1. General

A: GENERAL DESCRIPTION

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

B: ENGINE

1. ENGINE AND EMISSION CONTROL SYSTEM

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

C: AUTOMATIC TRANSMISSION

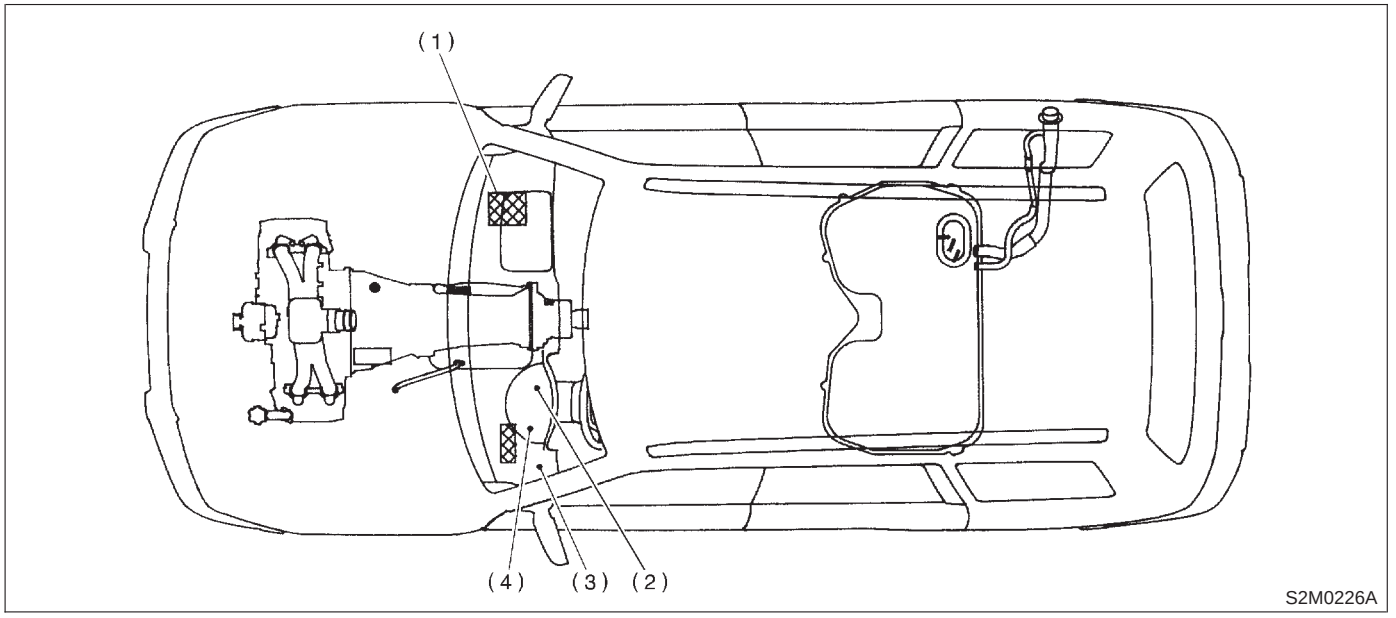
1. ELECTRONIC-HYDRAULIC CONTROL SYSTEM

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

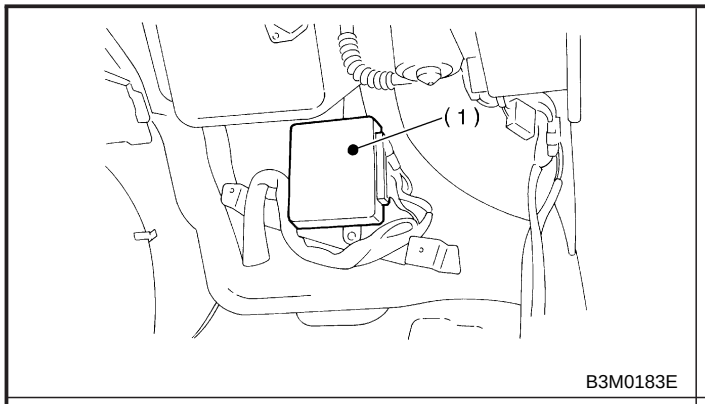
2. Electrical Components Location

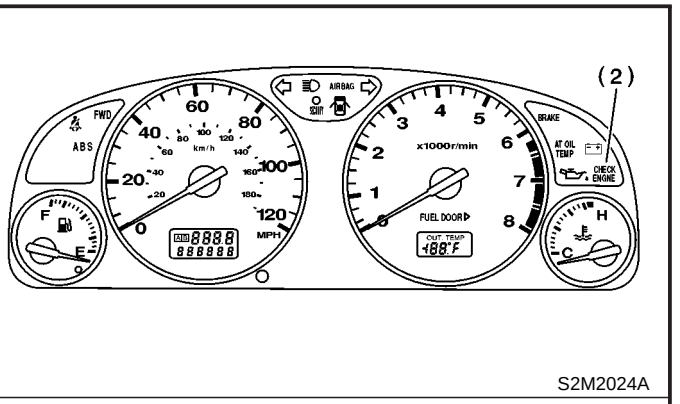
A: ENGINE

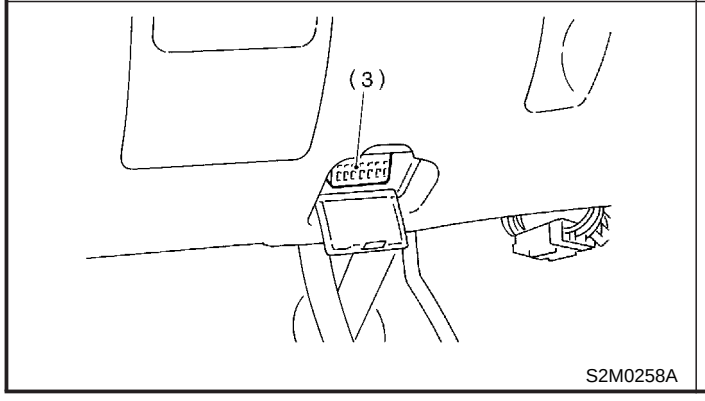
1. MODULE

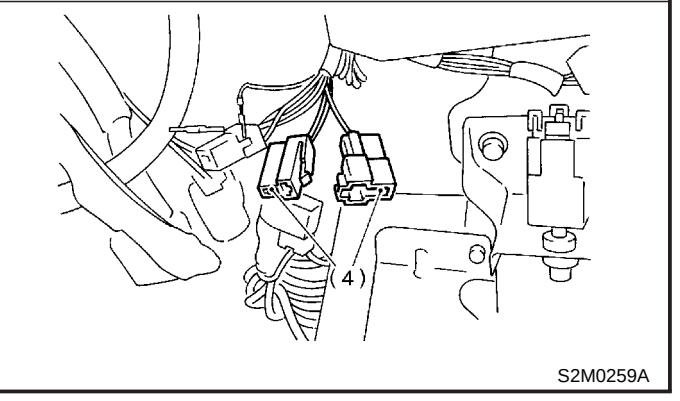


(1) Engine control module (ECM)
(2) CHECK ENGINE malfunction indicator lamp (MIL)
(3) Data link connector
(4) Test mode connector

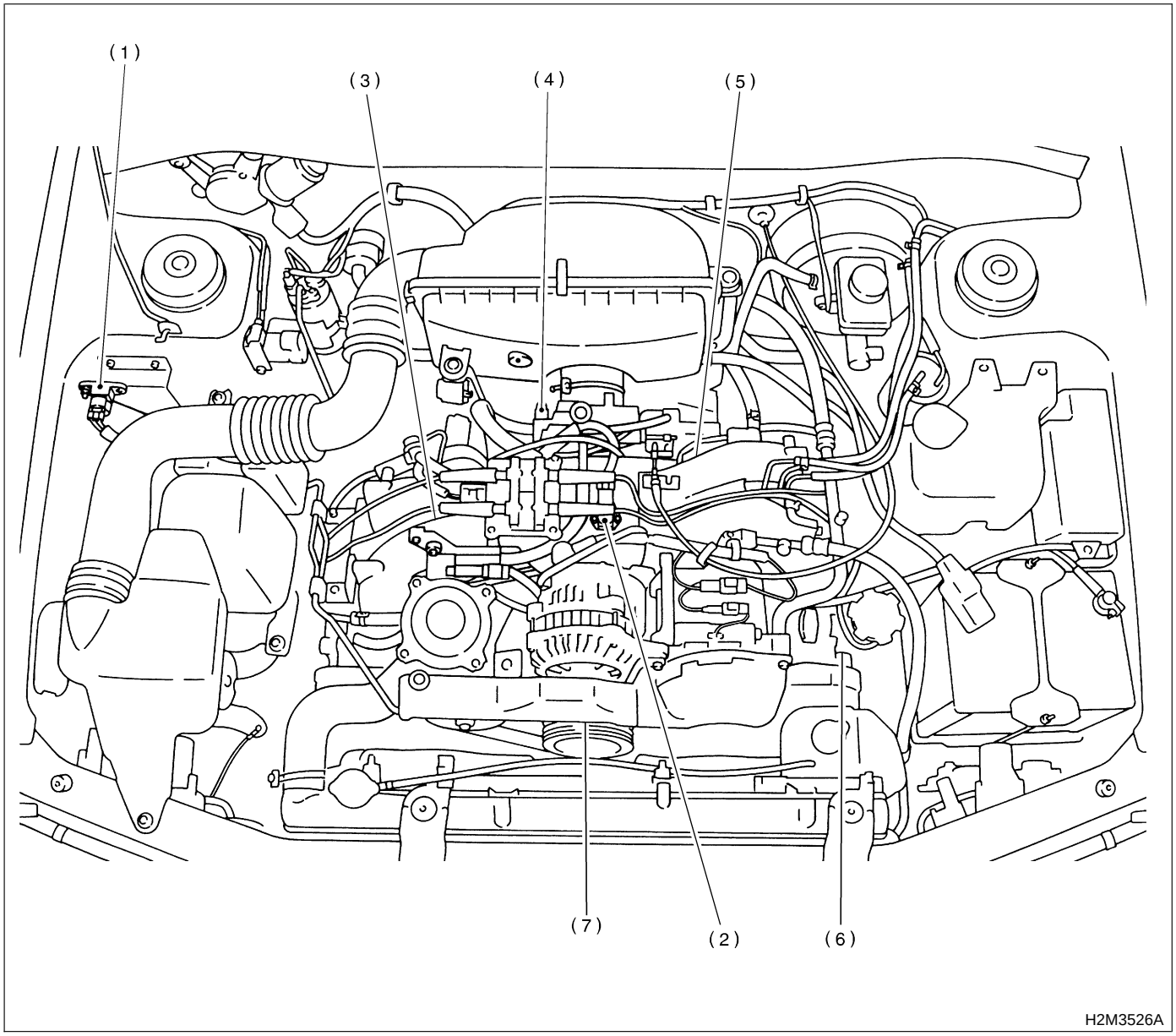




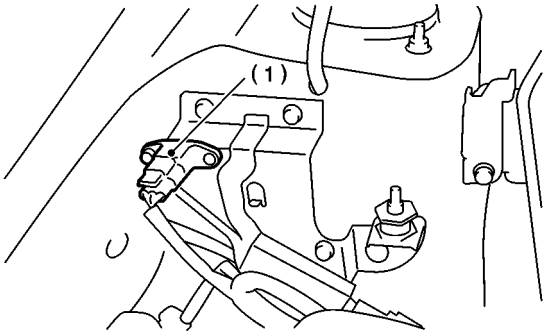




2. SENSOR



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



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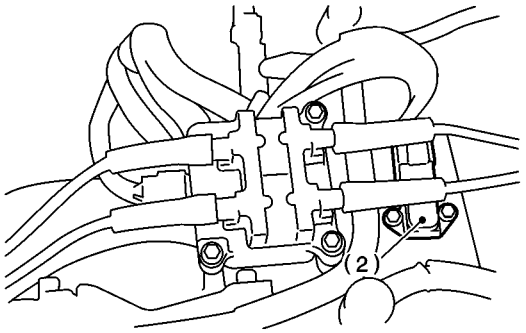

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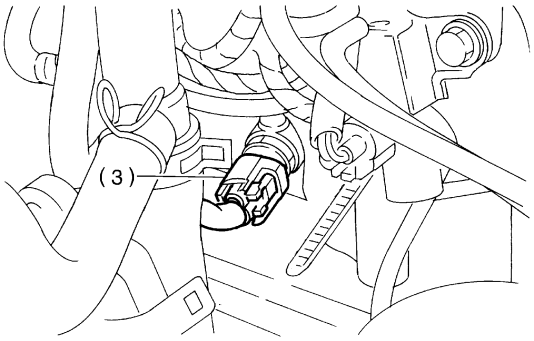

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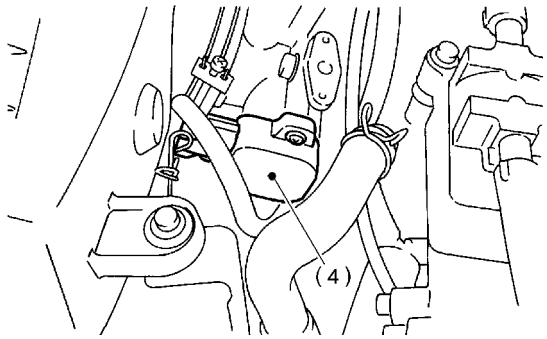

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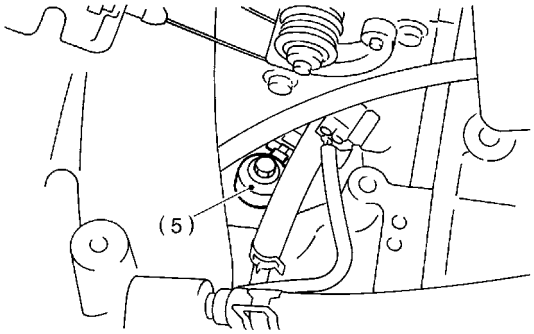

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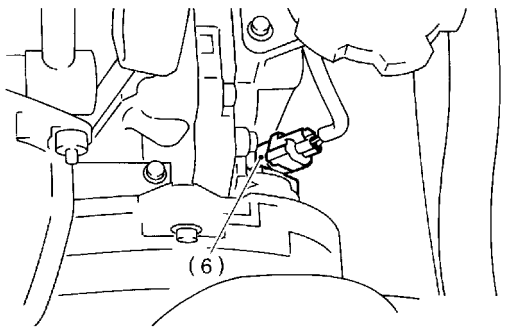

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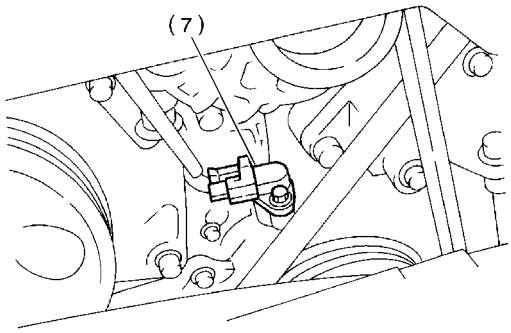

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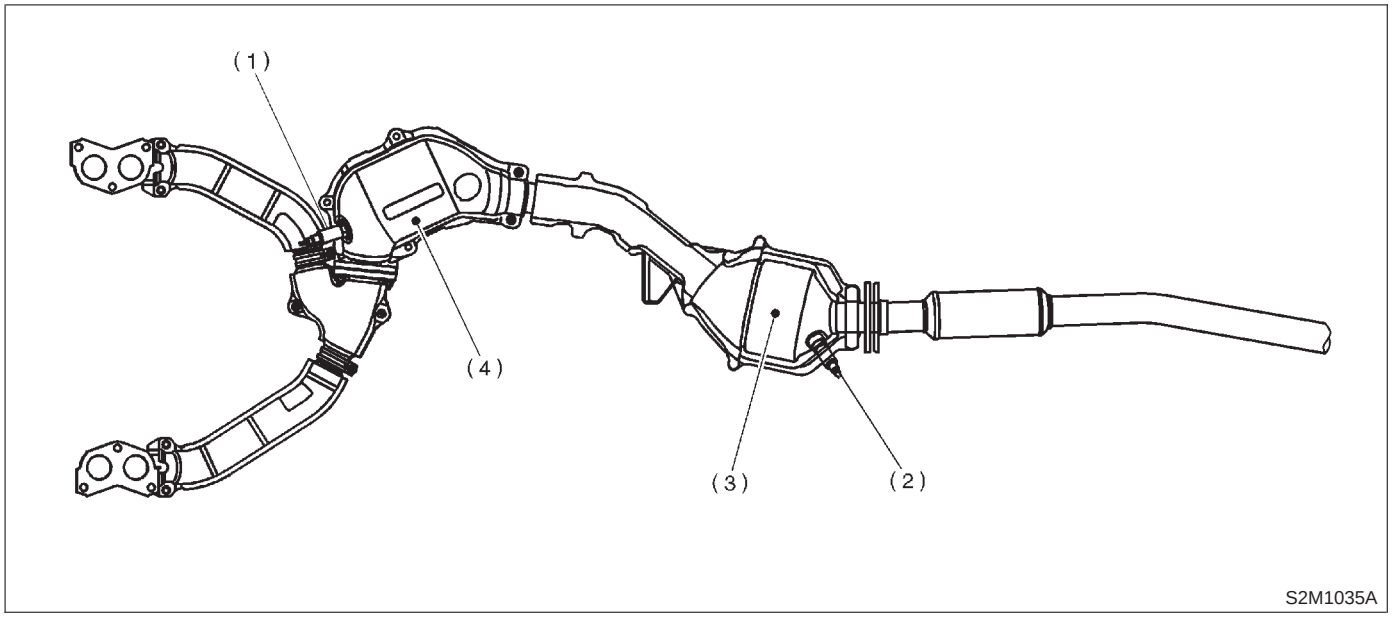
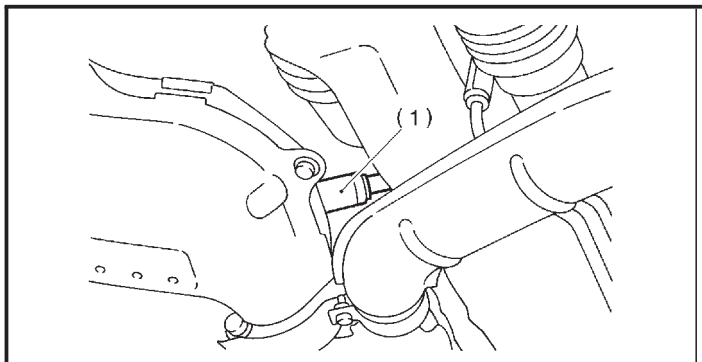
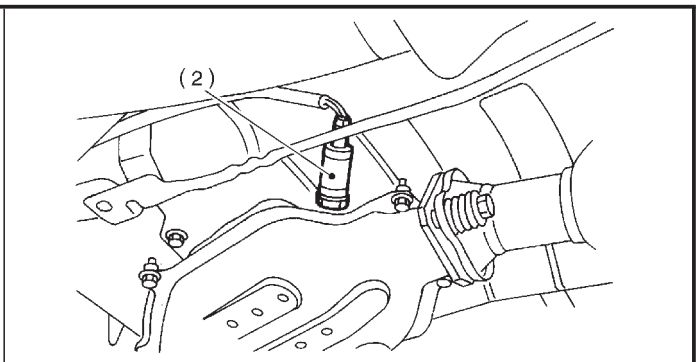
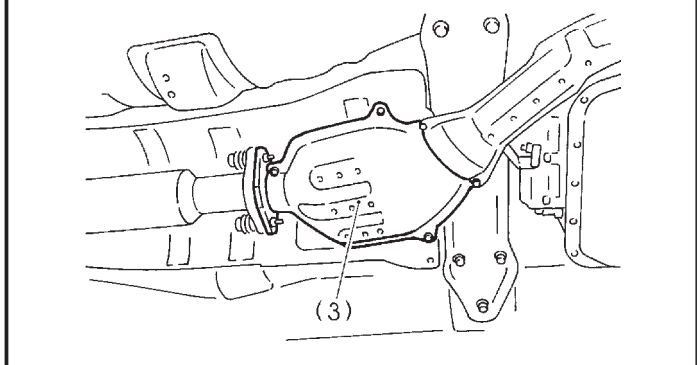
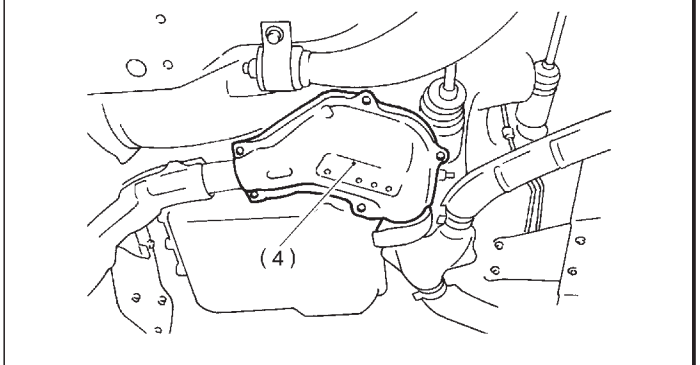


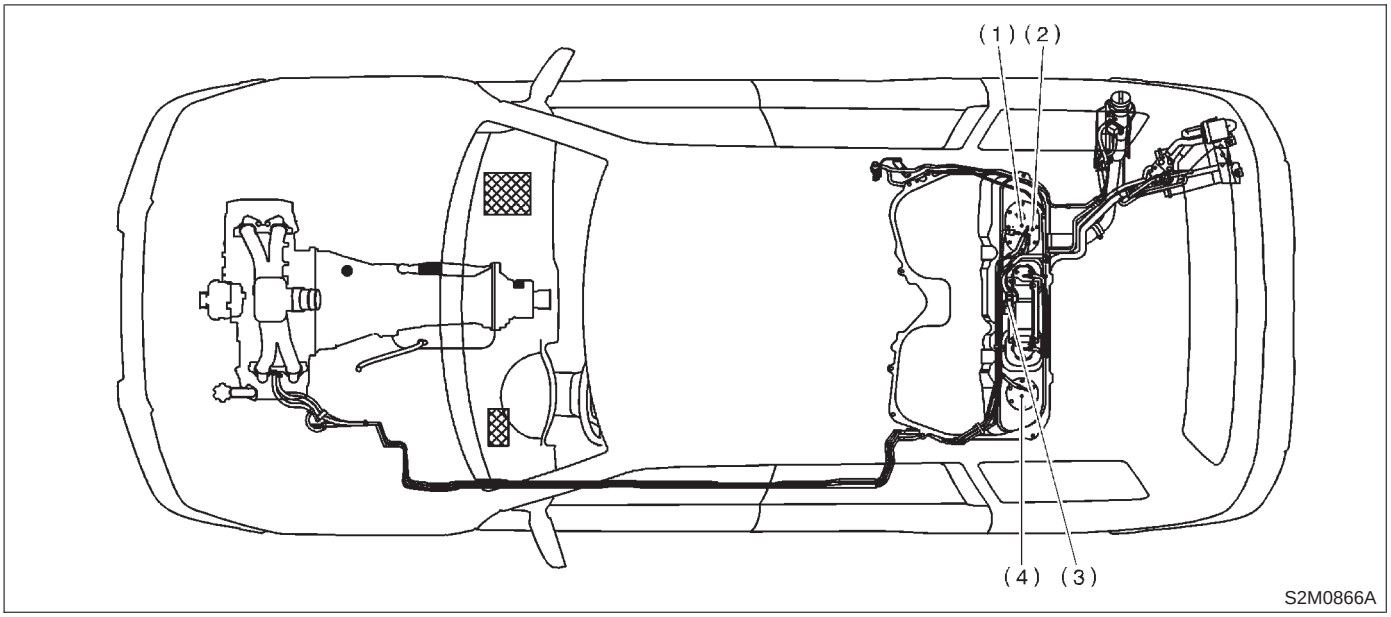
(1) Front oxygen (A/F) sensor
(2) Rear oxygen sensor
(3) Rear catalytic converter
(4) Front catalytic converter



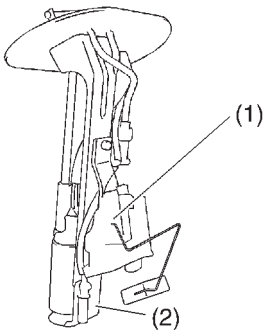


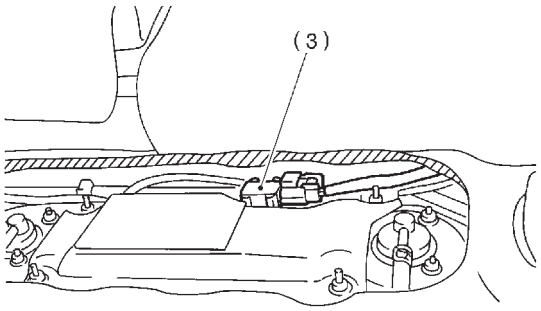


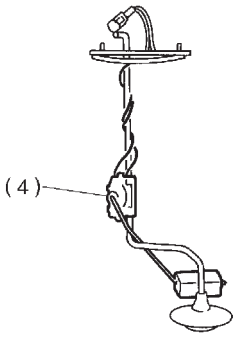




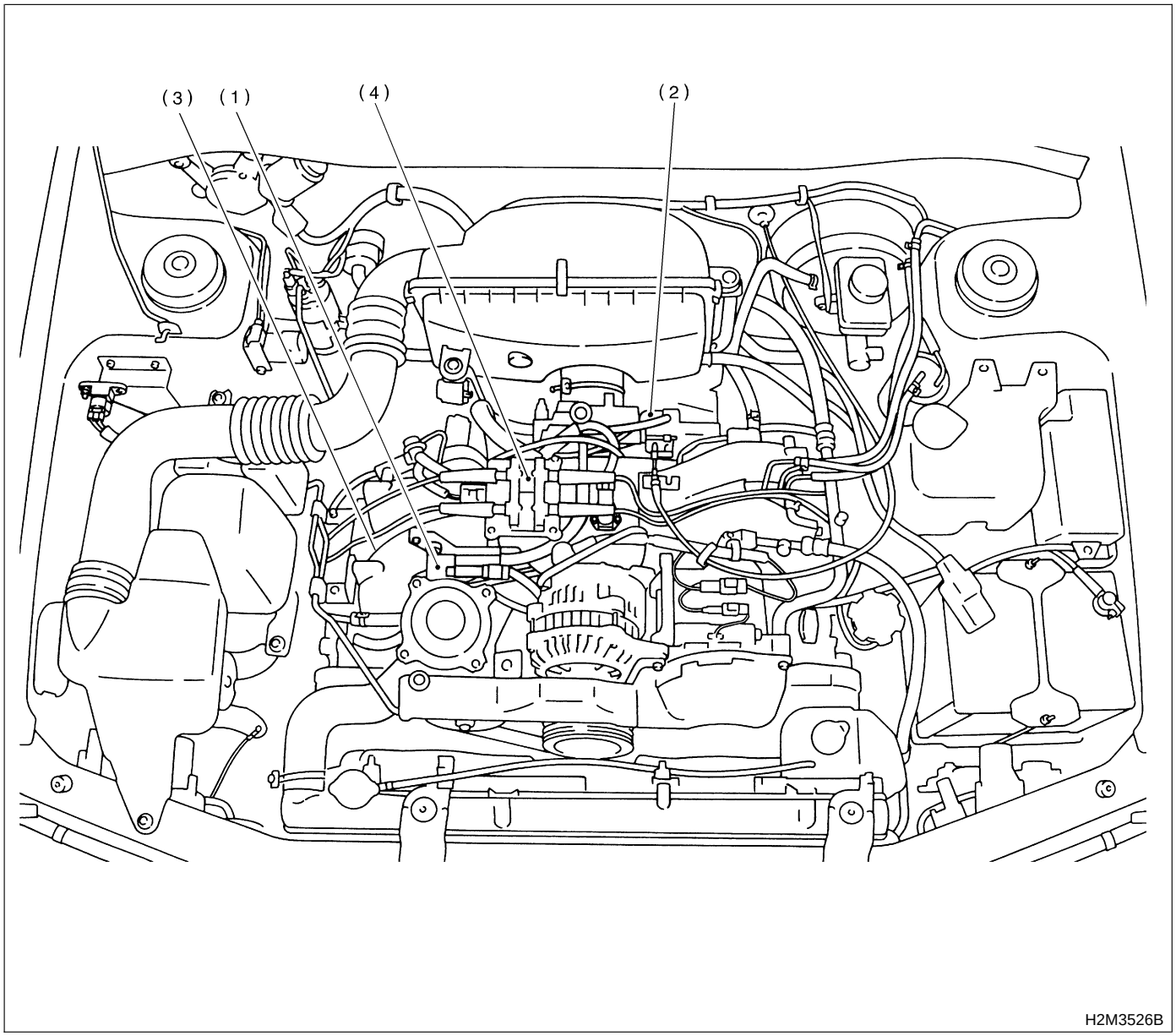
(1) Fuel level sensor (Main)
(2) Fuel temperature sensor
(3) Fuel tank pressure sensor
(4) Fuel level sensor (Sub)



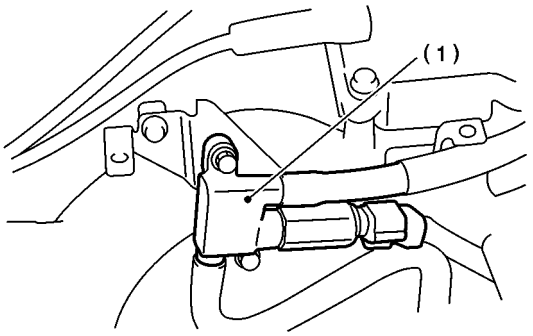




3. SOLENOID VALVE, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS



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



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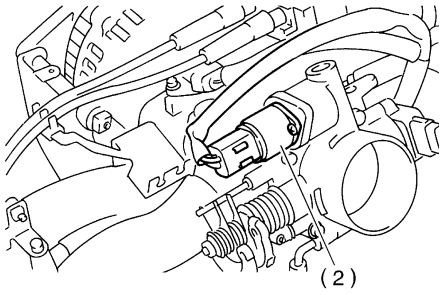

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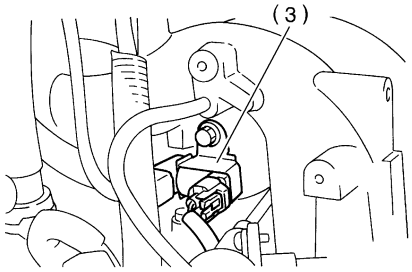

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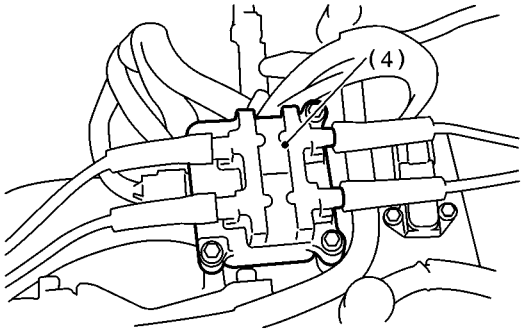

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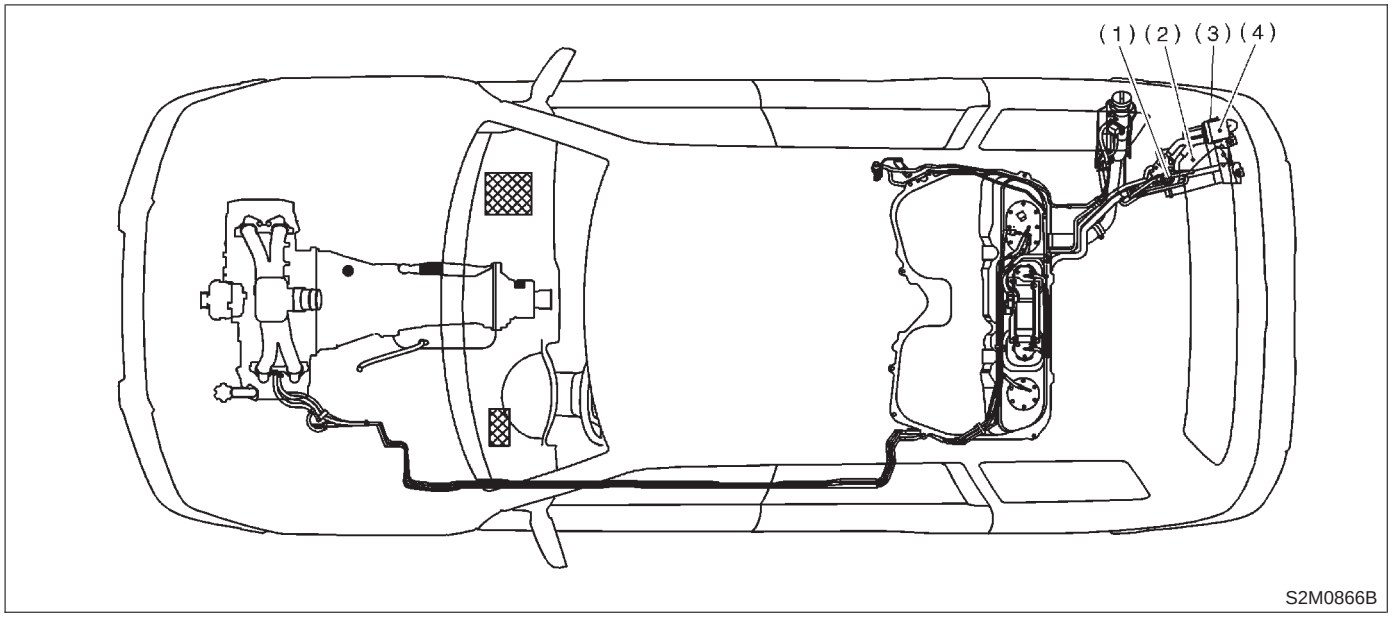
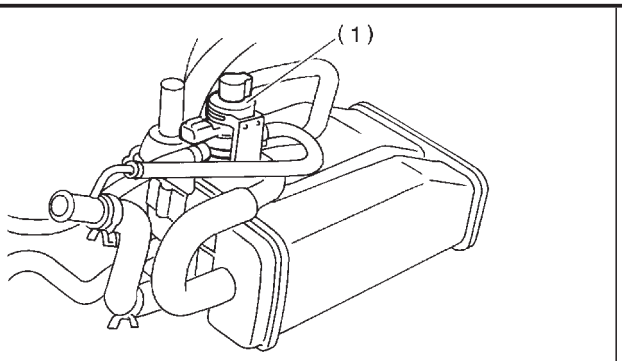
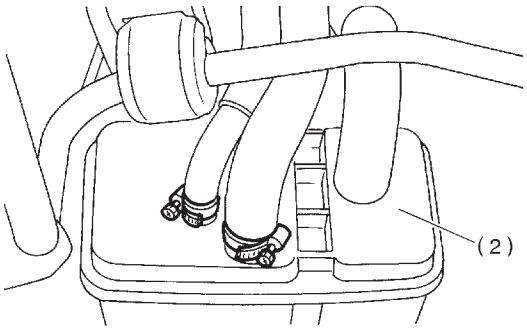
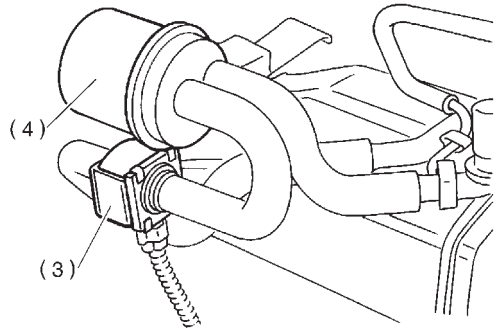


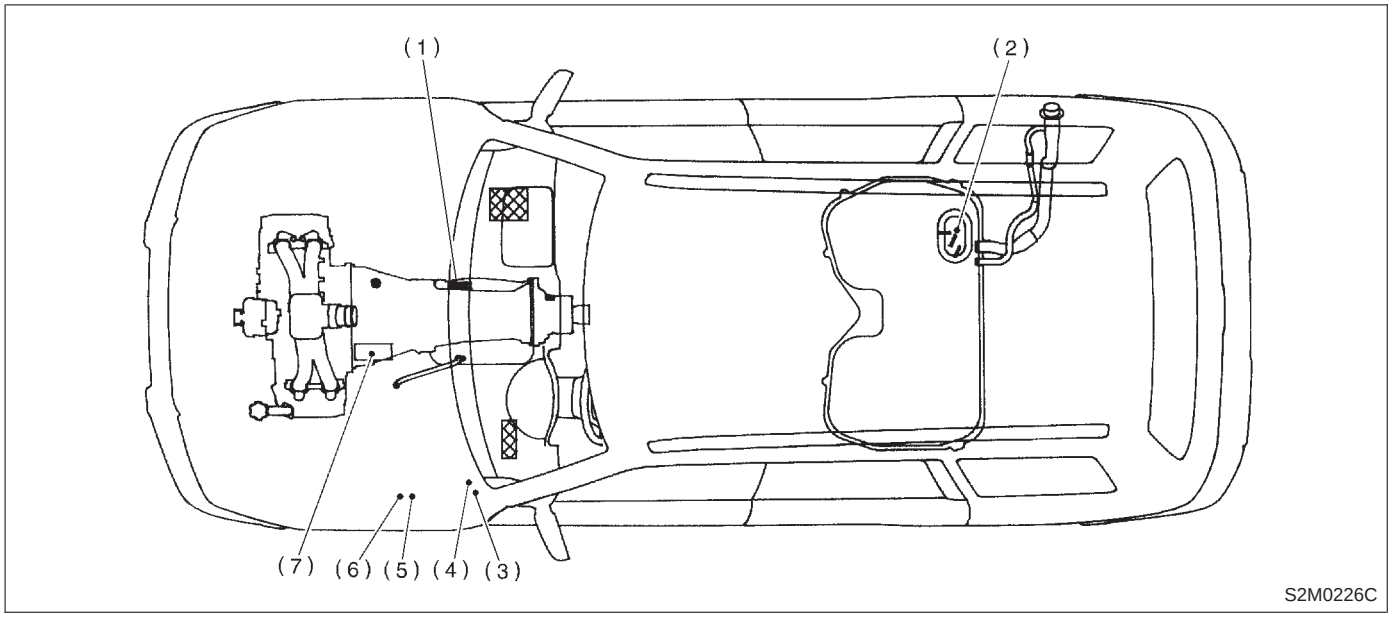
(1) Pressure control solenoid valve
(2) Canister
(3) Drain valve
(4) Air filter



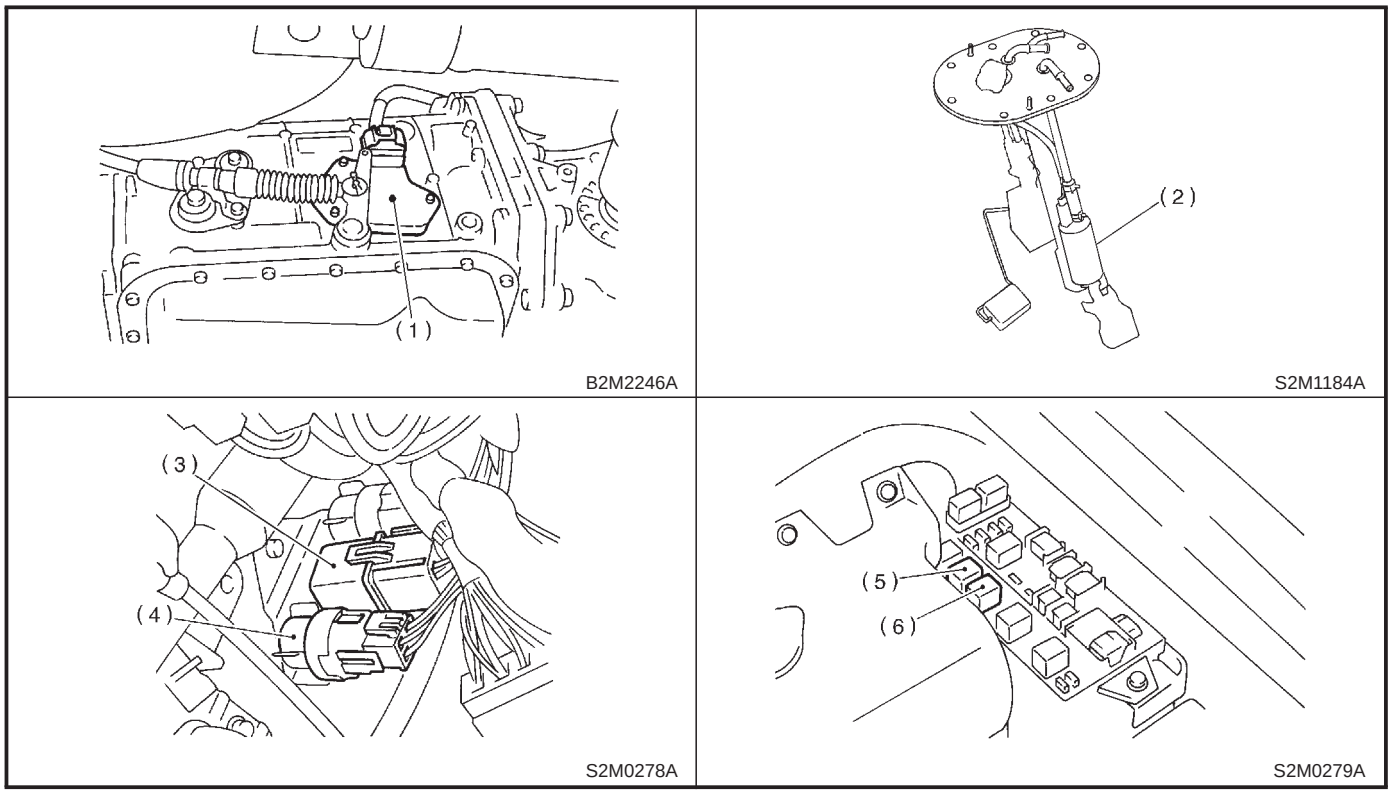


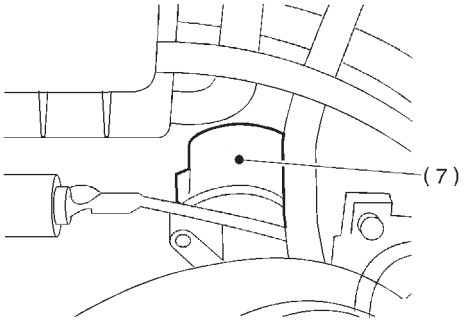


MEMO:



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

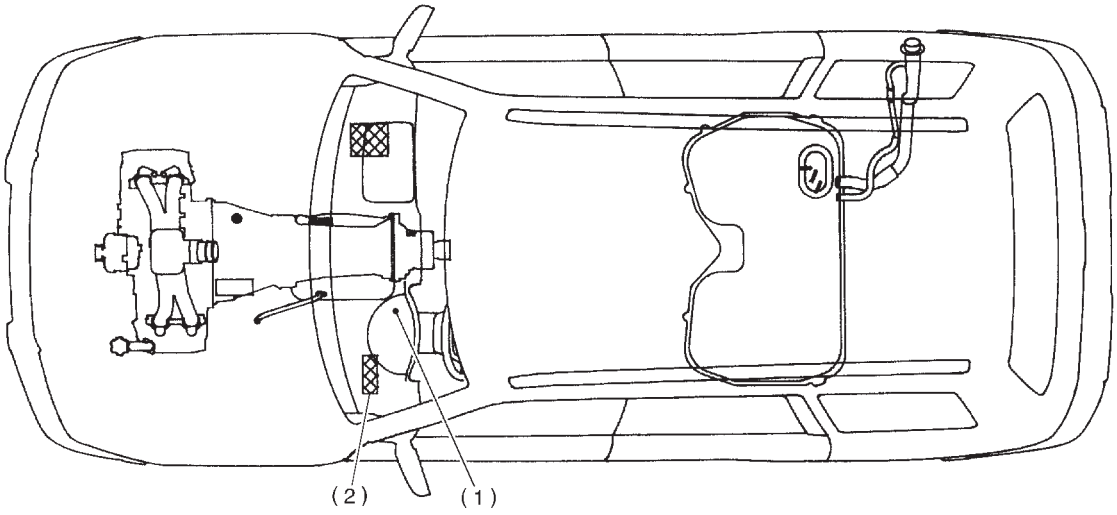




B2M2247B

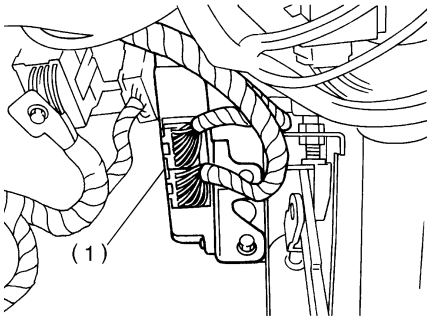
B: TRANSMISSION

1. MODULE



S2M0226D

(1) Transmission Control Module (TCM) (for AT vehicles)
(2) AT diagnostic indicator light (for AT vehicles)



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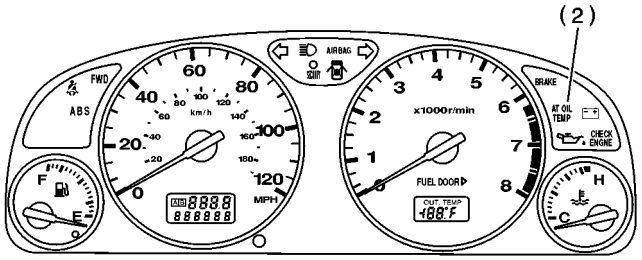
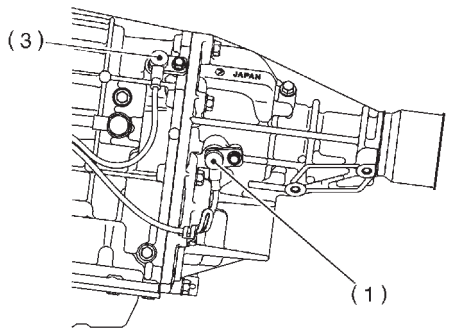


S2M2024B

2. SENSOR



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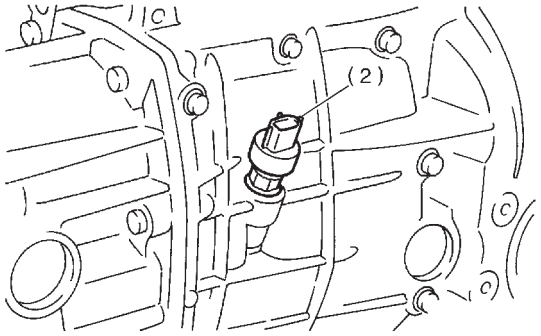

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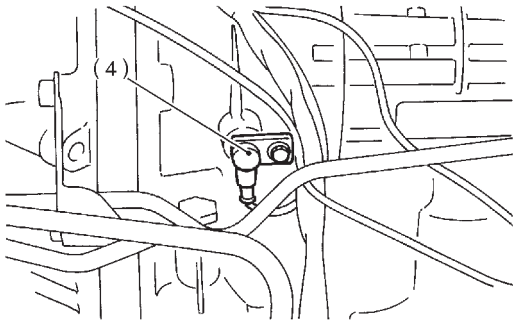

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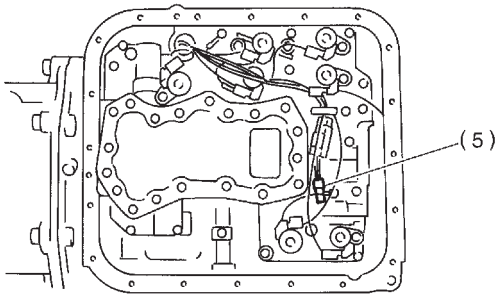

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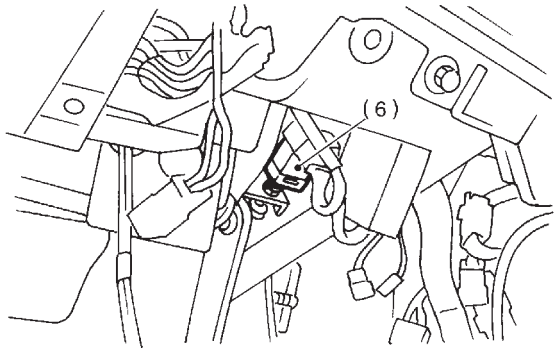
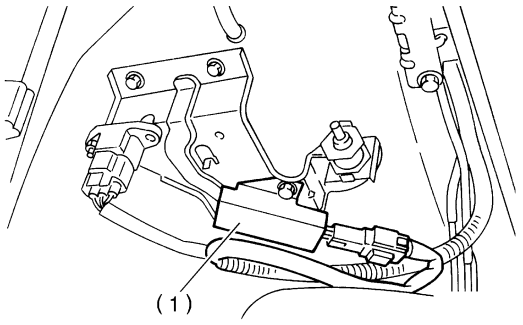


OBD0653B

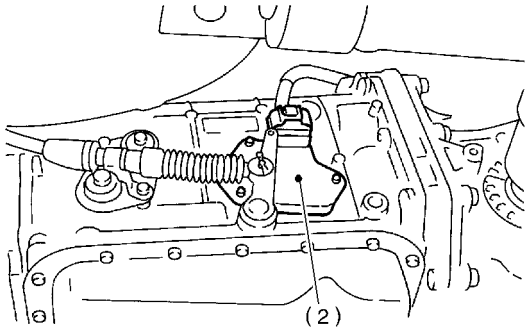
(1) Vehicle speed sensor 1 (for AT vehicles)
(2) Vehicle speed sensor 2 (for MT vehicles)
(3) Vehicle speed sensor 2 (for AT vehicles)
(4) Torque converter turbine speed sensor
(5) ATF temperature sensor (for AT vehicles)
(6) Brake light switch

3. SOLENOID VALVE AND RELAY

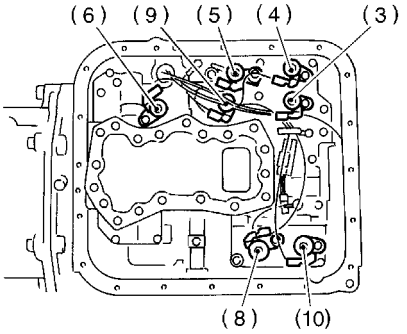
- **For AT vehicles**



B3M1670C



B2M2246B



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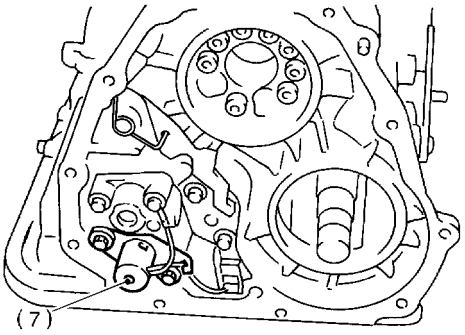
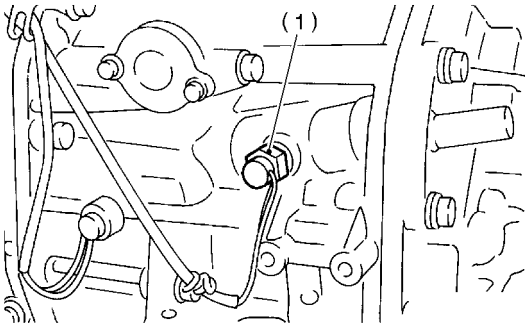


B2M2264A

(1) Dropping resistor
(2) Inhibitor switch
(3) Shift solenoid valve 1
(4) Shift solenoid valve 2
(5) Line pressure duty solenoid
(6) Lock up duty solenoid
(7) Transfer duty solenoid
(8) 2-4 brake duty solenoid
(9) Low clutch timing solenoid valve
(10) 2-4 brake timing solenoid valve

- **For MT vehicles**



B2M2265A

(1) Neutral position switch

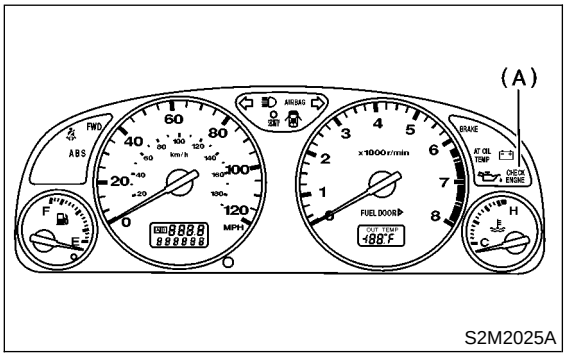
3. Diagnosis System

A: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL)

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

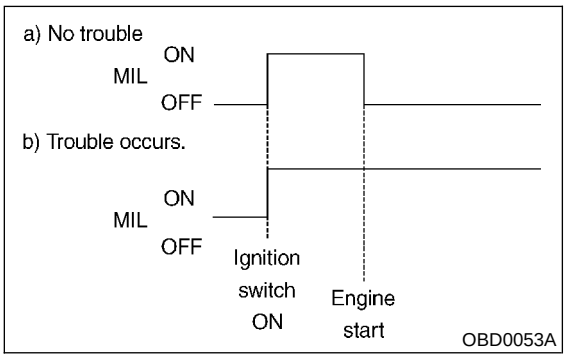
1) When ignition switch is turned to ON (engine off), the CHECK ENGINE malfunction indicator lamp (MIL) in the combination meter illuminates.

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

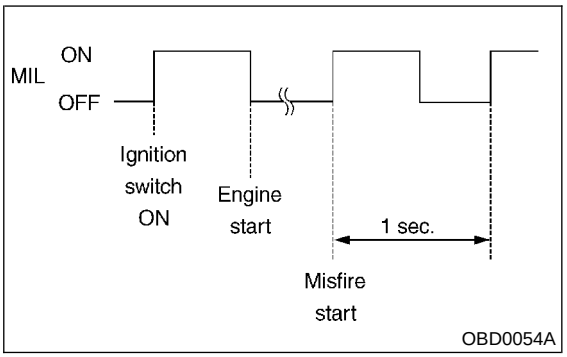


(A) Malfunction indicator lamp (MIL)

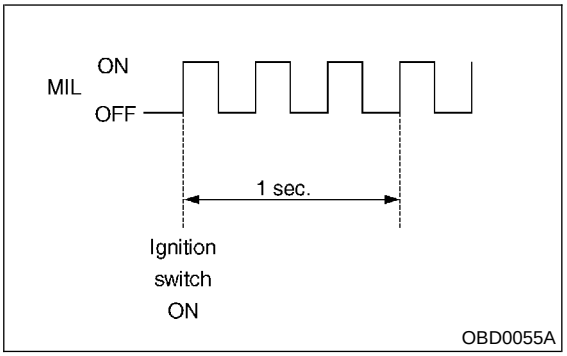
2) After starting the engine, the MIL goes out. If it does not, either the engine or the emission control system is malfunctioning.



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



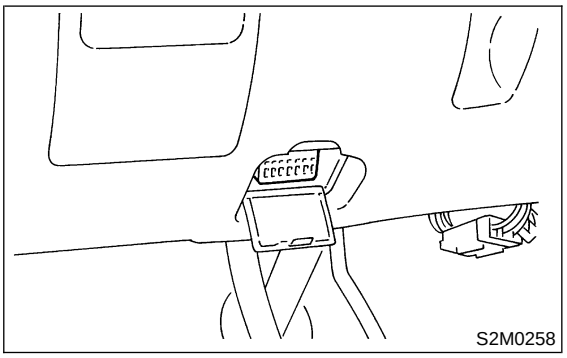
4) When ignition switch is turned to ON (engine off) or to “START” with the test mode connector connected, the MIL blinks at a cycle of 3 Hz.



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).



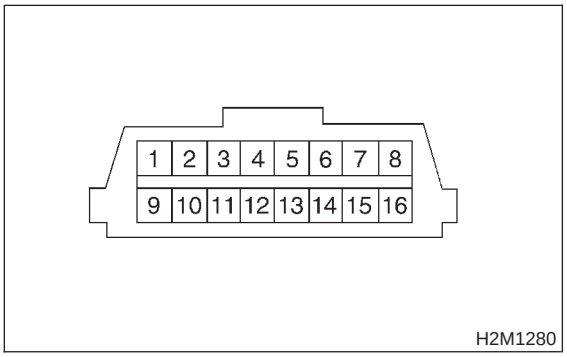
3) Using the OBD-II general scan tool, call up diagnostic trouble code(s) and freeze frame data.
OBD-II general scan tool functions consist of:
(1) MODE $01: Current powertrain diagnostic data
(2) MODE $02: Powertrain freeze frame data
(3) MODE $03: Emission-related powertrain diagnostic trouble codes
(4) MODE $04: Clear/Reset emission-related diagnostic information
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.
<Ref. to 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	Blank	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 pressure 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 diagnostics 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 diagnostics 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)

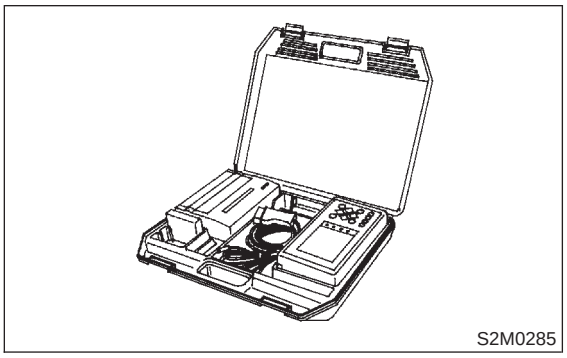
Refers to the mode used to clear or reset emission-related diagnostic information (OBD-II trouble diagnostic information).

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

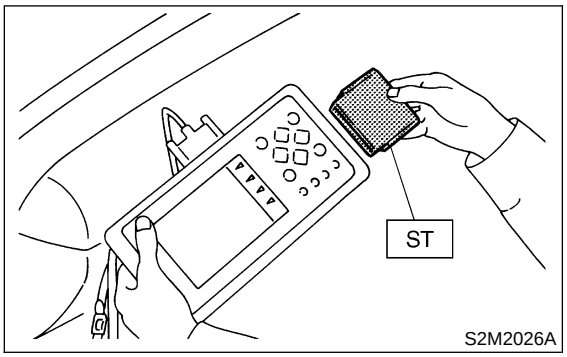
C: SUBARU SELECT MONITOR

1. HOW TO USE SUBARU SELECT MONITOR

1) Prepare Subaru Select Monitor kit.

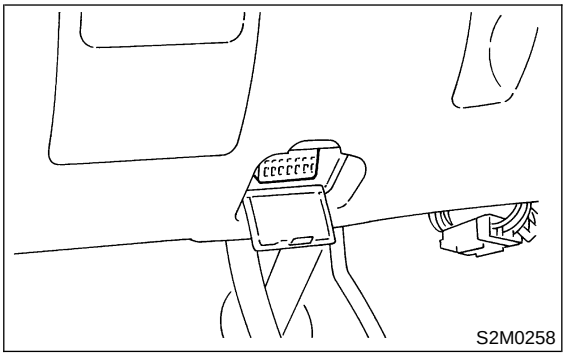

S2M0285

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



S2M2026A

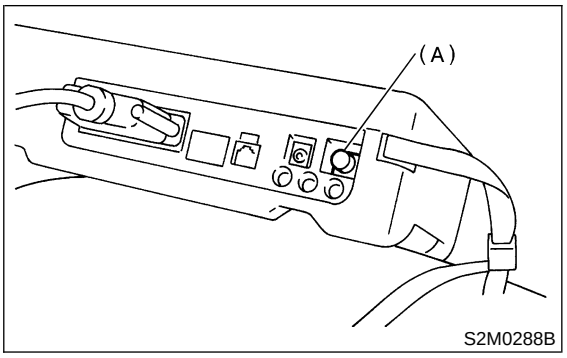
4) Connect Subaru Select Monitor to data link connector.
(1) Data link connector located in the lower portion of the instrument panel (on the driver's side).


S2M0258

(2) Connect diagnosis cable to data link connector.

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

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



S2M0288B

(A) Power switch

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

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

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

2) On the 「System Selection Menu」 display screen, select the {Engine Control System} and press the [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the 「Engine Diagnosis」 display screen, select the {Diagnostic Code(s) Display} and press the [YES] key.
5) On the 「Diagnostic Code(s) Display」 display screen, select the {Current Diagnostic Code(s)} or {History Diagnostic Code(s)} and press the [YES] key.

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

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

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

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

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

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

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

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

Contents	Display	Unit of measure
Engine torque control signal #2	Torque Control Signal #2	ON or OFF
Engine torque control permission signal	Torque Control Permit	ON or OFF
Rear oxygen sensor rich signal	Rear O2 Rich Signal	ON or OFF
Pressure control solenoid valve	PCV Solenoid Valve	ON or OFF
Drain valve	Vent. Solenoid Valve	ON or OFF
Starter switch signal	Starter Switch Signal	ON or OFF
Idle switch signal	Idle Switch Signal	ON or OFF
Crankshaft position sensor signal	Crankshaft Position Sig.	ON or OFF
Camshaft position sensor signal	Camshaft Position Sig.	ON or OFF
Rear defogger switch signal	Rear Defogger Switch	ON or OFF
Blower fan switch signal	Blower Fan Switch	ON or OFF
Small light switch signal	Small Light Switch	ON or OFF
Air assist injector solenoid valve signal	AAI Solenoid Valve	ON or OFF

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

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

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

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

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

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

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

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

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

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

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

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

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

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

8. LED OPERATION MODE FOR ENGINE

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

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

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

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

9. READ CURRENT DATA SHOWN ON DISPLAY FOR AT.

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

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

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

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

D: CLEAR MEMORY MODE

1. SUBARU SELECT MONITOR (NORMAL MODE)

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

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

2. SUBARU SELECT MONITOR (OBD MODE)

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

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

3. OBD-II GENERAL SCAN TOOL

For clear memory procedures using the OBD-II general scan tool, refer to the OBD-II General Scan Tool Instruction Manual.

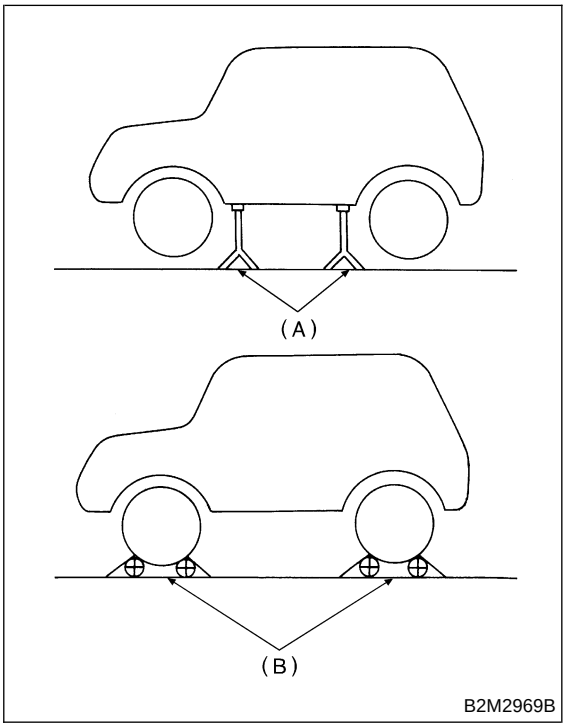
After the memory has been cleared, the ISC must be initialized. To do this, turn the ignition switch to the ON position. Wait 3 seconds before starting the engine.

E: INSPECTION MODE

1. PREPARATIONS FOR THE INSPECTION MODE

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

WARNING:
● Before raising the vehicle, ensure parking brakes are applied.
● Do not use a pantograph jack in place of a safety stand.
● Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral 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.

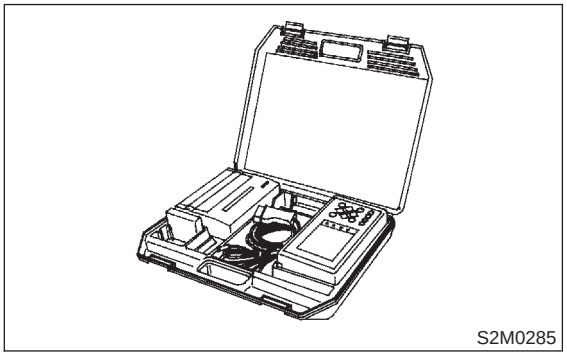


(A) Safety stand
(B) Free rollers

2. SUBARU SELECT MONITOR

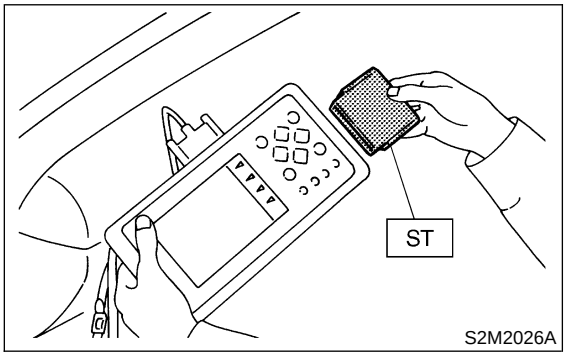
After performing diagnostics and clearing the memory, check for any remaining unresolved trouble data.

1) Prepare Subaru Select Monitor kit.


S2M0285

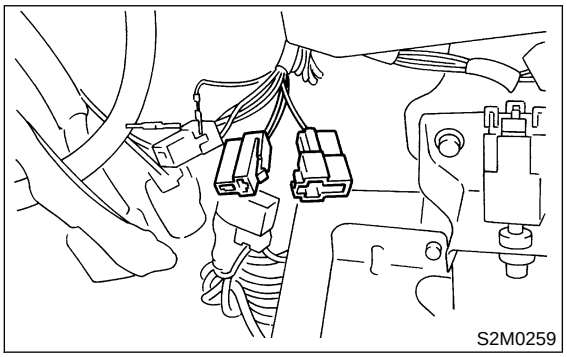
2) Connect diagnosis cable to Subaru Select Monitor.

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



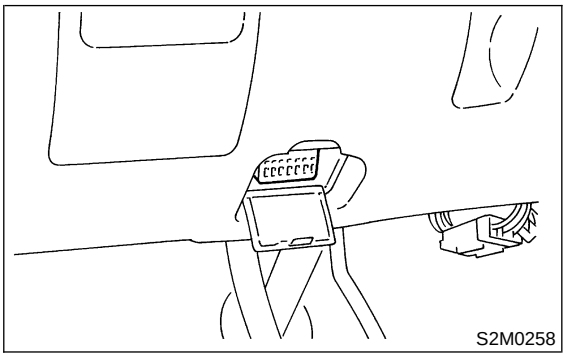
S2M2026A

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.


S2M0259

5) Connect Subaru Select Monitor to data link connector.

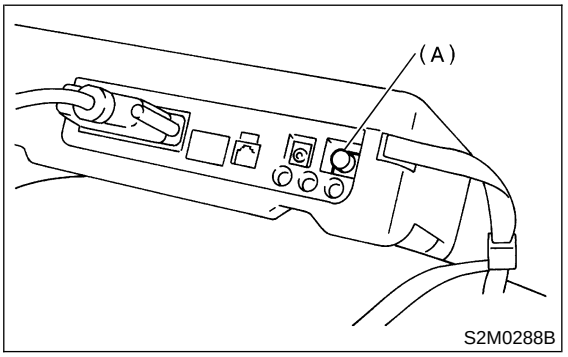
(1) Connect Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side).


S2M0258

(2) Connect diagnosis cable to data link connector.

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

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



S2M0288B

(A) Power switch

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

8) On the 「System Selection Menu」 display screen, select the {Engine Control System} and press the [YES] key.

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

10) On the 「Engine Diagnosis」 display screen, select the {Dealer Check Mode Procedure} and press the [YES] key.

11) When the "Perform Inspection (Dealer Check) Mode?" is shown on the display screen, press the [YES] key.

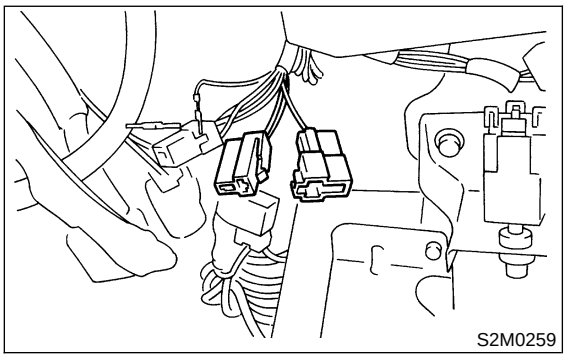
12) Perform subsequent procedures as instructed on the display screen.

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

NOTE:
● For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
● For detailed concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE (DTC) LIST.
<Ref. to 2-7 [T10A0].>
● 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 on-board diagnostics system.

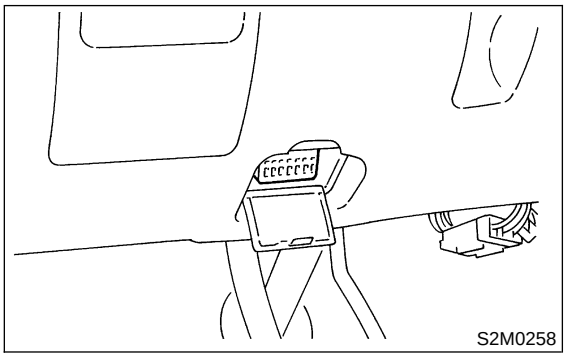
3. OBD-II GENERAL SCAN TOOL

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


S2M0259

2) 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).

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


S2M0258

3) Start the engine.

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

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

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

7) Place the select 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 on-board diagnostics system.

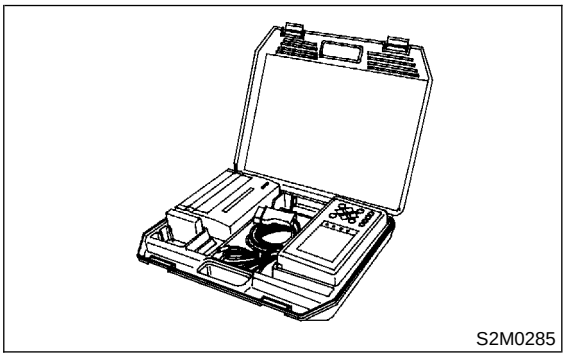
8) Using the OBD-II general scan tool, check for diagnostic trouble code(s) and record the result(s).

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

F: COMPULSORY VALVE OPERATION CHECK MODE

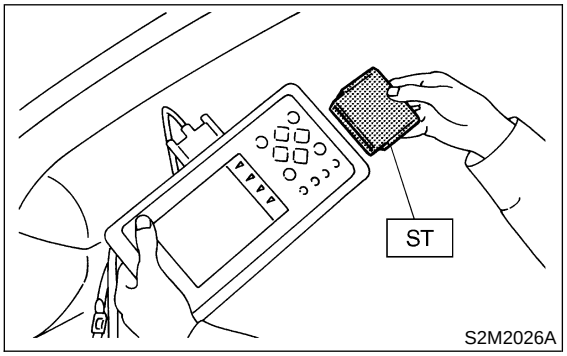
1. SUBARU SELECT MONITOR

1) Prepare Subaru Select Monitor kit.

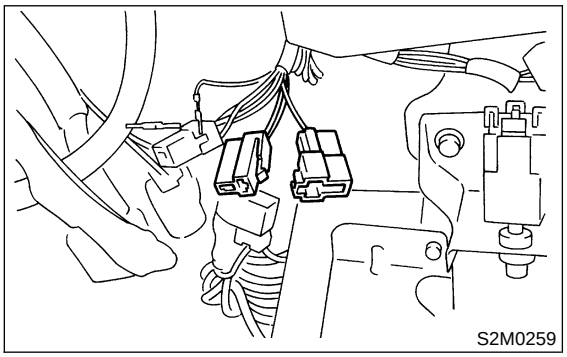

S2M0285

2) Connect diagnosis cable to Subaru Select Monitor.

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

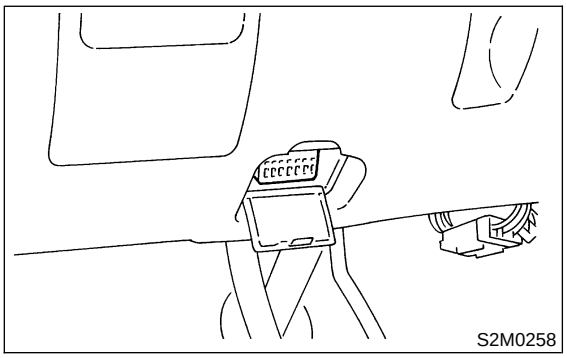


4) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



5) Connect Subaru Select Monitor to data link connector.

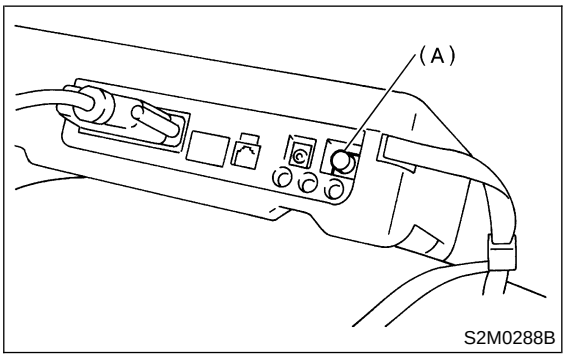
(1) Connect Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side).



(2) Connect diagnosis cable to data link connector.

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

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



(A) Power switch

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

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

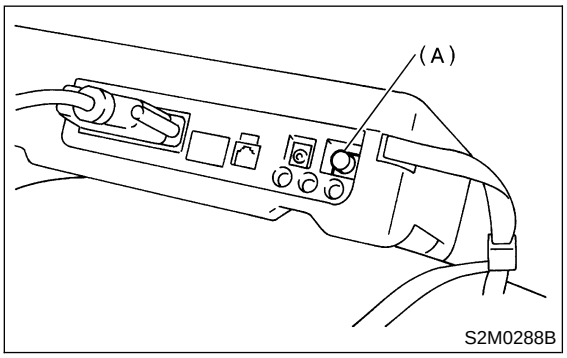
Contents	Display
Compulsory fuel pump relay operation check	Fuel Pump Relay
Compulsory radiator fan relay operation check	Radiator Fan Relay
Compulsory air conditioning relay operation check	A/C Relay
Compulsory pressure control solenoid valve operation check	PCV Solenoid Valve
Compulsory drain valve operation check	Vent Control Solenoid Valve

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

G: FINISHING DIAGNOSIS OPERATION

1. SUBARU SELECT MONITOR

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



(A) Power switch

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

4. Cautions

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

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

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

B: PRECAUTIONS

1) Never connect the battery in reverse polarity.
● The ECM will be destroyed instantly.
● The fuel injector and other part will be damaged in just a few minutes more.
2) Do not disconnect the battery terminals while the engine is running.
● A large counter electromotive force will be generated in the alternator, and this voltage may damage electronic parts such as ECM, etc.
3) Before disconnecting the connectors of each sensor and the ECM, be sure to turn OFF the ignition switch.
4) Poor contact has been identified as a primary cause of this problem. To measure the voltage and/or resistance of individual sensors or all electrical control modules at the harness side connector, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in) into the part.
5) Before removing ECM from the located position, disconnect two cables on battery.
● Otherwise, the ECM may be damaged.

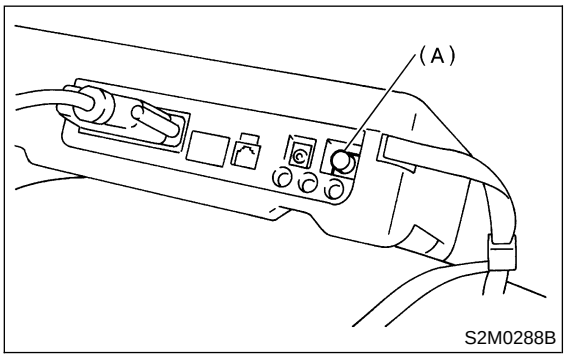
CAUTION:
When replacing ECM, be careful not to use the wrong spec. ECM to avoid any damage on fuel injection system.

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

G: FINISHING DIAGNOSIS OPERATION

1. SUBARU SELECT MONITOR

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



(A) Power switch

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

4. Cautions

A: SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

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

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

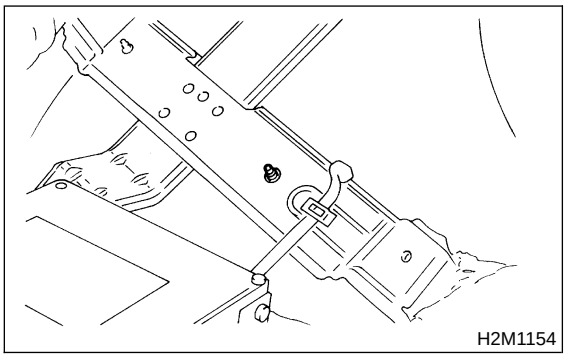
B: PRECAUTIONS

1) Never connect the battery in reverse polarity.
● The ECM will be destroyed instantly.
● The fuel injector and other part will be damaged in just a few minutes more.
2) Do not disconnect the battery terminals while the engine is running.
● A large counter electromotive force will be generated in the alternator, and this voltage may damage electronic parts such as ECM, etc.
3) Before disconnecting the connectors of each sensor and the ECM, be sure to turn OFF the ignition switch.
4) Poor contact has been identified as a primary cause of this problem. To measure the voltage and/or resistance of individual sensors or all electrical control modules at the harness side connector, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in) into the part.
5) Before removing ECM from the located position, disconnect two cables on battery.
● Otherwise, the ECM may be damaged.

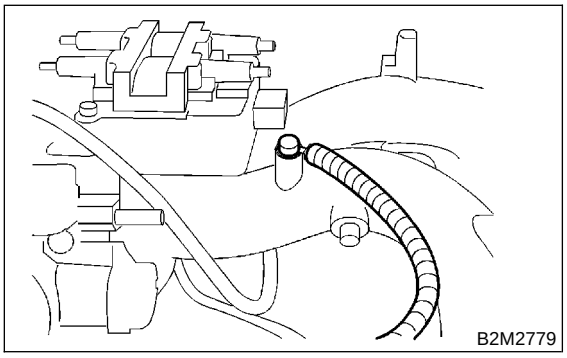
CAUTION:
When replacing ECM, be careful not to use the wrong spec. ECM to avoid any damage on fuel injection system.

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

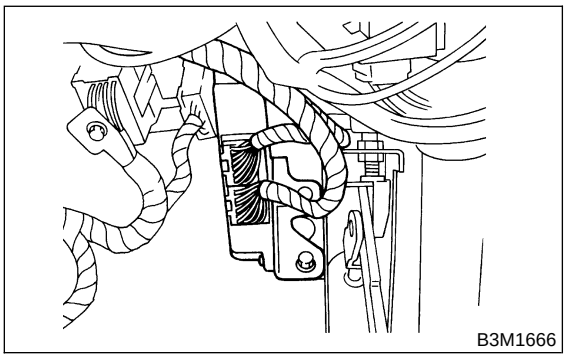
7) Use ECM mounting stud bolts at the body head grounding point when measuring voltage and resistance inside the passenger compartment.


H2M1154

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


B2M2779

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


B3M1666

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

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

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

C: PRE-INSPECTION

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

1. POWER SUPPLY

1) Measure battery voltage and specific gravity of electrolyte.

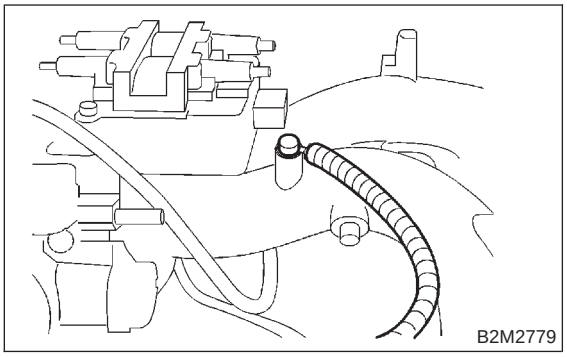
Standard voltage: 12 V

Specific gravity: Above 1.260

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

2. ENGINE GROUNDING

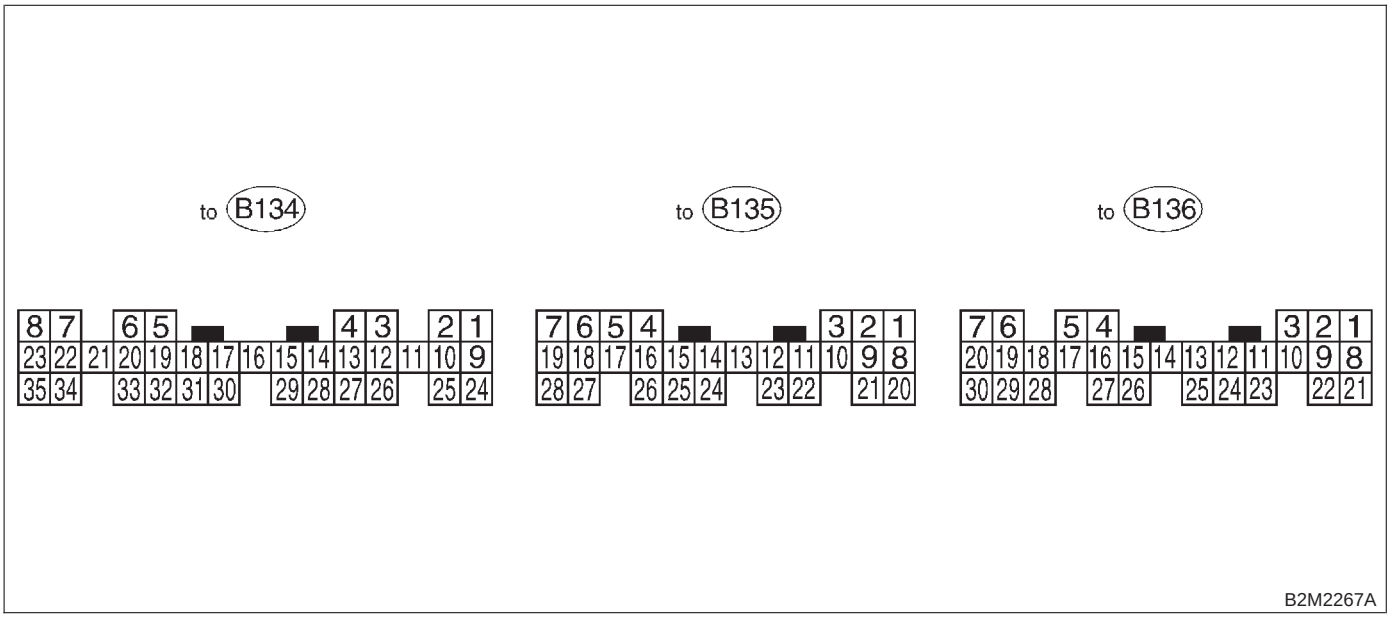
Make sure the engine grounding terminal is properly connected to the engine.



MEMO:

5. Specified Data

A: ENGINE CONTROL MODULE (ECM) I/O SIGNAL



Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Crankshaft position sensor	Signal (+)	B135	1	0	−7 to +7	Sensor output waveform
	Signal (−)	B135	8	0	0	—
	Shield	B135	10	0	0	—
Camshaft position sensor	Signal (+)	B135	2	0	−7 to +7	Sensor output waveform
	Signal (−)	B135	9	0	0	—
	Shield	B135	10	0	0	—
Throttle position sensor	Signal	B136	17	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.7		—
	Power supply	B136	15	5	5	—
	GND (sensor)	B136	16	0	0	—
Rear oxygen sensor	Signal	B136	18	0	0 — 0.9	—
	Shield	B136	24	0	0	—
	GND (sensor)	B136	16	0	0	—
Front oxygen (A/F) sensor heater	Signal 1	B134	22	0 — 1.0	0 — 1.0	—
	Signal 2	B134	23	0 — 1.0	0 — 1.0	—
Rear oxygen sensor heater signal		B134	21	0 — 1.0	0 — 1.0	—
Engine coolant temperature sensor	Signal	B136	14	1.0 — 1.4	1.0 — 1.4	After warm-up the engine.
	GND (sensor)	B136	16	0	0	After warm-up the engine.
Vehicle speed signal		B135	24	0 or 5	0 or 5	“5” and “0” are repeatedly displayed when vehicle is driven.
Starter switch		B135	28	0	0	Cranking: 8 — 14
A/C switch		B135	27	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Ignition switch		B135	7	10 — 13	13 — 14	—
Neutral position switch (MT)		B136	26	ON: 12±0.5 OFF: 0		Switch is ON when gear is in neutral position.
Neutral position switch (AT)		B135	26	ON: 0 OFF: 12±0.5		Switch is ON when shift is in “N” or “P” position.
Test mode connector		B135	14	5	5	When connected: 0
Knock sensor	Signal	B136	4	2.8	2.8	—
	Shield	B136	25	0	0	—
Back-up power supply		B136	9	10 — 13	13 — 14	Ignition switch “OFF”: 10 — 13
Control unit power supply		B136	1	10 — 13	13 — 14	—
		B136	2	10 — 13	13 — 14	—
Sensor power supply		B136	15	5	5	—
Line end check 1		B135	20	0	0	—
Ignition control	#1, #2	B134	25	0	1 — 3.4	Waveform
	#3, #4	B134	26	0	1 — 3.4	Waveform
Fuel injector	#1	B134	4	10 — 13	1 — 14	Waveform
	#2	B134	13	10 — 13	1 — 14	Waveform
	#3	B134	14	10 — 13	1 — 14	Waveform
	#4	B134	15	10 — 13	1 — 14	Waveform
Idle air control solenoid valve	Signal 1	B134	5	—	1 — 13	Waveform
	Signal 2	B134	6	—	1 — 13	Waveform
	Signal 3	B134	19	—	1 — 13	Waveform
	Signal 4	B134	20	—	1 — 13	Waveform
	Power supply	B136	2	10 — 13	13 — 14	—
Fuel pump relay control		B134	16	ON: 0.5, or less OFF: 10 — 13	0.5, or less	—
A/C relay control		B134	17	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 1 control		B134	3	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	—
Radiator fan relay 2 control		B134	2	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	With A/C vehicles only
Self-shutoff control		B135	19	10 — 13	13 — 14	—
Malfunction indicator lamp		B134	11	—	—	Light “ON”: 1, or less Light “OFF”: 10 — 14
Engine speed output		B134	30	—	0 — 13, or more	Waveform
Torque control 1 signal		B135	16	5	5	—
Torque control 2 signal		B135	17	5	5	—
Torque control cut signal		B134	31	8	8	—
Purge control solenoid valve		B134	2	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Atmospheric pressure sensor	Signal	B136	29	3.9 — 4.1	2.0 — 2.3	—
	Power supply	B136	15	5	5	
	GND (sensor)	B136	16	0	0	
Fuel temperature sensor		B136	26	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (75°F)
Fuel level sensor		B136	27	0.12 — 4.75	0.12 — 4.75	—

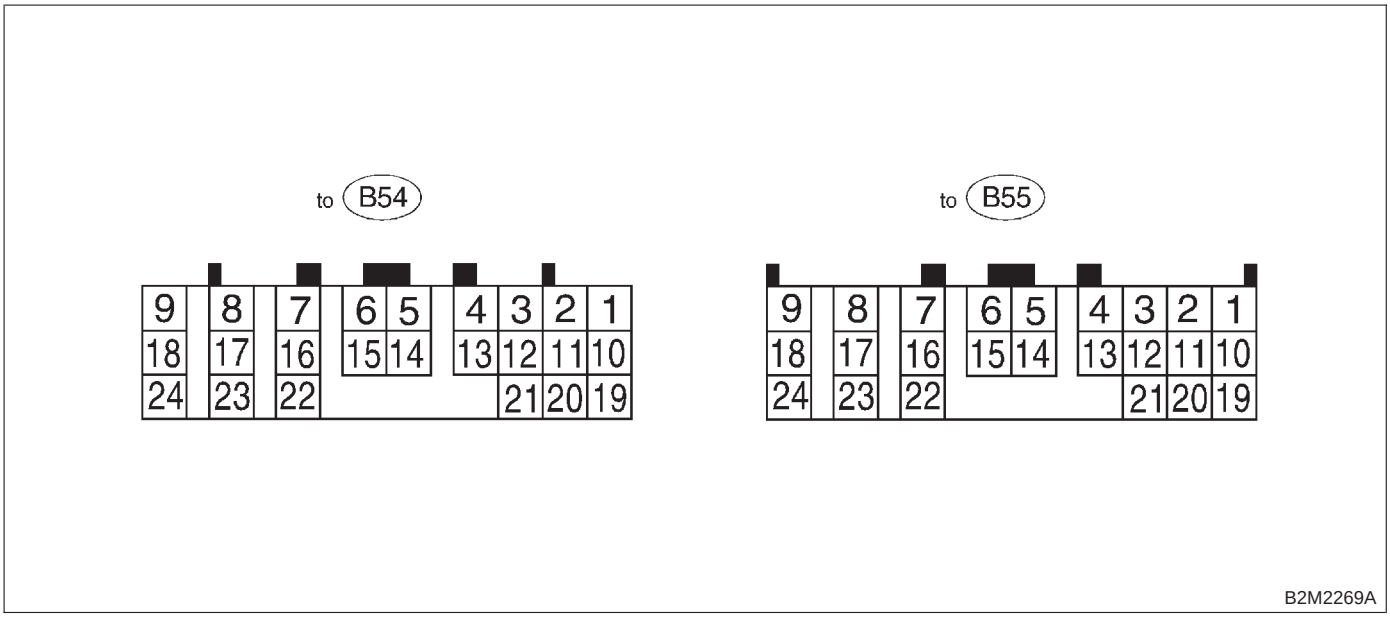
Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Fuel tank pressure sensor	Signal	B136	12	2.3 — 2.7	2.3 — 2.7	The value obtained after the fuel filler cap was removed once and recapped.
	Power supply	B136	15	5	5	—
	GND (sensor)	B136	16	0	0	—
Fuel tank pressure control solenoid valve		B134	1	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
Drain valve		B134	10	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	—
AT diagnosis input signal		B135	4	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	Waveform
Small light switch		B136	3	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Blower fan switch		B136	30	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Rear defogger switch		B135	21	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Front oxygen (A/F) sensor signal 1		B136	19	2.8 — 3.2	2.8 — 3.2	—
Front oxygen (A/F) sensor signal 2		B136	6	2.4 — 2.7	2.4 — 2.7	—
Front oxygen (A/F) sensor signal 3		B136	7	0.2 — 4.9	0.2 — 4.9	—
Front oxygen (A/F) sensor signal 4		B136	20	0.2 — 4.9	0.2 — 4.9	—
Pressure sensor		B136	5	2.4 — 4.8	0.4 — 1.8	—
Intake air temperature sensor		B136	13	2.3 — 2.5	1.4 — 1.6	—
SSM/GST communication line		B135	3	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	—
GND (sensors)		B136	16	0	0	—
GND (injectors)		B134	7	0	0	—
GND (ignition system)		B134	27	0	0	—
GND (power supply)		B134	8	0	0	—
GND (control systems)		B136	21	0	0	—
		B136	22	0	0	—
GND (oxygen sensor heater 1)		B134	35	0	0	—
GND (oxygen sensor heater 2)		B134	34	0	0	—

B: ENGINE CONDITION DATA

Content	Specified data
Engine load	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



NOTE:
Check with ignition switch ON.

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

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

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

6. Basic Diagnostic Procedure

A: BASIC DIAGNOSTIC PROCEDURE FOR ENGINE

6A1 : CHECK ENGINE START FAILURE.

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

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

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

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

6A3 : CHECK INDICATION OF DTC ON DISPLAY.

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

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

NOTE:
If DTC is not shown on display although the MIL illuminates, perform diagnostics of MIL (CHECK ENGINE malfunction indicator lamp) circuit or combination meter. <Ref. to 2-7 [T700].>

6A4 : PERFORM THE DIAGNOSIS.

1) Inspect using “Diagnostics Chart with Trouble Code (DTC)”.
<Ref. to 2-7 [T10A0].>

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

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

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC?***
YES : Inspect using “Diagnostics Chart with Trouble Code (DTC)”. <Ref. to 2-7 [T10A0].>
NO : Complete the diagnosis.

B: BASIC CHECK ITEMS FOR AT

When trouble code about automatic transmission is shown on display, carry out the following basic check. After that, carry out the replacement or repair work.
1) ATF level check <Ref. to 3-2 [W1B1].>
2) Differential gear oil level check <Ref. to 3-2 [W1B2].>
3) ATF leak check <Ref. to 3-2 [W1B3].>
4) Differential gear oil leak check <Ref. to 3-2 [W1B3].>
5) Stall test <Ref. to 3-2 [W8A0].>
6) Line pressure test <Ref. to 3-2 [W10A0].>
7) Transfer clutch pressure test <Ref. to 3-2 [W11A0].>
8) Time lag test <Ref. to 3-2 [W9A0].>
9) Road test <Ref. to 3-2 [W7A0].>
10) Shift characteristics <Ref. to 3-2 [W7A0].>

C: CHECK LIST FOR INTERVIEW

1. CHECK LIST NO. 1

Check the following items when problem has occurred.

NOTE:
Use copies of this page for interviewing customers.

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

2. CHECK LIST NO. 2

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

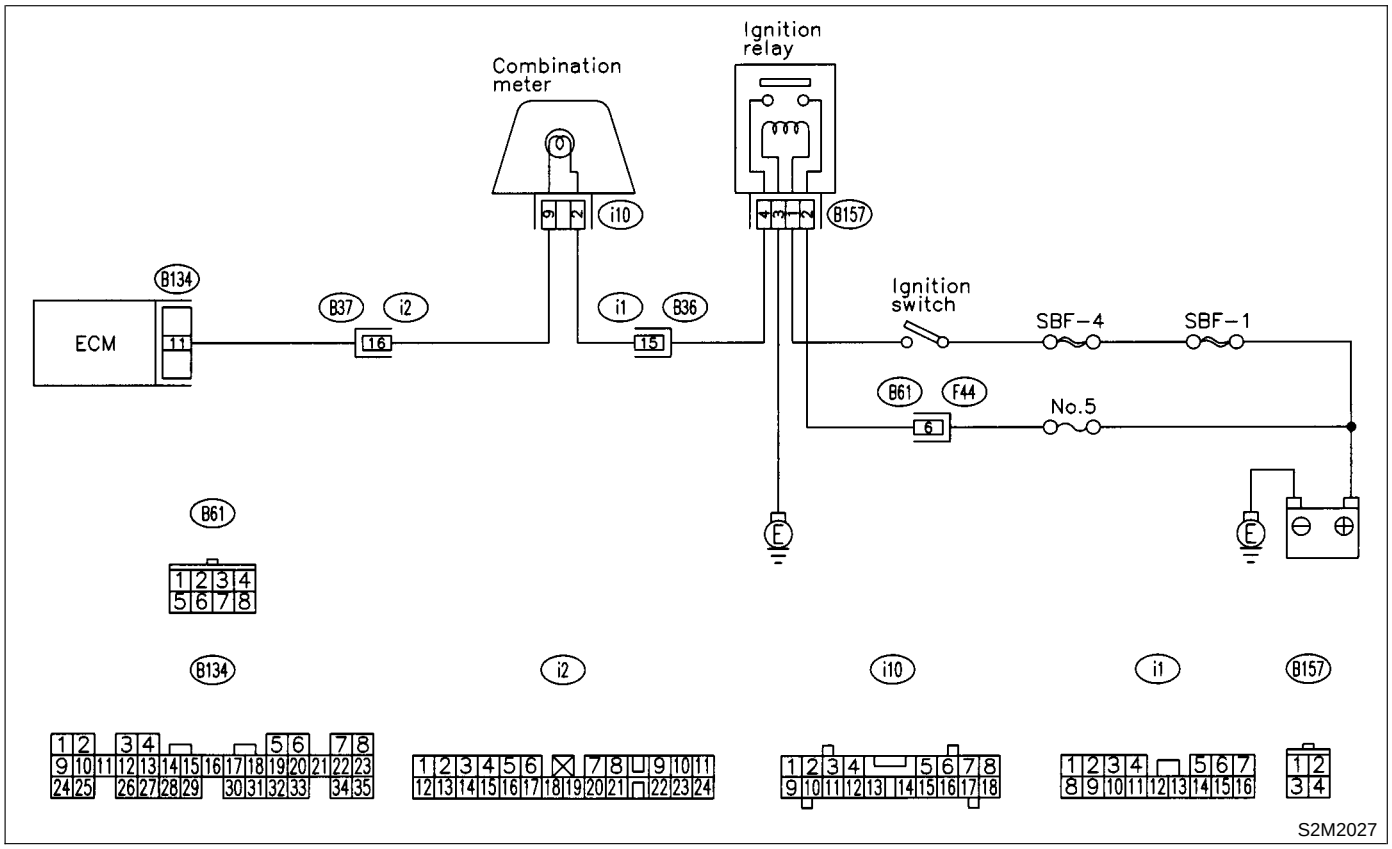
NOTE:
Use copies of this page for interviewing customers.

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

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

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

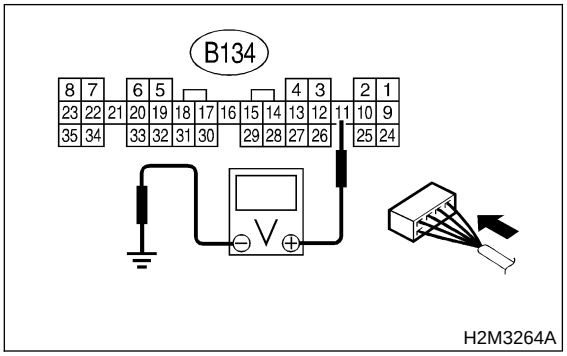
- **DIAGNOSIS:**
  - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.
- **TROUBLE SYMPTOM:**
  - When ignition switch is turned ON (engine OFF), MIL does not come on.
- **WIRING DIAGRAM:**



7A1 : CHECK OUTPUT SIGNAL FROM ECM.

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

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



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

7A2 : CHECK POOR CONTACT.

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

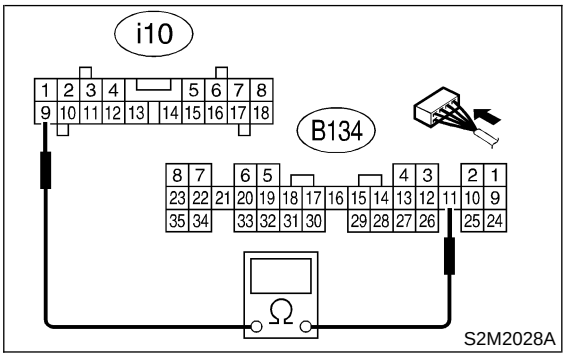
7A3 : CHECK ECM CONNECTOR.

CHECK : ***Is ECM connector correctly connected?***
YES : Replace ECM. <Ref. to 2-7 [W17A0].>
NO : Repair connection of ECM connector.

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

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

Connector & terminal
(B134) No. 11 — (i10) No. 9:



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

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in coupling connector (i2)

7A5 : CHECK POOR CONTACT.

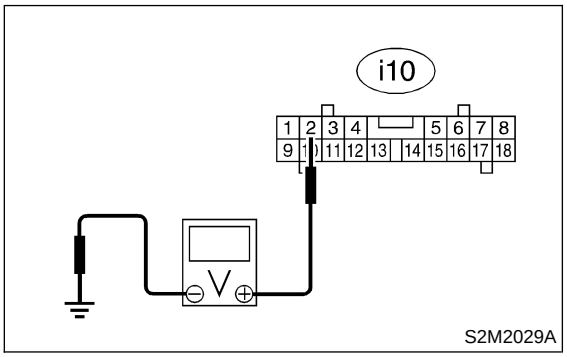
Check poor contact in combination meter connector. <Ref. to FOREWORD [W3C1].>

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

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

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

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



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

NOTE:
- Broken down ignition relay.
- Blown out fuse (No. 5).
- If replaced fuse (No. 5) blows easily, check the harness for short circuit of harness between fuse (No. 5) and ignition relay connector.
- Open or short circuit in harness between fuse (No. 5) and battery terminal
- Open circuit in harness between fuse (No. 5) and ignition relay connector
- Poor contact in ignition relay connector
- Poor contact in ignition switch connector

7A7 : CHECK LAMP BULB.

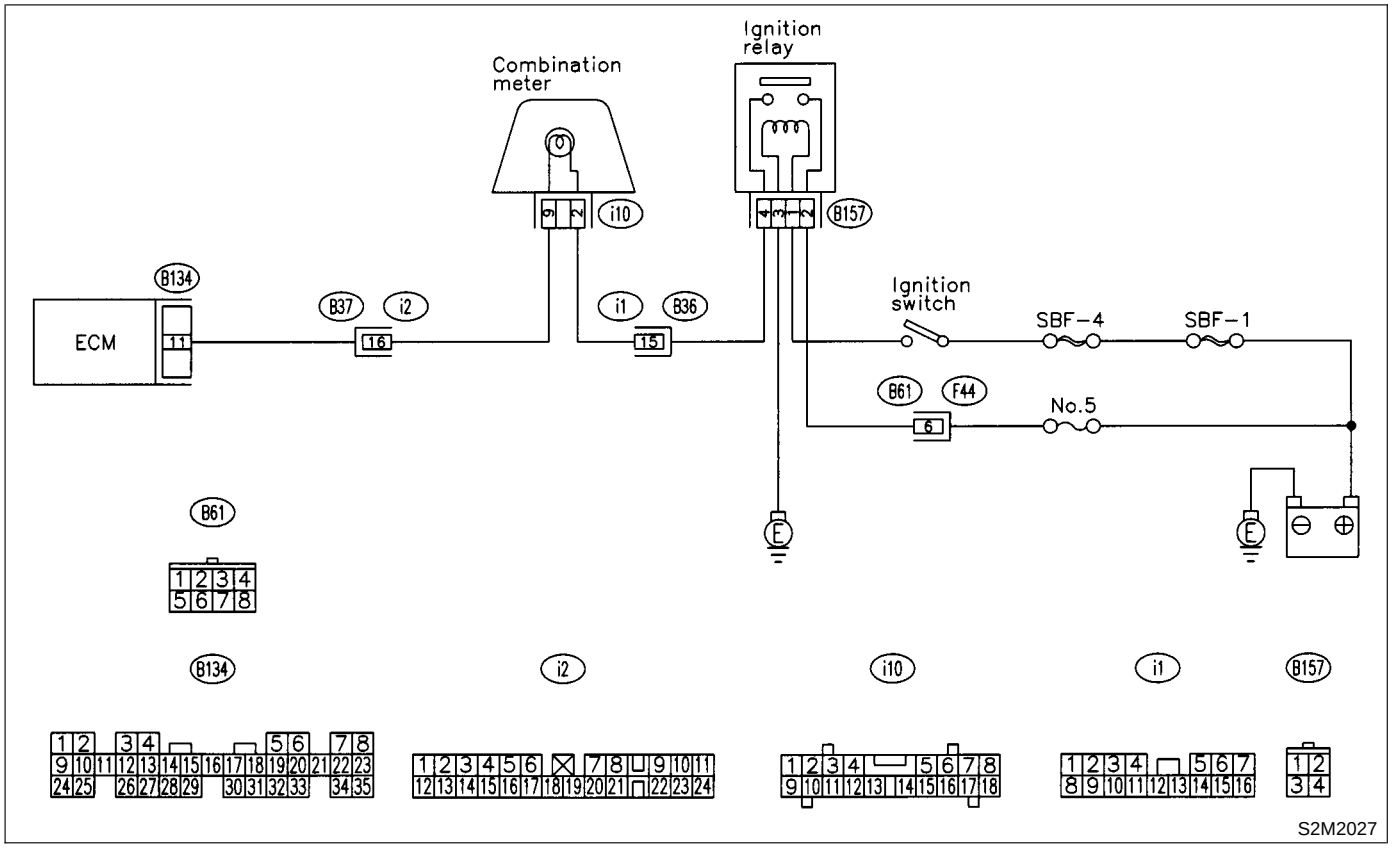
Remove engine malfunction indicator lamp bulb.

CHECK : ***Is lamp bulb condition OK?***
YES : Repair combination meter connector.
NO : Replace lamp bulb.

MEMO:

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

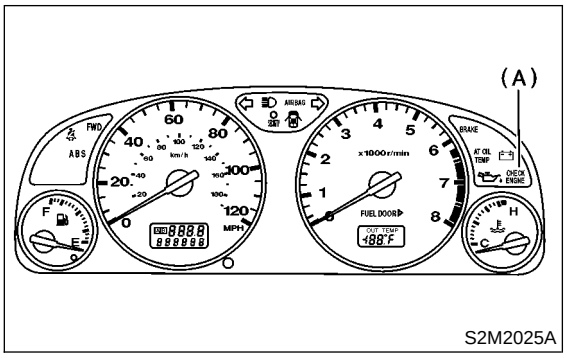
- **DIAGNOSIS:**
  - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is shorted.
- **TROUBLE SYMPTOM:**
  - Although MIL comes on when engine runs, trouble code is not shown on Subaru select monitor or OBD-II general scan tool display.
- **WIRING DIAGRAM:**



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

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

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



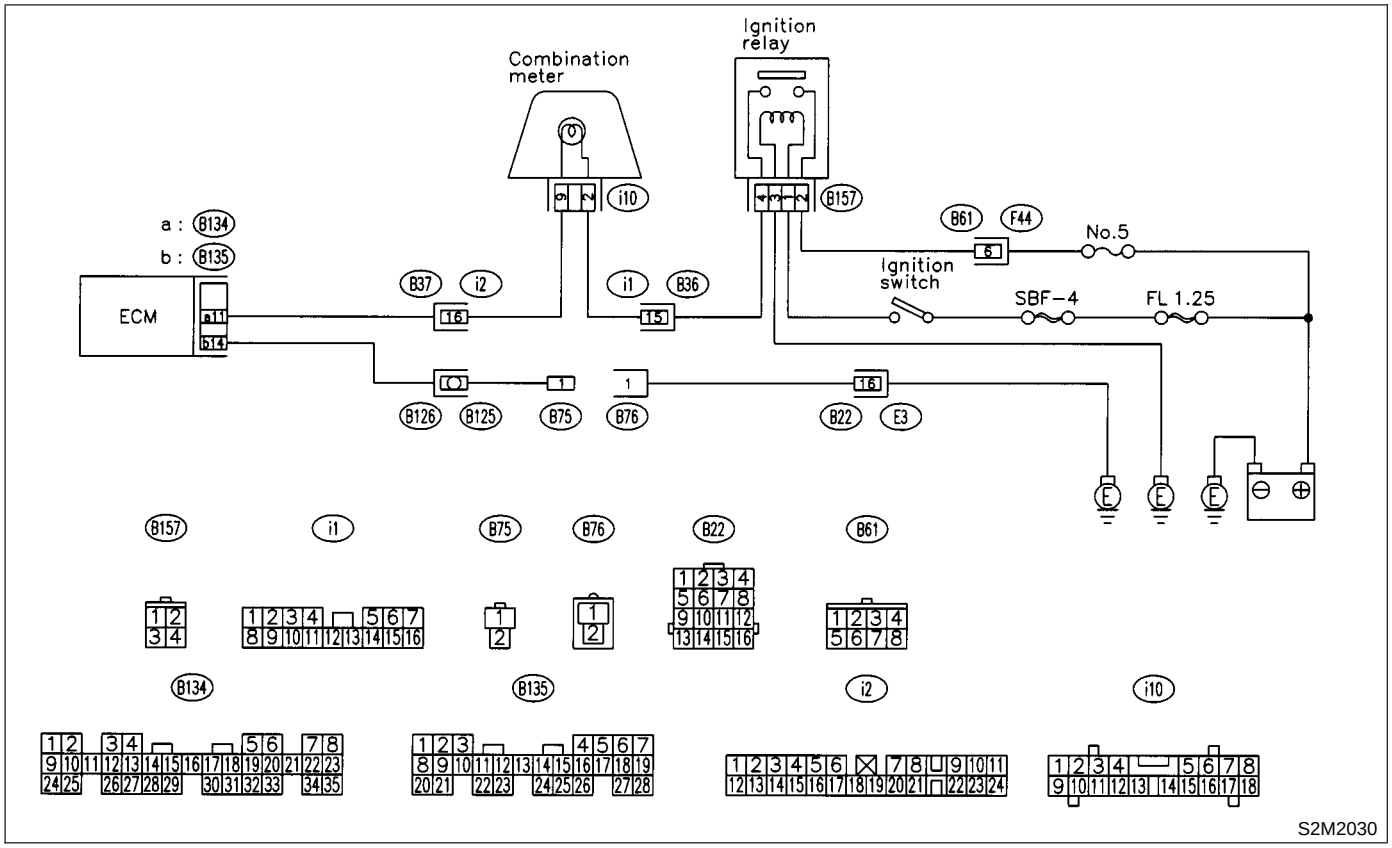
(A) Malfunction indicator lamp (MIL)

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

NO : Replace ECM. <Ref. to 2-7 [W17A0].>

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

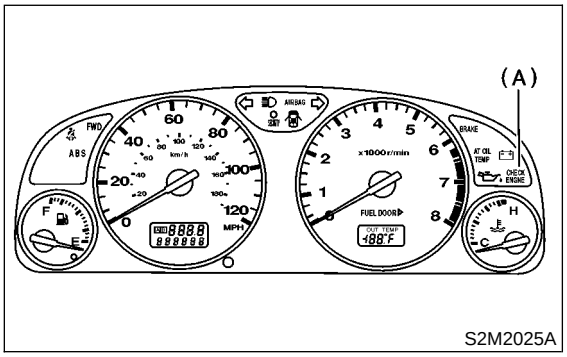
- **DIAGNOSIS:**
  - The CHECK ENGINE malfunction indicator lamp (MIL) circuit is open or shorted.
  - Test mode connector circuit is in open.
- **TROUBLE SYMPTOM:**
  - When inspection mode, MIL does not blink at a cycle of 3 Hz.
- **WIRING DIAGRAM:**



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

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

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



(A) Malfunction indicator lamp (MIL)

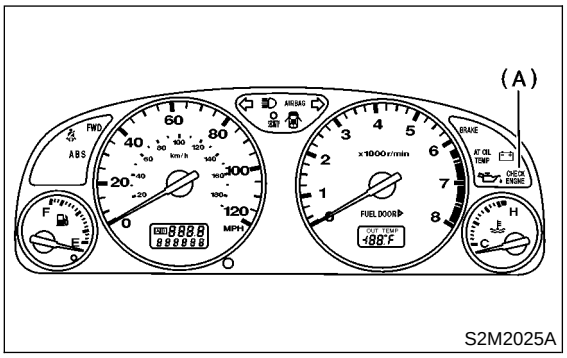
YES : Go to step **7C2**.

NO : Repair the MIL circuit. <Ref. to 2-7 [T7A0].>

7C2 : 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?***



(A) Malfunction indicator lamp (MIL)

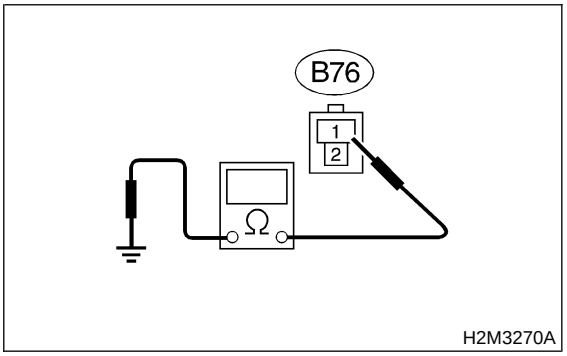
YES : Repair ground short circuit in harness between combination meter and ECM connector.

NO : Go to step **7C3**.

7C3 : CHECK HARNESS BETWEEN TEST MODE CONNECTOR AND CHASSIS GROUND.

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

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



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 test mode connector and chassis ground

7C4 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [W3C1].>

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

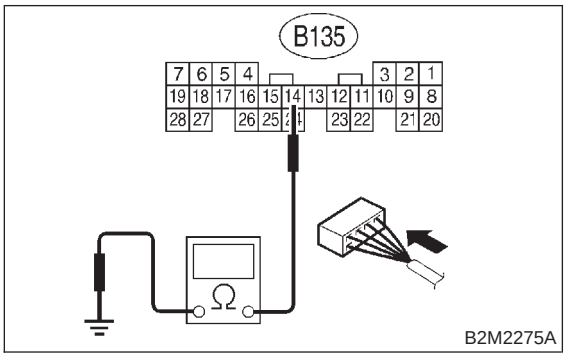
YES : Repair poor contact in ECM connector.

NO : Go to step **7C5**.

7C5 : CHECK HARNESS BETWEEN ECM AND TEST MODE CONNECTOR.

1) Connect test mode connector.
2) Measure resistance of harness between ECM and chassis ground.

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



CHECK : ***Is resistance less than 1 Ω?***
YES : Go to step **7C6**.
NO : Repair open circuit in harness between ECM and test mode connector.

7C6 : CHECK POOR CONTACT.

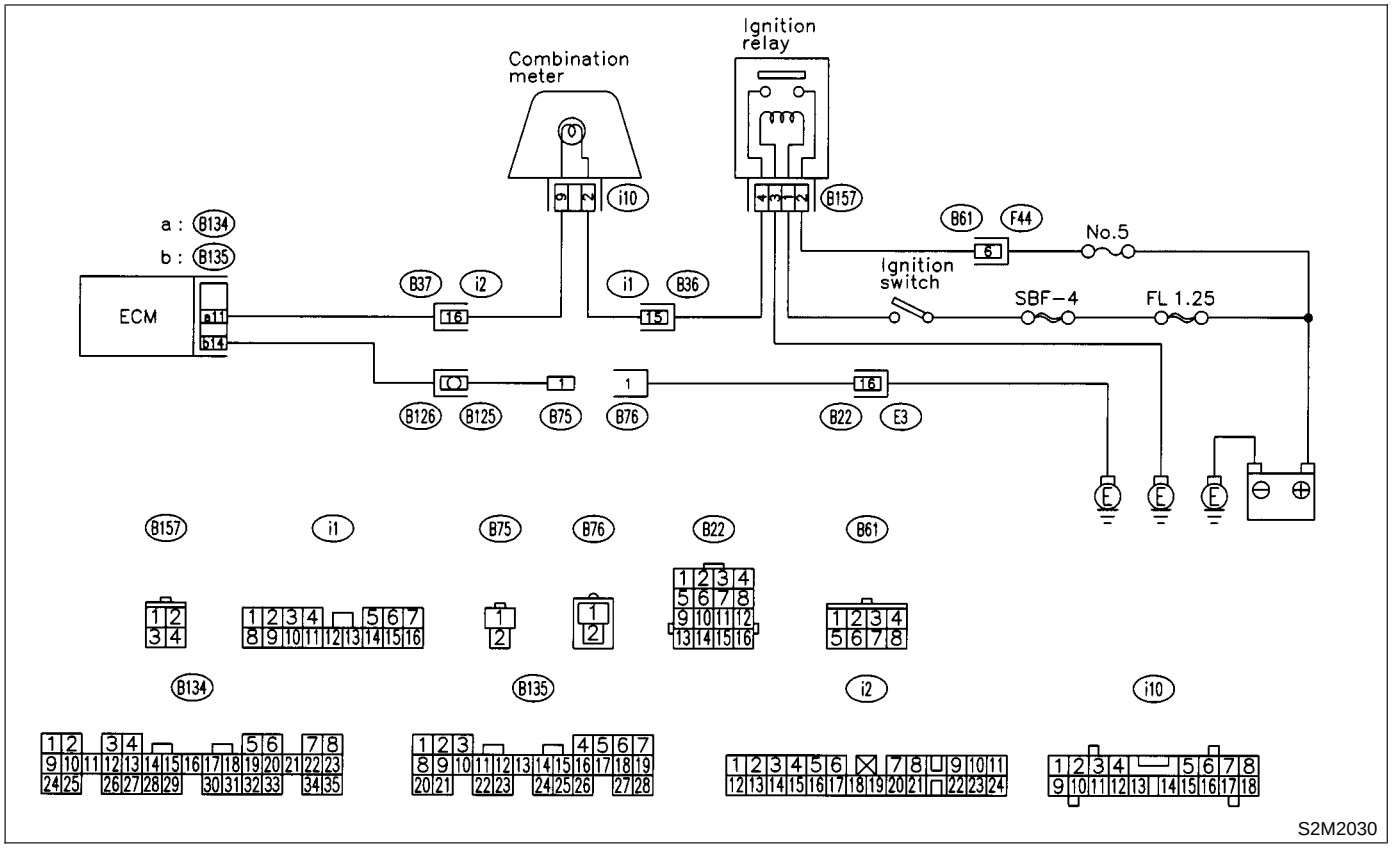
Check poor contact in ECM connector.
<Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

MEMO:

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

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



7D1 : CHECK TEST MODE CONNECTOR.

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

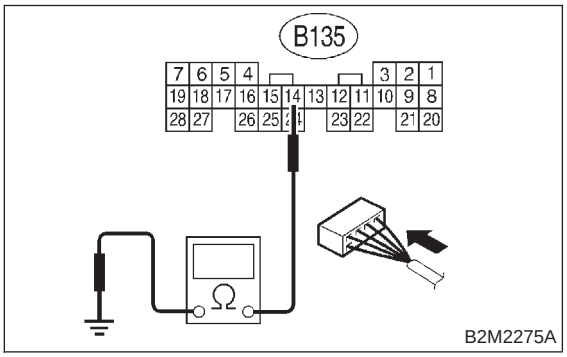
CHECK : ***Does MIL flash on and off?***
YES : Go to step **7D2**.
NO : System is in good order.

NOTE:
MIL blinks at a cycle of 3 Hz when test mode connector is connected.

7D2 : CHECK HARNESS BETWEEN ECM CONNECTOR AND ENGINE GROUNDING TERMINAL.

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

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



CHECK : ***Is resistance less than 5 Ω?***
YES : Repair short circuit in harness between ECM and test mode connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

MEMO:

8. Diagnostics for Engine Starting Failure

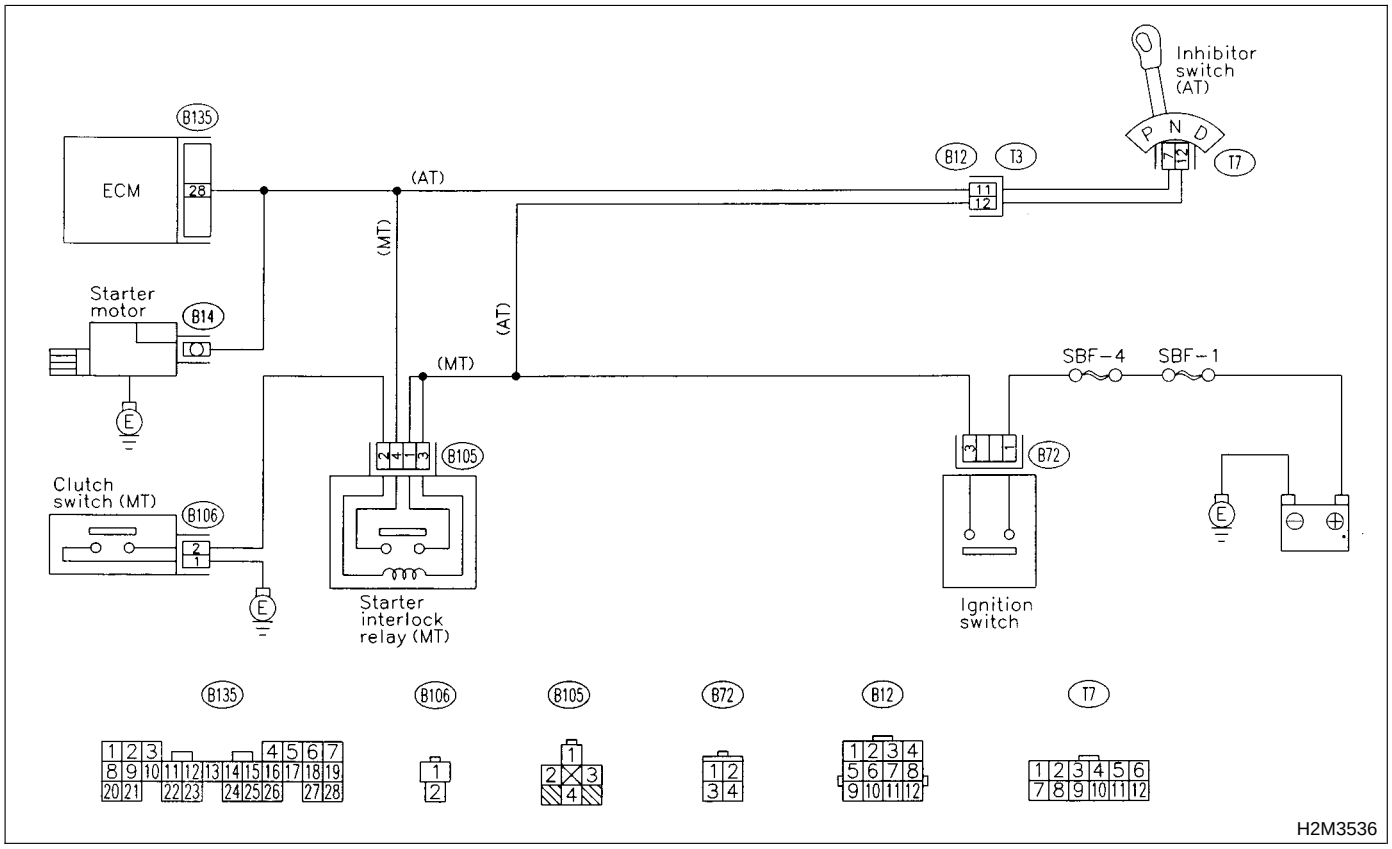
A: BASIC DIAGNOSTICS CHART

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

B: STARTER MOTOR CIRCUIT

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

- **WIRING DIAGRAM:**



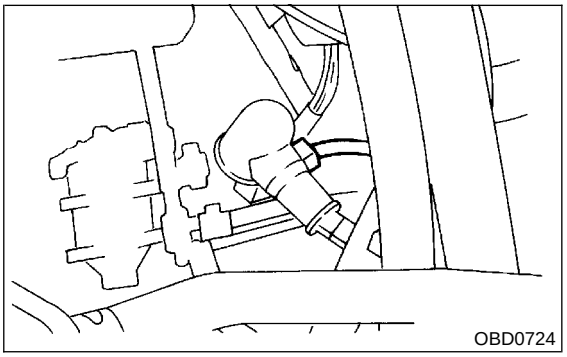
8B1 : CHECK BATTERY.

CHECK : ***Is the voltage more than 12 V?***
YES : Go to step **8B2**.
NO : Charge or replace battery.

8B2 : CHECK INPUT SIGNAL FOR STARTER MOTOR.

1) Turn ignition switch to OFF.

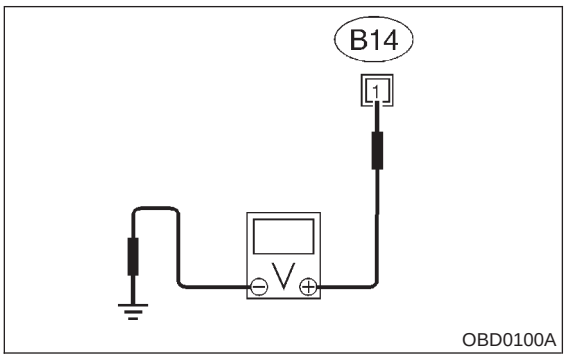
2) Disconnect connector from starter motor.



3) Turn ignition switch to ON.

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

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



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

CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8B3**.
NO : Go to step **8B4**.

8B3 : CHECK GROUND CIRCUIT OF STARTER MOTOR.

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

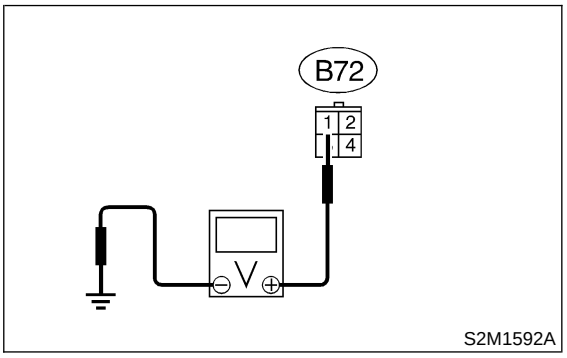
3) Measure resistance of ground cable between ground cable terminal and engine ground.

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

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

1) Disconnect connector from ignition switch.
2) Measure power supply voltage between ignition switch connector and chassis ground.

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

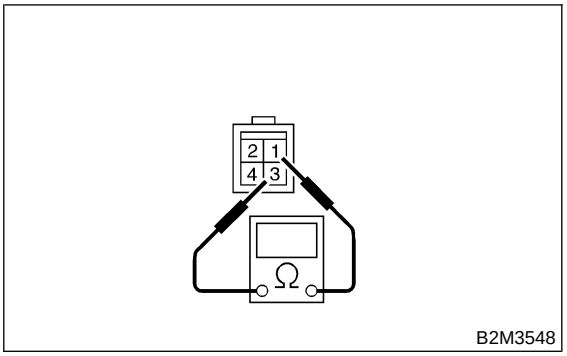


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8B6**.
NO : Repair open circuit in harness between ignition switch and battery, and check fuse SBF No. 4 and SBF No.1.

8B5 : CHECK IGNITION SWITCH.

1) Disconnect connector from ignition switch.
2) Measure resistance between ignition switch terminals while turning ignition switch to the “ST” position.

Terminals
No. 1 — No. 3:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8B6**.
NO : Replace ignition switch.

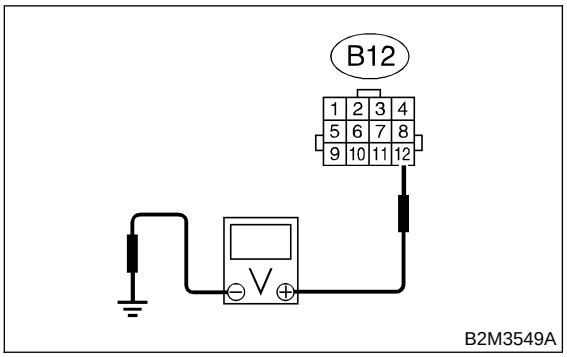
8B6 : CHECK TRANSMISSION TYPE.

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

8B7 : CHECK INPUT VOLTAGE OF INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from inhibitor switch.
3) Connect connector to ignition switch.
4) Measure input voltage between inhibitor switch connector terminal and engine ground while turning ignition switch to ST.

