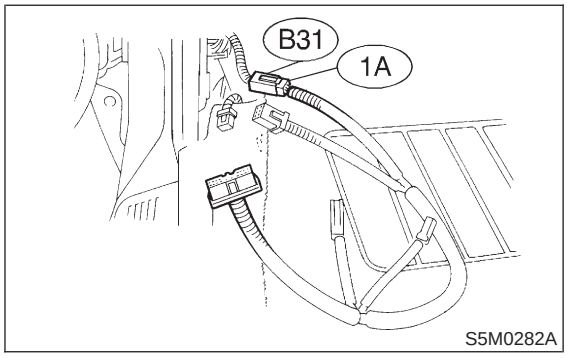
1) Remove front pillar lower trim (Driver side).
2) Check poor contact in connectors (AB1) and (B31).



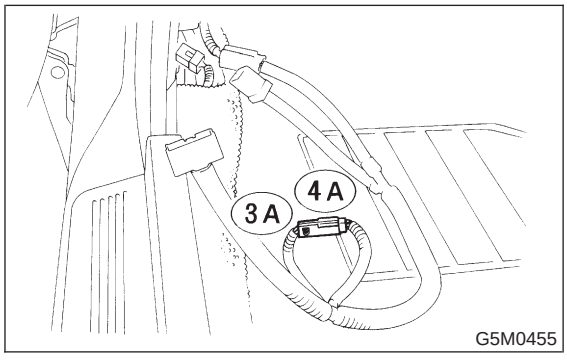
CHECK : ***Is there poor contact in double lock of connectors (AB1) and (B31)?***
YES : Repair poor contact in double lock of connectors (AB1) and (B31).
NO : Go to step **5M2**.

5M2 : INSPECTION OF AIRBAG WARNING LIGHT

1) Turn ignition switch "OFF" and connect body harness connector (B31) to test connector A connector (1A).



2) Connect battery ground cable and turn ignition switch "ON", (engine off) and connect connectors (3A) and (4A).

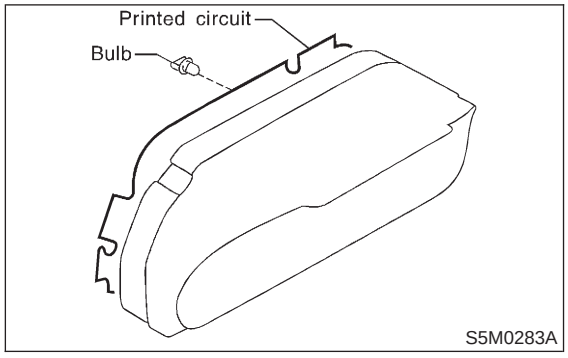


CHECK : ***Does the airbag warning light come off?***
YES : Go to step **5M4**.
NO : Go to step **5M3**.

5M3 : INSPECTION OF BODY HARNESS

Check body harness.

NOTE:
After problem has been eliminated, disconnect connectors (3A) and (4A).



CHECK : ***Is there anything unusual to body harness?***

YES : Repair body harness.

NO : Replace airbag warning light bulb <Ref. to 6-2 [W8B0].> or combination meter printed circuit.

5M4 : CHECK POOR CONTACT IN CONNECTOR (AB6).

Check connector (AB6) connected to airbag control module. <Ref. to 5-5 [W5A0].>

CHECK : ***Is there poor contact in connector (AB6)?***

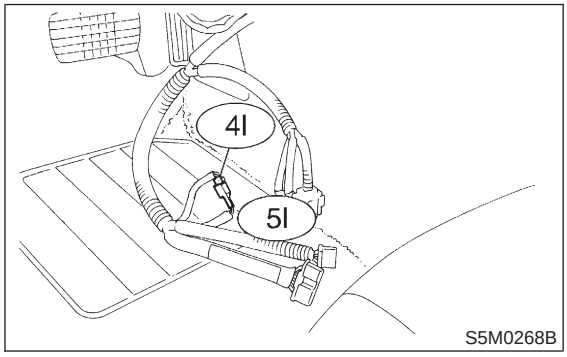
YES : Repair poor contact in connector (AB6).

NO : Go to step **5M5**.

5M5 : INSPECTION OF AIRBAG MAIN HARNESS

1) Turn ignition switch “OFF”, disconnect battery ground cable and then wait at least 20 seconds, and re-connect connectors (AB1) and (B31).
2) Remove instrument panel lower cover and disconnect (AB3) with (AB8), then disconnect connector (AB6) from airbag control module, <Ref. to 5-5 [W5A0].> and connect it to test harness I connector (1I).
3) Connect battery ground cable and turn ignition switch “ON”, (engine off) and connect connectors (4I) and (5I).

NOTE:
After problem has been eliminated, disconnect connectors (4I) and (5I).



CHECK : ***Does the airbag warning light come on?***

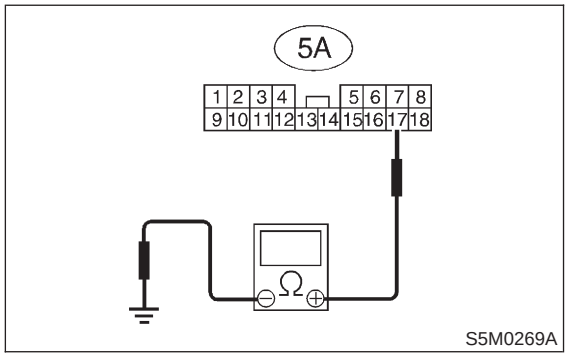
YES : Go to step **5M6**.

NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5M6 : GROUNDING CIRCUIT INSPECTION

1) Turn ignition switch “OFF”, disconnect battery ground cable and then wait at least 20 seconds.
2) Disconnect connector (AB1) from body harness connector (B31), and connect connector (B31) to test harness A connector (1A).
3) Measure resistance between connector (5A) terminal and chassis ground.

Connector & terminal
(5A) No. 17 (+) — Chassis ground (−):

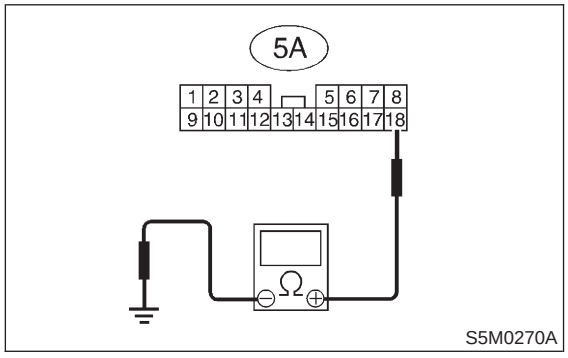


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5M7**.
NO : Repair body grounding circuit.

5M7 : GROUNDING CIRCUIT INSPECTION

Measure resistance between connector (5A) terminal and chassis ground.

Connector & terminal
(5A) No. 18 (+) — Chassis ground (−):

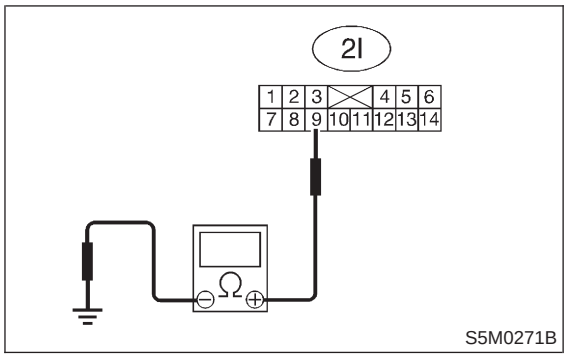


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5M8**.
NO : Repair body grounding circuit.

5M8 : INSPECTION OF AIRBAG MAIN HARNESS

1) Connect connectors (AB1) and (B31). Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness I connector (1I).
2) Measure resistance between each test harness I connector (2I) terminal and chassis ground.

Connector & terminal
(2I) No. 9 (+) — Chassis ground (−):

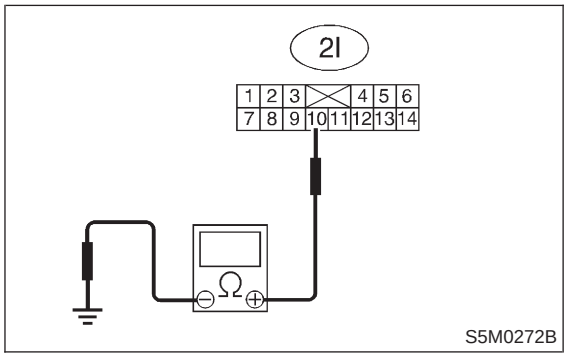


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **5M9**.
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

5M9 : INSPECTION OF AIRBAG MAIN HARNESS

Measure resistance between each test harness I connector (2I) terminal and chassis ground.

Connector & terminal
(2I) No. 10 (+) — Chassis ground (−):



CHECK : ***Is resistance less than 10 Ω?***
YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>
NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

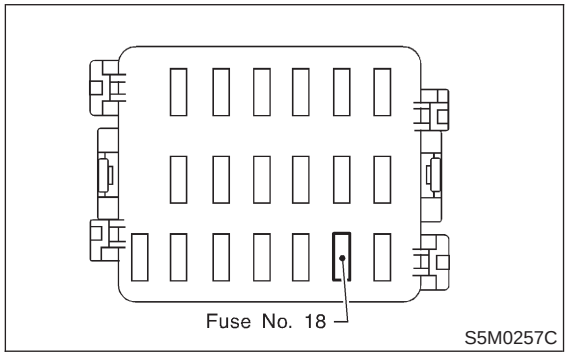
N: AIRBAG WARNING LIGHT REMAINS OFF.

DIAGNOSIS:
- Fuse No. 18 (in joint box) is blown.
- Body harness circuit is open.
- Airbag warning light is faulty.
- Airbag main harness is faulty.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds.

5N1 : FUSE NO. 18 (IN JOINT BOX) INSPECTION

Remove and visually check fuse No. 5 (In joint box).



CHECK : ***Is fuse No. 18 blown?***
YES : Replace fuse No. 18. If fuse No. 18 blows again, Go to step **5N2**.
NO : Go to step **5N2**.

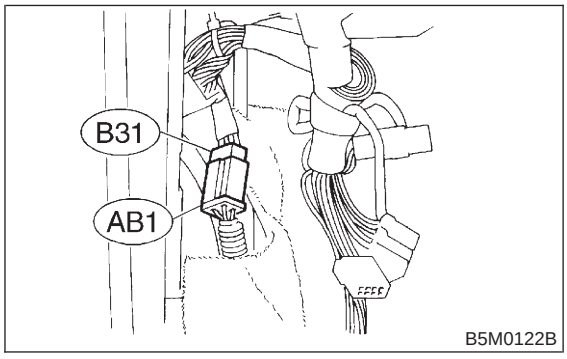
5N2 : BODY HARNESS INSPECTION

Turn ignition switch "ON" (engine off) to make sure other warning lights (in combination meter) illuminate.

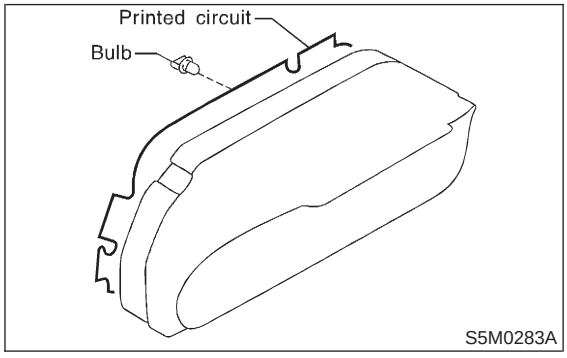
CHECK : ***Do all the warning lights (in combination meter) except airbag warning light come on?***
YES : Go to step **5N3**.
NO : Repair body harness.

5N3 : AIRBAG WARNING LIGHT MODULE (IN COMBINATION METER) INSPECTION

1) Turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
2) Disconnect body harness connector (B31) from connector (AB1).



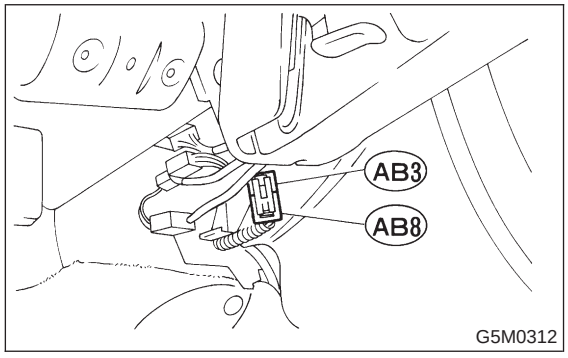
3) Connect battery ground cable and turn ignition switch "ON" (engine off) to make sure airbag warning light illuminates.



CHECK : ***Does the airbag warning light come on?***
YES : Go to step **5N4**.
NO : Replace airbag warning light bulb <Ref. to 6-2 [W8B0].> or combination meter printed circuit.

5N4 : AIRBAG MAIN HARNESS INSPECTION

1) Turn ignition switch “OFF”, disconnect battery ground cable and then wait at least 20 seconds.
2) Connect body harness connector (B31) and connector (AB1).
3) Disconnect connectors (AB3) and (AB8) below steering column. <Ref. to 5-5 [M2F2].>



4) Disconnect connector (AB6) from airbag control module. <Ref. to 5-5 [W5A0].>
5) Connect battery ground cable and turn ignition switch “ON” to make sure airbag warning light illuminates.

CHECK : ***Does the airbag warning light come on?***

YES : Replace airbag control module. <Ref. to 5-5 [W5A0].>

NO : Replace airbag main harness. <Ref. to 5-5 [W4A0].>

O: WARNING LIGHT INDICATES TROUBLE CODE, THEN NORMAL CODE. (FLASHING TROUBLE CODE.)

DIAGNOSIS:
Airbag system component parts are faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable, and then wait at least 20 seconds.

5O1 : AIRBAG COMPONENT PARTS APPEARANCE INSPECTION

1) Conduct on-board diagnostic and call up trouble codes stored in memory. <Ref. to 5-5 [T4B0].>
2) Select trouble code required to check airbag component parts from those listed in table and reproduce symptom.

Trouble codes	Check parts	Index. No.
5	● Airbag module (Driver) ● Roll connector ● Airbag main harness ● Airbag control module	<Ref. to 5-5 [W3A1].> <Ref. to 5-5 [W600].> <Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W5A0].>
11	● Roll connector ● Airbag module (Driver) ● Airbag main harness ● Airbag control module	<Ref. to 5-5 [W600].> <Ref. to 5-5 [W3A1].> <Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W5A0].>
12	● Airbag module (Passenger) ● Airbag main harness ● Airbag control module	<Ref. to 5-5 [W3A2].> <Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W500].>
15	● Airbag module (Driver) ● Roll connector ● Airbag main harness ● Airbag control module	<Ref. to 5-5 [W3A1].> <Ref. to 5-5 [W600].> <Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W5A0].>
16	● Airbag main harness ● Airbag module (Passenger) ● Airbag control module	<Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W3A2].> <Ref. to 5-5 [W5A0].>
21	Airbag control module	<Ref. to 5-5 [W5A0].>
22	Airbag control module	<Ref. to 5-5 [W5A0].>
25	● Fuse No. 6 ● Airbag main harness ● Airbag control module ● Body harness	<Ref. to 5-5 [T5J5].> <Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W5A0].> <Ref. to 5-5 [W4A0].>
31	● Airbag main harness ● Front sub sensor and front sub sensor harness (RH)	<Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W7A0].>
32	● Airbag main harness ● Front sub sensor and front sub sensor harness (LH)	<Ref. to 5-5 [W4A0].> <Ref. to 5-5 [W7A0].>

3) Conduct appearance inspection on parts selected.

NOTE:
Also check connector terminals, wiring harness, case, etc. for damage.

CHECK : ***Is there anything unusual about the appearance of airbag component parts?***
YES : Replace faulty airbag component parts.
NO : Go to step **5O2**.

5O2 : AIRBAG COMPONENT PARTS VIBRATION INSPECTION

1) Gently shake check parts (to determine faults).
2) To check airbag module or roll connector, turn and tilt steering wheel.

CAUTION:
Do not shake or vibrate airbag control module.

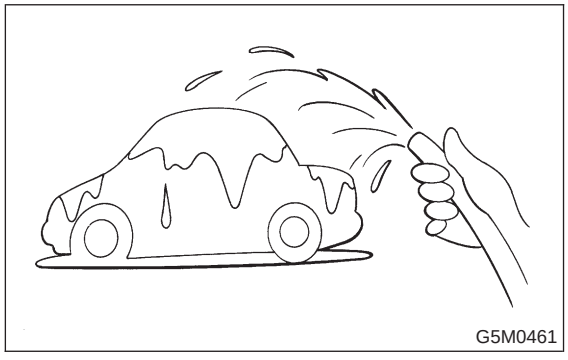
CHECK : ***Does the component malfunction again when shaking?***
YES : Replace faulty airbag component parts.
NO : Go to step **5O3**.

