

ON-BOARD DIAGNOSTICS II SYSTEM

2-7

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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

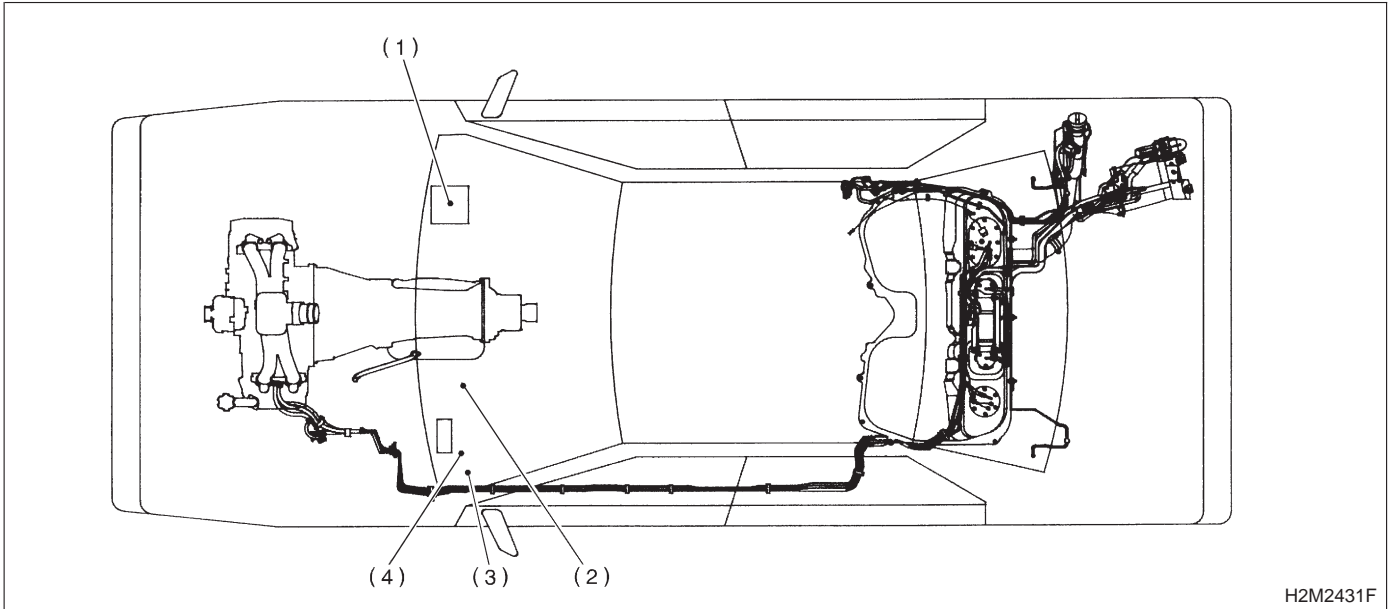
1. ELECTRONIC-HYDRAULIC CONTROL SYSTEM

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 3 and duty solenoids A, B and C (a total of six solenoids).

2. Electrical Components Location

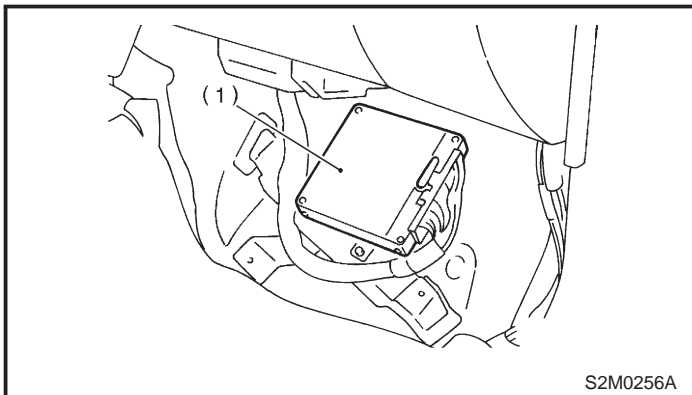
A: ENGINE (2200 cc MODEL)

1. MODULE

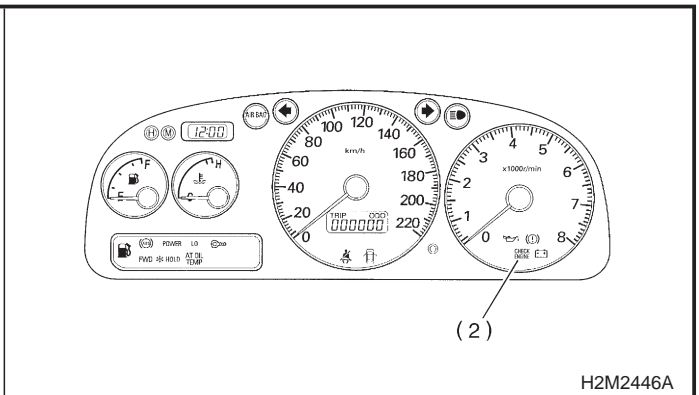


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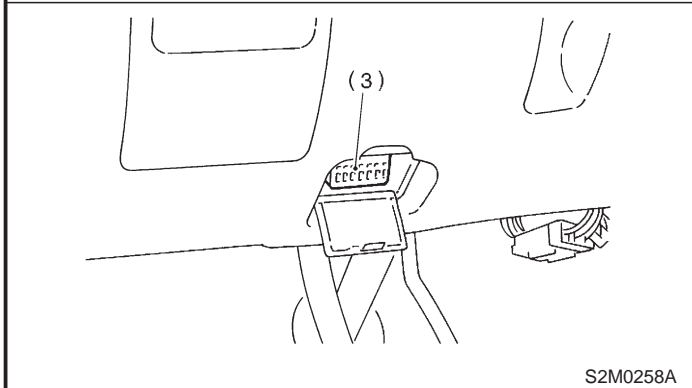
- (1) Engine control module (ECM)
- (2) CHECK ENGINE malfunction indicator lamp (MIL)
- (3) Data link connector
- (4) Test mode connector



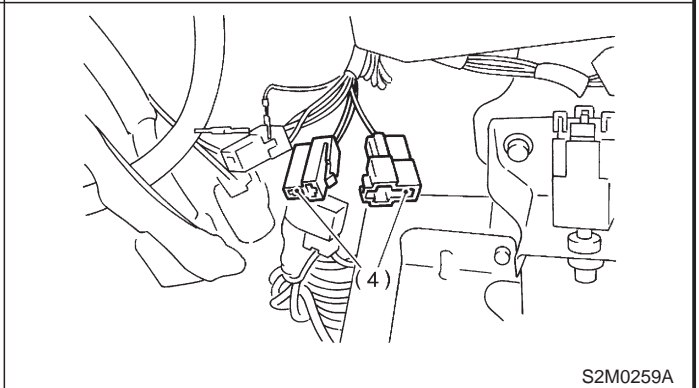
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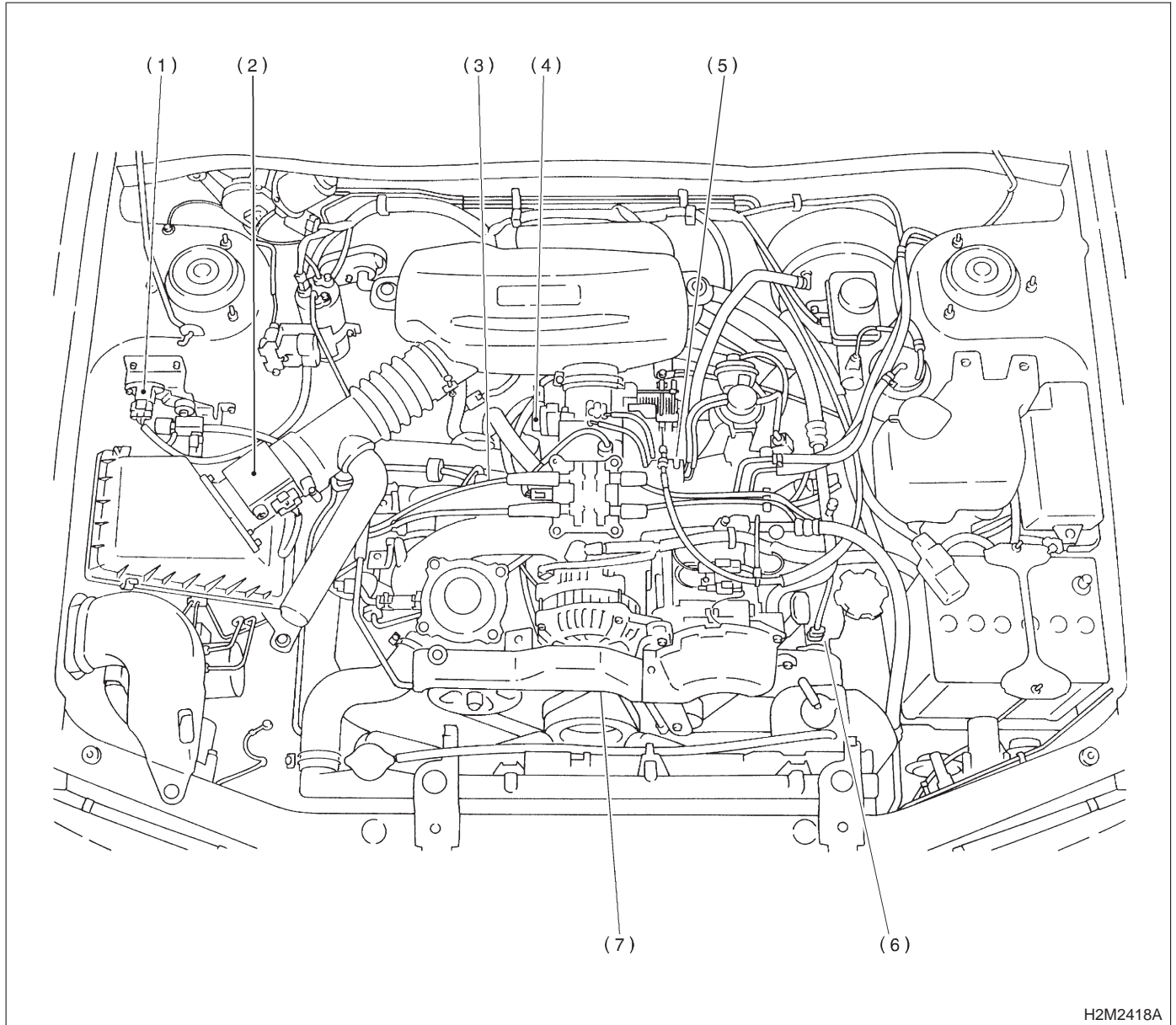


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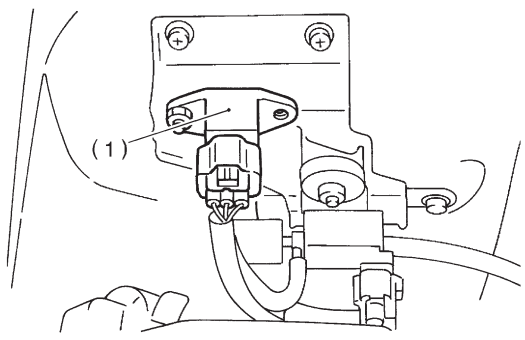
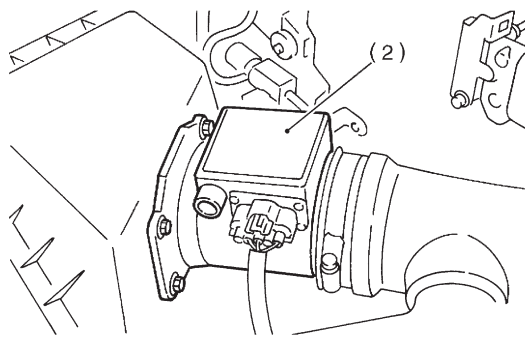
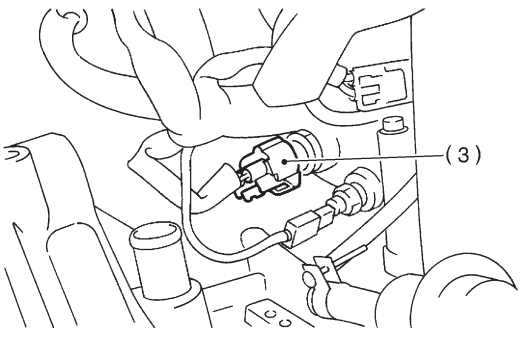
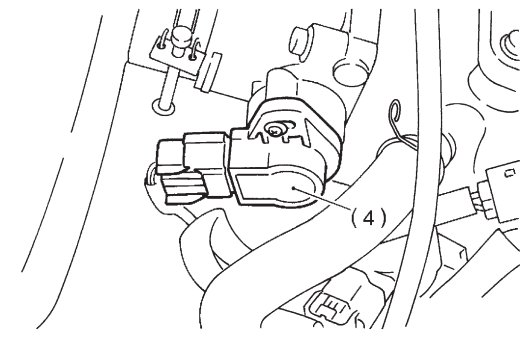
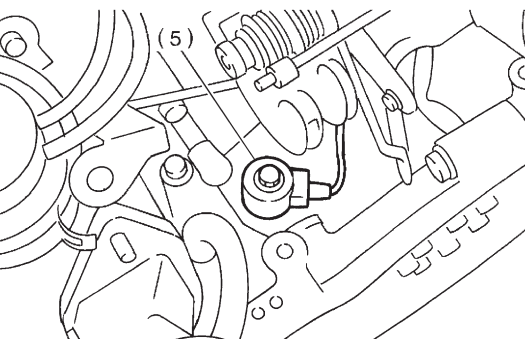
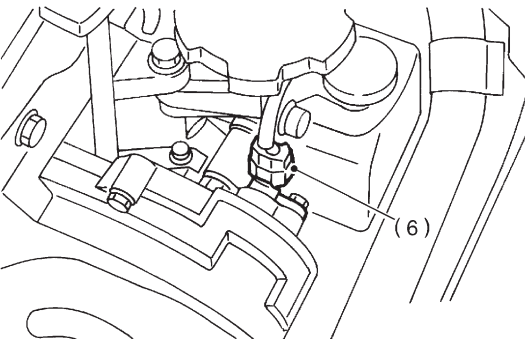
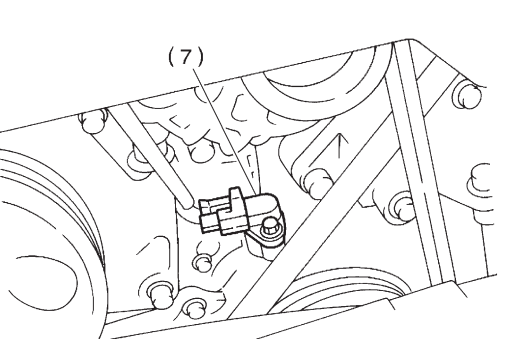

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2. SENSOR

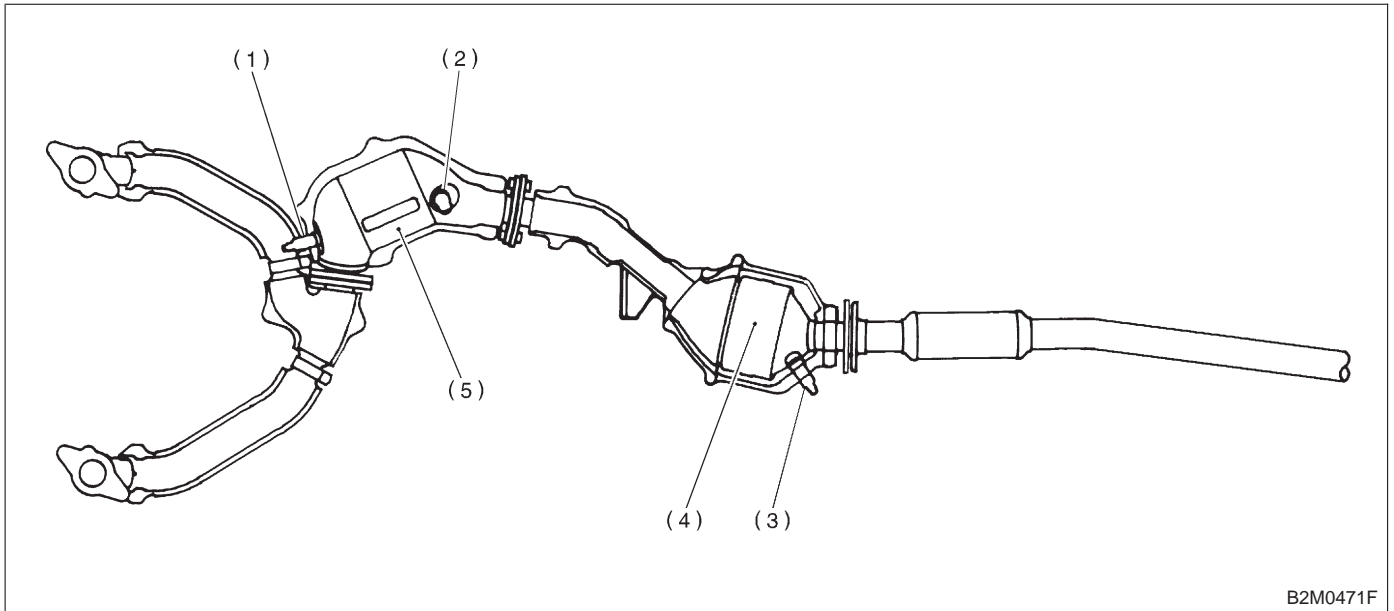


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- | | |
|---------------------------------------|--------------------------------|
| (1) Pressure sensor | (4) Throttle position sensor |
| (2) Mass air flow sensor | (5) Knock sensor |
| (3) Engine coolant temperature sensor | (6) Camshaft position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

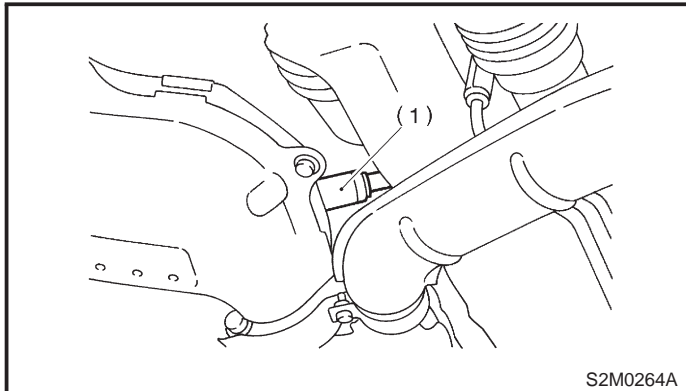
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 <p>(3)</p>	 <p>(4)</p>
B2M1690E	S2M0262A
 <p>(5)</p>	 <p>(6)</p>
B2M1691C	OBD0015D
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B2M0213I	

2. Electrical Components Location

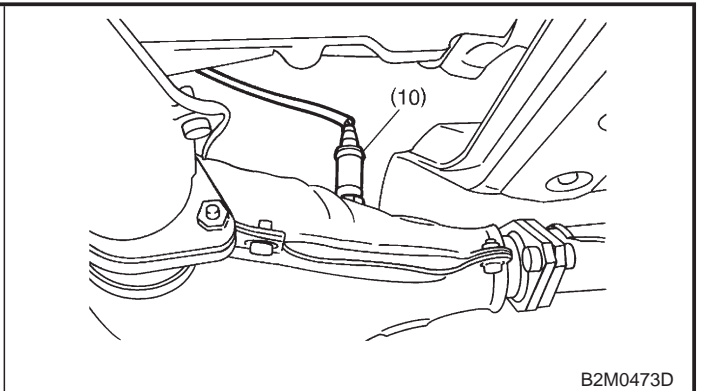


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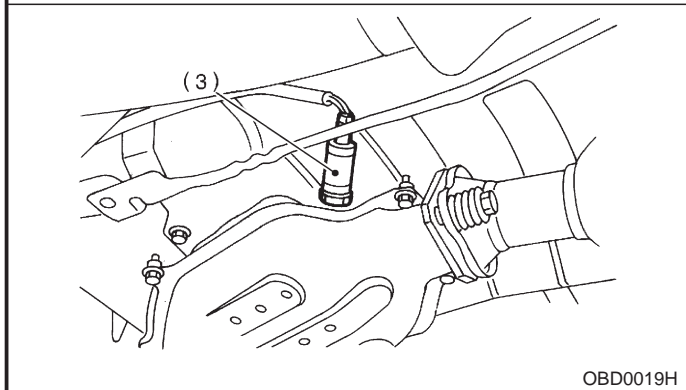
- (1) Front oxygen sensor
- (2) Rear oxygen sensor (California spec. vehicles)
- (3) Rear oxygen sensor (Federal spec. vehicles)
- (4) Rear catalytic converter
- (5) Front catalytic converter



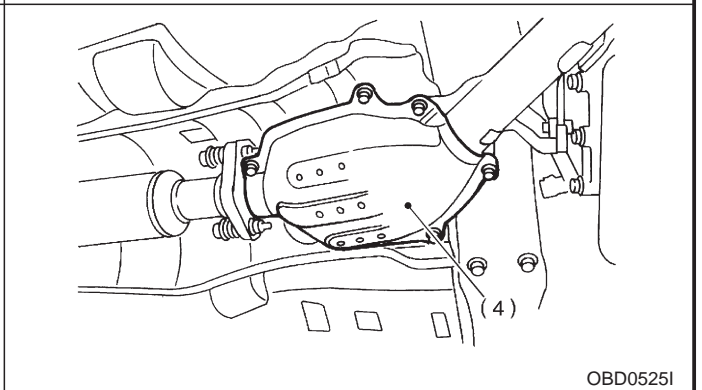
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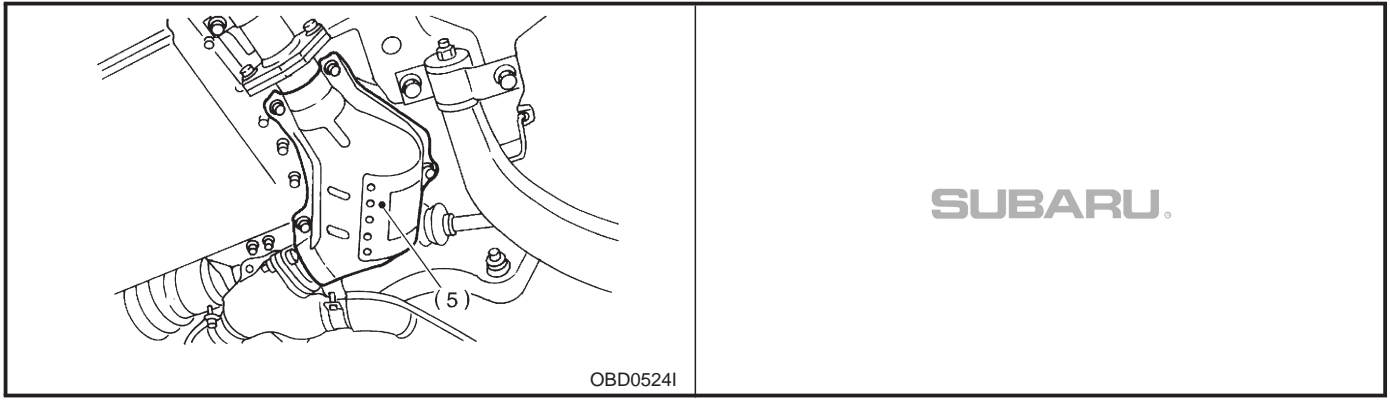
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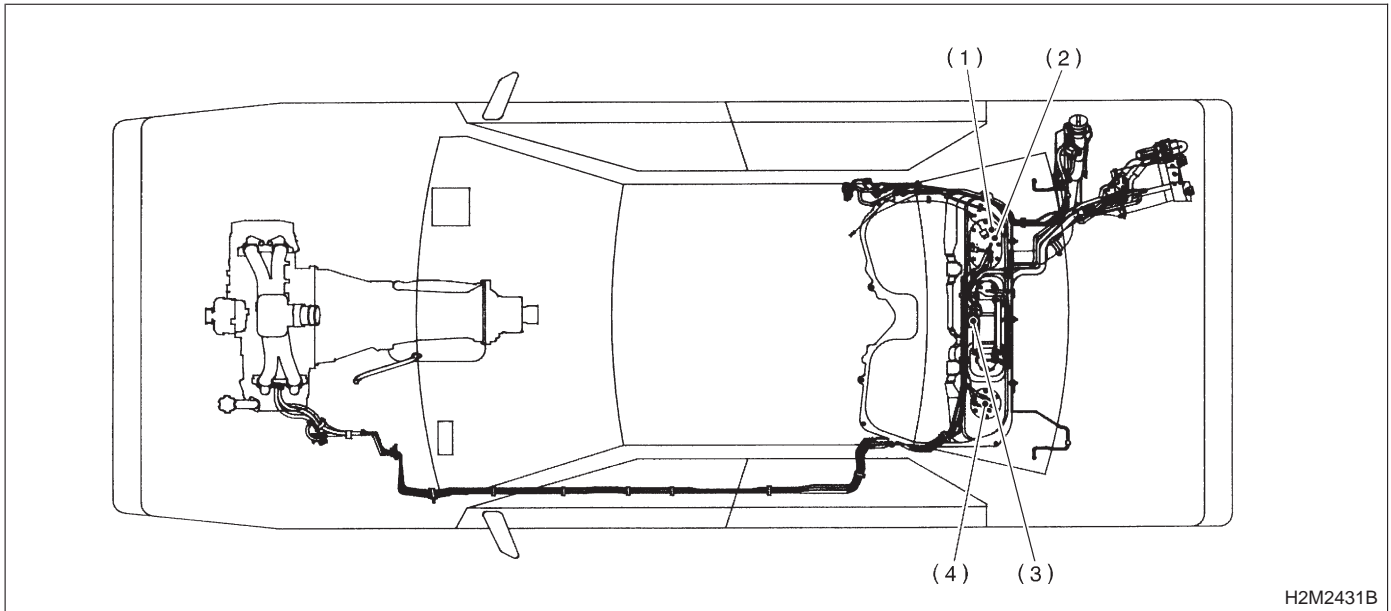
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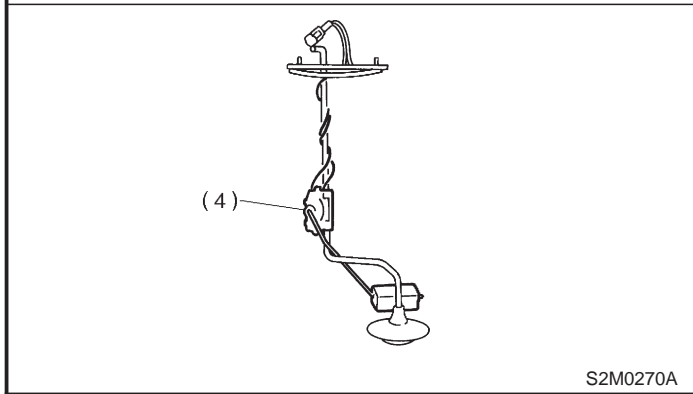
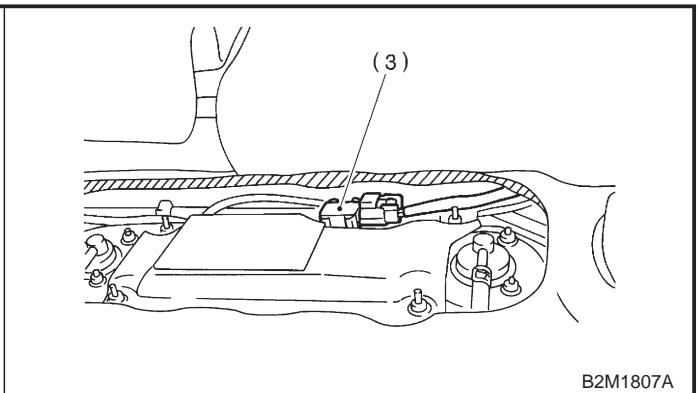
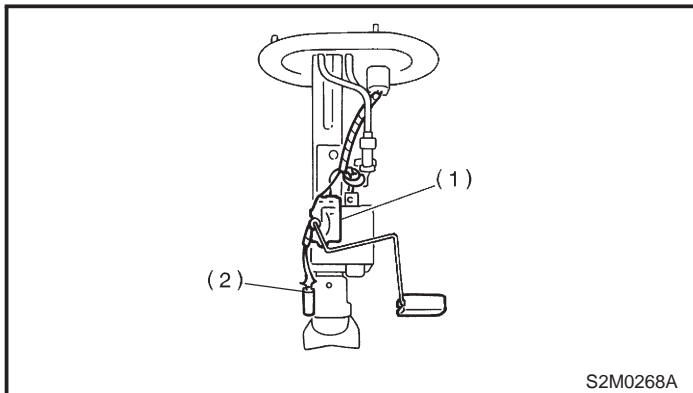


2. Electrical Components Location



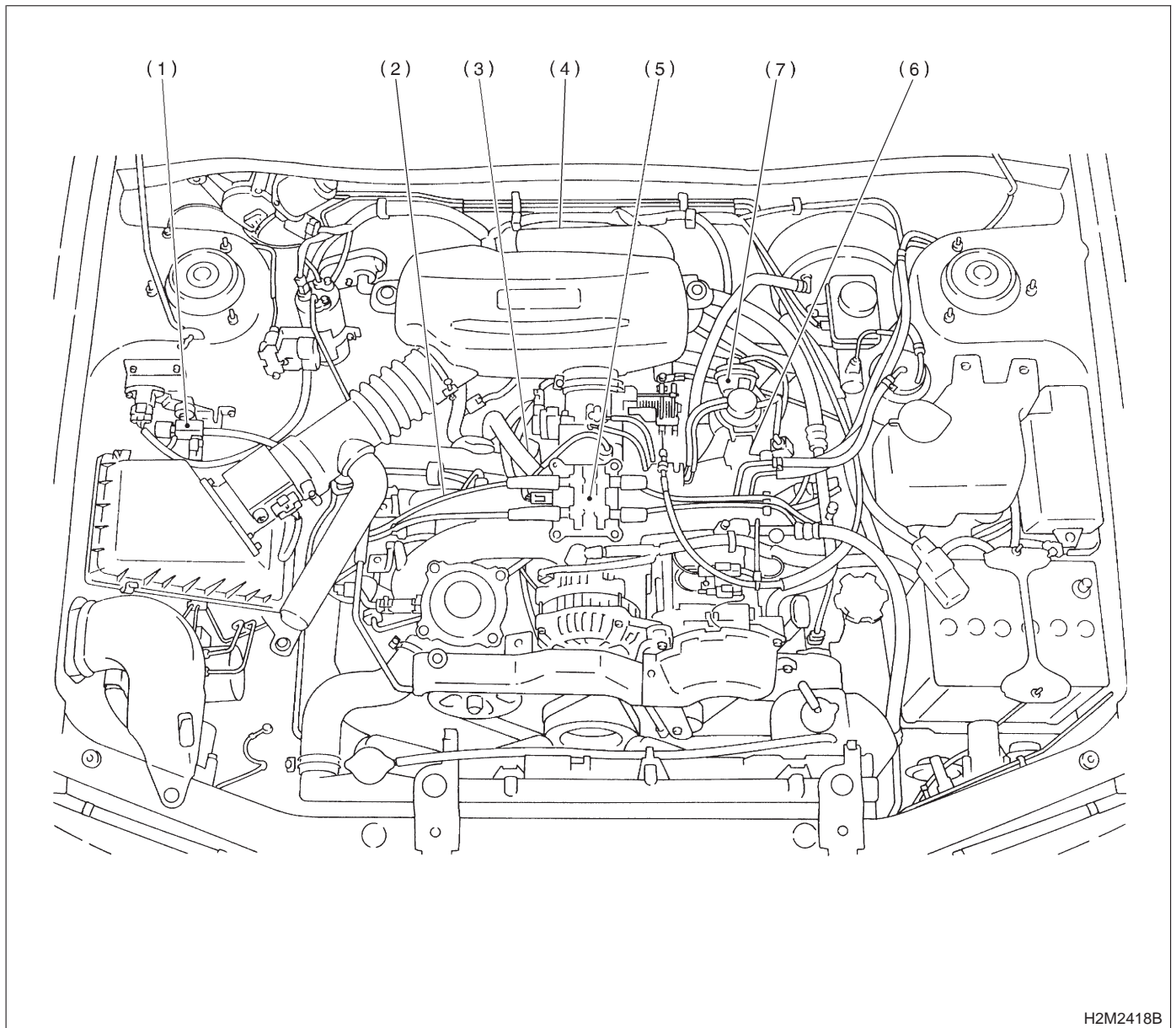
- (1) Fuel level sensor (Main)
- (2) Fuel temperature sensor

- (3) Fuel tank pressure sensor
- (4) Fuel level sensor (Sub)



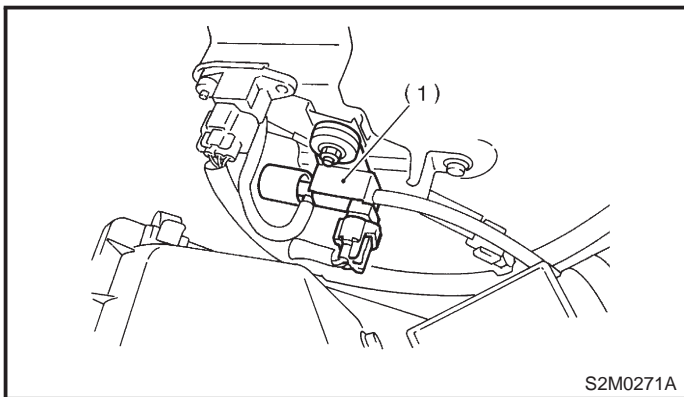
MEMO:

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

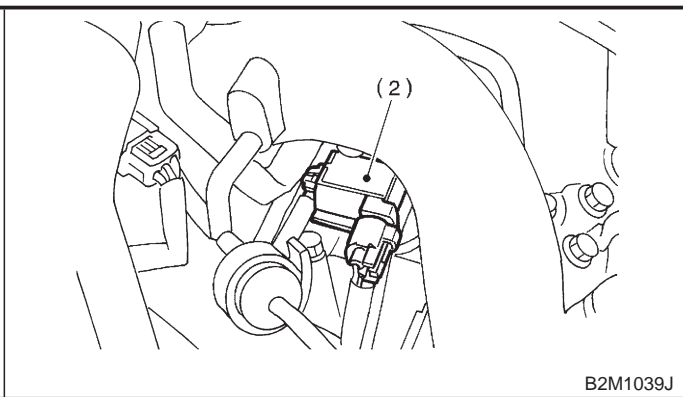


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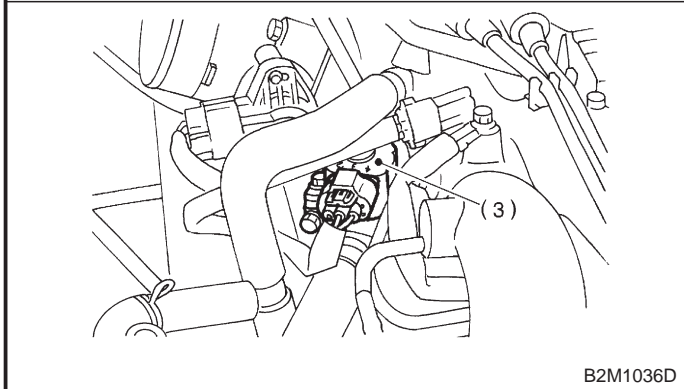
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|---|---|--|
| (1) Pressure sources switching solenoid valve | (4) Ignitor | (7) EGR valve (Except 2200 cc MT vehicles) |
| (2) Purge control solenoid valve | (5) Ignition coil | |
| (3) Idle air control solenoid valve | (6) EGR control solenoid valve (Except 2200 cc MT vehicles) | |



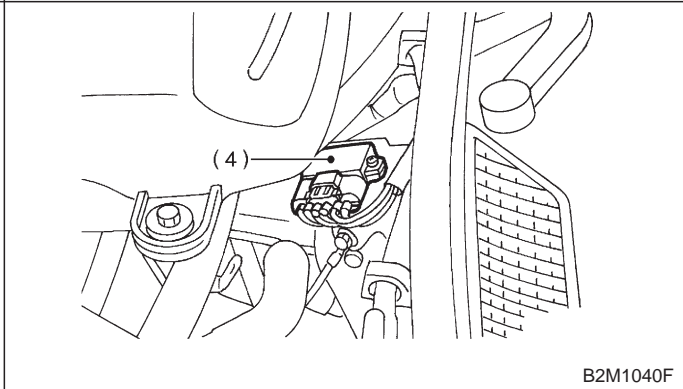
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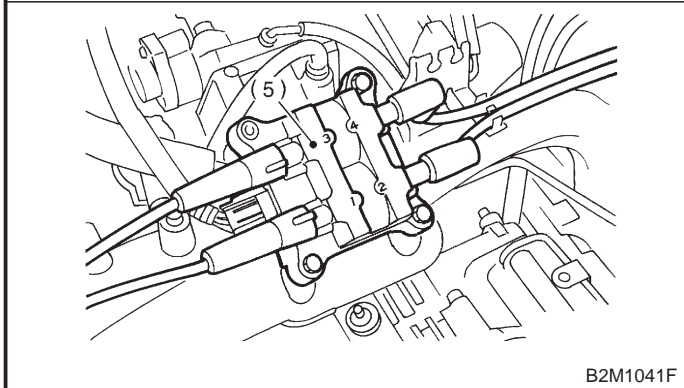
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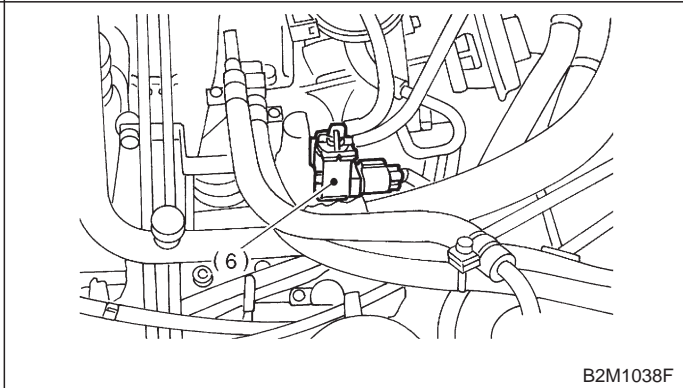
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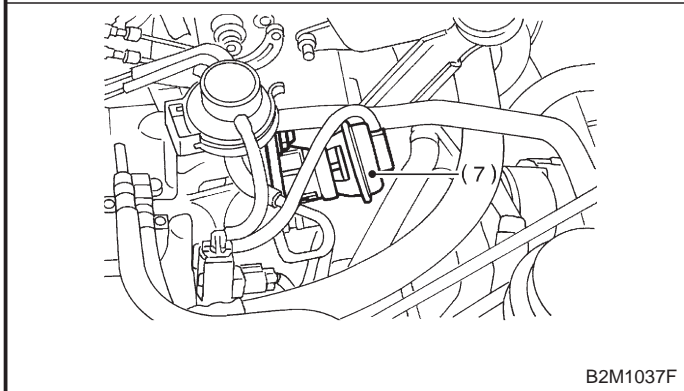
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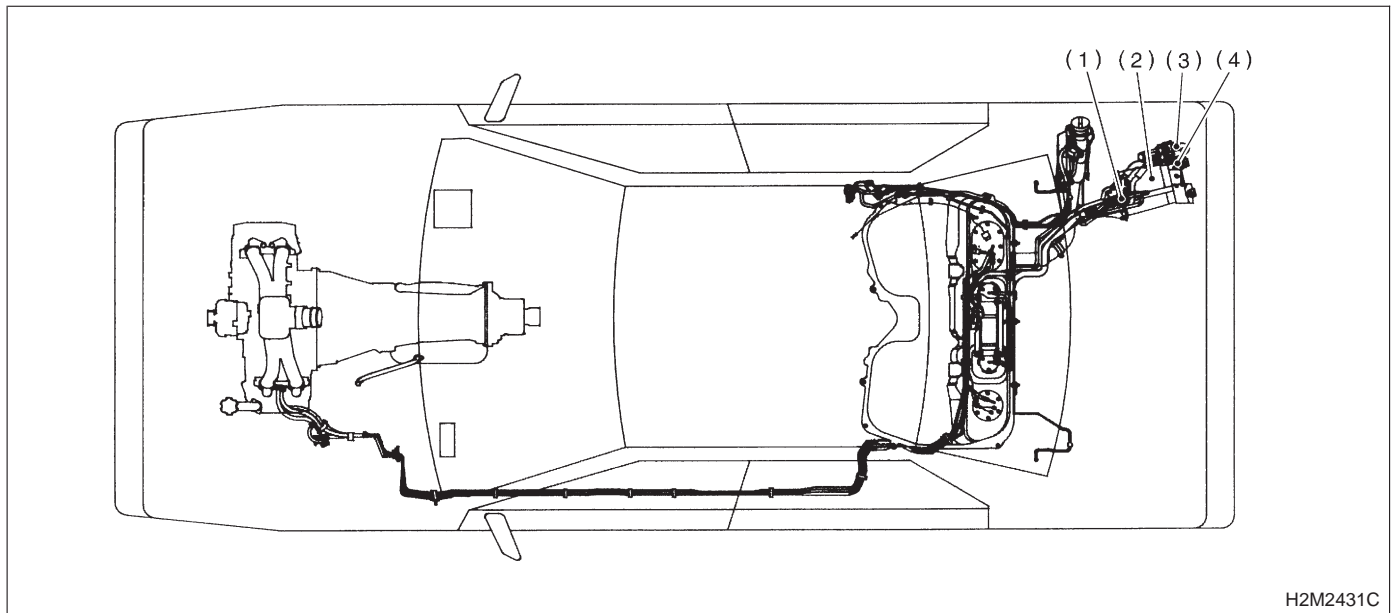
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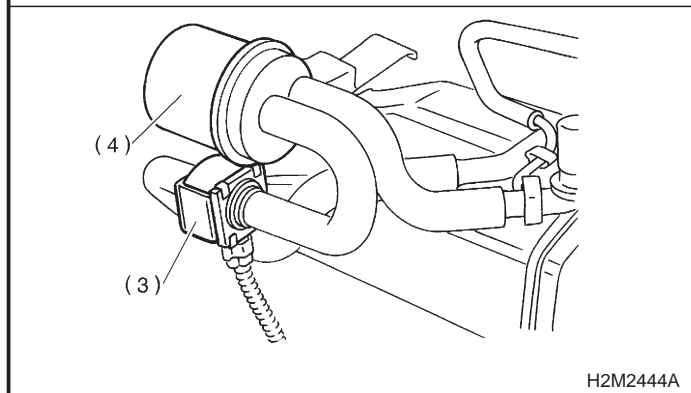
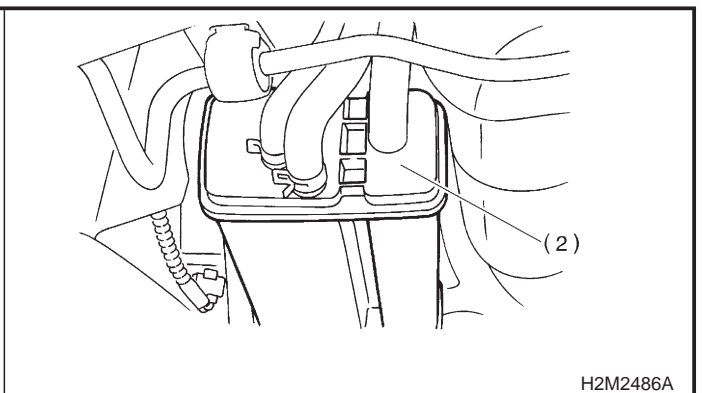
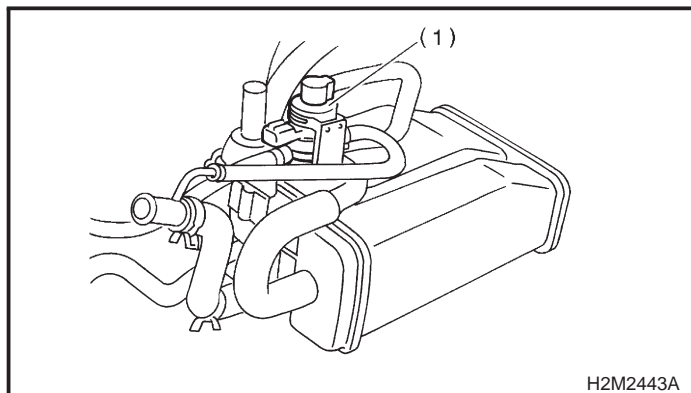
SUBARU.

2. Electrical Components Location



- (1) Pressure control solenoid valve
- (2) Canister

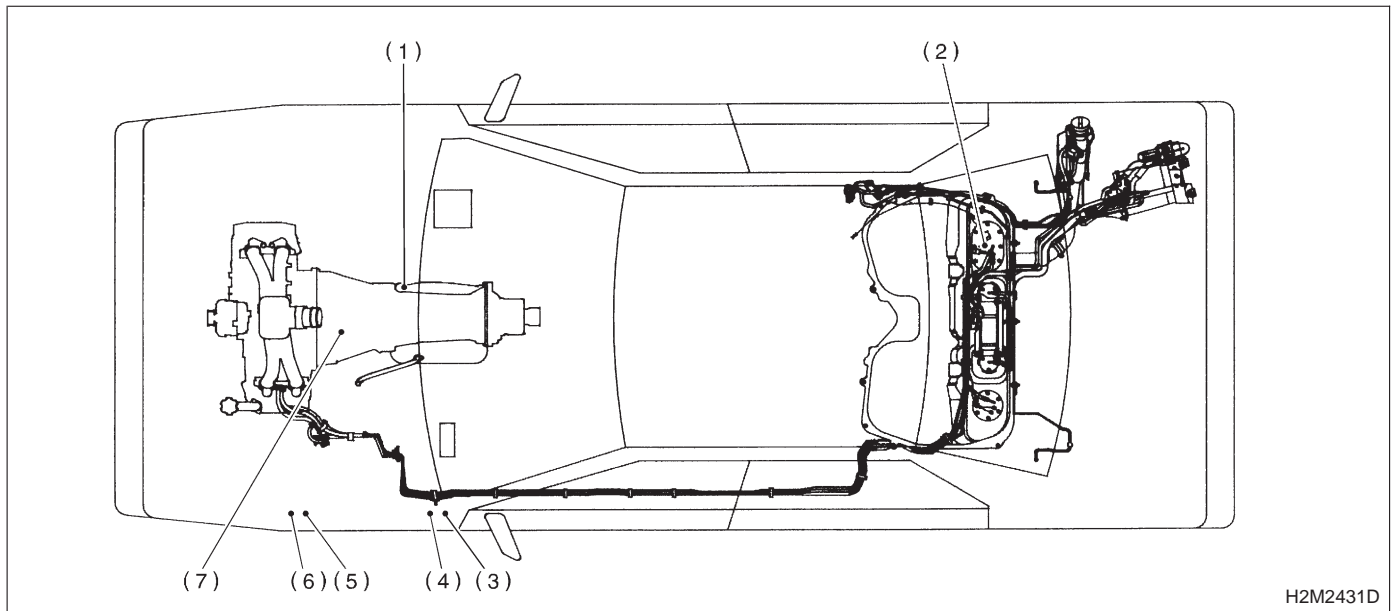
- (3) Drain valve
- (4) Air filter



SUBARU.

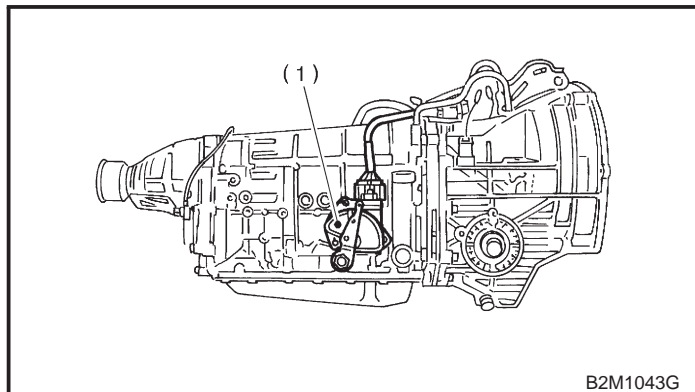
MEMO:

2. Electrical Components Location

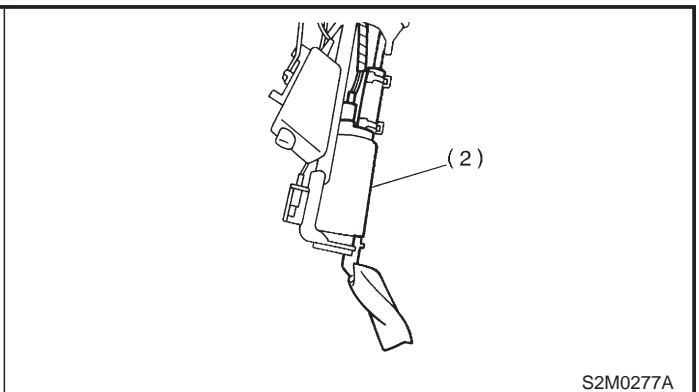


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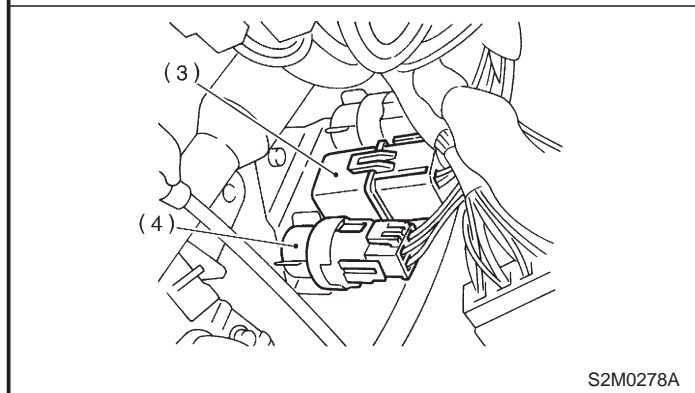
- | | | |
|----------------------|-------------------------------------|-------------|
| (1) Inhibitor switch | (4) Fuel pump relay | (7) Starter |
| (2) Fuel pump | (5) Radiator cooling main fan relay | |
| (3) Main relay | (6) Radiator cooling sub fan relay | |



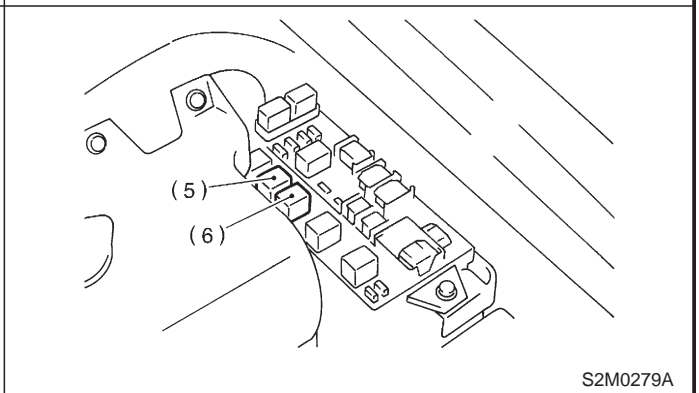
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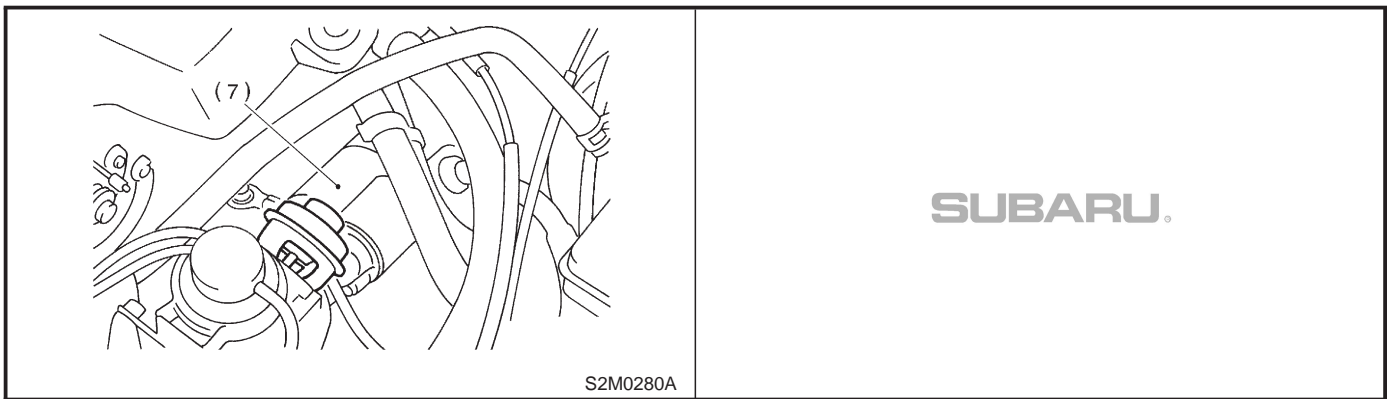
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S2M0278A

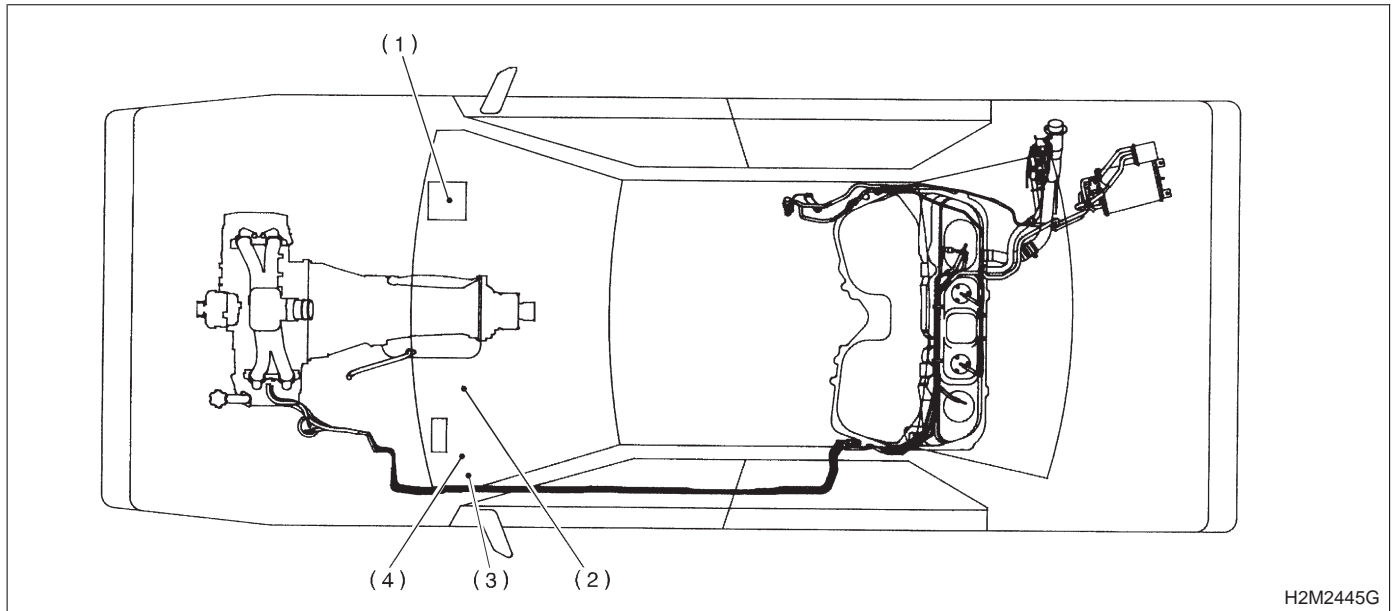


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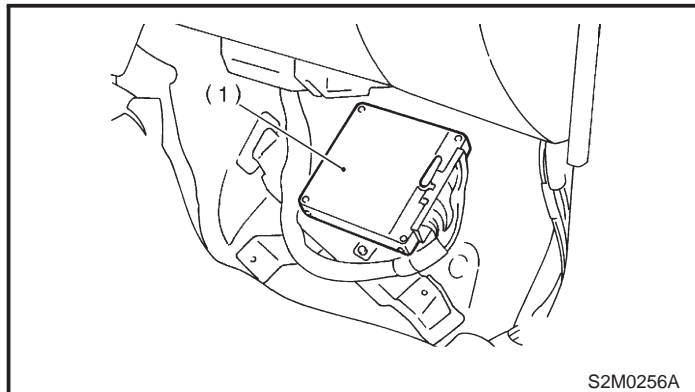
B: ENGINE (2500 cc MODEL)

1. MODULE

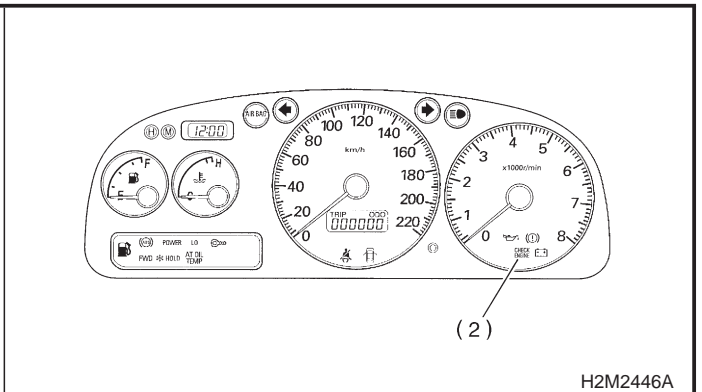


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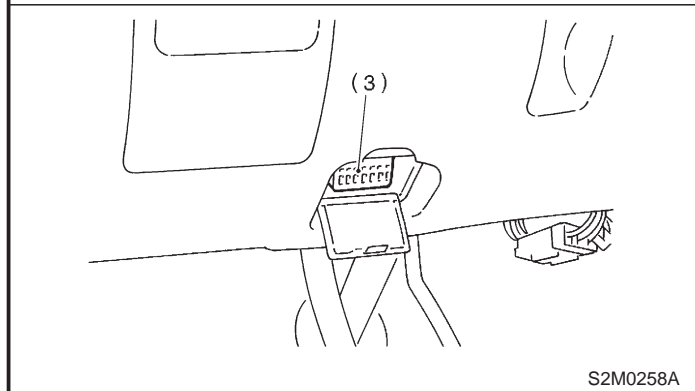
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| (1) Engine control module (ECM) | (3) Data link connector |
| (2) CHECK ENGINE malfunction indicator lamp (MIL) | (4) Test mode connector |



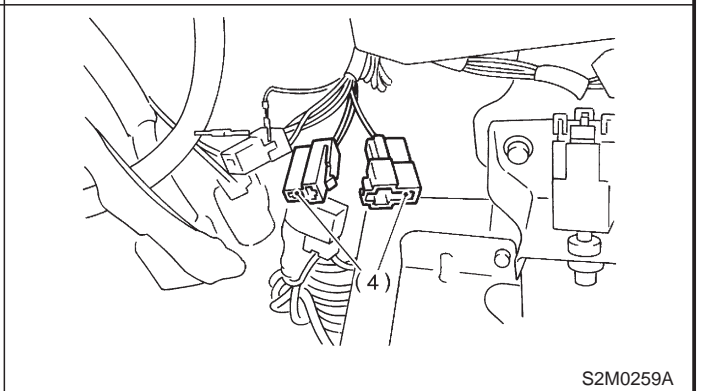
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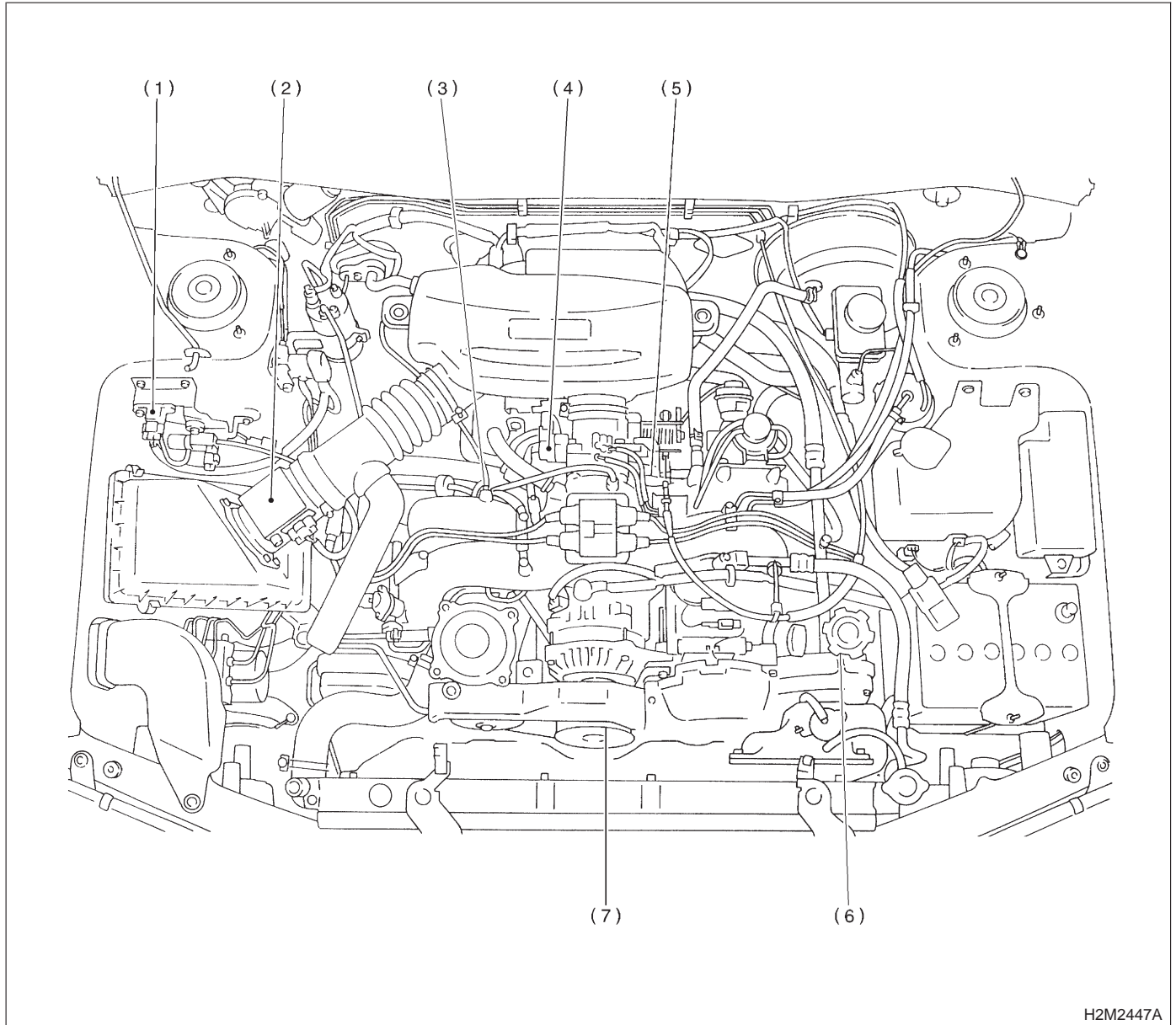
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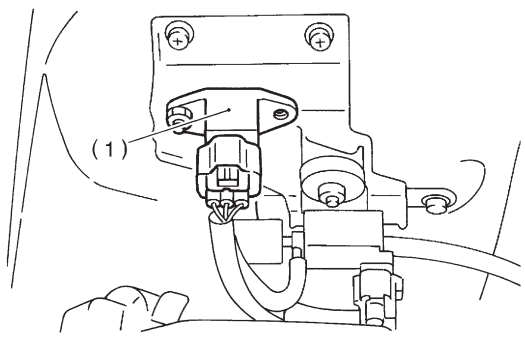
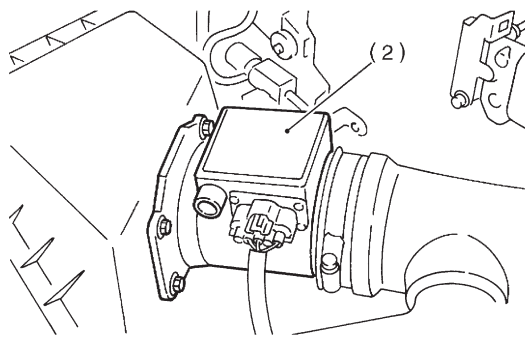
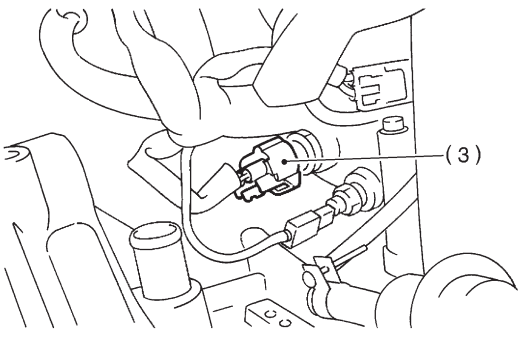
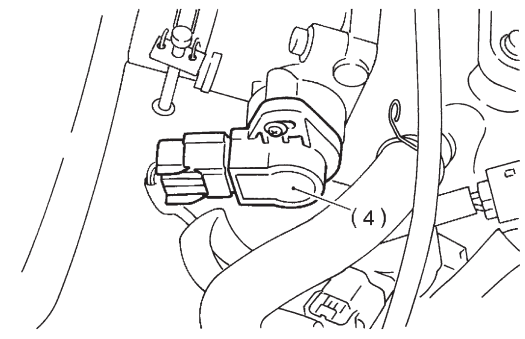
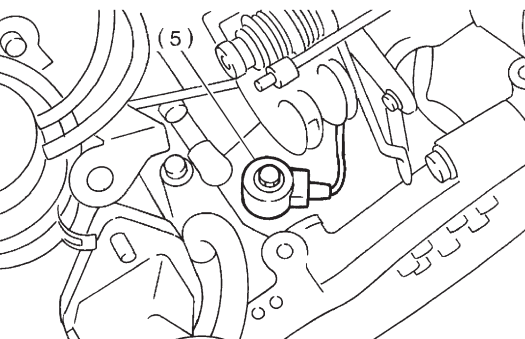
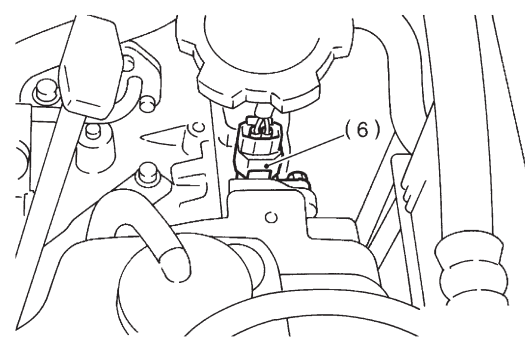
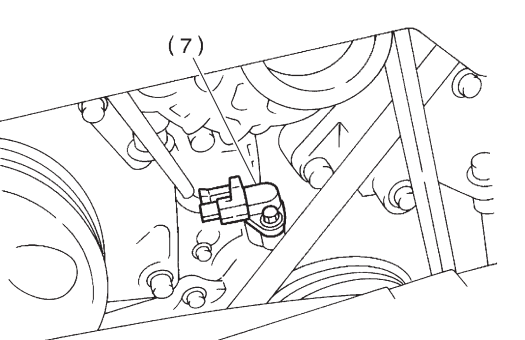
MEMO:

2. SENSOR

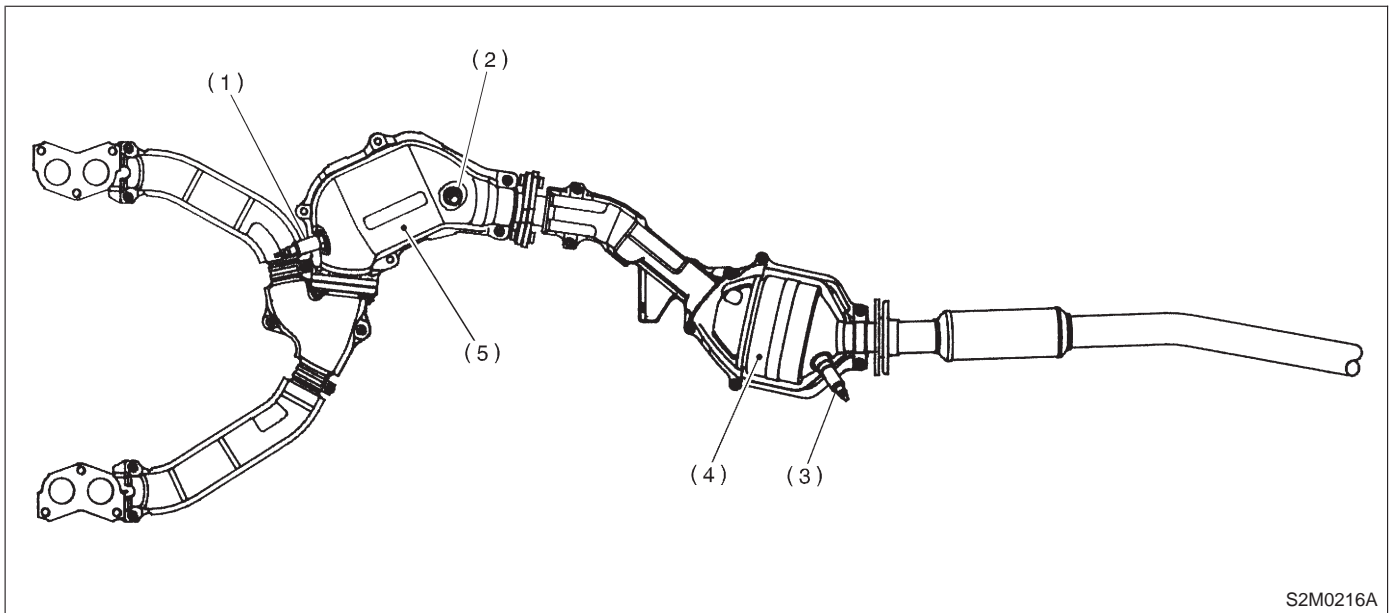


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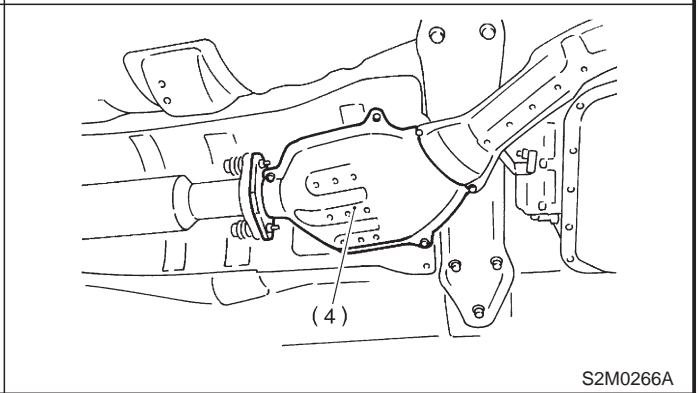
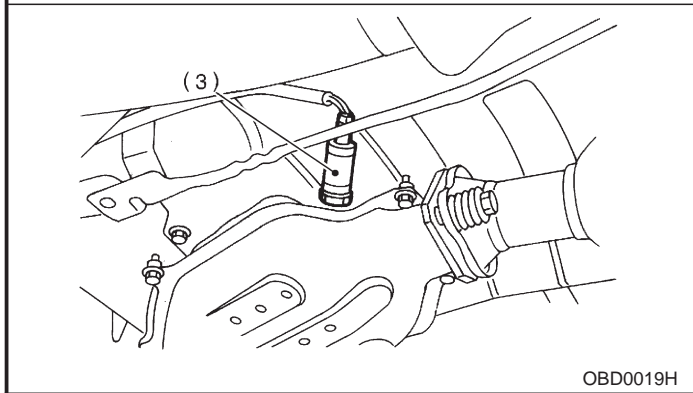
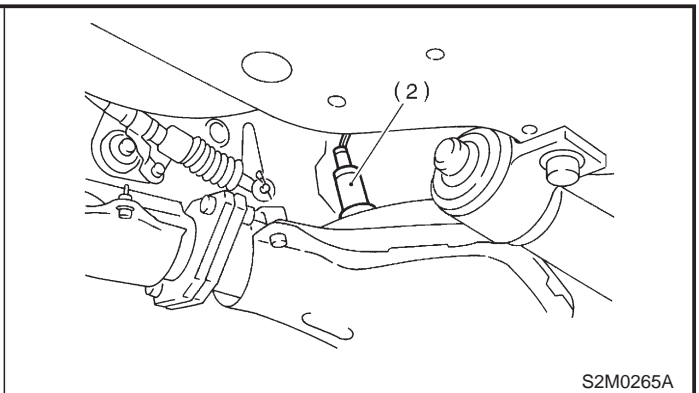
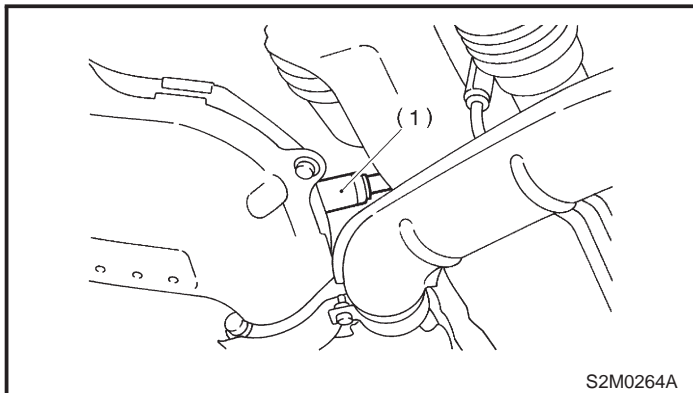
- | | |
|---------------------------------------|--------------------------------|
| (1) Pressure sensor | (4) Throttle position sensor |
| (2) Mass air flow sensor | (5) Knock sensor |
| (3) Engine coolant temperature sensor | (6) Camshaft position sensor |
| | (7) Crankshaft position sensor |

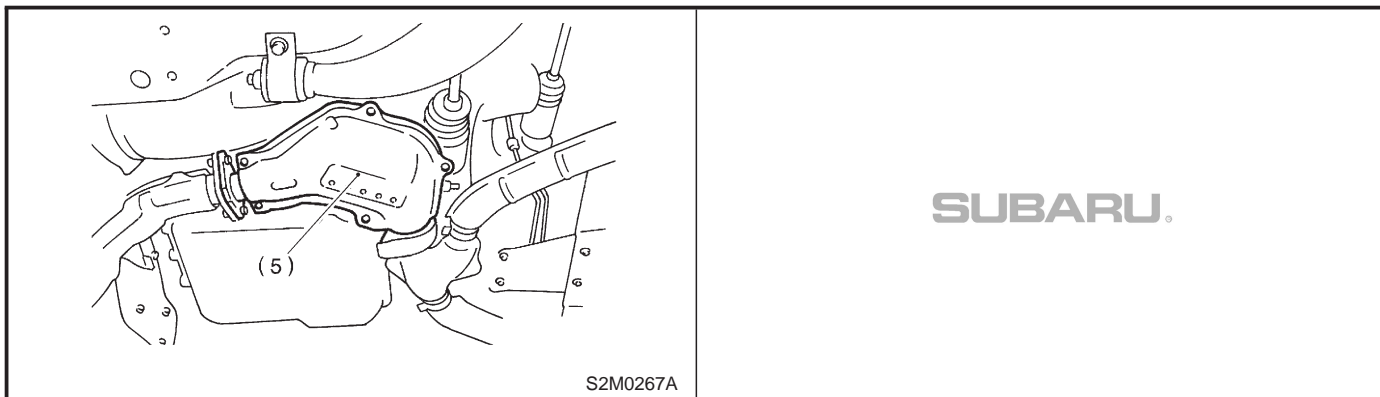
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B2M1690E	S2M0262A
 <p>(5)</p>	 <p>(6)</p>
B2M1691C	S2M0263A
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B2M0213I	

2. Electrical Components Location

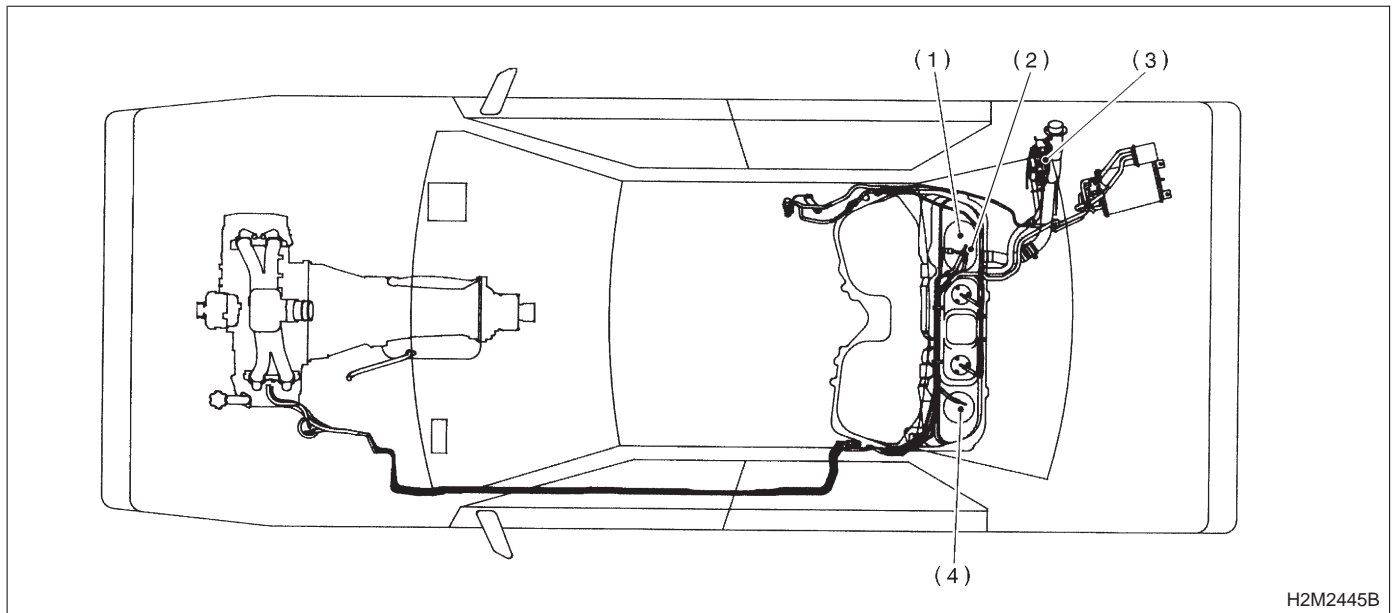


- (1) Front oxygen sensor
- (2) Rear oxygen sensor (California spec. vehicles)
- (3) Rear oxygen sensor (Federal spec. vehicles)
- (4) Rear catalytic converter
- (5) Front catalytic converter



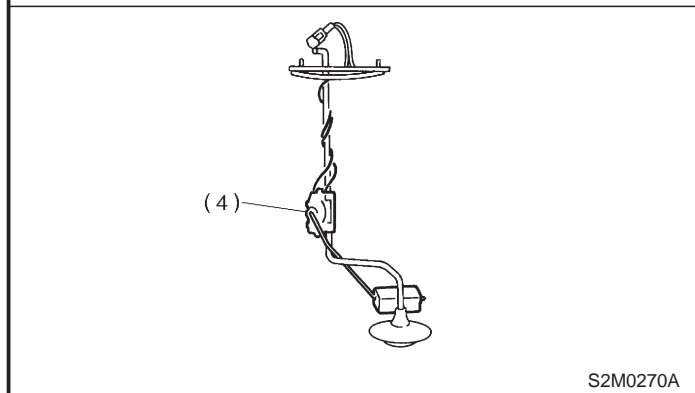
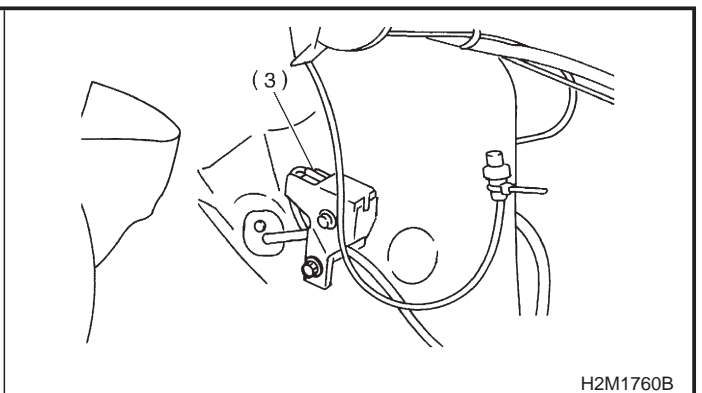
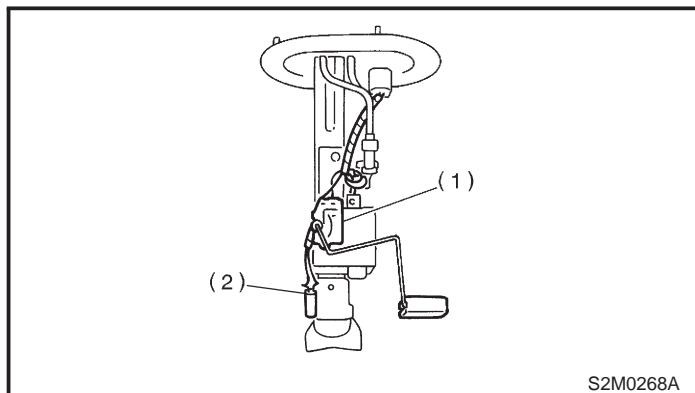


2. Electrical Components Location



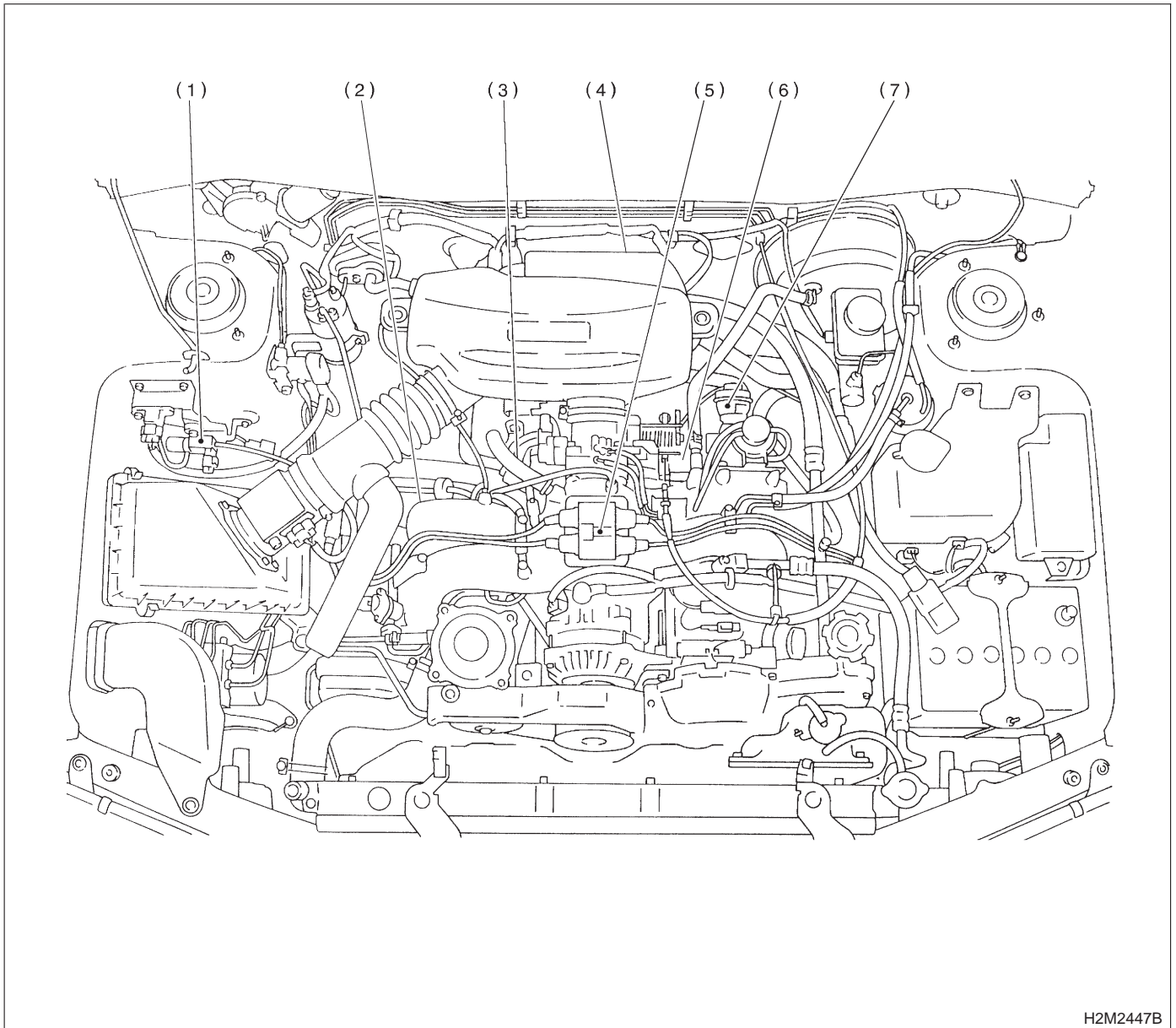
- (1) Fuel level sensor (Main)
- (2) Fuel temperature sensor

- (3) Fuel tank pressure sensor
- (4) Fuel level sensor (Sub)



MEMO:

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

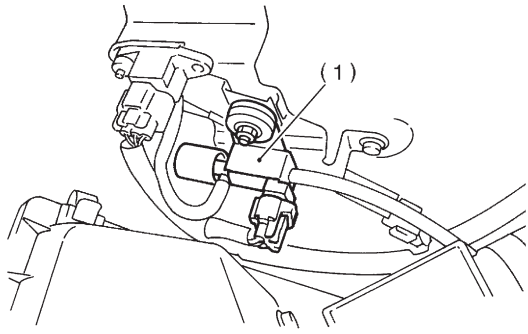
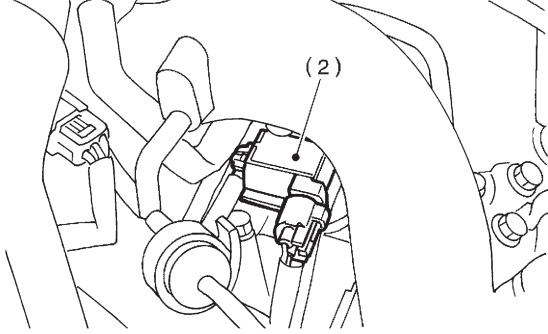
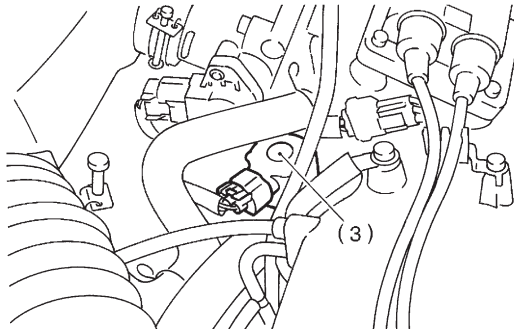
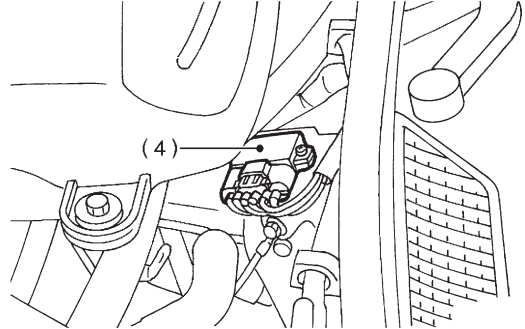
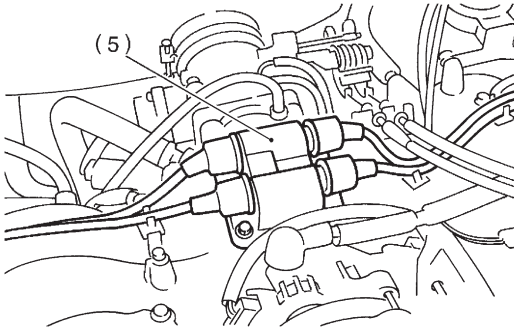
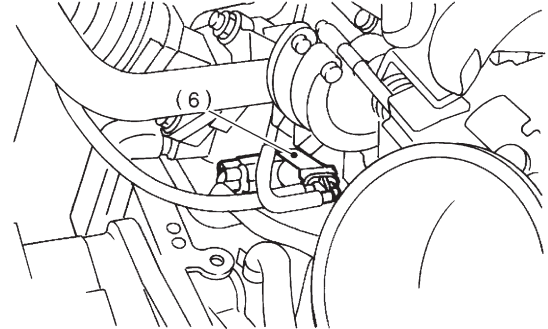
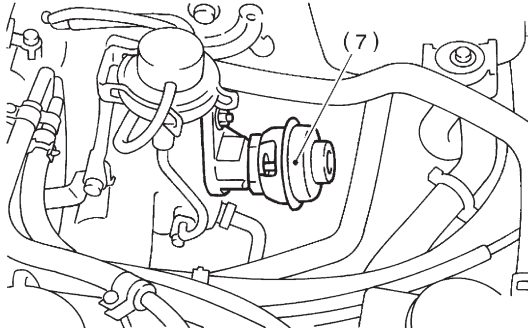


H2M2447B

- (1) Pressure sources switching solenoid valve
 (2) Purge control solenoid valve

- (3) Idle air control solenoid valve
 (4) Ignitor
 (5) Ignition coil

- (6) EGR control solenoid valve
 (7) EGR valve

 <p>(1)</p>	 <p>(2)</p>
 <p>(3)</p>	 <p>(4)</p>
 <p>(5)</p>	 <p>(6)</p>
 <p>(7)</p>	<p>SUBARU.</p>

S2M0271A

B2M1039J

S2M0272A

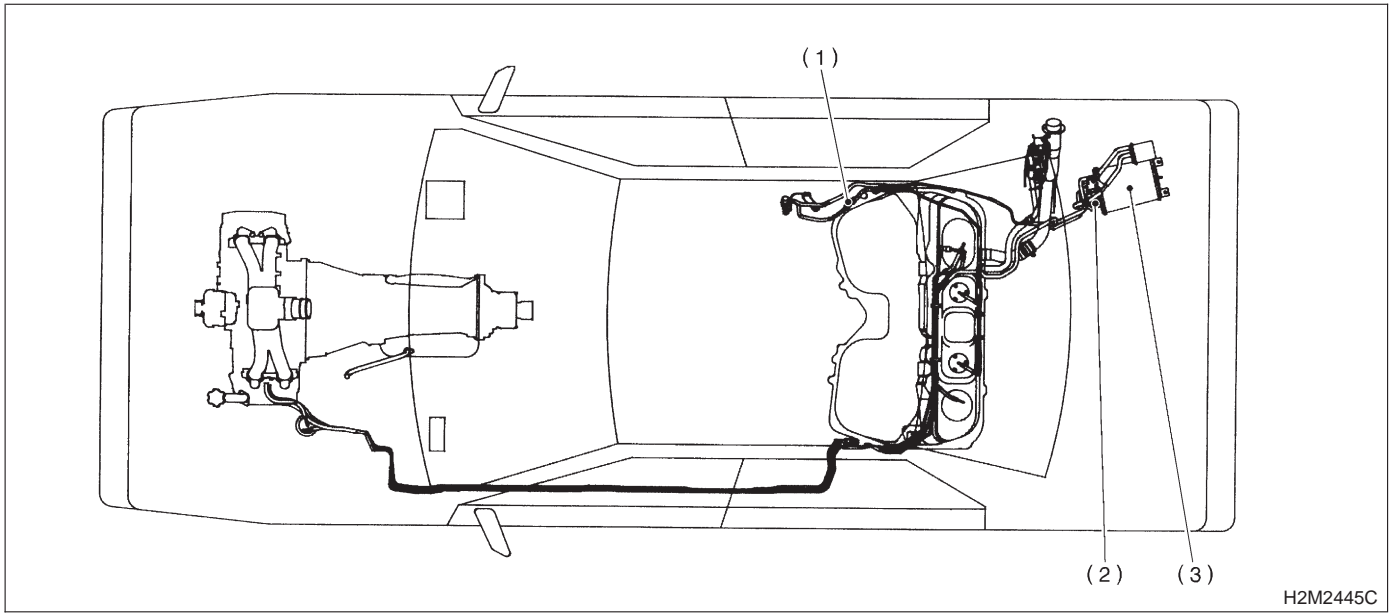
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S2M0273A

OBD0024E

S2M0274A

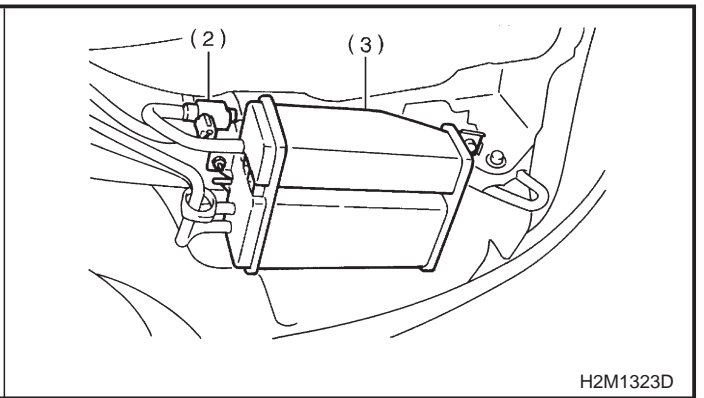
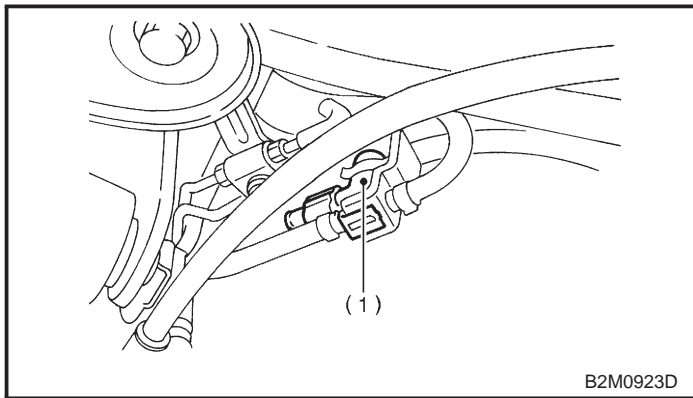
2. Electrical Components Location



(1) Pressure control solenoid valve

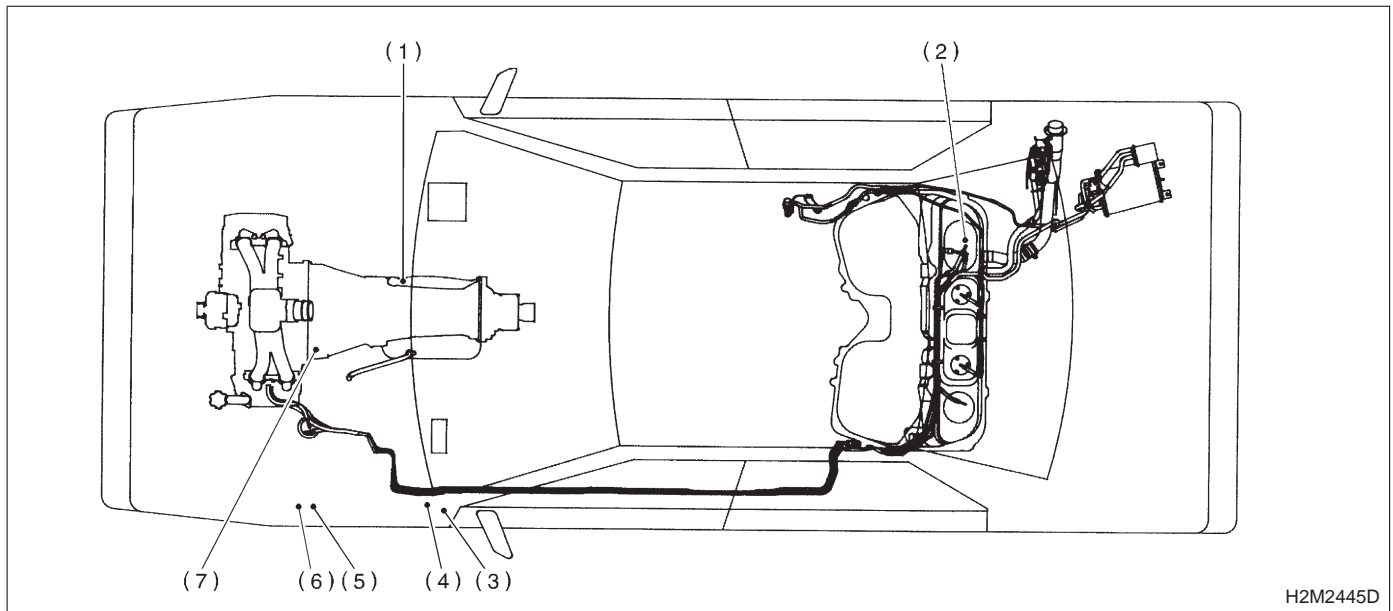
(2) Vent control solenoid valve

(3) Canister



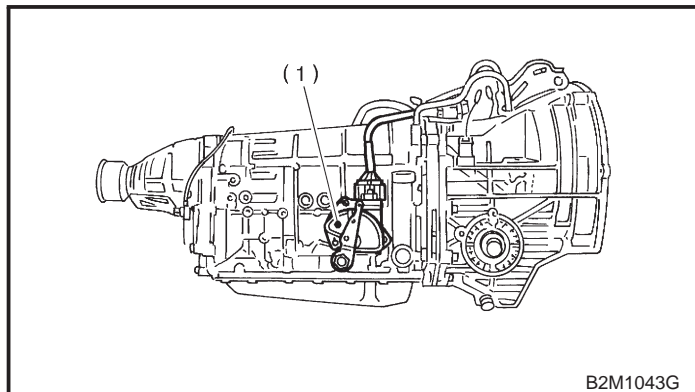
MEMO:

2. Electrical Components Location

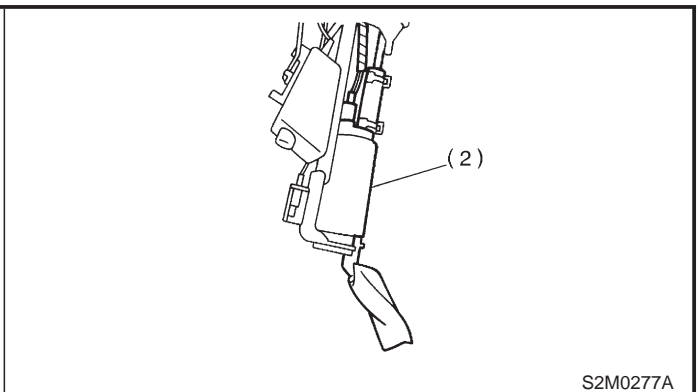


H2M2445D

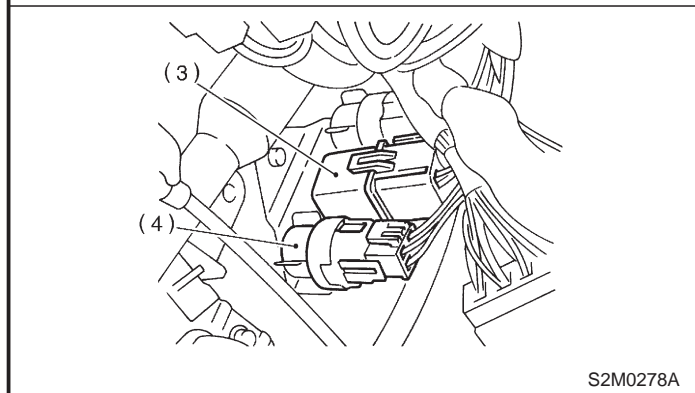
- | | | |
|----------------------|-------------------------------------|-------------|
| (1) Inhibitor switch | (4) Fuel pump relay | (7) Starter |
| (2) Fuel pump | (5) Radiator cooling main fan relay | |
| (3) Main relay | (6) Radiator cooling sub fan relay | |



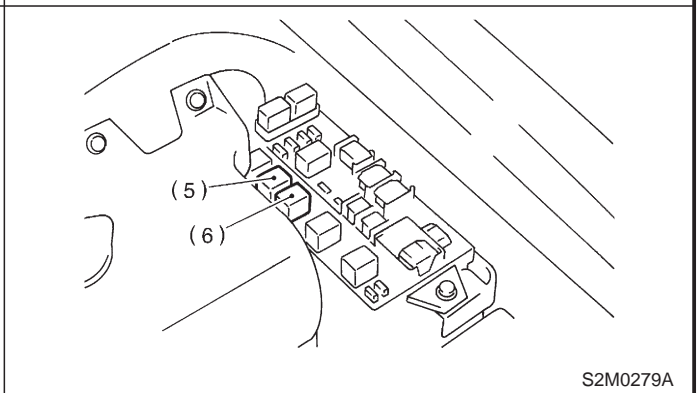
B2M1043G



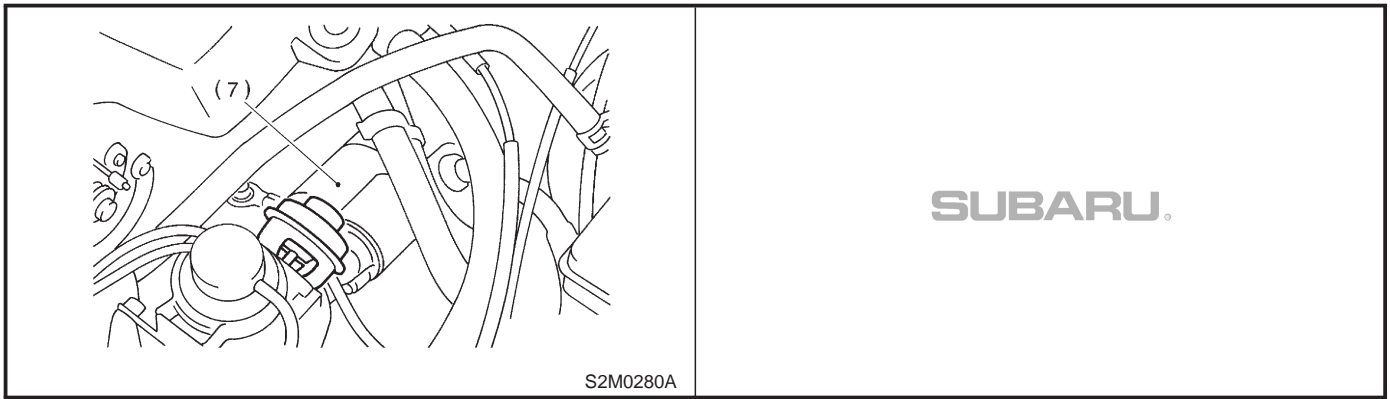
S2M0277A



S2M0278A



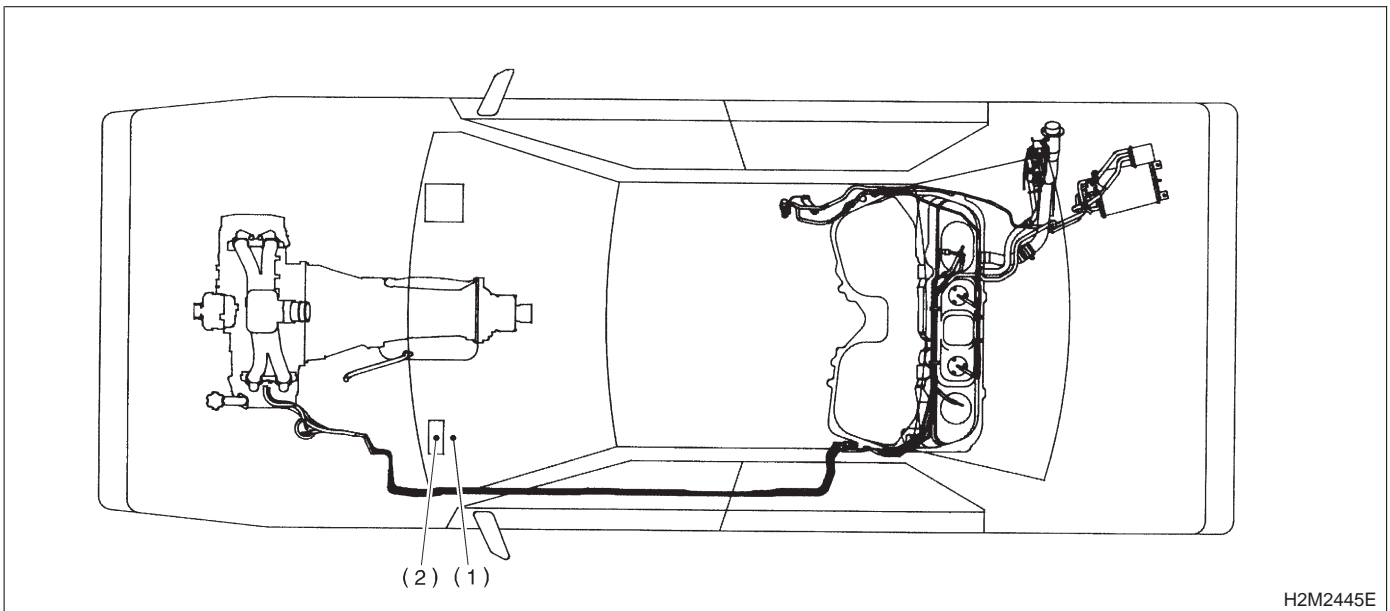
S2M0279A



C: TRANSMISSION

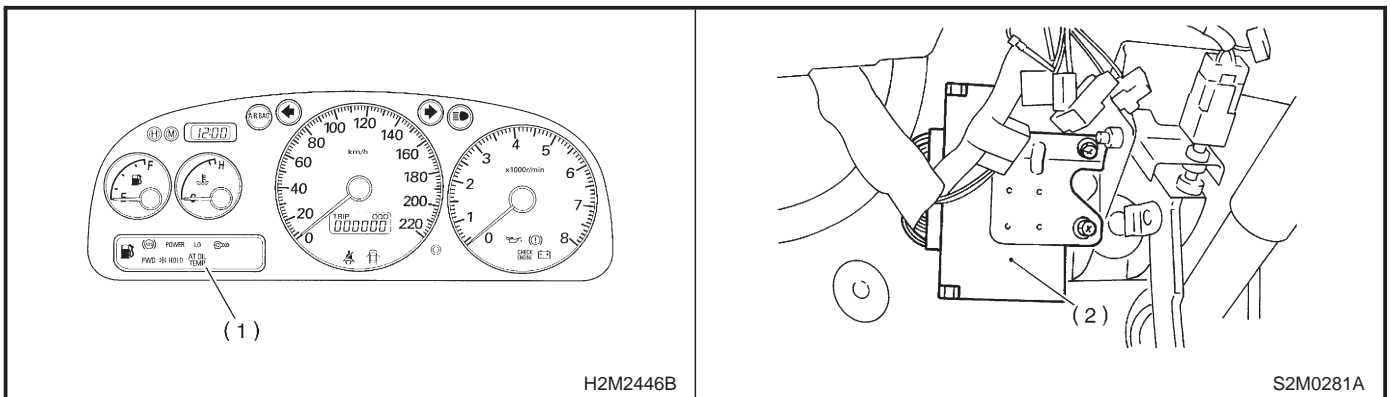
1. MODULE

- For AT vehicles



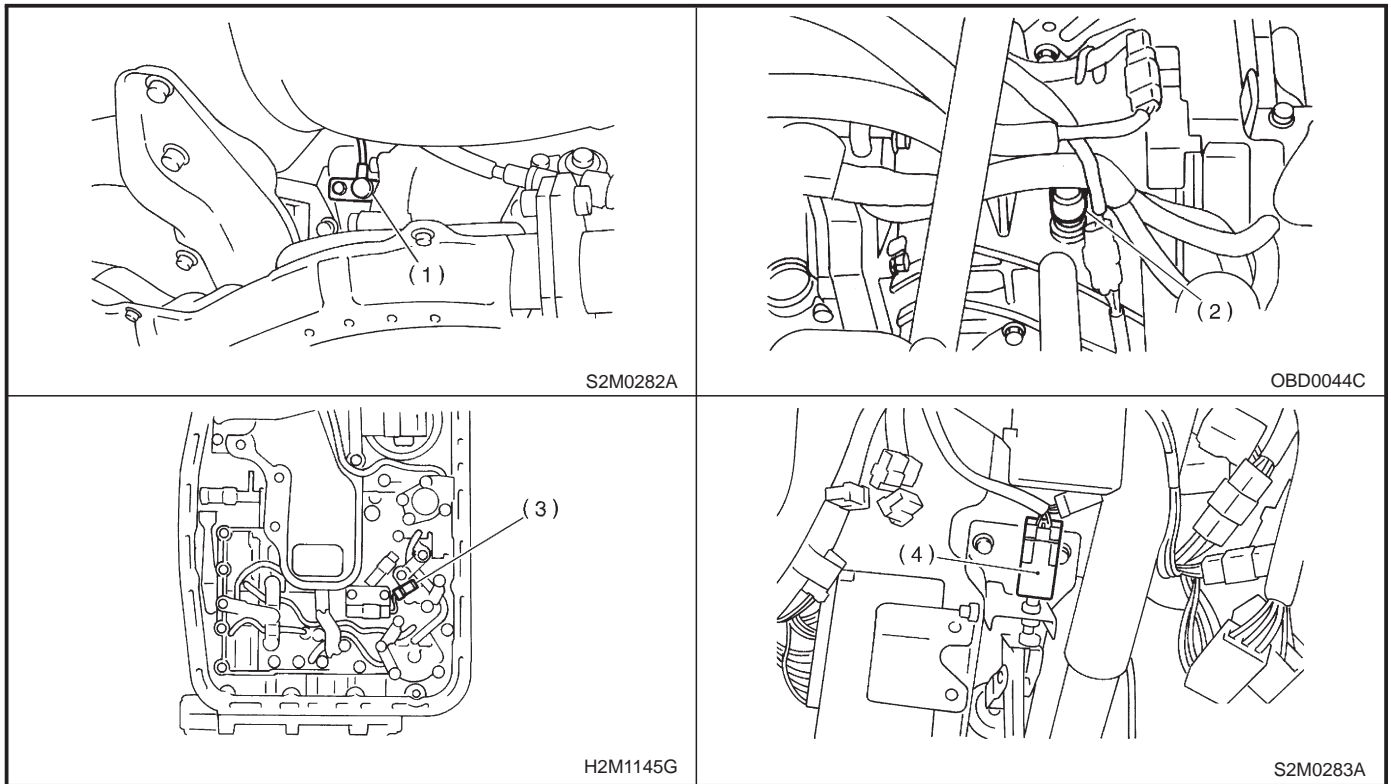
(1) AT OIL TEMP indicator light (AT diagnostic indicator light)

(2) Transmission Control Module (TCM)



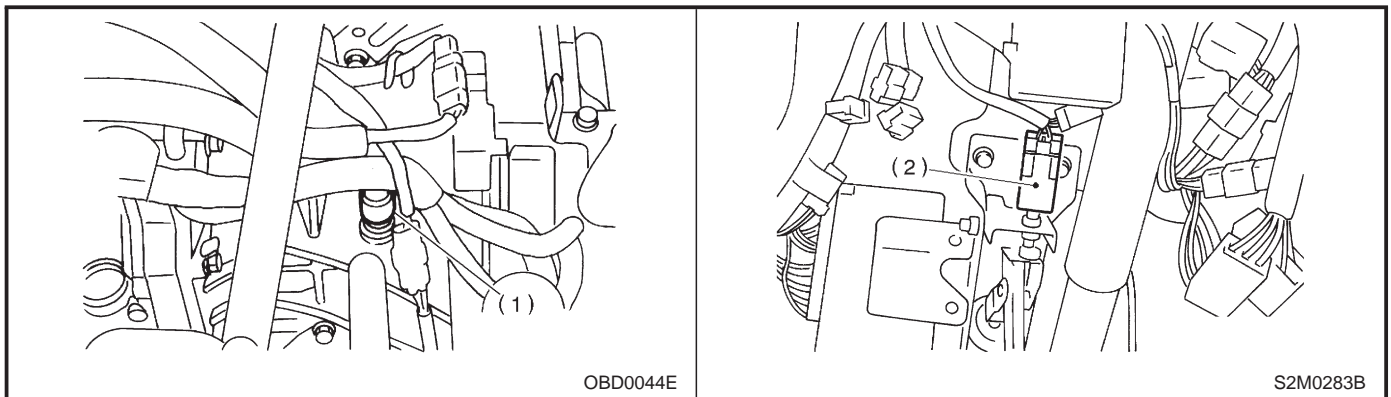
2. SENSOR

- For AT vehicles



- (1) Vehicle speed sensor 1
- (2) Vehicle speed sensor 2
- (3) ATF temperature sensor
- (4) Brake light switch

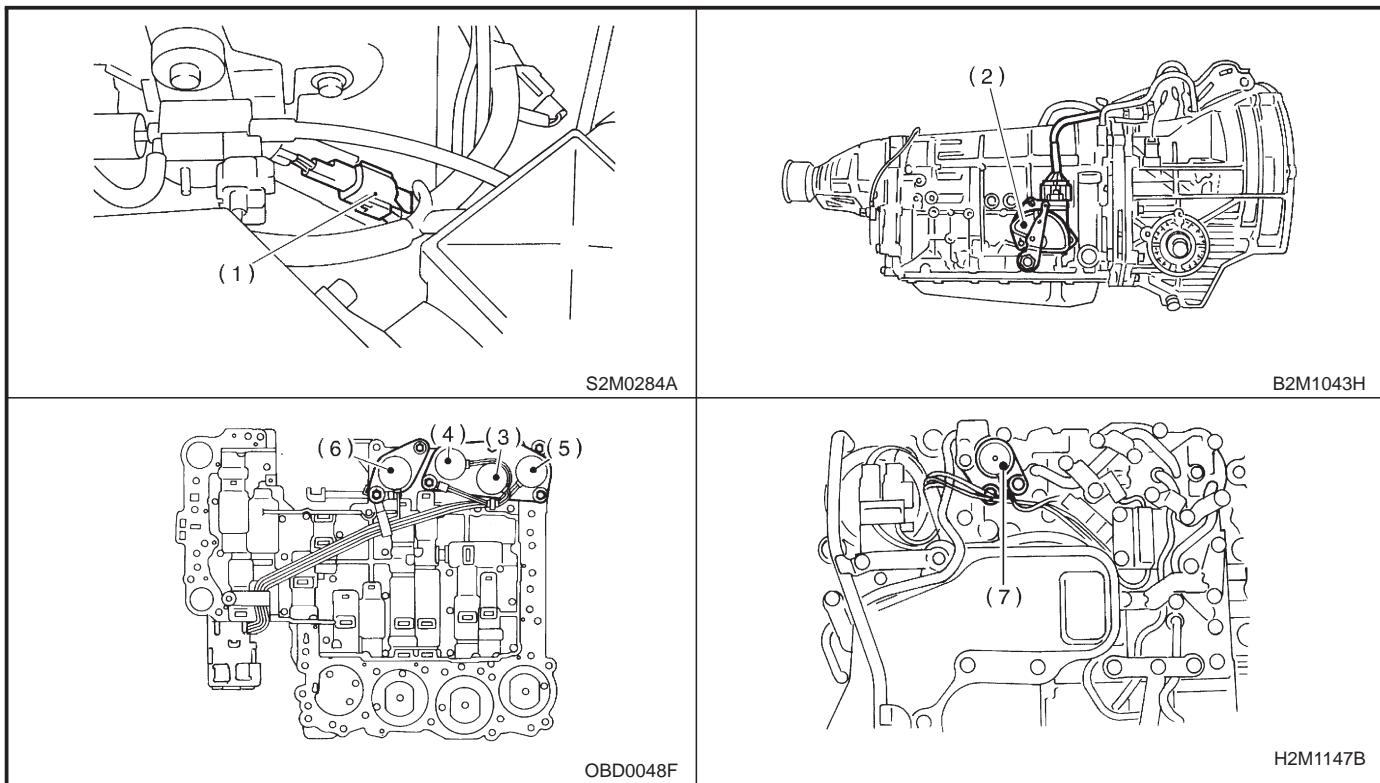
- For MT vehicles



- (1) Vehicle speed sensor 2
- (2) Brake light switch

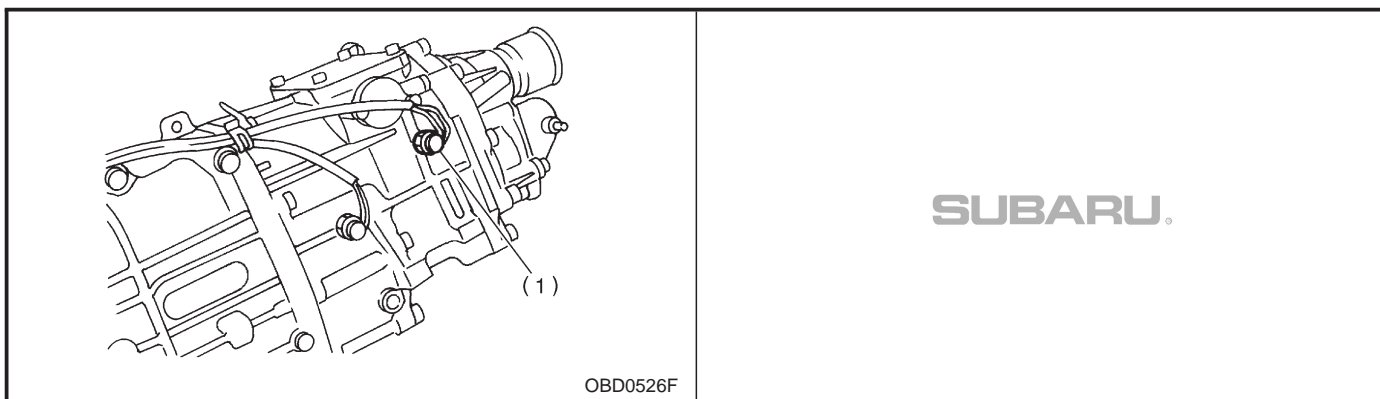
3. SOLENOID VALVE AND RELAY

- For AT vehicles



- | | | |
|----------------------------|----------------------------|---------------------------|
| (1) Dropping resistor | (4) Shift solenoid valve 2 | (7) Duty solenoid valve B |
| (2) Inhibitor switch | (5) Shift solenoid valve 3 | |
| (3) Shift solenoid valve 1 | (6) Duty solenoid valve A | |

- For MT vehicles



- (1) Neutral position switch

3. Diagnosis System

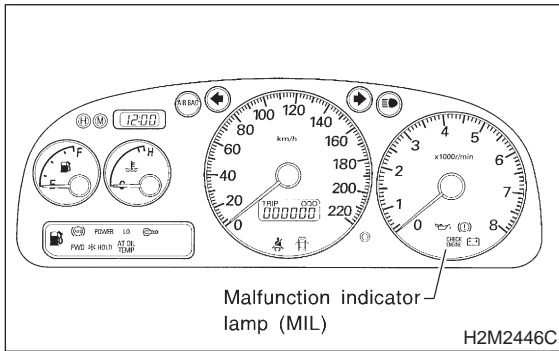
A: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL)

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

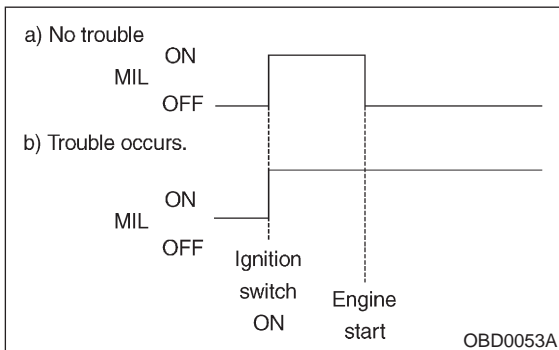
1) When ignition switch is turned to ON (engine off), the CHECK ENGINE malfunction indicator lamp (MIL) in the combination meter illuminates.