Connector & terminal
(B12) No. 12 (+) — Engine ground (–):

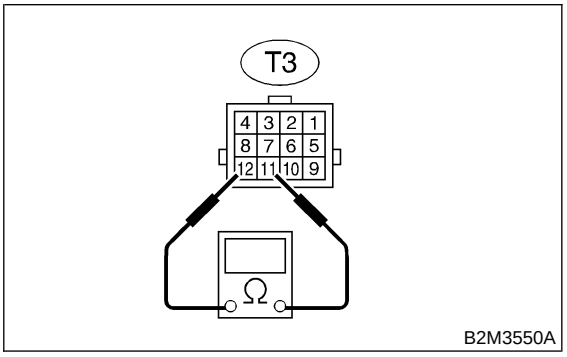


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8B8**.
NO : Repair open or ground short circuit in harness between inhibitor switch and ignition switch.

8B8 : CHECK INHIBITOR SWITCH.

1) Place the select lever in the “P” or “N” position.
2) Measure resistance between inhibitor switch terminals.

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

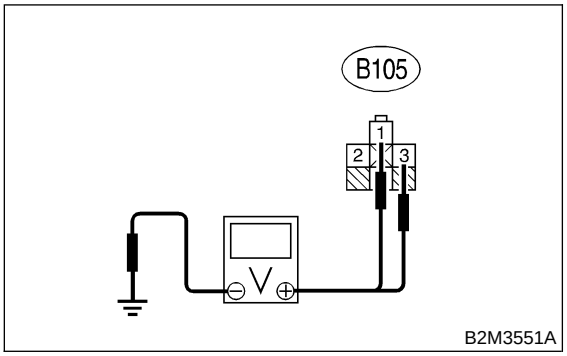


CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair open or ground short circuit in harness between inhibitor switch and starter motor.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

8B9 : CHECK INPUT VOLTAGE OF STARTER INTERLOCK RELAY.

1) Turn ignition switch to OFF.
2) Disconnect connector from starter interlock relay.
3) Connect connector to ignition switch.
4) Measure input voltage between starter interlock relay connector and chassis ground while turning ignition switch to ST.

Connector & terminal
(B105) No. 1 (+) — Chassis ground (–):
(B105) No. 3 (+) — Chassis ground (–):

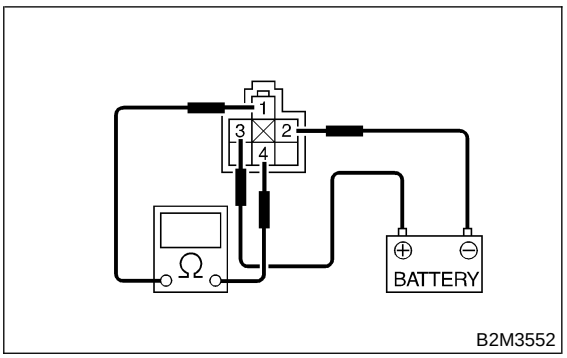


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8B10**.
NO : Repair open or ground short circuit in harness between starter interlock relay and ignition switch.

8B10 : CHECK STARTER INTERLOCK RELAY.

1) Connect battery to starter interlock relay terminals No. 2 and No. 3.
2) Measure resistance between starter interlock relay terminals.

Terminals
No. 1 — No. 4:

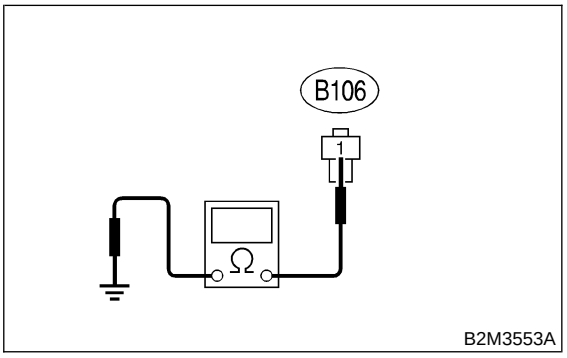


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8B11**.
NO : Replace starter interlock relay.

8B11 : CHECK GROUND CIRCUIT OF CLUTCH SWITCH.

1) Disconnect connector from clutch switch.
2) Measure resistance between clutch switch connector and chassis ground.

Connector & terminal
(B106) No. 1 — Chassis ground:

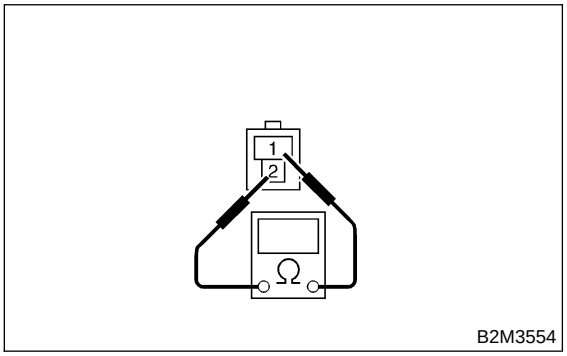


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8B12**.
NO : Repair open circuit of ground cable.

8B12 : CHECK CLUTCH SWITCH.

1) Measure resistance between clutch switch terminal while depressing the clutch pedal.

Terminals
No. 1 — No. 2:

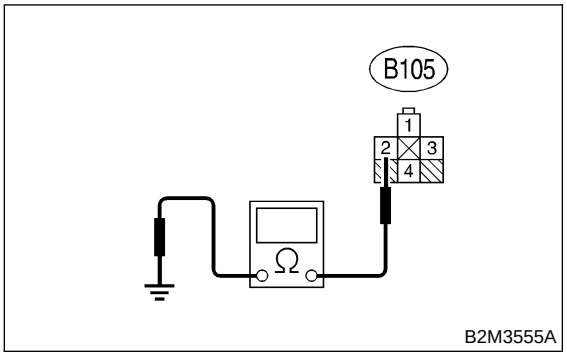


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8B13**.
NO : Replace clutch switch. <Ref. to 6-2 [T100].>

8B13 : CHECK CLUTCH SWITCH CIRCUIT.

1) Connect connector to clutch switch.
2) Measure resistance between starter interlock relay connector and chassis ground while depressing the clutch pedal.

Connector & terminal
(B105) No. 2 — Chassis ground:



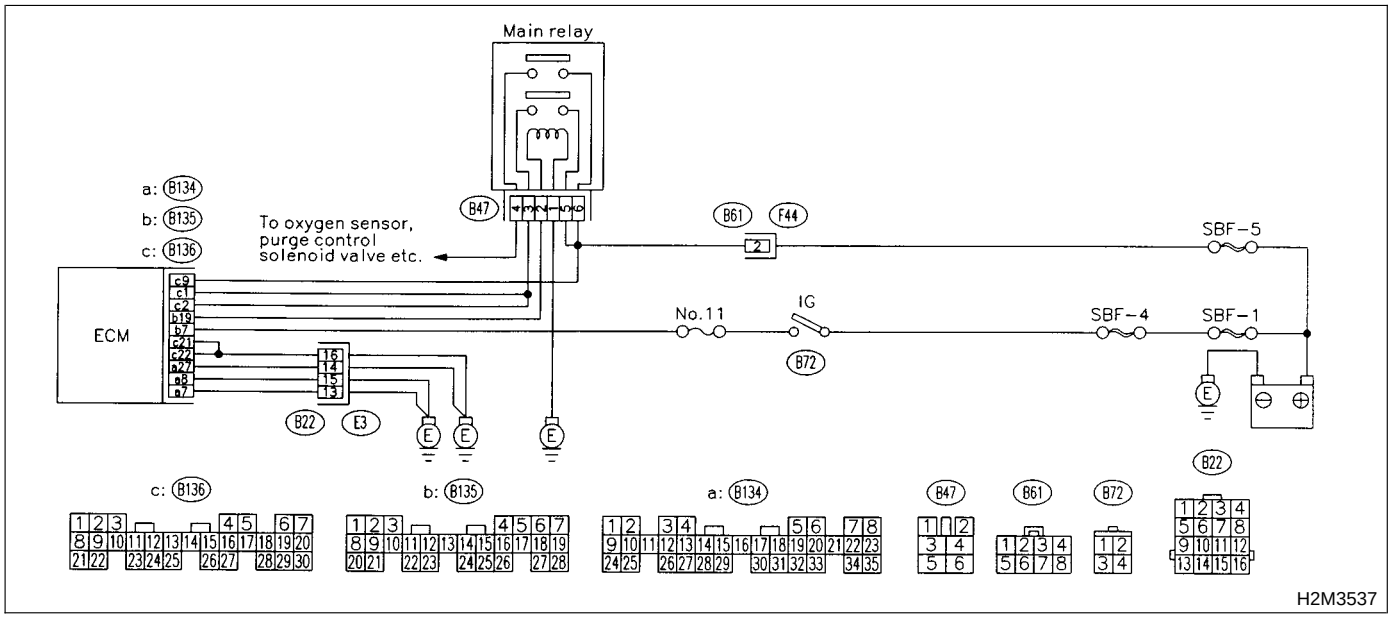
CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair open or ground short circuit in harness between starter interlock relay and starter motor.
NO : Repair open circuit in harness between starter interlock relay and clutch switch.

MEMO:

C: CONTROL MODULE POWER SUPPLY AND GROUND LINE

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

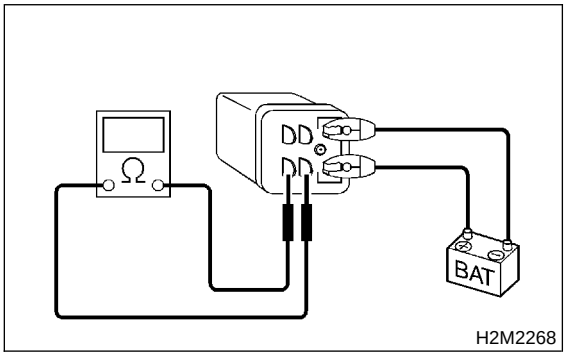
- **WIRING DIAGRAM:**



8C1 : CHECK MAIN RELAY.

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

Terminals
No. 3 — No. 5:

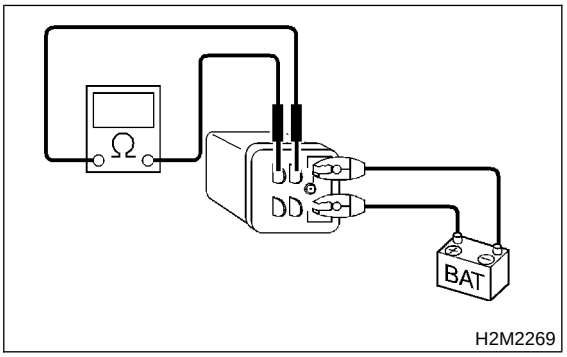


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8C2**.
NO : Replace main relay.

8C2 : CHECK MAIN RELAY.

Measure resistance between main relay terminals.

Terminals
No. 4 — No. 6:

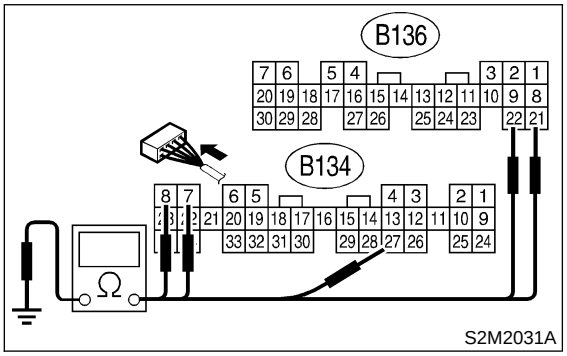


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8C3**.
NO : Replace main relay.

8C3 : CHECK GROUND CIRCUIT OF ECM.

1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B136) No. 21 — Chassis ground:
(B136) No. 22 — Chassis ground:
(B134) No. 27 — Chassis ground:
(B134) No. 8 — Chassis ground:
(B134) No. 7 — Chassis ground:

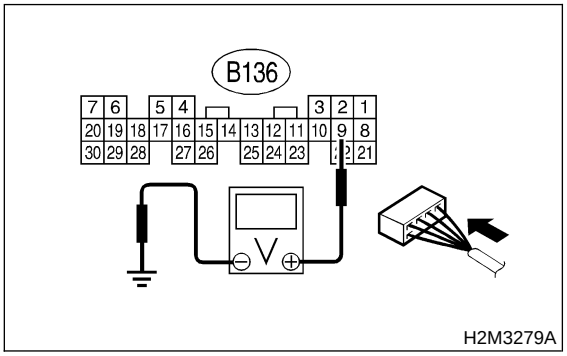


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C4**.
NO : Repair open circuit in harness between ECM connector and engine grounding terminal.

8C4 : CHECK INPUT VOLTAGE OF ECM.

Measure voltage between ECM connector and chassis ground.

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

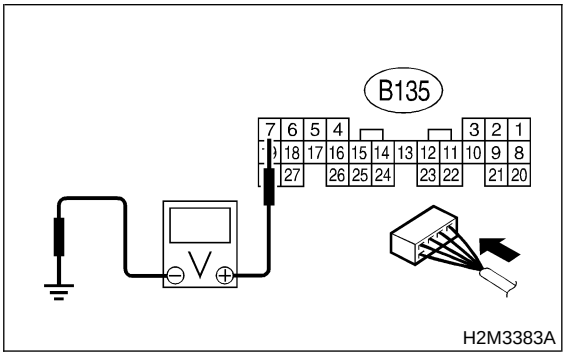


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C5**.
NO : Repair open or ground short circuit of power supply circuit.

8C5 : CHECK INPUT VOLTAGE OF ECM.

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

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

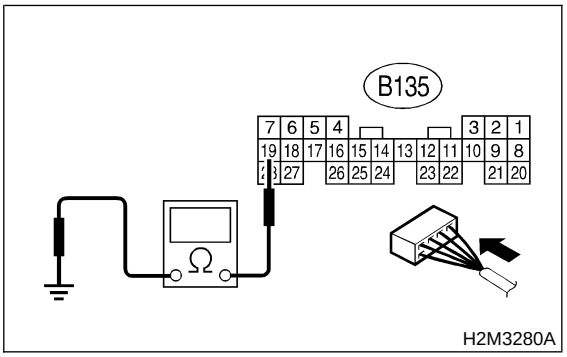


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C6**.
NO : Repair open or ground short circuit of power supply circuit.

8C6 : CHECK HARNESS BETWEEN ECM AND MAIN RELAY CONNECTOR.

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

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

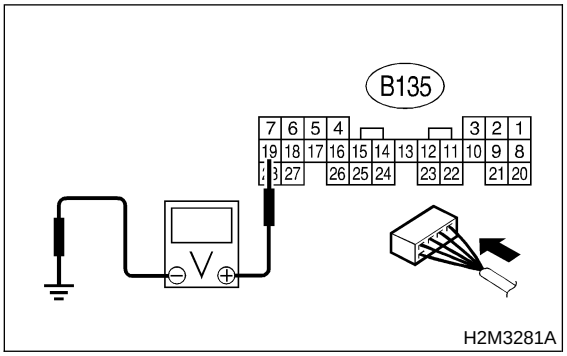


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8C7**.
NO : Repair ground short circuit in harness between ECM connector and main relay connector, then replace ECM.

8C7 : CHECK OUTPUT VOLTAGE FROM ECM.

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

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

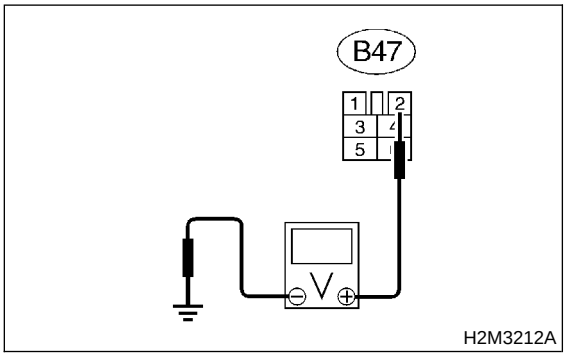


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C8**.
NO : Replace ECM.

8C8 : CHECK INPUT VOLTAGE OF MAIN RELAY.

Check voltage between main relay connector and chassis ground.

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

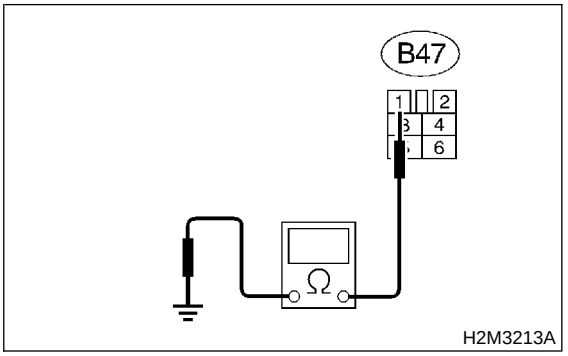


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C9**.
NO : Repair open circuit in harness between ECM connector and main relay connector.

8C9 : CHECK GROUND CIRCUIT OF MAIN RELAY.

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

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

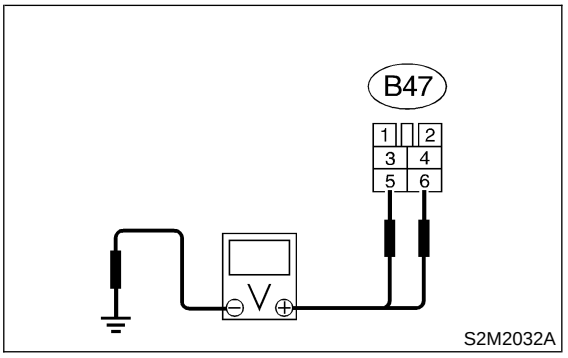


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8C10**.
NO : Repair open circuit between main relay and chassis ground.

8C10 : CHECK INPUT VOLTAGE OF MAIN RELAY.

Measure voltage between main relay connector and chassis ground.

Connector & terminal
(B47) No. 5 (+) — Chassis ground (−):
(B47) No. 6 (+) — Chassis ground (−):

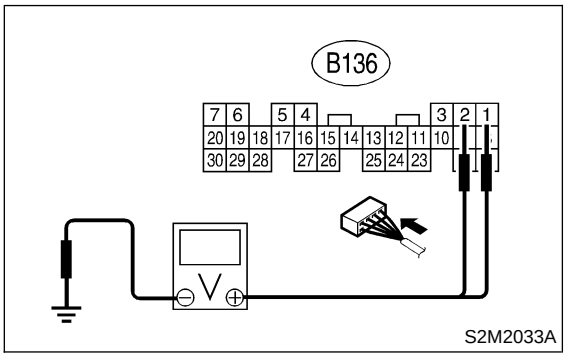


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8C11**.
NO : Repair open or ground short circuit in harness of power supply circuit.

8C11 : CHECK INPUT VOLTAGE OF ECM.

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

Connector & terminal
(B136) No. 1 (+) — Chassis ground (–):
(B136) No. 2 (+) — Chassis ground (–):

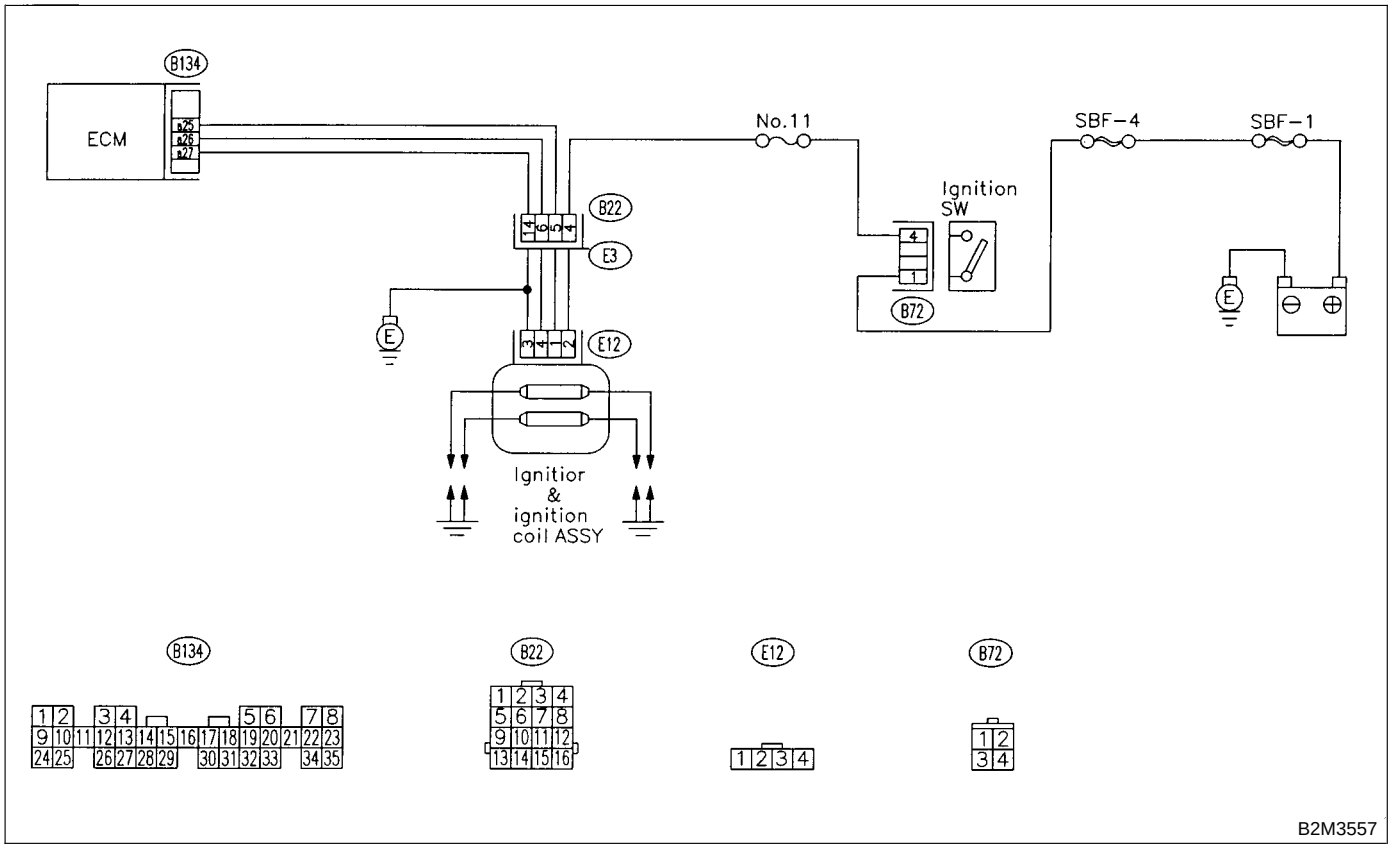


CHECK : ***Is the voltage more than 10 V?***
YES : Check ignition control system. <Ref. to 2-7 [T8D0].>
NO : Repair open or ground short circuit in harness between ECM connector and main relay connector.

D: IGNITION CONTROL SYSTEM

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

- **WIRING DIAGRAM:**

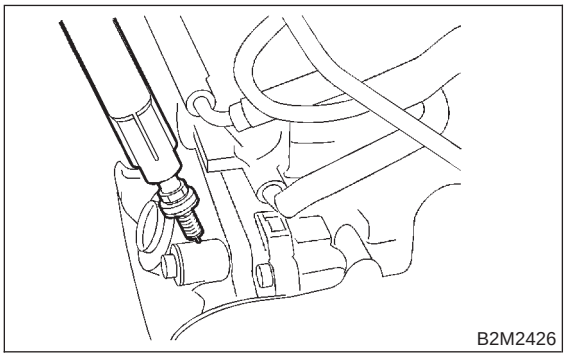


8D1 : CHECK IGNITION SYSTEM FOR SPARKS.

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

CAUTION:
Do not remove spark plug from engine.

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

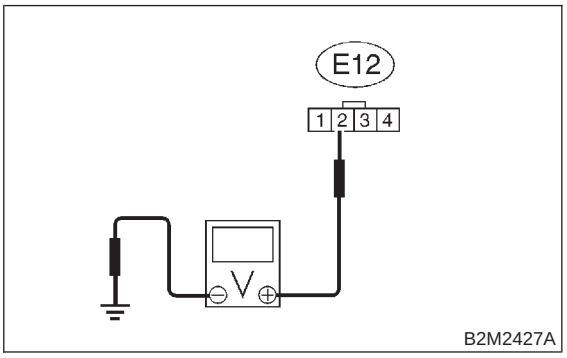


CHECK : ***Does spark occur at each cylinder?***
YES : Check fuel pump system. <Ref. to 2-7 [T8E0].>
NO : Go to step **8D2**.

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

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

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



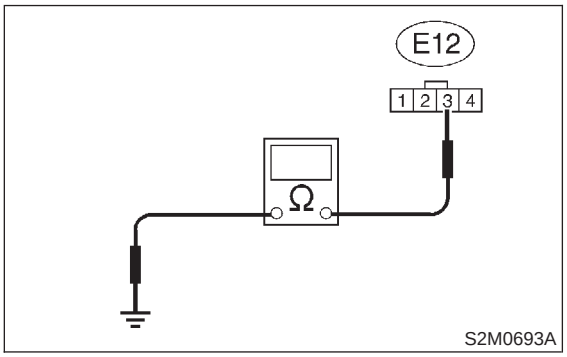
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8D3**.
NO : Repair harness and connector.

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

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

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

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



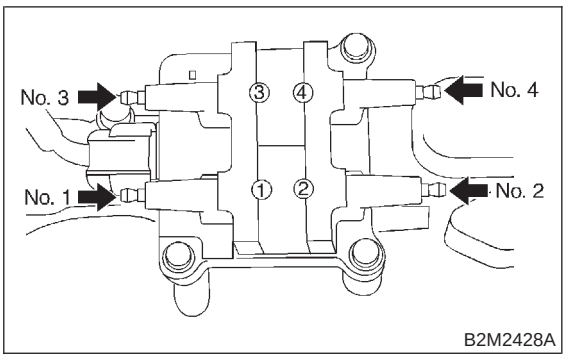
CHECK : ***Is the resistance between less than 5 Ω?***
YES : Go to step **8D4**.
NO : Repair harness and connector.

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

8D4 : CHECK IGNITION COIL & IGNITOR ASSEMBLY.

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

Terminals
No. 1 — No. 2:
No. 3 — No. 4:

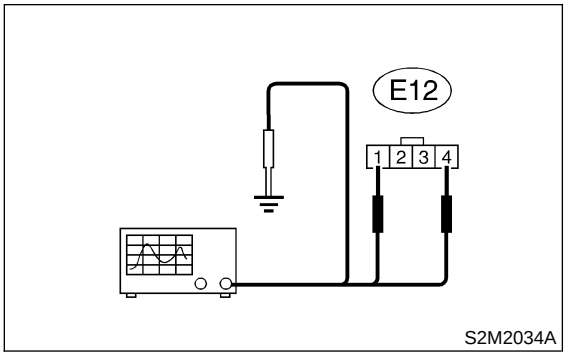


CHECK : ***Is the resistance between 10 and 15 kΩ?***
YES : Go to step **8D5**.
NO : Replace ignition coil & ignitor assembly. <Ref. to 6-1 [W4A0].>

8D5 : CHECK INPUT SIGNAL FOR IGNITION COIL & IGNITOR ASSEMBLY.

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

Connector & terminal
(E12) No. 1 (+) — Engine ground (–):
(E12) No. 4 (+) — Engine ground (–):

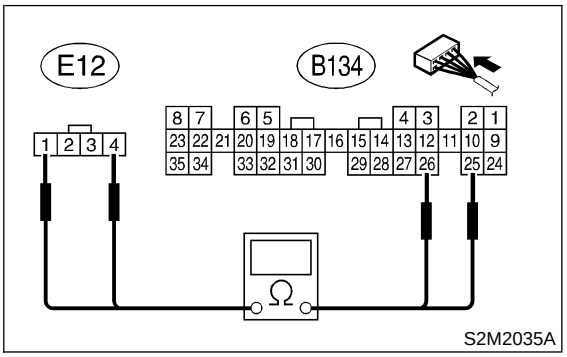


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8D6**.
NO : Replace ignition coil & ignitor assembly. <Ref. to 6-1 [W4A0].>

8D6 : CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR.

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

Connector & terminal
(B134) No. 25 — (E12) No. 1:
(B134) No. 26 — (E12) No. 4:



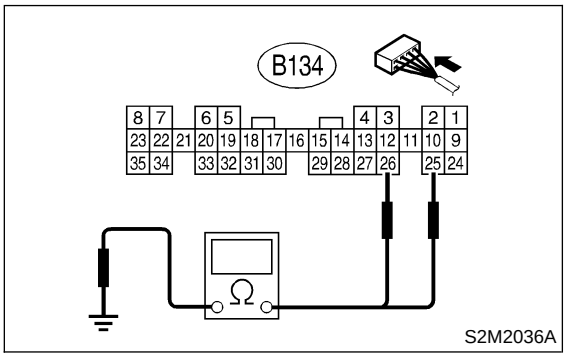
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8D7**.
NO : Repair harness and connector.

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

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

Measure resistance of harness between ECM and chassis ground.

Connector & terminal:
(B134) No. 25 — Chassis ground:
(B134) No. 26 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8D8**.
NO : Repair ground short circuit in harness between ECM and ignition coil & ignitor assembly connector.

8D8 : CHECK POOR CONTACT.

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

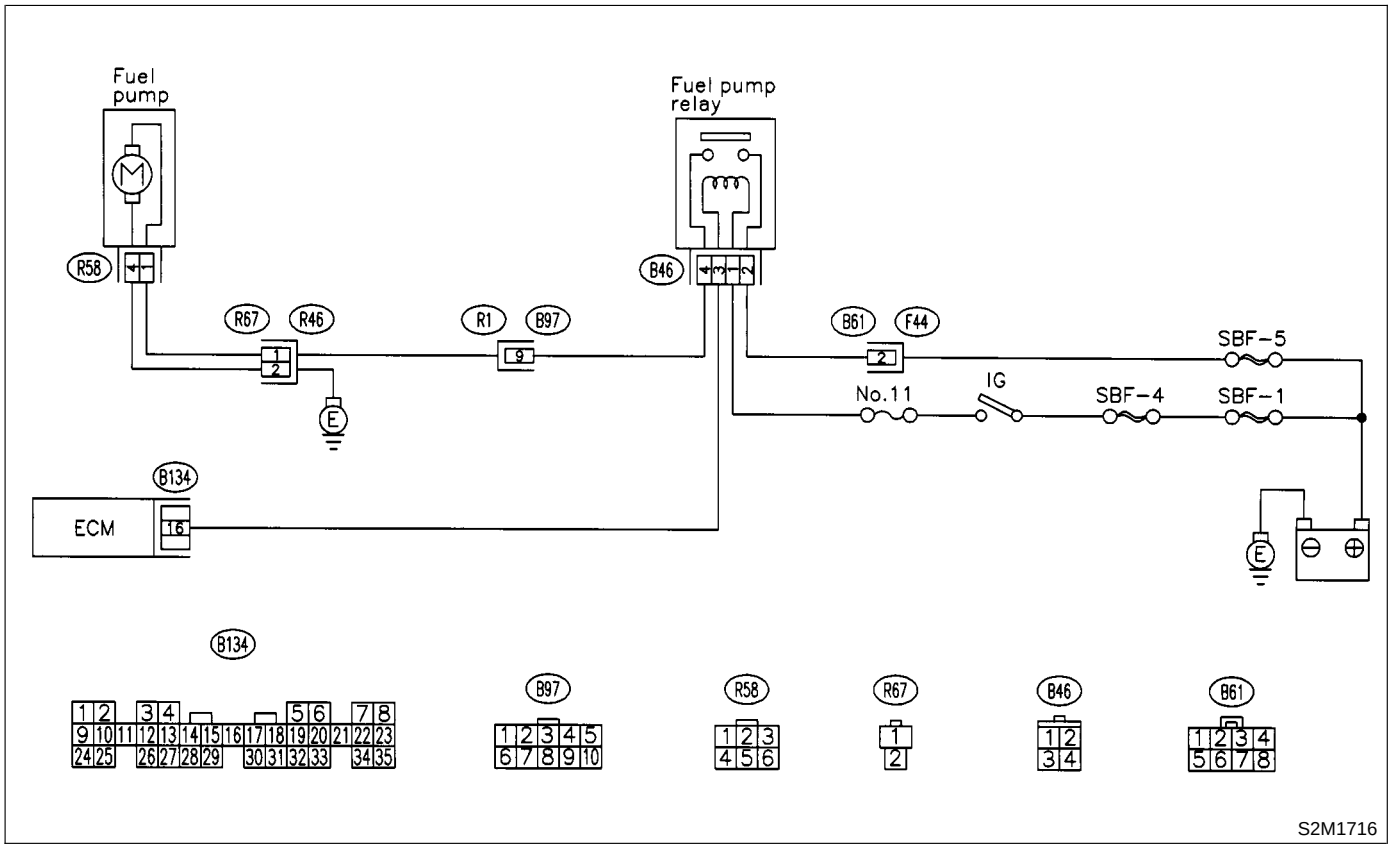
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Check fuel pump circuit. <Ref. to 2-7 [T8E0].>

MEMO:

E: FUEL PUMP CIRCUIT

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

- **WIRING DIAGRAM:**



8E1 : CHECK OPERATING SOUND OF FUEL PUMP.

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

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

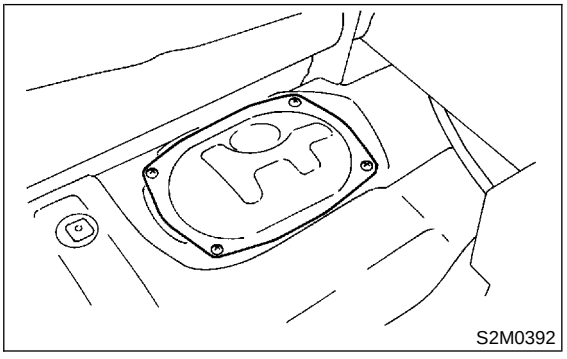
CHECK : ***Does fuel pump produce operating sound?***

YES : Check fuel injector circuit. <Ref. to 2-7 [T8G0].>

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

8E2 : CHECK GROUND CIRCUIT OF FUEL PUMP.

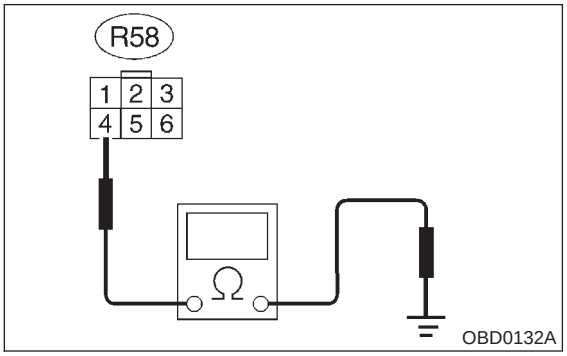
1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of luggage compartment floor.



3) Disconnect connector from fuel pump.

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

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



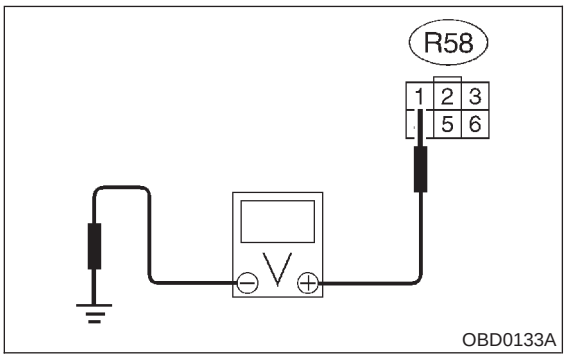
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **8E3**.
NO : Repair harness and connector.

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

8E3 : CHECK POWER SUPPLY TO FUEL PUMP.

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

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

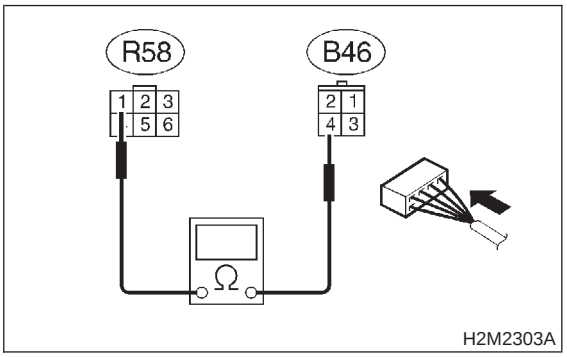


CHECK : ***Is the voltage more than 10 V?***
YES : Replace fuel pump. <Ref. to 2-8 [W3A0].>
NO : Go to step **8E4**.

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

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

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



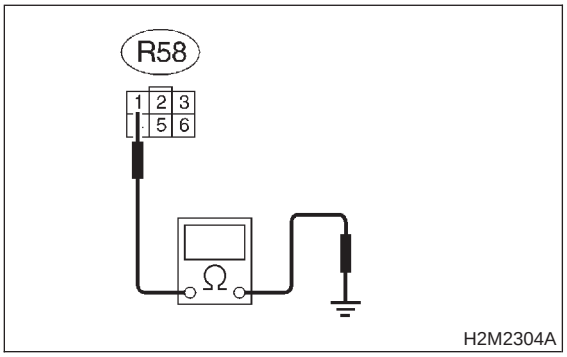
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E5**.
NO : Repair harness and connector.

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

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

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

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

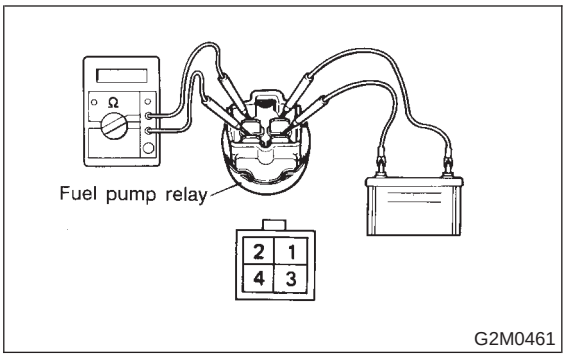


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E6**.
NO : Repair short circuit in harness between fuel pump and fuel pump relay connector.

8E6 : CHECK FUEL PUMP RELAY.

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

Terminals
No. 2 — No. 4:

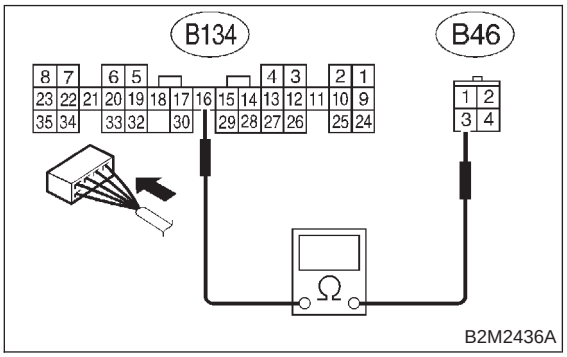


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **8E7**.
NO : Replace fuel pump relay. <Ref. to 2-7 [W19A0].>

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

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

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



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

8E8 : CHECK POOR CONTACT.

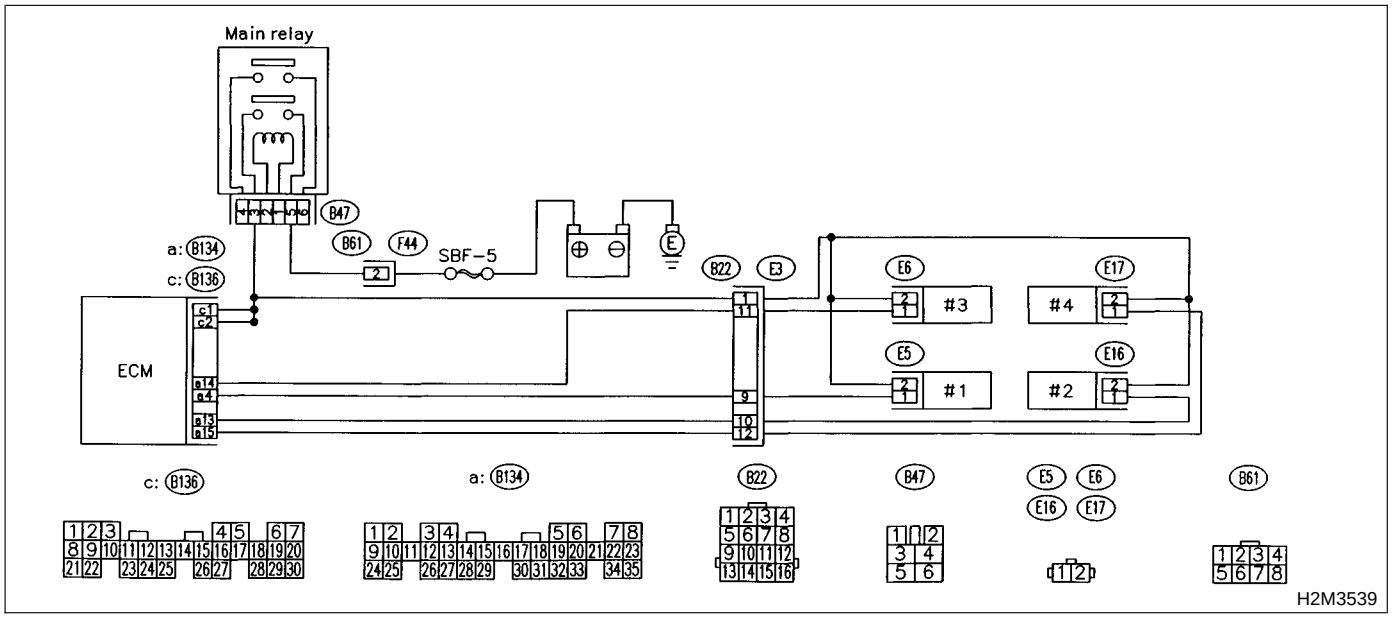
Check poor contact in ECM connector.
<Ref. to FOREWORD [T3C1].>

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

F: FUEL INJECTOR CIRCUIT

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

- **WIRING DIAGRAM:**



8F1 : CHECK OPERATION OF EACH FUEL INJECTOR.

While cranking the engine, check that each fuel injector emits “operating” sound. Use a sound scope or attach a screwdriver to injector for this check.

CHECK : ***Is the fuel injector emits “operating” sound?***

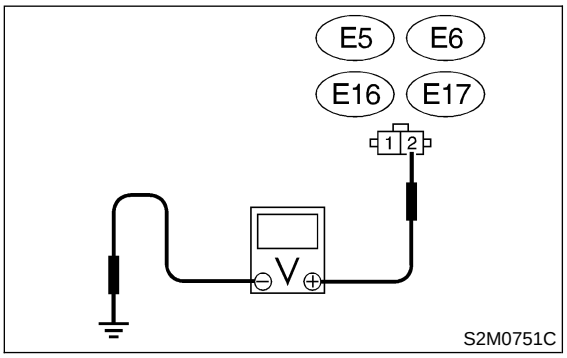
YES : Check fuel pressure. <Ref. to 2-2 [W7A0].>

NO : Go to step **8F2**.

8F2 : CHECK POWER SUPPLY TO EACH FUEL INJECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from #1 cylinder fuel injector.
3) Turn ignition switch to ON.
4) Measure power supply voltage between the fuel injector terminal and engine ground.

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 (–):



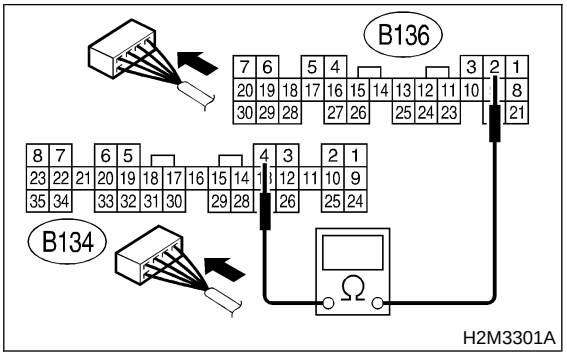
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **8F3**.
NO : Repair harness and connector.

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

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

1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 4 — (B136) No. 2:



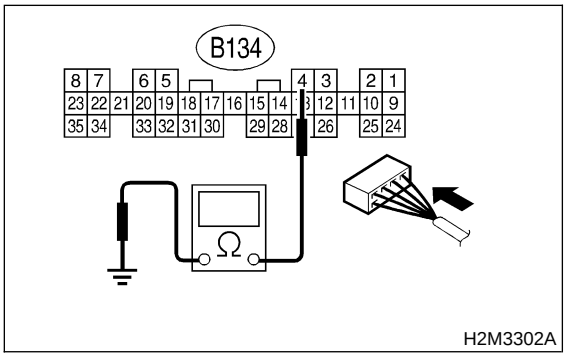
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **8F4**.
NO : Repair harness and connector.

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

8F4 : CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.

Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 4 — Chassis ground:

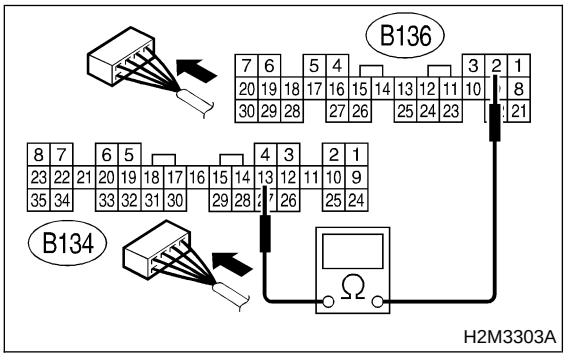


CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair ground short circuit in harness between ECM and fuel injector connector.
NO : Go to step **8F5**.

8F5 : CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.

Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 13 — (B136) No. 2:



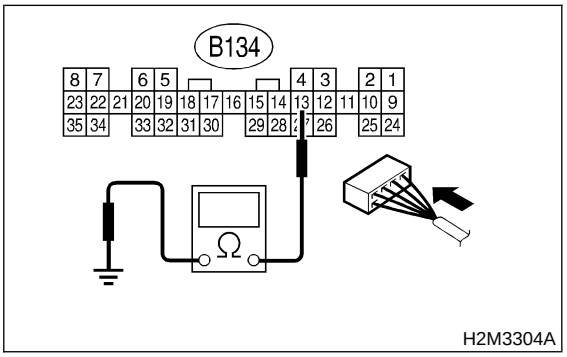
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **8F6**.
NO : Repair harness and connector.

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

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

Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 13 — Chassis ground:

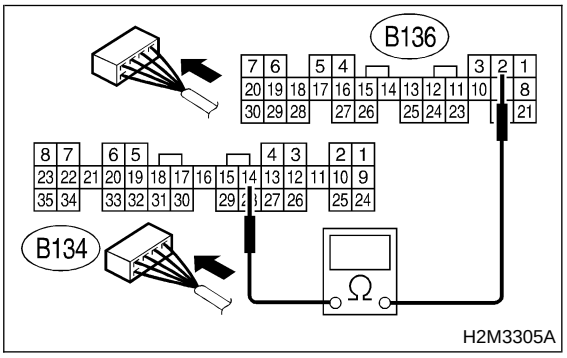


CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair ground short circuit in harness between ECM and fuel injector connector.
NO : Go to step **8F7**.

8F7 : CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.

Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 14 — (B136) No. 2:



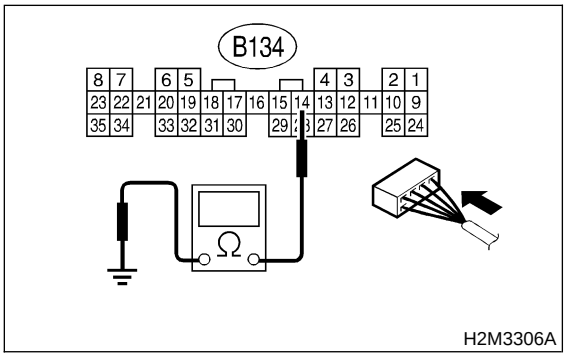
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **8F8**.
NO : Repair harness and connector.

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

8F8 : CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.

Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 14 — Chassis ground:

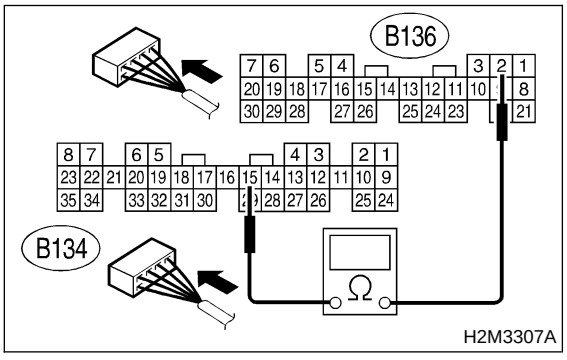


CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair ground short circuit in harness between ECM and fuel injector connector.
NO : Go to step **8F9**.

8F9 : CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.

Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 15 — (B136) No. 2:



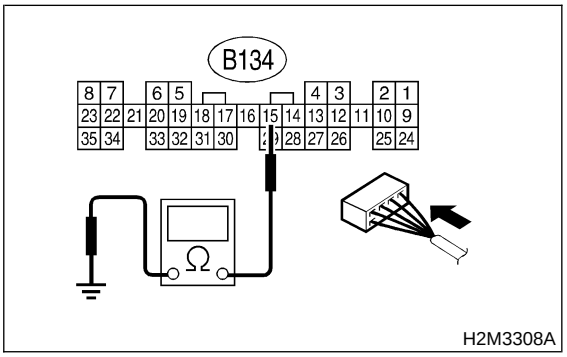
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **8F10**.
NO : Repair harness and connector.

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

8F10 : CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.

Measure resistance of harness between ECM and fuel injector connector.

Connector & terminal
(B134) No. 15 — Chassis ground:

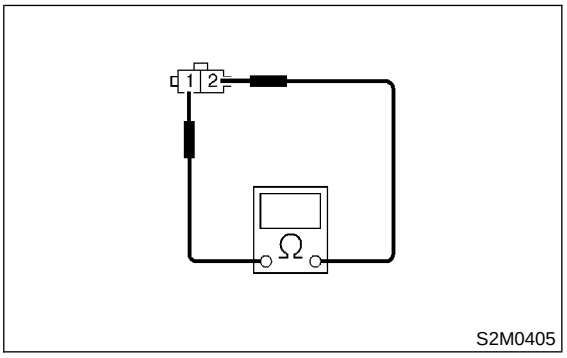


CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair ground short circuit in harness between ECM and fuel injector connector.
NO : Go to step **8F11**.

8F11 : CHECK EACH FUEL INJECTOR.

1) Turn ignition switch to OFF.
2) Measure resistance between each fuel injector terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **8F12**.
NO : Replace faulty fuel injector.

8F12 : CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [W3C1].>

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

YES : Repair poor contact in ECM connector.

NO : Check crankshaft position sensor circuit. <Ref. to 2-7 [T8G0].>

G: CRANKSHAFT POSITION SENSOR CIRCUIT

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

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

H: CAMSHAFT POSITION SENSOR CIRCUIT

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

NOTE:
Check camshaft position sensor circuit.
<Ref. to 2-7 [T10AF0].>

9. General Diagnostic Table

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

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

Symptom	Problem parts
1. Engine stalls during idling.	1) Idle air control solenoid valve 2) Intake air temperature and pressure sensor 3) Ignition parts (*1) 4) Engine coolant temperature sensor (*2) 5) Crankshaft position sensor (*3) 6) Camshaft position sensor (*3) 7) Fuel injection parts (*4)
2. Rough idling	1) Idle air control solenoid valve 2) Intake air temperature and pressure 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) Oxygen sensor 11) 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) Intake air temperature and pressure sensor
4. Poor acceleration	1) Intake air temperature and pressure 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) Intake air temperature and pressure sensor 2) Engine coolant temperature sensor (*2) 3) Crankshaft position sensor (*3) 4) Camshaft position sensor (*3) 5) Purge control solenoid valve 6) Fuel injection parts (*4) 7) Throttle position sensor 8) Fuel pump and fuel pump relay
6. Surge	1) Intake air temperature and pressure sensor 2) Engine coolant temperature sensor (*2) 3) Crankshaft position sensor (*3) 4) Camshaft position sensor (*3) 5) Fuel injection parts (*4) 6) Throttle position sensor 7) Fuel pump and fuel pump relay

Symptom	Problem parts
7. Spark knock	1) Intake air temperature and pressure 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) Intake air temperature and pressure sensor 2) Engine coolant temperature sensor (*2) 3) Fuel injection parts (*4) 4) Fuel pump and fuel pump relay

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

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

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

10. Diagnostics Chart with Trouble Code

A: DIAGNOSTIC TROUBLE CODE (DTC) LIST

DTC No.	Item	Index
P0106	Pressure sensor circuit range/performance problem	<Ref. to 2-7 [T10B0].>
P0107	Pressure sensor circuit low input	<Ref. to 2-7 [T10C0].>
P0108	Pressure sensor circuit high input	<Ref. to 2-7 [T10D0].>
P0111	Intake air temperature sensor circuit range/performance problem	<Ref. to 2-7 [T10E0].>
P0112	Intake air temperature sensor circuit low input	<Ref. to 2-7 [T10F0].>
P0113	Intake air temperature sensor circuit high input	<Ref. to 2-7 [T10G0].>
P0116	Engine coolant temperature sensor circuit low input	<Ref. to 2-7 [T10H0].>
P0117	Engine coolant temperature sensor circuit high input	<Ref. to 2-7 [T10I0].>
P0121	Throttle position sensor circuit range/performance problem (high input)	<Ref. to 2-7 [T10J0].>
P0122	Throttle position sensor circuit low input	<Ref. to 2-7 [T10K0].>
P0123	Throttle position sensor circuit high input	<Ref. to 2-7 [T10L0].>
P0125	Insufficient coolant temperature for closed loop fuel control	<Ref. to 2-7 [T10M0].>
P0130	Front oxygen (A/F) sensor circuit range/performance problem	<Ref. to 2-7 [T10N0].>
P0133	Front oxygen (A/F) sensor circuit slow response	<Ref. to 2-7 [T10O0].>
P0136	Rear oxygen sensor circuit malfunction	<Ref. to 2-7 [T10P0].>
P0139	Rear oxygen sensor circuit slow response	<Ref. to 2-7 [T10Q0].>
P0141	Rear oxygen sensor heater circuit malfunction	<Ref. to 2-7 [T10R0].>
P0170	Fuel trim malfunction	<Ref. to 2-7 [T10S0].>
P0181	Fuel temperature sensor A circuit range/performance problem	<Ref. to 2-7 [T10T0].>
P0182	Fuel temperature sensor A circuit low input	<Ref. to 2-7 [T10U0].>
P0183	Fuel temperature sensor A circuit high input	<Ref. to 2-7 [T10V0].>
P0301	Cylinder 1 misfire detected	<Ref. to 2-7 [T10W0].>
P0302	Cylinder 2 misfire detected	<Ref. to 2-7 [T10X0].>
P0303	Cylinder 3 misfire detected	<Ref. to 2-7 [T10Y0].>
P0304	Cylinder 4 misfire detected	<Ref. to 2-7 [T10Z0].>

DTC No.	Item	Index
P0325	Knock sensor circuit high input	<Ref. to 2-7 [T10AA0].>
P0335	Crankshaft position sensor circuit malfunction	<Ref. to 2-7 [T10AB0].>
P0336	Crankshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T10AC0].>
P0340	Camshaft position sensor circuit malfunction	<Ref. to 2-7 [T10AD0].>
P0341	Camshaft position sensor circuit range/performance problem	<Ref. to 2-7 [T10AE0].>
P0420	Catalyst system efficiency below threshold	<Ref. to 2-7 [T10AF0].>
P0440	Evaporative emission control system malfunction	<Ref. to 2-7 [T10AG0].>
P0442	Evaporative emission control system malfunction	<Ref. to 2-7 [T10AH0].>
P0443	Evaporative emission control system purge control valve circuit low input	<Ref. to 2-7 [T10AI0].>
P0446	Evaporative emission control system vent control low input	<Ref. to 2-7 [T10AJ0].>
P0451	Evaporative emission control system pressure sensor range/performance problem	<Ref. to 2-7 [T10AK0].>
P0452	Evaporative emission control system pressure sensor low input	<Ref. to 2-7 [T10AL0].>
P0453	Evaporative emission control system pressure sensor high input	<Ref. to 2-7 [T10AM0].>
P0461	Fuel level sensor circuit range/performance problem	<Ref. to 2-7 [T10AN0].>
P0462	Fuel level sensor circuit low input	<Ref. to 2-7 [T10AO0].>
P0463	Fuel level sensor circuit high input	<Ref. to 2-7 [T10AP0].>
P0480	Cooling fan relay 1 circuit low input	<Ref. to 2-7 [T10AQ0].>
P0483	Cooling fan function problem	<Ref. to 2-7 [T10AR0].>
P0500	Vehicle speed sensor malfunction	<Ref. to 2-7 [T10AS0].>
P0506	Idle control system RPM lower than expected	<Ref. to 2-7 [T10AT0].>
P0507	Idle control system RPM higher than expected	<Ref. to 2-7 [T10AU0].>
P0601	Internal control module memory check sum error	<Ref. to 2-7 [T10AV0].>
P0703	Brake switch input malfunction	<Ref. to 2-7 [T10AW0].>
P0705	Transmission range sensor circuit malfunction	<Ref. to 2-7 [T10AX0].>
P0710	Transmission fluid temperature sensor circuit malfunction	<Ref. to 2-7 [T10AY0].>
P0715	Torque converter turbine speed sensor circuit malfunction	<Ref. to 2-7 [T10AZ0].>
P0720	Output speed sensor (vehicle speed sensor 2) circuit malfunction	<Ref. to 2-7 [T10BA0].>

DTC No.	Item	Index
P0725	Engine speed input circuit malfunction	<Ref. to 2-7 [T10BB0].>
P0731	Gear 1 incorrect ratio	<Ref. to 2-7 [T10BC0].>
P0732	Gear 2 incorrect ratio	<Ref. to 2-7 [T10BD0].>
P0733	Gear 3 incorrect ratio	<Ref. to 2-7 [T10BE0].>
P0734	Gear 4 incorrect ratio	<Ref. to 2-7 [T10BF0].>
P0740	Torque converter clutch system malfunction	<Ref. to 2-7 [T10BG0].>
P0743	Torque converter clutch system (Lock-up duty solenoid) electrical	<Ref. to 2-7 [T10BH0].>
P0748	Pressure control solenoid (Line pressure duty solenoid) electrical	<Ref. to 2-7 [T10BI0].>
P0753	Shift solenoid A (Shift solenoid 1) electrical	<Ref. to 2-7 [T10BJ0].>
P0758	Shift solenoid B (Shift solenoid 2) electrical	<Ref. to 2-7 [T10BK0].>
P1100	Starter switch circuit low input	<Ref. to 2-7 [T10BL0].>
P1101	Neutral position switch circuit low input [MT vehicles] or Neutral position switch circuit high input [AT vehicles]	<Ref. to 2-7 [T10BM0].>
P1103	Engine torque control signal 1 circuit malfunction	<Ref. to 2-7 [T10BN0].>
P1106	Engine torque control signal 2 circuit malfunction	<Ref. to 2-7 [T10BO0].>
P1110	Atmospheric pressure sensor circuit low input	<Ref. to 2-7 [T10BP0].>
P1111	Atmospheric pressure sensor circuit high input	<Ref. to 2-7 [T10BQ0].>
P1112	Atmospheric pressure sensor range/performance problem	<Ref. to 2-7 [T10BR0].>
P1115	Engine torque control cut signal circuit high input	<Ref. to 2-7 [T10BS0].>
P1116	Engine torque control cut signal circuit low input	<Ref. to 2-7 [T10BT0].>
P1120	Starter switch circuit high input	<Ref. to 2-7 [T10BU0].>
P1121	Neutral position switch circuit high input [MT vehicles] or Neutral position switch circuit low input [AT vehicles]	<Ref. to 2-7 [T10BV0].>
P1130	Front oxygen (A/F) sensor circuit malfunction (open circuit)	<Ref. to 2-7 [T10BW0].>
P1131	Front oxygen (A/F) sensor circuit malfunction (short circuit)	<Ref. to 2-7 [T10BX0].>
P1132	Front oxygen (A/F) sensor heater circuit low input	<Ref. to 2-7 [T10BY0].>
P1133	Front oxygen (A/F) sensor heater circuit high input	<Ref. to 2-7 [T10BZ0].>
P1142	Throttle position sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T10CA0].>
P1151	Rear oxygen sensor heater circuit high input	<Ref. to 2-7 [T10CB0].>

DTC No.	Item	Index
P1207	Air assist injector solenoid valve circuit low input	<Ref. to 2-7 [T10CC0].>
P1208	Air assist injector solenoid valve circuit high input	<Ref. to 2-7 [T10CD0].>
P1325	Knock sensor circuit low input	<Ref. to 2-7 [T10CE0].>
P1400	Fuel tank pressure control solenoid valve circuit low input	<Ref. to 2-7 [T10CF0].>
P1420	Fuel tank pressure control solenoid valve circuit high input	<Ref. to 2-7 [T10CG0].>
P1422	Evaporative emission control system purge control valve circuit high input	<Ref. to 2-7 [T10CH0].>
P1423	Evaporative emission control system vent control high input	<Ref. to 2-7 [T10CI0].>
P1442	Fuel level sensor circuit range/performance problem 2	<Ref. to 2-7 [T10CJ0].>
P1443	Evaporative emission control system vent control function problem	<Ref. to 2-7 [T10CK0].>
P1445	Air assist injector solenoid valve malfunction	<Ref. to 2-7 [T10CL0].>
P1490	Thermostat malfunction	<Ref. to 2-7 [T10CM0].>
P1507	Idle control system malfunction (fail-safe)	<Ref. to 2-7 [T10CN0].>
P1510	Idle air control solenoid valve signal 1 circuit low input	<Ref. to 2-7 [T10CO0].>
P1511	Idle air control solenoid valve signal 1 circuit high input	<Ref. to 2-7 [T10CP0].>
P1512	Idle air control solenoid valve signal 2 circuit low input	<Ref. to 2-7 [T10CQ0].>
P1513	Idle air control solenoid valve signal 2 circuit high input	<Ref. to 2-7 [T10CR0].>
P1514	Idle air control solenoid valve signal 3 circuit low input	<Ref. to 2-7 [T10CS0].>
P1515	Idle air control solenoid valve signal 3 circuit high input	<Ref. to 2-7 [T10CT0].>
P1516	Idle air control solenoid valve signal 4 circuit low input	<Ref. to 2-7 [T10CU0].>
P1517	Idle air control solenoid valve signal 4 circuit high input	<Ref. to 2-7 [T10CV0].>
P1520	Cooling fan relay 1 circuit high input	<Ref. to 2-7 [T10CW0].>
P1540	Vehicle speed sensor malfunction 2	<Ref. to 2-7 [T10CX0].>
P1560	Back-up voltage circuit malfunction	<Ref. to 2-7 [T10CY0].>
P1700	Throttle position sensor circuit malfunction for automatic transmission	<Ref. to 2-7 [T10CZ0].>
P1701	Cruise control set signal circuit malfunction for automatic transmission	<Ref. to 2-7 [T10DA0].>
P1702	Automatic transmission diagnosis input signal circuit low input	<Ref. to 2-7 [T10DB0].>
P1703	Low clutch timing control solenoid valve circuit malfunction	<Ref. to 2-7 [T10DC0].>

DTC No.	Item	Index
P1704	2-4 brake timing control solenoid valve circuit malfunction	<Ref. to 2-7 [T10DD0].>
P1705	2-4 brake pressure control solenoid valve (2-4 brake duty solenoid) circuit malfunction	<Ref. to 2-7 [T10DE0].>
P1722	Automatic transmission diagnosis input signal circuit high input	<Ref. to 2-7 [T10DF0].>
P1742	Automatic transmission diagnosis input signal circuit malfunction	<Ref. to 2-7 [T10DG0].>

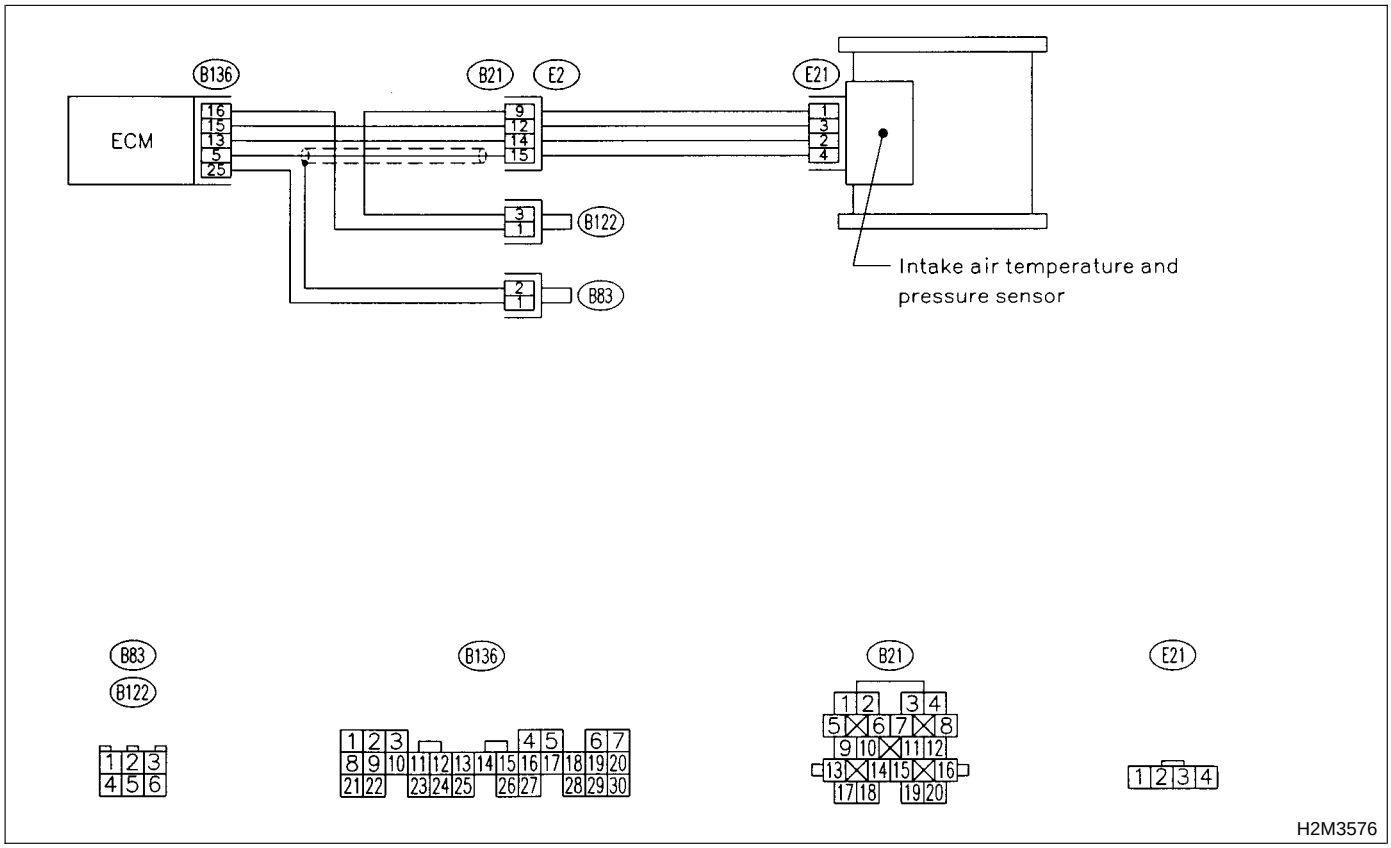
MEMO:

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

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

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

- **WIRING DIAGRAM:**



10B1 : CHECK ANY OTHER DTC ON DISPLAY.

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

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0107, P0108 or P1112?***

YES : Inspect DTC P0107, P0108 or P1112 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10B2**.

10B2 : 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 **10B3**.

10B3 : CHECK PRESSURE SENSOR.

1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).
2) Place the shift lever in the select lever in “N” or “P” position.
3) Turn A/C switch to OFF.
4) Turn all accessory switches to OFF.
5) Read data of intake manifold pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

Specification:
● Intake manifold absolute pressure

Engine speed	Specified value
Ignition ON	73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)
Idling	20.0 — 46.7 kPa (150 — 350 mmHg, 5.91 — 13.78 inHg)

CHECK : ***Is the value within the specifications?***
YES : Go to step **10B4**.
NO : Replace intake air temperature sensor and pressure sensor. <Ref. to 2-7 [W13A0].>

10B4 : CHECK THROTTLE POSITION.

Read data of throttle position signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is throttle positioning ratio equal to or less than 5% when throttle is fully closed?***
YES : Go to step **10B5**.
NO : Adjust or replace throttle position sensor. <Ref. to 2-7 [W10A0].>

10B5 : CHECK THROTTLE POSITION.

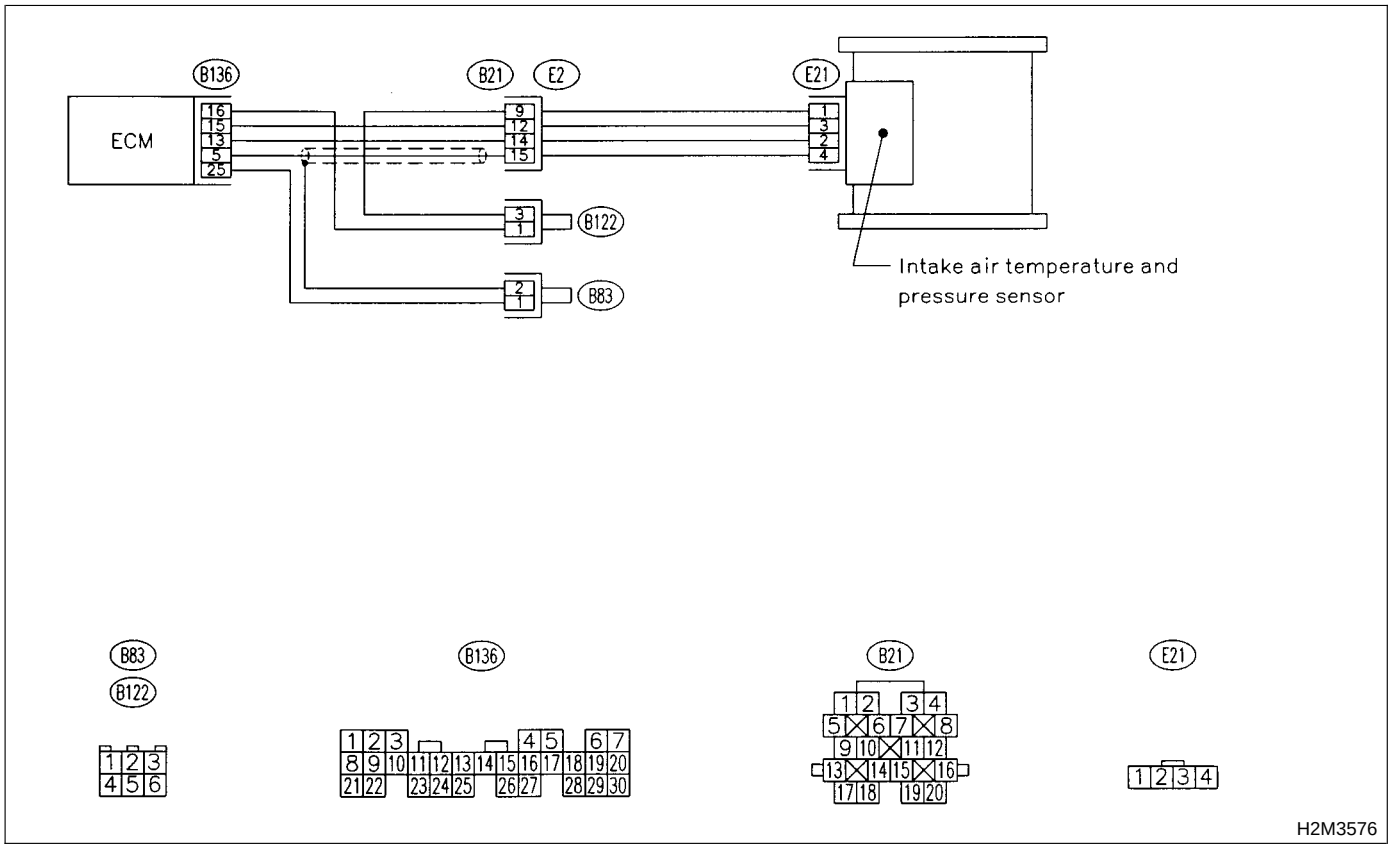
CHECK : ***Is throttle positioning ratio equal to or more than 85% when throttle is fully open?***
YES : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W11A0].>
NO : Replace throttle position sensor. <Ref. to 2-7 [W10A0].>

C: DTC P0107 — PRESSURE SENSOR CIRCUIT LOW INPUT —

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

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

- **WIRING DIAGRAM:**



10C1 : CHECK CURRENT DATA.

1) Start engine.
2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value less than 13.3 kPa (100 mmHg, 3.94 inHg)?***
YES : Go to step **10C3**.
NO : Go to step **10C2**.

10C2 : CHECK POOR CONTACT.

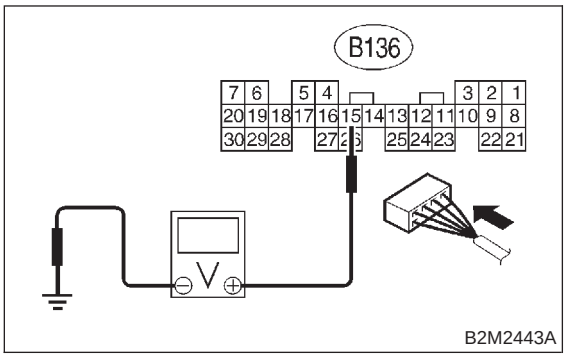
Check poor contact in ECM and pressure sensor connector. <Ref. to 2-7 [T3C8].>

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

10C3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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

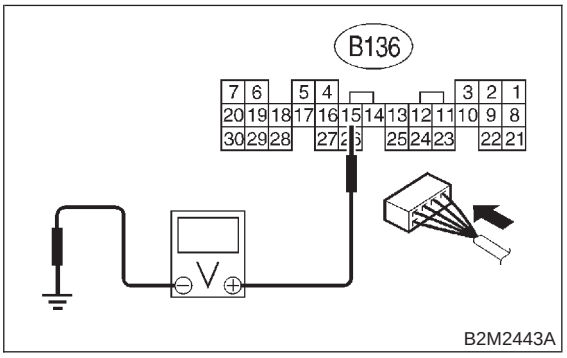


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10C5**.
NO : Go to step **10C4**.

10C4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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



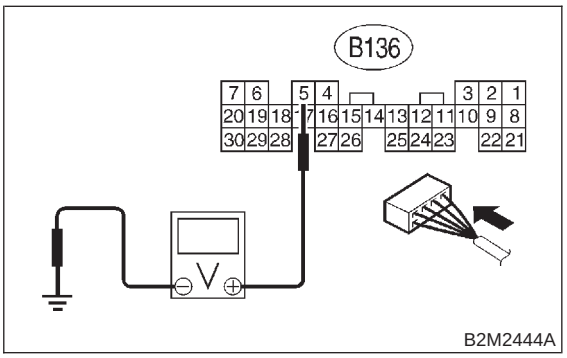
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10C5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

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



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10C7**.
NO : Go to step **10C6**.

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

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

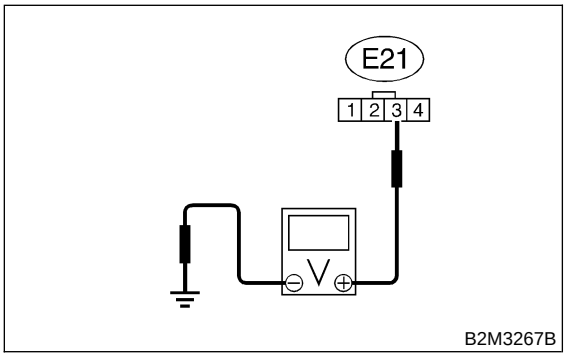
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 13.3 kPa (100 mmHg, 3.94 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10C7**.

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

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

Connector & terminal
(E21) No. 3 (+) — Engine ground (−):

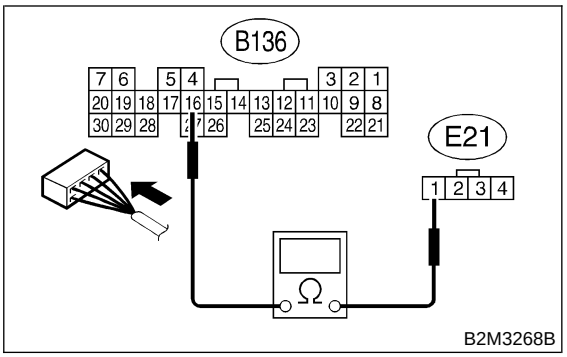


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10C8**.
NO : Repair open circuit in harness between ECM and intake air temperature and pressure sensor connector.

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

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

Connector & terminal
(B136) No. 16 — (E21) No. 1:

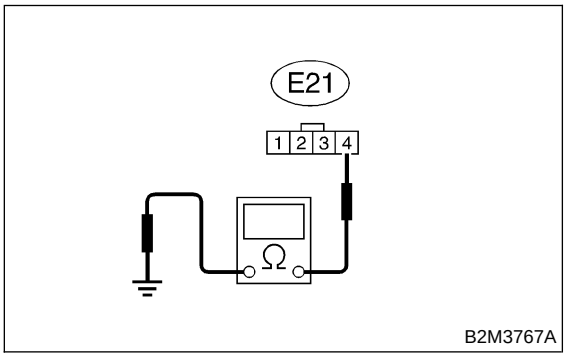


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10C9**.
NO : Repair open circuit in harness between ECM and intake air temperature and pressure sensor connector.

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

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

Connector & terminal
(E21) No. 4 — Engine ground:



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

10C10 : CHECK POOR CONTACT.

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

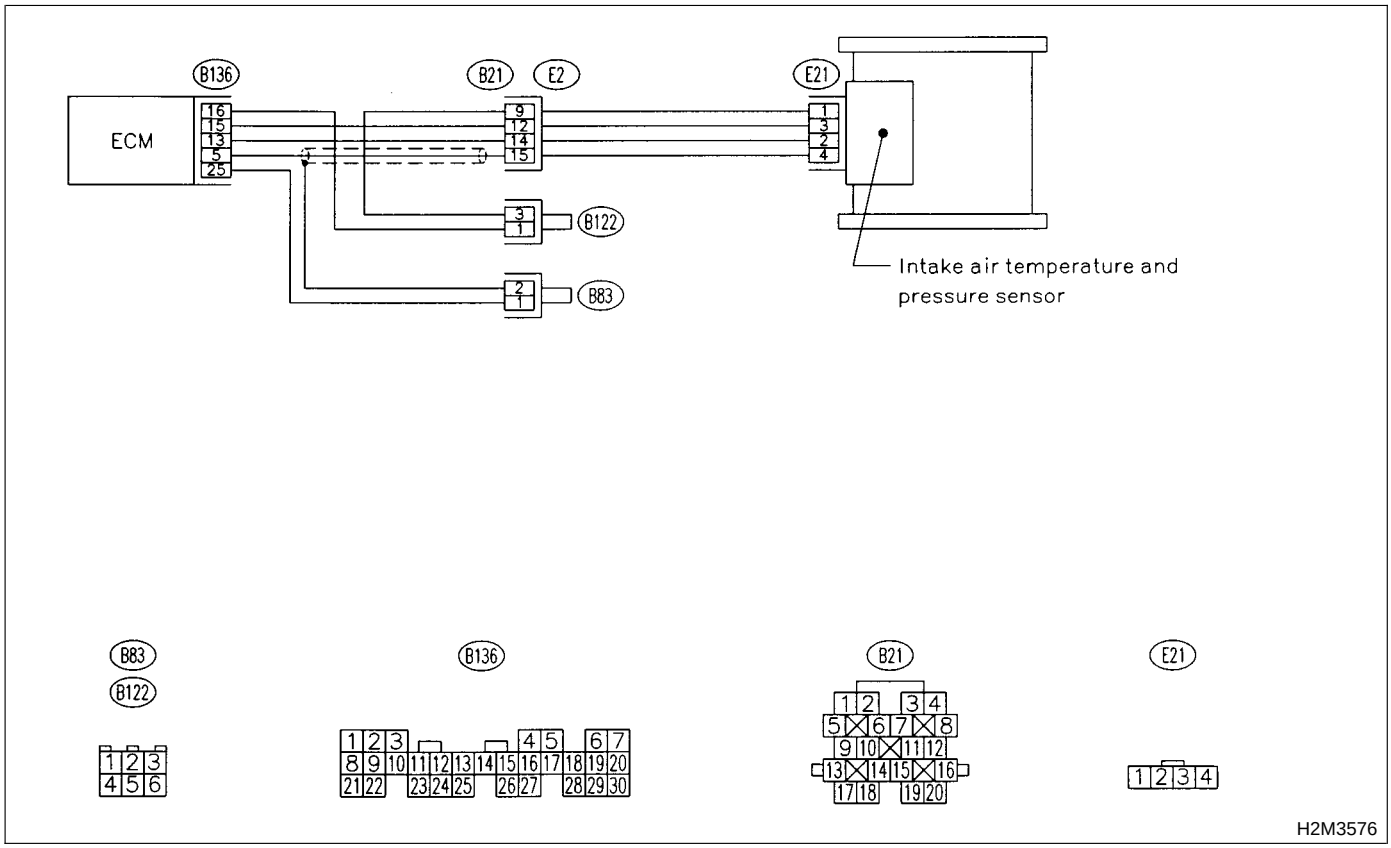
CHECK : ***Is there poor contact in intake manifold pressure sensor connector?***
YES : Repair poor contact in intake air temperature and pressure sensor connector.
NO : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W11A0].>

D: DTC P0108 — PRESSURE SENSOR CIRCUIT HIGH INPUT —

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

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

- **WIRING DIAGRAM:**



10D1 : CHECK CURRENT DATA.

1) Start engine.
2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

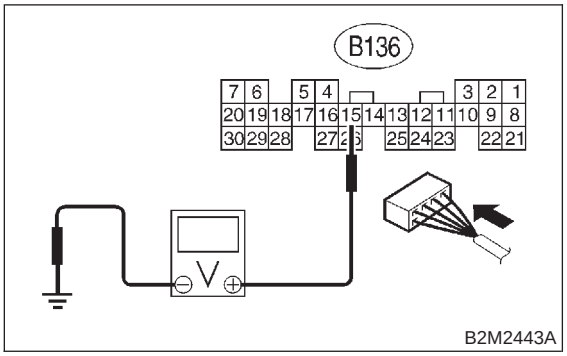
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 119.5 kPa (896.5 mmHg, 35.29 inHg)?***
YES : Go to step **10D9**.
NO : Go to step **10D2**.

10D2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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

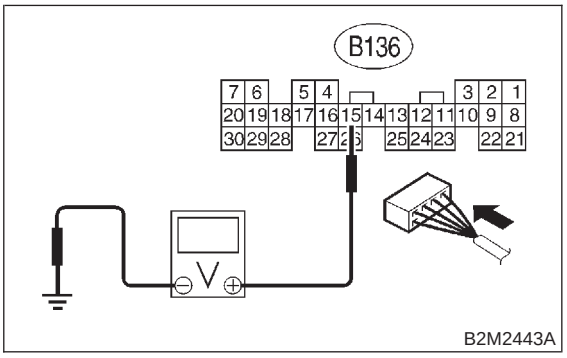


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10D4**.
NO : Go to step **10D3**.

10D3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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



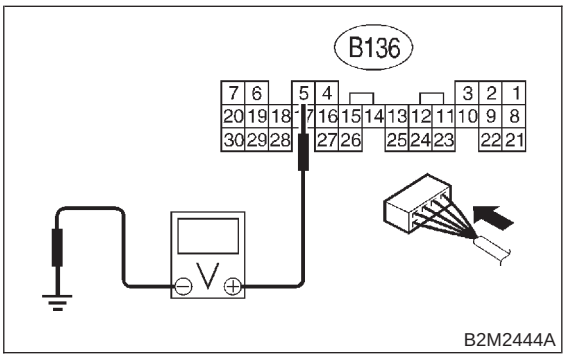
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10D4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10D6**.
NO : Go to step **10D5**.

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

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

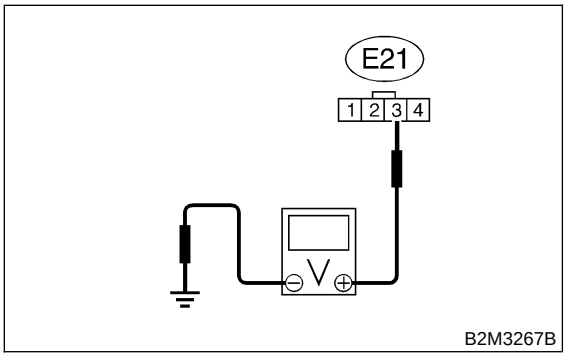
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 13.3 kPa (100 mmHg, 3.94 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10D6**.

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

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

Connector & terminal
(E21) No. 3 (+) — Engine ground (−):

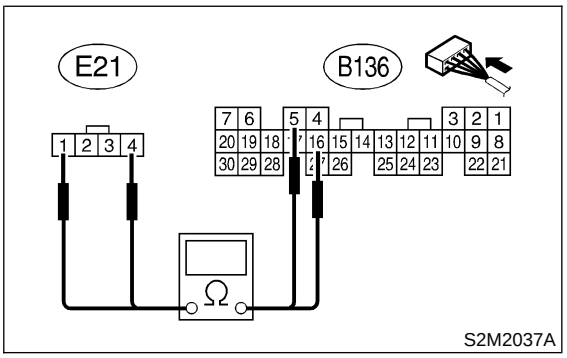


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10D7**.
NO : Repair open circuit in harness between ECM and intake air temperature and pressure sensor connector.

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

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

Connector & terminal
(B136) No. 5 — (E21) No. 4:
(B136) No. 16 — (E21) No. 1:



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

10D8 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in intake manifold pressure sensor connector?***
YES : Repair poor contact in intake air temperature and pressure sensor connector.
NO : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W11A0].>

10D9 : CHECK HARNESS BETWEEN ECM AND INTAKE AIR TEMPERATURE 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 intake air temperature and pressure sensor.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Read data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value more than 119.5 kPa (896.5 mmHg, 35.29 inHg)?***

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

NO : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W11A0].>

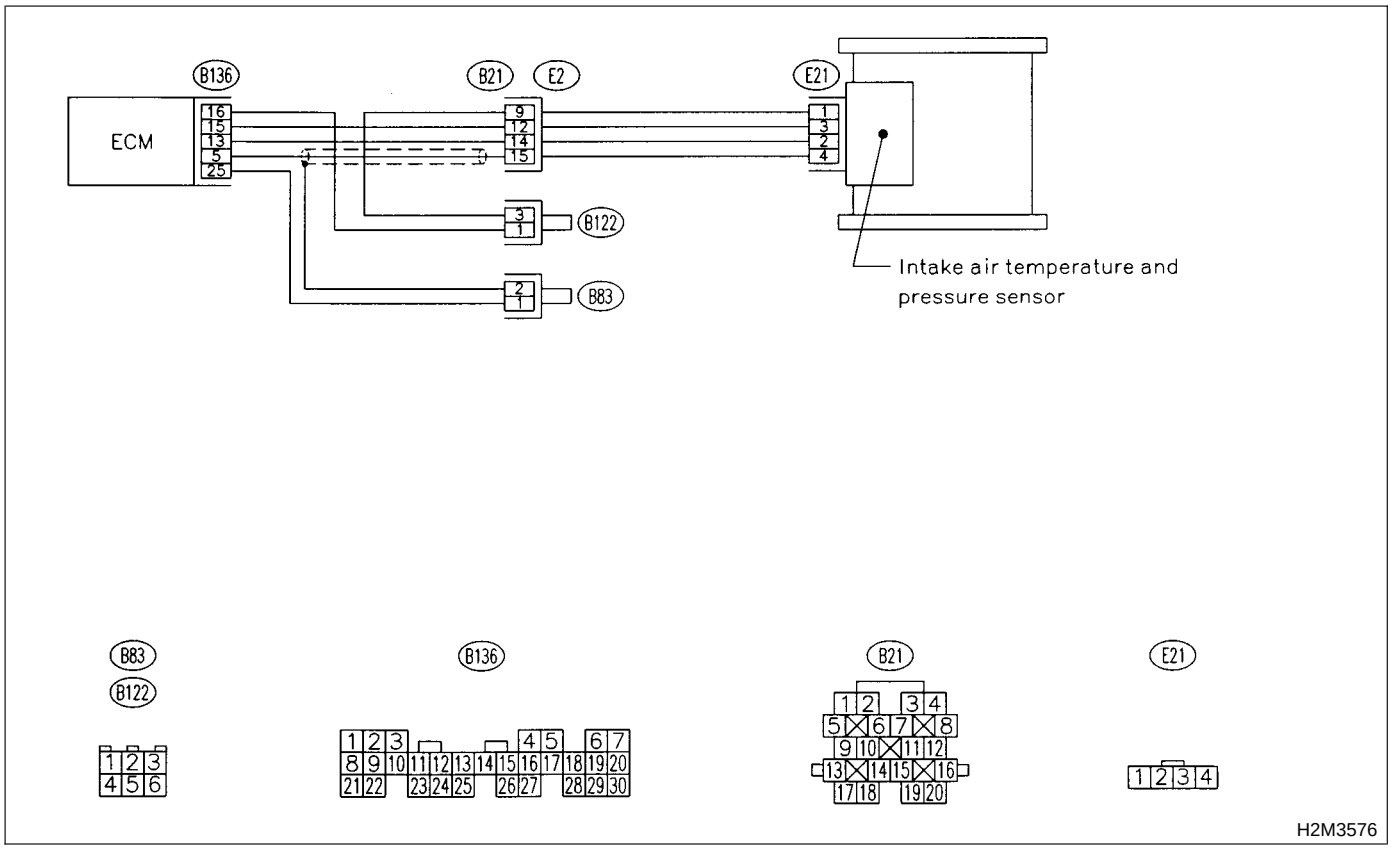
E: DTC P0111 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM —

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

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

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

- **WIRING DIAGRAM:**



10E1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0112, P0113, P0116, P0117 or P0125?***

YES : Inspect DTC P0112, P0113, P0116, P0117 or P0125 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

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

NO : Go to step **10E2**.

10E2 : CHECK ENGINE COOLANT TEMPERATURE.

1) Start the engine and warm it up completely.
2) Measure engine coolant temperature using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the engine coolant temperature between 75°C (167°F) and 95°C (203°F)?***

YES : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W11A0].>

NO : Inspect DTC P0125 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

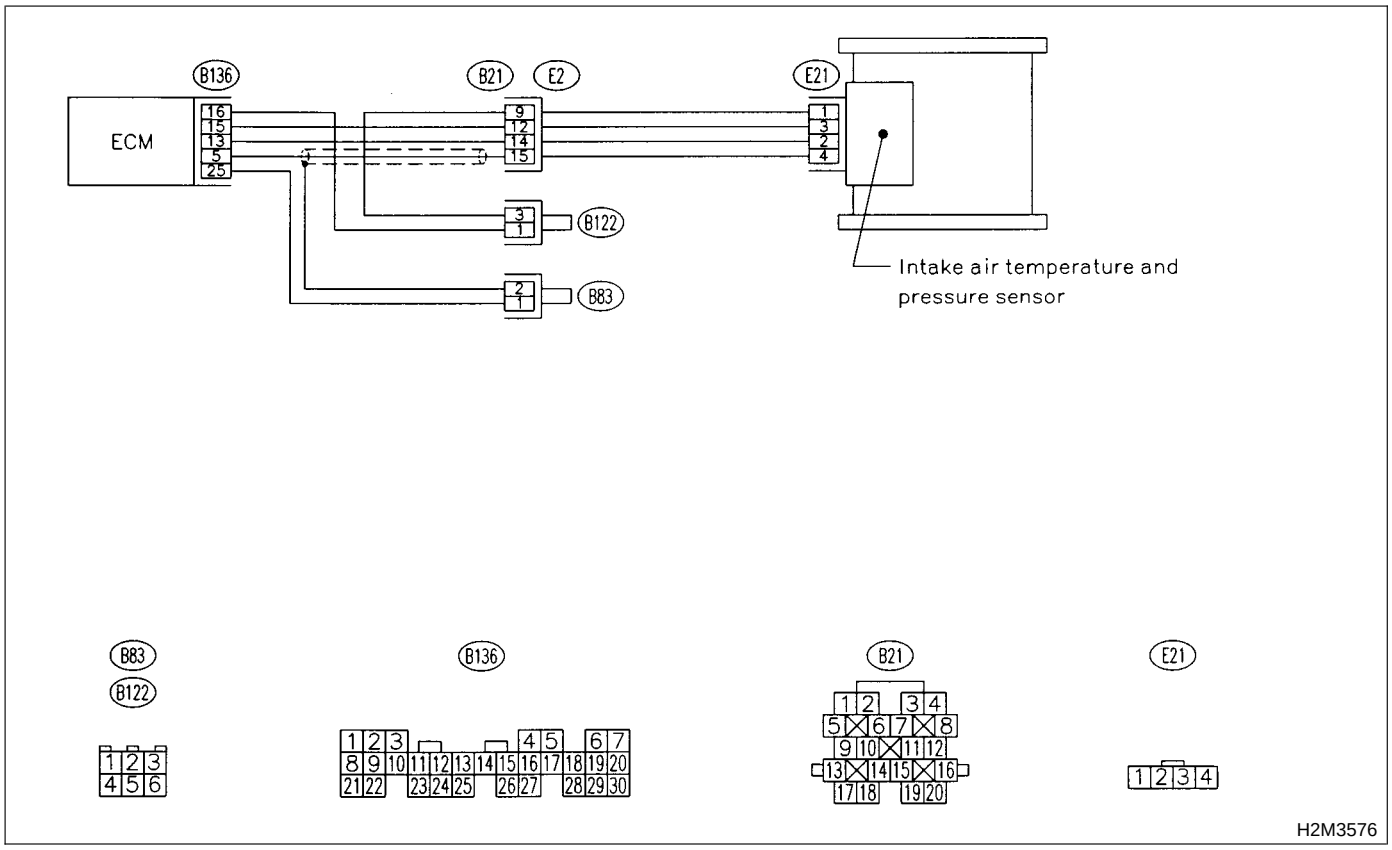
F: DTC P0112 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT LOW INPUT —

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

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

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

- **WIRING DIAGRAM:**



10F1 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

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

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

NOTE:
In this case, repair the following:
● Poor contact in intake air temperature and pressure sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21)
● Poor contact in joint connector (B83 and B122)

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

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

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

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W11A0].>
NO : Repair ground short circuit in harness between intake air temperature sensor and ECM connector.

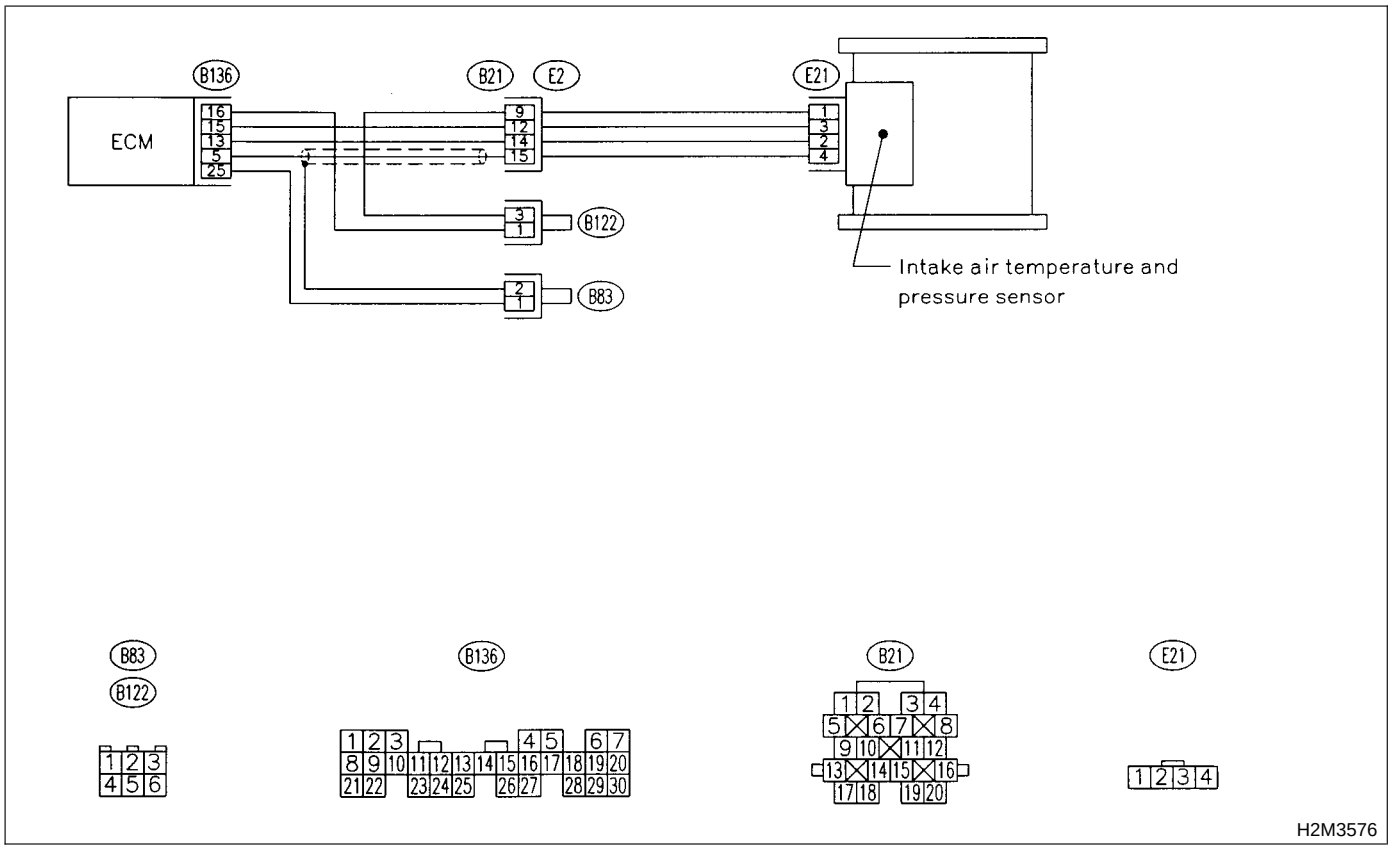
G: DTC P0113 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

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

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

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

- **WIRING DIAGRAM:**



10G1 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

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

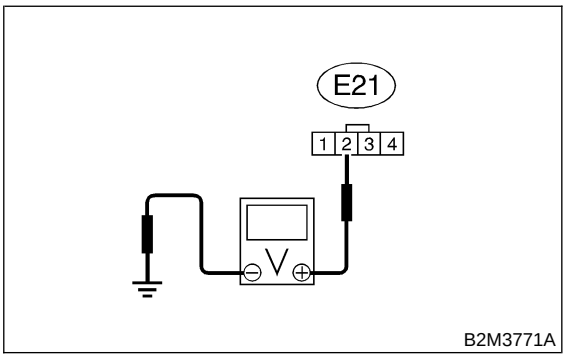
CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **10G2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in intake air temperature and pressure sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21)
● Poor contact in joint connector (B83 and B122)

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

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

Connector & terminal
(E21) No. 2 (+) — Engine ground (−):

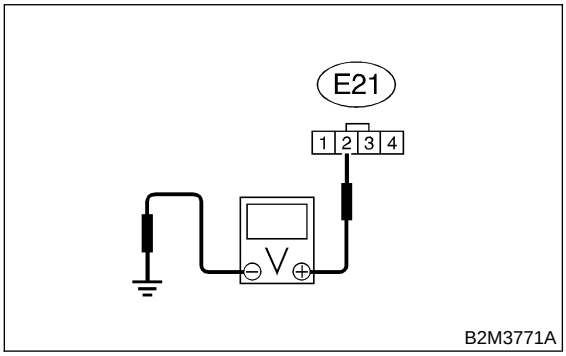


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between intake air temperature and pressure sensor and ECM connector.
NO : Go to step **10G3**.

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

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

Connector & terminal
(E21) No. 2 (+) — Engine ground (−):

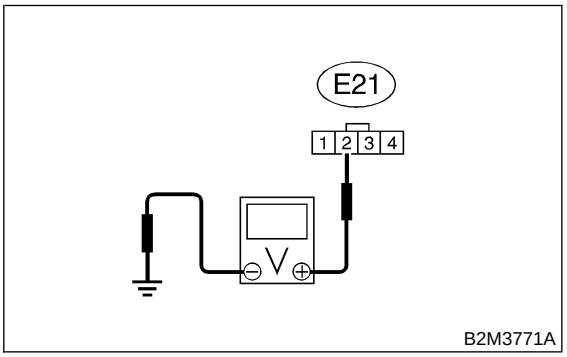


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between intake air temperature and pressure sensor and ECM connector.
NO : Go to step **10G4**.

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

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

Connector & terminal
(E21) No. 2 (+) — Engine ground (−):



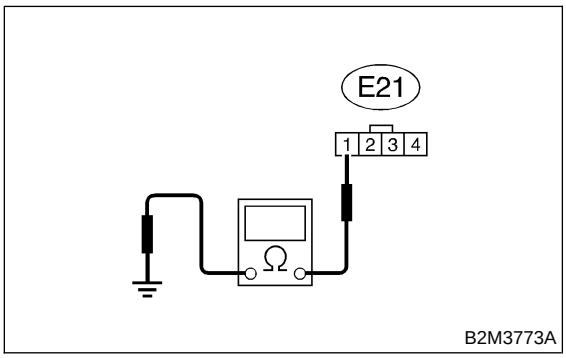
CHECK : ***Is the voltage more than 3 V?***
YES : Go to step **10G5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between intake air temperature and pressure sensor and ECM connector
- Poor contact in intake air temperature and pressure sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)
- Poor contact in joint connector (B83 and B122)

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

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

Connector & terminal
(E21) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W13A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between intake air temperature and pressure sensor and ECM connector
- Poor contact in intake air temperature and pressure sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)
- Poor contact in joint connector (B83 and B122)

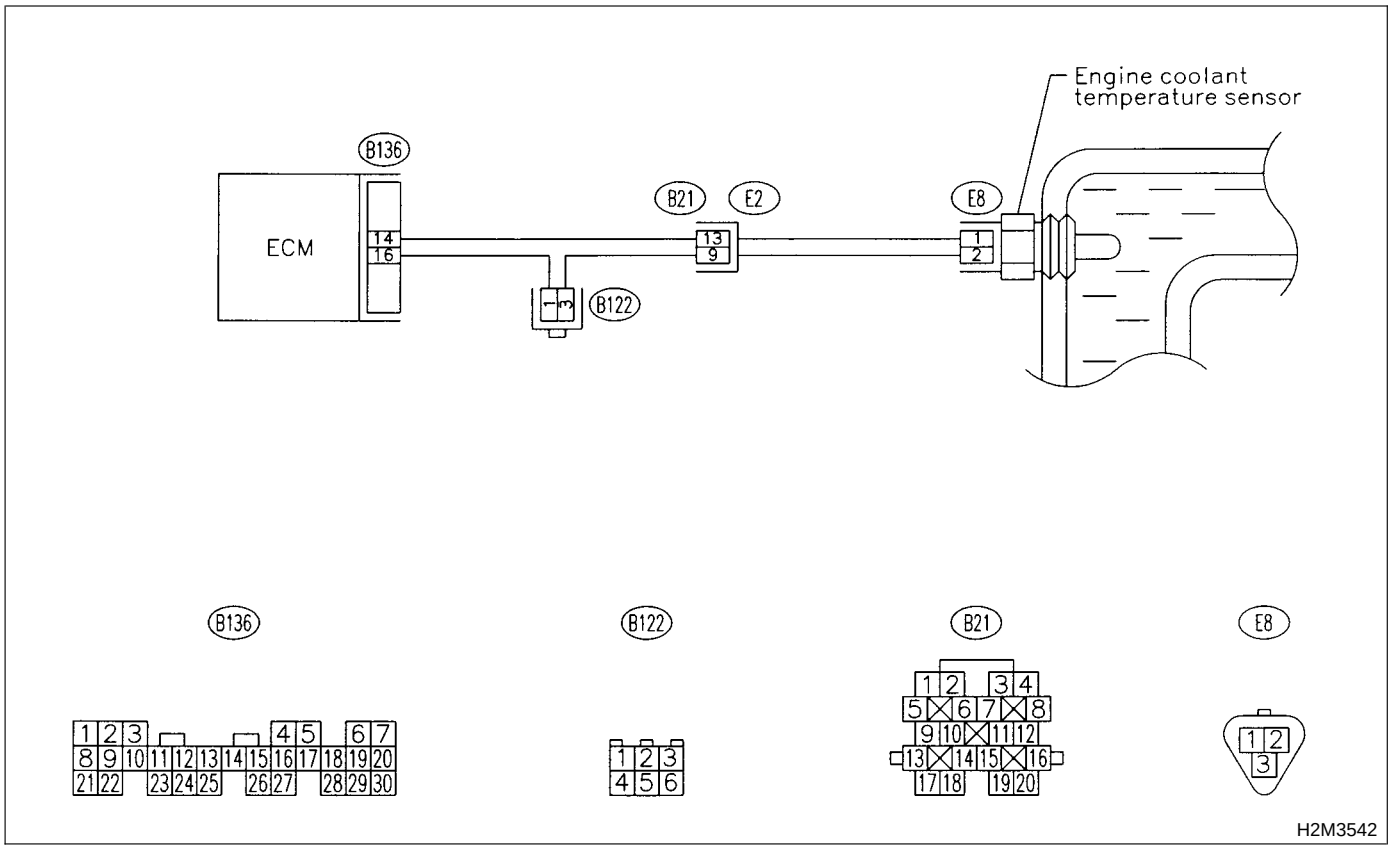
H: DTC P0116 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT LOW INPUT —

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

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

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

- **WIRING DIAGRAM:**



10H1 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value greater than 150°C (302°F)?***
YES : Go to step **10H2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in engine coolant temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21)
● Poor contact in joint connector (B122)

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

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

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

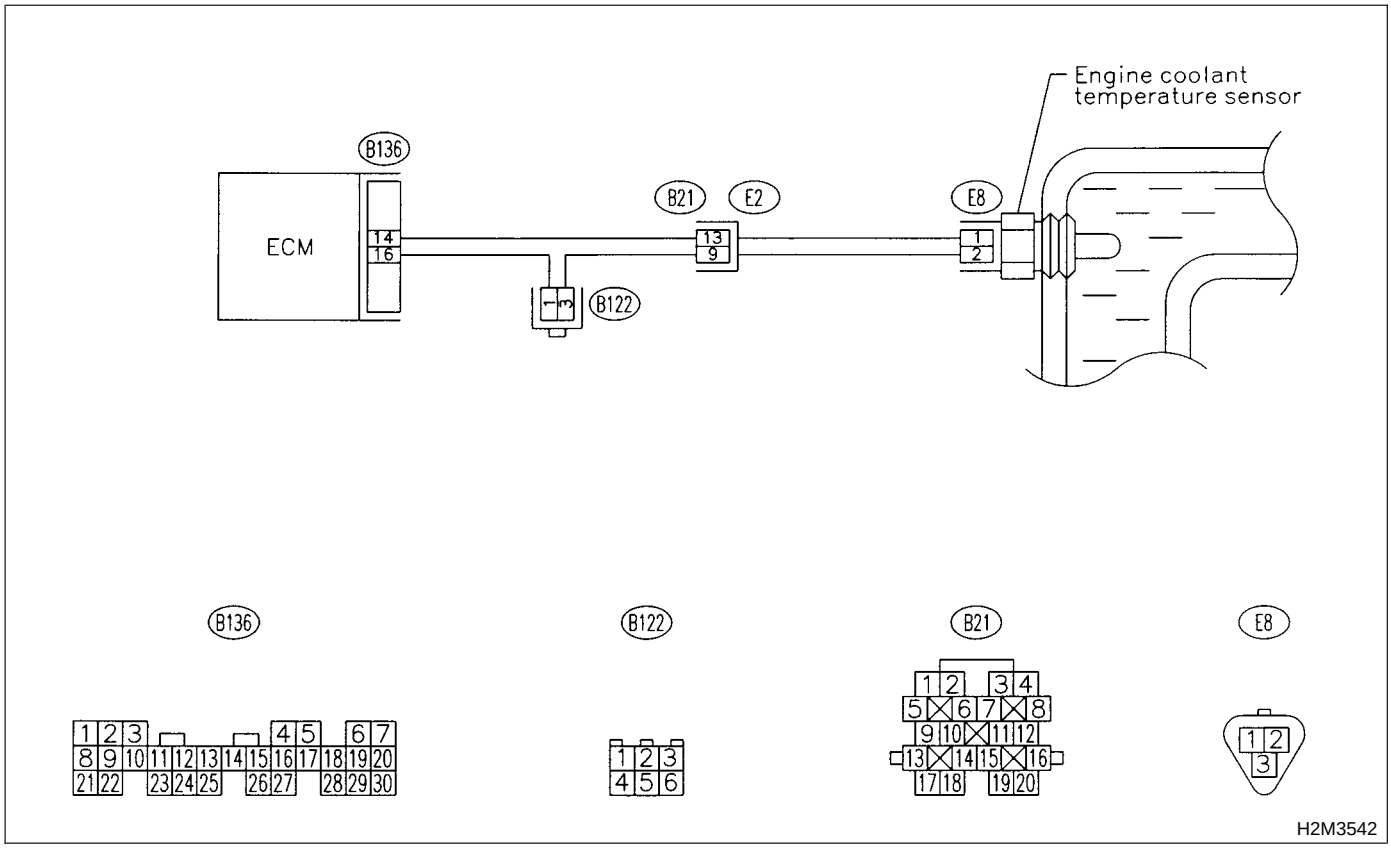
CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace engine coolant temperature sensor. <Ref. to 2-7 [W4A0].>
NO : Repair ground short circuit in harness between engine coolant temperature sensor and ECM connector.

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

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

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

- **WIRING DIAGRAM:**



10I1 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

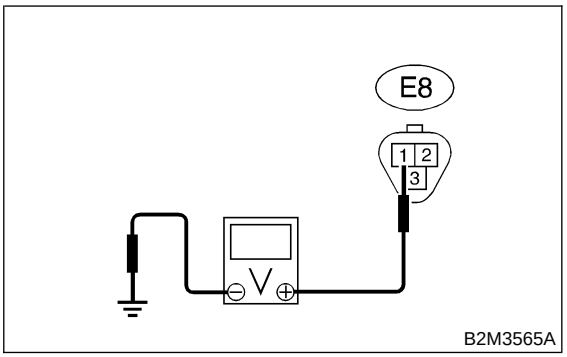
CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **10I2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in engine coolant temperature sensor
● Poor contact in ECM
● Poor contact in coupling connector (B21)
● Poor contact in joint connector (B122)

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

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

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

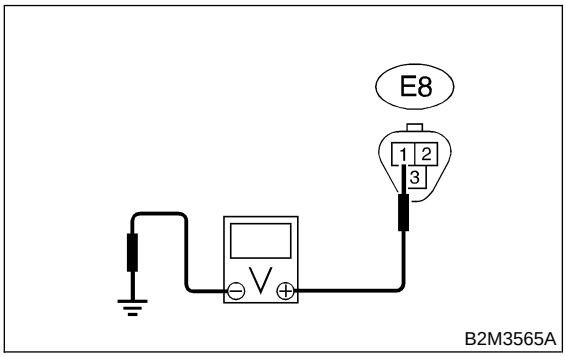


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.
NO : Go to step **10I3**.

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

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

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

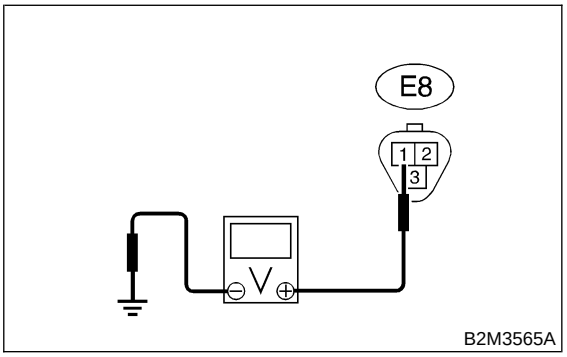


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.
NO : Go to step **10I4**.

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

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

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



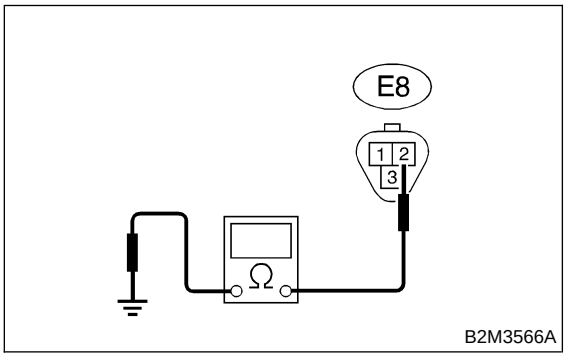
CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **10I5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)
- Poor contact in joint connector (B122)

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

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

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



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace engine coolant temperature sensor. <Ref. to 2-7 [W4A0].>
NO : Repair harness and connector.

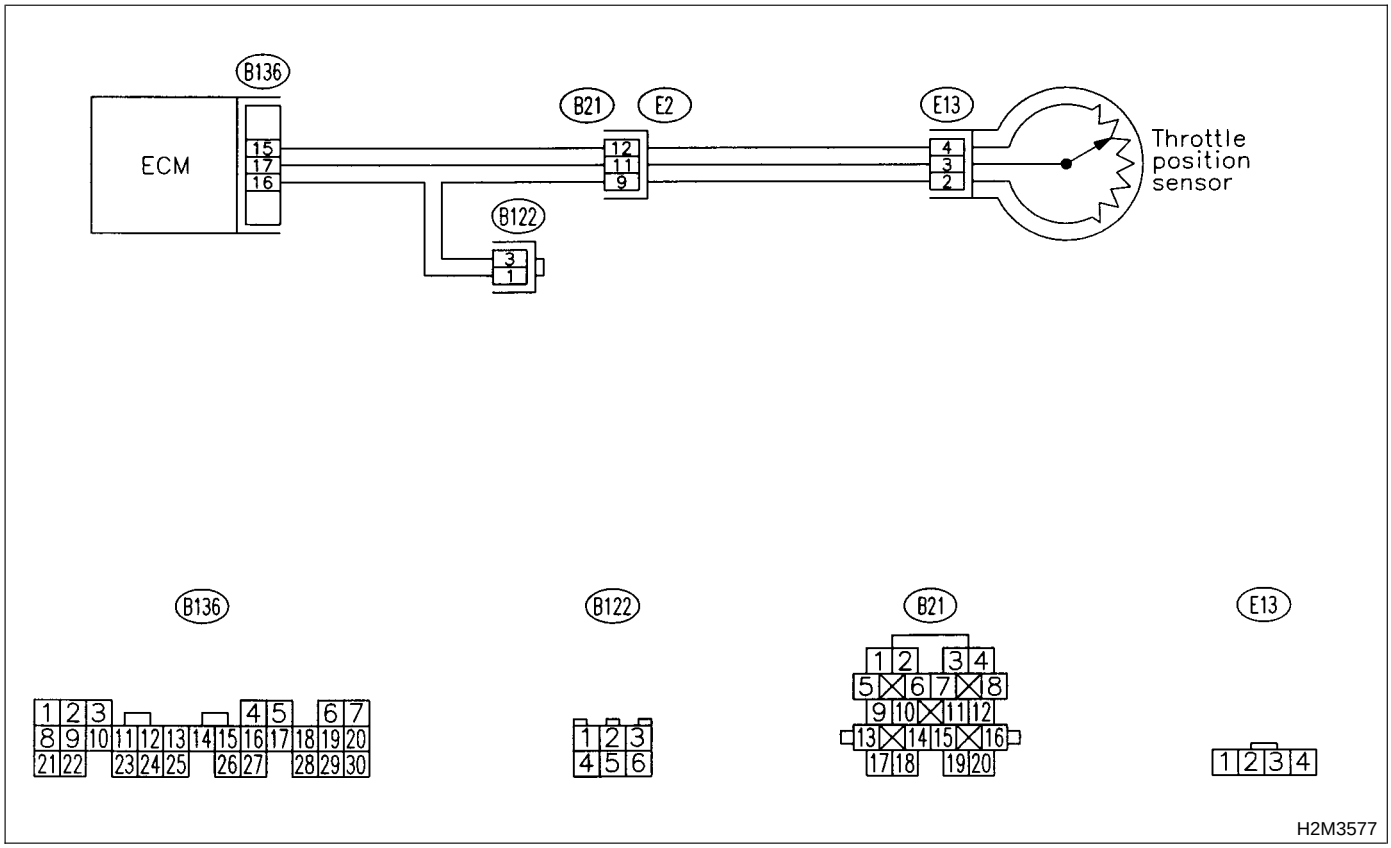
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)
- Poor contact in joint connector (B122)

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

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

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

- **WIRING DIAGRAM:**



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

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC 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. <Ref. to 2-7 [W10A0].>

MEMO:

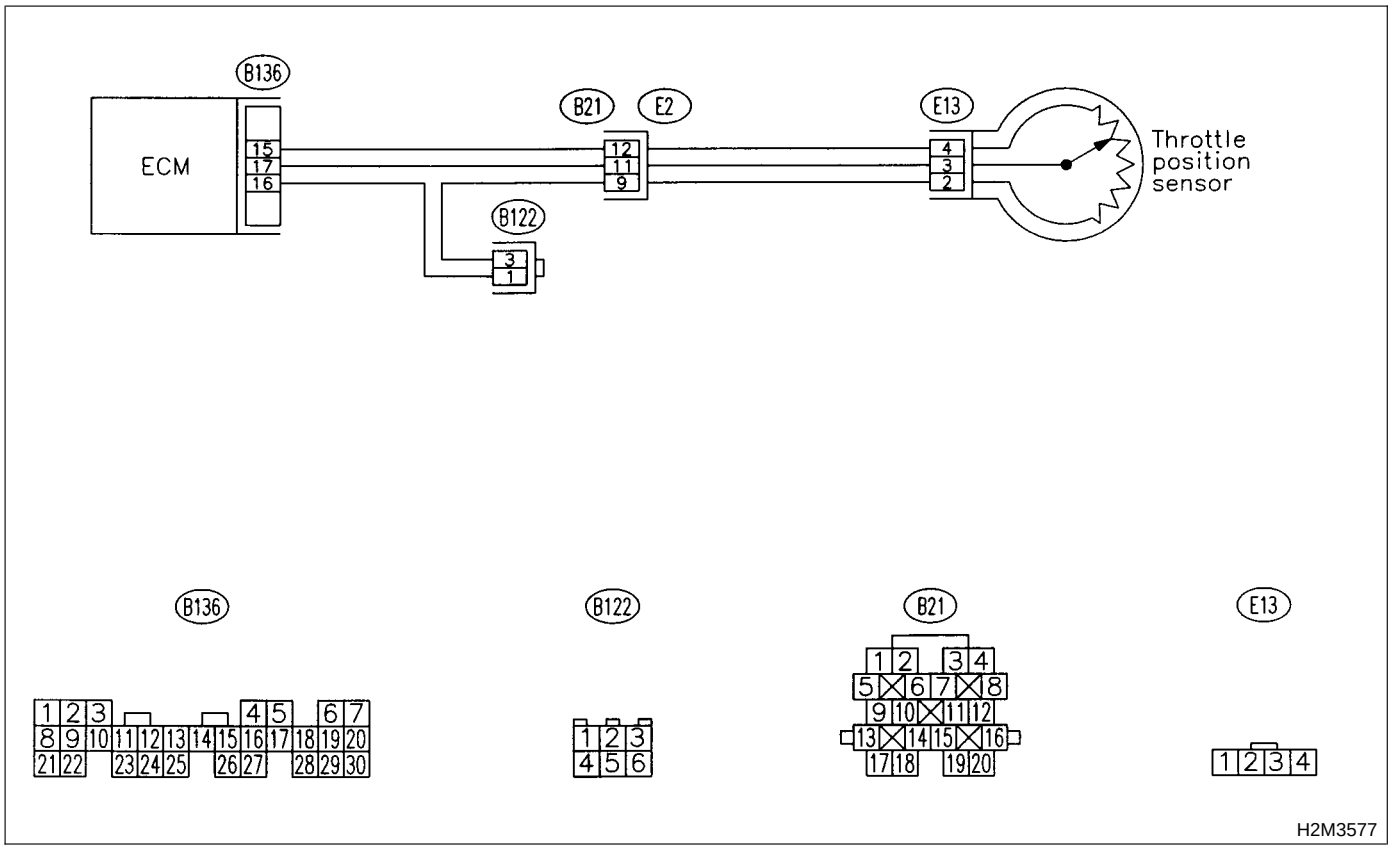
K: DTC P0122 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —

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

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

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

- **WIRING DIAGRAM:**



10K1 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
- Subaru Select Monitor

For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
- OBD-II general scan tool

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

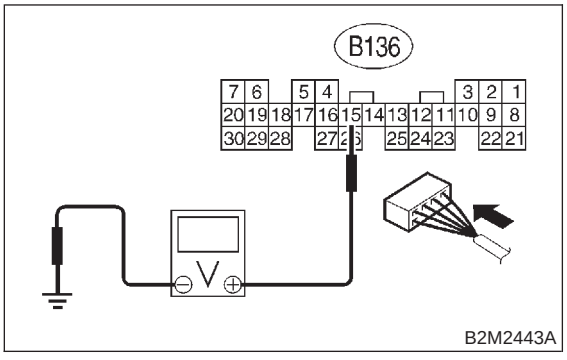
CHECK : ***Is the value less than 0.1 V?***
YES : Go to step **10K2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in throttle position sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B122)

10K2 : CHECK INPUT SIGNAL FOR ECM.

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

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

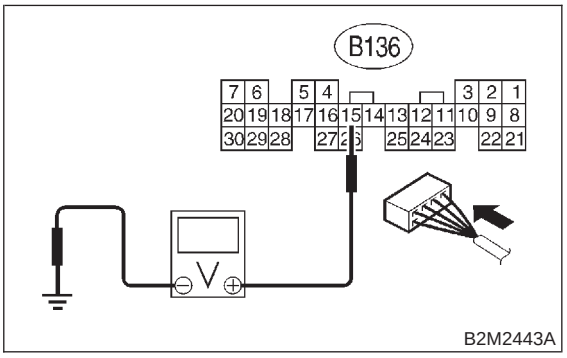


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10K4**.
NO : Go to step **10K3**.

10K3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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



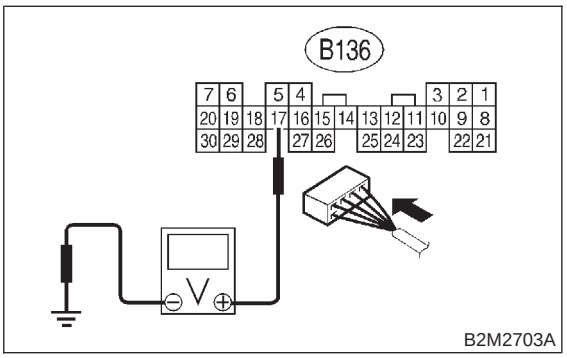
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10K4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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



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

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

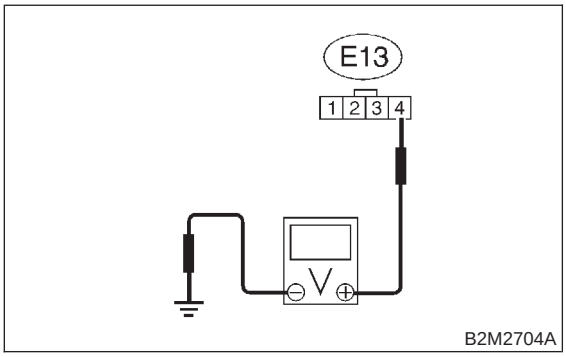
Measure voltage between ECM connector and chassis ground.

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

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

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

Connector & terminal
(E13) No. 4 (+) — Engine ground (−):



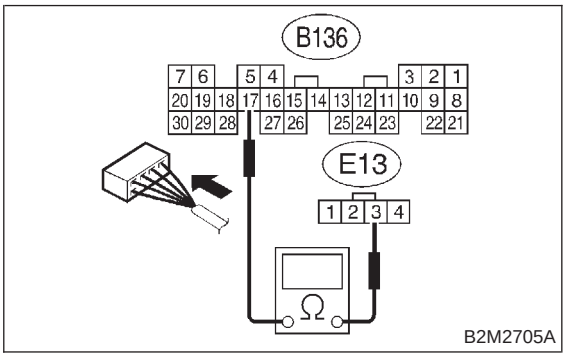
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10K7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in throttle position sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)
- Poor contact in joint connector (B122)

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

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

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



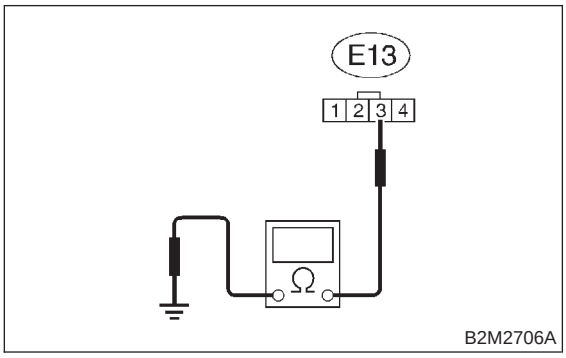
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10K8**.
NO : Repair harness and connector.

