

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 quan-

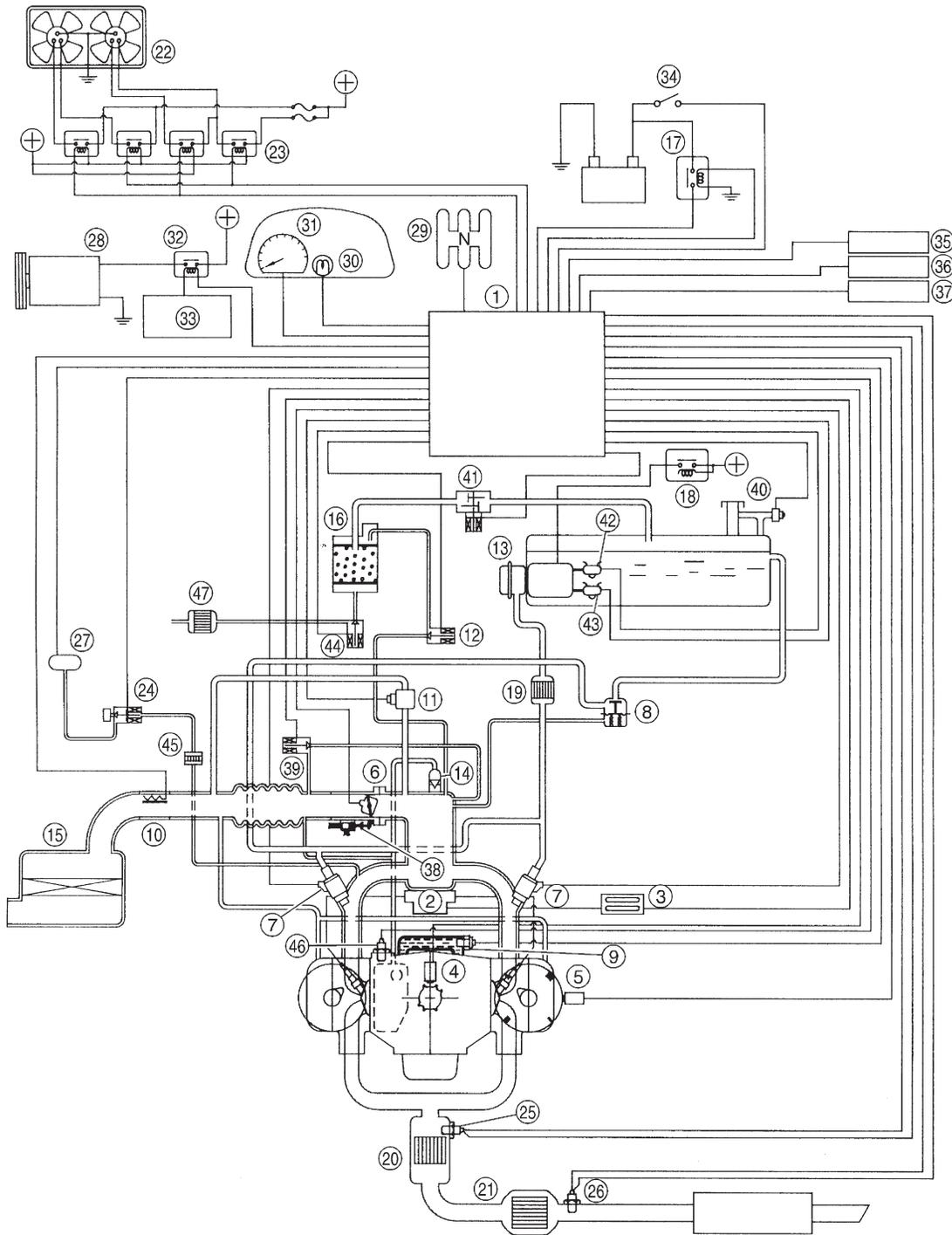
tity is determined by the duration of an electric pulse applied to the fuel injector and this permits simple, yet highly precise metering of the fuel.

- 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:

- 1) Reduced emission of harmful exhaust gases.
- 2) Reduced in fuel consumption.
- 3) Increased engine output.
- 4) Superior acceleration and deceleration.
- 5) Superior startability and warm-up performance in cold weather since compensation is made for coolant and intake air temperature.

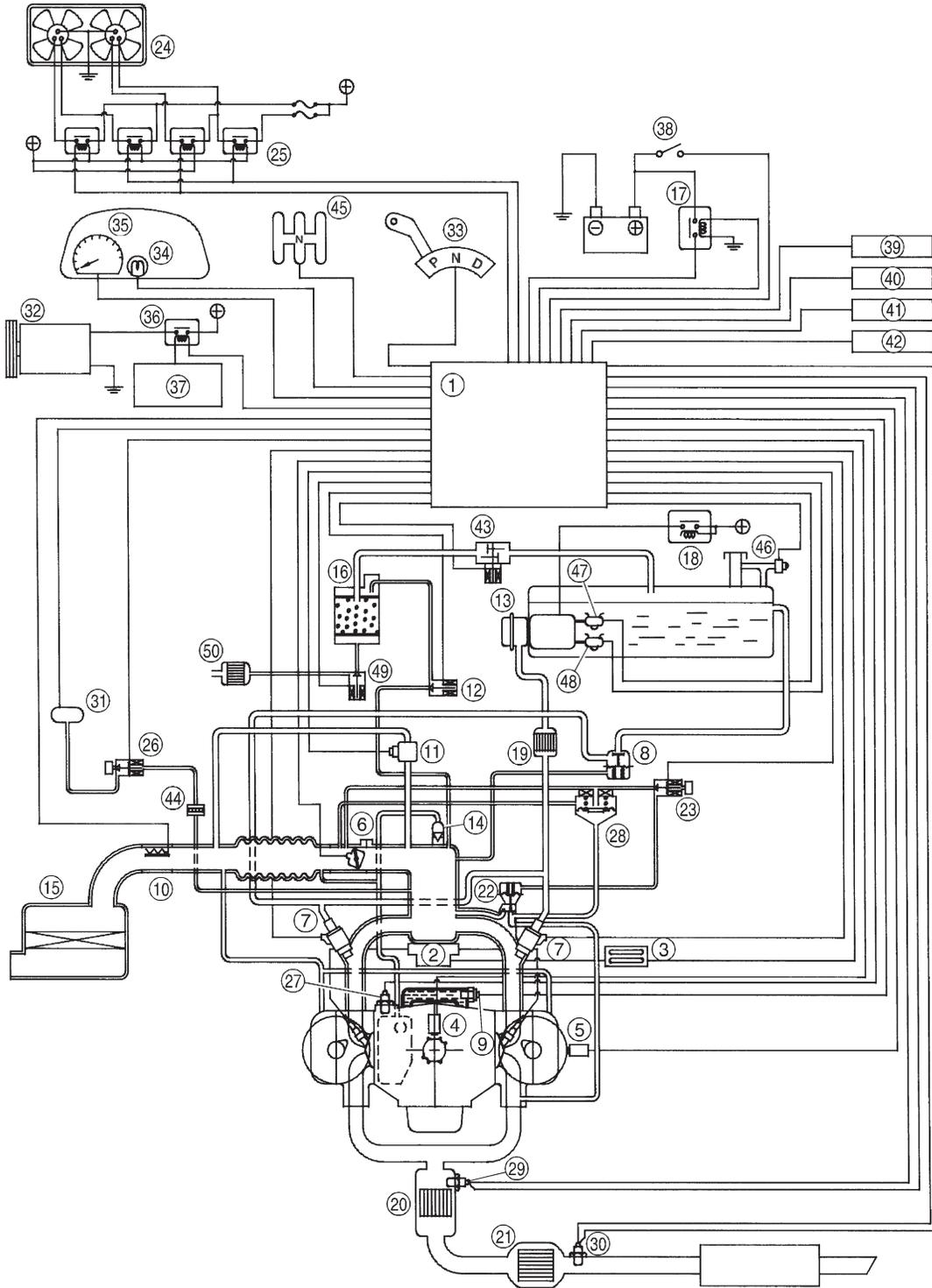
2. SCHEMATIC (1800 cc MODEL)



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-
- ① Engine control module (ECM)
 - ② Ignition coil
 - ③ Ignitor
 - ④ Crankshaft position sensor
 - ⑤ Camshaft position sensor
 - ⑥ Throttle position sensor
 - ⑦ Fuel injectors
 - ⑧ Pressure regulator
 - ⑨ Engine coolant temperature sensor
 - ⑩ Mass air flow sensor
 - ⑪ Idle air control solenoid valve
 - ⑫ Purge control solenoid valve
 - ⑬ Fuel pump
 - ⑭ PCV valve
 - ⑮ Air cleaner
 - ⑯ Canister
 - ⑰ Main relay
 - ⑱ Fuel pump relay
 - ⑲ Fuel filter
 - ⑳ Front catalytic converter
 - ㉑ Rear catalytic converter
 - ㉒ Radiator fan
 - ㉓ Radiator fan relay
 - ㉔ Pressure sources switching solenoid valve
 - ㉕ Front oxygen sensor
 - ㉖ Rear oxygen sensor
 - ㉗ Pressure sensor
 - ㉘ A/C compressor (With A/C models)
 - ㉙ Neutral position switch
 - ㉚ CHECK ENGINE malfunction indicator lamp (MIL)
 - ㉛ Tachometer
 - ㉜ A/C relay (With A/C models)
 - ㉝ A/C control module (With A/C models)
 - ㉞ Ignition switch
 - ㉟ Vehicle speed sensor
 - ㊱ Data link connector (For Subaru select monitor)
 - ㊲ Data link connector (For Subaru select monitor and OBD-II general scan tool)
 - ㊳ Throttle opener
 - ㊴ FICD solenoid valve (With A/C models)
 - ㊵ Fuel tank pressure sensor
 - ㊶ Pressure control solenoid valve
 - ㊷ Fuel temperature sensor
 - ㊸ Fuel level sensor
 - ㊹ Vent control solenoid valve
 - ㊺ Filter
 - ㊻ Knock sensor
 - ㊼ Air filter

3. SCHEMATIC (2200 cc MODEL)



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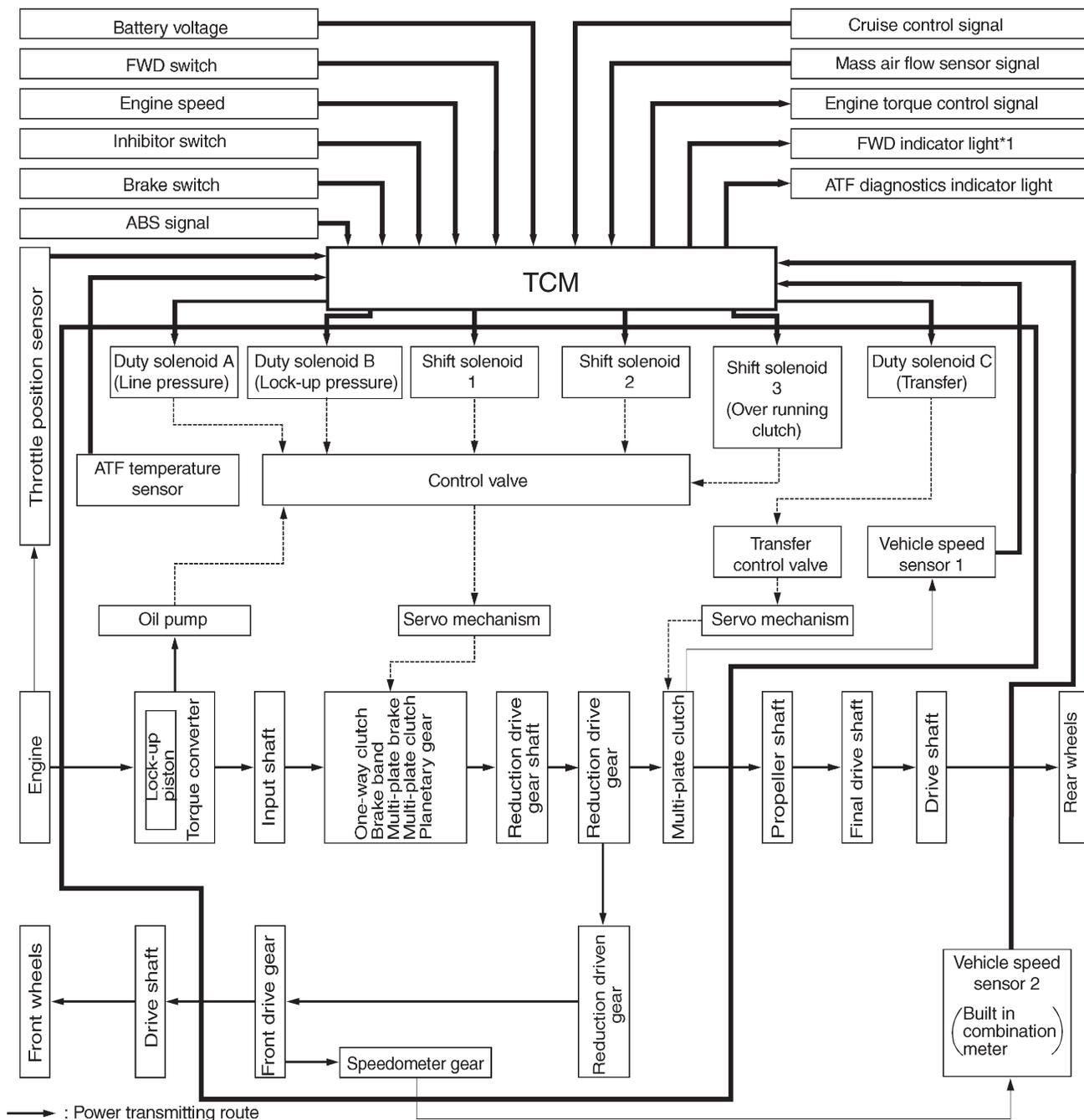
- ① Engine control module (ECM)
- ② Ignition coil
- ③ Ignitor
- ④ Crankshaft position sensor
- ⑤ Camshaft position sensor
- ⑥ Throttle position sensor
- ⑦ Fuel injectors
- ⑧ Pressure regulator
- ⑨ Engine coolant temperature sensor
- ⑩ Mass air flow sensor
- ⑪ Idle air control solenoid valve
- ⑫ Purge control solenoid valve
- ⑬ Fuel pump
- ⑭ PCV valve
- ⑮ Air cleaner
- ⑯ Canister
- ⑰ Main relay
- ⑱ Fuel pump relay
- ⑲ Fuel filter
- ⑳ Front catalytic converter
- ㉑ Rear catalytic converter
- ㉒ EGR valve (AT vehicles only)
- ㉓ EGR control solenoid valve (AT vehicles only)
- ㉔ Radiator fan
- ㉕ Radiator fan relay
- ㉖ Pressure sources switching solenoid valve
- ㉗ Knock sensor
- ㉘ Back-pressure transducer
- ㉙ Front oxygen sensor
- ㉚ Rear oxygen sensor
- ㉛ Pressure sensor
- ㉜ A/C compressor
- ㉝ Inhibitor switch (AT vehicles)
- ㉞ CHECK ENGINE malfunction indicator lamp (MIL)
- ㉟ Tachometer
- ㊱ A/C relay
- ㊲ A/C control module
- ㊳ Ignition switch
- ㊴ Transmission control module (TCM)
- ㊵ Vehicle speed sensor
- ㊶ Data link connector (Subaru select monitor)
- ㊷ Data link connector (OBD-II general scan tool)
- ㊸ Pressure control solenoid valve
- ㊹ Filter
- ㊺ Neutral position switch (MT vehicles)
- ㊻ Fuel tank pressure sensor
- ㊼ Fuel temperature sensor
- ㊽ Fuel level sensor
- ㊾ Vent control solenoid valve
- ㊿ Air filter

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. SCHEMATIC

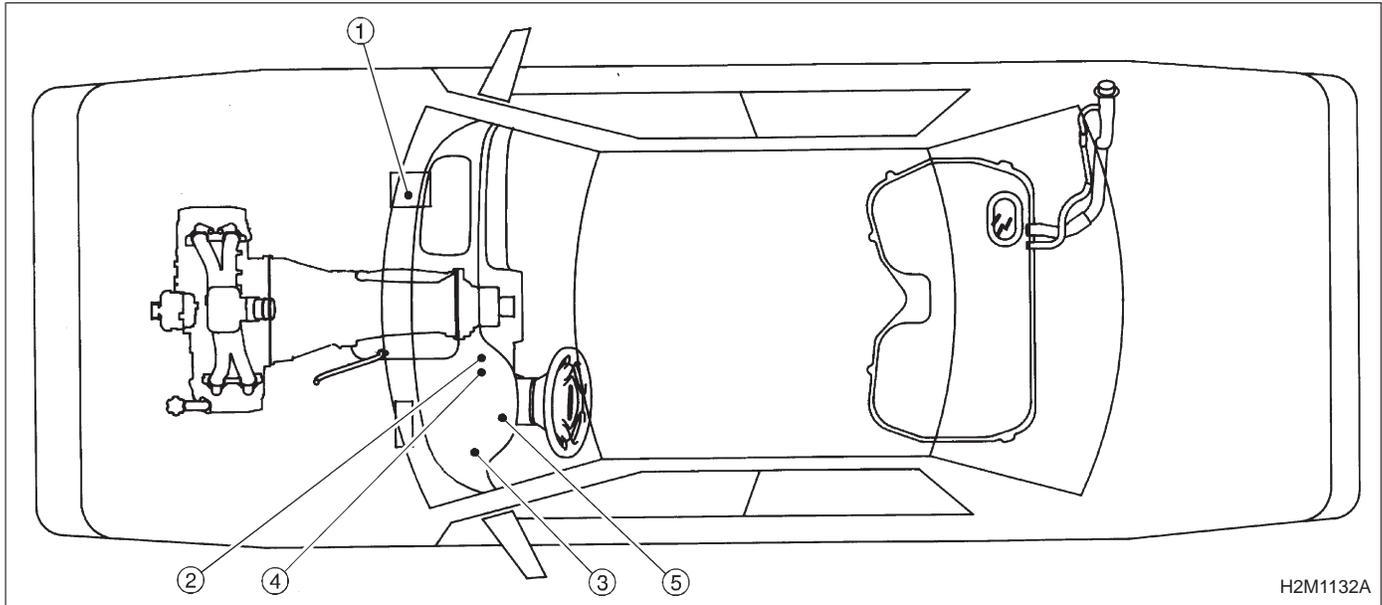


*1 : AWD vehicles only

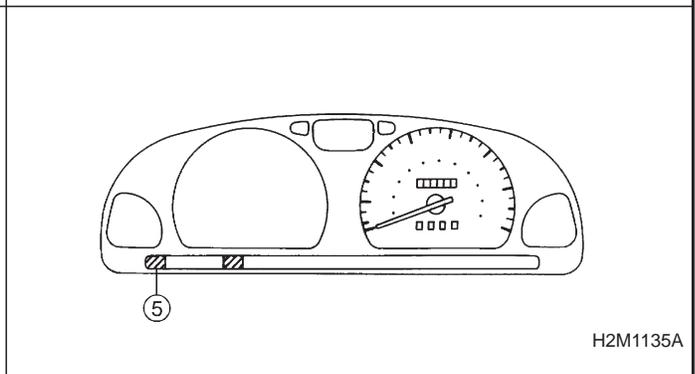
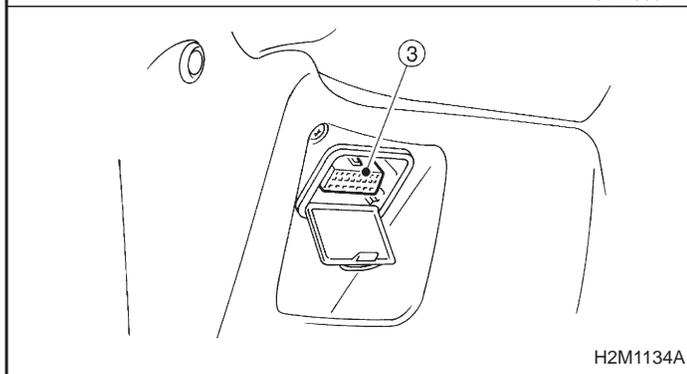
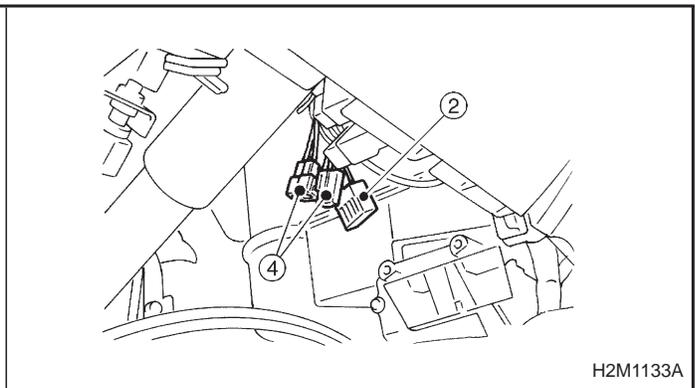
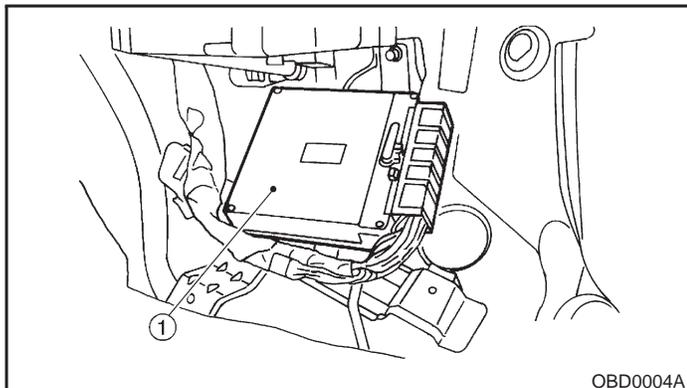
2. Electrical Components Location

A: ENGINE (1800 cc MODEL)

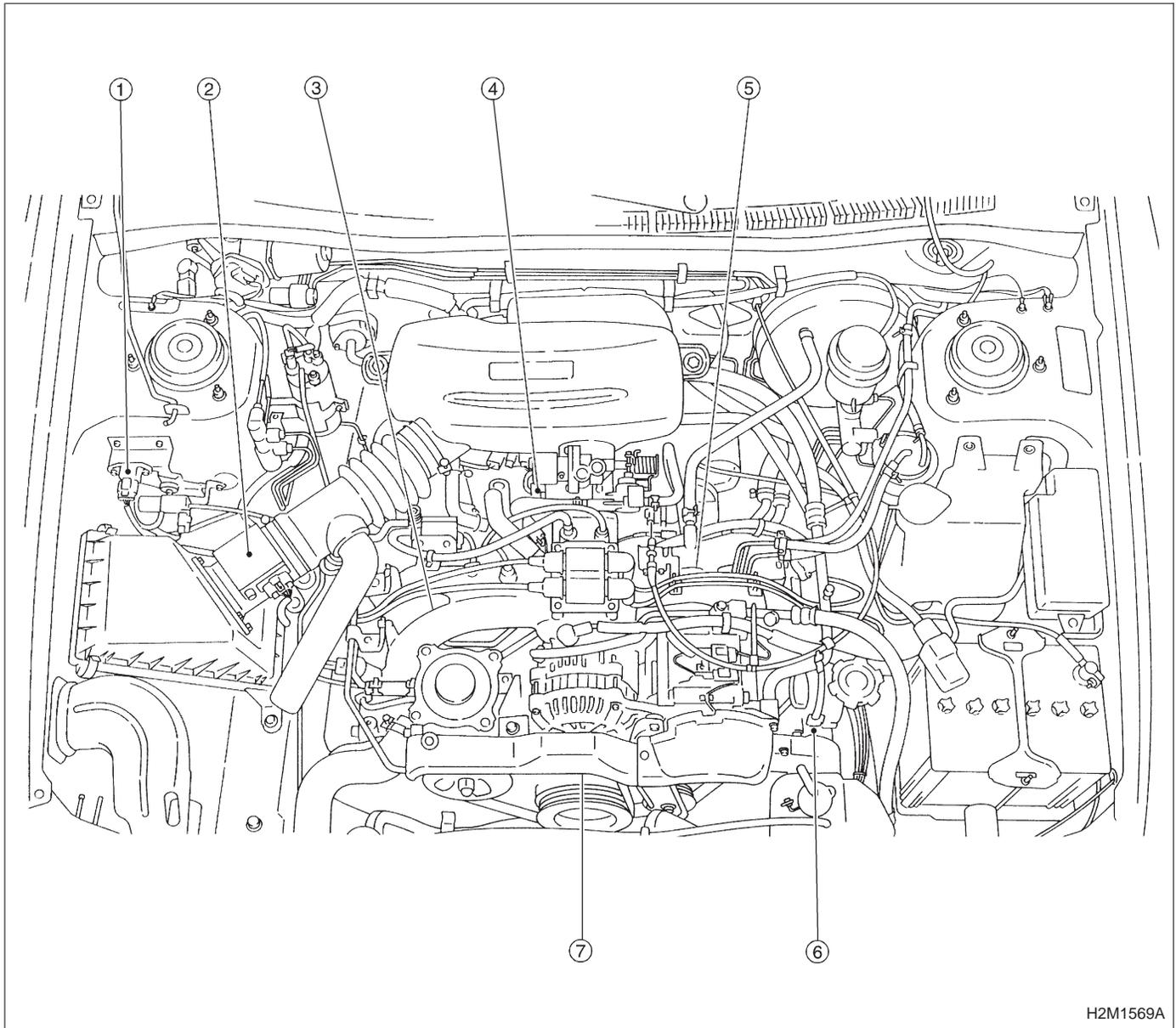
1. MODULE



- ① Engine control module (ECM)
- ② Data link connector (for Subaru select monitor only)
- ③ Data link connector (for Subaru select monitor and OBD-II general scan tool)
- ④ Test mode connector
- ⑤ CHECK ENGINE malfunction indicator lamp (MIL)

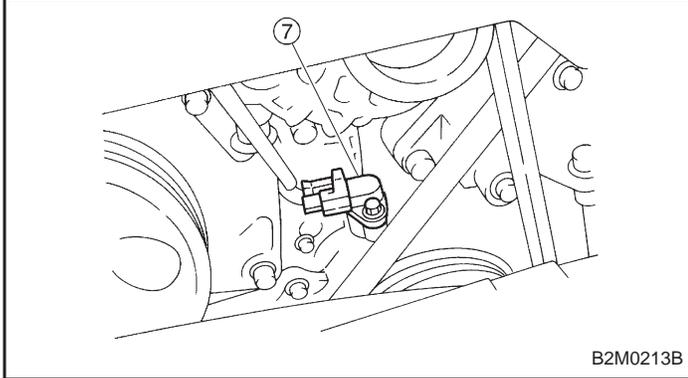
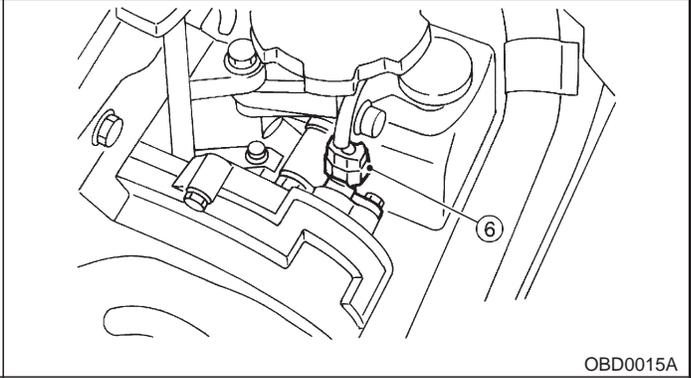
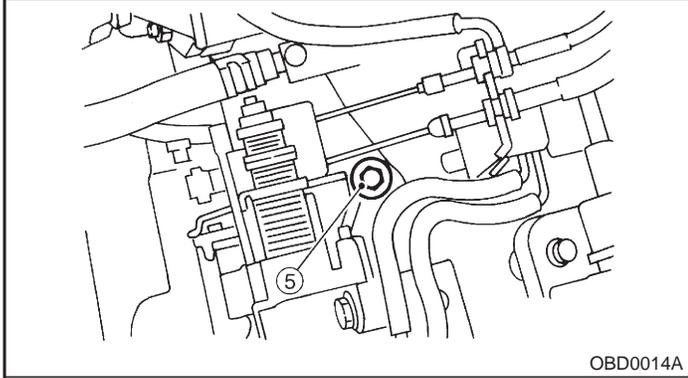
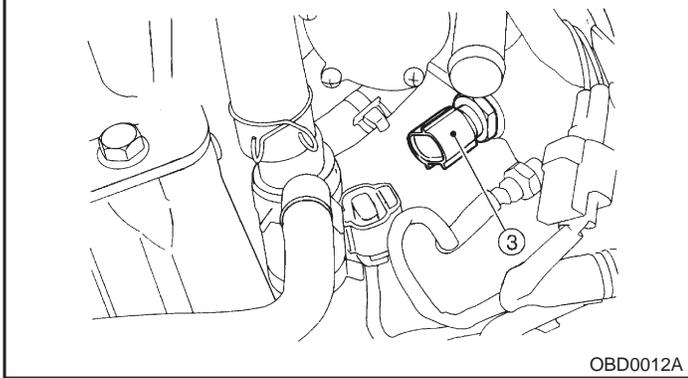
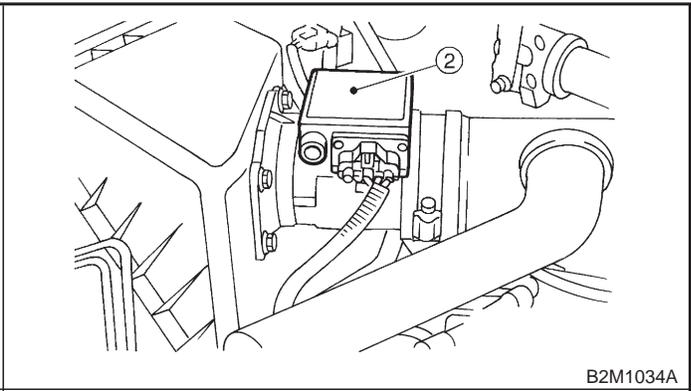
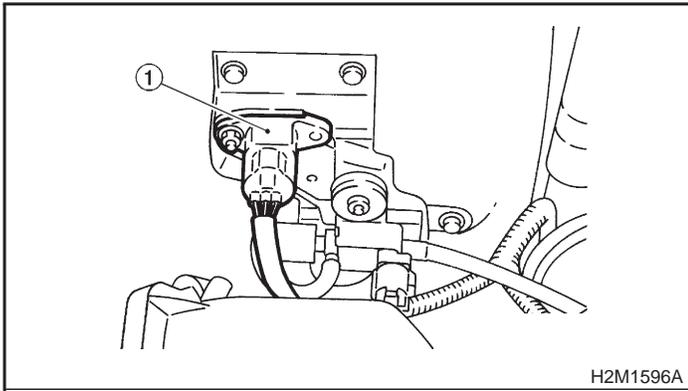


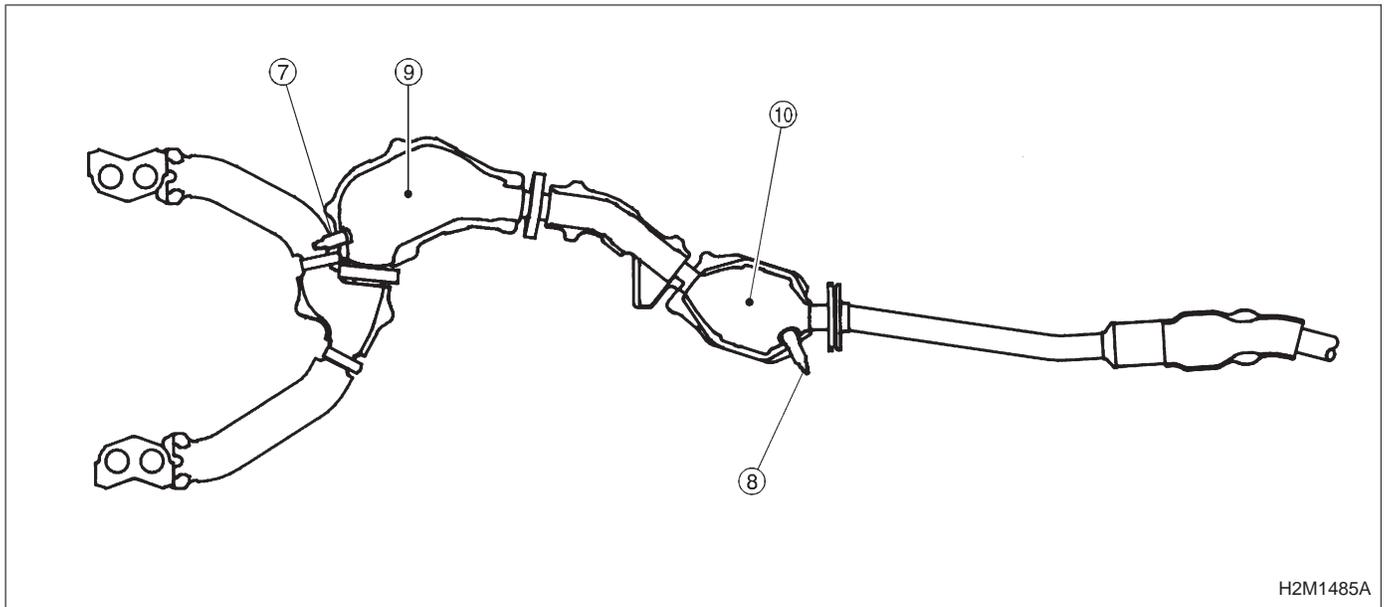
2. SENSOR



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

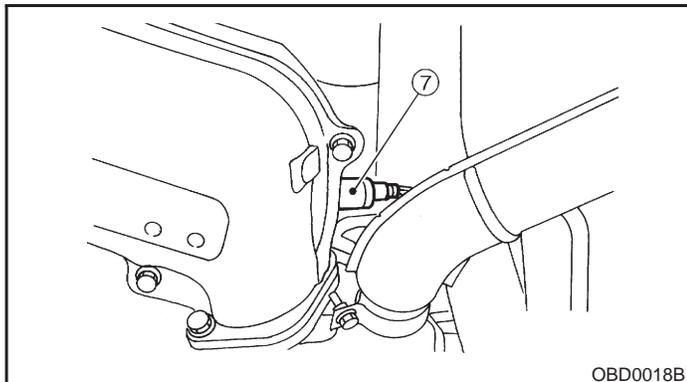




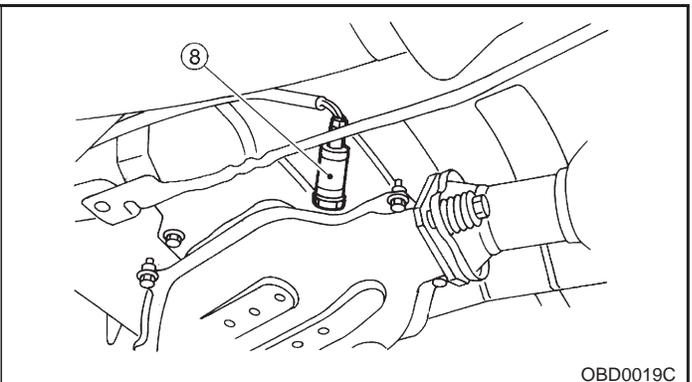
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- ⑦ Front oxygen sensor
- ⑧ Rear oxygen sensor

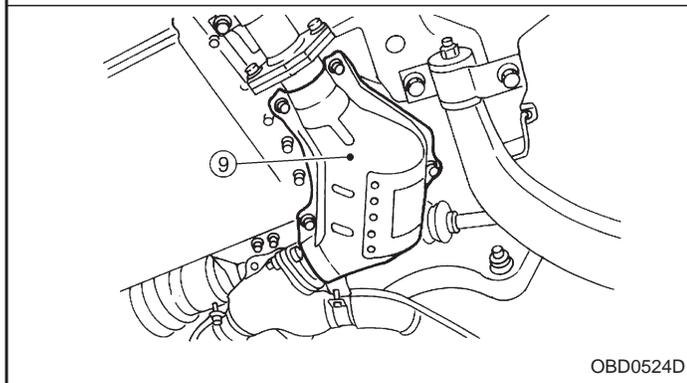
- ⑨ Front catalytic converter
- ⑩ Rear catalytic converter



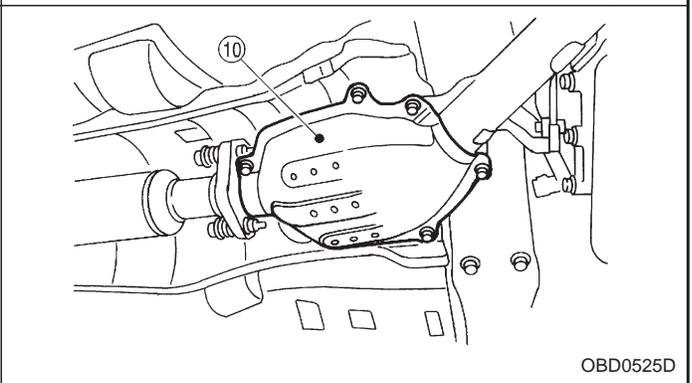
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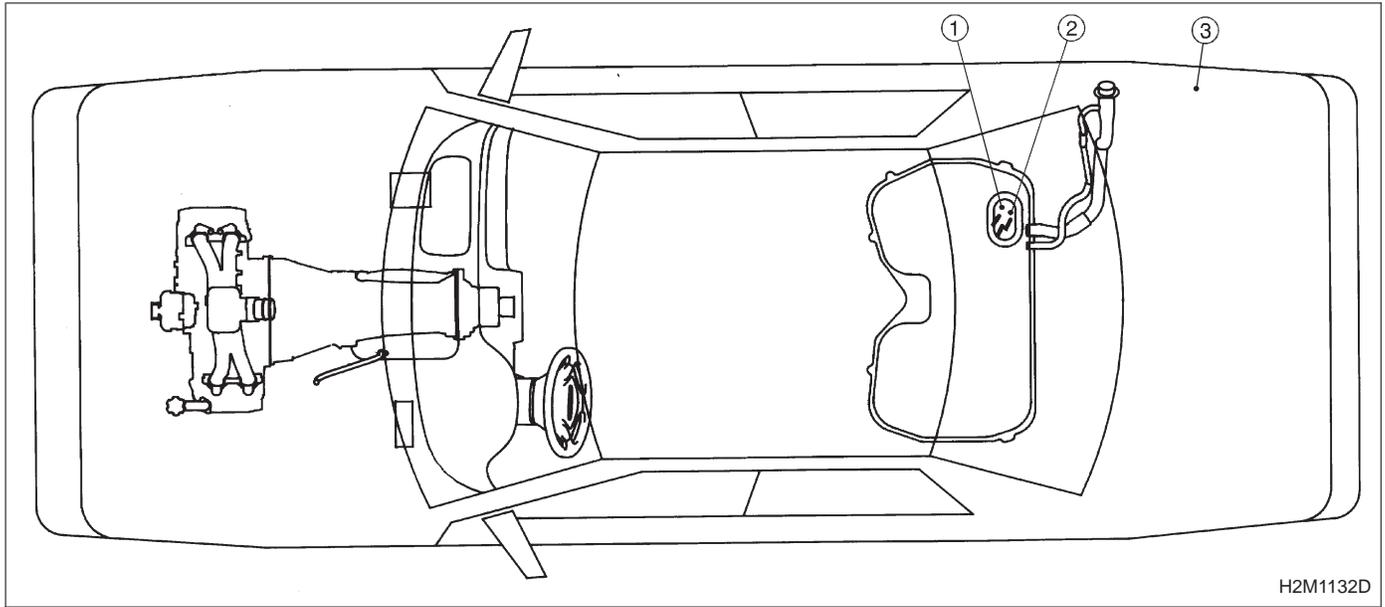
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OBD0524D

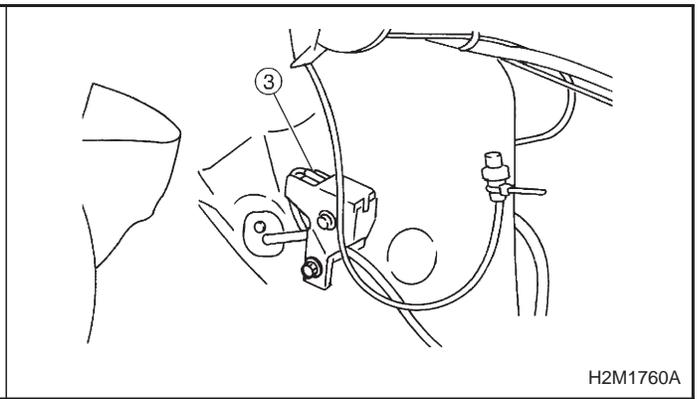
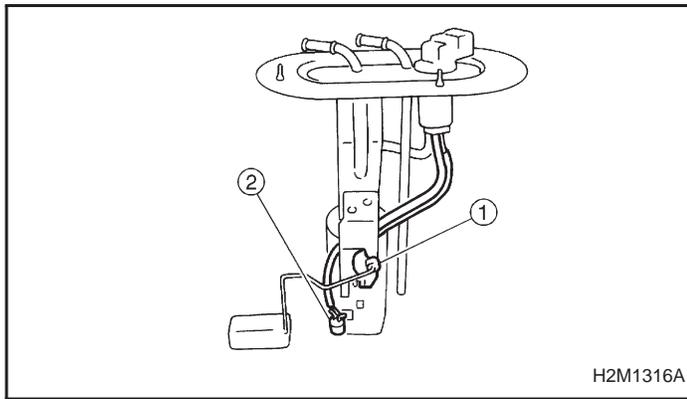


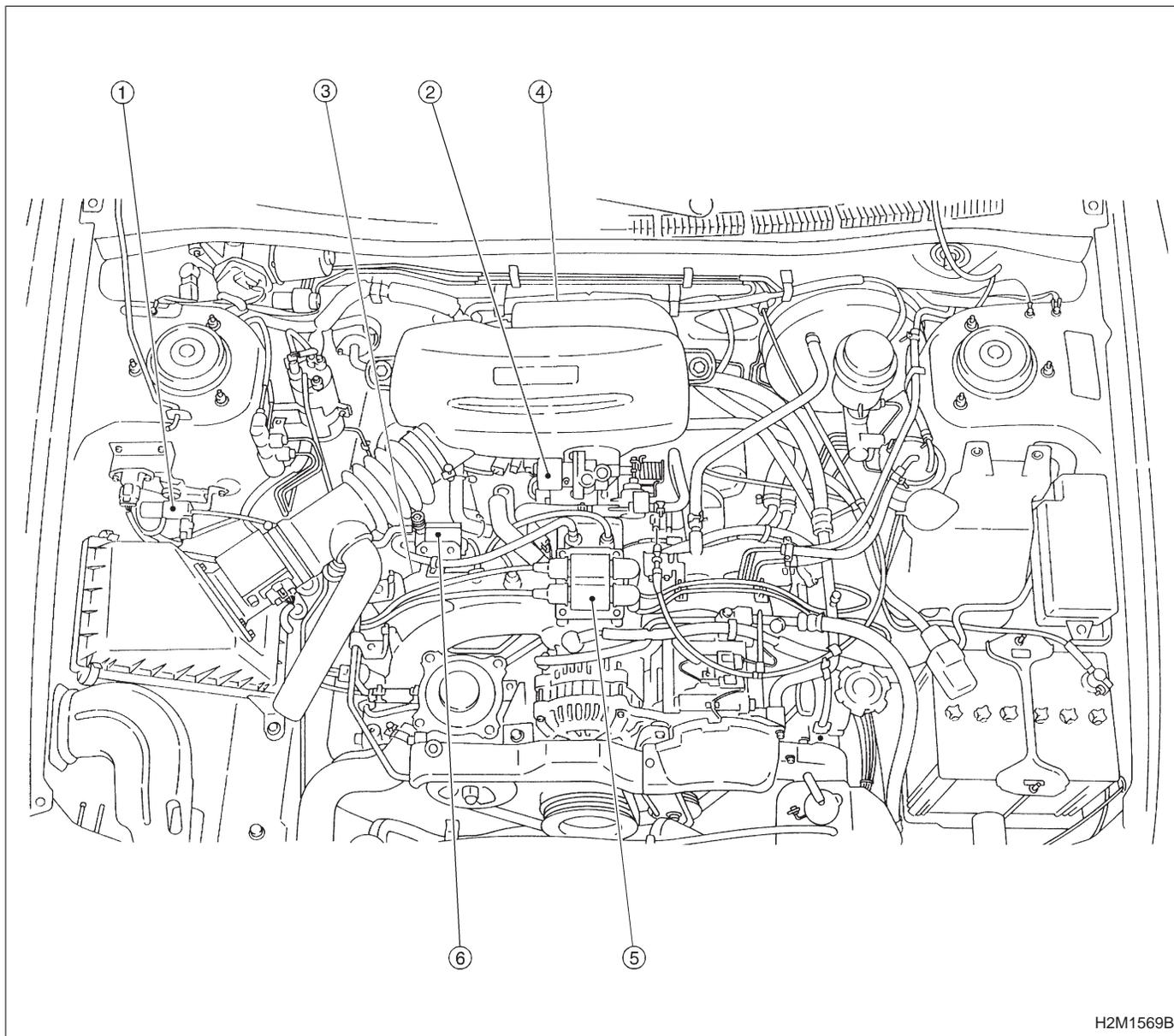
OBD0525D



- ① Fuel level sensor
- ② Fuel temperature sensor

- ③ Fuel tank pressure sensor

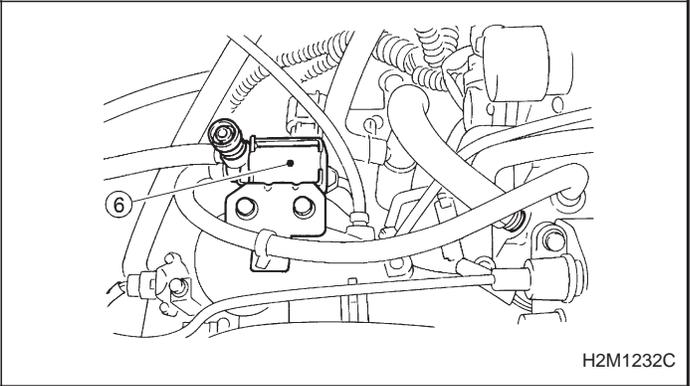
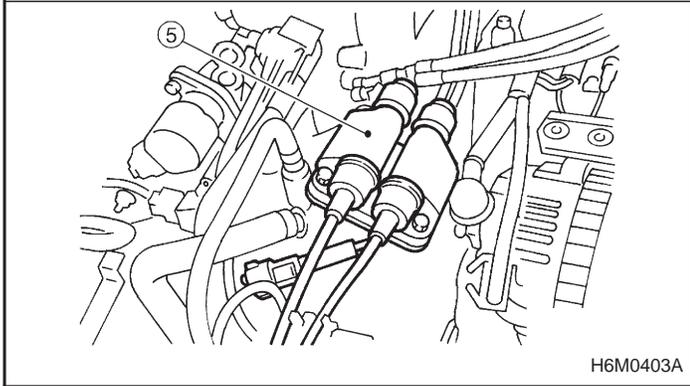
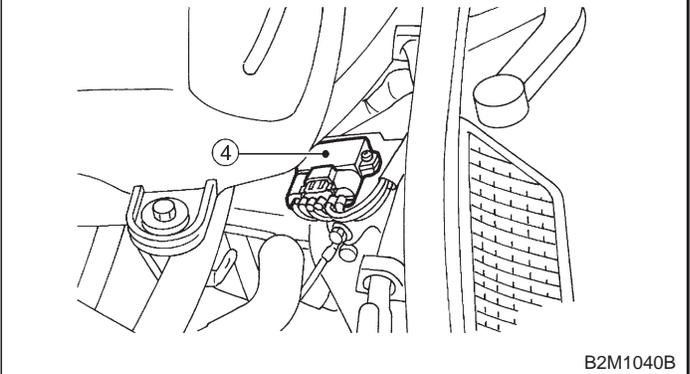
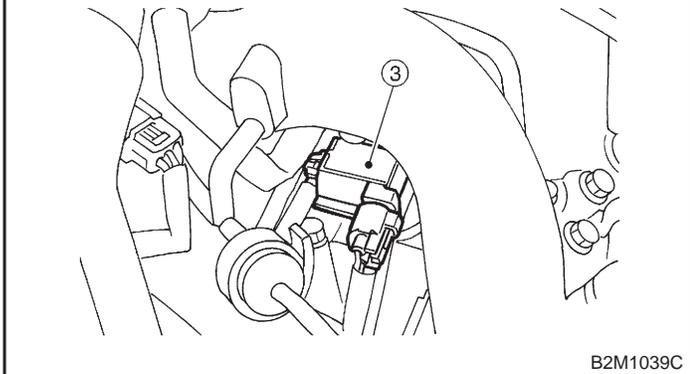
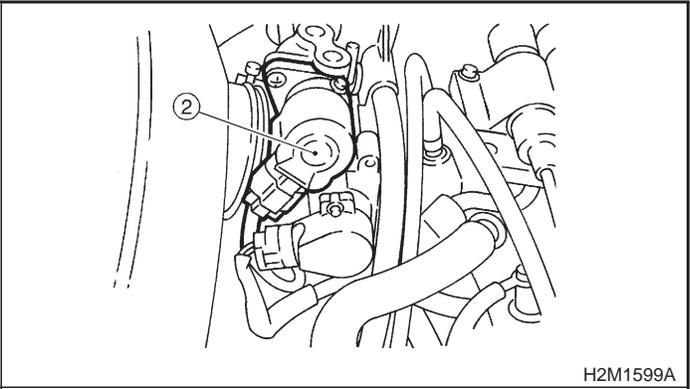
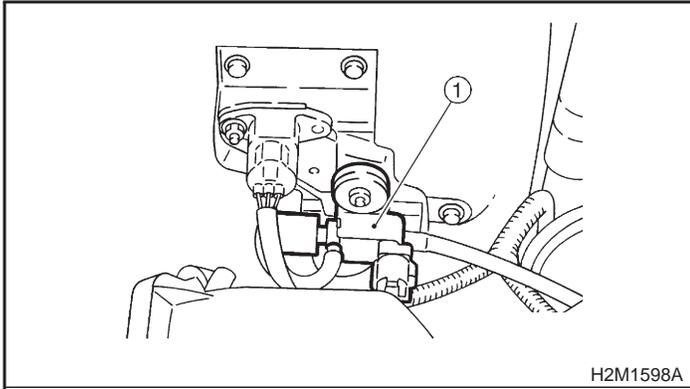


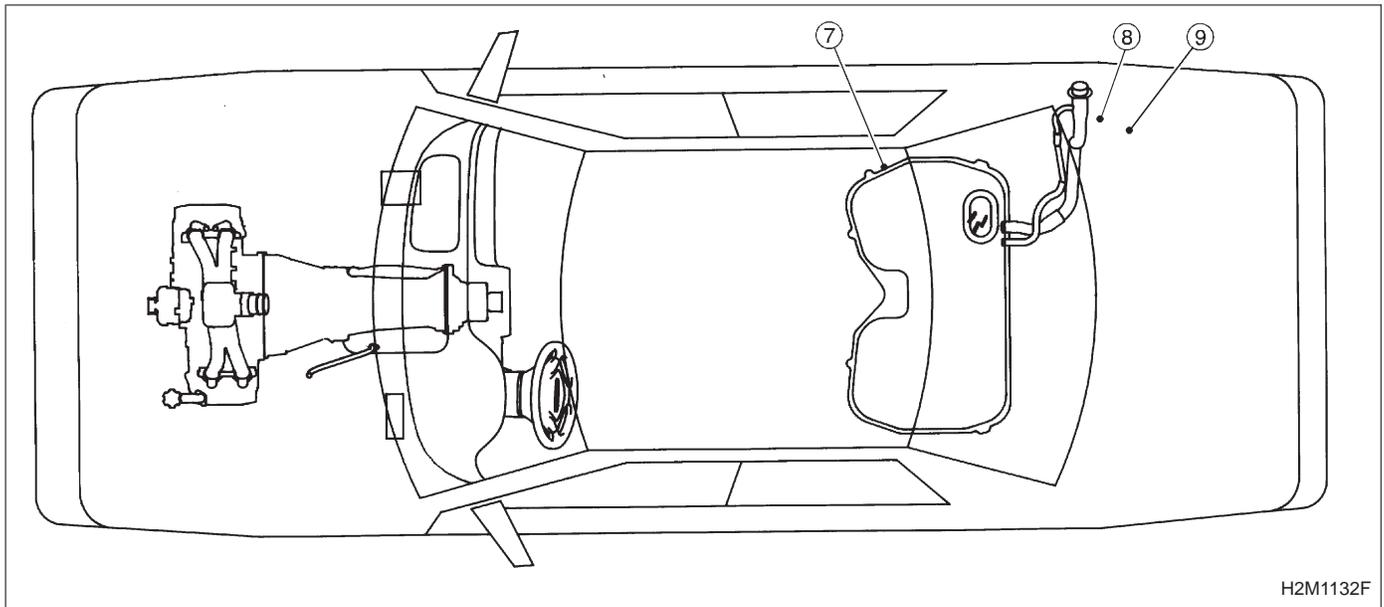
3. SOLENOID VALVE, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS

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- ① Pressure sources switching solenoid valve
- ② Idle air control solenoid valve
- ③ Purge control solenoid valve

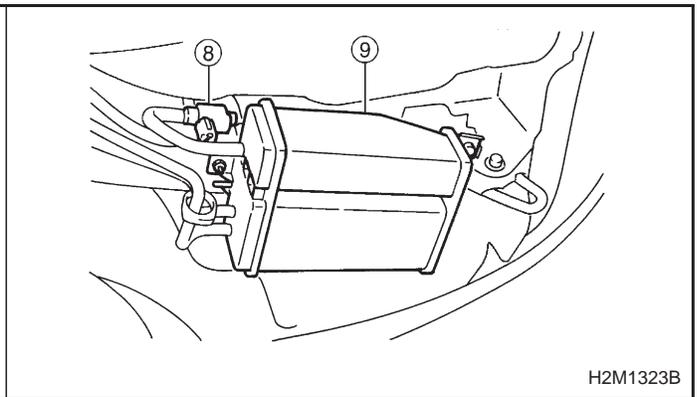
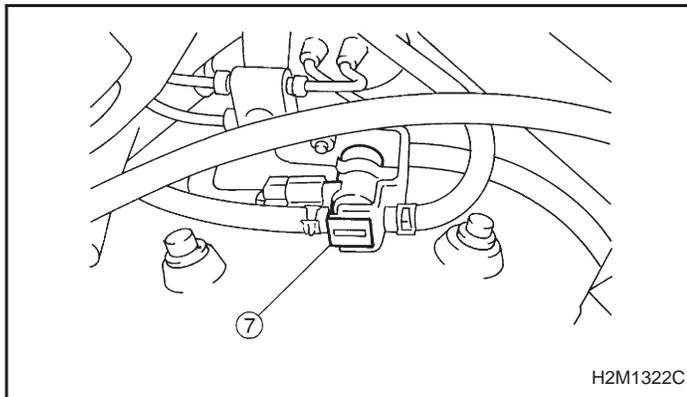
- ④ Ignitor
- ⑤ Ignition coil
- ⑥ FICD solenoid valve (With A/C models)

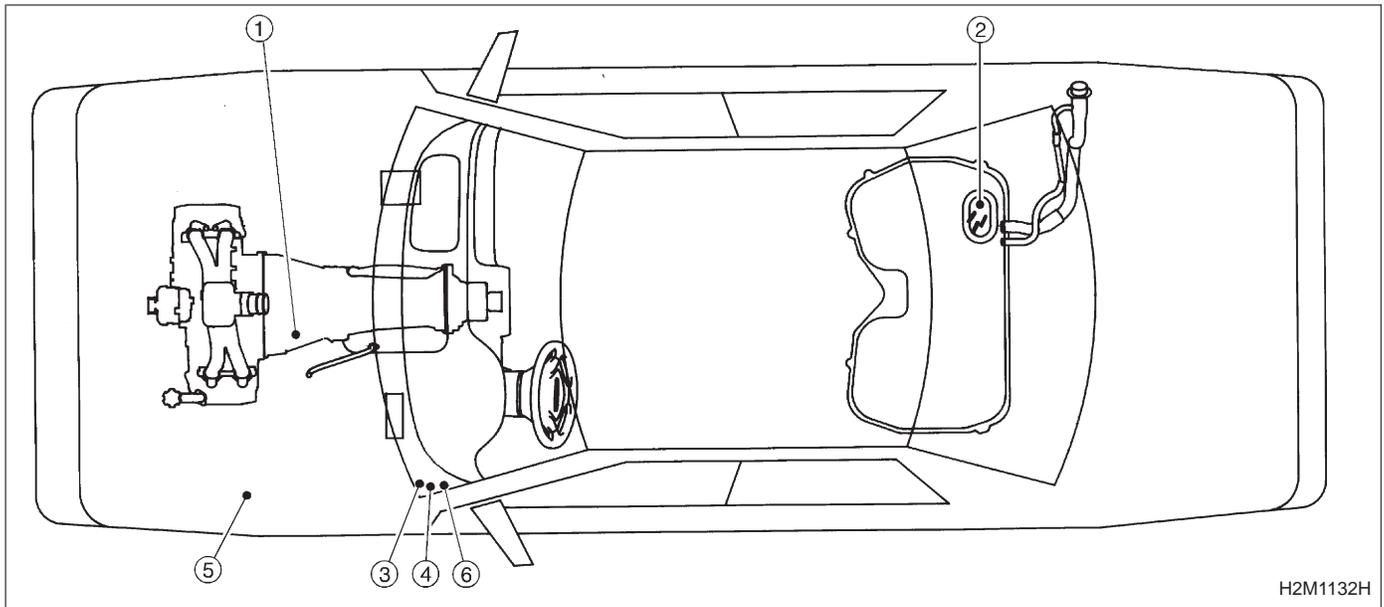




- ⑦ Pressure control solenoid valve
- ⑧ Vent control solenoid valve

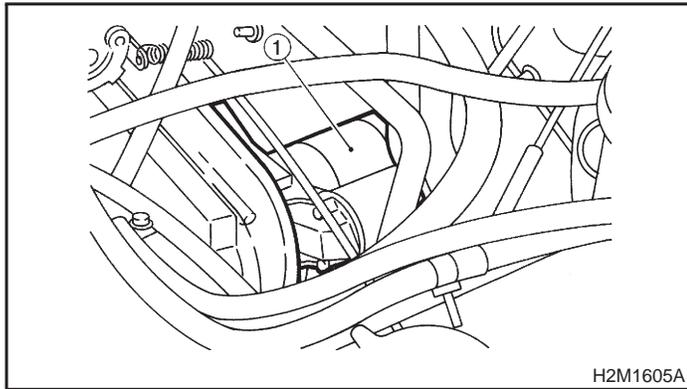
- ⑨ Canister



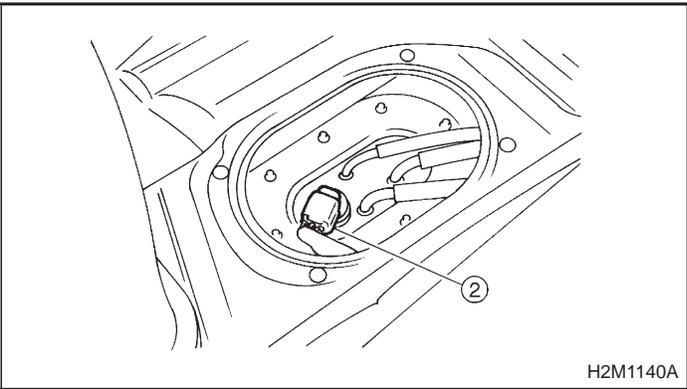


- ① Starter
- ② Fuel pump
- ③ Main relay

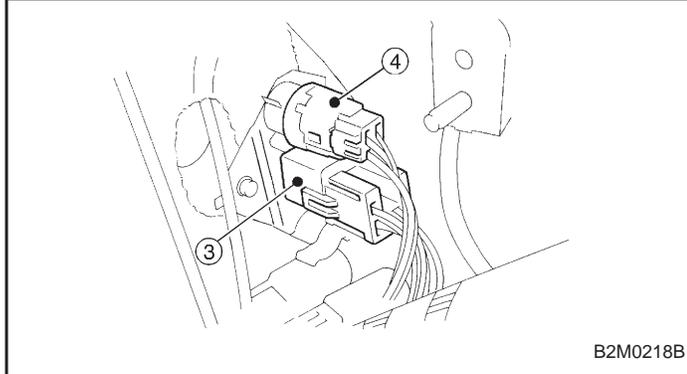
- ④ Fuel pump relay
- ⑤ Radiator sub fan relay (With A/C models only)
- ⑥ Main fan relay



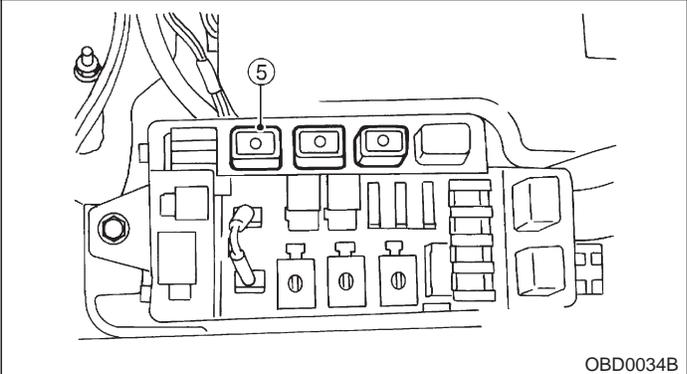
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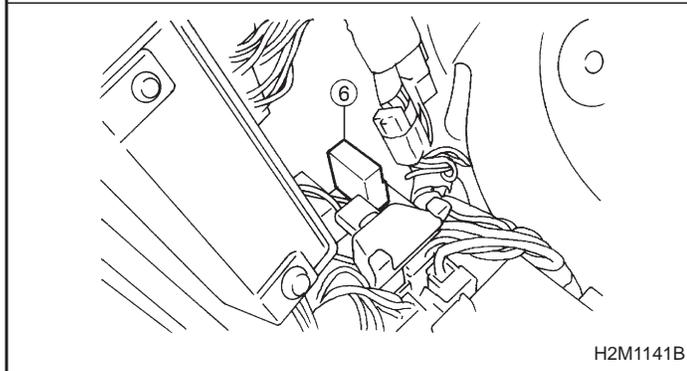
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B2M0218B



OBD0034B

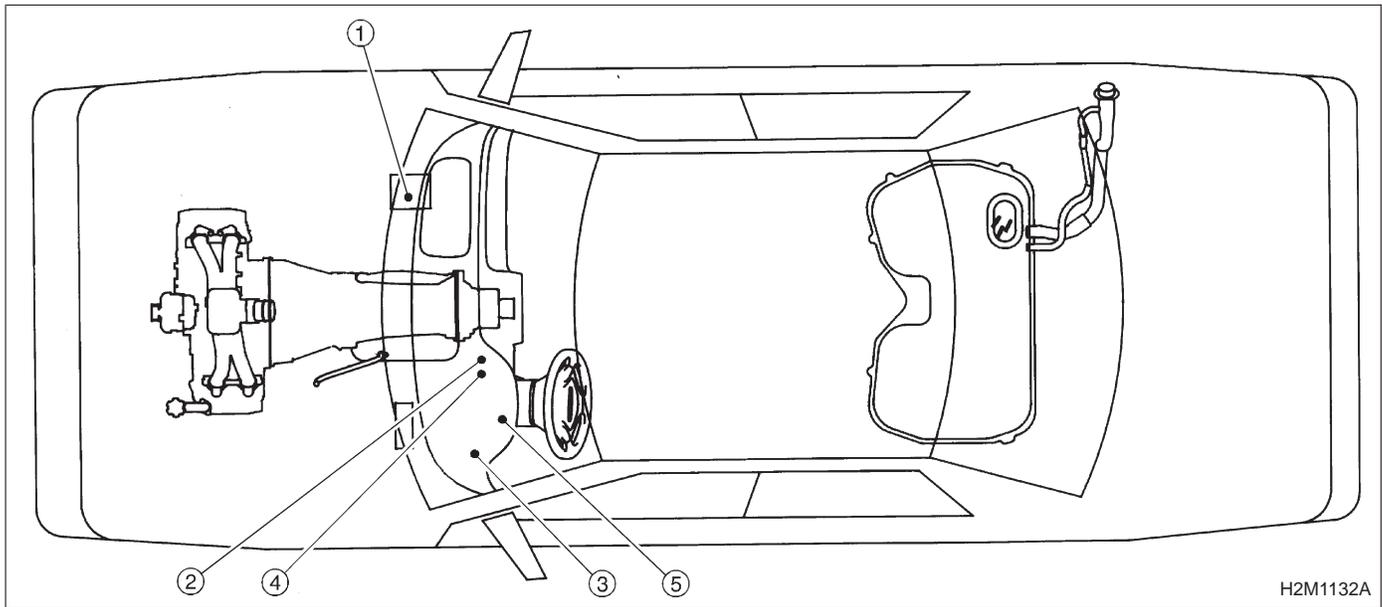


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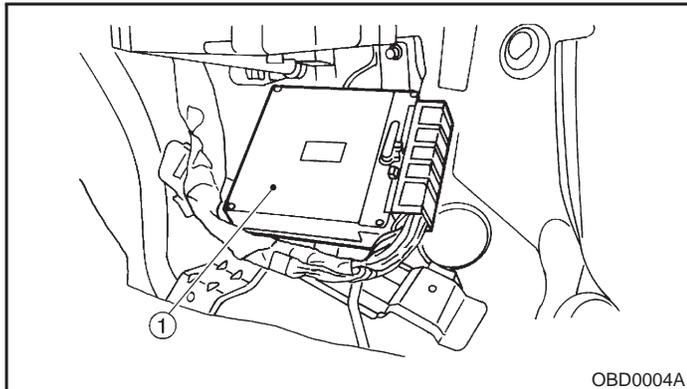
B: ENGINE (2200 cc MODEL)

1. MODULE

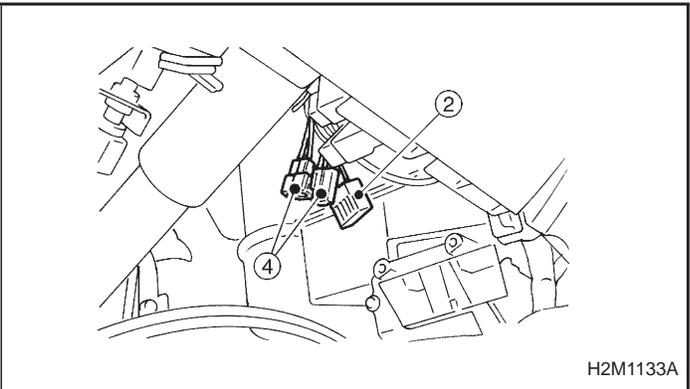


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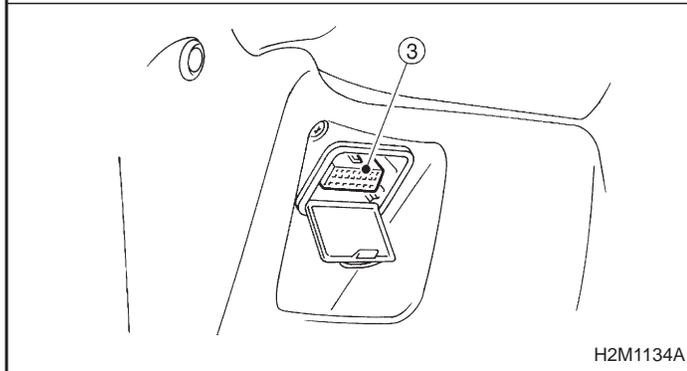
- ① Engine control module (ECM)
- ② Data link connector (for Subaru select monitor only)
- ③ Data link connector (for Subaru select monitor and OBD-II general scan tool)
- ④ Test mode connector
- ⑤ CHECK ENGINE malfunction indicator lamp (MIL)



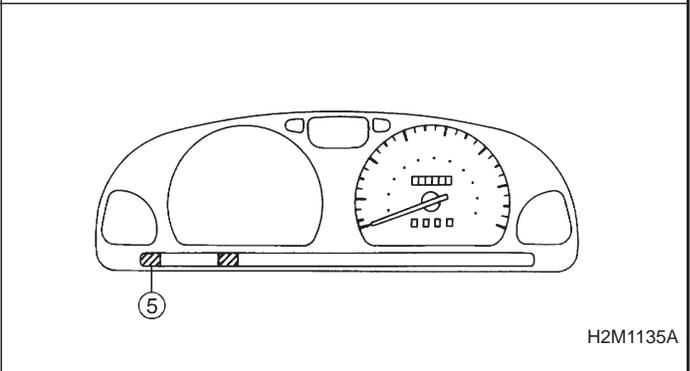
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H2M1133A

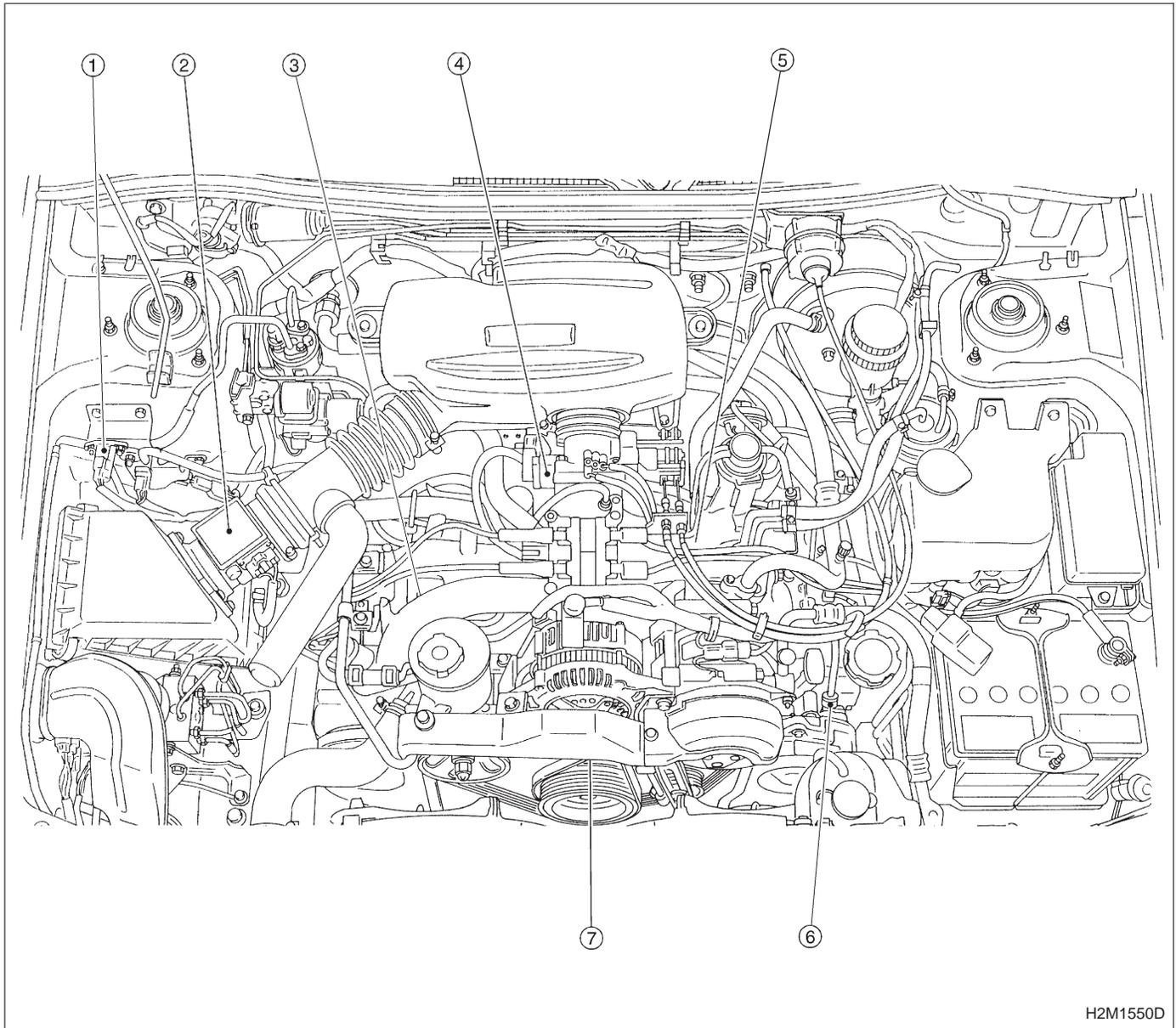


H2M1134A



H2M1135A

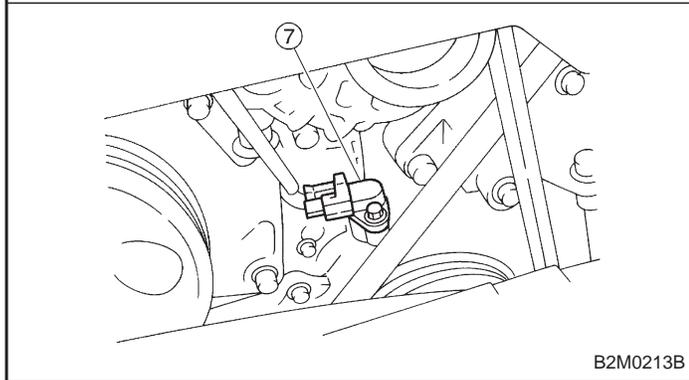
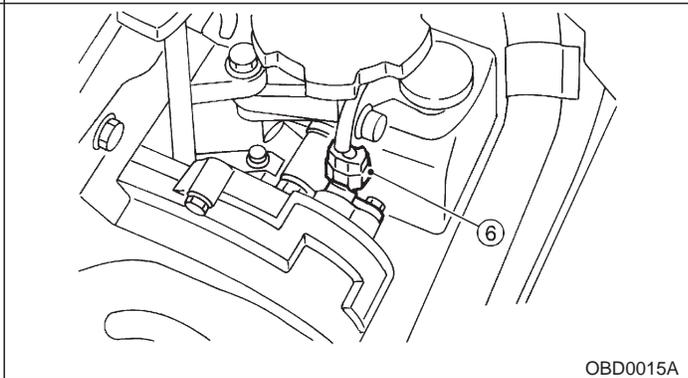
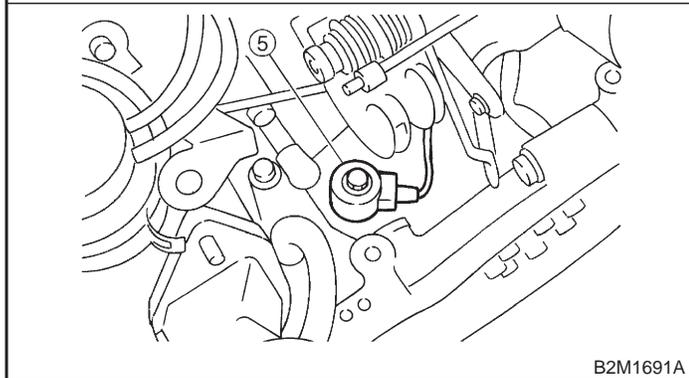
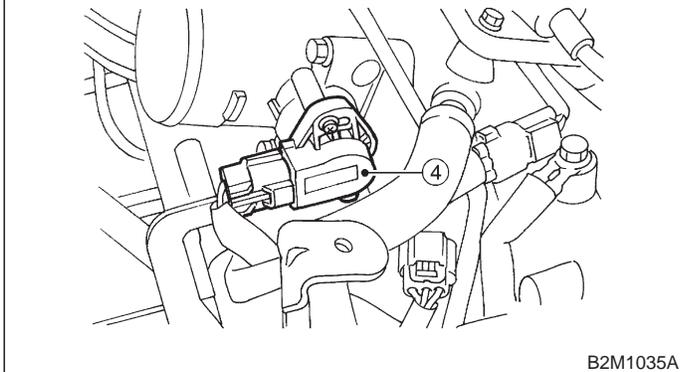
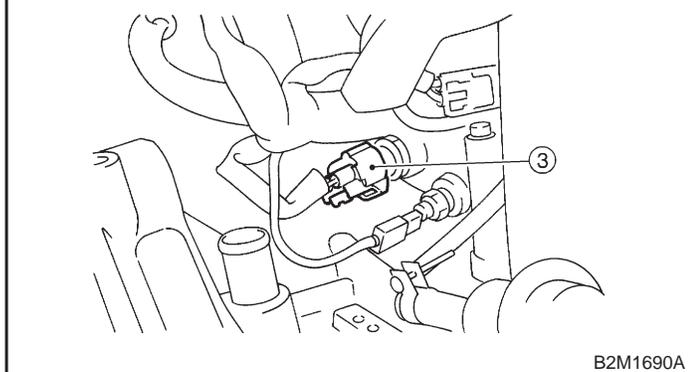
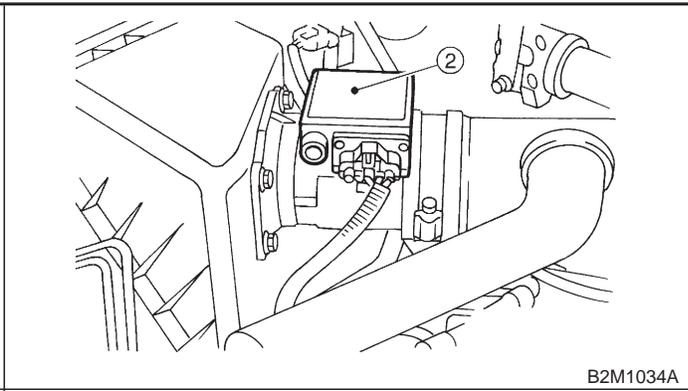
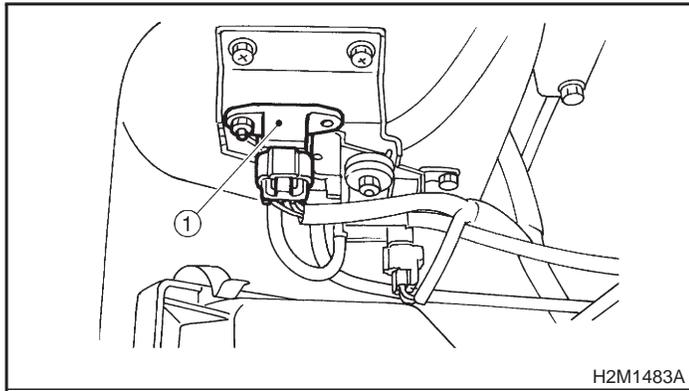
2. SENSOR



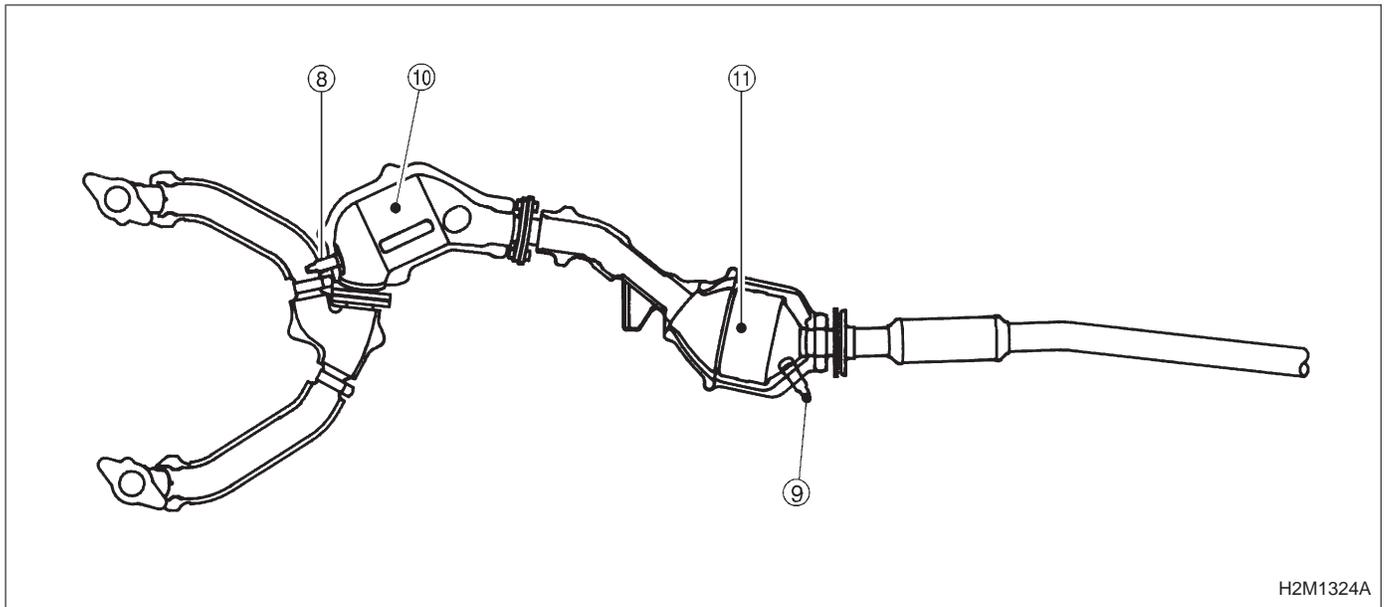
H2M1550D

- ① Pressure sensor
- ② Mass air flow sensor
- ③ Engine coolant temperature sensor
- ④ Throttle position sensor

- ⑤ Knock sensor
- ⑥ Camshaft position sensor
- ⑦ Crankshaft position sensor



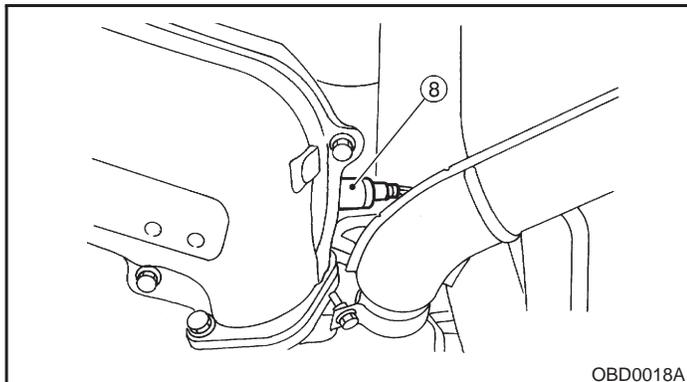
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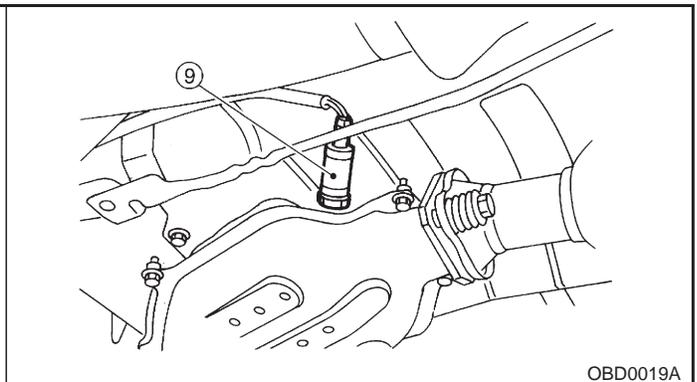
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- ⑧ Front oxygen sensor
- ⑨ Rear oxygen sensor

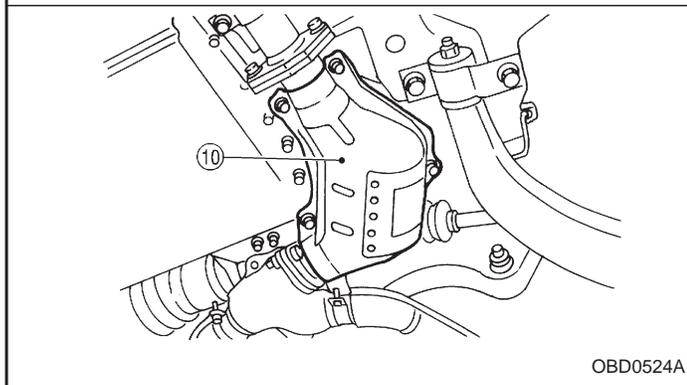
- ⑩ Front catalytic converter
- ⑪ Rear catalytic converter



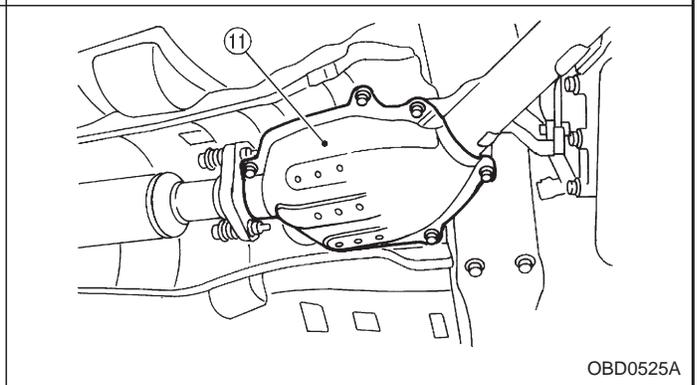
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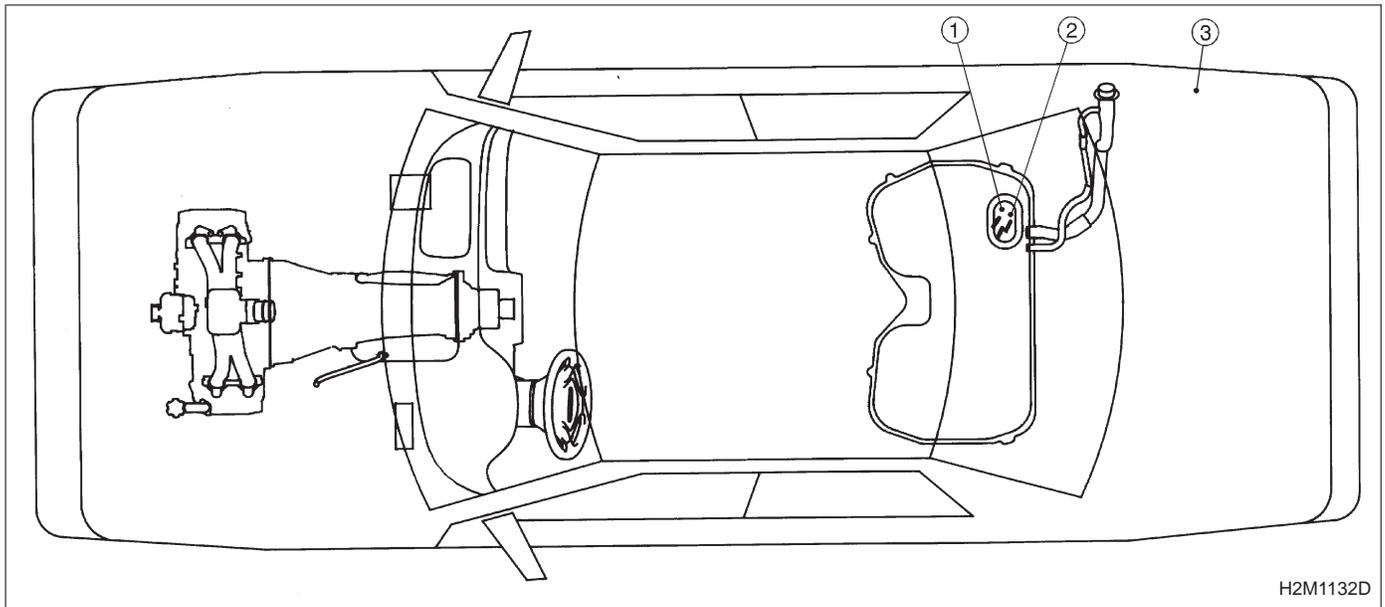
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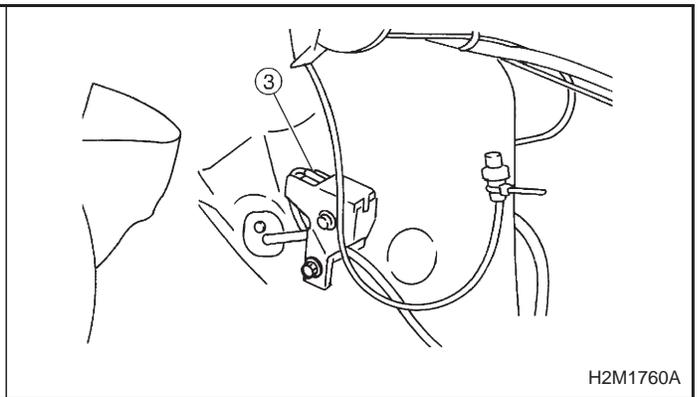
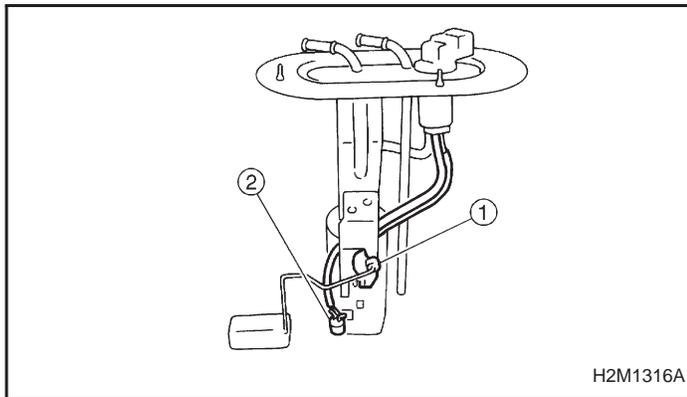


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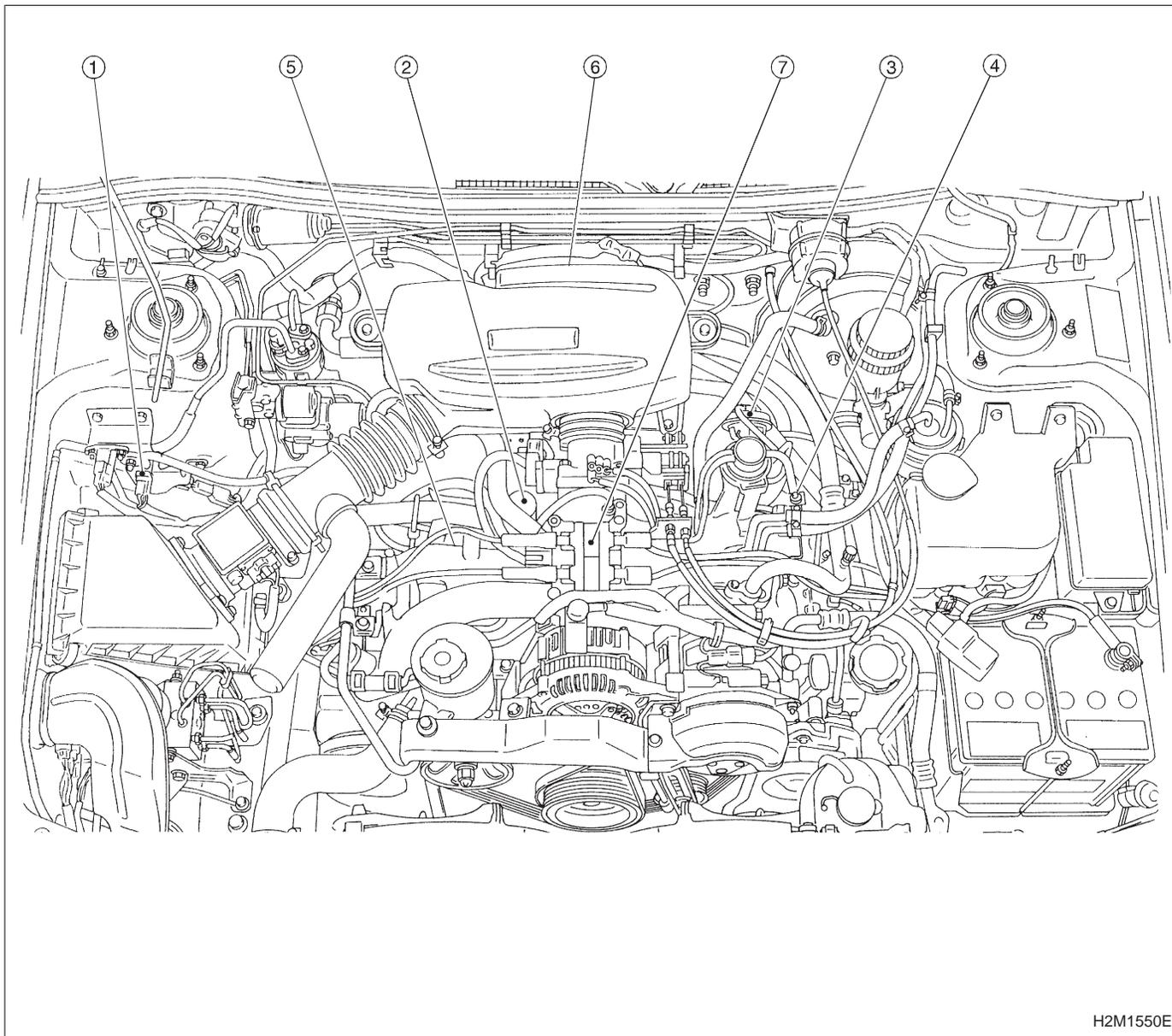


- ① Fuel level sensor
- ② Fuel temperature sensor

- ③ Fuel tank pressure sensor

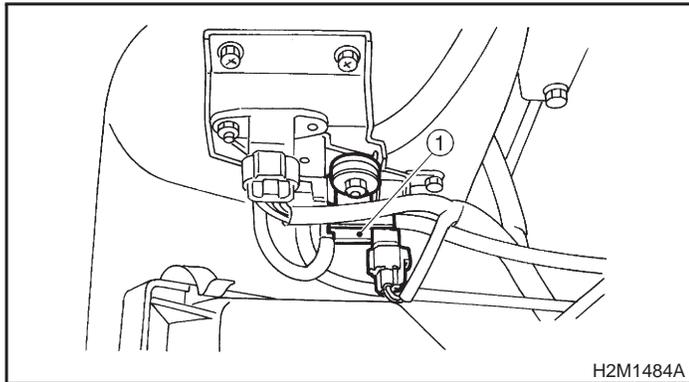


3. SOLENOID VALVE, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS

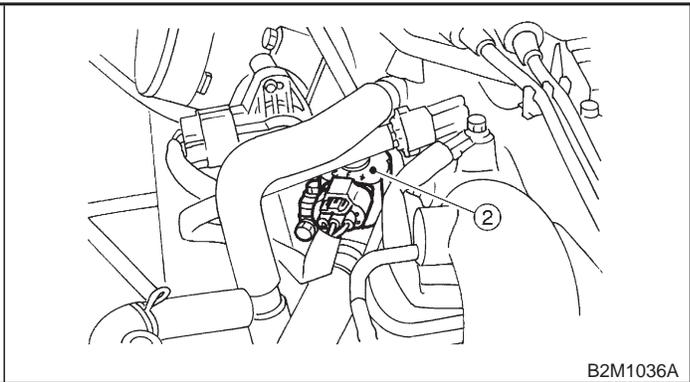


H2M1550E

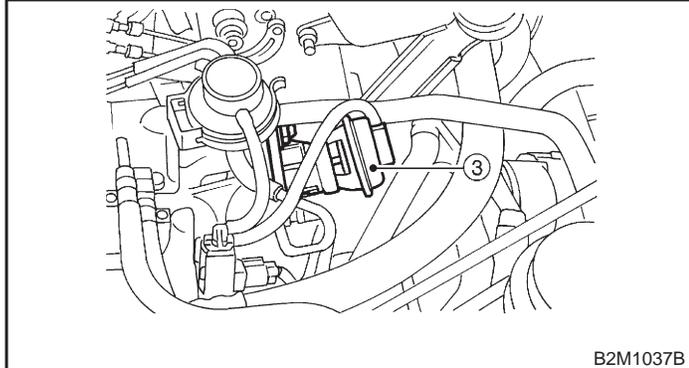
- | | |
|---|--------------------------------|
| ① Pressure sources switching solenoid valve | ⑤ Purge control solenoid valve |
| ② Idle air control solenoid valve | ⑥ Ignitor |
| ③ EGR valve (AT vehicles) | ⑦ Ignition coil |
| ④ EGR control solenoid valve (AT vehicles) | |



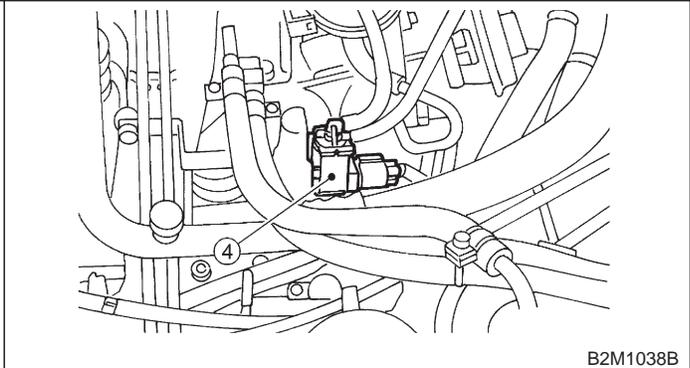
H2M1484A



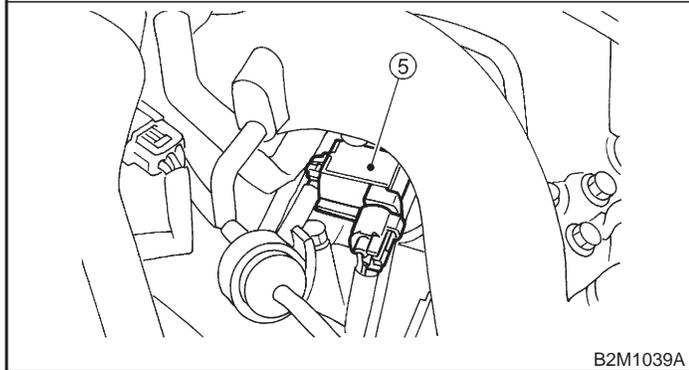
B2M1036A



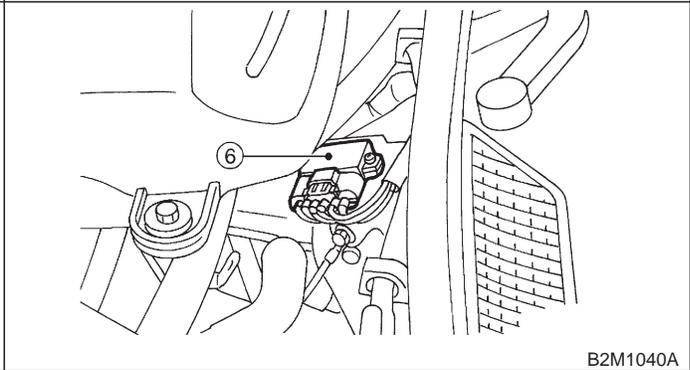
B2M1037B



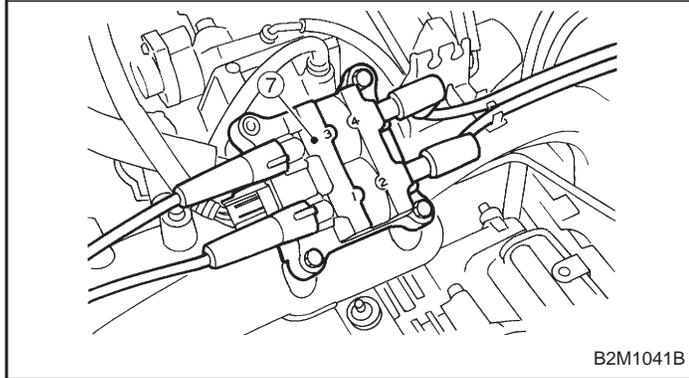
B2M1038B



B2M1039A

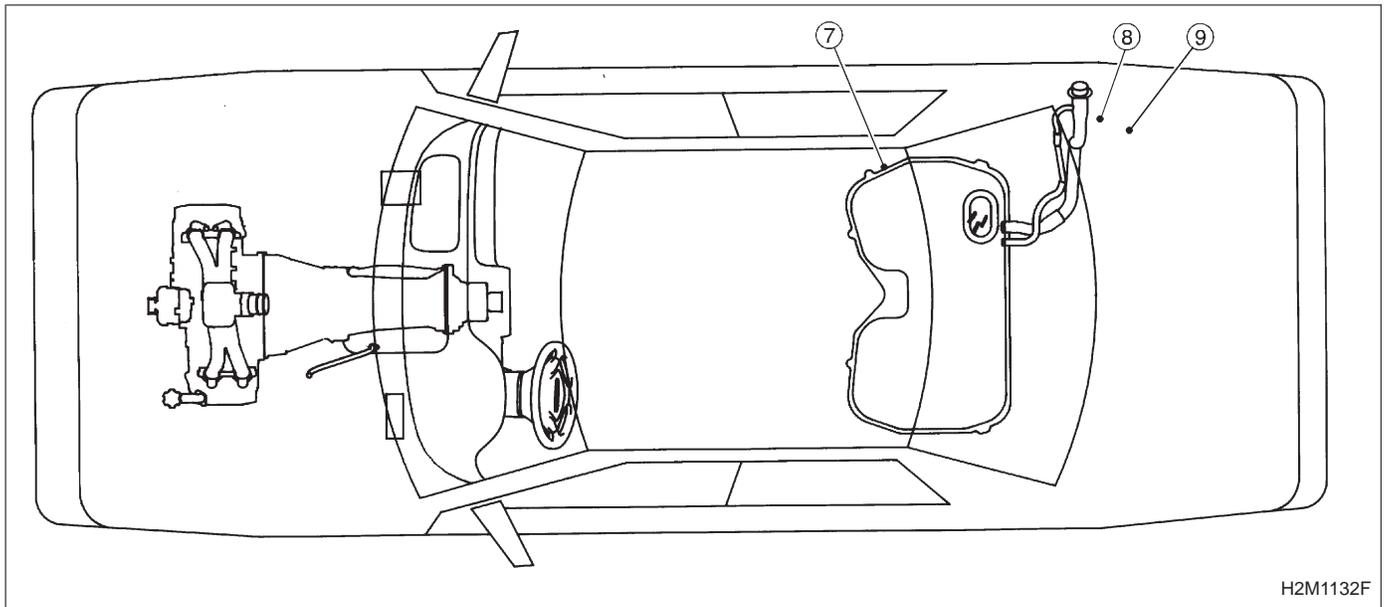


B2M1040A



B2M1041B

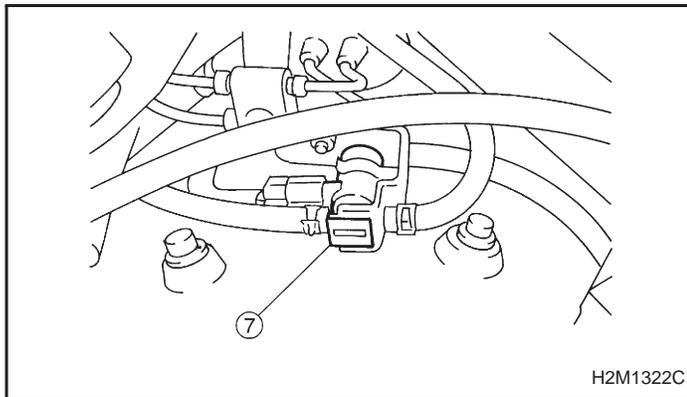
SUBARU.



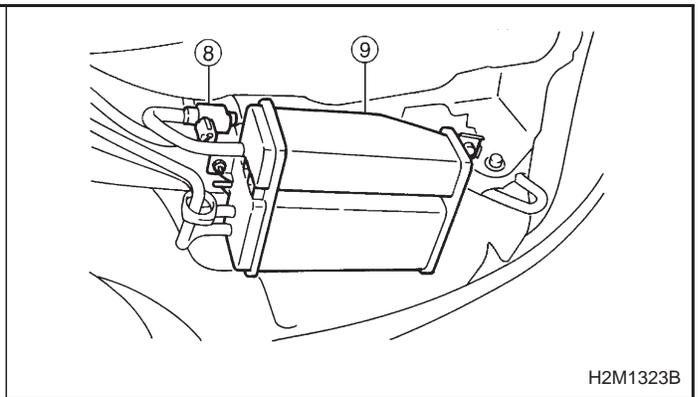
H2M1132F

- ⑦ Pressure control solenoid valve
- ⑧ Vent control solenoid valve

- ⑨ Canister

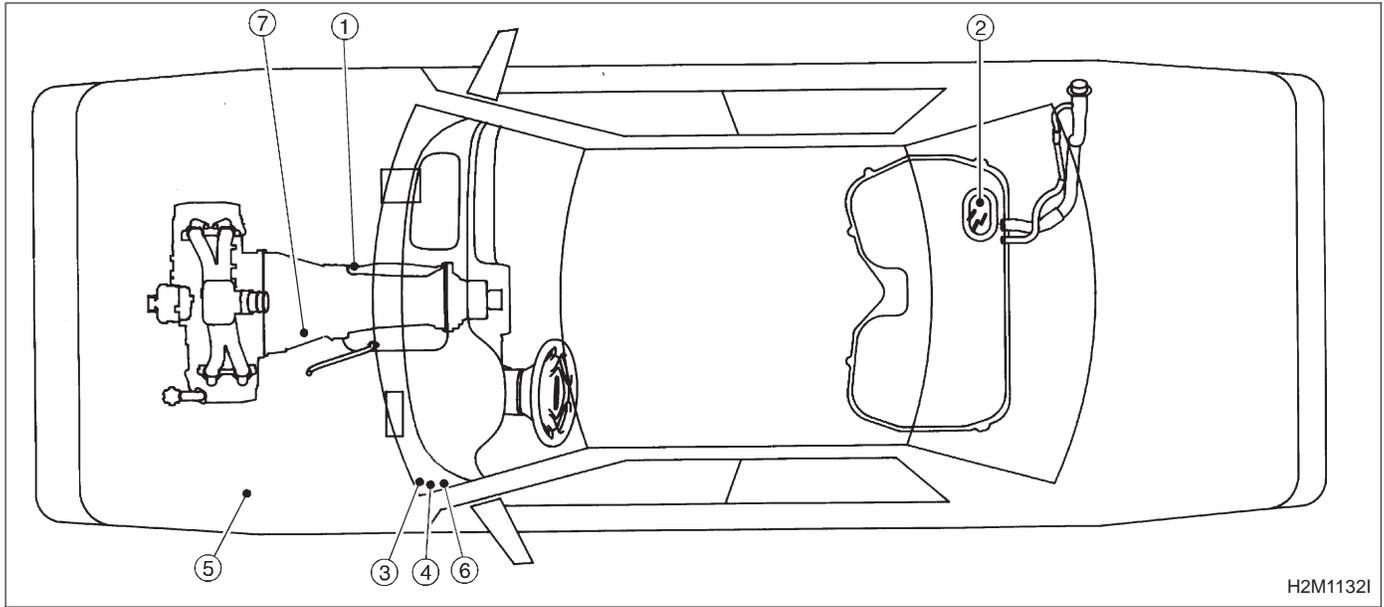


H2M1322C



H2M1323B

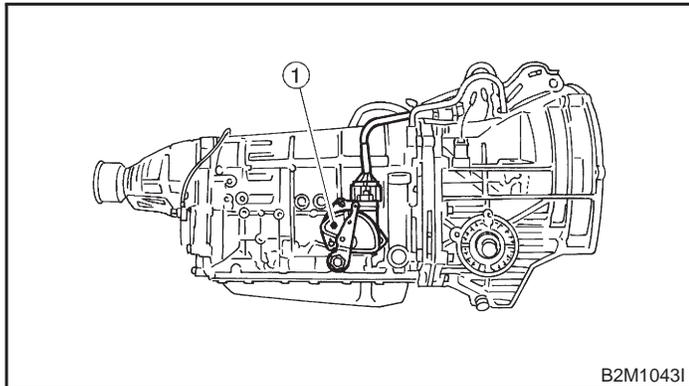
2. Electrical Components Location



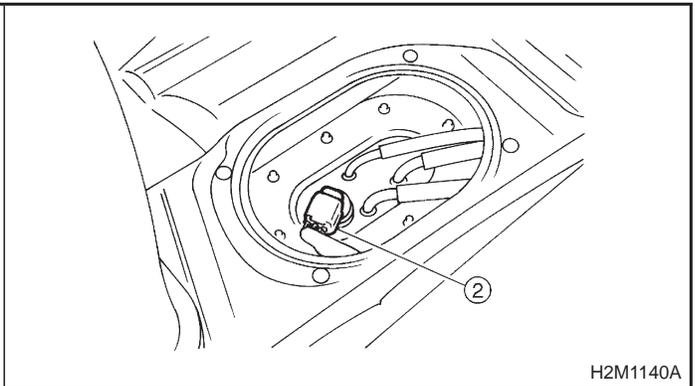
H2M1132I

- ① Inhibitor switch
- ② Fuel pump
- ③ Main relay
- ④ Fuel pump relay

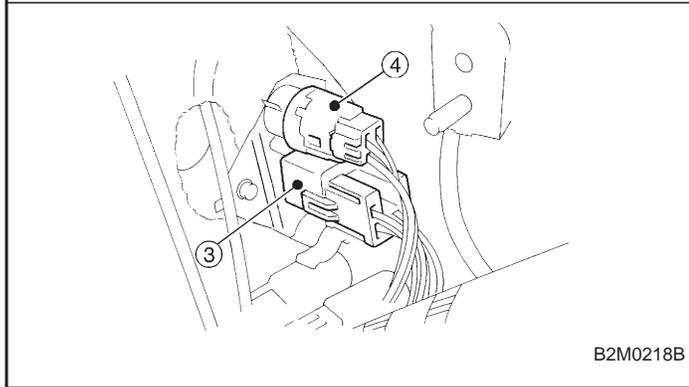
- ⑤ Radiator sub fan relay (With A/C models only)
- ⑥ Main fan relay
- ⑦ Starter



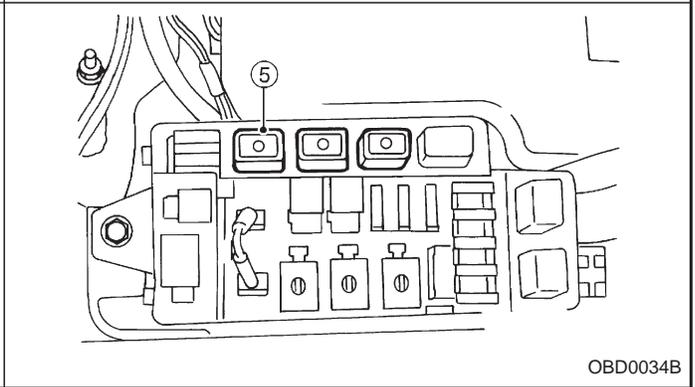
B2M1043I



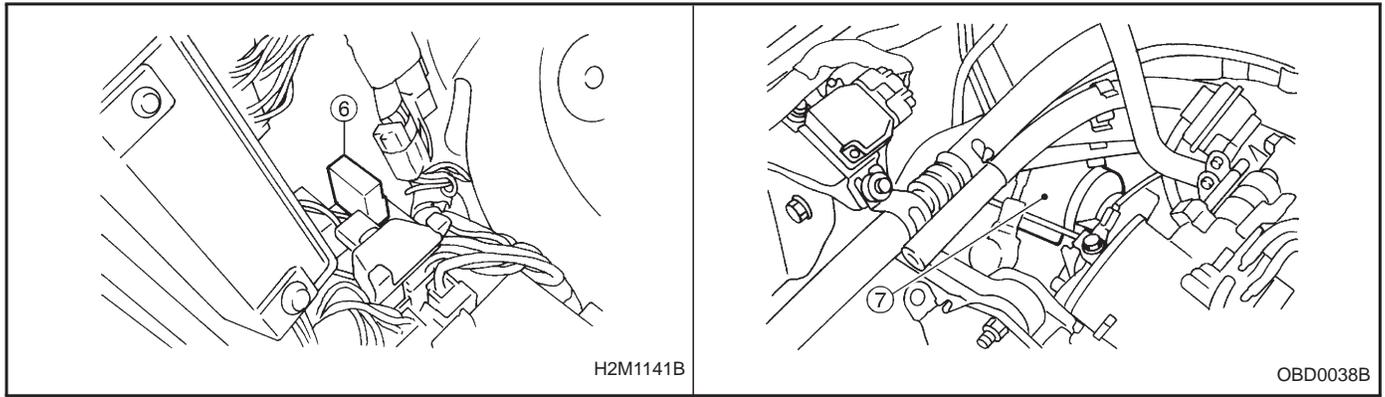
H2M1140A



B2M0218B

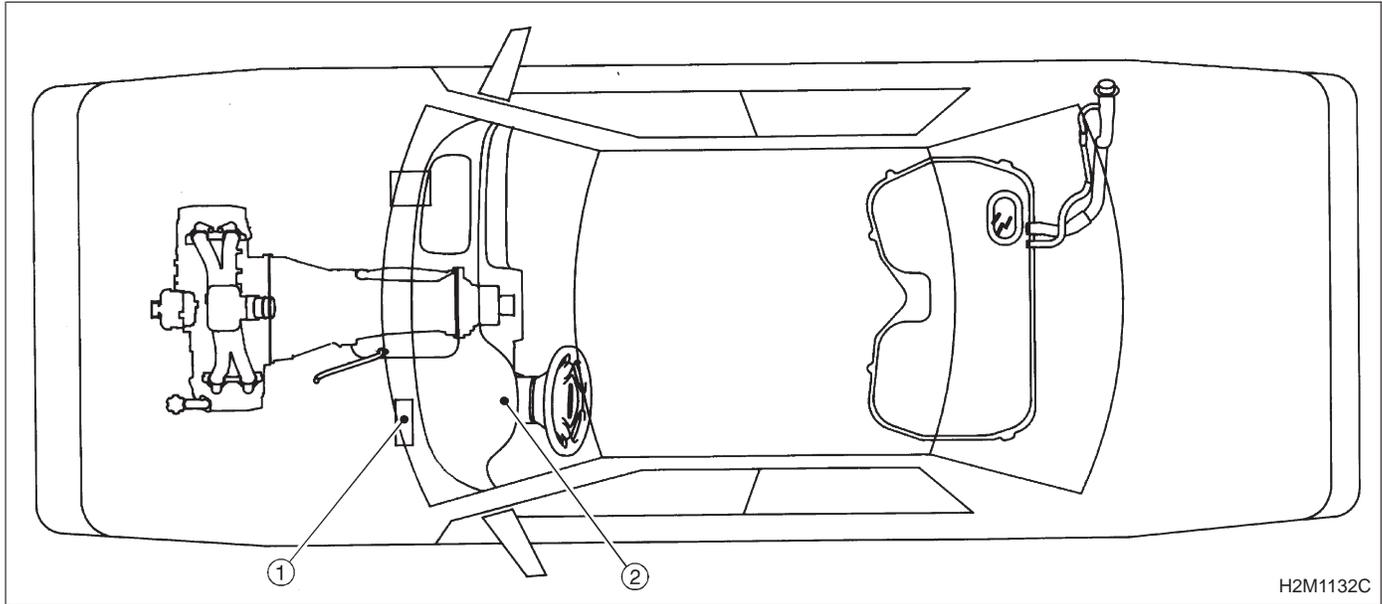


OBD0034B



C: TRANSMISSION

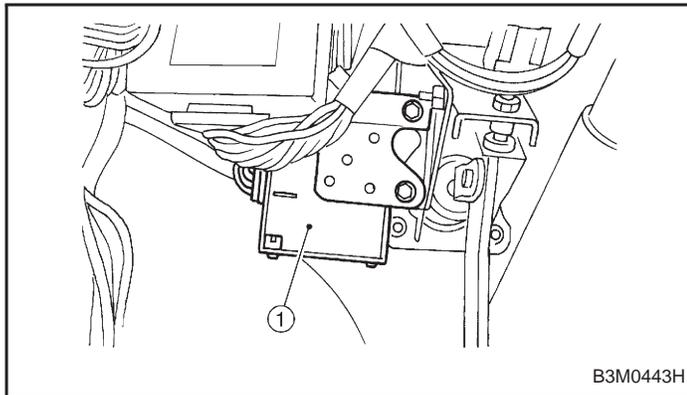
1. MODULE



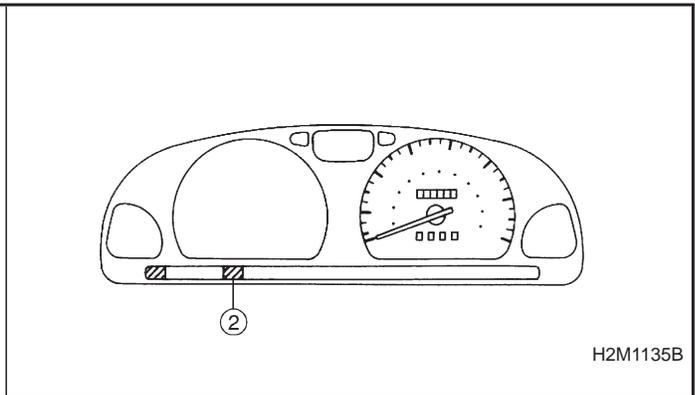
H2M1132C

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

② AT diagnostic indicator light (for AT vehicles)

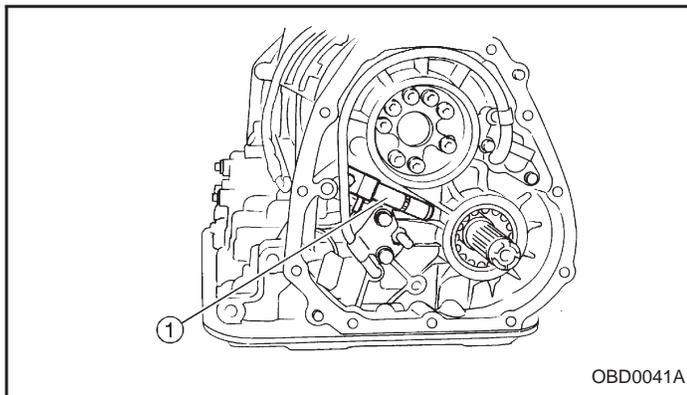


B3M0443H

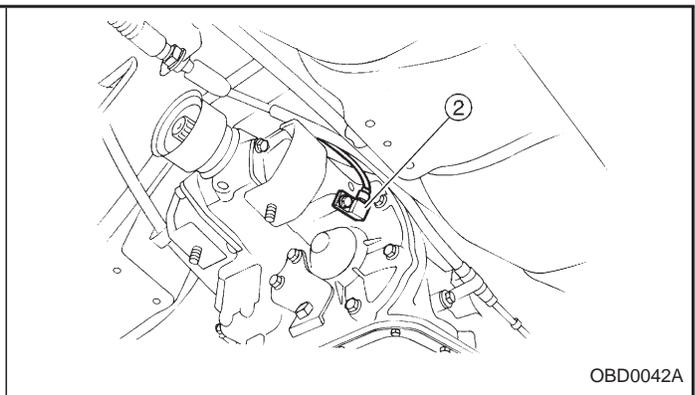


H2M1135B

2. SENSOR



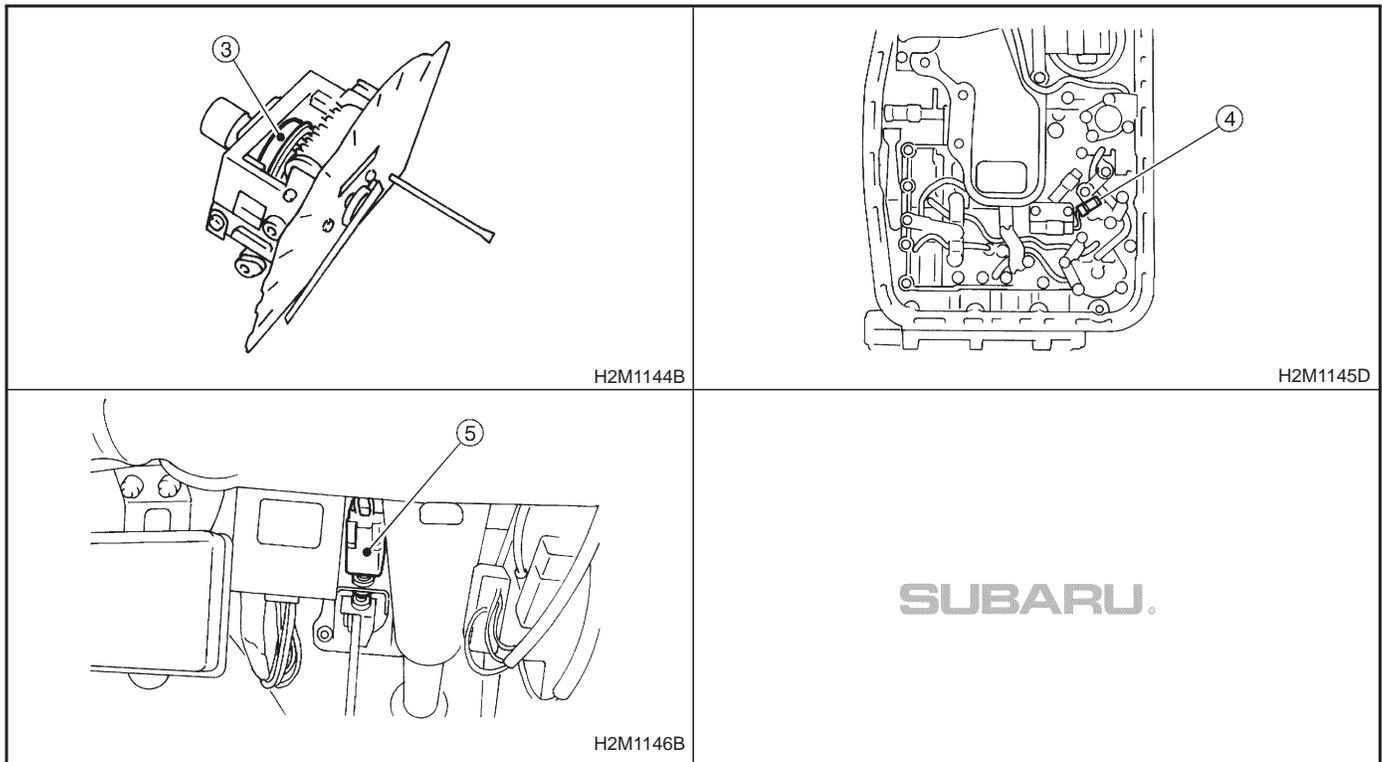
OBD0041A



OBD0042A

① Vehicle speed sensor 1 (for AT FWD vehicles)

② Vehicle speed sensor 1 (for AT AWD vehicles)

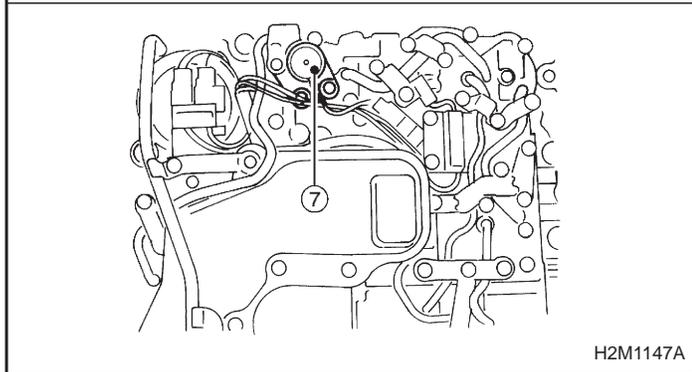
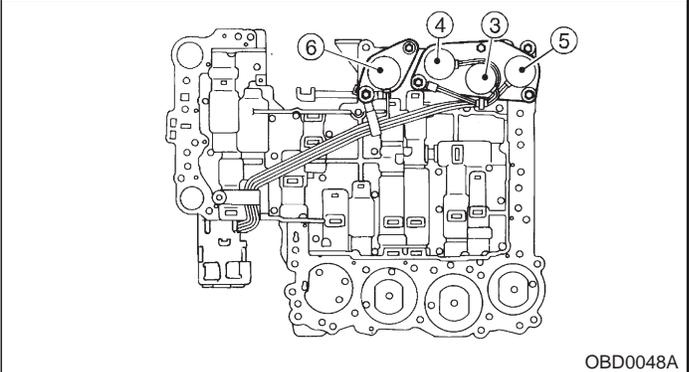
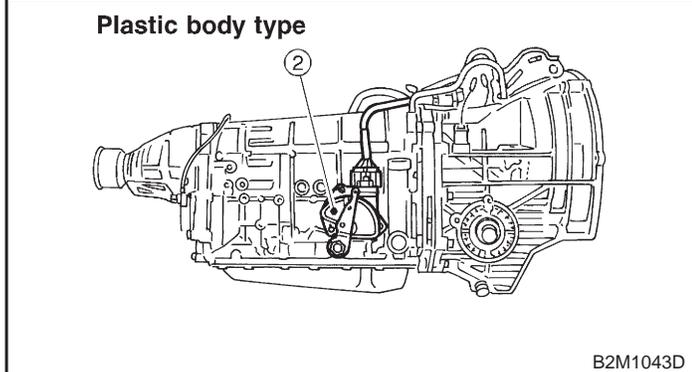
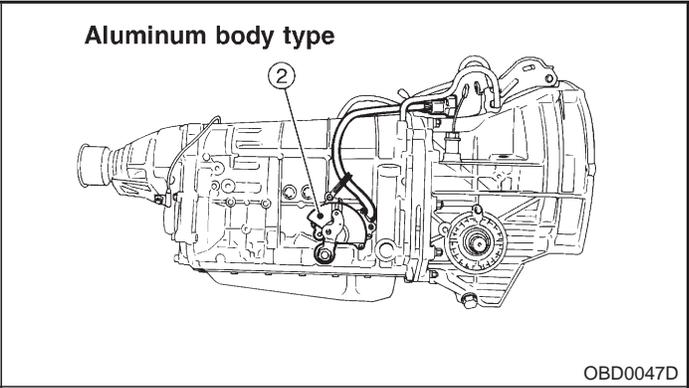
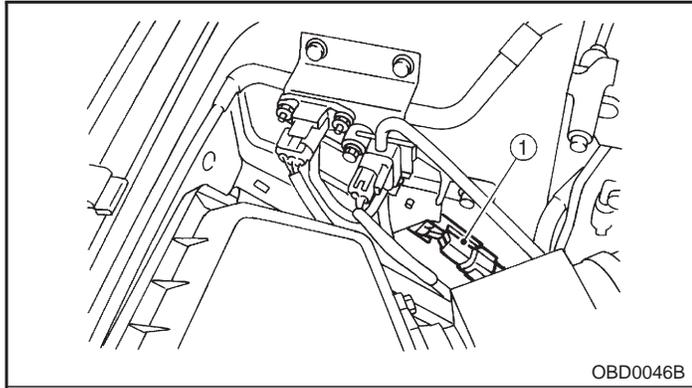


- ③ Vehicle speed sensor 2
- ④ ATF temperature sensor (for AT vehicles)

- ⑤ Brake light switch

3. SOLENOID VALVE AND RELAY

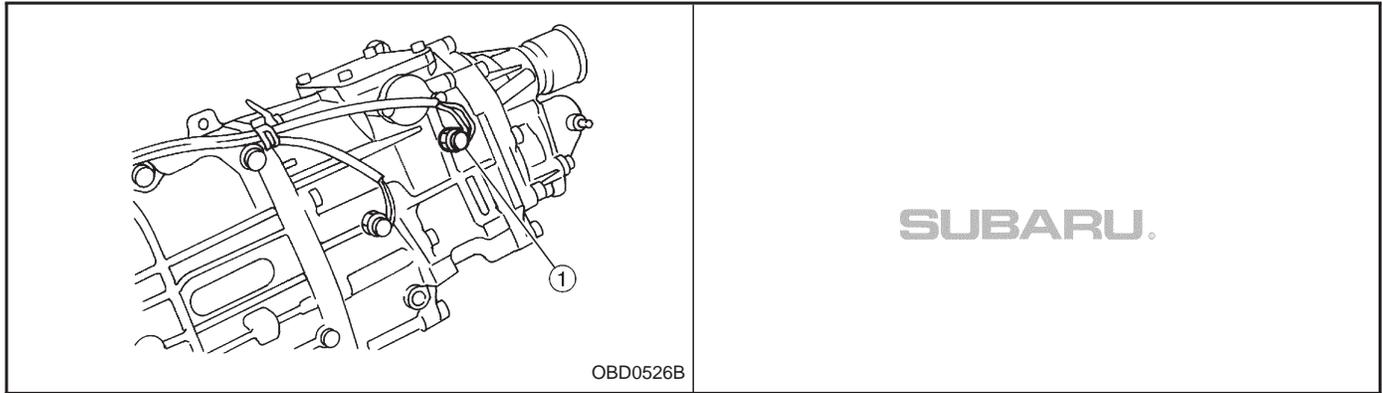
● For AT vehicles



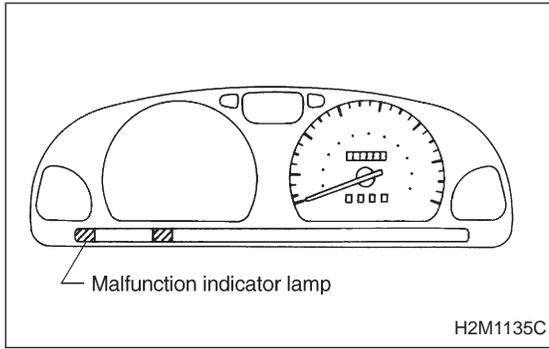
- ① Dropping resistor
- ② Inhibitor switch
- ③ Shift solenoid valve 1
- ④ Shift solenoid valve 2

- ⑤ Shift solenoid valve 3
- ⑥ Duty solenoid valve A
- ⑦ Duty solenoid valve B

● For MT vehicles



① Neutral position switch (AWD models)



3. Diagnosis System

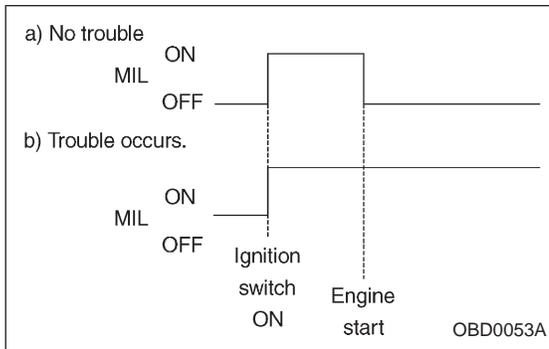
A: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL)

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

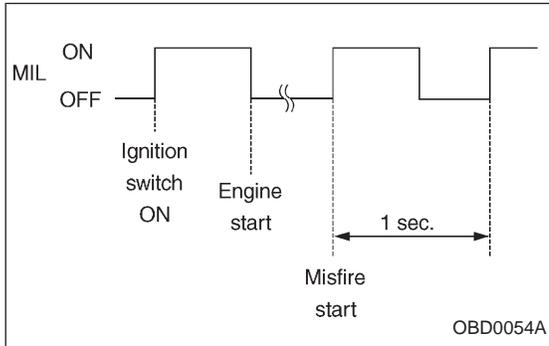
1) When ignition switch is turned to ON (engine off), the CHECK ENGINE malfunction indicator lamp (MIL) in the combination meter illuminates.