NOTE:

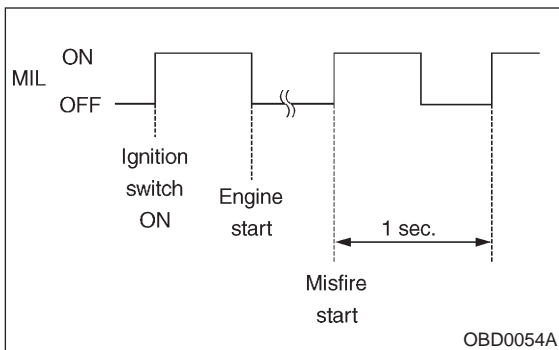
If the MIL does not illuminate, perform diagnostics of the CHECK ENGINE light circuit or the combination meter circuit. <Ref. to 2-7 [T700].>



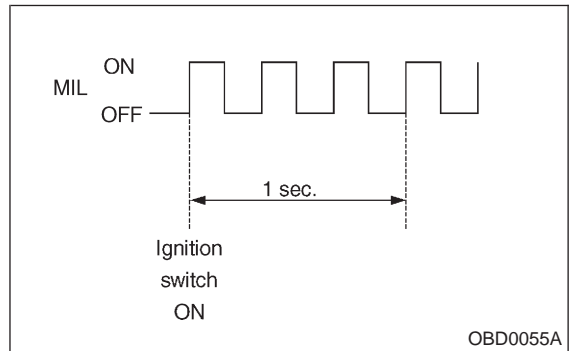
2) After starting the engine, the MIL goes out. If it does not, either the engine or the emission control system is malfunctioning.



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.

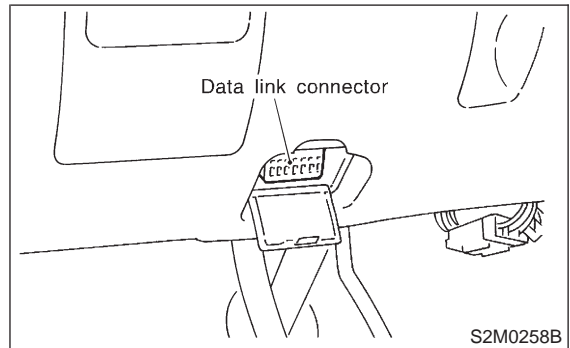


B: OBD-II GENERAL SCAN TOOL

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:

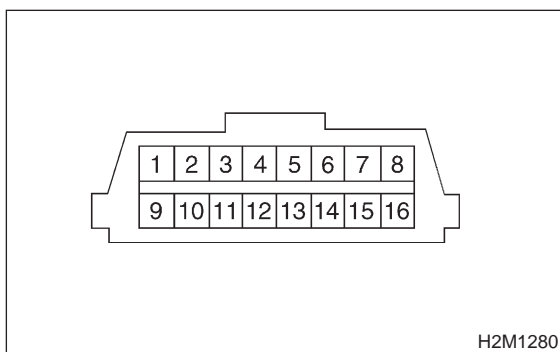
For details concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST, 2-7 [T10A0].

2. DATA LINK CONNECTOR

- 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	Subaru Select Monitor clock*	14	Blank
7	Blank	15	Blank
8	Blank	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	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	—

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. <Ref. to 2-7 [T10A0].>

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 oxygen sensor output data and test ID (identification) are shown in the following table.

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

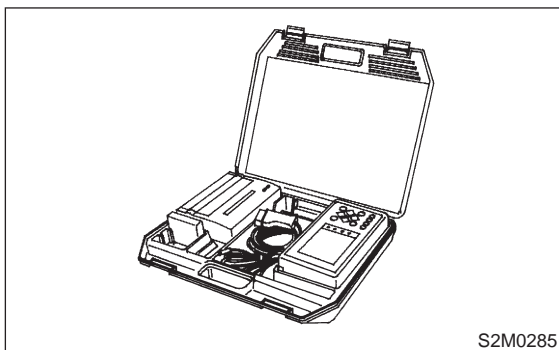
NOTE:

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

C: SUBARU SELECT MONITOR

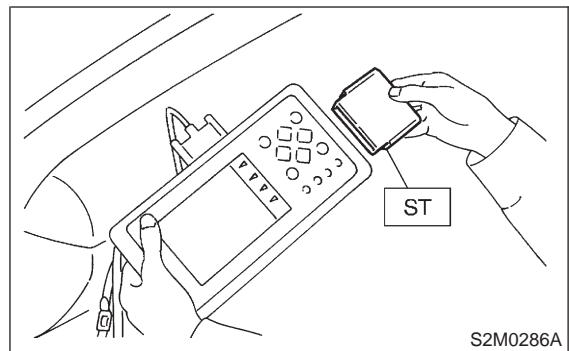
1. HOW TO USE SUBARU SELECT MONITOR

1) Prepare Subaru select monitor kit.



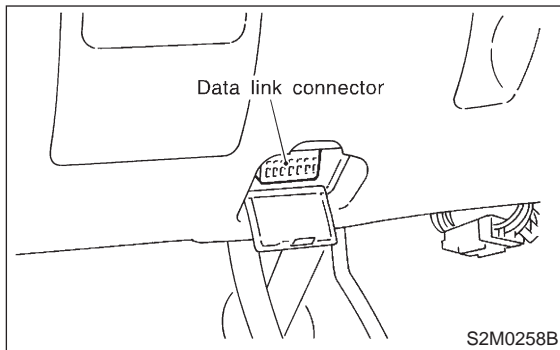
2) Connect diagnosis cable to Subaru select monitor.

3) Insert cartridge into Subaru select monitor.
ST 24082AA010 CARTRIDGE



4) Connect Subaru select monitor to data link connector.

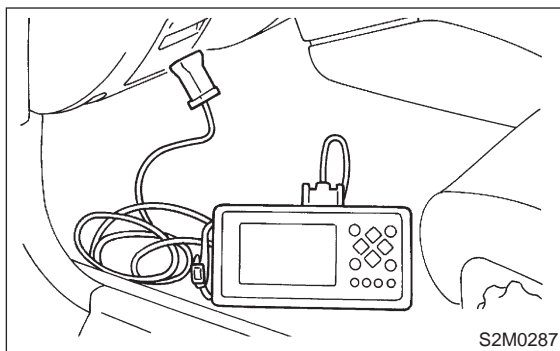
(1) Open the cover data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.



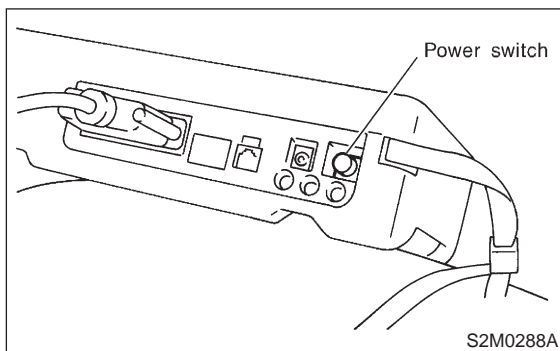
(2) Connect diagnosis cable to data link connector.

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 {EGI/EMPI} display screen.

NOTE:

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

- For details concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST. <Ref. to 2-7 [T10A0].>

3. READ DIAGNOSTICS 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 {EGI/EMPI} and press the [YES] key.

3) Press the [YES] key after displayed the information of engine type.

4) On the 「EGI/EMPI 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 details concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST. <Ref. to 2-7 [T10A0].>

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 {EGI/EMPi} and press the [YES] key.
 - 3) Press the [YES] key after displayed the information of engine type.
 - 4) On the 「EGI/EMPI 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	Mass Air Flow	g/s or lb/m
Mass air flow signal	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	ISC Valve Duty Ratio	%
Engine load data	Engine Load	%
Front oxygen sensor output signal	Front O2 Sensor	V
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
Intake manifold absolute pressure signal	Mani. Relative Pressure	mmHg or kPa or inHg
A/F correction (short term fuel trim) by rear oxygen sensor	Rear O2 A/F Learning	%
Long term fuel trim	Whole A/F Learning	%
Long term whole fuel trim	Front O2 A/F Learning	%
Front oxygen sensor heater current	Front O2 Heater	A
Rear oxygen sensor heater current	Rear O2 Heater	A
Canister purge control solenoid valve duty ratio	CPC Valve Duty Ratio	%
Fuel tank pressure signal	Fuel Tank Pressure	mmHg or kPa or inHg
Fuel temperature signal	Fuel Temp.	°C or °F
Fuel level signal	Fuel Level	V
Ignition switch signal	Ignition Switch	ON or OFF
Automatic transmission vehicle identification signal	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
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	Torque Control Signal	ON or OFF
Pressure sources switching solenoid valve	Pressure Sources Change	ON or OFF
Front oxygen sensor rich signal	Front O2 Rich Signal	ON or OFF
Rear oxygen sensor rich signal	Rear O2 Rich Signal	ON or OFF
Federal specification vehicle identification signal	FED Spec. Vehicle Signal	ON or OFF

Contents	Display	Unit of measure
Exhaust gas recirculation system diagnosis signal	EGR System Diagnosis	ON or OFF
Catalyst diagnosis signal	Catalyst Diagnosis	ON or OFF
Pressure control solenoid valve	PCV Solenoid Valve	ON or OFF
Exhaust gas recirculation solenoid valve	EGR Solenoid Valve	ON or OFF
Vent control solenoid valve or drain valve	Vent. Solenoid Valve	ON or OFF

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 {EGI/EMPI} and press the [YES] key.
 - 3) Press the [YES] key after displayed the information of engine type.
 - 4) On the 「EGI/EMPI 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 sensor	Short term fuel trim B1	%
Long term fuel trim by front oxygen sensor	Long term fuel trim B1	%
Intake manifold absolute pressure signal	Mani. Absolute Pressure	mmHg or kPa or inHg
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	°
Mass air flow signal	Mass Air Flow	g/s or lb/m
Throttle position signal	Throttle Opening Angle	%
Front oxygen sensor output signal	Oxygen sensor #11	V
Air fuel ratio correction by front oxygen sensor	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	—

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 {EGI/EMPI} and press the [YES] key.
 - 3) Press the [YES] key after displayed the information of engine type.
 - 4) On the 「EGI/EMPI 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 sensor	Short term fuel trim B1	%
Long term fuel trim by front oxygen sensor	Long term fuel trim B1	%
Intake manifold absolute pressure signal	Mani. Absolute Pressure	mmHg or kPa or inHg
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 {EGI/EMPI} and press the [YES] key.
 - 3) Press the [YES] key after displayed the information of engine type.
 - 4) On the 「EGI/EMPI 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 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 {EGI/EMPI} and press the [YES] key.
 - 3) Press the [YES] key after displayed the information of engine type.
 - 4) On the 「EGI/EMPI 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	Torque Control Signal #1	ON or OFF	When engine torque control 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	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.
Federal specification vehicle identification signal	FED Spec. Vehicle Signal	ON or OFF	Federal specification vehicle identification signal is entered.
Exhaust gas recirculation system diagnosis signal	EGR System Diagnosis	ON or OFF	When diagnosis of EGR system is finished.
Catalyst diagnosis signal	Catalyst Diagnosis	ON or OFF	When diagnosis of catalyzer is finished.
Pressure control solenoid valve	PCV Solenoid Valve	ON or OFF	When pressure control solenoid valve is in function.
Exhaust gas recirculation solenoid valve	EGR Solenoid Valve	ON or OFF	When EGR Solenoid Valve is in function.
Vent control solenoid valve or drain valve	Vent. Solenoid Valve	ON or OFF	When vent control solenoid valve or drain valve is in function.

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	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 sensor signal	Mass Air Flow Sensor	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
Power mode switch signal	Power Mode Switch	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
Hold mode switch signal	Hold Mode Switch	ON or OFF
Shift control solenoid A	Shift Solenoid #1	ON or OFF
Shift control solenoid B	Shift Solenoid #2	ON or OFF
Over running clutch control solenoid valve	Over Running Solenoid	ON or OFF
Automatic transmission fluid temperature warning lamp	ATF Temp. Warning Lamp	ON or OFF
Hold mode indicator lamp	Hold Lamp	ON or OFF
2 wheel drive mode indicator lamp	2WD Mode Lamp	ON or OFF
Torque control output signal	Torque Control Signal	ON or OFF

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 {EGI/EMPI} and press the [YES] key.
- 3) Press the [YES] key after displayed the information of engine type.
- 4) On the 「EGI/EMPI 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:

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 {EGI/EMPI} and press the [YES] key.
- 3) Press the [YES] key after displayed the information of engine type.
- 4) On the 「EGI/EMPI 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:

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.

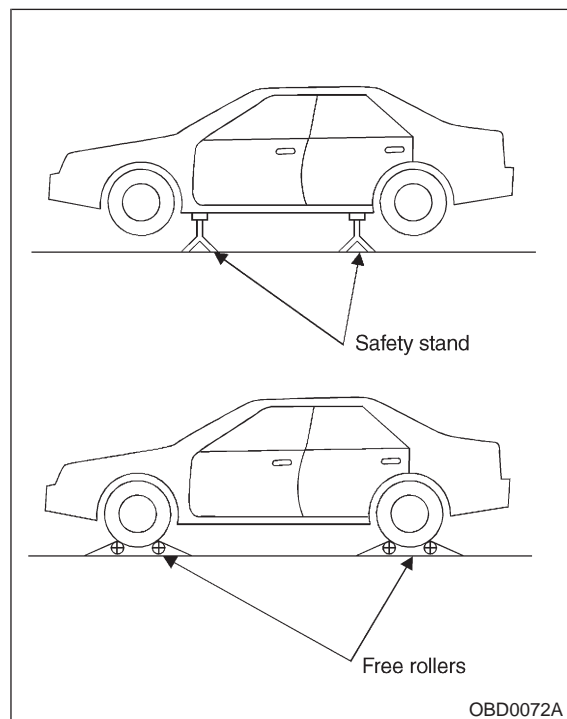
E: INSPECTION MODE

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.

WARNING:

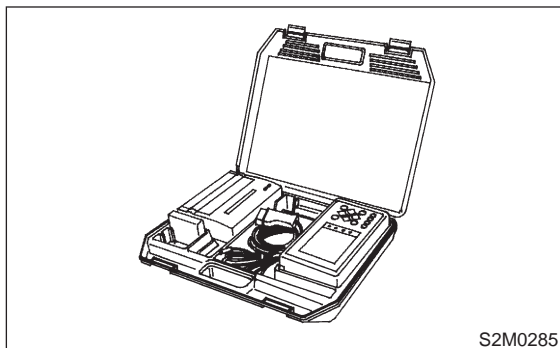
- Before raising the vehicle, ensure parking brakes are applied.
- Do not use a pantograph jack in place of a safety stand.
- Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runoff of front wheels.
- Do not abruptly depress/release clutch pedal or accelerator 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.

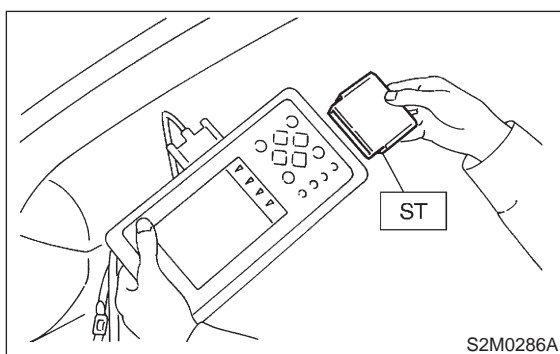
1) Prepare Subaru select monitor kit.



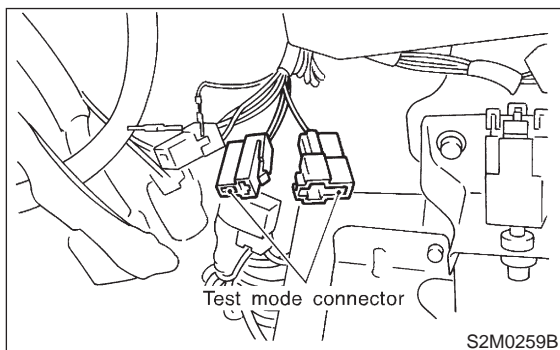
2) Connect diagnosis cable to Subaru select monitor.

3) Insert cartridge into Subaru select monitor.

ST 24082AA010 CARTRIDGE

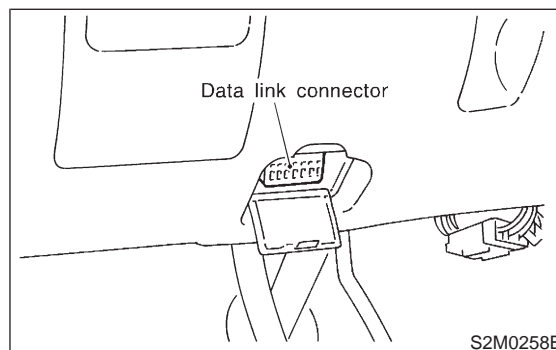


4) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



5) Connect Subaru select monitor to data link connector.

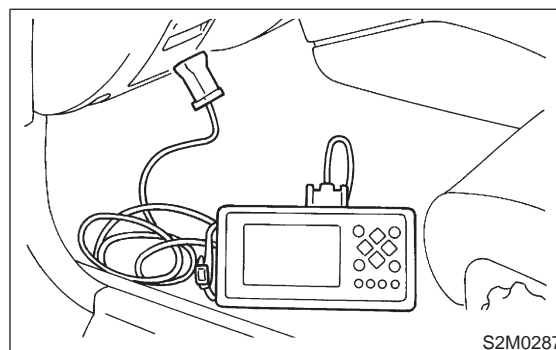
(1) Open the cover and connect Subaru select monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.



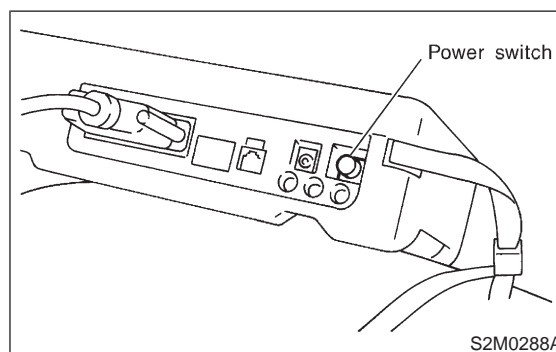
(2) Connect diagnosis cable to data link connector.

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 {EGI/EMPI} and press the [YES] key.

9) Press the [YES] key after displayed the information of engine type.

10) On the 「EGI/EMPI 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. <Ref. to 2-7 [T10A0].>

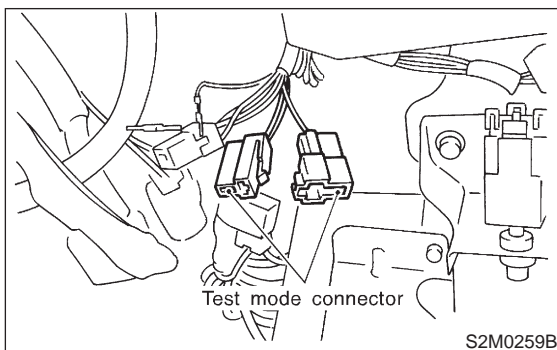
- On AWD vehicles, release the parking brake.

- 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:

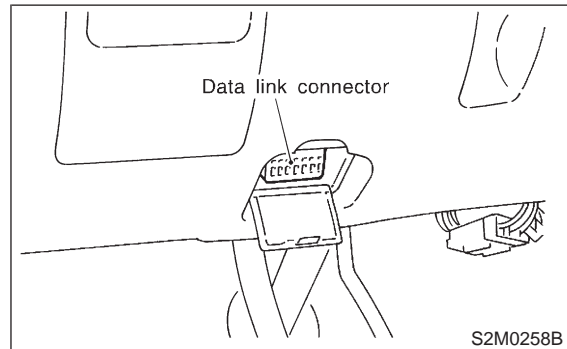
1) Connect test mode connector at the lower side of the instrument panel (on the driver's side), to the side of the center console box.



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).

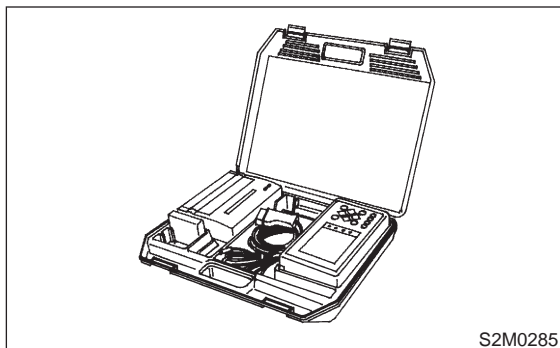
NOTE:

- For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.
- For details concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST. <Ref. to 2-7 [T10A0].>

F: COMPULSORY VALVE OPERATION CHECK MODE

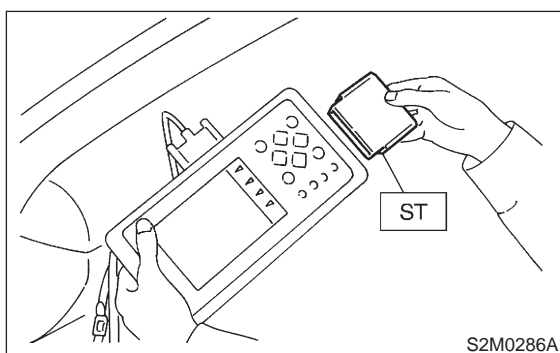
1. SUBARU SELECT MONITOR

1) Prepare Subaru select monitor kit.

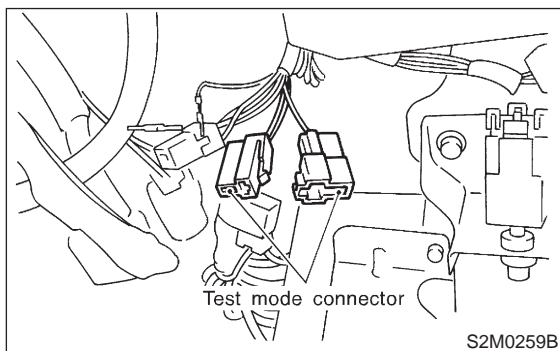


2) Connect diagnosis cable to Subaru select monitor.

3) Insert cartridge into Subaru select monitor.
ST 24082AA010 CARTRIDGE

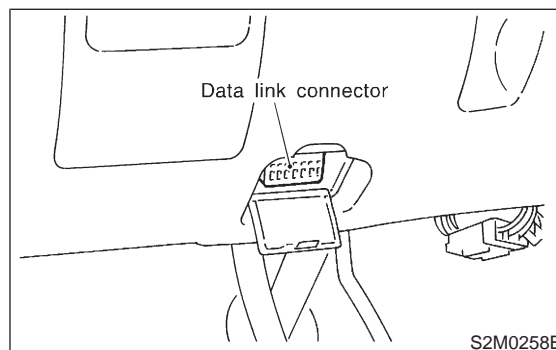


4) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



5) Connect Subaru select monitor to data link connector.

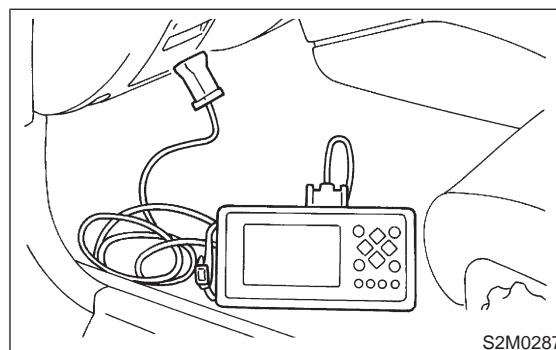
(1) Open the cover and connect Subaru select monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.



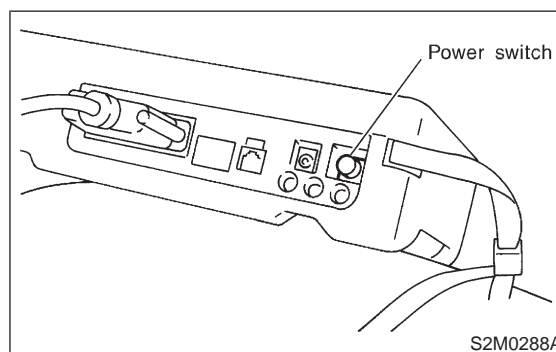
(2) Connect diagnosis cable to data link connector.

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 {EGI/EMPI} and press the [YES] key.

9) Press the [YES] key after displayed the information of engine type.

10) On the 「EGI/EMPI 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 exhaust gas recirculation control solenoid valve operation check	EGR Solenoid Valve
Compulsory pressure control solenoid valve operation check	PCV Solenoid Valve
Compulsory vent control solenoid valve operation check	Vent Control Solenoid Valve
Compulsory pressure sources switching solenoid valve operation check	Pressure Switching Sol.1

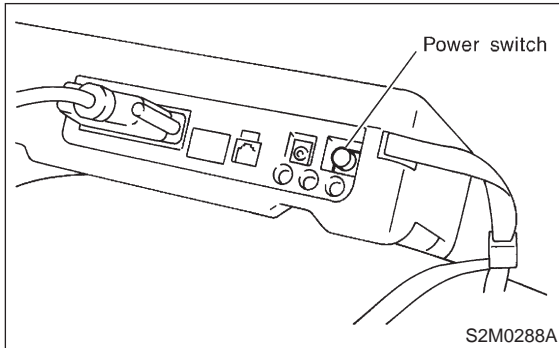
NOTE:

- Because CPC solenoid valve, 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"

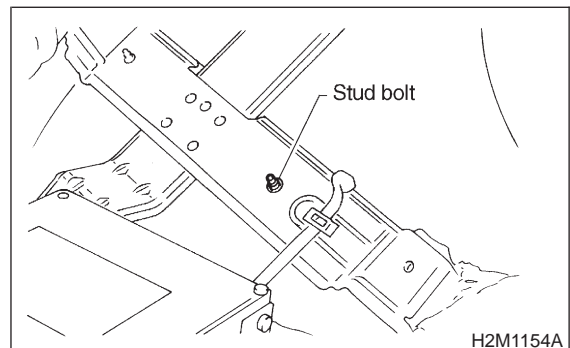
Airbag system wiring harness is routed near the engine control module (ECM), main relay and fuel pump relay.

CAUTION:

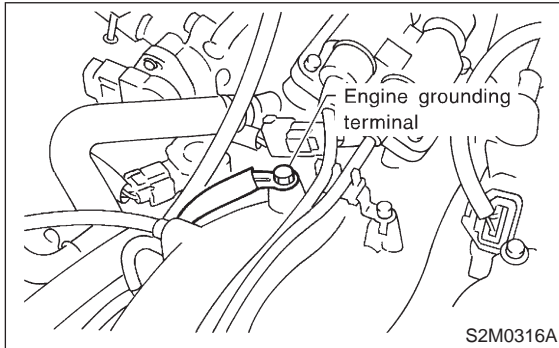
- All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.
- Be careful not to damage Airbag system wiring harness when servicing the engine control module (ECM), transmission control module (TCM), main relay and fuel pump relay.

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) Before removing ECM from the located position, disconnect two cables on battery.
 - Otherwise, the ECM may be damaged.
- 5) 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.
- 6) Use ECM mounting stud bolts at the body head grounding point when measuring voltage and resistance inside the passenger compartment.



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



8) Every MFI-related part is a precision part. Do not drop them.

9) 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.

10) 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.

11) 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.

12) 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.

13) 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).

14) 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.

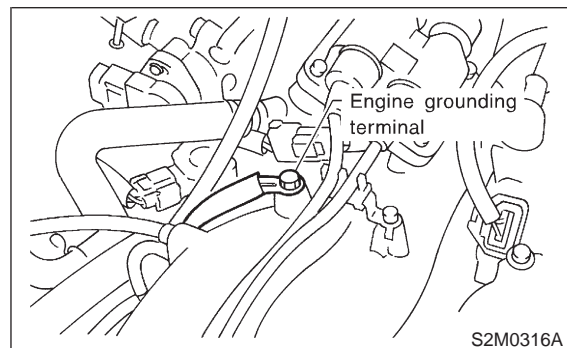
Standard voltage: 12 V

Specific gravity: Above 1.260

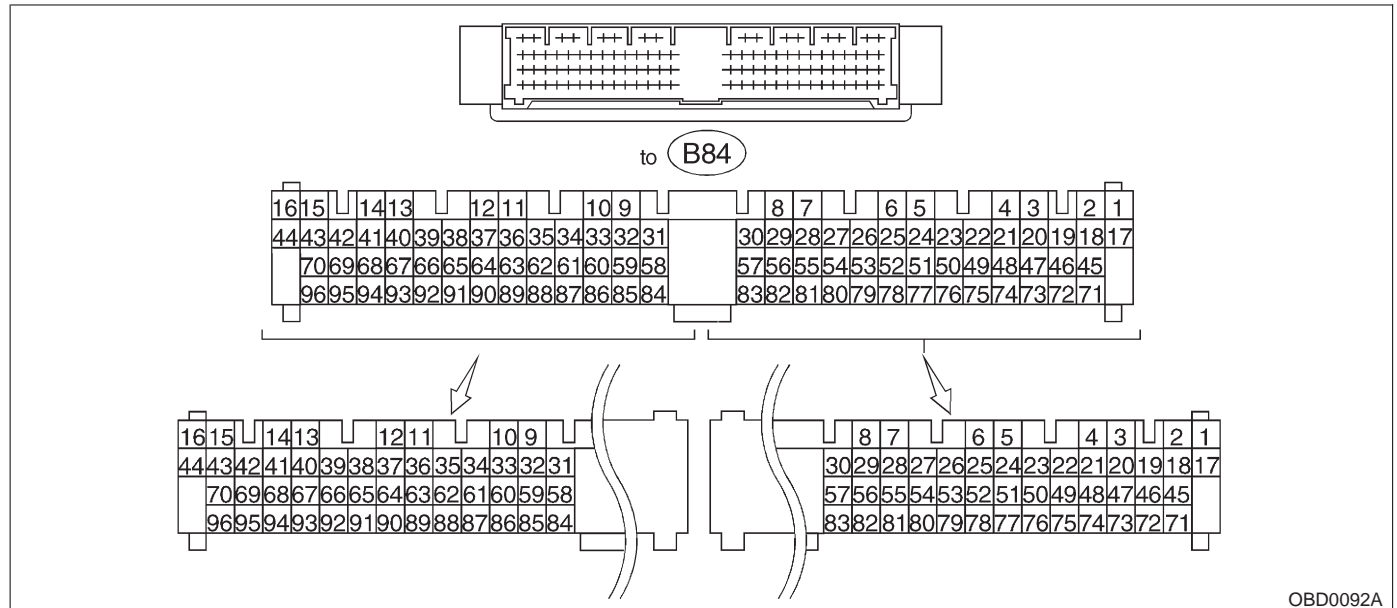
2) Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

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

Content	Conne- ctor No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (Engine OFF)	Engine ON (Idling)		
Crankshaft position sensor	Signal (+)	B84	8	0	-7 — +7	Sensor output waveform
	Signal (-)	B84	29	0	0	—
	Shield	B84	54	0	0	—
Camshaft position sensor	Signal (+)	B84	7	0	-7 — +7	Sensor output waveform
	Signal (-)	B84	28	0	0	—
	Shield	B84	54	0	0	—
Mass air flow sen- sor	Signal	B84	5	0 — 0.3	0.8 — 1.2	—
	Shield	B84	57	0	0	—
	GND	B84	53	0	0	—
Throttle position sensor	Signal	B84	6	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—
	Power supply	B84	21	5	5	—
	GND	B84	20	0	0	—
Front oxy- gen sen- sor	Signal	B84	23	0	0 — 0.9	—
	Shield	B84	56	0	0	—
Rear oxy- gen sen- sor	Signal	B84	24	0	0 — 0.9	—
	Shield	B84	56	0	0	—
Engine coolant tem- perature sensor	B84	22	1.0 — 1.4	1.0 — 1.4	After warm-up	
Vehicle speed sensor 2	B84	83	0 or 5	0 or 5	"5" and "0" are repeatedly dis- played when vehicle is driven.	
Starter switch	B84	86	0	0	Cranking: 8 to 14	
A/C switch	B84	60	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—	
Ignition switch	B84	85	10 — 13	13 — 14	—	

Content	Connector No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (Engine OFF)	Engine ON (Idling)		
Neutral position switch (MT)	B84	82	ON: 5.0±0.5 OFF: 0		● On MT vehicle; switch is ON when gear is in neutral position.	
Neutral position switch (AT)			ON: 0 OFF: 5.0±0.5		● On AT vehicle; switch is ON when shift is in "N" or "P" position.	
Test mode connector	B84	84	5	5	When connected: 0	
Knock sensor	Signal	B84	2.8	2.8	—	
	Shield	B84	0	0	—	
AT/MT identification	B84	81	(AT) 5 (MT) 0	(AT) 5 (MT) 0	When measuring voltage between ECM and chassis ground.	
Back-up power supply	B84	39	10 — 13	13 — 14	Ignition switch "OFF": 10 — 13	
Control unit power supply	B84	1	10 — 13	13 — 14	—	
		2				
Ignition control	# 1, # 2	B84	41	0	1 — 3.4	—
	# 3, # 4	B84	40	0	1 — 3.4	—
Fuel injector	# 1	B84	96	10 — 13	1 — 14	Waveform
	# 2	B84	70	10 — 13	1 — 14	Waveform
	# 3	B84	44	10 — 13	1 — 14	Waveform
	# 4	B84	16	10 — 13	1 — 14	Waveform
Idle air control solenoid valve	OPEN end	B84	14	—	1 — 13	Waveform
	CLOSE end	B84	13	—	13 — 1	Waveform
Fuel pump relay control	B84	32	ON: 0.5, or less OFF: 10 — 13	0.5, or less	—	
A/C relay control	B84	31	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—	
Radiator fan relay 1 control	B84	74	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—	
Radiator fan relay 2 control	B84	73	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	With A/C vehicles only	
Self-shutoff control	B84	63	10 — 13	13 — 14	—	
Malfunction indicator lamp	B84	58	—	—	Light "ON": 1, or less Light "OFF": 10 — 14	
Engine speed output	B84	64	—	0 — 13, or more	Waveform	
Torque control signal	B84	79	5	5	—	
Mass air flow signal for AT	B84	47	0 — 0.3	0.8 — 1.2	—	
Purge control solenoid valve	B84	72	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—	
Atmospheric pressure sensor	B84	26	3.9 — 4.1	2.0 — 2.3	—	
Pressure sources switching solenoid valve	B84	15	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—	
EGR solenoid valve	B84	71	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	Except 2200 cc MT vehicles	
Front oxygen sensor heater signal	B84	38	0 — 1.0	0 — 1.0	—	

Content	Connector No.	Terminal No.	Signal (V)		Note
			Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Rear oxygen sensor heater signal	B84	37	0 — 1.0	0 — 1.0	—
Fuel temperature sensor	B84	25	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (77°F)
Fuel level sensor	B84	27	0.12 — 4.75	0.12 — 4.75	—
Fuel tank pressure sensor	Signal	B84	4	2.3 — 2.7	The value obtained after the fuel filler cap was removed once and recapped.
	Power supply	B84	21	5	
	GND	B84	20	0	
Fuel tank pressure control solenoid valve	B84	10	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Vent control solenoid valve	B84	35	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	2500 cc models
Drain valve	B84	35	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	2200 cc models
AT diagnosis input signal	B84	80	Less than 1 ↔ More than 4	Less than 1 ↔ More than 4	Waveform
GND (sensors)	B84	20	0	0	—
GND (injectors)	B84	69	0	0	—
		95			
GND (ignition system)	B84	94	0	0	—
GND (power supply)	B84	19	0	0	—
		46			
GND (control systems)	B84	17	0	0	—
		18			
GND (oxygen sensor heater)	B84	42	0	0	—

B: ENGINE CONDITION DATA

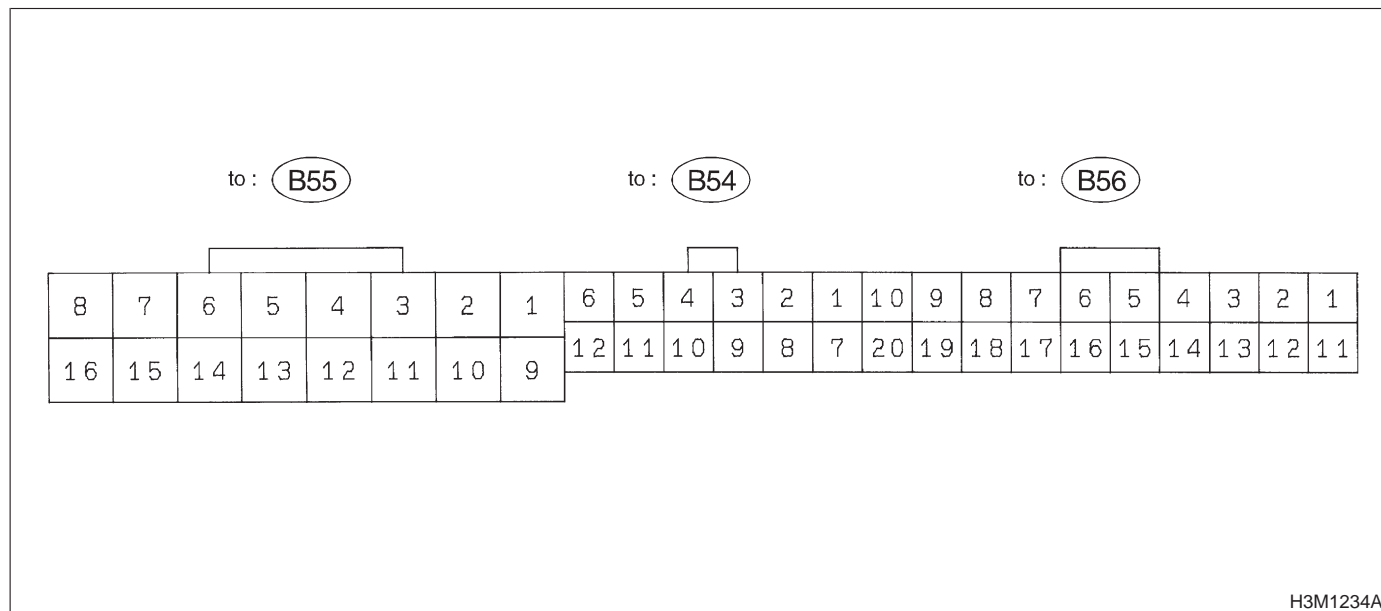
Content	Model	Specified data
Mass air flow	2200 cc	1.7 — 3.3 (g/sec): Idling
		7.1 — 14.2 (g/sec): 2,500 rpm racing
	2500 cc	2.2 — 4.2 (g/sec): Idling
		8.6 — 14.5 (g/sec): 2,500 rpm racing
Engine load	2200 cc	1.6 — 2.9 (%): Idling
		6.4 — 12.8 (%): 2,500 rpm racing
	2500 cc	1.9 — 3.5 (%): Idling
		7.2 — 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.

MEMO:

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



H3M1234A

NOTE:
Check with ignition switch ON.

Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)
Back-up power supply		B56	14	Ignition switch OFF	10 — 16
Ignition power supply		B54	6	Ignition switch ON (with engine OFF)	10 — 16
		B55	1		
Inhibitor switch	"P" range switch	B56	9	Selector lever in "P" range	Less than 1
				Selector lever in any other than "P" range	More than 8
	"N" range switch	B56	8	Selector lever in "N" range	Less than 1
				Selector lever in any other than "N" range	More than 8
	"R" range switch	B56	10	Selector lever in "R" range	Less than 1
				Selector lever in any other than "R" range	More than 6
	"D" range switch	B54	1	Selector lever in "D" range	Less than 1
				Selector lever in any other than "D" range	More than 6
"3" range switch	B54	2	Selector lever in "3" range	Less than 1	
			Selector lever in any other than "3" range	More than 6	
"2" range switch	B54	3	Selector lever in "2" range	Less than 1	
			Selector lever in any other than "2" range	More than 6	
"1" range switch	B54	4	Selector lever in "1" range	Less than 1	
			Selector lever in any other than "1" range	More than 6	
Brake switch	B56	7	Brake pedal depressed	More than 10.5	
			Brake pedal released	Less than 1	
ABS signal	B56	5	ABS switch ON	Less than 1	
			ABS switch OFF	More than 6.5	
AT diagnostics signal	B55	12	Ignition switch ON (with engine OFF)	Less than 1	
			Ignition switch ON (with engine ON)	More than 10	

Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Throttle position sensor	B54	8	Throttle fully closed.	0.3 — 0.7	—
			Throttle fully open.	4.3 — 4.9	
Throttle position sensor power supply	B56	19	Ignition switch ON (with engine OFF)	4.8 — 5.3	—
ATF temperature sensor	B54	10	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	B54	12	Vehicle stopped.	0	450 — 720
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed sensor 2	B56	11	When vehicle is slowly moved at least 2 meters (7 ft).	Less than 1 ← → More than 9	—
Engine speed signal	B54	5	Ignition switch ON (with engine OFF).	More than 10.5	—
			Ignition switch ON (with engine ON).	8 — 11	
Cruise set signal	B56	3	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	B55	16	Ignition switch ON	4 — 6	—
Mass air flow signal	B54	9	Engine idling after warm-up	0.5 — 1.2	—
Shift solenoid 1	B55	14	1st or 4th gear	More than 9	20 — 32
			2nd or 3rd gear	Less than 1	
Shift solenoid 2	B55	13	1st or 2nd gear	More than 9	20 — 32
			3rd or 4th gear	Less than 1	
Shift solenoid 3	B55	15	Selector lever in "N" range (with throttle fully closed).	Less than 1	20 — 32
			Selector lever in "D" range (with throttle fully closed).	More than 9	
Duty solenoid A	B55	8	Throttle fully closed (with engine OFF) after warm-up.	2.0 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 1	
Dropping resistor	B55	7	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	12 — 18
			Throttle fully open (with engine OFF) after warm-up.	Less than 1	
Duty solenoid B	B55	5	When lock up occurs.	More than 8.5	9 — 17
			When lock up is released.	Less than 0.5	
Duty solenoid C	B55	3	Fuse on FWD switch	More than 8.5	9 — 17
			Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	
Sensor ground line 1	B54	7	—	0	Less than 1
Sensor ground line 2	B56	20	—	0	Less than 1
System ground line	B56	1	—	0	Less than 1

Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Power system ground line	B55	10	—	0	Less than 1
FWD switch	B56	2	Fuse removed.	6 — 9.1	—
			Fuse installed.	Less than 1	
Data link signal	B56	12	—	—	—
		13	—	—	
AT diagnosis signal	B55	11	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 "8. 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.

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 [T700].>

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

YES : Go to step **6A4**.

NO : Repair the related parts.

6A4 : PERFORM THE DIAGNOSIS.

- 1) Inspect using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

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 "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

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) Brake band adjustment <Ref. to 3-2 [W2B0].>
- 6) Stall test <Ref. to 3-2 [W8A0].>
- 7) Line pressure test <Ref. to 3-2 [W10A0].>
- 8) Transfer clutch pressure test <Ref. to 3-2 [W11A0].>
- 9) Time lag test <Ref. to 3-2 [W9A0].>
- 10) Road test <Ref. to 3-2 [W7A0].>
- 11) Shift characteristics <Ref. to 3-2 [W7A0].>

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	<input type="checkbox"/> Fine <input type="checkbox"/> Cloudy <input type="checkbox"/> Rainy <input type="checkbox"/> Snowy <input type="checkbox"/> Various/Others:		
Outdoor temperature	°F (°C)		
	<input type="checkbox"/> Hot <input type="checkbox"/> Warm <input type="checkbox"/> Cool <input type="checkbox"/> Cold		
Place	<input type="checkbox"/> Highway <input type="checkbox"/> Suburbs <input type="checkbox"/> Inner city <input type="checkbox"/> Uphill <input type="checkbox"/> Downhill <input type="checkbox"/> Rough road <input type="checkbox"/> Others:		
	<input type="checkbox"/> Cold <input type="checkbox"/> Warming-up <input type="checkbox"/> After warming-up <input type="checkbox"/> Any temperature <input type="checkbox"/> Others:		
Engine speed		rpm	
Vehicle speed		MPH	
Driving conditions	<input type="checkbox"/> Not affected <input type="checkbox"/> At starting <input type="checkbox"/> While idling <input type="checkbox"/> At racing <input type="checkbox"/> While accelerating <input type="checkbox"/> While cruising <input type="checkbox"/> While decelerating <input type="checkbox"/> While turning (RH/LH)		
Headlight	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF	Rear defogger	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF
Blower	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF	Radio	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF
A/C compressor	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF	CD/Cassette	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF
Cooling fan	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF	Car phone	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF
Front wiper	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF	CB	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF
Rear wiper	<input type="checkbox"/> ON/ <input type="checkbox"/> OFF		

2. CHECK LIST NO. 2

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

NOTE:

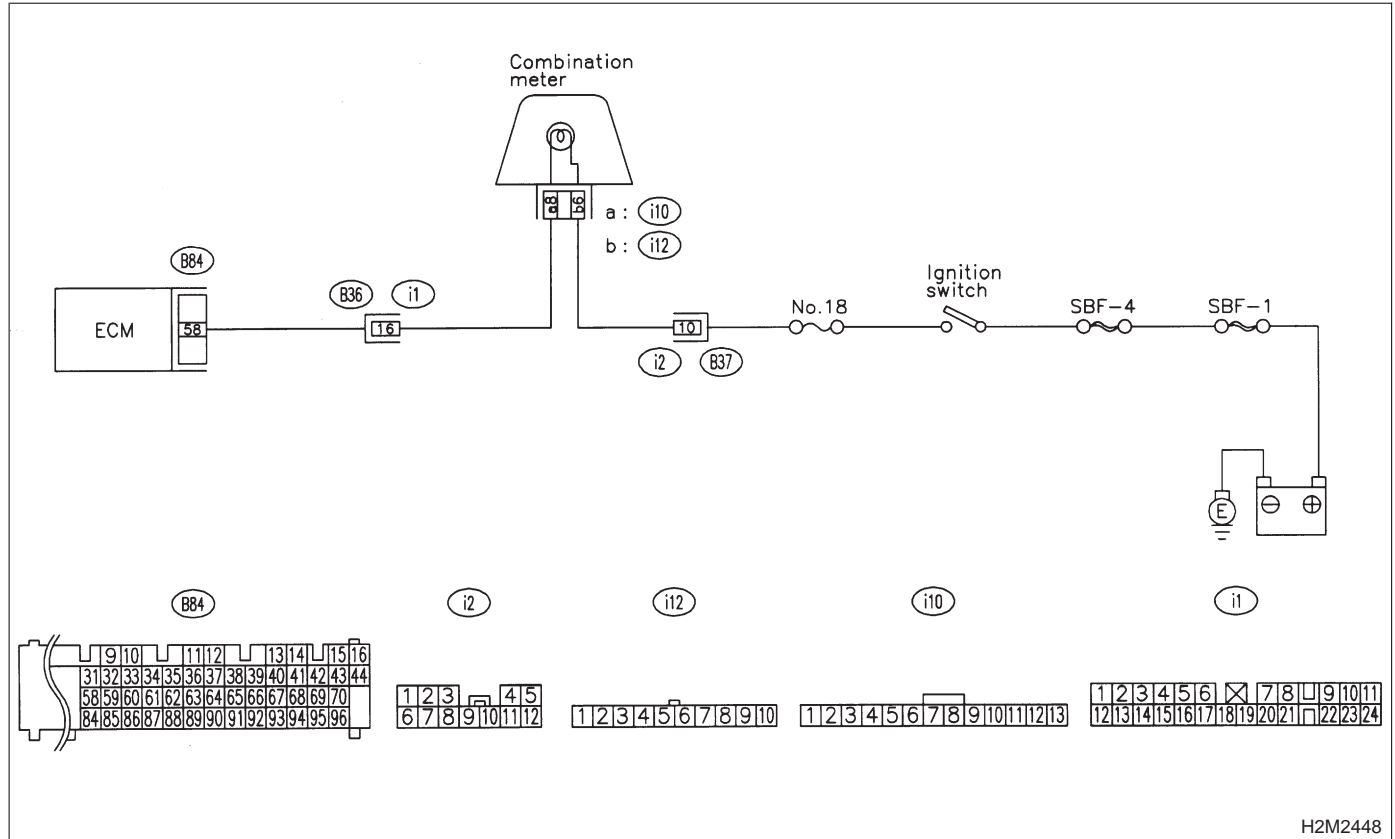
Use copies of this page for interviewing customers.

a) Other warning lights or indicators turn on. <input type="checkbox"/> Yes/ <input type="checkbox"/> No
<input type="checkbox"/> Low fuel warning light <input type="checkbox"/> Charge indicator light <input type="checkbox"/> AT diagnostics indicator light <input type="checkbox"/> ABS warning light <input type="checkbox"/> Engine oil pressure warning light
b) Fuel level
<ul style="list-style-type: none"> ● Lack of gasoline: <input type="checkbox"/> Yes/<input type="checkbox"/> No ● Indicator position of fuel gauge:
c) Intentional connecting or disconnecting of harness connectors or spark plug cords: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
● What:
d) Intentional connecting or disconnecting of hoses: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
● What:
e) Installing of parts other than genuine parts: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
● What:
● Where:
f) Occurrence of noise: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
● From where:
● What kind:
g) Occurrence of smell: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
● From where:
● What kind:
h) Intrusion of water into engine compartment or passenger compartment: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
i) Troubles occurred
<input type="checkbox"/> Engine does not start. <input type="checkbox"/> Engine stalls during idling. <input type="checkbox"/> Engine stalls while driving. <input type="checkbox"/> Engine speed decreases. <input type="checkbox"/> Engine speed does not decrease. <input type="checkbox"/> Rough idling <input type="checkbox"/> Poor acceleration <input type="checkbox"/> Back fire <input type="checkbox"/> After fire <input type="checkbox"/> No shift <input type="checkbox"/> Excessive shift shock

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

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

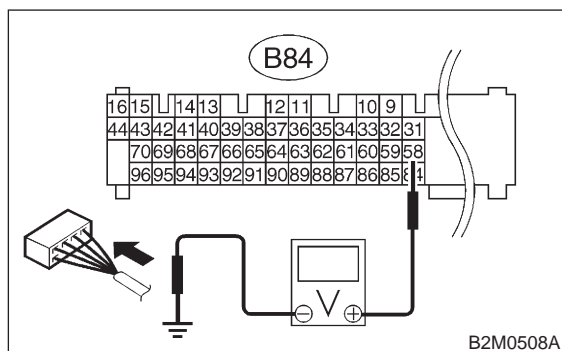
- **DIAGNOSIS:**
 - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.
- **TROUBLE SYMPTOM:**
 - When ignition switch is turned ON (engine OFF), MIL does not come on.
- **WIRING DIAGRAM:**



7A1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 58 (+) — Chassis ground (-):



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

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.

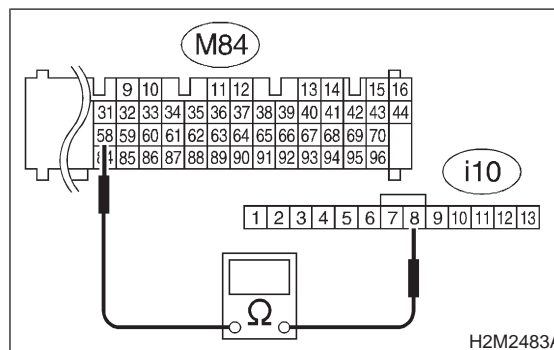
7A3 : CHECK ECM CONNECTOR.

- CHECK** : *Is ECM connector correctly connected?*
- YES** : Replace ECM.
- 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
(B84) No. 58 — (i10) No. 8:



- 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].>

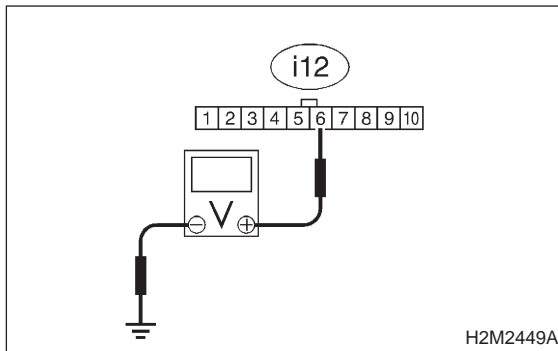
- CHECK** : *Is there poor contact in combination meter connector?*
- YES** : Repair poor contact in combination meter connector.
- NO** : Go to step 7A6.

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

(i10) No. 6 (+) — Chassis ground (-):



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

NOTE:

- Broken down ignition relay.
- Blown out fuse (No. 18).
- If replaced fuse (No. 18) blows 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 battery terminal
- Poor contact in coupling connector (i2 and B37)
- Poor contact in ignition switch connector

7A7 : CHECK POOR CONTACT.

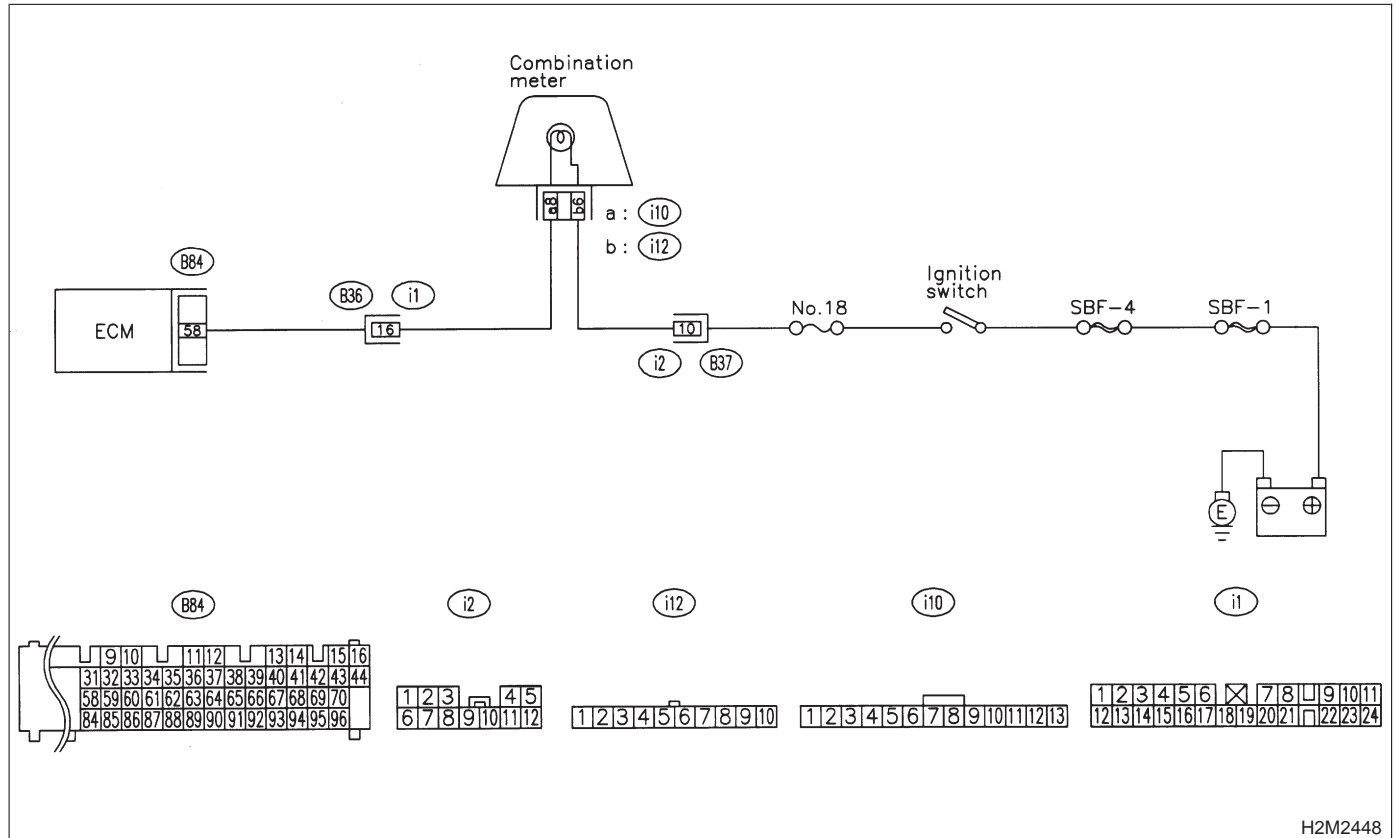
Check poor contact in combination meter connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : **Is there poor contact in combination meter connector?**
- YES** : Repair poor contact in combination meter connector.
- NO** : Replace bulb or combination meter.

MEMO:

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

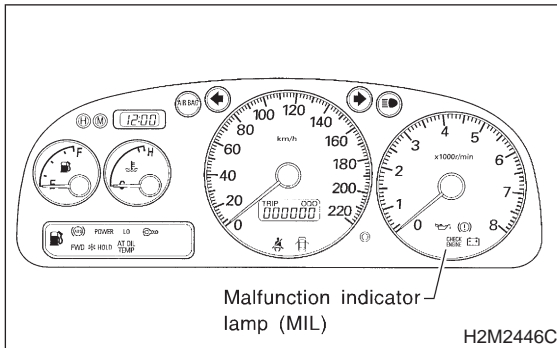
- **DIAGNOSIS:**
 - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is shorted.
- **TROUBLE SYMPTOM:**
 - Although MIL comes on when engine runs, trouble code is not shown on Subaru select monitor or OBD-II general scan tool display.
- **WIRING DIAGRAM:**



H2M2448

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

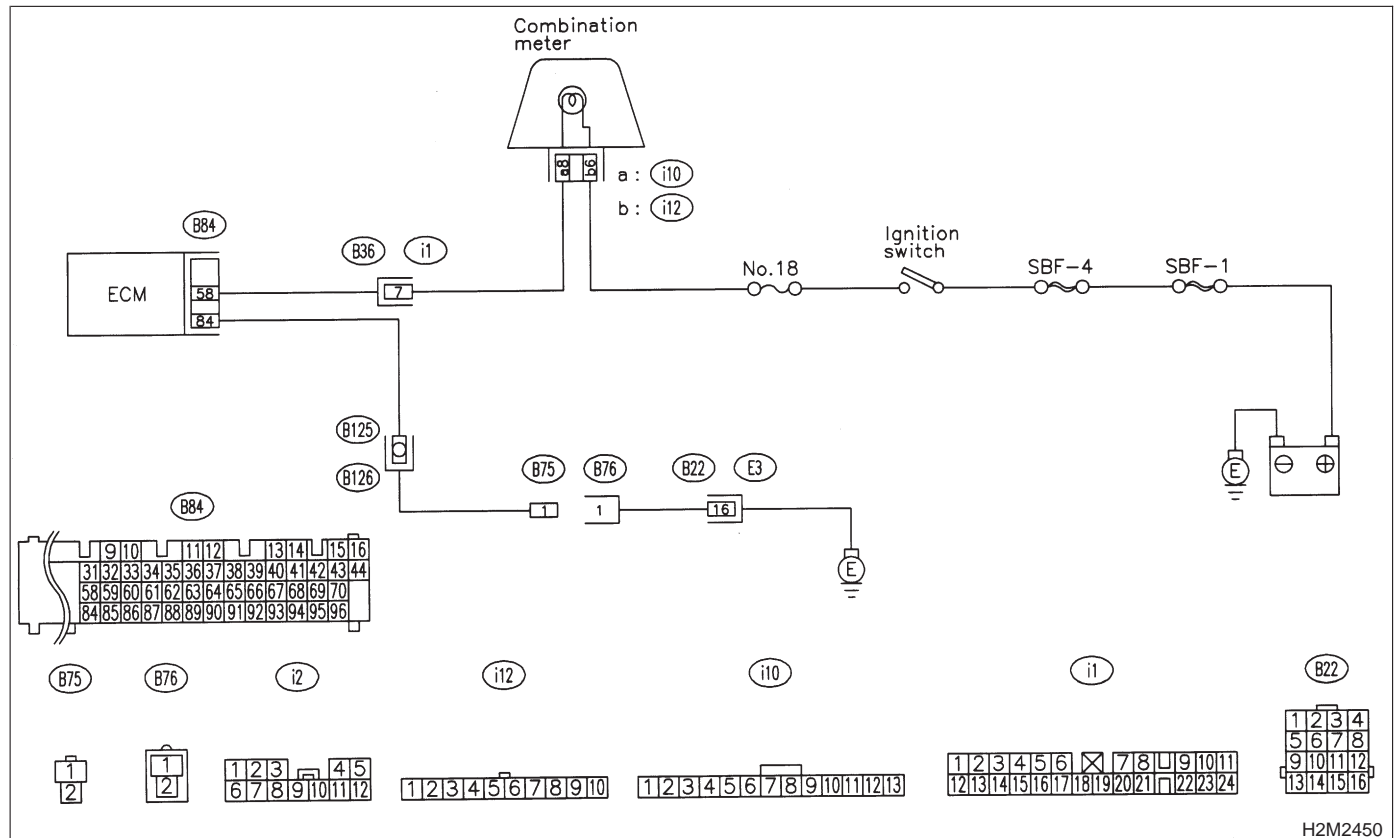
- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from ECM.
- 3) Turn ignition switch to ON.



- CHECK** : **Does the MIL come on?**
- YES** : Repair short circuit in harness between combination meter and ECM connector.
- NO** : Replace ECM.

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

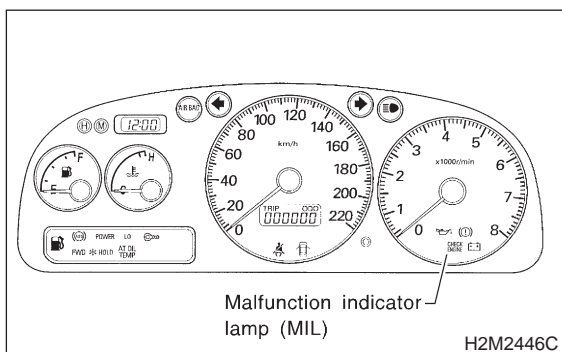
- **DIAGNOSIS:**
 - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.
 - Test mode connector circuit is in open.
- **TROUBLE SYMPTOM:**
 - When inspection mode, MIL does not blink at a cycle of 3 Hz.
- **WIRING DIAGRAM:**



H2M2450

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

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

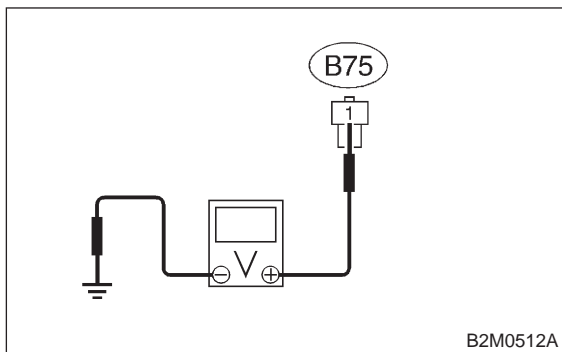


- CHECK** : *Does the MIL come on?*
- YES** : Go to step **7C2**.
- NO** : Repair the MIL circuit. <Ref. to 2-7 [T7A0].>

7C2 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between test mode connector and chassis ground.

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

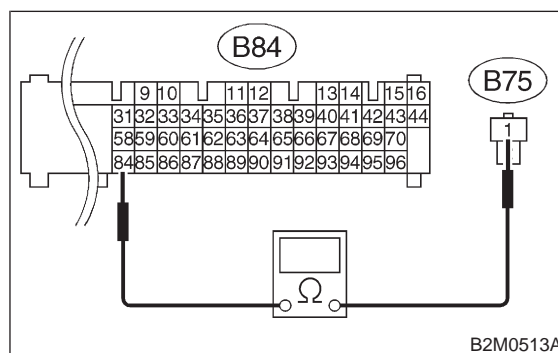


- CHECK** : *Is voltage less than 1 V?*
- YES** : Go to step **7C3**.
- NO** : Go to step **7C5**.

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
(B84) No. 84 — (B75) No. 1:



- CHECK** : *Is resistance less than 1 Ω?*
- YES** : Go to step **7C4**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and test mode connector
- Poor contact in coupling connector (B125)

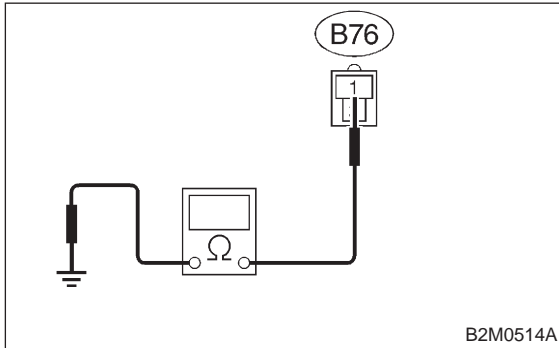
7C4 : CHECK POOR CONTACT.

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.

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:**

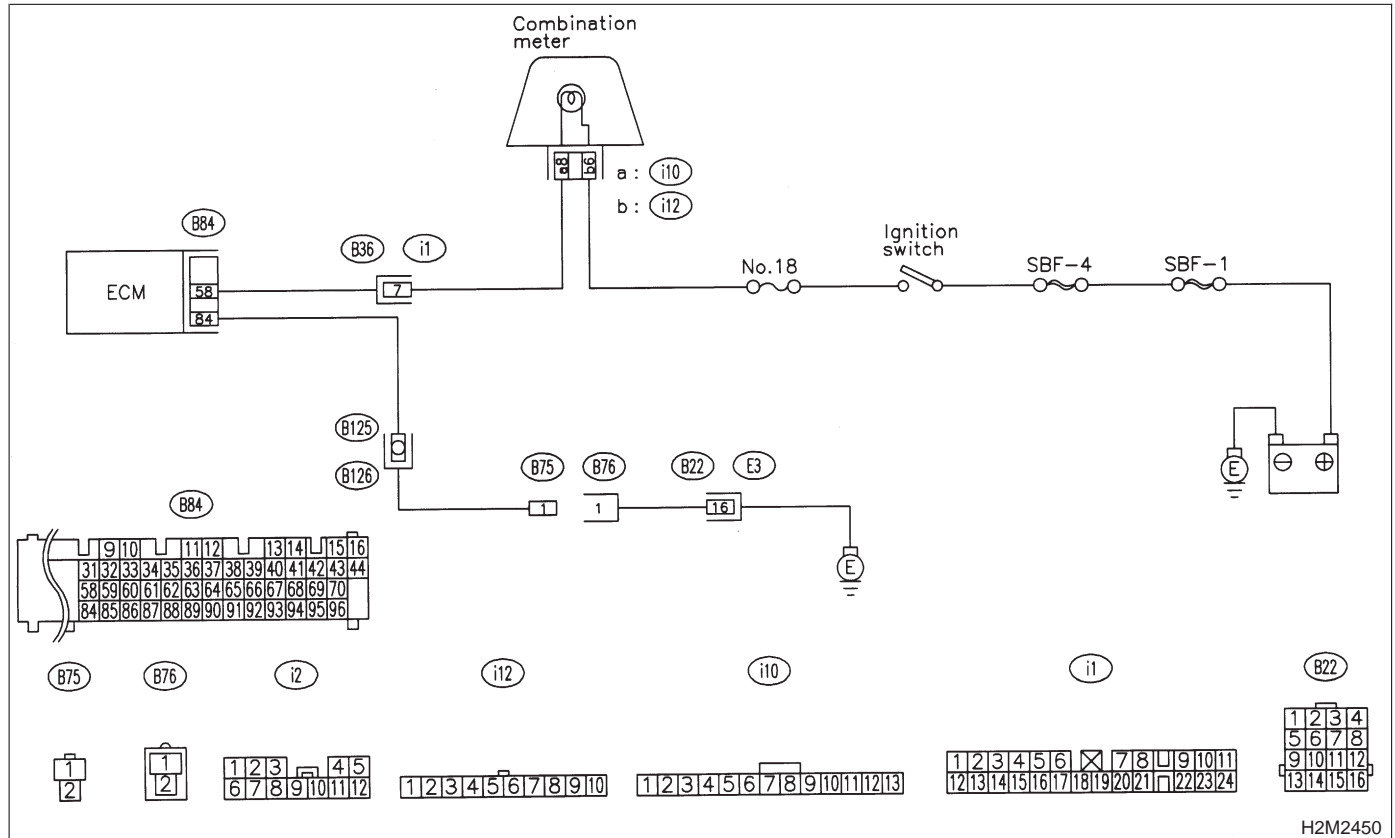
In this case, repair the following:

- Open circuit in harness between test mode and 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:**



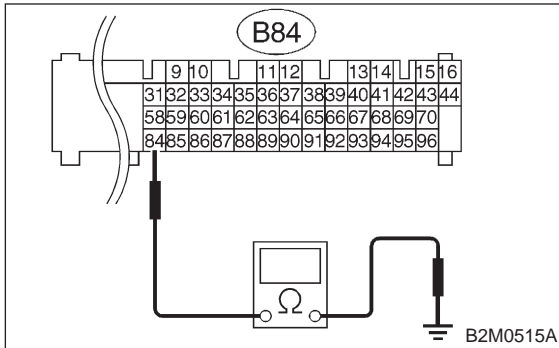
H2M2450

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

(B84) No. 84 — Chassis ground:



- CHECK** : *Is resistance less than 5 Ω?*
- YES** : Repair short circuit in harness between ECM and test mode connector.
- NO** : Replace ECM.

MEMO:

8. Diagnostics for Engine Starting Failure

A: BASIC DIAGNOSTICS CHART

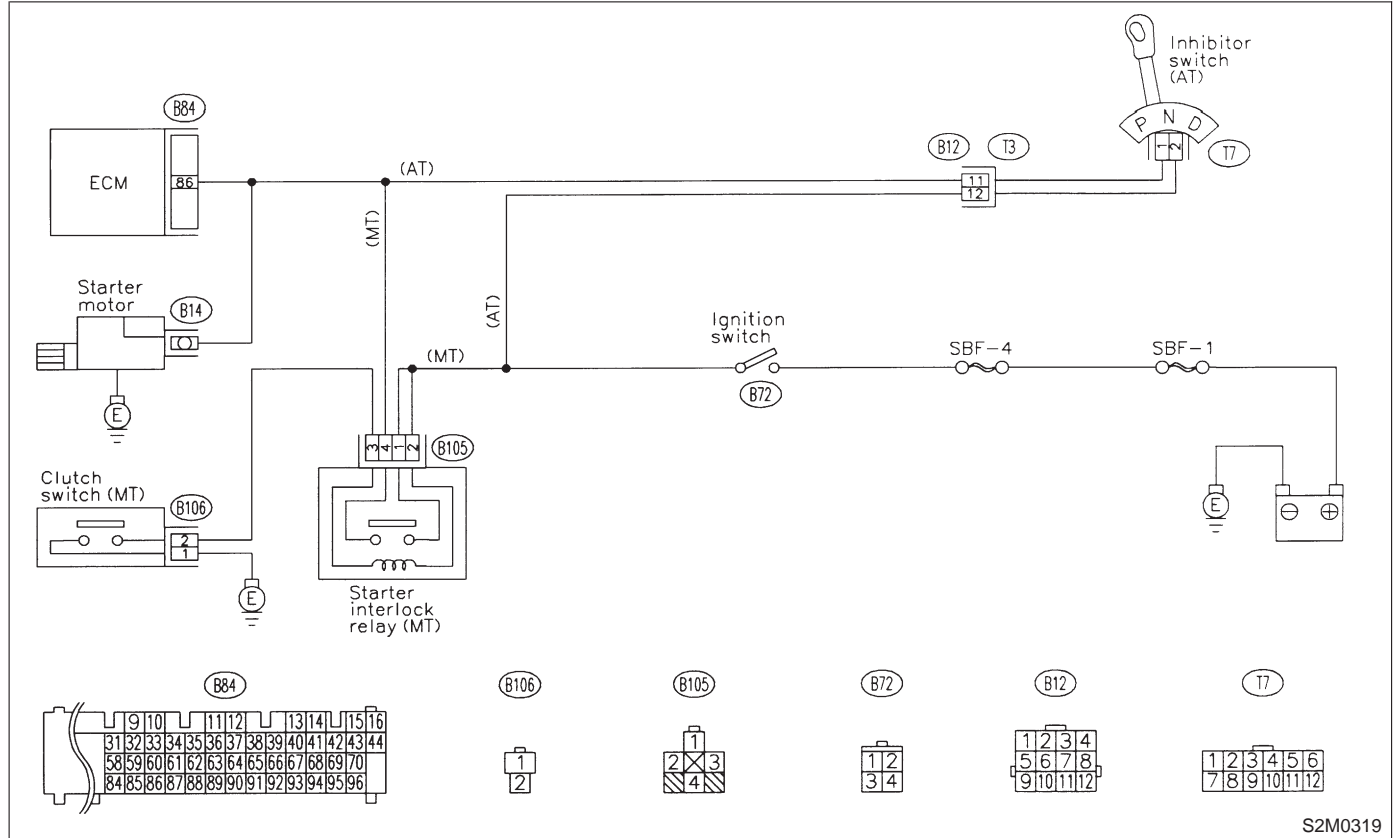
1. Inspection of starter motor circuit. <Ref. to 2-7 [T8B0].>	↓
2. Inspection of control module power supply and ground line. <Ref. to 2-7 [T8C0].>	↓
3. Inspection of ignition control system. <Ref. to 2-7 [T8D0].>	↓
4. Inspection of fuel pump circuit. <Ref. to 2-7 [T8E0].>	↓
5. Inspection of fuel injector circuit. <Ref. to 2-7 [T8F0].>	↓
6. Inspection of crankshaft position sensor circuit. <Ref. to 2-7 [T8G0].>	↓
7. Inspection of camshaft position sensor circuit. <Ref. to 2-7 [T8H0].>	↓
8. Inspection using Subaru select monitor or OBD-II general scan tool <Ref. to 2-7 [T1000].> 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 and INSPECTION MODES.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

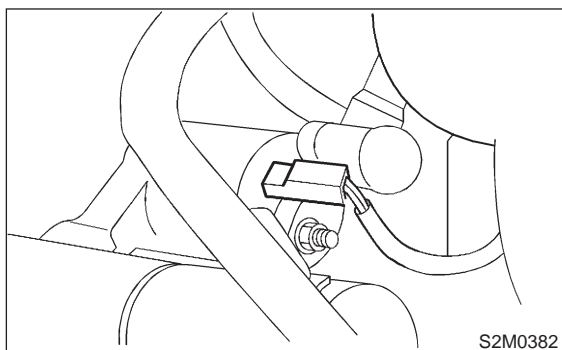
● **WIRING DIAGRAM:**



S2M0319

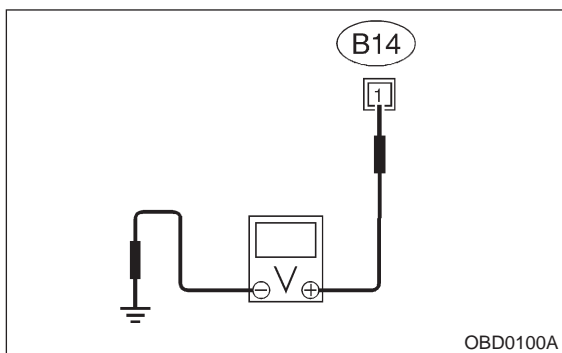
8B1 : CHECK INPUT SIGNAL FOR STARTER MOTOR.

- 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 (-):



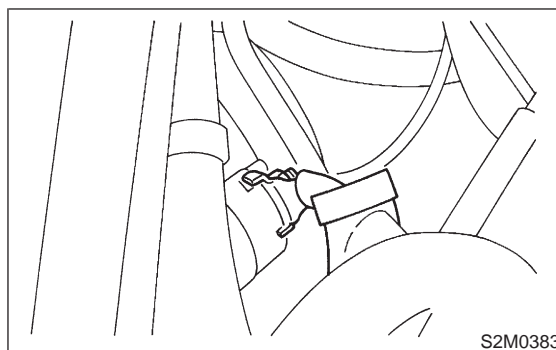
NOTE:

- 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 FUSE (SBF NO. 1).

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

- CHECK** : **Is resistance less than 1 Ω?**
YES : Go to step **8B4**.
NO : Replace SBF No. 1.

8B4 : CHECK FUSE (SBF NO. 4).

- 1) Remove SBF No. 4 from main fuse box.
- 2) Measure resistance of fuse.

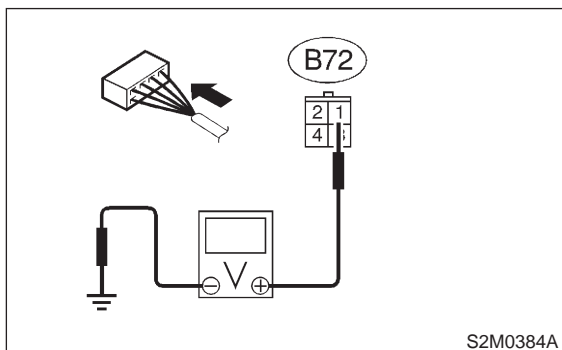
- CHECK** : **Is resistance less than 1 Ω?**
YES : Go to step **8B5**.
NO : Replace SBF No. 4.

8B5 : CHECK HARNESS BETWEEN BATTERY AND IGNITION SWITCH CONNECTOR.

- 1) Install SBF No. 1 and 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 **8B6**.
- NO** : Repair open circuit in harness between ignition switch and SBF No. 4 connector.

8B6 : CHECK TRANSMISSION TYPE.

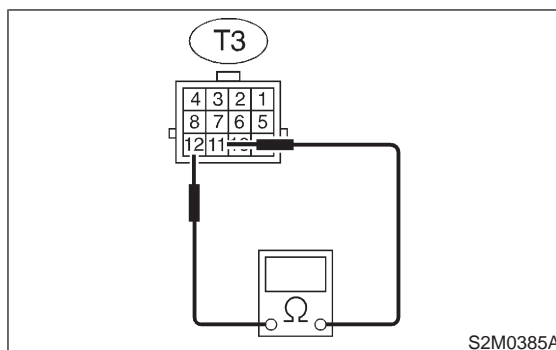
- CHECK** : **Is transmission type AT?**
- YES** : Go to step **8B7**.
- NO** : Go to step **8B11**.

8B7 : CHECK INHIBITOR SWITCH CIRCUIT.

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

Connector & terminal

(T3) No. 11 — No. 12:



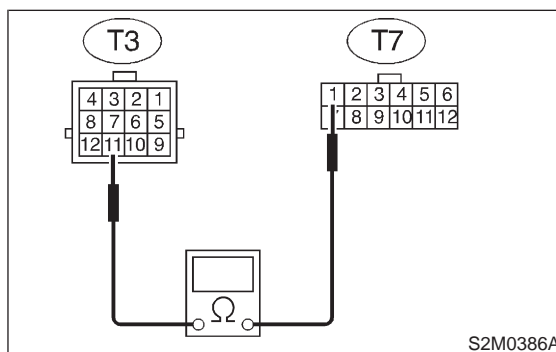
- CHECK** : **Is the resistance less than 1 Ω?**
- YES** : Repair open circuit in harness between starter motor and ignition switch connector.
- NO** : Go to step **8B8**.

8B8 : 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:



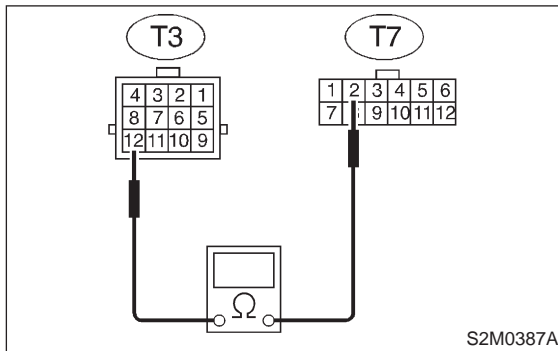
- CHECK** : **Is the resistance less than 1 Ω?**
- YES** : Go to step **8B9**.
- NO** : Repair open circuit in harness between transmission harness and inhibitor switch connector.

8B9 : 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 **8B10**.
- NO** : Repair open circuit in harness between transmission harness and inhibitor switch connector.

8B10 : CHECK POOR CONTACT.

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

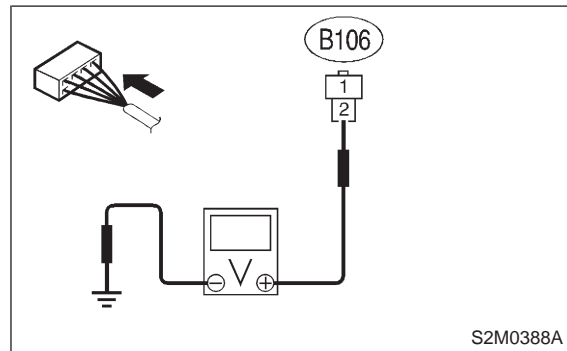
- CHECK** : *Is there poor contact in inhibitor switch connector?*
- YES** : Repair poor contact in inhibitor switch connector.
- NO** : Replace inhibitor switch.

8B11 : 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 (-):



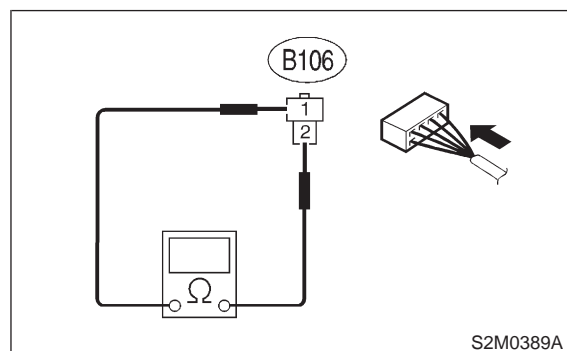
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Replace starter interlock relay.
- NO** : Go to step **8B12**.

8B12 : 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:



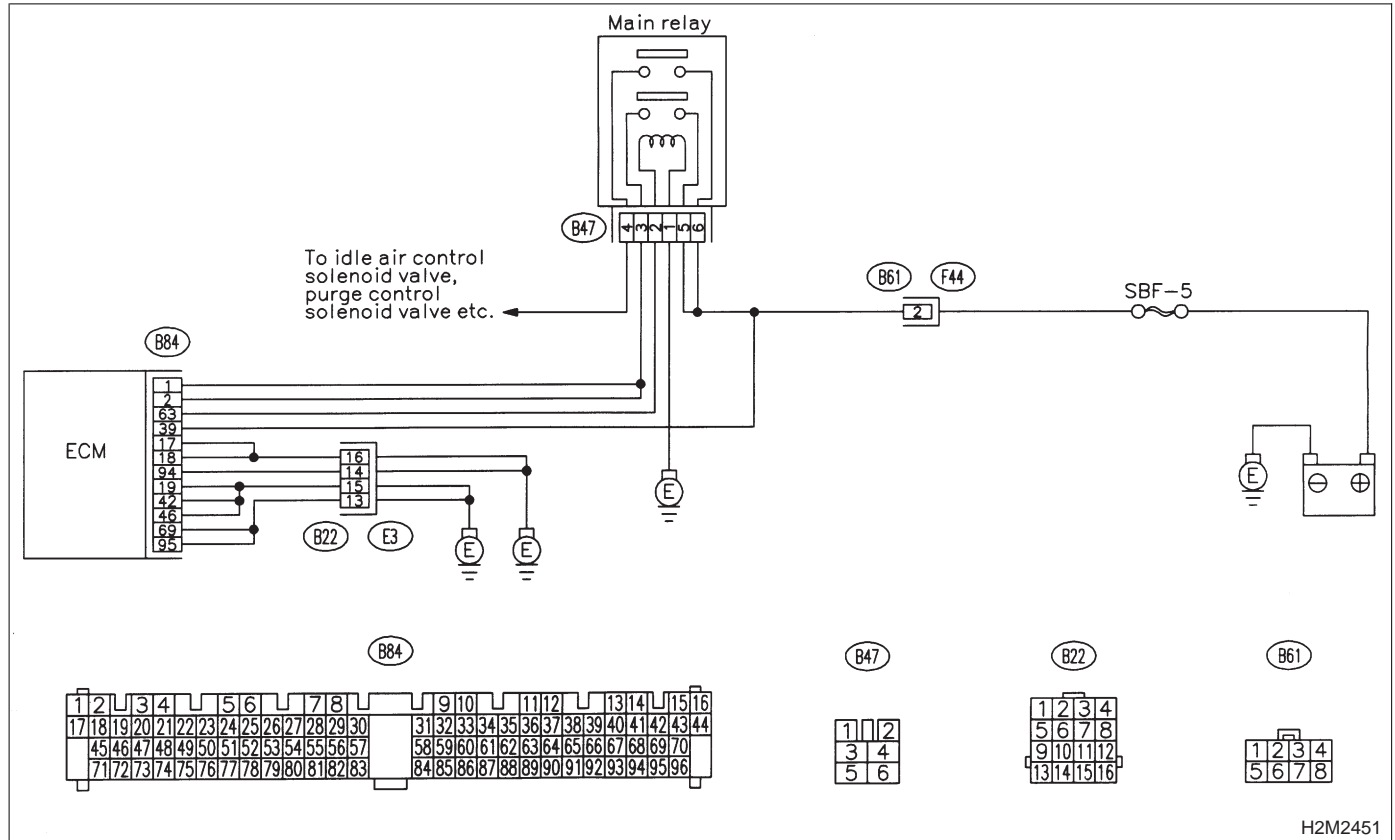
- CHECK** : *Is the resistance less than 10 Ω?*
- YES** : Repair open circuit in harness between starter motor and ignition switch connector.
- NO** : Replace clutch switch.

C: CONTROL MODULE POWER SUPPLY AND GROUND LINE

CAUTION:

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

● **WIRING DIAGRAM:**

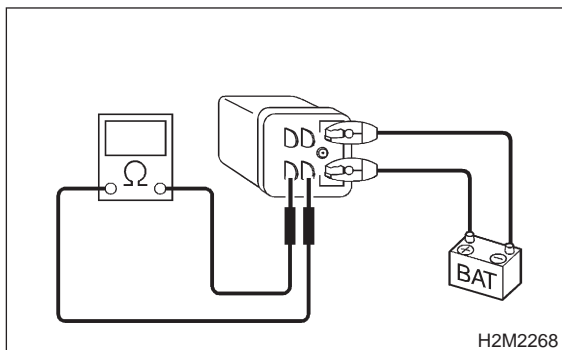


8C1 : CHECK MAIN RELAY.

- 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:



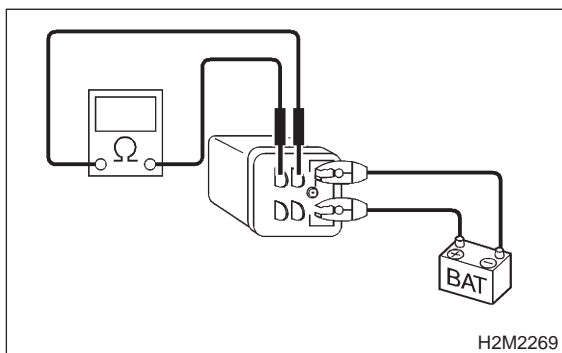
- CHECK** : Is the resistance less than 10 Ω?
- YES** : Go to step 8C2.
- NO** : Replace main relay.

8C2 : CHECK MAIN RELAY.

Measure resistance between main relay terminals.

Terminals

No. 4 — No. 6:



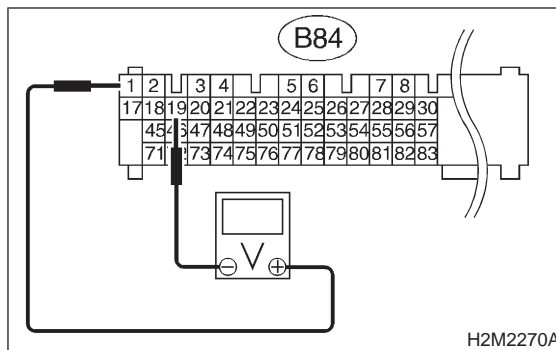
- CHECK** : Is the resistance less than 10 Ω?
- YES** : Go to step 8C3.
- NO** : Replace main relay.

8C3 : CHECK POWER SUPPLY CIRCUIT OF ECM.

- 1) Install main relay.
- 2) Disconnect connectors from ECM.
- 3) Turn ignition switch to ON.
- 4) Measure power supply voltage between ECM connector terminals.

Connector & terminal

(B84) No. 1 (+) — No. 19 (-):



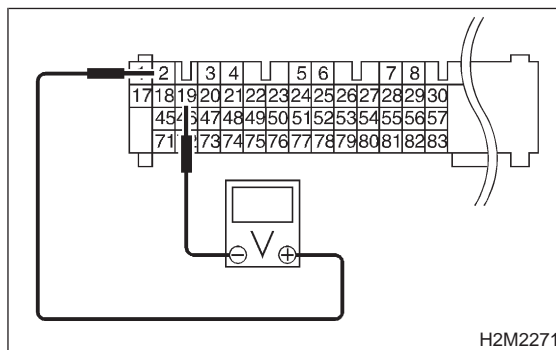
- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 8C4.
- NO** : Repair open or ground short circuit in harness of power supply circuit.

8C4 : CHECK POWER SUPPLY CIRCUIT OF ECM.

Measure power supply voltage between ECM connector terminals.

Connector & terminal

(B84) No. 2 (+) — No. 19 (-):



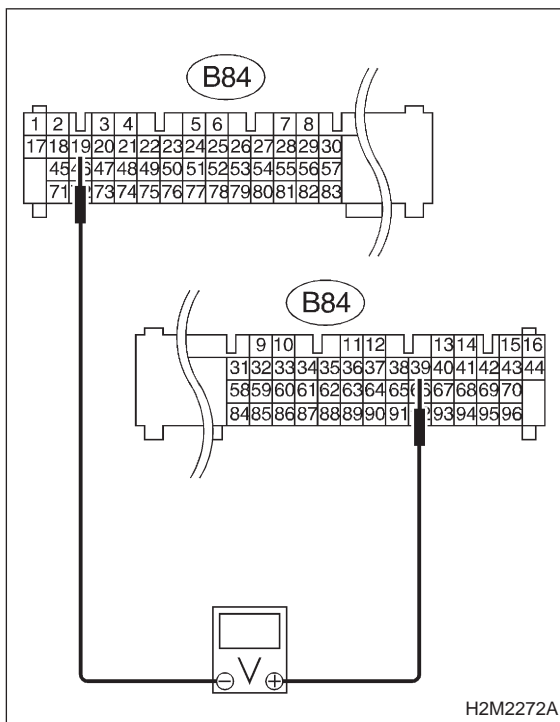
- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 8C5.
- NO** : Repair open or ground short circuit in harness of power supply circuit.

8C5 : CHECK POWER SUPPLY CIRCUIT OF ECM.

Measure power supply voltage between ECM connector terminals.

Connector & terminal

(B84) No. 39 (+) — No. 19 (-):



CHECK : *Is the voltage more than 10 V?*

YES : Go to step 8C6.

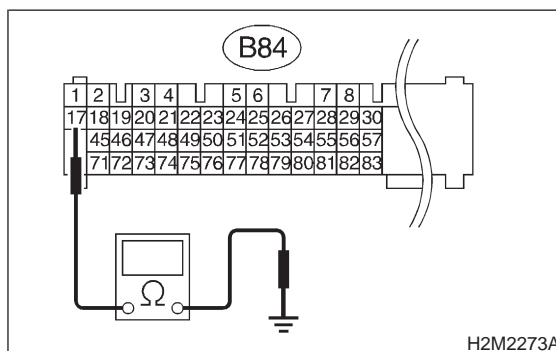
NO : Repair open or ground short circuit in harness of power supply circuit.

8C6 : CHECK GROUND CIRCUIT OF ECM.

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

Connector & terminal

(B84) No. 17 — Chassis ground:



CHECK : *Is the resistance less than 5 Ω?*

YES : Go to step 8C7.

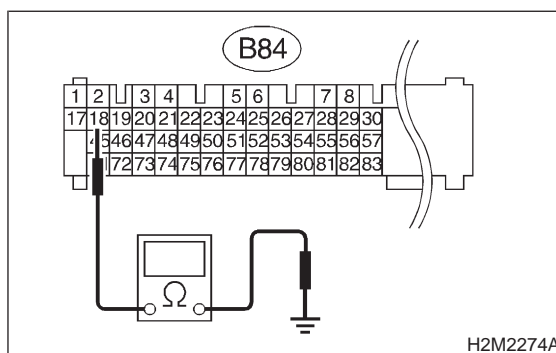
NO : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C7 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 18 — Chassis ground:



CHECK : *Is the resistance less than 5 Ω?*

YES : Go to step 8C8.

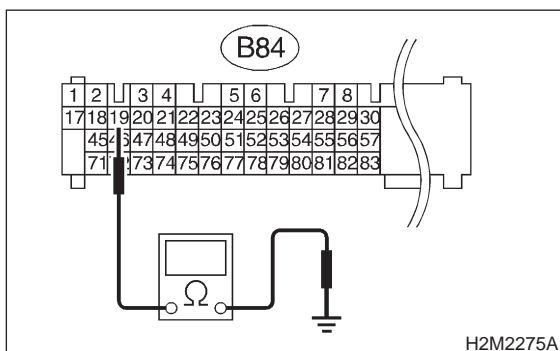
NO : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C8 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Measure resistance of harness between ECM and chassis ground.

(B84) No. 19 — Chassis ground:



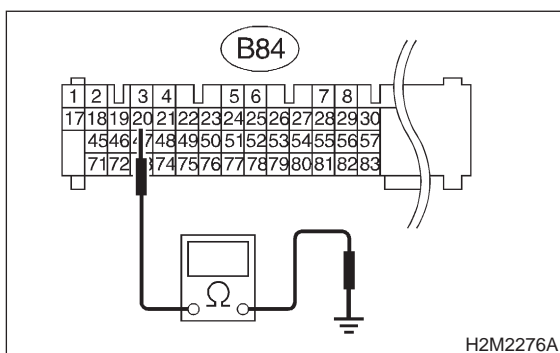
- CHECK** : Is the resistance less than 5 Ω?
- YES** : Go to step 8C9.
- NO** : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C9 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 20 — Chassis ground:



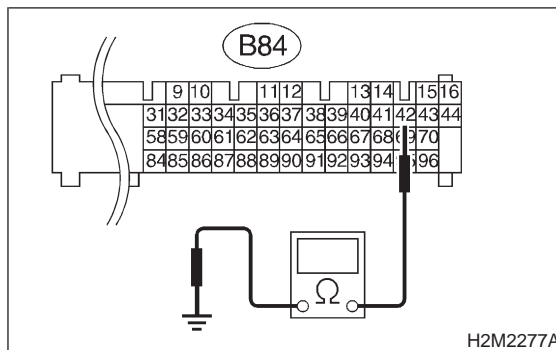
- CHECK** : Is the resistance less than 5 Ω?
- YES** : Go to step 8C10.
- NO** : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C10 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 42 — Chassis ground:



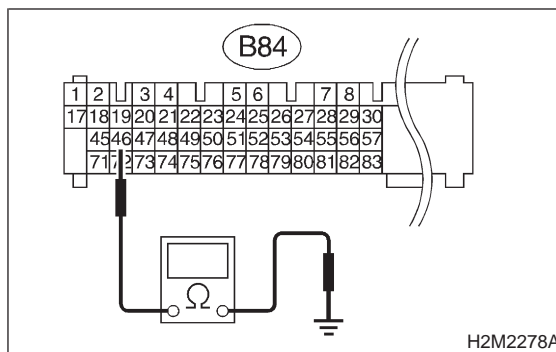
- CHECK** : Is the resistance less than 5 Ω?
- YES** : Go to step 8C11.
- NO** : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C11 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 46 — Chassis ground:

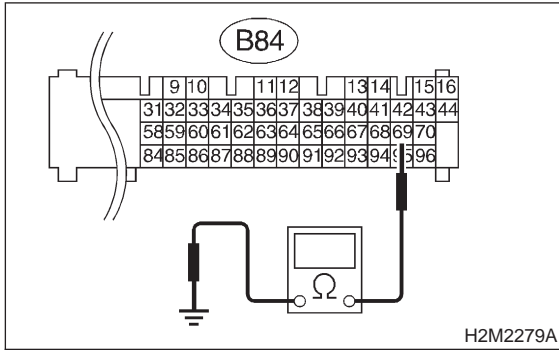


- CHECK** : Is the resistance less than 5 Ω?
- YES** : Go to step 8C12.
- NO** : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C12 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 69 — Chassis ground:

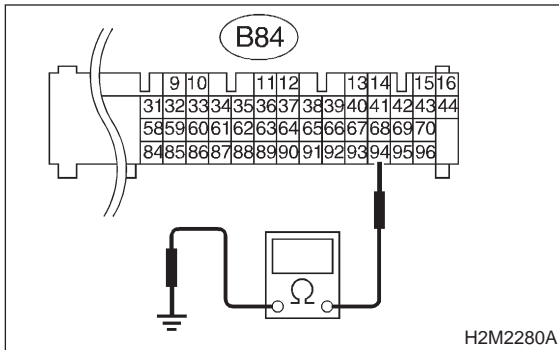


- CHECK** : Is the resistance less than 5 Ω?
- YES** : Go to step 8C13.
- NO** : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C13 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 94 — Chassis ground:

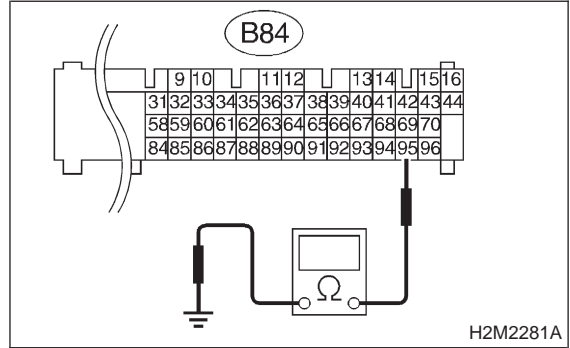


- CHECK** : Is the resistance less than 5 Ω?
- YES** : Go to step 8C14.
- NO** : Repair open circuit in harness between ECM connector and chassis grounding terminal.

8C14 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 95 — 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 chassis grounding terminal.

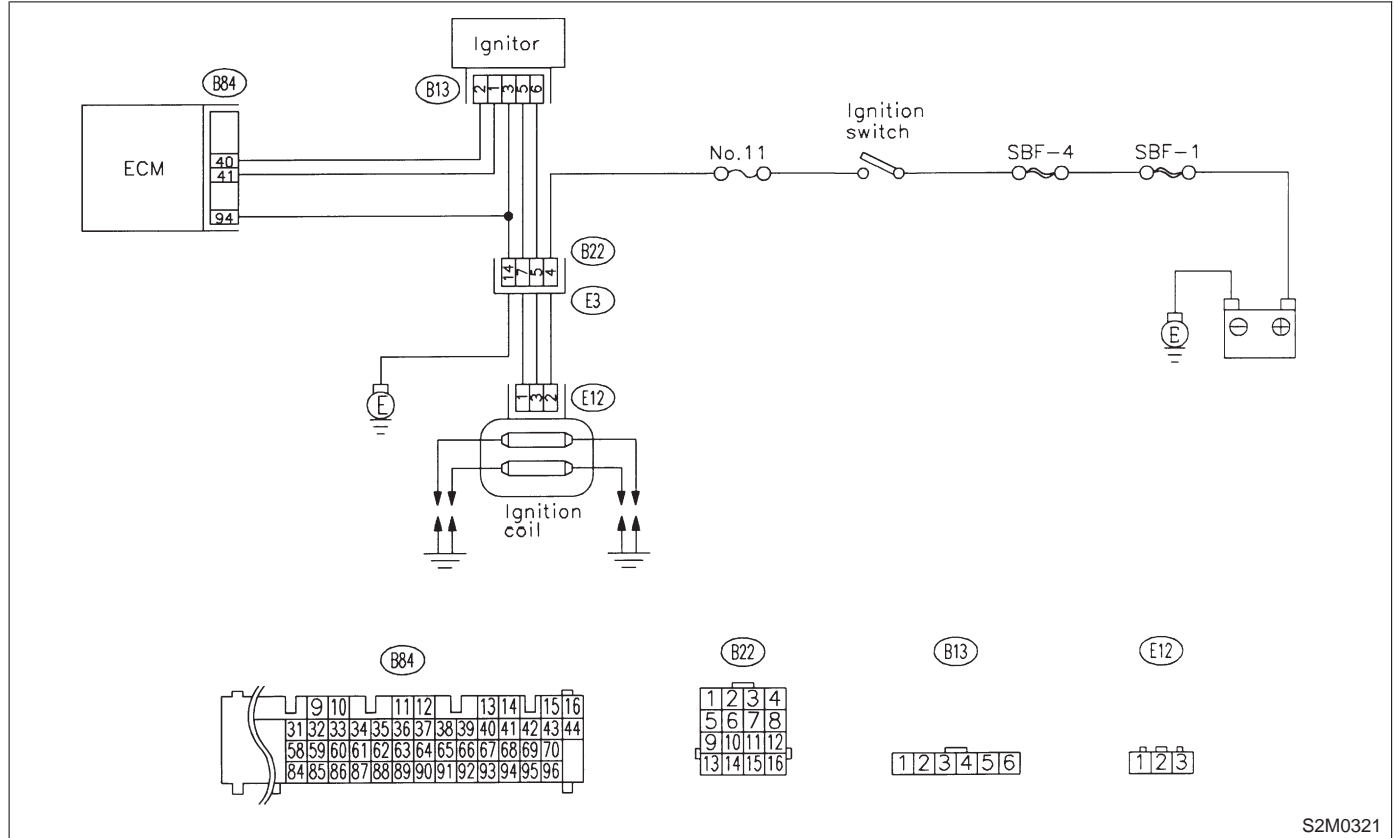
MEMO:

D: IGNITION CONTROL SYSTEM

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0321

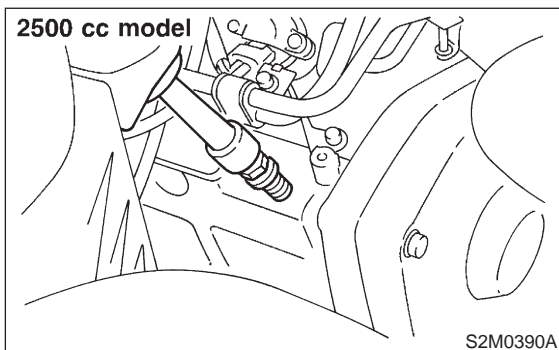
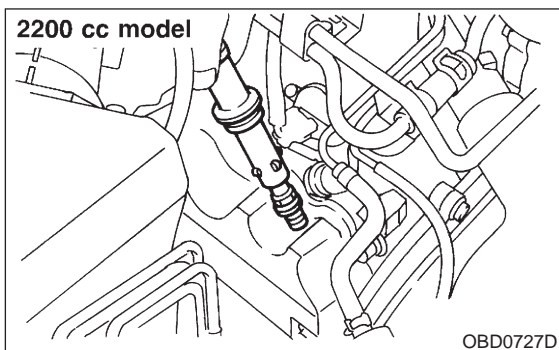
8D1 : CHECK IGNITION SYSTEM FOR SPARKS.

- 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.



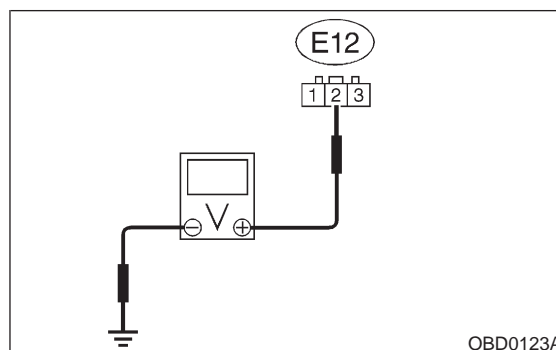
- CHECK** : **Does spark occur at each cylinder?**
- YES** : Check fuel pump system. <Ref. to 2-7 [T8E0].>
- NO** : Go to step 8D2.

8D2 : CHECK POWER SUPPLY CIRCUIT FOR IGNITION COIL.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from ignition coil.
- 3) Turn ignition switch to ON.
- 4) Measure power supply voltage between ignition coil 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:

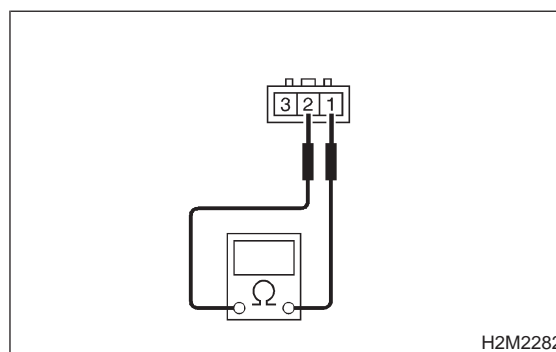
- Open circuit in harness between ignition coil and ignition switch connector
- Poor contact in coupling connector (B22)

8D3 : CHECK IGNITION COIL.

Measure resistance between ignition coil terminals to check primary coil.

Terminals

No. 2 — No. 1:



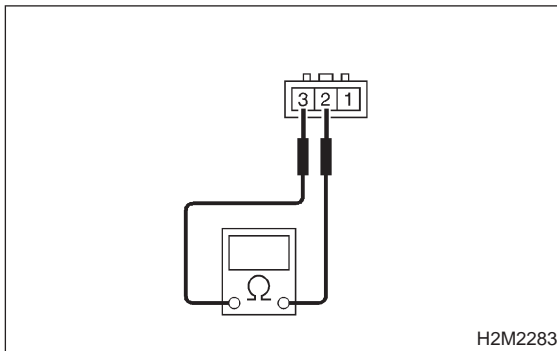
- CHECK** : **Is the resistance between 0.4 and 1.0 Ω?**
- YES** : Go to step 8D4.
- NO** : Replace ignition coil.

8D4 : CHECK IGNITION COIL.

Measure resistance between ignition coil terminals to check primary coil.

Terminals

No. 2 — No. 3:



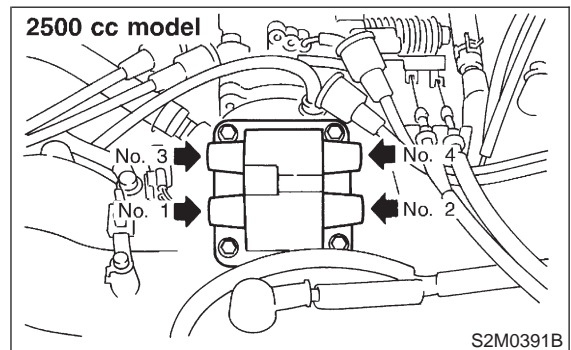
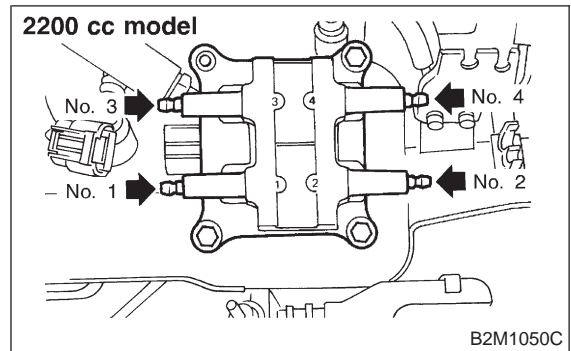
- CHECK** : Is the resistance between 0.4 and 1.0 Ω ?
- YES** : Go to step 8D5.
- NO** : Replace ignition coil.

8D5 : CHECK IGNITION COIL.

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

Terminals

No. 1 — No. 2:



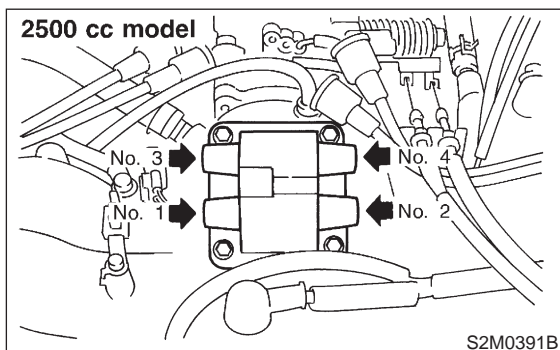
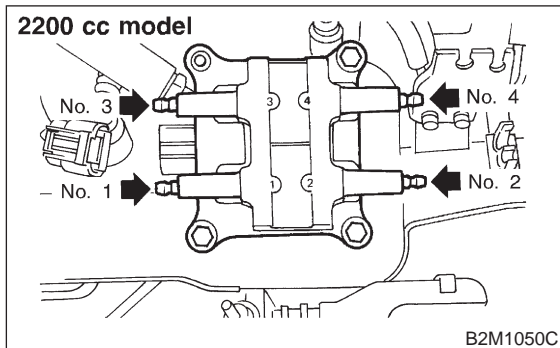
- CHECK** : Is the resistance between 10 and 15 Ω ?
- YES** : Go to step 8D6.
- NO** : Replace ignition coil.

8D6 : CHECK IGNITION COIL.

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 Ω?

YES : Go to step 8D7.

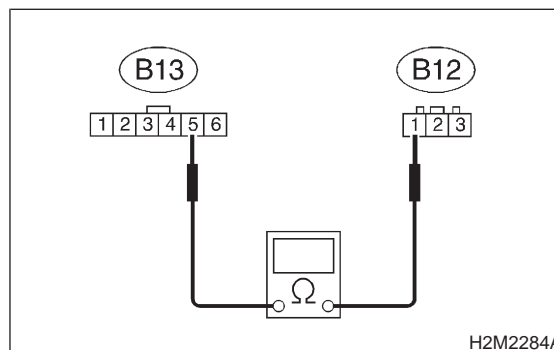
NO : Replace ignition coil.

8D7 : CHECK HARNESS BETWEEN IGNITOR AND IGNITION COIL CONNECTOR.

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

Connector & terminal

(B13) No. 5 — (E12) No. 1:



CHECK : Is the resistance less than 1 Ω?

YES : Go to step 8D8.

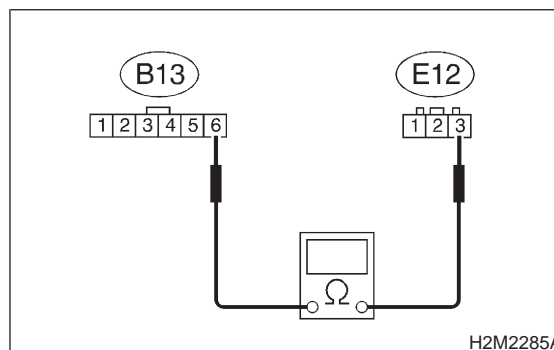
NO : Go to step 8D9.

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

Measure resistance of harness between ignition coil and ignitor connector.

Connector & terminal

(B13) No. 6 — (E12) No. 3:



CHECK : Is the resistance less than 1 Ω?

YES : Go to step 8D10.

NO : Go to step 8D9.

8D9 : CHECK POOR CONTACT.

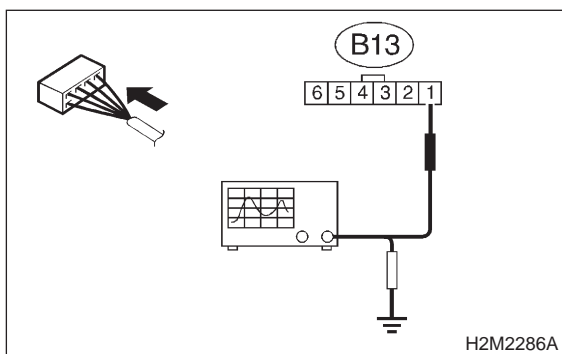
Check poor contact in coupling connector (B22).
<Ref. to FOREWORD [T3C1].>

- CHECK** : *Is there poor contact in coupling connector (B22)?*
- YES** : Repair poor contact in coupling connector (B22).
- NO** : Repair open circuit in harness between ignition coil and ignitor connector.

8D10 : CHECK INPUT SIGNAL FOR IGNITOR.

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

Connector & terminal:
(B13) No. 1 (+) — Engine ground (-):

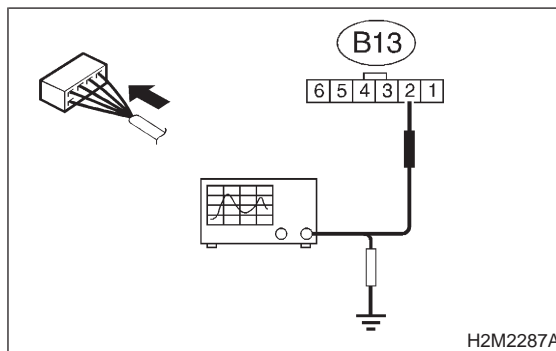


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step 8D11.
- NO** : Replace ignitor.

