# ENGINE SECTION 3



This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

# ENGINE (DIAGNOSTICS)

# EN(H4DOSTC)

# 1. Basic Diagnostic Procedure

## A: PROCEDURE

### 1. ENGINE

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ENGINE START FAILURE.**<br>1) Ask the customer when and how the trouble occurred using the interview check list. <Ref. to EN(H4DOSTC)-4, CHECK, Check List for Interview.><br>2) Start the engine.<br>Does the engine start? | Engine starts. | Go to step **2.** | Inspection using "Diagnostics for Engine Start Failure". <Ref. to EN(H4DOSTC)-66, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| 2 | **CHECK ILLUMINATION OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI).**<br>Does the CHECK ENGINE malfunction indicator lamp illuminate? | Indicator lamp illuminates. | Go to step **3.** | Inspection using "General Diagnostics Table". <Ref. to EN(H4DOSTC)-246, General Diagnostic Table.> |
| 3 | **CHECK INDICATION OF DTC ON DISPLAY.**<br>1) Turn the ignition switch to OFF.<br>2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.<br>3) Turn the ignition switch to ON and the Subaru Select Monitor or OBD-II general scan tool switch to ON.<br>4) Read the DTC on the Subaru Select Monitor.<br>Does the Subaru Select Monitor indicate DTC? | DTC is indicated. | Record the DTC. Repair the trouble cause. <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).> Go to step **4.** | Repair the related parts.<br>NOTE:<br>If DTC is not shown on display although the MI illuminates, perform diagnostics of MI (CHECK ENGINE malfunction indicator lamp) circuit or combination meter. <Ref. to EN(H4DOSTC)-38, Engine Malfunction Indicator Lamp (MI).> |
| 4 | **PERFORM THE DIAGNOSIS.**<br>1) Perform the clear memory mode. <Ref. to EN(H4DOSTC)-35, Clear Memory Mode.><br>2) Perform the inspection mode. <Ref. to EN(H4DOSTC)-33, Inspection Mode.><br>Does the Subaru Select Monitor indicate DTC? | DTC is indicated. | Inspect using "Diagnostics Procedure with Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOSTC)-66, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> | Complete the diagnosis. |

## 2. AUTOMATIC TRANSMISSION

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 AT-30, Automatic Transmission Fluid.>
2) Differential gear oil level check <Ref. to AT-31, Differential Gear Oil.>
3) ATF leak check <Ref. to AT-30, Automatic Transmission Fluid.>
4) Differential gear oil leak check <Ref. to AT-31, Differential Gear Oil.>
5) Stall test <Ref. to AT-33, Stall Test.>
6) Line pressure test <Ref. to AT-36, Line Pressure Test.>
7) Transfer clutch pressure test <Ref. to AT-38, Transfer Clutch Pressure Test.>
8) Time lag test <Ref. to AT-35, Time Lag Test.>
9) Road test <Ref. to AT-32, Road Test.>
10) Shift characteristics <Ref. to AT-38, Transfer Clutch Pressure Test.>

# 2. Check List for Interview

## A: CHECK

### 1. CHECK LLIST 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<br>❏ Cloudy<br>❏ Rainy<br>❏ Snowy<br>❏ Various/Others: | | |
| Outdoor temperature | °C (°F) | | |
| | ❏ Hot<br>❏ Warm<br>❏ Cool<br>❏ Cold | | |
| Place | ❏ Highway<br>❏ Suburbs<br>❏ Inner city<br>❏ Uphill<br>❏ Downhill<br>❏ Rough road<br>❏ Others: | | |
| Engine temperature | ❏ Cold<br>❏ Warming-up<br>❏ After warming-up<br>❏ Any temperature<br>❏ Others: | | |
| Engine speed | rpm | | |
| Vehicle speed | MPH | | |
| Driving conditions | ❏ Not affected<br>❏ At starting<br>❏ While idling<br>❏ At racing<br>❏ While accelerating<br>❏ While cruising<br>❏ While decelerating<br>❏ 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 MI 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<br>❑ Charge indicator light<br>❑ AT diagnostics indicator light<br>❑ ABS warning light<br>❑ Engine oil pressure warning light |
| b) Fuel level |
| • Lack of gasoline: ❑ Yes/❑ No<br>• 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:<br>• Where: |
| f) Occurrence of noise: ❑ Yes/❑ No |
| • From where:<br>• What kind: |
| g) Occurrence of smell: ❑ Yes/❑ No |
| • From where:<br>• What kind: |
| h) Intrusion of water into engine compartment or passenger compartment: ❑ Yes/❑ No |
| i) Troubles occurred |
| ❑ Engine does not start.<br>❑ Engine stalls during idling.<br>❑ Engine stalls while driving.<br>❑ Engine speed decreases.<br>❑ Engine speed does not decrease.<br>❑ Rough idling<br>❑ Poor acceleration<br>❑ Back fire<br>❑ After fire<br>❑ No shift<br>❑ Excessive shift shock |

# 3. General Description

## A: CAUTION

1) 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 the Airbag system wiring harness when servicing the engine control module (ECM), transmission control module (TCM), main relay and fuel pump relay.**

2) 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.

3) Do not disconnect the battery cables 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.

4) Before disconnecting the connectors of each sensor and ECM, be sure to turn OFF the ignition switch.

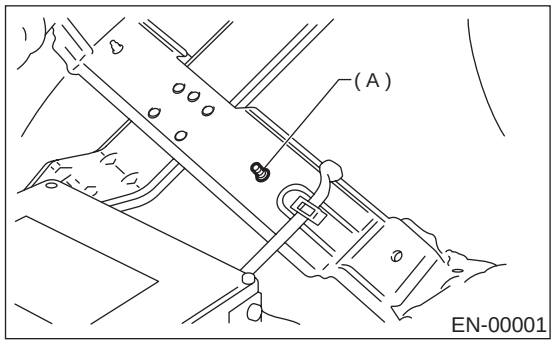
5) Poor contact has been identified as a primary cause of this problem. To measure the voltage and/or resistance of individual sensors or all electrical control modules at the harness side connector, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in) into the part.

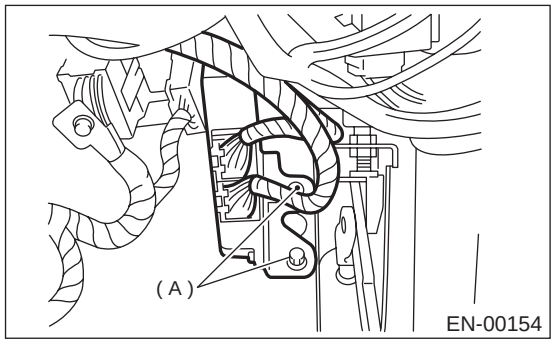
6) Before removing ECM from the located position, disconnect two cables on the battery.
• Otherwise, the ECM may be damaged.

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

7) 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.

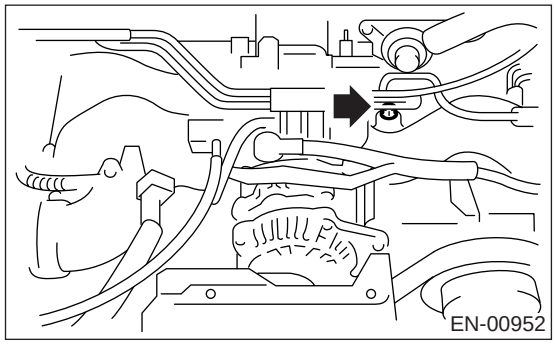
8) Use ECM or TCM mounting stud bolts at the body head grounding point when measuring the voltage and resistance inside the passenger compartment.




(A) Stud bolt

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




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

11) Observe the following cautions when installing a radio in MFI equipped models.

**CAUTION:**
**• The antenna must be kept as far apart as possible from the control unit.**
**(The ECM is located under the steering column, inside of the instrument panel lower trim panel.)**
**• The antenna feeder must be placed as far apart as possible from the ECM and MFI harness.**
**• Carefully adjust the antenna for correct matching.**
**• When mounting a large power type radio, pay special attention to the three items above mentioned.**
**• Incorrect installation of the radio may affect the operation of 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) On ABS vehicle, when performing a driving test in jacked-up or lifted-up position, sometimes the warning light may be lit, but this is not a malfunction of the system. The reason for this is the speed difference between the front and rear wheels. After diagnosis of engine control system, perform the ABS memory clearance procedure of self-diagnosis system.

## B: INSPECTION

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

### 1. BATTERY

1) Measure the battery voltage and specific gravity of electrolyte.

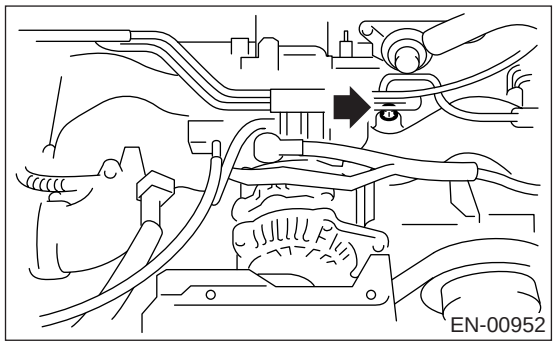
***Standard voltage: 12 V***

***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.




## C: NOTE

### 1. 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 (MI) 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.

### 2. ENGINE AND EMISSION CONTROL SYSTEM

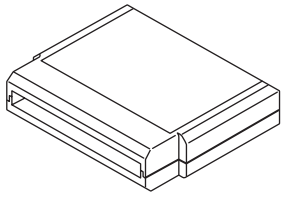
• The Multipoint Fuel Injection (MFI) system is a system that supplies the optimum air-fuel mixture to the engine for all the various operating conditions through the use of the latest electronic technology.
With this system fuel, which is pressurized at a constant pressure, is injected into the intake 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 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.

### 3. AUTOMATIC TRANSMISSION AND 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).

## D: PREPARATION TOOL

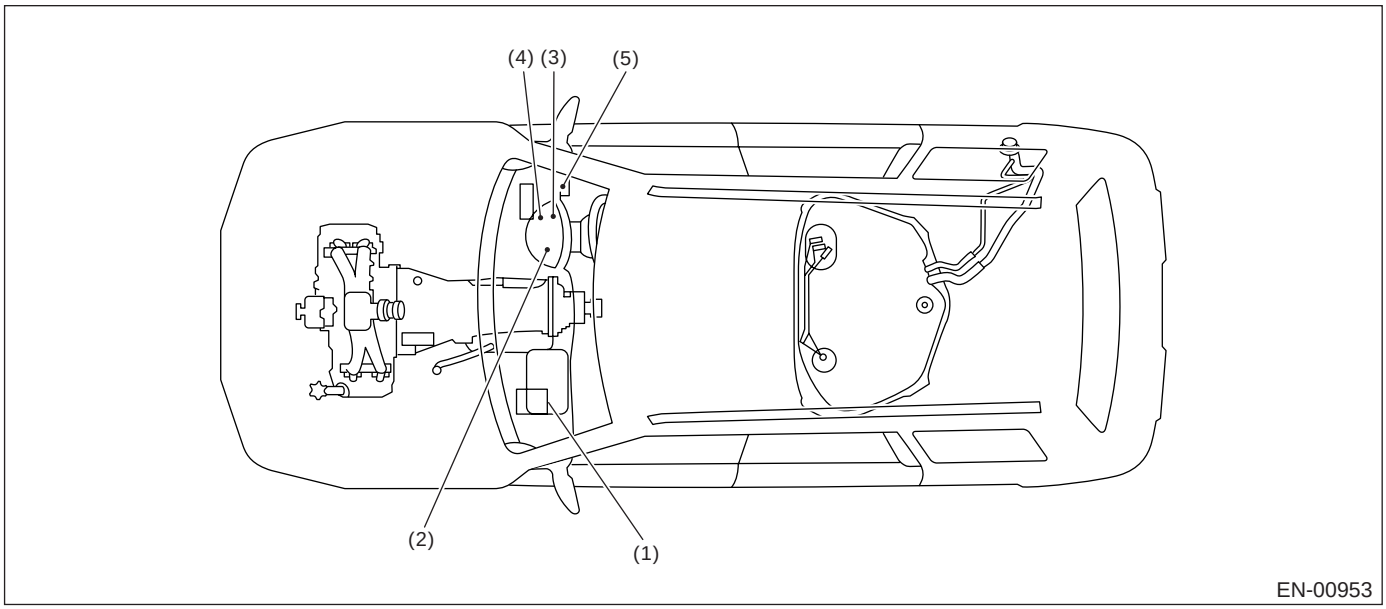
| ILLUSTRATION | TOOL NUMBER | DESCRIPTION | REMARKS |
|---|---|---|---|
|  ST24082AA210 | 24082AA210 (Newly adopted tool) | CARTRIDGE | Troubleshooting for electrical systems. |
|  ST22771AA030 | 22771AA030 | SELECT MONITOR KIT | Troubleshooting for electrical systems.<br>• English: 22771AA030 (Without printer)<br>• German: 22771AA070 (Without printer)<br>• French: 22771AA080 (Without printer)<br>• Spanish: 22771AA090 (Without printer) |

# 4. Electrical Components Location

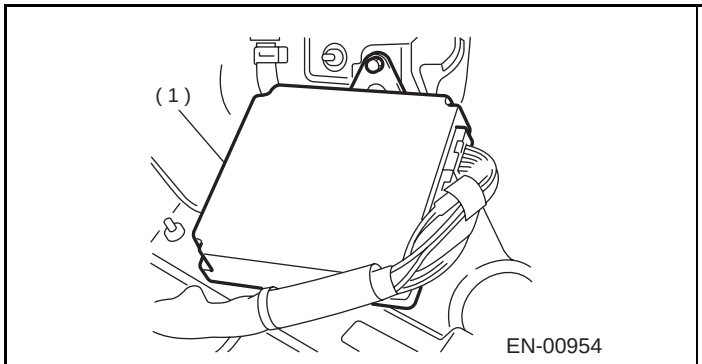
## A: LOCATION

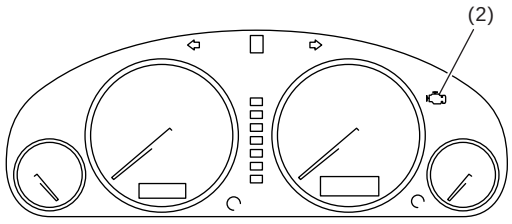
### 1. ENGINE

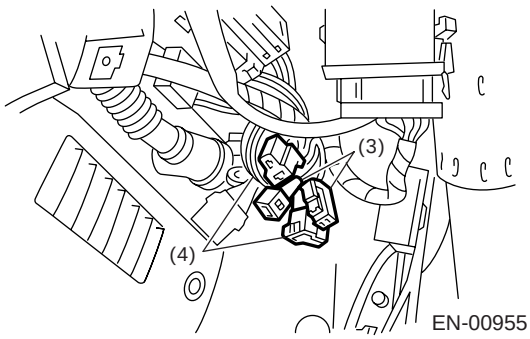
**• MODULE**

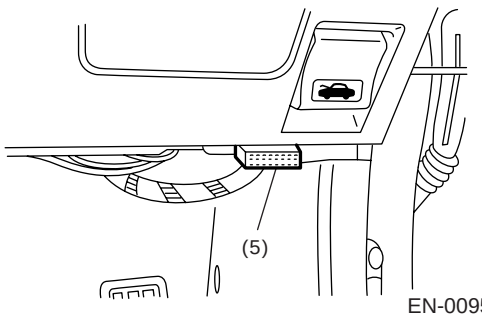



(1) Engine control module (ECM)
(2) CHECK ENGINE malfunction indicator lamp (MI)
(3) Read memory connector
(4) Test mode connector
(5) Data link connector

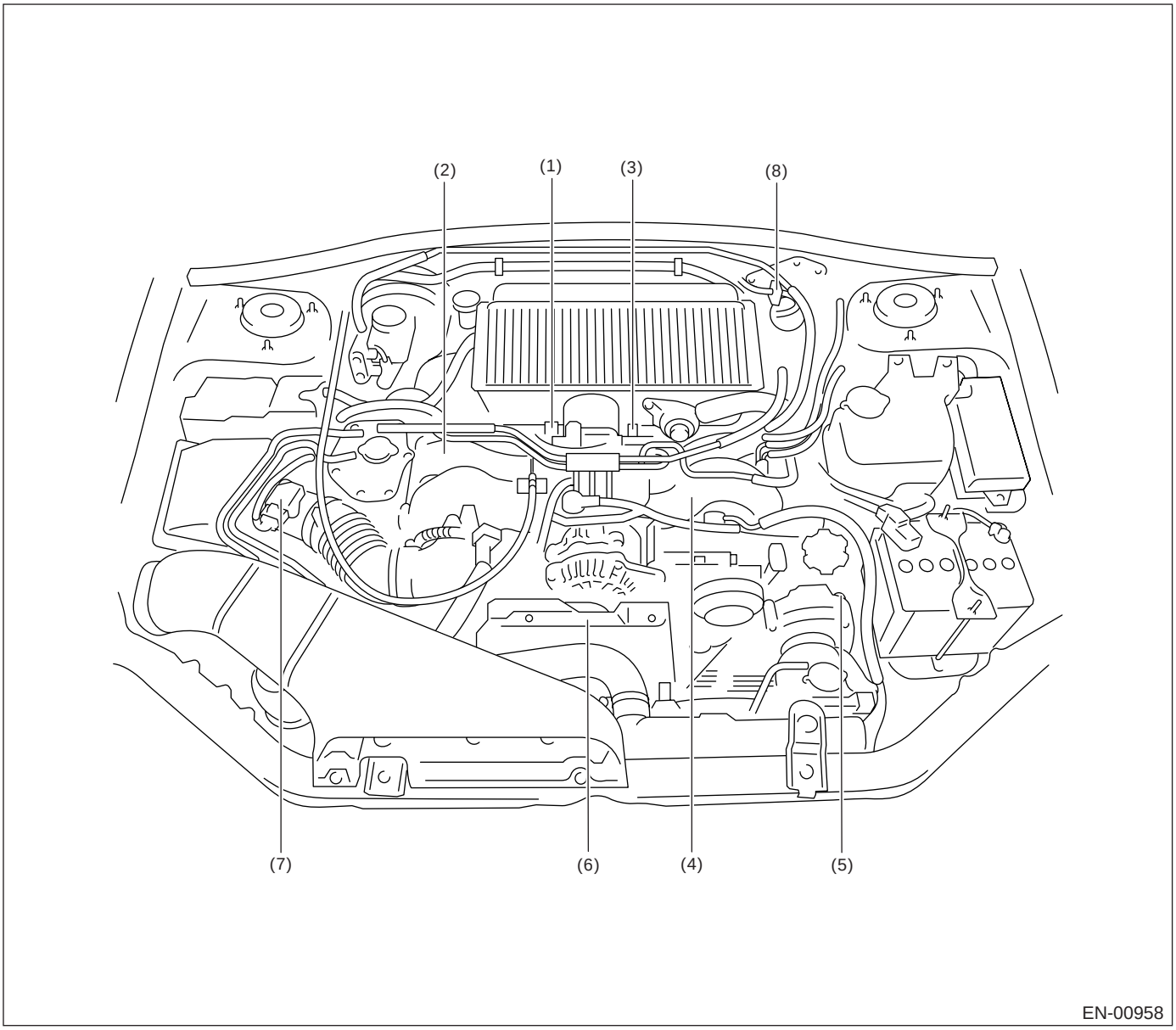


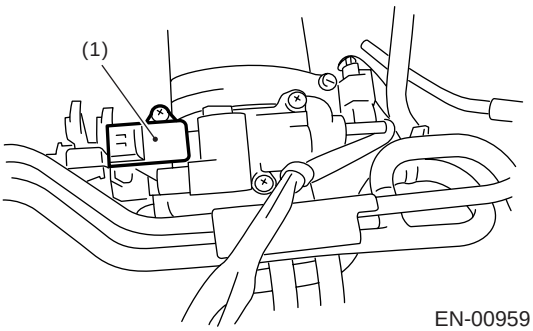



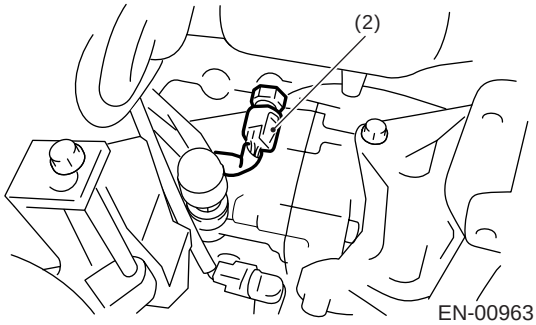
**• SENSOR**



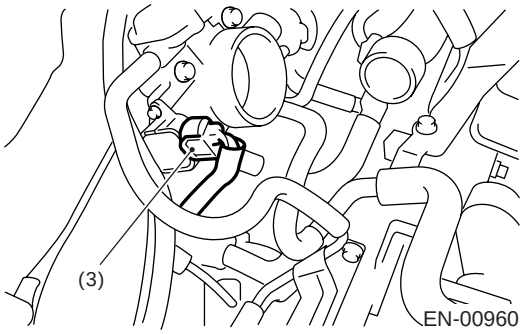

(1) Pressure sensor
(2) Engine coolant temperature sensor
(3) Throttle position sensor
(4) Knock sensor
(5) Camshaft position sensor
(6) Crankshaft position sensor
(7) Mass air flow and intake air temperature sensor
(8) Differential pressure sensor



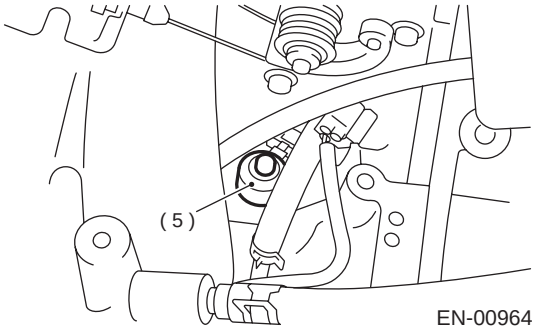
EN-00959



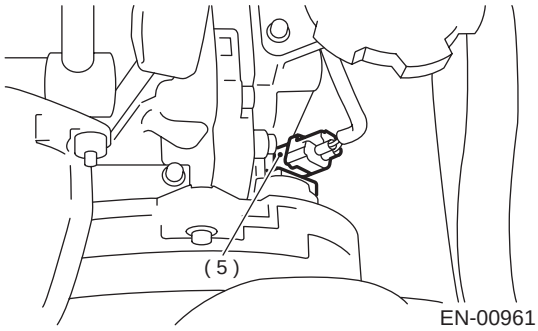
EN-00963



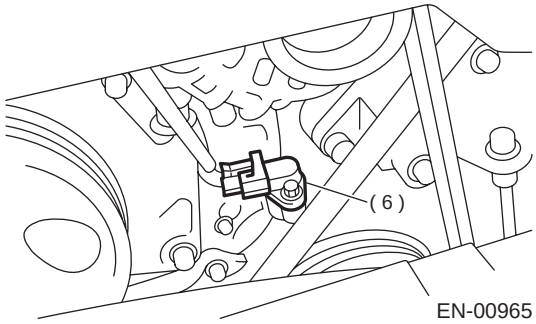
EN-00960



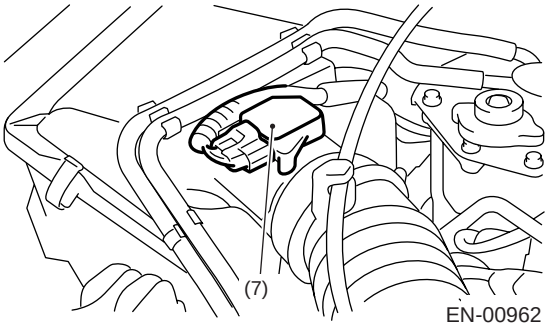
EN-00964



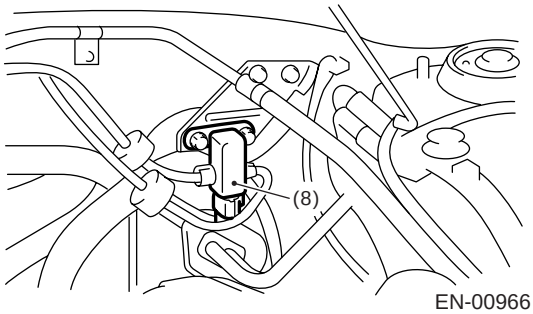
EN-00961



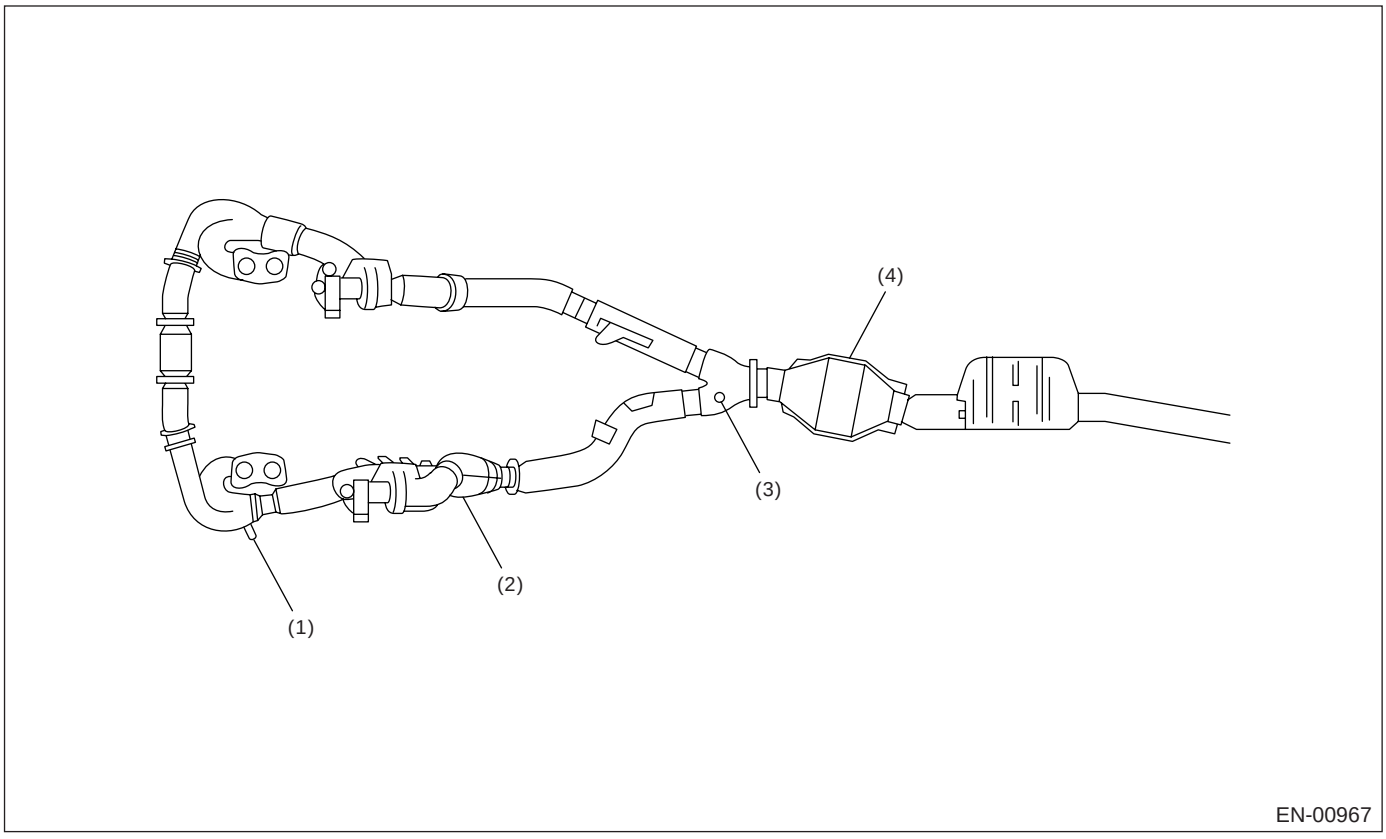
EN-00965



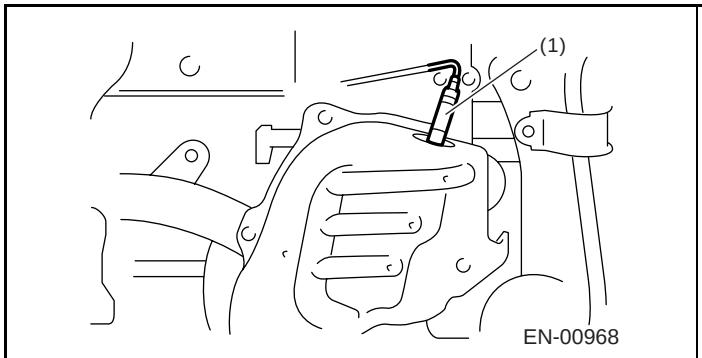
EN-00962

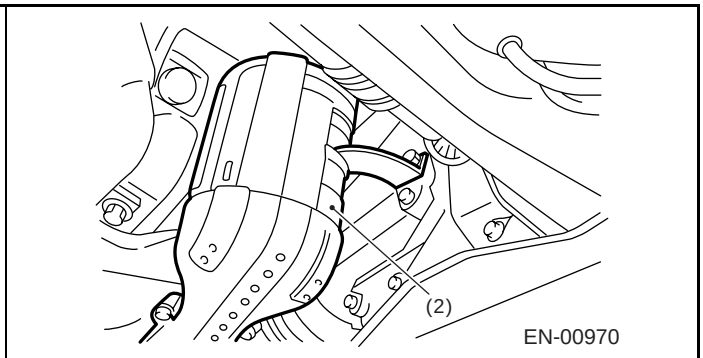


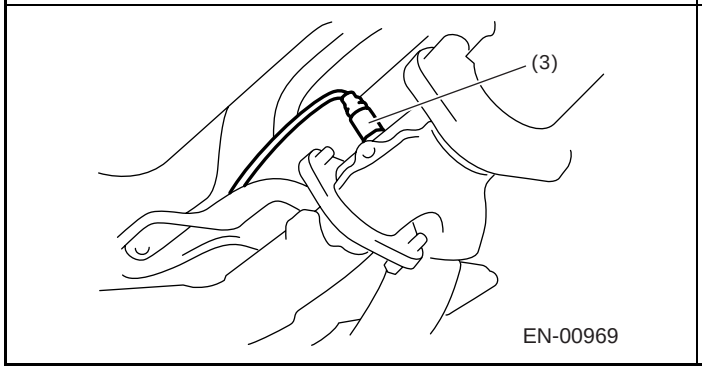
EN-00966

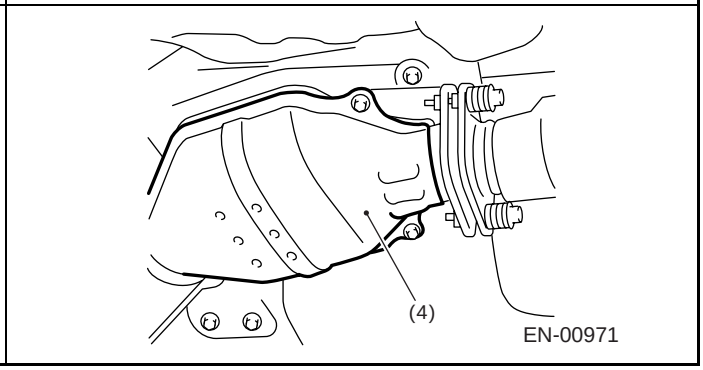



(1) Front oxygen (A/F) sensor
(2) Front catalytic converter
(3) Rear oxygen sensor
(4) Rear catalytic converter

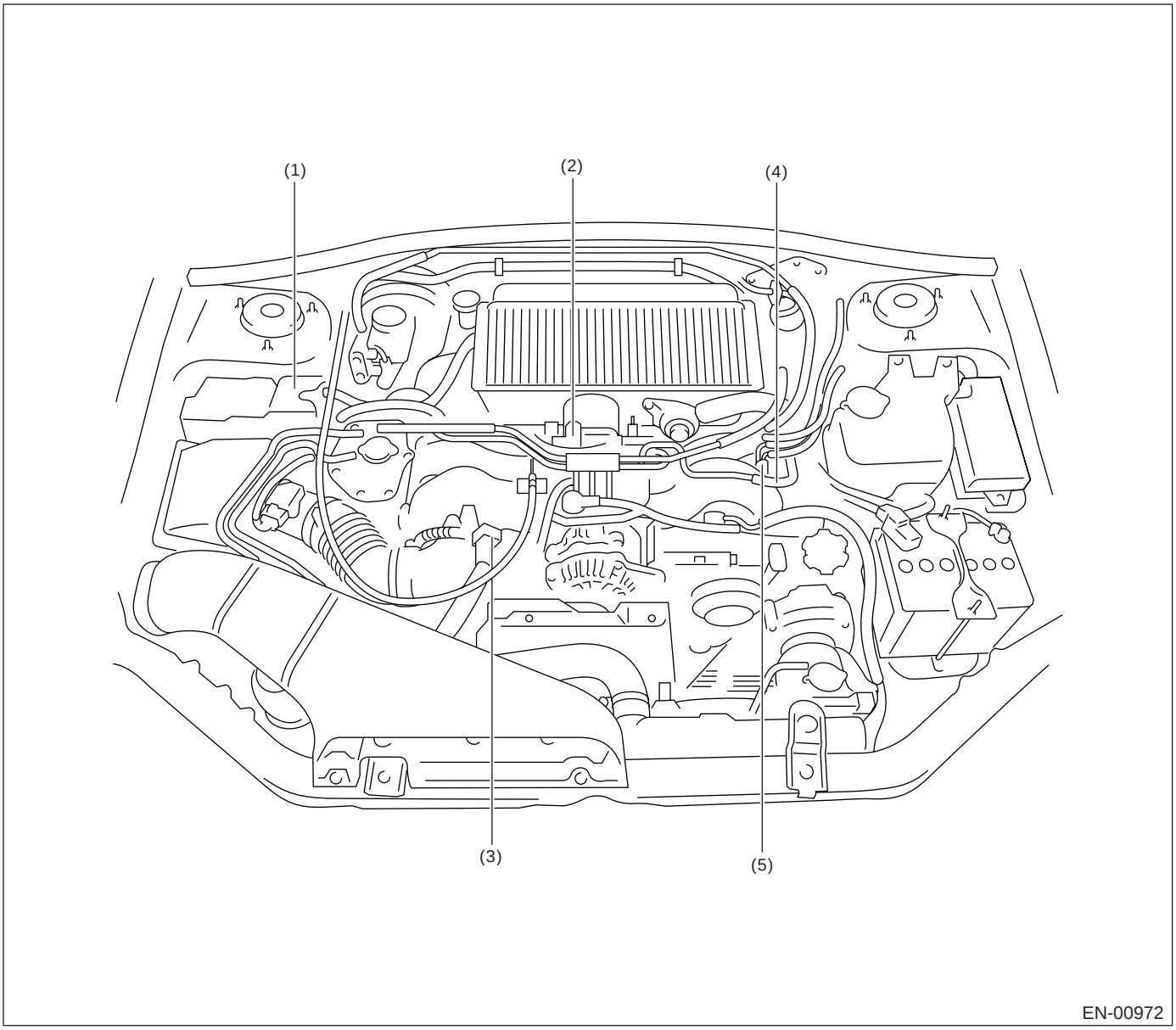


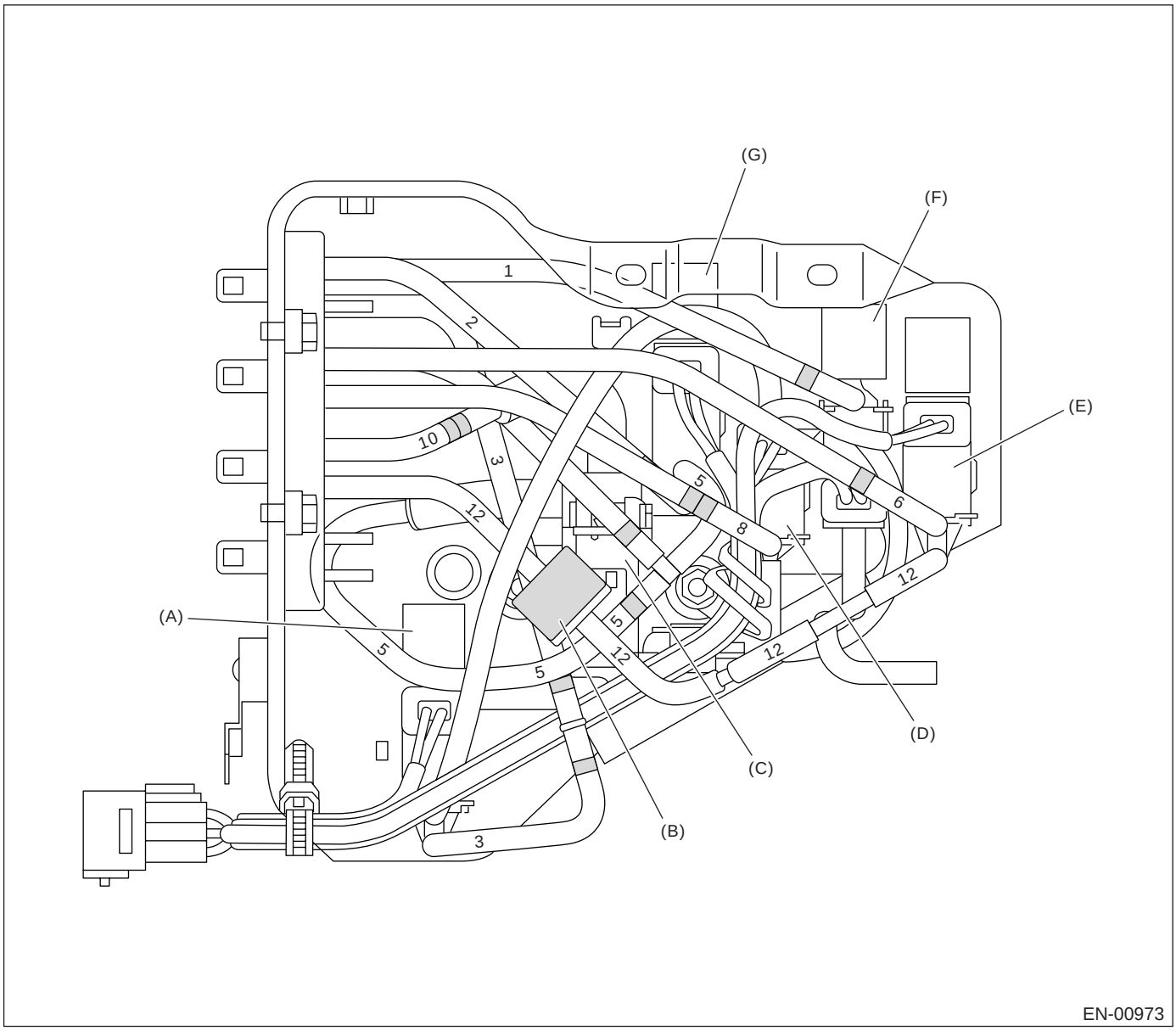



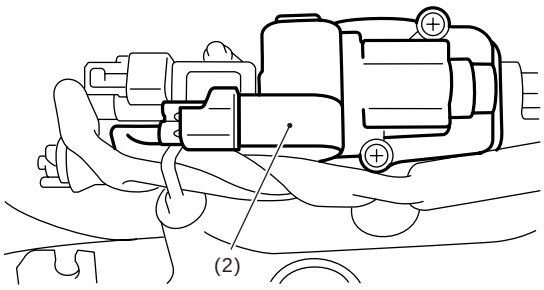
**• SOLENOID VALVE, ACTUATOR, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS**



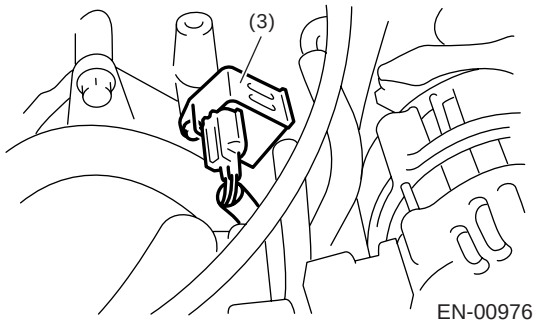

(1) Solenoid box ASSY
(2) Idle air control solenoid valve
(3) Purge control solenoid valve
(4) Ignition coil
(5) Fuel injector



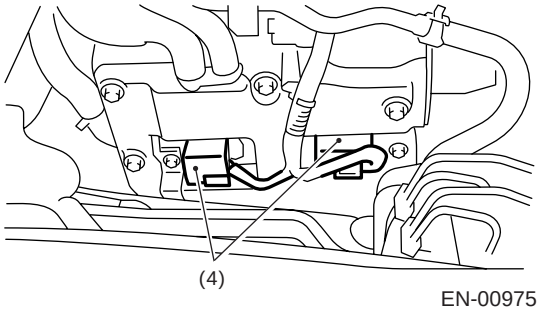

(A) Relief valve control solenoid valve 2
(B) Filter
(C) Exhaust valve control duty solenoid valve
(D) Relief valve control solenoid valve 1
(E) Exhaust valve control solenoid valve (For negative pressure)
(F) Intake air valve control solenoid valve
(G) Exhaust valve control solenoid valve (For positive pressure)



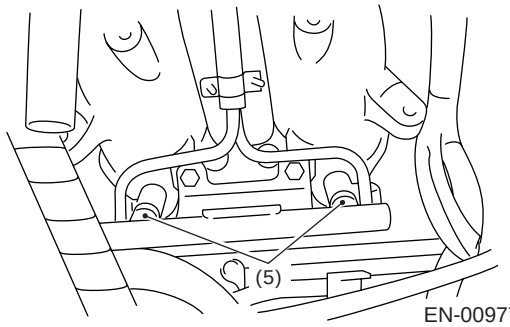
EN-00974



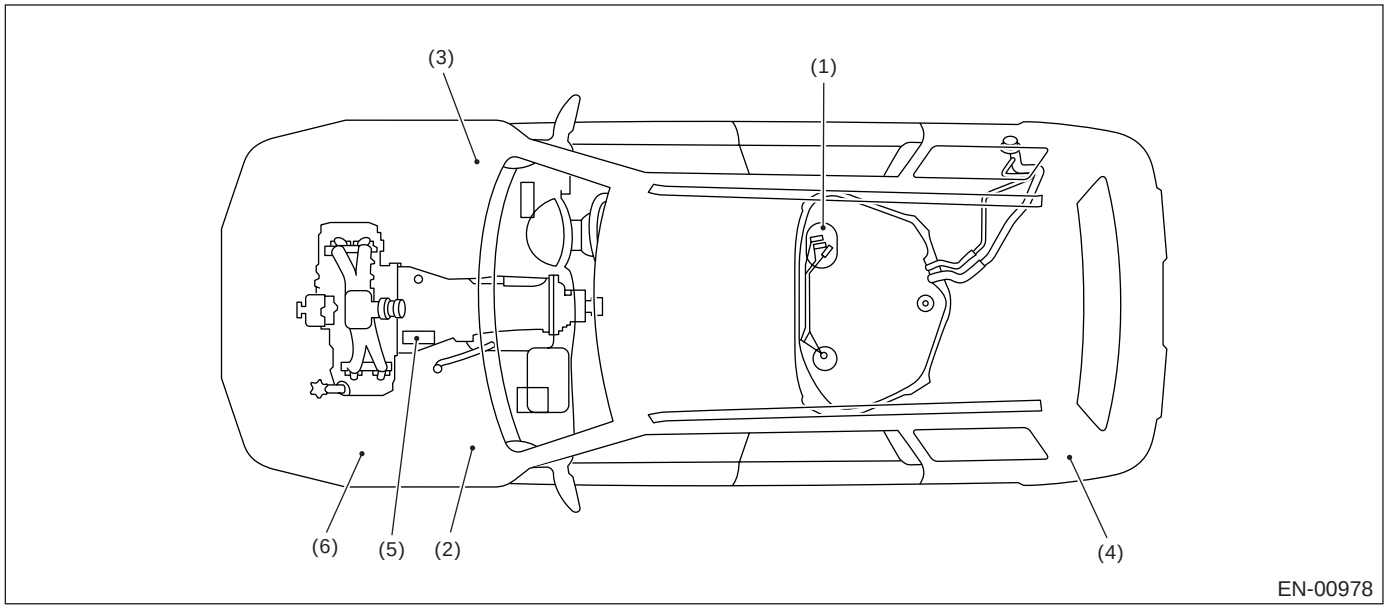
EN-00976



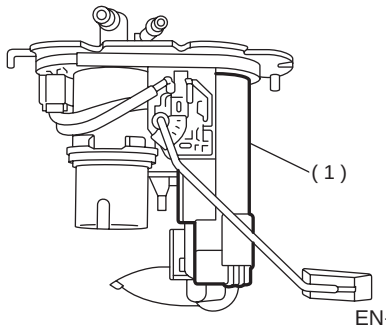
EN-00975

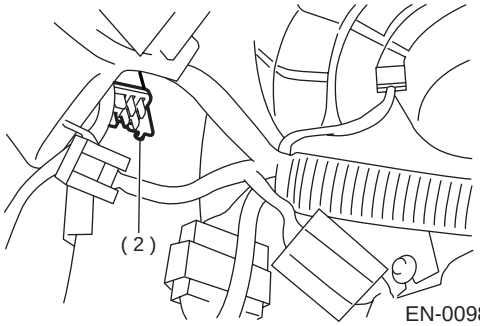


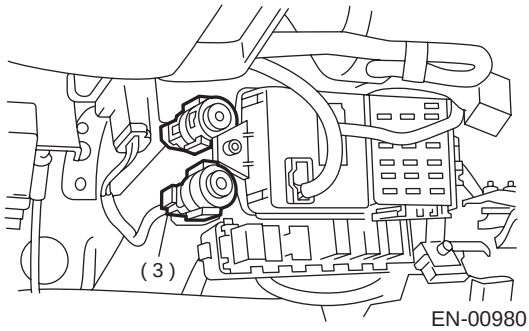
EN-00977

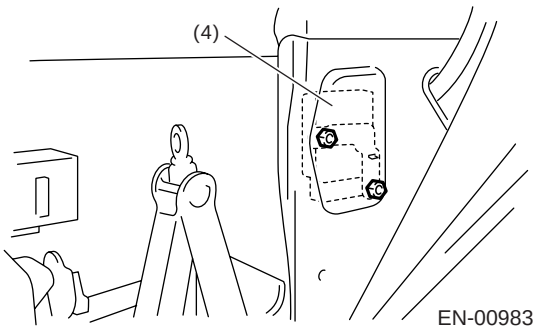


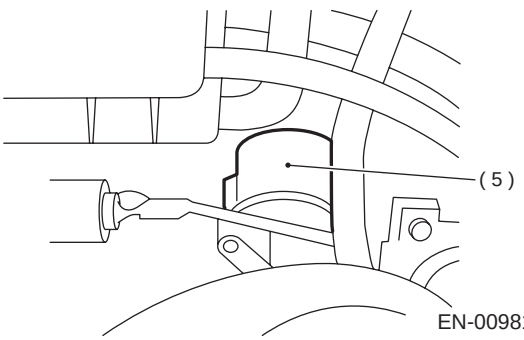

(1) Fuel pump
(2) Main relay
(3) Fuel pump relay
(4) Fuel pump controller
(5) Starter
(6) Wastegate control solenoid valve

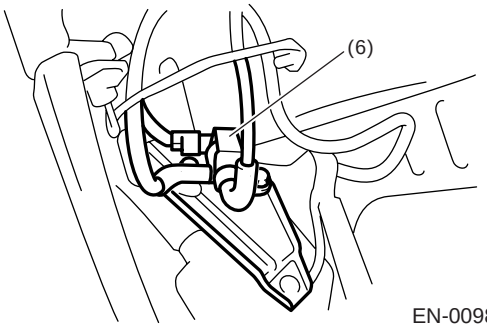


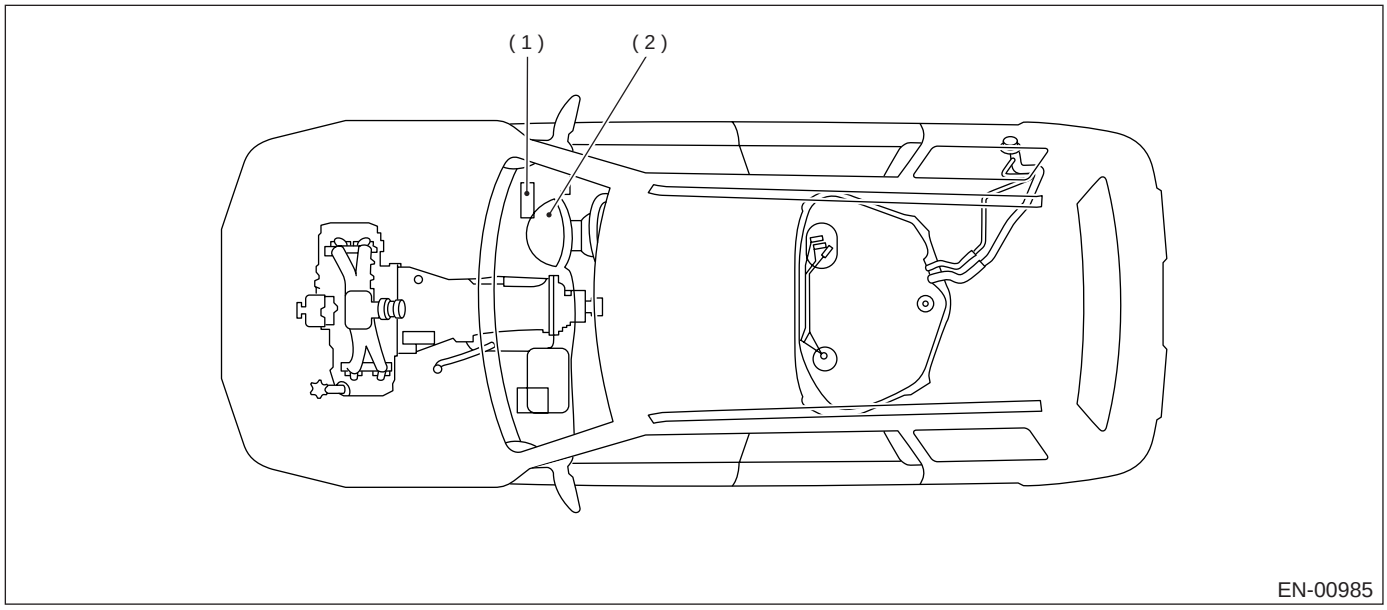



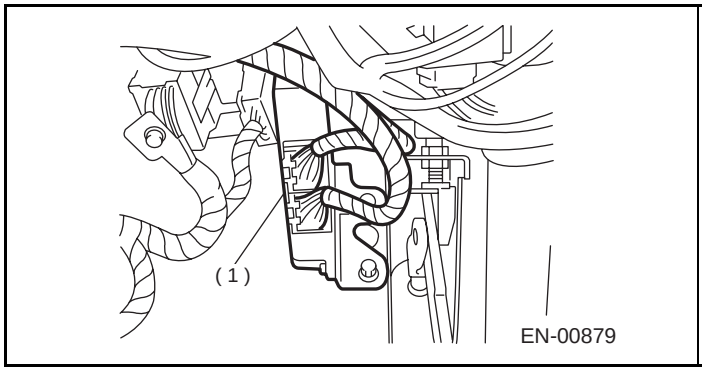



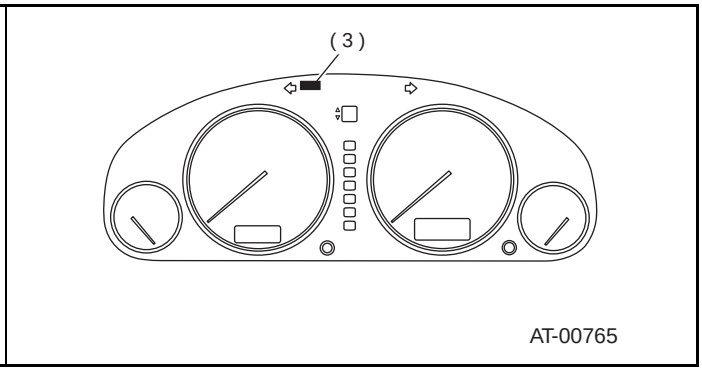
## 2. TRANSMISSION

**• MODULE**

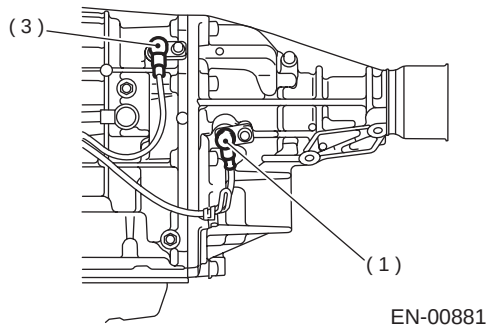


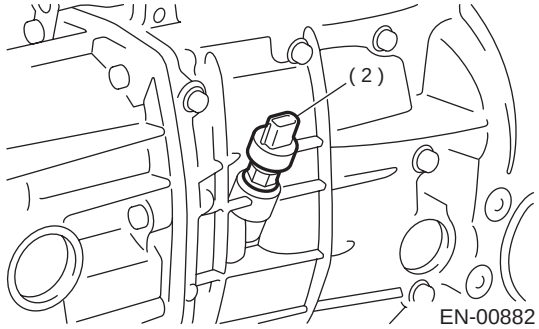

(1) Transmission Control Module (TCM) (for AT vehicles)
(2) AT diagnostic indicator light (for AT vehicles)

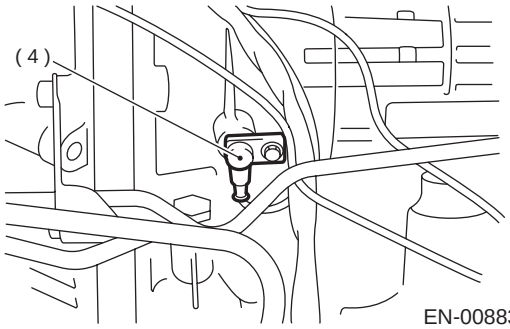


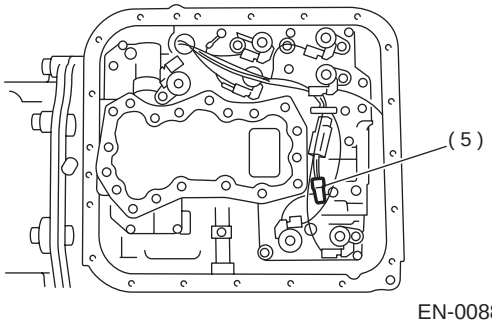



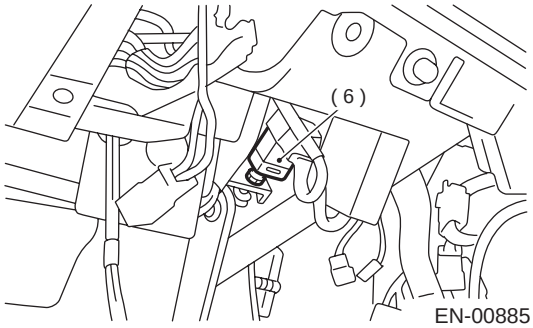
**• SENSOR**



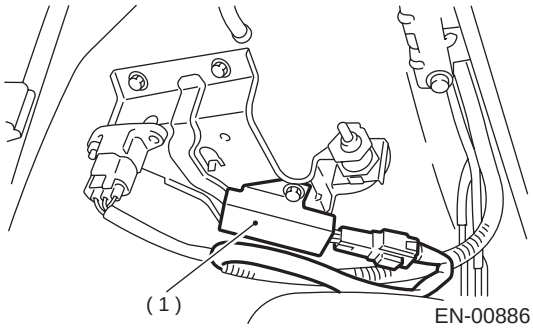



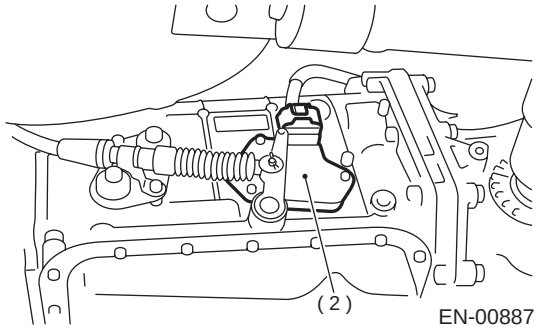



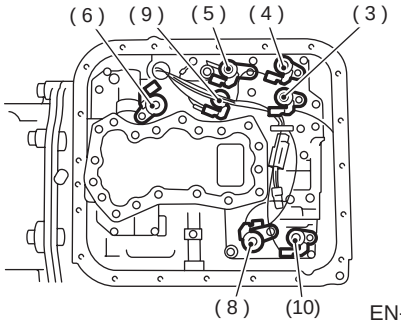



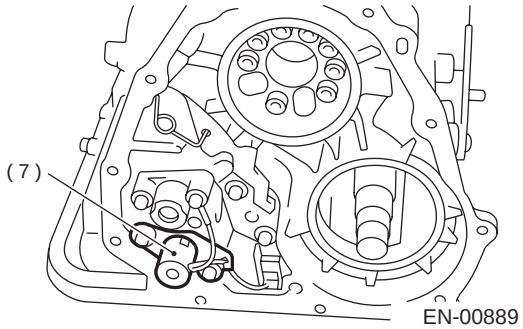

(1) Rear vehicle speed sensor (for AT vehicles)
(2) Front vehicle speed sensor (for MT vehicles)
(3) Front vehicle speed sensor (for AT vehicles)
(4) Torque converter turbine speed sensor
(5) ATF temperature sensor (for AT vehicles)
(6) Brake light switch

## • SOLENOID VALVE AND SWITCH (AT VEHICLES)



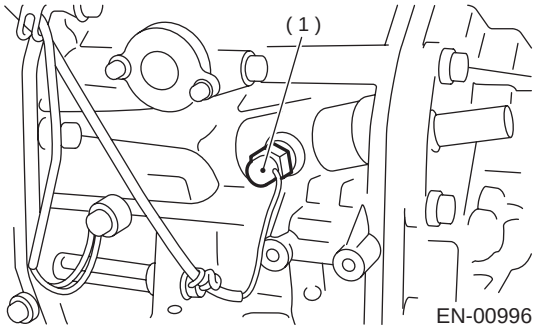




(1) Dropping resistor
(2) Inhibitor switch
(3) Shift solenoid valve 1
(4) Shift solenoid valve 2
(5) Line pressure duty solenoid
(6) Lock-up duty solenoid
(7) Transfer duty solenoid
(8) 2-4 brake duty solenoid
(9) Low clutch timing solenoid valve
(10) 2-4 brake timing solenoid valve