5O3 : SHOWERING INSPECTION TO BODY

Spray water on vehicle body.

CAUTION:
Do not directly spray water on airbag components.

NOTE:
Also check wiring harnesses as water may leak along them and get airbag component parts wet.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CHECK : ***Does water leak into the passenger compartment when showering vehicle?***
YES : Replace faulty airbag component parts.
NO : Perform clear memory. <Ref. to 5-5 [T4C0].>

P: WARNING LIGHT INDICATES TROUBLE CODE, THEN NORMAL CODE. (FLASHING NORMAL CODE.)

DIAGNOSIS:
- Airbag connector is faulty.
- Fuse No. 11 (in joint box) is blown.
- Airbag main harness is faulty.
- Airbag control module is faulty.
- Body harness is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable, and then wait at least 20 seconds.

5P1 : AIRBAG CONNECTOR APPEARANCE INSPECTION

Conduct appearance inspection on airbag connectors (AB2) through (AB8). <Ref. to 5-5 [T100].>

NOTE:
Check terminals, case and wiring harnesses for damage.

CHECK : ***Is there anything unusual about the appearance of connectors (AB2) through (AB8)?***
YES : Replace faulty airbag component parts.
NO : Go to step **5P2**.

5P2 : AIRBAG CONNECTOR VIBRATION INSPECTION

Conduct vibration inspection on airbag connectors (AB2) through (AB8). <Ref. to 5-5 [T100].>

NOTE:
Gently shake each airbag connector.

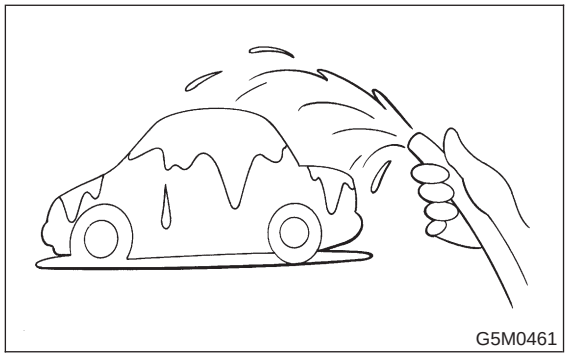
CHECK : ***Do the connectors (AB2) through (AB8) malfunction again when shaking?***
YES : Replace faulty airbag component parts.
NO : Go to step **5P3**.

5P3 : SHOWERING INSPECTION TO BODY

Spray water on vehicle body.

CAUTION:
Do not directly spray water on airbag components.

NOTE:
If leaks are noted, also check wiring harnesses as water may leak along them and wet airbag connectors.



CHECK : ***Does water leak into the passenger compartment when showering vehicle?***
YES : Replace faulty airbag component parts.
NO : Go to step **5P4**.

5P4 : FUSE NO. 11 (IN JOINT BOX), AIRBAG MAIN HARNESS, AIRBAG CONTROL MODULE, BODY HARNESS APPEARANCE INSPECTION

Conduct appearance inspection on fuse No. 11 <Ref. to 5-5 [T5I5].>, airbag main harness <Ref. to 5-5 [W4A0].>, airbag control module <Ref. to 5-5 [W5A0].> and body harness.

NOTE:
Also check connectors, terminals, wiring harness and case for damage.

CHECK : ***Is there anything unusual about the appearance of fuse No. 11, airbag main harness, airbag control module or body harness?***
YES : Replace faulty airbag component parts.
NO : Go to step **5P5**.

5P5 : FUSE NO. 11 (IN JOINT BOX), AIRBAG MAIN HARNESS, BODY HARNESS VIBRATION INSPECTION

Conduct vibration inspection on fuse No. 11, airbag main harness and body harness.

CAUTION:
Do not shake or vibrate airbag control module.

NOTE:
Gently shake each part.

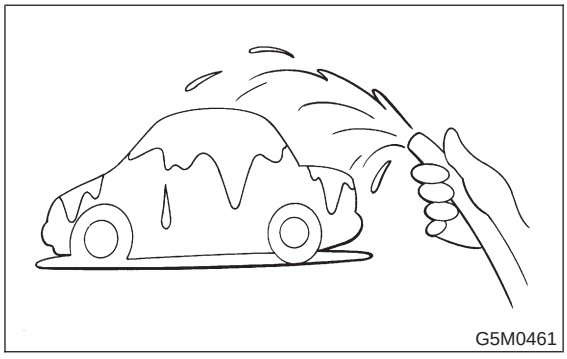
CHECK : ***Do fuse No. 11, airbag main harness or body harness malfunction again when shaking?***
YES : Replace faulty airbag component parts.
NO : Go to step **5P6**.

5P6 : SHOWERING INSPECTION TO BODY

Spray water on vehicle body.

CAUTION:
Do not directly spray water on each part.

NOTE:
If leaks are noted, check wiring harnesses as water may leak along them and get parts wet.



CHECK : ***Does water leak into the passenger compartment when showering vehicle?***
YES : Replace faulty airbag component parts.
NO : Go to step **5P7**.

5P7 : WARNING LIGHT ILLUMINATION CHECK

Turn ignition switch “ON” (engine off) and observe airbag warning light.

CHECK : ***Does the airbag warning light come on for about 7 seconds, then go out and stay out?***

YES : Perform clear memory. <Ref. to 5-5 [T4C0].>

NO : Go to “DIAGNOSTICS PROCEDURE”. <Ref. to 5-5 [T4D0].>

BODY ELECTRICAL SYSTEM (CRUISE CONTROL) 6-2

Page

T DIAGNOSTICS 2
1. Precaution 2
2. Pre-inspection....2
3. Electrical Components Location....7
4. Schematic....8
5. Control Module I/O Signal....10
6. Diagnostics Chart for On-board Diagnosis System....12
7. Diagnostics Chart for Power Line 14
8. Diagnostics Chart with Diagnostic Code....19
9. Diagnostics Chart with Select Monitor....42

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM “AIRBAG”

Airbag system wiring harness is routed near the cruise control module and cruise control command switch.

CAUTION:
● All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuits.
● Be careful not to damage Airbag system wiring harness when servicing the cruise control module and cruise control command switch.

2. Pre-inspection

A: FUNCTION TESTS

Conduct road tests by selecting a smooth, flat road or use free rollers for road test simulation.

1. CRUISE CONTROL MAIN SWITCH

1) Turn ignition switch to ON.
2) Check that cruise control main switch indicator light comes on when main switch is pressed (ON).
3) Check that main switch indicator light goes out when main switch is pressed again (OFF).
4) Turn ignition switch to OFF with main switch ON (indicated by illumination). Turn ignition switch ON again to ensure that main switch indicator light remains OFF.

2. CRUISE CONTROL COMMAND SWITCH

1) Check that cruise control command switch is properly set in “SET/COAST”, “RESUME/ACCEL”, or “CANCEL” mode.
2) Also check that command switch returns to the original position when released.

3. CONSTANT SPEED TEST

1) Turn cruise control main switch to ON.
2) Drive the vehicle at a speed greater than 40 km/h (25 MPH).
3) Press command switch to set in “SET/COAST” mode.
4) Ensure that vehicle is maintained at the speed set when command switch was pressed.

4. ACCELERATION TEST

1) Set vehicle speed at a speed greater that 40 km/h (25 MPH).
2) Ensure that vehicle continues to accelerate while holding command switch in “RESUME/ ACCEL” mode, and that vehicle maintains that optional speed when command switch is released.

5. DECELERATION TEST

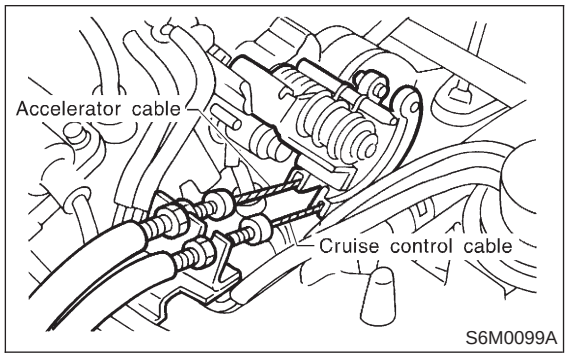
1) Set vehicle speed at an optional speed greater than 40 km/h (25 MPH).
2) Ensure that vehicle continues to decelerate while holding command switch in “SET/COAST” mode, and that it maintains that optional speed when command switch is released.

NOTE:
When vehicle speed reaches the lower speed limit of 30 km/h (19 MPH) during deceleration, cruise control will be released.

B: CRUISE CONTROL CABLE

2B1 : CHECK CRUISE CONTROL CABLE.

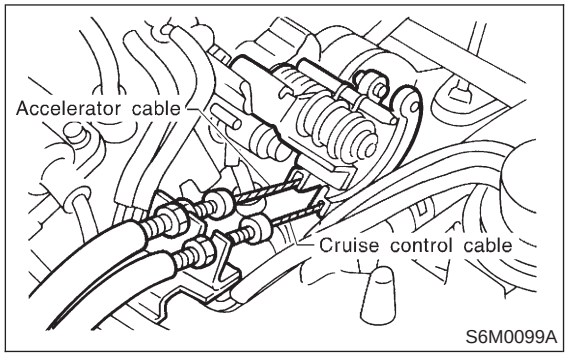
Check cruise control cable installation.



CHECK : ***Is the cruise control cable securely installed to the left of the accelerator cable?***
YES : Go to step **2B2**.
NO : Install cruise control cable securely. Go to step **2B2**.

2B2 : CHECK ACCELERATOR CABLE.

Check function of accelerator cable.



CHECK : ***Does the accelerator cable throttle cam move when the cruise control throttle is moved by hand?***
YES : Repair accelerator cable throttle cam. Go to step **2B3**.
NO : Go to step **2B3**.

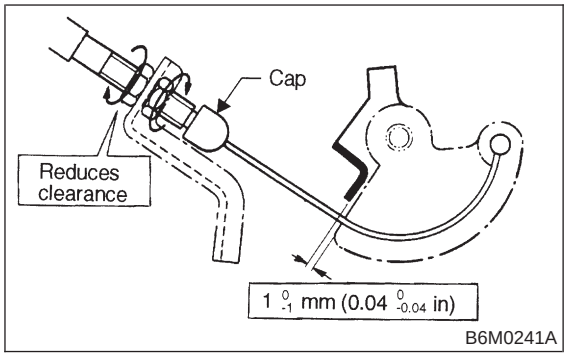
2B3 : CHECK THROTTLE CAM.

Check function of throttle cam.

CHECK : ***Does the throttle cam move smoothly?***
YES : Go to step **2B4**.
NO : Repair throttle cam. Go to step **2B4**.

2B4 : CHECK CABLE FREE PLAY.

Ensure that throttle cam-to-lever clearance is within specifications.



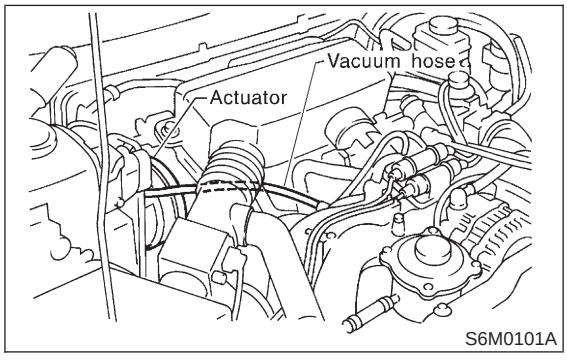
CHECK : ***Is throttle cam-to-lever clearance between 0 and 1 mm (0 and 0.04 in)?***
YES : Go to step **2C1**.
NO : Adjust cable end by adjusting nuts. Go to step **2C1**.

NOTE:
Ensure that cap is positioned in groove.

C: VACUUM HOSE

2C1 : CHECK VACUUM HOSE VISUALLY.

Check vacuum hose (which connects actuator and intake manifold).

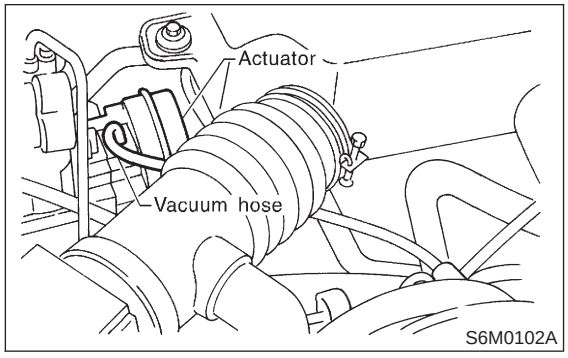


CHECK : ***Is there disconnection or cracks in vacuum hose?***
YES : Replace vacuum hose. Go to step **2D1**.
NO : Go to step **2D1**.

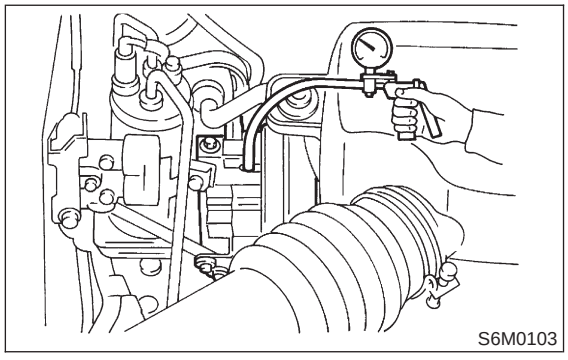
D: ACTUATOR

2D1 : CHECK FUNCTION OF ACTUATOR.

1) Disconnect vacuum hose from actuator.



2) Connect vacuum pump as shown in figure.



3) Make sure that cruise control cable moves smoothly and quickly when a vacuum pressure of 40.0 kPa (300 mmHg, 11.81 inHg) is applied to actuator.

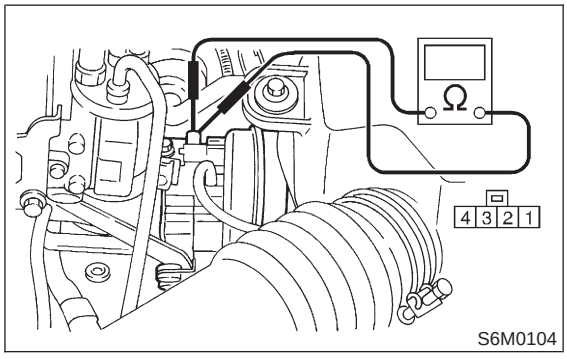
CHECK : ***Does cruise control cable have a stroke of 35 mm (1.38 in)?***
YES : Go to step **2D2**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].> Go to step **2D2**.

NOTE:
- When vacuum pressure is released from condition 3) above, make sure the cable returns to its original position smoothly and quickly.
- After inspection, disconnect vacuum pump and connect vacuum hose.

2D2 : MEASURE RESISTANCE OF VALVE.

1) Disconnect connector from actuator.
2) Measure resistance between terminals of actuator.

Terminals
No. 2 — No. 3:

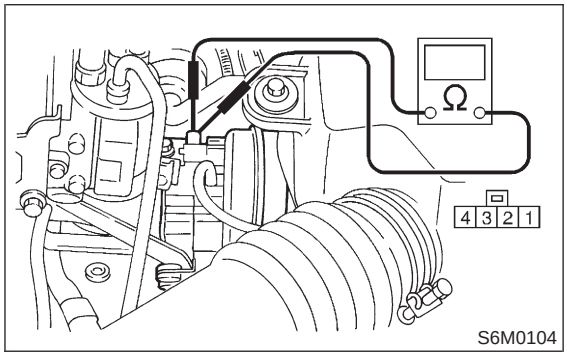


CHECK : ***Is resistance less than 100 Ω?***
YES : Go to step **2D3**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].>

2D3 : MEASURE RESISTANCE OF VALVE.

Measure resistance between terminals of actuator.

Terminals
No. 2 — No. 1:

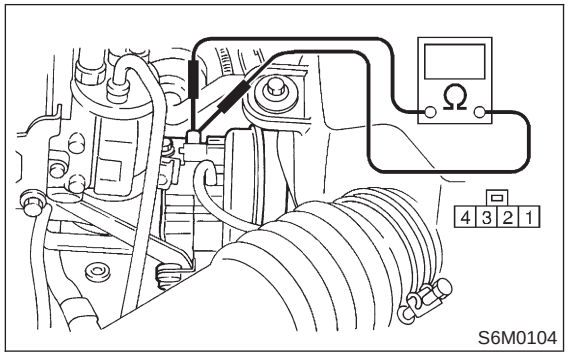


CHECK : ***Is resistance less than 69 Ω?***
YES : Go to step **2D4**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].>

2D4 : MEASURE RESISTANCE OF VALVE.

Measure resistance between terminals of actuator.