NOTE:

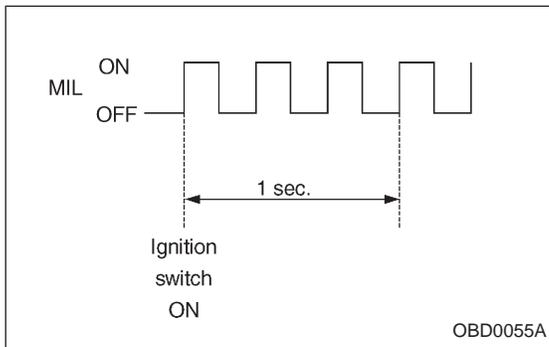
If the MIL does not illuminate, perform diagnostics of the CHECK ENGINE light circuit or the combination meter circuit. <Ref. to 2-7 [T700].>



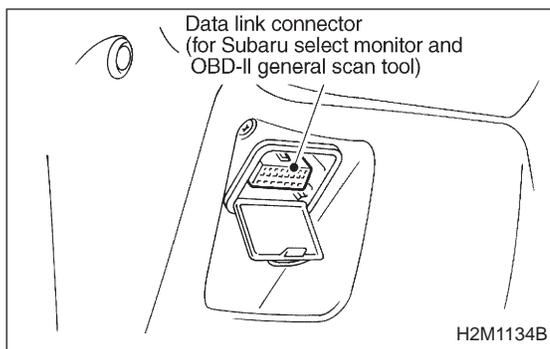
2) After starting the engine, the MIL goes out. If it does not, either the engine or the emission control system is malfunctioning.



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:

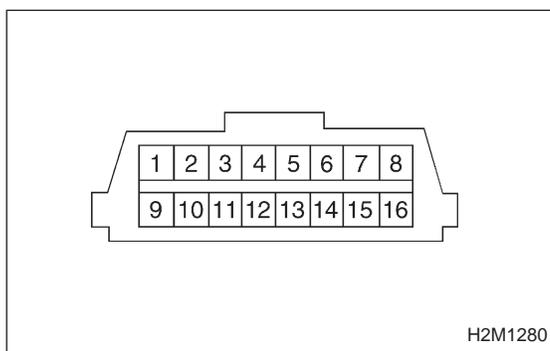
- (1) MODE \$01: Current powertrain diagnostic data
- (2) MODE \$02: Powertrain freeze frame data
- (3) MODE \$03: Emission-related powertrain diagnostic trouble codes
- (4) MODE \$04: Clear/Reset emission-related diagnostic information
- (5) MODE \$05: Oxygen sensor monitoring test results

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 (FOR OBD-II GENERAL SCAN TOOL AND SUBARU SELECT MONITOR)

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

CAUTION:

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

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

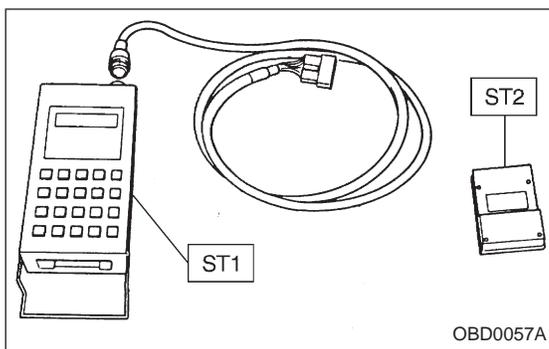
Refers to the mode using oxygen sensor output data while the on-board diagnosis system is performing diagnosis on the oxygen sensor.

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:

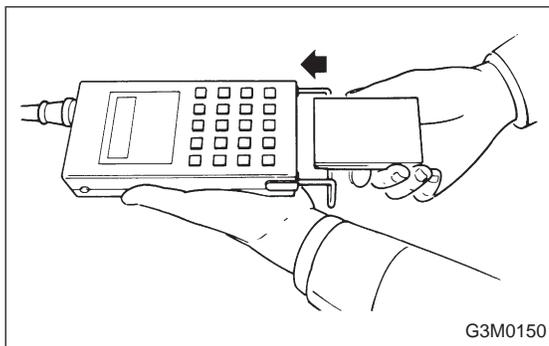
Refer to OBD-II general scan tool manufacturer's instruction manual to access oxygen sensor monitoring test results (MODE \$05).



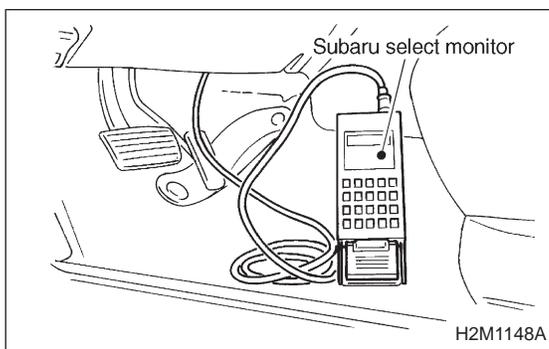
C: SUBARU SELECT MONITOR

1. HOW TO USE SUBARU SELECT MONITOR

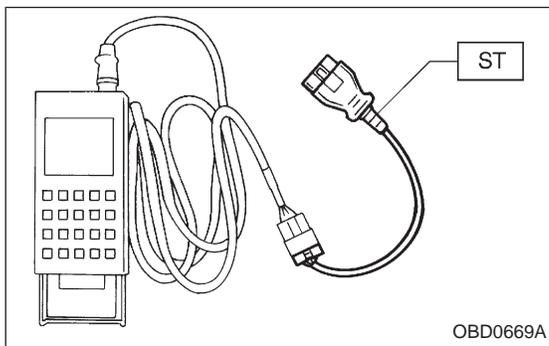
- 1) Prepare Subaru select monitor and cartridge.
- ST1 498307500 SELECT MONITOR KIT
ST2 498346200 CARTRIDGE



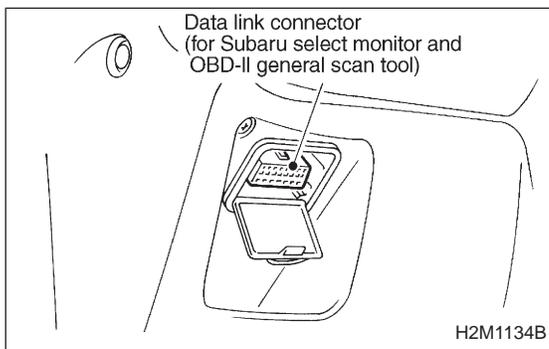
- 2) Turn ignition switch and Subaru select monitor switch to OFF.
- 3) Insert cartridge into Subaru select monitor.



- 4) Connect Subaru select monitor to data link connector.
 - Using data link connector for Subaru select monitor only, connect Subaru select monitor to its data link connector located in the lower portion of the instrument panel (on the driver's side), to the side of the center console box.

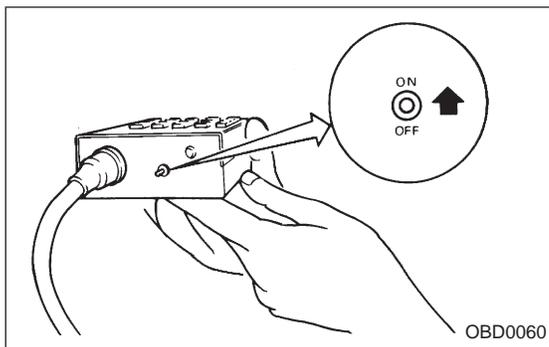


- Using data link connector for Subaru select monitor and OBD-II general scan tool;
 - (1) Connect ST to Subaru select monitor cable.
- ST 498357200 ADAPTER CABLE

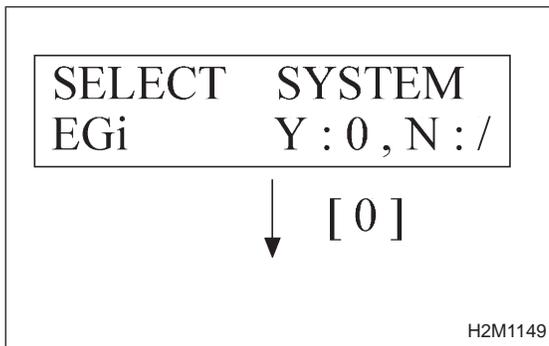


- (2) Open the cover and connect Subaru select monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.

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

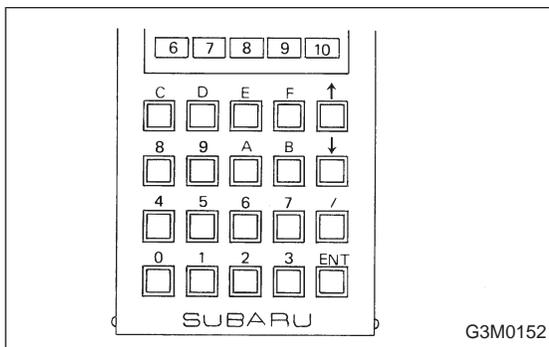


- 5) Turn ignition switch ON (engine OFF) and Subaru select monitor switch ON.
- 6) Using Subaru select monitor, call up diagnostic trouble code(s) and various data, then record them.

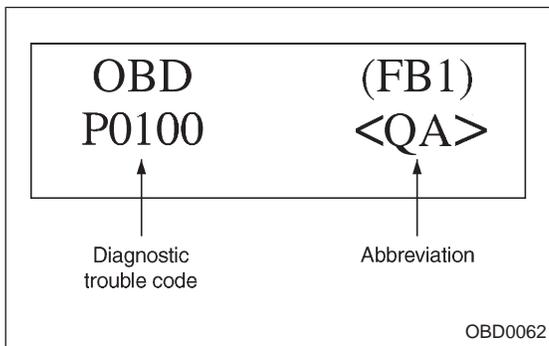


2. READ DIAGNOSTIC TROUBLE CODE (DTC) SHOWN ON DISPLAY. (MODE FB1)

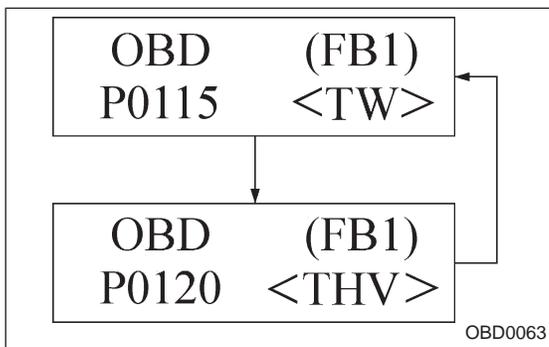
- 1) Select engine mode using function key. Press the function key [0].



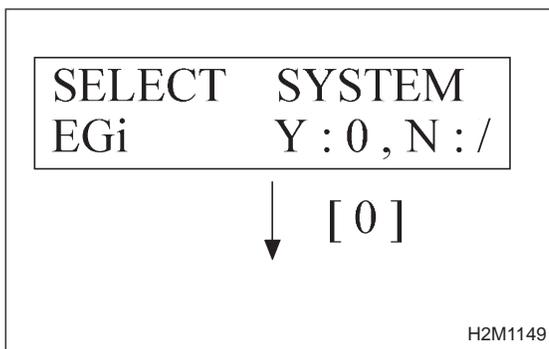
- 2) Designate mode using function key. Press [F] [B] [1] [ENT] in that order.



- 3) Ensure diagnostic trouble code(s) is shown.
 - (1) When there is only one diagnostic trouble code.

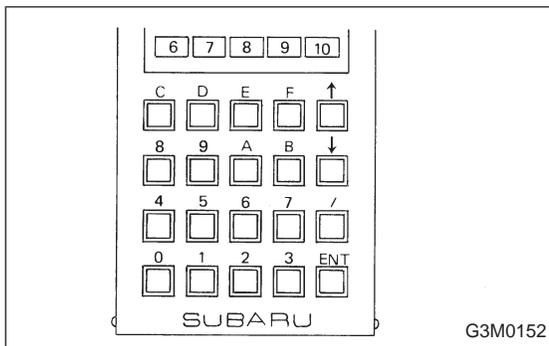


- (2) When there are multiple diagnostic trouble codes.
- NOTE:
For details concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST. <Ref. to 2-7 [T10A0].>

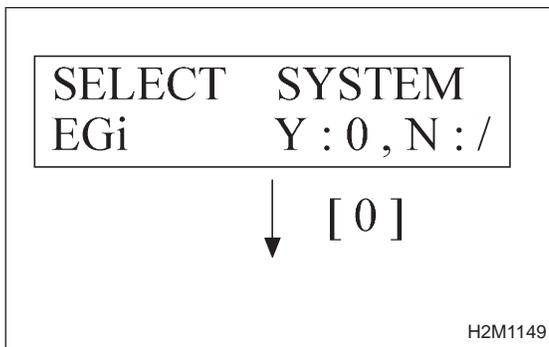


3. READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE. (FUNCTION MODE)

1) Select engine mode using function key.
Press the function key [0].

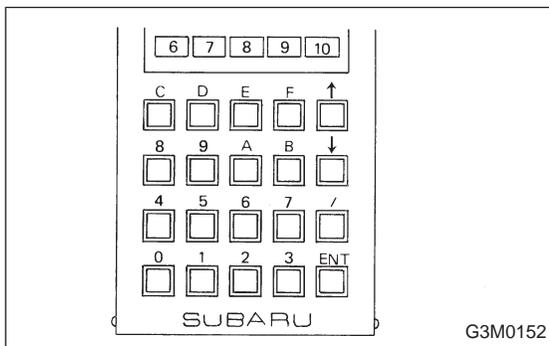


2) Designate mode using function key.
<Ref. to 2-7 [T3C6].>
(Example: Press [F] [0] [1] [ENT] in that order.)
3) Ensure data of input or output signal is shown.

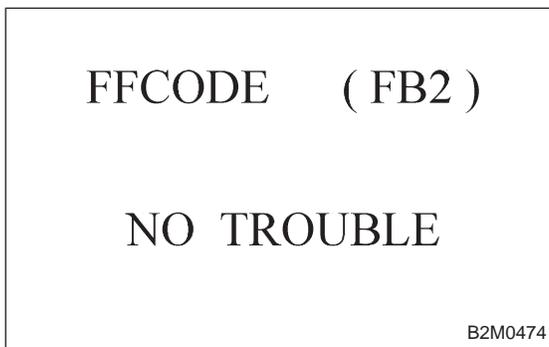


4. READ FREEZE FRAME DATA SHOWN ON DISPLAY. (MODE FB2)

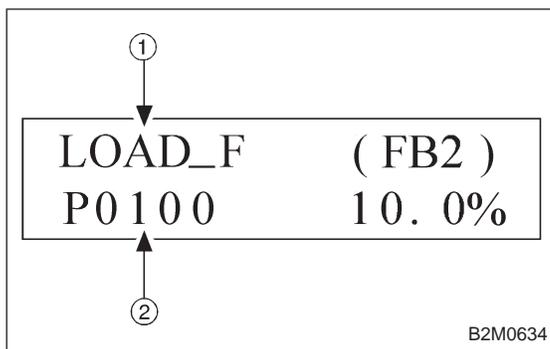
1) Select engine mode using function key.
Press the function key [0].



2) Designate mode using function key.
Press [F] [B] [2] [ENT] in that order.

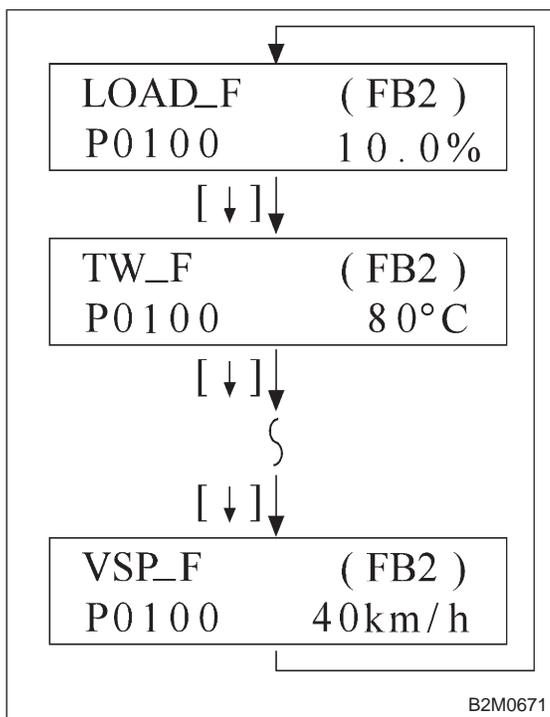


3) Ensure freeze frame data(s) is (are) shown.
(1) When no trouble is detected, or after memory is cleared.



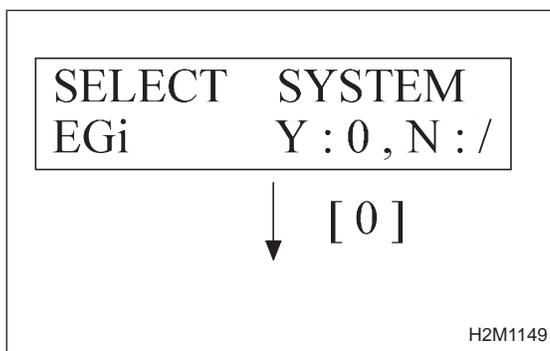
(2) When some trouble is detected.

- ① Abbreviation
- ② Diagnostic trouble code of trouble occurred



NOTE:

Other freeze frame data is shown on display by pushing the function key [↓].



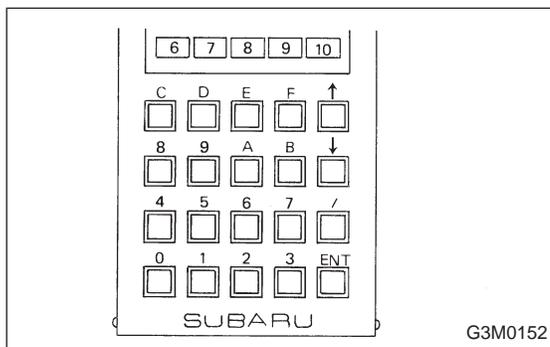
5. READ FREEZE FRAME DATA SHOWN ON DISPLAY. (MODE FB3)

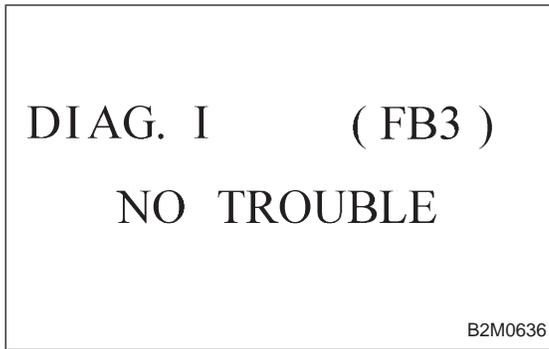
NOTE:

- For items and contents shown on display, refer to "6. READ DATA FUNCTION KEY LIST FOR ENGINE". <Ref. to 2-7 [T3C6].>
- Freeze frame data will not erase without clearing memory.

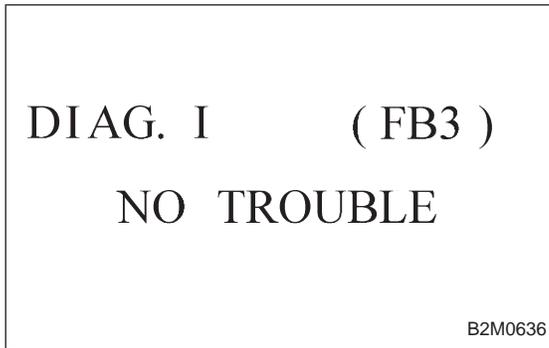
1) Select engine mode using function key. Press the function key [0].

2) Designate mode using function key. Press [F] [B] [3] [ENT] in that order.

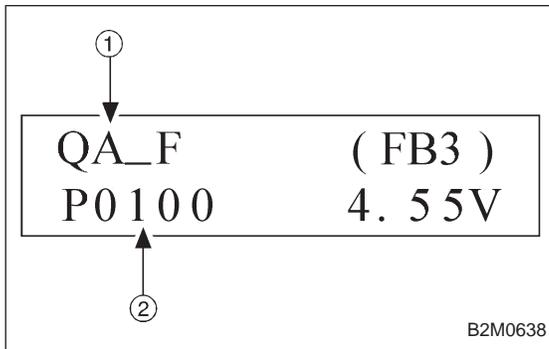




- 3) Ensure freeze frame data(s) is (are) shown.
 (1) When no trouble is detected, or after memory is cleared.

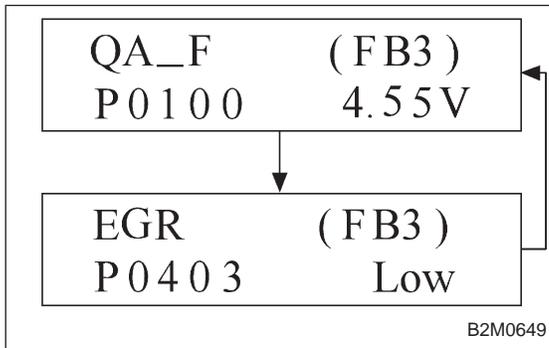


- (2) When a trouble occurs but the corresponding item is not displayed.



- (3) When only one trouble corresponding to the displayed item has occurred.

- ① Abbreviation
- ② Diagnostic trouble code of trouble occurred



- (4) When multiple troubles corresponding to the displayed item are detected.

NOTE:
 Freeze frame data is shown on display for 2 seconds at a time.

6. READ DATA FUNCTION KEY LIST FOR ENGINE

Function mode	Contents	Abbreviation	Unit of measure
F00	ROM ID number	YEAR	—
F01	Battery voltage	VB	V
F02	Vehicle speed signal	VSP	km/h, MPH
F03	Engine speed signal	EREV	rpm
F04	Engine coolant temperature signal	TW	°C, °F
F05	Ignition signal	ADVS	deg
F06	Mass air flow signal	QA	g/s, V
F07	Throttle position signal	THV	%, V
F08	Injector pulse width	TIM	mS
F09	Idle air control signal	ISC	%
F10	Load data	LOAD	%
F11	Front oxygen sensor output signal	O2	V
F12	Front oxygen sensor maximum and minimum output signal	O2max - min	V, V
F13	Rear oxygen sensor output signal	RO2	V
F14	Rear oxygen sensor maximum and minimum output signal	RO2max - min	V, V
F17	Short term fuel trim	ALPHA	%
F19	Knock sensor signal	KNOCK	deg
F20	Atmospheric absolute pressure signal	BARO. P	kPa, mmHg
F21	Intake manifold absolute pressure signal	MANI. P	kPa, mmHg
F29	A/F correction (short term trim) by rear oxygen sensor	PHOS	%
F30	Long term fuel trim	KBLRC	%
F31	Long term whole fuel trim	K0	%
F32	Front oxygen sensor heater current	FO2H	A
F33	Rear oxygen sensor heater current	RO2H	A
F35	Purge control solenoid valve duty ratio	CPCD	%
F36	Maximum value of cylinder #1 misfire times during 100 rotations	MF1	%
F37	Maximum value of cylinder #2 misfire times during 100 rotations	MF2	%
F38	Maximum value of cylinder #3 misfire times during 100 rotations	MF3	%
F39	Maximum value of cylinder #4 misfire times during 100 rotations	MF4	%
F42	Maximum and minimum EGR system pressure value (AT vehicles only)	EGR max - min	kPa
F43	Fuel tank pressure signal	TNKP	kPa, mmHg
F44	Fuel temperature signal	TNKT	°C, °F
F45	Fuel level signal	FLEVEL	V
FA0	ON ↔ OFF signal	—	—
FA1	ON ↔ OFF signal	—	—
FA2	ON ↔ OFF signal	—	—
FA3	ON ↔ OFF signal	—	—
FA4	ON ↔ OFF signal	—	—
FA5	ON ↔ OFF signal	—	—
FB0	Diagnostic trouble code (DTC)	INSPECT	—
FB1	Diagnostic trouble code (DTC)	OBD	—

Function mode	Contents	Abbreviation	Unit of measure
FB2	Load data (Freeze frame data)	LOAD-F	%
	Engine coolant temperature signal (Freeze frame data)	TW-F	°C
	Short term fuel trim (Freeze frame data)	ALPH-F	%
	Long term fuel trim (Freeze frame data)	KBLR-F	%
	Intake manifold absolute pressure signal (Freeze frame data)	MANI-F	kPa
	Engine speed signal (Freeze frame data)	EREV-F	rpm
	Vehicle speed signal (Freeze frame data)	VSP-F	km/h
FB3	Mass air flow signal (Freeze frame data)	QA-F (P0100)	V
	Pressure signal (Freeze frame data)	PS-F (P0105)	V
	Pressure signal (Freeze frame data)	PR-F (P0106)	V
	Engine coolant temperature signal (Freeze frame data)	TW-F (P0115)	V
	Throttle position signal (Freeze frame data)	THV-F (P0120)	V
	EGR control solenoid valve signal (Freeze frame data)	EGR (P0403)	—*1
	Purge control solenoid valve signal (Freeze frame data)	CPC (P0443)	—*1
	Start switch signal (Freeze frame data)	STSW (P1100)	—*1
	Pressure sources switching solenoid valve signal (Freeze frame data)	BR1 (P1102)	—*1
	Radiator fan relay 1 signal (Freeze frame data)	FAN1 (P1500)	—*1
FC0	Clear memory	—	—
FD01	Compulsory fuel pump relay operation check	FUEL PUMP	—
FD02	Compulsory purge control solenoid valve operation check	CPC SOL	—
FD03	Compulsory radiator fan relay operation check	RAD FAN	—
FD04	Compulsory A/C relay operation check	A/C RELAY	—
FD05	Compulsory EGR control solenoid valve operation check	EGR SOL	—
FD07	Compulsory pressure control solenoid valve operation check	PCV SOL	—
FD08	Compulsory vent control solenoid valve operation check	VENT SOL	—
FD09	Compulsory FICD solenoid valve operation check	FICD SOL	—
FD10	Compulsory pressure sources switching solenoid valve operation check	BR SOL	—

NOTE:

- Subaru select monitor is also available for monitoring information other than that used for check and repair of the vehicle.

- F42 (Maximum and minimum EGR system pressure value) will not read accurately until the EGR flow diagnosis terminates.

EGR flow diagnosis terminates when LED No. 2 illuminates at function mode FA4.

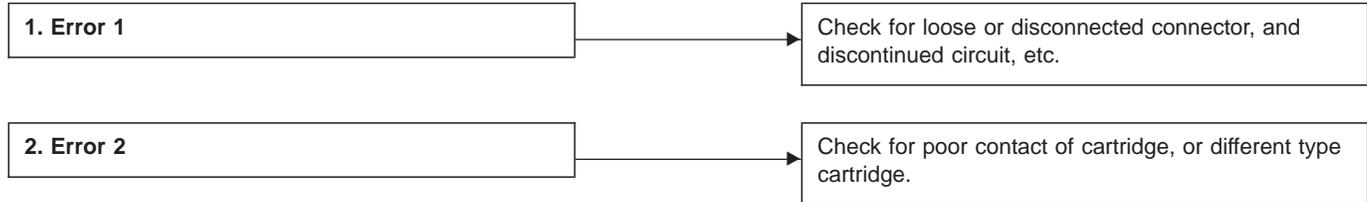
- *1: "Hi" or "Low" is shown instead of measured value.
- Because ASV solenoid valve and air injection system diagnosis solenoid valve are not installed, FD06 and FD11 will be displayed but non-functional.

<p>1 9 9 7 (F 0 0)</p> <p>2 . 2 S O H C</p>
B2M1045

7. FUNCTION MODE: F00
— ROM ID NUMBER (YEAR) —
CONDITION:
 Ignition switch “ON”

SPECIFIED DATA:
 Presentation display

- Probable cause (Item outside “specified data”)

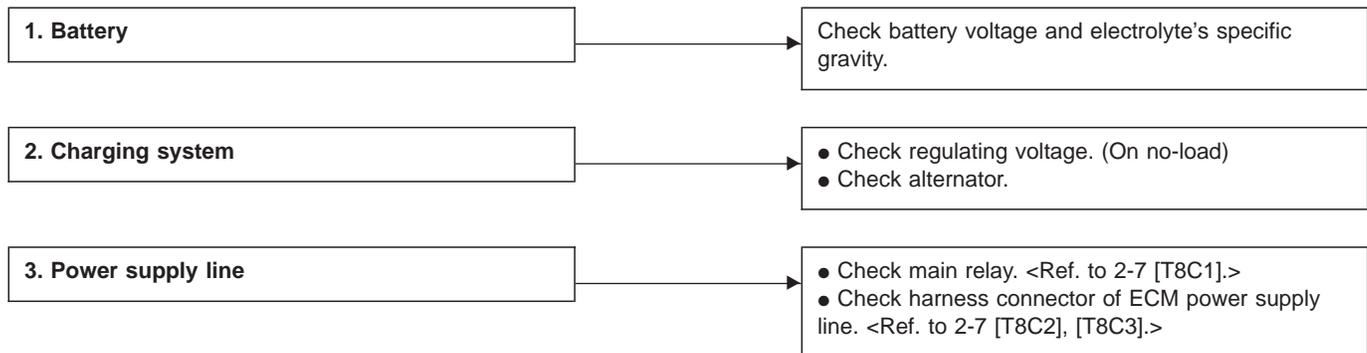


<p>V B (F 0 1)</p> <p>1 2 . 4 V</p>
B2M0270

8. FUNCTION MODE: F01
— BATTERY VOLTAGE (VB) —
CONDITION:
 (1) Ignition switch “ON”
 (2) Idling after warm-up

SPECIFIED DATA:
 (1) 11±1 V
 (2) 13±1 V

- Probable cause (Item outside “specified data”)



VSP	(F02)
24km/h	15MPH
B2M0754	

9. FUNCTION MODE: F02**— VEHICLE SPEED SIGNAL (VSP) —**

- Vehicle speed is indicated in kilometer per hour (km/h) and mile per hour (MPH) at the same time.

EREV	(F03)
1500 rpm	
B2M0478	

10. FUNCTION MODE: F03**— ENGINE SPEED SIGNAL (EREV) —**

TW	(F04)
80 ° C	176 ° F
B2M0479	

11. FUNCTION MODE: F04**— ENGINE COOLANT TEMPERATURE SIGNAL (TW)**

—

- Engine coolant temperature is indicated in “°C” and “°F” at the same time.

ADVS	(F05)
15 deg	
B2M0480	

12. FUNCTION MODE: F05**— IGNITION SIGNAL (ADVS) —**

NOTE:

The ignition timing value displayed in mode F05 is a value computed by ECM and will not always correspond with the value measured with a timing light.

QA	(F06)
1 . 67g / s	2 . 02V
B2M0481	

13. FUNCTION MODE: F06**— MASS AIR FLOW SIGNAL (QA) —**

- Mass air flow and voltage input from mass air flow sensor are shown on display at the same time.

THV (F07)

0% 0.21V

B2M0482

14. FUNCTION MODE: F07

— THROTTLE POSITION SIGNAL (THV) —

- Throttle position is indicated in percentage (%) and voltage (V) at the same time.

NOTE:

Be sure that the displayed value changes smoothly when changing throttle valve from fully closed to fully opened.

TIM (F08)

2.82 mS

B2M0483

15. FUNCTION MODE: F08

— INJECTOR PULSE WIDTH (TIM) —

ISC (F09)

35.7 %

B2M0484

16. FUNCTION MODE: F09

— IDLE AIR CONTROL SIGNAL (ISC) —

LOAD (F10)

10.0 %

B2M0485

17. FUNCTION MODE: F10

— LOAD DATA (LOAD) —

O2 (F11)

0.60 V

B2M0486

18. FUNCTION MODE: F11

— FRONT OXYGEN SENSOR OUTPUT SIGNAL (O2)

—

O₂max - min (F12)

0 . 80V 0 . 10V

B2M0487

19. FUNCTION MODE: F12

— FRONT OXYGEN SENSOR MAXIMUM AND MINIMUM OUTPUT SIGNAL (FO₂MAX - MIN) —

- Front oxygen sensor maximum and minimum output signals are indicated at the same time.

RO₂ (F13)

0 . 60 V

B2M0488

20. FUNCTION MODE: F13

— REAR OXYGEN SENSOR OUTPUT SIGNAL (RO₂) —

—

RO₂max - min (F14)

0 . 80V 0 . 10V

B2M0489

21. FUNCTION MODE: F14

— REAR OXYGEN SENSOR MAXIMUM AND MINIMUM OUTPUT SIGNAL (RO₂MAX - MIN) —

- Rear oxygen sensor maximum and minimum output signals are indicated at the same time.

ALPHA (F17)

- 0 . 8 %

B2M0490

22. FUNCTION MODE: F17

— SHORT TERM FUEL TRIM [A/F CORRECTION COEFFICIENT] (ALPHA) —

KNOCK (F19)

3 . 0 deg

B2M0491

23. FUNCTION MODE: F19

— KNOCK SENSOR SIGNAL [IGNITION TIMING CORRECTION COEFFICIENT] (KNOCK) —

BARO. P (F 2 0)

1 0 0 kPa 752 mmHg

B2M0755

24. FUNCTION MODE: F20

— ATMOSPHERIC ABSOLUTE PRESSURE SIGNAL (BARO. P) —

- Atmospheric absolute pressure is indicated in “kPa” and “mmHg” at the same time.

MANI. P (F 2 1)

2 9 kPa 218 mmHg

B2M0756

25. FUNCTION MODE: F21

— INTAKE MANIFOLD ABSOLUTE PRESSURE SIGNAL (MANI. P) —

- Intake manifold absolute pressure is indicated in “kPa” and “mmHg” at the same time.

PHOS (F29)

0 . 7 8 %

B2M0494

26. FUNCTION MODE: F29

— A/F CORRECTION COEFFICIENT [SHORT TERM TRIM] BY REAR OXYGEN SENSOR (PHOS) —

KBLRC (F30)

5 . 5 %

B2M0495

27. FUNCTION MODE: F30

— LONG TERM FUEL TRIM [A/F LEARNING CORRECTION COEFFICIENT] (KBLRC) —

K0 (F31)

0 . 0 %

B2M0496

28. FUNCTION MODE: F31

— LONG TERM FUEL TRIM WHOLE [A/F LEARNING CONTROL COEFFICIENT] (K0) —

FO2H (F32)

1.00 A

B2M0497

29. FUNCTION MODE: F32
— FRONT OXYGEN SENSOR HEATER CURRENT
(FO2H) —

RO2H (F33)

1.00 A

B2M0498

30. FUNCTION MODE: F33
— REAR OXYGEN SENSOR HEATER CURRENT
(RO2H) —

CPCD (F35)

0%

H2M1325

31. FUNCTION MODE: F35
— PURGE CONTROL SOLENOID VALVE DUTY RATIO
(CPCD) —

MF1 (F36)

0 %

B2M0499

32. FUNCTION MODE: F36
— MAXIMUM VALUE OF CYLINDER #1 MISFIRE RATE
DURING 100 ROTATIONS (MF1) —

MF2 (F37)

0 %

B2M0500

33. FUNCTION MODE: F37
— MAXIMUM VALUE OF CYLINDER #2 MISFIRE RATE
DURING 100 ROTATIONS (MF2) —

MF3	(F38)
0 %	
B2M0501	

34. FUNCTION MODE: F38
 — MAXIMUM VALUE OF CYLINDER #3 MISFIRE RATE DURING 100 ROTATIONS (MF3) —

MF4	(F39)
0 %	
B2M0502	

35. FUNCTION MODE: F39
 — MAXIMUM VALUE OF CYLINDER #4 MISFIRE RATE DURING 100 ROTATIONS (MF4) —

EGRmax-min	(F42)
100kPa	4kPa
B2M0759	

36. FUNCTION MODE: F42
 — MAXIMUM AND MINIMUM EGR SYSTEM PRESSURE VALUE [AT VEHICLES] (EGRMAX-MIN) —
 ● Maximum and minimum EGR system pressure value are indicated at the same time.

TNKP	(F43)
0.10kPa	1mmHg
H2M1326	

37. FUNCTION MODE: F43
 — FUEL TANK PRESSURE SIGNAL (TNKP) —

TNKT	(F44)
20°C	68°F
H2M1308	

38. FUNCTION MODE: F44
 — FUEL TEMPERATURE SIGNAL (TNKT) —

FLEVEL (F45)
2.50V
H2M1327

39. FUNCTION MODE: F45
— FUEL LEVEL SIGNAL (FLEVEL) —

40. FA MODE FOR ENGINE

Function mode	LED No.	Contents	Display	LED "ON" requirements
FA0	3	Neutral switch	NT	When neutral position signal is entered.
	7	Test mode connector	UD	When test mode connector is connected.
	8	AT/MT identification signal	AT	When AT identification signal is entered.
	9	Ignition switch	IG	When ignition switch is turned ON.
FA1	1	Radiator fan relay 2	R2	When radiator fan relay 2 is in function.
	2	Knock signal	KS	When knock signal is entered.
	3	Purge control solenoid valve	CN	When purge control solenoid valve is in function.
	4	Fuel pump relay	FP	When fuel pump relay is in function.
	6	Radiator fan relay 1	R1	When radiator fan relay 1 is in function.
	7	Air conditioner relay	AR	When air conditioner relay is in function.
	8	Air conditioner switch	AC	When air conditioner switch is turned ON.
FA2	1	FICD solenoid valve	AF	When FICD solenoid valve is in function.
	2	AEC signal	EC	When AEC signal is entered.
	3	EAM signal	AM	When EAM signal is gone out.
	4	AEB signal	EB	When AEB signal is entered.
	6	AET signal	ET	When AET signal is entered.
	7	Engine torque control signal	TR	When engine torque control signal is entered.
FA3	7	Pressure sources switching solenoid valve	BR	When pressure sources switching solenoid valve is in function.
FA4	1	Catalyst	CA	When diagnosis of catalyzer is finished.
	2	EGR system	E1	When diagnosis of EGR system is finished.
	3	Federal spec. vehicle identification signal	FC	When Federal spec. vehicle identification signal is entered.
	8	Rear oxygen sensor signal	OR	When rear oxygen sensor mixture ratio is rich.
	9	Front oxygen sensor signal	O2	When front oxygen sensor mixture ratio is rich.
FA5	6	Vent control solenoid valve	AL	When vent control solenoid valve is in function.
	7	EGR solenoid valve	ER	When EGR solenoid valve is in function.
	8	Pressure control solenoid valve	PC	When pressure control solenoid valve is in function.

LED No.	Signal name	Display
1	—	—
2	—	—
3	Neutral switch	NT
4	—	—
5	—	—
6	—	—
7	Test mode connector	UD
8	Identification of AT model	AT
9	Ignition switch	IG
0	—	—

—	—	NT	—	—
—	UD	AT	IG	—

1	2	3	4	5
6	7	8	9	0

41. FUNCTION MODE: FA0

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.

- LED No. 3 ● On MT model, gear position is in neutral.
- On AT model, shift position is in “P” or “N”.
- LED No. 7 Test mode connector is connected.
- LED No. 8 Vehicle is AT model.
- LED No. 9 Ignition switch is turned ON.

LED No.	Signal name	Display
1	Radiator fan relay 2	R2
2	Knock signal	KS
3	Purge control solenoid valve	CN
4	Fuel pump relay	FP
5	—	—
6	Radiator fan relay 1	R1
7	A/C relay	AR
8	A/C switch	AC
9	—	—
0	—	—

R2	KS	CN	FP	—
R1	AR	AC	—	—

1	2	3	4	5
6	7	8	9	0

42. FUNCTION MODE: FA1

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.

- LED No. 1 Radiator fan relay 2 is turned ON.
- LED No. 2 Engine is knocking.
- LED No. 3 Purge control solenoid valve is in function.
- LED No. 4 Fuel pump relay is turned ON.
- LED No. 6 Radiator fan relay 1 is turned ON.
- LED No. 7 A/C relay is turned ON.
- LED No. 8 A/C switch is turned ON.

NOTE:

- When LED No. 1, 3, 4, 6 and 7 blinks with the test mode connector connected and the ignition switch turned to ON, the corresponding part is functioning properly.
- When LED No. 4 illuminates for only 2 seconds after the ignition switch is turned to ON, (and then goes out), the corresponding part is functioning properly.
- LED No. 3 is applicable only to the models not equipped with enhanced evaporative emission control system.

LED No.	Signal name	Display
1	FICD solenoid valve	AF
2	AEC signal	EC
3	EAM signal	AM
4	AEB signal	EB
5	—	—
6	AET signal	ET
7	Engine torque control signal	TR
8	—	—
9	—	—
0	—	—

AF	EC	AM	EB	—
ET	TR	—	—	—

1	2	3	4	5
---	---	---	---	---

6	7	8	9	0
---	---	---	---	---

LED No.	Signal name	Display
1	—	—
2	—	—
3	—	—
4	—	—
5	—	—
6	—	—
7	Pressure sources switching solenoid valve	BR
8	—	—
9	—	—
0	—	—

—	—	—	—	—
—	BR	—	—	—

1	2	3	4	5
---	---	---	---	---

6	7	8	9	0
---	---	---	---	---

43. FUNCTION MODE: FA2

— ON ↔ OFF SIGNAL —

Requirement for LED "ON".

LED No. 1 FICD solenoid valve is in function.

LED No. 2 ECM entered the AEC signal emitted from TCS C/M.

LED No. 3 EAM signal goes out.

LED No. 4 ECM entered the AEB signal emitted from TCS C/M.

LED No. 6 ECM entered the AET signal emitted from TCS C/M.

LED No. 7 ECM entered the torque control signal emitted from TCM.

NOTE:

When LED No. 1 blinks with the test mode connector connected and the ignition switch turned to ON, the corresponding part is functioning properly.

44. FUNCTION MODE: FA3

— ON ↔ OFF SIGNAL —

Requirement for LED "ON".

LED No. 7 Pressure sources switching solenoid valve is in function.

NOTE:

When LED No. 7 blinks with the test mode connector connected and the ignition switch turned to ON, the corresponding part is functioning properly.

LED No.	Signal name	Display
1	Catalyst	CA
2	EGR system	E1
3	Federal spec. vehicle identification signal	FC
4	—	—
5	—	—
6	—	—
7	—	—
8	Rear oxygen sensor signal	OR
9	Front oxygen sensor signal	O2
0	—	—

CA	E1	FC	—	—
—	—	OR	O2	—

1	2	3	4	5
---	---	---	---	---

6	7	8	9	0
---	---	---	---	---

45. FUNCTION MODE: FA4

— ON ↔ OFF SIGNAL —

Requirement for LED "ON".

LED No. 1 Diagnosis of catalyzer is finished.

LED No. 2 Diagnosis of EGR system is finished.

LED No. 3 Vehicle is Federal spec. vehicles.

LED No. 8 Rear oxygen sensor mixture ratio is rich.

LED No. 9 Front oxygen sensor mixture ratio is rich.

LED No.	Signal name	Display
1	—	—
2	—	—
3	—	—
4	—	—
5	—	—
6	Vent control solenoid valve	AL
7	EGR solenoid valve	ER
8	Pressure control solenoid valve	PC
9	—	—
0	—	—

—	—	—	—	—
AL	ER	PC	—	—

1	2	3	4	5
---	---	---	---	---

6	7	8	9	0
---	---	---	---	---

46. FUNCTION MODE: FA5

— ON ↔ OFF SIGNAL —

Requirement for LED "ON".

LED No. 6 Vent control solenoid valve is in function.

LED No. 7 EGR solenoid valve is in function.

LED No. 8 Pressure control solenoid valve is in function.

NOTE:

When LED No. 6, 7 and 8 blinks with the test mode connector connected and the ignition switch turned to ON, the corresponding part is functioning properly.

47. FB MODE FOR ENGINE

Function mode	Abbreviation	Contents	Contents of display	Page
FB0	INSPECT	On-board diagnostics (Inspection)	Current trouble code indicated by on-board diagnostics after clear memory.	67 <Ref. to 2-7 [T3E0].>
FB1	OBD	On-board diagnostics (Read data)	Current trouble code indicated by on-board diagnostics.	40 <Ref. to 2-7 [T3C2].>
FB2	LOAD-F	Load data	<ul style="list-style-type: none"> ● Freeze frame data ● Data stored at the time of trouble occurrence, is shown on display. 	41 <Ref. to 2-7 [T3C4].>
	TW-F	Engine coolant temperature signal		
	ALPH-F	Throttle position signal		
	KBLR-F	Long term fuel trim		
	MANI-F	Intake manifold absolute pressure signal		
	EREV-F	Engine speed signal		
	VSP-F	Vehicle speed signal		
FB3	QA-F (P0100)	Mass air flow signal	<ul style="list-style-type: none"> ● Freeze frame data ● Data stored at the time of trouble occurrence, is shown on display. 	42 <Ref. to 2-7 [T3C5].>
	PS-F (P0105)	Pressure signal		
	PR-F (P0106)	Pressure signal		
	TW-F (P0115)	Engine coolant temperature signal		
	THV-F (P0120)	Throttle position signal		
	EGR (P0403)	EGR control solenoid valve signal		
	CPC (P0443)	Purge control solenoid valve signal		
	STSW (P1100)	Start switch signal		
	BR1 (P1102)	Pressure sources switching solenoid valve signal		
	FAN1 (P1500)	Radiator fan relay 1 signal		

48. FC MODE FOR ENGINE

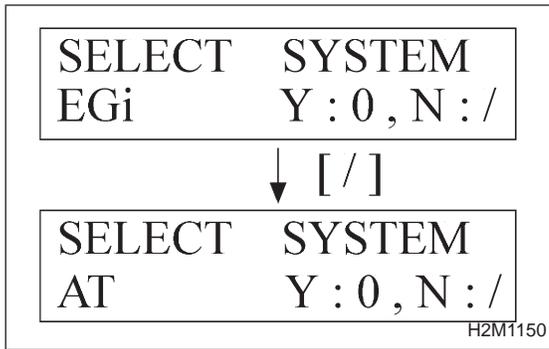
Function mode	Abbreviation	Contents	Contents of display	Page
FC0	MEMORY CLR	Back-up memory clear	Function of clearing trouble code stored in memory.	66 <Ref. to 2-7 [T3D0].>

49. FD MODE FOR ENGINE

Function mode	Abbreviation	Contents	Contents of display	Page
FD01	FUEL PUMP	Compulsory valve operation check	Function of checking operation of fuel pump relay, purge control solenoid valve, radiator fan relay, A/C relay, EGR control solenoid valve, pressure control solenoid valve, vent control solenoid valve and pressure sources switching solenoid valve.	72 <Ref. to 2-7 [T3F0].>
FD02	CPC SOL			
FD03	RAD FAN			
FD04	A/C RELAY			
FD05	EGR SOL			
FD07	PCV SOL			
FD08	VENT SOL			
FD09	FICD SOL			
FD10	BR SOL			

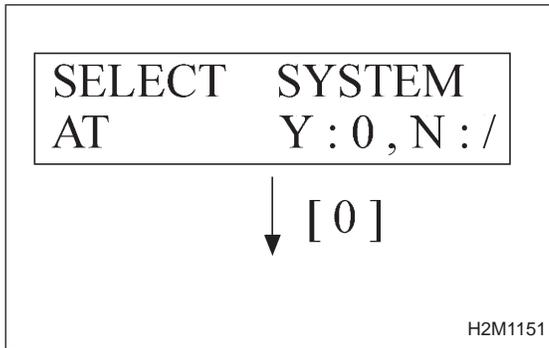
NOTE:

Because ASV solenoid valve and air injection system diagnosis solenoid valve are not installed, FD06 and FD11 will be displayed but non-functional.

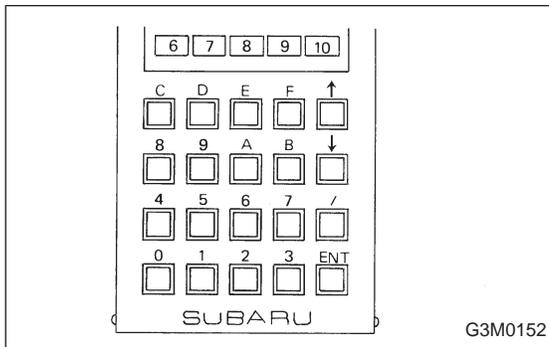


50. READ CURRENT DATA SHOWN ON DISPLAY FOR AT. (FUNCTION MODE)

1) Select AT mode using function key.
Press the function key [/], and change to AT mode.



2) Press the function key [0].



3) Designate mode using function key.

<Ref. to 2-7 [T3C51].>

(Example: Press [F] [0] [2] [ENT] in that order.)

4) Ensure data of input or output signal is shown.

51. READ DATA FUNCTION KEY LIST FOR AT

Function mode	Contents	Abbr.	Unit
F00	Mode display	E-4AT	—
F01	Battery voltage	VB	V
F02	Vehicle speed sensor 1 signal	VSP1	m/h
F03	Vehicle speed sensor 1 signal	VSP1	km/h
F04	Vehicle speed sensor 2 signal	VSP2	m/h
F05	Vehicle speed sensor 2 signal	VSP2	km/h
F06	Engine speed	EREV	rpm
F07	ATF temperature sensor signal	ATFT	deg F
F08	ATF temperature sensor signal	ATFT	deg C
F09	Throttle position sensor signal	THV	V
F10	Gear position	GEAR	—
F11	Line pressure duty ratio	PLDTY	%
F12	Lock-up duty ratio	LUPTY	%
F13	AWD duty ratio	4WDTY	%
F14	Throttle position sensor power supply voltage	THVCC	V
F15	Mass air flow sensor signal	AFM	V

<p>E - 4AT</p> <p>4WD</p>	<p>(F 0 0)</p> <p>1997</p>
<p>B2M1046</p>	

52. FUNCTION MODE: F00

— MODE DISPLAY —

SPECIFIED DATA:

Data at the left should be indicated.

Probable cause (if outside "specified data")

1. Communication failure
(No communication method can be confirmed with power ON.)

- | | |
|-----|--|
| (1) | Check loose or poor connectors, or shortcircuit. |
| (2) | Check type of cartridge. |

2. Vehicle types cannot be identified (due to communication failure).

Check improper cartridge.
Replace with proper one.

<p>VB</p> <p>12.7 V</p>	<p>(F01)</p>
<p>OBD0673</p>	

53. FUNCTION MODE: F01

— BATTERY VOLTAGE (VB) —

CONDITION:

- (1) Ignition switch ON
- (2) Engine idling after warm-up

SPECIFIED DATA:

- (1) 12±1 V
- (2) 13±1 V

1. Battery

Check battery voltage and specific gravity of electrolyte.

2. Charging system

- | | |
|-----|--|
| (1) | Measure regulating voltage under no loads. |
| (2) | Check generator (as a single unit). |

VSP1	(F02)
18 m/h	
G3M0725	

54. FUNCTION MODE: F02**— VEHICLE SPEED SENSOR 1 SIGNAL (VSP1) —**

- F02: Vehicle speed is indicated in mile per hour (m/h).
- F03: Vehicle speed is indicated in kilometer per hour (km/h).

VSP2	(F04)
12 m/h	
G3M0726	

55. FUNCTION MODE: F04**— VEHICLE SPEED SENSOR 2 SIGNAL (VSP2) —**

- F04: Vehicle speed is indicated in mile per hour (m/h).
- F05: Vehicle speed is indicated in kilometer per hour (km/h).

EREV	(F06)
1,500 rpm	
G3M0727	

56. FUNCTION MODE: F06**— ENGINE SPEED (EREV) —**

ATFT	(F07)
176 deg F	
OBD0386	

57. FUNCTION MODE: F07**— ATF TEMPERATURE SENSOR SIGNAL (ATFT) —**

- F07: ATF temperature is indicated in “deg F”.
- F08: ATF temperature is indicated in “deg C”.

THV	(F09)
4.0 V	
G3M0935	

58. FUNCTION MODE: F09**— THROTTLE POSITION SENSOR SIGNAL (THV) —**

GEAR (F10)
1st
G3M0730

59. FUNCTION MODE: F10
— GEAR POSITION (GEAR) —

PLDTY (F11)
50%
G3M0731

60. FUNCTION MODE: F11
— LINE PRESSURE DUTY RATIO (PLDTY) —

LUDTY (F12)
5%
G3M0732

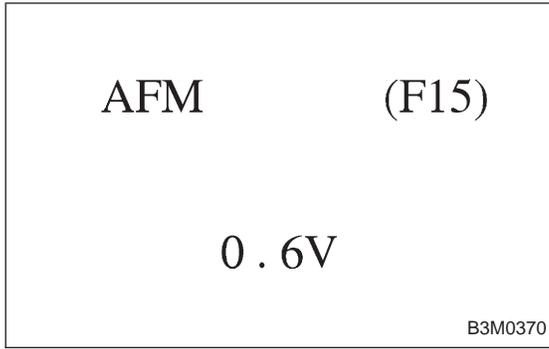
61. FUNCTION MODE: F12
— LOCK-UP DUTY RATIO (LUDTY) —

4WDTY (F13)
95%
G3M0733

62. FUNCTION MODE: F13
— AWD DUTY RATIO (4WDTY) —

THVCC (F14)
5.2 V
B3M0259

63. FUNCTION MODE: F14
— THROTTLE POSITION SENSOR POWER SUPPLY VOLTAGE (THVCC) —



64. FUNCTION MODE: F15
— MASS AIR FLOW SENSOR SIGNAL (AFM) —

LED No.	Signal name	Display
1	FWD switch	FF
2	Kick-down switch	KD
3	—	—
4	—	—
5	Brake switch	BR
6	ABS switch	AB
7	Cruise control set	CR
8	Power switch	PW
9	—	—
10	—	—

FF	KD	—	—	BR
AB	CR	PW	—	—

1	2	3	4	5
---	---	---	---	---

6	7	8	9	10
---	---	---	---	----

65. FUNCTION MODE: FA0

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.

LED No. 1 Fuse is installed in FWD switch.

LED No. 2 Kick-down switch is turned ON. (Europe and General models only)

LED No. 5 Brake pedal is depressed.

LED No. 6 ABS signal is entered.

LED No. 7 Cruise control is set.

LED No. 8 Power switch is turned ON. (Europe and General models only)

LED No.	Signal name	Display
1	N/P range switch	NP
2	R range switch	RR
3	D range switch	RD
4	3 range switch	R3
5	2 range switch	R2
6	1 range switch	R1
7	Diagnosis switch	SS
8	—	—
9	—	—
10	—	—

NP	RR	RD	R3	R2
R1	SS	—	—	—

1	2	3	4	5
---	---	---	---	---

6	7	8	9	10
---	---	---	---	----

66. FUNCTION MODE: FA1

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.

LED No. 1 “N” or “P” range is selected.

LED No. 2 “R” range is selected.

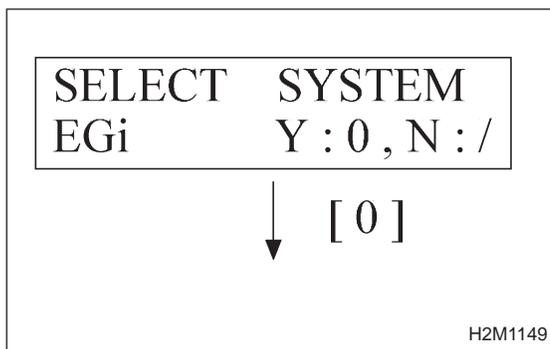
LED No. 3 “D” range is selected.

LED No. 4 “3” range is selected.

LED No. 5 “2” range is selected.

LED No. 6 “1” range is selected.

LED No. 7 Diagnosis connector is connected.

**D: CLEAR MEMORY MODE****1. SUBARU SELECT MONITOR**

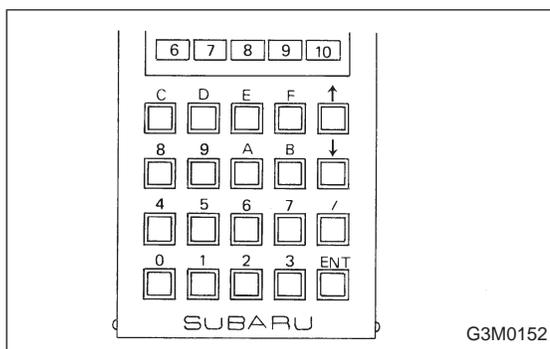
1) Select engine mode or AT mode using function key.

- Engine mode:

Press the function key [0].

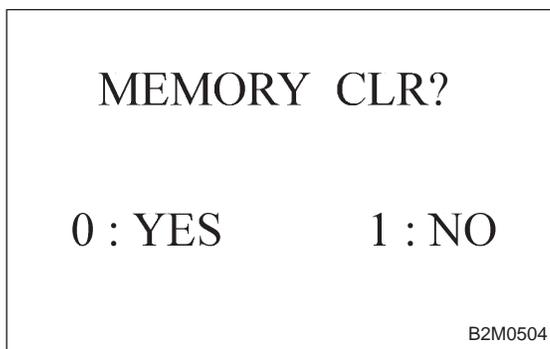
- AT mode:

Press the function key [/] [0] in that order.

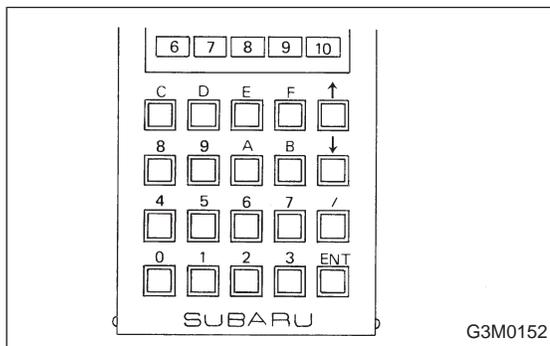


2) Designate mode using function key.

Press [F] [C] [0] [ENT] in that order.



3) Ensure displayed message.



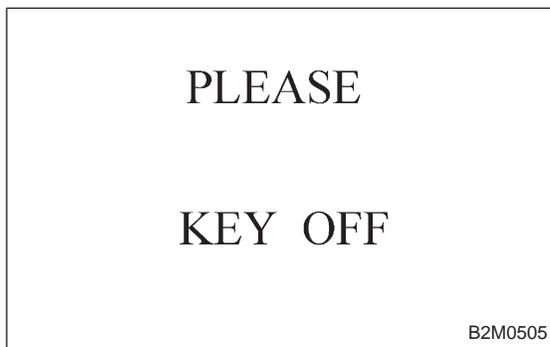
4) Press function key.

- When executing, (YES)

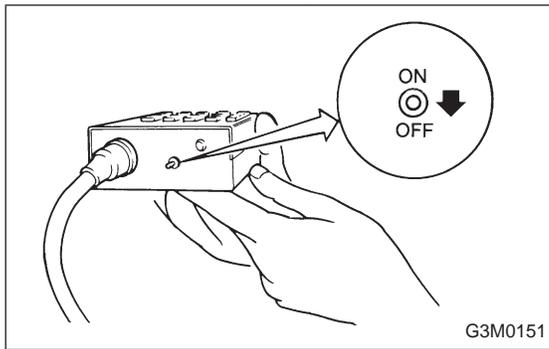
Press [0] [ENT] in that order.

- When not executing, (NO)

Press [1] [ENT] in that order.



5) When executed, the indication as shown here appears for approximately four seconds, and the past trouble history is deleted.



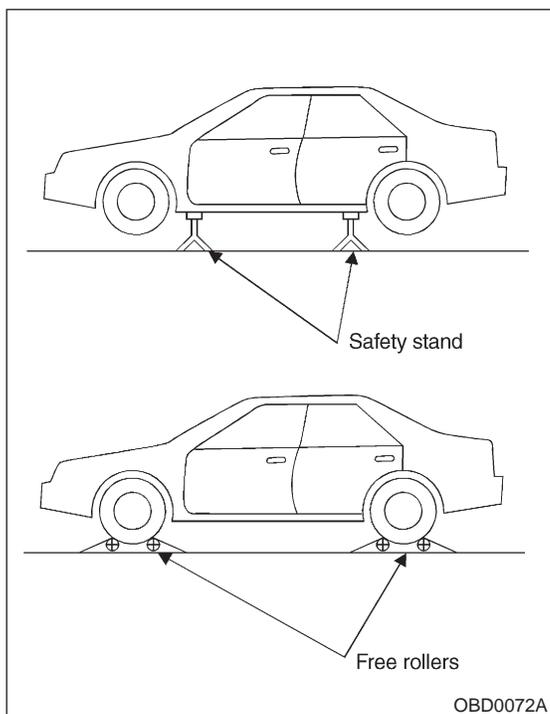
6) After the display is gone, turn Subaru select monitor switch and ignition switch to OFF.

NOTE:

When the ECM, battery terminals, etc. are disconnected after memory is cleared, idling speed may increase. This is not considered a problem because the ISC valve duty controlled learning value has been cleared. To return the engine to idling speed, idle for approximately 2 minutes with air conditioner off.

2. 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

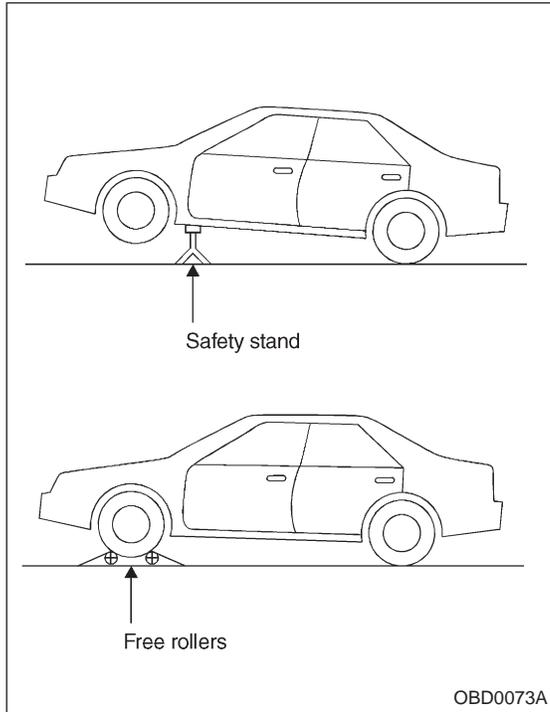
Raise the vehicle using a garage jack and place on safety stands or drive the vehicle onto free rollers.

● FULL-TIME AWD MODELS

WARNING:

- Before raising the vehicle, ensure parking brakes are applied.
- Do not use a pantograph jack in place of a safety stand.
- Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runout of front wheels.
- Do not abruptly depress/release clutch pedal or accelerator pedal during works even when engine is operating at low speeds since this may cause vehicle to jump off free rollers.
- In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.

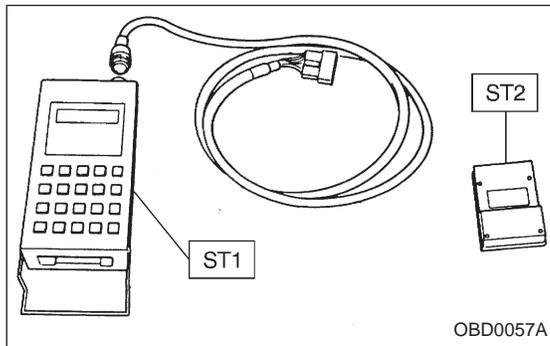
- Since the rear wheels will also rotate, do not place anything near them. Also, make sure that nobody goes in front of the vehicle.



- **FWD MODELS**

- **WARNING:**

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



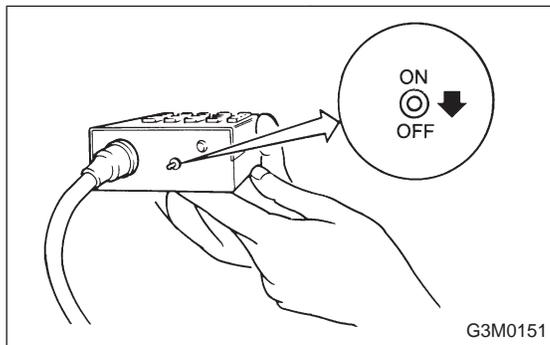
2. SUBARU SELECT MONITOR

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

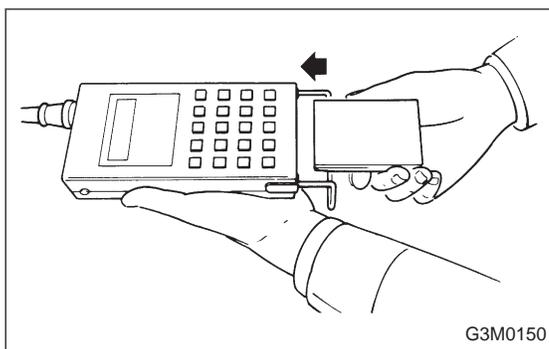
1) Prepare Subaru select monitor and cartridge.

ST1 498307500 SELECT MONITOR KIT

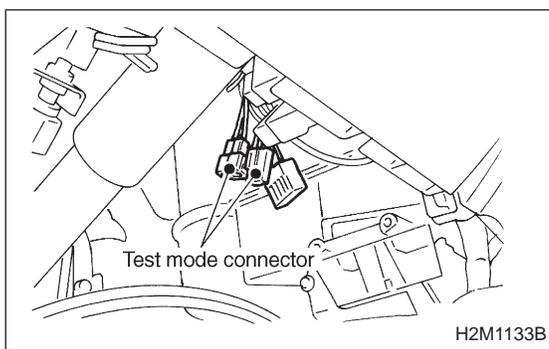
ST2 498346200 CARTRIDGE



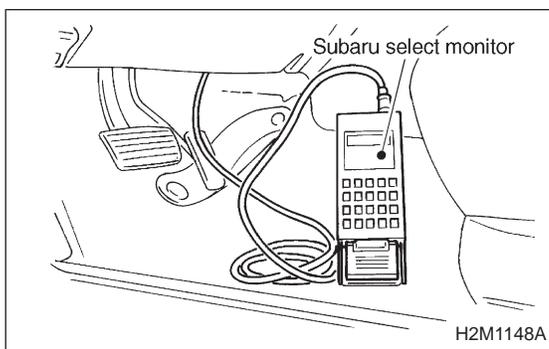
2) Turn ignition switch and Subaru select monitor switch to OFF.



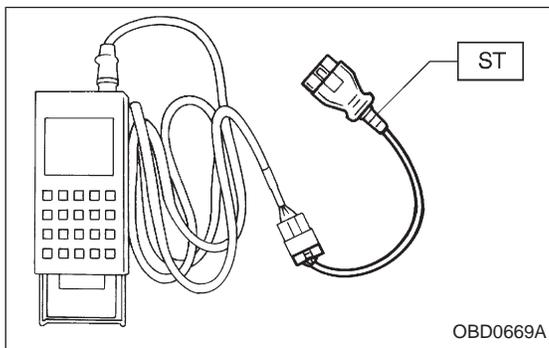
3) Insert cartridge into Subaru select monitor.



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.



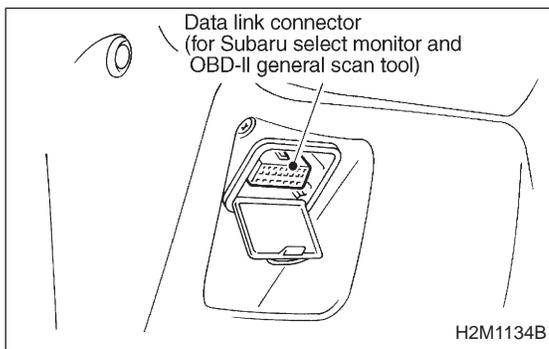
5) Connect Subaru select monitor to data link connector.
 ● Using data link connector for Subaru select monitor only:
 Connect Subaru select monitor to its data link connector located in the lower portion of the instrument panel (on the driver's side), to the side of the center console box.



● Using data link connector for Subaru select monitor and OBD-II general scan tool:

(1) Connect ST to Subaru select monitor cable.

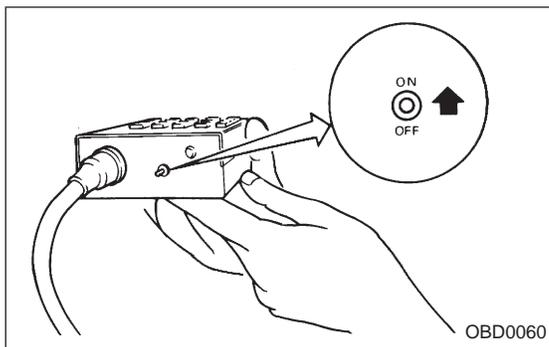
ST 498357200 ADAPTER CABLE



(2) 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.

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) 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)

8) Using the selector lever or shift lever, turn the “P” position switch and the “N” position switch to ON.

9) Depress the brake pedal to turn the brake switch ON. (AT vehicles)

10) Keep engine speed in the 2,500 — 3,000 rpm range for 40 seconds.

NOTE:

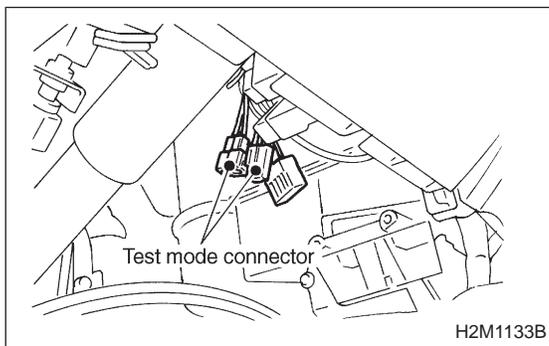
On models without tachometer, use the Subaru select monitor or tachometer (Secondary pickup type).

11) 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.

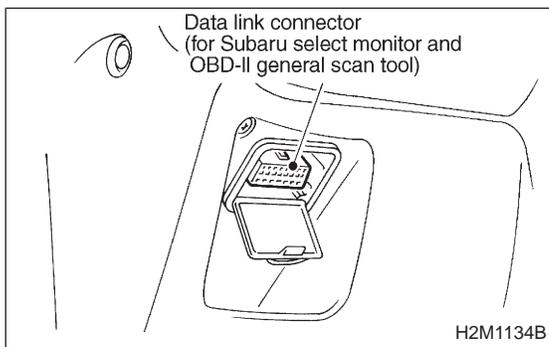
- The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <Ref. to 4-4 [T6D2].> or <Ref. to 4-4 [T9J0].>



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 Subaru select monitor or 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. <Ref. to 4-4 [T6D2].> or <Ref. to 4-4 [T9J0].>

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

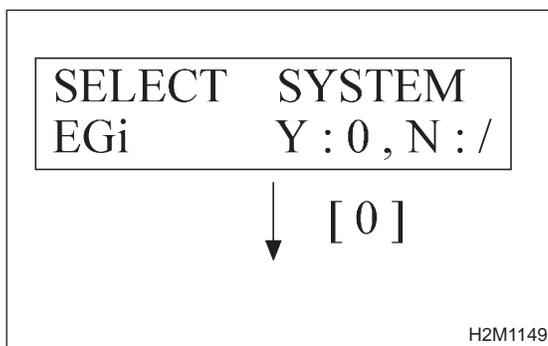
NOTE:

- 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].>

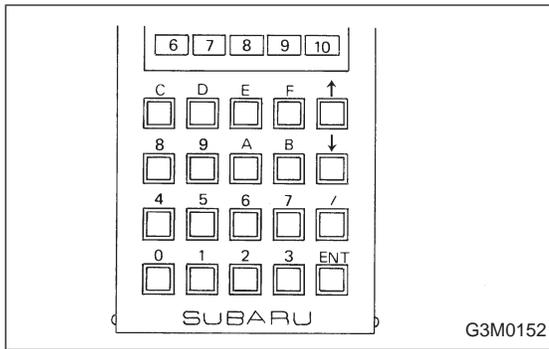
4. READ DIAGNOSTIC TROUBLE CODE (DTC) SHOWN ON DISPLAY. (MODE FB0 <INSPECTION MODE>)

Using Subaru select monitor, check for diagnostic trouble code(s) and record the result(s).

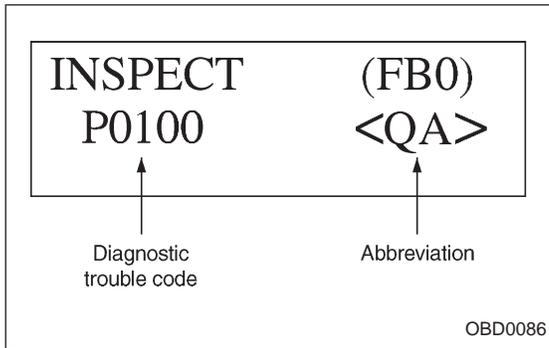
- 1) Select engine mode using function key. Press the function key [0].



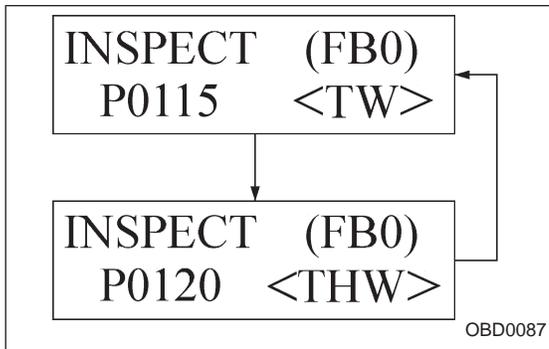
H2M1149



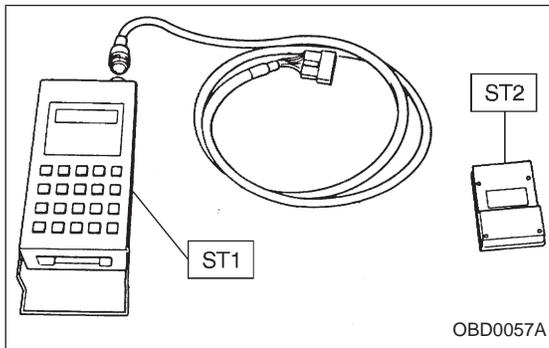
2) Designate mode using function key.
Press [F] [B] [0] [ENT] in that order.



3) Ensure diagnostic trouble code(s) is shown.
(1) When there is only one diagnostic trouble code.



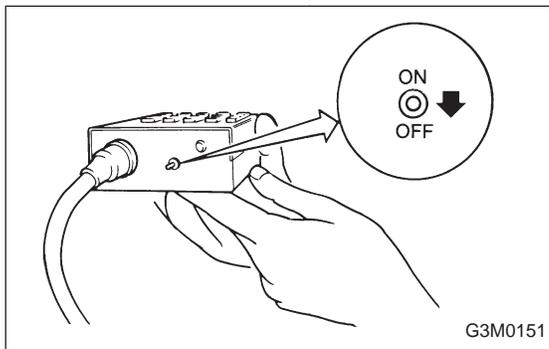
(2) When there are multiple diagnostic trouble codes.
NOTE:
For details concerning diagnostic trouble code(s), refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST. <Ref. to 2-7 [T10A0].>



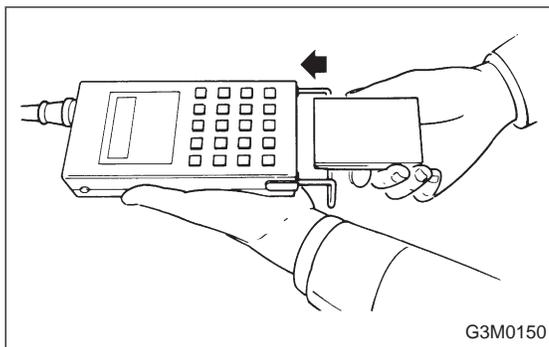
F: COMPULSORY VALVE OPERATION CHECK MODE (FD MODE)

1. SUBARU SELECT MONITOR

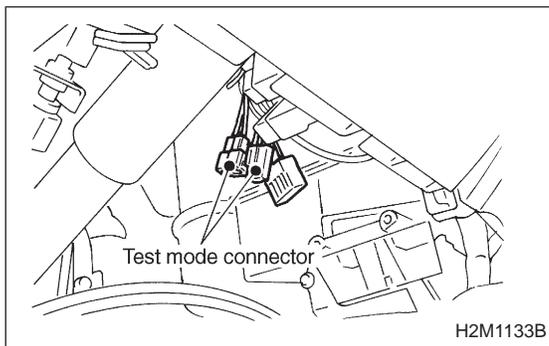
- 1) Prepare Subaru select monitor and cartridge.
ST1 498307500 SELECT MONITOR KIT
ST2 498346200 CARTRIDGE



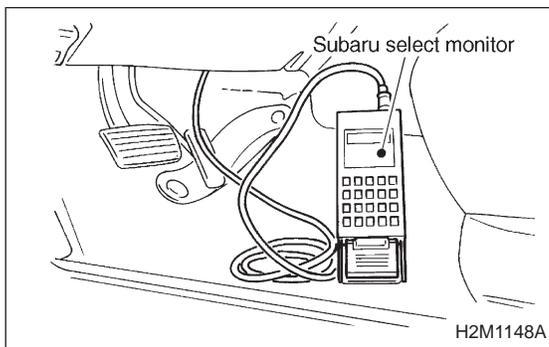
2) Turn ignition switch and Subaru select monitor switch to OFF.



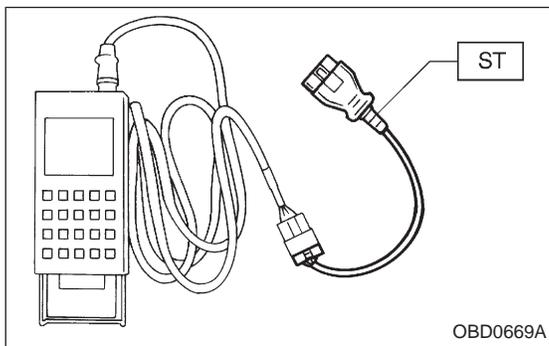
3) Insert cartridge into Subaru select monitor.



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.



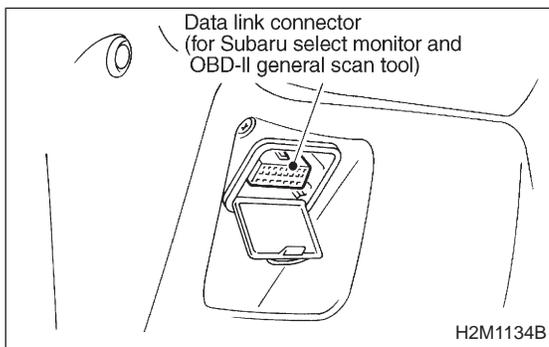
5) Connect Subaru select monitor to data link connector.
 ● Using data link connector for Subaru select monitor only:
 Connect Subaru select monitor to its data link connector located in the lower portion of the instrument panel (on the driver's side), to the side of the center console box.



● Using data link connector for Subaru select monitor and OBD-II general scan tool:

(1) Connect ST to Subaru select monitor cable.

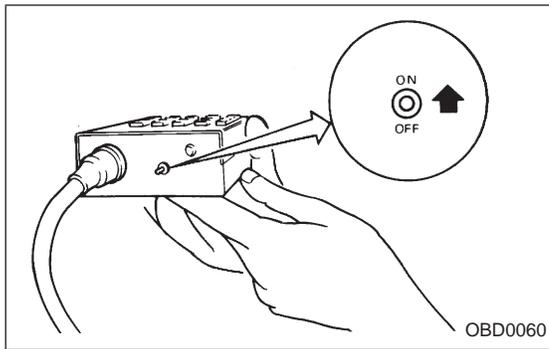
ST1 498357200 ADAPTER CABLE



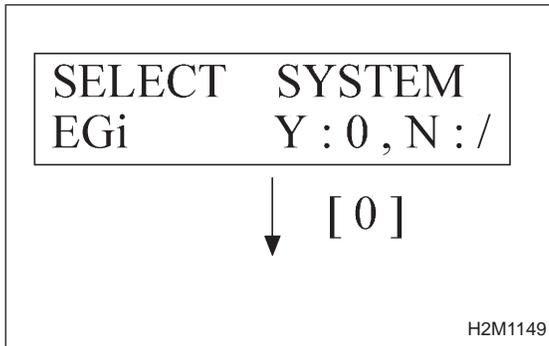
(2) Open the cover and connect Subaru select monitor to data link connector located in the lower portion of the instrument panel (on the driver's side), to the lower cover.

CAUTION:

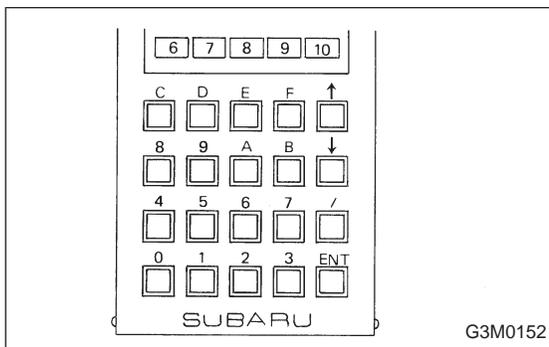
Do not connect scan tools except for Subaru select monitor and OBD-II general scan tool.



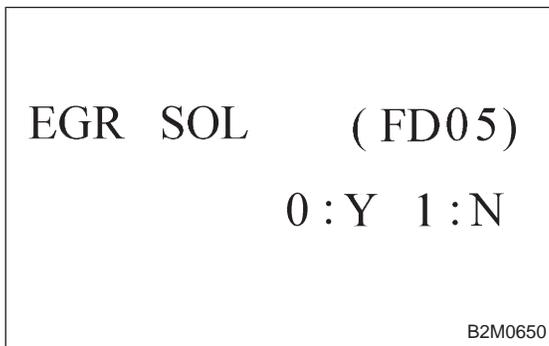
6) Turn ignition switch to ON (engine OFF) and Subaru select monitor switch to ON.



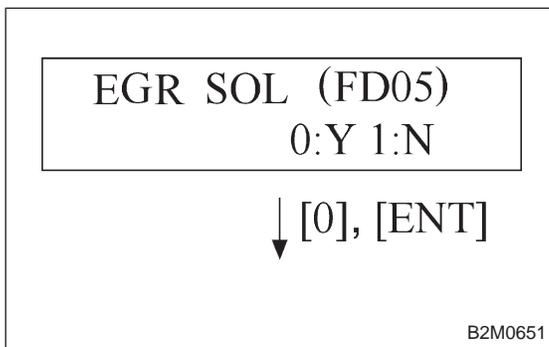
7) Select engine mode using function key. Press the function key [0].



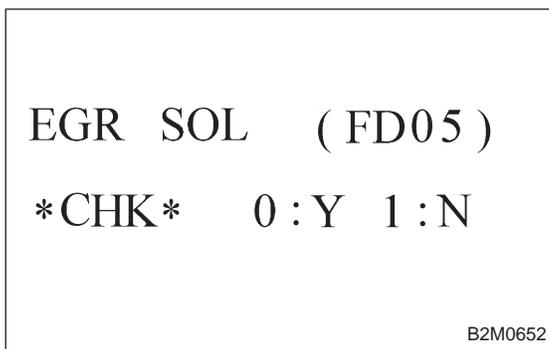
8) Designate mode using function key. <Ref. to 2-7 [T3C6].> (Example: Press [F] [D] [0] [5] [ENT] in that order.)



9) Ensure displayed message.

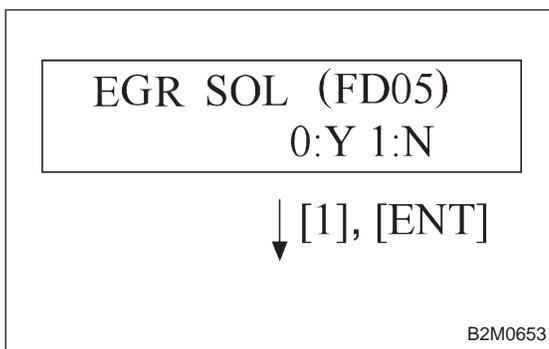


10) Press the function key. (1) When executing, press the function key [0].

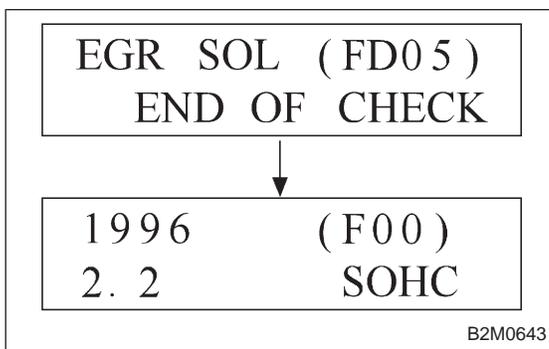


NOTE:

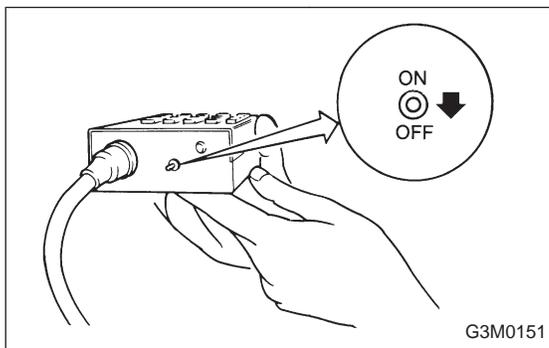
When in compulsory valve operation check mode the monitor indicates the execution of valve check on display.



(2) When not executing or stopping the compulsory valve check mode, press the function key [1].



11) When compulsory valve operation check mode is exited or check completed, the monitor indicates the completion of compulsory valve operation check on the display, and automatically returns to the initial mode (FUNCTION MODE: F00).



G: FINISHING DIAGNOSIS OPERATION

1. SUBARU SELECT MONITOR

- 1) Disconnect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.
- 2) Turn Subaru select monitor switch and ignition switch to OFF.
- 3) Disconnect Subaru select monitor from its data link connector.

4. Cautions

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

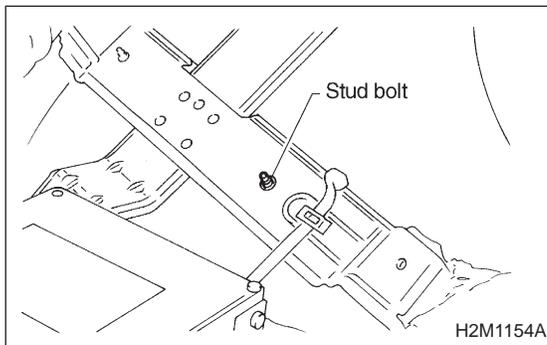
Airbag system wiring harness is routed near the engine control module (ECM), main relay and fuel pump relay.

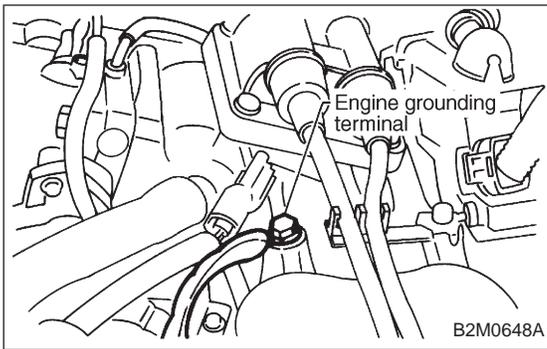
CAUTION:

- 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. <Ref. to 4-4 [T6D2].> or <Ref. to 4-4 [T9J0].>

C: PRE-INSPECTION

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

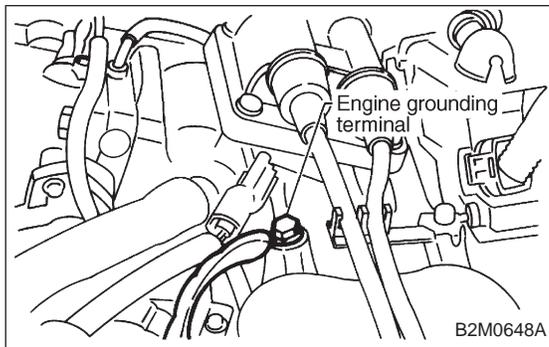
1. POWER SUPPLY

1) Measure battery voltage and specific gravity of electrolyte.

Standard voltage: 12 V

Specific gravity: Above 1.260

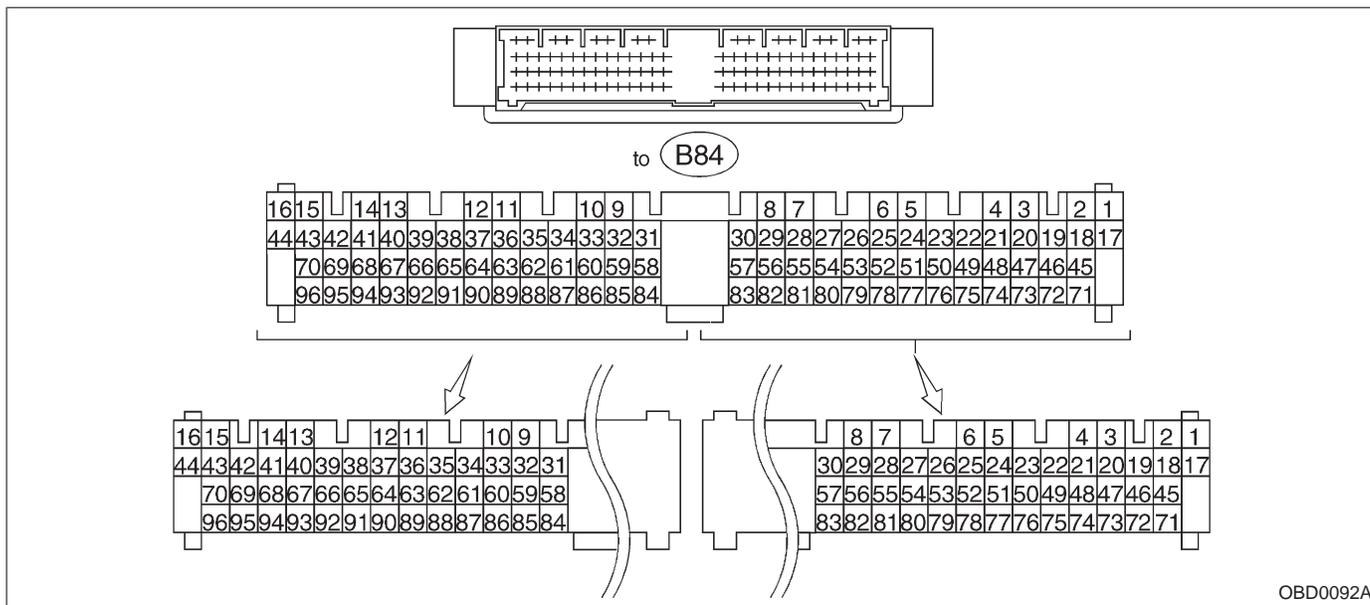
2) Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

**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



OBD0092A

Content	Connector 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	20	0	0	1800 cc model
B84		54	0	0	2200 cc model	
Camshaft position sensor	Signal (+)	B84	7	0	-7 — +7	Sensor output waveform
	Signal (-)	B84	28	0	0	—
	Shield	B84	20	0	0	1800 cc model
B84		54	0	0	2200 cc model	
Mass air flow sensor	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 oxygen sensor	Signal	B84	23	0	0 — 0.9	—
	Shield	B84	56	0	0	—
Rear oxygen sensor	Signal	B84	24	0	0 — 0.9	—
	Shield	B84	56	0	0	—
Engine coolant temperature 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 displayed when vehicle is driven.	
Starter switch	B84	86	0	0	Cranking: 8 to 14	

5. Specified Data

Content	Connector No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (Engine OFF)	Engine ON (Idling)		
A/C switch	B84	60	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—	
Ignition switch	B84	85	10 — 13	13 — 14	—	
Neutral position switch (MT)	B84	82	ON: 5.0±0.5 OFF: 0		● On MT vehicles; switch is ON when gear is in neutral position.	
Neutral position switch (AT)			ON: 0 OFF: 5.0±0.5		● On AT vehicles; 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	3	2.8	2200 cc model only	
	Shield	B84	56	0		
AT/MT identification	B84	81	(AT) 5 (MT) 0	(AT) 5 (MT) 0	When measuring voltage between ECM and body.	
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	2200 cc model only	
Mass air flow signal for AT	B84	47	0 — 0.3	0.8 — 1.2	2200 cc model only	
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	2200 cc AT vehicles only	
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	—
FICD control solenoid valve	B84	9	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	<ul style="list-style-type: none"> ● 1800 cc model only ● A/C equipped model
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	—

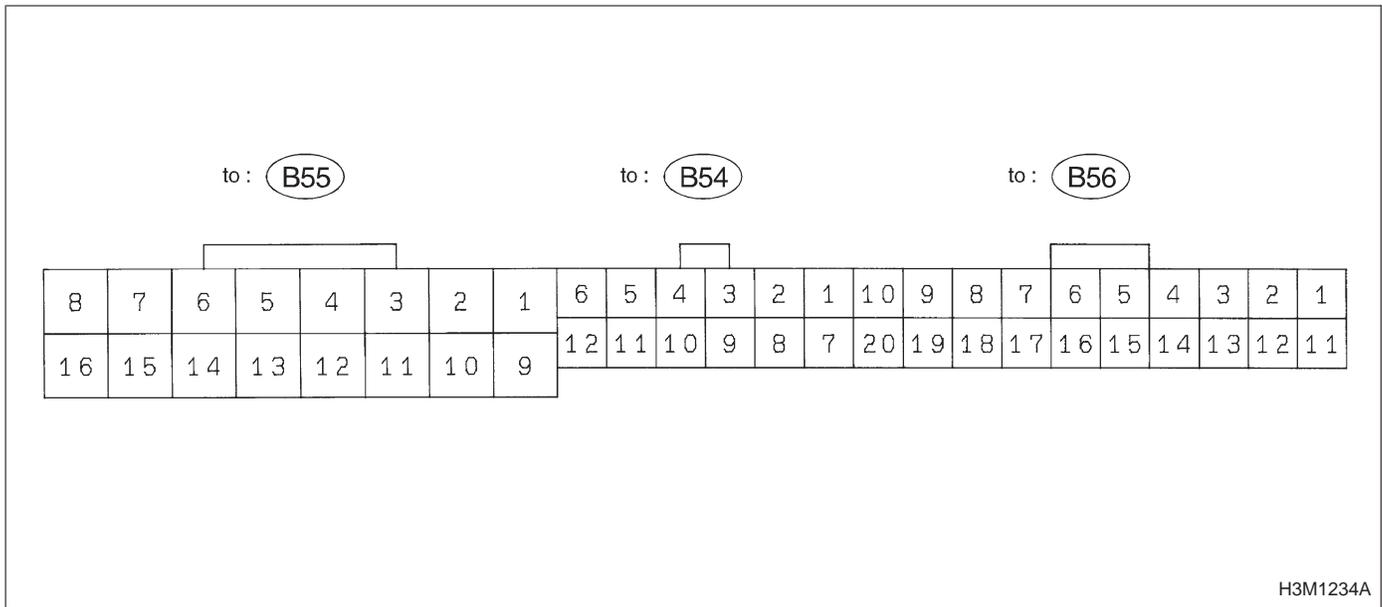
B: ENGINE CONDITION DATA

Content	Model	Specified data
Mass air flow	1800 cc	1.6 — 2.8 (g/sec): Idling
		6.1 — 10.3 (g/sec): 2,500 rpm racing
	2200 cc	1.7 — 3.3 (g/sec): Idling
		7.1 — 14.2 (g/sec): 2,500 rpm racing
Engine load	1800 cc	1.7 — 3.0 (%): Idling
		6.6 — 11.2 (%): 2,500 rpm racing
	2200 cc	1.6 — 2.9 (%): Idling
		6.4 — 12.8 (%): 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.

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



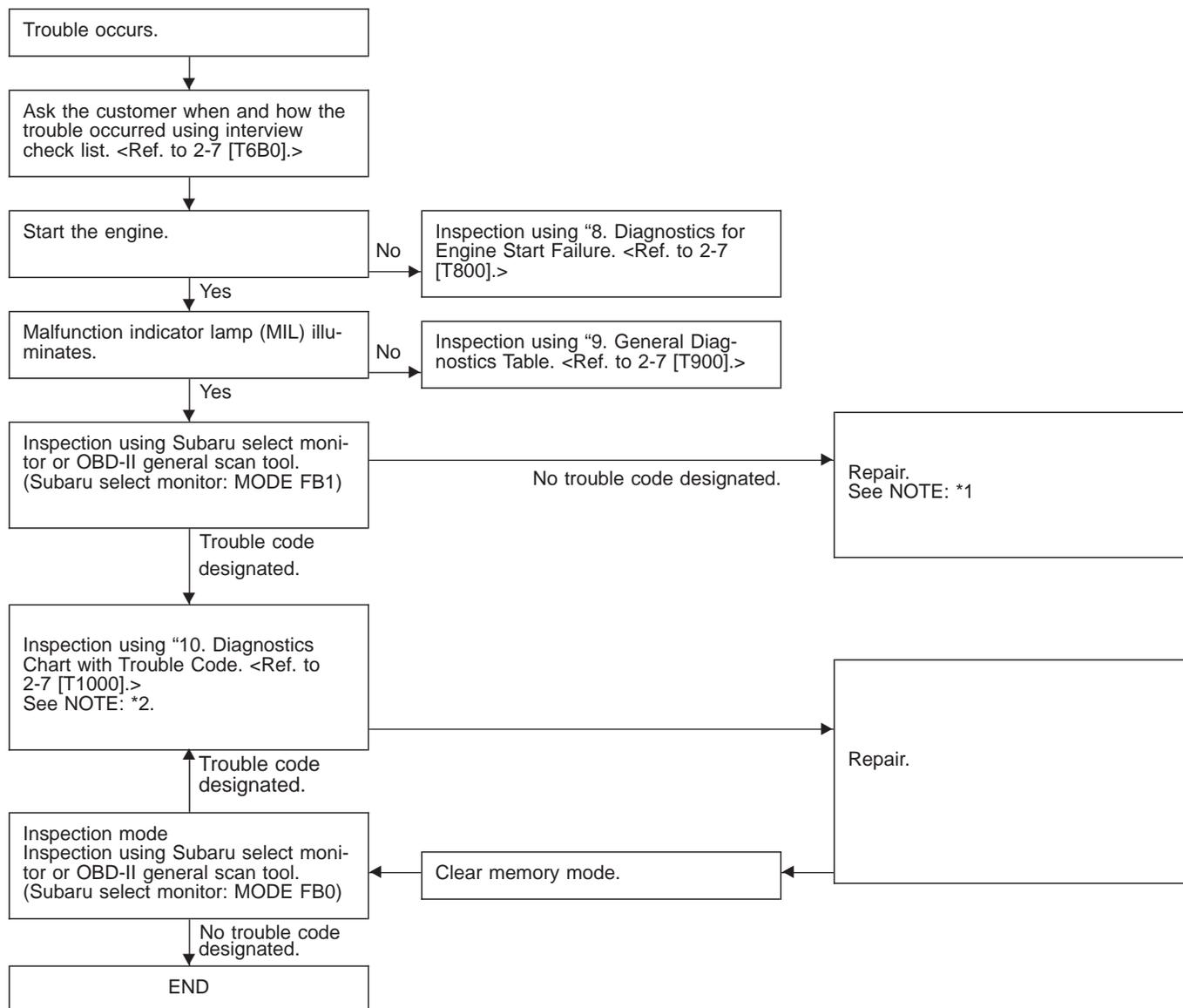
Check with ignition switch ON.

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	9	Selector lever in "P" range	Less than 1
			Selector lever in any other than "P" range	More than 8
	"N" range switch	8	Selector lever in "N" range	Less than 1
			Selector lever in any other than "N" range	More than 8
	"R" range switch	10	Selector lever in "R" range	Less than 1
			Selector lever in any other than "R" range	More than 6
	"D" range switch	1	Selector lever in "D" range	Less than 1
			Selector lever in any other than "D" range	More than 6
	"3" range switch	2	Selector lever in "3" range	Less than 1
			Selector lever in any other than "3" range	More than 6
	"2" range switch	3	Selector lever in "2" range	Less than 1
			Selector lever in any other than "2" range	More than 6
	"1" range switch	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
Diagnosis switch	B56	6	Diagnosis connector connected.	Less than 1
			Diagnosis connector disconnected.	More than 6

5. Specified Data

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 (7ft).	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 (AWD model only)	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
Power system ground line	B55	10	—	0	Less than 1
FWD switch (AWD model only)	B56	2	Fuse removed.	6 — 9.1	—
			Fuse installed.	Less than 1	
Data link signal (Subaru select monitor)	B56	12	—	—	—
		13	—	—	
AT diagnosis signal	B56	11	Ignition switch ON	Less than 1 ↔ More than 4	—

6. Basic Diagnostic Procedure



NOTE:

- *1: If trouble code is not shown on display although the MIL illuminates, perform diagnostics of the MIL (CHECK ENGINE LIGHT) circuit or combination meter. <Ref. to 2-7 [T700].>
- *2: Carry out the basic check, only when trouble code about automatic transmission is shown on display. <Ref. to 2-7 [T6A0].>

A: 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].>

B: 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:		
Engine temperature	<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
<ul style="list-style-type: none"> ● What:
d) Intentional connecting or disconnecting of hoses: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
<ul style="list-style-type: none"> ● What:
e) Installing of parts other than genuine parts: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
<ul style="list-style-type: none"> ● What: ● Where:
f) Occurrence of noise: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
<ul style="list-style-type: none"> ● From where: ● What kind:
g) Occurrence of smell: <input type="checkbox"/> Yes/ <input type="checkbox"/> No
<ul style="list-style-type: none"> ● 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.

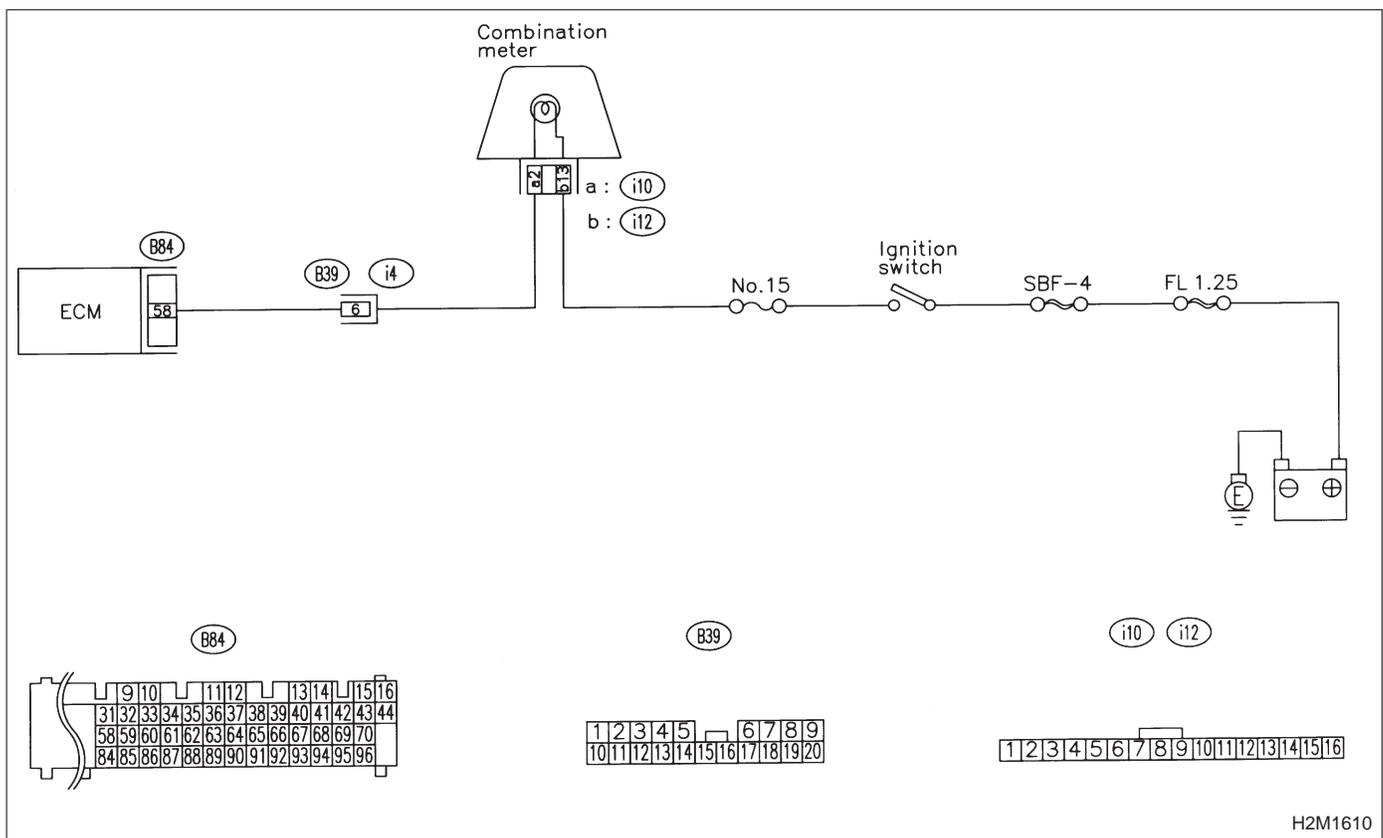
DIAGNOSIS:

- The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.

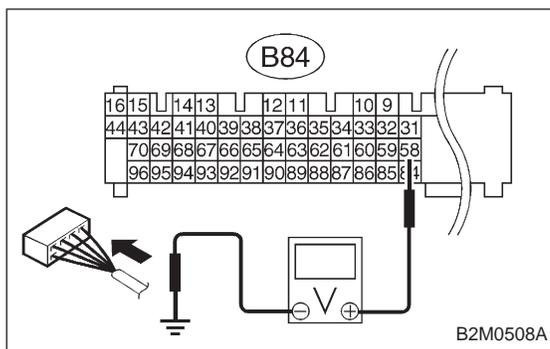
TROUBLE SYMPTOM:

- When ignition switch is turned ON (engine OFF), MIL does not come on.

WIRING DIAGRAM:

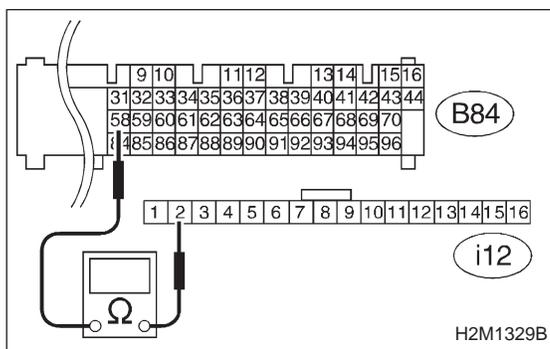


H2M1610



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 7A2.****(NO) : Go to next (CHECK) .****(CHECK) : Does the MIL come on when shaking or pulling ECM connector and harness?****(YES) : Repair poor contact in ECM connector.****(NO) : Go to next (CHECK) .****(CHECK) : Is ECM connector correctly connected?****(YES) : Replace ECM.****(NO) : Repair connection of ECM connector.**

7A2	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 — (i12) No. 2:****(CHECK) : Is resistance less than 1 Ω?****(YES) : Go to step 7A3.****(NO) : Repair harness and connector.****NOTE:**

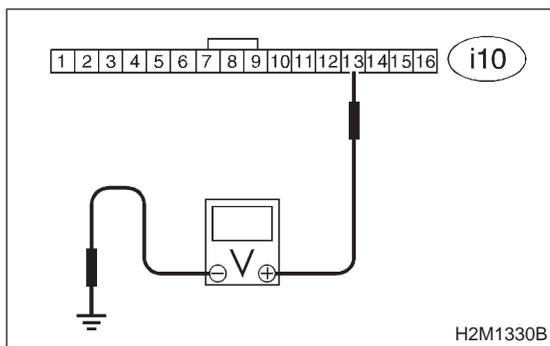
In this case, repair the following:

- Open circuit in harness between ECM and combination meter connector
- Poor contact in coupling connector (B39)

7A3	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 7A4.**

**7A4****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. 13 (+) — Chassis ground (-):

CHECK : *Is voltage more than 10 V?*

YES : Go to step **7A5**.

NO : Check the following and repair if necessary.

- Blown out fuse (No. 15).