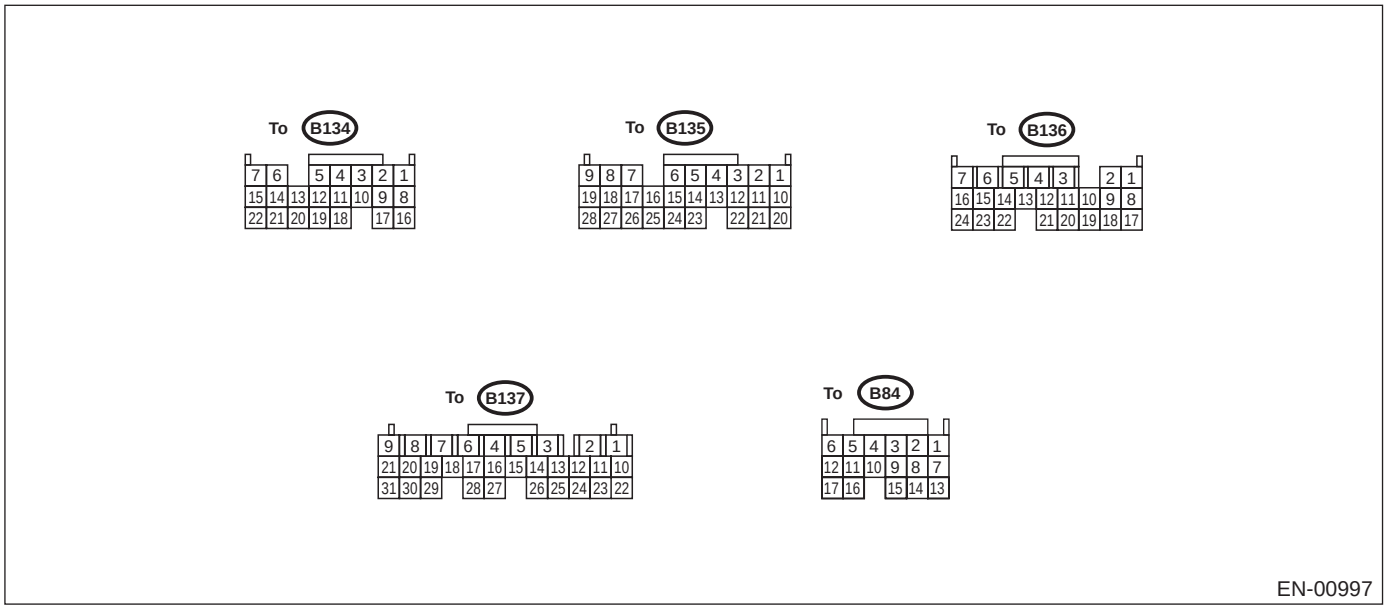
## • SOLENOID VALVE AND SWITCH (MT VEHICLES)




(1) Neutral position switch

# 5. Engine Control Module (ECM) I/O Signal

## A: ELECTRICAL SPECIFICATION




| Content | | Connector No. | Terminal No. | Signal (V) | | Note |
|---|---|---|---|---|---|---|
| | | | | Ignition SW ON (Engine OFF) | Engine ON (Idling) | |
| Crankshaft position sensor | Signal (+) | B135 | 2 | 0 | –7 — +7 | Sensor output waveform |
| | Signal (–) | B135 | 11 | 0 | 0 | — |
| | Shield | B135 | 21 | 0 | 0 | — |
| Camshaft position sensor | Signal (+) | B135 | 1 | 0 | –7 — +7 | Sensor output waveform |
| | Signal (–) | B135 | 10 | 0 | 0 | — |
| | Shield | B135 | 21 | 0 | 0 | — |
| Throttle position sensor | Signal | B135 | 7 | Fully closed: 0.2 — 1.0<br>Fully opened: 4.2 — 4.7 | | — |
| | Power supply | B135 | 9 | 5 | 5 | — |
| | GND (sensor) | B135 | 19 | 0 | 0 | — |
| Rear oxygen sensor | Signal | B135 | 17 | 0 | 0 — 0.9 | — |
| | Shield | B135 | 26 | 0 | 0 | — |
| | GND (sensor) | B135 | 19 | 0 | 0 | — |
| Front oxygen (A/F) sensor heater | Signal 1 | B137 | 4 | 0 — 1.0 | 0 — 1.0 | — |
| | Signal 2 | B137 | 5 | 0 — 1.0 | 0 — 1.0 | — |
| Rear oxygen sensor heater signal | | B136 | 13 | 0 — 1.0 | 0 — 1.0 | — |
| Engine coolant temperature sensor | Signal | B135 | 18 | 1.0 — 1.4 | 1.0 — 1.4 | After warm-up the engine. |
| | GND (sensor) | B135 | 19 | 0 | 0 | After warm-up the engine. |
| Vehicle speed signal | | B134 | 1 | 0 or 5 | 0 or 5 | “5” and “0” are repeatedly displayed when the vehicle is driven. |

| Content | | Connector No. | Terminal No. | Signal (V) | | Note |
|---|---|---|---|---|---|---|
| | | | | Ignition SW ON (Engine OFF) | Engine ON (Idling) | |
| Mass air flow sensor | Signal | B84 | 13 | — | 0.3 — 4.5 | — |
| | Shield | B84 | 8 | 0 | 0 | — |
| | GND | B84 | 7 | 0 | 0 | — |
| Intake air temperature sensor signal | | B135 | 27 | — | — | — |
| Wastegate control solenoid valve | | B137 | 24 | 10 — 13 | 13 — 14 | — |
| Starter switch | | B134 | 16 | 0 | 0 | Cranking: 8 — 14 |
| A/C switch | | B134 | 6 | ON: 10 — 13<br>OFF: 0 | ON: 13 — 14<br>OFF: 0 | — |
| Ignition switch | | B134 | 14 | 10 — 13 | 13 — 14 | — |
| Neutral position switch (MT) | | B134 | 8 | ON: 12±0.5<br>OFF: 0 | | Switch is ON when gear is in neutral position. |
| Neutral position switch (AT) | | B134 | 8 | ON: 0<br>OFF: 12±0.5 | | Switch is ON when shift is in “N” or “P” position. |
| Test mode connector | | B134 | 5 | 5 | 5 | When connected: 0 |
| Knock sensor | Signal | B135 | 4 | 2.8 | 2.8 | — |
| | Shield | B135 | 22 | 0 | 0 | — |
| Back-up power supply | | B137 | 10 | 10 — 13 | 13 — 14 | Ignition switch “OFF”: 10 — 13 |
| Control unit power supply | | B137 | 2 | 10 — 13 | 13 — 14 | — |
| | | B137 | 3 | 10 — 13 | 13 — 14 | — |
| Sensor power supply | | B135 | 9 | 5 | 5 | — |
| Line end check | | B134 | 10 | 0 | 0 | — |
| Ignition control | #1 | B136 | 24 | 0 | 13 — 14 | Waveform |
| | #2 | B136 | 23 | 0 | 13 — 14 | Waveform |
| | #3 | B136 | 22 | 0 | 13 — 14 | Waveform |
| | #4 | B136 | 21 | 0 | 13 — 14 | Waveform |
| Fuel injector | #1 | B137 | 1 | 10 — 13 | 1 — 14 | Waveform |
| | #2 | B136 | 6 | 10 — 13 | 1 — 14 | Waveform |
| | #3 | B136 | 5 | 10 — 13 | 1 — 14 | Waveform |
| | #4 | B136 | 4 | 10 — 13 | 1 — 14 | Waveform |
| Idle air control solenoid valve | Signal | B136 | 10 | 0 or 13 — 14 | 0 or 13 — 14 | Waveform |
| Fuel pump controller | Signal 1 | B134 | 13 | — | — | — |
| | Signal 2 | B136 | 16 | — | — | — |
| A/C relay control | | B137 | 27 | ON: 0.5, or less<br>OFF: 10 — 13 | ON: 0.5, or less<br>OFF: 13 — 14 | — |
| Radiator fan relay 1 control | | B137 | 17 | ON: 0.5, or less<br>OFF: 10 — 13 | ON: 0.5, or less<br>OFF: 13 — 14 | — |
| Radiator fan relay 2 control | | B137 | 28 | ON: 0.5, or less<br>OFF: 10 — 13 | ON: 0.5, or less<br>OFF: 13 — 14 | With A/C vehicles only |
| Malfunction indicator lamp | | B137 | 15 | — | — | Light “ON”: 1, or less<br>Light “OFF”: 10 — 14 |
| Engine speed output | | B136 | 9 | — | 0 — 13, or more | Waveform |
| Torque control signal 1 | | B134 | 19 | 5 | 5 | — |
| Torque control signal 2 | | B134 | 18 | 5 | 5 | — |
| Torque control cut signal | | B136 | 14 | 8 | 8 | — |
| Purge control solenoid valve | | B137 | 16 | ON: 1, or less<br>OFF: 10 — 13 | ON: 1, or less<br>OFF: 13 — 14 | — |

# ENGINE CONTROL MODULE (ECM) I/O SIGNAL

| Content | | Connector No. | Terminal No. | Signal (V) | | Note |
|---|---|---|---|---|---|---|
| | | | | Ignition SW ON (Engine OFF) | Engine ON (Idling) | |
| Pressure sensor | Signal | B135 | 8 | 1.7 — 2.4 | 1.1 — 1.6 | — |
| | Power supply | B135 | 9 | 5 | 5 | |
| | GND (sensor) | B135 | 19 | 0 | 0 | |
| Small light switch | | B134 | 17 | ON: 0<br>OFF: 10 — 13 | ON: 0<br>OFF: 13 — 14 | — |
| Blower fan switch | | B134 | 9 | ON: 0<br>OFF: 10 — 13 | ON: 0<br>OFF: 13 — 14 | — |
| Rear defogger switch | | B134 | 3 | ON: 0<br>OFF: 10 — 13 | ON: 0<br>OFF: 13 — 14 | — |
| Power steering oil pressure switch | | B135 | 24 | 10 — 13 | ON: 0<br>OFF: 13 — 14 | — |
| Front oxygen (A/F) sensor signal (+) | | B137 | 19 | 2.8 — 3.2 | 2.8 — 3.2 | — |
| Front oxygen (A/F) sensor signal (–) | | B137 | 29 | 2.4 — 2.7 | 2.4 — 2.7 | — |
| Front oxygen (A/F) sensor shield | | B137 | 18 | 0 | 0 | — |
| SSM/GST communication line | | B134 | 21 | Less than 1 ←→ More than 4 | Less than 1 ←→ More than 4 | — |
| GND (sensors) | | B135 | 19 | 0 | 0 | — |
| GND (injectors) | | B136 | 8 | 0 | 0 | — |
| GND (ignition system) | | B136 | 18 | 0 | 0 | — |
| GND (power supply) | | B136 | 17 | 0 | 0 | — |
| | | B134 | 22 | 0 | 0 | — |
| GND (control systems) | | B134 | 7 | 0 | 0 | — |
| | | B134 | 15 | 0 | 0 | — |
| GND (oxygen sensor heater 1) | | B137 | 9 | 0 | 0 | — |
| GND (oxygen sensor heater 2) | | B137 | 8 | 0 | 0 | — |
| Differential pressure sensor signal | | B135 | 15 | 2 | 2 | — |
| Relief valve control solenoid valve 2 signal | | B136 | 11 | 10 — 13 | 13 — 14 | — |
| Relief valve control solenoid valve 1 signal | | B136 | 12 | 10 — 13 | 13 — 14 | — |
| Exhaust valve control solenoid valve (negative pressure) signal | | B136 | 3 | 10 — 13 | 13 — 14 | — |
| Exhaust valve control solenoid valve (positive pressure) signal | | B136 | 1 | 10 — 13 | 13 — 14 | — |
| Intake air valve control solenoid valve signal | | B137 | 12 | 10 — 13 | 13 — 14 | — |
| Exhaust valve control duty solenoid valve | | B137 | 11 | 10 — 13 | 13 — 14 | — |

# 6. Engine Condition Data

## A: ELECTRICAL SPECIFICATION

| Content | Specified data |
|---|---|
| Engine load | 1.6 — 2.9 (%): Idling |
| | 6.4 — 12.8 (%): 2,500 rpm racing |

Measuring condition:
- After engine is warmed-up.
- Gear position is in neutral position.
- A/C is turned OFF.
- All accessory switches are turned OFF.

# 7. Transmission Control Module (TCM) I/O Signal

## A: ELECTRICAL SPECIFICATION

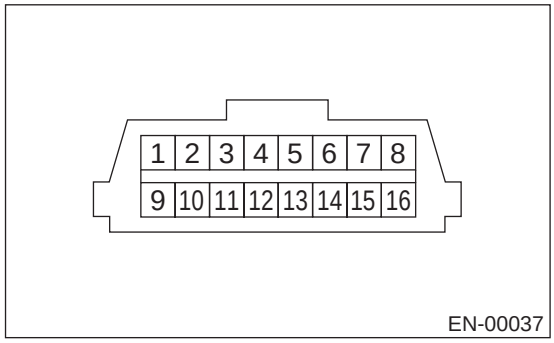
<Ref. to AT-14, Transmission Control Module (TCM) I/O Signal.>

# 8. Data Link Connector

## A: NOTE

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 Subaru Select Monitor, because the circuit for the Subaru Select Monitor may be damaged.**



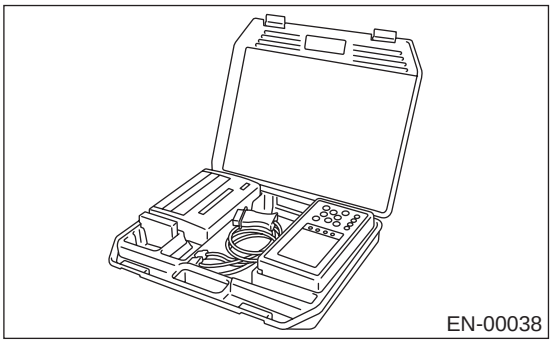

| Terminal No. | Contents | Terminal No. | Contents |
|---|---|---|---|
| 1 | Power supply | 9 | Blank |
| 2 | Blank | 10 | K line of ISO 9141 CARB |
| 3 | Blank | 11 | Blank |
| 4 | Blank | 12 | Ground |
| 5 | Blank | 13 | Ground |
| 6 | Flash write | 14 | Blank |
| 7 | Blank | 15 | Blank |
| 8 | Blank | 16 | Blank |

# 9. Subaru Select Monitor

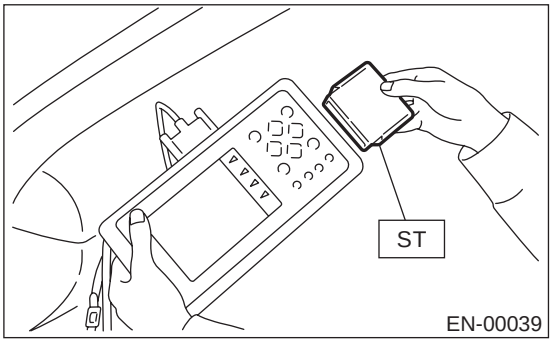
## A: OPERATION

### 1. HOW TO USE SUBARU SELECT MONITOR

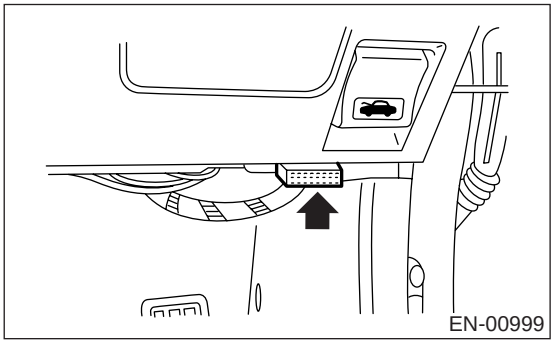
1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOSTC)-8, PREPARATION TOOL, General Description.>




2) Connect the diagnosis cable to Subaru Select Monitor.
3) Insert the cartridge into Subaru Select Monitor. <Ref. to EN(H4DOSTC)-8, PREPARATION TOOL, General Description.>



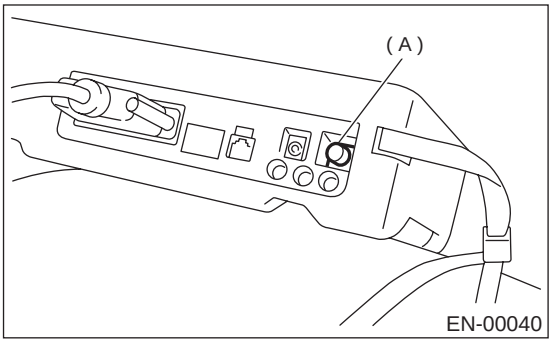

4) Connect the Subaru Select Monitor to data link connector.
(1) Data link connector located in the lower portion of the instrument panel (on the driver's side).




(2) Connect the diagnosis cable to data link connector.

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

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




(A) Power switch

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

### 2. READ DIAGNOSTIC TROUBLE CODE (DTC) FOR ENGINE. (NORMAL MODE)

Refer to Read Diagnostic Trouble Code for information about how to indicate DTC. <Ref. to EN(H4DOSTC)-32, Read Diagnostic Trouble Code.>

### 3. READ DIAGNOSTIC TROUBLE CODE (DTC) FOR ENGINE. (OBD MODE)

Refer to Read Diagnostic Trouble Code for information about how to indicate DTC. <Ref. to EN(H4DOSTC)-32, Read Diagnostic Trouble Code.>

## 4. READ CURRENT DATA FOR ENGINE. (NORMAL MODE)

1) On the «Main Menu» display screen, select the {Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
5) On the «Data Display Menu» display screen, select the {Data Display} and press [YES] key.
6) Using the scroll key, move the display screen up or down until 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 Duty Ratio | % |
| Alternator duty control signal | ALT Duty | % |
| Fuel pump duty control signal | Fuel Pump Duty | % |
| A/F sensor resistance | A/F Sensor #1 Resistance | Ω |
| Front oxygen (A/F) sensor output signal | A/F Sensor Output Lamda 1 | — |
| Rear oxygen sensor output signal | Rear O2 Sensor | V |
| Short term fuel trim | A/F Correction #1 | % |
| Knock sensor signal | Knocking Signal | deg |
| Atmospheric absolute pressure signal | Atmosphere Pressure | mmHg or kPa or inHg or psig |
| Intake manifold relative pressure signal | Mani. Relative Pressure | mmHg or kPa or inHg or psig |
| Intake manifold absolute pressure signal | Mani. Absolute Pressure | mmHg or kPa or inHg or psig |
| 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 Current 1 | A |
| Rear oxygen sensor heater voltage | Rear O2 Heater Voltage | V |
| Canister purge control solenoid valve duty ratio | CPC Valve Duty Ratio | % |
| Primary supercharged pressure control signal | Primary Control | % |
| Secondary supercharged pressure control signal | Secondary control | % |
| Differential pressure sensor signal | Diff. Press. Sen. Vol. | V |
| Differential pressure sensor signal | Pressure Diff. Sensor | mmHg or kPa or inHg or psig |
| Intake air temperature signal | Intake Air Temp. | °C or °F |
| Mass air flow sensor signal | Mass Air Flow | g/s |
| Mass air flow sensor signal | Air Flow Sensor Voltage | 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 signal | A/C Compressor Signal | ON or OFF |
| Radiator main fan relay signal | Radiator Fan Relay #1 | ON or OFF |
| Knocking signal | Knocking Signal | ON or OFF |
| Radiator sub fan relay signal | Radiator Fan Relay #2 | ON or OFF |

| Contents | Display | Unit of measure |
|---|---|---|
| Power steering switch signal | P/S Switch | ON or OFF |
| Rear oxygen sensor rich signal | Rear O2 Rich Signal | ON or OFF |
| Starter switch signal | Starter Switch | 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 SW | ON or OFF |
| Blower fan switch signal | Blower Fan SW | ON or OFF |
| Small light switch signal | Light Switch | ON or OFF |
| Supercharged pressure relief valve solenoid 1 signal | Relief Valve Solenoid 1 | ON or OFF |
| Supercharged pressure relief valve solenoid 2 signal | Relief Valve Solenoid 2 | ON or OFF |
| Exhaust gas positive pressure signal | Ex. Gas Pos. Pressure | ON or OFF |
| Exhaust gas negative pressure signal | Ex. Gas Neg. Pressure | ON or OFF |
| Read memory connector signal | Read Memory Signal | ON or OFF |
| MT/AT identification signal | AT Vehicle ID Signal | ON or OFF |
| TCS relief valve solenoid signal | TCS Relief Valve Sol. | ON or OFF |
| Engine torque control signal #1 | Torque Control Signal #1 | ON or OFF |
| Engine torque control signal #2 | Torque Control Signal #2 | ON or OFF |
| Engine torque control permission signal | Torque Permission Signal | ON or OFF |

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

## 5. READ CURRENT DATA FOR ENGINE. (OBD MODE)

1) On the «Main Menu» display screen, select the {Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
5) On the «OBD Menu» display screen, select the {Current Data Display & Save} and press [YES] key.
6) On the «Data Display Menu» display screen, select the {Data Display} and press [YES] key.
7) Using the scroll key, move the display screen up or down until 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 | MI (MI) | Complete or incomplete |
| Monitoring test of misfire | Misfire monitoring | No support |
| Monitoring test of fuel system | Fuel system monitoring | Complete or incomplete |
| Monitoring test of comprehensive component | Component monitoring | Complete or incomplete |
| Test of catalyst | Catalyst Diagnosis | No support |
| Test of heated catalyst | Heated catalyst | No support |
| Test of evaporative emission purge control system | Evaporative purge system | No support |
| Test of secondary air system | Secondary air system | No support |
| Test of air conditioning system refrigerant | A/C system refrigerant | No support |
| Test of oxygen sensor | Oxygen sensor | Complete or incomplete |
| Test of oxygen sensor heater | O2 Heater Diagnosis | Complete or incomplete |
| Test of EGR system | EGR system | No support |

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

## 6. READ FREEZE FRAME DATA FOR ENGINE. (OBD MODE)

1) On the «Main Menu» display screen, select the {Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
5) On the «OBD Menu» display screen, select the {Freeze Frame Data} and press [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 psig |
| 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. LED OPERATION MODE FOR ENGINE

1) On the «Main Menu» display screen, select the {Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
5) On the «Data Display Menu» display screen, select the {Data & LED Display} and press [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 SW | ON or OFF | When neutral position signal is entered. |
| Air conditioning switch signal | A/C SW | 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. |
| 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. |
| Rear oxygen sensor rich signal | Rear O2 Rich Signal | ON or OFF | When rear oxygen sensor mixture ratio is rich. |
| 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. |

| Contents | Display | Message | LED “ON” requirements |
|---|---|---|---|
| Camshaft position sensor signal | Camshaft Position Sig. | ON or OFF | When camshaft position sensor signal is entered. |
| Power steering switch signal | P/S SW | ON or OFF | When power steering switch is entered. |
| Rear defogger switch signal | Rear Defogger SW | ON or OFF | When rear defogger switch is turned ON. |
| Blower fan switch signal | Blower Fan SW | ON or OFF | When blower fan switch is turned ON. |
| Light switch signal | Light SW | ON or OFF | When small light switch is turned ON. |

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

## 8. READ CURRENT DATA 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 |
| Rear vehicle speed sensor signal | Vehicle Speed #1 | km/h or MPH |
| Front vehicle speed sensor 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 |
| 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 |

| Contents | Display | Unit of measure |
|---|---|---|
| Automatic transmission diagnosis indicator lamp | AT Diagnosis Lamp | ON or OFF |

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
For select monitor display details, refer to the following.

# 10.Read Diagnostic Trouble Code

## A: OPERATION

### 1. SUBARU SELECT MONITOR (NORMAL MODE)

1) On the «Main Menu» display screen, select the {Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
5) On the «Diagnostic Code(s) Display» display screen, select the {Current Diagnostic Code(s)} or {History Diagnostic Code(s)} and press [YES] key.

NOTE:
• For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
• For detailed concerning diagnostic trouble codes, refer to the List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).>

### 2. SUBARU SELECT MONITOR (OBD MODE)

1) On the «Main Menu» display screen, select the {2. Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
5) On the «OBD Menu» display screen, select the {Diagnosis Code(s) Display} and press [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 List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).>

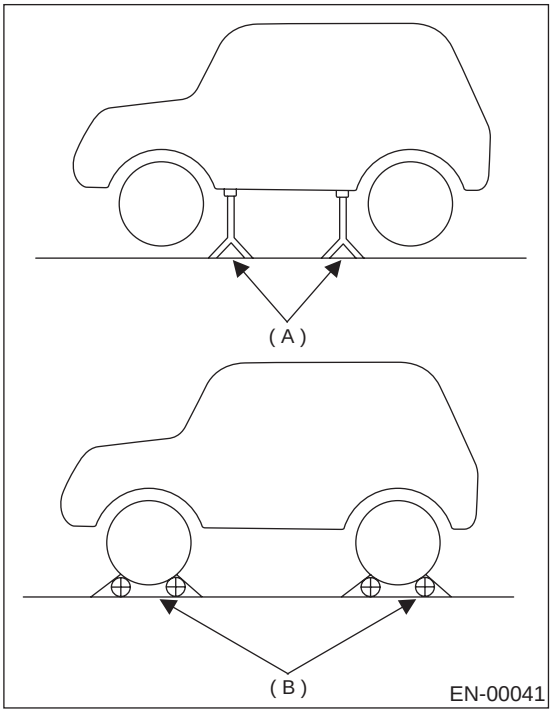
# 11.Inspection Mode

## A: OPERATION

### 1. PREPARATION FOR THE INSPECTION MODE

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

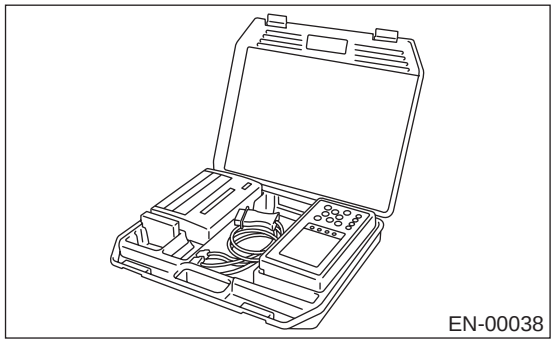
**WARNING:**
**• Before raising the vehicle, ensure parking brakes are applied.**
**• Do not use a pantograph jack in place of a safety stand.**
**• Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runout of front wheels.**
**• Do not abruptly depress/release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



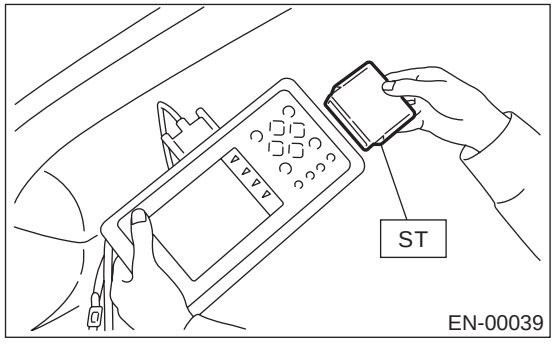

(A) Safety stand
(B) Free rollers

### 2. SUBARU SELECT MONITOR

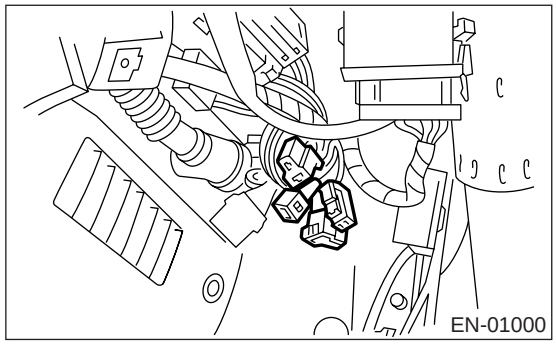
After performing diagnostics and clearing the memory, check for any remaining unresolved trouble data.
1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOSTC)-8, PREPARATION TOOL, General Description.>




2) Connect the diagnosis cable to Subaru Select Monitor.
3) Insert the cartridge into Subaru Select Monitor. <Ref. to EN(H4DOSTC)-8, PREPARATION TOOL, General Description.>

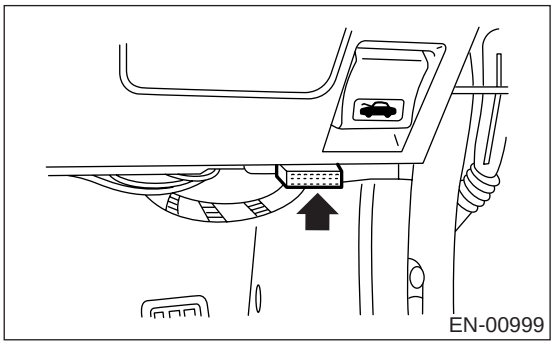



4) Connect the test mode connector at the lower portion of instrument panel (on the driver's side), to the side of center console box.



5) Connect the Subaru Select Monitor to data link connector.

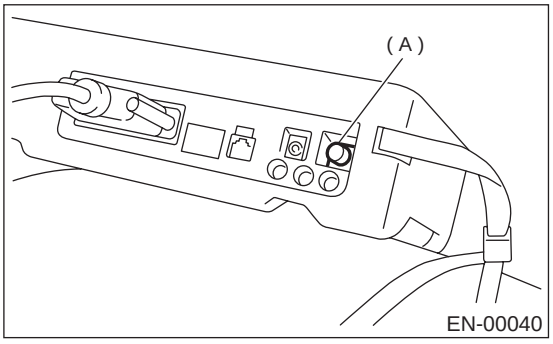
(1) Connect the Subaru Select Monitor to data link connector located in the lower portion of instrument panel (on the driver's side).




(2) Connect the diagnosis cable to data link connector.

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

6) Turn the 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 [YES] key.
8) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
11) When the “Perform Inspection (Dealer Check) Mode?” is shown on the display screen, press [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 List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).>
• Release the parking brake.
• The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system.

# 12.Clear Memory Mode

## A: OPERATION

### 1. SUBARU SELECT MONITOR (NORMAL MODE)

1) On the «Main Menu» display screen, select the {2. Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
5) When the 'Done' and 'Turn Ignition Switch OFF' are shown on the display screen, turn the Subaru Select Monitor and ignition switch to OFF.

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

### 2. SUBARU SELECT MONITOR (OBD MODE)

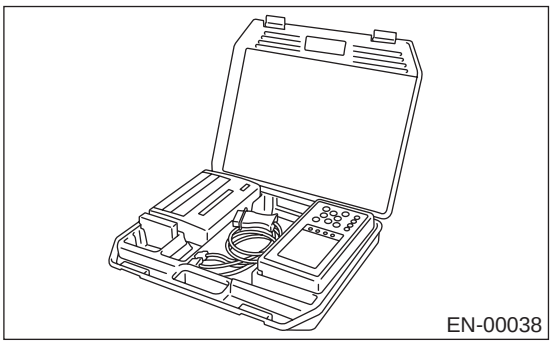
1) On the «Main Menu» display screen, select the {2. Each System Check} and press [YES] key.
2) On the «System Selection Menu» display screen, select the {Engine Control System} and press [YES] key.
3) Press the [YES] key after displayed the information of engine type.
4) On the «Engine Diagnosis» display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

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

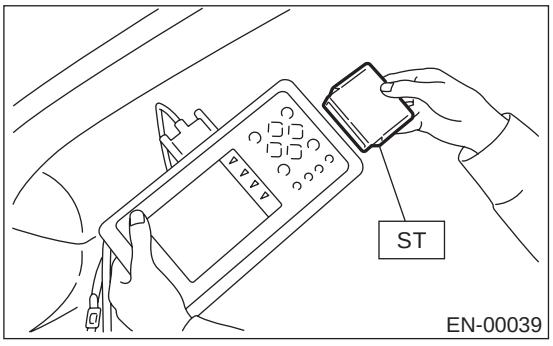
# 13.Compulsory Valve Operation Check Mode

## A: OPERATION

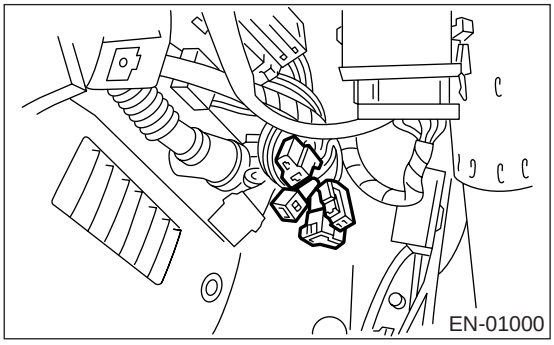
1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOSTC)-8, PREPARATION TOOL, General Description.>




2) Connect the diagnosis cable to Subaru Select Monitor.
3) Insert the cartridge into Subaru Select Monitor. <Ref. to EN(H4DOSTC)-8, PREPARATION TOOL, General Description.>

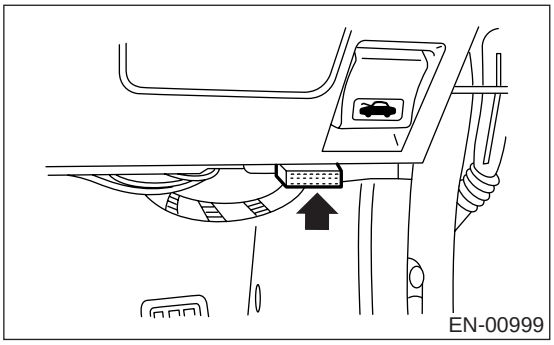



4) Connect the test mode connector at the lower portion of instrument panel (on the driver's side), to the side of center console box.




5) Connect the Subaru Select Monitor to data link connector.

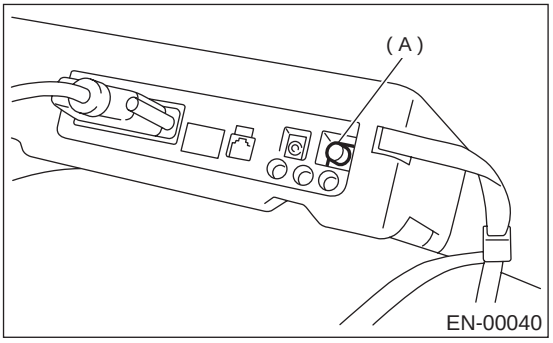
(1) Connect the Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side).




(2) Connect the diagnosis cable to data link connector.

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

6) Turn the 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 [YES] key.
8) On the «System Selection Menu» display screen, select the {Engine Control System} and press [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 [YES] key.
11) On the «System Operation Check Mode» display screen, select the {Actuator ON/OFF Operation} and press [YES] key.
12) Select the desired compulsory actuator on the «Actuator ON/OFF Operation» display screen and press [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 Compressor Relay |
| Compulsory purge control solenoid valve operation check | CPC Solenoid Valve |
| Compulsory relief valve control solenoid valve operation check | — |
| Compulsory exhaust valve control solenoid valve operation check | — |
| Compulsory intake air control solenoid valve operation check | — |

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

# 14.Engine Malfunction Indicator Lamp (MI)

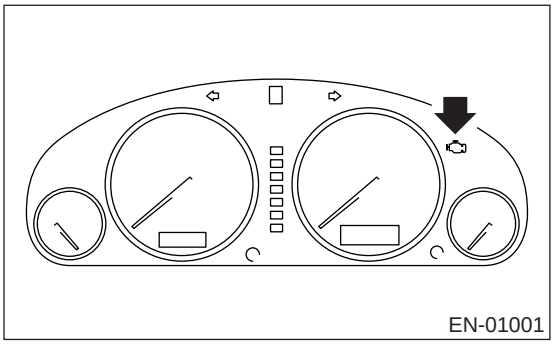
## A: PROCEDURE

| |
|---|
| 1. Activation of check engine malfunction indicator lamp (MI). <Ref. to EN(H4DOSTC)-39, ACTIVATION OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI), Engine Malfunction Indicator Lamp (MI).> |
| ↓ |
| 2. Check that engine malfunction indicator lamp (MI) does not come on. <Ref. to EN(H4DOSTC)-40, CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT COME ON., Engine Malfunction Indicator Lamp (MI).> |
| ↓ |
| 3. Check that engine malfunction indicator lamp (MI) does not go off. <Ref. to EN(H4DOSTC)-44, CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT GO OFF., Engine Malfunction Indicator Lamp (MI).> |
| ↓ |
| 4. Check that engine malfunction indicator lamp (MI) does not blink at a cycle of 3 Hz. <Ref. to EN(H4DOSTC)-46, CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT BLINK AT A CYCLE OF 3 HZ., Engine Malfunction Indicator Lamp (MI).> |
| ↓ |
| 5. Check that engine malfunction indicator lamp (MI) remains blinking at a cycle of 3 Hz. <Ref. to EN(H4DOSTC)-48, CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) REMAINS BLINKING AT A CYCLE OF 3 HZ., Engine Malfunction Indicator Lamp (MI).> |

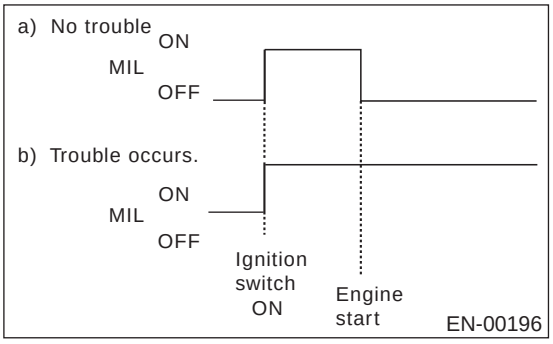
## B: ACTIVATION OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI)

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

NOTE:
If the MI does not illuminate, perform diagnostics of the CHECK ENGINE light circuit or the combination meter circuit. <Ref. to EN(H4DOSTC)-40, CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT COME ON., Engine Malfunction Indicator Lamp (MI).>

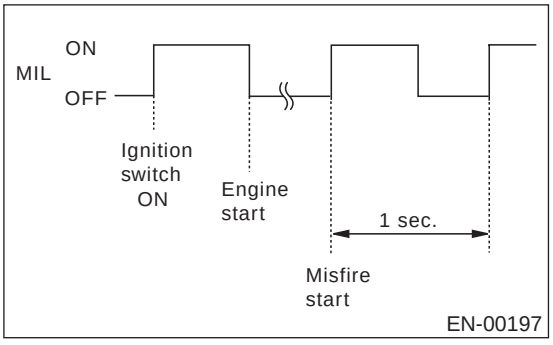

EN-01001

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



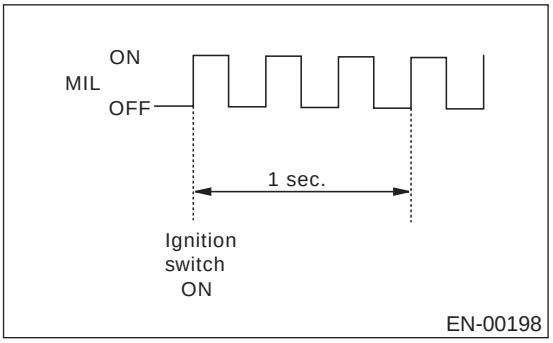
EN-00196

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



EN-00197

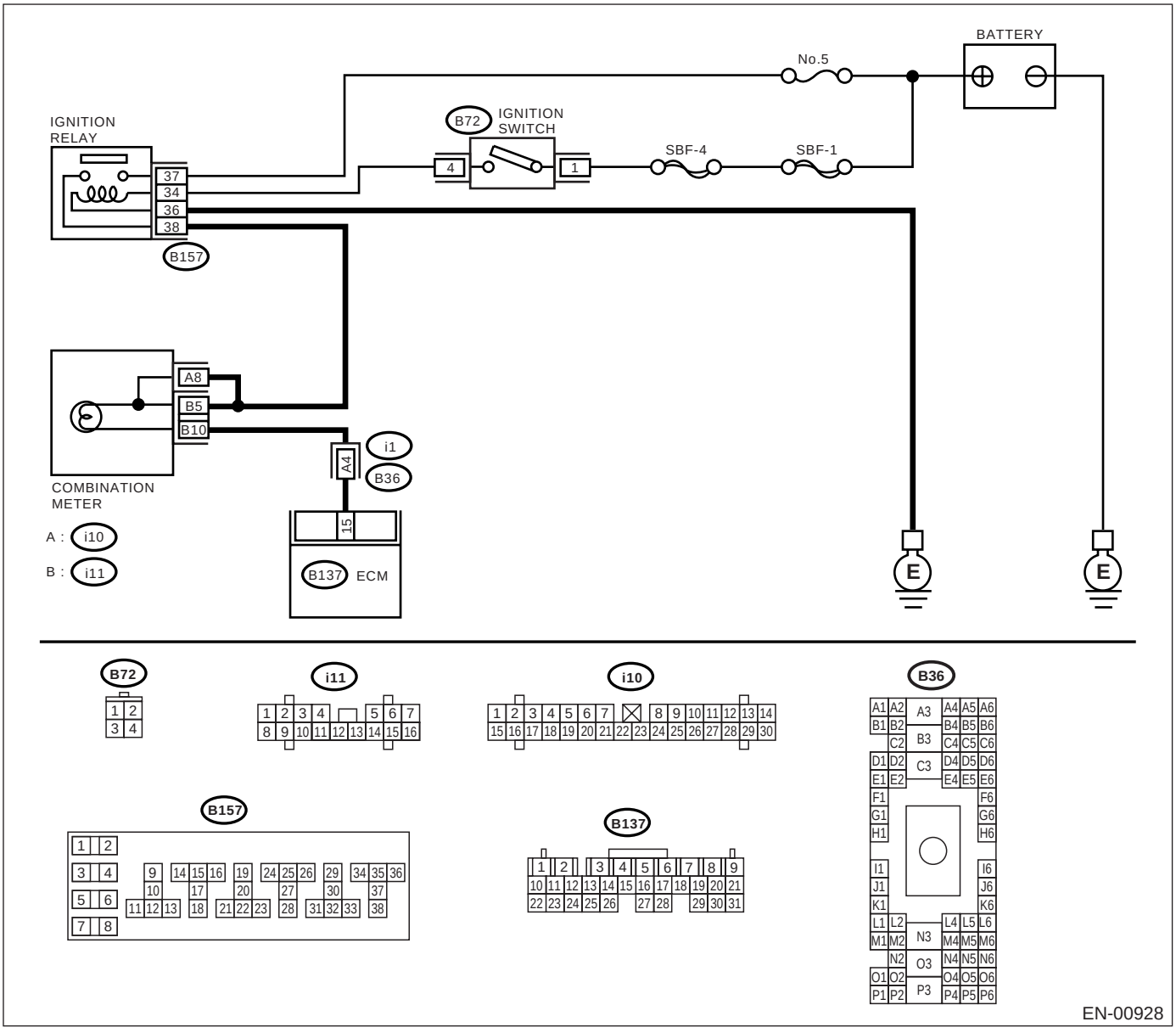
4) When the ignition switch is turned to ON (engine OFF) or to “START” with the test mode connector connected, the MI blinks at a cycle of 3 Hz.



EN-00198

## C: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT COME ON.

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



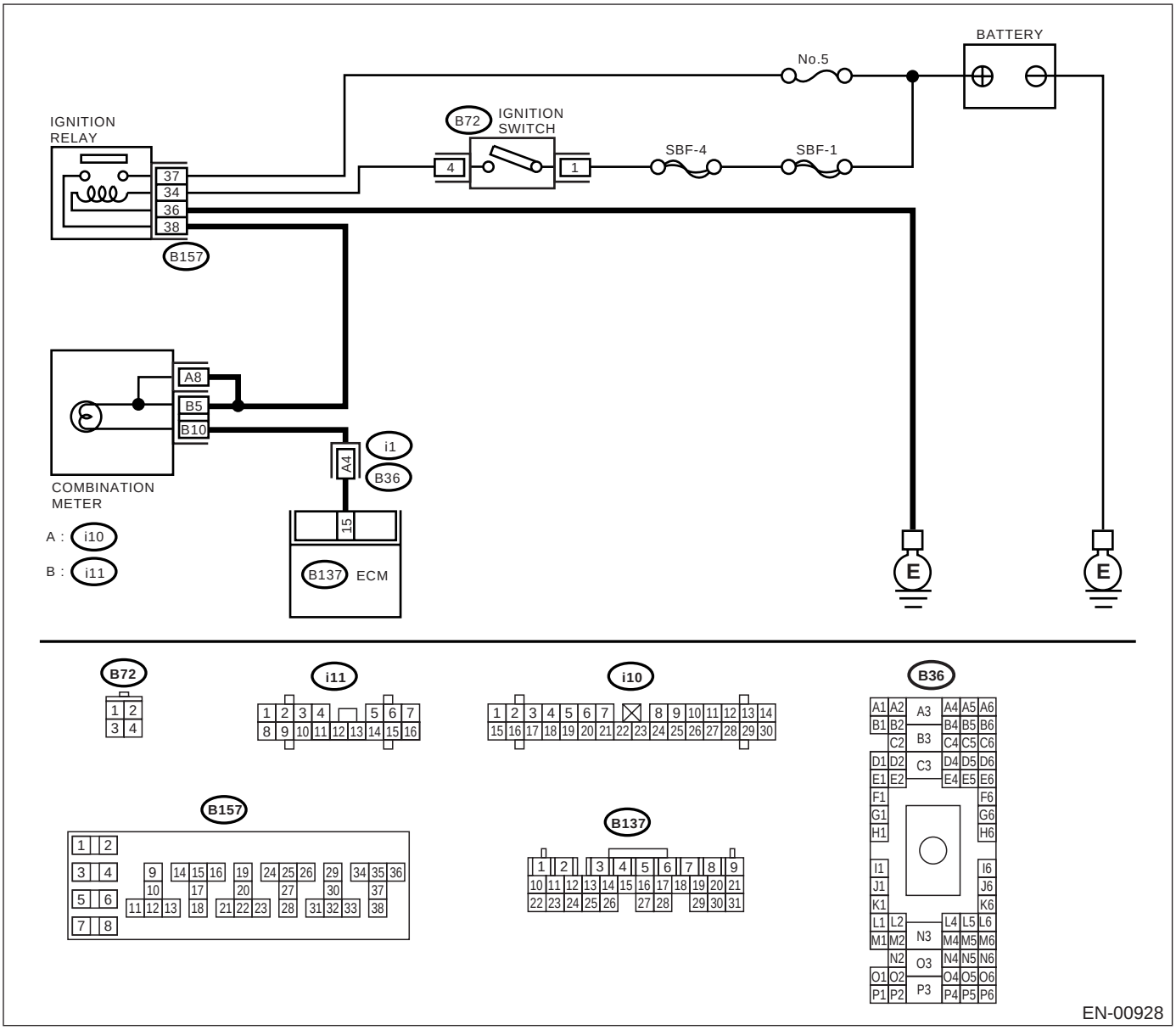
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 15 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 1 V | Go to step **4.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Does the MI come on when shaking or pulling ECM connector and harness? | MI illuminates. | Repair the poor contact in ECM connector. | Go to step **3.** |
| 3 | **CHECK ECM CONNECTOR.**<br>Is the ECM connector correctly connected? | Connected. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Repair the connection of ECM connector. |
| 4 | **CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Remove the combination meter. <Ref. to IDI-15, Combination Meter Assembly.><br>3) Disconnect the connector from ECM and combination meter.<br>4) Measure the resistance of harness between ECM and combination meter connector.<br>***Connector & terminal***<br>***(B137) No. 15 — (i11) No. 10:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **5.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and combination meter connector<br>• Poor contact in coupling connector |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in combination meter connector.<br>Is there poor contact in combination meter connector? | There is poor contact. | Repair the poor contact in combination meter connector. | Go to step **6.** |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK HARNESS BETWEEN COMBINATION METER AND IGNITION SWITCH CONNECTOR.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between combination meter connector and chassis ground.<br>***Connector & terminal***<br>***(i10) No. 8 (+) — Chassis ground (–):***<br>***(i11) No. 5 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **7.** | Check the following and repair if necessary.<br>NOTE:<br>• Broken down ignition relay.<br>• Blown out fuse (No. 5).<br>• If replaced fuse (No. 5) blows easily, check the harness for short circuit of harness between fuse (No. 5) and ignition relay connector.<br>• Open or short circuit in harness between fuse (No. 5) and battery terminal<br>• Open circuit in harness between fuse (No. 5) and ignition relay connector<br>• Poor contact in ignition relay connector<br>• Poor contact in ignition switch connector |
| 7 | **CHECK LAMP BULB.**<br>Remove the engine malfunction indicator lamp bulb.<br>Is the lamp bulb condition OK? | OK | Repair the combination meter connector. | Replace the lamp bulb. |

**MEMO:**

## D: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT GO OFF.

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

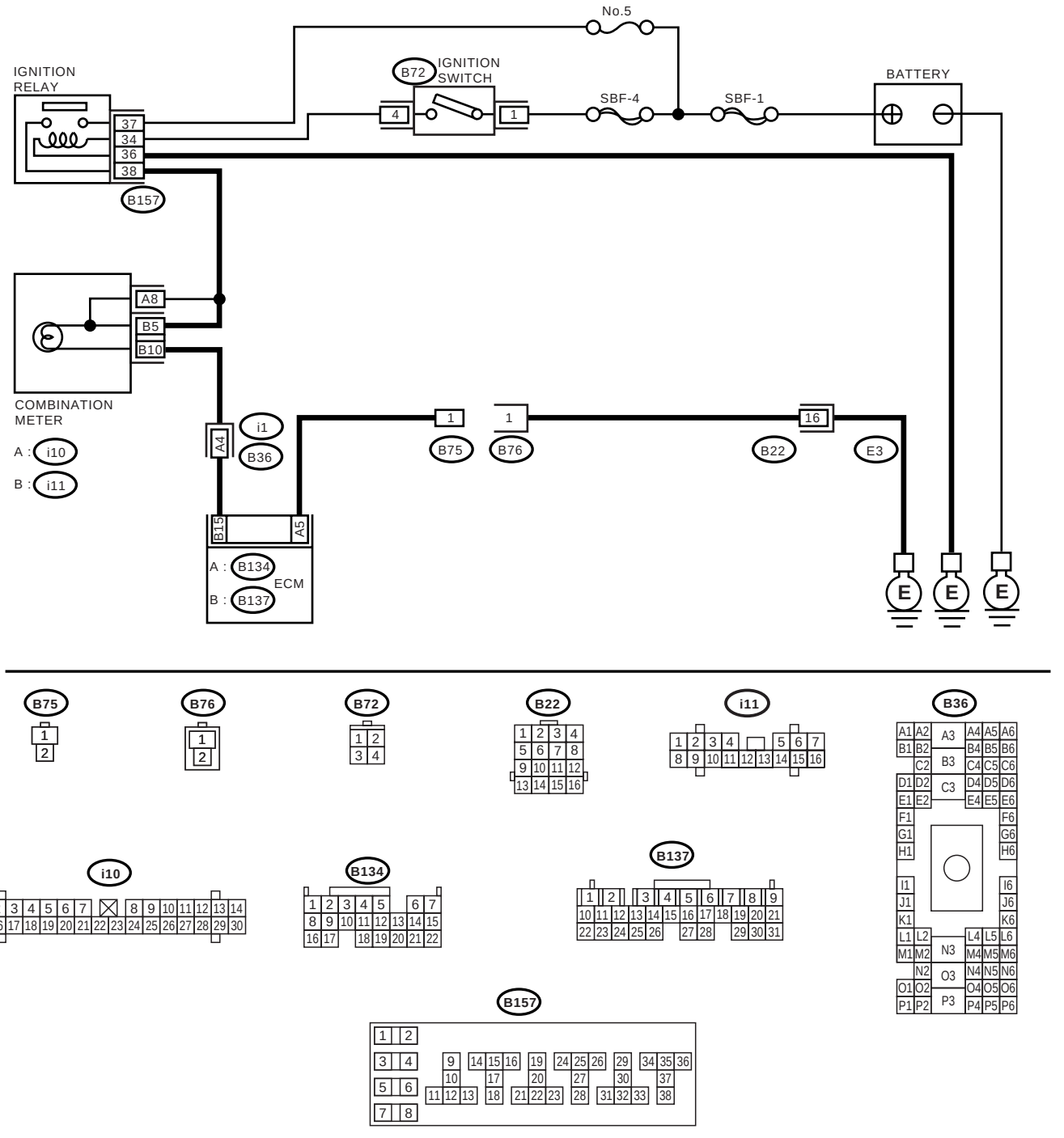



| Step | | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Turn the ignition switch to ON.<br>Does the MI come on? | MI illuminates. | Repair the short circuit in harness between combination meter and ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

**MEMO:**

## E: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT BLINK AT A CYCLE OF 3 HZ.

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

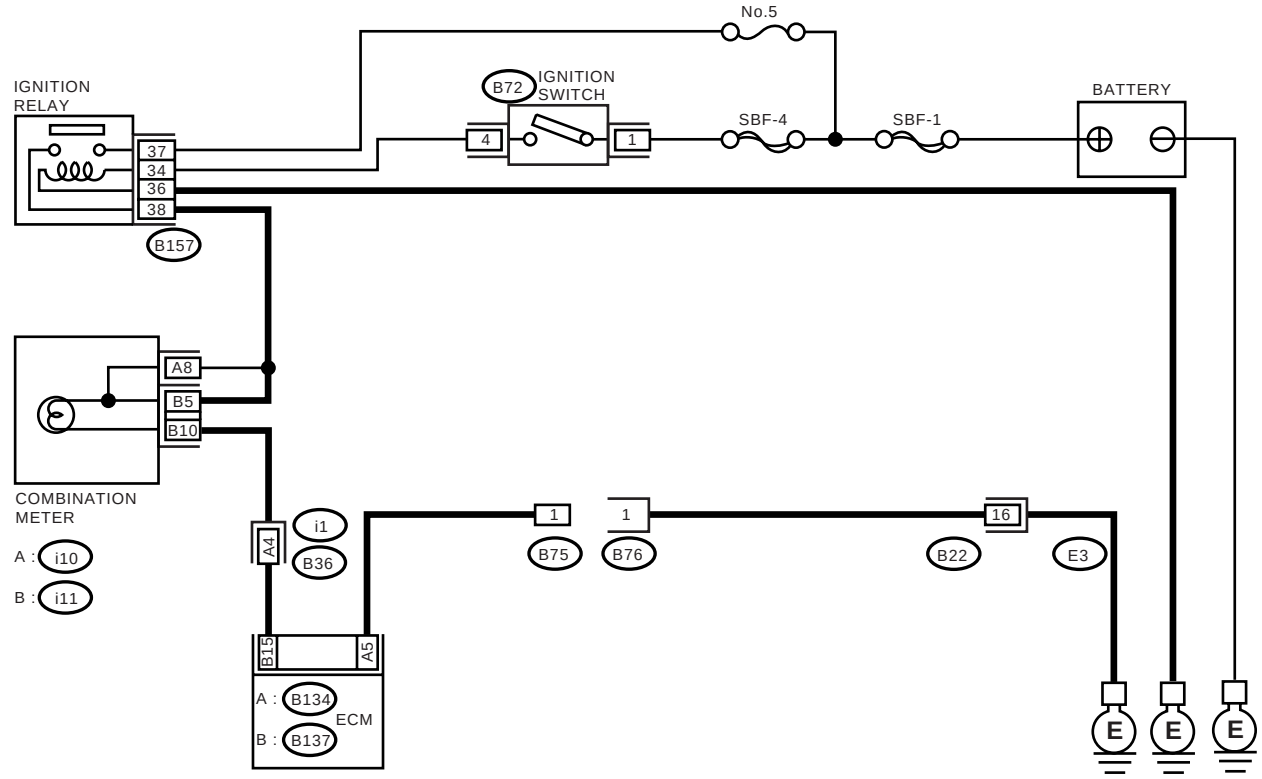


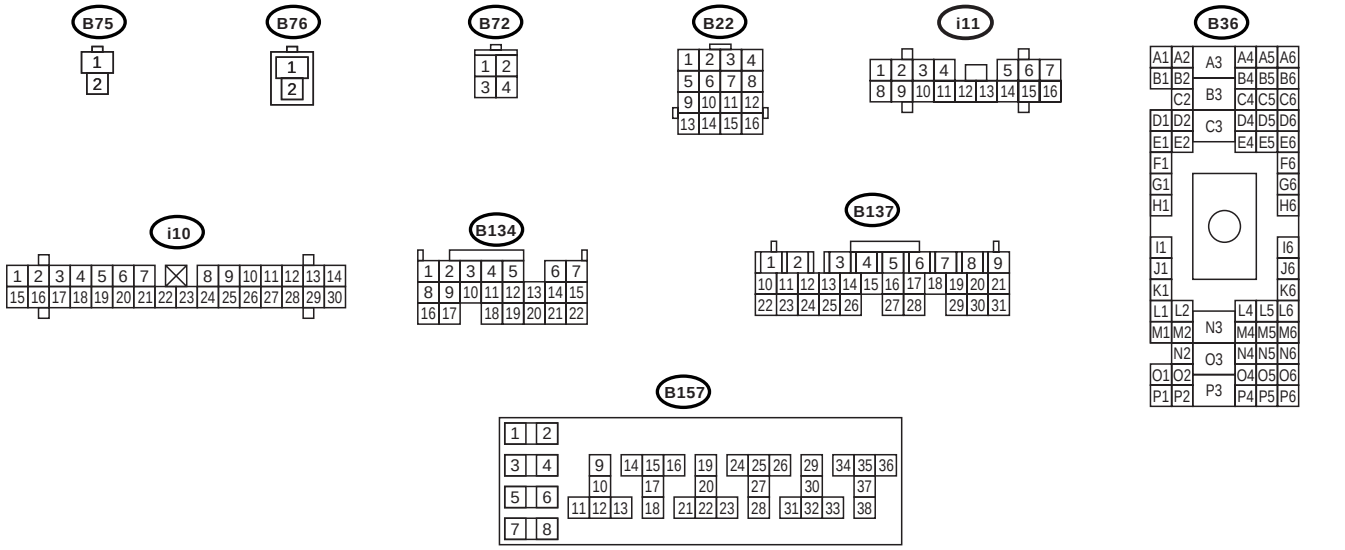

EN-00929

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK STATUS OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI).**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the test mode connector.<br>3) Turn the ignition switch to ON. (engine OFF)<br>Does the MI come on? | MI illuminates. | Go to step **2.** | Repair the MI circuit. <Ref. to EN(H4DOSTC)-40, CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) DOES NOT COME ON., Engine Malfunction Indicator Lamp (MI).> |
| 2 | **CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Turn the ignition switch to ON.<br>Does the MI come on? | MI illuminates. | Repair the ground short circuit in harness between combination meter and ECM connector. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN TEST MODE CONNECTOR AND CHASSIS GROUND.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between test mode connector and chassis ground.<br>***Connector & terminal***<br>***(B76) No. 1 — Chassis ground:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between test mode connector and chassis ground |
| 4 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Go to step **5.** |
| 5 | **CHECK HARNESS BETWEEN ECM AND TEST MODE CONNECTOR.**<br>1) Connect the test mode connector.<br>2) Measure the resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 5 — Chassis ground:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **6.** | Repair the open circuit in harness between ECM and test mode connector. |
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