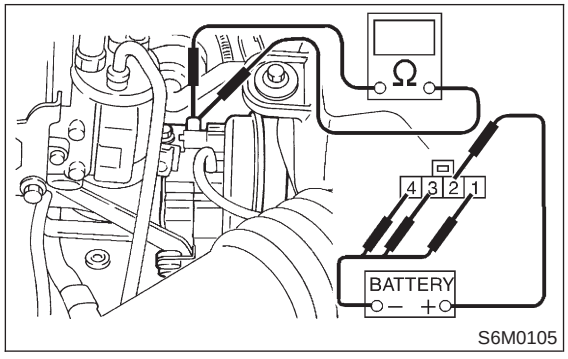
Terminals
No. 2 — No. 4:



CHECK : ***Is resistance less than 69 Ω?***
YES : Go to step **2D5**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].>

2D5 : CHECK FOR LEAKAGE AND STICKING OF VALVES.

1) Disconnect connector from actuator.
2) Make sure that cruise control cable moves smoothly when connecting + (positive) battery cable to terminal No. 2 and − (negative) battery cable to terminals No. 1, 3 and 4 of actuator connector.



CHECK : ***Does cruise control cable have a stroke of 35 mm (1.38 in) within 3 seconds?***
YES : Go to step **2D6**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].> Go to step **2D6**.

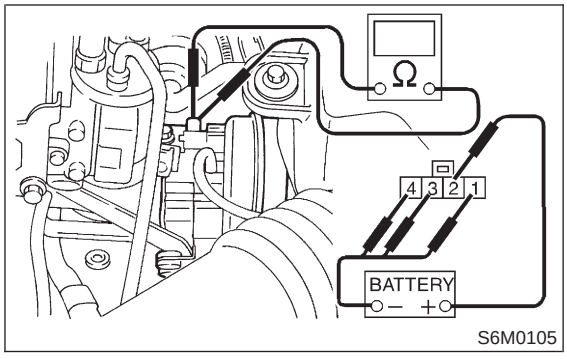
2D6 : CHECK FOR LEAKAGE AND STICKING OF VALVES.

When the battery cable is disconnected from former condition <Ref. to 6-2 [T2D5].> Step 2), make sure the cable returns to its original position smoothly.

CHECK : ***Does cruise control cable get back to its original position within 1.5 seconds?***
YES : Go to step **2D7**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].> Go to step **2D7**.

2D7 : CHECK CABLE MOVEMENT.

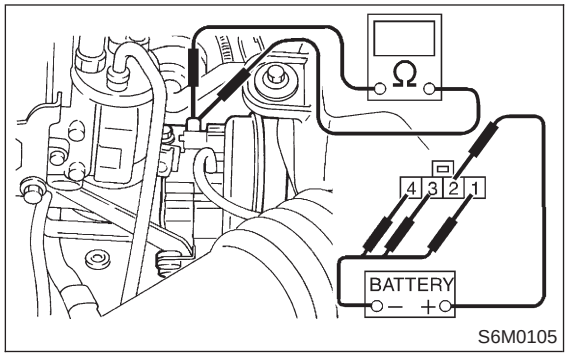
Connect + (positive) battery cable to terminal No. 2 and − (negative) battery cable to terminals No. 1, 3 and 4 of actuator connector.



CHECK : ***Does cruise control perform pull operation?***
YES : Go to step **2D8**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].> Go to step **2D8**.

2D8 : CHECK CABLE MOVEMENT.

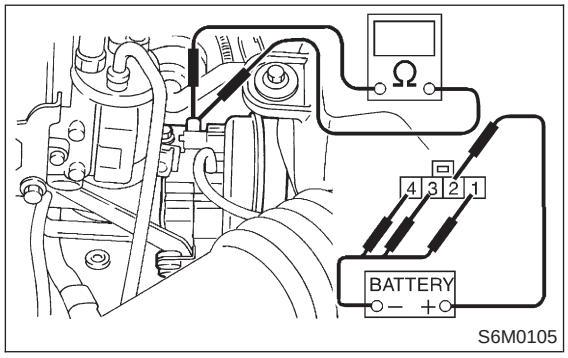
Connect + (positive) battery cable to terminal No. 2 and − (negative) battery cable to terminals No. 1 and 4 of actuator connector.



CHECK : ***Does cruise control perform hold operation?***
YES : Go to step **2D9**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].> Go to step **2D9**.

2D9 : CHECK CABLE MOVEMENT.

Connect + (positive) battery cable to terminal No. 2 and − (negative) battery cable to terminal No. 4 of actuator connector.



CHECK : ***Does cruise control perform release operation?***
YES : Go to step **2E1**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].> Go to step **2E1**.

E: POWER SUPPLY

2E1 : CHECK BATTERY.

Measure battery specific gravity of electrolyte.

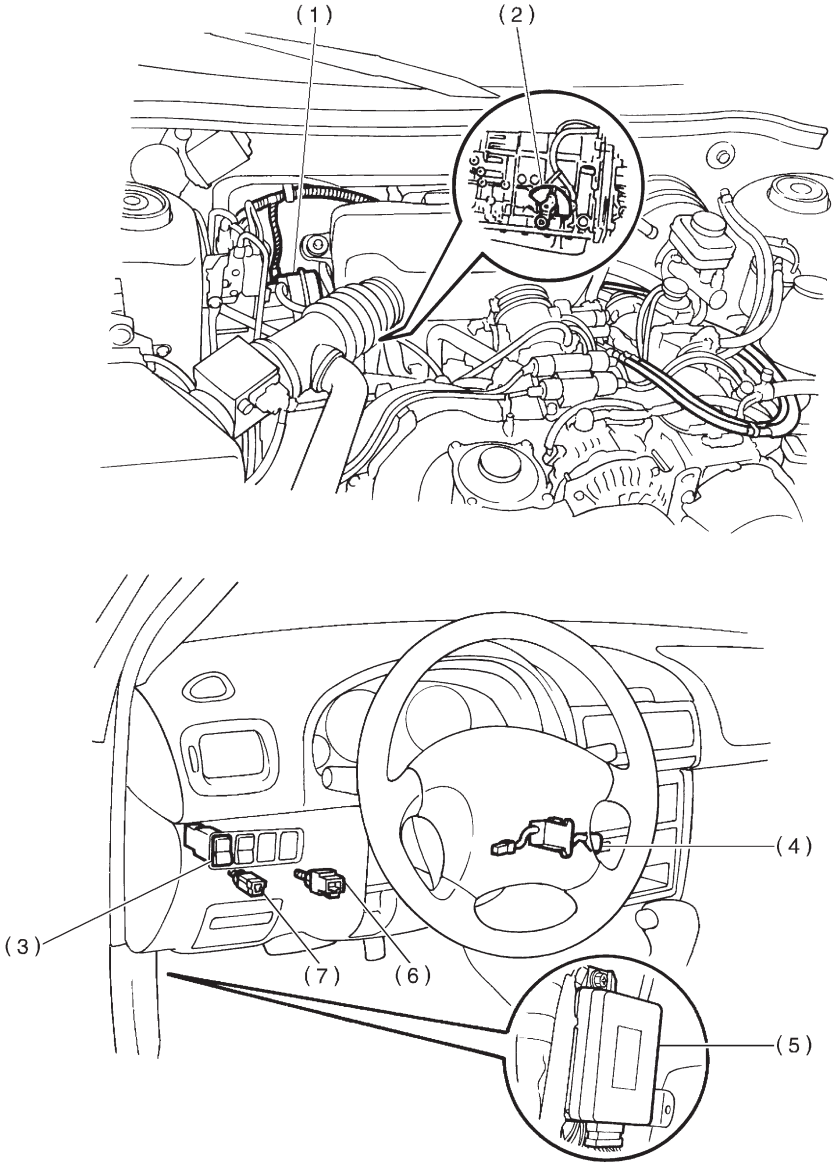
CHECK : ***Is battery specific gravity more than 1.250?***
YES : Go to step **2E2**.
NO : Charge or replace battery. <Ref. to 6-2 [W2A0].> Go to step **2E2**.

2E2 : CHECK FUSES, CONNECTORS AND HARNESSES.

Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

CHECK : ***Is there anything unusual about the appearance of main fuse, fuse, harness, connector and grounding?***
YES : Repair or replace faulty parts. End of pre-inspection.
NO : End of pre-inspection.

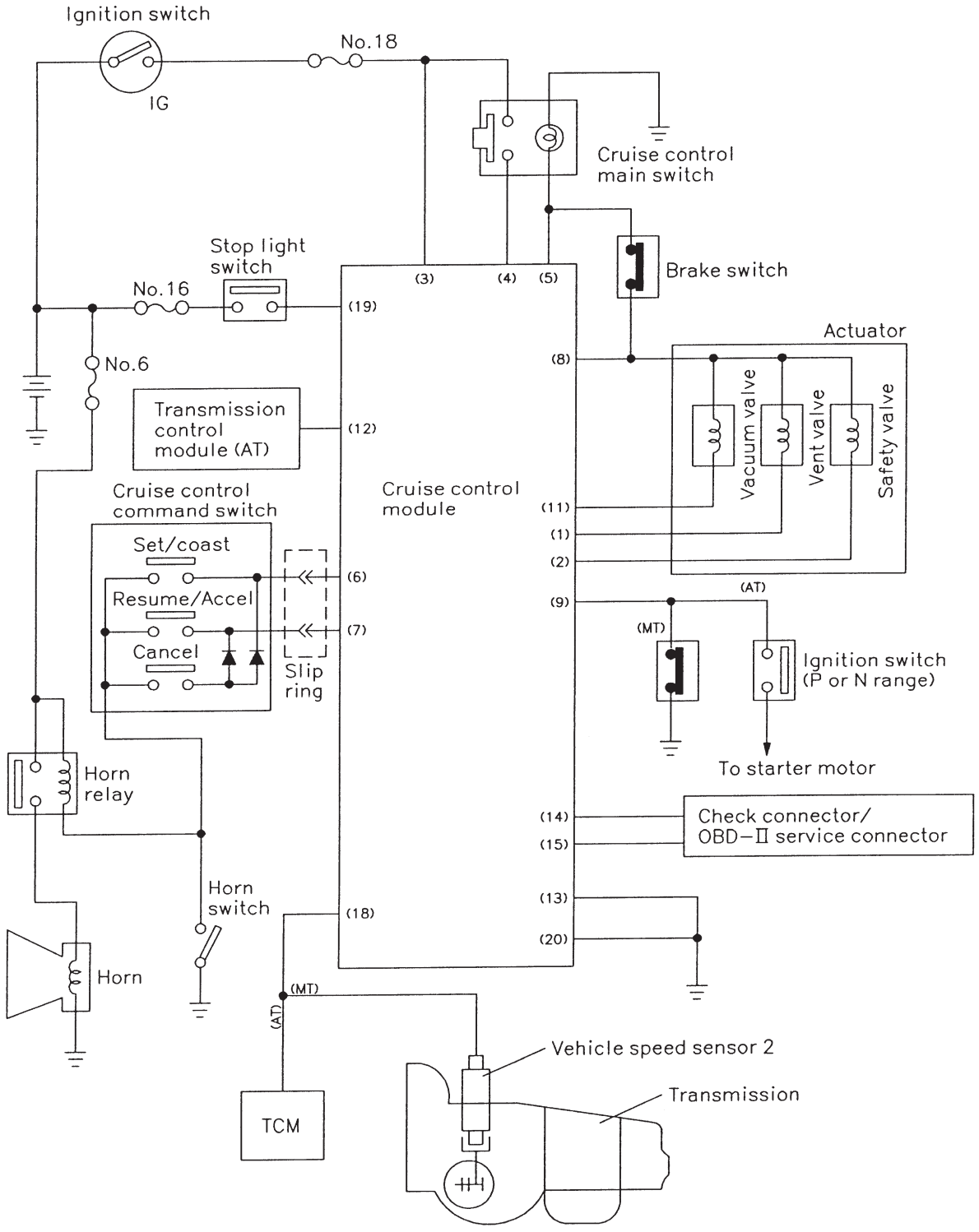
3. Electrical Components Location



S6M0106A

(1) Actuator (with valves)
(2) Inhibitor switch (AT)
(3) Cruise control main switch
(4) Cruise control command switch
(5) Cruise control module
(6) Stop and brake switch
(7) Clutch switch (MT)

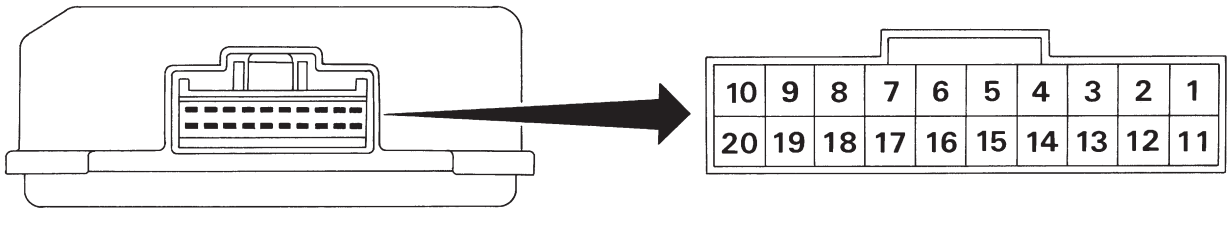
4. Schematic



S6M0325

MEMO:

5. Control Module I/O Signal



G6M0015

Content	Terminal No.	Measuring conditions and I/O signals (ignition switch ON and engine idling)
Vent valve	1	● Power supply is ON when vehicle is stopped. ● ON-and-OFF (“0”-and-battery voltage) operation is alternately repeated while cruise control is operating.
Safety valve	2	● Power supply is ON when vehicle is stopped. ● ON-and-OFF (“0”-and-battery voltage) operation is alternately repeated while cruise control is operating.
Ignition switch	3	● Battery voltage is present when ignition switch is turned ON. ● “0” volt is present when ignition switch is turned OFF.
Cruise control main switch	4	● Battery voltage is present when main power is turned ON. ● “0” volt is present when main power is turned OFF.
Power supply to vacuum valve, vent valve, safety valve and indicator light	5	● Battery voltage is present when main power is turned ON. ● “0” volt is present when main power is turned OFF.
SET/COAST switch	6	● Battery voltage is present when command switch is turned to SET/COAST position. ● “0” volt is present when command switch is released.
RESUME/ACCEL switch	7	● Battery voltage is present when command switch is turned to RESUME/ ACCEL position. ● “0” volt is present when command switch is released.
Brake switch	8	Set selector lever to any position other than “P” or “N” position (AT) / leave clutch pedal released (MT), while cruise control main switch is turned ON. Then check that; ● Battery voltage is present when brake pedal is released. ● “0” volt is present when brake pedal is depressed, or ● Battery voltage is present when clutch pedal is released (MT). ● “0” volt is present when clutch pedal is depressed (MT). ● Battery voltage is present when selector lever is in any position other than “P” or “N” position (AT). ● “0” volt is present when selector lever is set to “P” or “N” position (AT).
Clutch switch (MT)/ Inhibitor switch (AT)	9	● Battery voltage is present when clutch pedal is released (MT). ● “0” volt is present when clutch pedal is depressed (MT). ● Battery voltage is present when selector lever is in any position other than “P” or “N” position (AT). ● “0” volt is present when selector lever is set to “P” or “N” position (AT).
Vacuum valve	11	● Power supply is ON when vehicle is stopped. ● ON-and-OFF (“0”-and-battery voltage) operation is alternately repeated while cruise control is operating.
Set signal to transmission control module (AT)	12	● TCM emits a ground-level signal while driving vehicle at least 40 km/h (25 MPH) with SET switch ON.
Ground	13	—
Check connector/ OBD-II service connector	14	—
Check connector/ OBD-II service connector	15	—

Content	Terminal No.	Measuring conditions and I/O signals (ignition switch ON and engine idling)
Vehicle speed sensor 2 (MT) Automatic transmission control module (AT)	18	Lift-up the vehicle until all four wheels are raised off ground, and then rotate any wheel manually. Approx. 5 and 0 volt pulse signals are alternately input to cruise control module.
Stop light switch	19	Turn ignition switch to OFF. Then check that; ● Battery voltage is present when brake pedal is depressed. ● “0” volt is present when brake pedal is released.
Ground	20	—
NOTE: Voltage at terminals 1, 2, 11 and 12 cannot be checked unless vehicle is driving by cruise control operation.		

6. Diagnostics Chart for On-board Diagnosis System

A: BASIC DIAGNOSTIC PROCEDURE

6A1 : CHECK CRUISE CONTROL MAIN SWITCH.

1) Trouble occurs.
2) Perform pre-inspection. <Ref. to 6-2 [T200].>
3) Check cruise control main switch.