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

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

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

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



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

10K9 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in throttle position sensor connector?***
YES : Repair poor contact in throttle position sensor connector.
NO : Replace throttle position sensor. <Ref. to 2-7 [W10A0].>

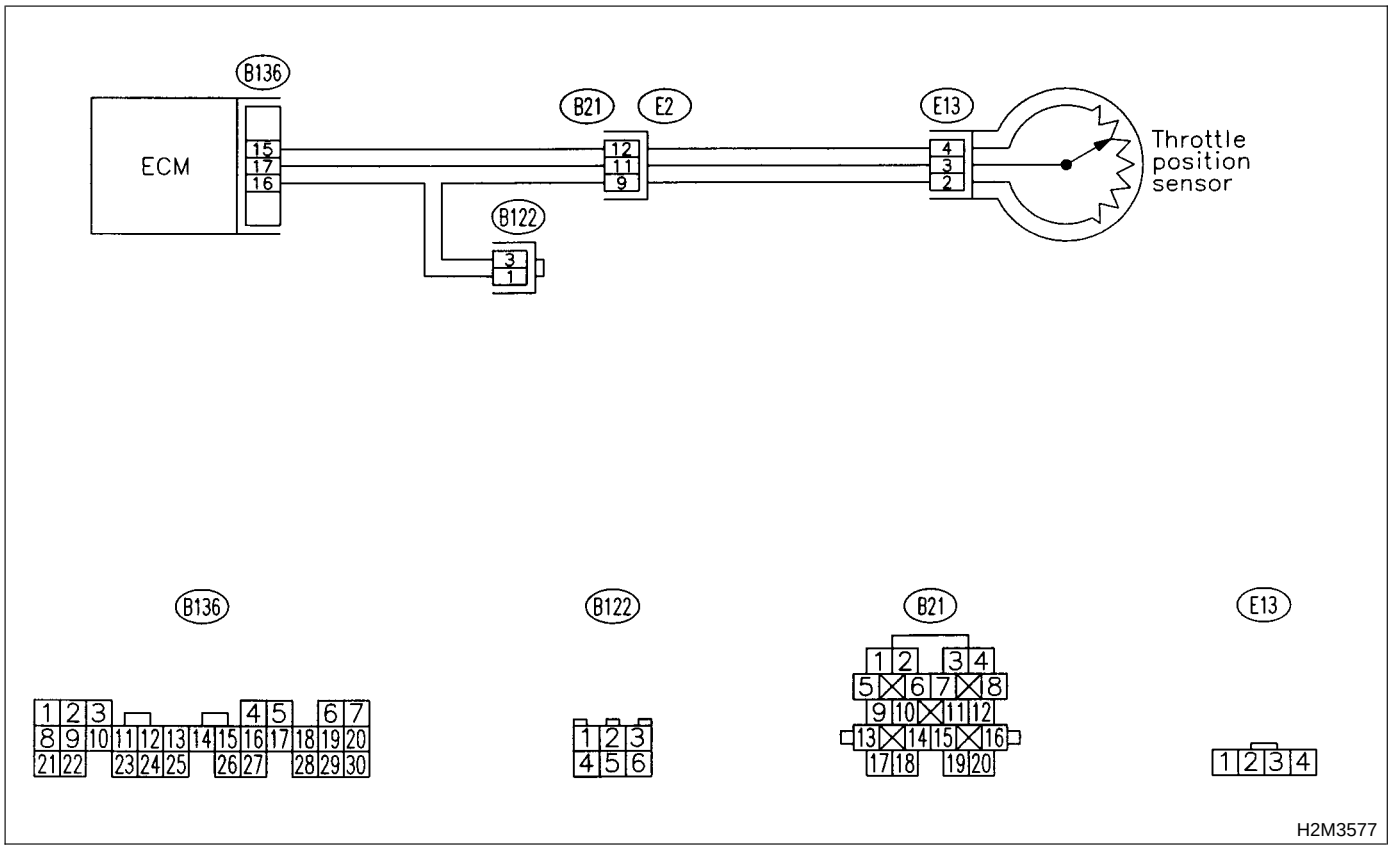
L: DTC P0123 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —

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

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

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

- **WIRING DIAGRAM:**



10L1 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

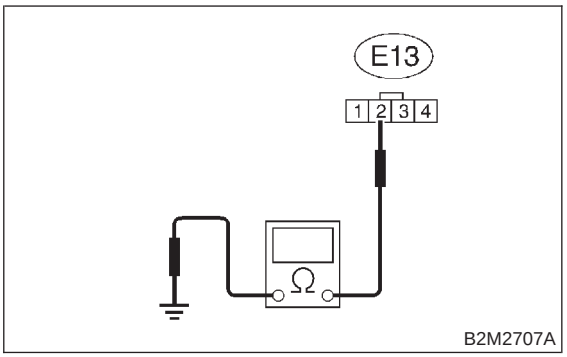
CHECK : ***Is the value more than 4.9 V?***
YES : Go to step **10L2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

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

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

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

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



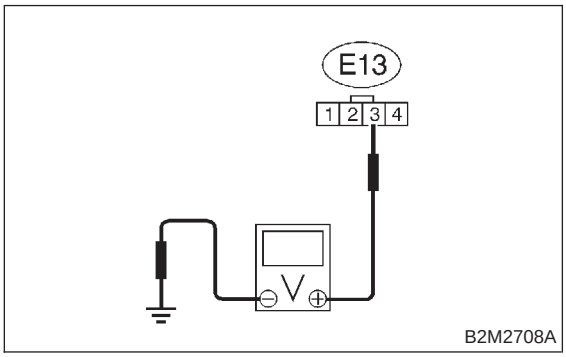
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10L3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between throttle position sensor and ECM connector
● Poor contact in coupling connector (B21)
● Poor contact in joint connector (B122)

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

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

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



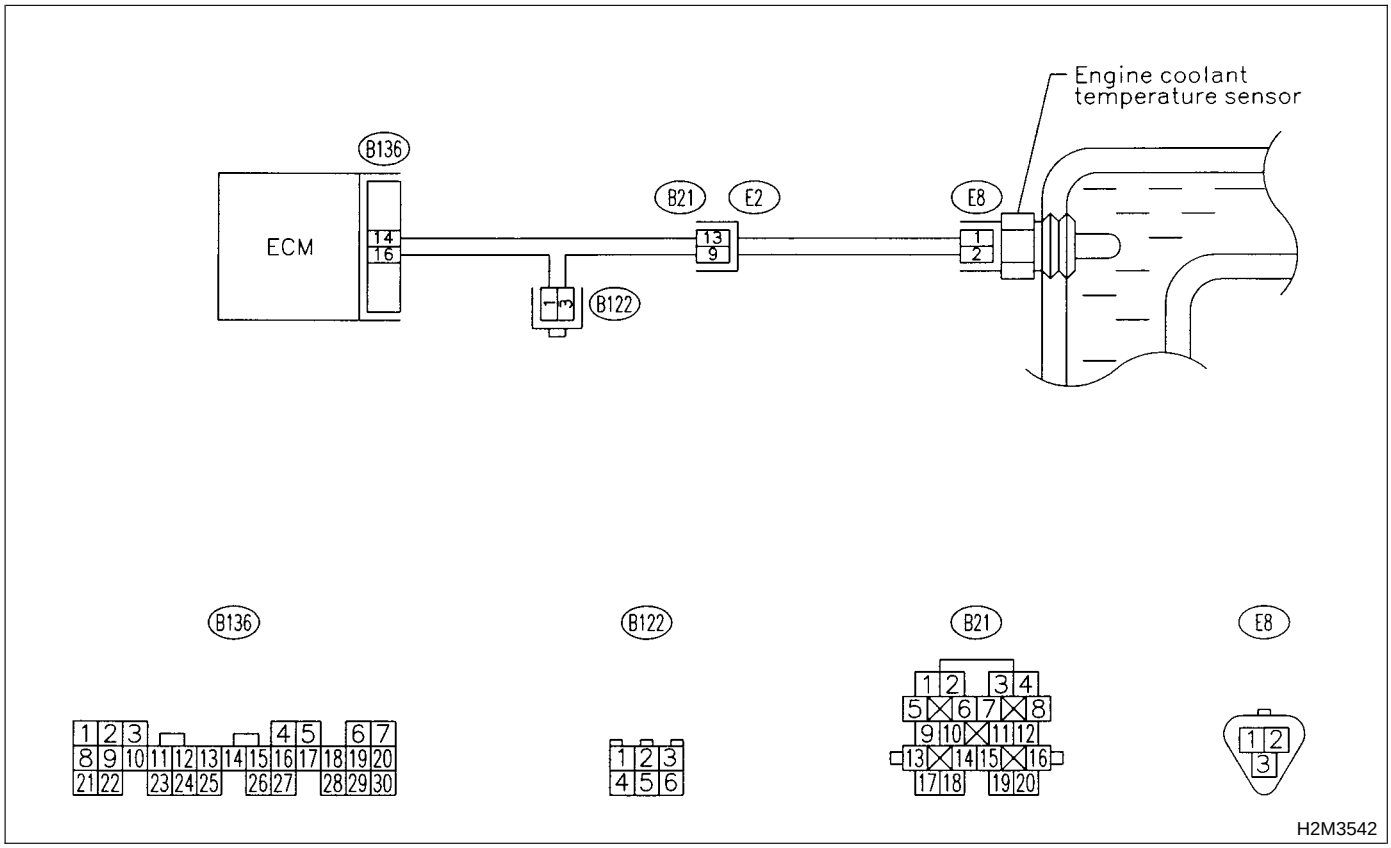
CHECK : ***Is the voltage more than 4.9 V?***
YES : Repair battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Replace throttle position sensor. <Ref. to 2-7 [W10A0].>

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

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine would not return to idling.

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

- **WIRING DIAGRAM:**



10M1 : CHECK ANY OTHER DTC ON DISPLAY.

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

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

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

NO : Go to step **10M2**.

10M2 : CHECK THERMOSTAT.

CHECK : ***Does thermostat remain opened?***

YES : Replace thermostat. <Ref. to 2-5 [W2A0].>

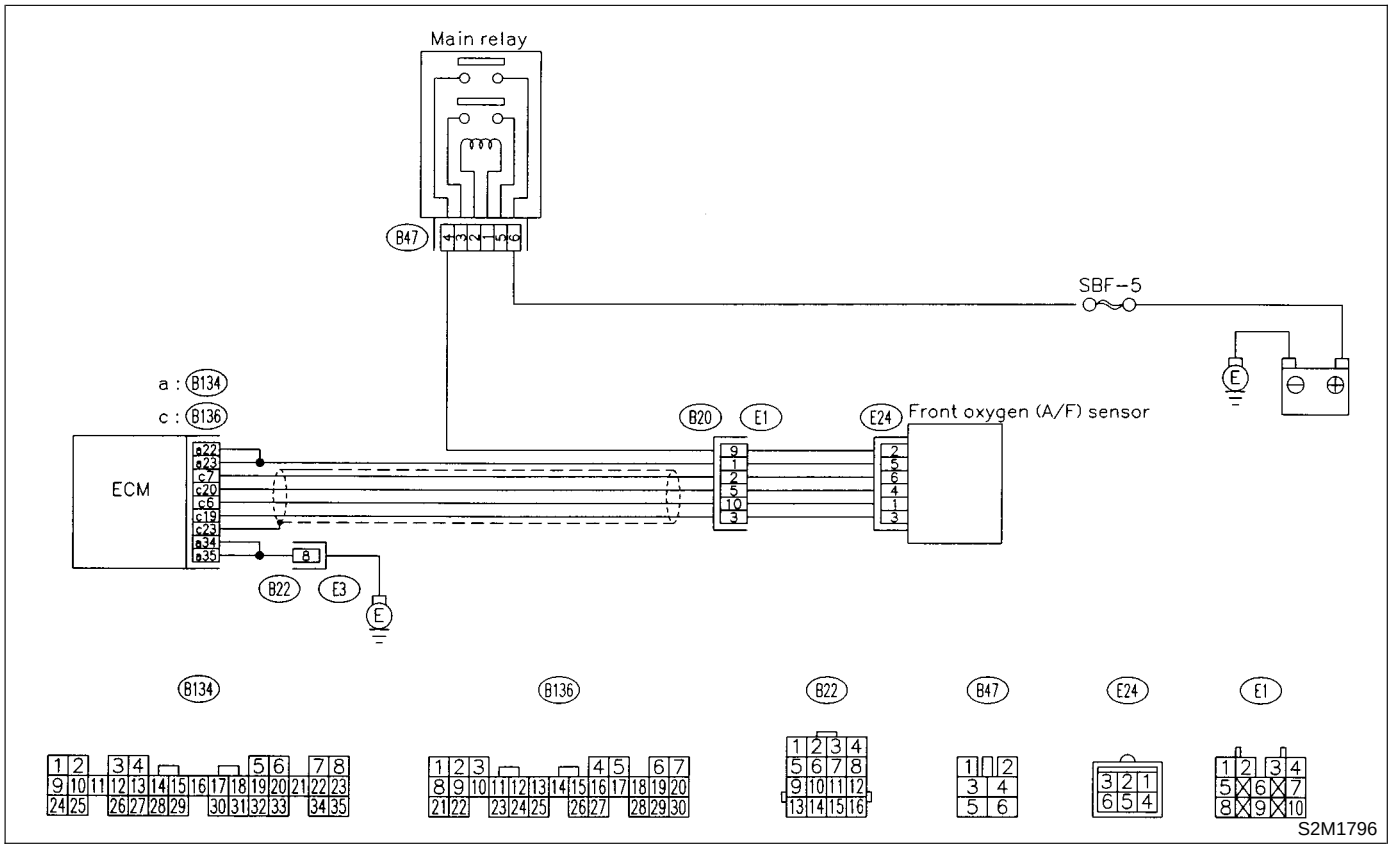
NO : Replace engine coolant temperature sensor. <Ref. to 2-7 [W4A0].>

N: DTC P0130 — FRONT OXYGEN (A/F) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

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

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

- **WIRING DIAGRAM:**



10N1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1130, P1131, P1132 or P1133?***

YES : Inspect DTC P1130, P1131, P1132 or P1133 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10N2**.

10N2 : CHECK FRONT OXYGEN (A/F) SENSOR DATA.

1) Start engine.
2) While observing the Subaru Select Monitor or OBD-II general scan tool screen, warm-up the engine until coolant temperature is above 70°C (160°F).
If the engine is already warmed-up, operate at idle speed for at least 1 minute.
3) Read data of front oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value equal to or more than 0.85 and equal to less than 1.15 in idling?***
YES : Go to step **10N3**.
NO : Go to step **10N4**.

10N3 : CHECK FRONT OXYGEN (A/F) SENSOR DATA.

Race engine at speeds from idling to 5,000 rpm for a total of 5 cycles.

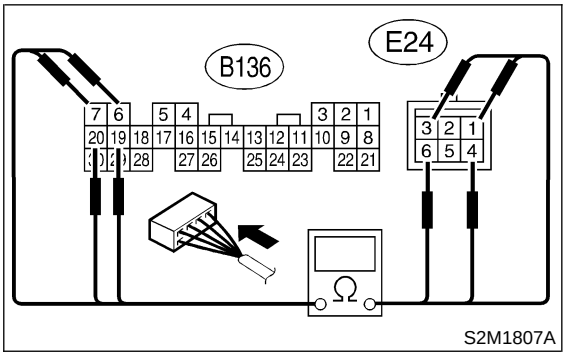
NOTE:
To increase engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed.

CHECK : ***Is the value more than 1.1 for a moment?***
YES : Go to step **10N6**.
NO : Go to step **10N4**.

10N4 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM and front oxygen (A/F) sensor connector.
3) Measure resistance between ECM and front oxygen (A/F) sensor.

Connector & terminals
(B136) No. 6 — (E24) No. 1:
(B136) No. 7 — (E24) No. 6:
(B136) No. 19 — (E24) No. 3:
(B136) No. 20 — (E24) No. 4:



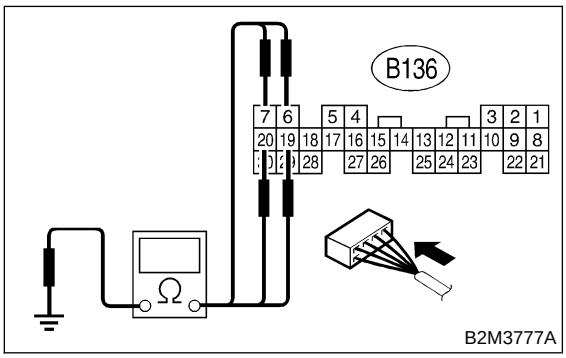
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10N5**.
NO : Repair open circuit between ECM and front oxygen (A/F) sensor.

10N5 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR.

Measure resistance between ECM and chassis ground.

Connector & terminals

(B136) No. 6 — Chassis ground:
(B136) No. 7 — Chassis ground:
(B136) No. 19 — Chassis ground:
(B136) No. 20 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10N6**.
NO : Repair ground short circuit between ECM and front oxygen (A/F) sensor.

10N6 : CHECK EXHAUST SYSTEM.

Check exhaust system parts.

NOTE:
Check the following items.
- Loose installation of portions
- Damage (crack, hole etc.) of parts
- Looseness of front oxygen (A/F) sensor
- Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor

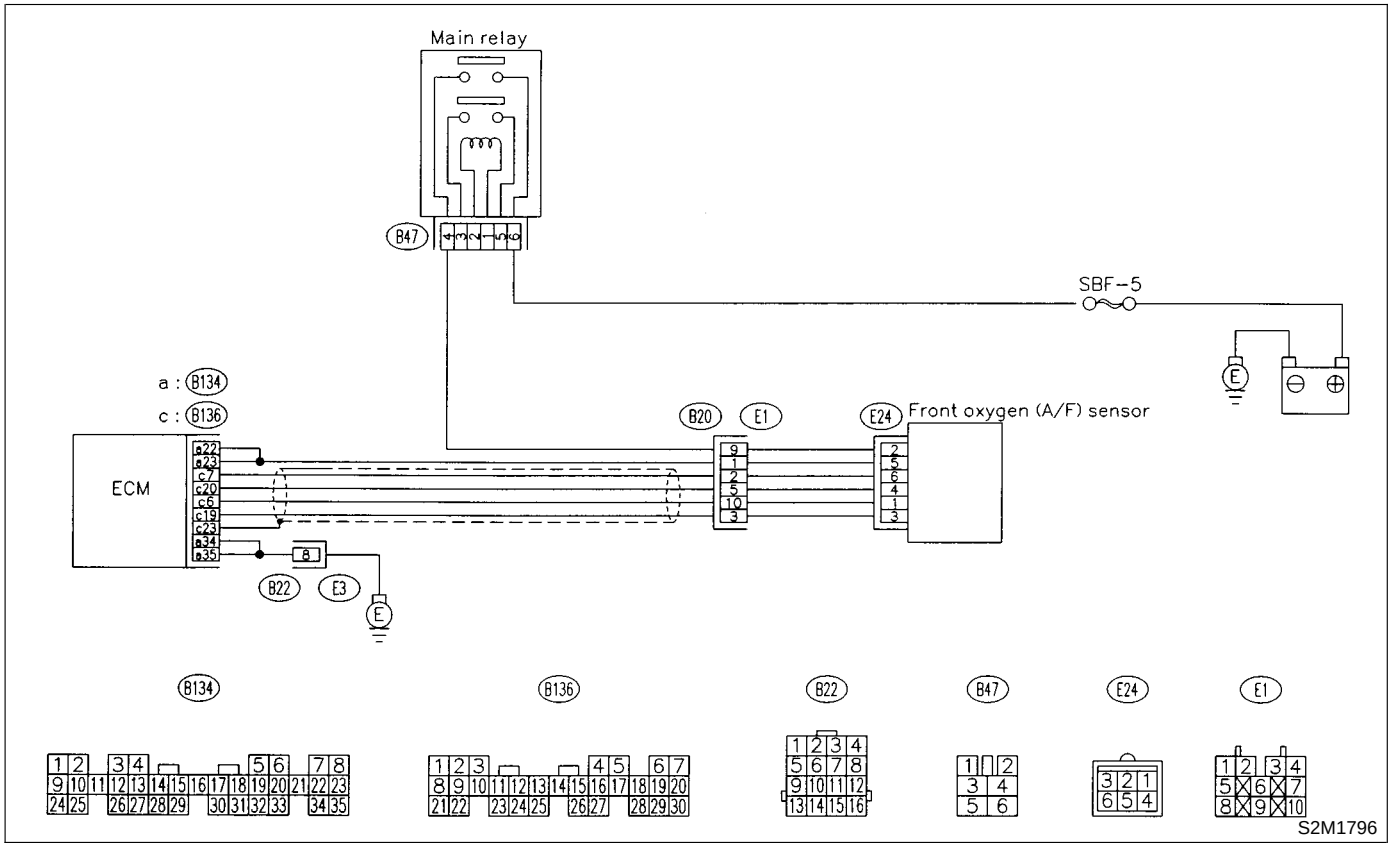
CHECK : ***Is there a fault in exhaust system?***
YES : Repair or replace faulty parts.
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W8A0].>

O: DTC P0133 — FRONT OXYGEN (A/F) SENSOR CIRCUIT SLOW RESPONSE —

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

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

- **WIRING DIAGRAM:**



10O1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1130, P1131, P1132 or P1133?***

YES : Inspect DTC P1130, P1131, P1132 or P1133 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 **10O2**.

10O2 : CHECK EXHAUST SYSTEM.

NOTE:
Check the following items.
- Loose installation of front portion of exhaust pipe onto cylinder heads
- Loose connection between front exhaust pipe and front catalytic converter
- Damage of exhaust pipe resulting in a hole

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

YES : Repair exhaust system.

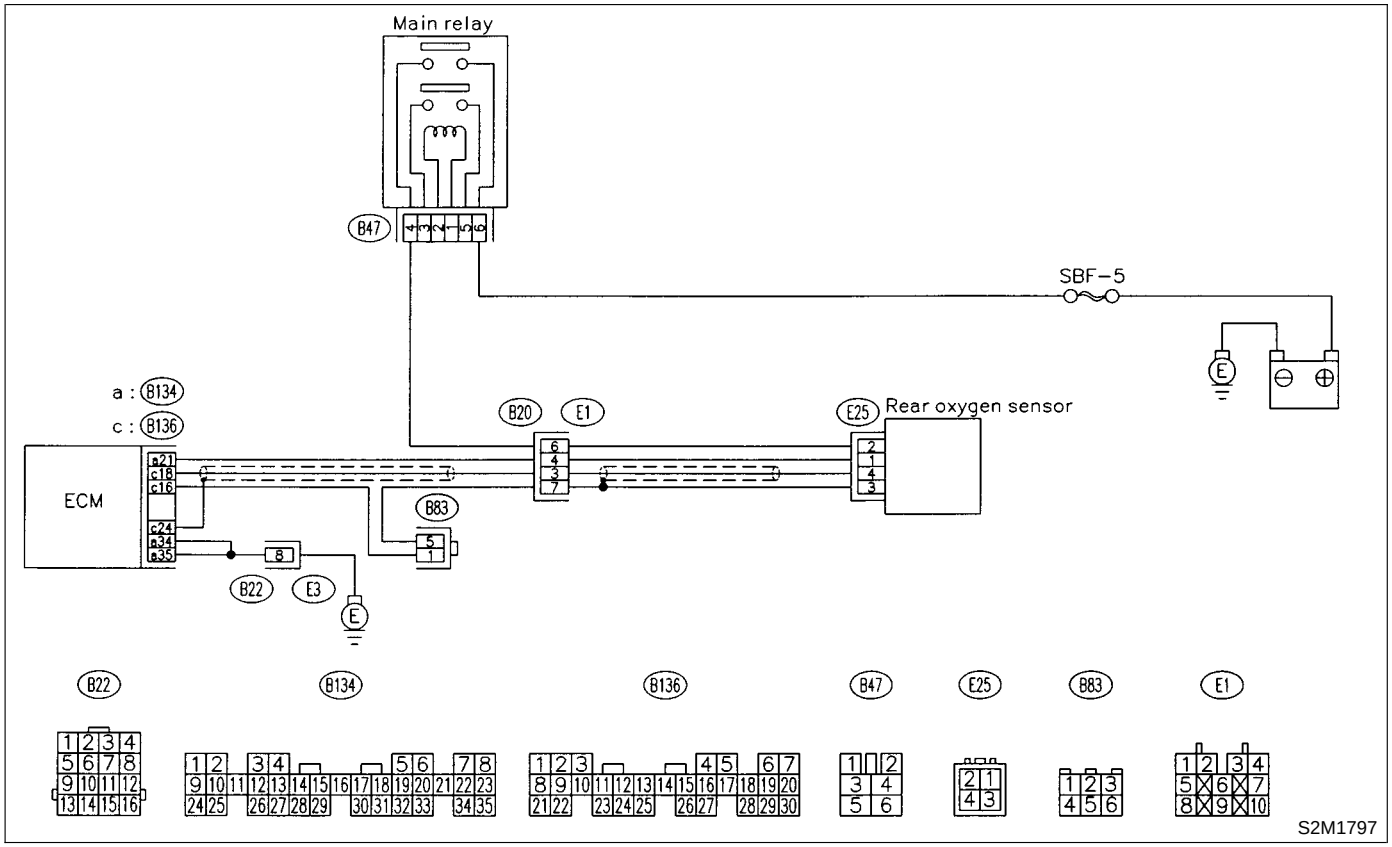
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W8A0].>

P: DTC P0136 — REAR OXYGEN SENSOR CIRCUIT MALFUNCTION —

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

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

- **WIRING DIAGRAM:**



10P1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1130 or P1131?***

YES : Go to step **10P2**.

NO : Go to step **10P3**.

10P2 : CHECK FAILURE CAUSE OF P0130.

Inspect DTC P1130 or P1131 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

CHECK : ***Is the failure cause of P1130 or P1131 in the fuel system?***

YES : Check fuel system.

NOTE:
In this case, it is not necessary to inspect DTC P0136.

NO : Go to step **10P3**.

10P3 : CHECK REAR OXYGEN SENSOR DATA.

1) 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.
2) Read data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Does the value fluctuate?***
YES : Go to step **10P7**.
NO : Go to step **10P4**.

10P4 : CHECK REAR OXYGEN SENSOR DATA.

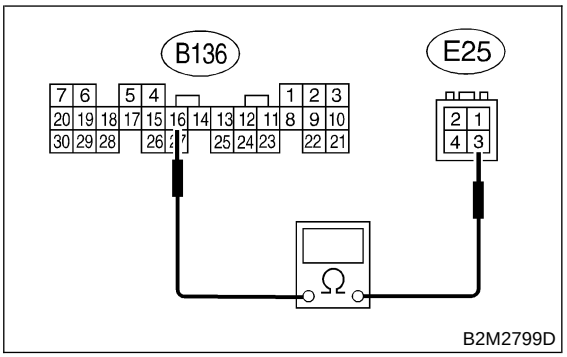
Read data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II General Scan Tool.

CHECK : ***Is the value fixed between 0.2 and 0.4 V?***
YES : Go to step **10P5**.
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W9A0].>

10P5 : CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 16 — (E25) No. 3:

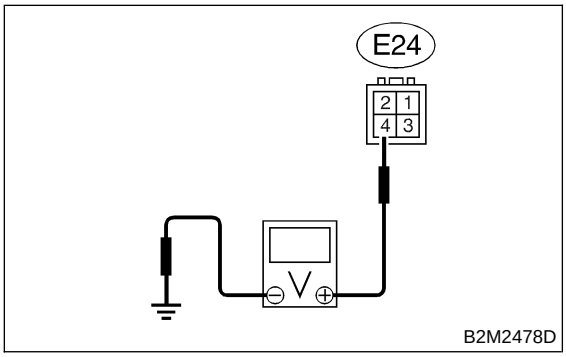


CHECK : ***Is the resistance more than 3 Ω?***
YES : Repair open circuit in harness between ECM and rear oxygen sensor connector.
NO : Go to step **10P6**.

10P6 : 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
(E24) No. 4 (+) — Engine ground (−):



CHECK : ***Is the voltage more than 0.2 V?***
YES : Replace rear oxygen sensor. <Ref. to 2-7 [W9A0].>
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

10P7 : CHECK EXHAUST SYSTEM.

Check exhaust system parts.

NOTE:
Check the following items.
- Loose installation of portions
- Damage (crack, hole etc.) of parts
- Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor

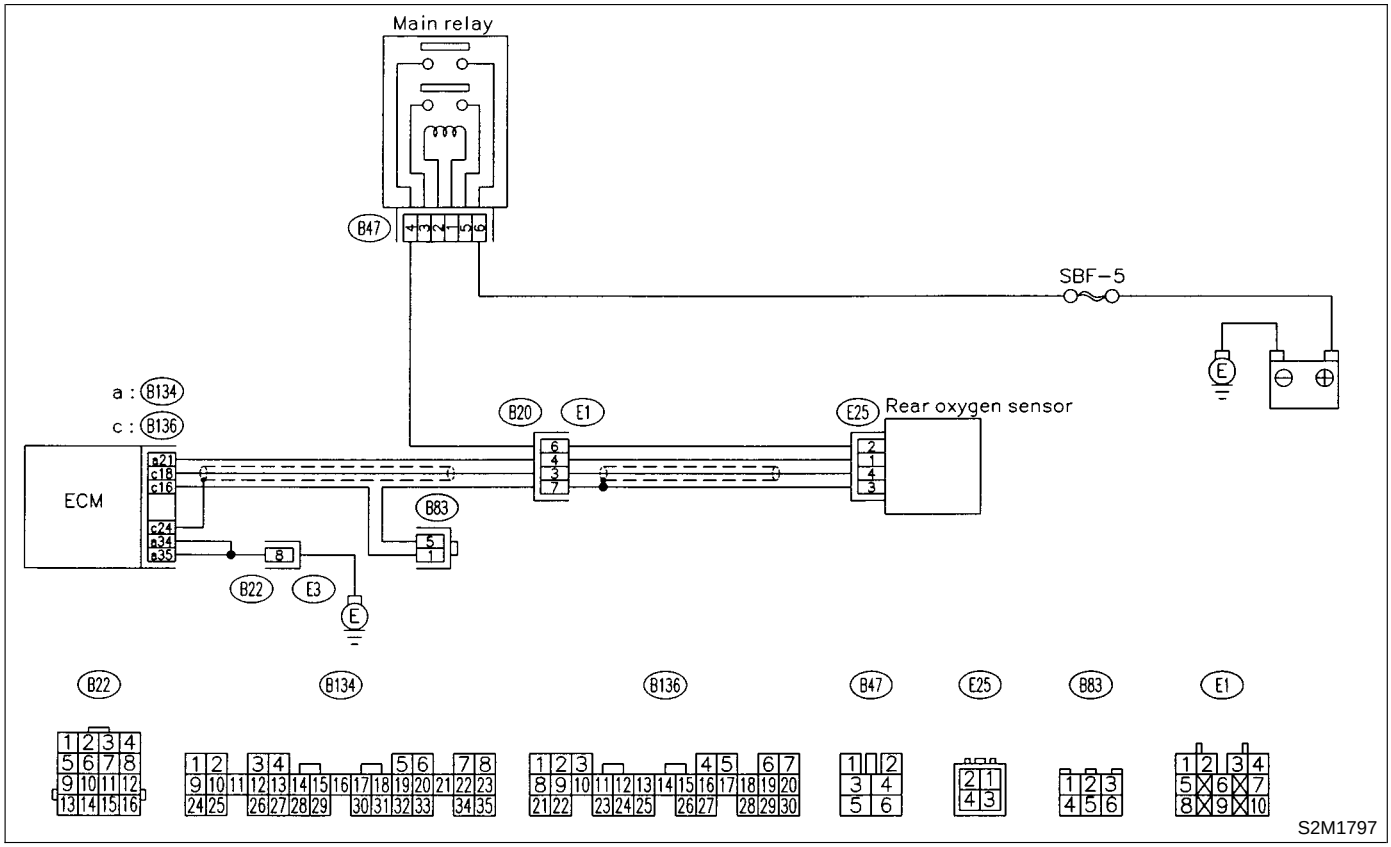
CHECK : ***Is there a fault in exhaust system?***
YES : Repair or replace faulty parts.
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W9A0].>

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

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

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

- **WIRING DIAGRAM:**



10Q1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0136?***

YES : Inspect DTC P0136 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

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

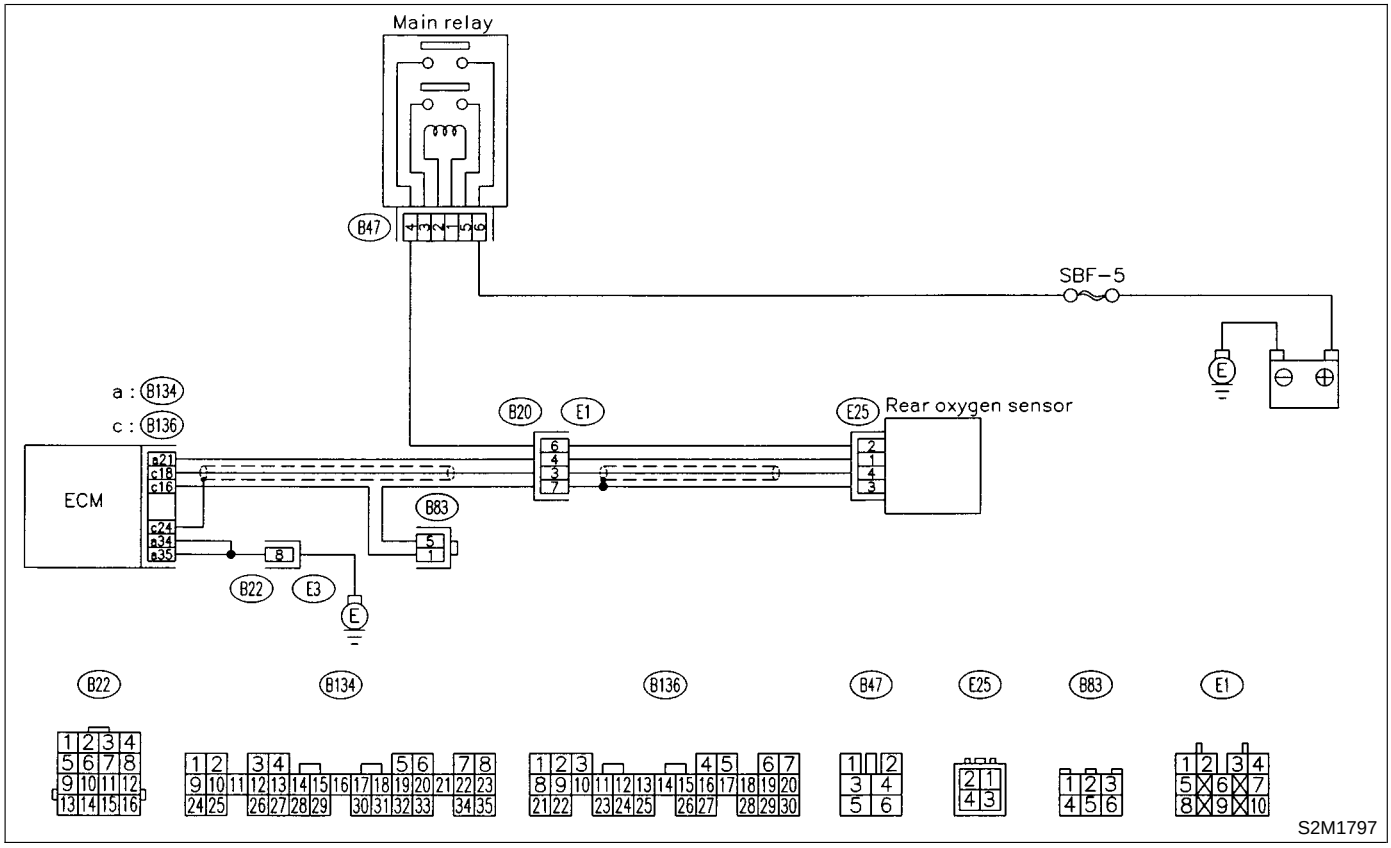
NO : Replace rear oxygen sensor. <Ref. to 2-7 [W9A0].>

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

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

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

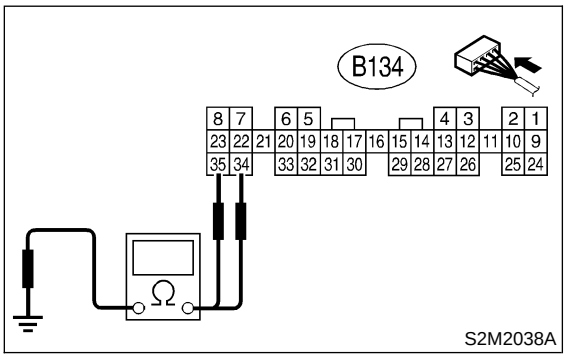
- **WIRING DIAGRAM:**



10R1 : CHECK GROUND CIRCUIT OF ECM.

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

Connector & terminal
(B134) No. 35 — Chassis ground:
(B134) No. 34 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10R2**.
NO : Repair harness and connector.

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

10R2 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of rear oxygen sensor heater current using Subaru Select Monitor or OBD-II general scan tool.

NOTE:
- Subaru Select Monitor

For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
- OBD-II scan tool

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

CHECK : ***Is the value more than 0.2 A?***
YES : Repair connector.

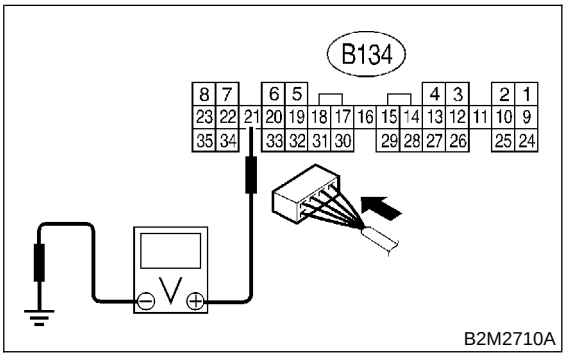
NOTE:
In this case, repair the following:
- Poor contact in rear oxygen sensor connector
- Poor contact in rear oxygen sensor connecting harness connector
- Poor contact in ECM connector

NO : Go to step **10R3**.

10R3 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

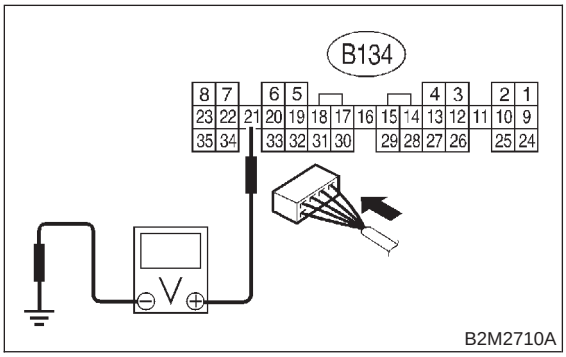


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **10R6**.
NO : Go to step **10R4**.

10R4 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

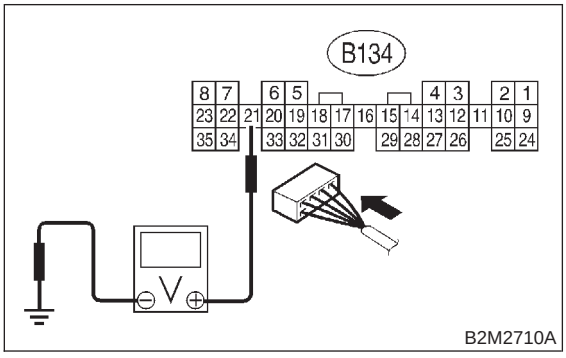


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10R5**.

10R5 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):

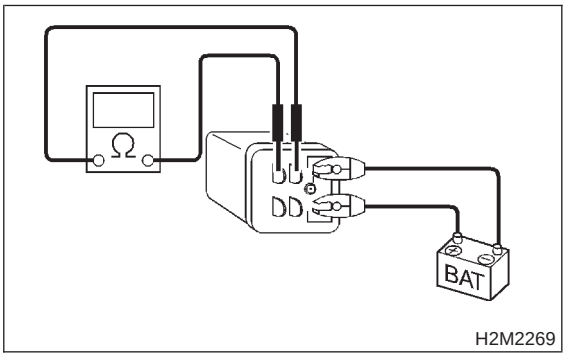


CHECK : ***Is the voltage less than 1.0 V?***
YES : Replace ECM. <Ref. to 2-7 [W17A0].>
NO : Repair battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>

10R6 : 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. 4 — No. 6:

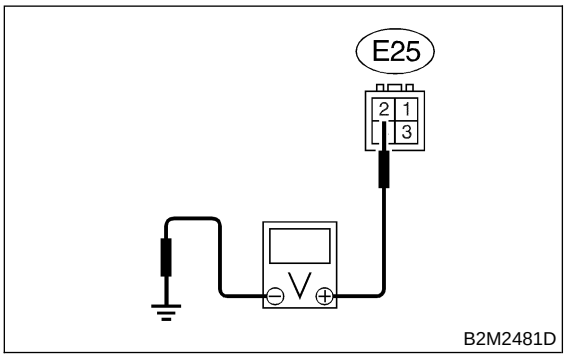


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10R7**.
NO : Replace main relay.

10R7 : CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from rear oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between rear oxygen sensor connector and engine ground or chassis ground.

Connector & terminal
(E25) No. 2 (+) — Chassis ground (−):



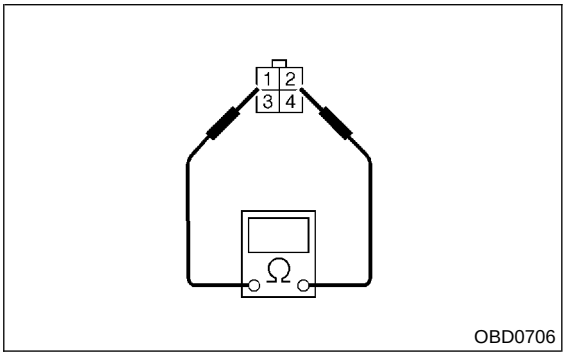
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10R8**.
NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between battery and rear oxygen sensor connector
- Poor contact in rear oxygen sensor connector
- Poor contact in coupling connector (E1)

10R8 : CHECK REAR OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between rear oxygen sensor connector terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 30 Ω?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
- Poor contact in rear oxygen sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (E1)

NO : Replace rear oxygen sensor. <Ref. to 2-7 [W9A0].>

S: DTC P0170 — FUEL TRIM MALFUNCTION —

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

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

10S1 : CHECK EXHAUST SYSTEM.

CHECK : ***Are there holes or loose bolts on exhaust system?***
YES : Repair exhaust system.
NO : Go to step **10S2**.

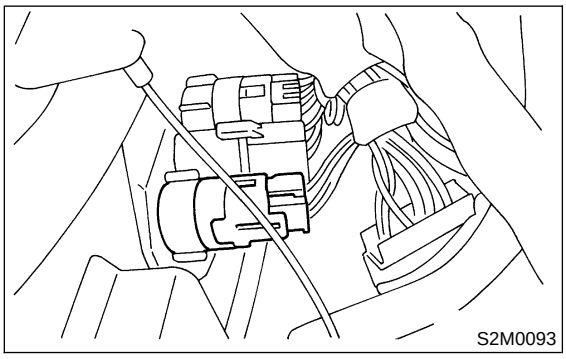
10S2 : CHECK AIR INTAKE SYSTEM.

CHECK : ***Are there holes, loose bolts or disconnection of hose on air intake system?***
YES : Repair air intake system.
NO : Go to step **10S3**.

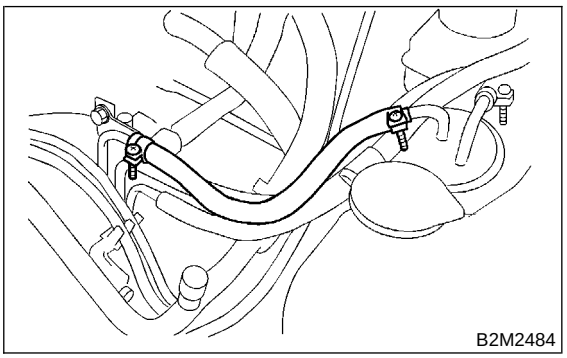
10S3 : CHECK FUEL PRESSURE.

WARNING:
● Place “NO FIRE” signs near the working area.
● Be careful not to spill fuel on the floor.

1) Release fuel pressure.
   (1) Disconnect connector from fuel pump relay.


S2M0093

   (2) Start the engine and run it until it stalls.
   (3) After the engine stalls, crank it for five more seconds.
   (4) Turn ignition switch to OFF.
2) Connect connector to fuel pump relay.
3) Disconnect fuel delivery hose from fuel filter, and connect fuel pressure gauge.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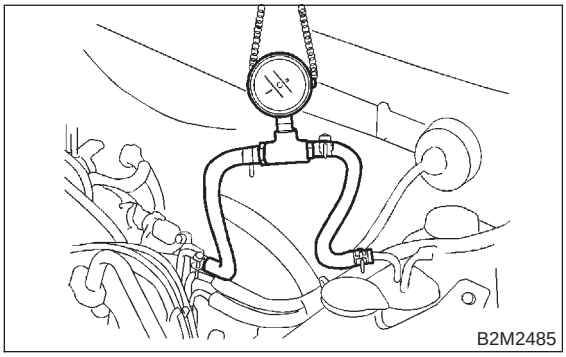
4) Install fuel filler cap.
5) Start the engine and idle while gear position is neutral.
6) Measure fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.

WARNING:
Before removing fuel pressure gauge, release fuel pressure.

NOTE:
If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.



CHECK : ***Is fuel pressure between 284 and 314 kPa (2.9 — 3.2 kg/cm^2, 41 — 46 psi)?***
YES : Go to step **10S4**.
NO : Repair the following items.

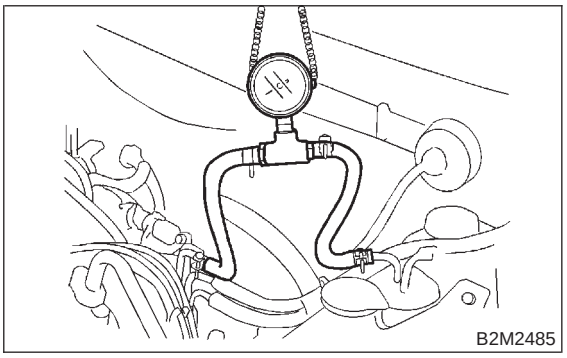
Fuel pressure too high	● Clogged fuel return line or bent hose
Fuel pressure too low	● Improper fuel pump discharge ● Clogged fuel supply line

10S4 : CHECK FUEL PRESSURE.

After connecting pressure regulator vacuum hose, measure fuel pressure.

WARNING:
Before removing fuel pressure gauge, release fuel pressure.

NOTE:
● If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.
● If out of specification as measured at this step, check or replace pressure regulator and pressure regulator vacuum hose.



CHECK : ***Is fuel pressure between 206 and 235 kPa (2.1 — 2.4 kg/cm^2, 30 — 34 psi)?***
YES : Go to step **10S5**.
NO : Repair the following items.

Fuel pressure too high	● Faulty pressure regulator ● Clogged fuel return line or bent hose
Fuel pressure too low	● Faulty pressure regulator ● Improper fuel pump discharge ● Clogged fuel supply line

10S5 : CHECK ENGINE COOLANT TEMPERATURE SENSOR.

1) Start the engine and warm-up completely.
2) Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is temperature between 70°C (158°F) and 100°C (212°F)?***
YES : Go to step **10S6**.
NO : Replace engine coolant temperature sensor. <Ref. to 2-7 [W4A0].>

10S6 : CHECK INTAKE MANIFOLD PRESSURE SENSOR SIGNAL.

1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).
2) Place the select lever in "N" or "P" position.
3) Turn A/C switch to OFF.
4) Turn all accessory switches to OFF.
5) Read data of intake manifold pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

Specification:

Engine speed	Specified value
Idling	24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 41.3 inHg)
Ignition ON	73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)

CHECK : ***Is the voltage within the specifications?***
YES : Contact with SOA service.

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

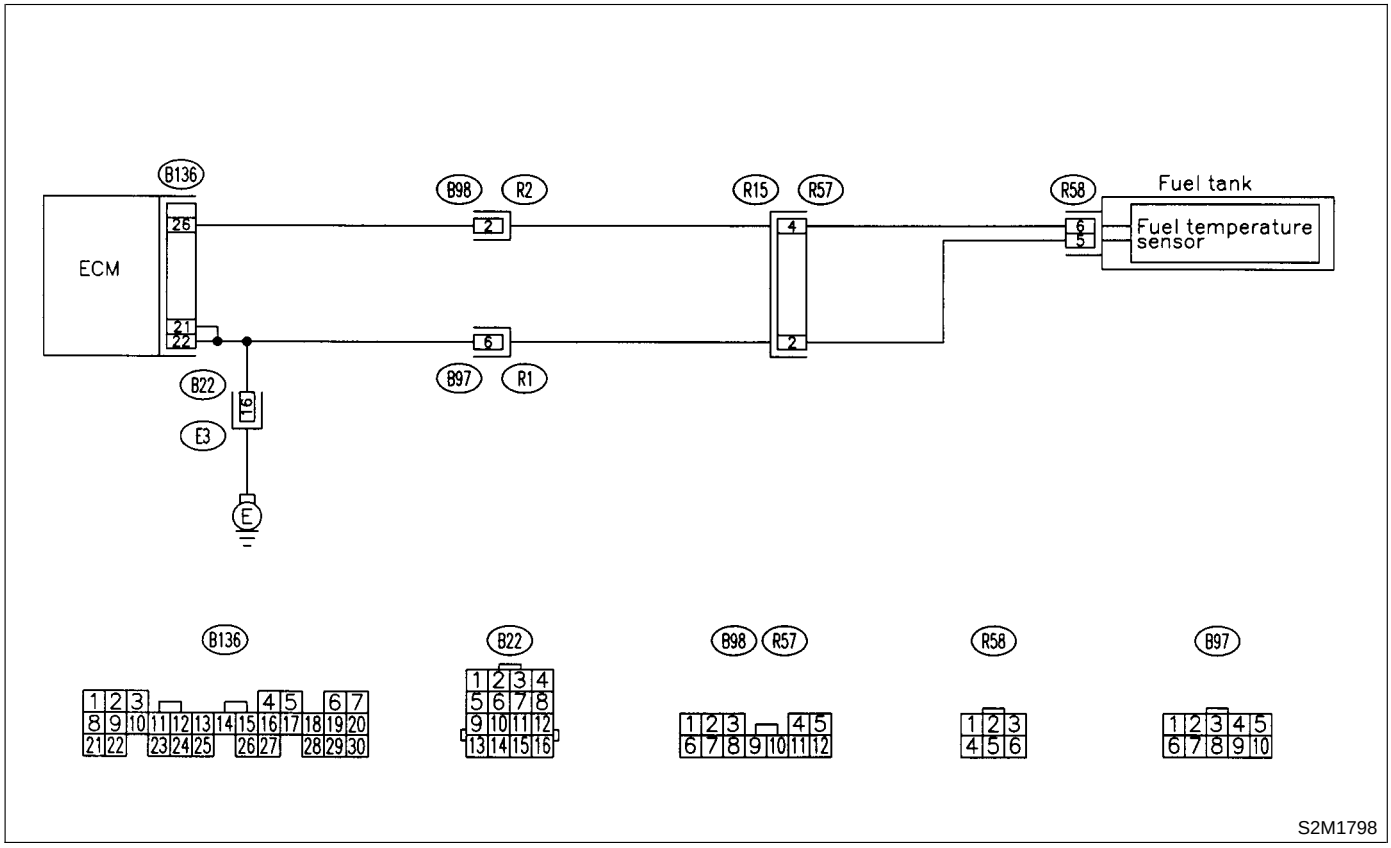
NO : Replace intake air temperature and pressure sensor. <Ref. to 2-7 [W11A0].>

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

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

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

- **WIRING DIAGRAM:**



10T1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0182 or P0183?***

YES : Inspect DTC P0182 or P0183 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

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

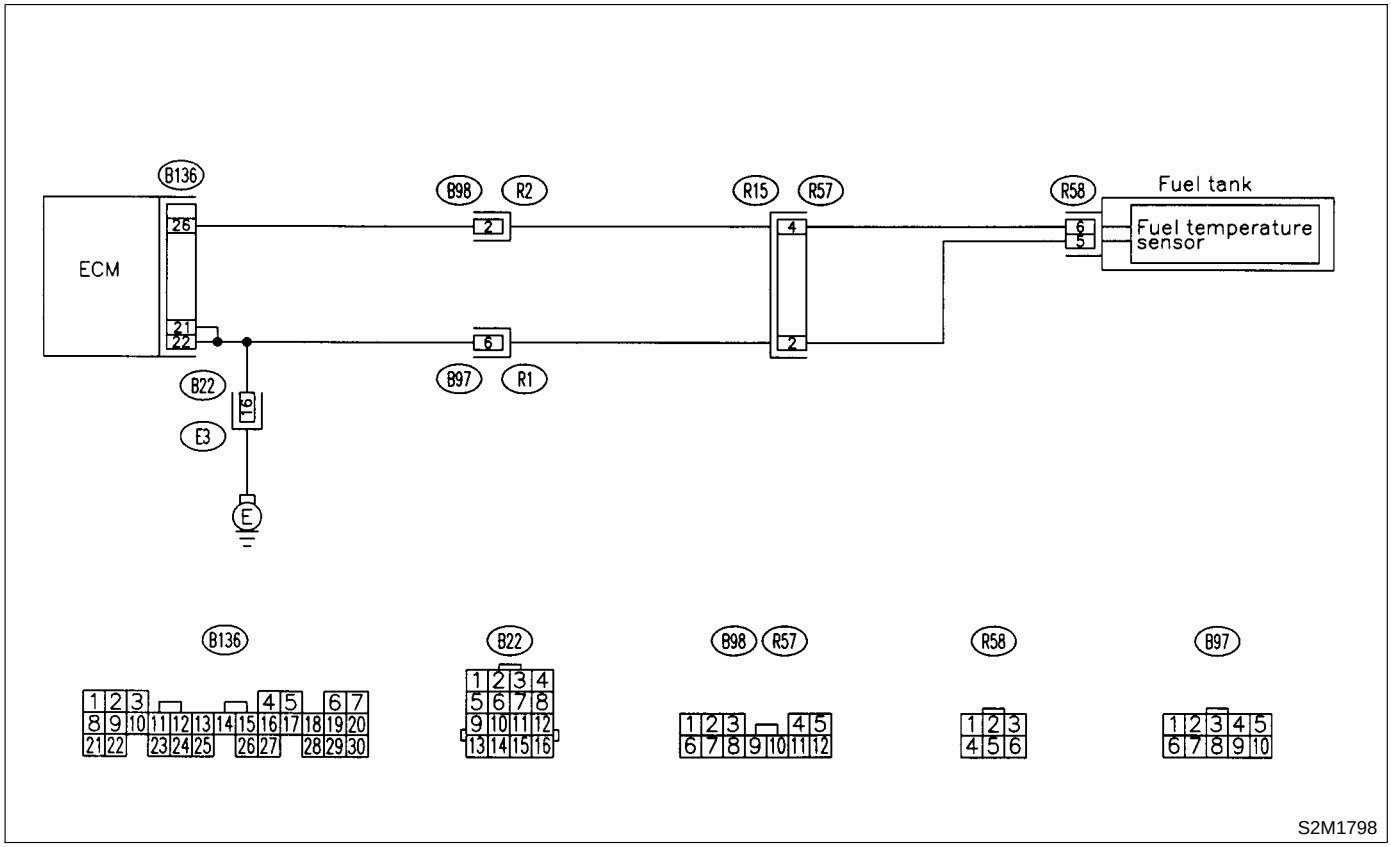
NO : Replace fuel temperature sensor. <Ref. to 2-1 [W6A0].>

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

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

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

- **WIRING DIAGRAM:**



10U1 : CHECK CURRENT DATA.

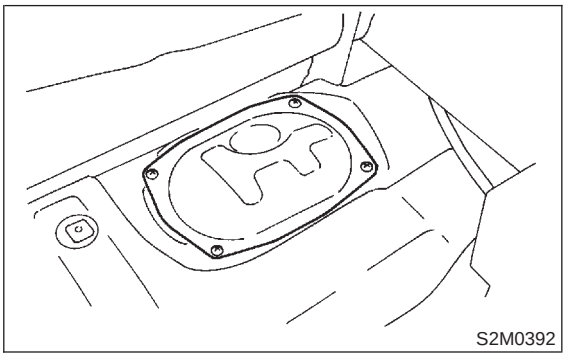
1) Start engine.
2) Read data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value greater than 150°C (302°F)?***
YES : Go to step **10U2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

10U2 : CHECK CURRENT DATA.

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


S2M0392

3) Disconnect connector from fuel pump.
4) Turn ignition switch to ON.
5) Read data of fuel temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

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

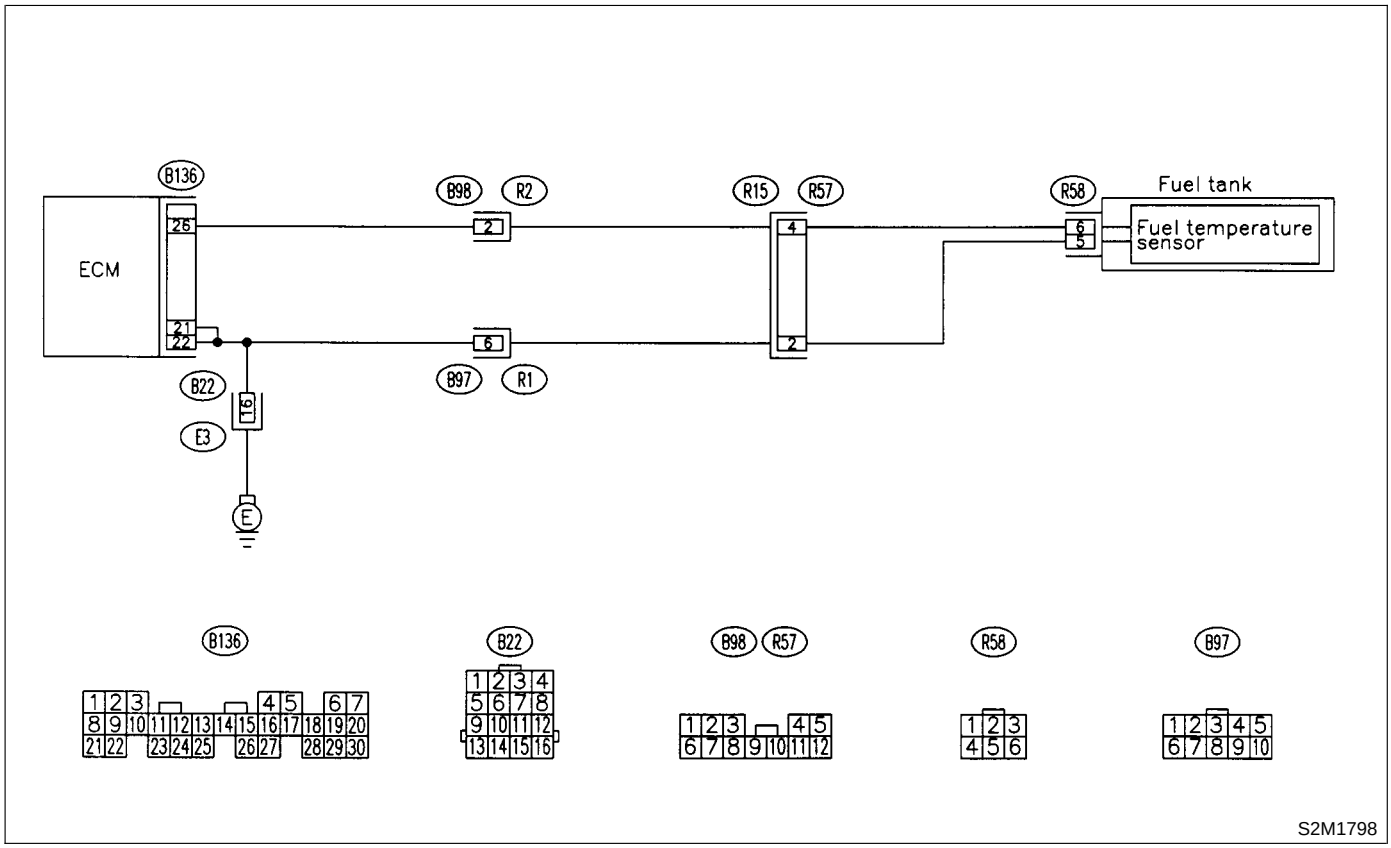
CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Replace fuel temperature sensor. <Ref. to 2-1 [W6A0].>
NO : Repair ground short circuit in harness between fuel pump and ECM connector.

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

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

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

- **WIRING DIAGRAM:**



10V1 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.

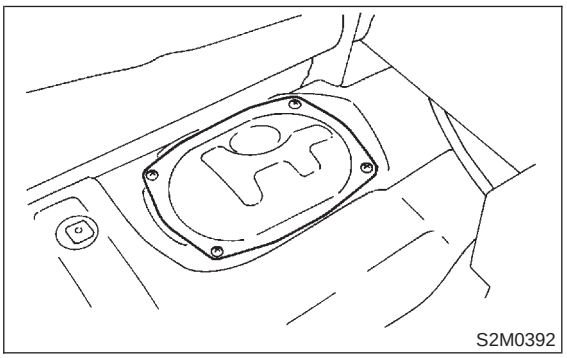
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −40°C (−40°F)?***
YES : Go to step **10V2**.
NO : Repair poor contact.

NOTE:
In this case, repair the following:
● Poor contact in fuel pump connector
● Poor contact in ECM connector
● Poor contact in coupling connectors (B22, B99, B98 and R57)

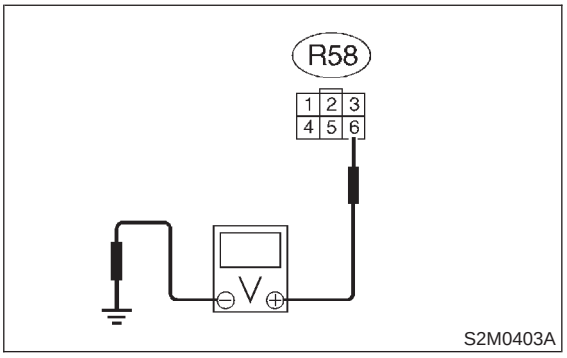
10V2 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

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


S2M0392

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

Connector & terminal
(R58) No. 6 (+) — Chassis ground (−):



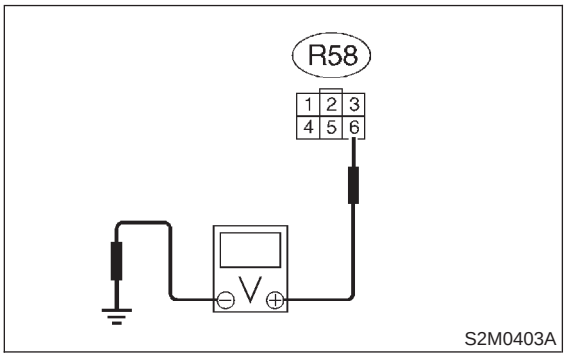
S2M0403A

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 **10V3**.

10V3 : 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 (−):

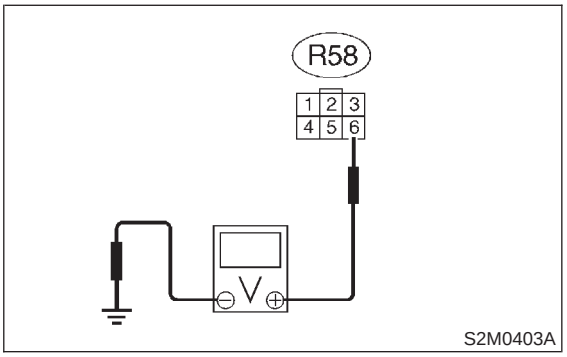


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel pump connector.
NO : Go to step **10V4**.

10V4 : 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 (−):



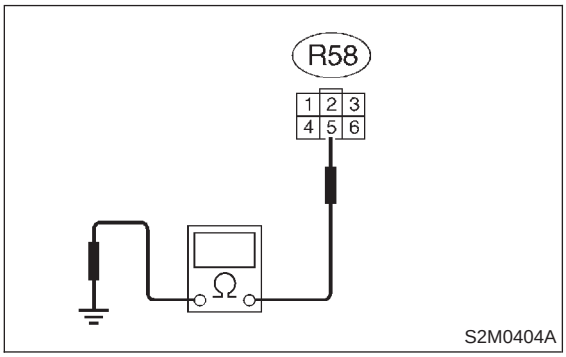
CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **10V5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B98 and R57)

10V5 : CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(R58) No. 5 — Chassis ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Replace fuel temperature sensor. <Ref. to 2-1 [W6A0].>
NO : Repair harness and connector.

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

W: DTC P0301 — CYLINDER 1 MISFIRE DETECTED —

NOTE:
For the diagnostic procedure, refer to DTC P0304. <Ref. to 2-7 [T11Z0].>

X: DTC P0302 — CYLINDER 2 MISFIRE DETECTED —

NOTE:
For the diagnostic procedure, refer to DTC P0304. <Ref. to 2-7 [T11Z0].>

Y: DTC P0303 — CYLINDER 3 MISFIRE DETECTED —

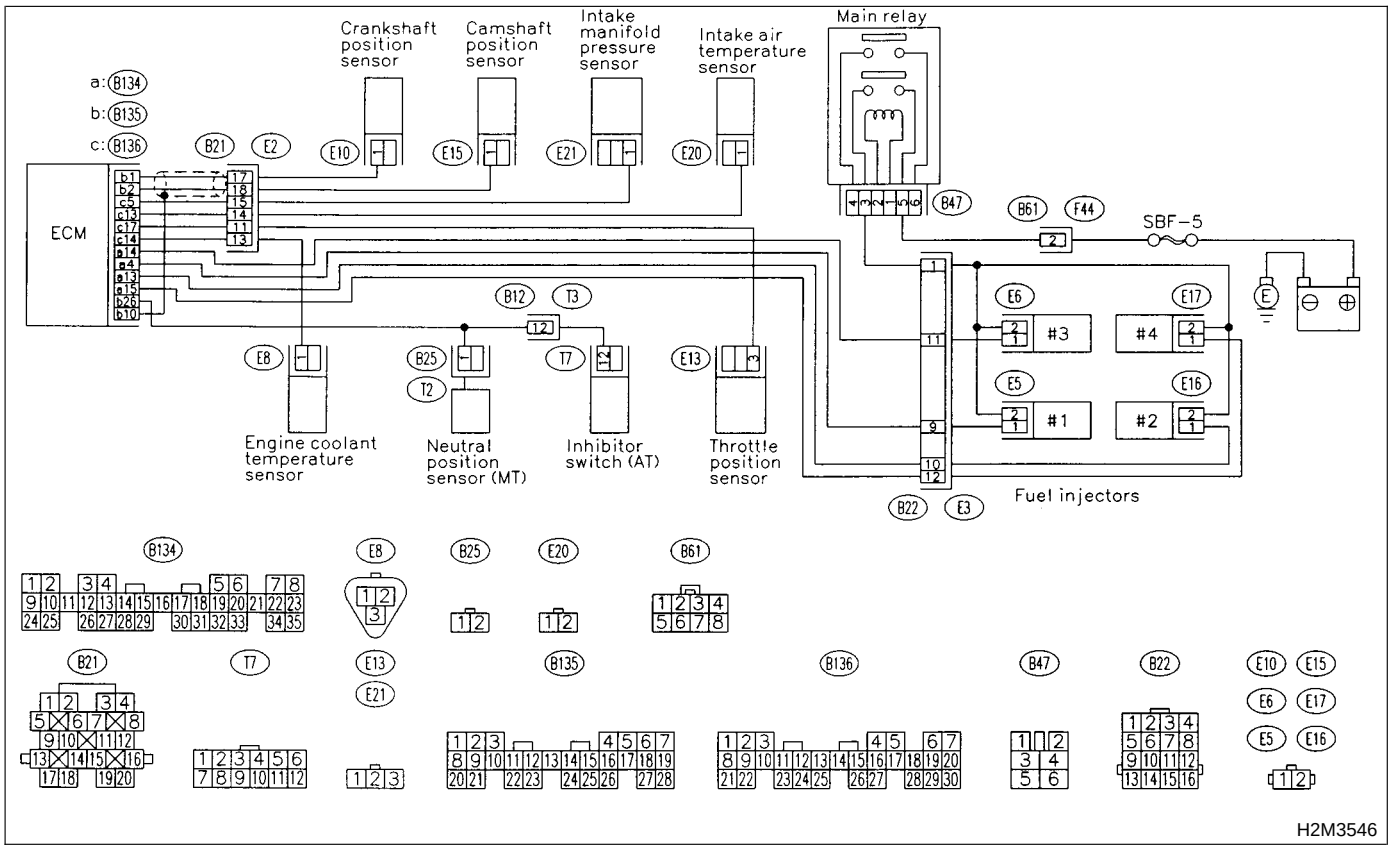
NOTE:
For the diagnostic procedure, refer to DTC P0304. <Ref. to 2-7 [T11Z0].>

Z: DTC P0304 — CYLINDER 4 MISFIRE DETECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
  - Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Erroneous idling
  - Rough driving

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

- **WIRING DIAGRAM:**



10Z1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0116, P0117 or P0125?***

YES : Inspect DTC P0106, P0107, P0108, P0116, P0117 or P0125 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

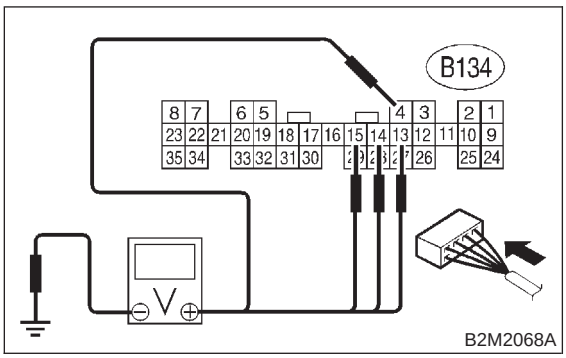
NOTE:
In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.

NO : Go to step **10Z2**.

10Z2 : CHECK OUTPUT SIGNAL FROM ECM.

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

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

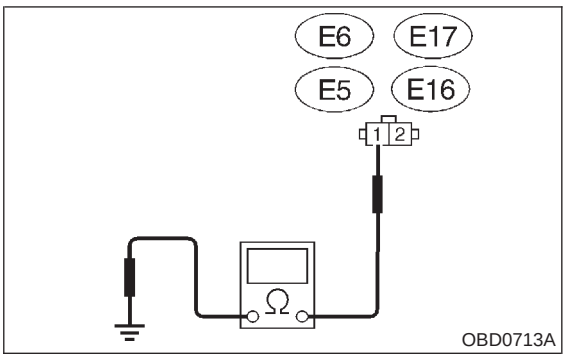


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10Z8**.
NO : Go to step **10Z3**.

10Z3 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

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

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



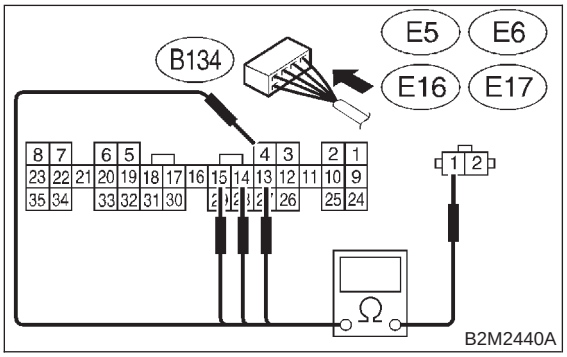
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between fuel injector and ECM connector.
NO : Go to step **10Z4**.

10Z4 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

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

Connector & terminal

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



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10Z5**.
NO : Repair harness and connector.

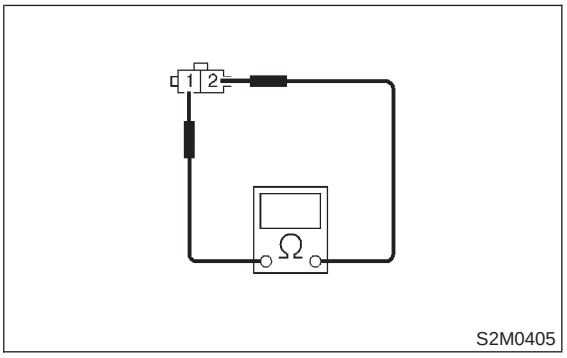
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel injector connector
- Poor contact in coupling connector (B22)

10Z5 : CHECK FUEL INJECTOR.

Measure resistance between fuel injector terminals on faulty cylinder.

Terminals

No. 1 — No. 2:



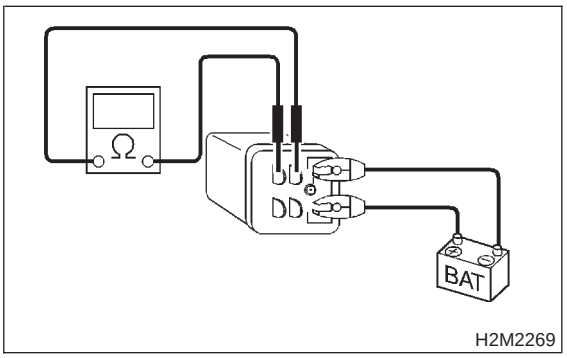
CHECK : ***Is the resistance between 5 and 20 Ω?***
YES : Go to step **10Z6**.
NO : Replace faulty fuel injector. <Ref. to 2-7 [W16A0].>

10Z6 : 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. 4 — No. 6:



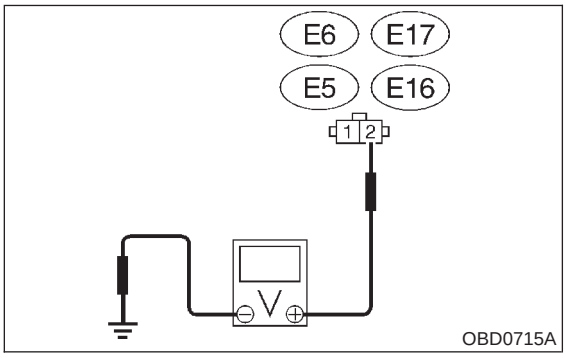
CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10Z7**.
NO : Replace main relay.

10Z7 : 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.

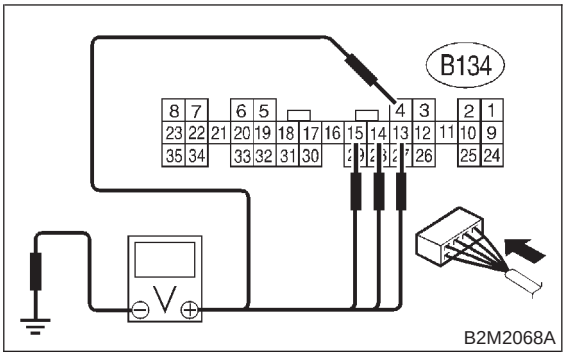
NOTE:
In this case, repair the following:
- Open circuit in harness between battery and fuel injector connector on faulty cylinders
- Poor contact in coupling connector (B22)
- Poor contact in main relay connector
- Poor contact in fuel injector connector on faulty cylinders

10Z8 : CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

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

Connector & terminal

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

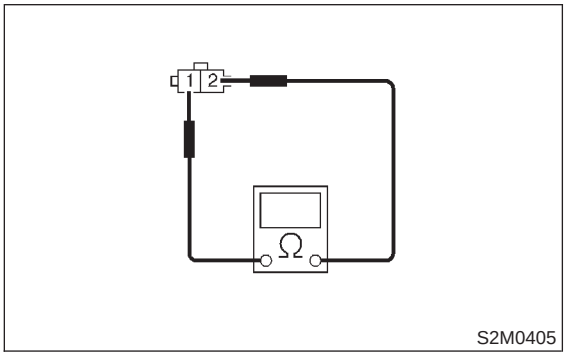


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel injector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Go to step **10Z9**.

10Z9 : CHECK FUEL INJECTOR.

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

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace faulty fuel injector <Ref. to 2-7 [W16A0].> and ECM <Ref. to 2-7 [W17A0].>.
NO : Go to step **10Z10**.

10Z10 : CHECK INSTALLATION OF CAMSHAFT POSITION SENSOR/ CRANKSHAFT POSITION SENSOR.

CHECK : ***Is camshaft position sensor or crankshaft position sensor loosely installed?***
YES : Tighten camshaft position sensor or crankshaft position sensor.
NO : Go to step **10Z11**.

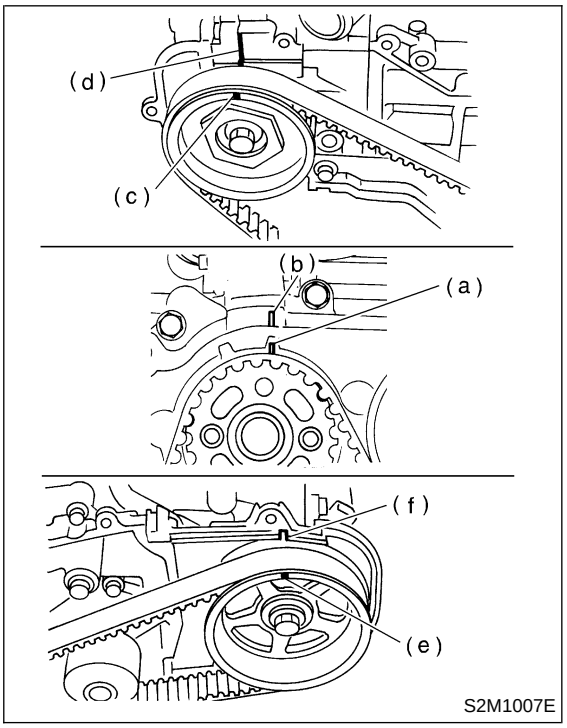
10Z11 : CHECK CRANKSHAFT SPROCKET.

Remove timing belt cover.

CHECK : ***Is crankshaft sprocket rusted or does it have broken teeth?***
YES : Replace crankshaft sprocket. <Ref. to 2-3 [W3A4].>
NO : Go to step **10Z12**.

10Z12 : CHECK INSTALLATION CONDITION OF TIMING BELT.

Turn crankshaft using ST. Align mark (a) of sprocket to cylinder block notch (b) and ensure that right side cam sprocket mark (c), cam cap and cylinder head matching surface (d) and/or left side cam sprocket mark (e) and belt cover notch (f) are properly adjusted.
ST 499987500 CRANKSHAFT SOCKET



CHECK : ***Is timing belt dislocated from its proper position?***
YES : Repair installation condition of timing belt. <Ref. to 2-3 [W3A0].>
NO : Go to step **10Z13**.

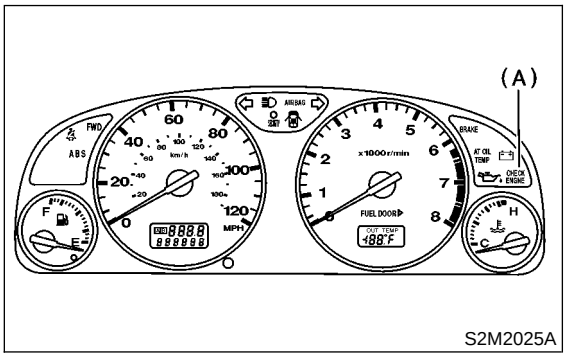
10Z13 : CHECK FUEL LEVEL.

CHECK : ***Is the fuel meter indication higher than the “Lower” level?***
YES : Go to step **10Z14**.
NO : Replenish fuel so fuel meter indication is higher than the “Lower” level. After replenishing fuel, Go to step **10Z14**.

10Z14 : CHECK STATUS OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).

1) Clear memory using Subaru Select Monitor. <Ref. to 2-7 [T3D0].>
2) Start engine, and drive the vehicle more than 10 minutes.

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



(A) Malfunction indicator lamp (MIL)

YES : Go to step **10Z16**.
NO : Go to step **10Z15**.

10Z15 : CHECK CAUSE OF MISFIRE DIAGNOSED.

CHECK : ***Was the cause of misfire diagnosed when the engine is running?***
YES : Finish diagnostics operation, if the engine has no abnormality.

NOTE:
Ex. Remove spark plug cord, etc.

NO : Repair poor contact.

NOTE:
In this case, repair the following:
- Poor contact in ignitor connector
- Poor contact in ignition coil connector
- Poor contact in fuel injector connector on faulty cylinders
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

10Z16 : CHECK AIR INTAKE SYSTEM.

CHECK : ***Is there a fault in air intake system?***
YES : Repair air intake system.

NOTE:
Check the following items:
- Are there air leaks or air suction caused by loose or dislocated nuts and bolts?
- Are there cracks or any disconnection of hoses?

NO : Go to step **10Z17**.

10Z17 : CHECK MISFIRE SYMPTOM.

1) Turn ignition switch to ON.
2) Read diagnostic trouble code (DTC).
- Subaru Select Monitor

<Ref. to 2-7 [T3C2].>
- OBD-II general scan tool

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

NOTE:
Perform diagnosis according to the items listed below.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate only one DTC?***
YES : Go to step **10Z22**.
NO : Go to step **10Z18**.

10Z18 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0302?***
YES : Go to step **10Z23**.
NO : Go to step **10Z19**.

10Z19 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0303 and P0304?***
YES : Go to step **10Z24**.
NO : Go to step **10Z20**.

10Z20 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0303?***
YES : Go to step **10Z25**.
NO : Go to step **10Z21**.

10Z21 : CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0302 and P0304?***
YES : Go to step **10Z26**.
NO : Go to step **10Z27**.

10Z22 : ONLY ONE CYLINDER

CHECK : ***Is there a fault in that cylinder?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plug
- Spark plug cord
- Fuel injector
- Compression ratio

NO : Go to DTC P0170. <Ref. to 2-7 [T10S0].>

10Z23 : GROUP OF #1 AND #2 CYLINDERS

CHECK : ***Are there faults in #1 and #2 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
- Check the following items.
  - Spark plugs
  - Fuel injectors
  - Ignition coil
  - Compression ratio
- If no abnormal is discovered, check for “8. D: IGNITION CONTROL SYSTEM” of #1 and #2 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to DTC P0170. <Ref. to 2-7 [T10S0].>

10Z24 : GROUP OF #3 AND #4 CYLINDERS

CHECK : ***Are there faults in #3 and #4 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
- Check the following items.
  - Spark plugs
  - Fuel injectors
  - Ignition coil
- If no abnormal is discovered, check for “8. D: IGNITION CONTROL SYSTEM” of #3 and #4 cylinders side. <Ref. to 2-7 [T8D0].>

NO : Go to DTC P0170. <Ref. to 2-7 [T10S0].>

10Z25 : GROUP OF #1 AND #3 CYLINDERS

CHECK : ***Are there faults in #1 and #3 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Skipping timing belt teeth

NO : Go to DTC P0170. <Ref. to 2-7 [T10S0].>

10Z26 : GROUP OF #2 AND #4 CYLINDERS

CHECK : ***Are there faults in #2 and #4 cylinders?***
YES : Repair or replace faulty parts.

NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Compression ratio
- Skipping timing belt teeth

NO : Go to DTC P0170. <Ref. to 2-7 [T10S0].>

10Z27 : CYLINDER AT RANDOM

CHECK : ***Is the engine idle rough?***
YES : Go to DTC P0170. <Ref. to 2-7 [T10S0].>
NO : Repair or replace faulty parts.

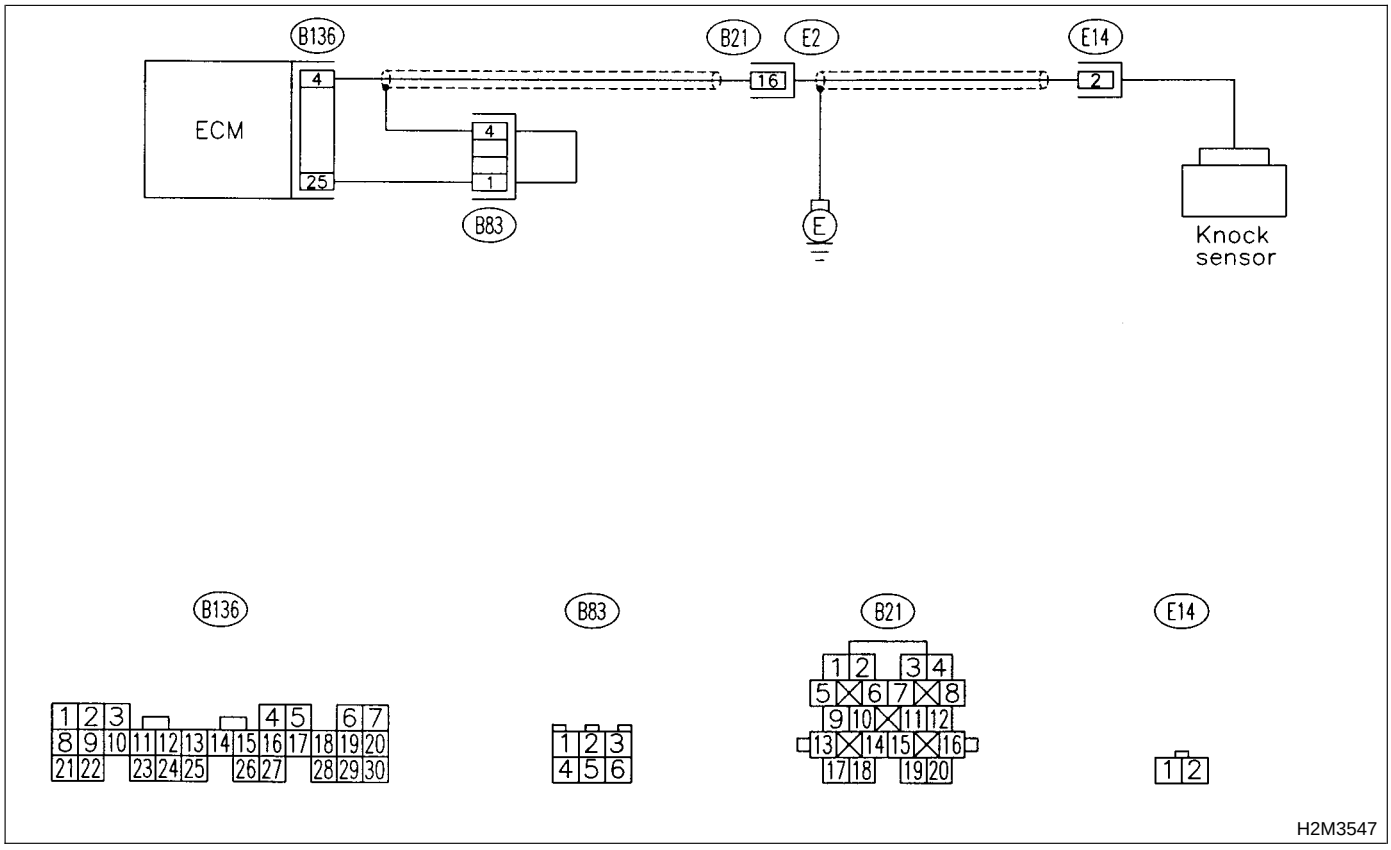
NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Compression ratio

AA: DTC P0325 — KNOCK SENSOR CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Poor driving performance
  - Knocking occurs.

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

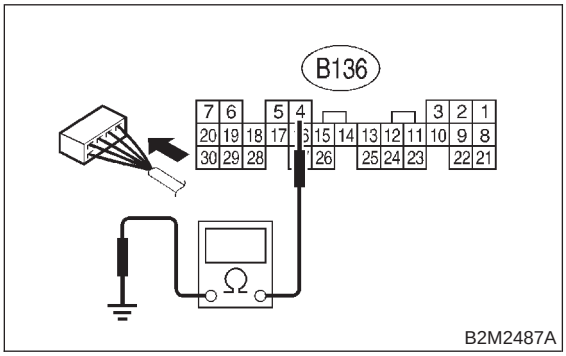
- **WIRING DIAGRAM:**



10AA1 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(B136) No. 4 — Chassis ground:

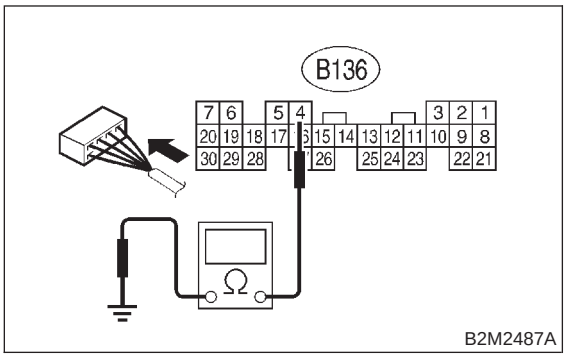


CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **10AA3**.
NO : Go to step **10AA2**.

10AA2 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

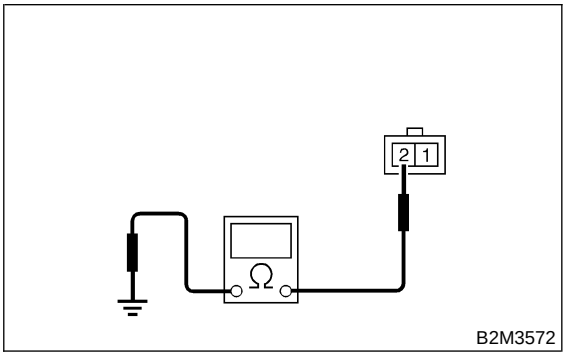


CHECK : ***Is the resistance less than 400 kΩ?***
YES : Go to step **10AA5**.
NO : Go to step **10AA6**.

10AA3 : CHECK KNOCK SENSOR.

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

Terminal
No. 2 — Engine ground:



CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **10AA4**.
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)

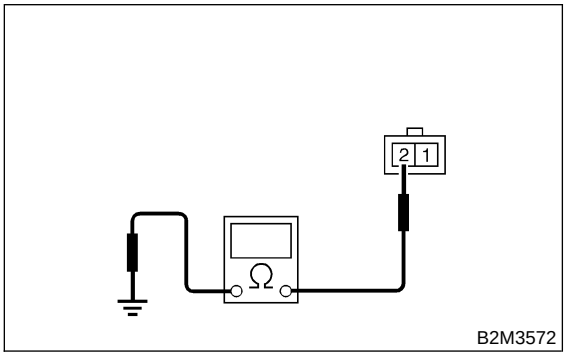
10AA4 : CHECK CONDITION OF KNOCK SENSOR INSTALLATION.

CHECK : ***Is the knock sensor installation bolt tightened securely?***
YES : Replace knock sensor. <Ref. to 2-7 [W7A0].>
NO : Tighten knock sensor installation bolt securely.

10AA5 : CHECK KNOCK SENSOR.

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

Terminal
No. 2 — Engine ground:



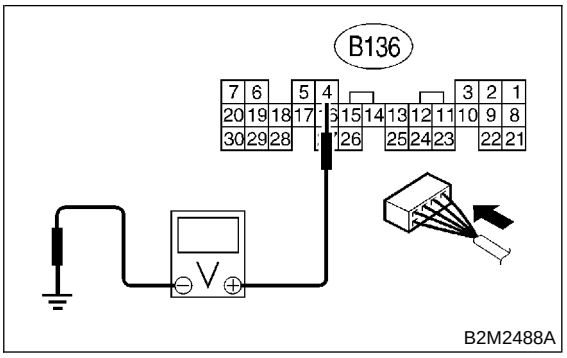
CHECK : ***Is the resistance less than 400 kΩ?***
YES : Replace knock sensor. <Ref. to 2-7 [W7A0].>
NO : Repair ground short circuit in harness between knock sensor connector and ECM connector.

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

10AA6 : CHECK INPUT SIGNAL FOR ECM.

1) Connect connectors to ECM and knock sensor.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

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

NO : Repair poor contact in ECM connector.

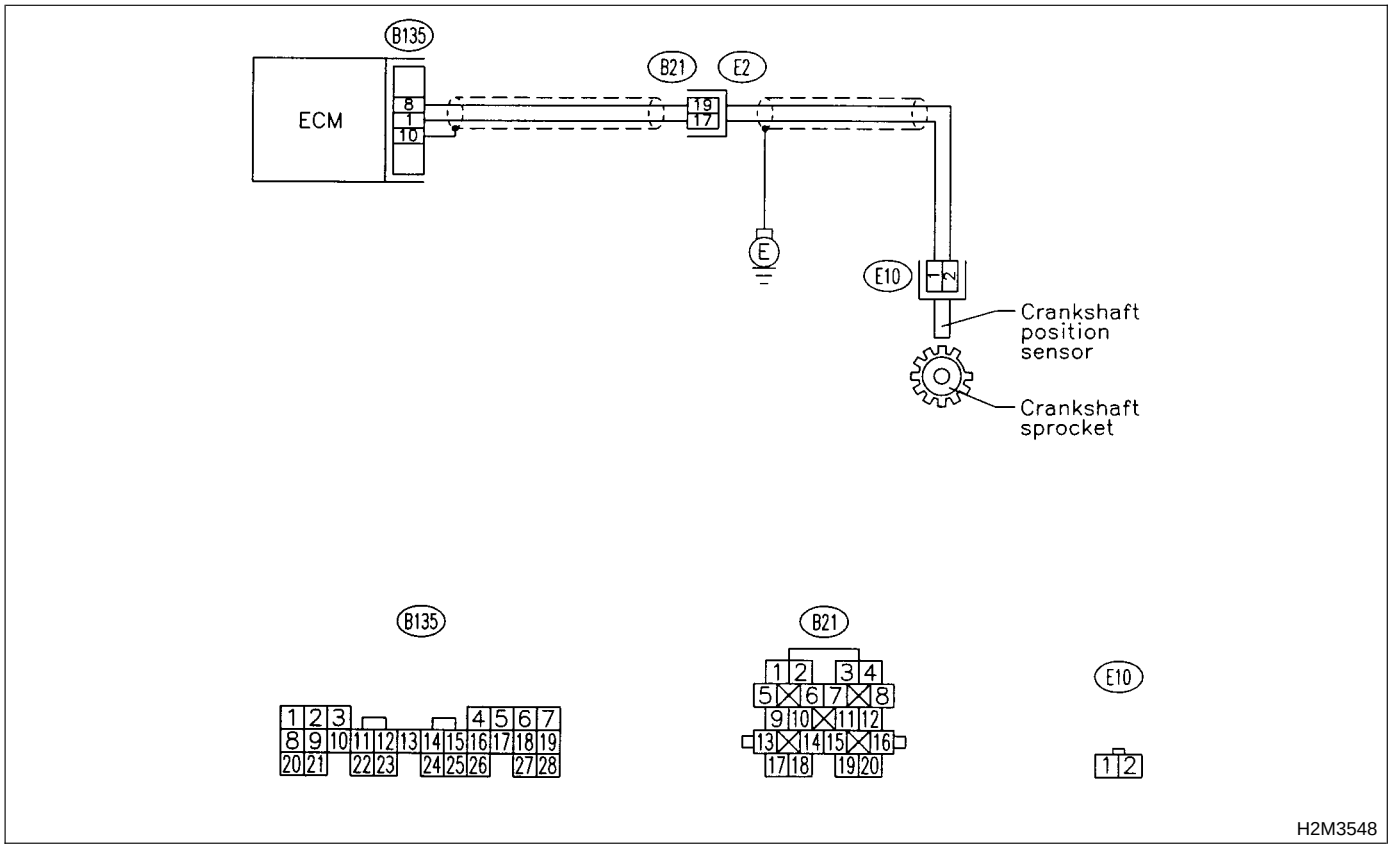
MEMO:

AB: DTC P0335 — CRANKSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

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

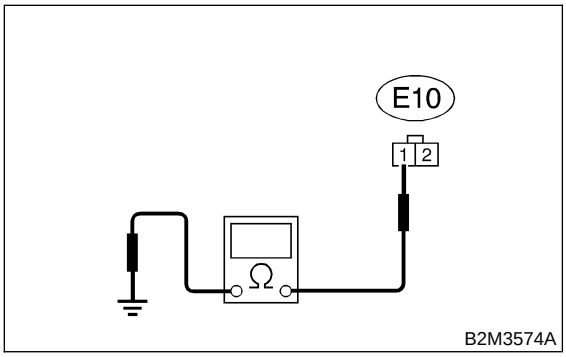
- **WIRING DIAGRAM:**



10AB1 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E10) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

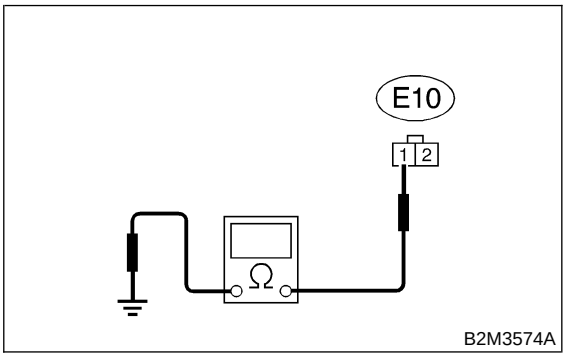
NOTE:
In this case, repair the following:
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **10AB2**.

10AB2 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E10) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between crankshaft position sensor and ECM connector.

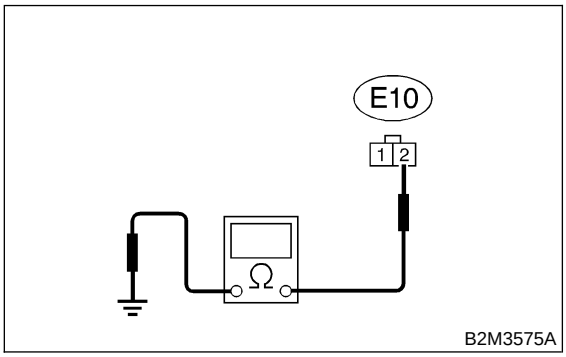
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **10AB3**.

10AB3 : CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E10) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AB4**.
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)

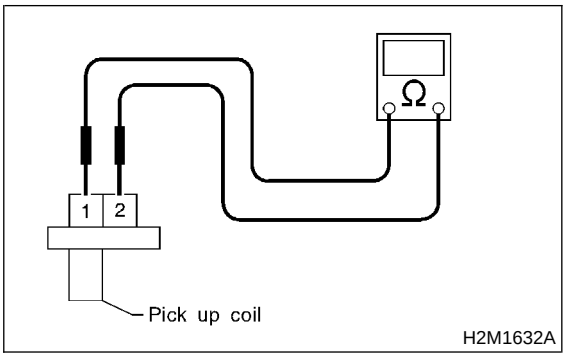
10AB4 : CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.

CHECK : ***Is the crankshaft position sensor installation bolt tightened securely?***
YES : Go to step **10AB5**.
NO : Tighten crankshaft position sensor installation bolt securely.

10AB5 : CHECK CRANKSHAFT POSITION SENSOR.

1) Remove crankshaft position sensor.
2) Measure resistance between connector terminals of crankshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Repair poor contact in crankshaft position sensor connector.
NO : Replace crankshaft position sensor. <Ref. to 2-7 [W5A0].>

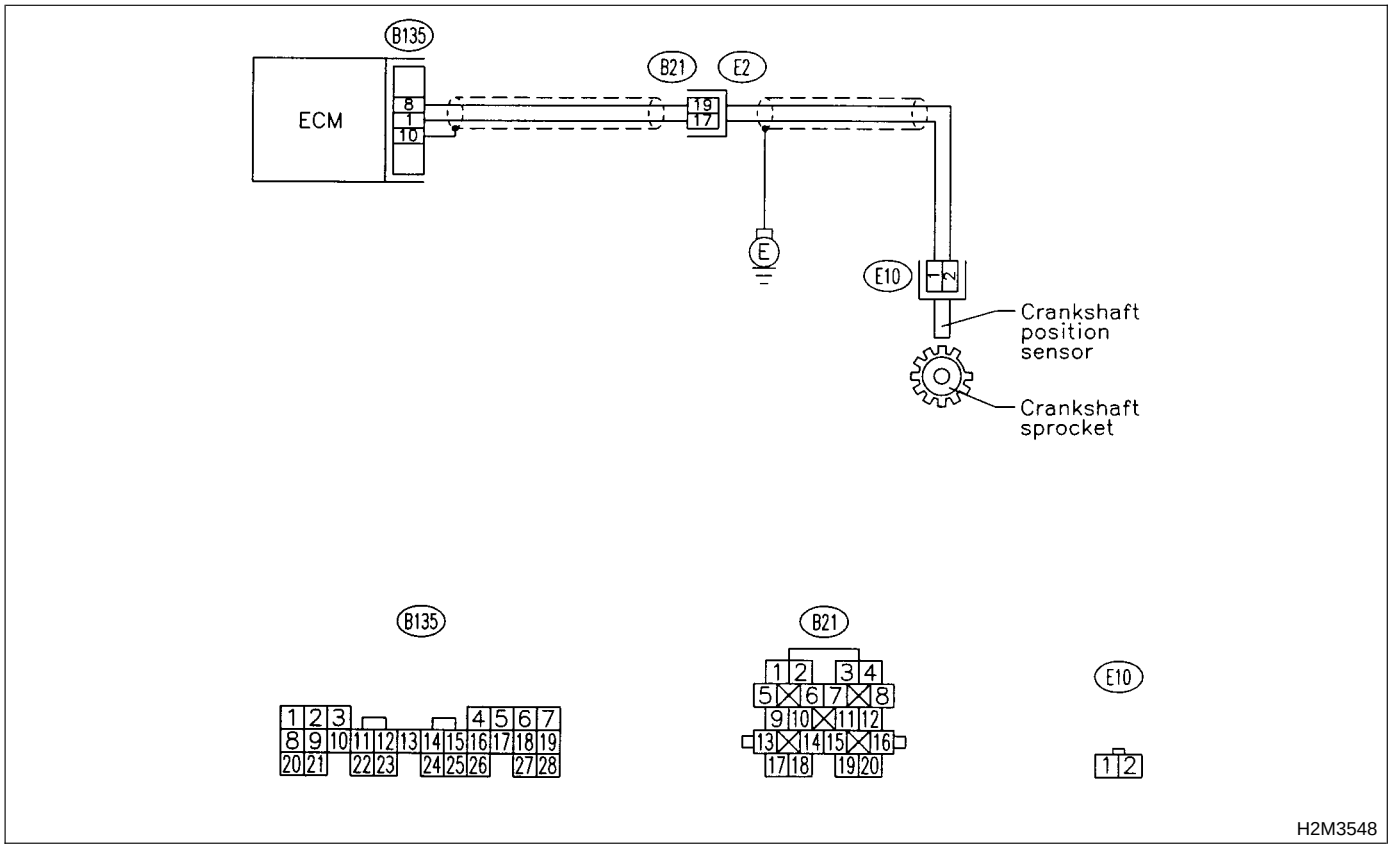
MEMO:

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

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

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

- **WIRING DIAGRAM:**



10AC1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0335?***

YES : Inspect DTC P0335 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10AC2**.

10AC2 : CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.

Turn ignition switch to OFF.

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

YES : Go to step **10AC3**.

NO : Tighten crankshaft position sensor installation bolt securely.

10AC3 : CHECK CRANKSHAFT SPROCKET.

Remove front belt cover.

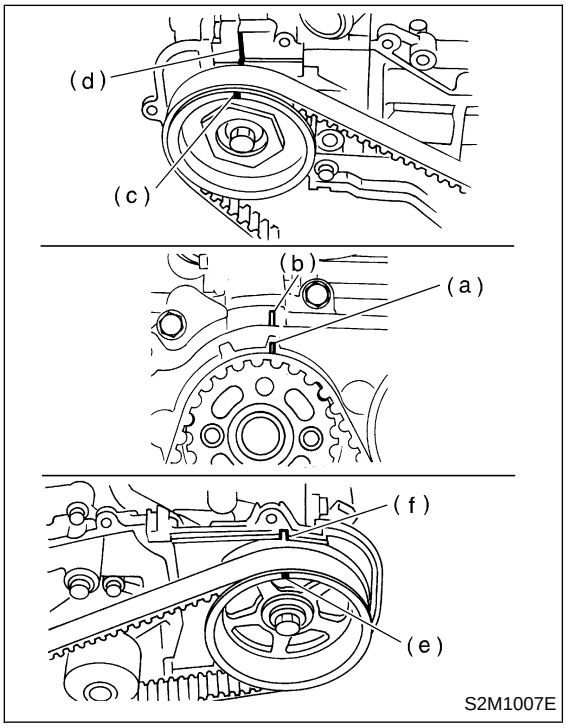
CHECK : ***Are crankshaft sprocket teeth cracked or damaged?***

YES : Replace crankshaft sprocket. <Ref. to 2-3 [W3A0].>

NO : Go to step **10AC4**.

10AC4 : CHECK INSTALLATION CONDITION OF TIMING BELT.

Turn crankshaft using ST. Align mark (a) of sprocket to cylinder block notch (b) and ensure that right side cam sprocket mark (c), cam cap and cylinder head matching surface (d) and/or left side cam sprocket mark (e) and belt cover notch (f) are properly adjusted.
ST 499987500 CRANKSHAFT SOCKET



CHECK : ***Is timing belt dislocated from its proper position?***

YES : Repair installation condition of timing belt. <Ref. to 2-3 [W3A0].>

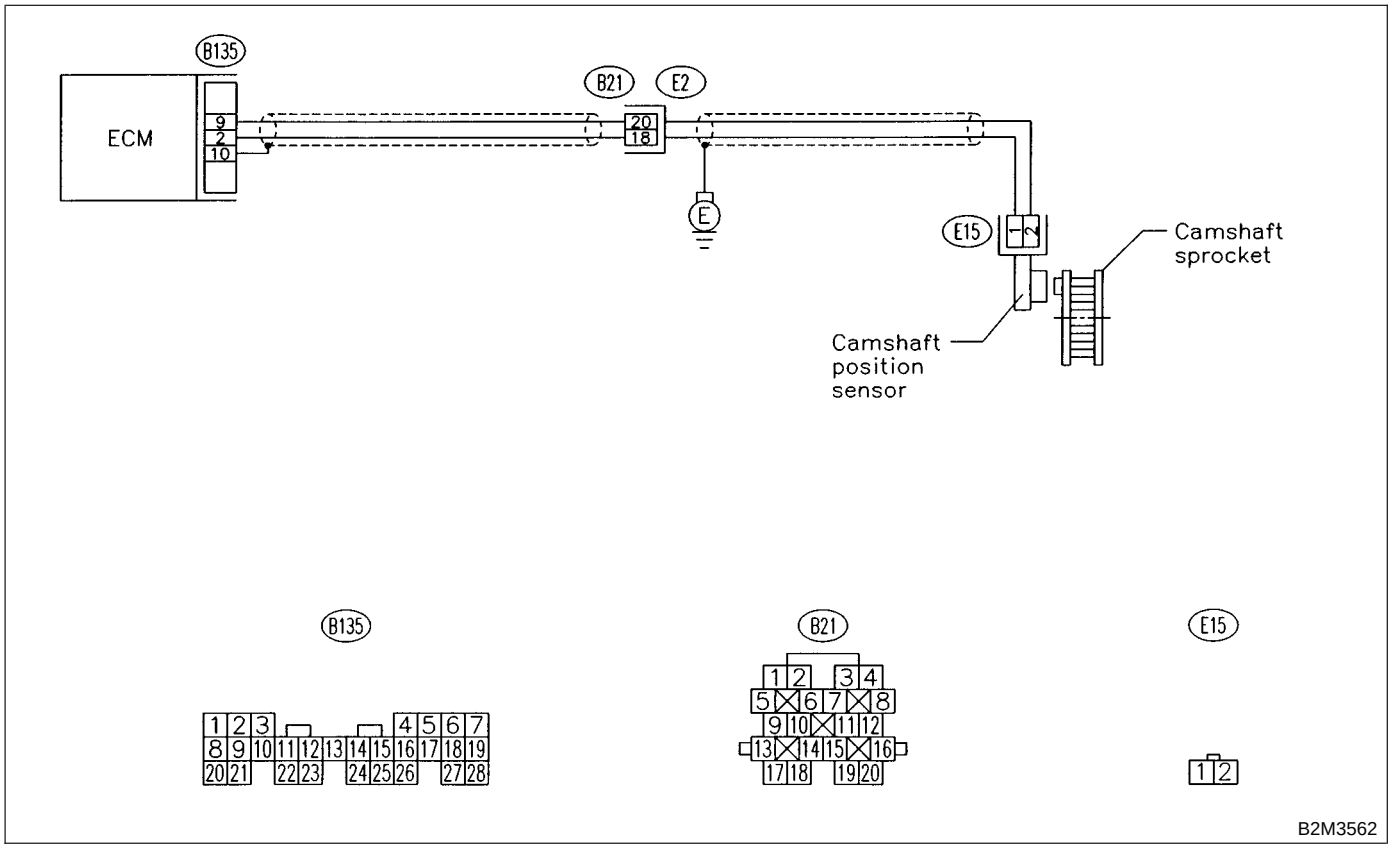
NO : Replace crankshaft position sensor. <Ref. to 2-7 [W5A0].>

AD: DTC P0340 — CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

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

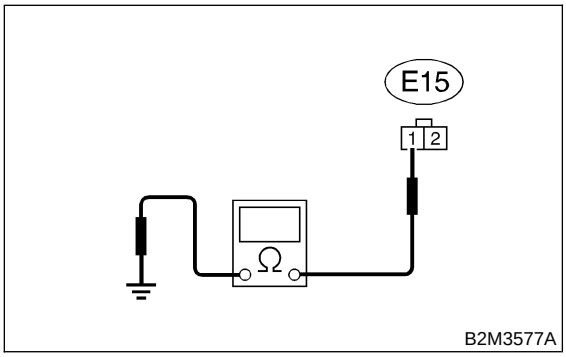
- **WIRING DIAGRAM:**



10AD1 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

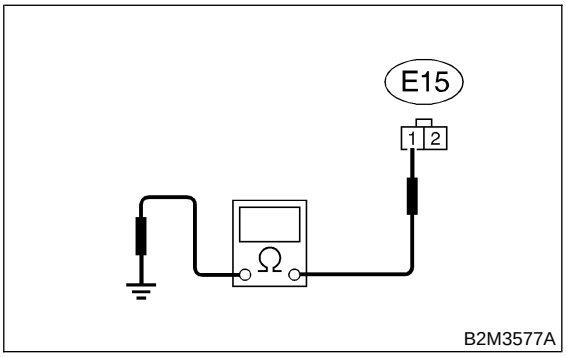
NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **10AD2**.

10AD2 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between camshaft position sensor and ECM connector.

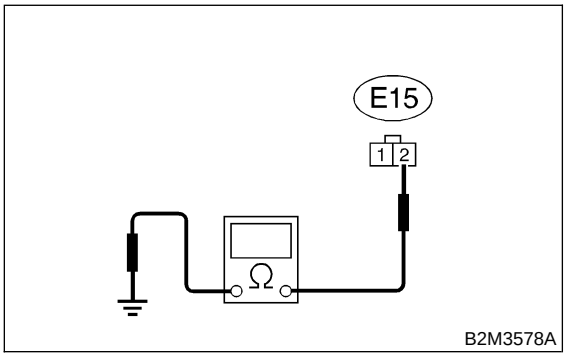
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **10AD3**.

10AD3 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E15) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AD4**.
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)

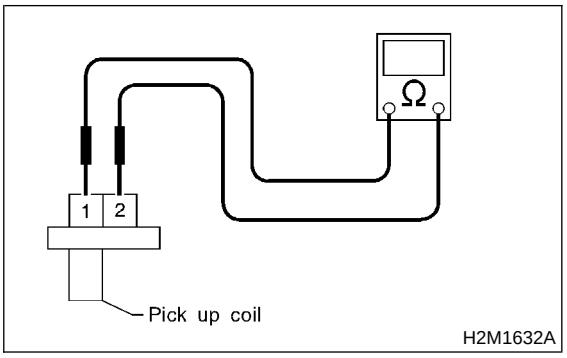
10AD4 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR.

CHECK : ***Is the camshaft position sensor installation bolt tightened securely?***
YES : Go to step **10AD5**.
NO : Tighten camshaft position sensor installation bolt securely.

10AD5 : CHECK CAMSHAFT POSITION SENSOR.

1) Remove camshaft position sensor.
2) Measure resistance between connector terminals of camshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Repair poor contact in camshaft position sensor connector.
NO : Replace camshaft position sensor. <Ref. to 2-7 [W6A0].>

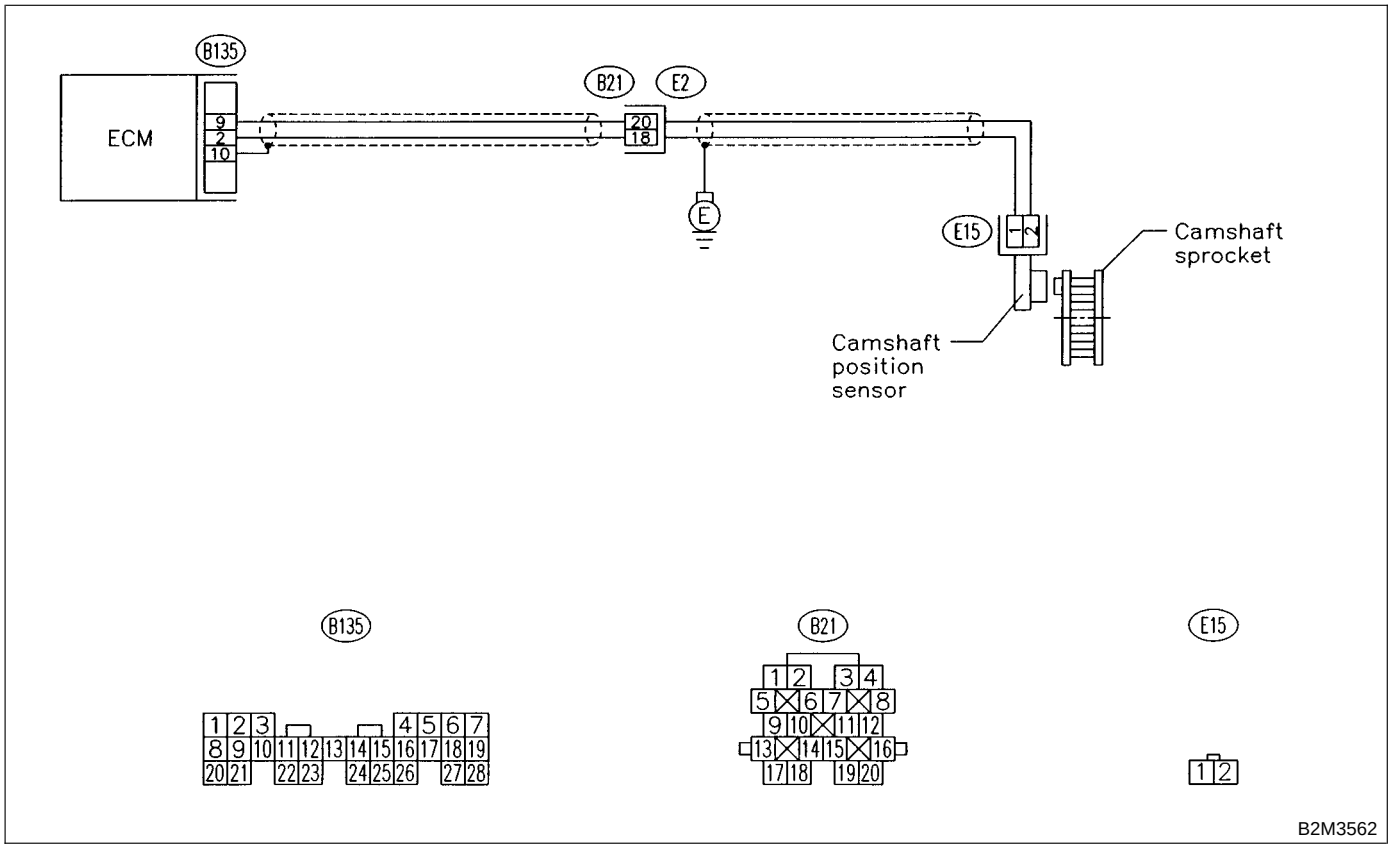
MEMO:

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

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

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

- **WIRING DIAGRAM:**



10AE1 :	CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0340?***

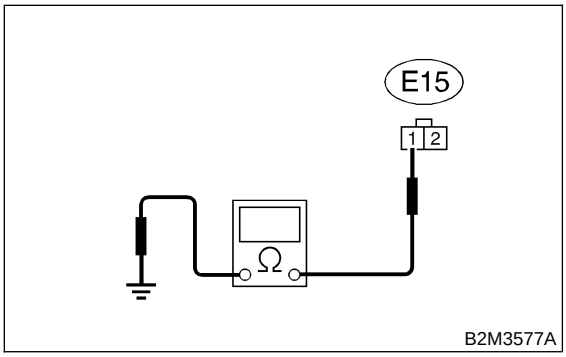
YES : Inspect DTC P0340 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10AE2**.

10AE2 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance more than 100 kΩ?***
YES : Repair harness and connector.

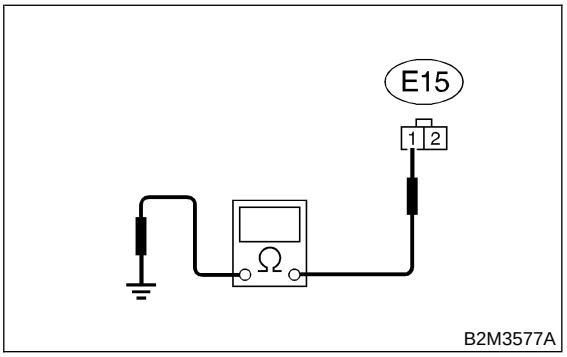
NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Go to step **10AE3**.

10AE3 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E15) No. 1 — Engine ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between camshaft position sensor and ECM connector.

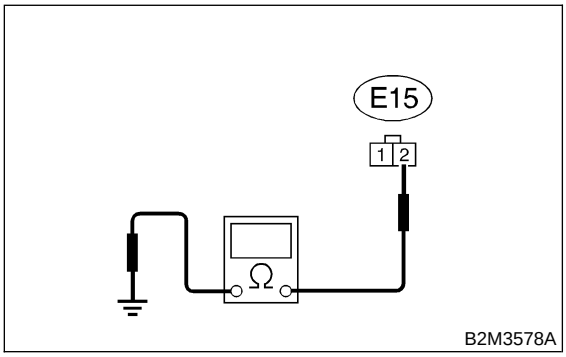
NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to step **10AE4**.

10AE4 : CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(E15) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AE5**.
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)

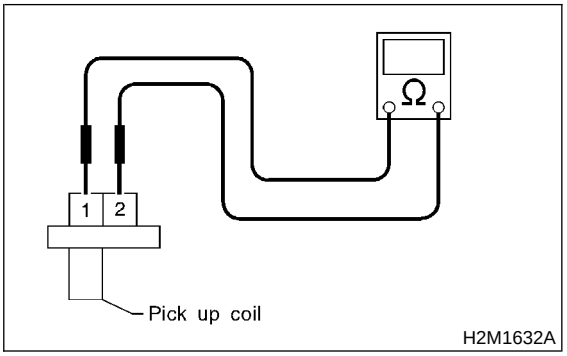
10AE5 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR.

CHECK : ***Is the camshaft position sensor installation bolt tightened securely?***
YES : Go to step **10AE6**.
NO : Tighten camshaft position sensor installation bolt securely.

10AE6 : CHECK CAMSHAFT POSITION SENSOR.

1) Remove camshaft position sensor.
2) Measure resistance between connector terminals of camshaft position sensor.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 1 and 4 kΩ?***
YES : Go to step **10AE7**.
NO : Replace camshaft position sensor. <Ref. to 2-7 [W6A0].>

10AE7 : CHECK CONDITION OF CAMSHAFT POSITION SENSOR.

Turn ignition switch to OFF.

CHECK : ***Is the camshaft position sensor installation bolt tightened securely?***
YES : Go to step **10AE8**.
NO : Tighten camshaft position sensor installation bolt securely.

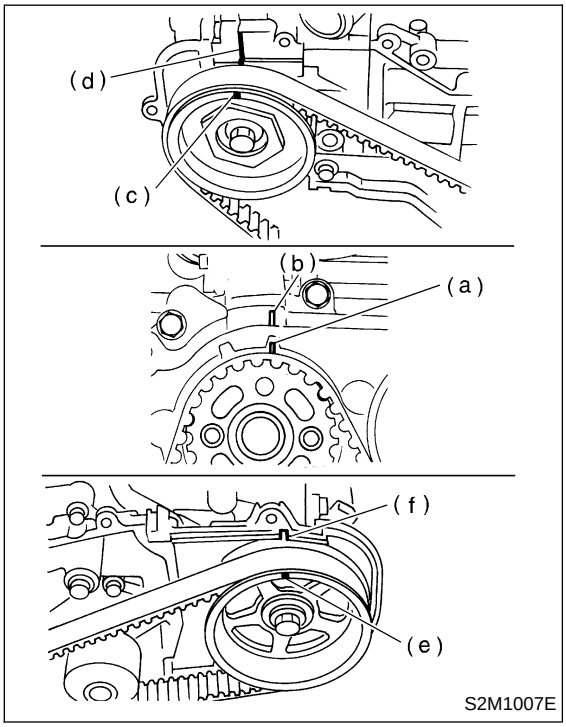
10AE8 : CHECK CAMSHAFT SPROCKET.

Remove front belt cover. <Ref. to 2-3 [W3A0].>

CHECK : ***Are camshaft sprocket teeth cracked or damaged?***
YES : Replace camshaft sprocket. <Ref. to 2-3 [W3A0].>
NO : Go to step **10AE9**.

10AE9 : CHECK INSTALLATION CONDITION OF TIMING BELT.

Turn crankshaft using ST. Align mark (a) of sprocket to cylinder block notch (b) and ensure that right side cam sprocket mark (c), cam cap and cylinder head matching surface (d) and/or left side cam sprocket mark (e) and belt cover notch (f) are properly adjusted.
ST 499987500 CRANKSHAFT SOCKET



CHECK : ***Is timing belt dislocated from its proper position?***

YES : Repair installation condition of timing belt. <Ref. to 2-3 [W3A0].>

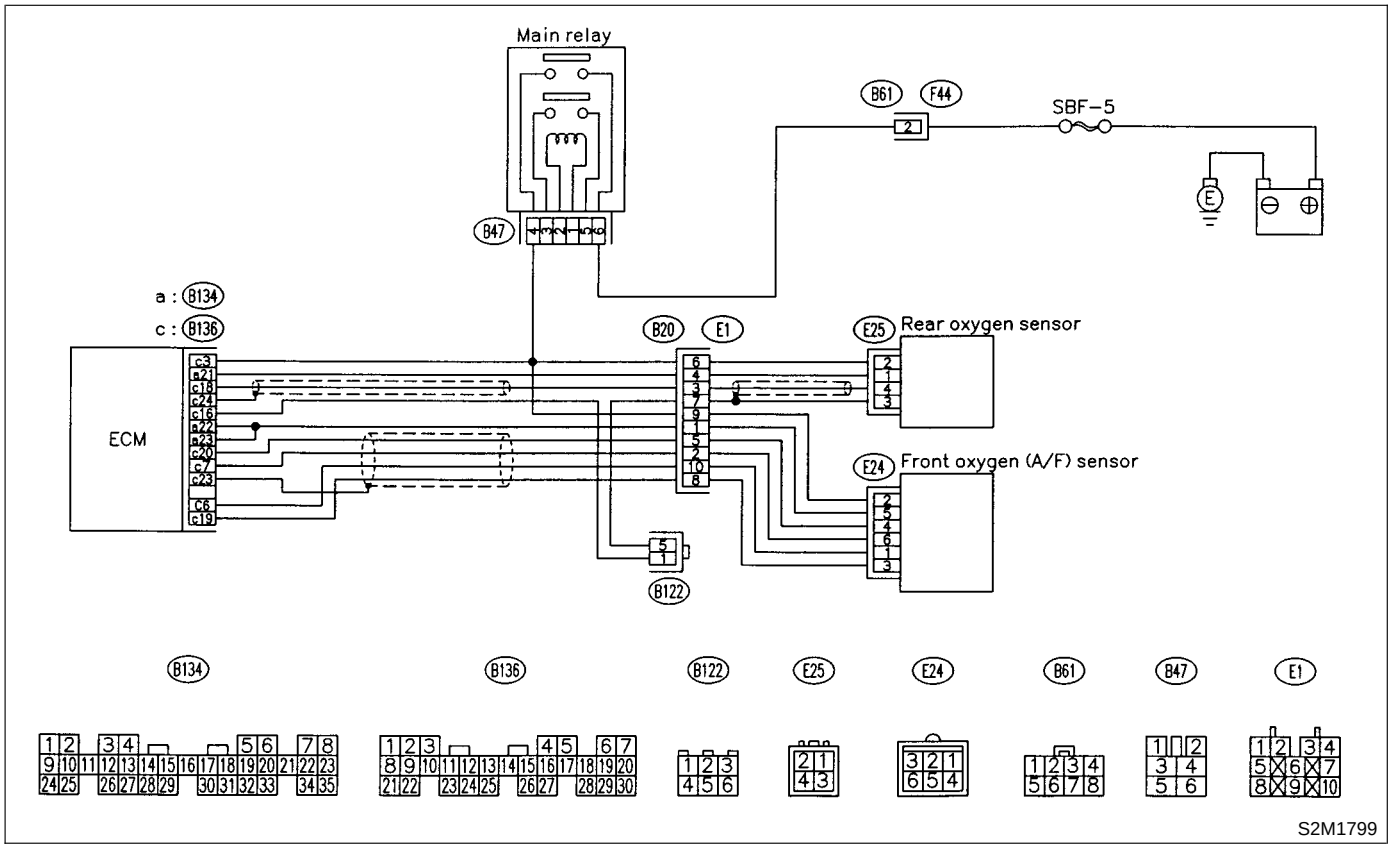
NO : Replace camshaft position sensor. <Ref. to 2-7 [W6A0].>

AF: DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Idle mixture is out of specifications.

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

- **WIRING DIAGRAM:**



10AF1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0130, P0133, P0136, P0139, P0141, P0301, P0302, P0303, P0304, P1130, P1131, P1132, P1133 and P1151?***

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 **10AF2**.

10AF2 : CHECK EXHAUST SYSTEM.

Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes.

NOTE:
Check the following positions.
- Between cylinder head and front exhaust pipe
- Between front exhaust pipe and front catalytic converter
- Between front catalytic converter and rear catalytic converter

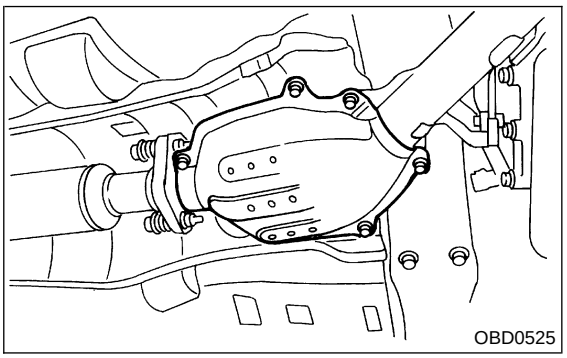
CHECK : ***Is there a fault in exhaust system?***

YES : Repair or replace exhaust system. <Ref. to 2-9 [W1A0].>

NO : Go to step **10AF3**.