NOTE:

If replaced fuse (No. 15) blows easily, check the harness for short circuit of harness between fuse (No. 15) and combination meter connector.

- Open or short circuit in harness between fuse (No. 15) and combination meter connector
- Open or short circuit in harness between fuse (No. 15) and ignition switch connector
- Poor contact in ignition switch connector

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 : Replace bulb or combination meter.

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

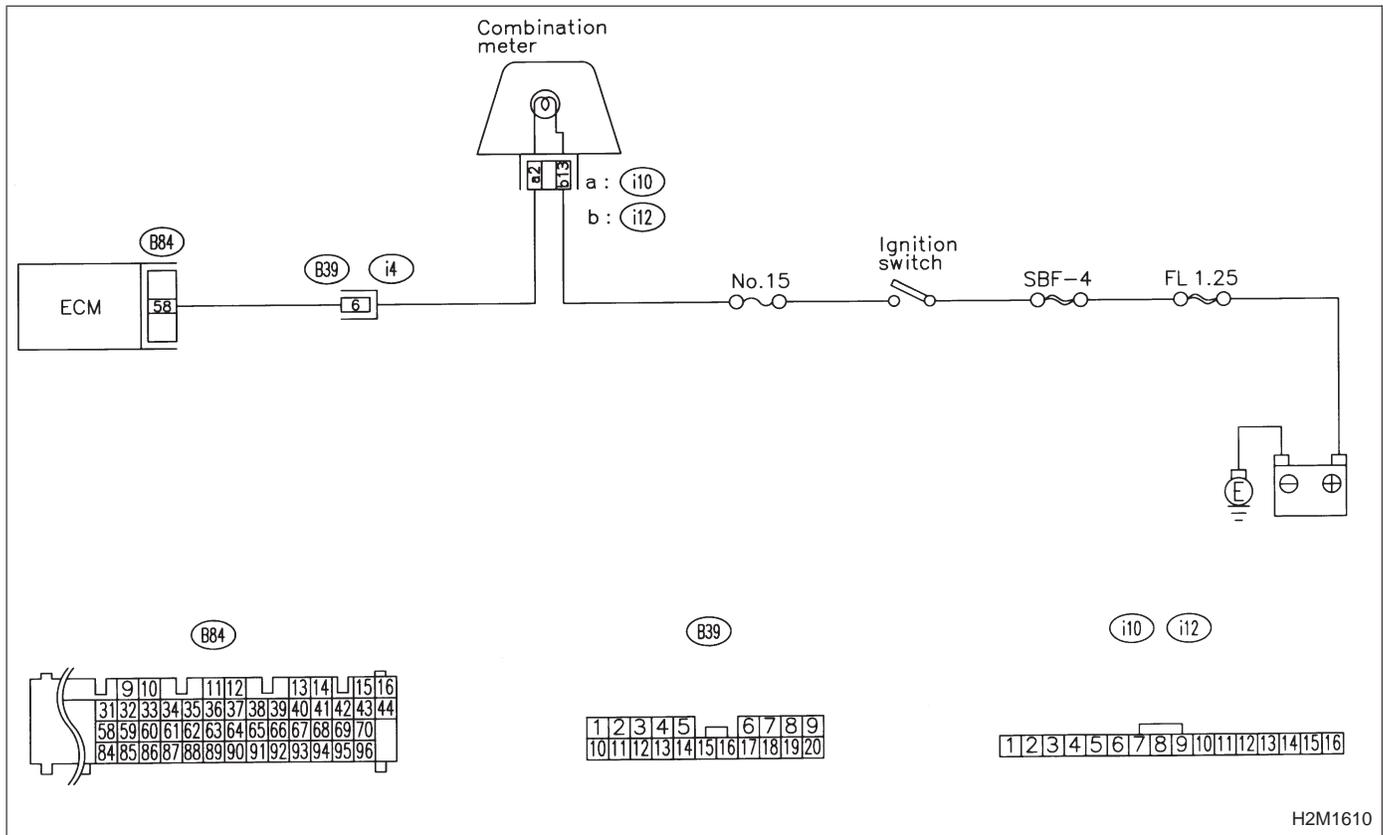
DIAGNOSIS:

- The CHECK ENGINE malfunction indicator lamp (MIL) circuit is shorted.

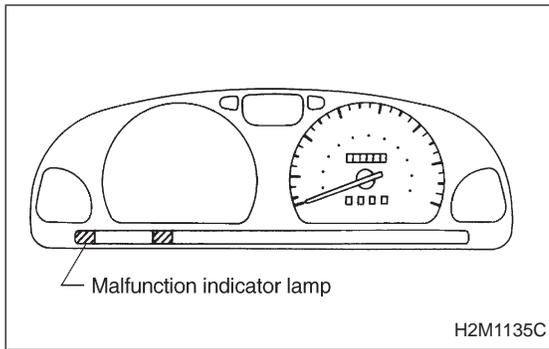
TROUBLE SYMPTOM:

- 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:



H2M1610

**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.

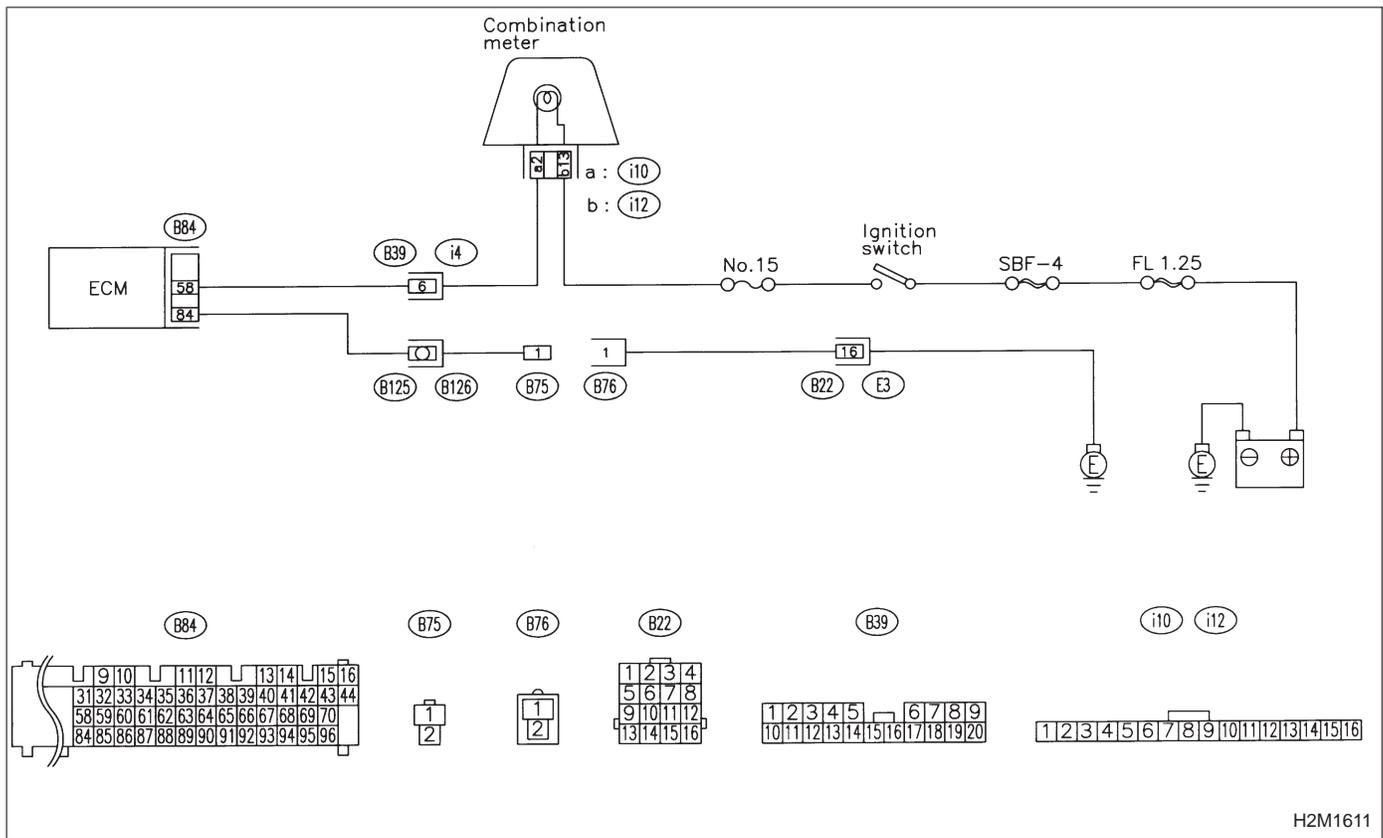
DIAGNOSIS:

- The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.
- Test mode connector circuit is in open.

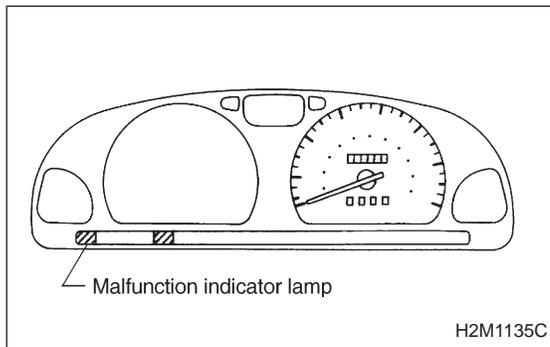
TROUBLE SYMPTOM:

- When inspection mode, MIL does not blink at a cycle of 3 Hz.

WIRING DIAGRAM:



H2M1611



H2M1135C

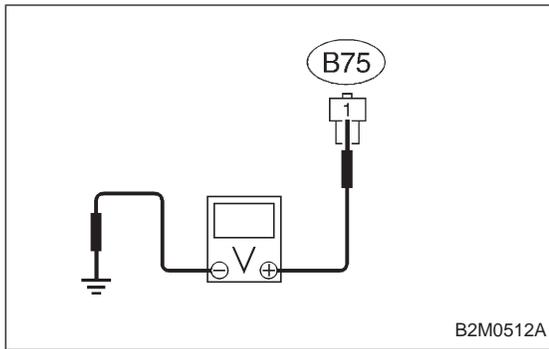
7C1 CHECK OPERATION OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).

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

CHECK : Does the MIL come on?

YES : Go to step 7C2.

NO : Repair the MIL circuit. <Ref. to 2-7 [T700].>



7C2 CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between test mode connector and chassis ground.

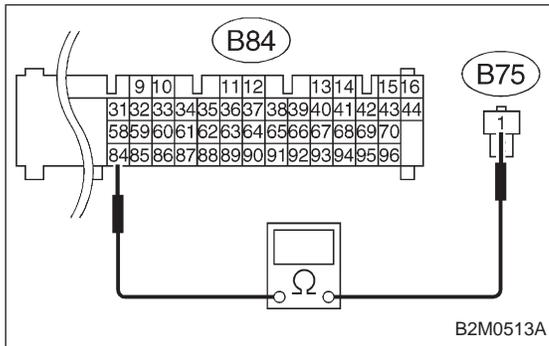
Connector & terminal

(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)

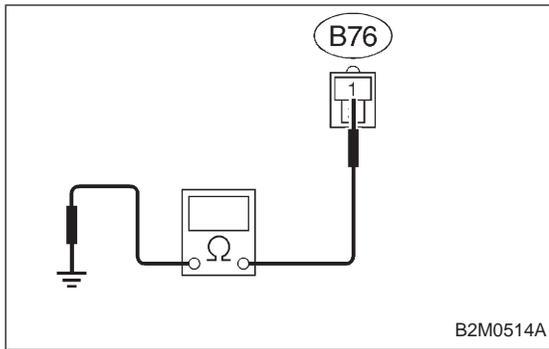
7C4 CHECK POOR CONTACT.

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)

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

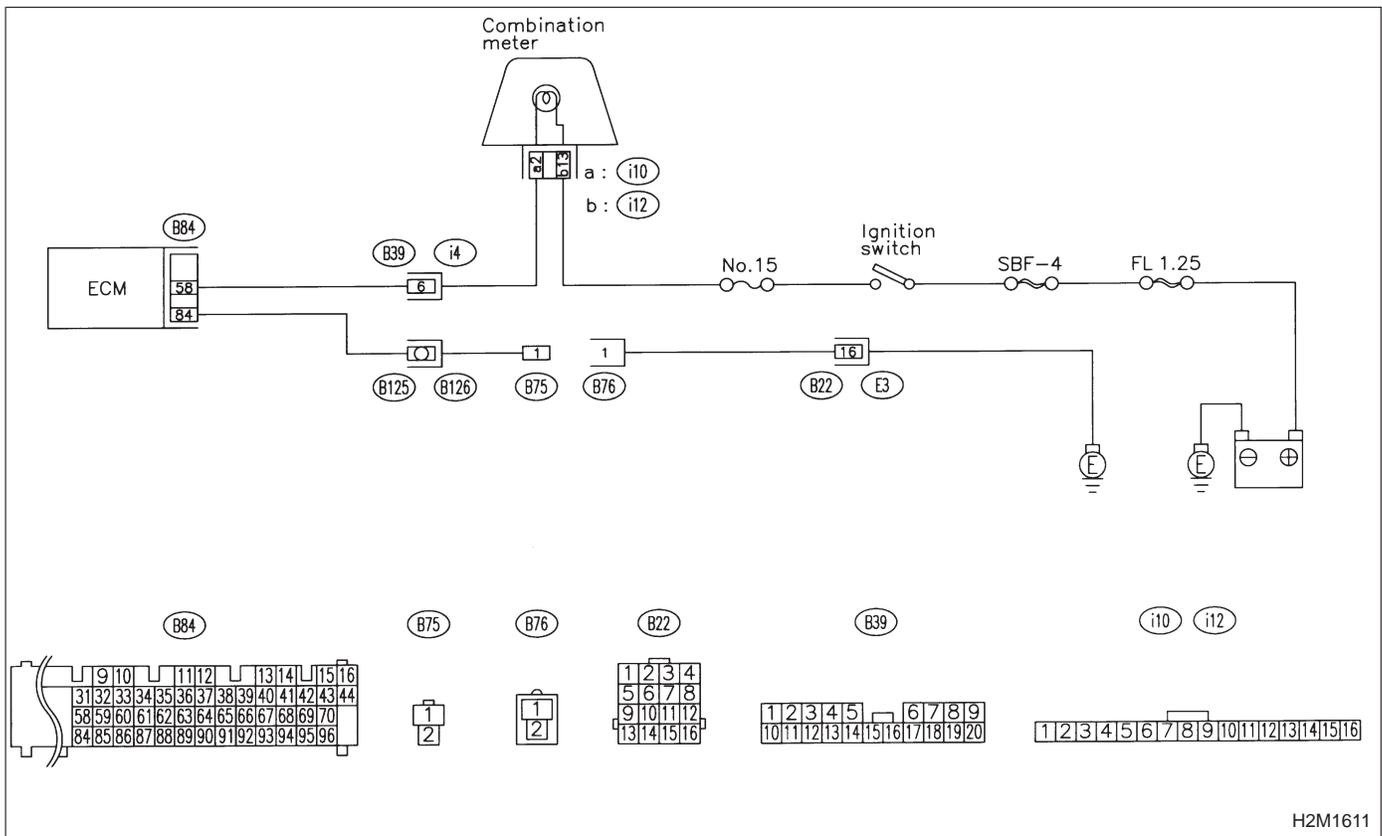
DIAGNOSIS:

- Test mode connector circuit is shorted.

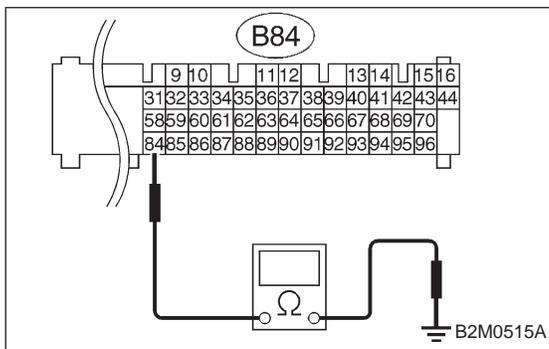
TROUBLE SYMPTOM:

- Even though test mode connector is disconnected, MIL blinks at a cycle of 3 Hz when ignition switch is turned to ON.

WIRING DIAGRAM:



H2M1611



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

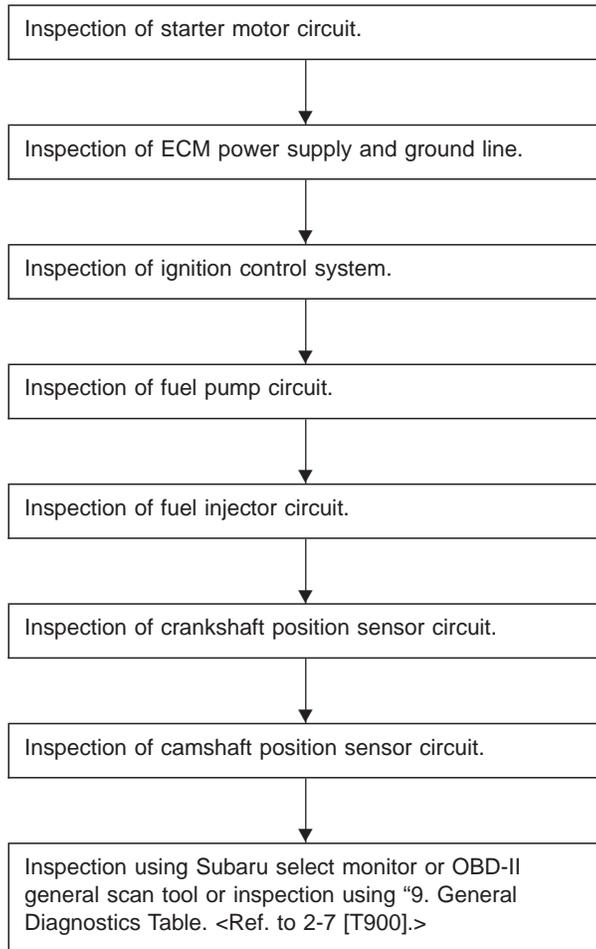
- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from ECM.
- 3) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal (B84) No.84 — Chassis ground:

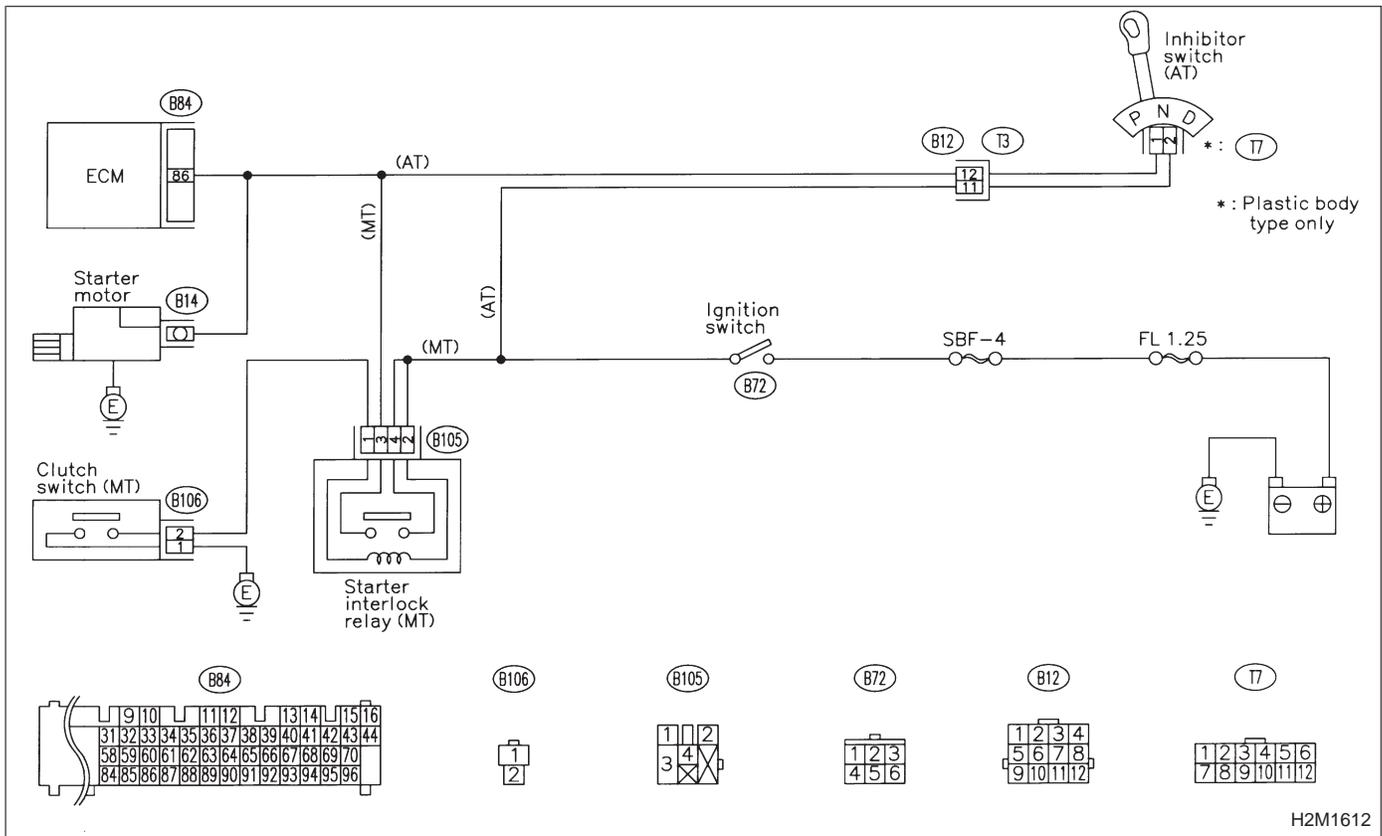
- CHECK** : Is resistance less than 5 Ω?
- YES** : Repair short circuit in harness between ECM and test mode connector.
- NO** : Replace ECM.

8. Diagnostics for Engine Starting Failure

A: BASIC DIAGNOSTICS CHART



**B: STARTER MOTOR CIRCUIT
WIRING DIAGRAM:**

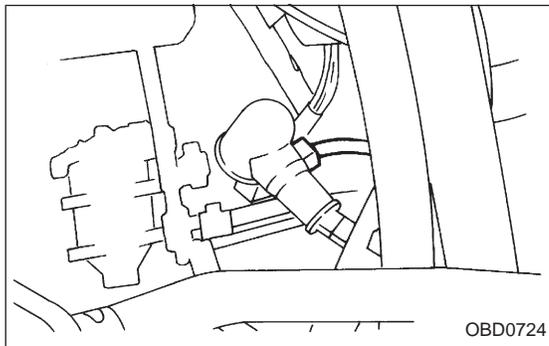


H2M1612

CAUTION:

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

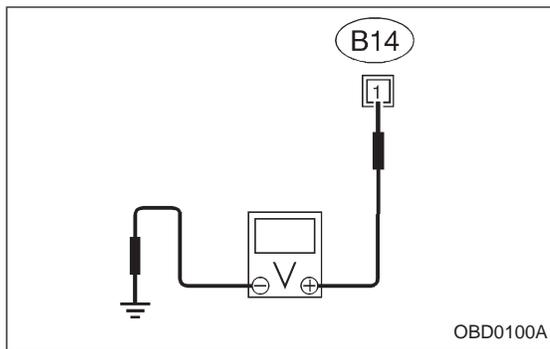
<Ref. to 2-7 [T3D0] and [T3E0].>



OBD0724

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 (-):

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

NOTE:

- On AT vehicles, place the selector lever in the “P” or “N” position.
- On MT vehicles, depress the clutch pedal.

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 [K1A0].>

NO : Repair open circuit of ground cable.

8B3

CHECK HARNESS BETWEEN BATTERY AND IGNITION SWITCH CONNECTOR.

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

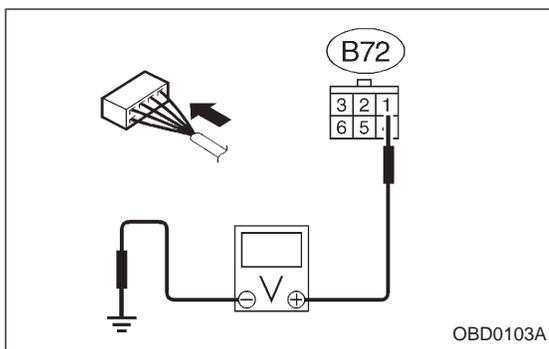
CHECK : *Is resistance less than 1 Ω?*

NO : Replace SBF No. 4.

YES : Go to next step 4).

4) Install SBF No. 4 to main fuse box.

5) Turn ignition switch to ON.



6) 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 **8B4**.

NO : Repair open circuit in harness between ignition switch and SBF No. 4 connector.

8B4	CHECK TRANSMISSION TYPE.
------------	---------------------------------

CHECK : *Is transmission type AT?*

YES : Go to step **8B5**.

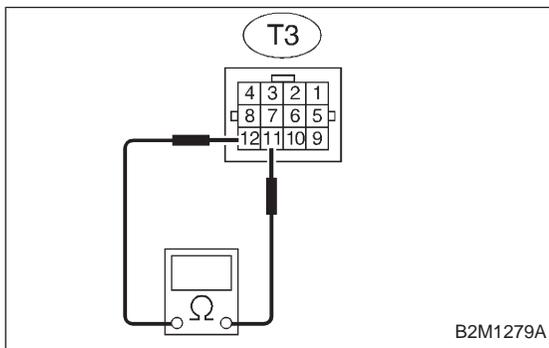
NO : Go to step **8B10**.

8B5	CHECK INHIBITOR SWITCH TYPE.
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CHECK : *Is inhibitor switch type plastic body?*

YES : Go to step **8B6**.

NO : Go to step **8B9**.



8B6	CHECK INHIBITOR SWITCH.
------------	--------------------------------

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

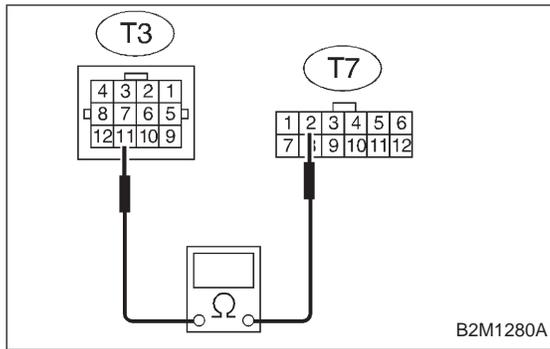
Connector & terminal

(T3) No. 11 — No. 12:

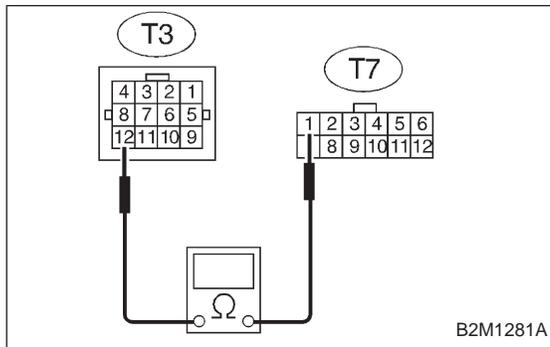
CHECK : *Is the resistance less than 1 Ω?*

YES : Repair open circuit in harness between starter motor and ignition switch connector.

NO : Go to step **8B7**.

**8B7 CHECK TRANSMISSION HARNESS.**

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

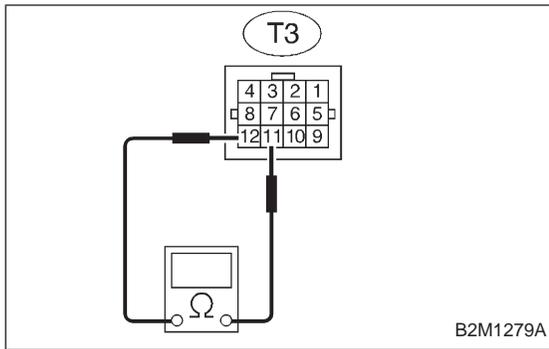
Connector & terminal**(T3) No. 11 — (T7) No. 2:****CHECK** : *Is the resistance less than 1 Ω?***YES** : Go to next step 3).**NO** : Repair open circuit in harness between transmission harness and inhibitor switch connector.

- 3) Measure resistance of harness between transmission harness and inhibitor switch connector.

Connector & terminal**(T3) No. 12 — (T7) No. 1:****CHECK** : *Is the resistance less than 1 Ω?***YES** : Go to step 8B8.**NO** : Repair open circuit in harness between transmission harness and inhibitor switch connector.**8B8 CHECK 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.

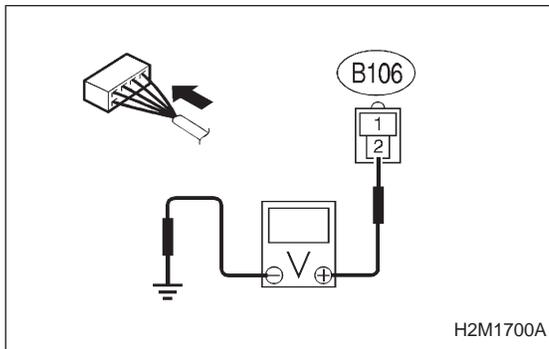


8B9 CHECK INHIBITOR SWITCH.

- 1) Turn ignition switch to OFF.
- 2) Place the selector lever in the "P" or "N" position.
- 3) Disconnect connector from 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** : Replace inhibitor switch.

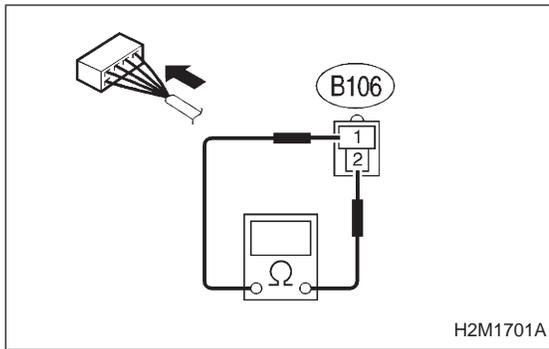


8B10 CHECK STARTER INTERLOCK CIRCUIT.

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

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

- CHECK** : *Is the voltage more than 10 V?*
- NO** : Replace starter interlock relay.
- YES** : Go to next step 3).



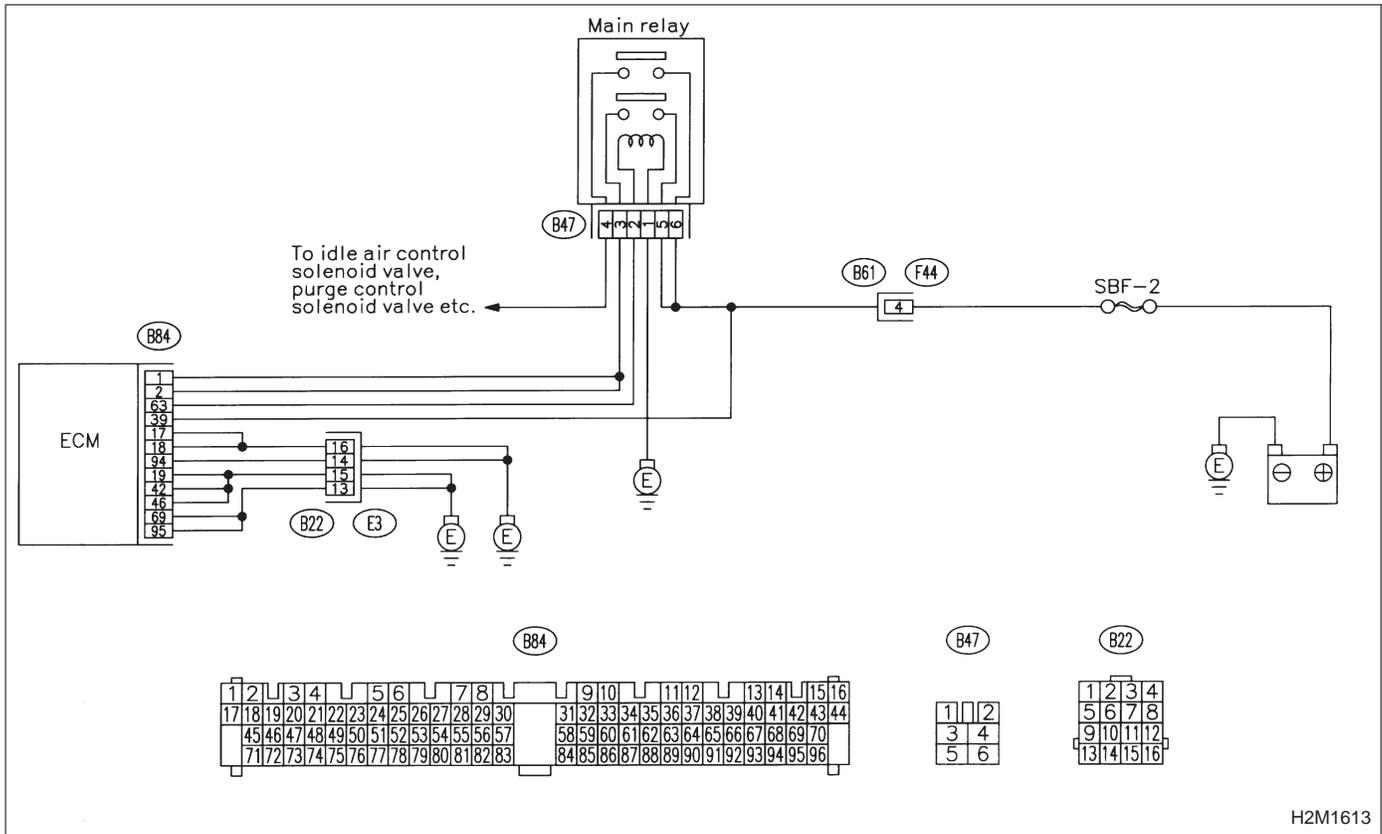
- 3) Turn ignition switch to OFF.
- 4) Measure resistance between clutch switch connector terminals while depressing the clutch pedal.

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

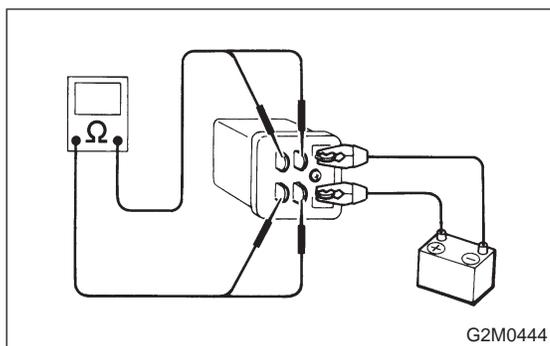
WIRING DIAGRAM:



CAUTION:

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

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



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 next step 5).

YES : Replace main relay.

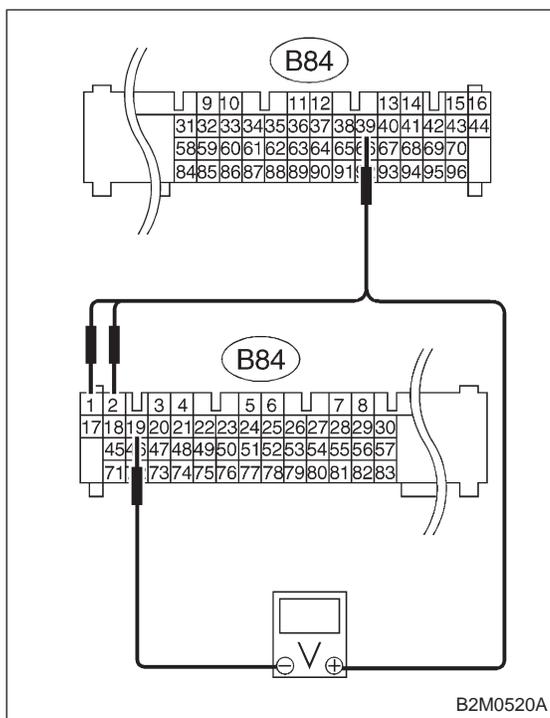
- 5) Measure resistance between main relay terminals.

Terminals**No. 4 — No. 6:**

CHECK : Is the resistance less than 10 Ω?

YES : Go to step 8C2.

NO : Replace main relay.



8C2	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 next step 5).

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

- 5) 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 next step 6).

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

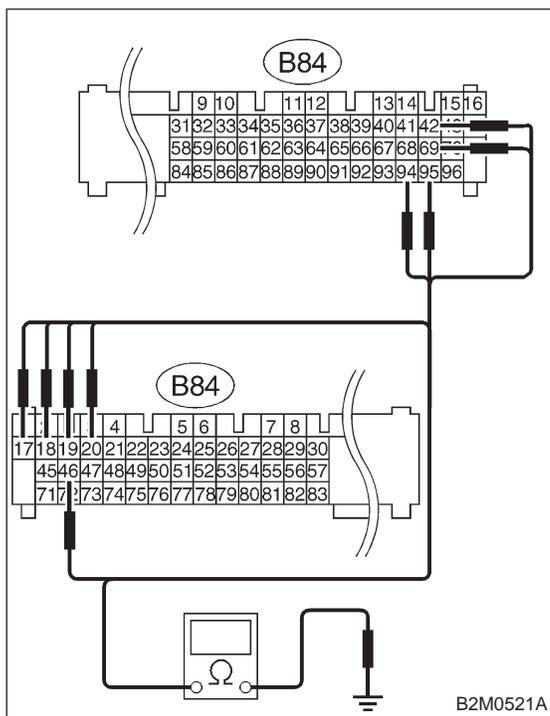
- 6) Measure power supply voltage between ECM connector terminals.

Connector & terminal**(B84) No. 39 (+) — No. 19 (-):**

CHECK : Is the voltage more than 10 V?

YES : Go to step 8C3.

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



8C3 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 next step 3).

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

- 3) 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 next step 4).

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

- 4) Measure resistance of harness between ECM and chassis ground.

Connector & terminal (B84) No. 19 — Chassis ground:

CHECK : Is the resistance less than 5 Ω?

YES : Go to next step 5).

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

- 5) 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 next step 6).

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

- 6) 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 next step 7).

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

7) 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 next step 8).

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

8) 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 next step 9).

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

9) 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 next step 10).

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

10) Measure resistance of harness between ECM and chassis ground.

Connector & terminal

(B84) No. 95 — Chassis ground:

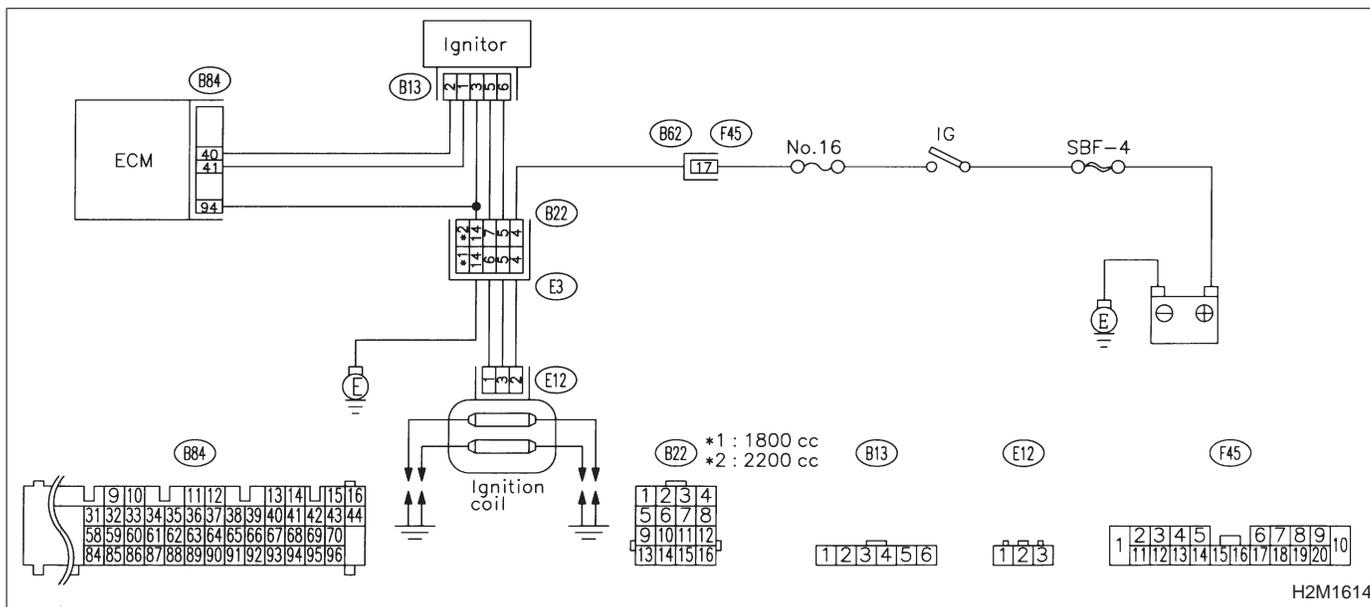
CHECK : *Is the resistance less than 5 Ω?*

YES : Check ignition control system. <Ref. to 2-7 [T8D0].>

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

D: IGNITION CONTROL SYSTEM

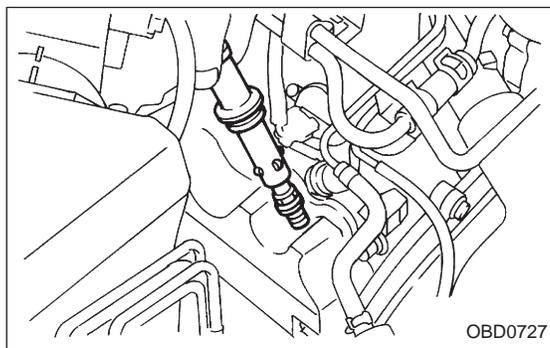
WIRING DIAGRAM:



CAUTION:

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

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



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:

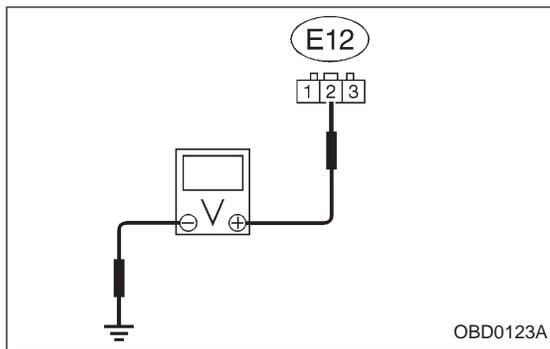
Do not remove spark plug from engine.

- 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.

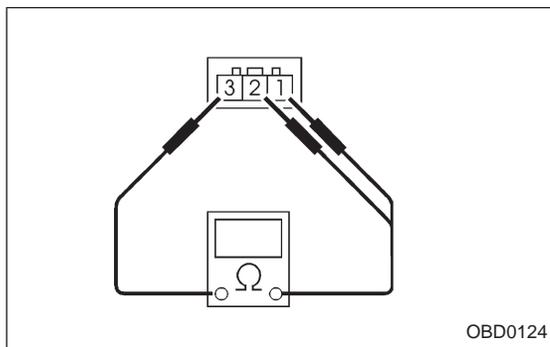
**8D2****CHECK POWER SUPPLY CIRCUIT FOR IGNITION COIL.**

- 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 connectors (B22 and F45)

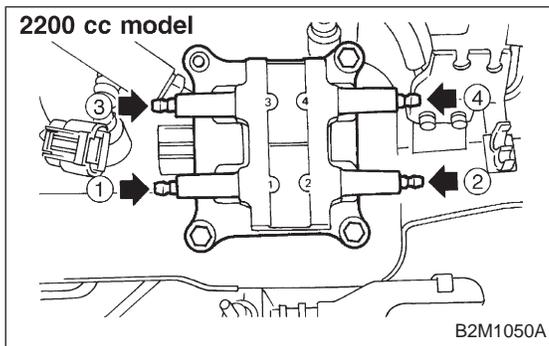
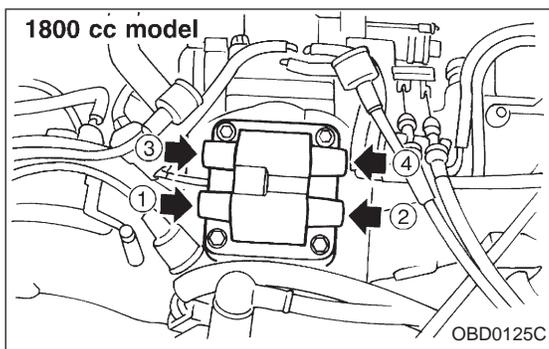
**8D3****CHECK IGNITION COIL.**

- 1) 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 next step 2).**NO** : Replace ignition coil.

- 2) 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?***NO** : Replace ignition coil.**YES** : Go to next step 3).



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

Terminals

#1 — #2:

- CHECK** : ● 1800 cc model
Is the resistance between 18 and 24 Ω?
- 2200 cc model
Is the resistance between 10 and 15 kΩ?

YES : Go to next step 4).

NO : Replace ignition coil.

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

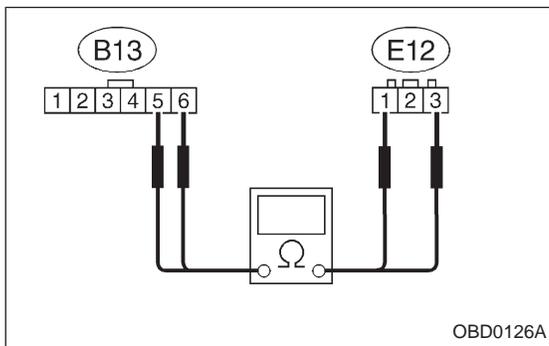
Terminals

#3 — #4:

- CHECK** : ● 1800 cc model
Is the resistance between 18 and 24 Ω?
- 2200 cc model
Is the resistance between 10 and 15 kΩ?

YES : Go to step 8D4.

NO : Replace ignition coil.



8D4 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 next step 4).

YES : Go to step 8D5.

- 4) 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 8D6.

NO : Go to step 8D5.

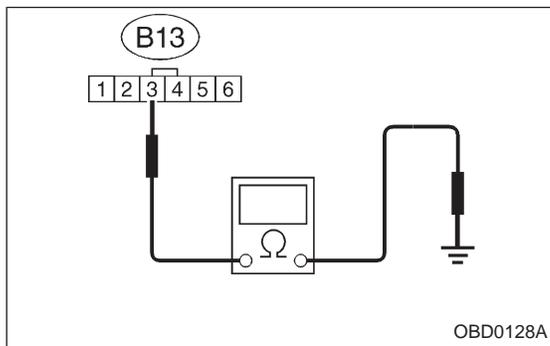
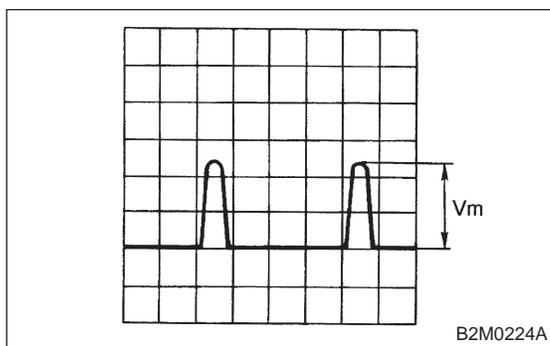
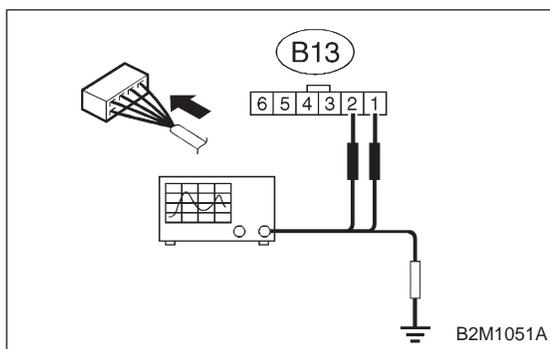
8D5 CHECK POOR CONTACT.

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.

**8D6 CHECK INPUT SIGNAL FOR IGNITOR.**

1) 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 next step 2).

NO : Replace ignitor.

2) 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 8D7.

NO : Replace ignitor.

8D7 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?*

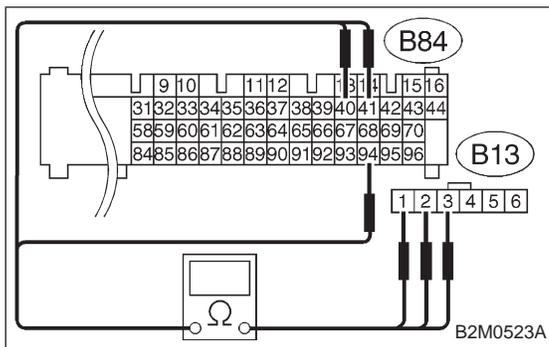
YES : Go to step 8D8.

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)



8D8 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 next step 3).

NO : Repair open circuit in harness between ECM and ignitor connector.

- 3) 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 next step 4).

NO : Repair open circuit in harness between ECM and ignitor connector.

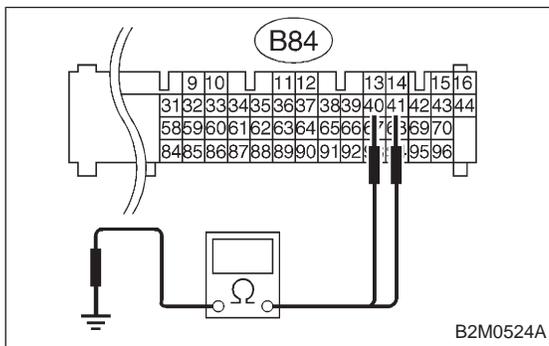
- 4) Measure resistance of harness between ECM and ignitor connector.

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

CHECK : Is the resistance less than 1 Ω?

NO : Repair open circuit in harness between ECM and ignitor connector.

YES : Go to next step 5).



- 5) 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 next step 6).

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

- 6) 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 8D9.

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

8D9**CHECK POOR CONTACT.**

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

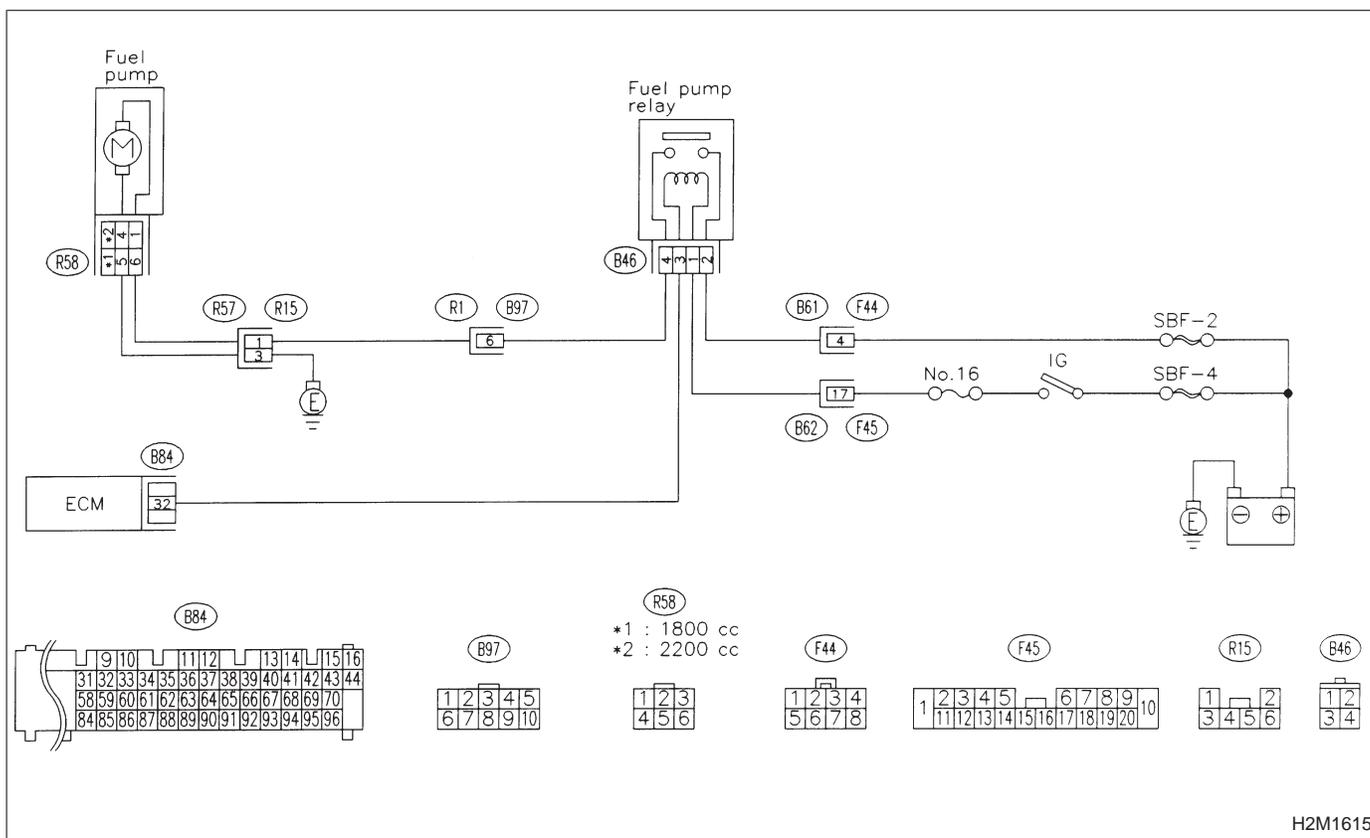
CHECK : *Is there poor contact in ECM connector?*

YES : Repair poor contact in ECM connector.

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

E: FUEL PUMP CIRCUIT

WIRING DIAGRAM:



H2M1615

CAUTION:

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

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

8E1	CHECK OPERATING SOUND OF FUEL PUMP.
------------	--

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

CHECK : Does fuel pump produce operating sound?

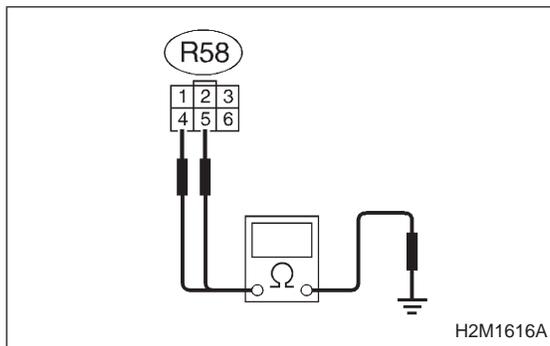
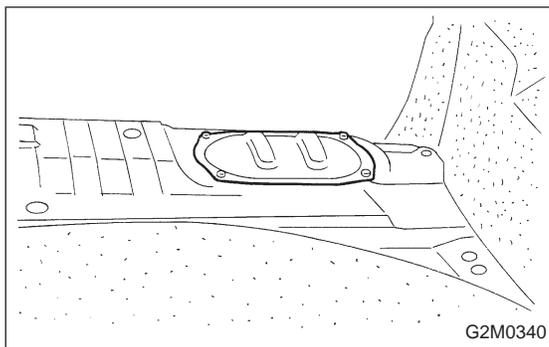
NOTE:

Fuel pump operation check can also be executed using Subaru Select Monitor (Function mode: FD01).

For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

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

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

**8E2****CHECK GROUND CIRCUIT OF FUEL PUMP.**

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

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

Connector & terminal

- 1800 cc model

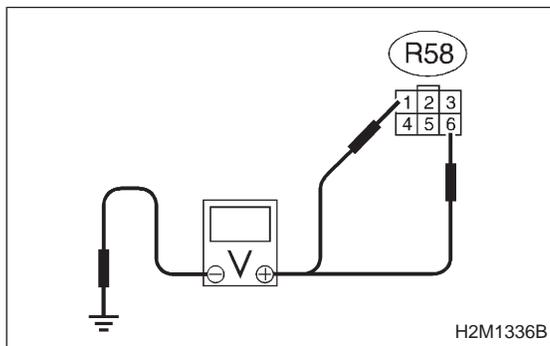
(R58) No. 5 — Chassis ground:

- 2200 cc model

(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.

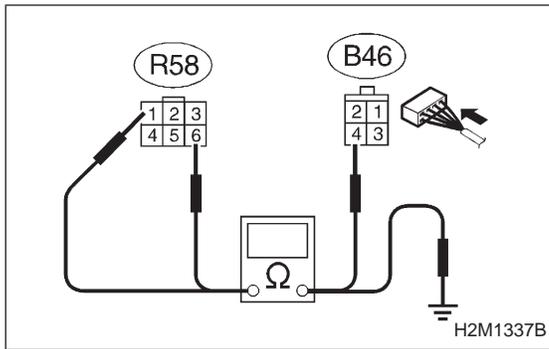
Connector & terminal

- 1800 cc model

(R58) No. 6 (+) — Chassis ground (-):

- 2200 cc model

(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

- 1800 cc model
(R58) No. 6 — (B46) No. 4:
- 2200 cc model
(R58) No. 1 — (B46) No. 4:

CHECK : Is the resistance less than 1 Ω?

YES : Go to next step 3).

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 (R15 and B97)

- 3) Measure resistance of harness between fuel pump and fuel pump relay connector.

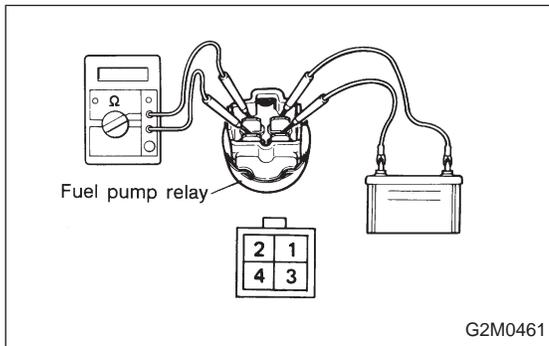
Connector & terminal

- 1800 cc model
(R58) No. 6 — Chassis ground:
- 2200 cc model
(R58) No. 1 — Chassis ground:

CHECK : Is the resistance more than 1 MΩ?

YES : Go to step 8E5.

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



8E5

CHECK FUEL PUMP RELAY.

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

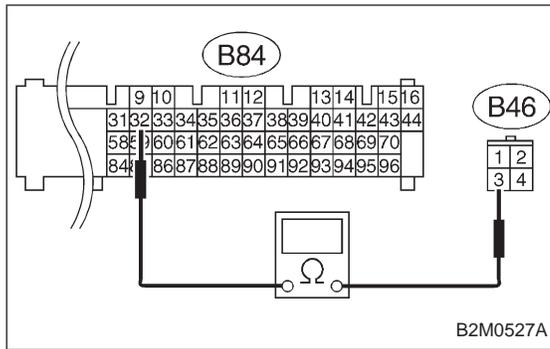
Terminals

No. 2 — No. 4:

CHECK : Is the resistance less than 10 Ω?

YES : Go to step 8E6.

NO : Replace fuel pump relay.

**8E6****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:

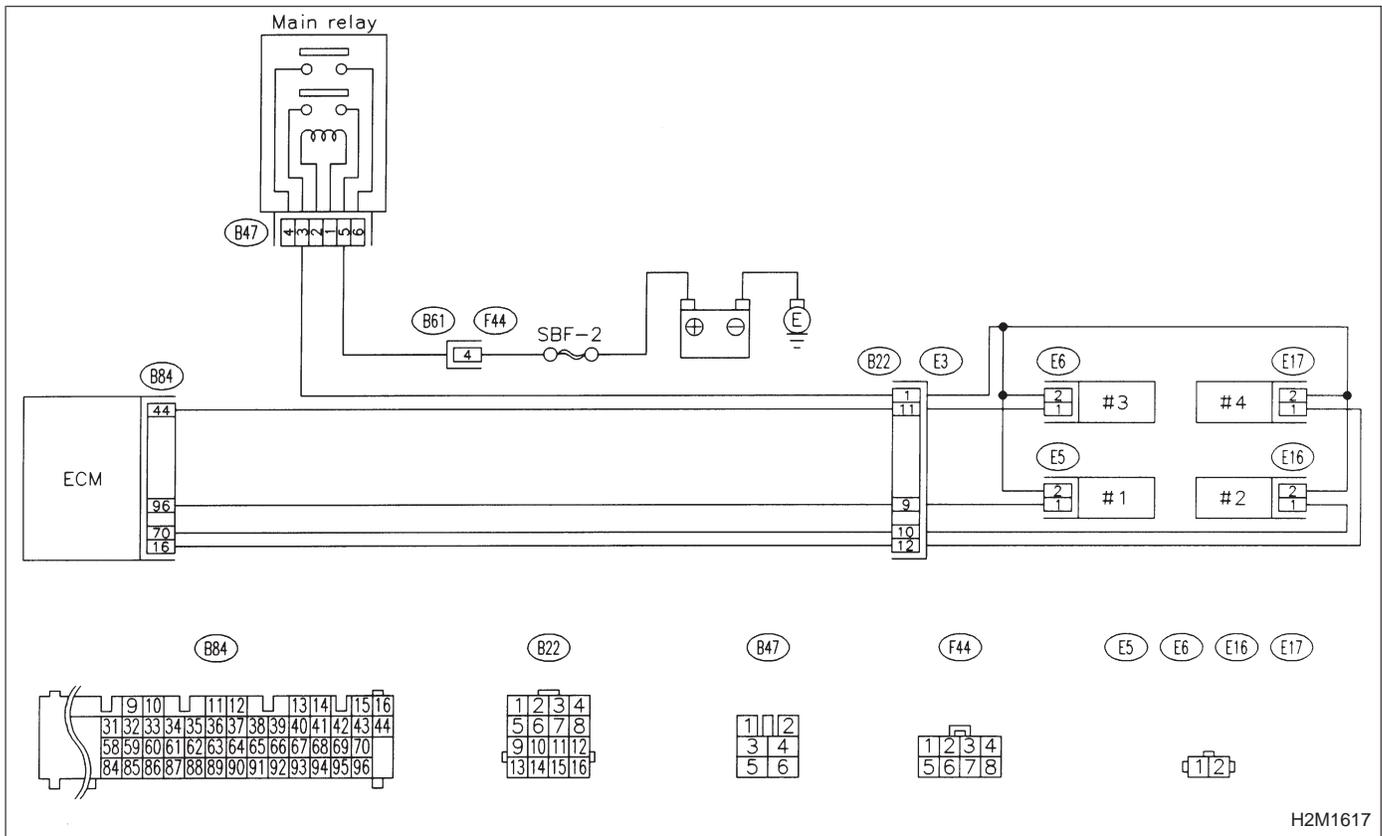
- CHECK** : *Is the resistance less than 1 Ω?*
- YES** : Go to step **8E7**.
- NO** : Repair open circuit in harness between ECM and fuel pump relay connector.

8E7**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
WIRING DIAGRAM:**



CAUTION:

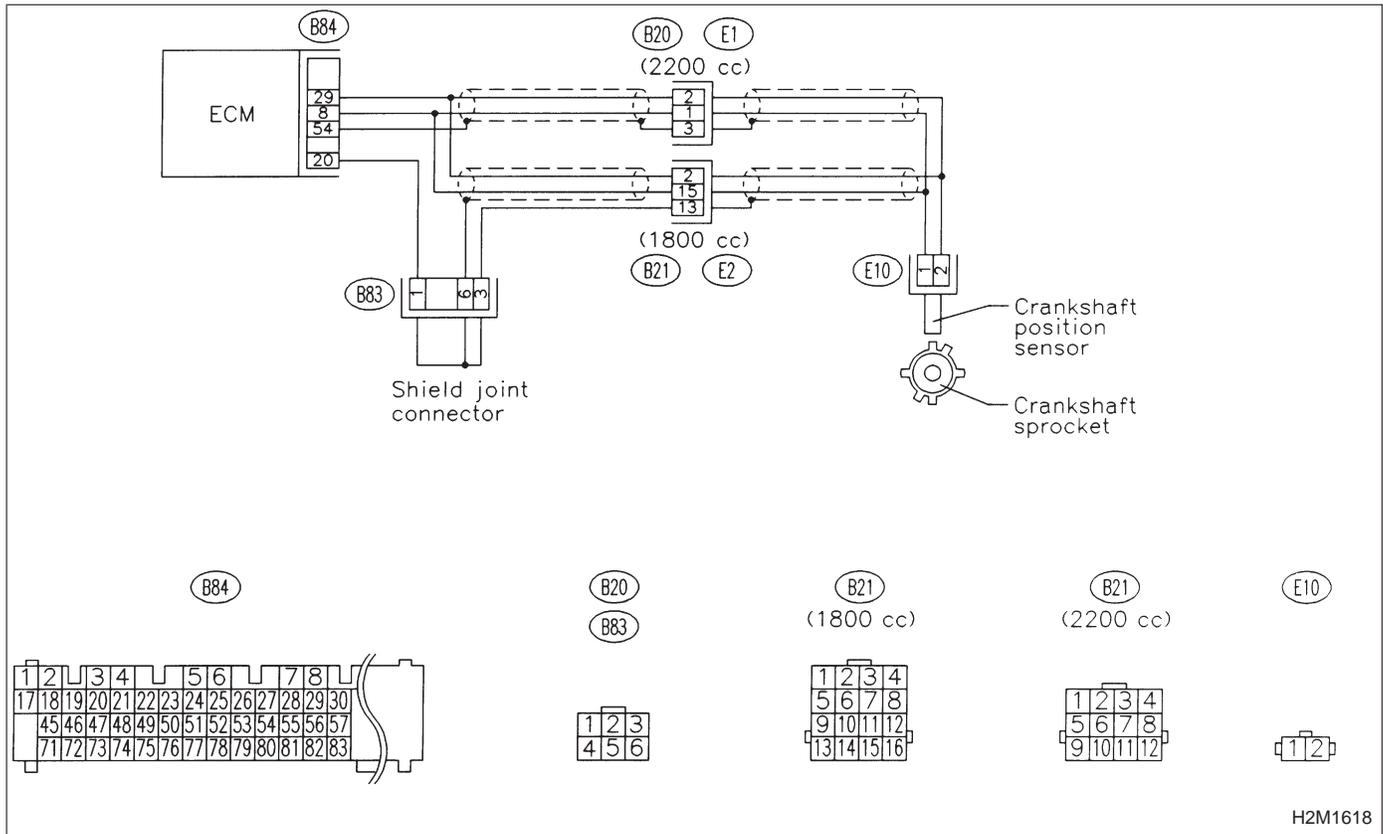
- Check or repair only faulty parts.
- After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**. <Ref. to 2-7 [T3D0] and [T3E0].>

NOTE:

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

G: CRANKSHAFT POSITION SENSOR CIRCUIT

WIRING DIAGRAM:



H2M1618

CAUTION:

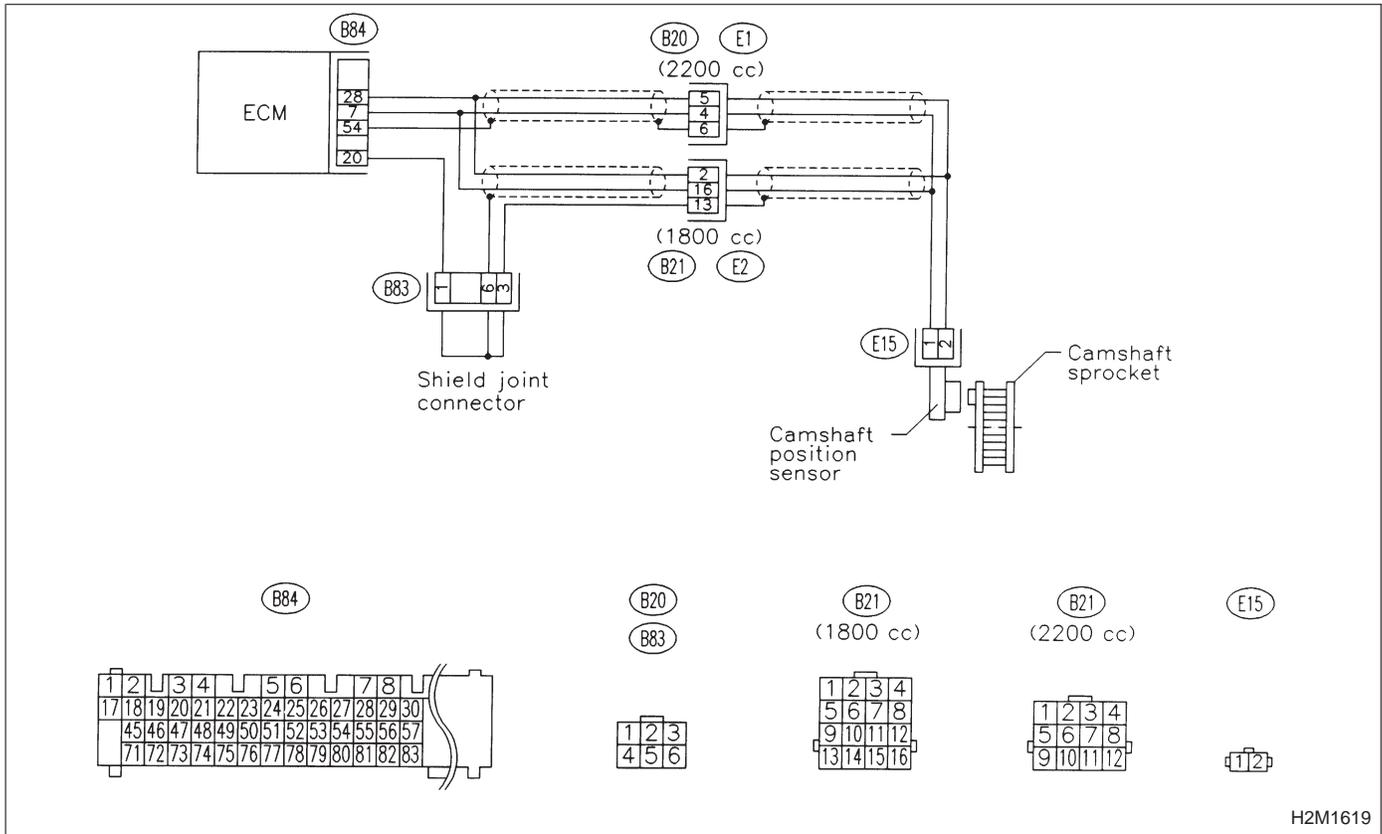
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

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

NOTE:

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

**H: CAMSHAFT POSITION SENSOR CIRCUIT
WIRING DIAGRAM:**



H2M1619

CAUTION:

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

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

NOTE:

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

9. General Diagnostic Table

A: GENERAL DIAGNOSTICS TABLE WITH NONCONFORMITY SYMPTOM FOR ENGINE

NOTE:

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

Symptom	Problem parts
1. Engine stalls during idling.	1) Idle air control solenoid valve 2) Mass air flow sensor 3) 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
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

Symptom	Problem parts
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 NONCONFORMITY SYMPTOM FOR AUTOMATIC TRANSMISSION

Symptom	Problem parts
Starter does not rotate when select lever is in "P" or "N"; starter rotates when select lever is in "R", "D", "3" or "2".	<ol style="list-style-type: none"> 1) Inhibitor switch 2) Select cable 3) Select lever 4) Starter motor and harness
Abnormal noise when select lever is in "P" or "N".	<ol style="list-style-type: none"> 1) Strainer 2) Duty solenoid C 3) Oil pump 4) Drive plate 5) ATF level too high or too low
Hissing noise occurs during standing start.	<ol style="list-style-type: none"> 1) Strainer 2) ATF level too high or too low
Noise occurs while driving in "D1".	<ol style="list-style-type: none"> 1) Final gear 2) Planetary gear
Noise occurs while driving in "D2".	<ol style="list-style-type: none"> 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in "D3".	<ol style="list-style-type: none"> 1) Final gear 2) Low & reverse brake 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in "D4".	<ol style="list-style-type: none"> 1) Final gear 2) Low & reverse brake 3) Planetary gear 4) Reduction gear 5) Differential gear oil level too high or too low
Engine stalls while shifting from one range to another.	<ol style="list-style-type: none"> 1) Control valve 2) Lock-up damper 3) Engine performance
Vehicle moves when select lever is in "N".	<ol style="list-style-type: none"> 1) Control unit 2) Inhibitor switch 3) Forward clutch
Shock occurs when select lever is moved from "N" to "D".	<ol style="list-style-type: none"> 1) Control module 2) Accumulator ("N" to "D") 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from "N" to "D".	<ol style="list-style-type: none"> 1) Control module 2) Control valve 3) Forward clutch 4) Duty solenoid A 5) Forward clutch seal ring 6) Front gasket transmission case
Shock occurs when select lever is moved from "N" to "R".	<ol style="list-style-type: none"> 1) Control module 2) Accumulator (4A) 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from "N" to "R".	<ol style="list-style-type: none"> 1) Control valve 2) Low & reverse clutch 3) Reverse clutch 4) Duty solenoid A 5) Forward clutch seal ring 6) Front gasket transmission case

Symptom	Problem parts
Vehicle does not start in any shift range (engine stalls).	1) Parking brake mechanism 2) Planetary gear
Vehicle does not start in any shift range (engine revving up).	1) Strainer 2) Duty solenoid A 3) Control valve 4) Drive pinion 5) Hypoid gear 6) Axle shaft 7) Differential gear 8) Oil pump 9) Input shaft 10) Output shaft 11) Planetary gear 12) Drive plate 13) ATF level too low 14) Front gasket transmission case
Vehicle does not start in "R" range only (engine revving up).	1) Select cable 2) Select lever 3) Control valve 4) Low & reverse clutch 5) Reverse clutch
Vehicle does not start in "R" range only (engine stalls).	1) Forward clutch 2) Band brake 3) Planetary gear 4) Parking brake mechanism
Vehicle does not start in "D", "3" or "2" range only (engine revving up).	1) Forward clutch 2) One-way clutch (1-2)
Vehicle does not start in "D", "3", "2" or "1" range only (engine revving up).	1) Forward clutch
Vehicle does not start in "D", "3", "2" or "1" range only (engine stalls).	1) Reverse clutch
Vehicle starts in "R" range only (engine revving up).	1) Control valve
Acceleration during standing starts is poor (high stall rpm).	1) Control valve 2) Forward clutch 3) Reverse clutch 4) ATF level too low 5) Front gasket transmission case
Acceleration during standing starts is poor (low stall rpm).	1) Oil pump 2) Torque converter one-way clutch 3) Engine performance
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).	1) Control module 2) Control valve 3) High clutch 4) Brake band 5) Planetary gear
Acceleration is poor when select lever is in "R" (normal stall rpm).	1) Control module 2) Overrunning clutch 3) High clutch 4) Brake band 5) Planetary gear

Symptom	Problem parts
No shift occurs from 1st to 2nd gear.	<ol style="list-style-type: none"> 1) Control module 2) Vehicle speed sensor 1 3) Vehicle speed sensor 2 4) Throttle position sensor 5) Shift solenoid 1 6) Shift solenoid 2 7) Control valve 8) Brake band
No shift occurs from 2nd to 3rd gear.	<ol style="list-style-type: none"> 1) Control module 2) Control valve 3) High clutch 4) One-way clutch (3-4)
No shift occurs from 3rd to 4th gear.	<ol style="list-style-type: none"> 1) Control module 2) Accumulator (3R) 3) ATF temperature sensor 4) Control valve 5) Band brake
Engine brake is not effected when select lever is in "3" range.	<ol style="list-style-type: none"> 1) Inhibitor switch 2) Control module 3) Throttle position sensor 4) Control valve 5) Shift solenoid 3
Engine brake is not effected when select lever is in "3" or "2" range.	<ol style="list-style-type: none"> 1) Control valve 2) Overrunning clutch
Engine brake is not effected when select lever is in "1" range.	<ol style="list-style-type: none"> 1) Control valve 2) Low & reverse brake clutch
Shift characteristics are erroneous.	<ol style="list-style-type: none"> 1) Inhibitor switch 2) Control module 3) Vehicle speed sensor 1 4) Vehicle speed sensor 2 5) Throttle position sensor 6) Control valve
No lock-up occurs.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Control valve 5) Lock-up facing 6) Engine speed signal
Parking brake is not effected.	<ol style="list-style-type: none"> 1) Select cable 2) Select lever
Shift lever cannot be moved or is hard to move from "P" range.	<ol style="list-style-type: none"> 3) Parking mechanism
ATF spurts out.	<ol style="list-style-type: none"> 1) ATF level too high
Differential oil spurts out.	<ol style="list-style-type: none"> 1) Differential gear oil too high
Differential oil level changes excessively.	<ol style="list-style-type: none"> 1) Seal pipe 2) Double oil seal
Odor is produced from ATF supply pipe.	<ol style="list-style-type: none"> 1) Transfer clutch 2) Forward clutch 3) Overrunning clutch 4) High clutch 5) Band brake 6) Low & reverse clutch 7) Reverse clutch 8) Lock-up facing 9) ATF deterioration

Symptom	Problem parts
Shock occurs from 1st to 2nd gear.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) Accumulator (2A) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Band brake 8) ATF deterioration 9) Engine performance 10) Dropping resistor
Slippage occurs from 1st to 2nd gear.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) Accumulator (2A) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Band brake
Shock occurs from 2nd to 3rd gear.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) Accumulator (3R) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) Band brake 9) ATF deterioration 10) Engine performance 11) Dropping resistor
Slippage occurs from 2nd to 3rd gear.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) Accumulator (3R) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) Band brake
Shock occurs from 3rd to 4th gear.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) Accumulator 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Overrunning clutch 8) Band brake 9) ATF deterioration 10) Engine performance
Slippage occurs from 3rd to 4th gear.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) Accumulator 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Band brake

Symptom	Problem parts
Shock occurs when select lever is moved from "3" to "2" range.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Overrunning clutch 7) Band brake 8) ATF deterioration
Shock occurs when select lever is moved from "D" to "1" range.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) ATF deterioration 7) Low & reverse brake
Shock occurs when select lever is moved from "2" to "1" range.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Low & reverse clutch 7) ATF deterioration
Shock occurs when accelerator pedal is released at medium speeds.	<ol style="list-style-type: none"> 1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Lock-up damper 7) Engine performance
Vibration occurs during straight-forward operation.	<ol style="list-style-type: none"> 1) Control module 2) Duty solenoid B 3) Lock-up facing 4) Lock-up damper
Vibration occurs during turns (tight corner "braking" phenomenon).	<ol style="list-style-type: none"> 1) Control module 2) Vehicle speed sensor 1 3) Vehicle speed sensor 2 4) Throttle position sensor 5) ATF temperature sensor 6) Transfer clutch 7) Transfer valve 8) Duty solenoid C 9) ATF deterioration
Front wheel slippage occurs during standing starts.	<ol style="list-style-type: none"> 1) Control module 2) Vehicle speed sensor 2 3) FWD switch 4) Throttle position sensor 5) ATF temperature sensor 6) Control valve 7) Transfer clutch 8) Transfer valve 9) Transfer pipe 10) Duty solenoid C 11) Transfer clutch hub
Vehicle is not set in FWD mode.	<ol style="list-style-type: none"> 1) Control module 2) FWD switch 3) Transfer clutch 4) Transfer valve 5) Duty solenoid C

Symptom	Problem parts
Select lever is hard to move.	<ol style="list-style-type: none">1) Select cable2) Select lever3) Detent spring4) Manual plate
Select lever is too high to move (unreasonable resistance).	<ol style="list-style-type: none">1) Detent spring2) Manual plate
Select lever slips out of operation during acceleration or while driving on rough terrain.	<ol style="list-style-type: none">1) Select cable2) Select lever3) Detent spring4) Manual plate

10. Diagnostic Chart with Trouble Code

A: DIAGNOSTIC TROUBLE CODE (DTC) LIST

DTC No.	Abbreviation (Subaru Select Monitor)	Item	Page
P0101	QA—RLOW	Mass air flow sensor circuit range/performance problem (low input)	133
P0102	QA—LOW	Mass air flow sensor circuit low input	135
P0103	QA—HI	Mass air flow sensor circuit high input	140
P0106	PS—R2	Pressure sensor circuit range/performance problem	143
P0107	P—SLOW	Pressure sensor circuit low input	147
P0108	P—SHI	Pressure sensor circuit high input	151
P0116	TW—LOW	Engine coolant temperature sensor circuit low input	156
P0117	TW—HI	Engine coolant temperature sensor circuit high input	159
P0121	TH—RHI	Throttle position sensor circuit range/performance problem (high input)	163
P0122	THV—LOW	Throttle position sensor circuit low input	165
P0123	THV—HI	Throttle position sensor circuit high input	170
P0125	TW—CL	Insufficient coolant temperature for closed loop fuel control	173
P0130	FO2—V	Front oxygen sensor circuit malfunction	175
P0133	FO2—R	Front oxygen sensor circuit slow response	178
P0135	FO2H	Front oxygen sensor heater circuit malfunction	180
P0136	RO2—V	Rear oxygen sensor circuit malfunction	184
P0139	RO2—R	Rear oxygen sensor circuit slow response	187
P0141	RO2H	Rear oxygen sensor heater circuit malfunction	189
P0170	FUEL	Fuel trim malfunction	193
P0181	TNKT—F	Fuel temperature sensor A circuit range/performance problem	198
P0182	TNKT—LOW	Fuel temperature sensor A circuit low input	200
P0183	TNKT—HI	Fuel temperature sensor A circuit high input	203
P0261	INJ1	Fuel injector circuit low input - #1	209
P0262	INJ1—HI	Fuel injector circuit high input - #1	214
P0264	INJ2	Fuel injector circuit low input - #2	209
P0265	INJ2—HI	Fuel injector circuit high input - #2	214
P0267	INJ3	Fuel injector circuit low input - #3	209
P0268	INJ3—HI	Fuel injector circuit high input - #3	214
P0270	INJ4	Fuel injector circuit low input - #4	209
P0271	INJ4—HI	Fuel injector circuit high input - #4	214
P0301	MIS—1	Cylinder 1 misfire detected	218
P0302	MIS—2	Cylinder 2 misfire detected	218
P0303	MIS—3	Cylinder 3 misfire detected	218
P0304	MIS—4	Cylinder 4 misfire detected	218
P0325	KNOCK	Knock sensor circuit malfunction	227
P0335	CRANK	Crankshaft position sensor circuit malfunction	230
P0336	CRANK—R	Crankshaft position sensor circuit range/performance problem	233
P0340	CAM	Camshaft position sensor circuit malfunction	235
P0341	CAM—R	Camshaft position sensor circuit range/performance problem	238

DTC No.	Abbreviation (Subaru Select Monitor)	Item	Page
P0400	EGR	Exhaust gas recirculation flow malfunction	240
P0403	EGRSOL	Exhaust gas recirculation circuit low input	245
P0420	CAT	Catalyst system efficiency below threshold	249
P0440	EVAP	Evaporative emission control system malfunction	251
P0441	CPC—F	Evaporative emission control system incorrect purge flow	255
P0443	CPC	Evaporative emission control system purge control valve circuit low input	257
P0446	VCMSOL—LO	Evaporative emission control system vent control low input	261
P0451	TNKP—F	Evaporative emission control system pressure sensor range/performance problem	265
P0452	TNKP—LOW	Evaporative emission control system pressure sensor low input	267
P0453	TNKP—HI	Evaporative emission control system pressure sensor high input	272
P0461	FLVL—R	Fuel level sensor circuit range/performance problem	278
P0462	FLVL—LOW	Fuel level sensor circuit low input	280
P0463	FLVL—HI	Fuel level sensor circuit high input	290
P0500	VSP	Vehicle speed sensor malfunction	298
P0505	ISC	Idle control system malfunction	300
P0506	ISC—RLOW	Idle control system RPM lower than expected	307
P0507	ISC—RHI	Idle control system RPM higher than expected	309
P0600	—	Serial communication link malfunction	311
P0601	RAM	Internal control module memory check sum error	313
P0703	ATBRK	Brake switch input malfunction	314
P0705	ATRNG	Transmission range sensor circuit malfunction	317
P0710	ATF	Transmission fluid temperature sensor circuit malfunction	336
P0720	ATVSP	Output speed sensor (vehicle speed sensor 1) circuit malfunction	337
P0725	ATNE	Engine speed input circuit malfunction	338
P0731	ATGR1	Gear 1 incorrect ratio	339
P0732	ATGR2	Gear 2 incorrect ratio	339
P0733	ATGR3	Gear 3 incorrect ratio	339
P0734	ATGR4	Gear 4 incorrect ratio	339
P0740	ATLU—F	Torque converter clutch system malfunction	343
P0743	ATLU	Torque converter clutch system electrical	347
P0748	ATPL	Pressure control solenoid electrical	348
P0753	ATSFT1	Shift solenoid A electrical	349
P0758	ATSFT2	Shift solenoid B electrical	350
P0760	ATOVR—F	Shift solenoid C malfunction	351
P0763	ATOVR	Shift solenoid C electrical	355
P1100	ST—SWOFF	Starter switch circuit low input	356
P1101	N—SW	Neutral position switch circuit malfunction [MT vehicles]	358
P1101	N—SWOFF	Neutral position switch circuit high input [AT vehicles]	362
P1102	BR	Pressure sources switching solenoid valve circuit low input	367
P1103	TRQ	Engine torque control signal circuit malfunction	371
P1120	ST—SWON	Starter switch circuit high input	374

DTC No.	Abbreviation (Subaru Select Monitor)	Item	Page
P1121	N-SWON	Neutral position switch circuit low input [AT vehicles]	376
P1122	BR-HI	Pressure sources switching solenoid valve circuit high input	380
P1141	QA-RHI	Mass air flow sensor circuit range/performance problem (high input)	382
P1142	TH-RLOW	Throttle position sensor circuit range/performance problem (low input)	384
P1143	PS-RLOW	Pressure sensor circuit range/performance problem (low input)	386
P1144	PS-RHI	Pressure sensor circuit range/performance problem (high input)	390
P1400	PCVSOL-LO	Fuel tank pressure control solenoid valve circuit low input	392
P1420	PCVSOL-HI	Fuel tank pressure control solenoid valve circuit high input	396
P1421	EGRSOL-HI	Exhaust gas recirculation circuit high input	399
P1422	CPC-HI	Evaporative emission control system purge control valve circuit high input	402
P1423	VCMSOL-HI	Evaporative emission control system vent control high input	405
P1440	PCV-FLOW	Fuel tank pressure control system function problem (low input)	408
P1441	PCV-FHI	Fuel tank pressure control system function problem (high input)	412
P1442	FLVL-R2	Fuel level sensor circuit range/performance problem 2	415
P1500	FAN-1	Radiator fan relay 1 circuit low input	417
P1502	FAN-F	Radiator fan function problem	421
P1507	ISC-SHI	Idle control system malfunction (fail-safe)	423
P1520	FAN-1HI	Radiator fan relay 1 circuit high input	425
P1540	VSP-S	Vehicle speed sensor malfunction 2	428
P1700	ATTH	Throttle position sensor circuit malfunction for automatic transmission	430
P1701	ATCRS	Cruise control set signal circuit malfunction for automatic transmission	432
P1702	ATDIAG-LO	Automatic transmission diagnosis input signal circuit low input	434
P1722	ATDIAG-HI	Automatic transmission diagnosis input signal circuit high input	437
P1742	ATDIAG-2	Automatic transmission diagnosis input signal circuit malfunction	440

OBD (FB1)
 P0101 <QA_RLOW>
 B2M1056

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

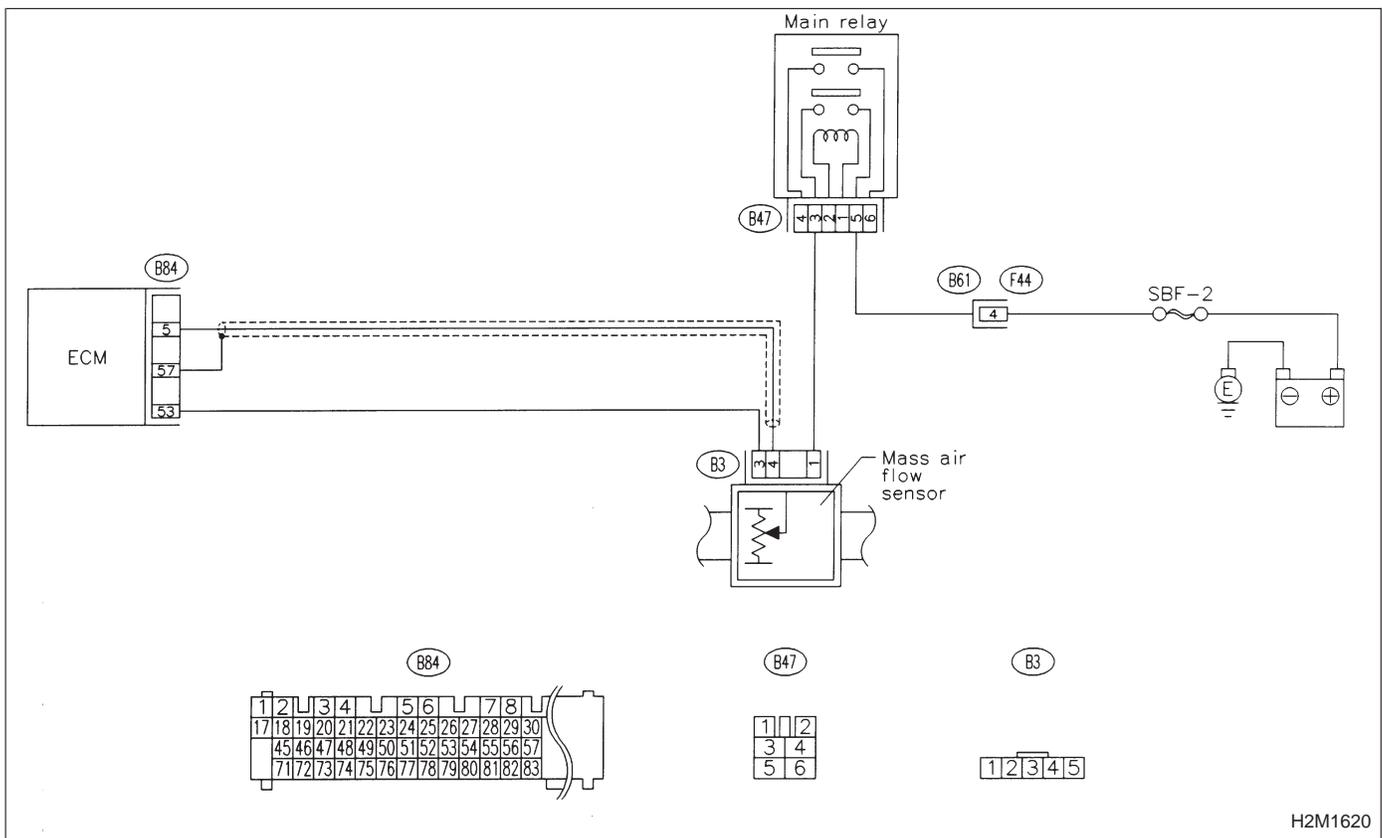
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



H2M1620

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

10B1	CHECK DTC P0102 OR P0103 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 [T10A0].>

NOTE:

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

NO : Replace mass air flow sensor.

OBD (FB1)
 P0102 <QA_LOW>
 B2M1058

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

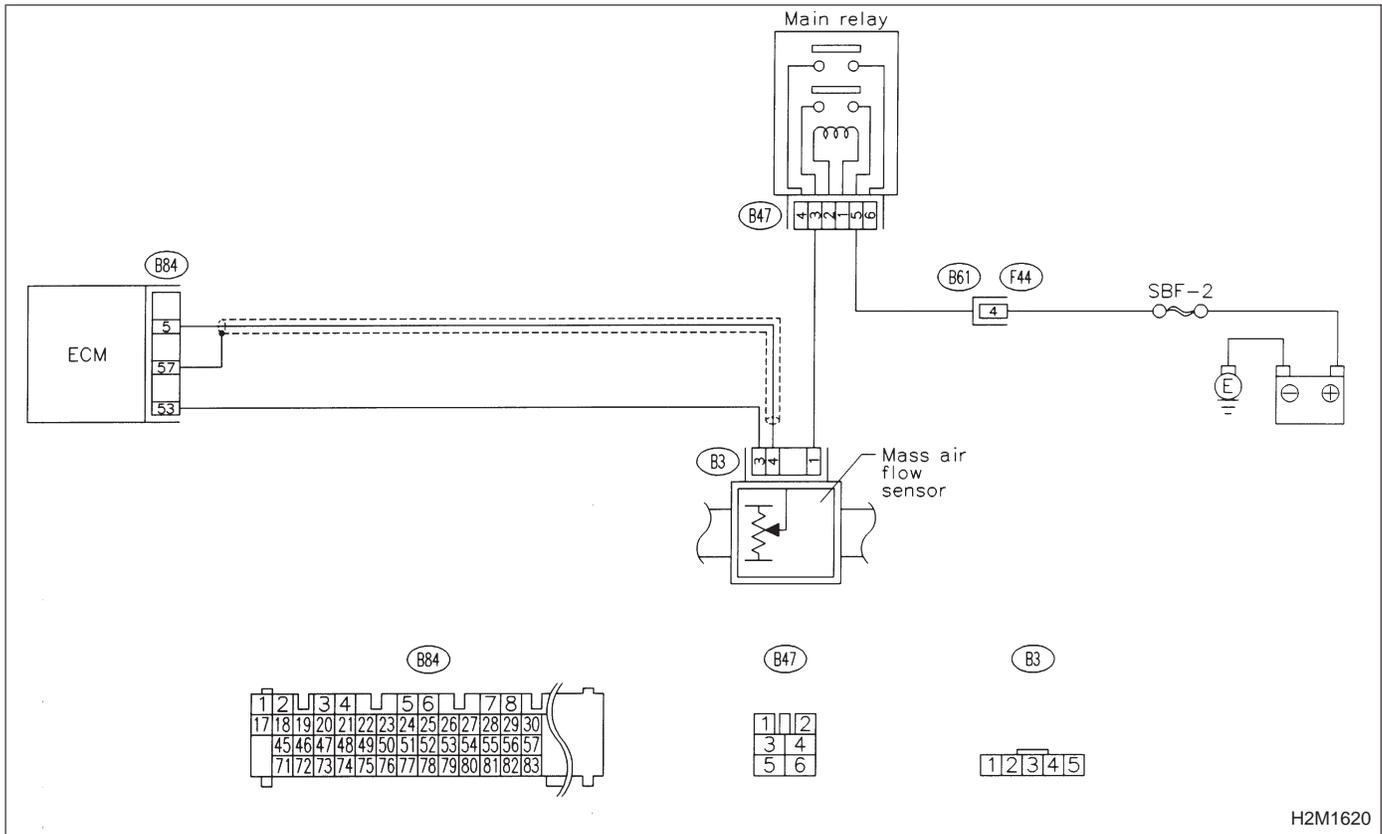
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:

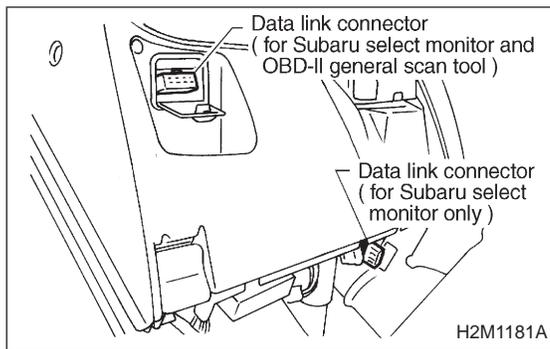


H2M1620

CAUTION:

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

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



QA	(F06)
1 . 67g / s	2 . 02V

B2M0481

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 on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F06

- F06: Mass air flow and voltage input from mass air flow sensor are shown on display at the same time.

CHECK : *Is the value equal to or more than 1.3 g/sec or 0.3 V and equal to or less than 250 g/sec or 5.0 V in function mode F06?*

Probable cause: Poor connect of connectors, circuit and grounding line.

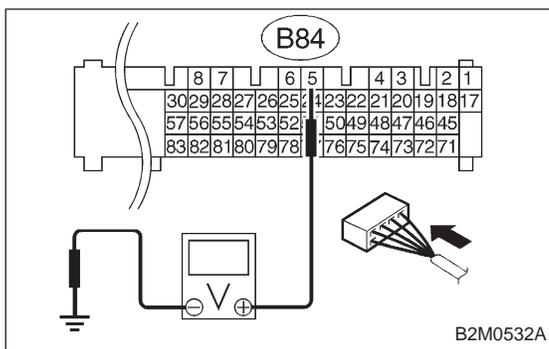
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the mass air flow sensor.

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.
(USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

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

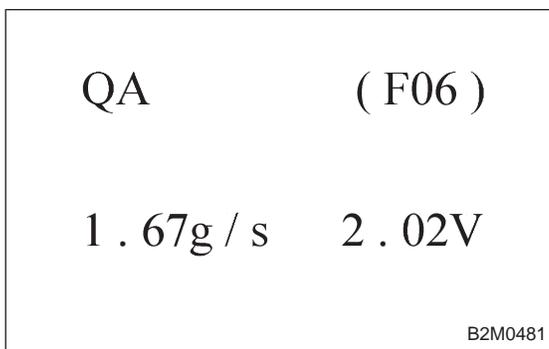
Connector & terminal

(B84) No. 5 (+) — Chassis ground (-):

CHECK : Is the voltage less than 0.3 V?

YES : Go to step 10C3.

NO : Go to next step 2).



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

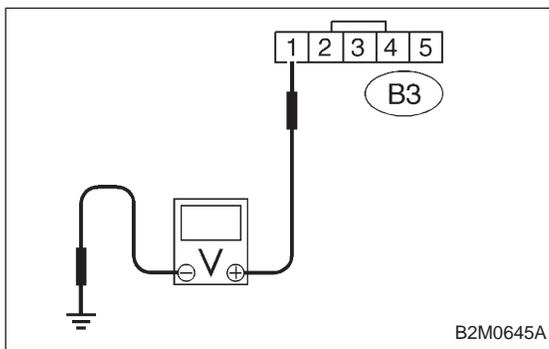
CHECK : Does the voltage change more than 0.3 V by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

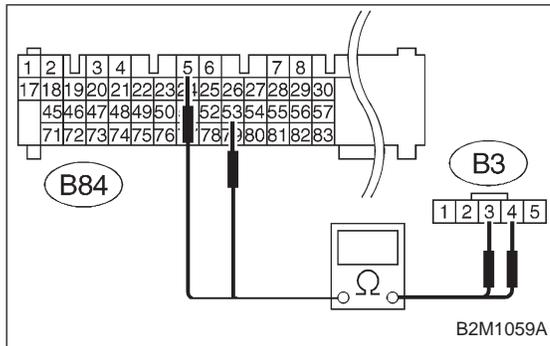
NOTE:

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



10C3 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 10C4.**NO** : Repair open circuit in harness between main relay and mass air flow sensor connector.**10C4****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 next step 4).**NO** : Repair harness and connector.**NOTE:**

In this case, repair the following:

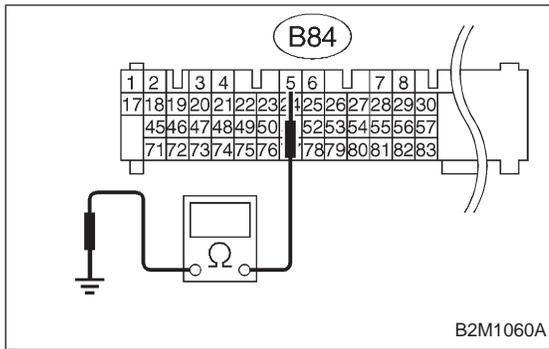
- Open circuit in harness between ECM and mass air flow sensor connector
- Poor contact in mass air flow sensor connector
- Poor contact in ECM connector

- 4) 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 10C5.**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



10C5

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.

OBD (FB1)
 P0103 <QA_HI>
 B2M1061

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

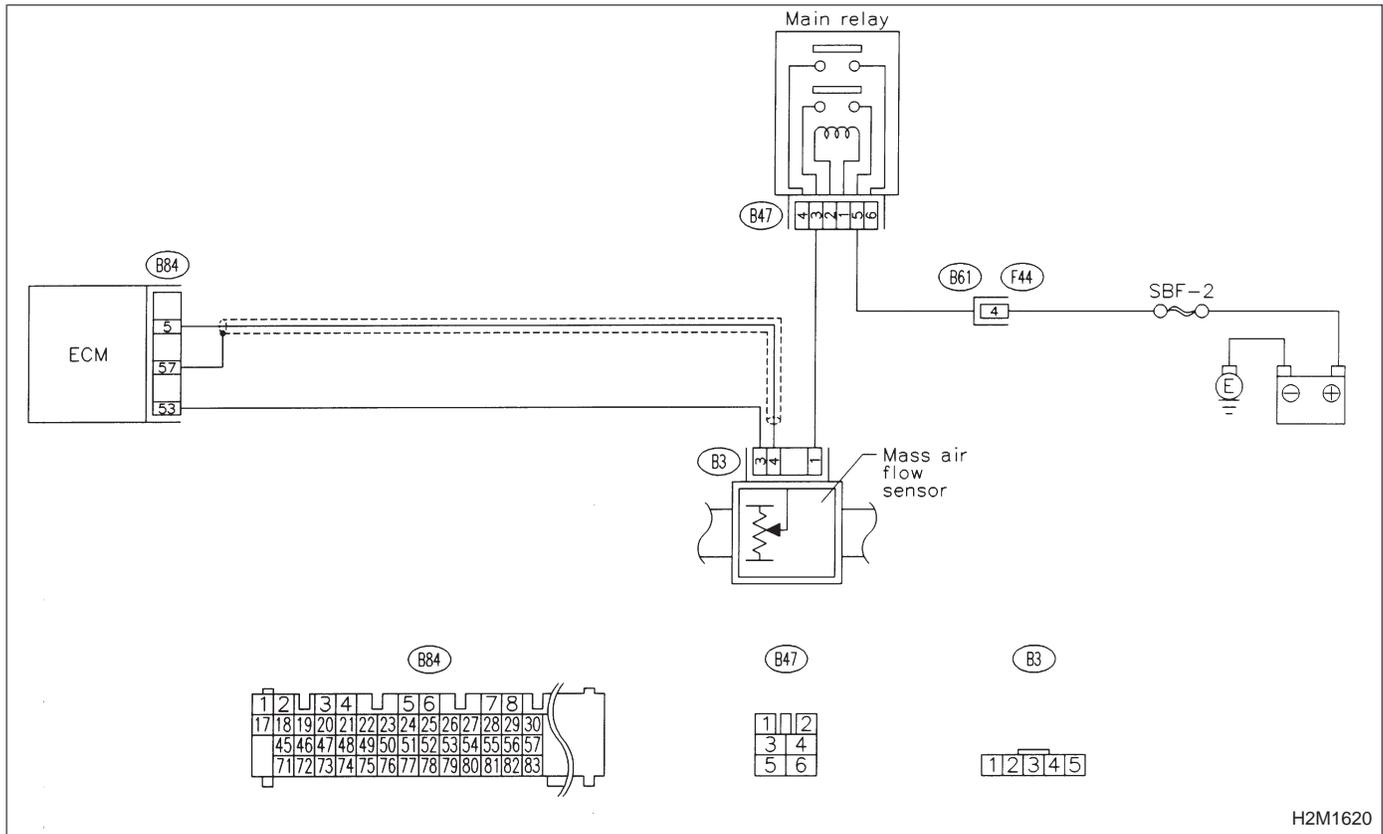
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

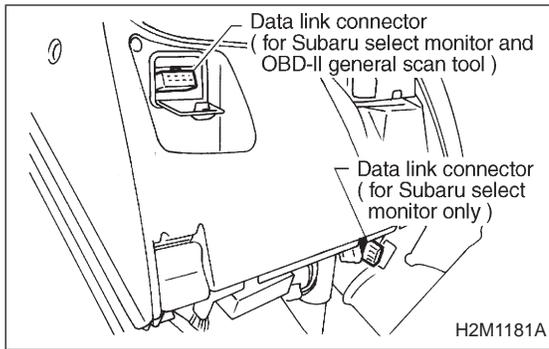
WIRING DIAGRAM:



CAUTION:

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

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



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.

QA (F06)

1 . 67g / s 2 . 02V

B2M0481

- 5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F06

- F06: Mass air flow and voltage input from mass air flow sensor are shown on display at the same time.

CHECK : *Is the value equal to or more than 1.3 g/sec or 0.3 V and equal to or less than 250 g/sec or 5.0 V in function mode F06?*

Probable cause: Poor connect of connectors, circuit and grounding line.

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NO : Go to step **10D2**.

QA	(F06)
1 . 67g / s	2 . 02V
B2M0481	

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 on Subaru select monitor or OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F06

CHECK : *Is the value more than 250 g/sec 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.

- OBD-II general scan tool

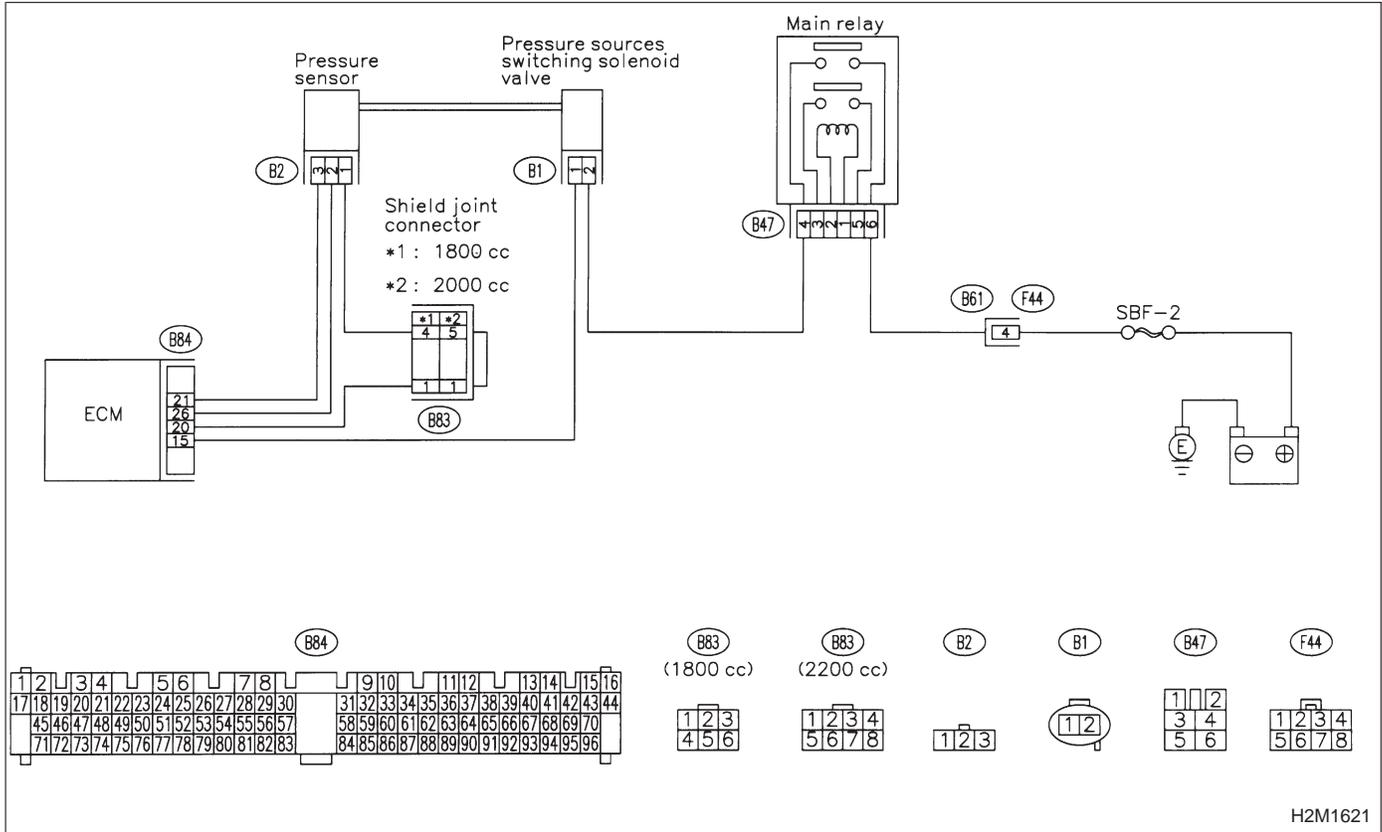
For detailed operation procedures, refer to OBD-II General Scan Tool Instruction Manual.

OBD (FB1)
 P0106 <PS_R2>
 B2M1062

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

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

WIRING DIAGRAM:



H2M1621

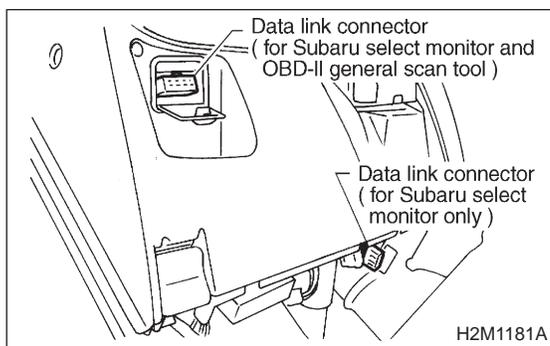
CAUTION:
 After repair or replacement of faulty parts, conduct
CLEAR MEMORY and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0] and [T3E0].>

10E1**CHECK DTC P0107, P0108, P1102 OR P1122 ON DISPLAY.****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 [T10A0].>

NOTE:

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

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 on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F21 and F20

- F21: Display shows pressure signal value sent from the pressure sensor.
- F20: Display shows pressure signal value sent from the pressure sensor.

CHECK: **Is the value more than 85 kPa in function mode F21?****YES**: Go to step **10E3**.**NO**

: Go to next step 6).

MANI.P (F 2 1)

29kPa218mmHg

B2M0756

BARO. P (F 2 0)

1 0 0kPa752mmHg

B2M0755

6) Read data on Subaru Select Monitor or OBD-II general scan tool.

CHECK : *Is the value less than 32 kPa in function mode F20?*

YES : Go to step 10E4.

NO : Go to step 7).

BARO. P (F 2 0)

1 0 0kPa752mmHg

B2M0755

7) Read data on Subaru Select Monitor or OBD-II general scan tool.

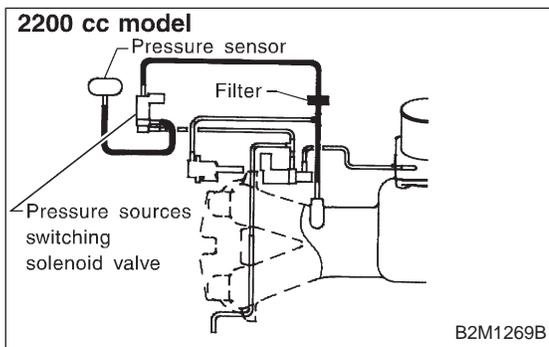
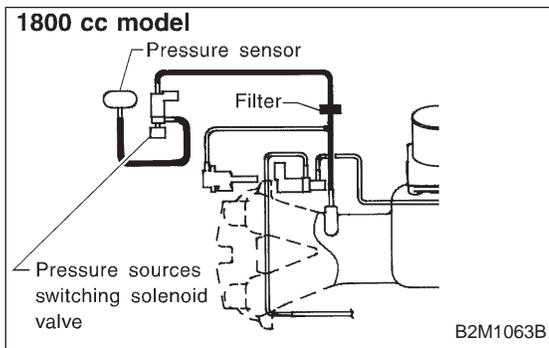
CHECK : *Is the value more than 133 kPa in function mode F20?*

YES : Replace pressure sensor.

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

● OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10E3 CHECK VACUUM HOSE.

CHECK : *Is there a fault in vacuum hose?*

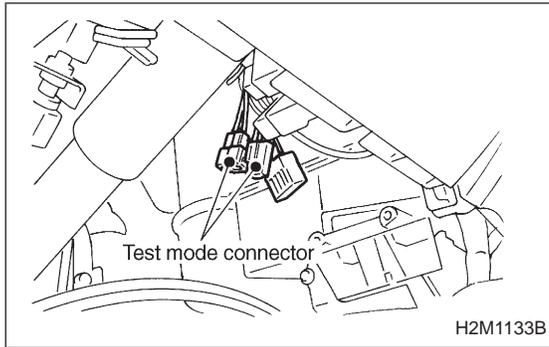
NOTE:

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

YES : Repair or replace hoses or filter.

NO : Go to step 10E4.



10E4

CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

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

CHECK : ***Does pressure sources switching solenoid valve produce operating sound? (ON ↔ OFF each 1.5 sec.)***

NOTE:

Pressure sources switching solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD10). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Replace pressure sensor.

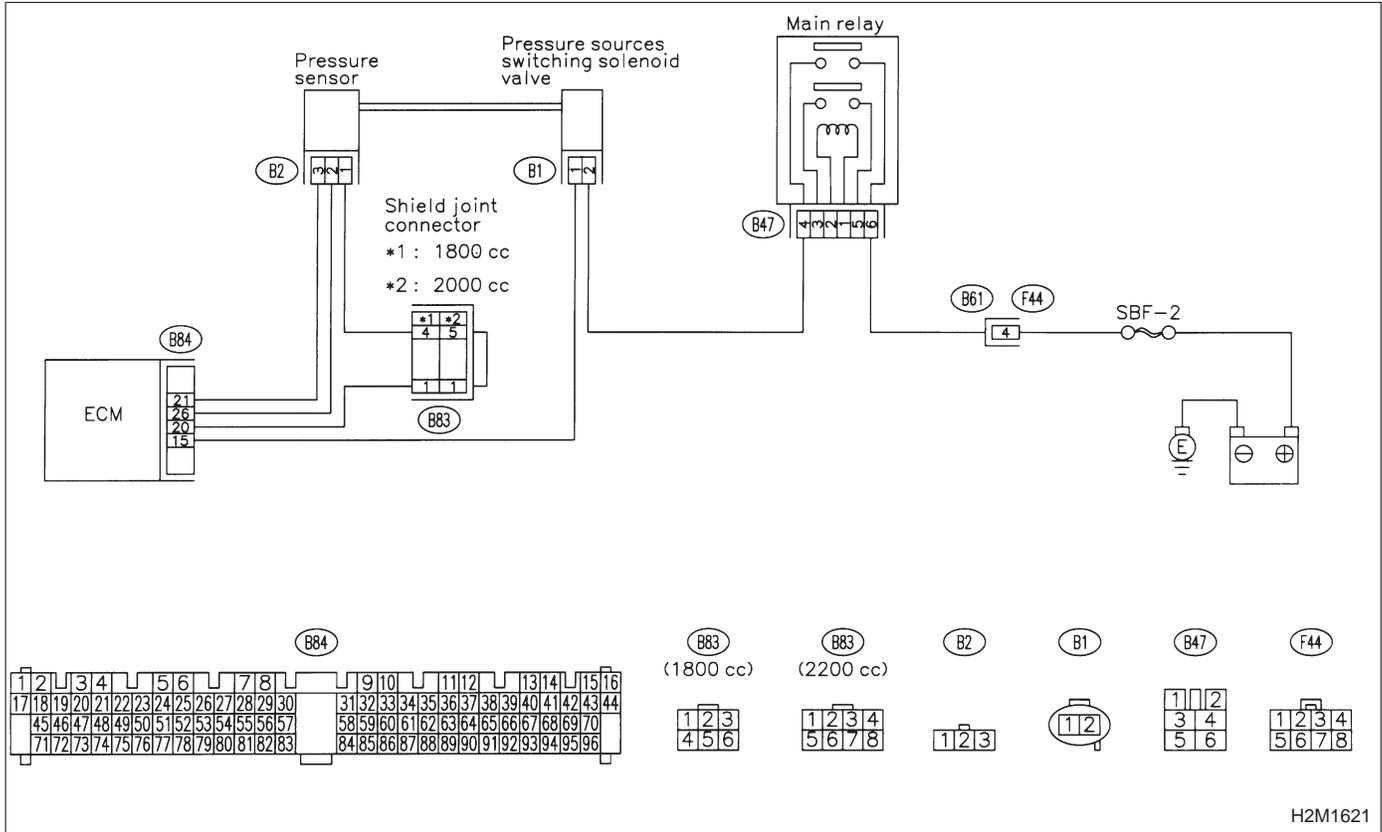
NO : Replace pressure sources switching solenoid valve.

OBD (FB1)
 P0107 <P_SLOW>
 B2M1064

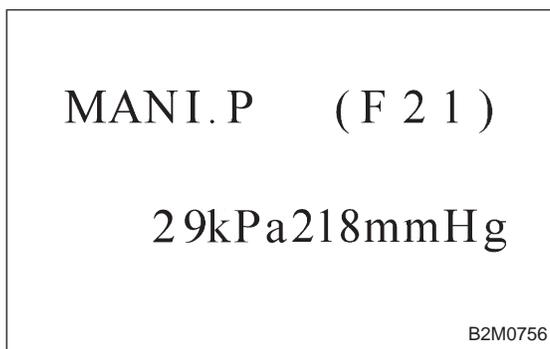
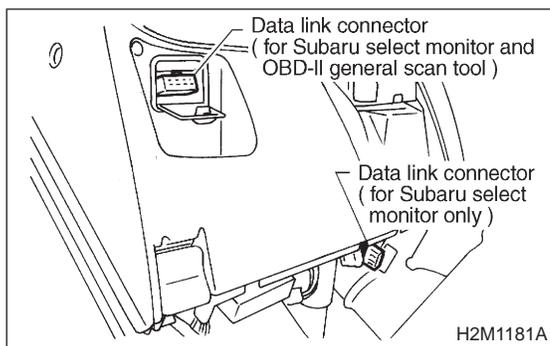
**F: DTC P0107
 — PRESSURE SENSOR CIRCUIT LOW
 INPUT —**

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

WIRING DIAGRAM:



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



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 on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F21

- F21: Display shows pressure signal value sent from pressure sensor.

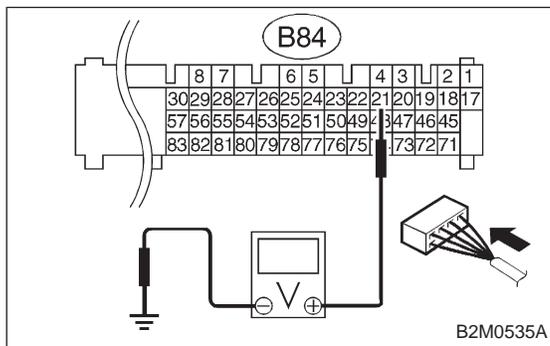
CHECK : Is the value less than 0 kPa in function mode F21?

YES : Go to step 10F2.

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

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10F2

CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

- 1) Measure voltage between ECM connector and chassis ground.

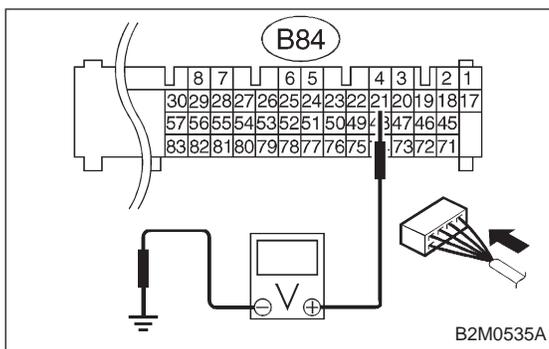
Connector & terminal

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

CHECK : Is the voltage more than 4.5 V?

YES : Go to next step 2).

NO : Go to next **CHECK** .



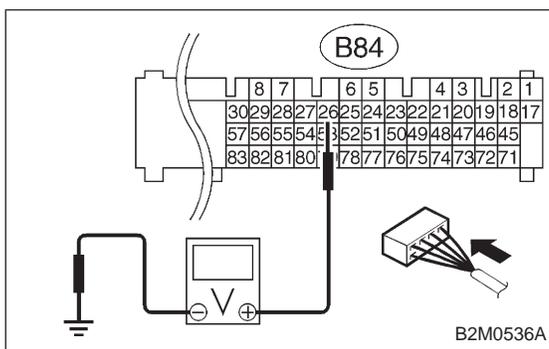
CHECK : Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?