## F: CHECK ENGINE MALFUNCTION INDICATOR LAMP (MI) REMAINS BLINKING AT A CYCLE OF 3 HZ.

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




EN-00929

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK TEST MODE CONNECTOR.**<br>1) Disconnect the test mode connector.<br>2) Turn the ignition switch to ON.<br>Does the MI flash on and off? | MI flashes. | Go to step **2.** | System is in good order.<br>NOTE:<br>MI blinks at a cycle of 3 Hz when test mode connector is connected. |
| 2 | **CHECK HARNESS BETWEEN ECM CONNECTOR AND ENGINE GROUNDING TERMINAL.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 5 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Repair the short circuit in harness between ECM and test mode connector. |

**MEMO:**

# 15.Diagnostics for Engine Starting Failure

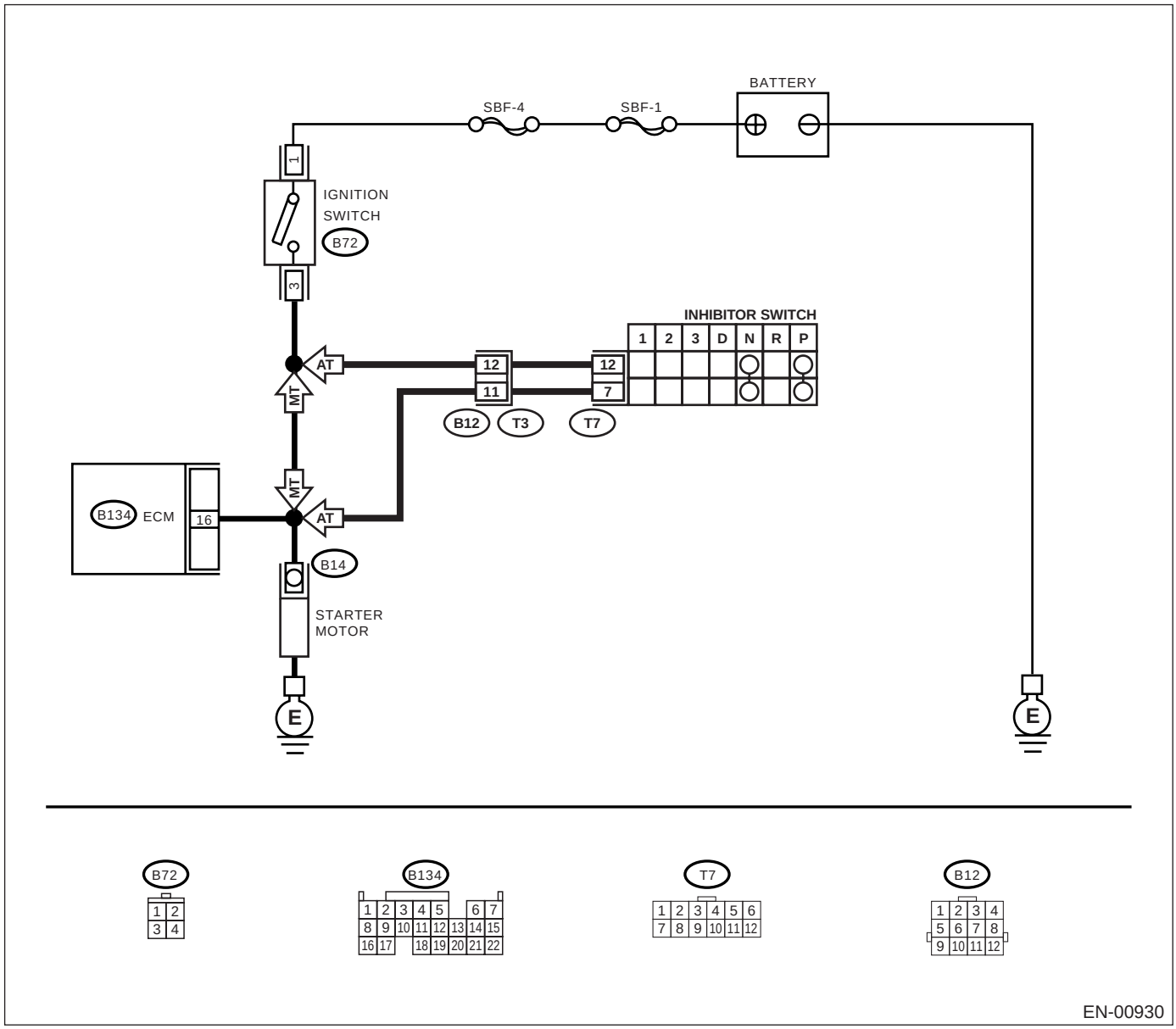
## A: PROCEDURE

| |
|---|
| 1. Inspection of starter motor circuit. <Ref. to EN(H4DOSTC)-52, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.> |
| ↓ |
| 2. Inspection of ECM power supply and ground line. <Ref. to EN(H4DOSTC)-56, CONTROL MODULE POWER SUPPLY AND GROUND LINE, Diagnostics for Engine Starting Failure.> |
| ↓ |
| 3. Inspection of fuel pump circuit. <Ref. to EN(H4DOSTC)-60, FUEL PUMP CIRCUIT, Diagnostics for Engine Starting Failure.> |

## B: STARTER MOTOR CIRCUIT

**CAUTION:**
**After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4DOSTC)-35, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OPERATION OF STARTER MOTOR.**<br>Does the starter motor operate when the switch starts? | Operates. | Go to step **2.** | Go to step **3.** |
| 2 | **CHECK DTC.**<br>Is DTC displayed? | DTC is indicated. | Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).> | Repair poor contact in ECM connector. |
| 3 | **CHECK INPUT SIGNAL FOR STARTER MOTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from starter motor.<br>3) Turn the ignition switch to ST.<br>4) Measure the power supply voltage between starter motor connector terminal and engine ground.<br>***Connector & terminal***<br>***(B14) No. 1 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value?<br>NOTE:<br>On AT vehicles, place the selector lever in the "P" or "N" position. | 10 V | Go to step **4.** | Go to step **5.** |
| 4 | **CHECK GROUND CIRCUIT OF STARTER MOTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the terminal from starter motor.<br>3) Measure the resistance of ground cable between ground cable terminal and engine ground.<br>Is the measured value less than the specified value? | 5 Ω | Check the starter motor. <Ref. to SC(H4DOSTC)-6, Starter.> | Repair the open circuit of ground cable. |
| 5 | **CHECK HARNESS BETWEEN BATTERY AND IGNITION SWITCH CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ignition switch.<br>3) Measure the power supply voltage between ignition switch connector and chassis ground.<br>***Connector & terminal***<br>***(B72) No. 1 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between ignition switch and battery, and check fuse SBF No. 4 and SBF No. 1. |
| 6 | **CHECK IGNITION SWITCH.**<br>1) Disconnect the connector from ignition switch.<br>2) Measure the resistance between ignition switch terminals while turning ignition switch to the "ST" position.<br>***Terminals***<br>***No. 1 — No. 3:***<br>Is the measured value less than specified value? | 5 Ω | Go to step **7.** | Replace the ignition switch. |

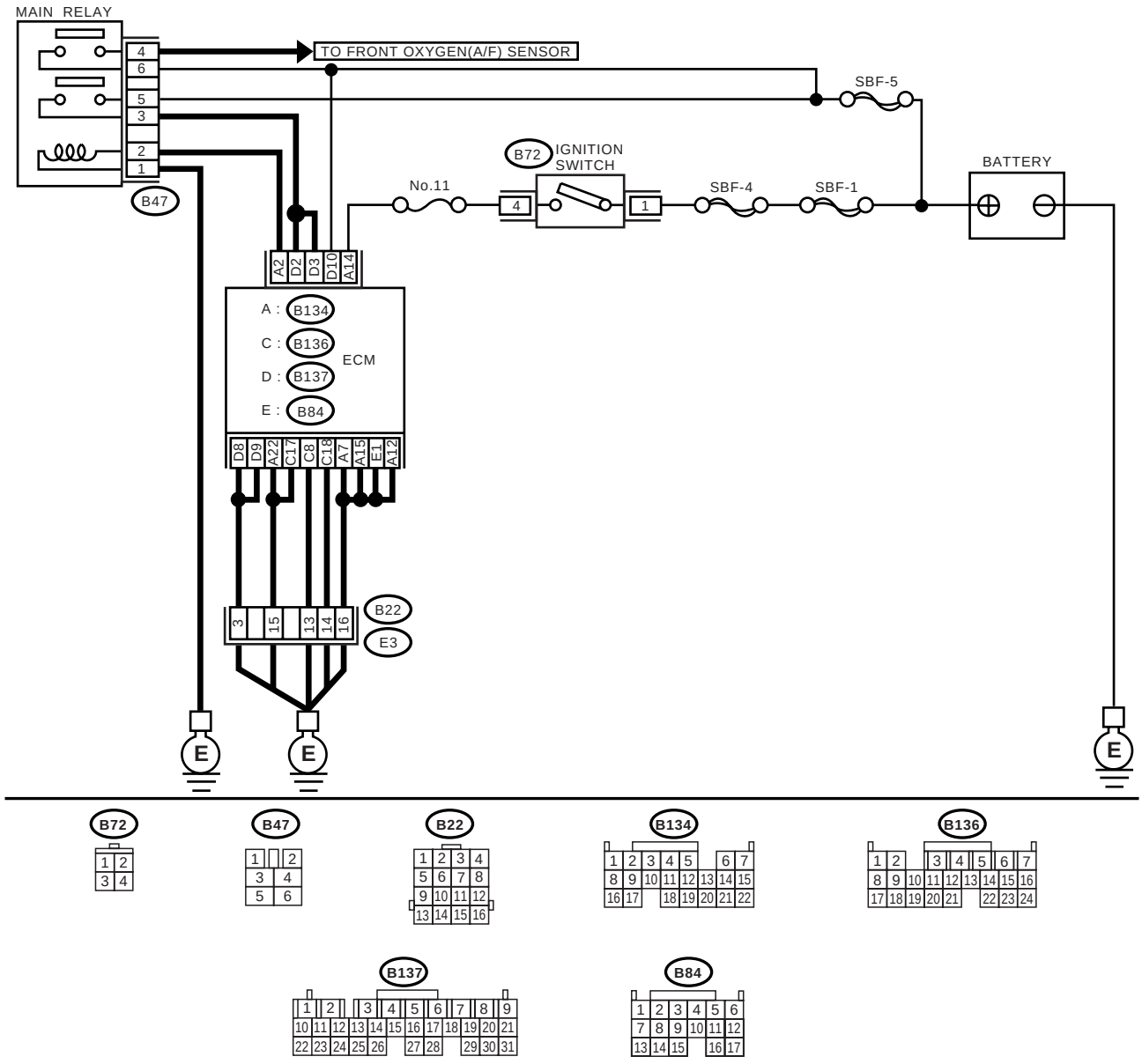
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK TRANSMISSION TYPE.**<br>Is the target AT vehicle? | Target is AT vehicle. | Go to step **8.** | Repair open or ground short circuit in harness between starter motor and ignition switch. |
| 8 | **CHECK INPUT VOLTAGE OF INHIBITOR SWITCH.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from inhibitor switch.<br>3) Connect the connector to ignition switch.<br>4) Measure the input voltage between inhibitor switch connector terminal and engine ground while turning ignition switch to ST.<br>***Connector & terminal***<br>***(B12) No. 12 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **9.** | Repair open or ground short circuit in harness between inhibitor switch and ignition switch. |
| 9 | **CHECK INHIBITOR SWITCH.**<br>1) Place the selector lever in the “P” or “N” position.<br>2) Measure the resistance between inhibitor switch terminals.<br>***Connector & terminal***<br>***(T3) No. 11 — No. 12:***<br>Is the measured value less than specified value? | 1 Ω | Repair open or ground short circuit in harness between inhibitor switch and starter motor. | Replace the inhibitor switch. <Ref. to AT-50, REMOVAL, Inhibitor Switch.> |

**MEMO:**

## C: CONTROL MODULE POWER SUPPLY AND GROUND LINE

**CAUTION:**
**After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4DOSTC)-35, Clear Memory Mode.> and INSPECTION MODE. <Ref. to EN(H4DOSTC)-33, Inspection Mode.>**

- **WIRING DIAGRAM:**




EN-00931

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK MAIN RELAY.**<br>1) Turn the ignition switch to OFF.<br>2) Remove the main relay.<br>3) Connect the battery to main relay terminals No. 1 and No. 2.<br>4) Measure the resistance between main relay terminals.<br>***Terminals***<br>***No. 3 — No. 5:***<br>***No. 4 — No. 6:***<br>Is the measured value less than the specified value? | 10 Ω | Go to step **2.** | Replace the main relay. |
| 2 | **CHECK GROUND CIRCUIT OF ECM.**<br>1) Disconnect the connector from ECM.<br>2) Measure the resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 7 — Chassis ground:***<br>***(B134) No. 12 — Chassis ground:***<br>***(B134) No. 15 — Chassis ground:***<br>***(B134) No. 22 — Chassis ground:***<br>***(B136) No. 8 — Chassis ground:***<br>***(B136) No. 17 — Chassis ground:***<br>***(B136) No. 18 — Chassis ground:***<br>***(B137) No. 8 — Chassis ground:***<br>***(B137) No. 9 — Chassis ground:***<br>***(B84) No. 1 — Chassis ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **3.** | Repair the open circuit in harness between ECM connector and engine grounding terminal. |
| 3 | **CHECK INPUT VOLTAGE OF ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 10 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **4.** | Repair the open or ground short circuit of power supply circuit. |
| 4 | **CHECK INPUT VOLTAGE OF ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the resistance between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 14 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **5.** | Repair the open or ground short circuit of power supply circuit. |
| 5 | **CHECK HARNESS BETWEEN ECM AND MAIN RELAY CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Measure resistance between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 2 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **6.** | Repair ground short circuit in harness between ECM connector and main relay connector. |

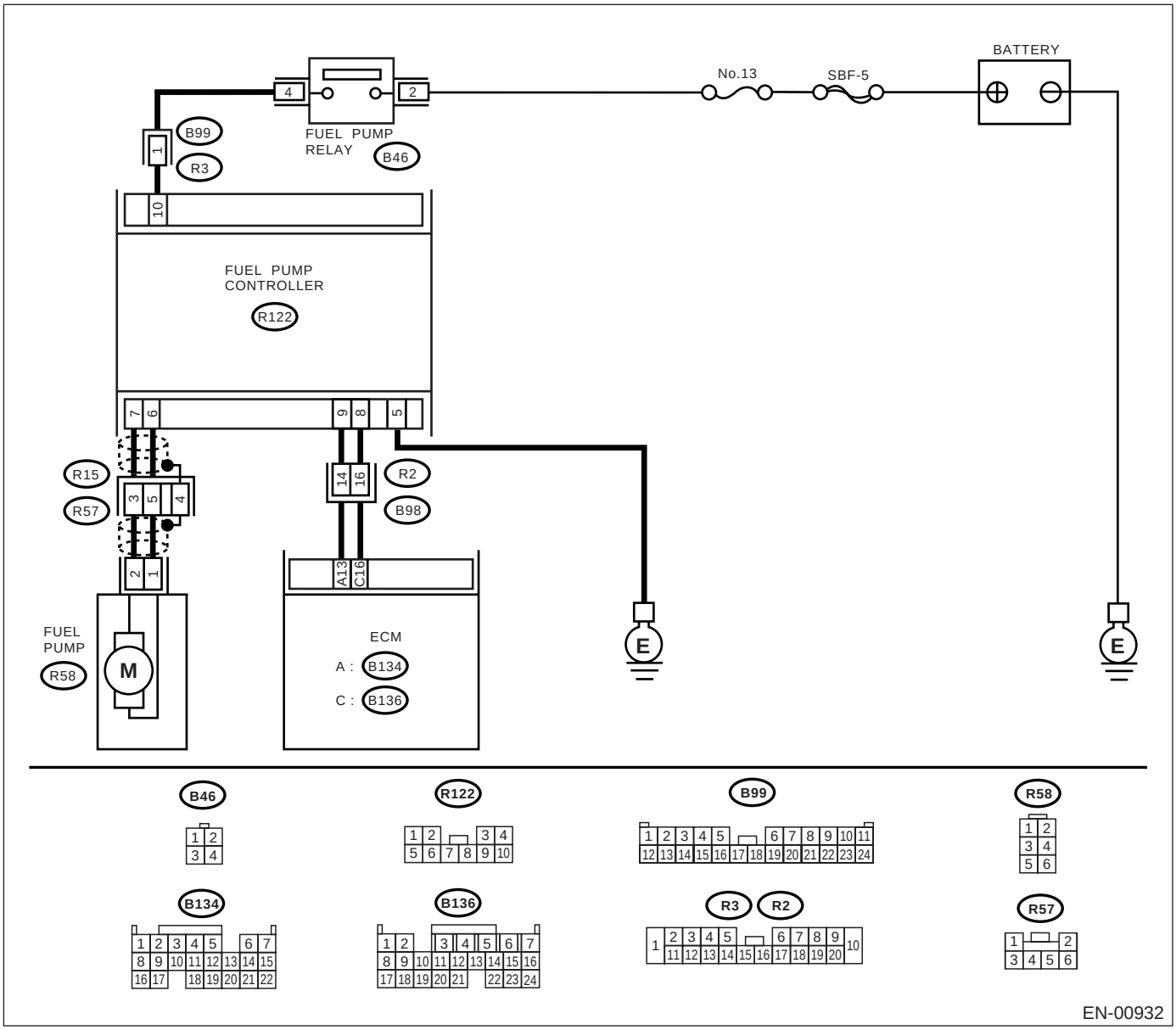
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK OUTPUT VOLTAGE FROM ECM.**<br>1) Connect the connector to ECM.<br>2) Turn the ignition switch to ON.<br>3) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 2 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **7.** | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 7 | **CHECK INPUT VOLTAGE OF MAIN RELAY.**<br>Check the voltage between main relay connector and chassis ground.<br>***Connector & terminal***<br>***(B47) No. 2 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **8.** | Repair the open circuit in harness between ECM connector and main relay connector. |
| 8 | **CHECK GROUND CIRCUIT OF MAIN RELAY.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between main relay connector and chassis ground.<br>***Connector & terminal***<br>***(B47) No. 1 — Chassis ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **9.** | Repair the open circuit between main relay and chassis ground. |
| 9 | **CHECK INPUT VOLTAGE OF MAIN RELAY.**<br>Measure the voltage between main relay connector and chassis ground.<br>***Connector & terminal***<br>***(B47) No. 5 (+) — Chassis ground (–):***<br>***(B47) No. 6 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **10.** | Repair the open or ground short circuit in harness of power supply circuit. |
| 10 | **CHECK INPUT VOLTAGE OF ECM.**<br>1) Connect the main relay connector.<br>2) Turn the ignition switch to ON.<br>3) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 2 (+) — Chassis ground (–):***<br>***(B137) No. 3 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Check the fuel pump circuit. <Ref. to EN(H4DOSTC)-60, FUEL PUMP CIRCUIT, Diagnostics for Engine Starting Failure.> | Repair the open or ground short circuit in harness between ECM connector and main relay connector. |

**MEMO:**

## D: FUEL PUMP CIRCUIT

**CAUTION:**
**After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4DOSTC)-35, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OPERATING SOUND OF FUEL PUMP.**<br>Make sure that the fuel pump is in operation for 2 seconds when turning ignition switch to ON.<br>Does the fuel pump produce operating sound?<br>NOTE:<br>Fuel pump operation can also be executed using the Subaru Select Monitor (Function mode: FD01).<br>For the procedure, refer to “Compulsory Valve Operation Check Mode”. <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.> | Operating sound produced. | Go to step **2.** | Record the DTC. Repair the trouble case. <Ref. to EN(H4DOSTC)-66, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Are there poor contact in ECM connectors? | There is poor contact. | Repair poor contact in ECM connectors. | Inspection using “General Diagnostic Table” <Ref. to EN(H4DOSTC)-246, INSPECTION, General Diagnostic Table.> |

# 16.List of Diagnostic Trouble Code (DTC)

## A: LIST

| DTC No. | Item | Index |
|---|---|---|
| P0031 | HO2S Heater Control Circuit Low (Bank 1 Sensor 1) | <Ref. to EN(H4DOSTC)-66, DTC P0031 — HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0032 | HO2S Heater Control Circuit High (Bank 1 Sensor 1) | <Ref. to EN(H4DOSTC)-70, DTC P0032 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0037 | HO2S Heater Control Circuit Low (Bank 1 Sensor 2) | <Ref. to EN(H4DOSTC)-72, DTC P0037 — HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0038 | HO2S Heater Control Circuit High (Bank 1 Sensor 2) | <Ref. to EN(H4DOSTC)-76, DTC P0038 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0102 | Mass or Volume Air Flow Circuit Low Input | <Ref. to EN(H4DOSTC)-78, DTC P0102 — MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0103 | Mass or Volume Air Flow Circuit High Input | <Ref. to EN(H4DOSTC)-82, DTC P0103 — MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0107 | Manifold Absolute Pressure/Barometric Pressure Circuit Low Input | <Ref. to EN(H4DOSTC)-84, DTC P0107 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0108 | Manifold Absolute Pressure/Barometric Pressure Circuit High Input | <Ref. to EN(H4DOSTC)-88, DTC P0108 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0112 | Intake Air Temperature Circuit Low Input | <Ref. to EN(H4DOSTC)-92, DTC P0112 — INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0113 | Intake Air Temperature Circuit High Input | <Ref. to EN(H4DOSTC)-94, DTC P0113 — INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0117 | Engine Coolant Temperature Circuit Low Input | <Ref. to EN(H4DOSTC)-98, DTC P0117 — ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0118 | Engine Coolant Temperature Circuit High Input | <Ref. to EN(H4DOSTC)-100, DTC P0118 — ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0122 | Throttle/Pedal Position Sensor/ Switch “A” Circuit Low Input | <Ref. to EN(H4DOSTC)-104, DTC P0122 — THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT LOW INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0123 | Throttle/Pedal Position Sensor/ Switch “A” Circuit High Input | <Ref. to EN(H4DOSTC)-108, DTC P0123 — THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT HIGH INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0136 | O2 Sensor Circuit (Bank 1 Sensor 2) | <Ref. to EN(H4DOSTC)-110, DTC P0136 — O2 SENSOR CIRCUIT (BANK 1 SENSOR 2) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0171 | System too Lean (Bank 1) | <Ref. to EN(H4DOSTC)-112, DTC P0171 — SYSTEM TOO LEAN (BANK 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0172 | System too Rich (Bank 1) | <Ref. to EN(H4DOSTC)-114, DTC P0172 — SYSTEM TOO RICH (BANK 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0245 | Turbo/Super ChargerWastegateSolenoid “A” Low | <Ref. to EN(H4DOSTC)-118, DTC P0245 — TURBO/SUPER CHARGERWASTEGATESOLENOID “A” LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |

| DTC No. | Item | Index |
|---|---|---|
| P0246 | Turbo/Super ChargerWastegateSolenoid “A” High | <Ref. to EN(H4DOSTC)-122, DTC P0246 — TURBO/SUPER CHARGER-WASTEGATESOLENOID “A” HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0249 | Turbo/Super ChargerWastegateSolenoid “B” Low | <Ref. to EN(H4DOSTC)-124, DTC P0249 — TURBO/SUPER CHARGER-WASTEGATESOLENOID “B” LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0250 | Turbo/Super ChargerWastegateSolenoid “B” High | <Ref. to EN(H4DOSTC)-128, DTC P0250 — TURBO/SUPER CHARGER-WASTEGATESOLENOID “B” HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0261 | Cylinder 1 Injector Circuit Low | <Ref. to EN(H4DOSTC)-130, DTC P0261 — CYLINDER 1 INJECTOR CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0264 | Cylinder 2 Injector Circuit Low | <Ref. to EN(H4DOSTC)-130, DTC P0264 — CYLINDER 2 INJECTOR CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0267 | Cylinder 3 Injector Circuit Low | <Ref. to EN(H4DOSTC)-130, DTC P0267 — CYLINDER 3 INJECTOR CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0270 | Cylinder 4 Injector Circuit Low | <Ref. to EN(H4DOSTC)-132, DTC P0270 — CYLINDER 4 INJECTOR CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0327 | Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor) | <Ref. to EN(H4DOSTC)-136, DTC P0327 — KNOCK SENSOR 1 CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0328 | Knock Sensor 1 Circuit High Input (Bank 1 or Single Sensor) | <Ref. to EN(H4DOSTC)-138, DTC P0328 — KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0335 | Crankshaft Position Sensor “A” Circuit | <Ref. to EN(H4DOSTC)-140, DTC P0335 — CRANKSHAFT POSITION SENSOR “A” CIRCUIT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0340 | Camshaft Position Sensor “A” Circuit (Bank 1 or Single Sensor) | <Ref. to EN(H4DOSTC)-142, DTC P0340 — CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 1 OR SINGLE SENSOR)N —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0350 | Ignition Coil Primary/Secondary Circuit | <Ref. to EN(H4DOSTC)-144, DTC P0350 — IGNITION COIL PRIMARY/SECONDARY CIRCUIT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0444 | Evaporative Emission Control System Purge Control Valve Circuit Open | <Ref. to EN(H4DOSTC)-148, DTC P0444 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT OPEN —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0445 | Evaporative Emission Control System Purge Control Valve Circuit Shorted | <Ref. to EN(H4DOSTC)-152, DTC P0445 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT SHORTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0500 | Vehicle Speed Sensor | <Ref. to EN(H4DOSTC)-156, DTC P0500 — VEHICLE SPEED SENSOR —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0508 | Idle Control System Circuit Low | <Ref. to EN(H4DOSTC)-158, DTC P0508 — IDLE CONTROL SYSTEM CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0509 | Idle Control System Circuit High | <Ref. to EN(H4DOSTC)-162, DTC P0509 — IDLE CONTROL SYSTEM CIRCUIT HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0512 | Starter Request Circuit | <Ref. to EN(H4DOSTC)-164, DTC P0512 — STARTER REQUEST CIRCUIT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0513 | Incorrect Immobilizer Key | <Ref. to IM-20, DTC P0153 — INCORRECT IMMOBILIZER KEY (USE OF UNREGISTERED KEY) —, Diagnostics Chart with Trouble Code.> |
| P0562 | System Voltage Low | <Ref. to EN(H4DOSTC)-166, DTC P0562 — SYSTEM VOLTAGE LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0563 | System Voltage High | <Ref. to EN(H4DOSTC)-168, DTC P0563 — SYSTEM VOLTAGE HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |

| DTC No. | Item | Index |
|---|---|---|
| P0851 | Neutral switch input circuit low | <Ref. to EN(H4DOSTC)-170, DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> and <Ref. to EN(H4DOSTC)-172, DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW (MT MODEL) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P0852 | Neutral switch input circuit high | <Ref. to EN(H4DOSTC)-174, DTC P0852 — NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> and<Ref. to EN(H4DOSTC)-178, DTC P0852 — NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT MODEL) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1110 | Atmospheric Pressure Sensor Circuit Malfunction (Low Input) | <Ref. to EN(H4DOSTC)-181, DTC P1110 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1111 | Atmospheric Pressure Sensor Circuit Malfunction (High Input) | <Ref. to EN(H4DOSTC)-182, DTC P1111 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (HIGH INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1130 | O2 Sensor Circuit (Open) (Bank1 Sensor1) | <Ref. to EN(H4DOSTC)-184, DTC P1130 — O2 SENSOR CIRCUIT (OPEN) (BANK1 SENSOR1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1131 | O2 Sensor Circuit (Short) (Bank1 Sensor1) | <Ref. to EN(H4DOSTC)-186, DTC P1131 — O2 SENSOR CIRCUIT (SHORT) (BANK1 SENSOR1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1134 | A/F Sensor micro-computer Problem | <Ref. to EN(H4DOSTC)-190, DTC P1134 — A/F SENSOR MICRO-COMPUTER PROBLEM —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1199 | Differential Pressure Sensor | <Ref. to EN(H4DOSTC)-192, DTC P1199 — DIFFERENTIAL PRESSURE SENSOR —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1230 | Fuel Pump Controller | <Ref. to EN(H4DOSTC)-194, DTC P1230 — FUEL PUMP CONTROLLER —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1235 | Intake Control Solenoid Valve Circuit Low | <Ref. to EN(H4DOSTC)-198, DTC P1235 — INTAKE CONTROL SOLENOID VALVE CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1236 | Intake Control Solenoid Valve Circuit High | <Ref. to EN(H4DOSTC)-202, DTC P1236 — INTAKE CONTROL SOLENOID VALVE CIRCUIT HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1237 | Exhaust Control Valve Solenoid Circuit Low (Positive Pressure) | <Ref. to EN(H4DOSTC)-204, DTC P1237 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT LOW (POSITIVE PRESSURE) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1238 | Exhaust Control Valve Solenoid Circuit High (Positive Pressure) | <Ref. to EN(H4DOSTC)-208, DTC P1238 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT HIGH (POSITIVE PRESSURE) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1239 | Exhaust Control Valve Solenoid Circuit Low (Negative Pressure) | <Ref. to EN(H4DOSTC)-210, DTC P1239 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT LOW (NEGATIVE PRESSURE) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1240 | Exhaust Control Valve Solenoid Circuit High (Negative Pressure) | <Ref. to EN(H4DOSTC)-214, DTC P1240 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT HIGH (NEGATIVE PRESSURE) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1241 | 2Stage Twin TURBO System (Single) | <Ref. to EN(H4DOSTC)-216, DTC P1241 — 2STAGE TWIN TURBO SYSTEM (SINGLE) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1242 | 2Stage Twin TURBO System (Twin) | <Ref. to EN(H4DOSTC)-218, DTC P1242 — 2STAGE TWIN TURBO SYSTEM (TWIN) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1247 | Relief Valve Control Solenoid Valve 1 Circuit Low | <Ref. to EN(H4DOSTC)-220, DTC P1247 — RELIEF VALVE CONTROL SOLENOID VALVE 1 CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |

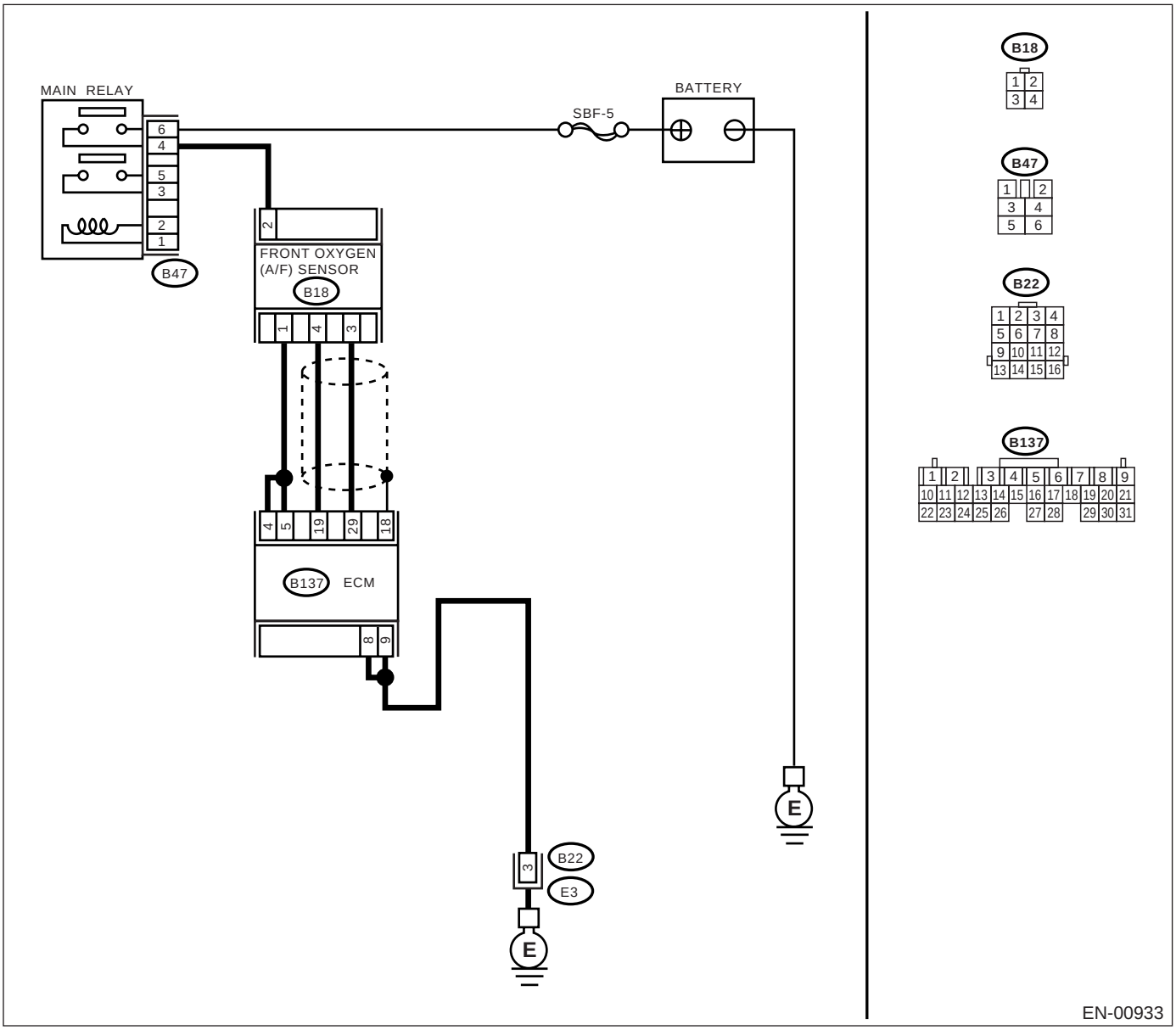
| DTC No. | Item | Index |
|---|---|---|
| P1248 | Relief Valve Control Solenoid Valve 1 Circuit High | <Ref. to EN(H4DOSTC)-224, DTC P1248 — RELIEF VALVE CONTROL SOLENOID VALVE 1 CIRCUIT HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1249 | Relief Valve Control Solenoid Valve 2 Circuit Low | <Ref. to EN(H4DOSTC)-226, DTC P1249 — RELIEF VALVE CONTROL SOLENOID VALVE 2 CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1250 | Relief Valve Control Solenoid Valve 2 Circuit High | <Ref. to EN(H4DOSTC)-230, DTC P1250 — RELIEF VALVE CONTROL SOLENOID VALVE 2 CIRCUIT HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1507 | Idle Control System Malfunction (Fail-safe) | <Ref. to EN(H4DOSTC)-232, DTC P1507 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1518 | Starter Switch Circuit Low input | <Ref. to EN(H4DOSTC)-234, DTC P1518 — STARTER SWITCH CIRCUIT LOW INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1560 | Back-up Voltage Circuit Malfunction | <Ref. to EN(H4DOSTC)-236, DTC P1560 — BACK-UP VOLTAGE CIRCUIT MALFUNCTION —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1570 | Antennna | <Ref. to IM-21, DTC P1570 — Antenna —, Diagnostics Chart with Trouble Code.> |
| P1571 | Reference Code Incompatibility | <Ref. to IM-17, DTC P1571 REFERENCE CODE INCOMPATIBILITY, Diagnostic Procedure with Trouble Code (DTC).> |
| P1572 | IMM Circuit Failure (Except Antenna Circuit) | <Ref. to IM-18, DTC P1572 IMM CIRCUIT FAILURE (EXCEPT ANTENNA CIRCUIT), Diagnostic Procedure with Trouble Code (DTC).> |
| P1574 | Key Communication Failure | <Ref. to IM-23, DTC P1574 KEY COMMUNICATION FAILURE, Diagnostic Procedure with Trouble Code (DTC).> |
| P1576 | EGI Control Module EEPROM | <Ref. to IM-25, DTC P1576 EGI CONTROL MODULE EEPROM, Diagnostic Procedure with Trouble Code (DTC).> |
| P1577 | IMM Control Module EEPROM | <Ref. to IM-25, DTC P1577 IMM CONTROL MODULE EEPROM, Diagnostic Procedure with Trouble Code (DTC).> |
| P1698 | Engine Torque Control Cut Signal Circuit Malfunction (Low Input) | <Ref. to EN(H4DOSTC)-238, DTC P1698 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1699 | Engine Torque Control Cut Signal Circuit Malfunction (High Input) | <Ref. to EN(H4DOSTC)-240, DTC P1699 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT MALFUNCTION (HIGH INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1711 | Engine Torque Control Signal #1 Circuit Malfunction | <Ref. to EN(H4DOSTC)-242, DTC P1711 — ENGINE TORQUE CONTROL SIGNAL #1 CIRCUIT MALFUNCTION —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |
| P1712 | Engine Torque Control Signal #2 Circuit Malfunction | <Ref. to EN(H4DOSTC)-244, DTC P1712 — ENGINE TORQUE CONTROL SIGNAL #2 CIRCUIT MALFUNCTION —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> |

# 17.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

## A: DTC P0031 — HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0031 and P0037 at the same time? | Indicated. | Go to step **2.** | Go to step **5.** |
| 2 | **CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from front oxygen (A/F) sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between front oxygen (A/F) sensor connector and engine ground.<br>***Connector & terminal***<br>***(B18) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Repair the power supply line.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between main relay and front oxygen (A/F) sensor connector<br>• Poor contact in front oxygen (A/F) sensor connector<br>• Poor contact in main relay connector |
| 3 | **CHECK GROUND CIRCUIT OF ECM.**<br>Measure the resistance of harness between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 8 — Chassis ground:***<br>***(B137) No. 9 — Chassis ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **4.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and engine ground cable<br>• Poor contact in ECM connector<br>Poor contact in coupling connector |
| 4 | **CHECK CURRENT DATA.**<br>1) Start the engine<br>2) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor. Is the measured value less than the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 0.2 A | Repair the poor contact in connector.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in front oxygen (A/F) sensor connector<br>• Poor contact in ECM connector | Go to step **5.** |
| 5 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Start and idle the engine.<br>2) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 4 (+) — Chassis ground (–):***<br>***(B137) No. 5 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 1.0 V | Go to step **7.** | Go to step **6.** |

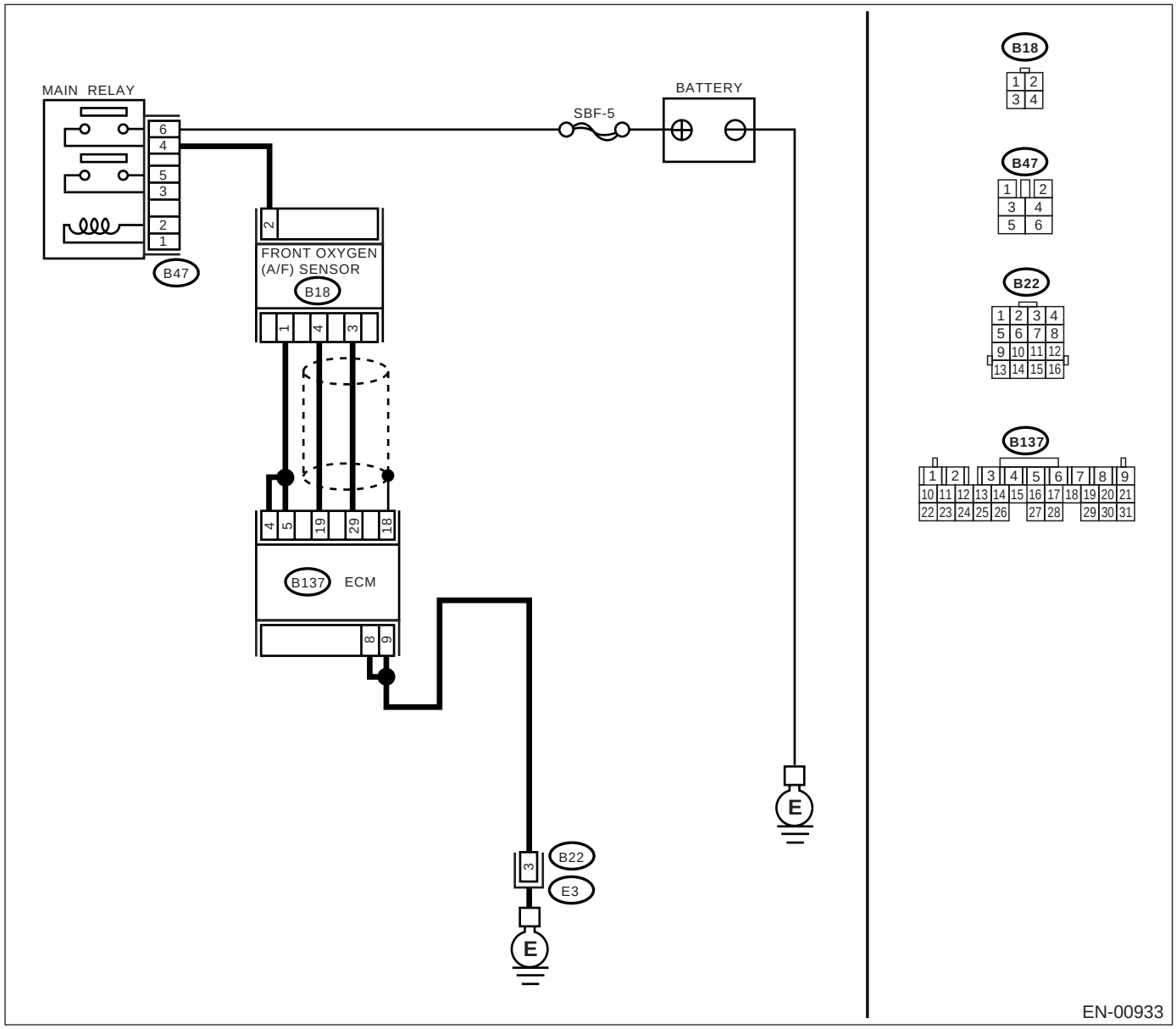
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 4 (+) — Chassis ground (–):***<br>***(B137) No. 5 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value shaking harness and connector of ECM while monitoring the value with voltage meter? | 1.0 V | Repair the poor contact in ECM connector. | Go to step **7.** |
| 7 | **CHECK FRONT OXYGEN (A/F) SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between front oxygen (A/F) sensor connector terminals.<br>***Terminals***<br>***No. 2 — No. 1:***<br>Is the measured value less than the specified value? | 10 Ω | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open or ground short circuit in harness between front oxygen (A/F) sensor and ECM connector<br>• Poor contact in front oxygen (A/F) sensor connector<br>• Poor contact in ECM connector | Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOSTC)-38, Front Oxygen (A/F) Sensor.> |

**MEMO:**

## B: DTC P0032 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

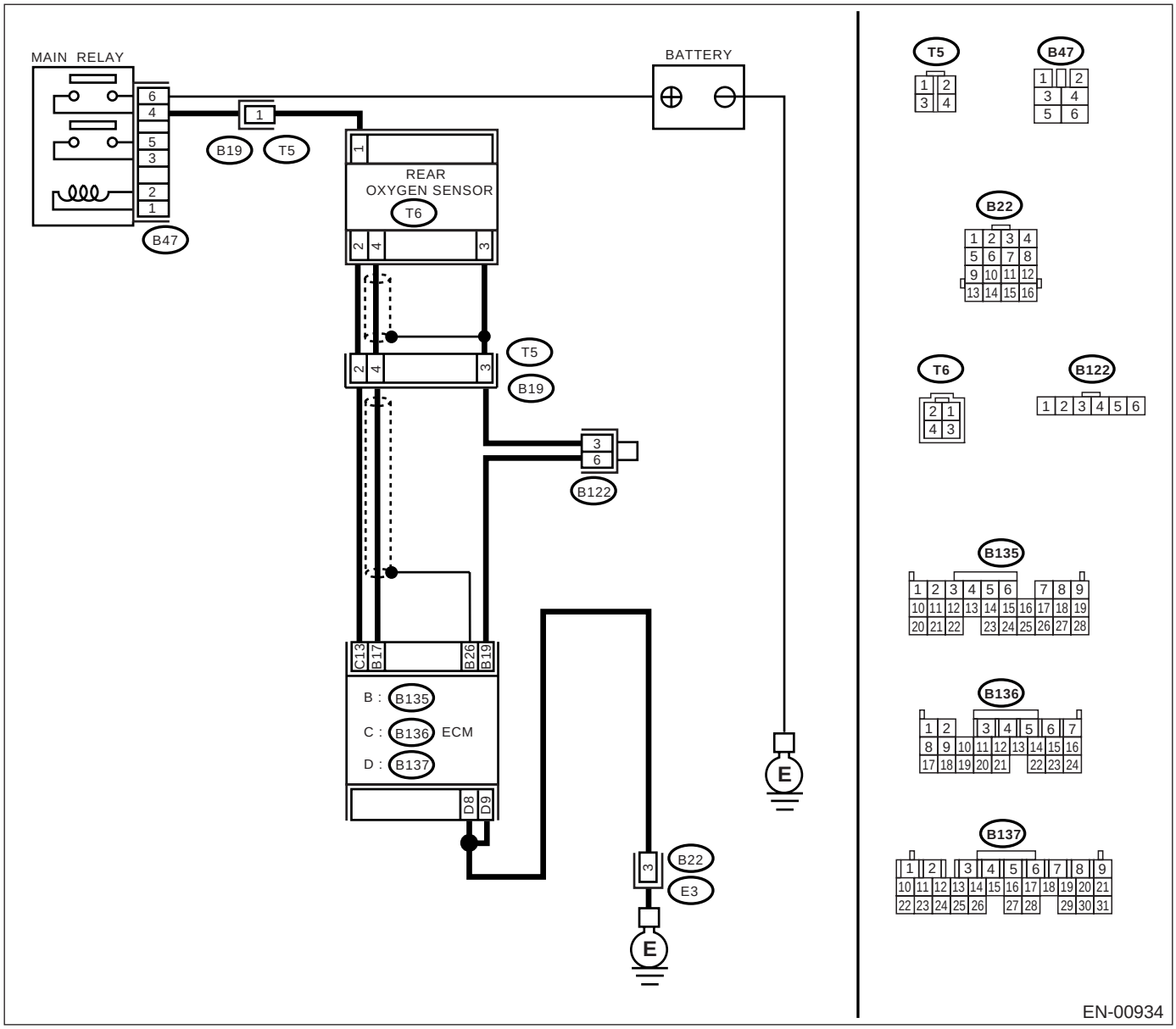


| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 4 (+) — Chassis ground (–):***<br>***(B137) No. 5 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 8 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT.**<br>1) Turn the ignition switch to OFF.<br>2) Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.<br>3) Turn the ignition switch to ON.<br>4) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor. Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 2.3 A | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | END |
| 3 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 4 (+) — Chassis ground (–):***<br>***(B137) No. 5 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value by shaking harness and connector of ECM while monitoring the value with voltage meter? | 8.0 V | Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. | END |

## C: DTC P0037 — HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GROUND CIRCUIT OF ECM.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 8 — Chassis ground:***<br>***(B137) No. 9 — Chassis ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of rear oxygen sensor heater current using Subaru Select Monitor.<br>Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 0.2 A | Repair the connector.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in rear oxygen sensor connector<br>• Poor contact in rear oxygen sensor connecting harness connector<br>• Poor contact in ECM connector | Go to step **3.** |
| 3 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Start and idle the engine.<br>2) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 13 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 1.0 V | Go to step **6.** | Go to step **4.** |
| 4 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 13 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value by shaking harness and connector of ECM while monitoring the value with voltage meter? | 1.0 V | Repair the poor contact in ECM connector. | Go to step **5.** |
| 5 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Disconnect the connector from rear oxygen sensor.<br>2) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 13 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 1.0 V | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

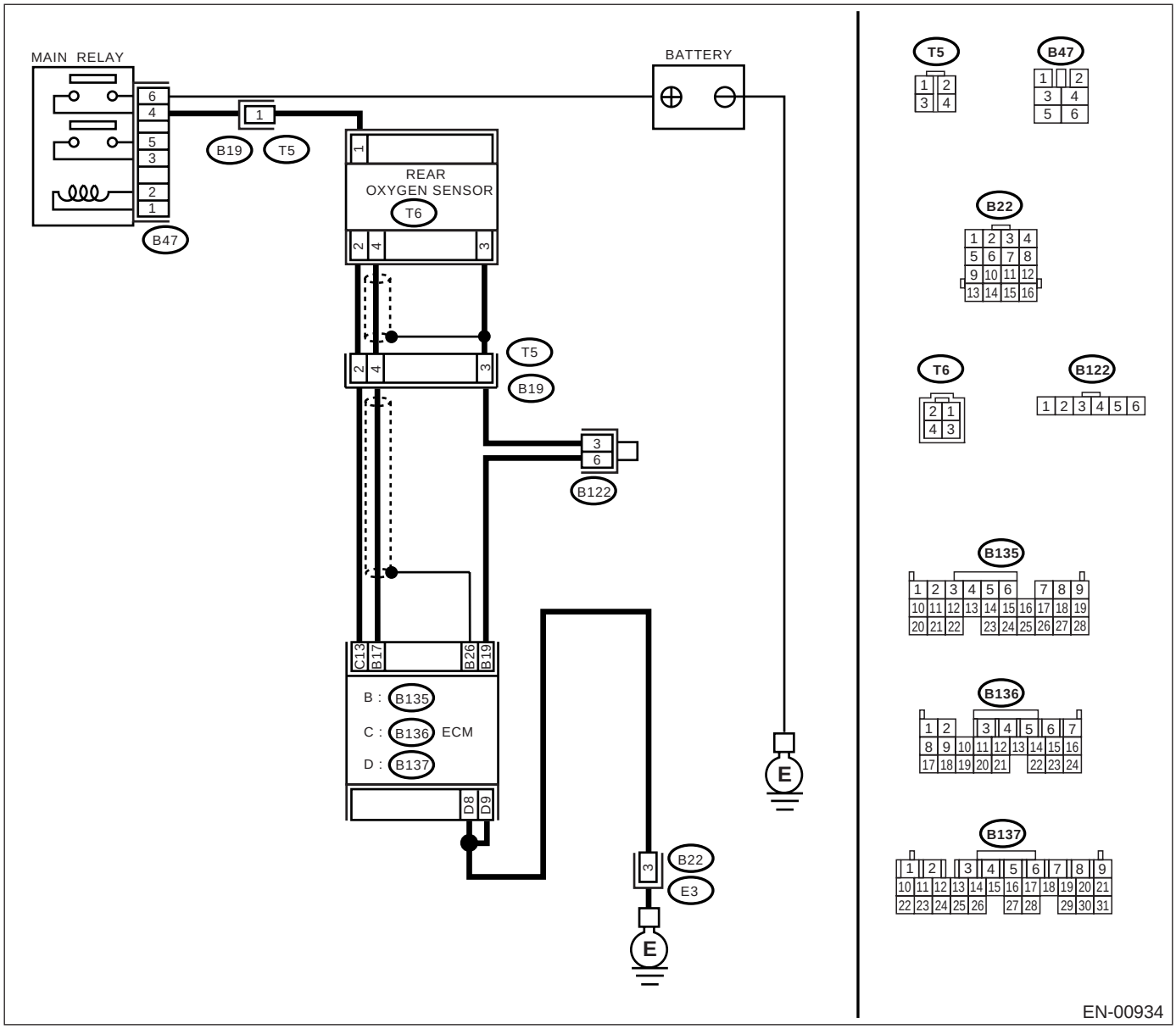
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from rear oxygen sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between rear oxygen sensor connector and engine ground or chassis ground.<br>***Connector & terminal***<br>***(T6) No. 2 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **7.** | Repair the power supply line.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between main relay and rear oxygen sensor connector<br>• Poor contact in rear oxygen sensor connector<br>• Poor contact in coupling connector |
| 7 | **CHECK REAR OXYGEN SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between rear oxygen sensor connector terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value less than the specified value? | 30 Ω | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between rear oxygen sensor and ECM connector<br>• Poor contact in rear oxygen sensor connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector | Replace the rear oxygen sensor. <Ref. to FU(H4DOSTC)-39, Rear Oxygen Sensor.> |

**MEMO:**

## D: DTC P0038 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

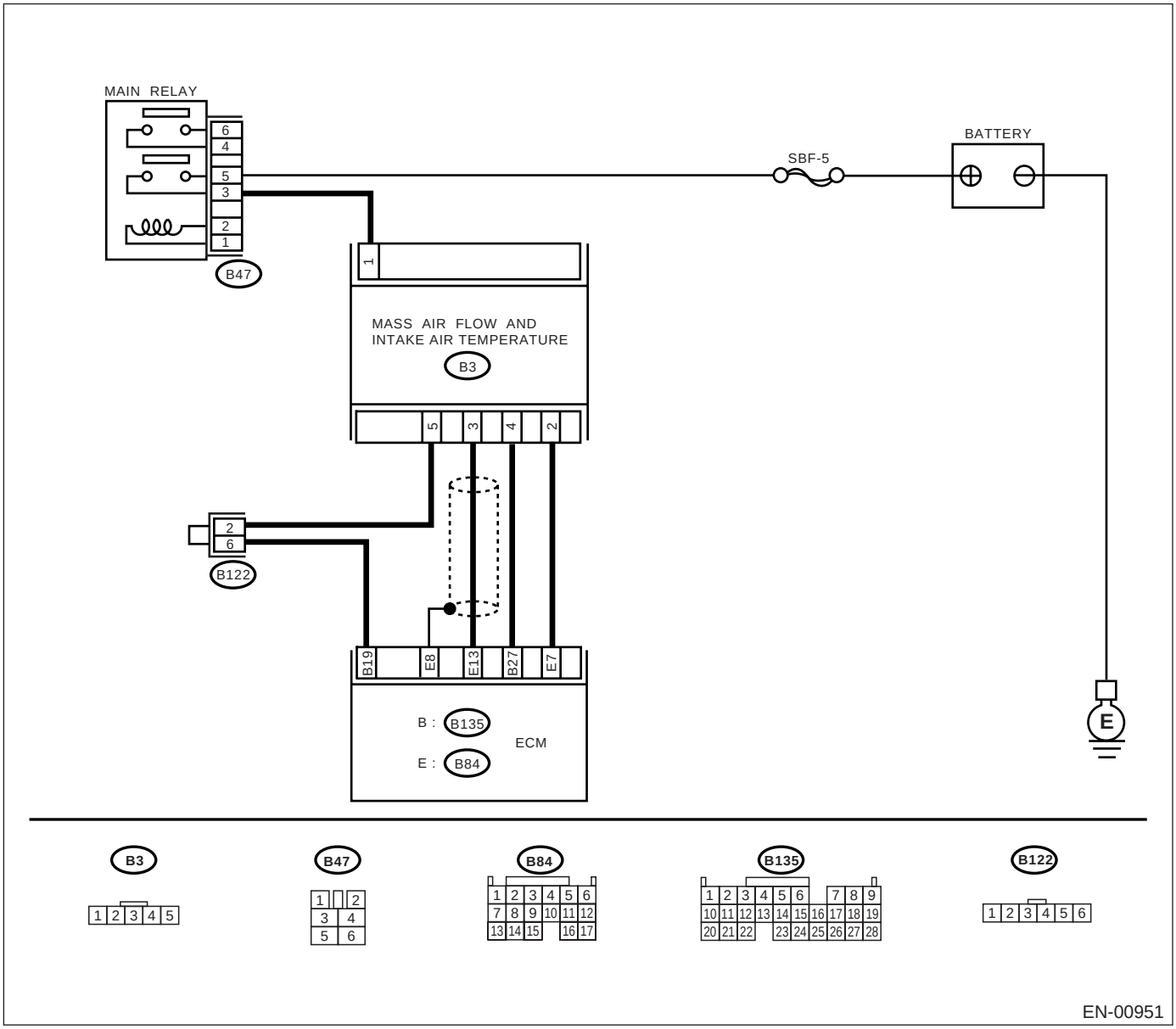
- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 13 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 8 V | Go to step **2.** | Go to step **3.** |
| 2 | **CHECK CURRENT DATA.**<br>1) Turn the ignition switch to OFF.<br>2) Repair the battery short circuit in harness between ECM and rear oxygen sensor connector.<br>3) Turn the ignition switch to ON.<br>4) Read the data of rear oxygen sensor heater current using Subaru Select Monitor.<br>Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 7 A | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | END |
| 3 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | END |