10AF3 : CHECK REAR CATALYTIC CONVERTER.

Separate rear catalytic converter from rear exhaust pipe.


OBD0525

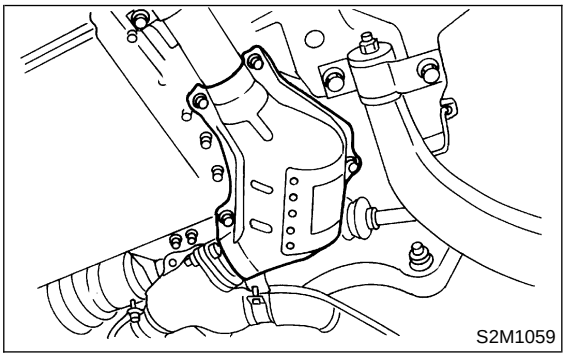
CHECK : ***Is there damage at rear face of rear catalyst?***

YES : Replace front catalytic converter <Ref. to 2-1 [W1A0].> and rear catalytic converter <Ref. to 2-1 [W2A0].>.

NO : Go to step **10AF4**.

10AF4 : CHECK FRONT CATALYTIC CONVERTER.

Remove front catalytic converter.


S2M1059

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

YES : Replace front catalytic converter. <Ref. to 2-1 [W1A0].>

NO : Contact with SOA service.

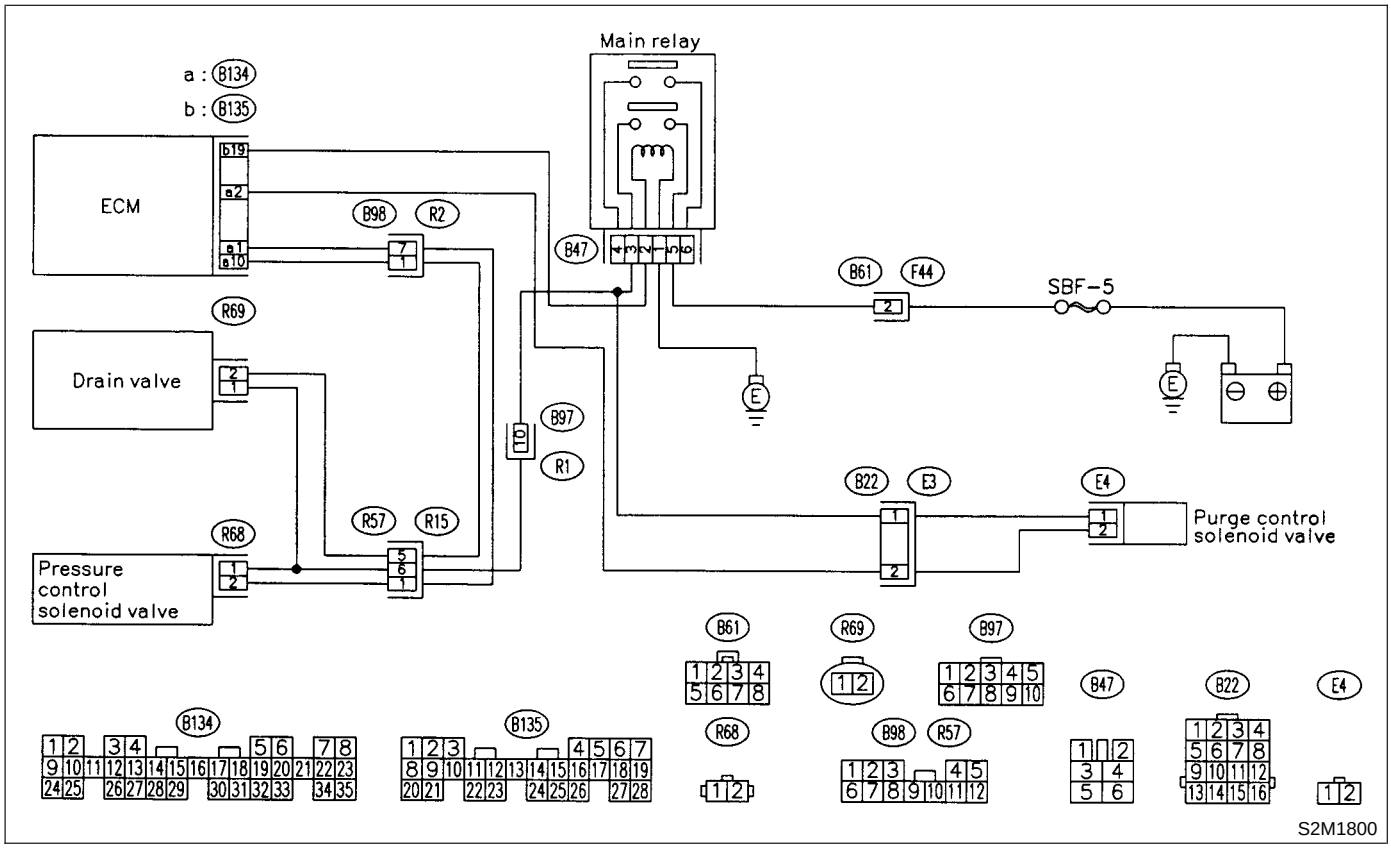
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

AG: DTC P0440 — EVAPORATIVE EMISSION CONTROL SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Gasoline smell
  - There is a hole of more than 1.0 mm (0.04 in) dia. in evaporation system or fuel tank.

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

- **WIRING DIAGRAM:**



10AG1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***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 **10AG2**.

10AG2 : CHECK FUEL FILLER CAP.

1) Turn ignition switch to OFF.
2) Check the fuel filler cap.

NOTE:
The DTC code is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.

CHECK : ***Is the fuel filler cap tightened securely?***
YES : Go to step **10AG3**.
NO : Tighten fuel filler cap securely.

10AG3 : CHECK FUEL FILLER PIPE PACKING.

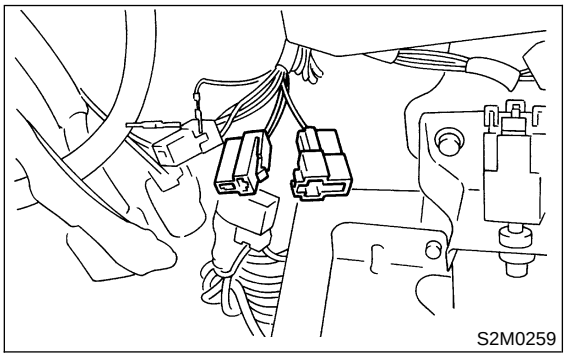
CHECK : ***Is there any damage to the seal between fuel filler cap and fuel filler pipe?***

YES : Repair or replace fuel filler cap and fuel filler pipe. <Ref. to 2-8 [W2A0].>

NO : Go to step **10AG4**.

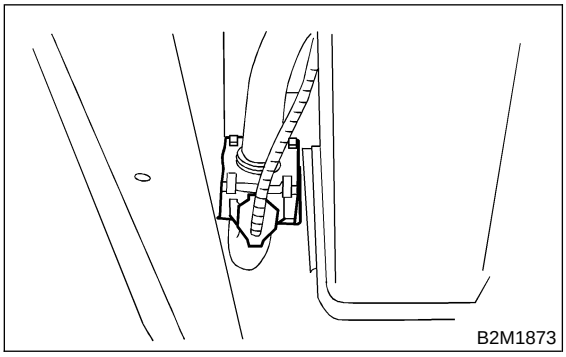
10AG4 : CHECK DRAIN VALVE.

1) Connect test mode connector.


S2M0259

2) Turn ignition switch to ON.
3) Operate drain valve.

NOTE:
Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>


B2M1873

CHECK : ***Does drain valve produce operating sound?***

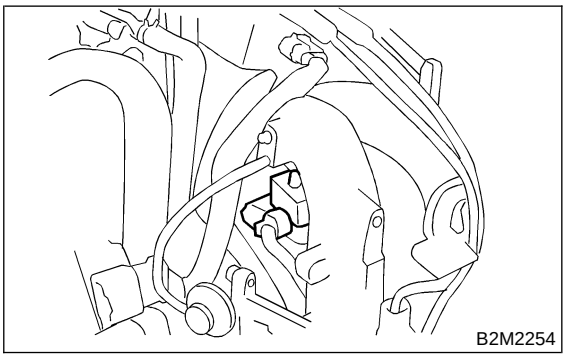
YES : Go to step **10AG5**.

NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

10AG5 : CHECK PURGE CONTROL SOLENOID VALVE.

Operate purge control solenoid valve.

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


B2M2254

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

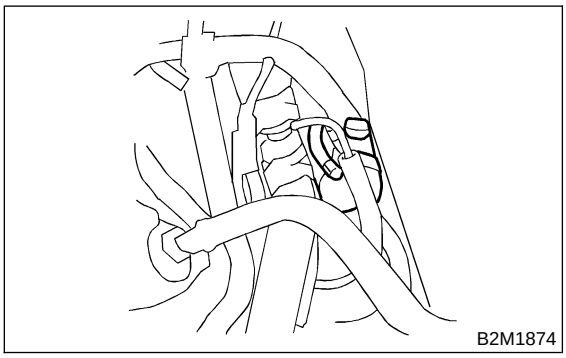
YES : Go to step **10AG6**.

NO : Replace purge control solenoid valve. <Ref. to 2-1 [W4A0].>

10AG6 : CHECK PRESSURE CONTROL SOLENOID VALVE.

Operate pressure control solenoid valve.

NOTE:
Pressure control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



CHECK : ***Does pressure control solenoid valve produce operating sound?***
YES : Go to step **10AG7**.
NO : Replace pressure control solenoid valve. <Ref. to 2-1 [W9A0].>

10AG7 : CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK : ***Is there a hole of more than 1.0 mm (0.04 in) dia. on fuel line?***
YES : Repair or replace fuel line. <Ref. to 2-8 [W8A0].>
NO : Go to step **10AG8**.

10AG8 : CHECK CANISTER.

CHECK : ***Is canister damaged or is there a hole of more than 1.0 mm (0.04 in) dia. in it?***
YES : Repair or replace canister. <Ref. to 2-1 [W3A0].>
NO : Go to step **10AG9**.

10AG9 : CHECK FUEL TANK.

Remove fuel tank. <Ref. to 2-8 [W1C0].>

CHECK : ***Is fuel tank damaged or is there a hole of more than 1.0 mm (0.04 in) dia. in it?***
YES : Repair or replace fuel tank. <Ref. to 2-8 [W1C0].>
NO : Go to step **10AG10**.

10AG10 : CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.

CHECK : ***Are there holes of more than 1.0 mm (0.04 in) dia., cracks, clogging or disconnections of hoses or pipes in evaporative emission control system?***
YES : Repair or replace hoses or pipes.
NO : Contact with SOA service.

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

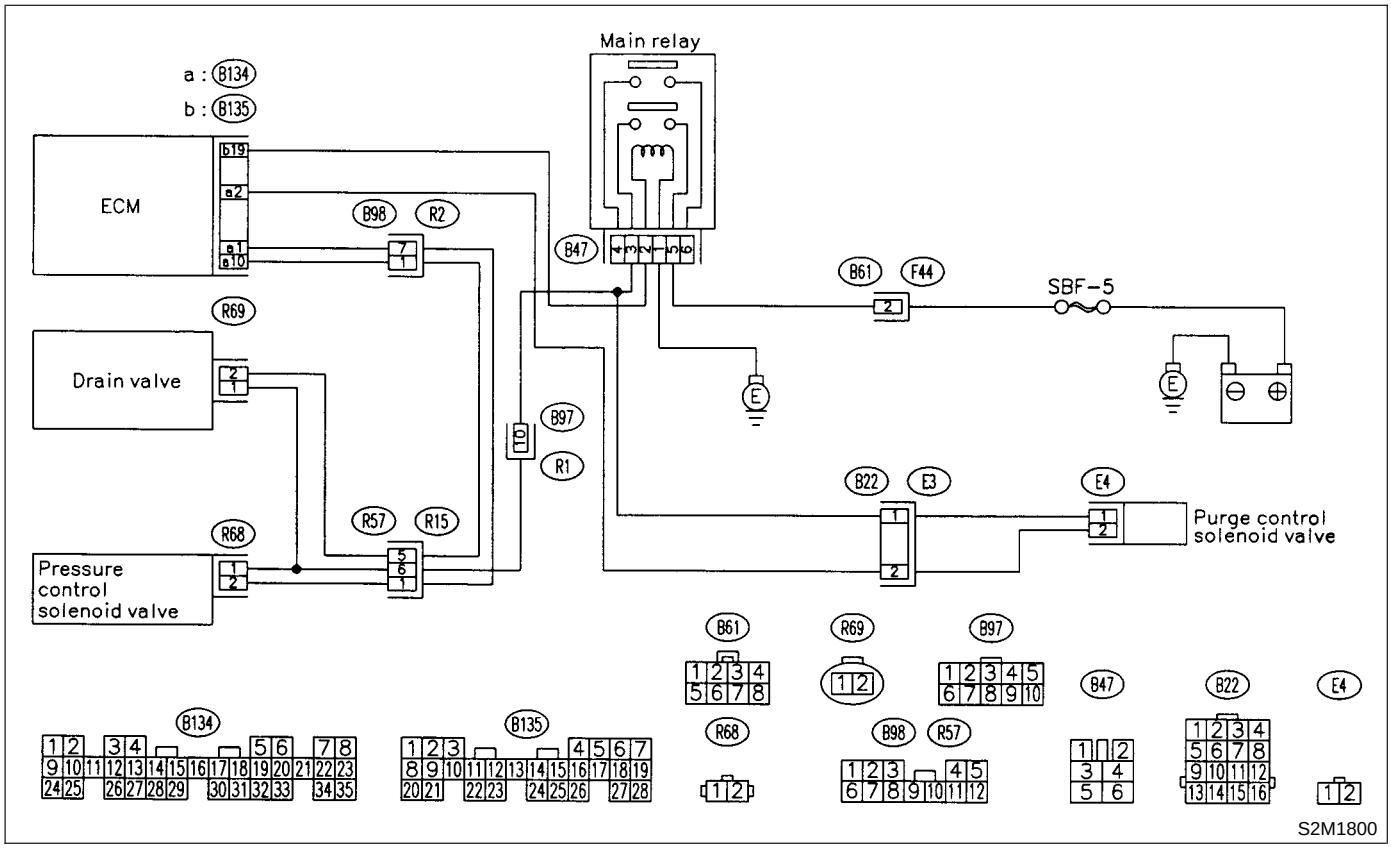
MEMO:

AH: DTC P0442 — EVAPORATIVE EMISSION CONTROL SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Gasoline smell
  - There is a hole of more than 0.5 mm (0.020 in) dia. in evaporation system or fuel tank.

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

- **WIRING DIAGRAM:**



10AH1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***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 **10AH2**.

10AH2 : CHECK FUEL FILLER CAP.

1) Turn ignition switch to OFF.
2) Check the fuel filler cap.

NOTE:
The DTC code is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.

CHECK : ***Is the fuel filler cap tightened securely?***
YES : Go to step **10AH3**.
NO : Tighten fuel filler cap securely.

10AH3 : CHECK FUEL FILLER PIPE PACKING.

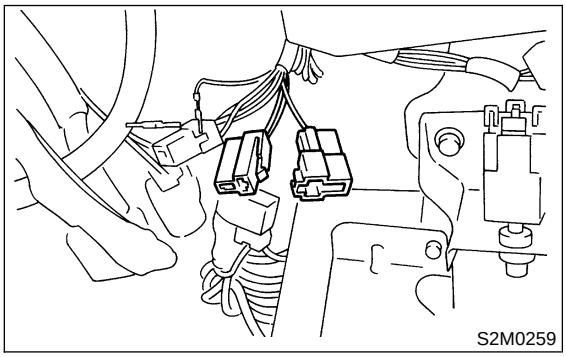
CHECK : ***Is there any damage to the seal between fuel filler cap and fuel filler pipe?***

YES : Repair or replace fuel filler cap and fuel filler pipe. <Ref. to 2-8 [W2A0].>

NO : Go to step **10AH4**.

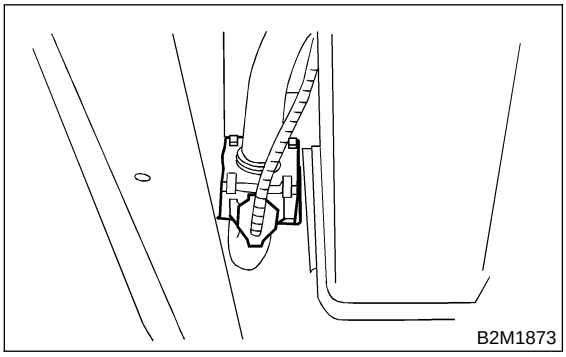
10AH4 : CHECK DRAIN VALVE.

1) Connect test mode connector.


S2M0259

2) Turn ignition switch to ON.
3) Operate drain valve.

NOTE:
Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>


B2M1873

CHECK : ***Does drain valve produce operating sound?***

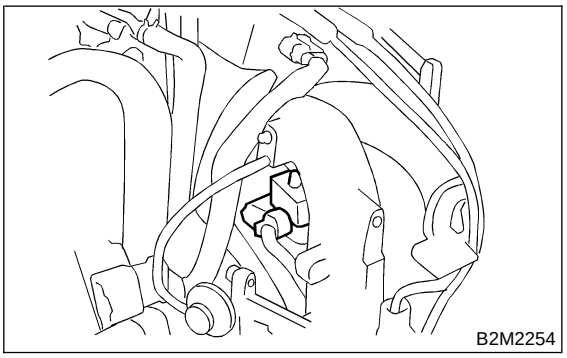
YES : Go to step **10AH5**.

NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

10AH5 : CHECK PURGE CONTROL SOLENOID VALVE.

Operate purge control solenoid valve.

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


B2M2254

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

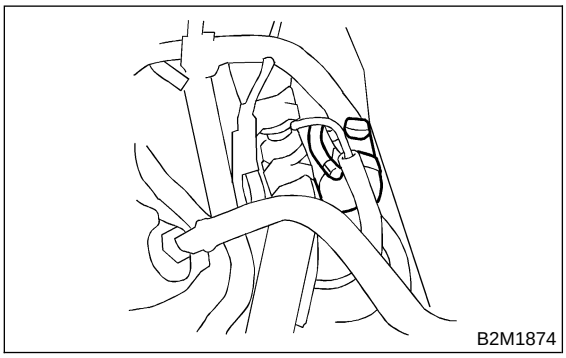
YES : Go to step **10AH6**.

NO : Replace purge control solenoid valve. <Ref. to 2-1 [W4A0].>

10AH6 : CHECK PRESSURE CONTROL SOLENOID VALVE.

Operate pressure control solenoid valve.

NOTE:
Pressure control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to “COMPULSORY VALVE OPERATION CHECK MODE”. <Ref. to 2-7 [T3F0].>



CHECK : ***Does pressure control solenoid valve produce operating sound?***
YES : Go to step **10AH7**.
NO : Replace pressure control solenoid valve. <Ref. to 2-1 [W9A0].>

10AH7 : CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK : ***Is there a hole of more than 0.5 mm (0.020 in) dia. on fuel line?***
YES : Repair or replace fuel line. <Ref. to 2-8 [W8A0].>
NO : Go to step **10AH8**.

10AH8 : CHECK CANISTER.

CHECK : ***Is canister damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?***
YES : Repair or replace canister. <Ref. to 2-1 [W3A0].>
NO : Go to step **10AH9**.

10AH9 : CHECK FUEL TANK.

Remove fuel tank. <Ref. to 2-8 [W1C0].>

CHECK : ***Is fuel tank damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?***
YES : Repair or replace fuel tank. <Ref. to 2-8 [W1C0].>
NO : Go to step **10AH10**.

10AH10 : CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.

CHECK : ***Are there holes of more than 0.5 mm (0.020 in) dia., cracks, clogging or disconnections of hoses or pipes in evaporative emission control system?***
YES : Repair or replace hoses or pipes.
NO : Contact with SOA service.

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

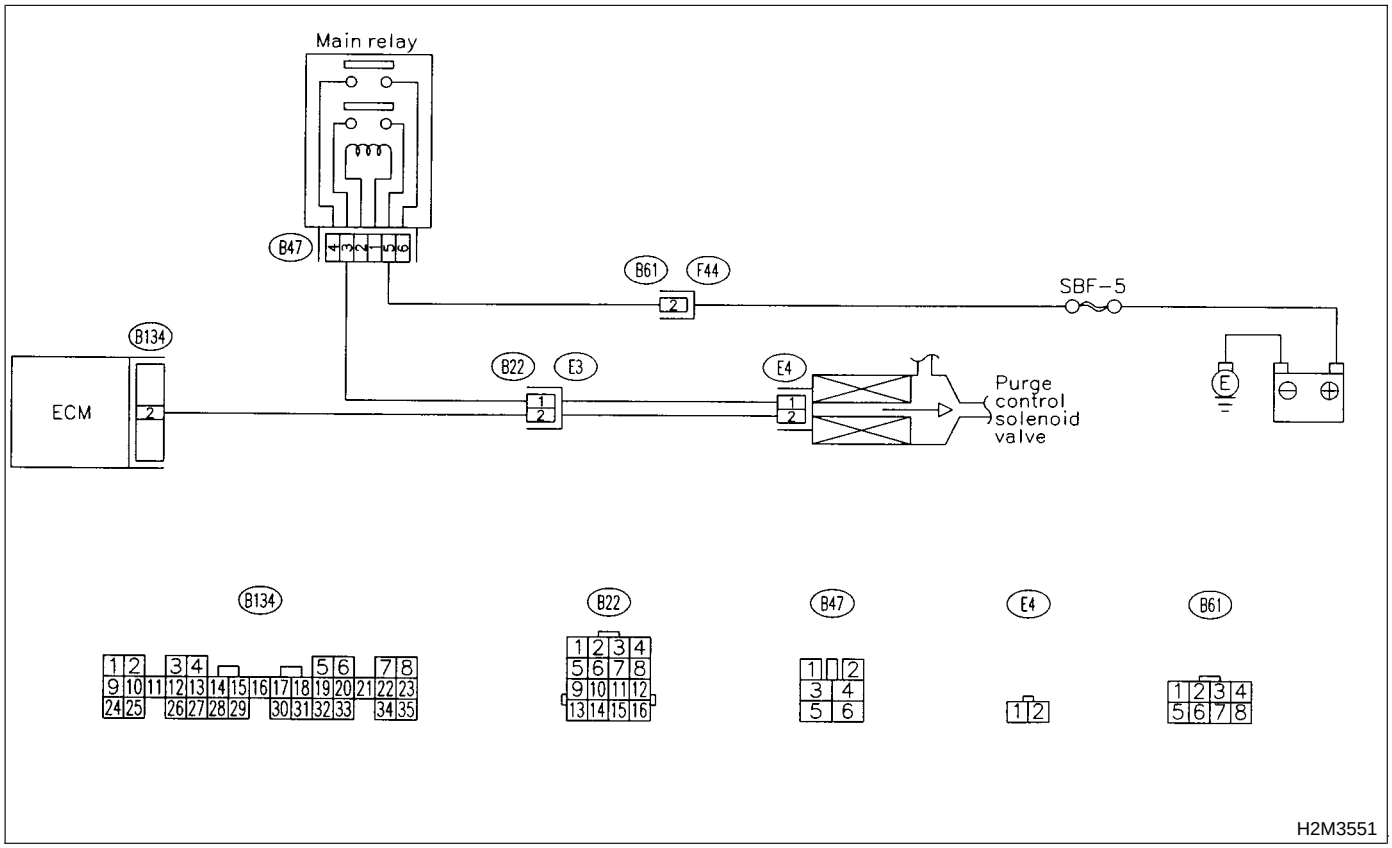
MEMO:

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

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

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

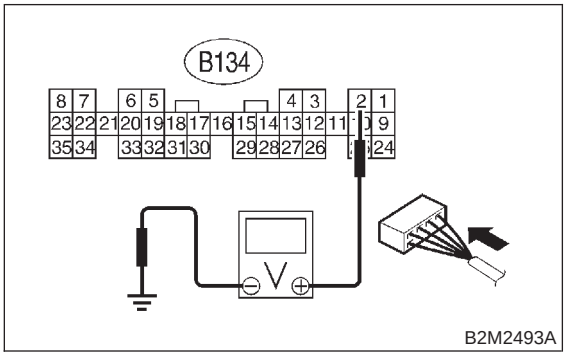
- **WIRING DIAGRAM:**



10AI1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

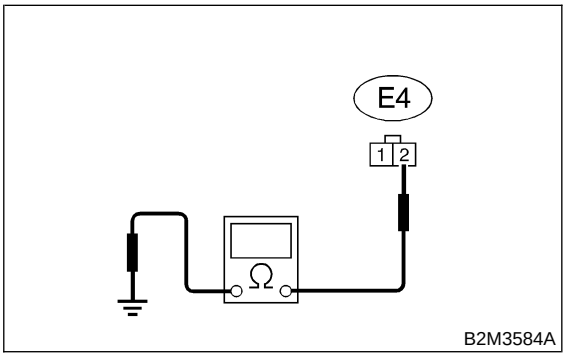
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

NO : Go to step **10AI2**.

10AI2 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

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

Connector & terminal
(E4) No. 2 — Engine ground:



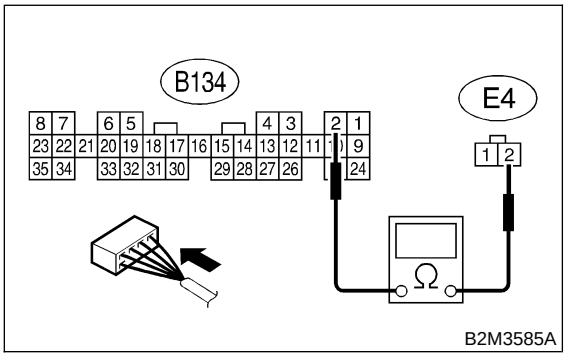
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and purge control solenoid valve connector.

NO : Go to step **10AI3**.

10AI3 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

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

Connector & terminal
(B134) No. 2 — (E4) No. 2:



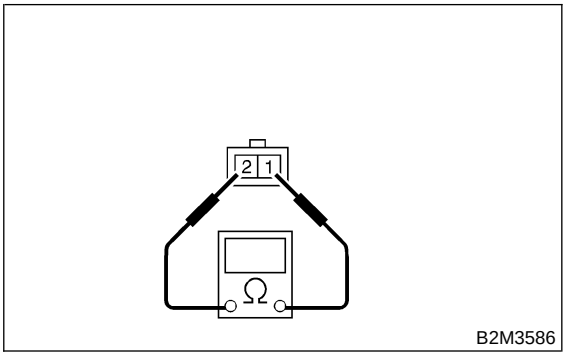
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AI4**.
NO : Repair open circuit in harness between ECM and purge control solenoid valve connector.

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

10AI4 : 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:

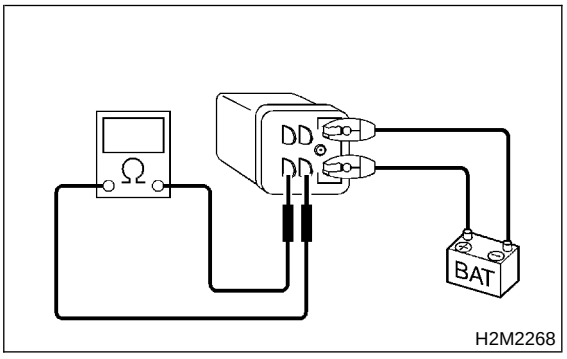


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **10AI5**.
NO : Replace purge control solenoid valve. <Ref. to 2-1 [W4A0].>

10AI5 : CHECK MAIN RELAY.

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

Terminals
No. 3 — No. 5:

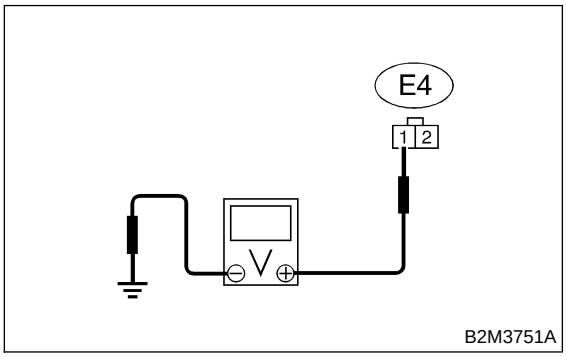


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10AI6**.
NO : Replace main relay.

10AI6 : 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 **10AI7**.
NO : Repair open circuit in harness between battery and purge control solenoid valve connector.

10AI7 : CHECK POOR CONTACT.

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

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

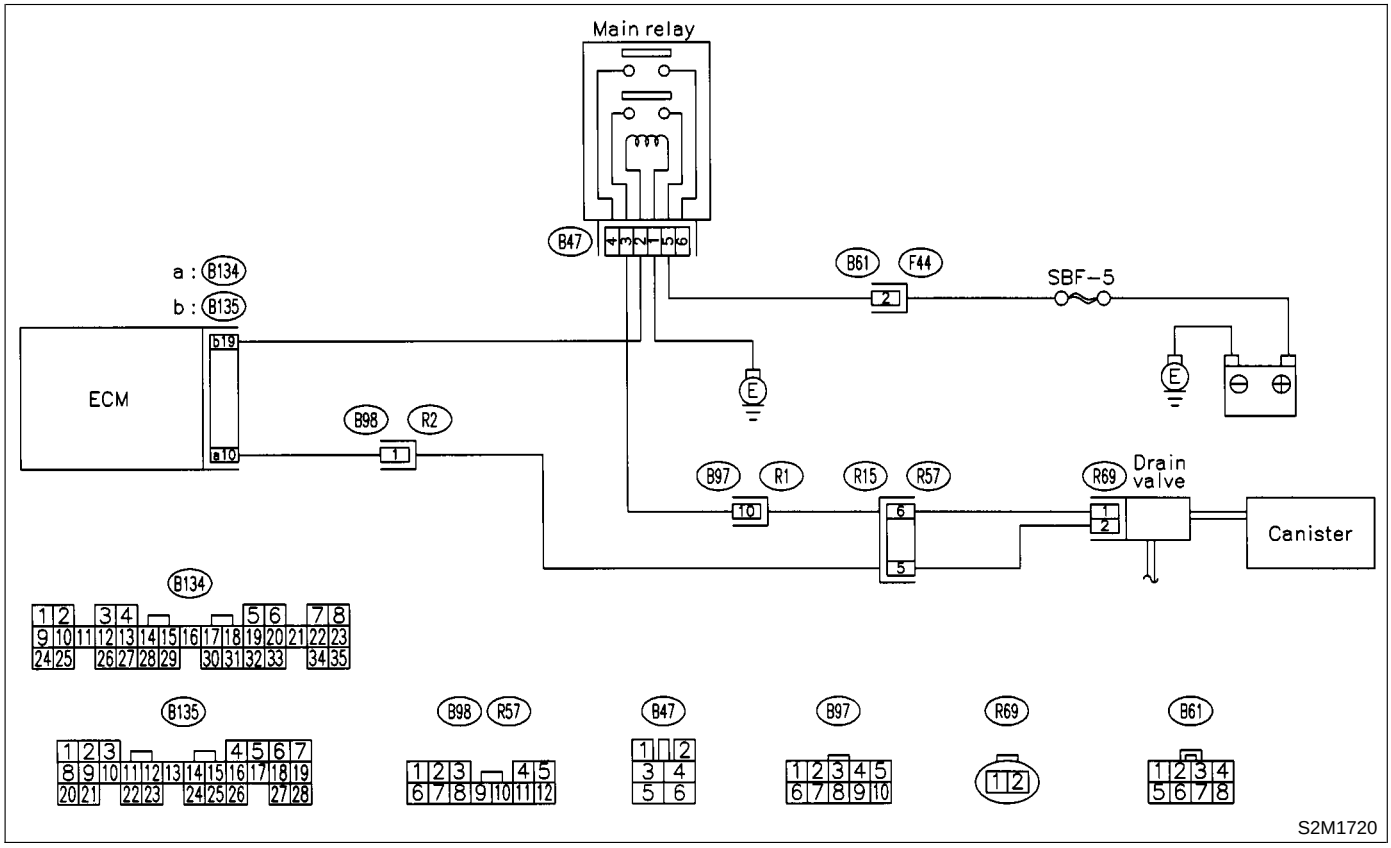
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

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

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

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

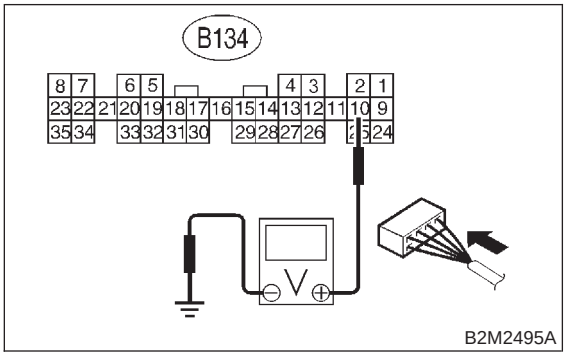
- **WIRING DIAGRAM:**



10AJ1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AJ2**.
NO : Go to step **10AJ3**.

10AJ2 : CHECK POOR CONTACT.

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

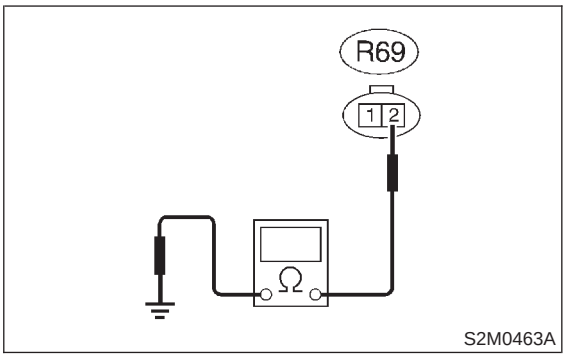
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in drain valve connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B98 and R57)

10AJ3 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

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

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

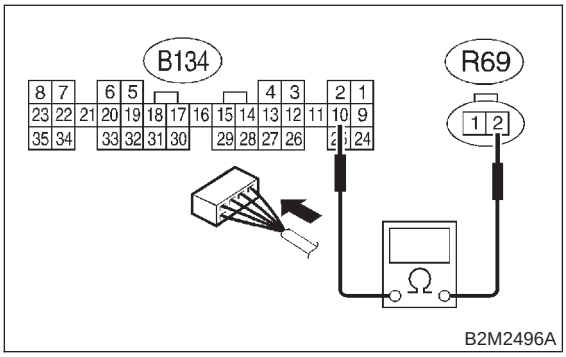


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and drain valve connector.
NO : Go to step **10AJ4**.

10AJ4 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and drain valve connector.

Connector & terminal
(B134) No. 10 — (R69) No. 2:



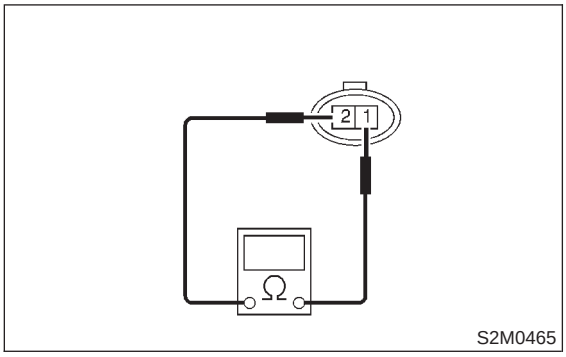
CHECK : ***Is the voltage less than 1 Ω?***
YES : Go to step **10AJ5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and drain valve connector
- Poor contact in coupling connectors (B98 and R57)

10AJ5 : CHECK DRAIN VALVE.

Measure resistance between drain valve terminals.

Terminals
No. 1 — No. 2:

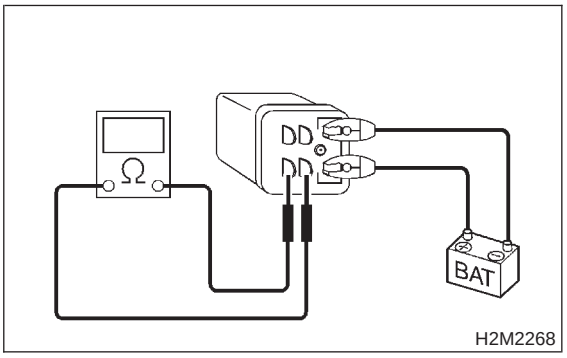


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **10AJ6**.
NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

10AJ6 : CHECK MAIN RELAY.

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

Terminals
No. 3 — No. 5:

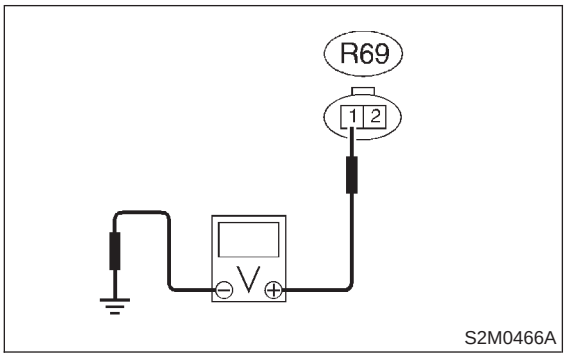


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10AJ7**.
NO : Replace main relay.

10AJ7 : CHECK POWER SUPPLY TO DRAIN VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between drain valve and chassis ground.

Connector & terminal
(R69) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AJ8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between battery and drain valve
● Poor contact in coupling connectors (B97 and R57)
● Poor contact in main relay connector

10AJ8 : CHECK POOR CONTACT.

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

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

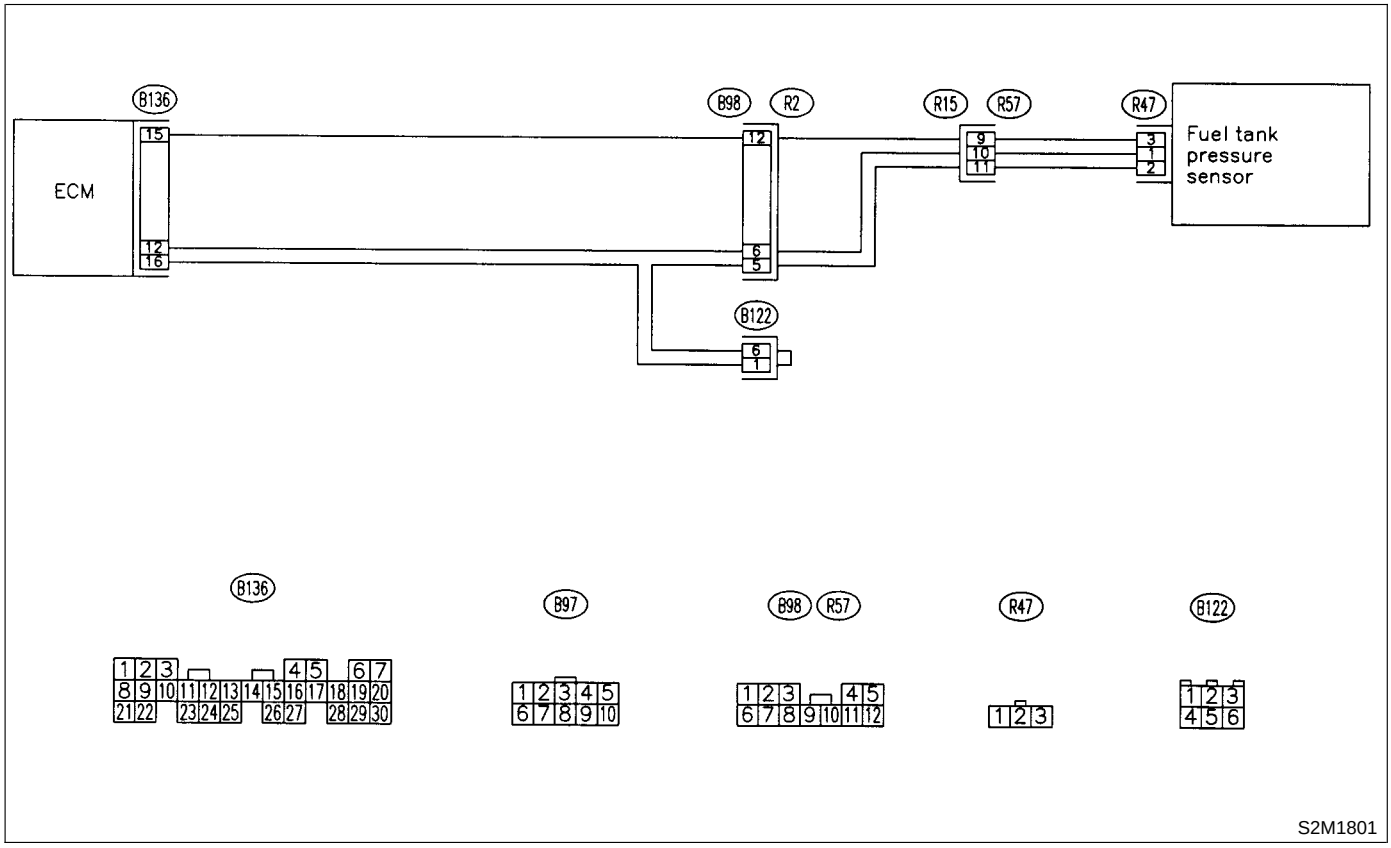
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

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

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

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

- **WIRING DIAGRAM:**



10AK1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any DTC on display?***
YES : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>
NO : Go to step **10AK2**.

10AK2 : CHECK FUEL FILLER CAP.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK : ***Is the fuel filler cap tightened securely?***
YES : Go to step **10AK3**.
NO : Tighten fuel filler cap securely.

10AK3 : CHECK PRESSURE/VACUUM LINE.

NOTE:
Check the following items.
- Disconnection, leakage and clogging of the vacuum hoses and pipes between fuel tank pressure sensor and fuel tank
- Disconnection, leakage and clogging of air ventilation hoses and pipes between fuel filler pipe and fuel tank

CHECK : ***Is there a fault in pressure/vacuum line?***
YES : Repair or replace hoses and pipes.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W8A0].>

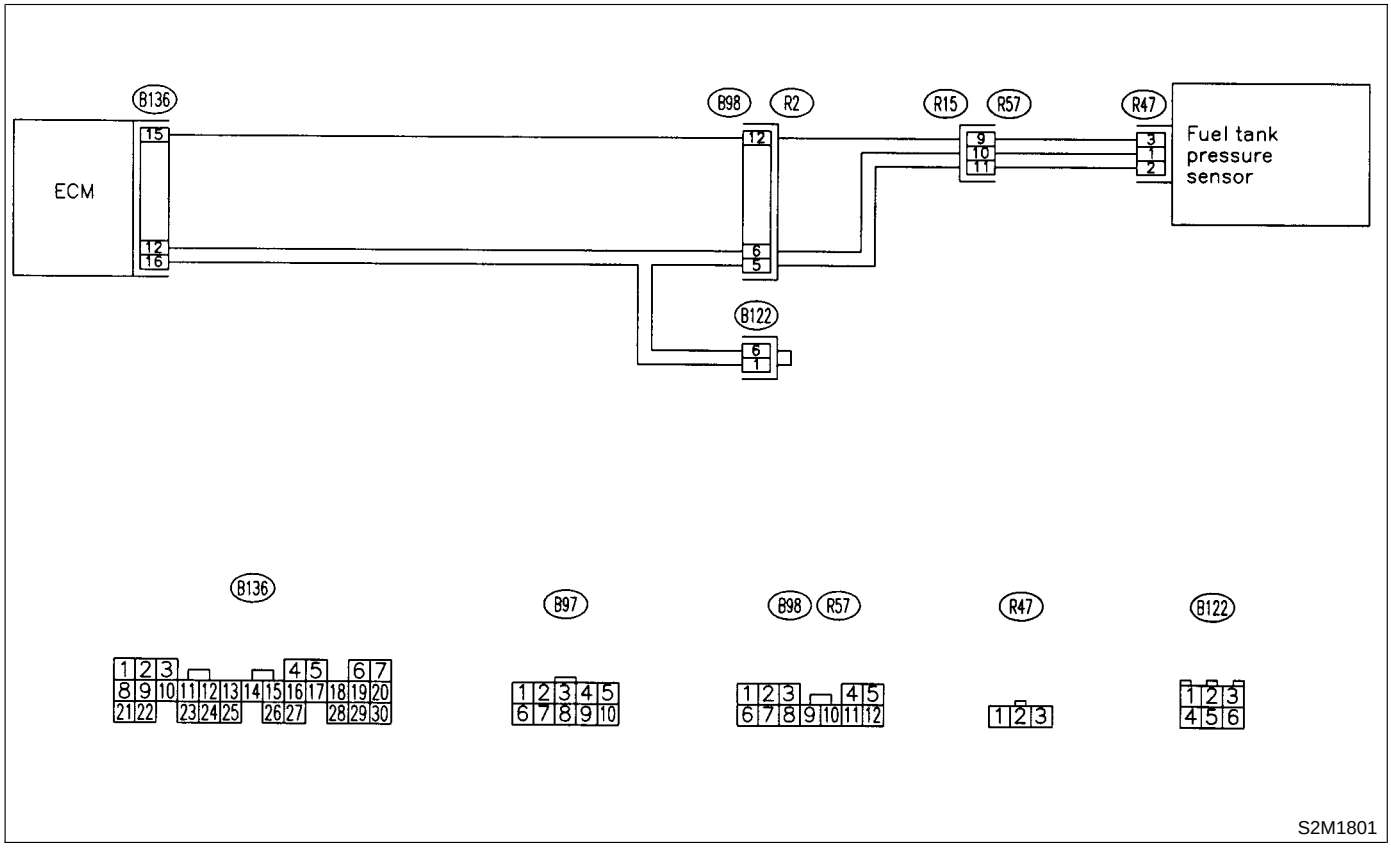
MEMO:

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

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

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

- **WIRING DIAGRAM:**



10AL1 : CHECK CURRENT DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Turn ignition switch to ON.
5) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool.

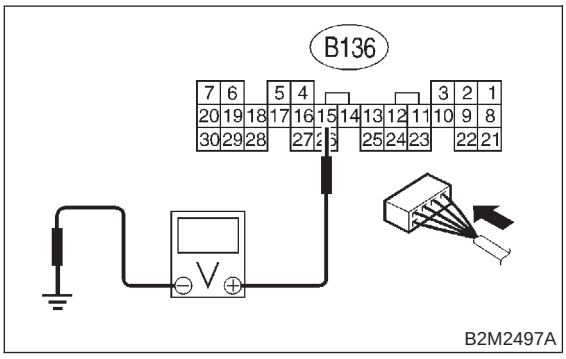
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value less than −2.8 kPa (−21.0 mmHg, −0.827 inHg)?***
YES : Go to step **10AL2**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

10AL2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

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

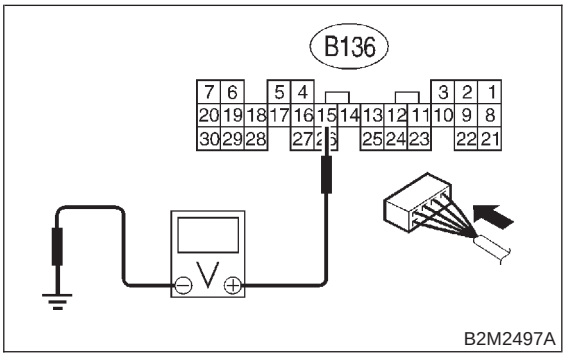


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AL4**.
NO : Go to step **10AL3**.

10AL3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

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



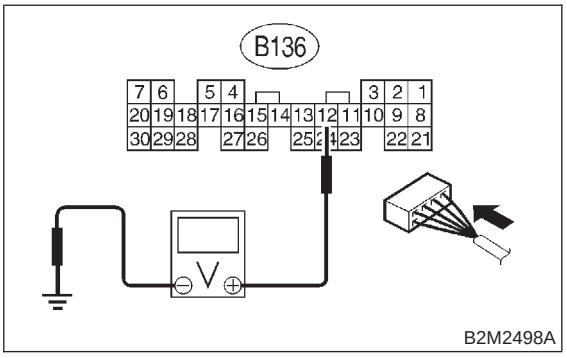
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10AL4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 12 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10AL6**.
NO : Go to step **10AL5**.

10AL5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel tank pressure sensor signal using Subaru Select Monitor.

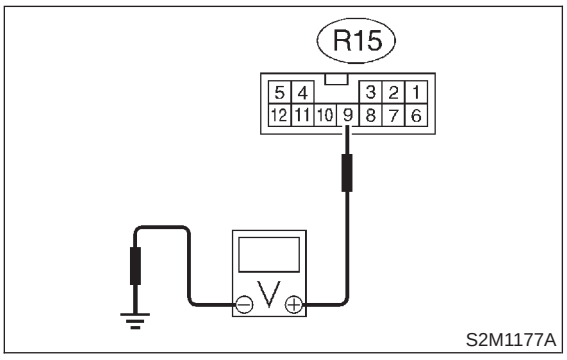
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than −2.8 kPa (−21.0 mmHg, −0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10AL6**.

10AL6 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Remove rear seat cushion (Wagon).
3) Separate rear wiring harness and fuel tank cord.
4) Turn ignition switch to ON.
5) Measure voltage between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 9 (+) — Chassis ground (−):



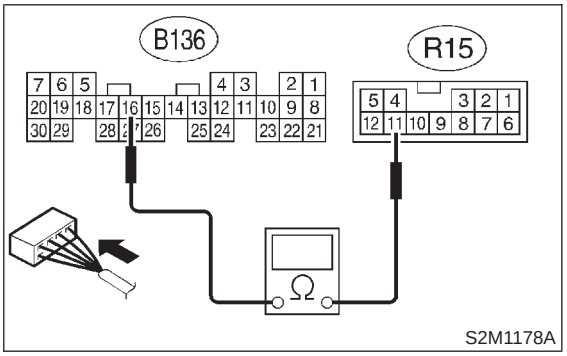
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AL7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R15)
● Poor contact in coupling connector (B98)

10AL7 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

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

Connector & terminal
(B136) No. 16 — (R15) No. 11:



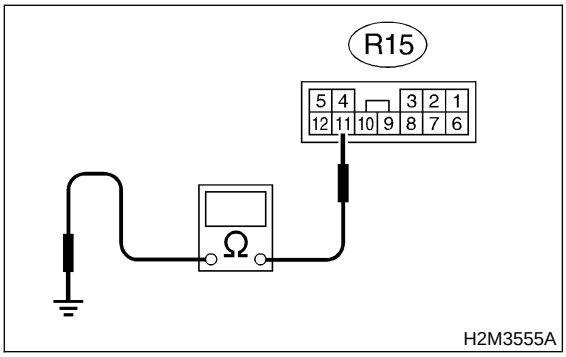
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AL8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R15)
● Poor contact in coupling connector (B98)
● Poor contact in joint connector (B122)

10AL8 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 11 — Chassis ground:

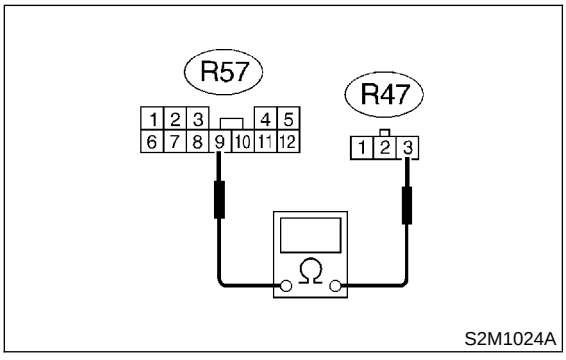


CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **10AL9**.
NO : Repair ground short circuit in harness between ECM and rear wiring harness connector (R15).

10AL9 : CHECK FUEL TANK CORD.

1) Disconnect connector from fuel tank pressure sensor.
2) Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 9 — (R47) No. 3:

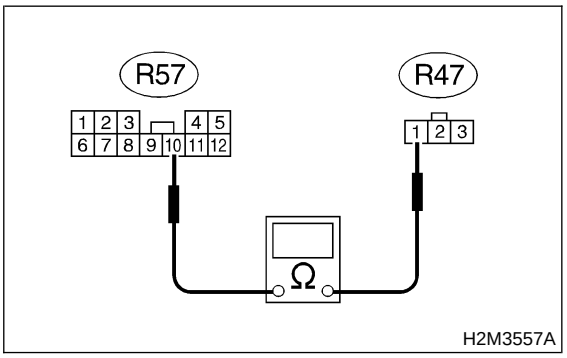


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AL10**.
NO : Repair open circuit in fuel tank cord.

10AL10 : CHECK FUEL TANK CORD.

Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 10 — (R47) No. 1:

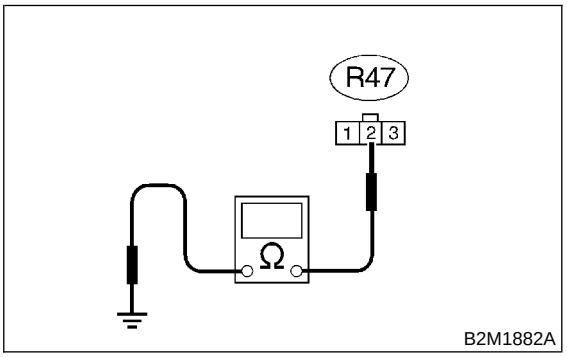


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AL11**.
NO : Repair open circuit in fuel tank cord.

10AL11 : CHECK FUEL TANK CORD.

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

Connector & terminal
(R47) No. 2 — Chassis ground:



CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **10AL12**.
NO : Repair ground short circuit in fuel tank cord.

10AL12 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in fuel tank pressure sensor connector?***

YES : Repair poor contact in fuel tank pressure sensor connector.

NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W8A0].>

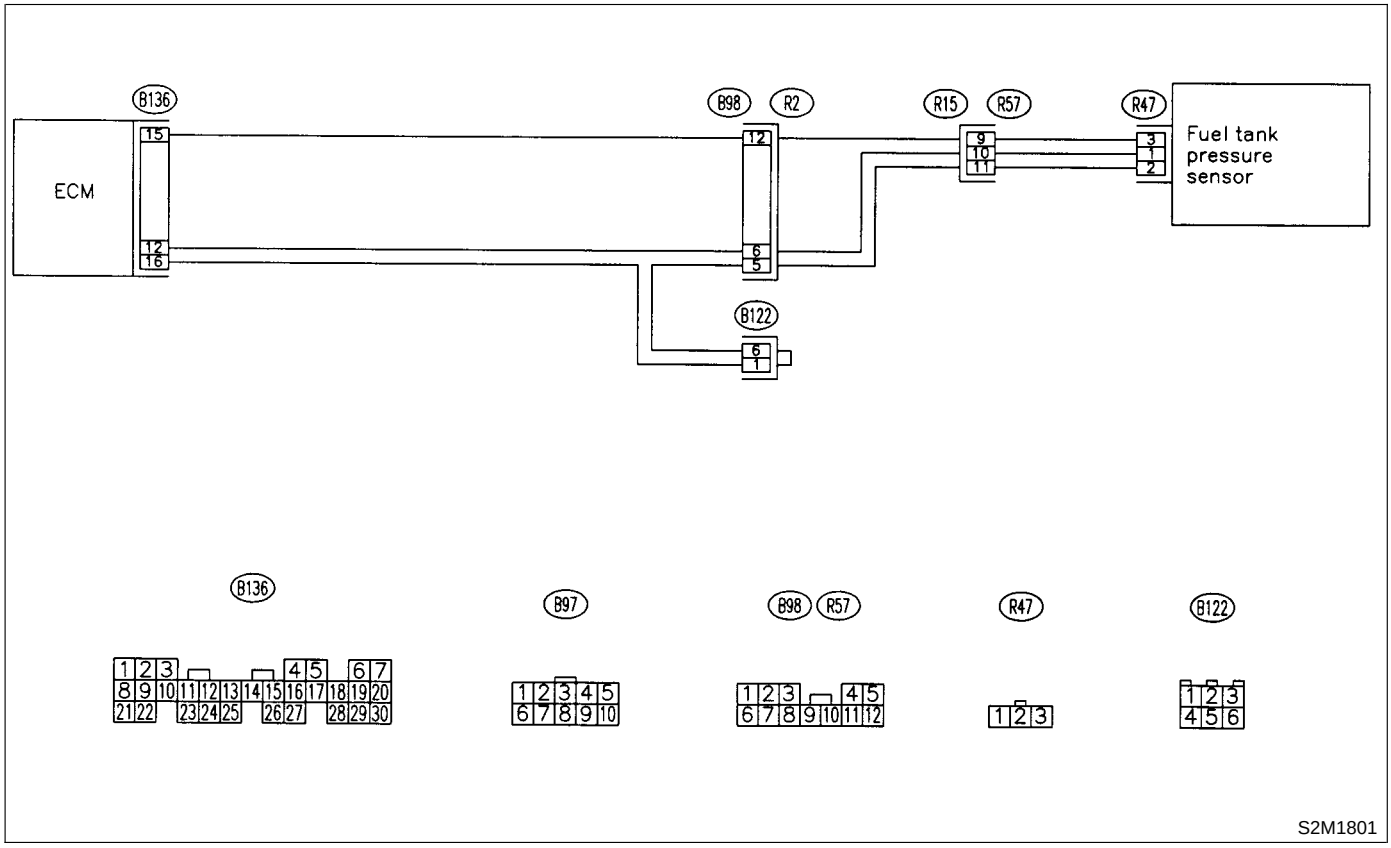
MEMO:

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

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

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

- **WIRING DIAGRAM:**



10AM1 : CHECK CURRENT DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Turn ignition switch to ON.
5) Read data of fuel tank pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool.

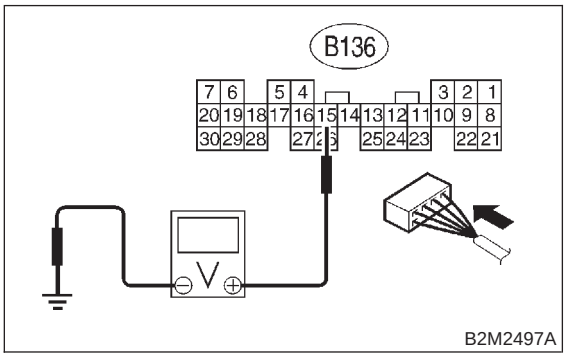
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?***
YES : Go to step **10AM12**.
NO : Go to step **10AM2**.

10AM2 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

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

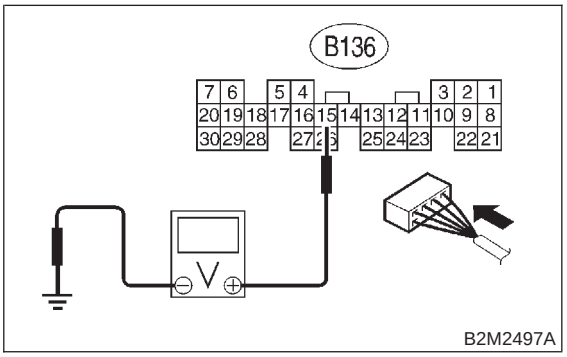


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AM4**.
NO : Go to step **10AM3**.

10AM3 : CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

Measure voltage between ECM connector and chassis ground.

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

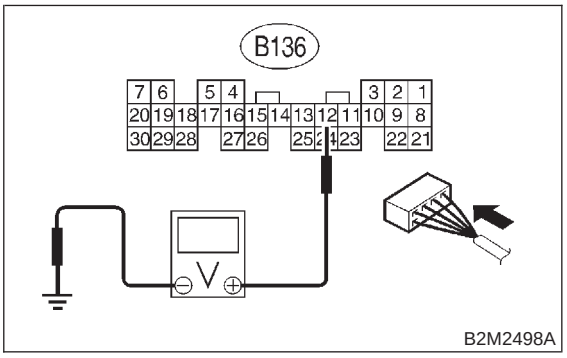


CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

10AM4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 12 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10AM6**.
NO : Go to step **10AM5**.

10AM5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel tank pressure sensor signal using Subaru Select Monitor.

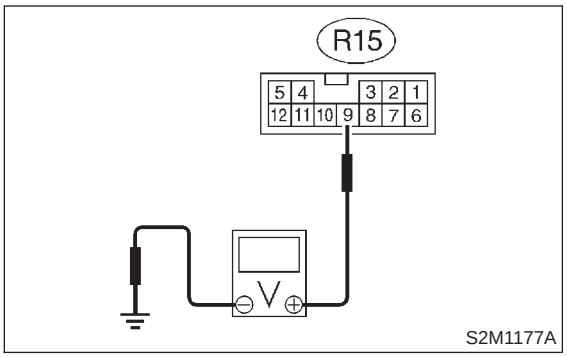
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than −2.8 kPa (−21.0 mmHg, −0.827 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10AM6**.

10AM6 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

1) Turn ignition switch to OFF.
2) Remove rear seat cushion (Sedan) or move rear seat cushion (Wagon).
3) Separate rear wiring harness and fuel tank cord.
4) Turn ignition switch to ON.
5) Measure voltage between rear wiring harness connector and chassis ground.

Connector & terminal
(R15) No. 9 (+) — Chassis ground (−):



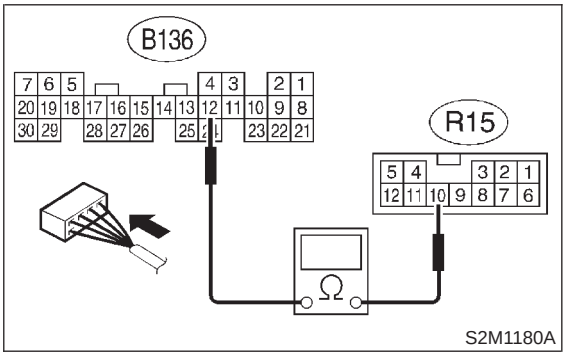
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10AM7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R15)
● Poor contact in coupling connector (B98)

10AM7 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

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

Connector & terminal
(B136) No. 12 — (R15) No. 10:



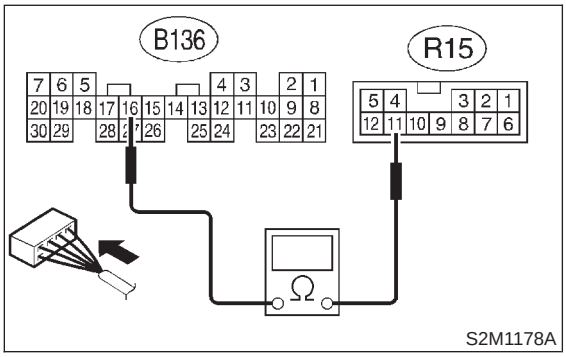
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AM8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and rear wiring harness connector (R15)
● Poor contact in coupling connector (B98)

10AM8 : CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.

Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(B136) No. 16 — (R15) No. 11:

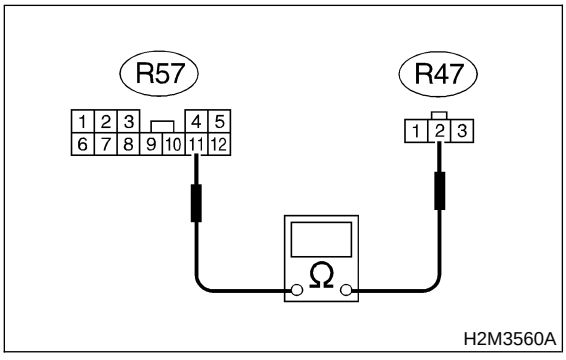


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AM9**.
NO : Repair ground short circuit in harness between ECM and rear wiring harness connector (R15).

10AM9 : CHECK FUEL TANK CORD.

1) Disconnect connector from fuel tank pressure sensor.
2) Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 11 — (R47) No. 2:

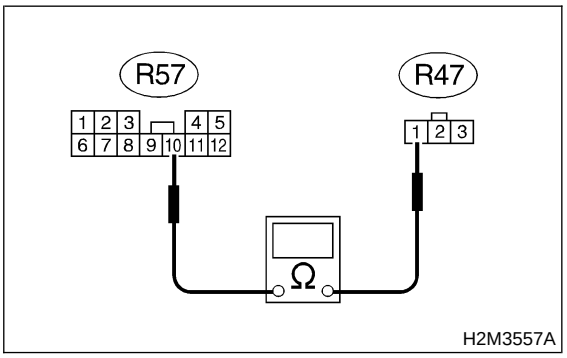


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AM10**.
NO : Repair open circuit in fuel tank cord.

10AM10 : CHECK FUEL TANK CORD.

Measure resistance of fuel tank cord.

Connector & terminal
(R57) No. 10 — (R47) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AM11**.
NO : Repair open circuit in fuel tank cord.

10AM11 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in fuel tank pressure sensor connector?***
YES : Repair poor contact in fuel tank pressure sensor connector.
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W8A0].>

10AM12 : CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

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

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

CHECK : ***Is the value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?***

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

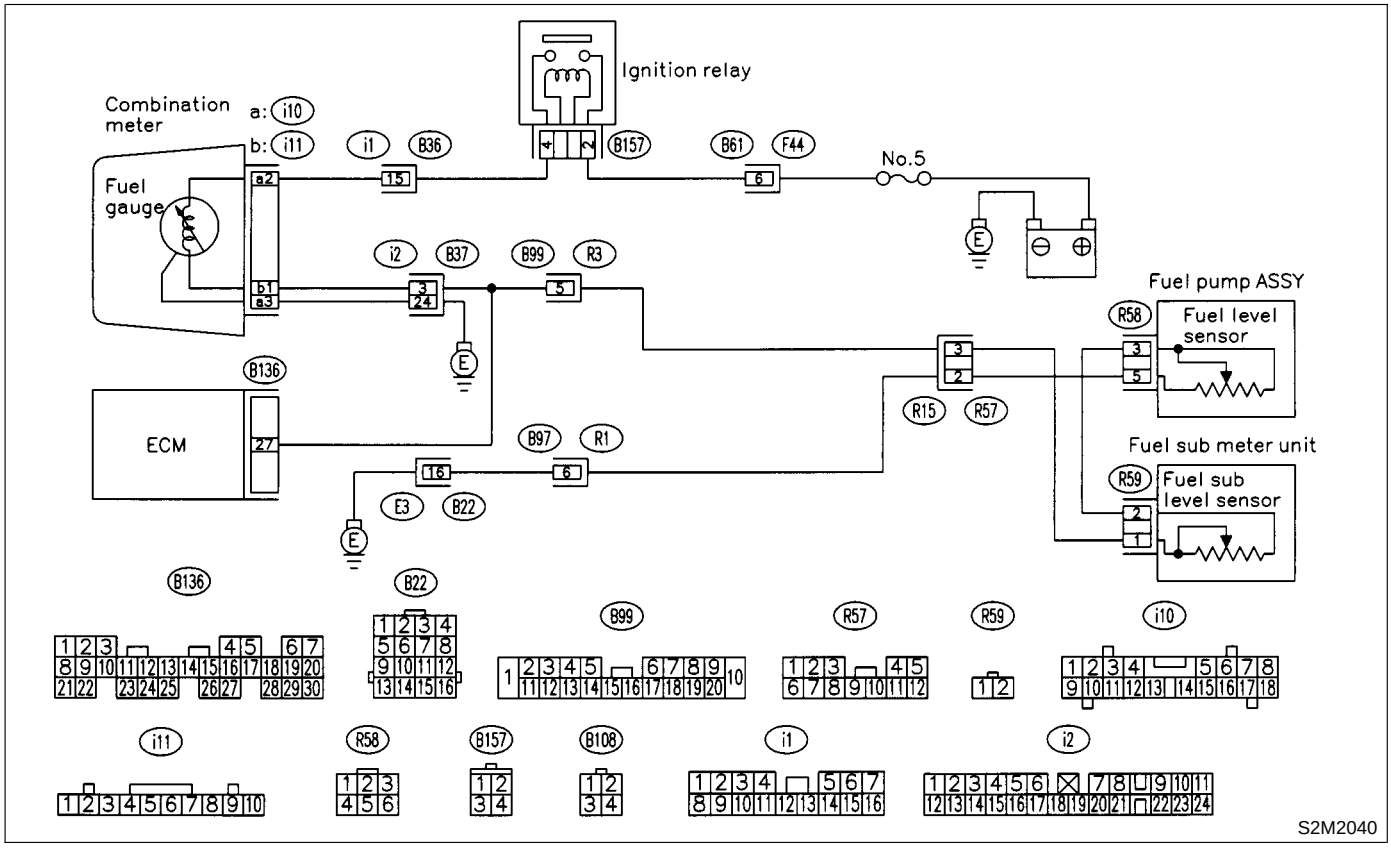
NO : Replace fuel tank pressure sensor. <Ref. to 2-1 [W8A0].>

AN: DTC P0461 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

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

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

- **WIRING DIAGRAM:**



10AN1 :	CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0462 or P0463?***

YES : Inspect DTC P0462 or P0463 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

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

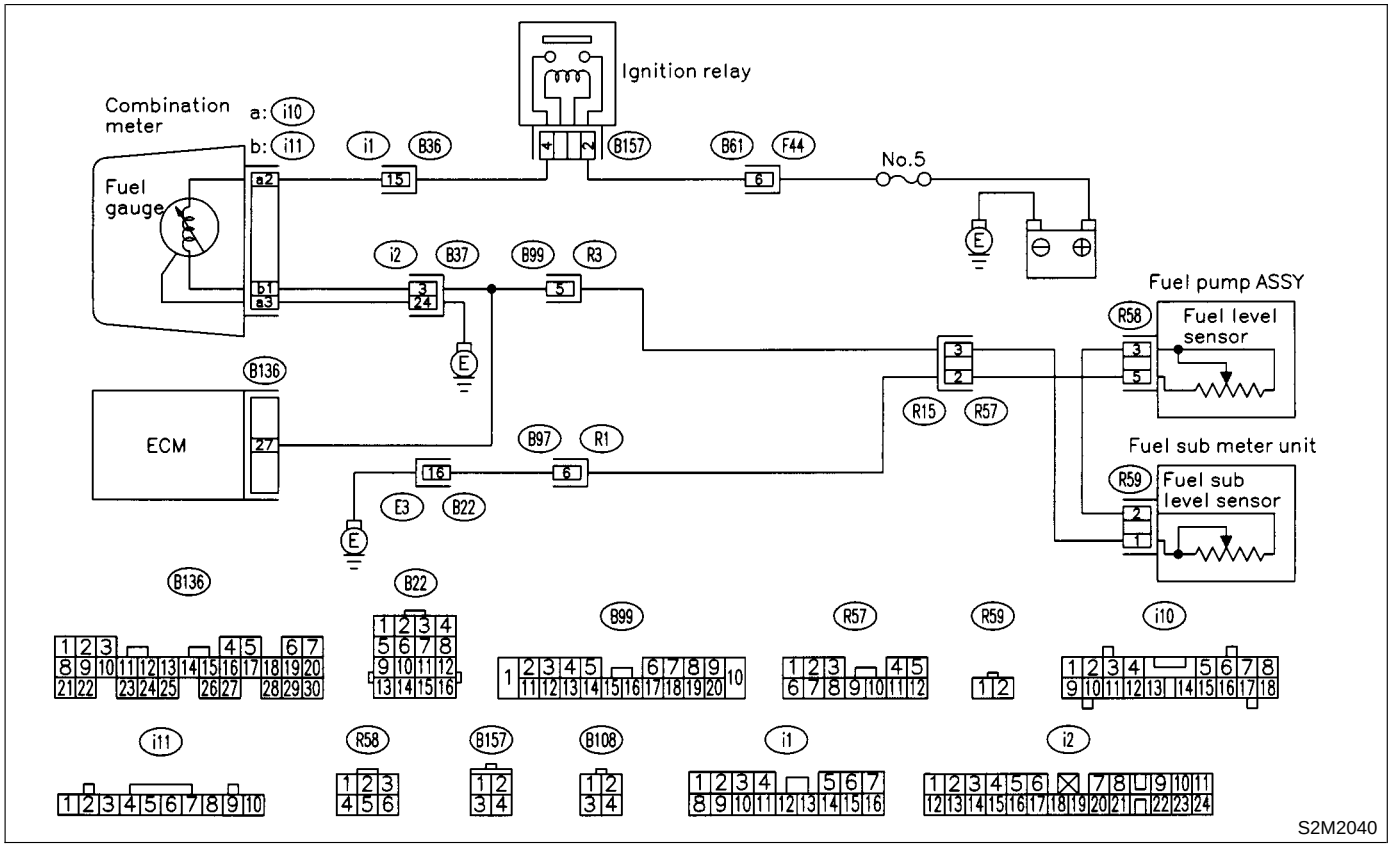
NO : Replace fuel sending unit <Ref. to 2-1 [W5A0].> and fuel sub level sensor <Ref. to 2-1 [W7A0].>.

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

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

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

- **WIRING DIAGRAM:**



10AO1 :	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer and tachometer operate normally?***

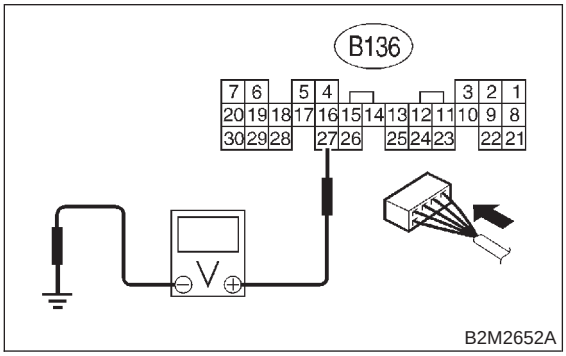
YES : Go to step **10AO2**.

NO : Repair or replace combination meter.

10AO2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.12 V?***
YES : Go to step **10AO6**.
NO : Go to step **10AO3**.

10AO3 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

Read data of fuel level sensor signal using Subaru Select Monitor.

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

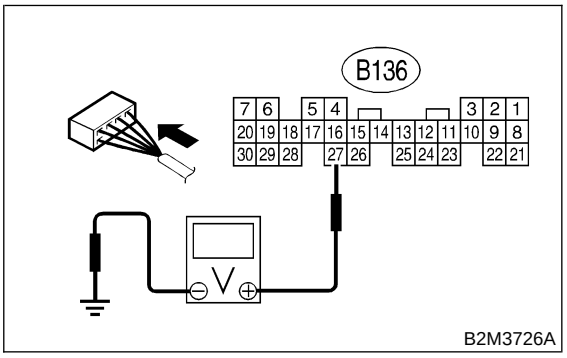
CHECK : ***Does the value change less than 0.12 V by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in ECM connector.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
● Poor contact in combination meter connector
● Poor contact in ECM connector
● Poor contact in coupling connectors (B99 and R57)

10AO4 : CHECK INPUT VOLTAGE OF ECM.

1) Turn ignition switch to OFF.
2) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15).
3) Turn ignition switch to ON.
4) Measure voltage of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):

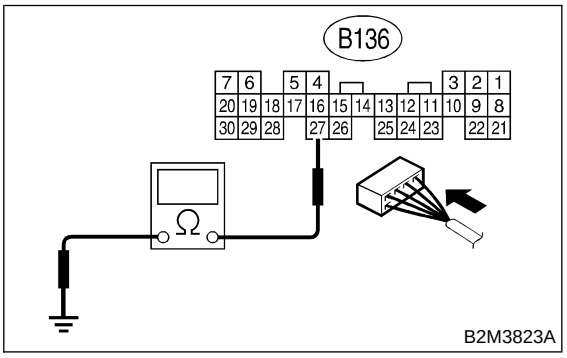


CHECK : ***Is the voltage more than 0.12 V?***
YES : Go to step **10AO4**.
NO : Go to step **10AO7**.

10AO5 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER.

1) Turn ignition switch to OFF.
2) Disconnect connector from connector (i10) and ECM connector.
3) Measure resistance between ECM and chassis ground.

Connector & terminal
(B136) No. 27 — Chassis ground:

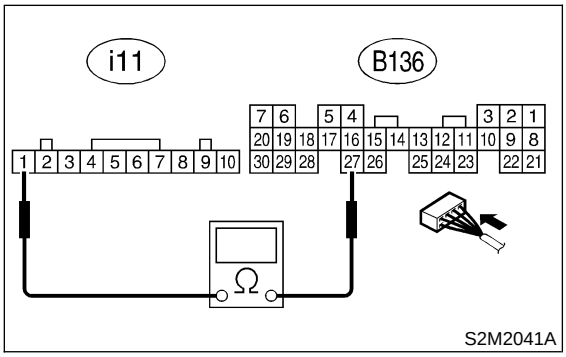


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AO6**.
NO : Repair ground short circuit in harness between ECM and combination meter connector.

10AO6 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER.

Measure resistance between ECM and combination meter connector.

Connector & terminal
(B136) No. 27 — (i11) No. 1:



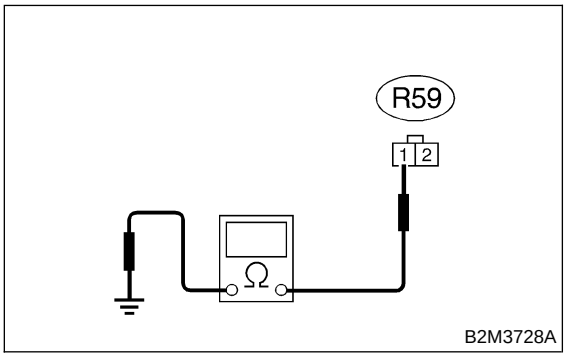
CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair or replace combination meter. <Ref. to 6-2 [W8A0].>
NO : Repair open circuit between ECM and combination meter connector.

NOTE:
In this case, repair the following:
Poor contact in coupling connector (R98)

10AO7 : CHECK FUEL TANK CORD.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel sub level sensor.
3) Measure resistance between fuel sub level sensor and chassis ground.

Connector & terminal
(R59) No. 1 — Chassis ground:

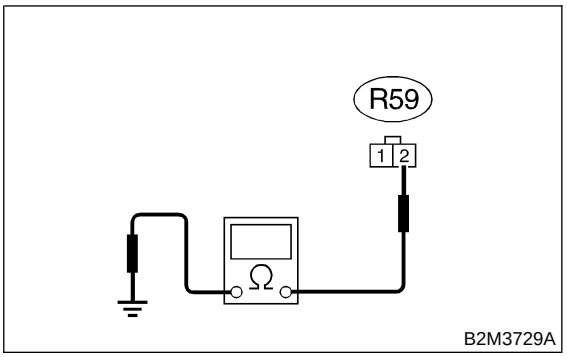


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AO8**.
NO : Repair ground short circuit in fuel tank cord.

10AO8 : CHECK FUEL TANK CORD.

1) Disconnect connector from fuel pump assembly.
2) Measure resistance between fuel pump assembly and chassis ground.

Connector & terminal
(R59) No. 2 — Chassis ground:



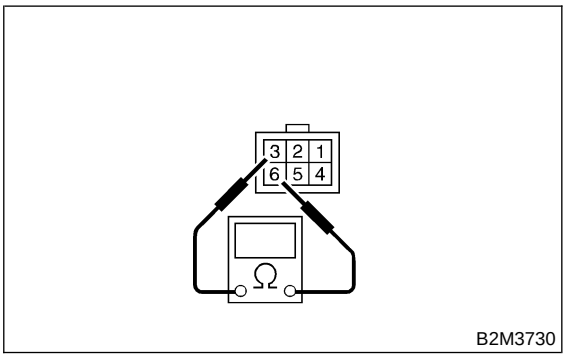
CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AO9**.
NO : Repair ground short circuit in fuel tank cord.

10AO9 : CHECK FUEL LEVEL SENSOR.

WARNING:
During work procedures, if fuel tank is more than 3/4 full, be careful because fuel may spill.

1) Remove fuel pump assembly. <Ref. to 2-8 [W3A0].>
2) Measure resistance between fuel level sensor and terminals with its float set to the full position.

Terminals
No. 3 — No. 6:



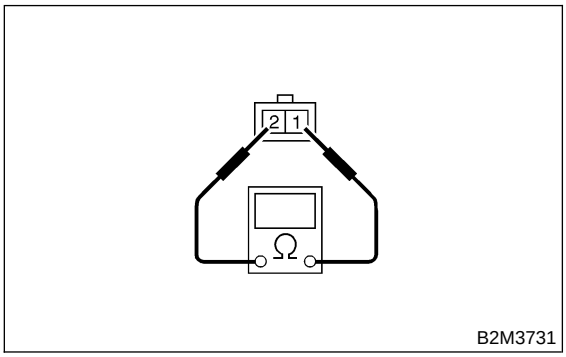
CHECK : ***Is the resistance between 0.5 and 2.5 Ω?***
YES : Go to step **10AO10**.
NO : Replace fuel level sensor.

10AO10 : CHECK FUEL SUB LEVEL SENSOR.

WARNING:
During work procedures, if fuel tank is more than 3/4 full, be careful because fuel may spill.

1) Remove fuel sub level sensor. <Ref. to 2-8 [W6A0].>
2) Measure resistance between fuel sub level sensor and terminals with its float set to the full position.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance between 0.5 and 2.5 Ω?***

YES : Repair poor contact in harness between ECM and combination meter connector.

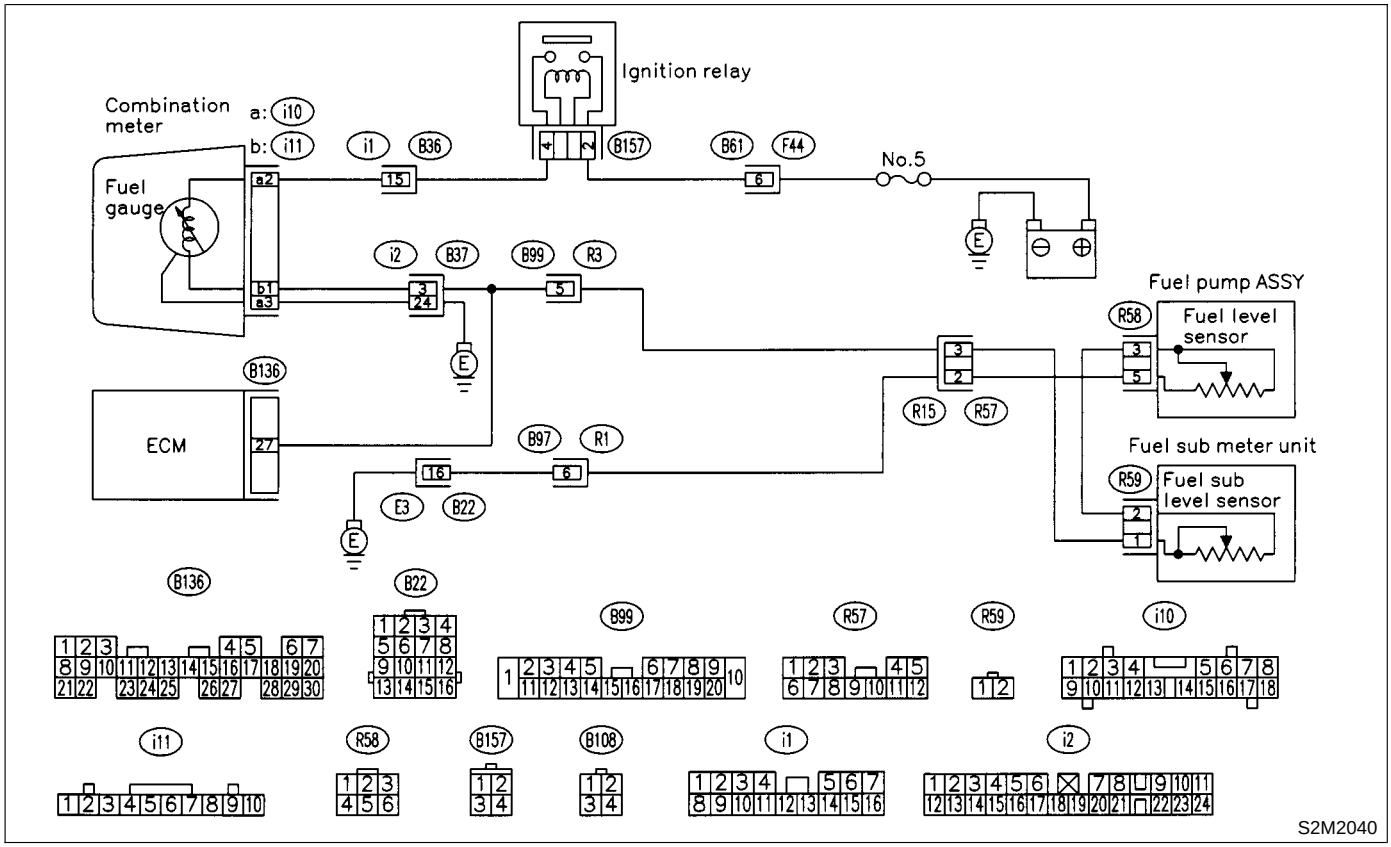
NO : Replace fuel sub level sensor.

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

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

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

- **WIRING DIAGRAM:**



10AP1 :	**CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.**

CHECK : ***Does speedometer and tachometer operate normally?***

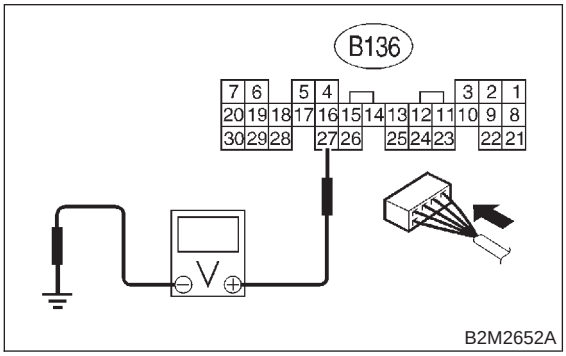
YES : Go to step **10AP2**.

NO : Repair or replace combination meter. <Ref. to 6-2 [W8A0].>

10AP2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):



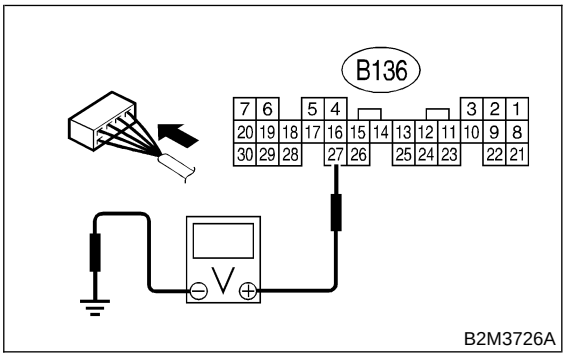
CHECK : ***Is the voltage more than 4.75 V?***
YES : Go to step **10AP3**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in coupling connector (B22, R97, B99 and R57)

10AP3 : CHECK INPUT VOLTAGE OF ECM.

1) Turn ignition switch to OFF.
2) Disconnect combination meter connector (i10) and ECM connector.
3) Turn ignition switch to ON.
4) Measure voltage of harness between ECM and chassis ground.

Connector & terminal
(B136) No. 27 (+) — Chassis ground (−):

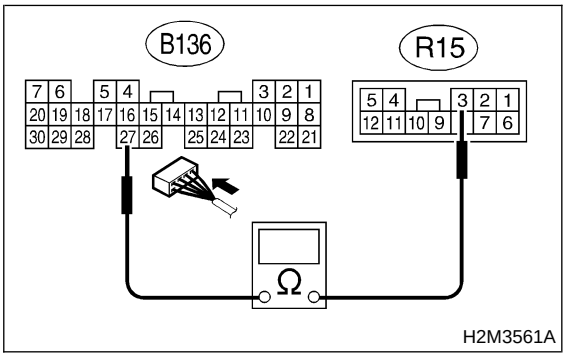


CHECK : ***Is the voltage more than 4.75 V?***
YES : Go to step **10AP4**.
NO : Repair battery short circuit between ECM and combination meter connector.

10AP4 : CHECK HARNESS BETWEEN ECM AND FUEL TANK CORD.

1) Turn ignition switch to OFF.
2) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15).
3) Measure resistance between ECM and fuel tank cord.

Connector & terminal
(B136) No. 27 — (R15) No. 3:

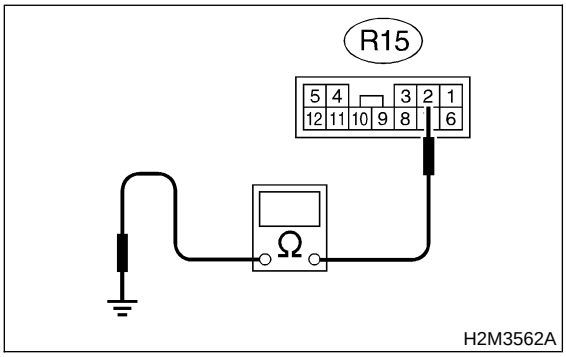


CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AP5**.
NO : Repair open circuit between ECM and fuel tank cord.

10AP5 : CHECK HARNESS BETWEEN FUEL TANK CORD AND CHASSIS GROUND.

Measure resistance between fuel tank cord and chassis ground.

Connector & terminal
(R15) No. 2 — Chassis ground:



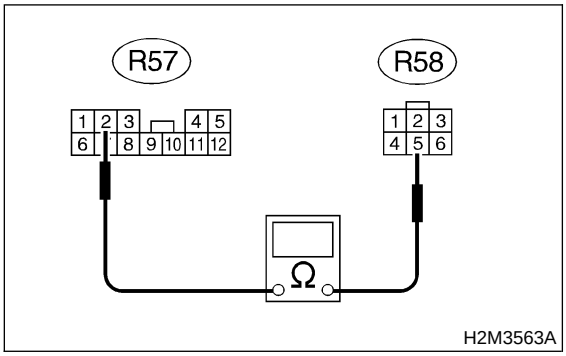
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10AP6**.
NO : Repair open circuit between fuel tank cord and chassis ground.

NOTE:
In this case, repair the following:
Poor contact in coupling connectors (B22 and B99)

10AP6 : CHECK FUEL TANK CORD.

1) Disconnect connector from fuel level sensor.
2) Measure resistance between fuel level sensor and coupling connector.

Connector & terminal
(R57) No. 2 — (R58) No. 5:

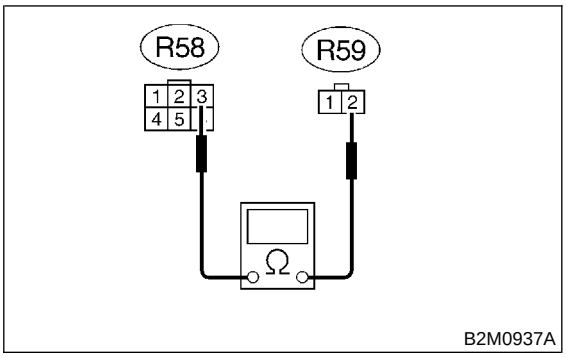


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10AP7**.
NO : Repair open circuit between coupling connector and fuel level sensor.

10AP7 : CHECK FUEL TANK CORD.

1) Disconnect connector from fuel sub level sensor.
2) Measure resistance between fuel level sensor and fuel sub level sensor.

Connector & terminal
(R58) No. 3 — (R59) No. 2:

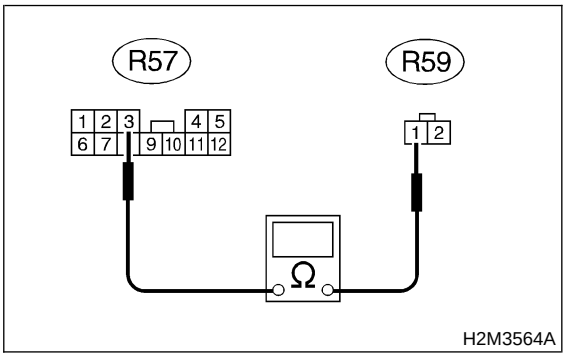


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10AP8**.
NO : Repair open circuit between fuel level sensor and fuel sub level sensor.

10AP8 : CHECK FUEL TANK CORD.

Measure resistance between fuel sub level sensor and coupling connector.

Connector & terminal
(R57) No. 3 — (R59) No. 1:



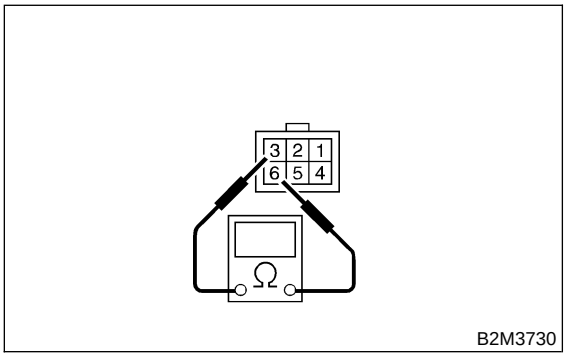
CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10AP9**.
NO : Repair open circuit between coupling connector and fuel sub level sensor.

10AP9 : CHECK FUEL LEVEL SENSOR.

WARNING:
During work procedures, if fuel tank is more than 3/4 full, be careful because fuel may spill.

1) Remove fuel pump assembly. <Ref. to 2-8 [W3A0].>
2) While moving fuel level sensor float up and down, measure resistance between fuel level sensor terminals.

Terminals
No. 3 — No. 6:



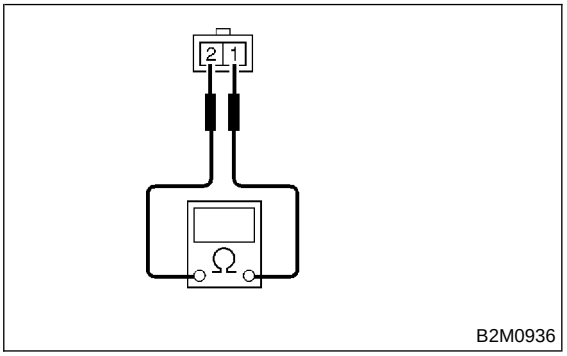
CHECK : ***Is the resistance more than 54.5 Ω?***
YES : Replace fuel level sensor. <Ref. to 2-8 [W3A0].>
NO : Go to step **10AP10**.

10AP10 : CHECK FUEL SUB LEVEL SENSOR.

WARNING:
During work procedures, if fuel tank is more than 3/4 full, be careful because fuel may spill.

1) Remove fuel sub level sensor. <Ref. to 2-8 [W6A0].>
2) While moving fuel sub level sensor float up and down, measure resistance between fuel sub level sensor terminals.

Terminals
No. 1 — No. 2:



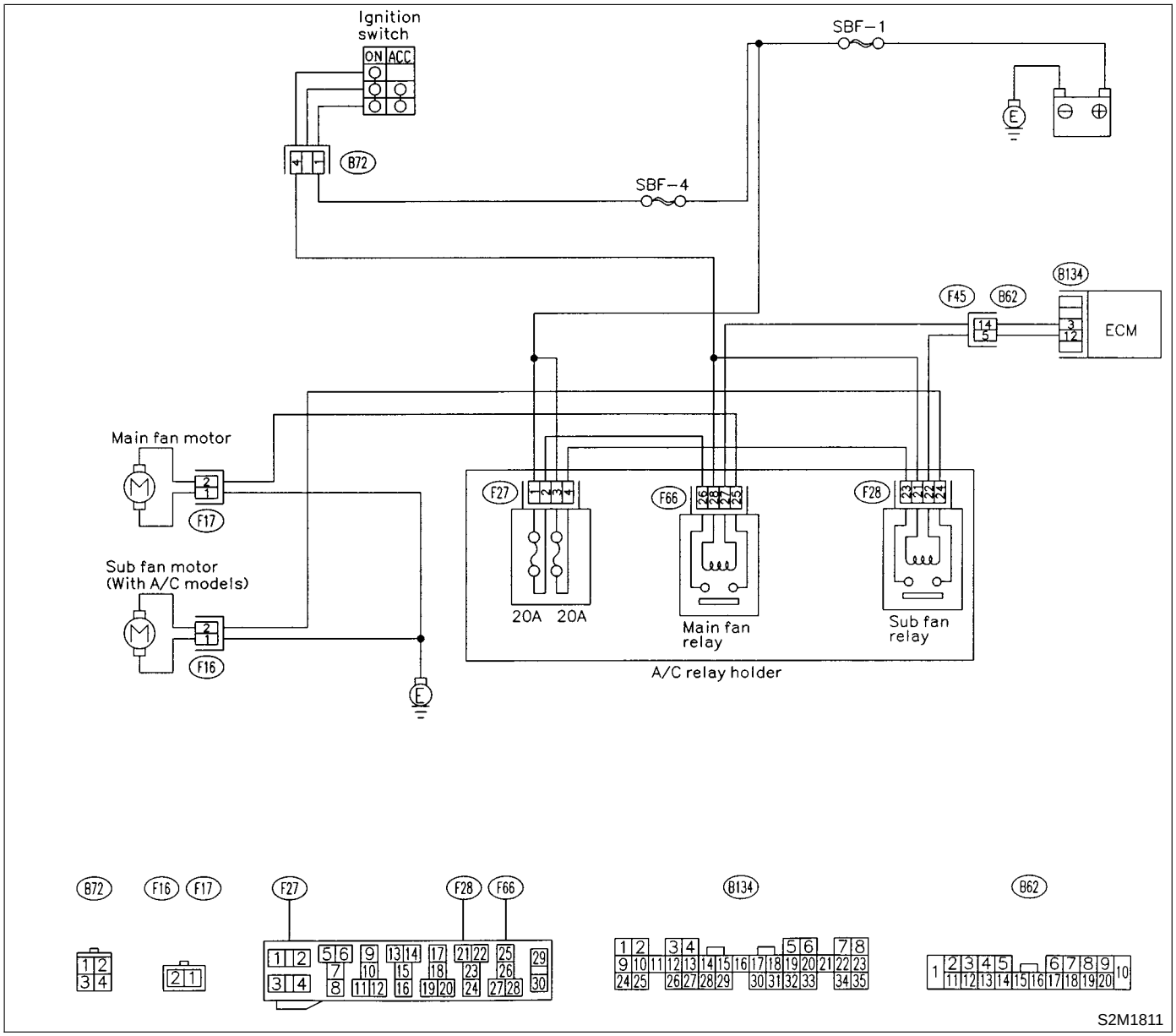
CHECK : ***Is the resistance more than 41.5 Ω?***
YES : Replace fuel sub level sensor. <Ref. to 2-8 [W6A0].>
NO : Replace combination meter. <Ref. to 6-2 [W13A1].>

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

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Radiator fan does not operate properly.
  - Overheating

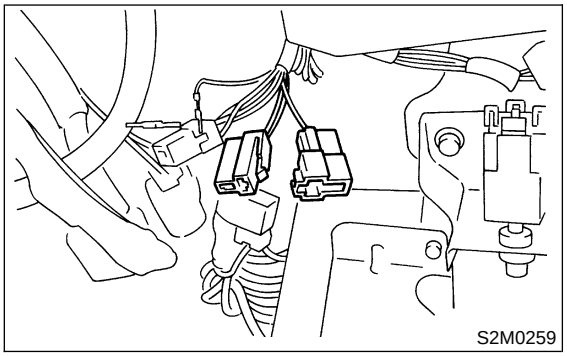
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10AQ1 : CHECK OUTPUT SIGNAL FROM ECM.

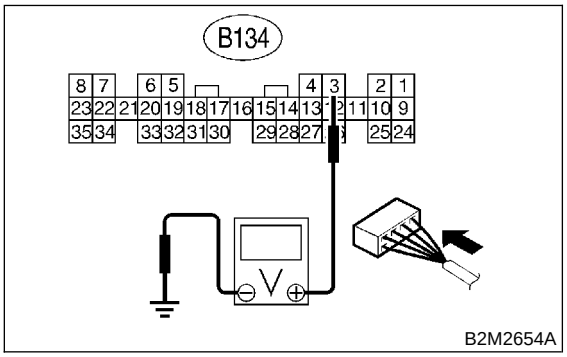
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) While operating radiator fan relay, measure voltage between ECM terminal and ground.

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

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):

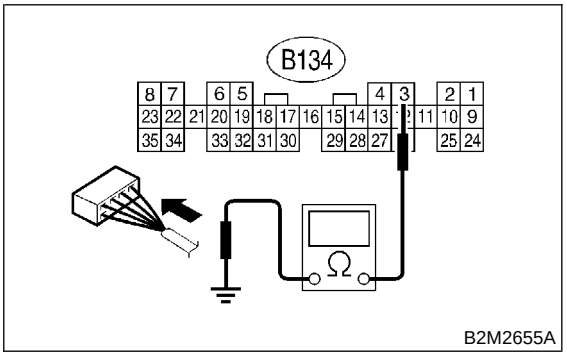


CHECK : ***Does voltage change between 0 and 10 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10AQ2**.

10AQ2 : CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

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

Connector & terminal
(B134) No. 3 — Chassis ground:

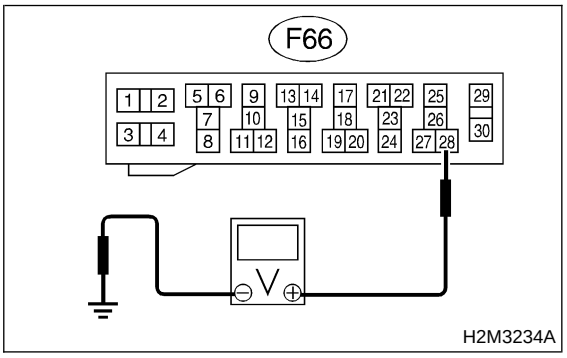


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in radiator fan relay 1 control circuit.
NO : Go to step **10AQ3**.

10AQ3 : CHECK POWER SUPPLY FOR RELAY.

1) Remove main fan relay from A/C relay holder.
2) Turn ignition switch to ON.
3) Measure voltage between fuse and relay box (F/B) connector and chassis ground.

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

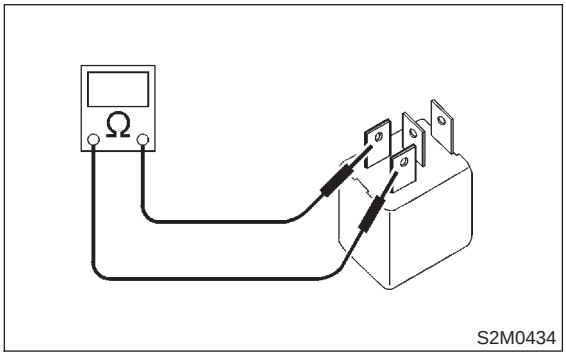


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10AQ4**.
NO : Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.

10AQ4 : CHECK MAIN FAN RELAY.

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

Terminal
No. 5 — No. 6:

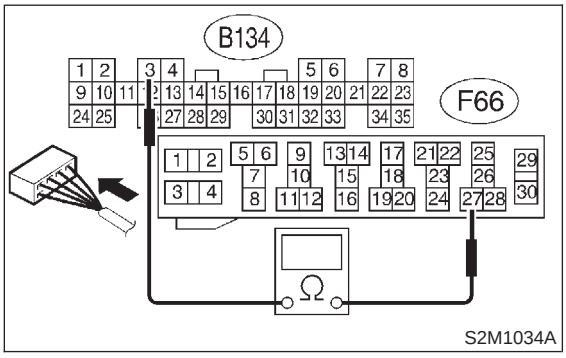


CHECK : ***Is the resistance between 87 and 107 Ω?***
YES : Go to step **10AQ5**.
NO : Replace main fan relay.

10AQ5 : CHECK OPEN CIRCUIT IN MAIN FAN RELAY CONTROL CIRCUIT.

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

Connector & terminal
(B134) No. 3 — (F66) No. 27:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AQ6**.
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)

10AQ6 : 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.

MEMO:

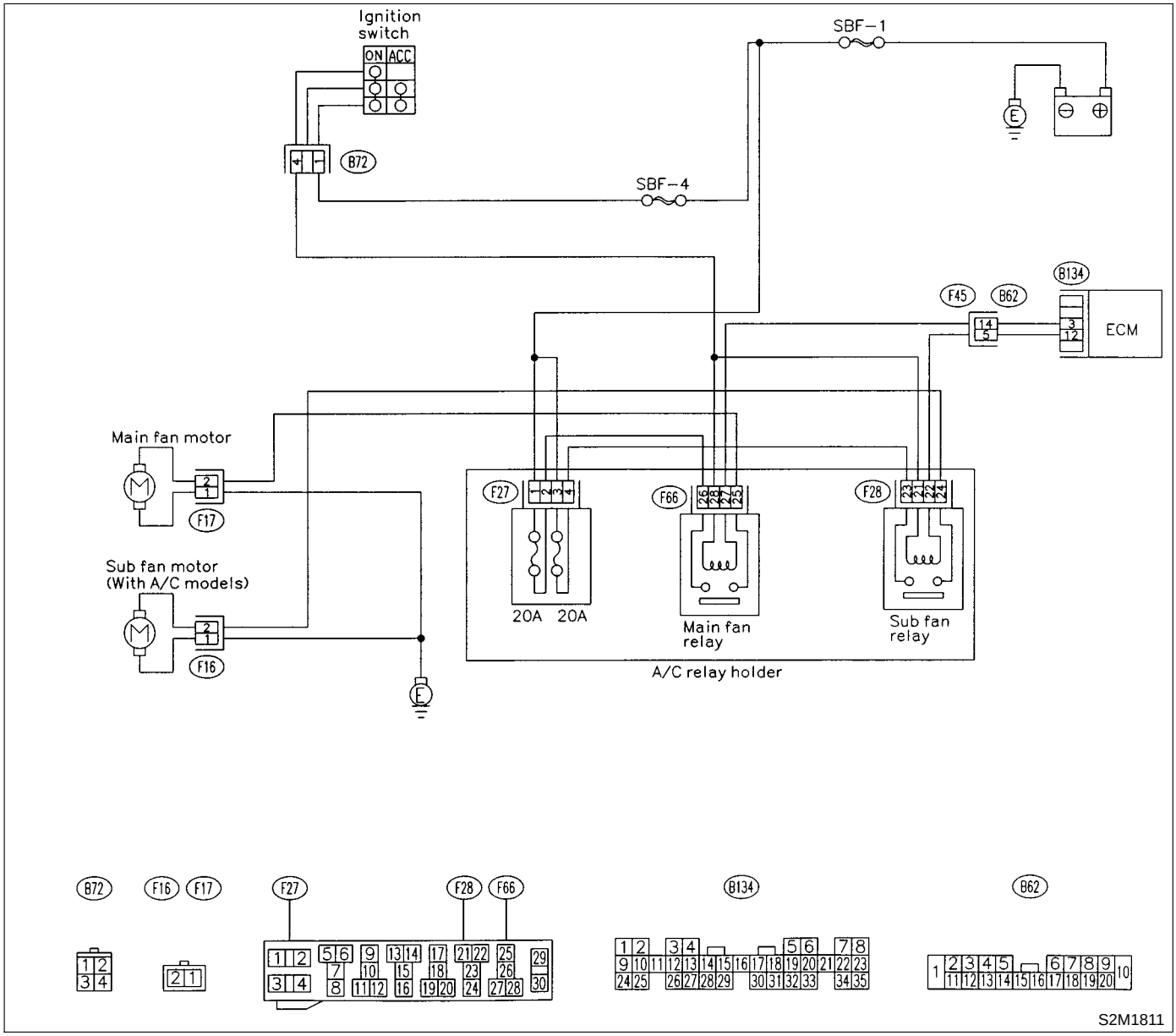
AR: DTC P0483 — COOLING FAN FUNCTION PROBLEM —

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

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

NOTE:
If the vehicle, with the engine idling, is placed very close to a wall or another vehicle, preventing normal cooling function, the OBD system may detect malfunction.

- **WIRING DIAGRAM:**



10AR1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

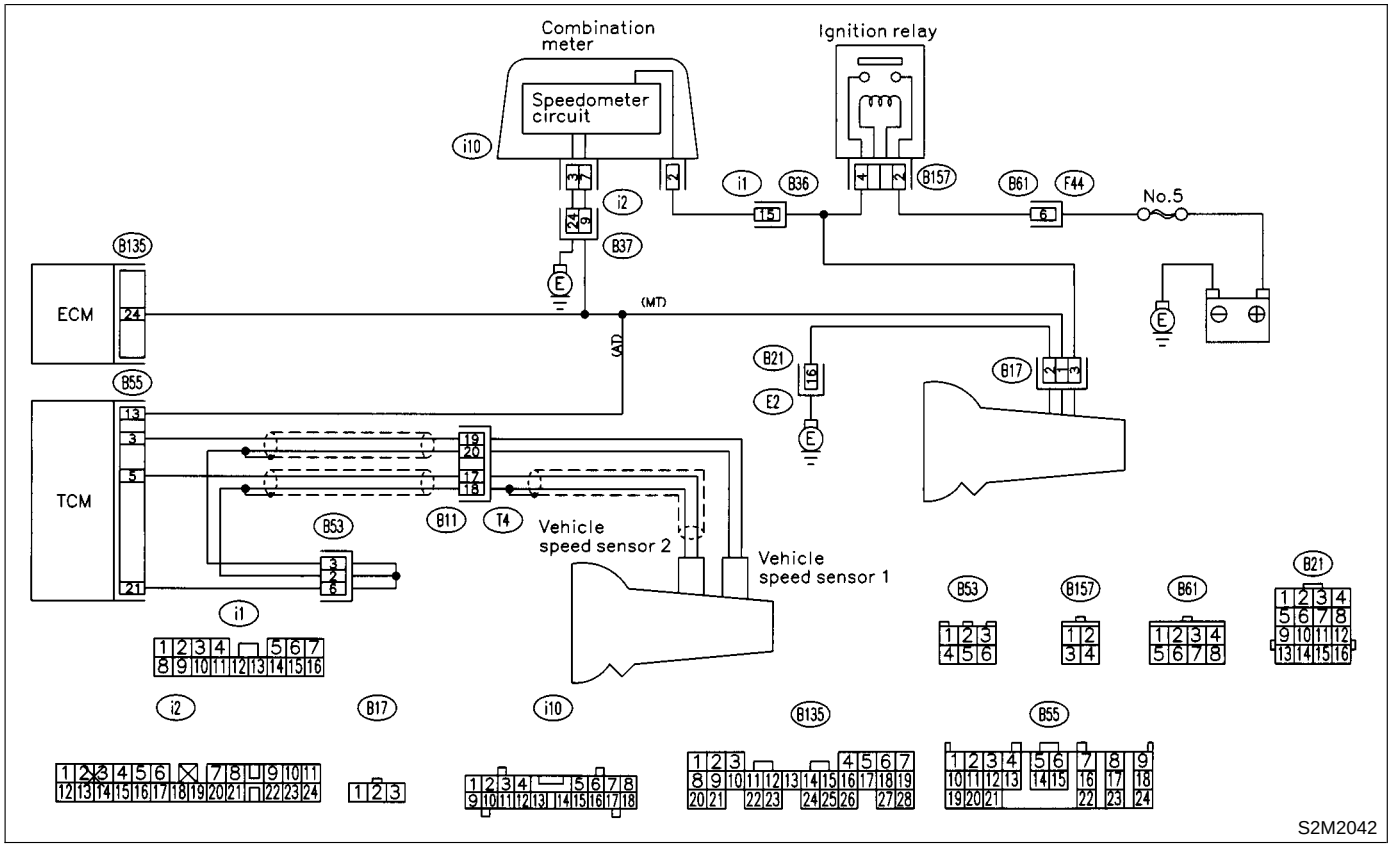
NO : Check engine cooling system. <Ref. to 2-5 [T100].>

AS: DTC P0500 — VEHICLE SPEED SENSOR MALFUNCTION —

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

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

- **WIRING DIAGRAM:**



10AS1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **10AS2**.
NO : Go to step **10AS3**.

10AS2 : CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?***
YES : Check vehicle speed sensor 2 signal circuit. <Ref. to 3-2 [T8F0].>
NO : Go to step **10AS3**.

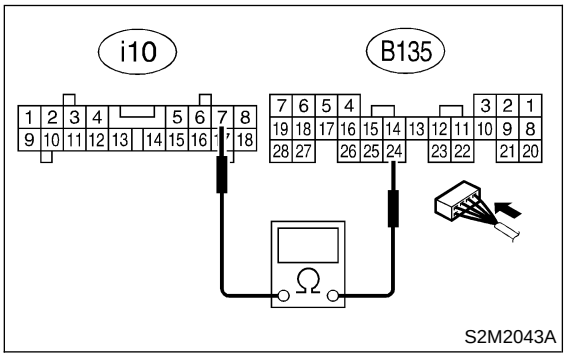
10AS3 : CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer operate normally?***
YES : Go to step **10AS4**.
NO : Check speedometer and vehicle speed sensor. <Ref. to 6-2 [T1A0].>

10AS4 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from combination meter.
3) Measure resistance between ECM and combination meter.

Connector & terminal
(B135) No. 24 — (i10) No. 7:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair poor contact in ECM connector.
NO : Repair harness and connector.

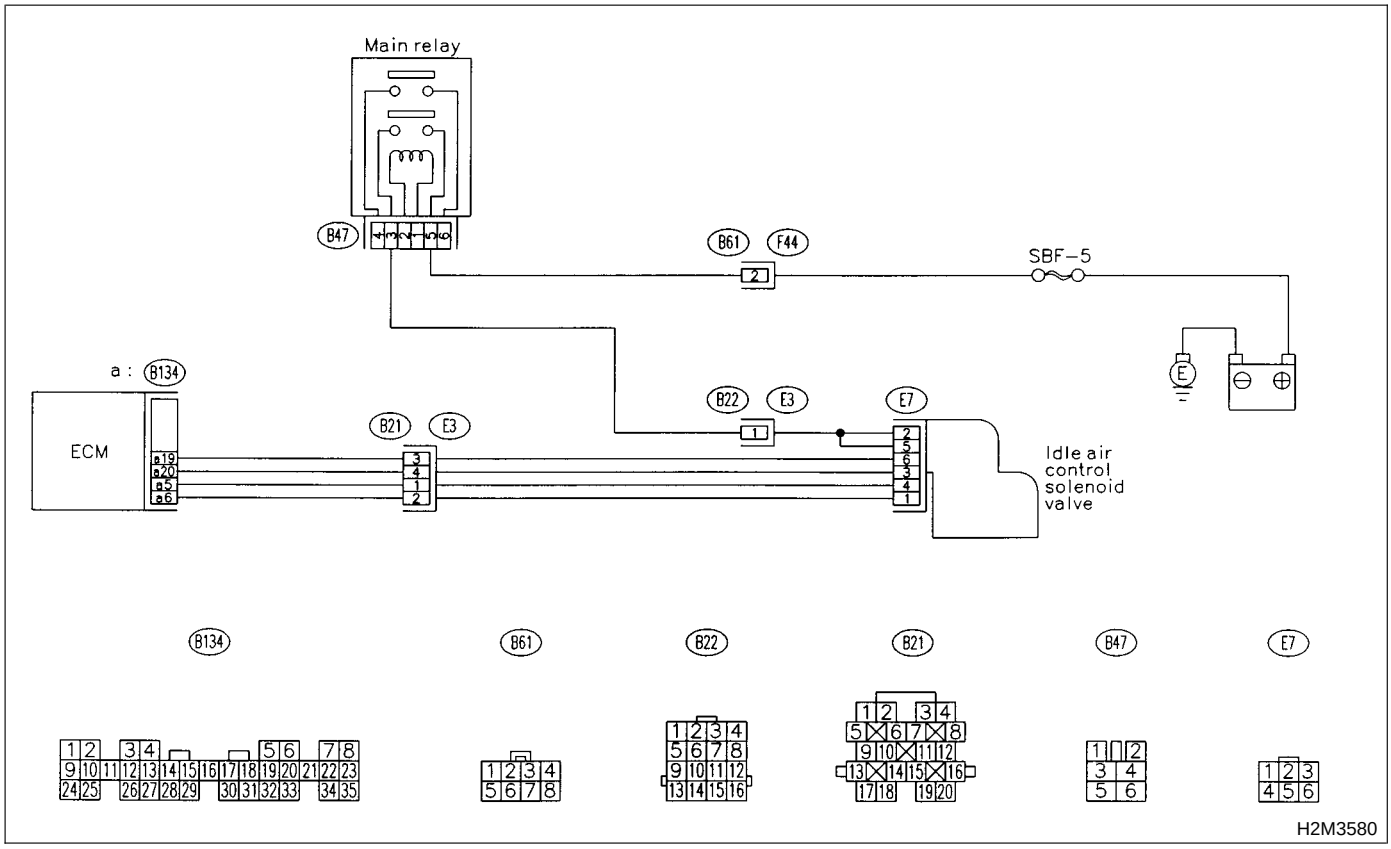
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector

AT: DTC P0506 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine is difficult to start.
  - Engine does not start.
  - Erroneous idling
  - Engine stalls.

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

- **WIRING DIAGRAM:**



10AT1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517?***

YES : Inspect DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517 using "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 **10AT2**.

10AT2 : CHECK AIR BY-PASS LINE.

1) Turn ignition switch to OFF.
2) Remove idle air control solenoid valve from throttle body. <Ref. to 2-7 [W13A0].>
3) Remove throttle body from intake manifold. <Ref. to 2-7 [W2A0].>
4) Using an air gun, force air into idle air control solenoid valve installation area. Confirm that forced air subsequently escapes from throttle body interior.

CHECK : ***Does air flow out?***

YES : Replace idle air control solenoid valve. <Ref. to 2-7 [W13A0].>

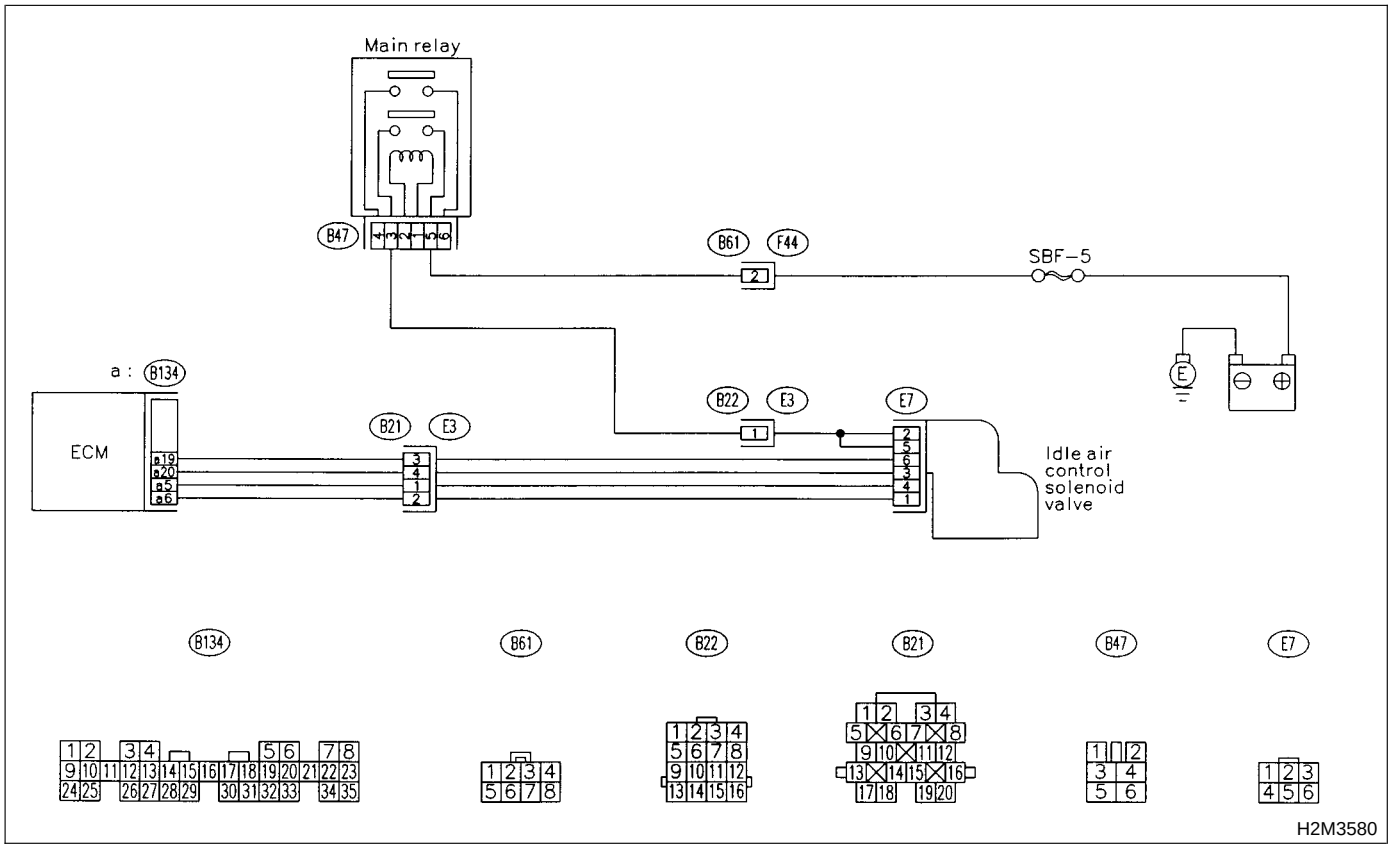
NO : Replace throttle body. <Ref. to 2-7 [W2A0].>

AU: DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine keeps running at higher revolution than specified idling revolution.

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

- **WIRING DIAGRAM:**



10AU1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517?***

YES : Inspect DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517 using “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 **10AU2**.

10AU2 : CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.
3) Check the following items.

- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Disconnections of vacuum hoses

CHECK : ***Is there a fault in air intake system?***

YES : Repair air suction and leaks.

NO : Go to step **10AU3**.

10AU3 : CHECK THROTTLE CABLE.

CHECK : ***Does throttle cable have play for adjustment?***
YES : Go to step **10AU4**.
NO : Adjust throttle cable. <Ref. to 4-5 [W1A3].>

10AU4 : CHECK AIR BY-PASS LINE.

1) Turn ignition switch to OFF.
2) Remove idle air control solenoid valve from throttle body. <Ref. to 2-7 [W13A0].>
3) Confirm that there are no foreign particles in by-pass air line.

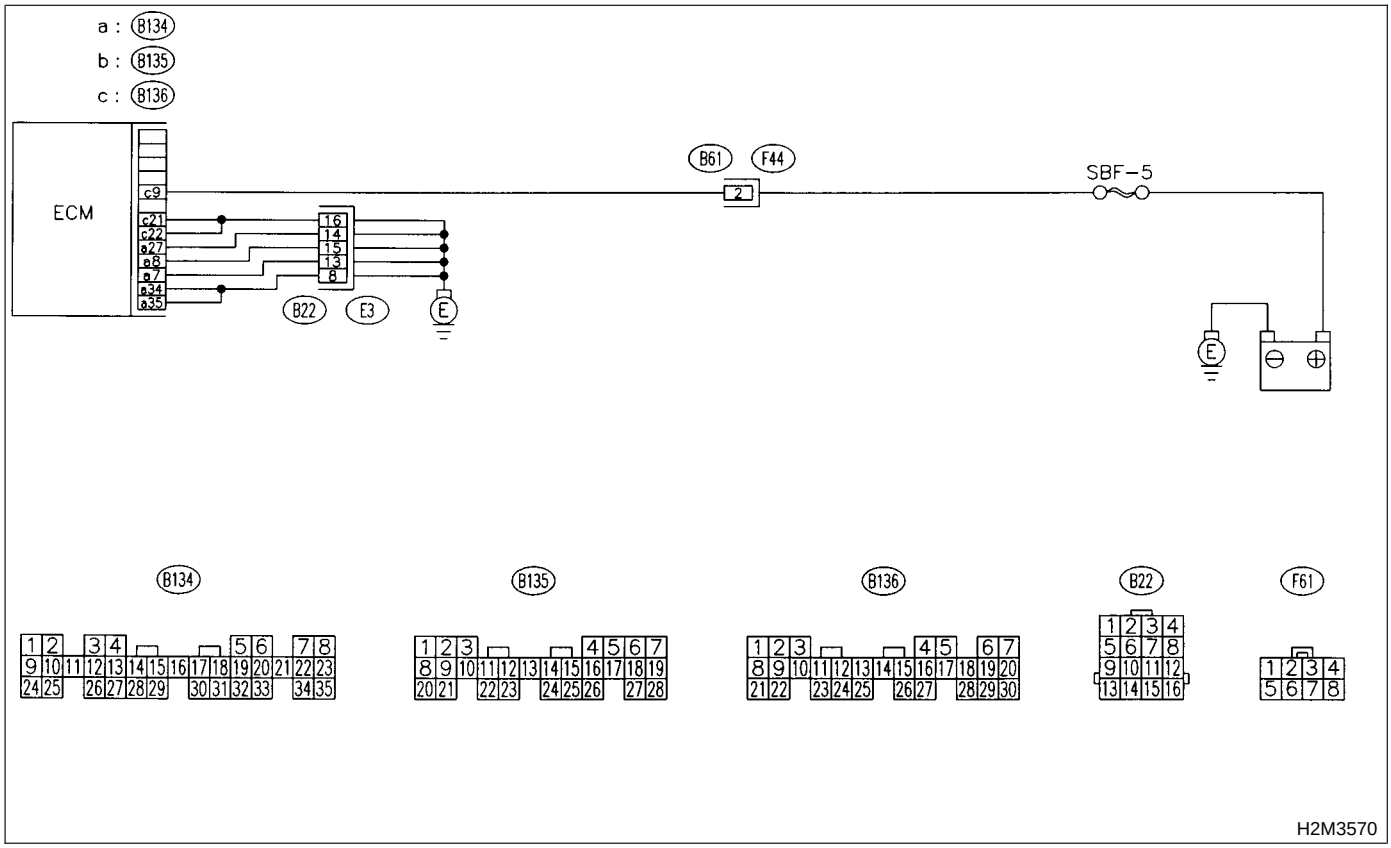
CHECK : ***Are foreign particles in by-pass air line?***
YES : Remove foreign particles from by-pass air line.
NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W13A0].>

AV: DTC P0601 — INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine does not start.
  - Engine stalls.

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

- **WIRING DIAGRAM:**



10AV1 :	**CHECK ANY OTHER DTC ON DISPLAY.**

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0601?***

YES : Replace ECM. <Ref. to 2-7 [W17A0].>

NO : It is not necessary to inspect DTC P0601.