8D11 : CHECK INPUT SIGNAL FOR IGNITOR.

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

Connector & terminal:
(B13) No. 2 (+) — Engine ground (-):

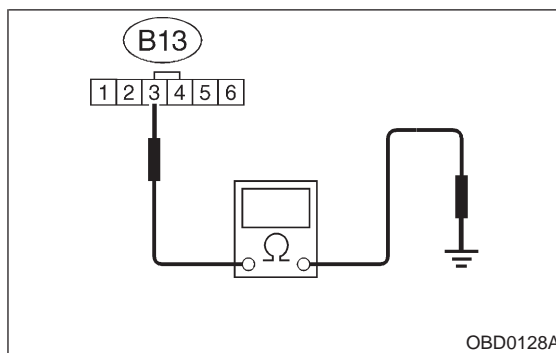


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step 8D12.
- NO** : Replace ignitor.

8D12 : CHECK HARNESS OF IGNITOR GROUND CIRCUIT.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between ignitor and engine ground.

Connector & terminal
(B13) No. 3 — Engine ground:



- CHECK** : *Is the resistance less than 5 Ω?*
- YES** : Go to step 8D13.
- NO** : Repair harness and connector.

NOTE:

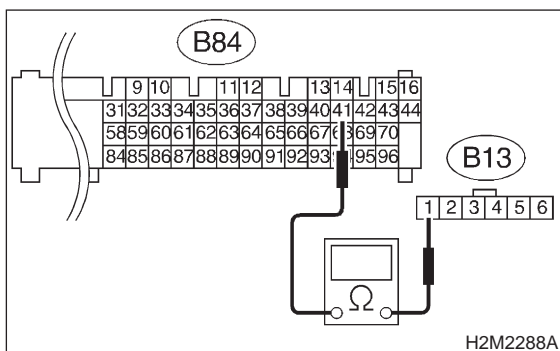
In this case, repair the following:

- Open circuit in harness between ignitor connector and engine grounding terminal
- Poor contact in coupling connector (B22)

8D13 : CHECK HARNESS BETWEEN ECM AND IGNITOR CONNECTOR.

- 1) Disconnect connector from ECM.
- 2) Measure resistance of harness between ECM and ignitor connector.

Connector & terminal
(B84) No. 41 — (B13) No. 1:

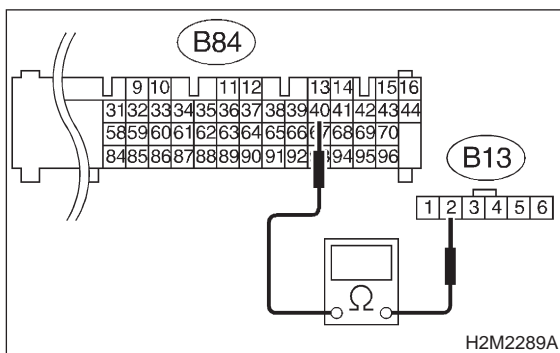


- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 8D14.
- NO** : Repair open circuit in harness between ECM and ignitor connector.

8D14 : CHECK HARNESS BETWEEN ECM AND IGNITOR CONNECTOR.

Measure resistance of harness between ECM and ignitor connector.

Connector & terminal
(B84) No. 40 — (B13) No. 2:

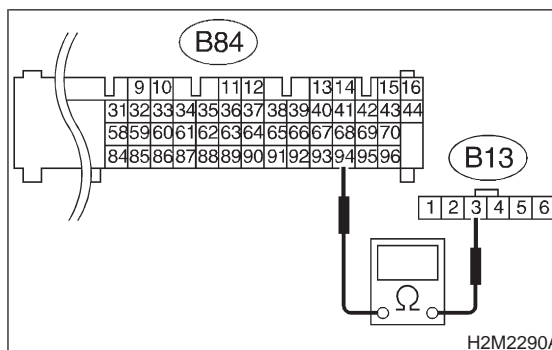


- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 8D15.
- NO** : Repair open circuit in harness between ECM and ignitor connector.

8D15 : CHECK HARNESS BETWEEN ECM AND IGNITOR CONNECTOR.

Measure resistance of harness between ECM and ignitor connector.

Connector & terminal
(B84) No. 94 — (B13) No. 3:

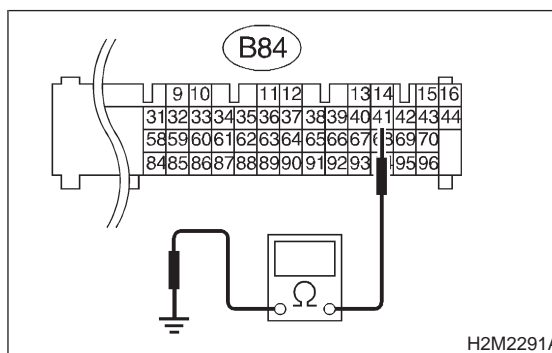


- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 8D16.
- NO** : Repair open circuit in harness between ECM and ignitor connector.

8D16 : CHECK HARNESS BETWEEN ECM AND IGNITOR CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 41 — Chassis ground:



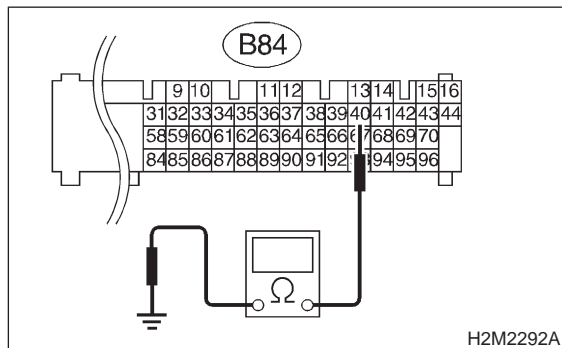
- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 8D17.
- NO** : Repair ground short circuit in harness between ECM and ignitor connector.

8D17 : CHECK HARNESS BETWEEN ECM AND IGNITOR CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 40 — Chassis ground:



- CHECK** : *Is the resistance more than 1 MΩ?*
- YES** : Go to step **8D18**.
- NO** : Repair ground short circuit in harness between ECM and ignitor connector.

8D18 : 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].>

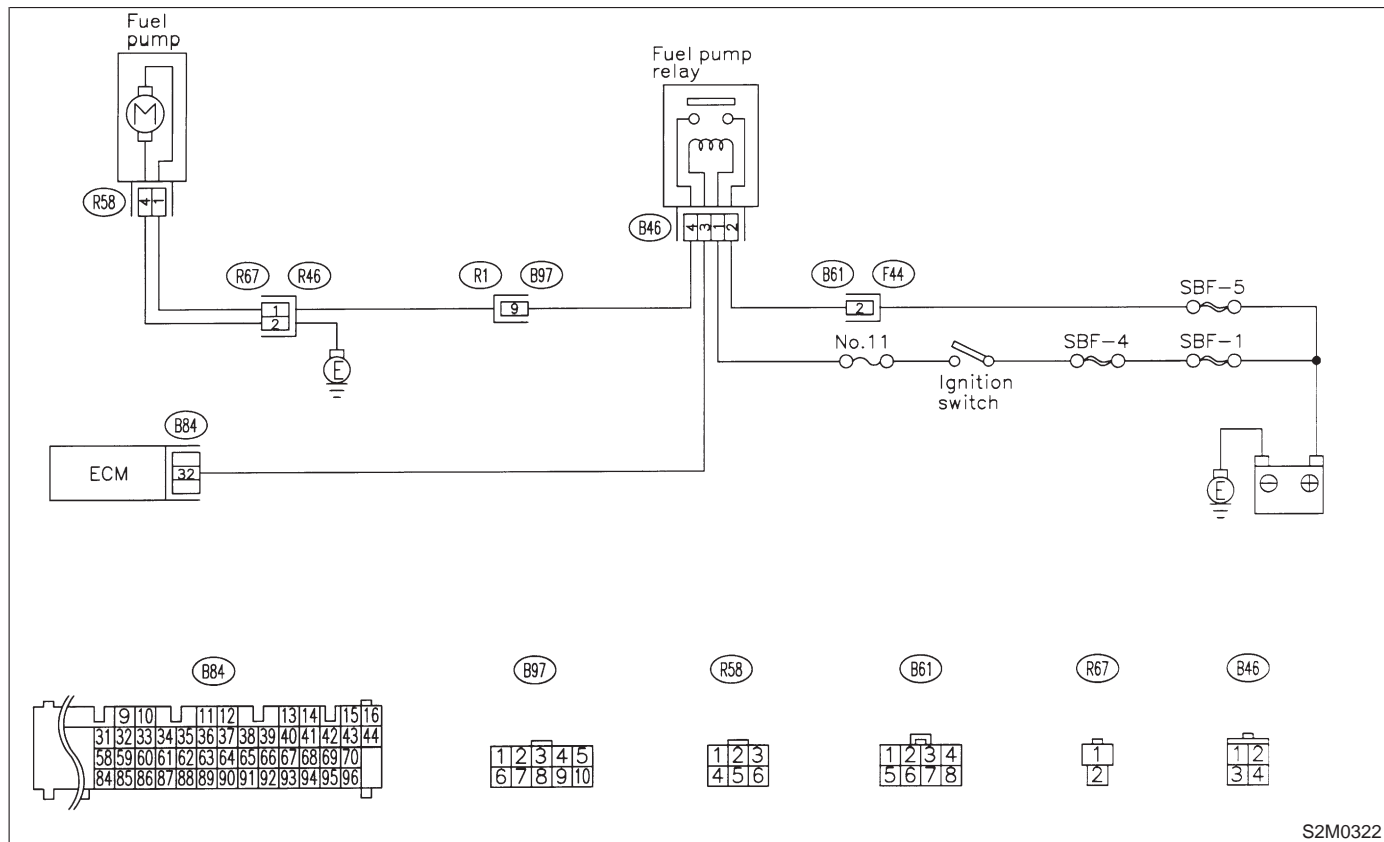
MEMO:

E: FUEL PUMP CIRCUIT

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0322

8E1 : CHECK OPERATING SOUND OF FUEL PUMP.

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

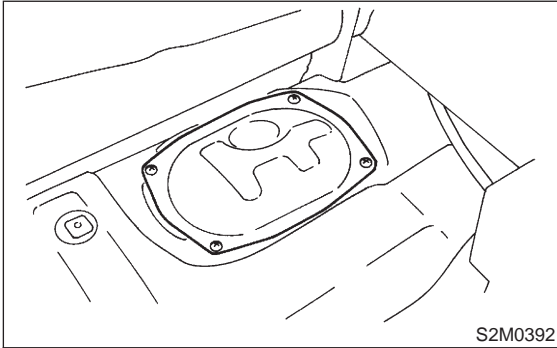
NOTE:

Fuel pump operation check can also be executed using Subaru Select Monitor. For the procedure, refer to the "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.

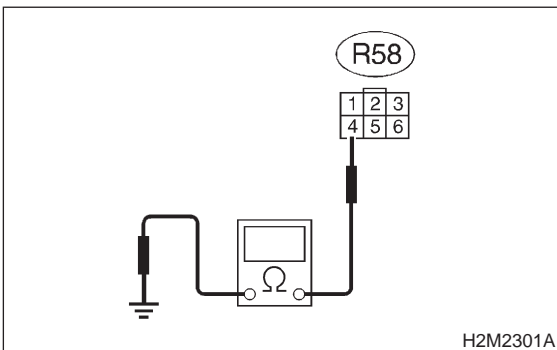
- 1) Turn ignition switch to OFF.
- 2) Remove fuel pump access hole lid located on the luggage compartment floor.



- 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:

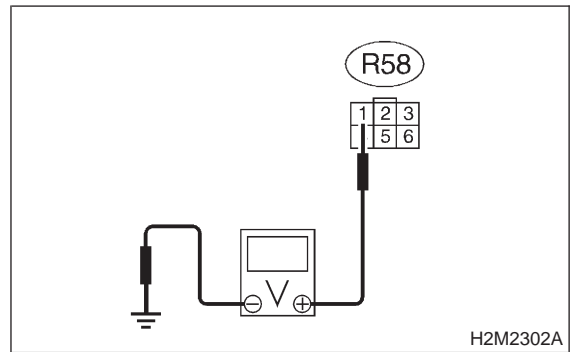
- Open circuit in harness between fuel pump connector and chassis grounding terminal
- Poor contact in coupling connector (R15)

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 (-):

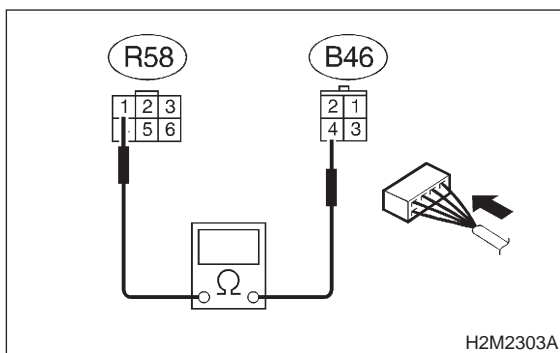


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Replace fuel pump.
- NO** : Go to step **8E4**.

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

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

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:

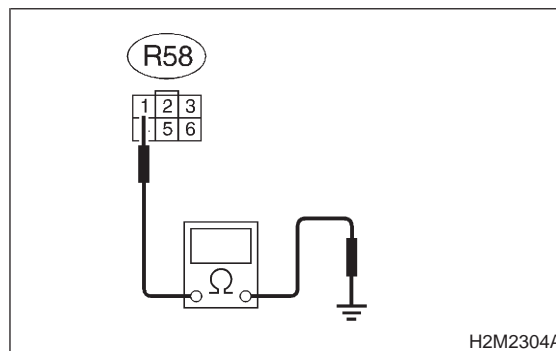
In this case, repair the following:

- Open circuit in harness between fuel pump and fuel pump relay connector
- 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:

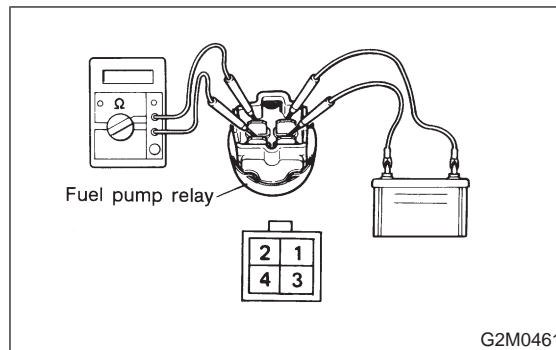


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 8E6.
- NO** : Repair ground short circuit in harness between fuel pump and fuel pump relay connector.

8E6 : CHECK FUEL PUMP RELAY.

- 1) Disconnect connector from fuel pump relay.
- 2) Remove fuel pump relay from 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:



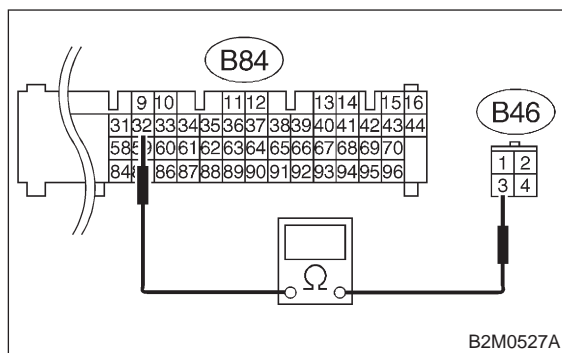
- CHECK** : Is the resistance less than 10 Ω?
- YES** : Go to step 8E7.
- NO** : Replace fuel pump relay.

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

(B84) No. 32 — (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

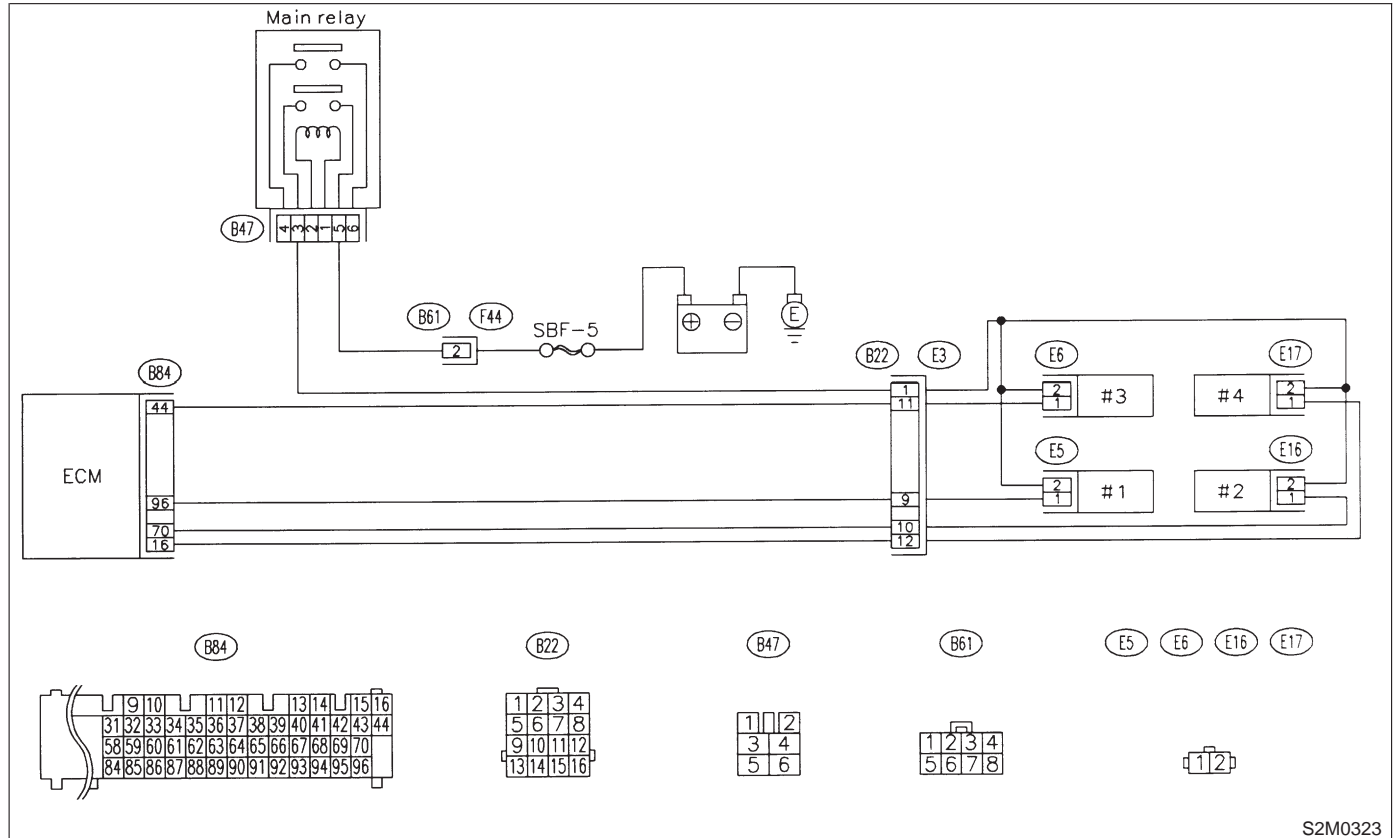
CAUTION:

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

NOTE:

Check fuel injector circuit. <Ref. to 2-7 [T10AA0].> or <Ref. to 2-7 [T10AE0].>

● **WIRING DIAGRAM:**



S2M0323

G: CRANKSHAFT POSITION SENSOR CIRCUIT

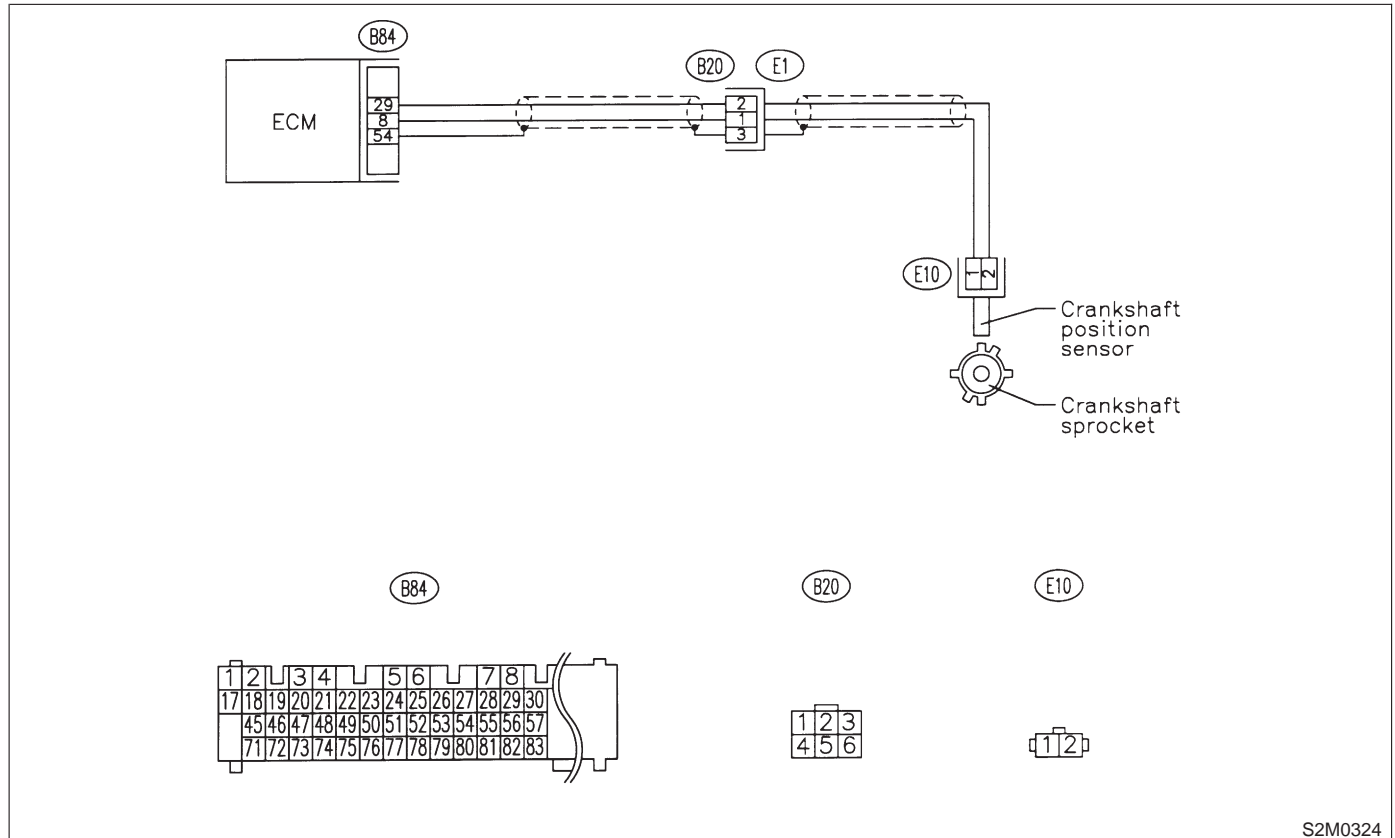
CAUTION:

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

NOTE:

Check crankshaft position sensor circuit. <Ref. to 2-7 [T10AK0].>

● **WIRING DIAGRAM:**



S2M0324

H: CAMSHAFT POSITION SENSOR CIRCUIT

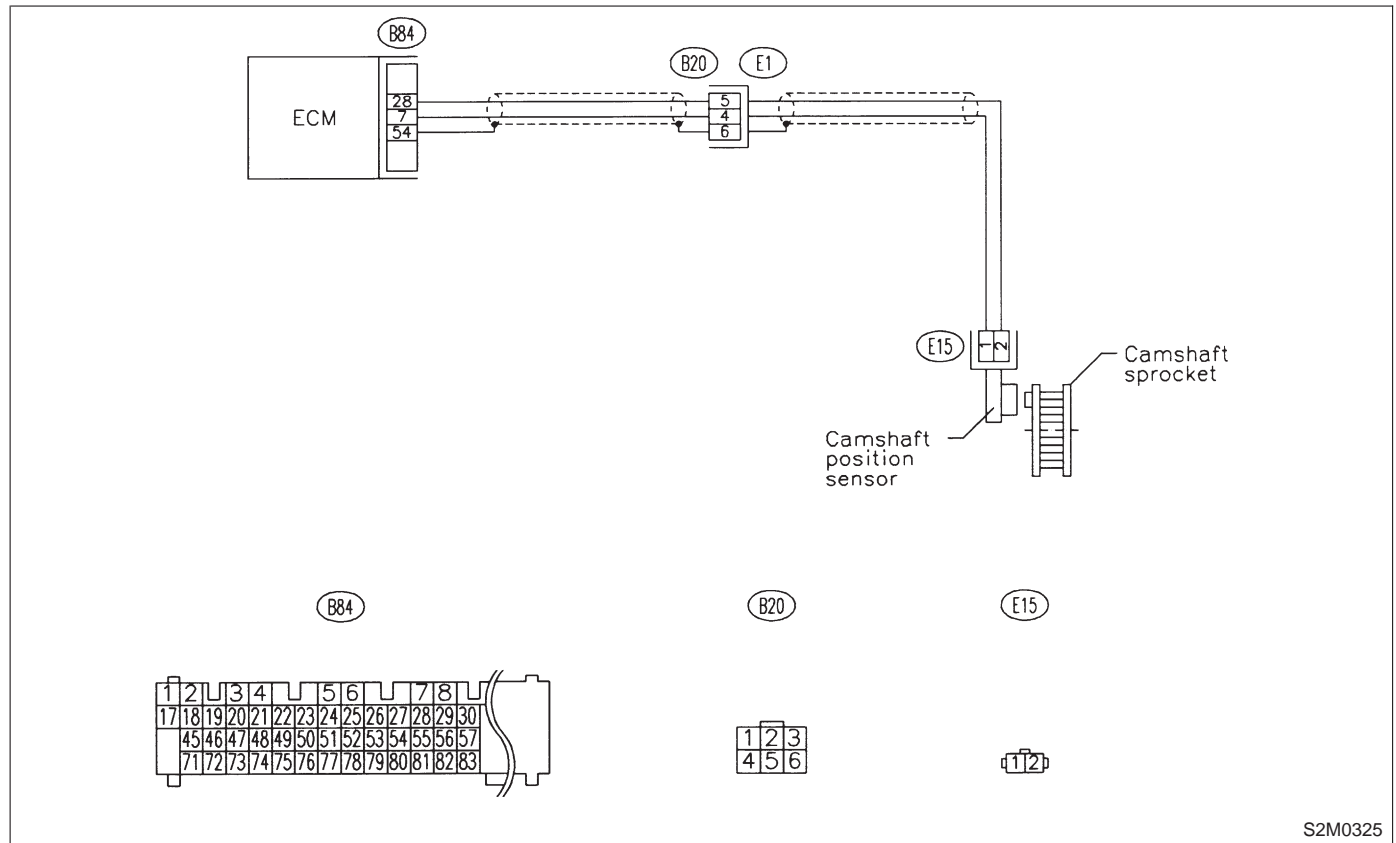
CAUTION:

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

NOTE:

Check camshaft position sensor circuit. <Ref. to 2-7 [T10AM0].>

● **WIRING DIAGRAM:**



S2M0325

MEMO:

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 2-3a [K100].> and <Ref. to 2-3b [K100].>

Symptom	Problem parts
1. Engine stalls during idling.	1) Idle air control solenoid valve 2) Mass air flow sensor 3) Ignition parts (*1) 4) Engine coolant temperature sensor (*2) 5) Crankshaft position sensor (*3) 6) Camshaft position sensor (*3) 7) EGR valve 8) Fuel injection parts (*4)
2. Rough idling	1) Idle air control solenoid valve 2) Mass air flow sensor 3) Engine coolant temperature sensor (*2) 4) Ignition parts (*1) 5) Air intake system (*5) 6) Fuel injection parts (*4) 7) Throttle position sensor 8) Crankshaft position sensor (*3) 9) Camshaft position sensor (*3) 10) EGR valve 11) Oxygen sensor 12) 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
4. Poor acceleration	1) Mass air flow sensor 2) Throttle position sensor 3) Fuel injection parts (*4) 4) Fuel pump and fuel pump relay 5) Engine coolant temperature sensor (*2) 6) Crankshaft position sensor (*3) 7) Camshaft position sensor (*3) 8) A/C switch and A/C cut relay 9) Engine torque control signal circuit 10) Ignition parts (*1)
5. Engine stalls or engine sags or hesitates at acceleration.	1) Mass air flow sensor 2) Engine coolant temperature sensor (*2) 3) Crankshaft position sensor (*3) 4) Camshaft position sensor (*3) 5) Purge control solenoid valve 6) EGR valve 7) Fuel injection parts (*4) 8) Throttle position sensor 9) Fuel pump and fuel pump relay

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

*1: Check ignitor, ignition coil 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. Diagnostic Chart with Trouble Code

A: DIAGNOSTIC TROUBLE CODE (DTC) LIST

DTC No.	Item	Index
P0101	Mass air flow sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T10B0].>
P0102	Mass air flow sensor circuit low input	<Ref. to 2-7 [T10C0].>
P0103	Mass air flow sensor circuit high input	<Ref. to 2-7 [T10D0].>
P0106	Pressure sensor circuit range/performance problem	<Ref. to 2-7 [T10E0].>
P0107	Pressure sensor circuit low input	<Ref. to 2-7 [T10F0].>
P0108	Pressure sensor circuit high input	<Ref. to 2-7 [T10G0].>
P0117	Engine coolant temperature sensor circuit low input	<Ref. to 2-7 [T10H0].>
P0118	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].>
P0130	Front oxygen sensor circuit malfunction	<Ref. to 2-7 [T10N0].>
P0133	Front oxygen sensor circuit slow response	<Ref. to 2-7 [T10O0].>
P0135	Front oxygen sensor heater circuit malfunction	<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 malfunction	<Ref. to 2-7 [T10S0].>
P0170	Fuel trim malfunction	<Ref. to 2-7 [T10T0].>
P0181	Fuel temperature sensor A circuit range/performance problem	<Ref. to 2-7 [T10U0].>
P0182	Fuel temperature sensor A circuit low input	<Ref. to 2-7 [T10V0].>
P0183	Fuel temperature sensor A circuit high input	<Ref. to 2-7 [T10W0].>
P0261	Fuel injector circuit low input - #1	<Ref. to 2-7 [T10X0].>
P0262	Fuel injector circuit high input - #1	<Ref. to 2-7 [T10AB0].>
P0264	Fuel injector circuit low input - #2	<Ref. to 2-7 [T10Y0].>

DTC No.	Item	Index
P0265	Fuel injector circuit high input - #2	<Ref. to 2-7 [T10AC0].>
P0267	Fuel injector circuit low input - #3	<Ref. to 2-7 [T10Z0].>
P0268	Fuel injector circuit high input - #3	<Ref. to 2-7 [T10AD0].>
P0270	Fuel injector circuit low input - #4	<Ref. to 2-7 [T10AA0].>
P0271	Fuel injector circuit high input - #4	<Ref. to 2-7 [T10AE0].>
P0301	Cylinder 1 misfire detected	<Ref. to 2-7 [T10AF0].>
P0302	Cylinder 2 misfire detected	<Ref. to 2-7 [T10AG0].>
P0303	Cylinder 3 misfire detected	<Ref. to 2-7 [T10AH0].>
P0304	Cylinder 4 misfire detected	<Ref. to 2-7 [T10AI0].>
P0325	Knock sensor circuit malfunction	<Ref. to 2-7 [T10AJ0].>
P0335	Crankshaft position sensor circuit malfunction	<Ref. to 2-7 [T10AK0].>
P0336	Crankshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T10AL0].>
P0340	Camshaft position sensor circuit malfunction	<Ref. to 2-7 [T10AM0].>
P0341	Camshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T10AN0].>
P0400	Exhaust gas recirculation flow malfunction	<Ref. to 2-7 [T10AO0].>
P0403	Exhaust gas recirculation circuit low input	<Ref. to 2-7 [T10AP0].>
P0420	Catalyst system efficiency below threshold	<Ref. to 2-7 [T10AQ0].>
P0440	Evaporative emission control system malfunction	<Ref. to 2-7 [T10AR0].>
P0441	Evaporative emission control system incorrect purge flow	<Ref. to 2-7 [T10AS0].>
P0443	Evaporative emission control system purge control valve circuit low input	<Ref. to 2-7 [T10AT0].>
P0446	Evaporative emission control system vent control low input [2200 cc model]	<Ref. to 2-7 [T10AU0].>
P0446	Evaporative emission control system vent control low input [2500 cc model]	<Ref. to 2-7 [T10AV0].>
P0451	Evaporative emission control system pressure sensor range/performance problem	<Ref. to 2-7 [T10AW0].>
P0452	Evaporative emission control system pressure sensor low input	<Ref. to 2-7 [T10AX0].>
P0453	Evaporative emission control system pressure sensor high input	<Ref. to 2-7 [T10AY0].>
P0461	Fuel level sensor circuit range/performance problem	<Ref. to 2-7 [T10AZ0].>
P0462	Fuel level sensor circuit low input	<Ref. to 2-7 [T10BA0].>

DTC No.	Item	Index
P0463	Fuel level sensor circuit high input	<Ref. to 2-7 [T10BB0].>
P0480	Cooling fan relay 1 circuit low input	<Ref. to 2-7 [T10BC0].>
P0483	Cooling fan function problem	<Ref. to 2-7 [T10BD0].>
P0500	Vehicle speed sensor malfunction	<Ref. to 2-7 [T10BE0].>
P0505	Idle control system malfunction	<Ref. to 2-7 [T10BF0].>
P0506	Idle control system RPM lower than expected	<Ref. to 2-7 [T10BG0].>
P0507	Idle control system RPM higher than expected	<Ref. to 2-7 [T10BH0].>
P0600	Serial communication link malfunction	<Ref. to 2-7 [T10BI0].>
P0601	Internal control module memory check sum error	<Ref. to 2-7 [T10BJ0].>
P0703	Brake switch input malfunction	<Ref. to 2-7 [T10BK0].>
P0705	Transmission range sensor circuit malfunction	<Ref. to 2-7 [T10BL0].>
P0710	Transmission fluid temperature sensor circuit malfunction	<Ref. to 2-7 [T10BM0].>
P0720	Output speed sensor (vehicle speed sensor 1) circuit malfunction	<Ref. to 2-7 [T10BN0].>
P0725	Engine speed input circuit malfunction	<Ref. to 2-7 [T10BO0].>
P0731	Gear 1 incorrect ratio	<Ref. to 2-7 [T10BP0].>
P0732	Gear 2 incorrect ratio	<Ref. to 2-7 [T10BQ0].>
P0733	Gear 3 incorrect ratio	<Ref. to 2-7 [T10BR0].>
P0734	Gear 4 incorrect ratio	<Ref. to 2-7 [T10BS0].>
P0740	Torque converter clutch system malfunction	<Ref. to 2-7 [T10BT0].>
P0743	Torque converter clutch system electrical	<Ref. to 2-7 [T10BU0].>
P0748	Pressure control solenoid electrical	<Ref. to 2-7 [T10BV0].>
P0753	Shift solenoid A electrical	<Ref. to 2-7 [T10BW0].>
P0758	Shift solenoid B electrical	<Ref. to 2-7 [T10BX0].>
P0760	Shift solenoid C malfunction	<Ref. to 2-7 [T10BY0].>
P0763	Shift solenoid C electrical	<Ref. to 2-7 [T10BZ0].>
P1100	Starter switch circuit low input	<Ref. to 2-7 [T10CA0].>
P1101	Neutral position switch circuit malfunction [MT vehicles]	<Ref. to 2-7 [T10CB0].>

DTC No.	Item	Index
P1101	Neutral position switch circuit high input [AT vehicles]	<Ref. to 2-7 [T10CC0].>
P1102	Pressure sources switching solenoid valve circuit low input	<Ref. to 2-7 [T10CD0].>
P1103	Engine torque control signal circuit malfunction	<Ref. to 2-7 [T10CE0].>
P1120	Starter switch circuit high input	<Ref. to 2-7 [T10CF0].>
P1121	Neutral position switch circuit low input [AT vehicles]	<Ref. to 2-7 [T10CG0].>
P1122	Pressure sources switching solenoid valve circuit high input	<Ref. to 2-7 [T10CH0].>
P1141	Mass air flow sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T10CI0].>
P1142	Throttle position sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T10CJ0].>
P1143	Pressure sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T10CK0].>
P1144	Pressure sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T10CL0].>
P1400	Fuel tank pressure control solenoid valve circuit low input	<Ref. to 2-7 [T10CM0].>
P1420	Fuel tank pressure control solenoid valve circuit high input	<Ref. to 2-7 [T10CN0].>
P1421	Exhaust gas recirculation circuit high input	<Ref. to 2-7 [T10CO0].>
P1422	Evaporative emission control system purge control valve circuit high input	<Ref. to 2-7 [T10CP0].>
P1423	Evaporative emission control system vent control high input [2200 cc model]	<Ref. to 2-7 [T10CQ0].>
P1423	Evaporative emission control system vent control high input [2500 cc model]	<Ref. to 2-7 [T10CR0].>
P1440	Fuel tank pressure control system function problem (low input)	<Ref. to 2-7 [T10CS0].>
P1441	Fuel tank pressure control system function problem (high input)	<Ref. to 2-7 [T10CT0].>
P1442	Fuel level sensor circuit range/performance problem 2	<Ref. to 2-7 [T10CU0].>
P1443	Evaporative emission control system vent control function problem [2200 cc model]	<Ref. to 2-7 [T10CV0].>
P1507	Idle control system malfunction (fail-safe)	<Ref. to 2-7 [T10CW0].>
P1520	Cooling fan relay 1 circuit high input	<Ref. to 2-7 [T10CX0].>
P1540	Vehicle speed sensor malfunction 2	<Ref. to 2-7 [T10CY0].>
P1700	Throttle position sensor circuit malfunction for automatic transmission	<Ref. to 2-7 [T10CZ0].>
P1701	Cruise control set signal circuit malfunction for automatic transmission	<Ref. to 2-7 [T10DA0].>
P1702	Automatic transmission diagnosis input signal circuit low input	<Ref. to 2-7 [T10DB0].>
P1722	Automatic transmission diagnosis input signal circuit high input	<Ref. to 2-7 [T10DC0].>

DTC No.	Item	Index
P1742	Automatic transmission diagnosis input signal circuit malfunction	<Ref. to 2-7 [T10DD0].>

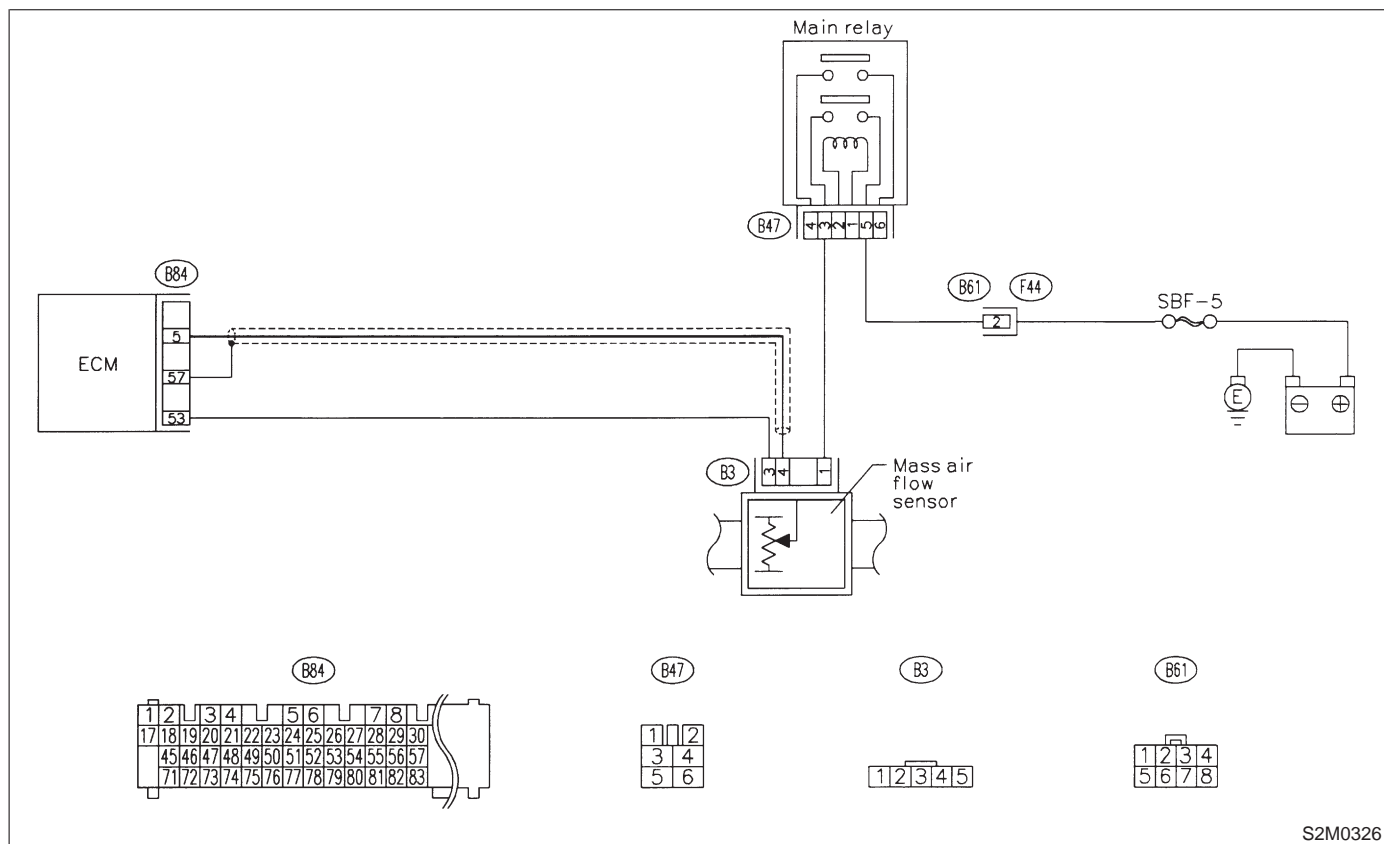
B: DTC P0101 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



10B1 : 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 "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P0101.

- NO** : Replace mass air flow sensor.

C: DTC P0102 — MASS AIR FLOW SENSOR CIRCUIT LOW INPUT —

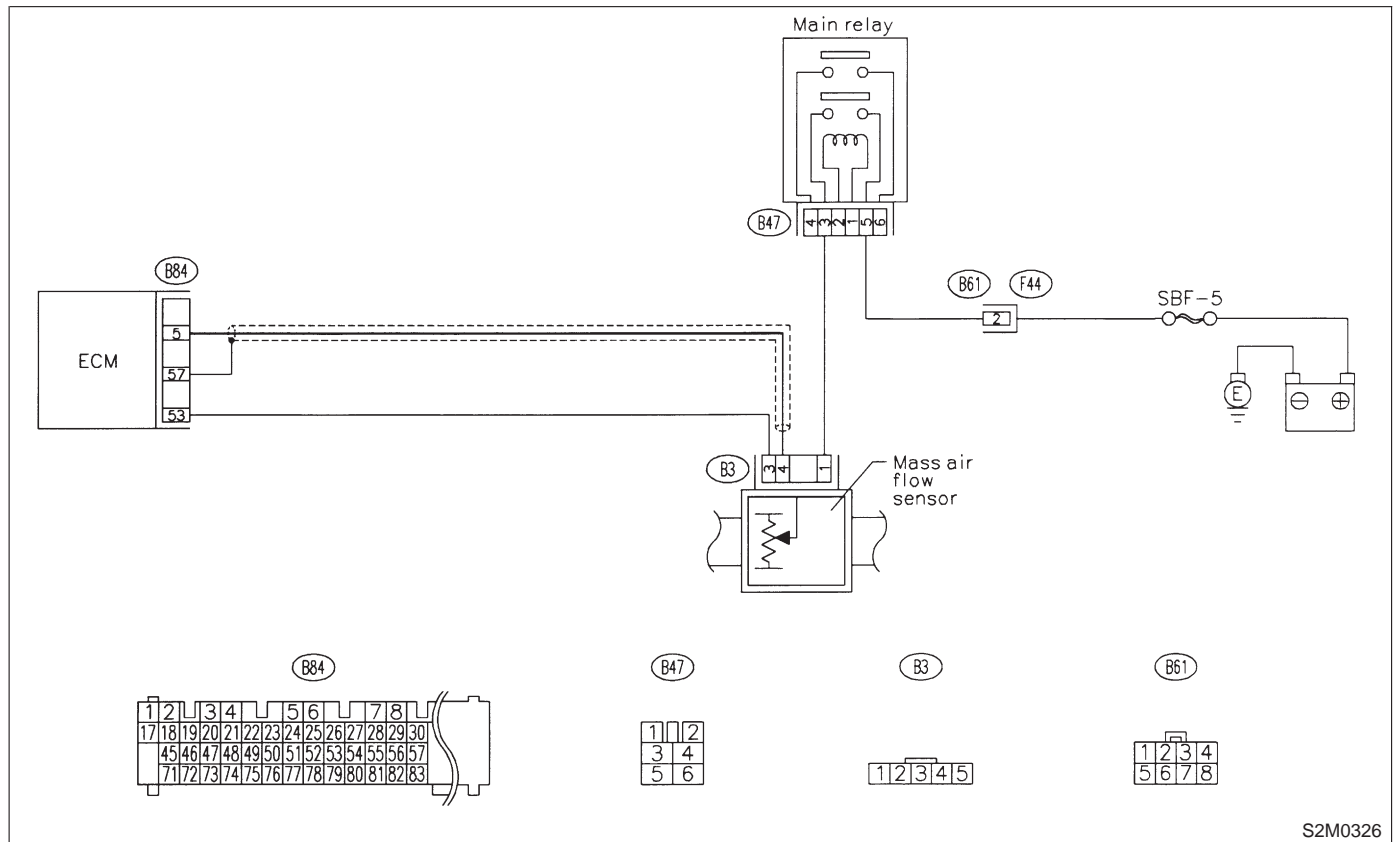
- **DTC DETECTING CONDITION:**
 - Immediately at fault recognition

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

CAUTION:

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

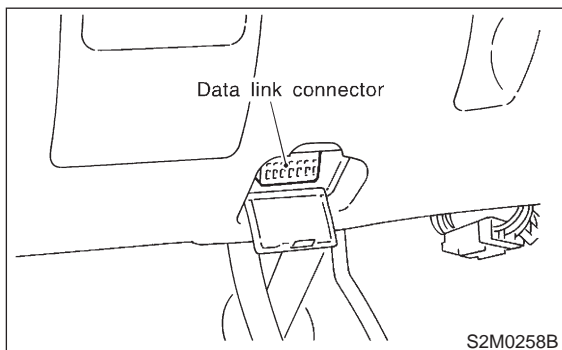
● **WIRING DIAGRAM:**



S2M0326

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 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 1.3 g/sec (0.172 lb/min) or 0.3 V and equal to or less than 250 g/sec (33 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

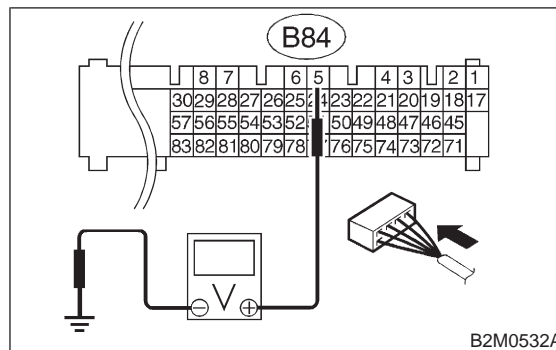
NO : Go to step **10C2**.

10C2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground while engine is idling.

Connector & terminal

(B84) No. 5 (+) — Chassis ground (-):



- CHECK** : *Is the voltage less than 0.3 V?*
- YES** : Go to step **10C4**.
- NO** : Go to step **10C3**.

10C3 : 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.

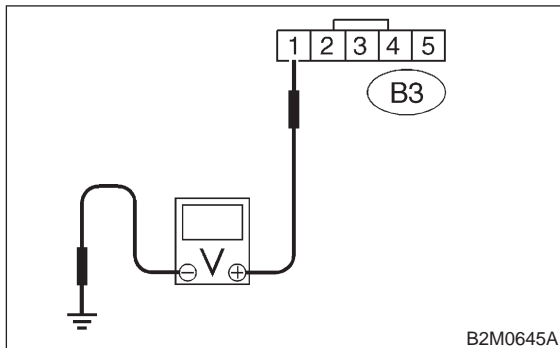
NOTE:

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

10C4 : 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
(B3) No. 1 (+) — Engine ground (-):

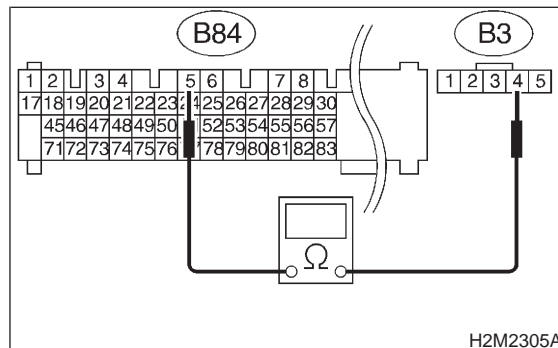


- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **10C5**.
- NO** : Repair open circuit in harness between main relay and mass air flow sensor connector.

10C5 : 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
(B84) No. 5 — (B3) No. 4:



- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **10C6**.
- NO** : Repair harness and connector.

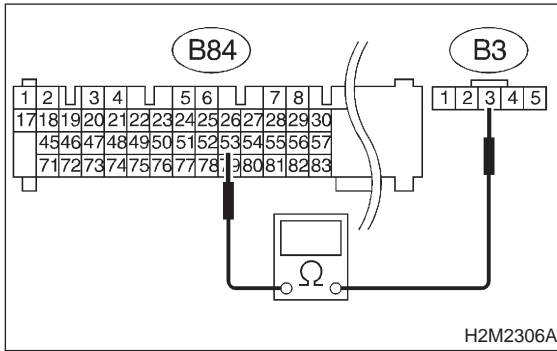
NOTE:

- 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

10C6 : CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

Measure resistance of harness between ECM and mass air flow sensor connector.

Connector & terminal
(B84) No. 53 — (B3) No. 3:



- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step 10C7.
- NO** : Repair harness and connector.

NOTE:

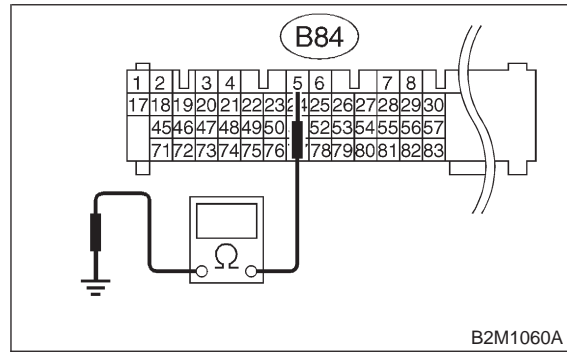
In this case, repair the following:

- 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

10C7 : CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 5 — Chassis ground:



- CHECK** : *Is the resistance more than 1 MΩ?*
- YES** : Replace mass air flow sensor.
- NO** : Repair ground short circuit in harness between ECM and mass air flow sensor connector.

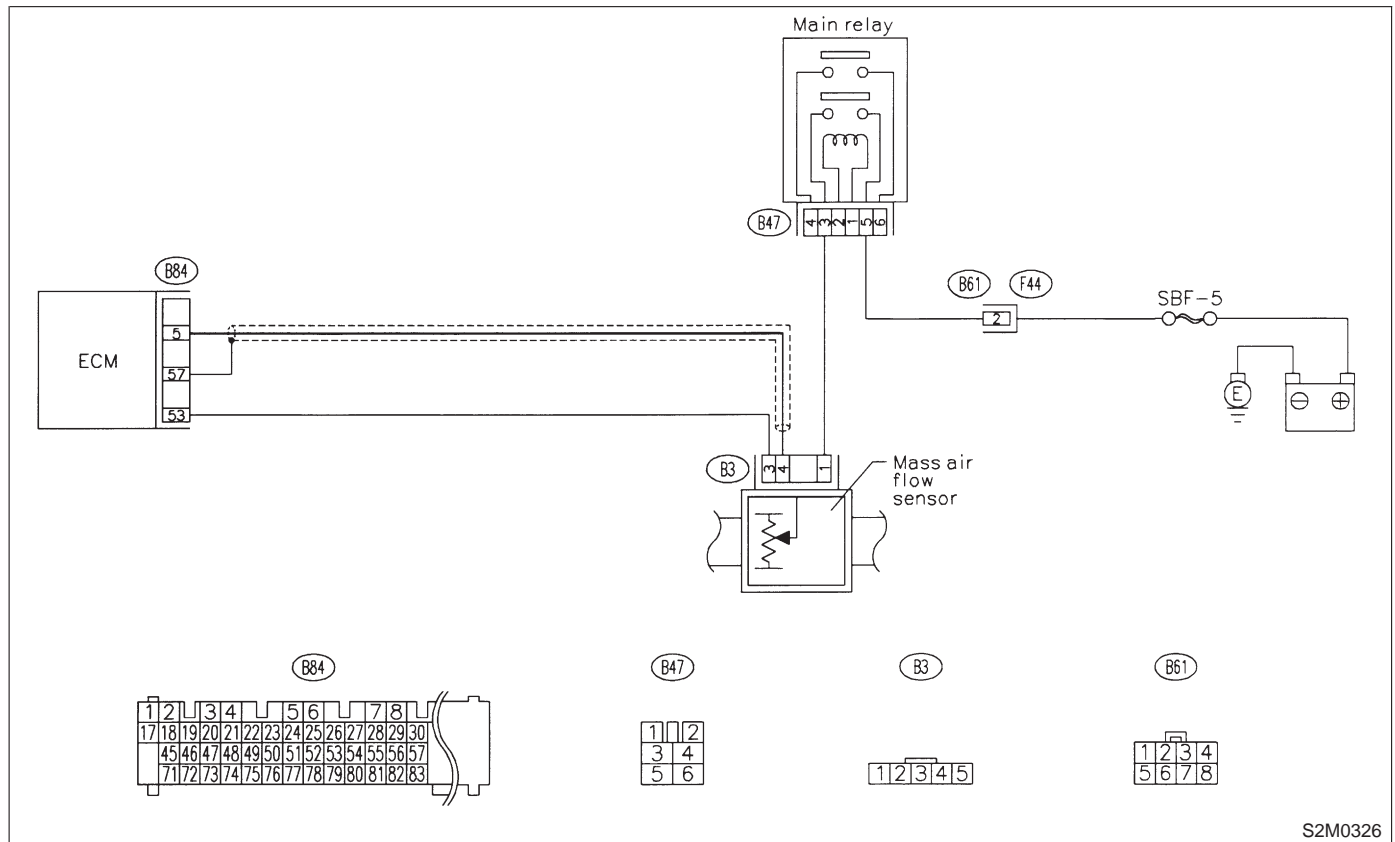
D: DTC P0103 — MASS AIR FLOW SENSOR CIRCUIT HIGH INPUT —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

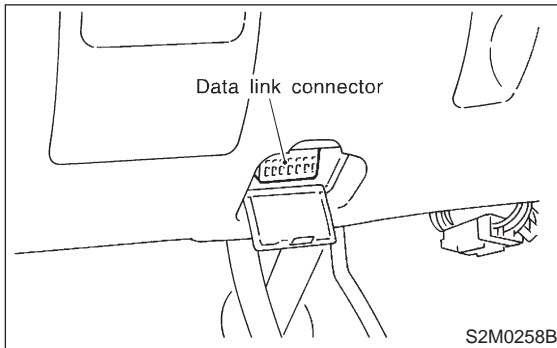
● **WIRING DIAGRAM:**



S2M0326

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 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 1.3 g/sec (0.172 lb/min) or 0.3 V and equal to or less than 250 g/sec (33 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 **10D2**.

10D2 : 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 250 g/sec (33 lb/min) or 5 V in function mode F06?*

YES : Repair battery short circuit in harness between mass air flow sensor and ECM connector. After repair, replace ECM.

NO : Replace mass air flow sensor.

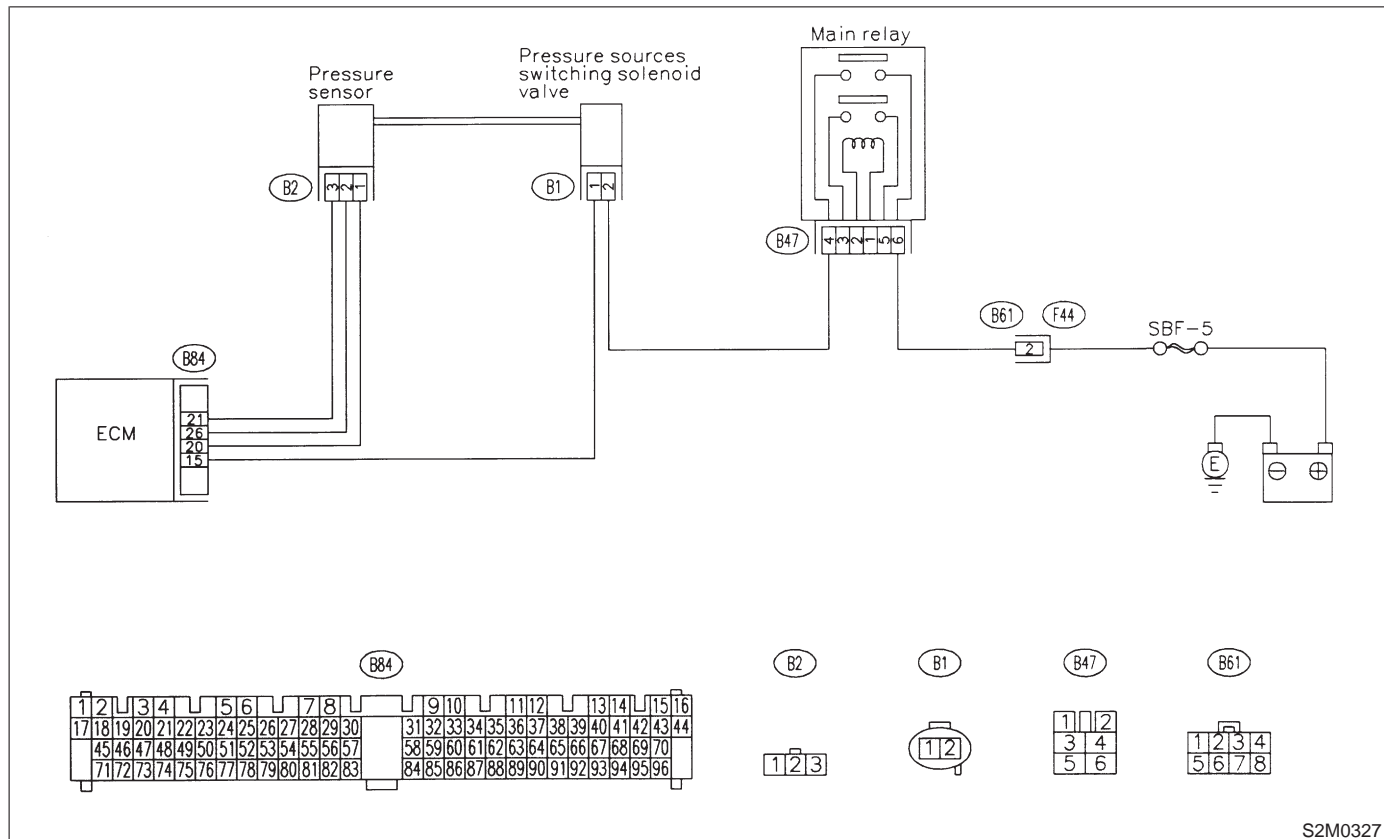
E: DTC P0106 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

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

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0327

10E1 : CHECK ANY OTHER DTC ON DISPLAY.

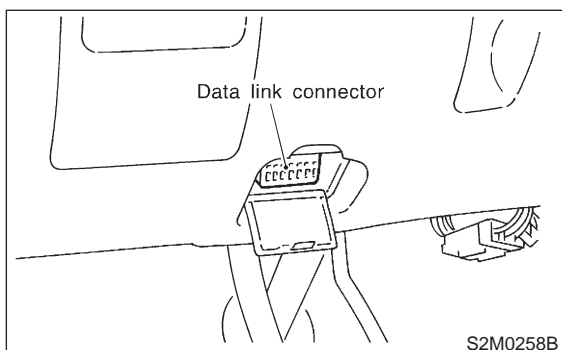
NOTE:

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 "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>
- NO** : Go to step **10E2**.

10E2 : 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 10E5.

NO : Go to step 10E3.

10E3 : 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 10E6.

NO : Go to step 10E4.

10E4 : 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)?*

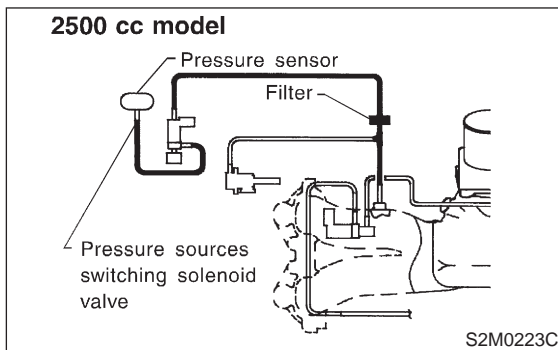
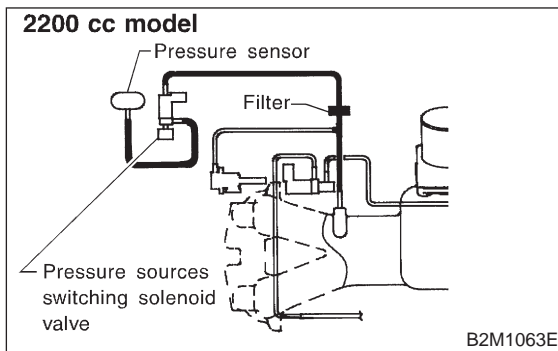
YES : Replace pressure sensor.

NO : Repair poor contact in pressure sensor connector, pressure sources switching solenoid valve connector, and ECM connector.

10E5 : CHECK VACUUM HOSES.

Check the following items.

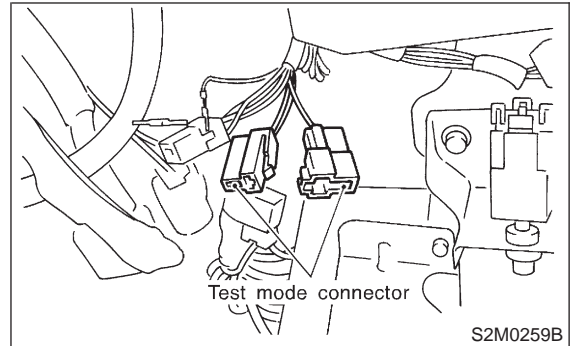
- Disconnection of the vacuum hose from pressure sources switching solenoid valve to intake manifold
- Holes in the vacuum hose between pressure sources switching solenoid valve to intake manifold
- Clogging of the vacuum hose between pressure sources switching solenoid valve to intake manifold
- Disconnection 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 **10E6**.

10E6 : 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.
- NO** : Replace pressure sources switching solenoid valve.

MEMO:

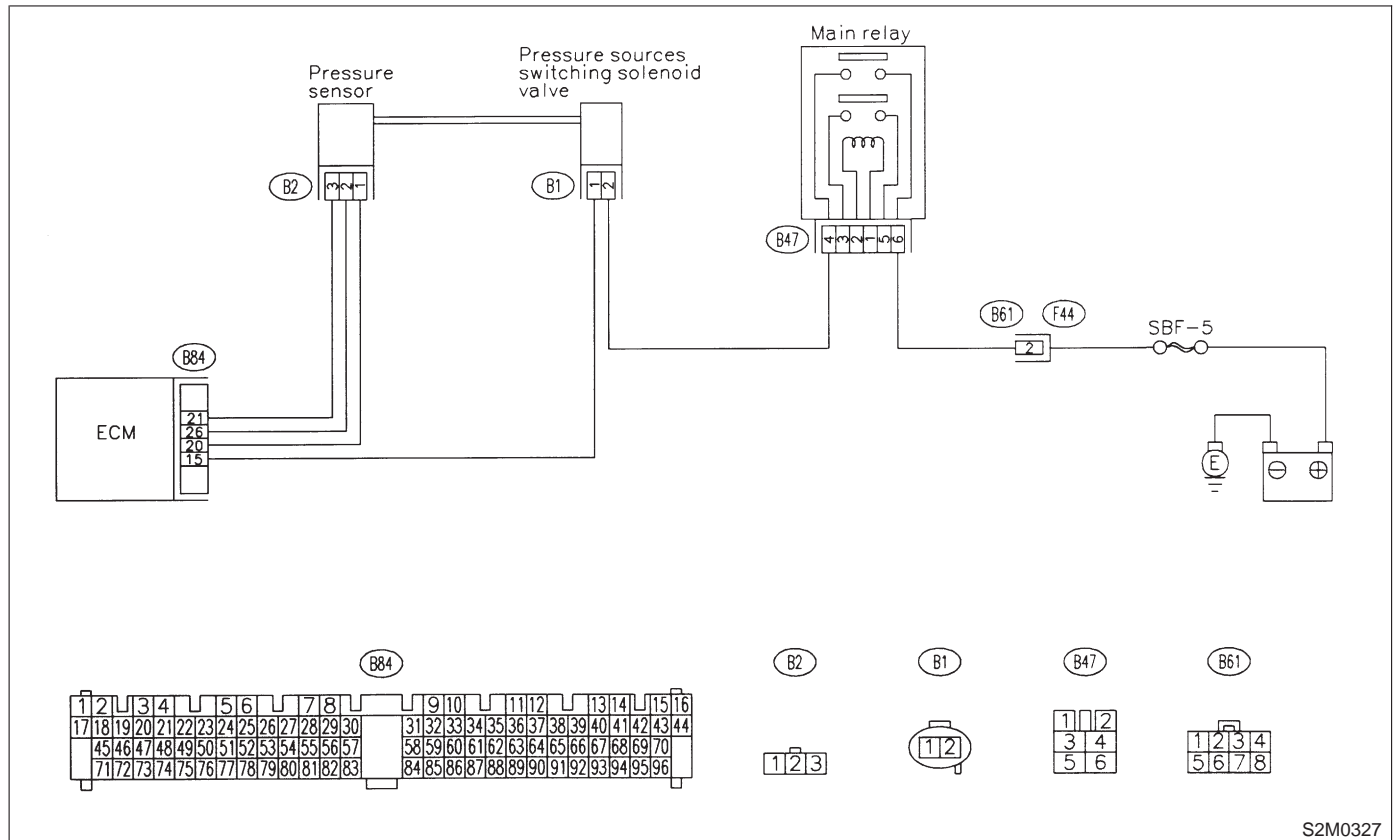
F: DTC P0107 — PRESSURE SENSOR CIRCUIT LOW INPUT —

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

CAUTION:

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

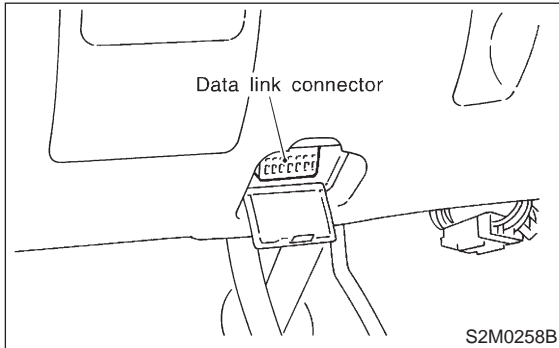
● **WIRING DIAGRAM:**



S2M0327

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 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 10F2.

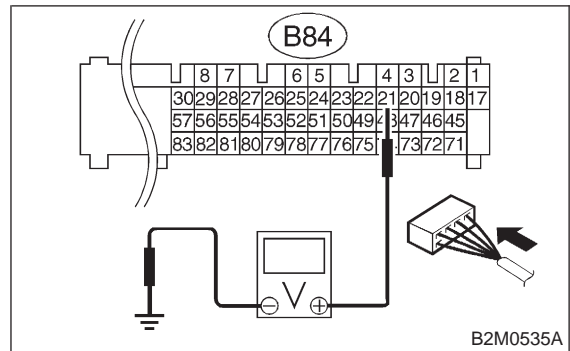
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time

10F2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B84) No. 21 (+) — Chassis ground (-):



CHECK : *Is the voltage more than 4.5 V?*

YES : Go to step 10F4.

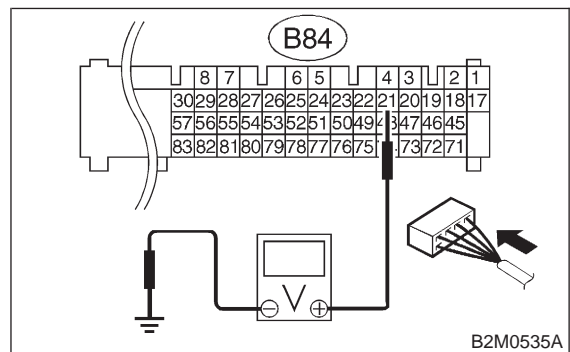
NO : Go to step 10F3.

10F3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B84) No. 21 (+) — 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:

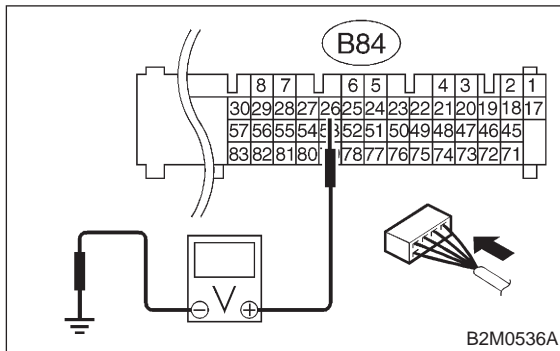
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10F4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal

(B84) No. 26 (+) — Chassis ground (-):



- CHECK** : *Is the voltage less than 0.2 V?*
- YES** : Go to step 10F6.
- NO** : Go to step 10F5.

10F5 : 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].>

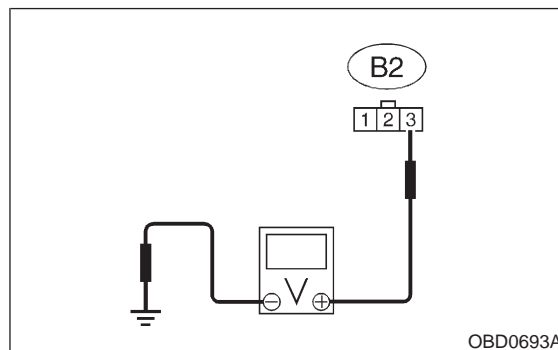
- CHECK** : *Does the value change more than 0 kPa (0 mmHg, 0 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?*
- YES** : Repair poor contact in ECM connector.
- NO** : Go to step 10F6.

10F6 : 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

(B2) No. 3 (+) — Engine ground (-):



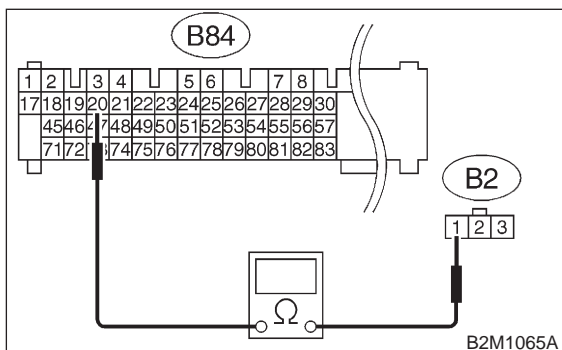
- CHECK** : *Is the voltage more than 4.5 V?*
- YES** : Go to step 10F7.
- NO** : Repair open circuit in harness between ECM and pressure sensor connector.

10F7 : 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

(B84) No. 20 — (B2) No. 1:



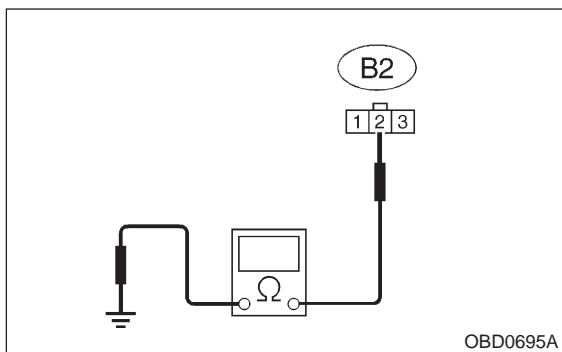
- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step 10F8.
- NO** : Repair open circuit in harness between ECM and pressure sensor connector.

10F8 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

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

Connector & terminal

(B2) No. 2 — Engine ground:



- CHECK** : *Is the resistance more than 500 kΩ?*
- YES** : Go to step 10F9.
- NO** : Repair ground short circuit in harness between ECM and pressure sensor connector.

10F9 : 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.

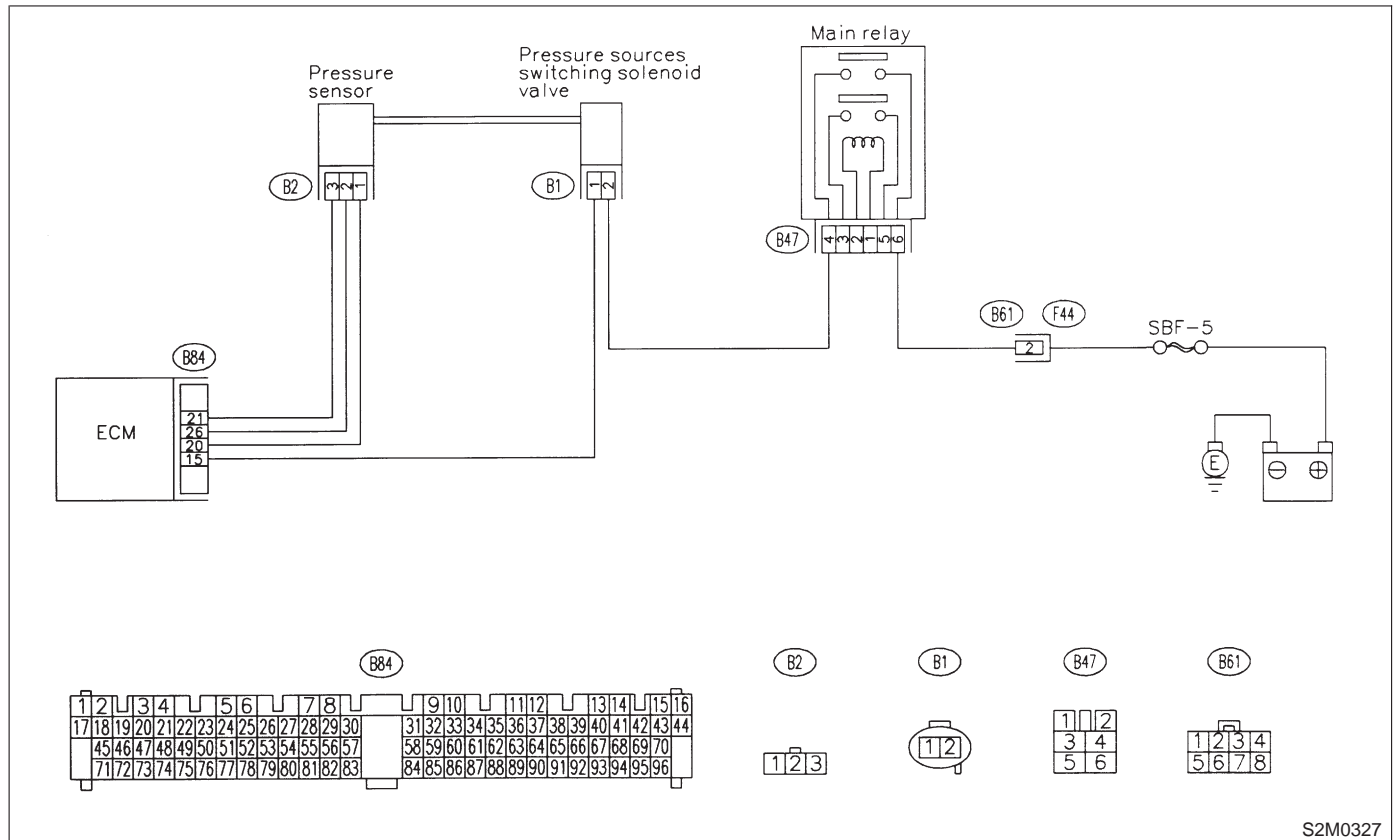
G: DTC P0108 — PRESSURE SENSOR CIRCUIT HIGH INPUT —

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

CAUTION:

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

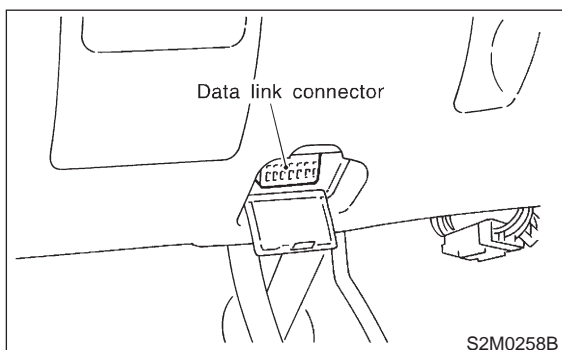
● **WIRING DIAGRAM:**



S2M0327

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 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 10G10.

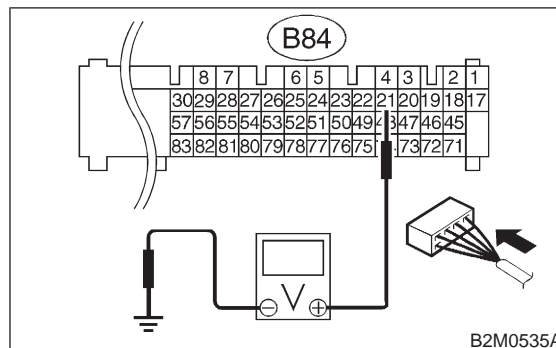
NO : Go to step 10G2.

10G2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B84) No. 21 (+) — Chassis ground (-):



CHECK : *Is the voltage more than 4.5 V?*

YES : Go to step 10G4.

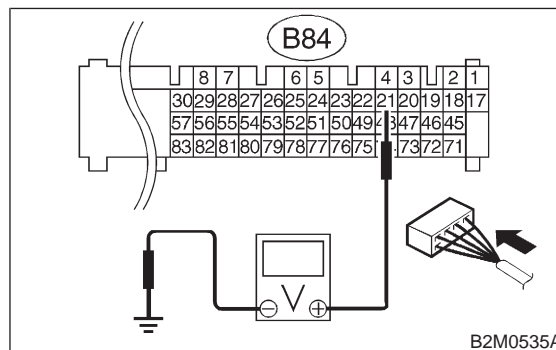
NO : Go to step 10G3.

10G3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B84) No. 21 (+) — 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:

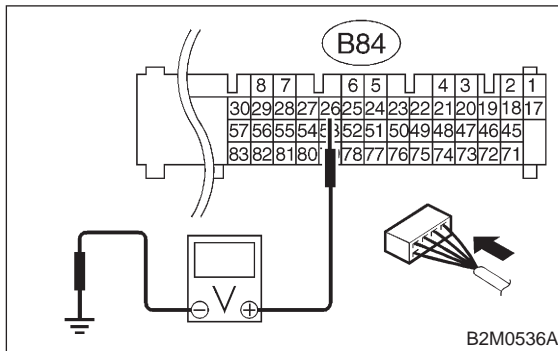
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10G4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B84) No. 26 (+) — Chassis ground (-):



- CHECK** : *Is the voltage less than 0.2 V?*
- YES** : Go to step **10G6**.
- NO** : Go to step **10G5**.

10G5 : 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].>

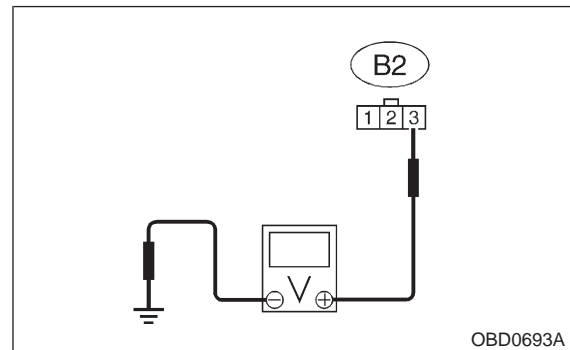
- CHECK** : *Does the value change more than 0 kPa (0 mmHg, 0 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?*
- YES** : Repair poor contact in ECM connector.
- NO** : Go to step **10G6**.

10G6 : 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

(B2) No. 3 (+) — Engine ground (-):

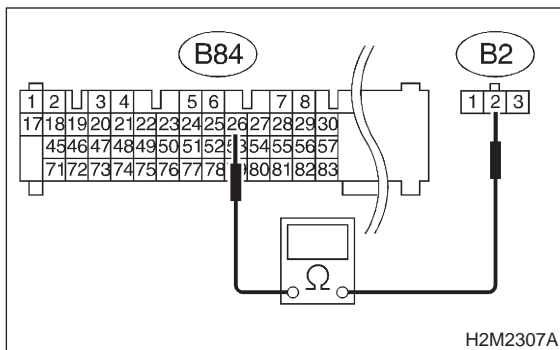


- CHECK** : *Is the voltage more than 4.5 V?*
- YES** : Go to step **10G7**.
- NO** : Repair open circuit in harness between ECM and pressure sensor connector.

10G7 : 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
(B84) No. 26 — (B2) No. 2:

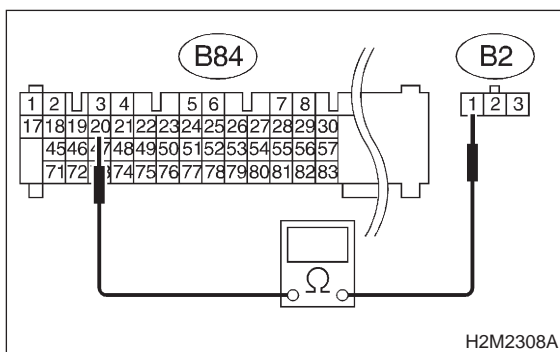


- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step 10G8.
- NO** : Repair open circuit in harness between ECM and pressure sensor connector.

10G8 : CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

Measure resistance of harness between ECM and pressure sensor connector.

Connector & terminal
(B84) No. 20 — (B2) No. 1:



- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step 10G9.
- NO** : Repair open circuit in harness between ECM and pressure sensor connector.

10G9 : 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.

10G10 : 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.

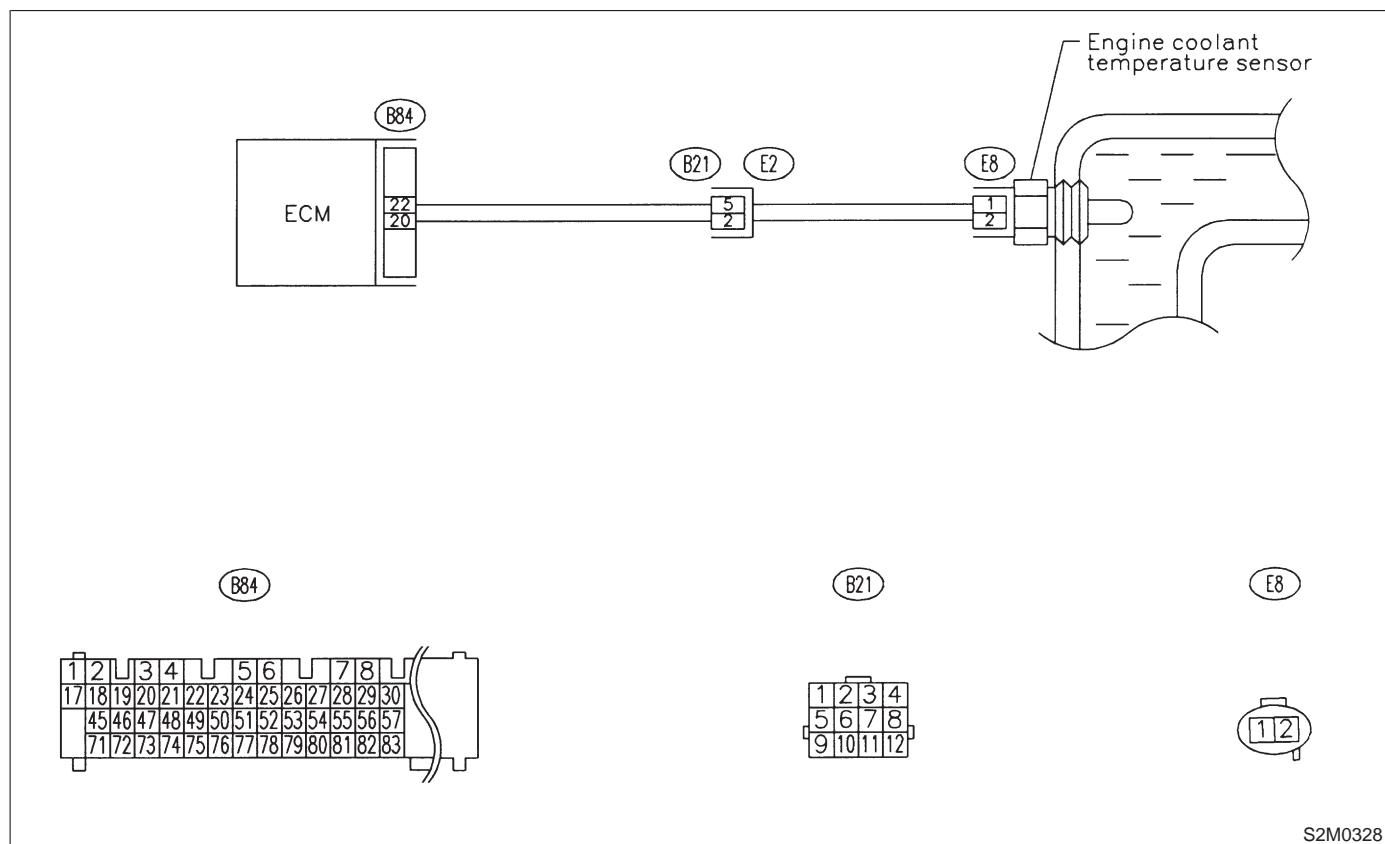
H: DTC P0117 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT LOW INPUT —

- **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 and INSPECTION MODES.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

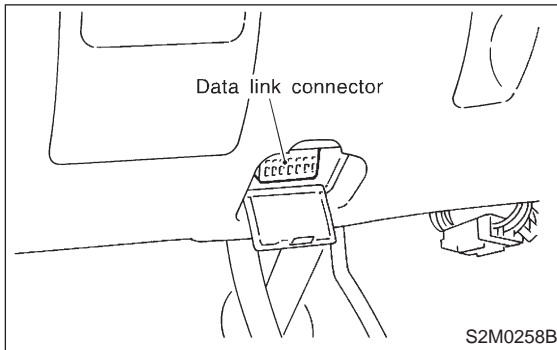
● **WIRING DIAGRAM:**



S2M0328

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 150°C (300°F)?*

YES : Go to step 10H2.

NO : Repair poor contact.

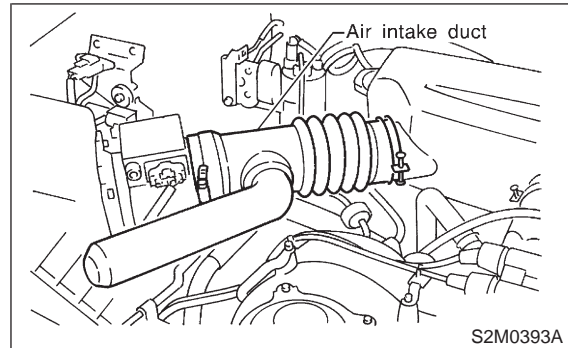
NOTE:

In this case, repair the following:

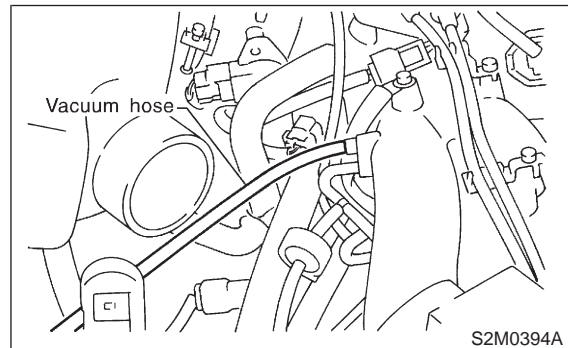
- Poor contact in engine coolant temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)

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

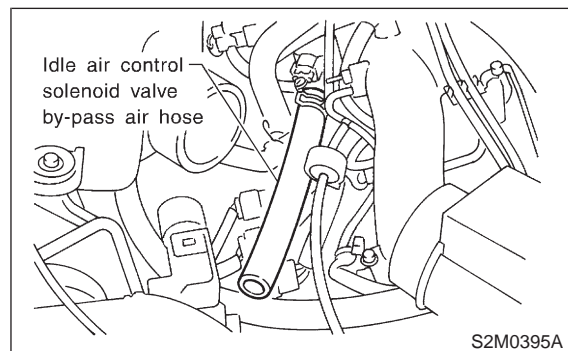
- 1) Turn ignition switch to OFF.
- 2) Remove air intake duct.



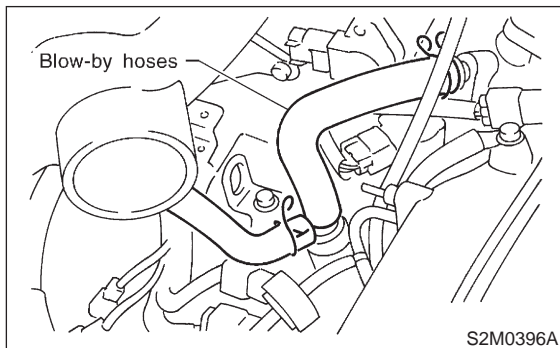
- 3) Remove vacuum hose from intake manifold.



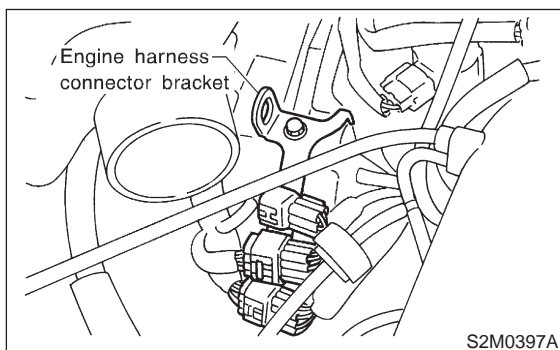
- 4) Remove idle air control solenoid valve by-pass air hose.



5) Remove blow-by hoses.



6) Remove engine harness connector bracket from cylinder block.



7) Disconnect connector from engine coolant temperature sensor.

8) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.

9) 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.

NO : Repair ground short circuit in harness between engine coolant temperature sensor and ECM connector.

MEMO:

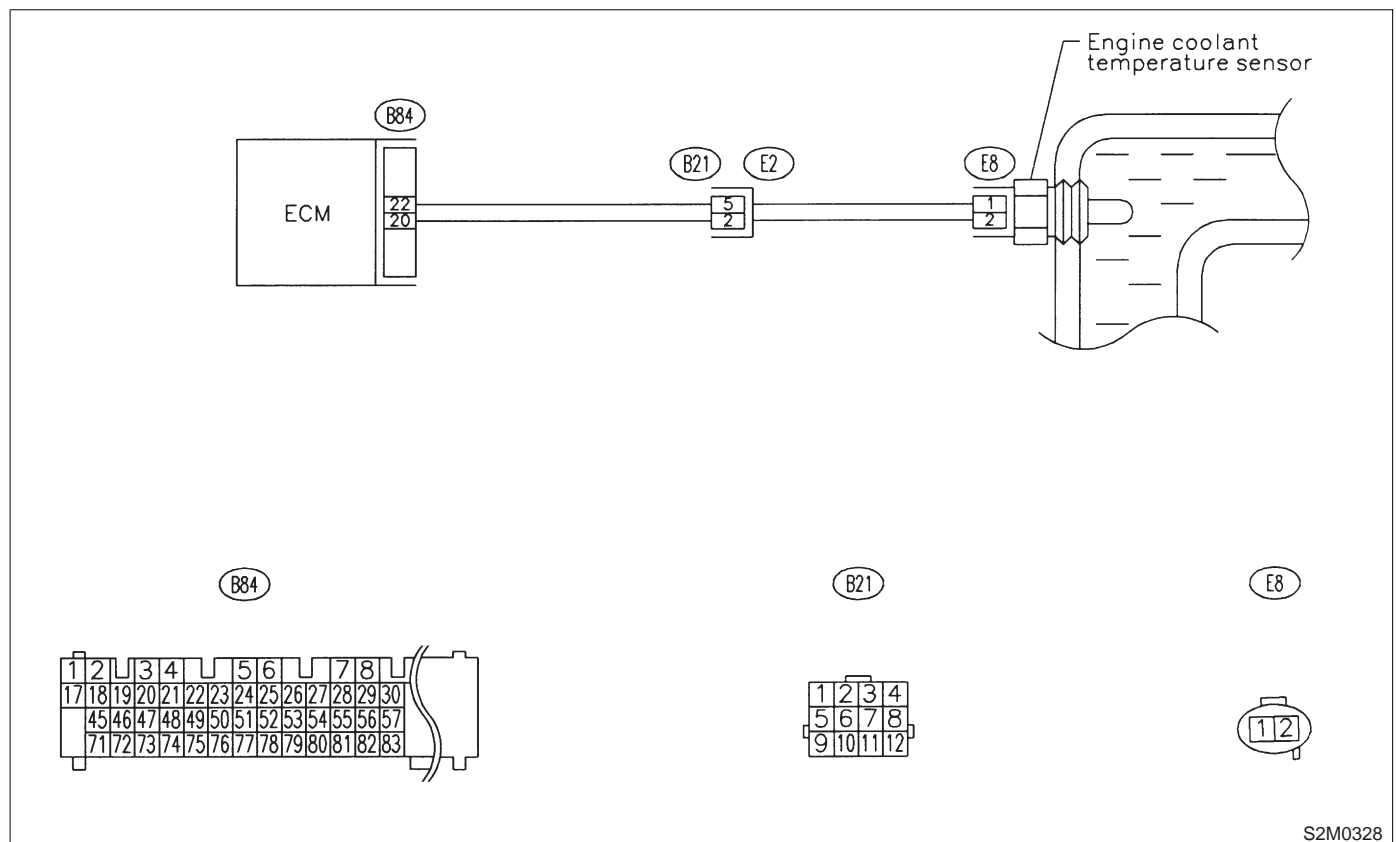
I: DTC P0118 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

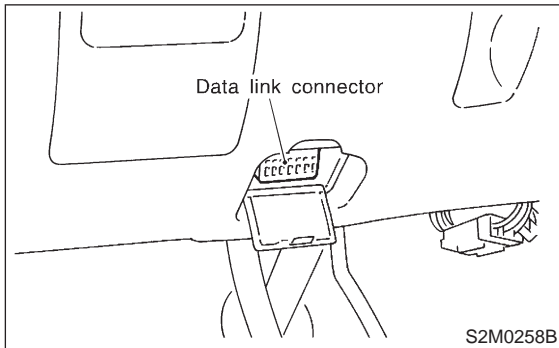
● **WIRING DIAGRAM:**



S2M0328

1011 : 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 1012.

NO : Repair poor contact.

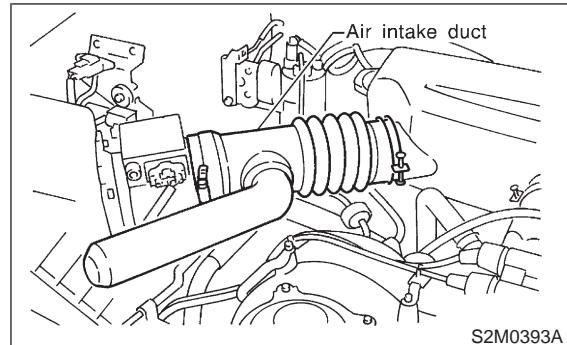
NOTE:

In this case, repair the following:

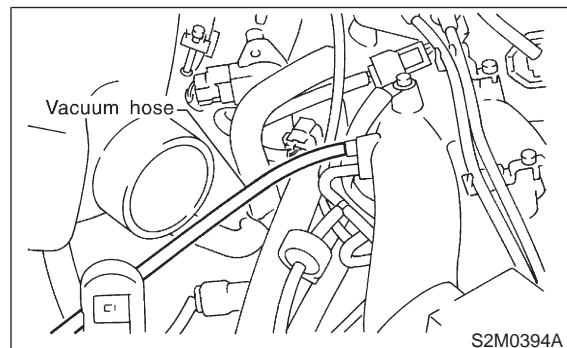
- Poor contact in engine coolant temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)

1012 : CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

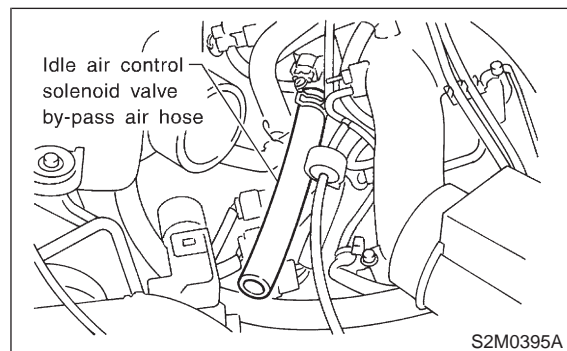
- 1) Turn ignition switch to OFF.
- 2) Remove air intake duct.



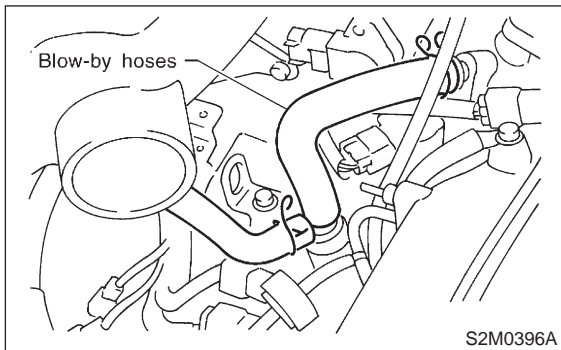
- 3) Remove vacuum hose from intake manifold.



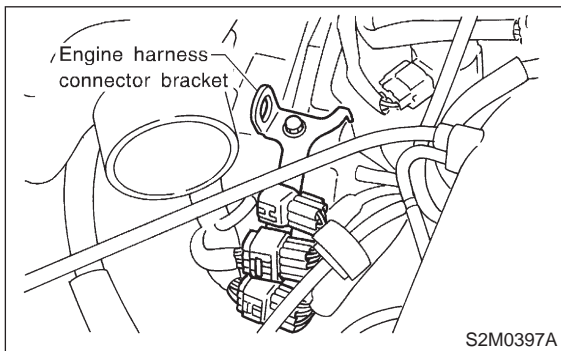
- 4) Remove idle air control solenoid valve by-pass air hose.



5) Remove blow-by hoses.



6) Remove engine harness connector bracket from cylinder block.

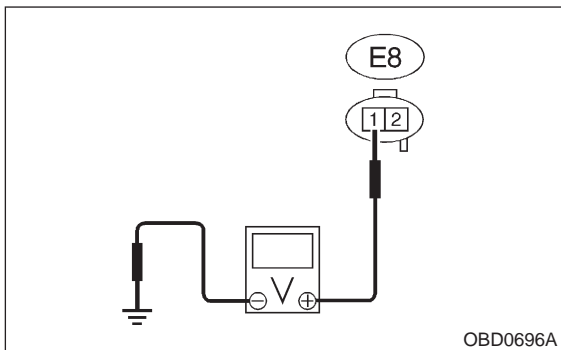


7) Disconnect connector from engine coolant temperature sensor.

8) 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.

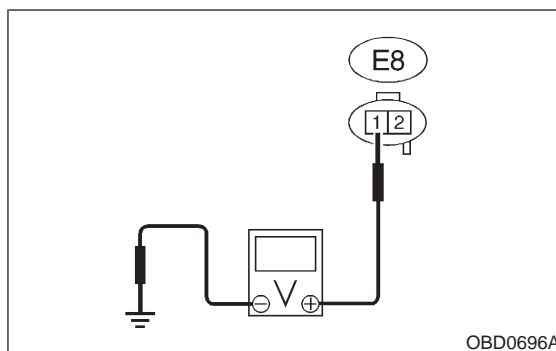
NO : Go to step **1013**.

1013 : 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.

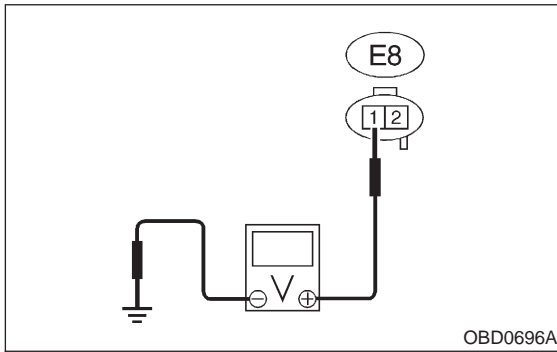
NO : Go to step **1014**.

1014 : 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 **1015**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

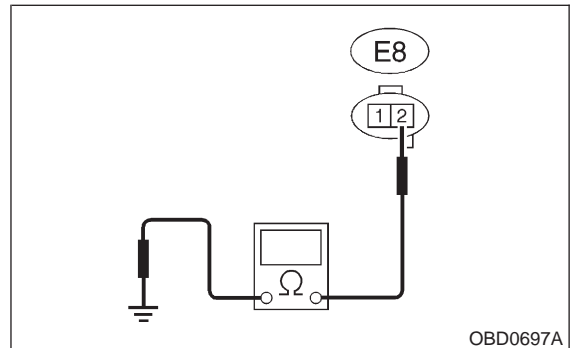
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

1015 : 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.
- 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)

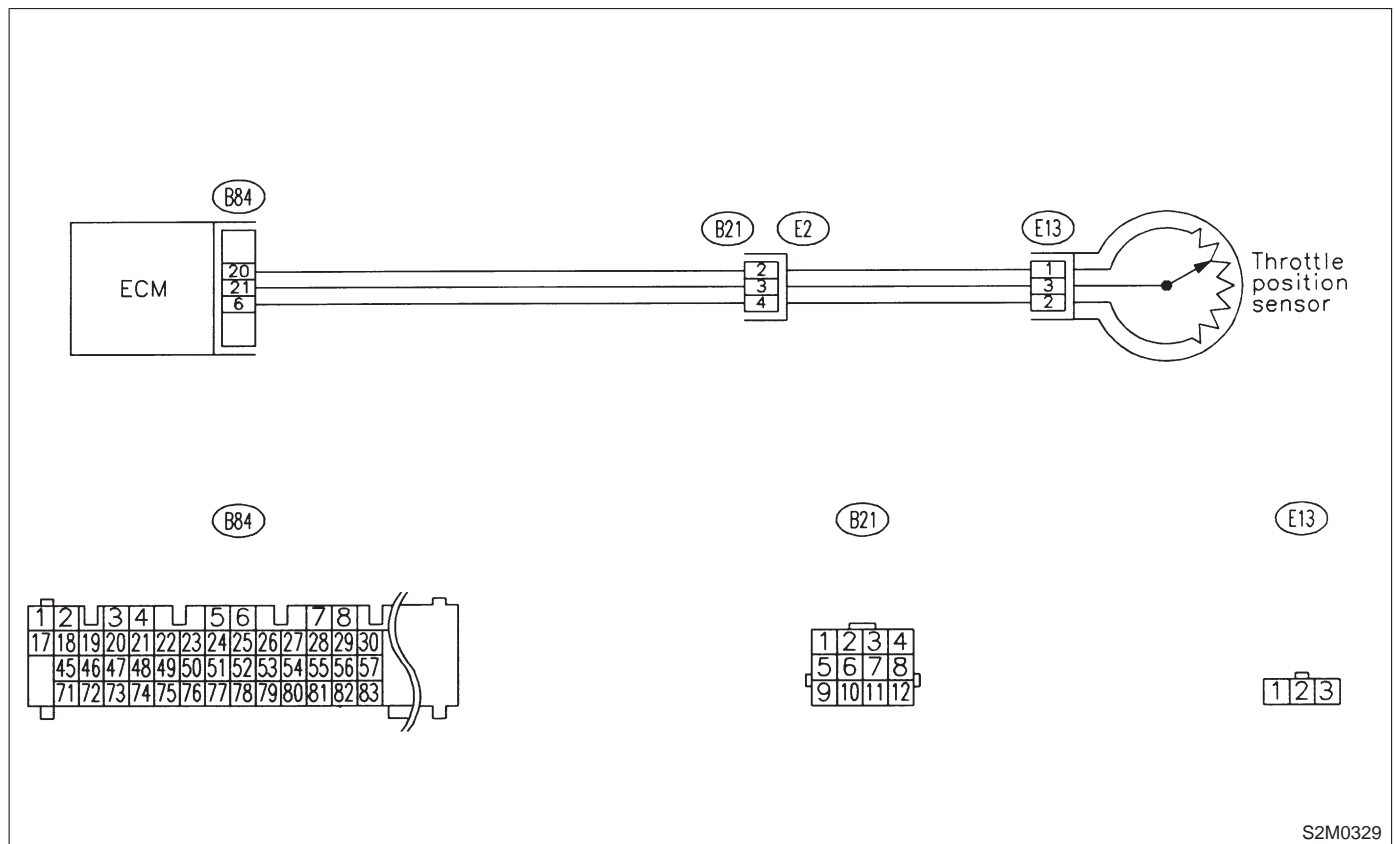
J: DTC P0121 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

- **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 and INSPECTION MODES. <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0329

10J1 : 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 "10. Diagnostics Chart with Trouble Code".
<Ref. to 2-7 [T1000].>

NOTE:

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

NO : Replace throttle position sensor.

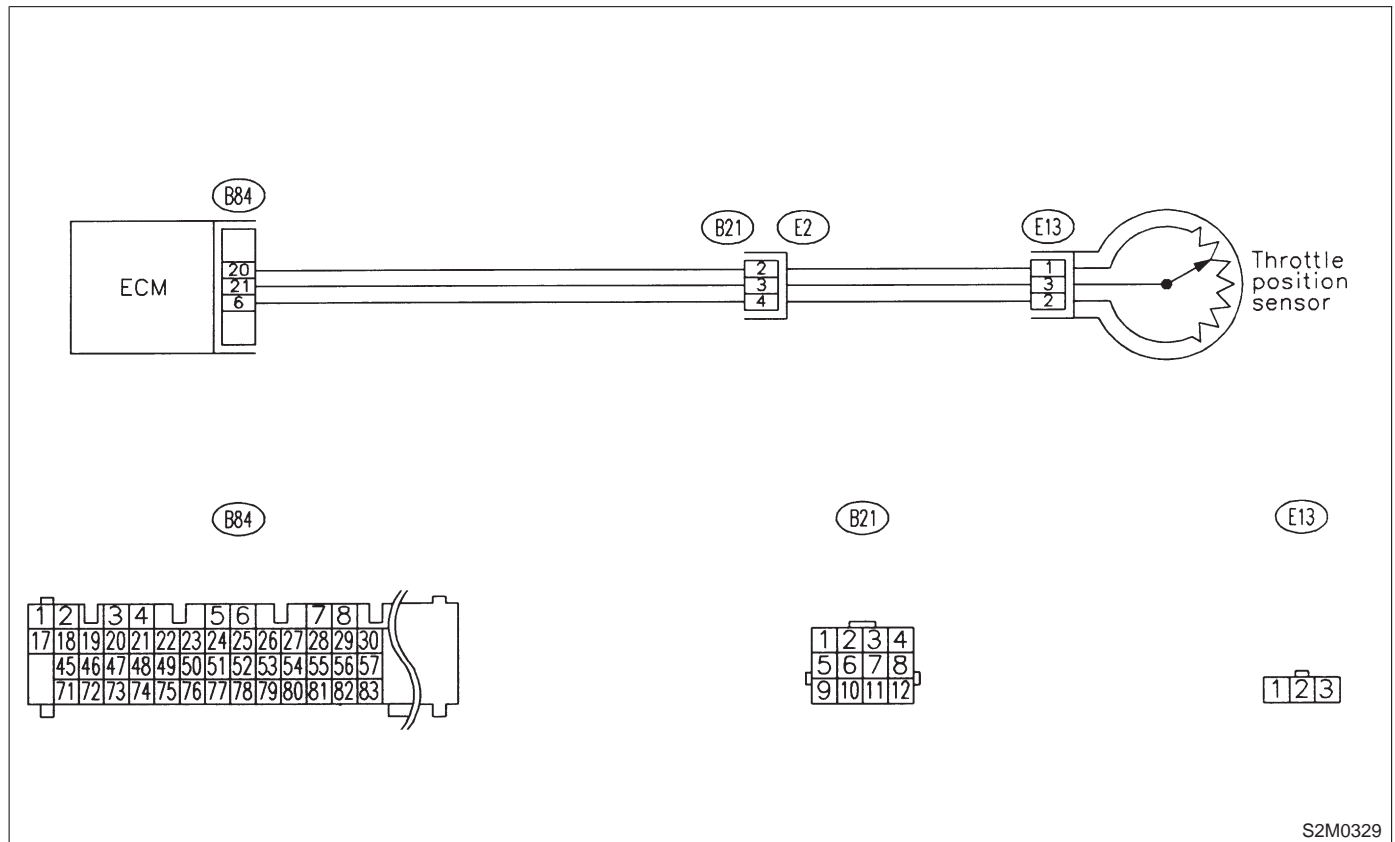
K: DTC P0122 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

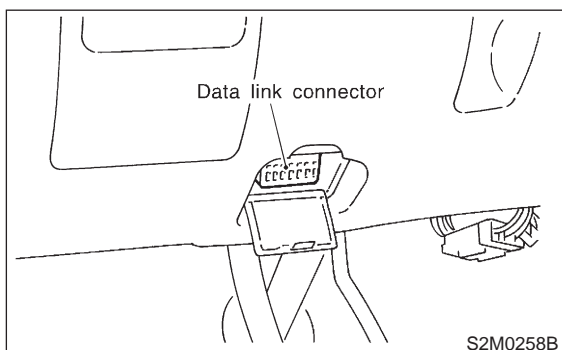
● **WIRING DIAGRAM:**



S2M0329

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.

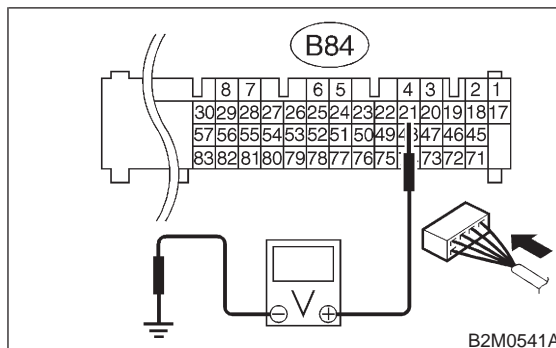
NOTE:

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

10K2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B84) No. 21 (+) — Chassis ground (-):

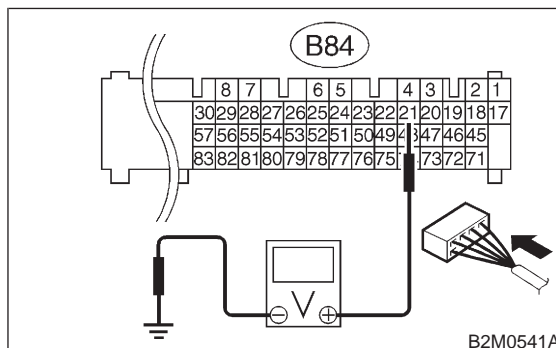


- CHECK** : *Is the voltage more than 4.5 V?*
- YES** : Go to step **10K4**.
- NO** : Go to step **10K3**.

10K3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 21 (+) — 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:

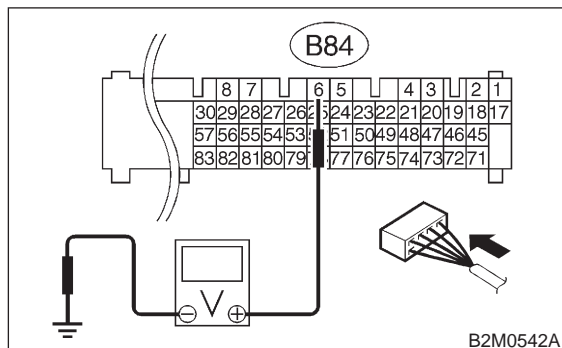
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10K4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B84) No. 6 (+) — 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.

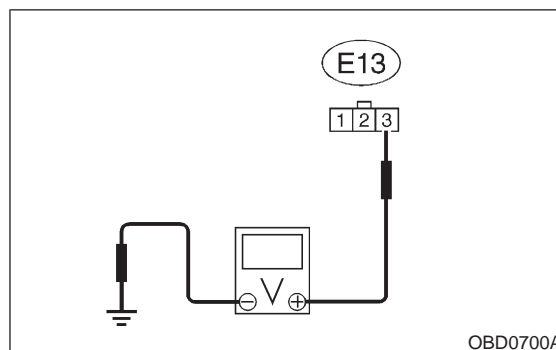
- CHECK** : Does the voltage change more than 0.1 V by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?
YES : Repair poor contact in ECM connector.
NO : Go to step 10K6.

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. 3 (+) — Engine ground (-):



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

NOTE:

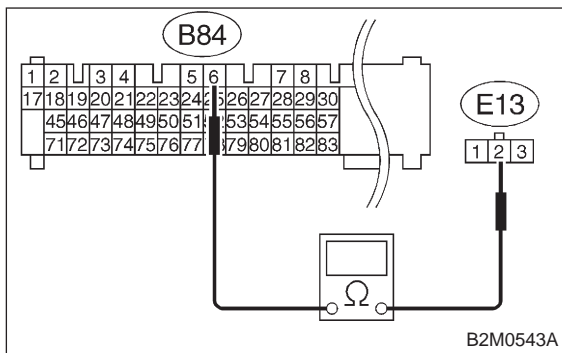
In this case, repair the following:

- 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
(B84) No. 6 — (E13) No. 2:



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

NOTE:

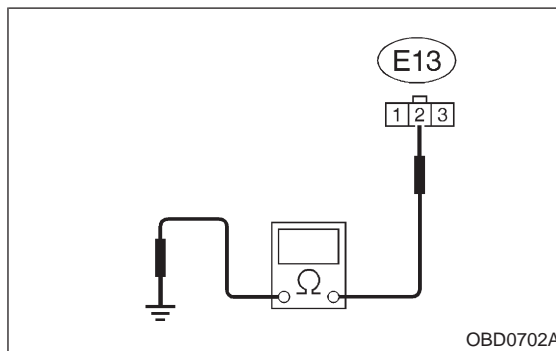
In this case, repair the following:

- 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)

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. 2 — 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.