## E: DTC P0102 — MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT —

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



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.**<br>1) Turn the ignition switch to OFF.<br>2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.<br>3) Turn the ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.<br>4) Start the engine and run it at idle.<br>5) Read the data of mass air flow sensor signal using Subaru Select Monitor.<br>Is the measured value within the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 1.3 g/sec (0.172 lb/min) — 240 g/sec (32 lb/min) or 0.3 — 4.58 V | Even if MI lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the mass air flow sensor.<br>NOTE:<br>In this case, repair the following:<br>• Open or ground short circuit in harness between mass air flow sensor and ECM connector<br>• Poor contact in mass air flow sensor or ECM connector | Go to step **2.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground while engine is idling.<br>***Connector & terminal***<br>***(B84) No. 13 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 0.2 V | Go to step **4.** | Go to step **3.** |
| 3 | **CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR).**<br>Measure the voltage between ECM connector and chassis ground while engine is idling.<br>Does the measured value change by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor? | The value changes. | Repair the poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 4 | **CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from mass air flow sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between mass air flow sensor connector and chassis ground.<br>***Connector & terminal***<br>***(B3) No. 1 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10V | Go to step **5.** | Repair the open circuit between mass air flow sensor and main relay |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between ECM and mass air flow sensor connector.<br>***Connector & terminal***<br>***(B84) No. 13 — (B3) No. 3:***<br>***(B135) No. 27 — (B3) No. 4:***<br>***(B135) No. 19 — (B3) No. 5:***<br>Is the measured value less than the specified value? | 1Ω | Go to step **6.** | Repair the open circuit between ECM and mass air flow sensor connector. |
| 6 | **CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR**<br>Measure the resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B84) No. 13 — Chassis ground:***<br>***(B135) No. 27 — Chassis ground:***<br>***(B135) No. 19 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1MΩ | Go to step **7.** | Repair the ground short circuit between ECM and mass air flow sensor connector. |
| 7 | **CHECK POOR CONTACT**<br>Check poor contact in mass air flow sensor connector.<br>Is there poor contact in mass air flow sensor connector? | There is poor contact. | Repair the poor contact in mass air flow sensor connector. | Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOSTC)-33, Mass Air Flow and Intake Air Temperature Sensor.> |

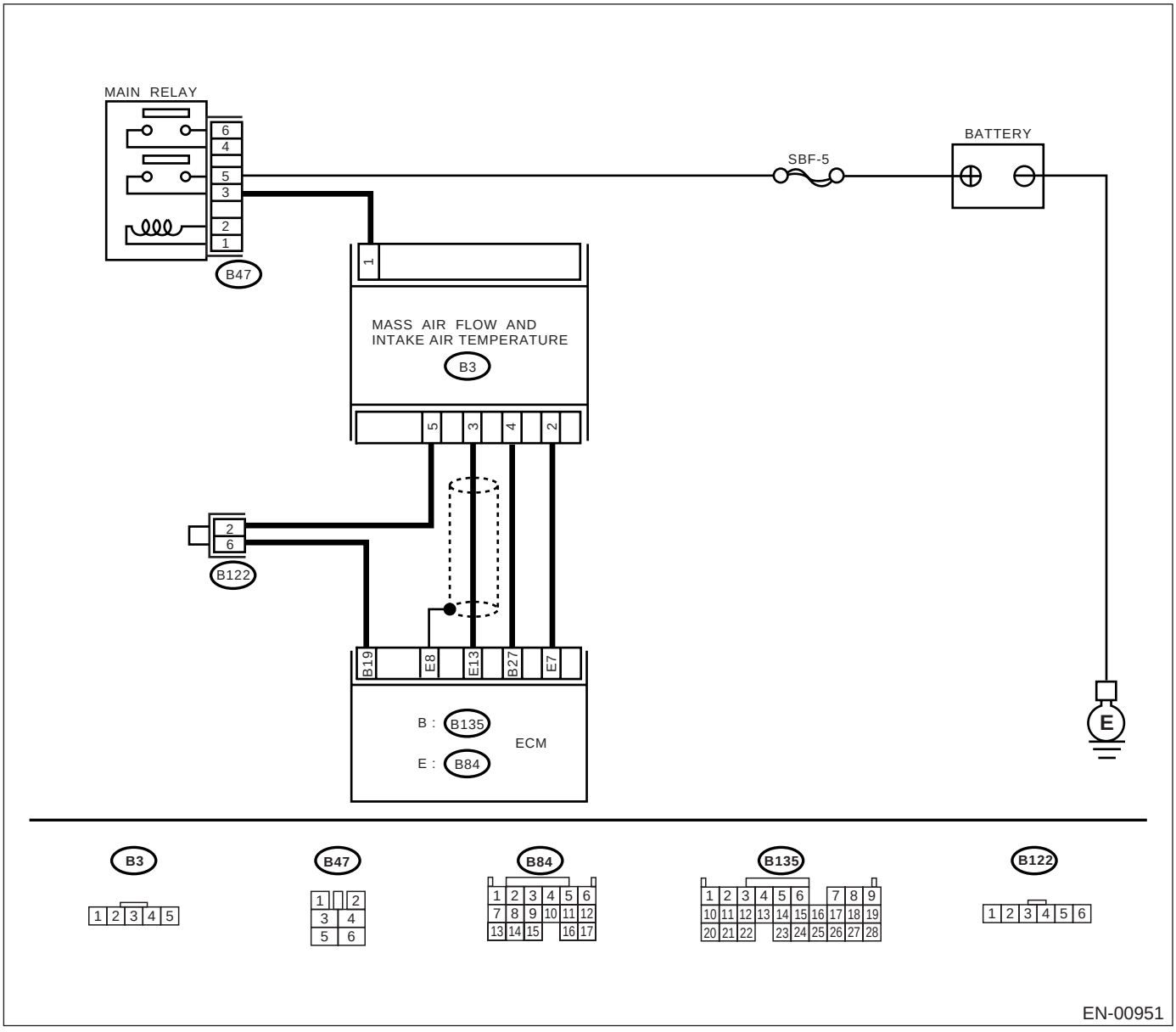
**MEMO:**

## F: DTC P0103 — MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

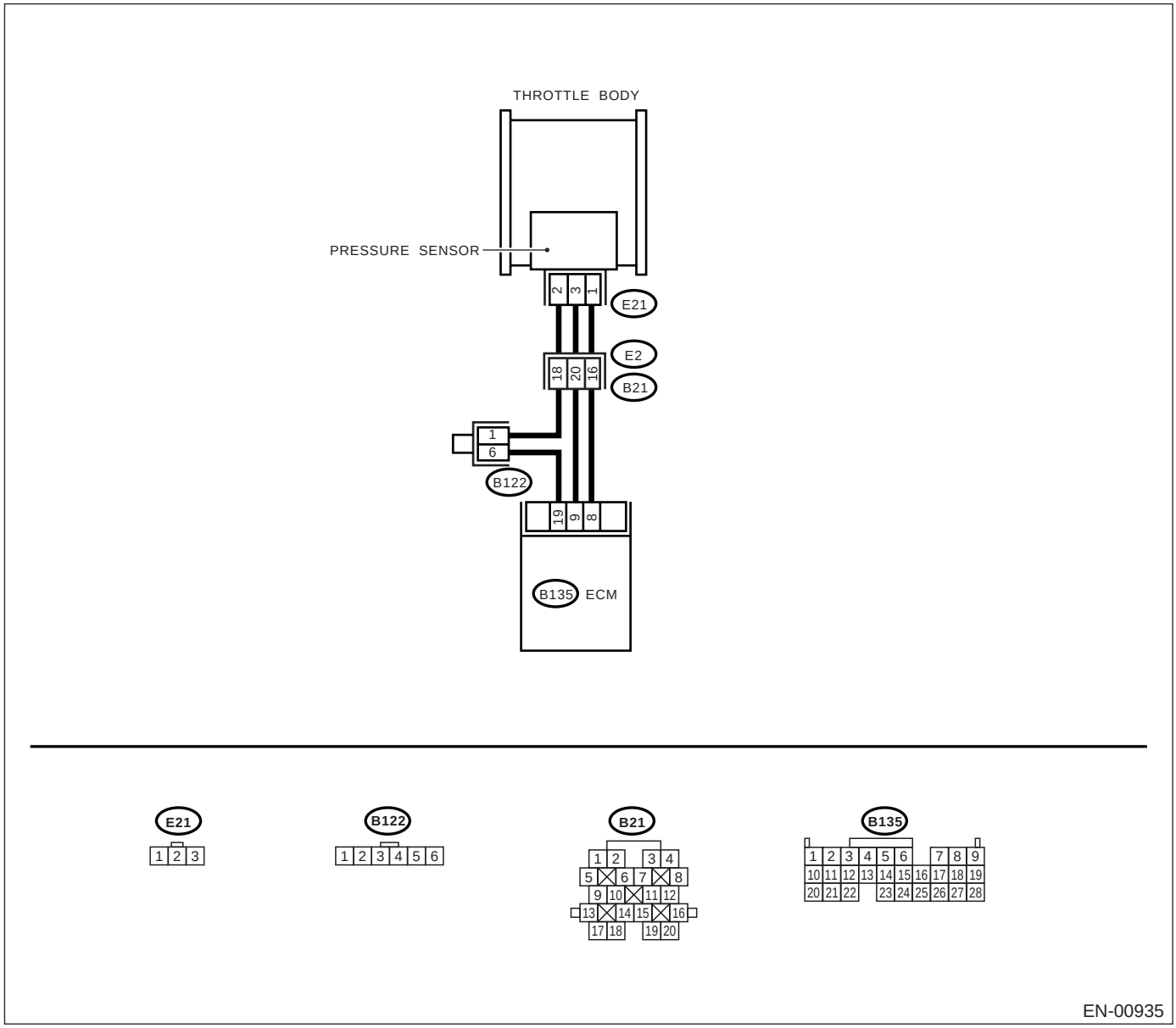


| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CONNECT SUBARU SELECT MONITOR, AND READ DATA.**<br>1) Turn the ignition switch to OFF.<br>2) Connect the Subaru Select Monitor to data link connector.<br>3) Turn the ignition switch to ON and Subaru Select Monitor switch to ON.<br>4) Start the engine.<br>5) Read the data of mass air flow sensor signal using Subaru Select Monitor.<br>Is the measured value within the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 1.3 g/sec (0.172 lb/min) — 240 g/sec (32 lb/min) or 0.3 — 4.58 V | Even if MI lights up, the circuit has returned to a normal condition at this time. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF and Subaru Select Monitor switch to OFF.<br>2) Disconnect the connector from mass air flow sensor.<br>3) Turn the ignition switch to ON and Subaru Select Monitor switch to ON.<br>4) Read the data of mass air flow sensor signal using Subaru Select Monitor.<br>Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 240 g/sec (32 lb/min) or 4.58 V | Repair the battery short circuit in harness between mass air flow sensor and ECM connector. After repair, replace the ECM. | Replace the mass air flow sensor. |

## G: DTC P0107 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor.<br>Is the measured value less than the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | –7.2 kPa (–54 mmHg, –2.1 inHg) | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check the poor contact in ECM and pressure sensor connector.<br>Is there poor contact in ECM or pressure sensor connector? | There is poor contact. | Repair the poor contact in ECM or pressure sensor connector. | Even if MI lights up, the circuit has returned to a normal condition at this time. |
| 3 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 9 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **5.** | Go to step **4.** |
| 4 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 9 (+) — Chassis ground (–):***<br>Does the measured value change by shaking harness and connector of ECM while monitoring the value with voltage meter? | The value changes. | Repair the poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 5 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 8 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 0.7 V | Go to step **6.** | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 6 | **CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from pressure sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between pressure sensor connector and engine ground.<br>***Connector & terminal***<br>***(E21) No. 3 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **7.** | Repair the open circuit in harness between ECM and intake manifold pressure sensor connector. |

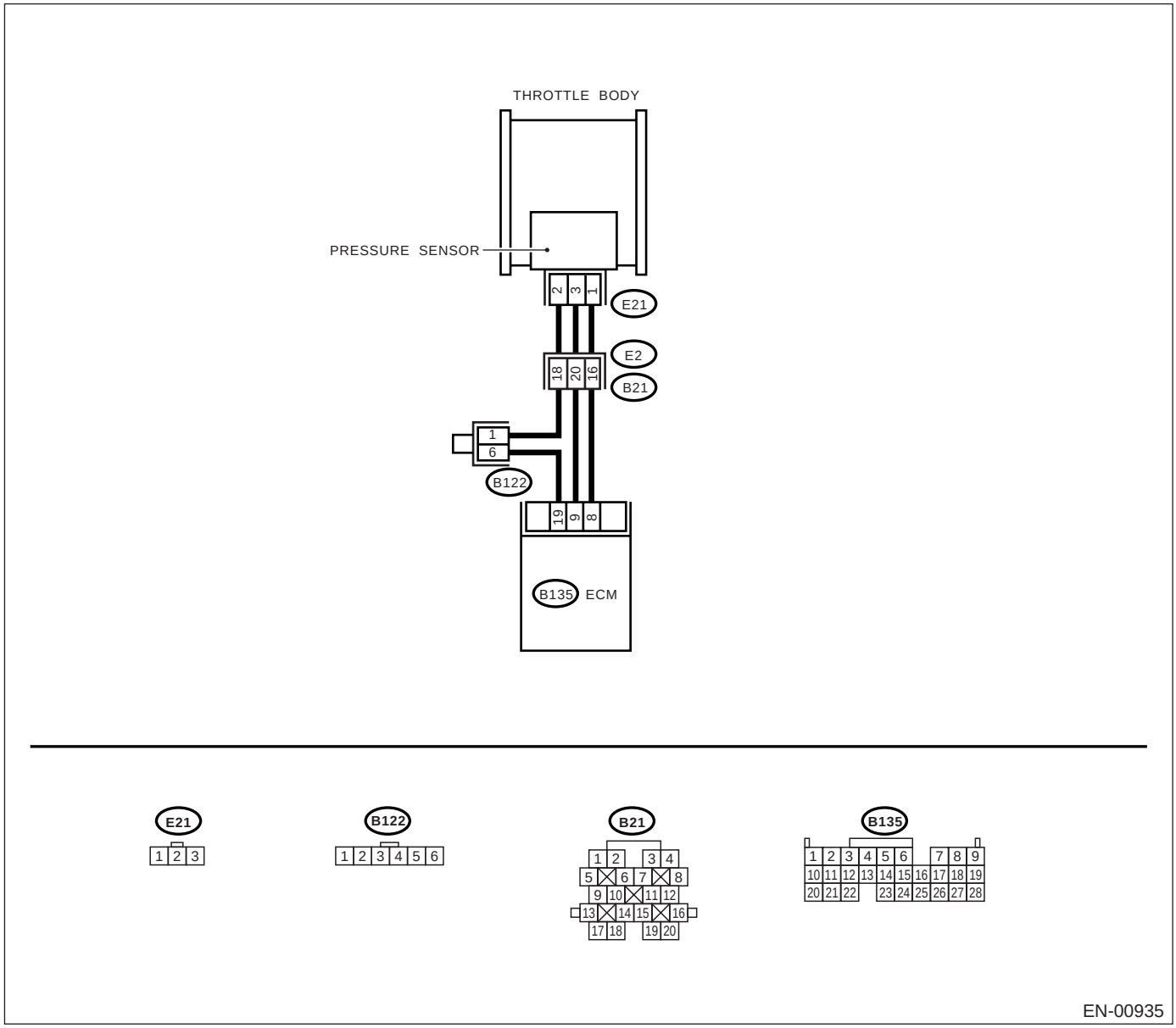
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between ECM and intake manifold pressure sensor connector.<br>***Connector & terminal***<br>***(B135) No. 19 — (E21) No. 2:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **8.** | Repair the open circuit in harness between ECM and intake manifold pressure sensor connector. |
| 8 | **CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.**<br>Measure the resistance of harness between intake manifold pressure sensor connector and engine ground.<br>***Connector & terminal***<br>***(E21) No. 1 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **9.** | Repair the ground short circuit in harness between ECM and intake manifold pressure sensor connector. |
| 9 | **CHECK POOR CONTACT.**<br>Check poor contact in pressure sensor connector.<br>Is there poor contact in pressure sensor connector? | There is poor contact. | Repair the poor contact in pressure sensor connector. | Replace the pressure sensor. <Ref. to FU(H4DOSTC)-34, Pressure Sensor.> |

**MEMO:**

## H: DTC P0108 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor.<br>Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 282 kPa (2121 mmHg, 83.50 inHg) | Go to step **7.** | Go to step **2.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 9 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **4.** | Go to step **3.** |
| 3 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 9 (+) — Chassis ground (–):***<br>Does the measured value change by shaking harness and connector of ECM while monitoring the value with voltage meter? | The value changes. | Repair the poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 4 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 8 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 4.5 V | Go to step **5.** | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 5 | **CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from pressure sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between pressure sensor connector and engine ground.<br>***Connector & terminal***<br>***(E21) No. 3 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **6.** | Repair the open circuit in harness between ECM and pressure sensor connector. |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between ECM and pressure sensor connector.<br>***Connector & terminal***<br>***(B135) No. 8 — (E21) No. 1:***<br>***(B135) No. 19 — (E21) No. 2:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **7.** | Repair the open circuit in harness between ECM and pressure sensor connector. |
| 7 | **CHECK POOR CONTACT.**<br>Check poor contact in pressure sensor connector.<br>Is there poor contact in pressure sensor connector? | There is poor contact. | Repair the poor contact in pressure sensor connector. | Replace the pressure sensor. <Ref. to FU(H4DOSTC)-34, Pressure Sensor.> |

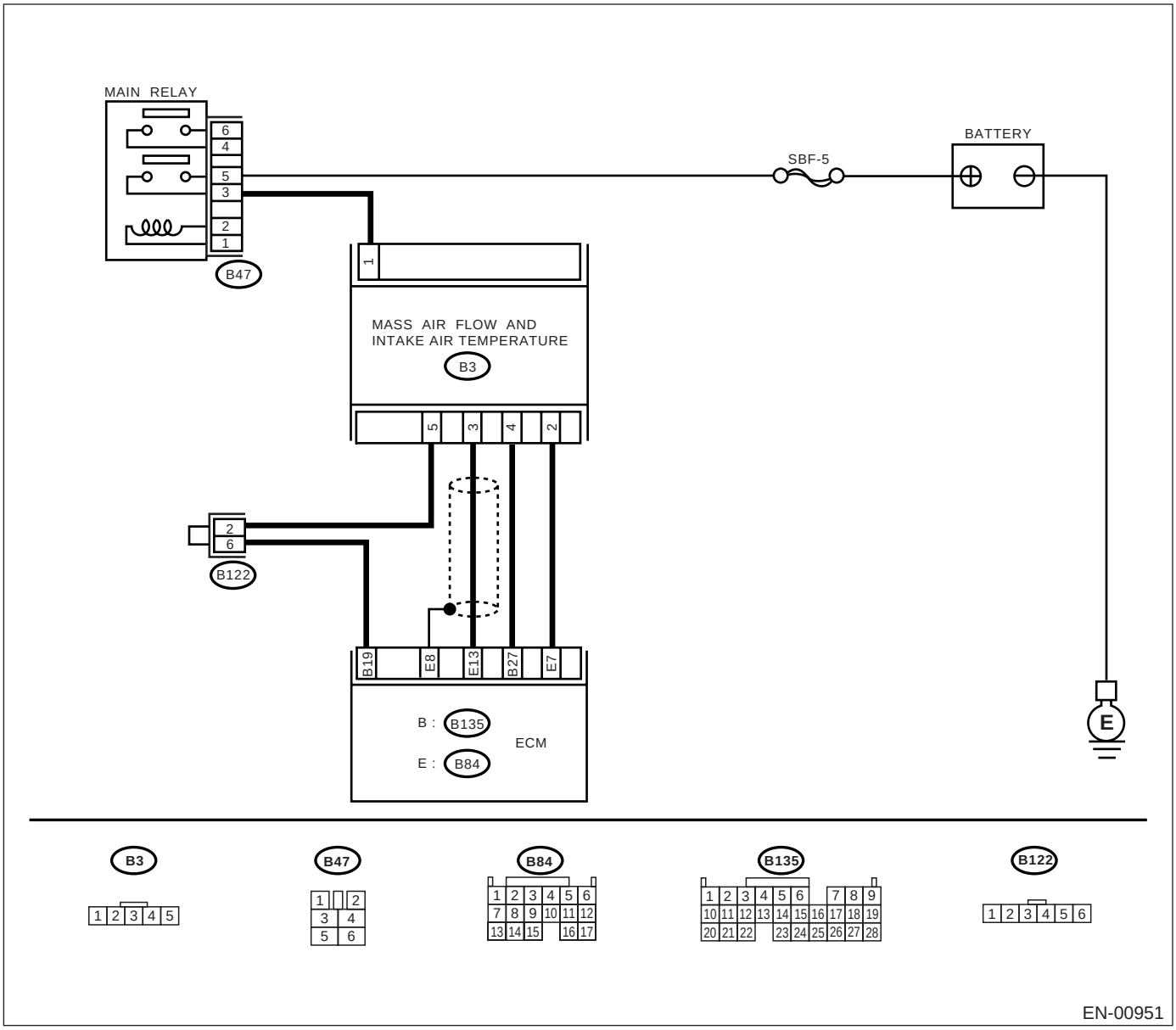
**MEMO:**

# I: DTC P0112 — INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



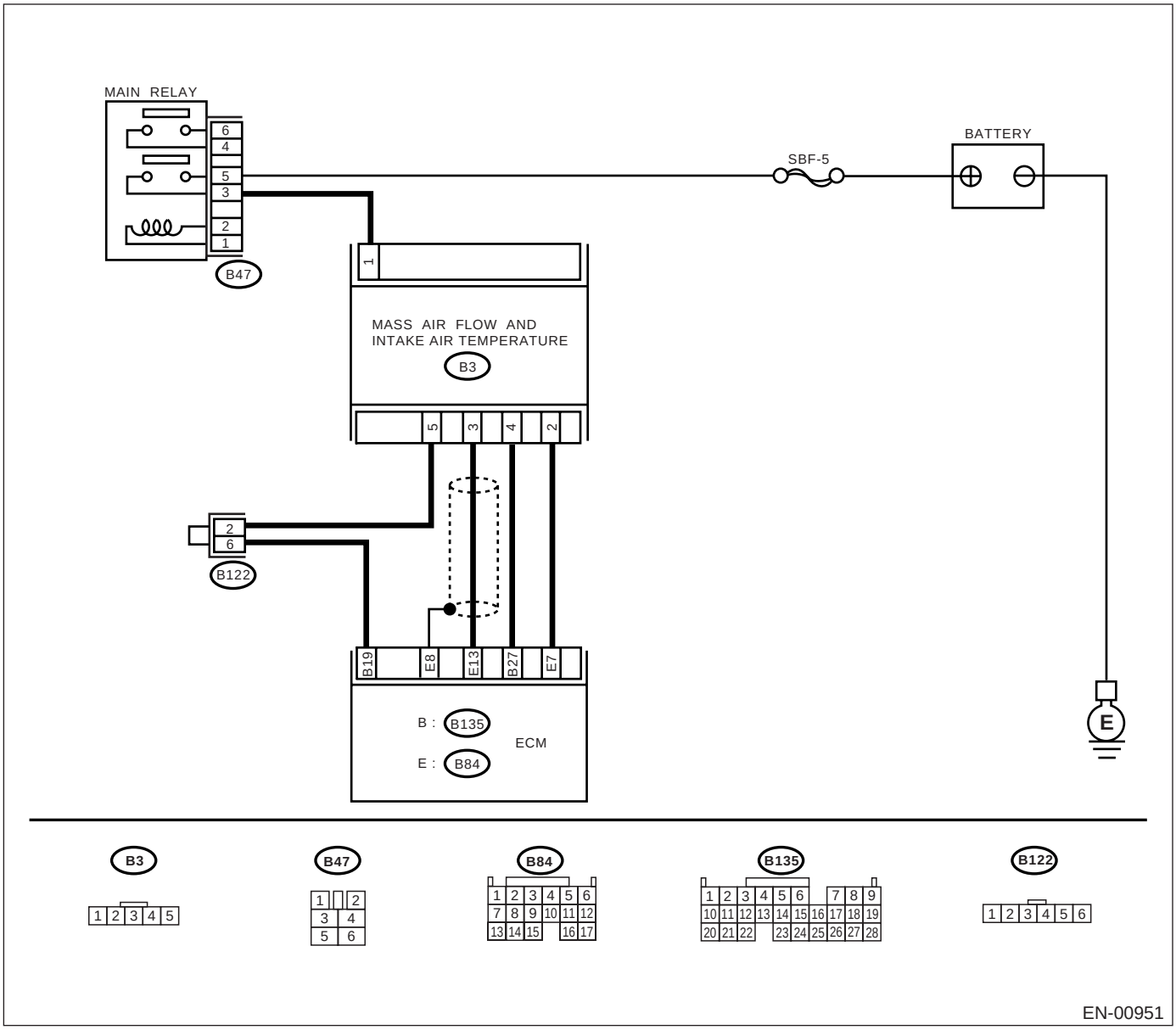
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of intake air temperature sensor signal using Subaru Select Monitor. Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 55°C (131°F) | Go to step **2.** | Repair the poor contact.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact mass air flow and intake air temperature sensor<br>• Poor contact in ECM<br>• Poor contact in joint connector |
| 2 | **CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from mass air flow and intake air temperature sensor.<br>3) Turn the ignition switch to ON.<br>4) Read the data of intake air temperature sensor signal using Subaru Select Monitor. Is the measured value less than the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | –36°C (–97°F) | Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOSTC)-33, Mass Air Flow and Intake Air Temperature Sensor.> | Repair the ground short circuit in harness between mass air flow and intake air temperature sensor and ECM connector. |

## J: DTC P0113 — INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of intake air temperature sensor signal using Subaru Select Monitor. Is the measured value less than the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | –36°C (–97°F) | Go to step **2.** | Repair the poor contact.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in mass air flow and intake air temperature sensor<br>• Poor contact in ECM<br>• Poor contact in joint connector |
| 2 | **CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from mass air flow and intake air temperature sensor.<br>3) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground.<br>***Connector & terminal***<br>***(B3) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between mass air flow and intake air temperature sensor and ECM connector. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground.<br>***Connector & terminal***<br>***(B3) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between mass air flow and intake air temperature sensor and ECM connector. | Go to step **4.** |
| 4 | **CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>Measure the voltage between mass air flow and intake air temperature sensor and pressure sensor connector and engine ground.<br>***Connector & terminal***<br>***(B3) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 4 V | Go to step **5.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector<br>• Poor contact in mass air flow and intake air temperature sensor<br>• Poor contact in ECM<br>• Poor contact in joint connector |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance of harness between mass air flow and intake air temperature sensor and engine ground.<br>***Connector & terminal***<br>***(B3) No. 5 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOSTC)-33, Mass Air Flow and Intake Air Temperature Sensor.> | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector<br>• Poor contact in mass air flow and intake air temperature sensor<br>• Poor contact in ECM<br>• Poor contact in joint connector |

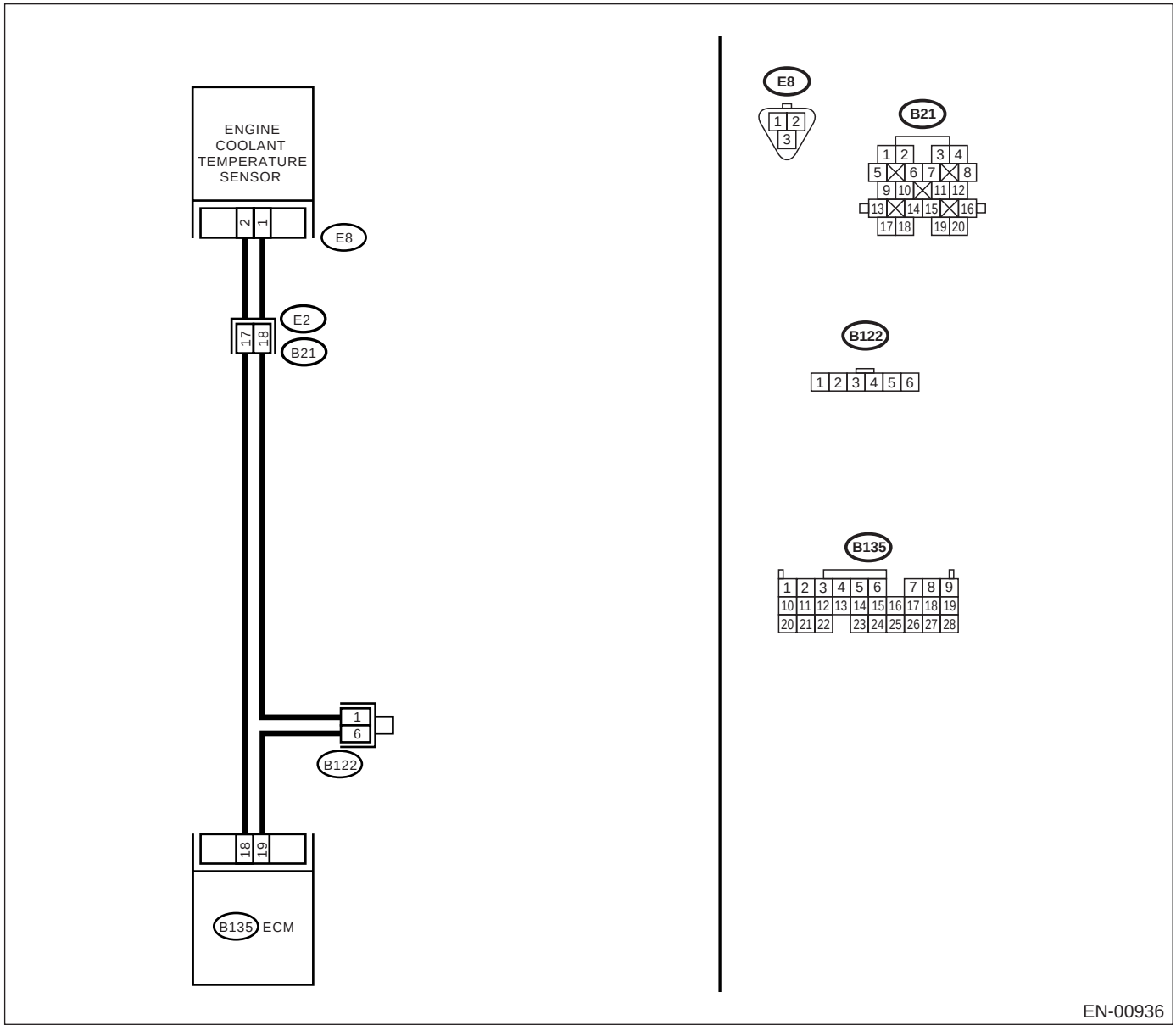
**MEMO:**

## K: DTC P0117 — ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



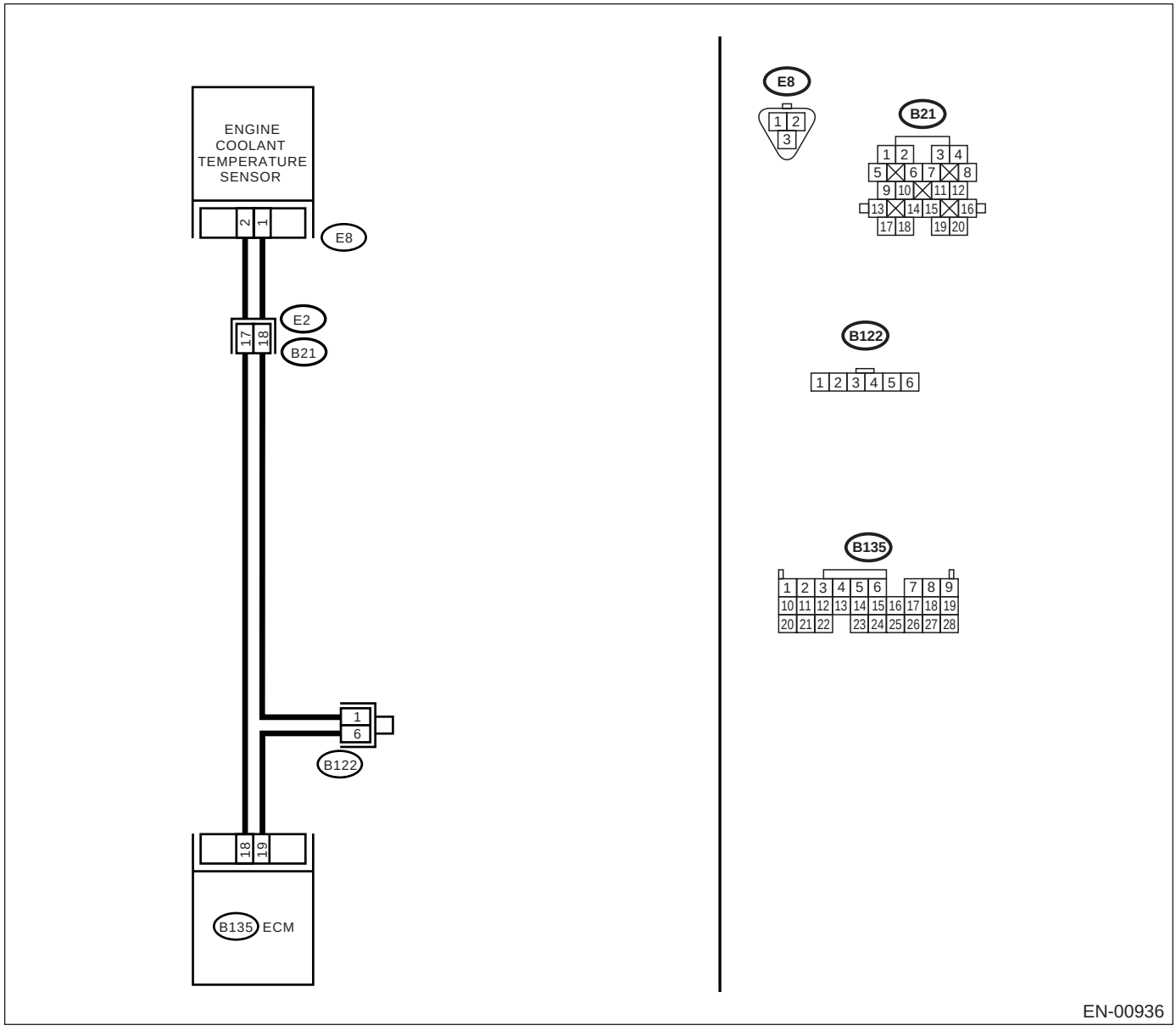
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.<br>Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 120°C (248°F) | Go to step **2.** | Repair the poor contact.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in engine coolant temperature sensor<br>• Poor contact in ECM<br>• Poor contact in coupling connector<br>• Poor contact in joint connector |
| 2 | **CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from engine coolant temperature sensor.<br>3) Turn the ignition switch to ON.<br>4) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.<br>Is the measured value less than the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | –40°C (–40°F) | Replace the engine coolant temperature sensor. <Ref. to FU(H4DOSTC)-28, Engine Coolant Temperature Sensor.> | Repair the ground short circuit in harness between engine coolant temperature sensor and ECM connector. |

## L: DTC P0118 — ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.<br>Is the measured value less than the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | –40°C (–40°F) | Go to step **2.** | Repair the poor contact.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in engine coolant temperature sensor<br>• Poor contact in ECM<br>• Poor contact in coupling connector<br>• Poor contact in joint connector |
| 2 | **CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from engine coolant temperature sensor.<br>3) Measure the voltage between engine coolant temperature sensor connector and engine ground.<br>***Connector & terminal***<br>***(E8) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and engine coolant temperature sensor connector. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between engine coolant temperature sensor connector and engine ground.<br>***Connector & terminal***<br>***(E8) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and engine coolant temperature sensor connector. | Go to step **4.** |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 4 | **CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>Measure the voltage between engine coolant temperature sensor connector and engine ground.<br>***Connector & terminal***<br>***(E8) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 4 V | Go to step **5.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and engine coolant temperature sensor connector<br>• Poor contact in engine coolant temperature sensor connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector<br>• Poor contact in joint connector |
| 5 | **CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance of harness between engine coolant temperature sensor connector and engine ground.<br>***Connector & terminal***<br>***(E8) No. 1 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Replace the engine coolant temperature sensor. <Ref. to FU(H4DOSTC)-28, Engine Coolant Temperature Sensor.> | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and engine coolant temperature sensor connector<br>• Poor contact in engine coolant temperature sensor connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector<br>• Poor contact in joint connector |

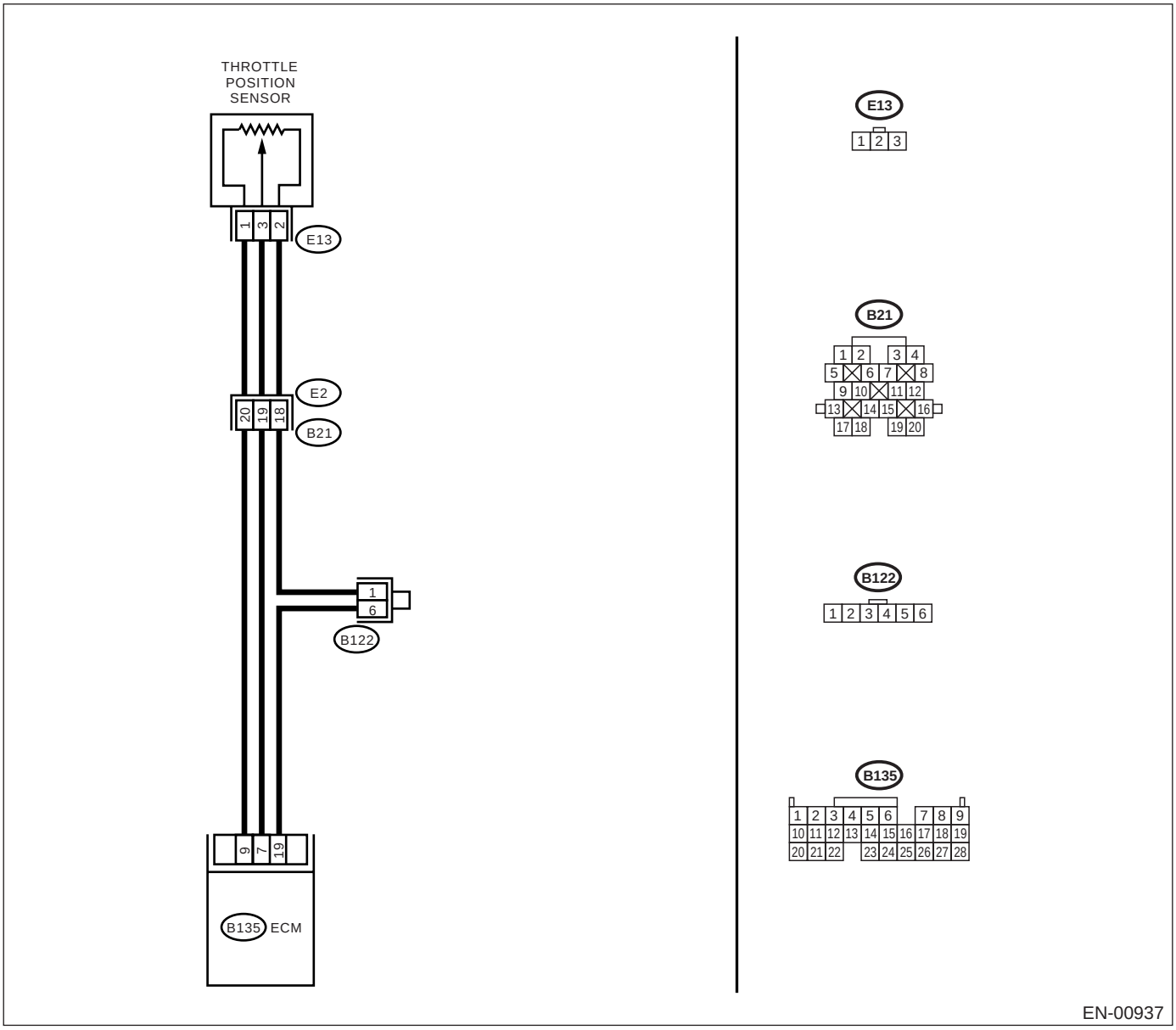
**MEMO:**

## M: DTC P0122 — THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT LOW INPUT —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of throttle position sensor signal using Subaru Select Monitor.<br>Is the measured value less than the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 0.1 V | Go to step **2.** | Even if MI lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in throttle position sensor connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed.<br>***Connector & terminal***<br>***(B135) No. 9 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **4.** | Go to step **3.** |
| 3 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 9 (+) — Chassis ground (–):***<br>Does the measured value change by shaking harness and connector of ECM while monitoring the value with voltage meter? | The voltage changes. | Repair the poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 4 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 7 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 0.1 V | Go to step **6.** | Go to step **5.** |
| 5 | **CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)**<br>Measure the voltage between ECM connector and chassis ground.<br>Does the measured value change by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor? | The value changes. | Repair the poor contact in ECM connector. | Go to step **6.** |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from throttle position sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between throttle position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E13) No. 1 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **7.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between throttle position sensor and ECM connector<br>• Poor contact in throttle position sensor connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector<br>• Poor contact in joint connector |
| 7 | **CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance of harness between ECM connector and throttle position sensor connector.<br>***Connector & terminal***<br>***(B135) No. 7 — (E13) No. 3:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **8.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between throttle position sensor and ECM connector<br>• Poor contact in ECM connector<br>• Poor contact in throttle position sensor connector<br>• Poor contact in coupling connector |
| 8 | **CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.**<br>Measure the resistance of harness between throttle position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E13) No. 3 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **9.** | Repair the ground short circuit in harness between throttle position sensor and ECM connector. |
| 9 | **CHECK POOR CONTACT.**<br>Check the poor contact in throttle position sensor connector.<br>Is there poor contact in throttle position sensor connector? | There is poor contact. | Repair the poor contact in throttle position sensor connector. | Replace the throttle position sensor. <Ref. to FU(H4DOSTC)-32, Throttle Position Sensor.> |

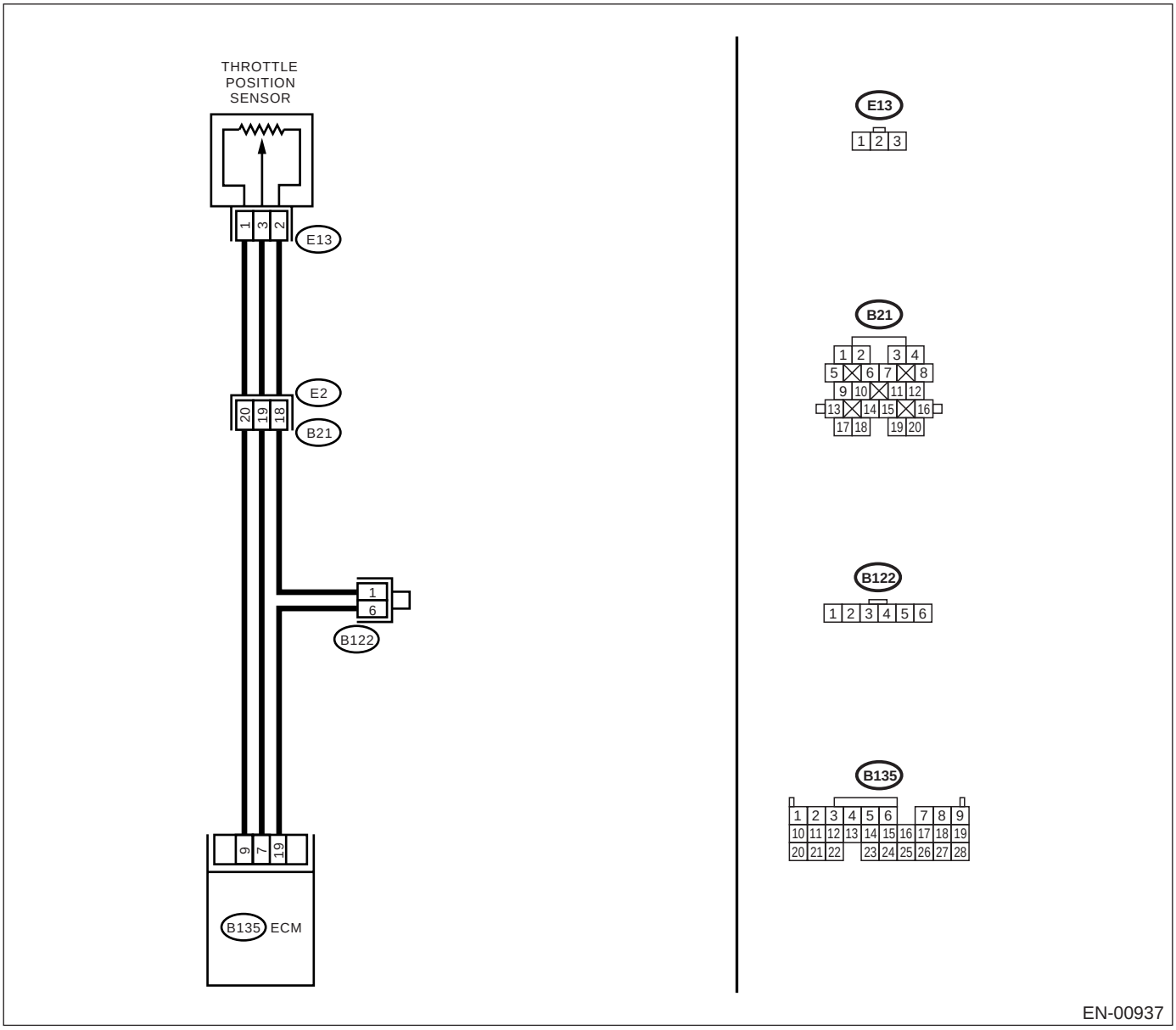
**MEMO:**

## N: DTC P0123 — THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT HIGH INPUT —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

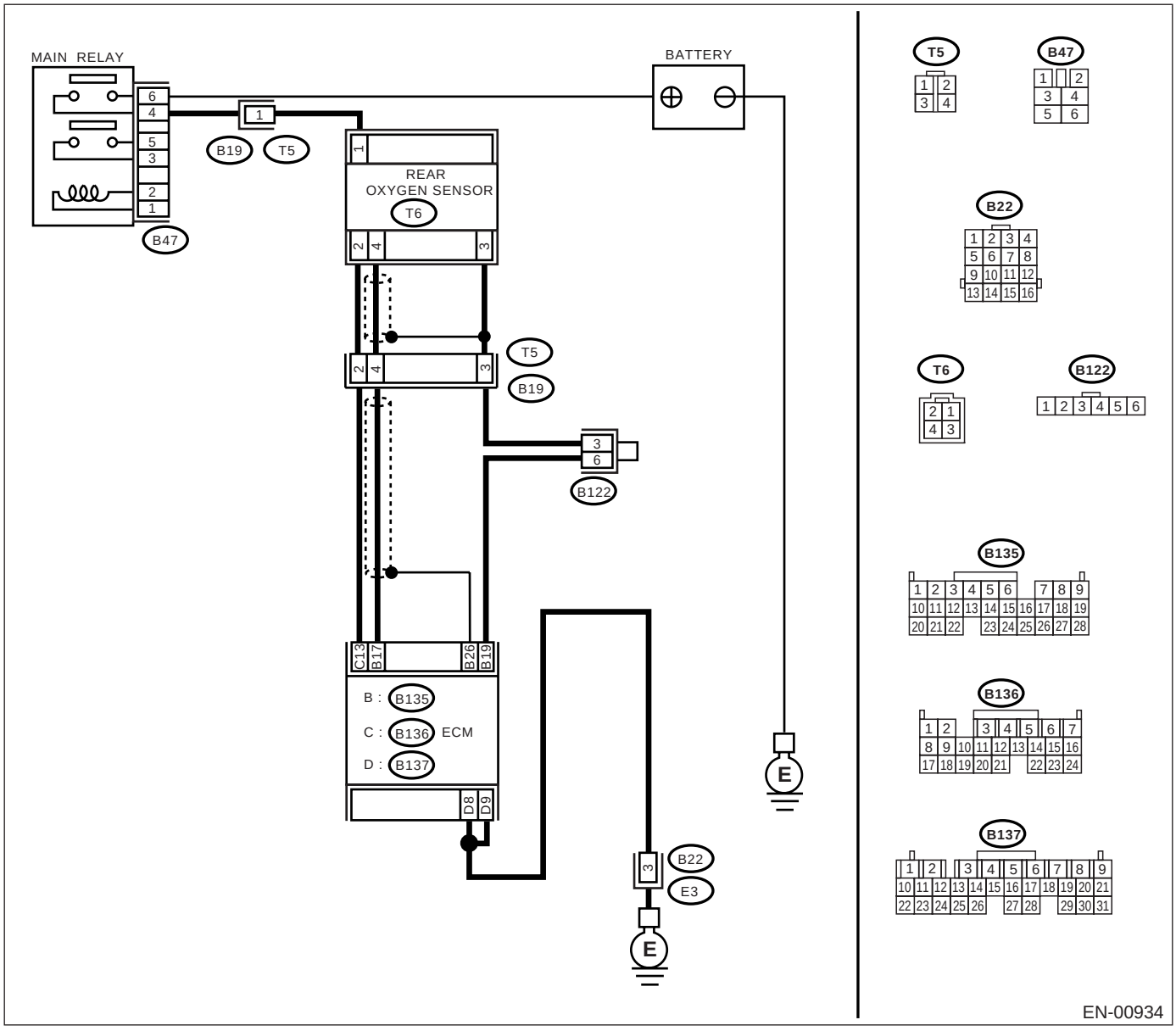


| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK CURRENT DATA.**<br>1) Start the engine.<br>2) Read the data of throttle position sensor signal using Subaru Select Monitor. Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 4.7 V | Go to step **2.** | Even if MI lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in throttle position sensor connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector |
| 2 | **CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from throttle position sensor.<br>3) Measure the resistance of harness between throttle position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E13) No. 2 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **3.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between throttle position sensor and ECM connector<br>• Poor contact in coupling connector<br>• Poor contact in joint connector |
| 3 | **CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between throttle position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E13) No. 3 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 4.7 V | Repair the battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Replace the throttle position sensor. <Ref. to FU(H4DOSTC)-32, Throttle Position Sensor.> |

## O: DTC P0136 — O2 SENSOR CIRCUIT (BANK 1 SENSOR 2) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK REAR OXYGEN SENSOR DATA.**<br>1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes.<br>2) Read the data of rear oxygen sensor signal using Subaru Select Monitor.<br>Does the value fluctuate?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | The value fluctuates. | Go to step **5.** | Go to step **2.** |
| 2 | **CHECK REAR OXYGEN SENSOR DATA.**<br>Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II General Scan Tool.<br>Is the measured value within the specified value? | 0.2 — 0.4 V | Go to step **3.** | Replace the rear oxygen sensor. <Ref. to FU(H4DOSTC)-39, Rear Oxygen Sensor.> |
| 3 | **CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from ECM and rear oxygen sensor.<br>3) Measure the resistance of harness between ECM and rear oxygen sensor connector.<br>***Connector & terminal***<br>***(B135) No. 26 — (T6) No. 4:***<br>Does the measured value exceed the specified value? | 3 Ω | Repair the open circuit in harness between ECM and rear oxygen sensor connector. | Go to step **4.** |
| 4 | **CHECK HARNESS BETWEEN REAR OXYGEN SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from rear oxygen sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between rear oxygen sensor harness connector and engine ground or chassis ground.<br>***Connector & terminal***<br>***(T6) No. 4 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 0.2 V | Replace the rear oxygen sensor. <Ref. to FU(H4DOSTC)-39, Rear Oxygen Sensor.> | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between rear oxygen sensor and ECM connector<br>• Poor contact in rear oxygen sensor connector<br>• Poor contact in ECM connector |
| 5 | **CHECK EXHAUST SYSTEM.**<br>Check the exhaust system parts.<br>Is there a fault in exhaust system?<br>NOTE:<br>Check the following items.<br>•Loose installation of portions<br>•Damage (crack, hole etc.) of parts<br>•Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor | There is a fault. | Repair or replace the faulty parts. | Replace the rear oxygen sensor. <Ref. to FU(H4DOSTC)-39, Rear Oxygen Sensor.> |

## P: DTC P0171 — SYSTEM TOO LEAN (BANK 1) —

NOTE:
For the diagnostic procedure, refer to DTC P0172. <Ref. to EN(H4DOSTC)-114, DTC P0172 — SYSTEM TOO RICH (BANK 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

**MEMO:**

## Q: DTC P0172 — SYSTEM TOO RICH (BANK 1) —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK EXHAUST SYSTEM.**<br>Are there holes or loose bolts on exhaust system? | There is no problem. | Go to step **2.** | Repair the exhaust system. |
| 2 | **CHECK AIR INTAKE SYSTEM.**<br>Are there holes, loose bolts or disconnection of hose on air intake system? | There is no problem. | Go to step **3.** | Repair the air intake system. |
| 3 | **CHECK PCV VALVE.**<br>Is PCV valve clogged? | PCV valve is not clogged. | Go to step **4.** | Replace PCV valve. |
| 4 | **CHECK FUEL PRESSURE.**<br>**Warning:**<br>**•Place "NO FIRE" signs near the working area.**<br>**•Be careful not to spill fuel on the floor.**<br>1) Release the fuel pressure.<br>(1) Disconnect the connector from fuel pump relay.<br>(2) Start the engine and run it until it stalls.<br>(3) After the engine stalls, crank it for 5 more seconds.<br>(4) Turn the ignition switch to OFF.<br>2) Connect the connector to fuel pump relay.<br>3) Disconnect the fuel delivery hose from fuel filter, and connect fuel pressure gauge.<br>4) Install the fuel filler cap.<br>5) Start the engine and idle while gear position is neutral.<br>6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.<br>Is the measured value within the specified value?<br>**Warning:**<br>**Before removing the fuel pressure gauge, release fuel pressure.**<br>NOTE:<br>If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. | 284 — 314 kPa (2.9 — 3.2 kg/cm$^2$, 41 — 46 psi) | Go to step **5.** | Repair the following items.<br>**Fuel presure too high**<br>• Clogged fuel return line or bent hose<br>**Fuel pressure too low**<br>• Improper fuel pump discharge<br>• Clogged fuel supply line |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK FUEL PRESSURE.**<br>After connecting pressure regulator vacuum hose, measure fuel pressure.<br>Is the measured value within the specified value?<br>**Warning:**<br>**Before removing the fuel pressure gauge, release fuel pressure.**<br>NOTE:<br>•If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.<br>•If out of specification as measured at this step, check or replace the pressure regulator and pressure regulator vacuum hose. | 206 — 235 kPa (2.1 — 2.4 kg/cm$^2$, 30 — 34 psi) | Go to step **6.** | Repair the following items.<br>**Fuel pressure too high**<br>• Faulty pressure regulator<br>• Clogged fuel return line or bent hose<br>**Fuel pressure too low**<br>• Faulty pressure regulator<br>• Improper fuel pump discharge<br>• Clogged fuel supply line |
| 6 | **CHECK ENGINE COOLANT TEMPERATURE SENSOR.**<br>1) Start the engine and warm-up completely.<br>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.<br>Does the measured value exceed the specified value?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | 60°C (140°F) | Go to step **7.** | Replace the engine coolant temperature sensor. <Ref. to FU(H4DOSTC)-28, Engine Coolant Temperature Sensor.> |
| 7 | **CHECK INTAKE MANIFOLD PRESSURE SENSOR.**<br>1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).<br>2) Place the shift lever in neutral position.<br>3) Turn the A/C switch to OFF.<br>4) Turn all accessory switches to OFF.<br>5) Read the data of intake manifold pressure sensor signal using Subaru Select Monitor.<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.><br>Is the measured value within the specified value? | Ignition ON 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) Idling 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg) | Go to step **8.** | Replace the mass air flow and intake manifold pressure sensor. <Ref. to FU(H4DOSTC)-33, Mass Air Flow and Intake Air Temperature Sensor.> |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 8 | **CHECK INTAKE AIR TEMPERATURE SENSOR.**<br>1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).<br>2) Place the shift lever in neutral position.<br>3) Turn the A/C switch to OFF.<br>4) Turn all accessory switches to OFF.<br>5) Open the front hood.<br>6) Measure the ambient temperature.<br>7) Read the data of intake manifold pressure sensor signal using Subaru Select Monitor. Is the value obtained when ambient temperature is subtracted from intake air temperature within the specified range?<br>NOTE:<br>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOSTC)-26, Subaru Select Monitor.> | –10°C (14°F) — 50°C (122°F) | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Check the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOSTC)-33, Mass Air Flow and Intake Air Temperature Sensor.> |