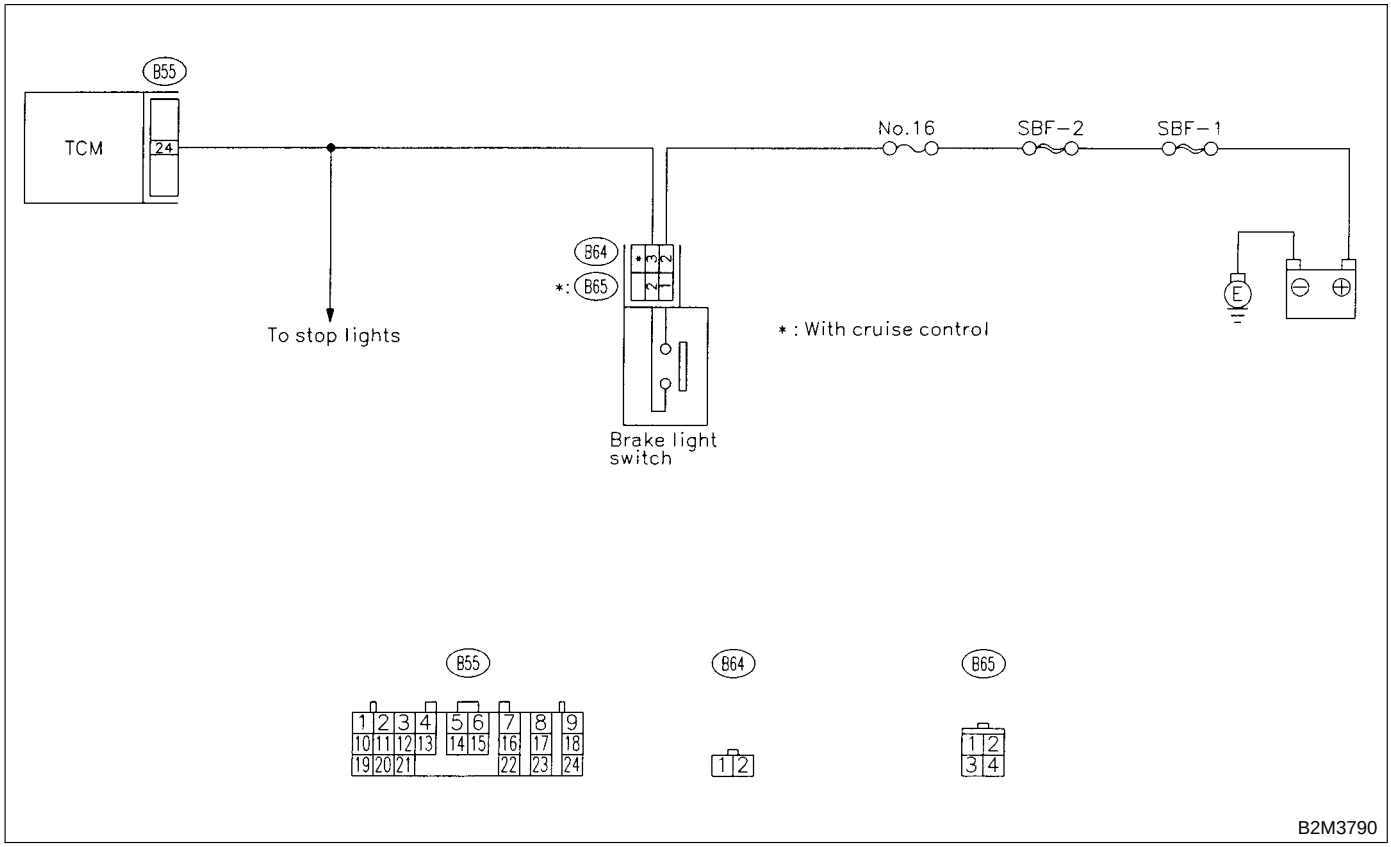
MEMO:

AW: DTC P0703 — BRAKE SWITCH INPUT MALFUNCTION —

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

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

- **WIRING DIAGRAM:**



10AW1 : CHECK OPERATION OF BRAKE LIGHT.

CHECK : ***Does brake light come on when depressing the brake pedal?***

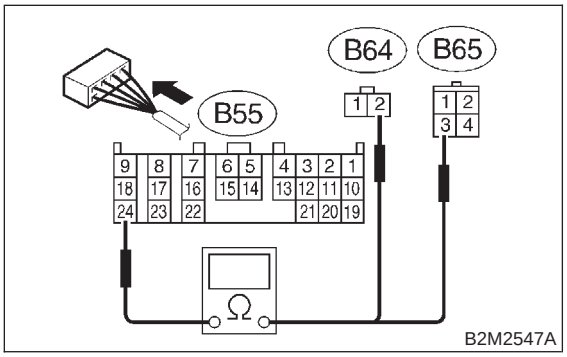
YES : Go to step **10AW2**.

NO : Repair or replace brake light circuit.

10AW2 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

1) Disconnect connectors from TCM and brake light switch.
2) Measure resistance of harness between TCM and brake light switch connector.

Connector & terminal
(B55) No. 24 — (B64) No. 2:
(B55) No. 24 — (B65) No. 3 (With cruise control):



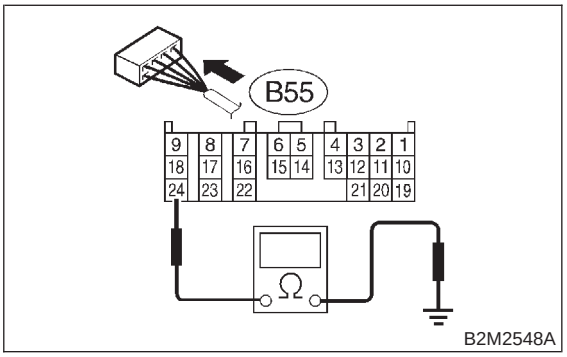
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10AW3**.
NO : Repair or replace harness and connector.

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

10AW3 : CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 24 — Chassis ground:

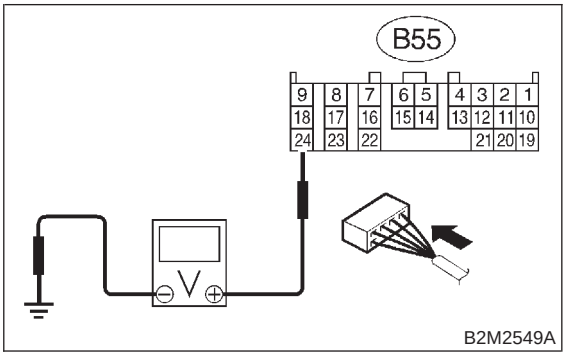


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **10AW4**.
NO : Repair ground short circuit in harness between TCM and brake light switch connector.

10AW4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and brake light switch.
2) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 24 (+) — Chassis ground (−):

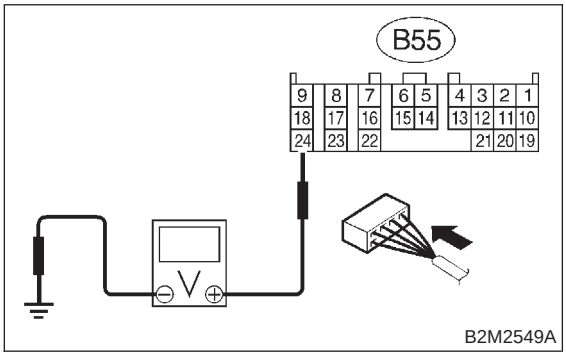


CHECK : ***Is the voltage less than 1 V when releasing the brake pedal?***
YES : Go to step **10AW5**.
NO : Adjust or replace brake light switch. <Ref. to 4-5 [W1A1].>

10AW5 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 24 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V when depressing the brake pedal?***
YES : Go to step **10AW6**.
NO : Adjust or replace brake light switch. <Ref. to 4-5 [W1A1].>

10AW6 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W23A0].>

AX: DTC P0705 — TRANSMISSION RANGE SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Starter does not rotate when select lever is in “P” or “N” range.
  - Starter rotates when select lever is in “R”, “D”, “3”, “2” or “1” range.
  - Engine brake is not effected when select lever is in “3” range.
  - Shift characteristics are erroneous.

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

NOTE:
Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

AY: DTC P0710 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift up to 4th speed (after engine warm-up)
  - No lock-up (after engine warm-up)
  - Excessive shift shock

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

NOTE:
Check ATF temperature sensor circuit. <Ref. to 3-2 [T8D0].>

AZ: DTC P0715 — TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT MALFUNCTION —

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

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

NOTE:
Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8G0].>

BA: DTC P0720 — OUTPUT SPEED SENSOR (VEHICLE SPEED SENSOR 2) CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift or excessive tight corner “braking”

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

NOTE:
Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8F0].>

BB: DTC P0725 — ENGINE SPEED INPUT CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)
  - AT diagnostic indicator light (AT OIL TEMP indicator light) remains on when vehicle speed is “0”.

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

NOTE:
Check engine speed input signal circuit. <Ref. to 3-2 [T8C0].>

BC: DTC P0731 — GEAR 1 INCORRECT RATIO —

NOTE:
For the diagnostic procedure, refer to DTC P0734. <Ref. to 2-7 [T10BF0].>

BD: DTC P0732 — GEAR 2 INCORRECT RATIO —

NOTE:
For the diagnostic procedure, refer to DTC P0734. <Ref. to 2-7 [T10BF0].>

BE: DTC P0733 — GEAR 3 INCORRECT RATIO —

NOTE:
For the diagnostic procedure, refer to DTC P0734. <Ref. to 2-7 [T10BF0].>

BF: DTC P0734 — GEAR 4 INCORRECT RATIO —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

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

10BF1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***
YES : Inspect relevant DTC using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>
NO : Go to step **10BF2**.

10BF2 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8E0].>

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit.
NO : Go to step **10BF3**.

10BF3 : CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8F0].>

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***
YES : Repair or replace vehicle speed sensor 2 circuit.
NO : Go to step **10BF4**.

10BF4 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.

Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8G0].>

CHECK : ***Is there any trouble in torque converter turbine speed sensor circuit?***
YES : Repair or replace torque converter turbine speed sensor circuit.
NO : Go to step **10BF5**.

10BF5 : 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 **10BF6**.

10BF6 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : ***Is there any mechanical trouble in automatic transmission?***
YES : Repair or replace automatic transmission. <Ref. to 3-2 [W100].>
NO : Replace TCM. <Ref. to 3-2 [W23A0].>

BG: DTC P0740 — TORQUE CONVERTER CLUTCH SYSTEM MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)
  - No shift or excessive tight corner “braking”

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

10BG1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Is there any other DTC on display?***
YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>
NO : Go to step **10BG2**.

10BG2 : CHECK DUTY SOLENOID B CIRCUIT.

Check duty solenoid B circuit. <Ref. to 3-2 [T8P0].>

CHECK : ***Is there any trouble in duty solenoid B circuit?***
YES : Repair or replace duty solenoid B circuit.
NO : Go to step **10BG3**.

10BG3 : CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8E0].>

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit.
NO : Go to step **10BG4**.

10BG4 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.

Check torque converter turbine speed sensor circuit. <Ref. to 3-2 [T8G0].>

CHECK : ***Is there any trouble in torque converter turbine speed sensor circuit?***
YES : Repair or replace torque converter turbine speed sensor circuit.
NO : Go to step **10BG5**.

10BG5 : CHECK ENGINE SPEED INPUT CIRCUIT.

Check engine speed input circuit. <Ref. to 3-2 [T8C0].>

CHECK : ***Is there any trouble in engine speed input circuit?***
YES : Repair or replace engine speed input circuit.
NO : Go to step **10BG6**.

10BG6 : CHECK INHIBITOR SWITCH CIRCUIT.

Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

CHECK : ***Is there any trouble in inhibitor switch circuit?***
YES : Repair or replace inhibitor switch circuit.
NO : Go to step **10BG7**.

10BG7 : CHECK BRAKE LIGHT SWITCH CIRCUIT.

Check brake light switch circuit. <Ref. to 2-7 [T10AW0].>

CHECK : ***Is there any trouble in brake light switch circuit?***

YES : Repair or replace brake light switch circuit.

NO : Go to step **10BG8**.

10BG8 : CHECK ATF TEMPERATURE SENSOR CIRCUIT.

Check ATF temperature sensor circuit. <Ref. to 3-2 [T8D0].>

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***

YES : Repair or replace ATF temperature sensor circuit.

NO : Go to step **10BG9**.

10BG9 : 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 **10BG10**.

10BG10 : CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK : ***Is there any mechanical trouble in automatic transmission?***

YES : Repair or replace automatic transmission. <Ref. to 3-2 [W100].>

NO : Replace TCM. <Ref. to 3-2 [W23A0].>

BH: DTC P0743 — TORQUE CONVERTER CLUTCH SYSTEM (LOCK-UP DUTY SOLENOID) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)

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

NOTE:
Check lock-up duty solenoid circuit. <Ref. to 3-2 [T8R0].>

BI: DTC P0748 — PRESSURE CONTROL SOLENOID (LINE PRESSURE DUTY SOLENOID) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

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

NOTE:
Check line pressure duty solenoid circuit. <Ref. to 3-2 [T8N0].>

BJ: DTC P0753 — SHIFT SOLENOID A (SHIFT SOLENOID 1) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift

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

NOTE:
Check shift solenoid 1 circuit. <Ref. to 3-2 [T8J0].>

BK: DTC P0758 — SHIFT SOLENOID B (SHIFT SOLENOID 2) ELECTRICAL —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No shift

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

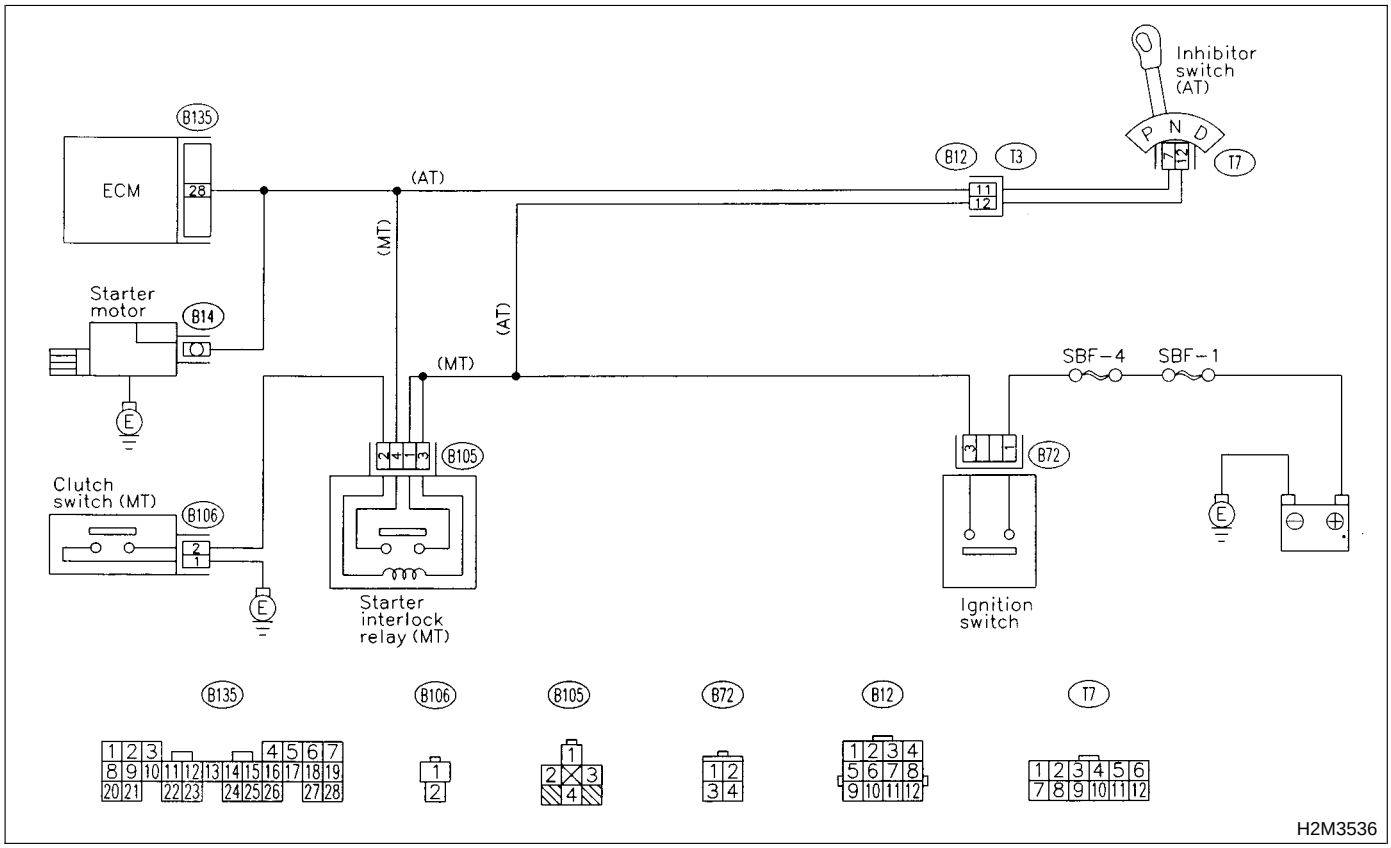
NOTE:
Check shift solenoid 2 circuit. <Ref. to 3-2 [T8K0].>

BL: DTC P1100 — STARTER SWITCH CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Failure of engine to start

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

- **WIRING DIAGRAM:**



10BL1 : CHECK OPERATION OF STARTER MOTOR.

NOTE:
- On AT vehicles, place the inhibitor switch in the "P" or "N" position.
- On MT vehicles, depress the clutch pedal.

CHECK : ***Does starter motor operate when ignition switch to "ST"?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between ECM and starter motor connector.
- Poor contact in ECM connector.

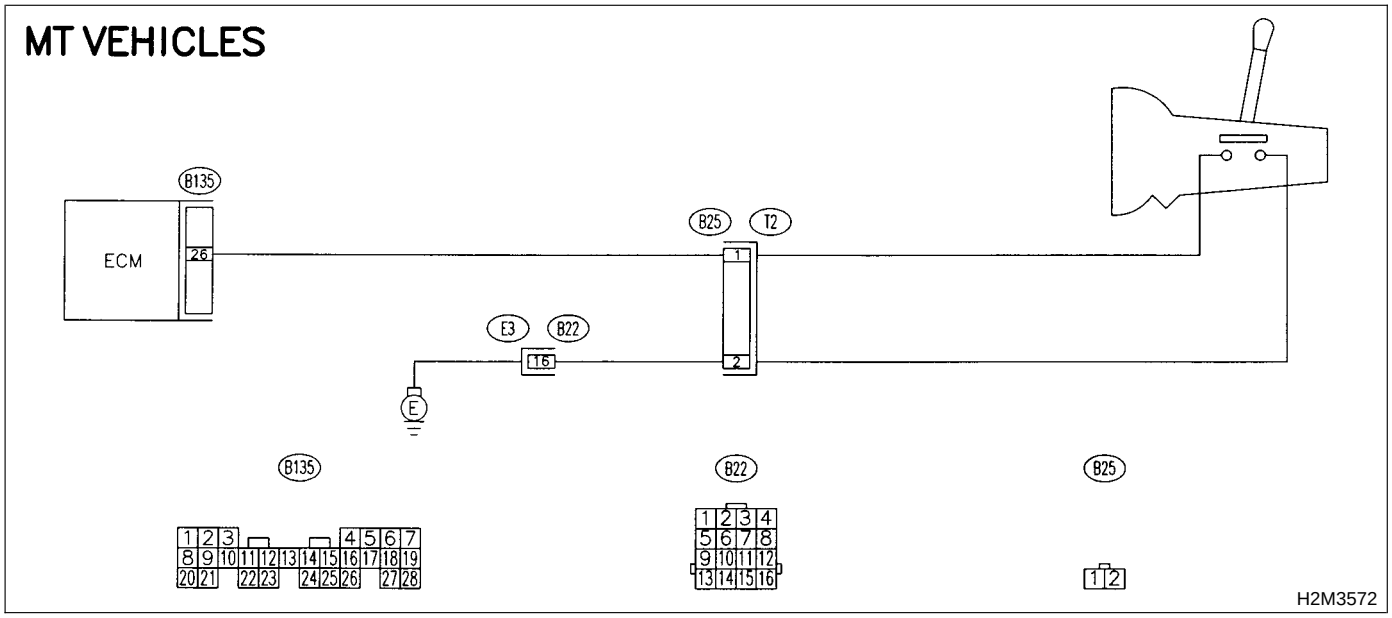
NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

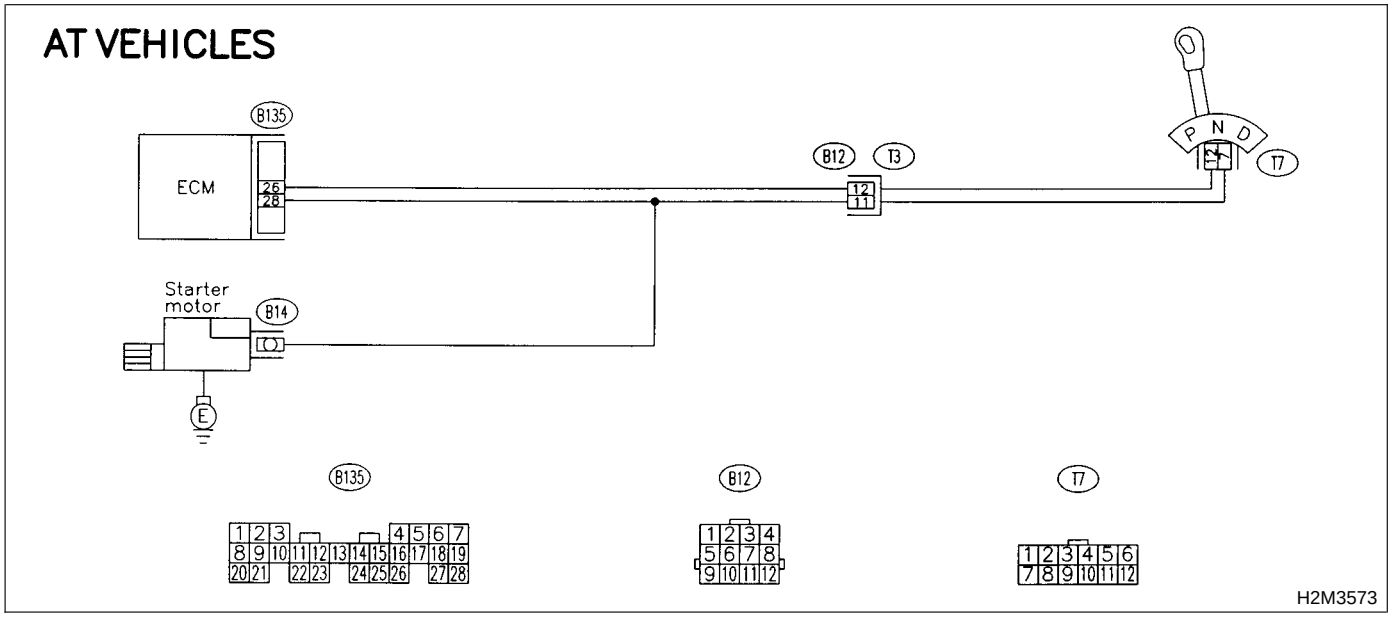
BM: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [MT VEHICLES] OR NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [AT VEHICLES] —

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

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

- **WIRING DIAGRAM:**





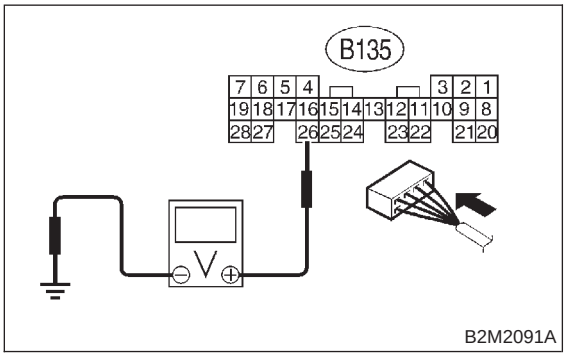
10BM1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type MT?***
YES : Go to step **10BM2**.
NO : Go to step **10BM8**.

10BM2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

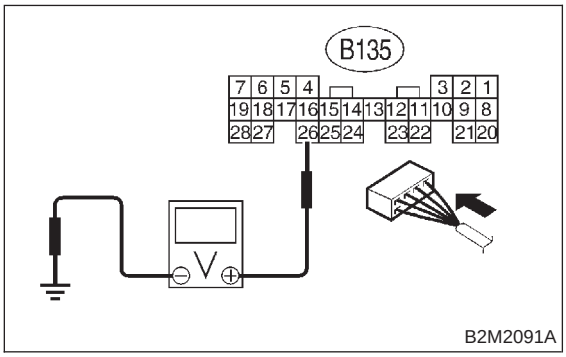


CHECK : ***Is the voltage more than 10 V in neutral position?***
YES : Go to step **10BM3**.
NO : Go to step **10BM5**.

10BM3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V in other positions?***
YES : Go to step **10BM4**.
NO : Go to step **10BM5**.

10BM4 : CHECK POOR CONTACT.

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

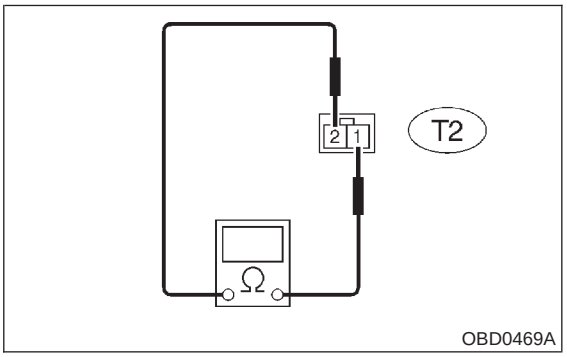
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10BM5 : CHECK NEUTRAL POSITION SWITCH.

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

Connector & terminal
(T2) No. 1 — No. 2:

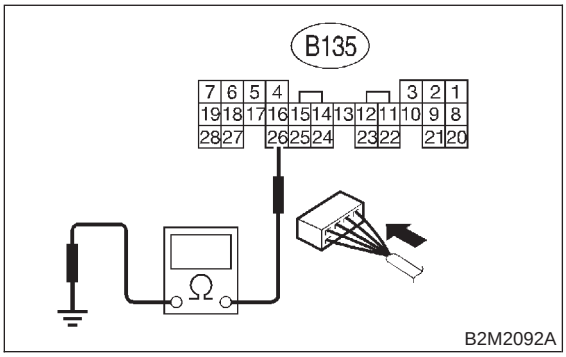


CHECK : ***Is the resistance more than 1 MΩ in neutral position?***
YES : Go to step **10BM6**.
NO : Repair short circuit in transmission harness or replace neutral position switch.

10BM6 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

Measure resistance between ECM and chassis ground.

Connector & terminal
(B135) No. 26 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and transmission harness connector.
NO : Go to step **10BM7**.

10BM7 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in transmission harness connector?***
YES : Repair poor contact in transmission harness connector.
NO : Contact with SOA service.

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

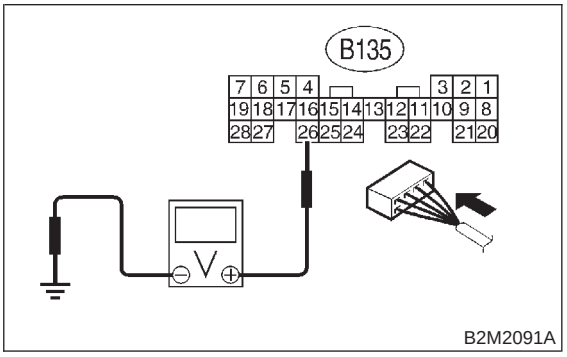
10BM8 : CHECK DTC P0705 ON DISPLAY.

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 **10BM9**.

10BM9 : CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground in select lever “N” and “P” positions.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

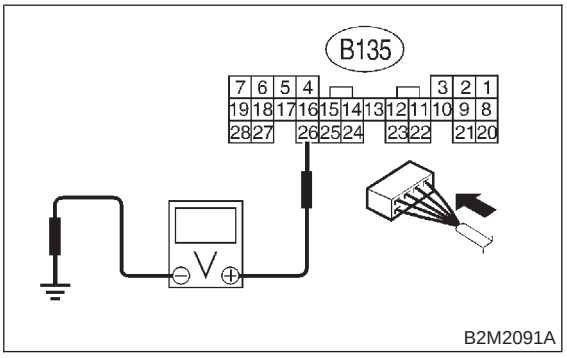


CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10BM10**.
NO : Go to step **10BM12**.

10BM10 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground in select lever except for “N” and “P” positions.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage between 4.5 and 5.5 V?***
YES : Go to step **10BM11**.
NO : Go to step **10BM12**.

10BM11 : 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.

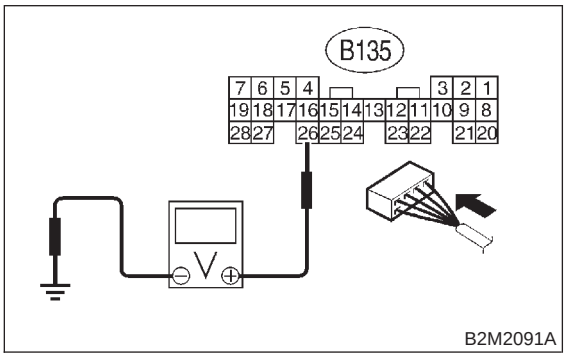
NO : Contact with SOA service.

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

10BM12 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



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

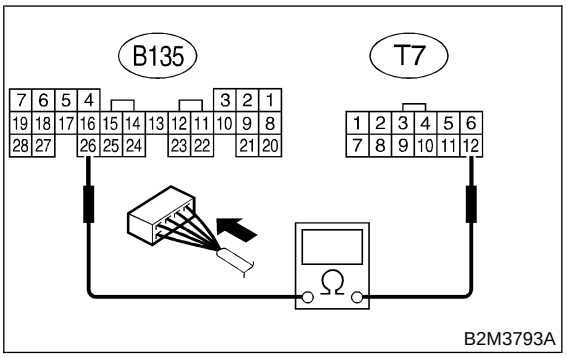
YES : Repair battery short circuit in harness between ECM and inhibitor switch connector.

NO : Go to step **10BM13**.

10BM13 : CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR.

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

Connector & terminal
(B135) No. 26 — (T7) No. 12:



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

YES : Go to step **10BM14**.

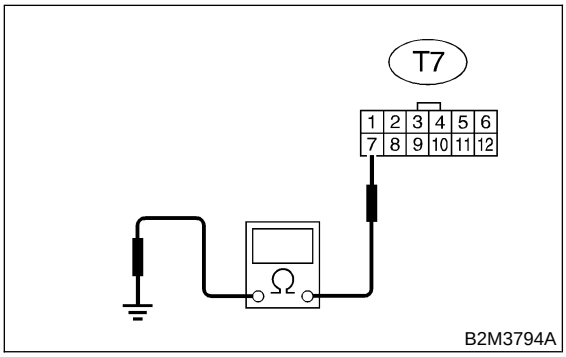
NO : Repair harness and connector.

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

10BM14 : CHECK INHIBITOR SWITCH GROUND LINE.

Measure resistance of harness between inhibitor switch connector and engine ground.

Connector & terminal
(T7) No. 7 — Engine ground:



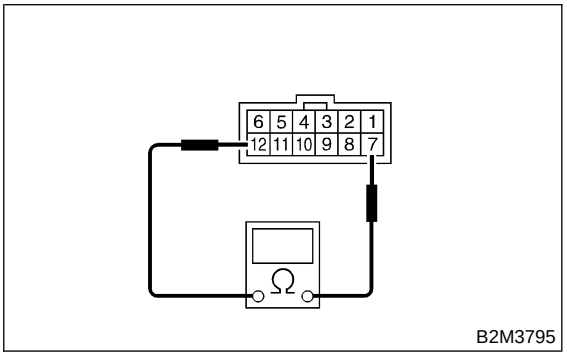
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10BM15**.
NO : Repair open circuit in harness between inhibitor switch connector and starter motor ground line.

NOTE:
In this case, repair the following:
- Open circuit in harness between inhibitor switch connector and starter motor ground line
- Poor contact in starter motor connector
- Poor contact in starter motor ground
- Starter motor

10BM15 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in select lever "N" and "P" positions.

Terminals
No. 7 — No. 12:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BM16**.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

10BM16 : CHECK SELECTOR CABLE CONNECTION.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***
YES : Repair selector cable connection. <Ref. to 3-2 [W2A0].>
NO : Contact with SOA service.

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

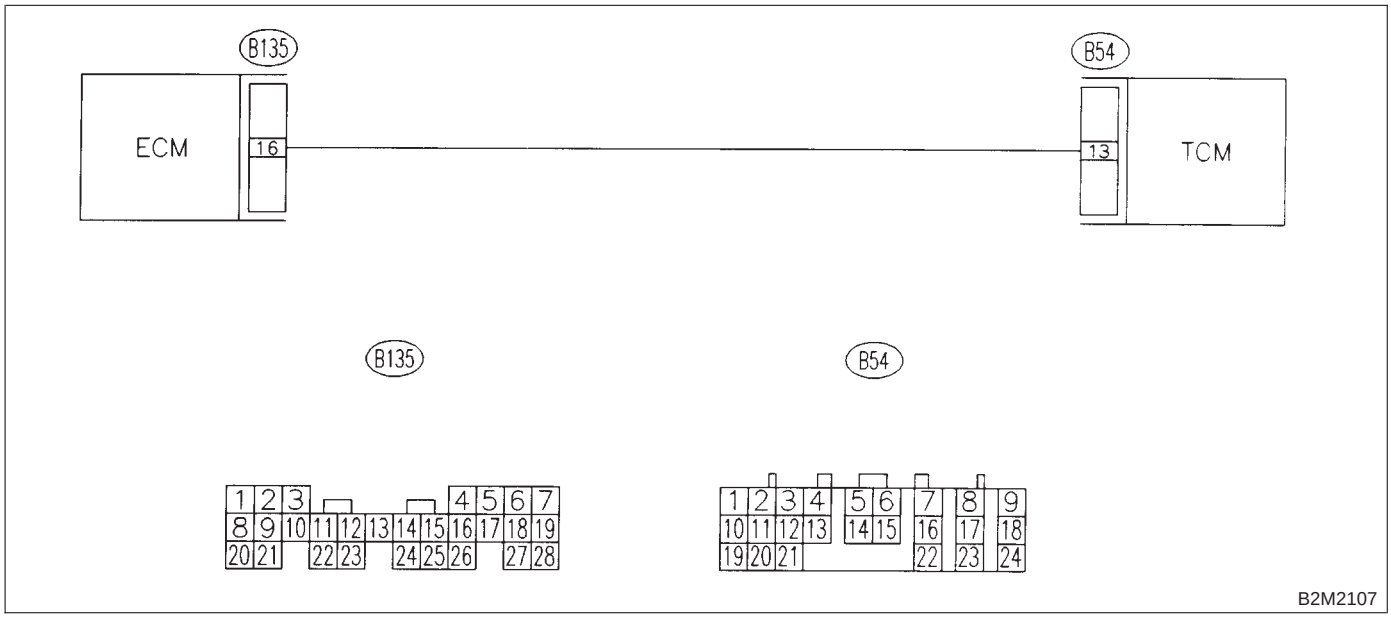
MEMO:

BN: DTC P1103 — ENGINE TORQUE CONTROL SIGNAL 1 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

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

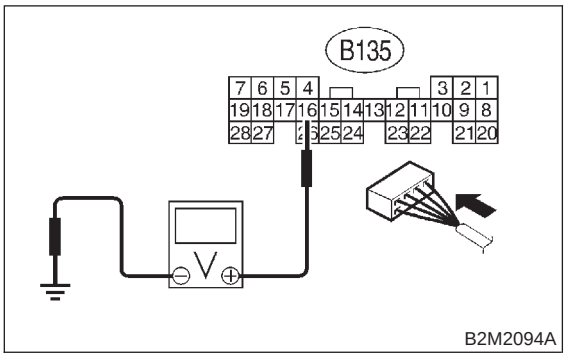
- **WIRING DIAGRAM:**



10BN1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 16 (+) — Chassis ground (−):

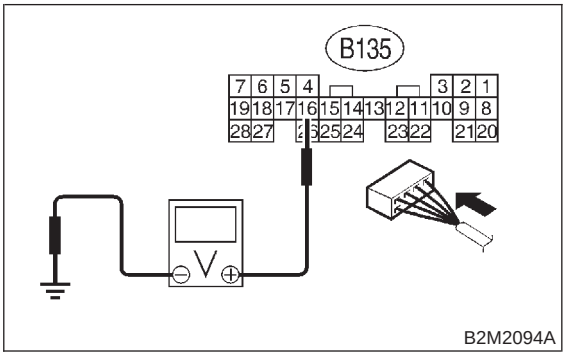


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BN2**.
NO : Go to step **10BN4**.

10BN2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 16 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector.
NO : Go to step **10BN3**.

10BN3 : CHECK POOR CONTACT.

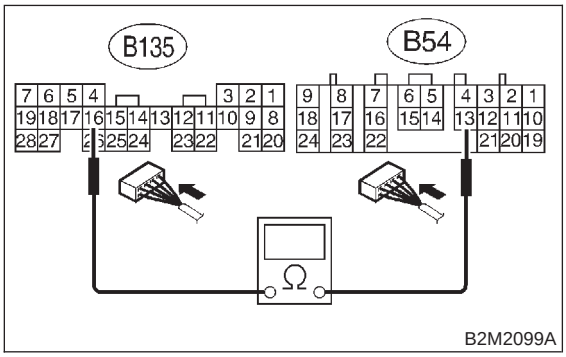
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

10BN4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 16 — (B54) No. 13:

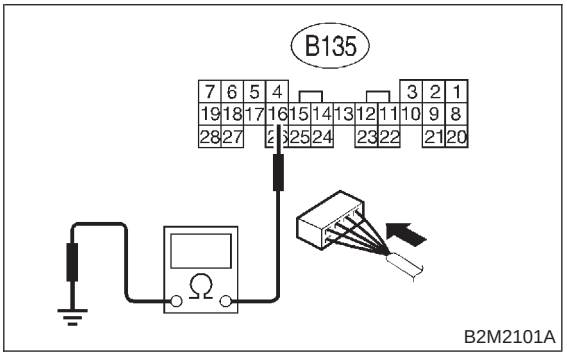


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BN5**.
NO : Repair open circuit in harness between ECM and TCM connector.

10BN5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B135) No. 16 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10BN6**.

10BN6 : CHECK POOR CONTACT.

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

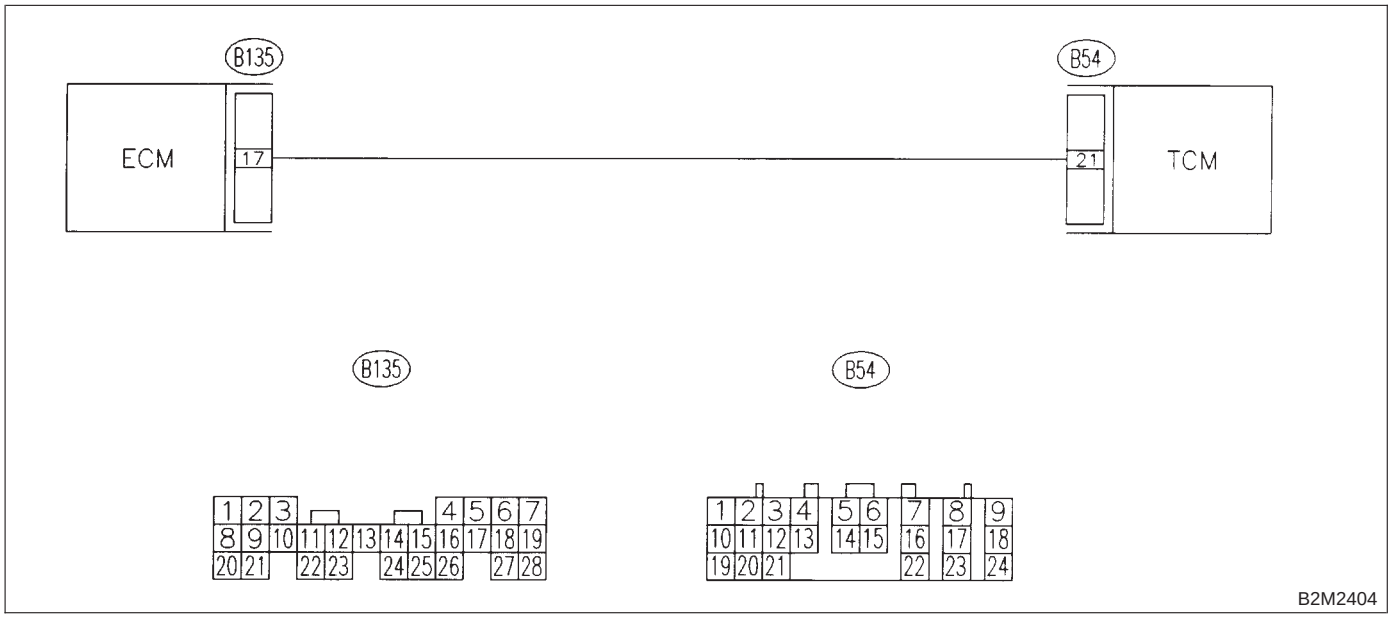
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W23A0].>

BO: DTC P1106 — ENGINE TORQUE CONTROL SIGNAL 2 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

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

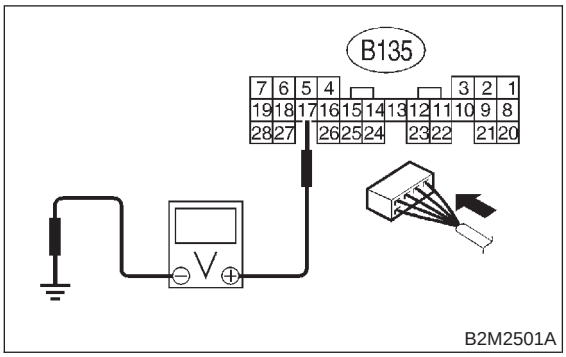
- **WIRING DIAGRAM:**



10BO1 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 17 (+) — Chassis ground (−):

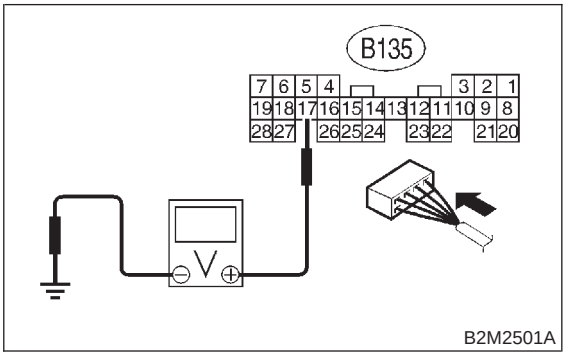


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BO2**.
NO : Go to step **10BO4**.

10BO2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 17 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector.
NO : Go to step **10BO3**.

10BO3 : CHECK POOR CONTACT.

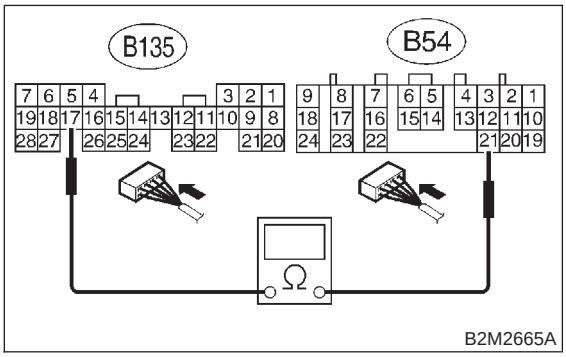
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

10BO4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 17 — (B54) No. 21:

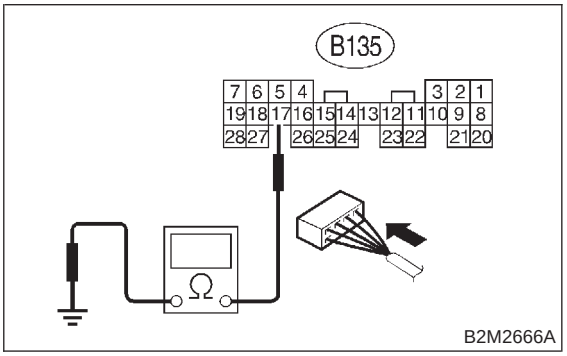


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BO5**.
NO : Repair open circuit in harness between ECM and TCM connector.

10BO5 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B135) No. 17 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10BO6**.

10BO6 : CHECK POOR CONTACT.

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

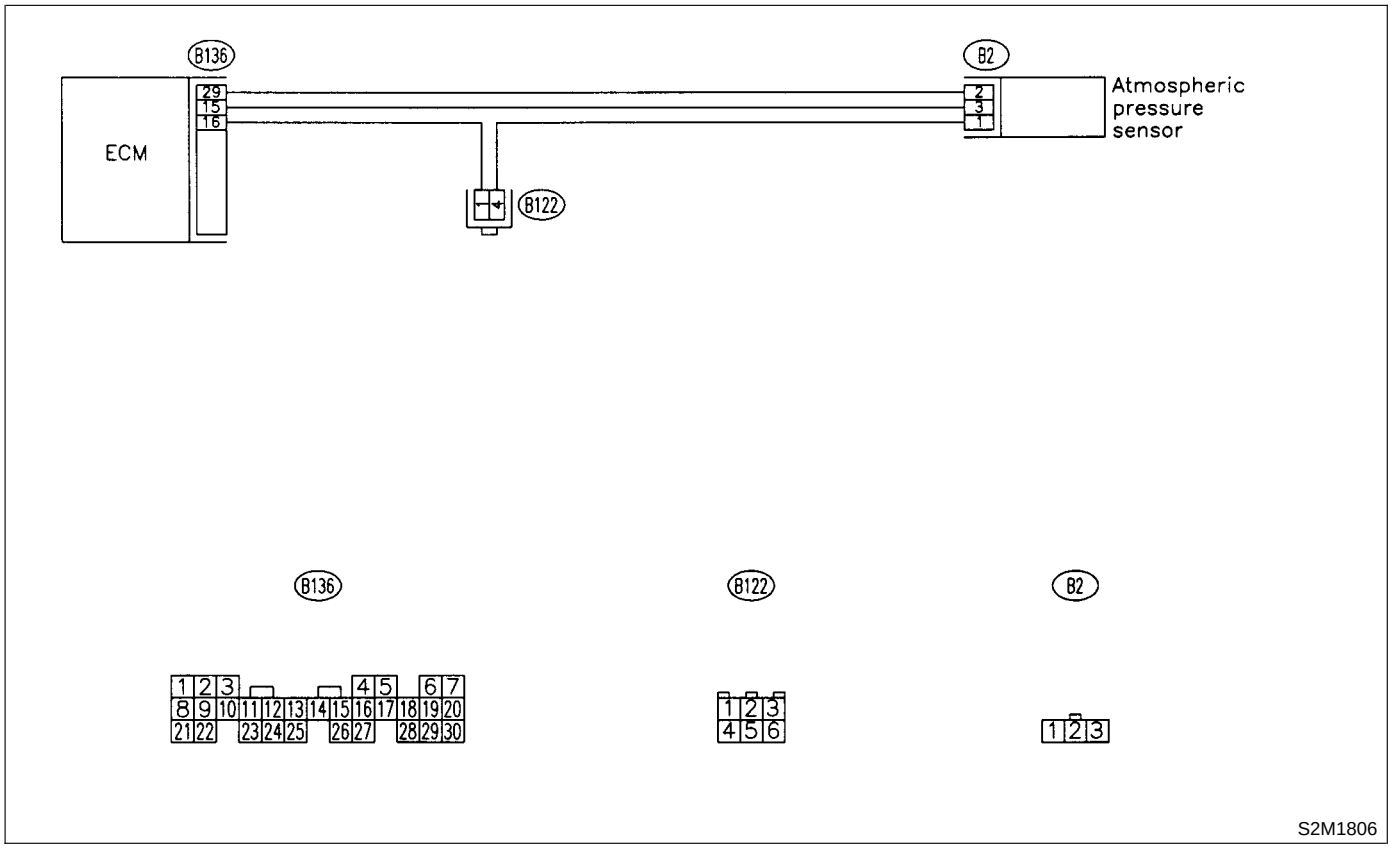
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W23A0].>

BP: DTC P1110 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT LOW INPUT —

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

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

- **WIRING DIAGRAM:**



10BP1 : CHECK CURRENT DATA.

1) Start engine.
2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value less than 0 kPa (0 mmHg, 0 inHg)?***
YES : Go to step **10BP3**.
NO : Go to step **10BP2**.

10BP2 : CHECK POOR CONTACT.

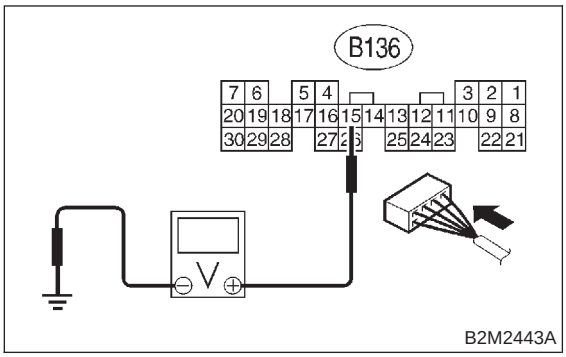
Check poor contact in ECM and pressure sensor connector. <Ref. to 2-7 [T3C8].>

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

10BP3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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

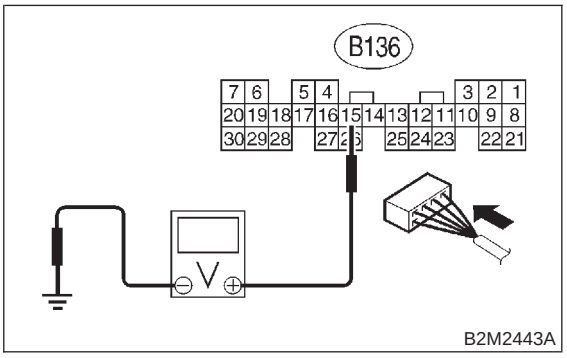


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BP5**.
NO : Go to step **10BP4**.

10BP4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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



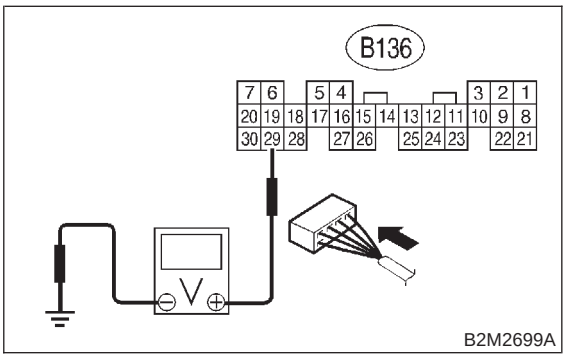
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10BP5 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 29 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10BP7**.
NO : Go to step **10BP6**.

10BP6 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

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

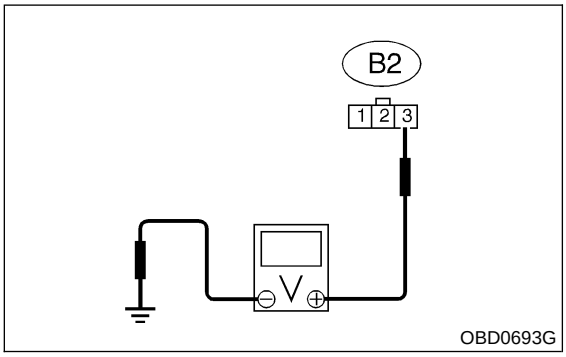
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 0 kPa (0 mmHg, 0 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10BP7**.

10BP7 : CHECK HARNESS BETWEEN ECM AND ATMOSPHERIC PRESSURE SENSOR CONNECTOR.

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

Connector & terminal
(B2) No. 3 (+) — Engine ground (−):



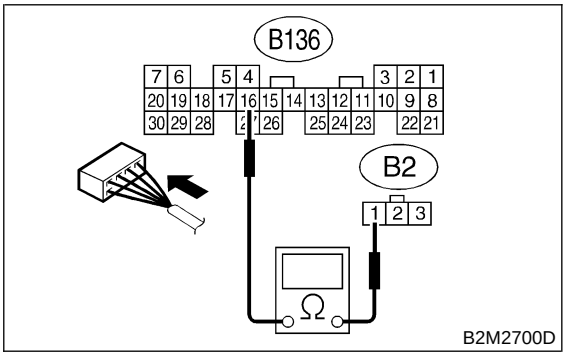
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BP8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and atmospheric pressure sensor connector
● Poor contact in joint connector (B122)

10BP8 : CHECK HARNESS BETWEEN ECM AND ATMOSPHERIC PRESSURE SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 16 — (B2) No. 1:



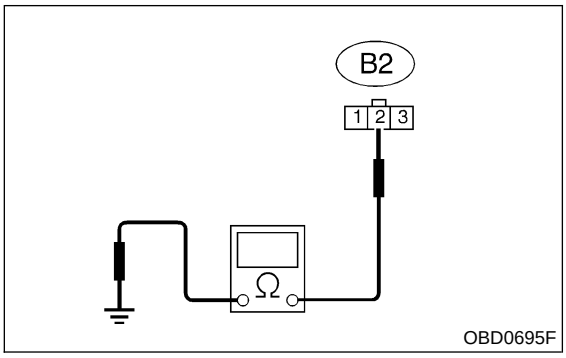
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BP9**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and pressure sensor connector

10BP9 : CHECK HARNESS BETWEEN ECM AND ATMOSPHERIC PRESSURE SENSOR CONNECTOR.

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

Connector & terminal
(B2) No. 2 — Engine ground:



CHECK : ***Is the resistance more than 500 kΩ?***
YES : Go to step **10BP10**.
NO : Repair ground short circuit in harness between ECM and pressure sensor connector.

10BP10 : CHECK POOR CONTACT.

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

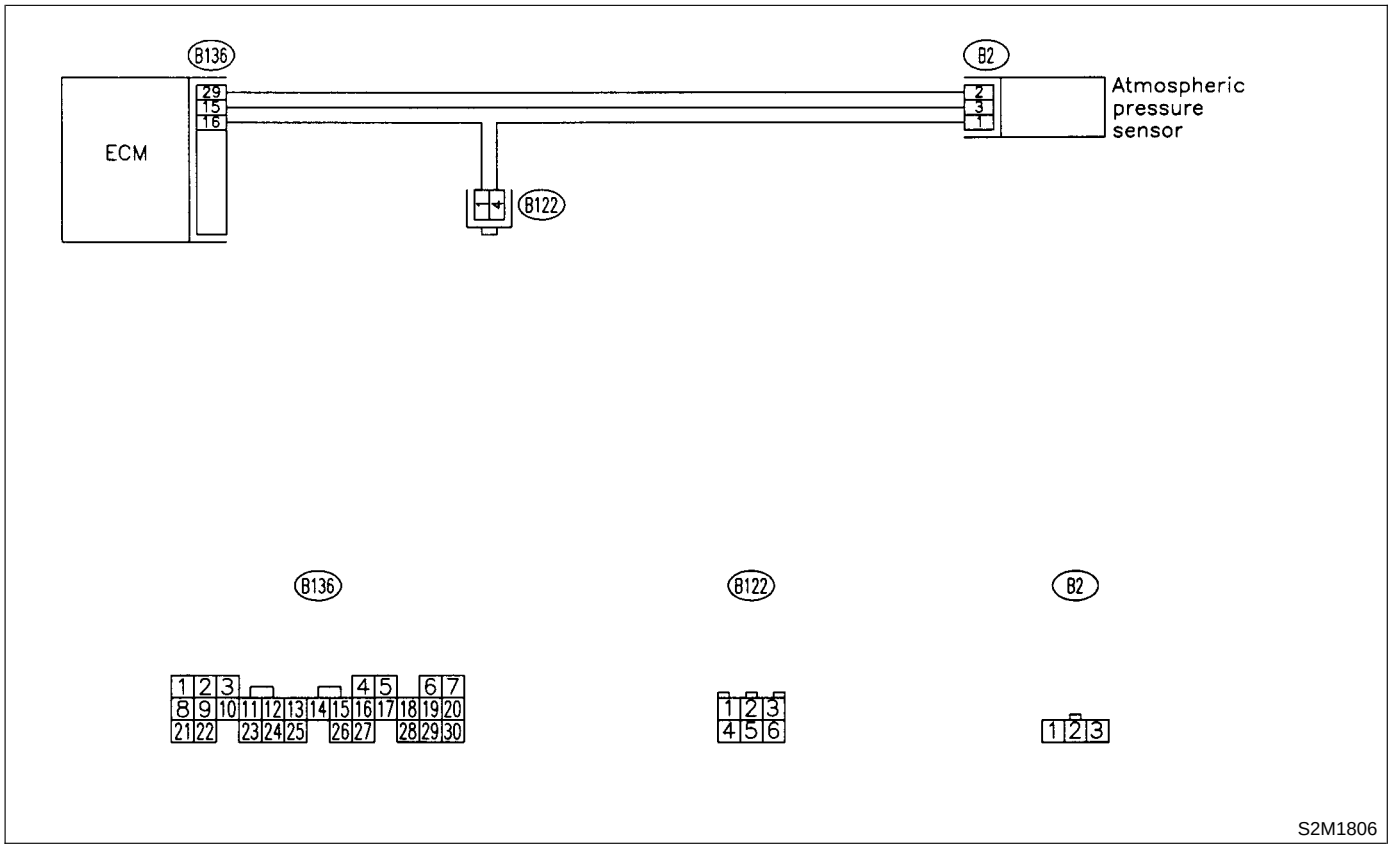
CHECK : ***Is there poor contact in pressure sensor connector?***
YES : Repair poor contact in atmospheric pressure sensor connector.
NO : Replace atmospheric pressure sensor. <Ref. to 2-7 [W12A0].>

BQ: DTC P1111 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT HIGH INPUT —

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

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

- **WIRING DIAGRAM:**



10BQ1 : CHECK CURRENT DATA.

1) Start engine.
2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

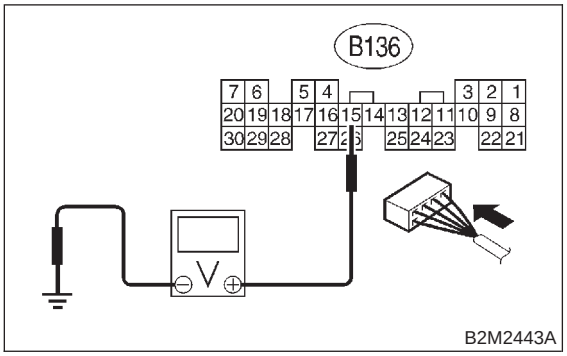
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 140 kPa (1,050 mmHg, 41.34 inHg)?***
YES : Go to step **10BQ9**.
NO : Go to step **10BQ2**.

10BQ2 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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

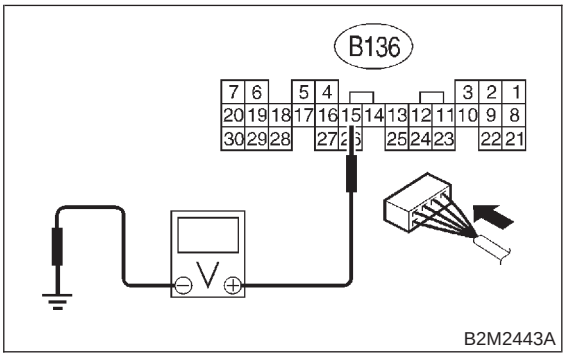


CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BQ4**.
NO : Go to step **10BQ3**.

10BQ3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

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



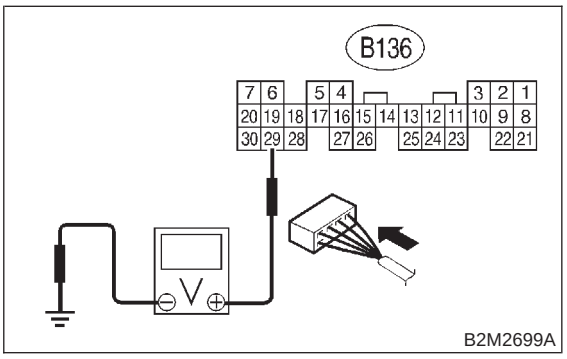
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10BQ4 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B136) No. 29 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 0.2 V?***
YES : Go to step **10BQ6**.
NO : Go to step **10BQ5**.

10BQ5 : CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)

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

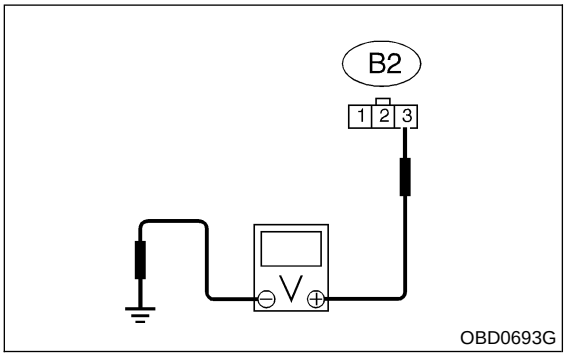
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

CHECK : ***Does the value change more than 0 kPa (0 mmHg, 0 inHg) by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10BQ6**.

10BQ6 : CHECK HARNESS BETWEEN ECM AND ATMOSPHERIC PRESSURE SENSOR CONNECTOR.

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

Connector & terminal
(B2) No. 3 (+) — Engine ground (−):



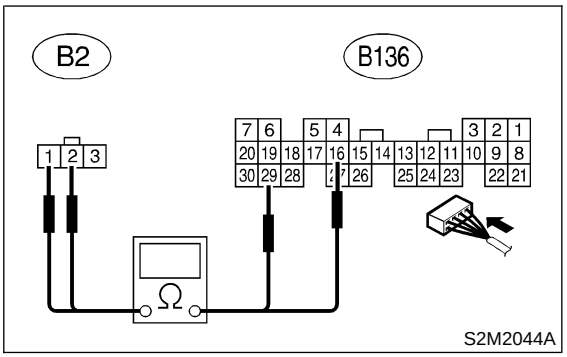
CHECK : ***Is the voltage more than 4.5 V?***
YES : Go to step **10BQ7**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and atmospheric pressure sensor connector
● Poor contact in joint connector (B122)

10BQ7 : CHECK HARNESS BETWEEN ECM AND ATMOSPHERIC PRESSURE SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 29 — (B2) No. 2:
(B136) No. 16 — (B2) No. 1:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BQ8**.
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 joint connector (B122)

10BQ8 : 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 atmospheric pressure sensor connector.
NO : Replace atmospheric pressure sensor. <Ref. to 2-7 [W12A0].>

10BQ9 : CHECK CURRENT DATA.

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

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

CHECK : ***Is the value more than 140 kPa (1,050 mmHg, 41.34 inHg)?***

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

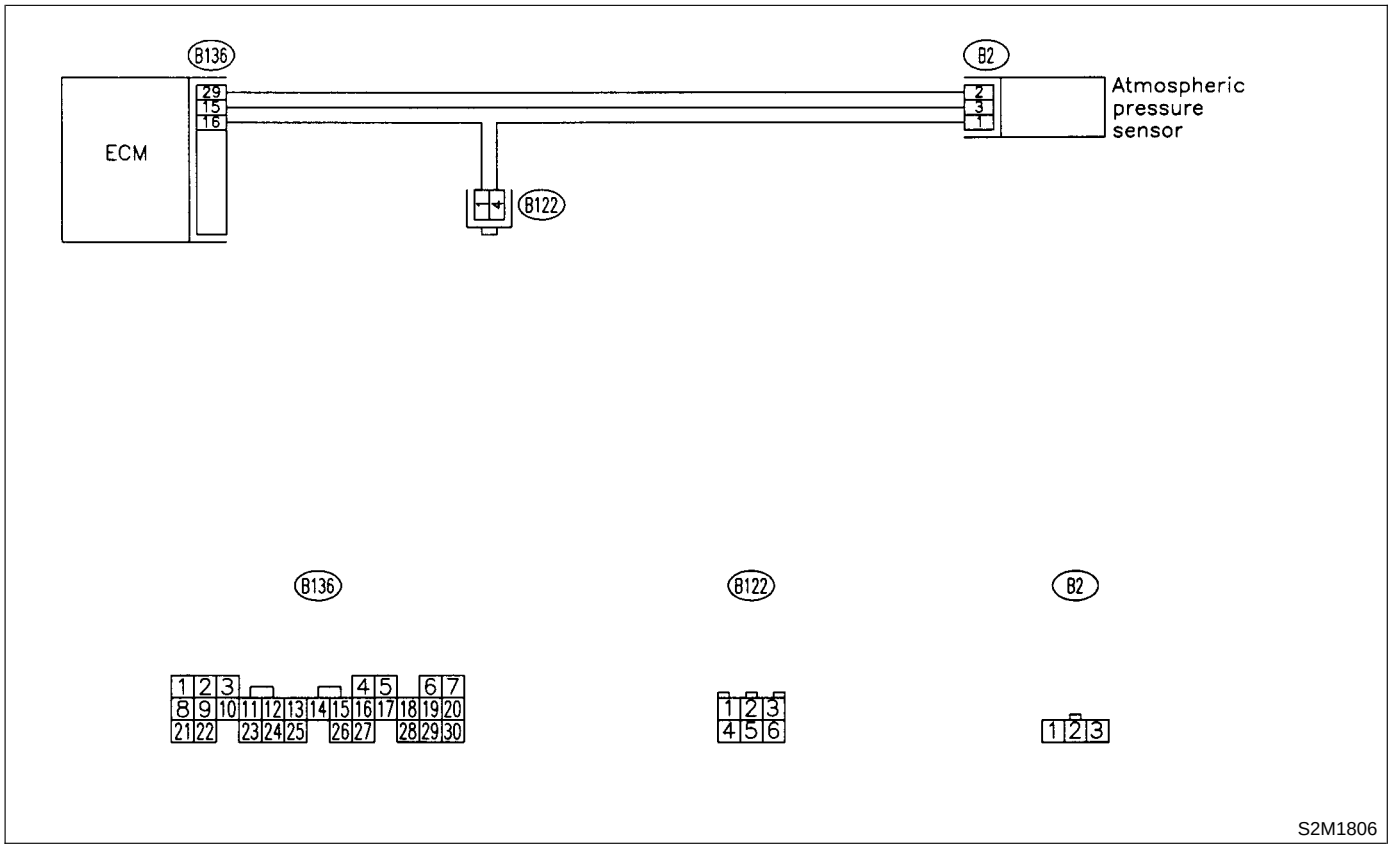
NO : Replace atmospheric pressure sensor. <Ref. to 2-7 [W12A0].>

BR: DTC P1112 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM —

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

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

- **WIRING DIAGRAM:**



10BR1 : CHECK ANY OTHER DTC ON DISPLAY.

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

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P1110 or P1111?***

YES : Inspect DTC P0106, P0107, P0108, P1110 or P1111 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10BR2**.

10BR2 : CHECK ATMOSPHERIC PRESSURE SENSOR FILTER.

1) Turn ignition switch to OFF.
2) Disconnect connector from atmospheric pressure sensor.
3) Remove atmospheric pressure sensor.
4) Check atmospheric pressure sensor filter.

CHECK : ***Is atmospheric pressure sensor filter non-functional? (Check for contamination, damage, water leakage, etc.)***

YES : Replace atmospheric pressure sensor filter.

NO : Go to step **10BR3**.

10BR3 : CHECK CURRENT DATA.

1) Turn ignition switch to ON.
2) Read data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value between 73.3 kPa (550 mmHg, 21.65 inHg) and 106.6 kPa (800 mmHg, 31.50 inHg)?***

YES : Replace atmospheric pressure sensor. <Ref. to 2-7 [W12A0].>

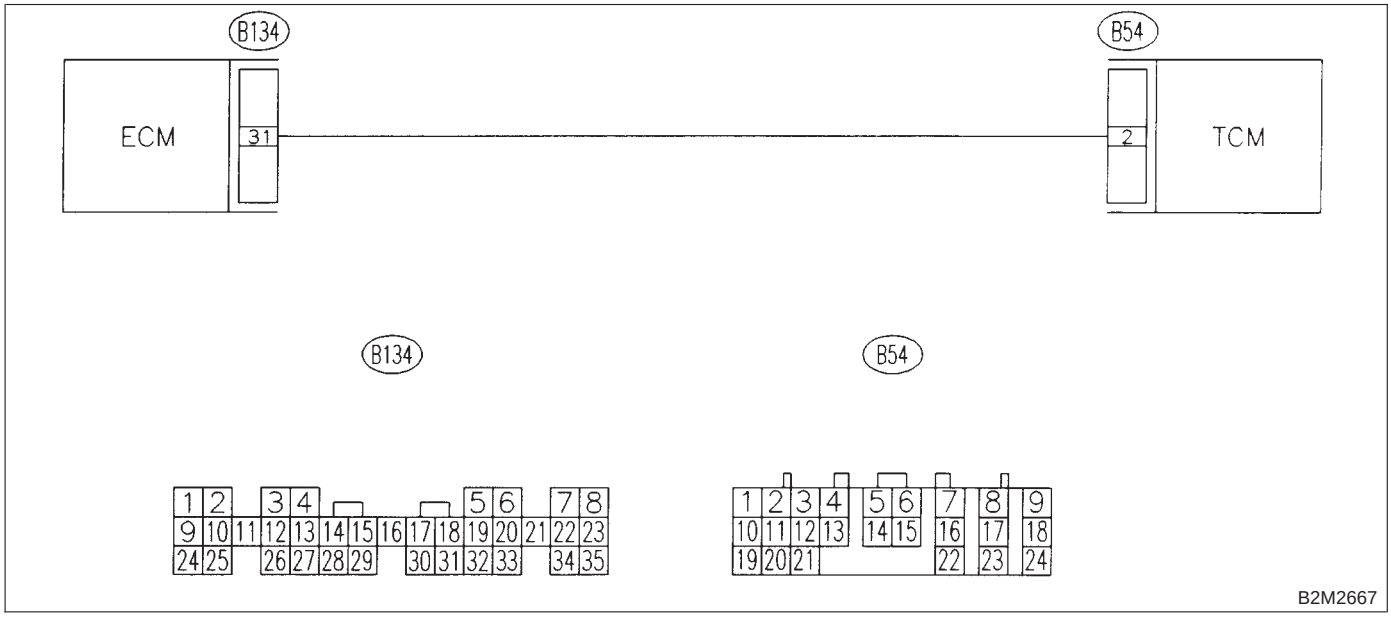
NO : Replace intake air temperature and pressure. <Ref. to 2-7 [W11A0].>

BS: DTC P1115 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT HIGH INPUT —

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

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

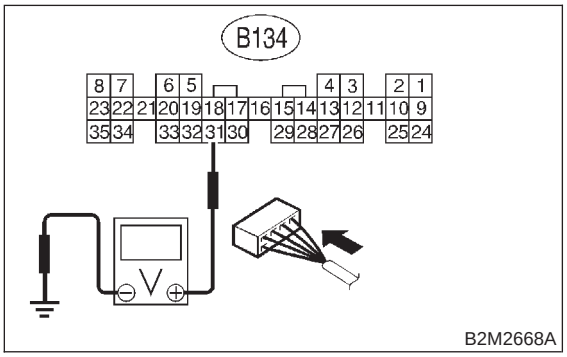
- **WIRING DIAGRAM:**



10BS1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start engine, and warm-up the engine.
2) Turn ignition switch to OFF.
3) Disconnect connector from TCM.
4) Turn ignition switch to ON.
5) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):

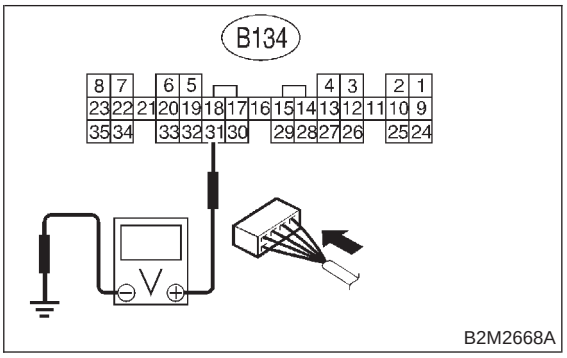


CHECK : ***Is the voltage less than 3 V?***
YES : Go to step **10BS2**.
NO : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>

10BS2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 10 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Contact with SOA service.

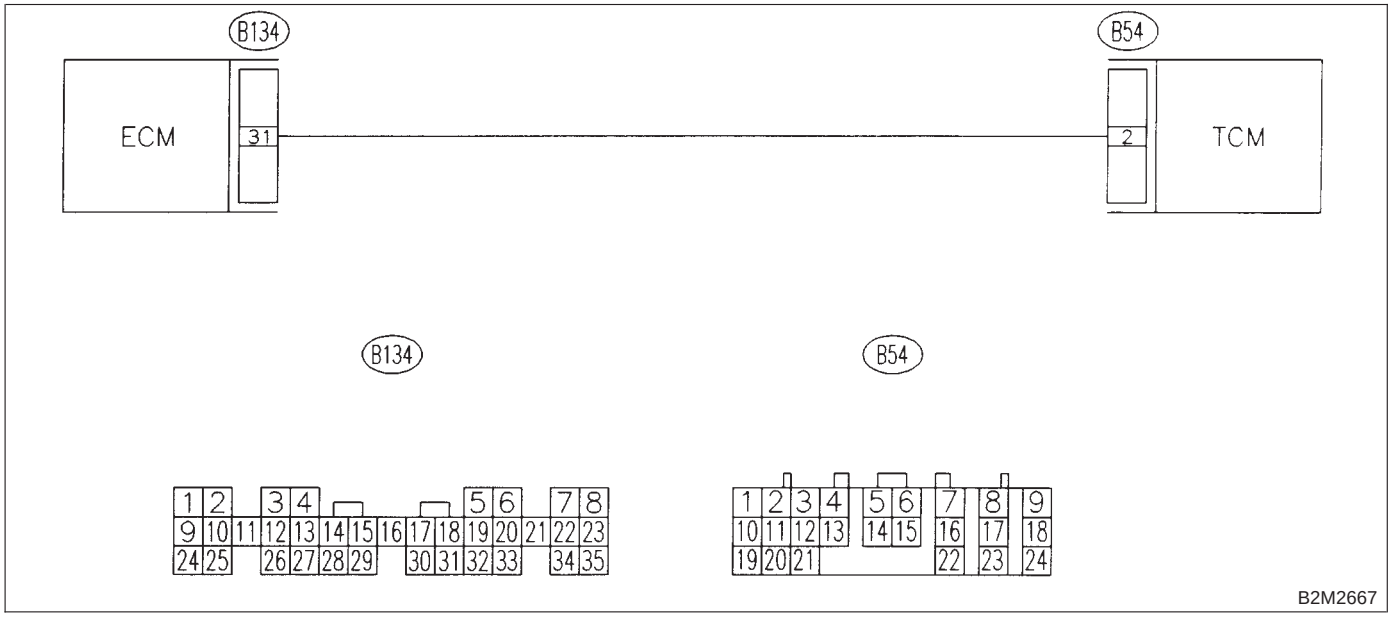
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BT: DTC P1116 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT LOW INPUT —

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

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

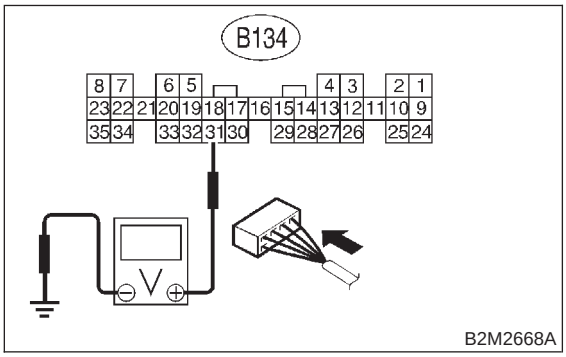
- **WIRING DIAGRAM:**



10BT1 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start engine, and warm-up the engine.
2) Turn ignition switch to OFF.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 31 (+) — Chassis ground (−):

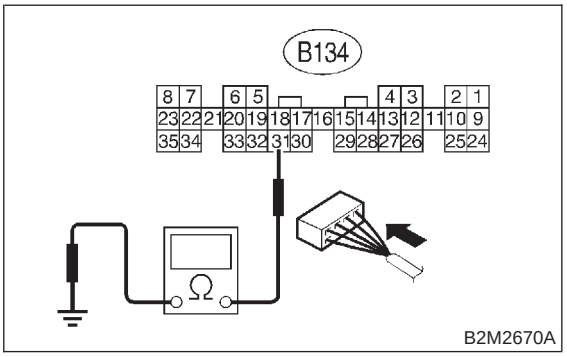


CHECK : ***Is the voltage more than 3 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10BT2**.

10BT2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B134) No. 31 — Chassis ground:

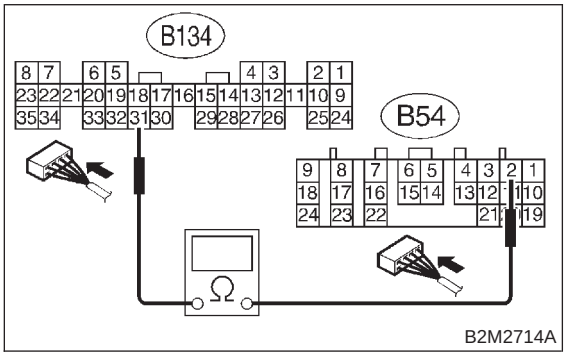


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10BT3**.

10BT3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure resistance of harness between ECM and TCM connector.

Connector & terminal
(B134) No. 31 — (B54) No. 2:



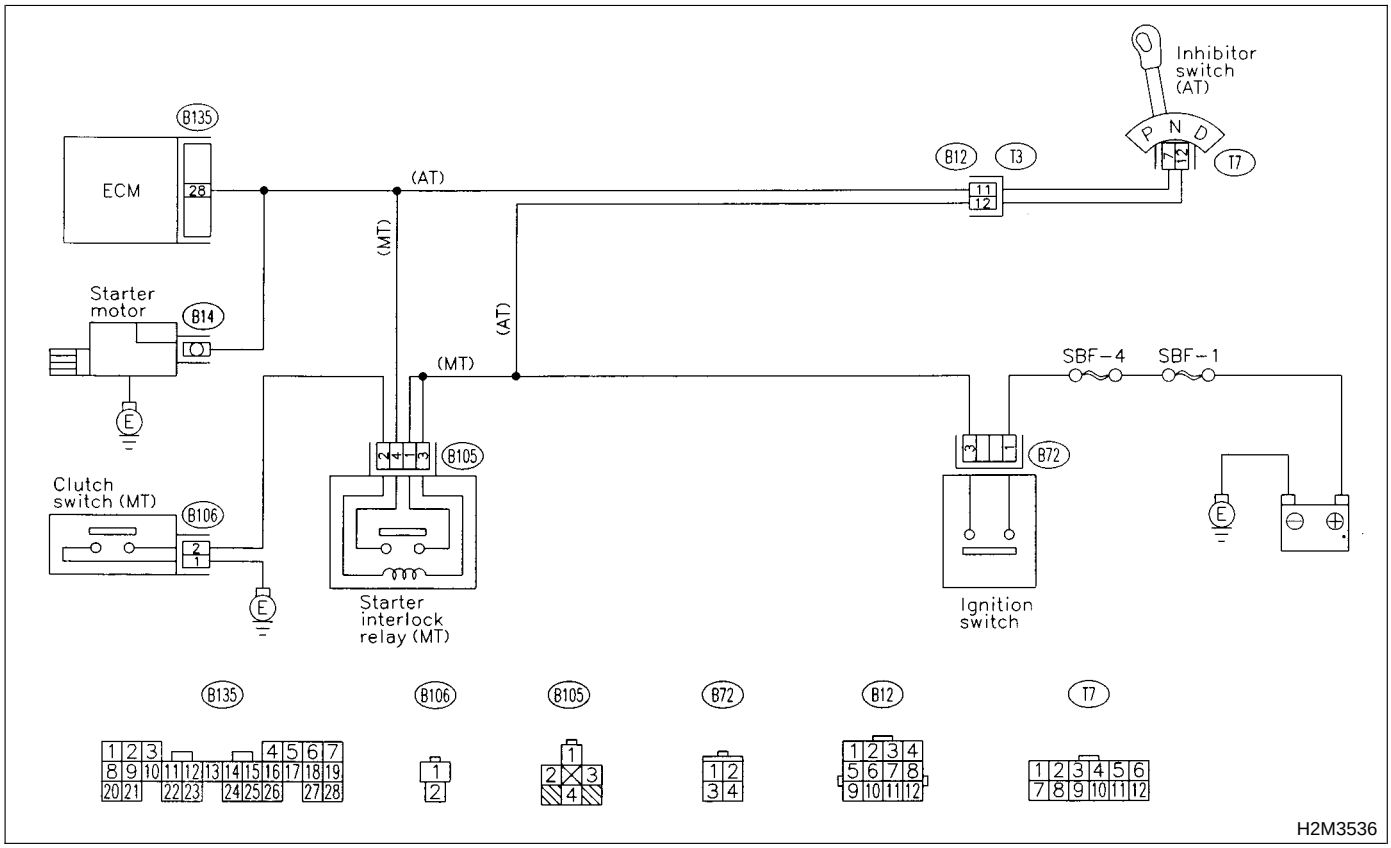
CHECK : ***Is the resistance less than 1 Ω?***
YES : Repair poor contact in ECM or TCM connector.
NO : Repair open circuit in harness between ECM and TCM connector.

BU: DTC P1120 — STARTER SWITCH CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Failure of engine to start

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

- **WIRING DIAGRAM:**



10BU1 : CHECK OPERATION OF STARTER MOTOR.

NOTE:
- ON AT vehicles, place the inhibitor switch in each position.
- On MT vehicles, depress or release the clutch pedal.

CHECK : ***Does starter motor operate when ignition switch to "ON"?***

YES : Repair battery short circuit in starter motor circuit. After repair, replace ECM. <Ref. to 2-7 [W17A0].>

NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

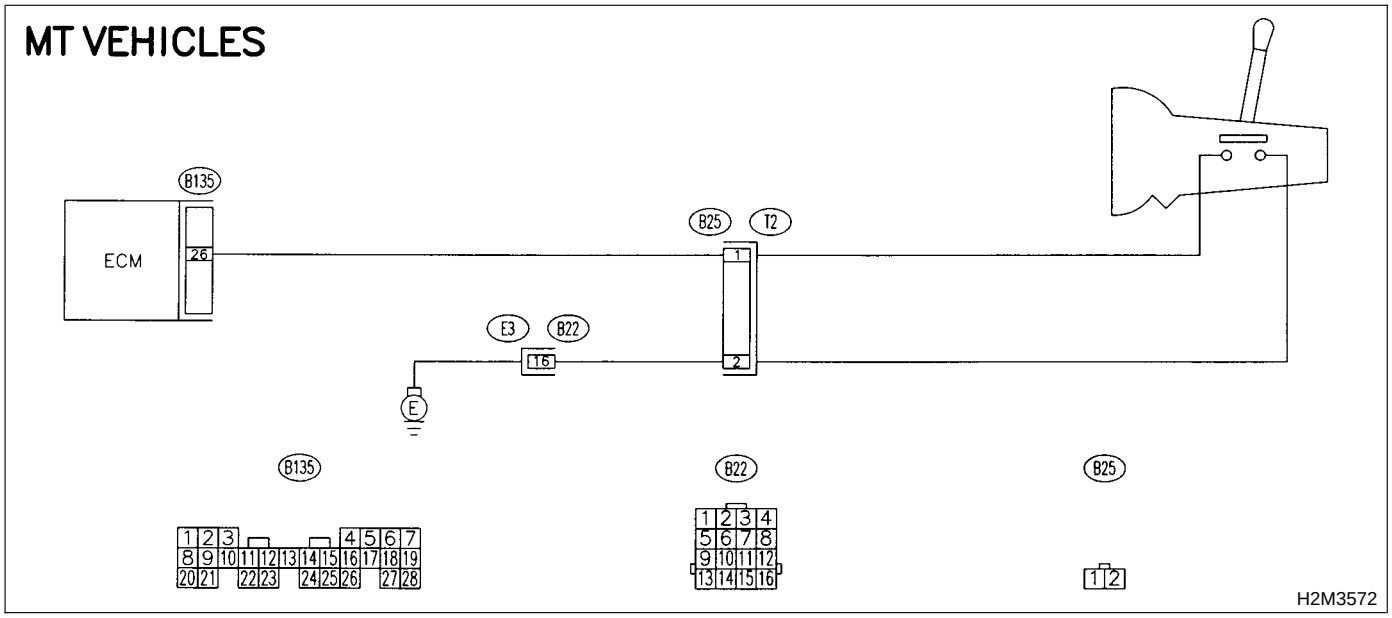
MEMO:

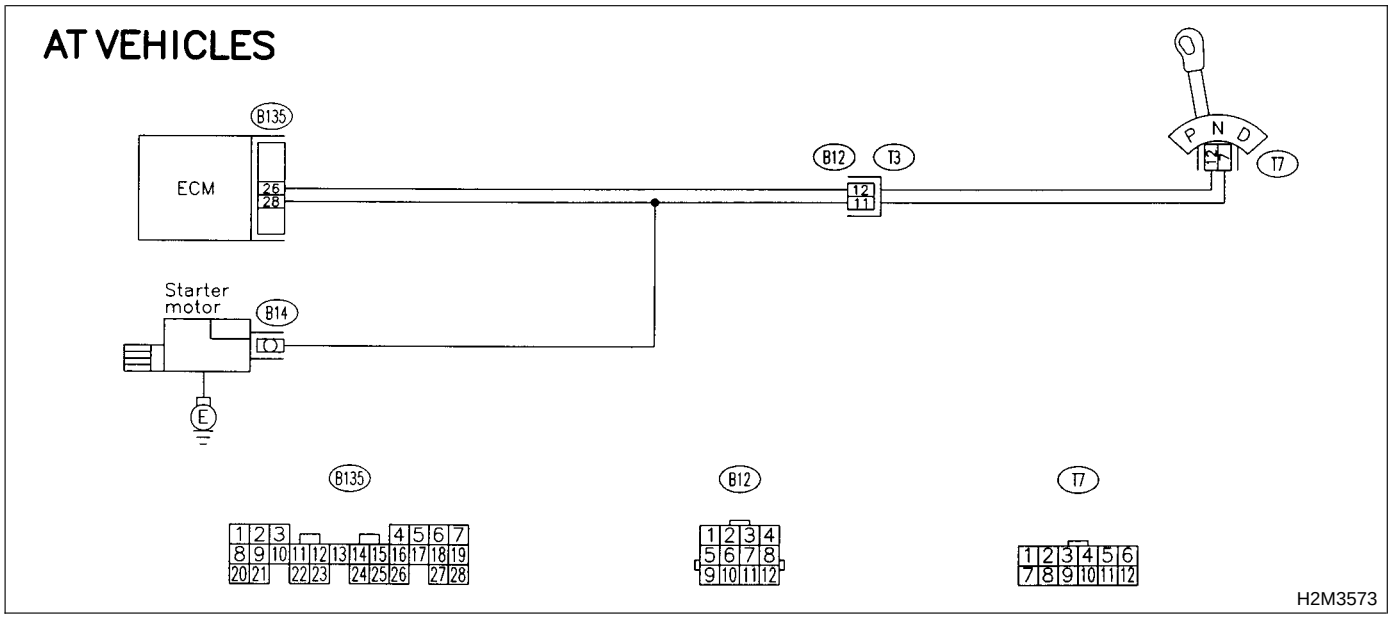
BV: DTC P1121 — NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [MT VEHICLES] OR NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [AT VEHICLES] —

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

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

- **WIRING DIAGRAM:**





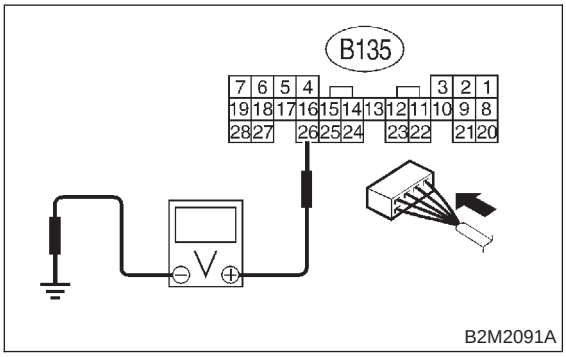
10BV1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type MT?***
YES : Go to step **10BV2**.
NO : Go to step **10BV9**.

10BV2 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

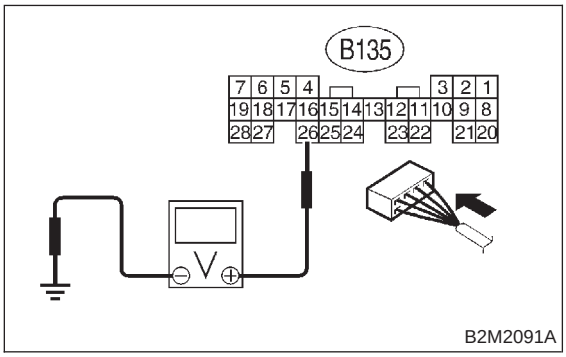


CHECK : ***Is the voltage more than 10 V in neutral position?***
YES : Go to step **10BV3**.
NO : Go to step **10BV5**.

10BV3 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V in other positions?***
YES : Go to step **10BV4**.
NO : Go to step **10BV6**.

10BV4 : CHECK POOR CONTACT.

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

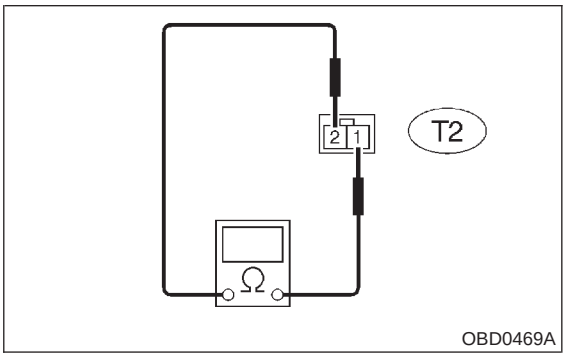
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10BV5 : CHECK NEUTRAL POSITION SWITCH.

Measure resistance between transmission harness connector terminals.

Connector & terminal
(T2) No. 1 — No. 2:

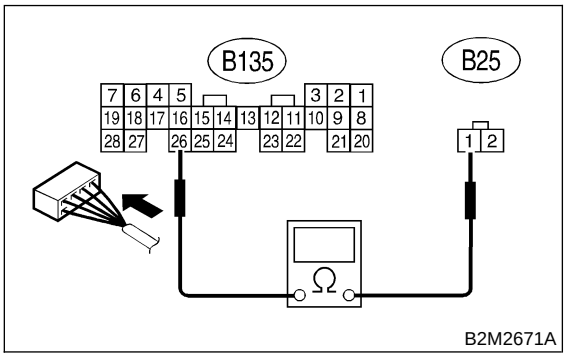


CHECK : ***Is the resistance less than 1 Ω in other positions?***
YES : Go to step **10BV6**.
NO : Repair open circuit in transmission harness or replace neutral position switch.

10BV6 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

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

Connector & terminal
(B135) No. 26 — (B25) No. 1:

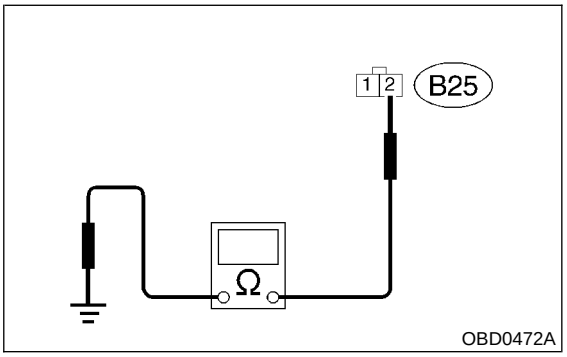


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BV7**.
NO : Repair open circuit in harness between ECM and transmission harness connector.

10BV7 : CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.

Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(B25) No. 2 — Engine ground:



CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10BV8**.
NO : Repair harness and connector.

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

10BV8 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in transmission harness connector?***
YES : Repair poor contact in transmission harness connector.
NO : Contact with SOA service.

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

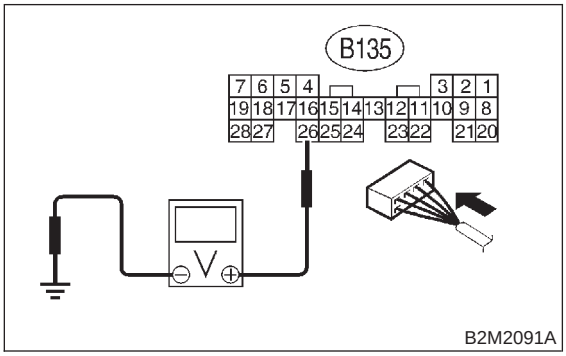
10BV9 : CHECK DTC P0705 ON DISPLAY.

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 **10BV10**.

10BV10 : CHECK INPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 26 (+) — Chassis ground (−):

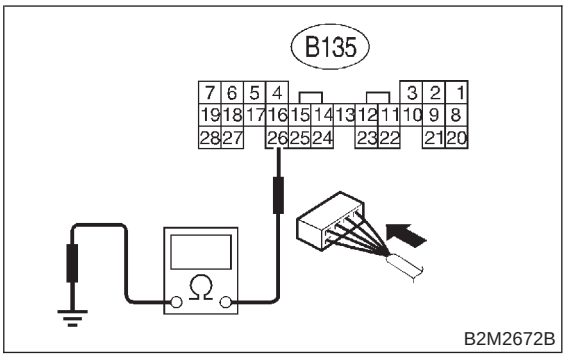


CHECK : ***Is the voltage between 4.5 and 5.5 V at except "N" and "P" positions?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.
NO : Go to step **10BV11**.

10BV11 : CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and transmission harness connector (T3).
3) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B135) No. 26 — Chassis ground:

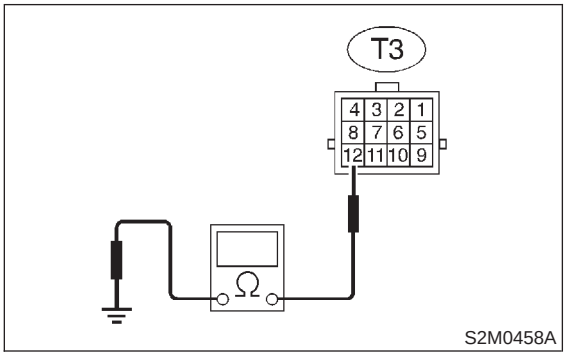


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and transmission harness connector.
NO : Go to step **10BV12**.

10BV12 : CHECK TRANSMISSION HARNESS CONNECTOR.

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

Connector & terminal
(T3) No. 12 — Engine ground:

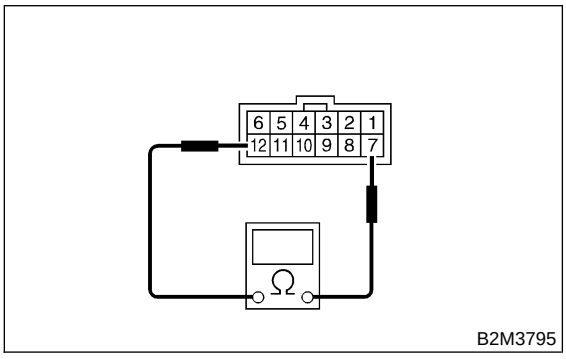


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between transmission harness and inhibitor switch connector.
NO : Go to step **10BV13**.

10BV13 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals in select lever except for "N" position.

Terminals
No. 7 — No. 12:



CHECK : ***Is the resistance more than 1 MΩ at except "N" and "P" positions?***
YES : Go to step **10BV14**.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

10BV14 : CHECK SELECTOR CABLE CONNECTION.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***
YES : Repair selector cable connection. <Ref. to 3-2 [W2A0].>
NO : Contact with SOA service.

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

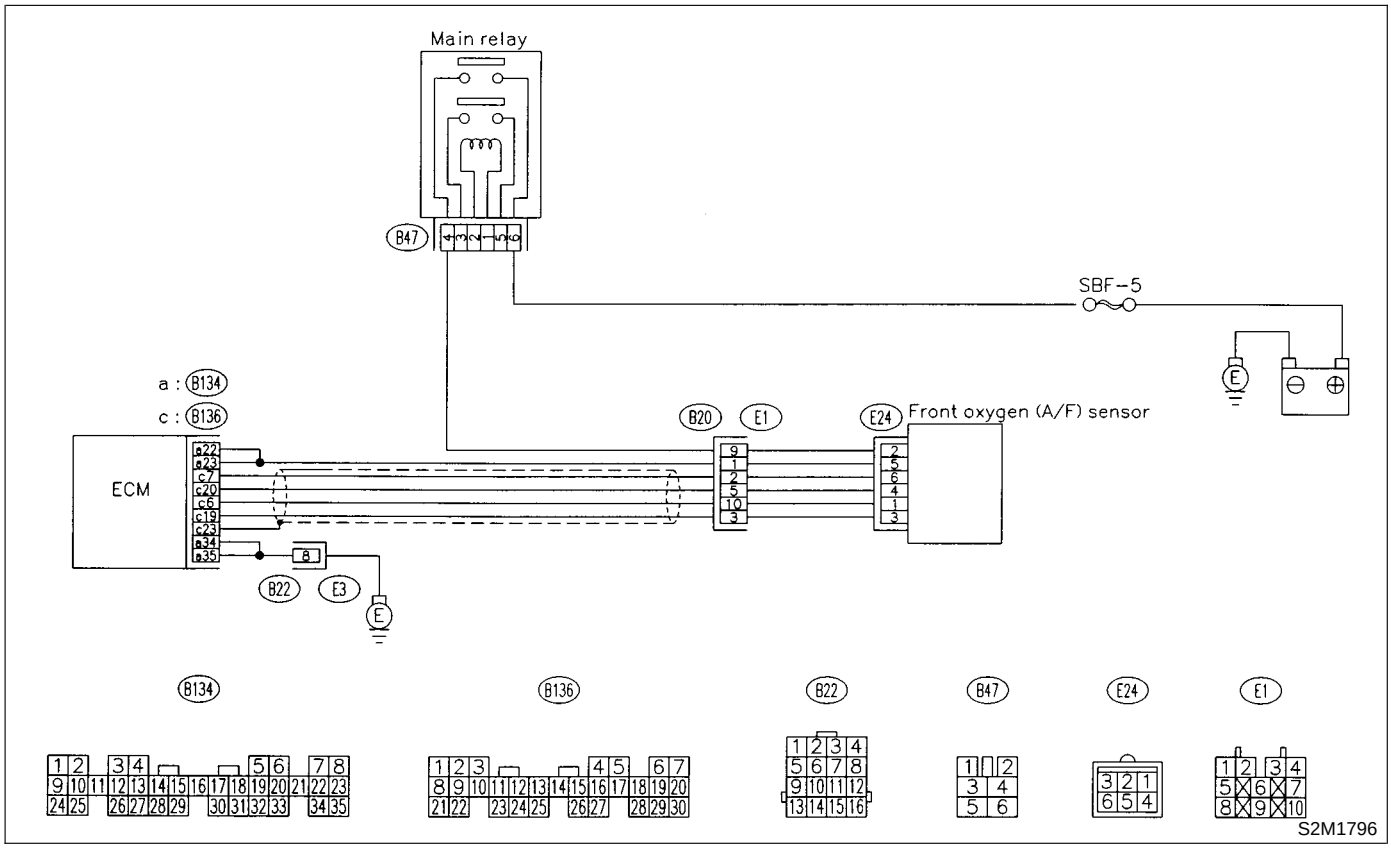
MEMO:

BW: DTC P1130 — FRONT OXYGEN (A/F) SENSOR CIRCUIT MALFUNCTION (OPEN CIRCUIT) —

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

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

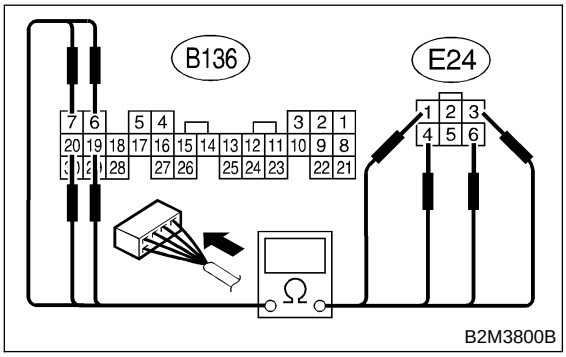
- **WIRING DIAGRAM:**



10BW1 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and front oxygen (A/F) sensor connector.
3) Measure resistance of harness between ECM and front oxygen (A/F) sensor connector.

Connector & terminal
(B136) No. 6 — (E24) No. 1:
(B136) No. 7 — (E24) No. 6:
(B136) No. 19 — (E24) No. 3:
(B136) No. 20 — (E24) No. 4:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BW2**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and front oxygen (A/F) sensor connector
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in ECM connector

10BW2 : CHECK POOR CONTACT.

Check poor contact in front oxygen (A/F) sensor connector. <Ref. to FOREWORD [T3C1].>

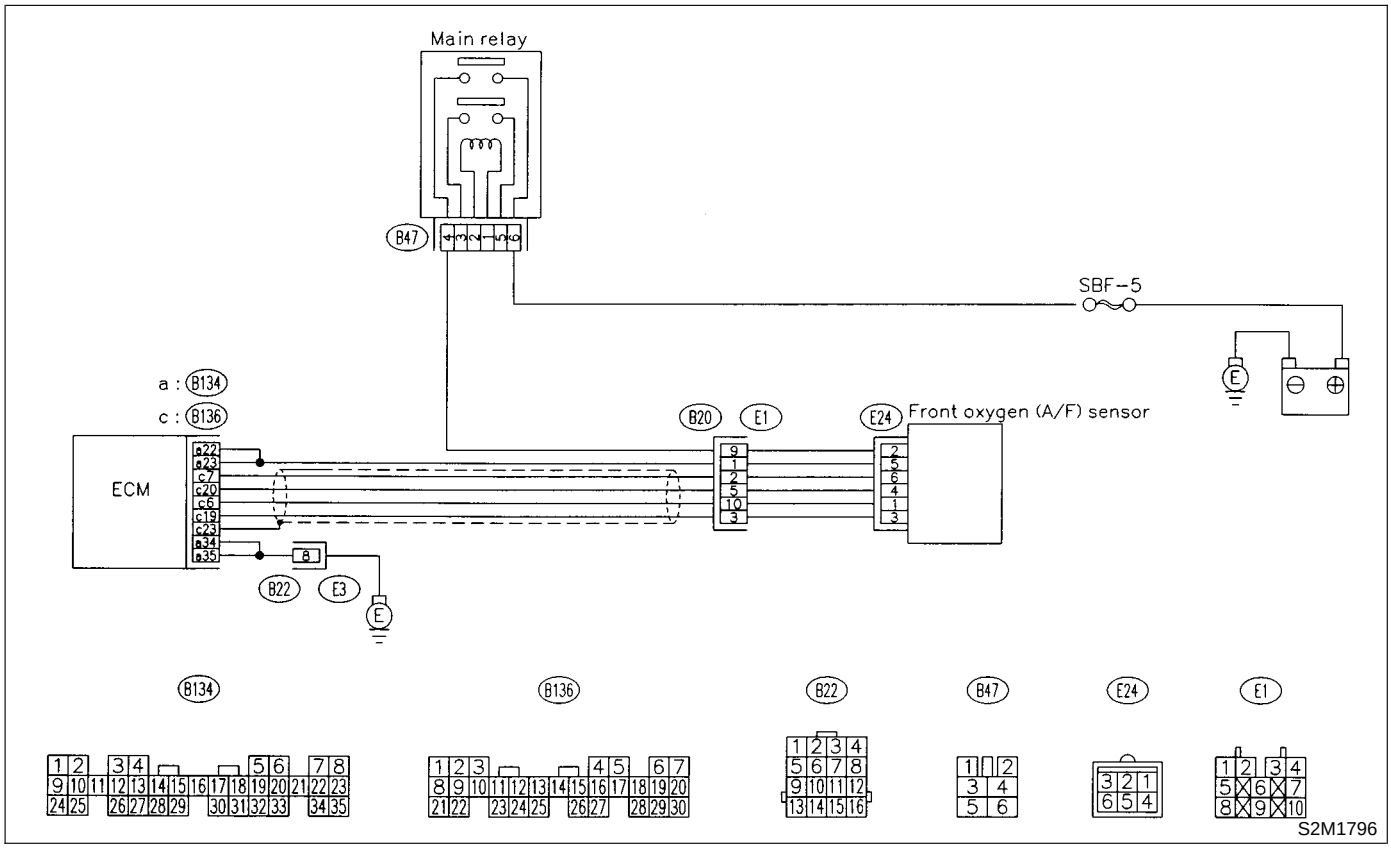
CHECK : ***Is there poor contact in front oxygen (A/F) sensor connector?***
YES : Repair poor contact in front oxygen (A/F) sensor connector.
NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W8A0].>

BX: DTC P1131 — FRONT OXYGEN (A/F) SENSOR CIRCUIT MALFUNCTION (SHORT CIRCUIT) —

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

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

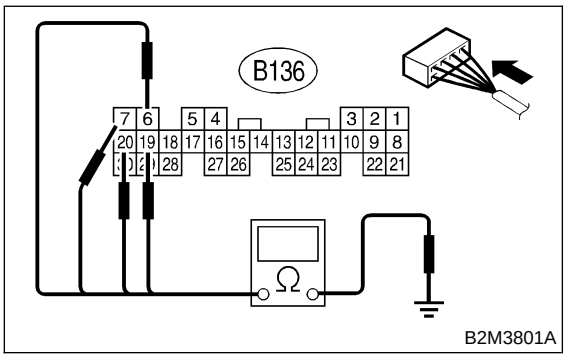
- **WIRING DIAGRAM:**



10BX1 : CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.

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

Connector & terminal
(B136) No. 6 — Chassis ground:
(B136) No. 7 — Chassis ground:
(B136) No. 19 — Chassis ground:
(B136) No. 20 — Chassis ground:



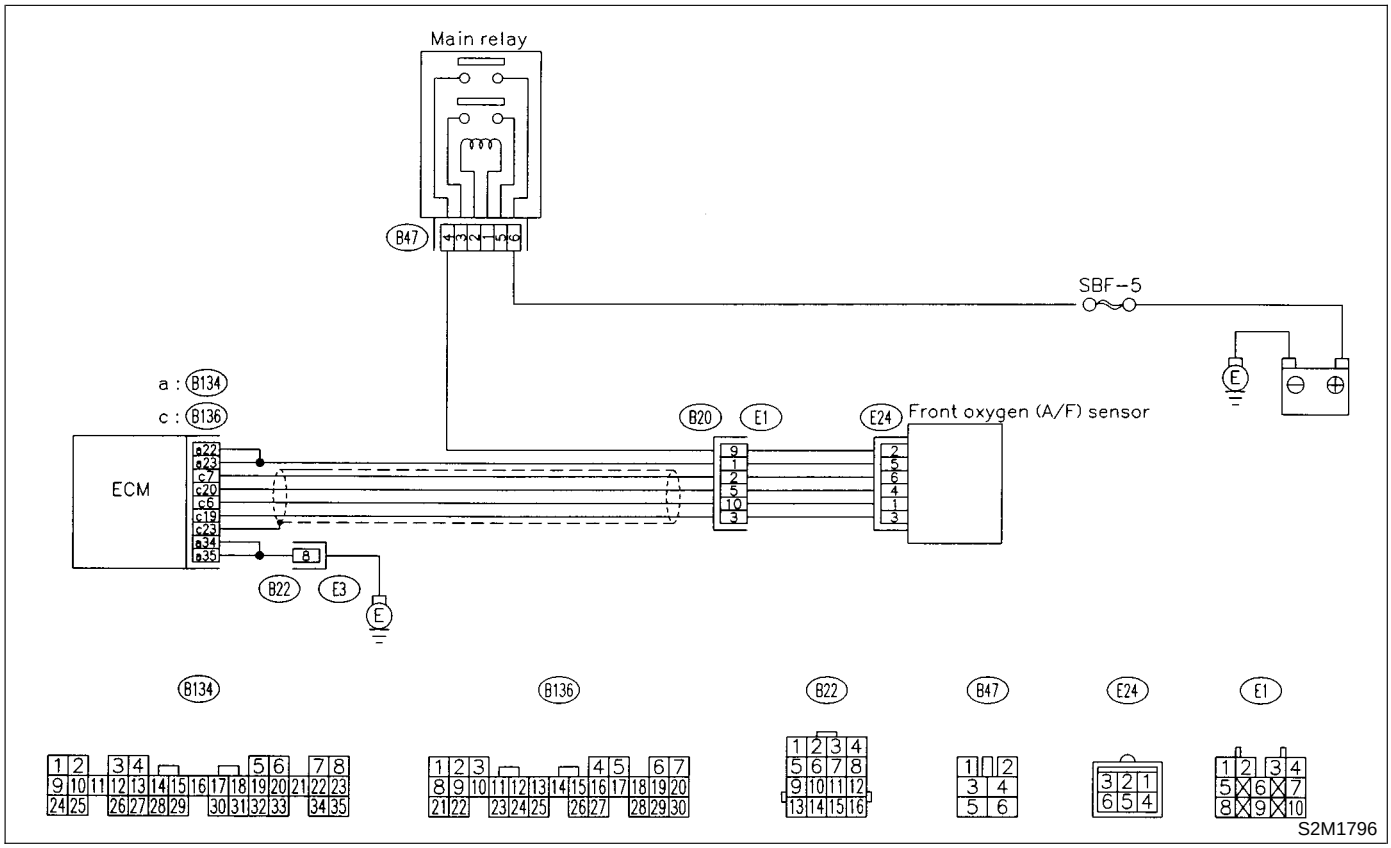
CHECK : ***Is the resistance more than 10 Ω?***
YES : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W8A0].>
NO : Repair ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.

BY: DTC P1132 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT LOW INPUT —

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

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

- **WIRING DIAGRAM:**



10BY1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1132 and P0141 at the same time?***

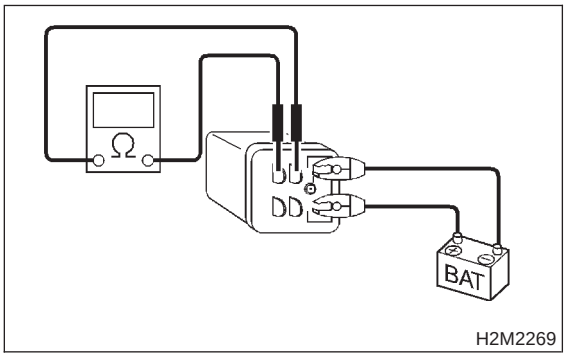
YES : Go to step **10BY2**.

NO : Go to step **10BY6**.

10BY2 : 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. 4 — No. 6:

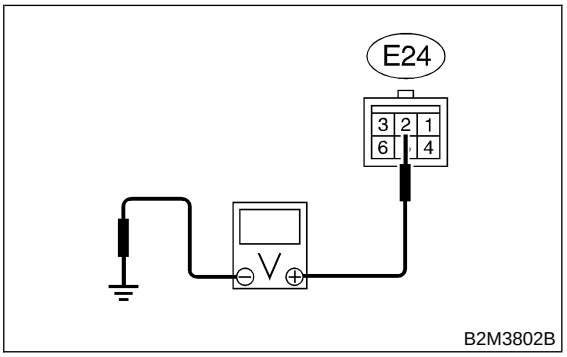


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10BY3**.
NO : Replace main relay.

10BY3 : CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from front oxygen (A/F) sensor.
3) Turn ignition switch to ON.
4) Measure voltage between front oxygen (A/F) sensor connector and engine ground.

Connector & terminal
(E24) No. 2 (+) — Engine ground (−):



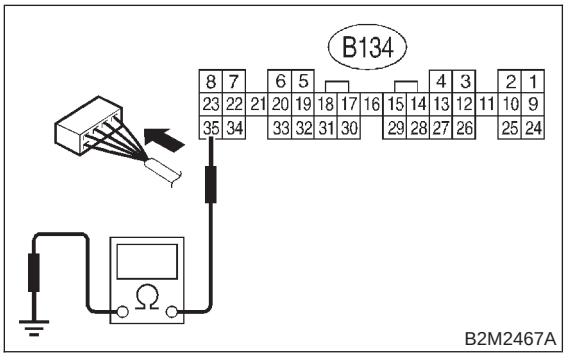
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10BY4**.
NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between battery and front oxygen (A/F) sensor connector
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in main relay connector

10BY4 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM connector and chassis ground.

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



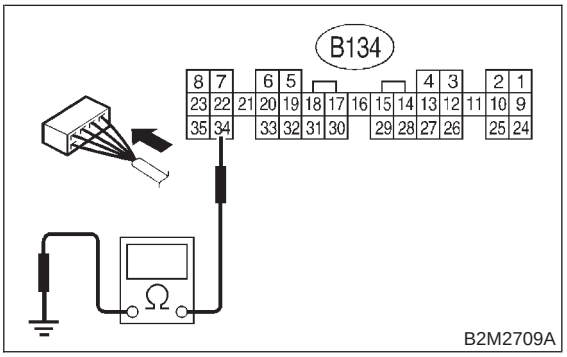
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10BY5**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and engine ground terminal
● Poor contact in ECM connector
Poor contact in coupling connector (B22)

10BY5 : CHECK GROUND CIRCUIT OF ECM.

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

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



CHECK : ***Is there resistance less than 5 Ω?***
YES : Go to step **10BY6**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
● Open circuit in harness between ECM and engine ground terminal
● Poor contact in ECM connector
Poor contact in coupling connector (B22)

10BY6 : CHECK CURRENT DATA.

1) Start the engine.
2) Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool.

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

CHECK : ***Is the value more than 0.2 A?***
YES : Repair poor contact in connector.

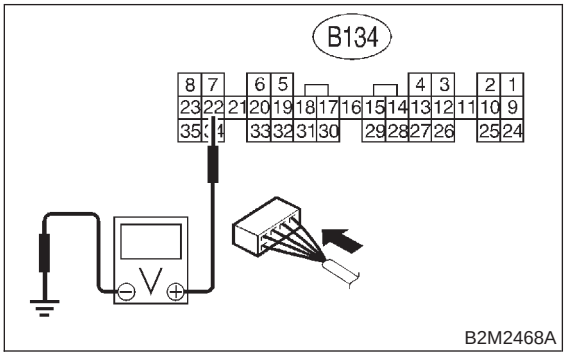
NOTE:
In this case, repair the following:
● Poor contact in front oxygen (A/F) sensor connector
● Poor contact in ECM connector

NO : Go to step **10BY7**.

10BY7 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):

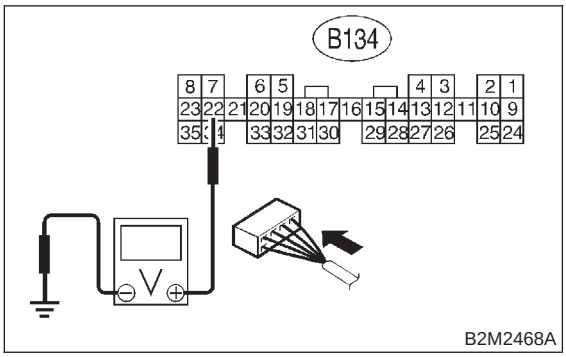


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **10BY9**.
NO : Go to step **10BY8**.

10BY8 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):

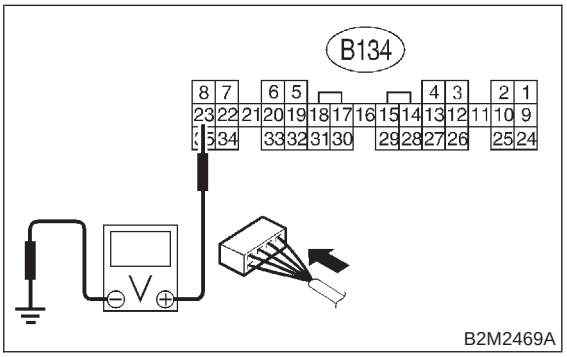


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10BY9**.

10BY9 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

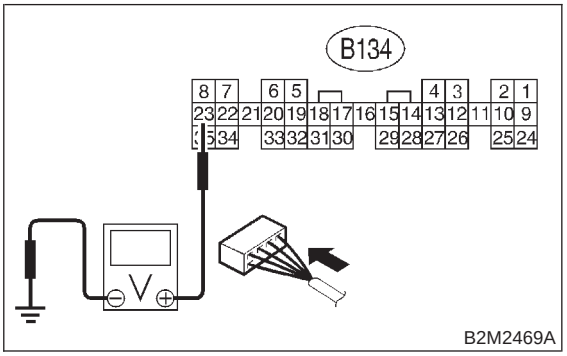


CHECK : ***Is the voltage less than 1.0 V?***
YES : Go to step **10BY11**.
NO : Go to step **10BY10**.

10BY10 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

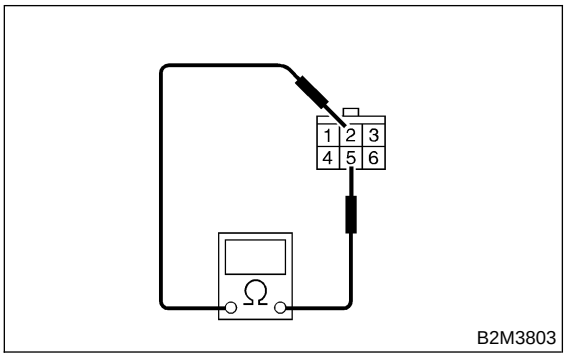


CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10BY11**.

10BY11 : CHECK FRONT OXYGEN (A/F) SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between front oxygen (A/F) sensor connector terminals.

Terminals
No. 2 — No. 5:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between front oxygen (A/F) sensor and ECM connector
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in ECM connector

NO : Replace front oxygen (A/F) sensor. <Ref. to 2-7 [W8A0].>

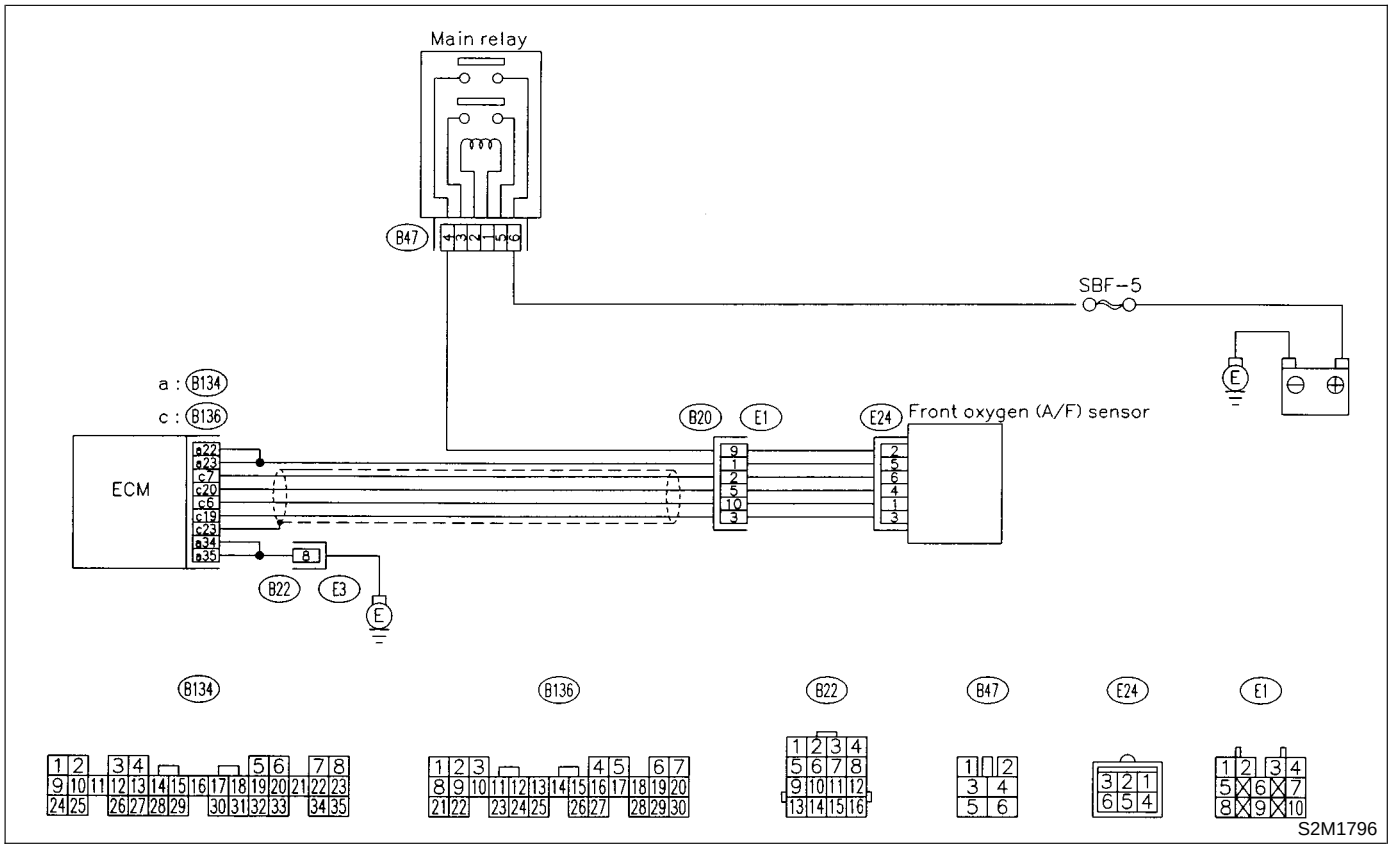
MEMO:

BZ: DTC P1133 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT HIGH INPUT —

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

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

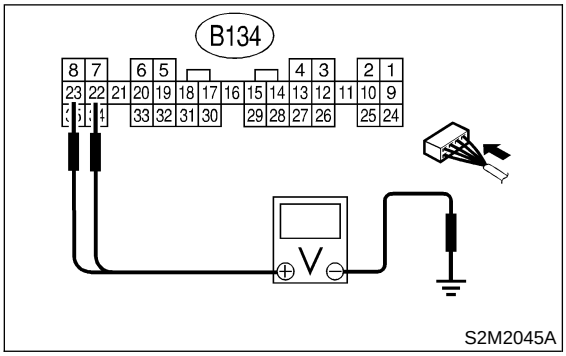
- **WIRING DIAGRAM:**



10BZ1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):
(B134) No. 22 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10BZ3**.
NO : Go to step **10BZ2**.

10BZ2 : CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT.

1) Turn ignition switch to OFF.
2) Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.
3) Turn ignition switch to ON.
4) Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or the OBD-II general scan tool.

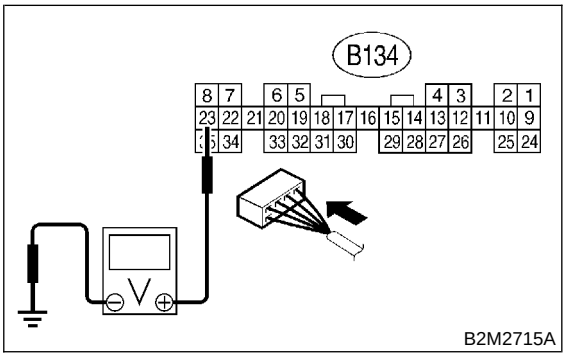
NOTE:
● Subaru Select Monitor
For detailed operation procedure, refer to the “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to 2-7 [T3C4].>
● OBD-II general scan tool
For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : ***Is the value more than 2.3 A?***
YES : Replace ECM. <Ref. to 2-7 [W17A0].>
NO : END

10BZ3 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 23 (+) — Chassis ground (−):

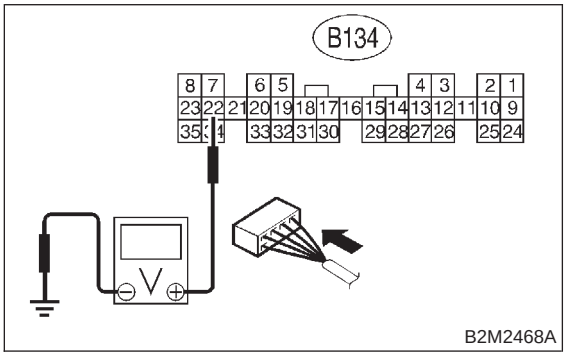


CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***
YES : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.
NO : Go to step **10BZ4**.

10BZ4 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 22 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.

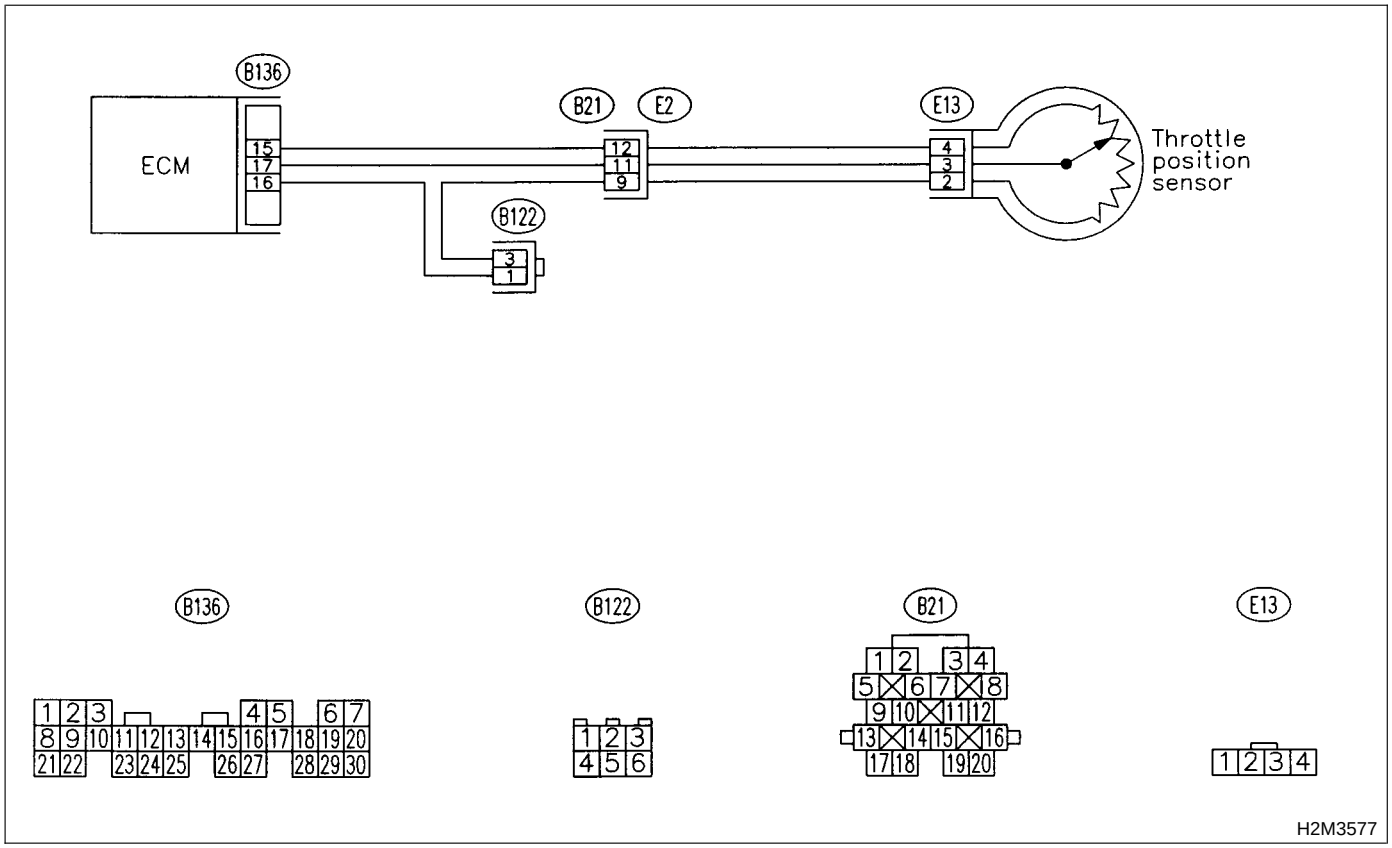
NO : END

CA: DTC P1142 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

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

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

- **WIRING DIAGRAM:**



10CA1 : CHECK ANY OTHER DTC ON DISPLAY.

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

YES : Inspect DTC P0122 or P0123 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1142.

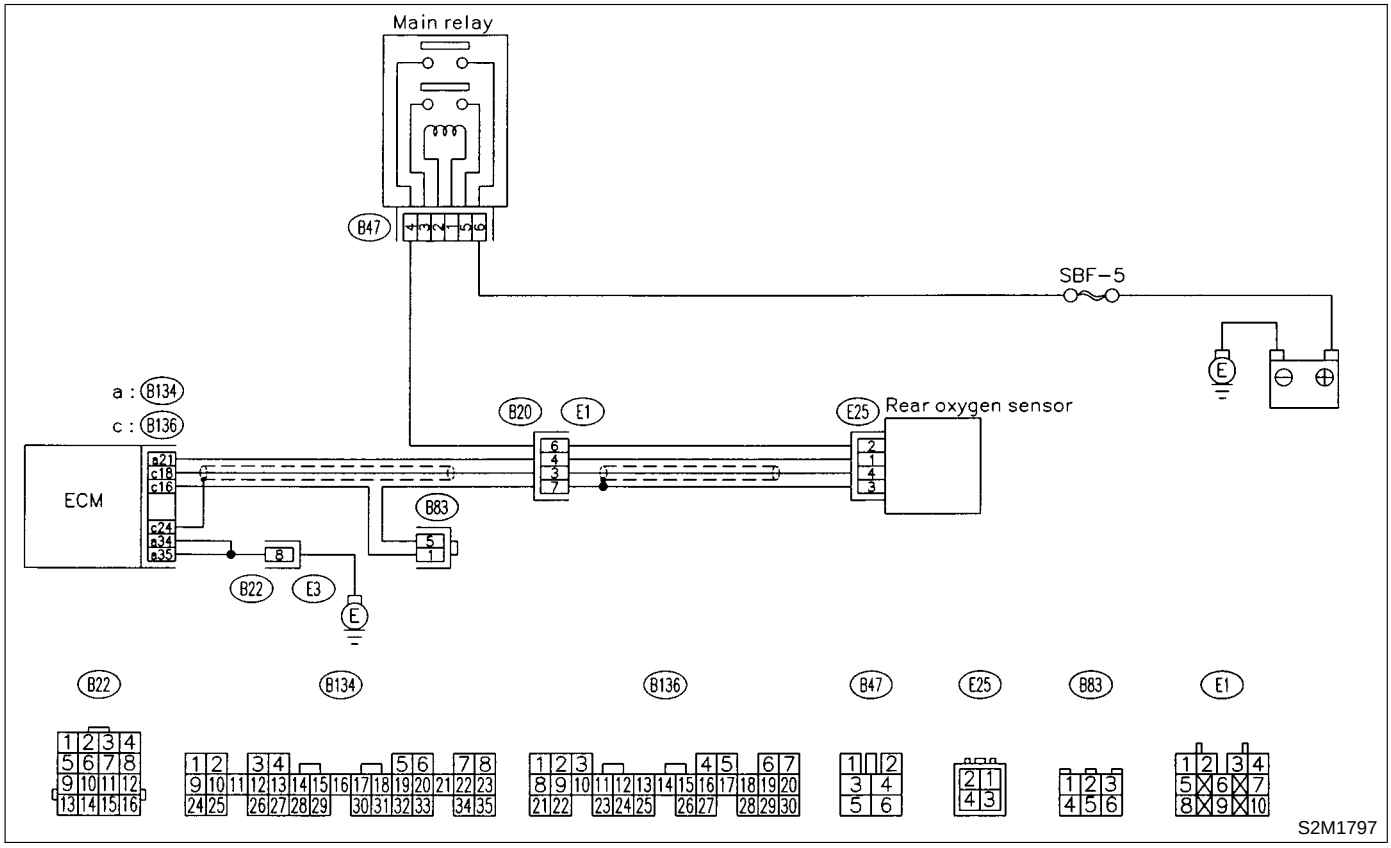
NO : Replace throttle position sensor. <Ref. to 2-7 [W10A0].>

CB: DTC P1151 — REAR OXYGEN SENSOR HEATER CIRCUIT HIGH INPUT —

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

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

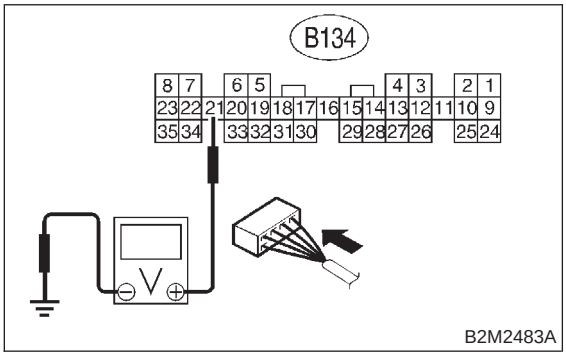
- **WIRING DIAGRAM:**



10CB1 : CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B134) No. 21 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 8 V?***
YES : Go to step **10CB2**.
NO : Go to step **10CB3**.

10CB2 : CHECK CURRENT DATA.

1) Turn ignition switch to OFF.
2) Repair battery short circuit in harness between ECM and rear oxygen sensor connector.
3) Turn ignition switch to ON.
4) Read data of rear oxygen sensor heater current using Subaru Select Monitor or the OBD-II general scan tool.

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

CHECK : ***Is the value more than 7 A?***
YES : Replace ECM. <Ref. to 2-7 [W17A0].>
NO : END

10CB3 : CHECK POOR CONTACT.

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

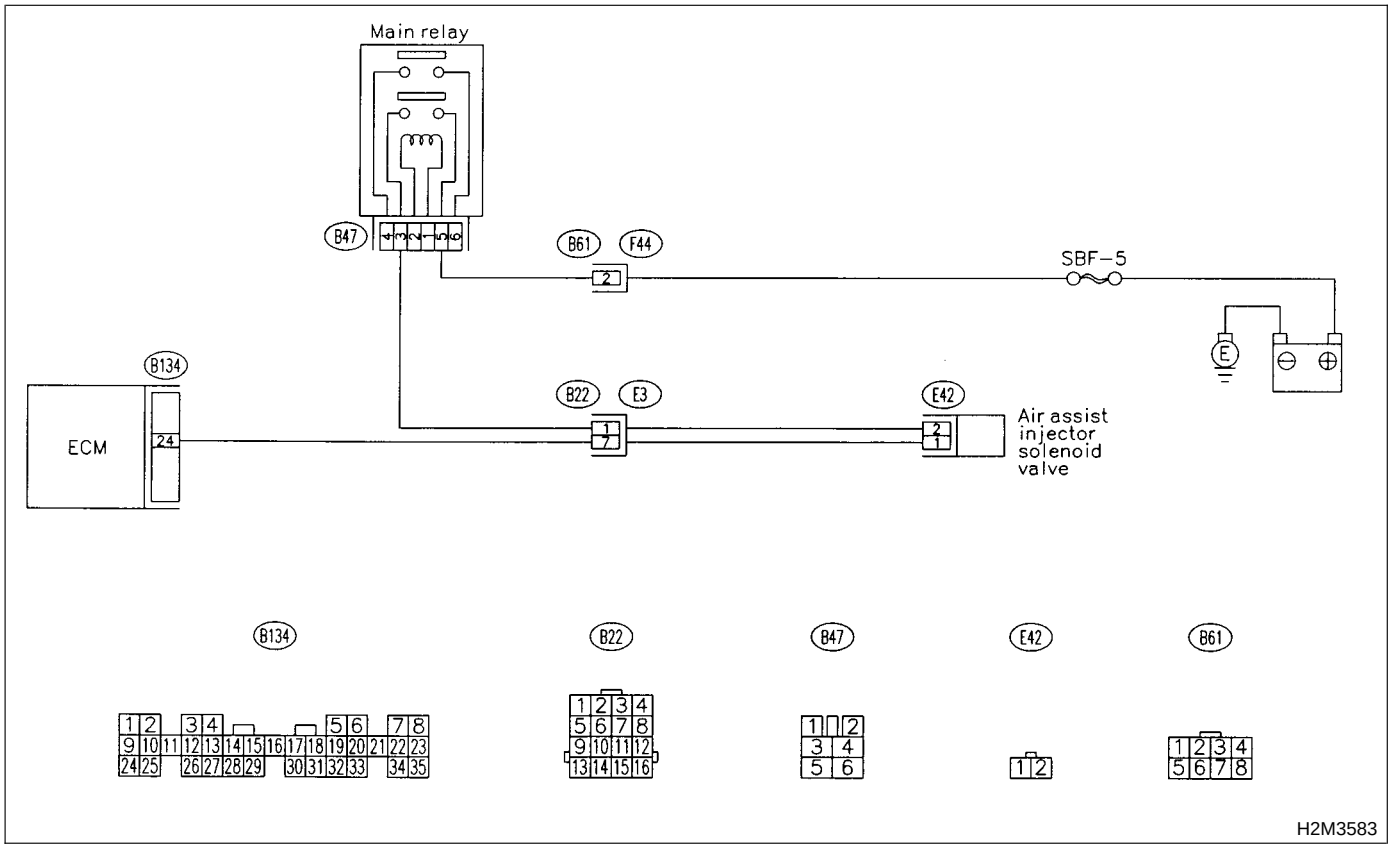
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : END

CC: DTC P1207 — AIR ASSIST INJECTOR SOLENOID VALVE CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.

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

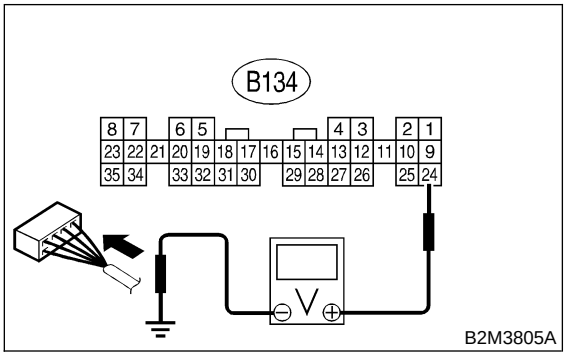
- **WIRING DIAGRAM:**



10CC1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 24 (+) — Chassis ground (−):

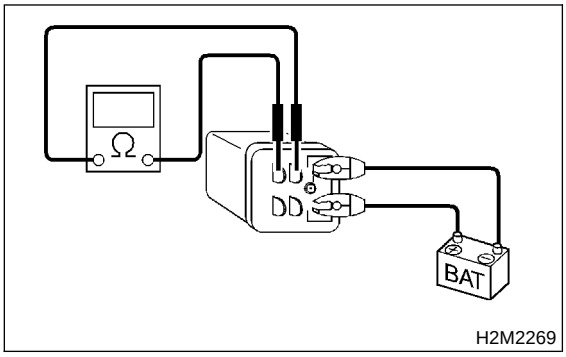


CHECK : ***Is the voltage more than 10 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10CC2**.

10CC2 : 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. 4 — No. 6:

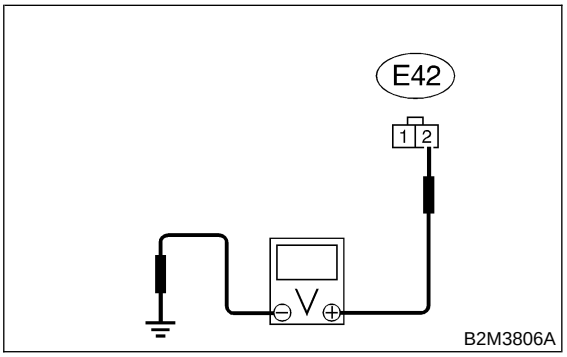


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10CC3**.
NO : Replace main relay.

10CC3 : CHECK POWER SUPPLY TO AIR ASSIST INJECTOR SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from air assist injector solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between air assist injector solenoid valve and engine ground.

Connector & terminal
(E42) No. 2 (+) — Engine ground (−):



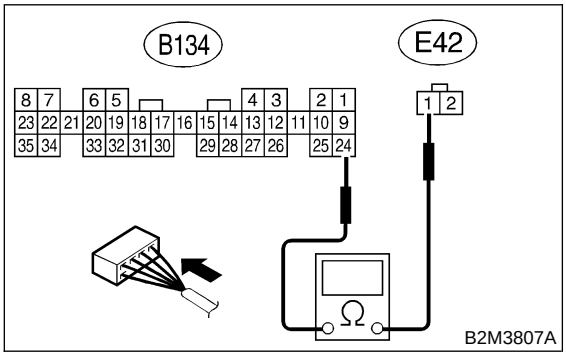
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CC4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between battery and air assist injector solenoid valve connector
- Poor contact in coupling connector (B22)

10CC4 : CHECK HARNESS BETWEEN ECM AND AIR ASSIST INJECTOR SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and air assist injector solenoid valve connector.

Connector & terminal
(B134) No. 24 — (E42) No. 1:



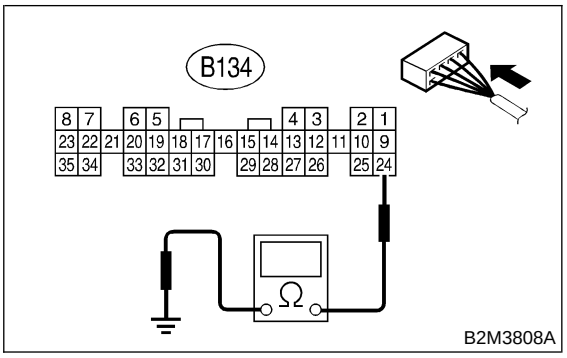
CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CC5**.
NO : Repair harness and connector.

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

10CC5 : CHECK HARNESS BETWEEN ECM AND AIR ASSIST INJECTOR SOLENOID VALVE CONNECTOR.

Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B134) No. 24 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and air assist injector solenoid valve connector.
NO : Go to step **10CC6**.

10CC6 : CHECK POOR CONTACT.

Check poor contact in ECM and air assist injector solenoid valve connectors. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM and air assist injector solenoid valve connectors?***
YES : Repair poor contact in ECM and air assist injector solenoid valve connectors.
NO : Replace air assist injector solenoid valve. <Ref. to 2-7 [W14A0].>

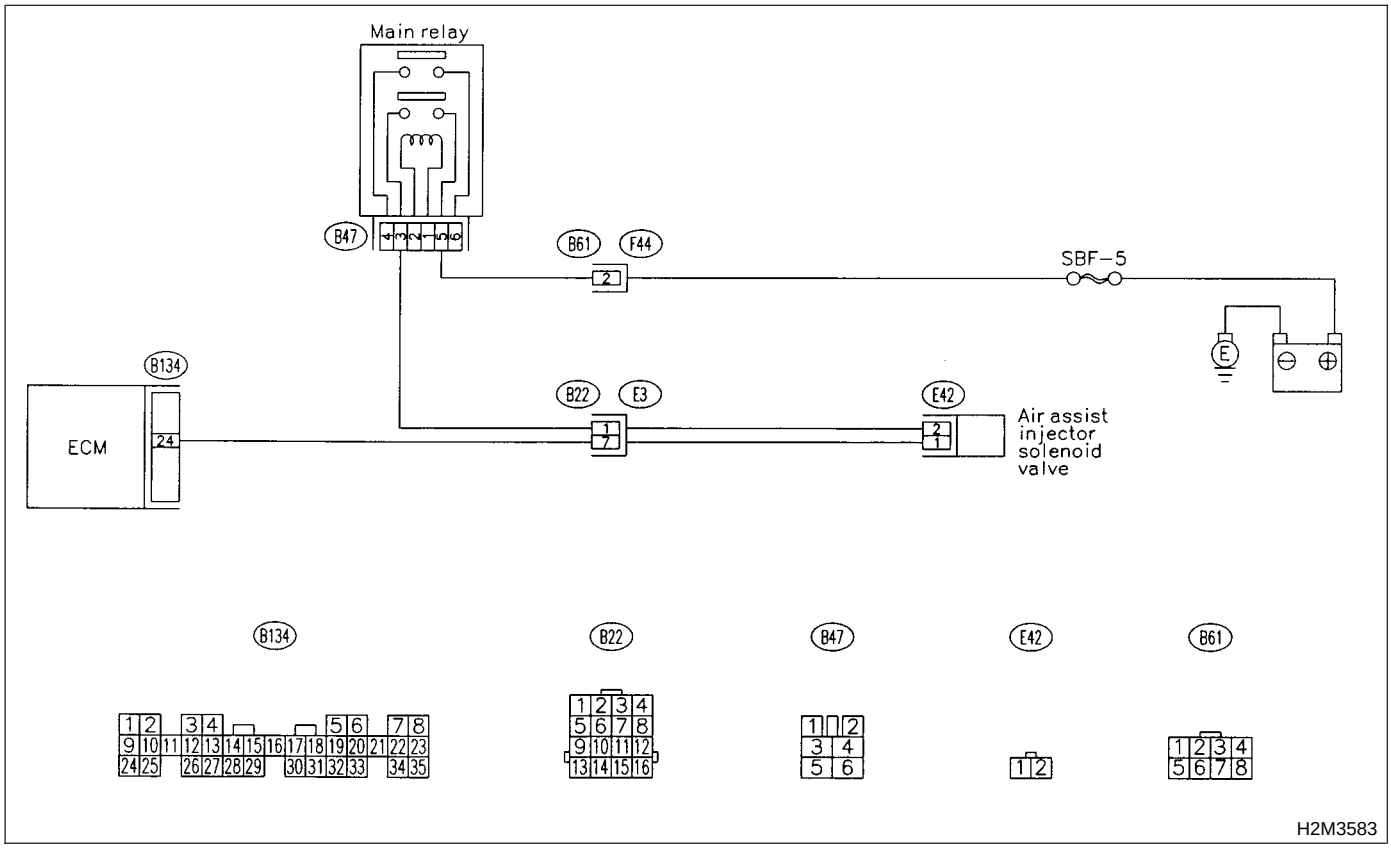
MEMO:

CD: DTC P1208 — AIR ASSIST INJECTOR SOLENOID VALVE CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.

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

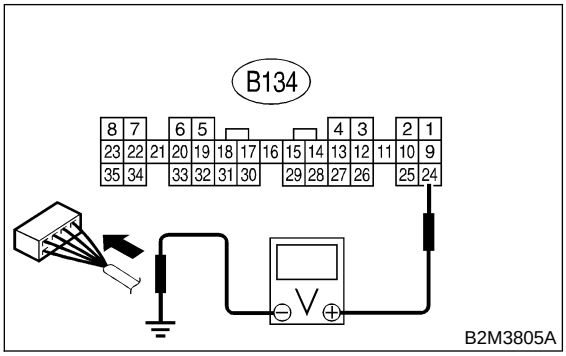
- **WIRING DIAGRAM:**



10CD1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 24 (+) — Chassis ground (−):

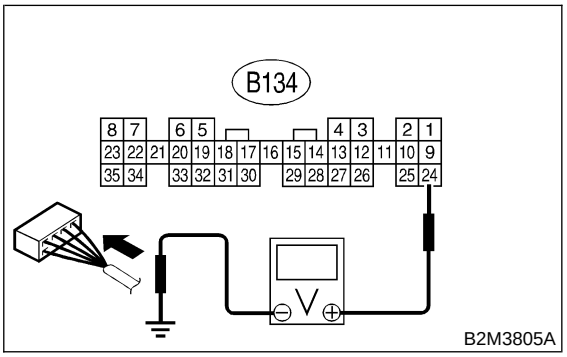


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CD2**.
NO : Go to step **10CD3**.

10CD2 : CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to OFF.
2) Disconnect connector from air assist injector solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 24 (+) — Chassis ground (−):

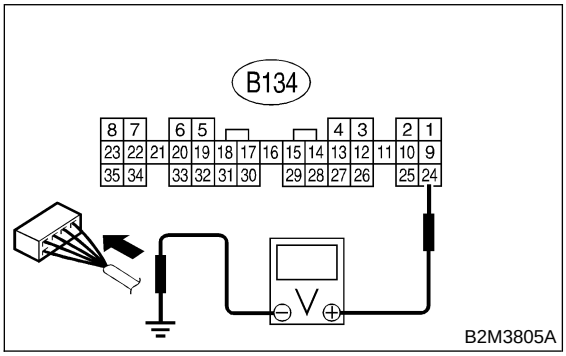


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and air assist injector solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Replace air assist injector solenoid valve <Ref. to 2-7 [W14A0].> and ECM <Ref. to 2-7 [W17A0].>.

10CD3 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 24 (+) — Chassis ground (−):



CHECK : ***Does the voltage change more than 10 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair battery short circuit in harness between ECM and air assist injector solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>

NO : Contact with SOA service.

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

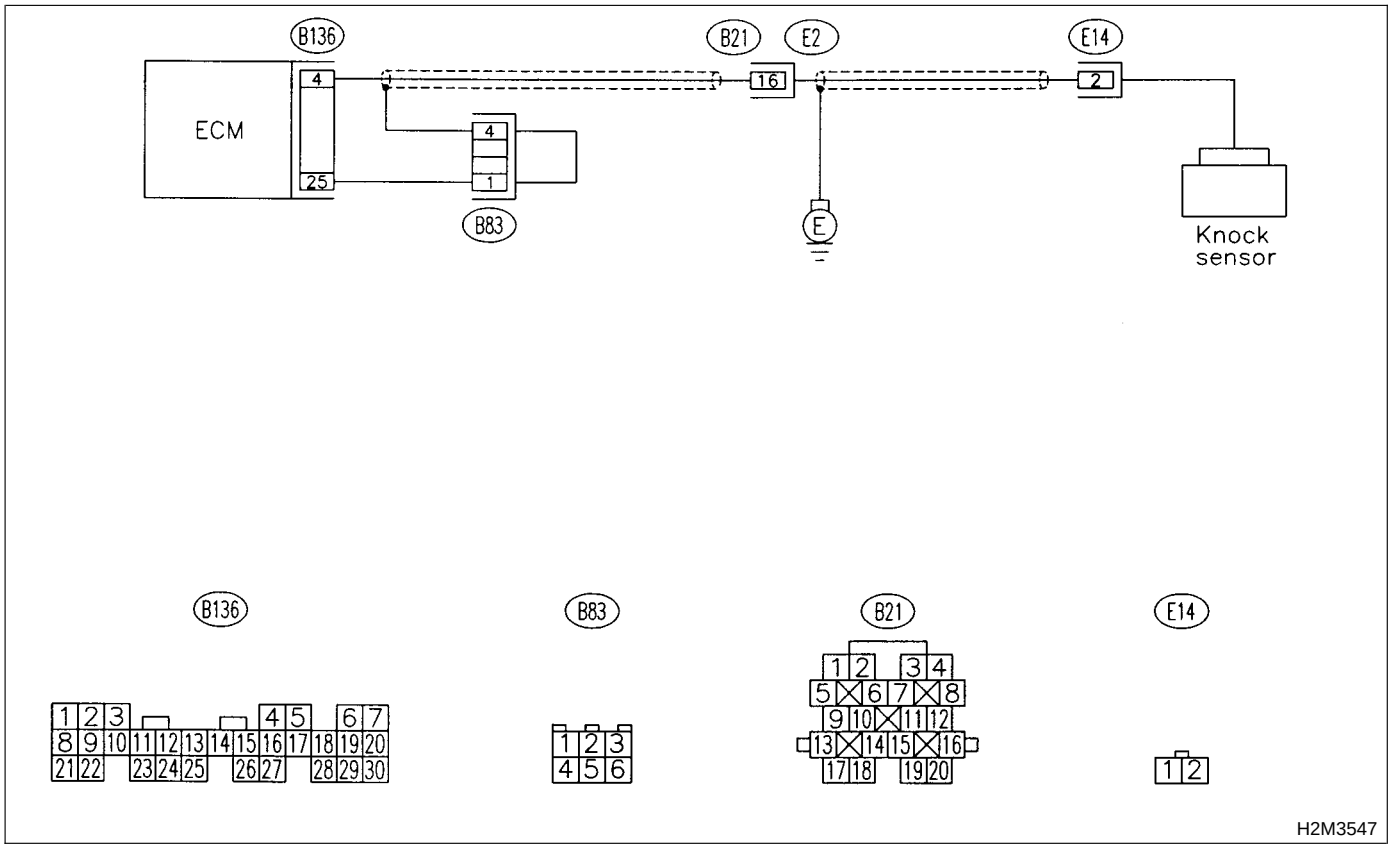
MEMO:

CE: DTC P1325 — KNOCK SENSOR CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Poor driving performance
  - Knocking occurs.

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

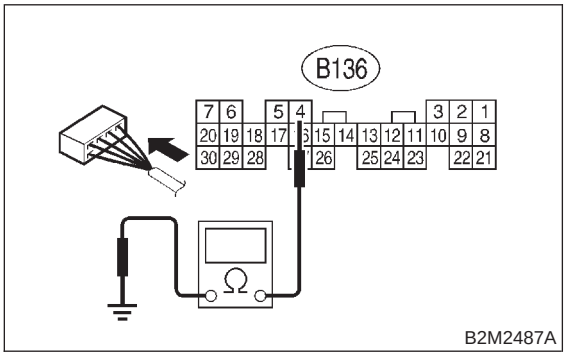
- **WIRING DIAGRAM:**



10CE1 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

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

Connector & terminal
(B136) No. 4 — Chassis ground:

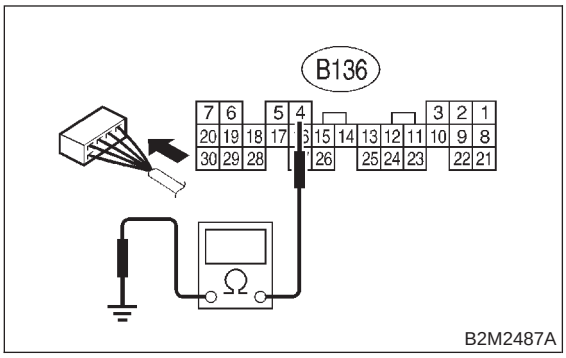


CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **10CE3**.
NO : Go to step **10CE2**.

10CE2 : CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B136) No. 4 — Chassis ground:

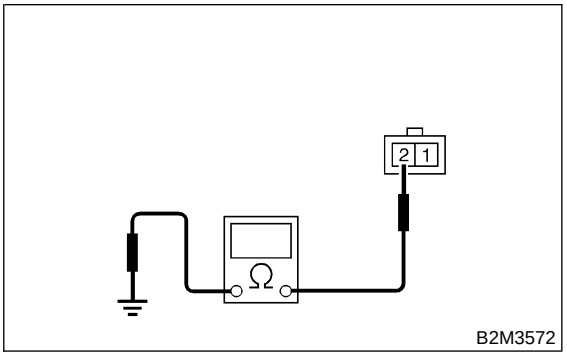


CHECK : ***Is the resistance less than 400 kΩ?***
YES : Go to step **10CE5**.
NO : Go to step **10CE6**.

10CE3 : CHECK KNOCK SENSOR.

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

Terminal
No. 2 — Engine ground:



CHECK : ***Is the resistance more than 700 kΩ?***
YES : Go to step **10CE4**.
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)

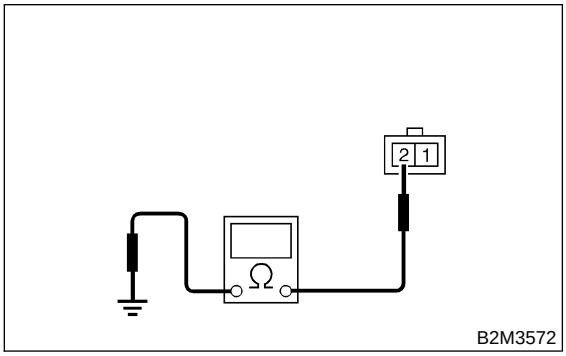
10CE4 : CHECK CONDITION OF KNOCK SENSOR INSTALLATION.

CHECK : ***Is the knock sensor installation bolt tightened securely?***
YES : Replace knock sensor. <Ref. to 2-7 [W7A0].>
NO : Tighten knock sensor installation bolt securely.

10CE5 : CHECK KNOCK SENSOR.

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

Terminal
No. 2 — Engine ground:



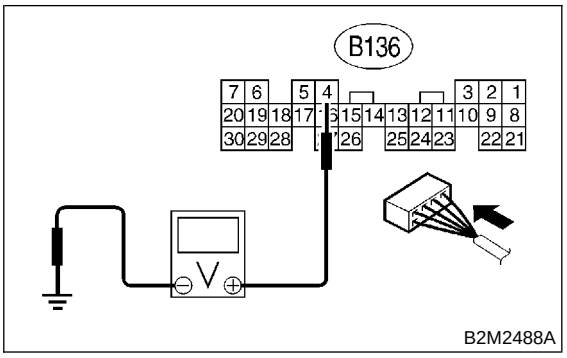
CHECK : ***Is the resistance less than 400 kΩ?***
YES : Replace knock sensor. <Ref. to 2-7 [W7A0].>
NO : Repair ground short circuit in harness between knock sensor connector and ECM connector.

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

10CE6 : CHECK INPUT SIGNAL FOR ECM.

1) Connect connectors to ECM and knock sensor.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B136) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

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

NO : Repair poor contact in ECM connector.

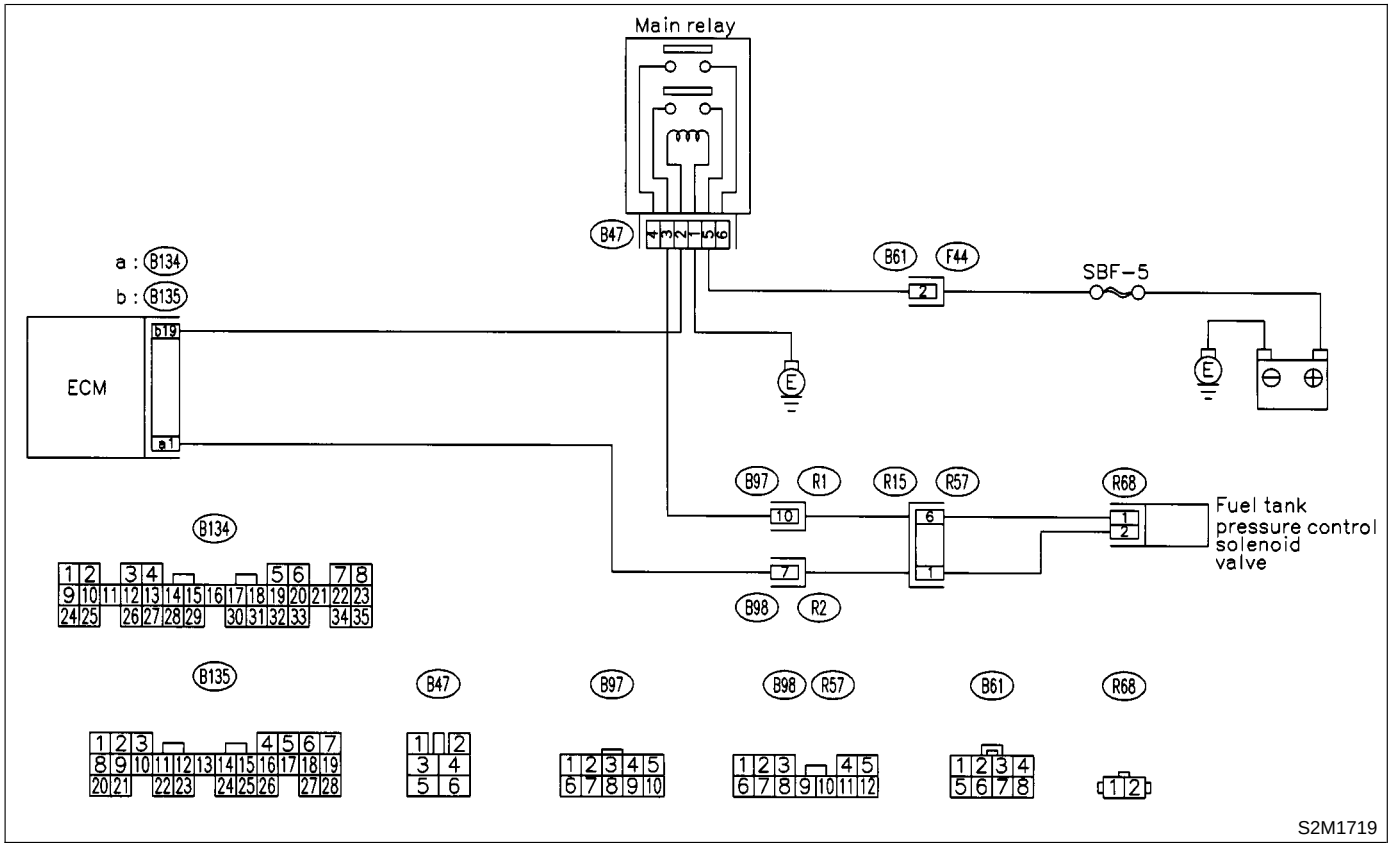
MEMO:

CF: DTC P1400 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW INPUT —

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

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

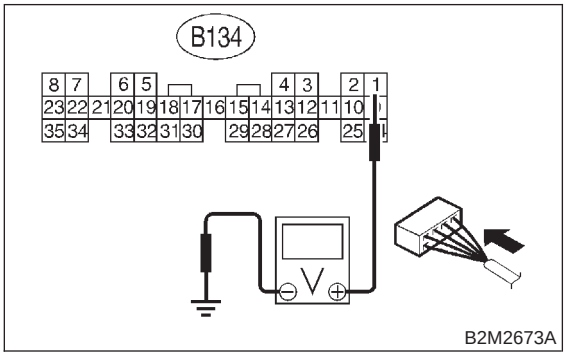
- **WIRING DIAGRAM:**



10CF1 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CF2**.
NO : Go to step **10CF3**.

10CF2 : CHECK POOR CONTACT.

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

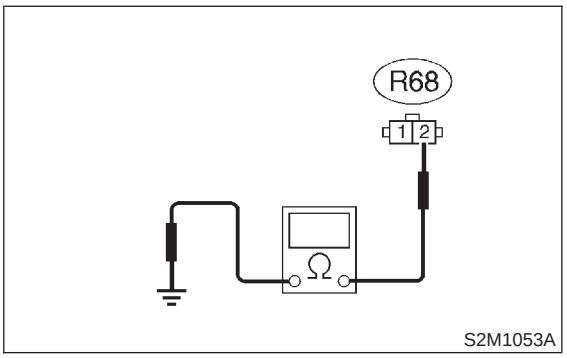
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

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

10CF3 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

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

Connector & terminal
(R68) No. 2 — Chassis ground:

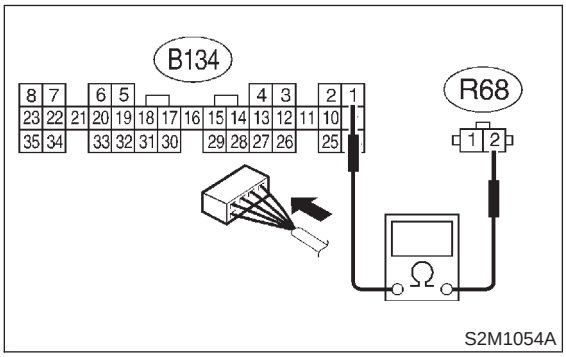


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and fuel tank pressure control solenoid valve connector.
NO : Go to step **10CF4**.

10CF4 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

Measure resistance of harness between ECM and fuel tank pressure control solenoid valve connector.

Connector & terminal
(B134) No. 1 — (R68) No. 2:



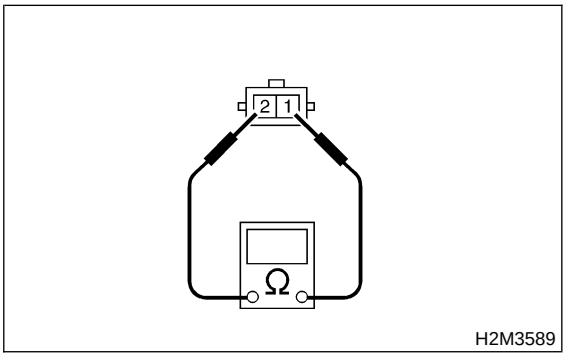
CHECK : ***Is the voltage less than 1 Ω?***
YES : Go to step **10CF5**.
NO : Repair harness and connector.

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 (R57 and B98)

10CF5 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:

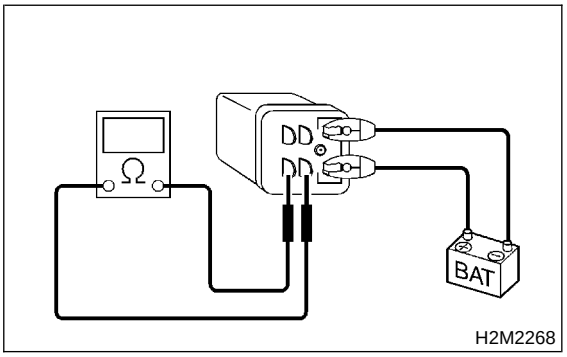


CHECK : ***Is the resistance between 10 and 100 Ω?***
YES : Go to step **10CF6**.
NO : Replace fuel tank pressure control solenoid valve. <Ref. to 2-1 [W9A0].>

10CF6 : CHECK MAIN RELAY.

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

Terminals
No. 3 — No. 5:

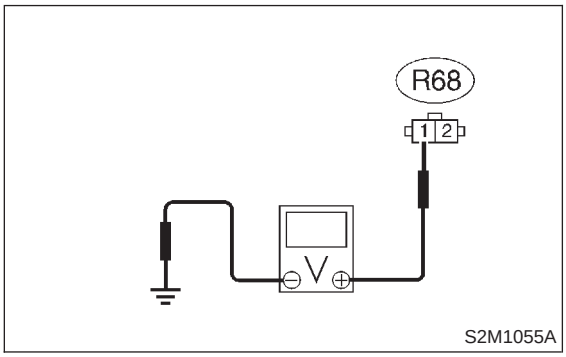


CHECK : ***Is the resistance less than 10 Ω?***
YES : Go to step **10CF7**.
NO : Replace main relay.

10CF7 : 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 **10CF8**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between battery and fuel tank pressure control solenoid valve connector
- Poor contact in coupling connectors (R57 and B97)
- Poor contact in main relay connector

10CF8 : 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.

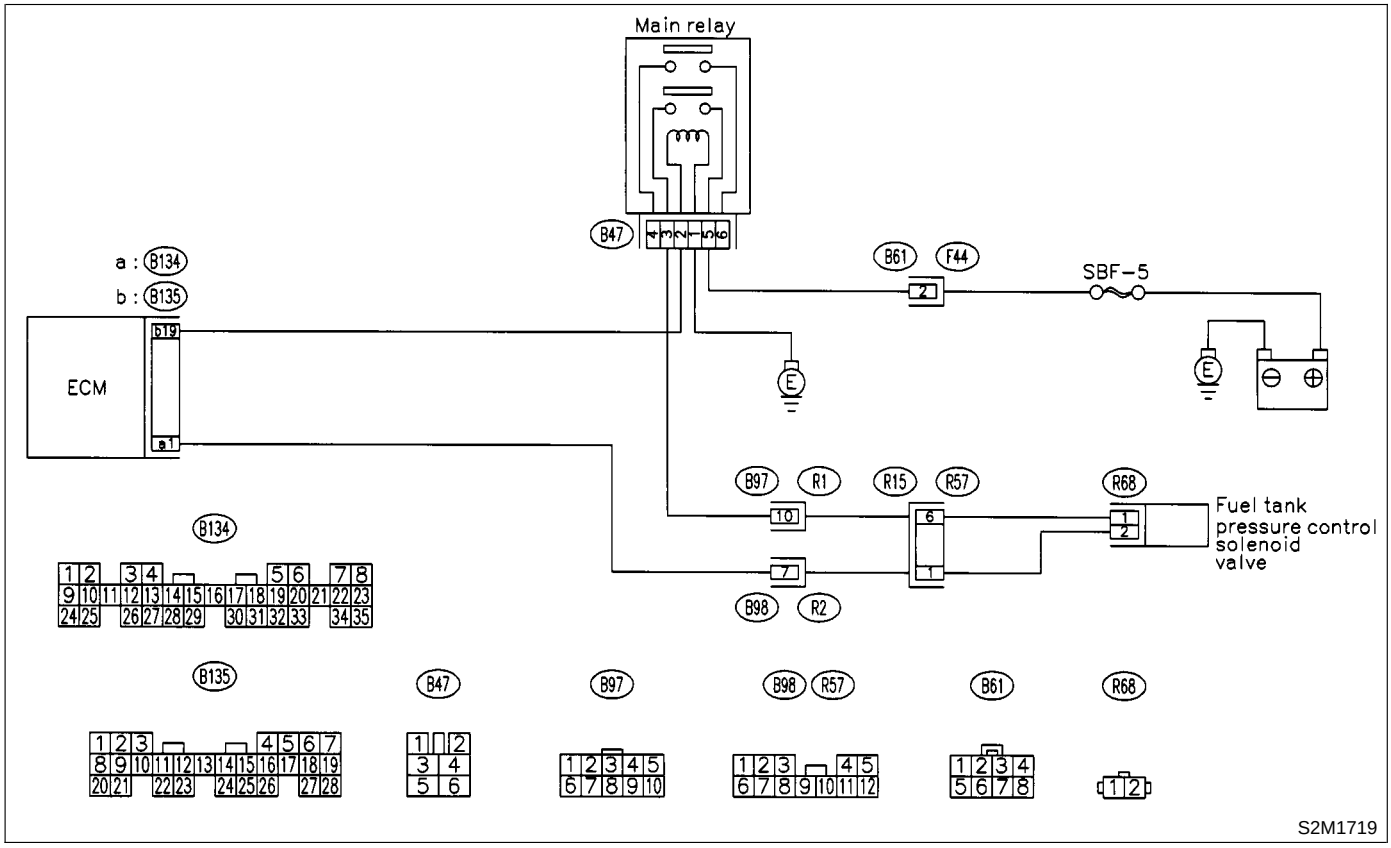
NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

CG: DTC P1420 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT HIGH INPUT —

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

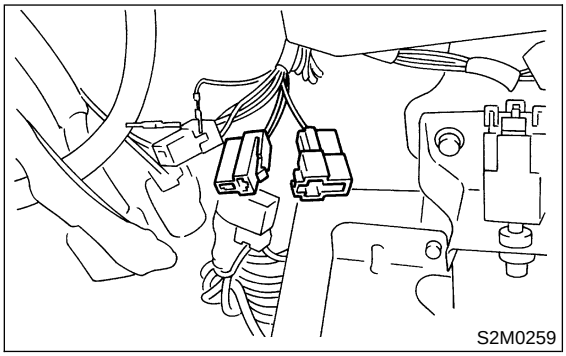
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CG1 : CHECK OUTPUT SIGNAL FROM ECM.

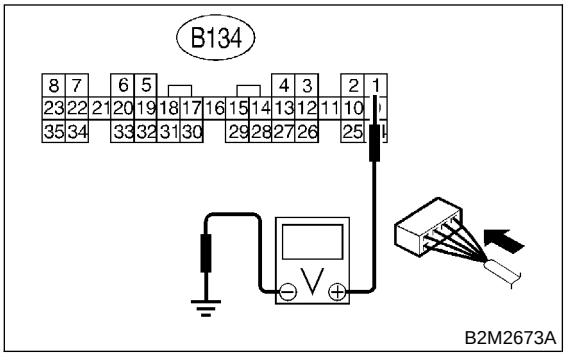
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) While operating fuel tank pressure control solenoid valve, measure voltage between ECM and chassis ground.

NOTE:
Fuel tank pressure control solenoid valve operation can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):

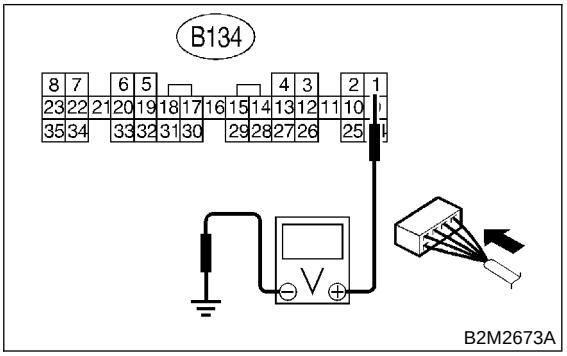


CHECK : ***Does voltage change between 0 and 10 V?***
YES : Go to step **10CG2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

10CG2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CG4**.
NO : Go to step **10CG3**.

10CG3 : CHECK POOR CONTACT.

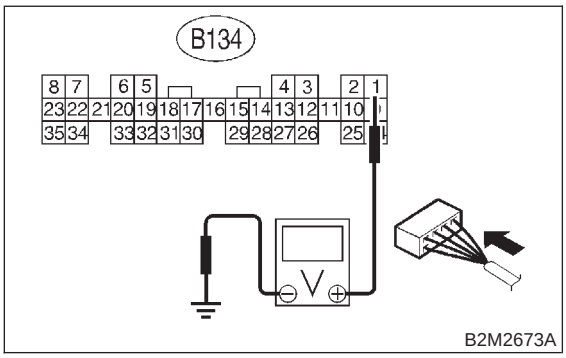
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

10CG4 : CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel tank pressure control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 1 (+) — Chassis ground (−):

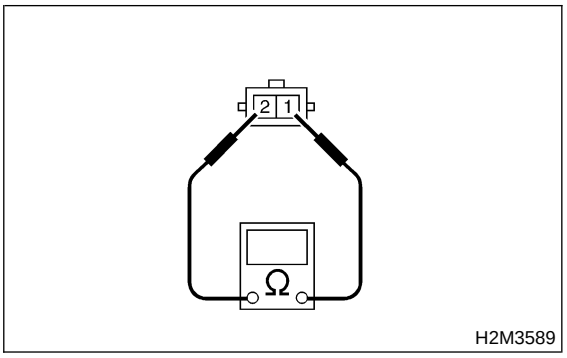


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel tank pressure control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Go to step **10CG5**.

10CG5 : CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace fuel tank pressure control solenoid valve <Ref. to 2-1 [W9A0].> and ECM <Ref. to 2-7 [W17A0].>.
NO : Go to step **10CG6**.

10CG6 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

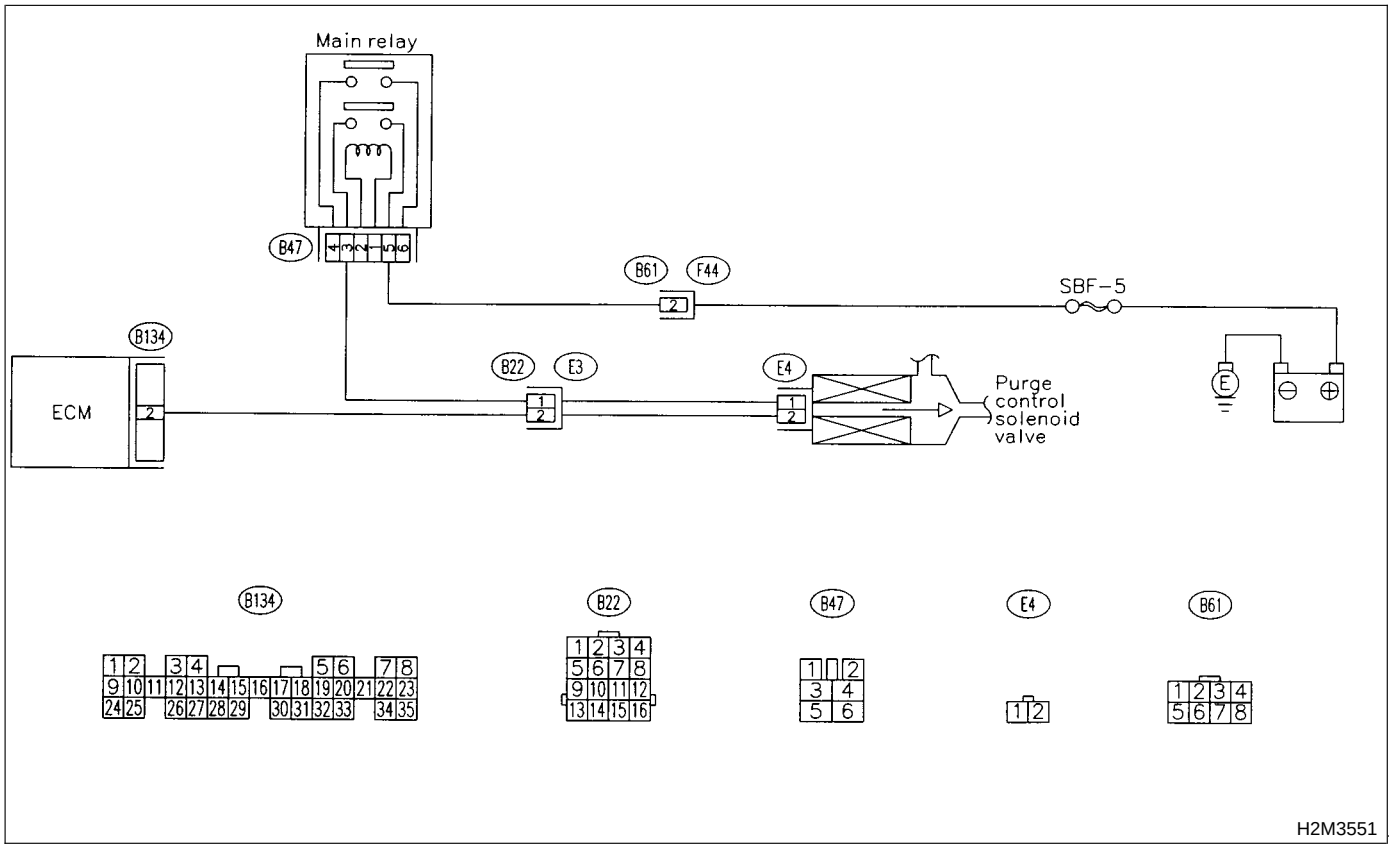
MEMO:

CH: DTC P1422 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH INPUT —

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

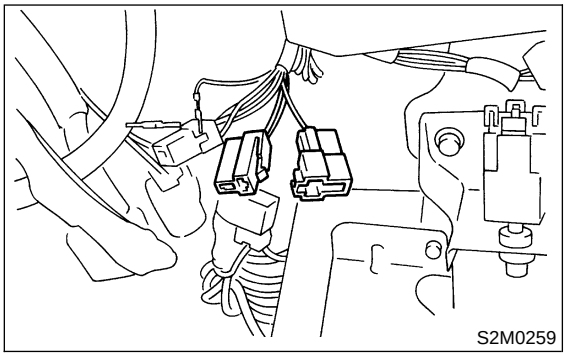
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CH1 : CHECK OUTPUT SIGNAL FROM ECM.

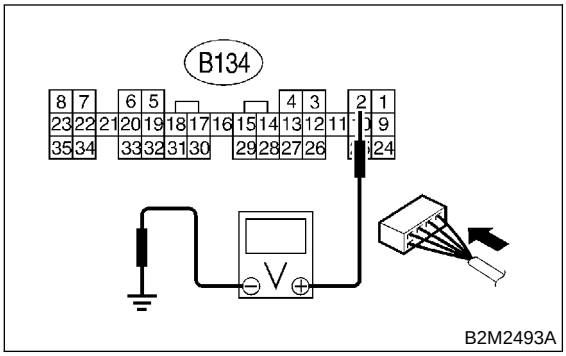
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) While operating purge control solenoid valve, measure voltage between ECM and chassis ground.

NOTE:
Purge control solenoid valve operation can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):

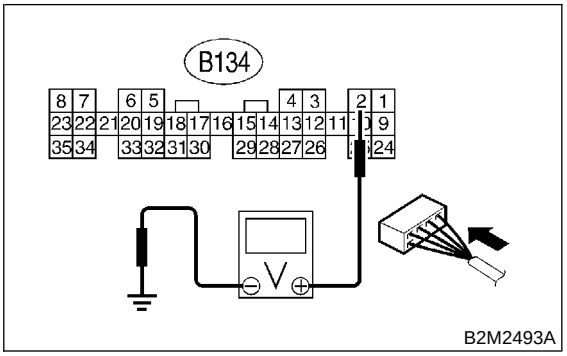


CHECK : ***Does voltage change between 0 and 10 V?***
YES : Go to step **10CH2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

10CH2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CH4**.
NO : Go to step **10CH3**.

10CH3 : CHECK POOR CONTACT.

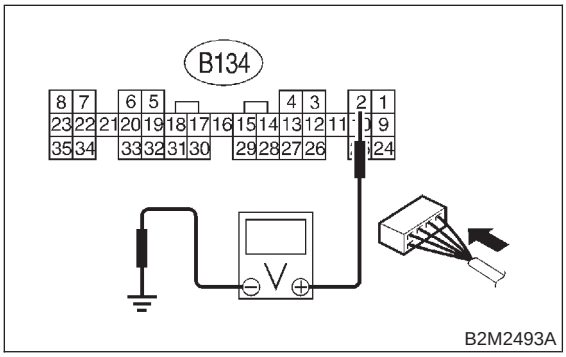
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

10CH4 : CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from purge control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 2 (+) — Chassis ground (−):

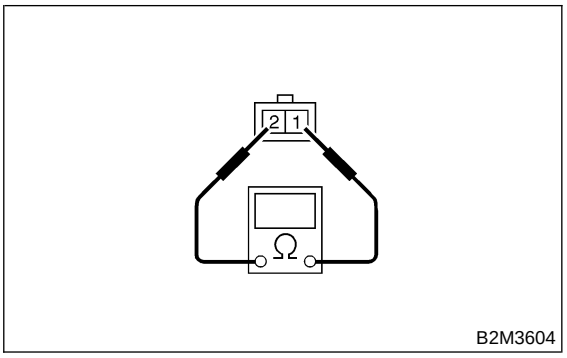


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Go to step **10CH5**.

10CH5 : CHECK PURGE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between purge control solenoid valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace purge control solenoid valve <Ref. to 2-1 [W17A0].> and ECM <Ref. to 2-7 [W17A0].>.
NO : Go to step **10CH6**.

10CH6 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

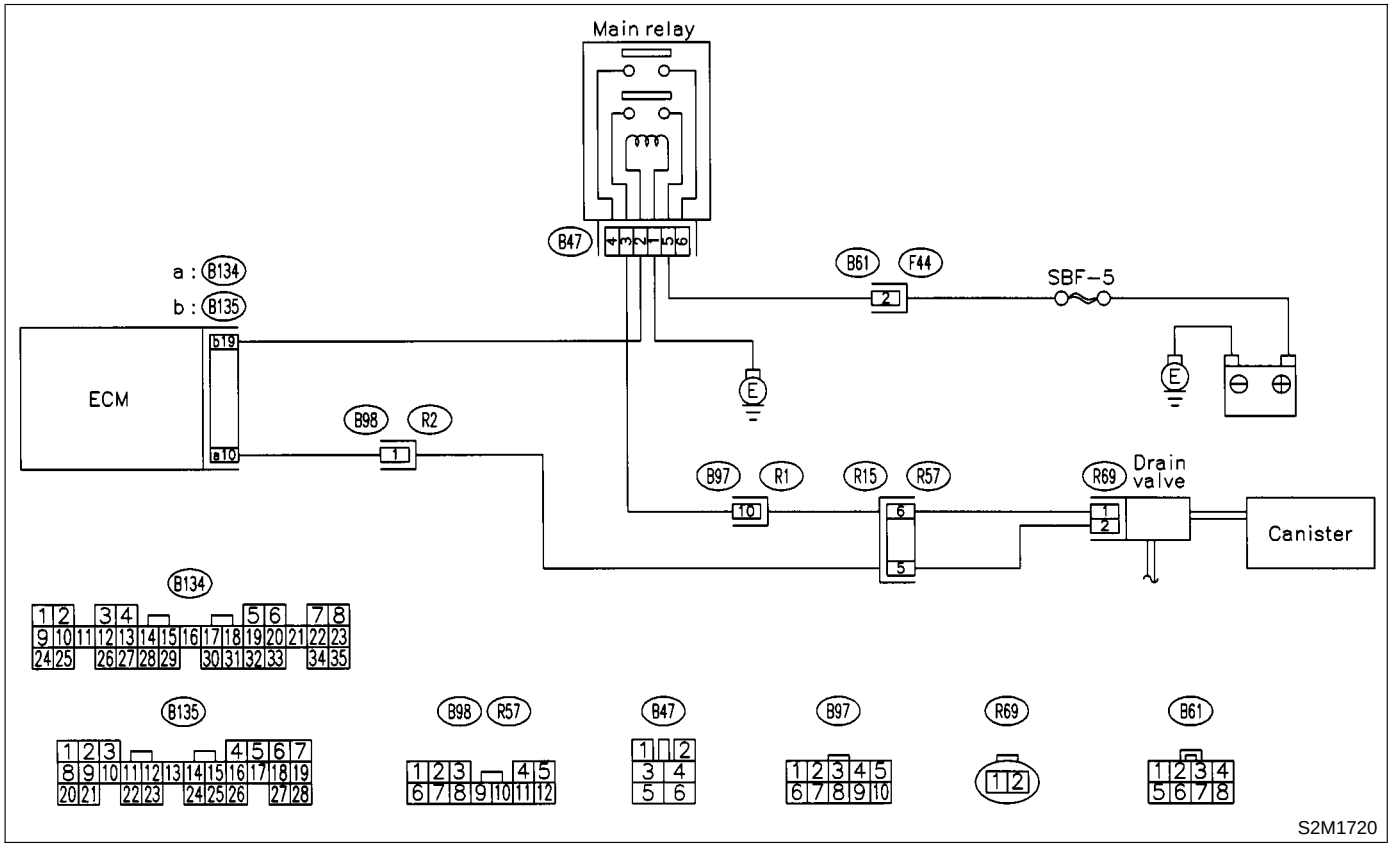
MEMO:

CI: DTC P1423 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL HIGH INPUT —

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

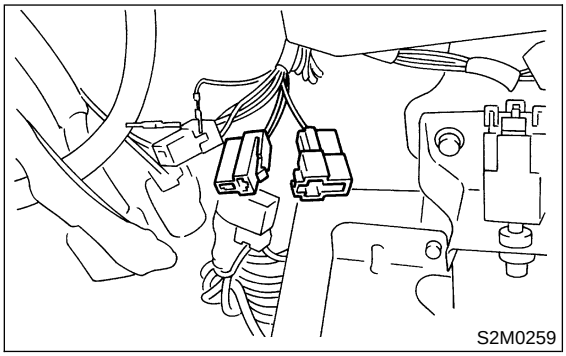
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CI1 : CHECK OUTPUT SIGNAL FROM ECM.

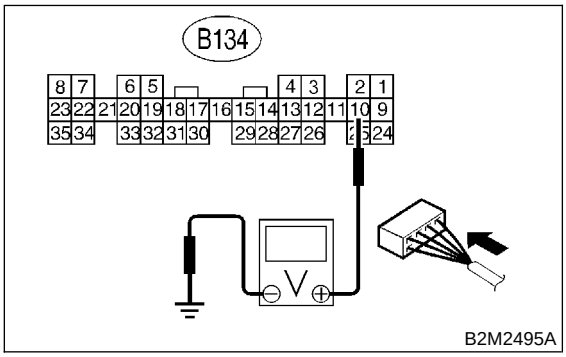
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) While operating drain valve, measure voltage between ECM and chassis ground.

NOTE:
Drain valve operation can be executed using Subaru Select Monitor. For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):

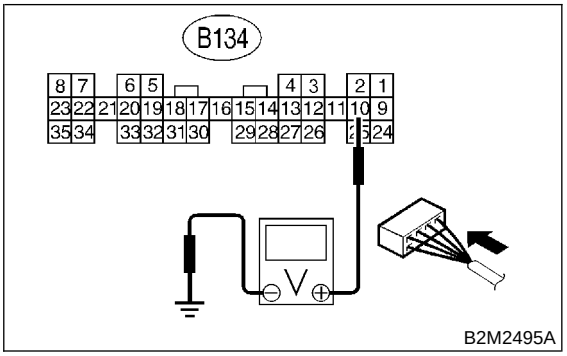


CHECK : ***Does voltage change between 0 and 10 V?***
YES : Go to step **10CI2**.
NO : Even if MIL light up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

10CI2 : CHECK OUTPUT SIGNAL FROM ECM.

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

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CI4**.
NO : Go to step **10CI3**.

10CI3 : CHECK POOR CONTACT.

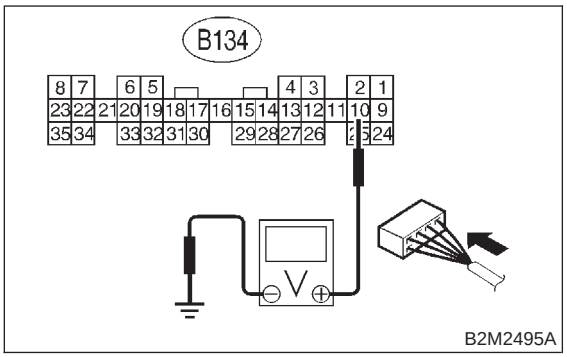
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

10CI4 : CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from drain valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 10 (+) — Chassis ground (−):

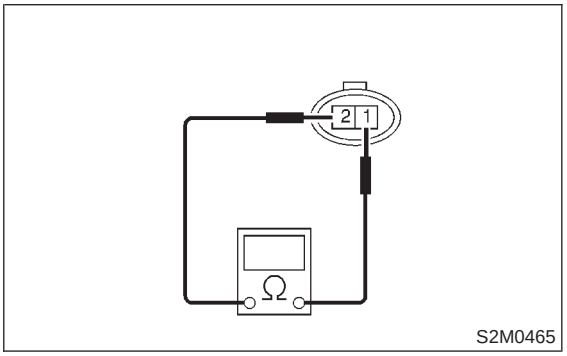


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and drain valve connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Go to step **10CI5**.

10CI5 : CHECK DRAIN VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between drain valve terminals.

Terminals
No. 1 — No. 2:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace drain valve <Ref. to 2-1 [W13A0].> and ECM <Ref. to 2-7 [W17A0].>.
NO : Go to step **10CI6**.

10CI6 : CHECK POOR CONTACT.

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

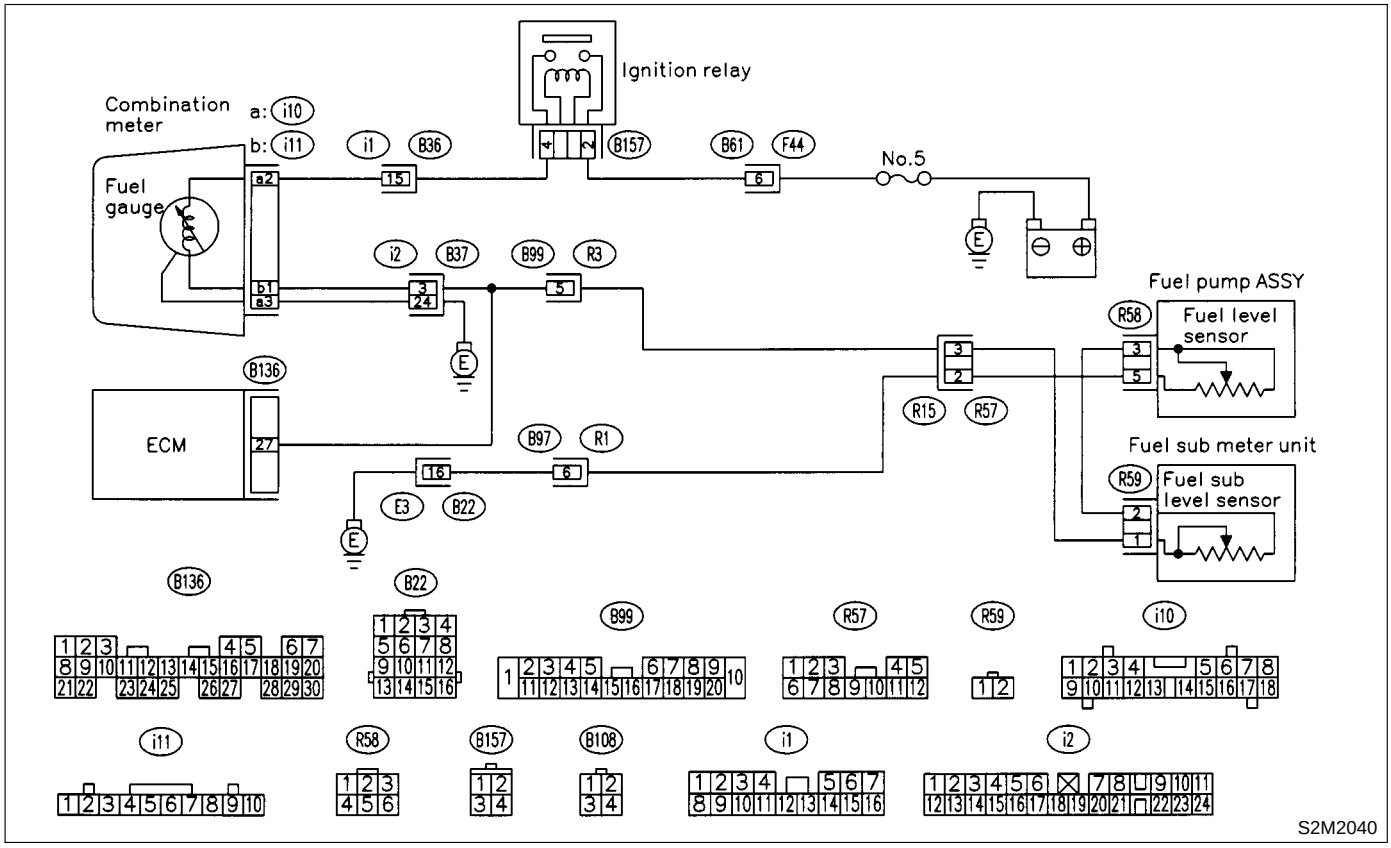
CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

CJ: DTC P1442 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM 2 —

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

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

- **WIRING DIAGRAM:**



10CJ1 :	CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0461, P0462 or P0463?***

YES : Inspect DTC P0461, P0462 or P0463 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

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

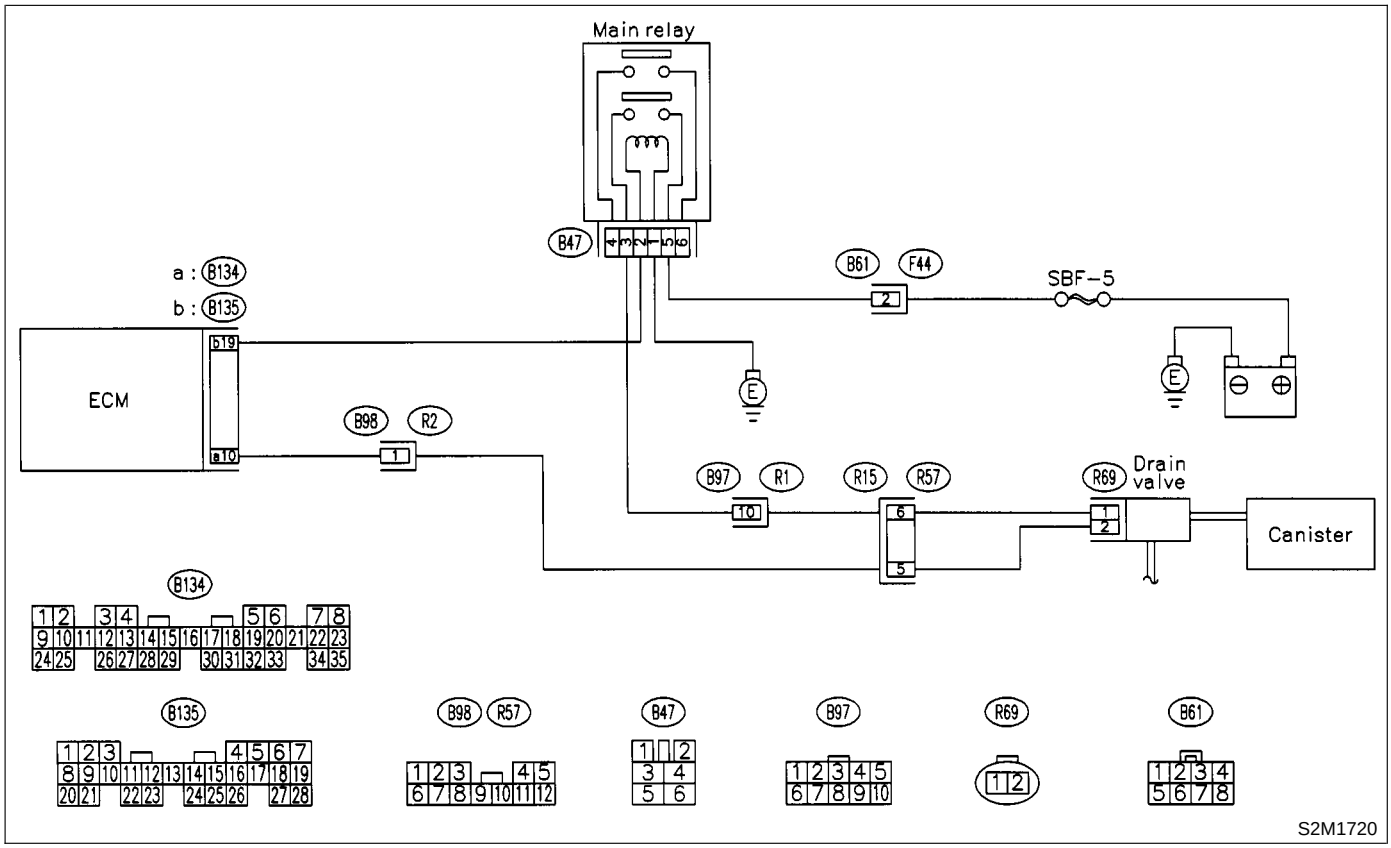
NO : Replace fuel level sensor <Ref. to 2-8 [W5A0].> and fuel sub level sensor. <Ref. to 2-8 [W6A0].>

CK: DTC P1443 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL FUNCTION PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately after fault occurrence
- **TROUBLE SYMPTOM:**
  - Improper fuel supply

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

- **WIRING DIAGRAM:**



10CK1 : CHECK ANY OTHER DTC ON DISPLAY.

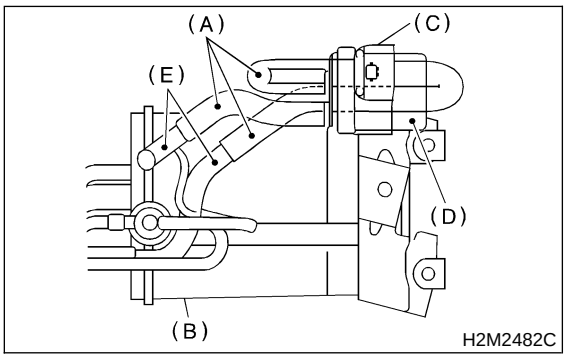
CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10CK2**.

10CK2 : CHECK VENT LINE HOSES.

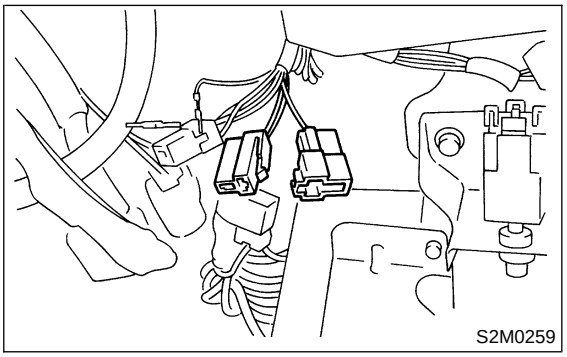
Check the following items.
- Clogging of vent hoses (A) between canister (B) and drain valve (C)
- Clogging of vent hose (A) between drain valve (C) and drain filter (D)
- Clogging of vent hose (A) between drain filter (D) and junction pipe (E)
- Clogging of junction pipe (E)
- Clogging of drain filter (D)



CHECK : ***Is there a fault in vent line?***
YES : Repair or replace the faulty part.
NO : Go to step **10CK3**.

10CK3 : CHECK DRAIN VALVE OPERATION.

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



3) Turn ignition switch to ON.
4) Operate drain valve.

NOTE:
Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to the "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

CHECK : ***Does drain valve produce operating sound?***
YES : Contact with SOA service.

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

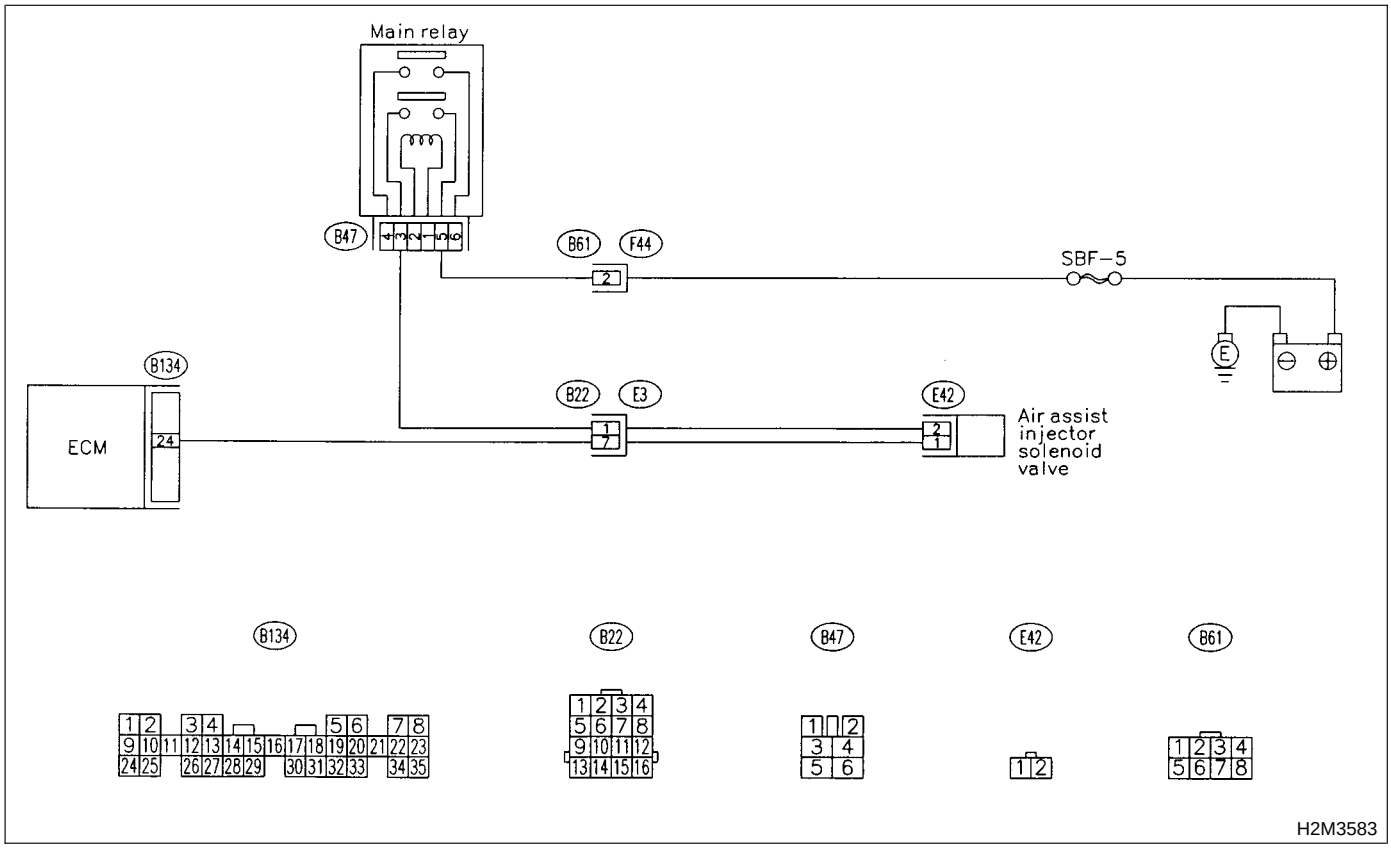
NO : Replace drain valve. <Ref. to 2-1 [W13A0].>

CL: DTC P1445 — AIR ASSIST INJECTOR SOLENOID VALVE MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately after fault occurrence
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.

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

- **WIRING DIAGRAM:**



10CL1 : CHECK ANY OTHER DTC ON DISPLAY.

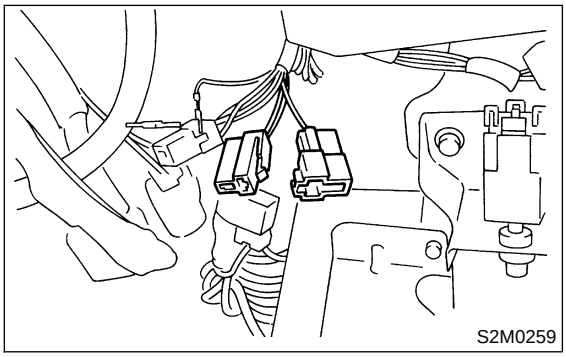
CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

NO : Go to step **10CL2**.

10CL2 : CHECK AIR ASSIST INJECTOR 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.
4) Operate air assist injector solenoid valve.

NOTE:
Air assist injector solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to the "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

CHECK : ***Does air assist injector solenoid valve operating sound?***
YES : Go to step **10CL3**.
NO : Replace air assist injector solenoid valve. <Ref. to 2-1 [W14A0].>

10CL3 : CHECK AIR BY-PASS HOSES.

Use your mouth to blow through air by-pass hose to make sure that there is a smooth air flow (no clogging).

CHECK : ***Is air by-pass hose damaged?***
YES : Repair or replace air by-pass hoses.
NO : Go to step **10CL4**.

10CL4 : CHECK FUEL INJECTOR.

1) Turn ignition switch to OFF.
2) Remove fuel injector. <Ref. to 2-7 [W16A0].>
3) Check for clogged fuel injectors.

CHECK : ***Is fuel injector clogged?***
YES : Replace fuel injector. <Ref. to 2-7 [W16A0].>
NO : Replace air assist injector solenoid valve. <Ref. to 2-7 [W14A0].>

CM: DTC P1490 — THERMOSTAT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Thermostat remains open.

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

10CM1 : CHECK VEHICLE CONDITION.

CHECK : ***Has engine operated at idle or has vehicle been driven with part of engine submerged under water?***

YES : In this case, it is not necessary to inspect DTC P1490.

NO : Go to step **10CM2**.

10CM2 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0125, P0301, P0302, P0303 and P0304 at same time?***

YES : Go to step **10CM3**.

NO : Inspect DTC P0125, P0301, P0302, P0303 and P0304 using “10. Diagnostics Chart with Trouble Code”. <Ref. to 2-7 [T10A0].>

10CM3 : CHECK ENGINE COOLANT.

CHECK : ***Are coolant level and mixture ratio of cooling water to anti-freeze solution correct?***

YES : Go to step **10CM4**.

NO : Replace engine coolant. <Ref. to 2-5 [W9A0].>

10CM4 : CHECK RADIATOR FAN.

1) Start the engine.
2) Check radiator fan operation.

CHECK : ***Does radiator fan continuously rotate for more than 3 minutes during idling?***

YES : Repair radiator fan circuit. <Ref. to 2-5 [T100].>

NO : Replace thermostat. <Ref. to 2-5 [W2A0].>

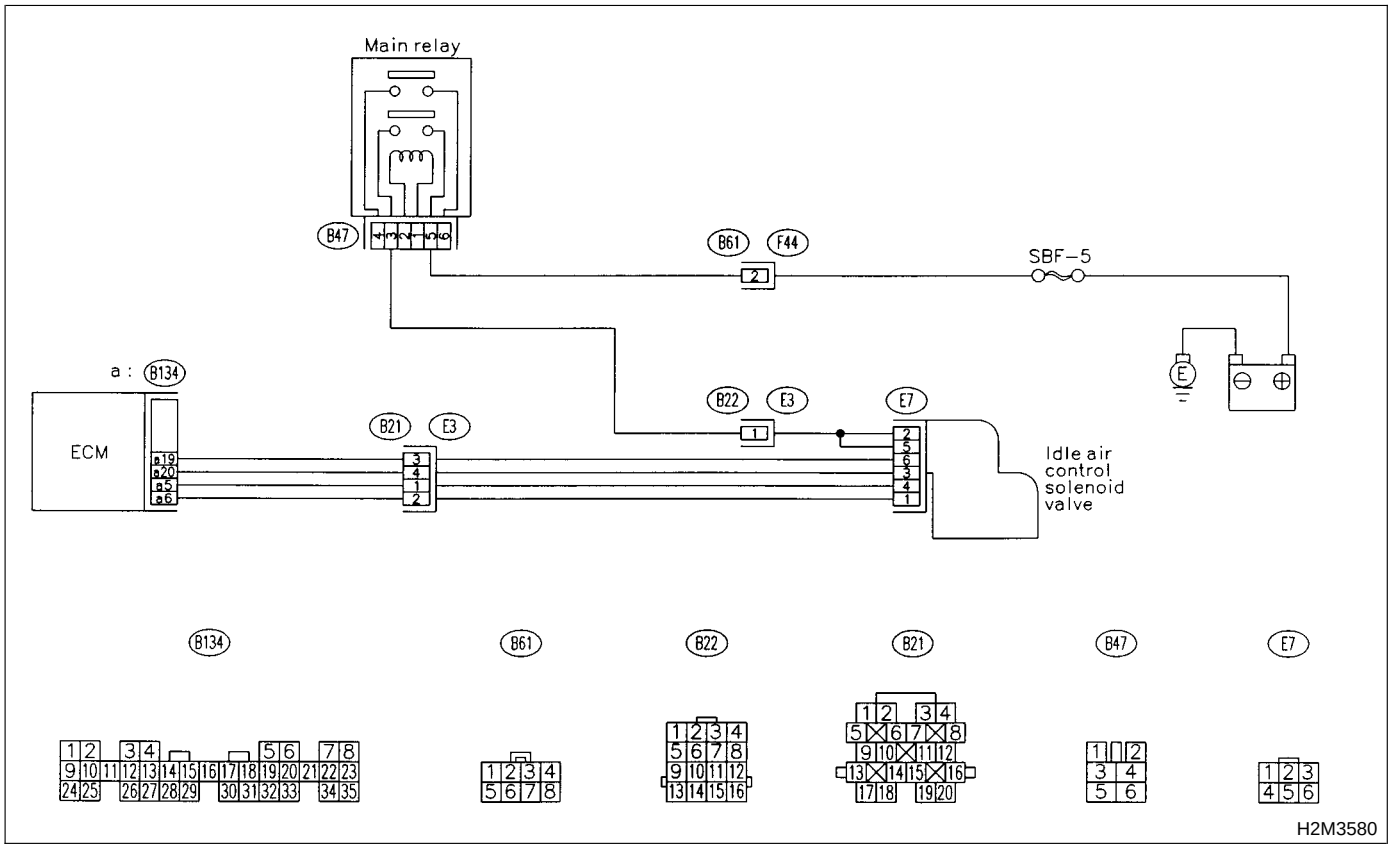
MEMO:

CN: DTC P1507 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine keeps running at higher revolution than specified idling revolution.

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

- **WIRING DIAGRAM:**



10CN1 : CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517?***

YES : Inspect DTC P1510, P1511, P1512, P1513, P1514, P1515, P1516 or P1517 using “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 **10CN2**.

10CN2 : CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.
3) Check the following items.

- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Disconnections of vacuum hoses

CHECK : ***Is there a fault in air intake system?***

YES : Repair air suction and leaks.

NO : Go to step **10CN3**.

10CN3 : CHECK THROTTLE CABLE.

CHECK : ***Does throttle cable have play for adjustment?***
YES : Go to step **10CN4**.
NO : Adjust throttle cable. <Ref. to 4-5 [W1A3].>

10CN4 : CHECK AIR BY-PASS LINE.

1) Turn ignition switch to OFF.
2) Remove idle air control solenoid valve from throttle body. <Ref. to 2-7 [W15A2].>
3) Confirm that there are no foreign particles in by-pass air line.

CHECK : ***Are foreign particles in by-pass air line?***
YES : Remove foreign particles from by-pass air line.
NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W13A0].>

MEMO:

CO: DTC P1510 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 1 CIRCUIT LOW INPUT —

NOTE:
For the diagnostic procedure, refer to DTC P1516. <Ref. to 2-7 [T10CU0].>

CP: DTC P1511 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 1 CIRCUIT HIGH INPUT —

NOTE:
For the diagnostic procedure, refer to DTC P1517. <Ref. to 2-7 [T10CV0].>

CQ: DTC P1512 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 2 CIRCUIT LOW INPUT —

NOTE:
For the diagnostic procedure, refer to DTC P1516. <Ref. to 2-7 [T10CU0].>

CR: DTC P1513 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 2 CIRCUIT HIGH INPUT —

NOTE:
For the diagnostic procedure, refer to DTC P1517. <Ref. to 2-7 [T11CV0].>

CS: DTC P1514 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 3 CIRCUIT LOW INPUT —

NOTE:
For the diagnostic procedure, refer to DTC P1516. <Ref. to 2-7 [T11CU0].>

CT: DTC P1515 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 3 CIRCUIT HIGH INPUT —

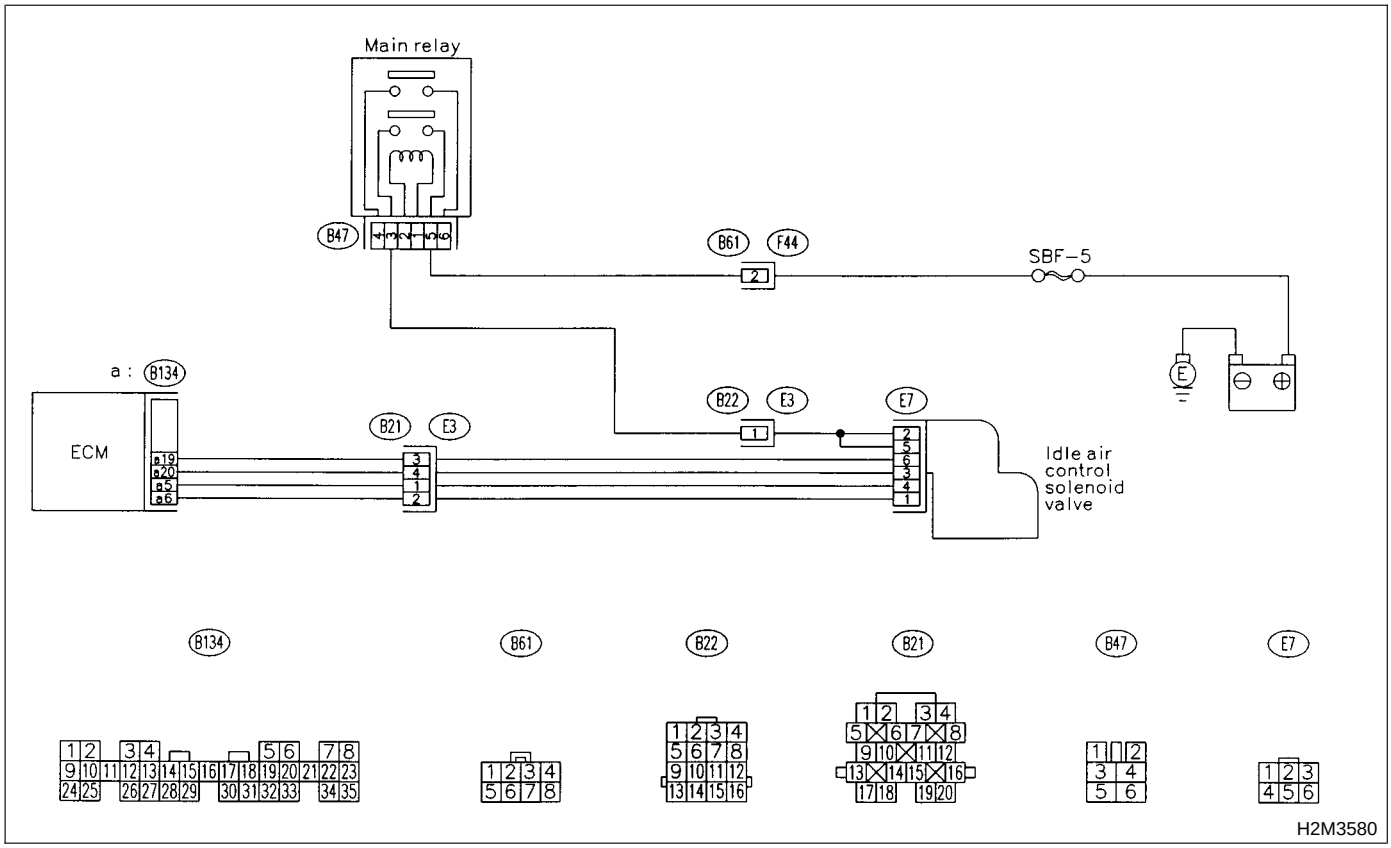
NOTE:
For the diagnostic procedure, refer to DTC P1517. <Ref. to 2-7 [T10CV0].>

CU: DTC P1516 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 4 CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

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

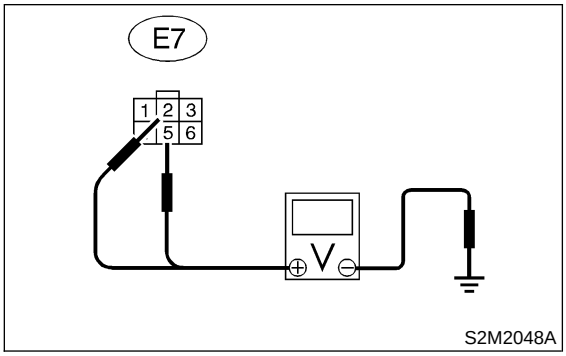
- **WIRING DIAGRAM:**



10CU1 : CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between idle air control solenoid valve connector and engine ground.

Connector & terminal
(E7) No. 2 (+) — Engine ground (−):
(E7) No. 5 (+) — Engine ground (−):



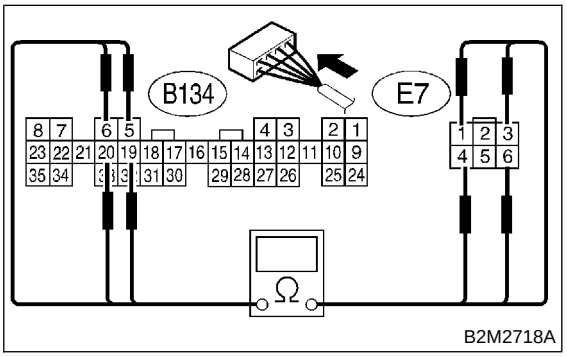
CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **10CU2**.
NO : Repair harness and connector.

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)

10CU2 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

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

Connector & terminal
DTC P1510; (B134) No. 5 — (E7) No. 3:
DTC P1512; (B134) No. 6 — (E7) No. 1:
DTC P1514; (B134) No. 19 — (E7) No. 6:
DTC P1516; (B134) No. 20 — (E7) No. 4:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10CU3**.
NO : Repair harness and connector.

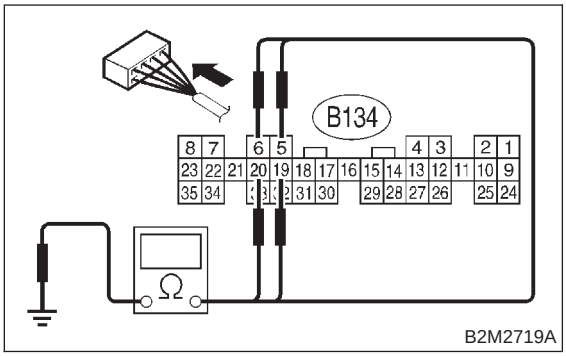
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B21)

10CU3 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

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

Connector & terminal

DTC P1510; (B134) No. 5 — Chassis ground:
DTC P1512; (B134) No. 6 — Chassis ground:
DTC P1514; (B134) No. 19 — Chassis ground:
DTC P1516; (B134) No. 20 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and idle air control solenoid valve connector.
NO : Go to step **10CU4**.

10CU4 : CHECK POOR CONTACT.

Check poor contact in ECM connector and idle air control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector or idle air control solenoid valve connector?***
YES : Repair poor contact in ECM connector or idle air control solenoid valve connector.
NO : Replace idle air control solenoid valve. <Ref. to 2-7 [W13A0].>

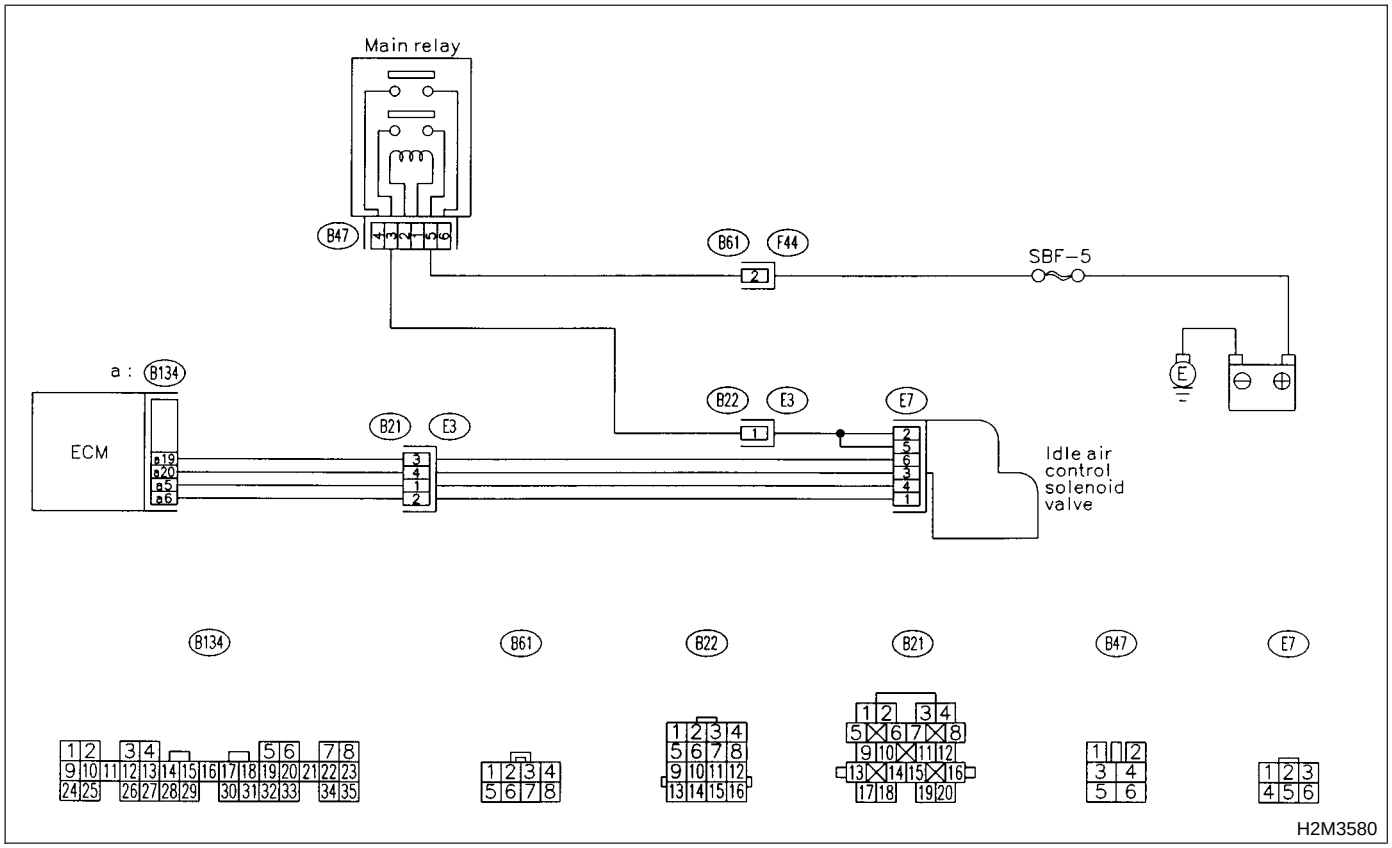
MEMO:

CV: DTC P1517 — IDLE AIR CONTROL SOLENOID VALVE SIGNAL 4 CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

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

- **WIRING DIAGRAM:**



10CV1 :	CHECK ANY OTHER DTC ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1511, P1513, P1515 and P1517 at same time?***

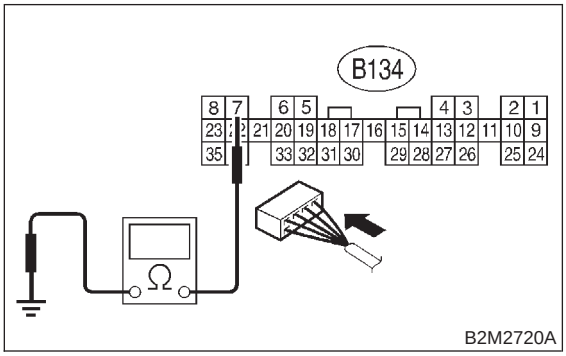
YES : Go to step **10CV2**.

NO : Go to step **10CV3**.

10CV2 : CHECK GROUND CIRCUIT FOR ECM.

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

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



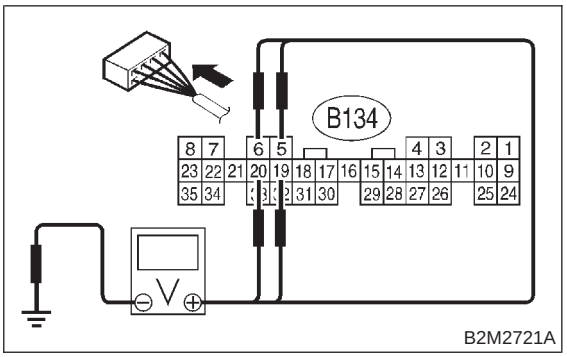
CHECK : ***Is the resistance less than 5 Ω?***
YES : Go to step **10CV3**.
NO : Repair harness and connector.

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

10CV3 : CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground.

Connector & terminal
DTC P1511; (B134) No. 5 (+) — Chassis ground (–):
DTC P1513; (B134) No. 6 (+) — Chassis ground (–):
DTC P1515; (B134) No. 19 (+) — Chassis ground (–):
DTC P1517; (B134) No. 20 (+) — Chassis ground (–):



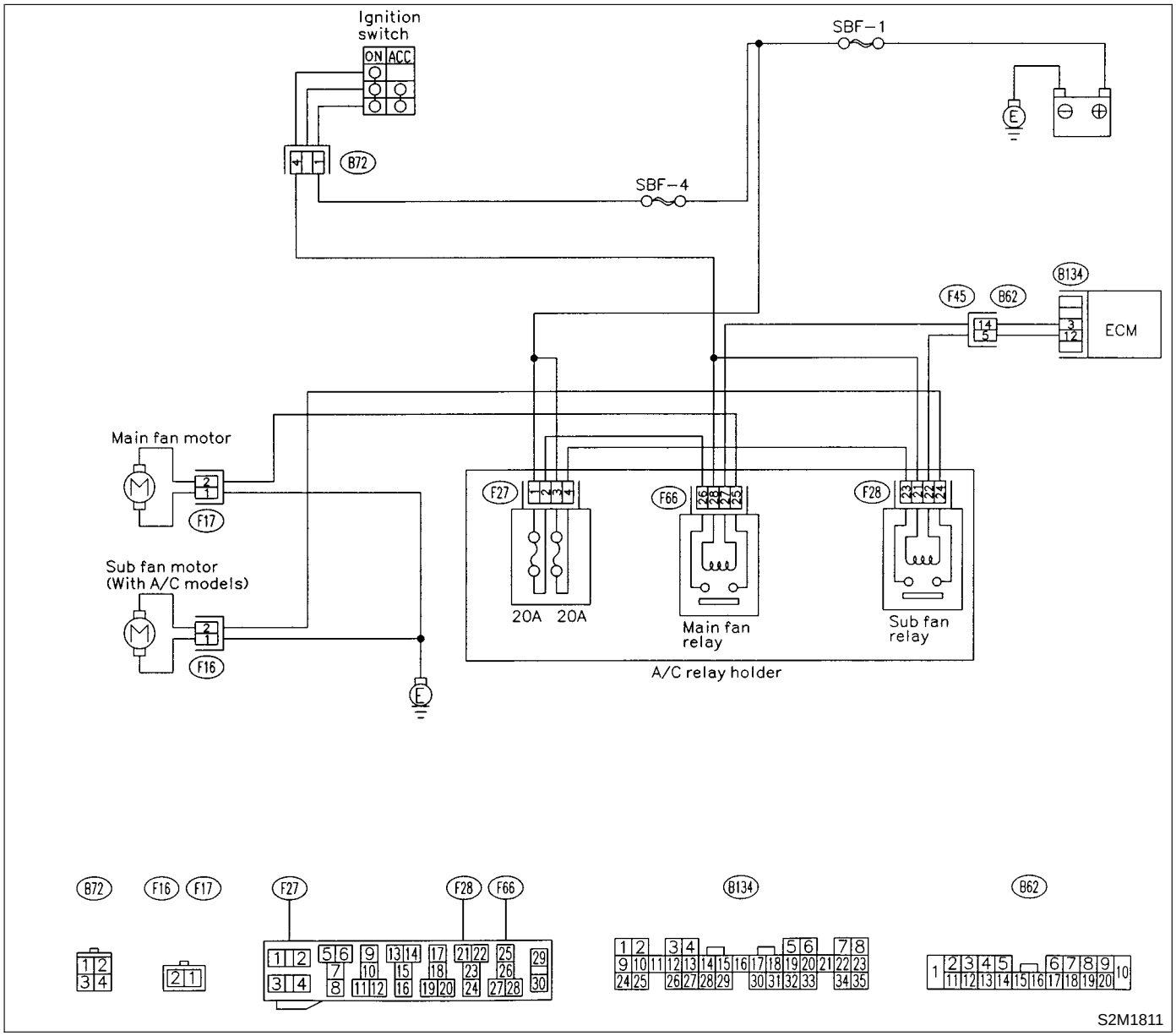
CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

CW: DTC P1520 — COOLING FAN RELAY 1 CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Radiator fan does not operate properly.
  - Overheating

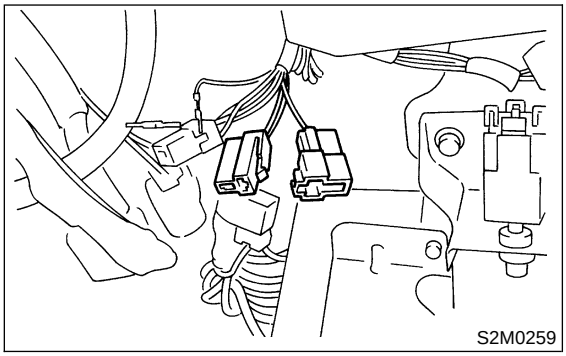
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10CW1 : CHECK OUTPUT SIGNAL FROM ECM.

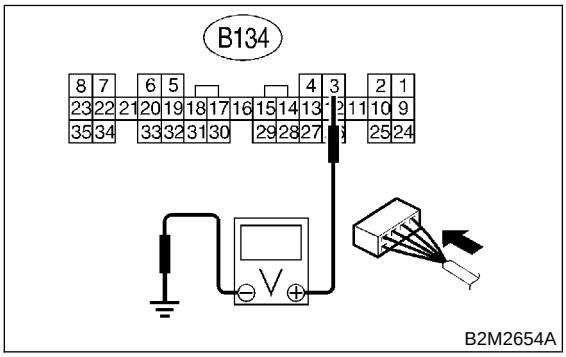
1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.



3) Turn ignition switch to ON.
4) While operating radiator fan relay, measure voltage between ECM and chassis ground.

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

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):



CHECK : ***Does voltage change between 0 and 10 V?***

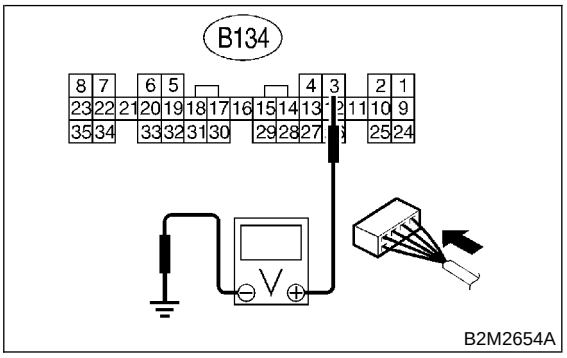
YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.

NO : Go to step **10CW2**.

10CW2 : CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT.

1) Turn ignition switch to OFF.
2) Remove main fan relay and sub fan relay. (with A/C models)
3) Disconnect test mode connector.
4) Turn ignition switch to ON.
5) Measure voltage between ECM and chassis ground.

Connector & terminal
(B134) No. 3 (+) — Chassis ground (−):



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

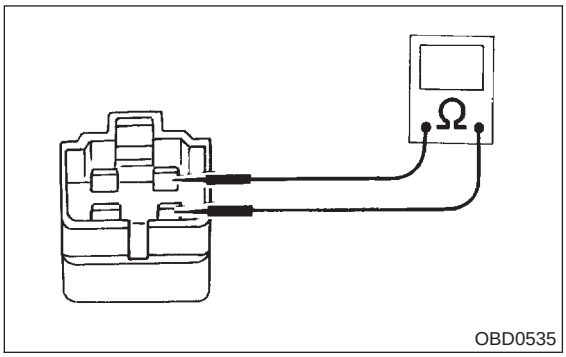
YES : Repair battery short circuit in radiator fan relay control circuit. After repair, replace ECM. <Ref. to 2-7 [W17A0].>

NO : Go to step **10CW3**.

10CW3 : 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:

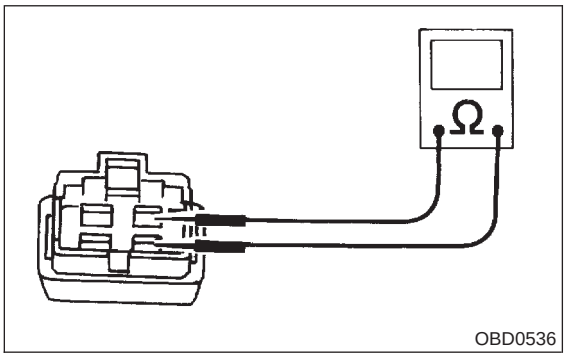


CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace main fan relay and ECM <Ref. to 2-7 [W17A0].>
NO : Go to step **10CW4**.

10CW4 : CHECK SUB FAN RELAY.

1) Remove sub fan relay.
2) Measure resistance between sub fan relay terminals.

Terminal
No. 1 — No. 3



CHECK : ***Is the resistance less than 1 Ω?***
YES : Replace sub fan relay and ECM <Ref. to 2-7 [W17A0].>
NO : Go to step **10CW5**.

10CW5 : CHECK POOR CONTACT.

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

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM. <Ref. to 2-7 [W17A0].>

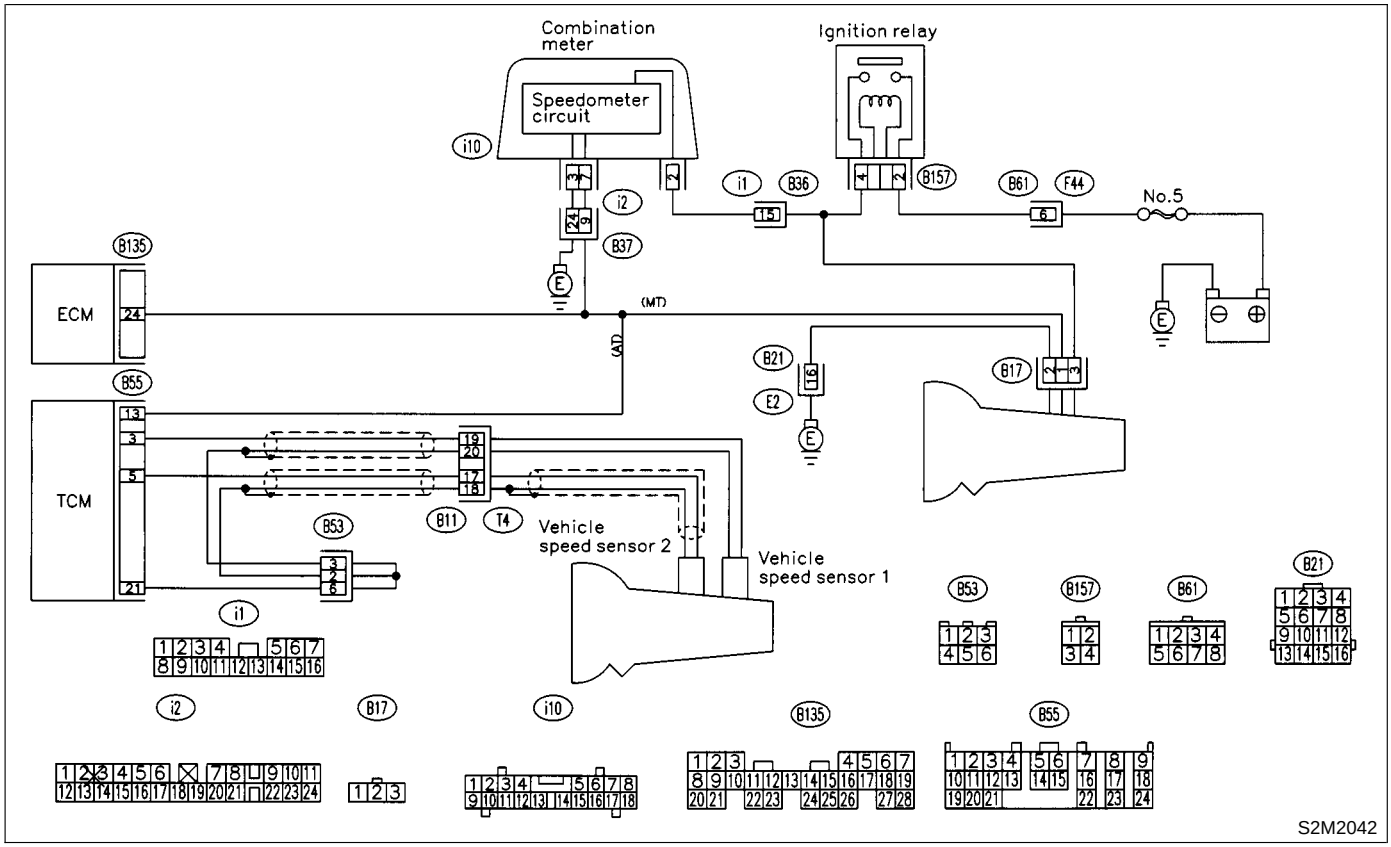
MEMO:

CX: DTC P1540 — VEHICLE SPEED SENSOR MALFUNCTION 2 —

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

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

- **WIRING DIAGRAM:**



10CX1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **10CX2**.
NO : Go to step **10CX3**.

10CX2 : CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?***
YES : Check vehicle speed sensor 2 signal circuit. <Ref. to 3-2 [T8F0].>
NO : Go to step **10CX3**.

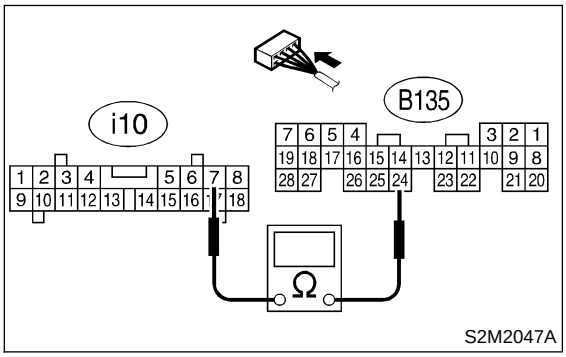
10CX3 : CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer operate normally?***
YES : Go to step **10CX4**.
NO : Check speedometer and vehicle speed sensor. <Ref. to 6-2 [T1A0].>

10CX4 : CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from combination meter.
3) Measure resistance between ECM and combination meter.

Connector & terminal
(B135) No. 24 — (i10) No. 7:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair poor contact in ECM connector.
NO : Repair harness and connector.

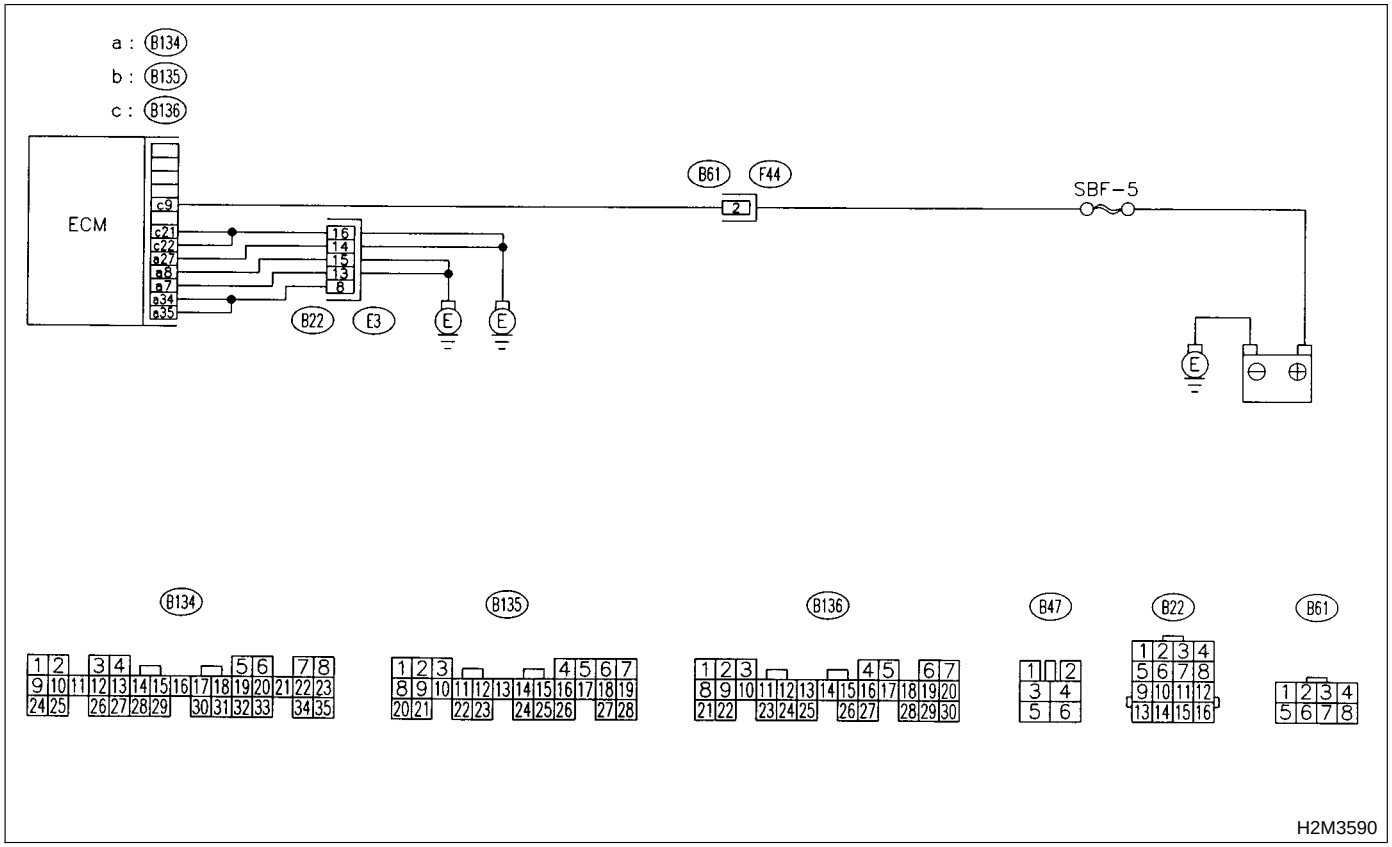
NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector
- Poor contact in coupling connector (i2)

CY: DTC P1560 — BACK-UP VOLTAGE CIRCUIT MALFUNCTION —

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

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

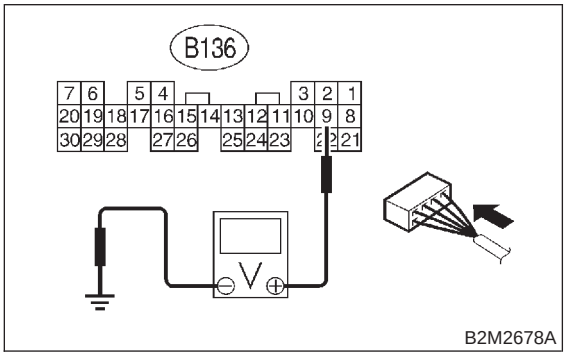
- **WIRING DIAGRAM:**



10CY1 : CHECK INPUT SIGNAL FOR ECM.

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

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

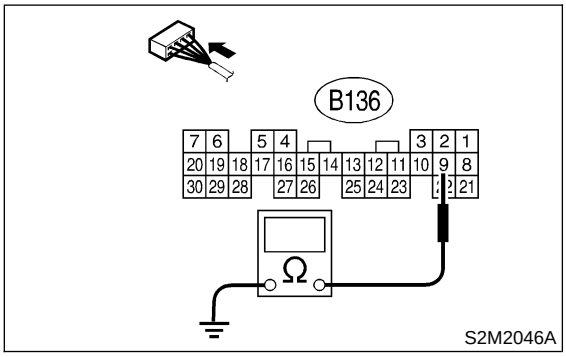


CHECK : ***Is the voltage more than 10 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10CY2**.

10CY2 : CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and chassis ground.

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



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM connector and battery terminal.
NO : Go to step **10CY3**.

10CY3 : CHECK FUSE SBF-5.

CHECK : ***Is fuse blown?***
YES : Replace fuse. <Ref. to 6-3 [D6A0].>
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and battery
- Poor contact in ECM connector
- Poor contact in battery terminal

CZ: DTC P1700 — THROTTLE POSITION SENSOR CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”

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

NOTE:
Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

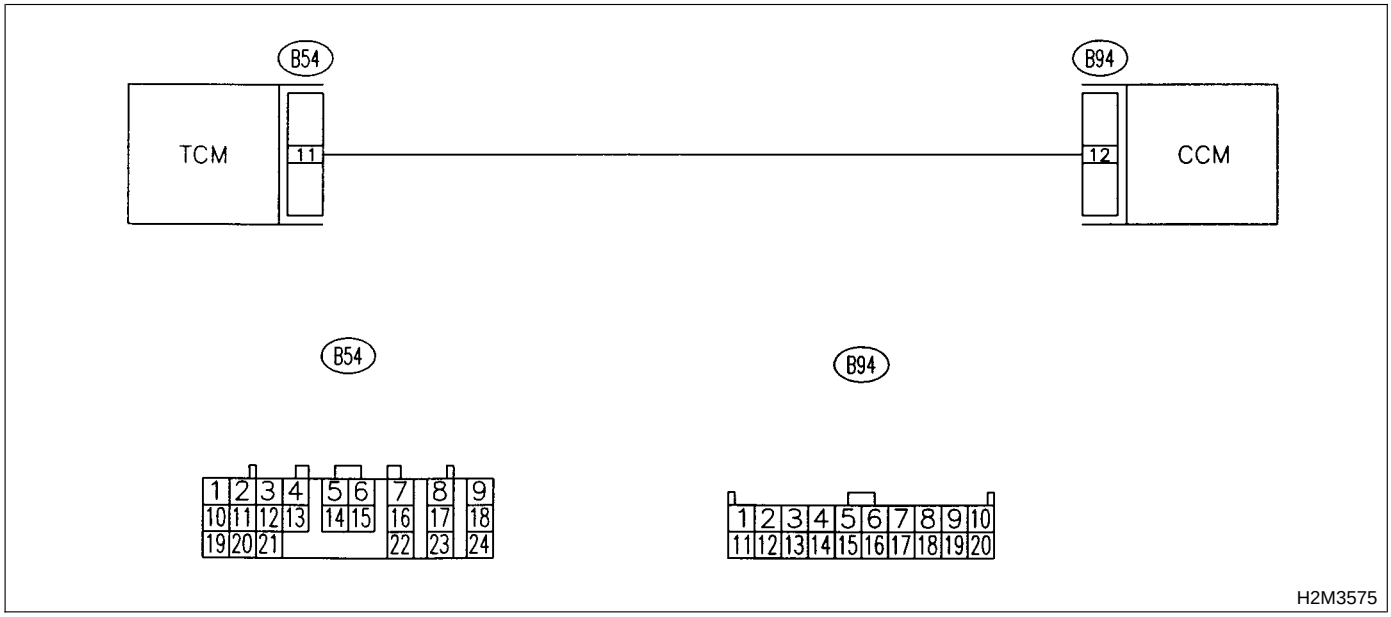
MEMO:

DA: DTC P1701 — CRUISE CONTROL SET SIGNAL CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

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

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

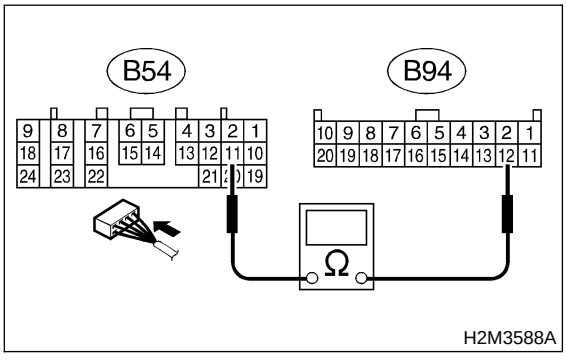
- **WIRING DIAGRAM:**



10DA1 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

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

Connector & terminal
(B54) No. 11 — (B94) No. 12:

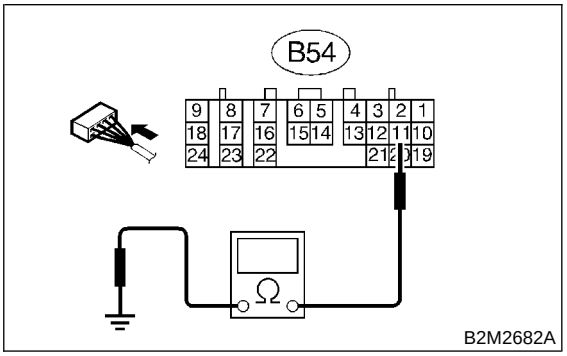


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10DA2**.
NO : Repair open circuit in harness between TCM and CCM connector.

10DA2 : CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 11 — Chassis ground:



CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair short circuit in harness between TCM and CCM connector.
NO : Go to step **10DA3**.

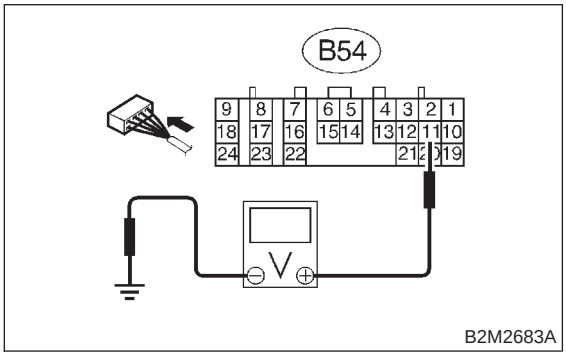
10DA3 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connector to TCM and CCM.
2) Lift-up the vehicle or set the vehicle on free rollers.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine.
4) Cruise control main switch to ON.
5) Move select lever to “D” and slowly increase vehicle speed to 50 km/h (31 MPH).
6) Cruise control set switch to ON.
7) Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 11 (+) — Chassis ground (−):



CHECK : ***Is the resistance less than 1 V?***
YES : Go to step **10DA4**.
NO : Check cruise control set circuit. <Ref. to 6-2 [T7A0].>

10DA4 : CHECK POOR CONTACT.

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

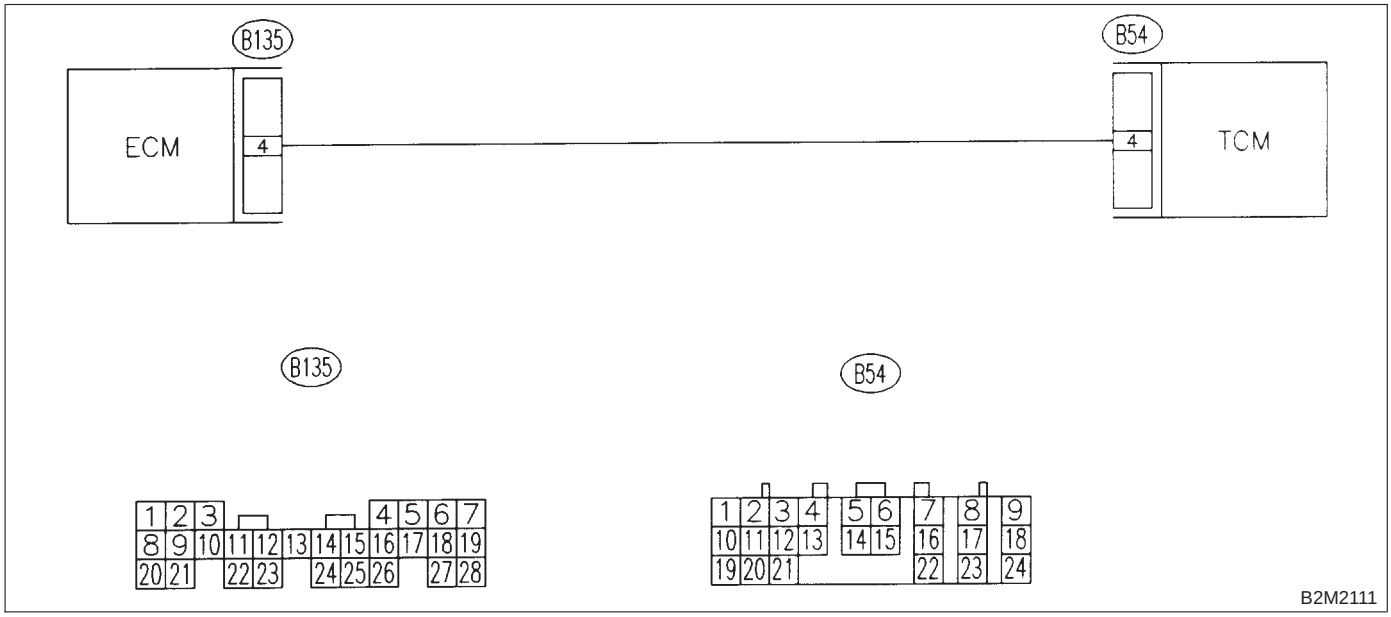
CHECK : ***Is there poor contact in TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Replace TCM. <Ref. to 3-2 [W23A0].>

DB: DTC P1702 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT LOW INPUT —

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

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

- **WIRING DIAGRAM:**



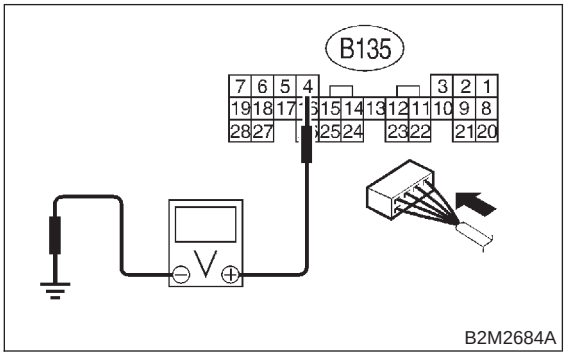
10DB1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **10DB2**.
NO : Check AT/MT identification circuit. <Ref. to 2-7 [T10DH0].>

10DB2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



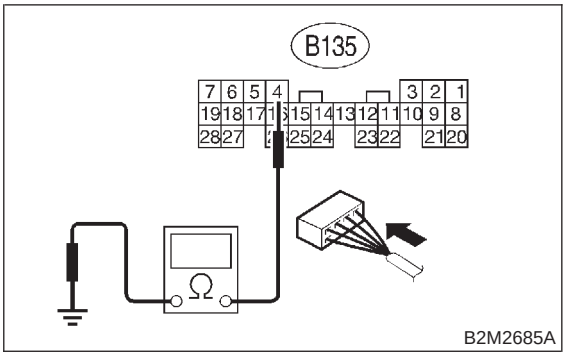
CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **10DB3**.
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM connector

10DB3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 — Chassis ground:

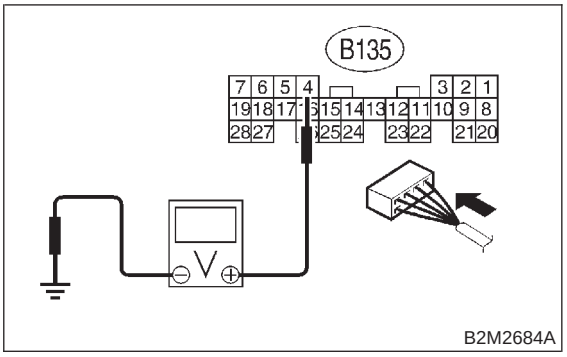


CHECK : ***Is the resistance less than 10 Ω?***
YES : Repair ground short circuit in harness between ECM and TCM connector.
NO : Go to step **10DB4**.

10DB4 : CHECK OUTPUT SIGNAL FOR ECM.

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

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 5 V?***
YES : Go to step **10DB5**.
NO : Repair poor contact in ECM connector.

10DB5 : CHECK TROUBLE CODE FOR AUTOMATIC TRANSMISSION.

Read trouble code for automatic transmission. <Ref. to 3-2 [T8A0].>

CHECK : ***Does trouble code appear for automatic transmission?***

YES : Inspect trouble code for automatic transmission. <Ref. to 3-2 [T8A0].>

NO : Replace TCM. <Ref. to 3-2 [W23A0].>

DC: DTC P1703 — LOW CLUTCH TIMING CONTROL SOLENOID VALVE CIRCUIT MALFUNCTION —

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

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

NOTE:
Check low clutch timing control solenoid valve circuit. <Ref. to 3-2 [T8L0].>

DD: DTC P1704 — 2-4 BRAKE TIMING CONTROL SOLENOID VALVE CIRCUIT MALFUNCTION —

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

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

NOTE:
Check 2-4 brake timing control solenoid valve circuit. <Ref. to 3-2 [T8M0].>

DE: DTC P1705 — 2-4 BRAKE PRESSURE CONTROL SOLENOID VALVE (2-4 BRAKE DUTY SOLENOID) CIRCUIT MALFUNCTION —

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

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

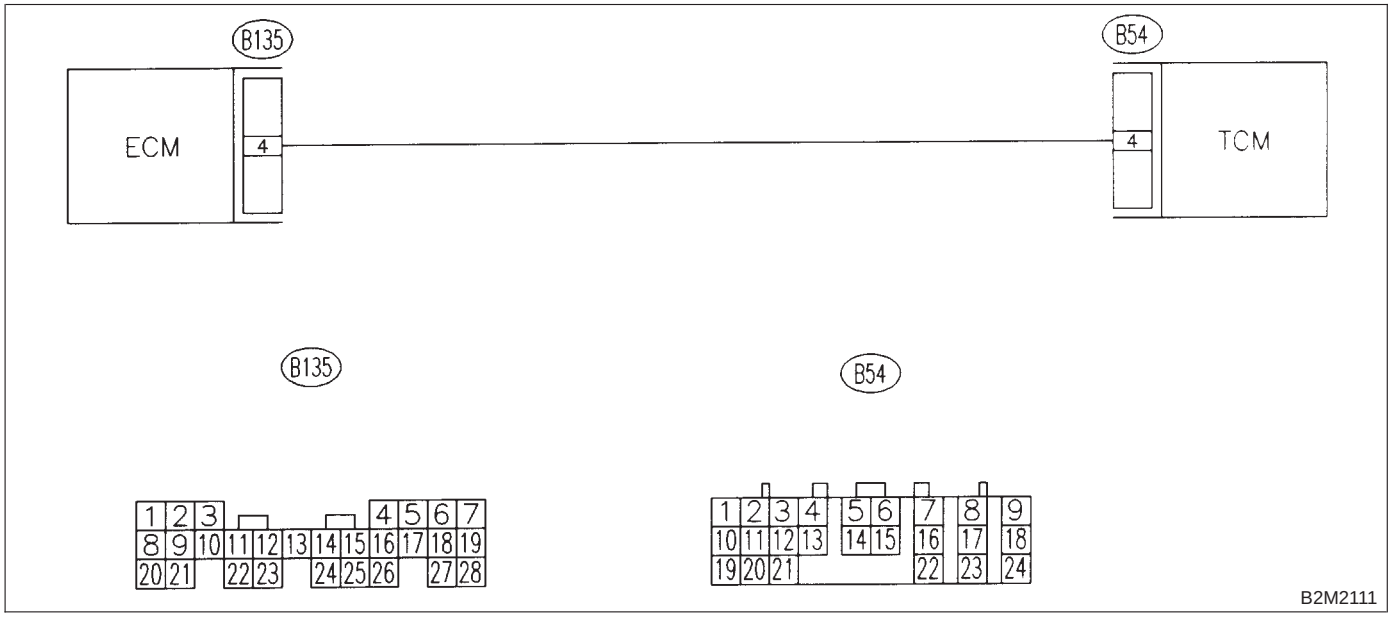
NOTE:
Check 2-4 brake duty solenoid circuit. <Ref. to 3-2 [T8O0].>

DF: DTC P1722 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT HIGH INPUT —

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

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

- **WIRING DIAGRAM:**



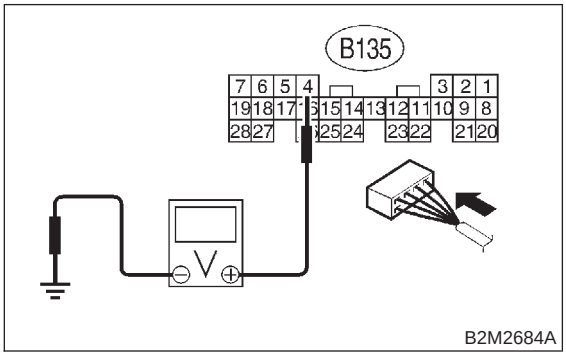
10DF1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **10DF2**.
NO : Check AT/MT identification circuit. <Ref. to [T10DH0].>

10DF2 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

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

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

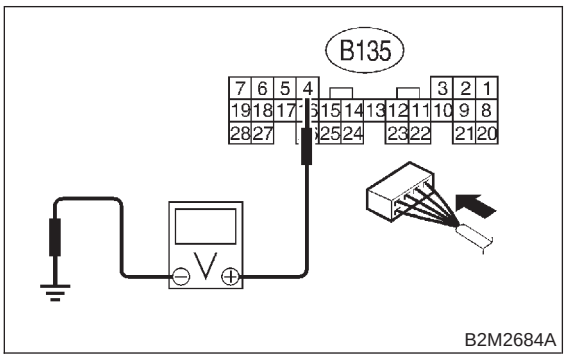


CHECK : ***Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to 2-7 [W17A0].>
NO : Go to step **10DF3**.

10DF3 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

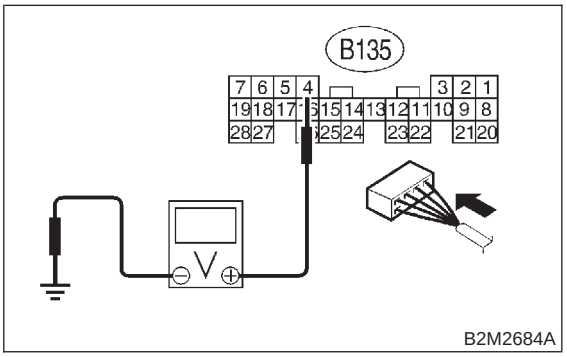


CHECK : ***Is the voltage more than 4 V?***
YES : Go to step **10DF6**.
NO : Go to step **10DF4**.

10DF4 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):

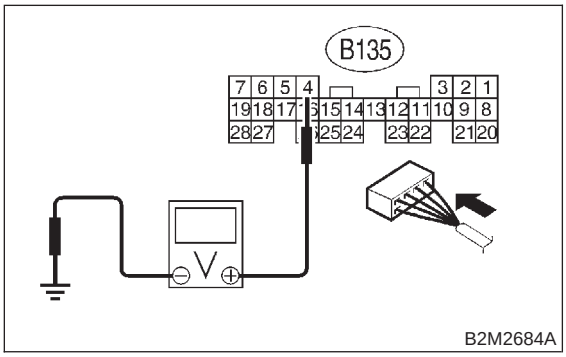


CHECK : ***Is the voltage less than 1 V?***
YES : Repair poor contact in ECM connector.
NO : Go to step **10DF5**.

10DF5 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 4 (+) — Chassis ground (−):



CHECK : ***Does the voltage change from 1 V to 4 V while monitoring the value with voltage meter?***

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

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM connector

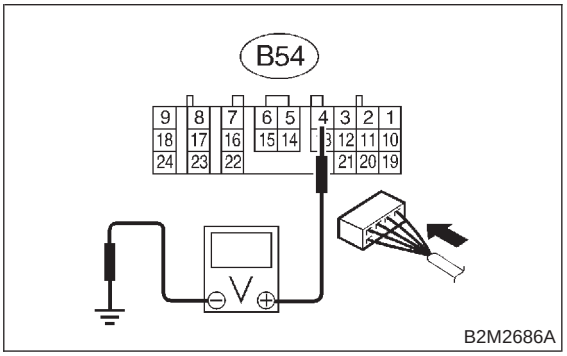
NO : Contact with SOA service.

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

10DF6 : CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 4 V?***

YES : Go to step **10DF7**.

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

10DF7 : 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.

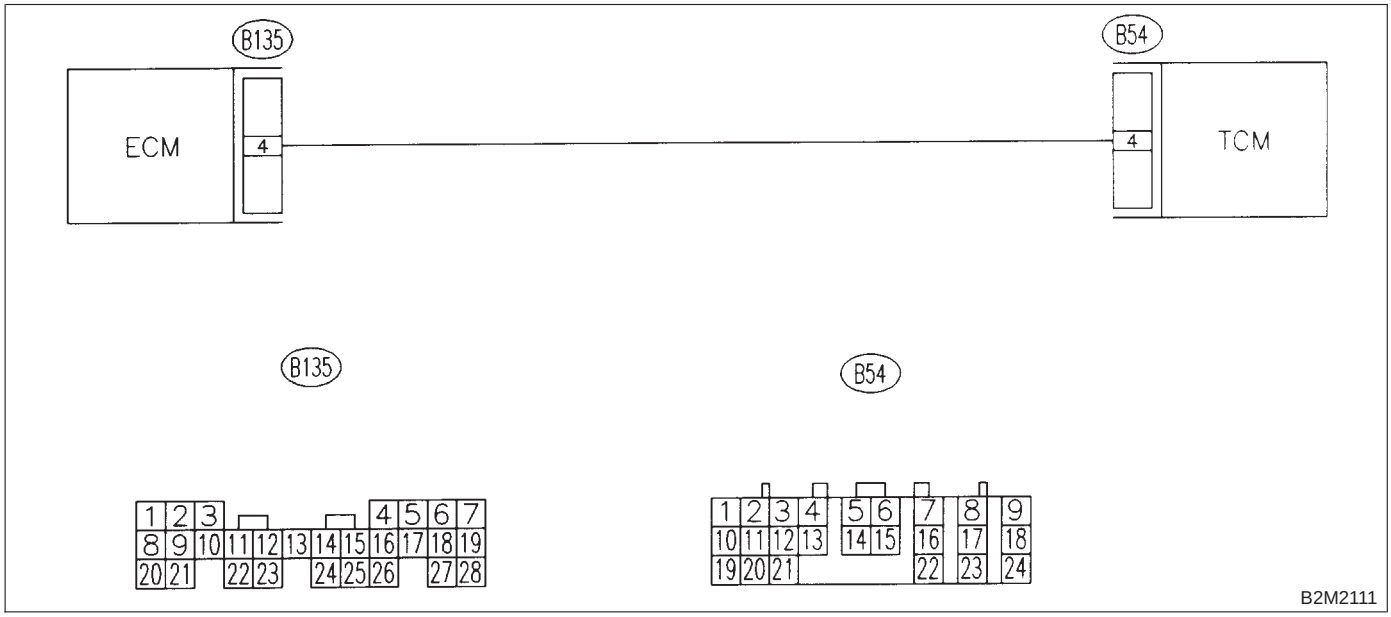
NO : Check TCM power supply line and grounding line.

DG: DTC P1742 — AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT MALFUNCTION —

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

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

- **WIRING DIAGRAM:**



10DG1 : CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **10DG2**.
NO : Check AT/MT identification circuit. <Ref. to 2-7 [T10DH0].>

10DG2 : 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 **10DG3**.
NO : Replace TCM. <Ref. to 3-2 [W23A0].>

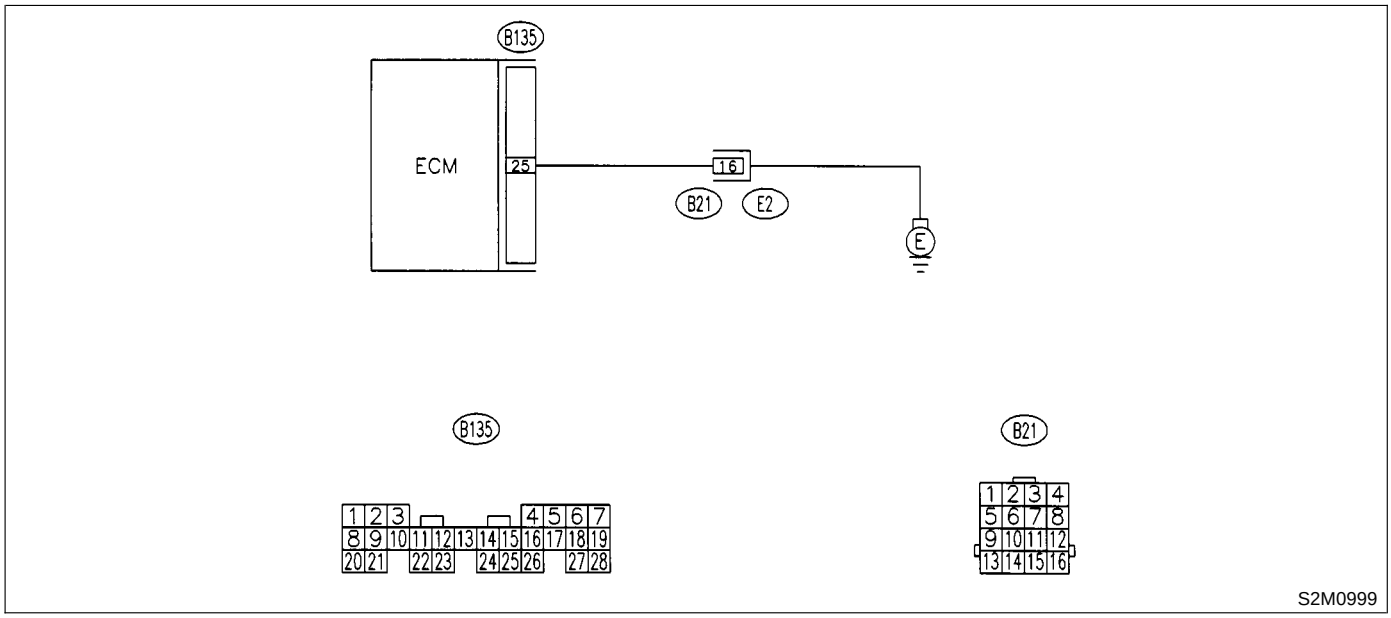
10DG3 : CHECK ACCESSORY.

CHECK : ***Are car phone and/or CB installed on vehicle?***
YES : Repair grounding line of car phone or CB system.
NO : Replace TCM. <Ref. to 3-2 [W23A0].>

DH: — AT/MT IDENTIFICATION CIRCUIT MALFUNCTION [MT VEHICLES] —

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>.

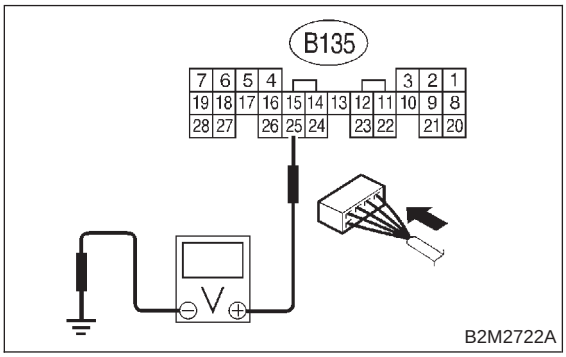
- **WIRING DIAGRAM:**



10DH1 : CHECK HARNESS BETWEEN ECM CONNECTOR AND ENGINE GROUNDING TERMINAL.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B135) No. 25 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 2 V?***
YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM connector and engine grounding terminal
- Poor contact in engine grounding terminal
- Poor contact in coupling connector (B21)

NO : Go to step **10DH2**.

10DH2 : CHECK POOR CONTACT.

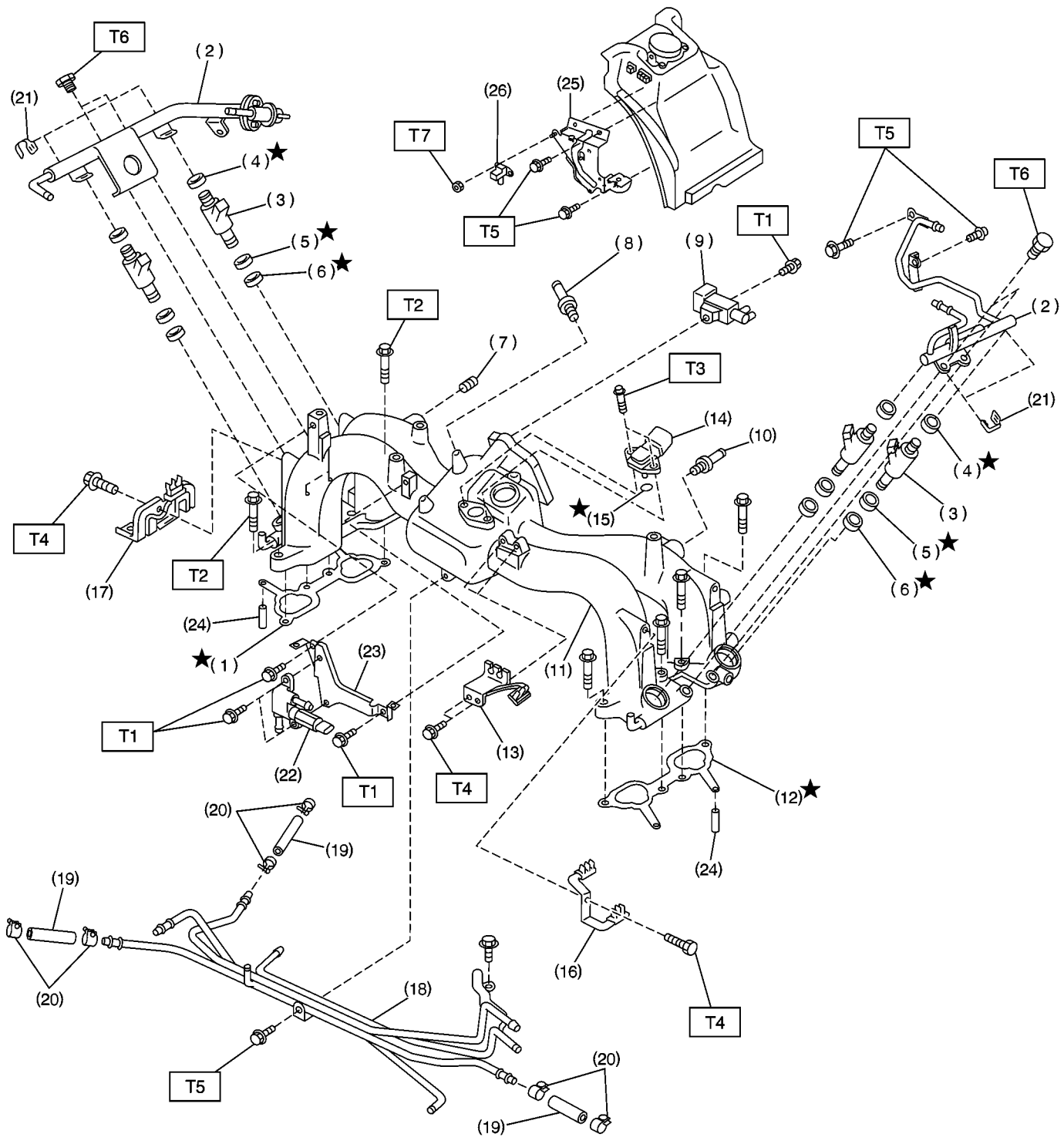
Check poor contact in ECM connector. <Ref. to FOREWORD [W3C1].>

CHECK : ***Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

MEMO:

1. Intake Manifold

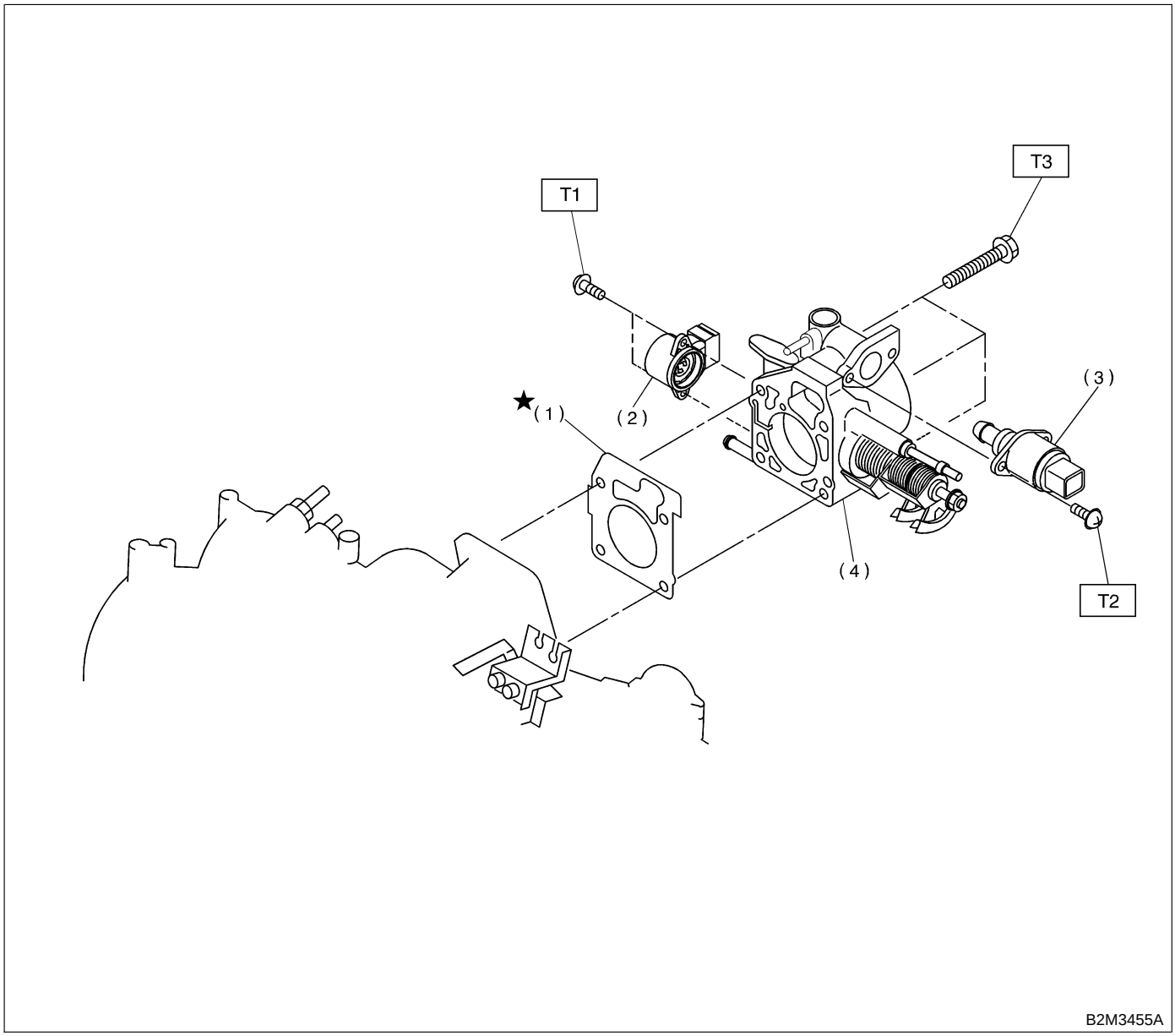


S2M1951A

(1) Intake manifold gasket RH
(2) Fuel injector pipe
(3) Fuel injector
(4) O-ring
(5) O-ring
(6) O-ring
(7) Plug
(8) PCV valve
(9) Purge control solenoid valve
(10) Nipple
(11) Intake manifold
(12) Intake manifold gasket LH
(13) Bracket
(14) Intake air temperature and pressure sensor
(15) O-ring
(16) Bracket LH
(17) Bracket RH
(18) Fuel pipe ASSY
(19) Fuel hose
(20) Clip
(21) Clip
(22) Air assist injector solenoid valve
(23) Air assist injector solenoid valve bracket
(24) Guide pin
(25) Atmospheric pressure sensor bracket
(26) Atmospheric pressure sensor

Tightening torque: N·m (kg-m, ft-lb)
T1: 16±1.5 (1.6±0.15, 11.6±1.1)
T2: 25±2 (2.5±0.2, 18.1±1.4)
T3: 2.0±0.4 (0.2±0.04, 1.4±0.3)
T4: 18.6±1.5 (1.9±0.15, 13.7±1.1)
T5: 4.9±0.5 (0.5±0.05, 3.6±0.4)
T6: 3.4±0.5 (0.35±0.05, 2.5±0.4)
T7: 6.4±0.5 (0.65±0.05, 4.7±0.4)

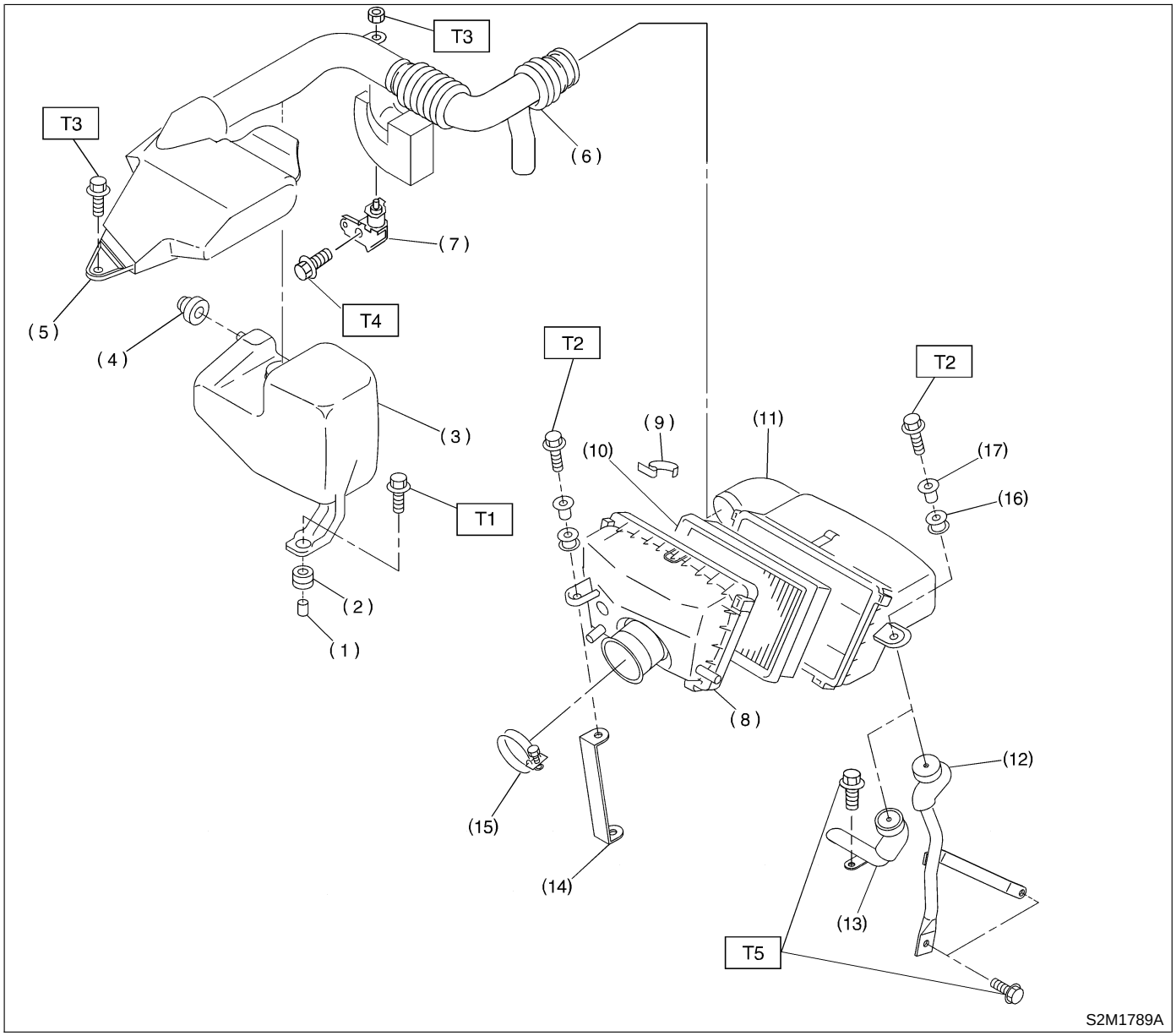
2. Air Intake System



(1) Gasket
(2) Throttle position sensor
(3) Idle air control solenoid valve
(4) Throttle body

Tightening torque: N·m (kg-m, ft-lb)
T1: 2.0±0.4 (0.2±0.04, 1.4±0.3)
T2: 6.0±0.8 (0.61±0.08, 4.4±0.6)
T3: 19±5 (1.9±0.5, 13.7±3.6)

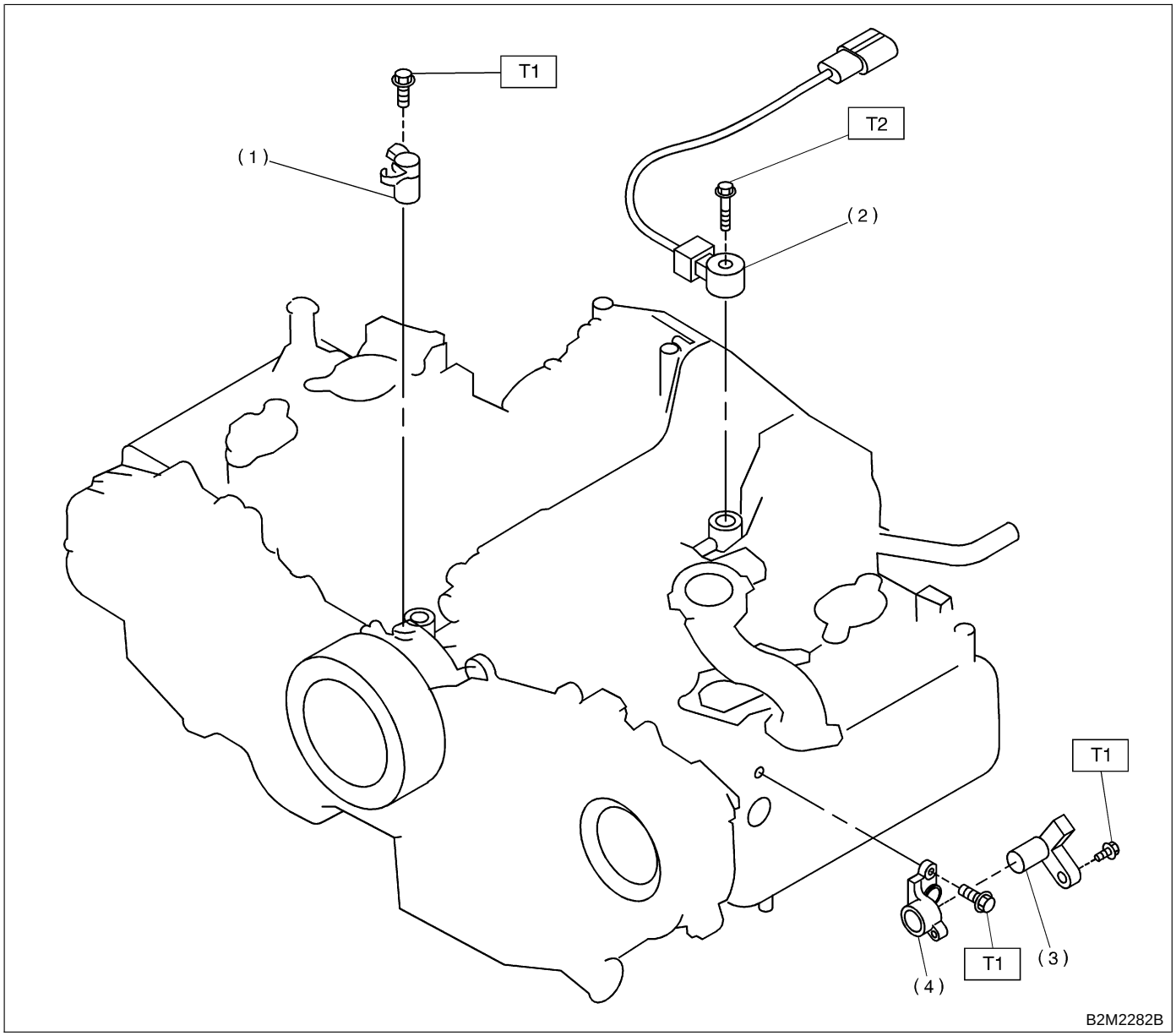
3. Air Cleaner



(1) Spacer
(2) Bush
(3) Air chamber
(4) Cushion rubber
(5) Air intake duct A
(6) Air intake duct B
(7) Holder
(8) Air cleaner case A
(9) Clip
(10) Air cleaner element
(11) Air cleaner case B
(12) Air cleaner case stay LH (MT vehicles)
(13) Air cleaner case stay LH (AT vehicles)
(14) Air cleaner case stay RH
(15) Clamp
(16) Bush
(17) Spacer

Tightening torque: N·m (kg-m, ft-lb)
T1: 33±10 (3.4±1.0, 25±7)
T2: 6.4±0.5 (0.65±0.05, 4.7±0.4)
T3: 7.4±2.0 (0.75±0.2, 5.4±1.4)
T4: 14±4 (1.4±0.4, 10.1±2.9)
T5: 16±5 (1.6±0.5, 11.6±3.6)

4. Crankshaft Position, Camshaft Position and Knock Sensors



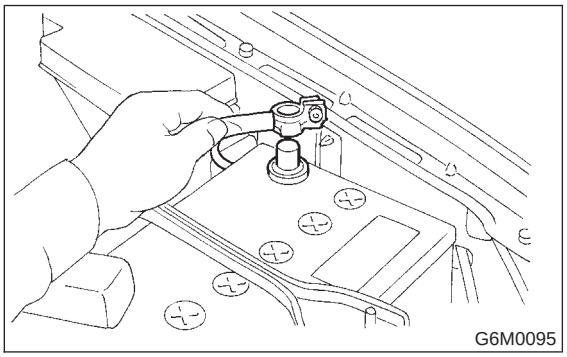
(1) Crankshaft position sensor
(2) Knock sensor
(3) Camshaft position sensor
(4) Camshaft position sensor support

Tightening torque: N·m (kg-m, ft-lb)
T1: 6.4±0.5 (0.65±0.05, 4.7±0.4)
T2: 23.5±2.9 (2.4±0.3, 17.4±2.2)

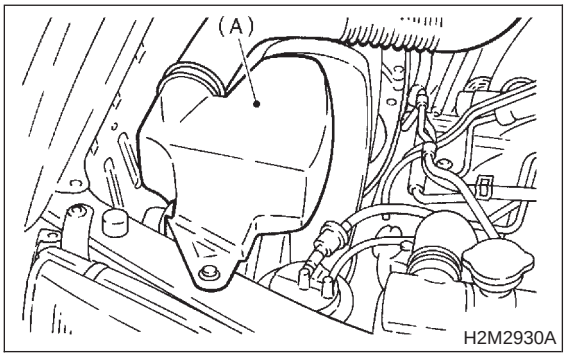
1. Air Cleaner Case and Air Intake Duct

A: REMOVAL AND INSTALLATION

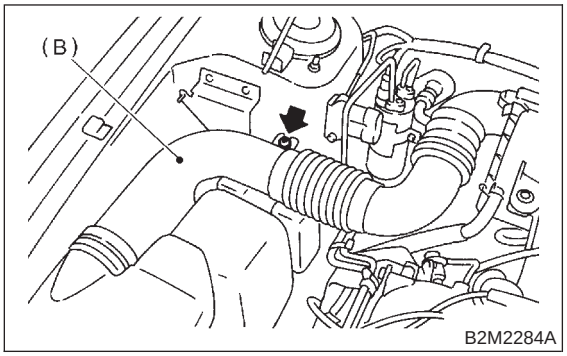
1) Disconnect battery ground cable.



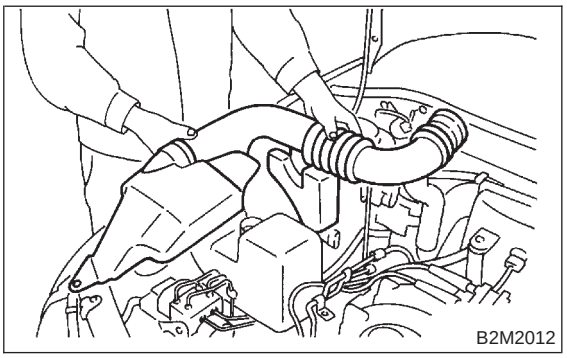
2) Remove bolt which installs air intake duct (A) on the front side of body.



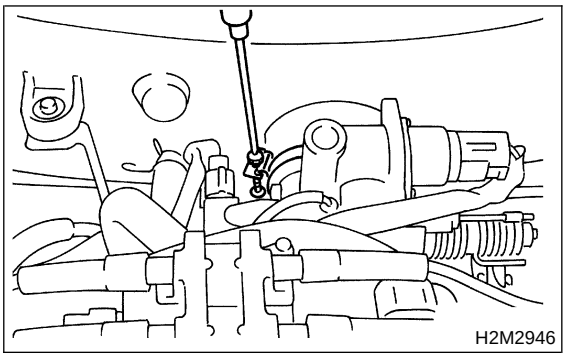
3) Remove bolt which installs air intake duct (B) on body.



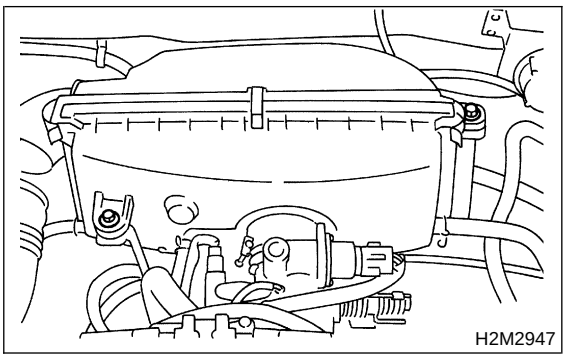
4) Remove air intake duct (A) and (B) as a unit.



5) Loosen clamp which connects air cleaner case to throttle body.



6) Disconnect hoses from air cleaner case.
7) Remove bolts which install air cleaner case to stays.

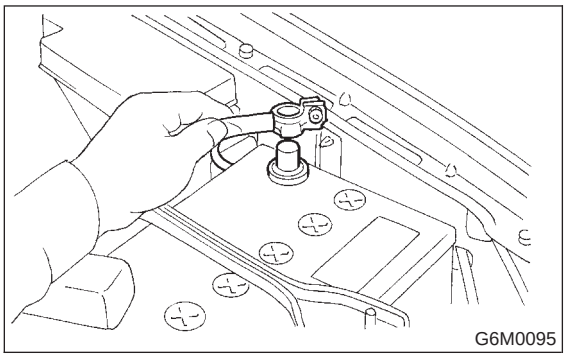


8) Remove air cleaner case.
9) Install in the reverse order of removal.

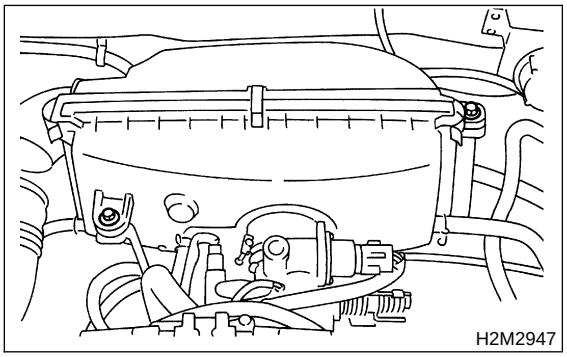
2. Throttle Body

A: REMOVAL AND INSTALLATION

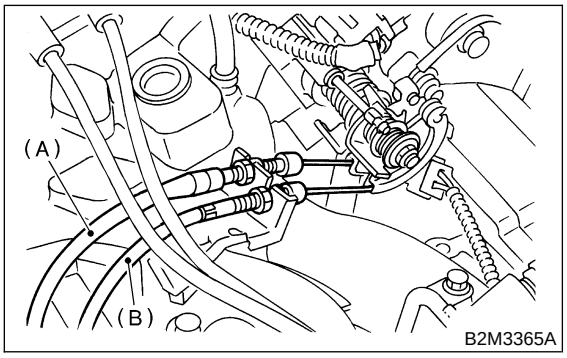
1) Disconnect battery ground cable.



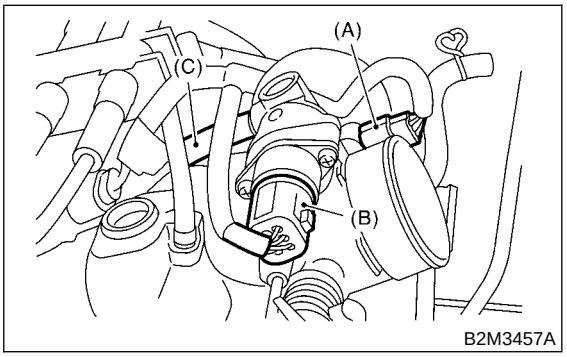
2) Remove air cleaner case.



3) Disconnect accelerator cable (A).
4) Disconnect cruise control cable (B). (With cruise control model)

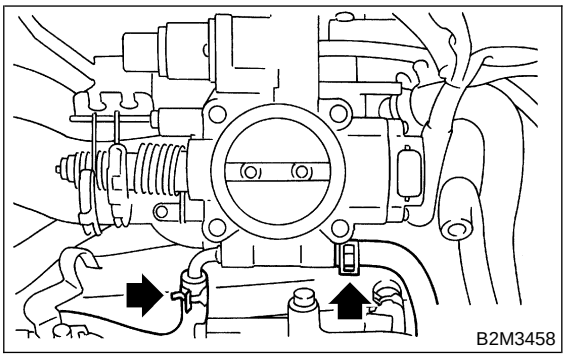


5) Disconnect connectors from idle air control solenoid valve, throttle position sensor.
6) Disconnect air by-pass hose from air assist injector solenoid valve.



(A) Throttle position sensor
(B) Idle air control solenoid valve
(C) Air by-pass hose from air assist injector solenoid valve

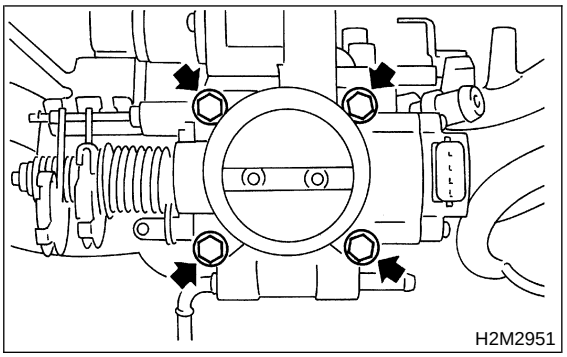
7) Disconnect engine coolant hoses from throttle body.



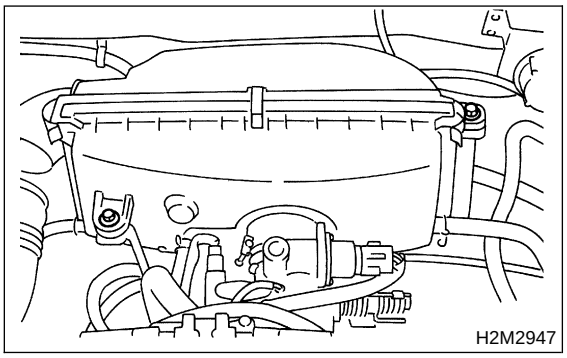
8) Remove bolts which install throttle body to intake manifold.
9) Install in the reverse order of removal.

CAUTION:
Always use a new gasket.

Tightening torque:
Throttle body;
22±2 N·m (2.2±0.2 kg-m, 15.9±1.4 ft-lb)



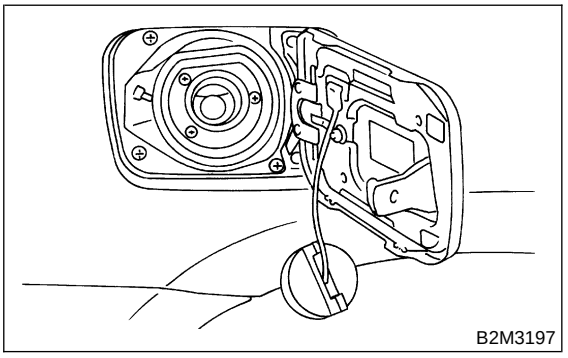
Tightening torque:
Air cleaner case;
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)


H2M2947

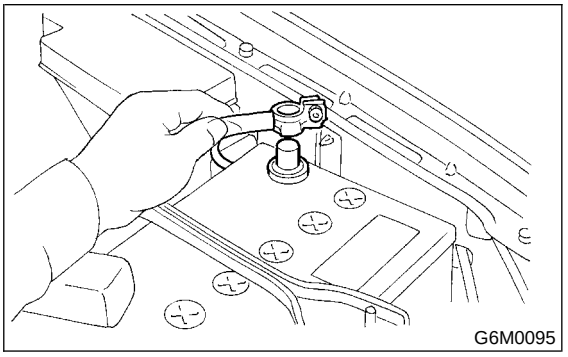
3. Intake Manifold

A: REMOVAL

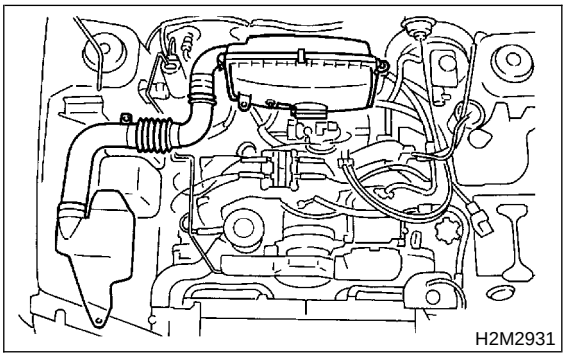
1) Release fuel pressure. <Ref. to 2-8 [W1A0].>
2) Open fuel flap lid, and remove fuel filler cap.


B2M3197

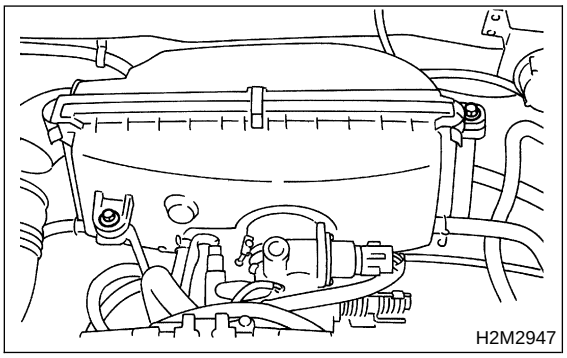
3) Disconnect battery ground cable.


G6M0095

4) Remove air intake duct and air cleaner assembly. <Ref. to 2-7 [W1A0].>


H2M2931

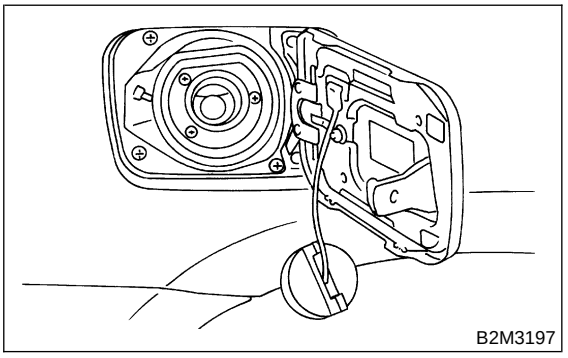
Tightening torque:
Air cleaner case;
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)


H2M2947

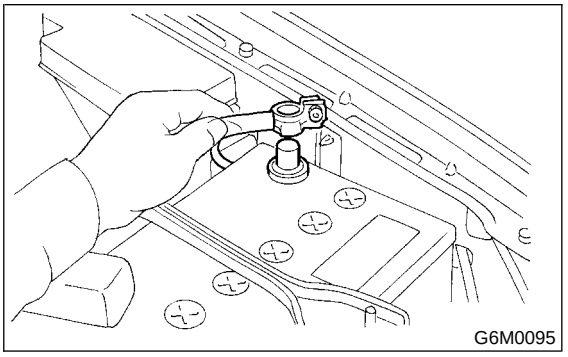
3. Intake Manifold

A: REMOVAL

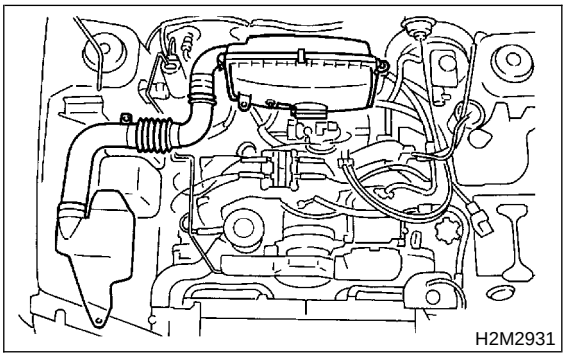
1) Release fuel pressure. <Ref. to 2-8 [W1A0].>
2) Open fuel flap lid, and remove fuel filler cap.


B2M3197

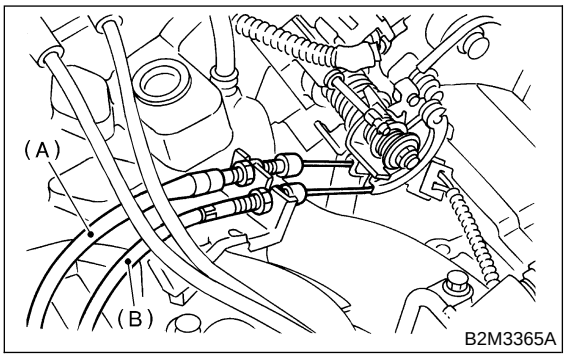
3) Disconnect battery ground cable.


G6M0095

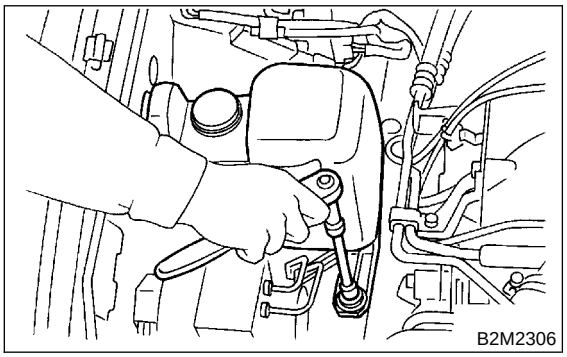
4) Remove air intake duct and air cleaner assembly. <Ref. to 2-7 [W1A0].>


H2M2931

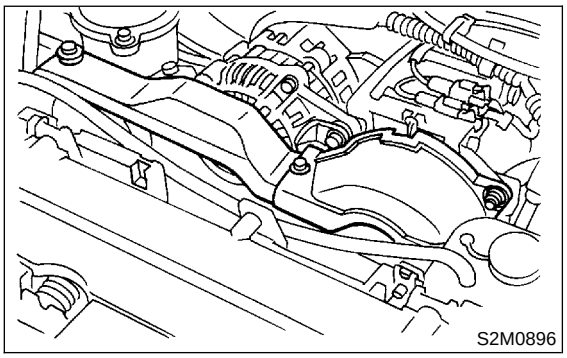
5) Disconnect accelerator cable (A).
6) Disconnect cruise control cable (B). (With cruise control model)



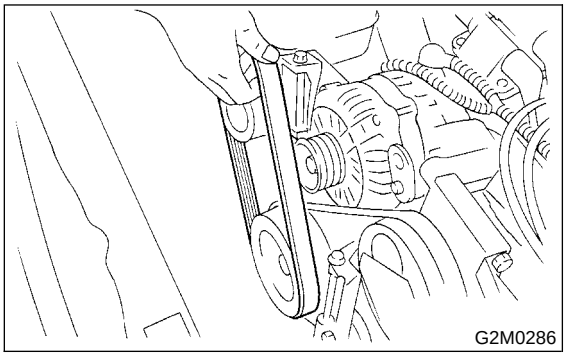
7) Remove power steering pump from bracket.
(1) Remove resonator chamber.



(2) Remove V-belt covers.

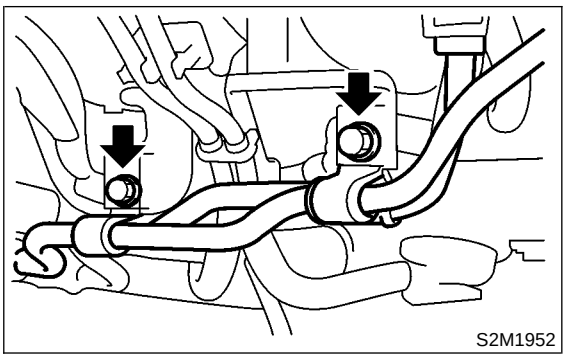


(3) Loosen lock bolt and slider bolt, and remove power steering pump drive V-belt.

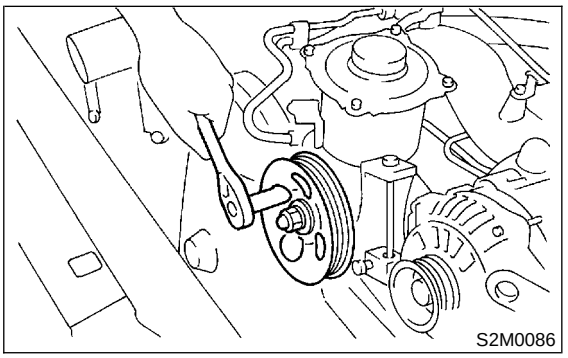


(4) Remove bolts which secure power steering pipe brackets to intake manifold.

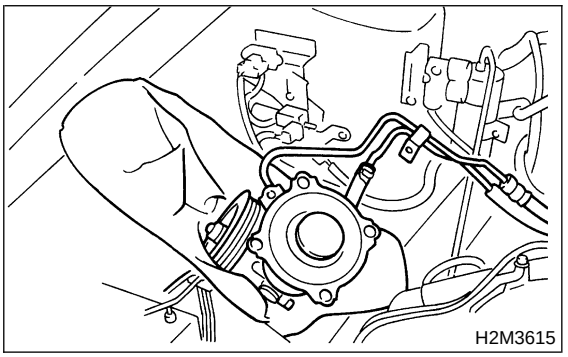
NOTE:
Do not disconnect power steering hose.



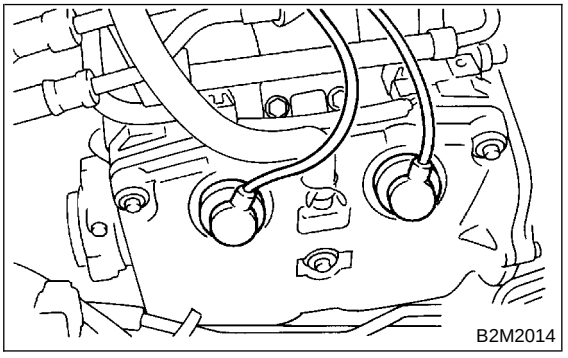
(5) Remove bolts which install power steering pump to bracket.



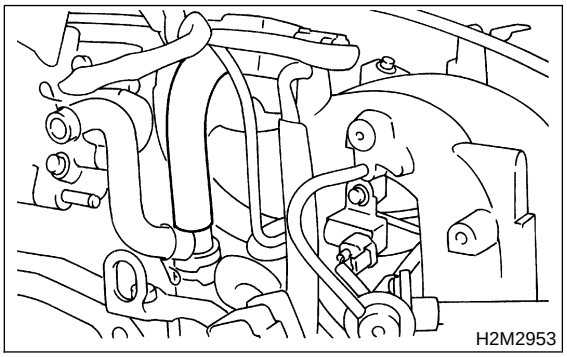
(6) Place power steering pump on the right side wheel apron.



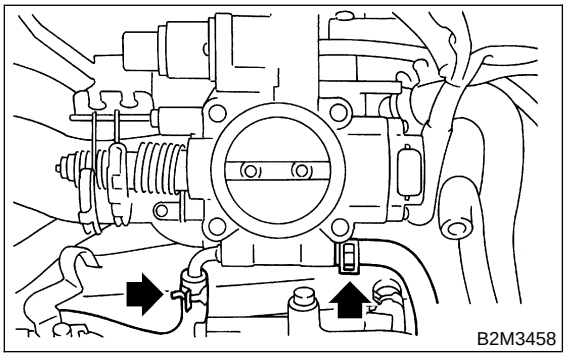
8) Disconnect spark plug cords from spark plugs.



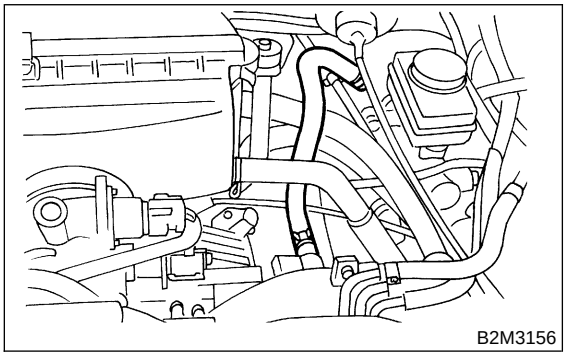
9) Disconnect PCV hose from intake manifold.



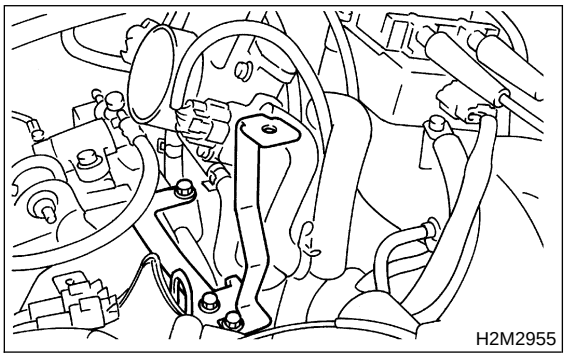
10) Disconnect engine coolant hose from throttle body.



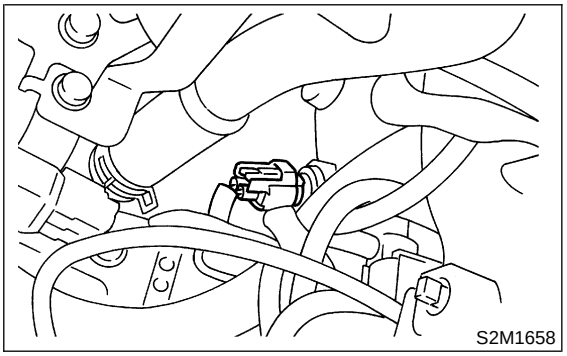
11) Disconnect brake booster hose.



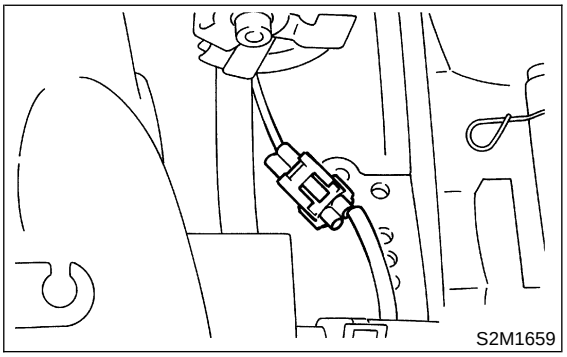
12) Remove air cleaner case stay RH and engine harness bracket, and disconnect engine harness connectors from bulkhead harness connectors.



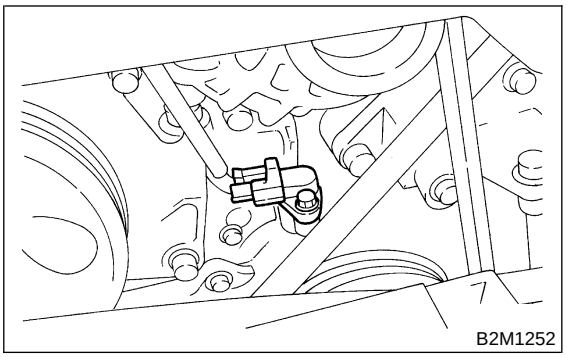
13) Disconnect connectors from engine coolant temperature sensor.



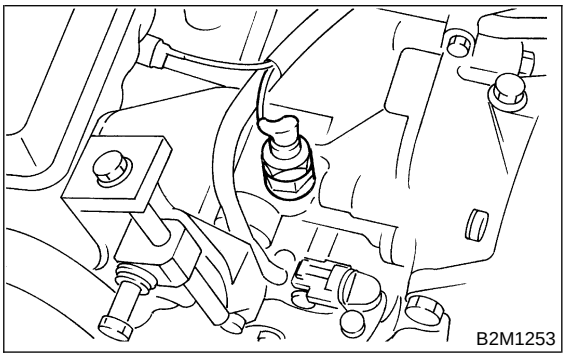
14) Disconnect knock sensor connector.



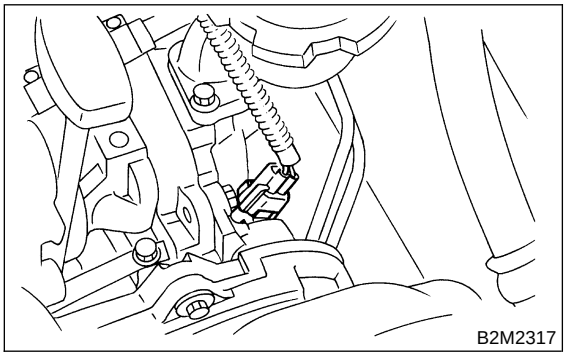
15) Disconnect connector from crankshaft position sensor.



16) Disconnect connector from oil pressure switch.

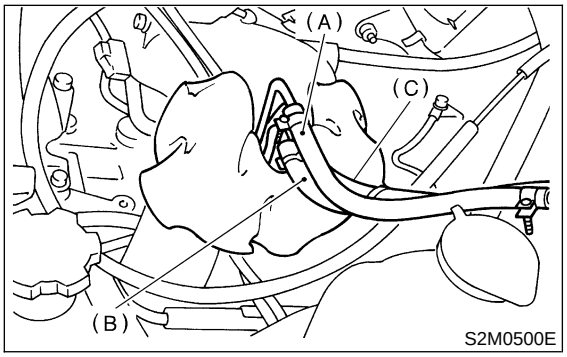


17) Disconnect connector from camshaft position sensor.


B2M2317

18) Disconnect fuel hoses from fuel pipes.

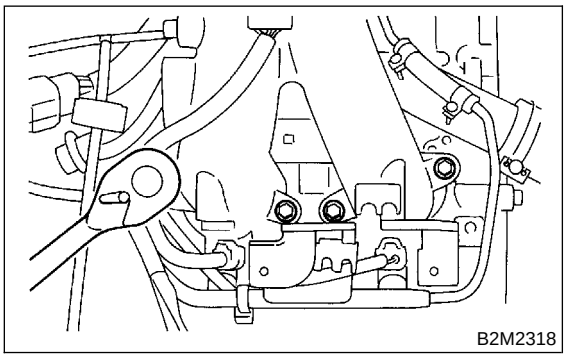
WARNING:
- **Do not spill fuel.**
- **Catch fuel from hoses in a container or cloth.**



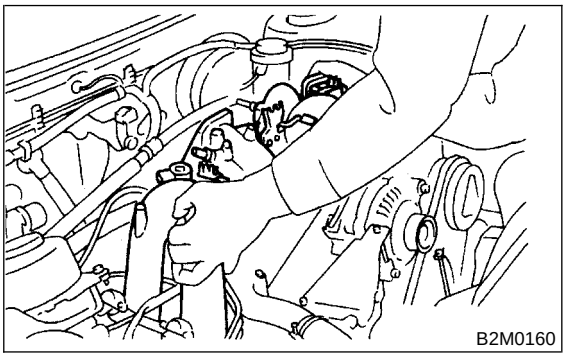
S2M0500E

(A) Fuel delivery hose
(B) Evaporation hose
(C) Return hose

19) Remove bolts which hold intake manifold onto cylinder heads.

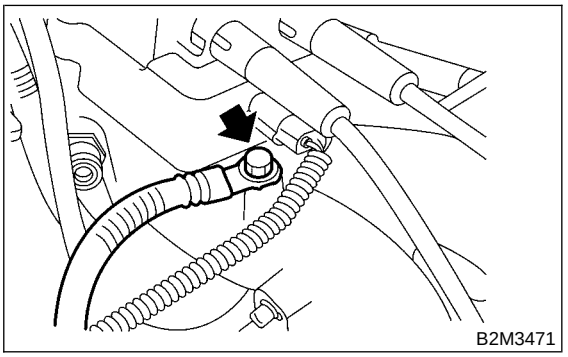

B2M2318

20) Remove intake manifold.

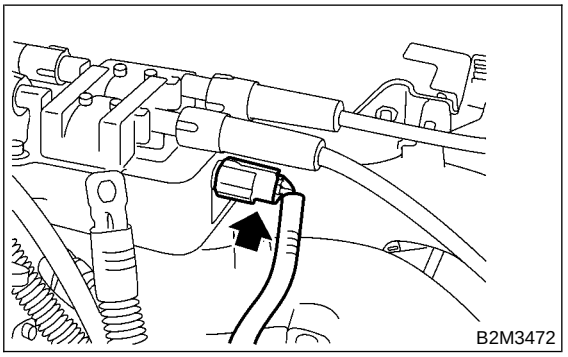

B2M0160

B: DISASSEMBLY

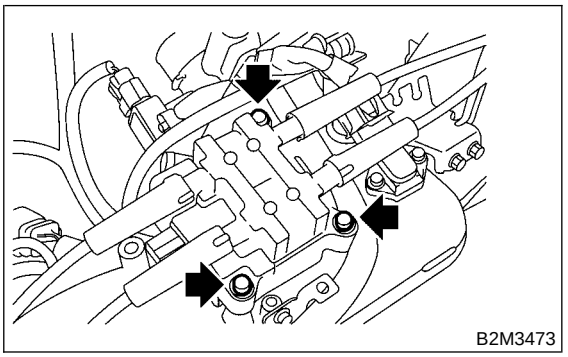
1) Disconnect engine ground terminal from intake manifold.


B2M3471

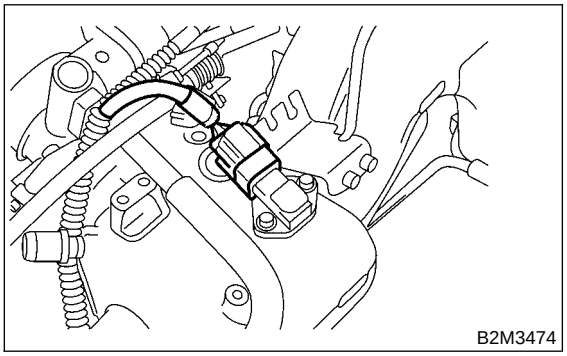
2) Disconnect connector from ignition coil and ignitor assembly.


B2M3472

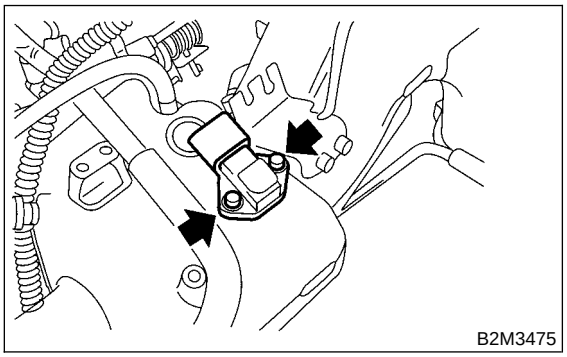
3) Remove ignition coil and ignitor assembly.


B2M3473

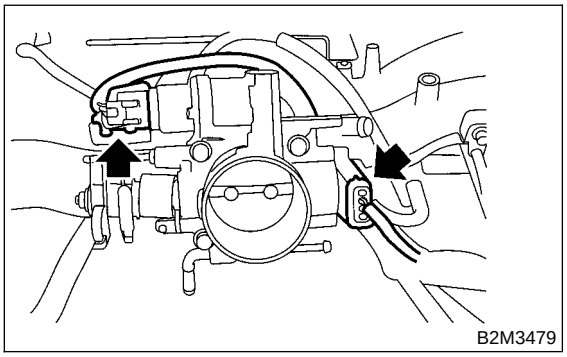
4) Disconnect connector from intake air temperature and pressure sensor.



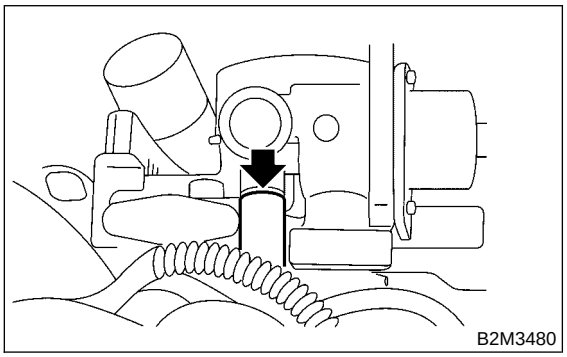
5) Remove intake air temperature and pressure sensor from intake manifold.



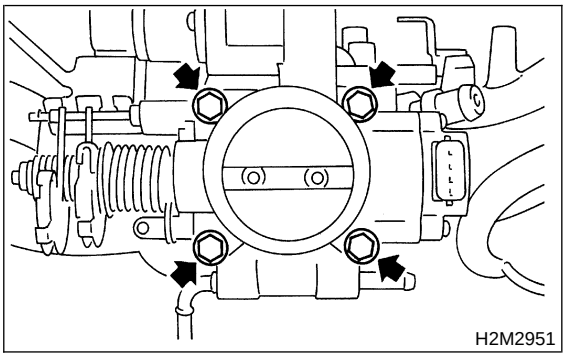
6) Disconnect connectors from throttle position sensor and idle air control solenoid valve.



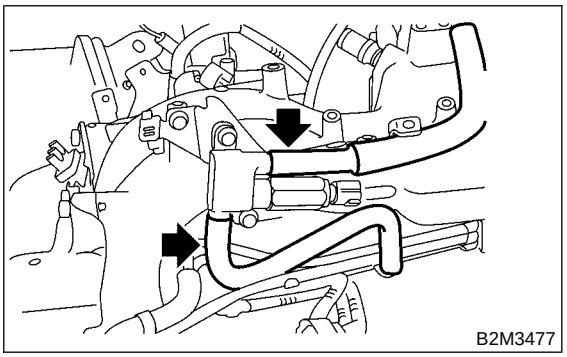
7) Disconnect air by-pass hose from throttle body.



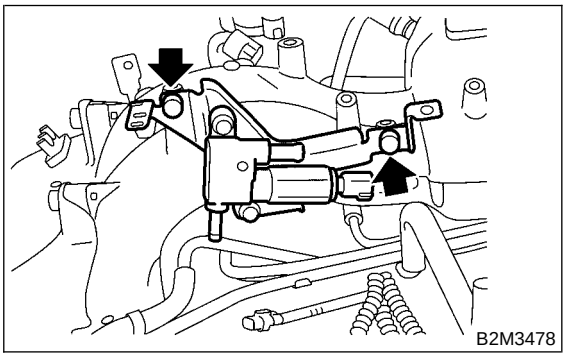
8) Remove throttle body.



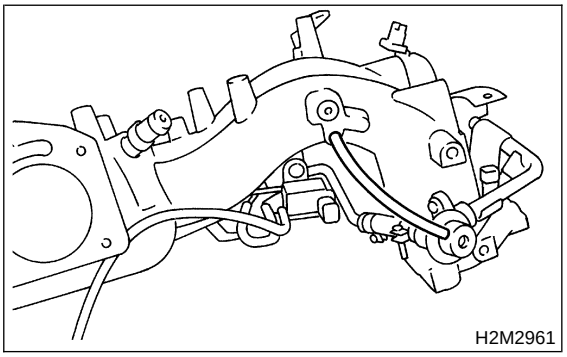
9) Disconnect connector from air assist injector solenoid valve.
10) Disconnect air by-pass hoses from air assist solenoid valve.



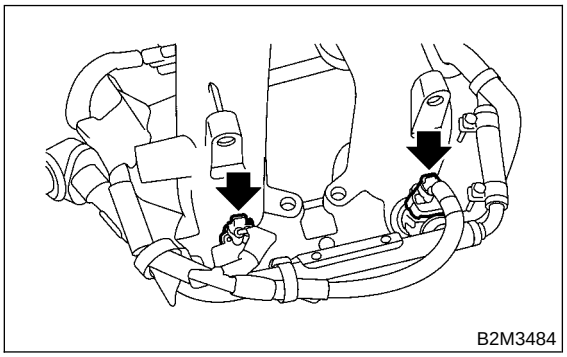
11) Remove air assist injector solenoid valve from intake manifold.



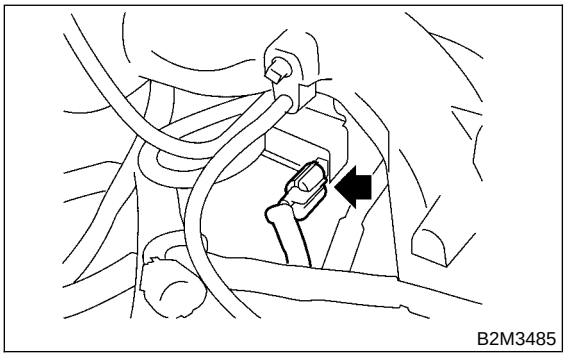
12) Disconnect pressure regulator vacuum hose from intake manifold.



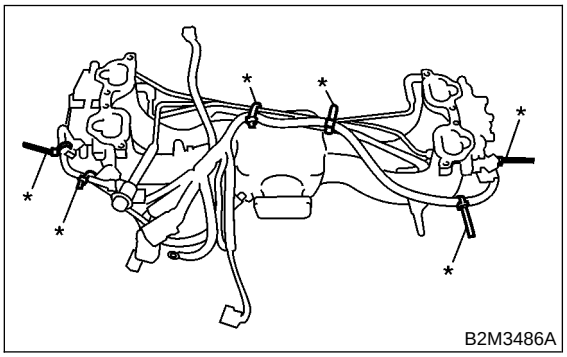
13) Disconnect connectors from fuel injectors.


B2M3484

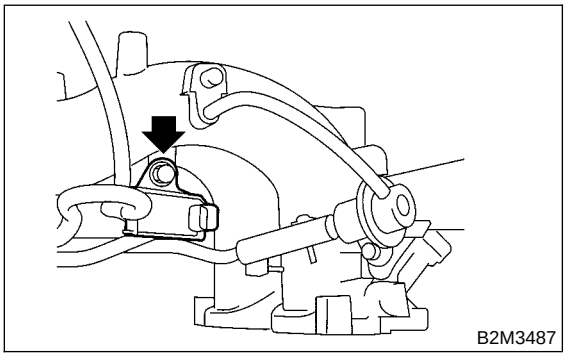
14) Disconnect connector from purge control solenoid valve.


B2M3485

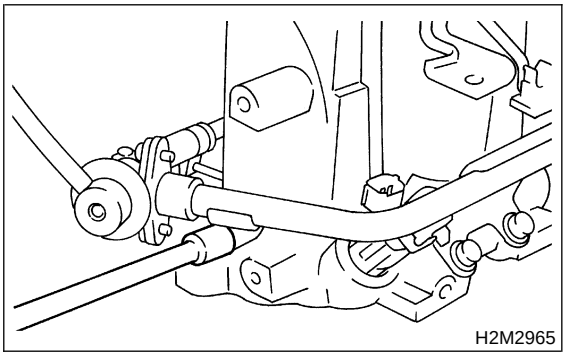
15) Disconnect air by-pass hose from purge control solenoid valve.
16) Remove harness bands (*) which hold engine harness onto intake manifold.


B2M3486A

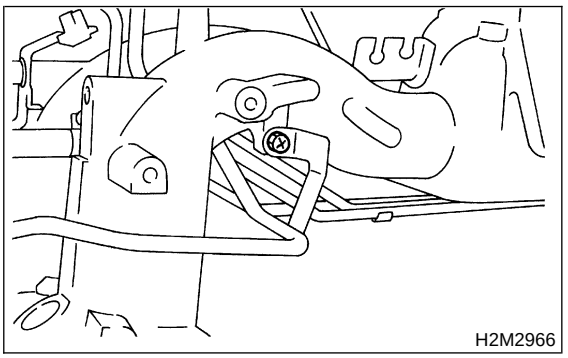
17) Remove engine harness from intake manifold.
18) Remove purge control solenoid valve.


B2M3487

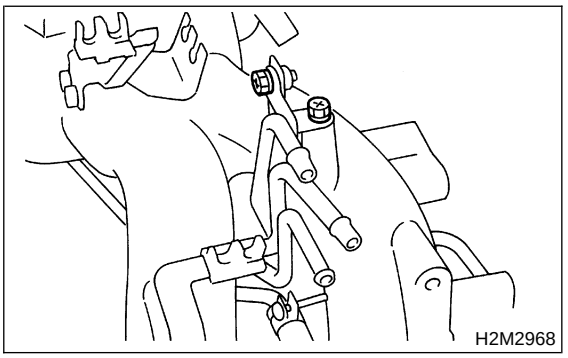
19) Remove bolt which installs injector pipe on intake manifold as shown in figure.


H2M2965

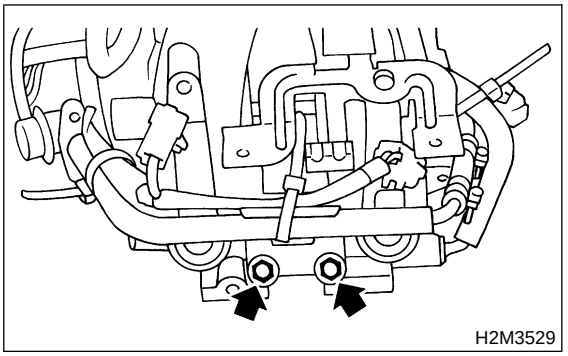
20) Remove bolt which installs injector pipe on intake manifold.


H2M2966

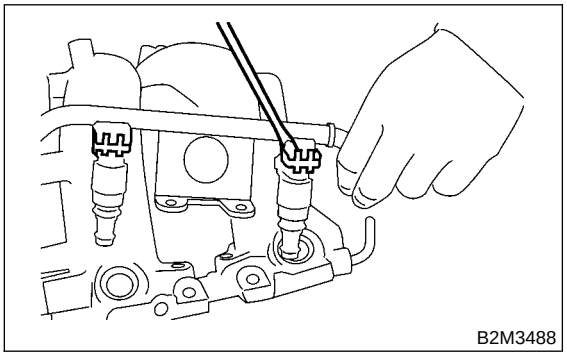
21) Remove the two bolts which hold fuel pipes on the left side of intake manifold.


H2M2968

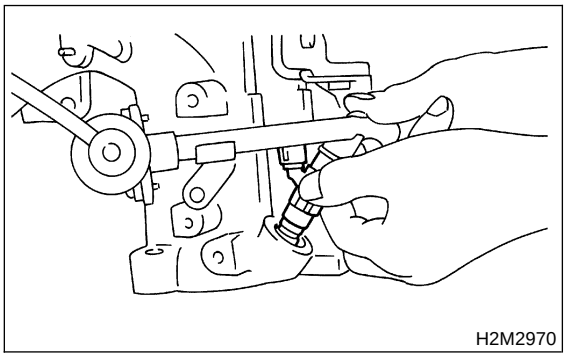
22) Remove bolt which installs injector pipe on intake manifold.


H2M3529

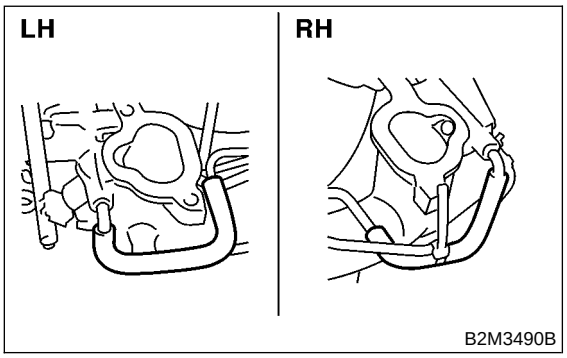
23) Remove fuel injectors.
(1) Remove fuel injector securing clip.



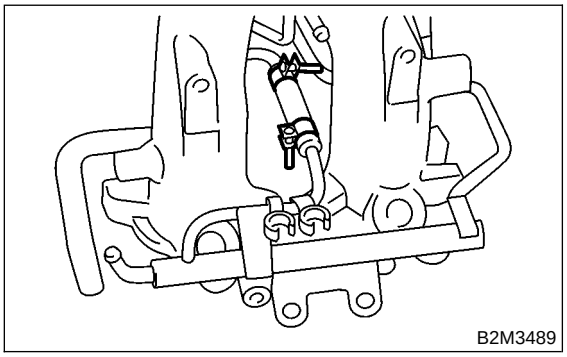
(2) Remove fuel injector while lifting up fuel injector pipe.



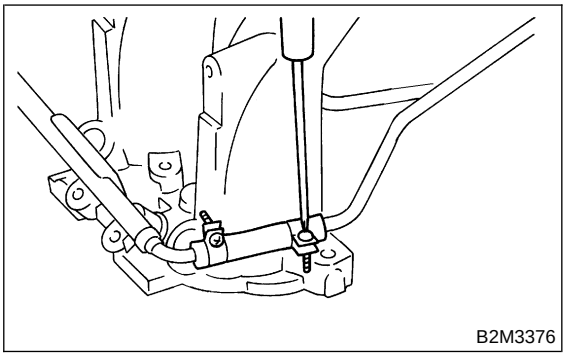
24) Disconnect air by-pass hoses from intake manifold.



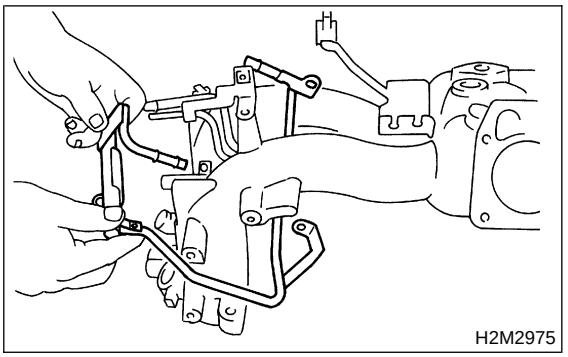
25) Loosen clamp which holds front left side fuel hose to injector pipe and remove the pipe from clamp.



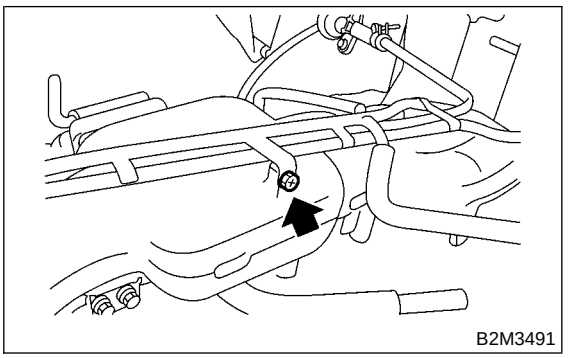
26) Loosen clamp which holds front right side fuel hose to injector pipe and remove the pipe from clamp.



27) Remove fuel injector pipe.



28) Remove bolt which installs fuel pipes on intake manifold.

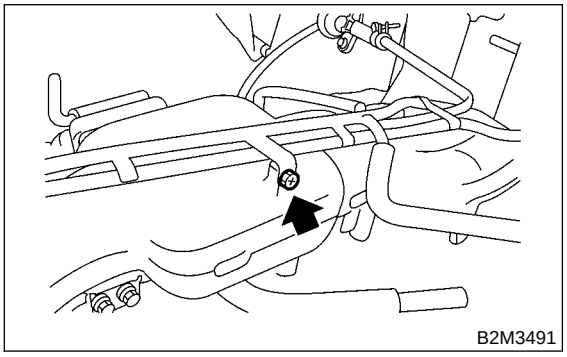


29) Remove fuel pipe assembly and pressure regulator, from intake manifold.

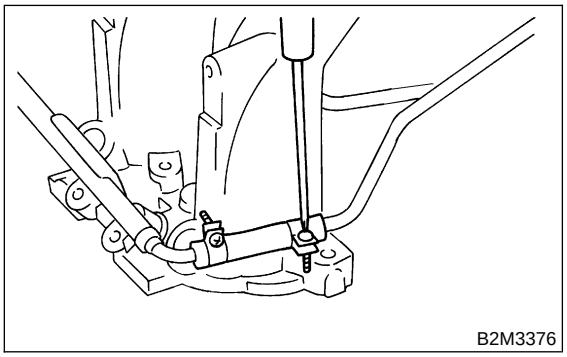
C: ASSEMBLY

1) Install fuel pipe assembly and pressure regulator, etc. to intake manifold.
2) Tighten bolt which installs fuel pipes on intake manifold.

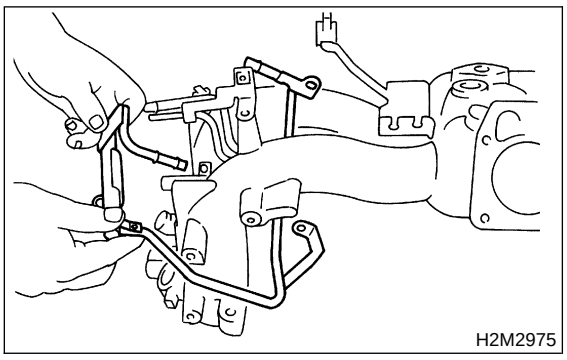
Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)


B2M3491

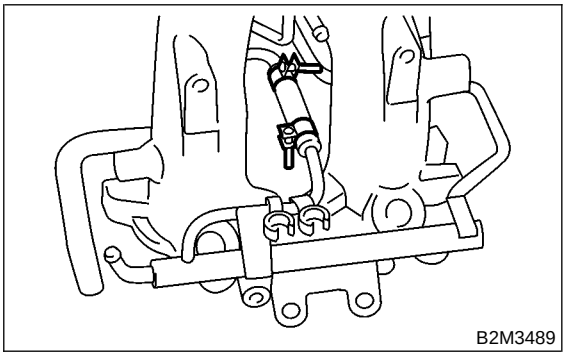
3) Connect right side fuel hose to injector pipe, and tighten clamp screw.


B2M3376

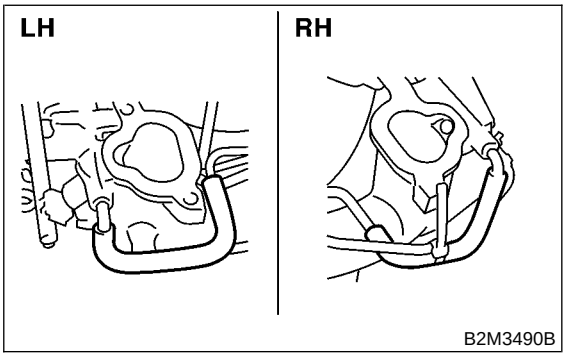
4) Install fuel injector pipe.


H2M2975

5) Connect left side fuel hose to injector pipe, and tighten clamp screw.


B2M3489

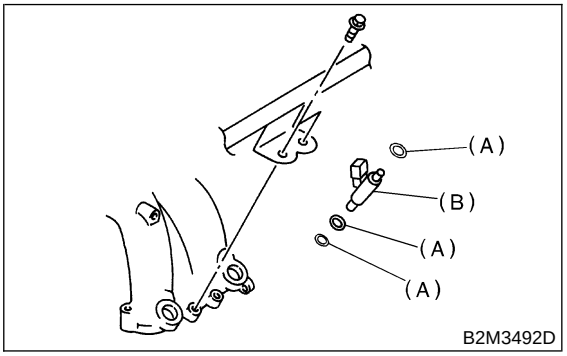
6) Connect air assist hoses.



B2M3490B

7) Install fuel injectors.

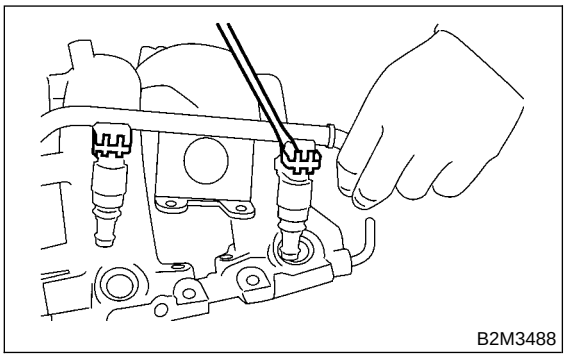
CAUTION:
Always use new o-rings.



B2M3492D

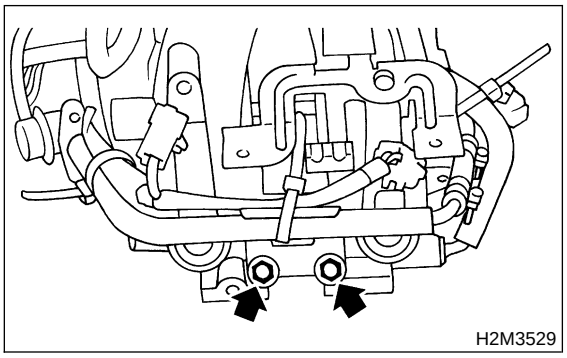
(A) O-ring
(B) Fuel injector

NOTE:
Do not forget to install the fuel injector securing clip.



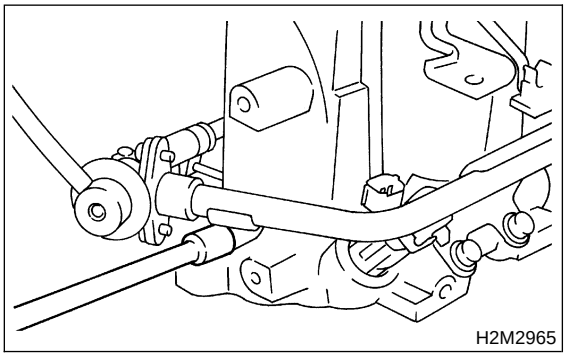
8) Tighten the two bolts which install fuel injector pipe on intake manifold.

Tightening torque:
3.4±0.5 N·m (0.35±0.05 kg-m, 2.5±0.4 ft-lb)



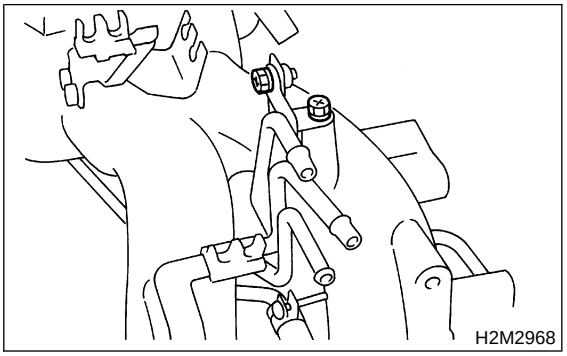
9) Tighten bolt which installs injector pipe on intake manifold.

Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)



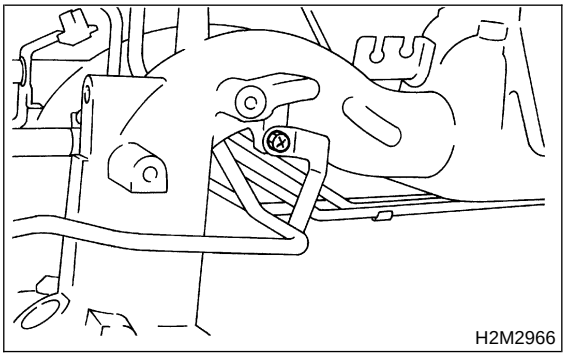
10) Tighten the two bolts which install fuel pipes on the left side of intake manifold.

Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)

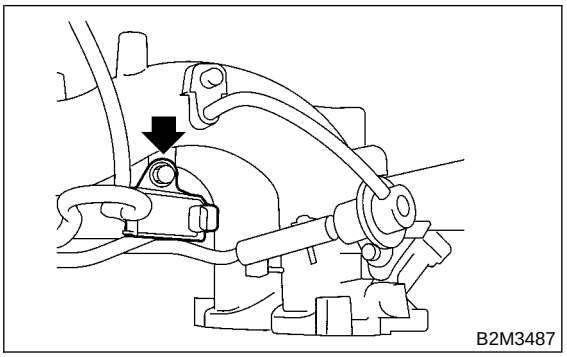


11) Tighten bolt which install injector pipe on intake manifold.

Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)

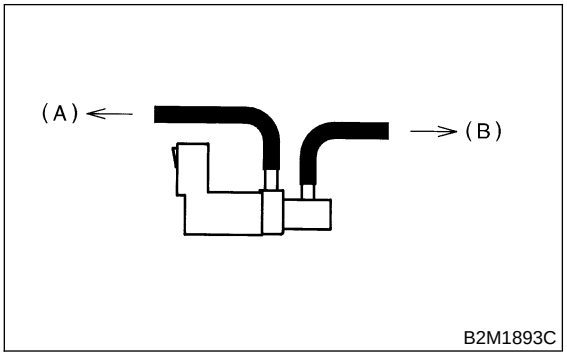


12) Install purge control solenoid valve.



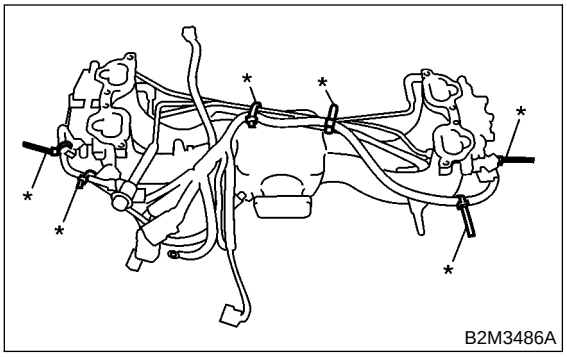
13) Connect hoses to purge control solenoid valve.

CAUTION:
Carefully connect the evaporation hoses.

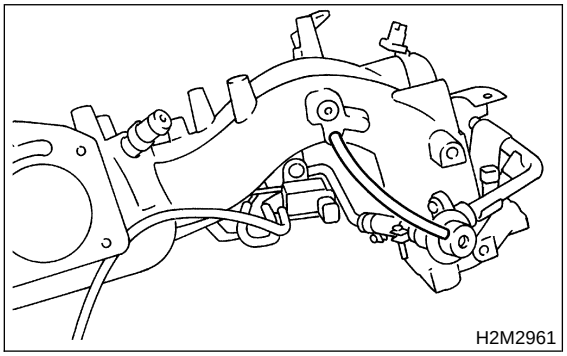


(A) To fuel pipe
(B) To intake manifold

14) Install engine harness onto intake manifold.
15) Connect connectors to fuel injectors and purge control solenoid valve.
16) Hold engine harness by harness band (*).

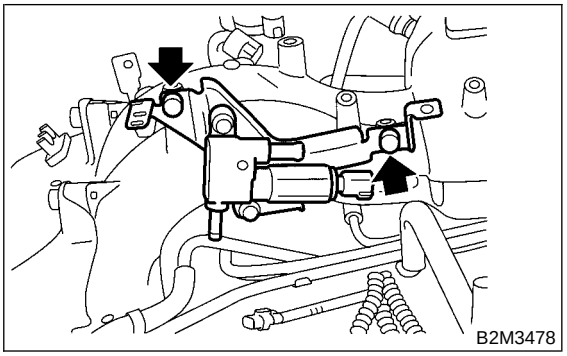


17) Connect pressure regulator vacuum hose to intake manifold.

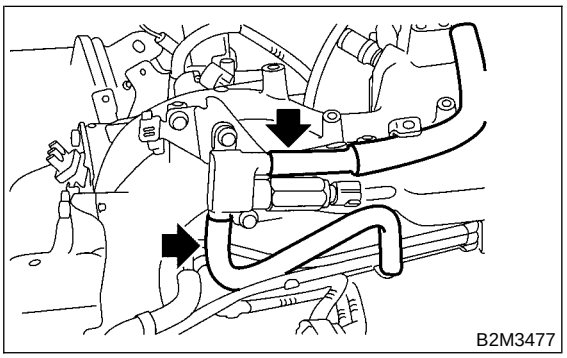


18) Install air assist injector solenoid valve to bracket.

Tightening torque:
16±1.5 N·m (1.6±0.15 kg-m, 11.6±1.1 ft-lb)



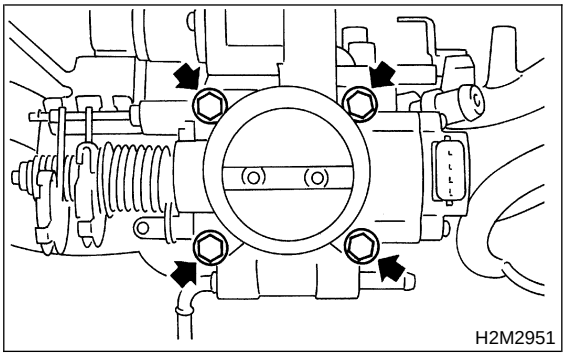
19) Connect air by-pass hoses to air assist solenoid valve.



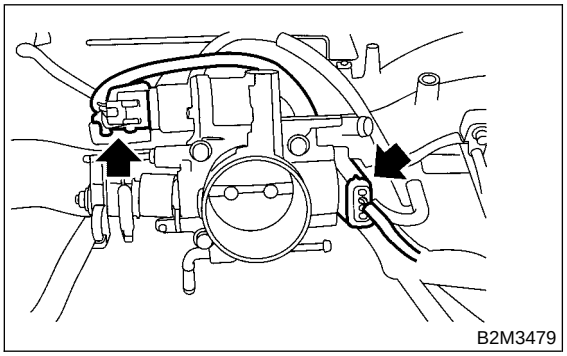
20) Connect connector to air assist solenoid valve.
21) Install throttle body to intake manifold.

CAUTION:
Replace gasket with a new one.

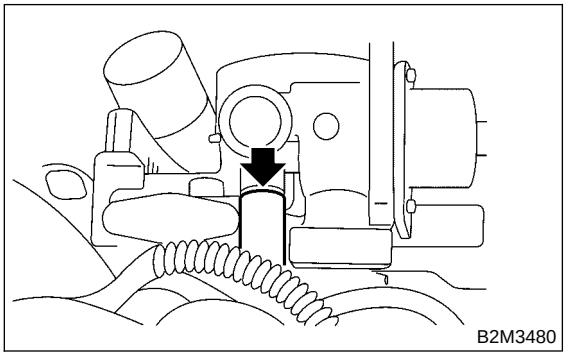
Tightening torque:
22±2 N·m (2.2±0.2 kg-m, 15.9±1.4 ft-lb)



22) Connect connector to throttle position sensor and idle air control solenoid valve.

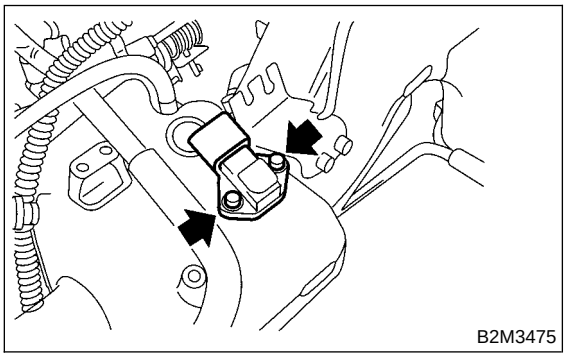

B2M3479

23) Connect air by-pass hose to throttle body.

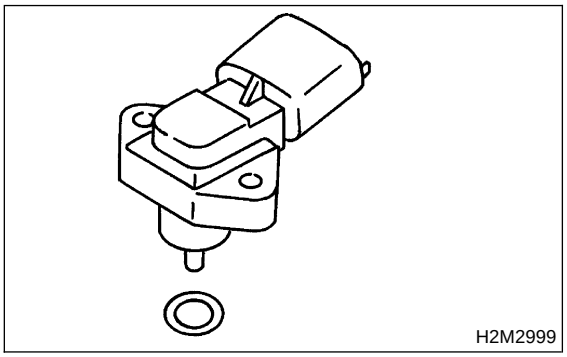

B2M3480

24) Install intake air temperature and pressure sensor.

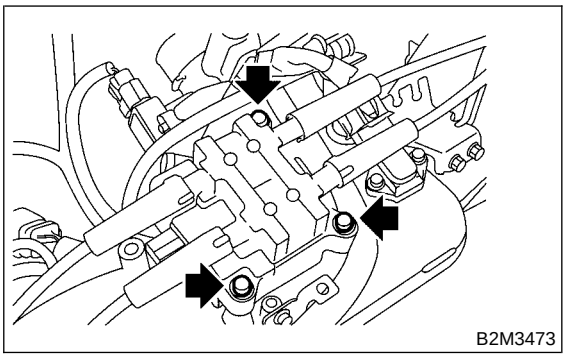
Tightening torque:
2.0±0.4 N·m (0.2±0.04 kg-m, 1.4±0.3 ft-lb)


B2M3475

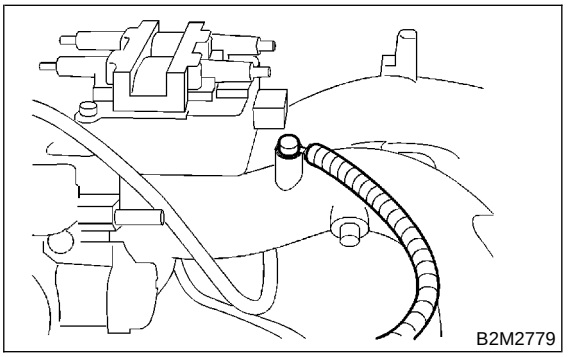
CAUTION:
Replace O-ring with new one.


H2M2999

25) Connect connector to intake air temperature and pressure sensor.
26) Install ignition coil and ignitor assembly.


B2M3473

27) Connect connector to ignition coil and ignitor assembly.
28) Install engine ground terminal to intake manifold.

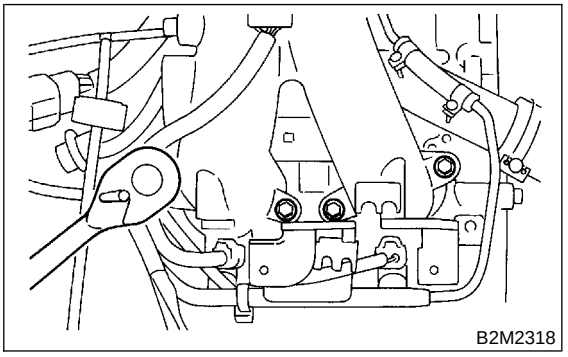

B2M2779

D: INSTALLATION

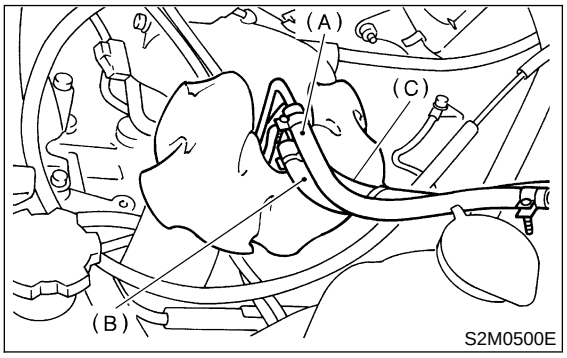
1) Install intake manifold onto cylinder heads.

CAUTION:
Always use new gaskets.

Tightening torque:
25±2 N·m (2.5±0.2 kg-m, 18.1±1.4 ft-lb)

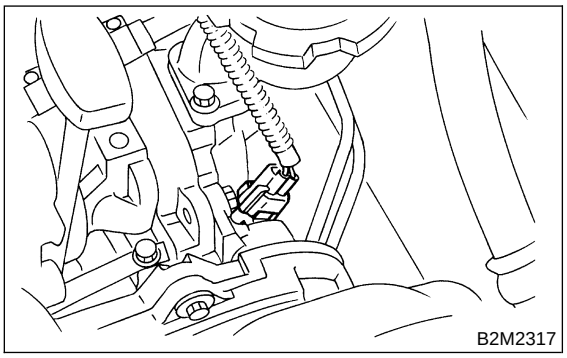

B2M2318

2) Connect fuel hoses.

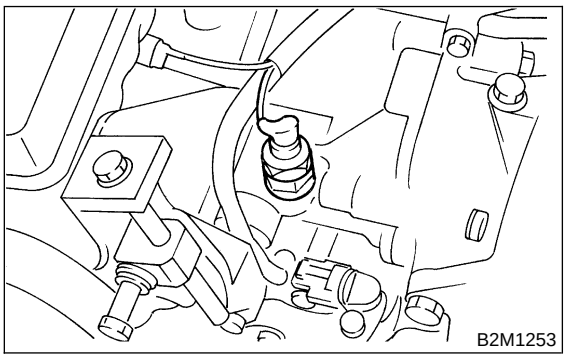


(A) Fuel delivery hose
(B) Evaporation hose
(C) Return hose

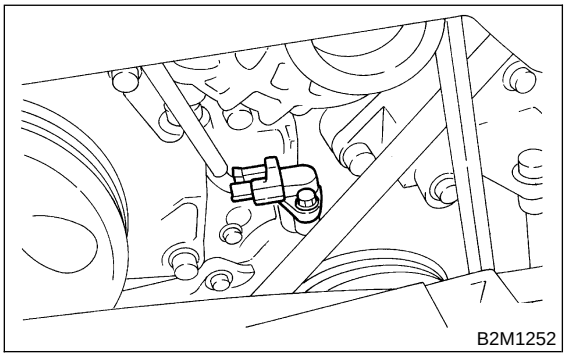
3) Connect connector to camshaft position sensor.



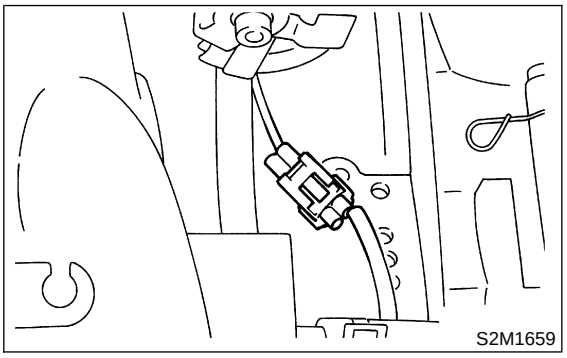
4) Connect connector to oil pressure switch.



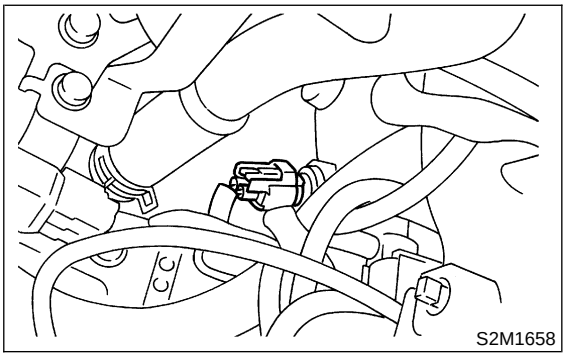
5) Connect connector to crankshaft position sensor.



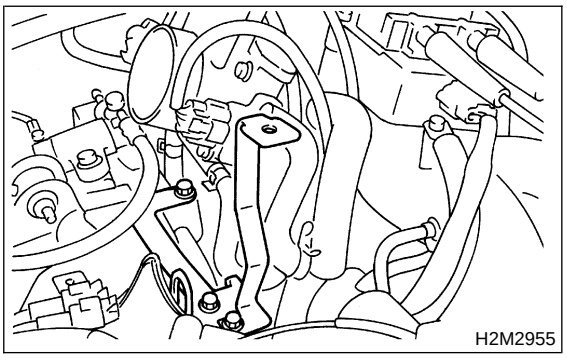
6) Connect knock sensor connector.



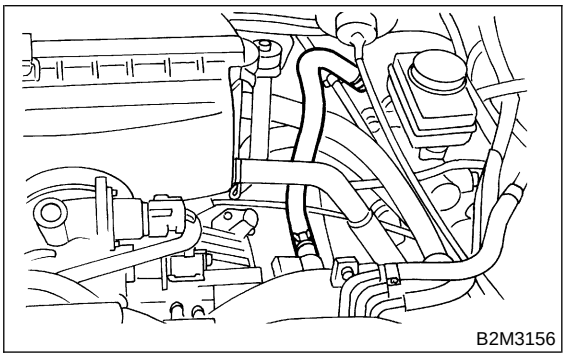
7) Connect connectors to engine coolant temperature sensor.



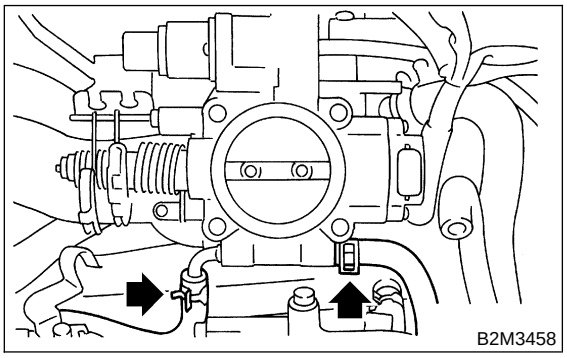
8) Install air cleaner case stay RH and engine harness bracket, and connect engine harness connectors to bulkhead connectors.



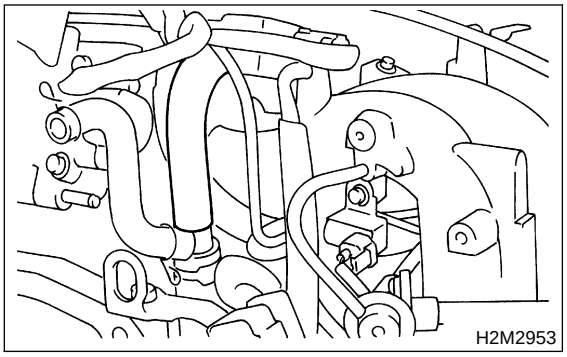
9) Connect brake booster hose.



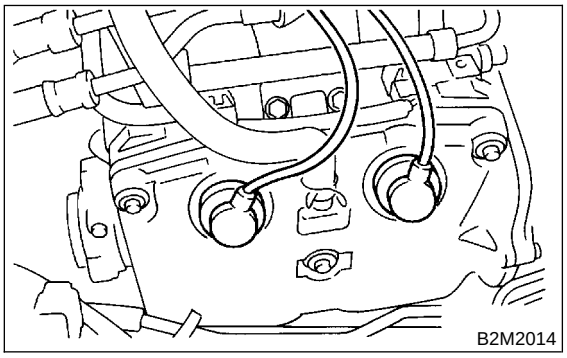
10) Connect engine coolant hose to throttle body.


B2M3458

11) Connect PCV hose to intake manifold.

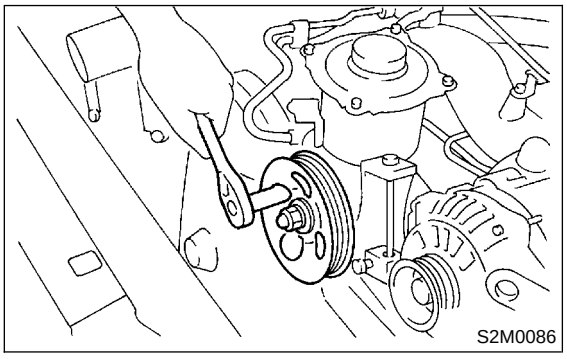

H2M2953

12) Connect spark plug cords to spark plugs.

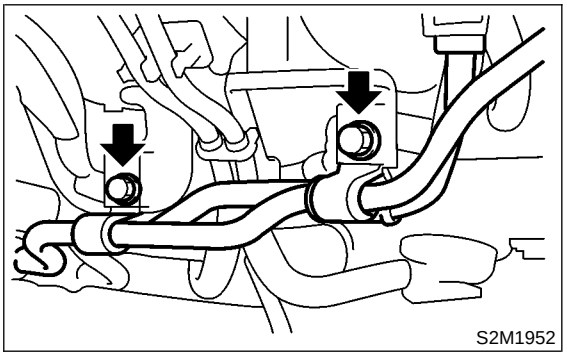

B2M2014

13) Install power steering pump on bracket.
(1) Install power steering pump on bracket, and tighten bolts.

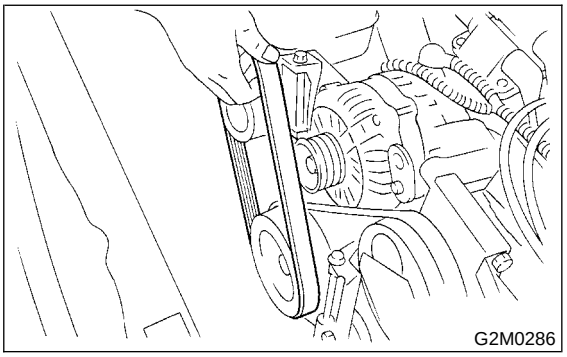
Tightening torque:
20.1±2.5 N·m (2.05±0.25 kg-m, 14.8±1.8 ft-lb)


S2M0086

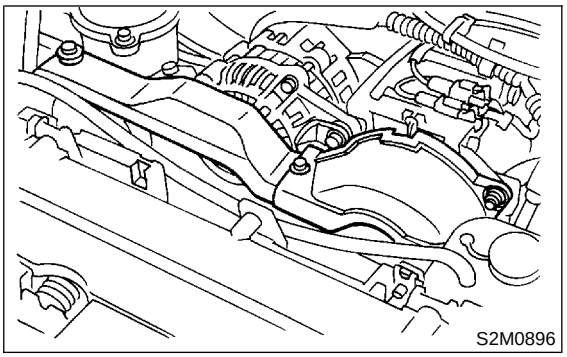
(2) Install power steering pipe brackets on the right side of intake manifold.


S2M1952

(3) Install power steering pump drive V-belt.

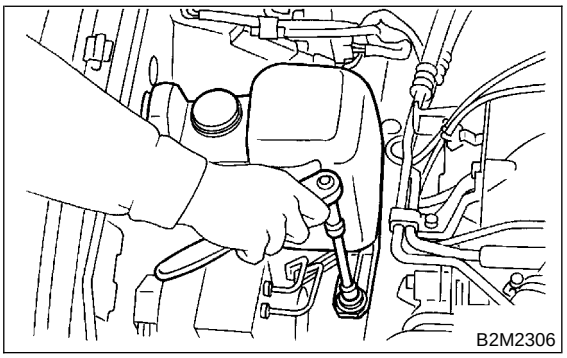

G2M0286

(4) Adjust V-belt. <Ref. to 1-5 [G2A0].>
(5) Install V-belt covers.

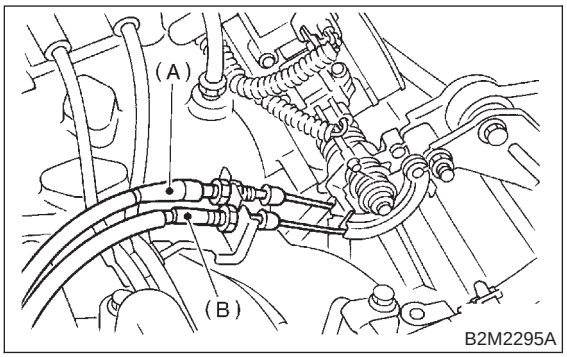

S2M0896

(6) Install resonator chamber.

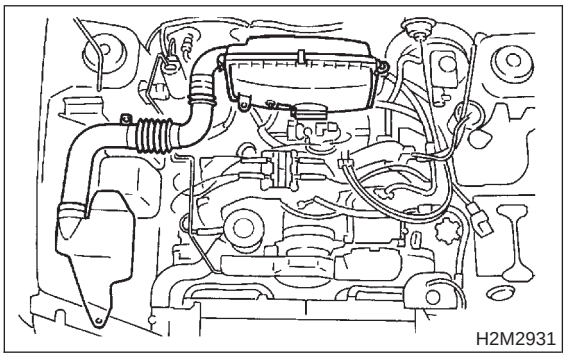
Tightening torque:
33±10 N·m (3.4±1.0 kg-m, 25±7 ft-lb)


B2M2306

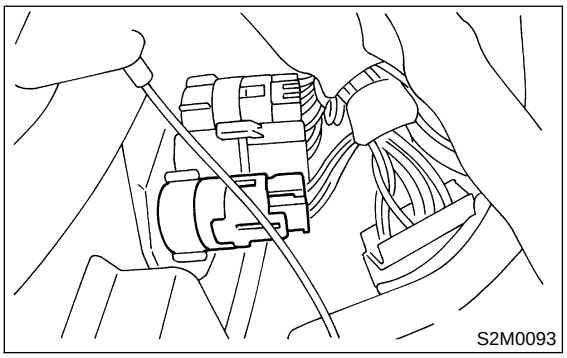
14) Connect accelerator cable (A).
15) Connect cruise control cable (B). (With cruise control models)



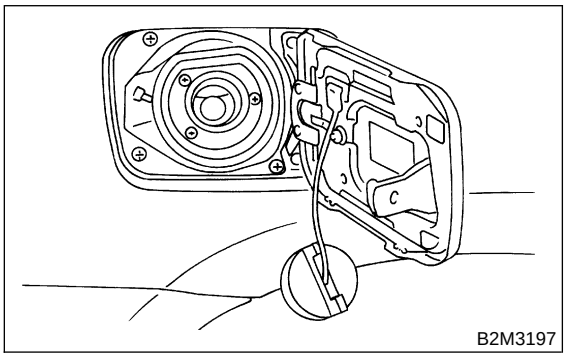
16) Install air intake duct and air cleaner assembly. <Ref. to 2-7 [W1A0].>



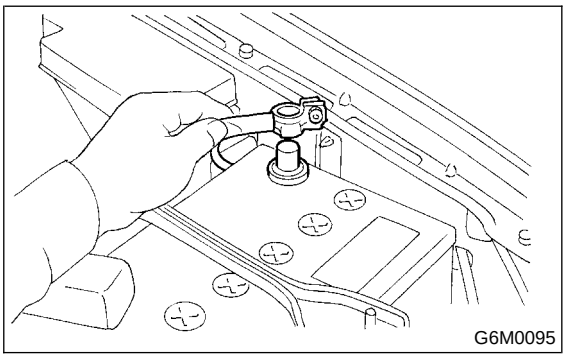
17) Connect connector to fuel pump relay.



18) Install fuel filler cap.



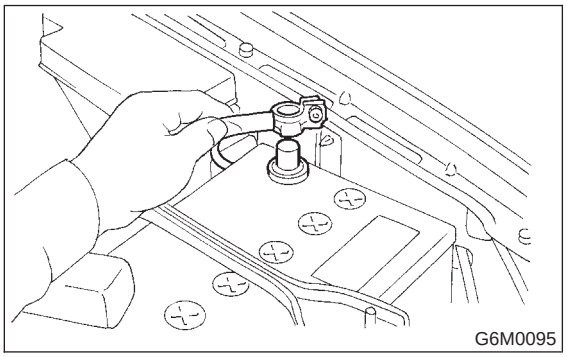
19) Connect battery ground cable.



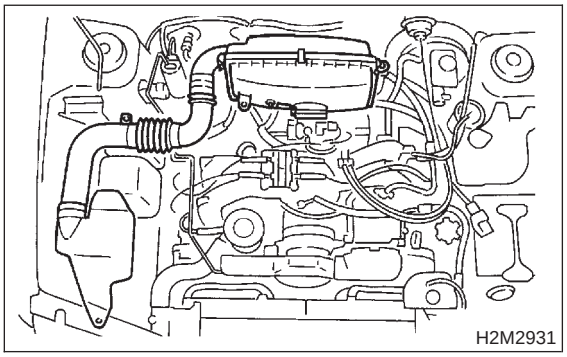
4. Engine Coolant Temperature Sensor

A: REMOVAL AND INSTALLATION

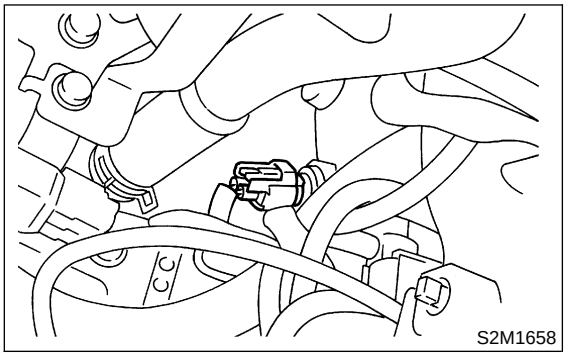
1) Disconnect battery ground cable.


G6M0095

2) Remove air intake duct and air cleaner assembly. <Ref. to 2-7 [W1A0].>

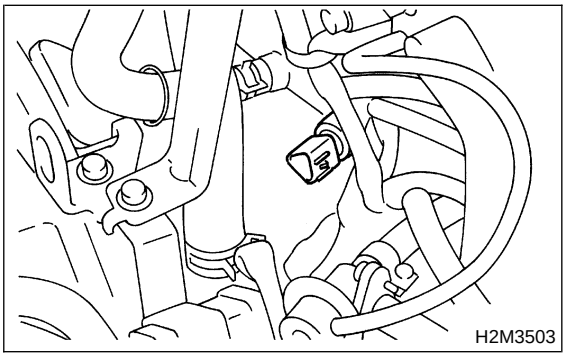

H2M2931

3) Disconnect connector from engine coolant temperature sensor.


S2M1658

4) Remove engine coolant temperature sensor.
5) Install in the reverse order of removal.

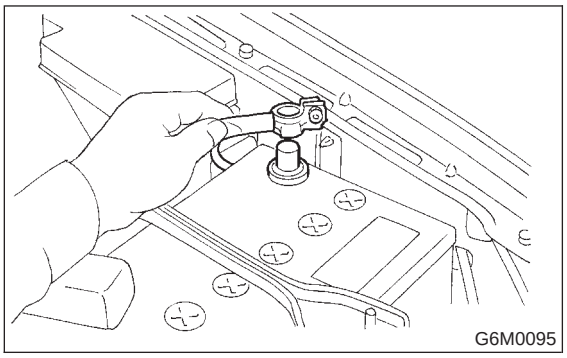
Tightening torque:
25±3 N·m (2.5±0.3 kg-m, 18.1±2.2 ft-lb)


H2M3503

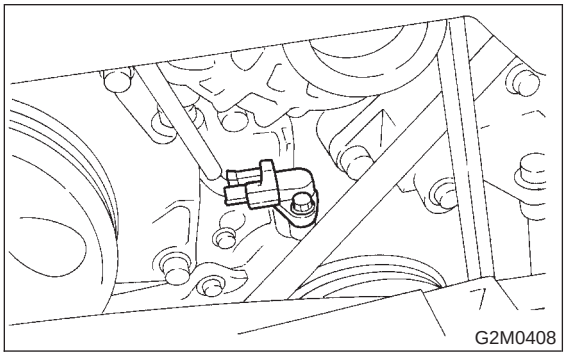
5. Crankshaft Position Sensor

A: REMOVAL AND INSTALLATION

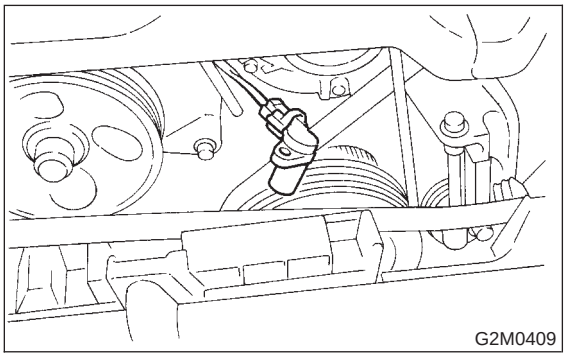
1) Disconnect battery ground cable.


G6M0095

2) Remove bolt which install crankshaft position sensor to cylinder block.

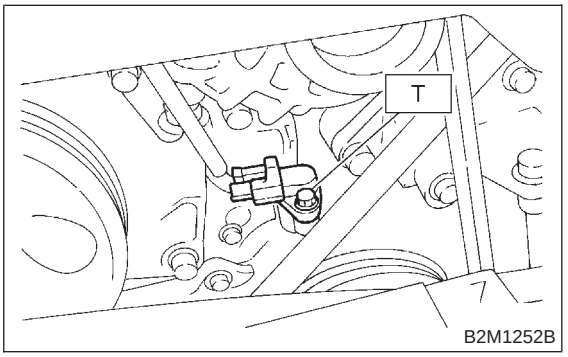

G2M0408

3) Remove crankshaft position sensor, and disconnect connector from it.


G2M0409

4) Install in the reverse order of removal.

Tightening torque:
T: 6.4±0.5 N·m (0.65±0.05 kg-m, 4.7±0.4 ft-lb)

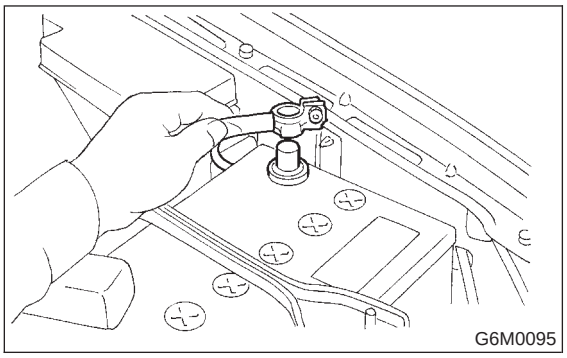


B2M1252B

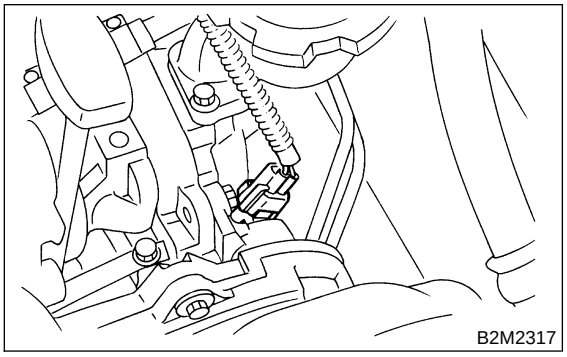
6. Camshaft Position Sensor

A: REMOVAL AND INSTALLATION

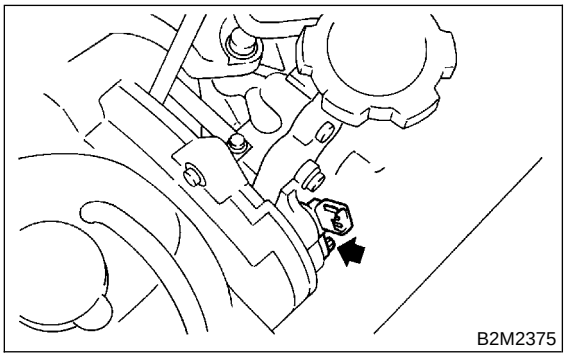
1) Disconnect battery ground cable.



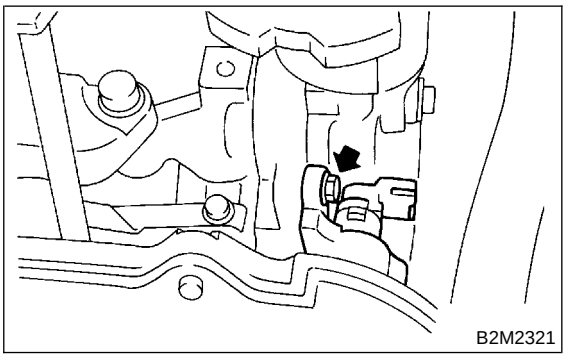
2) Disconnect connector from camshaft position sensor.



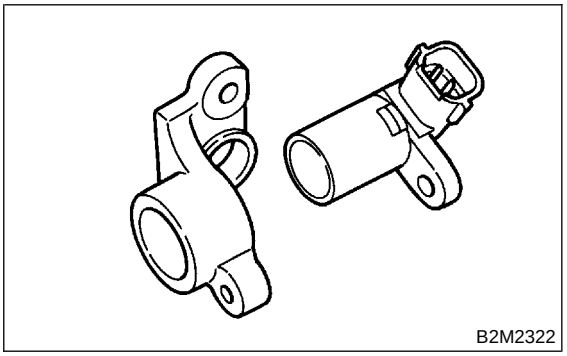
3) Remove bolt which installs camshaft position sensor to camshaft position sensor support.



4) Remove bolt which installs camshaft position sensor support to camshaft cap LH.



5) Remove camshaft position sensor and camshaft position sensor support as a unit.
6) Remove camshaft position sensor itself.



7) Install in the reverse order of removal.

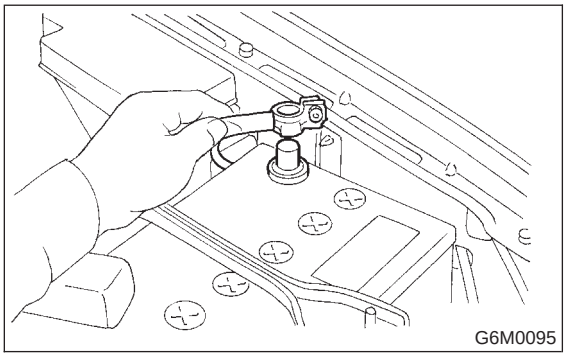
Tightening torque:

- ***Camshaft position sensor support; 6.4±0.5 N·m (0.65±0.05 kg-m, 4.7±0.4 ft-lb)***
- ***Camshaft position sensor; 6.4±0.5 N·m (0.65±0.05 kg-m, 4.7±0.4 ft-lb)***

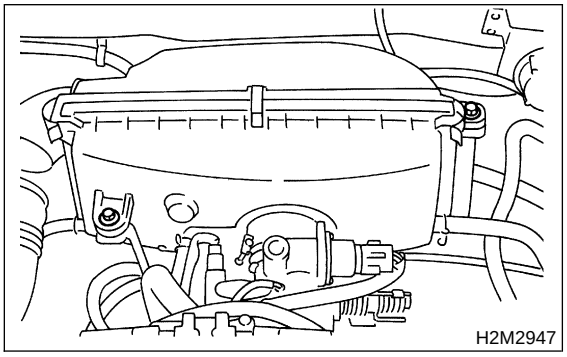
7. Knock Sensor

A: REMOVAL

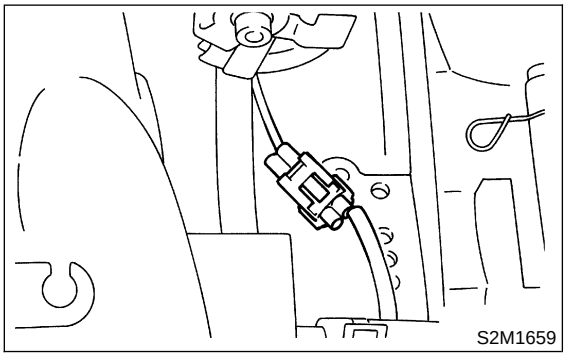
1) Disconnect battery ground cable from battery ground terminal.


G6M0095

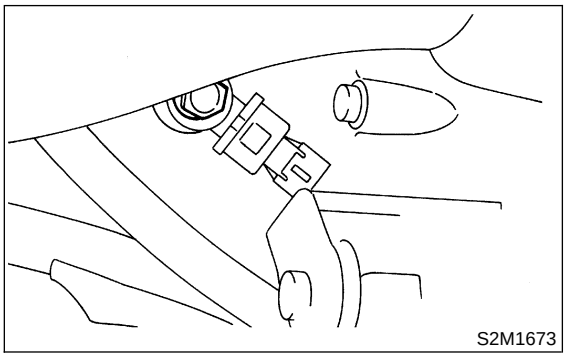
2) Remove air cleaner case.


H2M2947

3) Disconnect knock sensor connector.


S2M1659

4) Remove knock sensor from cylinder block.

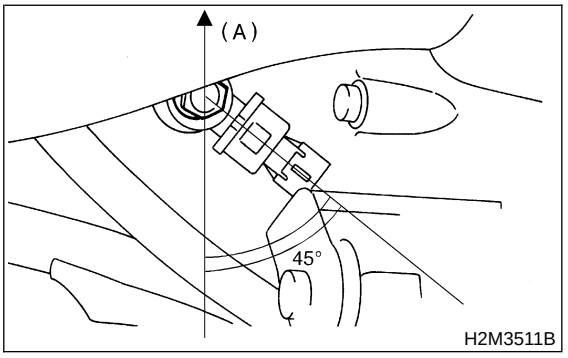

S2M1673

B: INSTALLATION

1) Install knock sensor to cylinder block.

Tightening torque:
23.5±2.9 N·m (2.4±0.3 kg-m, 17.4±2.2 ft-lb)

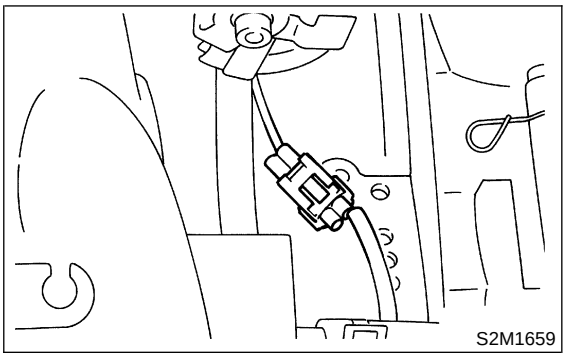
NOTE:
The extraction area of the knock sensor cord must be positioned at a 45° angle relative to the engine rear.



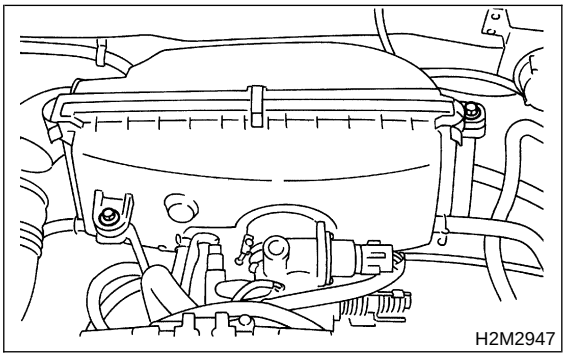
H2M3511B

(A) Engine front

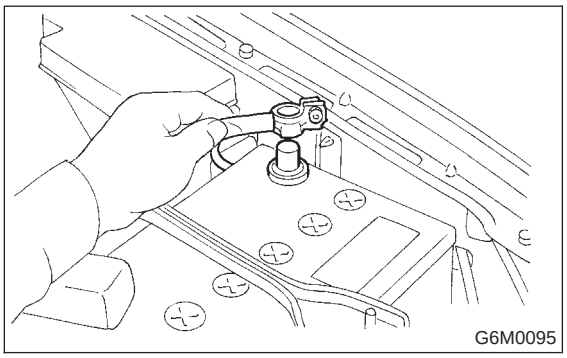
2) Connect knock sensor connector.


S2M1659

3) Install air cleaner case.


H2M2947

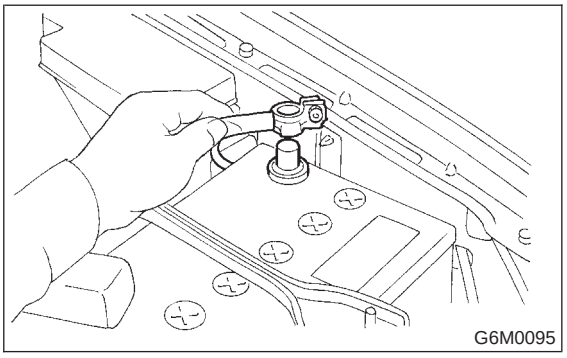
4) Connect battery ground cable.



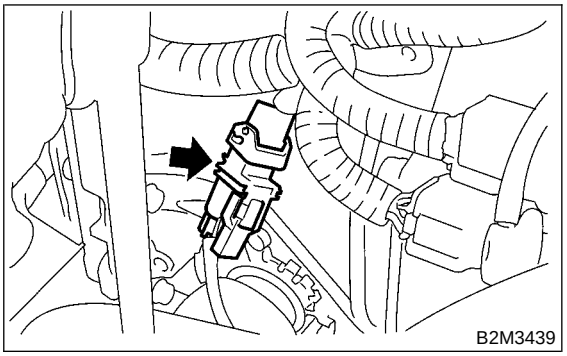
8. Front Oxygen (A/F) Sensor

A: REMOVAL

1) Set the vehicle on the lift.
2) Disconnect battery ground cable.



3) Disconnect connector from front oxygen (A/F) sensor.

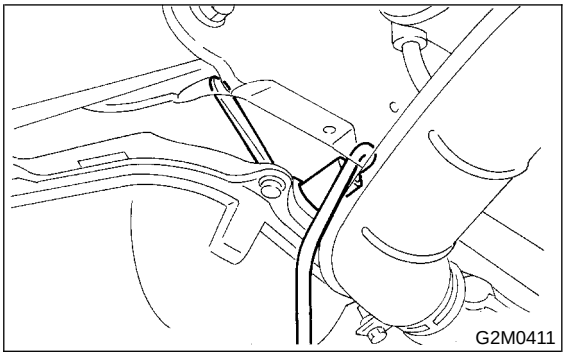


4) Lift-up the vehicle.
5) Apply SUBARU CRC or its equivalent to threaded portion of front oxygen (A/F) sensor, and leave it for one minute or more.

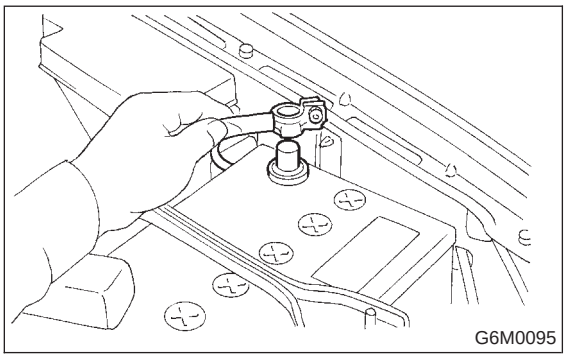
SUBARU CRC (Part No. 004301003)

6) Remove front oxygen (A/F) sensor.

CAUTION:
When removing front oxygen (A/F) sensor, do not force front oxygen (A/F) sensor especially when exhaust pipe is cold, otherwise it will damage exhaust pipe.



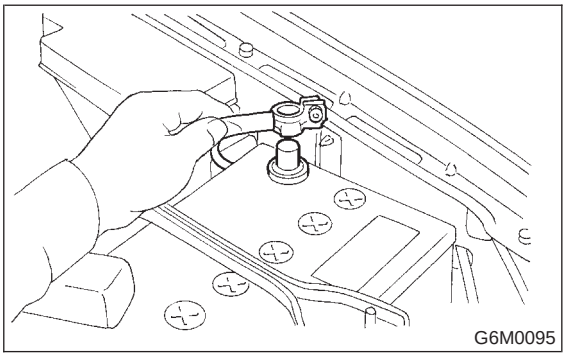
4) Connect battery ground cable.



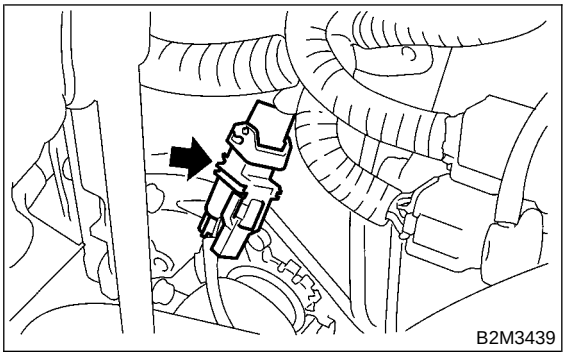
8. Front Oxygen (A/F) Sensor

A: REMOVAL

1) Set the vehicle on the lift.
2) Disconnect battery ground cable.



3) Disconnect connector from front oxygen (A/F) sensor.

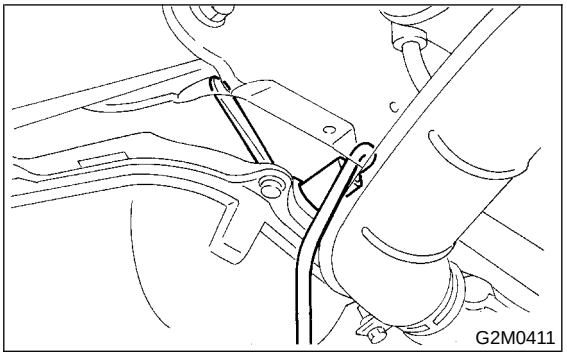


4) Lift-up the vehicle.
5) Apply SUBARU CRC or its equivalent to threaded portion of front oxygen (A/F) sensor, and leave it for one minute or more.

SUBARU CRC (Part No. 004301003)

6) Remove front oxygen (A/F) sensor.

CAUTION:
When removing front oxygen (A/F) sensor, do not force front oxygen (A/F) sensor especially when exhaust pipe is cold, otherwise it will damage exhaust pipe.

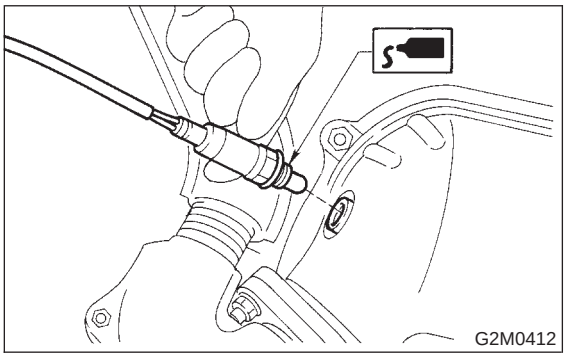


B: INSTALLATION

1) Before installing front oxygen (A/F) sensor, apply anti-seize compound only to threaded portion of front oxygen (A/F) sensor to make the next removal easier.

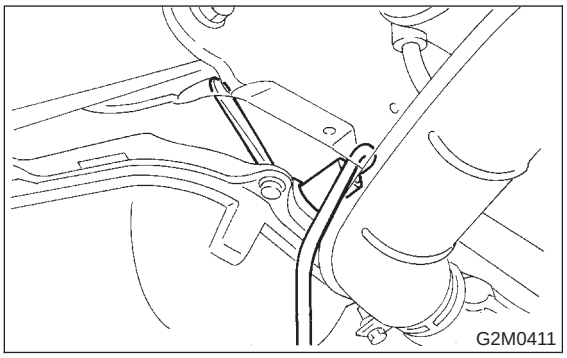
Anti-seize compound:
SS-30 by JET LUBE

CAUTION:
Never apply anti-seize compound to protector of front oxygen (A/F) sensor.

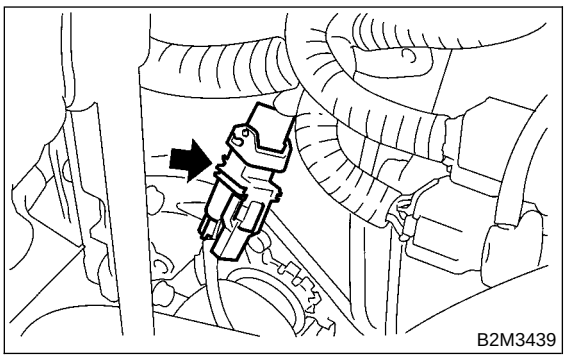

G2M0412

2) Install front oxygen (A/F) sensor.

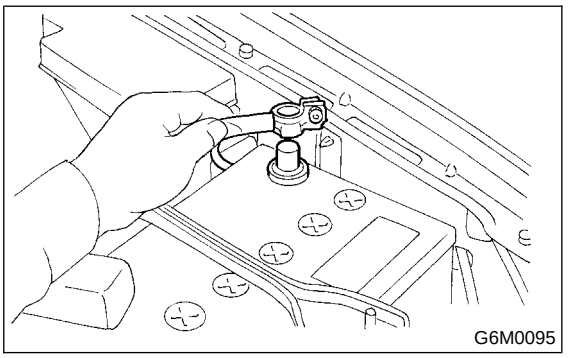
Tightening torque:
21±3 N·m (2.1±0.3 kg-m, 15.2±2.2 ft-lb)


G2M0411

3) Lower the vehicle.
4) Connect connector of front oxygen (A/F) sensor.


B2M3439

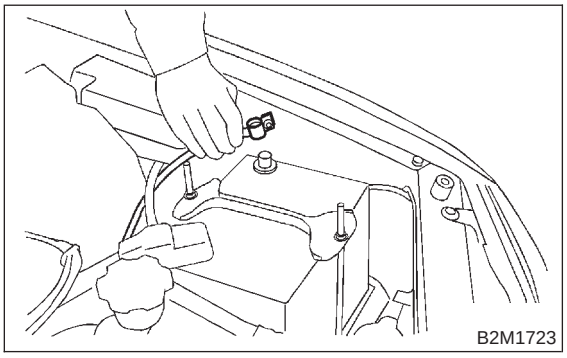
5) Connect battery ground cable.


G6M0095

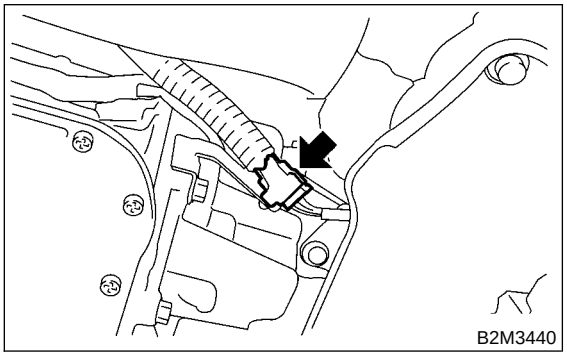
9. Rear Oxygen Sensor

A: REMOVAL

1) Set the vehicle on the lift.
2) Disconnect battery ground cable.



3) Disconnect connector from rear oxygen sensor.

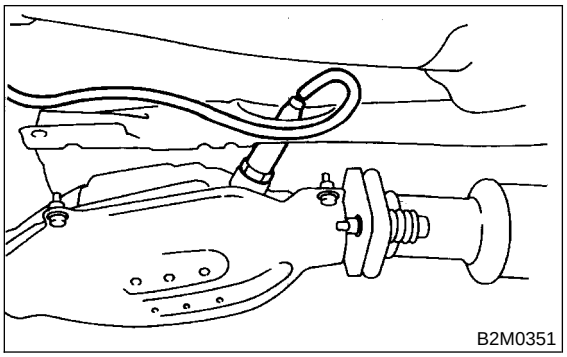


4) Lift-up the vehicle.
5) Apply SUBARU CRC or its equivalent to threaded portion of rear oxygen sensor, and leave it for one minute or more.

SUBARU CRC (Part No. 004301003)

6) Remove rear oxygen sensor.

CAUTION:
When removing, do not force rear oxygen sensor in an unnatural way especially when exhaust pipe is cold, otherwise it will damage exhaust pipe.

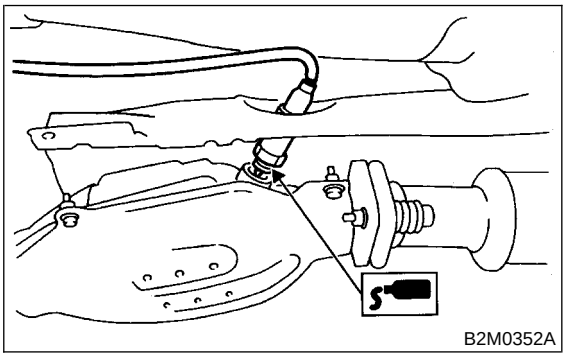


B: INSTALLATION

1) Before installing rear oxygen sensor, apply anti-seize compound only to threaded portion of rear oxygen sensor to make the next removal easier.

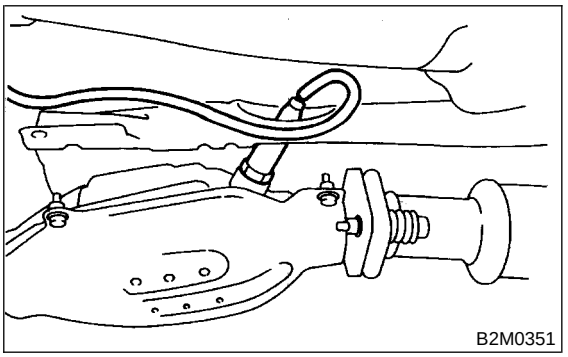
CAUTION:
Never apply anti-seize compound to protector of rear oxygen sensor.

Anti-seize compound:
SS-30 by JET LUBE

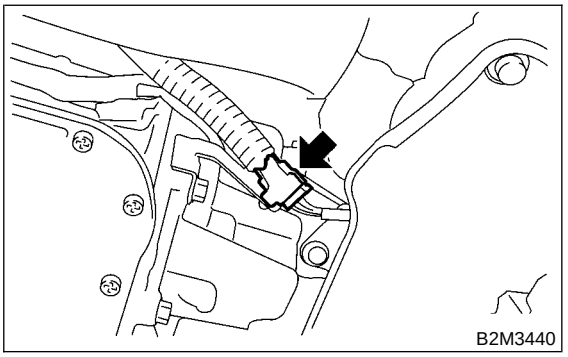


2) Install rear oxygen sensor.

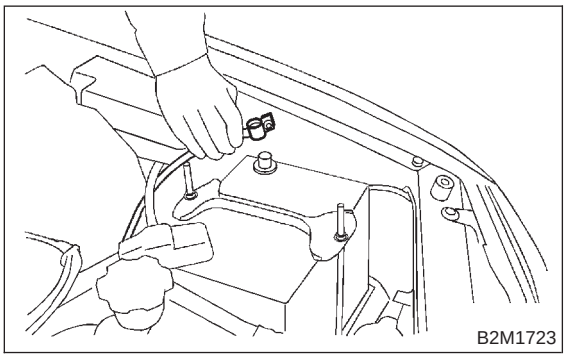
Tightening torque:
21±3 N·m (2.1±0.3 kg-m, 15.2±2.2 ft-lb)



3) Connect connector to rear oxygen sensor.



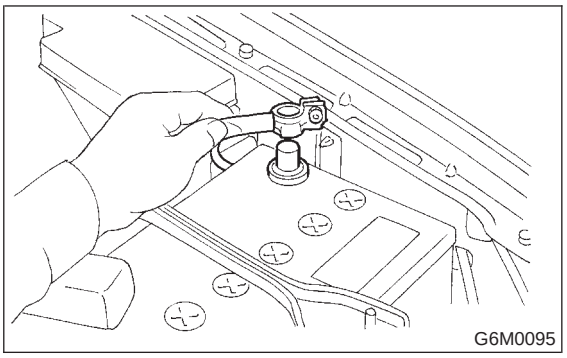
4) Lower the vehicle.
5) Connect battery ground cable.



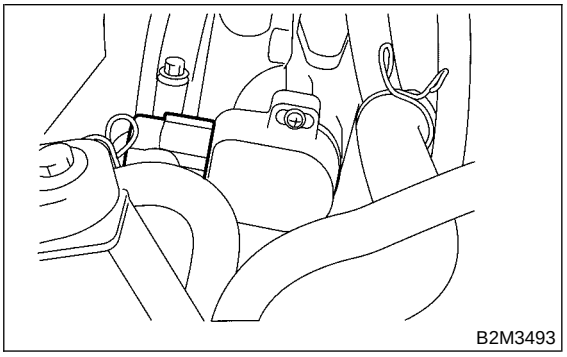
10. Throttle Position Sensor

A: REMOVAL AND INSTALLATION

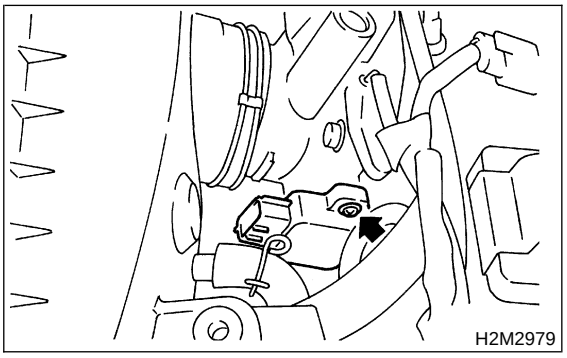
1) Disconnect battery ground cable.



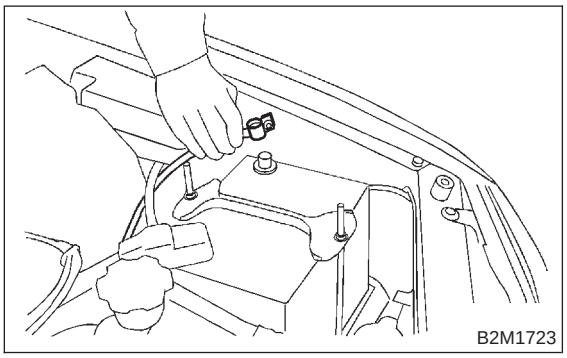
2) Disconnect connector from throttle position sensor.



3) Remove throttle position sensor holding screws, and remove it.



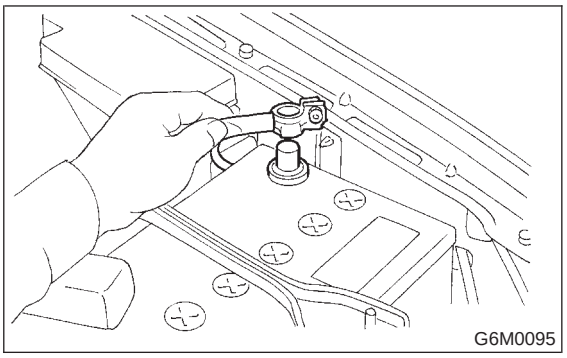
4) Lower the vehicle.
5) Connect battery ground cable.



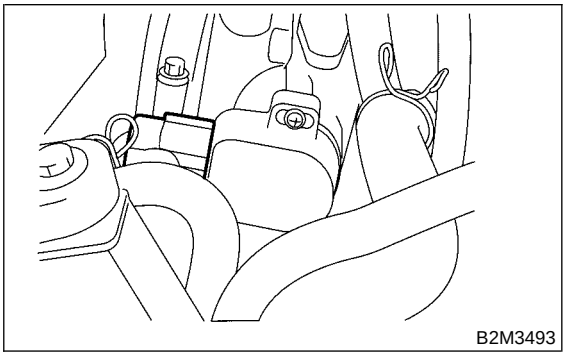
10. Throttle Position Sensor

A: REMOVAL AND INSTALLATION

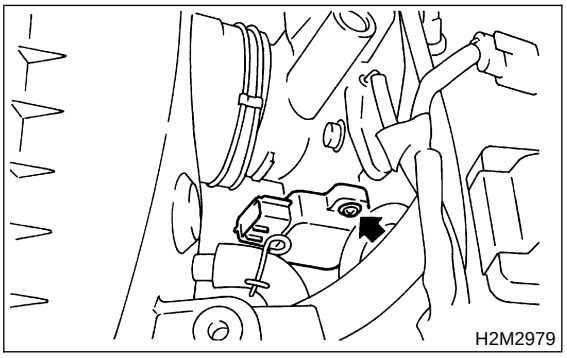
1) Disconnect battery ground cable.



2) Disconnect connector from throttle position sensor.



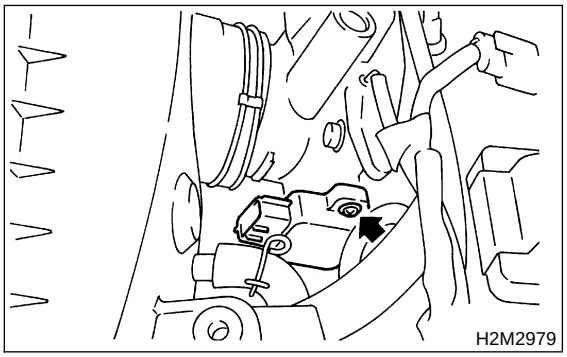
3) Remove throttle position sensor holding screws, and remove it.



4) Install in the reverse order of removal.

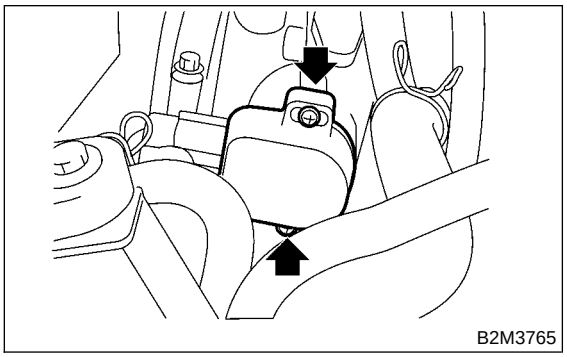
Tightening torque:
2.2±0.2 N·m (0.22±0.02 kg-m, 1.6±0.1 ft-lb)

CAUTION:
When installing throttle position sensor, adjust to the specified data.



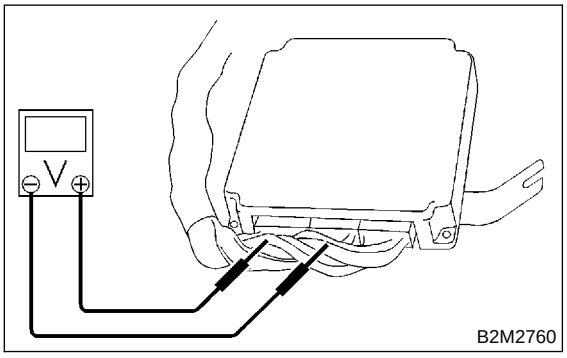
B: ADJUSTMENT

1) Turn ignition switch to OFF.
2) Loosen throttle position sensor holding screws.



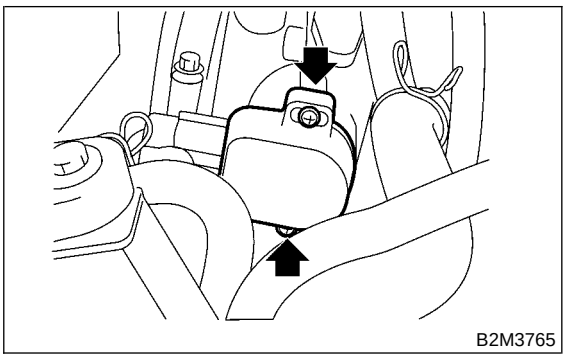
3) When using voltage meter;
(1) Take out ECM.
(2) Turn ignition switch to ON.
(3) Adjust throttle position sensor to the proper position to allow the voltage signal to ECM to be in specification.

Connector & terminal / Specified voltage
(B136) No. 15 — (B136) No. 17 / 0.45 — 0.55 V
[Fully closed.]

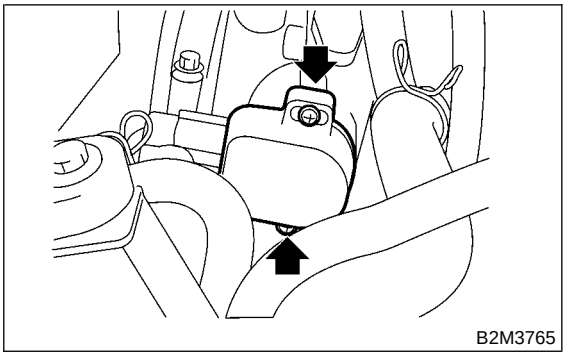


(4) Tighten throttle position sensor holding screws.

Tightening torque:
2.2±0.2 N·m (0.22±0.02 kg-m, 1.6±0.1 ft-lb)

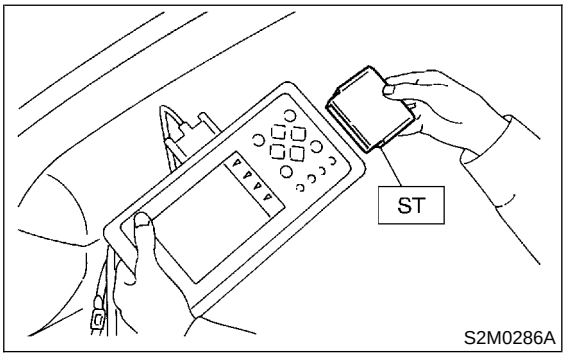


4) When using Subaru Select Monitor;
(1) Turn ignition switch to OFF.
(2) Loosen throttle position sensor holding screws.



NOTE:
For detailed operation procedures, refer to the Subaru Select Monitor Operation Manual.

(3) Insert the cartridge to Subaru Select Monitor.
<Ref. to 1-6 [G1100].>



(4) Connect Subaru Select Monitor to the data link connector.
5) Turn ignition switch to ON, and Subaru Select Monitor switch to ON.
6) Select {2. Each System Check} in Main Menu.

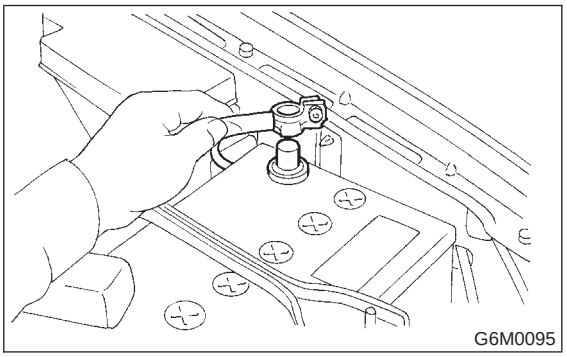
7) Select {Engine Control System} in Selection Menu.
8) Select {1. Current Data Display & Save} in Engine Control System Diagnosis.
9) Select {1.12 Data Display} in Data Display Menu.
10) Adjust throttle position sensor to the proper position to match with the following specifications.

Condition: Throttle fully closed
Throttle opening angle 0.00%
Throttle sensor voltage 0.50 V

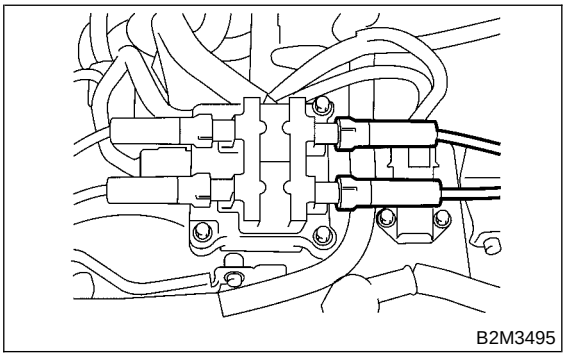
11. Intake Air Temperature and Pressure Sensor

A: REMOVAL AND INSTALLATION

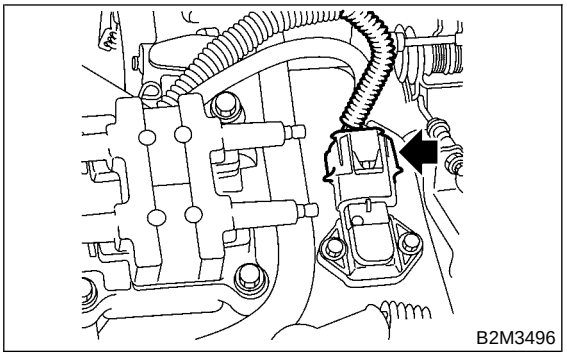
1) Disconnect battery ground cable.


G6M0095

2) Disconnect spark plug cord from ignition coil and ignitor assembly.


B2M3495

3) Disconnect connector from intake air temperature and pressure sensor.


B2M3496

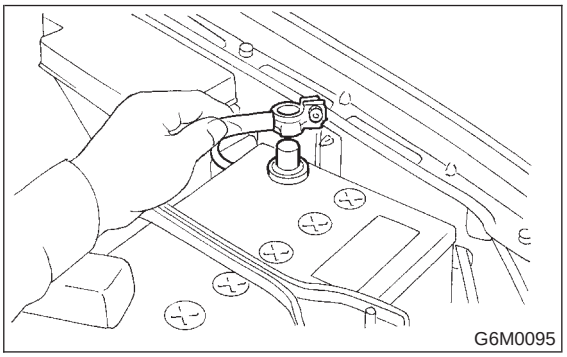
7) Select {Engine Control System} in Selection Menu.
8) Select {1. Current Data Display & Save} in Engine Control System Diagnosis.
9) Select {1.12 Data Display} in Data Display Menu.
10) Adjust throttle position sensor to the proper position to match with the following specifications.

Condition: Throttle fully closed
Throttle opening angle 0.00%
Throttle sensor voltage 0.50 V

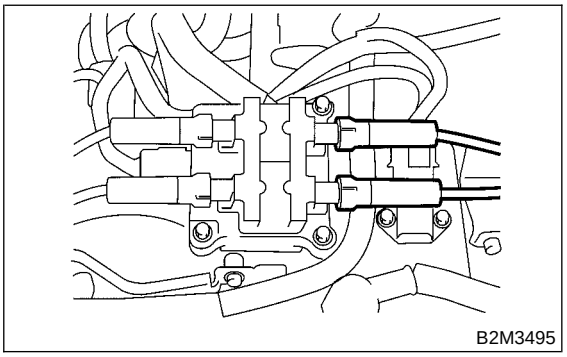
11. Intake Air Temperature and Pressure Sensor

A: REMOVAL AND INSTALLATION

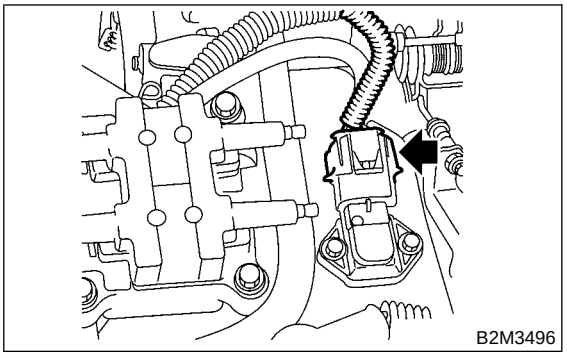
1) Disconnect battery ground cable.


G6M0095

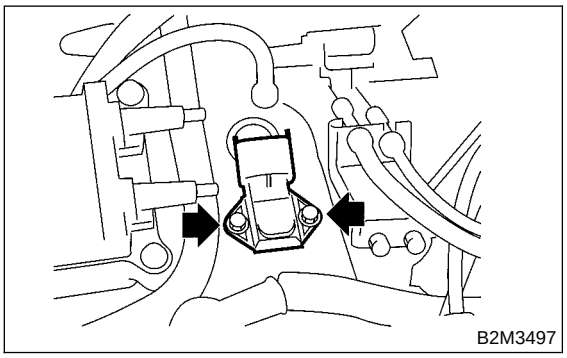
2) Disconnect spark plug cord from ignition coil and ignitor assembly.


B2M3495

3) Disconnect connector from intake air temperature and pressure sensor.

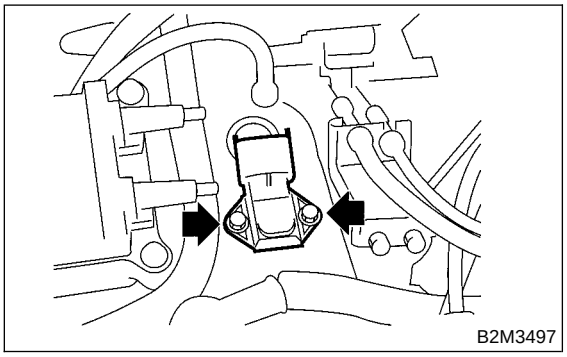

B2M3496

4) Remove intake air temperature and pressure sensor.

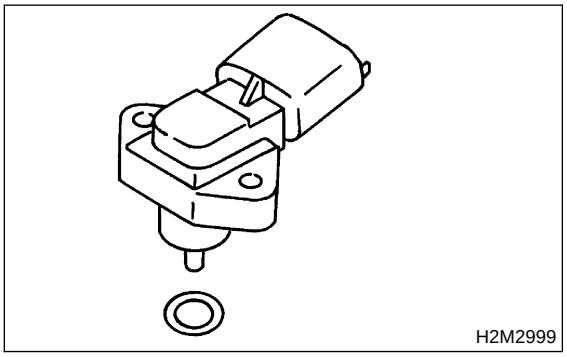


5) Install in the reverse order of removal.

Tightening torque:
2.0±0.4 N·m (0.2±0.04 kg-m, 1.4±0.3 ft-lb)



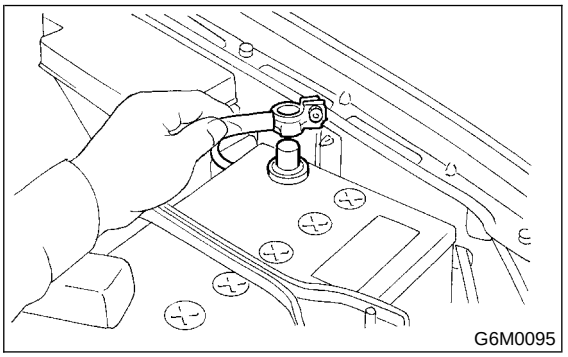
CAUTION:
Replace O-ring with new one.



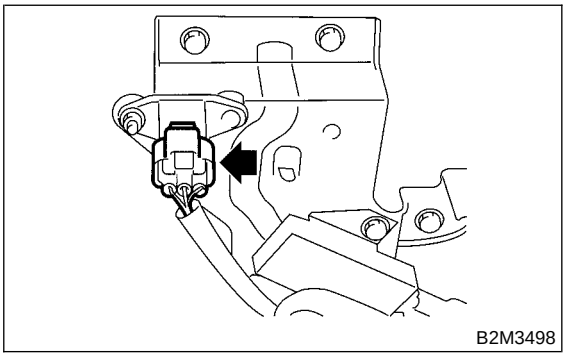
12. Atmospheric Pressure Sensor

A: REMOVAL AND INSTALLATION

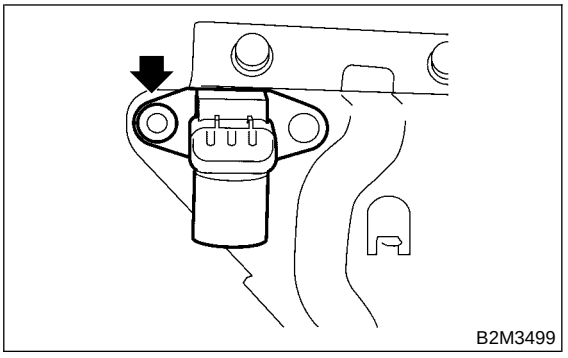
1) Disconnect battery ground cable.



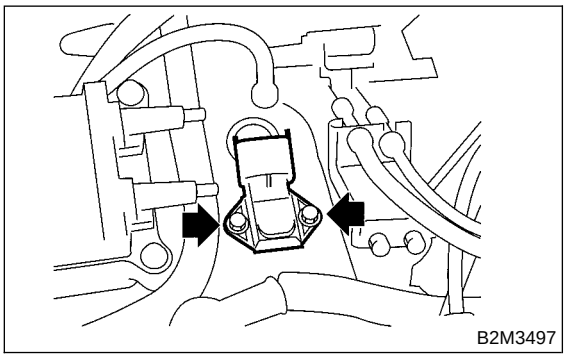
2) Disconnect connector from atmospheric pressure sensor.



3) Remove atmospheric pressure sensor from bracket.

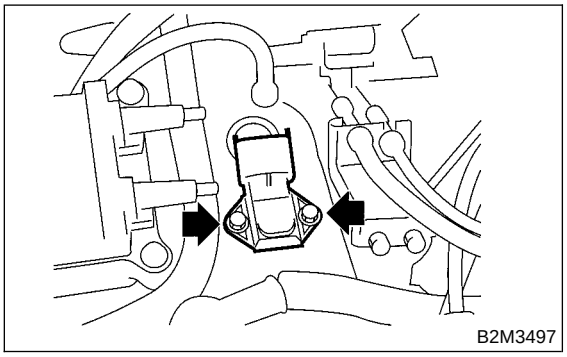


4) Remove intake air temperature and pressure sensor.

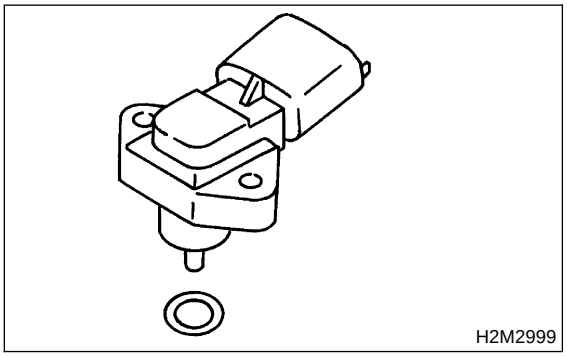


5) Install in the reverse order of removal.

Tightening torque:
2.0±0.4 N·m (0.2±0.04 kg-m, 1.4±0.3 ft-lb)



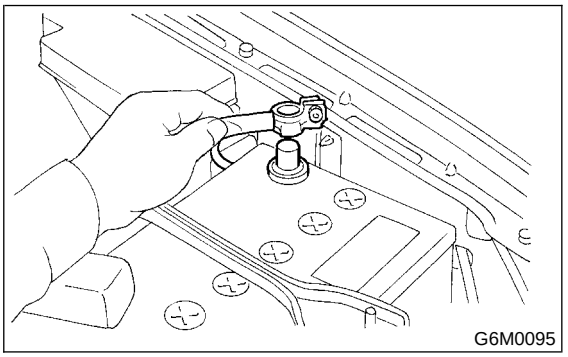
CAUTION:
Replace O-ring with new one.



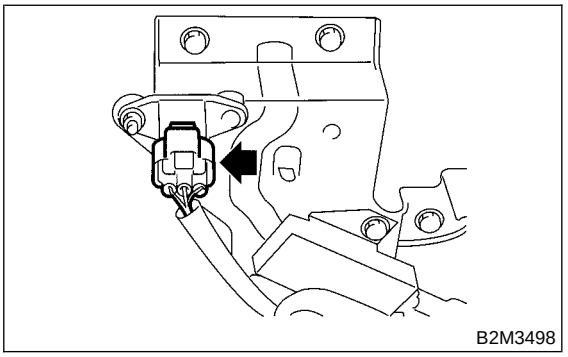
12. Atmospheric Pressure Sensor

A: REMOVAL AND INSTALLATION

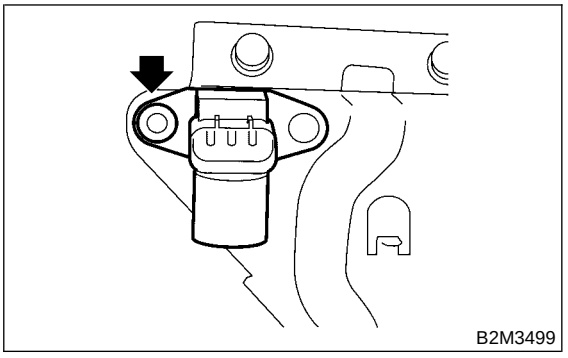
1) Disconnect battery ground cable.



2) Disconnect connector from atmospheric pressure sensor.

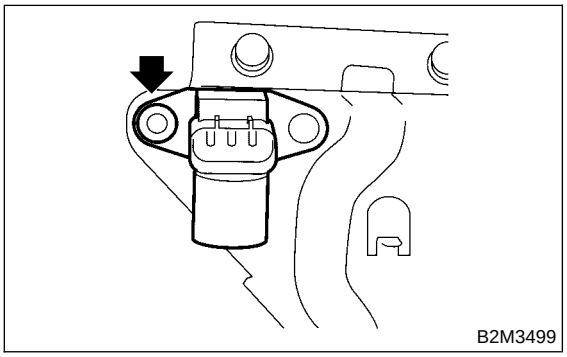


3) Remove atmospheric pressure sensor from bracket.



4) Install in the reverse order of removal.

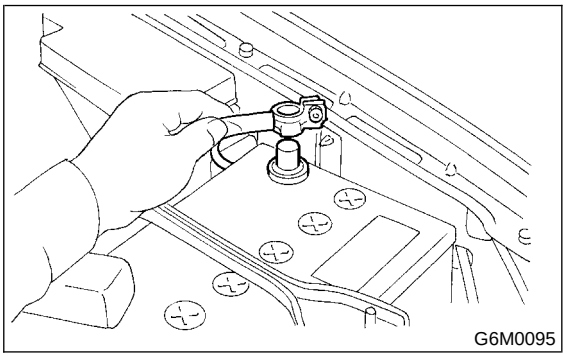
Tightening torque:
6.4±0.5 N·m (0.65±0.05 kg-m, 4.7±0.4 ft-lb)


B2M3499

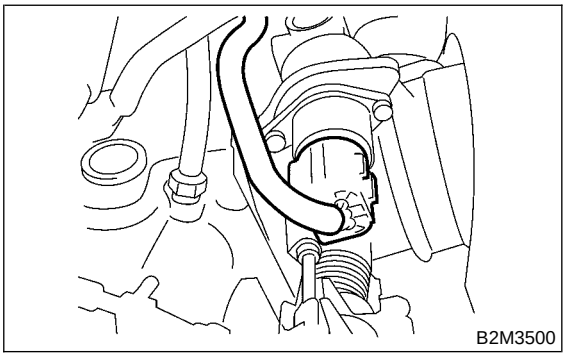
13. Idle Air Control Solenoid Valve

A: REMOVAL AND INSTALLATION

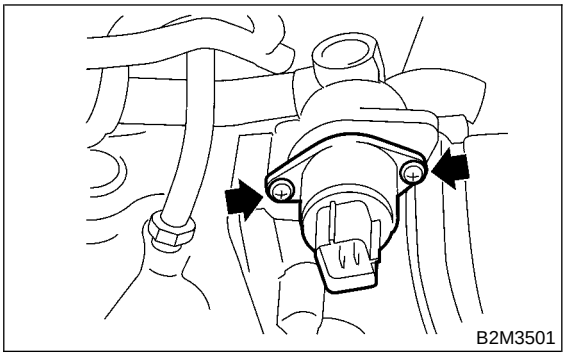
1) Disconnect battery ground cable.


G6M0095

2) Disconnect connector from idle air control solenoid valve.

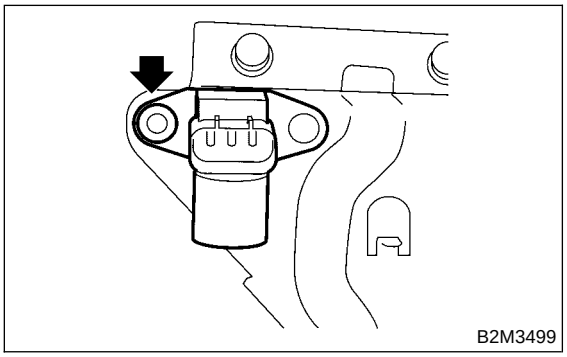

B2M3500

3) Remove idle air control solenoid valve from throttle body.


B2M3501

4) Install in the reverse order of removal.

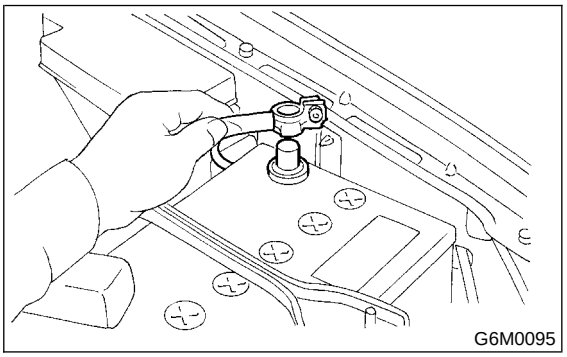
Tightening torque:
6.4±0.5 N·m (0.65±0.05 kg-m, 4.7±0.4 ft-lb)


B2M3499

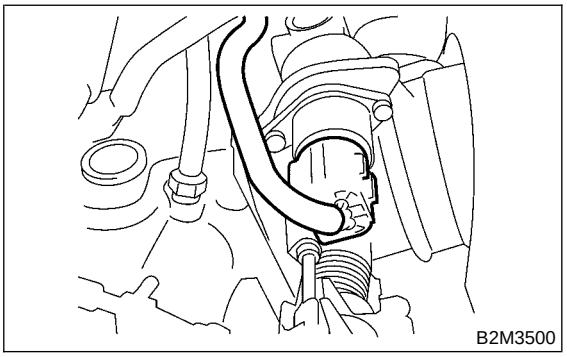
13. Idle Air Control Solenoid Valve

A: REMOVAL AND INSTALLATION

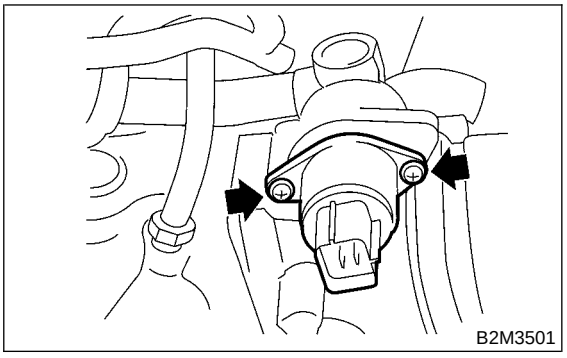
1) Disconnect battery ground cable.


G6M0095

2) Disconnect connector from idle air control solenoid valve.


B2M3500

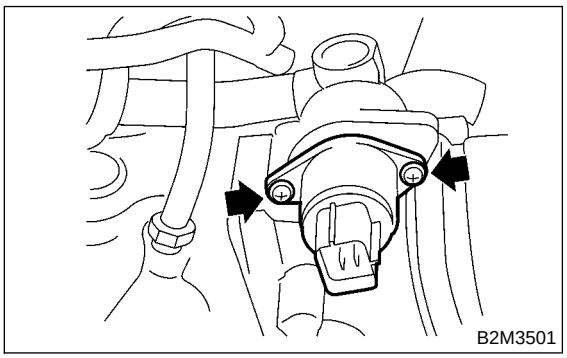
3) Remove idle air control solenoid valve from throttle body.


B2M3501

4) Install in the reverse order of removal.

CAUTION:
Always use new gasket.

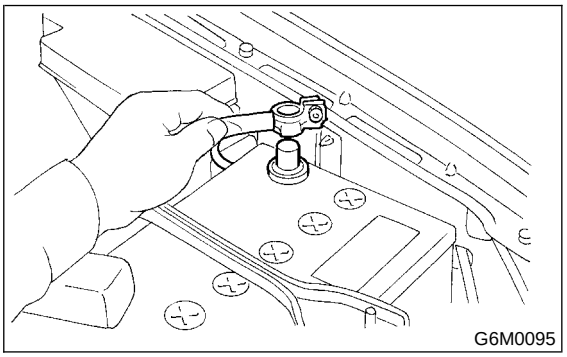
Tightening torque:
6.0±0.8 N·m (0.61±0.08 kg-m, 4.4±0.6 ft-lb)



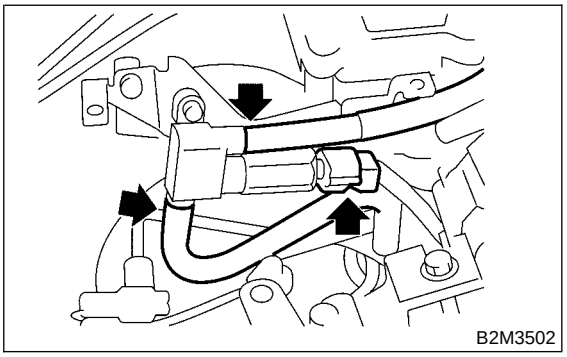
14. Air Assist Injector Solenoid Valve

A: REMOVAL AND INSTALLATION

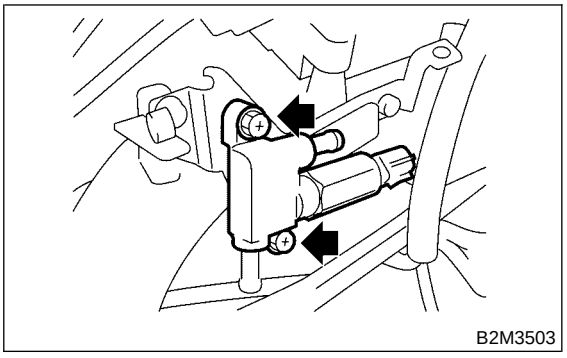
1) Disconnect battery ground cable.



2) Disconnect connector from air assist injector solenoid valve and disconnect air by-pass hoses.



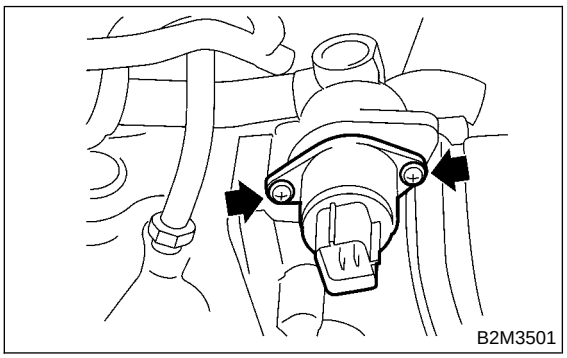
3) Remove air assist injector solenoid valve from intake manifold.



4) Install in the reverse order of removal.

CAUTION:
Always use new gasket.

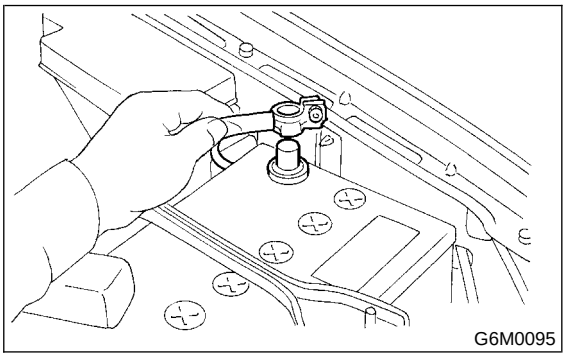
Tightening torque:
6.0±0.8 N·m (0.61±0.08 kg-m, 4.4±0.6 ft-lb)



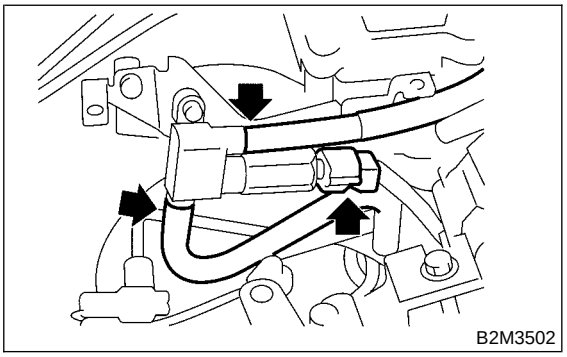
14. Air Assist Injector Solenoid Valve

A: REMOVAL AND INSTALLATION

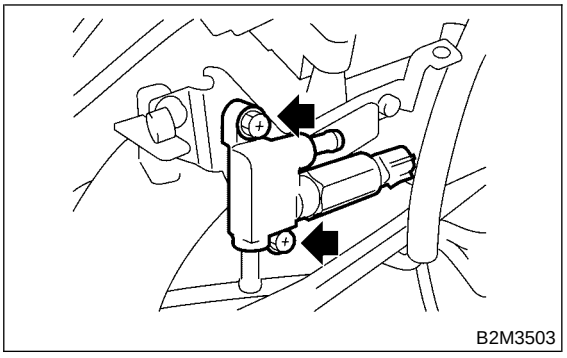
1) Disconnect battery ground cable.



2) Disconnect connector from air assist injector solenoid valve and disconnect air by-pass hoses.

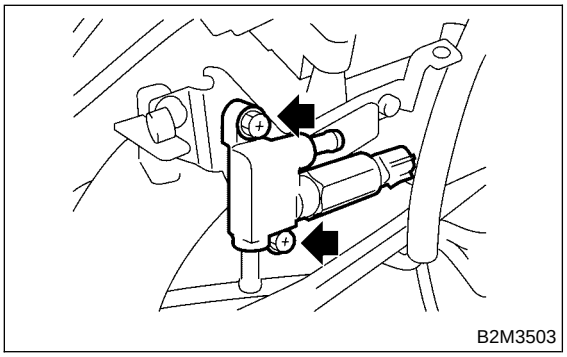


3) Remove air assist injector solenoid valve from intake manifold.



4) Install in the reverse order of removal.

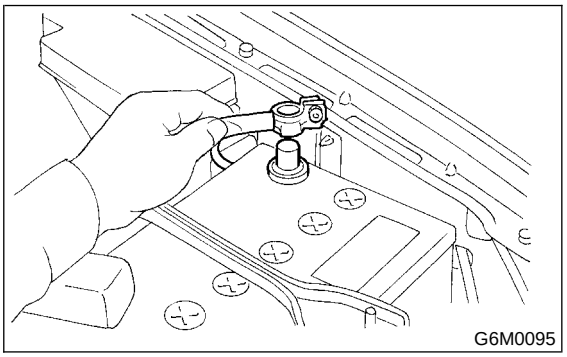
Tightening torque:
15.7±1.5 N·m (1.6±0.15 kg-m, 11.6±1.1 ft-lb)


B2M3503

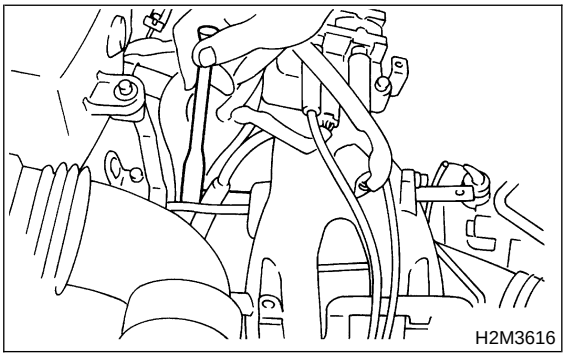
15. Purge Control Solenoid Valve

A: REMOVAL AND INSTALLATION

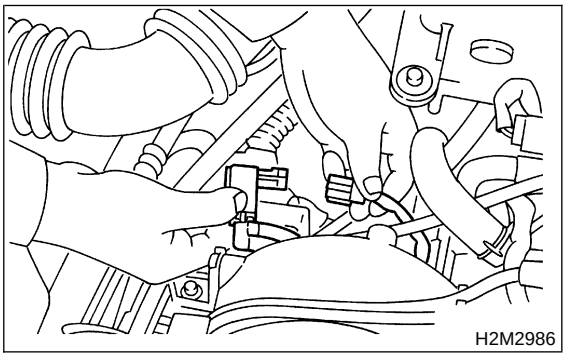
1) Disconnect battery ground cable.


G6M0095

2) Remove bolt which installs purge control solenoid valve onto intake manifold.

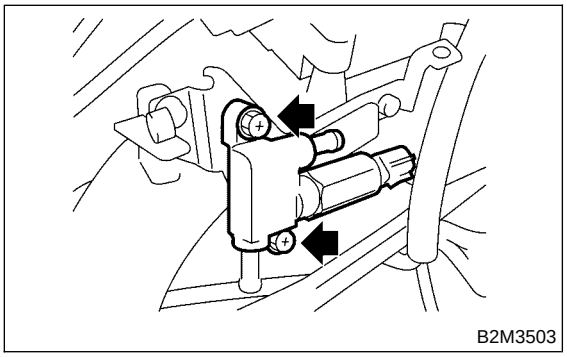

H2M3616

3) Take out purge control solenoid valve through the bottom of the intake manifold.
4) Disconnect connector and hoses from purge control solenoid valve.


H2M2986

4) Install in the reverse order of removal.

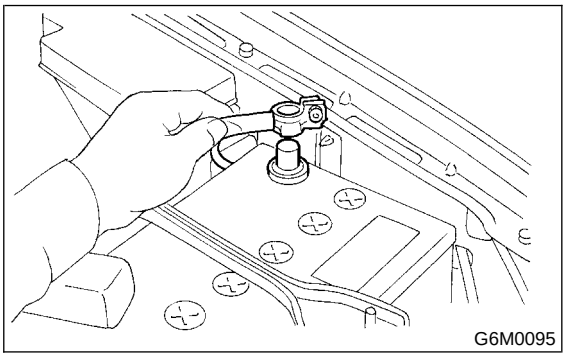
Tightening torque:
15.7±1.5 N·m (1.6±0.15 kg-m, 11.6±1.1 ft-lb)


B2M3503

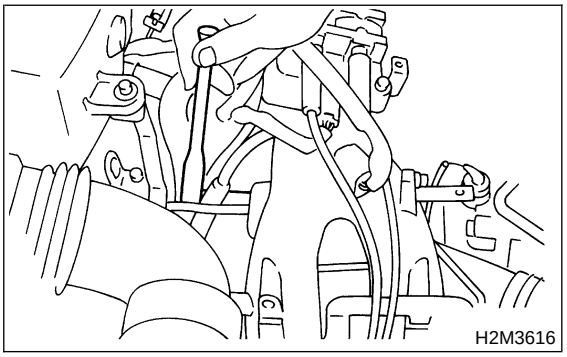
15. Purge Control Solenoid Valve

A: REMOVAL AND INSTALLATION

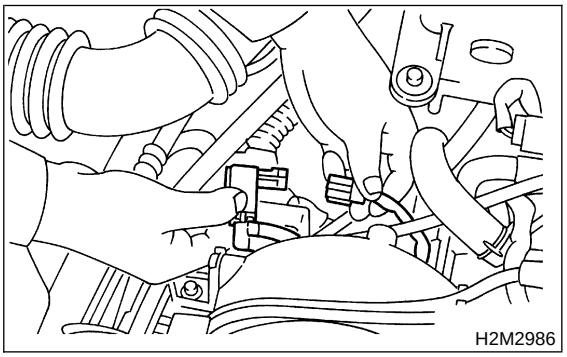
1) Disconnect battery ground cable.


G6M0095

2) Remove bolt which installs purge control solenoid valve onto intake manifold.

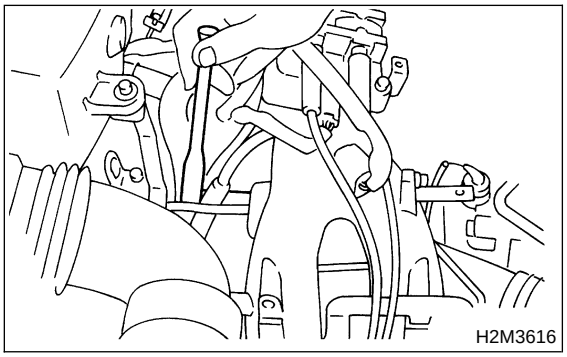

H2M3616

3) Take out purge control solenoid valve through the bottom of the intake manifold.
4) Disconnect connector and hoses from purge control solenoid valve.

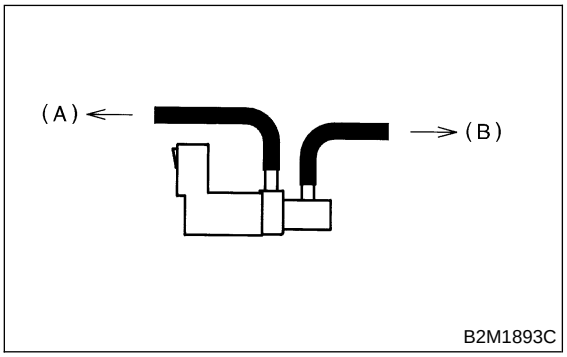

H2M2986

5) Install in the reverse order of removal.

Tightening torque:
16±1.5 N·m (1.6±0.15 kg-m, 11.6±1.1 ft-lb)


H2M3616

CAUTION:
Carefully connect the evaporation hoses.



B2M1893C

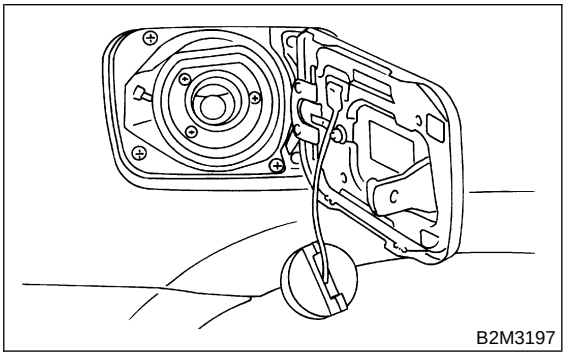
(A) To fuel pipe
(B) To intake manifold

16. Fuel Injector

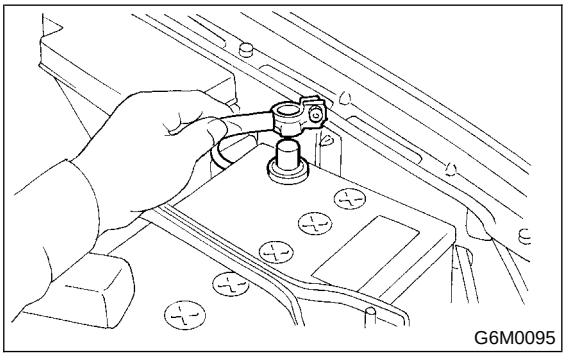
A: REMOVAL AND INSTALLATION

1. RH SIDE

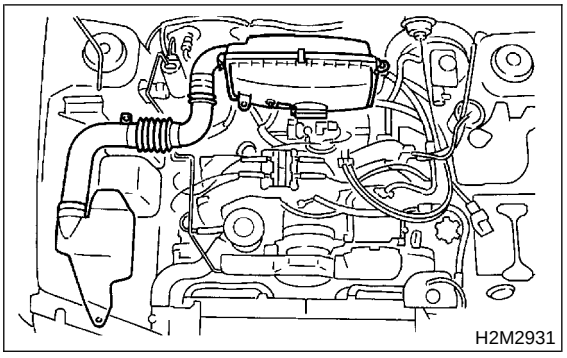
1) Release fuel pressure.
<Ref. to 2-8 [W1A0].>
2) Open fuel flap lid, and remove fuel filler cap.


B2M3197

3) Disconnect battery ground cable.

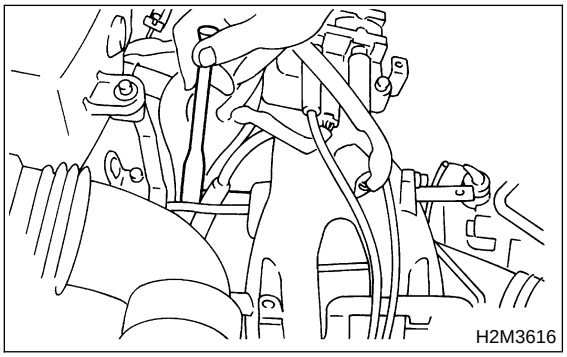

G6M0095

4) Remove air intake duct and air cleaner assembly. <Ref. to 2-7 [W1A0].>

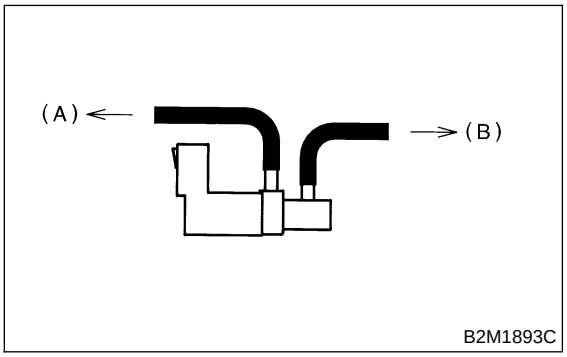

H2M2931

5) Install in the reverse order of removal.

Tightening torque:
16±1.5 N·m (1.6±0.15 kg-m, 11.6±1.1 ft-lb)


H2M3616

CAUTION:
Carefully connect the evaporation hoses.



B2M1893C

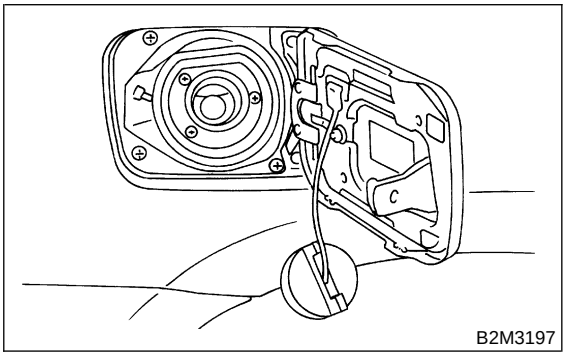
(A) To fuel pipe
(B) To intake manifold

16. Fuel Injector

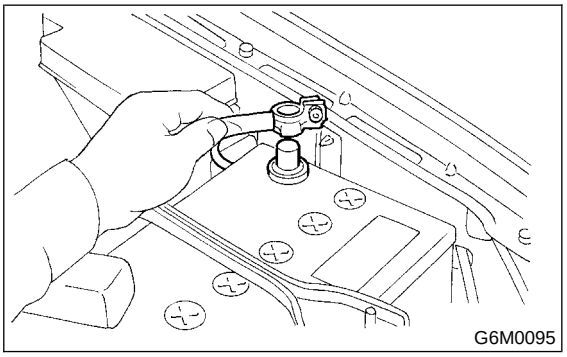
A: REMOVAL AND INSTALLATION

1. RH SIDE

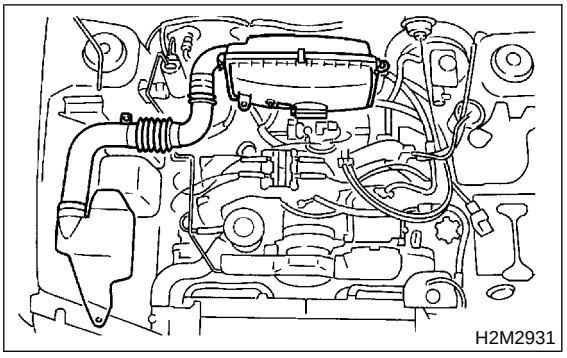
1) Release fuel pressure.
<Ref. to 2-8 [W1A0].>
2) Open fuel flap lid, and remove fuel filler cap.


B2M3197

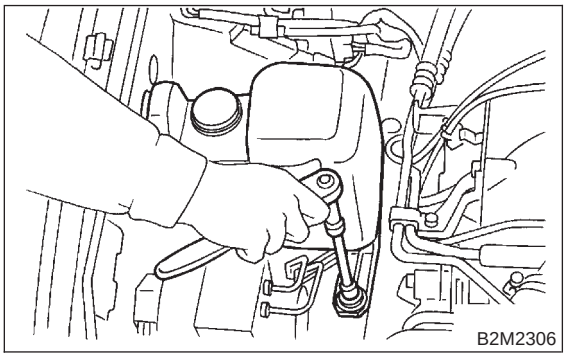
3) Disconnect battery ground cable.


G6M0095

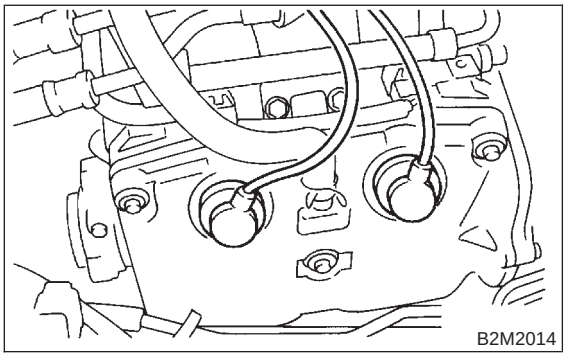
4) Remove air intake duct and air cleaner assembly. <Ref. to 2-7 [W1A0].>


H2M2931

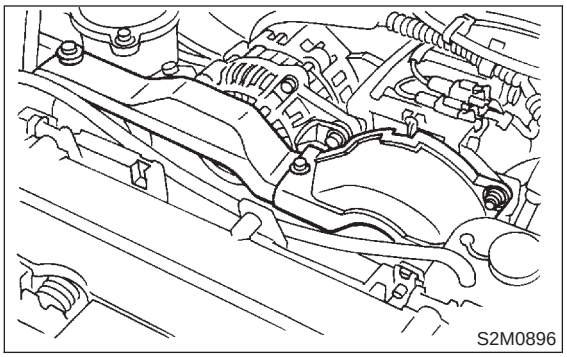
5) Remove resonator chamber.



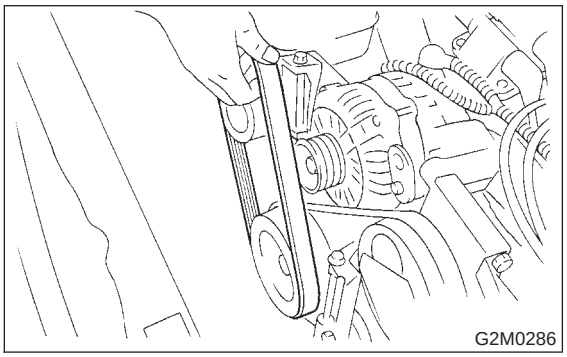
6) Remove spark plug cords from spark plugs (#1 and #3 cylinders).



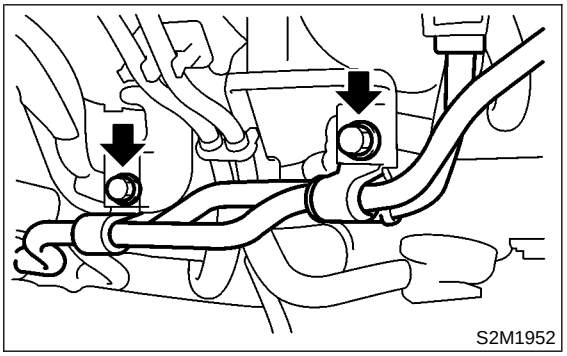
7) Remove power steering pump from bracket.
(1) Remove V-belt covers.



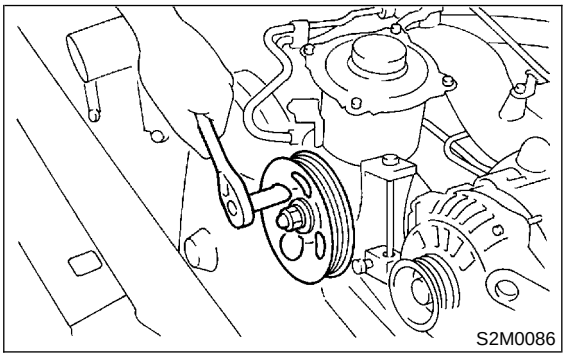
(2) Loosen lock bolt and slider bolt, and remove power steering pump drive V-belt.



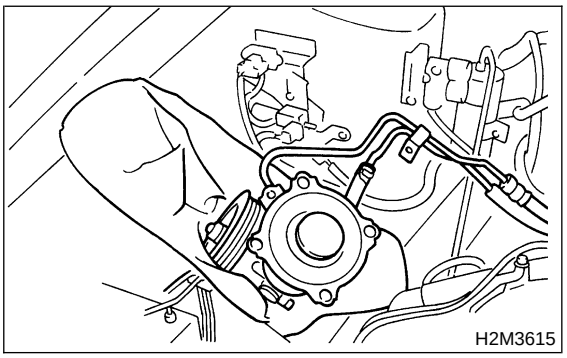
(3) Remove bolts which secure power steering pipe brackets to intake manifold.



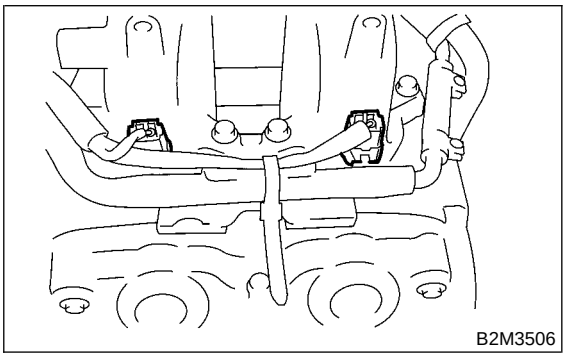
(4) Remove bolts which install power steering pump to bracket.



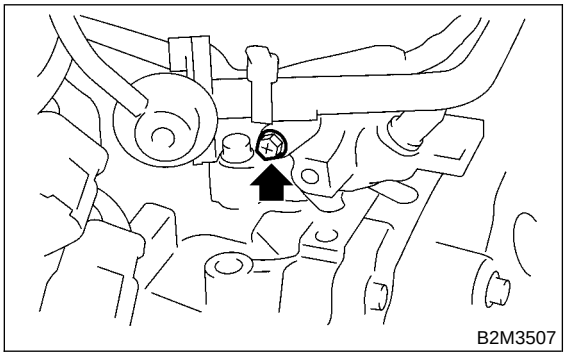
(5) Place power steering pump on the right side wheel apron.



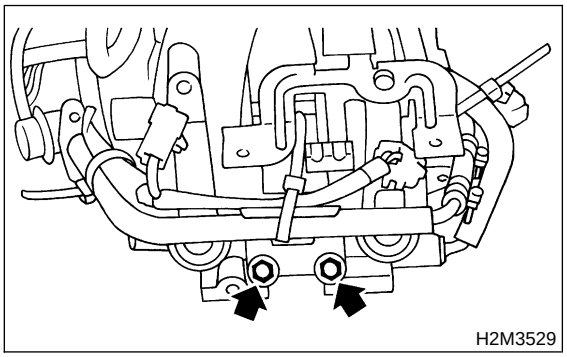
8) Disconnect connector from fuel injector.



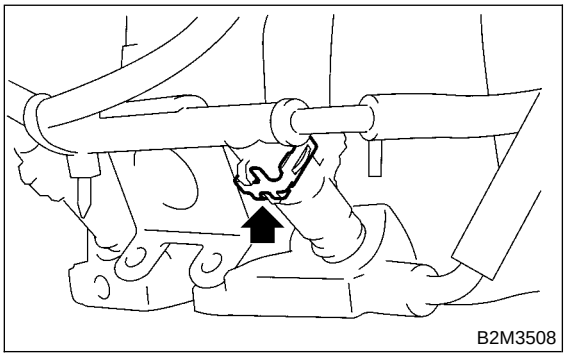
9) Remove bolt which install injector pipe to intake manifold.



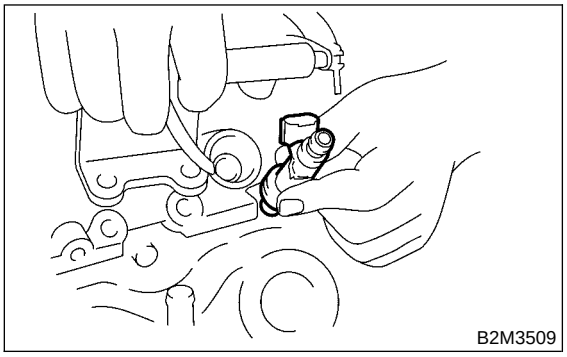
10) Remove the two bolts which install injector pipe on intake manifold.



11) Remove fuel injector from intake manifold.
(1) Remove fuel injector securing clip.

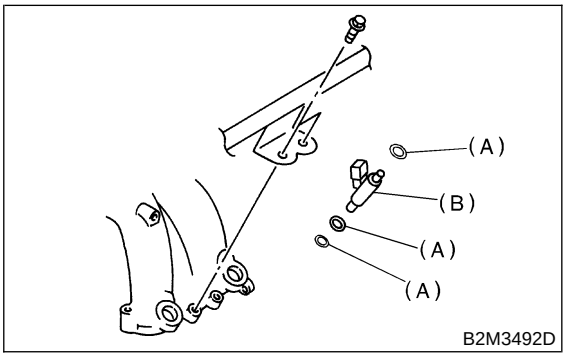


(2) Remove fuel injector while lifting up fuel injector pipe.



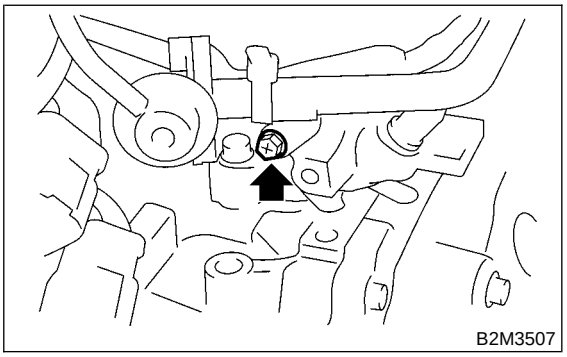
12) Install in the reverse order of removal.

CAUTION:
Replace O-rings with new ones.

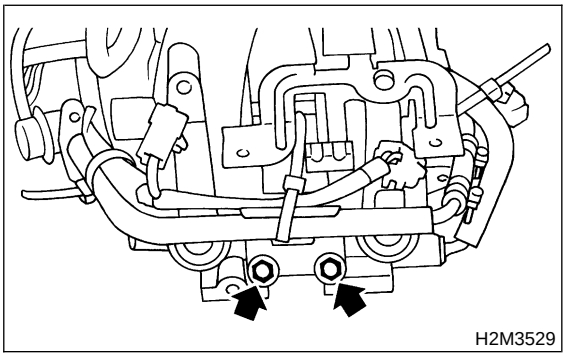


(A) O-ring
(B) Fuel injector

Tightening torque:
3.4±0.5 N·m (0.35±0.05 kg-m, 2.5±0.4 ft-lb)

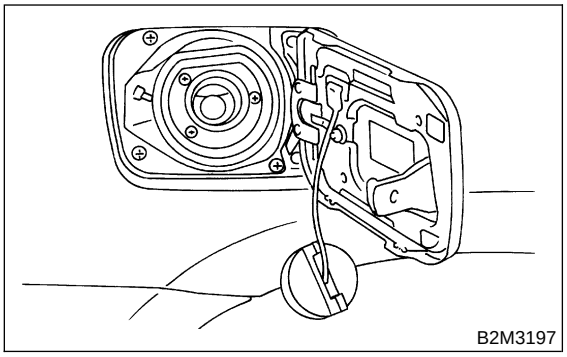


Tightening torque:
3.4±0.5 N·m (0.35±0.05 kg-m, 2.5±0.4 ft-lb)

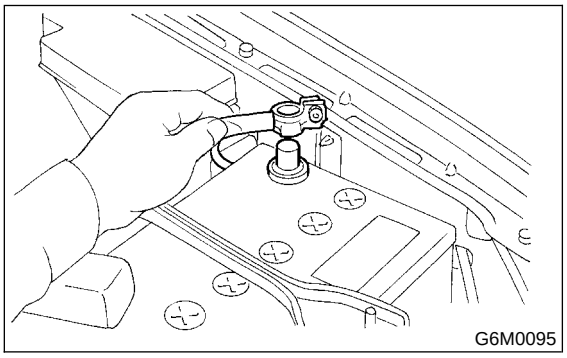


2. LH SIDE

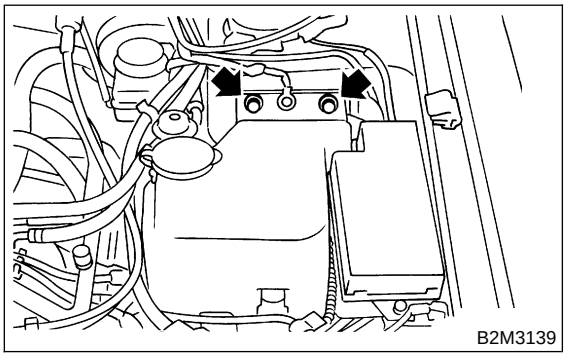
1) Release fuel pressure. <Ref. to 2-8 [W1A0].>
2) Open fuel flap lid, and remove fuel filler cap.


B2M3197

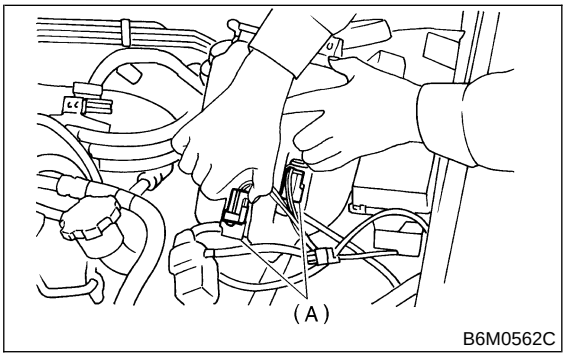
3) Disconnect battery ground cable.


G6M0095

4) Remove the two bolts which install washer tank on body.


B2M3139

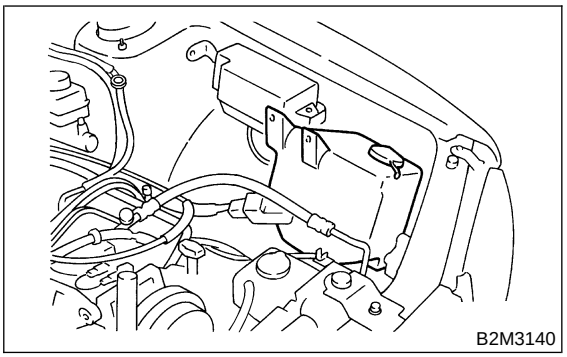
5) Disconnect connector from front window washer motor.
6) Disconnect connector from rear gate glass washer motor.



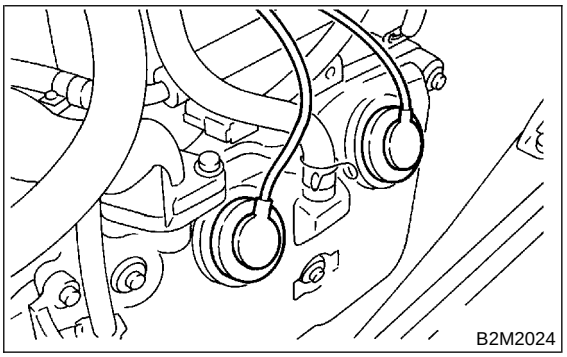
B6M0562C

(A) Washer motor connectors

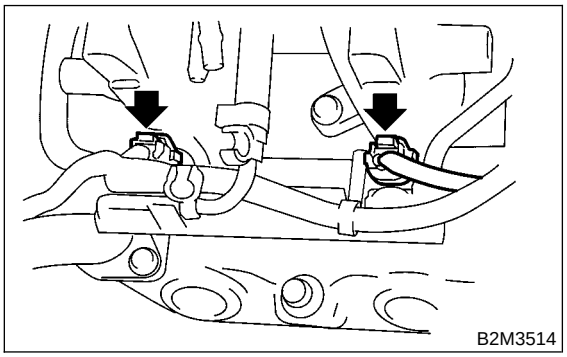
7) Disconnect rear window glass washer hose from washer motor, then plug connection with a suitable cap.
8) Move washer tank, and secure it away from working area.


B2M3140

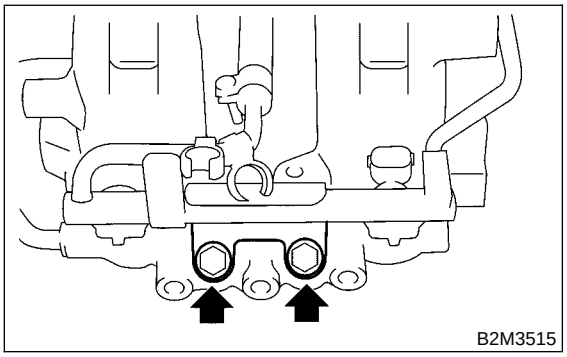
9) Remove spark plug cords from spark plugs (#2 and #4 cylinders).


B2M2024

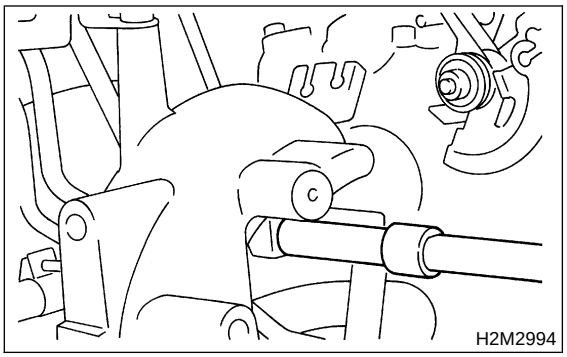
10) Disconnect connector from fuel injector.



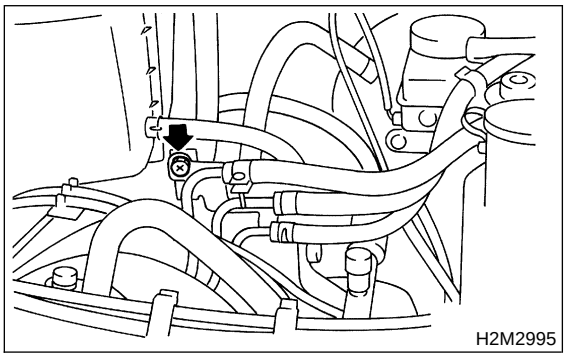
11) Remove bolt which holds injector pipe to intake manifold.



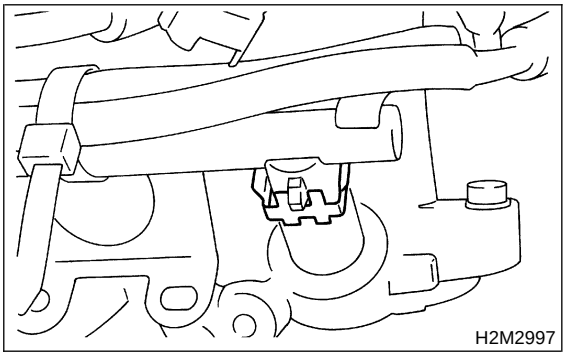
12) Remove bolt which installs injector pipe to intake manifold.



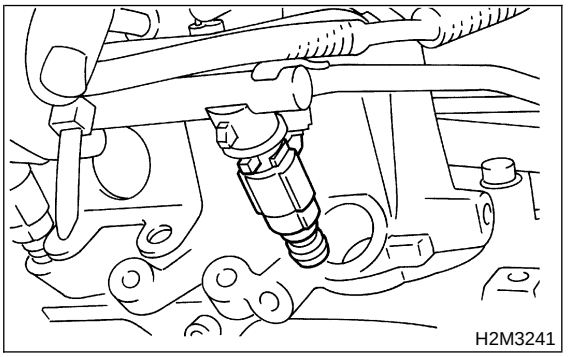
13) Remove bolt which holds fuel pipe on the left side intake manifold.



14) Remove fuel injector from intake manifold.
(1) Remove fuel injector securing clip.

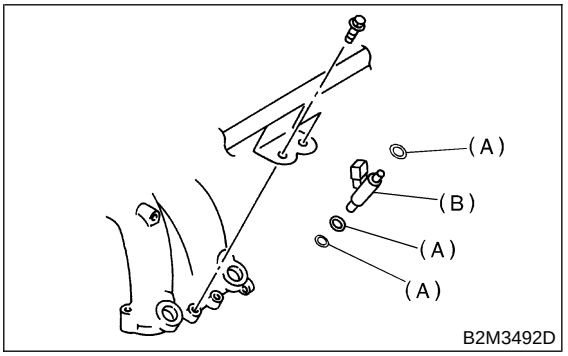


(2) Remove fuel injector while lifting up fuel injector pipe.



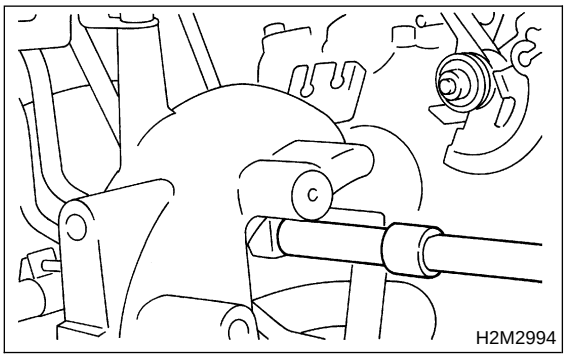
15) Install in the reverse order of removal.

CAUTION:
Replace O-rings with new ones.

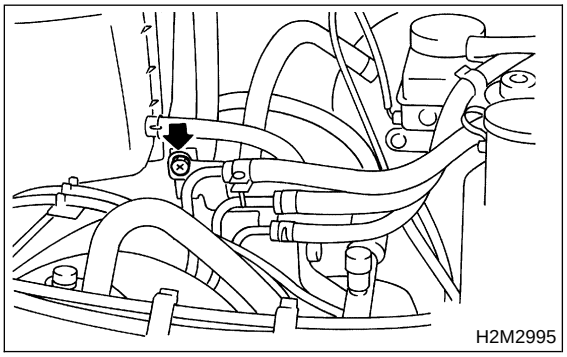


(A) O-ring
(B) Fuel injector

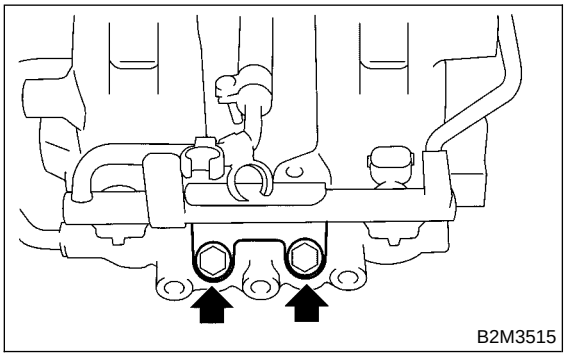
Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)



Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)



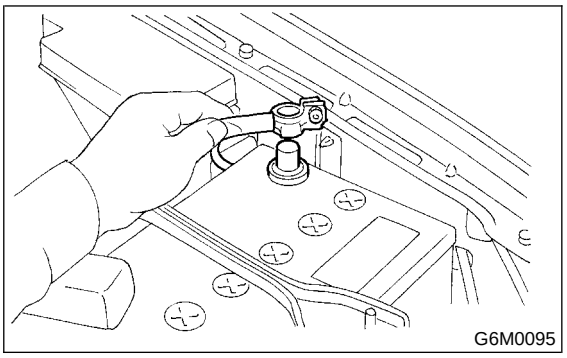
Tightening torque:
18.6±1.5 N·m (1.9±0.15 kg-m, 13.7±1.1 ft-lb)



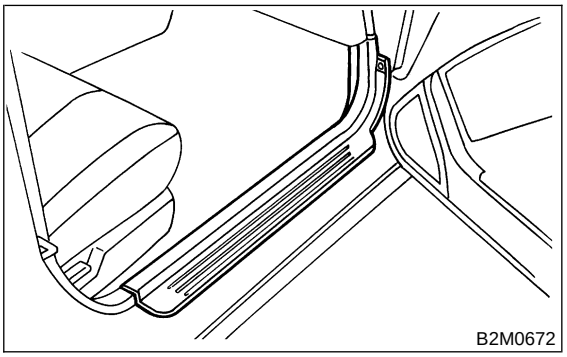
17. Engine Control Module

A: REMOVAL AND INSTALLATION

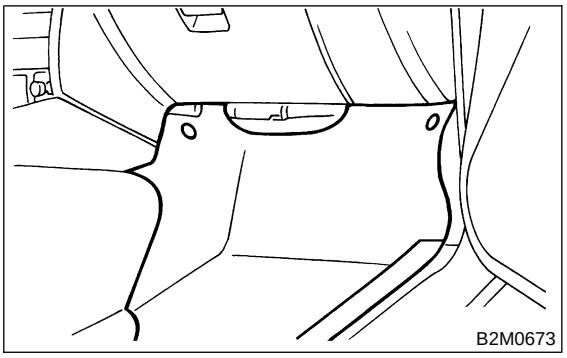
1) Disconnect battery ground cable.



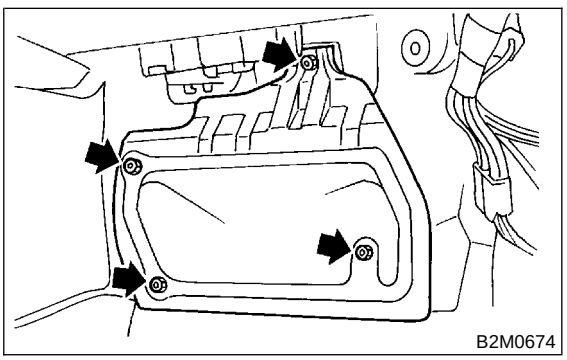
2) Remove side sill front cover.



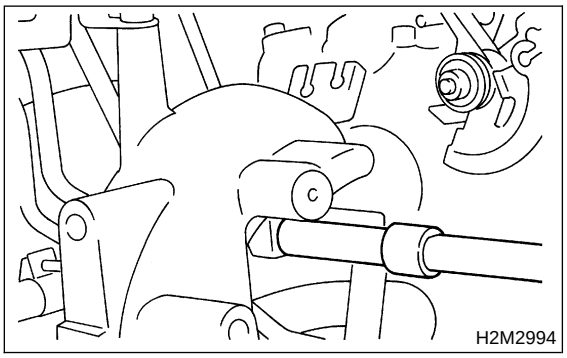
3) Detach floor mat of front passenger seat.



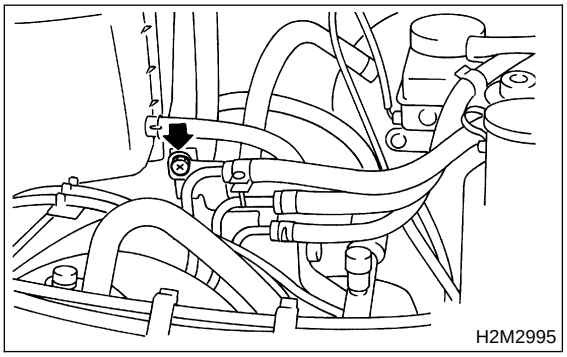
4) Remove protect cover.



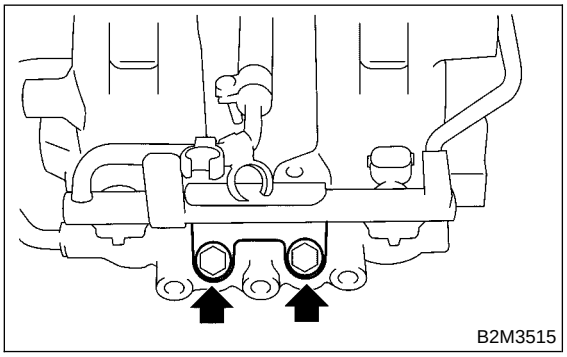
Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)



Tightening torque:
4.9±0.5 N·m (0.5±0.05 kg-m, 3.6±0.4 ft-lb)



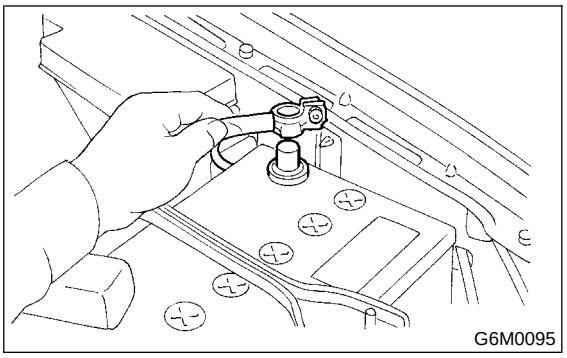
Tightening torque:
18.6±1.5 N·m (1.9±0.15 kg-m, 13.7±1.1 ft-lb)



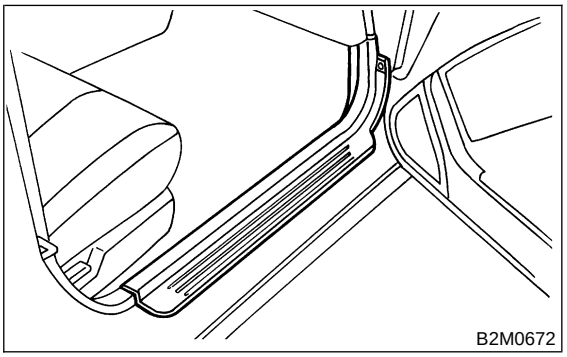
17. Engine Control Module

A: REMOVAL AND INSTALLATION

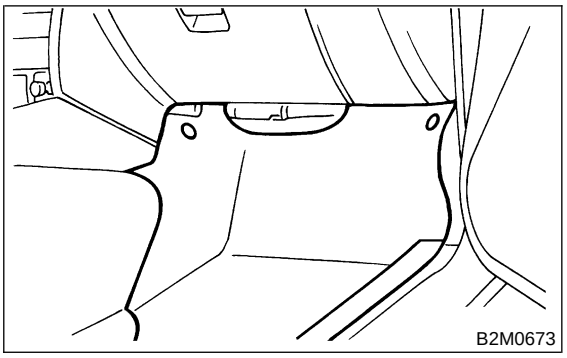
1) Disconnect battery ground cable.



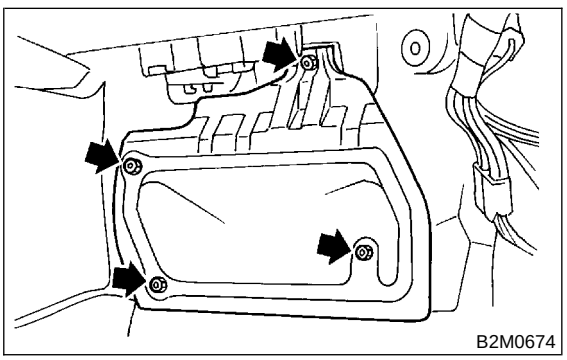
2) Remove side sill front cover.



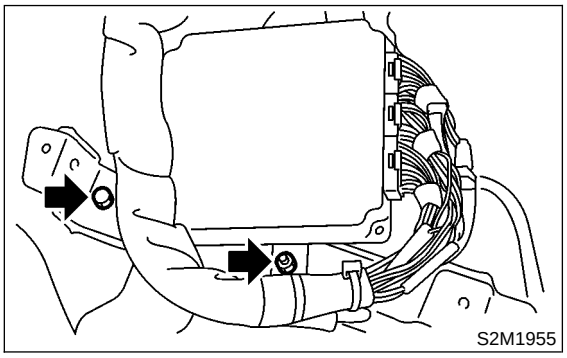
3) Detach floor mat of front passenger seat.



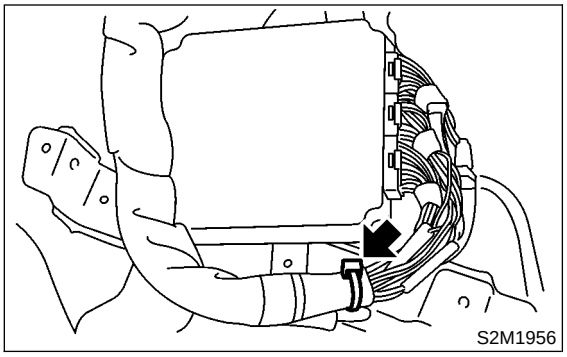
4) Remove protect cover.



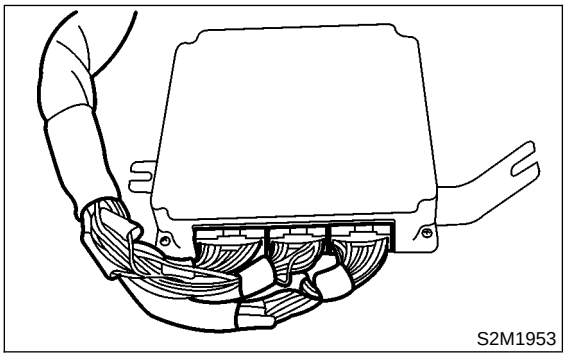
5) Remove nuts which hold ECM to bracket.


S2M1955

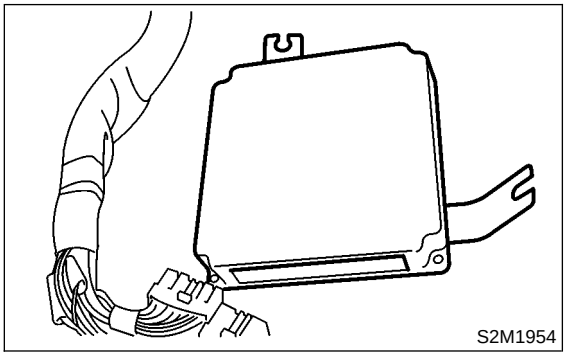
6) Remove clip from bracket.


S2M1956

7) Disconnect ECM connectors.


S2M1953

8) Take out ECM.


S2M1954

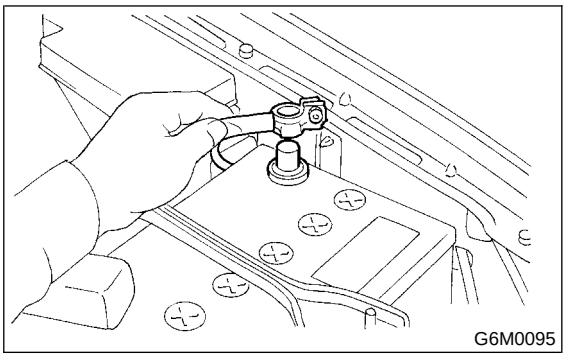
9) Install in the reverse order of removal.

CAUTION:
When replacing ECM, be careful not to use the wrong spec. ECM to avoid any damage to the fuel injection system.

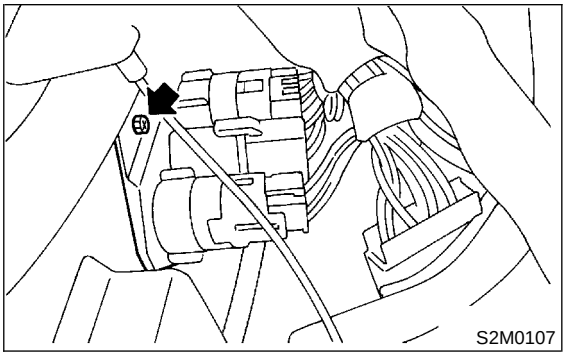
18. Main Relay

A: REMOVAL AND INSTALLATION

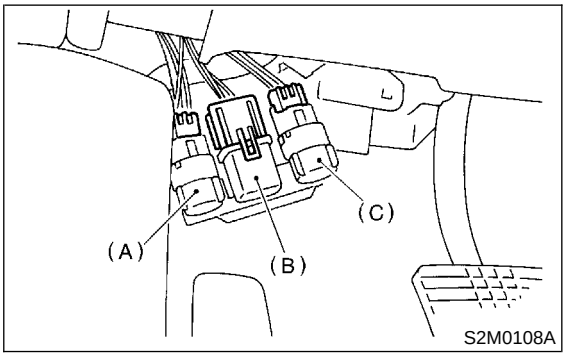
1) Disconnect battery ground cable.


G6M0095

2) Remove bolt which holds bracket of main relay and fuel pump relay.


S2M0107

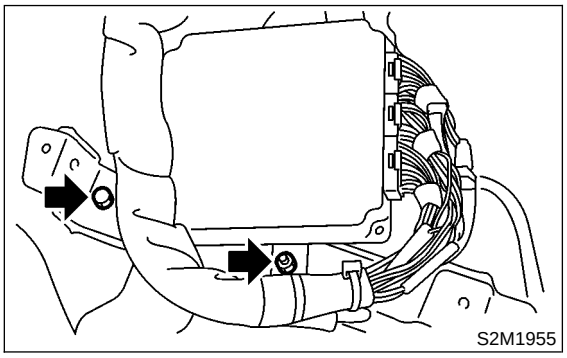
3) Disconnect connectors from relays.



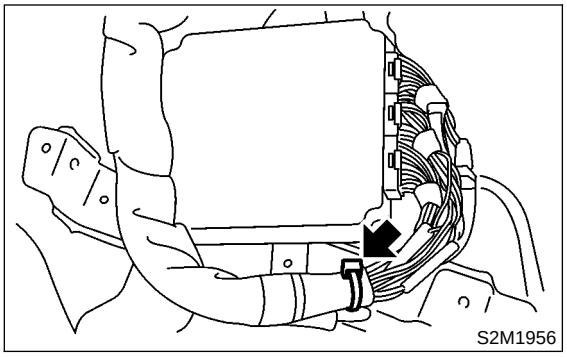
S2M0108A

(A) Rear accessory power supply relay
(B) Main relay
(C) Fuel pump relay

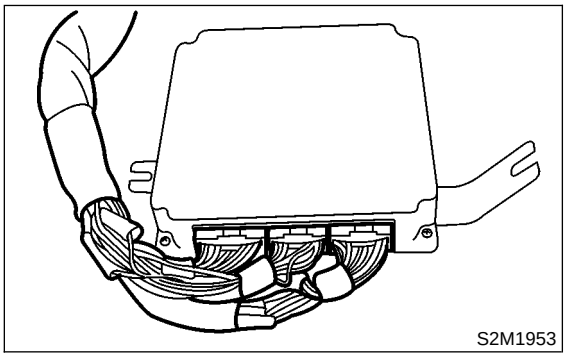
5) Remove nuts which hold ECM to bracket.


S2M1955

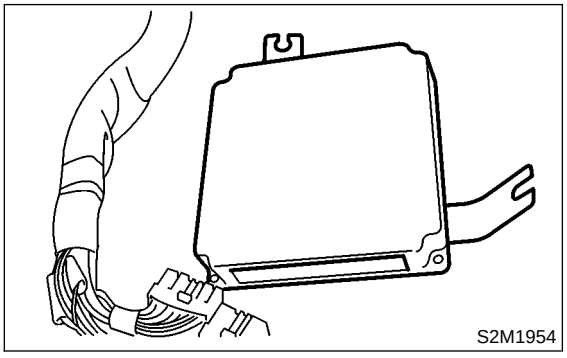
6) Remove clip from bracket.


S2M1956

7) Disconnect ECM connectors.


S2M1953

8) Take out ECM.


S2M1954

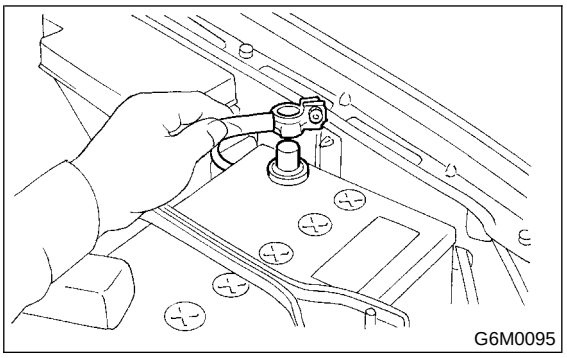
9) Install in the reverse order of removal.

CAUTION:
When replacing ECM, be careful not to use the wrong spec. ECM to avoid any damage to the fuel injection system.

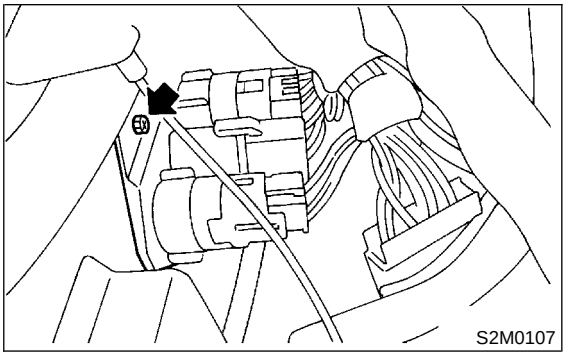
18. Main Relay

A: REMOVAL AND INSTALLATION

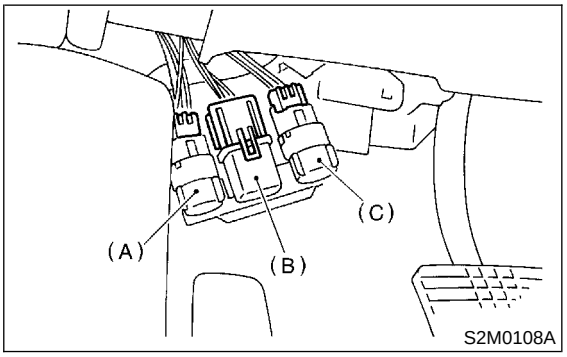
1) Disconnect battery ground cable.


G6M0095

2) Remove bolt which holds bracket of main relay and fuel pump relay.


S2M0107

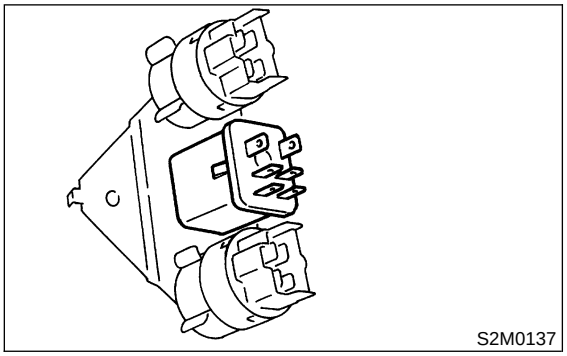
3) Disconnect connectors from relays.



S2M0108A

(A) Rear accessory power supply relay
(B) Main relay
(C) Fuel pump relay

4) Remove main relay from mounting bracket.

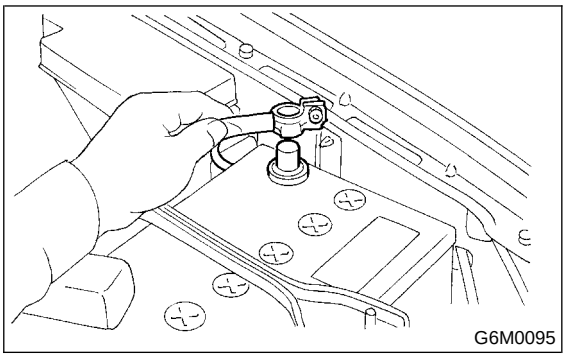


5) Install in the reverse order of removal.

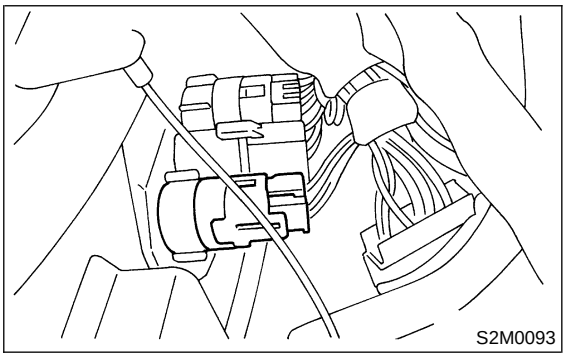
19. Fuel Pump Relay

A: REMOVAL AND INSTALLATION

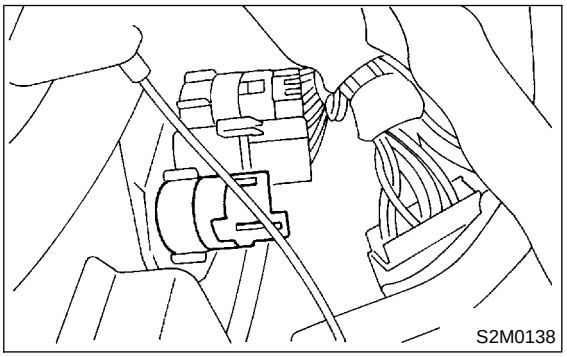
1) Disconnect battery ground cable.



2) Disconnect connector from fuel pump relay.

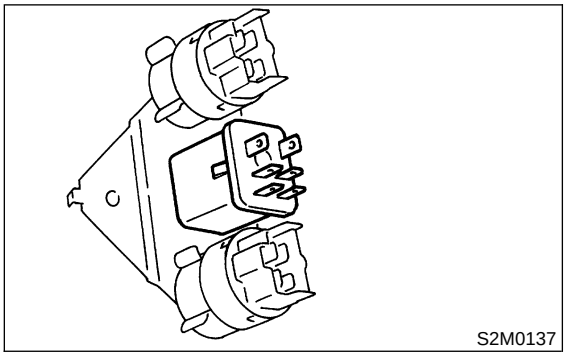


3) Remove fuel pump relay from mounting bracket.



4) Install in the reverse order of removal.

4) Remove main relay from mounting bracket.

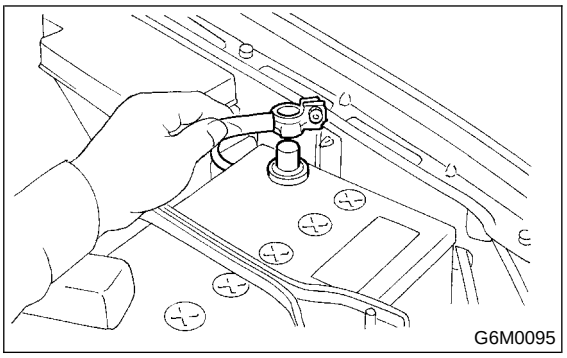


5) Install in the reverse order of removal.

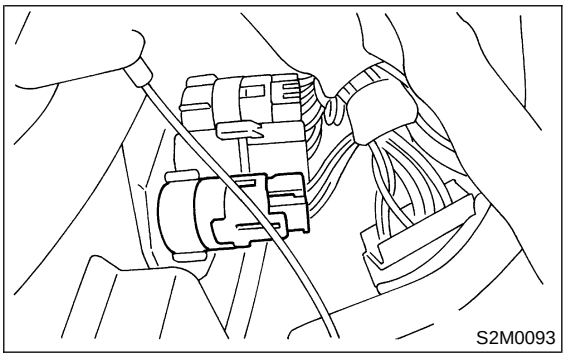
19. Fuel Pump Relay

A: REMOVAL AND INSTALLATION

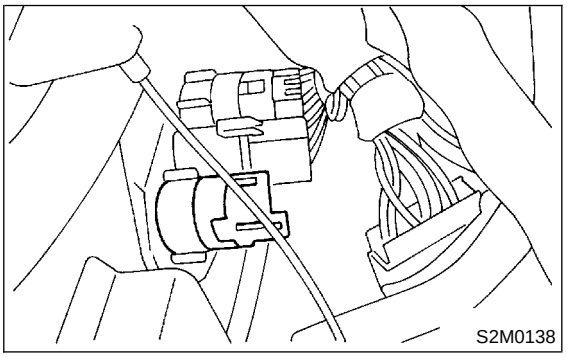
1) Disconnect battery ground cable.



2) Disconnect connector from fuel pump relay.



3) Remove fuel pump relay from mounting bracket.



4) Install in the reverse order of removal.