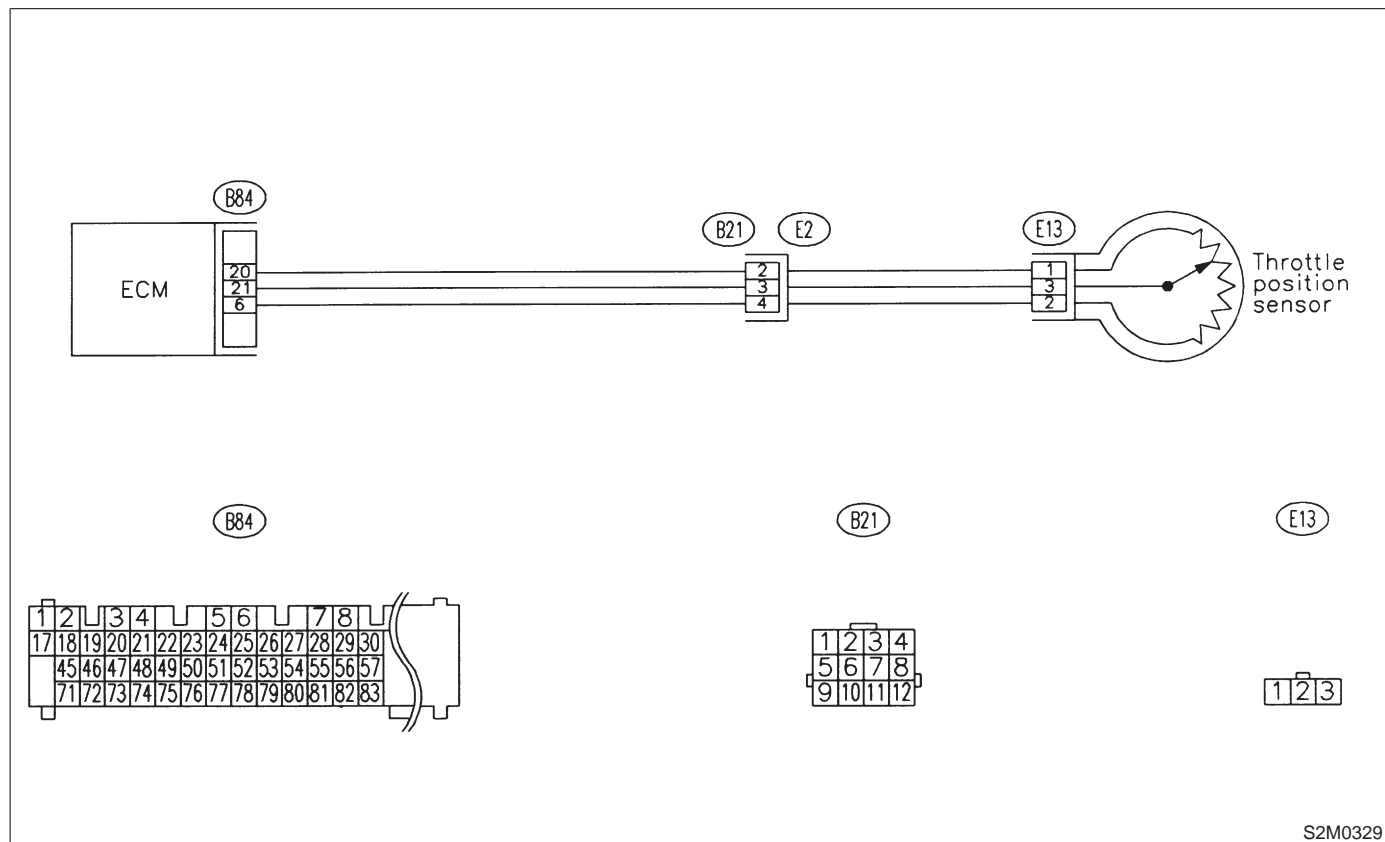
L: DTC P0123 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

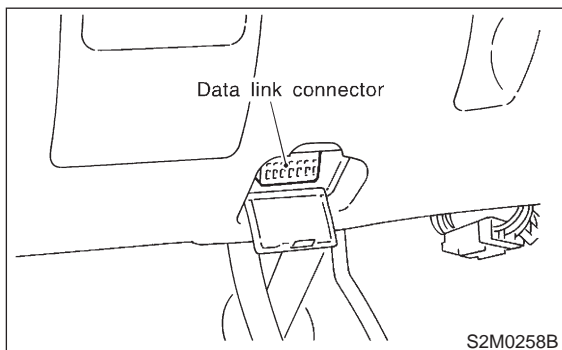
● **WIRING DIAGRAM:**



S2M0329

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:

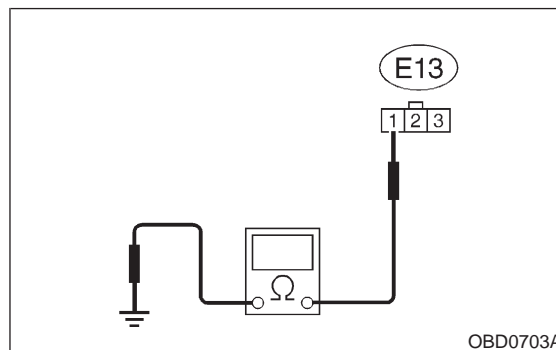
- In this case, repair the following:
- Poor contact in throttle position sensor connector
 - Poor contact in ECM connector
 - Poor contact in coupling connector (B21)

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. 1 — Engine ground:



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

NOTE:

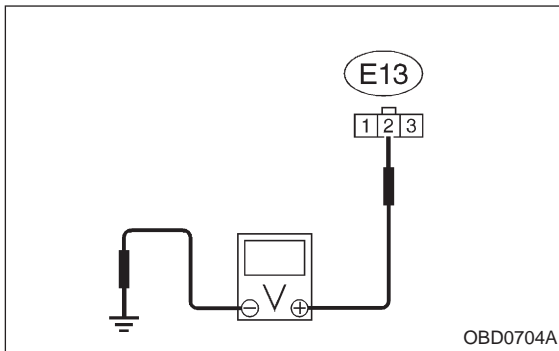
- In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
 - Poor contact in coupling connector (B21)

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. 2 (+) — 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.
- NO** : Replace throttle position sensor.

MEMO:

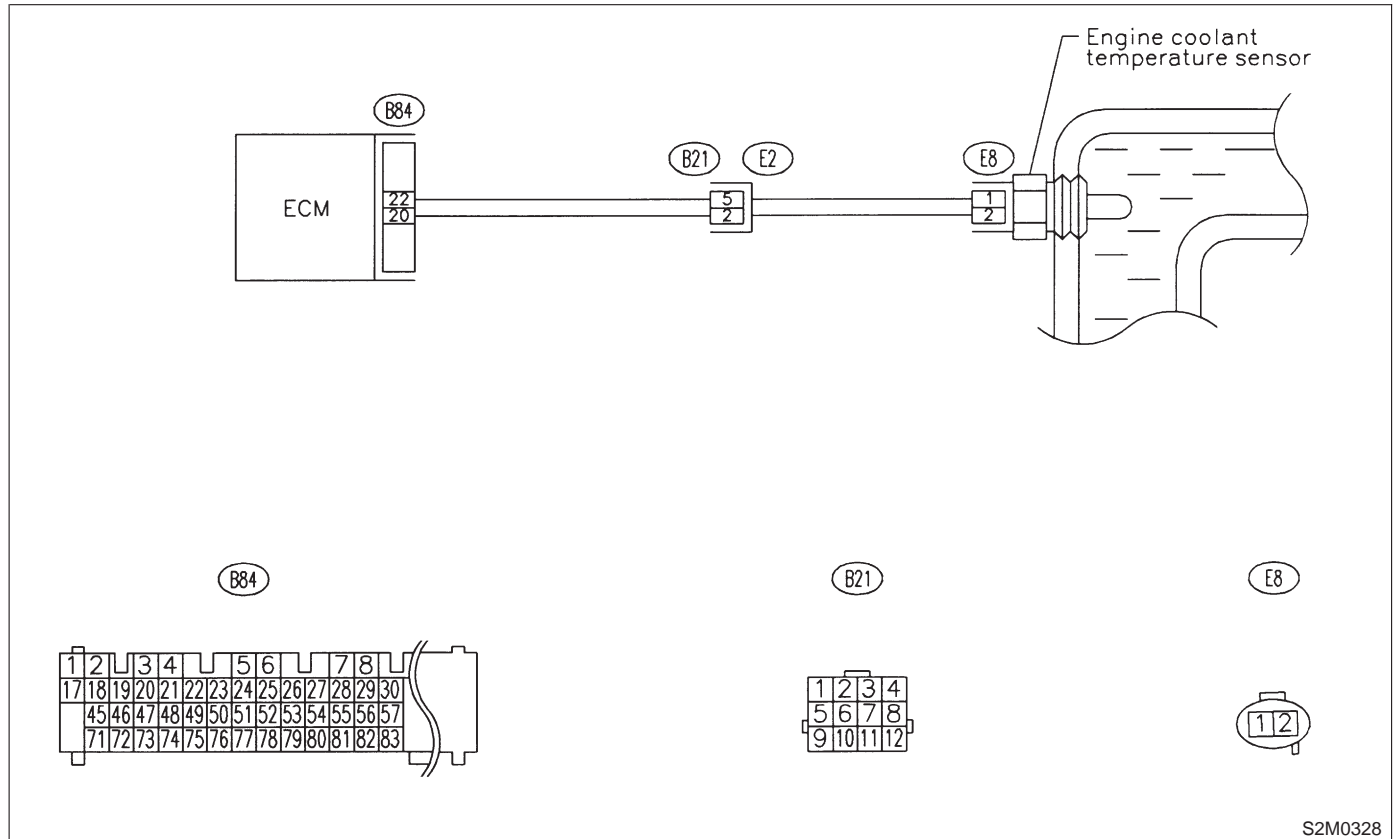
M: DTC P0125 — INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0328

10M1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : *Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0117 or P0118?*

YES : Inspect DTC P0117 or P0118 using "10. Diagnostics Chart with Trouble Code".
<Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P0125.

NO : Replace engine coolant temperature sensor.

N: DTC P0130 — FRONT OXYGEN SENSOR CIRCUIT MALFUNCTION —

• DTC DETECTING CONDITION:

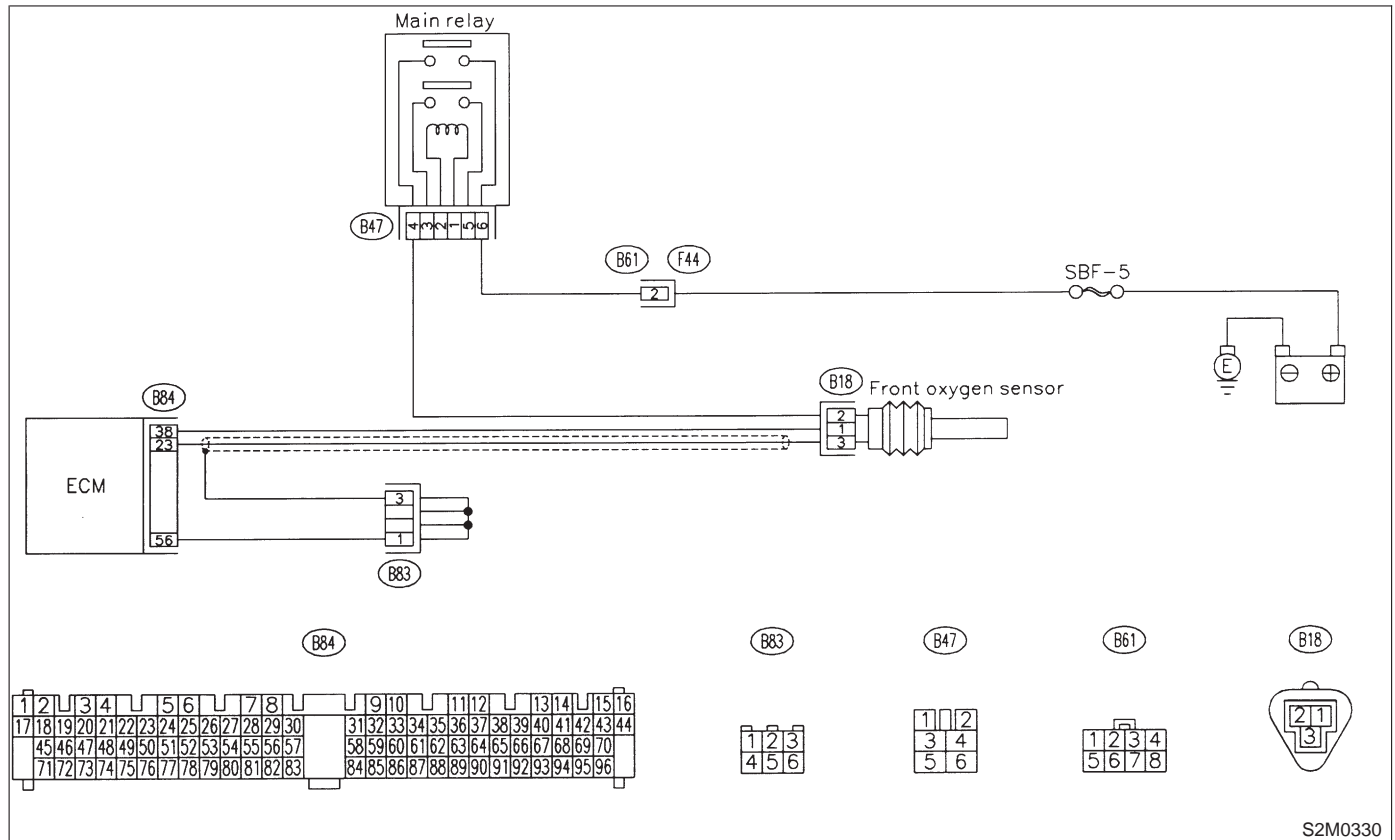
- Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

• WIRING DIAGRAM:



S2M0330

10N1 : CHECK FOR OTHER CAUSES AFFECTING EXHAUST GAS.

NOTE:

- Check for use of improper fuel.
- Check if engine oil or coolant level is extremely low.

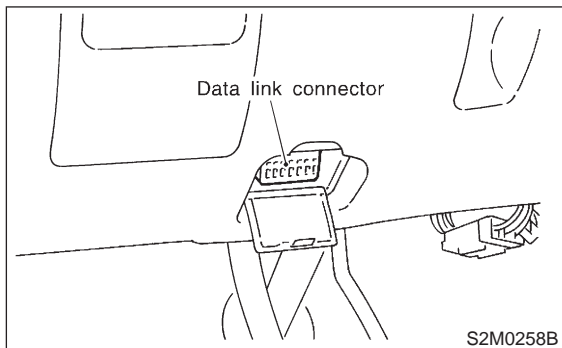
CHECK : *Is CO % more than 2 % after engine warm-up?*

YES : Check fuel system.

NO : Go to step 10N2.

10N2 : 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 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 difference of voltage less than 0.1 V between the value of max. output and min. output with function mode F12?*

YES : Go to step 10N3.

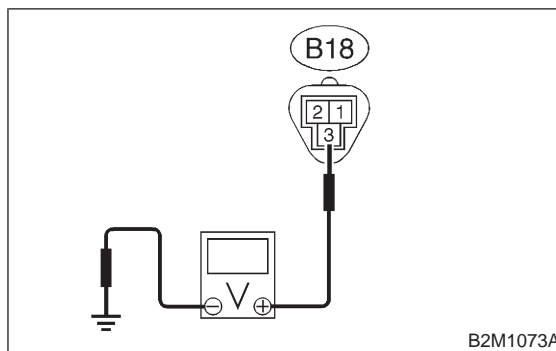
NO : Replace front oxygen sensor.

10N3 : 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

(B18) No. 3 (+) — Engine ground (-):



CHECK : *Is the voltage more than 0.2 V?*

YES : Go to step 10N4.

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

10N4 : 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.

O: DTC P0133 — FRONT OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

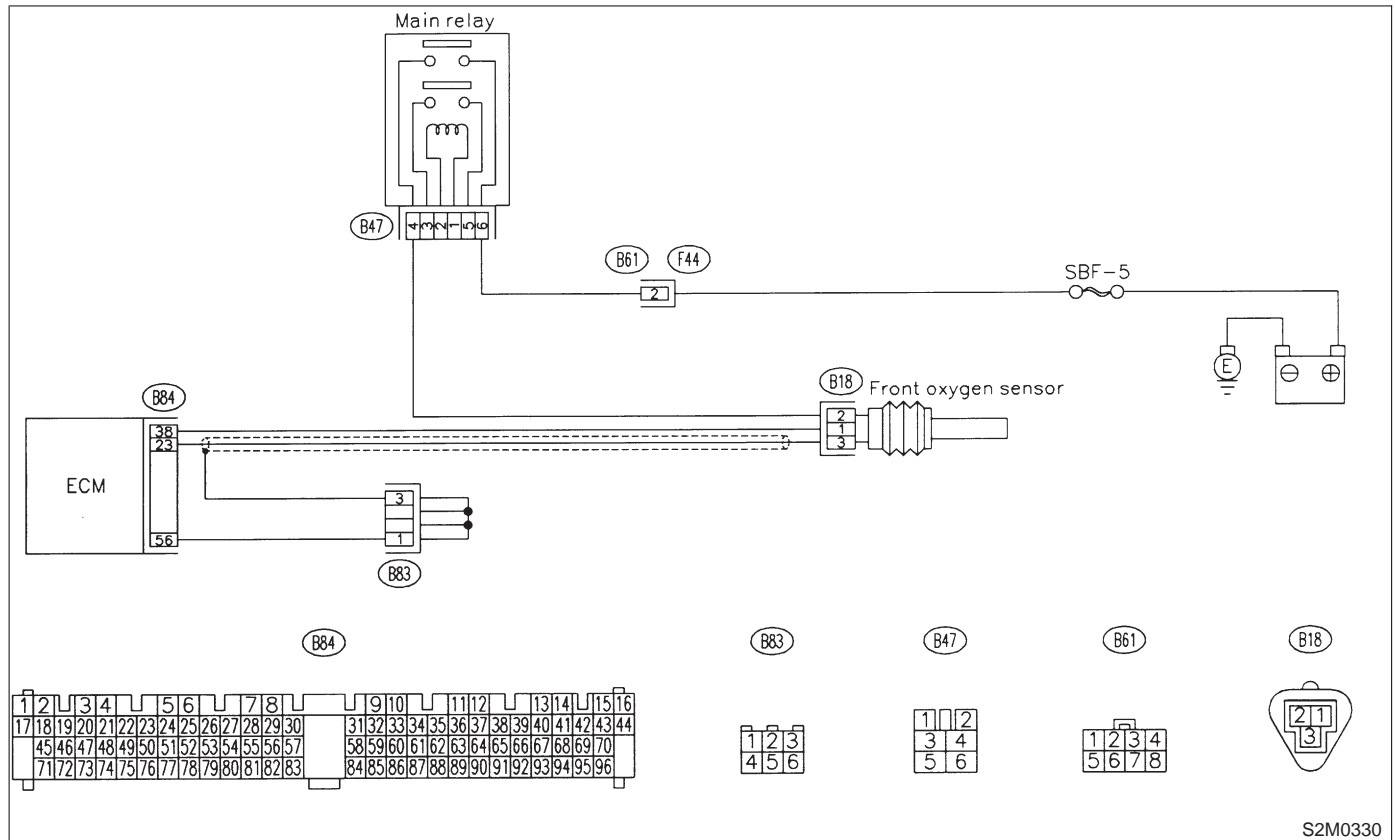
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

CAUTION:

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

WIRING DIAGRAM:



S2M0330

1001 : 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 "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P0133.

NO : Go to step 1002.

1002 : CHECK EXHAUST SYSTEM.

CHECK : Is there a fault in exhaust system?

YES : Repair 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

NO : Replace front oxygen sensor.

MEMO:

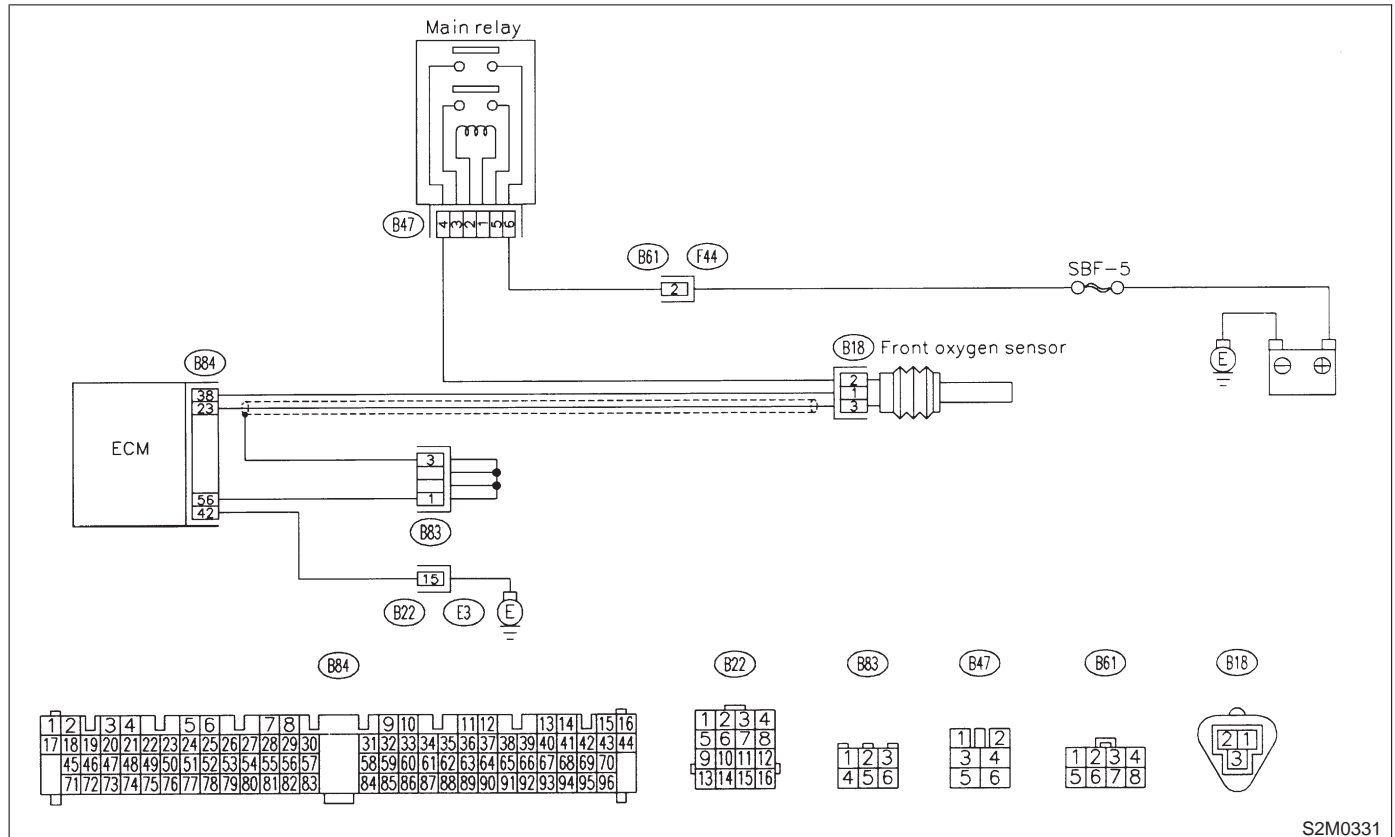
P: DTC P0135 — FRONT OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION —

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

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0331

10P1 : CHECK ANY OTHER DTC ON DISPLAY.

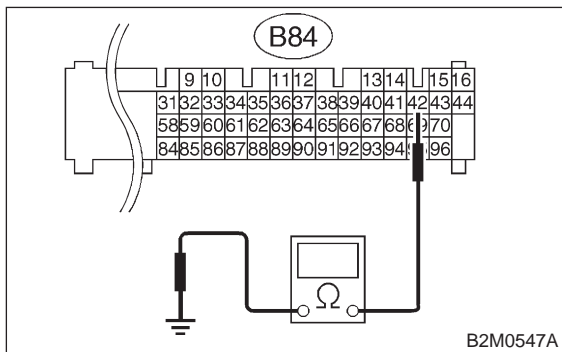
- CHECK** : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0135 and P0141 at the same time?
- YES** : Go to step 10P2.
- NO** : Go to step 10P3.

10P2 : 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

(B84) No. 42 — Chassis ground:



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

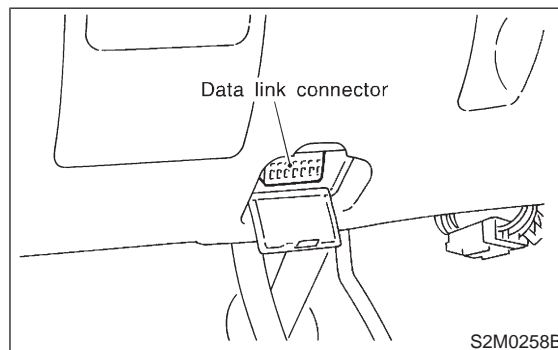
NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and coupling connector (B22)
- Open circuit in harness between coupling connector (B22) and engine grounding terminal
- Poor contact in front oxygen sensor connector
- Poor contact in coupling connector (B22)

10P3 : 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:

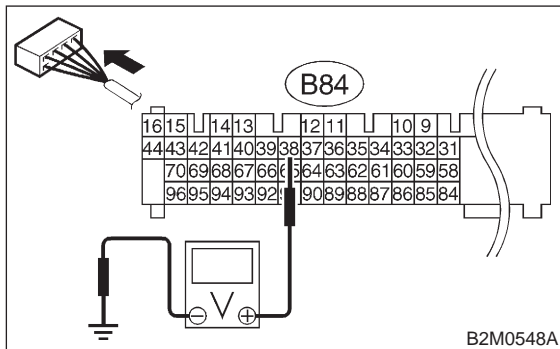
In this case, repair the following:

- Poor contact in front oxygen sensor connector
- Poor contact in ECM connector

- NO** : Go to step **10P4**.

10P4 : CHECK OUTPUT SIGNAL FROM ECM.

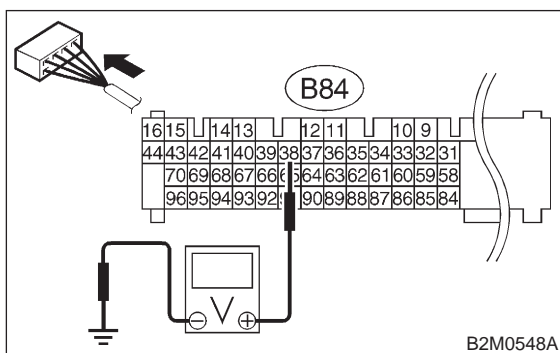
- 1) Start and idle the engine.
- 2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 38 (+) — Chassis ground (-):


- CHECK** : **Is the voltage less than 1.0 V?**
- YES** : Go to step 10P7.
- NO** : Go to step 10P5.

10P5 : CHECK OUTPUT SIGNAL FROM ECM.

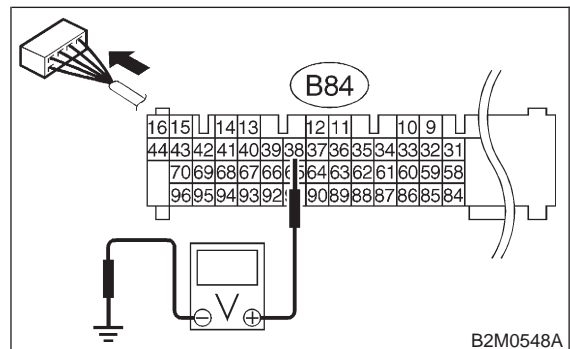
Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 38 (+) — 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 10P6.

10P6 : CHECK OUTPUT SIGNAL FROM ECM.

- 1) Disconnect connector from front oxygen sensor.
- 2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 38 (+) — Chassis ground (-):


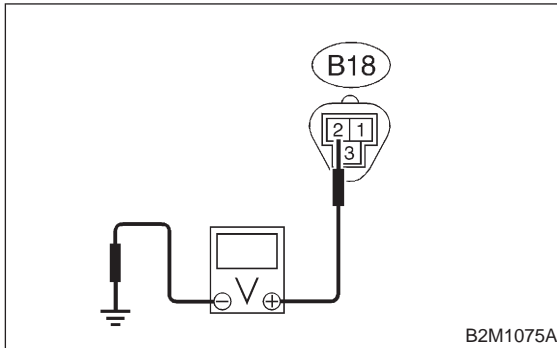
- CHECK** : **Is the voltage less than 1.0 V?**
- YES** : Replace ECM.
- NO** : Repair battery short circuit in harness between ECM and front oxygen sensor connector. After repair, replace ECM.

10P7 : 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

(B18) No. 2 (+) — Engine ground (-):



CHECK : *Is the voltage more than 10 V?*

YES : Go to step 10P8.

NO : Repair power supply line.

NOTE:

In this case, repair the following:

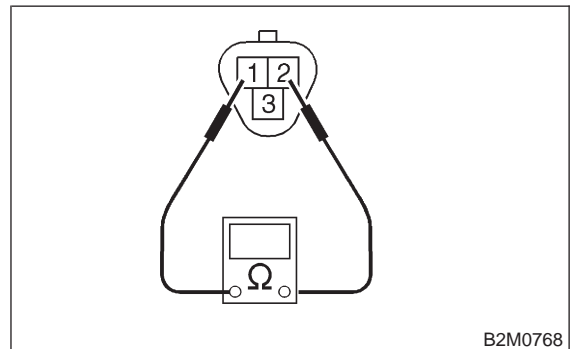
- Open circuit in harness between main relay and front oxygen sensor connector
- Poor contact in front oxygen sensor connector
- Poor contact in main relay connector

10P8 : 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.

Q: DTC P0136 — REAR OXYGEN SENSOR CIRCUIT MALFUNCTION —

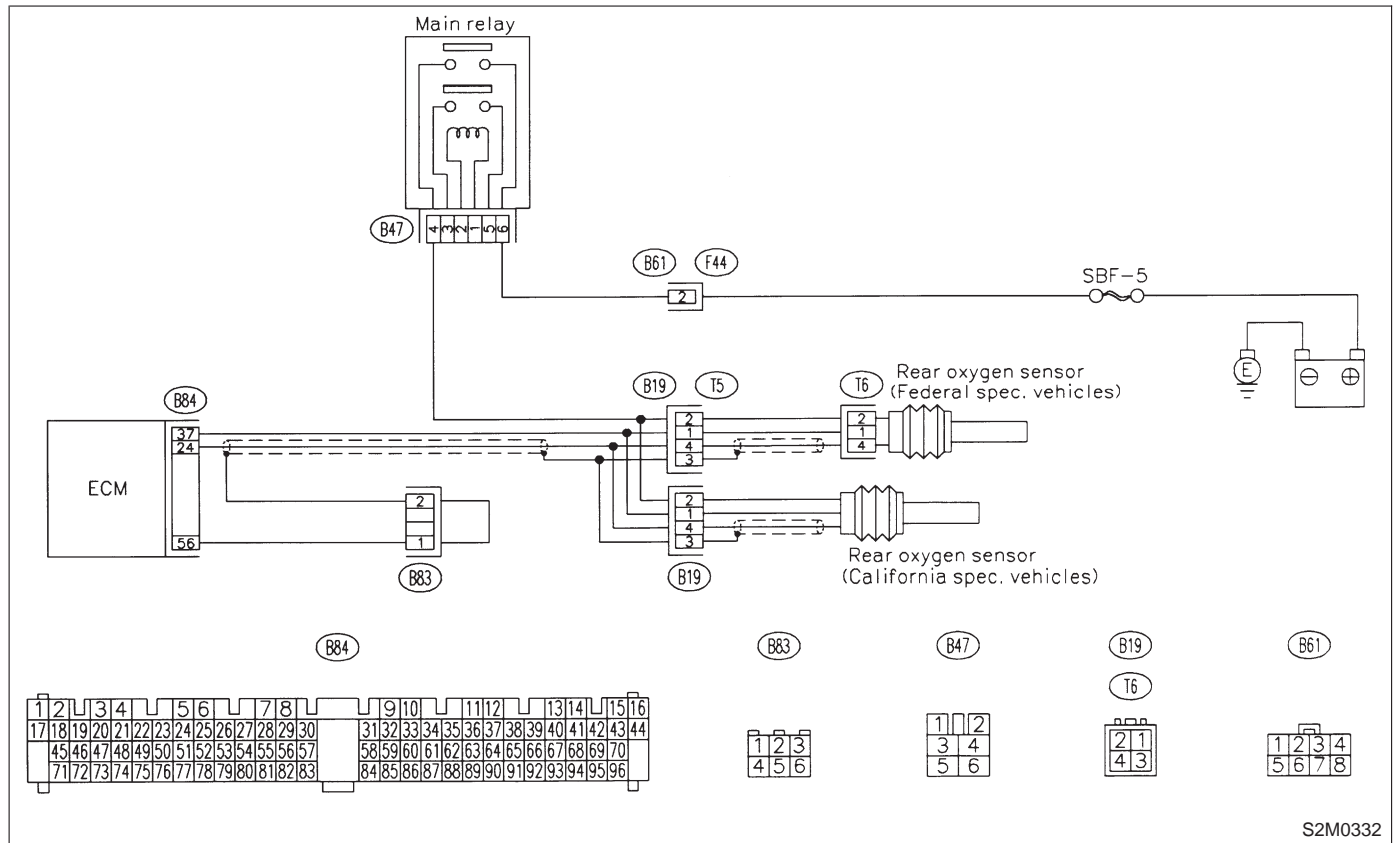
• DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

CAUTION:

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

• WIRING DIAGRAM:



S2M0332

10Q1 : CHECK ANY OTHER DTC ON DISPLAY.

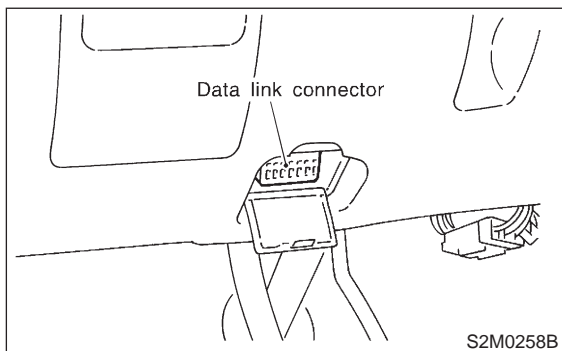
- (CHECK)** : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0130?
- (YES)** : Go to step 10Q2.
- (NO)** : Go to step 10Q3.

10Q2 : CHECK FAILURE CAUSE OF P0130.

- Perform the step 10N1 of DTC P0130. <Ref. to 2-7 [T10N1].>
- (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 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 10Q8.
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.

10Q5 : CHECK VEHICLE SPECIFICATION.

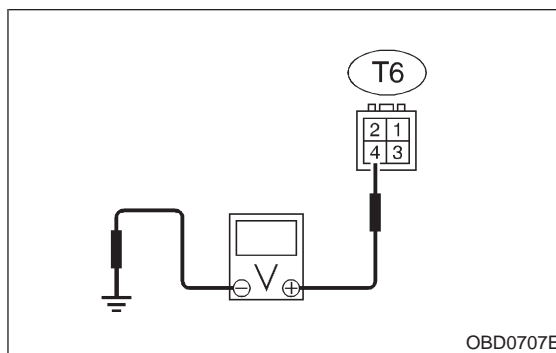
- CHECK** : *Is the vehicle California specification?*
YES : Go to step 10Q6.
NO : Go to step 10Q7.

10Q6 : 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

(B19) No. 4 (+) — Engine ground (-):



- CHECK** : *Is the voltage more than 0.2 V?*
YES : Replace rear oxygen sensor.
NO : Repair harness and connector.

NOTE:

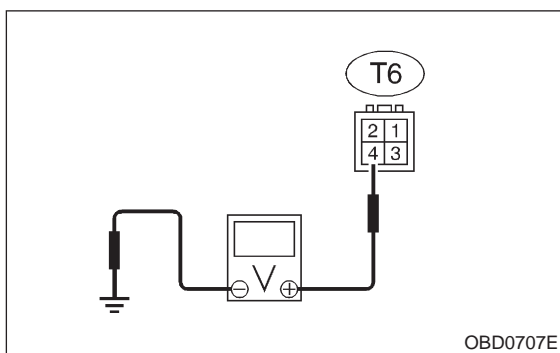
- In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
 - Poor contact in rear oxygen sensor connector
 - Poor contact in ECM connector

10Q7 : CHECK 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

(T6) No. 4 (+) — Chassis ground (-):



CHECK : **Is the voltage more than 0.2 V?**

YES : Replace rear oxygen sensor.

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
- Poor contact in rear oxygen sensor connecting harness connector

10Q8 : CHECK EXHAUST SYSTEM.

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.

R: DTC P0139 — REAR OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

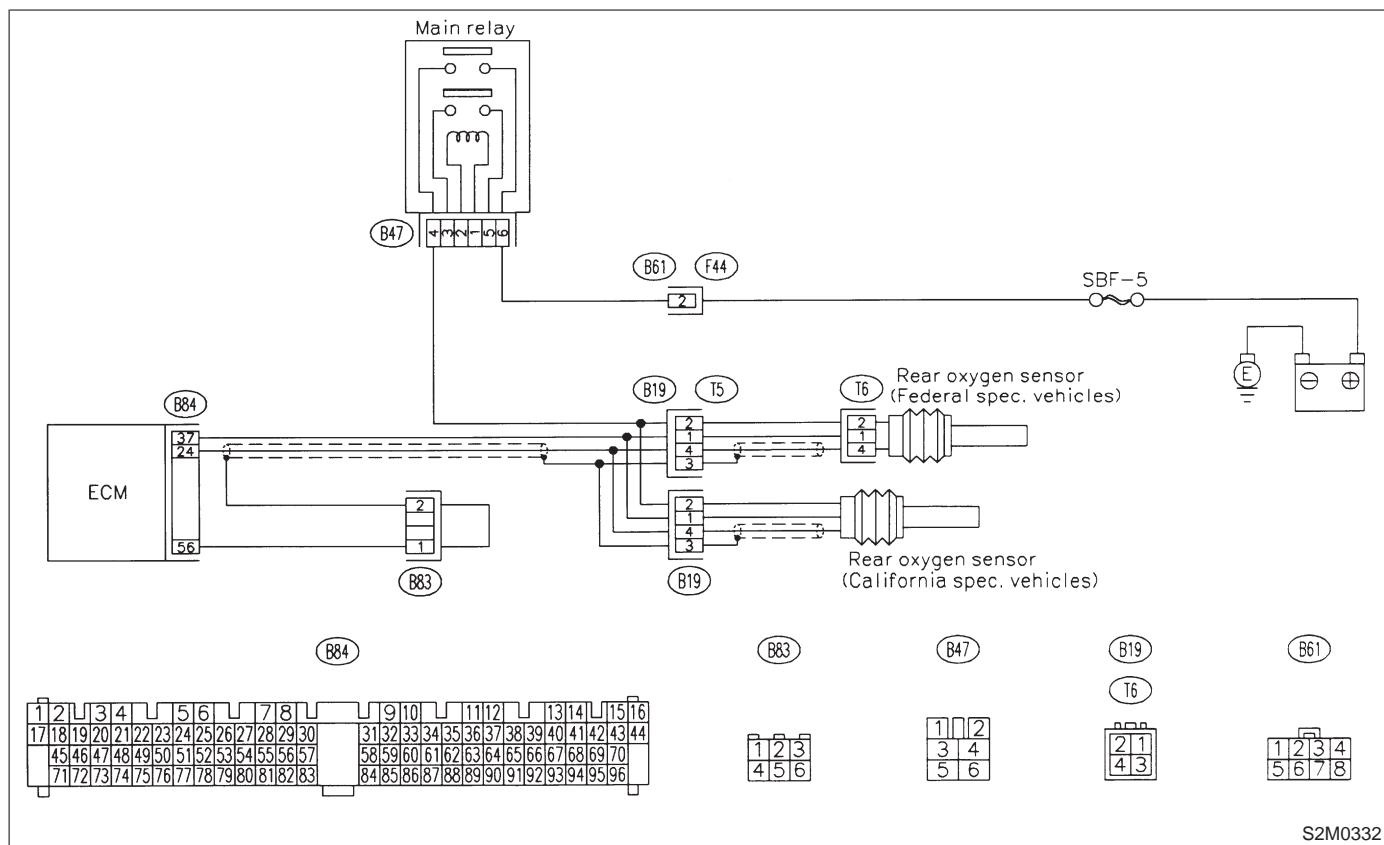
● DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

CAUTION:

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

● WIRING DIAGRAM:



S2M0332

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". <Ref. to 2-7 [T1000].>

NOTE:
 In this case, it is not necessary to inspect DTC P0139.

NO : Replace rear oxygen sensor.

S: DTC P0141 — REAR OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION

DTC DETECTING CONDITION:

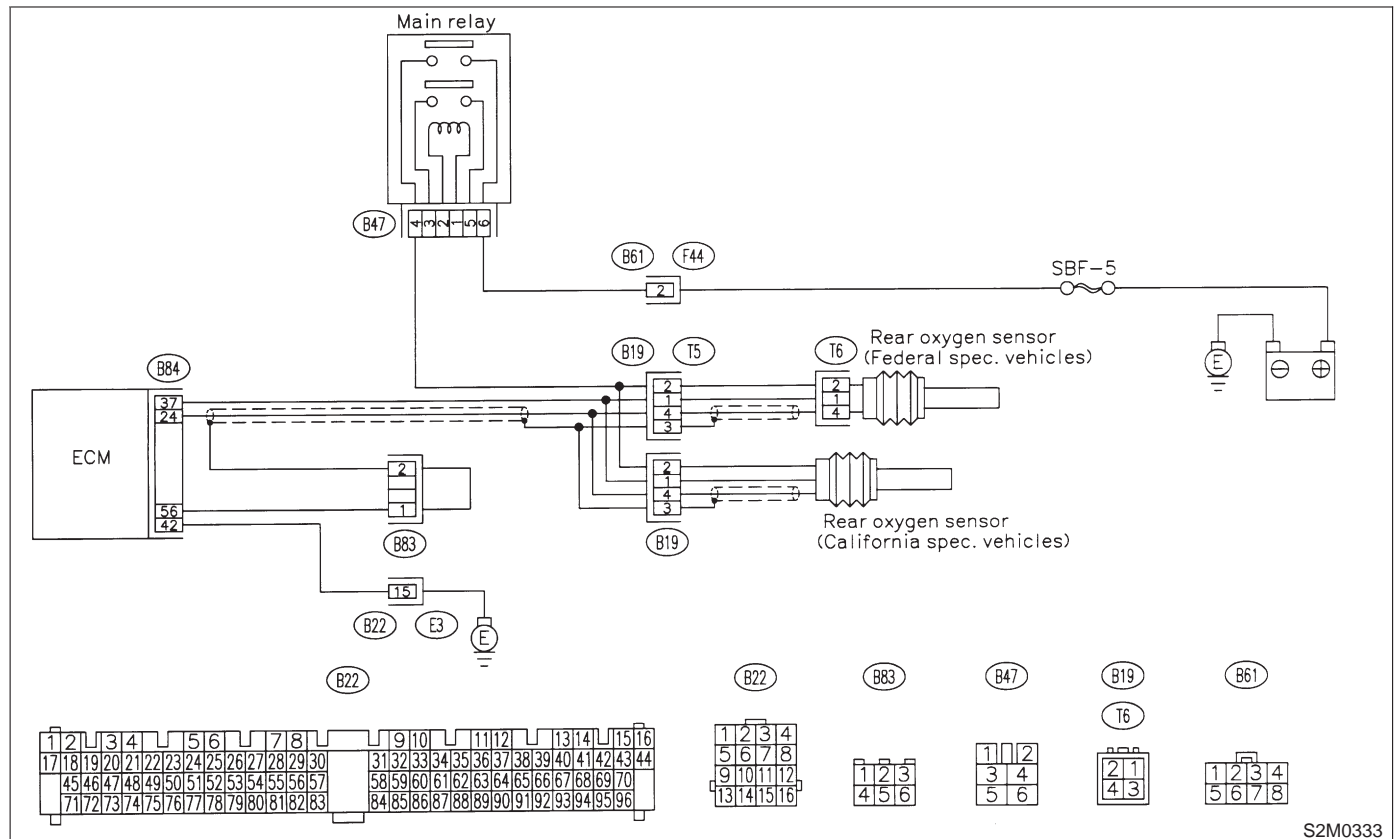
- Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <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.

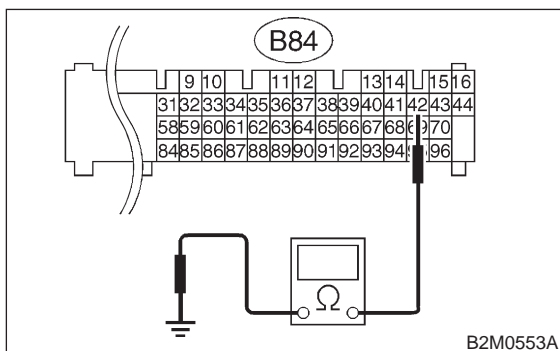
NO : Go to step 10S3.

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

(B84) No. 42 — Chassis ground:



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

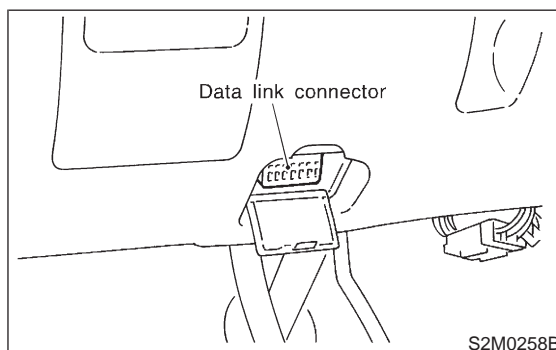
NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and coupling connector (B22)
- Open circuit in harness between coupling connector (B22) and engine grounding terminal
- Poor contact in rear oxygen sensor connector
- Poor contact in rear oxygen sensor connecting harness connector (B19)
- Poor contact in coupling connector (B22)

10S3 : 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:

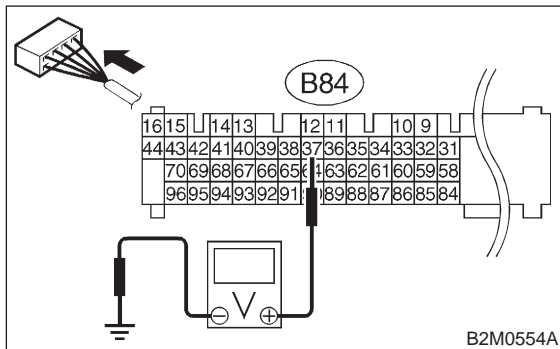
In this case, repair the following:

- 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 **10S4**.

10S4 : CHECK OUTPUT SIGNAL FROM ECM.

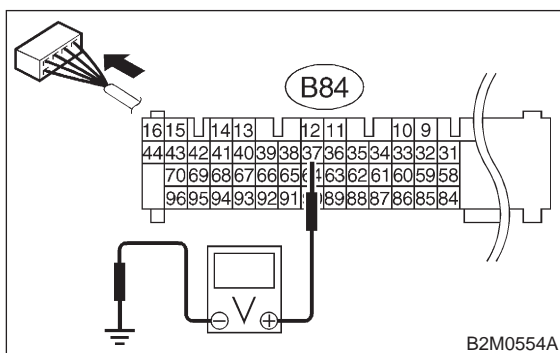
- 1) Start and idle the engine.
- 2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 37 (+) — Chassis ground (-):


- (CHECK)** : **Is the voltage less than 1.0 V?**
- (YES)** : Go to step **10S7**.
- (NO)** : Go to step **10S5**.

10S5 : CHECK OUTPUT SIGNAL FROM ECM.

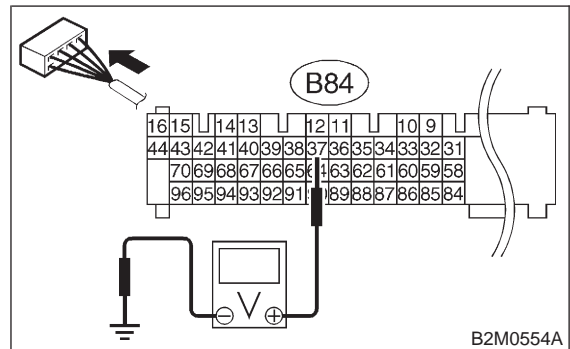
Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 37 (+) — 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 **10S6**.

10S6 : CHECK OUTPUT SIGNAL FROM ECM.

- 1) Disconnect connector from rear oxygen sensor.
- 2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 37 (+) — Chassis ground (-):


- (CHECK)** : **Is the voltage less than 1.0 V?**
- (YES)** : Replace ECM.
- (NO)** : Repair battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace ECM.

10S7 : CHECK VEHICLE SPECIFICATION.

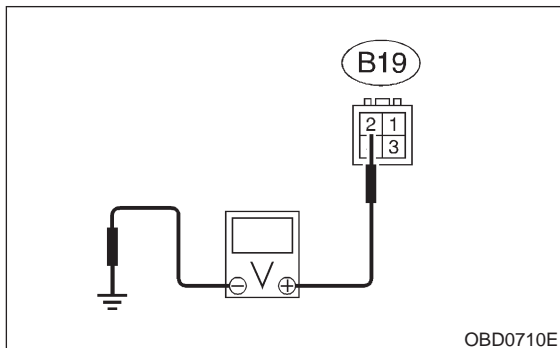
- (CHECK)** : **Is the vehicle California specification?**
- (YES)** : Go to step **10S8**.
- (NO)** : Go to step **10S9**.

10S8 : 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

(B19) No. 2 (+) — Engine ground (-):



CHECK : *Is the voltage more than 10 V?*

YES : Go to step **10S10**.

NO : Repair power supply line.

NOTE:

In this case, repair the following:

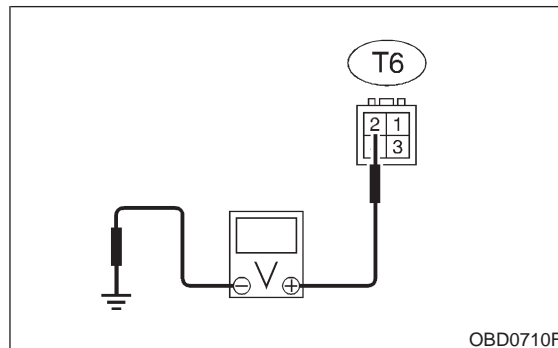
- Open circuit in harness between main relay and rear oxygen sensor connector
- Poor contact in rear oxygen sensor connector

10S9 : 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

(T6) No. 2 (+) — Chassis ground (-):



CHECK : *Is the voltage more than 10 V?*

YES : Go to step **10S10**.

NO : Repair power supply line.

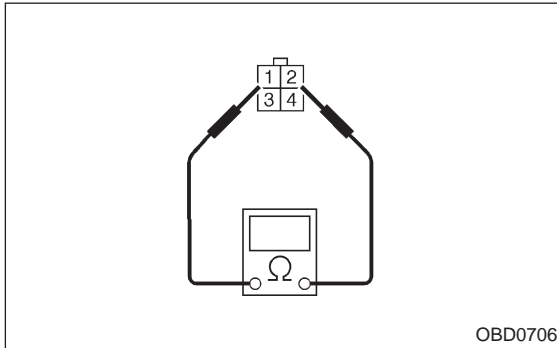
NOTE:

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 rear oxygen sensor connecting harness connector

10S10 : 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 rear oxygen sensor connecting harness connector

NO : Replace rear oxygen sensor.

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** and **INSPECTION MODES**.
<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

10T1 : CHECK EXHAUST SYSTEM.

CHECK : Are there holes or loose bolts on exhaust system?

YES : Repair exhaust system.

NO : Go to step 10T2.

10T2 : CHECK AIR INTAKE SYSTEM.

CHECK : Are there holes, loose bolts or disconnection of hose on air intake system?

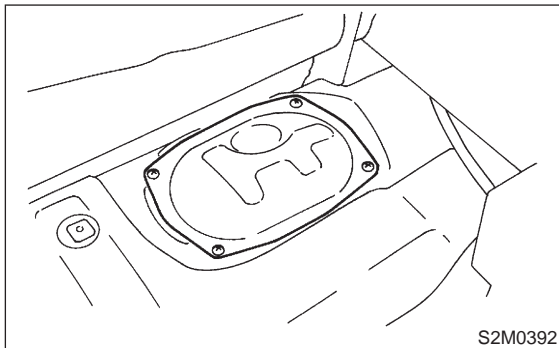
YES : Repair air intake system.

NO : Go to step 10T3.

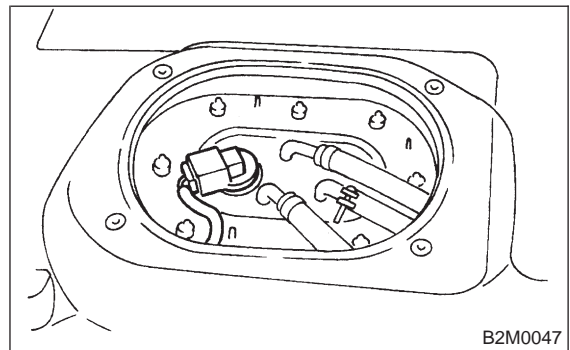
10T3 : CHECK FUEL PRESSURE.

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).



2) Disconnect connector from fuel tank.



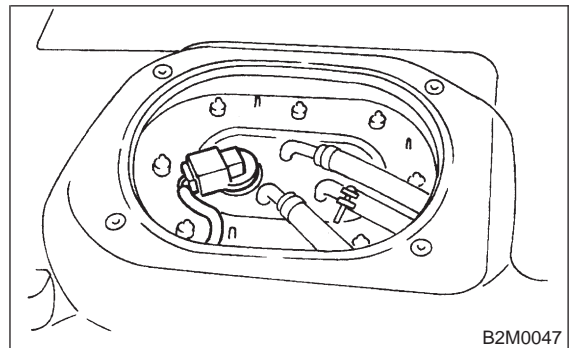
3) Start the engine, and run it until it stalls.

- (4) After stopping the engine, crank the engine for 5 to 7 seconds to reduce fuel pressure.

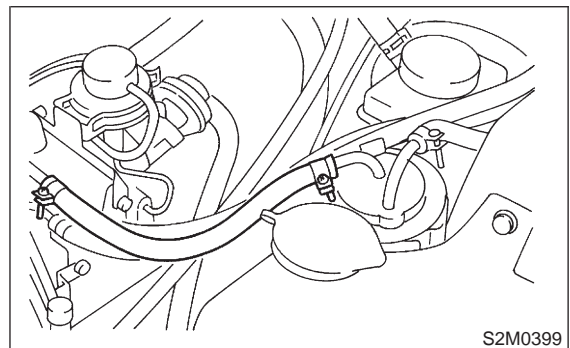
5) Turn ignition switch to OFF.

6) Remove fuel filler cap.

2) Connect connector to fuel tank.



3) Disconnect fuel delivery hose from fuel filter, and connect fuel pressure gauge.



4) Install fuel filler cap.

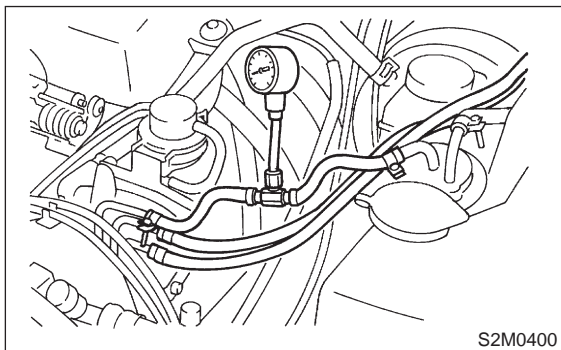
- 5) Start the engine and idle while gear position is neutral.
- 6) Measure fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.

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.



CHECK : *Is fuel pressure between 226 and 275 kPa (2.3 — 2.8 kg/cm², 33 — 40 psi)?*

YES : Go to step 10T4.

NO : Repair the following items.

Fuel pressure too high	<ul style="list-style-type: none"> ● Clogged fuel return line or bent hose
Fuel pressure too low	<ul style="list-style-type: none"> ● Improper fuel pump discharge ● Clogged fuel supply line

10T4 : CHECK FUEL PRESSURE.

After connecting pressure regulator vacuum hose, measure fuel pressure.

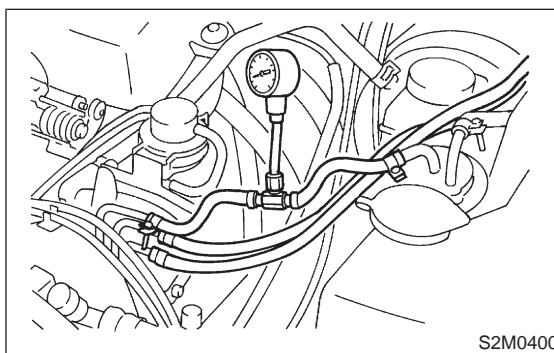
WARNING:

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.



CHECK : *Is fuel pressure between 157 and 206 kPa (1.6 — 2.1 kg/cm², 23 — 30 psi)?*

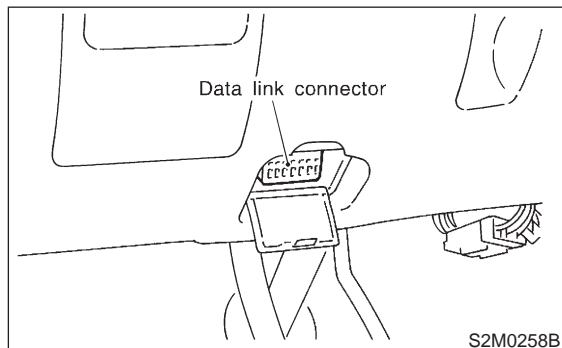
YES : Go to step 10T5.

NO : Repair the following items.

Fuel pressure too high	<ul style="list-style-type: none"> ● Faulty pressure regulator ● Clogged fuel return line or bent hose
Fuel pressure too low	<ul style="list-style-type: none"> ● Faulty pressure regulator ● Improper fuel pump discharge ● Clogged fuel supply line

10T5 : 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 10T6.

NO : Replace engine coolant temperature sensor.

10T6 : 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.

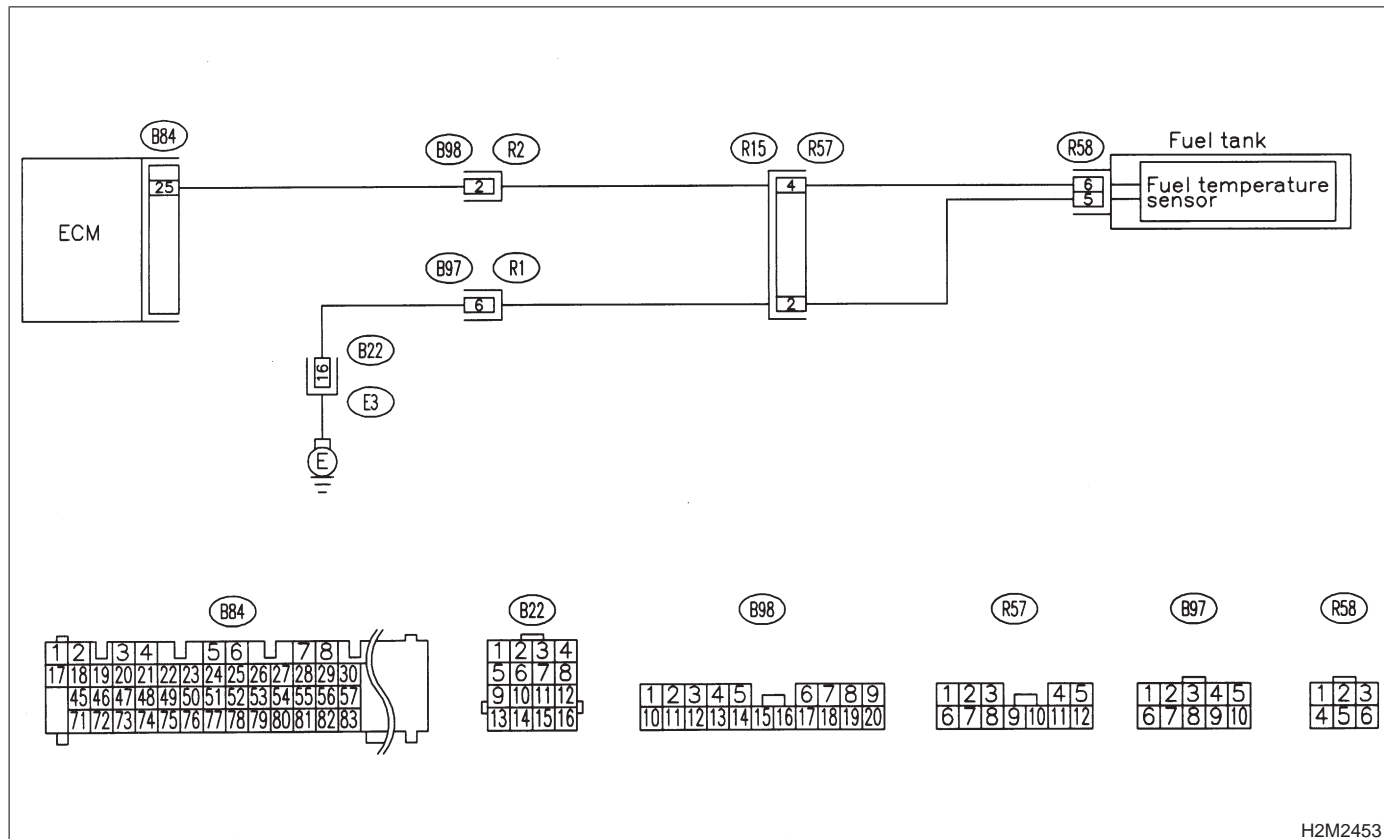
U: DTC P0181 — FUEL TEMPERATURE SENSOR A CIRCUIT RANGE/PERFORMANCE PROBLEM —

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

CAUTION:

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

● **WIRING DIAGRAM:**



H2M2453

10U1 : 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". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P0181.

- NO** : Replace fuel temperature sensor.

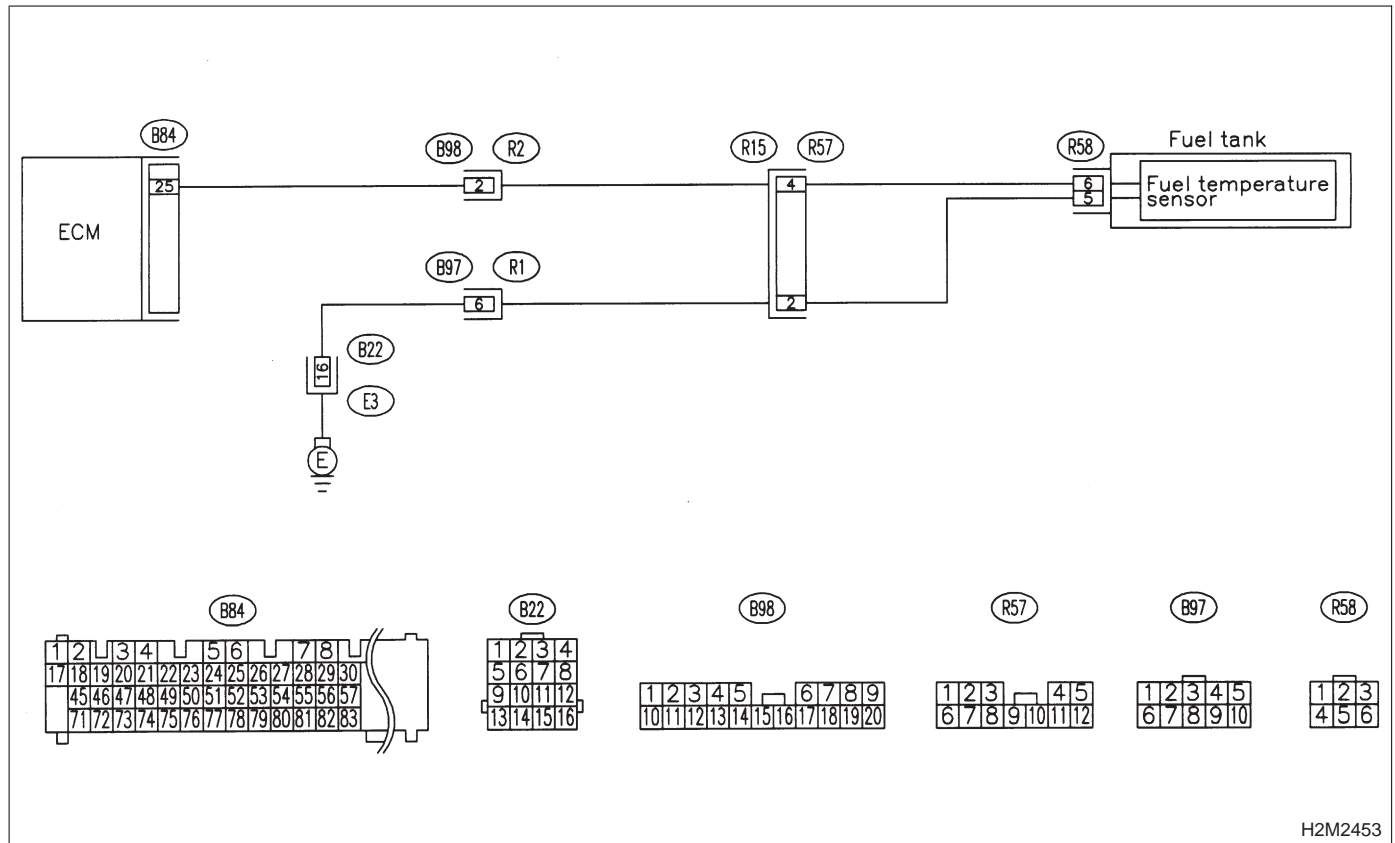
V: DTC P0182 — FUEL TEMPERATURE SENSOR A CIRCUIT LOW INPUT —

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

CAUTION:

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

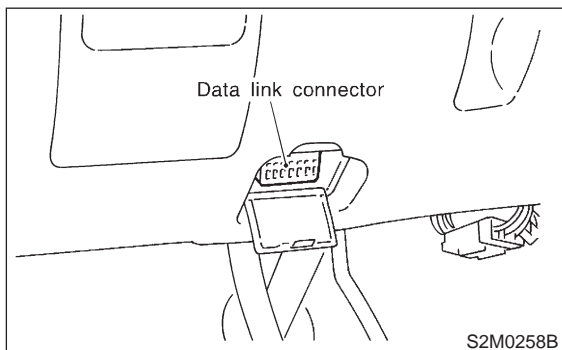
● **WIRING DIAGRAM:**



H2M2453

10V1 : 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.

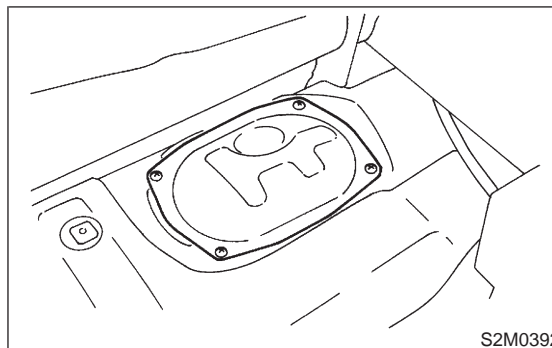
CHECK : *Is the value greater than 150°C (300°F)?*

YES : Go to step 10V2.

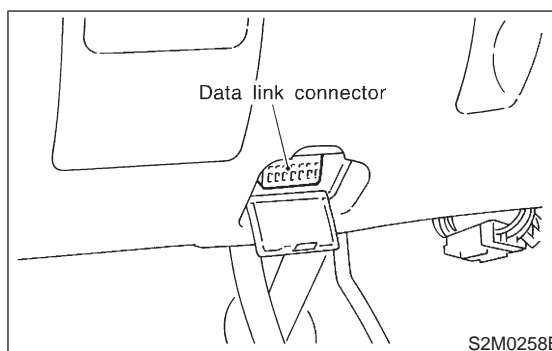
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

10V2 : 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.

NO : Repair ground short circuit in harness between fuel pump and ECM connector.

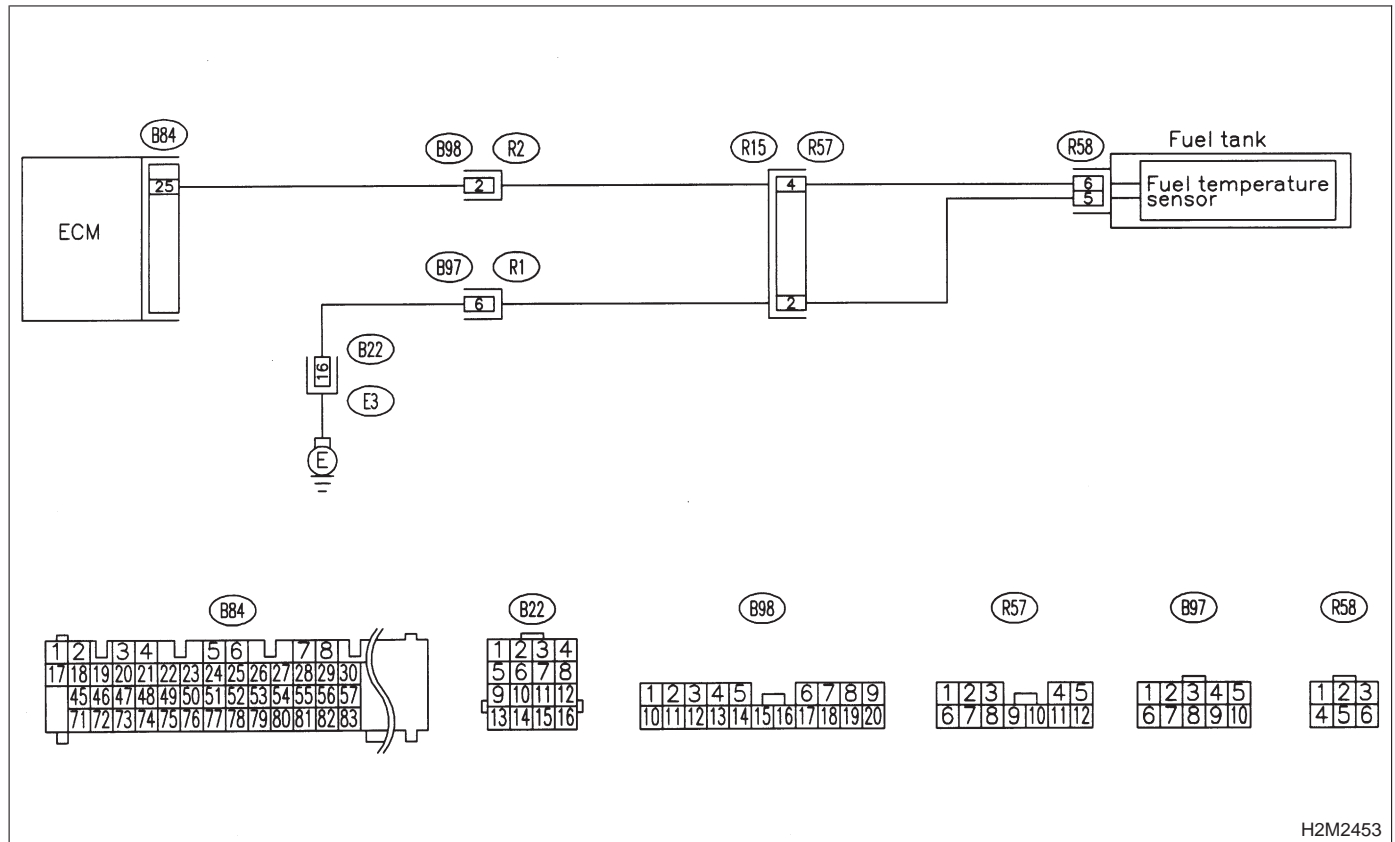
W: DTC P0183 — FUEL TEMPERATURE SENSOR A CIRCUIT HIGH INPUT —

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

CAUTION:

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

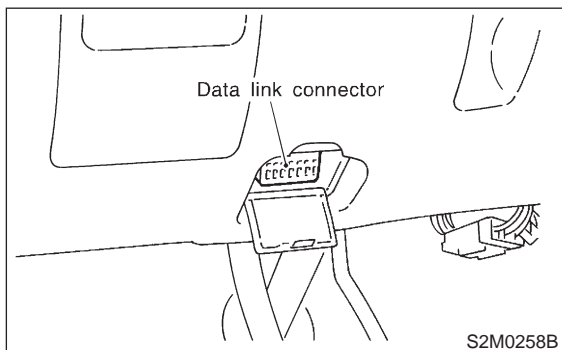
● **WIRING DIAGRAM:**



H2M2453

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.

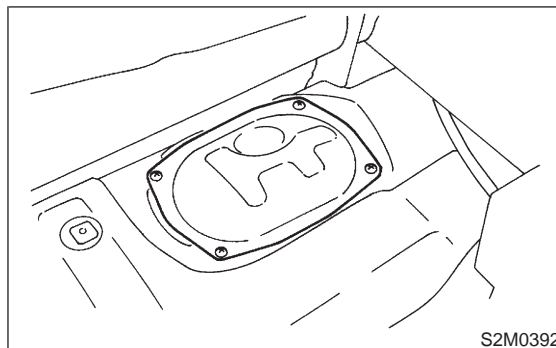
- CHECK** : *Is the value less than -40°C (-40°F)?*
YES : Go to step **10W2**.
NO : Repair poor contact.

NOTE:

- In this case, repair the following:
- Poor contact in fuel pump connector
 - Poor contact in ECM connector
 - Poor contact in coupling connectors (B22, B97, B98 and R57)

10W2 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

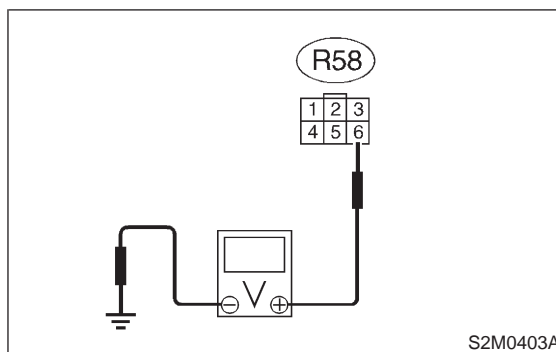
- 1) Turn ignition switch to OFF.
- 2) Remove access hole lid.



- 3) Disconnect connector from fuel pump.
- 4) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal

(R58) No. 6 (+) — Chassis ground (-):



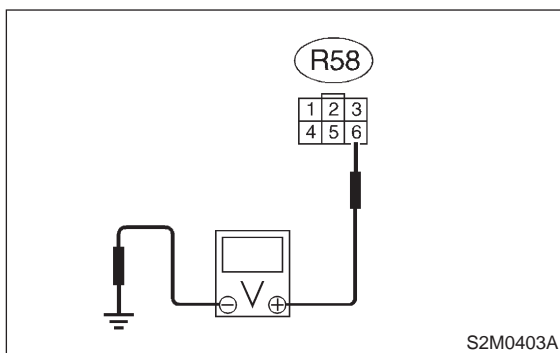
- CHECK** : *Is the voltage more than 10 V?*
YES : Repair battery short circuit in harness between ECM and fuel pump connector.
NO : Go to step **10W3**.

10W3 : 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 (-):



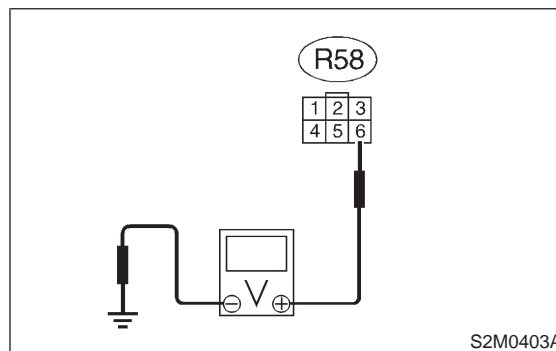
- CHECK** : **Is the voltage more than 10 V?**
- YES** : Repair battery short circuit in harness between ECM and fuel pump connector.
- NO** : Go to step **10W4**.

10W4 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

Measure voltage between fuel pump connector and chassis ground.

Connector & terminal

(R58) No. 2 (+) — Chassis ground (-):



- CHECK** : **Is the voltage more than 4 V?**
- YES** : Go to step **10W5**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

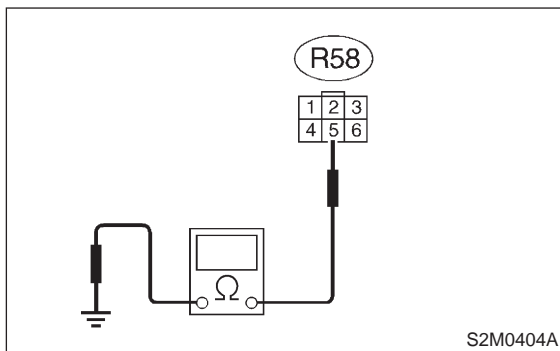
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B98 and R57)

10W5 : 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.

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 P0261 — FUEL INJECTOR CIRCUIT LOW INPUT - #1 —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10AA0]. <Ref. to 2-7 [T10AA0].>

Y: DTC P0264 — FUEL INJECTOR CIRCUIT LOW INPUT - #2 —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10AA0]. <Ref. to 2-7 [T10AA0].>

Z: DTC P0267 — FUEL INJECTOR CIRCUIT LOW INPUT - #3 —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10AA0]. <Ref. to 2-7 [T10AA0].>

AA: DTC P0270 — FUEL INJECTOR CIRCUIT LOW INPUT - #4 —

● **DTC DETECTING CONDITION:**

- Immediately at fault recognition

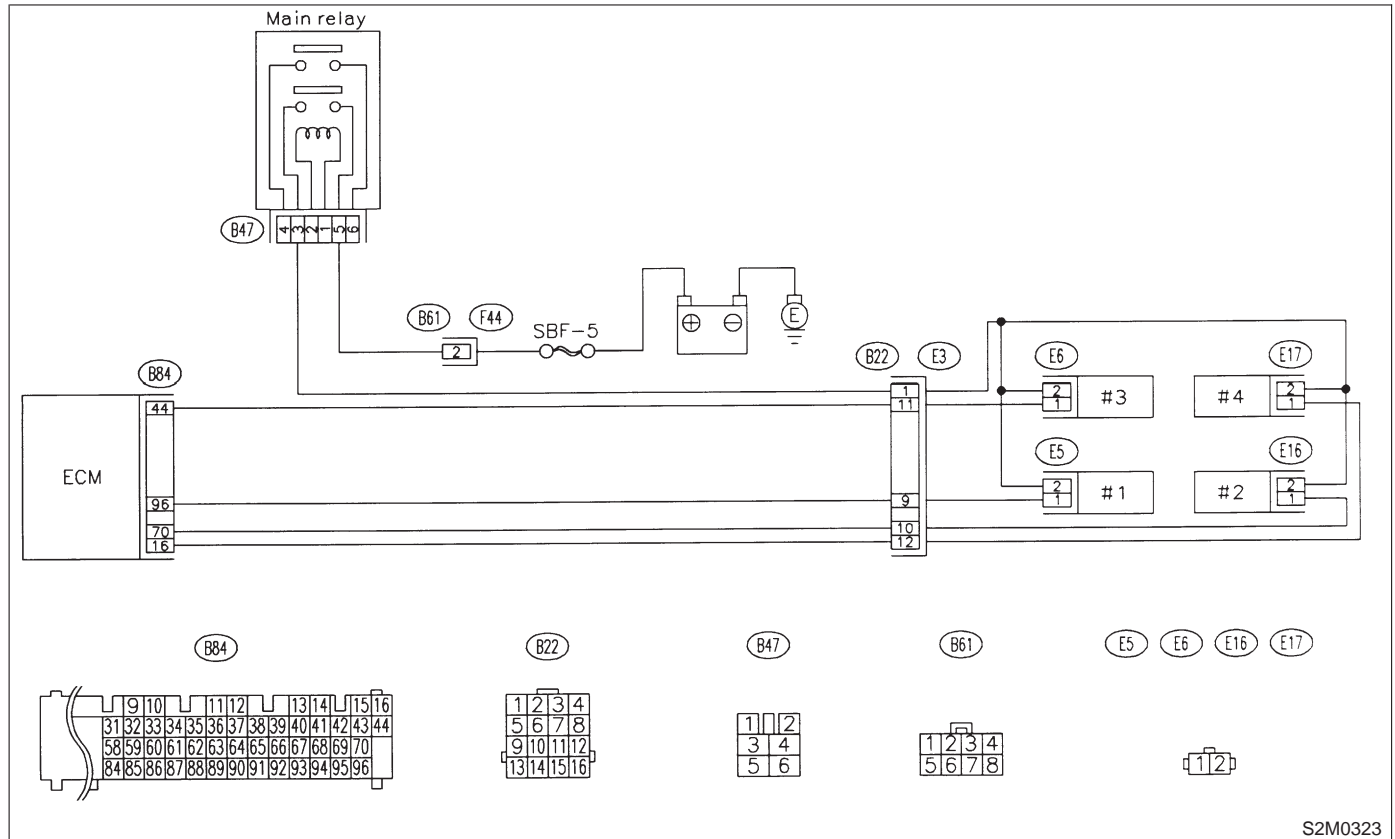
● **TROUBLE SYMPTOM:**

- Failure of engine to start
- Engine stalls.
- Erroneous idling
- Rough driving

CAUTION:

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

● **WIRING DIAGRAM:**



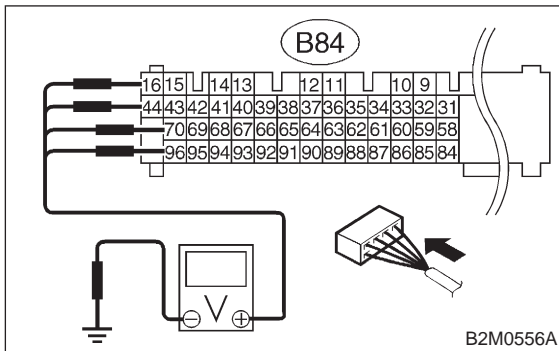
S2M0323

10AA1 : 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 (B84) No. 96 (+) — Chassis ground (-):
- #2 (B84) No. 70 (+) — Chassis ground (-):
- #3 (B84) No. 44 (+) — Chassis ground (-):
- #4 (B84) No. 16 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 10AA2.
- NO** : Go to step 10AA3.

10AA2 : 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:

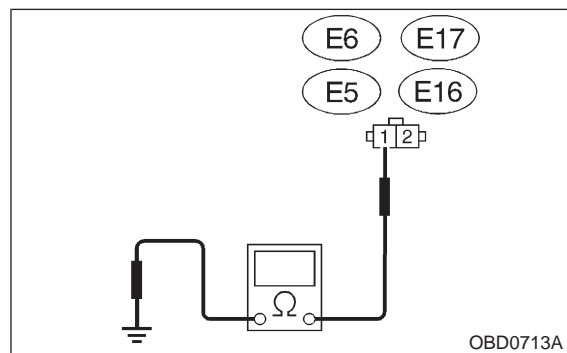
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10AA3 : 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:



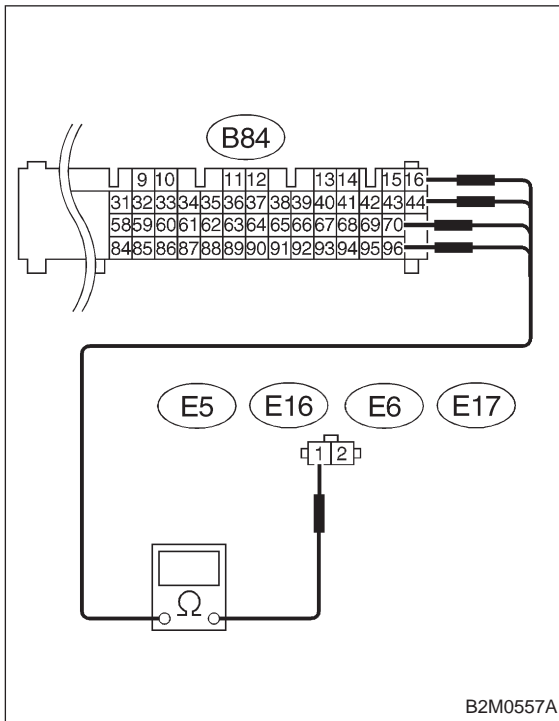
- CHECK** : Is the resistance less than 10 Ω?
- YES** : Repair ground short circuit in harness between fuel injector and ECM connector.
- NO** : Go to step 10AA4.

10AA4 : 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 (B84) No. 96 — (E5) No. 1:
- #2 (B84) No. 70 — (E16) No. 1:
- #3 (B84) No. 44 — (E6) No. 1:
- #4 (B84) No. 16 — (E17) No. 1:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AA5.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

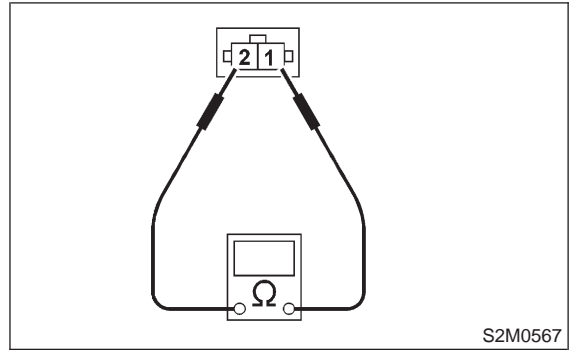
- Open circuit in harness between ECM and fuel injector connector
- Poor contact in coupling connector (B22)

10AA5 : CHECK FUEL INJECTOR.

Measure resistance between fuel injector terminals on faulty cylinder.

Terminals

No. 1 — No. 2:



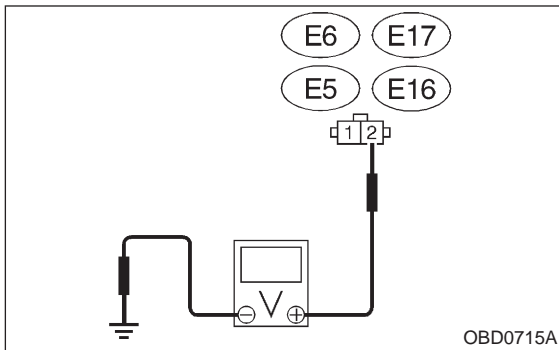
- CHECK** : Is the resistance between 5 and 20 Ω?
- YES** : Replace faulty fuel injector.
- NO** : Go to step 10AA6.

10AA6 : 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

AB: DTC P0262 — FUEL INJECTOR CIRCUIT HIGH INPUT - #1 —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10AE0]. <Ref. to 2-7 [T10AE0].>

AC: DTC P0265 — FUEL INJECTOR CIRCUIT HIGH INPUT - #2 —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10AE0]. <Ref. to 2-7 [T10AE0].>

AD: DTC P0268 — FUEL INJECTOR CIRCUIT HIGH INPUT - #3 —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10AE0]. <Ref. to 2-7 [T10AE0].>

AE: DTC P0271 — FUEL INJECTOR CIRCUIT HIGH INPUT - #4 —

● **DTC DETECTING CONDITION:**

- Immediately at fault recognition

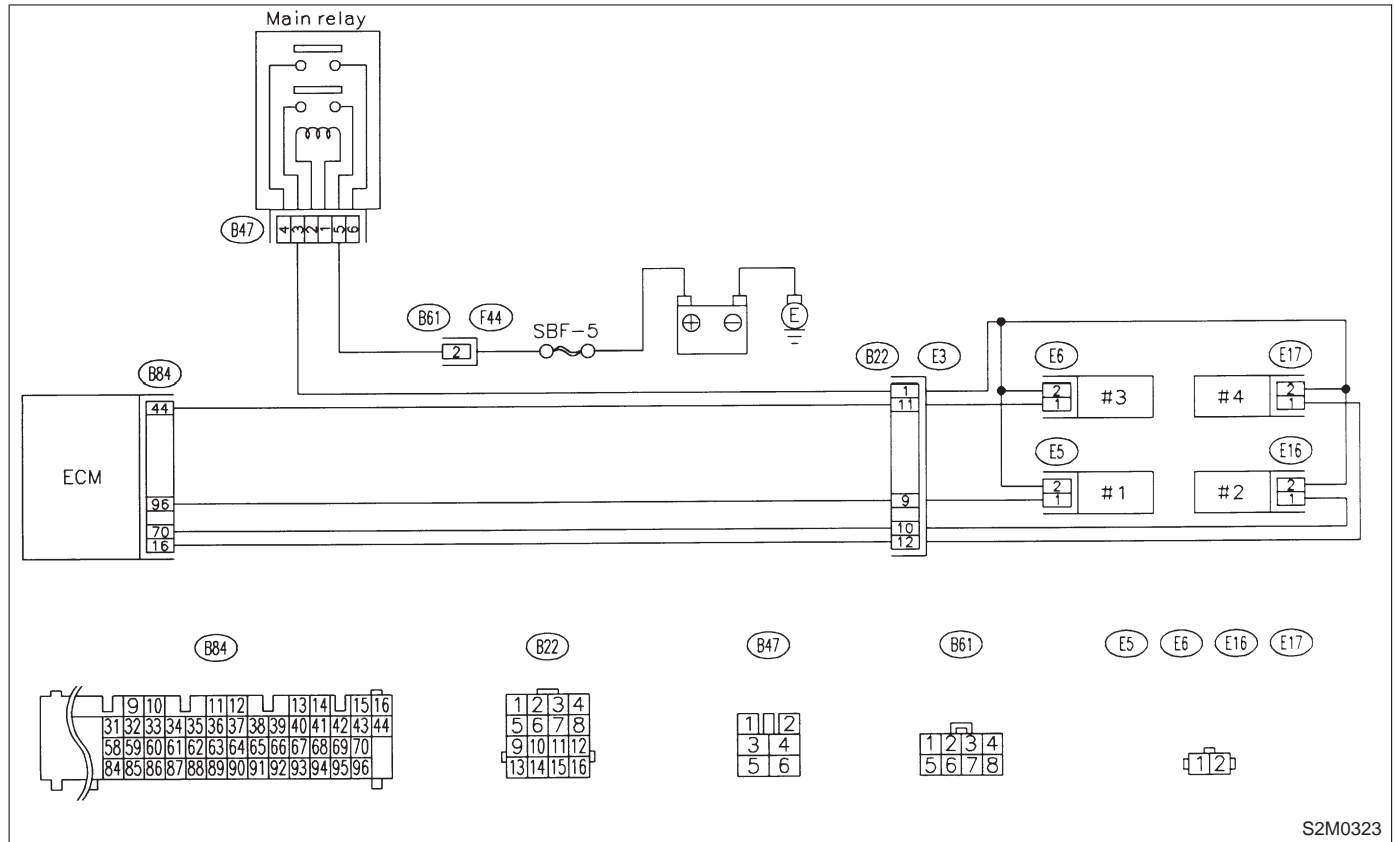
● **TROUBLE SYMPTOM:**

- Failure of engine to start
- Engine stalls.
- Erroneous idling
- Rough driving

CAUTION:

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

● **WIRING DIAGRAM:**



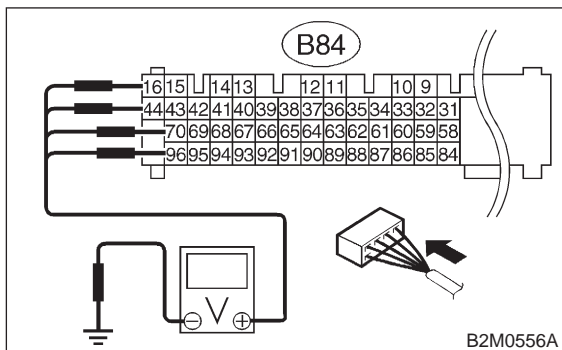
S2M0323

10AE1 : 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 (B84) No. 96 (+) — Chassis ground (-):
- #2 (B84) No. 70 (+) — Chassis ground (-):
- #3 (B84) No. 44 (+) — Chassis ground (-):
- #4 (B84) No. 16 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 10AE3.
- NO** : Go to step 10AE2.

10AE2 : CHECK POOR CONTACT.

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

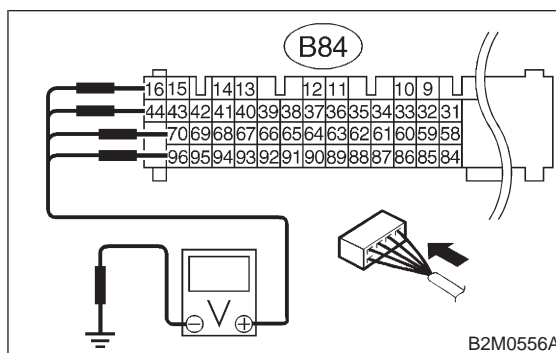
- CHECK** : Is there poor contact in ECM connector?
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10AE3 : 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

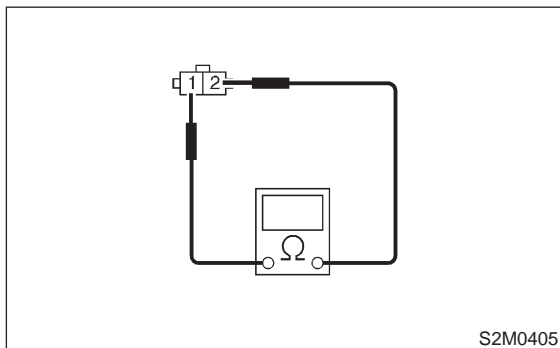
- #1 (B84) No. 96 (+) — Chassis ground (-):
- #2 (B84) No. 70 (+) — Chassis ground (-):
- #3 (B84) No. 44 (+) — Chassis ground (-):
- #4 (B84) No. 16 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
- YES** : Repair battery short circuit in harness between ECM and fuel injector. After repair, replace ECM.
- NO** : Go to step 10AE4.

10AE4 : 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 and ECM.
- NO** : Go to step **10AE5**.

10AE5 : 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.

MEMO:

AF: DTC P0301 — CYLINDER 1 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10A10]. <Ref. to 2-7 [T10A10].>

AG: DTC P0302 — CYLINDER 2 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10A10]. <Ref. to 2-7 [T10A10].>

AH: DTC P0303 — CYLINDER 3 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10A10]. <Ref. to 2-7 [T10A10].>

AI: 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:**

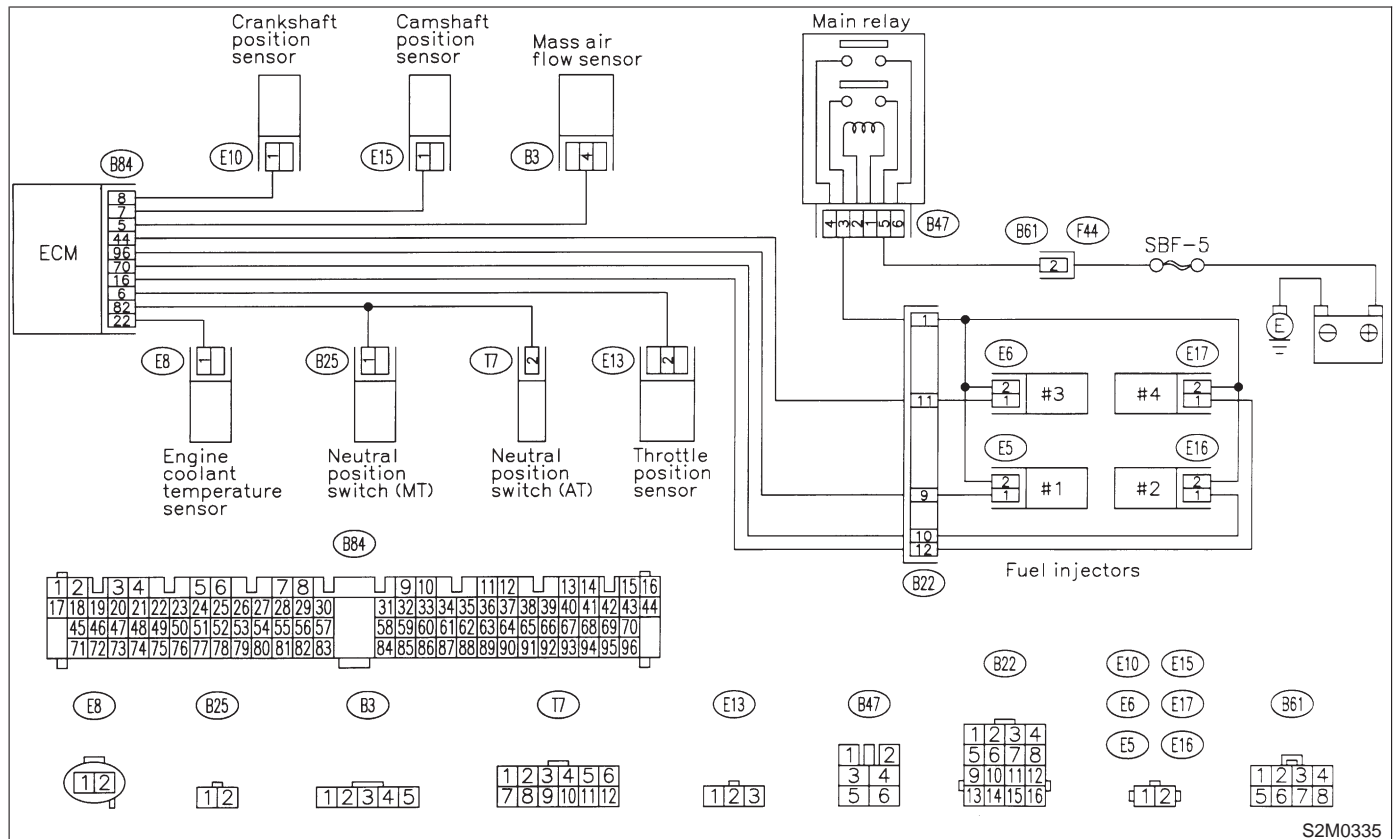
- Engine stalls.
- Erroneous idling
- Rough driving

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0335

10A11 : 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, P0125, P0261, P0262, P0264, P0265, P0267, P0268, P0270 or P0271?

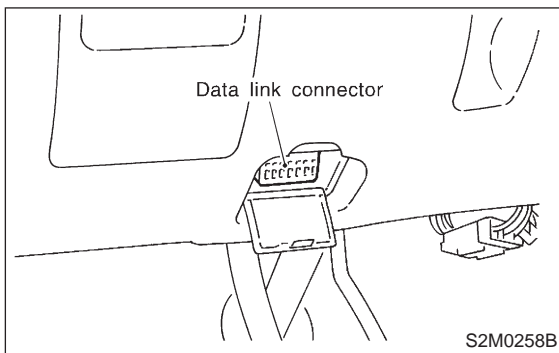
YES : Inspect DTC P0101, P0102, P0103, P0116, P0117, P0125, P0261, P0262, P0264, P0265, P0267, P0268, P0270 or P0271 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:
In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.

NO : Go to step 10A12.

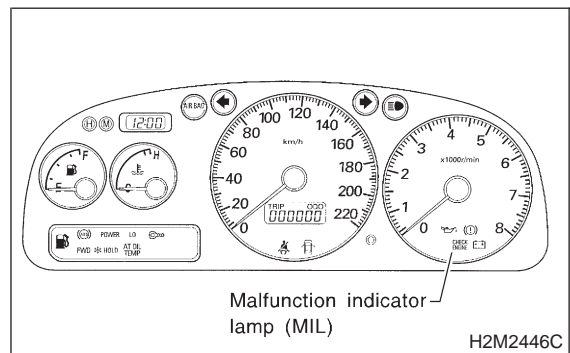
10A12 : CHECK STATUS OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).

- 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 10A15.

NO : Go to step 10A13.

10A13 : CHECK AMOUNT OF FUEL.

CHECK : Has the vehicle been run empty of fuel?

YES : Finish diagnostics operation, if the engine has no abnormality.

NO : Go to step 10A14.

10A14 : 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)

10A15 : CHECK AIR INTAKE SYSTEM.**CHECK** : *Is there a fault in air intake system?***YES** : Repair air intake system.

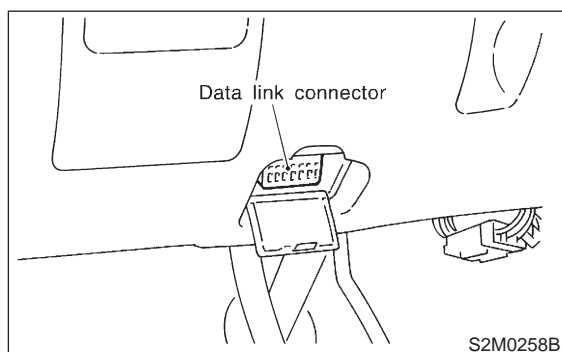
NOTE:

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 **10A16**.**10A16 : 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 **10A11**.**NO** : Go to step **10A17**.**10A17 : 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 **10A12**.**NO** : Go to step **10A18**.**10A18 : 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 **10A13**.**NO** : Go to step **10A19**.**10A19 : 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 **10A14**.**NO** : Go to step **10A10**.**10A10 : 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 **10A15**.**NO** : Go to step **10A16**.**10A11 : 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 step **10A17**.

10A112 : 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
- If no abnormal is discovered, check for "D: IGNITION CONTROL SYSTEM" of #1 and #2 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to step **10A117**.**10A113 : 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 "D: IGNITION CONTROL SYSTEM" of #3 and #4 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to step **10A117**.**10A114 : 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 step **10A117**.**10A115 : 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
- Skipping timing belt teeth

NO : Go to step **10A117**.**10A116 : CYLINDER AT RANDOM****CHECK** : *Is the engine idle rough?***YES** : Go to step **10A117**.**NO** : Go to DTC P0170. <Ref. to 2-7 [T10T3].>, <Ref. to 2-7 [T10T4].> and <Ref. to 2-7 [T10T5].>

10A117 : PERFORM CONFIRMATION OF ACTUAL DRIVING PATTERN.

- 1) Conduct CLEAR MEMORY and INSPECTION MODE. <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>
- 2) Start and warm-up the engine until the radiator fan makes one complete rotation. (All accessory switches are OFF.)
- 3) Turn Subaru select monitor switch to ON.
- 4) Operate the 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 {EGI/EMPI} and press the [YES] key.
 - (3) Press the [YES] key after displayed the information of engine type.
 - (4) On the 「EGI/EMPI 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.

NOTE:

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

- 5) Run at the speed of 88±5 km/h (55±3 MPH) until the LED of {EGR System Diagnosis} comes on.

NOTE:

- Keep the throttle valve opening at the same degree, since diagnosis will be interrupted when the opening varies. Diagnosis starts in 190 seconds after starting engine and takes 4 seconds.
- Put the gear to “5th” gear position (MT) or “D” range (AT) for the diagnosis.

CHECK : *Has the LED come on?*

YES : Go to step **10A118**.

NO : Go to step **10A117**.

10A118 : CHECK EGR SYSTEM.

- 1) Put up the vehicle.
- 2) Read data of maximum and minimum EGR system pressure using Subaru Select Monitor.
 - (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 {EGI/EMPI} and press the [YES] key.
 - (3) On the [YES] key after displayed the information of engine type.
 - (4) On the 「EGI/EMPI Diagnosis」 display screen, select the {5. Display of Diagnosis} and press the [YES] key.
 - (5) On the 「Display of Diagnosis」 display screen, select the {EGR System Diagnosis} and press the [YES] key.

NOTE:

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

CHECK : *Is the minimum EGR system pressure value less than 1 kPa?*

YES : Clean EGR valve.

CAUTION:

Do not use solvent when cleaning EGR valve assembly, as it can damage diaphragm.

NOTE:

- Remove and blow away the exhaust deposits. Make sure the valve operates smoothly and the valve seat area is completely cleaned.
- Replace EGR valve as required.

NO : Go to DTC P0170. <Ref. to 2-7 [T10T3].>, <Ref. to 2-7 [T10T4].> and <Ref. to 2-7 [T10T5].>

MEMO:

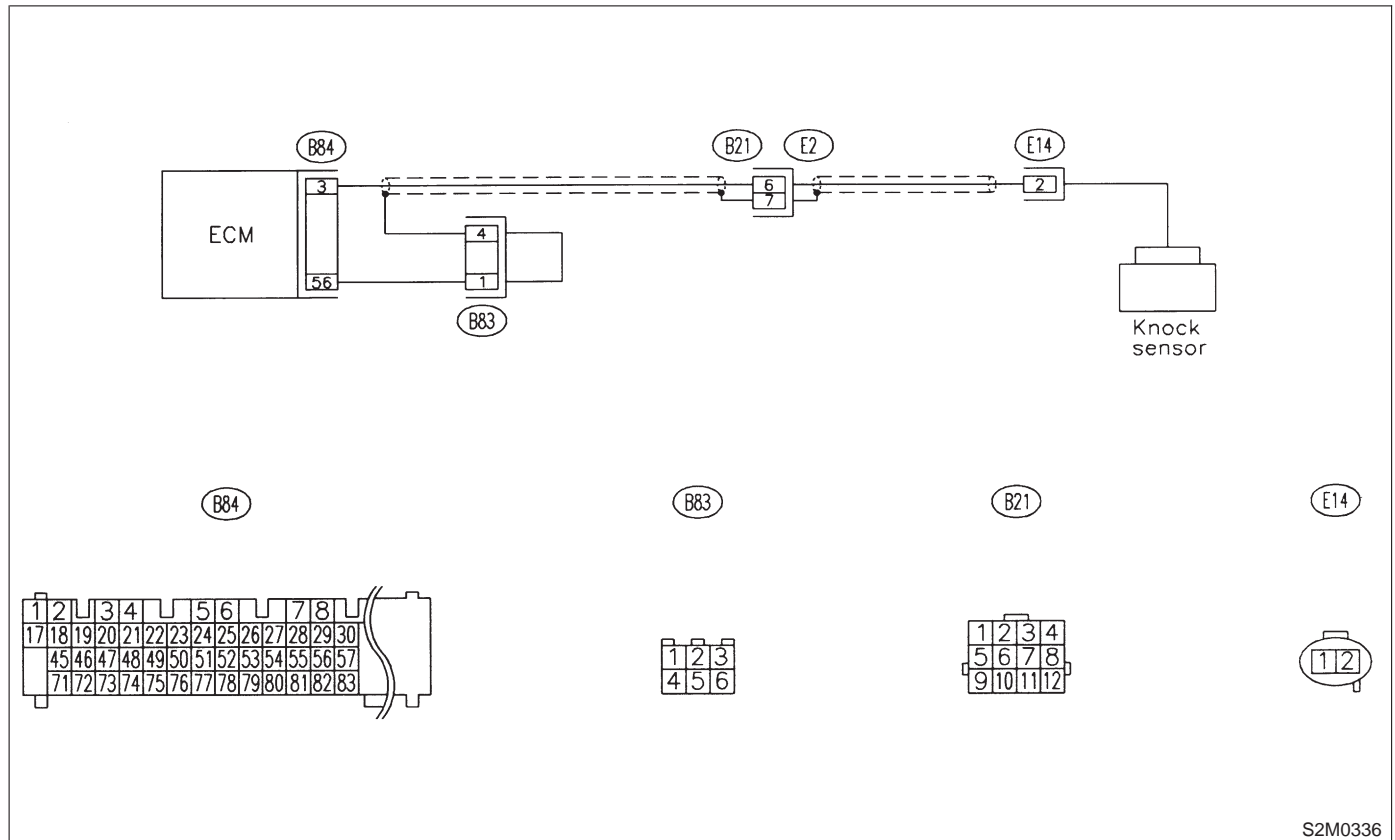
AJ: DTC P0325 — KNOCK SENSOR CIRCUIT MALFUNCTION —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

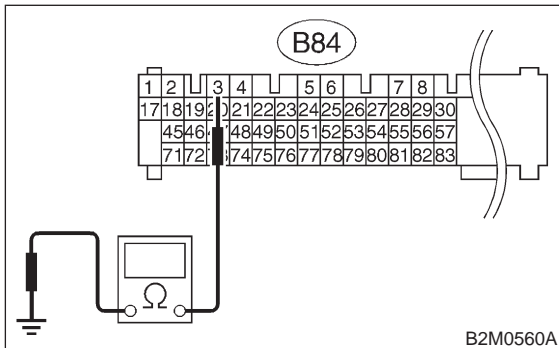


S2M0336

10AJ1 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM 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
(B84) No. 3 — Chassis ground:

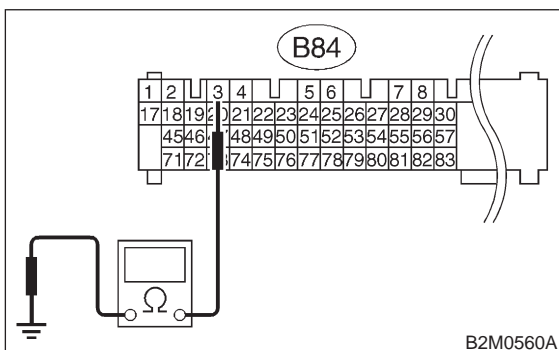


- CHECK** : Is the resistance more than 700 kΩ?
YES : Go to step 10AJ3.
NO : Go to step 10AJ2.

10AJ2 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 3 — Chassis ground:

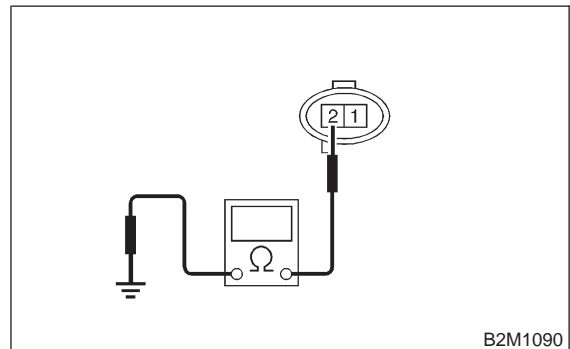


- CHECK** : Is the resistance less than 400 kΩ?
YES : Go to step 10AJ5.
NO : Go to step 10AJ6.

10AJ3 : 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 10AJ4.
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)

10AJ4 : CHECK CONDITION OF KNOCK SENSOR INSTALLATION.

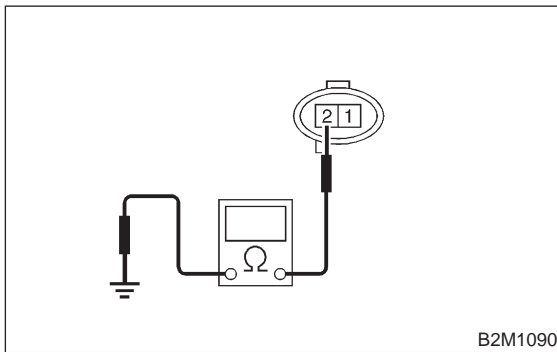
- CHECK** : Is the knock sensor installation bolt tightened securely?
YES : Replace knock sensor.
NO : Tighten knock sensor installation bolt securely.

10AJ5 : 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.
- NO** : Repair ground short circuit in harness between knock sensor connector and ECM connector.

NOTE:

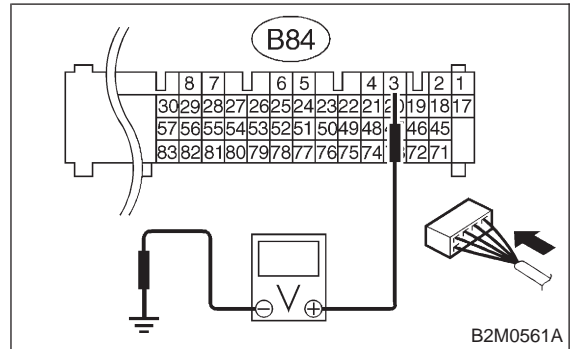
The harness between both connectors is shielded. Repair short circuit of harness together with shield.

10AJ6 : CHECK INPUT 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

(B84) No. 3 (+) — 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:

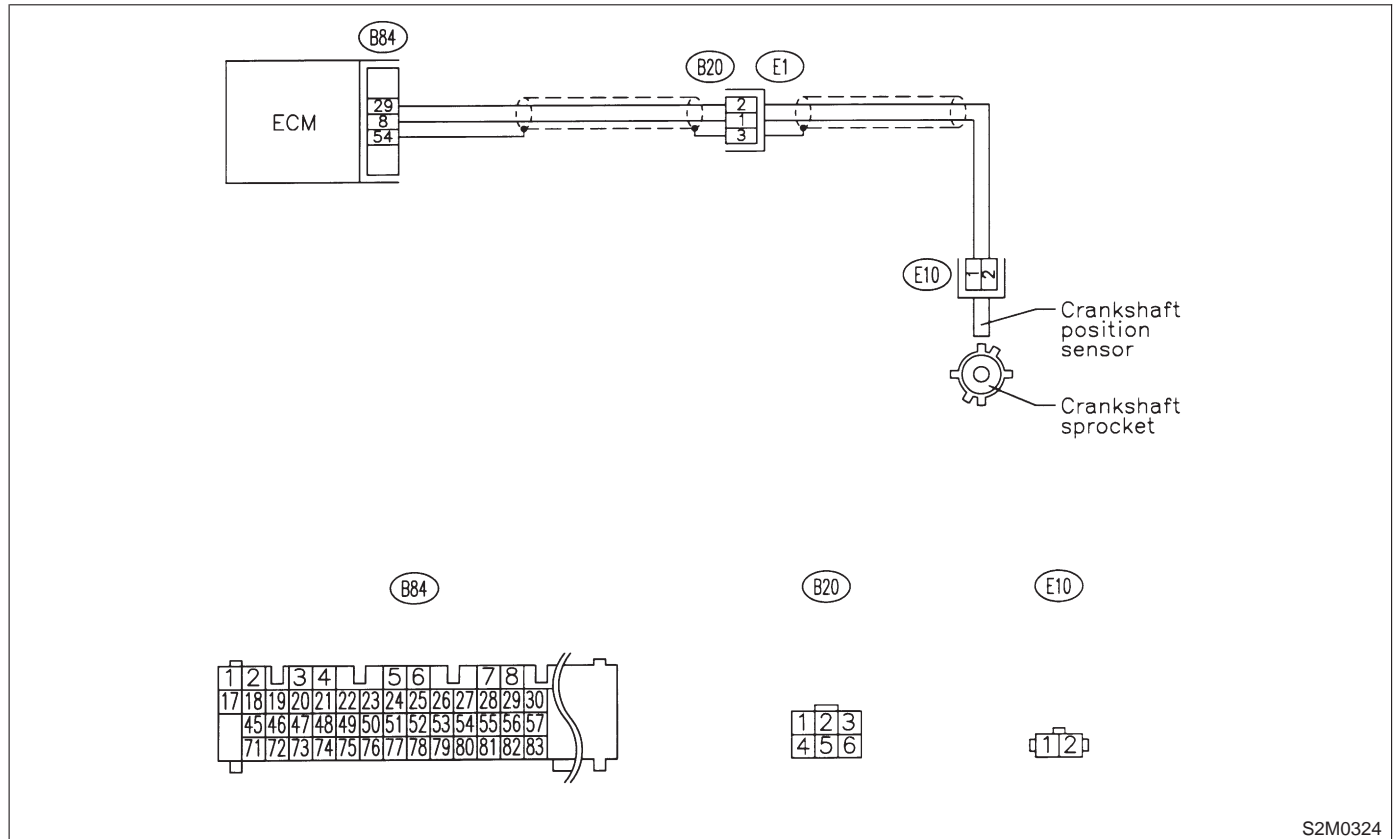
AK: DTC P0335 — CRANKSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

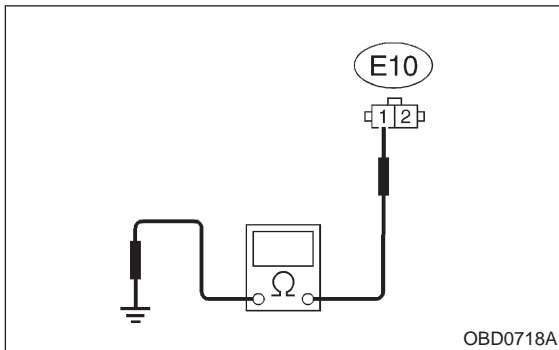


S2M0324

10AK1 : 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:

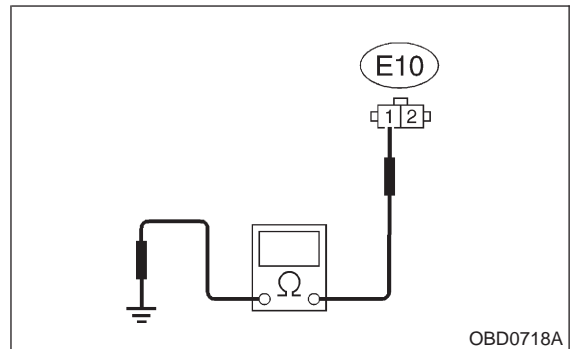
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B20)

- NO** : Go to step **10AK2**.

10AK2 : 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.

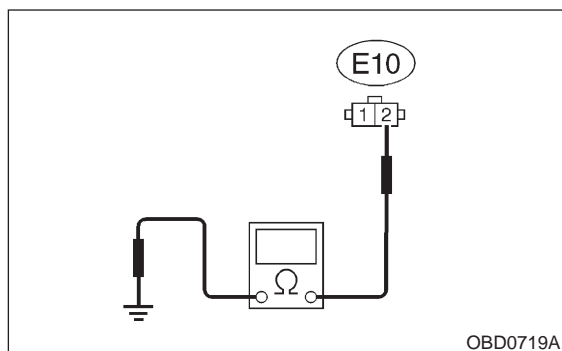
- NO** : Go to step **10AK3**.

10AK3 : 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 10AK4.