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.



2) Measure voltage between ECM and chassis ground.

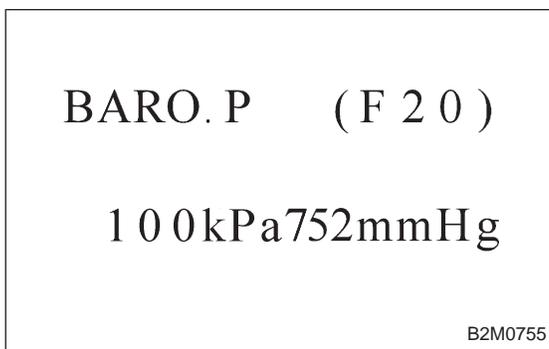
Connector & terminal

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

CHECK : Is the voltage less than 0.2 V?

YES : Go to step 10F3.

NO : Go to next step 3).



3) Read data on Subaru Select Monitor.

● Subaru Select Monitor

Designate mode using function key.

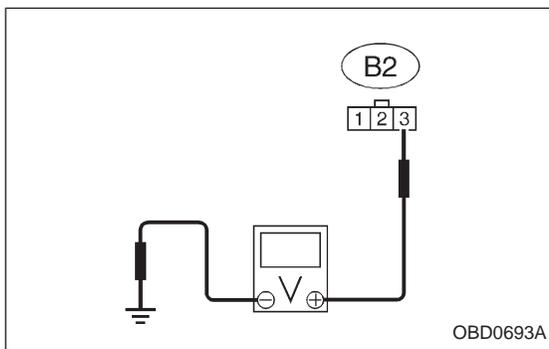
Function mode: F20

● F20: Display shows pressure signal value sent from pressure sensor.

CHECK : Does the value change more than 0 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?

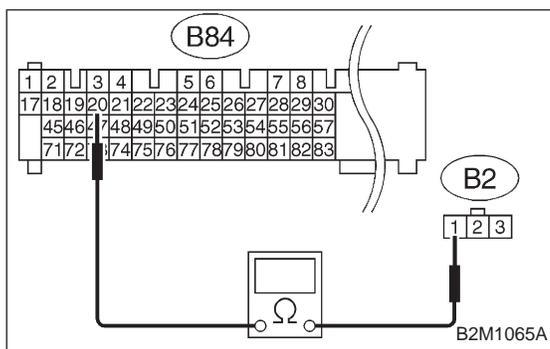
YES : Repair poor contact in ECM connector.

NO : Go to step 10F3.



10F3 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 next step 5).**NO** : Repair open circuit in harness between ECM and pressure sensor connector.

5) Turn ignition switch to OFF.

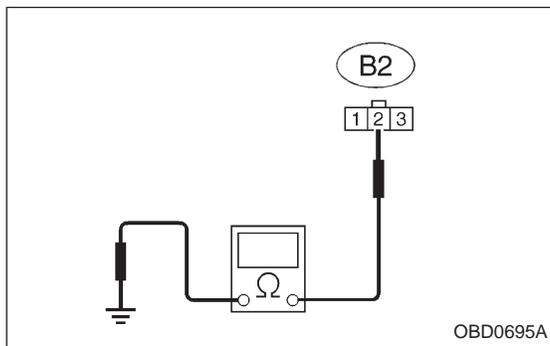
6) Disconnect connector from ECM.

7) 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 next step 8).**NO** : Repair harness and connector.**NOTE:**

In this case, repair the following:

- Open circuit in harness between ECM and pressure sensor connector
- Poor contact in shield joint connector (B83)



8) 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 10F4.**NO** : Repair ground short circuit in harness between ECM and pressure sensor connector.**10F4****CHECK POOR CONTACT.**

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

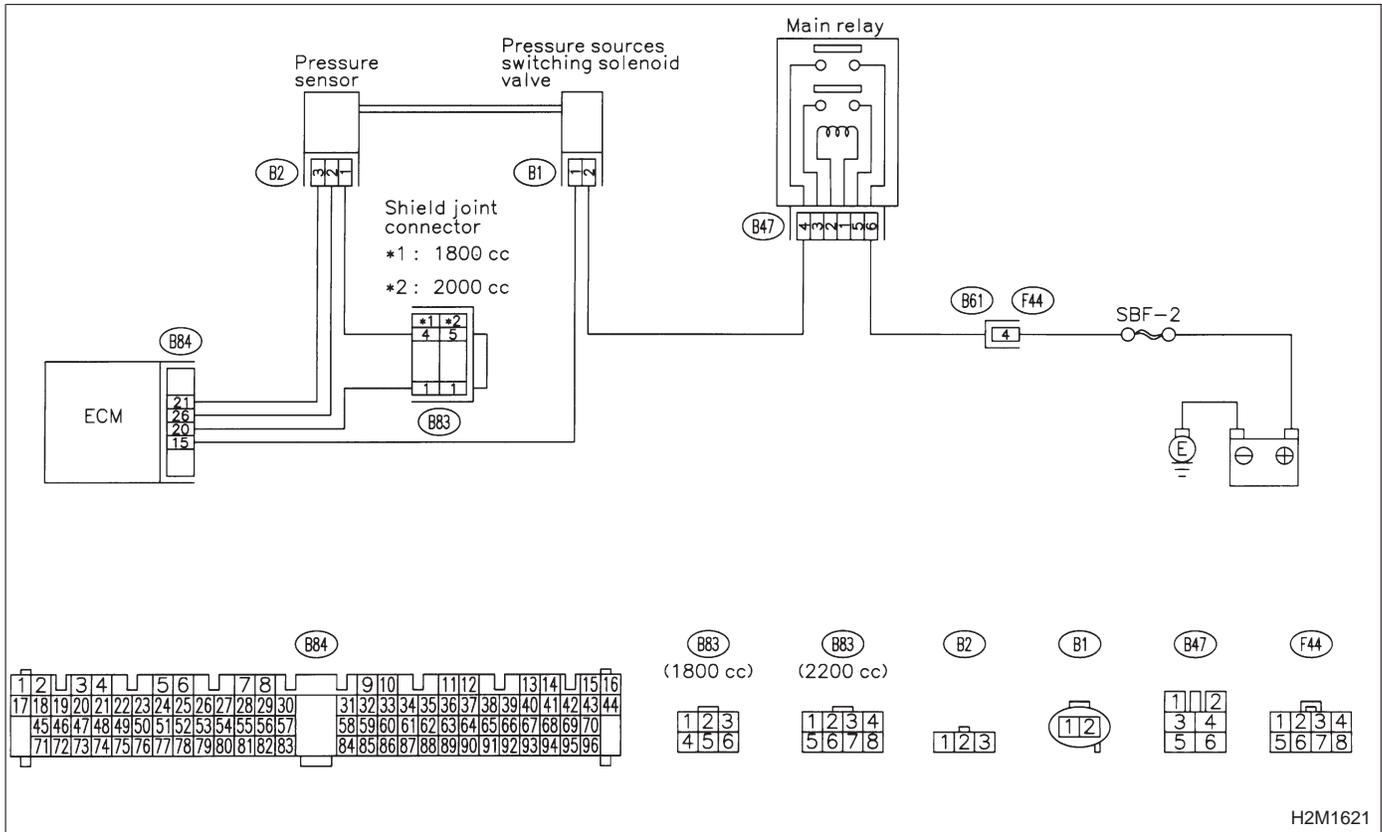
CHECK : Is there poor contact in pressure sensor connector?**YES** : Repair poor contact in pressure sensor connector.**NO** : Replace pressure sensor.

OBD (FB1)
 P0108 <P_SHI>
 B2M1066

G: DTC P0108
— PRESSURE SENSOR CIRCUIT HIGH INPUT —

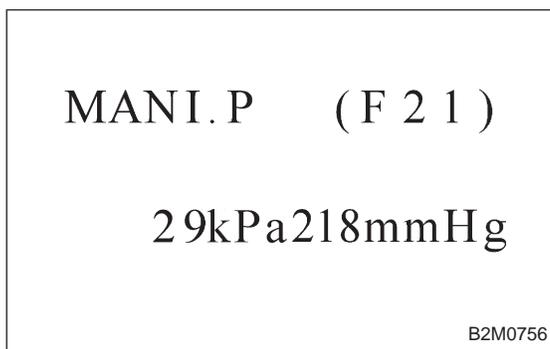
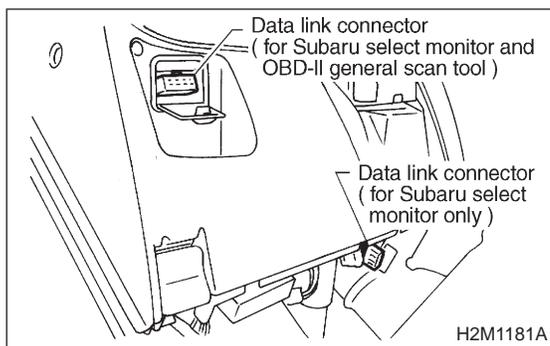
- DTC DETECTING CONDITION:**
- Immediately at fault recognition

WIRING DIAGRAM:



H2M1621

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

**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 on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F21

- F21: Display shows pressure signal value sent from pressure sensor.

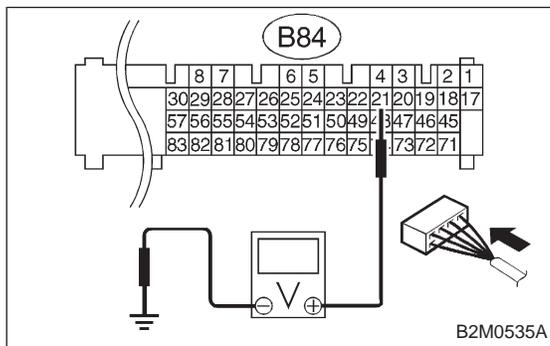
CHECK : Is the value more than 140 kPa in function mode F21?

YES : Go to step 10G5.

NO : Go to step 10G2.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

**10G2**

CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

- 1) Measure voltage between ECM connector and chassis ground.

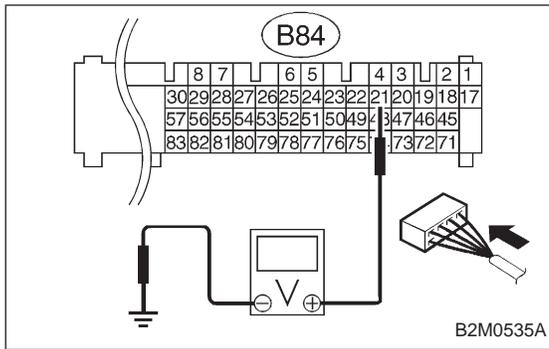
Connector & terminal

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

CHECK : Is the voltage more than 4.5 V?

YES : Go to next step 2).

NO : Go to next **CHECK** .



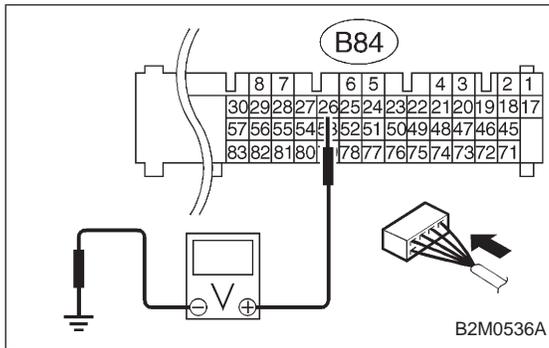
CHECK : Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?

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.



2) Measure voltage between ECM connector and chassis ground.

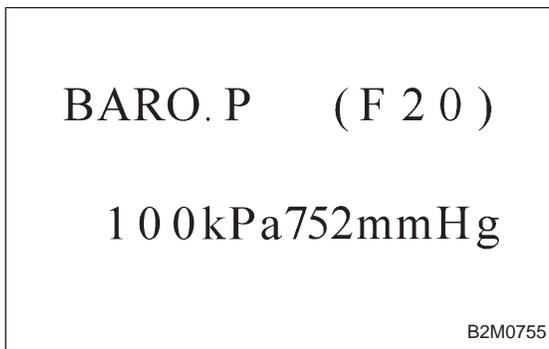
Connector & terminal

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

CHECK : Is the voltage less than 0.2 V?

YES : Go to step 10G3.

NO : Go to next step 3).



3) Read data on Subaru Select Monitor.

- Subaru Select Monitor

Designate mode using function key.

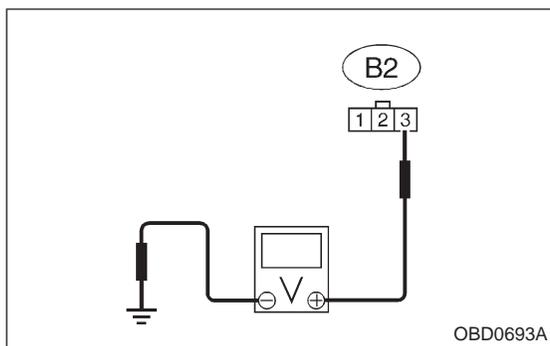
Function mode: F20

- F20: Display shows pressure signal value sent from pressure sensor.

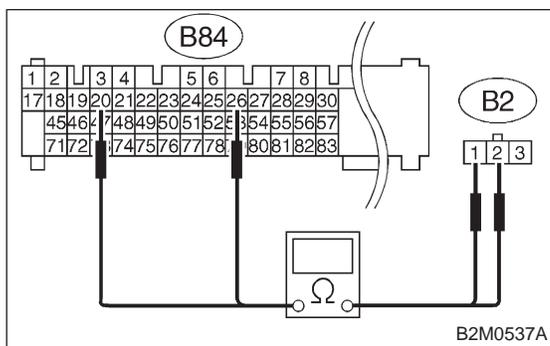
CHECK : Does the value change more than 0 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?

YES : Repair poor contact in ECM connector.

NO : Go to step 10G3.

**10G3****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 next step 5).**NO** : Repair open circuit in harness between ECM and pressure sensor connector.

- 5) Turn ignition switch to OFF.
- 6) Disconnect connector from ECM.
- 7) 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 next step 8).**NO** : Repair open circuit in harness between ECM and pressure sensor connector.

- 8) 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 10G4.**NO** : Repair harness and connector**NOTE:**

In this case, repair the following:

- Open circuit in harness between ECM and pressure sensor connector
- Poor contact in shield joint connector (B83)

10G4 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.

MANI.P (F 2 1)

29kPa218mmHg

B2M0756

10G5 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 on Subaru select monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F21

CHECK : *Is the value more than 140 kPa in function mode F21?*

YES : Repair battery short circuit in harness between ECM and pressure sensor connector.

NO : Replace pressure sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

OBD (FB1)
 P0116 <TW_LOW>
 B2M1067

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

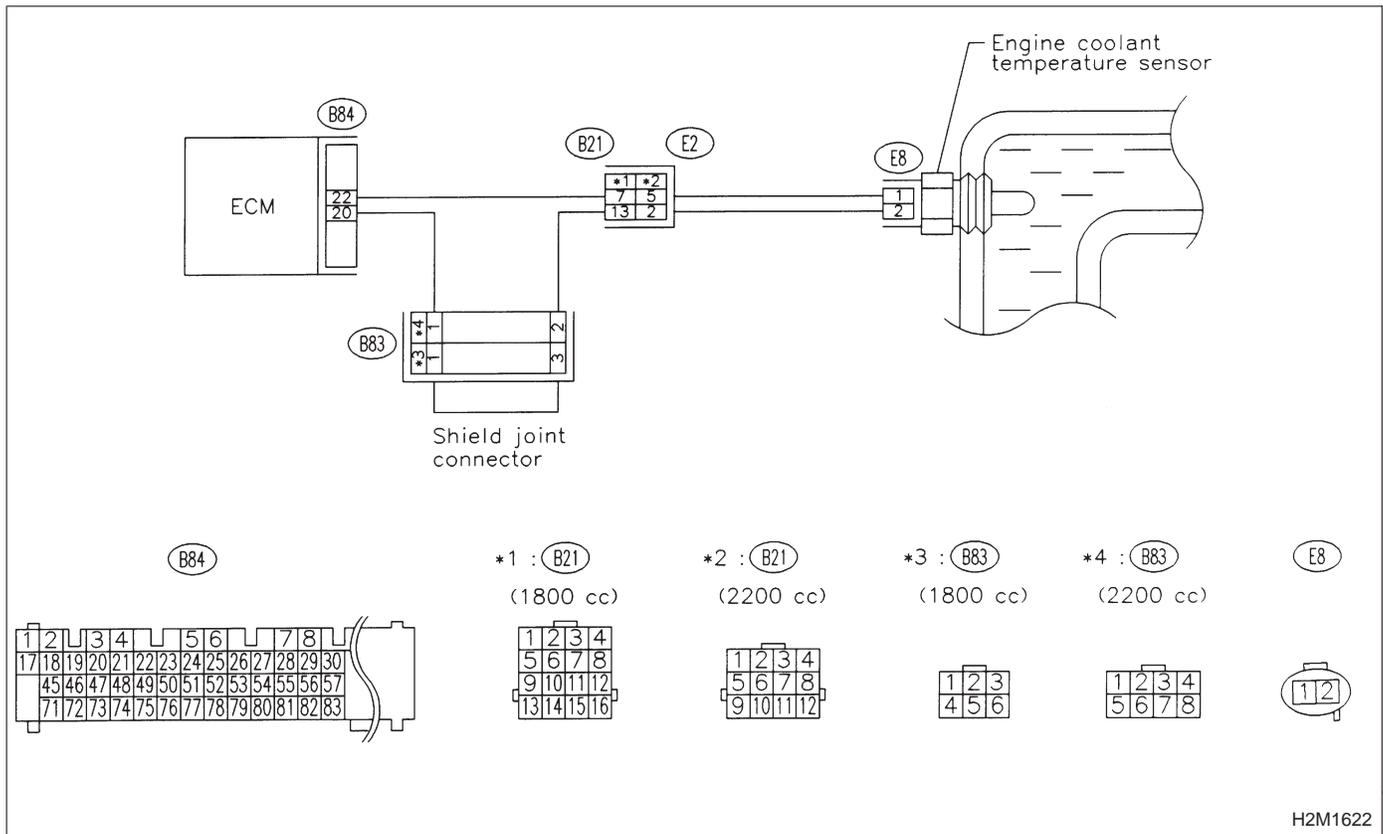
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

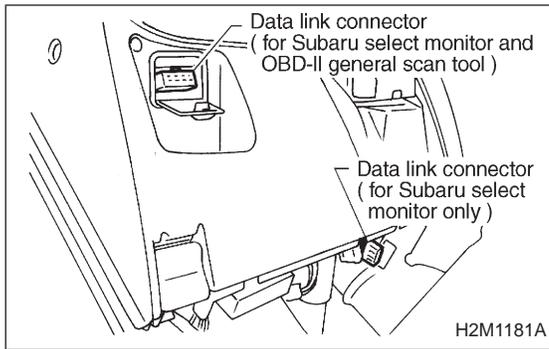
WIRING DIAGRAM:



CAUTION:

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

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



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.

TW	(F04)
80 ° C	176 ° F

B2M0479

- 5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in “°C” and “°F”.

CHECK : *Is the value greater than 150°C or 300°F in function mode F04?*

YES : Go to step **10H2**.

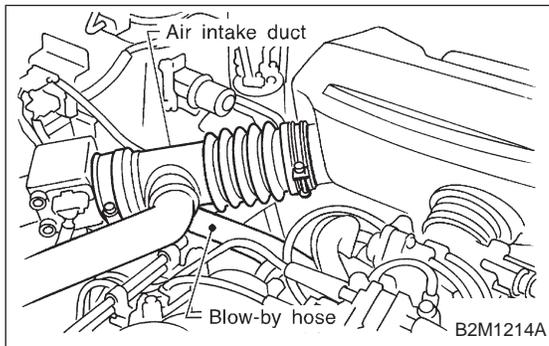
NO : Repair poor contact.

NOTE:

In this case, repair the following:

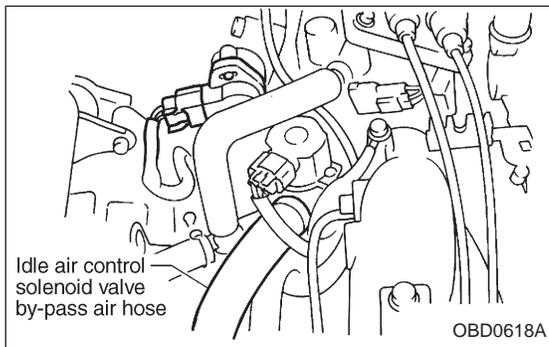
- Poor contact in engine coolant temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



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

- 1) Turn ignition switch to OFF.
- 2) Remove air intake duct. <Ref. to 2-7 [W1A0].>



- 3) Remove idle air control solenoid valve by-pass air hose (2200 cc model).

- 4) Disconnect connector from engine coolant temperature sensor.

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

TW	(F04)
80 ° C	176 ° F
B2M0479	

6) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in “°C” and “°F”.

CHECK : *Is the value less than -40°C or -40°F in function mode F04?*

YES : Replace engine coolant temperature sensor.

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

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

OBD (FB1)
 P0117 <TW_HI>
 B2M1068

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

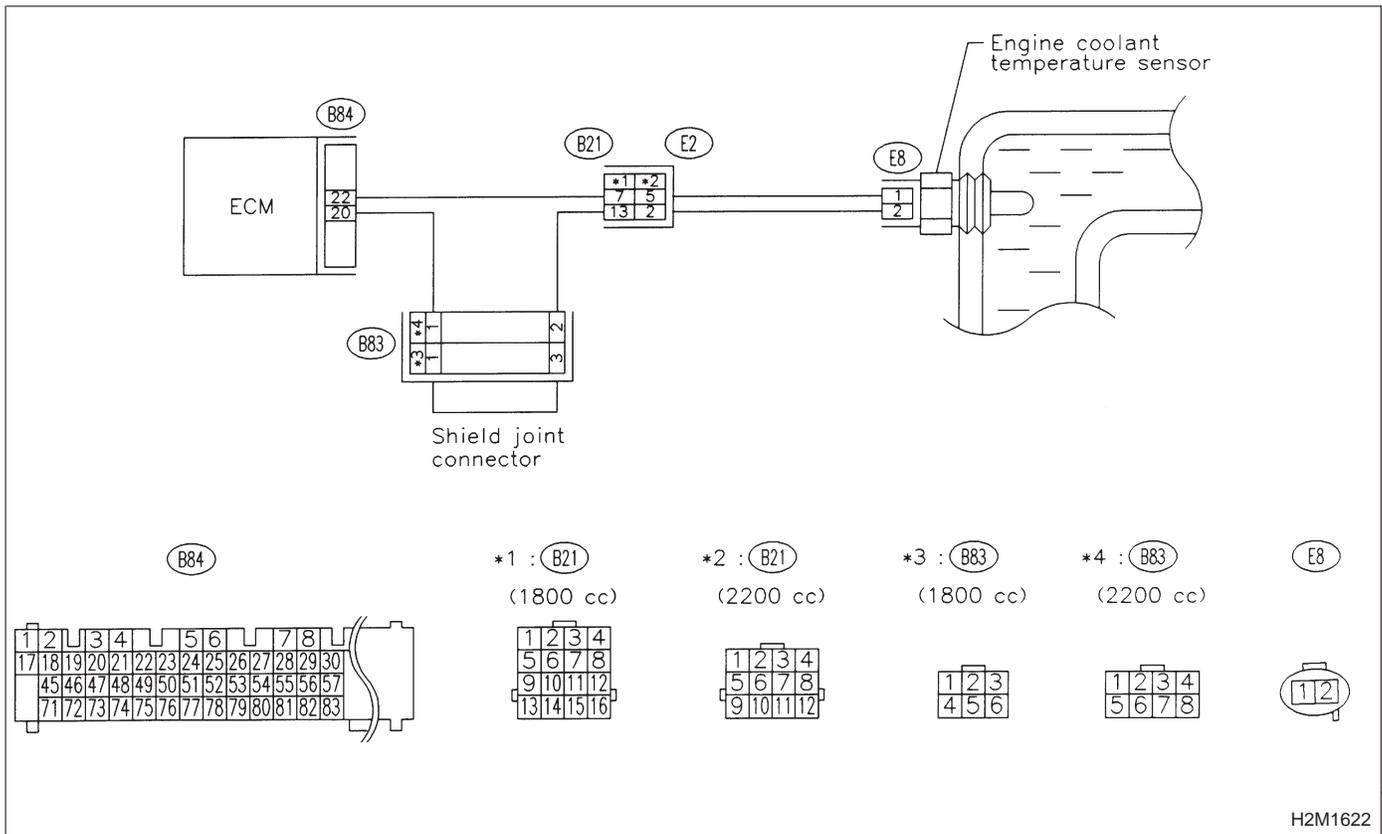
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

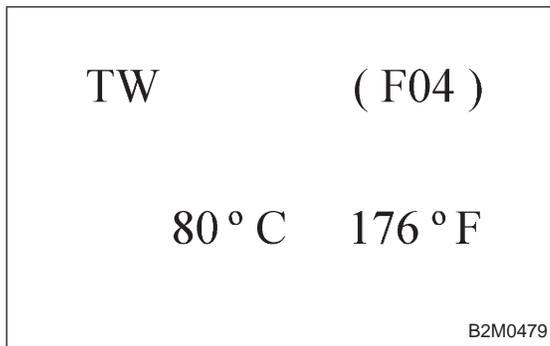
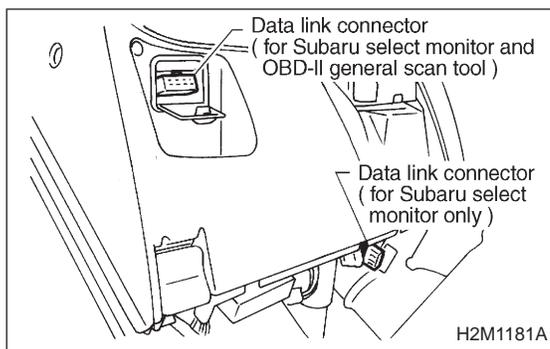
WIRING DIAGRAM:



CAUTION:

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

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



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 on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in "°C" and "°F".

CHECK : Is the value less than -40°C or -40°F in function mode F04?

YES : Go to step 1012.

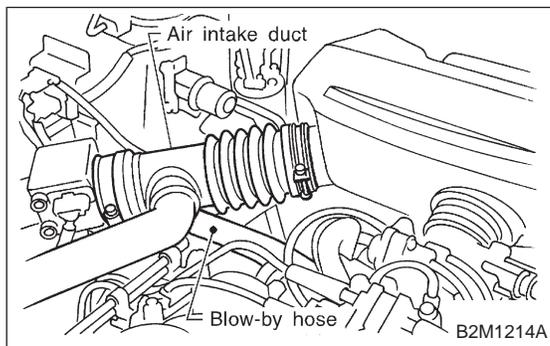
NO : Repair poor contact.

NOTE:

In this case, repair the following:

- Poor contact in engine coolant temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)
- OBD-II general scan tool

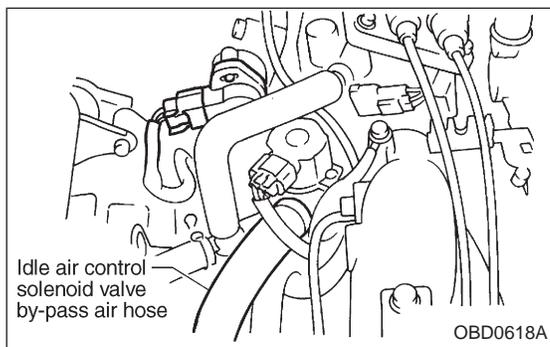
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



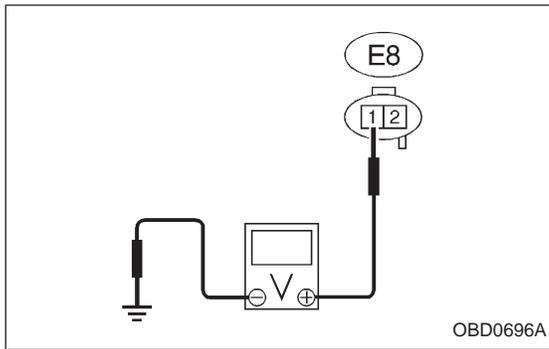
1012

CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

- 1) Turn ignition switch to OFF.
- 2) Remove air intake duct. <Ref. to 2-7 [W1A0].>



- 3) Remove idle air control solenoid valve by-pass air hose. (2200 cc model)
- 4) Disconnect connector from engine coolant temperature sensor.



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

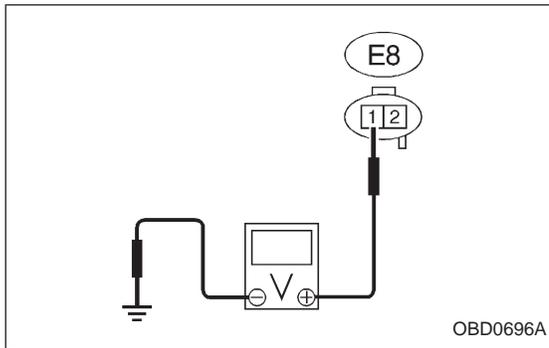
Connector & terminal

(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 next step 6).



6) Turn ignition switch to ON.

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

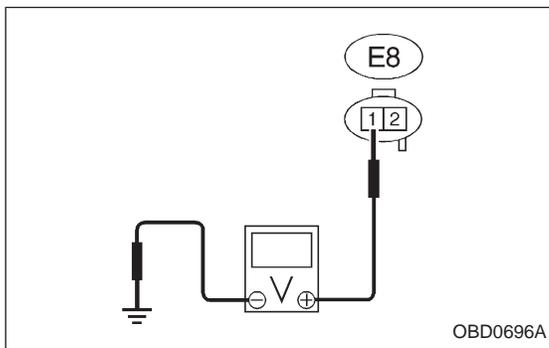
Connector & terminal

(E8) No. 1 (+) — Engine ground (-):

CHECK : Is the voltage more than 10 V?

YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.

NO : Go to step 10I3.



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

1) 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?

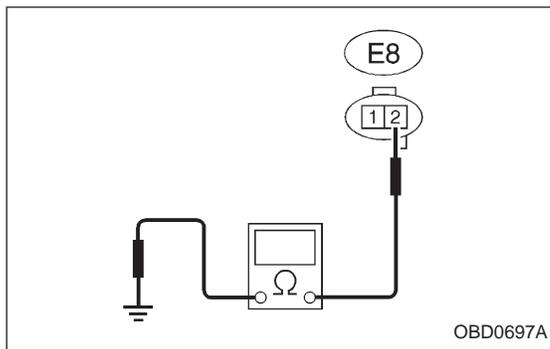
YES : Go to next step 2).

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)



2) Turn ignition switch to OFF.

3) 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)
- Poor contact in shield joint connector (B83)

OBD (FB1)
 P0121 <TH_RHI>
 B2M1069

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

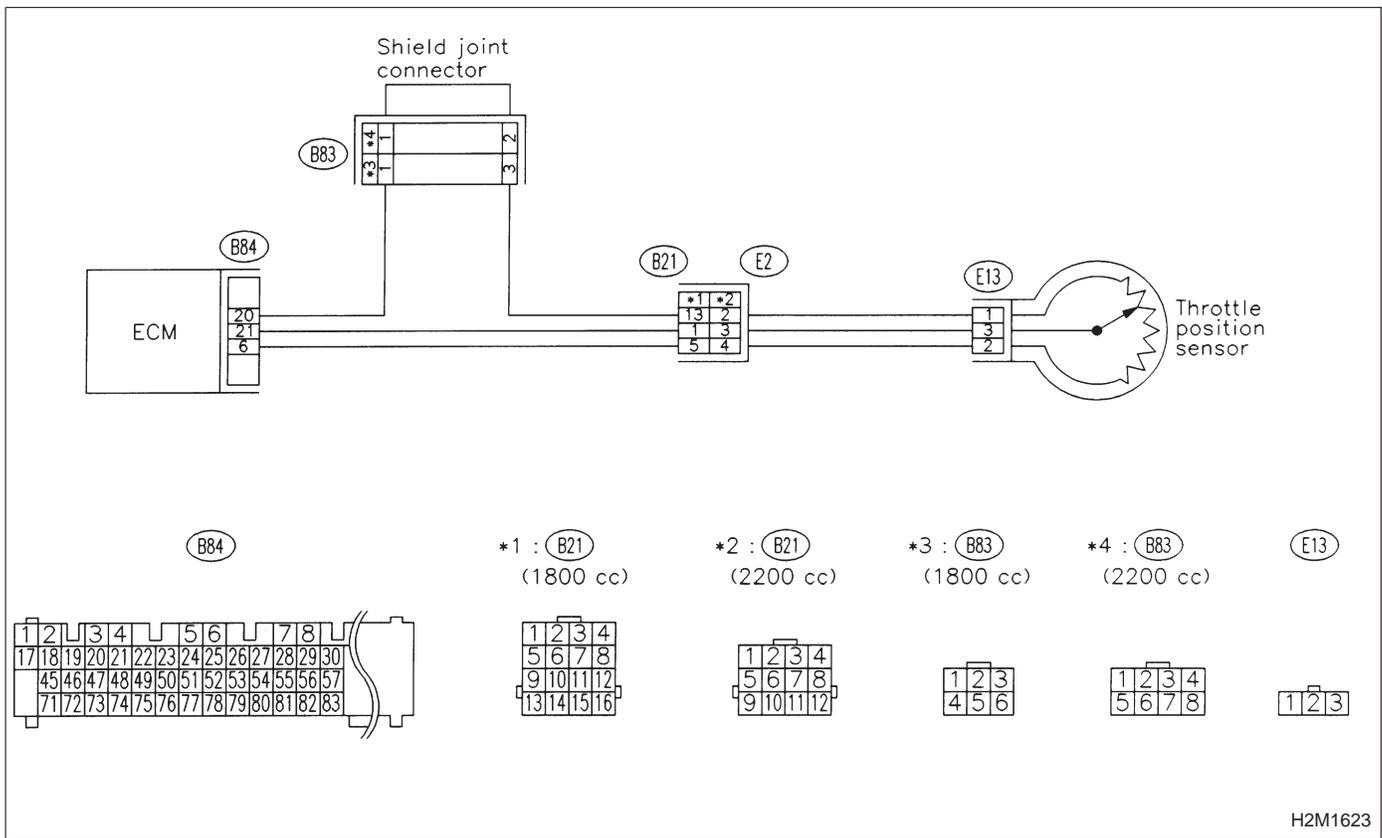
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



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

10J1	CHECK DTC P0122 OR P0123 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 [T10A0].>

NOTE:

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

NO : Replace throttle position sensor.

OBD (FB1)
 P0122 <THV_LOW>
 B2M1070

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

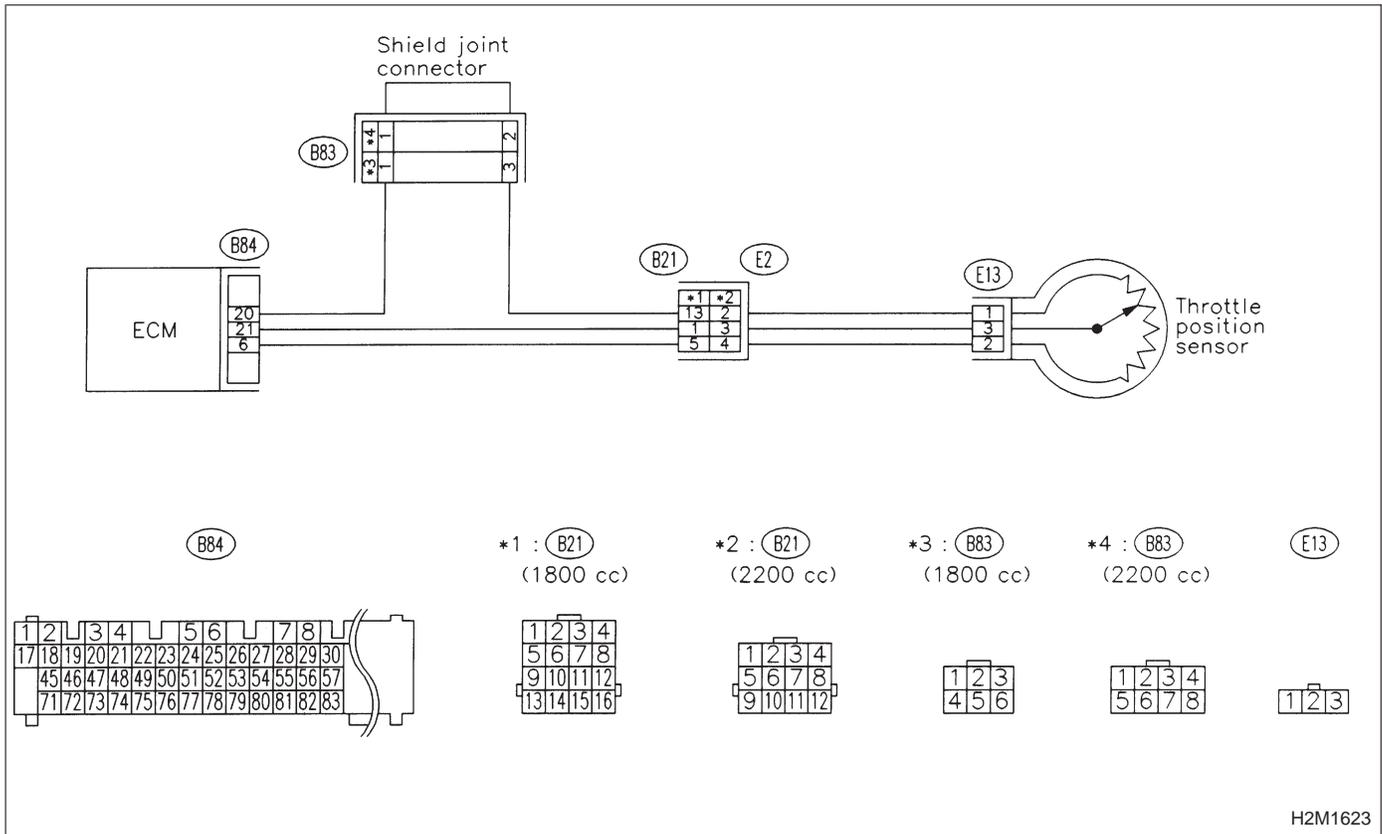
DTC DETECTING CONDITION:

- Immediately at fault recognition

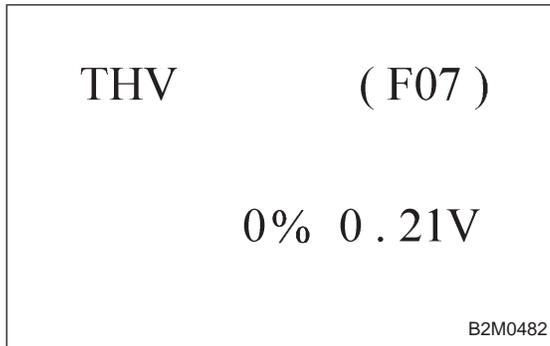
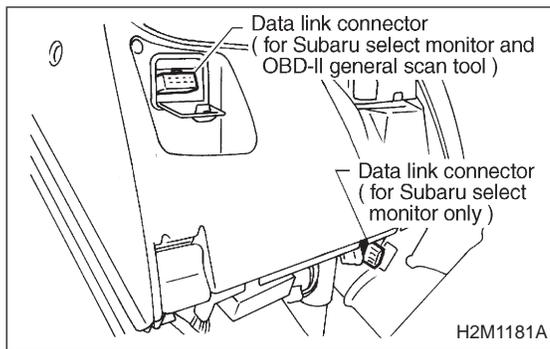
TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



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

**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 on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F07

- F07: Throttle position sensor output signal is indicated.

CHECK : **Is the value less than 0.1 V in function mode F07?**

YES : Go to step **10G2**.

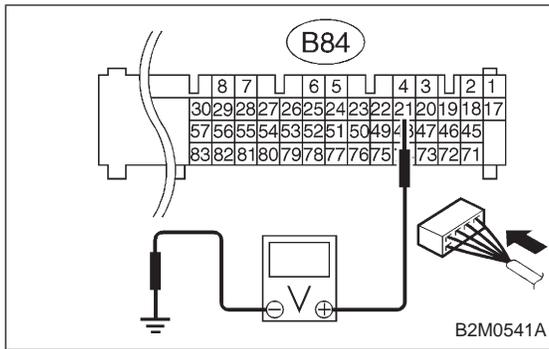
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

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)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10K2

**CHECK INPUT SIGNAL FOR ECM.
(USING VOLTAGE METER AND SUBARU
SELECT MONITOR.)**

1) 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 next step 2).

NO : Go to next **CHECK** .

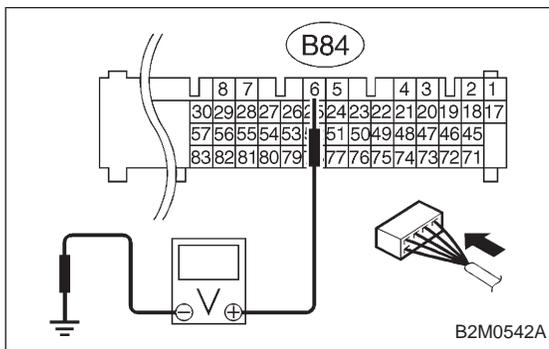
CHECK : Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?

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.



2) 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 10K3.

NO : Go to next step 3).

THV (F07)

0% 0.21V

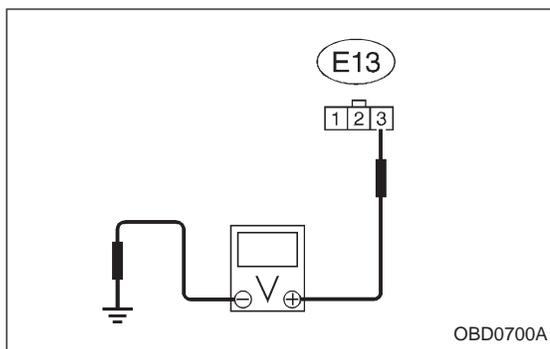
B2M0482

3) 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 10K3.



10K3

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.

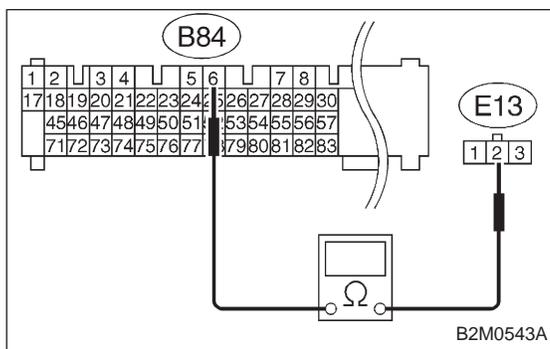
Connector & terminal
(E13) No. 3 (+) — Engine ground (-):
CHECK : *Is the voltage more than 4.5 V?*
YES : Go to next step 5).

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)



- 5) Turn ignition switch to OFF.

- 6) Measure resistance of harness between ECM connector and throttle position sensor connector.

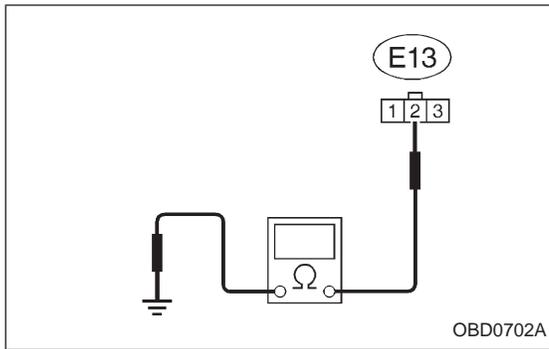
Connector & terminal
(B84) No. 6 — (E13) No. 2:
CHECK : *Is the resistance less than 1 Ω?*
YES : Go to next step 7).

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)



7) 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 10K4.

10K4

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.

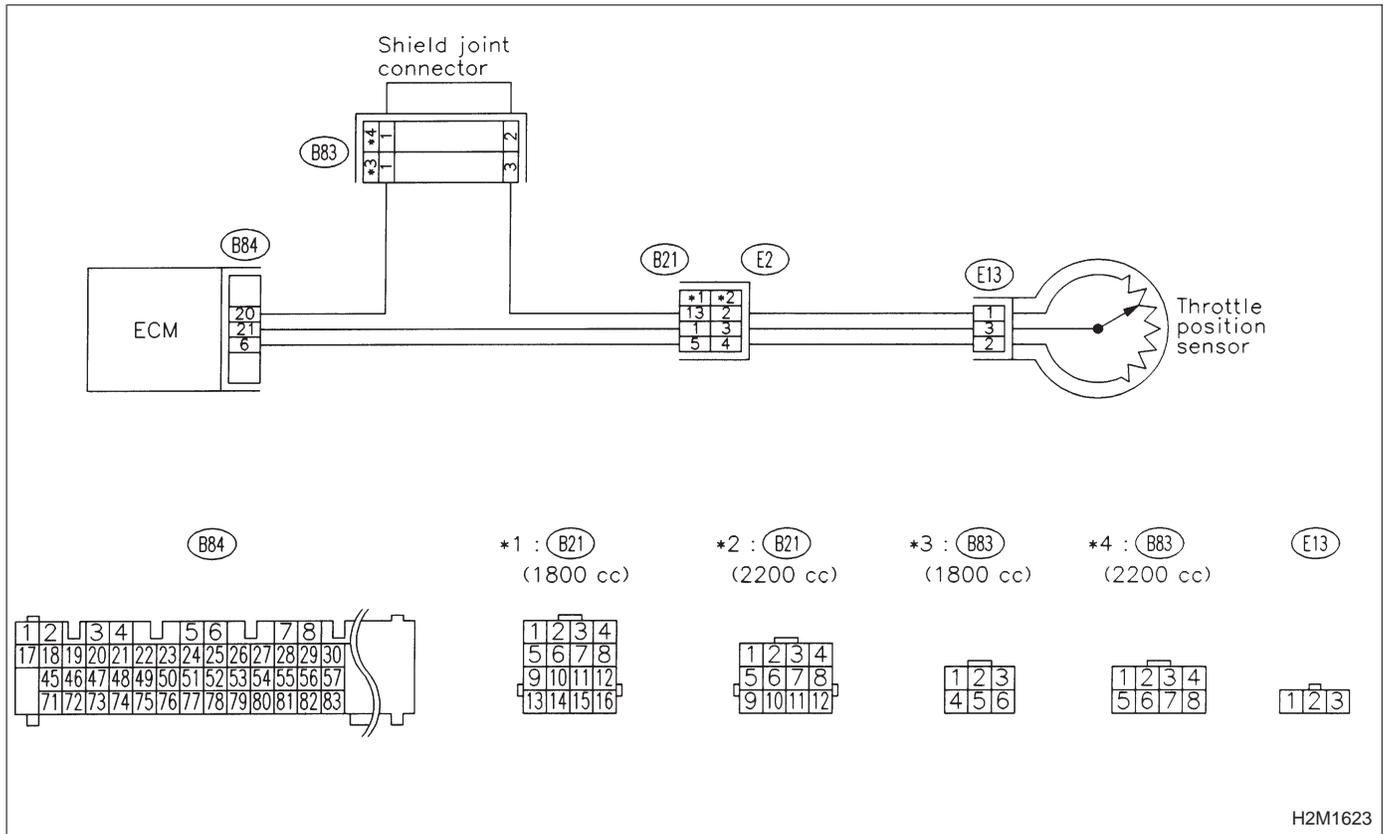
OBD (FB1)
 P0123 <THV_HI>
 B2M1071

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

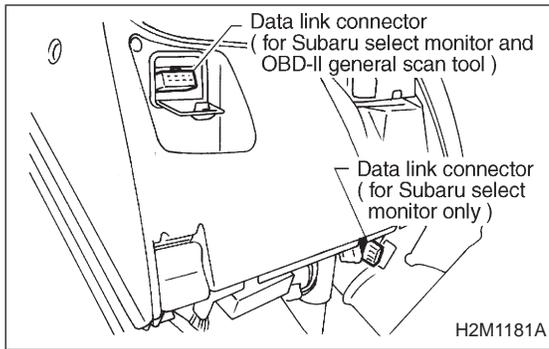
- DTC DETECTING CONDITION:**
- Immediately at fault recognition

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

WIRING DIAGRAM:



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



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.

THV (F07)

0% 0.21V

B2M0482

- 5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor Designate mode using function key.

Function mode: F07

- F07: Throttle position sensor output signal is indicated.

CHECK : **Is the value more than 4.9 V in function mode F07?**

YES : Go to step **10L2**.

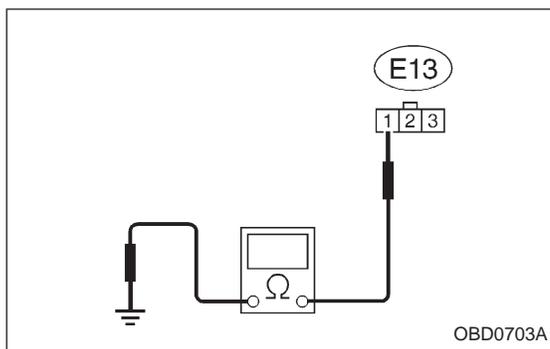
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

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)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



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?*

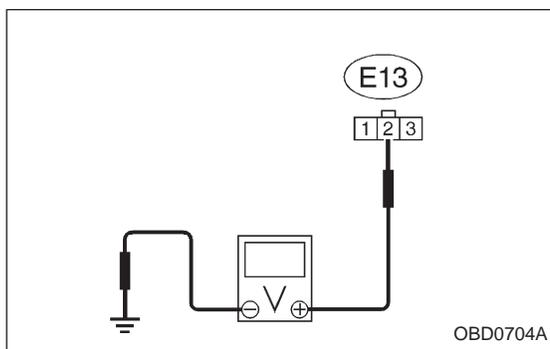
YES : Go to next step 4).

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 shield joint connector (B83)



- 4) Turn ignition switch to ON.
- 5) 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.

OBD (FB1)

P0125 <TW_CL>

OBD0191

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

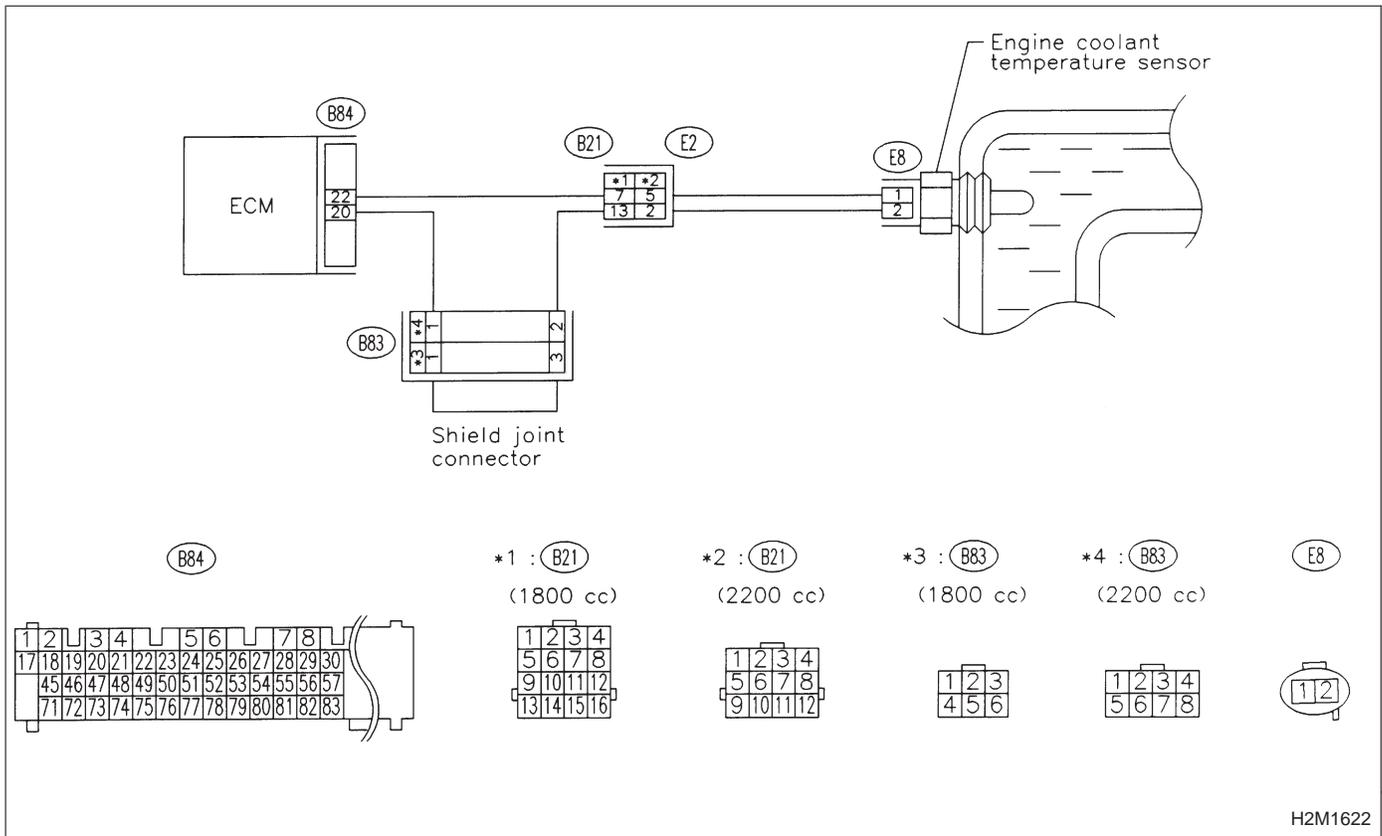
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine would not return to idling.

WIRING DIAGRAM:



CAUTION:

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

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

10M1	CHECK DTC P0116 OR P0117 ON DISPLAY.
-------------	---

CHECK : *Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0116 or P0117?*

YES : Inspect DTC P0116 or P0117 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:

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

NO : Replace engine coolant temperature sensor.

OBD (FB1)

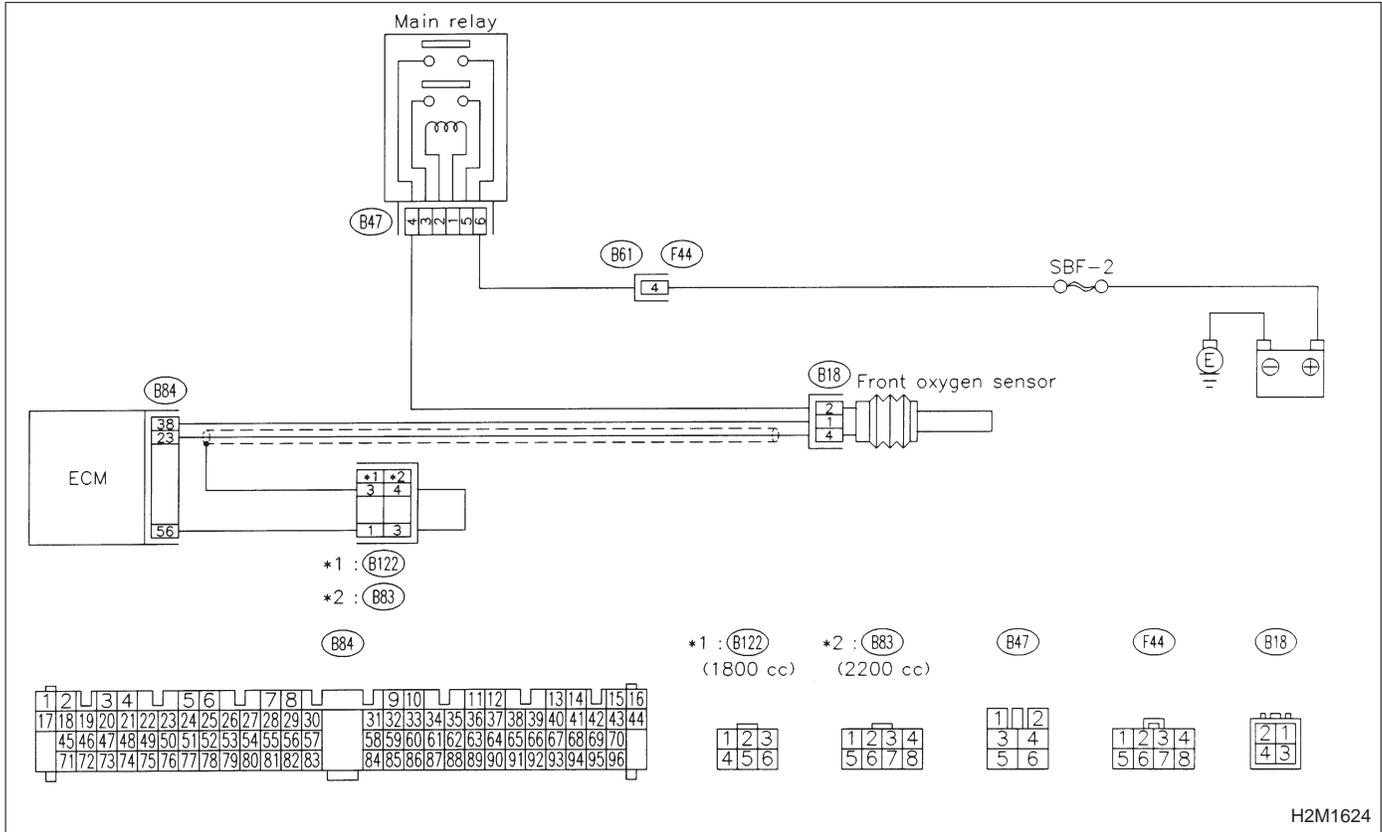
P0130 <FO2_V>

OBD0199

N: DTC P0130
— FRONT OXYGEN SENSOR CIRCUIT MALFUNCTION —

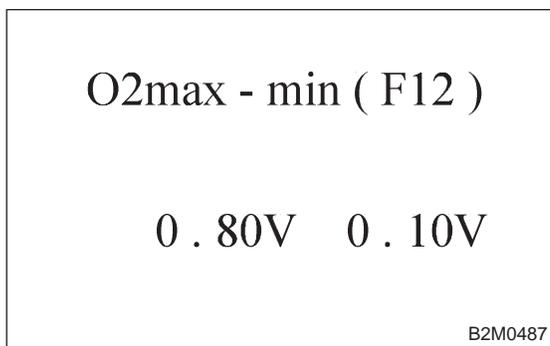
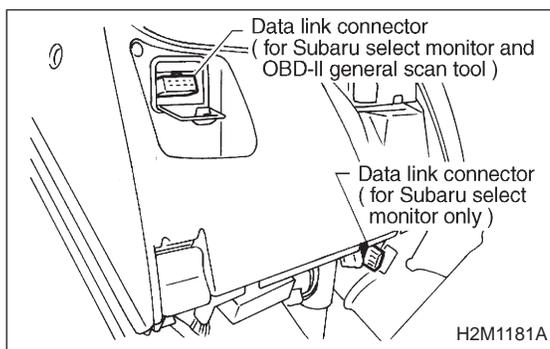
- DTC DETECTING CONDITION:**
- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1624

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

**10N1****CHECK FOR OTHER CAUSES AFFECTING EXHAUST GAS.**

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

YES : Check fuel system.

NOTE:

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

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 on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F12

- F12: Front oxygen sensor max. and min. output signals are indicated at the same time.

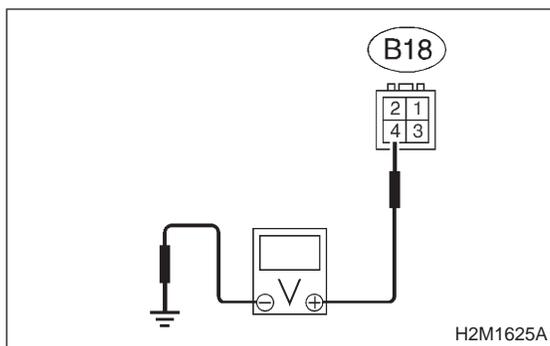
CHECK : *Is the difference of voltage less than 0.1 V between the value of max. output and min. output with function mode F12?*

YES : Go to step **10N3**.

NO : Replace front oxygen sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

**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. 4 (+) — 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

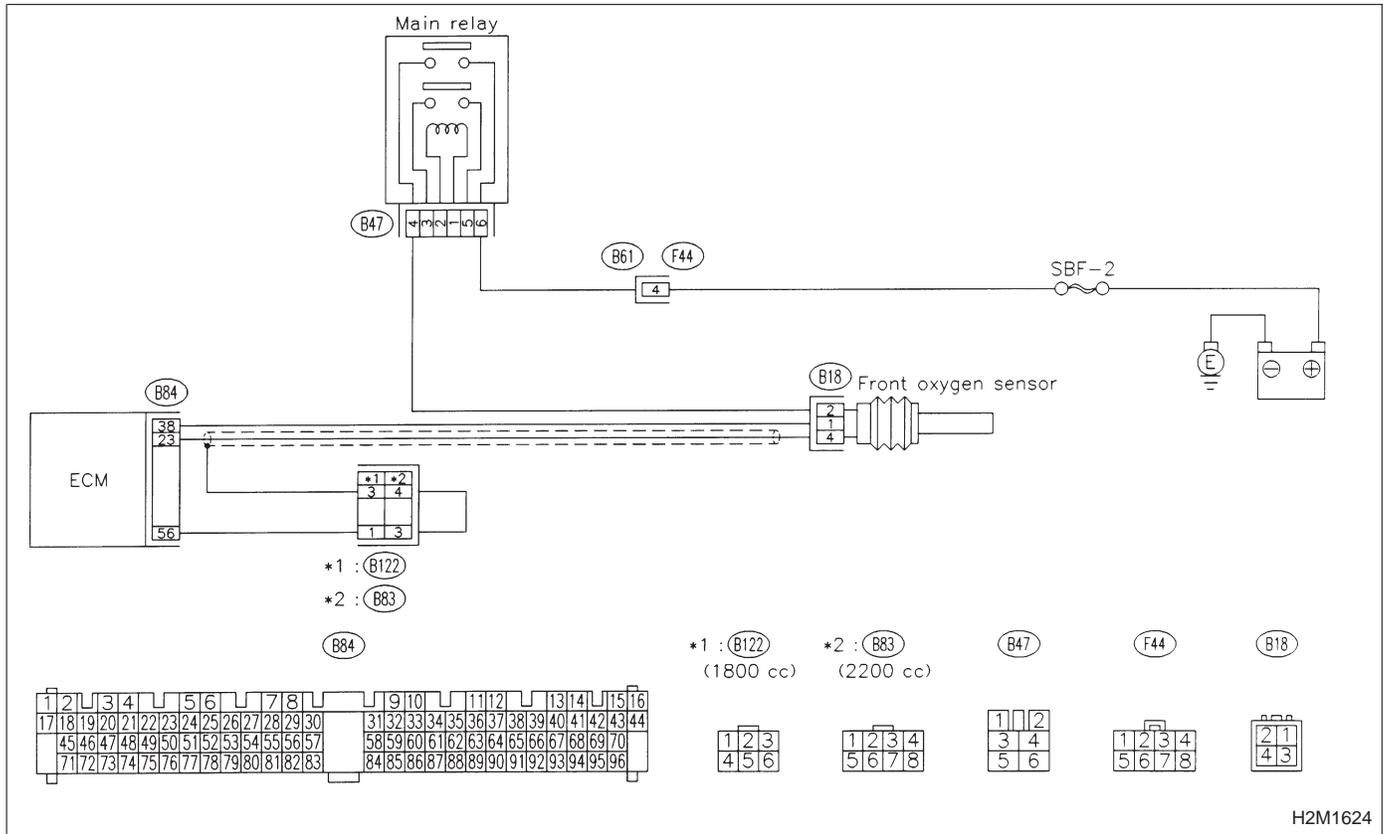
10N4**CHECK POOR CONTACT.**Check poor contact in front oxygen sensor connector.
<Ref. to FOREWORD [T3C1].>**CHECK** : *Is there poor contact in front oxygen sensor connector?***YES** : Repair poor contact in front oxygen sensor connector.**NO** : Replace front oxygen sensor.

OBD	(FB1)
P0133	<FO2_R>
OBD0209	

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

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

WIRING DIAGRAM:



H2M1624

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

1001	CHECK DTC P0130 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 [T10A0].>

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?*

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

YES : Repair exhaust system.

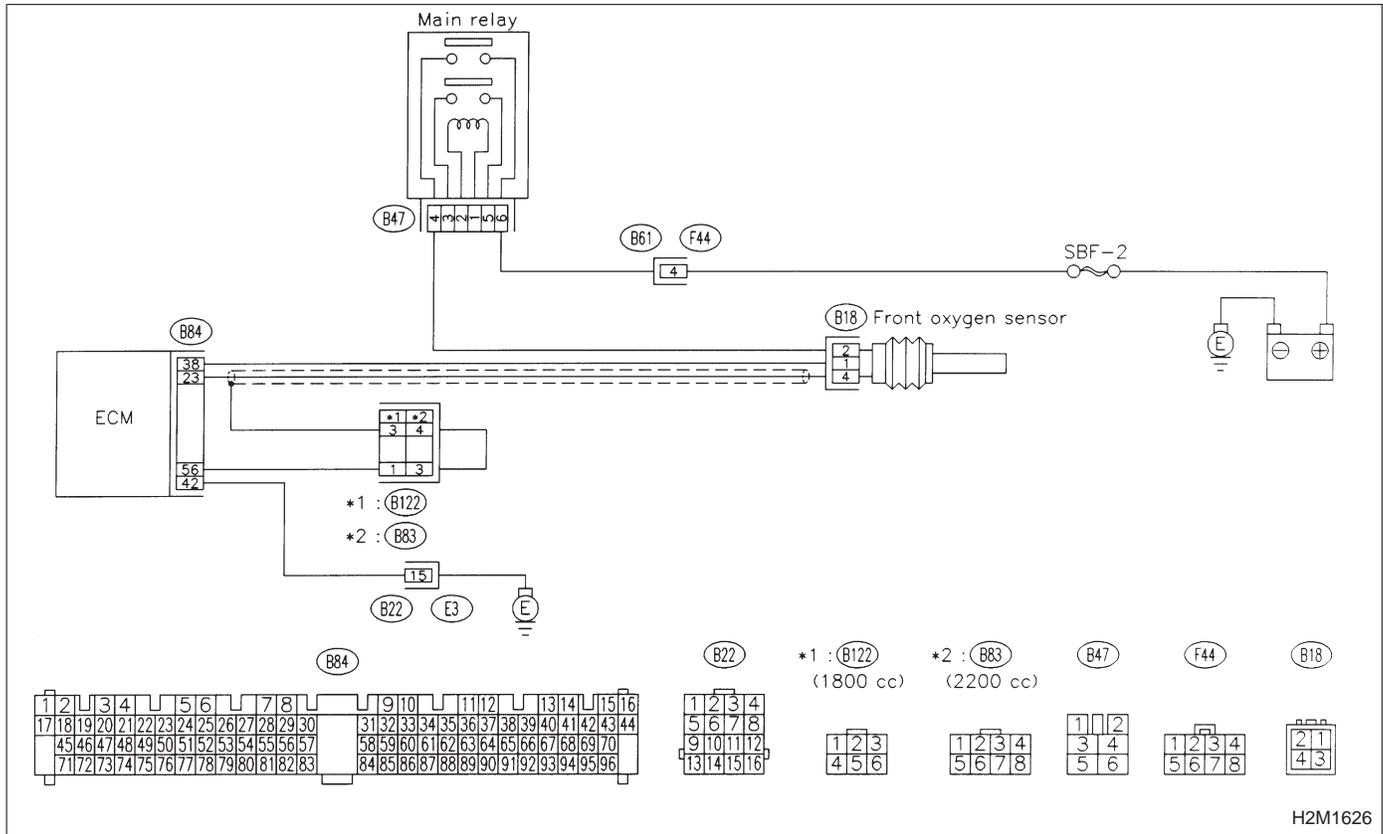
NO : Replace front oxygen sensor.

OBD	(FB1)
P0135	<FO2H>
OBD0212	

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

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

WIRING DIAGRAM:



H2M1626

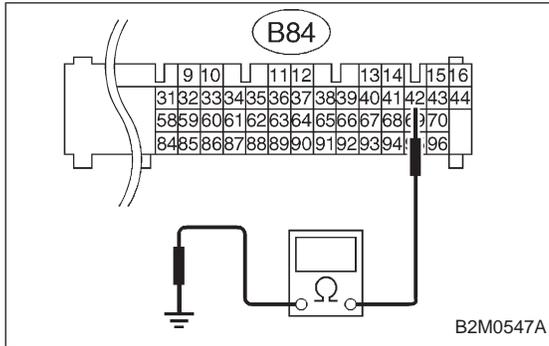
CAUTION:
 After repair or replacement of faulty parts, conduct
CLEAR MEMORY and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0] and [T3E0].>

10P1	CHECK DTC P0141 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 next step 1).

NO : Go to step **10P2**.



- 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?*

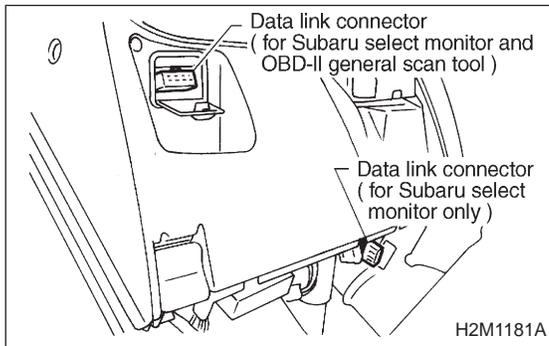
YES : Repair poor contact in ECM connector.

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)



10P2	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.

FO2H (F32)

1.00 A

B2M0497

5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
- Designate mode using function key.

Function mode: F32

- F32: Front oxygen sensor heater current is indicated.

CHECK : Is the value more than 0.2 A in function mode F32?

YES : Repair connector.

NOTE:

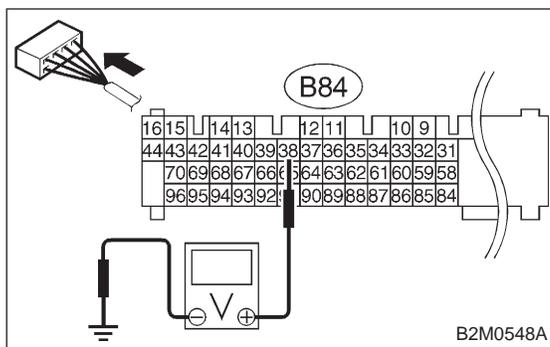
In this case, repair the following:

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

NO : Go to step 10P3.

- OBD-II scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



B2M0548A

10P3

CHECK OUTPUT SIGNAL FROM ECM. (USING VOLTAGE METER.)

- 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 10P4.

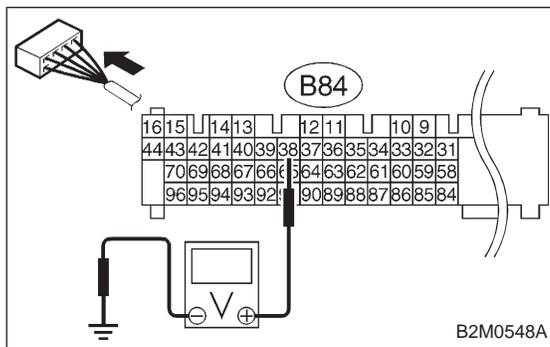
NO : Go to next step 3).

- 3) Measure voltage between ECM connector and 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 next step 4).



B2M0548A

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

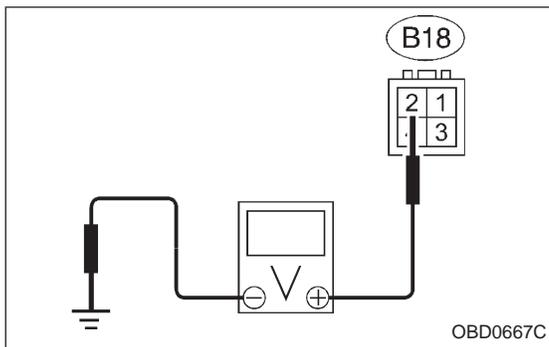
Connector & terminal

(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.



10P4 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?*

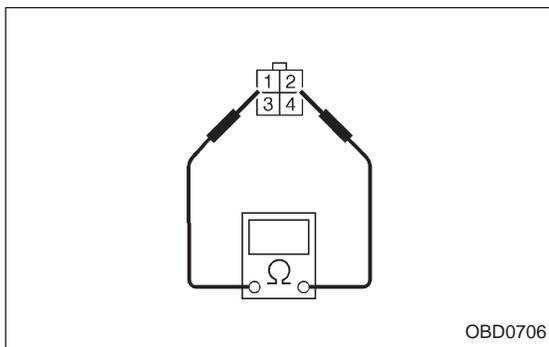
YES : Go to step 10P5.

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



10P5 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

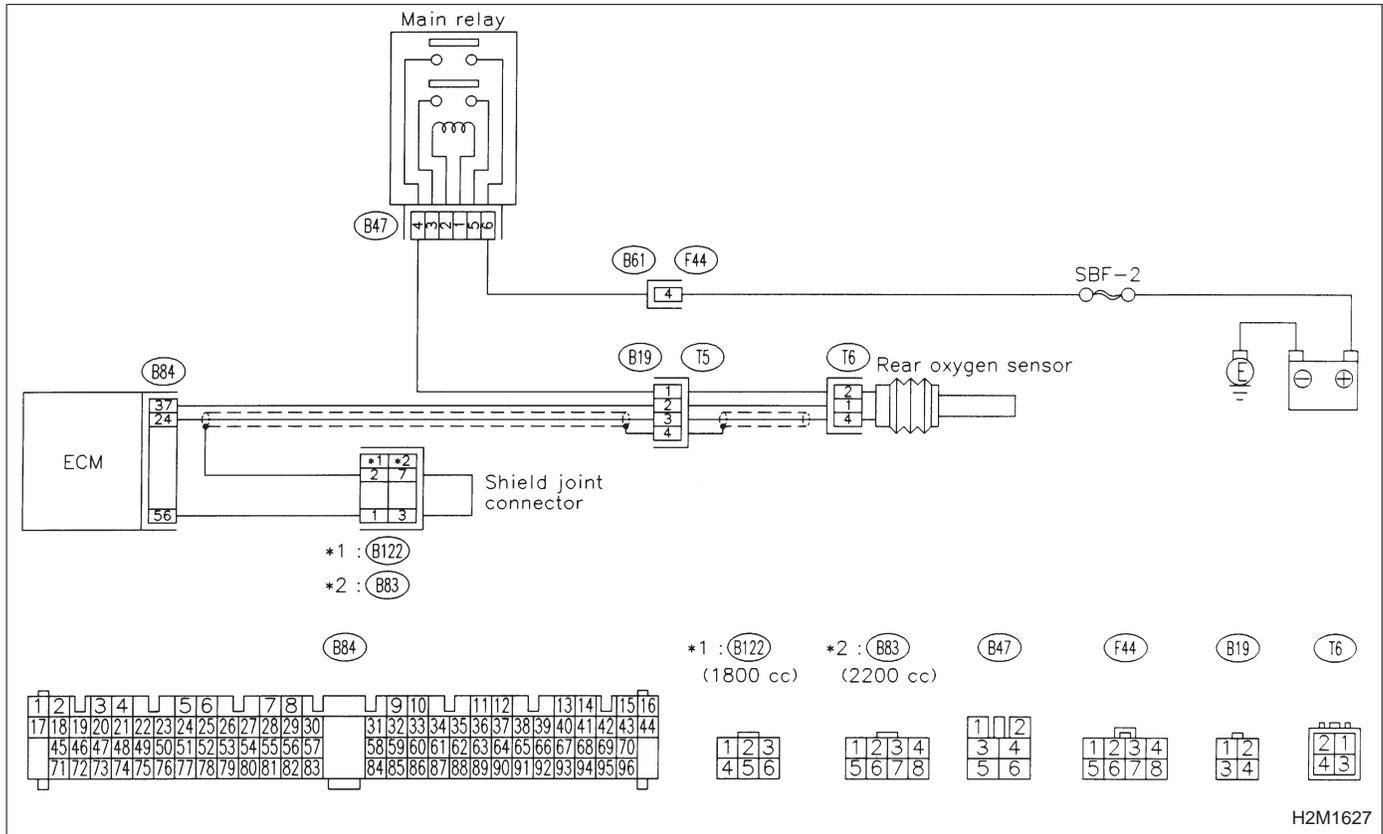
NO : Replace front oxygen sensor.

OBD	(FB1)
P0136	<RO2_V>
OBD0220	

**Q: DTC P0136
— REAR OXYGEN SENSOR CIRCUIT
MALFUNCTION —**

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

WIRING DIAGRAM:



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

10Q1	CHECK DTC P0130 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].>

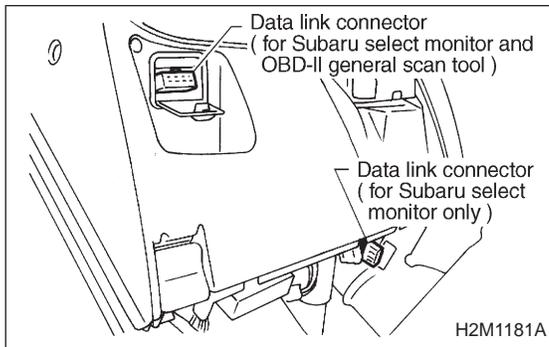
CHECK : Is the failure cause of P0130 in the fuel system?

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 on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

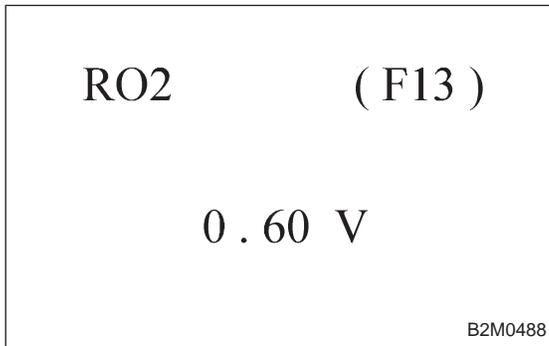
Function mode: F13

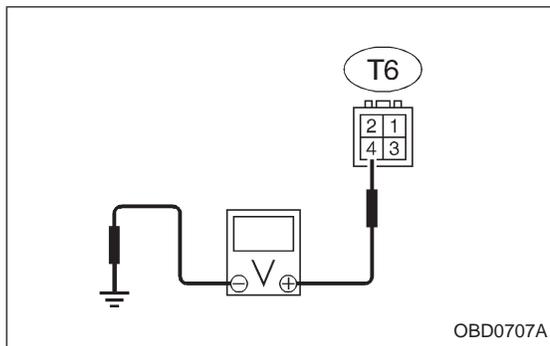
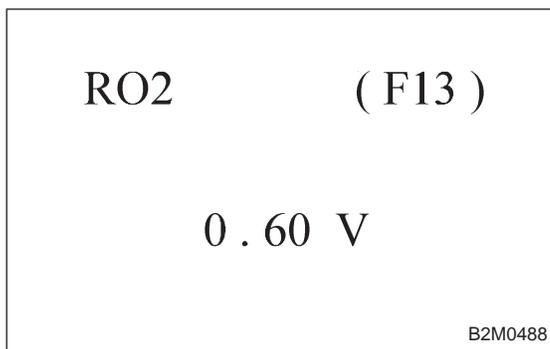
- F13: Rear oxygen sensor output signal is indicated.

CHECK : Does the value fluctuate in function mode F13?

YES : Go to step 10Q5.

NO : Go to next step 6).





6) Read data on Subaru Select Monitor or OBD-II General Scan Tool.

CHECK : *Is the value fixed between 0.2 and 0.4 V in function mode F13?*

YES : Go to step **10Q4**.

NO : Replace rear oxygen sensor.

● OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

10Q4

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

10Q5

CHECK EXHAUST SYSTEM.

CHECK : *Is there a fault in 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

YES : Repair or replace faulty parts.

NO : Replace rear oxygen sensor.

OBD (FB1)

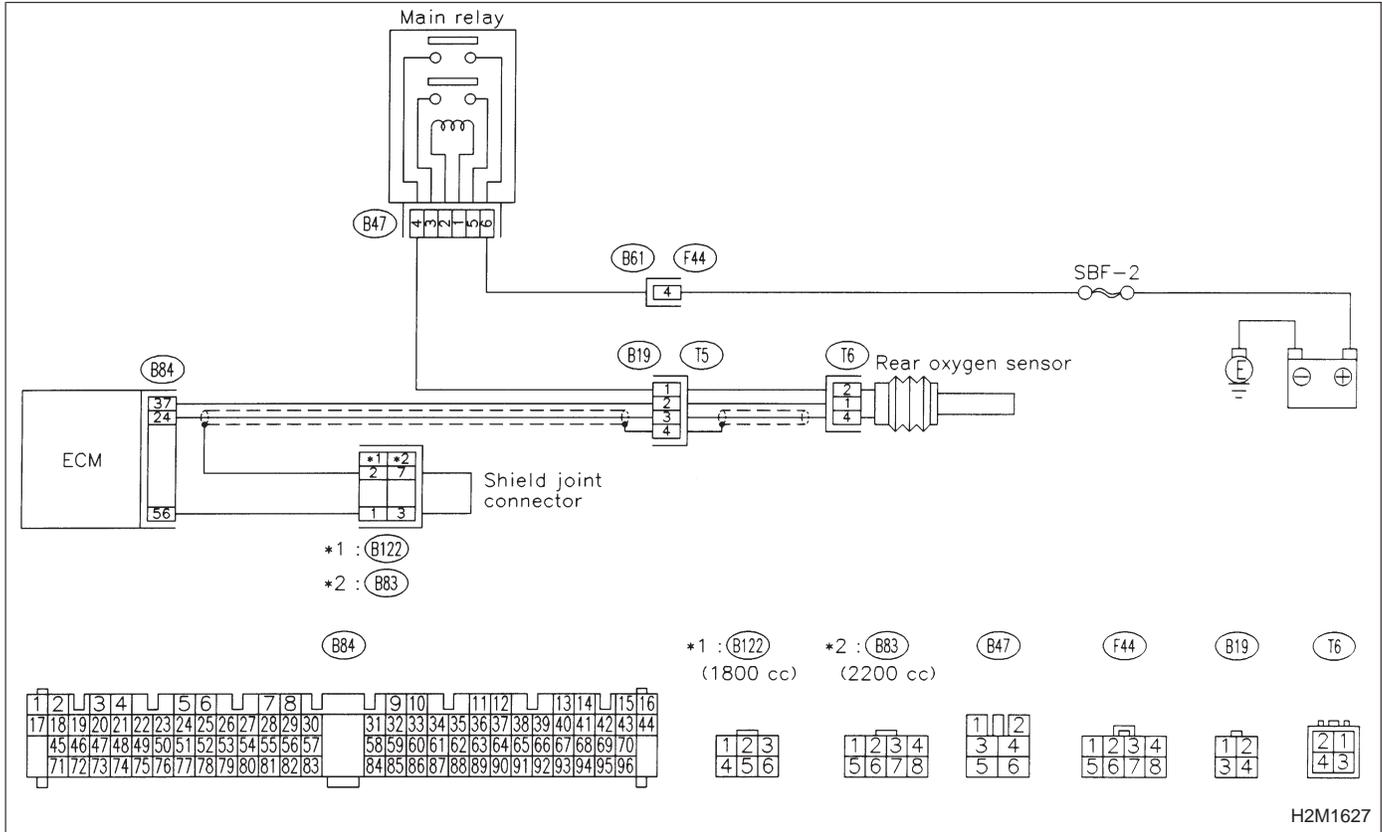
P0139 <RO2_R>

OBD0229

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

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

WIRING DIAGRAM:



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

10R1	CHECK DTC P0136 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 [T10A0].>

NOTE:

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

NO : Replace rear oxygen sensor.

OBD (FB1)

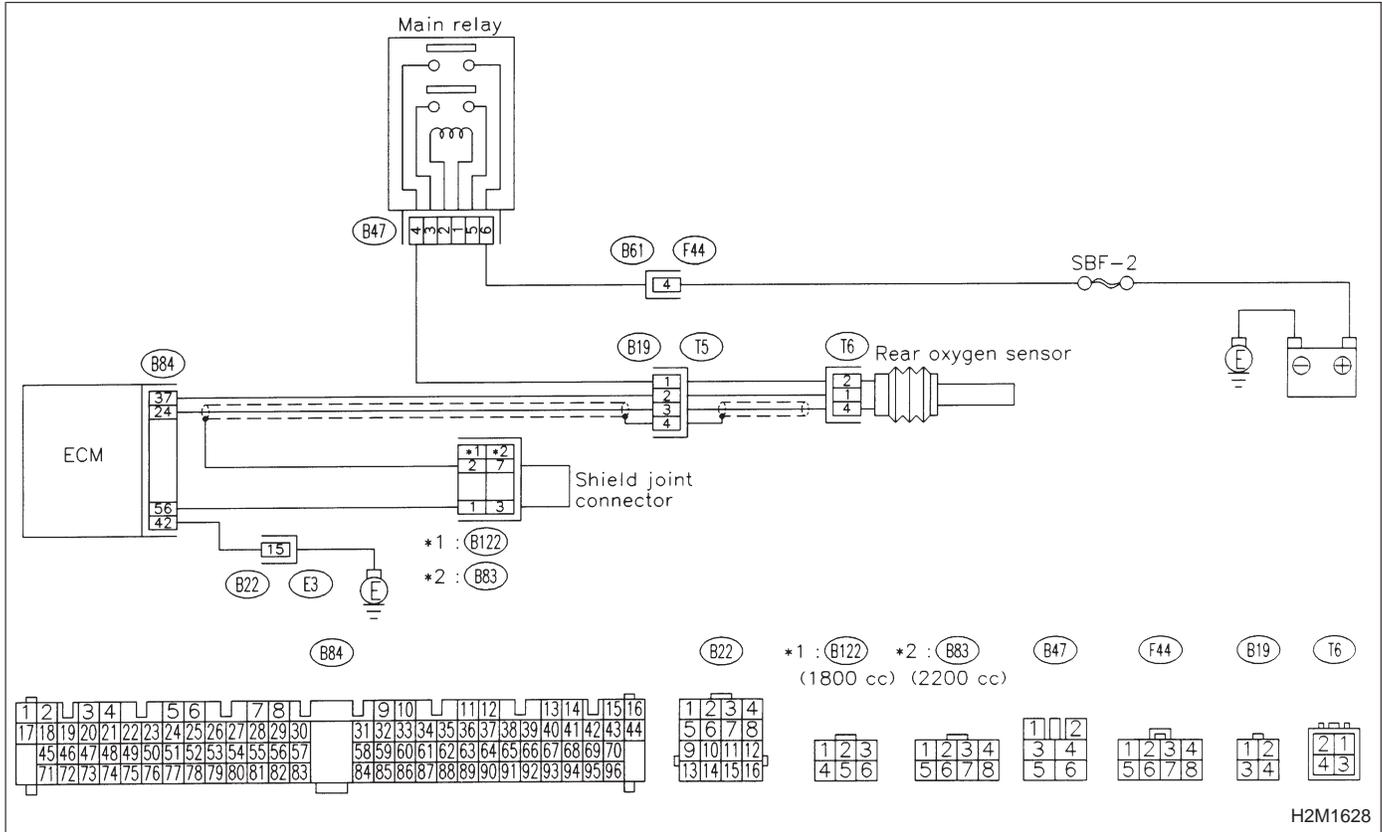
P0141 <RO2H>

OBD0232

S: DTC P0141
— REAR OXYGEN SENSOR HEATER
CIRCUIT MALFUNCTION —

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

WIRING DIAGRAM:



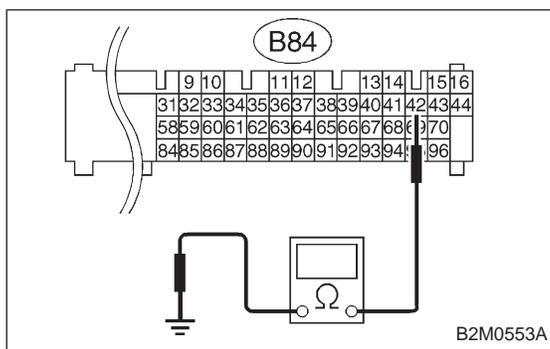
CAUTION:
 After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0] and [T3E0].>

10S1	CHECK DTC P0135 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 next step 1).

NO : Go to step **10S2**.



- 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?

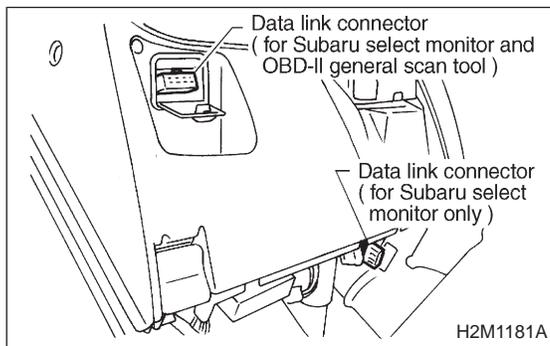
YES : Repair poor contact in ECM connector.

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 engine grounding terminal
- Poor contact in coupling connector (B22)



10S2	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.

RO2H (F33)

1.00 A

B2M0498

5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
- Designate mode using function key.

Function mode: F33

- F33: Rear oxygen sensor heater current is indicated.

CHECK : *Is the value more than 0.2 A in function mode F33?*

YES : Repair connector.

NOTE:

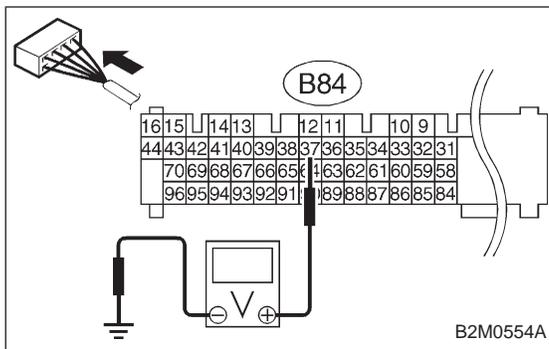
In this case, repair the following:

- 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 10S3.

- OBD-II scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10S3	CHECK OUTPUT SIGNAL FROM ECM. (USING VOLTAGE METER.)
-------------	---

- 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 10S4.

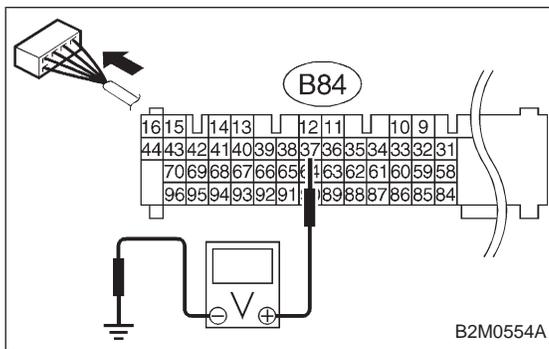
NO : Go to next step 3).

- 3) Measure voltage between ECM connector and 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 next step 4).



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

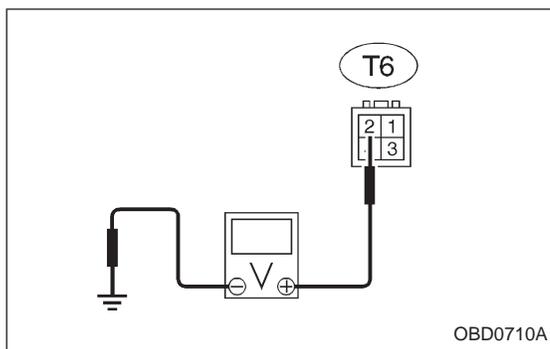
Connector & terminal

(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.

**10S4****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?*

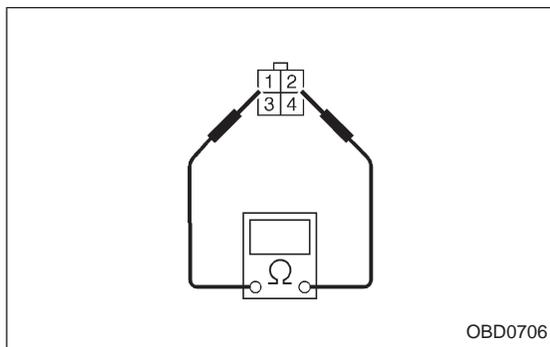
YES : Go to step 10S5.

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

**10S5****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.

OBD	(FB1)
P0170	<FUEL>
OBD0240	

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 MODE**.

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

10T1	CHECK EXHAUST SYSTEM.
-------------	------------------------------

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

YES : Repair exhaust system.

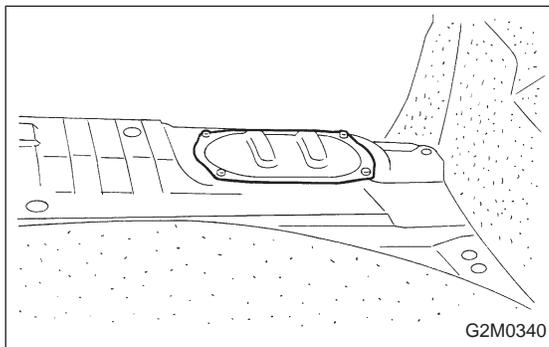
NO : Go to step **10T2**.

10T2	CHECK AIR INTAKE SYSTEM.
-------------	---------------------------------

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

YES : Repair air intake system.

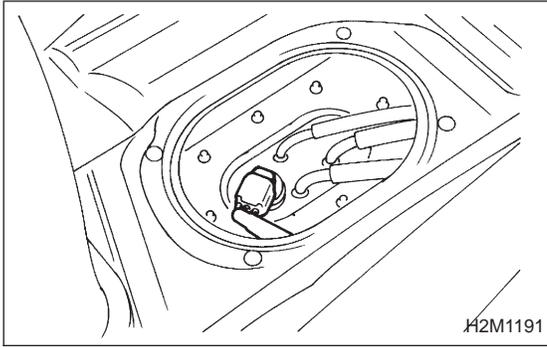
NO : Go to step **10T3**.



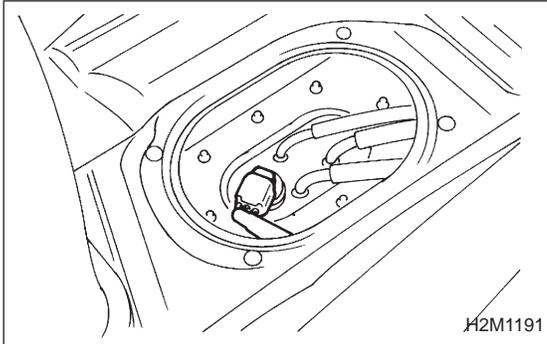
10T3	CHECK FUEL PRESSURE.
-------------	-----------------------------

1) Release fuel pressure.

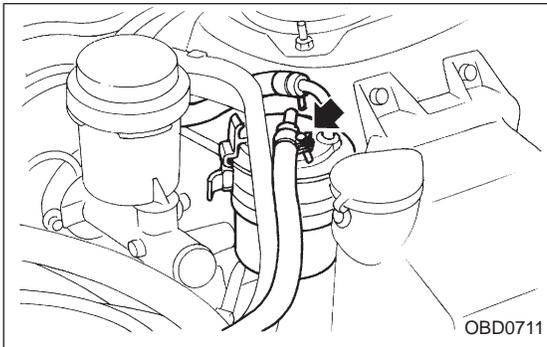
(1) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



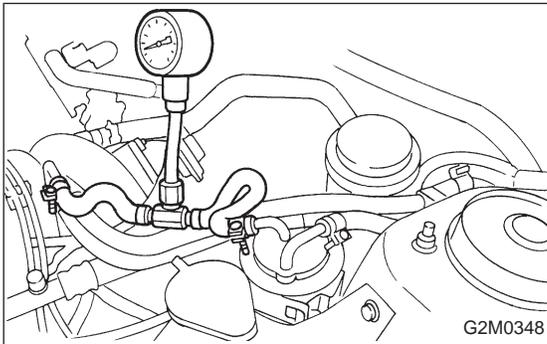
- (2) Disconnect connector from fuel tank.
- (3) Start the engine, and run it until it stalls.
- (4) After stopping the engine, crank the engine for 5 to 7 seconds to reduce fuel pressure.
- (5) Turn ignition switch to OFF.



- 2) Connect connector to fuel tank.



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



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

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

YES : Go to next step 6).

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

6) After connecting pressure regulator vacuum hose, measure fuel pressure.

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

YES : Go to step 10T4.

NO : Repair the following items.

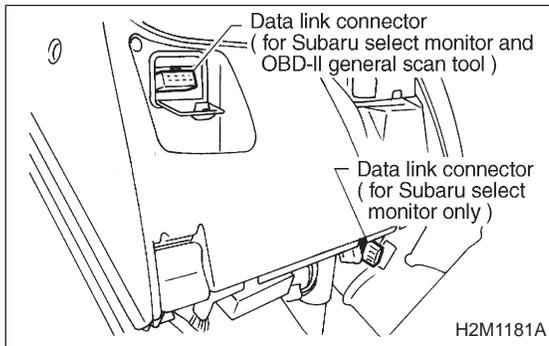
Fuel pressure too high	<ul style="list-style-type: none"> ● Faulty pressure regulator ● Clogged fuel return line or bent hose
Fuel pressure too low	<ul style="list-style-type: none"> ● Faulty pressure regulator ● Improper fuel pump discharge ● Clogged fuel supply line

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.



10T4	<p>CHECK ENGINE COOLANT TEMPERATURE SENSOR. <REF. TO 2-7 [T10H0] OR [T10I0].></p>
-------------	--

- 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.

TW	(F04)
80 ° C	176 ° F
B2M0479	

4) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in “°C” and “°F”.

CHECK : *Is temperature greater than 60°C or 140°F in function mode F04?*

YES : Go to step **10T5**.

NO : Replace engine coolant temperature sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

10T5	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.

QA	(F06)
1 . 67g / s	2 . 02V
B2M0481	

5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F06

- F06: Mass air flow and voltage input from mass air flow sensor are shown on display.

CHECK : *Is the voltage in function mode F06 within the specifications shown in the following table?*

Model	Engine speed	Specified value
1800 cc	Idling	1.6 — 2.8 (g/sec)
	2,500 rpm	6.1 — 10.3 (g/sec)
2200 cc	Idling	1.7 — 3.3 (g/sec)
	2,500 rpm	7.1 — 14.2 (g/sec)

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.

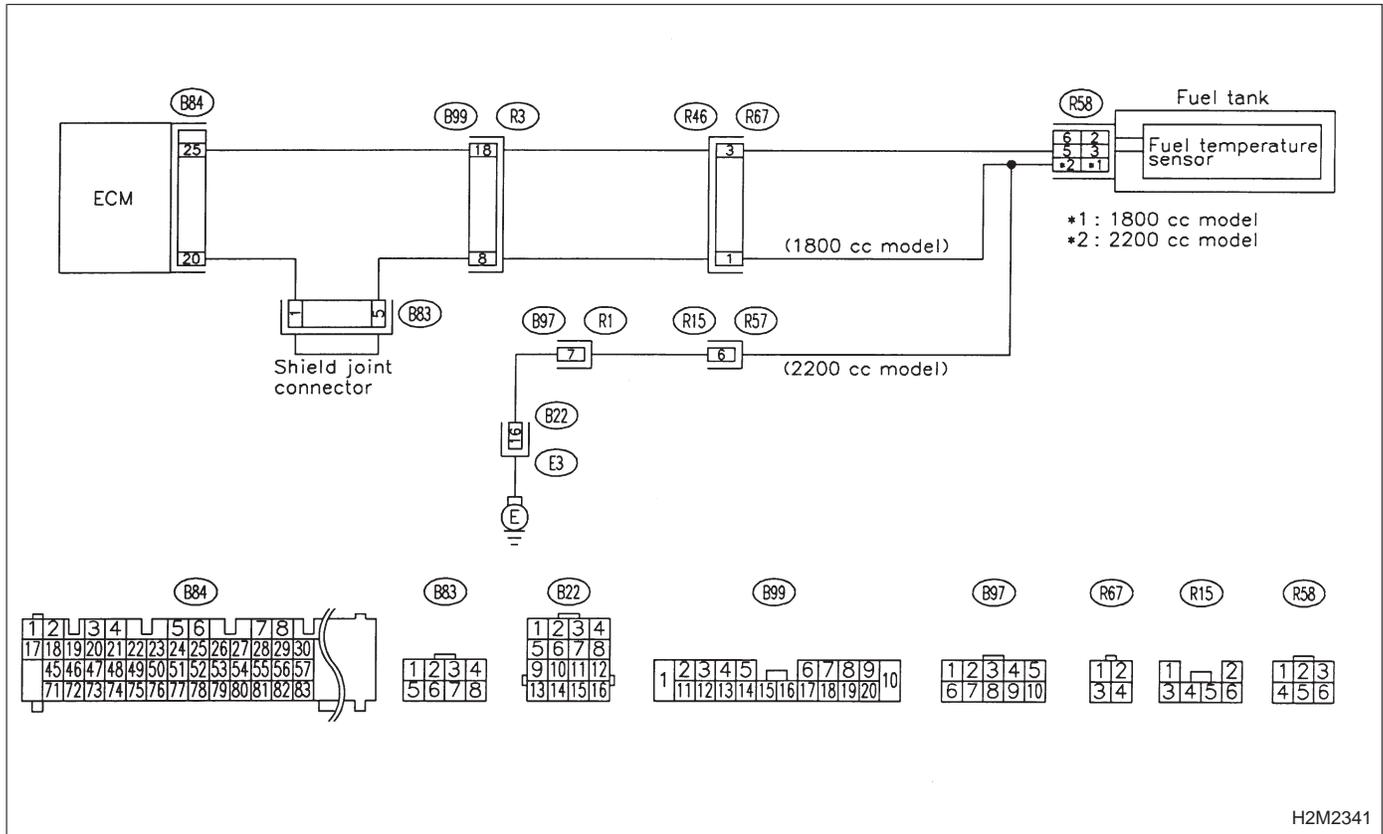
- OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

OBD (FB1)
 P0181 <TNKT_F>
 H2M1350

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

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

WIRING DIAGRAM:



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

10U1	CHECK DTC P0182 OR P0183 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 [T10A0].>

NOTE:

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

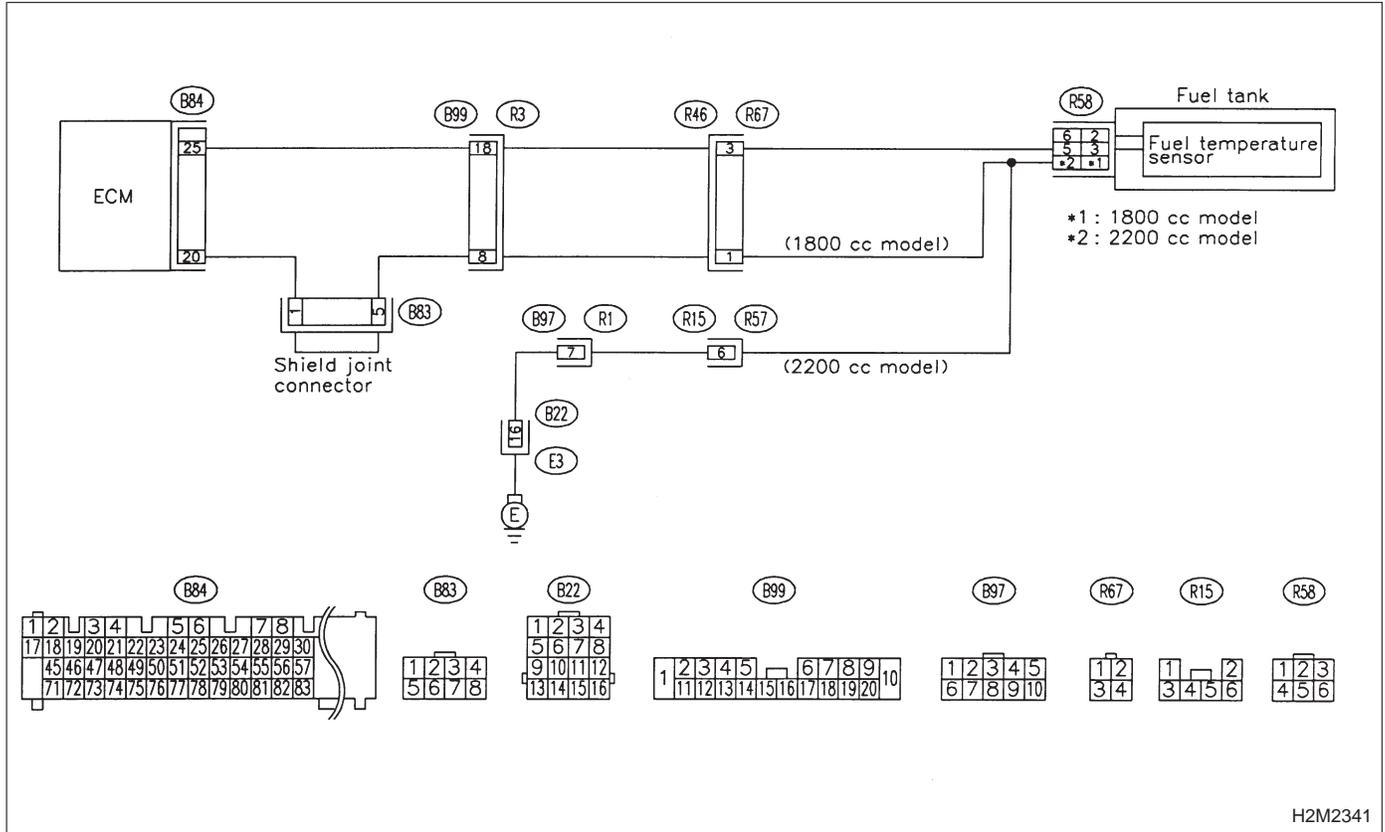
NO : Replace fuel temperature sensor.

OBD (FB1)
 P0182 <TNKT_LOW>
 B2M1079

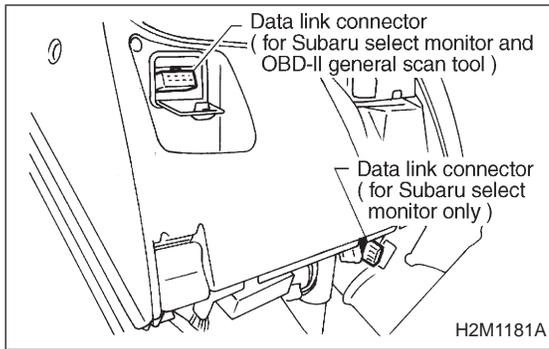
V: DTC P0182
— FUEL TEMPERATURE SENSOR A CIRCUIT
LOW INPUT —

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

WIRING DIAGRAM:

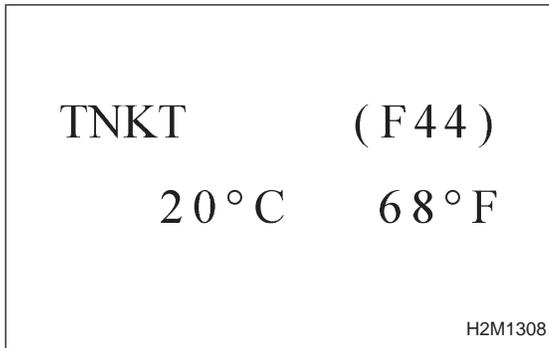


CAUTION:
 After repair or replacement of faulty parts, conduct
CLEAR MEMORY and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0] and [T3E0].>



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 on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F44

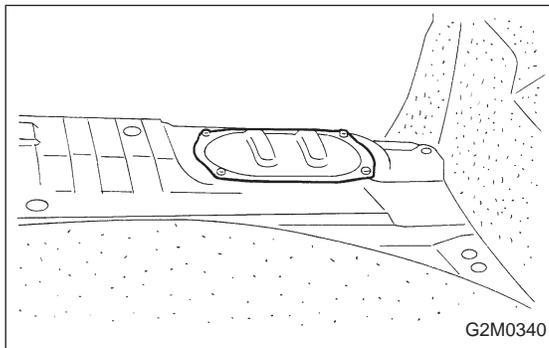
- F44: Fuel temperature is indicated in “C” and “F”.

CHECK : *Is the value greater than 150°C or 300°F in function mode F44?*

YES : Go to step 10V2.

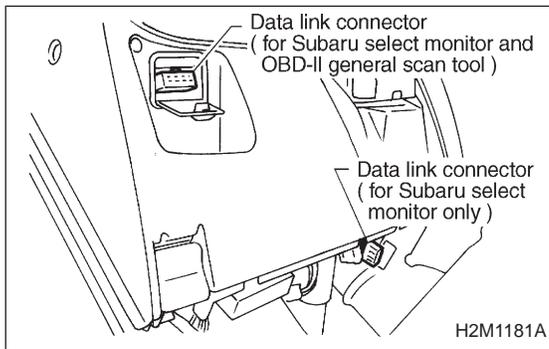
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

- OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



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.

TNKT	(F 44)
20 ° C	68 ° F
H2M1308	

6) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F44

- F44: Fuel temperature is indicated in "°C" and "°F".

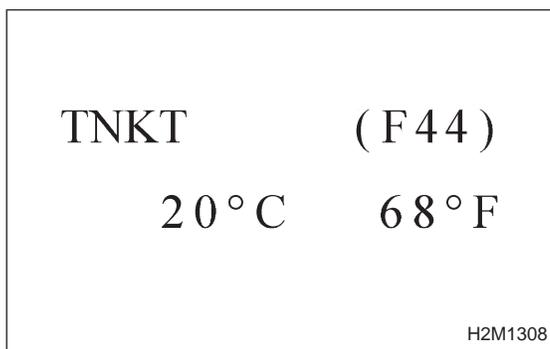
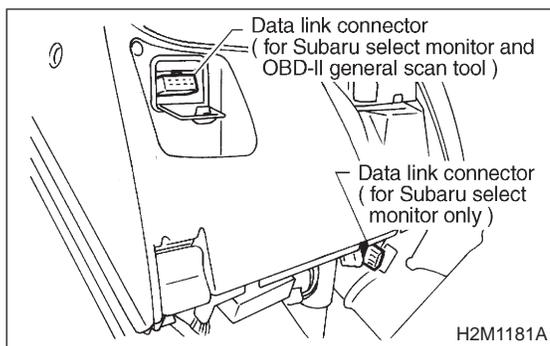
CHECK : *Is the value less than -40°C or -40°F in function mode F44?*

YES : Replace fuel temperature sensor.

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

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

**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 on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F44

- F44: Fuel temperature is indicated in "°C" and "°F".

CHECK : *Is the value less than -40°C or -40°F in function mode F44?*

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 (B83, B99 and R67)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

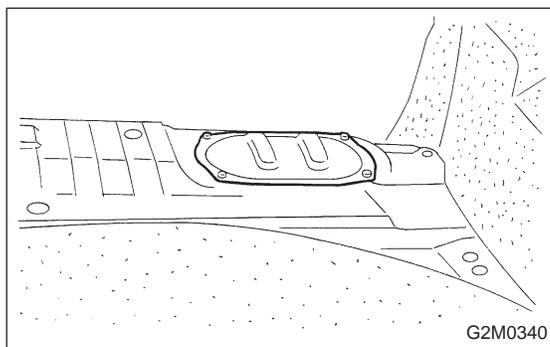
10W2

CHECK ENGINE DISPLACEMENT.

CHECK : *Is the engine 1800 cc model?*

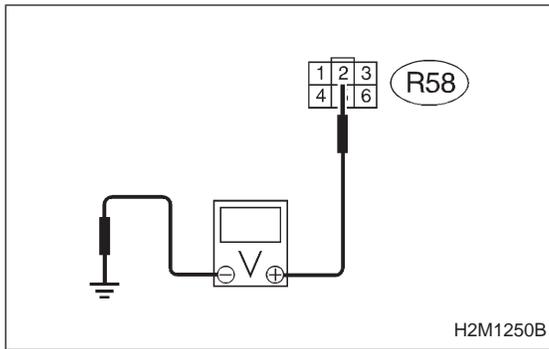
YES : Go to **10W3**.

NO : Go to **10W7**.

**10W3**

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.

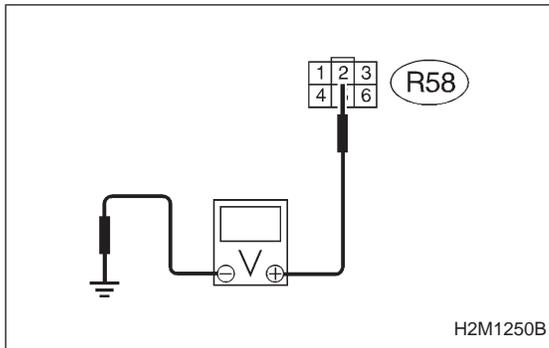
Connector & terminal

(R58) No. 2 (+) — 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.
-------------	---

1) Turn ignition switch to ON.

2) Measure voltage between fuel pump connector and chassis ground.

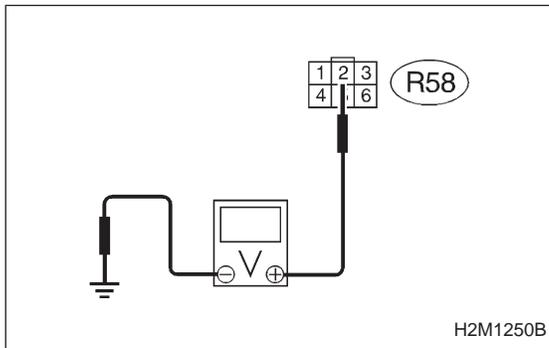
Connector & terminal

(R58) No. 2 (+) — 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 10W5.



10W5	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?

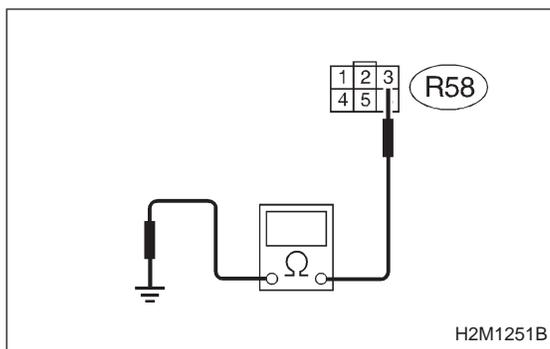
YES : Go to step 10W6.

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 (B99 and R67)

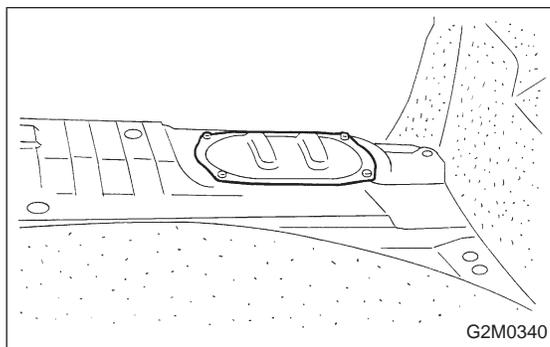
**10W6****CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.**

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

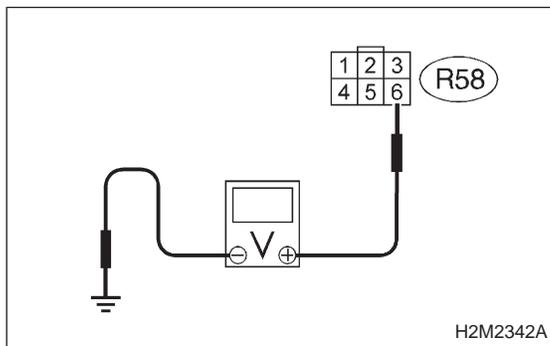
Connector & terminal (R58) No. 3 — Chassis ground:**CHECK** : *Is the resistance less than 5 Ω?***YES** : Replace fuel temperature sensor.**NO** : Repair harness and connector.**NOTE:**

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 (B83, B99 and R67)

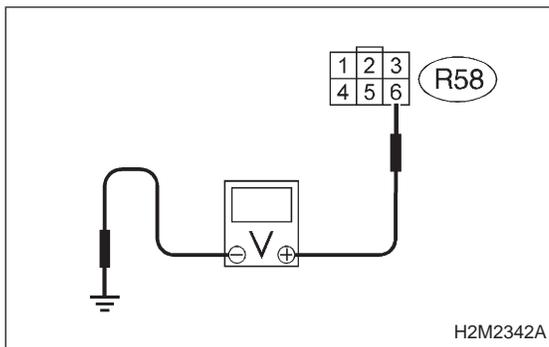
**10W7****CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.**

- 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 **10W8**.



10W8 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.

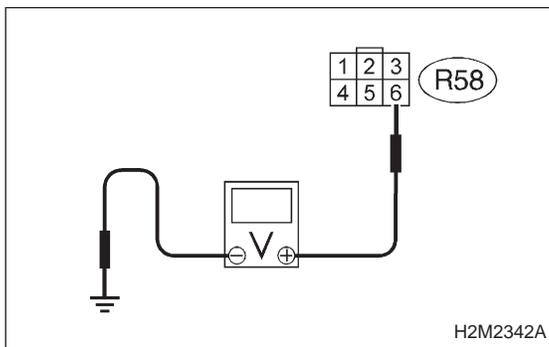
Connector & terminal

(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 10W9.



10W9 CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

Measure voltage between fuel pump connector and chassis ground.

Connector & terminal

(R58) No. 6 (+) — Chassis ground (-):

CHECK : Is the voltage more than 4 V?

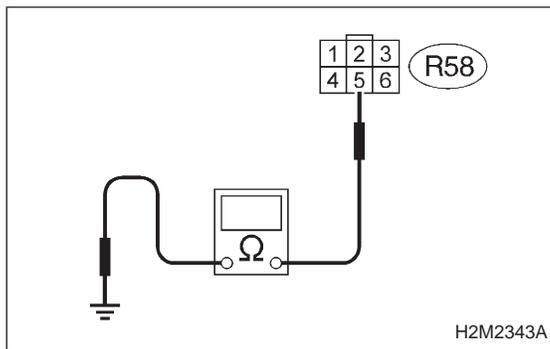
YES : Go to step 10W10.

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 (B99 and R67)

**10W10**

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 R15)

OBD (FB1)
 P0261 <INJ 1>
 B2M1081

X: DTC P0261
 — FUEL INJECTOR CIRCUIT LOW INPUT -
 #1 —

OBD (FB1)
 P0264 <INJ 2>
 B2M1082

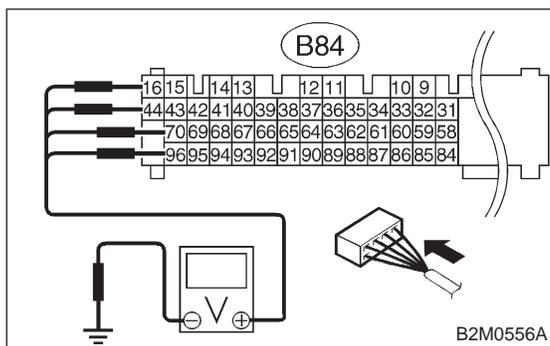
Y: DTC P0264
 — FUEL INJECTOR CIRCUIT LOW INPUT -
 #2 —

OBD (FB1)
 P0267 <INJ 3>
 B2M1083

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

OBD (FB1)
 P0270 <INJ 4>
 B2M1084

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

**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].>

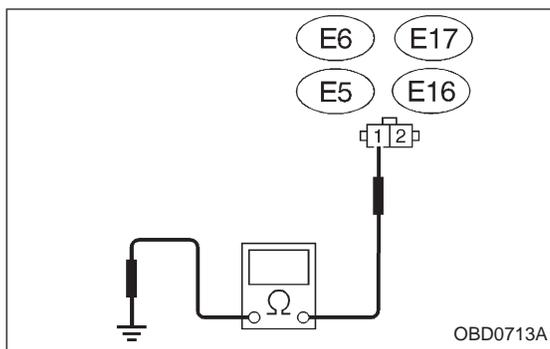
CHECK : *Is there poor contact in ECM connector?*

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 resistance between ECM connector and engine ground on faulty cylinders.