CHECK : ***Does cruise control main switch turn ON?***
YES : Go to step **6A2**.
NO : Go to "Diagnostics Chart for Power Line". <Ref. to 6-2 [T700].>

6A2 : CHECK CRUISE SPEED IS SET.

CHECK : ***Does cruise speed properly set while driving at minimum of 40 km/h (25 MPH)?***
YES : Go to step **6A3**.
NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T800].>

6A3 : CHECK CRUISE CONTROL IS RELEASED.

CHECK : ***Does cruise control properly release during operation?***
YES : Go to step **6A4**.
NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T800].>

6A4 : CHECK CRUISE SPEED IS HELD WITHIN SET SPEED.

CHECK : ***Does cruise speed hold within set speed ±3 km/h (2 MPH)?***
YES : Go to step **6A5**.
NO : Go to pre-inspection of actuator. <Ref. to 6-2 [T2D0].>

6A5 : CHECK RESUME/ACCEL SWITCH.

CHECK : ***Does RESUME/ACCEL switch function properly?***
YES : Go to step **6A6**.
NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T800].>

6A6 : CHECK SET/COAST SWITCH.

CHECK : ***Does SET/COAST switch function properly?***
YES : Go to step **6A7**.
NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T800].>

6A7 : CHECK CANCEL SWITCH.

CHECK : ***Does CANCEL switch function properly?***
YES : Go to step **6A8**.
NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T800].>

6A8 : CHECK CRUISE SPEED IS RELEASED.

CHECK : ***Does cruise speed release when brake pedal is depressed?***
YES : Go to step **6A9**.
NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T800].>

6A9 : CHECK CRUISE SPEED IS RELEASED.

CHECK : ***Does cruise speed release when clutch pedal is depressed?***
YES : Cruise control system is in correct order.
NO : Go to "Diagnostics Chart with Trouble Code". <Ref. to 6-2 [T800].>

B: ON-BOARD DIAGNOSIS WITH SELECT MONITOR

1. GENERAL

The on-board diagnosis function of the cruise control system uses an external select monitor.
The on-board diagnosis function operates in two categories, which are used depending on the type of problems;

NOTE:
Select monitor cartridge:
No. 24082AA090

1) Cruise cancel conditions diagnosis
(1) This category of diagnosis requires actual vehicle driving in order to determine the cause, (as when cruise speed is cancelled during driving although cruise cancel condition is not entered).
(2) Cruise control module memory stores the cancel condition (Code No.) which occurred during driving. When there are plural cancel conditions (Code No.), they are shown on the select monitor.

CAUTION:
● The cruise control memory stores not only the cruise "cancel" which occurred (although "cancel" operation is not entered by the driver), but also the "cancel" condition input by the driver.
● The content of memory is cleared when ignition switch or cruise main switch is turned OFF.

2) Real-time diagnosis
The real-time diagnosis function is used to determine whether or not the input signal system is in good order, according to signal emitted from switches, sensors, etc.
(1) Vehicle cannot be driven at cruise speed because problems occurs in the cruise control system or its associated circuits.
(2) Monitor the signal conditions from switches and sensors.

2. CRUISE CANCEL CONDITIONS DIAGNOSIS

1) Connect select monitor.
2) Start the engine and turn cruise control main switch to ON.
3) Set select monitor in "All System Diagnosis" mode.

NOTE:
The diagnostic code is also shown in the "Each System Check" mode. This mode is called up on the "Cruise Control Diagnosis" screen by selecting the item "Cancel Code(s) Display".

4) Drive vehicle at least 40 km/h (25 MPH) with cruise speed set.
5) If cruise speed is canceled itself (without doing any cancel operations), a diagnostic code will appear on select monitor display.

CAUTION:
● A diagnostic code will also appear when cruise cancel is effected by driver. Do not confuse.
● Have a co-worker ride in vehicle to assist in diagnosis during driving.

NOTE:
Diagnostic code will be cleared by turning ignition switch or cruise control main switch to OFF.

3. REAL-TIME DIAGNOSIS

1) Connect select monitor.
2) Turn ignition switch and cruise control main switch to ON.
3) Select the "Current Data Display & Save" mode on the select monitor "Cruise Control Diagnosis" screen.
4) Ensure that normal indication is displayed when controls are operated as indicated below:
● Depress/release the brake pedal. (Stop light switch and brake switch turn ON.)
● Turn ON the "SET/COAST" switch.
● Turn ON the "RESUME/ACCEL" switch.
● Depress/release the clutch pedal. (MT)
● Set the selector lever to P or N. (AT)

7. Diagnostics Chart for Power Line

A: BASIC DIAGNOSTICS PROCEDURE

7A1 : DRIVE AT CRUISE SPEED.

CHECK : ***Can cruise speed be set?***

YES : Go to “CHECK INDICATOR AND CIRCUIT IN CRUISE CONTROL MAIN SWITCH”. <Ref. to 6-2 [T7B0].>

NO : Go to “CHECK CRUISE CONTROL MAIN SWITCH”. <Ref. to 6-2 [T7C0].>

B: CHECK INDICATOR AND CIRCUIT IN CRUISE CONTROL MAIN SWITCH

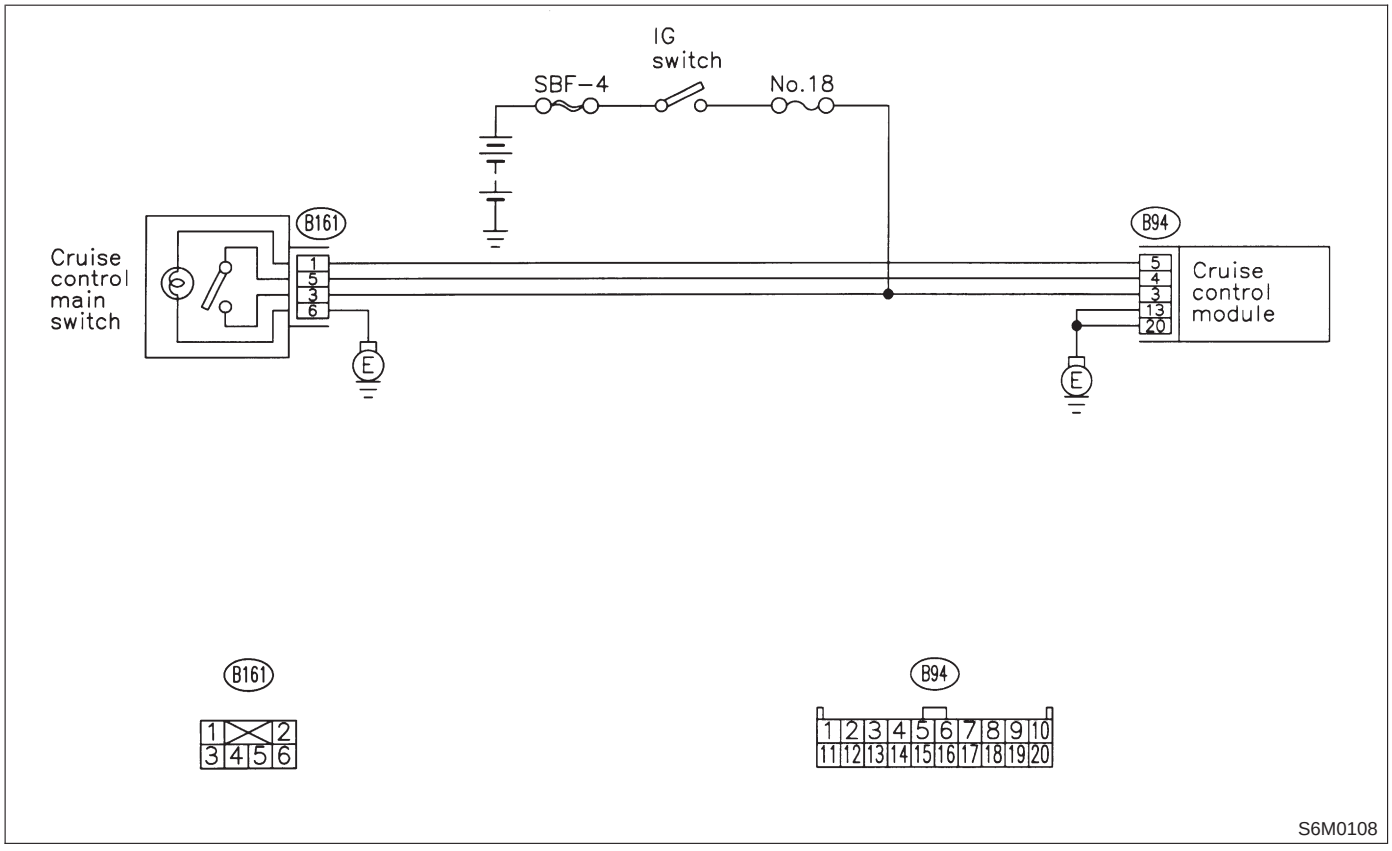
DIAGNOSIS:

- Bulb failure or open harness of the indicator circuit in the cruise control main switch.

TROUBLE SYMPTOM:

- Cruise control can be set, normally indicator does not come on. (When main switch is pressed.)

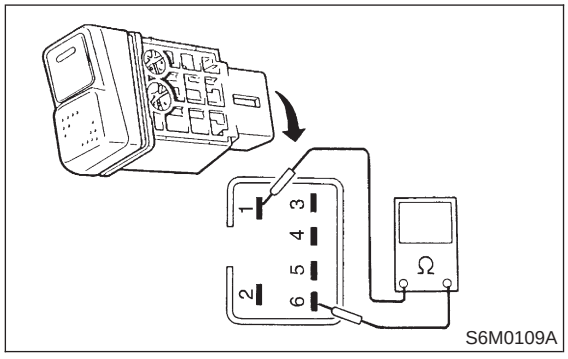
WIRING DIAGRAM:



7B1 : CHECK CRUISE CONTROL MAIN SWITCH.

1) Remove cruise control main switch.
2) Measure resistance between cruise control main switch terminals.

Terminals
No. 1 — No. 6:

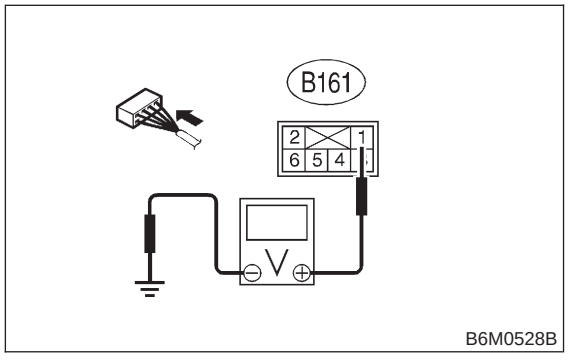


CHECK : ***Is resistance between 10 and 80 Ω?***
YES : Go to step **7B2**.
NO : Replace switch illumination bulb. <Ref. to 6-2 [W11B2].>

7B2 : CHECK CIRCUIT BETWEEN CRUISE CONTROL MODULE AND CRUISE CONTROL MAIN SWITCH INDICATOR LIGHT.

1) Turn the ignition switch to ON.
2) Turn cruise control main switch to ON.
3) Measure voltage between cruise control main switch connector and the chassis ground.

Connector & terminal
(B161) No. 1 (+) — Chassis ground (−):

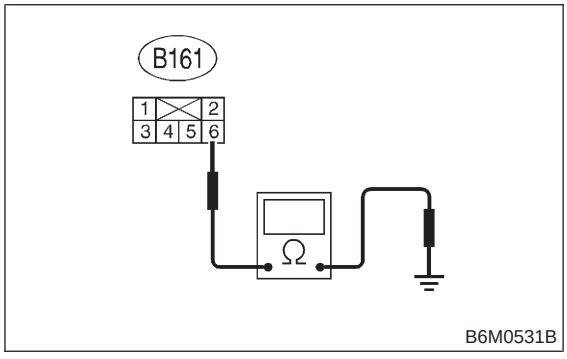


CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7B3**.
NO : Repair or replace wiring harness.

7B3 : CHECK CIRCUIT BETWEEN CRUISE CONTROL MODULE AND CRUISE CONTROL MAIN SWITCH INDICATOR LIGHT.

1) Turn the ignition switch and cruise control main switch to OFF.
2) Remove the connector from the cruise control main switch.
3) Measure resistance of ground circuit between the cruise control main switch connector and chassis ground.

Connector & terminal
(B161) No. 6 (+) — Chassis ground (−):



CHECK : ***Is resistance less than 10 Ω?***
YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>
NO : Repair or replace wiring harness.

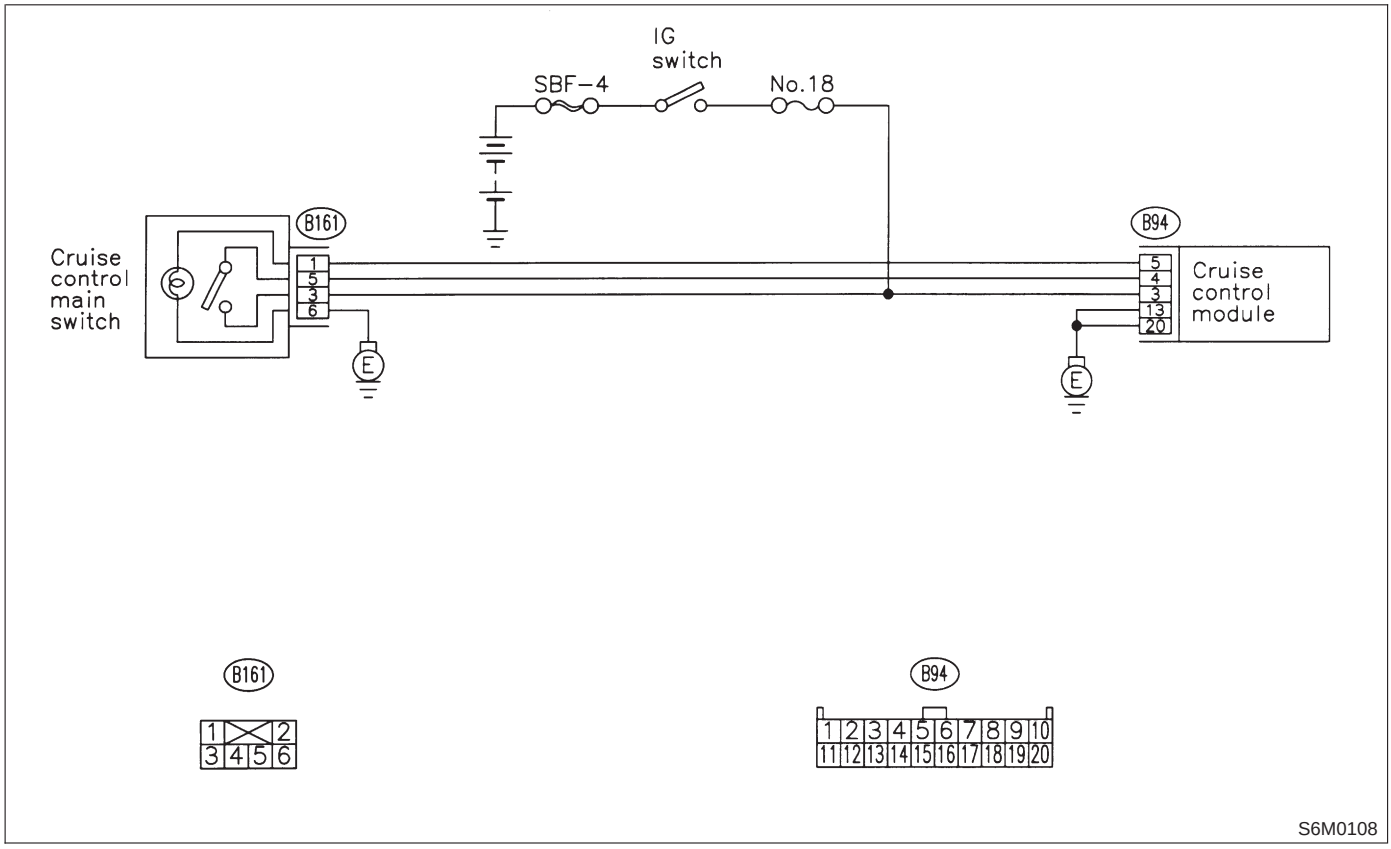
C: CHECK CRUISE CONTROL MAIN SWITCH

DIAGNOSIS:
- Faulty cruise control main switch, or open harness.

TROUBLE SYMPTOM:
- Cruise control main switch is not turned ON and cruise control cannot be set.