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 (B20)

10AK4 : CHECK CONDITION OF CRANKSHAFT POSITION SENSOR INSTALLATION.

CHECK : Is the crankshaft position sensor installation bolt tightened securely?

YES : Go to step 10AK5.

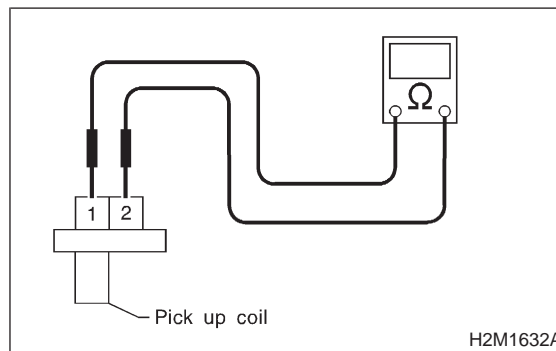
NO : Tighten crankshaft position sensor installation bolt securely.

10AK5 : CHECK OF 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.

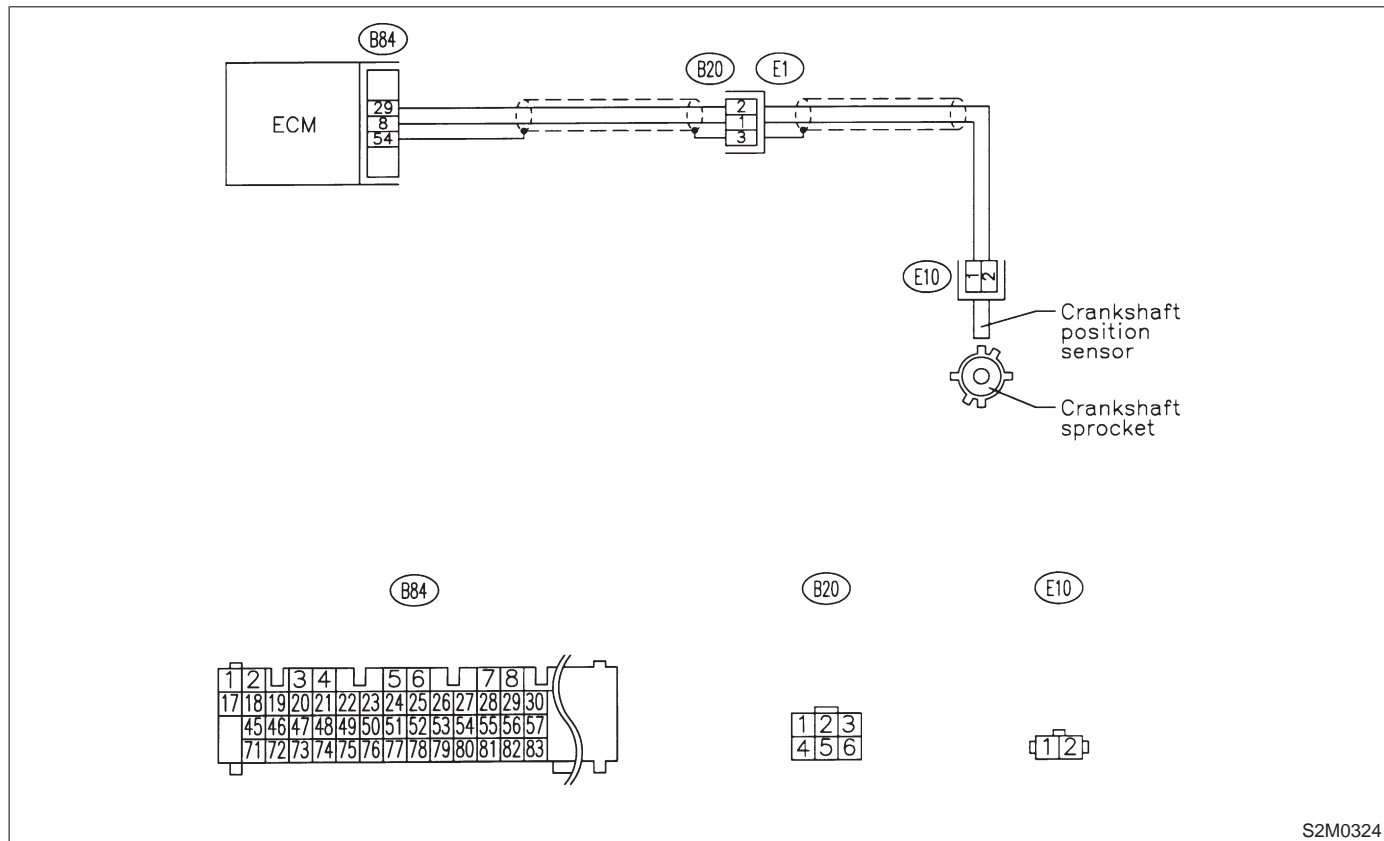
AL: DTC P0336 — CRANKSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0324

10AL1 : 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”. <Ref. to 2-7 [T1000].>
- NO** : Replace crankshaft position sensor.

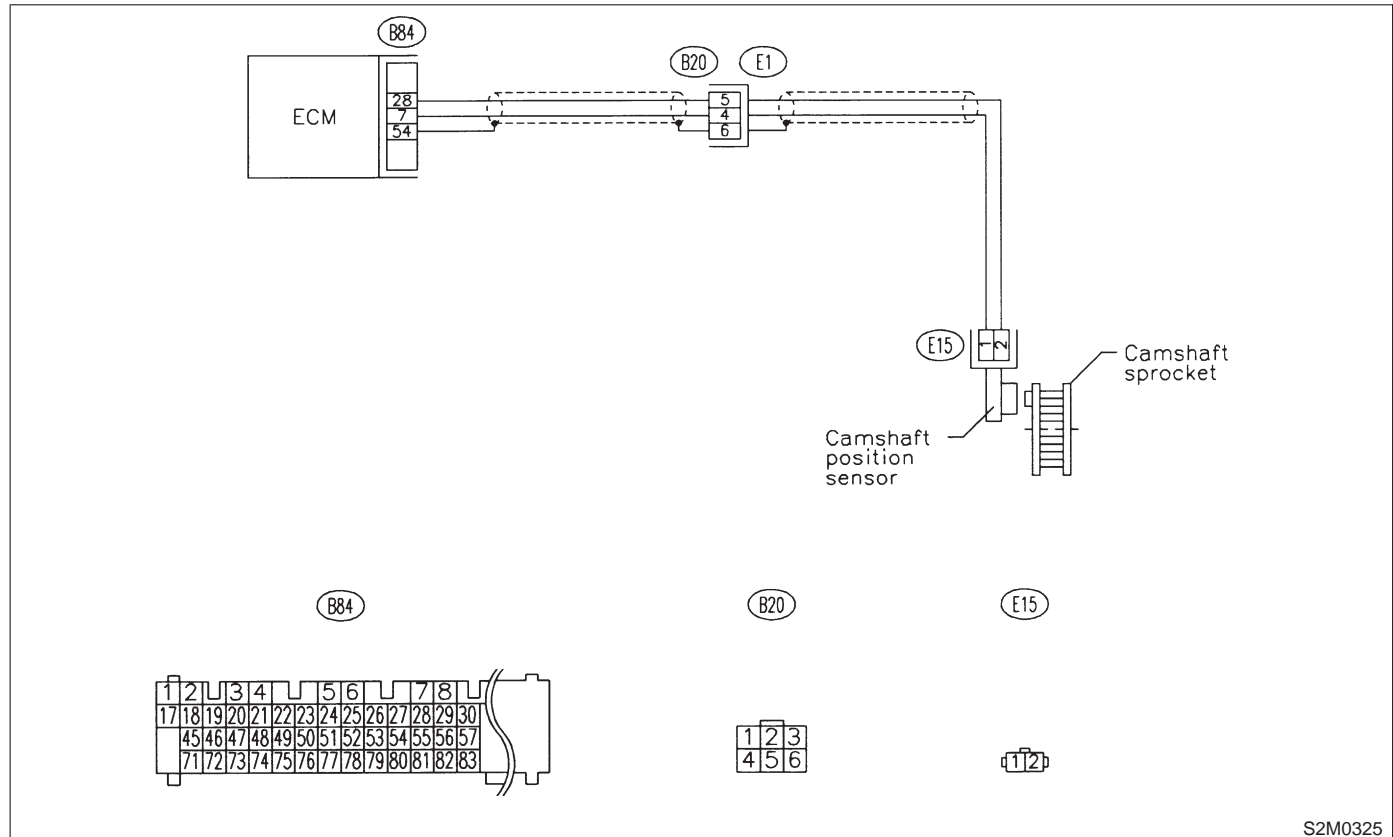
AM: DTC P0340 — CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

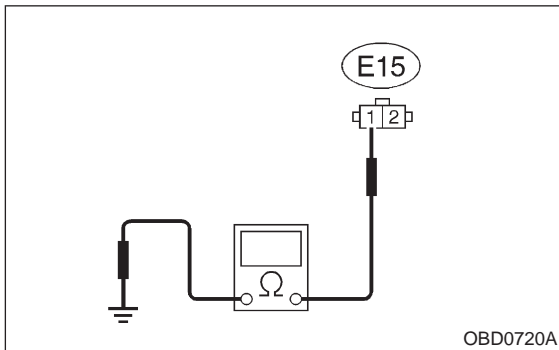


S2M0325

10AM1 : 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:

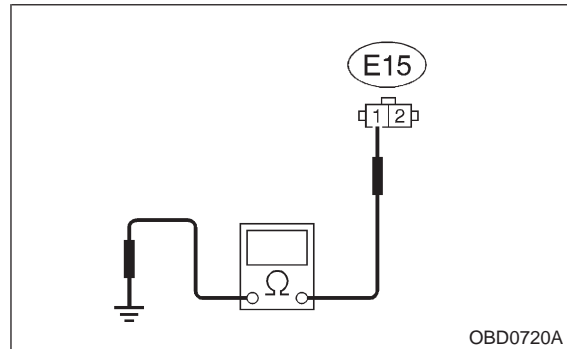
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B20)

- NO** : Go to step **10AM2**.

10AM2 : 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.

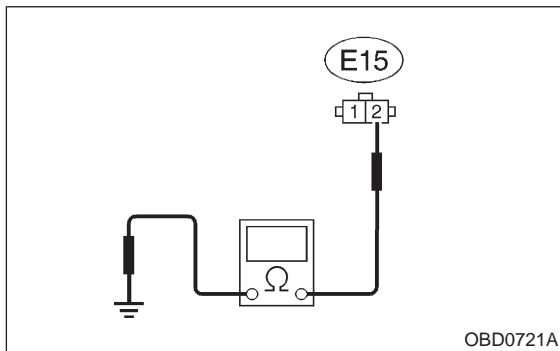
- NO** : Go to step **10AM3**.

10AM3 : 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 **10AM4**.

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 (B20)

10AM4 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR INSTALLATION.

CHECK : *Is the camshaft position sensor installation bolt tightened securely?*

YES : Go to step **10AM5**.

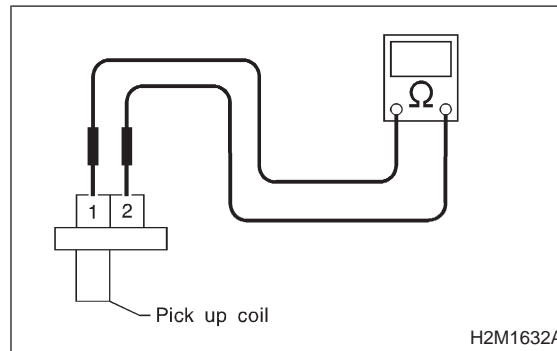
NO : Tighten camshaft position sensor installation bolt securely.

10AM5 : 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.

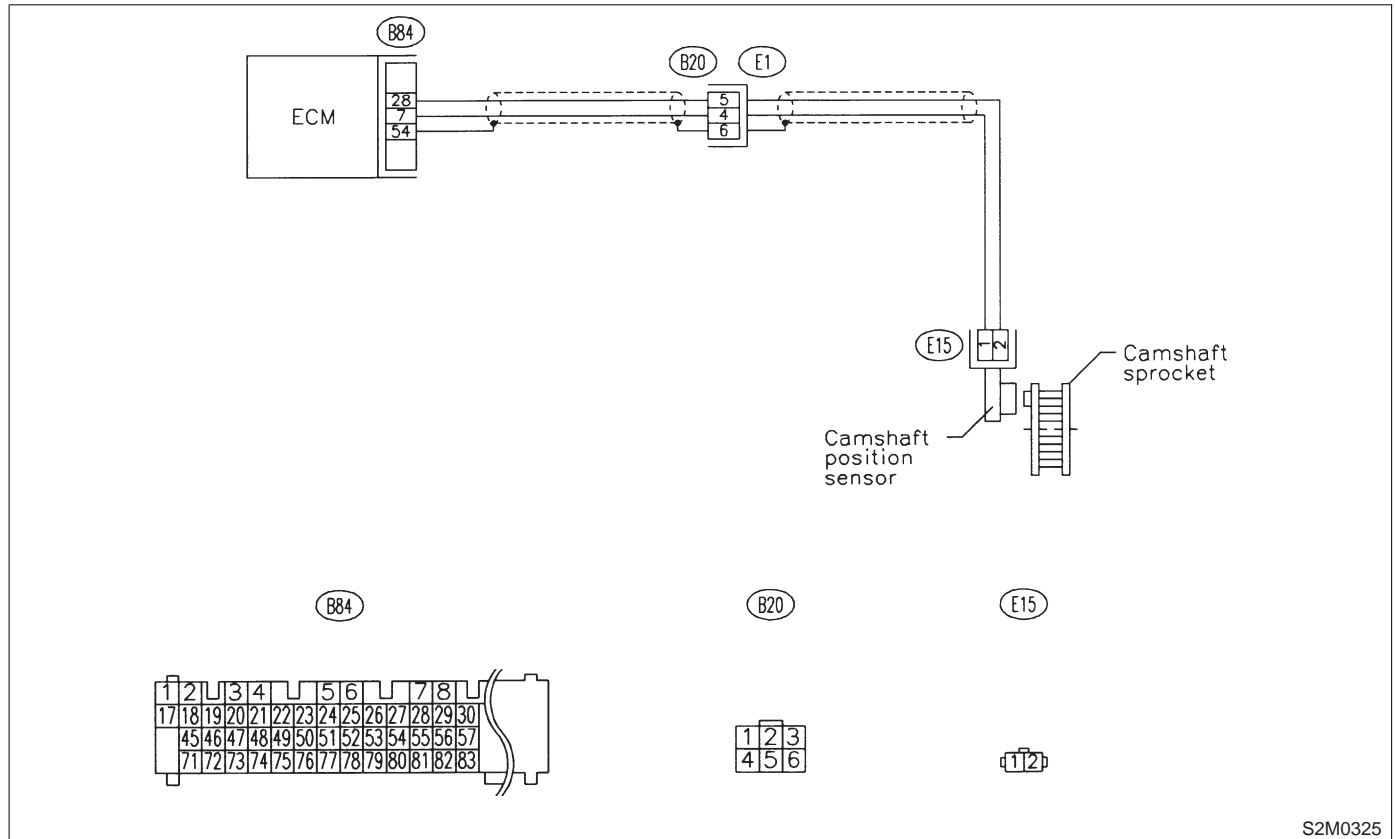
AN: DTC P0341 — CAMSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0325

10AN1 : 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”. <Ref. to 2-7 [T1000].>
- NO** : Replace camshaft position sensor.

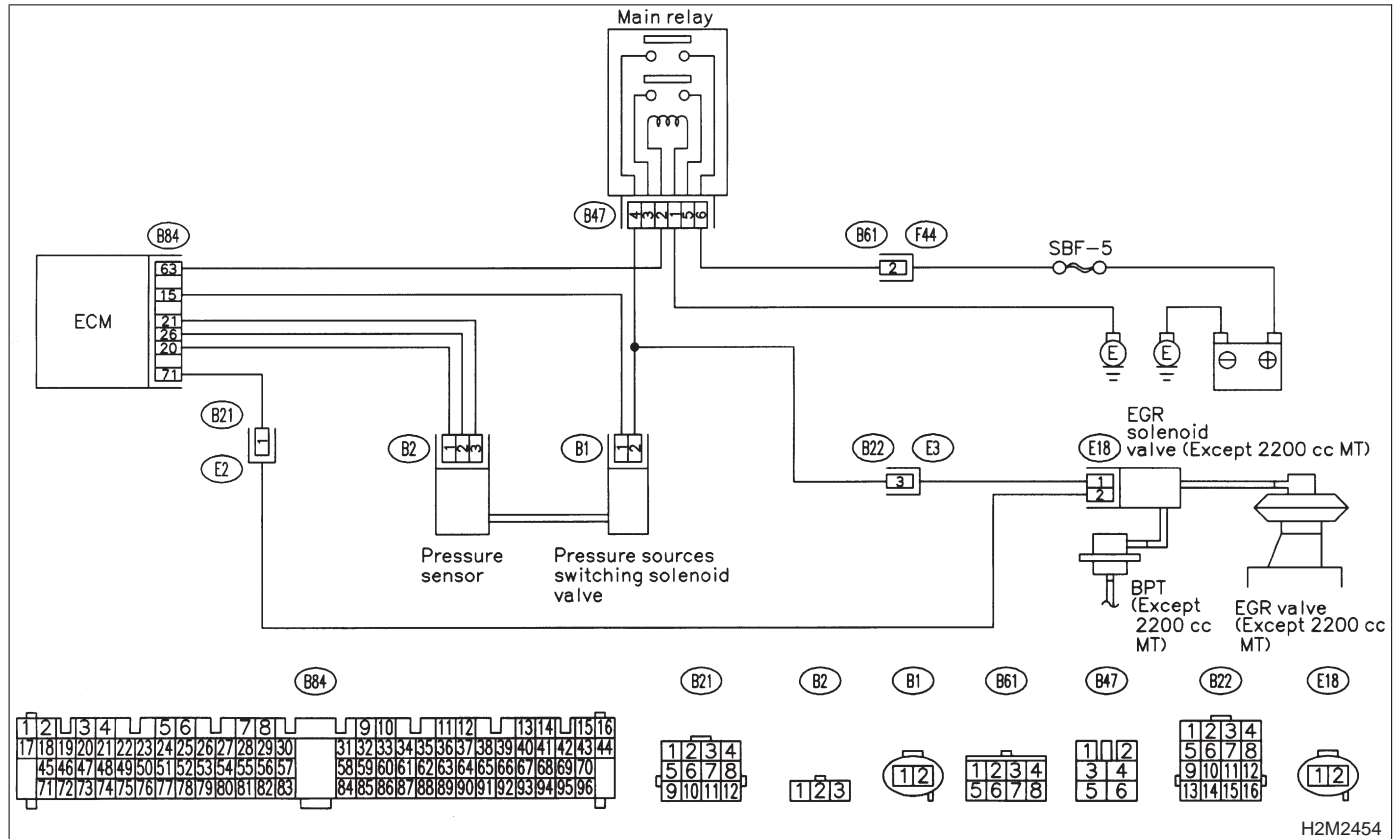
AO: DTC P0400 — EXHAUST GAS RECIRCULATION FLOW MALFUNCTION

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Poor driving performance on low engine speed

CAUTION:

Before confirmation of actual driving pattern, conduct CLEAR MEMORY and INSPECTION MODES. <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



10A01 : CHECK ENGINE/TRANSMISSION TYPE.

- CHECK** : Is engine/transmission type 2200 cc/MT?
- YES** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DE0].>
- NO** : Go to step 10A02.

10A02 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0403, P1102, P1122 or P1421?

YES : Inspect DTC P0106, P0107, P0108, P0403, P1102, P1122 or P1421 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

Manually check that EGR valve diaphragm is not stuck.

WARNING:

Be careful when checking EGR valve, since it may be extremely hot.

NOTE:

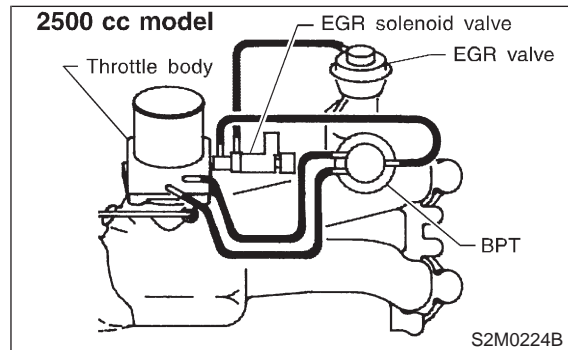
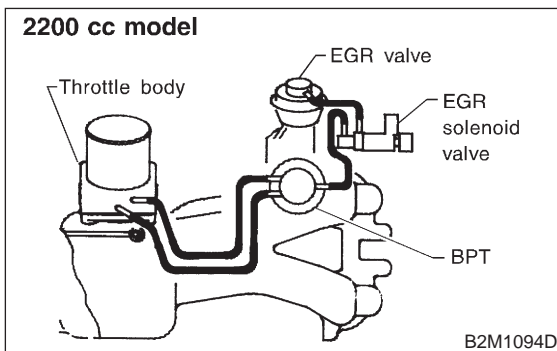
In this case, it is not necessary to inspect DTC P0400. After checking the above item, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN**. <Ref. to 2-7 [T10A07].>

NO : Go to step 10A03.

10A03 : CHECK VACUUM LINE.

Check the following items.

- Disconnection, leakage and clogging of the two vacuum hoses and pipes between throttle body and BPT
- Disconnection, leakage and clogging of the vacuum hose and pipe between EGR solenoid valve and BPT
- Disconnection, leakage and clogging of the vacuum hose between EGR solenoid valve and EGR valve
- Disconnection, leakage and clogging of BPT pressure transmitting hose



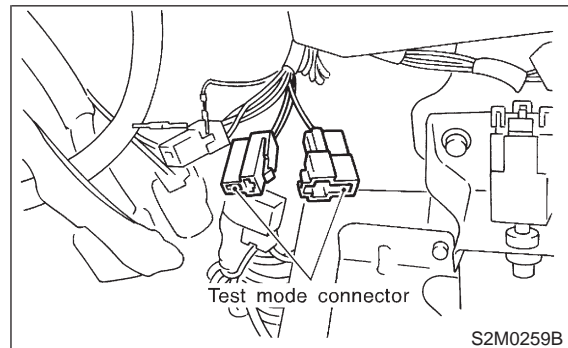
CHECK : Is there a fault in vacuum line?

YES : Repair or replace hoses and pipes. And after the checking and repairing, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN**. <Ref. to 2-7 [T10A07].>

NO : Go to step 10A04.

10A04 : CHECK OPERATION OF EGR SYSTEM.

- 1) Turn ignition switch to OFF.
- 2) Connect the test mode connector.



- 3) Turn ignition switch to ON.

NOTE:

EGR 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 EGR solenoid valve produce operating sound?

YES : Go to step 10A05.

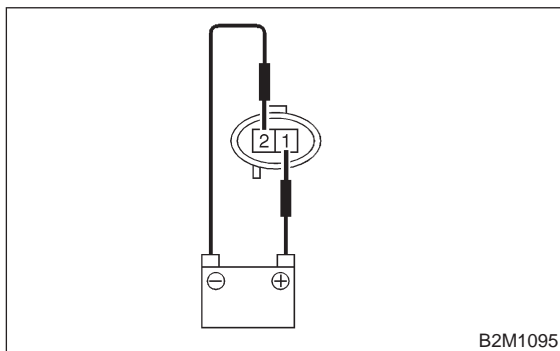
NO : Replace EGR solenoid valve.

10A05 : CHECK EGR VALVE.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from EGR solenoid valve.
- 3) Connect 12 V battery's ground (–) terminal to one terminal of the EGR solenoid valve. Then connect 12 V battery's (+) terminal to the other terminal of it.

CAUTION:

Do not use the 12 V battery installed in the vehicle, because the electrical system may be damaged.



- 4) Start the engine.

CHECK : **Does EGR valve operate at a throttle valve opening of 5 to 10 degrees with visually check?**

YES : Possibly EGR valve malfunction may be due to freezing or clogging by foreign matter. At this point in time do not replace EGR valve, since it is not faulty. And after the checking, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN**. <Ref. to 2-7 [T10A07].>

NOTE:

If malfunction is detected again in the confirmation of actual driving pattern, EGR valve is faulty. Go to step **10A06**.

NO : Go to step **10A06**.

10A06 : CHECK MECHANICAL TROUBLE.

Turn ignition switch to OFF.

CHECK : **Is there clogging in the gas outlets of intake manifold or cylinder head, checking by breathing into the outlets?**

YES : Repair or replace intake manifold or cylinder head. And go to **CONFIRMATION OF ACTUAL DRIVING PATTERN**. <Ref. to 2-7 [T10A07].>

NO : Clean EGR valve. And go to **CONFIRMATION OF ACTUAL DRIVING PATTERN**. <Ref. to 2-7 [T10A07].>

CAUTION:

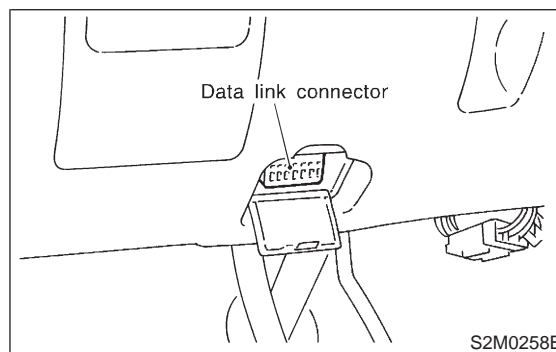
Do not use solvent when cleaning EGR valve assembly, as it can damage diaphragm.

NOTE:

- Remove and blow away the exhaust deposits. Make sure the valve operates smoothly and the valve seat area is completely cleaned.
- Replace EGR valve as required.

10A07 : CONFIRMATION OF ACTUAL DRIVING PATTERN.

- 1) Connect Subaru select monitor to its data link connector.



- 2) Conduct CLEAR MEMORY and INSPECTION MODES. <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

3) Start and warm-up the engine until the radiator fan makes one complete rotation. (All accessory switches are OFF.)

4) Turn Subaru select monitor switch to ON.

5) Operate the 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 {EGI/EMPI} and press the [YES] key.

(3) Press the [YES] key after displayed the information of engine type.

(4) On the 「EGI/EMPI 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.

NOTE:

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

6) Run at the speed of 88 ± 5 km/h (55 ± 3 MPH) until the LED of {EGR System Diagnosis} comes on.

NOTE:

- Keep the throttle valve opening at the same degree, since diagnosis will be interrupted when the opening varies. Diagnosis starts in 190 seconds after starting engine and takes 4 seconds.
- Put the gear to “5th” gear position (MT) or “D” range (AT) for the diagnosis.

7) Read DTC using Subaru select monitor.

(1) On the 「Main Menu」 display screen, select the {2. Check of Each System} and press the [YES] key.

(2) On the 「System Selection Menu」 display screen, select the {EGI/EMPI} and press the [YES] key.

(3) Press the [YES] key after displayed the information of engine type.

(4) On the 「EGI/EMPI Diagnosis」 display screen, select the {7. OBD System} and press the [YES] key.

(5) On the 「OBD Menu」 display screen, select the {6. Temporary code inspect} and press the [YES] key.

NOTE:

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

8) Confirm the “No Temporary Diagnostic Code” indication on Subaru select monitor.

CHECK : **Does the Subaru select monitor indicate any other DTC on display?**

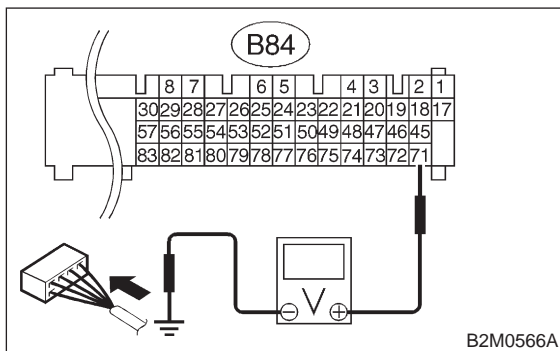
YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code”.
<Ref. to 2-7 [T1000].>

NO : End of diagnosis.

10AP2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 71 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
YES : Go to step 10AP3.
NO : Go to step 10AP4.

10AP3 : 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:

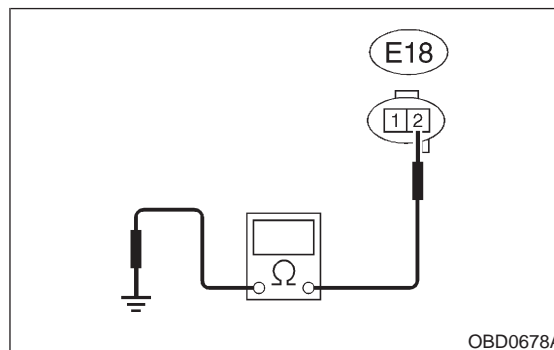
In this case, repair the following:

- Poor contact in EGR solenoid valve connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

10AP4 : CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from EGR solenoid valve and ECM.
- 3) Measure resistance of harness between EGR solenoid valve connector and engine ground.

Connector & terminal
(E18) No. 2 — Engine ground:



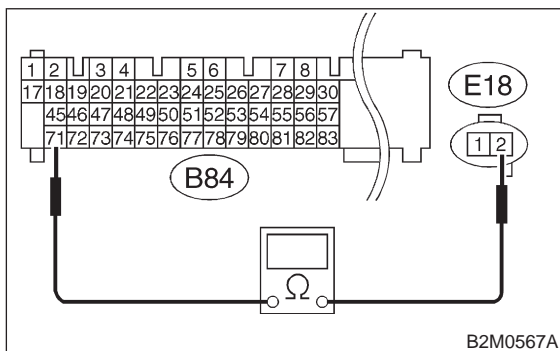
- CHECK** : Is the resistance less than 10 Ω?
YES : Repair ground short circuit in harness between ECM and EGR solenoid valve connector.
NO : Go to step 10AP5.

10AP5 : CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and EGR solenoid valve connector.

Connector & terminal

(B84) No. 71 — (E18) No. 2:



- CHECK** : *Is the voltage less than 1 Ω?*
- YES** : Go to step **10AP6**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

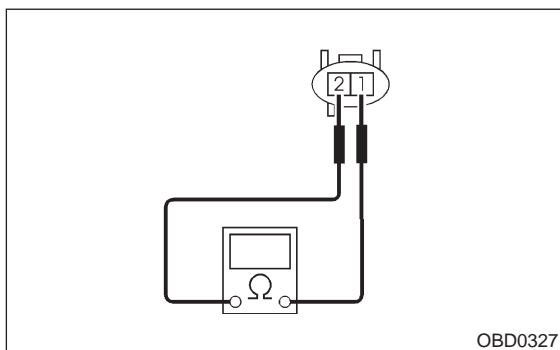
- Open circuit in harness between EGR solenoid valve and ECM connector
- Poor contact in coupling connector (B21)
- Poor contact in EGR solenoid valve connector
- Poor contact in ECM connector

10AP6 : CHECK EGR SOLENOID VALVE.

Measure resistance between EGR solenoid valve terminals.

Terminals

No. 1 — No. 2:



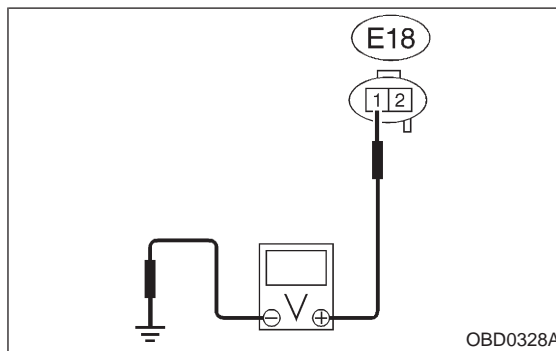
- CHECK** : *Is the resistance between 10 and 100 Ω?*
- YES** : Go to step **10AP7**.
- NO** : Replace EGR solenoid valve.

10AP7 : CHECK POWER SUPPLY TO EGR SOLENOID VALVE.

- 1) Turn ignition switch to ON.
- 2) Measure voltage between EGR solenoid valve and engine ground.

Connector & terminal

(E18) No. 1 (+) — Engine ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **10AP8**.
- NO** : Repair open circuit in harness between main relay and EGR solenoid valve connector.

10AP8 : CHECK POOR CONTACT.

Check poor contact in EGR solenoid valve connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : *Is there poor contact in EGR solenoid valve connector?*
- YES** : Repair poor contact in EGR solenoid valve connector.
- NO** : Contact with SOA service.

NOTE:

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

MEMO:

AQ: DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD

DTC DETECTING CONDITION:

- Immediately at fault recognition (2200 cc Federal spec. vehicles only)
- Two consecutive driving cycles with fault

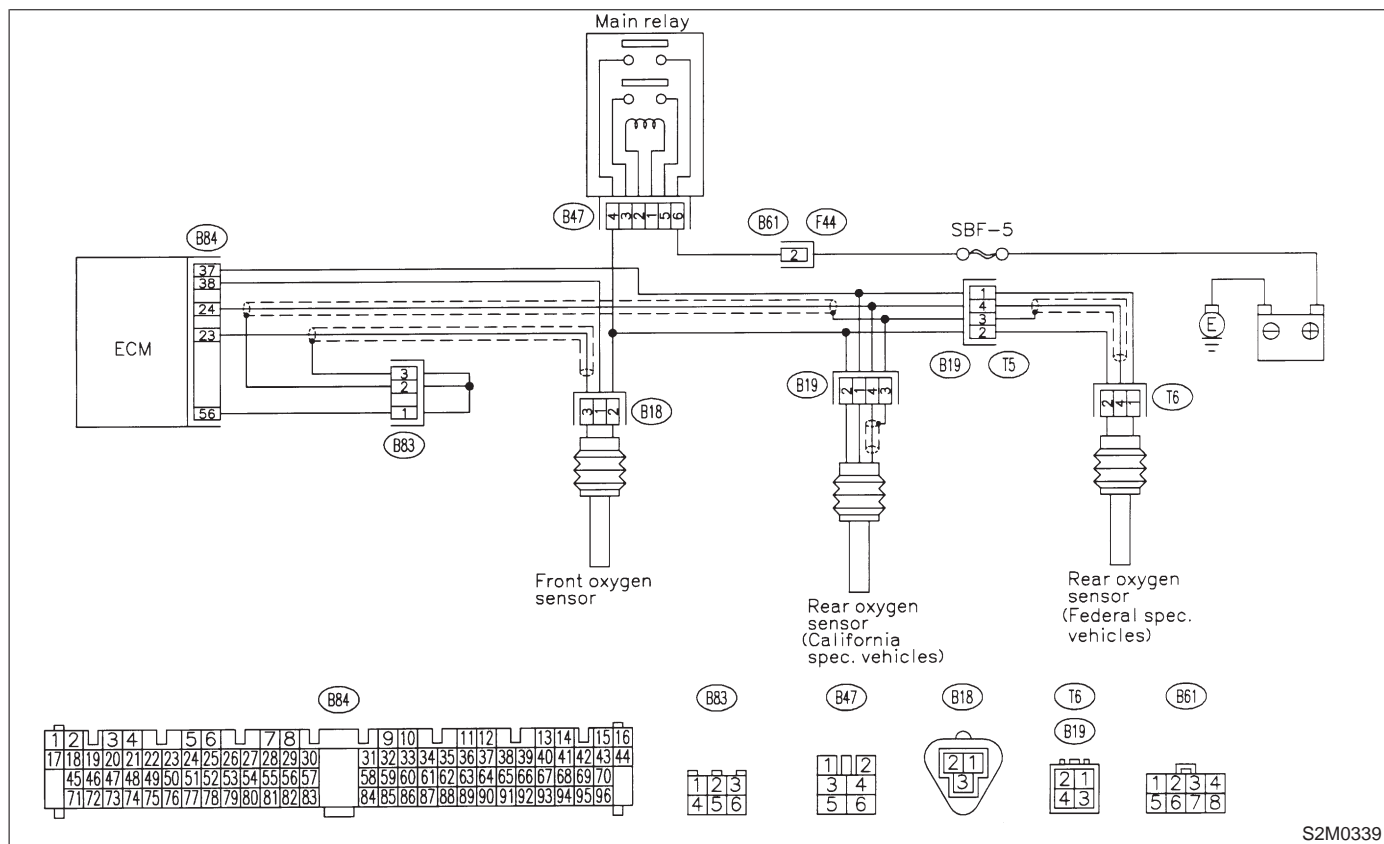
TROUBLE SYMPTOM:

- Engine stalls.
- Idle mixture is out of specifications.

CAUTION:

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

WIRING DIAGRAM:



S2M0339

10AQ1 : 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 and P0141?

YES : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code".
 <Ref. to 2-7 [T1000].>

NOTE:
 In this case, it is not necessary to inspect DTC P0420.

NO : Go to step 10AQ2.

10AQ2 : 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:

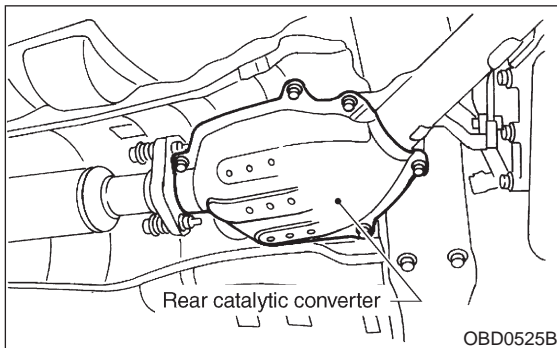
Check the following positions.

- 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.
NO : Go to step **10AQ3**.

10AQ3 : CHECK REAR CATALYTIC CONVERTER.

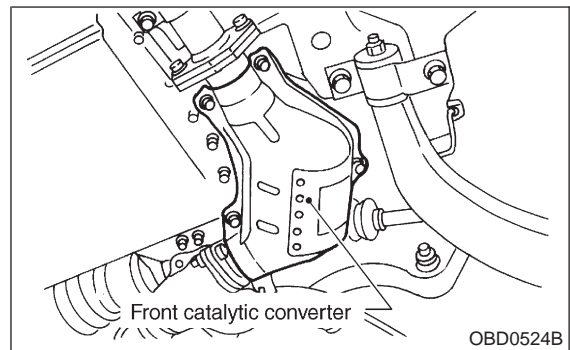
Separate rear catalytic converter from rear exhaust pipe.



- CHECK** : *Is there damage at rear face of rear catalyst?*
YES : Replace front and rear catalytic converters.
NO : Go to step **10AQ4**.

10AQ4 : 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.
NO : Contact with SOA service.

NOTE:

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

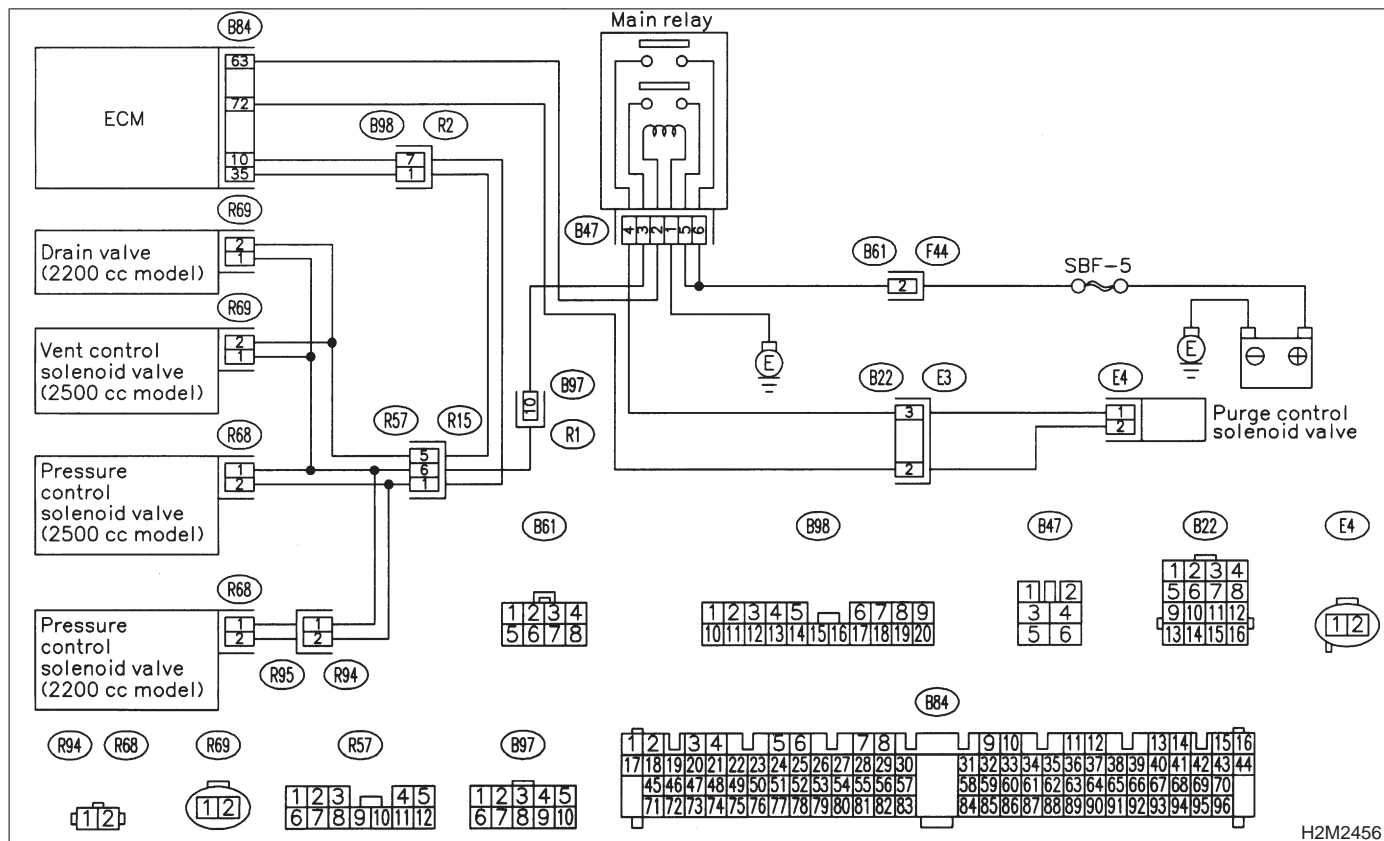
AR: DTC P0440 — EVAPORATIVE EMISSION CONTROL SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Gasoline smell

CAUTION:

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

● **WIRING DIAGRAM:**



10AR1 : 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".
 <Ref. to 2-7 [T1000].>
- NO** : Go to step **10AR2**.

10AR2 : CHECK FUEL FILLER CAP.

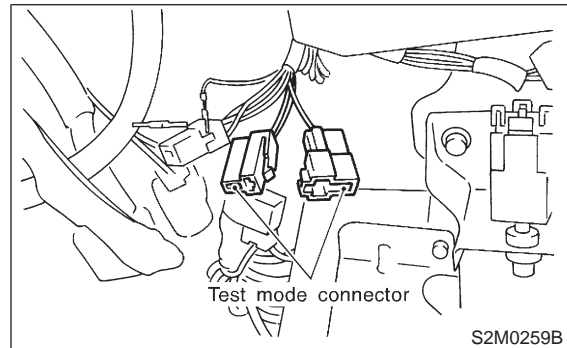
- 1) Turn ignition switch to OFF.
 - 2) Open the fuel flap.
- CHECK** : *Is the fuel filler cap tightened securely?*
 - YES** : Tighten fuel filler cap securely.
 - NO** : Go to step **10AR3**.

10AR3 : 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.
- NO** : Go to step **10AR4**.

10AR4 : CHECK DRAIN VALVE OR VENT CONTROL SOLENOID VALVE.

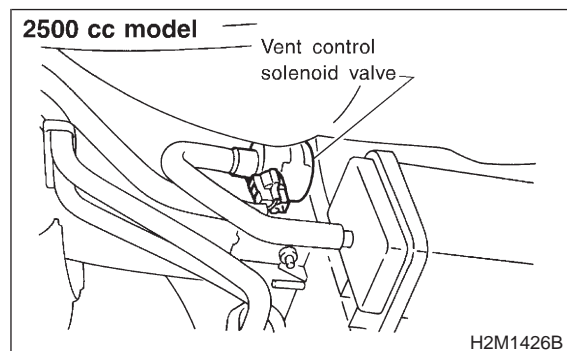
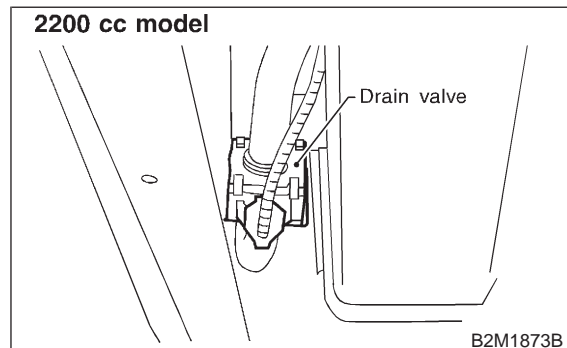
- 1) Connect test mode connector.



- 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].>

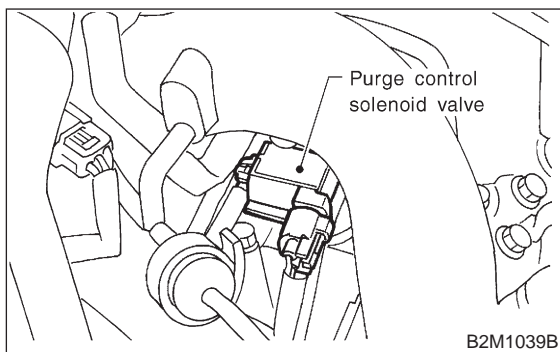


- CHECK** : *Does drain valve or vent control solenoid valve produce operating sound?*
- YES** : Go to step **10AR5**.
- NO** : Replace drain valve or vent control solenoid valve.

10AR5 : 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].>

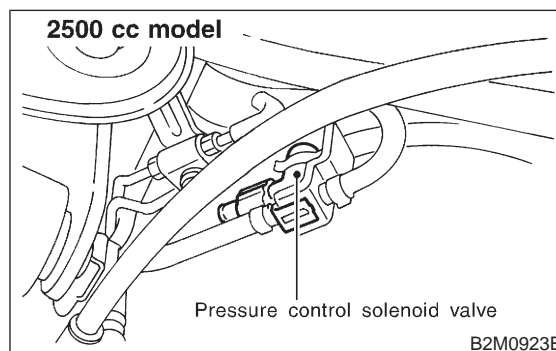
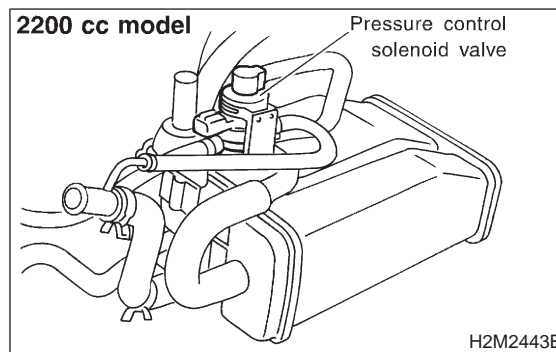


- CHECK** : **Does purge control solenoid valve produce operating sound?**
- YES** : Go to step **10AR6**.
- NO** : Replace purge control solenoid valve.

10AR6 : 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 **10AR7**.
- NO** : Replace pressure control solenoid valve.

10AR7 : CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

- CHECK** : **Does fuel leak in fuel line?**
- YES** : Repair or replace fuel line.
- NO** : Go to step **10AR8**.

10AR8 : CHECK CANISTER.

- CHECK** : **Is there any damage at canister?**
- YES** : Repair or replace canister.
- NO** : Go to step **10AR9**.

10AR9 : CHECK FUEL TANK.

CHECK : *Is there any damage at fuel tank?*

YES : Repair or replace fuel tank.

NO : Go to step **10AR10**.

10AR10 : 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.

**AS: DTC P0441 — EVAPORATIVE EMISSION CONTROL SYSTEM
INCORRECT PURGE FLOW —**

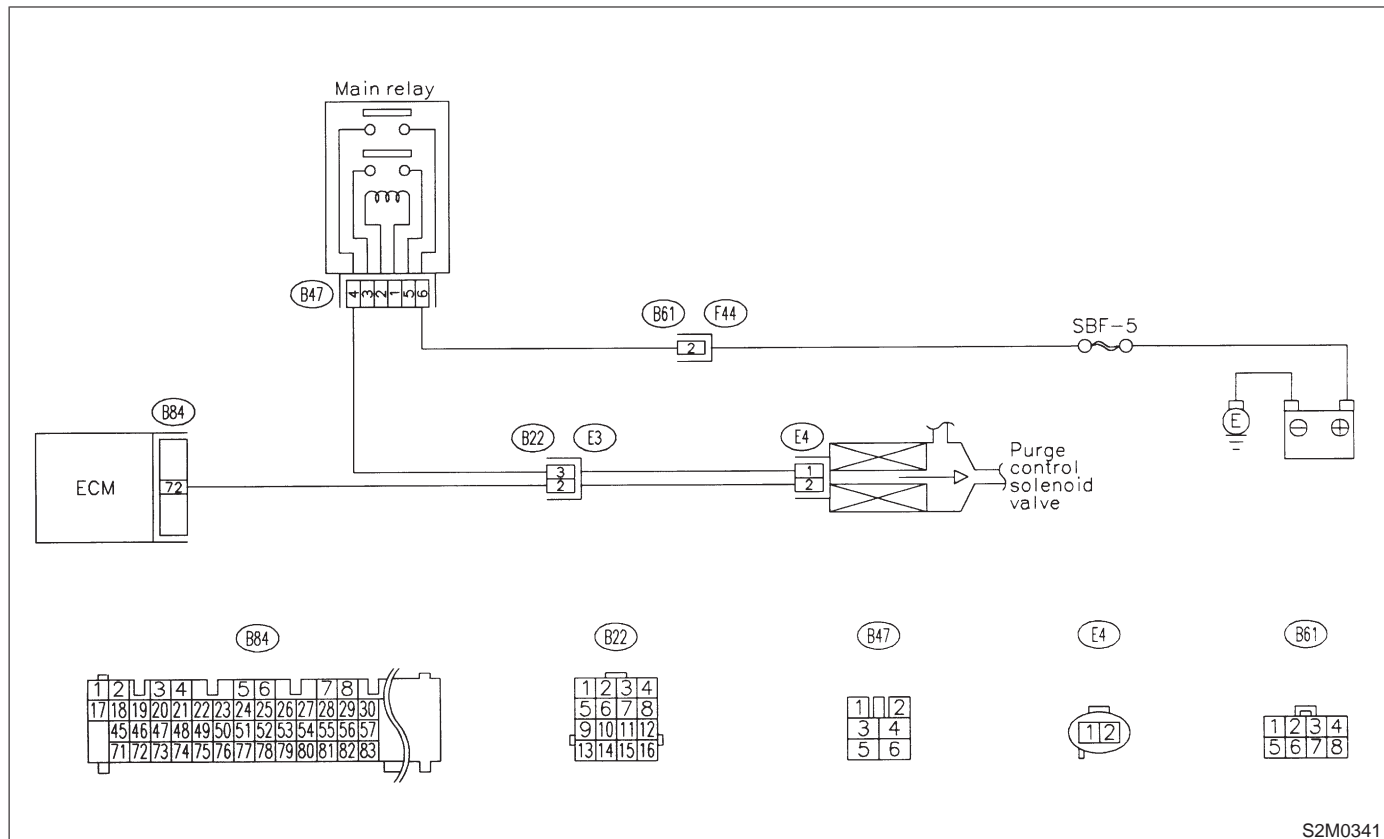
● DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

CAUTION:

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

● WIRING DIAGRAM:



S2M0341

10AS1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0443, P1102, P1122 or P1422?

YES : Inspect the relevant DTC P0106, P0107, P0108, P0443, P1102, P1122 or P1422 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

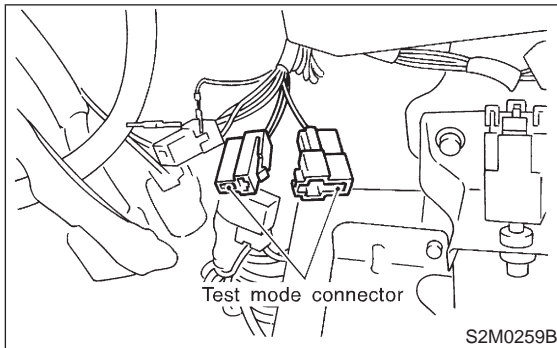
NOTE:

In this case, it is not necessary to inspect DTC P0441.

NO : Go to step 10AS2.

10AS2 : CHECK PURGE CONTROL SOLENOID 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:

Purge control 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 purge control solenoid valve produce operating sound at about 0.3 Hz?**
- YES** : Go to step **10AS3**.
- NO** : Replace purge control solenoid valve.

10AS3 : CHECK PURGE CONTROL SOLENOID VALVE.

Disconnect canister purge hose from canister.

- CHECK** : **Does pulsation occur by blowing through the canister purge hose?**
- YES** : Repair or replace evaporation line.

NOTE:

In this case, repair the following:

- Loose connections in evaporation line
 - Cracks in evaporation line
 - Clogging in evaporation line
- NO** : Replace purge control solenoid valve.

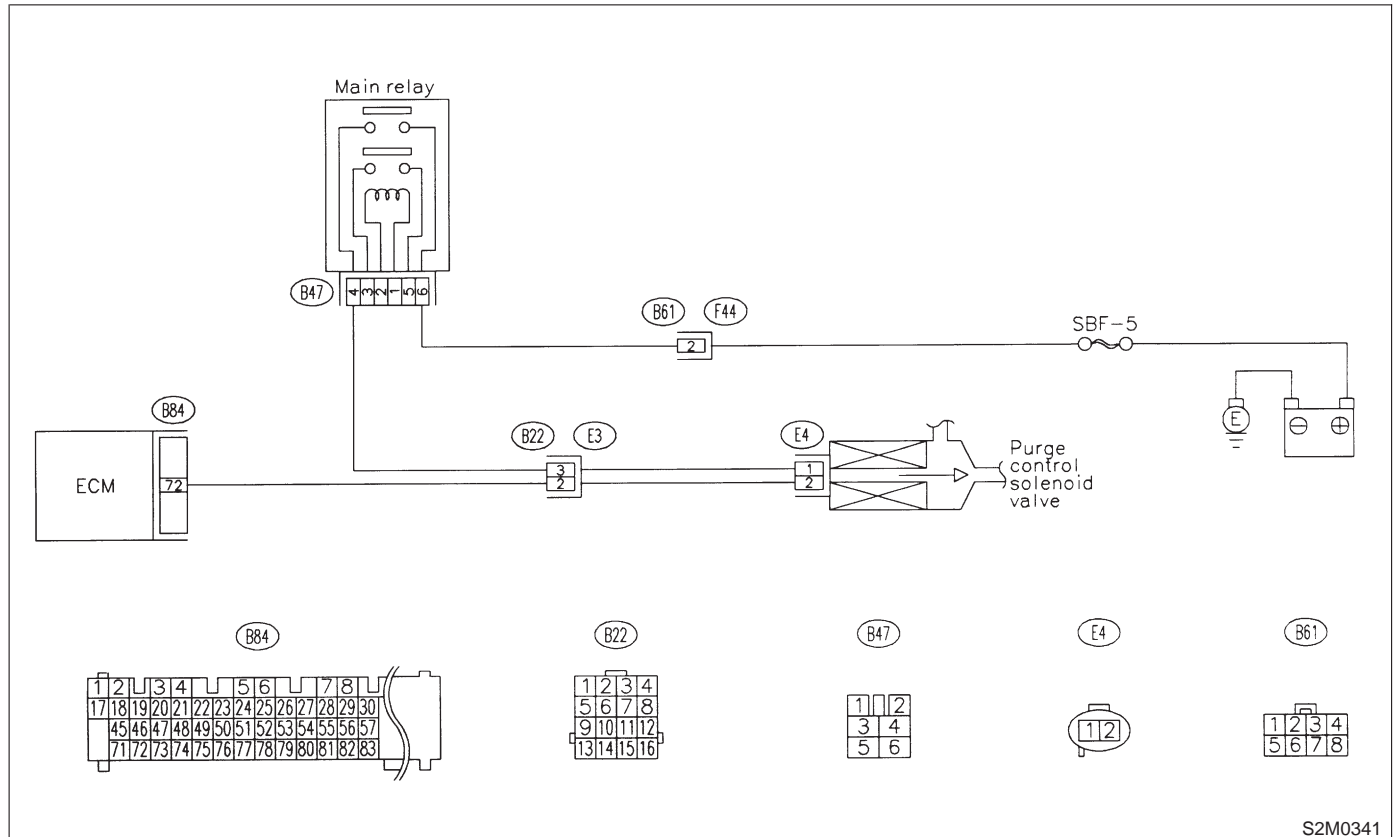
AT: DTC P0443 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Erroneous idling

CAUTION:

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

● **WIRING DIAGRAM:**



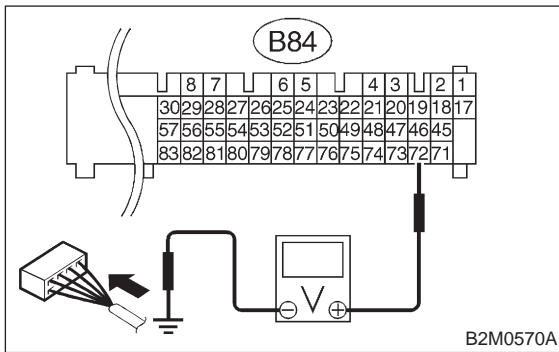
S2M0341

10AT1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal

(B84) No. 72 (+) — 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.

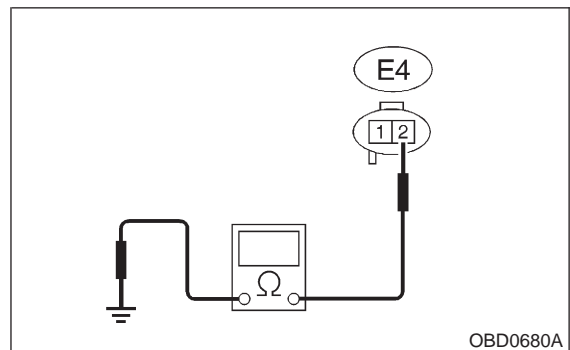
- NO** : Go to step **10AT2**.

10AT2 : 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:



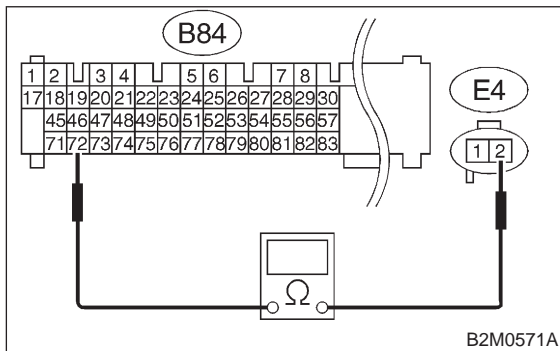
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Repair ground short circuit in harness between ECM and purge control solenoid valve connector.
- NO** : Go to step **10AT3**.

10AT3 : 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

(B84) No. 72 — (E4) No. 2:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AT4.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

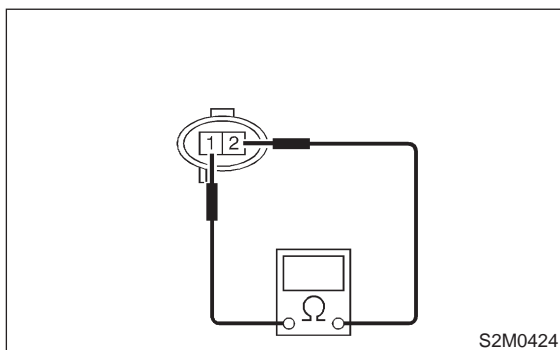
- Open circuit in harness between ECM and purge control solenoid valve connector
- Poor contact in coupling connector (B22)

10AT4 : 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:



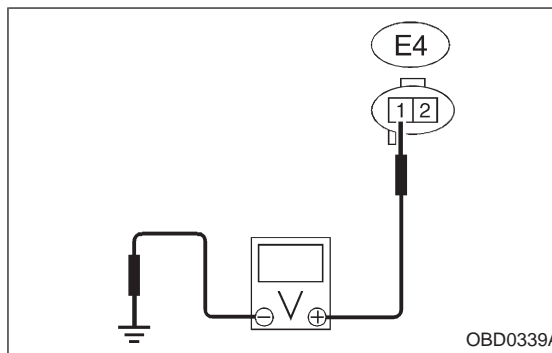
- CHECK** : Is the resistance between 10 and 100 Ω?
- YES** : Go to step 10AT5.
- NO** : Replace purge control solenoid valve.

10AT5 : 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 10AT6.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between main relay and purge control solenoid valve connector
- Poor contact in coupling connector (B22)
- Poor contact in main relay connector

10AT6 : 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:

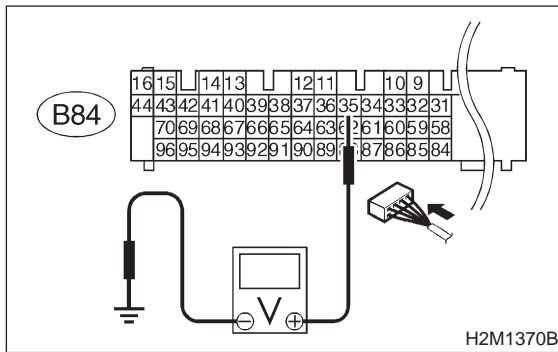
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

MEMO:

10AU1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 35 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
YES : Go to step 10AU2.
NO : Go to step 10AU3.

10AU2 : 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:

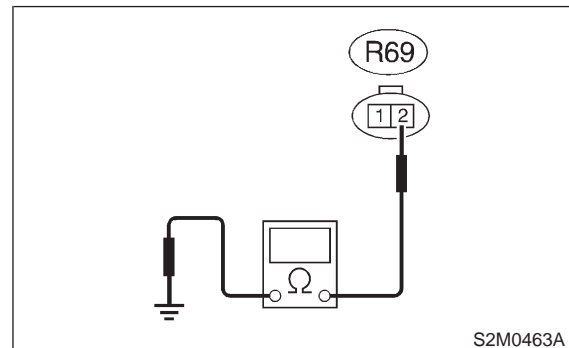
In this case, repair the following:

- Poor contact in drain valve connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B97, B98 and R57)

10AU3 : 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:



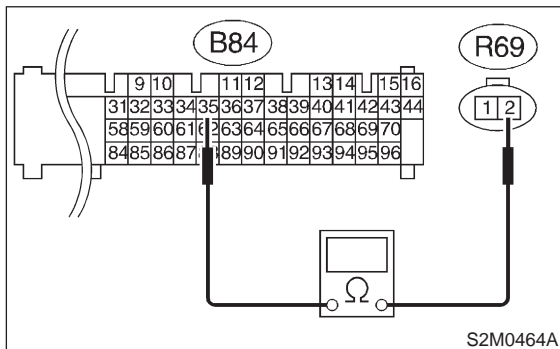
- CHECK** : Is the resistance less than 10 Ω?
YES : Repair ground short circuit in harness between ECM and drain valve connector.
NO : Go to step 10AU4.

10AU4 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and drain valve connector.

Connector & terminal

(B84) No. 35 — (R69) No. 2:



CHECK : **Is the voltage less than 1 Ω?**

YES : Go to step **10AU5**.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

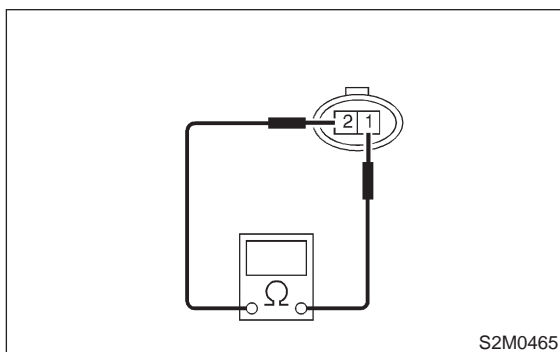
- Open circuit in harness between ECM and drain valve connector
- Poor contact in coupling connectors (B98 and R57)

10AU5 : 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 **10AU6**.

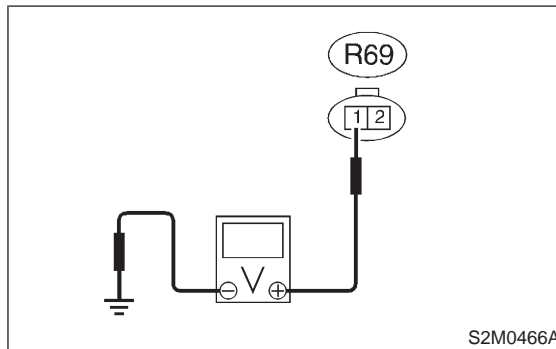
NO : Replace drain valve.

10AU6 : 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 **10AU7**.

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

10AU7 : 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:

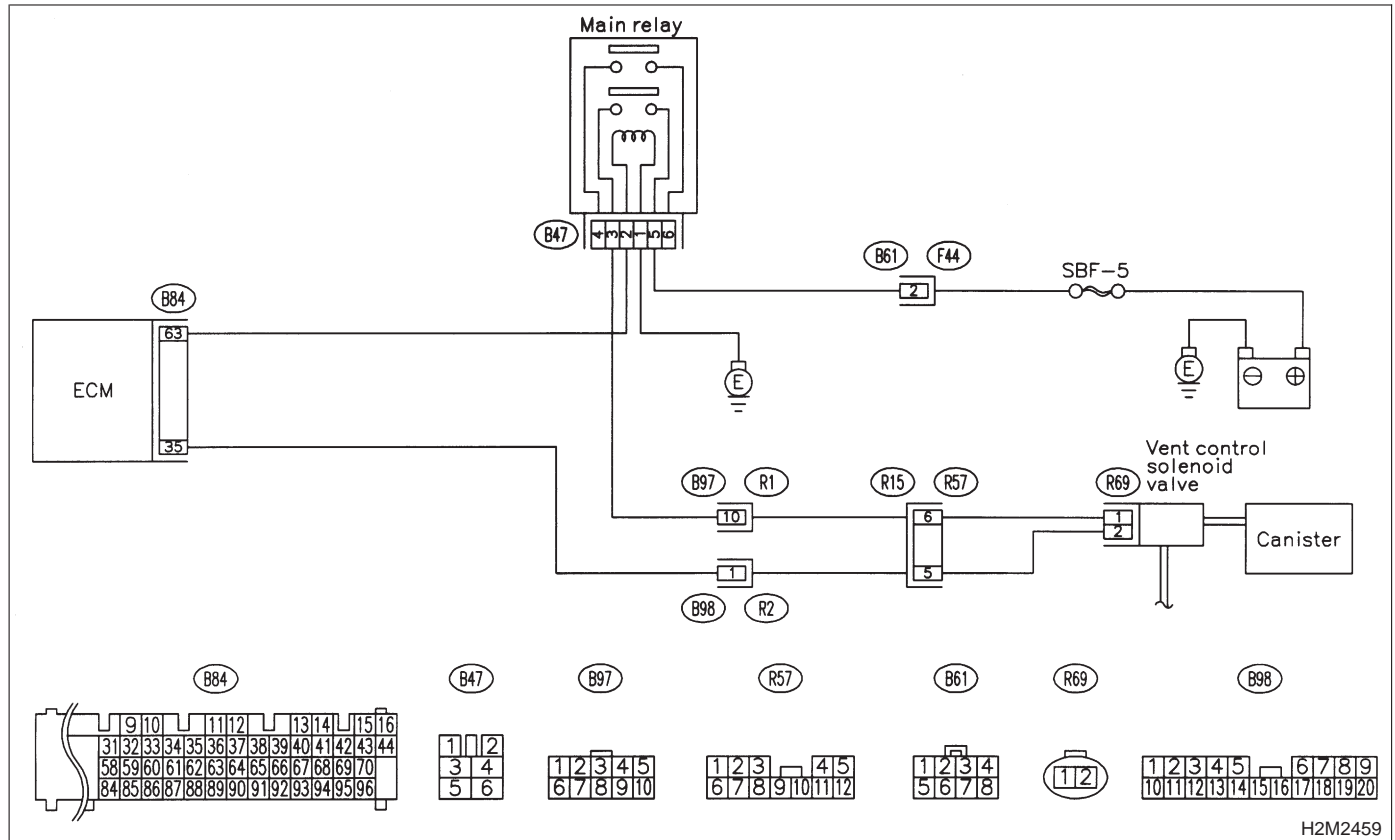
AV: DTC P0446 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL LOW INPUT [2500 cc MODEL]—

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

CAUTION:

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

● **WIRING DIAGRAM:**

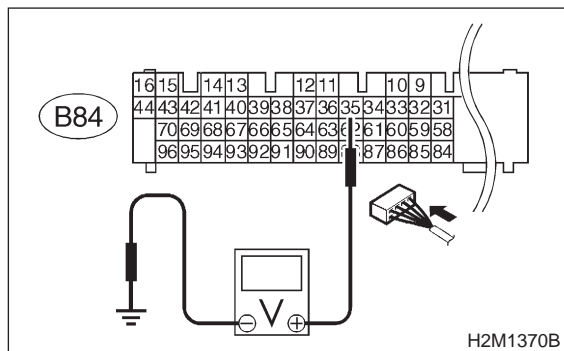


H2M2459

10AV1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 35 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
YES : Go to step 10AV2.
NO : Go to step 10AV3.

10AV2 : 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:

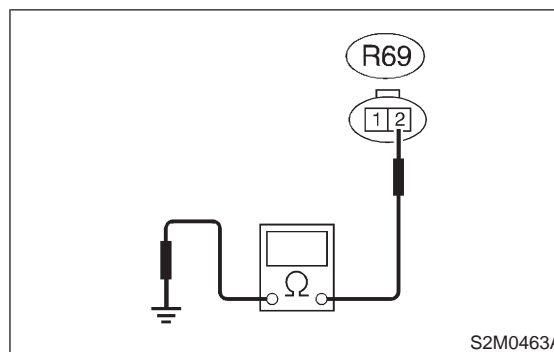
In this case, repair the following:

- Poor contact in vent control solenoid valve connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B97, B98 and R57)

10AV3 : CHECK HARNESS BETWEEN VENT CONTROL SOLENOID VALVE AND ECM CONNECTOR.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from vent control solenoid valve and ECM.
- 3) Measure resistance of harness between vent control solenoid valve connector and chassis ground.

Connector & terminal
(R69) No. 2 — Chassis ground:



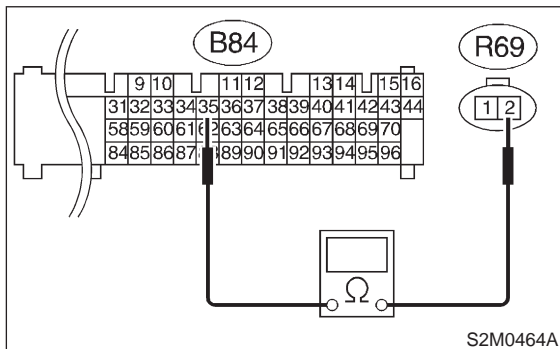
- CHECK** : Is the resistance less than 10 Ω?
YES : Repair ground short circuit in harness between ECM and vent control solenoid valve connector.
NO : Go to step 10AV4.

10AV4 : CHECK HARNESS BETWEEN VENT CONTROL SOLENOID VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and vent control solenoid valve connector.

Connector & terminal

(B84) No. 35 — (R69) No. 2:



- CHECK** : Is the voltage less than 1 Ω?
- YES** : Go to step 10AV5.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

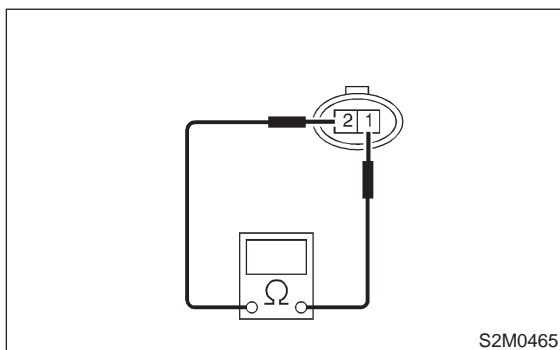
- Open circuit in harness between ECM and vent control solenoid valve connector
- Poor contact in coupling connectors (B98 and R57)

10AV5 : CHECK VENT CONTROL SOLENOID VALVE.

Measure resistance between vent control solenoid valve terminals.

Terminals

No. 1 — No. 2:



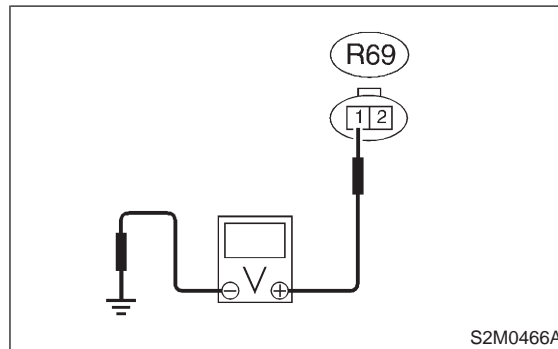
- CHECK** : Is the resistance between 10 and 100 Ω?
- YES** : Go to step 10AV6.
- NO** : Replace vent control solenoid valve.

10AV6 : CHECK POWER SUPPLY TO VENT CONTROL SOLENOID VALVE.

- 1) Turn ignition switch to ON.
- 2) Measure voltage between vent control solenoid valve and chassis ground.

Connector & terminal

(R69) No. 1 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 10AV7.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between main relay and vent control solenoid valve
- Poor contact in coupling connectors (B97 and R57)
- Poor contact in main relay connector

10AV7 : CHECK POOR CONTACT.

Check poor contact in vent control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : Is there poor contact in vent control solenoid valve connector?
- YES** : Repair poor contact in vent control solenoid valve connector.
- NO** : Contact with SOA service.

NOTE:

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

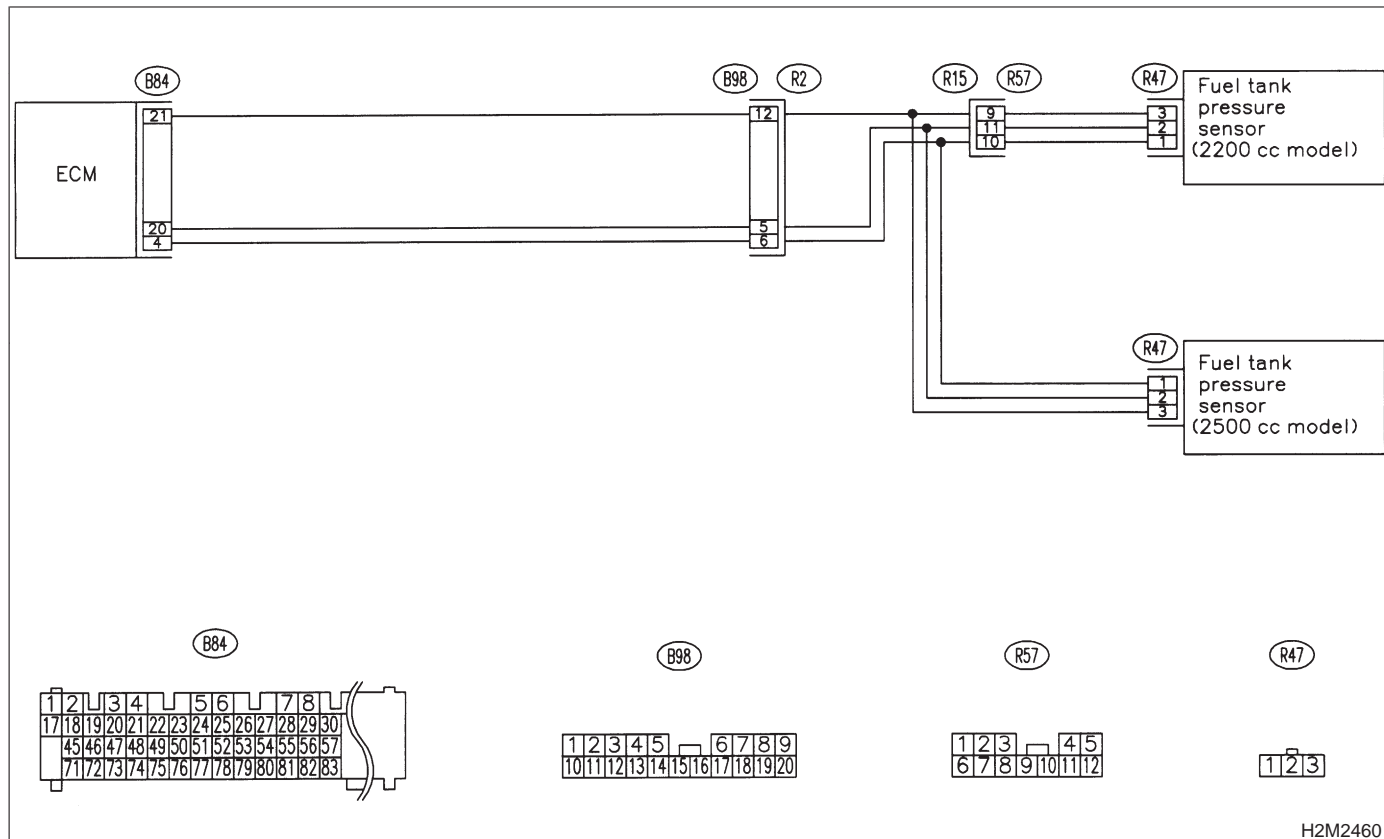
AW: DTC P0451 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR RANGE/PERFORMANCE PROBLEM —

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

CAUTION:

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

● **WIRING DIAGRAM:**



H2M2460

10AW1 : 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.

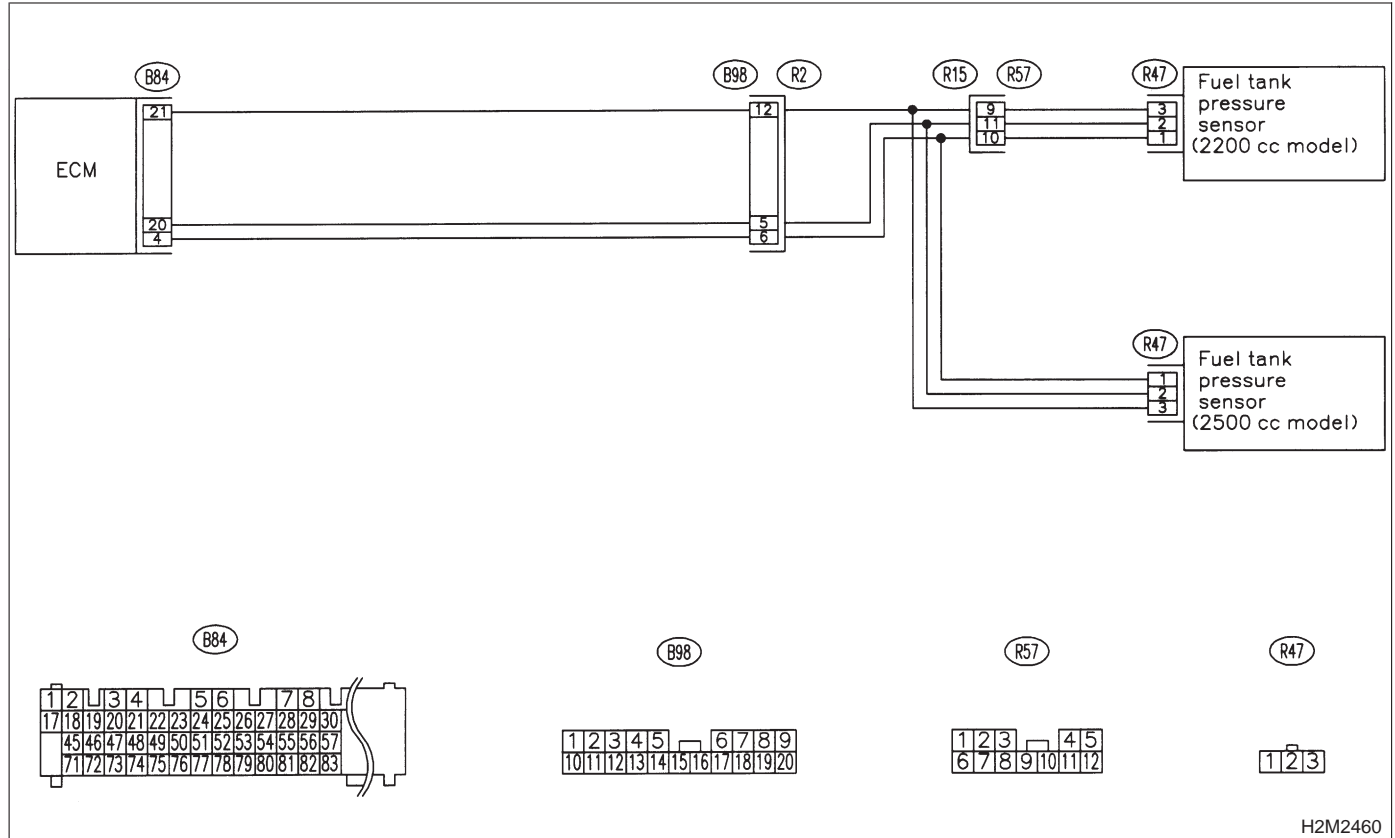
AX: DTC P0452 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT —

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

CAUTION:

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

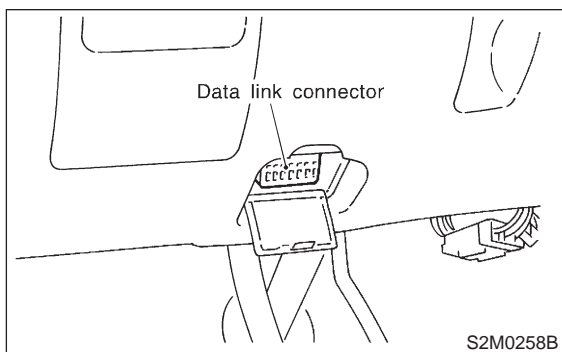
- **WIRING DIAGRAM:**



H2M2460

10AX1 : 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:

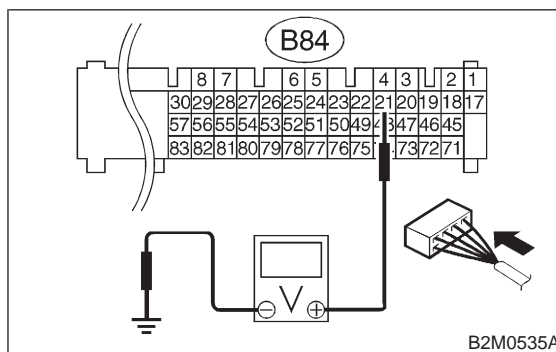
- Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
- OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

- CHECK** : *Is the value less than -2.8 kPa (-21.0 mmHg, -0.827 inHg)?*
- YES** : Go to step 10AX2.
- NO** : Even if MIL lights up, the circuit has returned to a normal condition at this time.

10AX2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

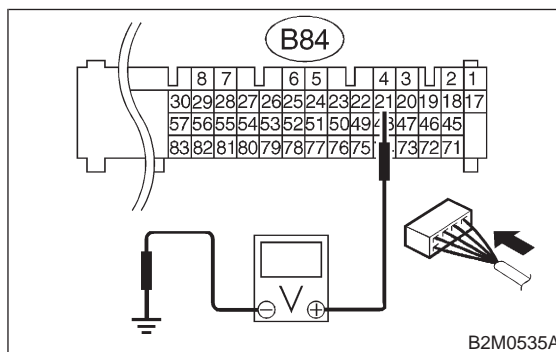
Connector & terminal
(B84) No. 21 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 4.5 V?*
- YES** : Go to step 10AX4.
- NO** : Go to step 10AX3.

10AX3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and 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:

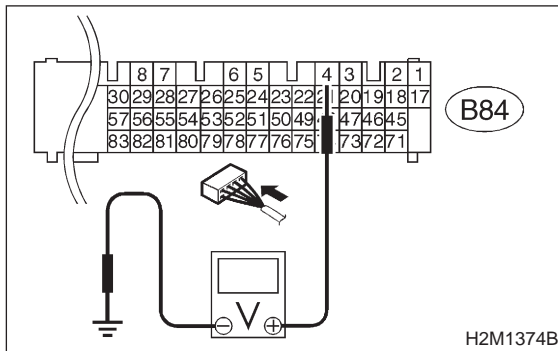
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10AX4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal

(B84) No. 4 (+) — Chassis ground (-):



- CHECK** : Is the voltage less than 0.2 V?
YES : Go to step 10AX6.
NO : Go to step 10AX5.

10AX5 : 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].>

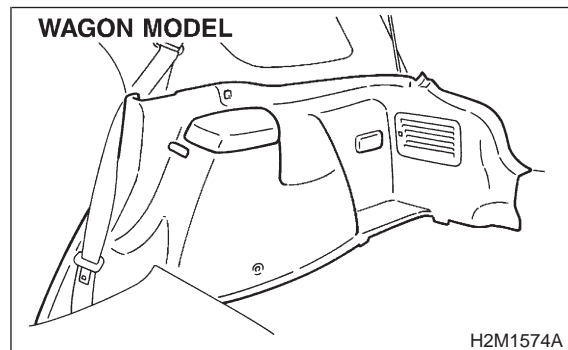
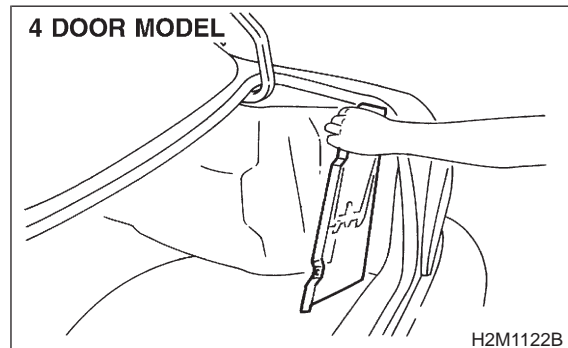
- CHECK** : Does the value change more than -2.8 kPa (-21.0 mmHg, -0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?
YES : Repair poor contact in ECM connector.
NO : Go to step 10AX6.

10AX6 : CHECK VEHICLE MODEL.

- CHECK** : Is the vehicle 2500 cc model?
YES : Go to step 10AX7.
NO : Go to step 10AX10.

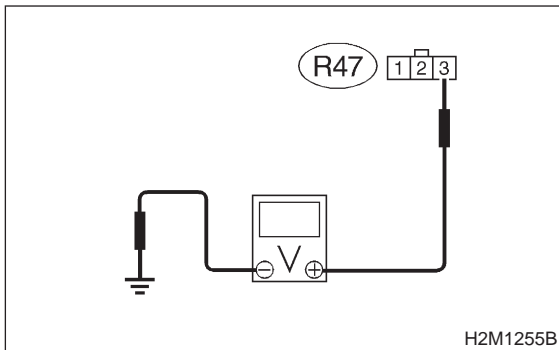
10AX7 : CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

- 1) Turn ignition switch to OFF.
- 2) Detach right side trunk side trim panel (Sedan) or right side rear quarter trim panel (Wagon).



- 3) Remove right side rear quarter trim pocket (Wagon model only).
- 4) Detach right side rear quarter insulator (Wagon model only).

- 5) Disconnect connector from fuel tank pressure sensor.
- 6) Turn ignition switch to ON.
- 7) Measure voltage between fuel tank pressure sensor connector and chassis ground.



Connector & terminal
(R47) No. 3 (+) — Chassis ground (-):

- CHECK** : Is the voltage more than 4.5 V?
- YES** : Go to step 10AX8.
- NO** : Repair harness and connector.

NOTE:

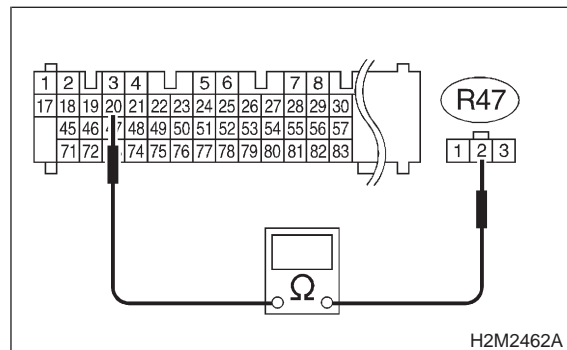
In this case, repair the following:

- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connector (B98)

10AX8 : CHECK HARNESS BETWEEN ECM AND FUEL TANK 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
(B84) No. 20 — (R47) No. 2:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AX9.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

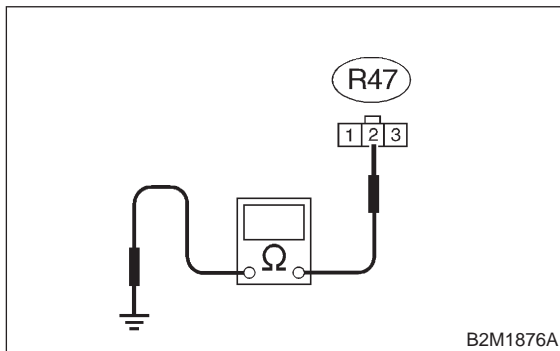
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connectors (B98)

10AX9 : CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

Measure resistance of harness between fuel tank pressure sensor connector and chassis ground.

Connector & terminal

(R47) No. 2 — Chassis ground:



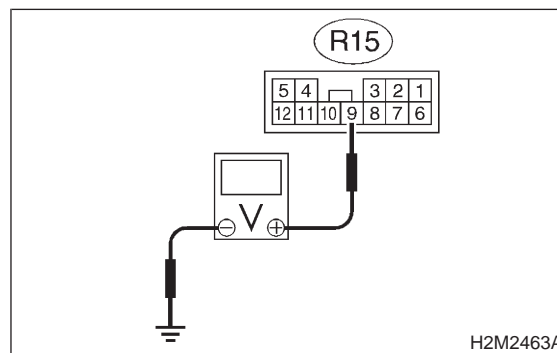
- CHECK** : *Is the resistance more than 500 kΩ?*
- YES** : Go to step **10AX16**.
- NO** : Repair ground short circuit in harness between ECM and fuel tank pressure sensor connector.

10AX10 : 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 **10AX11**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

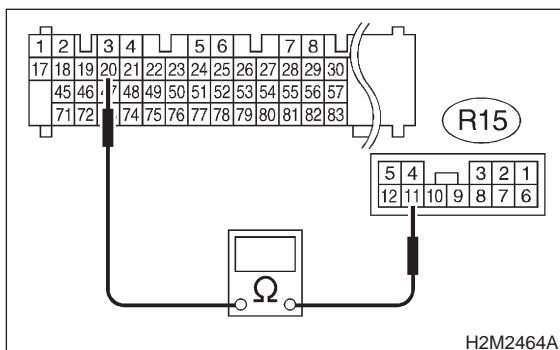
- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

10AX11 : 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

(B84) No. 20 — (R15) No. 11:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AX12.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

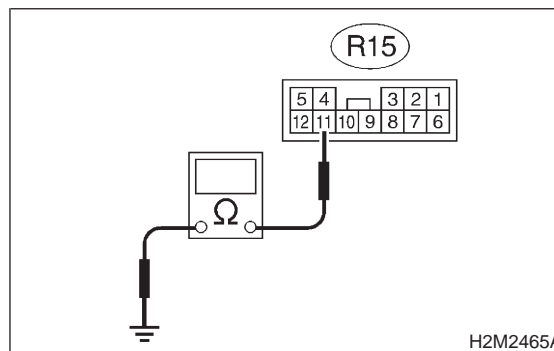
- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

10AX12 : 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:



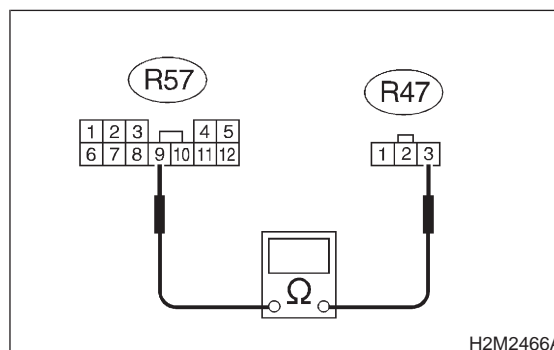
- CHECK** : Is the resistance more than 500 kΩ?
- YES** : Go to step 10AX13.
- NO** : Repair ground short circuit in harness between ECM and rear wiring harness connector (R15).

10AX13 : 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:



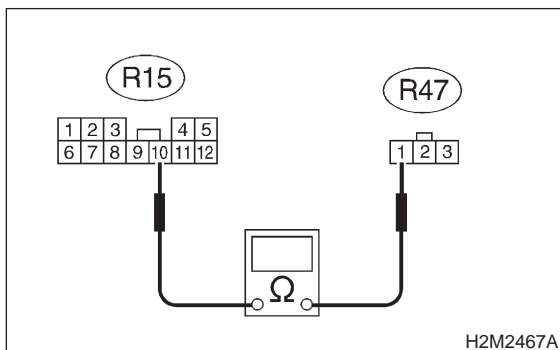
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AX14.
- NO** : Repair open circuit in fuel tank cord.

10AX14 : CHECK FUEL TANK CORD.

Measure resistance of fuel tank cord.

Connector & terminal

(R15) No. 10 — (R47) No. 1:



CHECK : **Is the resistance less than 1 Ω?**

YES : Go to step **10AX15**.

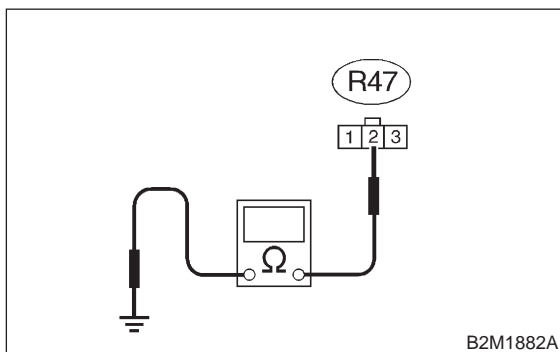
NO : Repair open circuit in fuel tank cord.

10AX15 : 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 **10AX16**.

NO : Repair ground short circuit in fuel tank cord.

10AX16 : 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.

MEMO:

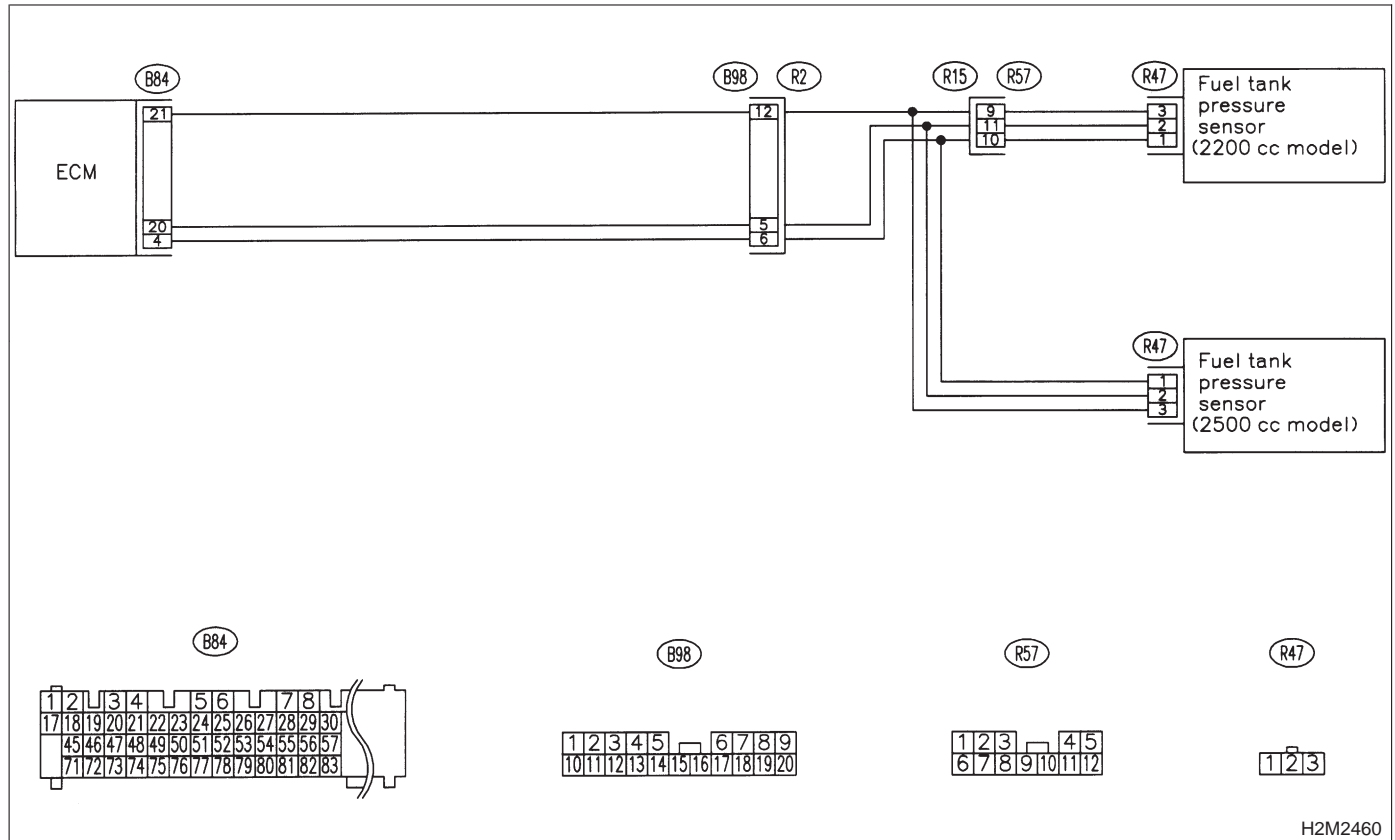
AY: DTC P0453 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT —

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

CAUTION:

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

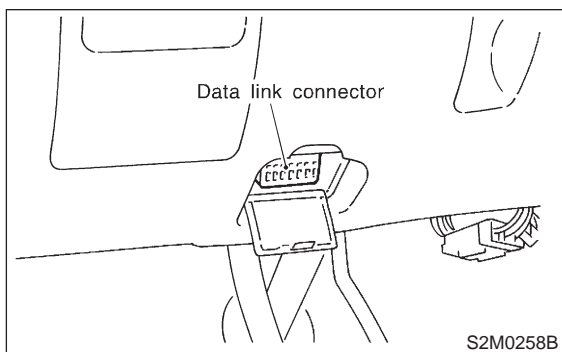
- **WIRING DIAGRAM:**



H2M2460

10AY1 : 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:

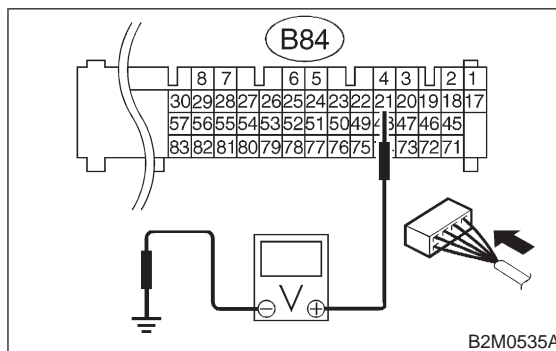
- Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
- OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

- CHECK** : *Is the value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?*
- YES** : Go to step 10AY16.
- NO** : Go to step 10AY2.

10AY2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 21 (+) — Chassis ground (-):

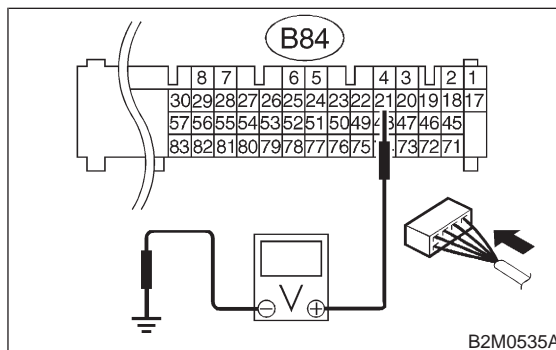


- CHECK** : *Is the voltage more than 4.5 V?*
- YES** : Go to step 10AY4.
- NO** : Go to step 10AY3.

10AY3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 21 (+) — Chassis ground (-):



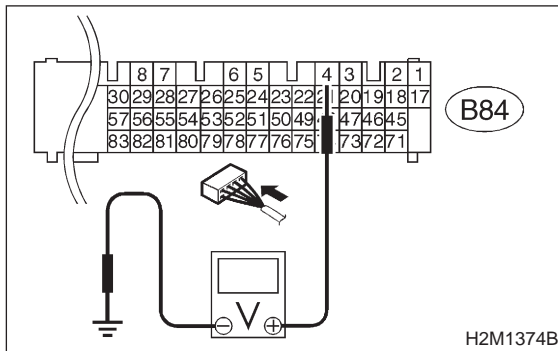
- CHECK** : *Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10AY4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal

(B84) No. 4 (+) — Chassis ground (-):



- CHECK** : **Is the voltage less than 0.2 V?**
- YES** : Go to step **10AY6**.
- NO** : Go to step **10AY5**.

10AY5 : 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].>

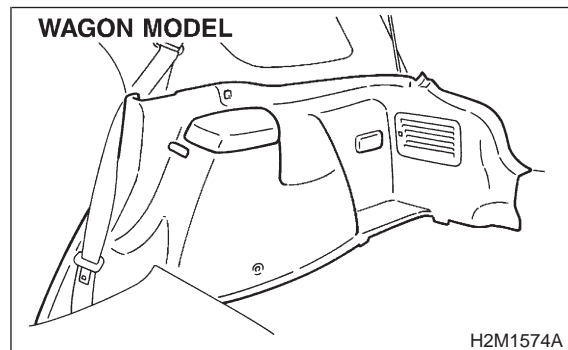
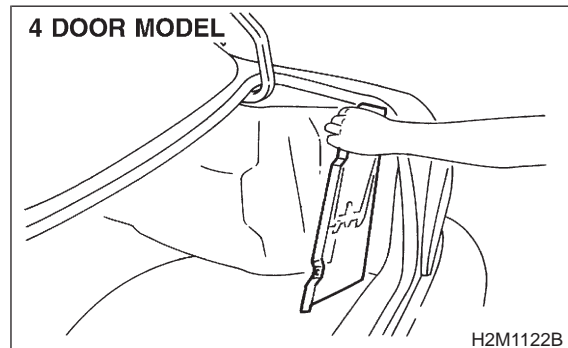
- CHECK** : **Does the value change more than -2.8 kPa (-21.0 mmHg, -0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?**
- YES** : Repair poor contact in ECM connector.
- NO** : Go to step **10AY6**.

10AY6 : CHECK VEHICLE MODEL.

- CHECK** : **Is the vehicle 2500 cc model?**
- YES** : Go to step **10AY7**.
- NO** : Go to step **10AY10**.

10AY7 : CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

- 1) Turn ignition switch to OFF.
- 2) Detach right side trunk side trim panel (Sedan) or right side rear quarter trim panel (Wagon).

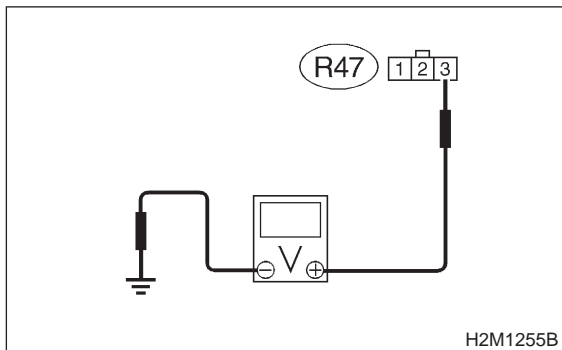


- 3) Remove right side rear quarter trim pocket (Wagon model only).
- 4) Detach right side rear quarter insulator (Wagon model only).

- 5) Disconnect connector from fuel tank pressure sensor.
- 6) Turn ignition switch to ON.
- 7) Measure voltage between fuel tank pressure sensor connector and chassis ground.

Connector & terminal

(R47) No. 3 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 4.5 V?*
- YES** : Go to step **10AY8**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

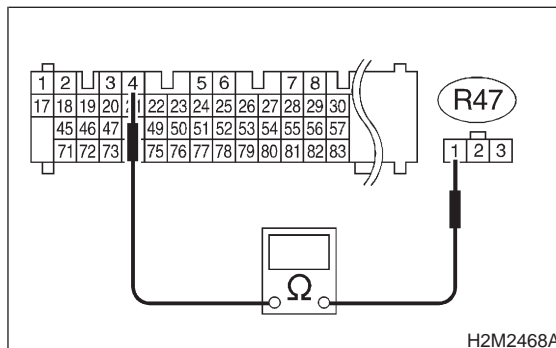
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connector (B98)

10AY8 : CHECK HARNESS BETWEEN ECM AND FUEL TANK 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

(B84) No. 4 — (R47) No. 1:



- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **10AY9**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

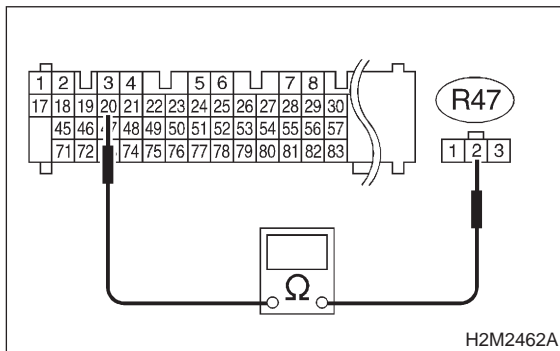
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connector (B98)

10AY9 : CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

Measure resistance of harness between ECM and fuel tank pressure sensor connector.

Connector & terminal

(B84) No. 20 — (R47) No. 2:



CHECK : **Is the resistance less than 1 Ω?**

YES : Go to step **10AY15**.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

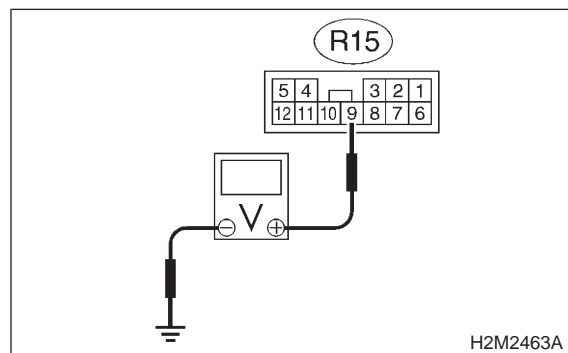
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connector (B98)

10AY10 : 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 **10AY11**.

NO : Repair harness and connector.

NOTE:

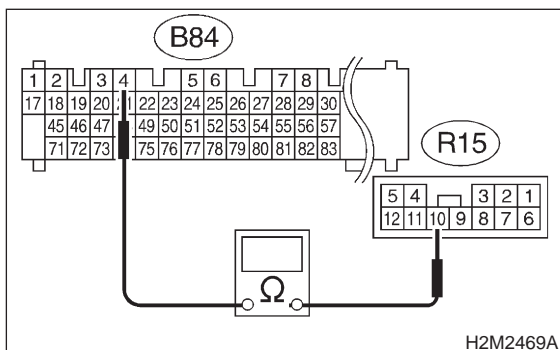
In this case, repair the following:

- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

10AY11 : 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
(B84) No. 4 — (R15) No. 10:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AY12.
- NO** : Repair harness and connector.

NOTE:

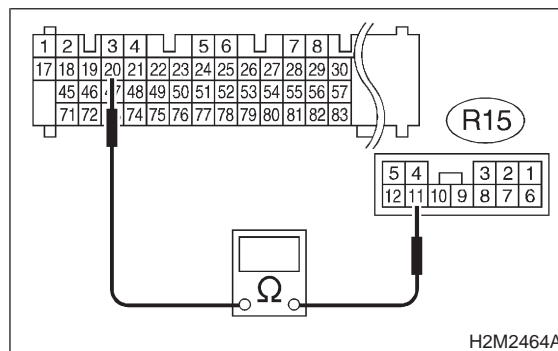
In this case, repair the following:

- Open circuit in harness between ECM and rear wiring harness connector (R15)
- Poor contact in coupling connector (B98)

10AY12 : 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
(B84) No. 20 — (R15) No. 11:

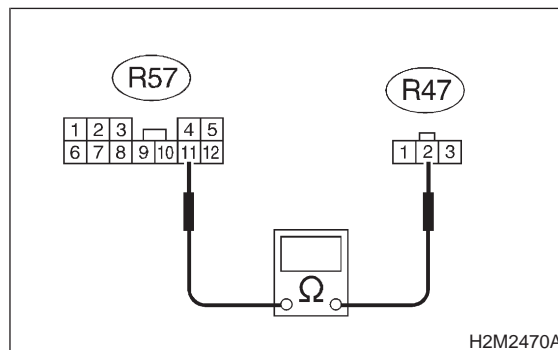


- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AY13.
- NO** : Repair ground short circuit in harness between ECM and rear wiring harness connector (R15).

10AY13 : 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:



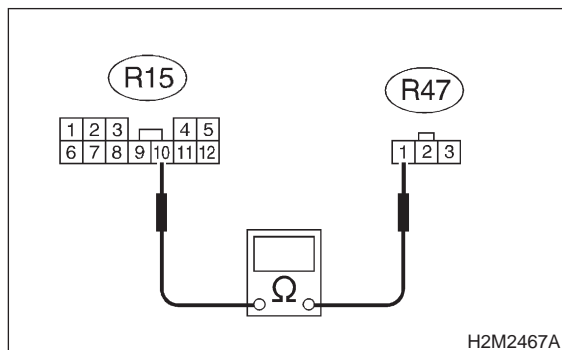
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AY14.
- NO** : Repair open circuit in fuel tank cord.

10AY14 : 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 **10AY15**.
- NO** : Repair open circuit in fuel tank cord.

10AY15 : CHECK POOR CONTACT.

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

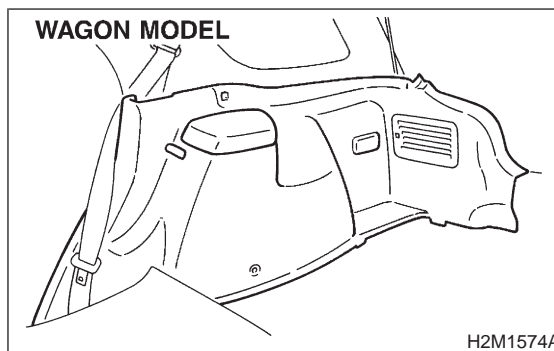
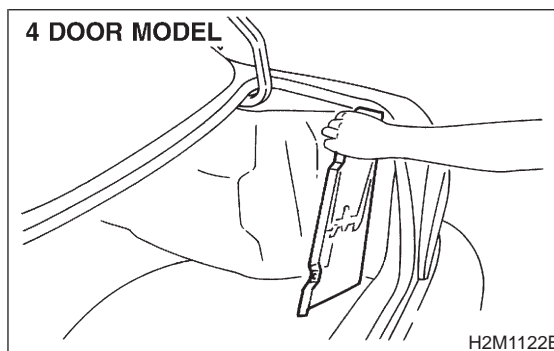
- CHECK** : *Is there poor contact in fuel tank pressure sensor connector?*
- YES** : Repair poor contact in fuel tank pressure sensor connector.
- NO** : Replace fuel tank pressure sensor.

10AY16 : CHECK VEHICLE MODEL.

- CHECK** : *Is the vehicle 2500 cc model?*
- YES** : Go to step **10AY17**.
- NO** : Go to step **10AY18**.

10AY17 : 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) Detach right side trunk side trim panel (Sedan) or right side rear quarter trim panel (Wagon).



- 3) Remove right side rear quarter trim pocket (Wagon model only).
- 4) Detach right side rear quarter insulator (Wagon model only).
- 5) Disconnect connector from fuel tank pressure sensor.
- 6) Remove fuel filler cap.
- 7) Install fuel filler cap.
- 8) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
- 9) 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.

10AY18 : 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.

MEMO:

BA: DTC P0462 — FUEL LEVEL SENSOR CIRCUIT LOW INPUT —

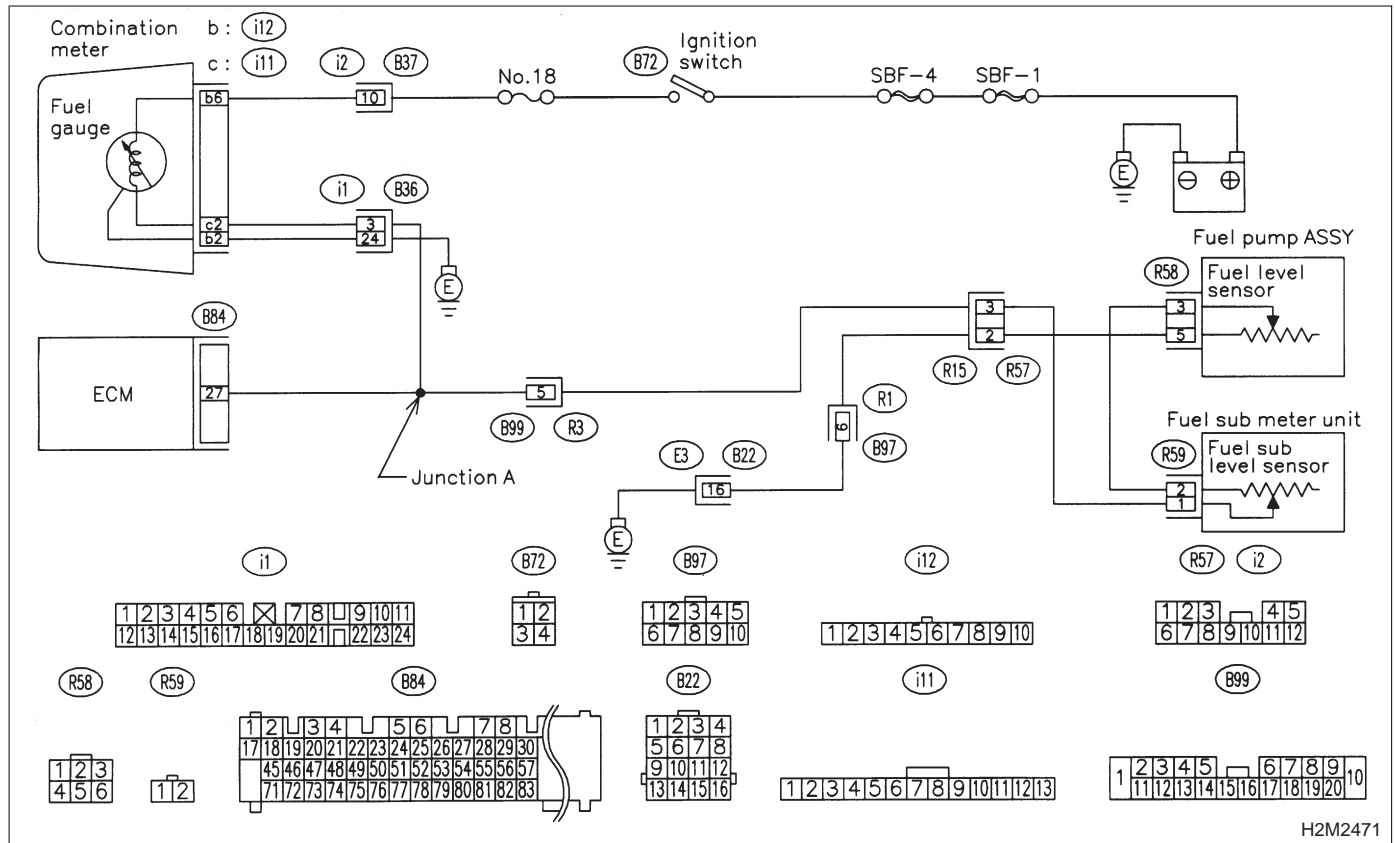
• DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

CAUTION:

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

• WIRING DIAGRAM:



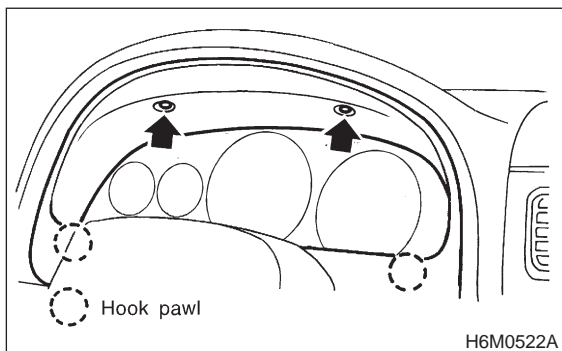
H2M2471

10BA1 : CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

- CHECK** : Does speedometer and tachometer operate normally?
- YES** : Go to step 10BA3.
- NO** : Go to step 10BA2.