Connector & terminal

#1 (E5) No. 1 — Engine ground:

#2 (E16) No. 1 — Engine ground:

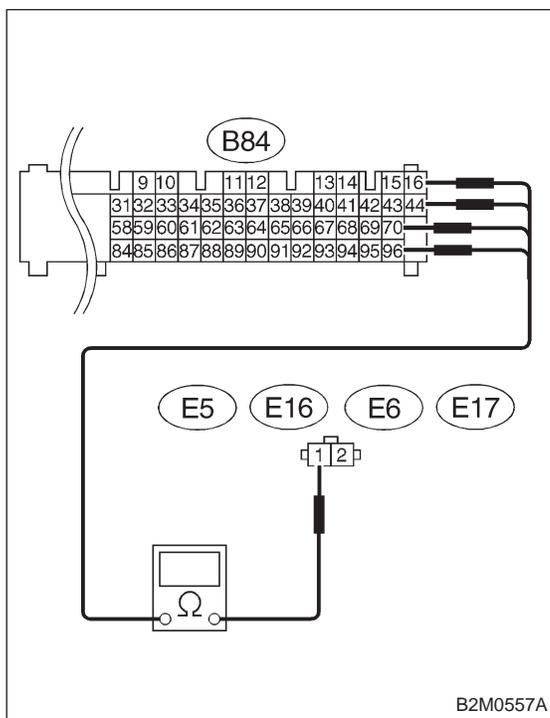
#3 (E6) No. 1 — Engine ground:

#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 next step 4).



- 4) 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?

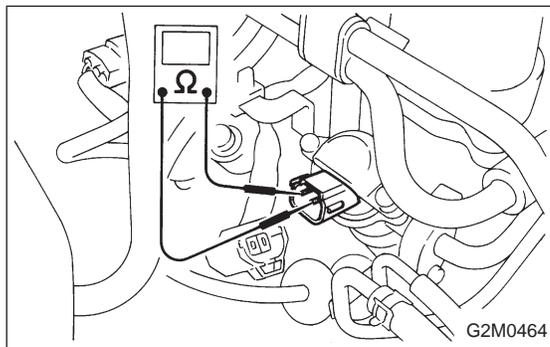
YES : Go to step 10AA4.

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)


10AA4 CHECK FUEL INJECTOR.

Measure resistance between fuel injector terminals on faulty cylinder.

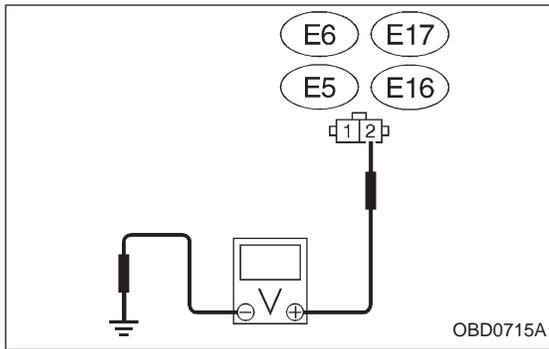
Terminals

No. 1 — No. 2:

CHECK : Is the resistance between 5 and 20 Ω?

NO : Replace faulty fuel injector.

YES : Go to step 10AA5.

**10AA5 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

OBD (FB1)
P0262 <INJ 1_HI>

B2M1085

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

OBD (FB1)
P0265 <INJ 2_HI>

B2M1086

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

OBD (FB1)
P0268 <INJ 3_HI>

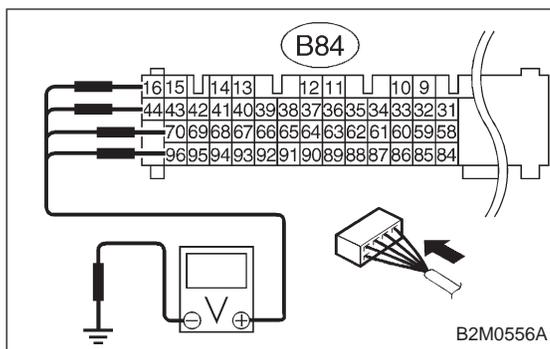
B2M1087

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

OBD (FB1)
P0271 <INJ 4_HI>

B2M1088

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

**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.

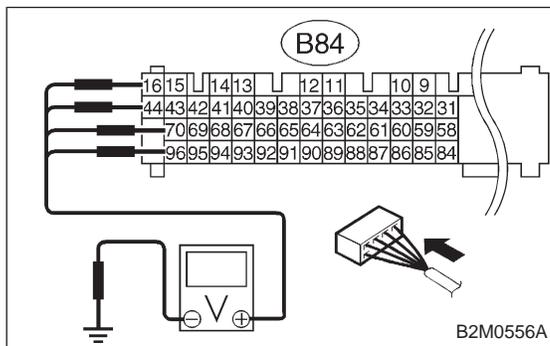
10AE2 CHECK POOR CONTACT.

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.

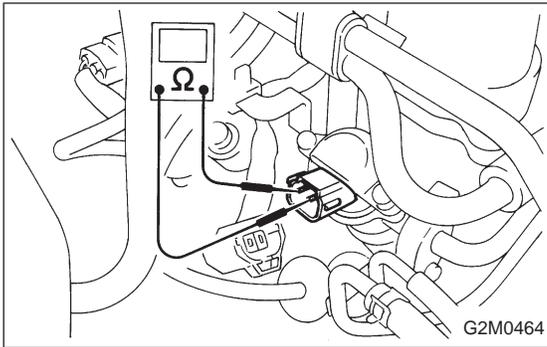
Connector & terminal

- #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 next step 5).



- 5) Turn ignition switch to OFF.
 6) 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 10AE4.

10AE4 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.

OBD	(FB1)
P0301	<MIS_1>
OBD0277	

AF: DTC P0301
— CYLINDER 1 MISFIRE DETECTED —

OBD	(FB1)
P0302	<MIS_2>
OBD0278	

AG: DTC P0302
— CYLINDER 2 MISFIRE DETECTED —

OBD	(FB1)
P0303	<MIS_3>
OBD0279	

AH: DTC P0303
— CYLINDER 3 MISFIRE DETECTED —

OBD	(FB1)
P0304	<MIS_4>
OBD0280	

AI: DTC P0304
— CYLINDER 4 MISFIRE DETECTED —

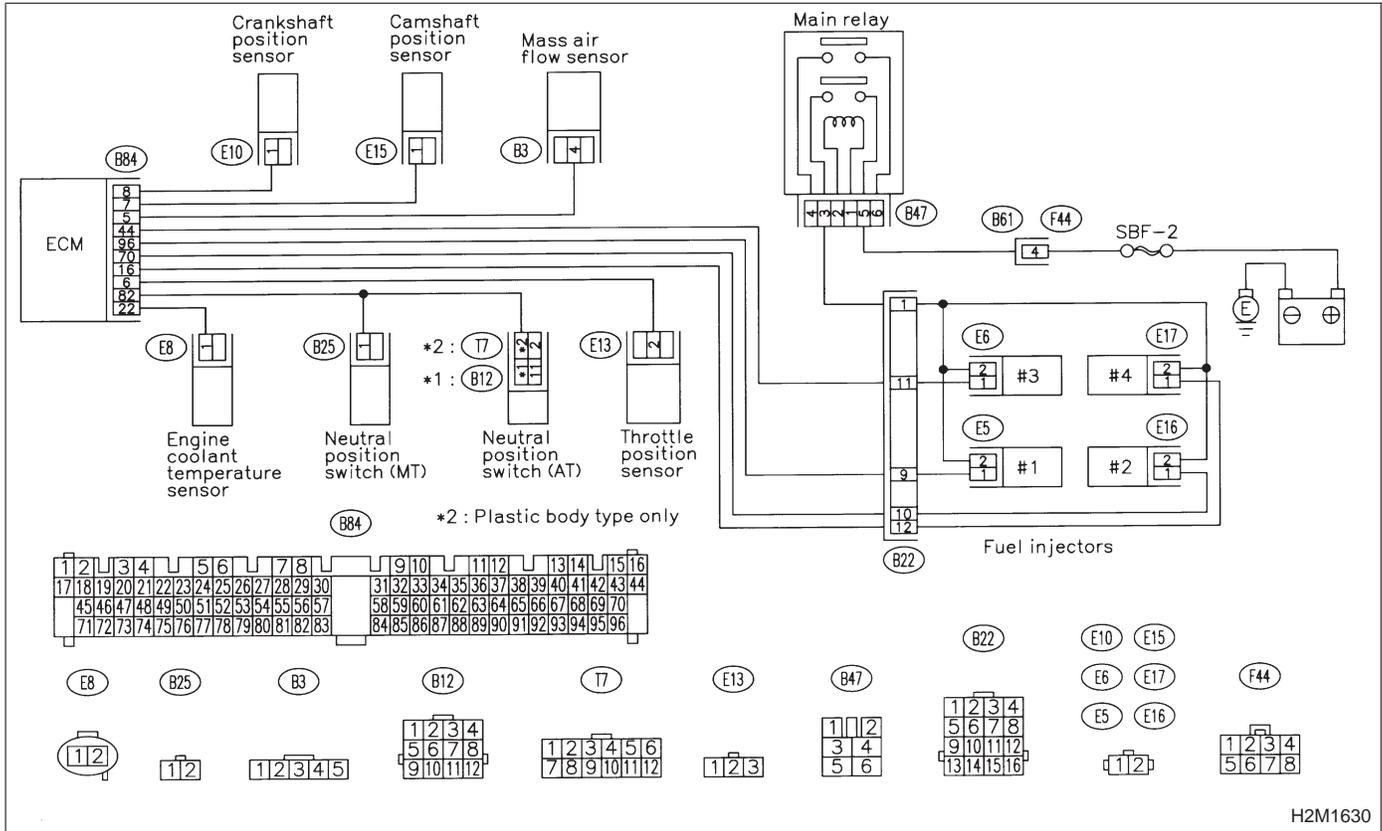
DTC DETECTING CONDITION:

- 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

WIRING DIAGRAM:



H2M1630

CAUTION:

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

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

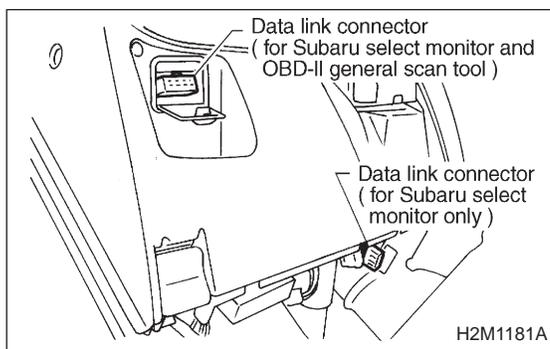
10A11	CHECK DTC P0101, P0102, P0103, P0116, P0117, P0125, P0261, P0262, P0264, P0265, P0267, P0268, P0270 OR P0271 ON DISPLAY.
--------------	---

- 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 [T10A0].>

NOTE:

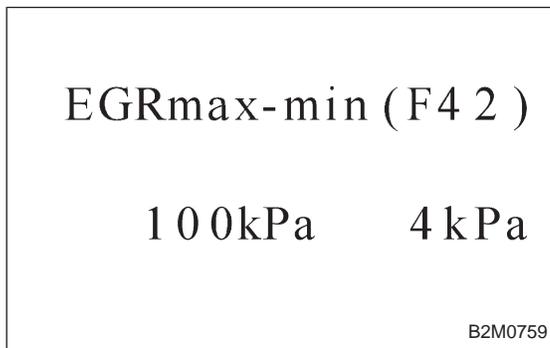
In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.

- NO** : Go to step **10A12**.

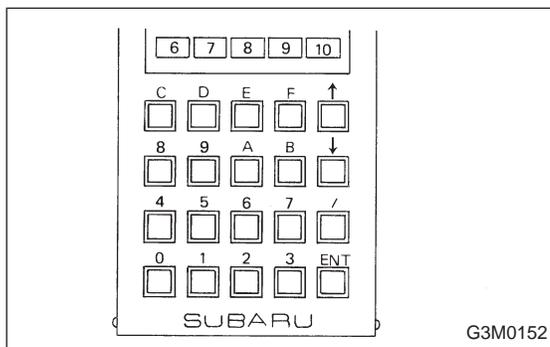


10A12	CONNECT SUBARU SELECT MONITOR AND READ DATA.
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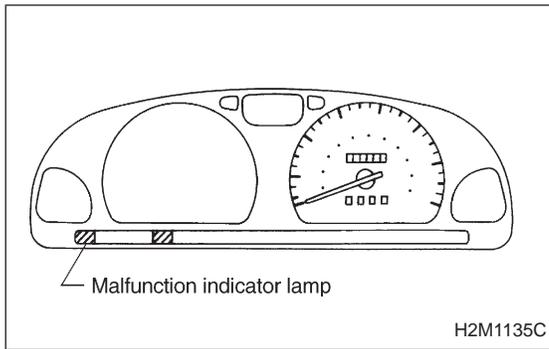
- 1) Turn ignition switch to OFF.
- 2) Connect Subaru Select Monitor to the data link connector.
- 3) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.



- 4) Read data on Subaru Select Monitor. Designate mode use function key.
- Function mode: F42**
- NOTE:**
F42: Maximum and minimum EGR system pressure value are indicated at the same time.
- 5) Print out the displayed data on paper.



- 6) Clear memory on Subaru Select Monitor. Designate mode use function key. Press [F], [C], [0], [ENT] in that order.



7) Start engine, and drive the vehicle more than 10 minutes.

CHECK : *Is the MIL coming on or blinking?*

YES : Go to step **10A13**.

NO : Go to next **CHECK** .

CHECK : *Has the vehicle been run empty of fuel?*

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

NO : Go to next **CHECK** .

CHECK : *Was the cause of misfire diagnosed when the engine is running?*

NOTE:

Ex. Remove spark plug cord, etc.

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

NO : Repair poor connector.

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)

10A13	CHECK AIR INTAKE SYSTEM.
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CHECK : *Is there a fault in air intake system?*

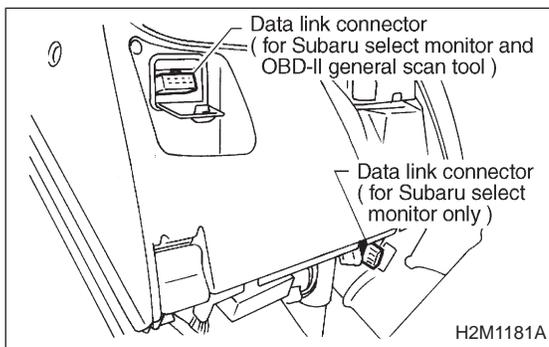
NOTE:

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?

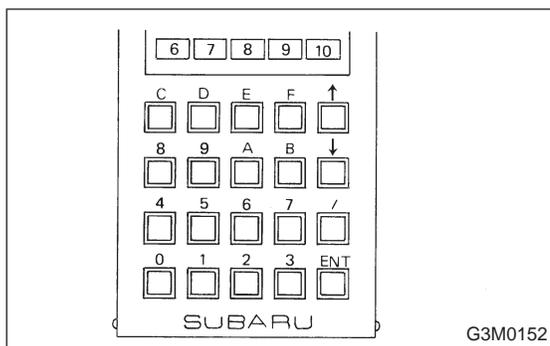
YES : Repair air intake system.

NO : Go to step **10A14**.



10A14	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

Designate mode use function key.

Function mode: FB1

- 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 10AI5.

NO : Go to next **CHECK** .

CHECK : **Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0301 and P0302?**

YES : Go to step 10AI6.

NO : Go to next **CHECK** .

CHECK : **Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0303 and P0304?**

YES : Go to step 10AI7.

NO : Go to next **CHECK** .

CHECK : **Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0301 and P0303?**

YES : Go to step 10AI8.

NO : Go to next **CHECK** .

CHECK : **Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0302 and P0304?**

YES : Go to step 10AI9.

NO : Go to step 10AI10.

10A15	ONLY ONE CYLINDER
--------------	--------------------------

CHECK : *Is there a fault in that cylinder?*

NOTE:

Check the following items.

- Spark plug
- Spark plug cord
- Fuel injector
- Compression ratio

YES : Repair or replace faulty parts.

NO : Go to step **10A11**.

10A16	GROUP OF #1 AND #2 CYLINDERS
--------------	-------------------------------------

CHECK : *Are there faults in #1 and #2 cylinders?*

NOTE:

- Check the following items.
 - Spark plugs
 - Fuel injectors
 - Ignition coil
- If no abnormal is discovered, check for "IGNITION CONTROL SYSTEM" of #1 and #2 cylinders side. <Ref. to 2-7 [T8D0].>

YES : Repair or replace faulty parts.

NO : Go to step **10A11**.

10A17	GROUP OF #3 AND #4 CYLINDERS
--------------	-------------------------------------

CHECK : *Are there faults in #3 and #4 cylinders?*

NOTE:

- Check the following items.
 - Spark plugs
 - Fuel injectors
 - Ignition coil
- If no abnormal is discovered, check for "IGNITION CONTROL SYSTEM" of #3 and #4 cylinders side. <Ref. to 2-7 [T8D0].>

YES : Repair or replace faulty parts.

NO : Go to step **10A11**.

10A18	GROUP OF #1 AND #3 CYLINDERS
--------------	-------------------------------------

CHECK : *Are there faults in #1 and #3 cylinders?*

NOTE:

Check the following items.

- Spark plugs
- Fuel injectors
- Skipping timing belt teeth

YES : Repair or replace faulty parts.

NO : Go to step **10A11**.

10A19	GROUP OF #2 AND #4 CYLINDERS
--------------	-------------------------------------

CHECK : *Are there faults in #2 and #4 cylinders?*

NOTE:

Check the following items.

- Spark plugs
- Fuel injectors
- Skipping timing belt teeth

YES : Repair or replace faulty parts.

NO : Go to step **10A11**.

10A110	THE CYLINDER AT RANDOM
---------------	-------------------------------

CHECK : *Is the engine idle rough?*

YES : Go to step **10A11**.

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

EGRmax-min (F4 2)

1 0 0kPa 4 kPa

B2M0759

10A111 CHECK EGR SYSTEM.

CHECK : *Is the minimum EGR system pressure value (value of function mode (F42) less than 1 kPa?*

NOTE:

Use the value read in step **10X2** for function mode F42.

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], [T10T4] and [T10T5].>

OBD (FB1)

P0325 <KNOCK>

OBD0283

**AJ: DTC P0325
— KNOCK SENSOR CIRCUIT
MALFUNCTION —**

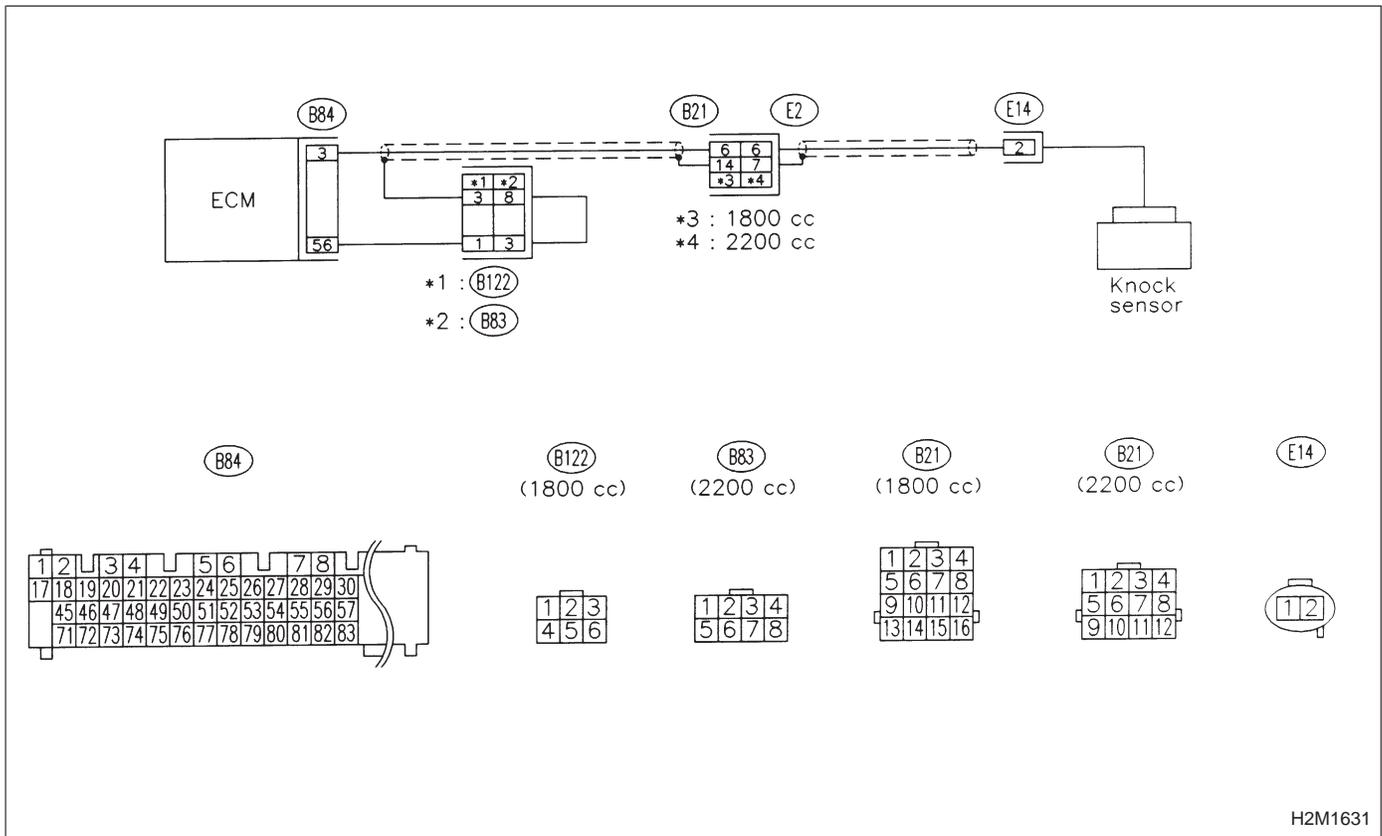
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

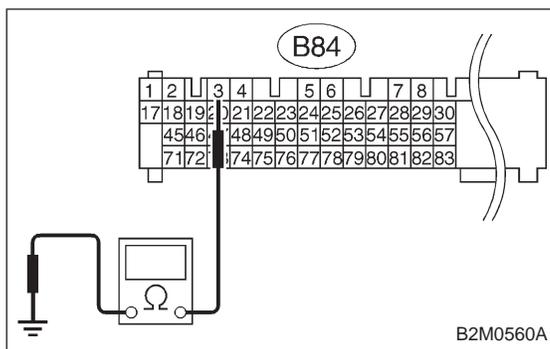
WIRING DIAGRAM:



H2M1631

CAUTION:

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

**10AJ1****CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.**

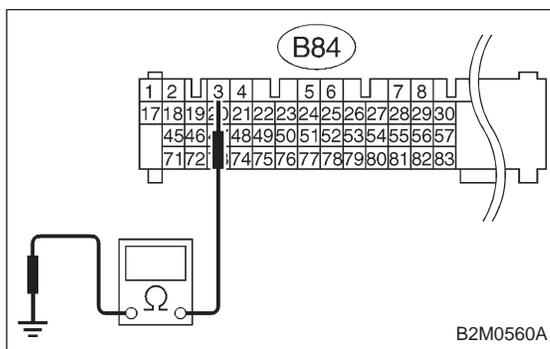
- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from ECM.
- 3) Measure resistance of harness between ECM connector and chassis ground.

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

CHECK : Is the resistance more than 700 k Ω ?

YES : Go to step 10AJ2.

NO : Go to next step 4).



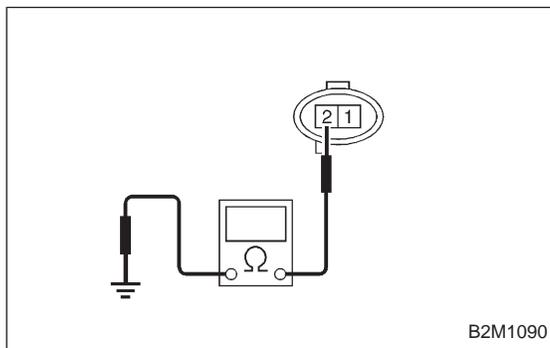
- 4) Measure resistance of harness between ECM connector and chassis ground.

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

CHECK : Is the resistance less than 400 k Ω ?

YES : Go to step 10AJ3.

NO : Go to step 10AJ4.

**10AJ2****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 k Ω ?

YES : Go to next **CHECK** .

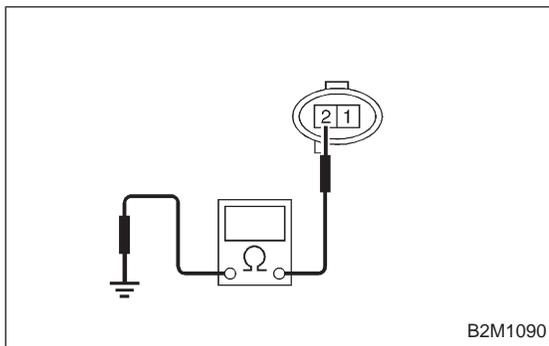
NO : Repair harness and connector.

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)

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



10AJ3 CHECK KNOCK SENSOR.

- 1) Disconnect connector from knock sensor.
- 2) Measure resistance between knock sensor connector terminal and engine ground.

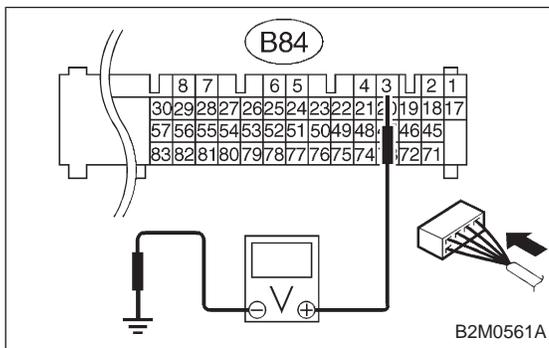
Terminal

No. 2 — Engine ground:

- CHECK** : *Is the resistance 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.



10AJ4 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.

OBD	(FB1)
P0335	<CRANK>

OBD0292

AK: DTC P0335
— CRANKSHAFT POSITION SENSOR
CIRCUIT MALFUNCTION —

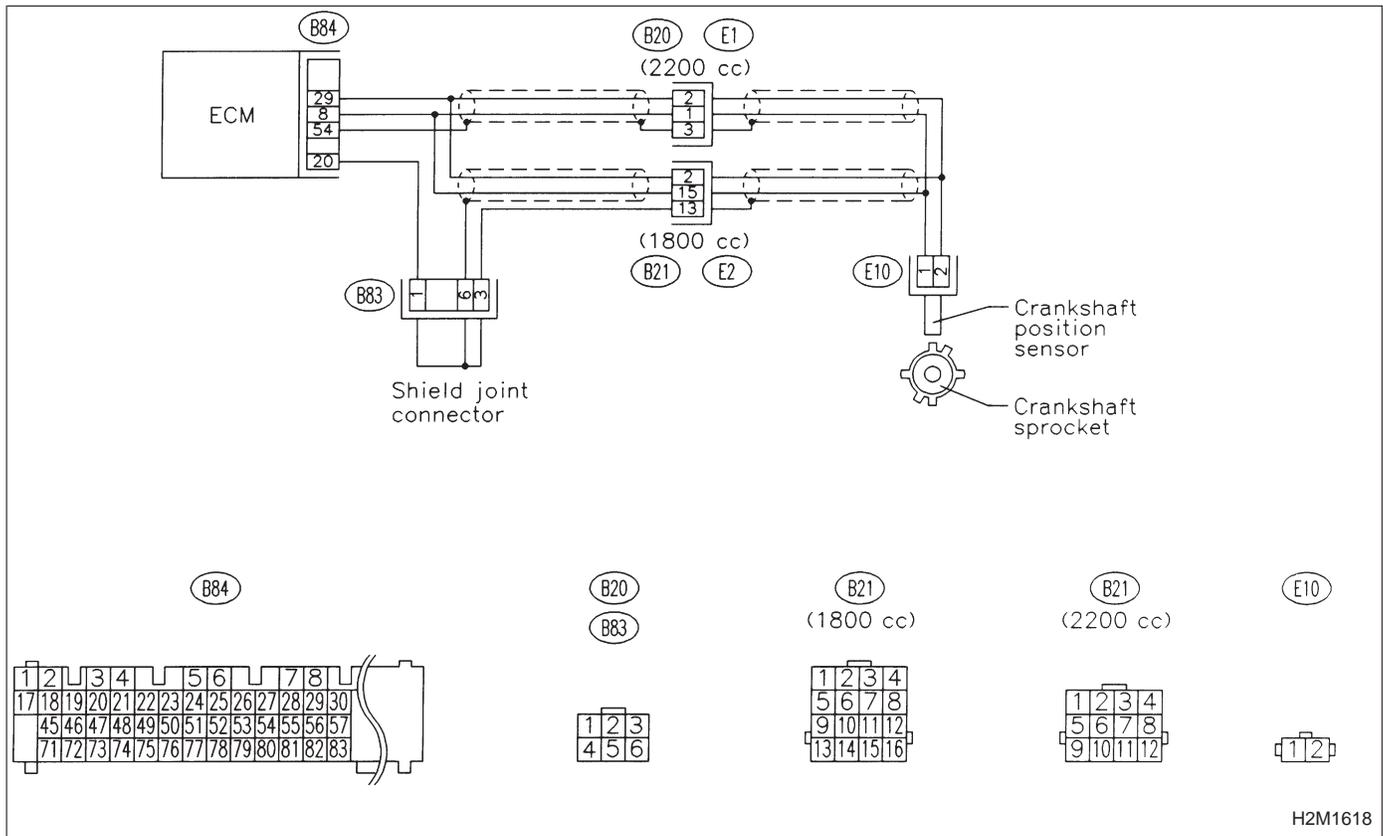
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

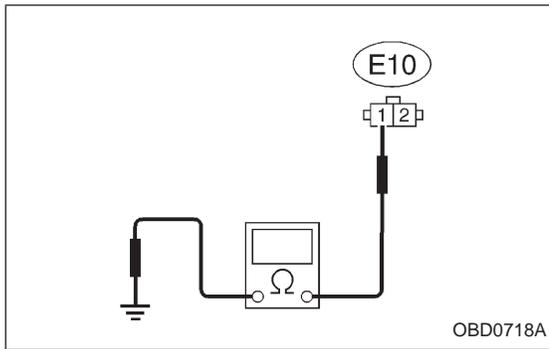
WIRING DIAGRAM:



CAUTION:

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

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

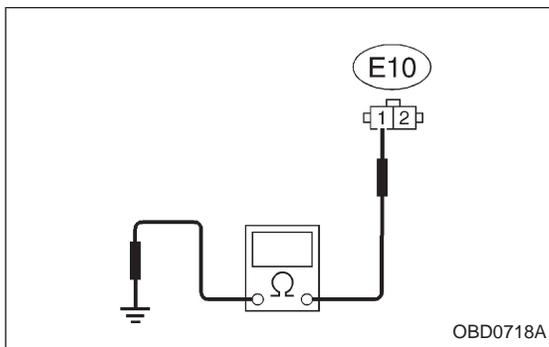
**10AK1****CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.**

- 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 (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

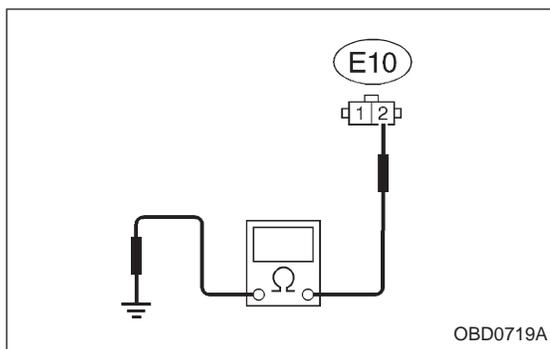
NO : Go to next step 4).

- 4) 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 next step 5).



5) 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 10AK2.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

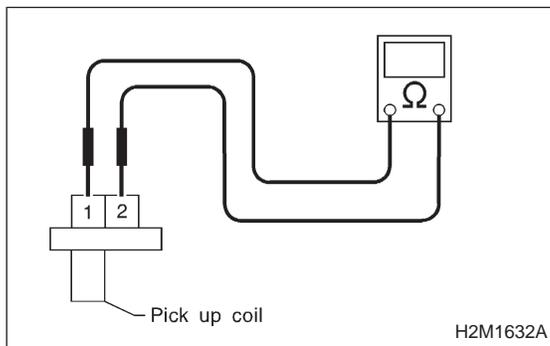
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

10AK2	CHECK CRANKSHAFT POSITION SENSOR.
--------------	--

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

YES : Go to next step 1).

NO : Tighten crankshaft position sensor installation bolt securely.



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.

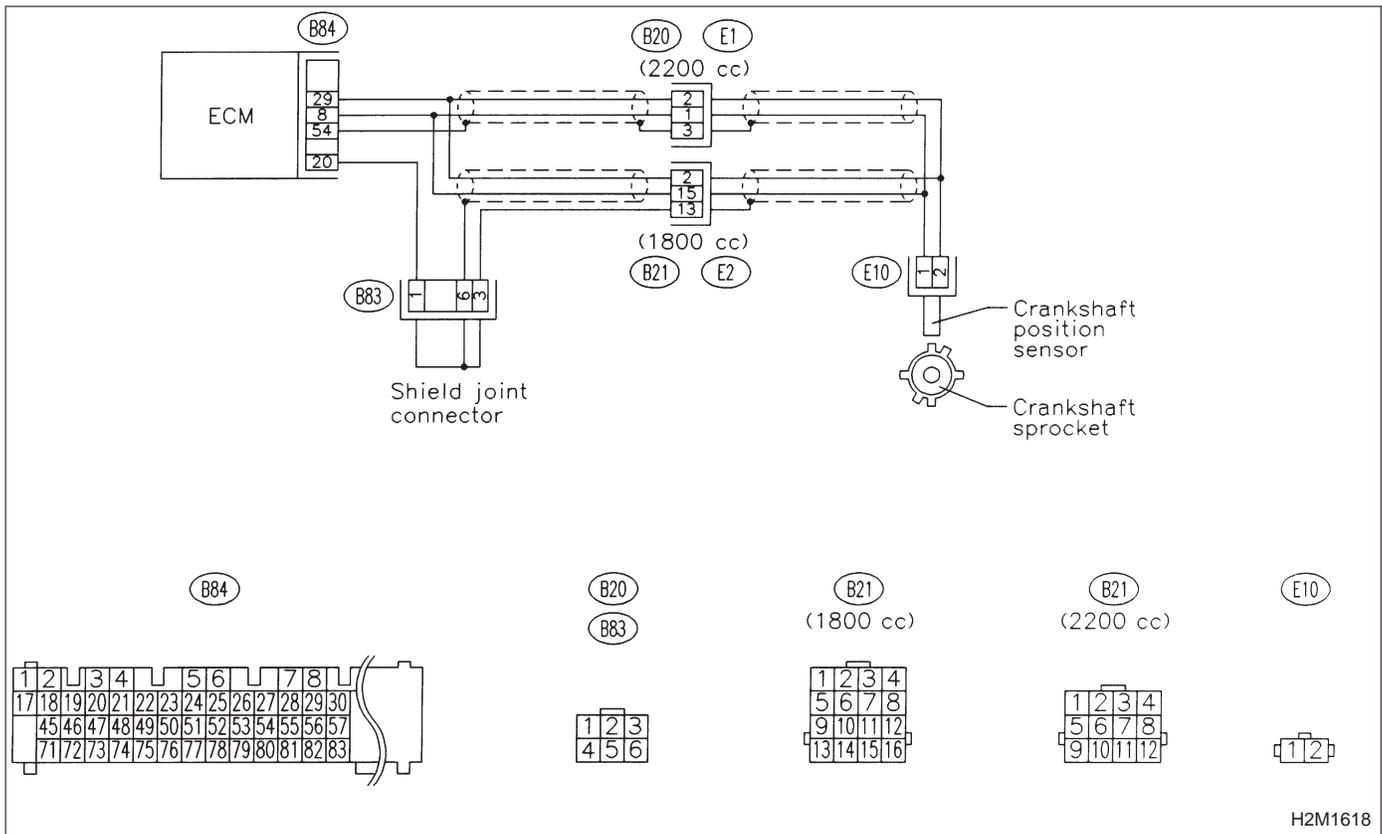
OBD (FB1)
 P0336 <CRANK_R>
 B2M1091

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

WIRING DIAGRAM:



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

10AL1	CHECK DTC P0335 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 [T10A0].>
- NO** : Replace crankshaft position sensor.

OBD	(FB1)
P0340	<CAM>

OBD0304

**AM: DTC P0340
— CAMSHAFT POSITION SENSOR CIRCUIT
MALFUNCTION —**

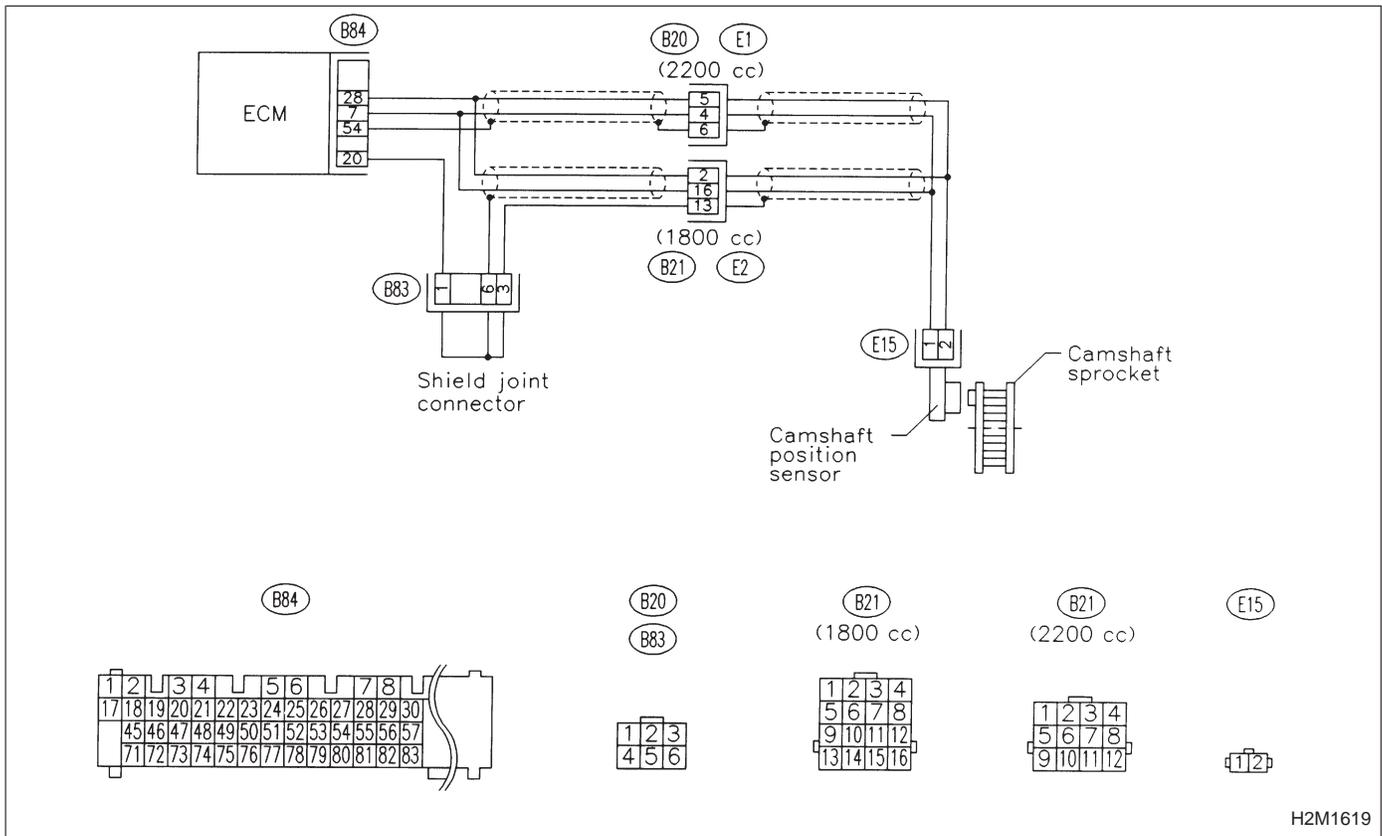
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

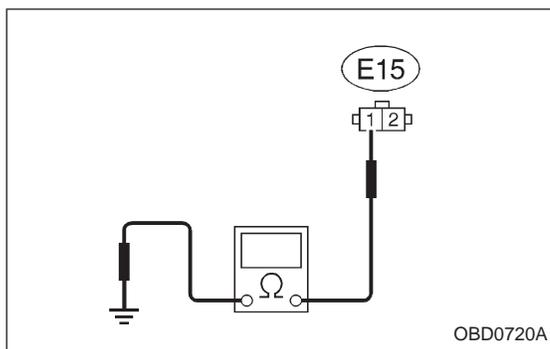
WIRING DIAGRAM:



H2M1619

CAUTION:

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



10AM1

CHECK HARNESS BETWEEN CAM-SHAFT POSITION SENSOR AND ECM CONNECTOR.

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

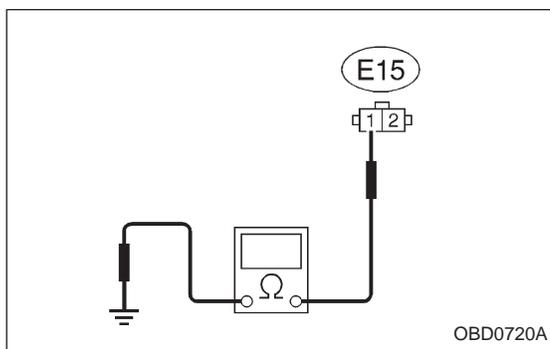
Connector & terminal
(E15) No. 1 — Engine ground:
CHECK : Is the resistance more than 100 kΩ?

YES : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

NO : Go to next step 4).


- 4) Measure resistance of harness between camshaft position sensor connector and engine ground.

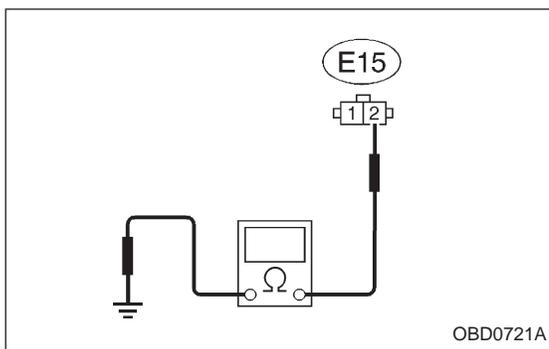
Connector & terminal
(E15) No. 1 — Engine ground:
CHECK : Is the resistance less than 10 Ω?

YES : Repair ground short circuit in harness between camshaft position sensor connector and ECM connector.

NOTE:

The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to next step 5).



5) 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 10AM2.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

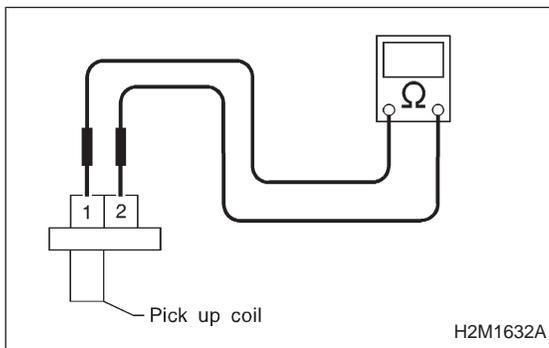
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

10AM2	CHECK CAMSHAFT POSITION SENSOR.
--------------	--

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

YES : Go to next step 1).

NO : Tighten camshaft position sensor installation bolt securely.



- 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.

OBD (FB1)
 P0341 <CAM_R>
 B2M1092

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

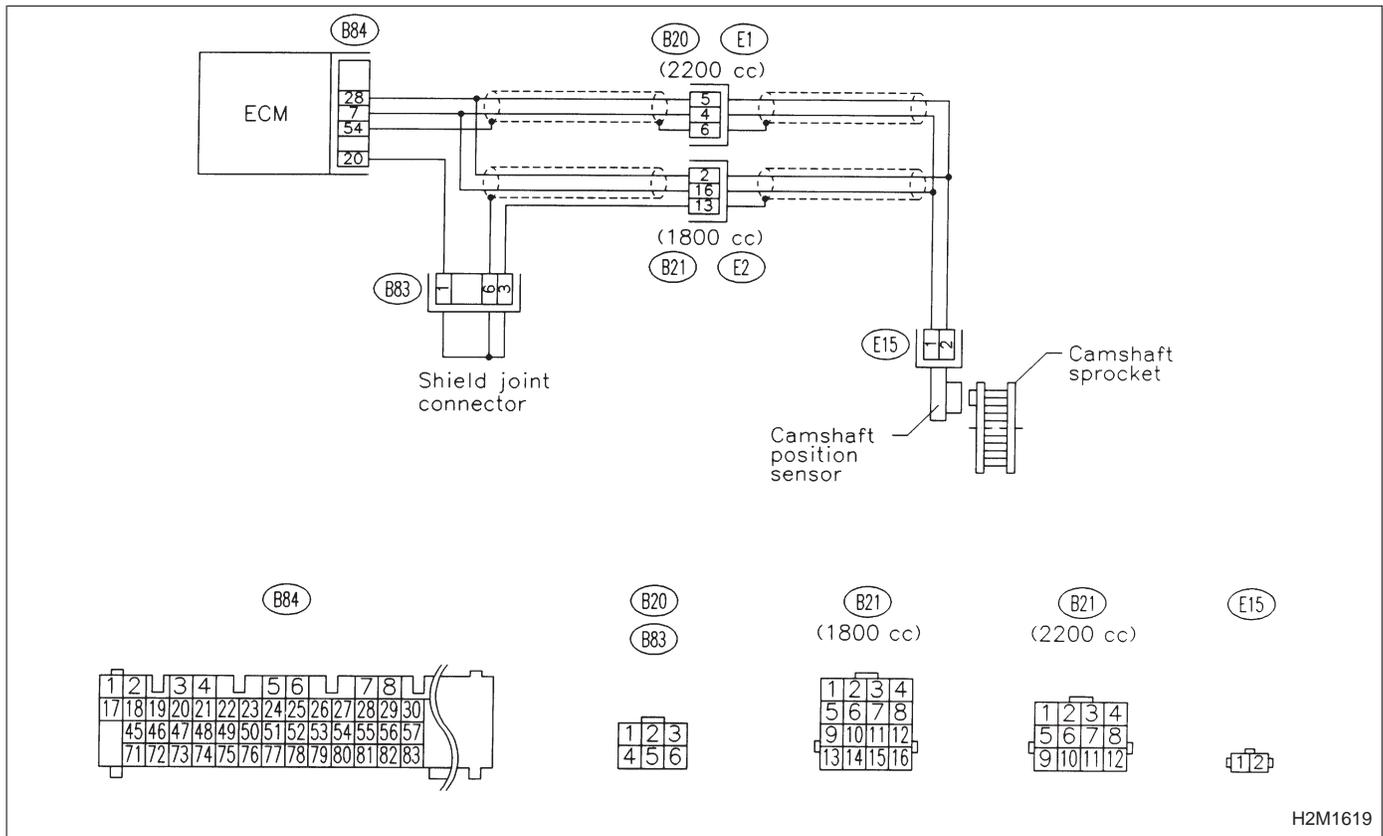
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

WIRING DIAGRAM:



H2M1619

CAUTION:

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

10AN1	CHECK DTC P0340 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 [T10A0].>
- NO** : Replace camshaft position sensor.

OBD	(FB1)
P0400	<EGR>
OBD0315	

**AO: DTC P0400
— EXHAUST GAS RECIRCULATION FLOW
MALFUNCTION —**

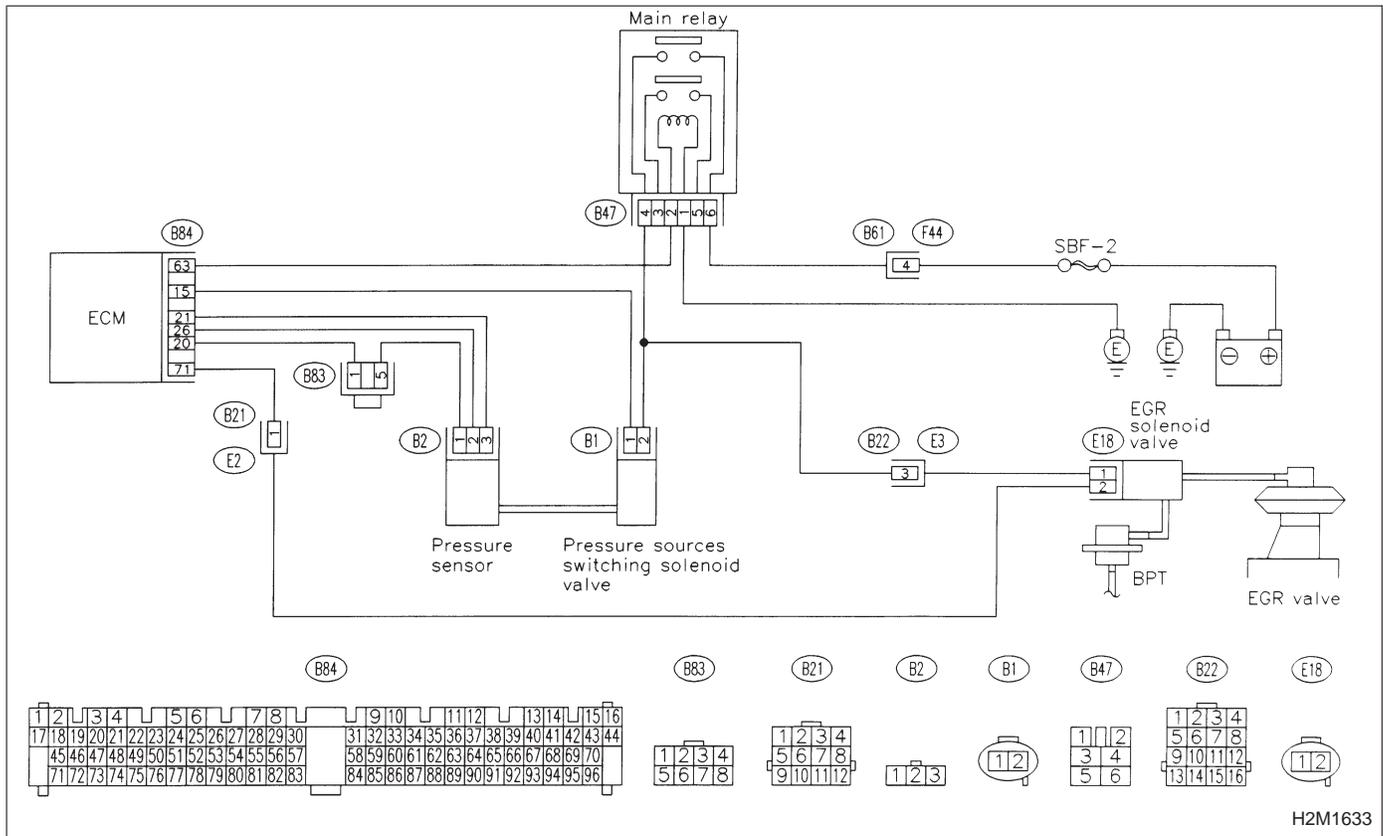
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Poor driving performance on low engine speed

WIRING DIAGRAM:



CAUTION:

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

10A01	CHECK TRANSMISSION TYPE.
--------------	---------------------------------

CHECK : *Is transmission type MT?*

YES : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>

NO : Go to step **10A02**.

10A02	CHECK DTC P0106, P0107, P0108, P0403, P1102, P1122 OR P1421 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 [T10A0].>
● Manually check that EGR valve diaphragm is not stuck.

WARNING:

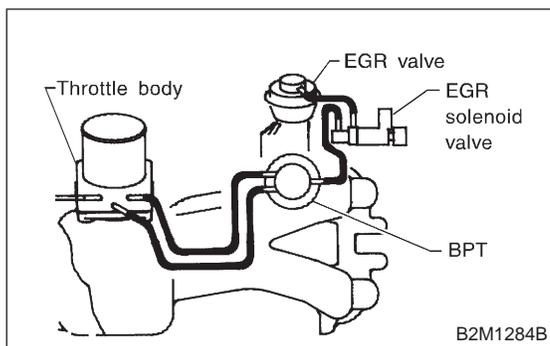
Be careful when checking EGR valve, since it may be extremely hot.

NOTE:

In this case, it is not necessary to inspect DTC P0400.

After checking the above item, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

NO : Go to step **10A03**.

**10A03 CHECK VACUUM LINE.**

CHECK : *Is there a fault in vacuum line?*

NOTE:

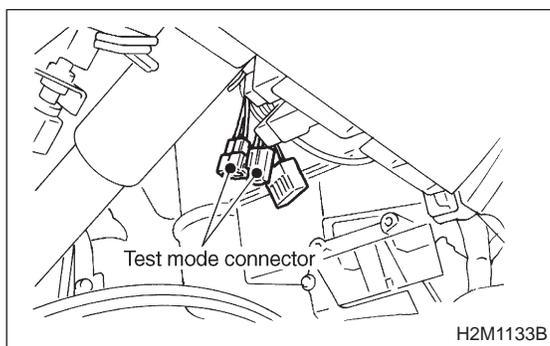
Check the following items.

- 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

YES : Repair or replace hoses and pipes.

And after the checking and repairing, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

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.

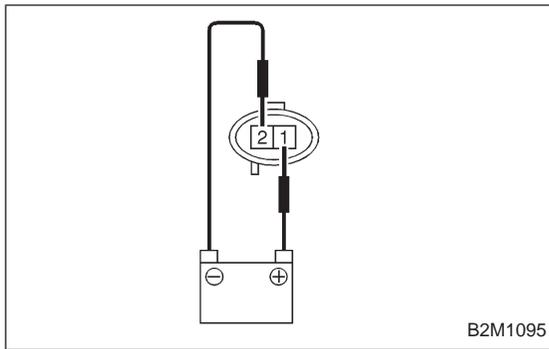
CHECK : *Does EGR solenoid valve produce operating sound?*

NOTE:

EGR control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD05). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to next step 4).

NO : Replace EGR solenoid valve.



- 4) Turn ignition switch to OFF.
- 5) Disconnect connector from EGR solenoid valve.
- 6) Connect 12 V battery's ground \ominus terminal to one terminal of the EGR solenoid valve. Then connect 12 V battery's \oplus 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.

- 7) 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.**

NOTE:

If malfunction is detected again in the confirmation of actual driving pattern, EGR valve is faulty. Go to next step 8).

NO : Go to next step 8).

- 8) 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.**

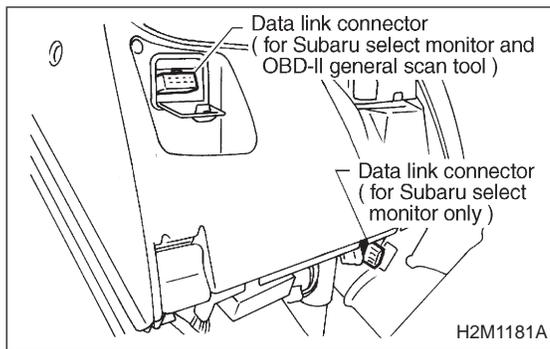
NO : Clean EGR valve. And go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

CAUTION:

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

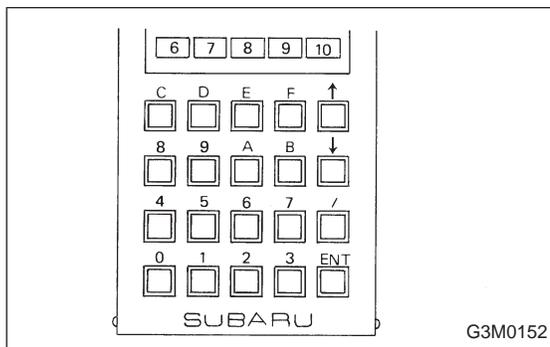
NOTE:

- 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.

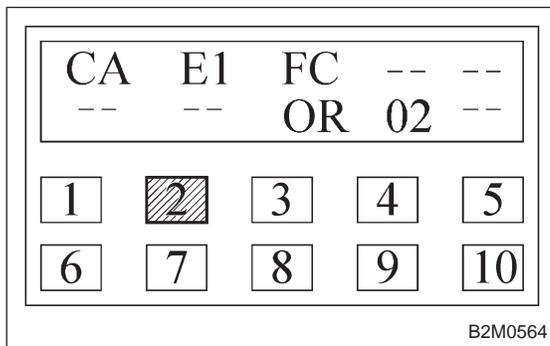


CONFIRMATION OF ACTUAL DRIVING PATTERN.

- 1) Conduct CLEAR MEMORY and INSPECTION MODES. <Ref. to 2-7 [T3D0] and [T3E0].>
- 2) Connect Subaru select monitor to its data link connector.
- 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.



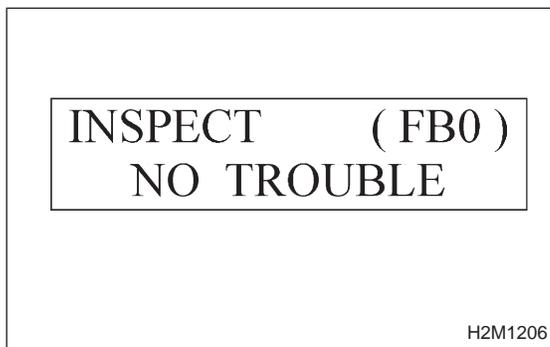
- 5) Designate mode using function key.
Function mode: FA4



- 6) Drive at 88±5 km/h (55±3 MPH) until the LED No. 2 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 "D" range for the diagnosis.



- 7) Designate mode using function key.
Function mode: FB0

- 8) Confirm the "No trouble" indication on Subaru select monitor.

OBD	(FB1)
P0403	<EGRSOL>
OBD0323	

AP: DTC P0403
— EXHAUST GAS RECIRCULATION CIRCUIT
LOW INPUT —

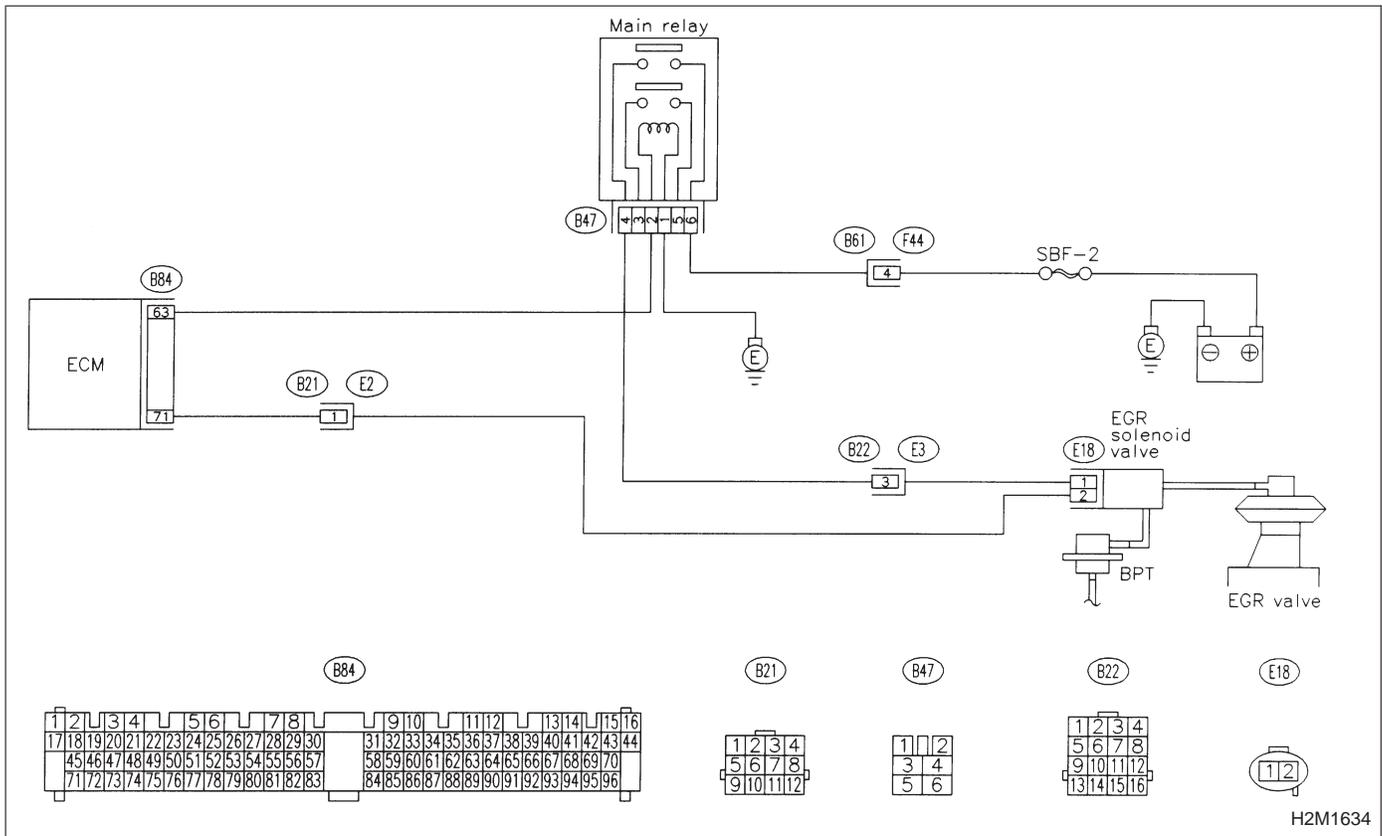
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Poor driving performance on low engine speed

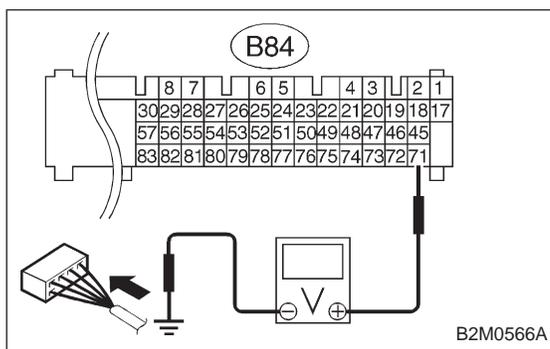
WIRING DIAGRAM:



H2M1634

CAUTION:

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

10AP1 CHECK TRANSMISSION TYPE.**CHECK** : *Is transmission type MT?***YES** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>**NO** : Go to step **10AP2**.**10AP2 CHECK OUTPUT SIGNAL FROM ECM.**

1) Turn ignition switch to ON.

2) Measure voltage between ECM and chassis ground.

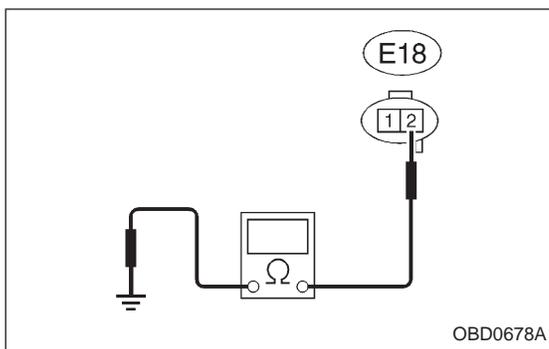
Connector & terminal**(B84) No. 71 (+) — Chassis ground (-):****CHECK** : *Is the voltage more than 10 V?***YES** : Go to **10AP3**.**NO** : Go to step **10AP4**.**10AP3 CHECK POOR CONTACT.**

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)

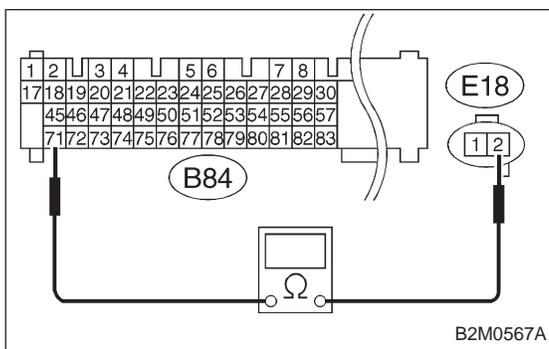


10AP4 CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR.

- 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 next step 4).



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

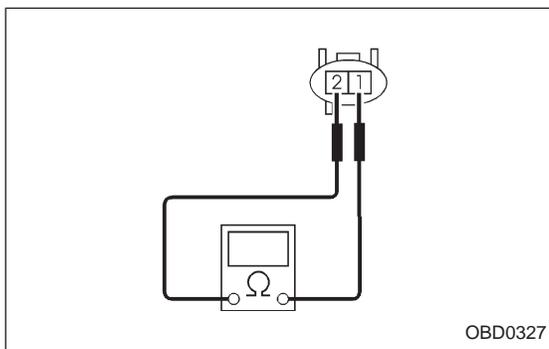
Connector & terminal (B84) No. 71 — (E18) No. 2:

- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to step 10AP5.
- 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



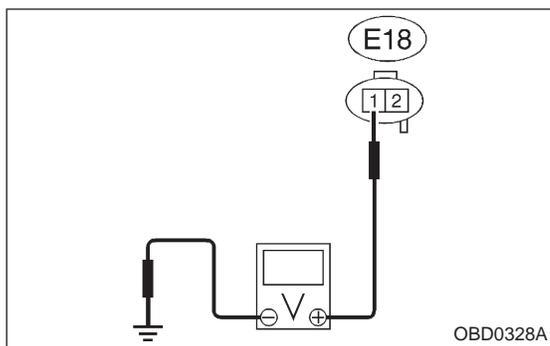
10AP5 CHECK EGR SOLENOID VALVE.

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 10AP6.
- NO** : Replace EGR solenoid valve.

**10AP6****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 **10AP7**.

NO : Repair open circuit in harness between main relay and EGR solenoid valve connector.

10AP7**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.

OBD	(FB1)
P0420	<CAT>

OBD0329

AQ: DTC P0420
— CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD —

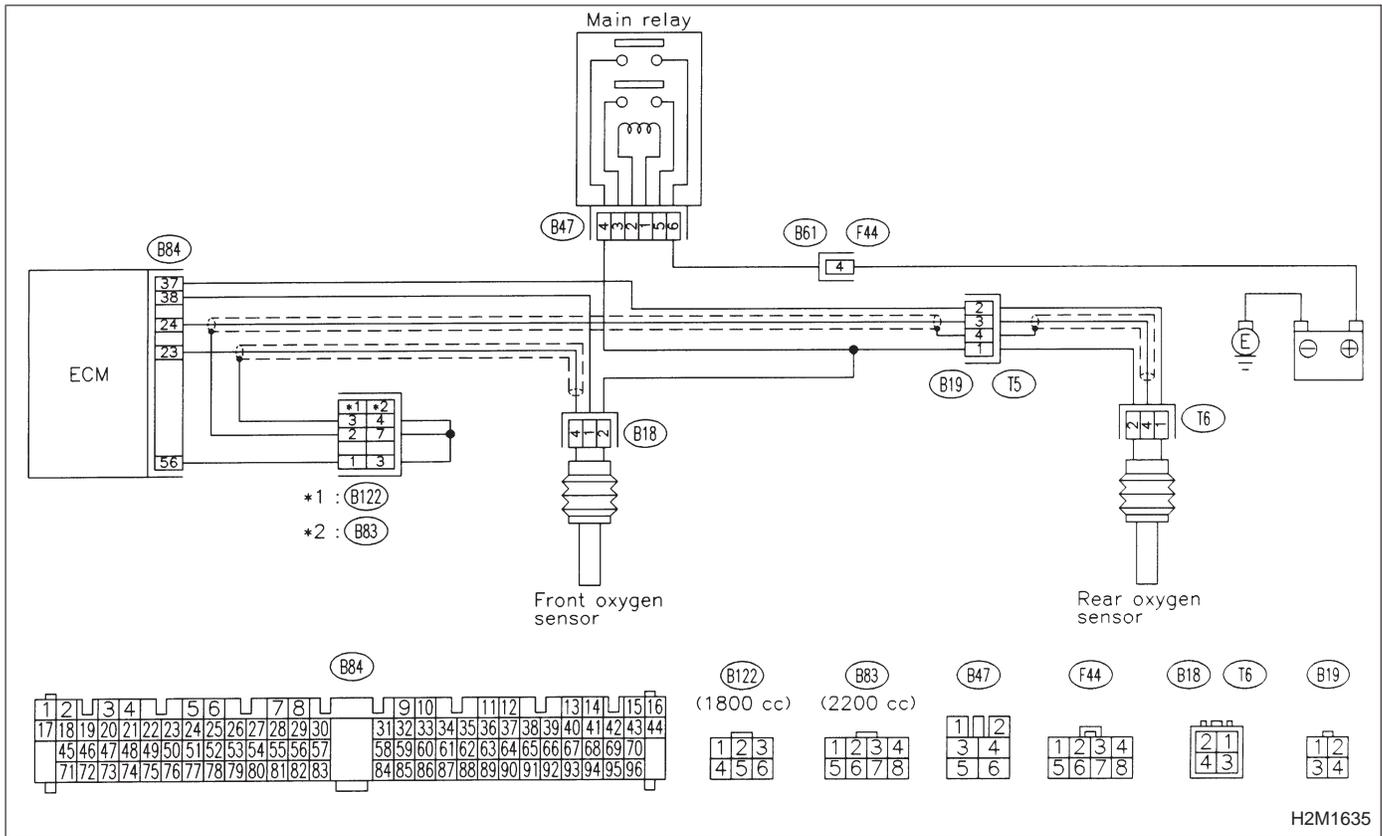
DTC DETECTING CONDITION:

- 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.

WIRING DIAGRAM:



CAUTION:

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

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

10AQ1	CHECK ANY OTHER DTC P0130, P0133, P0135, P0136, P0139 AND P0141 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 [T10A0].>

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.

CHECK : *Is there a fault in exhaust system?*

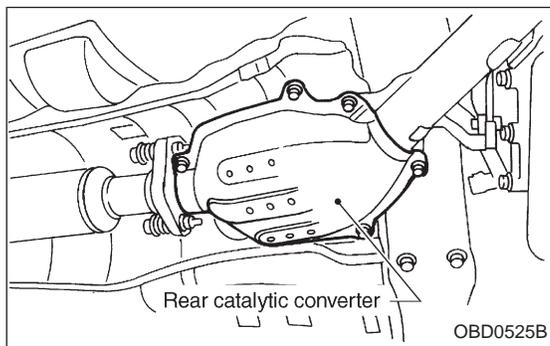
NOTE:

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

YES : Repair or replace exhaust system.

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



10AQ3	CHECK REAR CATALYTIC CONVERTER.
--------------	--

1) 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 next step 2).

2) Remove front catalytic converter.

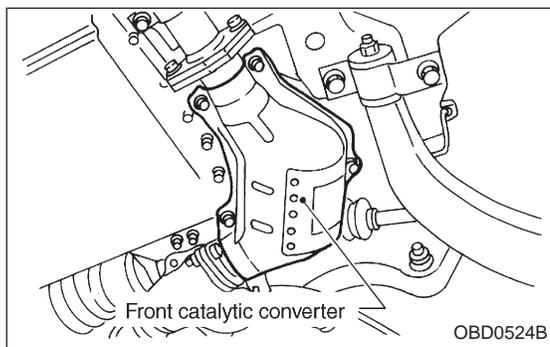
CHECK : *Is there damage at rear face or front face of front catalyst?*

YES : Replace front catalytic converter.

NO : Contact with SOA service.

NOTE:

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



OBD (FB1)
 P0440 <EVAP>
 H2M1365

AR: DTC P0440
— EVAPORATIVE EMISSION CONTROL SYSTEM MALFUNCTION —

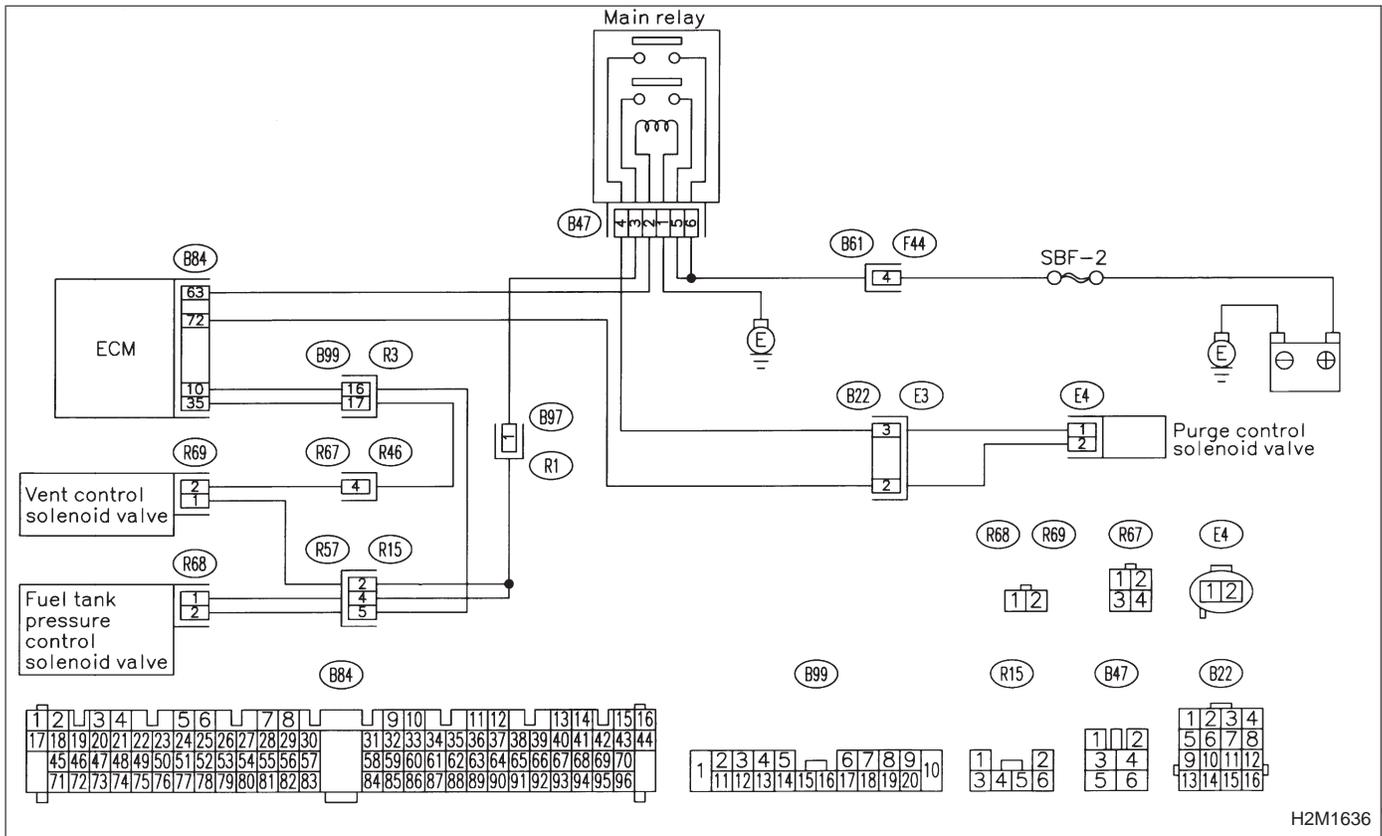
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Gasoline smell

WIRING DIAGRAM:



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

10AR1	CHECK ANY OTHER DTC (BESIDES DTC P0440) 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 [T10A0].>

NO : Go to step **10AR2**.

10AR2	CHECK FUEL FILLER CAP AND FUEL FILLER PIPE.
--------------	--

1) Turn ignition switch to OFF.

2) Open the fuel flap.

CHECK : *Is the fuel filler cap tightened securely?*

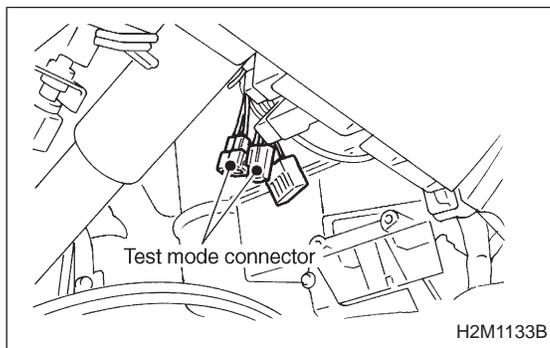
YES : Tighten fuel filler cap securely.

NO : Go to next **CHECK** .

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 **10AR3**.



10AR3	CHECK VENT CONTROL SOLENOID VALVE.
--------------	---

1) Connect test mode connector.

2) Turn ignition switch to ON.

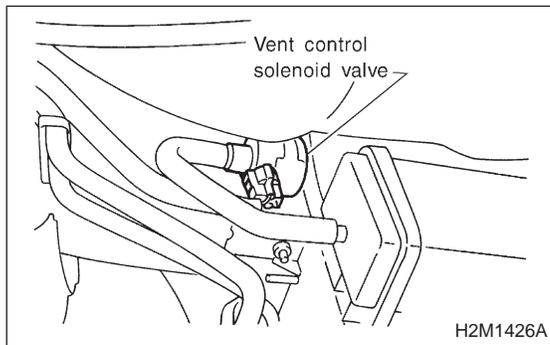
CHECK : *Does vent control solenoid valve produce operating sound?*

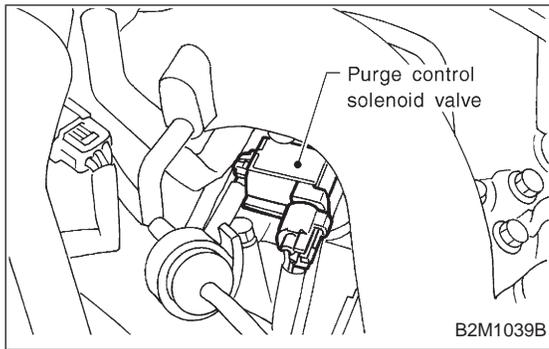
NOTE:

Vent control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD08). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10AR4**.

NO : Replace vent control solenoid valve.





10AR4	CHECK PURGE CONTROL SOLENOID VALVE.
--------------	--

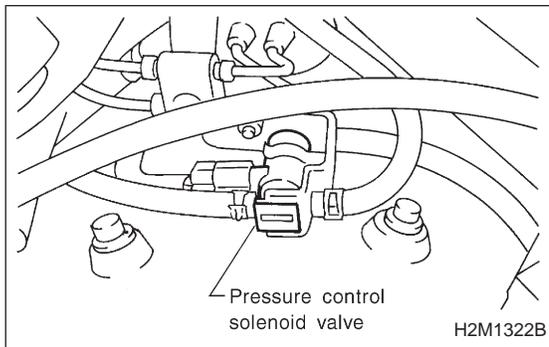
CHECK : *Does purge control solenoid valve produce operating sound?*

NOTE:

Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10AR5**.

NO : Replace purge control solenoid valve.



10AR5	CHECK PRESSURE CONTROL SOLENOID VALVE.
--------------	---

CHECK : *Does pressure control solenoid valve produce operating sound?*

NOTE:

Pressure control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD07). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10AR6**.

NO : Replace pressure control solenoid valve.

10AR6

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 next **CHECK** .**CHECK** : ***Is there any damage at canister?*****YES** : Repair or replace canister.**NO** : Go to next **CHECK** .**CHECK** : ***Is there any damage at fuel tank?*****YES** : Repair or replace fuel tank.**NO** : Go to next **CHECK** .**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:

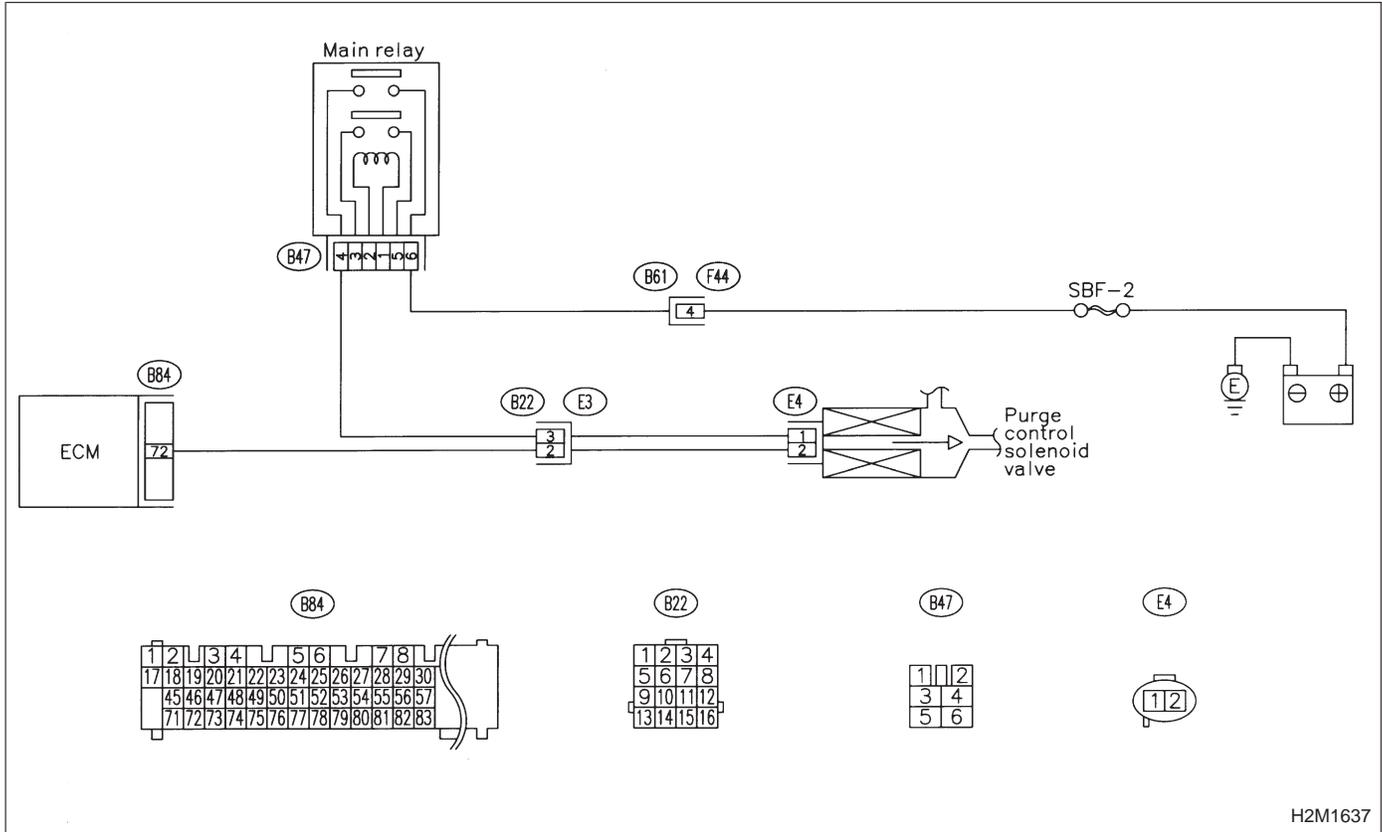
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD	(FB1)
P0441	<CPC_F>
OBD0331	

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

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

WIRING DIAGRAM:



H2M1637

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

10AS1	CHECK DTC P0106, P0107, P0108, P0443, P1102, P1122 OR P1422 ON DISPLAY.
--------------	--

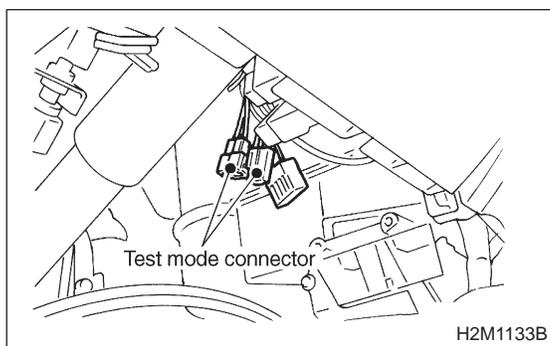
CHECK : *Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0443, P1102, P1122 or P1422?*

YES : Inspect the relevant DTC P0106, P0107, P0108, P0443, P1102, P1122 or P1422 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

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.

CHECK : *Does purge control solenoid valve produce operating sound at about 0.3 Hz?*

NOTE:

Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to next step 4).

NO : Replace purge control solenoid valve.

- 4) 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.

OBD	(FB1)
P0443	<CPC>
OBD0335	

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

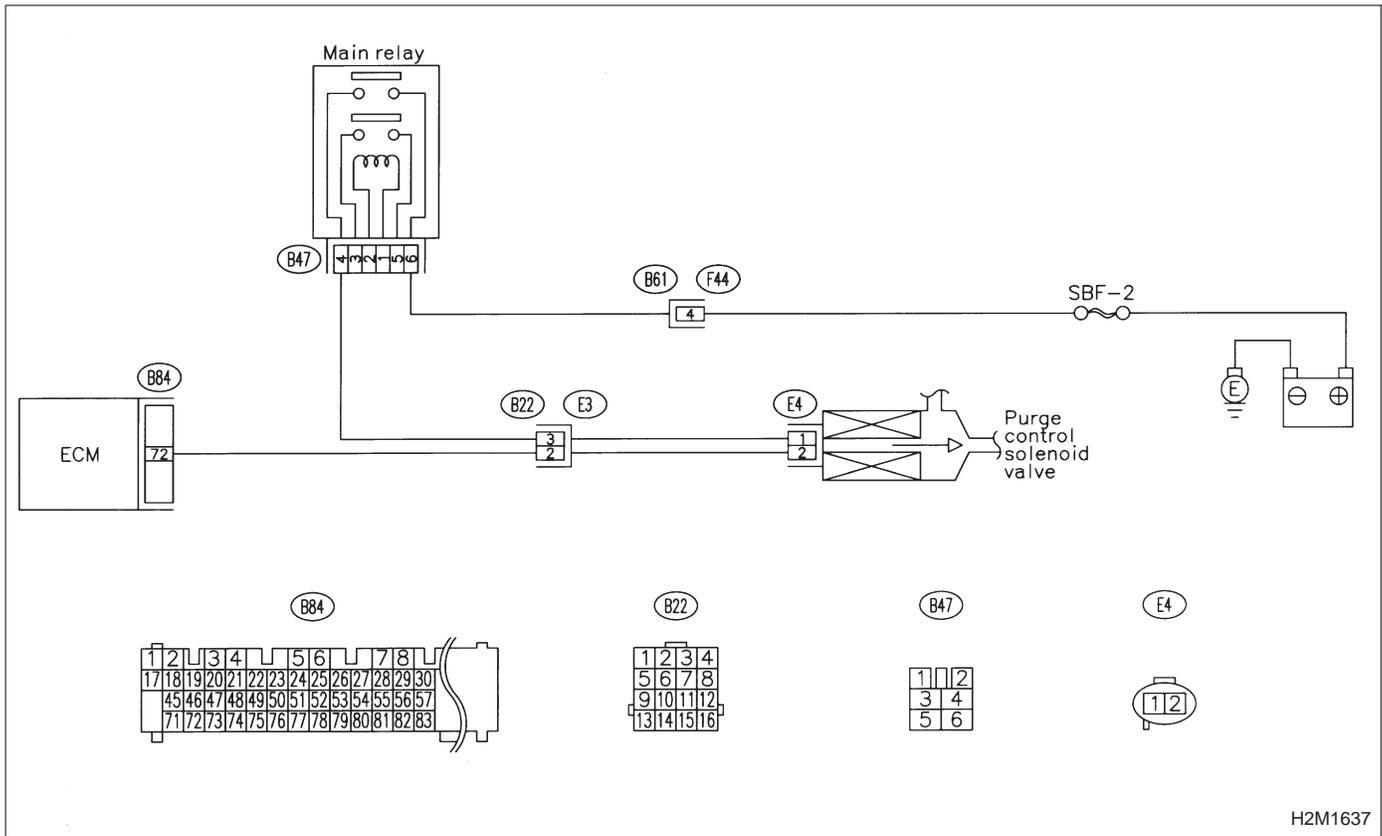
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

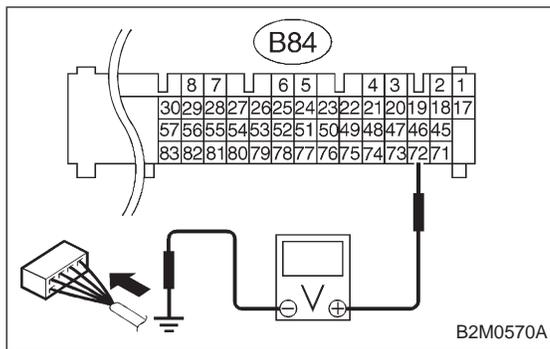
- Erroneous idling

WIRING DIAGRAM:



H2M1637

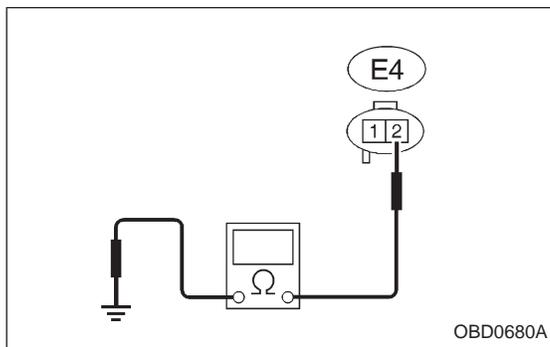
CAUTION:
 After repair or replacement of faulty parts, conduct **CLEAR MEMORY and INSPECTION MODES.**
 <Ref. to 2-7 [T3D0] and [T3E0].>

**10AT1 CHECK OUTPUT SIGNAL FROM ECM.**

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

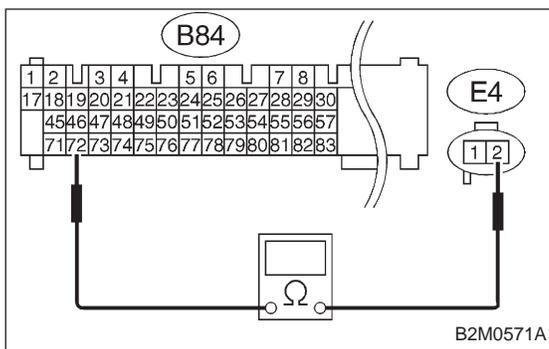
Connector & terminal**(B84) No. 72 (+) — Chassis ground (-):****CHECK** : **Is the voltage more than 10 V?****YES** : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.**NOTE:**

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 next step 4).



4) 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?

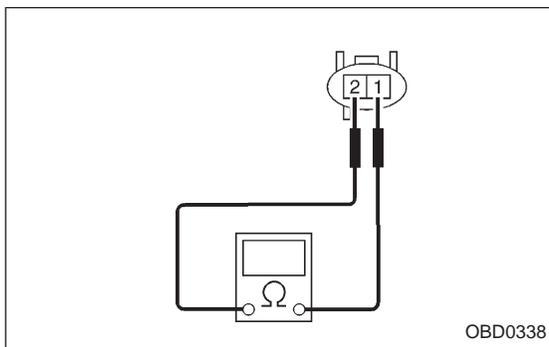
YES : Go to step 10AT3.

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)



10AT3	CHECK PURGE CONTROL SOLENOID VALVE.
--------------	--

- 1) Remove purge control solenoid valve.
- 2) Measure resistance between purge control solenoid valve terminals.

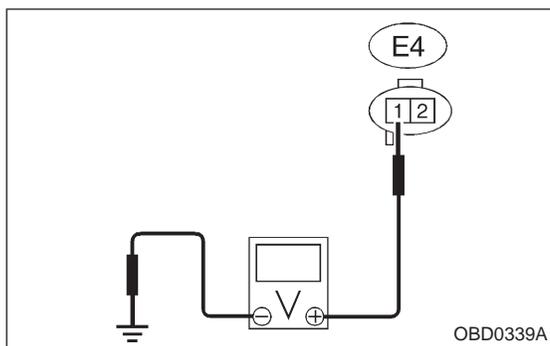
Terminals

No. 1 — No. 2:

CHECK : Is the resistance between 10 and 100 Ω?

YES : Go to step 10AT4.

NO : Replace purge control solenoid valve.

**10AT4****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 **10AT5**.

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

10AT5**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:

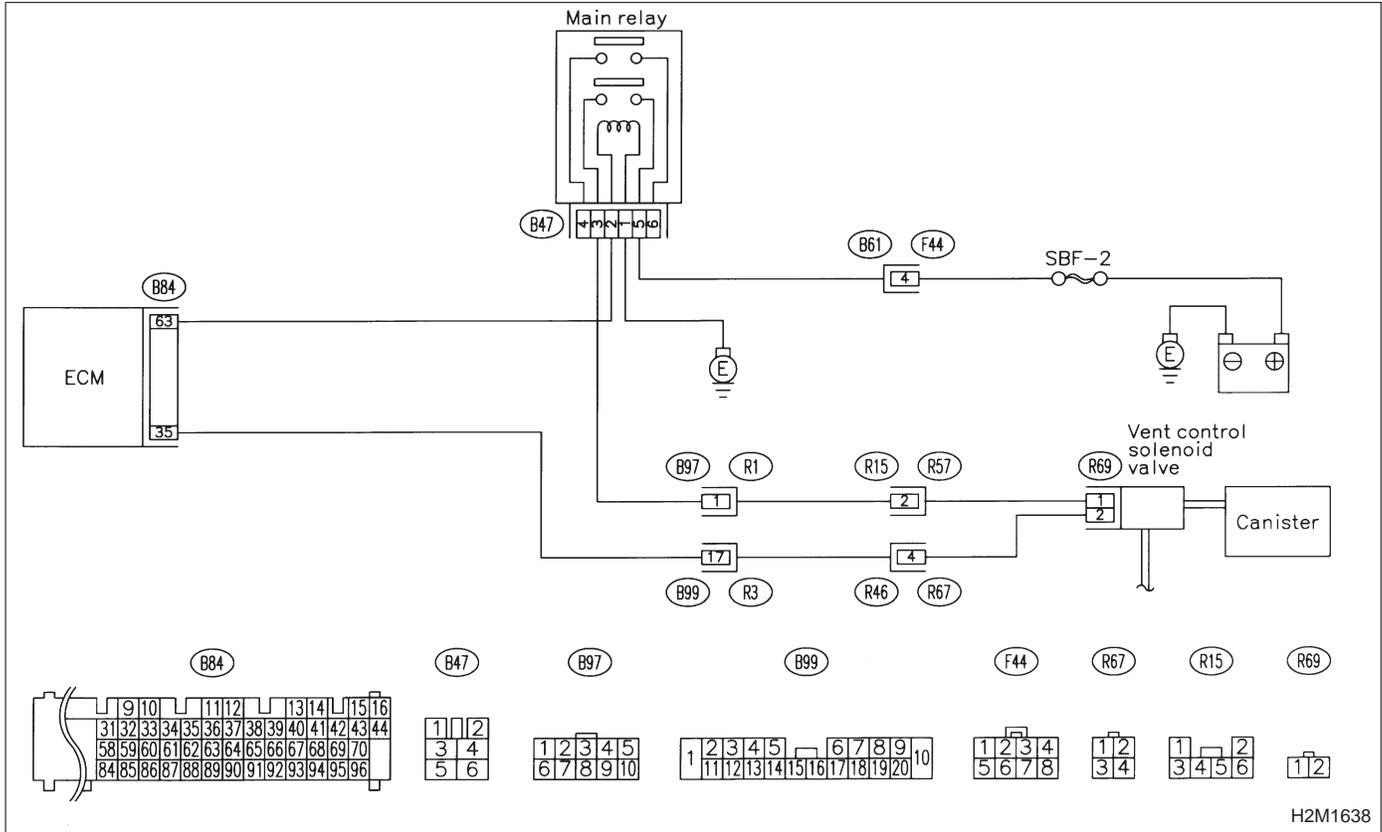
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)
 P0446<VCMSOL_LO>
 B2M1098

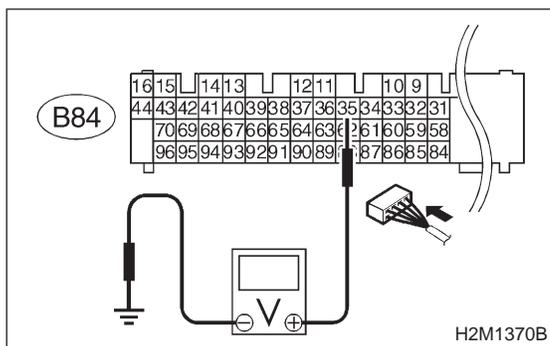
AU: DTC P0446
— EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL LOW INPUT —

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

WIRING DIAGRAM:



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

**10AU1 CHECK OUTPUT SIGNAL FROM ECM.**

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

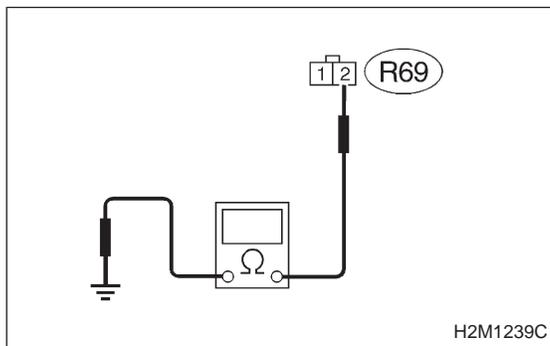
Connector & terminal**(B84) No. 35 (+) — Chassis ground (-):****(CHECK) : Is the voltage more than 10 V?****(YES) : Go to step 10AU2.****(NO) : Go to step 10AU3.****10AU2 CHECK POOR CONTACT.**

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:**

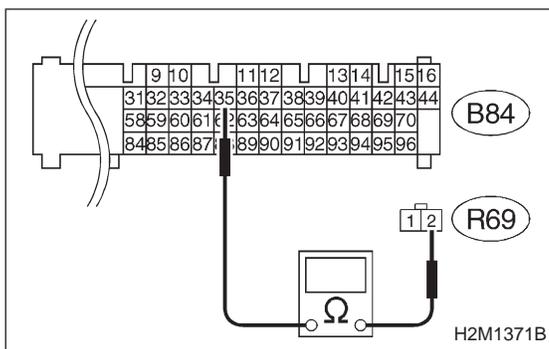
In this case, repair the following:

- Poor contact in vent control solenoid valve connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B97, B99, R15 and R67)

**10AU3 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 next step 4).**



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

Connector & terminal
(B84) No. 35 — (R69) No. 2:

CHECK : Is the resistance less than 1 Ω?

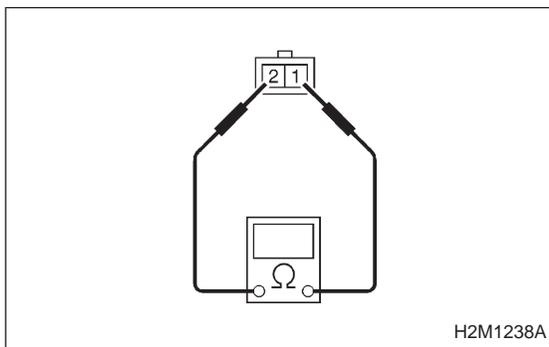
YES : Go to step 10AU4.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and vent control solenoid valve connector
- Poor contact in coupling connectors (B99 and R67)



10AU4	CHECK VENT CONTROL SOLENOID VALVE.
--------------	---

Measure resistance between vent control solenoid valve terminals.

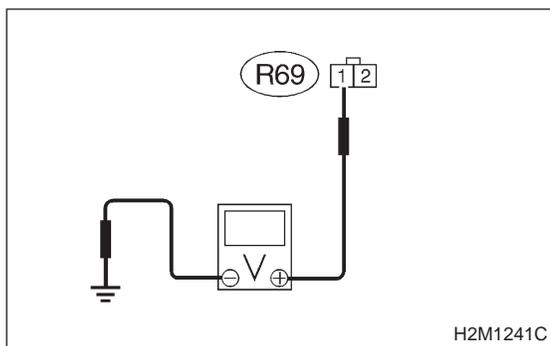
Terminals

No. 1 — No. 2:

CHECK : Is the resistance between 10 and 100 Ω?

YES : Go to step 10AU5.

NO : Replace vent control solenoid valve.

**10AU5****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 **10AU6**.

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 R15)
- Poor contact in main relay connector

10AU6**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:

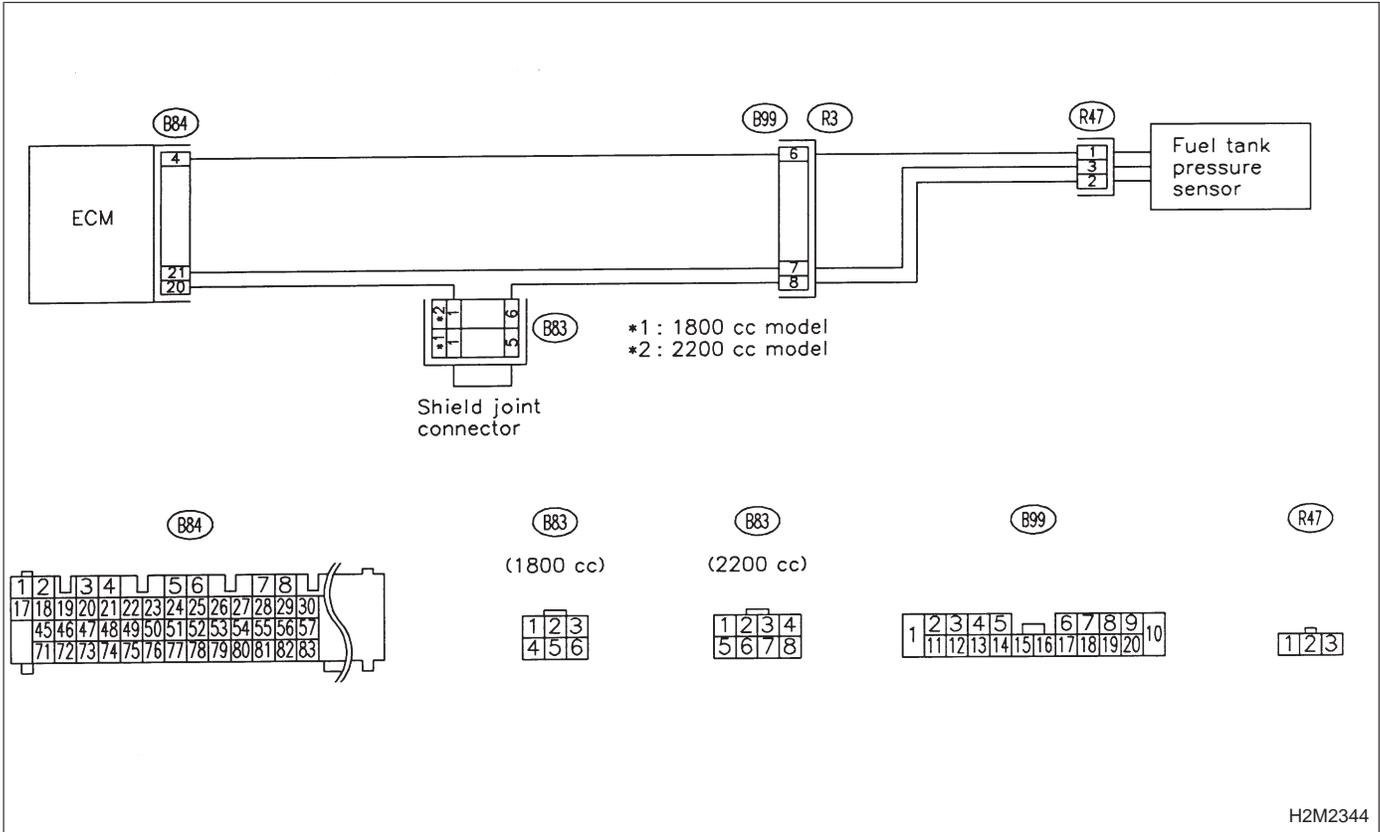
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)
 P0451 <TNKP_F>
 H2M1377

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

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

WIRING DIAGRAM:



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

10AV1**CHECK PRESSURE/VACUUM LINE.****CHECK****: *Is there a fault in 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

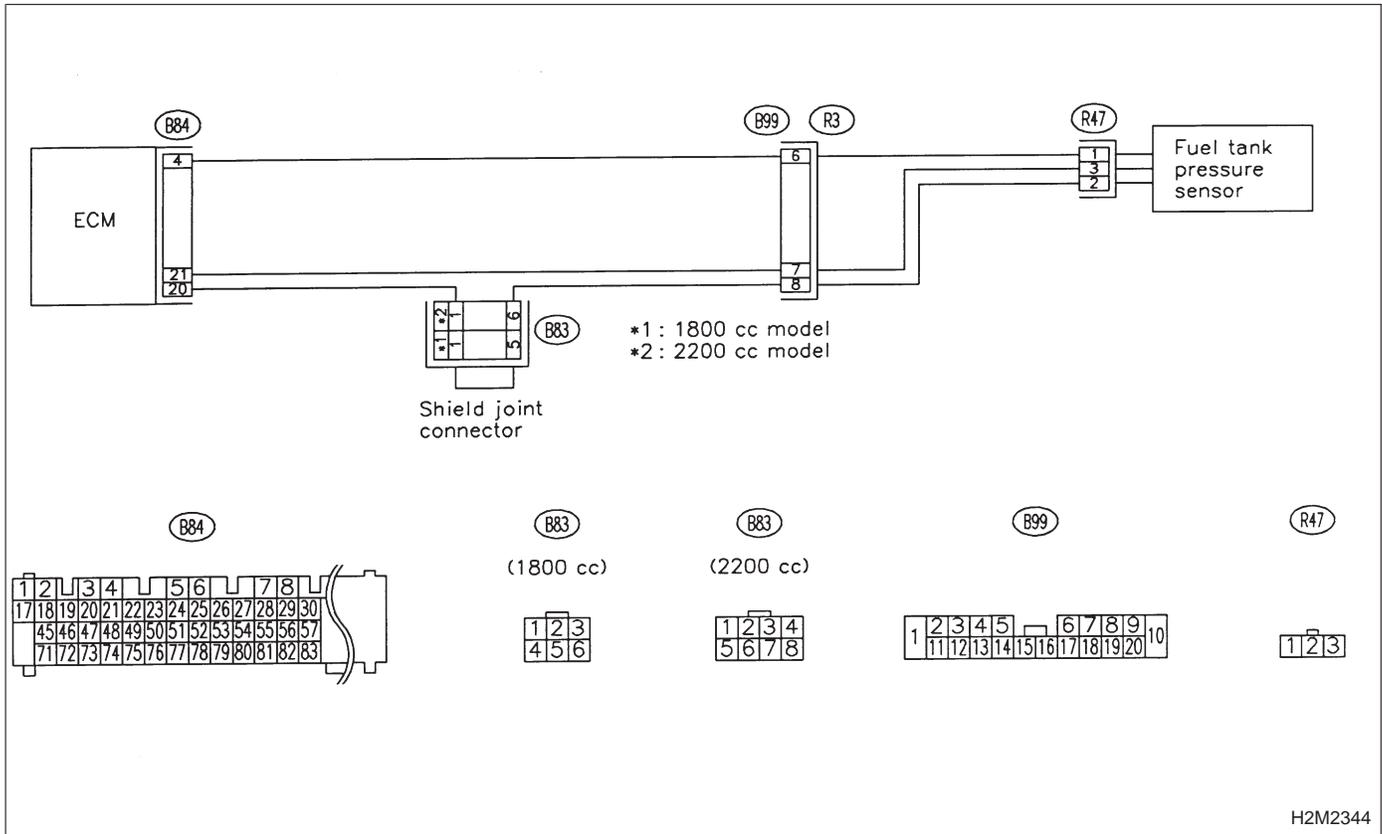
YES**: Repair or replace hoses and pipes.****NO****: Replace fuel tank pressure sensor.**

OBD (FB1)
 P0452 <TNKP_LOW>
 B2M1099

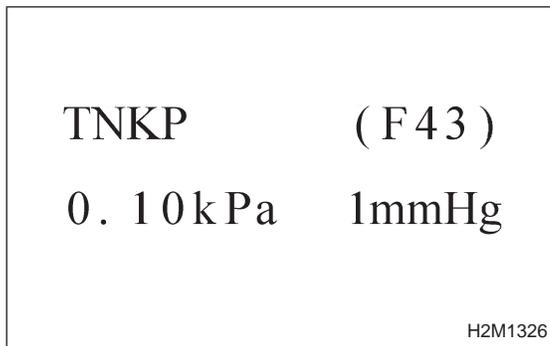
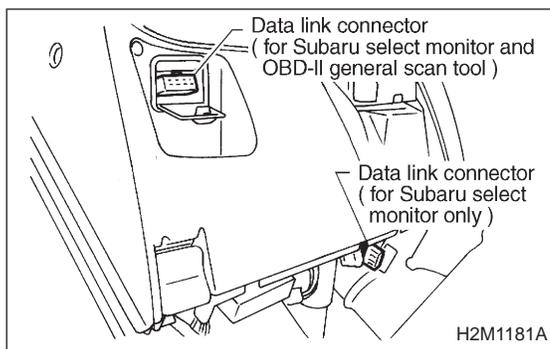
AW: DTC P0452
— EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT
—

DTC DETECTING CONDITION:
 • Immediately at fault recognition

WIRING DIAGRAM:



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

**10AW1****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 on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F43

- F43: Display shows pressure signal value sent from fuel tank pressure sensor.

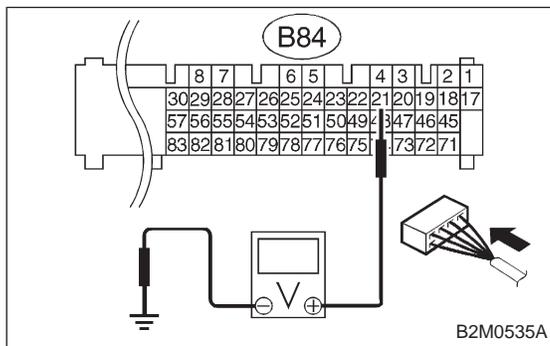
CHECK : *Is the value less than -2.8 kPa in function mode F43?*

YES : Go to step 10AW2.

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

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

**10AW2****CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.**

Measure voltage between ECM connector and chassis ground.

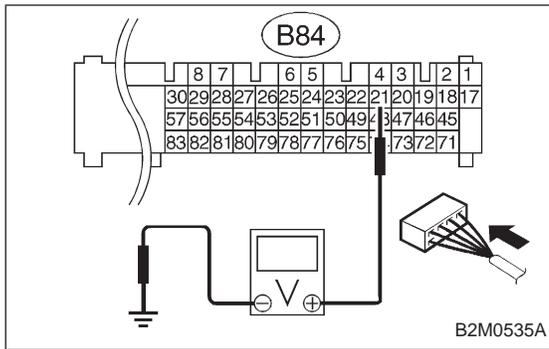
Connector & terminal

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

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

YES : Go to step 10AW4.

NO : Go to step 10AW3.



10AW3 CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

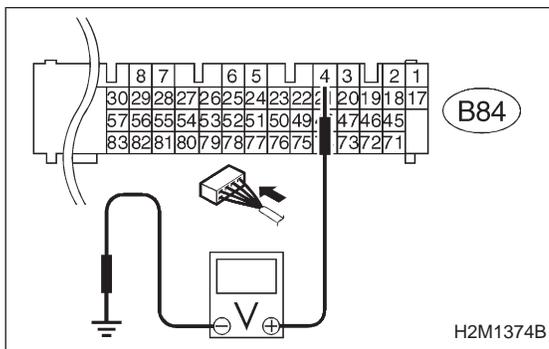
Measure voltage between ECM connector and chassis ground.

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.



10AW4 CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER.)

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 10AW6.

NO : Go to step 10AW5.

TNKP (F43)
0. 10kPa 1mmHg

H2M1326

10AW5 CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data on Subaru Select Monitor.

- Subaru Select Monitor

Designate mode using function key.

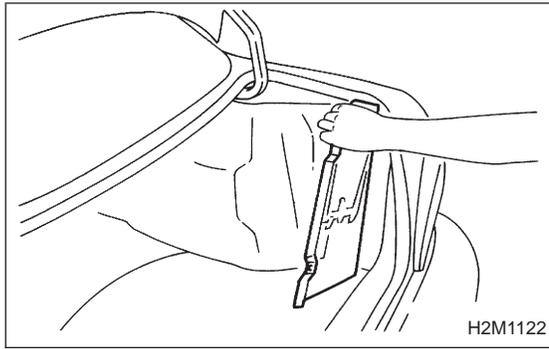
Function mode: F43

- F43: Display shows pressure signal value sent from fuel tank pressure sensor.

CHECK : *Does the value change more than -2.8 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?*

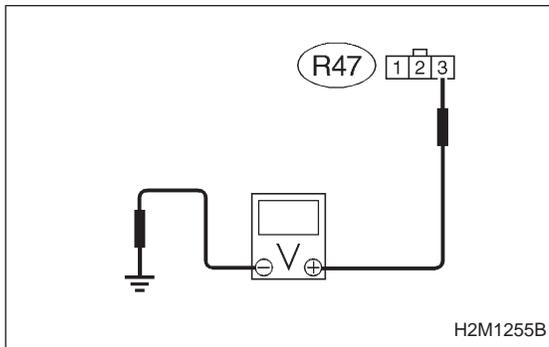
YES : Repair poor contact in ECM connector.

NO : Go to step 10AW6.

**10AW6**

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) Disconnect connector from fuel tank pressure sensor.
- 4) Turn ignition switch to ON.
- 5) 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?*

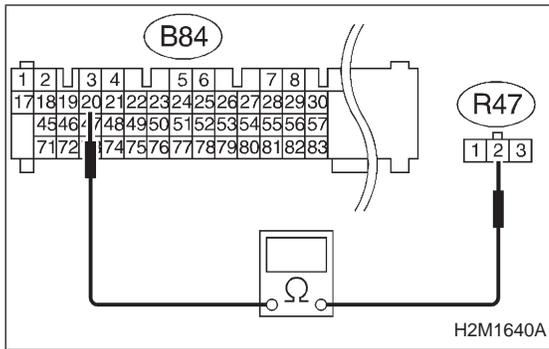
YES : Go to step 10AW7.

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 (B99)



10AW7 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?*

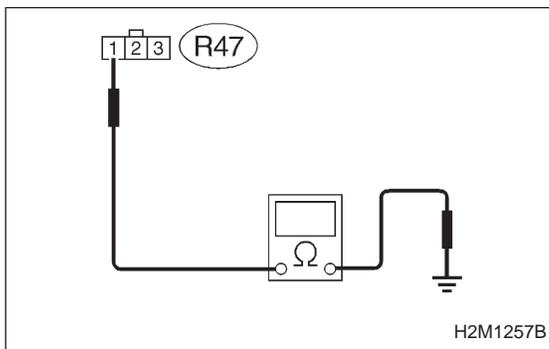
YES : Go to step 10AW8.

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 (B83 and B99)



10AW8 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. 1 — Chassis ground:

CHECK : *Is the resistance more than 500 kΩ?*

YES : Go to step 10AW9.

NO : Repair ground short circuit in harness between ECM and fuel tank pressure sensor connector.

10AW9 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.

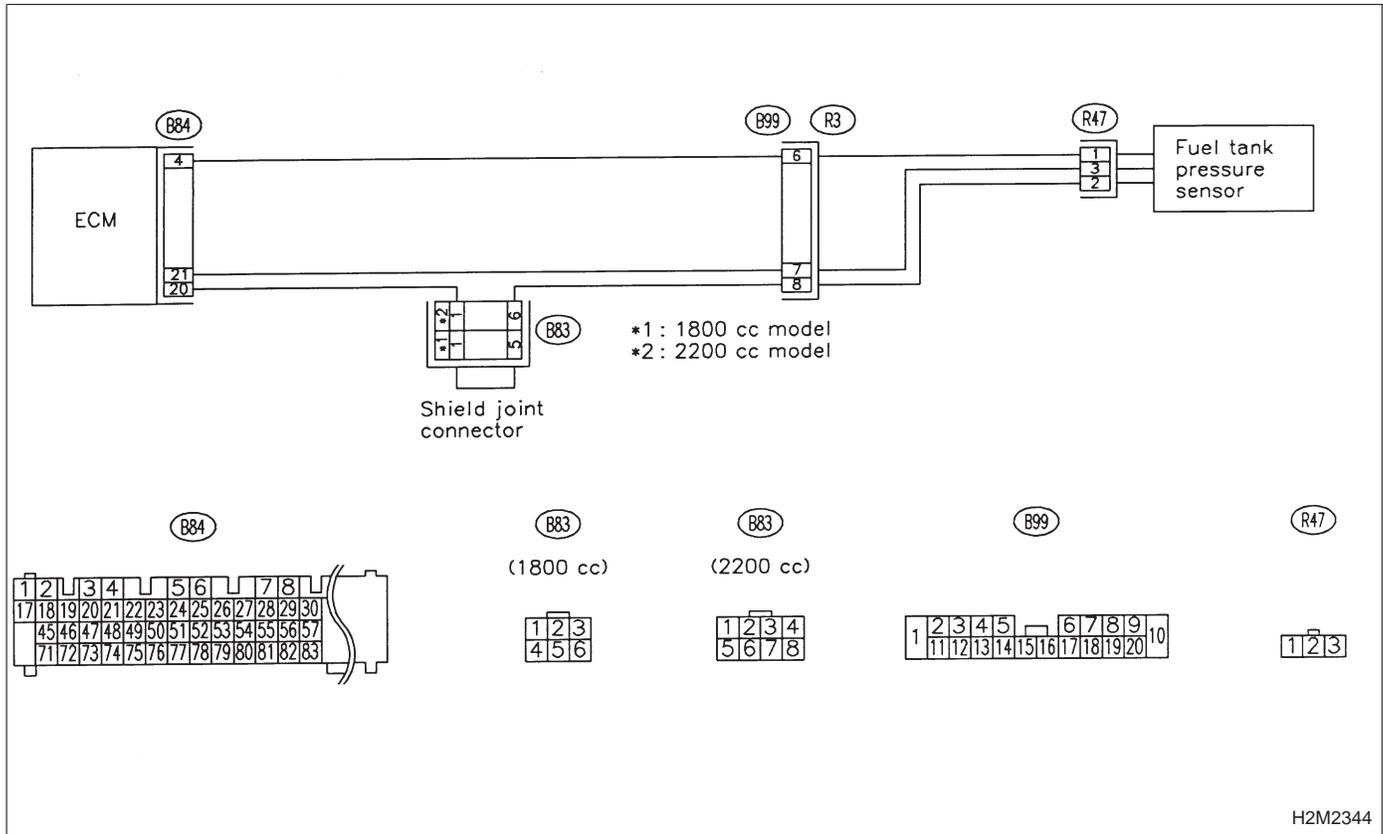
NO : Replace fuel tank pressure sensor.