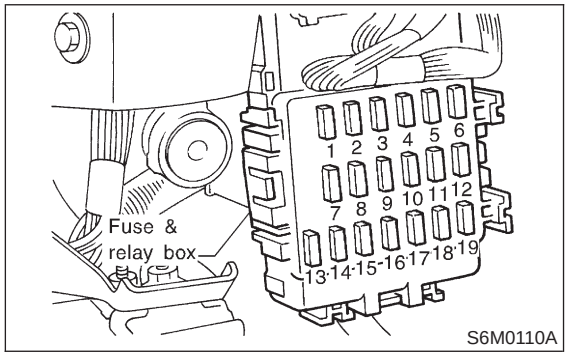
NOTE:
When the main relay (built-in cruise control module) operates, the main switch circuit is in normal condition.
The main relay operation can be checked by hearing the operation sounds.
This operation sounds will be heard when ignition switch and cruise control main switch is turned to ON.

WIRING DIAGRAM:



7C1 : CHECK FUSE.

Check fuse No. 18.



CHECK : ***Is fuse No. 18 blown?***
YES : Replace fuse No. 18. Go to step **7C2**.
NO : Go to step **7C2**.

7C2 : CHECK POWER SUPPLY.

1) Turn ignition switch to ON.
2) Measure voltage between fuse & relay box connector and chassis ground.

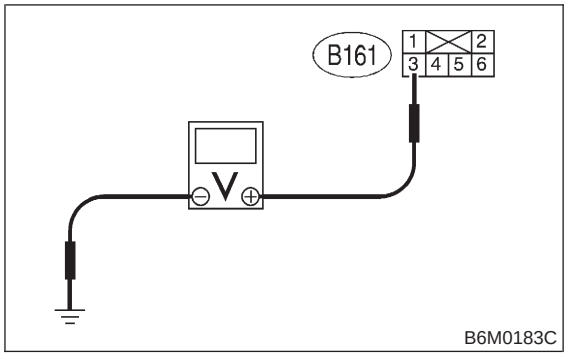
Connector & terminal
(B152) No. 5 (+) — Chassis ground (−):

CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7C3**.
NO : Replace fuse No. 18. When fuse No. 18 is blown again, repair shorted parts of circuit.

7C3 : CHECK CRUISE CONTROL MAIN SWITCH.

1) Turn ignition switch to OFF.
2) Remove cruise control main switch and disconnect connector.
3) Turn ignition switch to ON.
4) Measure voltage between cruise control main switch connector and chassis ground.

Connector & terminal
(B161) No. 3 (+) — Chassis ground (−):

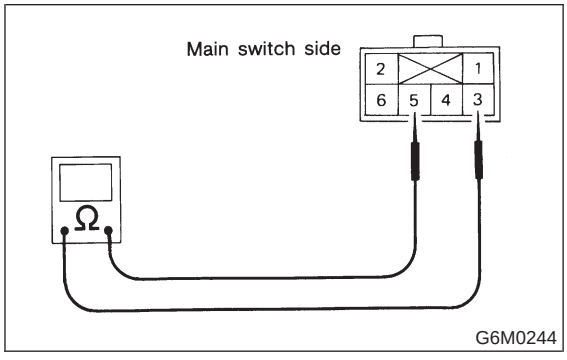


CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7C4**.
NO : Replace cruise control main switch. <Ref. to 6-2 [W11B2].>

7C4 : CHECK CRUISE CONTROL MAIN SWITCH.

Measure resistance between cruise control main switch terminals.

Terminals
No. 3 — No. 5:

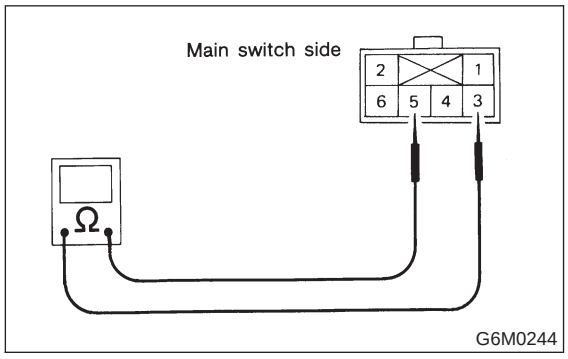


CHECK : ***Is resistance less than 10 Ω? (When switch is ON.)***
YES : Go to step **7C5**.
NO : Replace cruise control main switch. <Ref. to 6-2 [W11B2].>

7C5 : CHECK CRUISE CONTROL MAIN SWITCH.

Measure resistance between cruise control main switch terminals.

Terminals
No. 3 — No. 5:

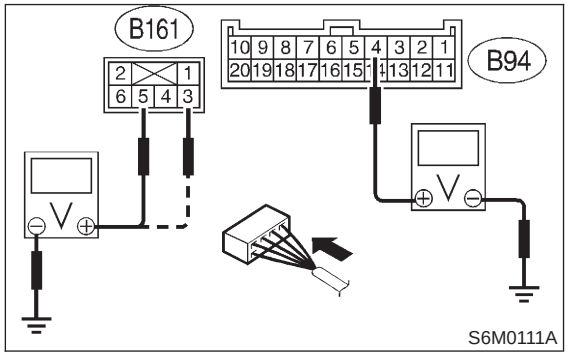


CHECK : ***Is resistance less than 1 MΩ? (When switch is OFF.)***
YES : Go to step **7C6**.
NO : Replace cruise control main switch. <Ref. to 6-2 [W11B2].>

7C6 : CHECK HARNESS BETWEEN CRUISE CONTROL MAIN SWITCH CONNECTOR AND CHASSIS GROUND.

1) Connect connector.
2) Turn ignition switch to ON.
3) Turn cruise control main switch to ON.
4) Measure voltage between terminal of cruise control main switch and chassis ground.

Connector & terminal
(B161) No. 3 (+) — Chassis ground (−):

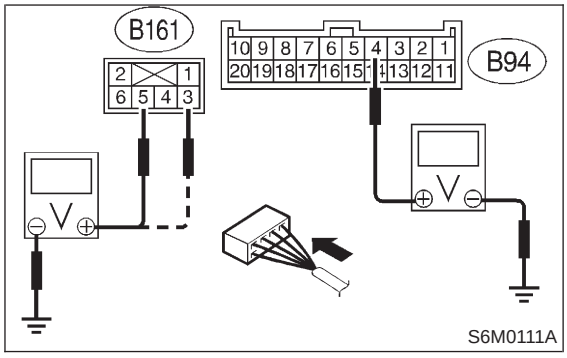


CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7C7**.
NO : Repair or replace wiring harness.

7C7 : CHECK HARNESS BETWEEN CRUISE CONTROL MAIN SWITCH CONNECTOR AND CHASSIS GROUND.

Measure voltage between terminal of cruise control main switch chassis ground.

Connector & terminal
(B161) No. 5 (+) — Chassis ground (−):

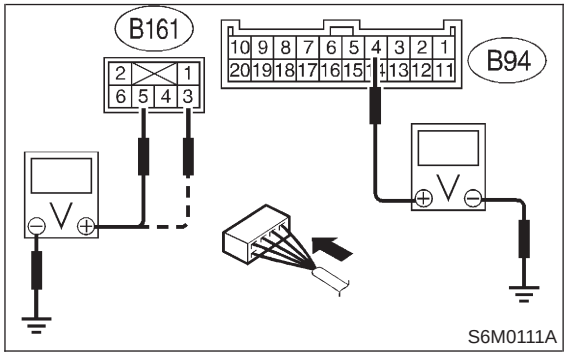


CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7C8**.
NO : Repair or replace wiring harness.

7C8 : CHECK HARNESS BETWEEN CRUISE CONTROL MODULE CONNECTOR AND CHASSIS GROUND.

Measure voltage between terminal of cruise control module and chassis ground.

Connector & terminal
(B94) No. 4 (+) — Chassis ground (−):



CHECK : ***Is voltage more than 10 V?***
YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>
NO : Repair or replace wiring harness.

NOTE:
Depress cruise control main switch with fingers while measuring voltage between (B161) No. 5 and chassis ground.

8. Diagnostics Chart with Diagnostic Code

A: DIAGNOSTIC CODE LIST

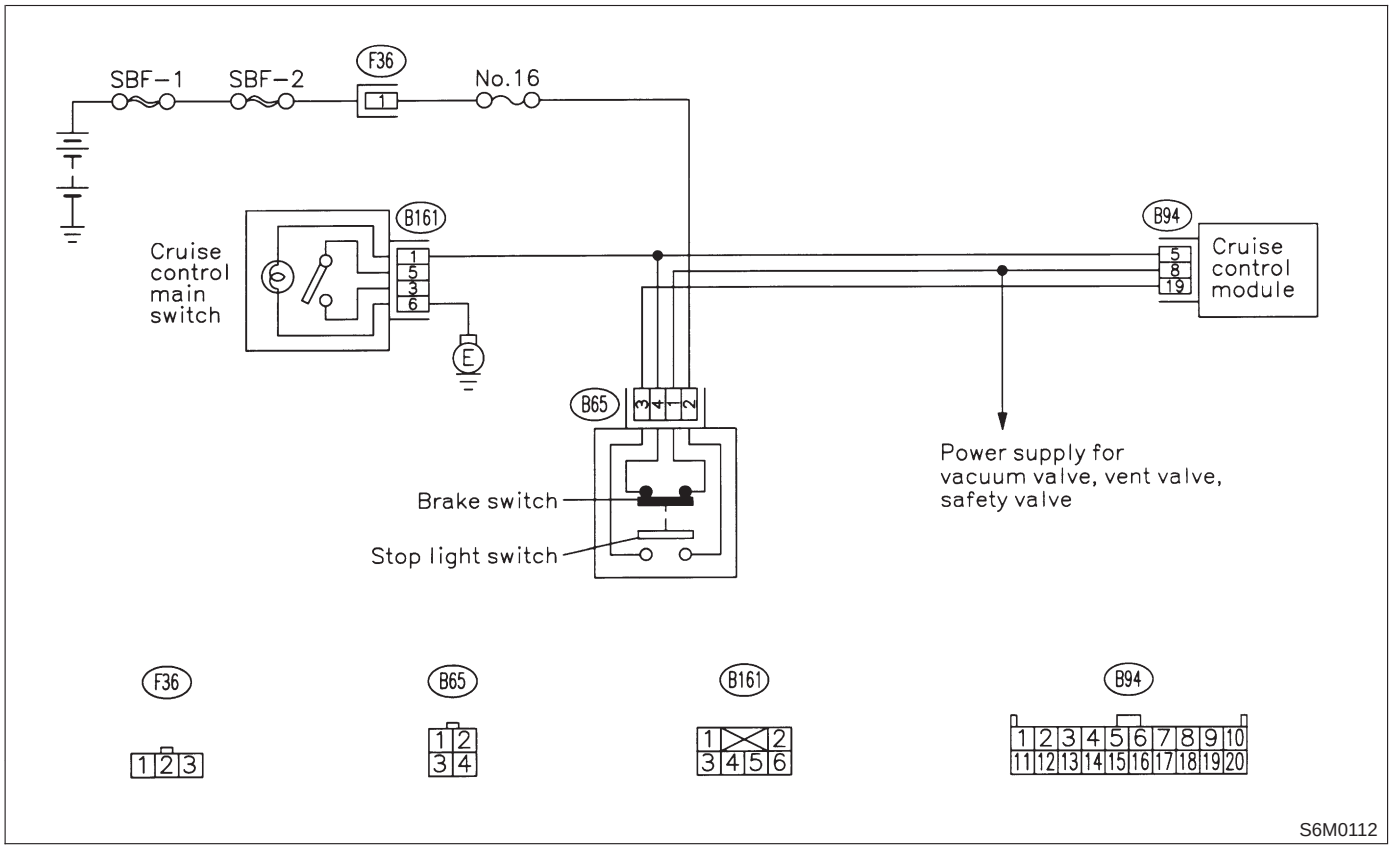
Diagnostic code	Item	Contents of diagnosis	Index No.
11	BRAKE SW/STOP SW	Input signals from brake switch “OFF”, stop light switch “ON” (Brake pedal is depressed.)	<Ref. to 6-2 [T8B0].>
12	CLUTCH SW/INHIBITOR SW	Input signals from clutch switch “OFF” (MT), or inhibitor switch “P or N” (AT) [Clutch pedal is depressed (MT), or selector lever is set to P or N position (AT).]	<Ref. to 6-2 [T8C0].>
13	LOW SPEED LIMIT	Low-speed control limiter	<Ref. to 6-2 [T8D0].>
14	CANCEL SW	Input signal from cancel switch (faulty SET/COAST switch or RESUME/ACCEL switch)	<Ref. to 6-2 [T8E0].>
21	VACUUM VALVE	Faulty vacuum valve or valve drive system	<Ref. to 6-2 [T8F0].>
22	VENT 2 VALVE	Faulty vent 2 valve or valve drive system	<Ref. to 6-2 [T8F0].>
23	VENT 1 VALVE	Faulty vent 1 valve or valve drive system	<Ref. to 6-2 [T8F0].>
24	SPEED SENSOR	Faulty vehicle speed sensor 2 (MT) or transmission control module (AT)	<Ref. to 6-2 [T8D0].>
25	CONTROL MODULE	Faulty CPU RAM included in cruise control module	<Ref. to 6-2 [T8G0].>

B: DIAGNOSTIC CODE 11 (BRAKE SWITCH, STOP LIGHT SWITCH)

DIAGNOSIS:
- Failure or disconnection of the stop light switch and brake switch.

TROUBLE SYMPTOM:
- Cruise control cannot be set.

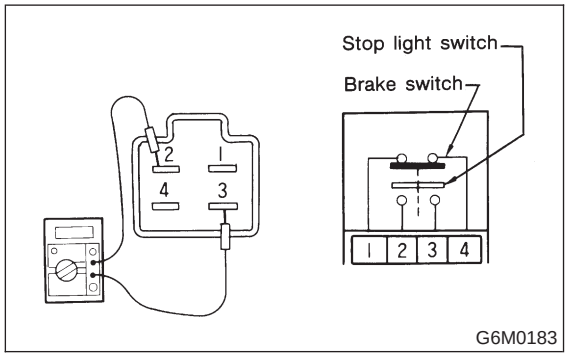
WIRING DIAGRAM:



8B1 : CHECK BRAKE SWITCH.

1) Turn ignition switch to ON.
2) Turn cruise control main switch to ON.
3) Apply parking brake securely.
4) Set select monitor in “Current Data Display & Save” mode.
5) Depress the brake pedal and check signals for proper operation.
   (1) The Stop Lamp Switch shown on the display turns from “OFF” to “ON”.
   (2) The Brake Switch shown on the display turns from “OFF” to “ON”.
6) Release the brake pedal.
7) Remove connector of stop and brake switch.
8) Check circuit between brake switch terminal.

Terminals
No. 1 — No. 4: (Brake switch)

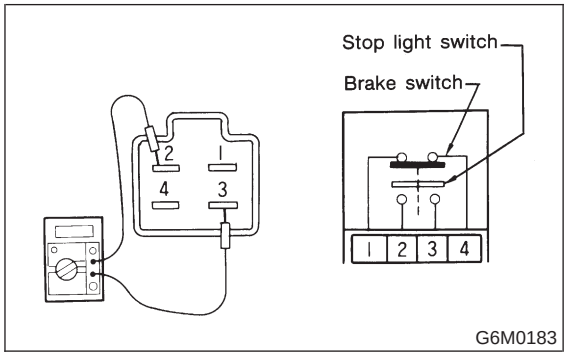


CHECK : ***Is resistance less than 1 Ω? (When brake pedal is released.)***
YES : Go to step **8B2**.
NO : Replace brake and stop light switch. <Ref. to 4-5 [C100].>

8B2 : CHECK BRAKE SWITCH.

Check circuit between brake switch terminal.

Terminals
No. 1 — No. 4: (Brake switch)

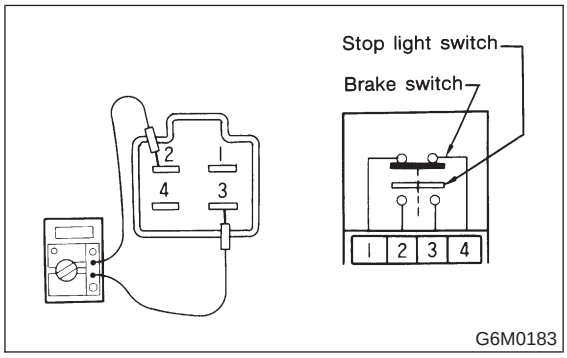


CHECK : ***Is resistance more than 1 MΩ? (When brake pedal is depressed.)***
YES : Go to step **8B3**.
NO : Replace brake and stop light switch. <Ref. to 4-5 [C100].>

8B3 : CHECK STOP LIGHT SWITCH.

Check circuit between stop light switch terminal.

Terminals
No. 2 — No. 3: (Stop light switch)



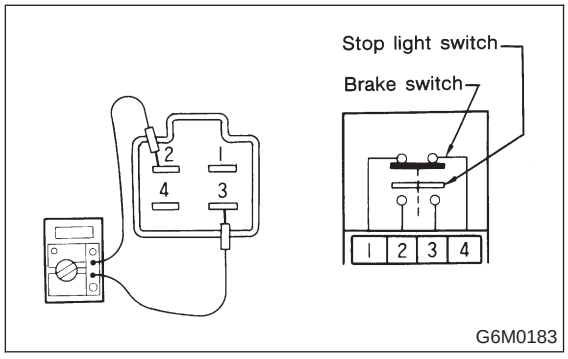
CHECK : ***Is resistance more than 1 MΩ? (When brake pedal is released.)***
YES : Go to step **8B4**.
NO : Replace brake and stop light switch. <Ref. to 4-5 [C100].>

8B4 : CHECK STOP LIGHT SWITCH.

Check circuit between stop light switch terminal.

Terminals

No. 2 — No. 3: (Stop light switch)



CHECK : ***Is resistance less than 1 Ω? (When brake pedal is depressed.)***

YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>

NO : Replace brake and stop light switch. <Ref. to 4-5 [C1A0].>

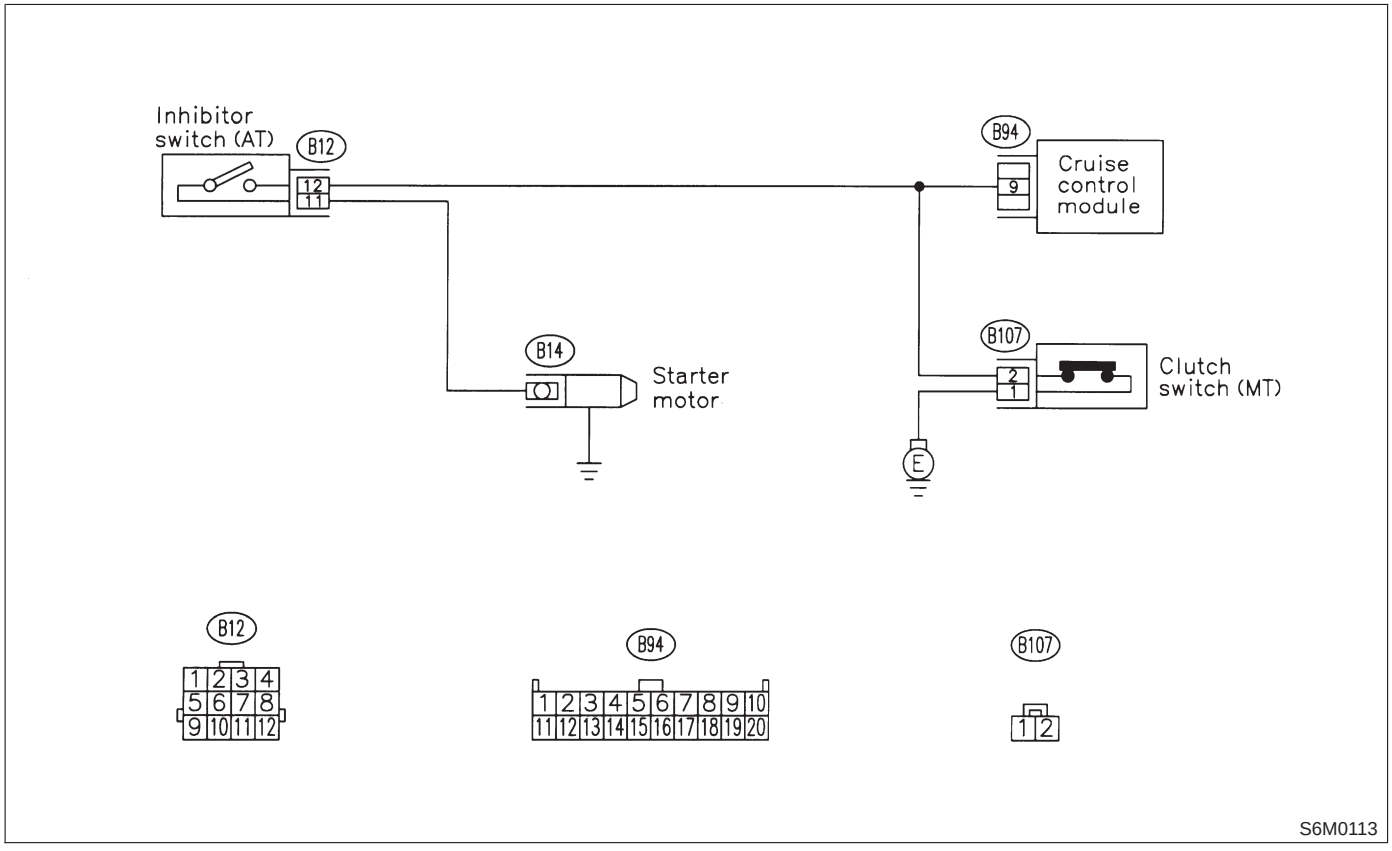
MEMO:

C: DIAGNOSTIC CODE 12 (CLUTCH SWITCH, INHIBITOR SWITCH)

DIAGNOSIS:
- Failure or disconnection of the clutch switch. (MT)
- Failure or disconnection of the inhibitor switch. (AT)

TROUBLE SYMPTOM:
- Cruise control cannot be set.

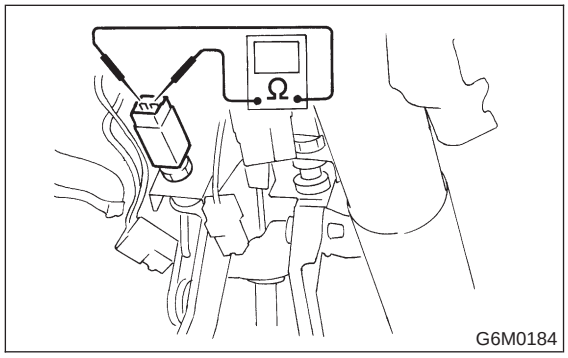
WIRING DIAGRAM:



8C1 : CHECK CLUTCH SWITCH. (MT)

1) Turn ignition switch to ON.
2) Turn cruise control main switch to ON.
3) Apply parking brake securely.
4) Set select monitor in “Current Data Display & Save” mode.
5) Depress the clutch pedal and check signal for proper operation. (MT)
The Clutch/Inhibitor Switch shown on the display turns from “ON” to “OFF”.
6) Disconnect connector of clutch switch.
7) Check continuity of the clutch switch.

Terminals
No. 1 — No. 2:

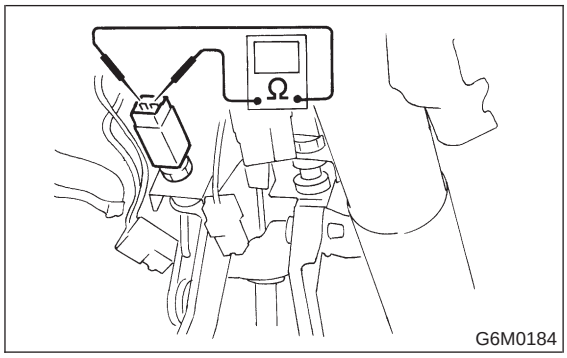


CHECK : ***Is resistance less than 10 Ω? (When clutch pedal is released.)***
YES : Go to step **8C2**.
NO : Replace clutch switch. <Ref. to 4-5 [C1A0].>

8C2 : CHECK CLUTCH SWITCH. (MT)

Check continuity of the clutch switch.

Terminals
No. 1 — No. 2:

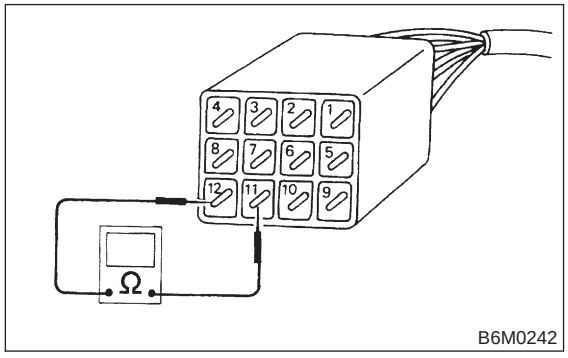


CHECK : ***Is resistance more than 1 MΩ? (When clutch pedal is depressed.)***
YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>
NO : Replace clutch switch. <Ref. to 4-5 [C1A0].>

8C3 : CHECK INHIBITOR SWITCH. (AT)

1) Turn ignition switch to ON.
2) Turn cruise control main switch to ON.
3) Apply parking brake securely.
4) Set select monitor in “Current Data Display & Save” mode.
5) Set the selector lever from P or N position to D position and check signal for proper operation. (AT)
The Clutch/Inhibitor Switch shown on the display turns from “ON” to “OFF”.
6) Set the selector lever to P or N position.
7) Disconnect connector of inhibitor switch.
8) Check continuity of the inhibitor switch.

Terminals
No. 11 — No. 12:

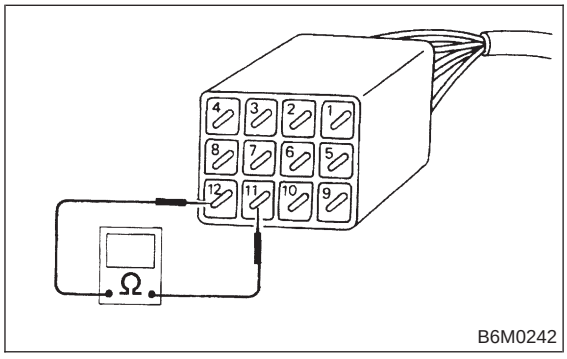


CHECK : ***Is resistance less than 10 Ω? (When selector lever is in P or N.)***
YES : Go to step **8C4**.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].> Repair inhibitor switch wiring harness.

8C4 : CHECK INHIBITOR SWITCH. (AT)

Check continuity of the inhibitor switch.

Terminals
No. 11 — No. 12:



CHECK : ***Is resistance more than 1 MΩ? (When selector lever is not in P or N.)***
YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].> Repair inhibitor switch wiring harness.

MEMO:

D: DIAGNOSTIC CODE 13 AND 24 (SPEED SENSOR SYSTEM)

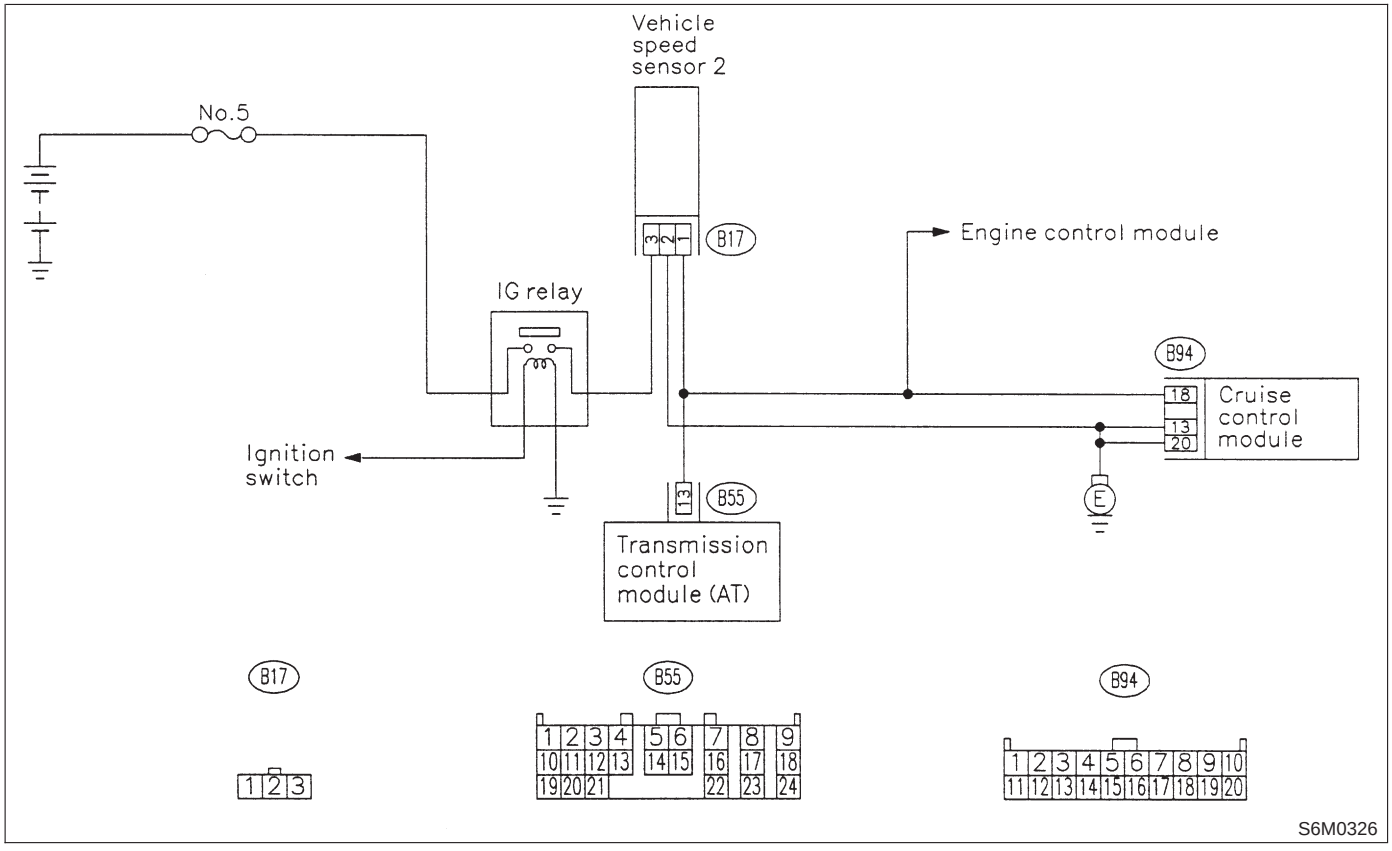
DIAGNOSIS:

● Disconnection or short circuit of vehicle speed sensor 2 (MT model) or transmission control module (AT model).

TROUBLE SYMPTOM:

● Cruise control cannot be set. (Cancelled immediately.)

WIRING DIAGRAM:



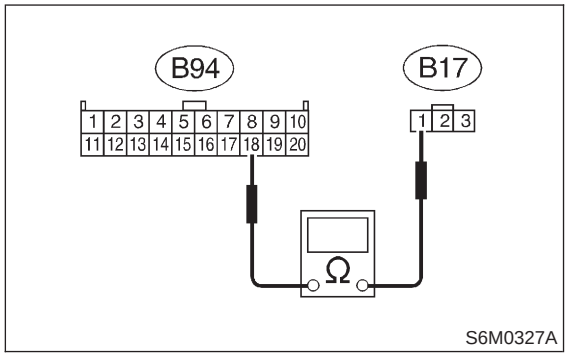
8D1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is the transmission type MT?***
YES : Go to step **8D2**.
NO : Go to step **8D7**.

8D2 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL MODULE AND VEHICLE SPEED SENSOR 2.

1) Disconnect connector from vehicle speed sensor 2 and cruise control module.
2) Measure resistance of harness connector between vehicle speed sensor 2 and cruise control module.

Connector & terminal
(B17) No. 1 — (B94) No. 18:

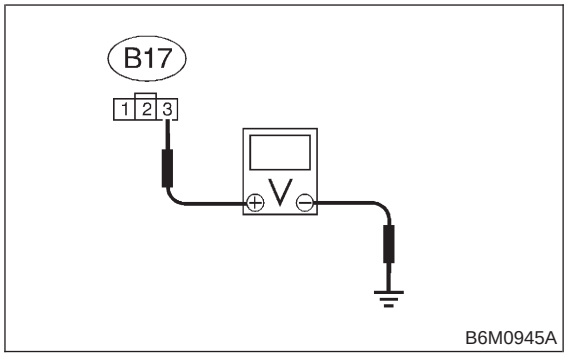


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8D3**.
NO : Repair wiring harness.

8D3 : CHECK HARNESS CONNECTOR BETWEEN BATTERY AND VEHICLE SPEED SENSOR 2.

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

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

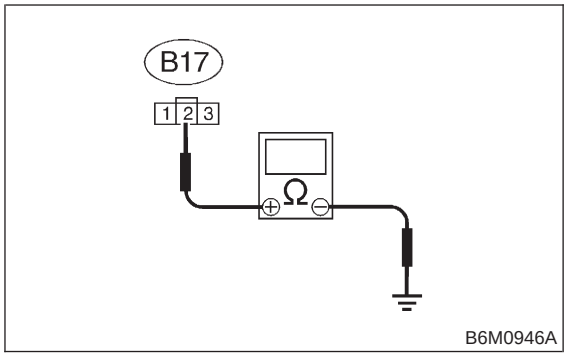


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8D4**.
NO : Repair harness connector between battery and vehicle speed sensor 2.