10BA2 : CHECK GROUND CIRCUIT OF COMBINATION METER.

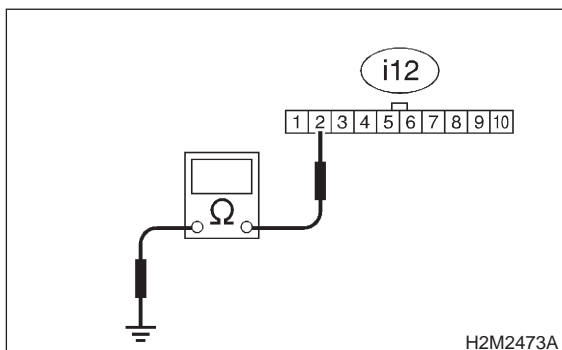
- 1) Turn ignition switch to OFF.
- 2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



- 3) Disconnect connector from combination meter.
- 4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal

(i12) No. 2 — Chassis ground:



- CHECK** : *Is resistance less than 5 Ω?*
- YES** : Repair or replace combination meter.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

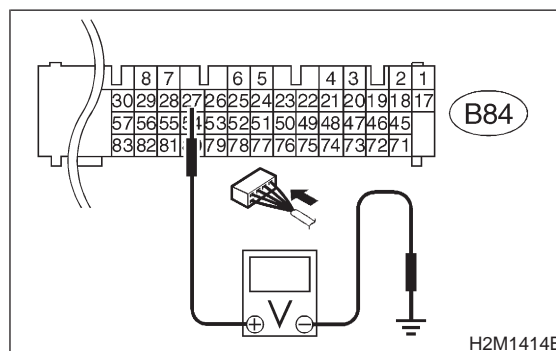
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal
- Poor contact in coupling connector (i1)

10BA3 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal

(B84) No. 27 (+) — Chassis ground (-):



- CHECK** : *Is the voltage less than 0.12 V?*
- YES** : Go to step 10BA5.
- NO** : Go to step 10BA4.

10BA4 : 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.

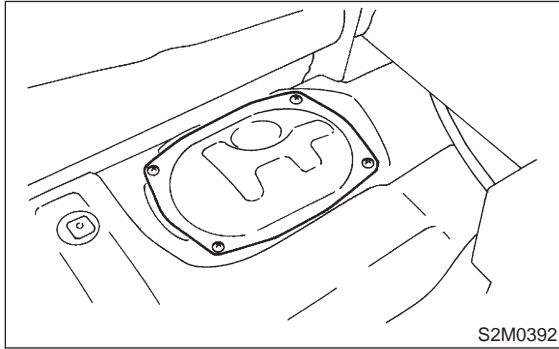
NOTE:

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)

10BA5 : CHECK HARNESS BETWEEN ECM, COMBINATION METER AND FUEL PUMP CONNECTOR.

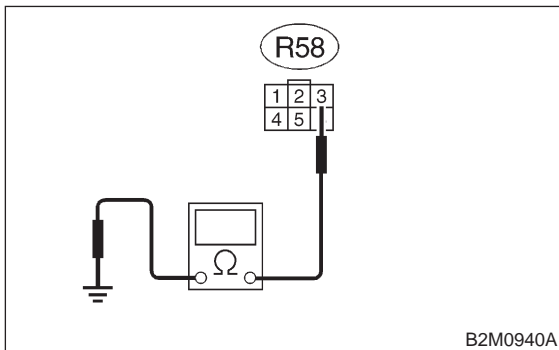
- 1) Turn ignition switch to OFF.
- 2) Remove fuel pump access hole lid located on the right rear of luggage compartment floor (Wagon) or trunk compartment floor (Sedan).



- 3) Disconnect connector from fuel pump.
- 4) Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal

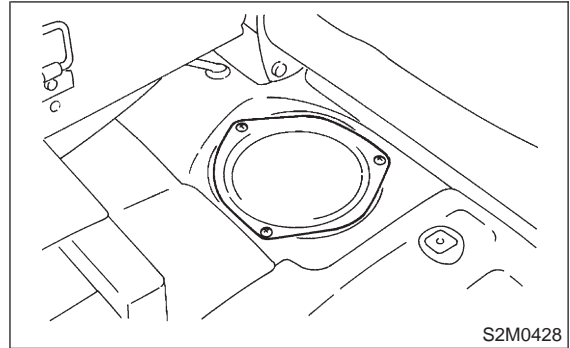
(R58) No. 3 — Chassis ground:



- CHECK** : Is the resistance less than 10 Ω?
- YES** : Go to step 10BA6.
- NO** : Go to step 10BA10.

10BA6 : CHECK HARNESS BETWEEN FUEL PUMP AND FUEL SUB METER UNIT CONNECTOR.

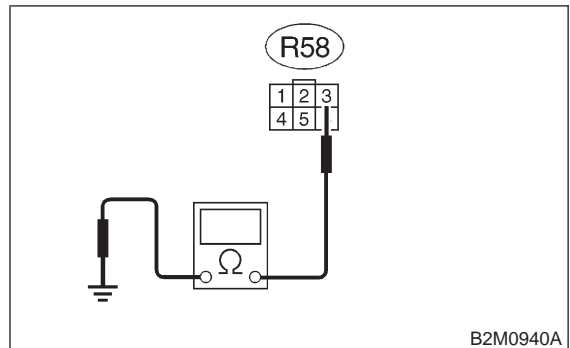
- 1) Remove service hole cover located on the left rear of luggage compartment floor.



- 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:



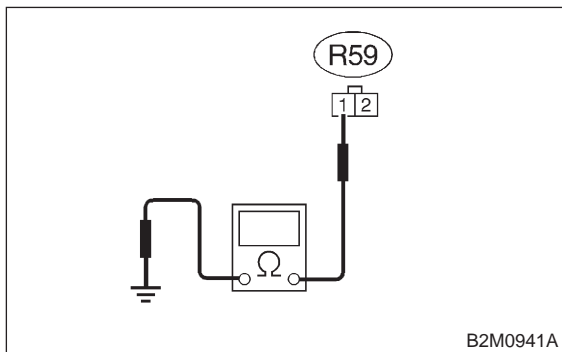
- CHECK** : Is the resistance less than 10 Ω?
- YES** : Repair ground short circuit in harness between fuel pump and fuel sub meter unit connector.
- NO** : Go to step 10BA7.

10BA7 : CHECK FUEL TANK CODE.

- 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:



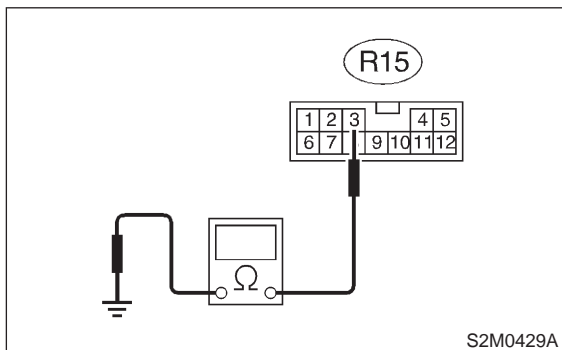
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Repair ground short circuit in fuel tank cord.
- NO** : Go to step 10BA8.

10BA8 : 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

(R15) No. 3 — Chassis ground:



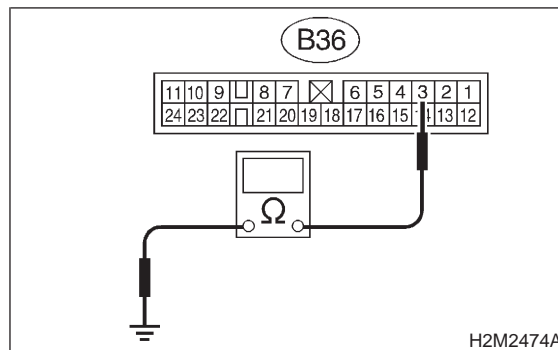
- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Repair ground short circuit in rear wiring harness.
- NO** : Go to step 10BA9.

10BA9 : CHECK BULKHEAD AND INSTRUMENT PANEL WIRING HARNESS.

- 1) Separate bulkhead wiring harness connector (B37) and instrument panel wiring harness connector (i2).
- 2) Measure resistance of harness between bulkhead wiring harness connector and chassis ground.

Connector & terminal

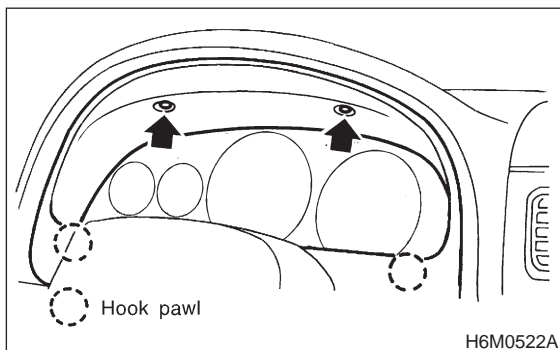
(B36) No. 3 — Chassis ground:



- 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.

10BA10 : CHECK HARNESS BETWEEN COMBINATION METER AND FUEL PUMP CONNECTOR.

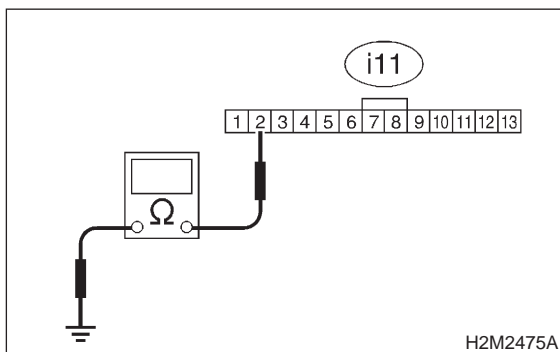
- 1) Connect connector to fuel pump.
- 2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



- 3) Disconnect connector from combination meter.
- 4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal

(i11) No. 2 — Chassis ground:



CHECK : **Is the resistance less than 200 Ω?**

YES : Go to step **10BA11**.

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 connector (i1)

10BA11 : CHECK COMBINATION METER.

Disconnect speedometer cable from combination meter and remove combination meter.

CHECK : **Is the fuel meter installation screw tightened securely?**

YES : Go to step **10BA12**.

NO : Tighten fuel meter installation screw securely.

10BA12 : CHECK 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.

MEMO:

BB: DTC P0463 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —

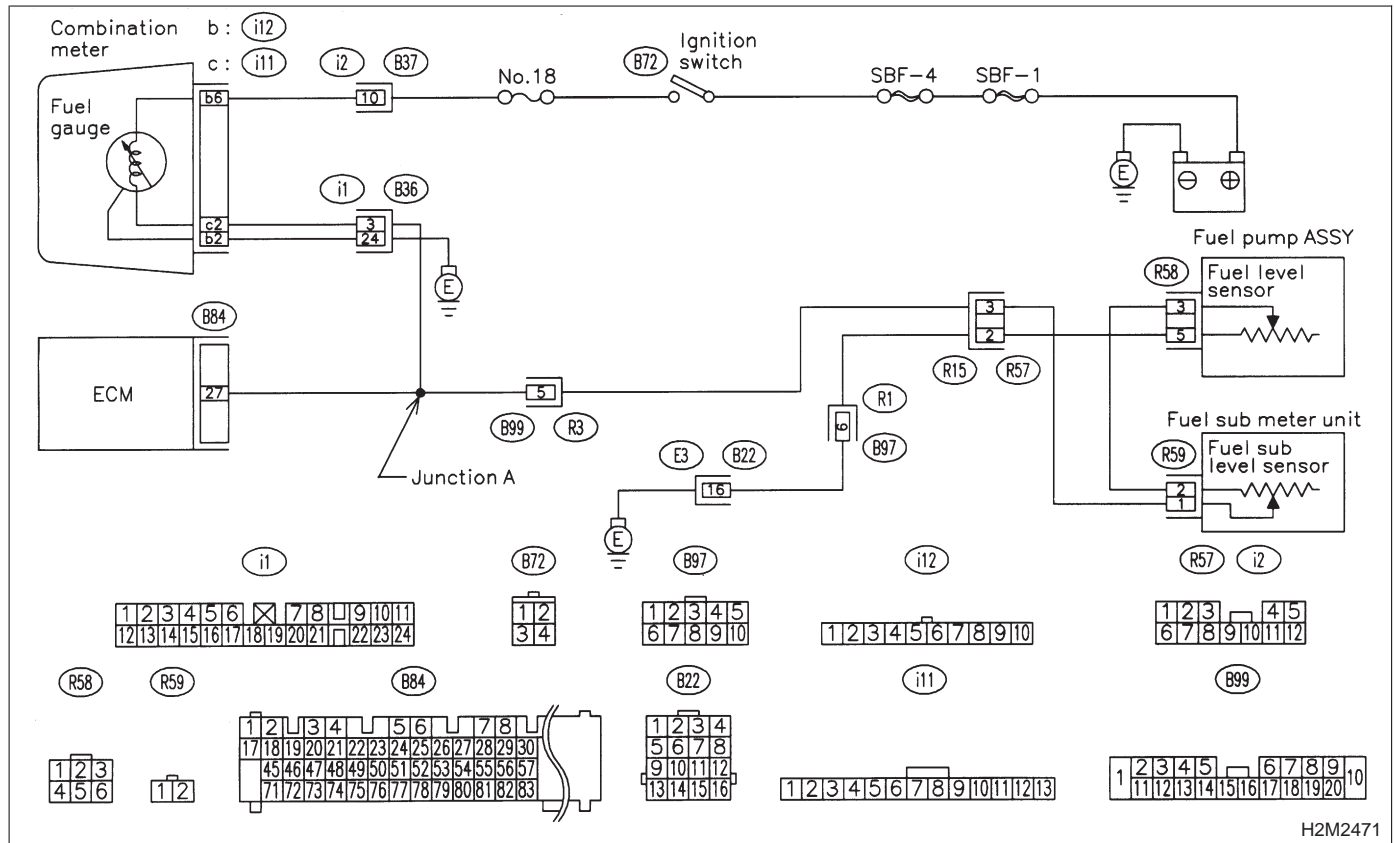
• DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

CAUTION:

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

• WIRING DIAGRAM:



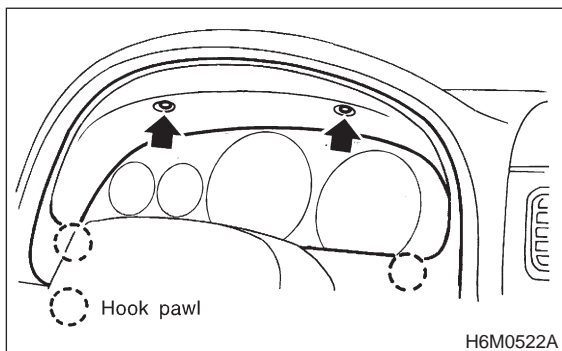
H2M2471

10BB1 : CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

- CHECK** : Does speedometer and tachometer operate normally?
- YES** : Go to step 10BB3.
- NO** : Go to step 10BB2.

10BB2 : CHECK GROUND CIRCUIT OF COMBINATION METER.

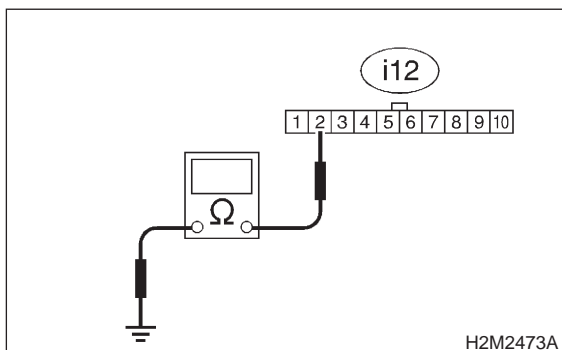
- 1) Turn ignition switch to OFF.
- 2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>



- 3) Disconnect connector from combination meter.
- 4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal

(i12) No. 2 — Chassis ground:



CHECK : *Is resistance less than 5 Ω?*

YES : Repair or replace combination meter.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

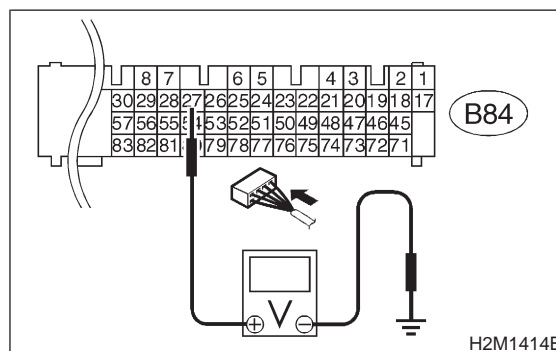
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal

10BB3 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal

(B84) No. 27 (+) — Chassis ground (-):



CHECK : *Is the voltage more than 4.75 V?*

YES : Go to step 10BB4.

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.

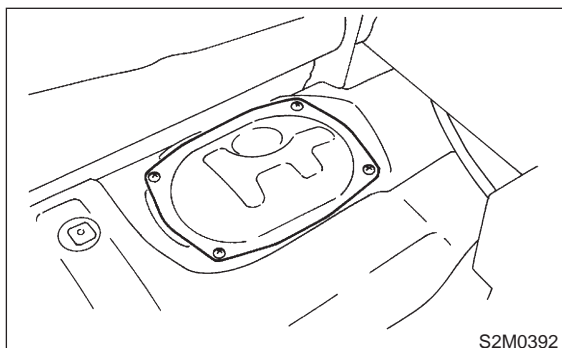
NOTE:

In this case, repair the following:

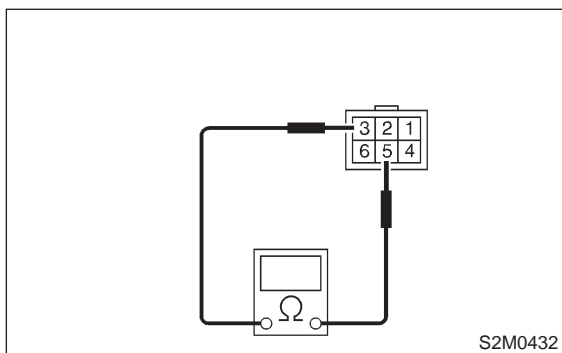
- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (i1, B22, B99, B97 and R57)

10BB4 : CHECK FUEL LEVEL SENSOR.

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



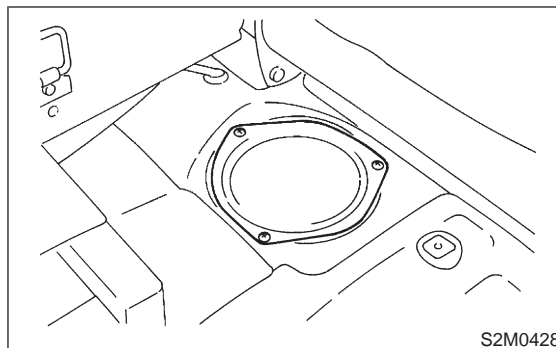
- 3) Disconnect connector from fuel pump.
- 4) Measure resistance between connector terminals of fuel pump.

Terminals**No. 3 — No. 5:**

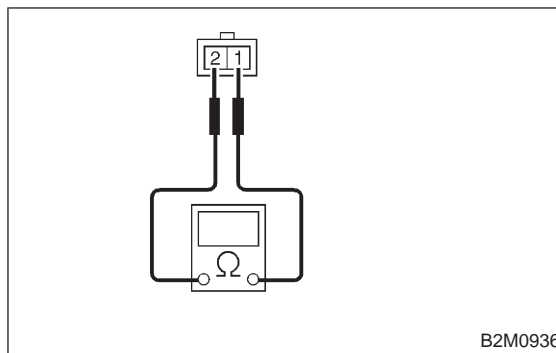
- CHECK** : Is the resistance less than 100 Ω ?
- YES** : Go to step 10BB5.
- NO** : Replace fuel sending unit.

10BB5 : CHECK FUEL SUB LEVEL SENSOR.

- 1) Remove service hole cover located on the left rear of luggage compartment floor.



- 2) Disconnect connector from fuel sub meter unit.
- 3) Measure resistance between connector terminals of fuel sub meter unit.

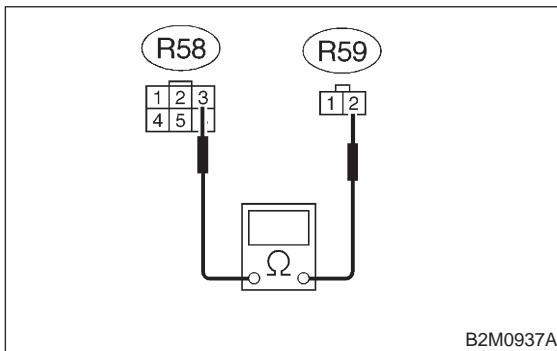
Terminals**No. 1 — No. 2:**

- CHECK** : Is the resistance less than 100 Ω ?
- YES** : Go to step 10BB6.
- NO** : Replace fuel sub meter unit.

10BB6 : 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:

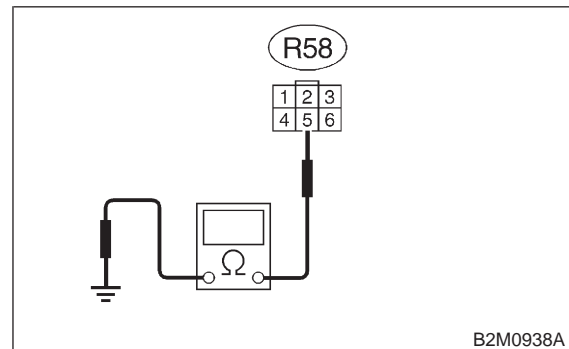


- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **10BB7**.
- NO** : Repair open circuit in harness between fuel pump and fuel sub meter unit connector.

10BB7 : 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 **10BB8**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

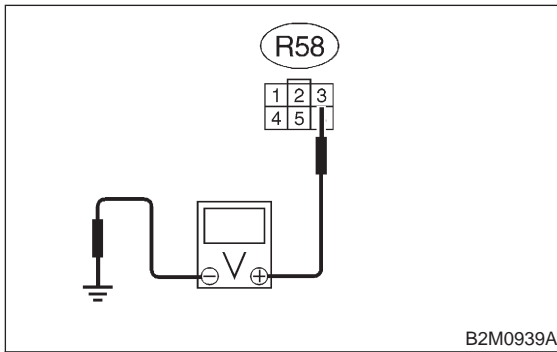
- Open circuit in harness between fuel pump connector and chassis grounding terminal
- Poor contact in fuel pump connector
- Poor contact in coupling connectors (R57, B97 and B22)

10BB8 : 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 (-):



B2M0939A

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 connectors (R57 and B99)

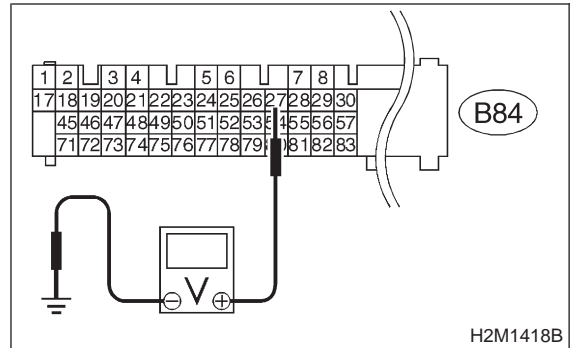
NO : Go to step **10BB9**.

10BB9 : 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

(B84) No. 27 (+) — Chassis ground (-):



H2M1418B

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 (B99)

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:

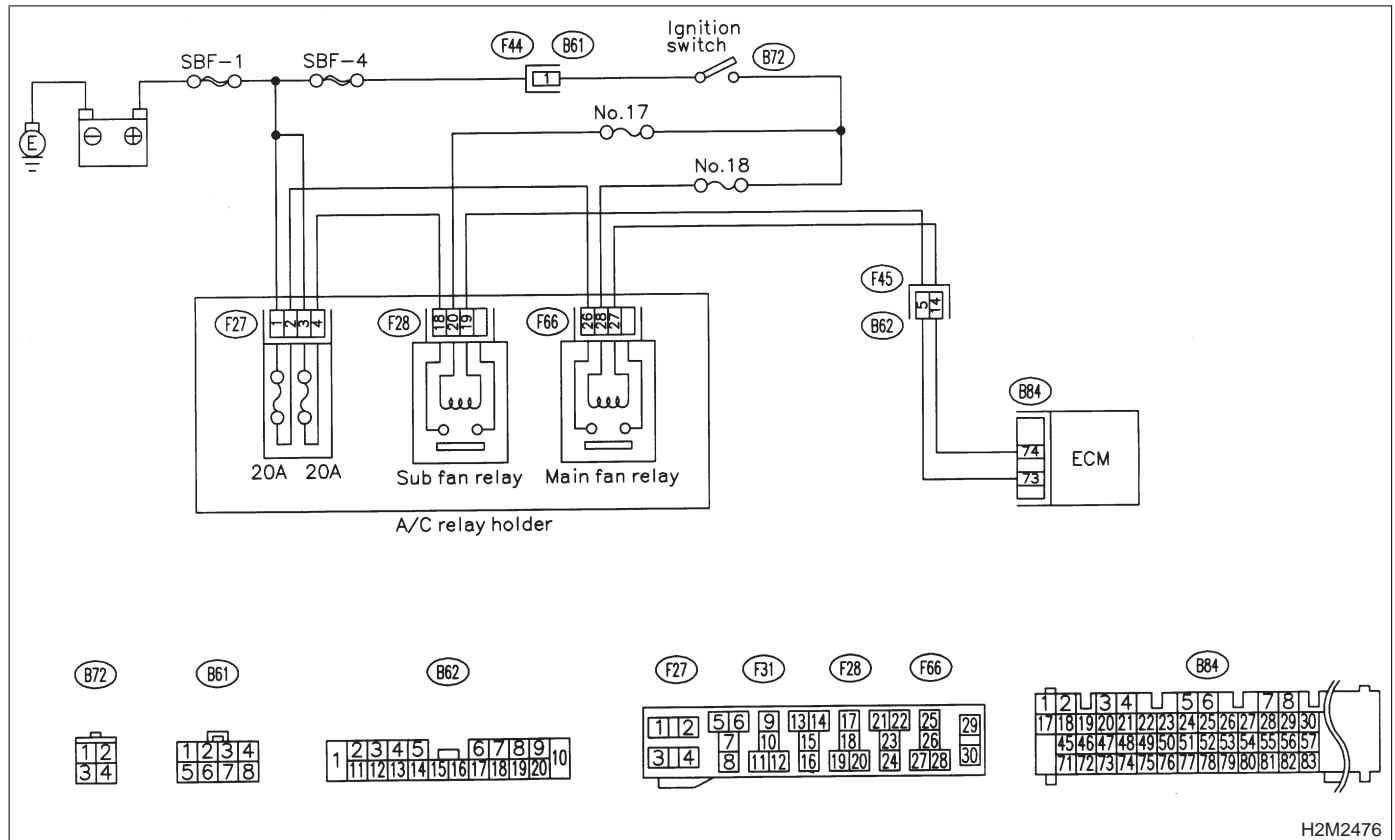
BC: DTC P0480 — COOLING FAN RELAY 1 CIRCUIT LOW INPUT —

- **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 and INSPECTION MODE.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

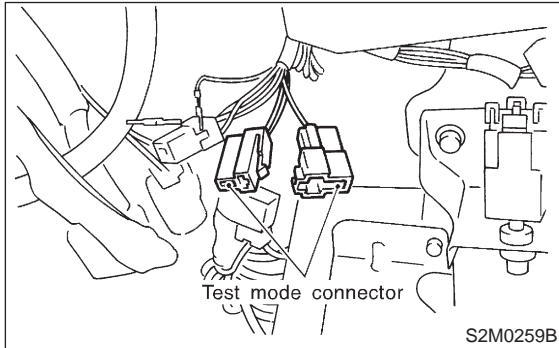
● **WIRING DIAGRAM:**



H2M2476

10BC1 : 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.



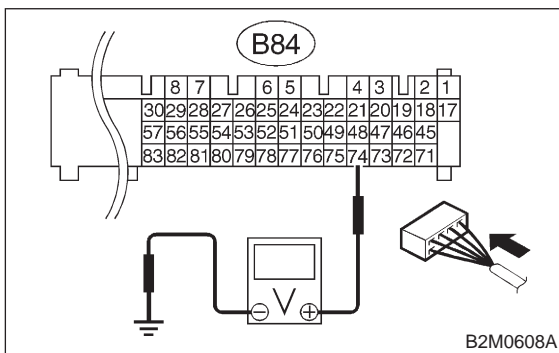
- 3) Turn ignition switch to ON.

NOTE:

Radiator fan relay operation check can be executed using Subaru Select Monitor. For procedure, refer to the "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

- 4) Measure voltage between ECM and chassis ground.

**Connector & terminal
(B84) No. 74 (+) — Chassis ground (-):**

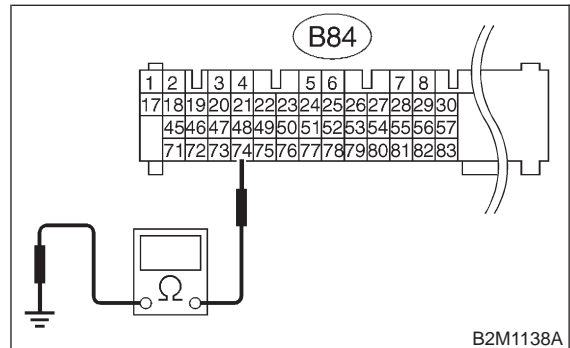


- CHECK** : Does voltage change between 0 and 10 volts?
- YES** : Repair poor contact in ECM connector.
- NO** : Go to step 10BC2.

10BC2 : 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
(B84) No. 74 — Chassis ground:**

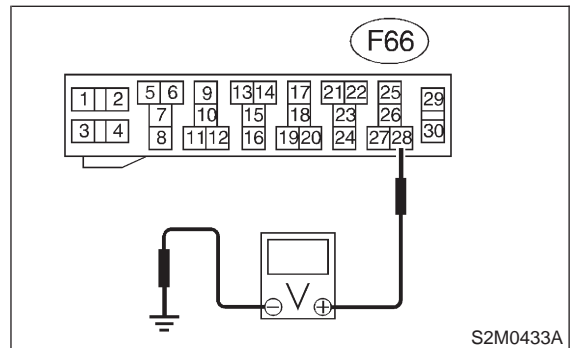


- CHECK** : Is the resistance less than 10 Ω?
- YES** : Repair ground short circuit in radiator fan relay 1 control circuit.
- NO** : Go to step 10BC3.

10BC3 : 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 main fan relay connector and chassis ground.

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



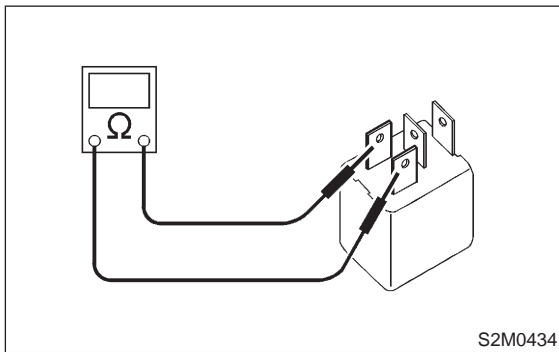
- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 10BC4.
- NO** : Repair open circuit in harness between ignition switch and A/C relay holder connector.

10BC4 : CHECK MAIN FAN RELAY.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between main fan relay terminals.

Terminal

No. 27 — No. 28:



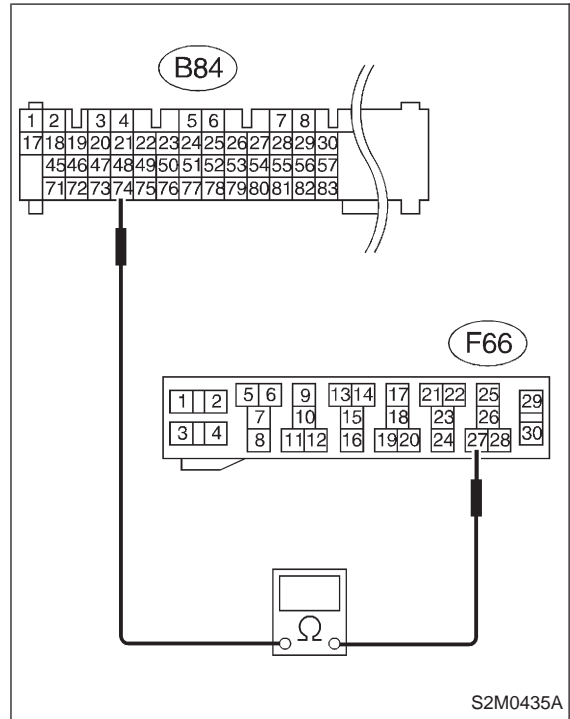
- CHECK** : Is the resistance between 74 and 118 Ω?
- YES** : Go to step 10BC5.
- NO** : Replace main fan relay.

10BC5 : CHECK OPEN CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

Measure resistance of harness between ECM and main fan relay connector.

Connector & terminal

(B84) No. 74 — (F66) No. 27:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BC6.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and A/C relay holder connector
- Poor contact in coupling connector (B62)

10BC6 : CHECK POOR CONTACT.

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

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

NOTE:

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

MEMO:

BD: DTC P0483 — COOLING FAN FUNCTION PROBLEM —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Occurrence of noise
 - Overheating

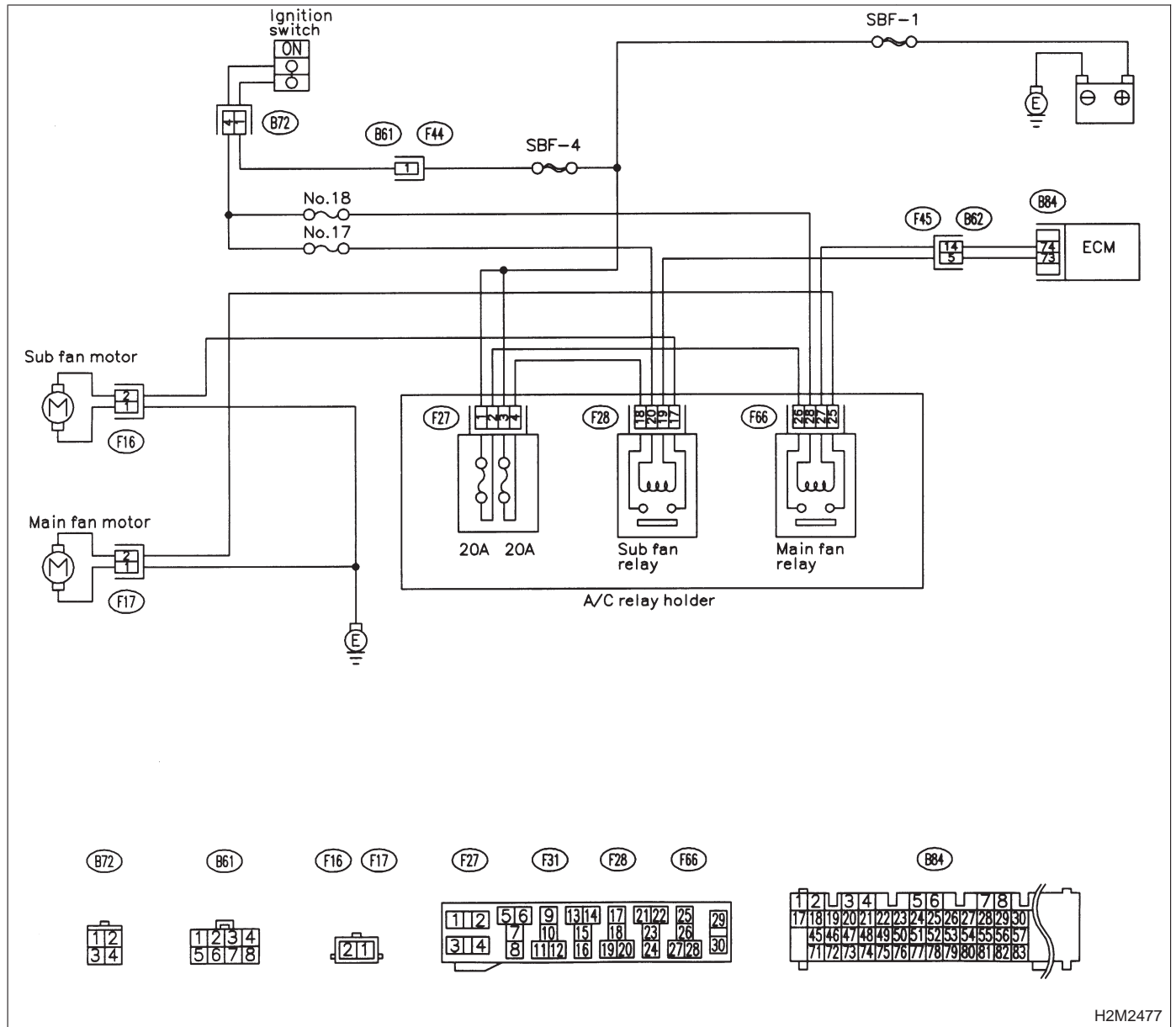
CAUTION:

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



H2M2477

10BD1 : 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". <Ref. to 2-7 [T1000].>
- NO** : Check engine cooling system. <Ref. to 2-5 [K100].>

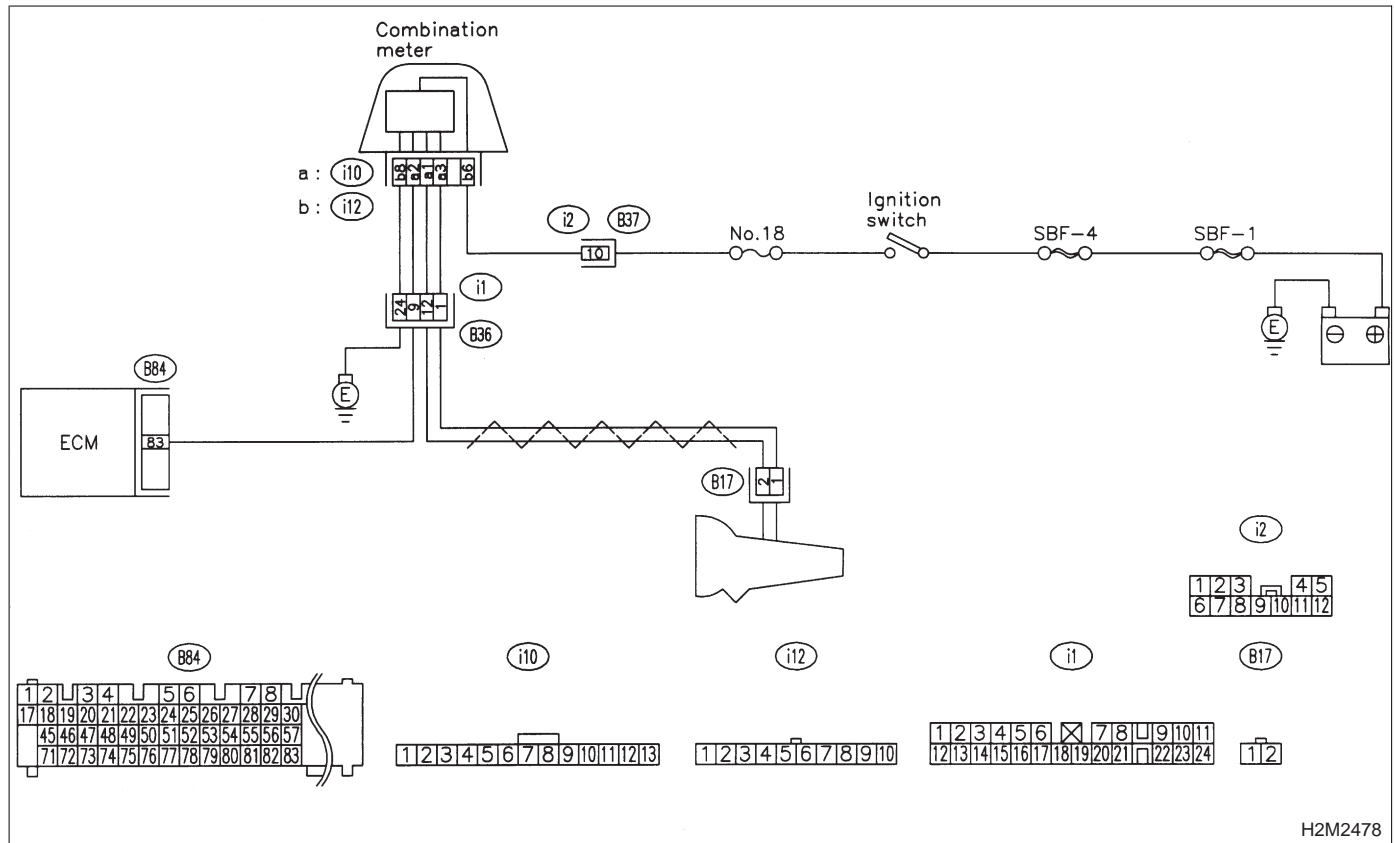
BE: DTC P0500 — VEHICLE SPEED SENSOR MALFUNCTION —

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

CAUTION:

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

● **WIRING DIAGRAM:**



H2M2478

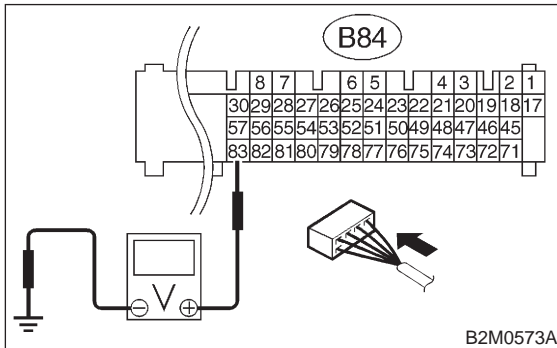
10BE1 : CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

- CHECK** : Does speedometer operate normally?
- YES** : Go to step 10BE2.
- NO** : Check speedometer and vehicle speed sensor 2 <Ref. to 6-2 [K2A0].>.

10BE2 : 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
(B84) No. 83 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 2 V?*
- YES** : Repair harness and connector.

NOTE:

In this case, repair the following:

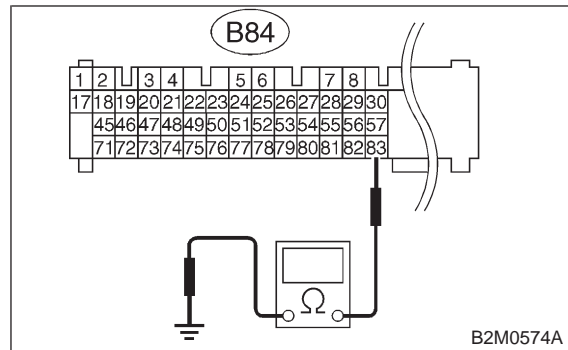
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector
- Poor contact in coupling connector (i1)

NO : Go to step **10BE3**.

10BE3 : 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
(B84) No. 83 — 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.

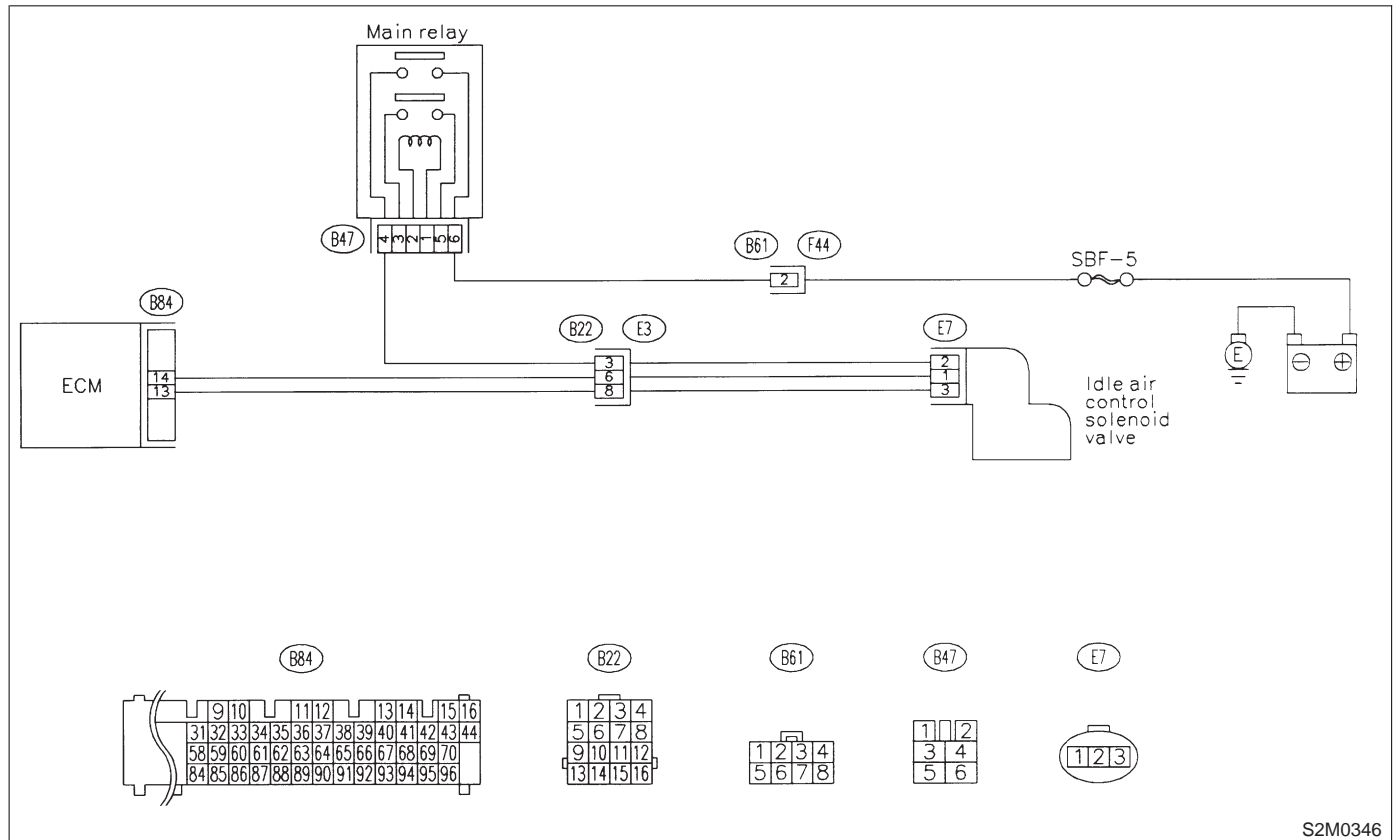
BF: DTC P0505 — IDLE CONTROL SYSTEM MALFUNCTION —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0346

10BF1 : CHECK AIR INTAKE SYSTEM.

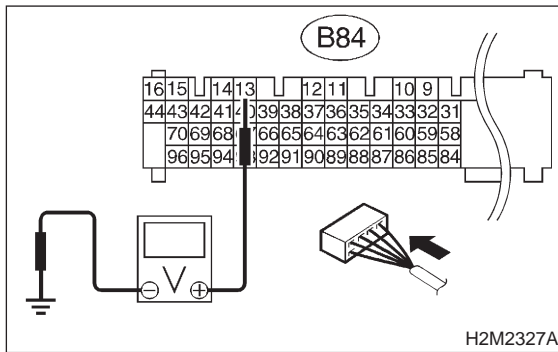
- 1) Turn ignition switch to ON.
- 2) Start engine, and idle it.
- 3) Check the following items.
 - Loose installation of intake manifold, idle air control solenoid valve and throttle body
 - Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
 - Loose connections and cracks of idle air control solenoid valve by-pass hoses
 - Disconnections of vacuum hoses

- CHECK** : *Is there a fault in air intake system?*
- YES** : Repair or replace air intake system.
- NO** : Go to step **10BF2**.

10BF2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 13 (+) — Chassis ground (-):

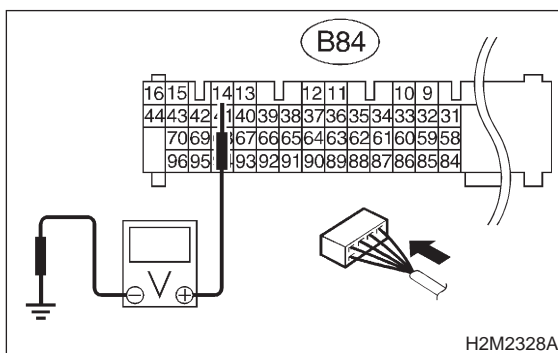


- CHECK** : Is the voltage more than 3 V?
YES : Go to step 10BF3.
NO : Go to step 10BF13.

10BF3 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 14 (+) — Chassis ground (-):

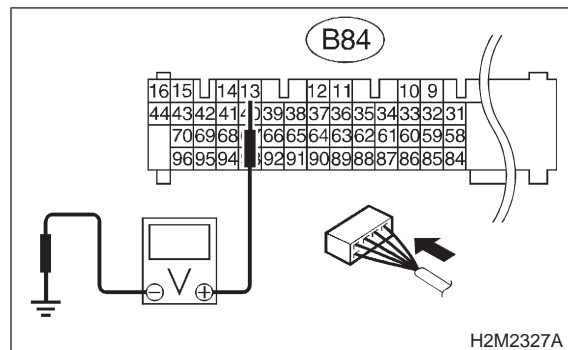


- CHECK** : Is the voltage more than 3 V?
YES : Go to step 10BF4.
NO : Go to step 10BF13.

10BF4 : 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
(B84) No. 13 (+) — Chassis ground (-):



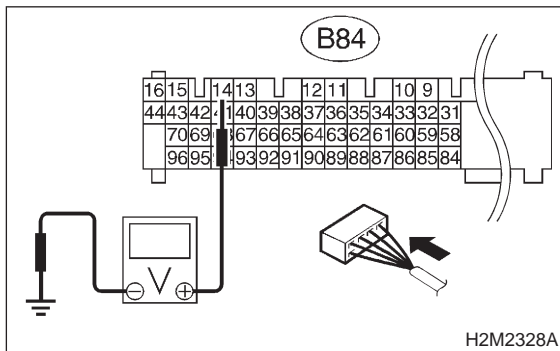
- CHECK** : Is the voltage more than 10 V?
YES : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM.
NO : Go to step 10BF5.

10BF5 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal

(B84) No. 14 (+) — 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.
- NO** : Go to step **10BF6**.

10BF6 : CHECK POOR CONTACT.

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

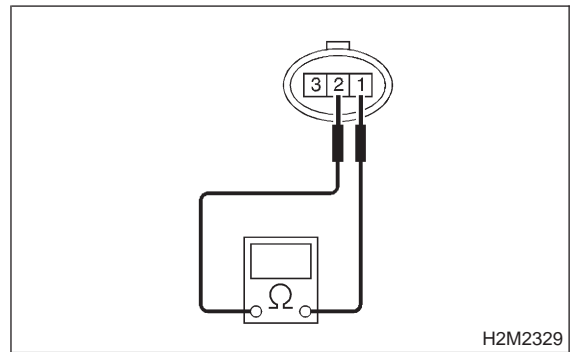
- CHECK** : **Is there poor contact in ECM connector?**
- YES** : Repair poor contact in ECM connector.
- NO** : Go to step **10BF7**.

10BF7 : CHECK IDLE AIR CONTROL SOLENOID VALVE.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between idle air control solenoid valve connector terminals.

Terminals

No. 1 — No. 2:



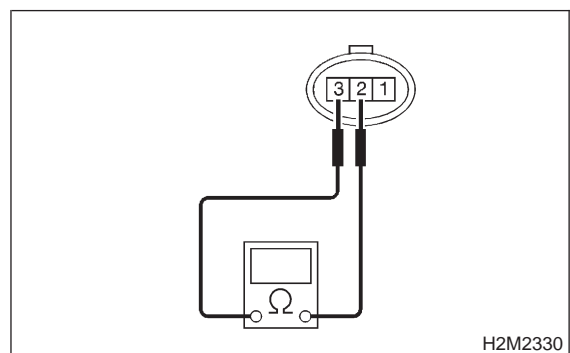
- CHECK** : **Is the resistance more than 20 Ω?**
- YES** : Replace idle air control solenoid valve.
- NO** : Go to step **10BF8**.

10BF8 : CHECK IDLE AIR CONTROL SOLENOID VALVE.

Measure resistance between idle air control solenoid valve connector terminals.

Terminals

No. 2 — No. 3:



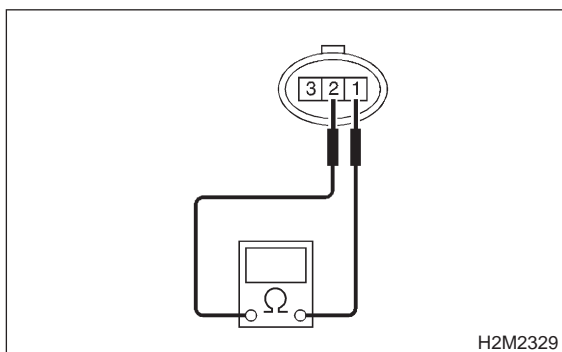
- CHECK** : **Is the resistance more than 20 Ω?**
- YES** : Replace idle air control solenoid valve.
- NO** : Go to step **10BF9**.

10BF9 : CHECK IDLE AIR CONTROL SOLENOID VALVE.

Measure resistance between idle air control solenoid valve connector terminals.

Terminals

No. 1 — No. 2:



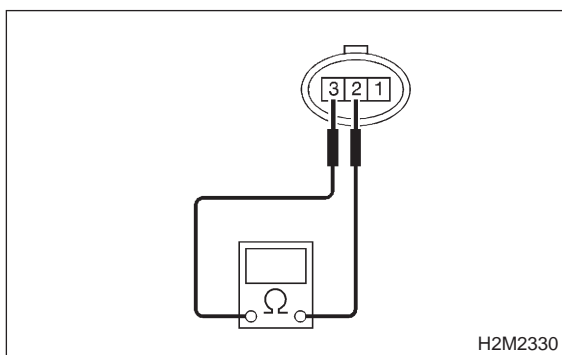
- CHECK** : *Is the resistance less than 5 Ω?*
- YES** : Replace idle air control solenoid valve and ECM.
- NO** : Go to step **10BF10**.

10BF10 : CHECK IDLE AIR CONTROL SOLENOID VALVE.

Measure resistance between idle air control solenoid valve connector terminals.

Terminals

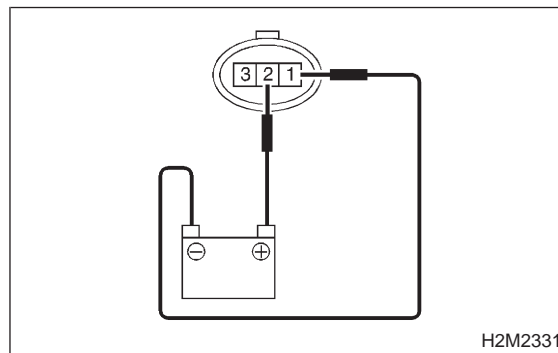
No. 2 — No. 3:



- CHECK** : *Is the resistance less than 5 Ω?*
- YES** : Replace idle air control solenoid valve and ECM.
- NO** : Go to step **10BF11**.

10BF11 : CHECK IDLE AIR CONTROL SOLENOID VALVE.

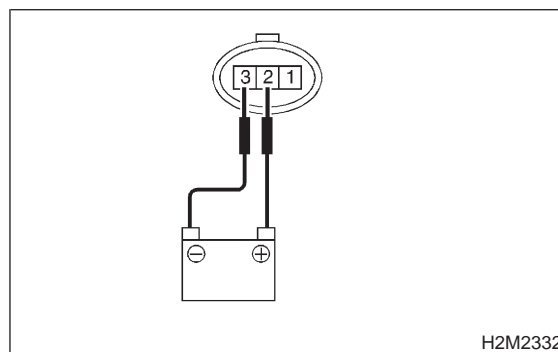
- 1) Remove idle air control solenoid valve. <Ref. to 2-7 [W12A0].>
- 2) Check operation of idle air control solenoid valve.



- CHECK** : *Is idle air control solenoid valve fully opened when applying the battery to terminals No. 2 (+) and No. 1 (-)?*
- YES** : Go to step **10BF12**.
- NO** : Clean idle air control solenoid valve. <Ref. to 2-7 [W12B0].>

10BF12 : CHECK IDLE AIR CONTROL SOLENOID VALVE.

Check operation of idle air control solenoid valve.



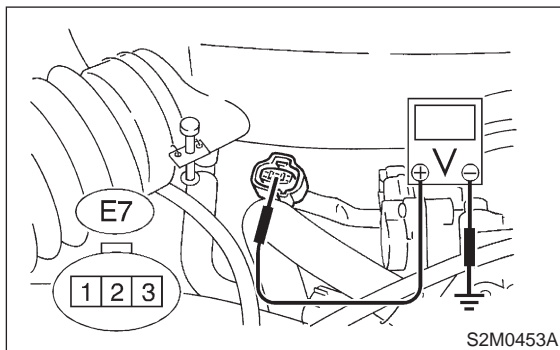
- CHECK** : *Is idle air control solenoid valve fully closed when applying the battery to terminals No. 2 (+) and No. 3 (-)?*
- YES** : Go to step **10BF13**.
- NO** : Clean idle air control solenoid valve. <Ref. to 2-7 [W12B0].>

10BF13 : 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) Disconnect connector from idle air control solenoid valve.
- 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 **10BF14**.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

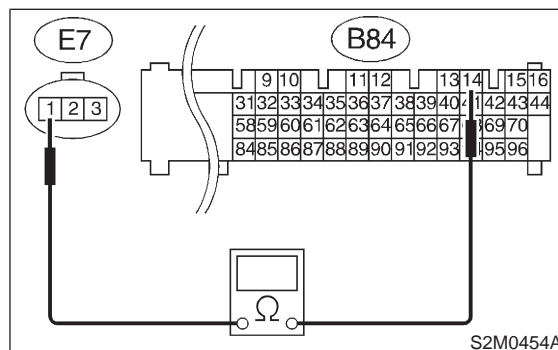
- Open circuit in harness between idle air control solenoid valve and main relay connector
- Poor contact in coupling connector (B22)

10BF14 : 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

(B84) No. 14 — (E7) No. 1:



- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **10BF15**.
- NO** : Repair harness and connector.

NOTE:

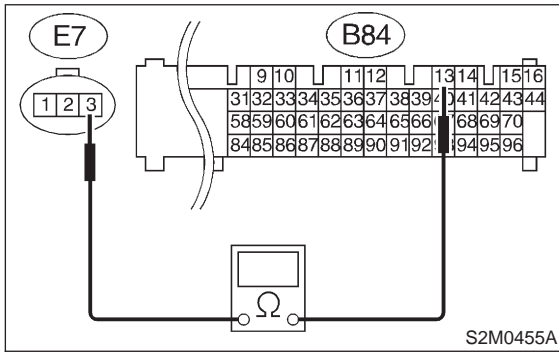
In this case, repair the following:

- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B22)

10BF15 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

Measure resistance of harness between ECM and idle air control solenoid valve connector.

Connector & terminal
(B84) No. 13 — (E7) No. 3:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BF16.
- NO** : Repair harness and connector.

NOTE:

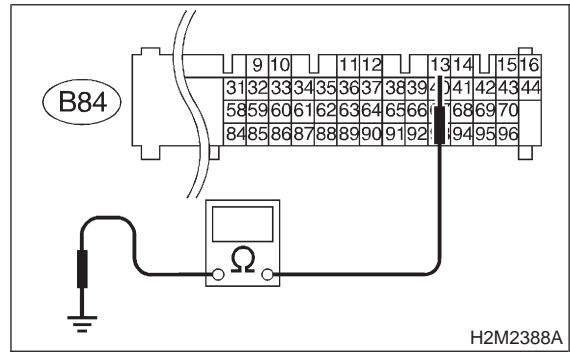
In this case, repair the following:

- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B22)

10BF16 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 13 — Chassis ground:

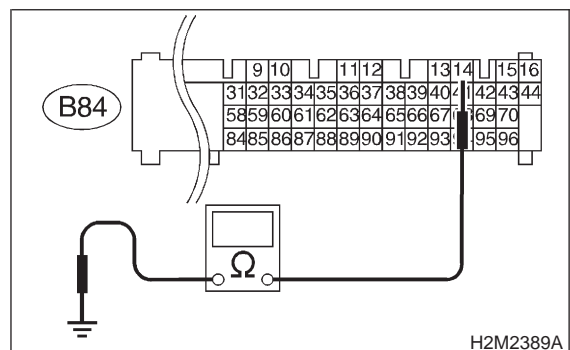


- CHECK** : Is the resistance less than 10 Ω?
- YES** : Repair ground short circuit in harness between ECM and idle air control solenoid valve connector.
- NO** : Go to step 10BF17.

10BF17 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 14 — 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 10BF18.

10BF18 : CHECK POOR CONTACT.

Check poor contact in idle air control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : *Is there poor contact in idle air control solenoid valve connector?*

YES : Repair poor contact in idle air control solenoid valve connector.

NO : Contact with SOA service.

NOTE:

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

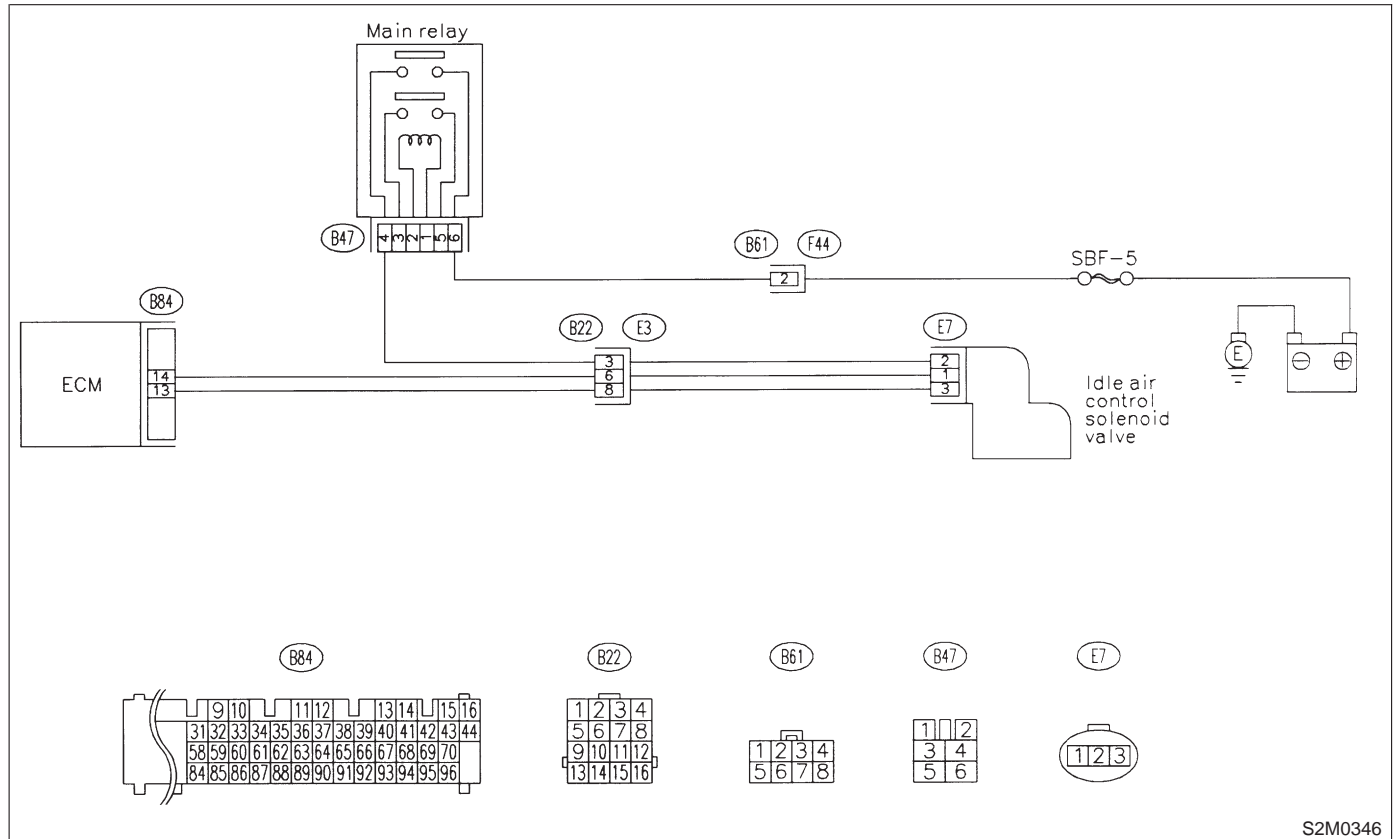
BG: DTC P0506 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0346

10BG1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0505?

YES : Inspect DTC P0505 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P0506.

NO : Go to step **10BG2**.

10BG2 : CHECK AIR INTAKE SYSTEM.

- 1) Turn ignition switch to ON.
- 2) Start engine, and idle it.

CHECK : Is clogging the by-pass line between by-pass hose and intake duct?

YES : Repair the by-pass line.

NO : Replace idle air control solenoid valve.

BH: DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED

● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

● **TROUBLE SYMPTOM:**

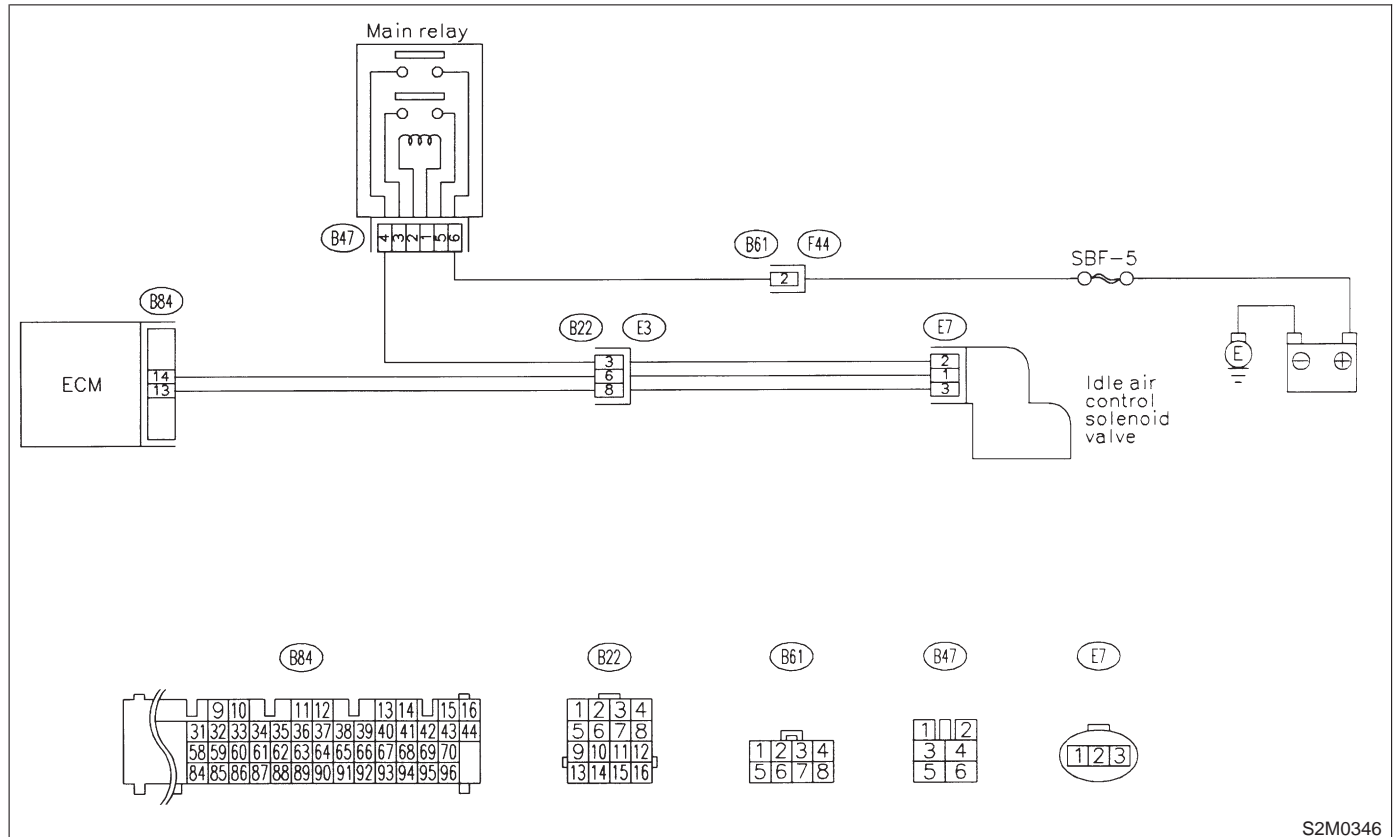
- Engine keeps running at higher revolution than specified idling revolution.

CAUTION:

After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0346

10BH1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0505?

YES : Inspect DTC P0505 using "10. Diagnostic Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P0507.

NO : Go to step 10BH2.

10BH2 : 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
 - Loose connections and cracks of idle air control solenoid valve by-pass hoses
 - 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.

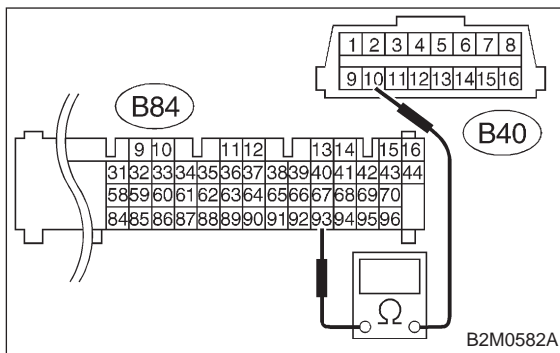
MEMO:

10BI1 : CHECK HARNESS BETWEEN ECM AND DATA LINK CONNECTOR.

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

Connector & terminal

(B84) No. 93 — (B40) No. 10:



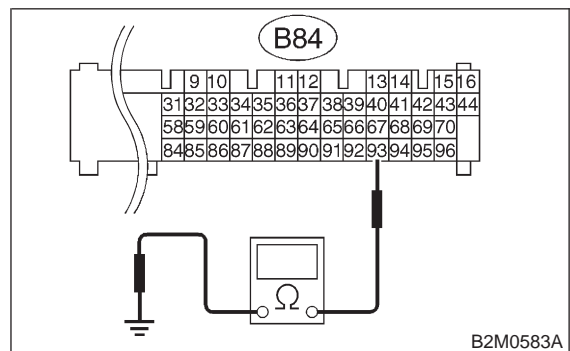
- CHECK** : **Is the resistance less than 1 Ω?**
- YES** : Go to step **10BI2**.
- NO** : Repair open circuit in harness between ECM and data link connector.

10BI2 : CHECK HARNESS BETWEEN ECM AND DATA LINK CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 93 — Chassis ground:



- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Repair ground short circuit in harness between ECM and data link connector.
- NO** : Repair poor contact in ECM connector and data link connector.

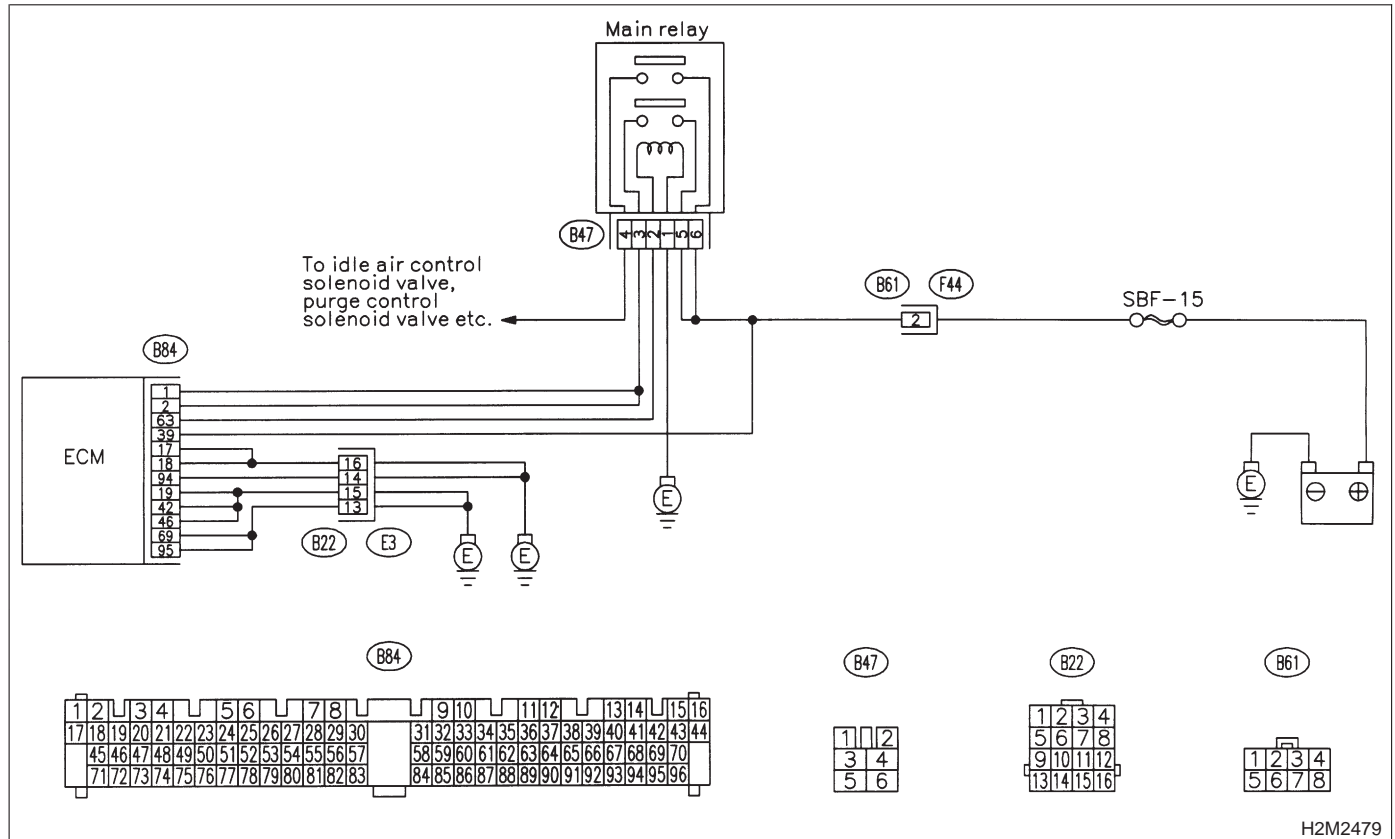
BJ: DTC P0601 — INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



MEMO:

BK: DTC P0703 — BRAKE SWITCH INPUT MALFUNCTION —

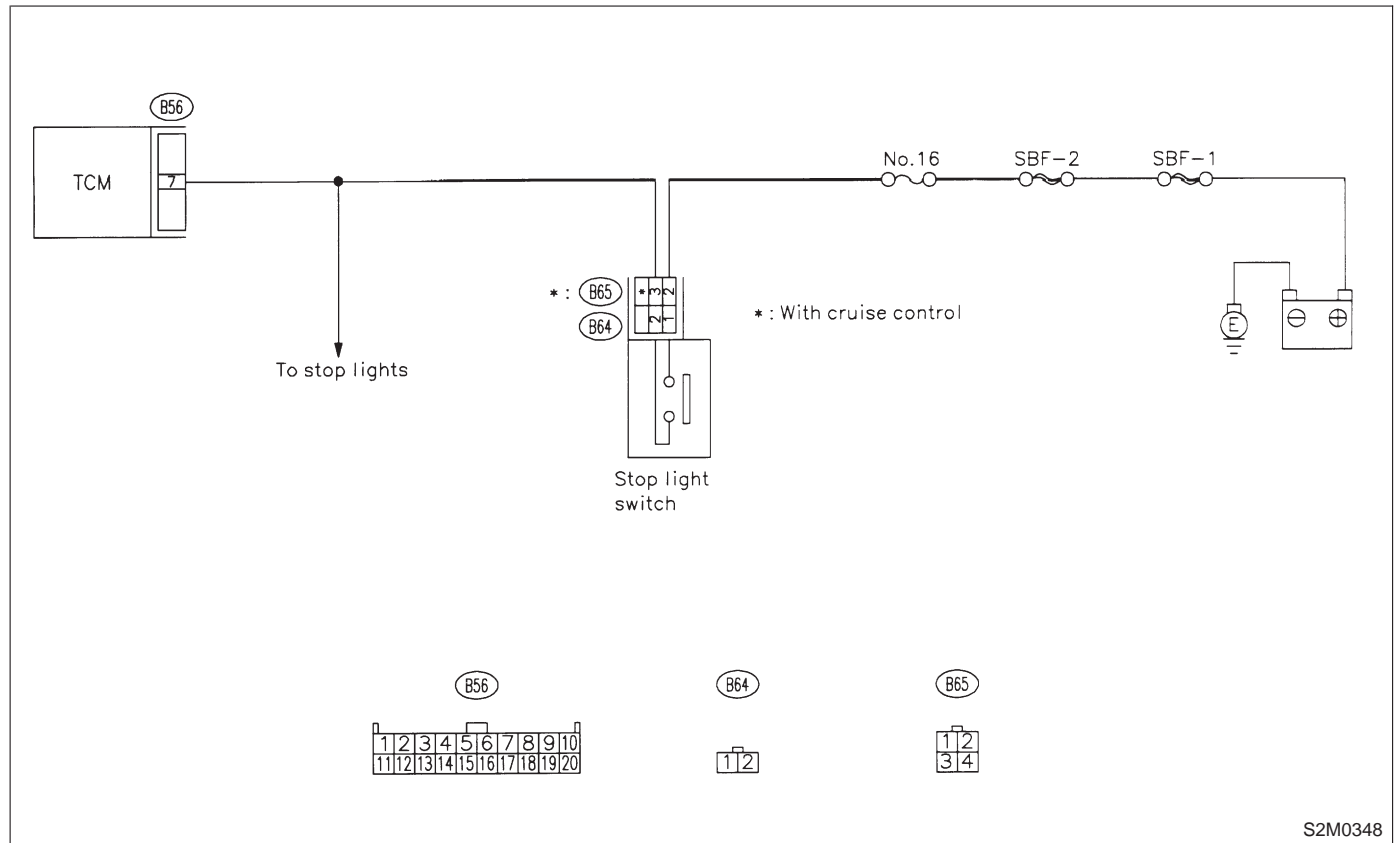
● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

CAUTION:

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

● **WIRING DIAGRAM:**



10BK1 : CHECK OPERATION OF BRAKE LIGHT.

- CHECK** : Does brake light come on when depressing the brake pedal?
- YES** : Go to step 10BK2.
- NO** : Repair or replace brake light circuit.

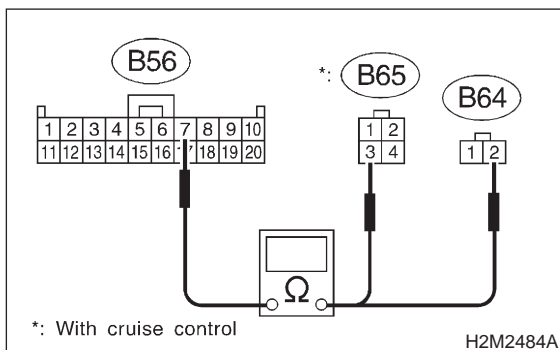
10BK2 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

- 1) Disconnect connectors from TCM and brake light switch.
- 2) Measure resistance of harness between TCM and brake light switch connector.

Connector & terminal

(B56) No. 7 — (B64) No. 2 (Without cruise control):

(B56) No. 7 — (B65) No. 3 (With cruise control):



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BK3.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

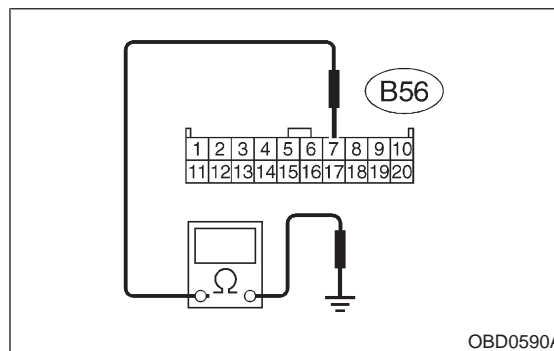
- Open circuit in harness between TCM and brake light switch connector
- Poor contact in TCM connector
- Poor contact in brake light switch connector

10BK3 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal

(B56) No. 7 — Chassis ground:



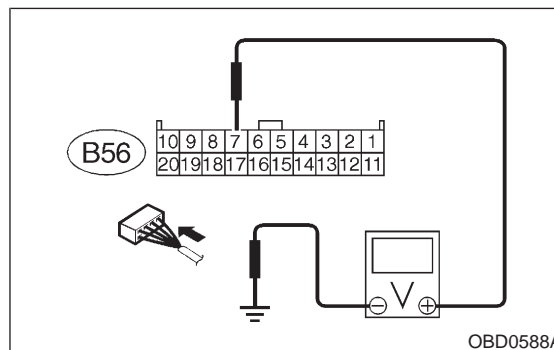
- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BK4.
- NO** : Repair ground short circuit in harness between TCM and brake light switch connector.

10BK4 : CHECK INPUT SIGNAL FOR TCM.

- 1) Connect connectors to TCM and brake light switch.
- 2) Measure voltage between TCM and chassis ground.

Connector & terminal

(B56) No. 7 (+) — Chassis ground (-):



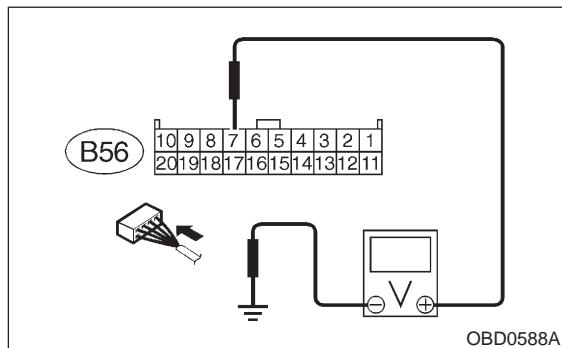
- CHECK** : Is the voltage less than 1 V when releasing the brake pedal?
- YES** : Go to step 10BK5.
- NO** : Adjust or replace brake light switch.

10BK5 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal

(B56) No. 7 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V when depressing the brake pedal?*
- YES** : Go to step 10BK6.
- NO** : Adjust or replace brake light switch.

10BK6 : 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.

MEMO:

BL: DTC P0705 — TRANSMISSION RANGE SENSOR CIRCUIT MALFUNCTION —

● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

● **TROUBLE SYMPTOM:**

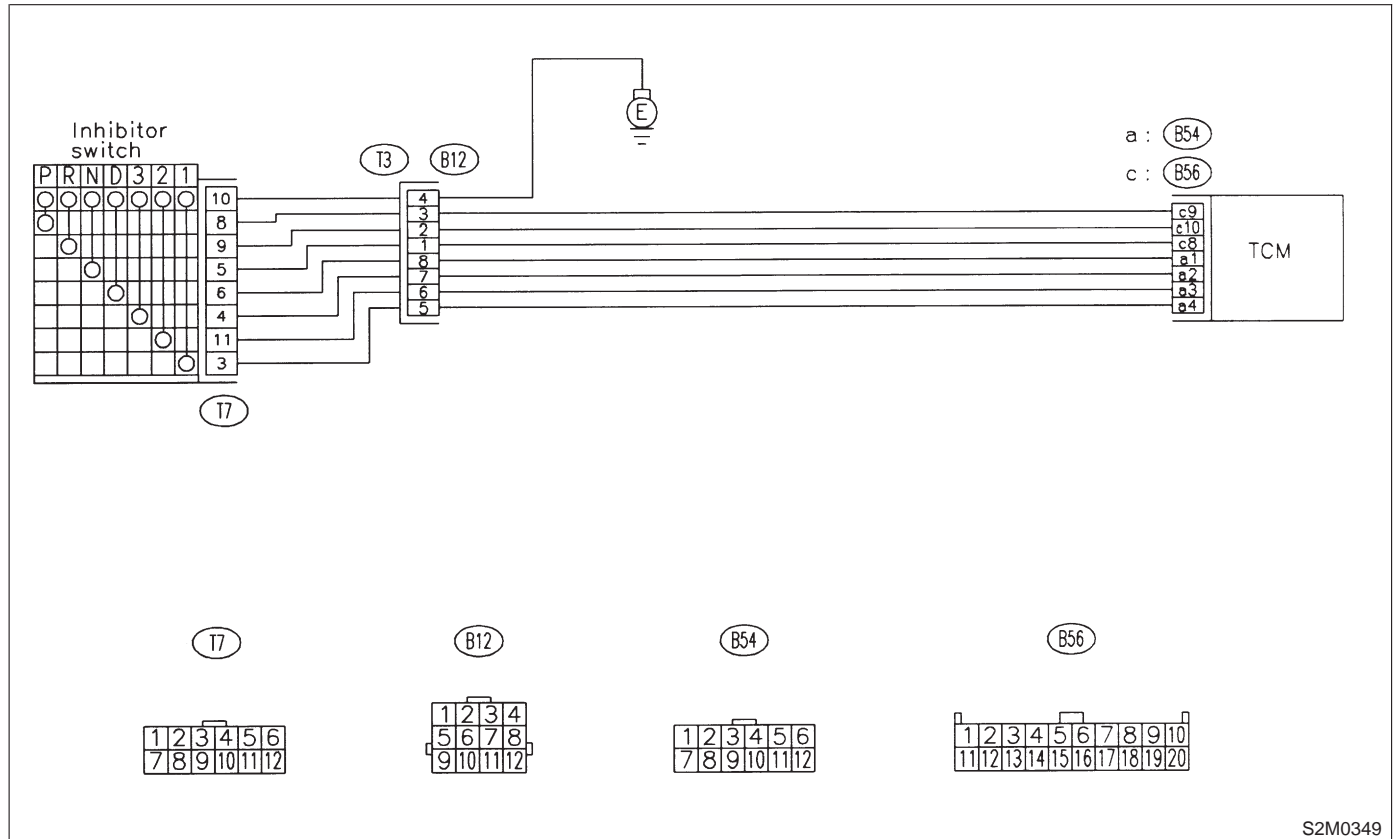
- Starter does not rotate when selector lever is in “P” or “N” range.
- Starter rotates when selector lever is in “R”, “D”, “3”, “2” or “1” range.
- Engine brake is not effected when selector lever is in “3” range.
- Shift characteristics are erroneous.

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

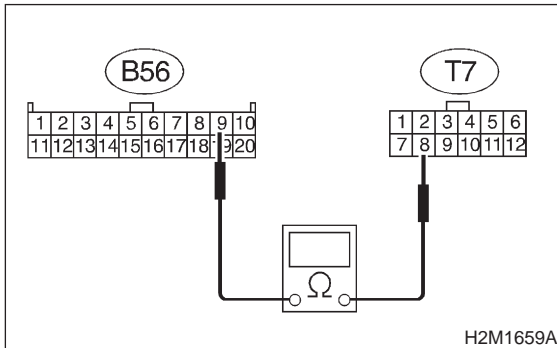


S2M0349

10BL1 : 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
(B56) No. 9 — (T7) No. 8:



- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **10BL2**.
- NO** : Repair harness and connector.

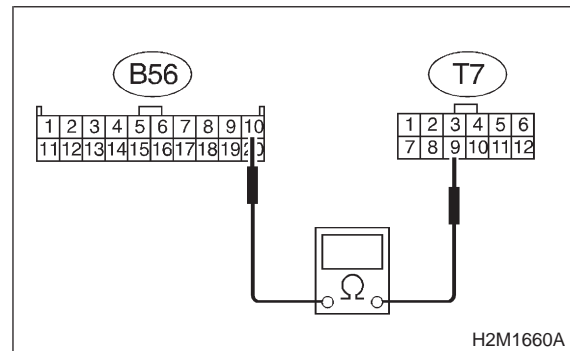
NOTE:

- In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
 - Poor contact in coupling connector (B12)

10BL2 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 10 — (T7) No. 9:



- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **10BL3**.
- NO** : Repair harness and connector.

NOTE:

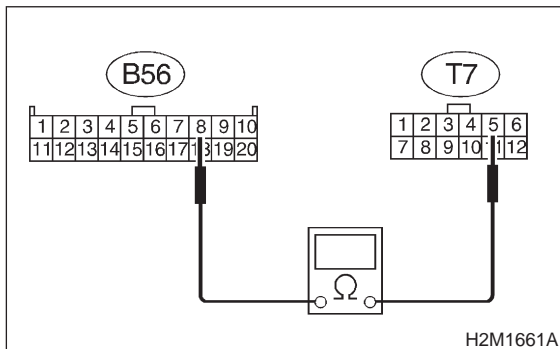
- In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
 - Poor contact in coupling connector (B12)

10BL3 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal

(B56) No. 8 — (T7) No. 5:



CHECK : *Is the resistance less than 1 Ω?*

YES : Go to step **10BL4**.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

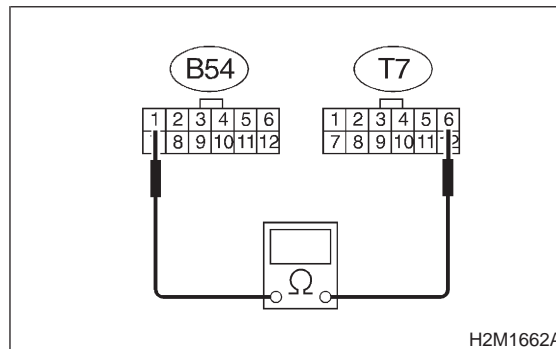
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)

10BL4 : 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. 6:



CHECK : *Is the resistance less than 1 Ω?*

YES : Go to step **10BL5**.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

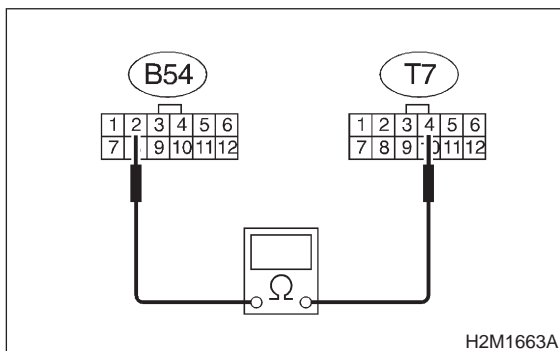
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)

10BL5 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal

(B54) No. 2 — (T7) No. 4:



CHECK : *Is the resistance less than 1 Ω?*

YES : Go to step 10BL6.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

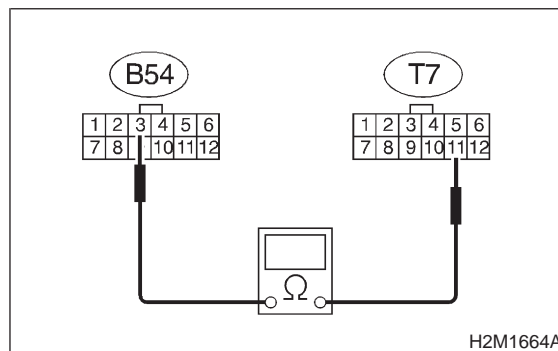
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)

10BL6 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal

(B54) No. 3 — (T7) No. 11:



CHECK : *Is the resistance less than 1 Ω?*

YES : Go to step 10BL7.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

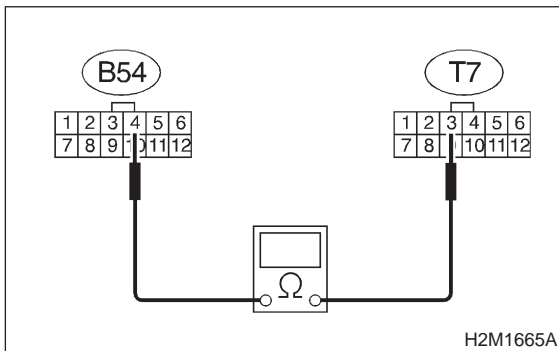
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)

10BL7 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal

(B54) No. 4 — (T7) No. 3:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BL8.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

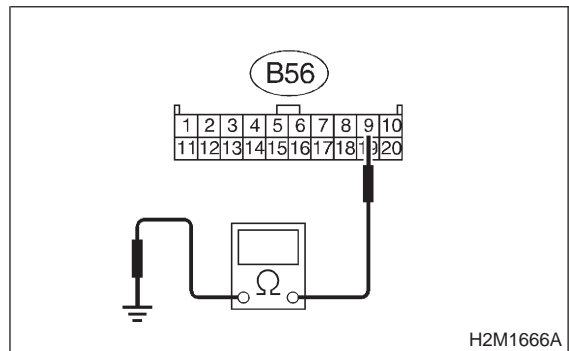
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)

10BL8 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal

(B56) No. 9 — Chassis ground:



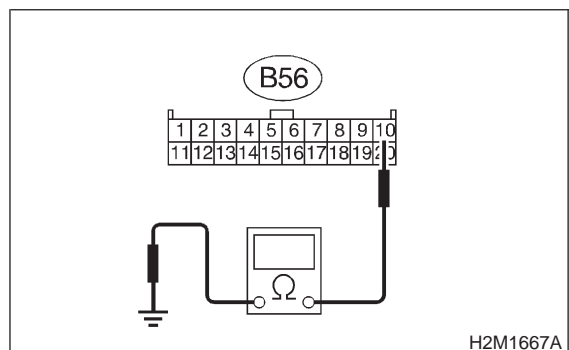
- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL9.
- NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

10BL9 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal

(B56) No. 10 — Chassis ground:

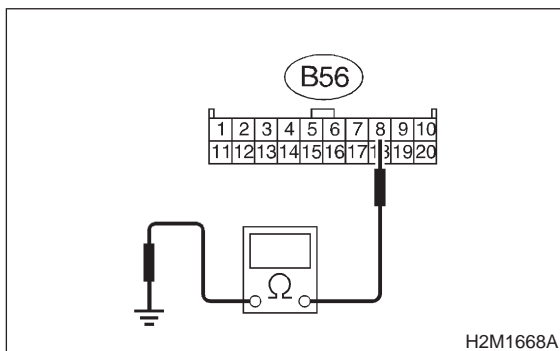


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL10.
- NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

10BL10 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal (B56) No. 8 — Chassis ground:

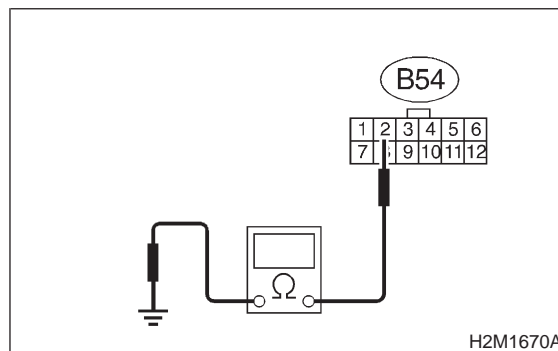


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL11.
- NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

10BL12 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal (B54) No. 2 — Chassis ground:

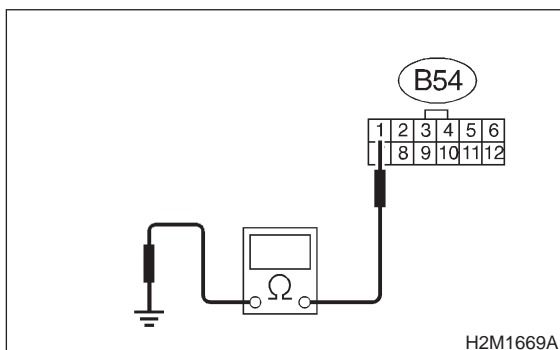


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL13.
- NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

10BL11 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal (B54) No. 1 — Chassis ground:

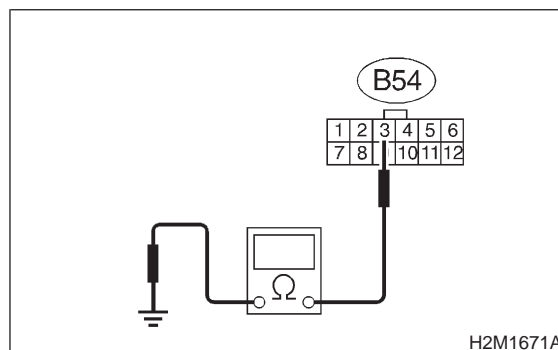


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL12.
- NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

10BL13 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal (B54) No. 3 — Chassis ground:

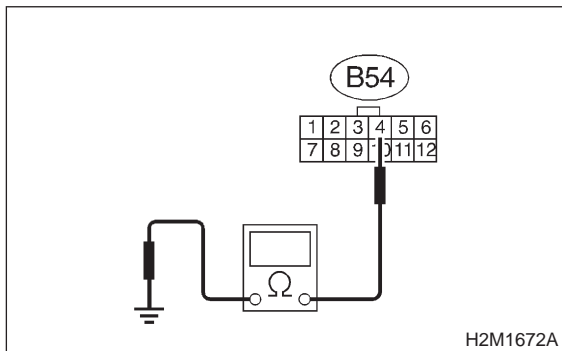


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL14.
- NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

10BL14 : CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 4 — Chassis ground:

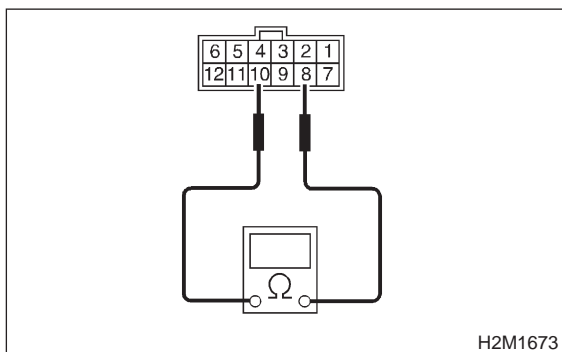


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL15.
- NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

10BL15 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector "P" position.

Terminals
No. 8 — No. 10:

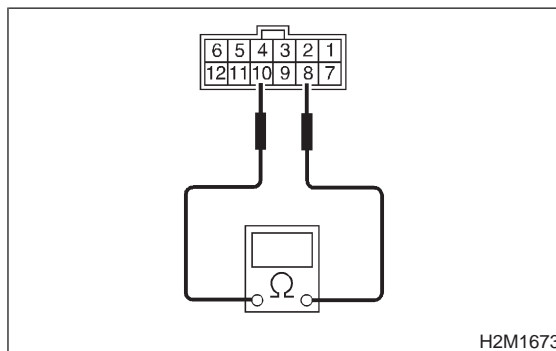


- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BL17.
- NO** : Go to step 10BL29.

10BL16 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "P" position.

Terminals
No. 8 — No. 10:

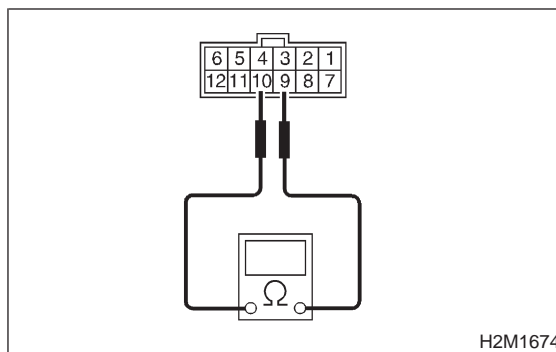


- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL17.
- NO** : Go to step 10BL29.

10BL17 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "R" position.

Terminals
No. 9 — No. 10:



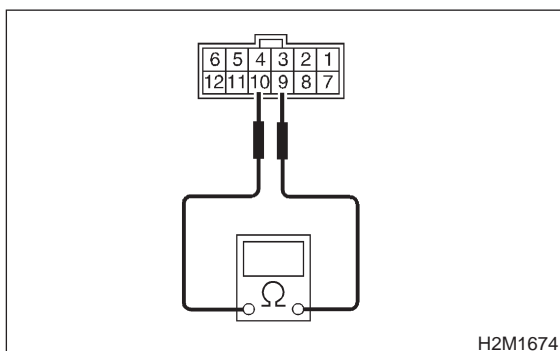
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BL18.
- NO** : Go to step 10BL29.

10BL18 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "R" position.

Terminals

No. 9 — No. 10:



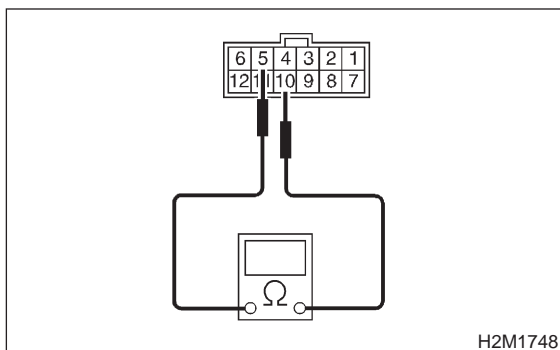
- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL19.
- NO** : Go to step 10BL29.

10BL19 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "N" position.

Terminals

No. 5 — No. 10:



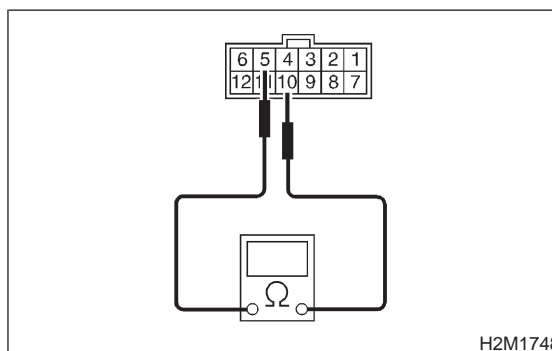
- CHECK** : Is the resistance less than 1 Ω in "N" position?
- YES** : Go to step 10BL20.
- NO** : Go to step 10BL29.

10BL20 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "N" position.

Terminals

No. 5 — No. 10:



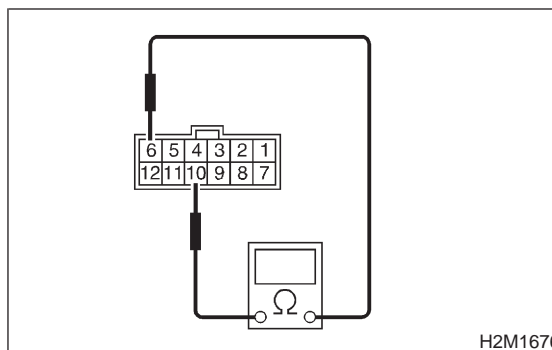
- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL21.
- NO** : Go to step 10BL29.

10BL21 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "D" position.

Terminals

No. 6 — No. 10:



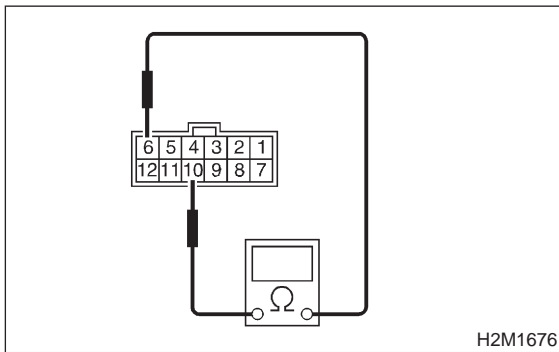
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BL22.
- NO** : Go to step 10BL29.

10BL22 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "D" position.

Terminals

No. 6 — No. 10:



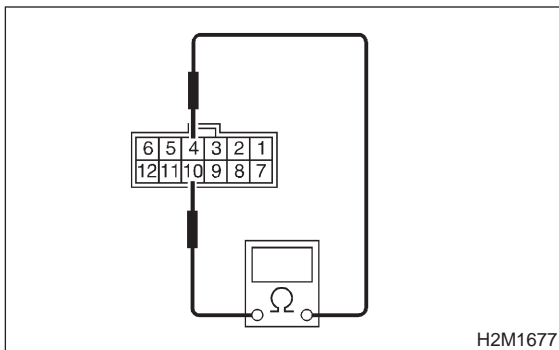
- CHECK** : Is the resistance more than 1 Ω?
- YES** : Go to step 10BL23.
- NO** : Go to step 10BL29.

10BL23 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "3" position.

Terminals

No. 4 — No. 10:



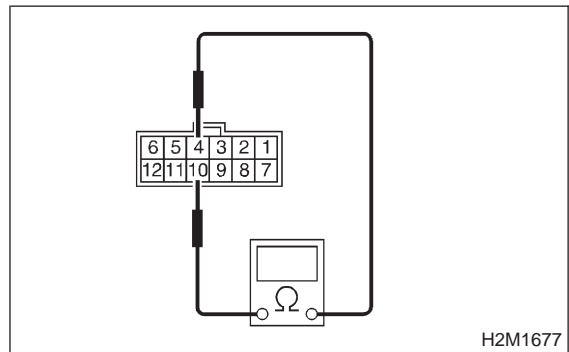
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BL24.
- NO** : Go to step 10BL29.

10BL24 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "3" position.

Terminals

No. 4 — No. 10:



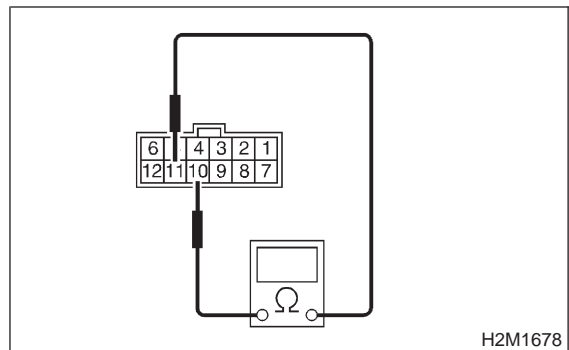
- CHECK** : Is the resistance more than 1 MΩ?
- YES** : Go to step 10BL25.
- NO** : Go to step 10BL29.

10BL25 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever "2" position.

Terminals

No. 11 — No. 10:



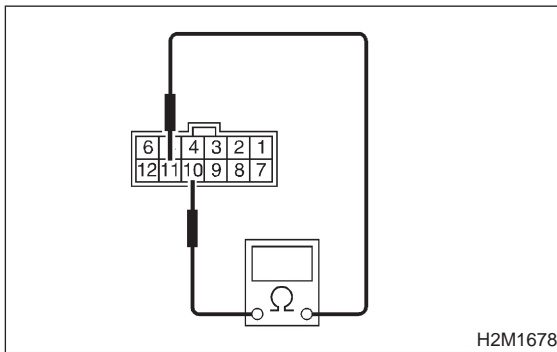
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10BL26.
- NO** : Go to step 10BL29.

10BL26 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "2" position.

Terminals

No. 11 — No. 10:



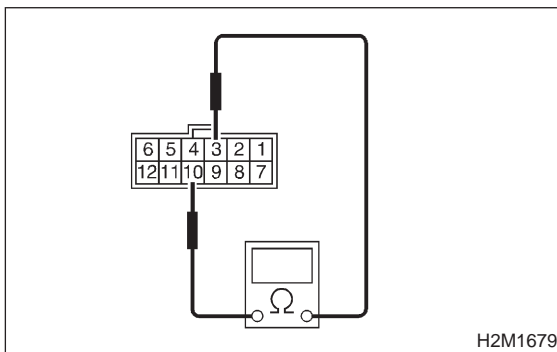
- CHECK** : *Is the resistance more than 1 MΩ?*
- YES** : Go to step 10BL27.
- NO** : Go to step 10BL29.

10BL27 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals

No. 3 — No. 10:



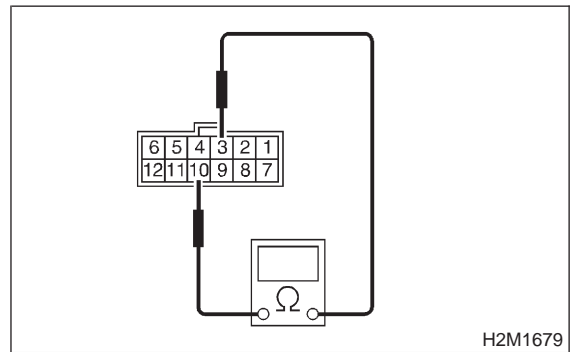
- CHECK** : *Is the resistance less than 1 Ω in "1" position?*
- YES** : Go to step 10BL28.
- NO** : Go to step 10BL29.

10BL28 : 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 10BL30.
- NO** : Go to step 10BL29.

10BL29 : CHECK SELECTOR CABLE.

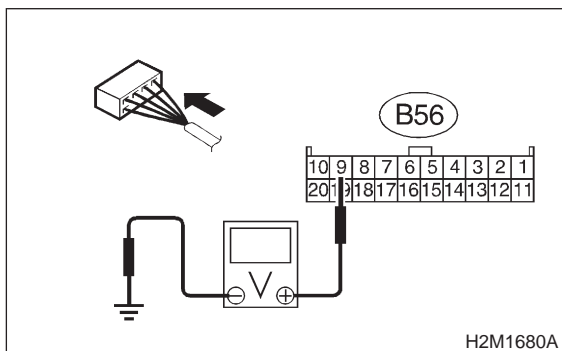
- CHECK** : *Is there faulty connection in the selector cable?*
- YES** : Repair connection of selector cable.
- NO** : Replace inhibitor switch.

10BL30 : 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 in selector lever "P" position.

Connector & terminal

(B56) No. 9 (+) — Chassis ground (-):



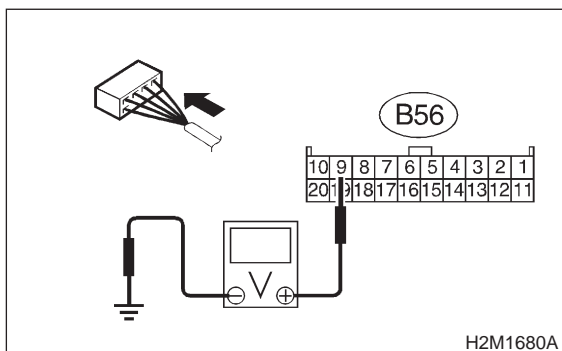
- CHECK** : Is the voltage less than 1 V?
- YES** : Go to step 10BL31.
- NO** : Go to step 10BL44.

10BL31 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for "P" position.

Connector & terminal

(B56) No. 9 (+) — Chassis ground (-):



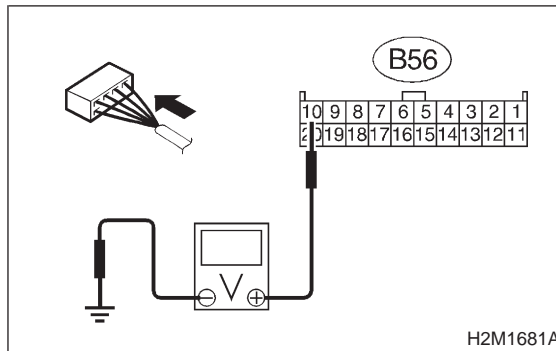
- CHECK** : Is the voltage more than 8 V?
- YES** : Go to step 10BL32.
- NO** : Go to step 10BL44.

10BL32 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever "R" position.

Connector & terminal

(B56) No. 10 (+) — Chassis ground (-):



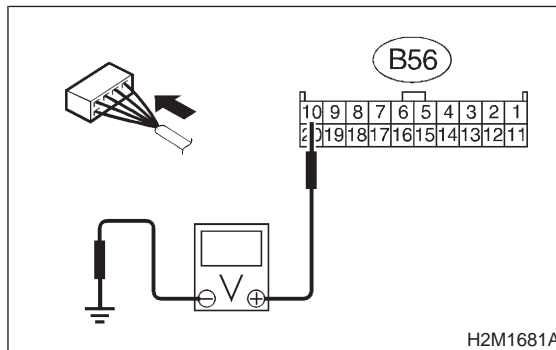
- CHECK** : Is the voltage less than 1 V?
- YES** : Go to step 10BL33.
- NO** : Go to step 10BL44.

10BL33 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for "R" position.

Connector & terminal

(B56) No. 10 (+) — Chassis ground (-):

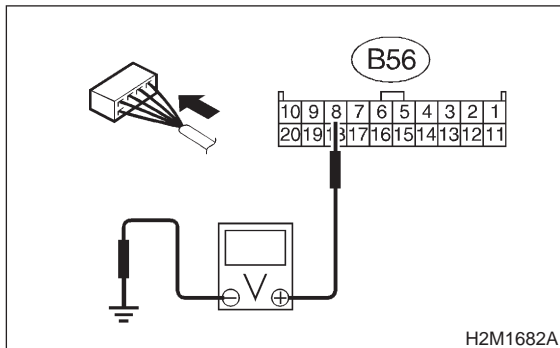


- CHECK** : Is the voltage more than 6 V?
- YES** : Go to step 10BL34.
- NO** : Go to step 10BL44.

10BL34 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever "N" position.

Connector & terminal
(B56) No. 8 (+) — Chassis ground (-):

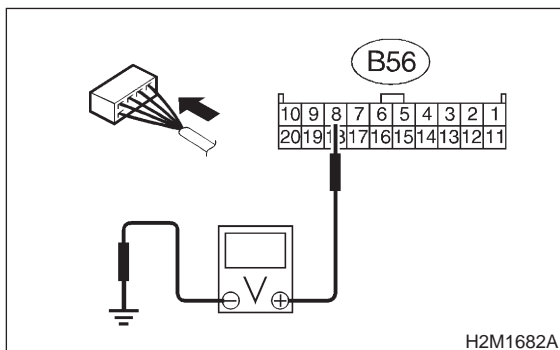


- CHECK** : Is the voltage less than 1 V?
- YES** : Go to step 10BL35.
- NO** : Go to step 10BL44.

10BL35 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for "N" position.

Connector & terminal
(B56) No. 8 (+) — Chassis ground (-):

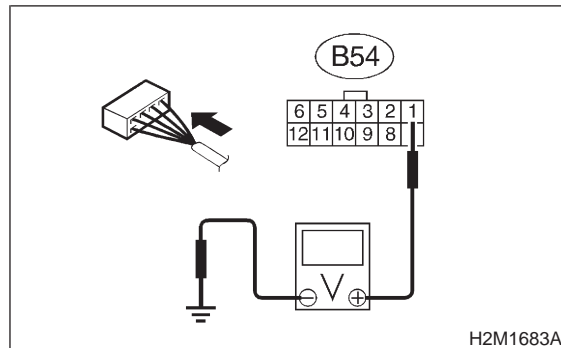


- CHECK** : Is the voltage more than 8 V?
- YES** : Go to step 10BL36.
- NO** : Go to step 10BL44.

10BL36 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever "D" position.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (-):

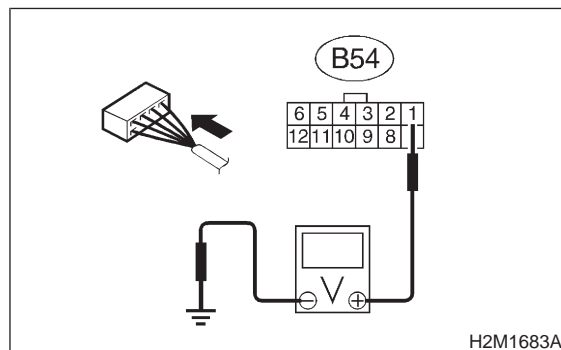


- CHECK** : Is the voltage less than 1 V?
- YES** : Go to step 10BL37.
- NO** : Go to step 10BL44.

10BL37 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for "D" position.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (-):



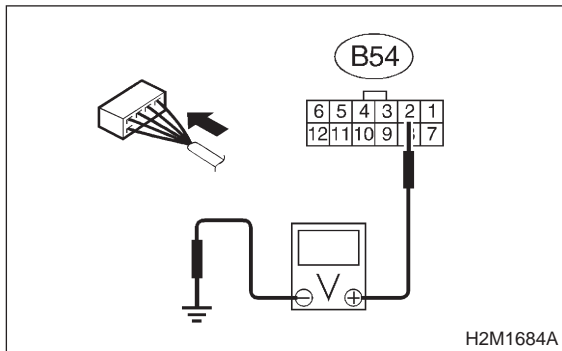
- CHECK** : Is the voltage more than 6 V?
- YES** : Go to step 10BL38.
- NO** : Go to step 10BL44.

10BL38 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever "3" position.