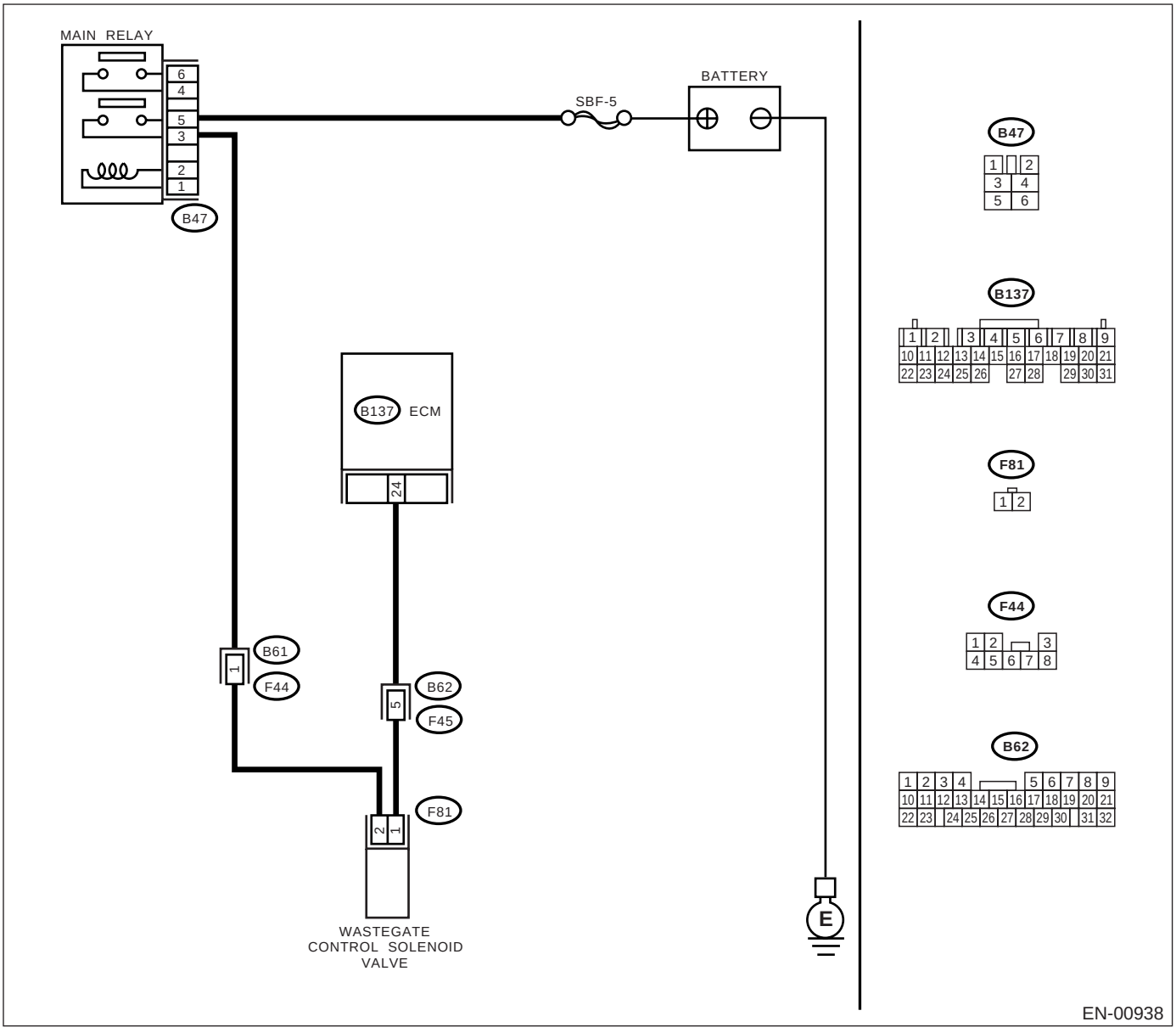
**MEMO:**

## R: DTC P0245 — TURBO/SUPER CHARGERWASTEGATESOLENOID “A” LOW —

- **TROUBLE SYMPTOM:**
  - Erroneous idling

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 24 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact with your Subaru distributor.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from wastegate control solenoid valve and ECM.<br>3) Measure the resistance of harness between wastegate control solenoid valve connector and engine ground.<br>***Connector & terminal***<br>***(F81) No. 1 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair the ground short circuit in harness between ECM and wastegate control solenoid valve connector. |
| 3 | **CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and wastegate control solenoid valve of harness connector.<br>***Connector & terminal***<br>***(B137) No. 24 — (F81) No. 1:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit in harness between ECM and wastegate control solenoid valve connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and wastegate control solenoid valve connector |
| 4 | **CHECK WASTEGATE CONTROL SOLENOID VALVE.**<br>1) Remove the wastegate control solenoid valve.<br>2) Measure the resistance between wastegate control solenoid valve terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value within the specified value? | 30 — 34 Ω | Go to step **5.** | Replace the wastegate control solenoid valve. <Ref. to IN(H4DOSTC)-21, Wastegate Control Solenoid Valve.> |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK POWER SUPPLY TO WASTEGATE CONTROL SOLENOID VALVE.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between wastegate control solenoid valve and engine ground.<br>***Connector & terminal***<br>***(F81) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between main relay and wastegate control solenoid valve connector. |
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in wastegate control solenoid valve connector.<br>Is there poor contact in wastegate control solenoid valve connector? | There is poor contact. | Repair the poor contact in wastegate control solenoid valve connector. | Contact with your Subaru distributor.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

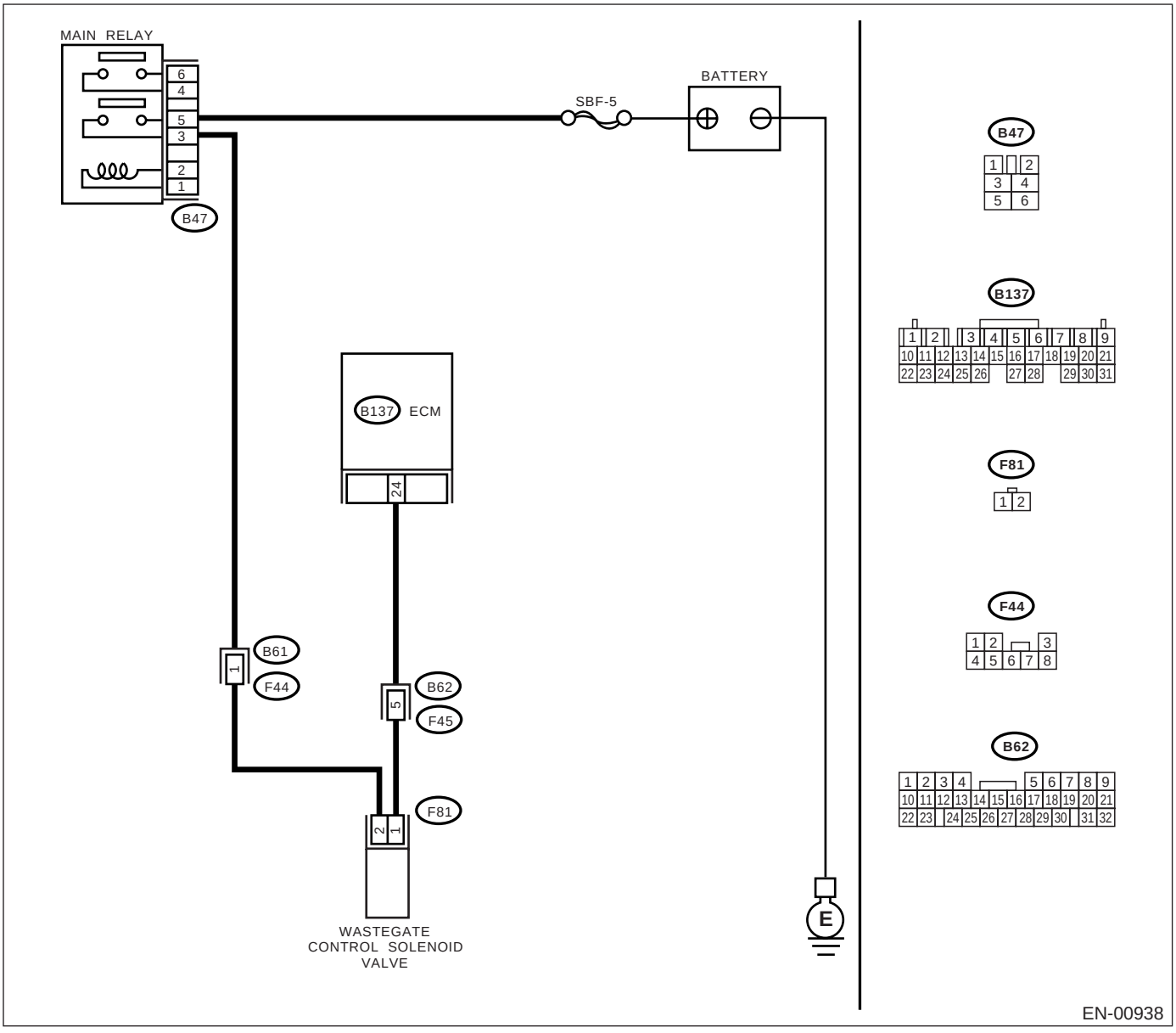
**MEMO:**

## S: DTC P0246 — TURBO/SUPER CHARGERWASTEGATESOLENOID “A” HIGH —

- **TROUBLE SYMPTOM:**
  - Erroneous idling

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



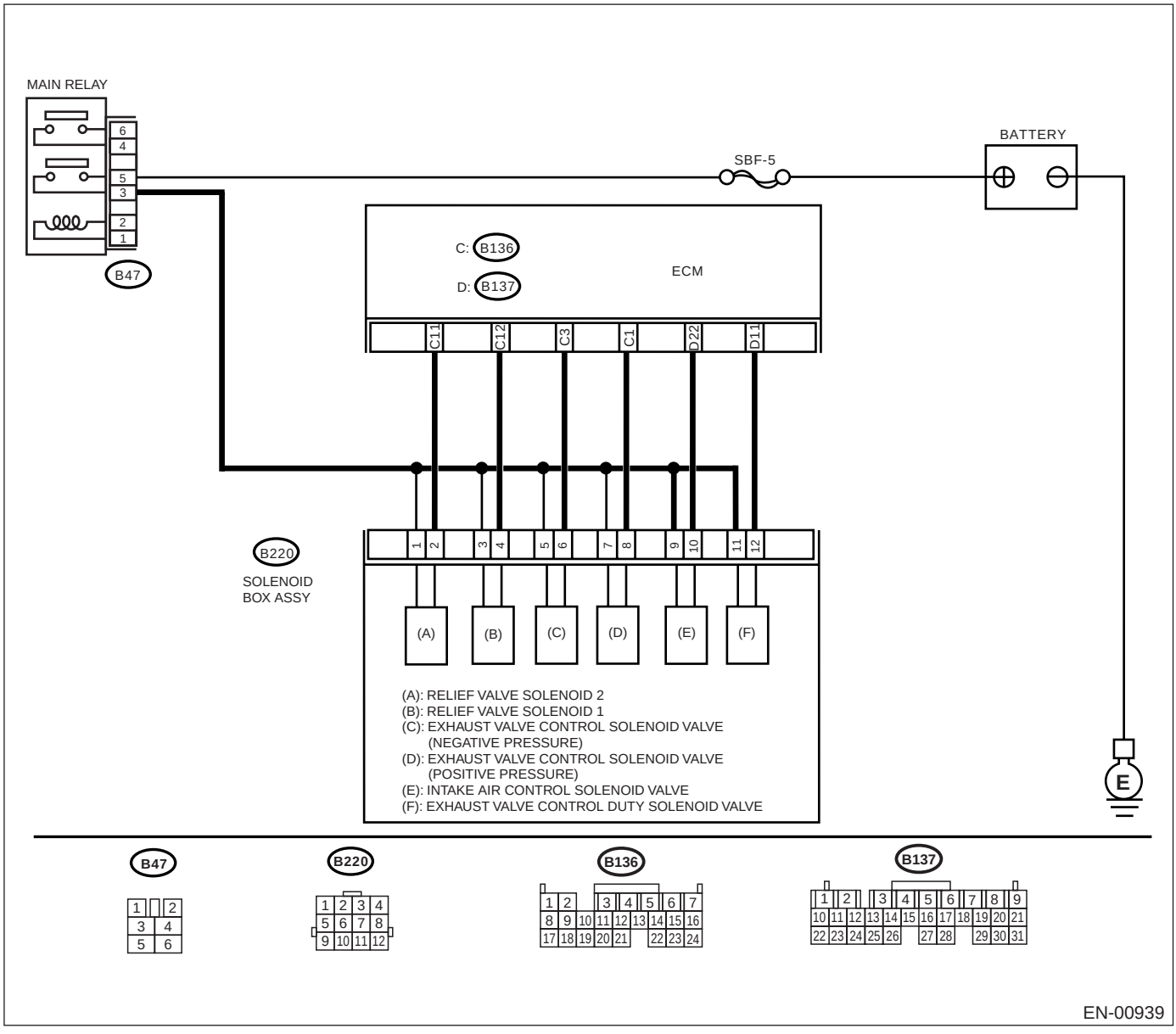
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 24 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 3 | **CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from wastegate control solenoid valve.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 24 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and wastegate control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **4.** |
| 4 | **CHECK WASTEGATE CONTROL SOLENOID VALVE.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between wastegate control solenoid valve terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the wastegate control solenoid valve <Ref. to IN(H4DOSTC)-21, Wastegate Control Solenoid Valve.> and ECM <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

# T: DTC P0249 — TURBO/SUPER CHARGERWASTEGATESOLENOID “B” LOW —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 11 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL DUTY SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from exhaust valve control duty solenoid valve and ECM.<br>3) Measure the resistance of harness between exhaust valve control duty solenoid valve connector and engine ground.<br>***Connector & terminal***<br>***(B220) No. 12 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair the ground short circuit in harness between ECM and exhaust valve control duty solenoid valve connector. |
| 3 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL DUTY SOLENOID VALVE AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and exhaust valve control duty solenoid valve of harness connector.<br>***Connector & terminal***<br>***(B137) No. 11 — (B220) No. 12:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit in harness between ECM and exhaust valve control duty solenoid valve connector. |
| 4 | **CHECK EXHAUST VALVE CONTROL DUTY SOLENOID VALVE.**<br>Measure the resistance between purge control solenoid valve terminals.<br>***Terminals***<br>***No. 11 — No. 12:***<br>Is the measured value within the specified value? | 17 — 21 Ω | Go to step **5.** | Replace the exhaust valve control duty solenoid valve. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 5 | **CHECK POWER SUPPLY TO EXHAUST VALVE CONTROL DUTY SOLENOID VALVE.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between exhaust valve control duty solenoid valve and engine ground.<br>***Connector & terminal***<br>***(B220) No. 11 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between main relay and exhaust valve control duty solenoid valve connector. |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in exhaust valve control duty solenoid valve and ECM connectors.<br>Is there poor contact in exhaust valve control duty solenoid valve and ECM connectors? | There is poor contact. | Repair the poor contact in exhaust valve control duty solenoid valve and ECM connectors. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

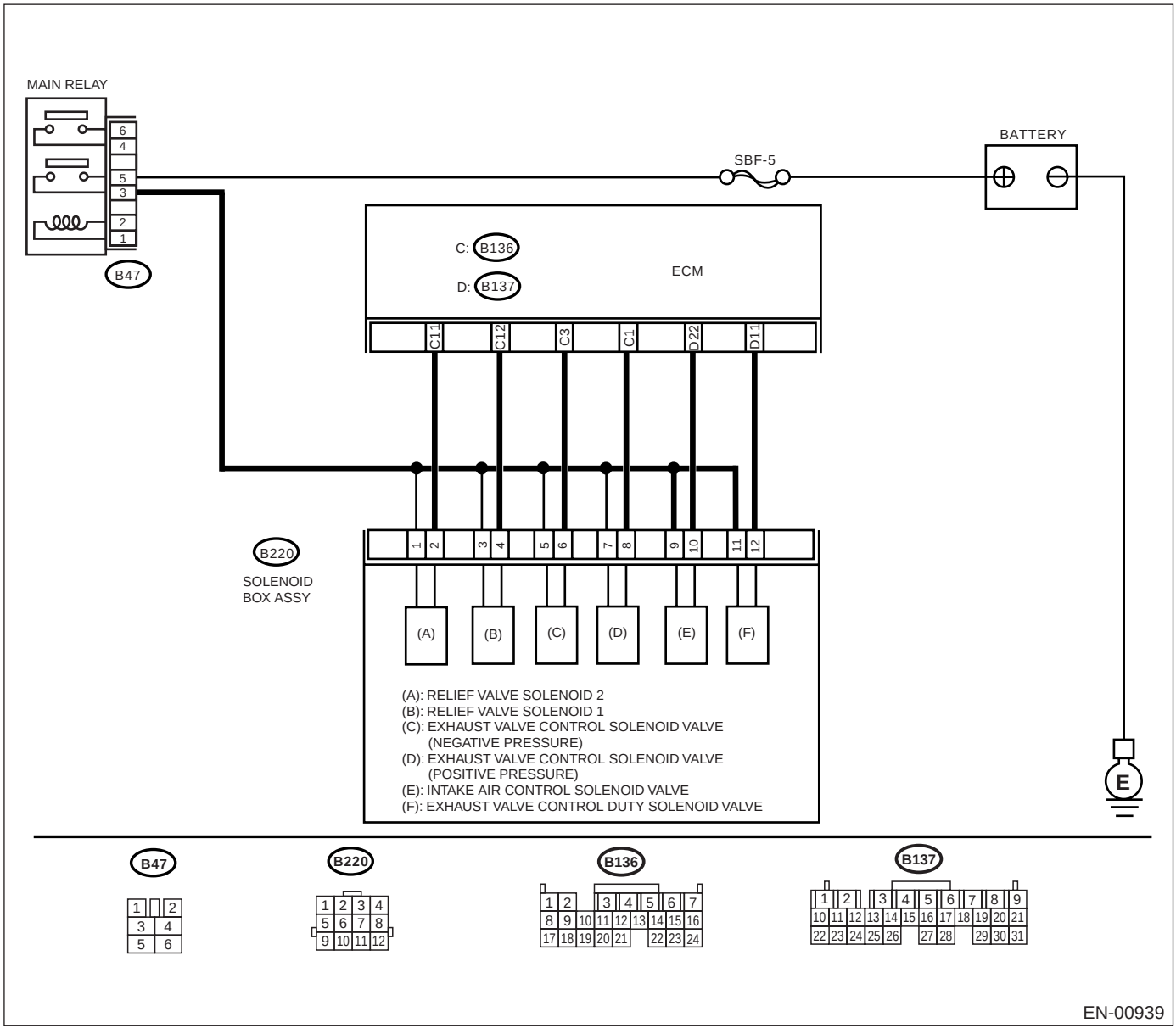
**MEMO:**

## U: DTC P0250 — TURBO/SUPER CHARGERWASTEGATESOLENOID “B” HIGH —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 11 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 3 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL DUTY SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from exhaust valve control duty solenoid valve.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 11 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and exhaust valve control duty solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **4.** |
| 4 | **CHECK EXHAUST VALVE CONTROL DUTY SOLENOID VALVE.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between exhaust valve control duty solenoid valve terminals.<br>***Terminals***<br>***No. 11 — No. 12:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the exhaust valve control duty solenoid valve <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> and ECM <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and exhaust valve control duty solenoid valve connectors.<br>Is there poor contact in ECM exhaust valve control duty solenoid valve connectors? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

## V: DTC P0261 — CYLINDER 1 INJECTOR CIRCUIT LOW —

NOTE:
For the diagnostic procedure, refer to DTC P0270. <Ref. to EN(H4DOSTC)-132, DTC P0270 — CYLINDER 4 INJECTOR CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## W: DTC P0264 — CYLINDER 2 INJECTOR CIRCUIT LOW —

NOTE:
For the diagnostic procedure, refer to DTC P0270. <Ref. to EN(H4DOSTC)-132, DTC P0270 — CYLINDER 4 INJECTOR CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## X: DTC P0267 — CYLINDER 3 INJECTOR CIRCUIT LOW —

NOTE:
For the diagnostic procedure, refer to DTC P0270. <Ref. to EN(H4DOSTC)-132, DTC P0270 — CYLINDER 4 INJECTOR CIRCUIT LOW —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

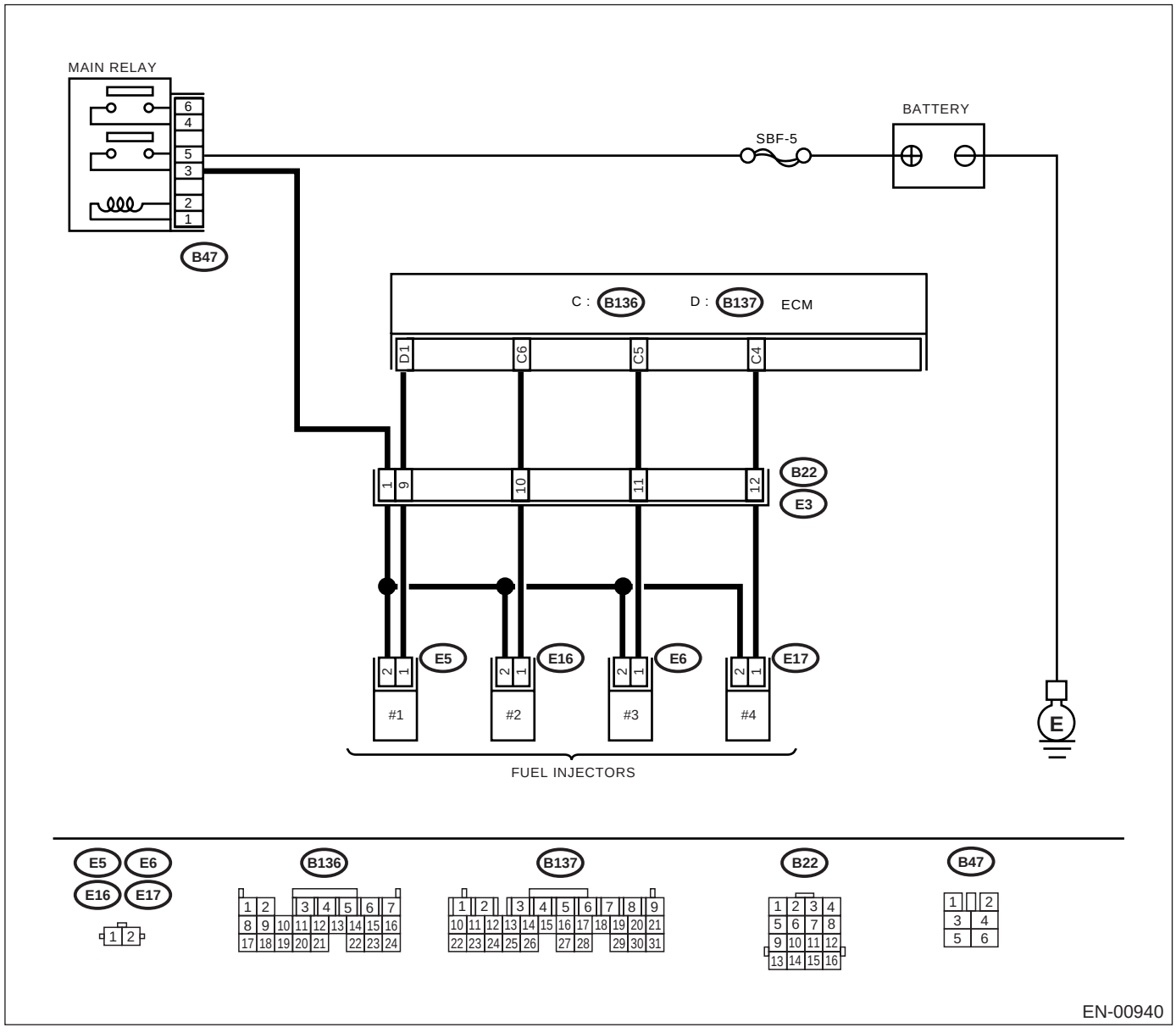
**MEMO:**

## Y: DTC P0270 — CYLINDER 4 INJECTOR CIRCUIT LOW —

- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Erroneous idling
  - Rough driving

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OPERATION OF EACH FUEL INJECTOR.**<br>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.<br>Does the fuel injector operate? | Operates. | Check the fuel pressure. <Ref. to ME(H4DOSTC)-26, FUEL PRESSURE, .> | Go to step **2.** |
| 2 | **CHECK POWER SUPPLY TO EACH FUEL INJECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from #1 cylinder fuel injector.<br>3) Turn the ignition switch to ON.<br>4) Measure the power supply voltage between the fuel injector terminal and engine ground.<br>***Connector & terminal***<br>***#1 (E5) No. 2 (+) — Engine ground (–):***<br>***#2 (E16) No. 2 (+) — Engine ground (–):***<br>***#3 (E6) No. 2 (+) — Engine ground (–):***<br>***#4 (E17) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between main relay and fuel injector connector<br>• Poor contact in main relay connector<br>• Poor contact in coupling connector<br>• Poor contact in fuel injector connector |
| 3 | **CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.**<br>1) Disconnect the connector from ECM.<br>2) Measure the resistance of harness between ECM and fuel injector connector.<br>***Connector & terminal***<br>***(B137) No. 1 — (E5) No. 1:***<br>***(B136) No. 6 — (E16) No. 1:***<br>***(B136) No. 5 — (E6) No. 1:***<br>***(B136) No. 4 — (E6) No. 1:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in the harness between ECM and fuel injector connector<br>• Poor contact in the coupling connector |
| 4 | **CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.**<br>Measure the resistance of harness between ECM and fuel injector connector.<br>***Connector & terminal***<br>***(B137) No. 1 — Chassis ground:***<br>***(B136) No. 6 — Chassis ground:***<br>***(B136) No. 5 — Chassis ground:***<br>***(B136) No. 4 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **5.** | Repair the ground short circuit in harness between ECM and fuel injector connector. |
| 5 | **CHECK EACH FUEL INJECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between each fuel injector terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value within the specified value? | 5 — 20 Ω | Go to step **6.** | Replace the faulty fuel injector. |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Inspection using “General Diagnostic Table”. <Ref. to EN(H4DOSTC)-246, INSPECTION, General Diagnostic Table.> |

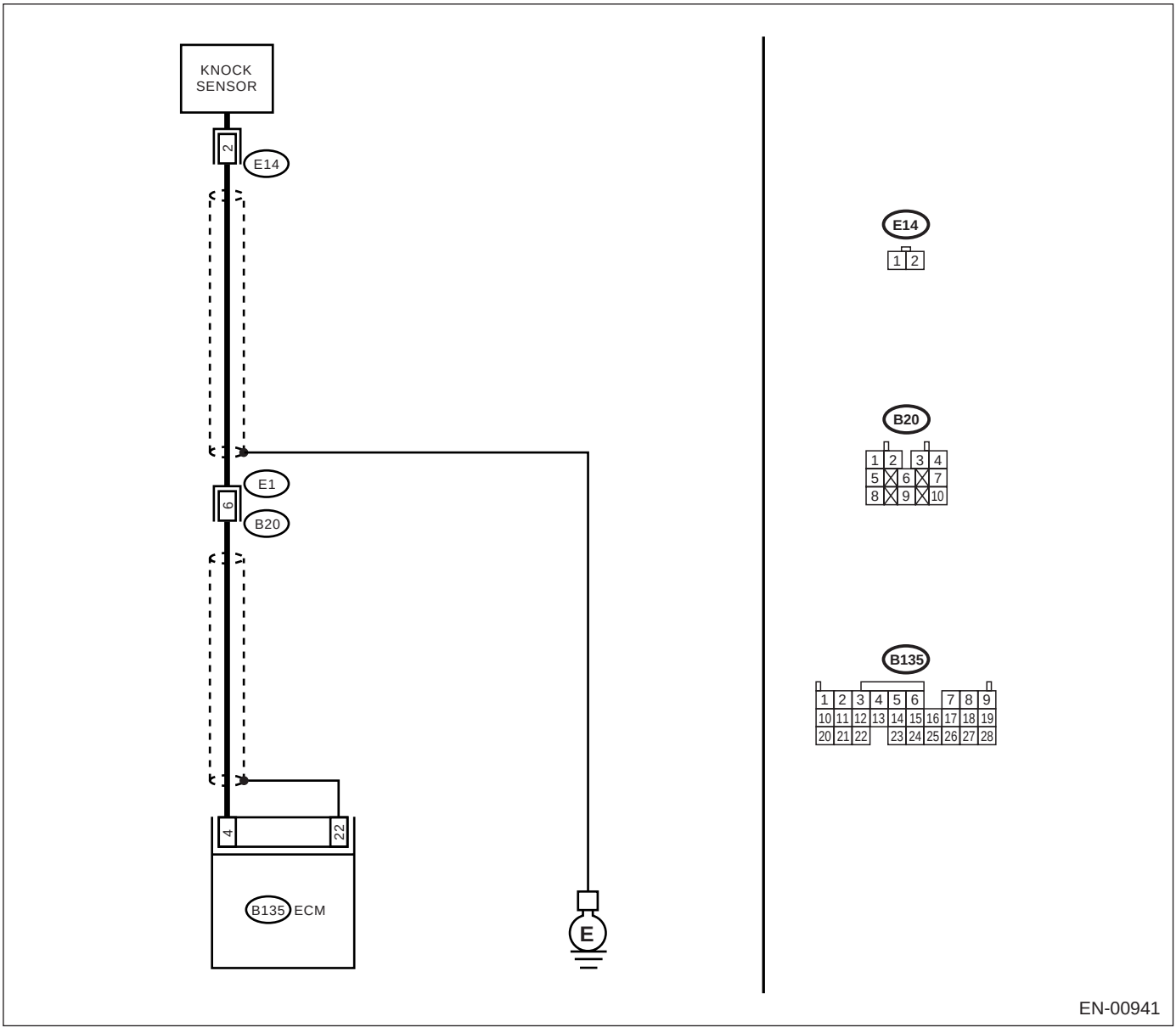
**MEMO:**

## Z: DTC P0327 — KNOCK SENSOR 1 CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR) —

- **TROUBLE SYMPTOM:**
  - Poor driving performance
  - Knocking occurs.

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



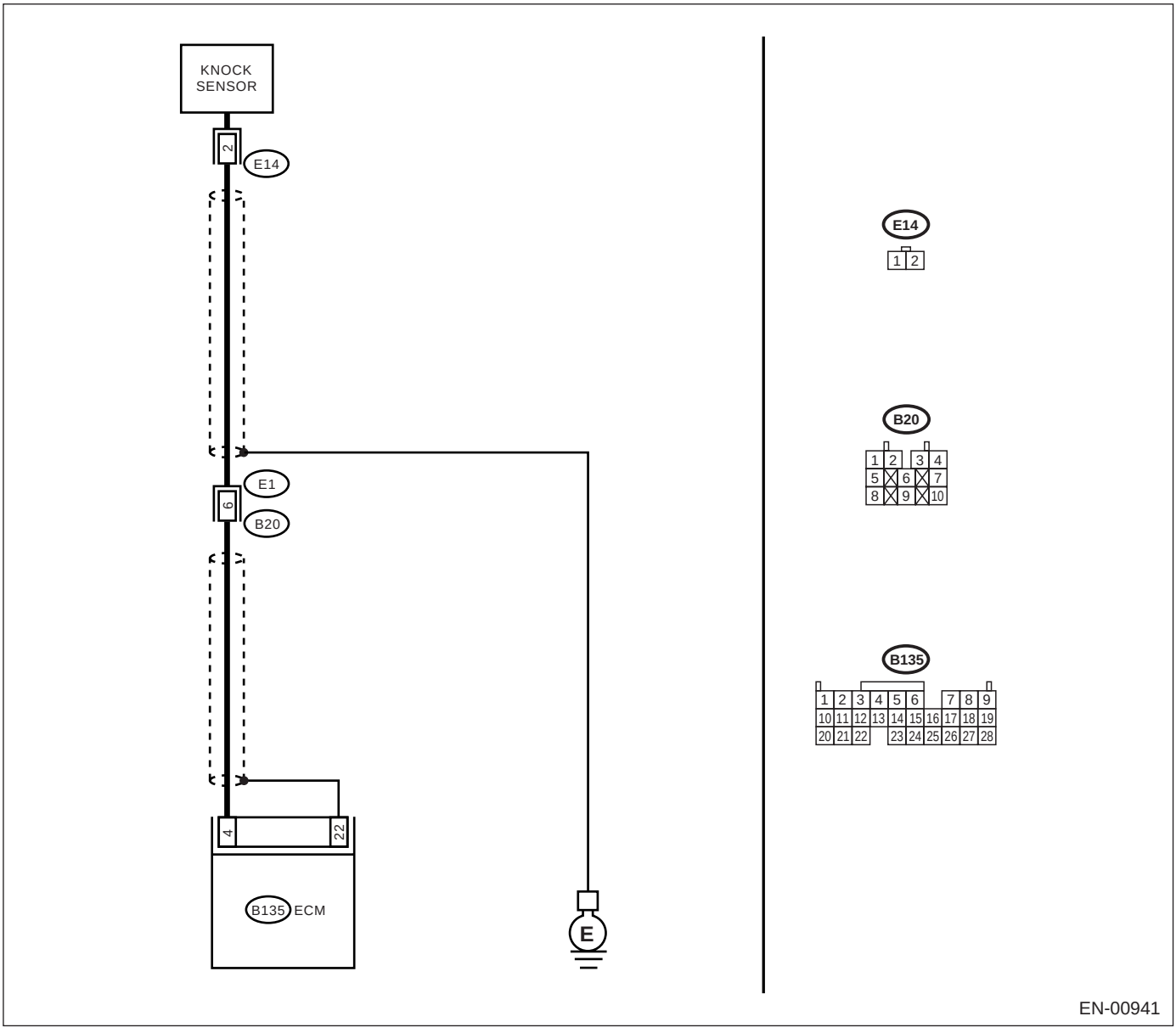
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance between ECM harness connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 4 — Chassis ground:***<br>Does the measured value exceed the specified value? | 700 kΩ | Go to step **2.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between knock sensor and ECM connector<br>• Poor contact in knock sensor connector<br>• Poor contact in coupling connector |
| 2 | **CHECK KNOCK SENSOR.**<br>1) Disconnect the connector from knock sensor.<br>2) Measure the resistance between knock sensor connector terminal and engine ground.<br>***Terminal***<br>***No. 2 — Engine ground:***<br>Does the measured value exceed the specified value? | 700 kΩ | Go to step **3.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between knock sensor and ECM connector<br>• Poor contact in knock sensor connector<br>• Poor contact in coupling connector |
| 3 | **CHECK CONDITION OF KNOCK SENSOR INSTALLATION.**<br>Is the knock sensor installation bolt tightened securely? | Tightened securely. | Replace the knock sensor. <Ref. to FU(H4DOSTC)-31, Knock Sensor.> | Tighten the knock sensor installation bolt securely. |

## AA:DTC P0328 — KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR) —

- **TROUBLE SYMPTOM:**
  - Poor driving performance
  - Knocking occurs.

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



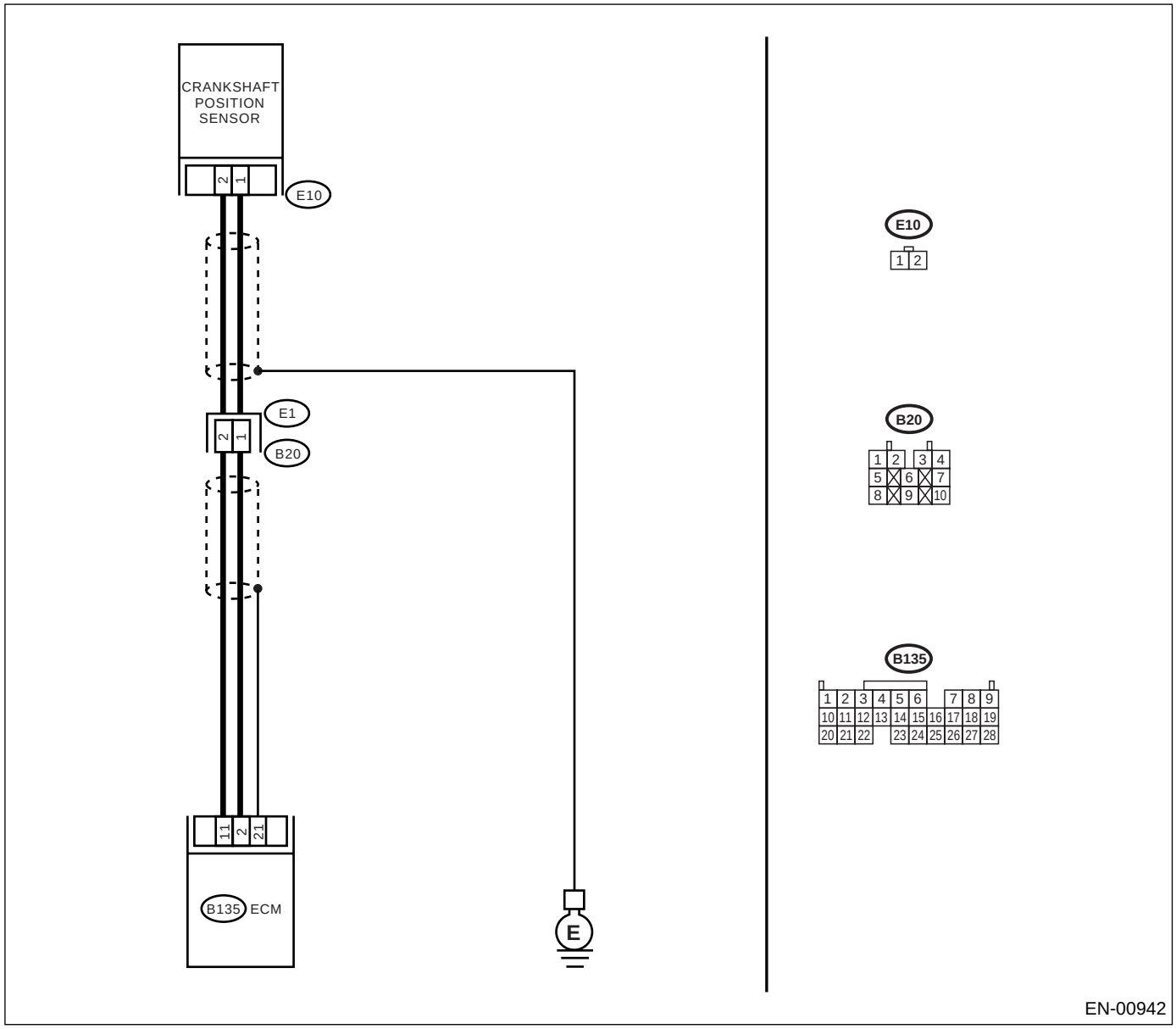
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 4 — Chassis ground:***<br>Is the measured value less than the specified value? | 400 kΩ | Go to step **2.** | Go to step **3.** |
| 2 | **CHECK KNOCK SENSOR.**<br>1) Disconnect the connector from knock sensor.<br>2) Measure the resistance between knock sensor connector terminal and engine ground.<br>***Terminal***<br>***No. 2 — Engine ground:***<br>Is the measured value less than the specified value? | 400 kΩ | Replace the knock sensor. <Ref. to FU(H4DOSTC)-31, Knock Sensor.> | Repair the ground short circuit in harness between knock sensor connector and ECM connector.<br>NOTE:<br>The harness between both connectors is shielded. Repair the short circuit of harness together with shield. |
| 3 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Connect the connectors to ECM and knock sensor.<br>2) Turn the ignition switch to ON.<br>3) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B135) No. 4 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 2 V | Even if MI lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)<br>NOTE:<br>In this case, repair the following:<br>• Poor contact in knock sensor connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector | Repair the poor contact in ECM connector. |

## AB:DTC P0335 — CRANKSHAFT POSITION SENSOR “A” CIRCUIT —

- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



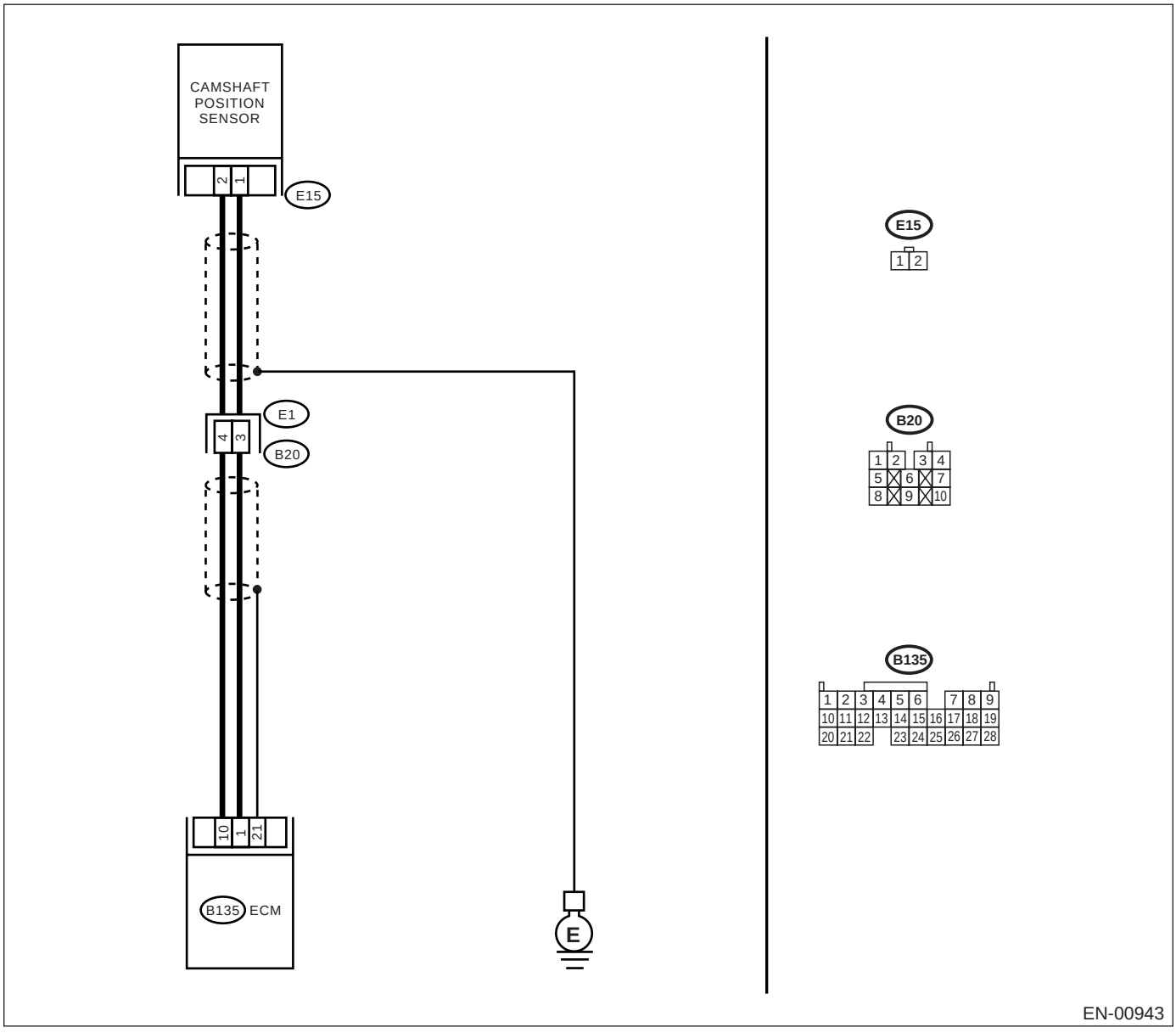
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from crankshaft position sensor.<br>3) Measure the resistance of harness between crankshaft position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E10) No. 1 — Engine ground:***<br>Does the measured value exceed the specified value? | 100 kΩ | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between crankshaft position sensor and ECM connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.**<br>Measure the resistance of harness between crankshaft position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E10) No. 1 — Engine ground:***<br>Is the measured value less than the specified value? | 10 Ω | Repair the ground short circuit in harness between crankshaft position sensor and ECM connector.<br>NOTE:<br>The harness between both connectors are shielded. Repair the ground short circuit in harness together with shield. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.**<br>Measure the resistance of harness between crankshaft position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E10) No. 2 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **4.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between crankshaft position sensor and ECM connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector |
| 4 | **CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.**<br>Is the crankshaft position sensor installation bolt tightened securely? | Tightened securely. | Go to step **5.** | Tighten the crankshaft position sensor installation bolt securely. |
| 5 | **CHECK CRANKSHAFT POSITION SENSOR.**<br>1) Remove the crankshaft position sensor.<br>2) Measure the resistance between connector terminals of crankshaft position sensor.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value within the specified value? | 1 — 4 kΩ | Repair the poor contact in crankshaft position sensor connector. | Replace the crankshaft position sensor. <Ref. to FU(H4DOSTC)-29, Crankshaft Position Sensor.> |

# AC:DTC P0340 — CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 1 OR SINGLE SENSOR)N —

- **TROUBLE SYMPTOM:**
  - Engine stalls.
  - Failure of engine to start

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



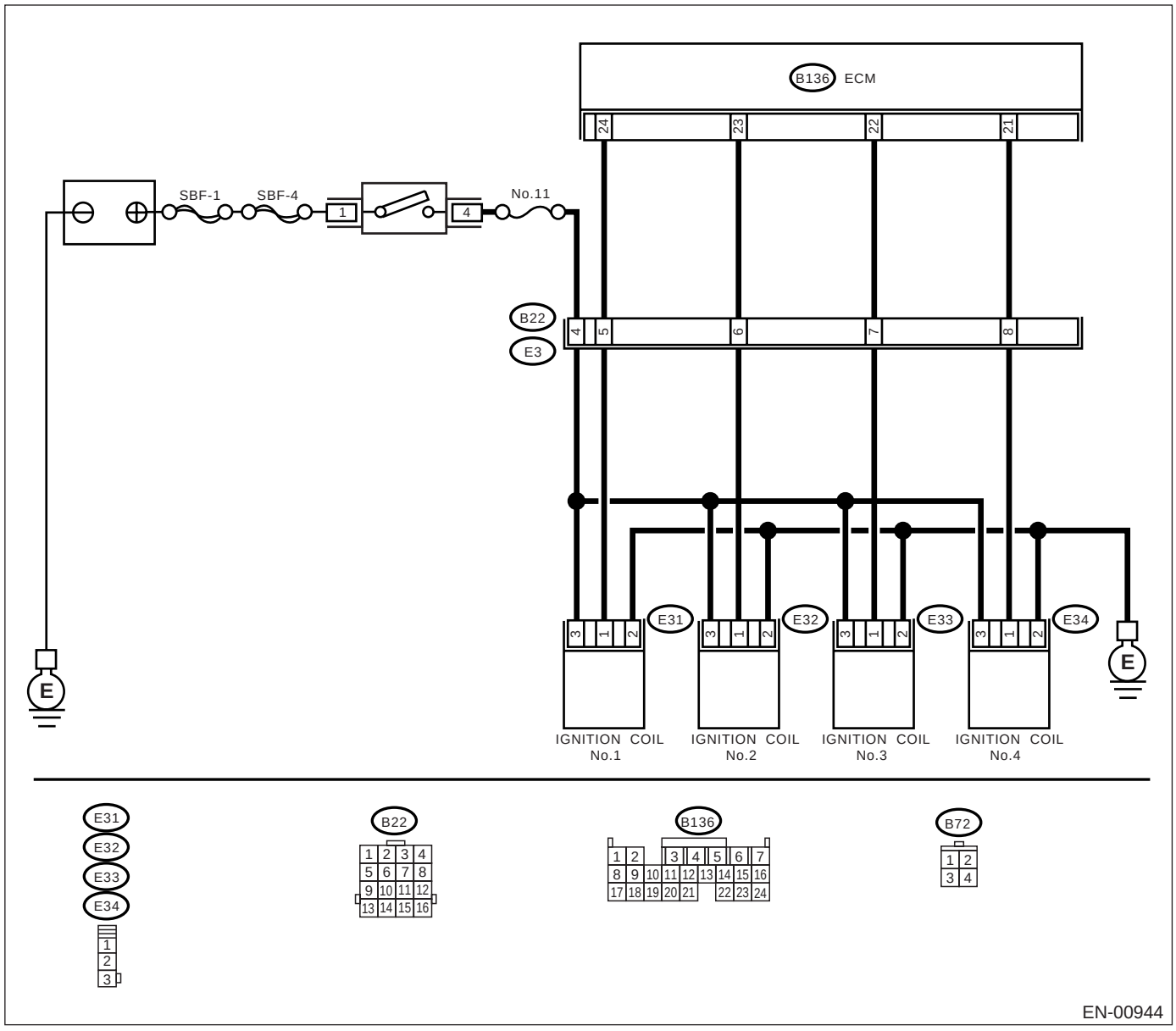
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from camshaft position sensor.<br>3) Measure the resistance of harness between camshaft position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E15) No. 1 — Engine ground:***<br>Does the measured value exceed the specified value? | 100 kΩ | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between camshaft position sensor and ECM connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.**<br>Measure the resistance of harness between camshaft position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E15) No. 1 — Engine ground:***<br>Is the measured value less than the specified value? | 10 Ω | Repair the ground short circuit in harness between camshaft position sensor and ECM connector.<br>NOTE:<br>The harness between both connectors are shielded. Repair ground short circuit in harness together with shield. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.**<br>Measure the resistance of harness between camshaft position sensor connector and engine ground.<br>***Connector & terminal***<br>***(E15) No. 2 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **4.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between camshaft position sensor and ECM connector<br>• Poor contact in ECM connector<br>• Poor contact in coupling connector |
| 4 | **CHECK CONDITION OF CAMSHAFT POSITION SENSOR.**<br>Is the camshaft position sensor installation bolt tightened securely? | Tightened securely. | Go to step **5.** | Tighten the camshaft position sensor installation bolt securely. |
| 5 | **CHECK CAMSHAFT POSITION SENSOR.**<br>1) Remove the camshaft position sensor.<br>2) Measure the resistance between connector terminals of camshaft position sensor.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value within the specified value? | 1 — 4 kΩ | Repair the poor contact in camshaft position sensor connector. | Replace the camshaft position sensor. <Ref. to FU(H4DOSTC)-30, Camshaft Position Sensor.> |

## AD:DTC P0350 — IGNITION COIL PRIMARY/SECONDARY CIRCUIT —

- **TROUBLE SYMPTOM:**
  - Failure of engine to start
  - Erroneous idling

**CAUTION:**
**After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4DOSTC)-35, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK SPARK PLUG CONDITION.**<br>1) Remove the spark plug. <Ref. to IG(H4DOSTC)-5, REMOVAL, Spark Plug.><br>2) Check the spark plug condition. <Ref. to IG(H4DOSTC)-6, INSPECTION, Spark Plug.><br>Is spark plug's status OK? | OK | Go to step **2.** | Replace the spark plug. |
| 2 | **CHECK IGNITION SYSTEM FOR SPARKS.**<br>1) Connect the spark plug to ignition coil.<br>2) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.><br>3) Contact the spark plug's thread portion on engine.<br>4) While opening throttle valve fully, crank the engine to check that spark occurs at each cylinder.<br>Does the spark occur at each cylinder? | Spark occurs. | Check the fuel pump system. <Ref. to EN(H4DOSTC)-60, FUEL PUMP CIRCUIT, Diagnostics for Engine Starting Failure.> | Go to step **3.** |
| 3 | **CHECK POWER SUPPLY CIRCUIT FOR IGNITION COIL & IGNITOR ASSEMBLY.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ignition coil & ignitor assembly.<br>3) Turn the ignition switch to ON.<br>4) Measure the power supply voltage between ignition coil & ignitor assembly connector and engine ground.<br>***Connector & terminal***<br>***(E31) No. 3 (+) — Engine ground (–):***<br>***(E32) No. 3 (+) — Engine ground (–):***<br>***(E33) No. 3 (+) — Engine ground (–):***<br>***(E34) No. 3 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **4.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ignition coil & ignitor assembly, and ignition switch connector<br>• Poor contact in coupling connectors |
| 4 | **CHECK HARNESS OF IGNITION COIL & IGNITOR ASSEMBLY GROUND CIRCUIT.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between ignition coil & ignitor assembly connector and engine ground.<br>***Connector & terminal***<br>***(E31) No. 2 — Engine ground:***<br>***(E32) No. 2 — Engine ground:***<br>***(E33) No. 2 — Engine ground:***<br>***(E34) No. 2 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **5.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ignition coil & ignitor assembly connector and engine grounding terminal |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Disconnect the connector from ignition coil & ignitor assembly.<br>4) Measure the resistance of harness between ECM and ignition coil & ignitor assembly connector.<br>***Connector & terminal***<br>***(B136) No. 21 — (E34) No. 1:***<br>***(B136) No. 22 — (E33) No. 1:***<br>***(B136) No. 23 — (E32) No. 1:***<br>***(B136) No. 24 — (E31) No. 1:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **6.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and ignition coil & ignitor assembly connector<br>• Poor contact in coupling connector |
| 6 | **CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR.**<br>Measure the resistance of harness between ECM and engine ground.<br>***Connector & terminal:***<br>***(B136) No. 21 — Engine ground:***<br>***(B136) No. 22 — Engine ground:***<br>***(B136) No. 23 — Engine ground:***<br>***(B136) No. 24 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **7.** | Repair the ground short circuit in harness between ECM and ignition coil & ignitor assembly connector. |
| 7 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ignition coil and ignitor assembly. |

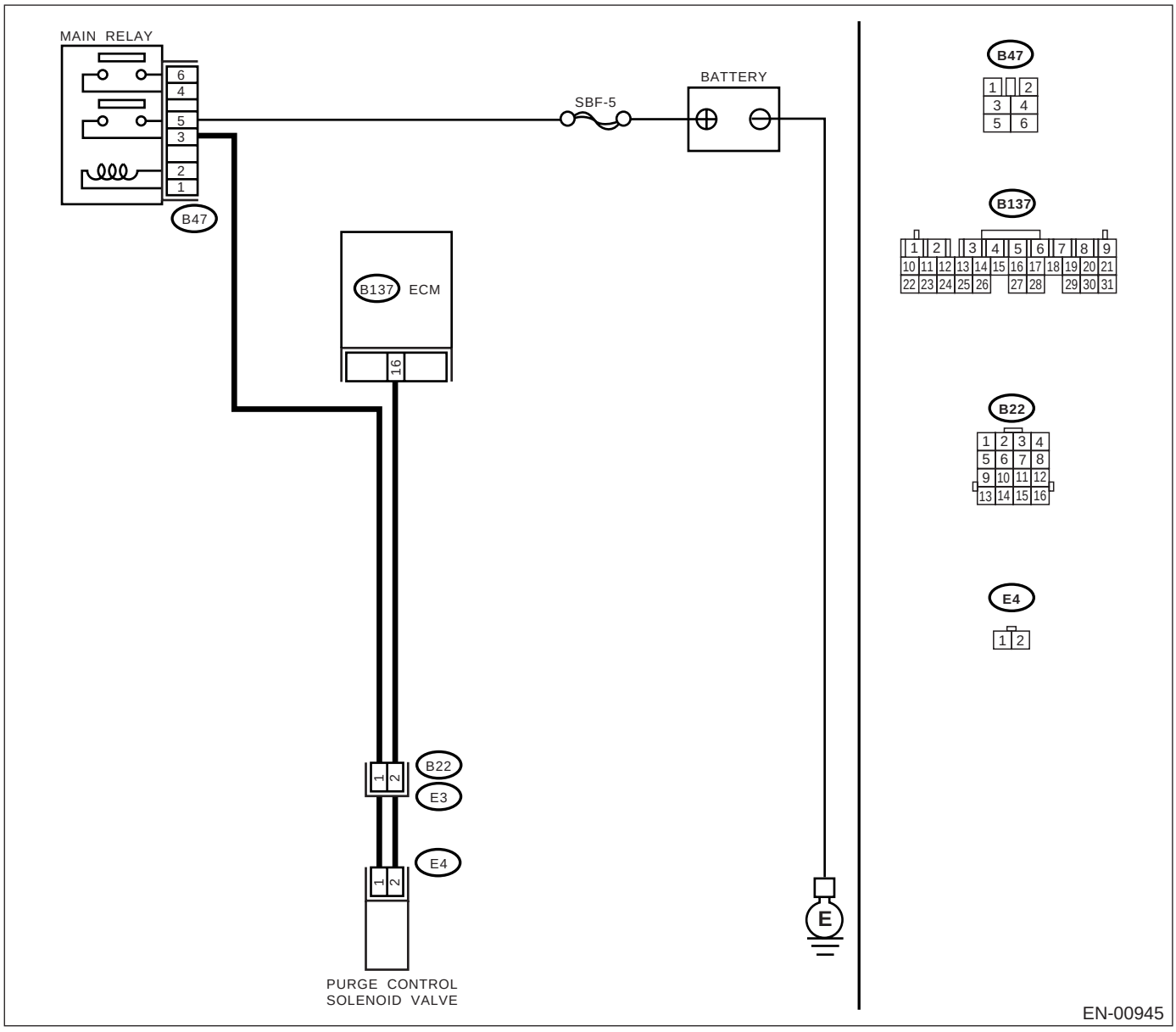
**MEMO:**

## AE:DTC P0444 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT OPEN —

- **TROUBLE SYMPTOM:**
  - Erroneous idling

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 16 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from purge control solenoid valve and ECM.<br>3) Measure the resistance of harness between purge control solenoid valve connector and engine ground.<br>***Connector & terminal***<br>***(E4) No. 2 — Engine ground:***<br>Is the measured value less than the specified value? | 10 Ω | Repair the ground short circuit in harness between ECM and purge control solenoid valve connector. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and purge control solenoid valve of harness connector.<br>***Connector & terminal***<br>***(B137) No. 16 — (E4) No. 2:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit in harness between ECM and purge control solenoid valve connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and purge control solenoid valve connector<br>• Poor contact in coupling connector |
| 4 | **CHECK PURGE CONTROL SOLENOID VALVE.**<br>1) Remove the purge control solenoid valve.<br>2) Measure the resistance between purge control solenoid valve terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value within the specified value? | 10 — 100 Ω | Go to step **5.** | Replace the purge control solenoid valve. <Ref. to EC(H4DOSTC)-6, Purge Control Solenoid Valve.> |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between purge control solenoid valve and engine ground.<br>***Connector & terminal***<br>***(E4) No. 1 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between main relay and purge control solenoid valve connector. |
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in purge control solenoid valve connector.<br>Is there poor contact in purge control solenoid valve connector? | There is poor contact. | Repair the poor contact in purge control solenoid valve connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