OBD (FB1)
 P0453 <TNKP_HI>
 B2M1100

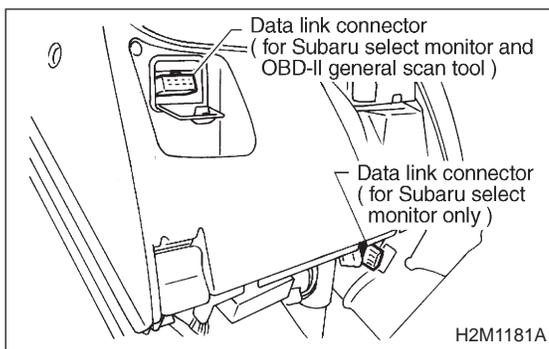
AX: DTC P0453
— EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT
—

DTC DETECTING CONDITION:
 • Immediately at fault recognition

WIRING DIAGRAM:



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



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.

TNKP (F43)
0. 10kPa 1mmHg

H2M1326

- 6) Read the data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor Designate mode using function key.

Function mode: F43

- F43: Display shows pressure signal value sent from fuel tank pressure sensor.

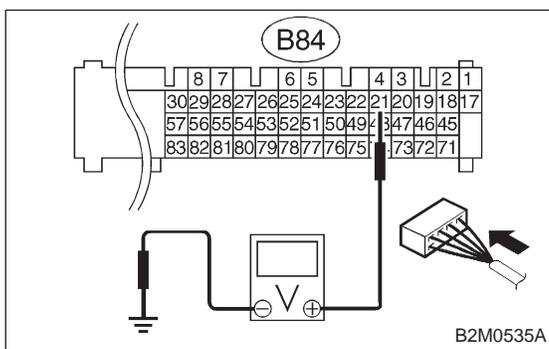
CHECK : *Is the value more than 2.8 kPa in function mode F43?*

YES : Go to step 10AX10.

NO : Go to step 10AX2.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10AX2 CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

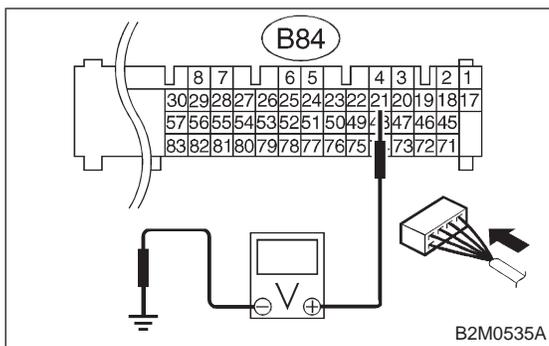
Measure voltage between ECM connector and chassis ground.

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.



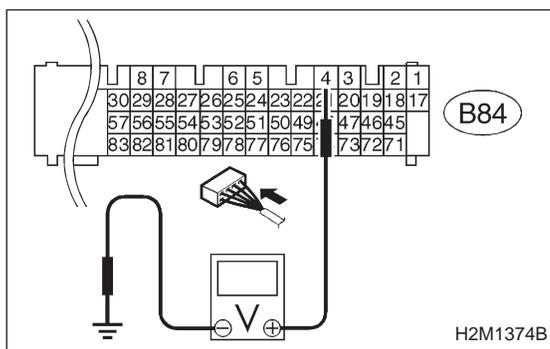
10AX3 CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

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) : Replace ECM.



**10AX4 CHECK INPUT SIGNAL FOR ECM.
(USING VOLTAGE METER.)**

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.

TNKP (F43)

0. 10kPa 1mmHg

H2M1326

**10AX5 CHECK INPUT SIGNAL FOR ECM.
(USING SUBARU SELECT MONITOR.)**

Read data on Subaru Select Monitor.

- Subaru Select Monitor

Designate mode using function key.

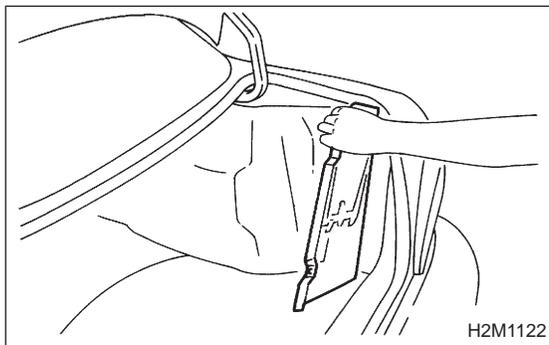
Function mode: F43

- F43: Display shows pressure signal value sent from fuel tank pressure sensor.

(CHECK) : Does the value change more than -2.8 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?

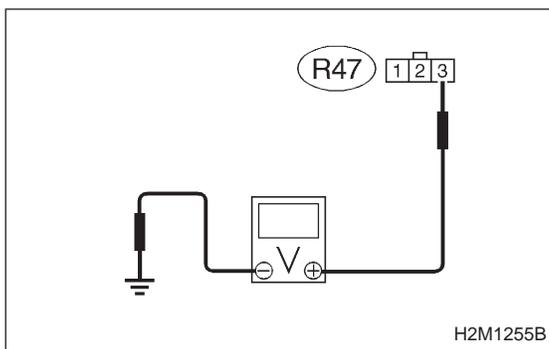
(YES) : Repair poor contact in ECM connector.

(NO) : Go to step 10AX6.



10AX6 CHECK 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) Disconnect connector from fuel tank pressure sensor.
- 4) Turn ignition switch to ON.
- 5) 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?

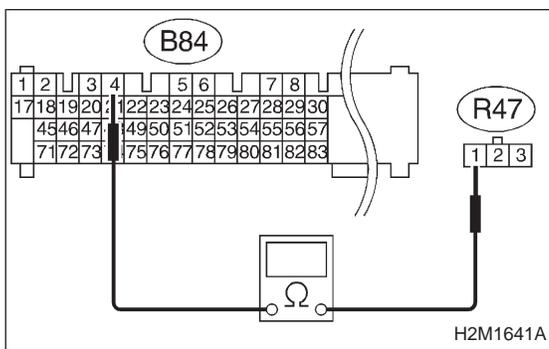
YES : Go to step 10AX7.

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 (B99)



10AX7	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?

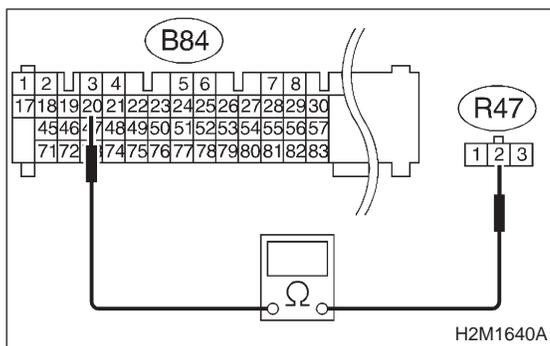
YES : Go to step 10AX8.

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 (B99)

**10AX8****CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.**

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 (B83 and B99)

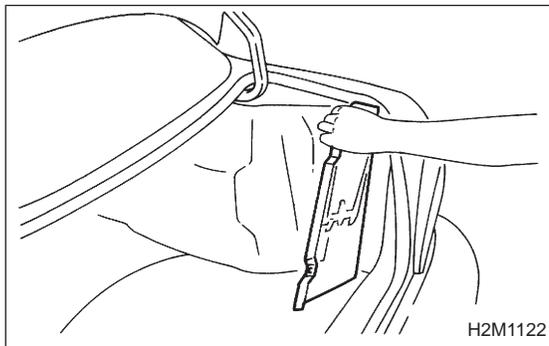
10AX9**CHECK POOR CONTACT.**

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.

**10AX10****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).

TNKP (F 43)

0.10 kPa 1mmHg

H2M1326

- 3) Disconnect connector from fuel tank pressure sensor.
- 4) Remove fuel filler cap.
- 5) Install fuel filler cap.
- 6) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
- 7) Read data on Subaru select monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F43

CHECK : *Is the value more than 2.8 kPa in function mode F43?*

YES : Repair battery short circuit in harness between ECM and fuel tank pressure sensor connector.

NO : Replace fuel tank pressure sensor.

- OBD-II general scan tool

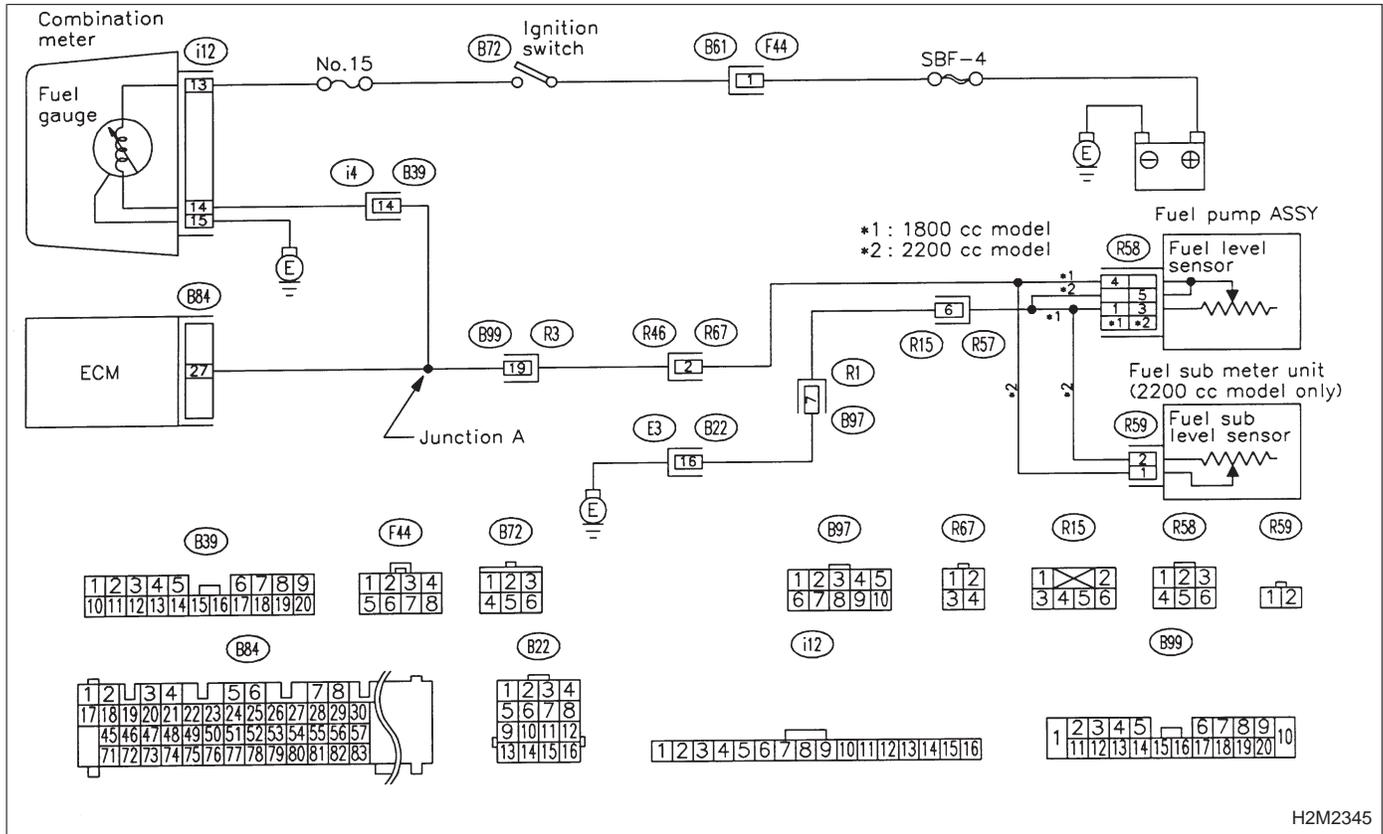
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

OBD (FB1)
 P0461 <FLVL_R>
 B2M1101

AY: DTC P0461
— FUEL LEVEL SENSOR CIRCUIT RANGE/
PERFORMANCE PROBLEM —

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

WIRING DIAGRAM:



H2M2345

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

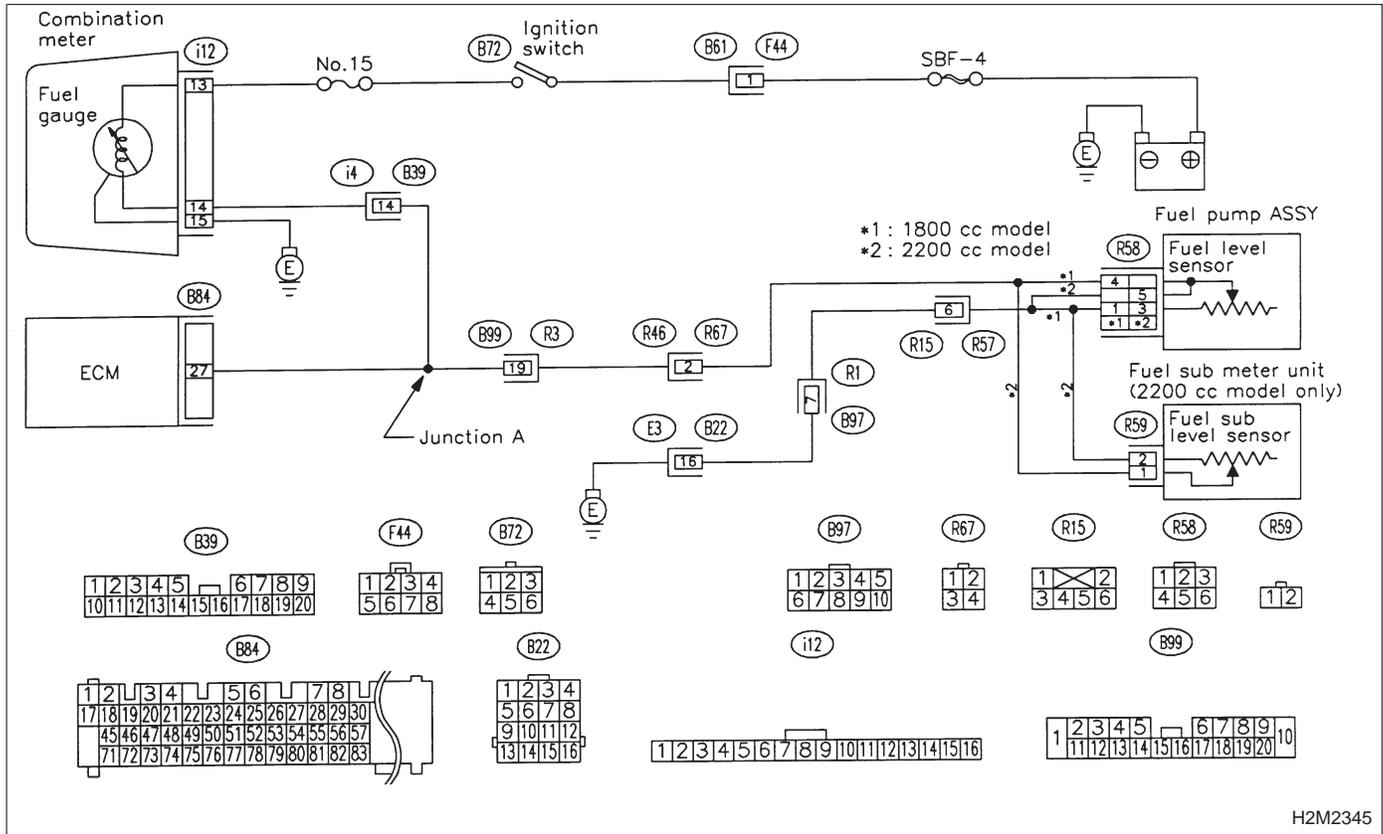
10AY1**CHECK DTC P0462 OR P0463 ON DISPLAY.****CHECK****: Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0462 or P0463?****YES****: Inspect DTC P0462 or P0463 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>****NOTE:****In this case, it is not necessary to inspect this trouble.****NO****: Replace fuel sending unit and fuel sub meter unit.**

OBD (FB1)
 P0462 <FLVL_LOW>
 B2M1102

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

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

WIRING DIAGRAM:



H2M2345

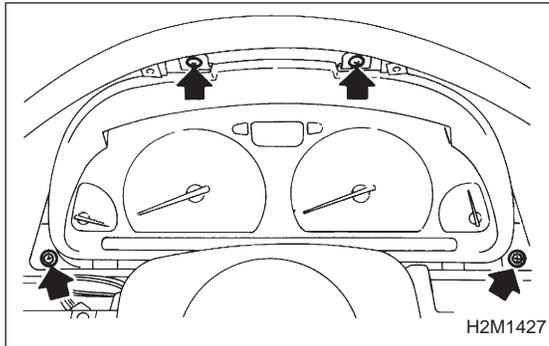
CAUTION:
 After repair or replacement of faulty parts, conduct **CLEAR MEMORY** and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0] and [T3E0].>

10AZ1	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.
--------------	---

CHECK : *Does speedometer and tachometer operate normally?*

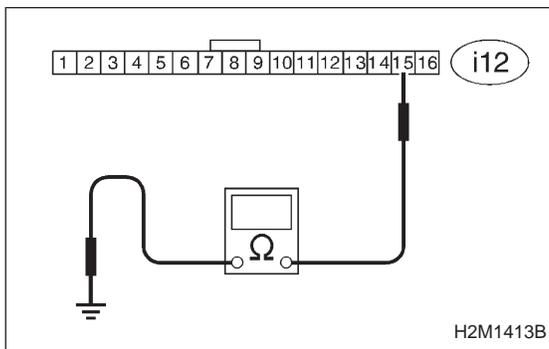
YES : Go to step 10AZ3.

NO : Go to step 10AZ2.



10AZ2	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. 15 — 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:

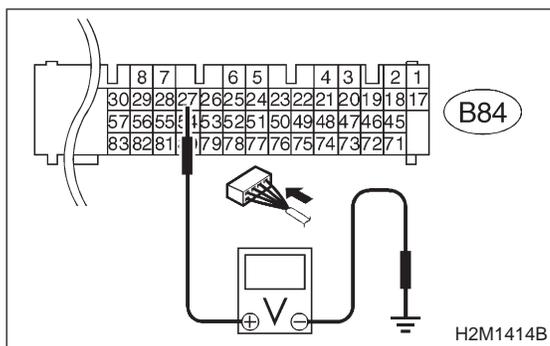
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal

10AZ3	CHECK ENGINE DISPLACEMENT.
--------------	-----------------------------------

CHECK : *Is the engine 1800 cc model?*

YES : Go to step 10AZ4.

NO : Go to step 10AZ10.

**10AZ4****CHECK INPUT SIGNAL FOR ECM.
(USING VOLTAGE METER.)**

- 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 **10AZ6**.**NO** : Go to step **10AZ5**.**FLEVEL (F45)****2.50V**

H2M1327

10AZ5**CHECK INPUT SIGNAL FOR ECM.
(USING SUBARU SELECT MONITOR.)**

Measure voltage between ECM connector and chassis ground.

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?*

- Subaru Select Monitor
- Designate mode using function key.

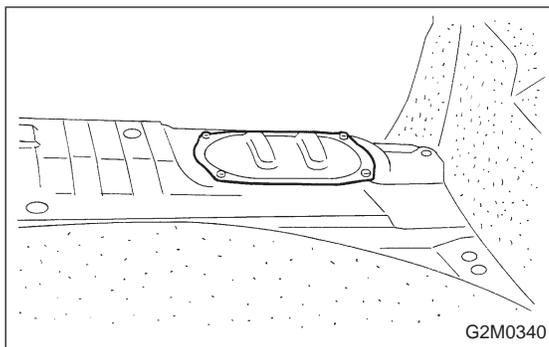
Function mode: F45

- F45: Fuel level sensor output signal is indicated.

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:**

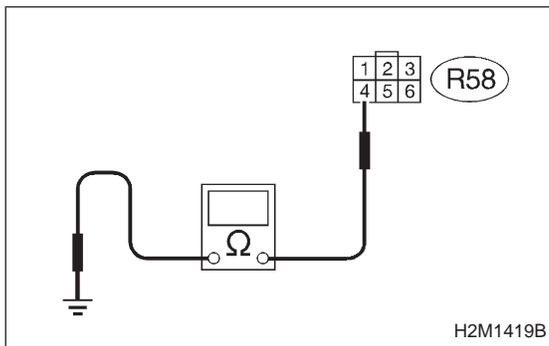
In this case, repair the following:

- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B39, B22, B99, B97, R67 and R15)



10AZ6 CHECK HARNESS BETWEEN ECM, COMBINATION METER AND FUEL PUMP CONNECTOR.

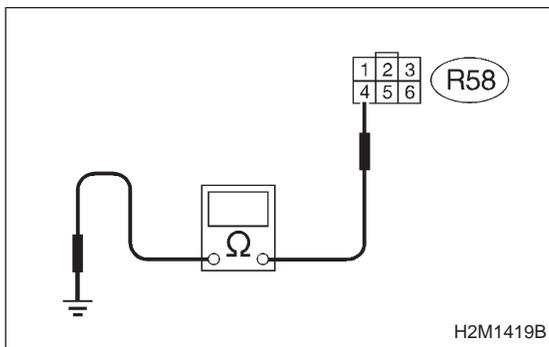
- 1) Turn ignition switch to OFF.
- 2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



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

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

- CHECK** : Is the resistance less than 10 Ω?
- YES** : Go to step 10AZ7.
- NO** : Go to step 10AZ17.

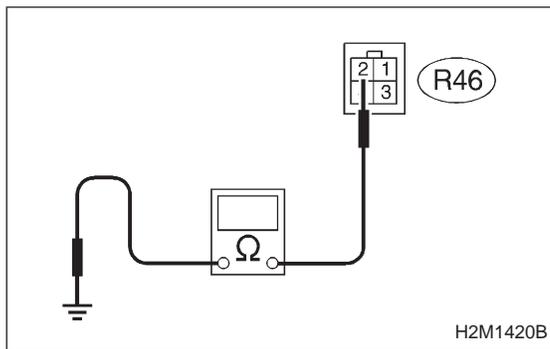


10AZ7 CHECK FUEL TANK CORD.

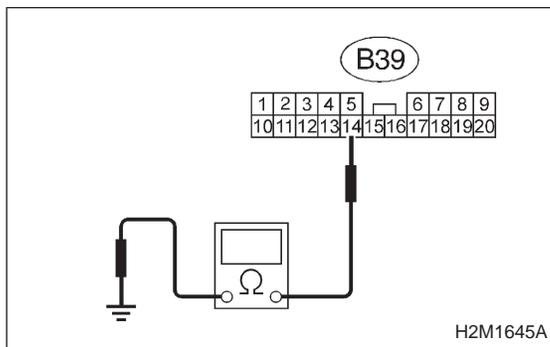
- 1) Separate fuel tank cord connector (R67) and rear wiring harness connector (R46).
- 2) Measure resistance of harness between fuel sub meter unit connector and chassis ground.

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

- CHECK** : Is the resistance less than 10 Ω?
- YES** : Repair ground short circuit in fuel tank cord.
- NO** : Go to step 10AZ8.

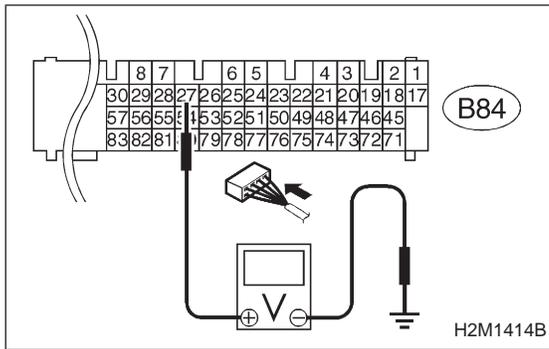
**10AZ8 CHECK REAR WIRING HARNESS.**

- 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**(R46) No. 2 — Chassis ground:****CHECK** : Is the resistance less than 10 Ω?**YES** : Repair ground short circuit in rear wiring harness.**NO** : Go to step 10AZ9.**10AZ9 CHECK BULKHEAD AND INSTRUMENT PANEL WIRING HARNESS.**

- 1) Separate bulkhead wiring harness connector (B39) and instrument panel wiring harness connector (i4).
- 2) Measure resistance of harness between bulkhead wiring harness connector and chassis ground.

Connector & terminal**(B39) No. 14 — 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.

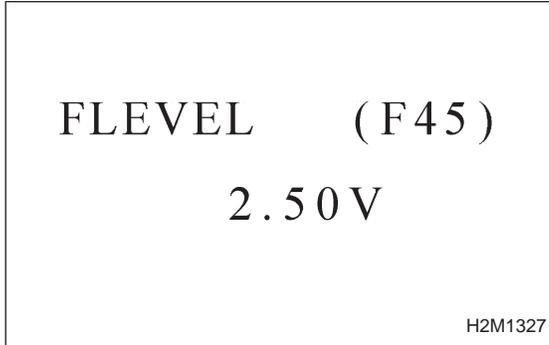


10AZ10 CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER.)

- 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 10AZ12.
- NO** : Go to step 10AZ11.



10AZ11 CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Measure voltage between ECM connector and chassis ground.

- 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?

- Subaru Select Monitor Designate mode using function key.

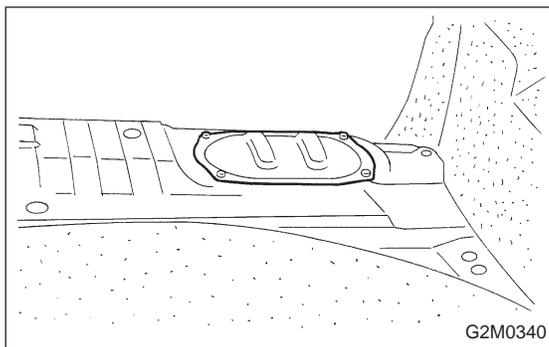
Function mode: F45

- F45: Fuel level sensor output signal is indicated.

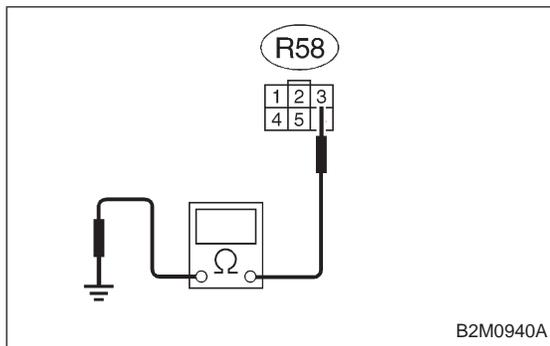
- YES** : Repair poor contact in ECM connector.
- NO** : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
 In this case, repair the following:

- Poor contact in fuel pump connector
- Poor contact in fuel sub meter unit connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B39, B22, B99, B97, R67 and R15)

**10AZ12**
CHECK HARNESS BETWEEN ECM, COMBINATION METER AND FUEL PUMP CONNECTOR.

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

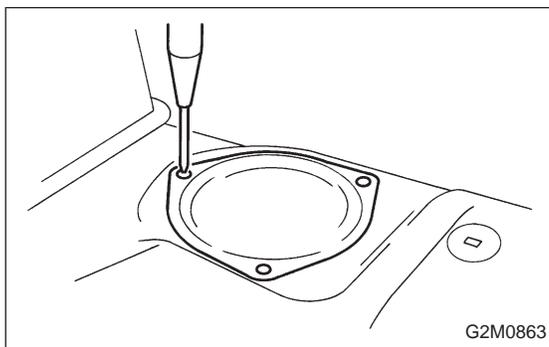


- 3) Disconnect connector from fuel pump.
- 4) Measure resistance of harness between fuel pump connector and chassis ground.

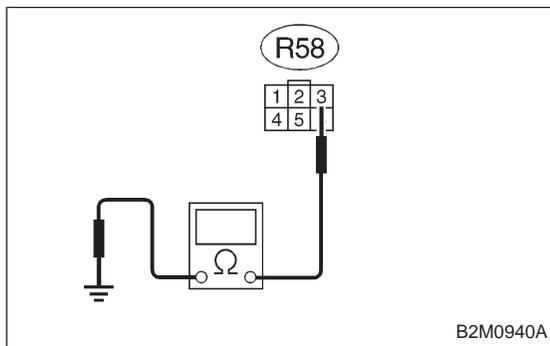
CHECK : **Connector & terminal (R58) No. 3 — Chassis ground:**
Is the resistance less than 10 Ω?

YES : Go to step 10AZ13.

NO : Go to step 10AZ17.

**10AZ13**
CHECK HARNESS BETWEEN FUEL PUMP AND FUEL SUB METER UNIT CONNECTOR.

- 1) Remove service hole cover located on the left rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).

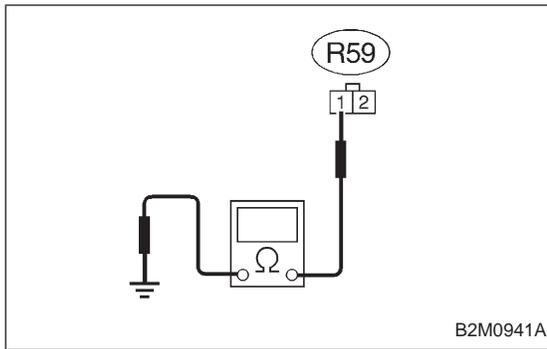


- 2) Disconnect connector from fuel sub meter unit.
- 3) Measure resistance of harness between fuel pump connector and chassis ground.

CHECK : **Connector & terminal (R58) No. 3 — Chassis ground:**
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 10AZ14.

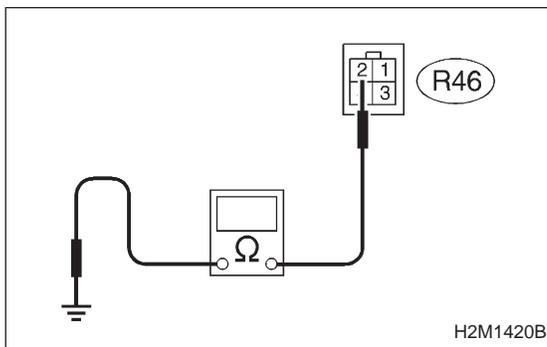
**10AZ14 CHECK FUEL TANK CODE.**

- 1) Separate fuel tank cord connector (R67) and rear wiring harness connector (R46).
- 2) Measure resistance of harness between fuel sub meter unit connector and chassis ground.

CHECK : **Connector & terminal (R59) No. 1 — Chassis ground:**
Is the resistance less than 10 Ω?

YES : Repair ground short circuit in fuel tank cord.

NO : Go to step **10AZ15**.

**10AZ15 CHECK REAR WIRING HARNESS.**

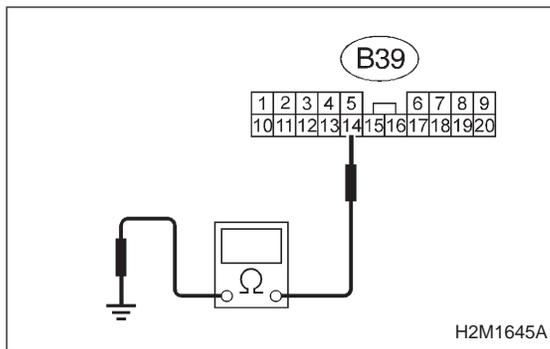
- 1) Separate rear wiring harness connector (R3) and bulk-head wiring harness connector (B99).
- 2) Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal (R46) No. 2 — Chassis ground:

CHECK : **Is the resistance less than 10 Ω?**

YES : Repair ground short circuit in rear wiring harness.

NO : Go to step **10AZ16**.



10AZ16 CHECK BULKHEAD AND INSTRUMENT PANEL WIRING HARNESS.

- 1) Separate bulkhead wiring harness connector (B39) and instrument panel wiring harness connector (i4).
- 2) Measure resistance of harness between bulkhead wiring harness connector and chassis ground.

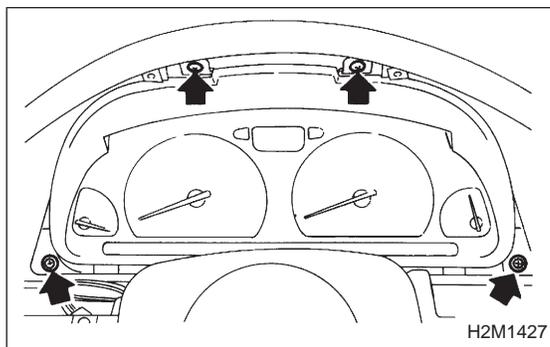
Connector & terminal

(B39) No. 14 — Chassis ground:

CHECK : Is the resistance less than 10 Ω ?

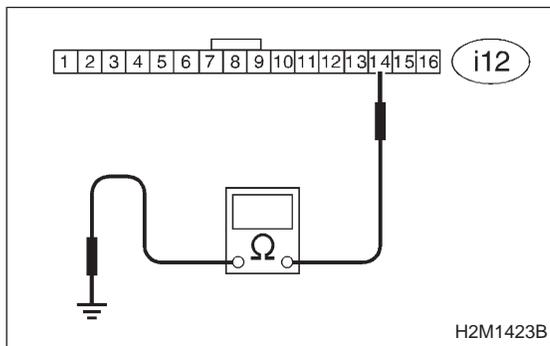
YES : Repair ground short circuit in bulkhead wiring harness.

NO : Repair ground short circuit in instrument panel wiring harness.



10AZ17 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

(i12) No. 14 — Chassis ground:

Is the resistance less than 200 Ω ?

YES : Go to step 10AZ18.

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 (B39)

10AZ18 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 **10AZ19**.

NO : Tighten fuel meter installation screw securely.

10AZ19 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.

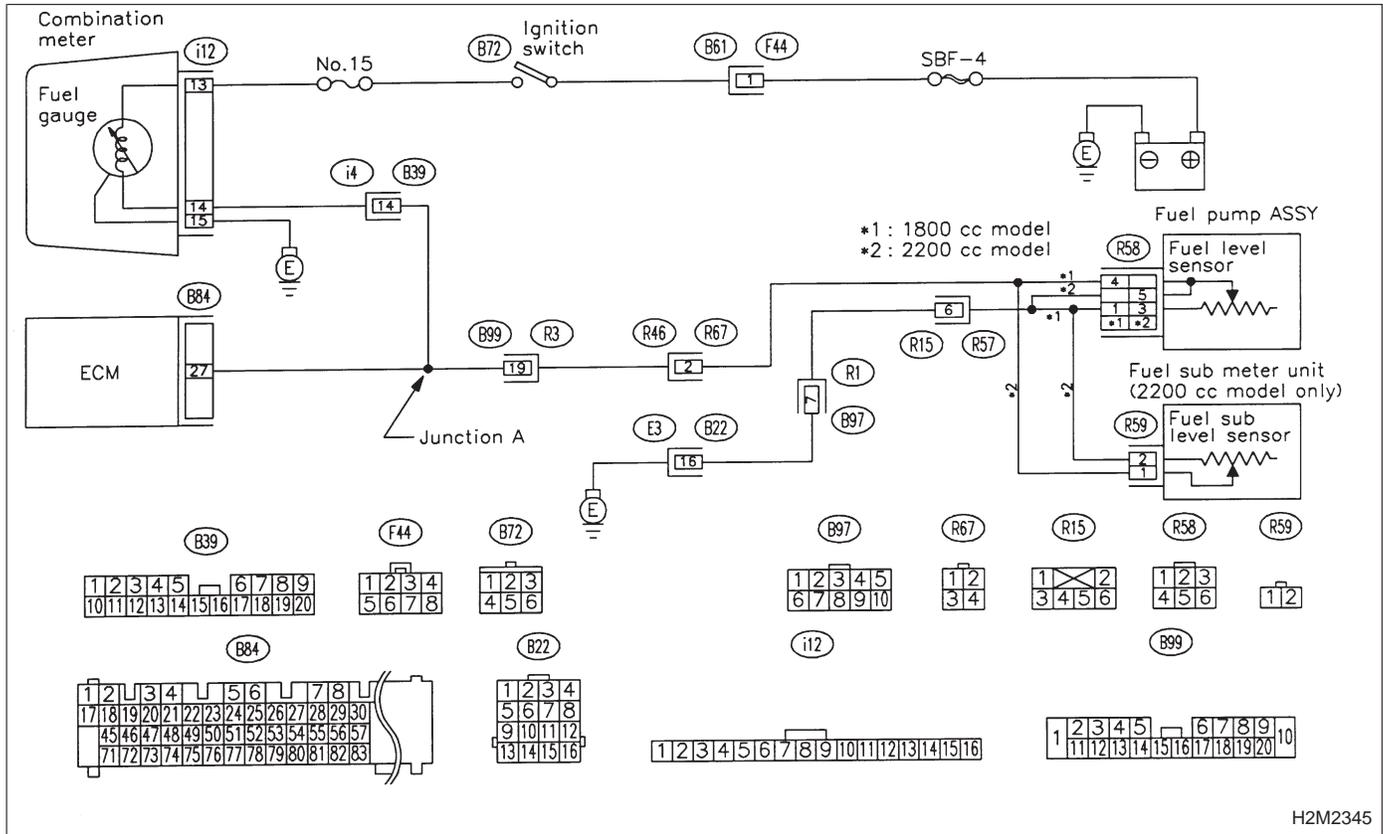
NO : Replace fuel meter assembly.

OBD (FB1)
 P0463 <FLVL_HI>
 B2M1103

**BA: DTC P0463
 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —**

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

WIRING DIAGRAM:



H2M2345

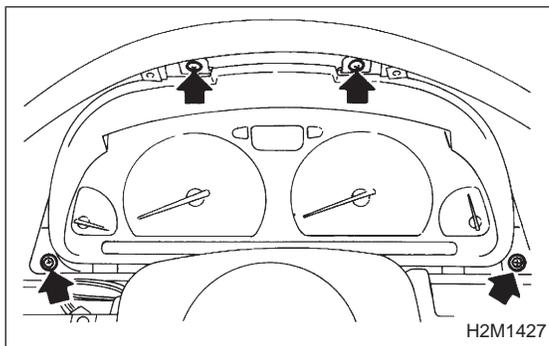
CAUTION:
 After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
 <Ref. to 2-7 [T3D0] and [T3E0].>

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

CHECK : Does speedometer and tachometer operate normally?

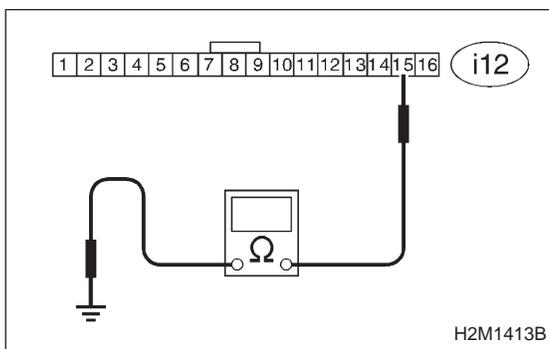
YES : Go to step 10BA3.

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. 15 — 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:

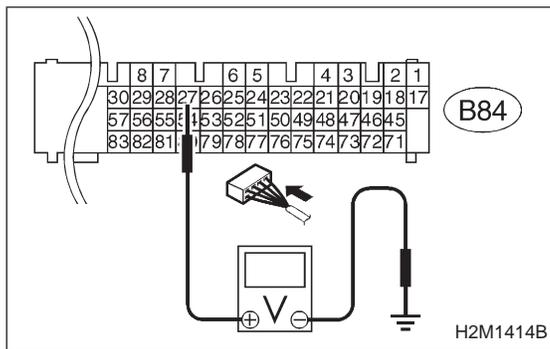
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal

10BA3	CHECK ENGINE DISPLACEMENT.
--------------	-----------------------------------

CHECK : Is the engine 1800 cc model?

YES : Go to step 10BA4.

NO : Go to step 10BA9.

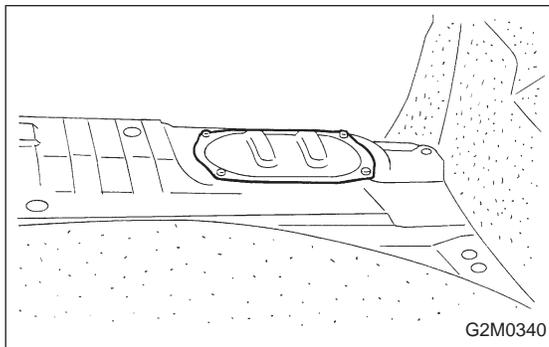
**10BA4 CHECK INPUT SIGNAL FOR ECM.**

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

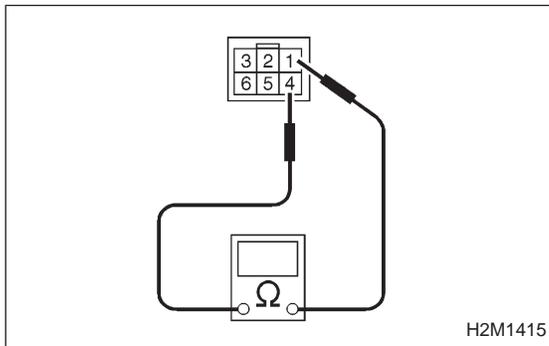
Connector & terminal**(B84) No. 27 (+) — Chassis ground (-):****(CHECK) : Is the voltage more than 4.75 V?****(YES) : Go to step 10BA5.****(NO) : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.****NOTE:**

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 (B39, B22, B99, B97, R67 and R15)

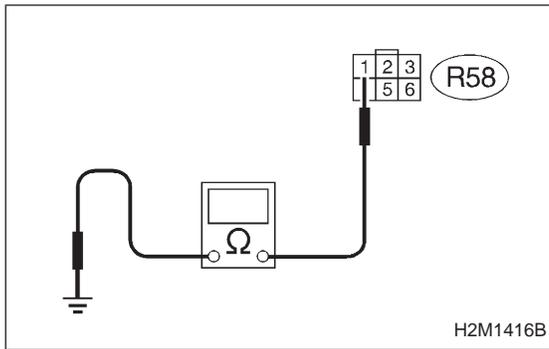
**10BA5 CHECK FUEL LEVEL SENSOR.**

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



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

Terminals**No. 1 — No. 4:****(CHECK) : Is the resistance less than 100 Ω?****(YES) : Go to step 10BA6.****(NO) : Replace fuel sending unit.**



10BA6 CHECK GROUND CIRCUIT OF FUEL LEVEL SENSOR.

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

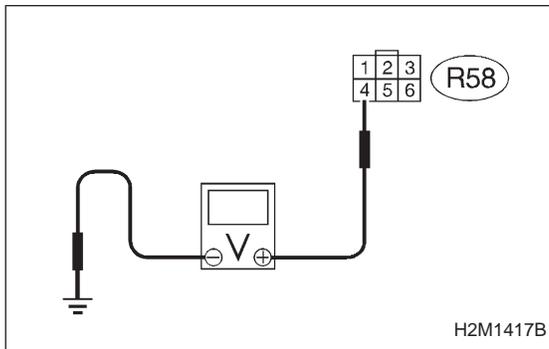
Connector & terminal
(R58) No. 1 — Chassis ground:
Is the resistance less than 5 Ω?

- YES** : Go to step **10BA7**.
- 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 (R15, B97 and B22)



10BA7 CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONNECTOR.

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

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

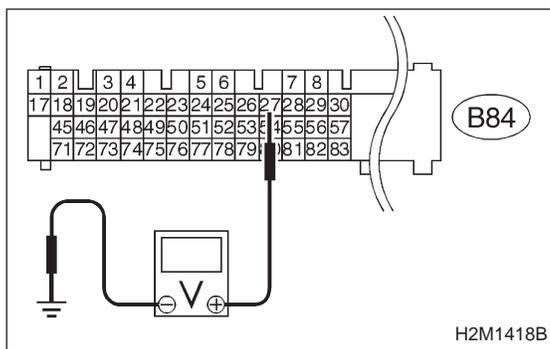
- CHECK** : **Is the voltage less than 1 V?**
- YES** : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between fuel pump connector and junction A on rear wiring harness
- Poor contact in fuel pump connector
- Poor contact in coupling connector (R67)

- NO** : Go to step **10BA8**.


10BA8 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:
CHECK : *Is the voltage less than 1 V?*
YES : Repair harness and connector.

NOTE:

In this case, repair the following:

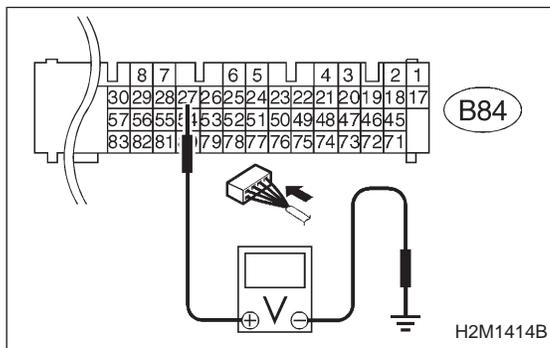
- Open circuit in harness between ECM connector and junction A on rear wiring harness
- Poor contact in coupling connector (B99)

NO : Repair connector.

NOTE:

In this case, repair the following:

- Poor contact in fuel pump connector
- Poor contact in ECM connector


10BA9 CHECK INPUT SIGNAL FOR ECM.

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

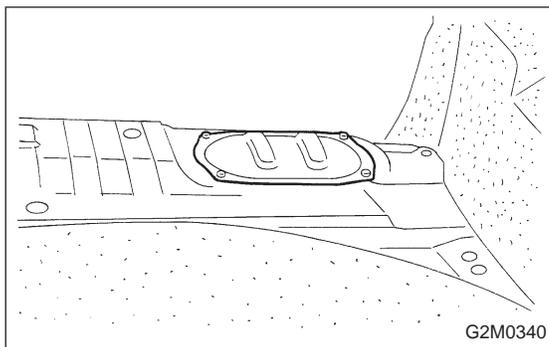
CHECK : **Connector & terminal**
(B84) No. 27 (+) — Chassis ground (-):
Is the voltage more than 4.75 V?
YES : Go to step 10BA10.

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:

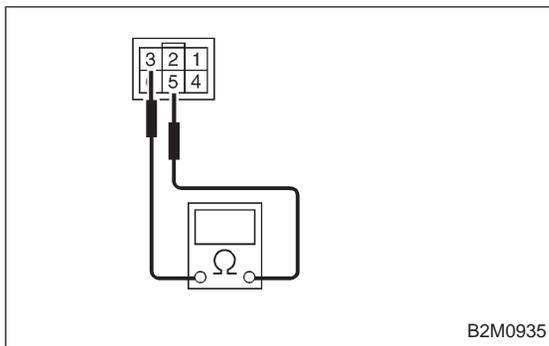
In this case, repair the following:

- Poor contact in fuel pump connector
- Poor contact in fuel sub meter unit connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connector (i3, B99, B22, B98 and R57)



10BA10 CHECK FUEL LEVEL SENSOR.

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

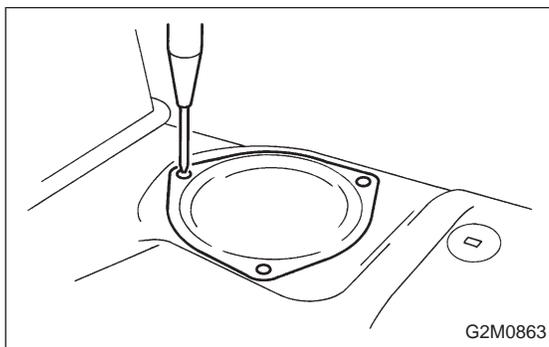


- 3) Disconnect connector from fuel pump.
- 4) Measure resistance between connector terminals of fuel pump.

CHECK : *Terminals No. 3 — No. 5:*
Is the resistance less than 100 Ω?

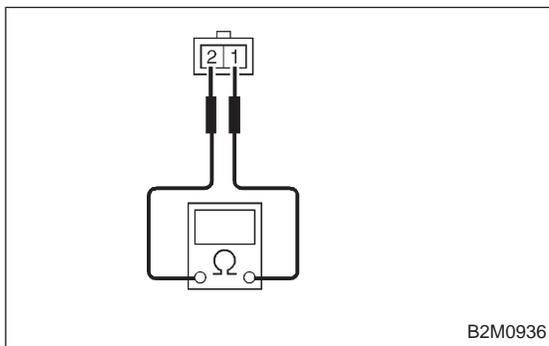
YES : Go to step 10BA11.

NO : Replace fuel sending unit.



10BA11 CHECK FUEL SUB LEVEL SENSOR.

- 1) Remove service hole cover located on the left rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).

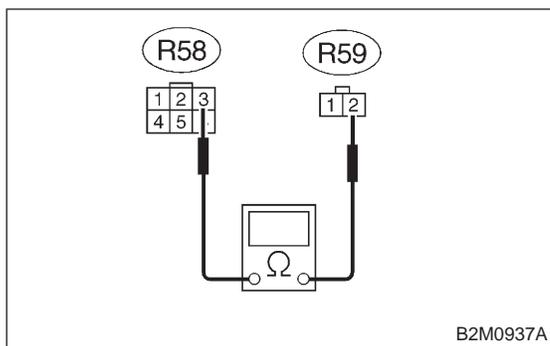


- 2) Disconnect connector from fuel sub meter unit.
- 3) Measure resistance between connector terminals of fuel sub meter unit.

CHECK : *Terminals No. 1 — No. 2:*
Is the resistance less than 100 Ω?

YES : Go to step 10BA12.

NO : Replace fuel sub meter unit.



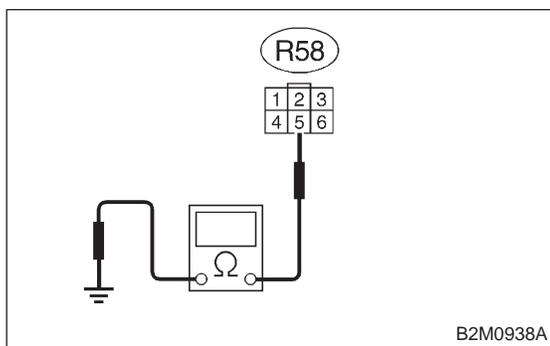
10BA12 CHECK HARNESS BETWEEN FUEL PUMP AND FUEL SUB METER UNIT CONNECTOR.

Measure resistance of harness between fuel pump and fuel sub meter unit connector.

CHECK : **Connector & terminal (R58) No. 3 — (R59) No. 2:**
Is the resistance less than 1 Ω?

YES : Go to step **10BA13**.

NO : Repair open circuit in harness between fuel pump and fuel sub meter unit connector.



10BA13 CHECK GROUND CIRCUIT OF FUEL LEVEL SENSOR.

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

CHECK : **Connector & terminal (R58) No. 5 — Chassis ground:**
Is the resistance less than 5 Ω?

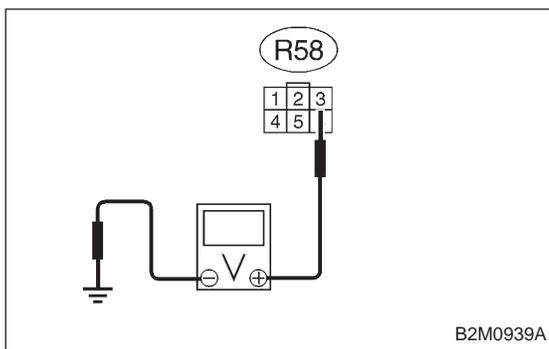
YES : Go to step **10BA14**.

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 (R15, B97 and B22)



10BA14 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.

CHECK : **Connector & terminal (R58) No. 3 (+) — Chassis ground (-): Is the voltage less than 1 V?**

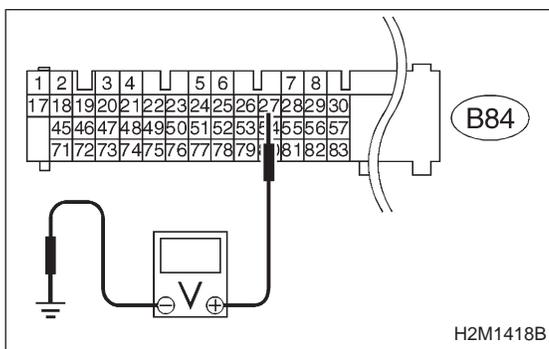
YES : Repair harness and connector.

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 (R67 and B99)

NO : Go to step **10BA15**.



10BA15 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.

CHECK : **Connector & terminal (B84) No. 27 (+) — Chassis ground: 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

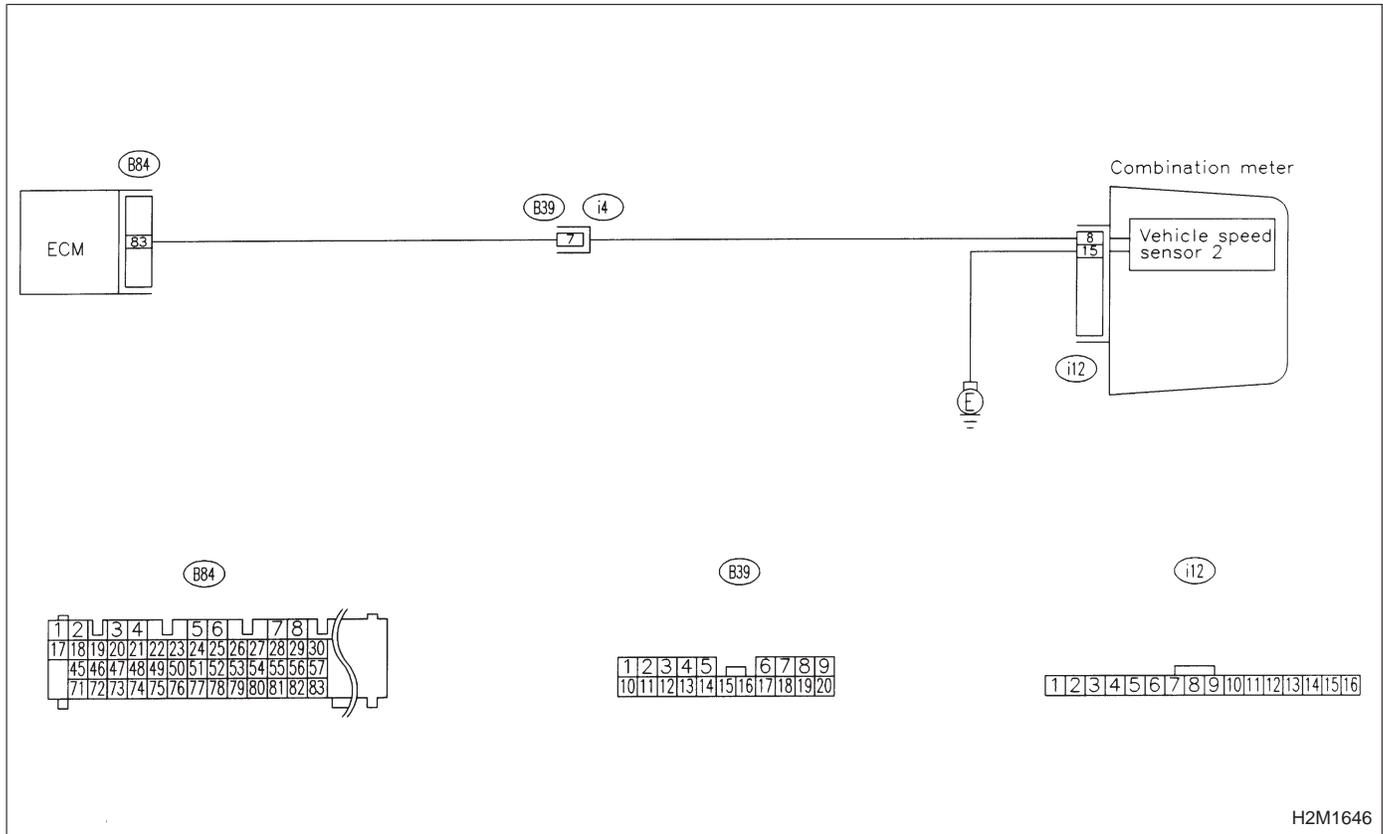
OBD	(FB1)
P0500	<VSP>
OBD0340	

BB: DTC P0500
— VEHICLE SPEED SENSOR MALFUNCTION
—

DTC DETECTING CONDITION:

- Immediately at fault recognition

WIRING DIAGRAM:

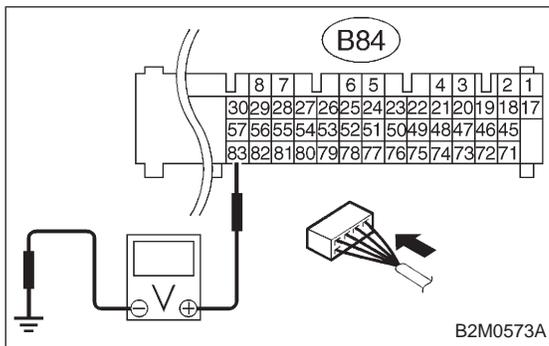


H2M1646

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

10BB1 CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

- CHECK** : *Does speedometer operate normally?*
- YES** : Go to step **10BB2**.
- NO** : Check speedometer and vehicle speed sensor 2 <Ref. to 6-2 [K2A0].>.



10BB2 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 (-):

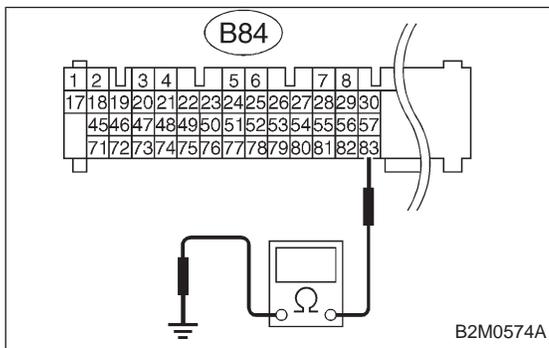
- CHECK** : *Is the voltage more than 2 V?*
- YES** : Repair harness and connector.

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 (B39)

- NO** : Go to step **10BB3**.



10BB3 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.

OBD	(FB1)
P0505	<ISC>

OBD0358

BC: DTC P0505
— IDLE CONTROL SYSTEM MALFUNCTION
—

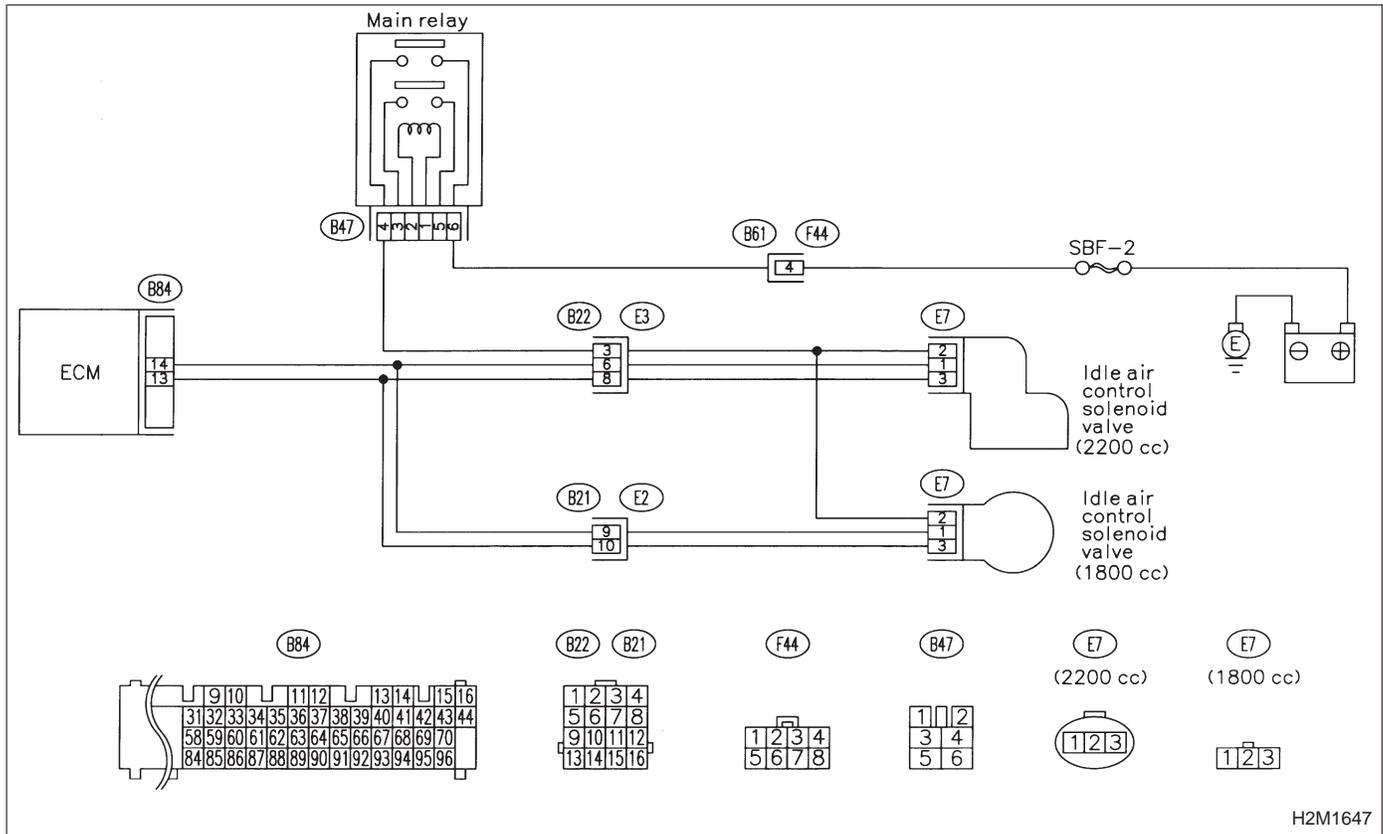
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

WIRING DIAGRAM:



H2M1647

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

10BC1 CHECK AIR INTAKE SYSTEM.

- 1) Turn ignition switch to ON.
- 2) Start engine, and idle it.

CHECK : *Is there a fault in air intake system?*

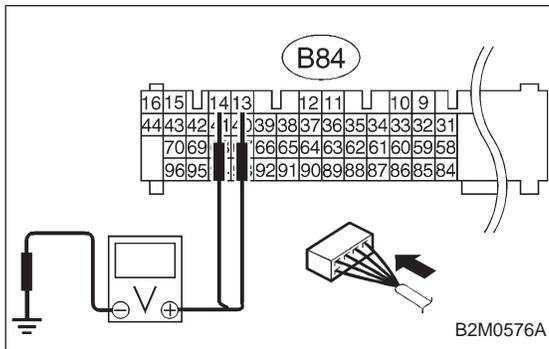
NOTE:

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

YES : Repair or replace air intake system.

NO : Go to step **10BC2**.



10BC2 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 next step 3).

NO : Go to step **10BC5**.

- 3) Measure voltage between ECM and chassis ground.

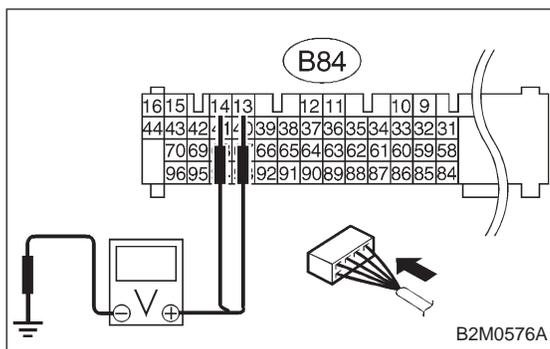
Connector & terminal

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

CHECK : *Is the voltage more than 3 V?*

YES : Go to next step 4).

NO : Go to step **10BC5**.



- 4) Turn ignition switch to OFF.
- 5) Disconnect connector from idle air control solenoid valve.
- 6) Turn ignition switch to ON.
- 7) Measure voltage between ECM and chassis ground.

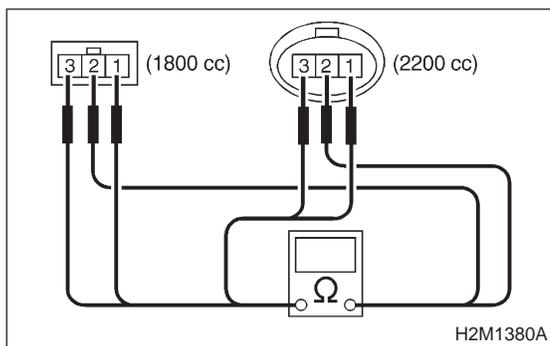
Connector & terminal**(B84) No. 13 (+) — Chassis ground (-):****CHECK** : *Is the voltage more than 10 V?***YES** : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM.**NO** : Go to next step 8).

- 8) 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 10BC3.**10BC3 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 10BC4.


10BC4 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 next step 3).

- 3) 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 next step 4).

- 4) 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 next step 5).

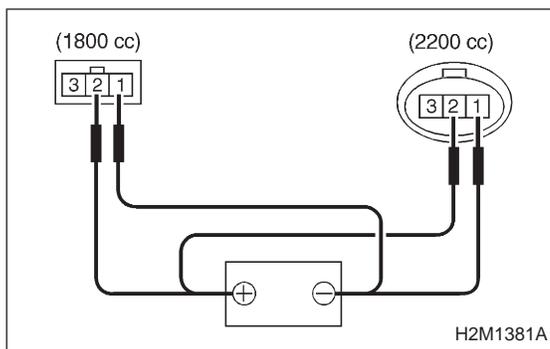
- 5) Measure resistance between idle air control solenoid valve connector terminals.

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 next step 6).



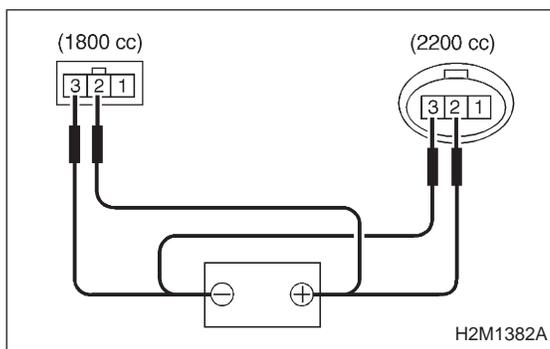
6) Remove idle air control solenoid valve. <Ref. to 2-7 [W12A0].>

7) 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 next step 8).

NO : Clean idle air control solenoid valve. <Ref. to 2-7 [W12B0].>

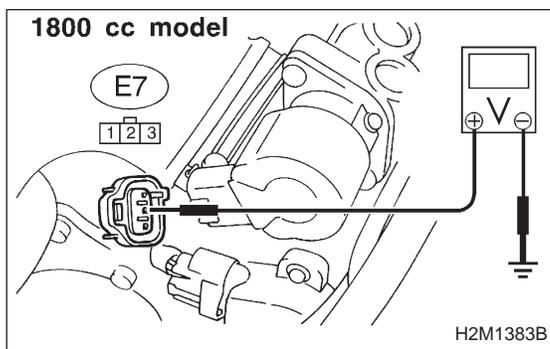


8) Check operation of idle air control solenoid valve.

CHECK : *Is idle air control solenoid valve fully closed when applying the battery to terminals No. 2 (+) and No. 3 (-)?*

YES : Go to step 10BC5.

NO : Clean idle air control solenoid valve. <Ref. to 2-7 [W12B0].>



10BC5	CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.
--------------	---

1) Turn ignition switch to OFF.

2) Disconnect connector from idle air control solenoid valve.

3) Turn ignition switch to ON.

4) Measure voltage between idle air control solenoid valve and engine ground.

Connector & terminal

(E7) No. 2 (+) — Engine ground (-):

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

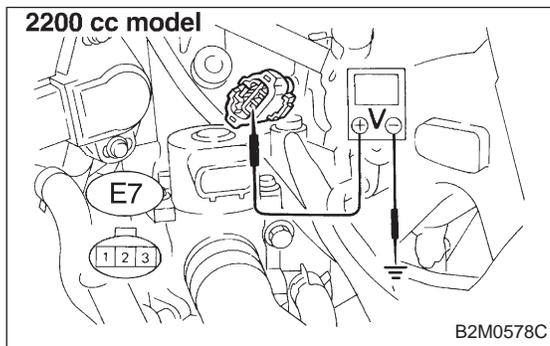
YES : Go to step 10BC6.

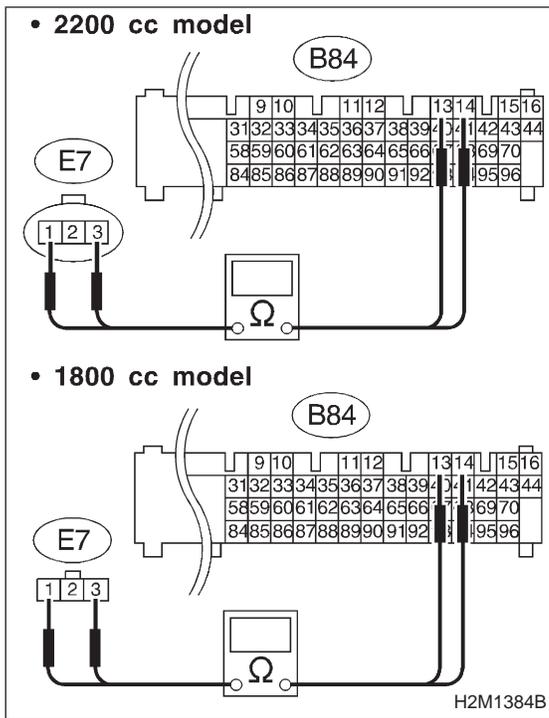
NO : Repair harness and connector.

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)





10BC6 **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 next step 4).

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B22) [2200 cc]

- 4) 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?*

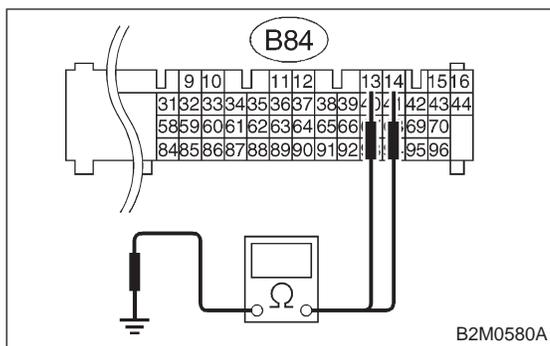
YES : Go to next step 5).

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B22) [2200 cc]



5) 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 next step 6).

6) 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 10BC7.

10BC7	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.

OBD (FB1)
 P0506 <ISC_RLOW>
 B2M1104

**BD: DTC P0506
 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED —**

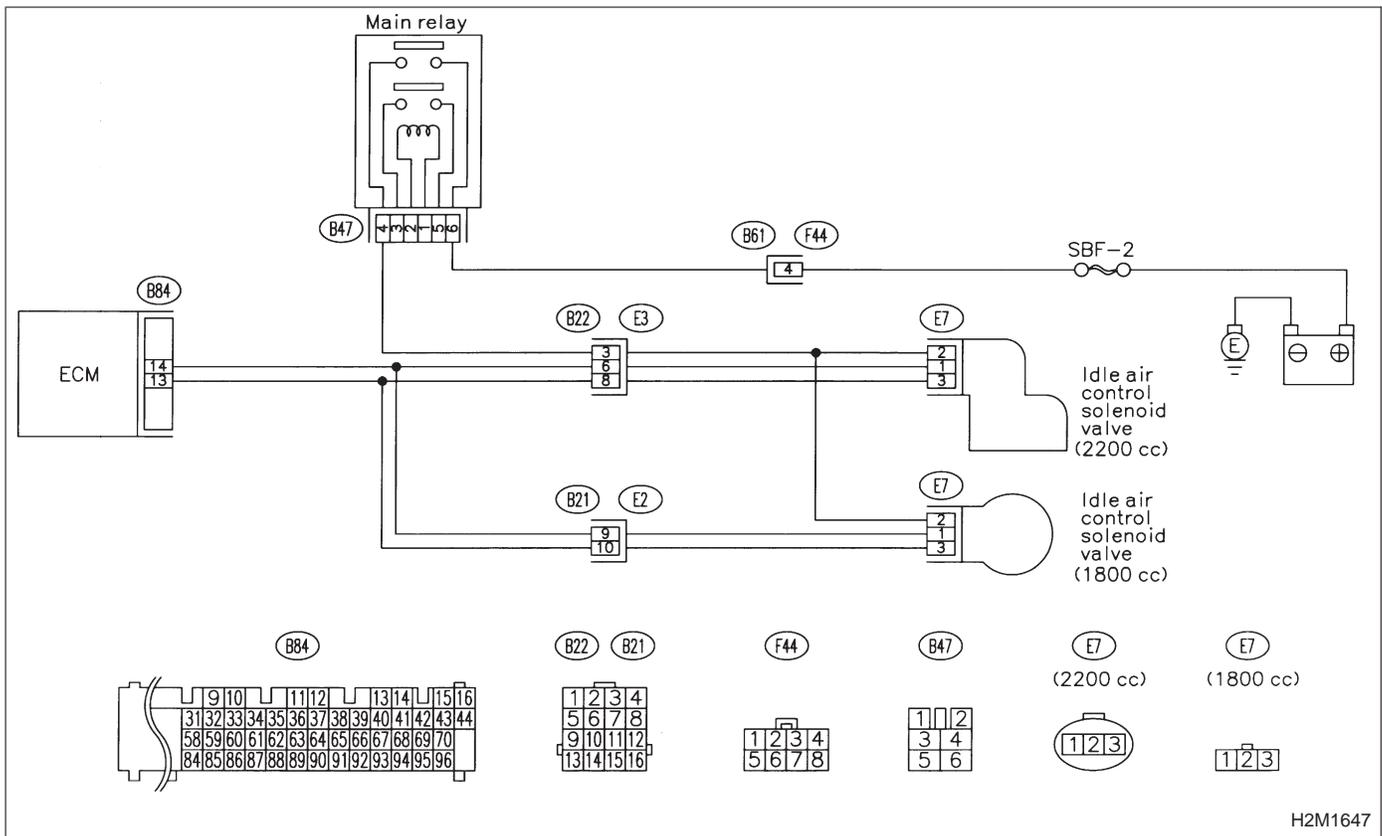
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine is difficult to start.
- Engine does not start.
- Erroneous idling
- Engine stalls.

WIRING DIAGRAM:



CAUTION:

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

10BD1	CHECK DTC P0505 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 [T10A0].>

NOTE:

In this case, it is not necessary to inspect DTC P0506.

NO : Go to step **10BD2**.

10BD2	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.

OBD (FB1)
 P0507 <ISC_RHI>
 B2M1105

BE: DTC P0507
— IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED —

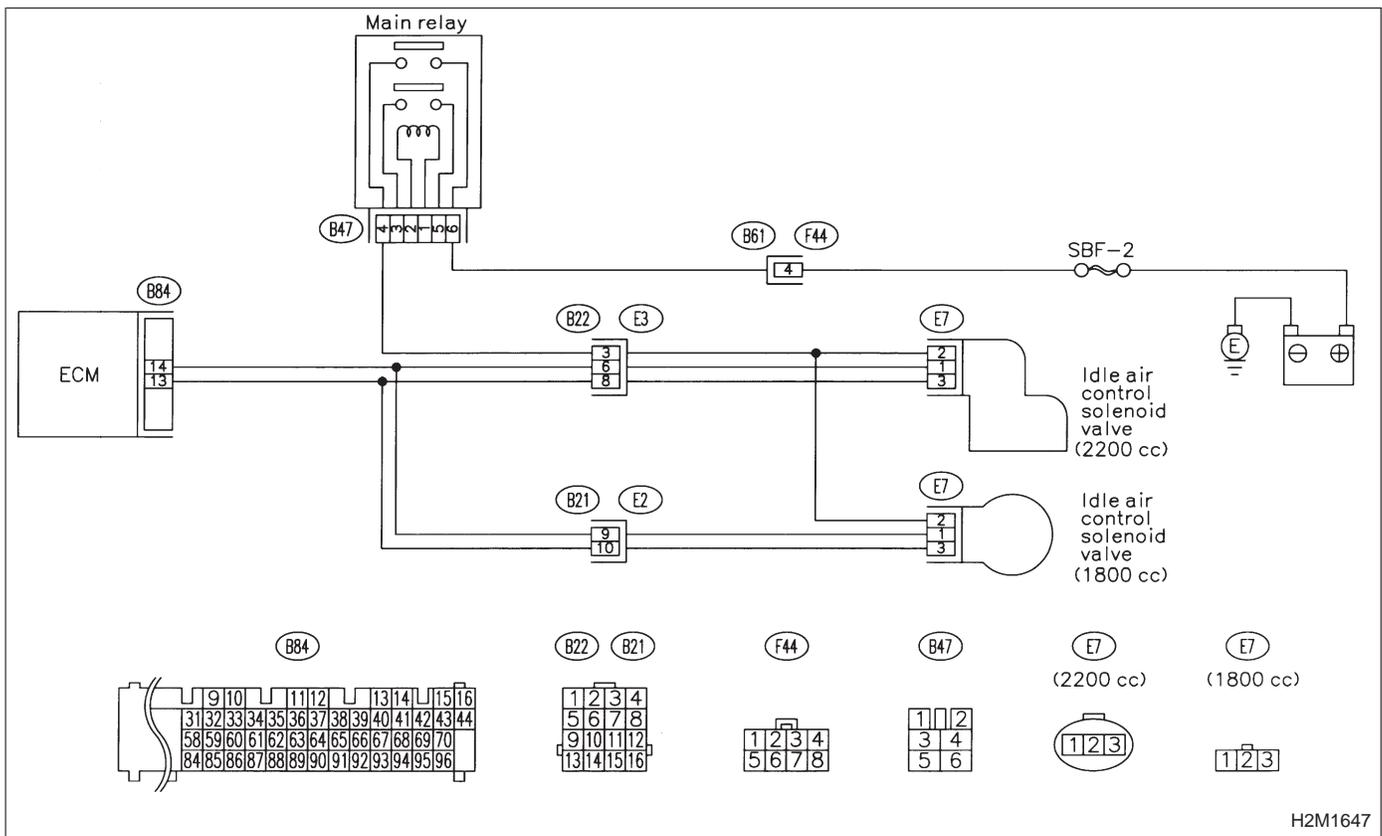
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine keeps running at higher revolution than specified idling revolution.

WIRING DIAGRAM:



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

10BE1	CHECK DTC P0505 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 [T10A0].>

NOTE:

In this case, it is not necessary to inspect DTC P0507.

NO : Go to step **10BE2**.

10BE2	CHECK AIR INTAKE SYSTEM.
--------------	---------------------------------

1) Turn ignition switch to ON.

2) Start engine, and idle it.

CHECK : *Is there a fault in air intake system?*

NOTE:

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

YES : Repair air suction and leaks.

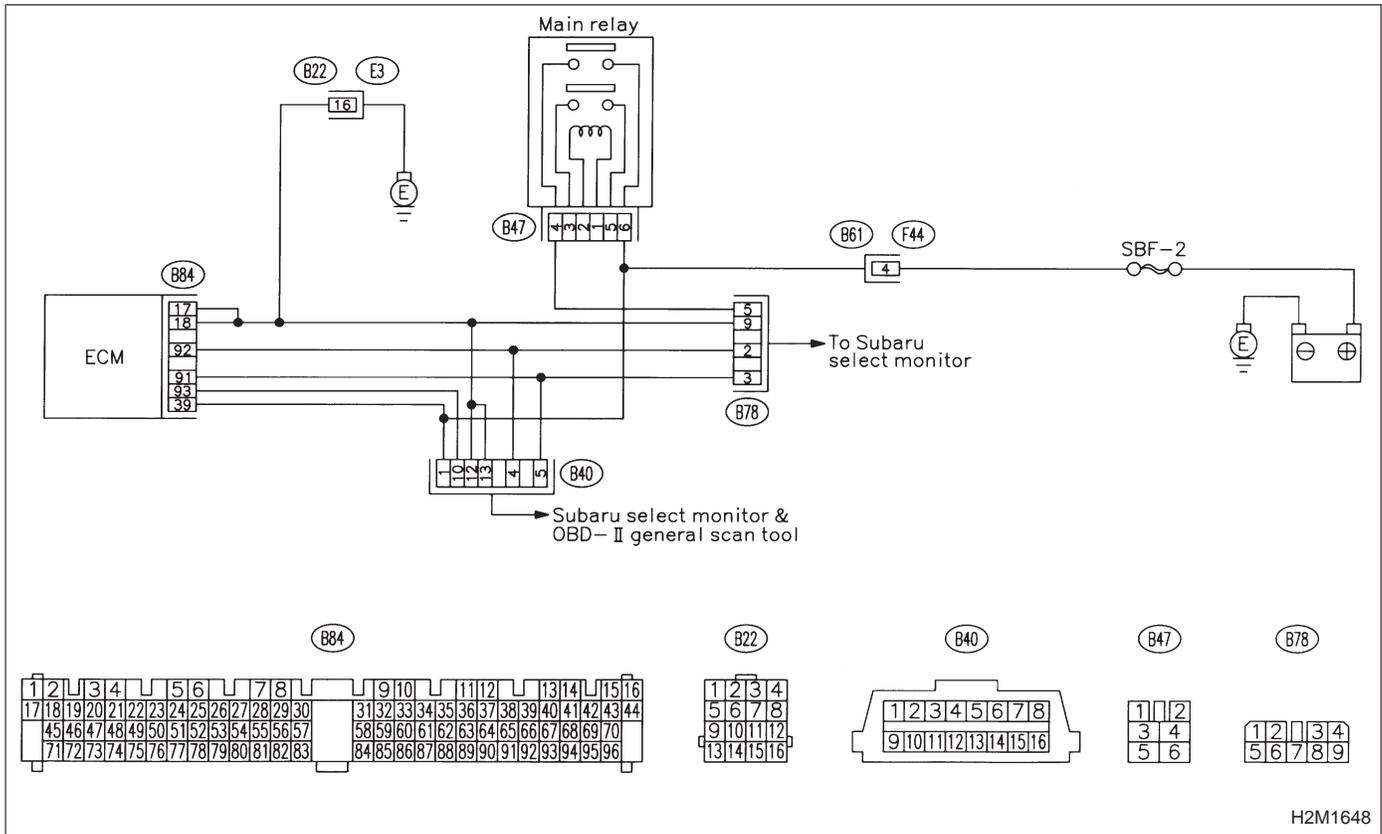
NO : Replace idle air control solenoid valve.

**BF: DTC P0600
— SERIAL COMMUNICATION LINK
MALFUNCTION —**

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:

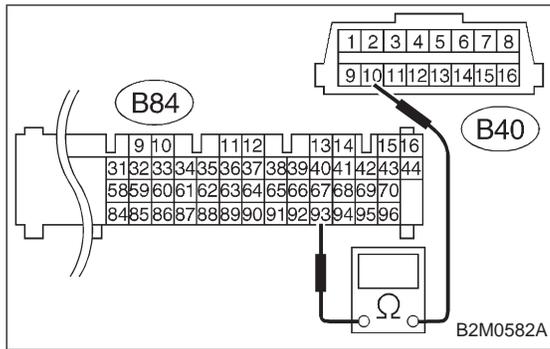


H2M1648

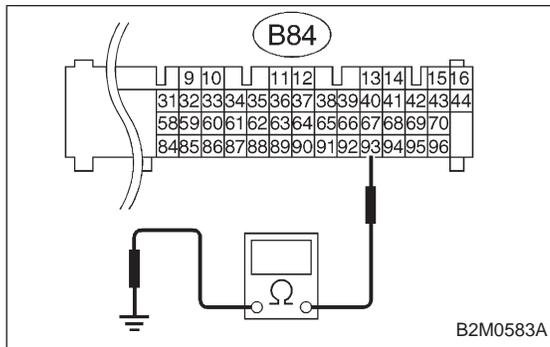
CAUTION:

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

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

**10BF1****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 (for Subaru Select Monitor & OBD-II general scan tool).

Connector & terminal**(B84) No. 93 — (B40) No. 10:****CHECK** : Is the resistance less than 1 Ω?**YES** : Go to next step 4).**NO** : Repair open circuit in harness between ECM and data link connector.

- 4) Measure resistance of harness between ECM and chassis ground.

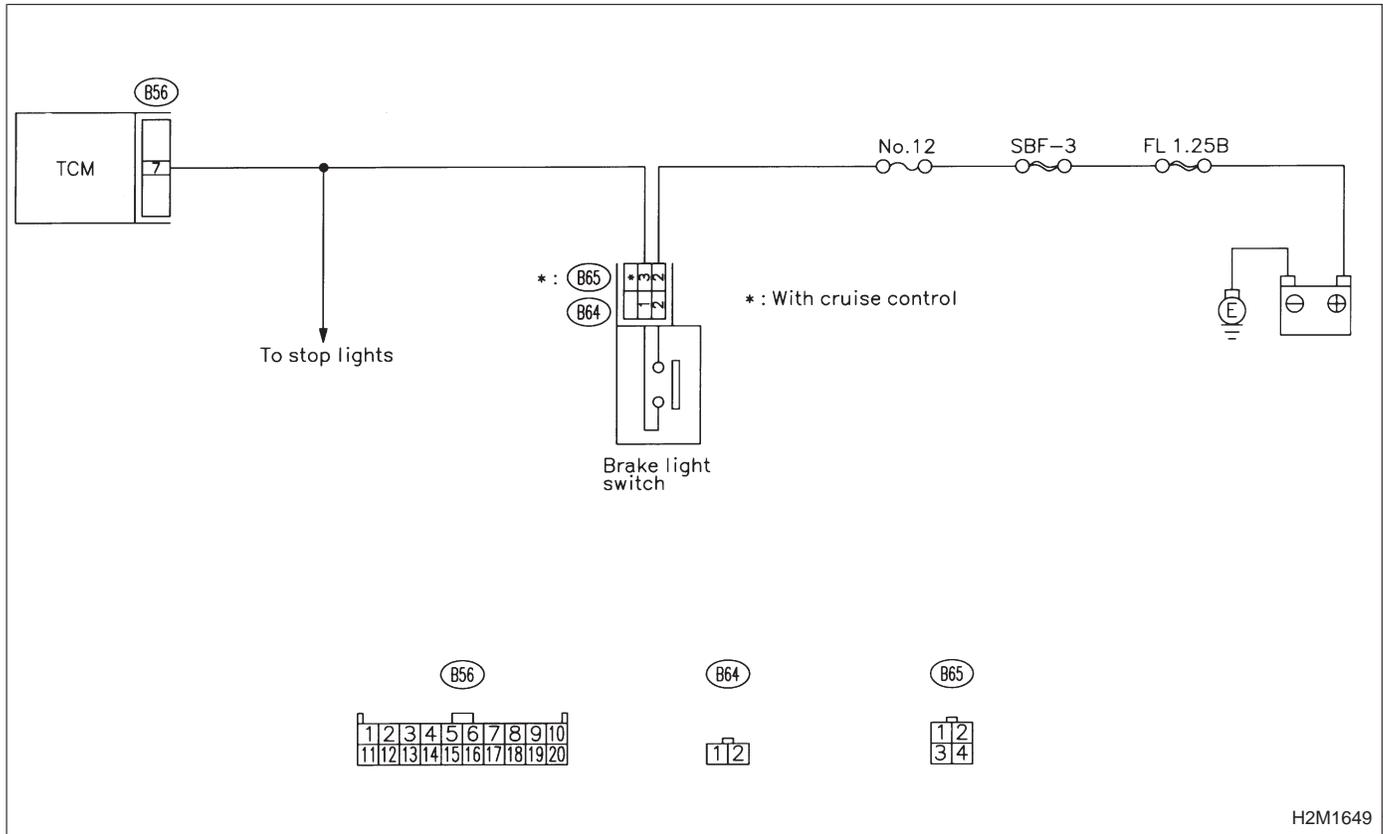
Connector & terminal**(B84) No. 93 — Chassis ground:****CHECK** : Is the resistance less than 10 Ω?**YES** : Repair ground short circuit in harness between ECM and data link connector.**NO** : Repair poor contact in ECM connector and data link connector.

OBD (FB1)
 P0703 <ATBRK>
 B2M0655

BH: DTC P0703
— BRAKE SWITCH INPUT MALFUNCTION —

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

WIRING DIAGRAM:



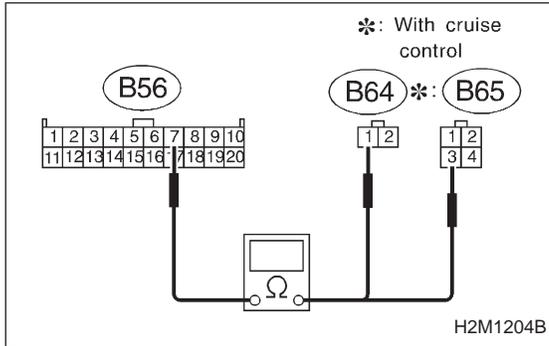
CAUTION:
 After repair or replacement of faulty parts, conduct
CLEAR MEMORY and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0] and [T3E0].>

10BH1 CHECK OPERATION OF BRAKE LIGHT.

CHECK : Does brake light come on when depressing the brake pedal?

YES : Go to step 10BH2.

NO : Repair or replace brake light circuit.



10BH2 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. 1 (Without cruise control):

(B56) No. 7 — (B65) No. 3 (With cruise control):

CHECK : Is the resistance less than 1 Ω?

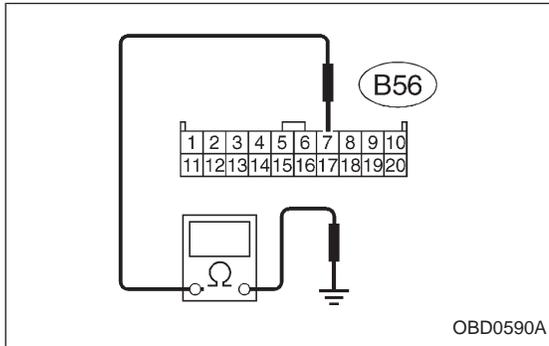
YES : Go to next step 3).

NO : Repair or replace harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between TCM and brake light switch connector
- Poor contact in TCM connector
- Poor contact in brake light switch connector



3) Measure resistance of harness between TCM and chassis ground.

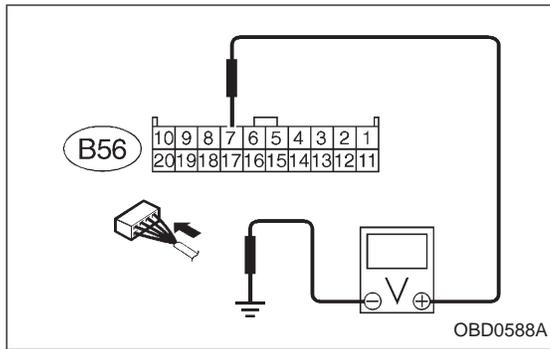
Connector & terminal

(B56) No. 7 — Chassis ground:

CHECK : Is the resistance more than 1 MΩ?

YES : Go to step 10BH3.

NO : Repair ground short circuit in harness between TCM and brake light switch connector.

**10BH3 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 next step 3).

NO : Adjust or replace brake light switch.

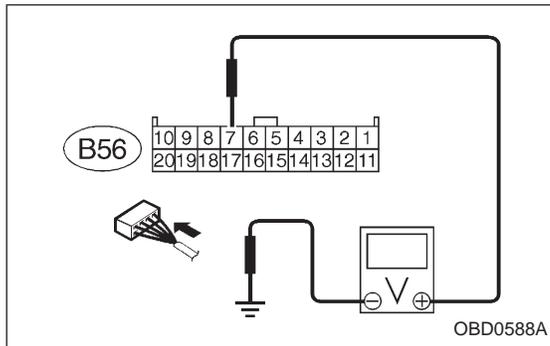
- 3) Measure voltage between TCM and chassis ground.

Connector & terminal**(B56) No. 7 (+) — Chassis ground (-):**

CHECK : *Is the voltage more than 10 V when depressing the brake pedal?*

YES : Go to step **10BH4**.

NO : Adjust or replace brake light switch.

**10BH4 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.

OBD (FB1)
 P0705 <ATRNG>
 B2M0656

**BI: DTC P0705
 — TRANSMISSION RANGE SENSOR CIRCUIT
 MALFUNCTION —**

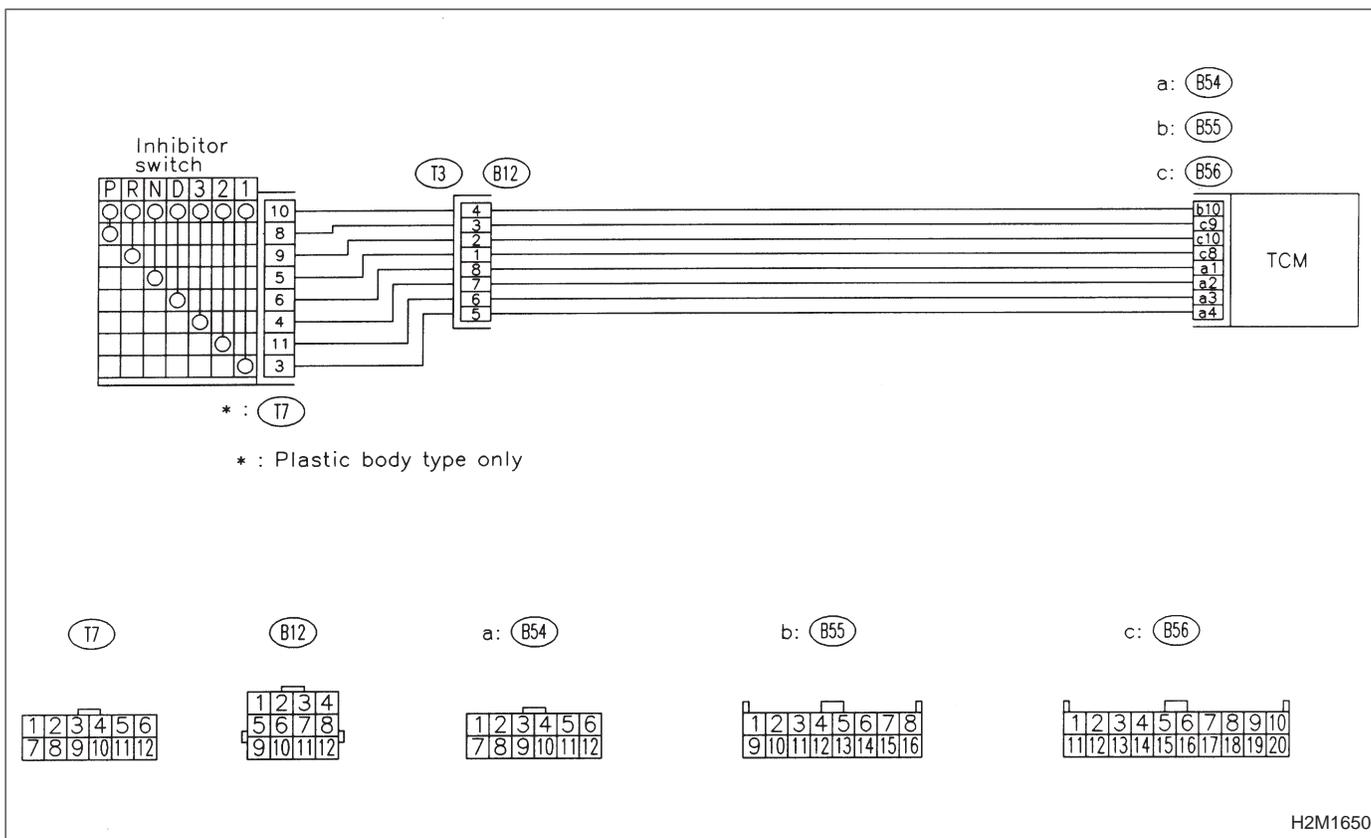
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

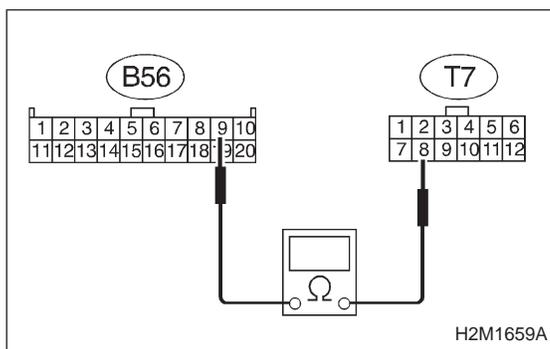
- Starter does not rotate when selector lever is in “P” or “N” range.
- Starter rotates when selector lever is in “R”, “D”, “3”, “2” or “1” range.
- Engine brake is not effected when selector lever is in “3” range.
- Shift characteristics are erroneous.

WIRING DIAGRAM:



CAUTION:

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

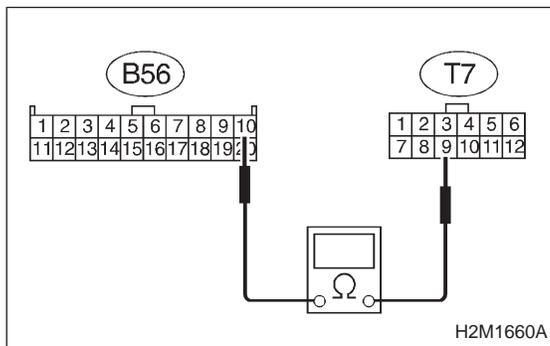
10BI1 CHECK INHIBITOR SWITCH TYPE.**CHECK** : *Is inhibitor switch type plastic body?***YES** : Go to step 10BI2.**NO** : Go to step 10BI24.**10BI2 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.**

- 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 10BI3.**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)

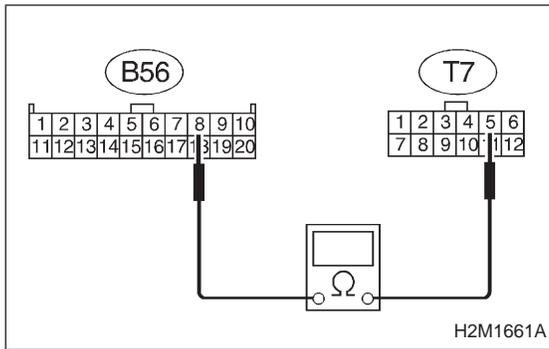
**10BI3 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.**

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 10BI4.**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)



10BI4

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?

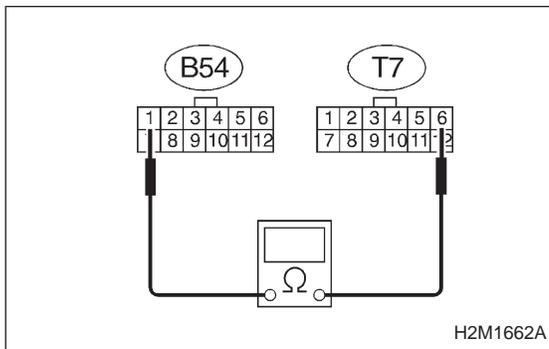
YES : Go to step 10BI5.

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)



10BI5

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?

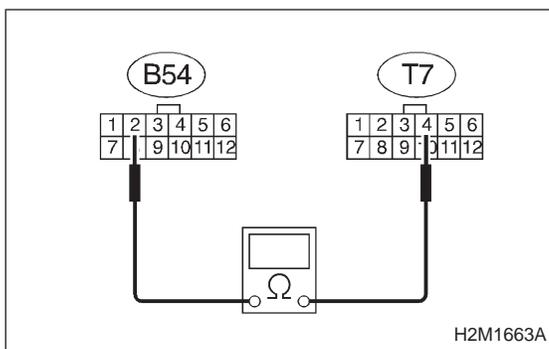
YES : Go to step 10BI6.

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)



10BI6

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?

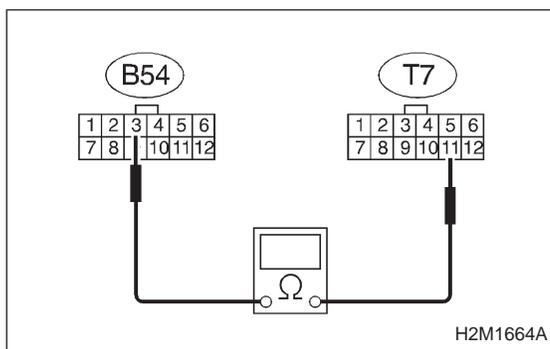
YES : Go to step 10BI7.

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)

**10BI7****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?*

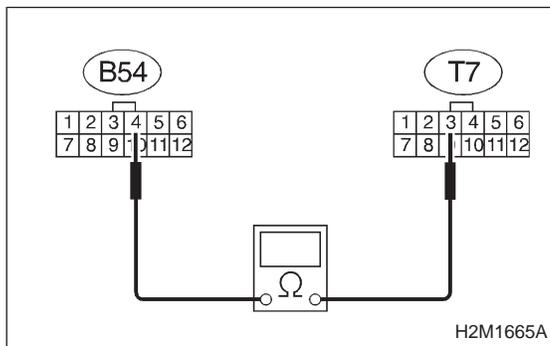
YES : Go to step **10BI8**.

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)

**10BI8****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?*

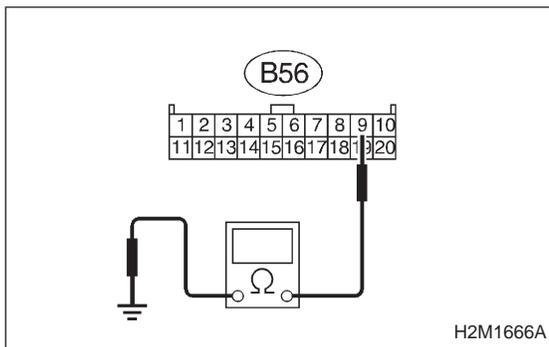
YES : Go to step **10BI9**.

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)



10BI9 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

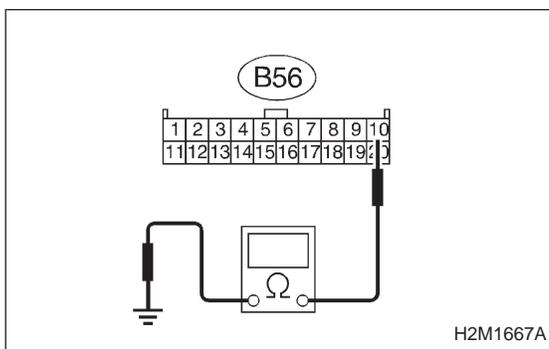
Connector & terminal

(B56) No. 9 — Chassis ground:

CHECK : Is the resistance more than 1 MΩ?

YES : Go to step 10BI10.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI10 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

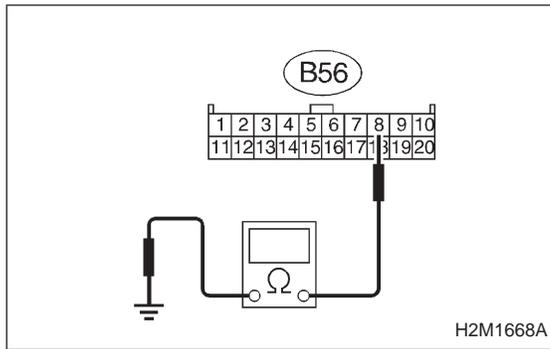
Connector & terminal

(B56) No. 10 — Chassis ground:

CHECK : Is the resistance more than 1 MΩ?

YES : Go to step 10BI11.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.


10BI11 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

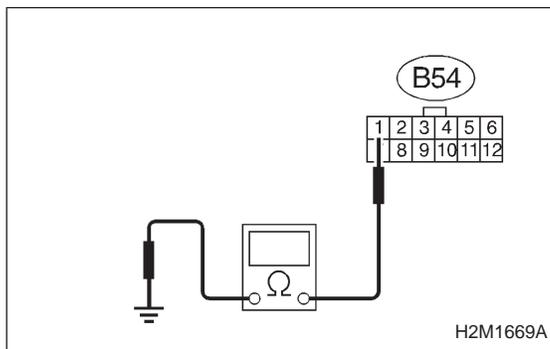
Connector & terminal

(B56) No. 8 — Chassis ground:

CHECK : Is the resistance more than 1 MΩ?

YES : Go to step 10BI12.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.


10BI12 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

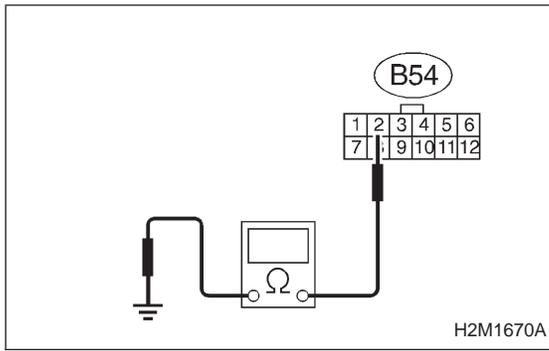
Connector & terminal

(B54) No. 1 — Chassis ground:

CHECK : Is the resistance more than 1 MΩ?

YES : Go to step 10BI13.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI13 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

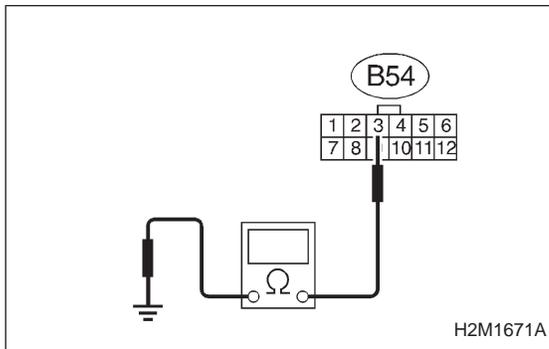
Connector & terminal

(B54) No. 2 — Chassis ground:

CHECK : *Is the resistance more than 1 MΩ?*

YES : Go to step 10BI14.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI14 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

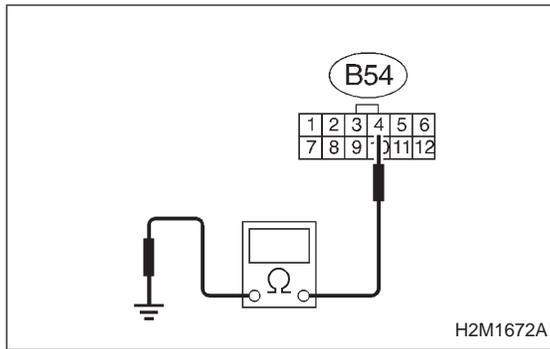
Connector & terminal

(B54) No. 3 — Chassis ground:

CHECK : *Is the resistance more than 1 MΩ?*

YES : Go to step 10BI15.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.


10BI15 CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

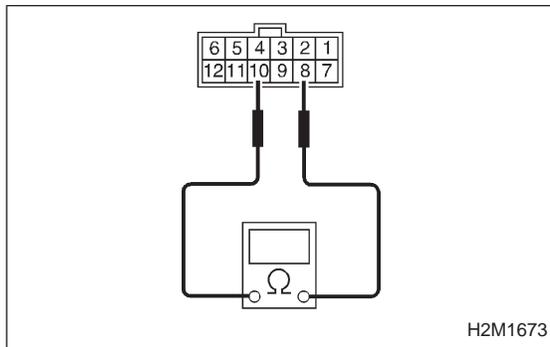
Connector & terminal

(B54) No. 4 — Chassis ground:

CHECK : *Is the resistance more than 1 M Ω ?*

YES : Go to step **10BI16**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.


10BI16 CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals

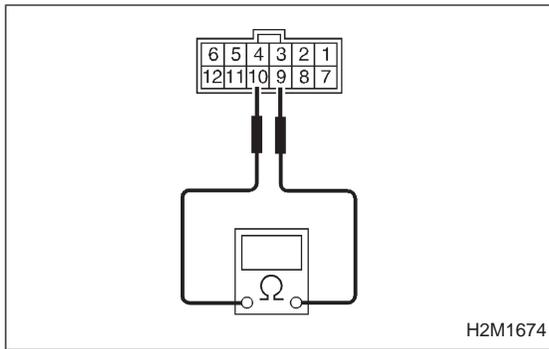
No. 8 — No. 10

CHECK : ● *Is the resistance less than 1 Ω in "P" position?*

● *Is the resistance more than 1 M Ω in other positions?*

YES : Go to step **10BI17**.

NO : Go to step **10BI23**.

**10BI17 CHECK INHIBITOR SWITCH.**

Measure resistance between inhibitor switch connector receptacle's terminals.

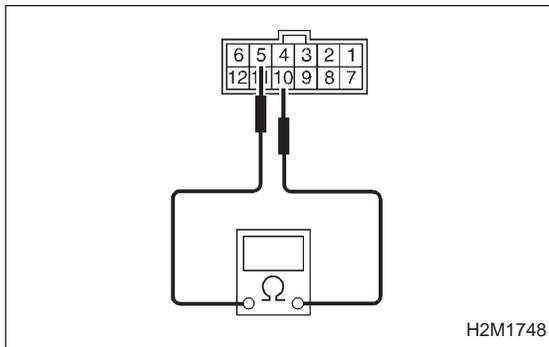
Terminals

No. 9 — No. 10

CHECK : ● *Is the resistance less than 1 Ω in "R" position?*
 ● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to step 10BI18.

NO : Go to step 10BI23.

**10BI18 CHECK INHIBITOR SWITCH.**

Measure resistance between inhibitor switch connector receptacle's terminals.

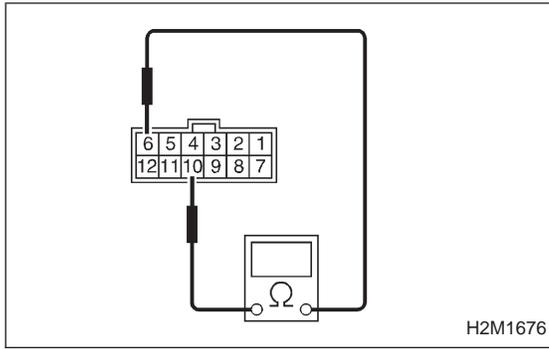
Terminals

No. 5 — No. 10

CHECK : ● *Is the resistance less than 1 Ω in "N" position?*
 ● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to step 10BI19.

NO : Go to step 10BI23.

**10BI19 CHECK INHIBITOR SWITCH.**

Measure resistance between inhibitor switch connector receptacle's terminals.

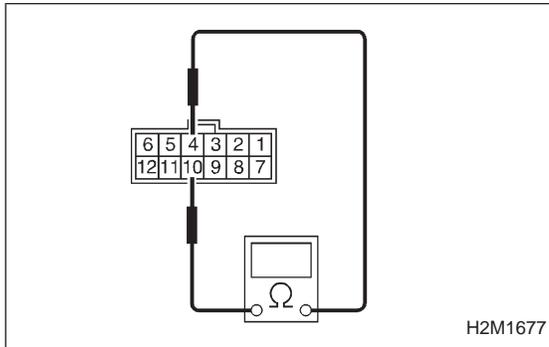
Terminals

No. 6 — No. 10

CHECK : ● *Is the resistance less than 1 Ω in "D" position?*
● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to step 10BI20.

NO : Go to step 10BI23.

**10BI20 CHECK INHIBITOR SWITCH.**

Measure resistance between inhibitor switch connector receptacle's terminals.

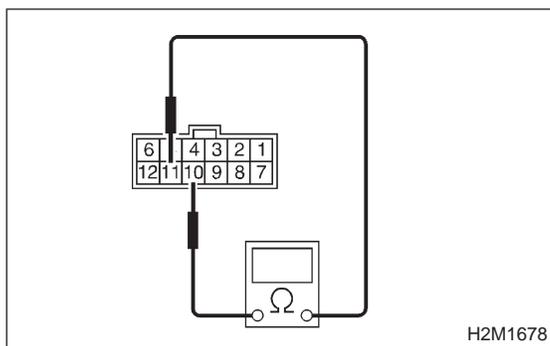
Terminals

No. 4 — No. 10

CHECK : ● *Is the resistance less than 1 Ω in "3" position?*
● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to step 10BI21.

NO : Go to step 10BI23.

**10BI21 CHECK INHIBITOR SWITCH.**

Measure resistance between inhibitor switch connector receptacle's terminals.

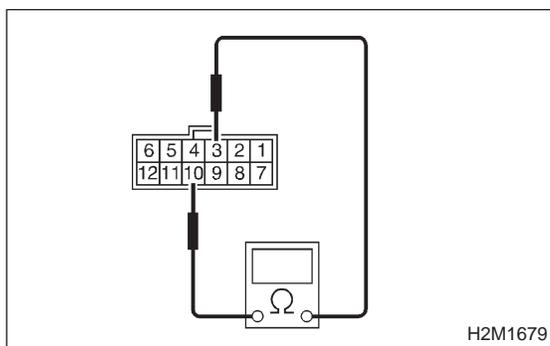
Terminals

No. 11 — No. 10

CHECK : ● *Is the resistance less than 1 Ω in "2" position?*
 ● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to step 10BI22.

NO : Go to step 10BI23.

**10BI22 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?*
 ● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to step 10BI26.

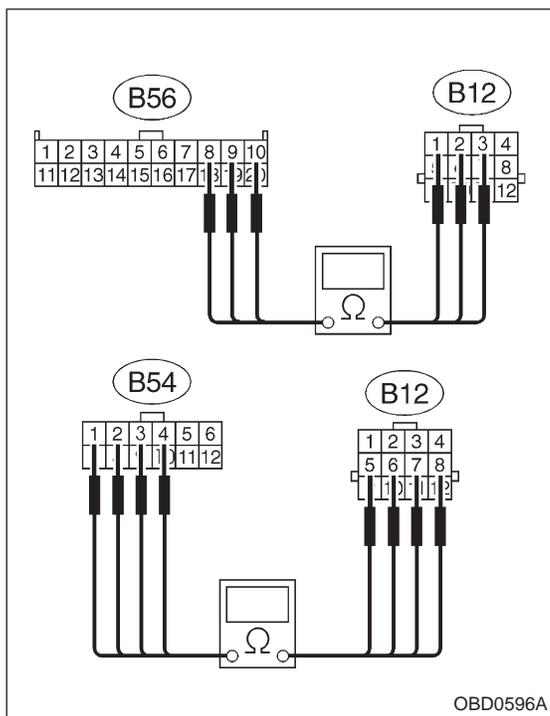
NO : Go to step 10BI23.

10BI23 CHECK SELECTOR CABLE.

CHECK : *Is there faulty connection in the selector cable?*

YES : Repair connection of selector cable.

NO : Replace inhibitor switch.


10B124 CHECK HARNESS BETWEEN TCM AND TRANSMISSION HARNESS CONNECTOR.

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

Connector & terminal
(B56) No. 9 — (B12) No. 3:
CHECK : Is the resistance less than 1 Ω?

YES : Go to next **CHECK** .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 10 — (B12) No. 2:
CHECK : Is the resistance less than 1 Ω?

YES : Go to next **CHECK** .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 8 — (B12) No. 1:
CHECK : Is the resistance less than 1 Ω?

YES : Go to next **CHECK** .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 1 — (B12) No. 8:
CHECK : Is the resistance less than 1 Ω?

YES : Go to next **CHECK** .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 2 — (B12) No. 7:
CHECK : Is the resistance less than 1 Ω?

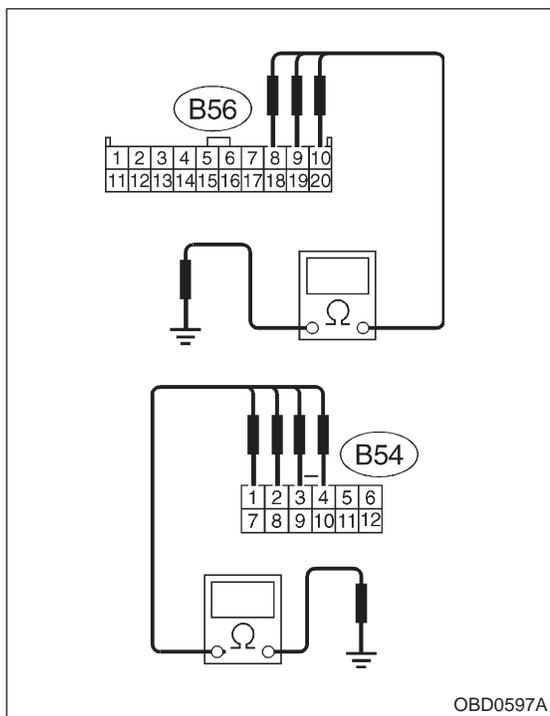
YES : Go to next **CHECK** .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 3 — (B12) No. 6:
CHECK : Is the resistance less than 1 Ω?

YES : Go to next **CHECK** .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal**(B54) No. 4 — (B12) No. 5:****CHECK** : Is the resistance less than 1 Ω ?**YES** : Go to next step 4).**NO** : Repair open circuit in harness between TCM and transmission harness connector.

4) Measure resistance of harness between TCM and chassis ground.

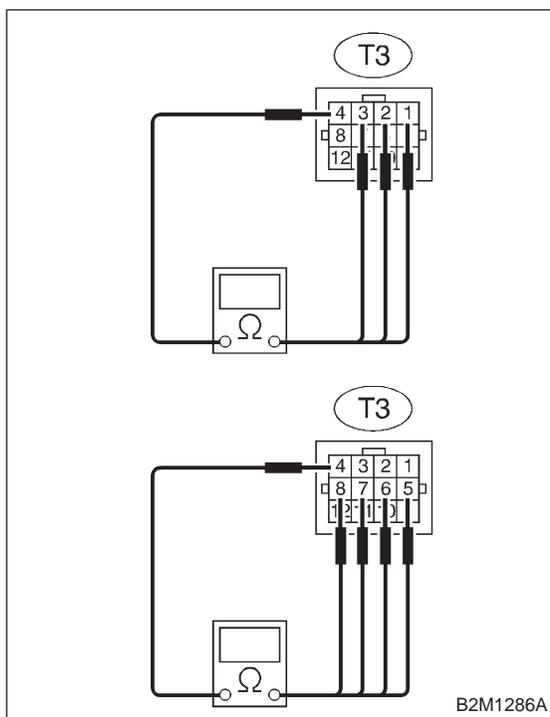
Connector & terminal**(B56) No. 9 — Chassis ground:****CHECK** : Is the resistance more than 1 $M\Omega$?**YES** : Go to next **CHECK** .**NO** : Repair ground short circuit in harness between TCM and transmission harness connector.**Connector & terminal****(B56) No. 10 — Chassis ground:****CHECK** : Is the resistance more than 1 $M\Omega$?**YES** : Go to next **CHECK** .**NO** : Repair ground short circuit in harness between TCM and transmission harness connector.**Connector & terminal****(B56) No. 8 — Chassis ground:****CHECK** : Is the resistance more than 1 $M\Omega$?**YES** : Go to next **CHECK** .**NO** : Repair ground short circuit in harness between TCM and transmission harness connector.**Connector & terminal****(B54) No. 1 — Chassis ground:****CHECK** : Is the resistance more than 1 $M\Omega$?**YES** : Go to next **CHECK** .**NO** : Repair ground short circuit in harness between TCM and transmission harness connector.**Connector & terminal****(B54) No. 2 — Chassis ground:****CHECK** : Is the resistance more than 1 $M\Omega$?**YES** : Go to next **CHECK** .**NO** : Repair ground short circuit in harness between TCM and transmission harness connector.**Connector & terminal****(B54) No. 3 — Chassis ground:****CHECK** : Is the resistance more than 1 $M\Omega$?**YES** : Go to next **CHECK** .**NO** : Repair ground short circuit in harness between TCM and transmission harness connector.

**Connector & terminal
(B54) No. 4 — Chassis ground:**

CHECK : Is the resistance more than 1 M Ω ?

YES : Go to step 10BI25.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI25 CHECK INHIBITOR SWITCH.

Measure resistance between transmission harness connector receptacle's terminals.

**Connector & terminal
(T3) No. 3 — No. 4**

CHECK : ● Is the resistance less than 1 Ω in "P" position?
● Is the resistance more than 1 M Ω in other positions?

YES : Go to next **CHECK** .

NO : Go to **CHECK1** .

**Connector & terminal
(T3) No. 2 — No. 4**

CHECK : ● Is the resistance less than 1 Ω in "R" position?
● Is the resistance more than 1 M Ω in other positions?

YES : Go to next **CHECK** .

NO : Go to **CHECK1** .