Connector & terminal

(B54) No. 2 (+) — Chassis ground (-):



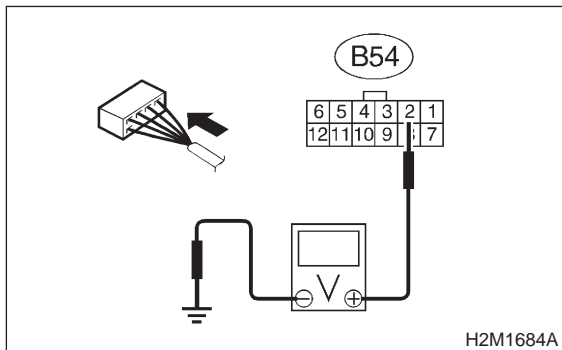
- CHECK** : Is the voltage less than 1 V?
- YES** : Go to step 10BL39.
- NO** : Go to step 10BL44.

10BL39 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for "3" position.

Connector & terminal

(B54) No. 2 (+) — Chassis ground (-):



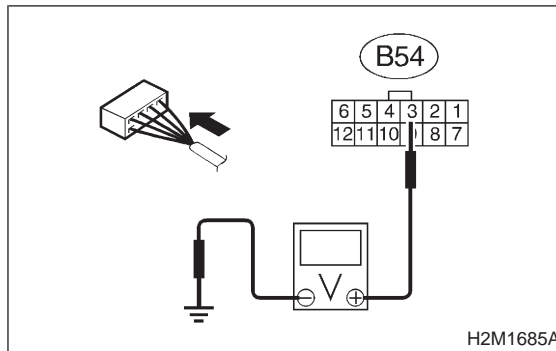
- CHECK** : Is the voltage more than 6 V?
- YES** : Go to step 10BL40.
- NO** : Go to step 10BL44.

10BL40 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever "2" position.

Connector & terminal

(B54) No. 3 (+) — Chassis ground (-):



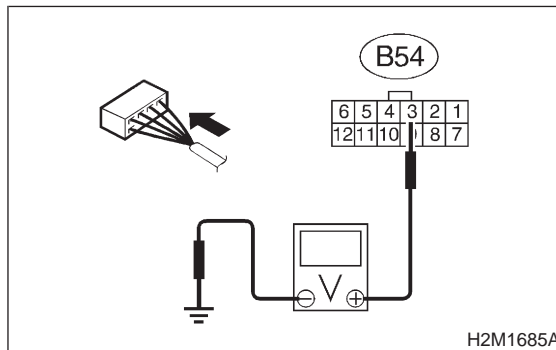
- CHECK** : Is the voltage less than 1 V?
- YES** : Go to step 10BL41.
- NO** : Go to step 10BL44.

10BL41 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for "2" position.

Connector & terminal

(B54) No. 3 (+) — Chassis ground (-):



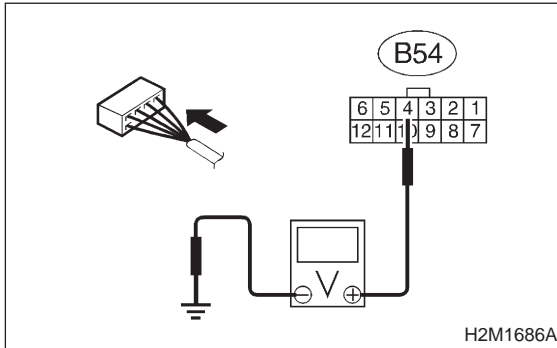
- CHECK** : Is the voltage more than 6 V?
- YES** : Go to step 10BL42.
- NO** : Go to step 10BL44.

10BL42 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever "1" position.

Connector & terminal

(B54) No. 4 (+) — Chassis ground (-):



CHECK : **Is the voltage less than 1 V?**

YES : Go to step 10BL43.

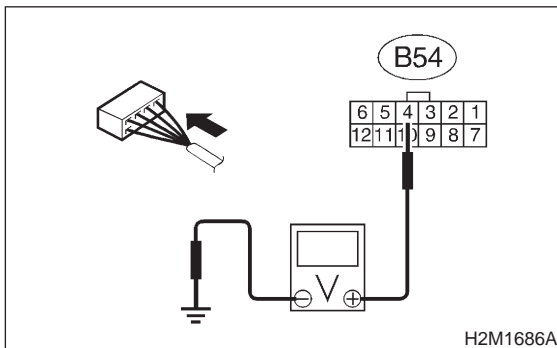
NO : Go to step 10BL44.

10BL43 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground in selector lever except for "1" position.

Connector & terminal

(B54) No. 4 (+) — Chassis ground (-):



CHECK : **Is the voltage more than 6 V?**

YES : Repair poor contact in TCM connector.

NO : Go to step 10BL44.

10BL44 : 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.

BM: DTC P0710 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT MALFUNCTION —

● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

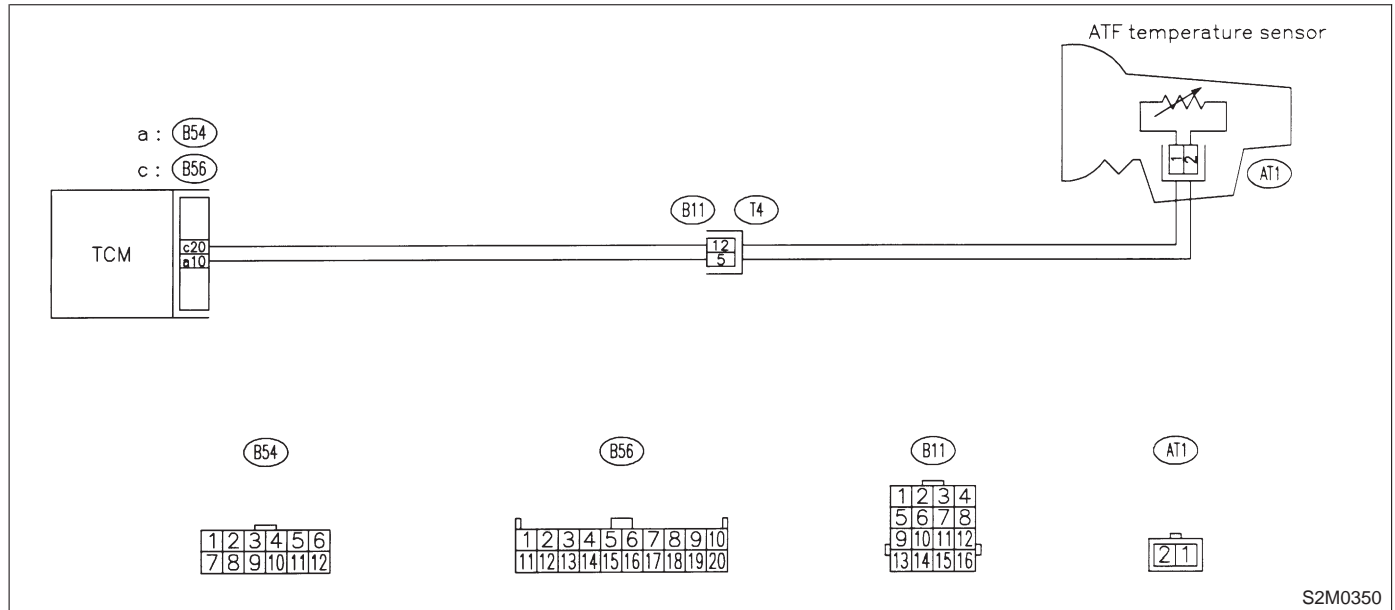
● **TROUBLE SYMPTOM:**

- 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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0350

10BM1 : 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 [T8H0].>
- NO** : It is not necessary to inspect DTC P0710.

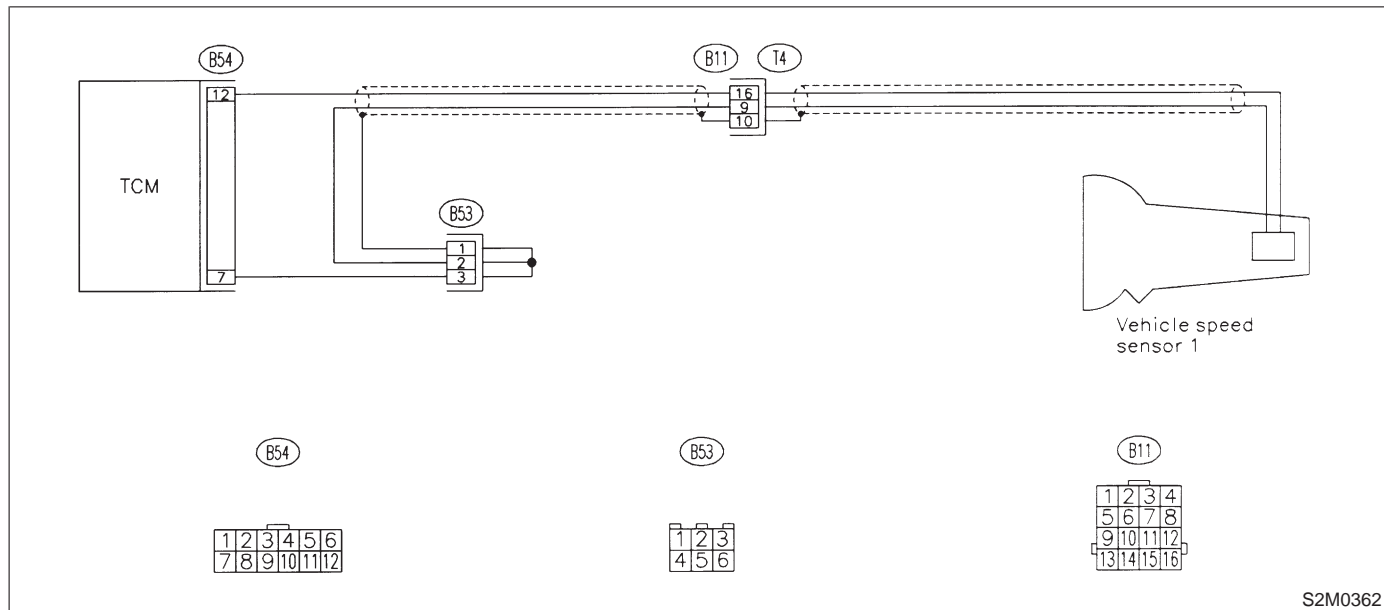
BN: DTC P0720 — OUTPUT SPEED SENSOR (VEHICLE SPEED SENSOR 1) CIRCUIT MALFUNCTION —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0362

10BN1 : 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 1 circuit.
 <Ref. to 3-2 [T8N0].>
- NO** : It is not necessary to inspect DTC P0720.

BO: DTC P0725 — ENGINE SPEED INPUT CIRCUIT MALFUNCTION —

● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

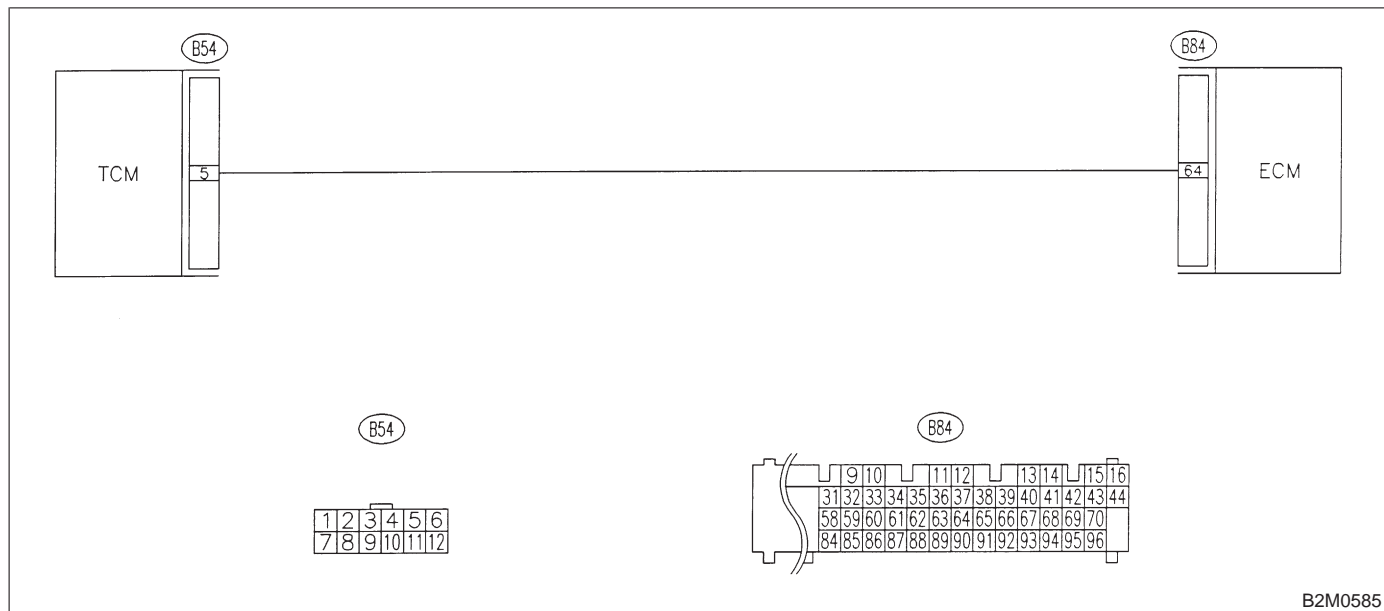
● **TROUBLE SYMPTOM:**

- 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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



B2M0585

10BO1 : 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 [T8J0].>

NO : It is not necessary to inspect DTC P0725.

MEMO:

BP: DTC P0731 — GEAR 1 INCORRECT RATIO —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10BS0]. <Ref. to 2-7 [T10BS0].>

BQ: DTC P0732 — GEAR 2 INCORRECT RATIO —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10BS0]. <Ref. to 2-7 [T10BS0].>

BR: DTC P0733 — GEAR 3 INCORRECT RATIO —

NOTE:

For the diagnostic procedure, refer to 2-7 [T10BS0]. <Ref. to 2-7 [T10BS0].>

BS: DTC P0734 — GEAR 4 INCORRECT RATIO —● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

● **TROUBLE SYMPTOM:**

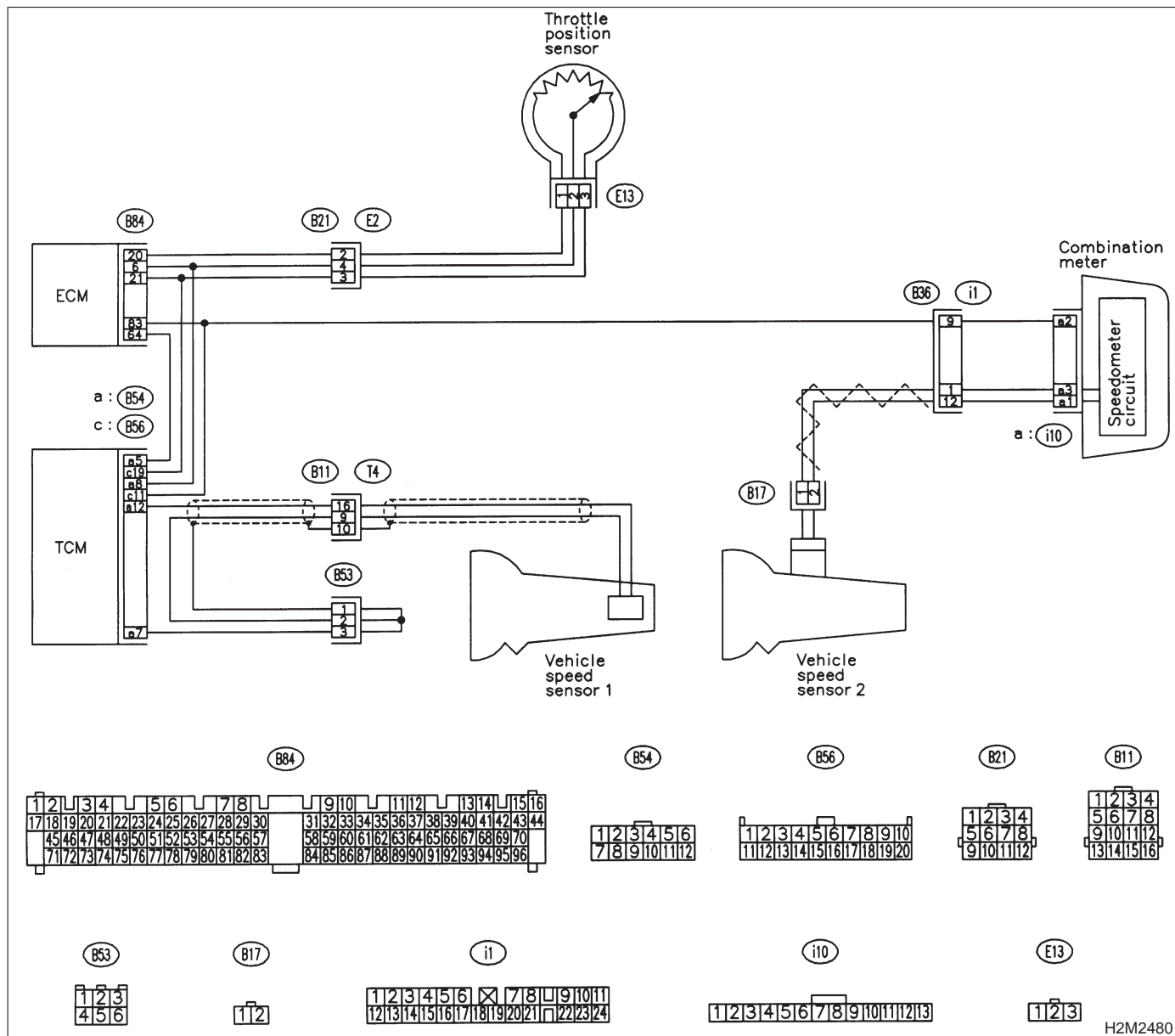
- Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

CAUTION:

After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● WIRING DIAGRAM:



H2M2480

10BS1 : 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". <Ref. to 2-7 [T1000].>
- NO** : Go to step **10BS2**.

10BS2 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

- Check throttle position sensor circuit. <Ref. to 3-2 [T8M0].>
- CHECK** : *Is there any trouble in throttle position sensor circuit?*
- YES** : Repair or replace throttle position sensor circuit.
- NO** : Go to step **10BS3**.

10BS3 : CHECK VEHICLE SPEED SENSOR 1 CIRCUIT.

Check vehicle speed sensor 1 circuit. <Ref. to 3-2 [T8N0].>

- CHECK** : *Is there any trouble in vehicle speed sensor 1 circuit?*
- YES** : Repair or replace vehicle speed sensor 1 circuit.
- NO** : Go to step **10BS4**.

10BS4 : CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8O0].>

- CHECK** : *Is there any trouble in vehicle speed sensor 2 circuit?*
- YES** : Repair or replace vehicle speed sensor 2 circuit.
- NO** : Go to step **10BS5**.

10BS5 : CHECK ENGINE SPEED INPUT CIRCUIT.

Check engine speed input circuit. <Ref. to 3-2 [T8J0].>

- CHECK** : *Is there any trouble in engine speed input circuit?*
- YES** : Repair or replace engine speed input circuit.
- NO** : Go to step **10BS6**.

10BS6 : 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 **10BS7**.

10BS7 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

- CHECK** : *Is there any mechanical trouble in automatic transmission?*
- YES** : Repair or replace automatic transmission.
- NO** : Replace TCM.

MEMO:

BT: DTC P0740 — TORQUE CONVERTER CLUTCH SYSTEM MALFUNCTION

• DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

• TROUBLE SYMPTOM:

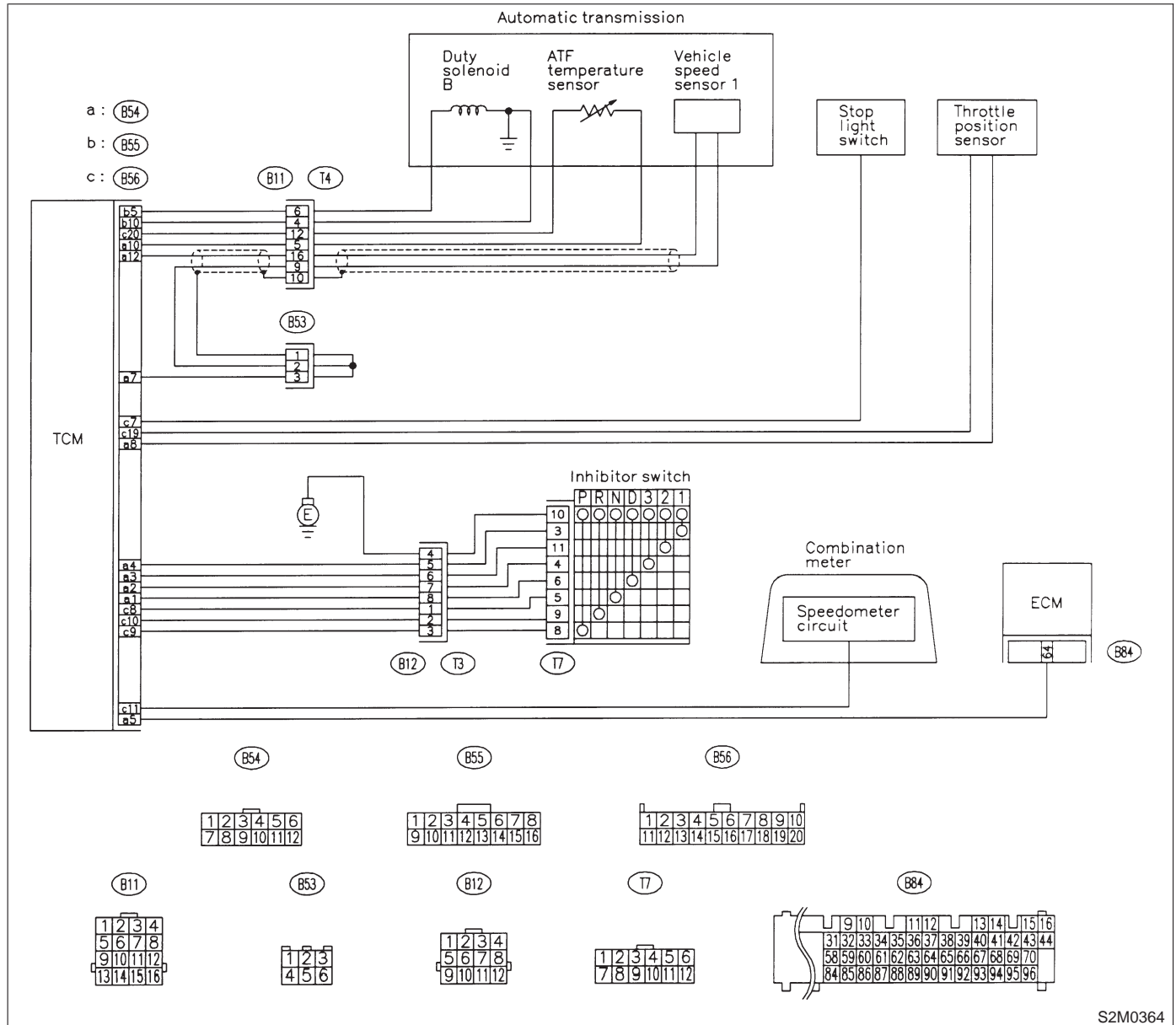
- No shift or excessive tight corner “braking”
- No shift or excessive tight corner “braking”

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

• WIRING DIAGRAM:



S2M0364

10BT1 : 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". <Ref. to 2-7 [T1000].>
- NO** : Go to step **10BT2**.

10BT2 : CHECK DUTY SOLENOID B CIRCUIT.

Check duty solenoid B circuit. <Ref. to 3-2 [T8D0].>

- CHECK** : *Is there any trouble in duty solenoid B circuit?*
- YES** : Repair or replace duty solenoid B circuit.
- NO** : Go to step **10BT3**.

10BT3 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8M0].>

- CHECK** : *Is there any trouble in throttle position sensor circuit?*
- YES** : Repair or replace throttle position sensor circuit.
- NO** : Go to step **10BT4**.

10BT4 : CHECK VEHICLE SPEED SENSOR 1 CIRCUIT.

Check vehicle speed sensor 1 circuit. <Ref. to 3-2 [T8N0].>

- CHECK** : *Is there any trouble in vehicle speed sensor 1 circuit?*
- YES** : Repair or replace vehicle speed sensor 1 circuit.
- NO** : Go to step **10BT5**.

10BT5 : CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8O0].>

- CHECK** : *Is there any trouble in vehicle speed sensor 2 circuit?*
- YES** : Repair or replace vehicle speed sensor 2 circuit.
- NO** : Go to step **10BT6**.

10BT6 : CHECK ENGINE SPEED INPUT CIRCUIT.

Check engine speed input circuit. <Ref. to 3-2 [T8J0].>

- CHECK** : *Is there any trouble in engine speed input circuit?*
- YES** : Repair or replace engine speed input circuit.
- NO** : Go to step **10BT7**.

10BT7 : CHECK INHIBITOR SWITCH CIRCUIT.

Check inhibitor switch circuit. <Ref. to 2-7 [T10BL0].>

- CHECK** : *Is there any trouble in inhibitor switch circuit?*
- YES** : Repair or replace inhibitor switch circuit.
- NO** : Go to step **10BT8**.

10BT8 : CHECK BRAKE LIGHT SWITCH CIRCUIT.

Check brake light switch circuit. <Ref. to 2-7 [T10BK0].>

- CHECK** : *Is there any trouble in brake light switch circuit?*
- YES** : Repair or replace brake light switch circuit.
- NO** : Go to step **10BT9**.

10BT9 : CHECK ATF TEMPERATURE SENSOR CIRCUIT.

Check ATF temperature sensor circuit. <Ref. to 3-2 [T8H0].>

- CHECK** : *Is there any trouble in ATF temperature sensor circuit?*
- YES** : Repair or replace ATF temperature sensor circuit.
- NO** : Go to step **10BT10**.

10BT10 : 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 **10BT11**.

10BT11 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

- CHECK** : *Is there any mechanical trouble in automatic transmission?*
- YES** : Repair or replace automatic transmission.
- NO** : Replace TCM.

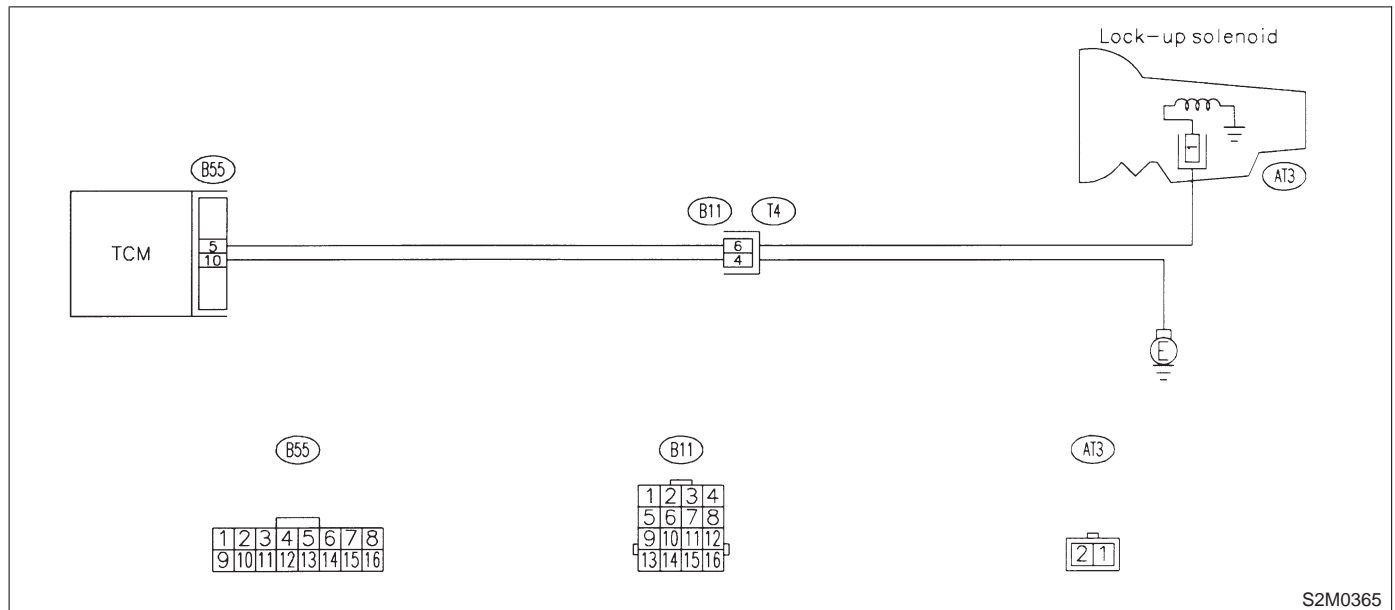
BU: DTC P0743 — TORQUE CONVERTER CLUTCH SYSTEM (DUTY SOLENOID B) ELECTRICAL —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0365

10BU1 : 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 [T8D0].>
- NO** : It is not necessary to inspect DTC P0743.

BV: DTC P0748 — PRESSURE CONTROL SOLENOID (DUTY SOLENOID A) ELECTRICAL —

● DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

● TROUBLE SYMPTOM:

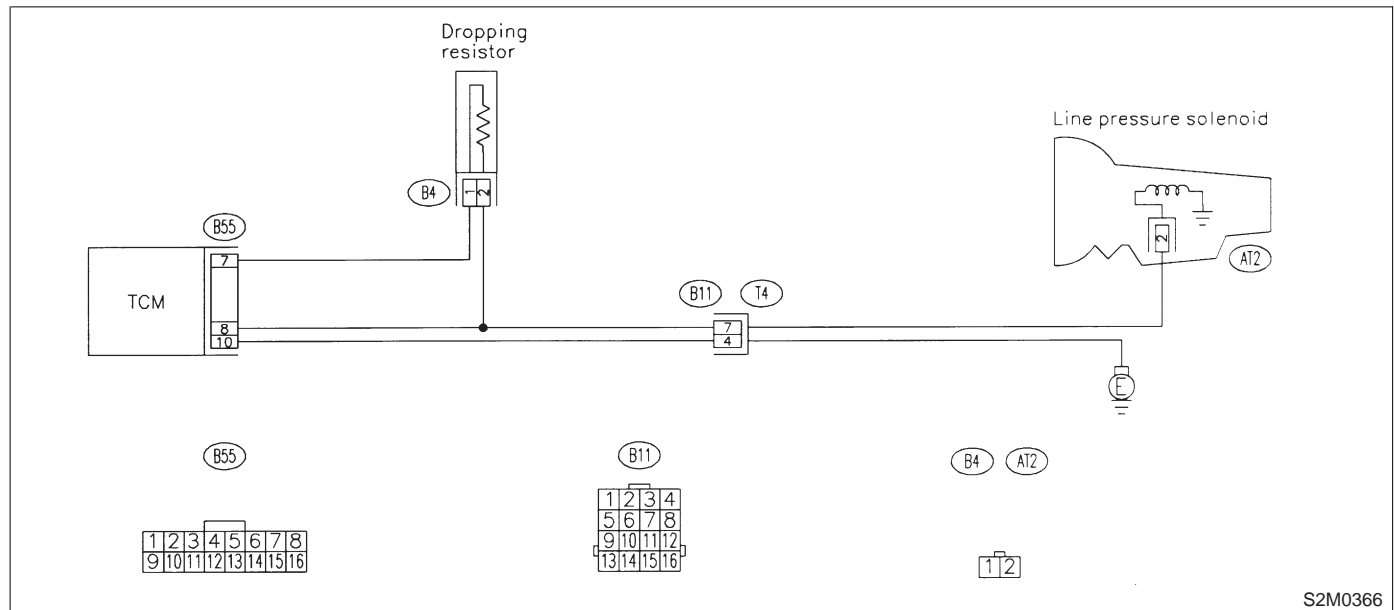
- Excessive shift shock

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● WIRING DIAGRAM:



10BV1 : 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 [T8C0].>

NO : It is not necessary to inspect DTC P0748.

BW: DTC P0753 — SHIFT SOLENOID A (SHIFT SOLENOID 1) ELECTRICAL● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

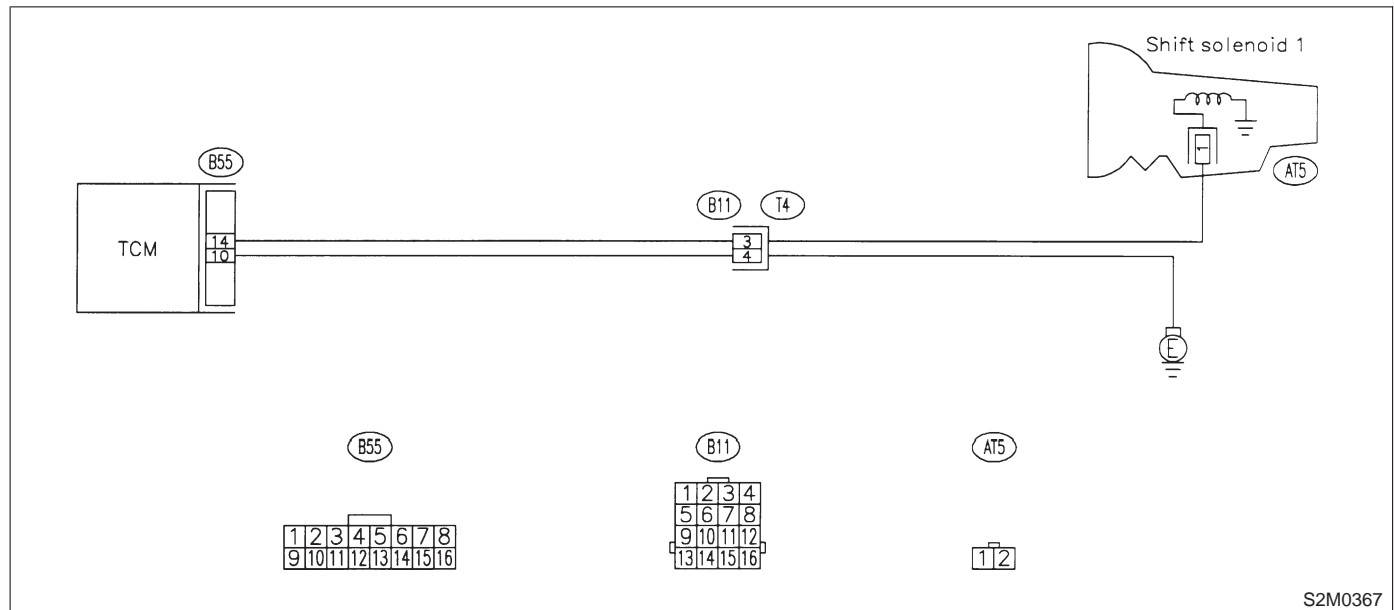
● **TROUBLE SYMPTOM:**

- No shift

CAUTION:

After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:****10BW1 : CHECK DTC P0753 ON DISPLAY.**

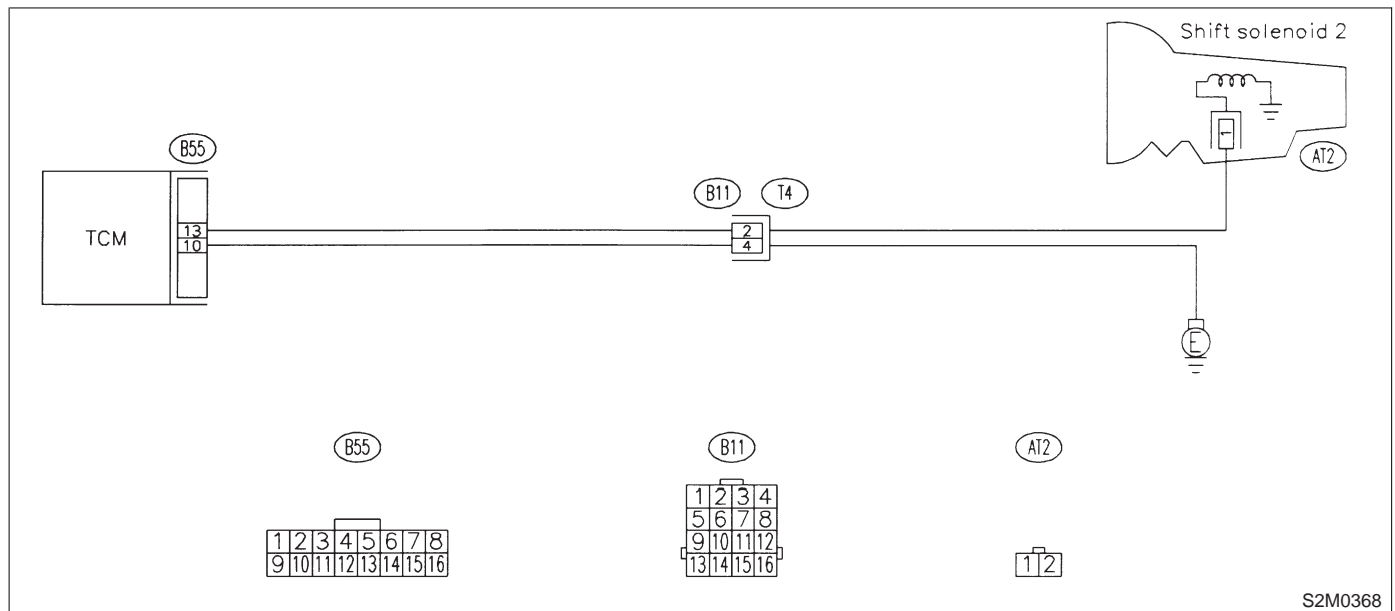
- CHECK** : *Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0753?*
- YES** : Check shift solenoid 1 circuit. <Ref. to 3-2 [T8G0].>
- NO** : It is not necessary to inspect DTC P0753.

BX: 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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:****10BX1 : 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 [T8F0].>
- NO** : It is not necessary to inspect DTC P0758.

MEMO:

BY: DTC P0760 — SHIFT SOLENOID C (SHIFT SOLENOID 3) MALFUNCTION

• DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

• TROUBLE SYMPTOM:

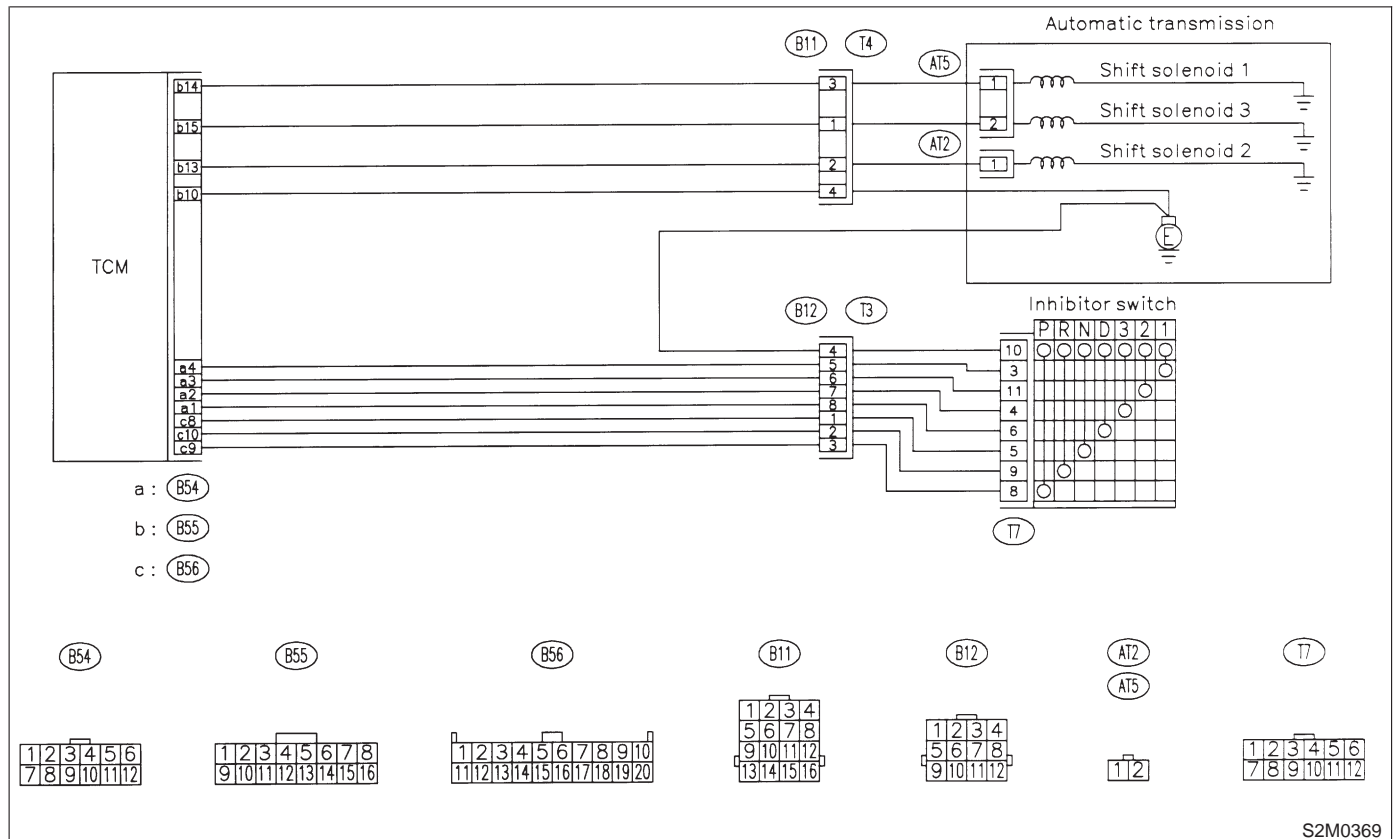
- Ineffective engine brake with selector lever in “3”

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

• WIRING DIAGRAM:



S2M0369

10BY1 : CHECK ANY OTHER DTC ON DISPLAY.

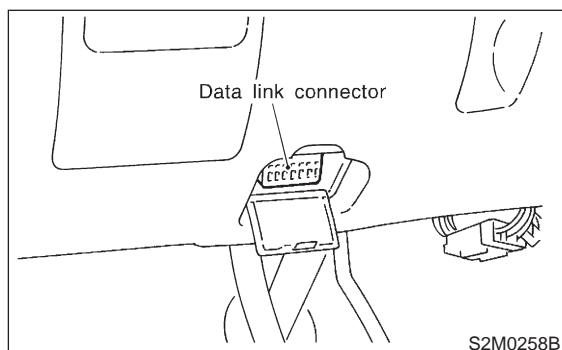
10BY2 : CHECK INHIBITOR SWITCH CIRCUIT.

- CHECK** : *Is there any other DTC on display?*
- YES** : Inspect relevant DTC using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T1000].>
- NO** : Go to step **10BY2**.

- Check inhibitor switch circuit. <Ref. to 2-7 [T10BL0].>
- CHECK** : *Is there any trouble in inhibitor switch circuit?*
- YES** : Repair or replace inhibitor switch circuit.
- NO** : Go to step **10BY3**.

10BY3 : CHECK GEAR POSITION.

- 1) Turn ignition switch to OFF.
- 2) Connect the Subaru select monitor to data link connector.



- 3) Lift-up or raise the vehicle and support with safety stands.

CAUTION:

On AWD models, raise all wheels off ground.

- 4) Start and warm-up the engine and transmission.
- 5) Subaru select monitor switch to ON.
- 6) Read data of gear position signal using Subaru select monitor.

(1) On the 「Main Menu」 display screen, select the {2. Check of Each System} 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 {4. 1 Data Display with Detail} and press the [YES] key.

(6) Use the scroll key to show {Gear Position} items on the display screen.

NOTE:

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

- 7) Move selector lever to “D” and drive the vehicle.

CHECK : **Does gear position change according to throttle position and vehicle speed?**

YES : Go to step **10BY4**.

NO : Go to step **10BY6**.

10BY4 : 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 **10BY5**.

10BY5 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : **Is there any mechanical trouble in automatic transmission?**

YES : Repair or replace automatic transmission.

NO : Replace TCM.

10BY6 : CHECK SHIFT SOLENOID 1 CIRCUIT.

Check shift solenoid 1 circuit. <Ref. to 3-2 [T8G0].>

CHECK : **Is there any trouble in shift solenoid 1 circuit?**

YES : Repair or replace shift solenoid 1 circuit.

NO : Go to step **10BY7**.

10BY7 : CHECK SHIFT SOLENOID 2 CIRCUIT.

Check shift solenoid 2 circuit. <Ref. to 3-2 [T8F0].>

CHECK : **Is there any trouble in shift solenoid 2 circuit?**

YES : Repair or replace shift solenoid 2 circuit.

NO : Go to step **10BY8**.

10BY8 : CHECK SHIFT SOLENOID 3 CIRCUIT.

Check shift solenoid 3 circuit. <Ref. to 3-2 [T8E0].>

CHECK : **Is there any trouble in shift solenoid 3 circuit?**

YES : Repair or replace shift solenoid 3 circuit.

NO : Go to step **10BY9**.

10BY9 : 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 **10BY10**.

10BY10 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : *Is there any mechanical trouble in automatic transmission?*

YES : Repair or replace automatic transmission.

NO : Replace TCM.

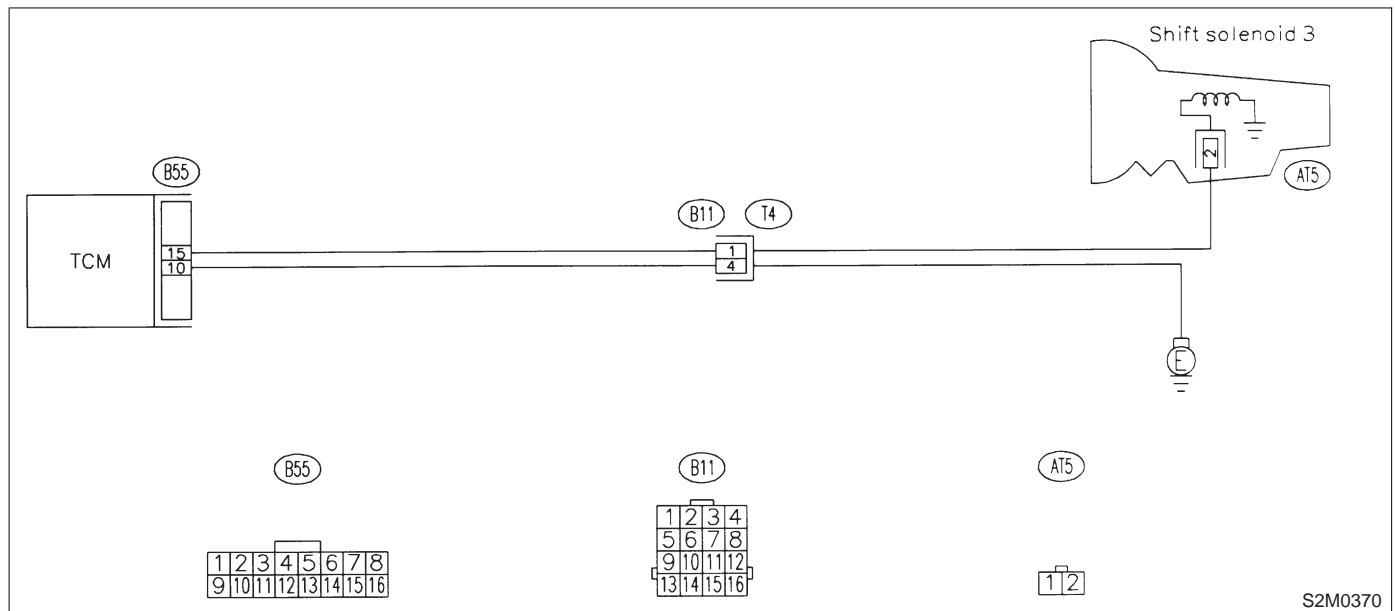
BZ: DTC P0763 — SHIFT SOLENOID C (SHIFT SOLENOID 3) ELECTRICAL —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Ineffective engine brake with selector lever in “3”

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0370

10BZ1 : CHECK DTC P0763 ON DISPLAY.

- CHECK** : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0763?
- YES** : Check shift solenoid 3 circuit. <Ref. to 3-2 [T8E0].>
- NO** : It is not necessary to inspect DTC P0763.

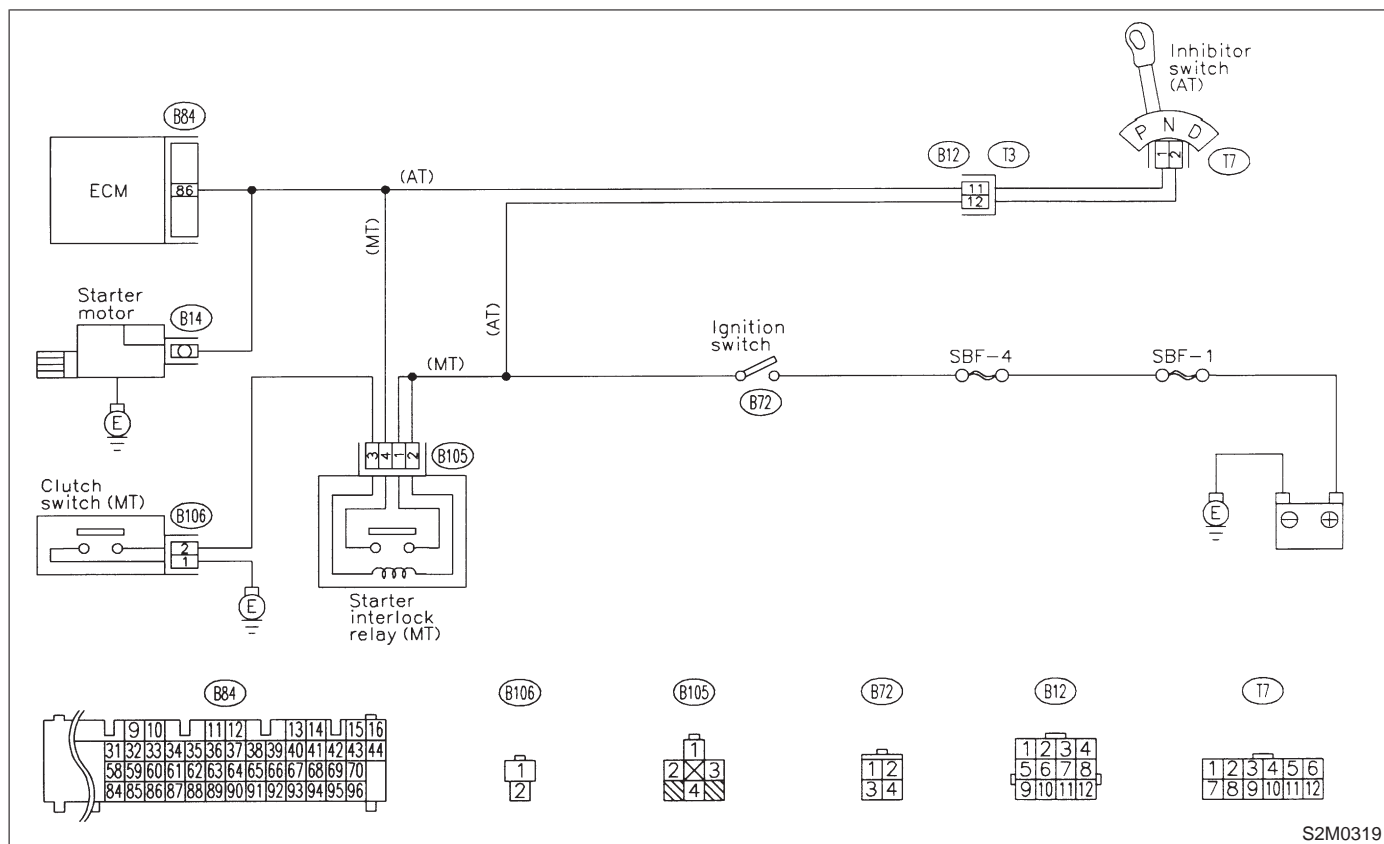
CA: DTC P1100 — STARTER SWITCH CIRCUIT LOW INPUT —

- **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 and INSPECTION MODES.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0319

10CA1 : 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].>

MEMO:

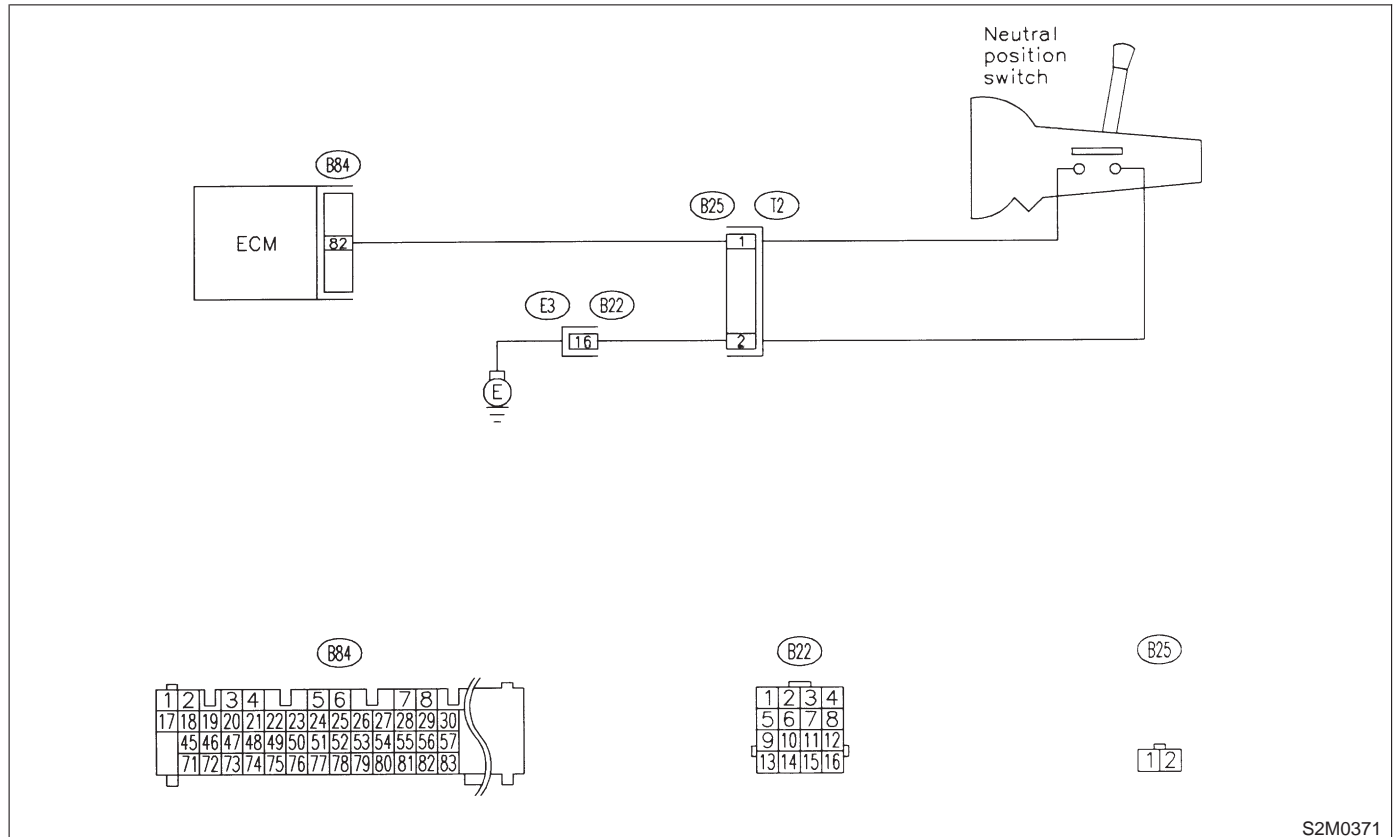
CB: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT MALFUNCTION [MT VEHICLES] —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Erroneous idling

CAUTION:

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

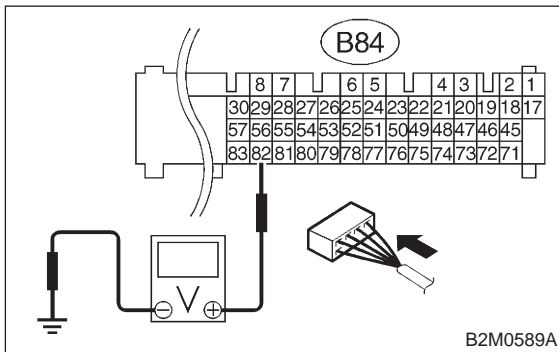
● **WIRING DIAGRAM:**



10CB1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B84) No. 82 (+) — Chassis ground (-):

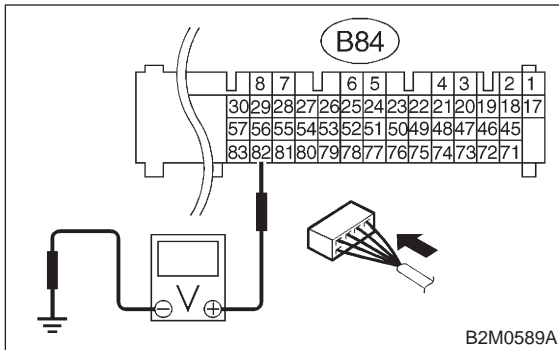


- CHECK** : *Is the voltage between 4.5 and 5.5 V in neutral position?*
- YES** : Go to step 10CB2.
- NO** : Go to step 10CB4.

10CB2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (-):



- CHECK** : *Is the voltage less than 1 V in other positions?*
- YES** : Go to step 10CB3.
- NO** : Go to step 10CB4.

10CB3 : CHECK POOR CONTACT.

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

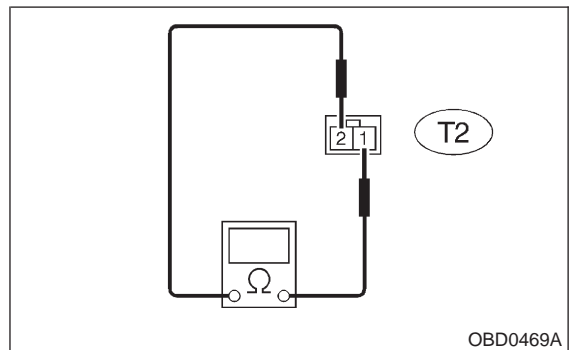
- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Contact with SOA service.

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

10CB4 : 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:

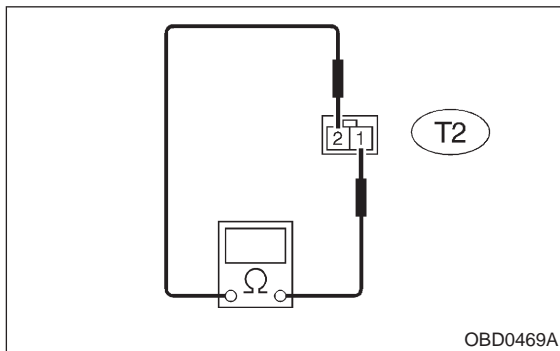


- CHECK** : *Is the resistance more than 1 MΩ in neutral position?*
- YES** : Go to step 10CB5.
- NO** : Repair short circuit in transmission harness or replace neutral position switch.

10CB5 : 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?

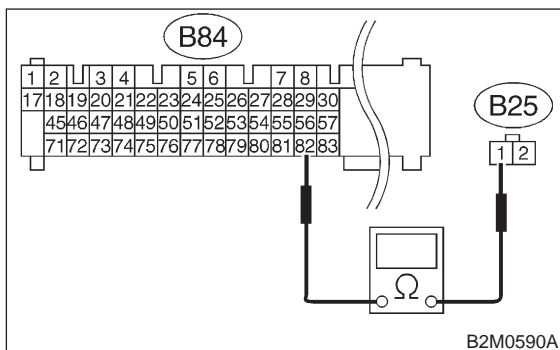
YES : Go to step 10CB6.

NO : Repair open circuit in transmission harness or replace neutral position switch.

10CB6 : 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
(B84) No. 82 — (B25) No. 1:



CHECK : Is the resistance less than 1 Ω?

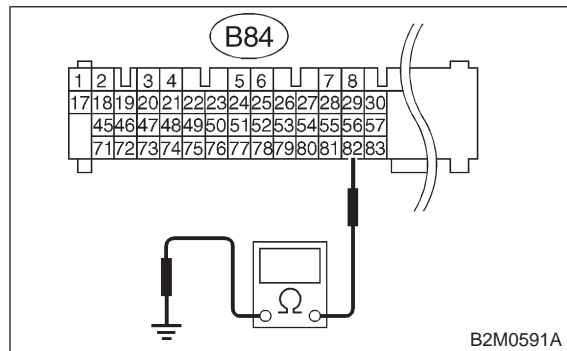
YES : Go to step 10CB7.

NO : Repair open circuit in harness between ECM and transmission harness connector.

10CB7 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

Measure resistance between ECM and chassis ground.

Connector & terminal
(B84) No. 82 — Chassis ground:



CHECK : Is the resistance less than 10 Ω?

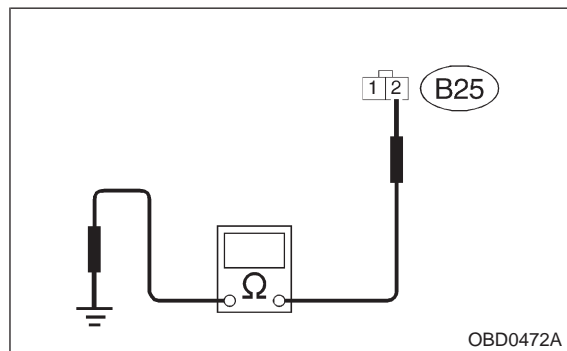
YES : Repair ground short circuit in harness between ECM and transmission harness connector.

NO : Go to step 10CB8.

10CB8 : CHECK NEUTRAL POSITION SWITCH GROUND CIRCUIT.

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 10CB9.

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)

10CB9 : 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** : Replace ECM.

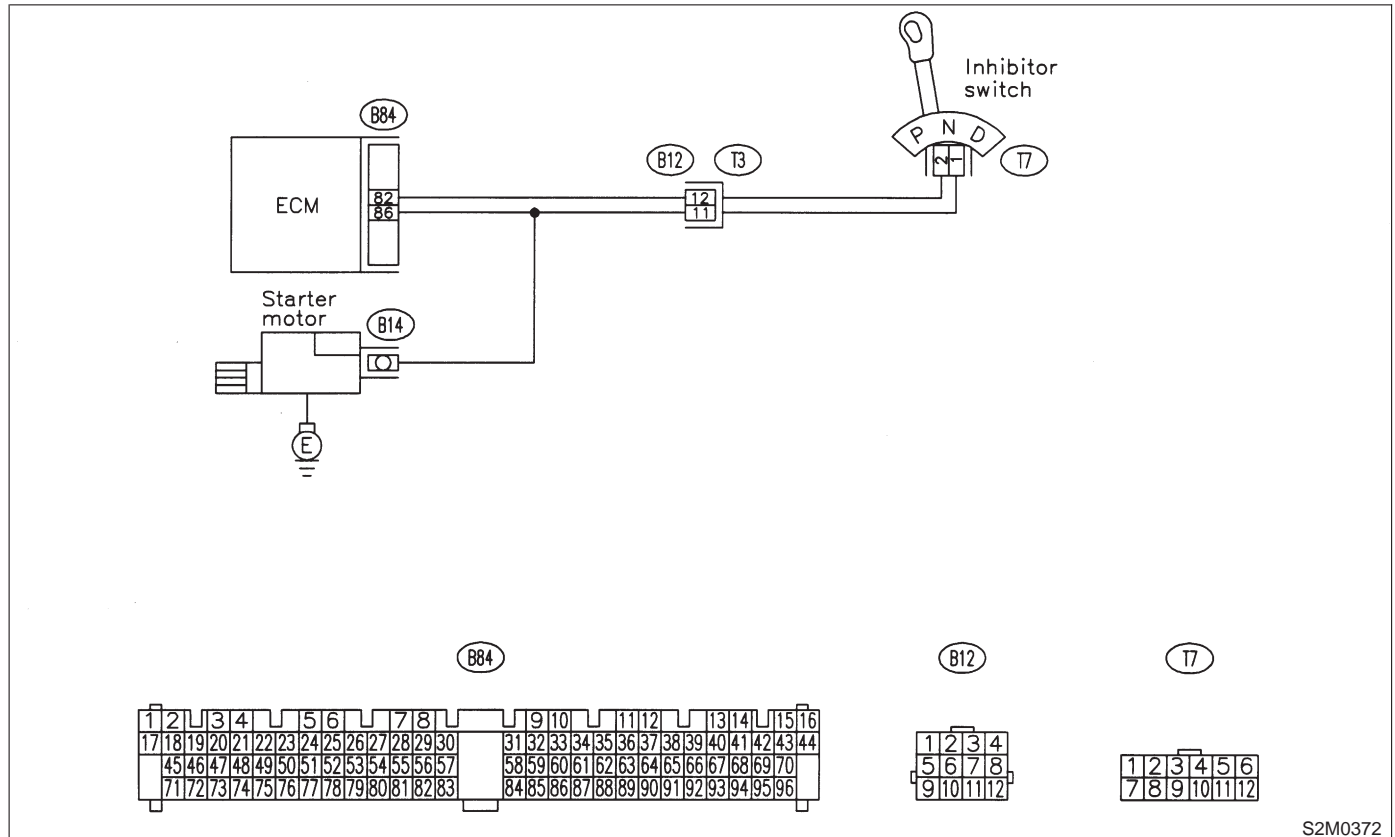
CC: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [AT VEHICLES] —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Erroneous idling

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0372

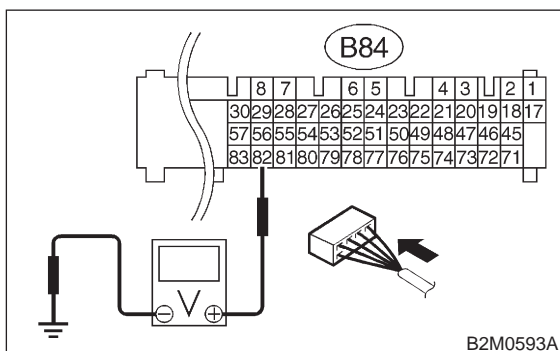
10CC1 : CHECK DTC P0705 ON DISPLAY.

- 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”. <Ref. to 2-7 [T1000].>
- NO** : Go to step **10CC2**.

10CC2 : 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
(B84) No. 82 (+) — Chassis ground (-):

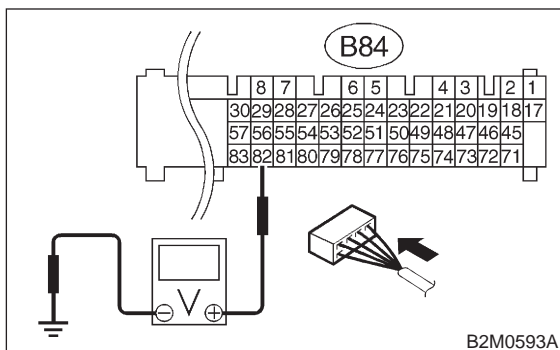


- CHECK** : *Is the voltage less than 1 V?*
- YES** : Go to step 10CC3.
- NO** : Go to step 10CC5.

10CC3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground in selector lever except for "N" and "P" positions.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (-):



- CHECK** : *Is the voltage between 4.5 and 5.5 V?*
- YES** : Go to step 10CC4.
- NO** : Go to step 10CC5.

10CC4 : CHECK POOR CONTACT.

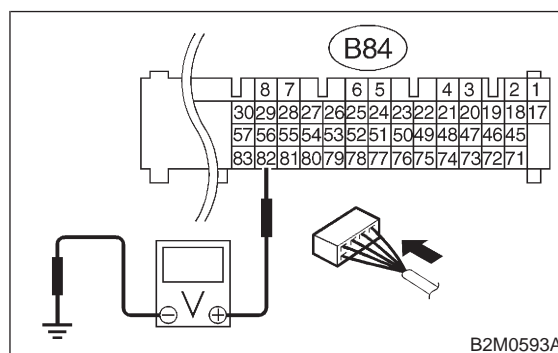
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10CC5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (-):



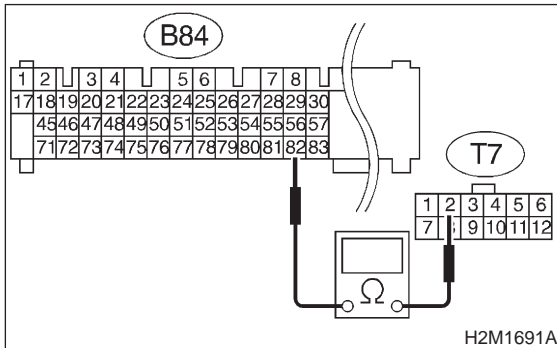
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Repair battery short circuit in harness between ECM and inhibitor switch connector.
- NO** : Go to step 10CC6.

10CC6 : 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

(B84) No. 82 — (T7) No. 2:



- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10CC7.
- NO** : Repair harness and connector.

NOTE:

In this case, repair the following:

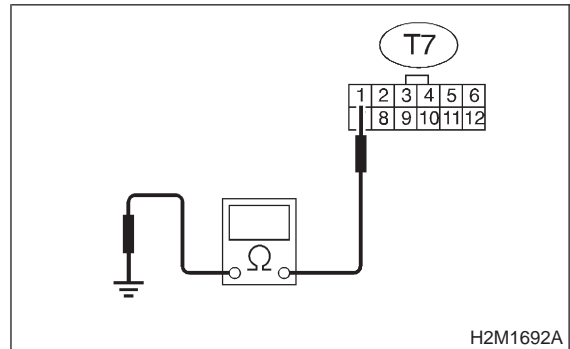
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)
- Poor contact in inhibitor switch connector
- Poor contact in ECM connector

10CC7 : CHECK INHIBITOR SWITCH GROUND LINE.

Measure resistance of harness between inhibitor switch connector and engine ground.

Connector & terminal

(T7) No. 1 — Engine ground:



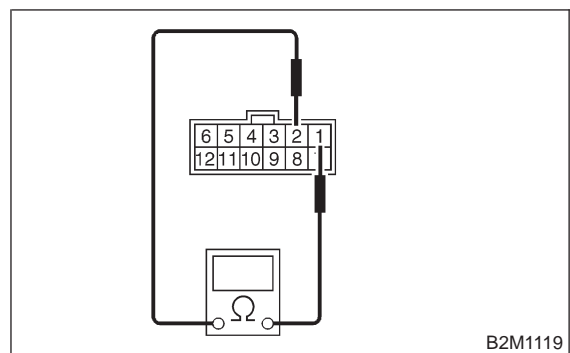
- CHECK** : Is the resistance less than 5 Ω?
- YES** : Go to step 10CC8.
- NO** : Repair open circuit in inhibitor switch ground line.

10CC8 : 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 10CC9.
- NO** : Replace inhibitor switch.

10CC9 : 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 [W3B0].>
- NO** : Replace ECM.

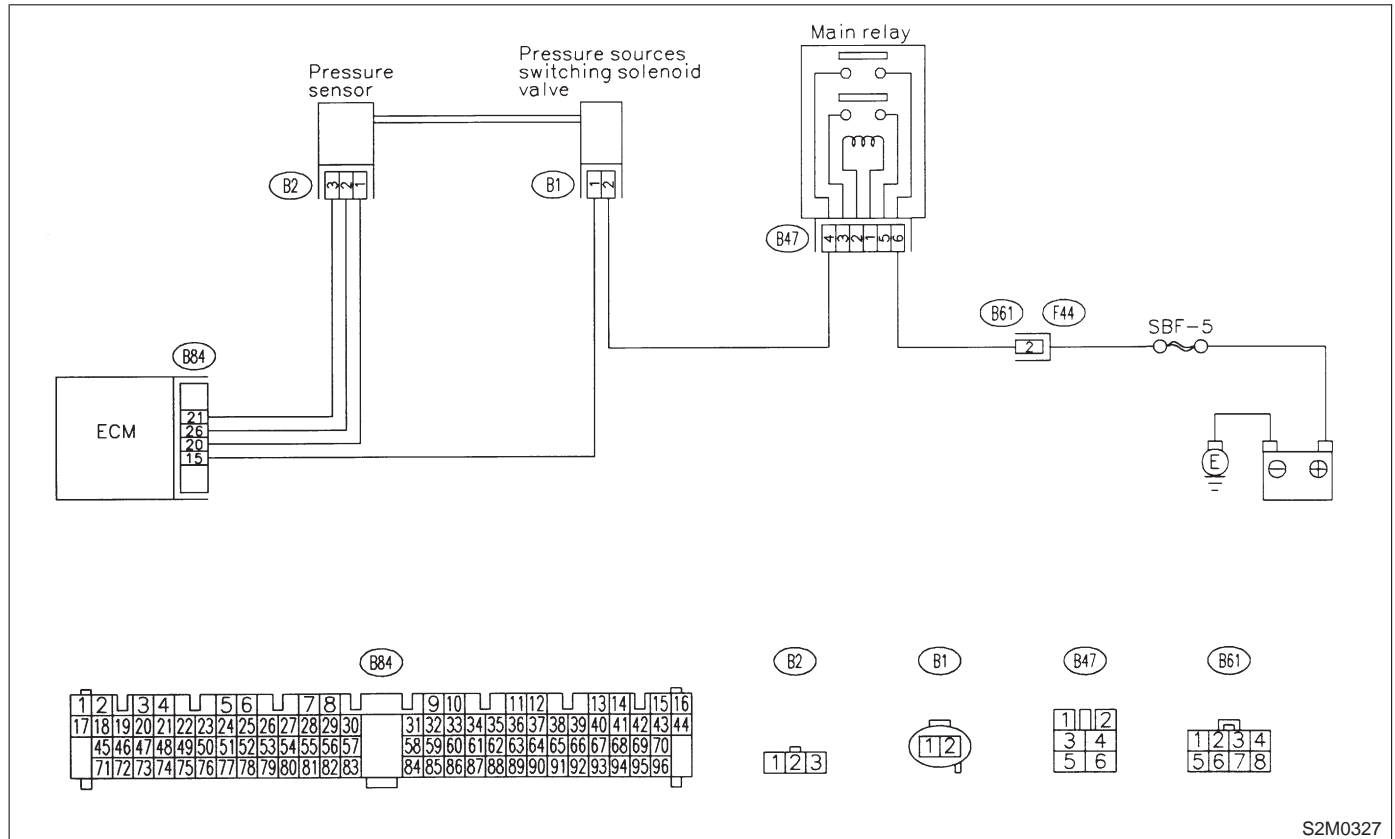
CD: DTC P1102 — PRESSURE SOURCES SWITCHING SOLENOID VALVE CIRCUIT LOW INPUT —

- **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** and **INSPECTION MODE**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

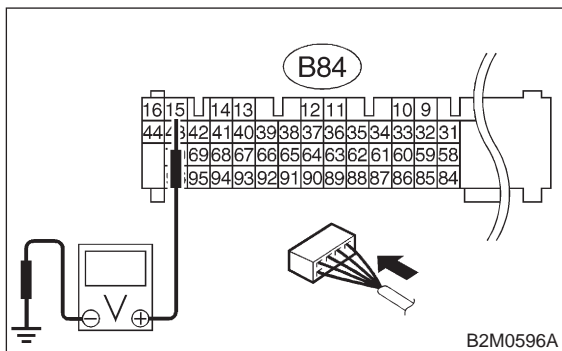


S2M0327

10CD1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 15 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
YES : Go to step 10CD2.
NO : Go to step 10CD3.

10CD2 : CHECK POOR CONTACT.

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

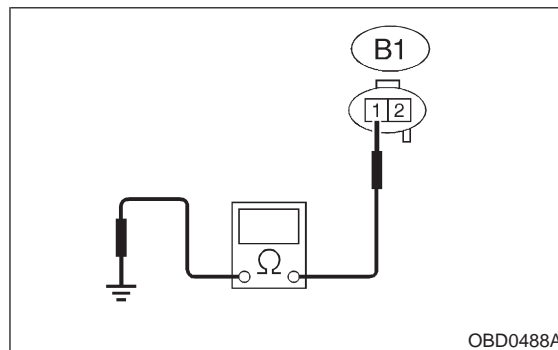
- CHECK** : Is there poor contact in ECM connector?
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10CD3 : 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
(B1) No. 1 — Engine ground:



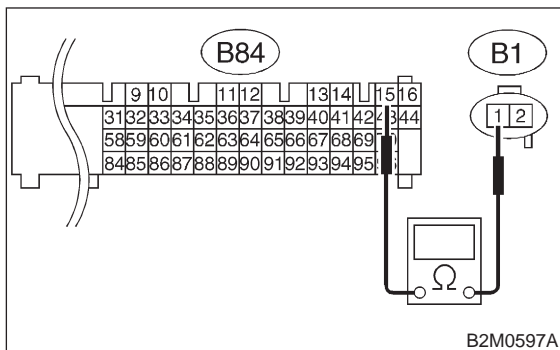
- CHECK** : Is the resistance less than 10 Ω?
YES : Repair ground short circuit in harness between ECM and pressure sources switching solenoid valve connector.
NO : Go to step 10CD4.

10CD4 : 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

(B84) No. 15 — (B1) No. 1:



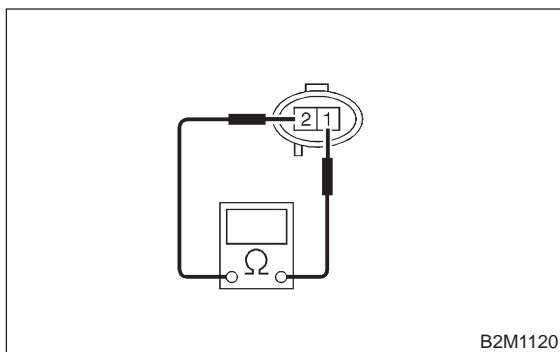
- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **10CD5**.
- NO** : Repair open circuit in harness between ECM and pressure sources switching solenoid valve connector.

10CD5 : CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

Measure resistance between pressure sources switching solenoid valve connector terminals.

Terminals

No. 1 — No. 2:



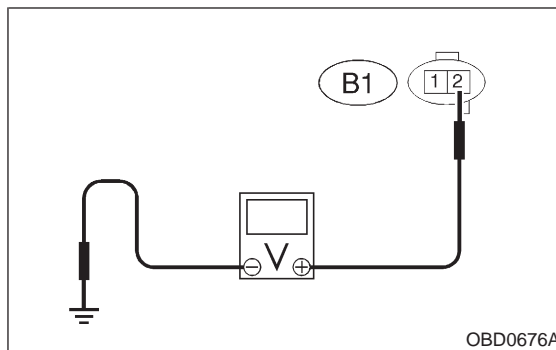
- CHECK** : *Is the resistance between 10 and 100 Ω?*
- YES** : Go to step **10CD6**.
- NO** : Replace pressure sources switching solenoid valve.

10CD6 : 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

(B1) No. 2 (+) — Engine ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **10CD7**.
- NO** : Repair open circuit in harness between main relay and pressure sources switching solenoid valve connector.

10CD7 : 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:

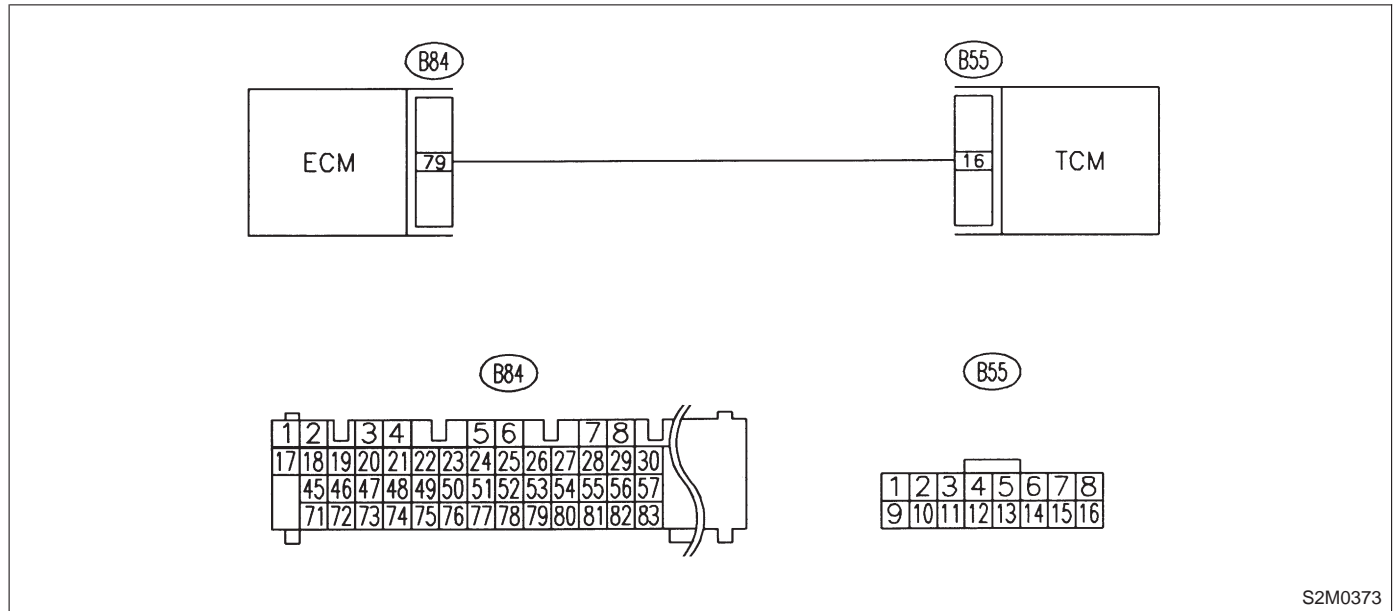
CE: DTC P1103 — ENGINE TORQUE CONTROL SIGNAL CIRCUIT MALFUNCTION —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

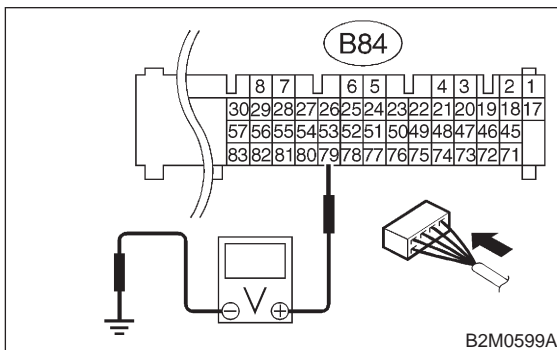


10CE1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal

(B84) No. 79 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 4.5 V?*
- YES** : Go to step **10CE2**.
- NO** : Go to step **10CE3**.

10CE2 : CHECK POOR CONTACT.

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

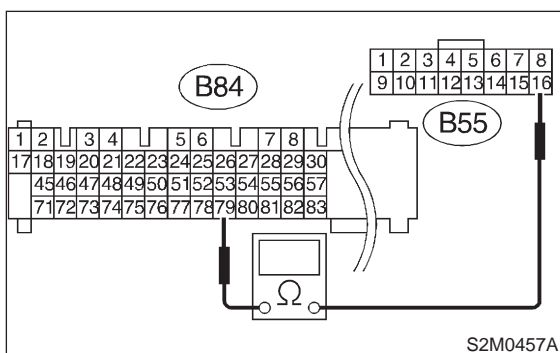
- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10CE3 : 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

(B84) No. 79 — (B55) No. 16:



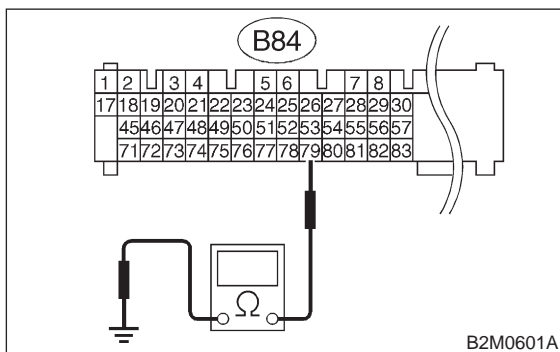
- CHECK** : **Is the resistance less than 1 Ω?**
- YES** : Go to step **10CE4**.
- NO** : Repair open circuit in harness between ECM and TCM connector.

10CE4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 79 — 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 **10CE5**.

10CE5 : 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.

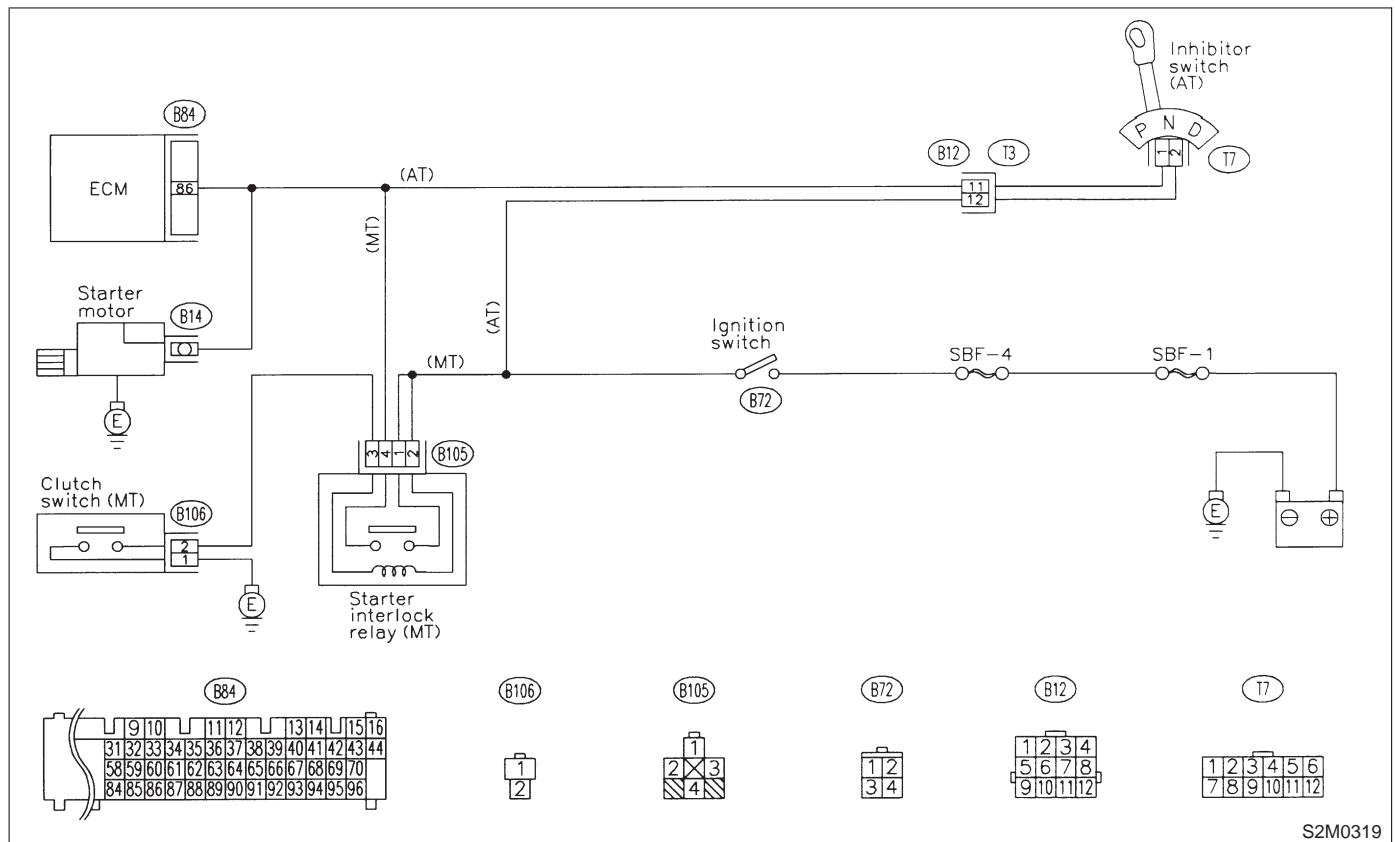
CF: DTC P1120 — STARTER SWITCH CIRCUIT HIGH INPUT —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0319

10CF1 : 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.
- NO** : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

MEMO:

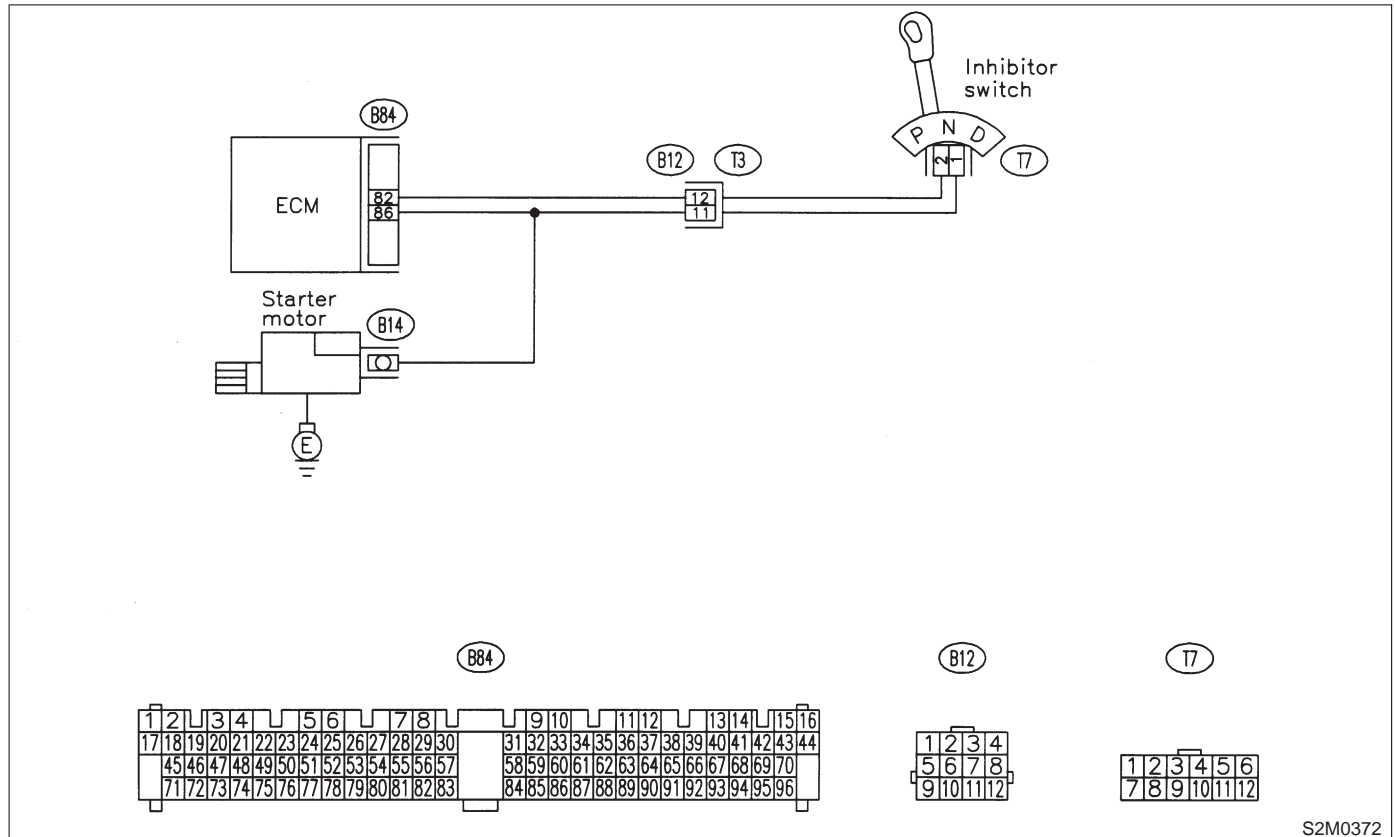
CG: DTC P1121 — NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [AT VEHICLES] —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Erroneous idling

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0372

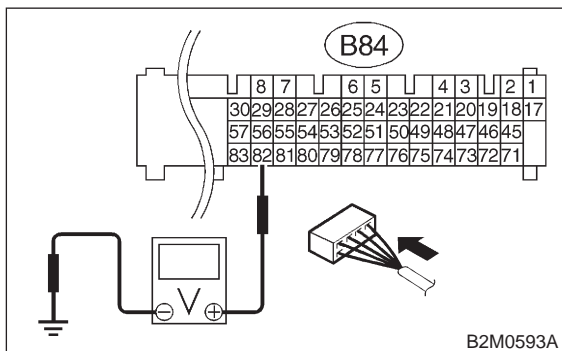
10CG1 : CHECK DTC P0705 ON DISPLAY.

- 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”. <Ref. to 2-7 [T1000].>
- NO** : Go to step **10CG2**.

10CG2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B84) No. 82 (+) — Chassis ground (-):

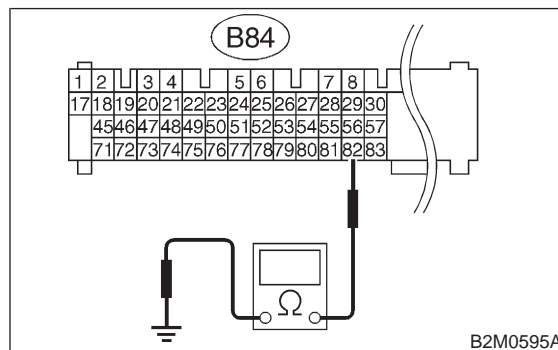


- CHECK** : *Is the voltage between 4.5 and 5.5 V in other positions?*
- YES** : Even if MIL lights up, the circuit has returned to a normal condition at this time.
- NO** : Go to step **10CG3**.

10CG3 : 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.

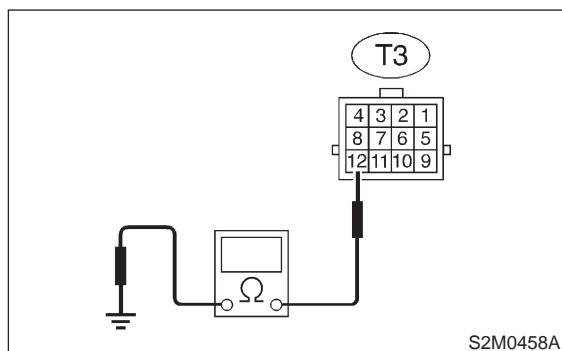
Connector & terminal
(B84) No. 82 — Chassis ground:



- 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 **10CG4**.

10CG4 : CHECK TRANSMISSION HARNESS CONNECTOR.

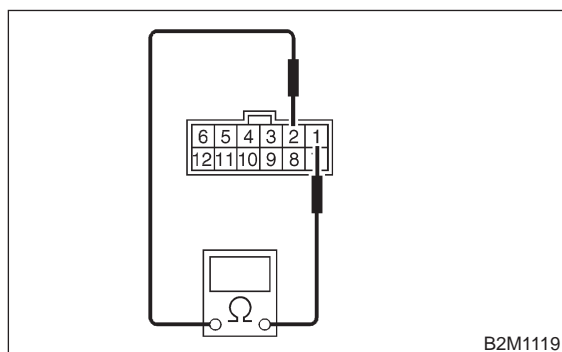
- 1) Disconnect connector from inhibitor switch.
- 2) Measure resistance of harness between transmission harness connector and engine ground.

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 **10CG5**.

10CG5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in selector lever except for "N" and "P" positions.

Terminals**No. 1 — No. 2:**

- CHECK** : **Is the resistance more than 1 MΩ?**
- YES** : Go to step **10CG6**.
- NO** : Replace inhibitor switch.

10CG6 : 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 [W3B0].>
- NO** : Contact with SOA service.

NOTE:

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

MEMO:

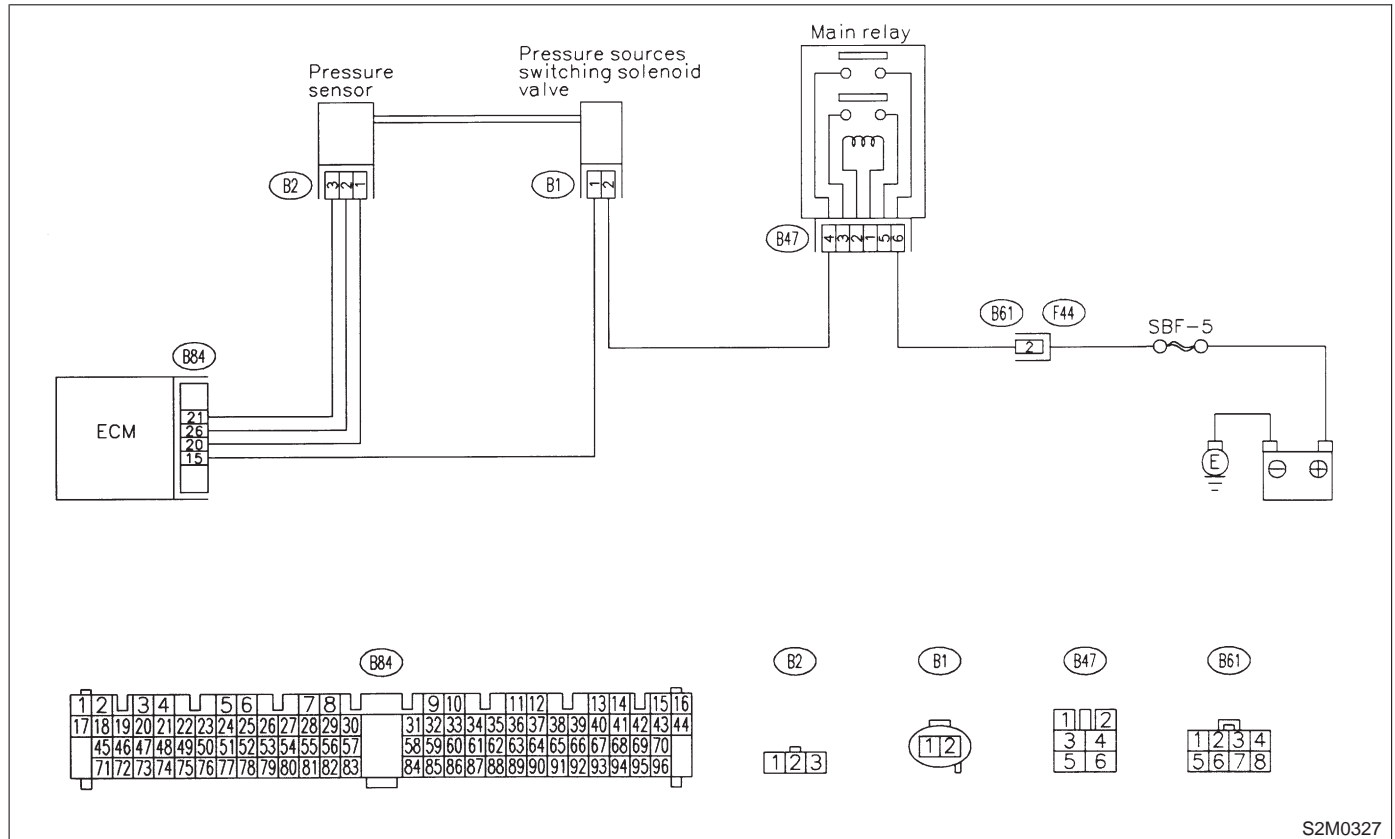
CH: DTC P1122 — PRESSURE SOURCES SWITCHING SOLENOID VALVE CIRCUIT HIGH INPUT —

- **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** and **INSPECTION MODE**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

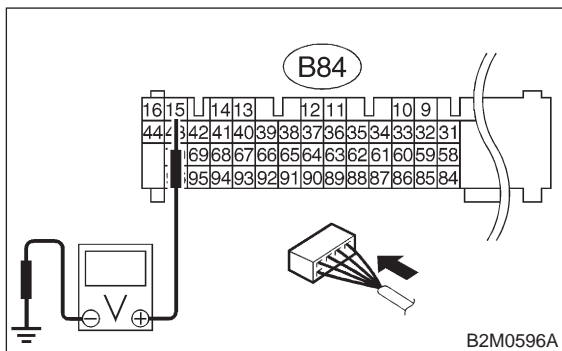


S2M0327

10CH1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 15 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step 10CH3.
- NO** : Go to step 10CH2.

10CH2 : CHECK POOR CONTACT.

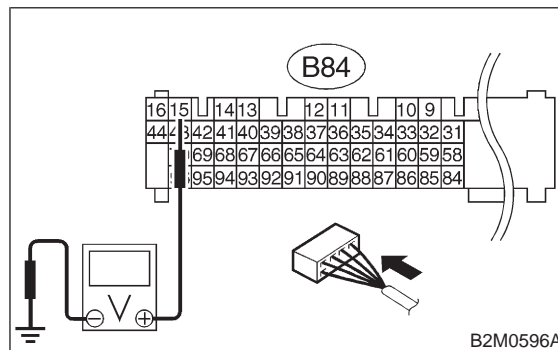
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10CH3 : 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
(B84) No. 15 (+) — Chassis ground (-):



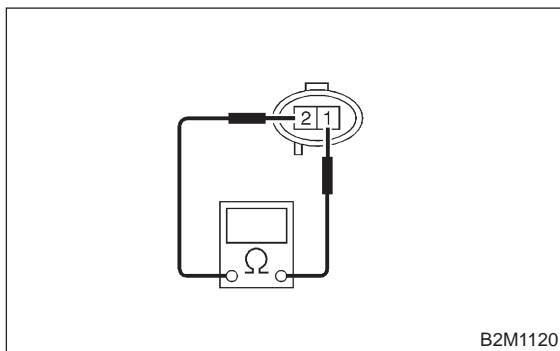
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Repair battery short circuit in harness between ECM and pressure sources switching solenoid valve connector. After repair, replace ECM.
- NO** : Go to step 10CH4.

10CH4 : CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between pressure sources switching solenoid valve connector terminals.

Terminals

No. 1 — No. 2:



- CHECK** : ***Is the resistance less than 1 Ω?***
- YES** : Replace pressure sources switching solenoid valve and ECM.
- NO** : Go to step **10CH5**.

10CH5 : 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.

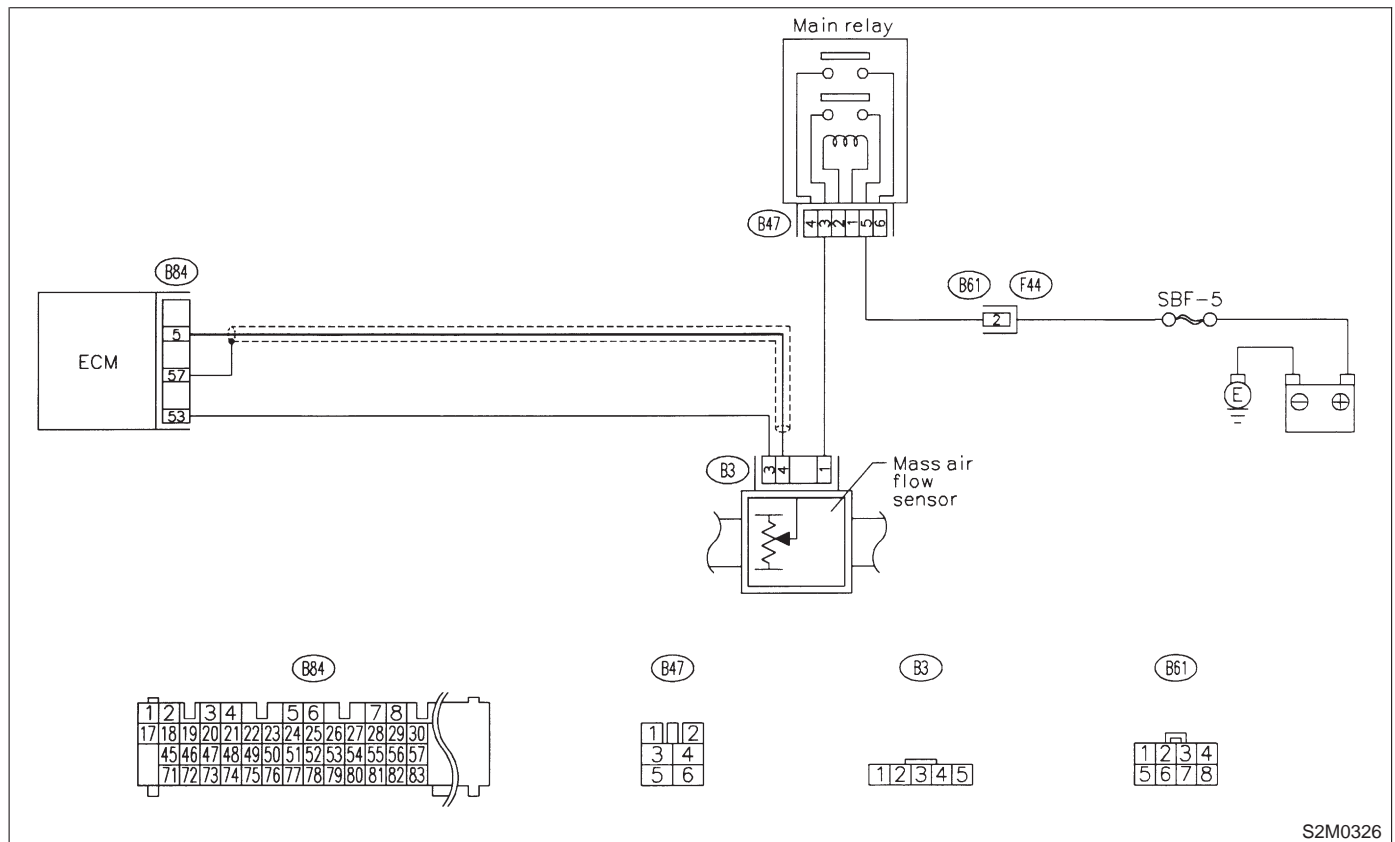
CI: DTC P1141 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



10C11 : 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 "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P1141.

- NO** : Replace mass air flow sensor.

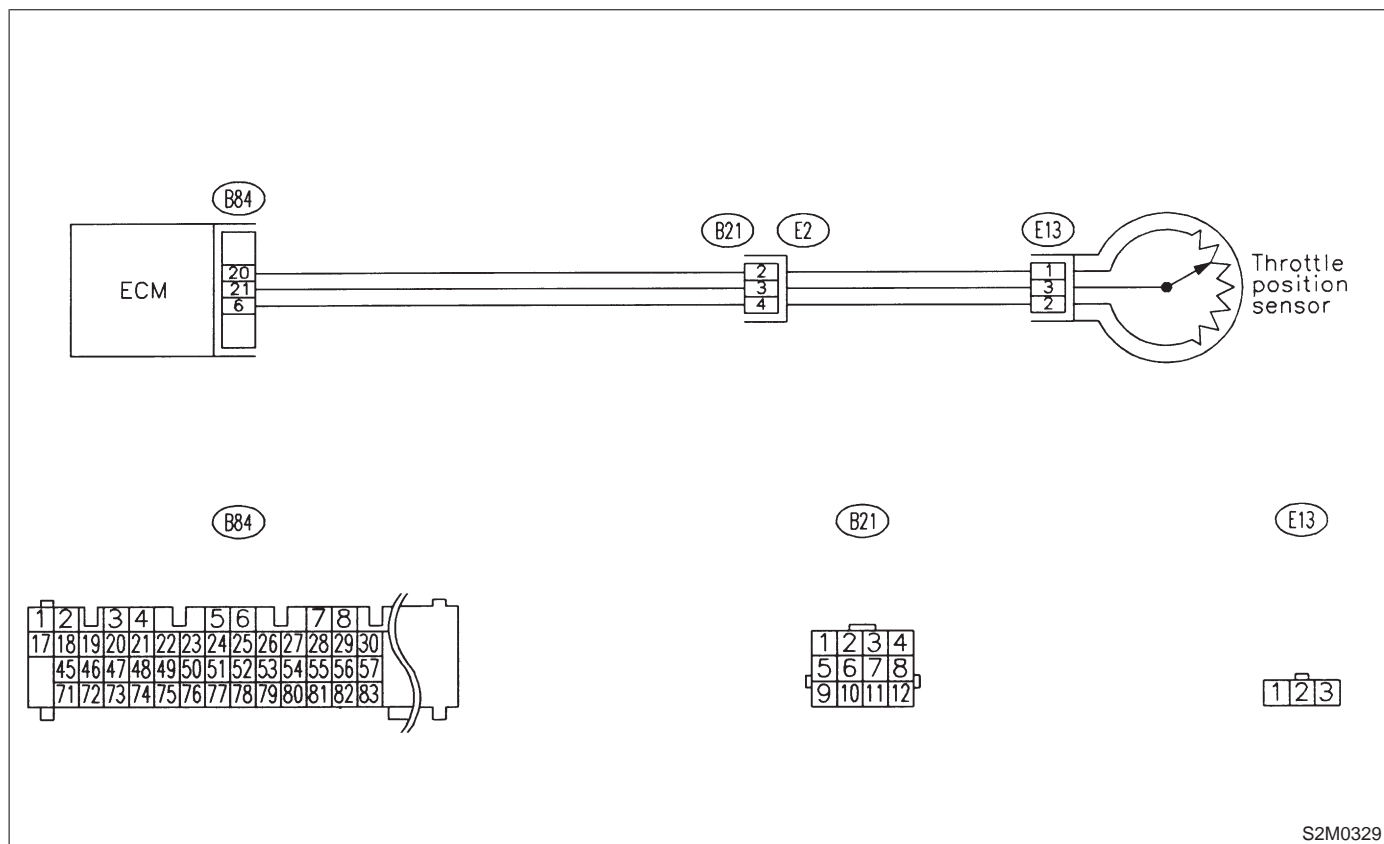
CJ: DTC P1142 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

- **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** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



10CJ1 : 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 "10. Diagnostics Chart with Trouble Code".
 <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P1142.

- NO** : Replace throttle position sensor.

MEMO:

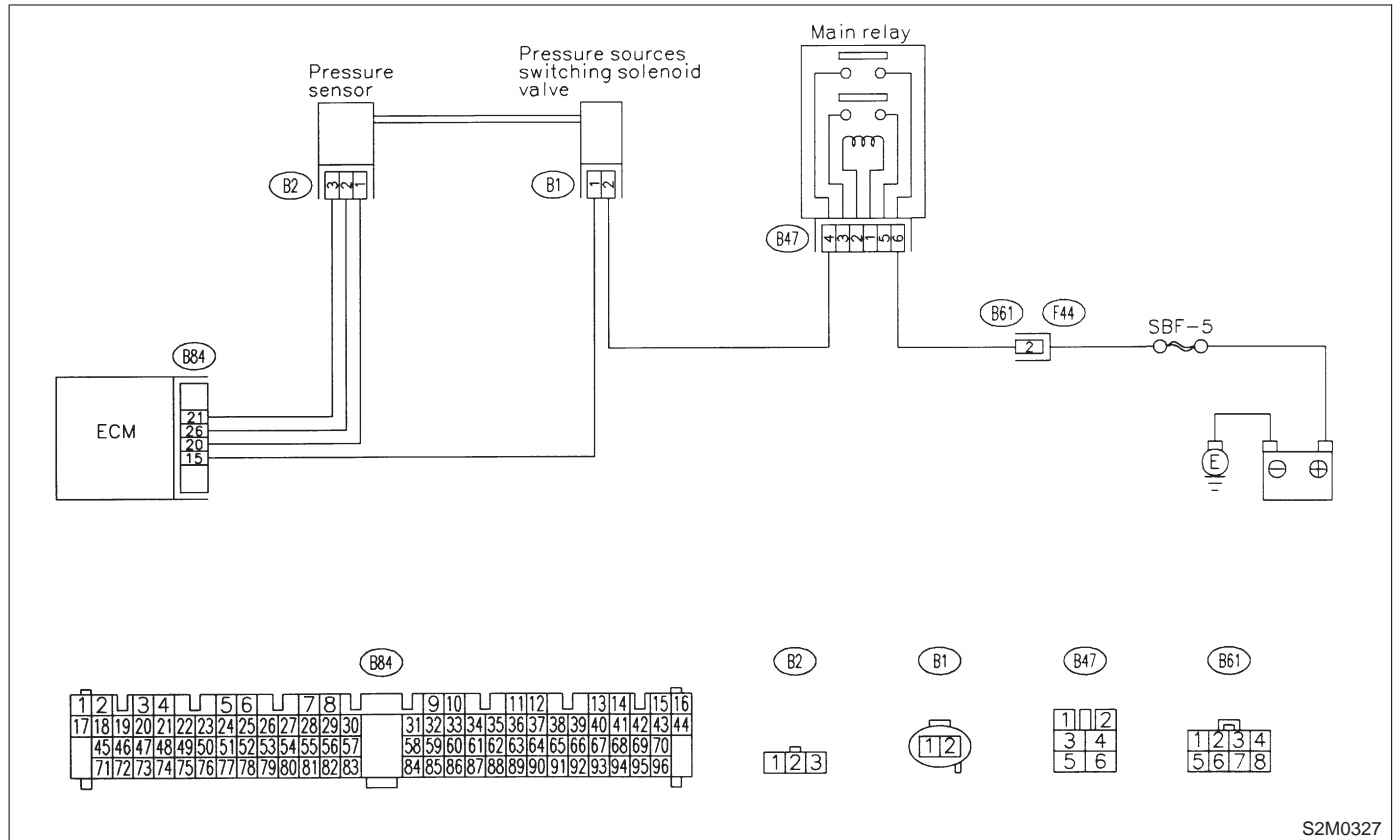
CK: DTC P1143 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

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

CAUTION:

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

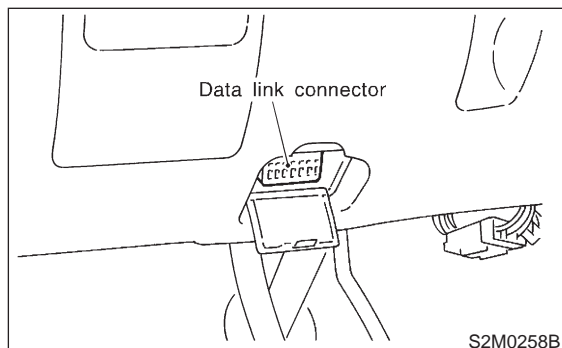
- **WIRING DIAGRAM:**



S2M0327

10CK1 : 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 **10CK3**.

NO : Go to step **10CK2**.

10CK2 : 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.

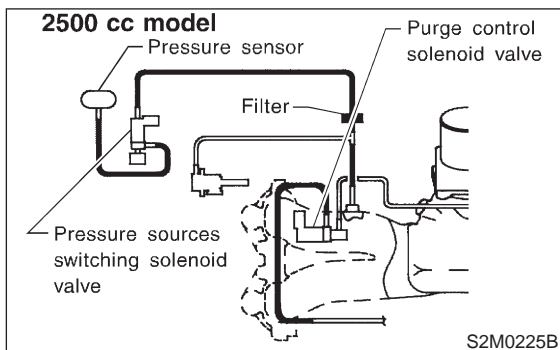
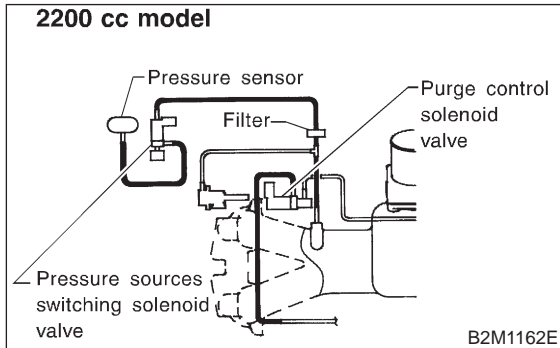
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

NOTE:

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

10CK3 : 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 CPC solenoid valve.



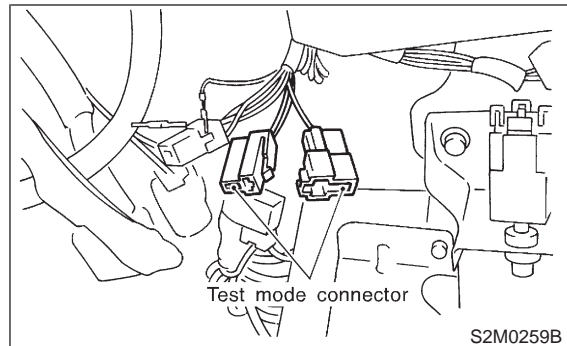
CHECK : **Is there a fault in vacuum hose?**

YES : Repair or replace hoses or filter.

NO : Go to step **10CK4**.

10CK4 : 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.

NO : Replace pressure sources switching solenoid valve.