8D4 : CHECK HARNESS CONNECTOR BETWEEN VEHICLE SPEED SENSOR 2 AND ENGINE GROUND.

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

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



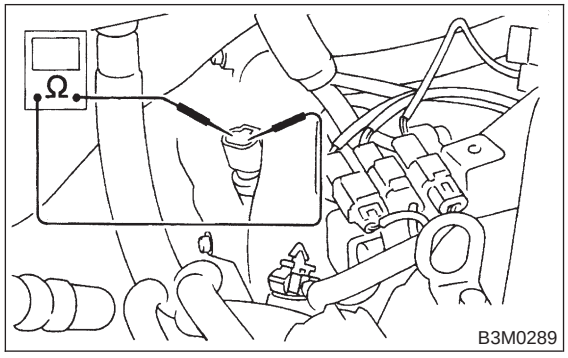
CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8D5**.
NO : Repair harness connector between vehicle speed sensor 2 and engine ground.

8D5 : CHECK VEHICLE SPEED SENSOR 2.

NOTE:
● If resistance between terminals of vehicle speed sensor 2 is out of specification, the sensor may have a failure.
● If resistance is OK and voltage between terminals of vehicle speed sensor 2 is out of specification, mechanical trouble may be present between vehicle speed sensor 2 and speedometer shaft in transmission.

Measure resistance between terminals of vehicle speed sensor 2.

Terminals
No. 2 — No. 3:



CHECK : ***Is the resistance between 350 and 450 Ω?***
YES : Go to step **8D6**.
NO : Replace vehicle speed sensor 2.

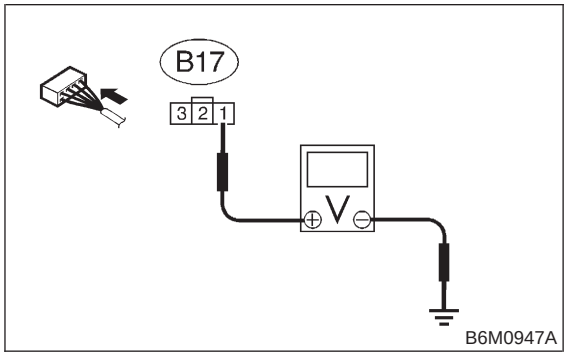
8D6 : CHECK VEHICLE SPEED SENSOR 2.

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

WARNING:
Be careful not to be caught up by the running wheels.

3) Drive the vehicle at speed greater than 20 km/h (12 MPH).
4) Measure voltage between vehicle speed sensor 2 connector (B17) and chassis ground.

Connector & terminal
(B17) No. 1 (+) — Chassis ground (−):



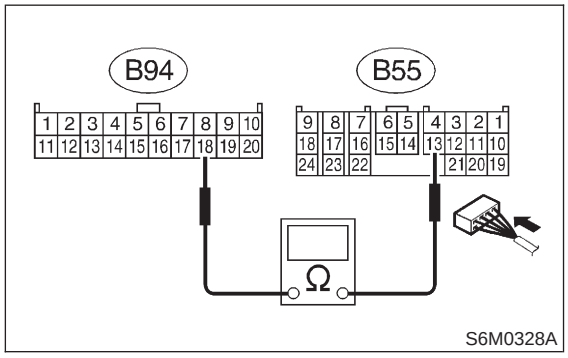
CHECK : ***Is the voltage more than 4 V?***
YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>
NO : Replace vehicle speed sensor 2.

8D7 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL MODULE AND AUTOMATIC TRANSMISSION CONTROL MODULE.

1) Disconnect connector from automatic transmission control module and cruise control module.
2) Measure resistance between cruise control module connector and automatic transmission control module connector.

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
(B94) No. 18 — (B55) No. 13:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8D8**.
NO : Repair harness connector between cruise control module and automatic transmission control module.

8D8 : CHECK AUTOMATIC TRANSMISSION CONTROL MODULE.

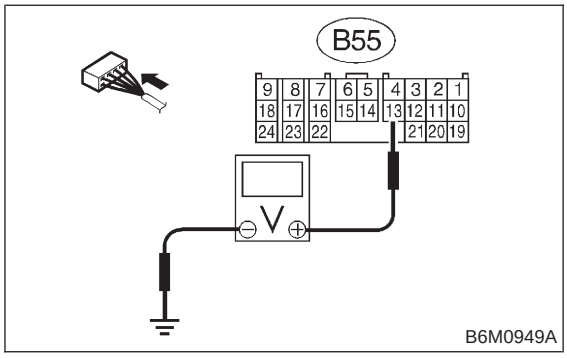
1) Connect connector to automatic transmission control module.
2) Set the vehicle on free roller, or lift-up the vehicle and support with safety stands.

WARNING:
Be careful not to be caught by the running wheels.

3) Drive the vehicle faster than 20 km/h (12MPH).
4) Measure voltage between automatic transmission control module connector (B55) 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
(B55) No. 13 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 4 V?***
YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>
NO : Replace automatic transmission control module. <Ref. to 3-2 [W22A0].>

E: DIAGNOSTIC CODE 14 (SET/COAST SWITCH, RESUME/ACCEL SWITCH, CANCEL SWITCH)

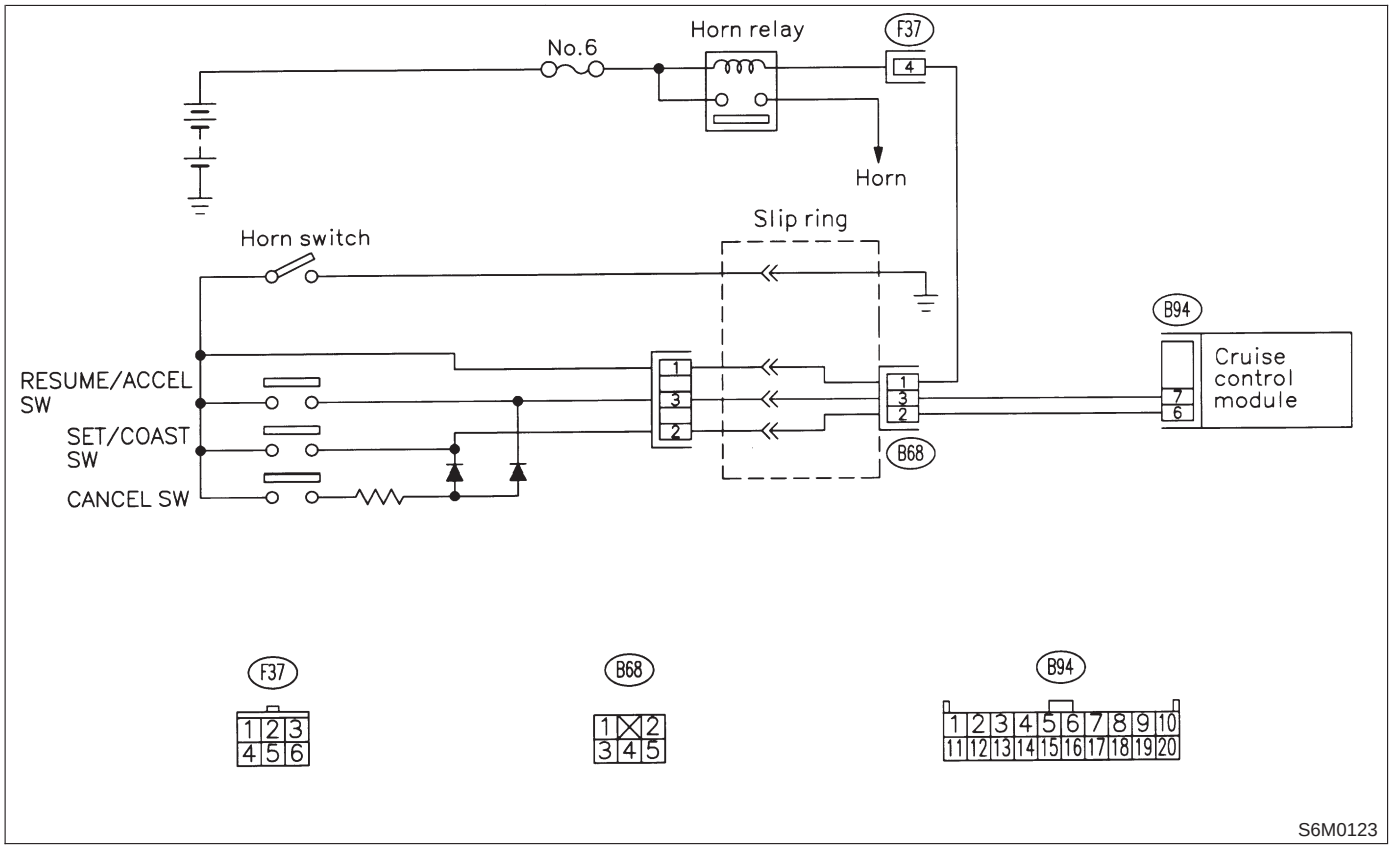
DIAGNOSIS:

- Short circuit inside the SET SW and RESUME SW.

TROUBLE SYMPTOM:

- Cruise control cannot be set. (Cancelled immediately.)

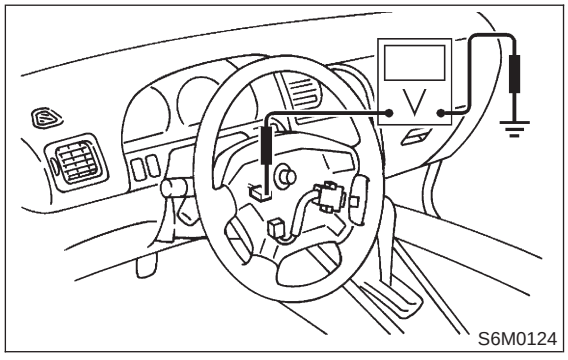
WIRING DIAGRAM:



8E1 : CHECK POWER SUPPLY.

1) Turn ignition switch to ON.
2) Turn cruise control main switch to ON.
3) Set select monitor in “Current Data Display & Save” mode.
4) Check signals for proper operation.
   (1) When pushing the SET/COAST switch:
   The SET/COAST switch shown on the display turns from “OFF” to “ON”.
   (2) When pushing the RESUME/ACCEL switch:
   The RESUME/ACCEL switch shown on the display turns from “OFF” to “ON”.
5) Turn ignition switch to OFF.
6) Disconnect connector from cruise control command switch.
7) Turn ignition switch to ON.
8) Measure voltage between cruise control command switch connector and chassis ground.

Terminals
No. 1 (+) — Chassis ground (−):

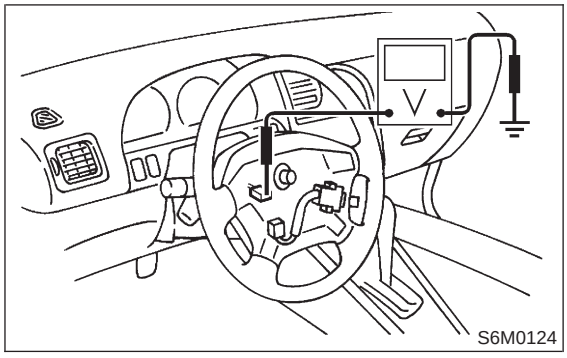


CHECK : ***Is voltage more than 10 V?***
YES : Go to step **8E2**.
NO : Repair or replace wiring harness between fuse & relay box and cruise control command switch. <Ref. to 6-2 [W11B3].>

8E2 : CHECK CRUISE CONTROL COMMAND SWITCH.

1) Turn ignition switch to OFF.
2) Connect connector of cruise control command switch.
3) Turn ignition switch to ON.
4) Measure voltage between cruise control command switch connector and chassis ground.

Terminals
No. 2 (+) — Chassis ground (−):

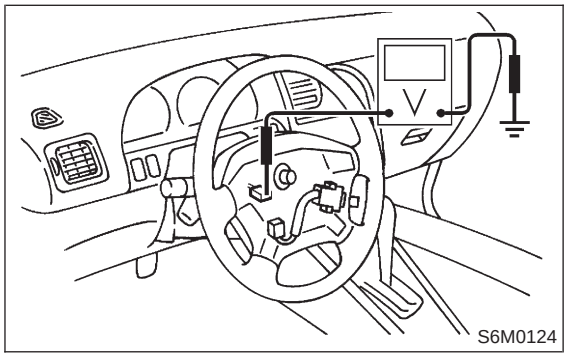


CHECK : ***Is voltage more than 10 V? (When SET/COAST switch is ON.)***
YES : Go to step **8E3**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E3 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals
No. 3 (+) — Chassis ground (−):

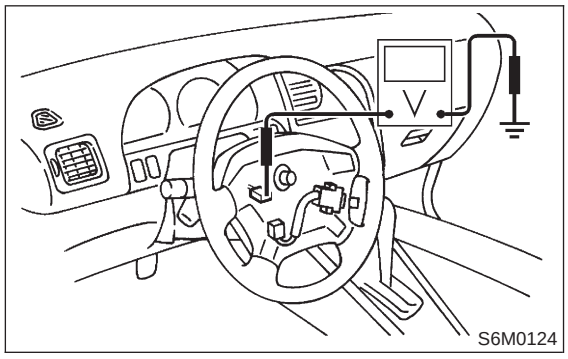


CHECK : ***Is voltage more than 10 V? (When RESUME/ACCEL switch is ON.)***
YES : Go to step **8E4**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E4 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals
No. 2 (+) — Chassis ground (−):

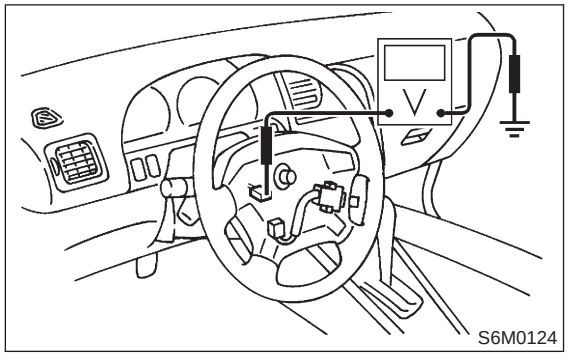


CHECK : ***Is voltage more than 10 V? (When CANCEL switch is ON.)***
YES : Go to step **8E5**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E5 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure voltage between cruise control command switch connector and chassis ground.

Terminals
No. 3 (+) — Chassis ground (−):

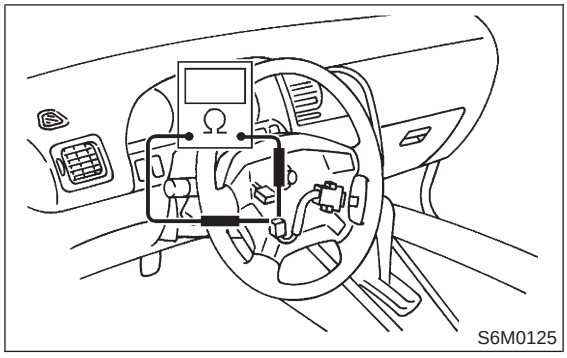


CHECK : ***Is voltage more than 10 V? (When CANCEL switch is ON.)***
YES : Go to step **8E6**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E6 : CHECK CRUISE CONTROL COMMAND SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from cruise control command switch.
3) Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals
No. 1 — No. 2:

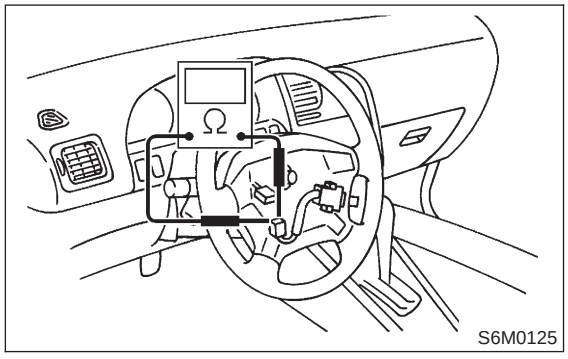


CHECK : ***Is resistance less than 10 Ω? (When SET/COAST switch is ON.)***
YES : Go to step **8E7**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E7 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals
No. 1 — No. 2:

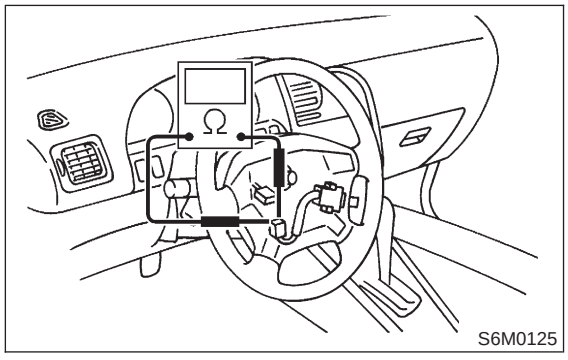


CHECK : ***Is resistance more than 1 MΩ? (When SET/COAST switch is OFF.)***
YES : Go to step **8E8**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E8 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals
No. 1 — No. 3:

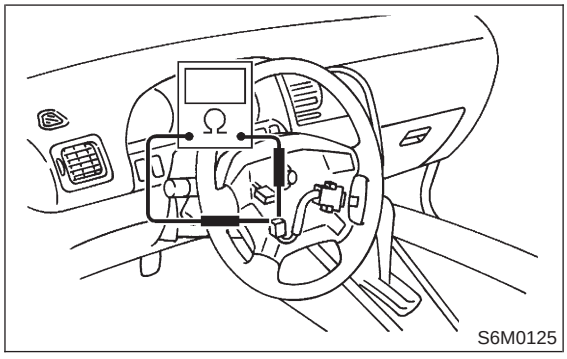


CHECK : ***Is resistance less than 10 Ω? (When RESUME/ACCEL switch is ON.)***
YES : Go to step **8E9**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E9 : CHECK CRUISE CONTROL COMMAND SWITCH.

Measure resistance between terminals of cruise control command switch connector (switch side) to check the switch operation.

Terminals
No. 1 — No. 3:

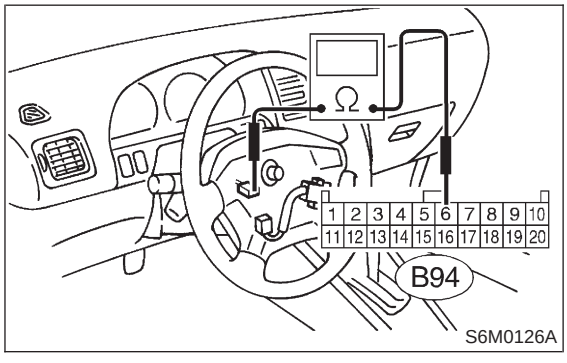


CHECK : ***Is resistance more than 1 MΩ? (When RESUME/ACCEL switch is OFF.)***
YES : Go to step **8E10**.
NO : Replace cruise control command switch. <Ref. to 6-2 [W11B3].>

8E10 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL COMMAND SWITCH AND CRUISE CONTROL MODULE.

1) Disconnect connector from cruise control module.
2) Measure resistance of harness connector between cruise control command switch and cruise control module.

Connector & terminal
No. 2 (command switch) — (B94) No. 6:

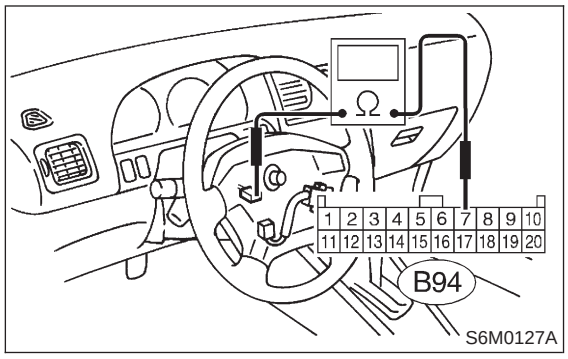


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **8E11**.
NO : Repair or replace wiring harness.

8E11 : CHECK HARNESS CONNECTOR BETWEEN CRUISE CONTROL COMMAND SWITCH AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control command switch and cruise control module.

Connector & terminal
No. 3 (command switch) — (B94) No. 7:



CHECK : ***Is resistance less than 10 Ω?***
YES : Replace cruise control module. <Ref. to 6-2 [W11B4].>
NO : Repair or replace wiring harness.

MEMO:

F: DIAGNOSTIC CODE 21, 22 AND 23 (VACUUM VALVE, VENT 2 VALVE, VENT 1 VALVE)

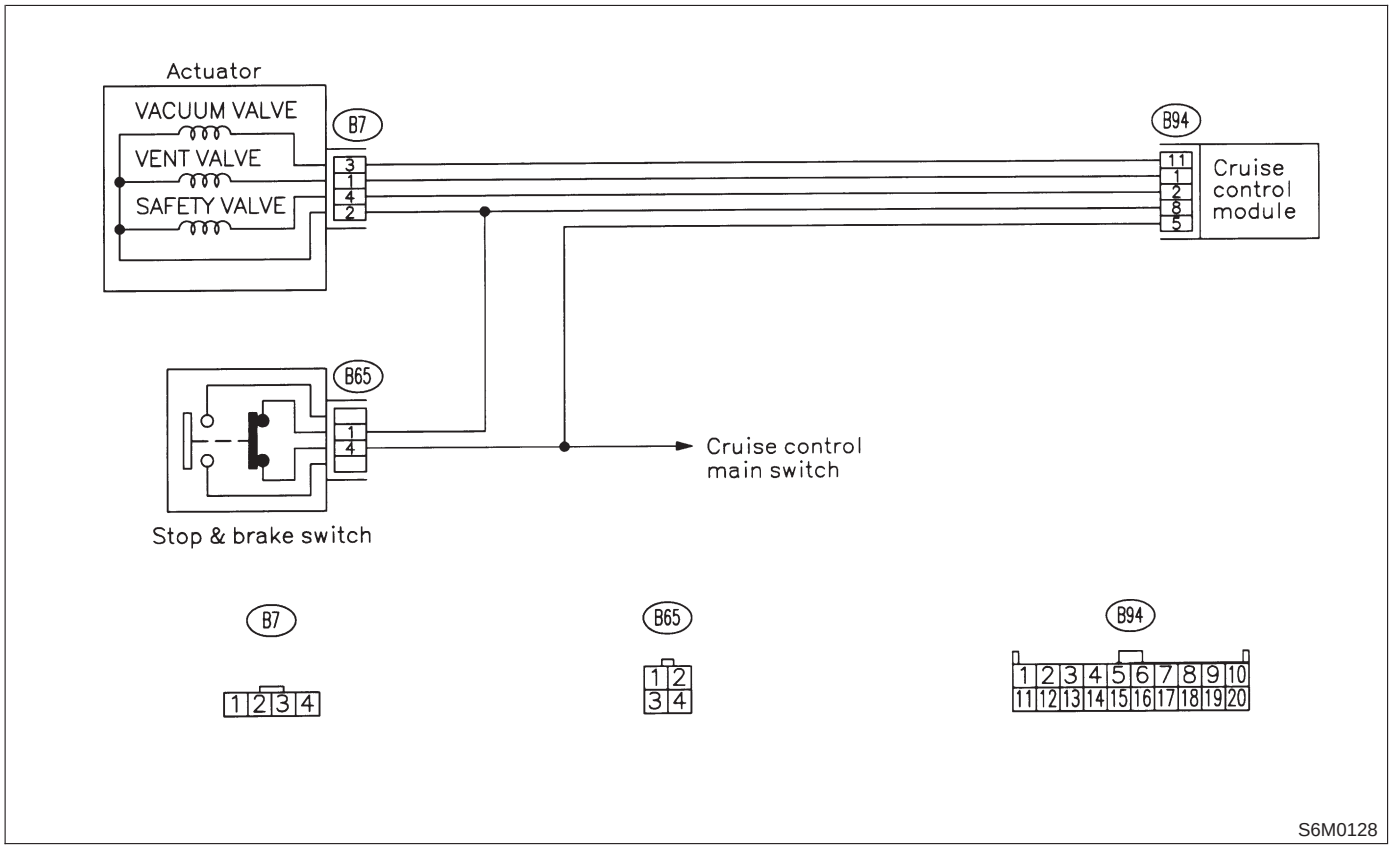
DIAGNOSIS:

- Open or poor contact of vacuum valve, vent 2 valve and vent 1 valve.

TROUBLE SYMPTOM:

- Cruise control cannot be set. (Cancels immediately.)

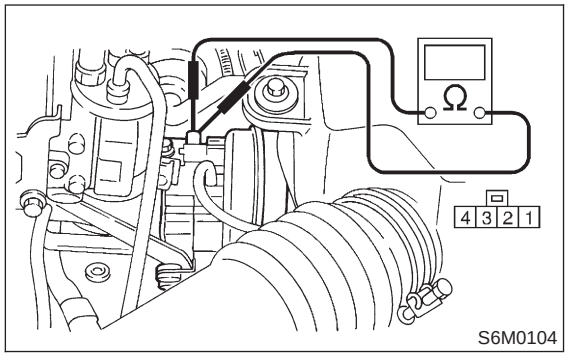
WIRING DIAGRAM:



8F1 : MEASURE RESISTANCE OF VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE.

1) Disconnect connector from actuator.
2) Measure resistance of vacuum valve, vent 2 valve and vent 1 valve.

Terminals
No. 2 — No. 3:

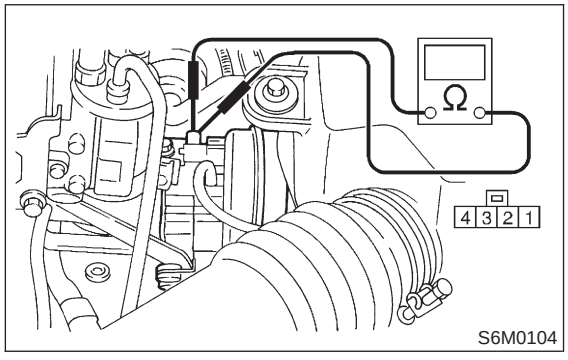


CHECK : ***Is resistance less than 22 Ω?***
YES : Go to step **8F2**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].>

8F2 : MEASURE RESISTANCE OF VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE.

Measure resistance of vacuum valve, vent 2 valve and vent 1 valve.

Terminals
No. 2 — No. 1:

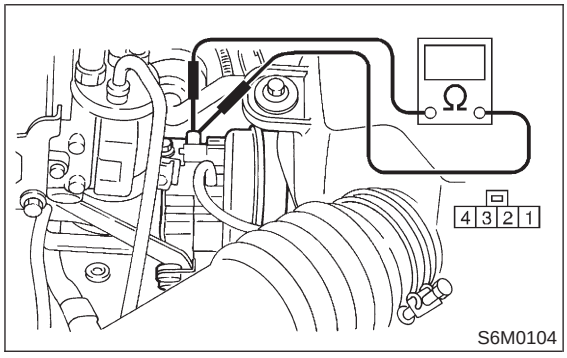


CHECK : ***Is resistance less than 55 Ω?***
YES : Go to step **8F3**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].>

8F3 : MEASURE RESISTANCE OF VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE.

Measure resistance of vacuum valve, vent 2 valve and vent 1 valve.

Terminals
No. 2 — No. 4:

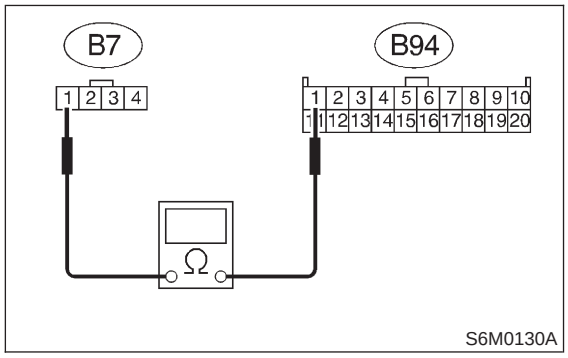


CHECK : ***Is resistance less than 55 Ω?***
YES : Go to step **8F4**.
NO : Replace actuator. <Ref. to 6-2 [W11B1].>

8F4 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

1) Disconnect connector from cruise control module.
2) Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal
(B7) No. 1 — (B94) No. 1:

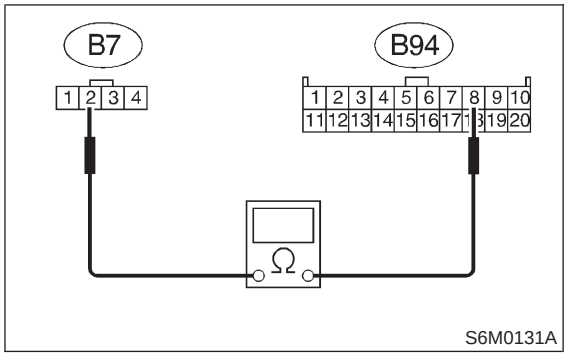


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **8F5**.
NO : Repair or replace wiring harness between actuator <Ref. to 6-2 [W11B1].> and cruise control module <Ref. to 6-2 [W11B4].>.

8F5 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal
(B7) No. 2 — (B94) No. 8:

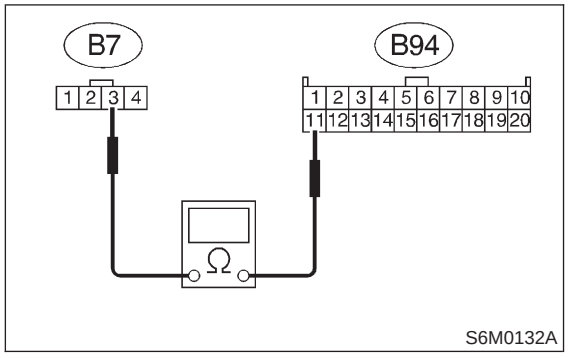


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **8F6**.
NO : Repair or replace wiring harness between actuator <Ref. to 6-2 [W11B1].> and cruise control module <Ref. to 6-2 [W11B4].>.

8F6 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal
(B7) No. 3 — (B94) No. 11:

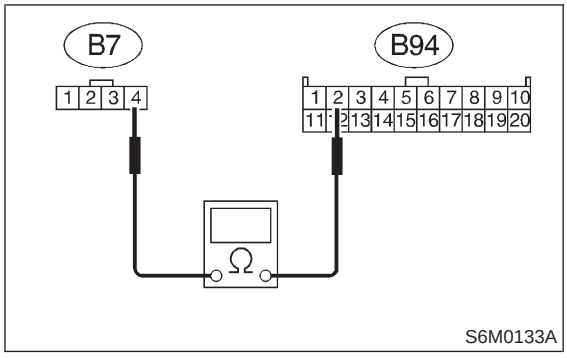


CHECK : ***Is resistance less than 10 Ω?***
YES : Go to step **8F7**.
NO : Repair or replace wiring harness between actuator <Ref. to 6-2 [W11B1].> and cruise control module <Ref. to 6-2 [W11B4].>.

8F7 : PERFORM A CIRCUIT TEST IN HARNESS BETWEEN ACTUATOR (VACUUM VALVE, VENT 2 VALVE AND VENT 1 VALVE) AND CRUISE CONTROL MODULE.

Measure resistance of harness connector between cruise control module, vacuum valve, vent 2 valve and vent 1 valve.

Connector & terminal
(B7) No. 4 — (B94) No. 2:



CHECK : ***Is resistance less than 10 Ω?***
YES : Replace cruise control module.
NO : Repair or replace wiring harness between actuator <Ref. to 6-2 [W11B1].> and cruise control module <Ref. to 6-2 [W11B4].>.

G: DIAGNOSTIC CODE 25 (CRUISE CONTROL MODULE BUILT-IN RELAY, CPU RAM)

DIAGNOSIS:

- Poor welding of built-in relay of cruise control module.
- Failure of built-in CPU RAM of cruise control module.

TROUBLE SYMPTOM:

- Cruise control is canceled and memorized cruise speed is also canceled.
- Once cruise control is canceled, cruise control cannot be set until the ignition switch and cruise control main switch turns OFF, and then turns ON again.

NOTE:
Check input/output signal and vehicle speed signal with select monitor. When signals are in good condition, failure is in cruise control module. (Check power supply and ground conditions of cruise control module.)

9. Diagnostics Chart with Select Monitor

A: FUNCTION MODE

NOTE:
Applicable select monitor cartridge:
No. 24082AA090

Select the “Cruise Control” system using the select monitor and set the “Current Data Display & Save” mode. The following parameters will then appear on the display.

- Vehicle Speed

The current vehicle speed is shown on the display.

- Stop Lamp Switch

When the brake pedal is depressed, the stop lamp switch shown on the display turns from “OFF” to “ON”.

- Brake Switch

When the brake pedal is depressed, the brake switch shown on the display turns from “OFF” to “ON”.

- “SET/COAST” Switch

When the cruise control command switch is placed in the “SET/COAST” position, the SET/COAST switch shown on the display turns from “OFF” to “ON”.

- “RESUME/ACCEL” Switch

When the cruise control command switch is placed in the “RESUME/ACCEL” position, the RESUME/ACCEL switch shown on the display turns from “OFF” to “ON”.

- Clutch/Inhibitor Switch

When the clutch pedal is depressed, the clutch/inhibitor switch shown on the display turns from “ON” to “OFF”. (MT models)
When the selector lever is moved from the “N” or “P” position to any other position, the clutch/inhibitor switch shown on the display turns from “ON” to “OFF”.