**Connector & terminal
(T3) No. 1 — No. 4**

CHECK : ● Is the resistance less than 1 Ω in "N" position?
● Is the resistance more than 1 M Ω in other positions?

YES : Go to next **CHECK** .

NO : Go to **CHECK1** .

**Connector & terminal
(T3) No. 8 — No. 4**

CHECK : ● Is the resistance less than 1 Ω in "D" position?
● Is the resistance more than 1 M Ω in other positions?

YES : Go to next **CHECK** .

NO : Go to **CHECK1** .

Connector & terminal**(T3) No. 7 — No. 4**

CHECK : ● *Is the resistance less than 1 Ω in "3" position?*
● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to next **CHECK** .

NO : Go to **CHECK1** .

Connector & terminal**(T3) No. 6 — No. 4**

CHECK : ● *Is the resistance less than 1 Ω in "2" position?*
● *Is the resistance more than 1 $M\Omega$ in other positions?*

YES : Go to next **CHECK** .

NO : Go to **CHECK1** .

Connector & terminal**(T3) No. 5 — No. 4**

CHECK : ● *Is the resistance less than 1 Ω in "1" position?*
● *Is the resistance more than 1 $M\Omega$ in other positions?*

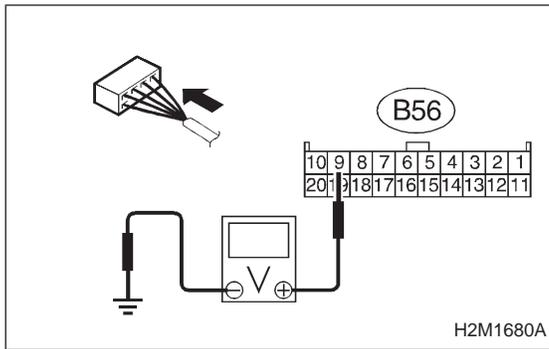
YES : Go to step 10BI26.

NO : Go to **CHECK1** .

CHECK1 : *Is there faulty connection in the selector cable?*

YES : Repair connection of selector cable.

NO : Replace inhibitor switch.

**10BI26 CHECK INPUT SIGNAL FOR TCM.**

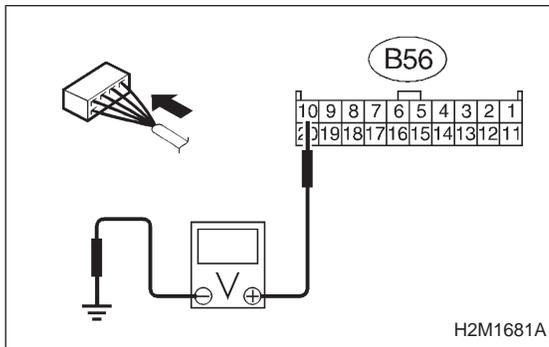
- 1) Turn ignition switch to OFF.
- 2) Connect connector to TCM and transmission.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between TCM and chassis ground.

Connector & terminal**(B56) No. 9 (+) — Chassis ground (-):**

CHECK : ● *Is the voltage less than 1 V in “P” and “N” positions?*
 ● *Is the voltage more than 8 V in other positions?*

YES : Go to step 10BI27.

NO : Go to step 10BI33.

**10BI27 CHECK INPUT SIGNAL FOR TCM.**

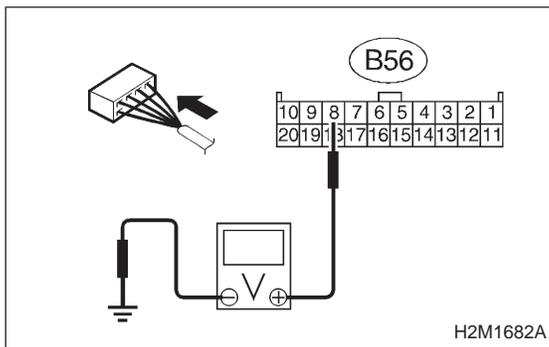
Measure voltage between TCM and chassis ground.

Connector & terminal**(B56) No. 10 (+) — Chassis ground (-):**

CHECK : ● *Is the voltage less than 1 V in “R” position?*
 ● *Is the voltage more than 6 V in other positions?*

YES : Go to step 10BI28.

NO : Go to step 10BI33.



10BI28 CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

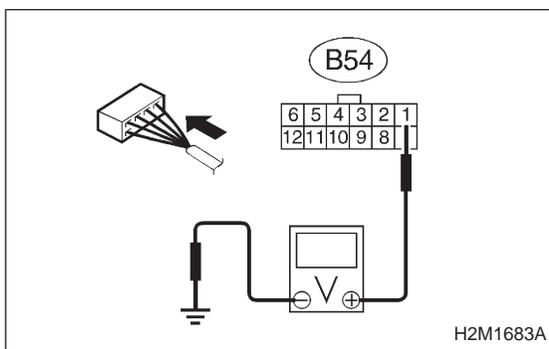
Connector & terminal

(B56) No. 8 (+) — Chassis ground (-):

- CHECK** :
- Is the voltage less than 1 V in “N” and “P” positions?
 - Is the voltage more than 8 V in other positions?

YES : Go to step 10BI29.

NO : Go to step 10BI33.



10BI29 CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

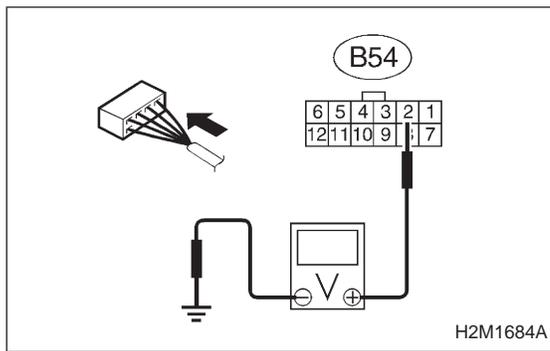
Connector & terminal

(B54) No. 1 (+) — Chassis ground (-):

- CHECK** :
- Is the voltage less than 1 V in “D” position?
 - Is the voltage more than 6 V in other positions?

YES : Go to step 10BI30.

NO : Go to step 10BI33.

**10BI30 CHECK INPUT SIGNAL FOR TCM.**

Measure voltage between TCM and chassis ground.

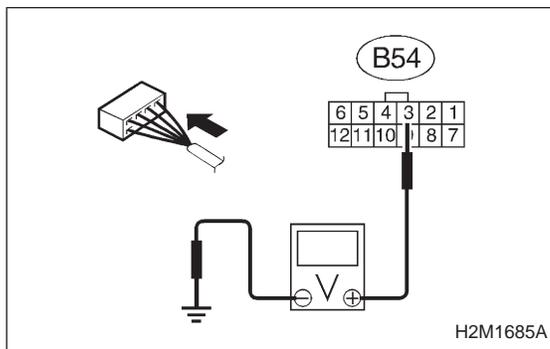
Connector & terminal

(B54) No. 2 (+) — Chassis ground (-):

CHECK : ● *Is the voltage less than 1 V in “3” position?*
 ● *Is the voltage more than 6 V in other positions?*

YES : Go to step 10BI31.

NO : Go to step 10BI33.

**10BI31 CHECK INPUT SIGNAL FOR TCM.**

Measure voltage between TCM and chassis ground.

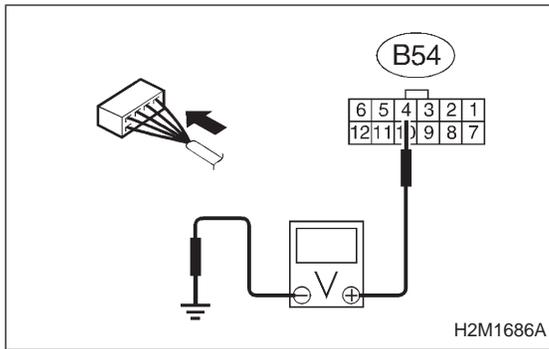
Connector & terminal

(B54) No. 3 (+) — Chassis ground (-):

CHECK : ● *Is the voltage less than 1 V in “2” position?*
 ● *Is the voltage more than 6 V in other positions?*

YES : Go to step 10BI32.

NO : Go to step 10BI33.

**10BI32 CHECK INPUT SIGNAL FOR TCM.**

Measure voltage between TCM and chassis ground.

Connector & terminal

(B54) No. 4 (+) — Chassis ground (-):

CHECK : ● *Is the voltage less than 1 V in "1" position?*
 ● *Is the voltage more than 6 V in other positions?*

YES : Repair poor contact in TCM connector.

NO : Go to step **10BI33**.

10BI33 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.

OBD	(FB1)
P0710	<ATF>
OBD0380	

BJ: DTC P0710
— TRANSMISSION FLUID TEMPERATURE
SENSOR CIRCUIT MALFUNCTION —

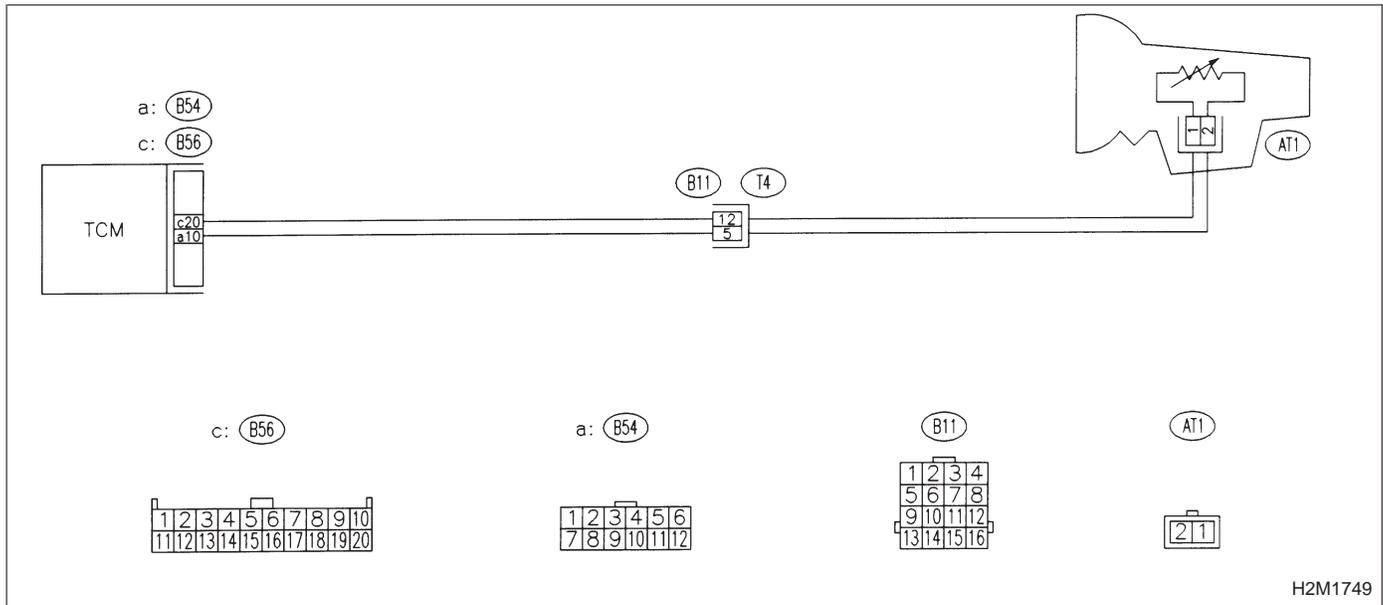
DTC DETECTING CONDITION:

- 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

WIRING DIAGRAM:



H2M1749

CAUTION:

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

10BJ1	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.

OBD	(FB1)
P0720	<ATVSP>
OBD0392	

BK: DTC P0720
— OUTPUT SPEED SENSOR (VEHICLE SPEED SENSOR 1) CIRCUIT MALFUNCTION
—

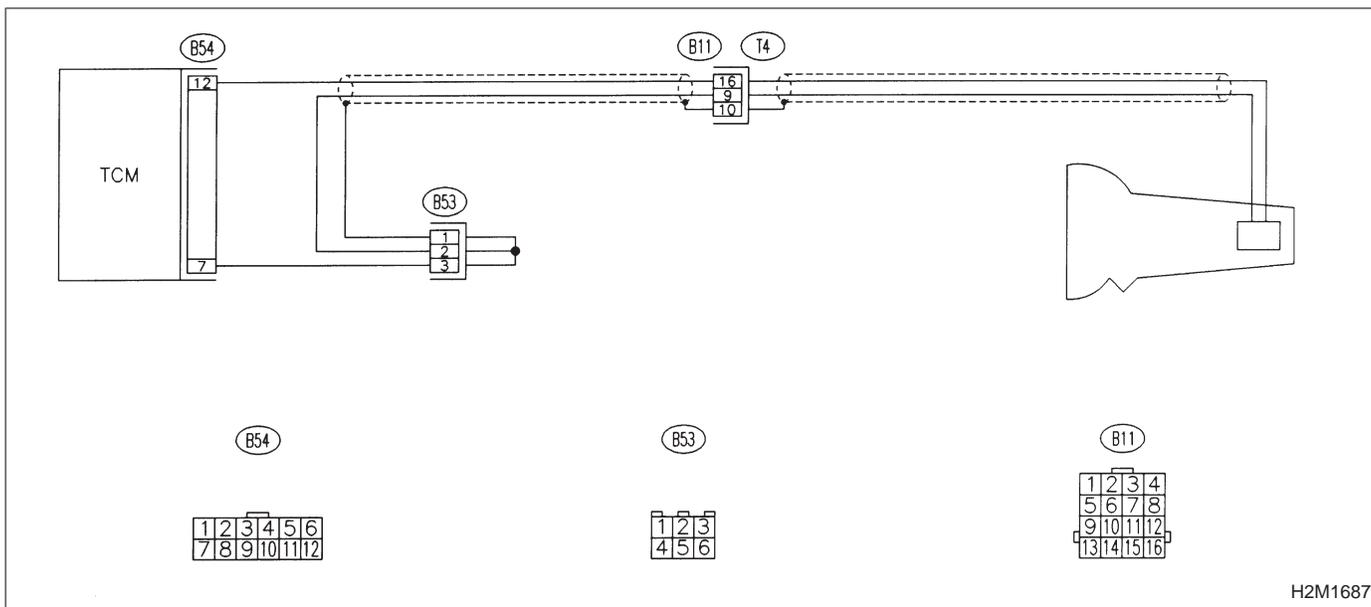
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No shift or excessive tight corner “braking”

WIRING DIAGRAM:



H2M1687

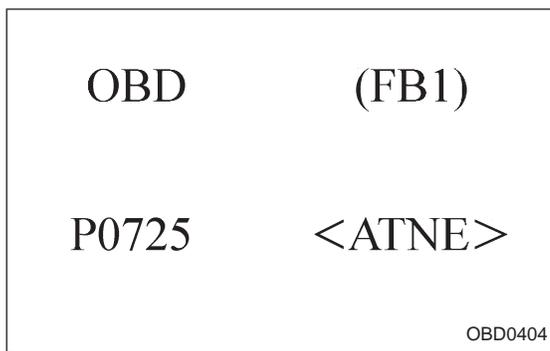
CAUTION:

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

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

10BK1	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.



BL: DTC P0725
— ENGINE SPEED INPUT CIRCUIT
MALFUNCTION —

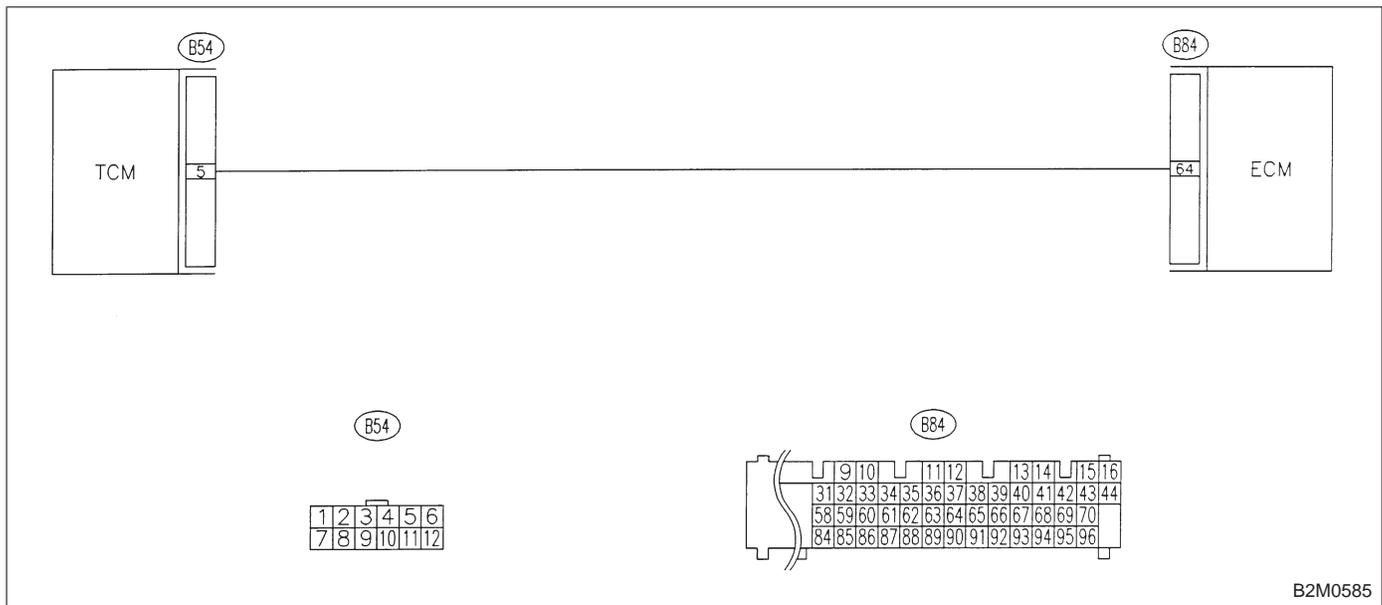
DTC DETECTING CONDITION:

- 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".

WIRING DIAGRAM:



CAUTION:

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

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

10BL1	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.

OBD (FB1)

P0731 <ATGR1>

B2M0657

BM: DTC P0731

— GEAR 1 INCORRECT RATIO —

OBD (FB1)

P0732 <ATGR2>

B2M0658

BN: DTC P0732

— GEAR 2 INCORRECT RATIO —

OBD (FB1)

P0733 <ATGR3>

B2M0659

BO: DTC P0733

— GEAR 3 INCORRECT RATIO —

OBD (FB1)

P0734 <ATGR4>

B2M0660

BP: DTC P0734

— GEAR 4 INCORRECT RATIO —

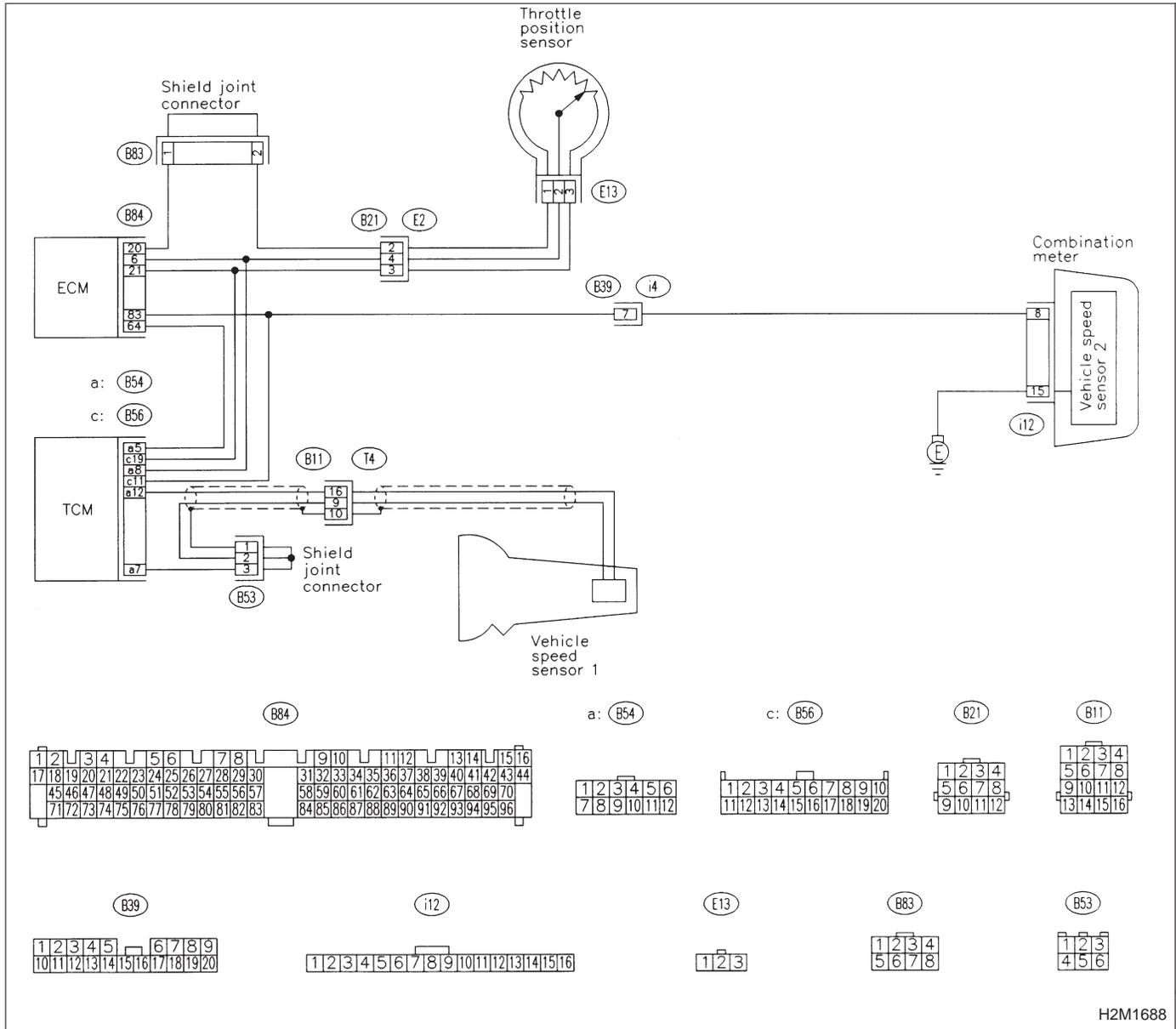
DTC DETECTING CONDITION:

- 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"

WIRING DIAGRAM:



H2M1688

CAUTION:

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

10BP1	CHECK ANY OTHER DTC (BESIDES DTC P0731, P0732, P0733, P0734) 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 [T10A0].>
- NO** : Go to step **10BP2**.

10BP2	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 **10BP3**.

10BP3	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 **10BP4**.

10BP4	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 **10BP5**.

10BP5	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 **10BP6**.

10BP6	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 **10BP7**.

10BP7	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.

OBD (FB1)
P0740 <ATLU_F>

B2M0661

**BQ: DTC P0740
— TORQUE CONVERTER CLUTCH SYSTEM
MALFUNCTION —**

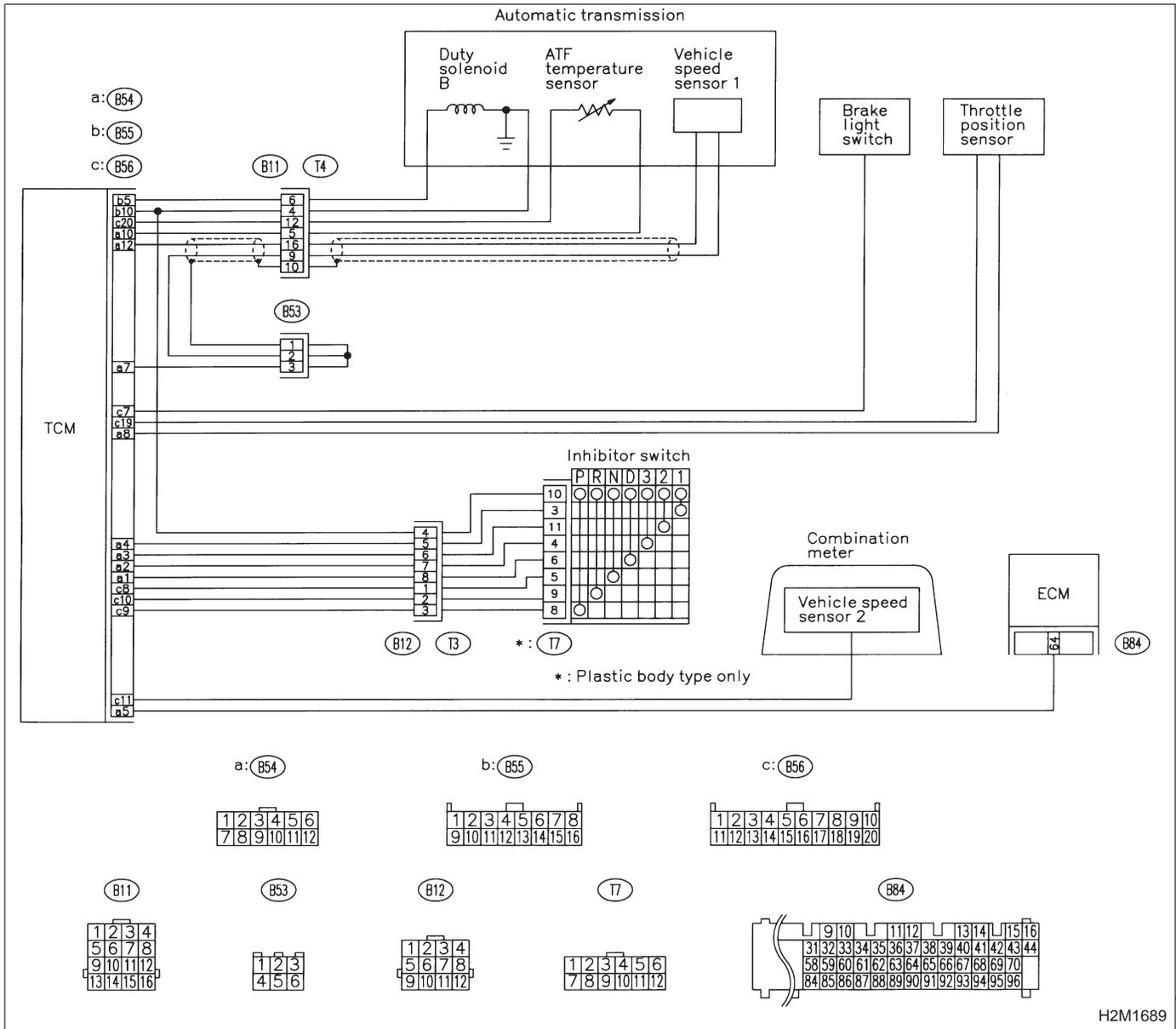
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No lock-up (after engine warm-up)
- No shift or excessive tight corner “braking”

WIRING DIAGRAM:



H2M1689

CAUTION:

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

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

10BQ1	CHECK ANY OTHER DTC (BESIDES DTC P0740) 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 [T10A0].>

NO : Go to step **10BQ2**.

10BQ2	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 **10BQ3**.

10BQ3	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 **10BQ4**.

10BQ4	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 **10BQ5**.

10BQ5	CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.
--------------	--

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T800].>

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***

YES : Repair or replace vehicle speed sensor 2 circuit.

NO : Go to step **10BQ6**.

10BQ6	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 **10BQ7**.

10BQ7	CHECK INHIBITOR SWITCH CIRCUIT.
--------------	--

Check inhibitor switch circuit. <Ref. to 2-7 [T10BI0].>

CHECK : ***Is there any trouble in inhibitor switch circuit?***

YES : Repair or replace inhibitor switch circuit.

NO : Go to step **10BQ8**.

10BQ8	CHECK BRAKE LIGHT SWITCH CIRCUIT.
--------------	--

Check brake light switch circuit. <Ref. to 2-7 [T10BH0].>

CHECK : ***Is there any trouble in brake light switch circuit?***

YES : Repair or replace brake light switch circuit.

NO : Go to step **10BQ9**.

10BQ9	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 **10BQ10**.

10BQ10	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 **10BQ11**.

10BQ11	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.

OBD (FB1)
 P0743 <ATLU>
 B2M0662

BR: DTC P0743
— TORQUE CONVERTER CLUTCH SYSTEM
(DUTY SOLENOID B) ELECTRICAL —

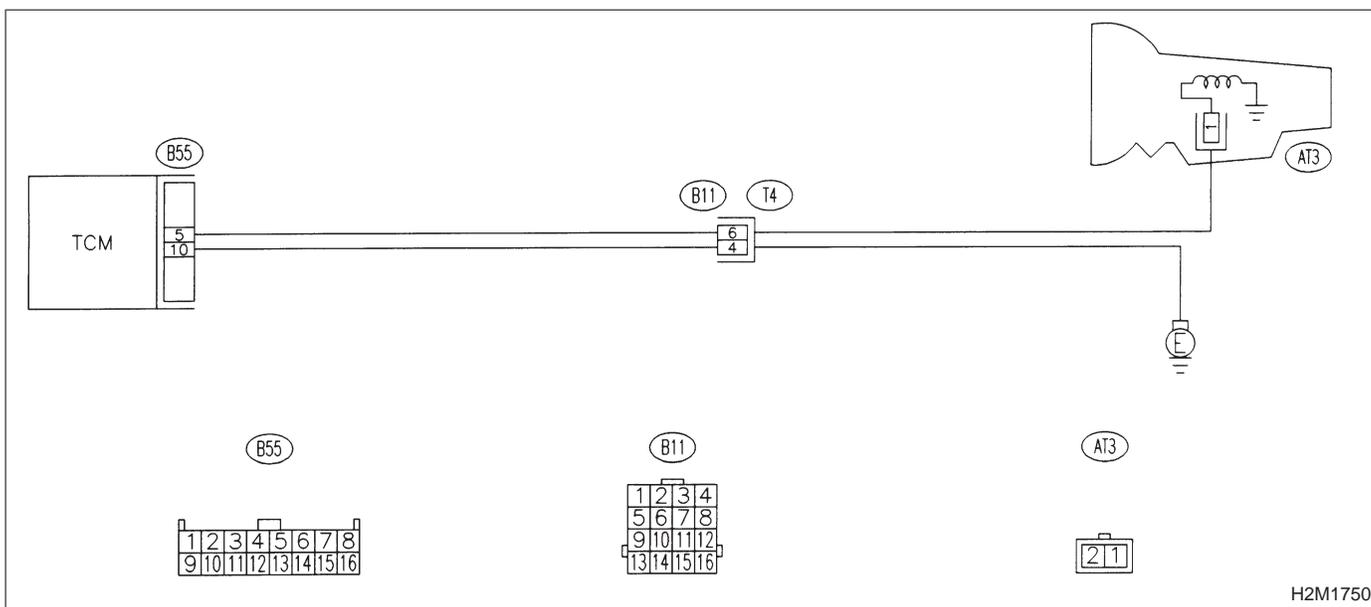
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No lock-up (after engine warm-up)

WIRING DIAGRAM:



CAUTION:

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

10BR1	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.

OBD (FB1)
 P0748 <ATPL>
 B2M0663

BS: DTC P0748
— PRESSURE CONTROL SOLENOID (DUTY SOLENOID A) ELECTRICAL —

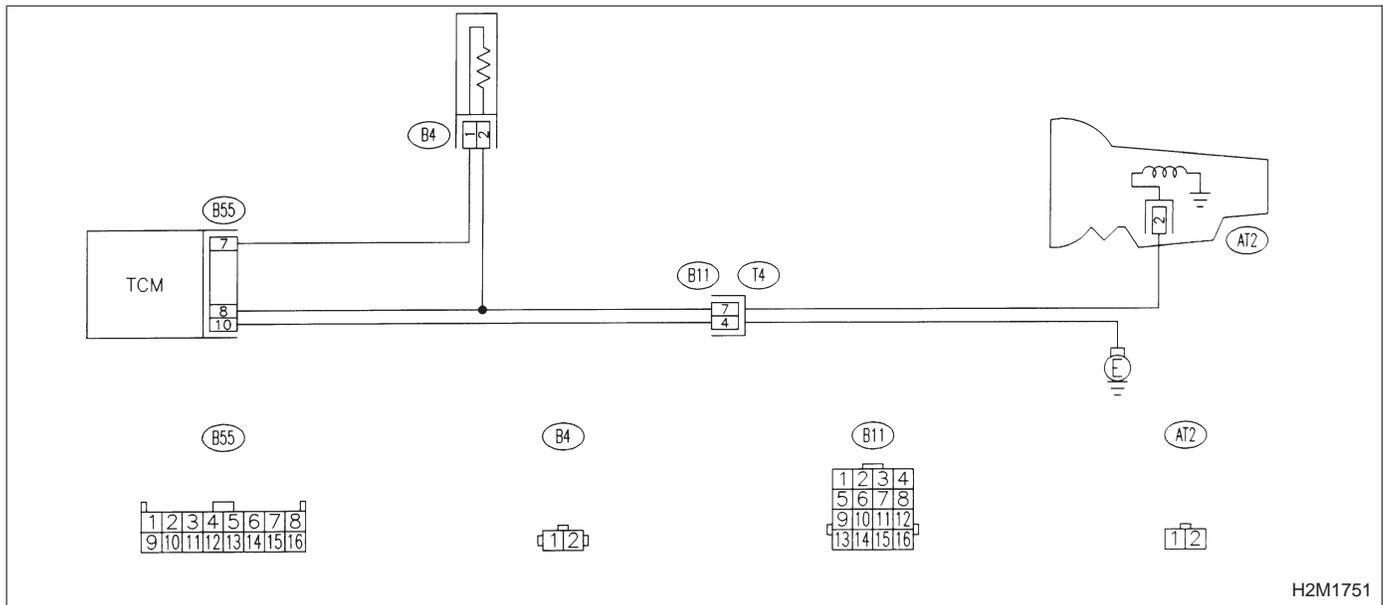
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Excessive shift shock

WIRING DIAGRAM:



CAUTION:

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

10BS1	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.

OBD (FB1)
 P0753 <ATSFT1>
 B2M0664

BT: DTC P0753
— SHIFT SOLENOID A (SHIFT SOLENOID 1)
ELECTRICAL —

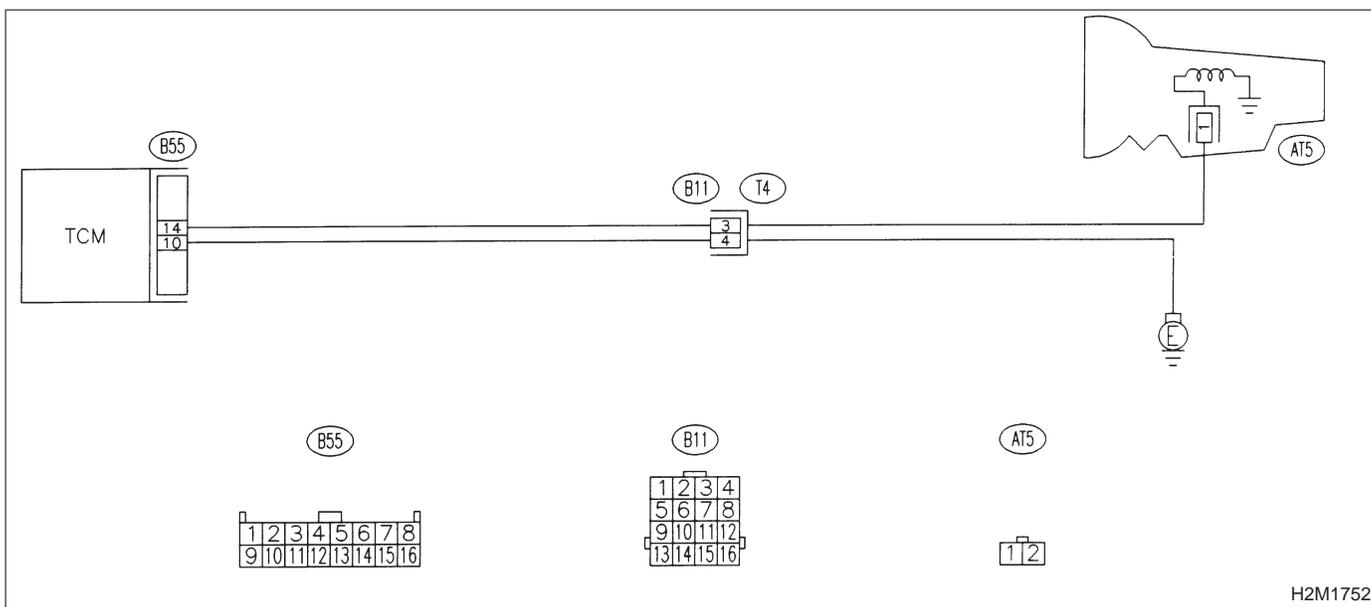
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No shift

WIRING DIAGRAM:



H2M1752

CAUTION:

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

10BT1	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.

OBD (FB1)
 P0758 <ATSFT2>

B2M0665

**BU: DTC P0758
 — SHIFT SOLENOID B (SHIFT SOLENOID 2)
 ELECTRICAL —**

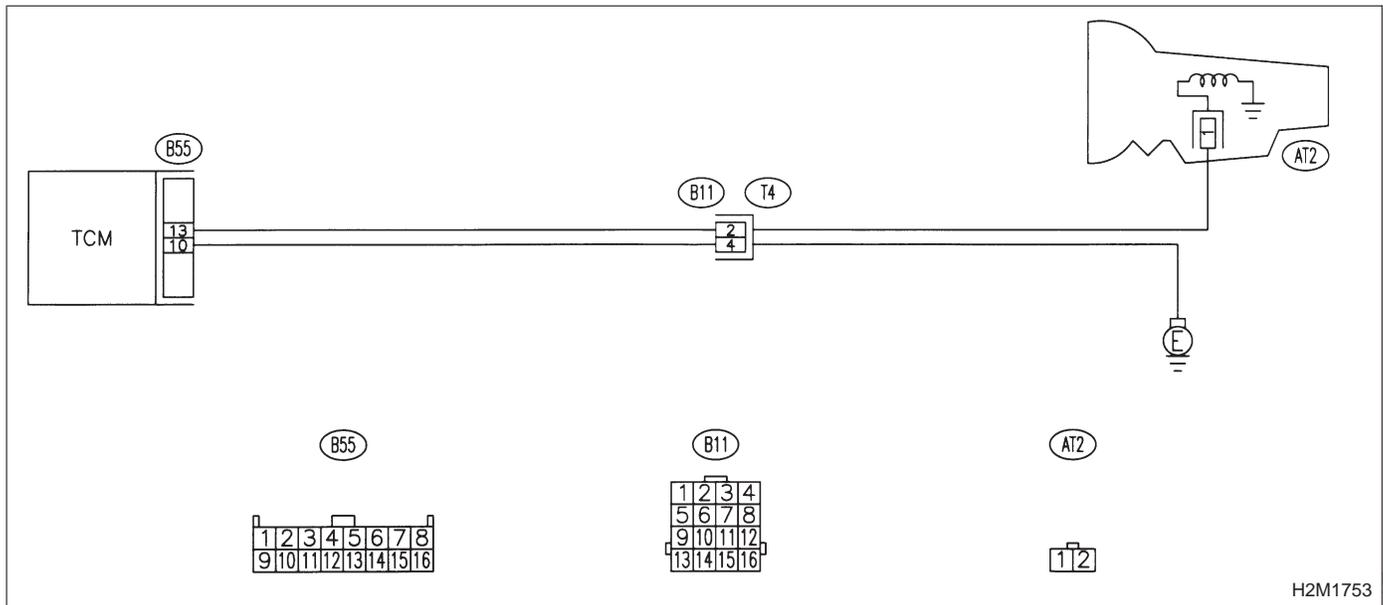
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No shift

WIRING DIAGRAM:



CAUTION:

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

10BU1	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.

OBD (FB1)
 P0760<ATOVR_F>
 B2M0666

BV: DTC P0760
— SHIFT SOLENOID C (SHIFT SOLENOID 3) MALFUNCTION —

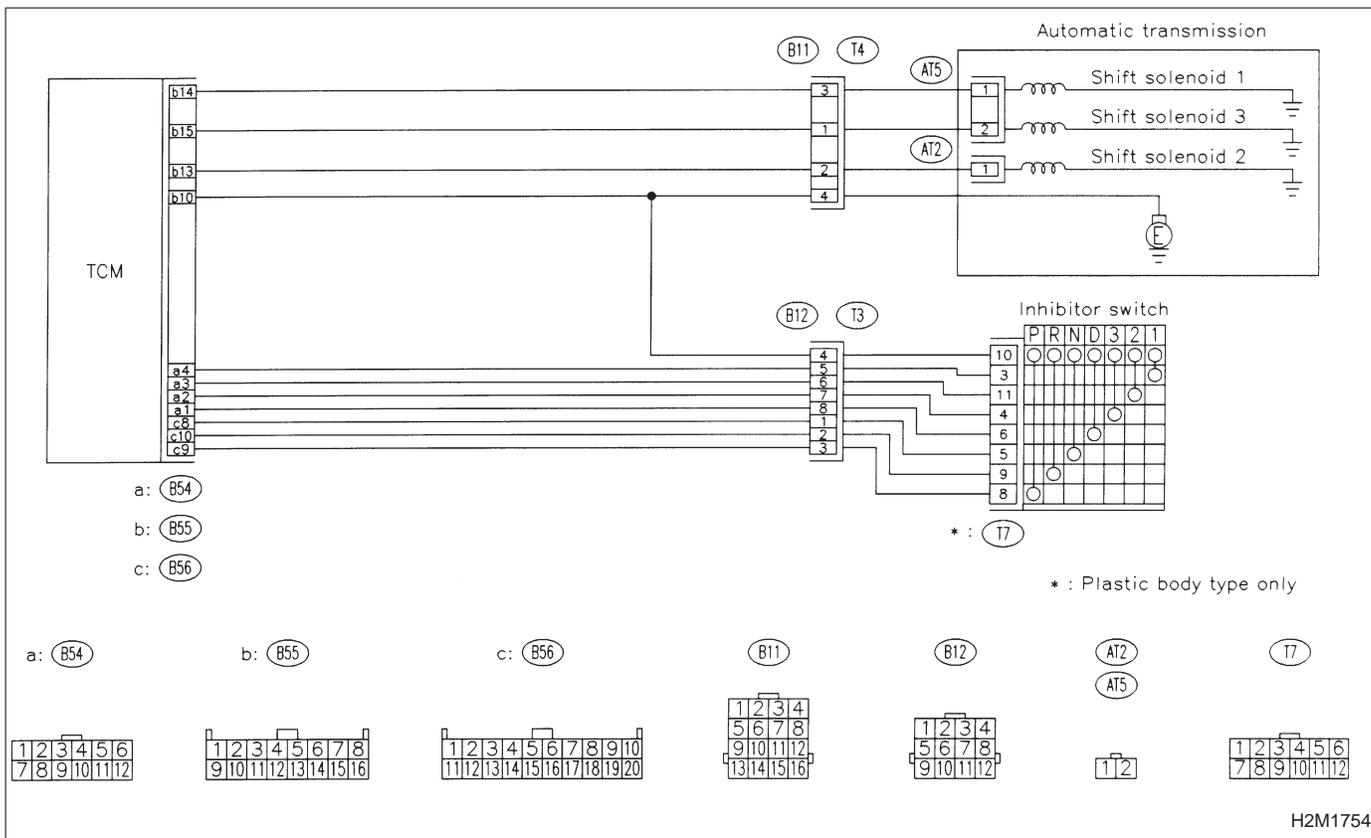
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Ineffective engine brake with selector lever in “3”

WIRING DIAGRAM:



CAUTION:

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

10BV1 CHECK ANY OTHER DTC (BESIDES DTC P0760) 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 [T10A0].>
- NO** : Go to step **10BV2**.

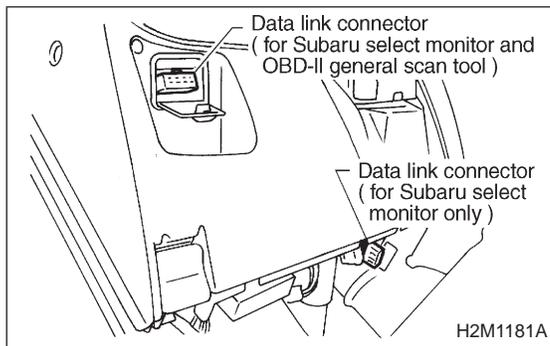
10BV2 CHECK INHIBITOR SWITCH CIRCUIT.

Check inhibitor switch circuit. <Ref. to 2-7 [T10BI0].>

CHECK : *Is there any trouble in inhibitor switch circuit?*

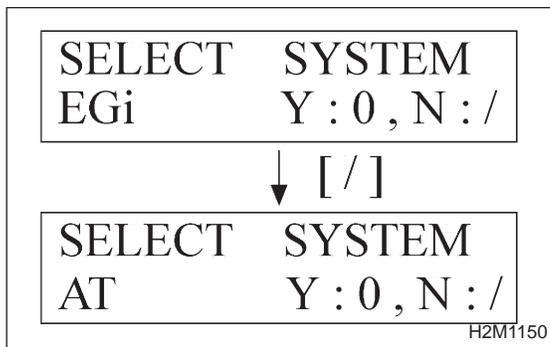
YES : Repair or replace inhibitor switch circuit.

NO : Go to step **10BV3**.

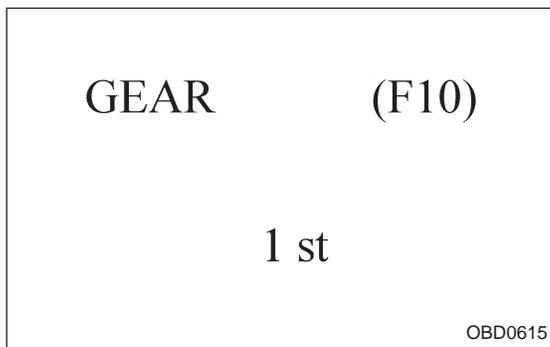
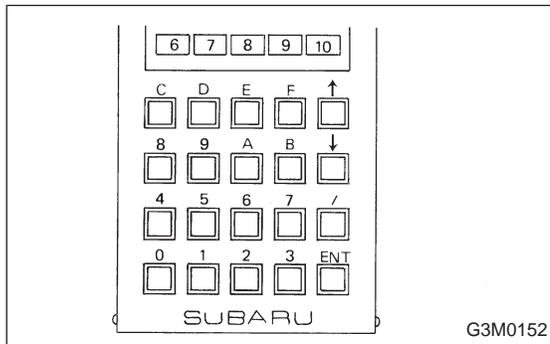


10BV3 CHECK GEAR POSITION.

- 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) Select AT mode using function key. Press the function key [/], and change to AT mode.
 - 7) Press the function key [0].



- 8) Designate mode using function key.
Function mode for AT: F10



- 9) Move selector lever to "D" and drive the vehicle.
- 10) Read data on Subaru select monitor.

CHECK : *Does gear position change according to throttle position and vehicle speed?*

YES : Go to step **10BV4**.

NO : Go to step **10BV6**.

10BV4 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 **10BV5**.

10BV5 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.

10BV6 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 **10BV7**.

10BV7 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 **10BV8**.

10BV8 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 **10BV9**.

10BV9	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 **10BV10**.

10BV10	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.

OBD (FB1)
 P0763 <ATOVR>
 B2M0667

**BW: DTC P0763
 — SHIFT SOLENOID C (SHIFT SOLENOID 3)
 ELECTRICAL —**

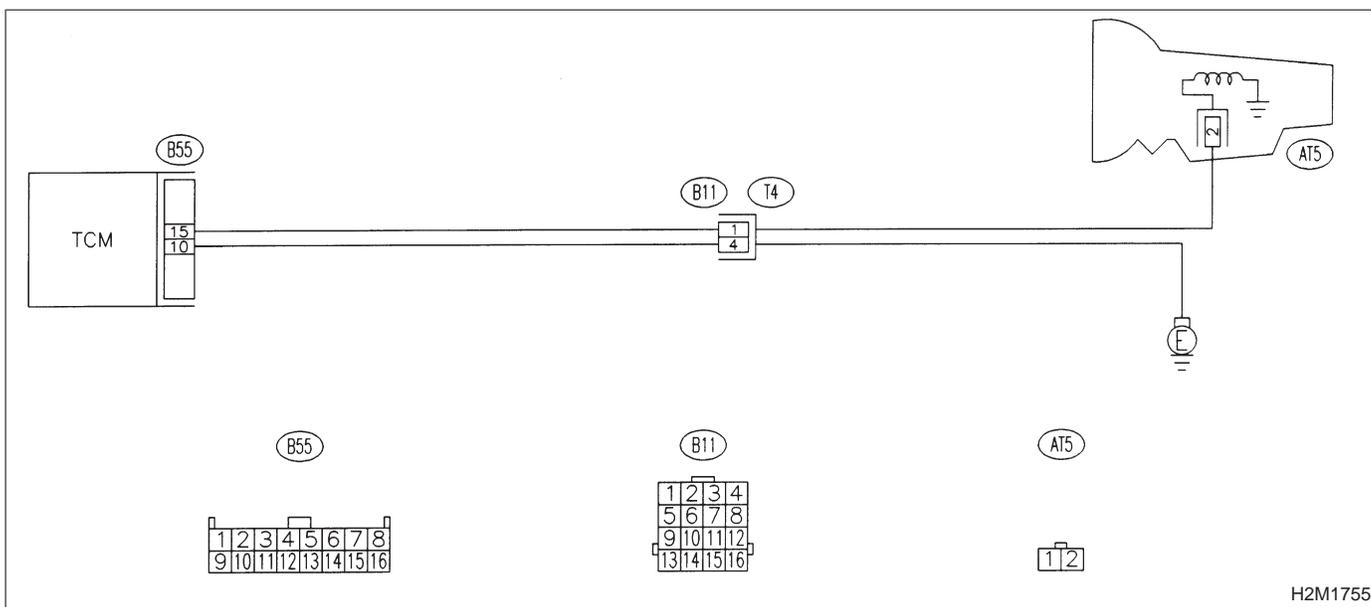
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Ineffective engine brake with selector lever in “3”

WIRING DIAGRAM:



H2M1755

CAUTION:

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

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

10BW1	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.

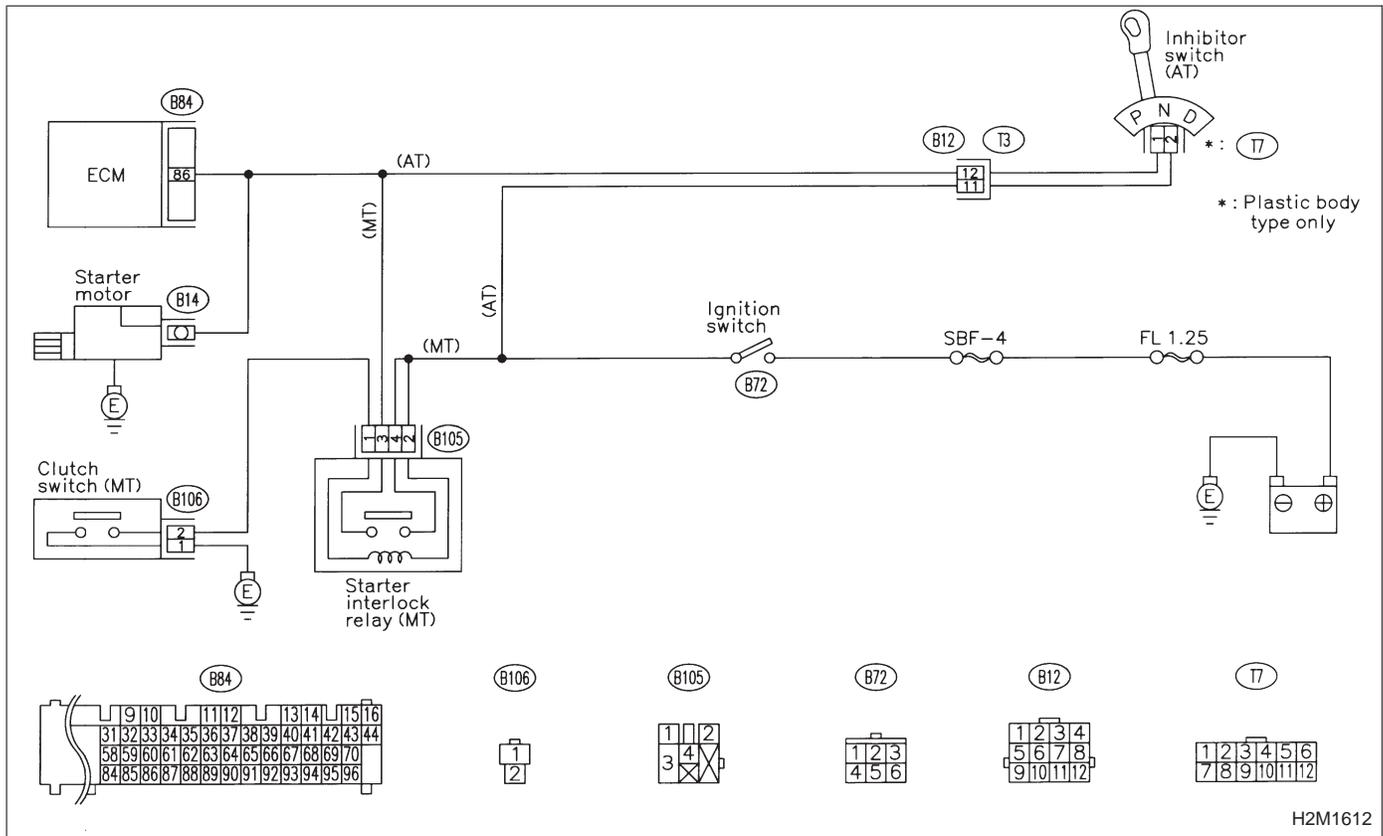
OBD (FB1)
 P1100 <ST_SWOFF>
 B2M1113

BX: DTC P1100
— STARTER SWITCH CIRCUIT LOW INPUT
—

DTC DETECTING CONDITION:
 ● Two consecutive driving cycles with fault

TROUBLE SYMPTOM:
 ● Failure of engine to start

WIRING DIAGRAM:



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

10BX1**CHECK OPERATION OF STARTER MOTOR.**

CHECK : *Does starter motor operate when ignition switch to "ST"?*

NOTE:

- On AT vehicles, place the inhibitor switch in the "P" or "N" position.
- On MT vehicles, depress the clutch pedal.

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].>

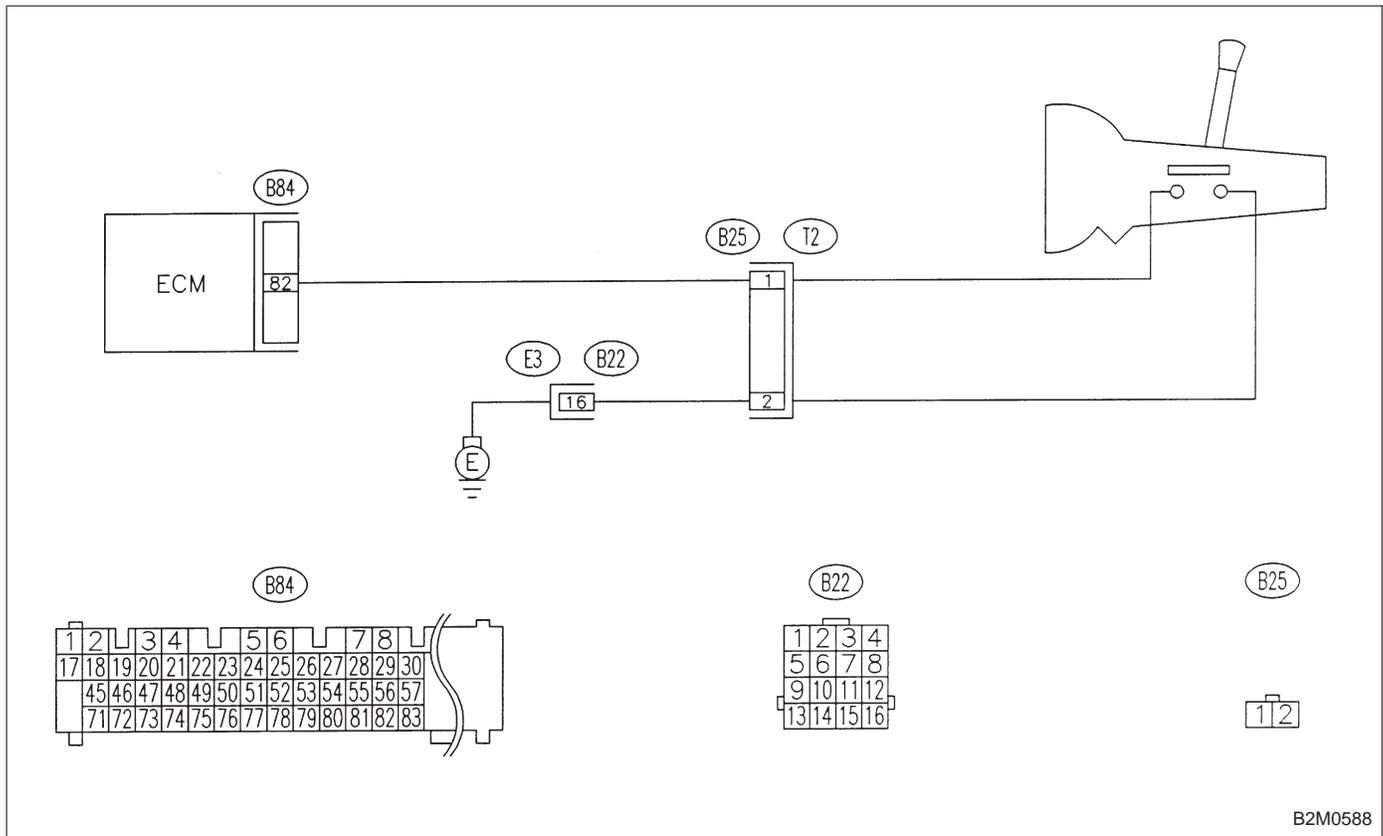
OBD (FB1)
 P1101 <N_SW>
 B2M1114

BY: DTC P1101
— NEUTRAL POSITION SWITCH CIRCUIT MALFUNCTION [MT VEHICLES] —

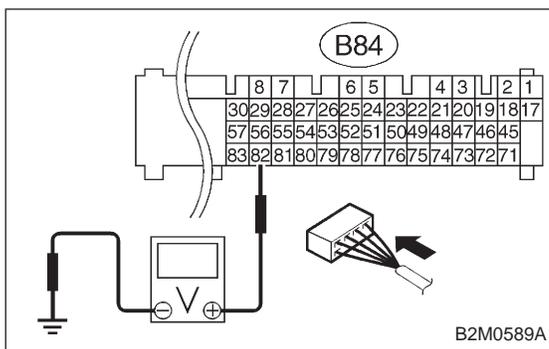
- DTC DETECTING CONDITION:**
- Two consecutive driving cycles with fault

- TROUBLE SYMPTOM:**
- Erroneous idling

WIRING DIAGRAM:



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



10BY1 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 next step 3).

NO : Go to step 10BY3.

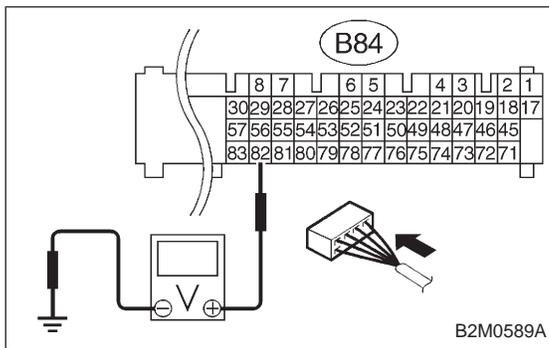
- 3) Measure voltage between ECM and chassis ground.

Connector & terminal (B84) No. 82 (+) — Chassis ground (-):

CHECK : Is the voltage less than 1 V in other positions?

YES : Go to step 10BY2.

NO : Go to step 10BY3.



10BY2 CHECK POOR CONTACT.

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

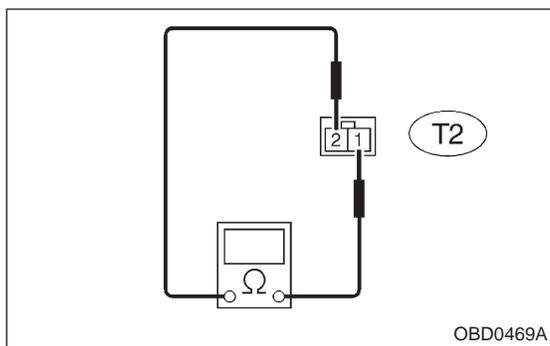
CHECK : Is there poor contact in ECM connector?

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.

**10BY3 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 next step 4).

NO : Repair short circuit in transmission harness or replace neutral position switch.

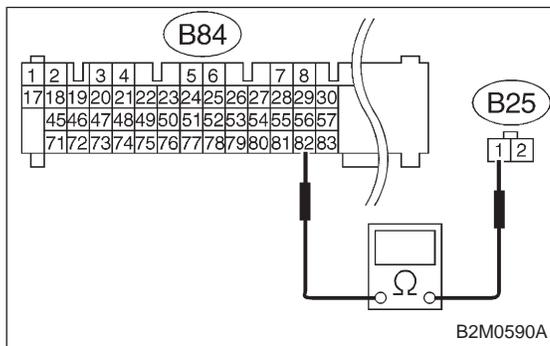
- 4) Measure resistance between transmission harness connector terminals.

Connector & terminal**(T2) No. 1 — No. 2:**

CHECK : Is the resistance less than 1 Ω in other positions?

YES : Go to step 10BY4.

NO : Repair open circuit in transmission harness or replace neutral position switch.

**10BY4 CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH.**

- 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 next step 3).

NO : Repair open circuit in harness between ECM and transmission harness connector.

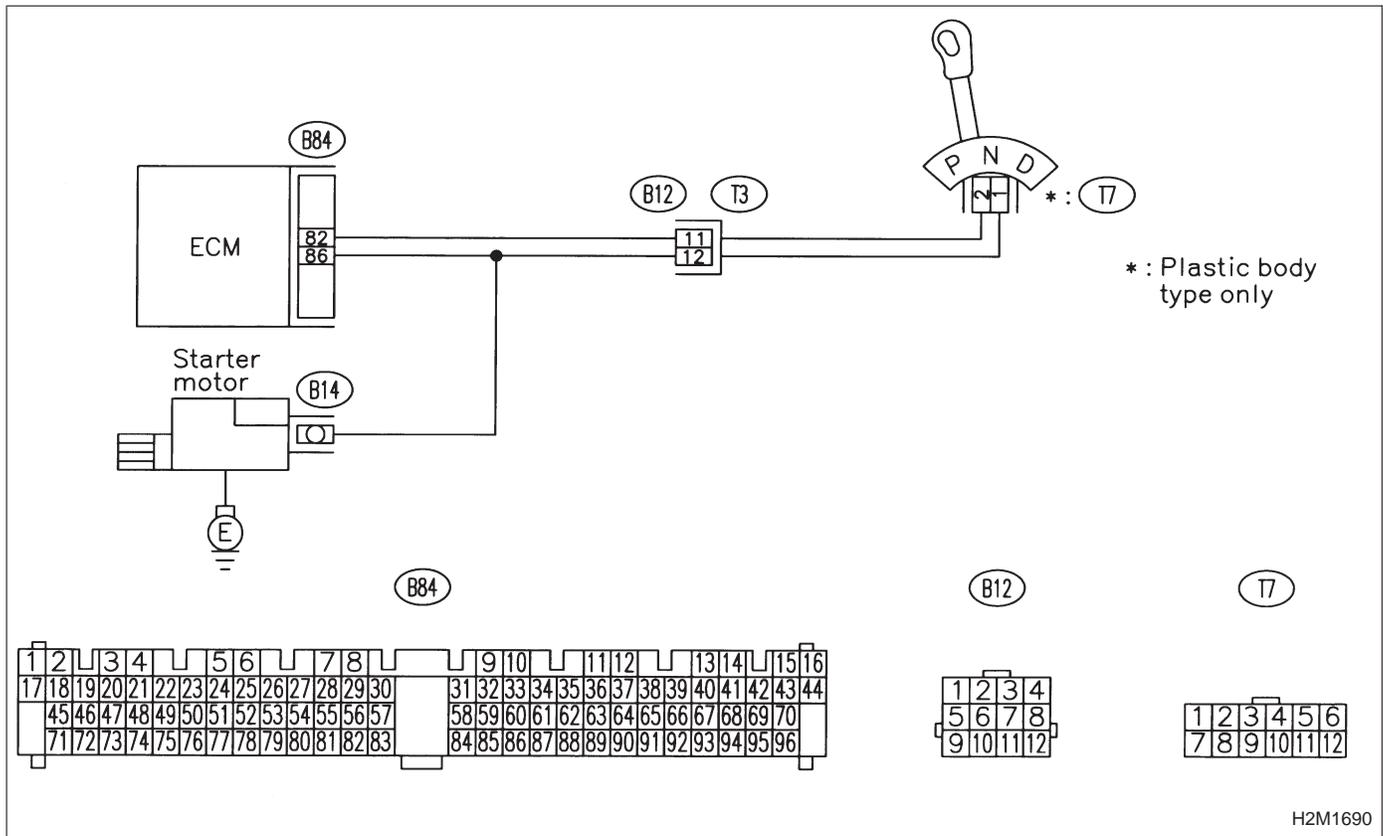
OBD (FB1)
 P1101 <N_SWOFF>
 B2M1115

BZ: DTC P1101
— NEUTRAL POSITION SWITCH CIRCUIT
HIGH INPUT [AT VEHICLES] —

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

- TROUBLE SYMPTOM:**
- Erroneous idling

WIRING DIAGRAM:



H2M1690

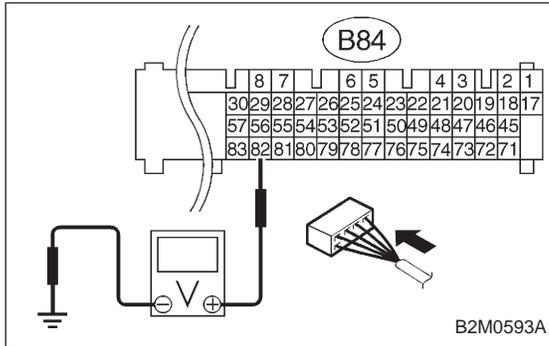
CAUTION:
 After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
 <Ref. to 2-7 [T3D0] and [T3E0].>

10BZ1 CHECK DTC P0705 ON DISPLAY.

CHECK : Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0705?

YES : Inspect DTC P0705 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Go to step 10BZ2.



10BZ2 CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal

(B84) No. 82 (+) — Chassis ground (-):

CHECK : Is the voltage less than 1 V in "N" and "P" positions?

YES : Go to next step 3).

NO : Go to step 10BZ4.

- 3) Measure voltage between ECM and chassis ground.

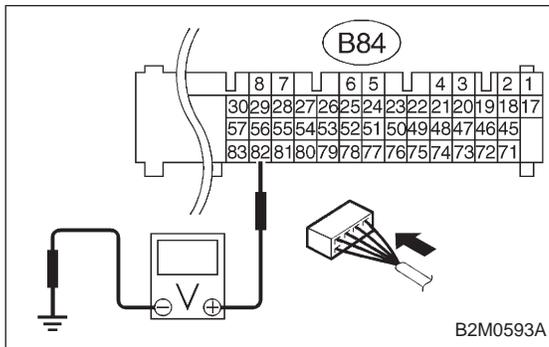
Connector & terminal

(B84) No. 82 (+) — Chassis ground (-):

CHECK : Is the voltage between 4.5 and 5.5 V in other positions?

YES : Go to step 10BZ3.

NO : Go to step 10BZ4.



10BZ3 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.

10BZ4 CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

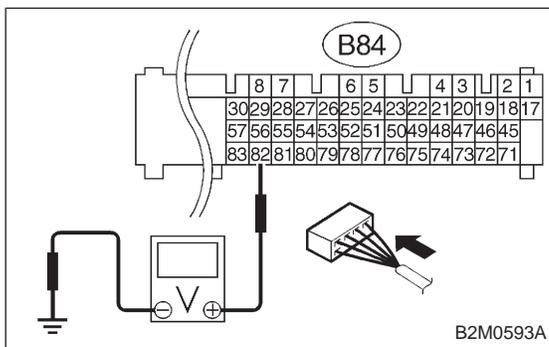
Connector & terminal

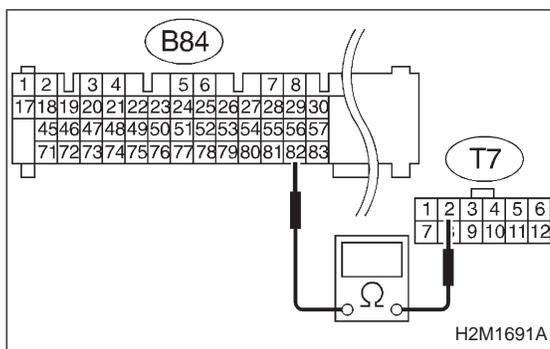
(B84) No. 82 (+) — Chassis ground (-):

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 10BZ5.



10BZ5 CHECK INHIBITOR SWITCH TYPE.**CHECK** : *Is inhibitor switch type plastic body?***YES** : Go to step 10BZ6.**NO** : Go to step 10BZ8.**10BZ6 CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH.**

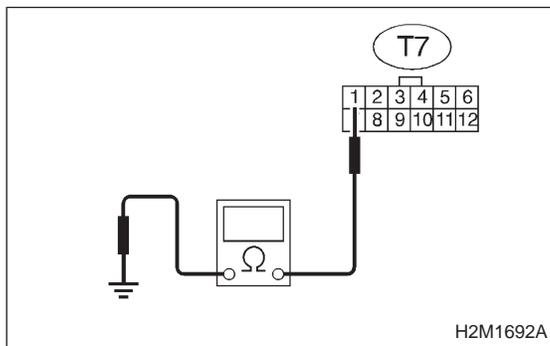
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from ECM and inhibitor switch.
- 3) Measure resistance of harness between ECM and inhibitor switch connector.

Connector & terminal
(B84) No. 82 — (T7) No. 2:

CHECK : *Is the resistance less than 1 Ω?***YES** : Go to next step 4).**NO** : Repair harness and connector.**NOTE:**

In this case, repair the following:

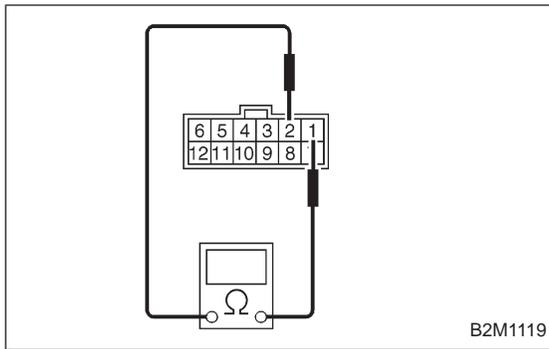
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)
- Poor contact in inhibitor switch connector
- Poor contact in ECM connector



- 4) 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 10BZ7.**NO** : Repair open circuit in inhibitor switch ground line.



10BZ7 CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals

No. 1 — No. 2:

CHECK : Is the resistance less than 1 Ω in "N" and "P" positions?

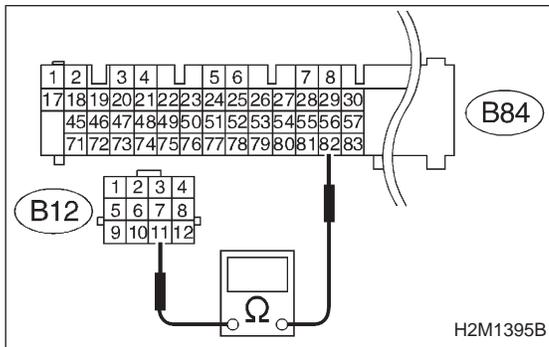
YES : Go to next **CHECK** .

NO : Replace inhibitor switch.

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.



10BZ8 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 and transmission harness connector.

Connector & terminal

(B84) No. 82 — (B12) No. 11:

CHECK : Is the resistance less than 1 Ω?

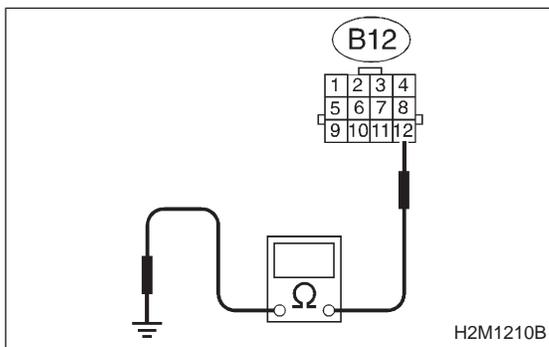
YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and transmission harness connector
- Poor contact in transmission harness connector
- Poor contact in ECM connector



- 4) Measure resistance of harness between transmission harness connector and engine ground.

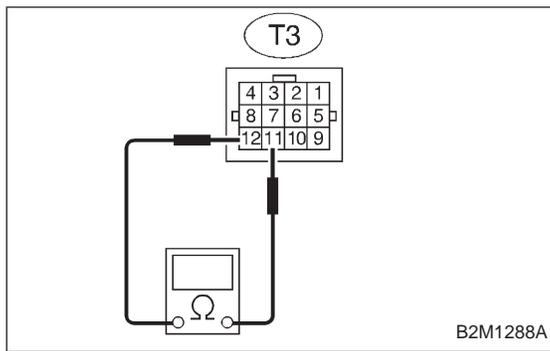
Connector & terminal

(B12) No. 12 — Engine ground:

CHECK : Is the resistance less than 5 Ω?

YES : Go to step 10BZ9.

NO : Repair open circuit in inhibitor switch ground line.

**10BZ9 CHECK INHIBITOR SWITCH.**

Measure resistance between transmission harness connector receptacle's terminals.

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

CHECK : *Is the resistance less than 1 Ω in "N" and "P" positions?*

YES : Go to next **CHECK** .

NO : Replace inhibitor switch.

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.

OBD	(FB1)
P1102	
OBD0481	

CA: DTC P1102
— PRESSURE SOURCES SWITCHING
SOLENOID VALVE CIRCUIT LOW INPUT —

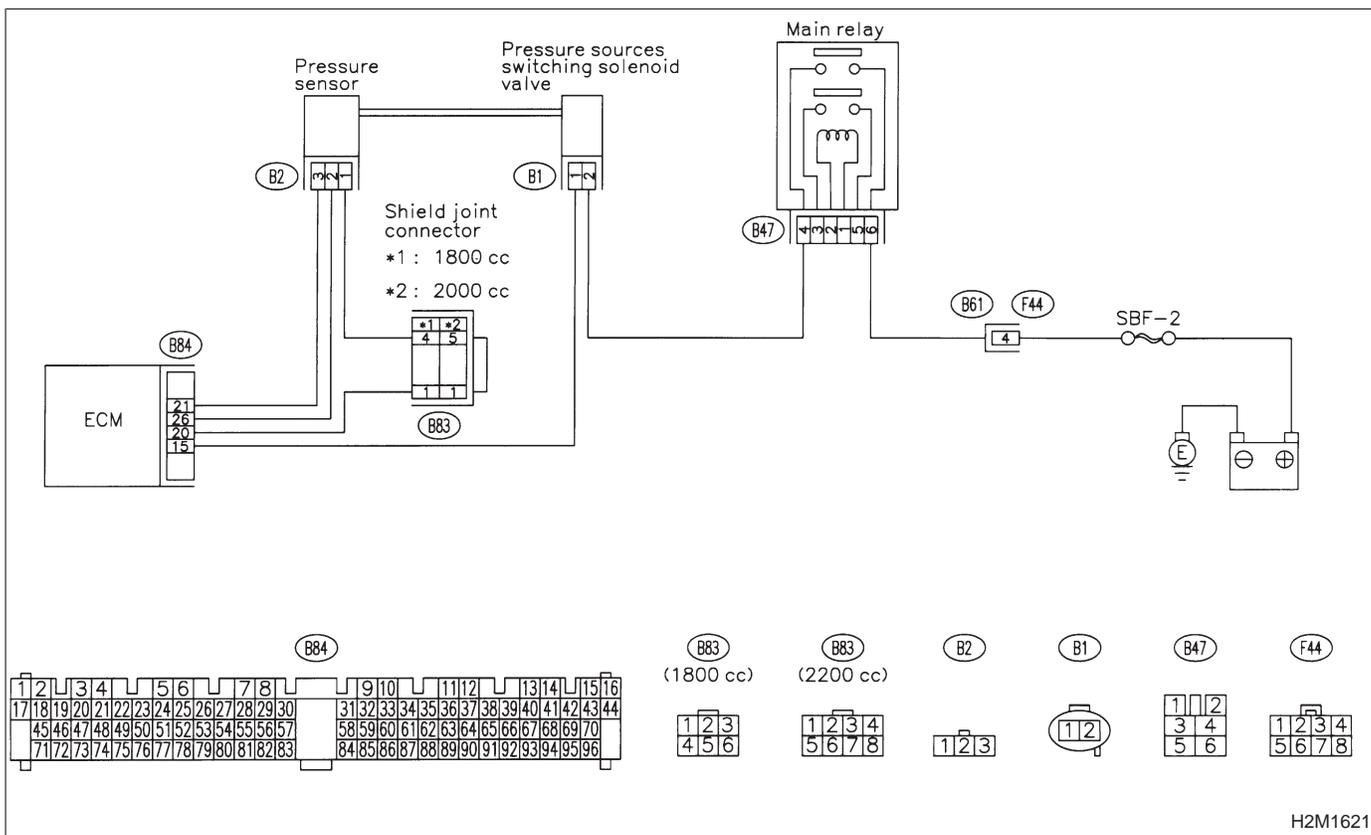
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Failure of engine to start

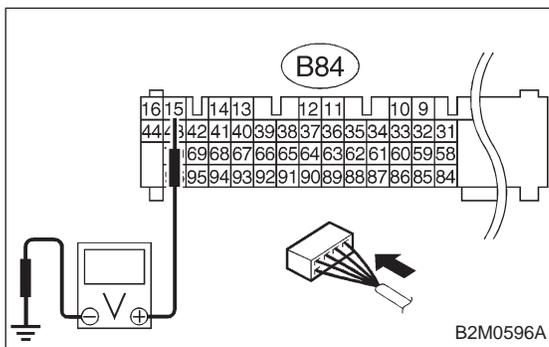
WIRING DIAGRAM:



CAUTION:

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

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



10CA1 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 10CA2.
- NO** : Go to step 10CA3.

10CA2 CHECK POOR CONTACT.

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

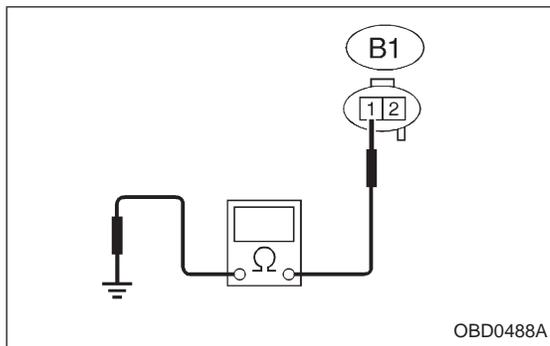
CHECK : *Is there poor contact in ECM connector?*

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.

**10CA3 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.

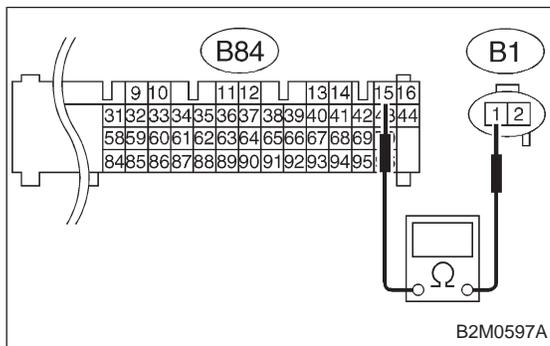
Connector & terminal

(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 next step 4).



4) 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?*

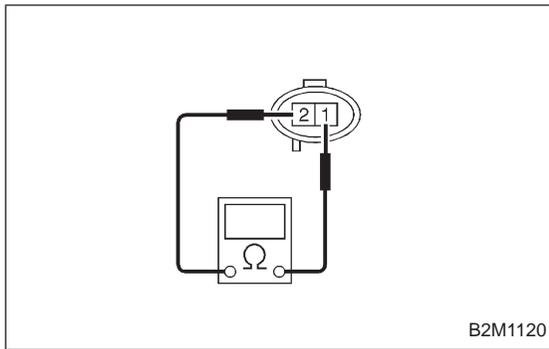
YES : Go to step 10CA4.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and pressure sources switching solenoid valve connector
- Poor contact in shield joint connector (B83)


10CA4 CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

Measure resistance between pressure sources switching solenoid valve connector terminals.

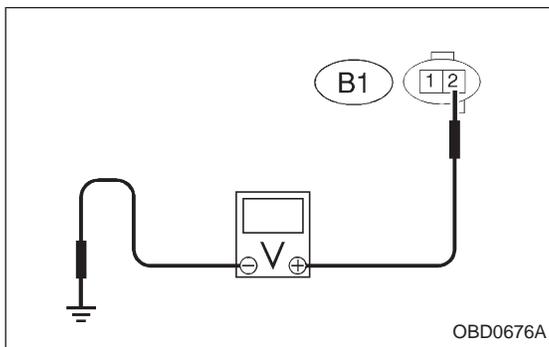
Terminals

No. 1 — No. 2:

CHECK : *Is the resistance between 10 and 100 Ω?*

YES : Go to step **10CA5**.

NO : Replace pressure sources switching solenoid valve.


10CA5 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 **10CA6**.

NO : Repair open circuit in harness between main relay and pressure sources switching solenoid valve connector.

10CA6	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.

OBD	(FB1)
P1103	<TRQ>
OBD0489	

CB: DTC P1103
— ENGINE TORQUE CONTROL SIGNAL
CIRCUIT MALFUNCTION —

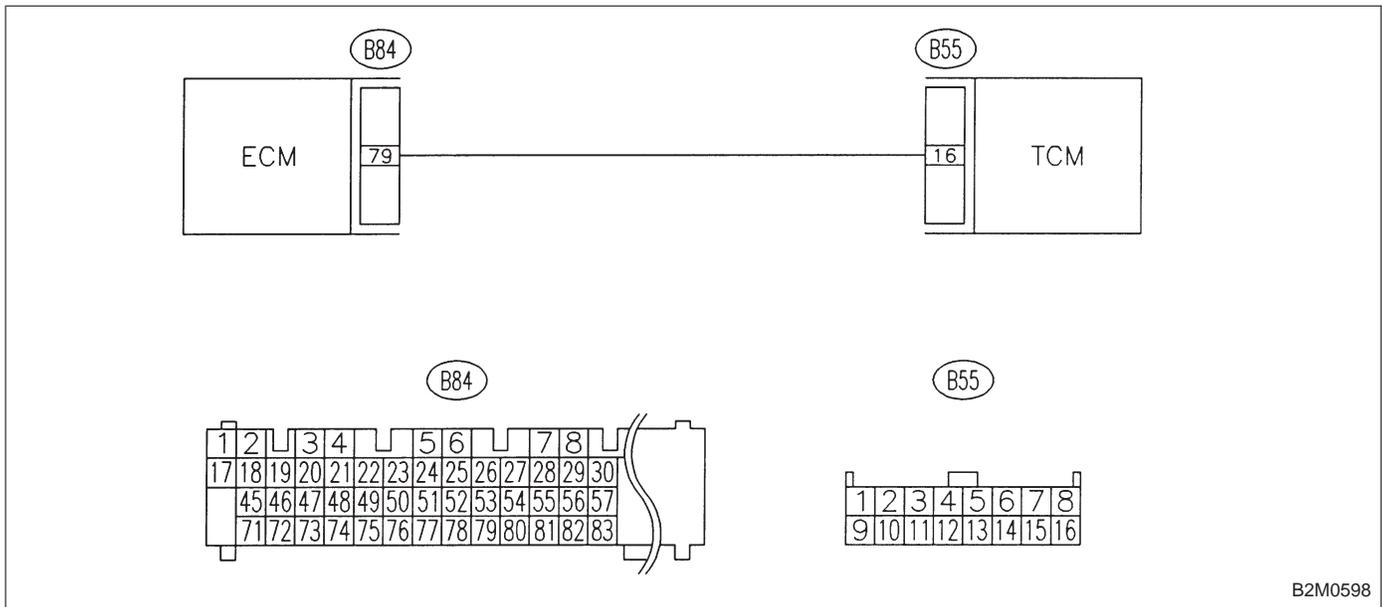
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Excessive shift shock

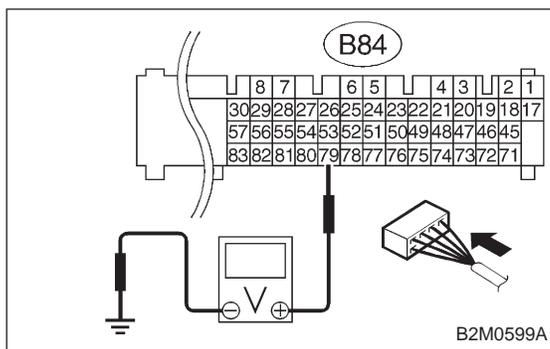
WIRING DIAGRAM:



CAUTION:

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

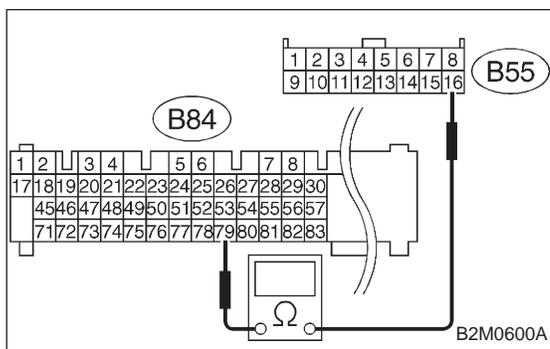
<Ref. to 2-7 [T3D0] and [T3E0].>

**10CB1 CHECK INPUT SIGNAL FOR ECM.**

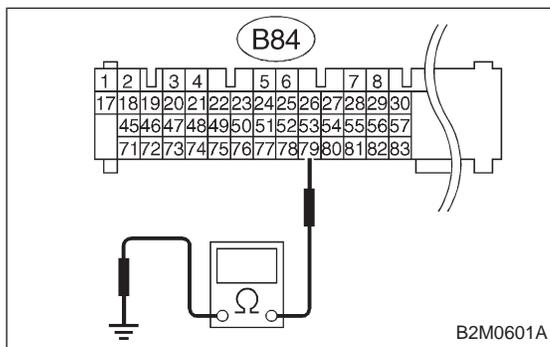
- 1) Turn ignition switch to ON.
- 2) Measure voltage between ECM and chassis ground.

Connector & terminal**(B84) No. 79 (+) — Chassis ground (-):****CHECK** : Is the voltage more than 4.5 V?**YES** : Go to step 10CB2.**NO** : Go to step 10CB3.**10CB2 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.**10CB3 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 next step 4).**NO** : Repair open circuit in harness between ECM and TCM connector.

- 4) 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 10CB4.

10CB4	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.

OBD (FB1)
 P1120 <ST_SWON>
 B2M1122

CC: DTC P1120
— STARTER SWITCH CIRCUIT HIGH INPUT —

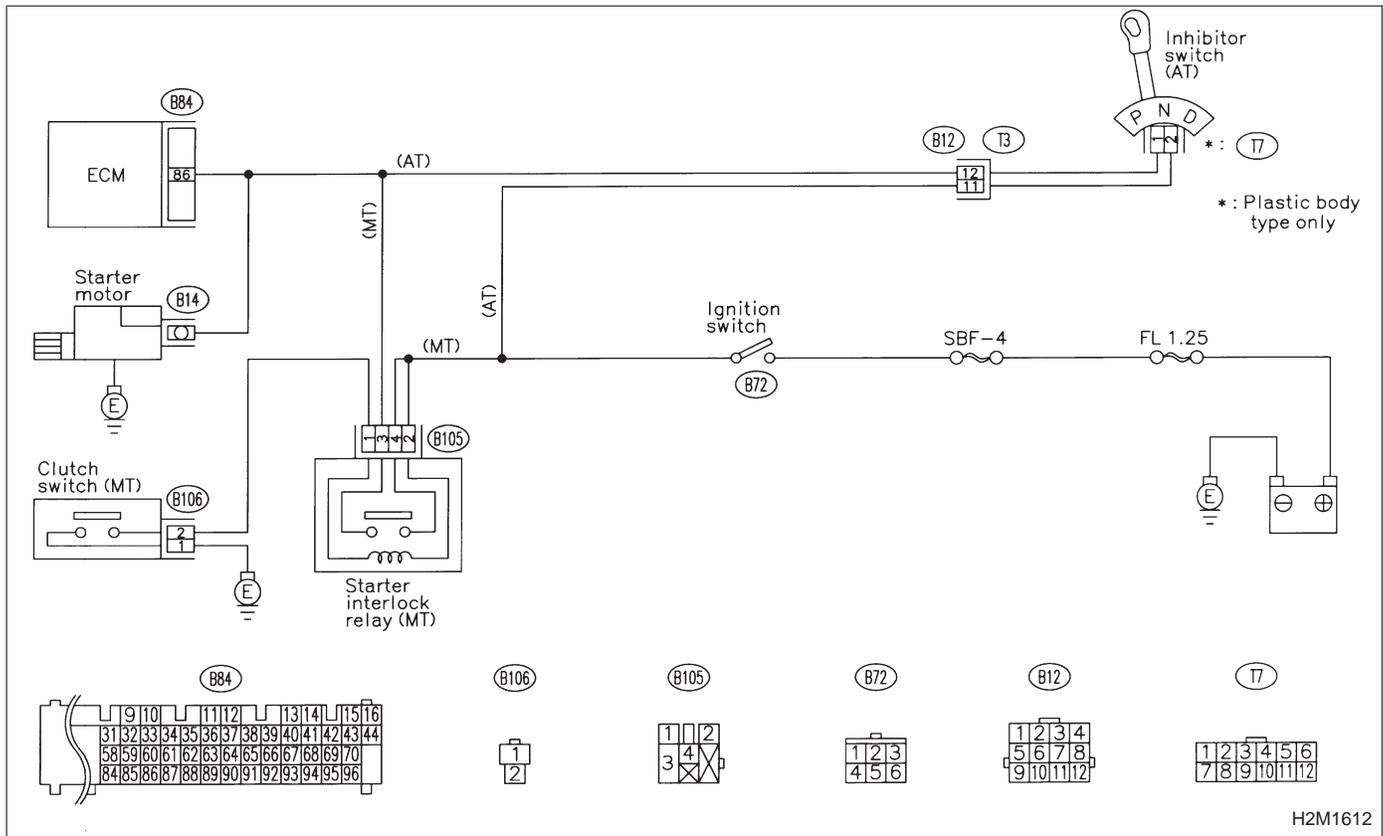
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Failure of engine to start

WIRING DIAGRAM:



H2M1612

CAUTION:

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

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

10CC1

CHECK OPERATION OF STARTER MOTOR.

CHECK : *Does starter motor operate when ignition switch to "ON"?*

NOTE:

- On AT vehicles, place the inhibitor switch in each position.
- On MT vehicles, depress or release the clutch pedal.

YES : Repair battery short circuit in starter motor circuit. After repair, replace ECM.

NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

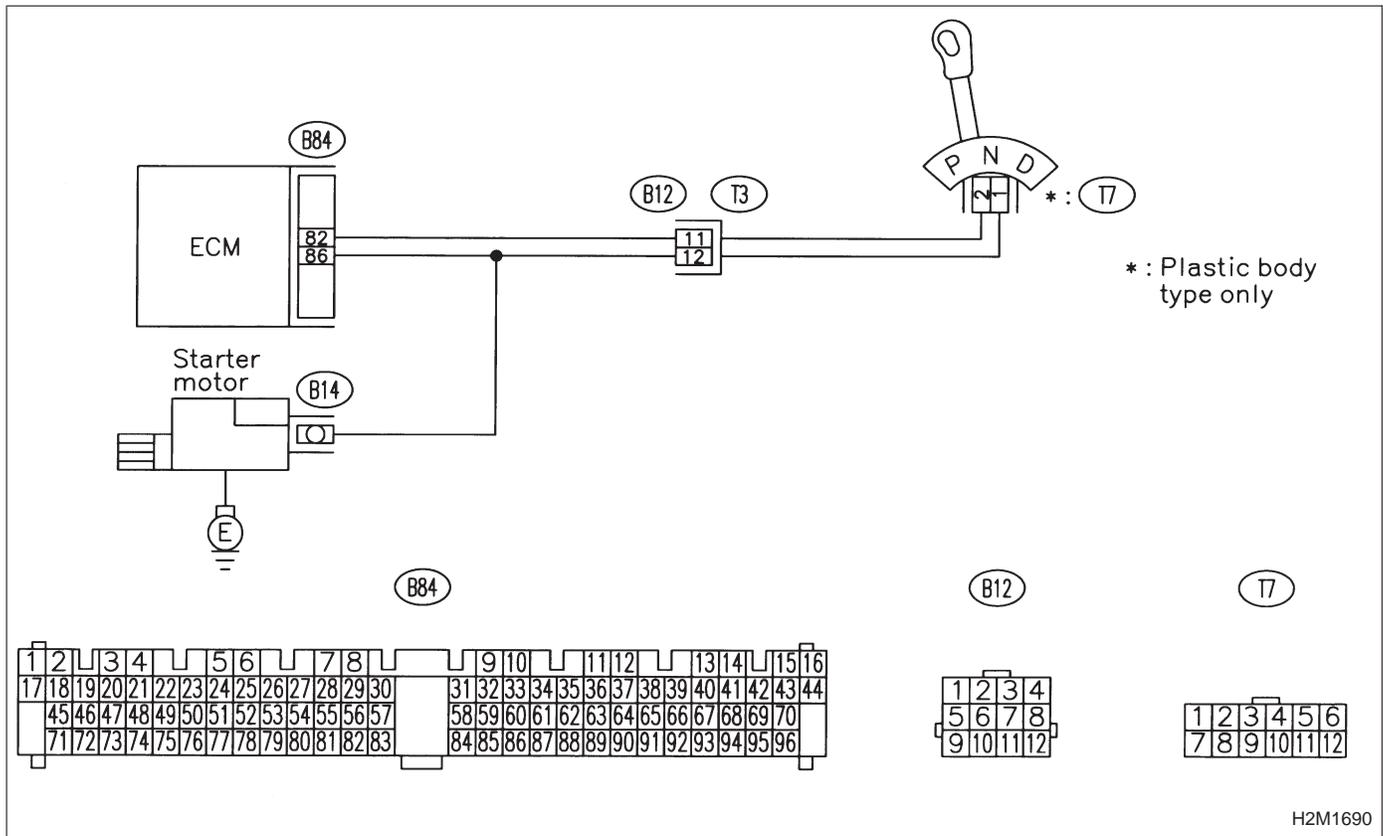
OBD (FB1)
 P1121 <N_SWON>
 B2M1123

CD: DTC P1121
— NEUTRAL POSITION SWITCH CIRCUIT
LOW INPUT [AT VEHICLES] —

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

- TROUBLE SYMPTOM:**
- Erroneous idling

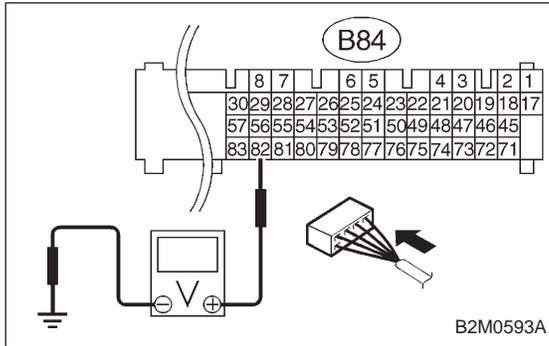
WIRING DIAGRAM:



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

10CD1 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 [T10A0].>
- NO** : Go to step **10CD2**.

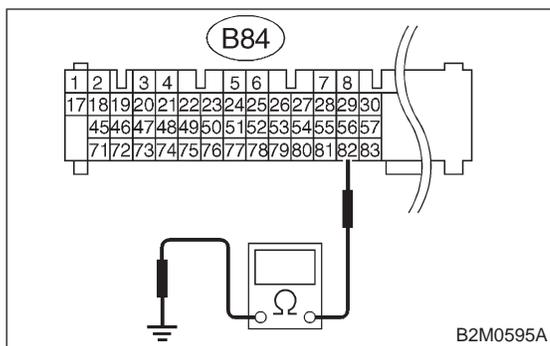


10CD2 CHECK INPUT SIGNAL FOR ECM.

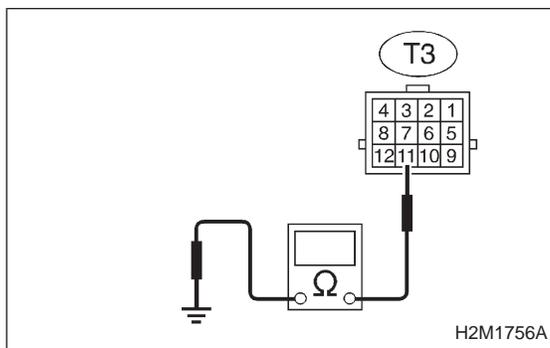
- 1) Turn ignition switch to ON.
 - 2) Measure voltage between ECM and chassis ground.
- Connector & terminal (B84) No. 82 (+) — Chassis ground (-):**
- CHECK** : Is the voltage between 4.5 and 5.5 V in other positions?
 - YES** : Even if MIL lights up, the circuit has returned to a normal condition at this time.
 - NO** : Go to step **10CD3**.

10CD3 CHECK INHIBITOR SWITCH TYPE.

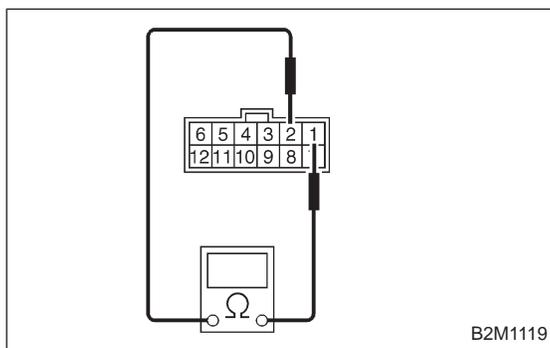
- CHECK** : Is inhibitor switch type plastic body?
- YES** : Go to step **10CD4**.
- NO** : Go to step **10CD7**.

**10CD4****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 10CD5.**10CD5****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. 11 — 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 10CD6.**10CD6****CHECK INHIBITOR SWITCH.**

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals**No. 1 — No. 2:****CHECK** : Is the resistance more than 1 $M\Omega$ in other positions?**YES** : Go to next **CHECK** .**NO** : Replace inhibitor switch.

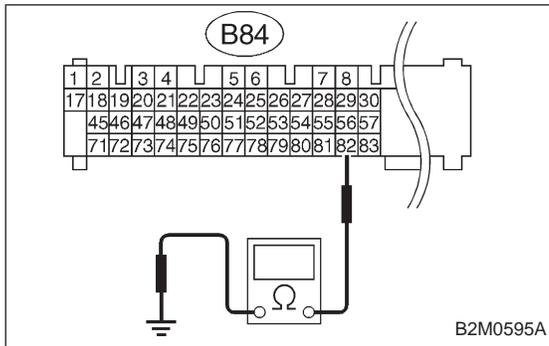
CHECK : *Is there any fault in selector cable connection to inhibitor switch?*

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.



10CD7 CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.

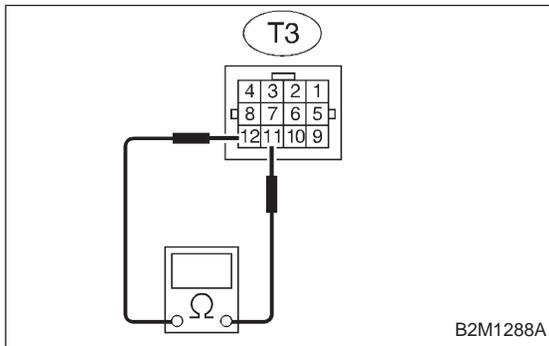
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from ECM and transmission harness connector.
- 3) Measure resistance of harness between ECM and chassis ground.

Connector & terminal (B84) No. 82 — Chassis ground:

CHECK : *Is the resistance less than 10 Ω?*

YES : Repair short circuit in harness between ECM and transmission harness connector.

NO : Go to step **10CD8**.



10CD8 CHECK INHIBITOR SWITCH.

Measure resistance between transmission harness connector receptacle's terminals.

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

CHECK : *Is the resistance more than 1 MΩ in other positions?*

YES : Go to next **CHECK** .

NO : Replace inhibitor switch.

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.

OBD (FB1)
 P1122 <BR_HI>
 B2M1124

CE: DTC P1122
— PRESSURE SOURCES SWITCHING SOLENOID VALVE CIRCUIT HIGH INPUT —

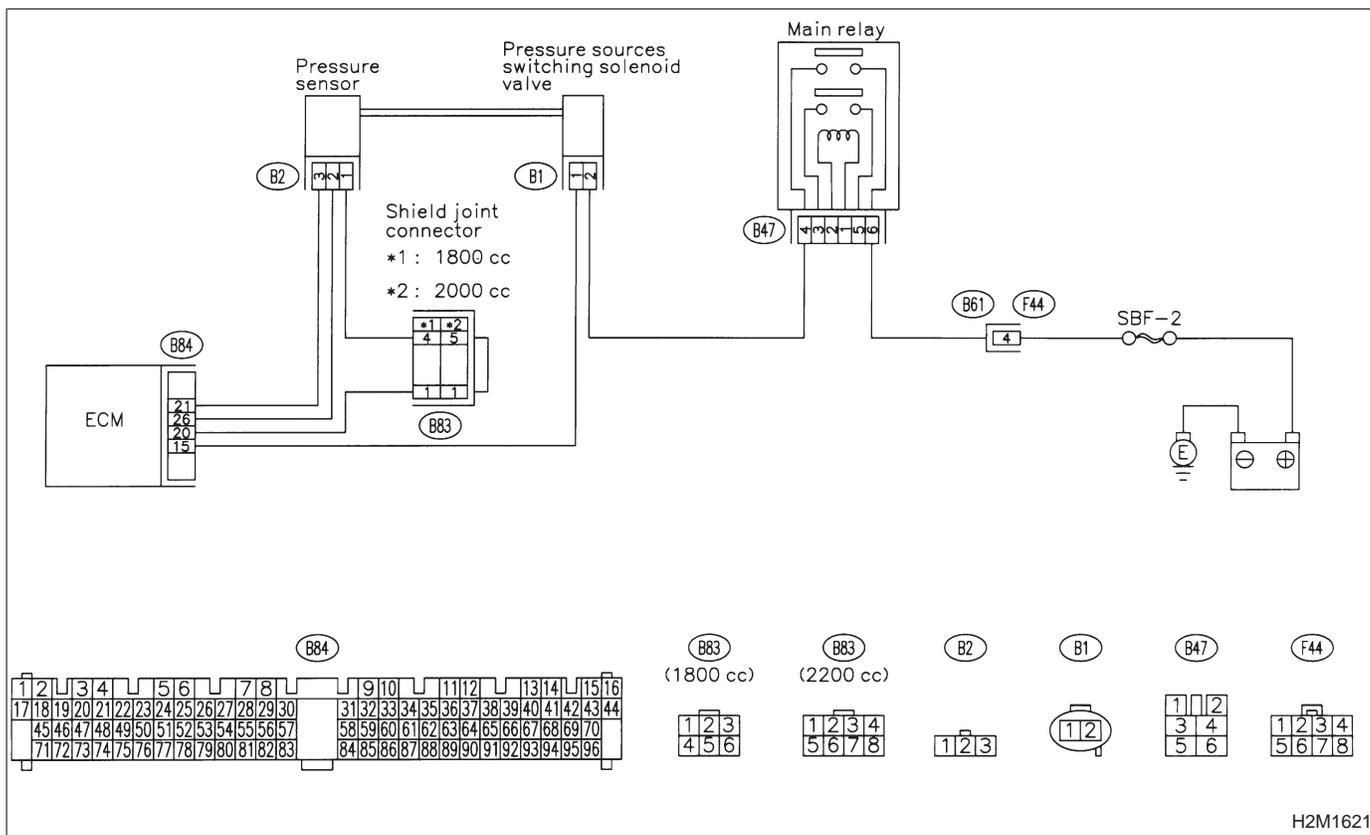
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Failure of engine to start

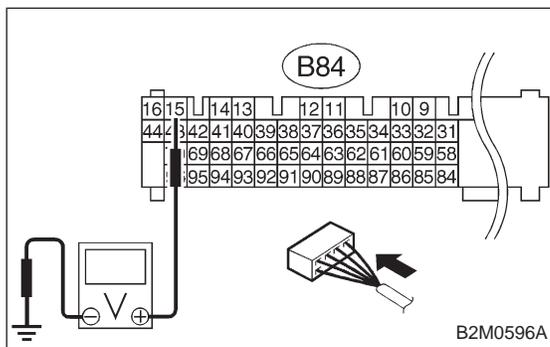
WIRING DIAGRAM:



CAUTION:

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

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



10CE1 CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal

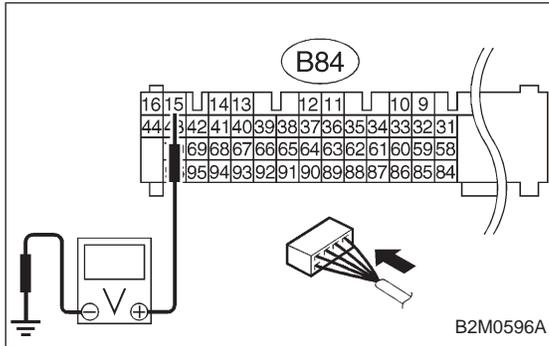
(B84) No. 15 (+) — Chassis ground (-):

- CHECK** : Is the voltage more than 10 V?
- YES** : Go to step 10CE3.
- NO** : Go to step 10CE2.

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.

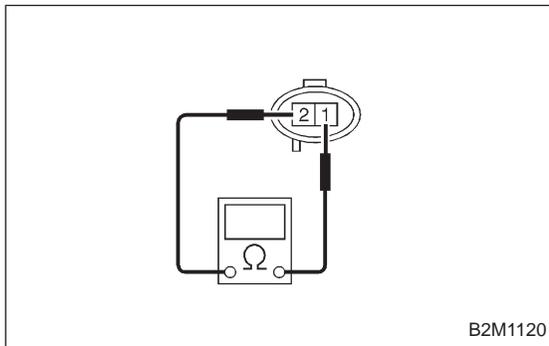


10CE3 CHECK HARNESS BETWEEN ECM AND PRESSURE SOURCES SWITCHING SOLENOID VALVE CONNECTOR.

- 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 next step 5).



- 5) Turn ignition switch to OFF.
- 6) 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 10CE4.

10CE4 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.

OBD (FB1)
 P1141 <QA_RHI>
 B2M1126

CF: DTC P1141
— MASS AIR FLOW SENSOR CIRCUIT
RANGE/PERFORMANCE PROBLEM (HIGH
INPUT) —

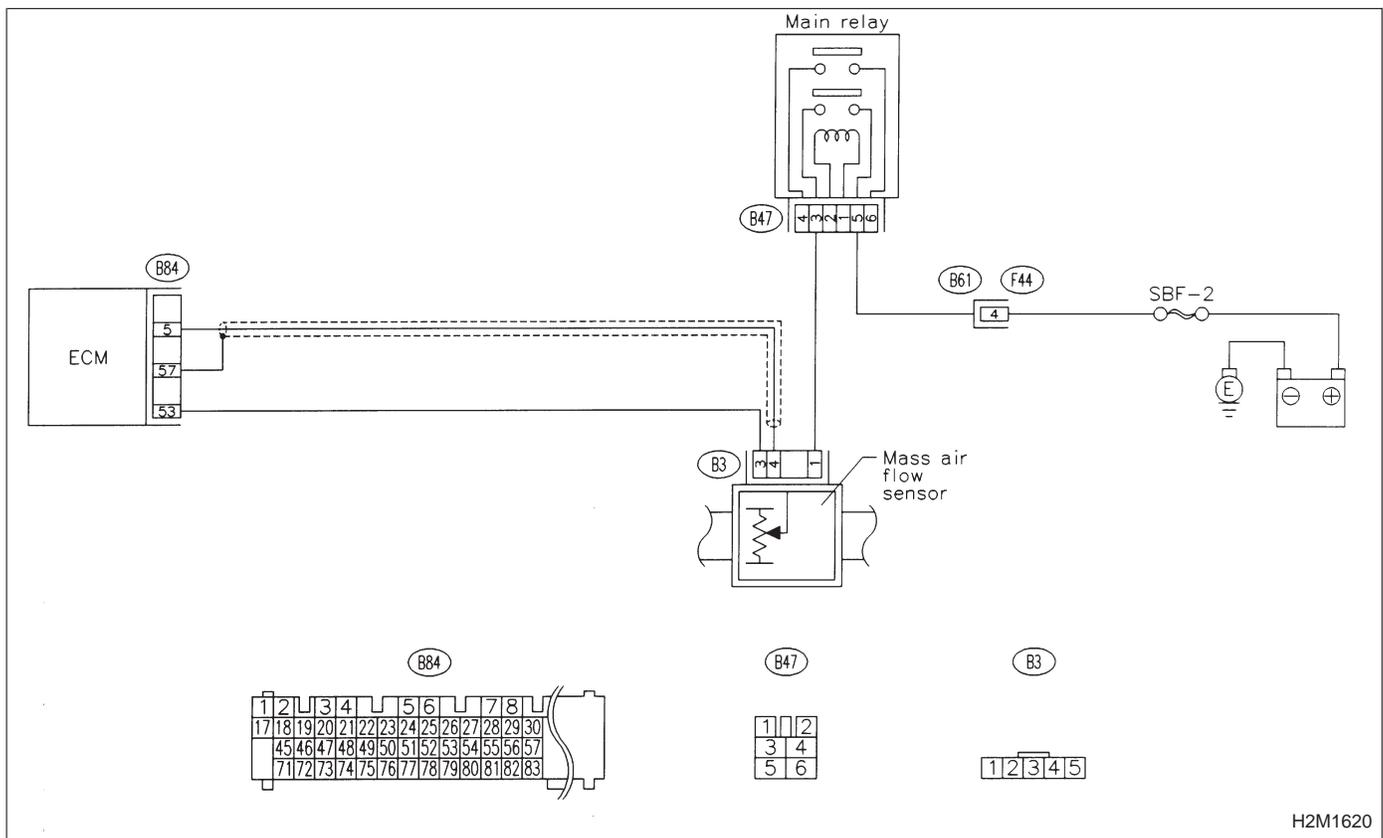
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



H2M1620

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

10CF1**CHECK DTC P0102 OR P0103 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 [T10A0].>****NOTE:****In this case, it is not necessary to inspect DTC P1141.****NO****: Replace mass air flow sensor.**

OBD (FB1)
 P1142 <TH_RLOW>
 B2M1127

CG: DTC P1142
— THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

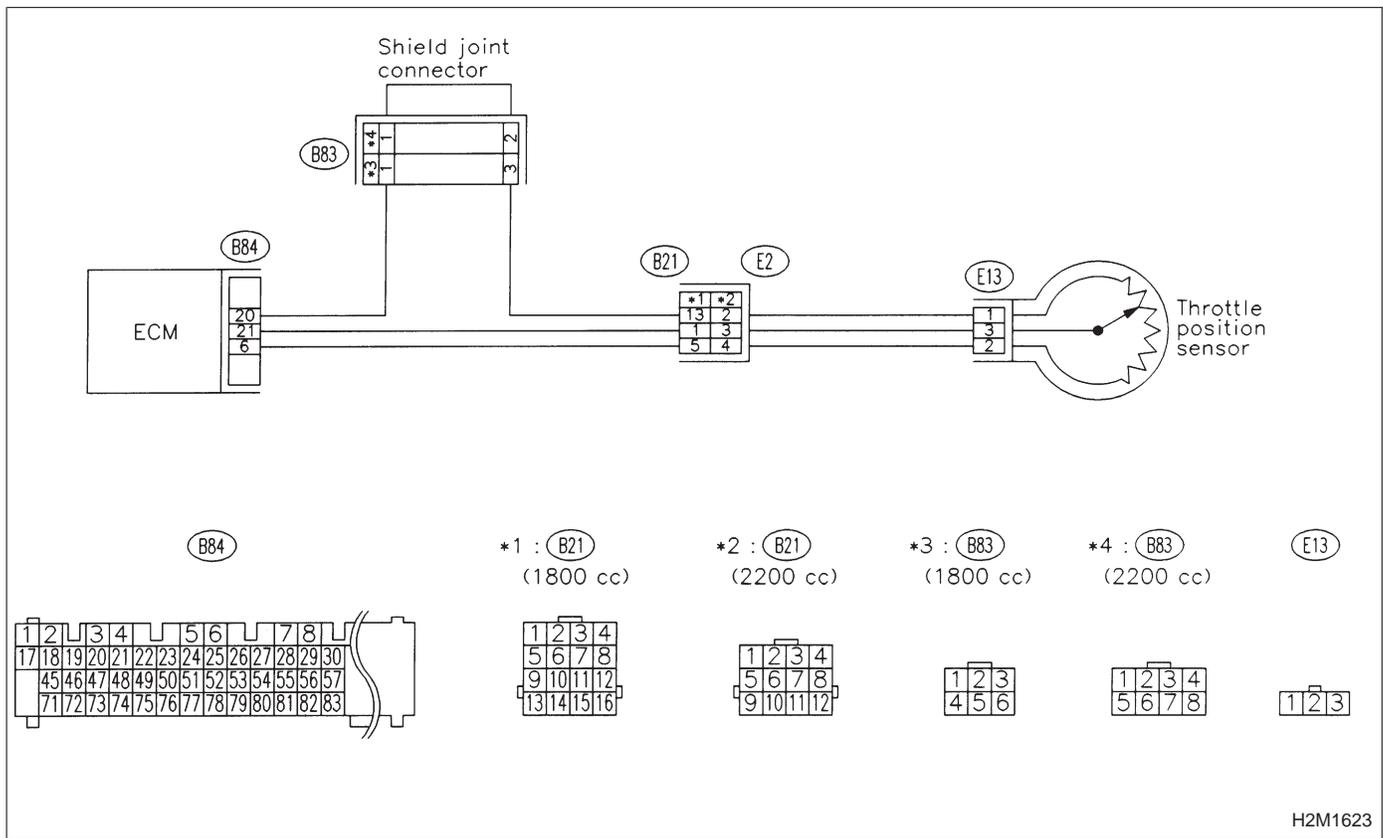
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



CAUTION:

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

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

10CG1

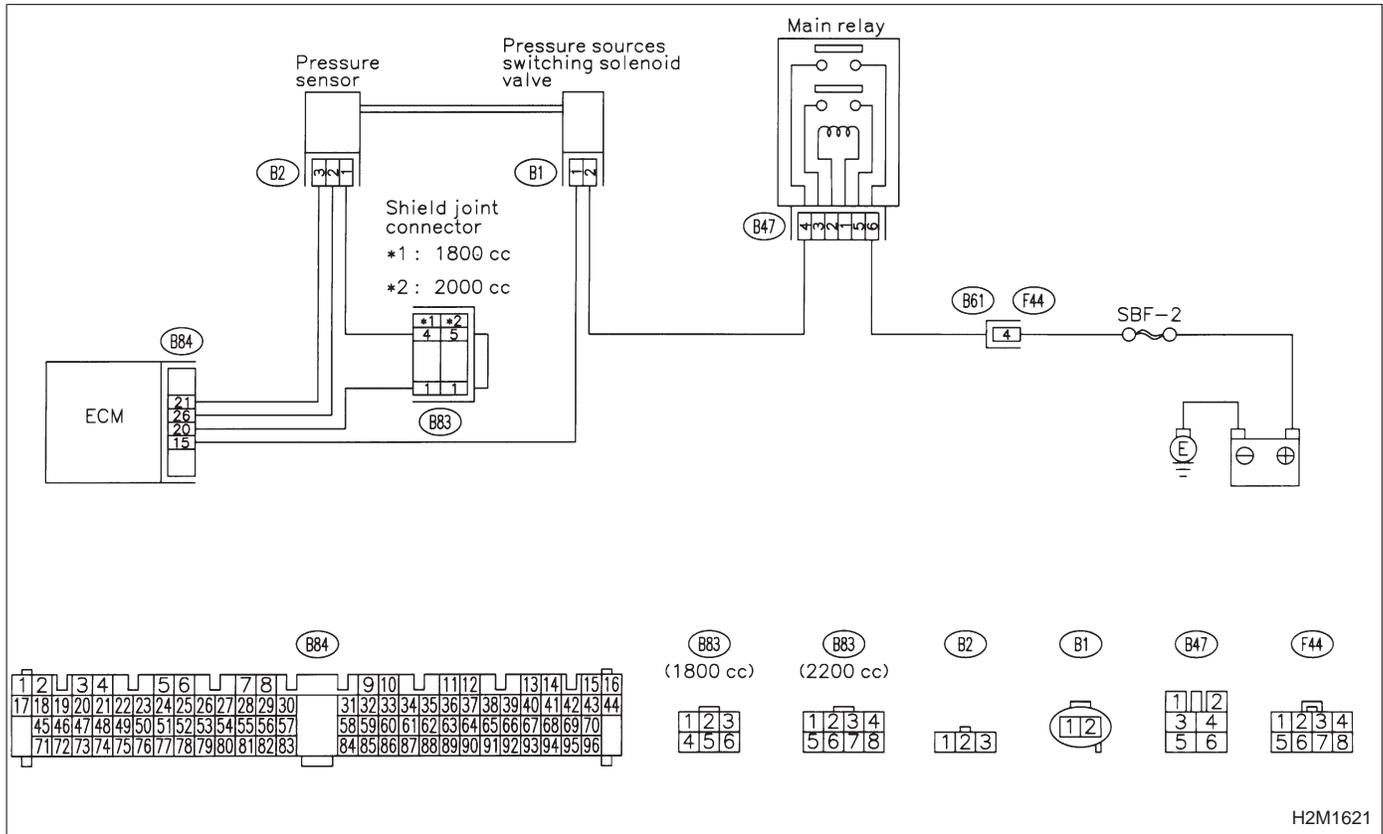
CHECK DTC P0122 OR P0123 ON DISPLAY.**CHECK****: Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0122 or P0123?****YES****: Inspect DTC P0122 or P0123 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>****NOTE:****In this case, it is not necessary to inspect DTC P1142.****NO****: Replace throttle position sensor.**

OBD (FB1)
 P1143 <PS_RLOW>
 B2M1128

CH: DTC P1143
— PRESSURE SENSOR CIRCUIT
RANGE/PERFORMANCE PROBLEM (LOW
INPUT) —

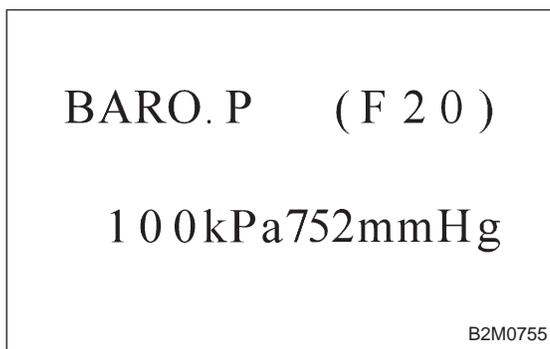
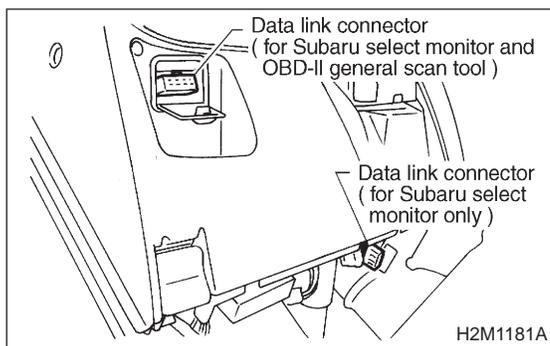
- DTC DETECTING CONDITION:**
- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1621

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

**10CH1 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 on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F20

- F20: Display shows pressure signal value sent from the pressure sensor.

CHECK : *Is the value less than 32 kPa in function mode F20?*

YES : Go to step **10CH3**.

NO : Go to step **10CH2**.

- OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

BARO. P (F 20)

100kPa 752mmHg

B2M0755

10CH2 CHECK PRESSURE SENSOR.

- 1) Measure actual atmospheric pressure.
- 2) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor
- Designate mode using function key.

Function mode: F20

- F20: Display shows pressure signal value sent from the pressure sensor.

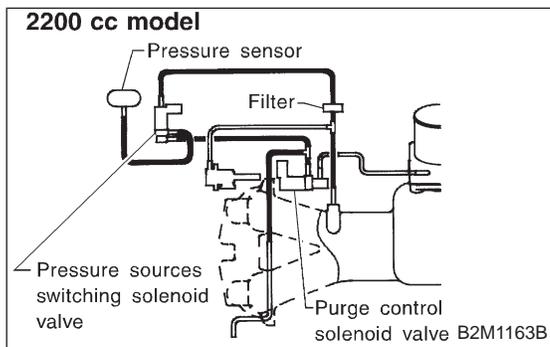
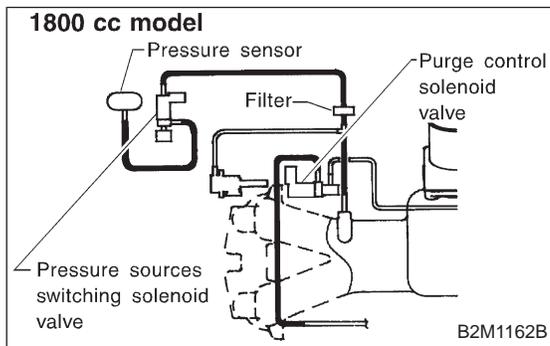
CHECK : *Is the difference between absolute value of Subaru Selector Monitor indication and actual atmospheric pressure greater than 10 kPa (0.102 kg/cm², 1.45 psi)?*

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.

**10CH3 CHECK VACUUM HOSE.**

CHECK : *Is there a fault in vacuum hose?*

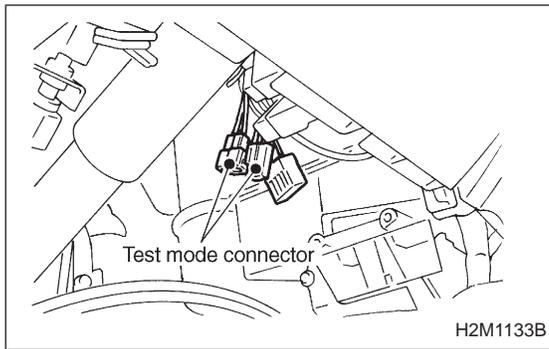
NOTE:

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.

YES : Repair or replace hoses or filter.

NO : Go to step **10CH4**.



10CH4	CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.
--------------	---

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

CHECK : ***Does pressure sources switching solenoid valve produce operating sound? (ON ↔ OFF each 1.5 sec.)***

NOTE:

Pressure sources switching solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD10). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Replace pressure sensor.

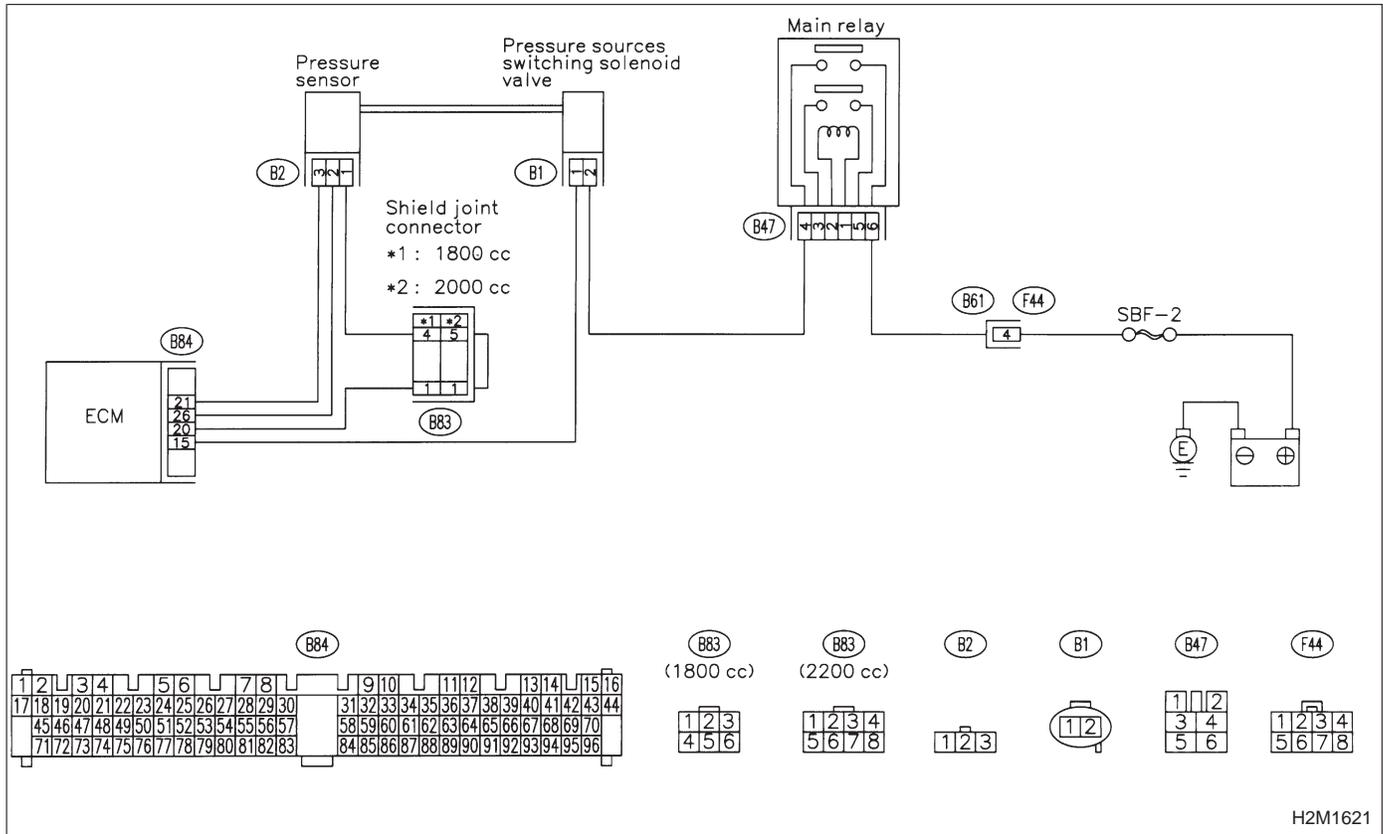
NO : Replace pressure sources switching solenoid valve.

OBD (FB1)
 P1144 <PS_RHI>
 B2M1129

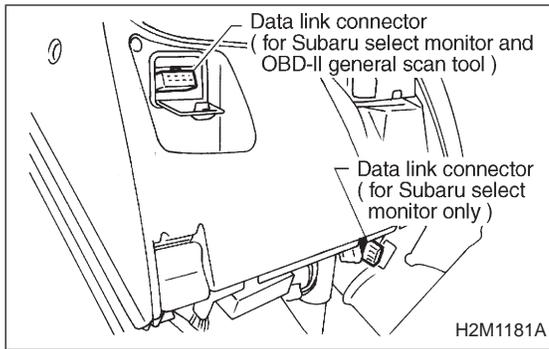
CI: DTC P1144
 — PRESSURE SENSOR CIRCUIT
 RANGE/PERFORMANCE PROBLEM (HIGH
 INPUT) —

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

WIRING DIAGRAM:



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



10C11 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 on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor
Designate mode using function key.

Function mode: F20

- F20: Display shows pressure signal value sent from the pressure sensor.

BARO. P (F 2 0)

1 0 0 kPa 752 mmHg

B2M0755

CHECK : *Is the value more than 133 kPa in function mode F20?*

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.

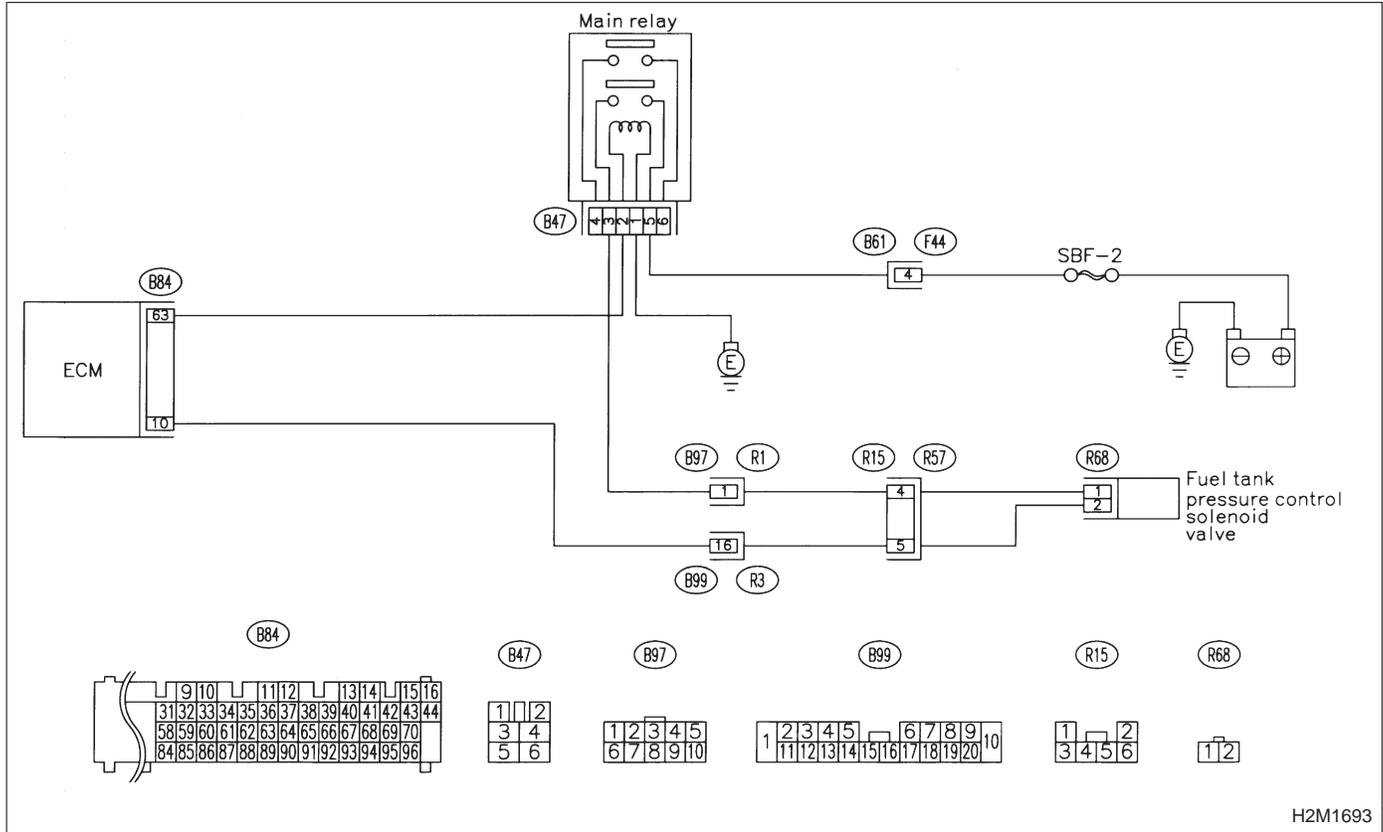
- OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

OBD (FB1)
 P1400<PCVSOL_LO>
 B2M1130

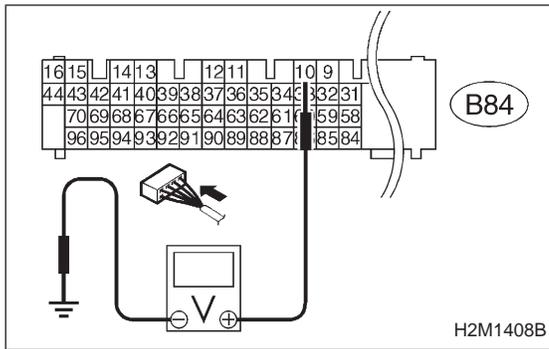
CJ: DTC P1400
— FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW INPUT —

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

WIRING DIAGRAM:



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



10CJ1 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 10CJ2.

NO : Go to step 10CJ3.

10CJ2 CHECK POOR CONTACT.

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

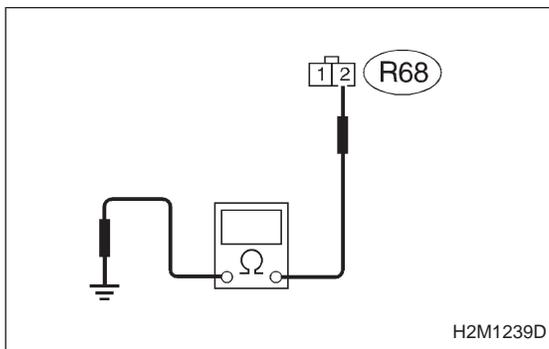
CHECK : Is there poor contact in ECM connector?

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.



10CJ3 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.

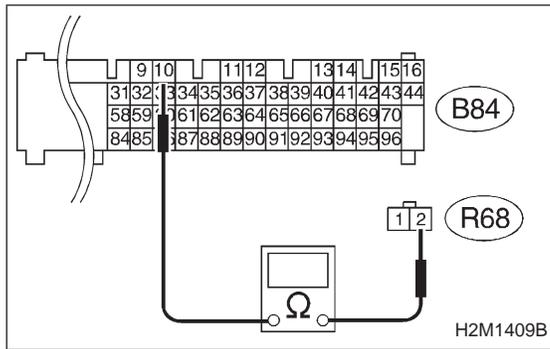
Connector & terminal

(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 next step 4).



4) 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 resistance less than 1 Ω?

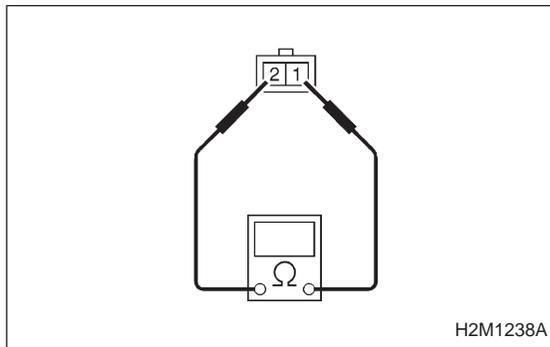
YES : Go to step 10CJ4.

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 (B99 and R15)



10CJ4

CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

Measure resistance between fuel tank pressure control solenoid valve terminals.

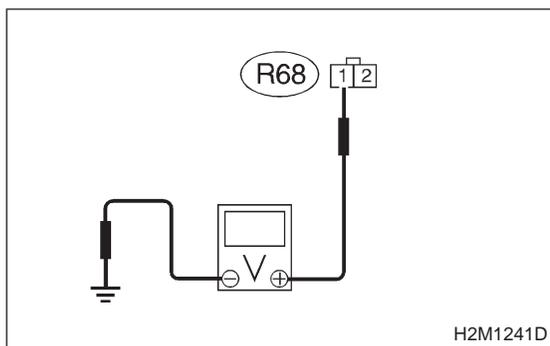
Terminals

No. 1 — No. 2:

CHECK : Is the resistance between 10 and 100 Ω?

YES : Go to step 10CJ5.

NO : Replace fuel tank pressure control solenoid valve.

**10CJ5****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 **10CJ6**.

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 R15)
- Poor contact in main relay connector

10CJ6**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:

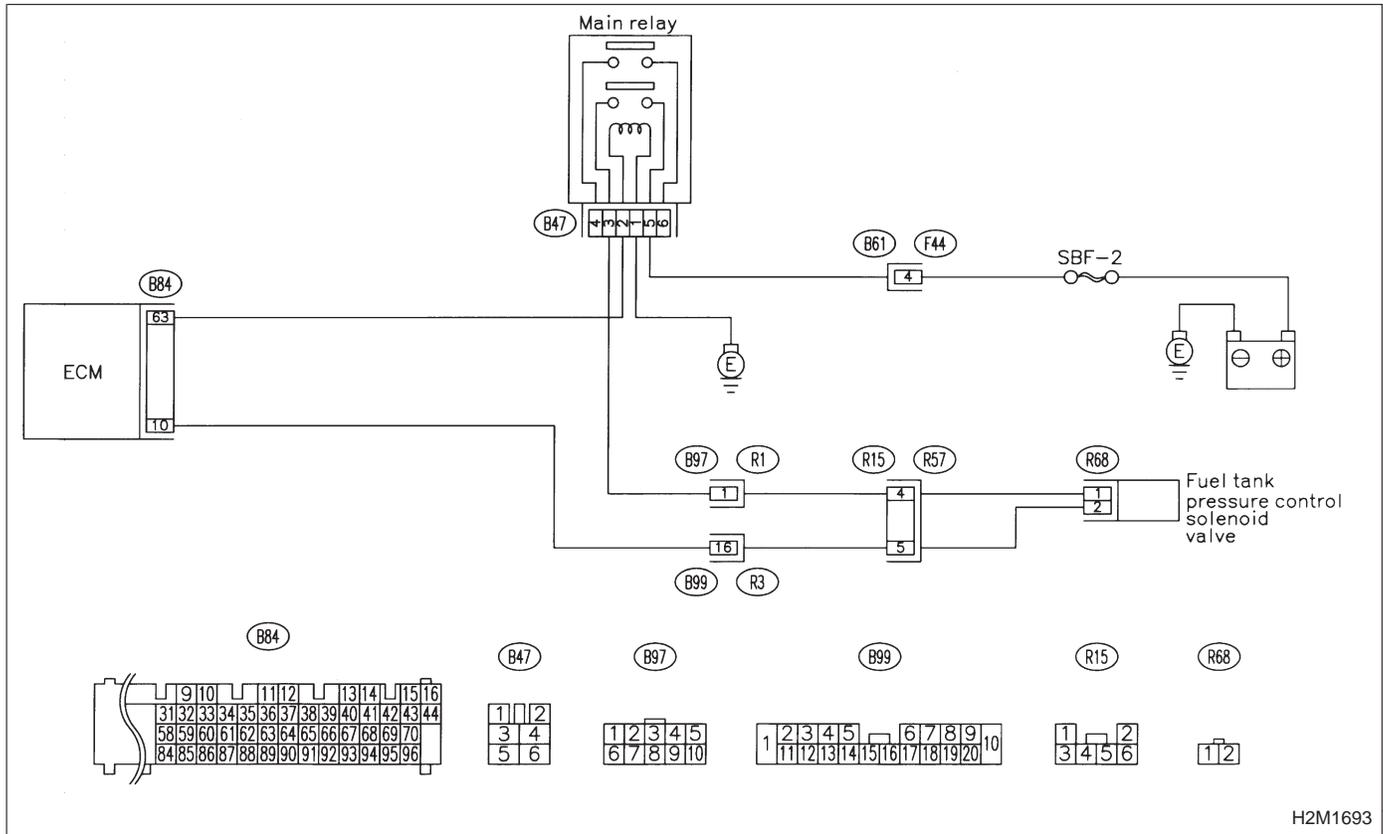
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)
 P1420<PCVSOL_HI>
 B2M1131

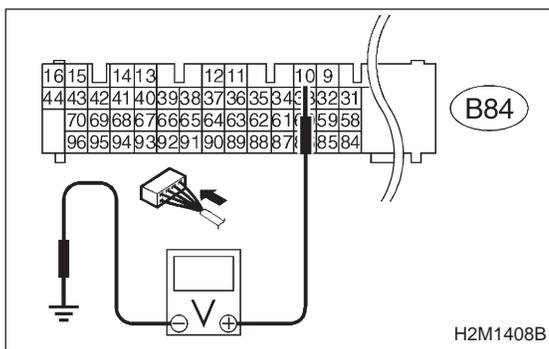
CK: DTC P1420
— FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT HIGH INPUT —

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

WIRING DIAGRAM:



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



10CK1 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 10CK3.

NO : Go to step 10CK2.

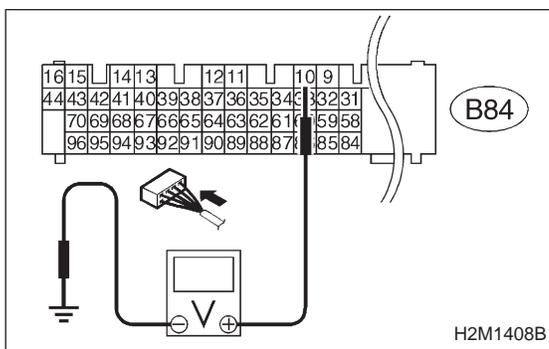
10CK2 CHECK POOR CONTACT.

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.



10CK3 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.

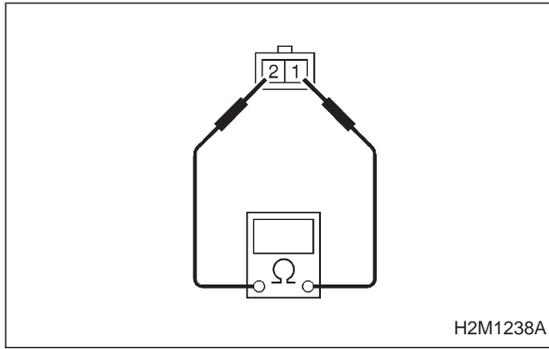
Connector & terminal

(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 next step 5).



- 5) Turn ignition switch to OFF.
- 6) 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 **10CK4**.

10CK4 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.

OBD (FB1)
 P1421<EGRSOL_HI>
 B2M1132

CL: DTC P1421
— EXHAUST GAS RECIRCULATION CIRCUIT
HIGH INPUT —

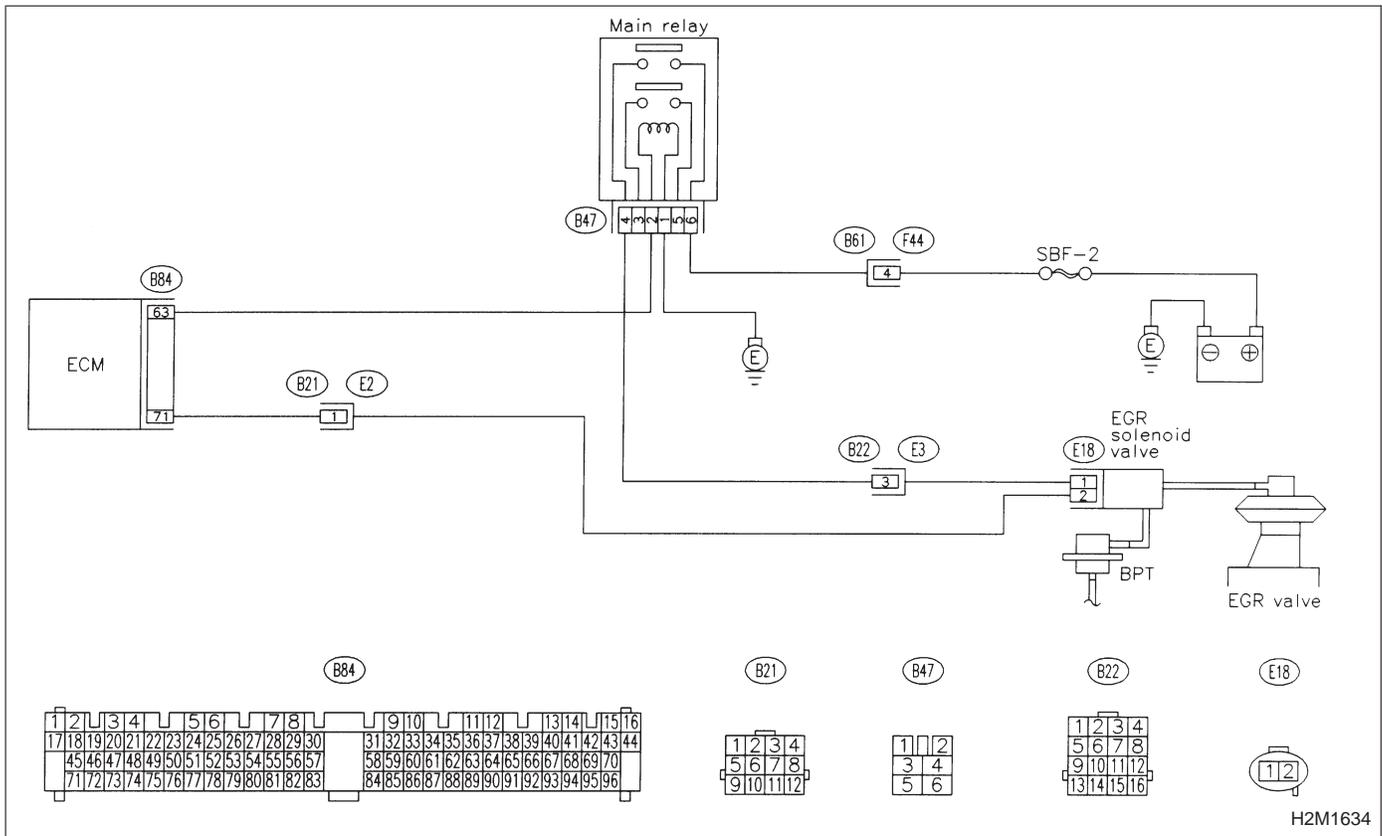
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

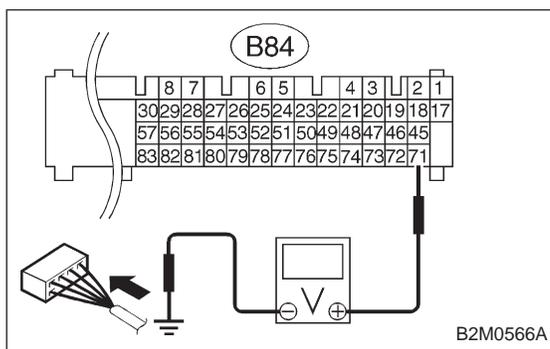
- Poor driving performance on low engine speed

WIRING DIAGRAM:



CAUTION:

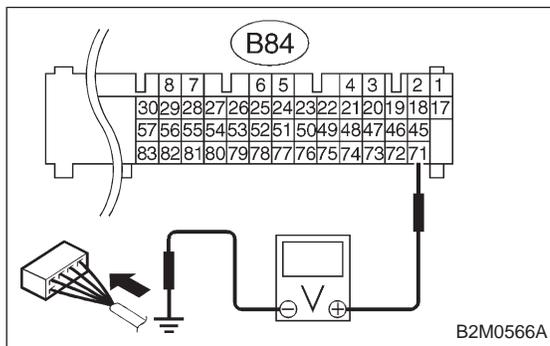
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
 <Ref. to 2-7 [T3D0] and [T3E0].>

10CL1 CHECK TRANSMISSION TYPE.**CHECK** : *Is transmission type MT?***YES** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>**NO** : Go to step **10CL2**.**10CL2 CHECK OUTPUT SIGNAL FROM ECM.**

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

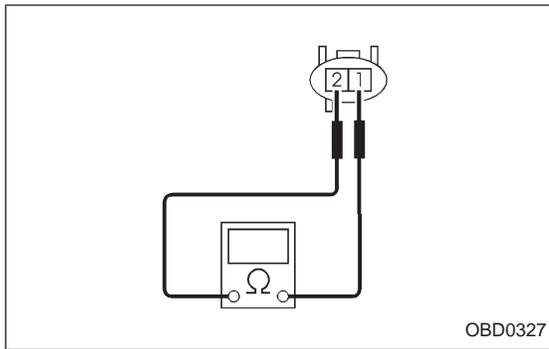
Connector & terminal**(B84) No. 71 (+) — Chassis ground (-):****CHECK** : *Is the voltage more than 10 V?***YES** : Go to step **10CL4**.**NO** : Go to step **10CL3**.**10CL3 CHECK POOR CONTACT.**

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

CHECK : *Is there poor contact in ECM connector?***YES** : Repair poor contact in ECM connector.**NO** : Replace ECM.**10CL4 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 next step 5).



- 5) Turn ignition switch to OFF.
- 6) 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 **10CL5**.

10CL5 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.

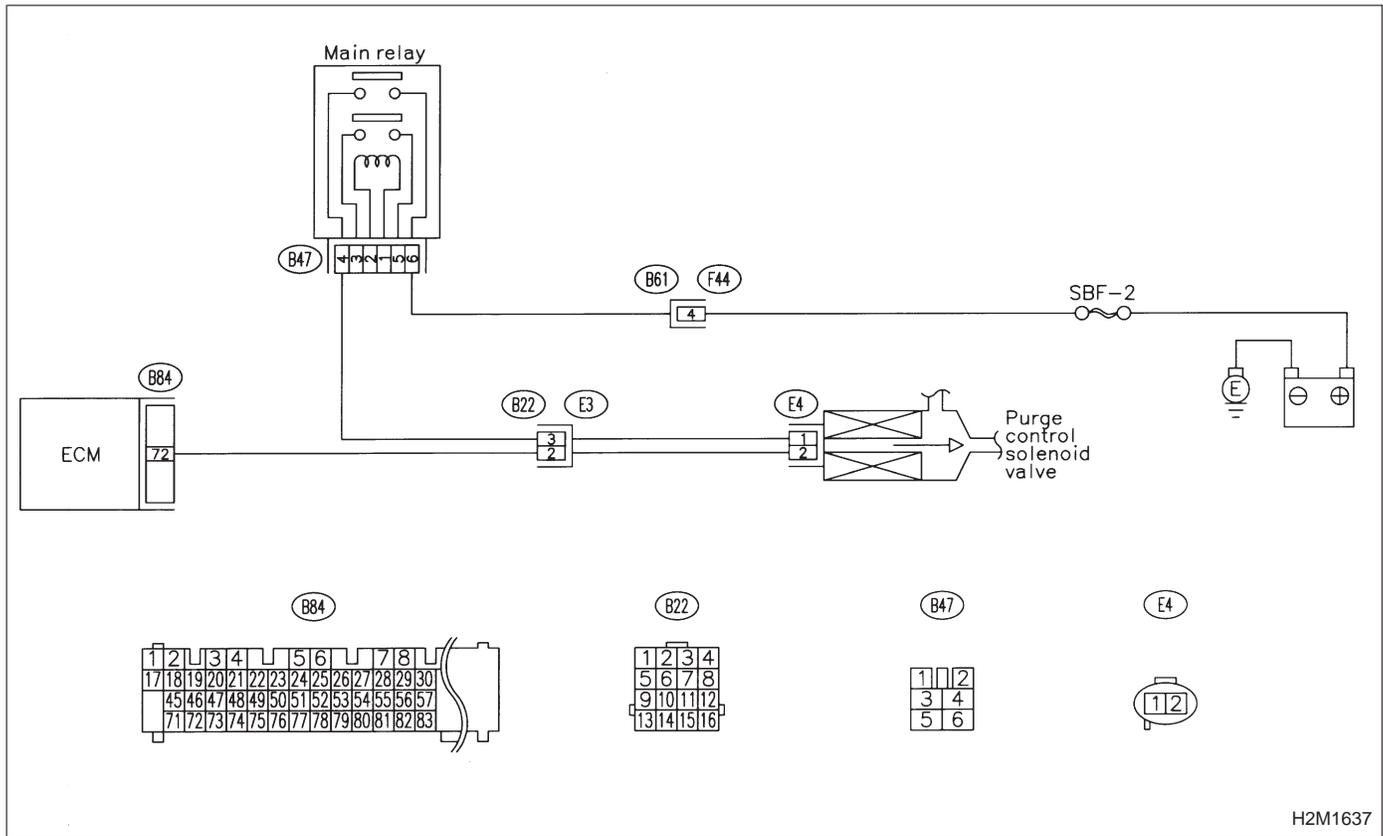
OBD (FB1)
 P1422 <CPC_HI>
 B2M1133

CM: DTC P1422
— EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH INPUT —

DTC DETECTING CONDITION:
 ● Two consecutive driving cycles with fault

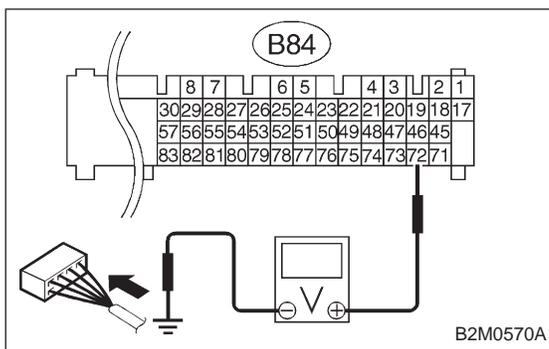
TROUBLE SYMPTOM:
 ● Erroneous idling

WIRING DIAGRAM:



H2M1637

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



10CM1 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 10CM3.

NO : Go to step 10CM2.

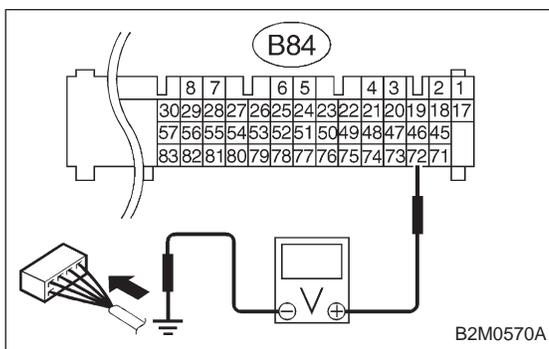
10CM2 CHECK POOR CONTACT.

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 : Replace ECM.



10CM3 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.

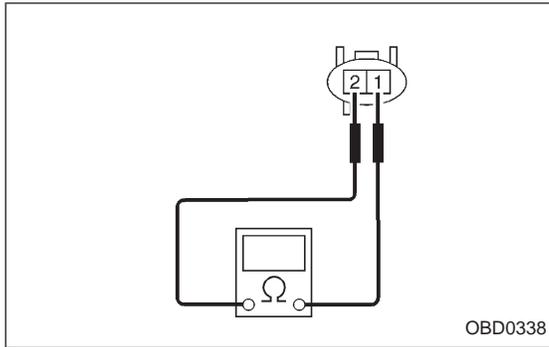
Connector & terminal

(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 next step 5).



- 5) Turn ignition switch to OFF.
- 6) 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 **10CM4**.

10CM4 CHECK POOR CONTACT.

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

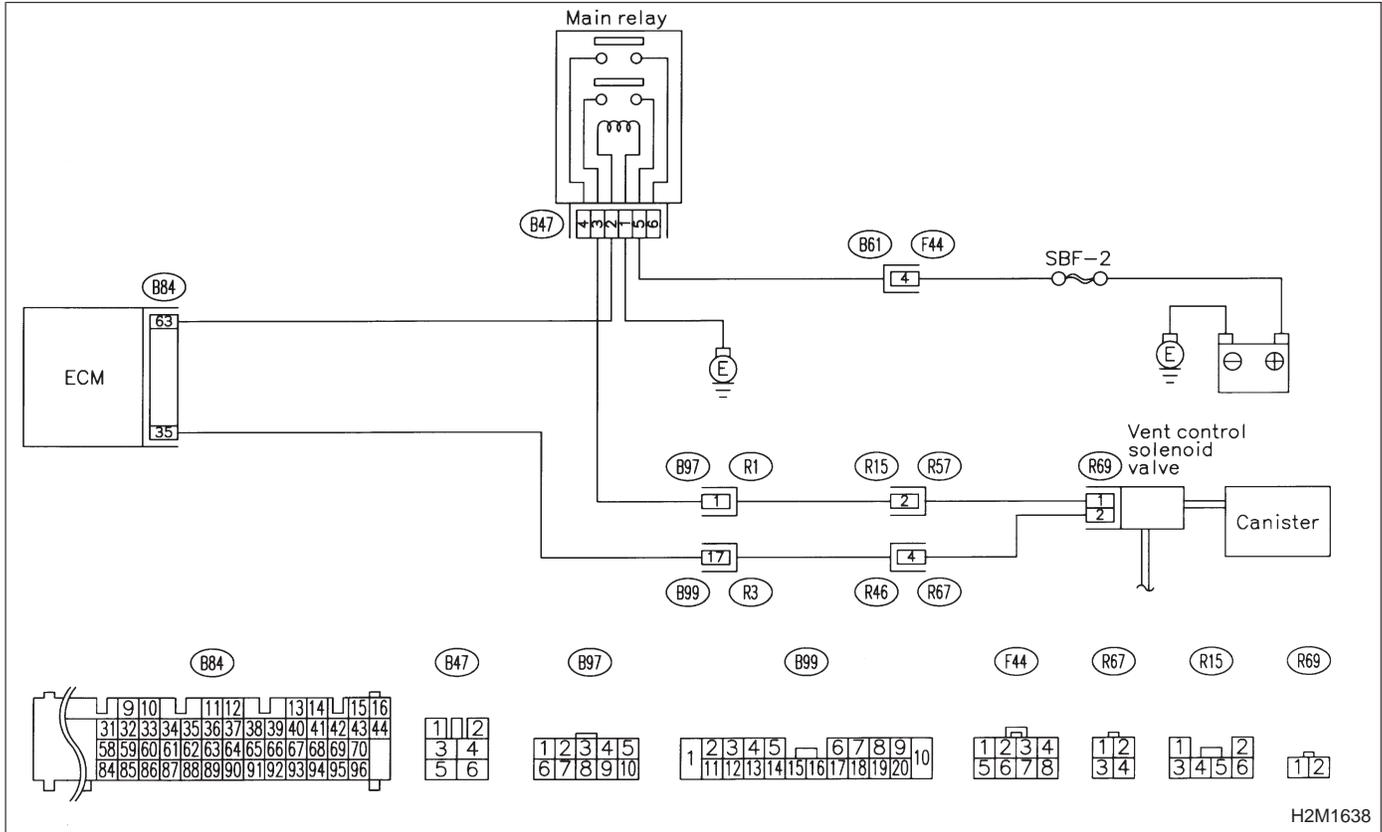
- CHECK** : *Is there poor contact in ECM connector?*
- YES** : Repair poor contact in ECM connector.
- NO** : Replace ECM.

OBD (FB1)
 P1423 <VCMSOL_HI>
 B2M1134

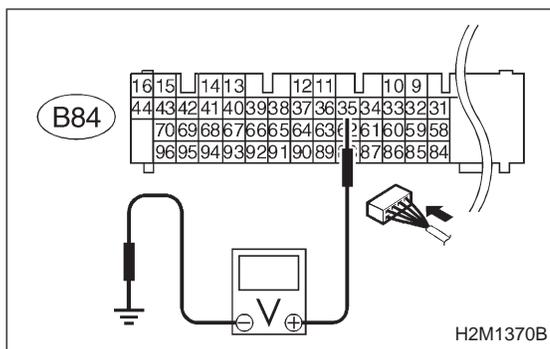
CN: DTC P1423
— EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL HIGH INPUT —

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

WIRING DIAGRAM:



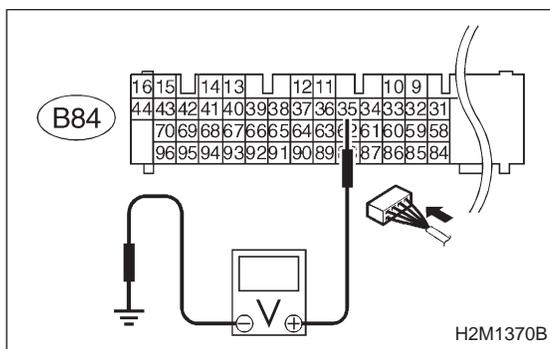
CAUTION:
 After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
 <Ref. to 2-7 [T3D0] and [T3E0].>

**10CN1 CHECK OUTPUT SIGNAL FROM ECM.**

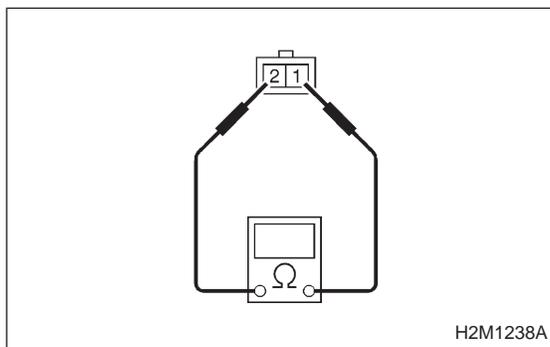
- 1) Turn ignition switch to ON.
- 2) Measure voltage between ECM and chassis ground.

Connector & terminal**(B84) No. 35 (+) — Chassis ground (-):****CHECK** : Is the voltage more than 10 V?**YES** : Go to step 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 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 next step 5).

- 5) Turn ignition switch to OFF.
- 6) 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 10CN4.

10CN4	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.

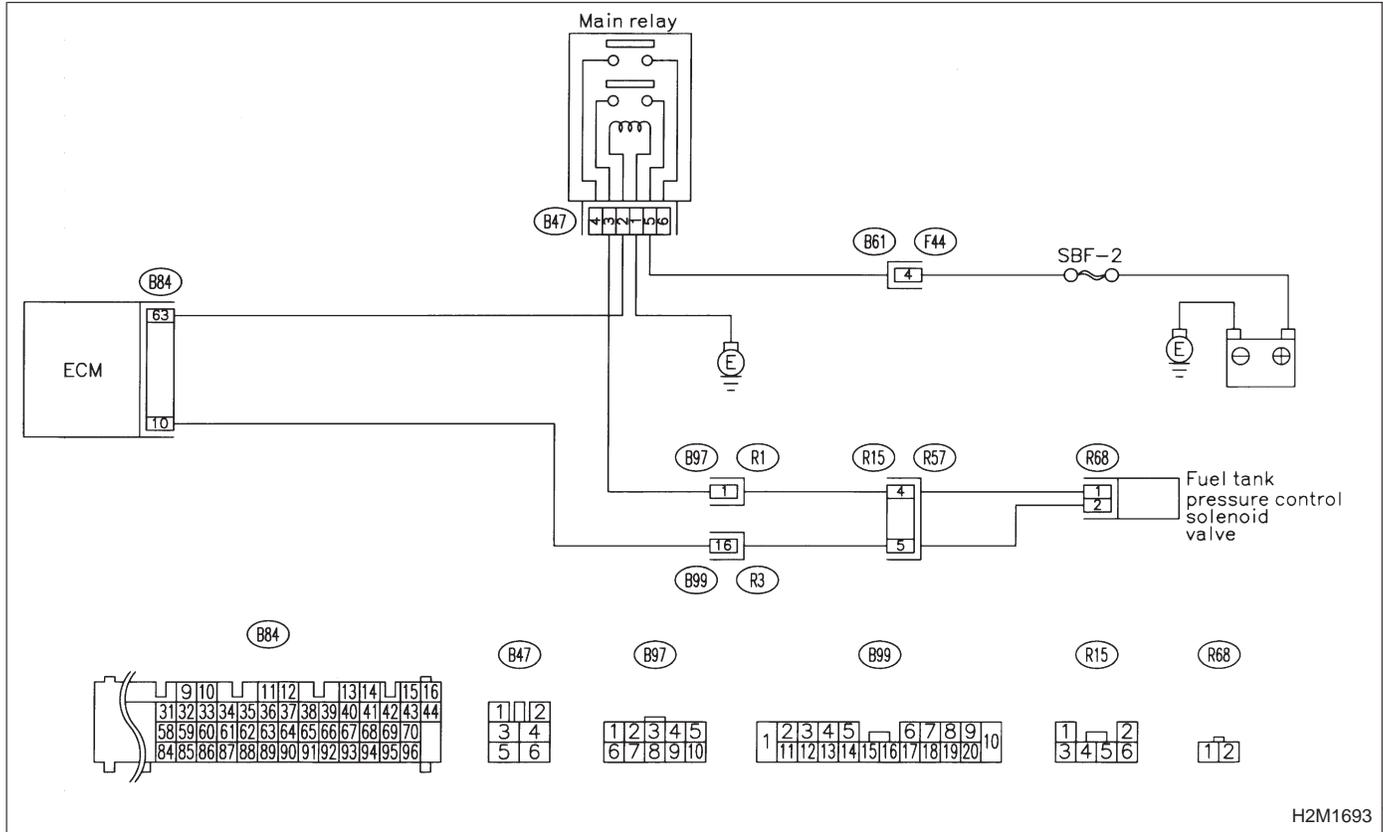
NO : Replace ECM.

OBD (FB1)
 P1440 <PCV_FLOW>
 B2M1135

CO: DTC P1440
 — FUEL TANK PRESSURE CONTROL SYSTEM FUNCTION PROBLEM (LOW INPUT)
 —

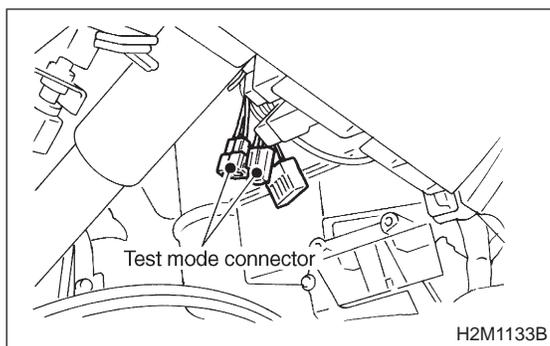
DTC DETECTING CONDITION:
 ● Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1693

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



10CO1	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.
--------------	---

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

CHECK : *Does fuel tank pressure control solenoid valve produce operating sound?*

NOTE:

Fuel tank pressure control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD07). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CO2**.

NO : Replace fuel tank pressure control solenoid valve.

10CO2	CHECK FUEL FILLER CAP AND FUEL FILLER PIPE.
--------------	--

- 1) Turn ignition switch to OFF.
- 2) Open the fuel flap.

CHECK : *Is the fuel filler cap tightened securely?*

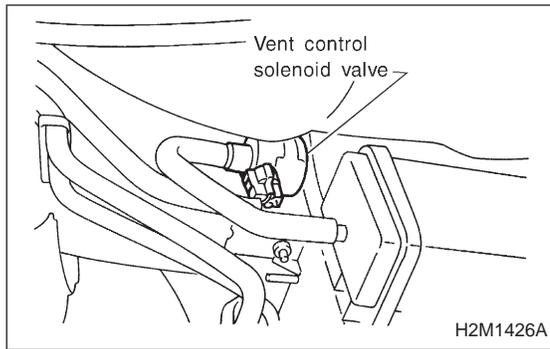
YES : Tighten fuel filler cap securely.

NO : Go to next **CHECK** .

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 **10CO3**.



10C03	CHECK VENT CONTROL SOLENOID VALVE.
--------------	---

Turn ignition switch to ON.

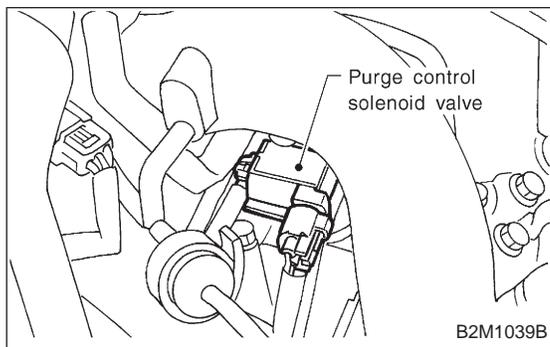
CHECK : *Does vent control solenoid valve produce operating sound?*

NOTE:

Vent control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD08). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10C04**.

NO : Replace vent control solenoid valve.



10C04	CHECK PURGE CONTROL SOLENOID VALVE.
--------------	--

CHECK : *Does purge control solenoid valve produce operating sound?*

NOTE:

Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10C05**.

NO : Replace purge control solenoid valve.

10CO5	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 next **CHECK** .

CHECK : **Is there any damage at canister?**

YES : Repair or replace canister.

NO : Go to next **CHECK** .

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

YES : Repair or replace fuel tank.

NO : Go to next **CHECK** .

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:

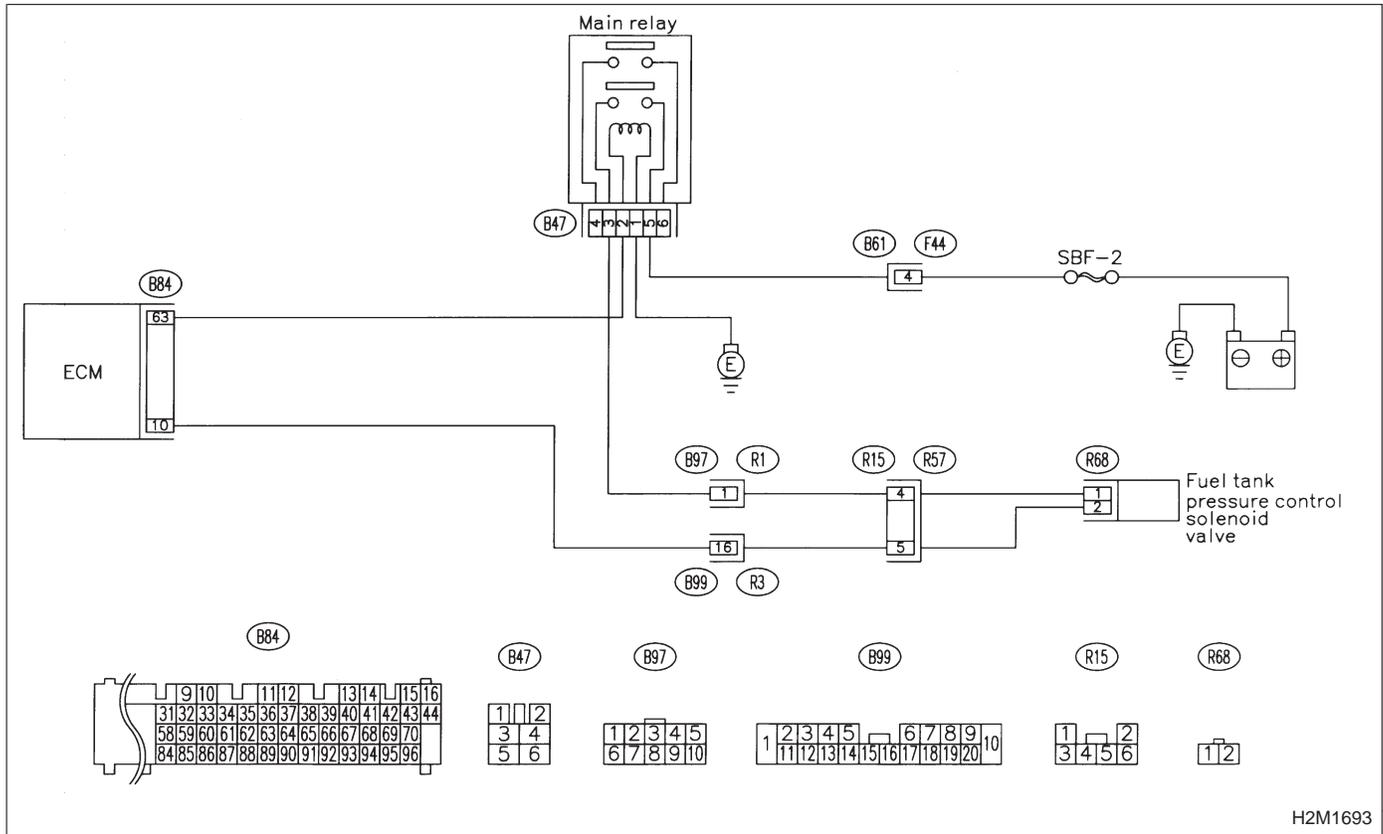
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)
 P1441 <PCV_FHI>
 B2M1136

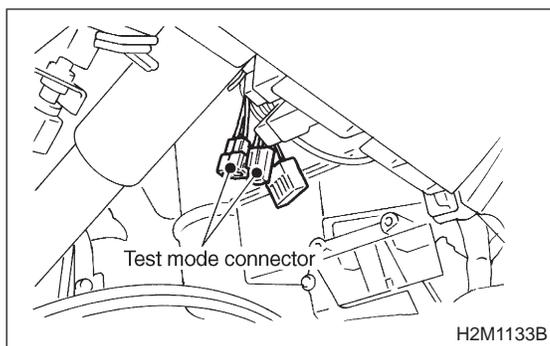
CP: DTC P1441
— FUEL TANK PRESSURE CONTROL SYSTEM FUNCTION PROBLEM (HIGH INPUT)
 —

DTC DETECTING CONDITION:
 ● Two consecutive driving cycles with fault

WIRING DIAGRAM:



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



10CP1	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.
--------------	---

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

CHECK : *Does fuel tank pressure control solenoid valve produce operating sound?*

NOTE:

Fuel tank pressure control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD07). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CP2**.

NO : Replace fuel tank pressure control solenoid valve.

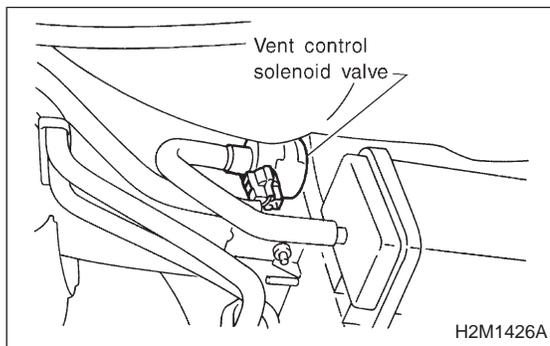
10CP2	CHECK FUEL FILLER CAP AND FUEL FILLER PIPE.
--------------	--

- 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 **10CP3**.



10CP3	CHECK VENT CONTROL SOLENOID VALVE.
--------------	---

Turn ignition switch to ON.

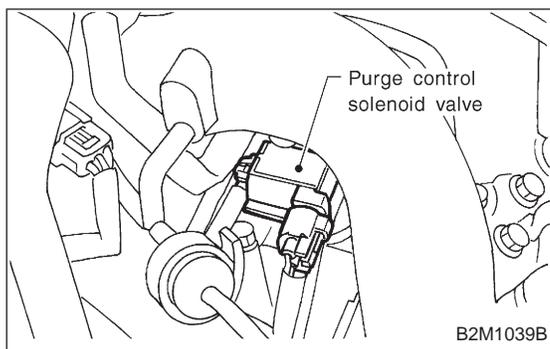
CHECK : *Does vent control solenoid valve produce operating sound?*

NOTE:

Vent control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD08). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CP4**.

NO : Replace vent control solenoid valve.

**10CP4****CHECK PURGE CONTROL SOLENOID VALVE.**

CHECK : *Does purge control solenoid valve produce operating sound?*

NOTE:

Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CP5**.

NO : Replace purge control solenoid valve.

10CP5**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 next **CHECK** .

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

YES : Repair or replace fuel tank.

NO : Go to next **CHECK** .

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:

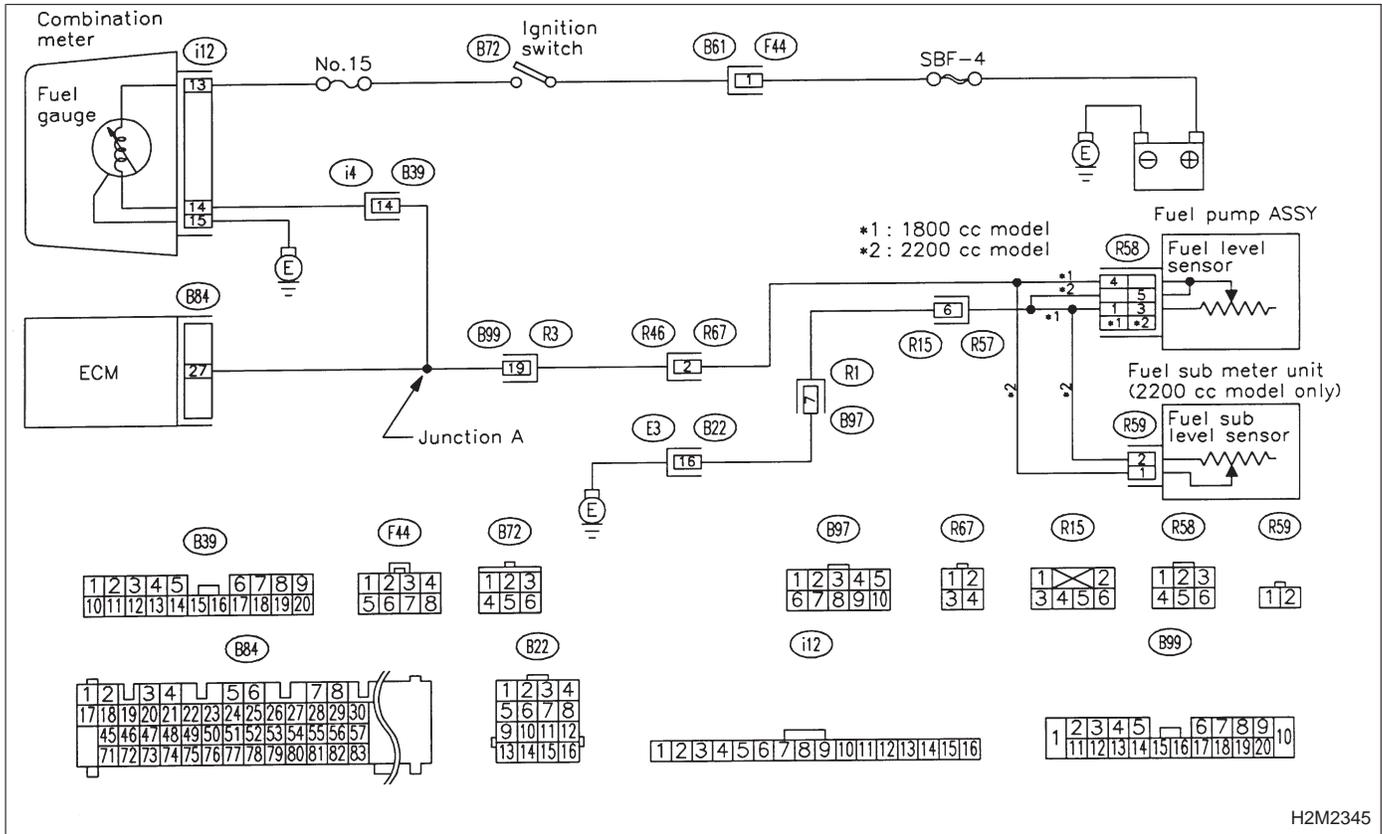
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)
 P1442 <FLVL_R2>
 B2M1137

CQ: DTC P1442
— FUEL LEVEL SENSOR CIRCUIT RANGE/
PERFORMANCE PROBLEM 2 —

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

WIRING DIAGRAM:



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

10CQ1**CHECK DTC P0461, P0462 OR P0463 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 [T10A0].>****NOTE:****In this case, it is not necessary to inspect this trouble.****NO****: Replace fuel sending unit and fuel sub meter unit.**

OBD (FB1)

P1500 <FAN_1>

OBD0527

CR: DTC P1500
— RADIATOR FAN RELAY 1 CIRCUIT LOW INPUT —

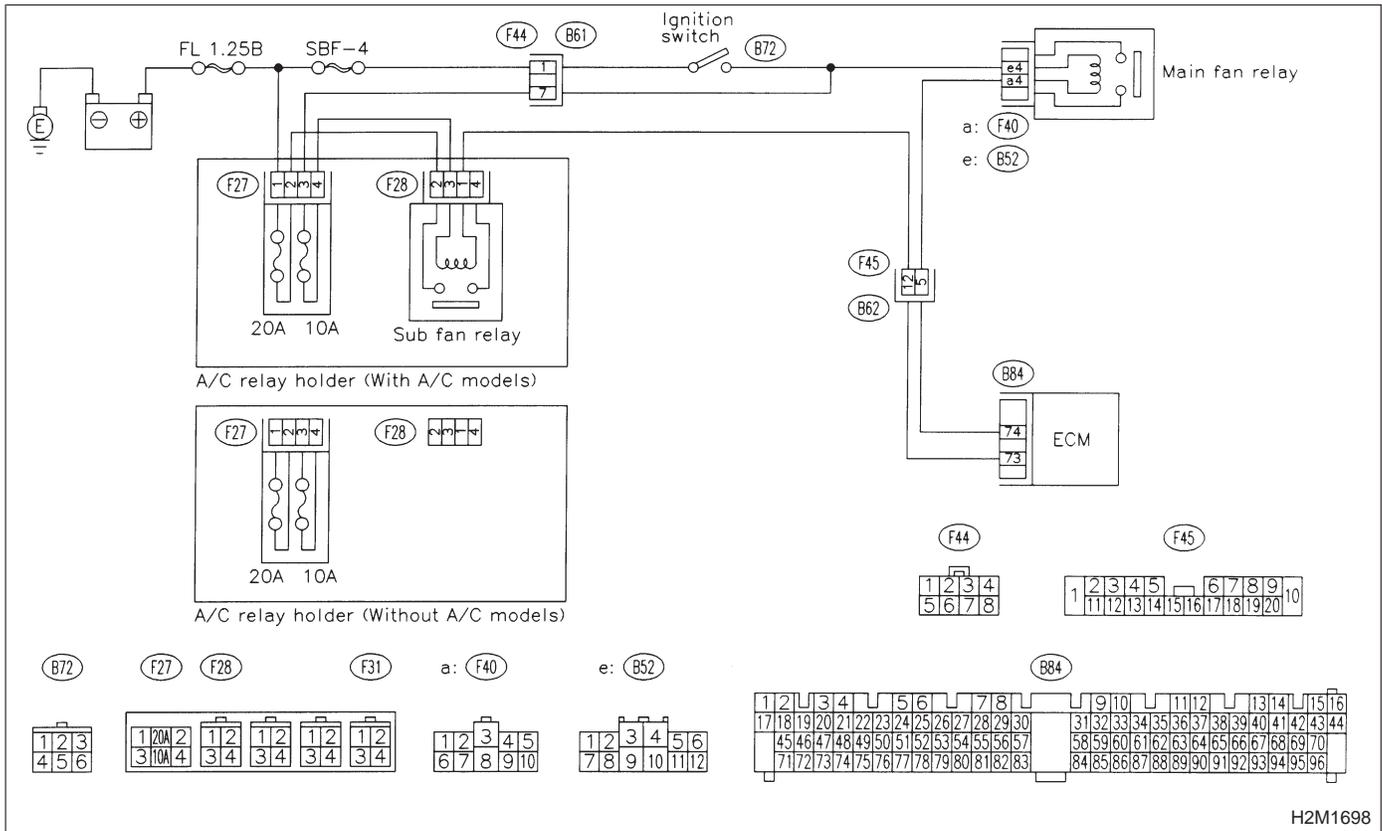
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

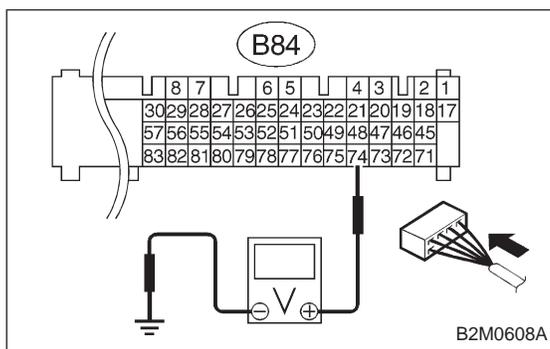
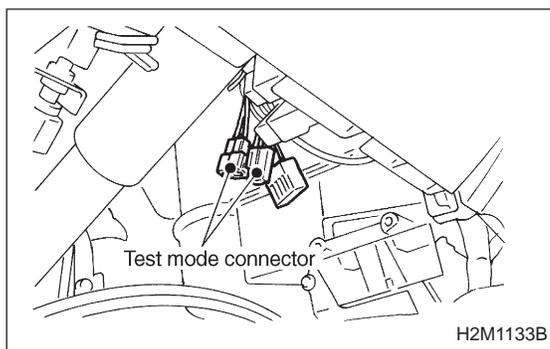
WIRING DIAGRAM:



CAUTION:

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

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

**10CR1 CHECK OUTPUT SIGNAL FROM ECM.**

- 1) Turn ignition switch to OFF.
- 2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.
- 3) Turn ignition switch to ON.

- 4) Measure voltage between ECM and chassis ground.

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

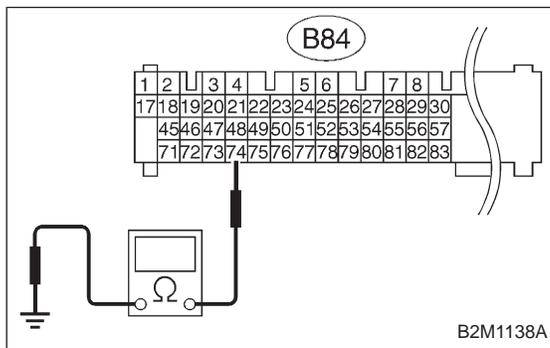
CHECK : Does voltage change between 0 and 10 volts?

NOTE:

Radiator fan relay operation check can be executed using Subaru Select Monitor (Function mode: FD03). For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Repair poor contact in ECM connector.

NO : Go to step **10CR2**.

**10CR2 CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.**

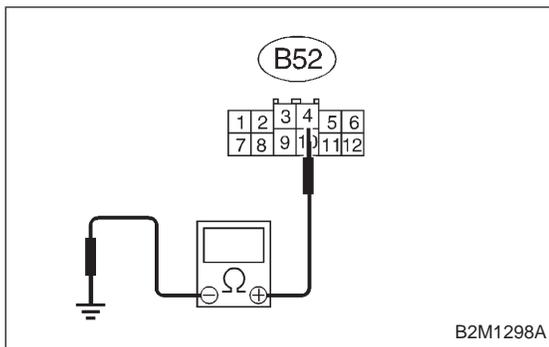
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from ECM.
- 3) Measure resistance of harness between ECM connector and chassis ground.

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 **10CR3**.



10CR3 CHECK POWER SUPPLY FOR RELAY.

- 1) Disconnect connector (B52) from fuse and relay box (F/B).
- 2) Turn ignition switch to ON.
- 3) Measure voltage between fuse and relay box (F/B) connector and chassis ground.

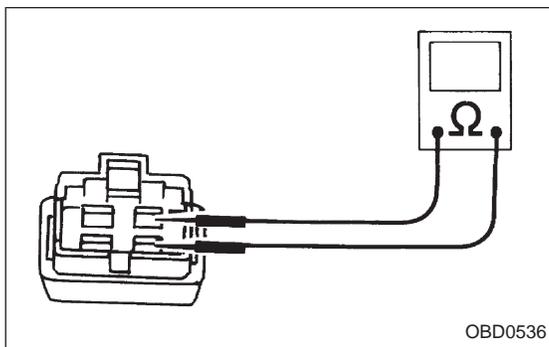
Connector & terminal

(B52) No. 4 (+) — Chassis ground (-):

CHECK : Is the voltage more than 10 V?

YES : Go to step 10CR4.

NO : Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.



10CR4 CHECK MAIN FAN RELAY.

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

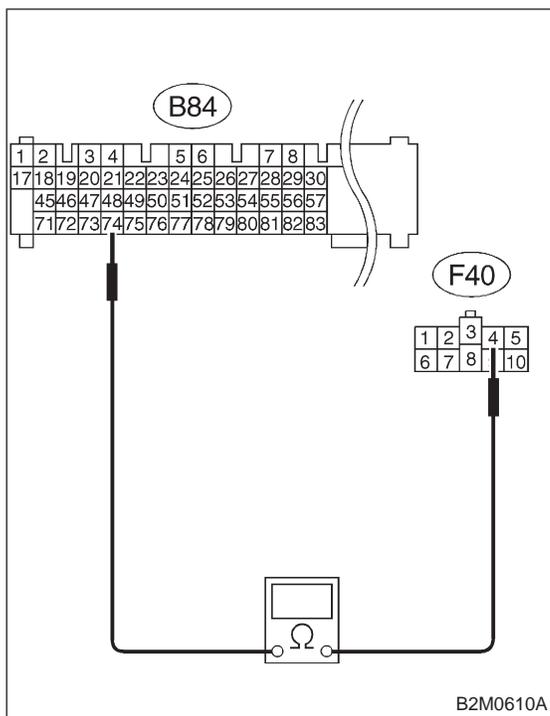
Terminal

No. 1 — No. 3:

CHECK : Is the resistance between 83 and 117 Ω?

YES : Go to step 10CR5.

NO : Replace main fan relay.


10CR5 CHECK OPEN CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

- 1) Disconnect connector (F40) from fuse and relay box (F/B).
- 2) Measure resistance of harness between ECM and main fan relay connector.

**Connector & terminal
(B84) No. 74 — (F40) No. 4:**

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

YES : Go to step **10CR6**.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and main fan relay connector
- Poor contact in coupling connector (F45)

10CR6 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.

OBD (FB1)

P1502 <FAN_F>

OBD0538

CS: DTC P1502
— RADIATOR FAN FUNCTION PROBLEM —

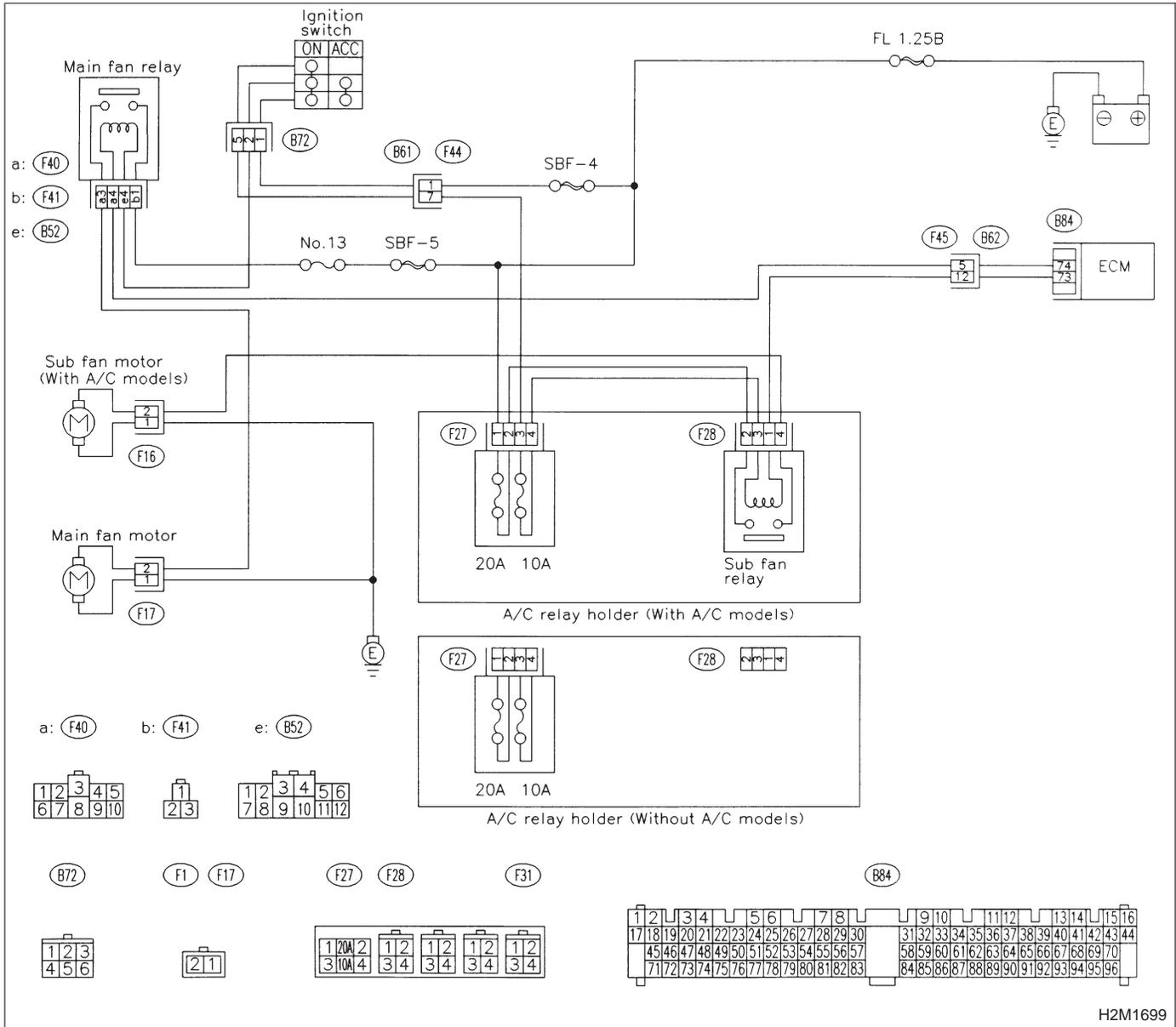
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Occurrence of noise
- Overheating

WIRING DIAGRAM:



H2M1699

CAUTION:

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

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

10CS1	CHECK ANY OTHER DTC (BESIDE DTC P1502) 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 [T10A0].>

NO : Check engine cooling system. <Ref. to 2-5 [K100].>

OBD (FB1)
 P1507 <ISC_SHI>
 B2M1140

CT: DTC P1507
— IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

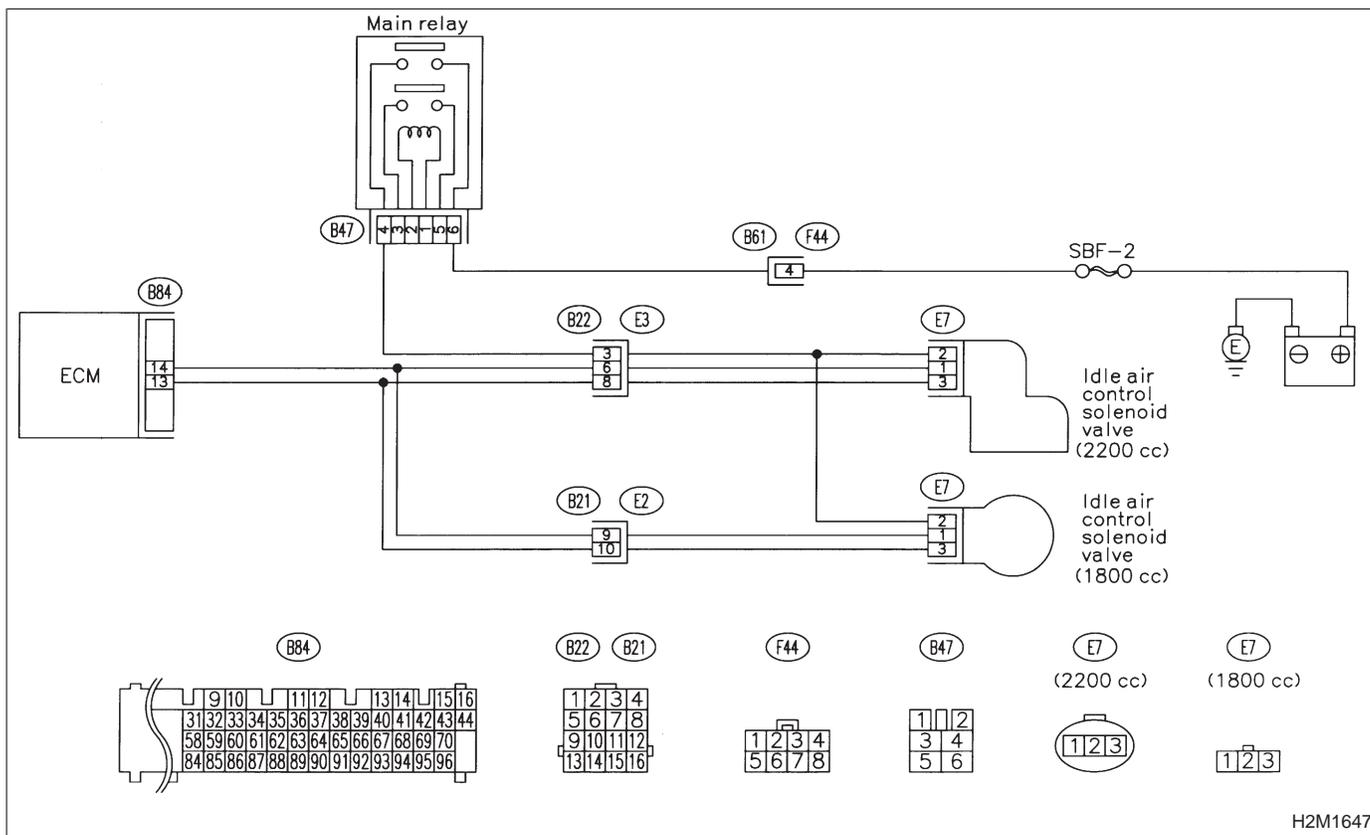
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine keeps running at higher revolution than specified idling revolution.

WIRING DIAGRAM:



CAUTION:

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

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

10CT1	CHECK DTC P0505 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 [T10A0].>

NOTE:

In this case, it is not necessary to inspect DTC P1507.

NO : Go to step **10CT2**.

10CT2	CHECK AIR INTAKE SYSTEM.
--------------	---------------------------------

1) Turn ignition switch to ON.

2) Start engine, and idle it.

CHECK : *Is there a fault in air intake system?*

NOTE:

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

YES : Repair air suction and leaks.

NO : Replace idle air control solenoid valve.

OBD (FB1)
 P1520 <FAN_1HI>
 B2M1141

CU: DTC P1520
— RADIATOR FAN RELAY 1 CIRCUIT HIGH INPUT —

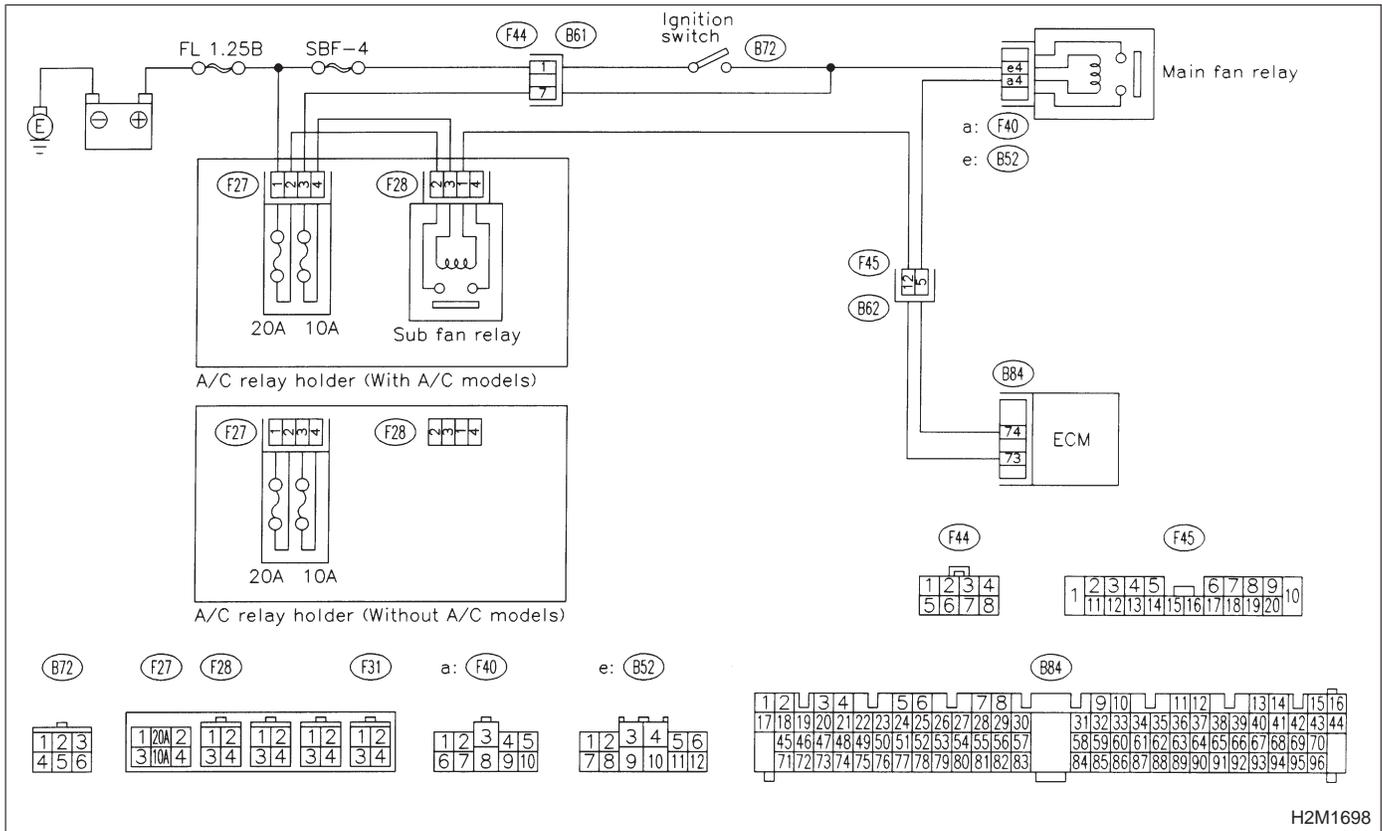
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

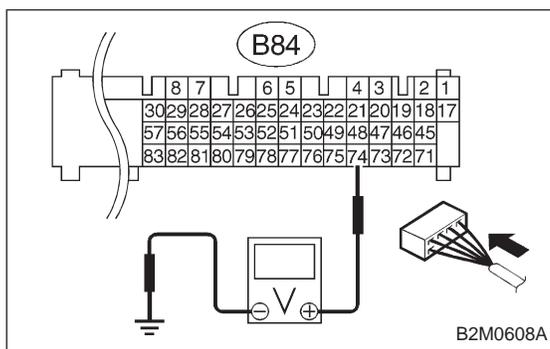
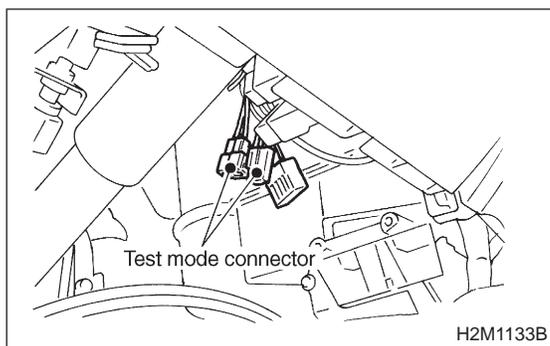
WIRING DIAGRAM:



CAUTION:

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

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

**10CU1 CHECK OUTPUT SIGNAL FROM ECM.**

- 1) Turn ignition switch to OFF.
- 2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.
- 3) Turn ignition switch to ON.

- 4) Measure voltage between ECM and chassis ground.

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

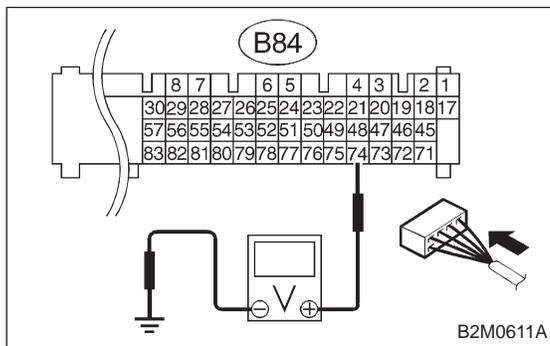
CHECK : Does voltage change between 0 and 10 volts?

NOTE:

Radiator fan relay operation check can be executed using Subaru Select Monitor (Function mode: FD03). For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CU2**.

NO : 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.

**10CU2 CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.**

- 1) Turn ignition switch to OFF.
- 2) Remove main fan relay 1 and sub fan relay 1. (with A/C models)
Remove main fan relay. (without A/C models)
- 3) Disconnect test mode connector.
- 4) Turn ignition switch to ON.
- 5) Measure voltage between ECM and chassis ground.

Connector & terminal**(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 **10CU3**.

10CU3	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.

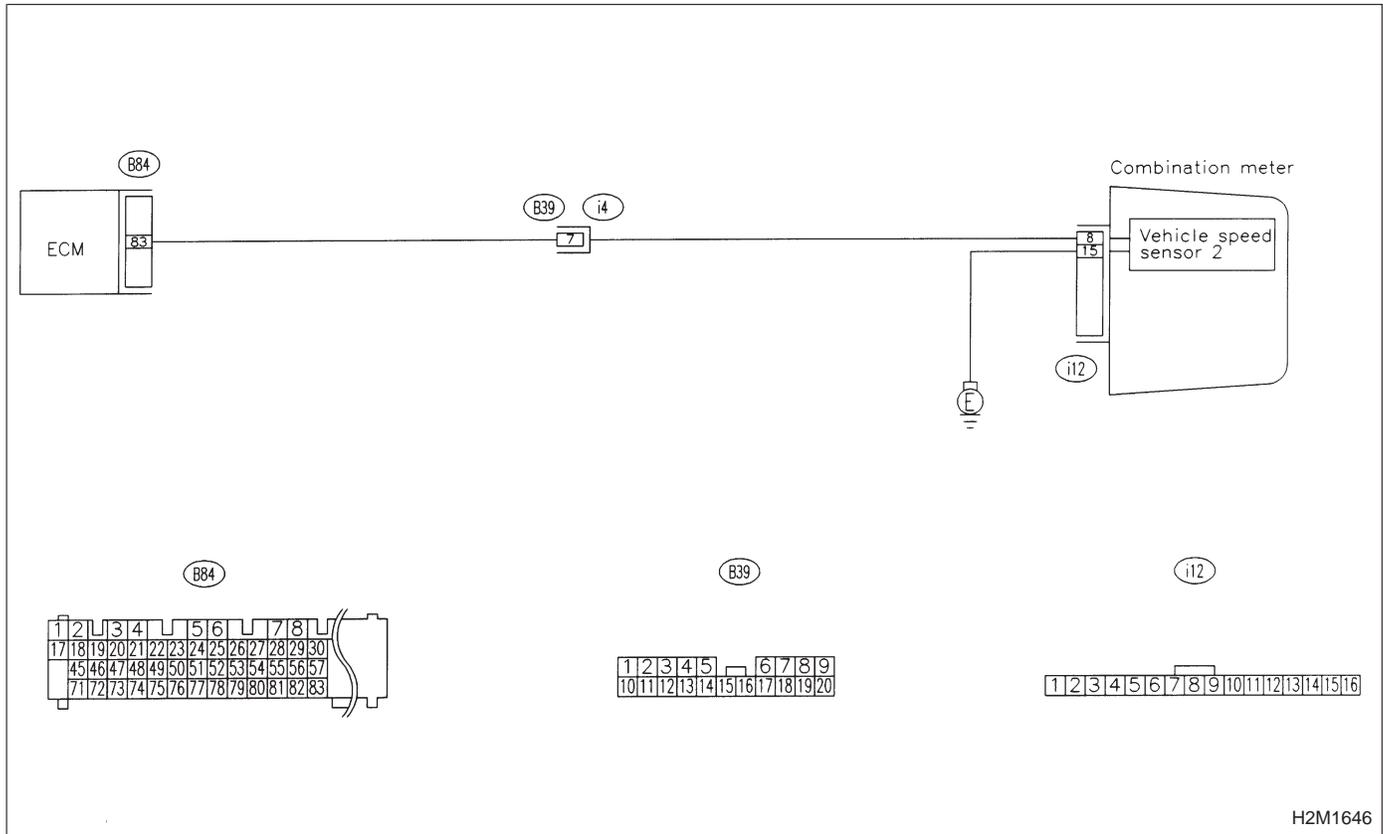
NO : Replace ECM.

OBD (FB1)
 P1540 <VSP_S>
 B2M1142

CV: DTC P1540
 — VEHICLE SPEED SENSOR MALFUNCTION
 2 —

DTC DETECTING CONDITION:
 ● Immediately at fault recognition

WIRING DIAGRAM:

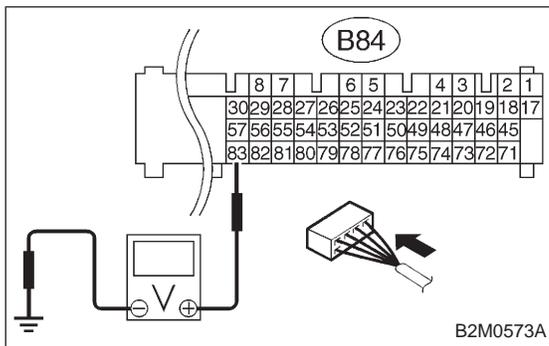


H2M1646

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

10CV1 CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

- CHECK** : Does speedometer operate normally?
- YES** : Go to step **10CV2**.
- NO** : Check speedometer and vehicle speed sensor 2. <Ref. to 6-2 [K2A0].>



10CV2 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 (-):

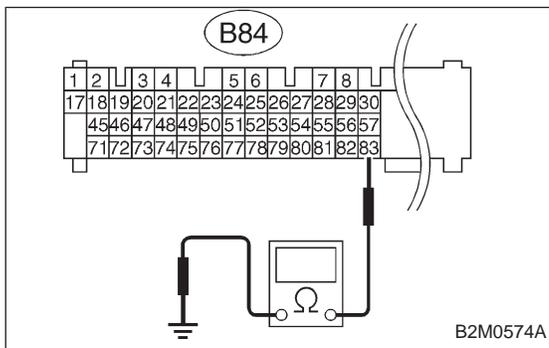
- CHECK** : Is the voltage more than 2 V?
- YES** : Repair harness and connector.

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 (B39)

- NO** : Go to step **10CV3**.



10CV3 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.

OBD	(FB1)
P1700	<ATTH>
OBD0501	

CW: DTC P1700
— THROTTLE POSITION SENSOR CIRCUIT
MALFUNCTION FOR AUTOMATIC
TRANSMISSION —

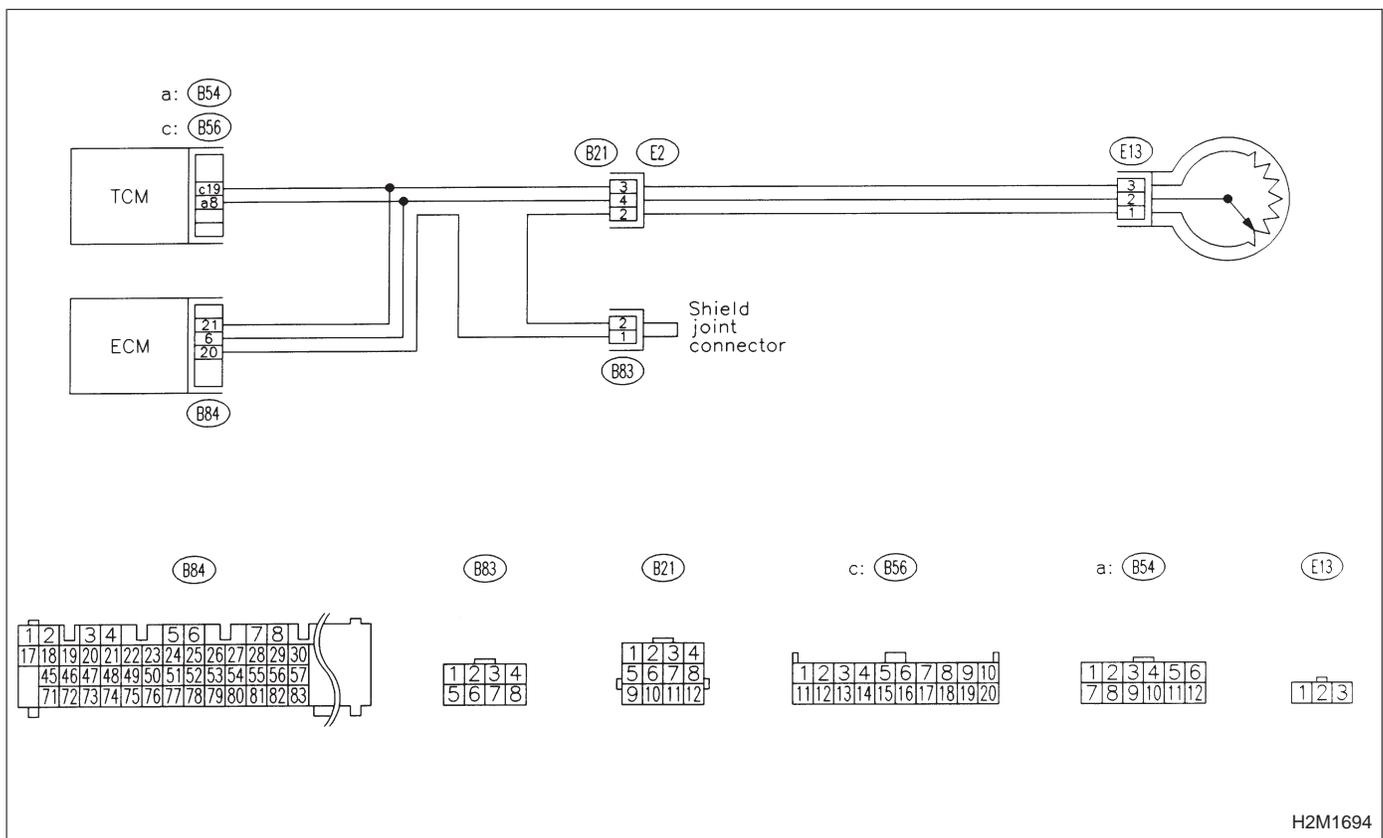
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Shift point too high or too low; engine brake not effected in "3" range; excessive shift shock; excessive tight corner "braking"

WIRING DIAGRAM:



H2M1694

CAUTION:

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

10CW1	CHECK DTC P1700 ON DISPLAY.
--------------	------------------------------------

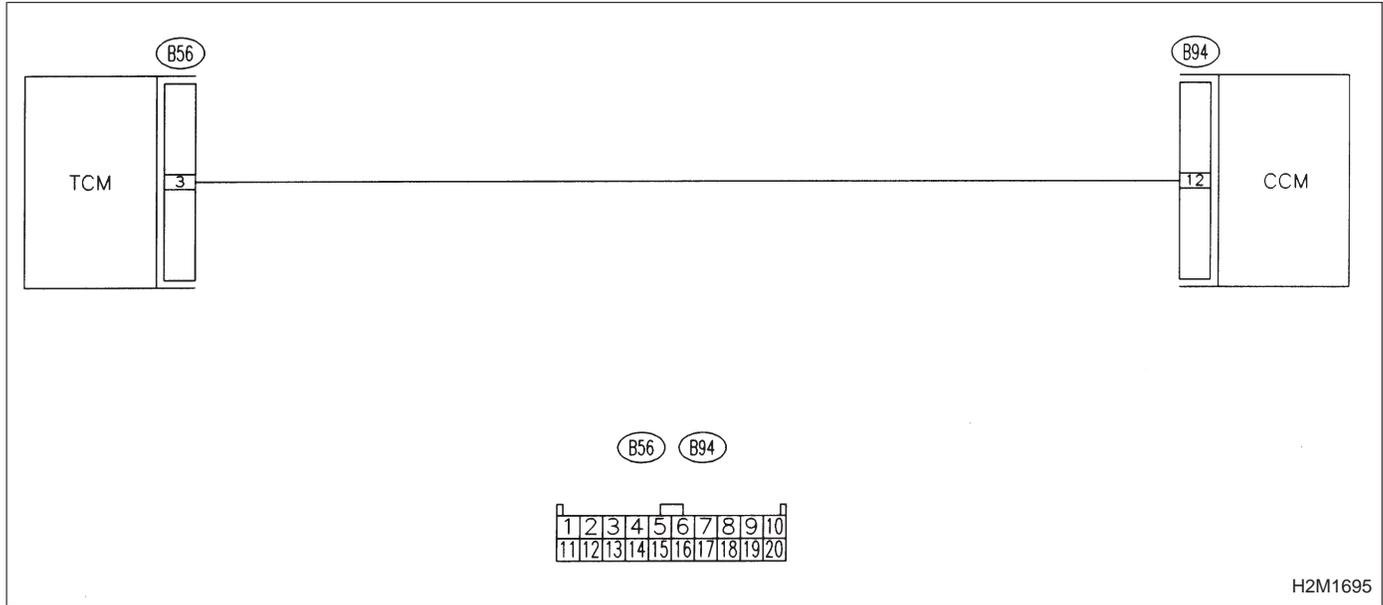
- CHECK** : *Does the Subaru select monitor or OBD-II general scan tool indicate DTC P1700?*
- YES** : Check throttle position sensor circuit. <Ref. to 3-2 [T8M0].>
- NO** : It is not necessary to inspect DTC P1700.

OBD (FB1)
 P1701 <ATCRS>
 B2M0669

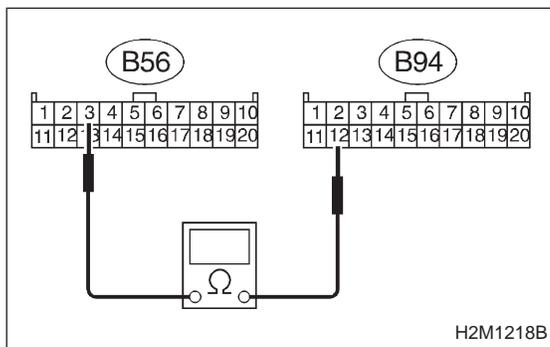
CX: DTC P1701
— CRUISE CONTROL SET SIGNAL CIRCUIT
MALFUNCTION FOR AUTOMATIC
TRANSMISSION —

DTC DETECTING CONDITION:
 ● Two consecutive driving cycles with fault

WIRING DIAGRAM:



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

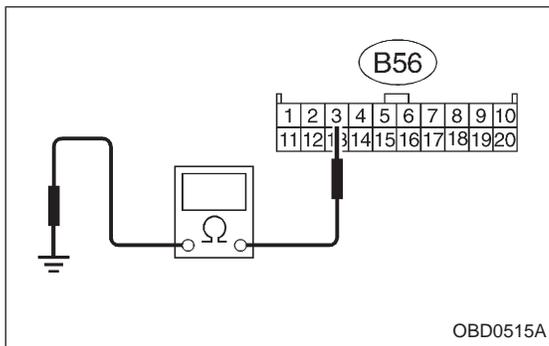


10CX1 CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

- 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:**

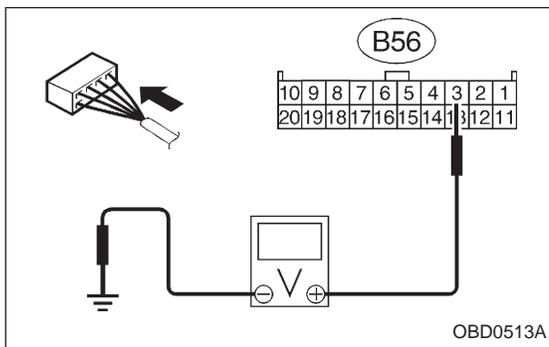
- CHECK** : Is the resistance less than 1 Ω?
- YES** : Go to next step 4).
- NO** : Repair open circuit in harness between TCM and CCM connector.



4) 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 short circuit in harness between TCM and CCM connector.
- NO** : Go to step 10CX2.



10CX2	CHECK INPUT SIGNAL FOR TCM.
--------------	------------------------------------

- 1) Connect connector to TCM and CCM.
 - 2) Lift-up the vehicle or set the vehicle on free rollers.
- CAUTION:**
On AWD models, raise all wheels off ground.
- 3) Start the engine.
 - 4) Cruise control main switch to ON.
 - 5) TCS OFF switch to ON. (with TCS models only)
 - 6) Move selector lever to "D" and slowly increase vehicle speed to 50 km/h (31 MPH).
 - 7) Cruise control set switch to ON.
 - 8) Measure voltage between TCM and chassis ground.

**Connector & terminal
(B56) No. 3 (+) — Chassis ground (-):**

- CHECK** : Is the voltage less than 1 V?
- YES** : Go to step 10CX3.
- NO** : Check cruise control set circuit. <Ref. to 6-3 [D5011].>

10CX3	CHECK POOR CONTACT.
--------------	----------------------------

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

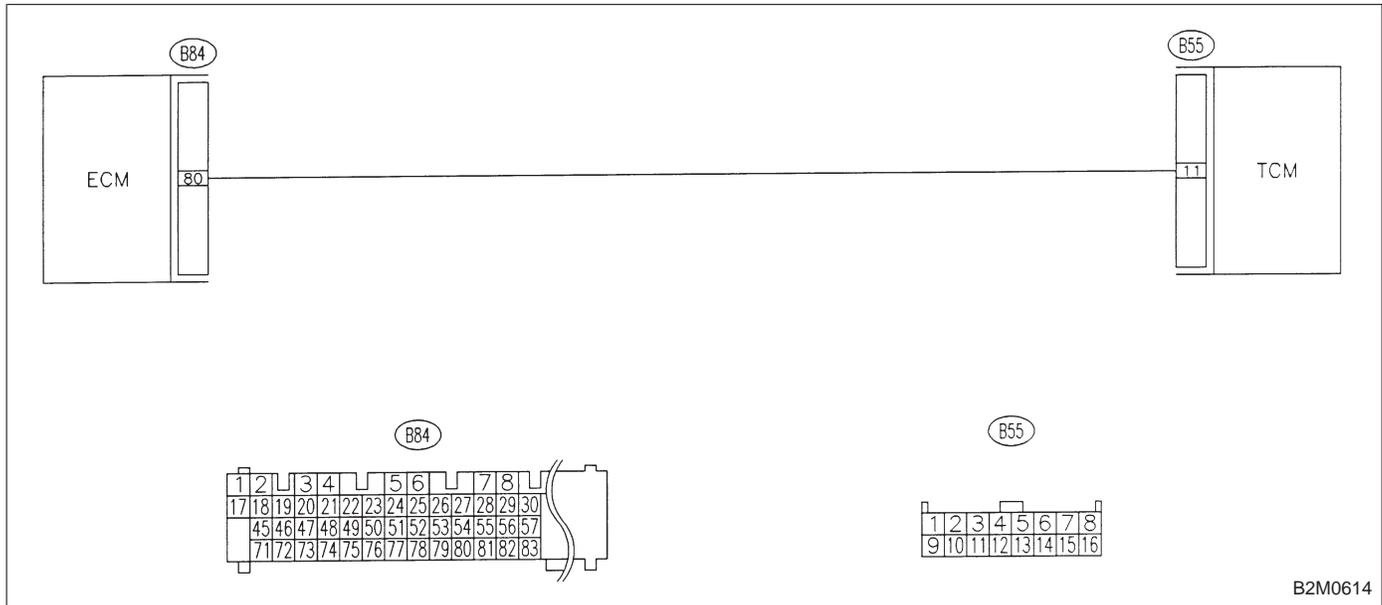
- CHECK** : Is there poor contact in TCM connector?
- YES** : Repair poor contact in TCM connector.
- NO** : Replace TCM.

OBD (FB1)
 P1702<ATDIAG_LO>
 B2M1143

CY: DTC P1702
— AUTOMATIC TRANSMISSION DIAGNOSIS
INPUT SIGNAL CIRCUIT LOW INPUT —

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

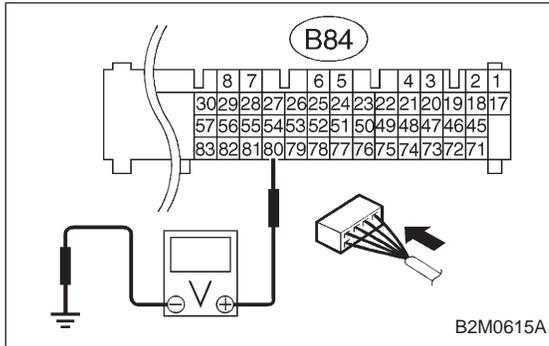
WIRING DIAGRAM:



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

10CY1 CHECK TRANSMISSION TYPE.

- CHECK** : *Is transmission type AT?*
- YES** : Go to step 10CY2.
- NO** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>



10CY2 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

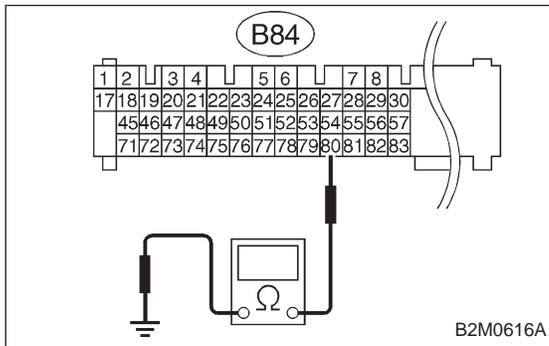
- 1) Turn ignition switch to ON.
- 2) Measure voltage between ECM and chassis ground.

Connector & terminal (B84) No. 80 (+) — Chassis ground (-):

- CHECK** : *Is the voltage less than 1 V?*
- YES** : Go to step 10CY3.
- 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

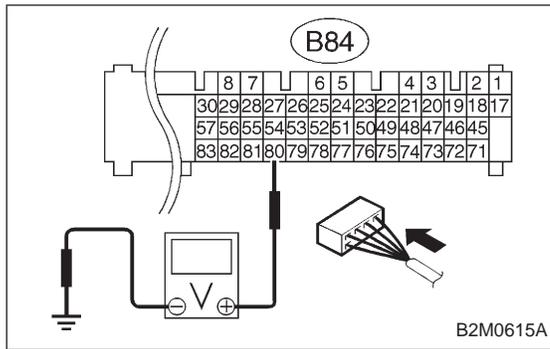


10CY3 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

- 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 10CY4.

**10CY4 CHECK 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:

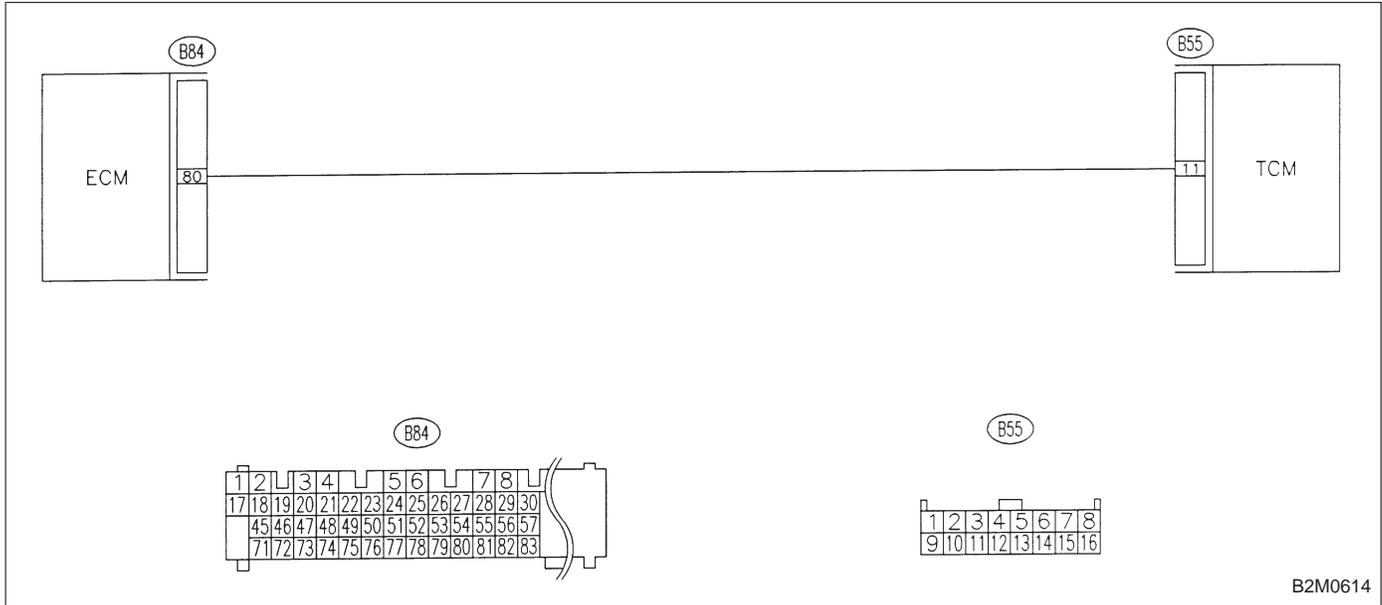
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)
 P1722<ATDIAG_HI>
 B2M1144

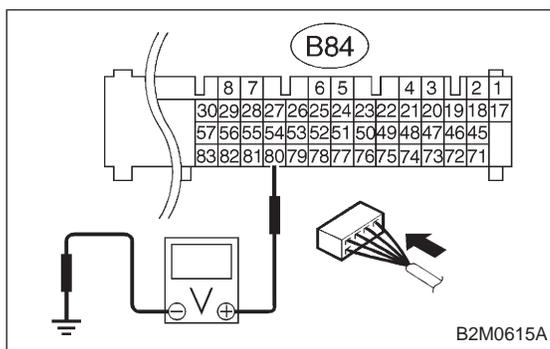
CZ: DTC P1722
— AUTOMATIC TRANSMISSION DIAGNOSIS
INPUT SIGNAL CIRCUIT HIGH INPUT —

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

WIRING DIAGRAM:

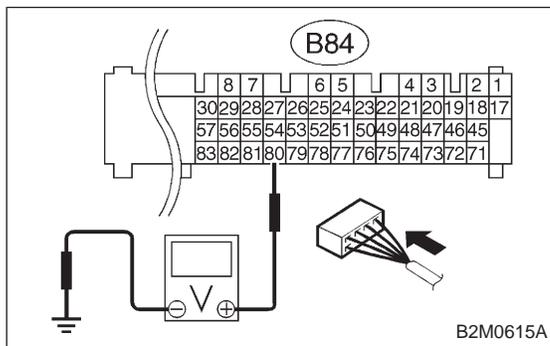


CAUTION:
 After repair or replacement of faulty parts, conduct
CLEAR MEMORY and **INSPECTION MODES**.
 <Ref. to 2-7 [T3D0] and [T3E0].>

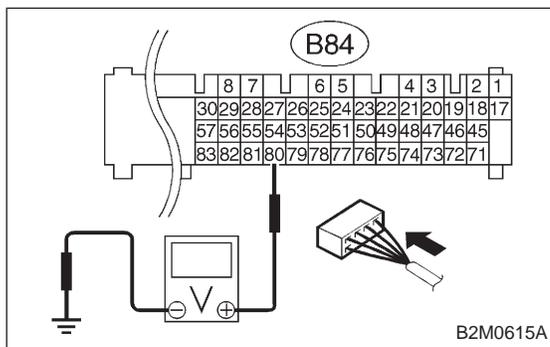
10CZ1 CHECK TRANSMISSION TYPE.**CHECK** : *Is transmission type AT?***YES** : Go to step 10CZ2.**NO** : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>**10CZ2 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**

1) Turn ignition switch to ON.

2) Measure voltage between ECM and chassis ground.

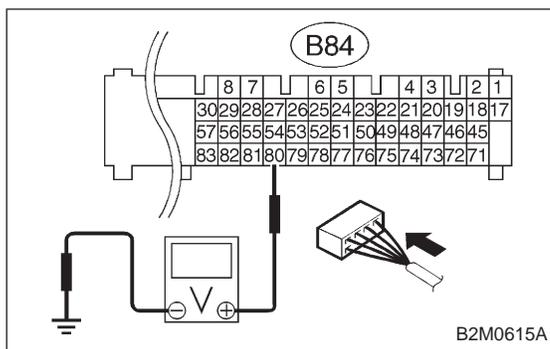
Connector & terminal**(B84) No. 80 (+) — Chassis ground (-):****CHECK** : *Is the voltage more than 10 V?***YES** : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM.**NO** : Go to step 10CZ3.**10CZ3 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**

1) 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 10CZ4.**NO** : Go to next step 2).

2) 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 next step 3).



3) 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:

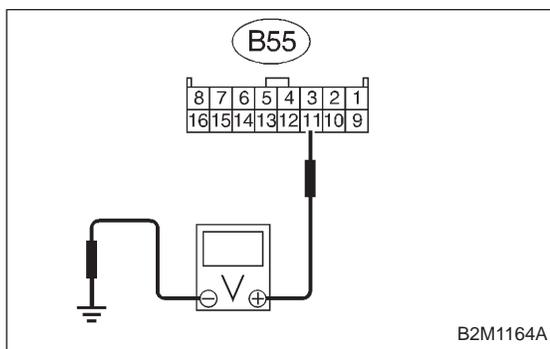
In this case, repair the following:

- 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.



10CZ4 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 10CZ5.

NO : Repair open circuit in harness between ECM and TCM connector.

10CZ5 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.

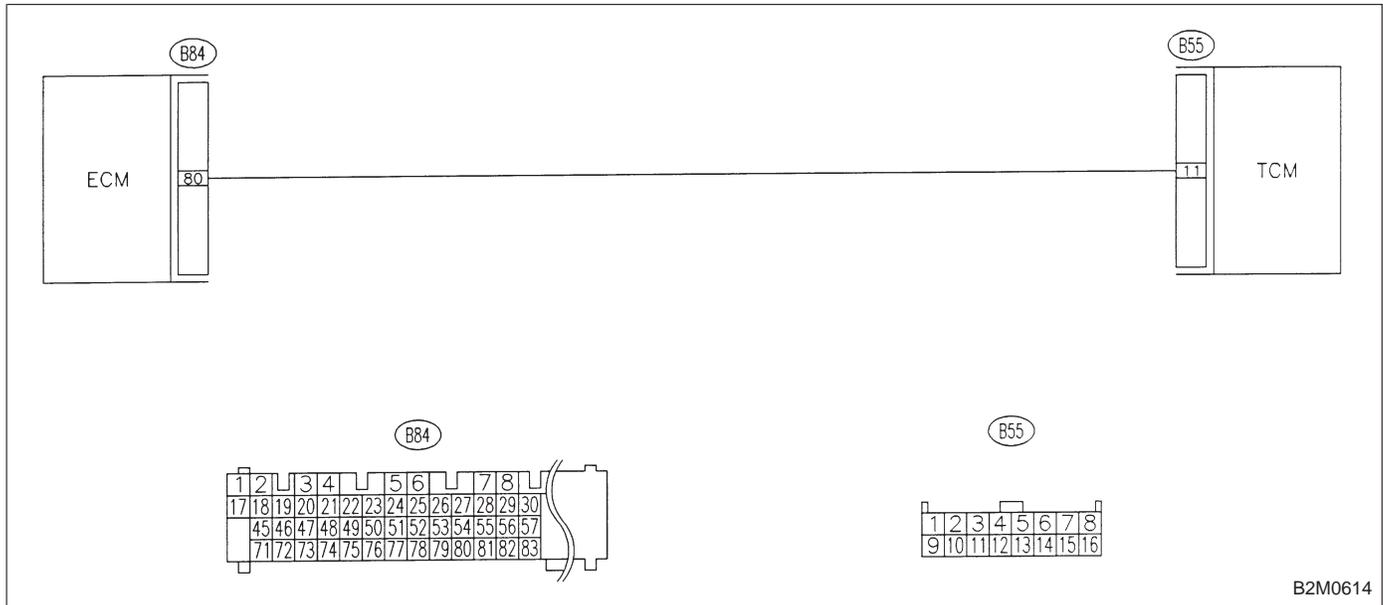
OBD (FB1)
 P1742 <ATDIAG_2>

B2M1147

**DA: DTC P1742
 — AUTOMATIC TRANSMISSION DIAGNOSIS
 INPUT SIGNAL CIRCUIT MALFUNCTION —**

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

WIRING DIAGRAM:



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

10DA1	CHECK TRANSMISSION TYPE.
--------------	---------------------------------

CHECK : *Is transmission type AT?*

YES : Go to step **10DA2**.

NO : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>

10DA2	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 **10DA3**.

NO : Replace TCM.

10DA3	CHECK ACCESSORY.
--------------	-------------------------

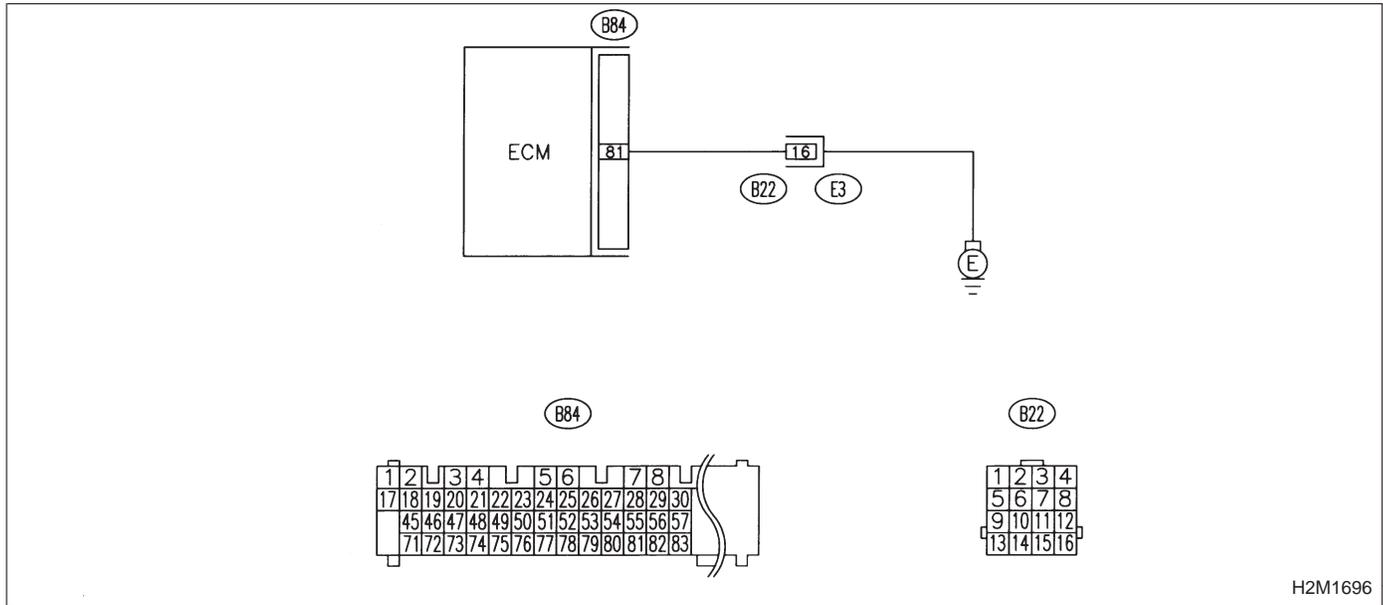
CHECK : *Are car phone and/or CB installed on vehicle?*

YES : Repair grounding line of car phone or CB system.

NO : Replace TCM.

**DB: — AT/MT IDENTIFICATION CIRCUIT
MALFUNCTION [MT VEHICLES] —**

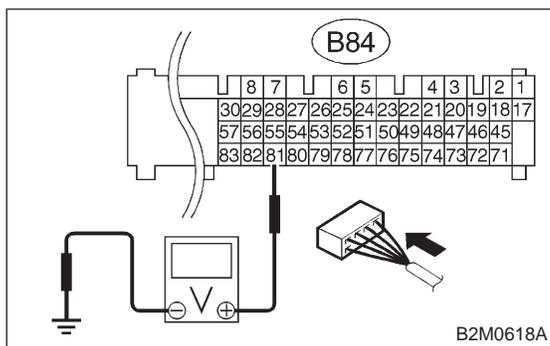
WIRING DIAGRAM:



CAUTION:

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

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



10DB1	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 **10DB2**.

10DB2	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.