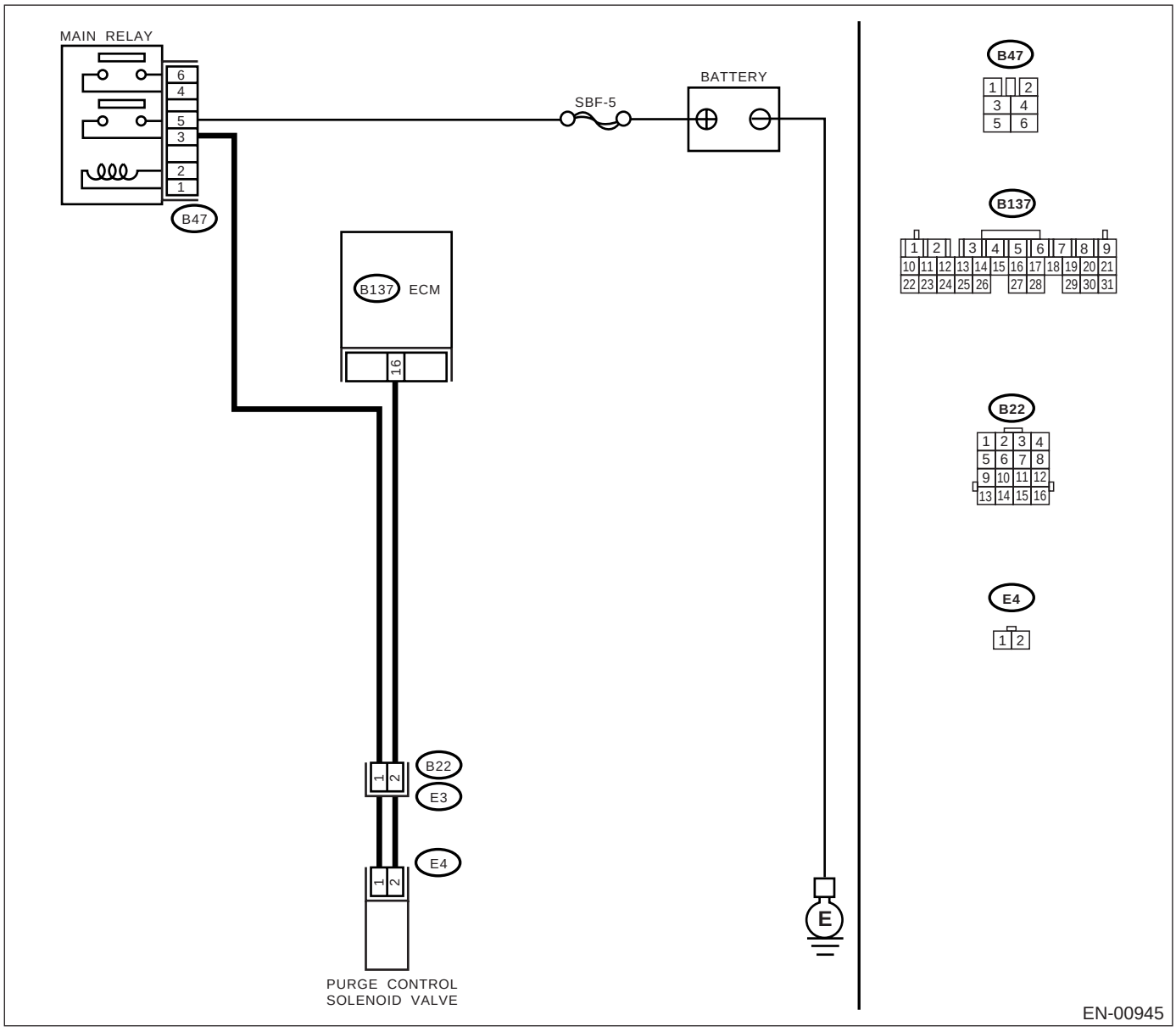
**MEMO:**

# AF:DTC P0445 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT SHORTED —

- **TROUBLE SYMPTOM:**
  - Erroneous idling

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to OFF.<br>2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side), to the side of center console box.<br>3) Turn the ignition switch to ON.<br>4) While operating the purge control solenoid valve, measure the voltage between ECM and chassis ground.<br>NOTE:<br>Purge control solenoid valve operation can be executed using the Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.><br>***Connector & terminal***<br>***(B137) No. 16 (+) — Chassis ground (–):***<br>Is the measured value within the specified value? | 0 — 13 V | Go to step **2.** | Even if MI light up, the circuit has returned to a normal condition at this time. In this case, repair the poor contact in ECM connector. |
| 2 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 16 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **4.** | Go to step **3.** |
| 3 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 4 | **CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from purge control solenoid valve.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 16 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK PURGE CONTROL SOLENOID VALVE.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between purge control solenoid valve terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the purge control solenoid valve <Ref. to EC(H4DOSTC)-6, Purge Control Solenoid Valve.> and ECM <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **6.** |

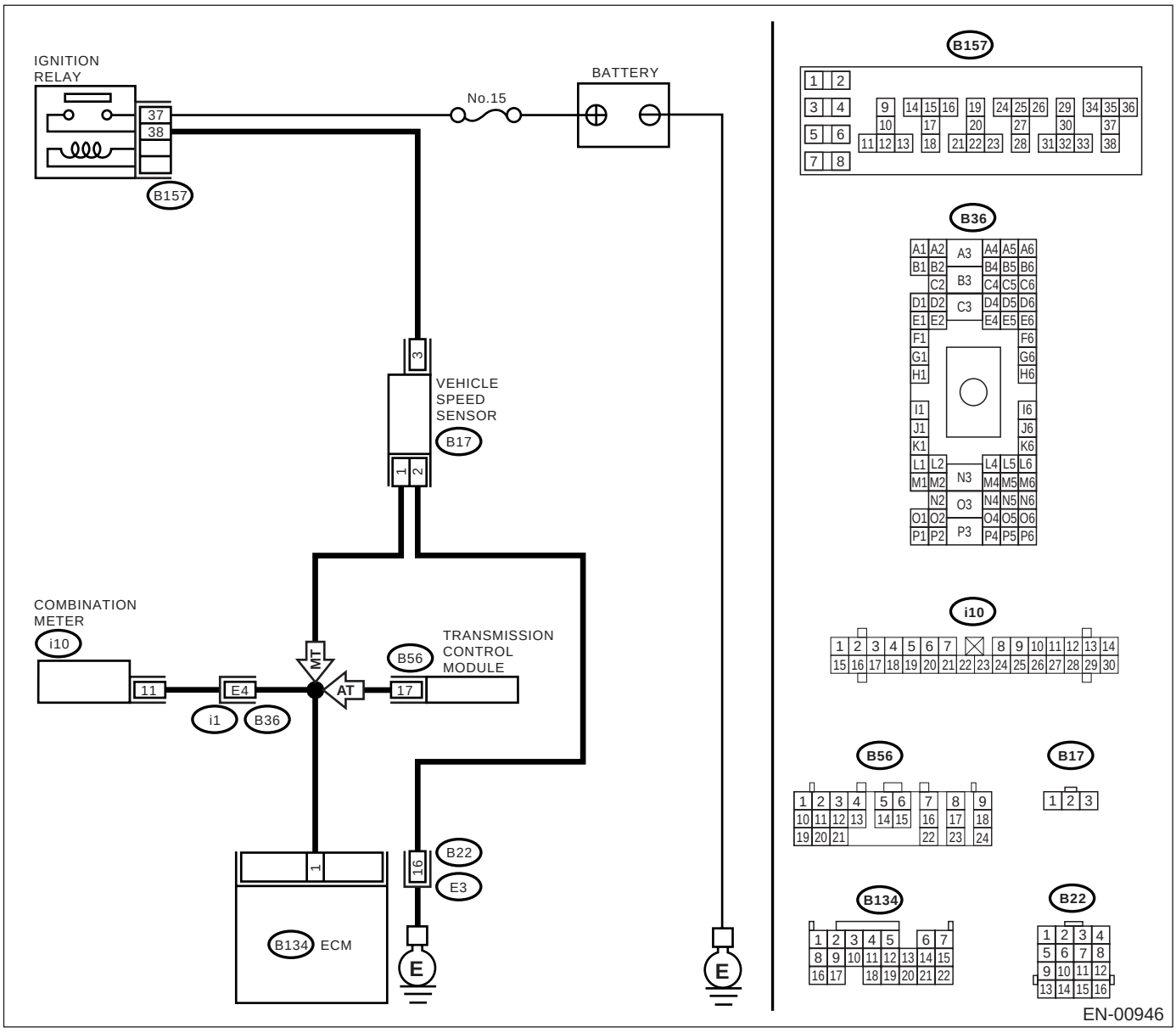
| Step | | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

**MEMO:**

## AG:DTC P0500 — VEHICLE SPEED SENSOR —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



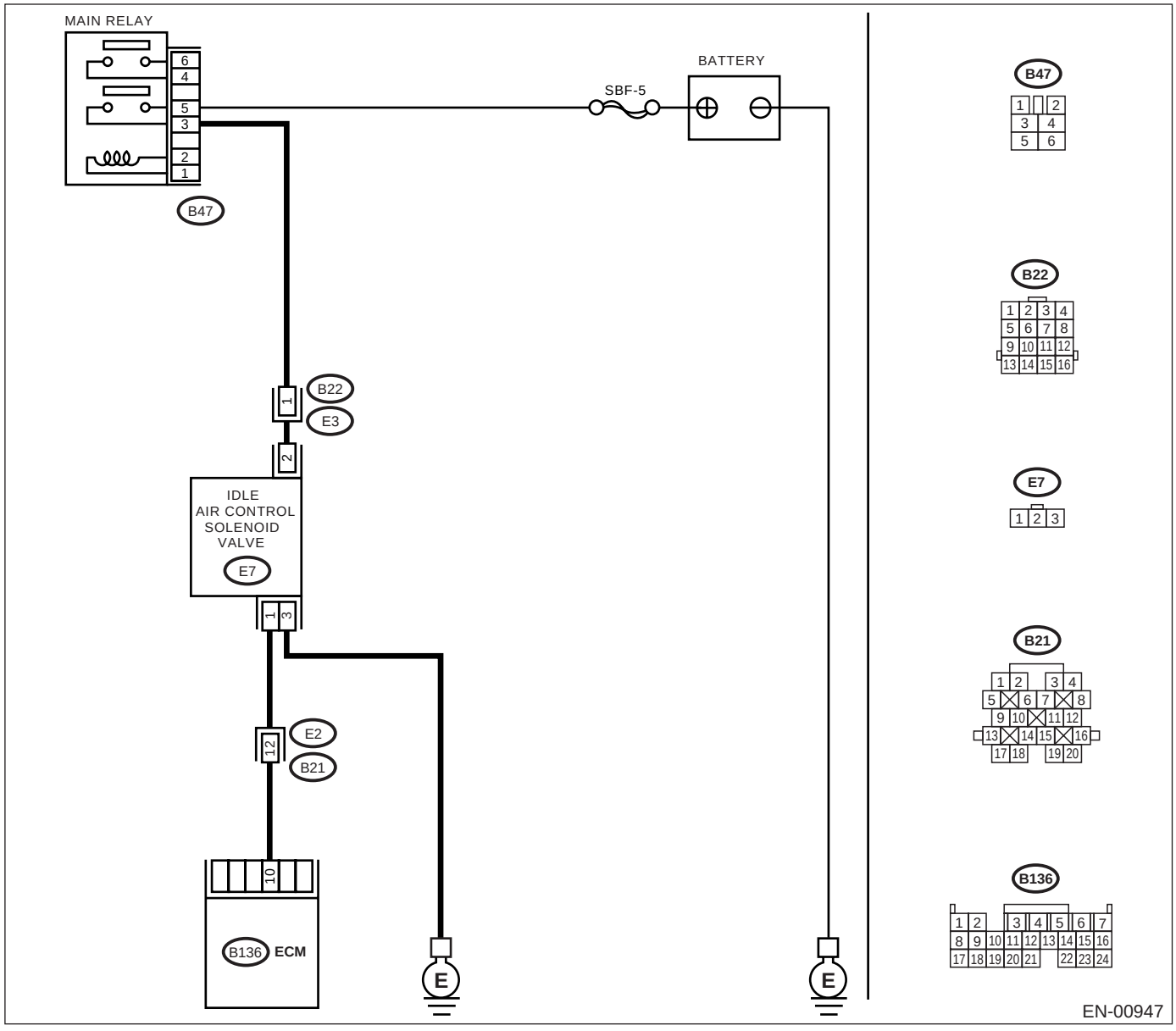
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK SPEEDOMETER OPERATION IN COMBINATION METER.**<br>Does the speedometer operate normally? | Operates normally. | Go to step **2.** | Check the speedometer and vehicle speed sensor. <Ref. to IDI-19, Speedometer.> |
| 2 | **CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from combination meter.<br>3) Measure the resistance between ECM and combination meter.<br>***Connector & terminal***<br>***(B134) No. 1 — (i10) No. 11:***<br>Is the measured value less than the specified value? | 10 Ω | Repair the poor contact in ECM connector. | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and combination meter connector<br>• Poor contact in ECM connector<br>• Poor contact in combination meter connector<br>• Poor contact in coupling connector |

## AH:DTC P0508 — IDLE CONTROL SYSTEM CIRCUIT LOW —

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 10 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 3 V | Repair the poor contact in ECM connector. | Go to step **2.** |
| 2 | **CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from idle air control solenoid valve.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between idle air control solenoid valve and engine ground.<br>***Connector & terminal***<br>***(E7) No. 2 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between idle air control solenoid valve and main relay connector<br>• Poor contact in coupling connector |
| 3 | **CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between ECM and idle air control solenoid valve connector.<br>***Connector & terminal***<br>***(B136) No. 10 — (E7) No. 1:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and idle air control solenoid valve connector<br>• Poor contact in coupling connector |
| 4 | **CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.**<br>Measure the resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 10 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **5.** | Repair the ground short circuit in harness between ECM and idle air control solenoid valve connector. |
| 5 | **CHECK GROUND CIRCUIT OF IDLE AIR CONTROL SOLENOID VALVE.**<br>Measure the resistance of harness between idle air control solenoid valve connector and engine ground.<br>***Connector & terminal***<br>***(E7) No. 3 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **6.** | Repair the open circuit in harness between idle air control solenoid valve connector and engine ground cable. |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and idle air control solenoid valve connectors.<br>Is there poor contact in ECM and idle air control solenoid valve connectors? | There is poor contact. | Repair the poor contact in ECM and idle air control solenoid valve connectors. | Replace the idle air control solenoid valve. <Ref. to FU(H4DOSTC)-35, Idle Air Control Solenoid Valve.> |

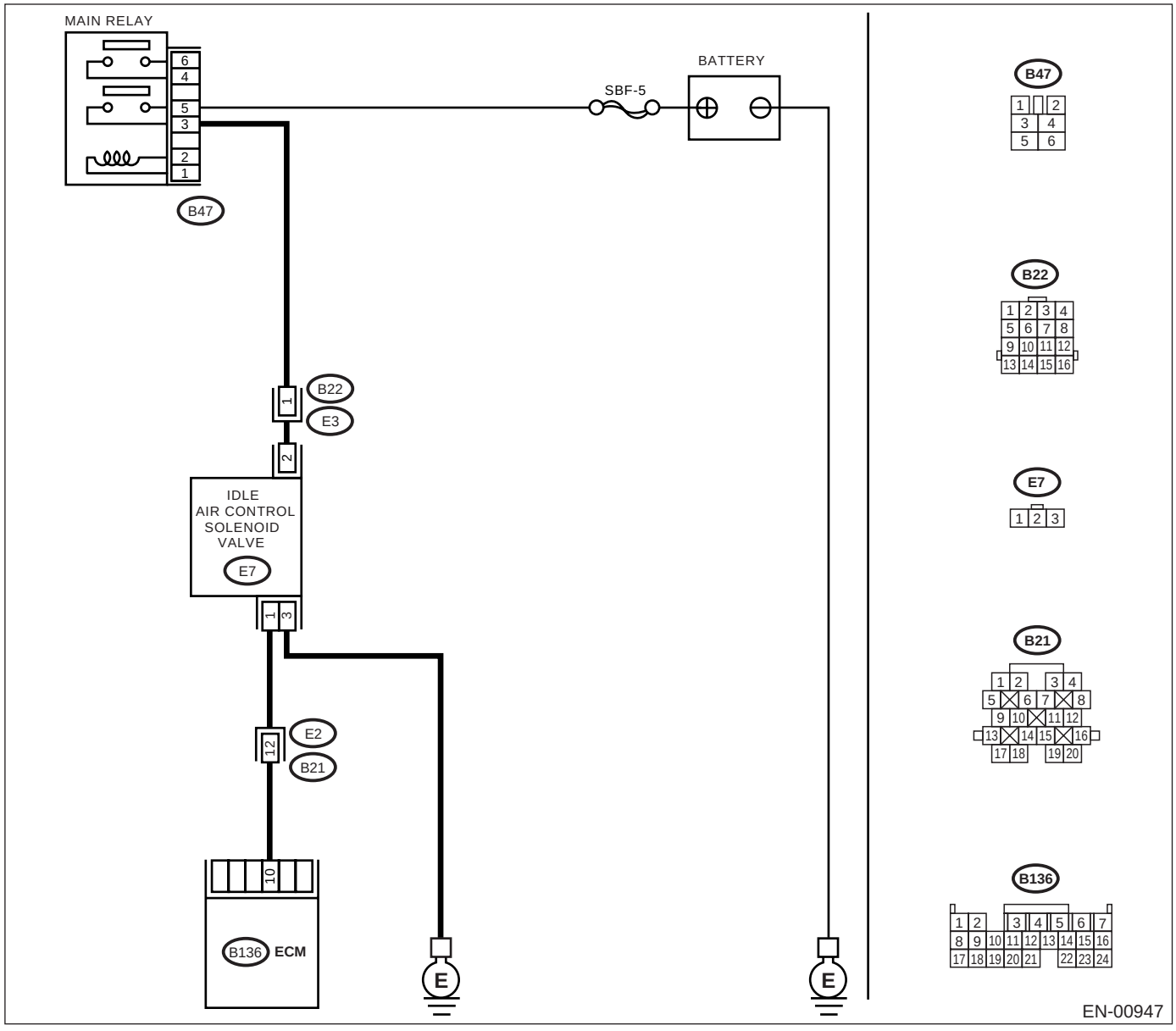
**MEMO:**

## AI: DTC P0509 — IDLE CONTROL SYSTEM CIRCUIT HIGH —

- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



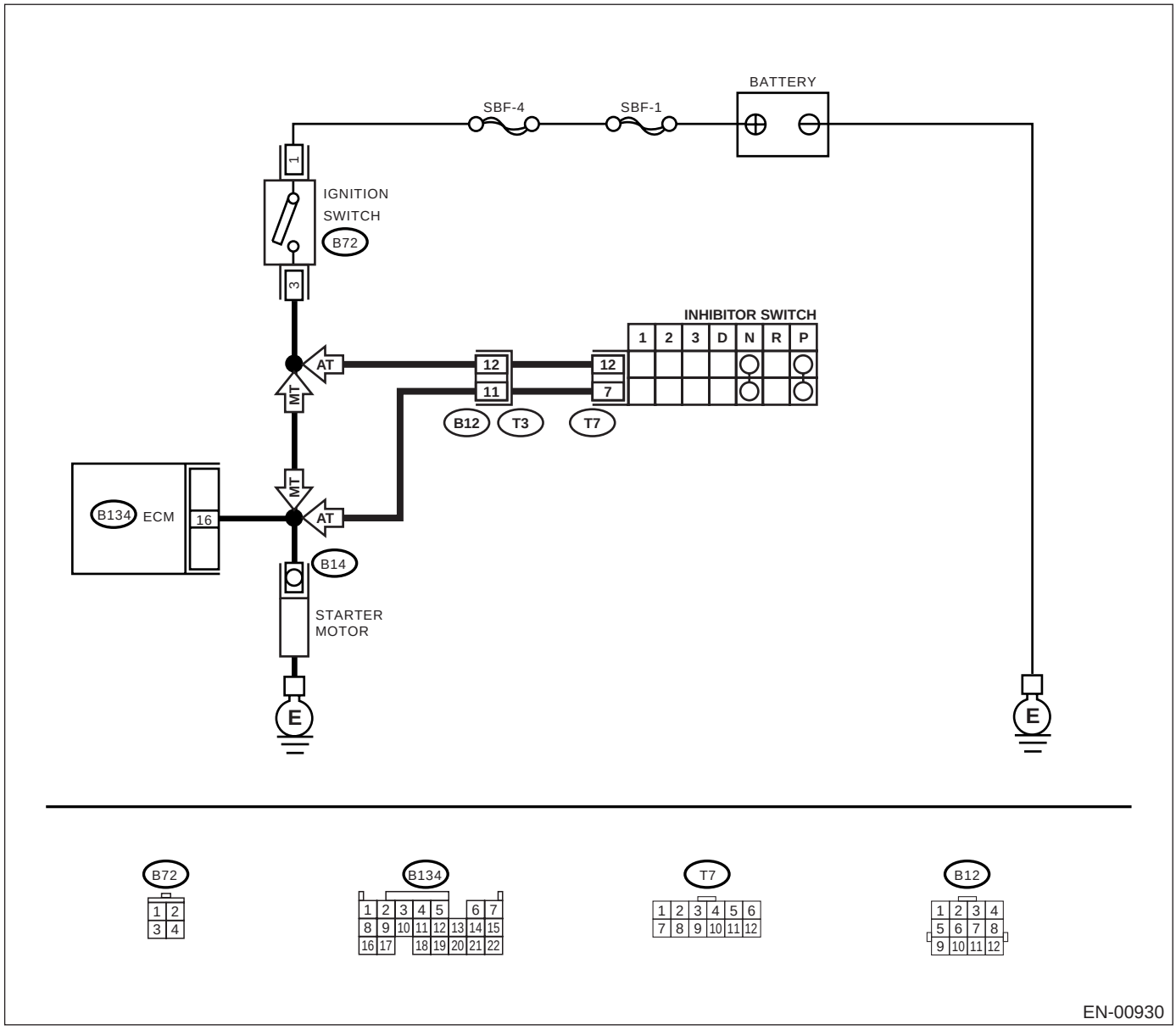
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK THROTTLE CABLE.**<br>Does the throttle cable have play for adjustment? | Cable has play correctly. | Go to step **2.** | Adjust the throttle cable. <Ref. to SP(H4SO)-10, Accelerator Control Cable.> |
| 2 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 10 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **4.** |
| 3 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from idle air control solenoid valve.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 10 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Replace the idle air control solenoid valve <Ref. to FU(H4DOSTC)-35, Idle Air Control Solenoid Valve.> and replace ECM <Ref. to FU(H4DOSTC)-40, Engine Control Module.>. |
| 4 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 10 (+) — Chassis ground (–):***<br>Does the measured value change by shaking harness and connector of ECM while monitoring the value with voltage meter? | The value changes. | Repair the battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Contact SUBARU distributor service.<br>NOTE:<br>Insepction by DTM is required, because probable cause is deterioration of multiple parts. |

## AJ:DTC P0512 — STARTER REQUEST CIRCUIT —

- **TROUBLE SYMPTOM:**
  - Failure of engine to start

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



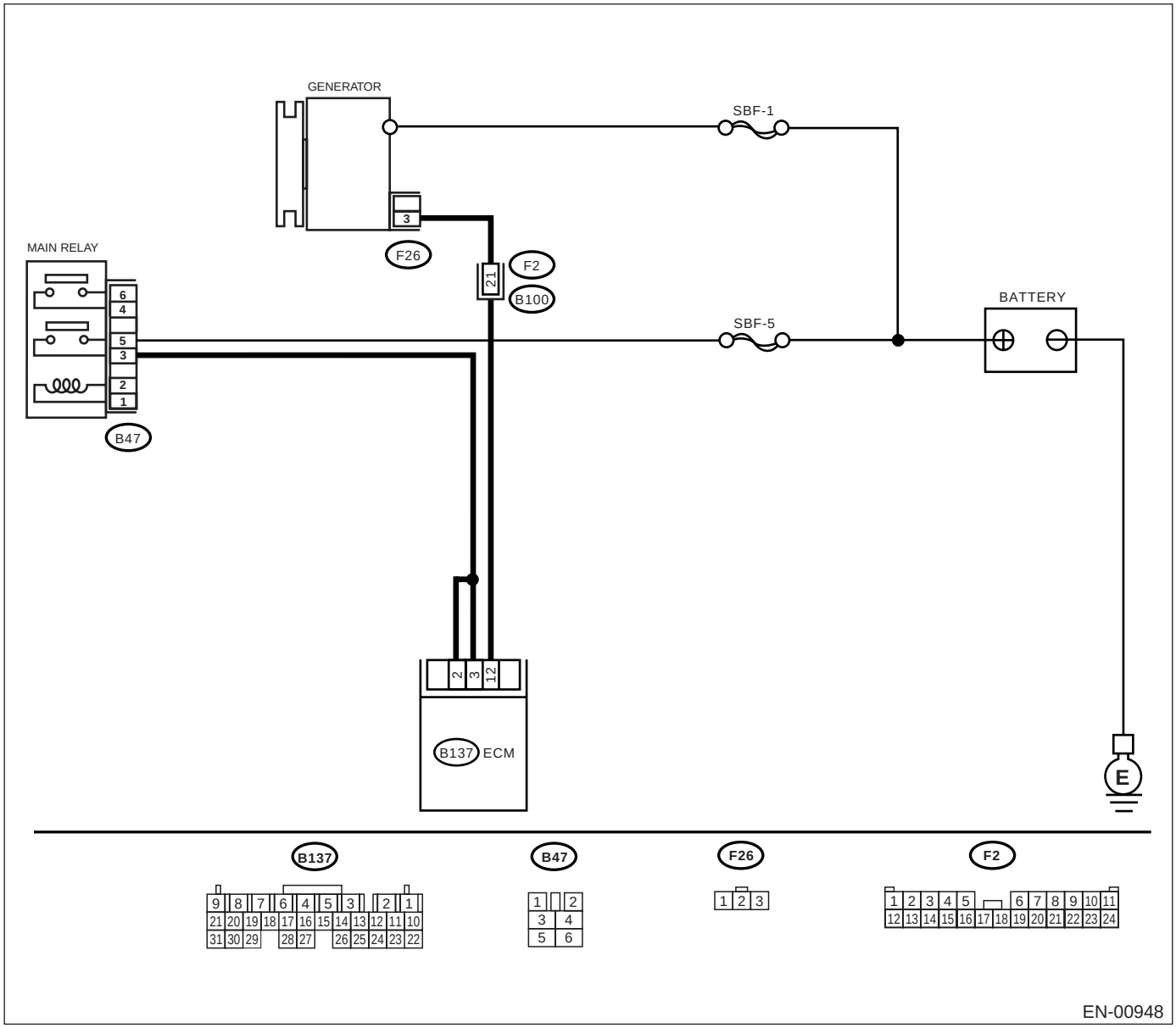
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OPERATION OF STARTER MOTOR.**<br>NOTE:<br>Place the inhibitor switch in each position.<br>Does the starter motor operate when ignition switch to “ON”? | Operates. | Repair the battery short circuit in starter motor circuit. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Check the starter motor circuit. <Ref. to EN(H4DOSTC)-52, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.> |

## AK:DTC P0562 — SYSTEM VOLTAGE LOW —

- **TROUBLE SYMPTOM:**
  - Charge warning light comes on.

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.>.**

- **WIRING DIAGRAM:**



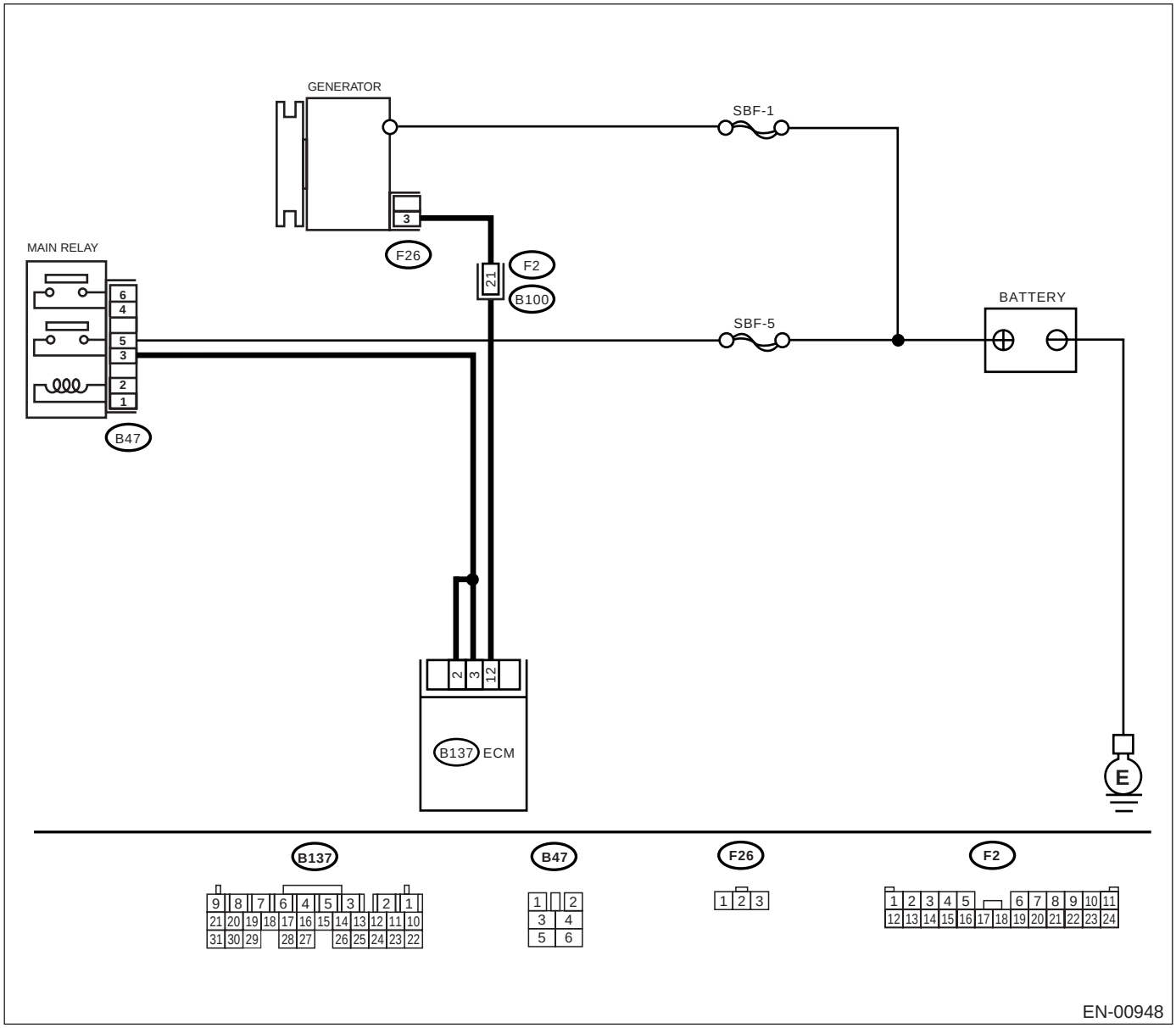
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GENERATOR.**<br>1) Start the engine.<br>2) Idling after warm-up.<br>3) Measure the voltage between generator B terminal and chassis ground.<br>***Terminal***<br>***Generator B terminal (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 10.8 V | Go to step **2.** | Repair the generator. <Ref. to SC(H4DOSTC)-14, Generator.> |
| 2 | **CHECK GENERATOR.**<br>1) Run the engine at 5,000 rpm.<br>2) Measure the voltage between generator B terminal and chassis gorund.<br>***Terminal***<br>***Generator B terminal (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 10.8 V | Go to step **3.** | Repair the generator. <Ref. to SC(H4DOSTC)-14, Generator.> |
| 3 | **CHECK BATTERY TERMINAL.**<br>Turn the ignition switch to OFF.<br>Are the positive and negative battery terminals tightly clamped? | Clamped tightly. | Go to step **4.** | Tighten the clamp of terminal. |
| 4 | **CHECK INPUT VOLTAGE OF ECM.**<br>1) Run the engine at idle.<br>2) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 1 (+) — Chassis ground (–):***<br>***(B136) No. 2 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 10.8 V | Go to step **5.** | Repair the harness connector between battery, main relay and ECM. |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Is there poor contact in connectors between generator, battery and ECM? | There is poor contact. | Repair the connector. | Go to step **6.** |
| 6 | **CHECK ECM.**<br>1) Connect all connectors.<br>2) Erase the memory. <Ref. to EN(H4DOSTC)-35, Clear Memory Mode.><br>3) Perform the inspection mode. <Ref. to EN(H4DOSTC)-33, Inspection Mode.><br>4) Read out the DTC. <Ref. to EN(H4DOSTC)-32, Read Diagnostic Trouble Code.><br>Is the same DTC as in the current diagnosis still being output? | DTC indicated. | Replace the generator. | Go to step **7.** |
| 7 | **CHECK ANY OTHER DTCs APPEARANCE.**<br>Are other DTCs being output? | DTCs indicated. | Proceed with the diagnosis corresponding to the DTC. | A temporary poor contact. |

## AL:DTC P0563 — SYSTEM VOLTAGE HIGH —

- **TROUBLE SYMPTOM:**
  - Charge warning light comes on.

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.>.**

- **WIRING DIAGRAM:**



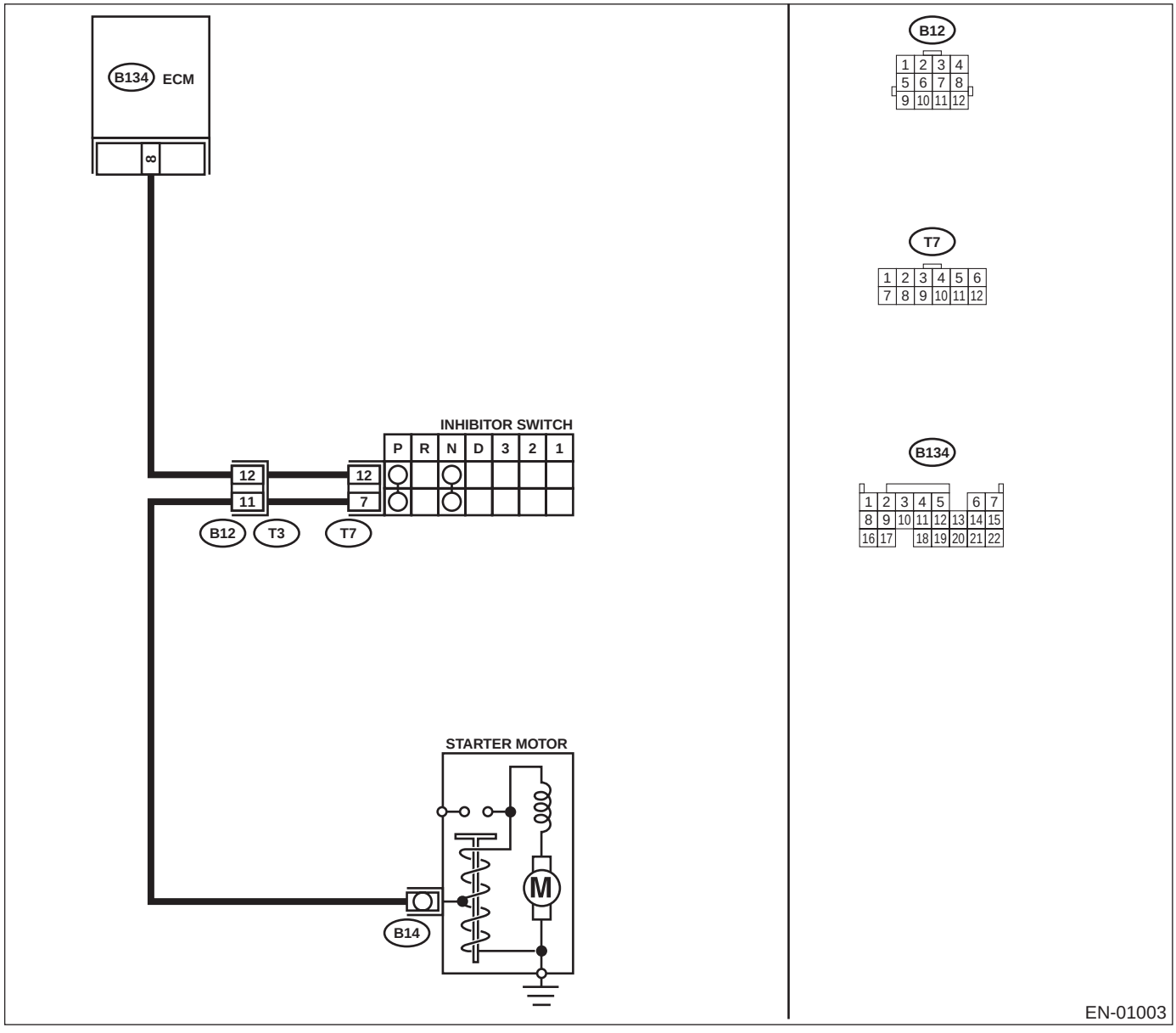
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK GENERATOR.**<br>1) Start the engine.<br>2) Idling after warm-up.<br>3) Measure the voltage between generator B terminal and chassis ground.<br>***Terminal***<br>***Generator B terminal (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 16.2 V | Go to step **2.** | Repair the generator. <Ref. to SC(H4DOSTC)-14, Generator.> |
| 2 | **CHECK GENERATOR.**<br>1) Run the engine at 5,000 rpm.<br>2) Measure the voltage between generator B terminal and chassis gorund.<br>***Terminal***<br>***Generator B terminal (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 16.2 V | Go to step **3.** | Repair the generator. <Ref. to SC(H4DOSTC)-14, Generator.> |
| 3 | **CHECK BATTERY TERMINAL.**<br>Turn the ignition switch to OFF.<br>Are the positive and negative battery terminals tightly clamped? | Clamped tightly. | Go to step **4.** | Tighten the clamp of terminal. |
| 4 | **CHECK INPUT VOLTAGE OF ECM.**<br>1) Run the engine at idle.<br>2) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 1 (+) — Chassis ground (–):***<br>***(B136) No. 2 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 16.2 V | Go to step **5.** | Repair the harness connector between battery, main relay and ECM. |
| 5 | **CHECK POOR CONTACT IN CONNECTORS.**<br>Is there poor contact in connectors between generator, battery and ECM? | There is poor contact. | Repair the connector. | Go to step **6.** |
| 6 | **CHECK ECM.**<br>1) Connect all connectors.<br>2) Erase the memory. <Ref. to EN(H4DOSTC)-35, Clear Memory Mode.><br>3) Perform the inspection mode. <Ref. to EN(H4DOSTC)-33, Inspection Mode.><br>4) Read out the DTC. <Ref. to EN(H4DOSTC)-32, Read Diagnostic Trouble Code.><br>Is the same DTC as in the current diagnosis still being output? | DTC indicated. | Replace the generator. | Go to step **7.** |
| 7 | **CHECK ANY OTHER DTCs APPEARANCE.**<br>Are other DTCs being output? | DTCs indicated. | Proceed with the diagnosis corresponding to the DTC. | A temporary poor contact. |

## AM:DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL) —

- **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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



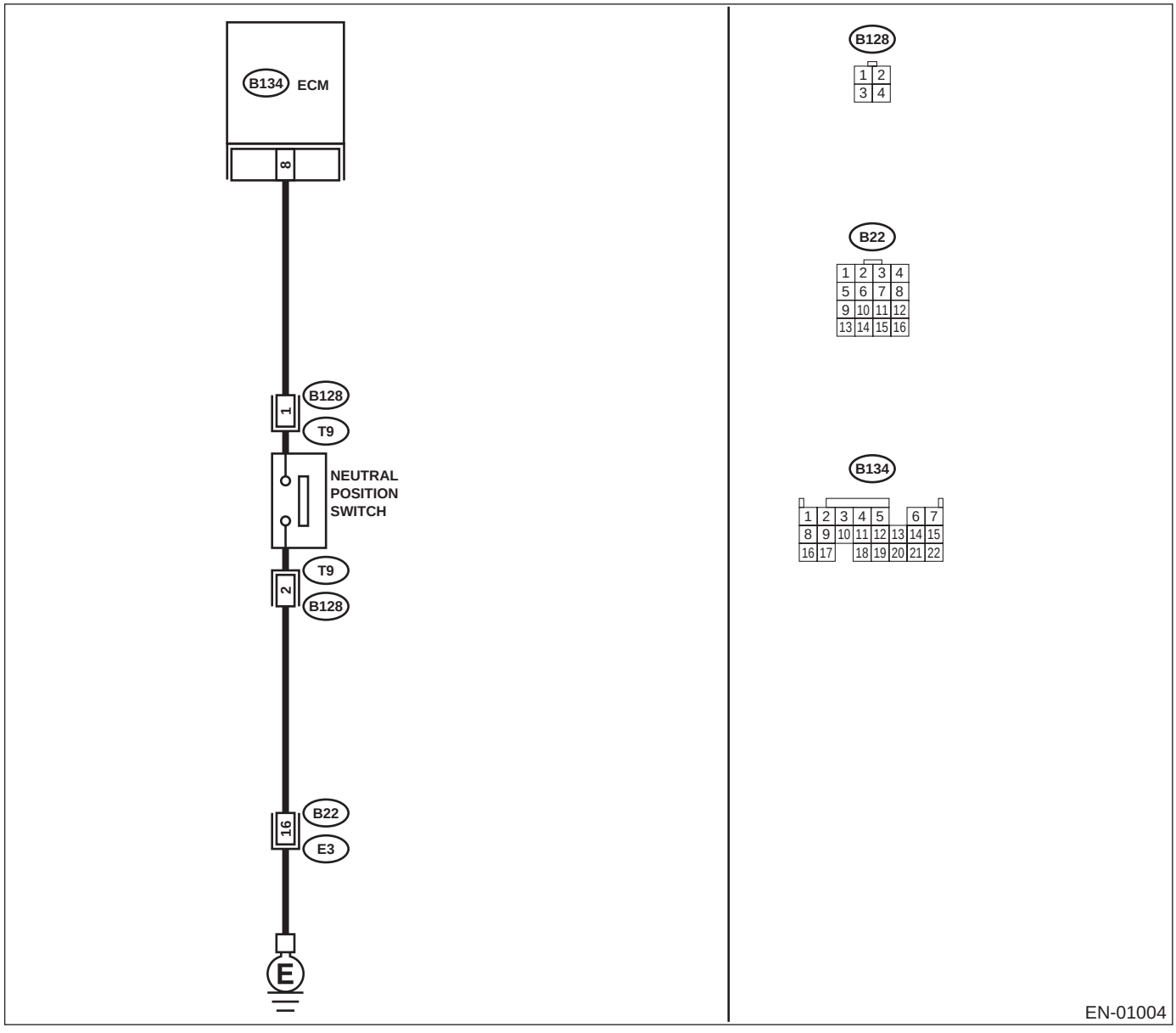
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Is any other DTC displayed? | DTC indicated. | Inspect the relevant DTC using "List of Diagnostics Trouble Code (DTC)". <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).> | Go to step **2.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 8 (+) — Chassis ground (–):***<br>Is the measured value within the specified value at except "N" and "P" position? | 4.5 V — 5.5 V | Even if MI lights up, the circuit has returned to a normal condition at this time. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connectors from ECM and transmission harness connector (T3).<br>3) Measure resistance of harness between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 8 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **4.** | Repair ground short circuit in harness between ECM and transmission harness connector. |
| 4 | **CHECK TRANSMISSION HARNESS CONNECTOR.**<br>1) Disconnect connector from inhibitor switch.<br>2) Measure resistance of harness between transmission harness connector and engine ground.<br>***Connector & terminal***<br>***(T3) No. 12 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **5.** | Repair ground short circuit in harness between transmission harness and inhibitor switch connector. |
| 5 | **CHECK INHIBITOR SWITCH.**<br>Measure resistance between inhibitor switch connector receptacle's terminals in select lever except for "N" position.<br>***Terminals***<br>***No. 7 — No. 12:***<br>Does the measured value exceed the specified value at except "N" and "P" positions? | 1 MΩ | Go to step **6.** | Replace inhibitor switch. <Ref. to AT-49, Inhibitor Switch.> |
| 6 | **CHECK SELECTOR CABLE CONNECTION.**<br>Is there any fault in selector cable connection to inhibitor switch? | There is a fault. | Repair selector cable connection. <Ref. to CS-12, Select Cable.> | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

## AN:DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW (MT MODEL) —

- **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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



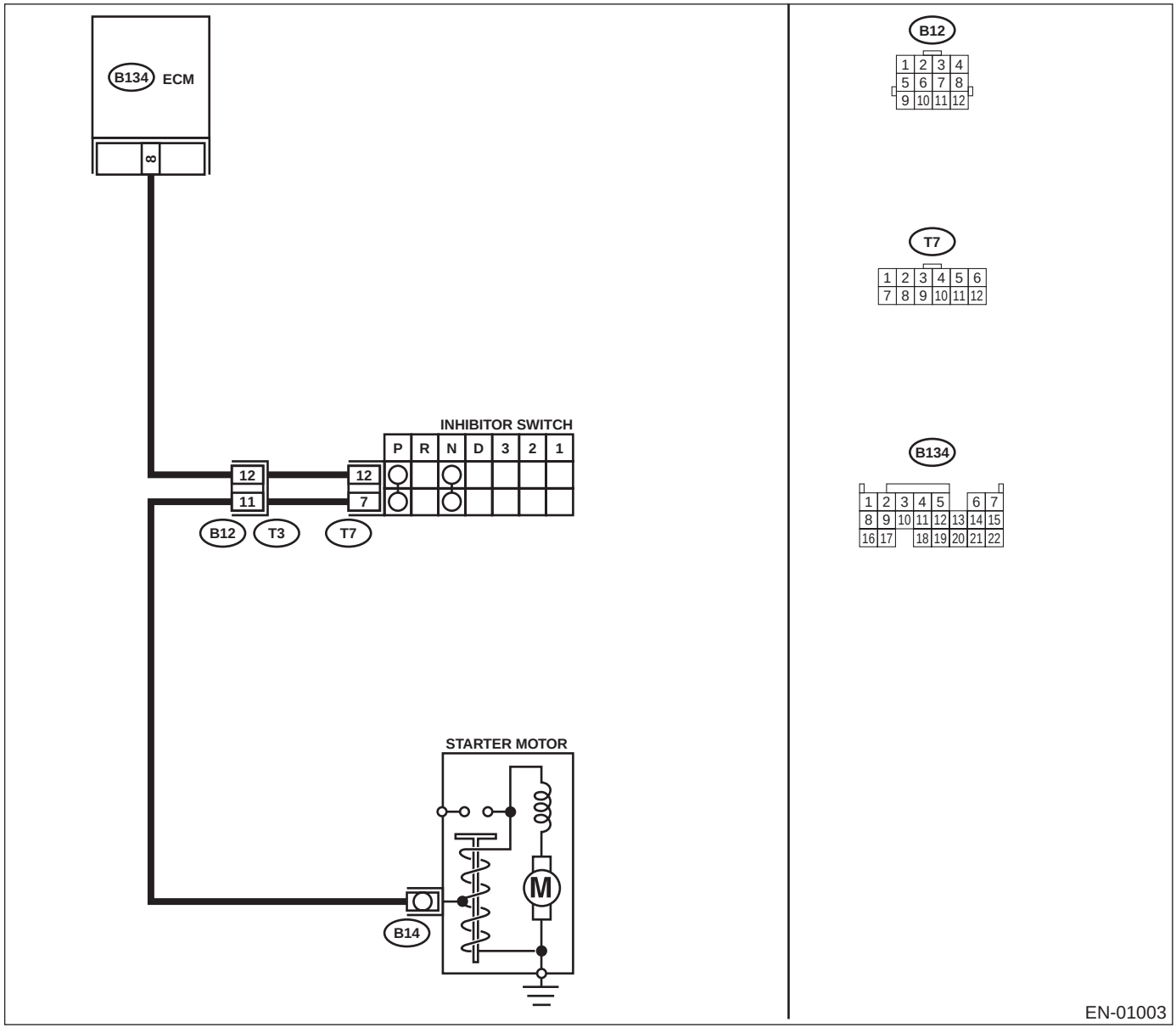
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 8 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value in neutral position? | 5 V | Go to step **2.** | Go to step **4.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 8 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value at except neutral position? | 1 V | Go to step **3.** | Go to step **4.** |
| 3 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 4 | **CHECK NEUTRAL POSITION SWITCH.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from transmission harness.<br>3) Measure resistance between transmission harness and connector terminals.<br>***Connector & terminal***<br>***(T9) No. 1 — No. 2:***<br>Does the measured value exceed the specified value in neutral position? | 1 MΩ | Go to step **5.** | Repair short circuit in transmission harness or replace neutral position switch. |
| 5 | **CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.**<br>1) Disconnect connector from ECM.<br>2) Measure resistance between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 8 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Repair ground short circuit in harness between ECM and transmission harness connector. | Go to step **6.** |
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in transmission harness connector.<br>Is there poor contact in transmission harness connector? | There is poor contact. | Repair poor contact in transmission harness connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

## AO:DTC P0852 — NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL) —

- **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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Is any other DTC displayed? | DTC indicated. | Inspect the relevant DTC using "List of Diagnostics Trouble Code (DTC)". <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).> | Go to step **2.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM and chassis ground in select level "N" and "P" positions.<br>***Connector & terminal***<br>***(B134) No. 8 (+) — Chassis ground***<br>Is the measured value less than the specified value? | 1 V | Go to step **3.** | Go to step **5.** |
| 3 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure voltage between ECM and chassis ground in select level "N" and "P" positions.<br>***Connector & terminal***<br>***(B134) No. 8 (+) — Chassis ground***<br>Is the measured value within the specified range? | 4.5 - 5.5 V | Go to step **4.** | Go to step **5.** |
| 4 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector. | There is poor contact. | Repair poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 5 | **CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connector from ECM and inhibitor switch.<br>3) Measure resistance of harness between ECM and inhibitor switch connector.<br>***Connector & terminal***<br>***(B134) No. 8 — (T7) No. 12:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **6.** | Repair harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and inhibitor switch connector<br>• Poor contact in coupling connector<br>• Poor contact in inhibitor switch connector<br>• Poor contact in ECM connector |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK INHIBITOR SWITCH GROUND LINE.**<br>Measure resistance of harness between inhibitor switch connector and engine ground.<br>***Connector & terminal***<br>***(T7) No. 7 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **7.** | Repair open circuit in harness between inhibitor switch connector and starter motor ground line.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between inhibitor switch connector and starter motor grond line<br>• Poor contact in satrter motor connector<br>• Poor contact in starter motor ground<br>• Starter motor |
| 7 | **CHECK INHIBITOR SWITCH.**<br>Measure resistance between inhibitor switch connector receptacle's terminals in select level "N" and "P" positions.<br>***Terminal***<br>***No. 7 — No. 12:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **8.** | Replace inhibitor switch. <Ref. to AT-49, Inhibitor Switch.> |
| 8 | **CHECK SELECTOR CABLE CONNECTION.**<br>Is there any fault in selector cable connection to inhibitor switch? | There is a fault. | Repair selector cable connection. <Ref. to CS-12, Select Cable.> | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

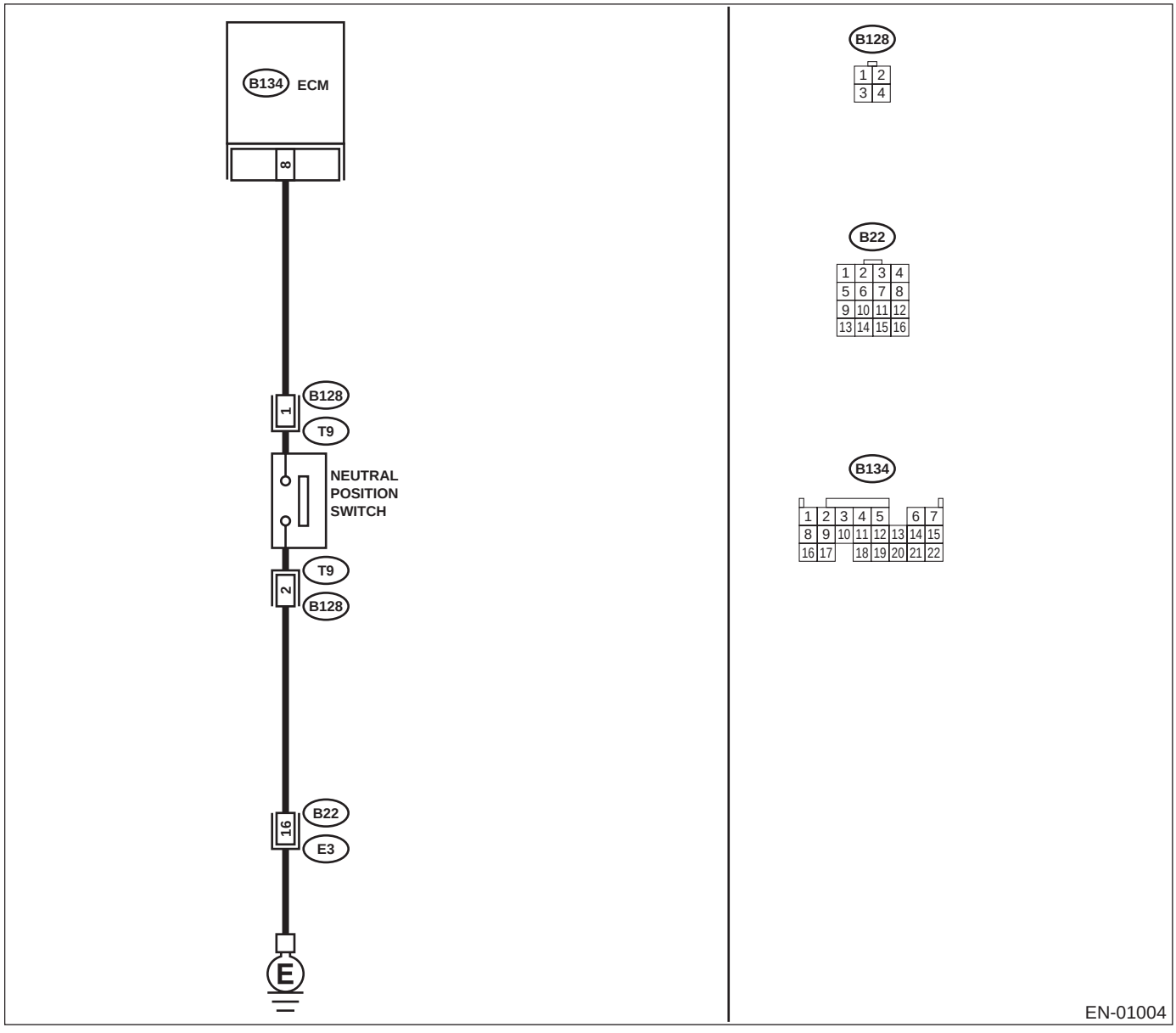
**MEMO:**

## AP:DTC P0852 — NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT MODEL) —

- **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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 8 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value in neutral position? | 5 V | Go to step **2.** | Go to step **4.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 8 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value at except neutral position? | 1 V | Go to step **3.** | Go to step **5.** |
| 3 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 4 | **CHECK NEUTRAL POSITION SWITCH.**<br>Measure resistance between transmission harness connector terminals.<br>***Connector & terminal***<br>***(T9) No. 1 — No. 2:***<br>Is the measured value less than the specified value at except neutral position? | 1 Ω | Go to step **5.** | Repair open circuit in transmission harness or replace neutral position switch. |
| 5 | **CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.**<br>1) Disconnect connector from ECM.<br>2) Measure resistance of harness between ECM and transmission harness connector.<br>***Connector & terminal***<br>***(B134) No. 8 — (B128) No. 1:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **6.** | Repair open circuit in harness between ECM and transmission harness connector. |
| 6 | **CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.**<br>Measure resistance of harness between transmission harness connector and engine ground.<br>***Connector & terminal***<br>***(B128) No. 2 — Engine ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **7.** | Repair harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between transmission harness connector and engine grounding terminal<br>• Poor contact in coupling connector |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK POOR CONTACT.**<br>Check poor contact in transmission harness connector.<br>Is there poor contact in transmission harness connector? | There is poor contact. | Repair poor contact in transmission harness connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

## AQ:DTC P1110 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (LOW INPUT) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Does the Subaru Select Monitor indicate DTC P1110? | DTC P1110 indicated. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.><br>NOTE:<br>Atmospheric pressure sensor is built into ECM. | It is not necessary to inspect DTC P1110. |

## AR:DTC P1111 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (HIGH INPUT) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

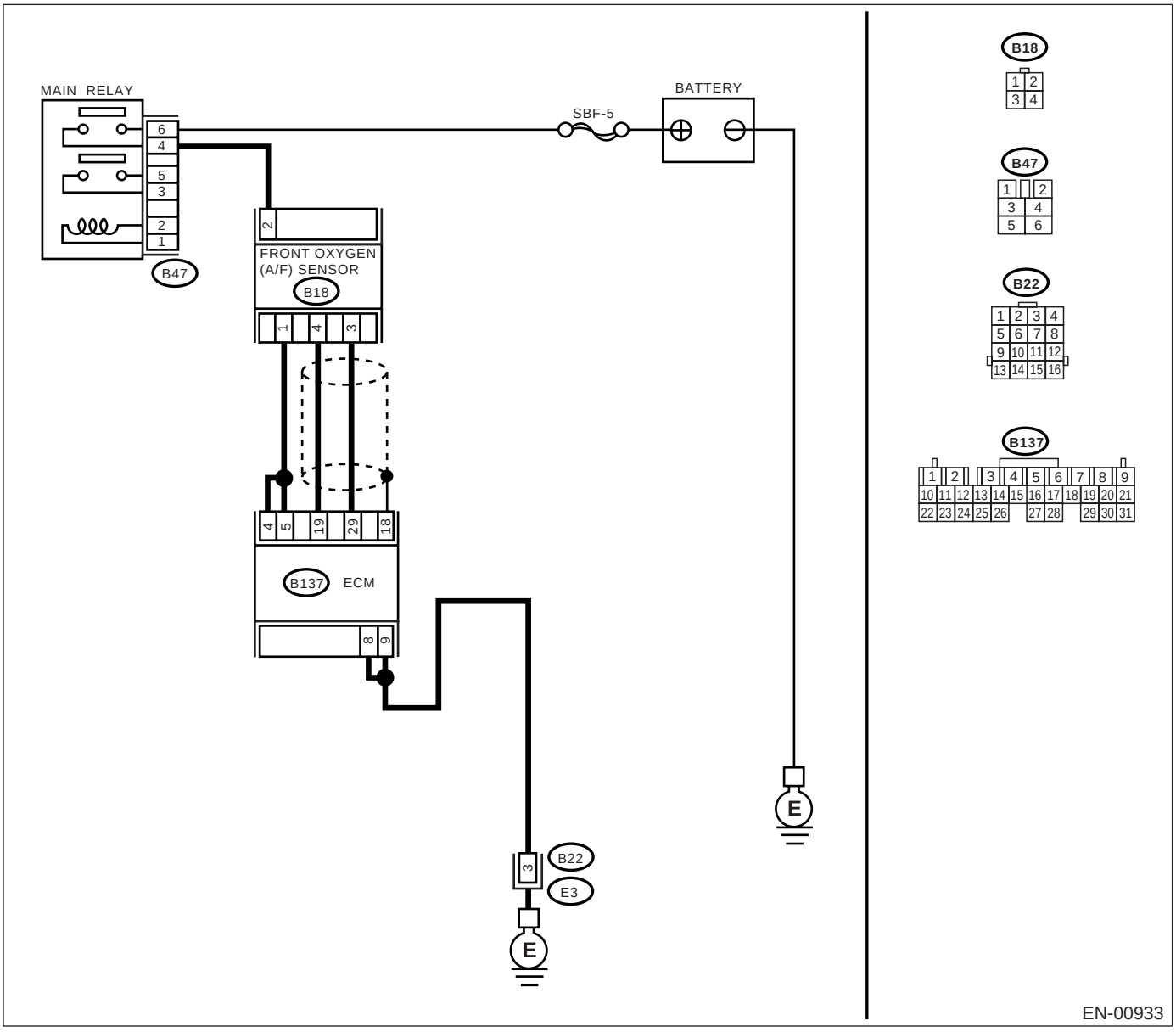
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Does the Subaru Select Monitor indicate DTC P1111? | DTC P1111 indicated. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.><br>NOTE:<br>Atmospheric pressure sensor is built into ECM. | It is not necessary to inspect DTC P1111. |

**MEMO:**

## AS: DTC P1130 — O2 SENSOR CIRCUIT (OPEN) (BANK1 SENSOR1) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

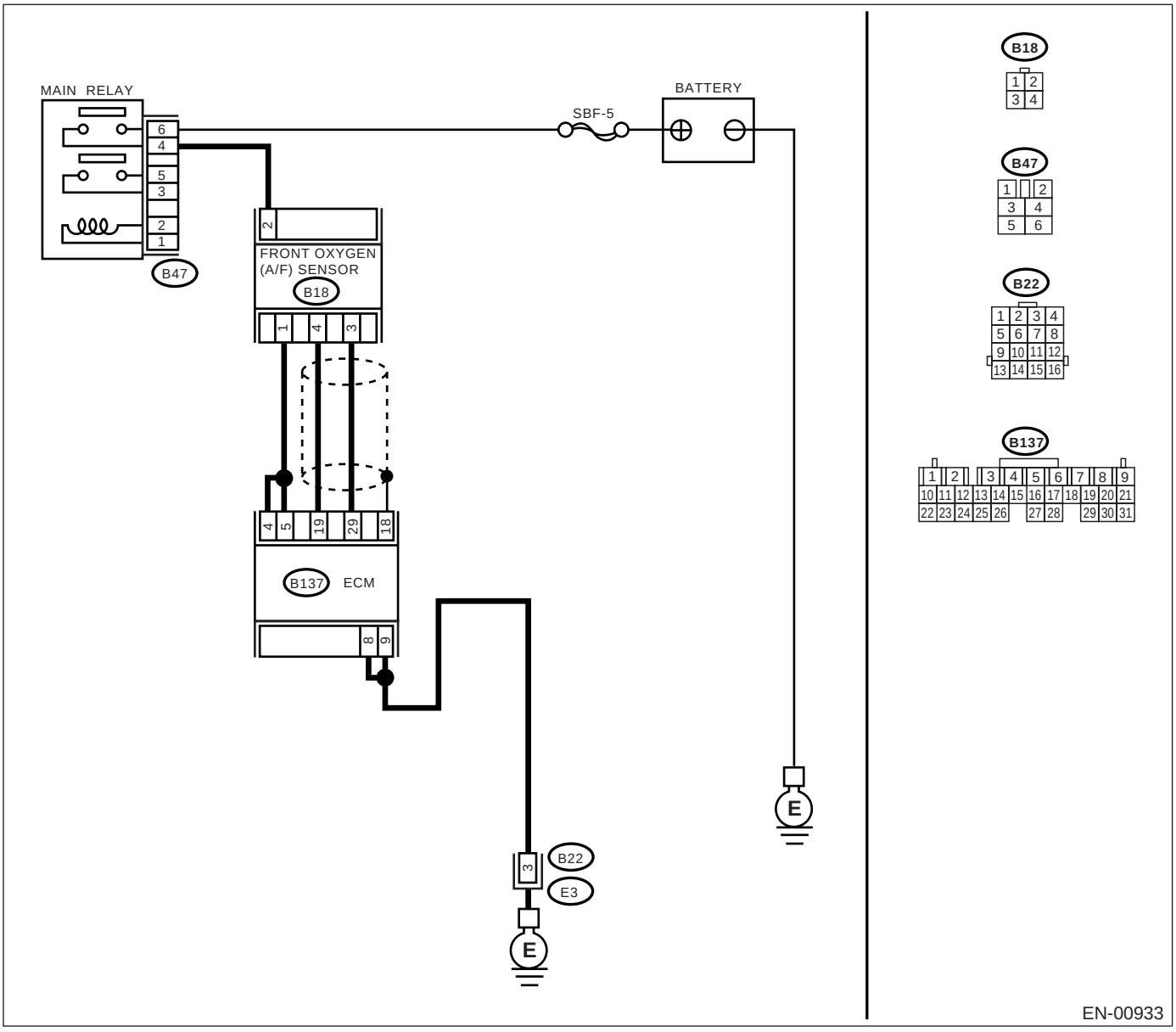


| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from ECM and front oxygen (A/F) sensor connector.<br>3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.<br>***Connector & terminal***<br>***(B137) No. 29 — (B18) No. 3:***<br>***(B137) No. 19 — (B18) No. 4:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **2.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and front oxygen (A/F) sensor connector<br>• Poor contact in front oxygen (A/F) sensor connector<br>• Poor contact in ECM connector |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in front oxygen (A/F) sensor connector.<br>Is there poor contact in front oxygen (A/F) sensor connector? | There is poor contact. | Repair the poor contact in front oxygen (A/F) sensor connector. | Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOSTC)-38, Front Oxygen (A/F) Sensor.> |

## AT: DTC P1131 — O2 SENSOR CIRCUIT (SHORT) (BANK1 SENSOR1) —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 19 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **2.** | Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector. |
| 2 | **CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.**<br>Measure the resistance of harness between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 29 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector. |
| 3 | **CHECK OUTPUT SIGNAL FOR ECM.**<br>1) Connect the connector to ECM.<br>2) Turn the ignition switch to ON.<br>3) Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 19 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **4.** | Go to step **5.** |
| 4 | **CHECK OUTPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 19 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Repair the poor contact in ECM connector. |
| 5 | **CHECK OUTPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 29 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 4.95 V | Go to step **6.** | Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOSTC)-38, Front Oxygen (A/F) Sensor.> |

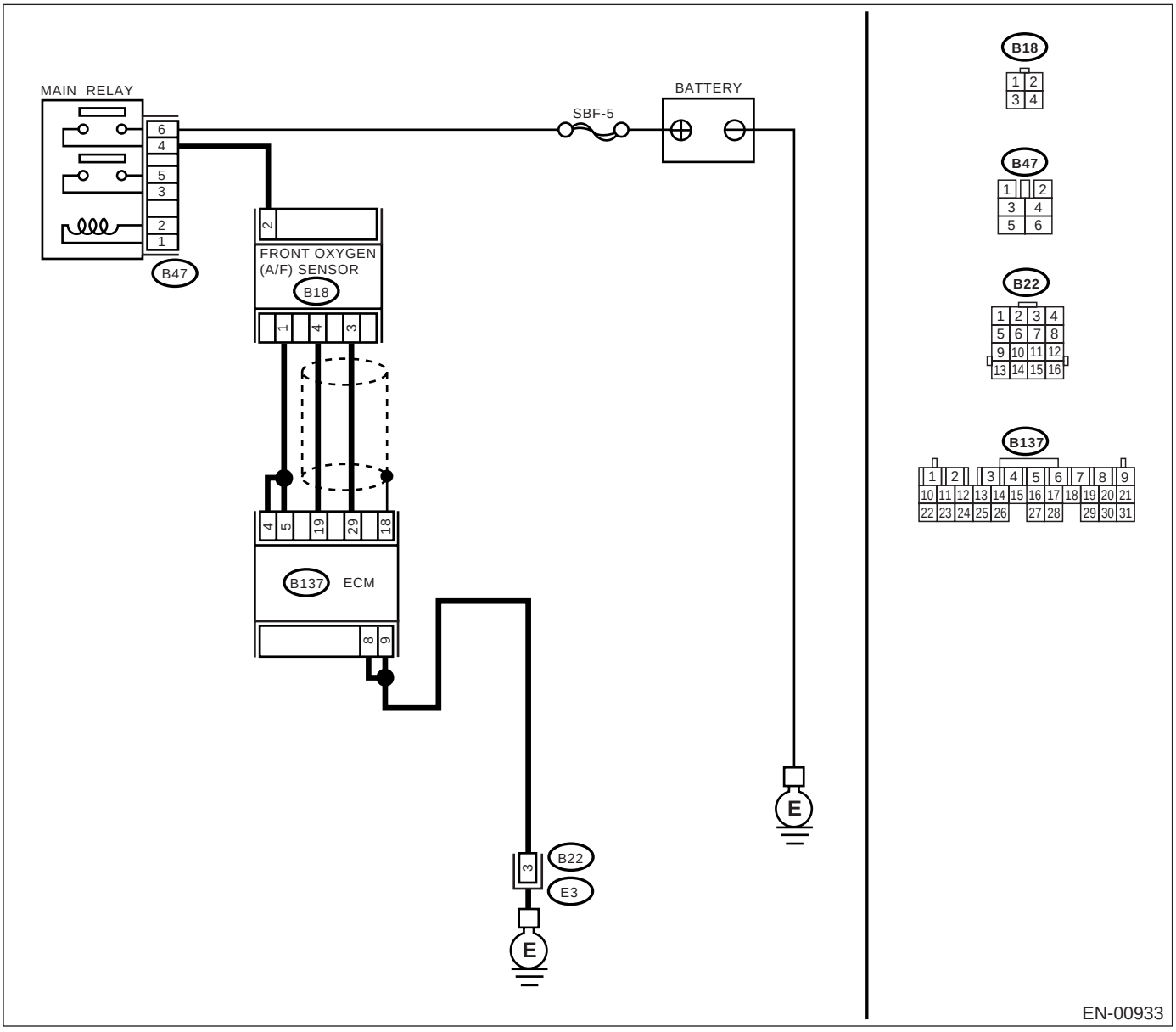
| Step | | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK OUTPUT SIGNAL FOR ECM.**<br>Measure the voltage between ECM connector and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 29 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Repair the poor contact in ECM connector. |

**MEMO:**

## AU:DTC P1134 — A/F SENSOR MICRO-COMPUTER PROBLEM —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

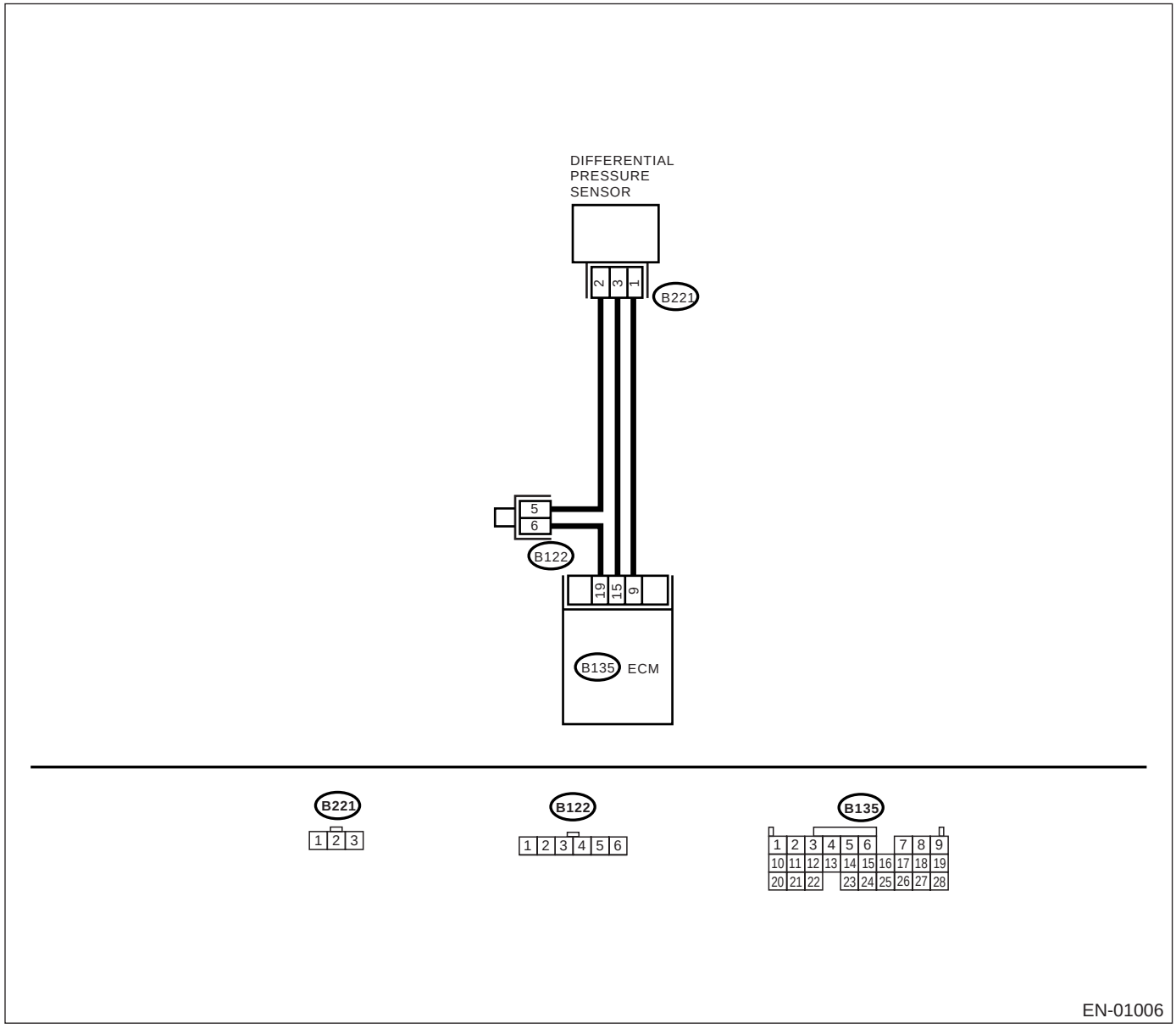


| Step | | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Does the Subaru Select Monitor indicate DTC P1134? | DTC P1134 indicated. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | It is not necessary to inspect DTC P1134. |

## AV:DTC P1199 — DIFFERENTIAL PRESSURE SENSOR —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

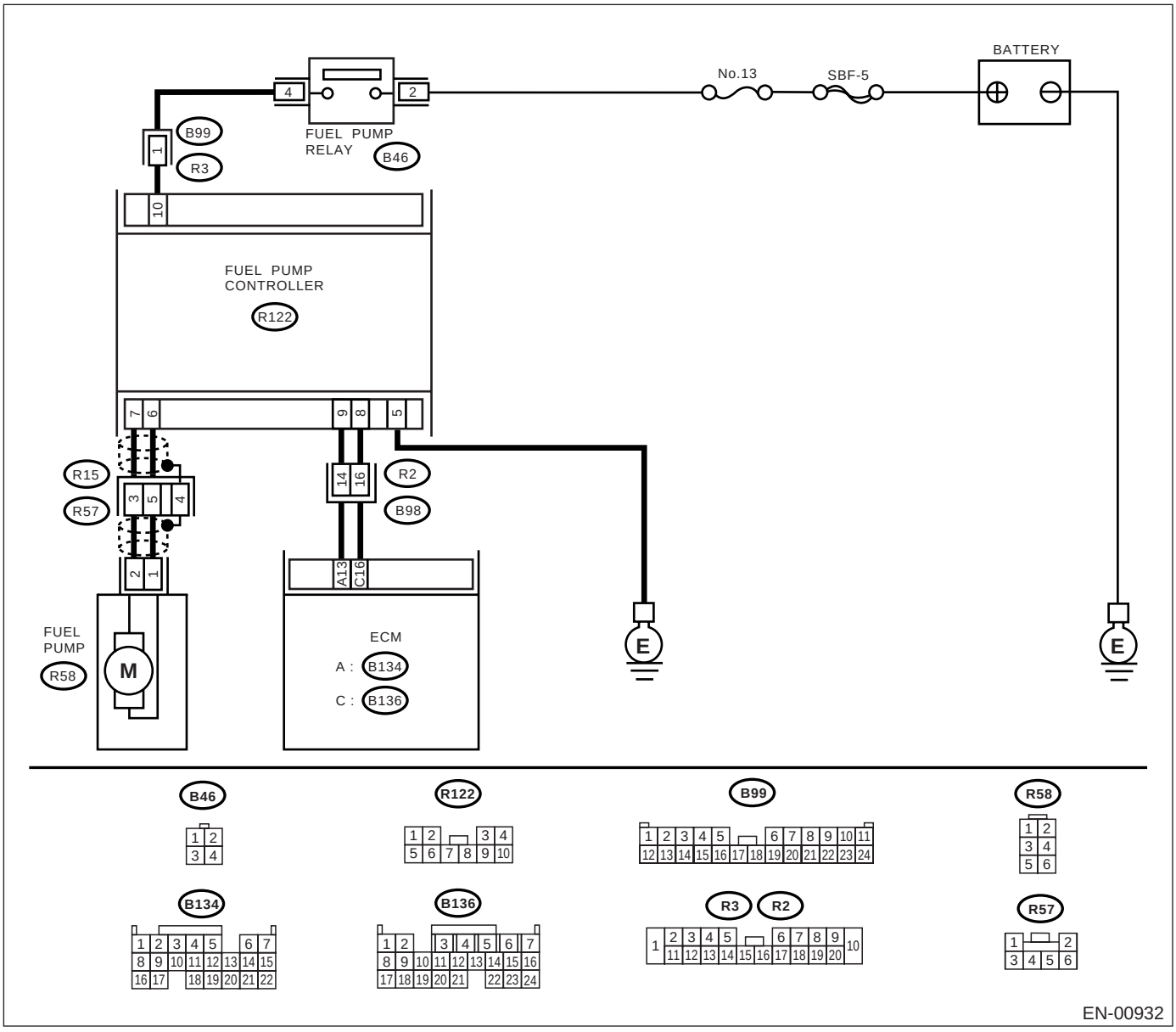


| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK POWER SUPPLY TO DIFFERENTIAL PRESSURE SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from differential pressure sensor.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between differential pressure sensor and engine ground.<br>***Connector & terminal***<br>***(B221) No. 1(+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **2.** | Repair or replace the harness connector between ECM and differential pressure connector. |
| 2 | **CHECK HARNESS BETWEEN ECM AND DIFFERENTIAL PRESSURE SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance between ECM and differential pressure sensor.<br>***Connector & terminal***<br>***(B221) No. 2 — (B135) No. 19:***<br>***(B221) No. 3 — (B135) No. 15:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **3.** | Repair the open circuit between ECM and differential pressure sensor. |
| 3 | **CHECK HARNESS BETWEEN ECM AND DIFFERENTIAL PRESSURE SENSOR.**<br>Measure the resistance between differential pressure sensor and engine ground.<br>***Connector & terminal***<br>***(B221) No. 3 — engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **4.** | Repair the ground short circuit between ECM and differential pressure sensor. |
| 4 | **CHECK DIFFERENTIAL PRESSURE SENSOR.**<br>1) Turn the ignition switch to OFF.<br>2) Install the vacuum pump to secondary turbocharger side hose fitting.<br>3) Apply 5 V to the terminals No.1 and No.2, then connect terminal NO.3 to positive side and terminal No.2 to negative side.<br>4) Measure the voltage between differential pressure sensor terminals.<br>***Terminal***<br>***No. 3 (+) — No. 2 (–):***<br>Does the voltage change as in the specified range? | 3.5 V at 66.7 kPa (500 mmHg, 19.69 inHg)<br>2.0 V at 0 kPa (0 mmHg, 0 inHg)<br>0.5 V at -66.7 kPa (-500 mmHg, (-19.69 inHg) | Go to step **5.** | Replace the differential pressure sensor. |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and differential pressure sensor connectors.<br>Is there poor contact in ECM and differential pressure sensor connectors. | There is poor contact. | Repair the poor contact in ECM and differential pressure sensor connectors. | Replace the ECM. |

# AW:DTC P1230 — FUEL PUMP CONTROLLER —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK POWER SUPPLY CIRCUIT TO FUEL PUMP CONTROLLER.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from fuel pump controller.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between fuel pump controller and chassis ground.<br>***Connector & terminal***<br>***(R122) No. 10 (+) — Chassis ground (-):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **2.** | Repair the power supply circuit.<br>NOTE:<br>In this case repair the following:<br>• Open or ground short circuit in harness between fuel pump relay and fuel pump controller.<br>• Poor contact in fuel pump controller connector.<br>• Poor contact in fuel pump relay connector. |
| 2 | **CHECK GROUND CIRCUIT OF FUEL PUMP CONTROLLER.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance of harness between fuel pump controller and chassis ground.<br>***Connector & terminal***<br>***(R122) No. 5 — Chassis ground:***<br>Is the measured value less than the specified value? | 5 Ω | Go to step **3.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit between fuel pump controller and chassis ground.<br>• Poor contact in fuel pump controller connector. |
| 3 | **CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND FUEL PUMP CONNECTOR.**<br>1) Disconnect the connector from fuel pump.<br>2) Measure the resistance of harness between fuel pump controller and fuel pump connector.<br>***Connector & terminal***<br>***(R122) No. 7 — (R58) No. 2:***<br>***(R122) No. 6 — (R58) No. 1:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit between fuel pump controller and fuel pump. |
| 4 | **CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND FUEL PUMP CONNECTOR.**<br>Measure the resistance of harness between fuel pump controller and chassis ground.<br>***Connector & terminal***<br>***(R122) No. 7 — Chassis ground:***<br>***(R122) No. 6 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **5.** | Repair the ground short circuit between fuel pump controller and fuel pump. |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from ECM.<br>3) Measure the resistance of harness between fuel pump controller and ECM connector.<br>***Connector & terminal***<br>***(R122) No. 9 — (B134) No. 13:***<br>***(R122) No. 8 — (B136) No. 16:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **6.** | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit between fuel pump controller and ECM.<br>• Poor contact in fuel pump controller and ECM connector. |
| 6 | **CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND ECM CONNECTOR.**<br>Measure the resistance of harness between fuel pump controller and chassis ground.<br>***Connector & terminal***<br>***(R122) No. 9 — Chassis ground:***<br>***(R122) No. 8 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **7.** | Repair the ground short circuit between fuel pump controller and ECM. |
| 7 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and fuel pump controller connector.<br>Is there poor contact in ECM and fuel pump controller connector. | There is poor contact. | Repair the poor contact in ECM and fuel pump controller. | Replace the fuel pump controller. <Ref. to FU(H4DOSTC)-43, Fuel Pump Controller.> |

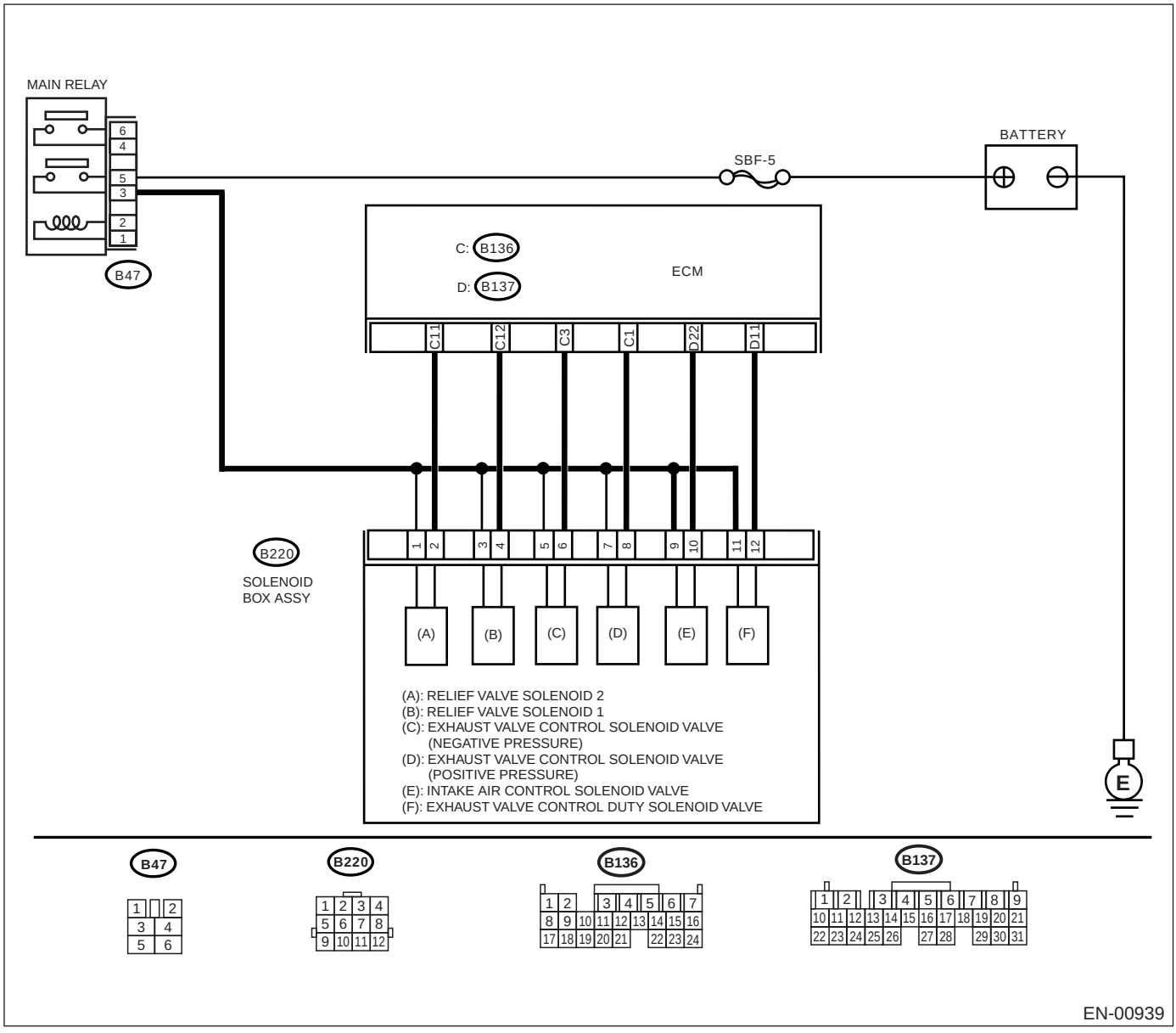
**MEMO:**

## AX:DTC P1235 — INTAKE CONTROL SOLENOID VALVE CIRCUIT LOW —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 22 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN INTAKE AIR VALVE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from intake air valve control solenoid valve and ECM.<br>3) Measure the resistance of harness between intake air valve control solenoid valve connector and engine ground.<br>***Connector & terminal***<br>***(B220) No. 10 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair the ground short circuit in harness between ECM and intake air valve control solenoid valve connector. |
| 3 | **CHECK HARNESS BETWEEN INTAKE AIR VALVE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and intake air valve control solenoid valve of harness connector.<br>***Connector & terminal***<br>***(B137) No. 22 — (B220) No. 10:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit in harness between ECM and intake air valve control solenoid valve connector. |
| 4 | **CHECK INTAKE AIR VALVE CONTROL SOLENOID VALVE.**<br>Measure the resistance between intake air valve control solenoid valve terminals.<br>***Terminals***<br>***No. 9 — No. 10:***<br>Is the measured value within the specified value? | 37 — 44 Ω | Go to step **5.** | Replace the intake air valve control solenoid valve. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 5 | **CHECK POWER SUPPLY TO INTAKE AIR VALVE CONTROL SOLENOID VALVE.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between intake air valve control solenoid valve and engine ground.<br>***Connector & terminal***<br>***(B220) No. 9 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between main relay and intake air valve control solenoid valve connector. |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in intake air valve control solenoid valve and ECM connectors.<br>Is there poor contact in intake air valve control solenoid valve and ECM connectors? | There is poor contact. | Repair the poor contact in intake air valve control solenoid valve and ECM connectors. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

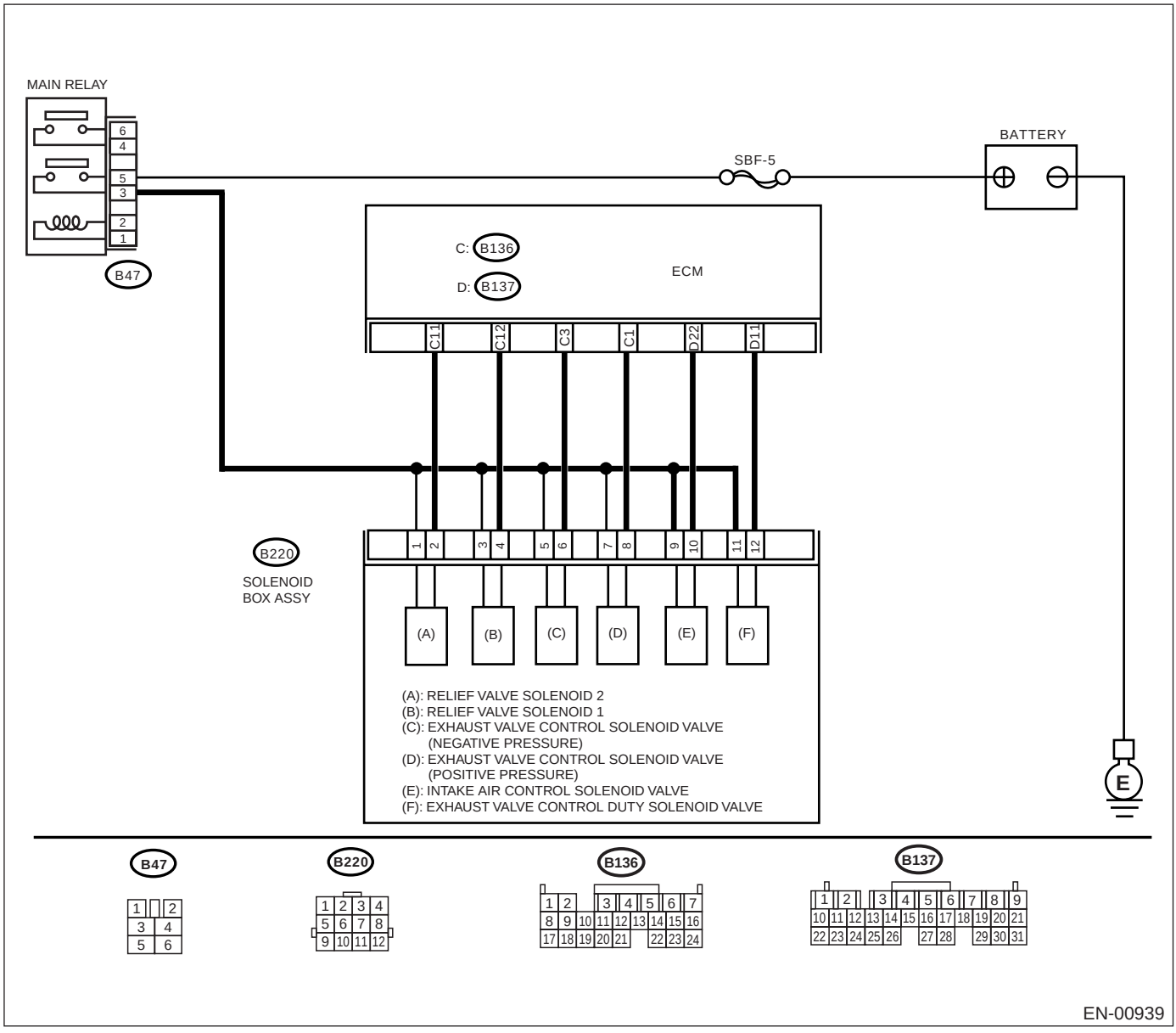
**MEMO:**

## AY:DTC P1236 — INTAKE CONTROL SOLENOID VALVE CIRCUIT HIGH —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



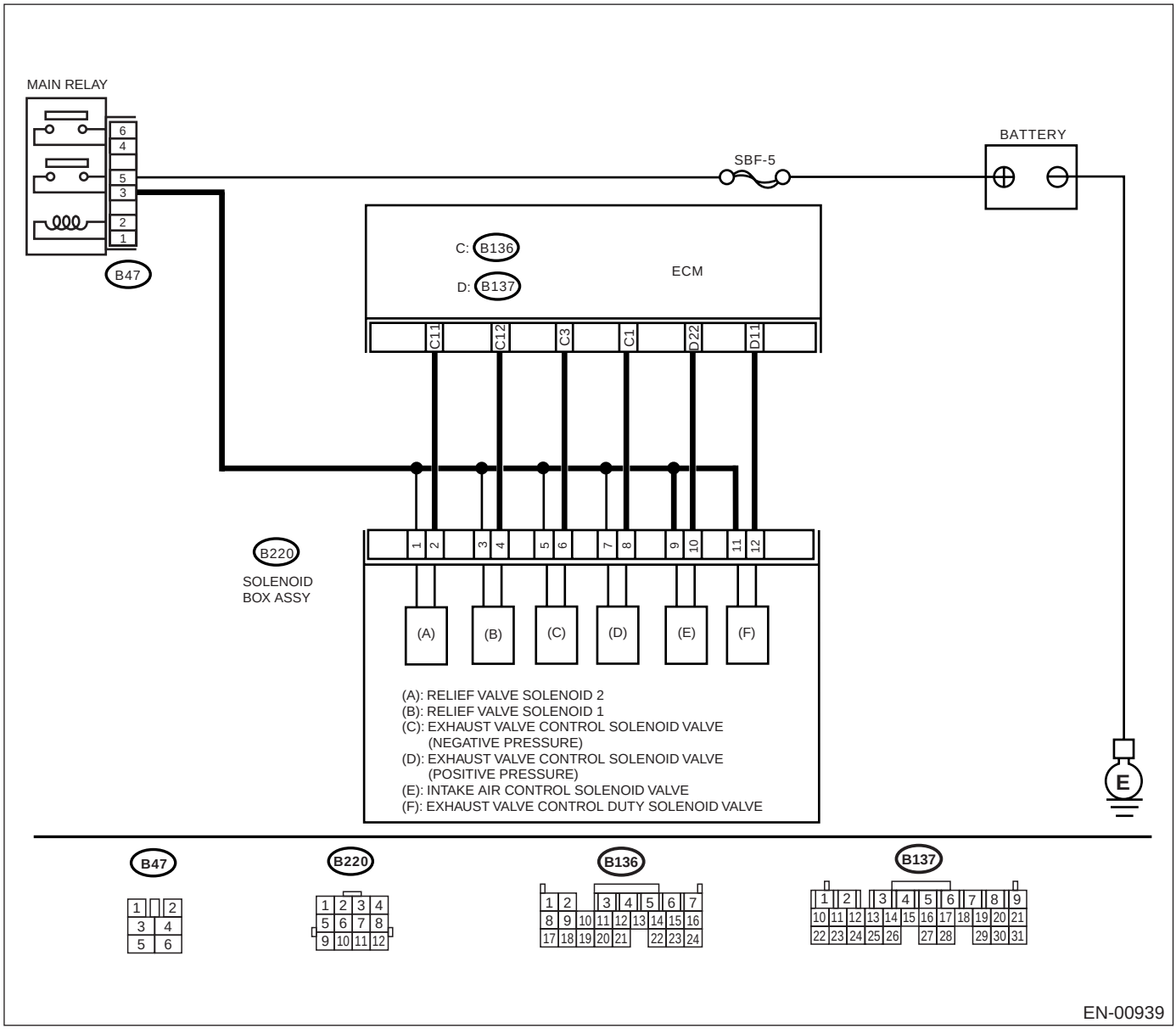
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 22 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 3 | **CHECK HARNESS BETWEEN INTAKE AIR VALVE CONTROL SOLENOID VALVE AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from intake air valve control solenoid valve.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 12 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and intake air valve control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **4.** |
| 4 | **CHECK INTAKE AIR VALVE CONTROL SOLENOID VALVE.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between intake air valve control solenoid valve terminals.<br>***Terminals***<br>***No. 9 — No. 10:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the intake air valve control solenoid valve <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> and ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and intake air valve control solenoid valve connectors.<br>Is there poor contact in ECM and intake air valve control solenoid valve connectors? | There is poor contact. | Repair the poor contact in ECM and intake air valve control solenoid valve connectors. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

# AZ:DTC P1237 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT LOW (POSITIVE PRESSURE) —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 1 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact with your Subaru distributor.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE) AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from exhaust valve control solenoid valve (positive pressure) and ECM.<br>3) Measure the resistance of harness between exhaust valve control solenoid valve (positive pressure) connector and engine ground.<br>***Connector & terminal***<br>***(B220) No. 8 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Repair the ground short circuit in harness between ECM and exhaust valve control solenoid valve (positive pressure) connector. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE) AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and exhaust valve control solenoid valve (positive pressure) of harness connector.<br>***Connector & terminal***<br>***(B136) No. 1 — (B220) No. 8:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **4.** | Repair the open circuit in harness between ECM and exhaust valve control solenoid valve (positive pressure) connector. |
| 4 | **CHECK EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE).**<br>Measure the resistance between exhaust valve control solenoid valve (positive pressure) terminals.<br>***Terminals***<br>***No. 7 — No. 8:***<br>Is the measured value within the specified value? | 37 — 44 Ω | Go to step **5.** | Replace the exhaust valve control solenoid valve (positive pressure). <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 5 | **CHECK POWER SUPPLY TO EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE).**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between exhaust valve control solenoid valve (positive pressure) and engine ground.<br>***Connector & terminal***<br>***(B220) No. 7 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair open circuit in harness between main relay and exhaust valve control solenoid valve (positive pressure) connector. |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in exhaust valve control solenoid valve (positive pressure) and ECM connectors.<br>Is there poor contact in exhaust valve control solenoid valve (positive pressure) and ECM connectors? | There is poor contact. | Repair the poor contact in exhaust valve control solenoid valve (positive pressure) and ECM connectors. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

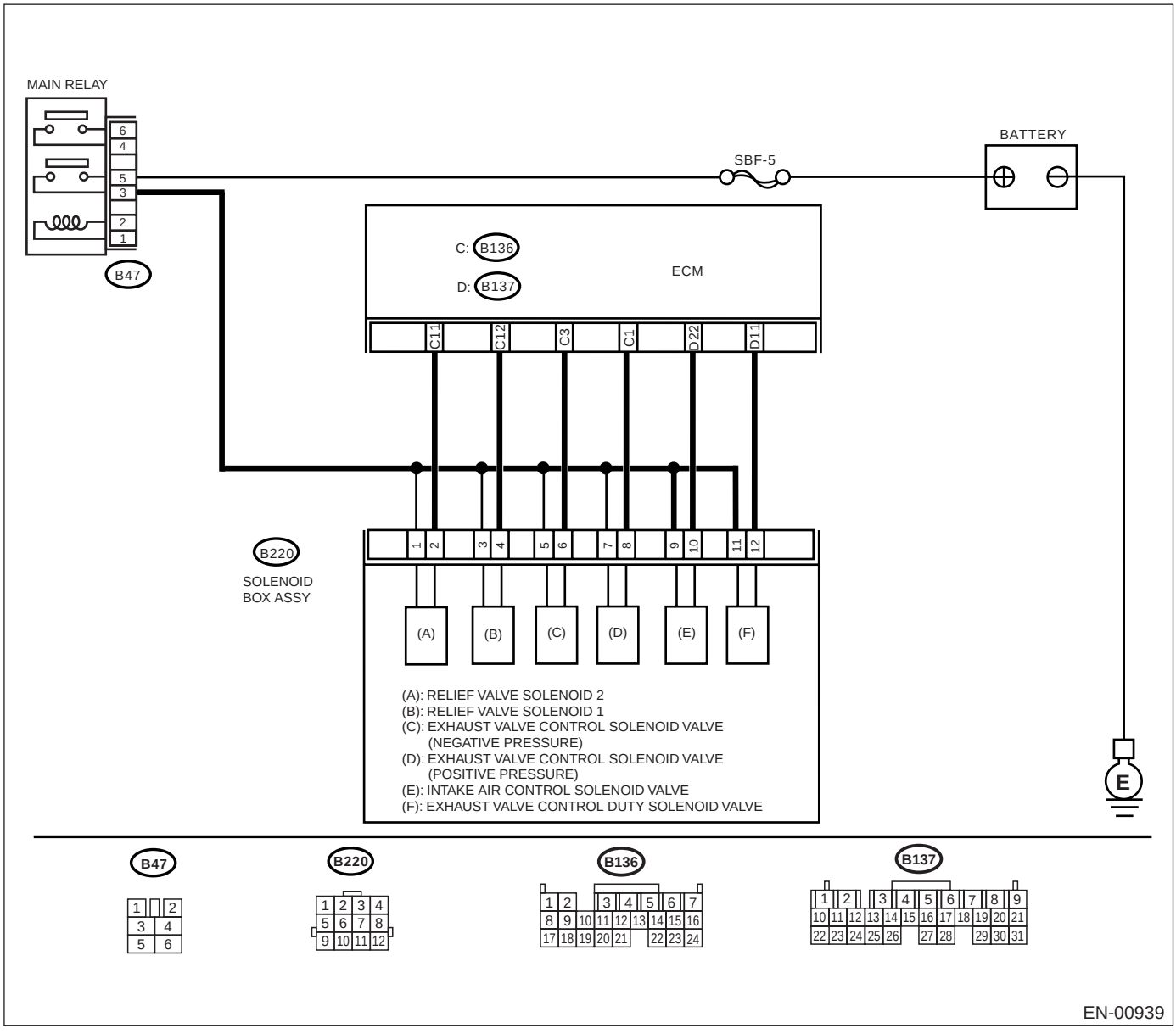
**MEMO:**

# BA:DTC P1238 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT HIGH (POSITIVE PRESSURE) —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



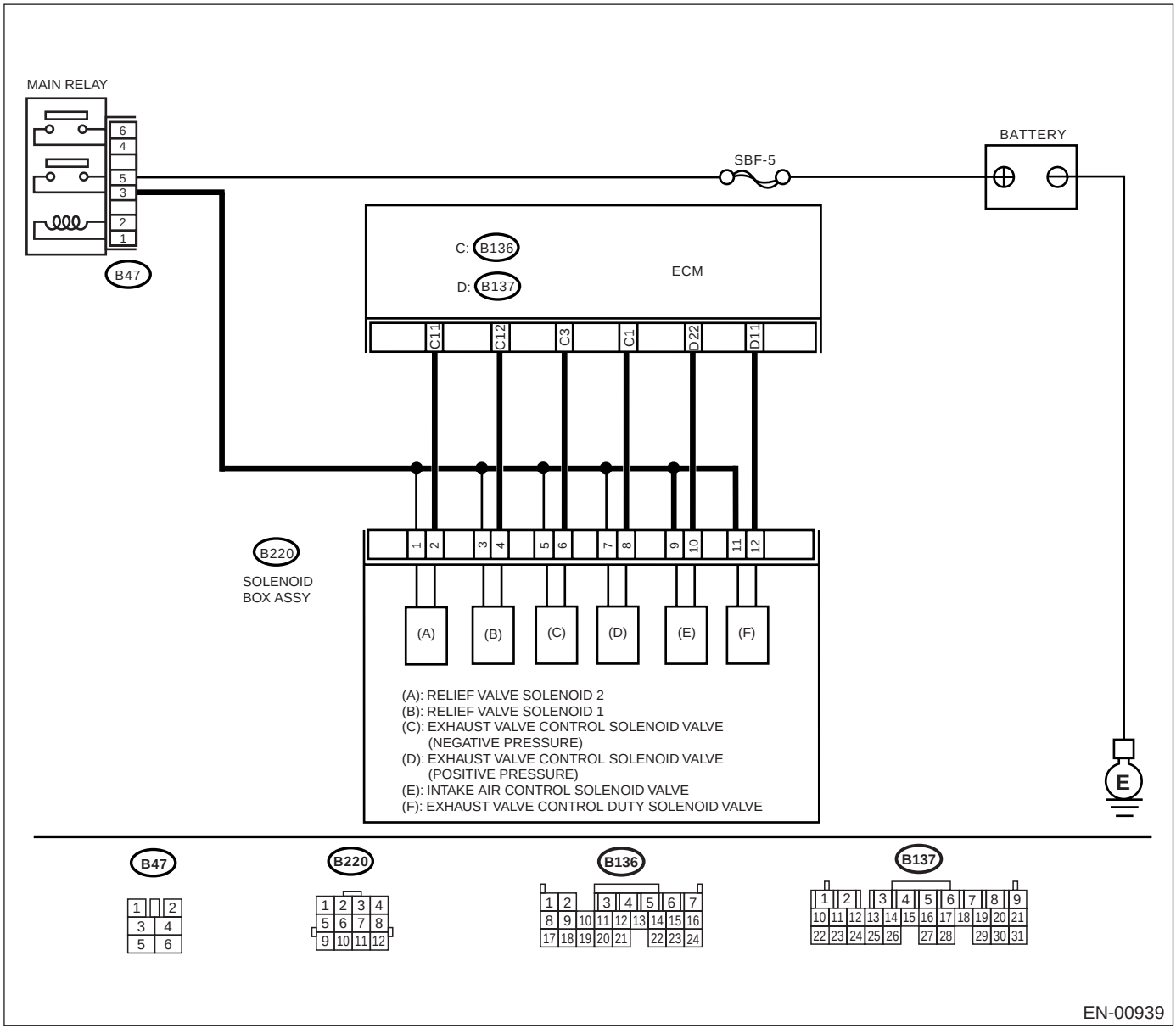
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 1 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check the poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 3 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE) AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from exhaust valve control solenoid valve (positive pressure).<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 1 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and exhaust valve control solenoid valve (positive pressure) connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **4.** |
| 4 | **CHECK EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE).**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between exhaust valve control solenoid valve (positive pressure) terminals.<br>***Terminals***<br>***No. 7 — No. 8:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the exhaust valve control solenoid valve (positive pressure). <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> and ECM <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and exhaust valve control solenoid valve (positive pressure).<br>Is there poor contact in ECM and exhaust valve control solenoid valve (positive pressure)? | There is poor contact. | Repair the poor contact in ECM and exhaust valve control solenoid valve (positive pressure). | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

# BB:DTC P1239 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT LOW (NEGATIVE PRESSURE) —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 3 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL SOLENOID VALVE (NEGATIVE PRESSURE) AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from exhaust valve control solenoid valve (negative pressure) and ECM.<br>3) Measure the resistance of harness between exhaust valve control solenoid valve (negative pressure) connector and engine ground.<br>***Connector & terminal***<br>***(B136) No. 3 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Repair the ground short circuit in harness between ECM and exhaust valve control solenoid valve (negative pressure) connector. | Go to step **3.** |
| 3 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL SOLENOID VALVE (NEGATIVE PRESSURE) AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and exhaust valve control solenoid valve (negative pressure) of harness connector.<br>***Connector & terminal***<br>***(B136) No. 3 — (B220) No. 6:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit in harness between ECM and exhaust valve control solenoid valve (negative pressure) connector. |
| 4 | **CHECK EXHAUST VALVE CONTROL SOLENOID VALVE. (NEGATIVE PRESSURE)**<br>Measure the resistance between exhaust valve control solenoid valve (negative pressure) terminals.<br>***Terminals***<br>***No. 5 — No. 6:***<br>Is the measured value within the specified value? | 30 — 34 Ω | Go to step **5.** | Replace the exhaust valve control solenoid valve (negative pressure). <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 5 | **CHECK POWER SUPPLY TO EXHAUST VALVE CONTROL SOLENOID VALVE (NEGATIVE PRESSURE).**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between exhaust valve control solenoid valve (negative pressure) and engine ground.<br>***Connector & terminal***<br>***(B220) No. 5 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between main relay and exhaust valve control solenoid valve (negative pressure) connector. |
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in exhaust valve control solenoid valve (negative pressure) and ECM connectors.<br>Are there poor contact in exhaust valve control solenoid valve (negative pressure) and ECM connectors? | There are poor contacts. | Repair the poor contact in exhaust valve control solenoid valve (negative pressure) and ECM connectors. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

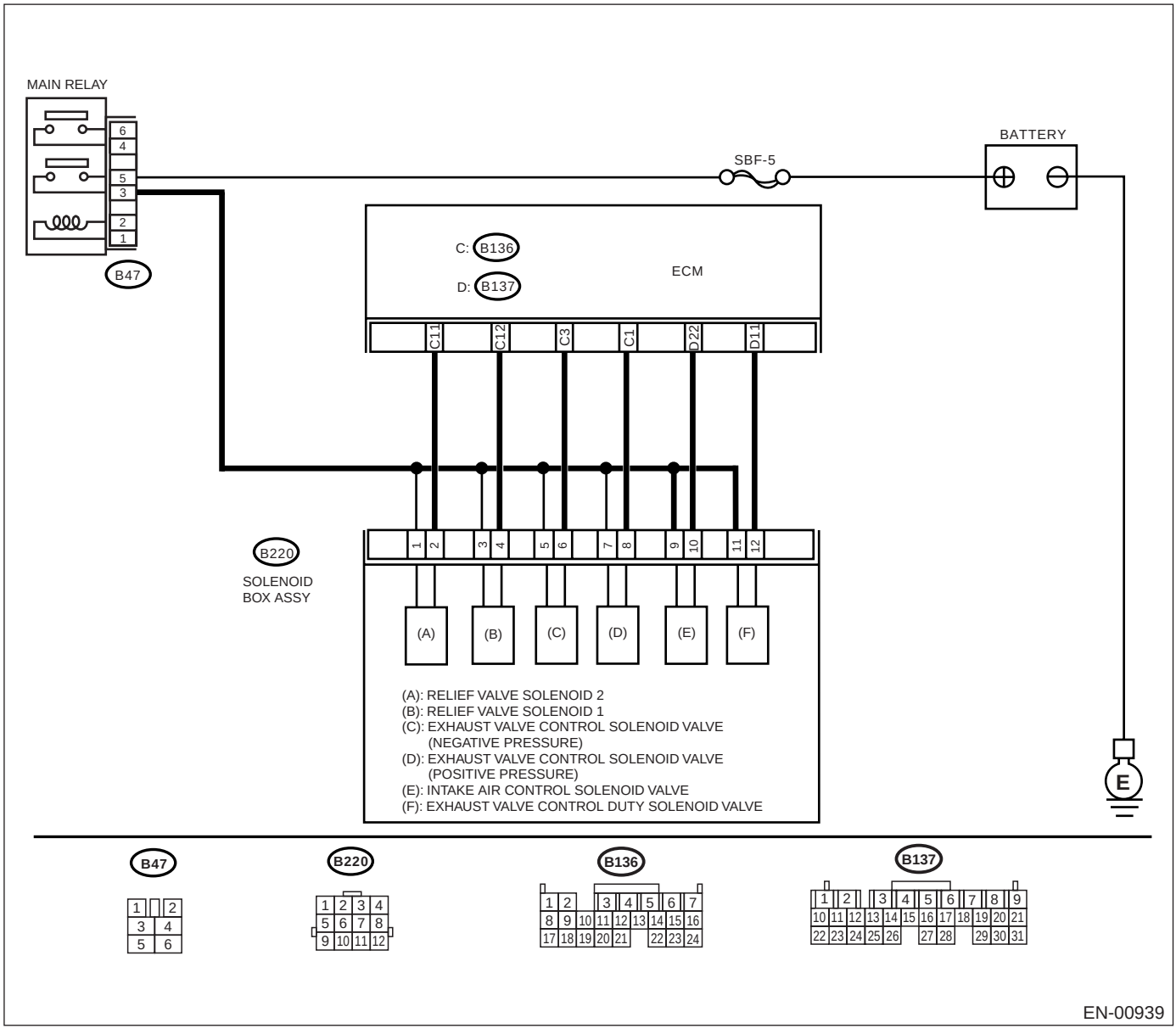
**MEMO:**

# BC:DTC P1240 — EXHAUST CONTROL VALVE SOLENOID CIRCUIT HIGH (NEGATIVE PRESSURE) —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 3 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 3 | **CHECK HARNESS BETWEEN EXHAUST VALVE CONTROL SOLENOID VALVE (NEGATIVE PRESSURE) AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from exhaust valve control solenoid valve (negative pressure).<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 3 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and exhaust valve control solenoid valve (negative pressure) connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **4.** |
| 4 | **CHECK EXHAUST VALVE CONTROL SOLENOID VALVE (NEGATIVE PRESSURE).**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between exhaust valve control solenoid valve (negative pressure) terminals.<br>***Terminals***<br>***No. 5 — No. 6:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the exhaust valve control solenoid valve (negative pressure) <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> and ECM <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and exhaust valve control solenoid valve (negative pressure) connectors.<br>Are there poor contact in ECM and exhaust valve control solenoid valve (negative pressure) connectors? | There are poor contacts. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

## BD:DTC P1241 — 2STAGE TWIN TURBO SYSTEM (SINGLE) —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Is any other DTC displayed? | DTC indicated. | Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).> | Go to step **2.** |
| 2 | **CHECK OPERATION OF RELIEF VALVE CONTROL SOLENOID VALVE 2.**<br>Operate the relief valve control solenoid valve 2. <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.><br>Does the relief valve control solenoid valve 2 produce operating sound? | Operating sound produced. | Go to step **3.** | Replace the relief valve control solenoid valve 2. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 3 | **CHECK OPERATION OF EXHAUST CONTROL VALVE.**<br>1) Operate the exhaust valve control solenoid valve. <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.><br>2) Check the operation of exhaust control valve actuator.<br>Does the actuator rod operate correctly?.<br>NOTE:<br>Actuator rod operates in approx. 7 second cycle, and stroke is approx. 30 mm (1.18 in). | Operates correctly. | Go to step **4.** | Check the exhaust valve control solenoid valve and vacuum hose. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 4 | **CHECK OPERATION OF INTAKE AIR CONTROL VALVE.**<br>1) Operate the intake air valve control solenoid valve. <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.><br>2) Check the operation of intake air control valve actuator.<br>Does the actuator rod operate correctly?<br>NOTE:<br>Actuator rod operates in approx. 2 second cycle, and stroke is approx. 12 mm (0.47 in). | Operates correctly. | Go to step **5.** | Check the intake air control solenoid valve and vacuum hose. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 5 | **CHECK RELIEF VALVE.**<br>1) Remove the relief valve.<br>2) Check the relief valve.<br>Is there a fault in the relief valve and hose routing? | There is no problem. | Go to step **6.** | Replace or repair the relief valve and vacuum hose. |
| 6 | **CHECK VACUUM HOSES OF EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE).**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **7.** | Repair or replace the vacuum hoses. |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK VACUUM HOSES OF DIFFERENTIAL PRESSURE SENSOR.**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **8.** | Repair or replace the vacuum hoses. |
| 8 | **CHECK VACUUM HOSES OF PRIMARY TURBOCHARGER WASTEGATE CONTROL VALVE.**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **9.** | Repair or replace the vacuum hoses. |
| 9 | **CHECK VACUUM HOSES BETWEEN SOLENOID BOX AND SURGE TANK.**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **10.** | Repair or replace the vacuum hoses. |
| 10 | **CHECK PRIMARY TURBOCHARGER WASTEGATE VALVE.**<br>Is there a fault on the primary turbocharger wastegate valve? | There is no problem. | Go to step **11.** | Replace the primary turbocharger. <Ref. to IN(H4DOSTC)-15, Turbocharger.> |
| 11 | **CHECK LH AND RH INTAKE DUCT.**<br>Are there cracks or stuck on the LH and RH intake duct? | There is no problem. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Replace the air intake duct. <Ref. to IN(H4DOSTC)-12, Intake Duct.> |

## BE:DTC P1242 — 2STAGE TWIN TURBO SYSTEM (TWIN) —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Is any other DTC displayed? | DTC indicated. | Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).> | Go to step **2.** |
| 2 | **CHECK OPERATION OF RELIEF VALVE CONTROL SOLENOID VALVE 2.**<br>Operate the relief valve control solenoid valve 2. <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.><br>Does the relief valve control solenoid valve 2 produce operating sound? | Operating sound produced. | Go to step **3.** | Replace the relief valve control solenoid valve 2. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 3 | **CHECK OPERATION OF EXHAUST CONTROL VALVE.**<br>1) Operate the exhaust valve control solenoid valve. <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.><br>2) Check the operation of exhaust control valve actuator.<br>Does the actuator rod operate correctly?<br>NOTE:<br>Actuator rod operates in approx. 7 second cycle, and stroke is approx. 30 mm (1.18 in). | Operate correctly. | Go to step **4.** | Check the exhaust valve control solenoid valve and vacuum hose. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 4 | **CHECK OPERATION OF INTAKE AIR CONTROL VALVE.**<br>1) Operate the intake air valve control solenoid valve. <Ref. to EN(H4DOSTC)-36, Compulsory Valve Operation Check Mode.><br>2) Check the operation of intake air control valve actuator.<br>Does the actuator rod operate correctly?<br>NOTE:<br>Actuator rod operates in approx. 2 second cycle, and stroke is approx. 12 mm (0.47 in). | Operate correctly. | Go to step **5.** | Check the intake valve control solenoid valve and vacuum hose. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 5 | **CHECK RELIEF VALVE.**<br>1) Remove the relief valve.<br>2) Check the relief valve.<br>Is there a fault in the relief valve and hose routing? | There is no problem. | Go to step **6.** | Replace or repair the relief valve and vacuum hose. |
| 6 | **CHECK VACUUM HOSES OF EXHAUST VALVE CONTROL SOLENOID VALVE (POSITIVE PRESSURE).**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **7.** | Repair or replace the vacuum hoses. |

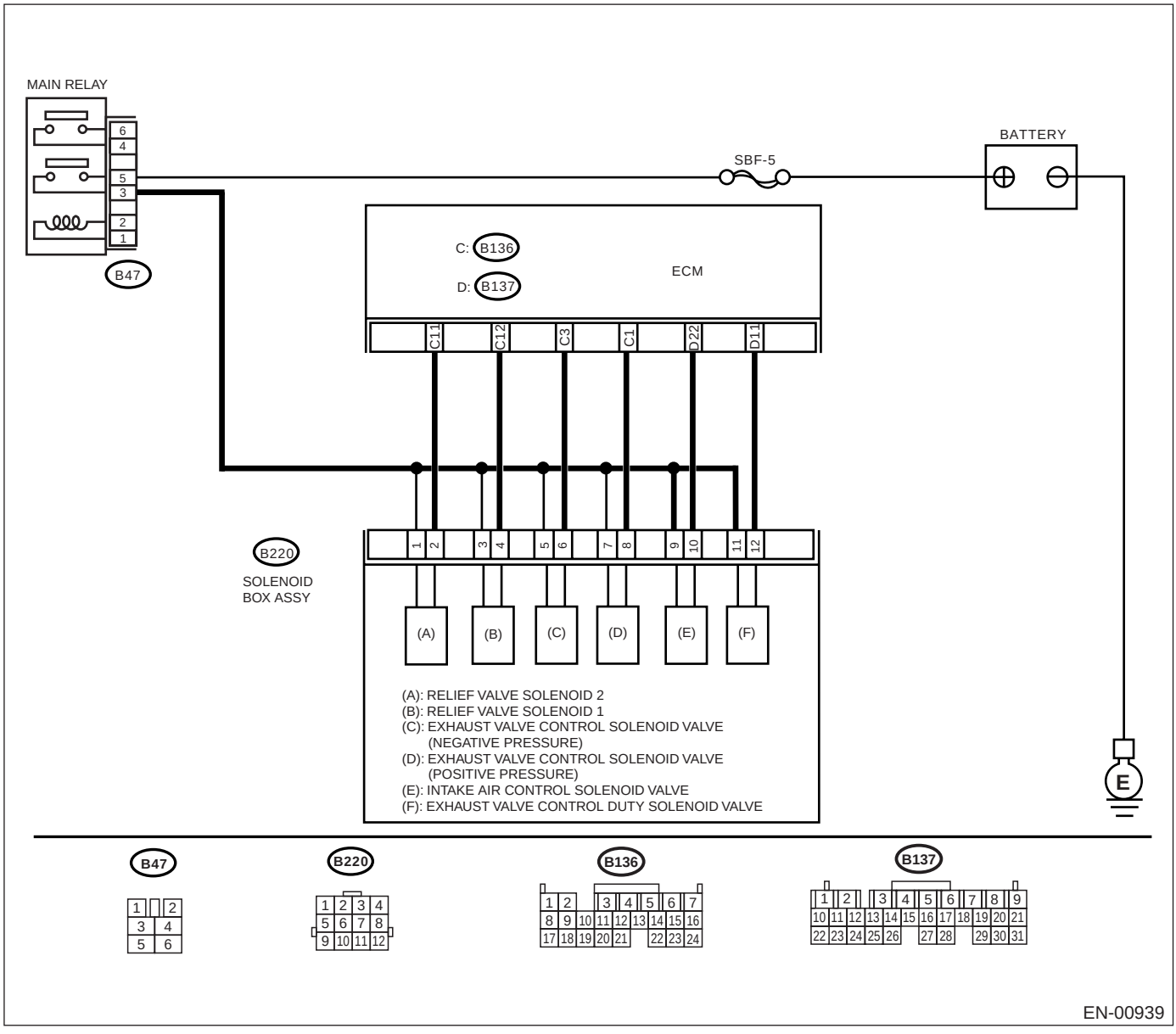
| Step | | Value | Yes | No |
|---|---|---|---|---|
| 7 | **CHECK VACUUM HOSES OF DIFFERENTIAL PRESSURE SENSOR.**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **8.** | Repair or replace the vacuum hoses. |
| 8 | **CHECK VACUUM HOSES OF PRIMARY TURBOCHARGER WASTEGATE CONTROL VALVE.**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **9.** | Repair or replace the vacuum hoses. |
| 9 | **CHECK VACUUM HOSES BETWEEN SOLENOID BOX AND SURGE TANK.**<br>Are there cracks, stuck or improper routing on vacuum hose? | There is no problem. | Go to step **10.** | Repair or replace the vacuum hoses. |
| 10 | **CHECK PRIMARY TURBOCHARGER WASTEGATE VALVE.**<br>Is there a fault on the primary turbocharger wastegate valve? | There is no problem. | Go to step **11.** | Replace the primary turbocharger. <Ref. to IN(H4DOSTC)-15, Turbocharger.> |
| 11 | **CHECK LH AND RH INTAKE DUCT.**<br>Are there cracks or stuck on the LH and RH intake duct? | There is no problem. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Replace the air intake duct. <Ref. to IN(H4DOSTC)-12, Intake Duct.> |

## BF:DTC P1247 — RELIEF VALVE CONTROL SOLENOID VALVE 1 CIRCUIT LOW —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 12 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact with your Subaru distributor.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN RELIEF VALVE CONTROL SOLENOID VALVE 1 AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from relief valve control solenoid valve 1 and ECM.<br>3) Measure the resistance of harness between relief valve control solenoid valve 1 connector and engine ground.<br>***Connector & terminal***<br>***(B220) No. 4 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair the ground short circuit in harness between ECM and relief valve control solenoid valve 1 connector. |
| 3 | **CHECK HARNESS BETWEEN RELIEF VALVE CONTROL SOLENOID VALVE 1 AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and relief valve control solenoid valve 1 of harness connector.<br>***Connector & terminal***<br>***(B136) No. 12 — (B220) No. 4:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit in harness between ECM and relief valve control solenoid valve 1 connector. |
| 4 | **CHECK RELIEF VALVE CONTROL SOLENOID VALVE 1.**<br>Measure the resistance between relief valve control solenoid valve 1 terminals.<br>***Terminals***<br>***No. 3 — No. 4:***<br>Is the measured value within the specified value? | 37 — 44 Ω | Go to step **5.** | Replace the relief valve control solenoid valve 1.<br><Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 5 | **CHECK POWER SUPPLY TO RELIEF VALVE CONTROL SOLENOID VALVE 1.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between relief valve control solenoid valve 1 and engine ground.<br>***Connector & terminal***<br>***(B220) No. 3 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between main relay and relief valve control solenoid valve 1 connector. |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in relief valve control solenoid valve 1 and ECM connectors.<br>Are there poor contact in relief valve control solenoid valve 1 and ECM connectors? | There are poor contacts. | Repair the poor contact in relief valve control solenoid valve 1 and ECM connectors. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

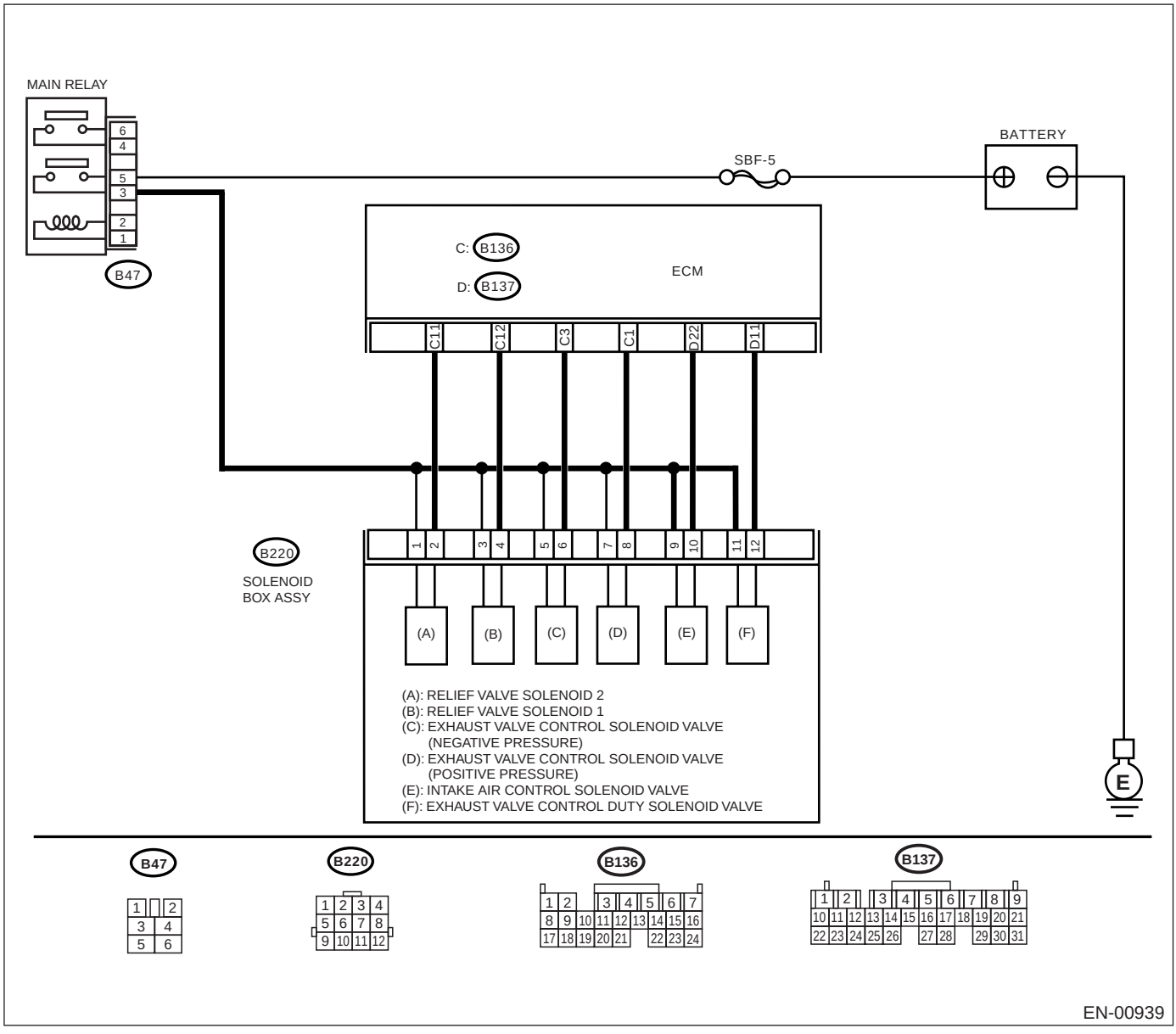
**MEMO:**

# BG:DTC P1248 — RELIEF VALVE CONTROL SOLENOID VALVE 1 CIRCUIT HIGH —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



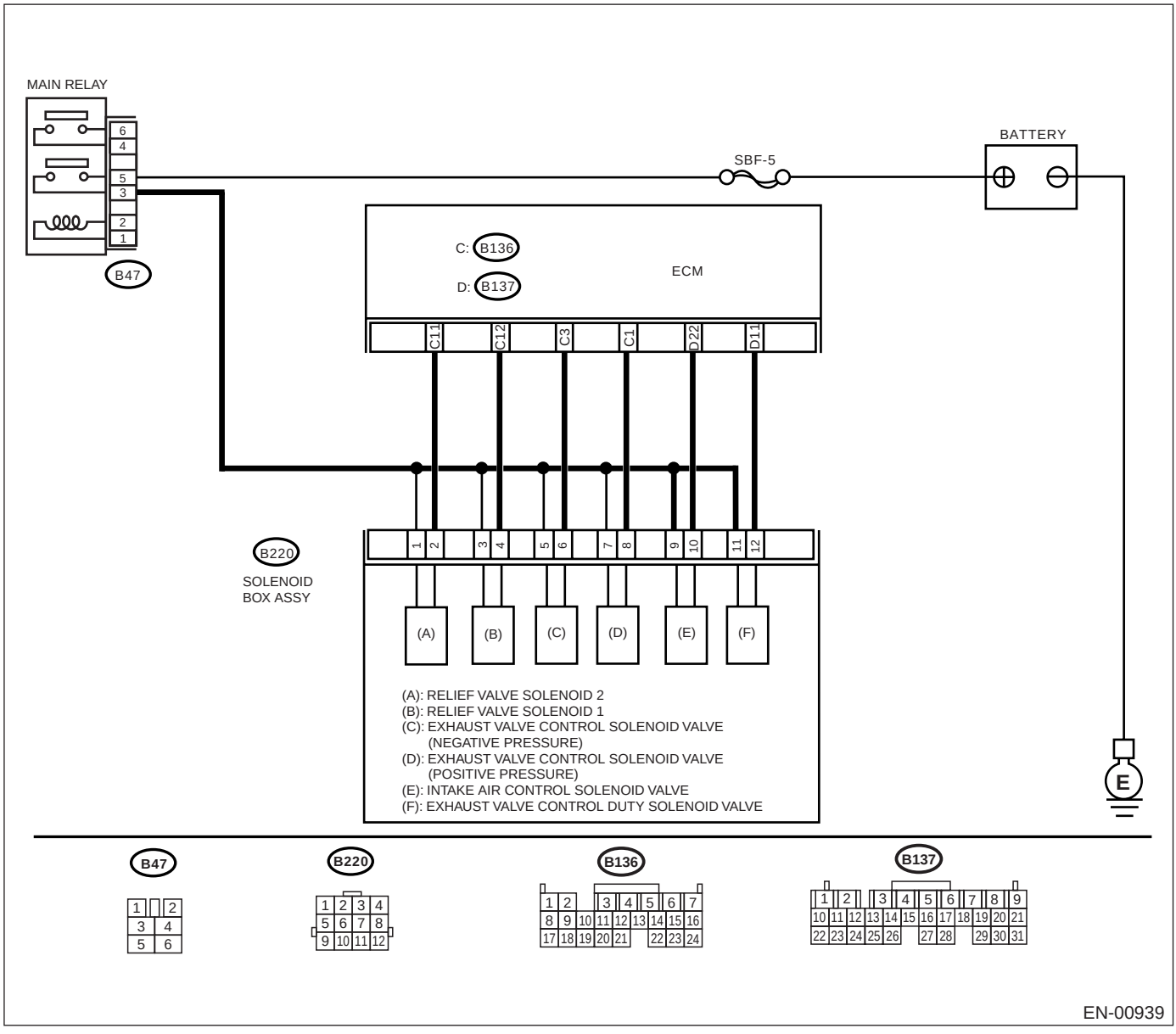
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 12 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 3 | **CHECK HARNESS BETWEEN RELIEF VALVE CONTROL SOLENOID VALVE 1 AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from relief valve control solenoid valve 1.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 12 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and relief valve control solenoid valve 1 connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **4.** |
| 4 | **CHECK RELIEF VALVE CONTROL SOLENOID VALVE 1.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between relief valve control solenoid valve 1 terminals.<br>***Terminals***<br>***No. 3 — No. 4:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the relief valve control solenoid valve 1 <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> and replace ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and relief valve control solenoid valve 1 connetors.<br>Are there poor contact in ECM and relief valve control solenoid valve 1 connetors? | There are poor contacts. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

# BH:DTC P1249 — RELIEF VALVE CONTROL SOLENOID VALVE 2 CIRCUIT LOW —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INTPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 11 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Even if MI lights up, the circuit has returned to a normal condition at this time. Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN RELIEF VALVE CONTROL SOLENOID VALVE 2 AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connectors from relief valve control solenoid valve 2 and ECM.<br>3) Measure the resistance of harness between relief valve control solenoid valve 2 connector and engine ground.<br>***Connector & terminal***<br>***(B220) No. 2 — Engine ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair the ground short circuit in harness between ECM and relief valve control solenoid valve 2 connector. |
| 3 | **CHECK HARNESS BETWEEN RELIEF VALVE CONTROL SOLENOID VALVE 2 AND ECM CONNECTOR.**<br>Measure the resistance of harness between ECM and relief valve control solenoid valve 2 of harness connector.<br>***Connector & terminal***<br>***(B136) No. 11 — (B220) No. 2:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **4.** | Repair the open circuit in harness between ECM and relief valve control solenoid valve 2 connector. |
| 4 | **CHECK RELIEF VALVE CONTROL SOLENOID VALVE 2.**<br>Measure the resistance between relief valve control solenoid valve 2 terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value within the specified value? | 37 — 44 Ω | Go to step **5.** | Replace the relief valve control solenoid valve 2.<br><Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> |
| 5 | **CHECK POWER SUPPLY TO RELIEF VALVE CONTROL SOLENOID VALVE 2.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between wastegate control solenoid valve and engine ground.<br>***Connector & terminal***<br>***(B220) No. 1 (+) — Engine ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **6.** | Repair the open circuit in harness between main relay and relief valve control solenoid valve 2 connector. |

| Step | | Value | Yes | No |
|---|---|---|---|---|
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and relief valve control solenoid valve 2 and ECM connectors.<br>Are there poor contact in ECM and relief valve control solenoid valve 2 and ECM connectors? | There are poor contacts. | Repair the poor contact in ECM and relief valve control solenoid valve 2 and ECM connectors. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

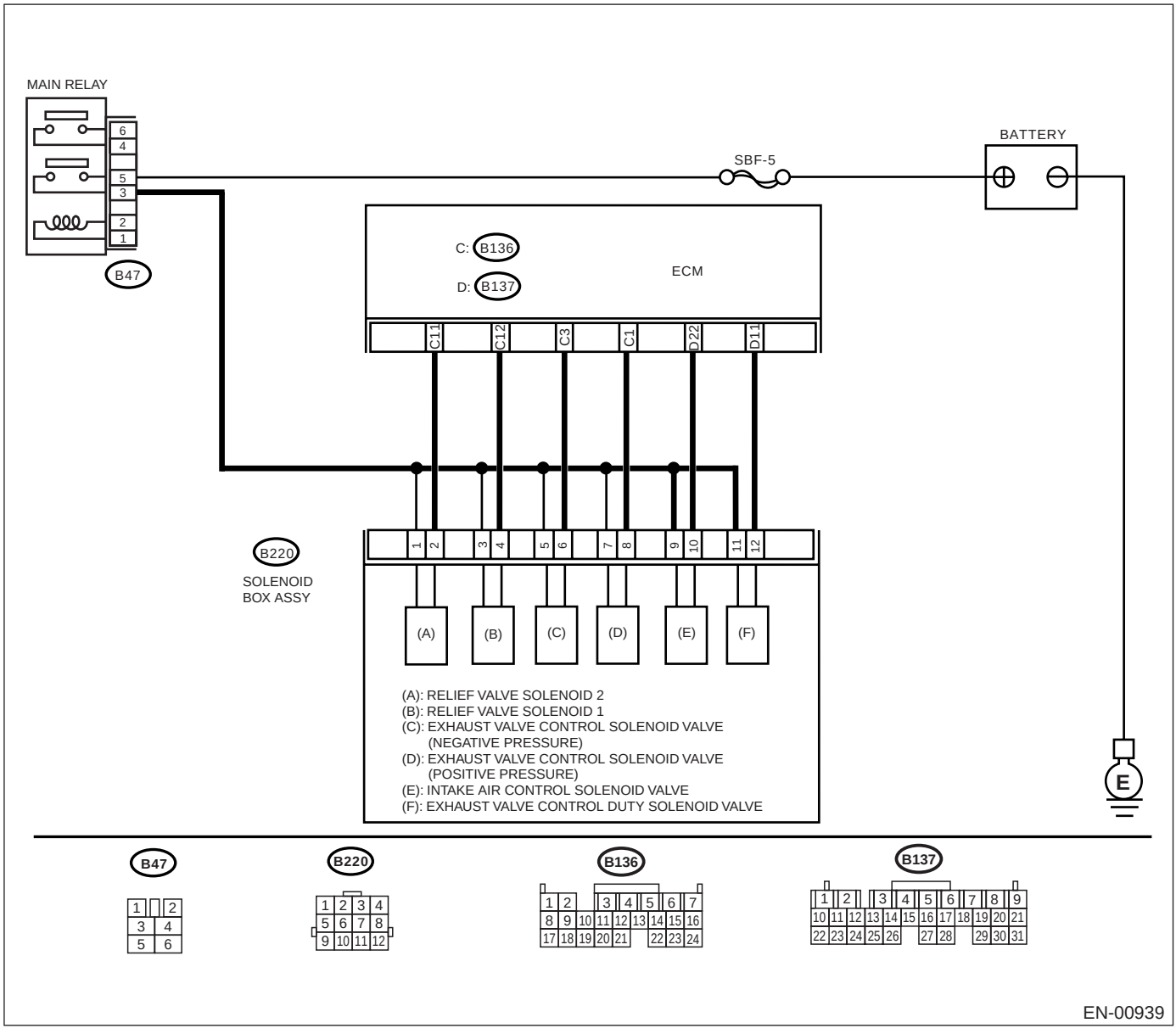
**MEMO:**

# BI: DTC P1250 — RELIEF VALVE CONTROL SOLENOID VALVE 2 CIRCUIT HIGH —

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

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



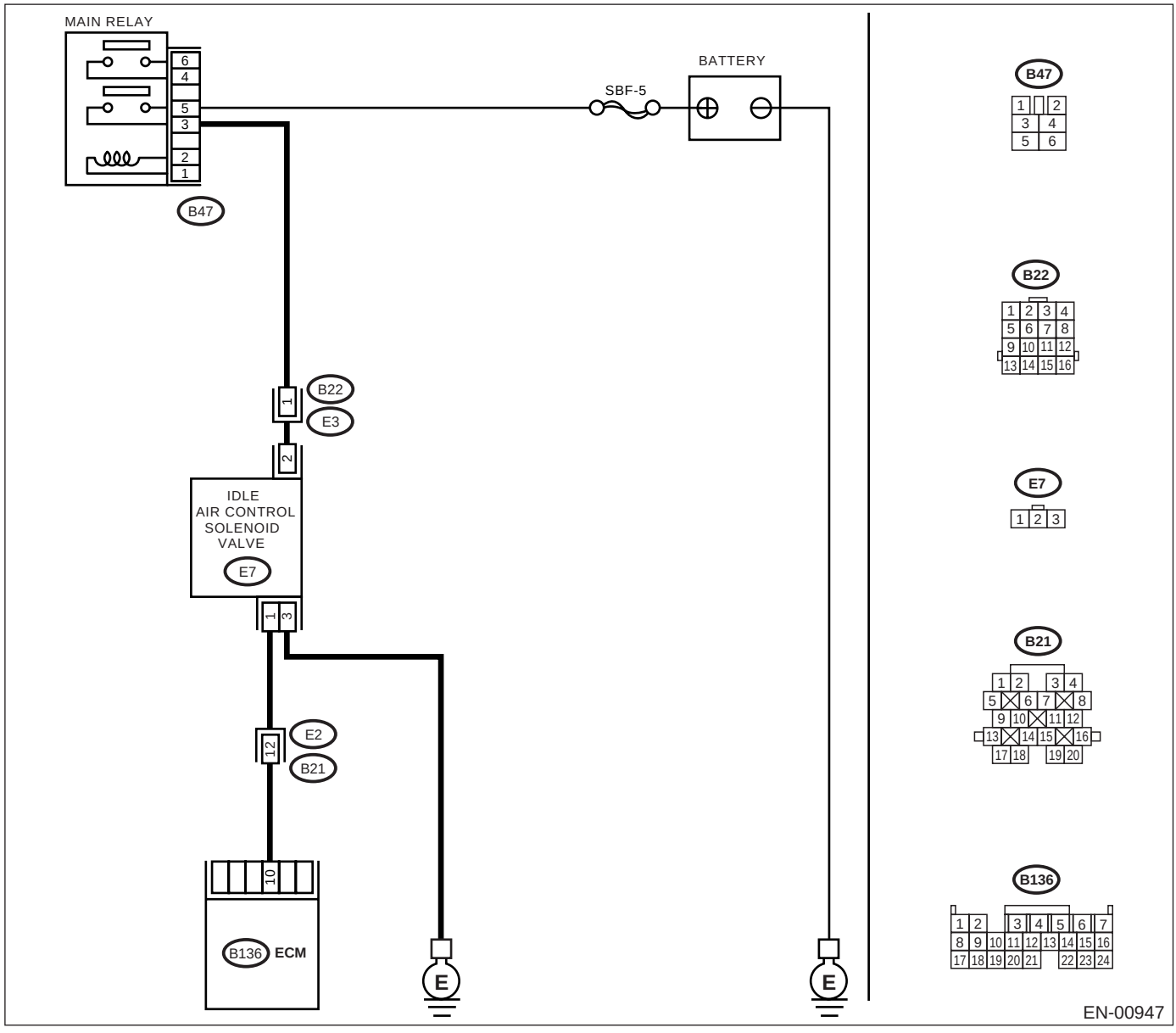
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL TO ECM.**<br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 11 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Go to step **3.** | Go to step **2.** |
| 2 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair the poor contact in ECM connector. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 3 | **CHECK HARNESS BETWEEN RELIEF VALVE CONTROL SOLENOID VALVE 2 AND ECM CONNECTOR.**<br>1) Turn the ignition switch to OFF.<br>2) Disconnect the connector from relief valve control solenoid valve 2.<br>3) Turn the ignition switch to ON.<br>4) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 11 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the battery short circuit in harness between ECM and relief valve control solenoid valve 2 connector. After repair, replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **4.** |
| 4 | **CHECK RELIEF VALVE CONTROL SOLENOID VALVE 2.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between relief valve control solenoid valve 2 terminals.<br>***Terminals***<br>***No. 1 — No. 2:***<br>Is the measured value less than the specified value? | 1 Ω | Replace the relief valve control solenoid valve 2. <Ref. to IN(H4DOSTC)-19, Solenoid Box Assembly.> and replace ECM <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Go to step **5.** |
| 5 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM and relief valve control solenoid valve 2 connectors.<br>Are there poor contact in ECM and relief valve control solenoid valve 2 connectors? | There are poor contacts. | Repair the poor contact in ECM and relief valve control solenoid valve 2 connectors. | Replace the ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |

## BJ:DTC P1507 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

- **TROUBLE SYMPTOM:**
  - Engine keeps running at higher revolution than specified idling revolution.
  - Fuel is cut according to fail-safe function.

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**



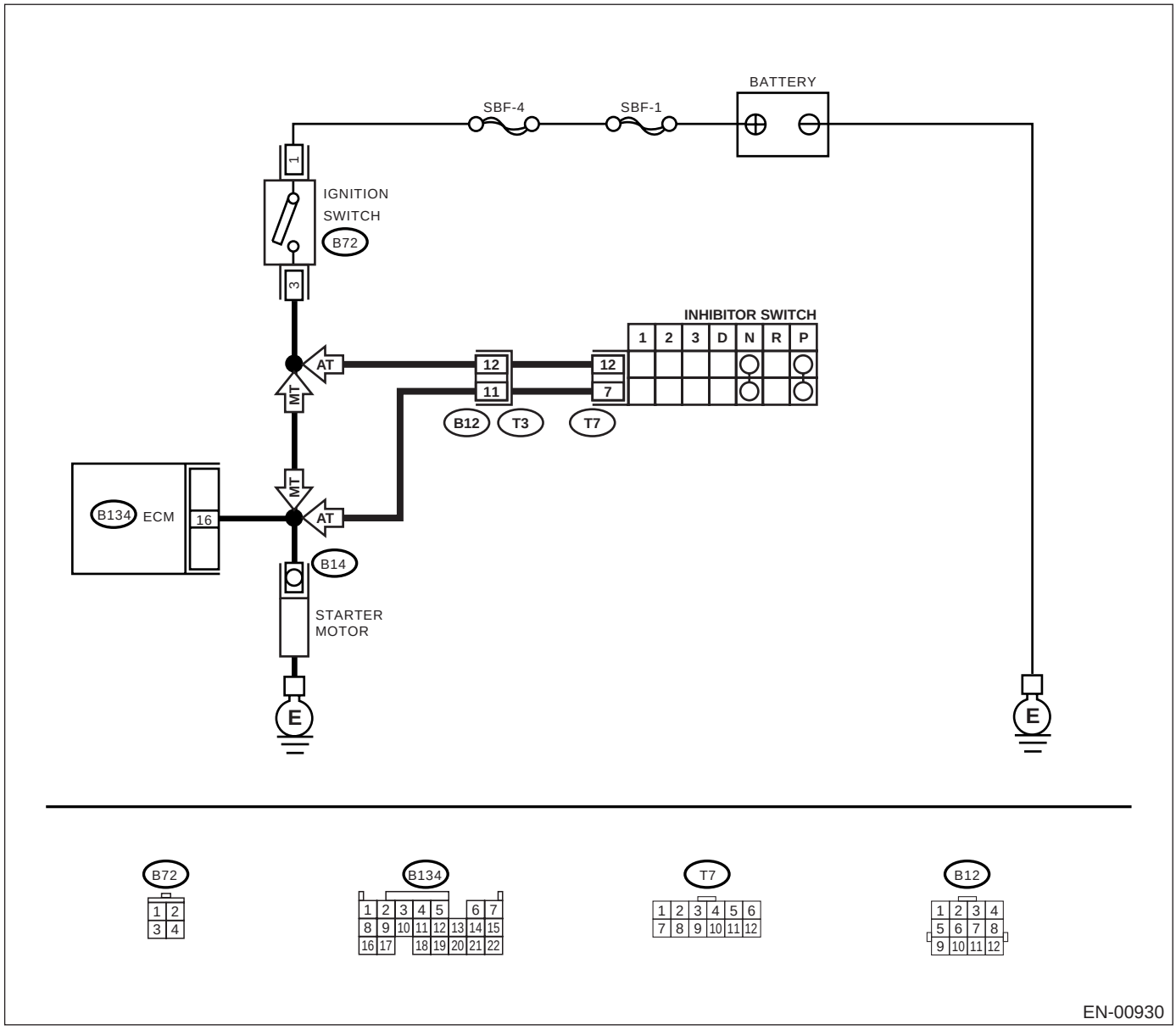
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK ANY OTHER DTC ON DISPLAY.**<br>Is any other DTC displayed? | DTC indicated. | Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOSTC)-62, List of Diagnostic Trouble Code (DTC).><br>NOTE:<br>In this case, it is not necessary to inspect DTC P0507. | Go to step **2.** |
| 2 | **CHECK AIR INTAKE SYSTEM.**<br>1) Turn the ignition switch to ON.<br>2) Start the engine, and idle it.<br>3) Check the following items:<br>•Loose installation of intake manifold, idle air control solenoid valve and throttle body<br>•Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket<br>•Disconnections of vacuum hoses<br>Is there a fault in the air intake system? | There is no problem. | Go to step **3.** | Repair the air suction and leaks. |
| 3 | **CHECK THROTTLE CABLE.**<br>Does the throttle cable have play for adjustment? | Cable has play correctly. | Go to step **4.** | Adjust the throttle cable. <Ref. to SP(H4SO)-10, Accelerator Control Cable.> |
| 4 | **CHECK AIR BY-PASS LINE.**<br>1) Turn the ignition switch to OFF.<br>2) Remove the idle air control solenoid valve from throttle body. <Ref. to FU(H4DOSTC)-35, Idle Air Control Solenoid Valve.><br>3) Confirm that there are no foreign particles in the by-pass air line.<br>Are foreign particles in the by-pass air line? | Foreign particles are in the by-pass air line. | Remove the foreign particles from by-pass air line. | Replace the idle air control solenoid valve. <Ref. to FU(H4DOSTC)-35, Idle Air Control Solenoid Valve.> |

## BK:DTC P1518 — STARTER SWITCH CIRCUIT LOW INPUT —

- **TROUBLE SYMPTOM:**
  - Failure of engine to start

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**

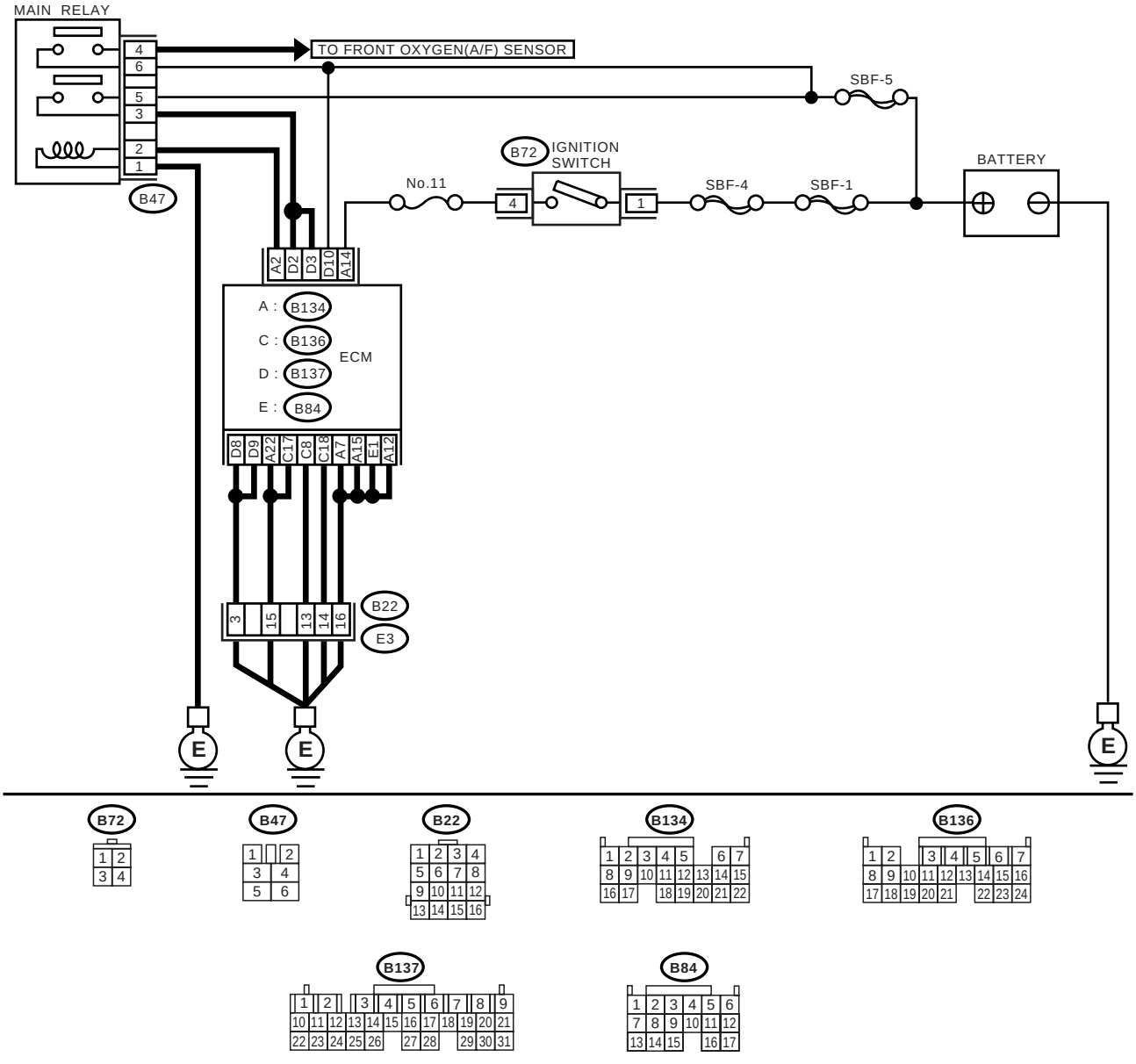


| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OPERATION OF STARTER MOTOR.**<br>Does the starter motor operate when ignition switch to “ST”? | Operates. | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open or ground short circuit in harness between ECM and starter motor connector.<br>• Poor contact in ECM connector. | Check the starter motor circuit. <Ref. to EN(H4DOSTC)-52, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.> |

## BL:DTC P1560 — BACK-UP VOLTAGE CIRCUIT MALFUNCTION —

**CAUTION:**
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, Inspection Mode.> .**

- **WIRING DIAGRAM:**




EN-00931

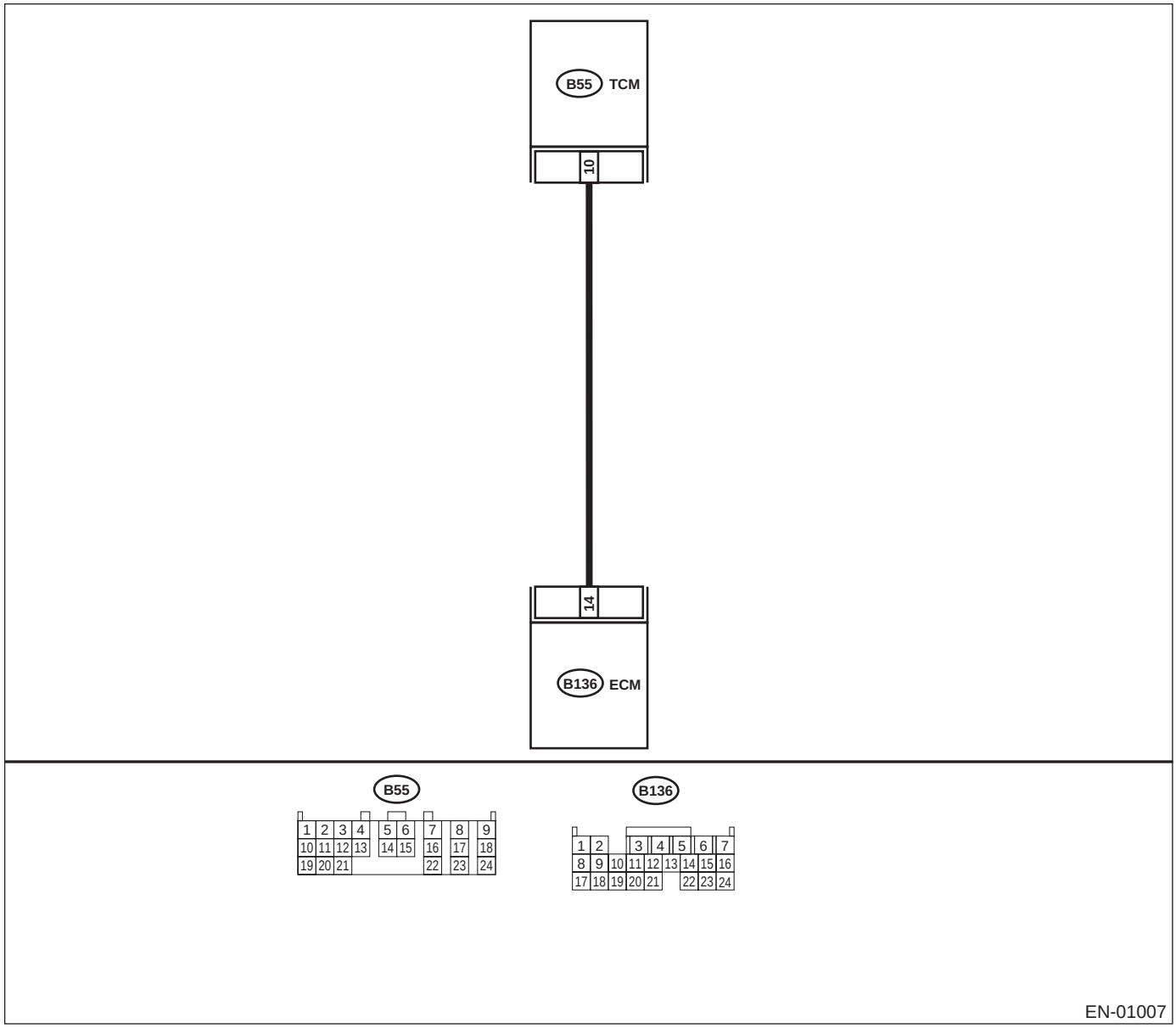
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Turn the ignition switch to OFF.<br>2) Measure the voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 10 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair the poor contact in ECM connector. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR.**<br>1) Disconnect the connector from ECM.<br>2) Measure the resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B137) No. 10 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair the ground short circuit in harness between ECM connector and battery terminal. |
| 3 | **CHECK FUSE SBF-5.**<br>Is the fuse blown? | Fuse is blown-out. | Replace the fuse. | Repair the harness and connector.<br>NOTE:<br>In this case, repair the following:<br>• Open circuit in harness between ECM and battery<br>• Poor contact in ECM connector<br>• Poor contact in battery terminal |

## BM:DTC P1698 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT MALFUNCTION (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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



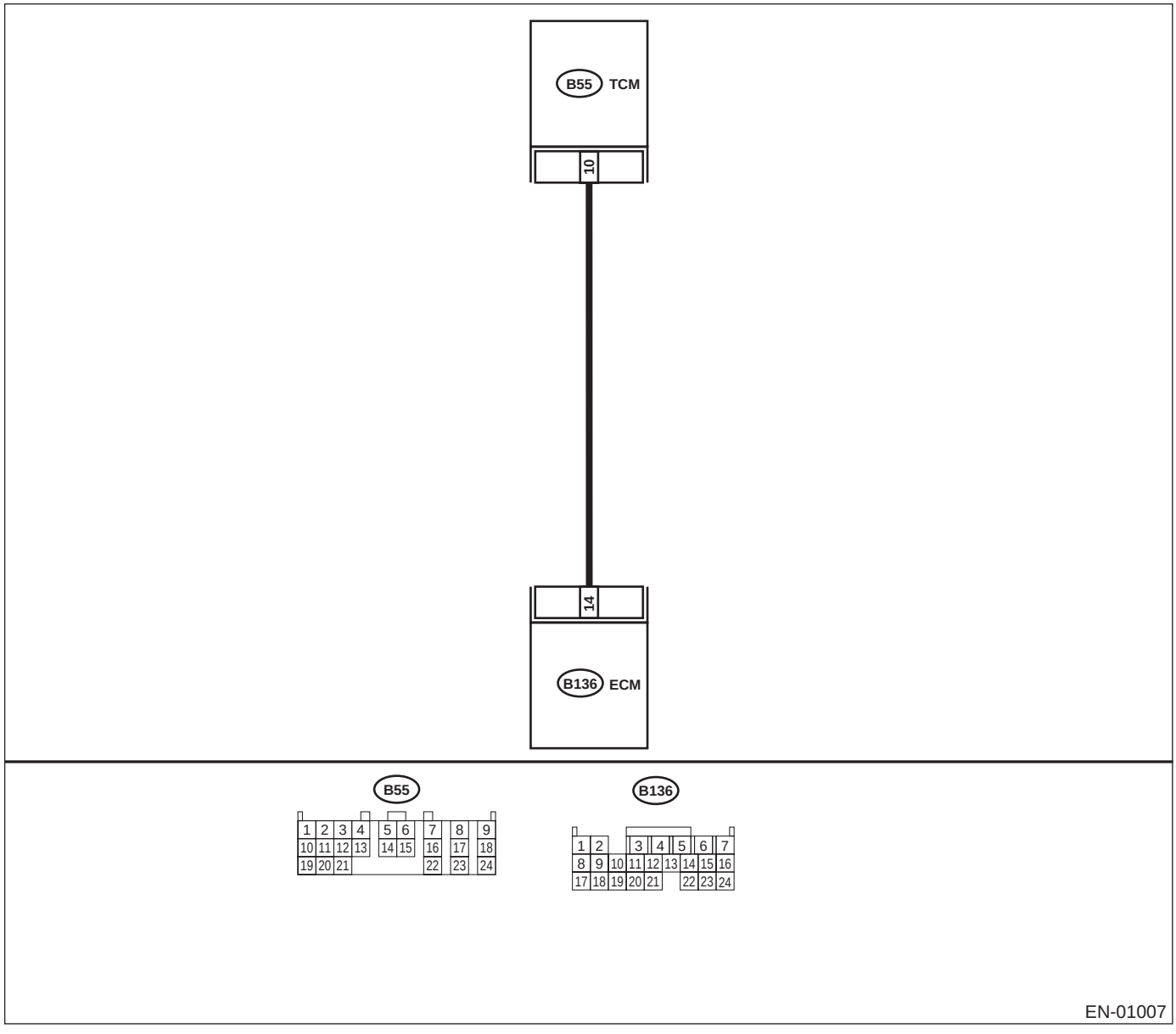
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Start engine, and warm-up the engine.<br>2) Turn ignition switch to OFF.<br>3) Turn ignition switch to ON.<br>4) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 14 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 3 V | Repair poor contact in ECM connector. | Go to step **2.** |
| 2 | **CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connectors from ECM and TCM.<br>3) Measure resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 14 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **3.** | Repair ground short circuit in harness between ECM and TCM connector. |
| 3 | **CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**<br>Measure resistance of harness between ECM and TCM connector.<br>***Connector & terminal***<br>***(B136) No. 14 — (B55) No. 10:***<br>Is the measured value less than the specified value? | 1 Ω | Repair poor contact in ECM or TCM connector. | Repair open circuit in harness between ECM and TCM connector. |

## BN:DTC P1699 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT MALFUNCTION (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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



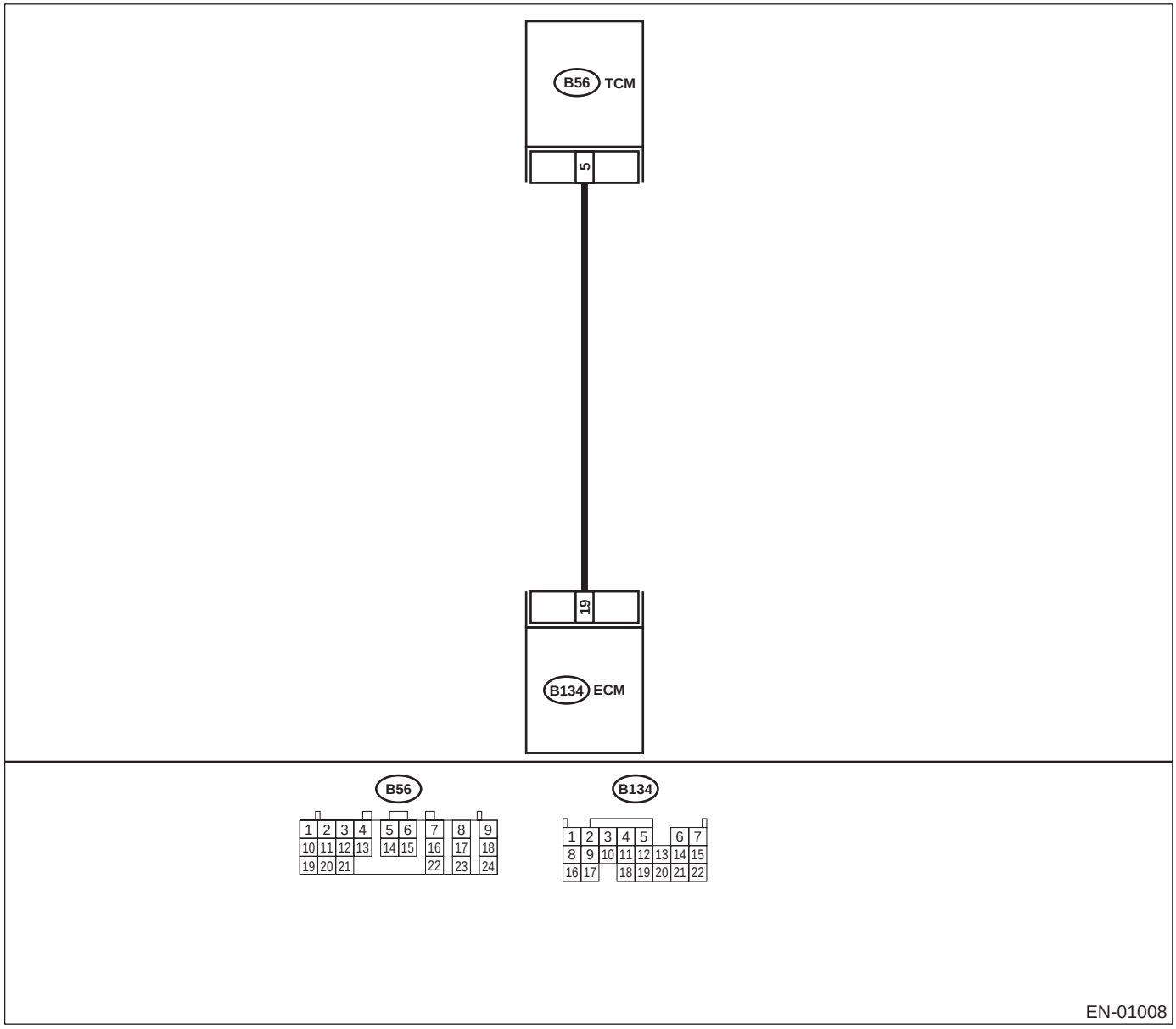
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK OUTPUT SIGNAL FROM ECM.**<br>1) Start engine, and warm-up the engine.<br>2) Turn ignition switch to OFF.<br>3) Disconnect connector from TCM.<br>4) Turn ignition switch to ON.<br>5) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 14 (+) — Chassis ground (–):***<br>Is the measured value less than the specified value? | 3 V | Go to step **2.** | Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> |
| 2 | **CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B136) No. 14 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value by shaking harness and connector of ECM while monitoring the value with voltage meter? | 10 V | Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM. <Ref. to FU(H4DOSTC)-40, Engine Control Module.> | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |

## BO:DTC P1711 — 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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



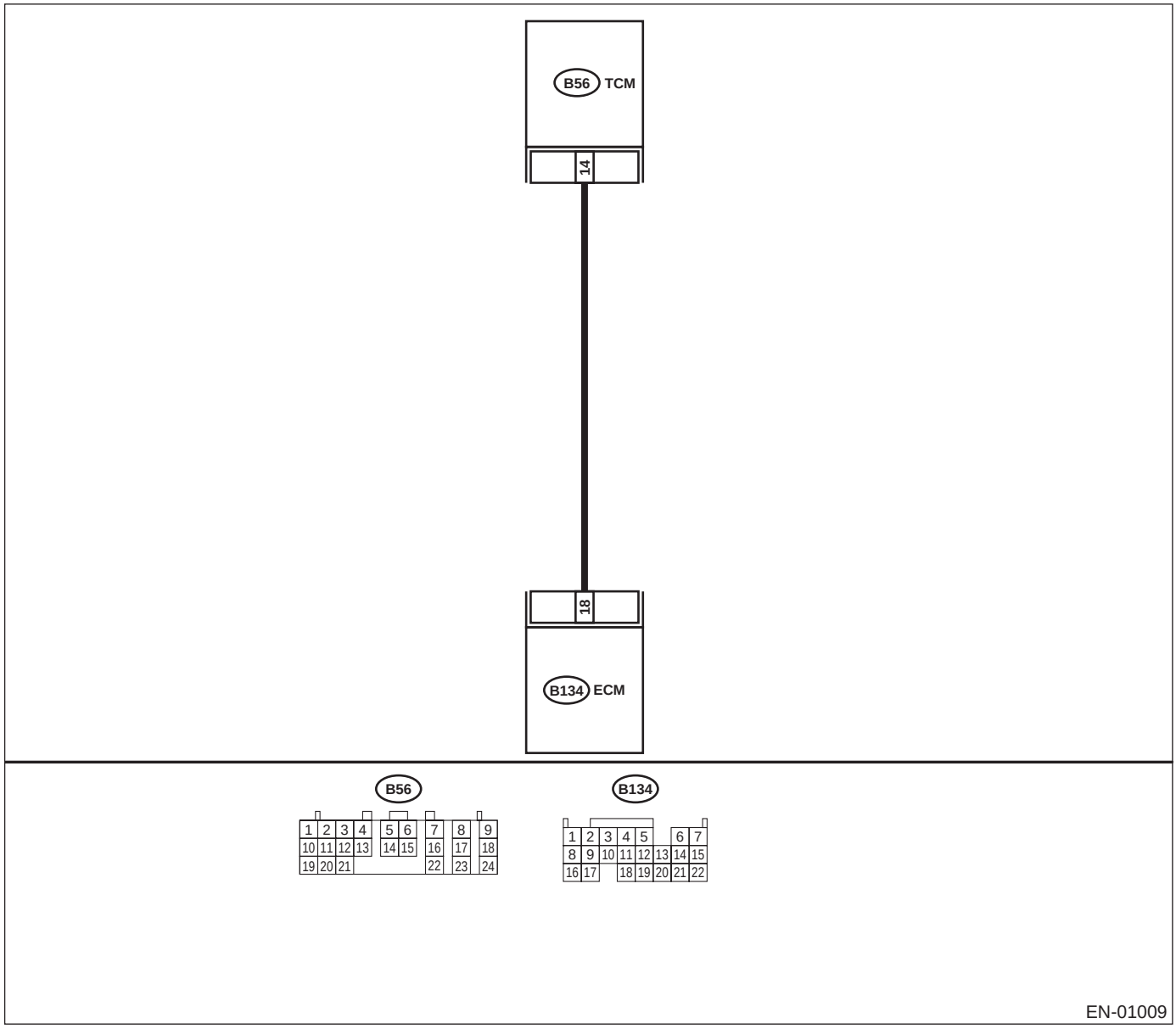
| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 19 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **2.** | Go to step **4.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 19 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair battery short circuit in harness between ECM and TCM connector. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 4 | **CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connectors from ECM and TCM.<br>3) Measure resistance of harness between ECM and TCM connector.<br>***Connector & terminal***<br>***(B134) No. 19 — (B56) No. 5:***<br>Is the measured value less than the specified value? | 1 Ω | Go to step **5.** | Repair open circuit in harness between ECM and TCM connector. |
| 5 | **CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**<br>Measure resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 19 — Chassis ground:***<br>Does the measured value exceed the specified value? | 1 MΩ | Go to step **6.** | Repair ground short circuit in harness between ECM and TCM connector. |
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in TCM connector.<br>Is there poor contact in TCM connector? | There is poor contact. | Repair poor contact in TCM connector. | Replace TCM. <Ref. to AT-76, Transmission Control Module (TCM).> |

## BP:DTC P1712 — 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 EN(H4DOSTC)-35, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOSTC)-33, OPERATION, Inspection Mode.> .**

- **WIRING DIAGRAM:**



| | Step | Value | Yes | No |
|---|---|---|---|---|
| 1 | **CHECK INPUT SIGNAL FOR ECM.**<br>1) Turn ignition switch to ON.<br>2) Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 18 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 4.5 V | Go to step **2.** | Go to step **4.** |
| 2 | **CHECK INPUT SIGNAL FOR ECM.**<br>Measure voltage between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 18 (+) — Chassis ground (–):***<br>Does the measured value exceed the specified value? | 10 V | Repair battery short circuit in harness between ECM and TCM connector. | Go to step **3.** |
| 3 | **CHECK POOR CONTACT.**<br>Check poor contact in ECM connector.<br>Is there poor contact in ECM connector? | There is poor contact. | Repair poor contact in ECM connector. | Contact SUBARU distributor service.<br>NOTE:<br>Inspection by DTM is required, because probable cause is deterioration of multiple parts. |
| 4 | **CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**<br>1) Turn ignition switch to OFF.<br>2) Disconnect connectors from ECM and TCM.<br>3) Measure resistance of harness between ECM and TCM connector.<br>***Connector & terminal***<br>***(B134) No. 18 — (B56) No. 14:*** | 1 Ω | Go to step **5.** | Repair open circuit in harness between ECM and TCM connector. |
| 5 | **CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.**<br>Measure resistance of harness between ECM and chassis ground.<br>***Connector & terminal***<br>***(B134) No. 18 — Chassis ground:***<br>Is the measured value less than the specified value? | 10 Ω | Go to step **6.** | Repair ground short circuit in harness between ECM and TCM connector. |
| 6 | **CHECK POOR CONTACT.**<br>Check poor contact in TCM connector.<br>Is there poor contact in TCM connector? | There is poor contact. | Repair poor contact in TCM connector. | Replace TCM. <Ref. to AT-76, Transmission Control Module (TCM).> |

# 18.General Diagnostic Table

## A: INSPECTION

### 1. ENGINE

NOTE:
Malfunction of parts other than those listed is also possible. <Ref. to ME(H4DOSTC)-90, Engine Trouble in General.>

| Symptom | Problem parts |
|---|---|
| 1. Engine does not start. (internal combustion does not occur.) | 1) ECM power supply<br>2) Engine ground terminal<br>3) Crankshaft position sensor<br>4) Camshaft position sensor<br>5) Fuel pump<br>6) Pressure regulator<br>7) Ignition coil & ignitor<br>8) Spark plug<br>9) Fuel injector |
| 2. Engine does not start. (internal combustion occurs.) | 1) ECM power supply<br>2) Spark plug<br>3) Engine coolant temperature sensor<br>4) Pressure regulator<br>5) Pressure sensor<br>6) Fuel pump<br>7) Fuel injector<br>8) Camshaft position sensor<br>9) Crankshaft position sensor<br>10) Idle air control solenoid valve |
| 3. Engine does not start. (engine stalls after internal combustion.) | 1) ECM power supply<br>2) Pressure sensor<br>3) Engine coolant temperature sensor<br>4) Spark plug<br>5) Ignition coil<br>6) Fuel pump<br>7) Pressure regulator<br>8) Fuel injector<br>9) Idle air control solenoid valve |
| 4. Engine stalls during idling. | 1) Idle air control solenoid valve<br>2) Pressure sensor<br>3) Mass air flow and intake temperature sensor<br>4) Ignition parts (*1)<br>5) Engine coolant temperature sensor (*2)<br>6) Crankshaft position sensor (*3)<br>7) Camshaft position sensor (*3)<br>8) Fuel injection parts (*4) |
| 5. Rough idling | 1) Idle air control solenoid valve<br>2) Pressure sensor<br>3) Mass air flow and intake temperature sensor<br>4) Engine coolant temperature sensor (*2)<br>5) Ignition parts (*1)<br>6) Air intake system (*5)<br>7) Fuel injection parts (*4)<br>8) Throttle position sensor<br>9) Crankshaft position sensor (*3)<br>10) Camshaft position sensor (*3)<br>11) Oxygen sensor<br>12) Fuel pump and fuel pump relay |

| Symptom | Problem parts |
|---|---|
| 6. Engine does not return to idle. | 1) Idle air control solenoid valve<br>2) Engine coolant temperature sensor<br>3) Accelerator cable (*6)<br>4) Throttle position sensor<br>5) Pressure sensor<br>6) Mass air flow sensor |
| 7. Poor acceleration | 1) Pressure sensor<br>2) Mass air flow and intake temperature sensor<br>3) Throttle position sensor<br>4) Fuel injection parts (*4)<br>5) Fuel pump and fuel pump relay<br>6) Engine coolant temperature sensor (*2)<br>7) Crankshaft position sensor (*3)<br>8) Camshaft position sensor (*3)<br>9) A/C switch and A/C cut relay<br>10) Engine torque control signal circuit<br>11) Ignition parts (*1) |
| 8. Engine stalls or engine sags or hesitates at acceleration. | 1) Pressure sensor<br>2) Mass air flow and intake temperature sensor<br>3) Engine coolant temperature sensor (*2)<br>4) Crankshaft position sensor (*3)<br>5) Camshaft position sensor (*3)<br>6) Purge control solenoid valve<br>7) Fuel injection parts (*4)<br>8) Throttle position sensor<br>9) Fuel pump and fuel pump relay |
| 9. Surge | 1) Pressure sensor<br>2) Mass air flow and intake temperature sensor<br>3) Engine coolant temperature sensor (*2)<br>4) Crankshaft position sensor (*3)<br>5) Camshaft position sensor (*3)<br>6) Fuel injection parts (*4)<br>7) Throttle position sensor<br>8) Fuel pump and fuel pump relay |
| 10. Spark knock | 1) Pressure sensor<br>2) Mass air flow and intake temperature sensor<br>3) Engine coolant temperature sensor<br>4) Knock sensor<br>5) Fuel injection parts (*4)<br>6) Fuel pump and fuel pump relay |
| 11. After burning in exhaust system | 1) Pressure sensor<br>2) Mass air flow and intake temperature sensor<br>3) Engine coolant temperature sensor (*2)<br>4) Fuel injection parts (*4)<br>5) Fuel pump and fuel pump relay |

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

**MEMO:**