MEMO:

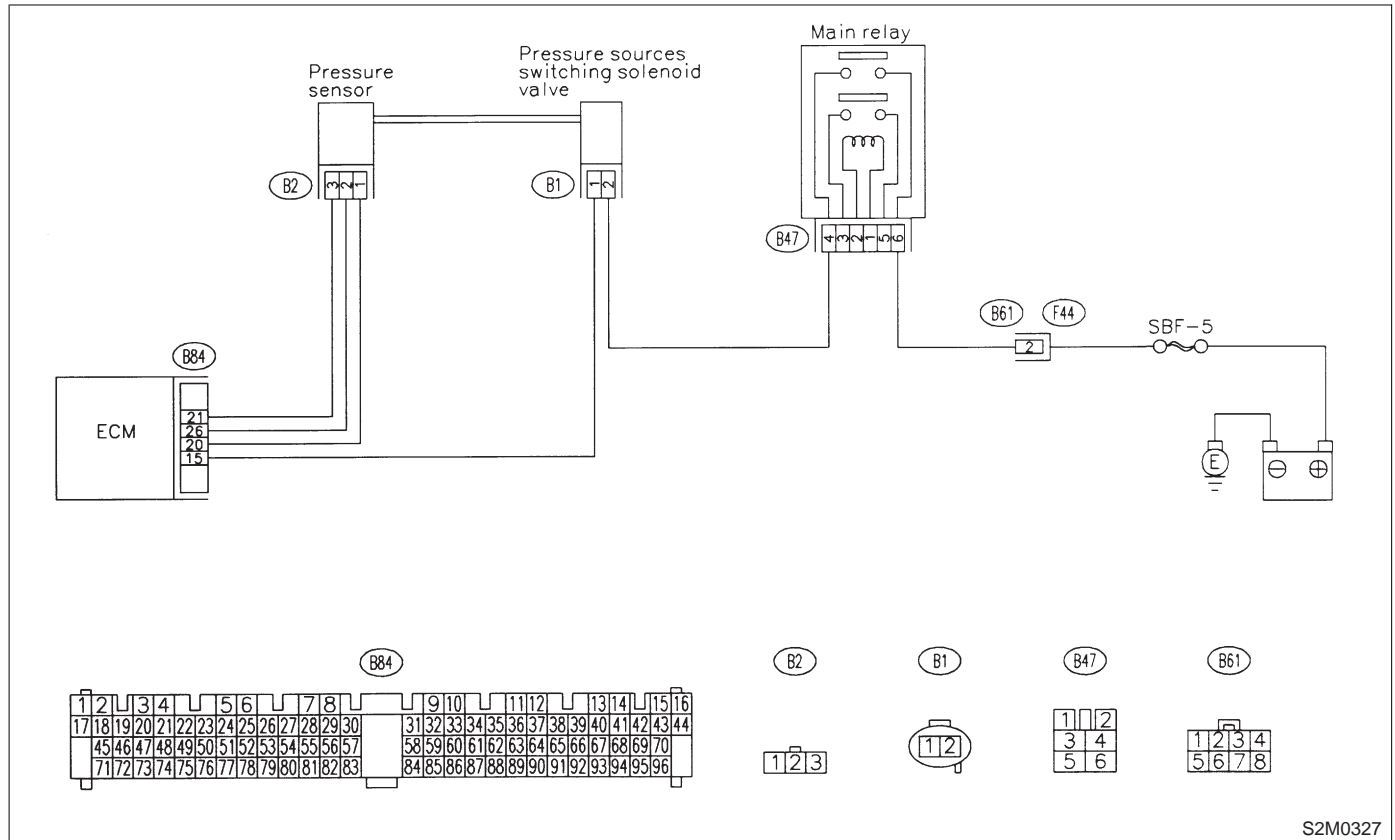
CL: DTC P1144 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

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

CAUTION:

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

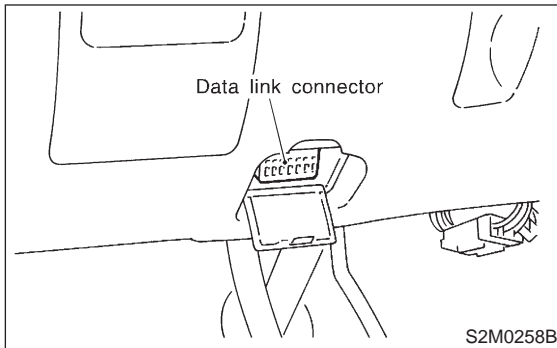
- **WIRING DIAGRAM:**



S2M0327

10CL1 : 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.

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.

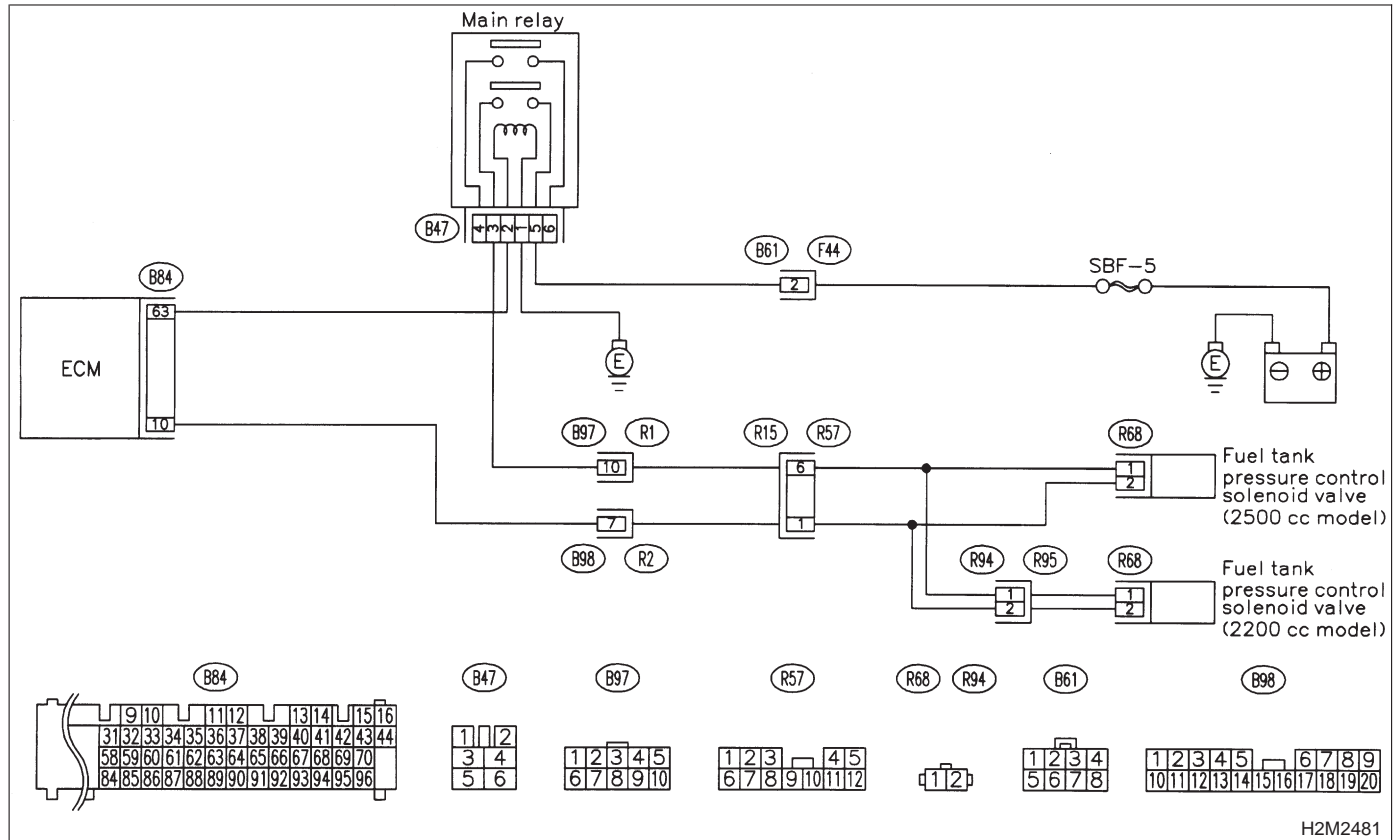
CM: DTC P1400 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW INPUT —

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

CAUTION:

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

● **WIRING DIAGRAM:**



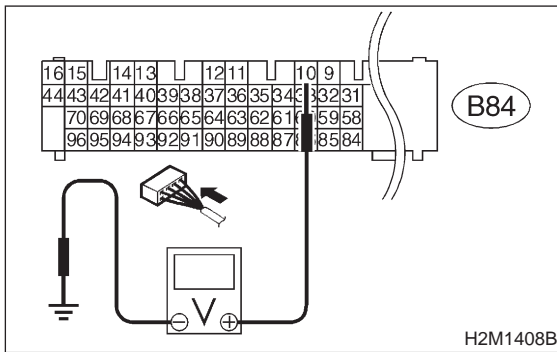
H2M2481

10CM1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal

(B84) No. 10 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
YES : Go to step 10CM2.
NO : Go to step 10CM3.

10CM2 : 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:

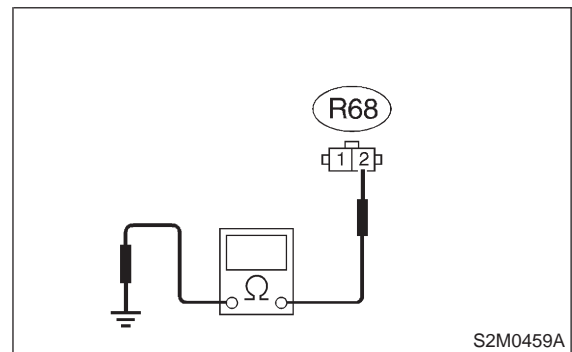
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10CM3 : 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:



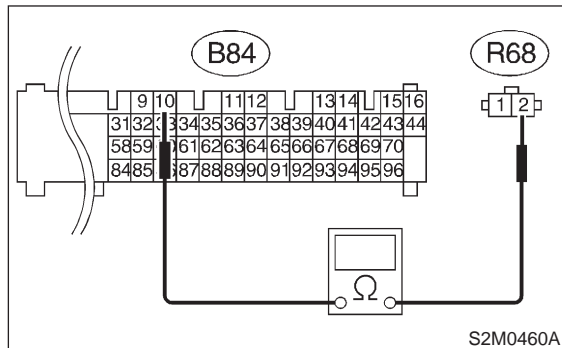
- CHECK** : Is the resistance less than 10 Ω?
YES : Repair ground short circuit in harness between ECM and fuel tank pressure control solenoid valve connector.
NO : Go to step 10CM4.

10CM4 : 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

(B84) No. 10 — (R68) No. 2:



- CHECK** : Is the voltage less than 1 Ω?
YES : Go to step 10CM5.
NO : Repair harness and connector.

NOTE:

In this case, repair the following:

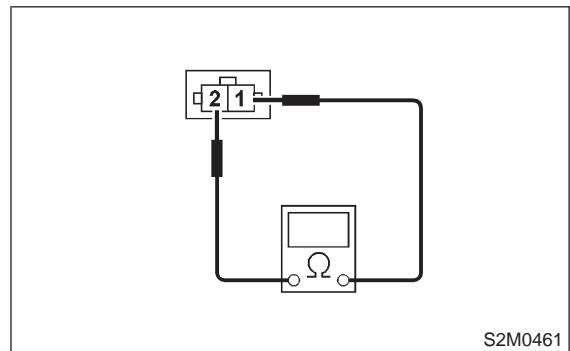
- Open circuit in harness between ECM and fuel tank pressure control solenoid valve connector
- Poor contact in coupling connectors (B98 and R57)

10CM5 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals

No. 1 — No. 2:



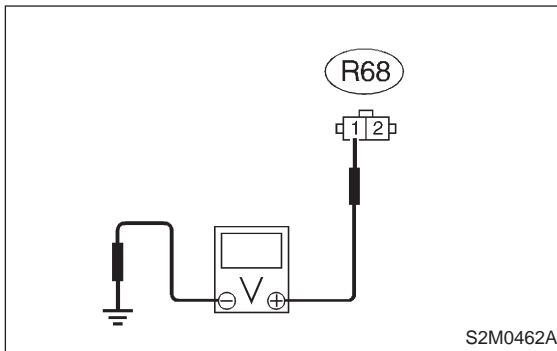
- CHECK** : Is the resistance between 10 and 100 Ω?
YES : Go to step 10CM6.
NO : Replace fuel tank pressure control solenoid valve.

10CM6 : 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 **10CM7**.

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 and R57)
- Poor contact in main relay connector

10CM7 : 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.

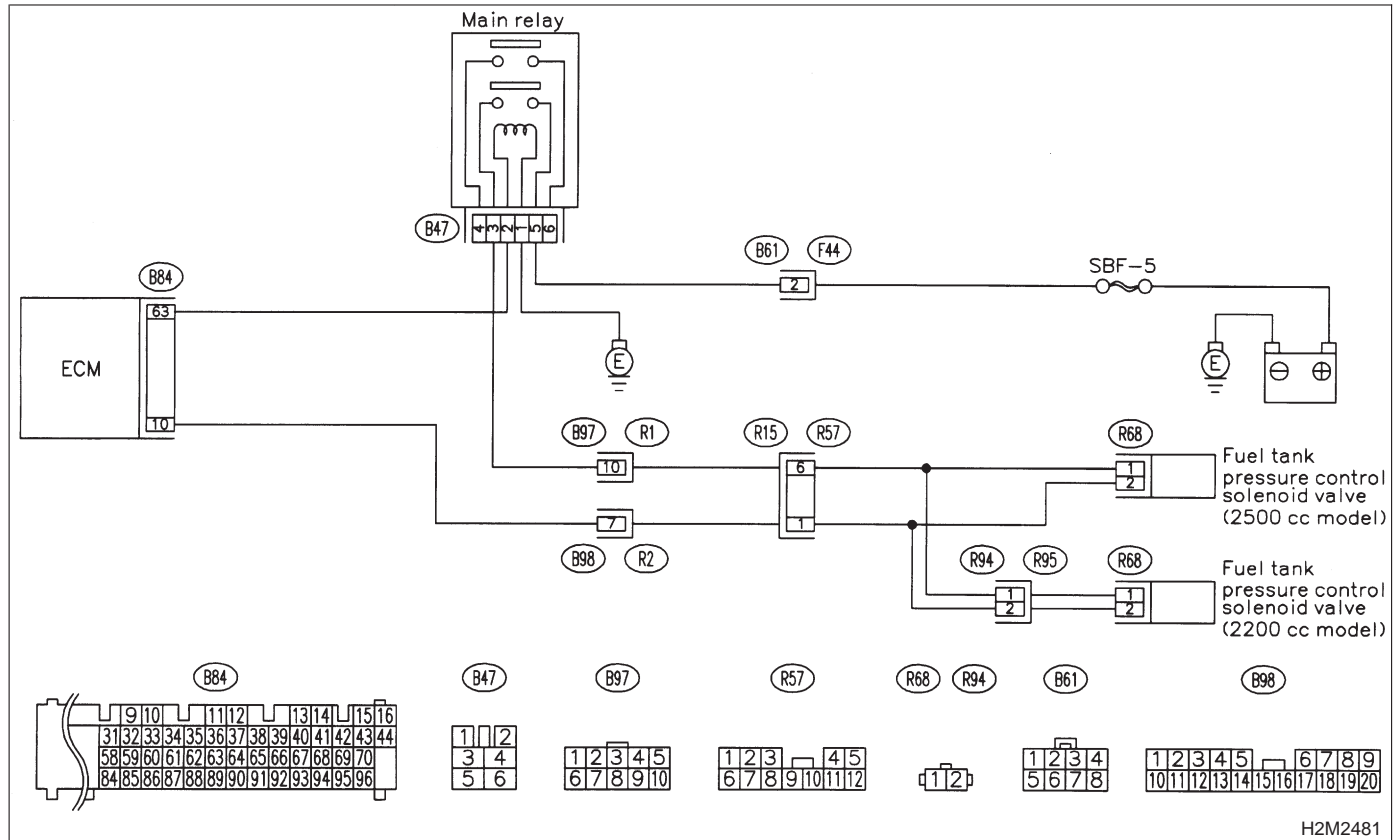
CN: DTC P1420 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT HIGH INPUT —

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

CAUTION:

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

● **WIRING DIAGRAM:**

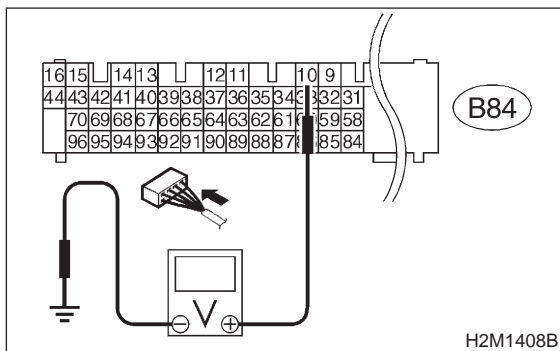


H2M2481

10CN1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 10 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step 10CN3.
- NO** : Go to step 10CN2.

10CN2 : CHECK POOR CONTACT.

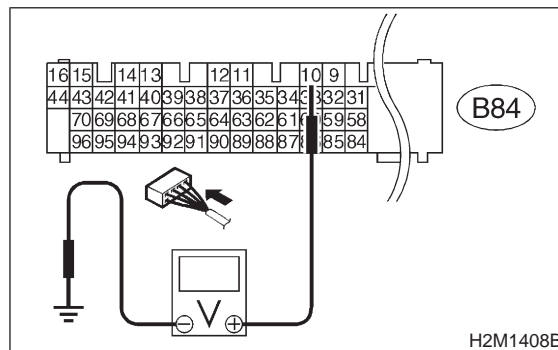
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10CN3 : 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
(B84) No. 10 (+) — Chassis ground (-):



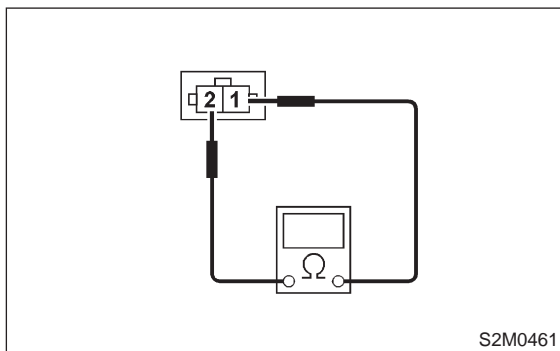
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Repair battery short circuit in harness between ECM and fuel tank pressure control solenoid valve connector. After repair, replace ECM.
- NO** : Go to step 10CN4.

10CN4 : 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 and ECM.
- NO** : Go to step **10CN5**.

10CN5 : 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.

MEMO:

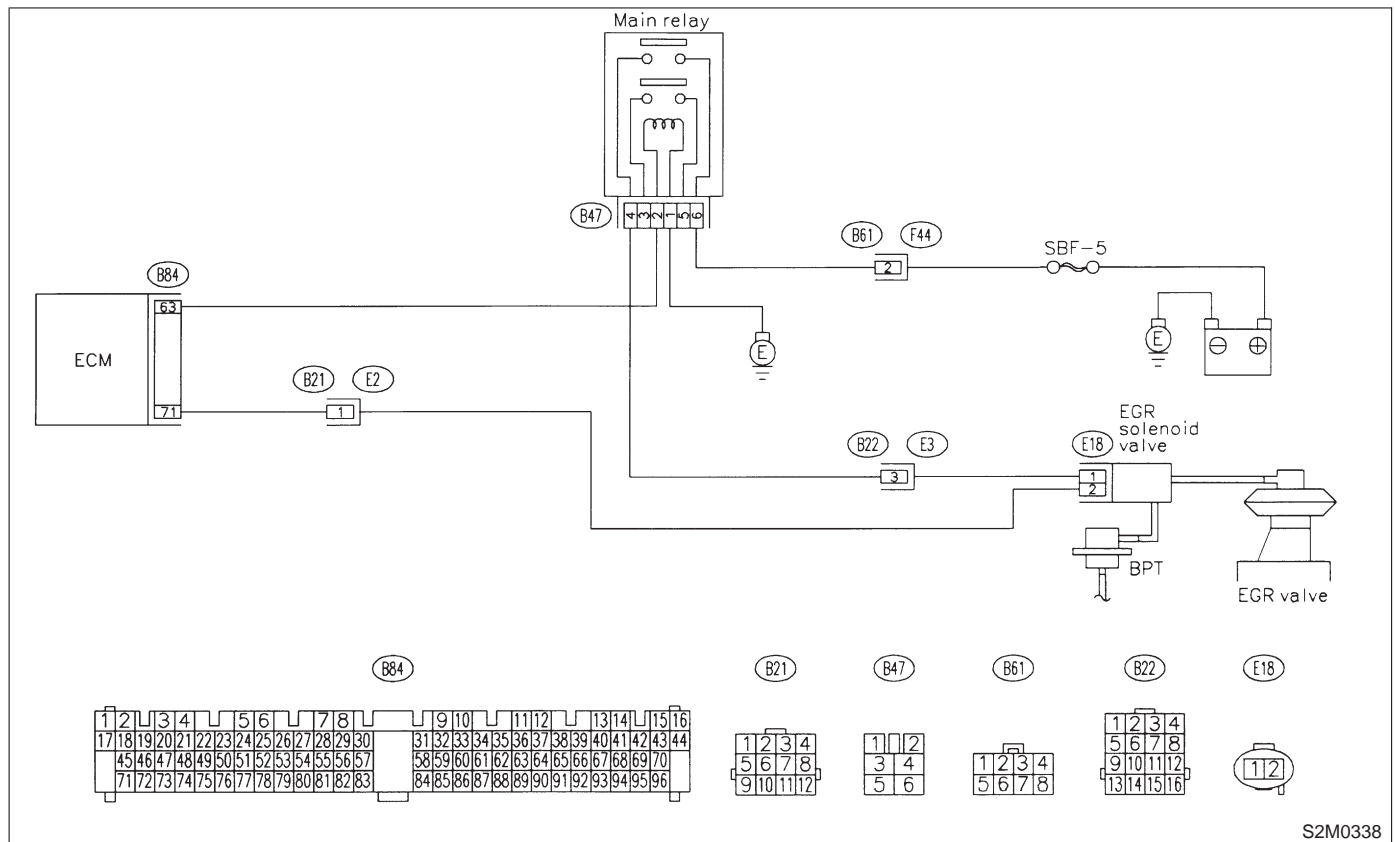
CO: DTC P1421 — EXHAUST GAS RECIRCULATION CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Poor driving performance on low engine speed

CAUTION:

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

● **WIRING DIAGRAM:**

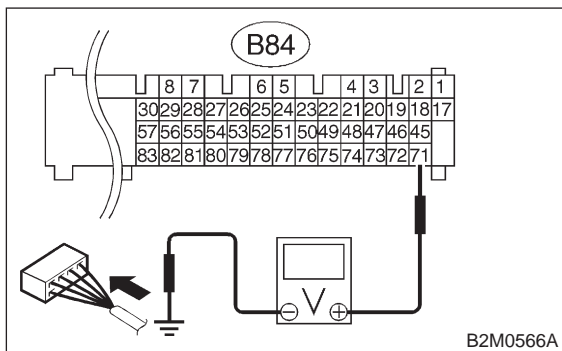


S2M0338

10CO1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 71 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
YES : Go to step 10CO3.
NO : Go to step 10CO2.

10CO2 : CHECK POOR CONTACT.

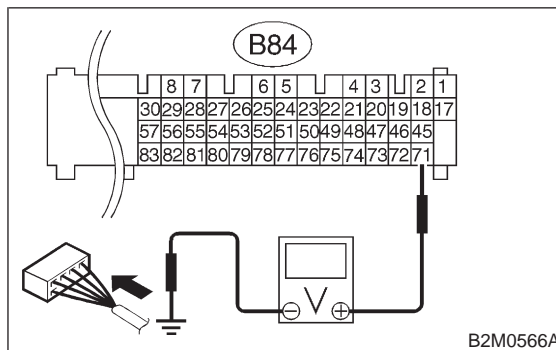
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : Is there poor contact in ECM connector?
YES : Repair poor contact in ECM connector.
NO : Replace ECM.

10CO3 : CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from EGR solenoid valve.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 71 (+) — Chassis ground (-):

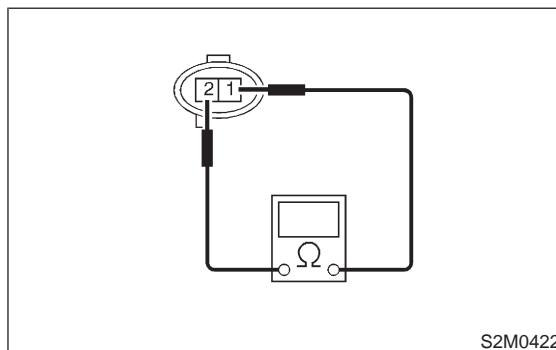


- CHECK** : Is the voltage more than 10 V?
YES : Repair battery short circuit in harness between ECM and EGR solenoid valve connector. After repair, replace ECM.
NO : Go to step 10CO4.

10CO4 : CHECK EGR SOLENOID VALVE.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between EGR solenoid valve terminals.

Terminals
No. 1 — No. 2:



- CHECK** : Is the resistance less than 1 Ω?
YES : Replace EGR solenoid valve and ECM.
NO : Go to step 10CO5.

10C05 : 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.

MEMO:

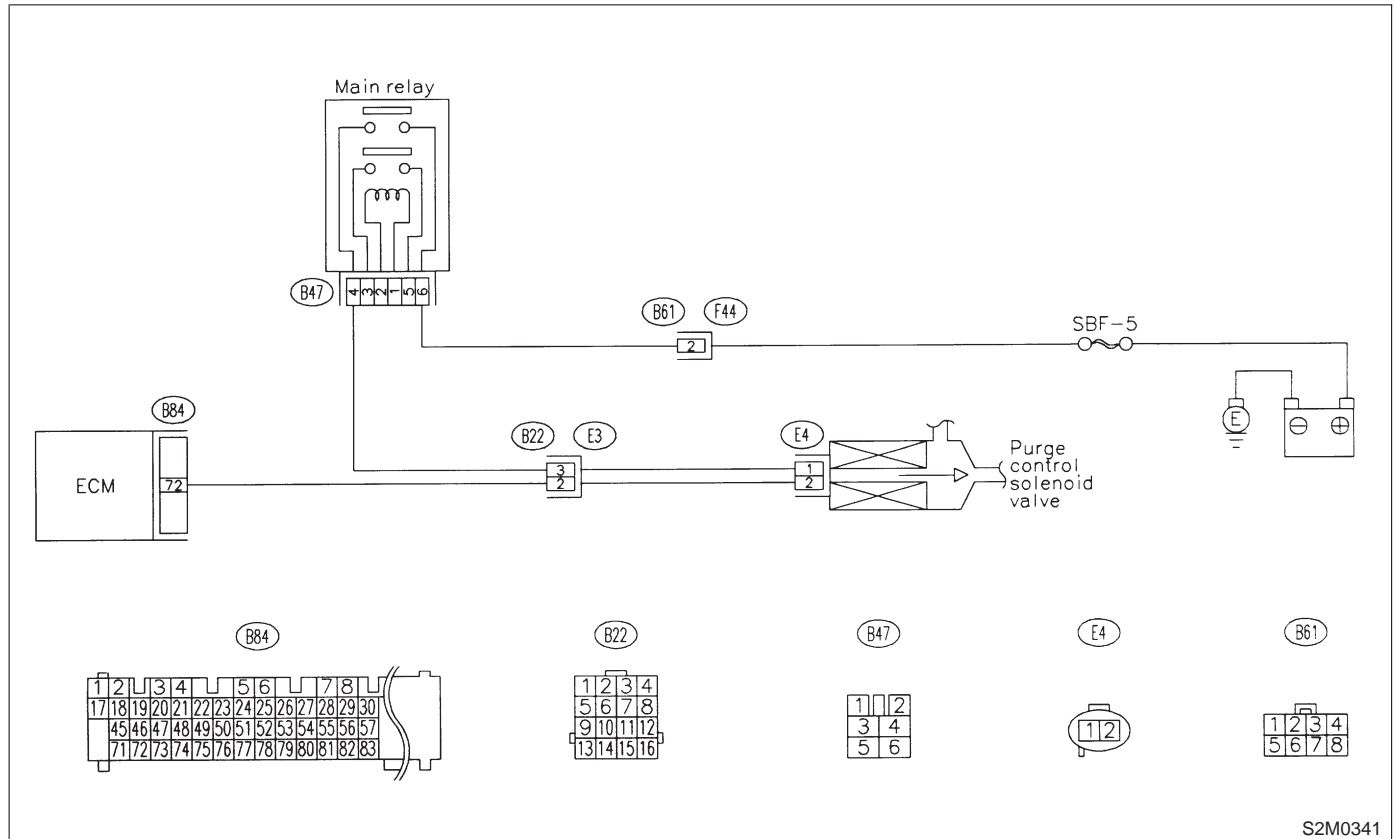
CP: DTC P1422 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
 - Erroneous idling

CAUTION:

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

● **WIRING DIAGRAM:**

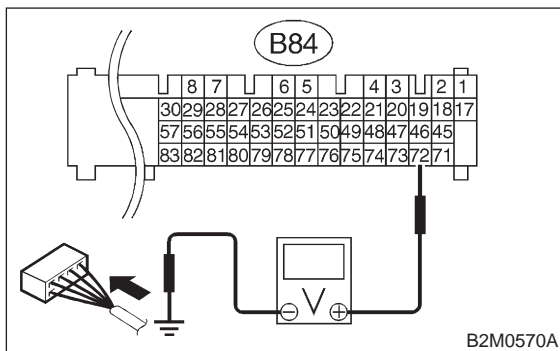


S2M0341

10CP1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 72 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step 10CP3.
- NO** : Go to step 10CP2.

10CP2 : CHECK POOR CONTACT.

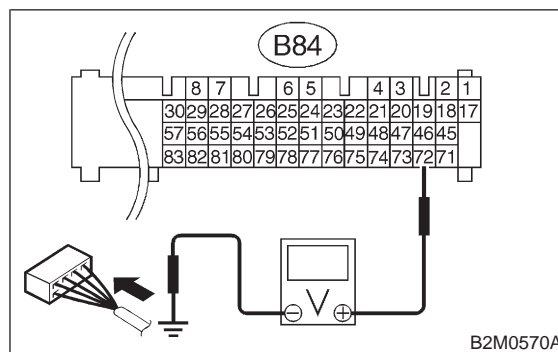
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10CP3 : 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
(B84) No. 72 (+) — Chassis ground (-):



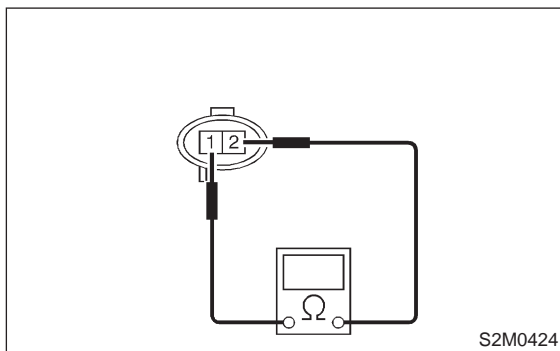
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Repair battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace ECM.
- NO** : Go to step 10CP4.

10CP4 : 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 and ECM.
- NO** : Go to step **10CP5**.

10CP5 : 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.

MEMO:

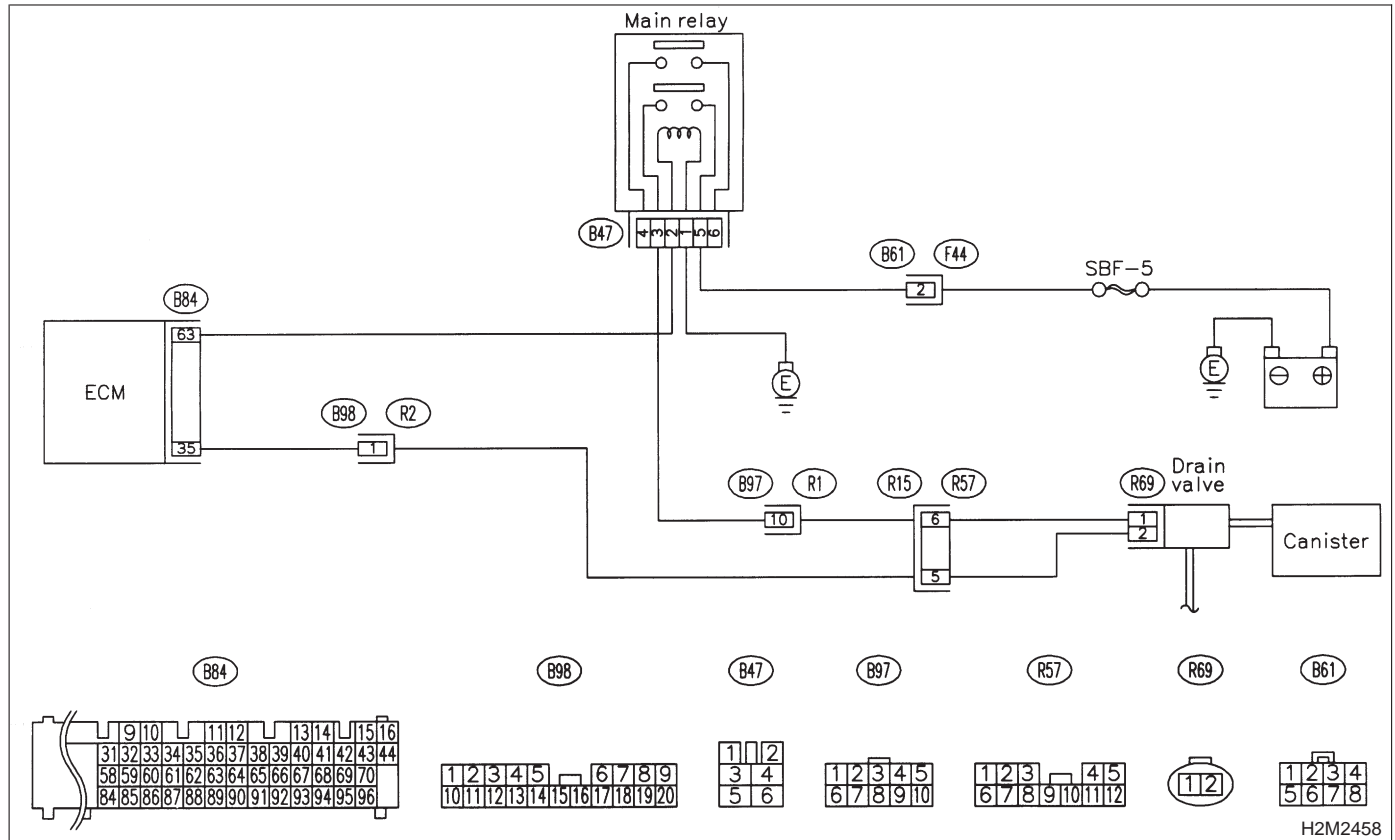
CQ: DTC P1423 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL HIGH INPUT [2200 cc MODEL] —

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

CAUTION:

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

● **WIRING DIAGRAM:**

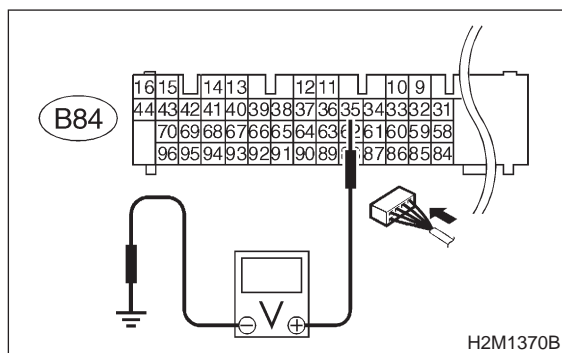


H2M2458

10CQ1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 35 (+) — Chassis ground (-):



- CHECK** : Is the voltage more than 10 V?
YES : Go to step 10CQ3.
NO : Go to step 10CQ2.

10CQ2 : CHECK POOR CONTACT.

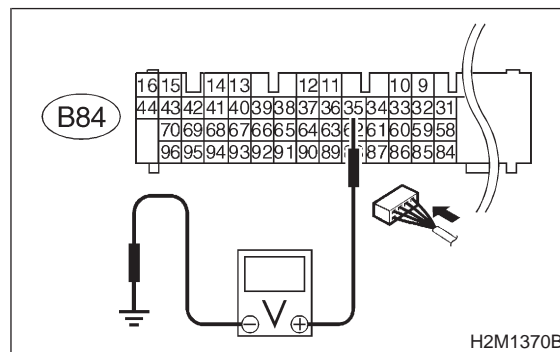
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

- CHECK** : Is there poor contact in ECM connector?
YES : Repair poor contact in ECM connector.
NO : Replace ECM.

10CQ3 : 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
(B84) No. 35 (+) — Chassis ground (-):

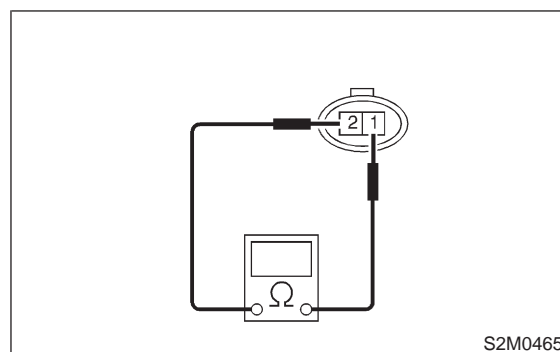


- CHECK** : Is the voltage more than 10 V?
YES : Repair battery short circuit in harness between ECM and drain valve connector. After repair, replace ECM.
NO : Go to step 10CQ4.

10CQ4 : 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 and ECM.
NO : Go to step 10CQ5.

10CQ5 : 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.

MEMO:

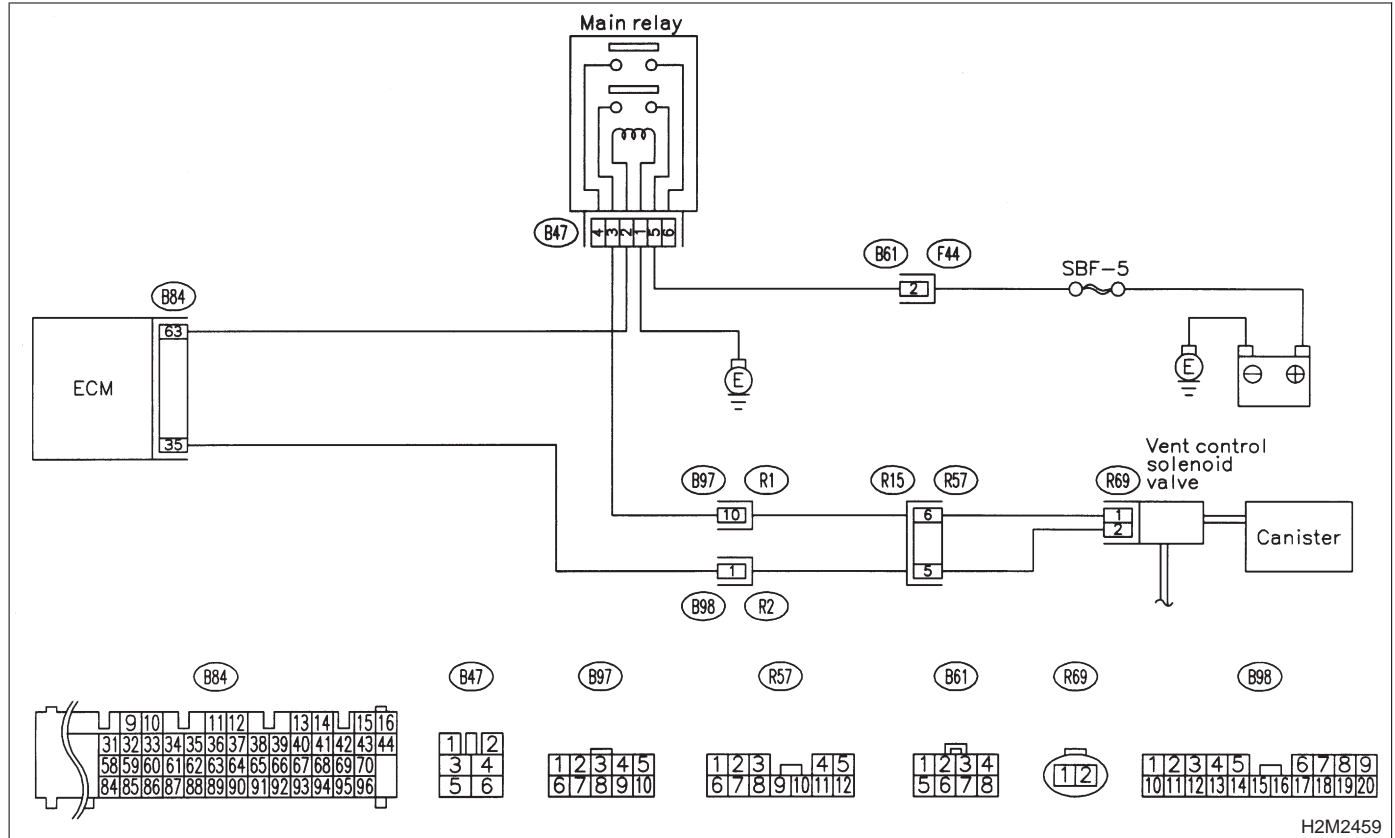
CR: DTC P1423 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL HIGH INPUT [2500 cc MODEL] —

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

CAUTION:

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

● **WIRING DIAGRAM:**



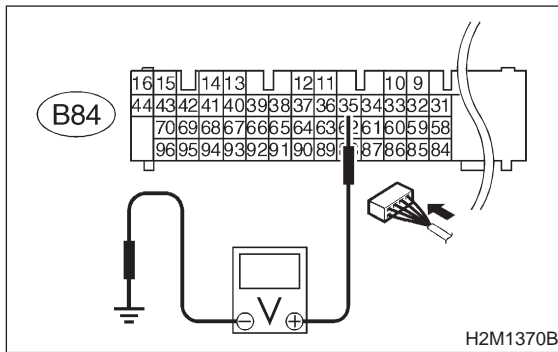
H2M2459

10CR1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal

(B84) No. 35 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 10 V?*
- YES** : Go to step **10CR3**.
- NO** : Go to step **10CR2**.

10CR2 : CHECK POOR CONTACT.

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

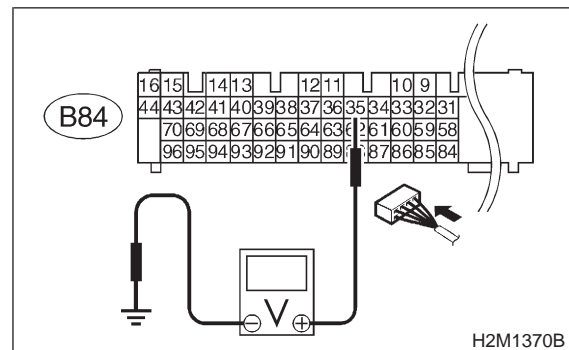
- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

10CR3 : CHECK HARNESS BETWEEN VENT CONTROL SOLENOID VALVE AND ECM CONNECTOR.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from vent control solenoid valve.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between ECM and chassis ground.

Connector & terminal

(B84) No. 35 (+) — Chassis ground (-):



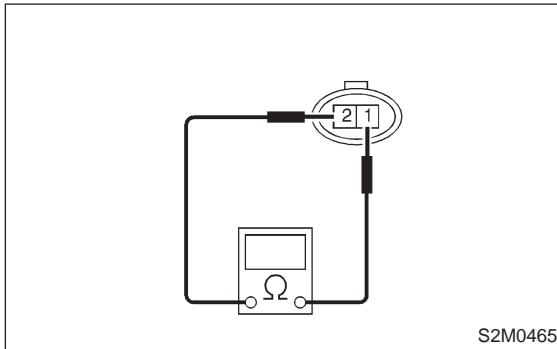
- CHECK** : *Is the voltage more than 10 V?*
- YES** : Repair battery short circuit in harness between ECM and vent control solenoid valve connector. After repair, replace ECM.
- NO** : Go to step **10CR4**.

10CR4 : CHECK VENT CONTROL SOLENOID VALVE.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between vent control solenoid valve terminals.

Terminals

No. 1 — No. 2:



- CHECK** : *Is the resistance less than 1 Ω ?*
- YES** : Replace vent control solenoid valve and ECM.
- NO** : Go to step **10CR5**.

10CR5 : 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.

MEMO:

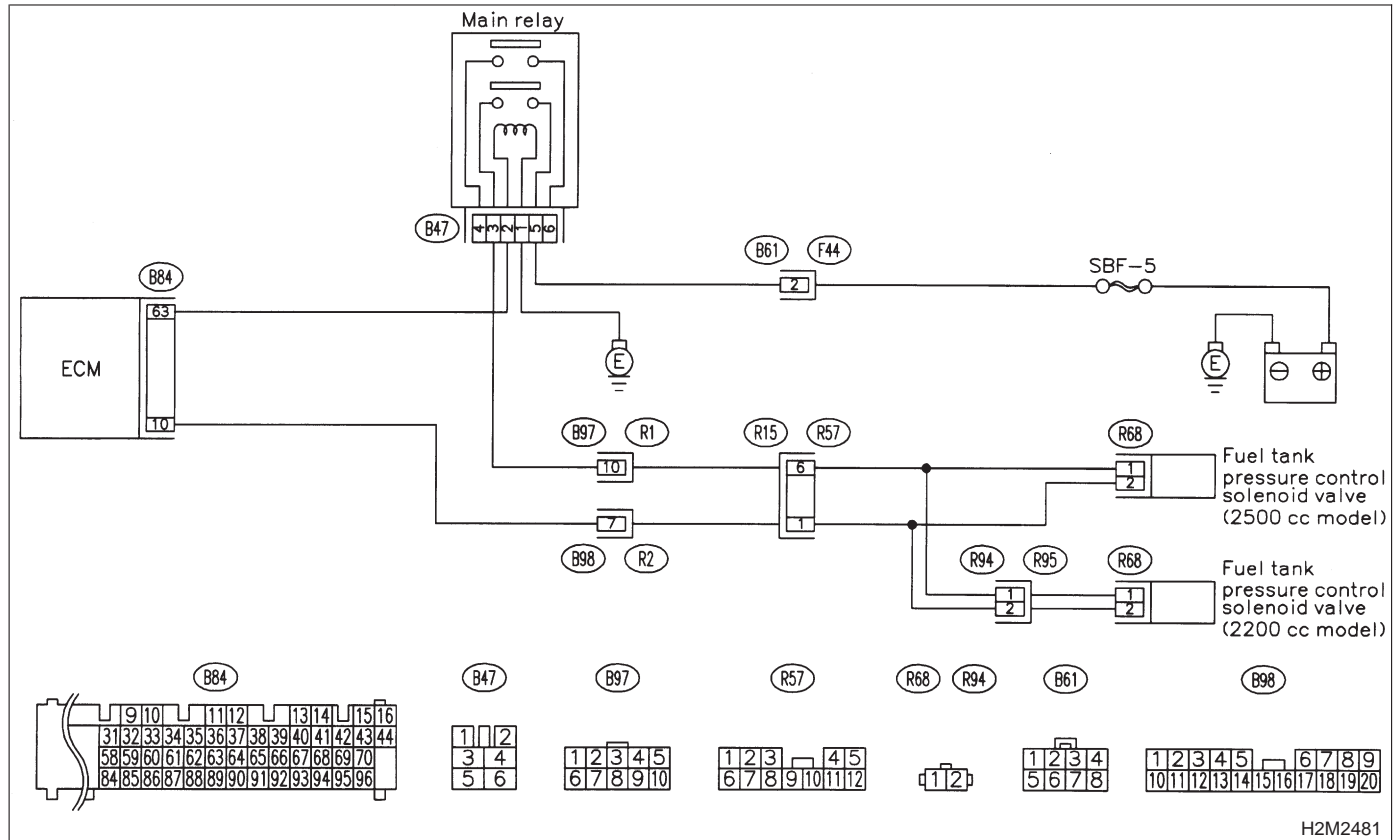
CS: DTC P1440 — FUEL TANK PRESSURE CONTROL SYSTEM FUNCTION PROBLEM (LOW INPUT) —

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

CAUTION:

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

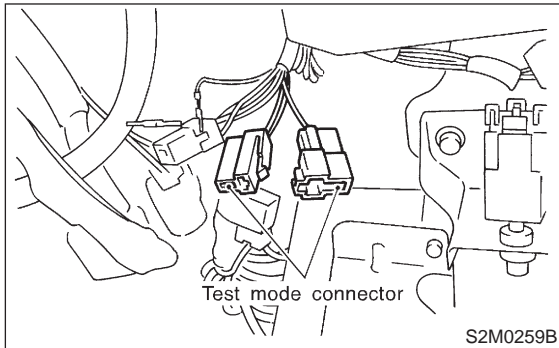
● **WIRING DIAGRAM:**



H2M2481

10CS1 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

- 1) Turn ignition switch to OFF.
- 2) Connect test mode connector.



- 3) Turn ignition switch to ON.

NOTE:

Fuel tank 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 fuel tank pressure control solenoid valve produce operating sound?**
- YES** : Go to step **10CS2**.
- NO** : Replace fuel tank pressure control solenoid valve.

10CS2 : CHECK FUEL FILLER CAP.

- 1) Turn ignition switch to OFF.
- 2) Open the fuel flap.

- CHECK** : **Is the fuel filler cap tightened securely?**
- YES** : Tighten fuel filler cap securely.
- NO** : Go to step **10CS3**.

10CS3 : CHECK FUEL FILLER PIPE SEAL.

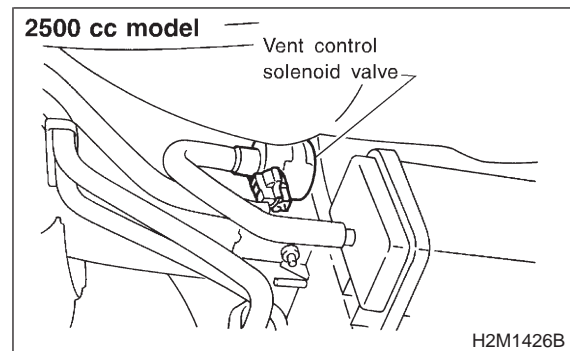
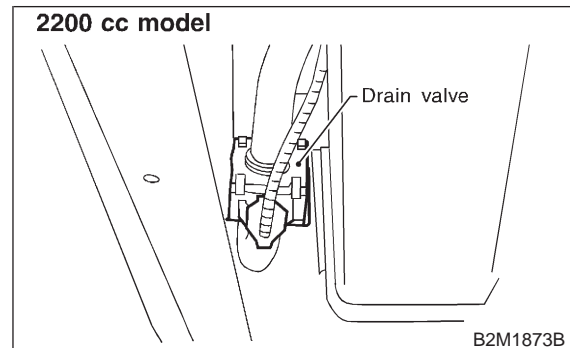
- CHECK** : **Is there any damage to the seal between fuel filler cap and fuel filler pipe?**
- YES** : Repair or replace fuel filler cap and fuel filler pipe.
- NO** : Go to step **10CS4**.

10CS4 : CHECK DRAIN VALVE OR VENT CONTROL SOLENOID VALVE.

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].>

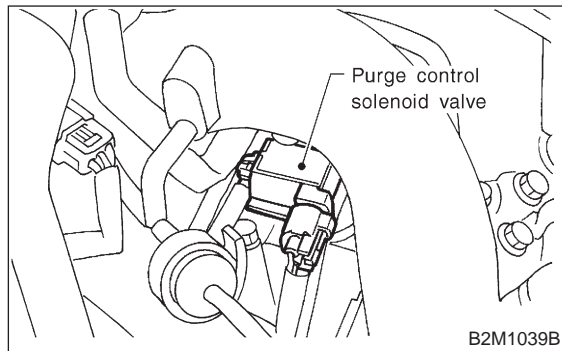


- CHECK** : **Does drain valve or vent control solenoid valve produce operating sound?**
- YES** : Go to step **10CS5**.
- NO** : Replace drain valve or vent control solenoid valve.

10CS5 : 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 **10CS6**.

NO : Replace purge control solenoid valve.

10CS6 : CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK : *Does fuel leak in fuel line?*

YES : Repair or replace fuel line.

NO : Go to step **10CS7**.

10CS7 : CHECK CANISTER.

CHECK : *Is there any damage at canister?*

YES : Repair or replace canister.

NO : Go to step **10CS8**.

10CS8 : CHECK FUEL TANK.

CHECK : *Is there any damage at fuel tank?*

YES : Repair or replace fuel tank.

NO : Go to step **10CS9**.

10CS9 : CHECK OTHER MECHANICAL TROUBLE.

CHECK : *Are there holes, cracks 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:

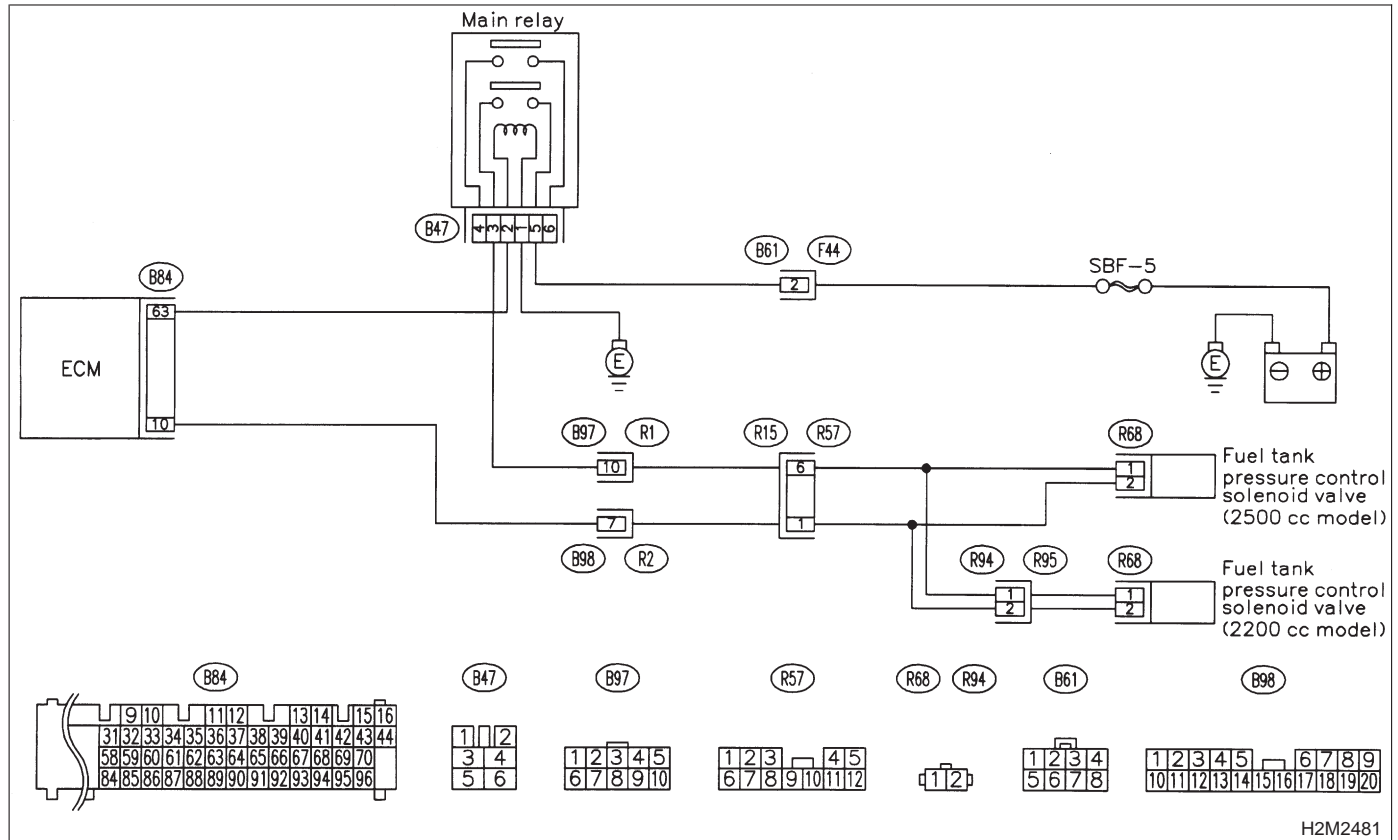
CT: DTC P1441 — FUEL TANK PRESSURE CONTROL SYSTEM FUNCTION PROBLEM (HIGH INPUT) —

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

CAUTION:

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

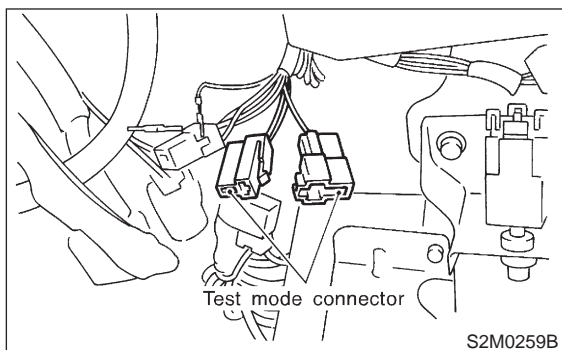
● **WIRING DIAGRAM:**



H2M2481

10CT1 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

- 1) Turn ignition switch to OFF.
- 2) Connect test mode connector.



- 3) Turn ignition switch to ON.

NOTE:

Fuel tank 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 fuel tank pressure control solenoid valve produce operating sound?**
- YES** : Go to step **10CT2**.
- NO** : Replace fuel tank pressure control solenoid valve.

10CT2 : CHECK FUEL FILLER CAP AND FUEL FILLER PIPE.

- 1) Turn ignition switch to OFF.
- 2) Open the fuel flap.

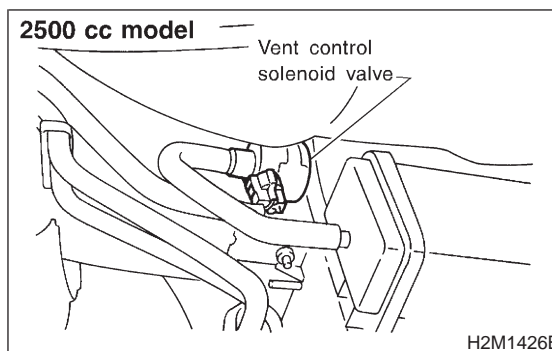
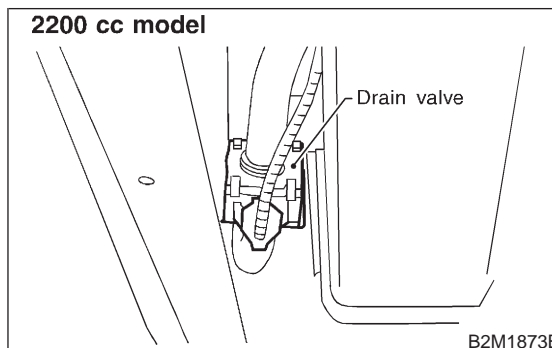
- CHECK** : **Is there any damage at fuel filler cap and fuel filler pipe?**
- YES** : Repair or replace fuel filler cap and fuel filler pipe.
- NO** : Go to step **10CT3**.

10CT3 : CHECK DRAIN VALVE OR VENT CONTROL SOLENOID VALVE.

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].>

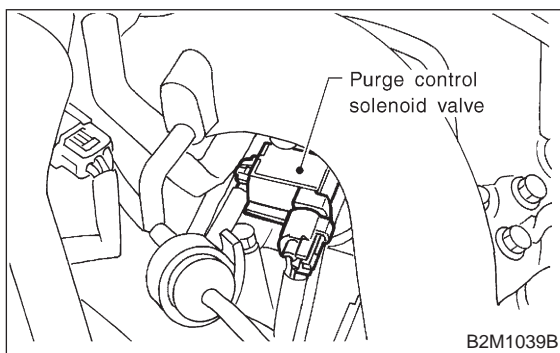


- CHECK** : **Does drain valve or vent control solenoid valve produce operating sound?**
- YES** : Go to step **10CT4**.
- NO** : Replace drain valve or vent control solenoid valve.

10CT4 : 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 **10CT5**.

NO : Replace purge control solenoid valve.

10CT5 : CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK : *Is there any damage at canister?*

YES : Repair or replace canister.

NO : Go to step **10CT6**.

10CT6 : CHECK FUEL TANK.

CHECK : *Is there any damage at fuel tank?*

YES : Repair or replace fuel tank.

NO : Go to step **10CT7**.

10CT7 : CHECK OTHER MECHANICAL TROUBLE.

CHECK : *Is there clogging 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.

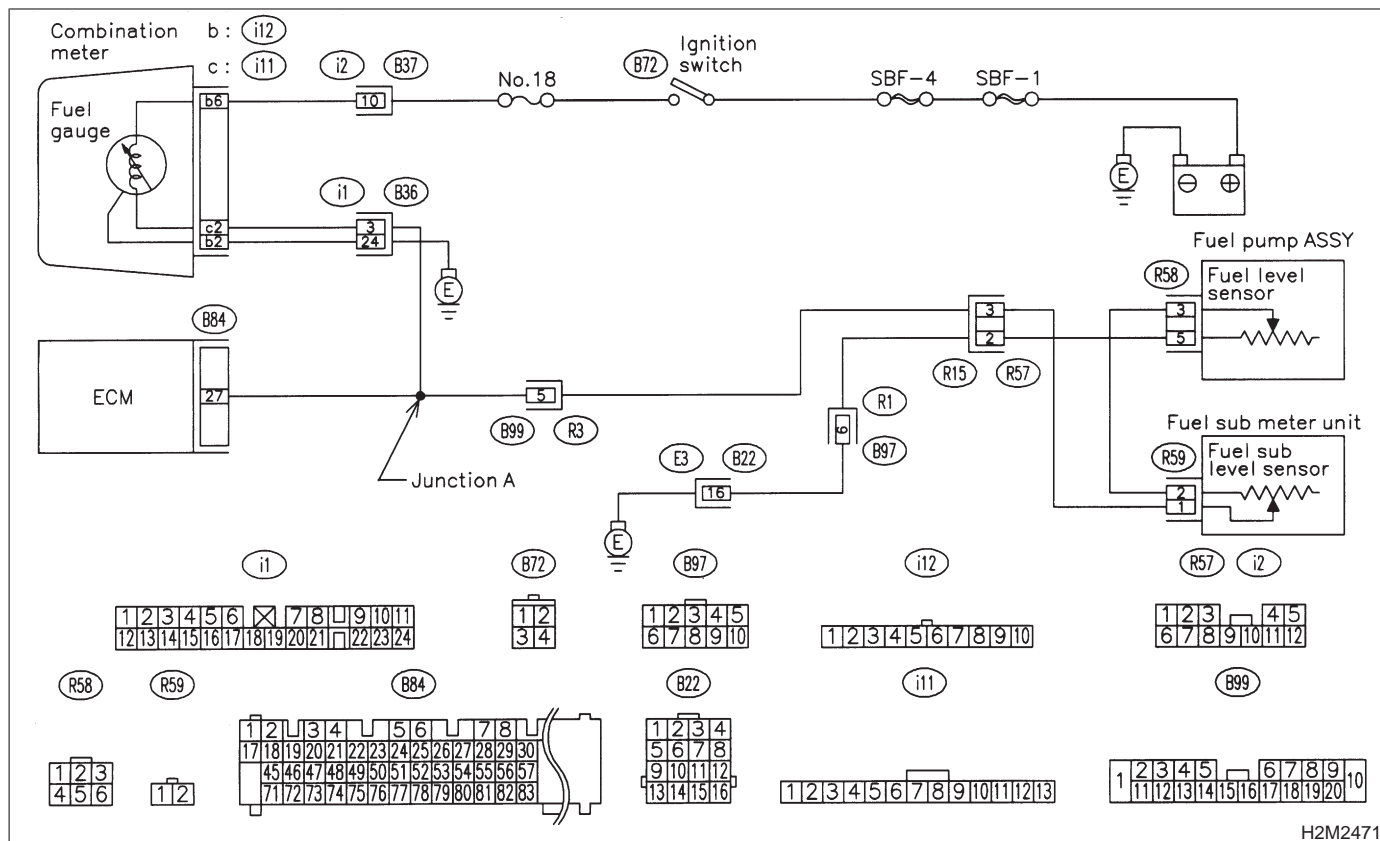
CU: DTC P1442 — FUEL LEVEL SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM 2 —

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

CAUTION:

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

● **WIRING DIAGRAM:**



H2M2471

10CU1 : 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 "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect this trouble.

NO : Replace fuel sending unit and fuel sub meter unit.

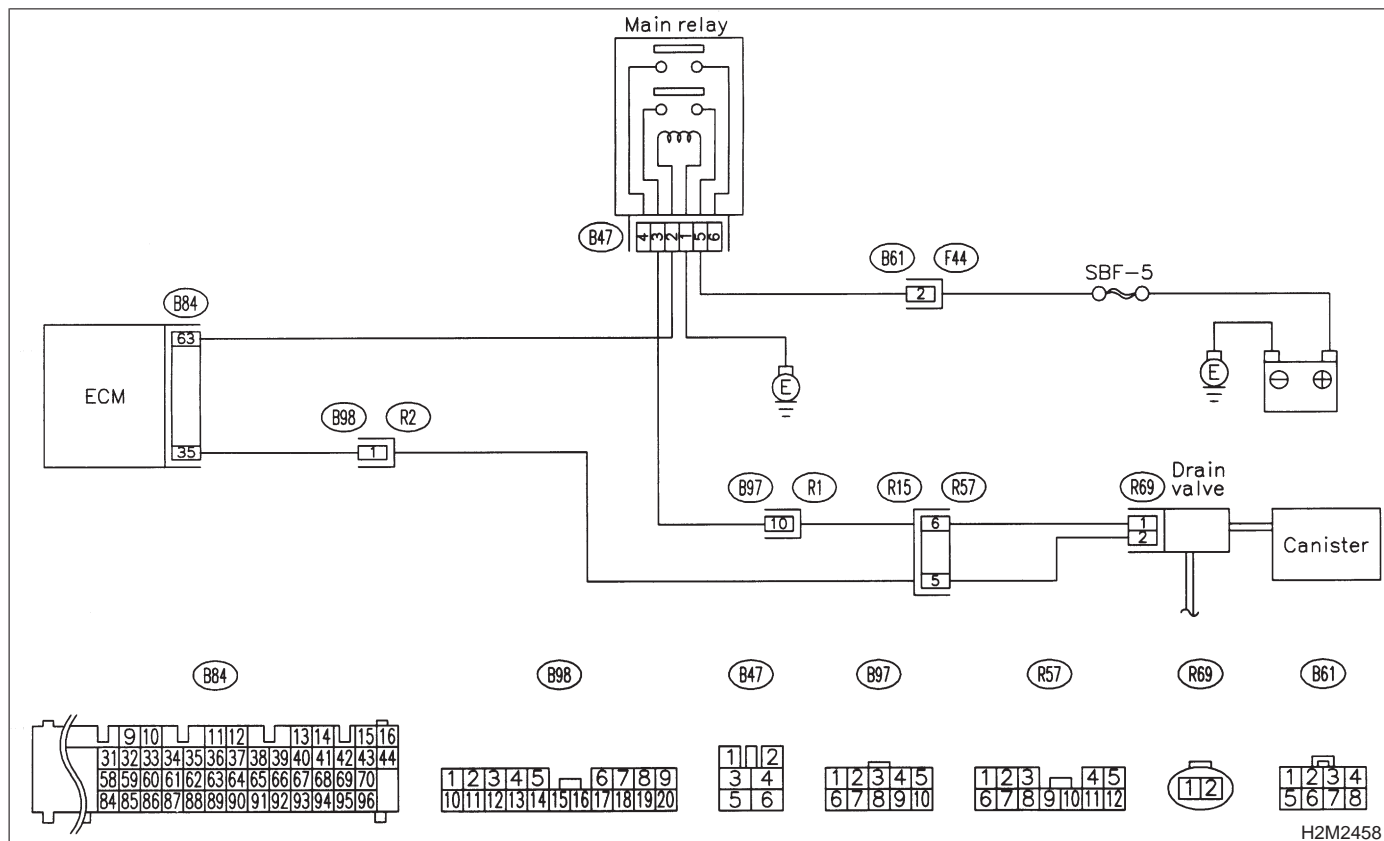
CV: DTC P1443 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL FUNCTION PROBLEM [2200 cc MODEL]—

- **DTC DETECTING CONDITION:**
 - Immediately after fault occurrence
- **TROUBLE SYMPTOM:**
 - Improper fuel supply

CAUTION:

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

● **WIRING DIAGRAM:**



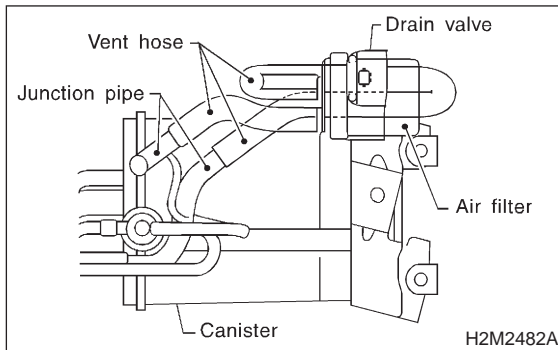
10CV1 : CHECK ANY OTHER DTC ON DISPLAY.

- CHECK** : *Is there any other DTC on display?*
- YES** : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code".
 <Ref. to 2-7 [T1000].>
- NO** : Go to step **10CV2**.

10CV2 : CHECK VENT LINE HOSES.

Check the following items.

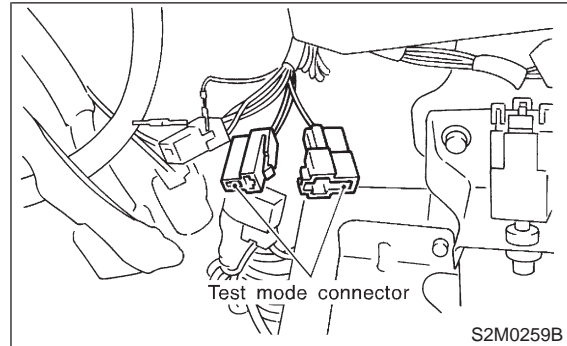
- Clogging of vent hoses between canister and drain valve
- Clogging of vent hose between drain valve and air filter
- Clogging of vent hose between air filter and junction pipe
- Clogging of junction pipe
- Clogging of air filter



- CHECK** : **Is there a fault in vent line?**
- YES** : Repair or replace the faulty part.
- NO** : Go to step **10CV3**.

10CV3 : 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.

CW: DTC P1507 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

● **TROUBLE SYMPTOM:**

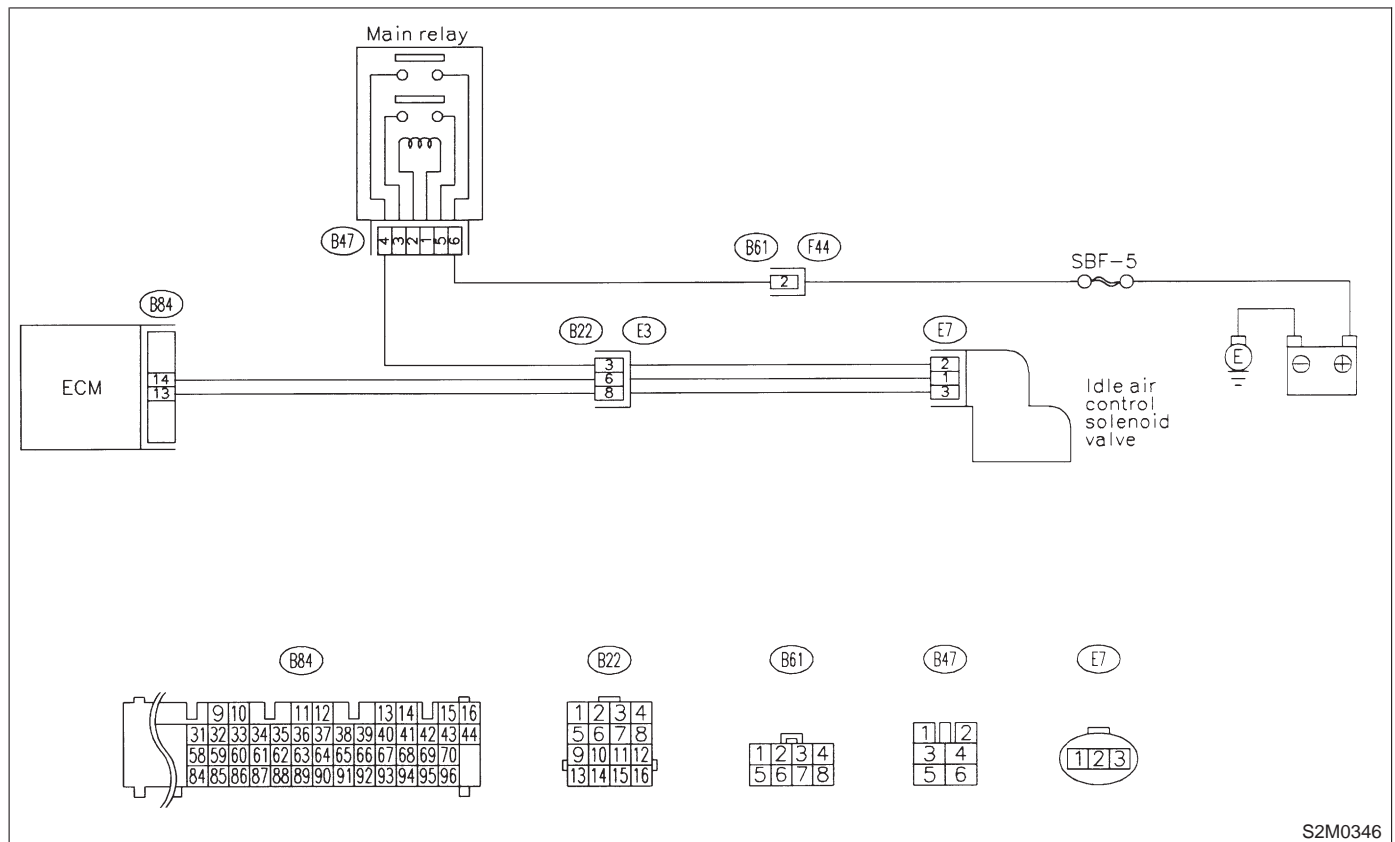
- Engine keeps running at higher revolution than specified idling revolution.

CAUTION:

After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0346

10CW1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0505?

YES : Inspect DTC P0505 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T1000].>

NOTE:

In this case, it is not necessary to inspect DTC P1507.

NO : Go to step **10CW2**.

10CW2 : 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
 - Loose connections and cracks of idle air control solenoid valve by-pass hoses
 - 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.

MEMO:

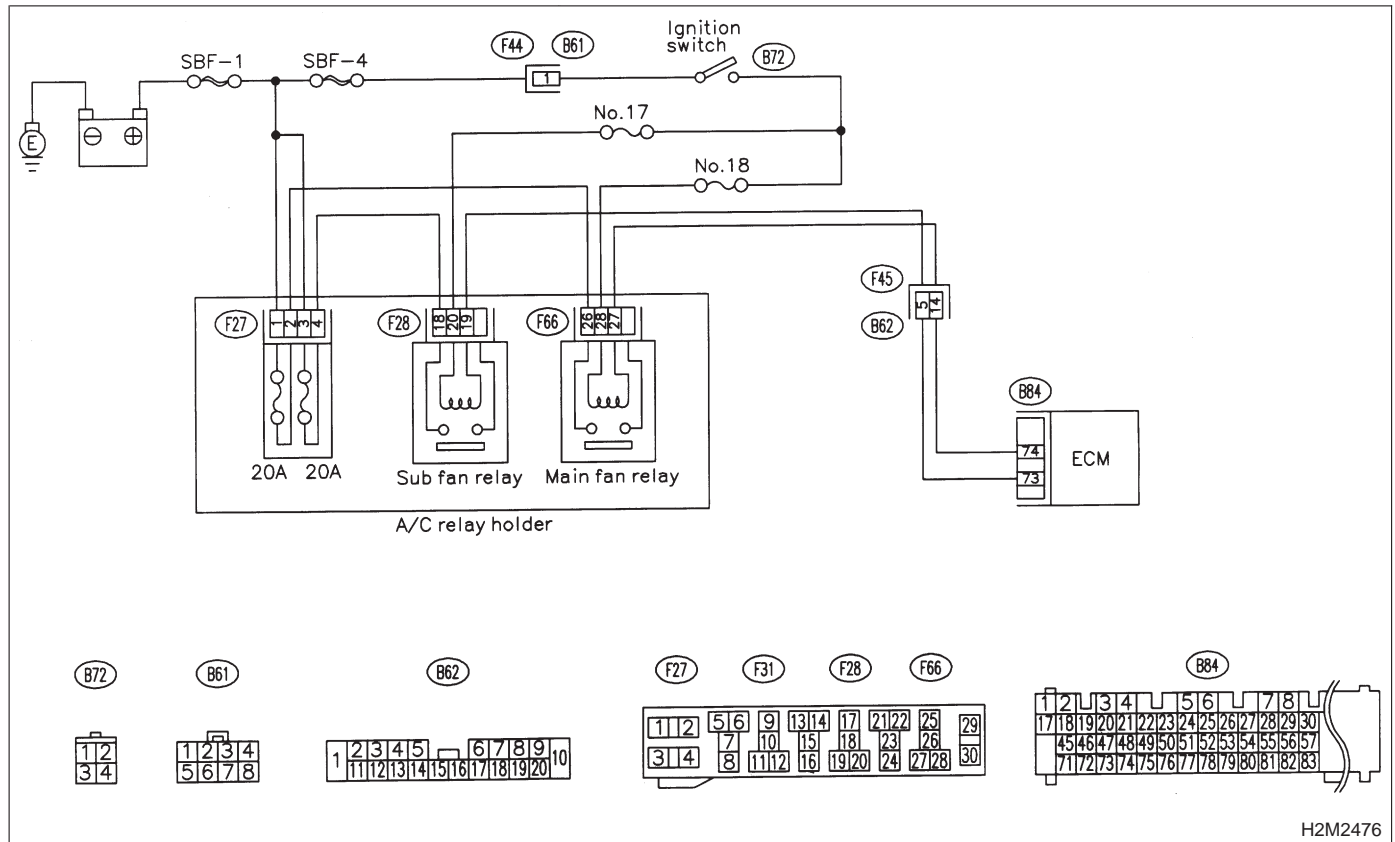
CX: DTC P1520 — COOLING FAN RELAY 1 CIRCUIT HIGH INPUT —

- **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 and INSPECTION MODE.
 <Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

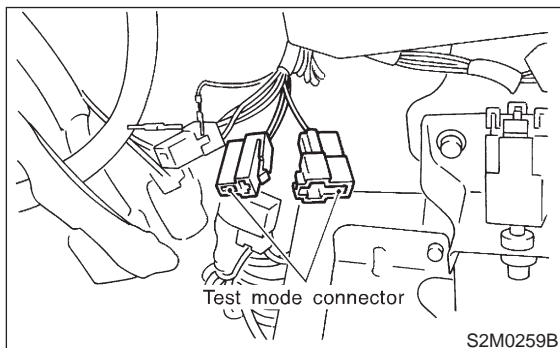
● **WIRING DIAGRAM:**



H2M2476

10CX1 : 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.

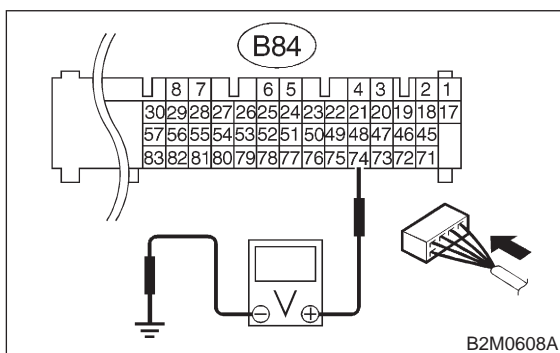
NOTE:

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].>

- 4) Measure voltage between ECM and chassis ground.

Connector & terminal

(B84) No. 74 (+) — 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.

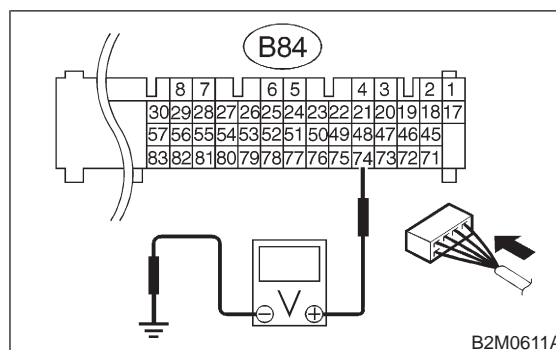
NO : Go to step **10CX2**.

10CX2 : CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

- 1) Turn ignition switch to OFF.
- 2) Remove main fan relay.
- 3) Disconnect test mode connector.
- 4) Turn ignition switch to ON.
- 5) Measure voltage between ECM and chassis ground.

Connector & terminal

(B84) No. 74 (+) — 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.

NO : Go to step **10CX3**.

10CX3 : 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.

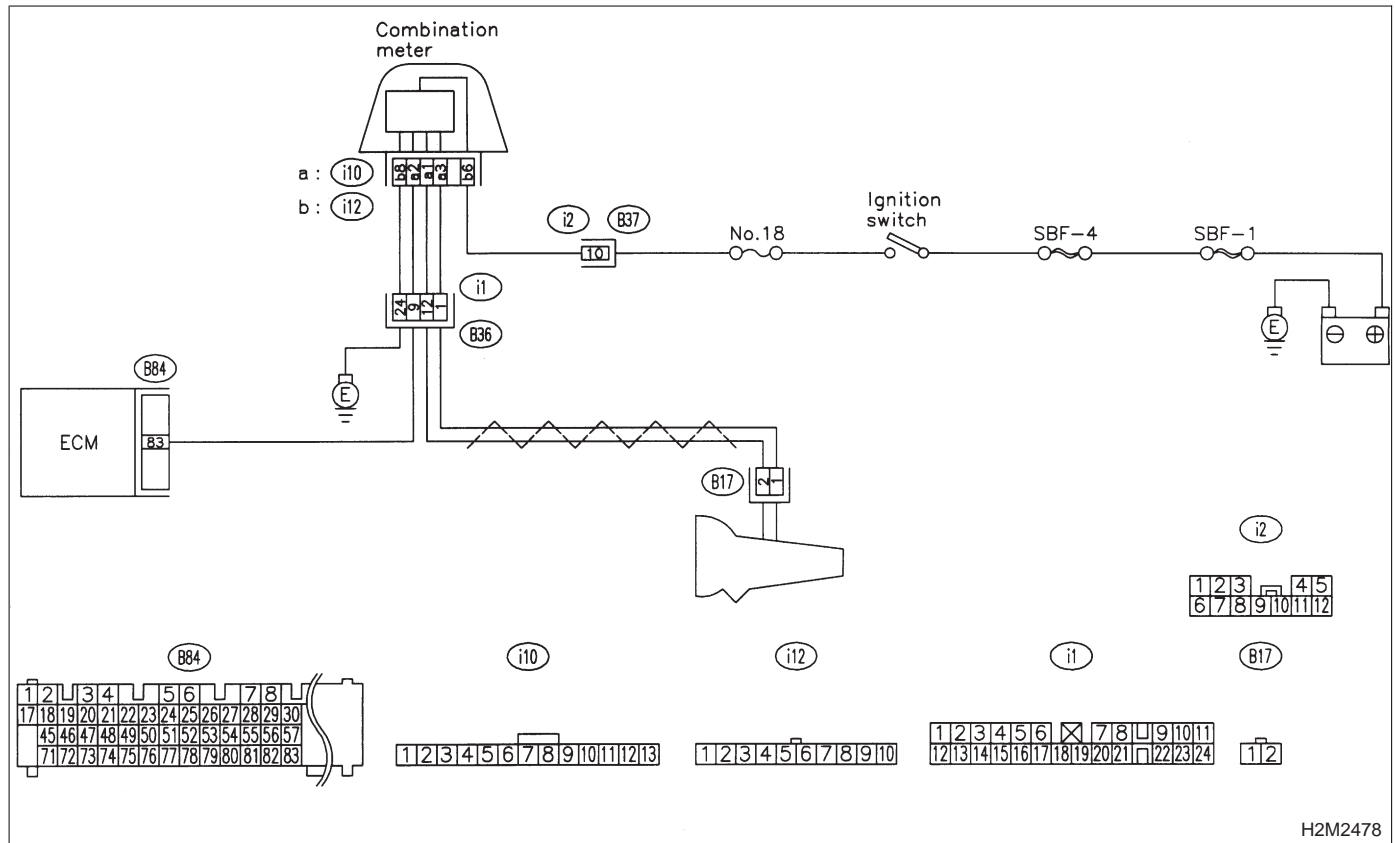
CY: DTC P1540 — VEHICLE SPEED SENSOR MALFUNCTION 2 —

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

CAUTION:

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

● **WIRING DIAGRAM:**



H2M2478

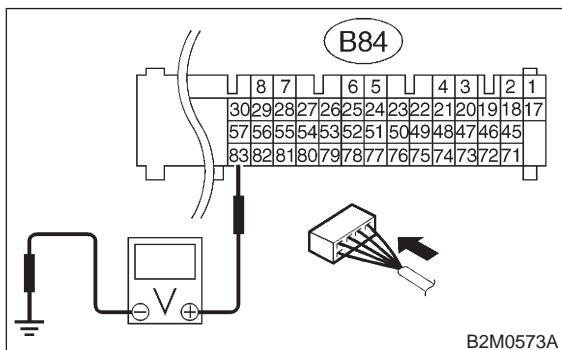
10CY1 : CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

- CHECK** : Does speedometer operate normally?
- YES** : Go to step 10CY2.
- NO** : Check speedometer and vehicle speed sensor 2. <Ref. to 6-2 [K2A0].>

10CY2 : 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
(B84) No. 83 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 2 V?*
- YES** : Repair harness and connector.

NOTE:

In this case, repair the following:

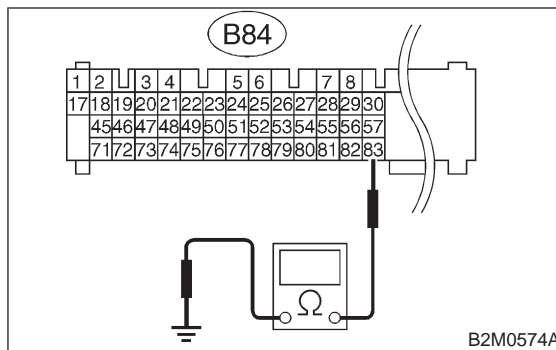
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector
- Poor contact in coupling connector (i2)

- NO** : Go to step **10CY3**.

10CY3 : 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
(B84) No. 83 — 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.

CZ: DTC P1700 — THROTTLE POSITION SENSOR CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

● **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

● **TROUBLE SYMPTOM:**

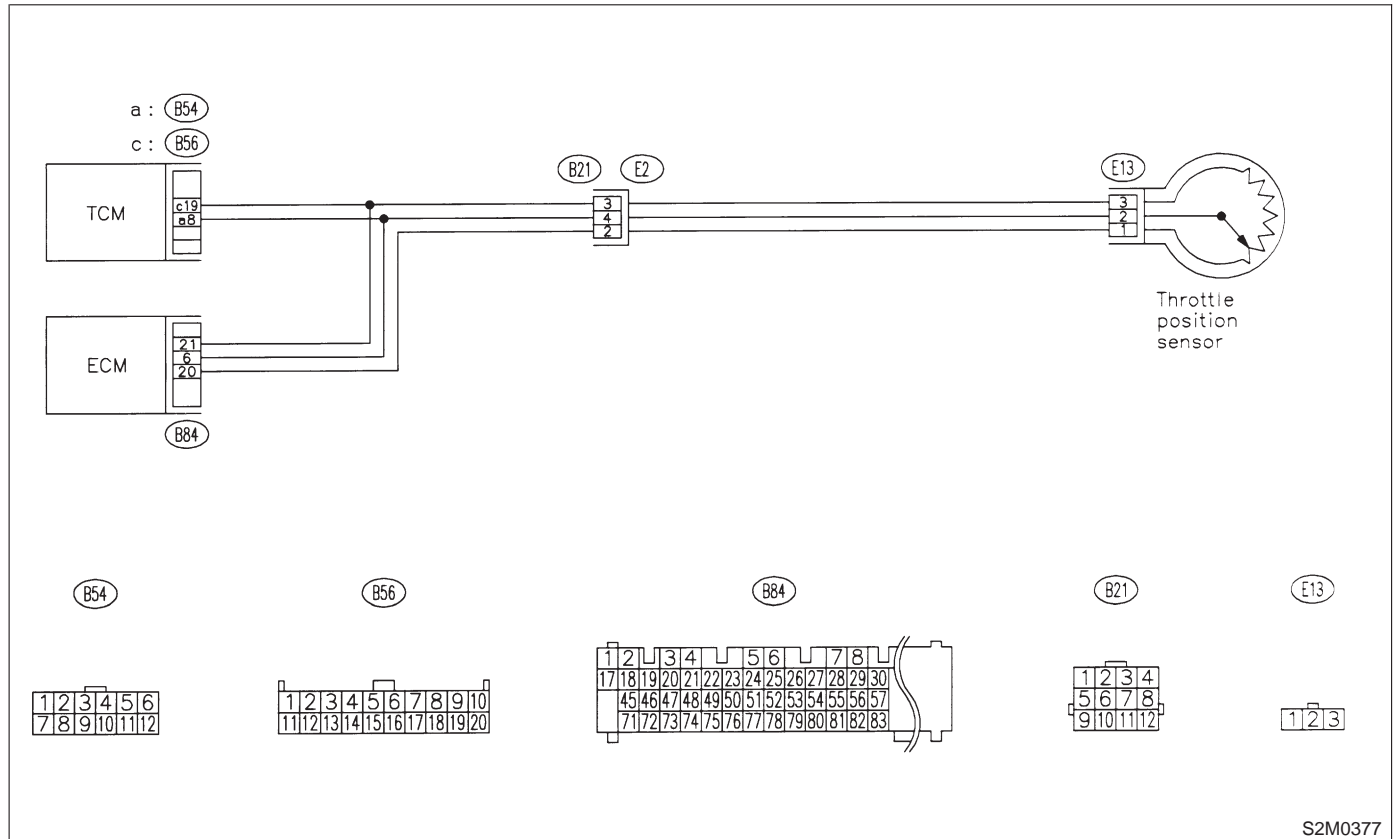
- Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

CAUTION:

After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



S2M0377

10CZ1 : 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 [T8M0].>
- NO** : It is not necessary to inspect DTC P1700.

MEMO:

DA: DTC P1701 — CRUISE CONTROL SET SIGNAL CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

● **DTC DETECTING CONDITION:**

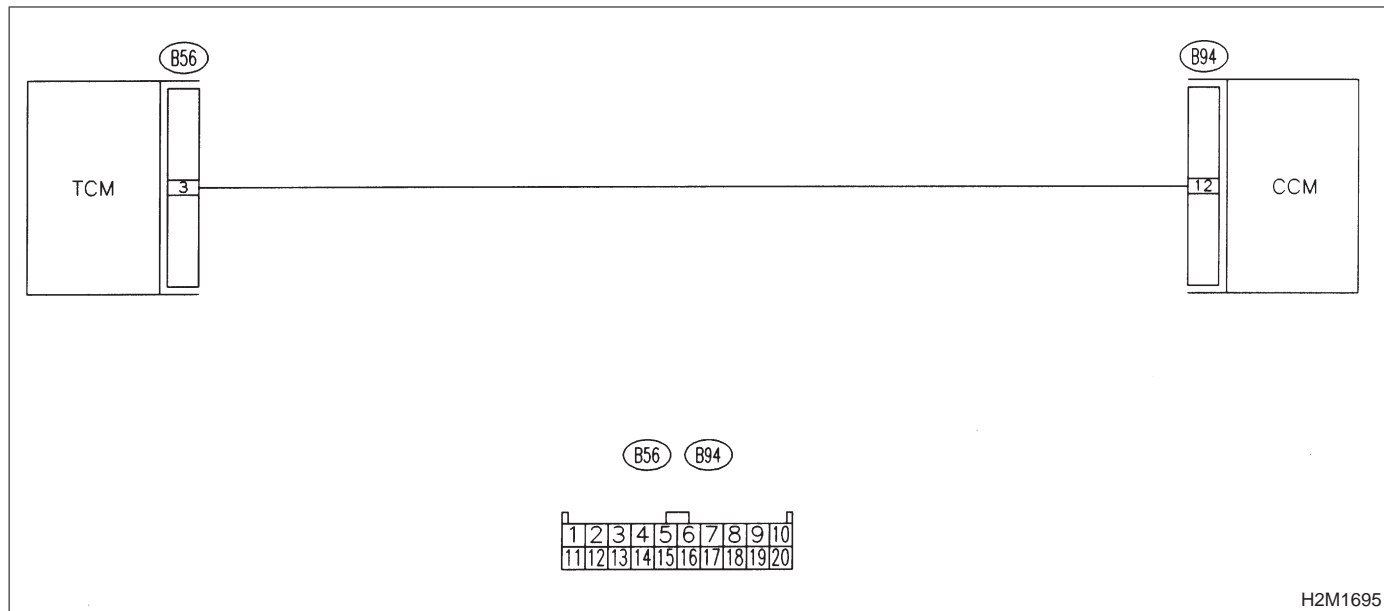
- Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**

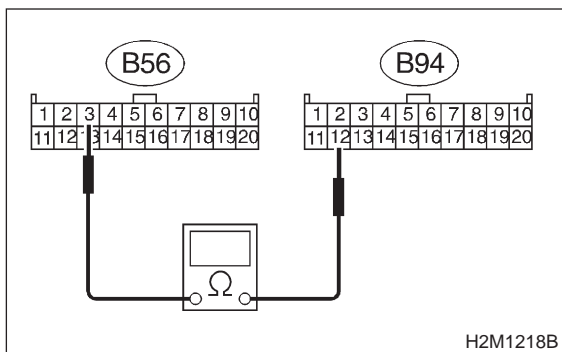


10DA1 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

- 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

(B56) No. 3 — (B94) No. 12:



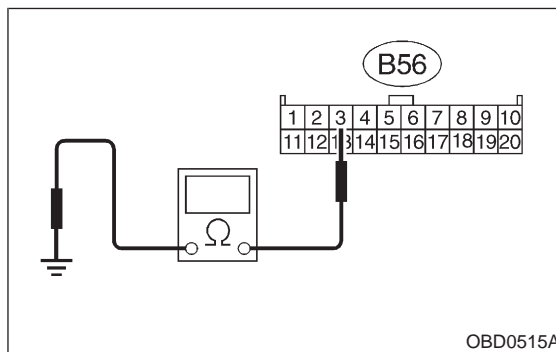
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10DA2.
- NO** : Repair open circuit in harness between TCM and CCM connector.

10DA2 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal

(B56) No. 3 — Chassis ground:



- CHECK** : Is the resistance less than 10 Ω?
- YES** : Repair ground short circuit in harness between TCM and CCM connector.
- NO** : Go to step 10DA3.

10DA3 : CHECK INPUT SIGNAL FOR TCM.

- 1) Connect connector to TCM and CCM.
- 2) Lift-up the vehicle or set the vehicle on free rollers.

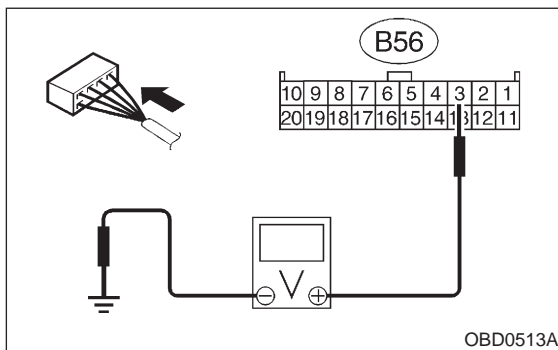
CAUTION:

On AWD models, raise all wheels off ground.

- 3) Start the engine.
- 4) Cruise control main switch to ON.
- 5) Move selector lever to "D" and slowly increase vehicle speed to 50 km/h (31 MPH).
- 6) Cruise control set switch to ON.
- 7) Measure voltage between TCM and chassis ground.

Connector & terminal

(B56) No. 3 (+) — Chassis ground (-):



- CHECK** : **Is the voltage less than 1 V?**
- YES** : Go to step **10DA4**.
- NO** : Check cruise control set circuit. <Ref. to 6-3 [D5K0].>

10DA4 : 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.

DB: DTC P1702 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT LOW INPUT —

● DTC DETECTING CONDITION:

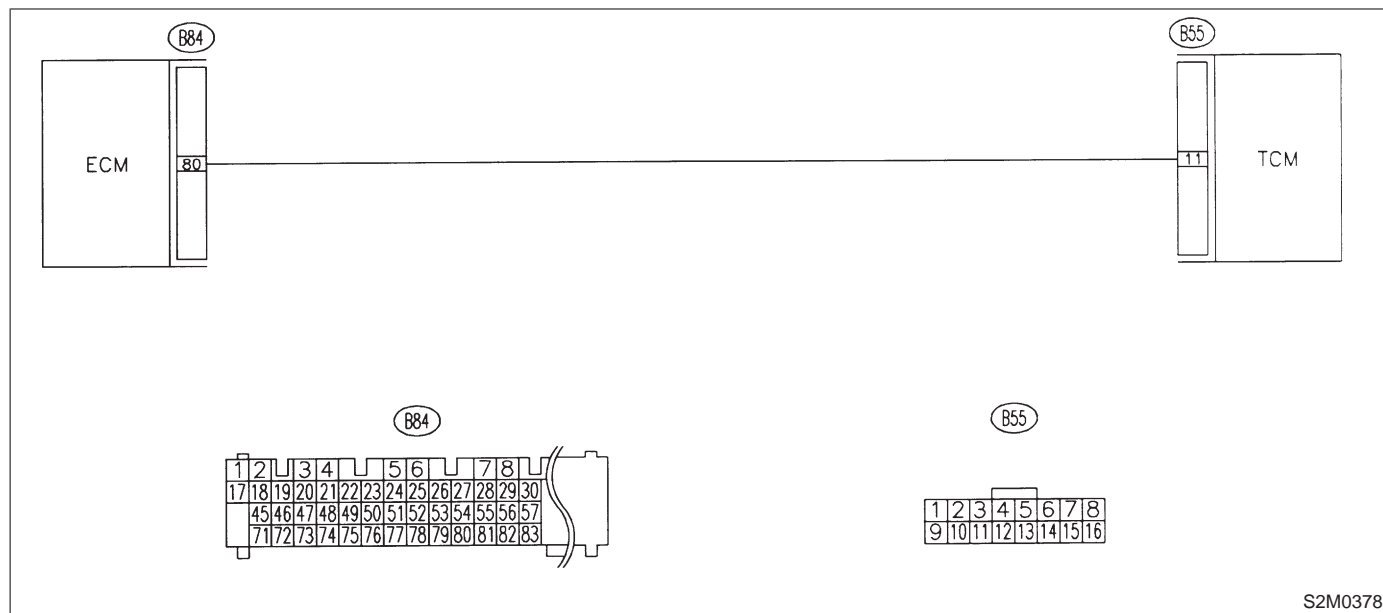
- Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0].> and <Ref. to 2-7 [T3E0].>

● WIRING DIAGRAM:



S2M0378

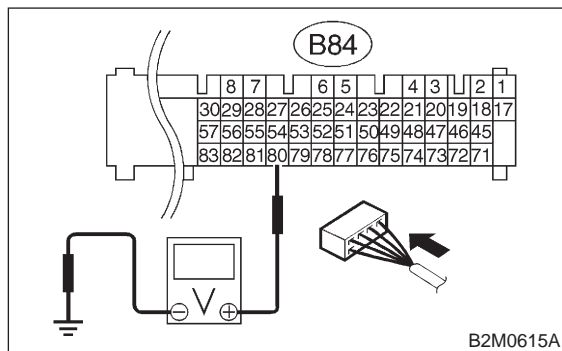
10DB1 : CHECK TRANSMISSION TYPE.

- CHECK** : *Is transmission type AT?*
- YES** : Go to step **10DB2**.
- NO** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DE0].>

10DB2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B84) No. 80 (+) — Chassis ground (-):



- CHECK** : **Is the voltage less than 1 V?**
- YES** : Go to step 10DB3.
- NO** : Even if MIL lights up, the circuit has returned to a normal condition at this time.

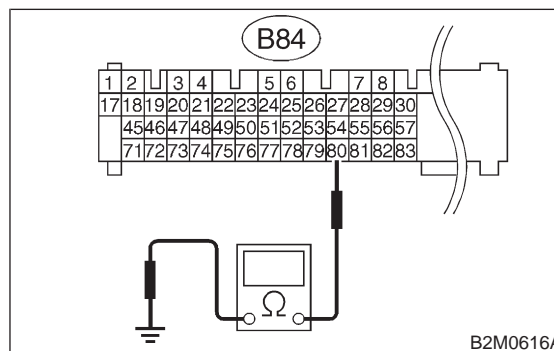
NOTE:

- In this case, repair the following:
- Poor contact in ECM connector
 - Poor contact in TCM connector

10DB3 : 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
(B84) No. 80 — Chassis ground:

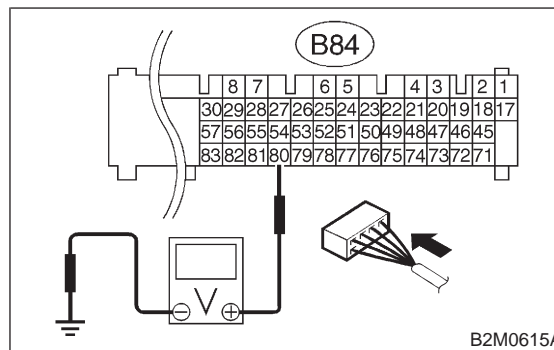


- CHECK** : **Is the resistance less than 10 Ω?**
- YES** : Repair ground short circuit in harness between ECM and TCM connector.
- NO** : Go to step 10DB4.

10DB4 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B84) No. 80 (+) — Chassis ground (-):



- CHECK** : **Is the voltage more than 5 V?**
- YES** : Replace TCM.
- NO** : Contact SOA service.

NOTE:

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

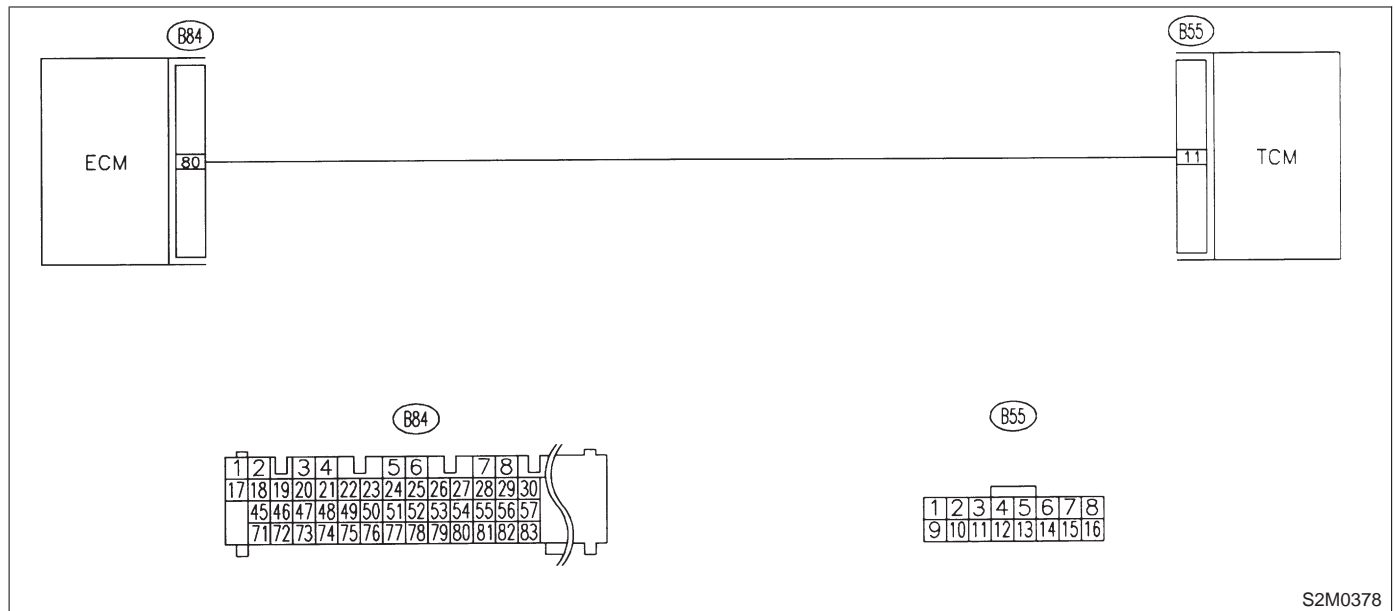
DC: DTC P1722 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT HIGH INPUT —

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

CAUTION:

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

● **WIRING DIAGRAM:**



S2M0378

10DC1 : CHECK TRANSMISSION TYPE.

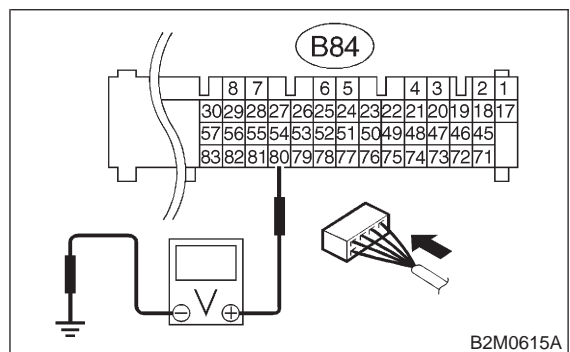
- CHECK** : *Is transmission type AT?*
- YES** : Go to step **10DC2**.
- NO** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DE0].>

10DC2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal

(B84) No. 80 (+) — Chassis ground (-):



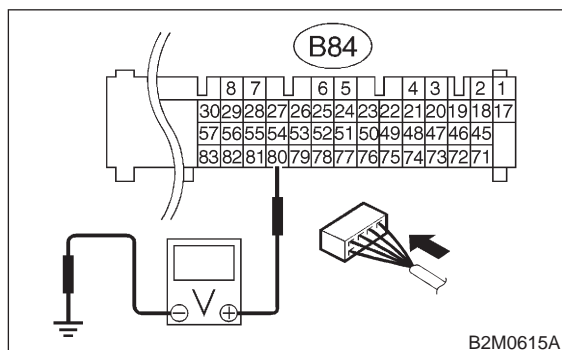
B2M0615A

- CHECK** : *Is the voltage more than 10 V?*
- YES** : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM.
- NO** : Go to step **10DC3**.

10DC3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — Chassis ground (-):

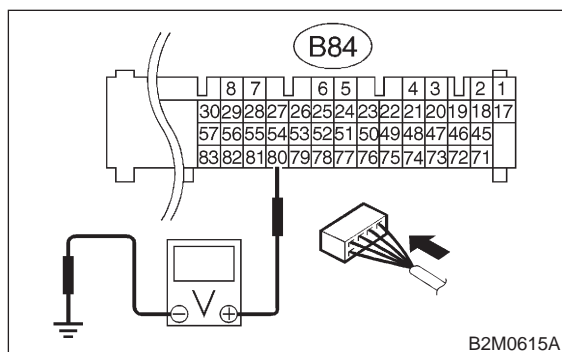


- CHECK** : Is the voltage more than 4 V?
- YES** : Go to step 10DC6.
- NO** : Go to step 10DC4.

10DC4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — Chassis ground (-):

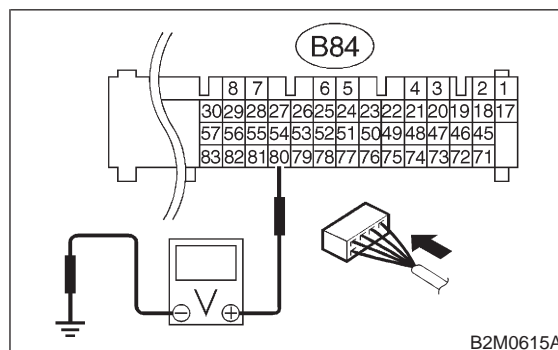


- CHECK** : Is the voltage less than 1 V?
- YES** : Repair poor contact in ECM connector.
- NO** : Go to step 10DC5.

10DC5 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — 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:

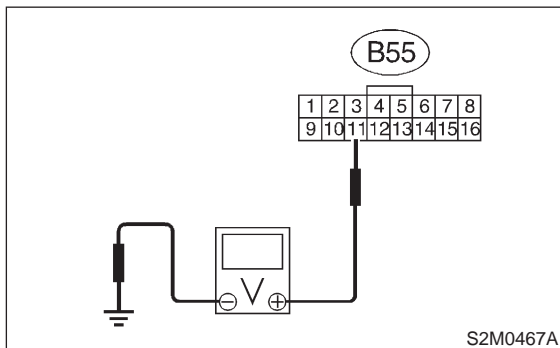
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

10DC6 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between TCM and chassis ground.

Connector & terminal

(B55) No. 11 (+) — Chassis ground (-):



- CHECK** : **Is the voltage more than 4 V?**
- YES** : Go to step **10DC7**.
- NO** : Repair open circuit in harness between ECM and TCM connector.

10DC7 : 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.

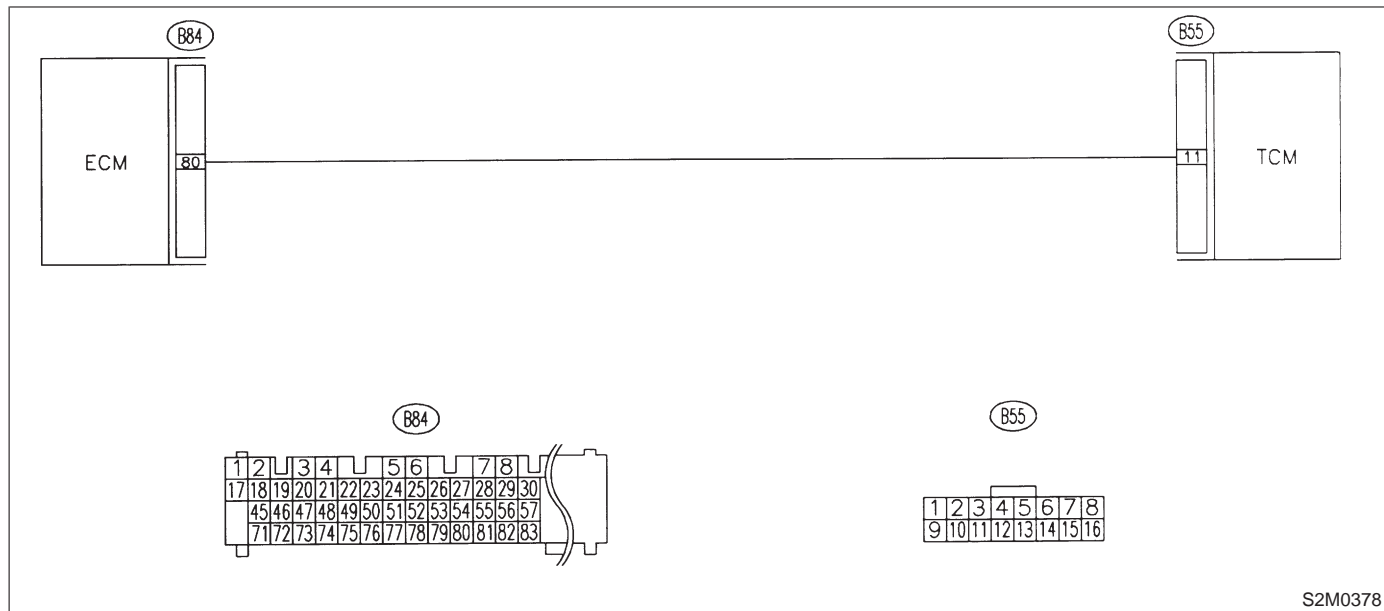
DD: DTC P1742 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT MALFUNCTION —

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

CAUTION:

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

● **WIRING DIAGRAM:**



10DD1 : CHECK TRANSMISSION TYPE.

- CHECK** : *Is transmission type AT?*
- YES** : Go to step 10DD2.
- NO** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DE0].>

10DD2 : 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 10DD3.
- NO** : Replace TCM.

10DD3 : CHECK ACCESSORY.

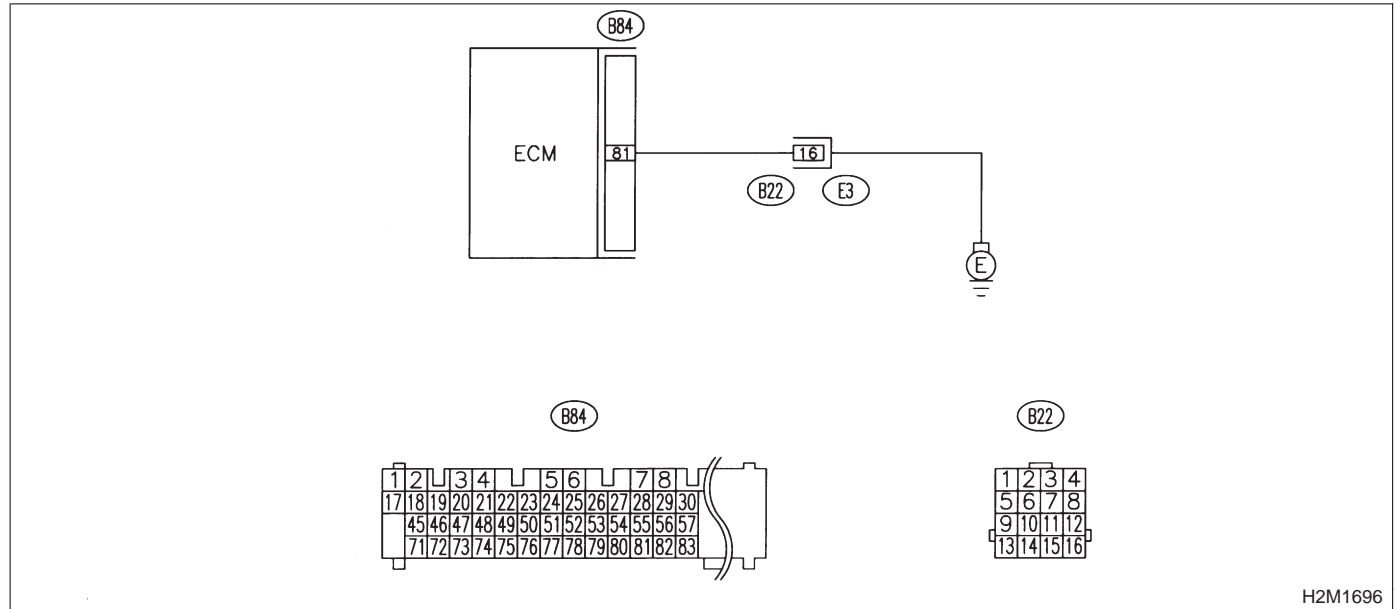
- CHECK** : *Are car phone and/or CB installed on vehicle?*
- YES** : Repair grounding line of car phone or CB system.
- NO** : Replace TCM.

DE: — AT/MT IDENTIFICATION CIRCUIT MALFUNCTION [MT VEHICLES] —

CAUTION:

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

● **WIRING DIAGRAM:**



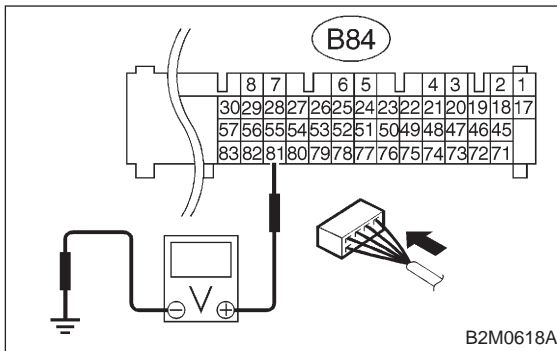
H2M1696

10DE1 : CHECK HARNESS BETWEEN ECM CONNECTOR AND CHASSIS GROUND.

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

Connector & terminal

(B84) No. 81 (+) — 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 **10DE2**.

10DE2 : 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.

MEMO: