

ENGINE SECTION 1

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.

FUEL INJECTION (FUEL SYSTEMS)	FU(H4SO 2.0)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H4SO 2.0)
INTAKE (INDUCTION)	IN(H4SO 2.0)
MECHANICAL	ME(H4SO 2.0)
EXHAUST	EX(H4SO 2.0)
COOLING	CO(H4SO 2.0)
LUBRICATION	LU(H4SO 2.0)
SPEED CONTROL SYSTEMS	SP(H4SO 2.0)
IGNITION	IG(H4SO 2.0)
STARTING/CHARGING SYSTEMS	SC(H4SO 2.0)
ENGINE (DIAGNOSTICS)	EN(H4SO 2.0) (diag)
FUEL INJECTION (FUEL SYSTEMS)	FU(H4SO 2.5)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H4SO 2.5)
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ENGINE SECTION 1

LUBRICATION

LU(H4SO 2.5)

SPEED CONTROL SYSTEMS

SP(H4SO 2.5)

IGNITION

IG(H4SO 2.5)

STARTING/CHARGING SYSTEMS

SC(H4SO 2.5)

ENGINE (DIAGNOSTICS)

EN(H4SO 2.5)
(diag)

ENGINE (DIAGNOSTICS)

EN(H4SO 2.0)(diag)

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Basic Diagnostic Procedure

ENGINE (DIAGNOSTICS)

1. Basic Diagnostic Procedure

A: PROCEDURE

1. ENGINE

Step	Check	Yes	No
1 CHECK ENGINE START FAILURE. 1) Ask the customer when and how the trouble occurred using the interview check list. <Ref. to EN(H4SO 2.0)(diag)-3, CHECK, Check List for Interview.> 2) Start the engine.	Does the engine start?	Go to step 2.	Inspection using "Diagnostics for Engine Starting Failure". <Ref. to EN(H4SO 2.0)(diag)-51, Diagnostics for Engine Starting Failure.>
2 CHECK ILLUMINATION OF MALFUNCTION INDICATOR LIGHT.	Does the malfunction indicator light illuminate?	Go to step 3.	Inspection using "General Diagnostic Table". <Ref. to EN(H4SO 2.0)(diag)-224, INSPECTION, General Diagnostic Table.>
3 CHECK INDICATION OF DTC ON DISPLAY. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON, and the Subaru Select Monitor switch to ON. 4) Read DTC on Subaru Select Monitor.	Is DTC displayed on the Subaru Select Monitor?	Record the DTC. Repair the trouble cause. <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> Go to step 4.	Repair the related parts. NOTE: If DTC is not shown on display although the engine warning light illuminates, perform the diagnostics of malfunction indicator light circuit or combination meter. <Ref. to EN(H4SO 2.0)(diag)-41, Malfunction Indicator Light.>
4 PERFORM DIAGNOSIS. 1) Perform the clear memory mode. <Ref. to EN(H4SO 2.0)(diag)-38, Clear Memory Mode.> 2) Perform the inspection mode. <Ref. to EN(H4SO 2.0)(diag)-32, Inspection Mode.>	Is DTC displayed on the Subaru Select Monitor?	Check on "Diagnostic Chart with Diagnostic Trouble Code (DTC)" <Ref. to EN(H4SO 2.0)(diag)-71, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Finish the diagnosis.

Check List for Interview

ENGINE (DIAGNOSTICS)

2. Check List for Interview

A: CHECK

1. CHECK LIST No. 1

Check the following items when problem has occurred.

NOTE:

Use copies of this page for interviewing customers.

Customer's name		Engine No.	
Date of sale		Fuel brand	
Date of repair		Odometer reading	km
V.I.N.			miles
Weather	<input type="checkbox"/> Fine <input type="checkbox"/> Cloudy <input type="checkbox"/> Rainy <input type="checkbox"/> Snowy <input type="checkbox"/> Various/Others:		
Ambient air temperature	°C (°F)		
	<input type="checkbox"/> Hot <input type="checkbox"/> Warm <input type="checkbox"/> Cool <input type="checkbox"/> Cold		
Place	<input type="checkbox"/> Highway <input type="checkbox"/> Suburbs <input type="checkbox"/> Inner city <input type="checkbox"/> Uphill <input type="checkbox"/> Downhill <input type="checkbox"/> Rough road <input type="checkbox"/> Others:		
Engine temperature	<input type="checkbox"/> Cold <input type="checkbox"/> Warming-up <input type="checkbox"/> After warming-up <input type="checkbox"/> Any temperature <input type="checkbox"/> Others:		
Engine speed	rpm		
Vehicle speed	km/h (MPH)		
Driving conditions	<input type="checkbox"/> Not affected <input type="checkbox"/> At starting <input type="checkbox"/> While idling <input type="checkbox"/> At racing <input type="checkbox"/> While accelerating <input type="checkbox"/> While cruising <input type="checkbox"/> While decelerating <input type="checkbox"/> While turning (RH/LH)		
Headlight	<input type="checkbox"/> ON / <input type="checkbox"/> OFF	Rear defogger	<input type="checkbox"/> ON / <input type="checkbox"/> OFF
Blower	<input type="checkbox"/> ON / <input type="checkbox"/> OFF	Audio	<input type="checkbox"/> ON / <input type="checkbox"/> OFF
A/C compressor	<input type="checkbox"/> ON / <input type="checkbox"/> OFF	Car phone	<input type="checkbox"/> ON / <input type="checkbox"/> OFF
Radiator fan	<input type="checkbox"/> ON / <input type="checkbox"/> OFF		
Front wiper	<input type="checkbox"/> ON / <input type="checkbox"/> OFF		
Rear wiper	<input type="checkbox"/> ON / <input type="checkbox"/> OFF		

Check List for Interview

ENGINE (DIAGNOSTICS)

2. CHECK LIST No. 2

Check the following items about the vehicle's state when malfunction indicator light turns on.

NOTE:

Use copies of this page for interviewing customers.

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

3. General Description

A: CAUTION

1) Airbag system wiring harness is routed near the ECM, main relay and fuel pump relay.

CAUTION:

- All airbag system wiring harnesses and connectors are colored yellow. Do not use electrical test equipment on these circuits.
- Be careful not to damage the airbag system wiring harness when servicing the ECM, 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 parts will be damaged.

3) Do not disconnect the battery terminals while the engine is running.

A large counter electromotive force will be generated in the generator, 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 the ignition switch to OFF. Perform the inspection mode after connecting the connectors.

5) Poor contact has been identified as a primary cause of this problem. Measure the voltage or resistance of individual sensor or all electrical control modules using 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) Remove the ECM from the located position after disconnecting two cables on battery.

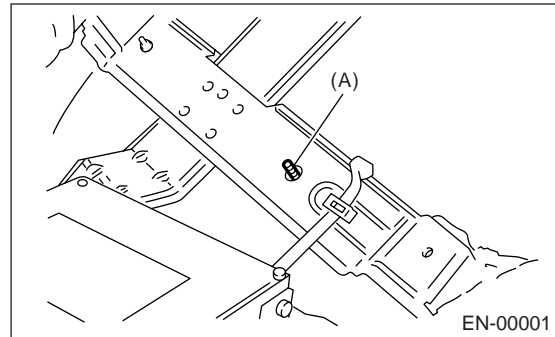
Otherwise, the ECM may be damaged.

CAUTION:

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

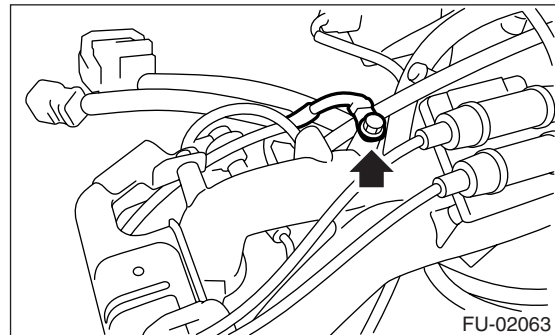
7) Connectors of each sensor in the engine compartment and the harness connectors on the engine side and body side are all designed to be waterproof. However, it is still necessary to take care not to allow water to get into the connectors when washing the vehicle, or when servicing the vehicle on a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

8) Use ECM mounting stud bolts as the grounding point to body when measuring voltage and resistance inside the passenger compartment.

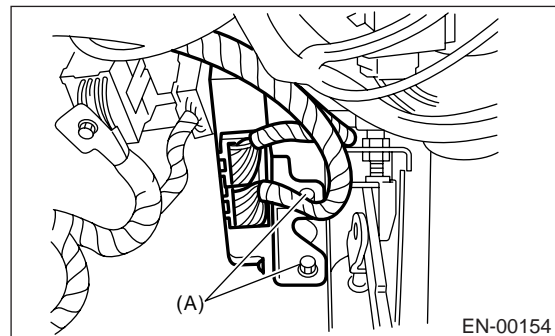


(A) Stud bolt

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



10) Use TCM mounting stud bolts as the grounding point to body when measuring voltage and resistance inside the passenger compartment.



(A) Stud bolt

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

12) 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 instrument panel lower trim panel.)

General Description

ENGINE (DIAGNOSTICS)

- 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 mentioned above.
- Incorrect installation of the radio may affect the operation of ECM.

13) 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.

14) 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.

15) 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.

16) For AT models, do not hold the stall for more than five seconds. (from closed throttle, fully open throttle to stall engine speed.)

17) On the model with ABS, when performing driving test in jacked-up or lifted-up position, sometimes the warning light may be lit, but this is not a malfunction of the system. The reason for this is the speed difference between the front and rear wheels. After diagnosis of engine control system, perform the ABS memory clear procedure of self-diagnosis function.

B: INSPECTION

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

1. BATTERY

1) Measure battery voltage and specific gravity of electrolyte.

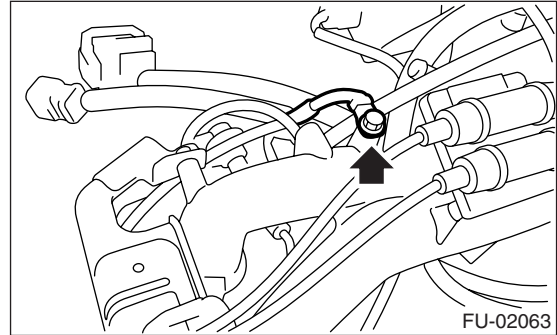
Standard voltage: 12 V

Specific gravity: Above 1.260

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

2. ENGINE GROUND

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



3. SELF-DIAGNOSIS FUNCTION

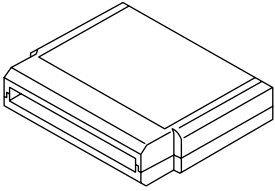

When detecting a malfunction by self-diagnosis function on ECM, malfunction indicator light illuminates and malfunction occurrence is displayed.

Calling the self-diagnosis result is performed by the Subaru Select Monitor.

General Description

ENGINE (DIAGNOSTICS)

C: PREPARATION TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST24082AA230	24082AA230	CARTRIDGE	Troubleshooting for electrical system.
 ST22771AA030	22771AA030	SUBARU SELECT MONITOR KIT	Troubleshooting for electrical system. <ul style="list-style-type: none">• English: 22771AA030 (Without printer)• German: 22771AA070 (Without printer)• French: 22771AA080 (Without printer)• Spanish: 22771AA090 (Without printer)

Electrical Component Location

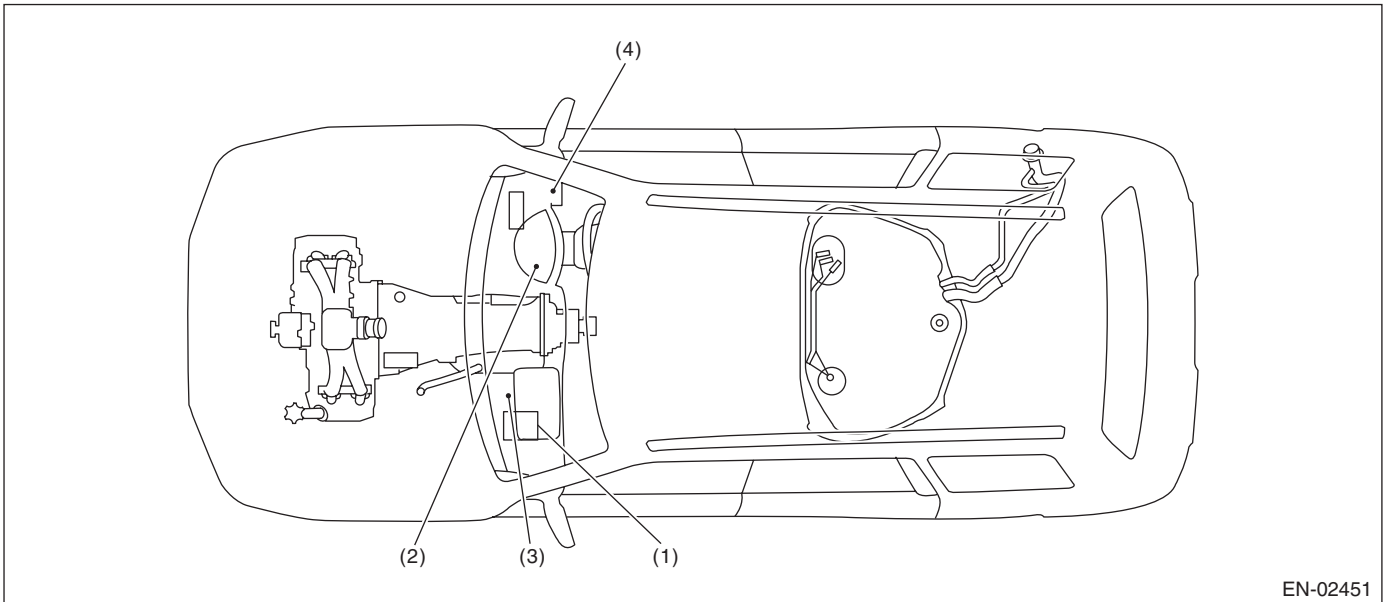
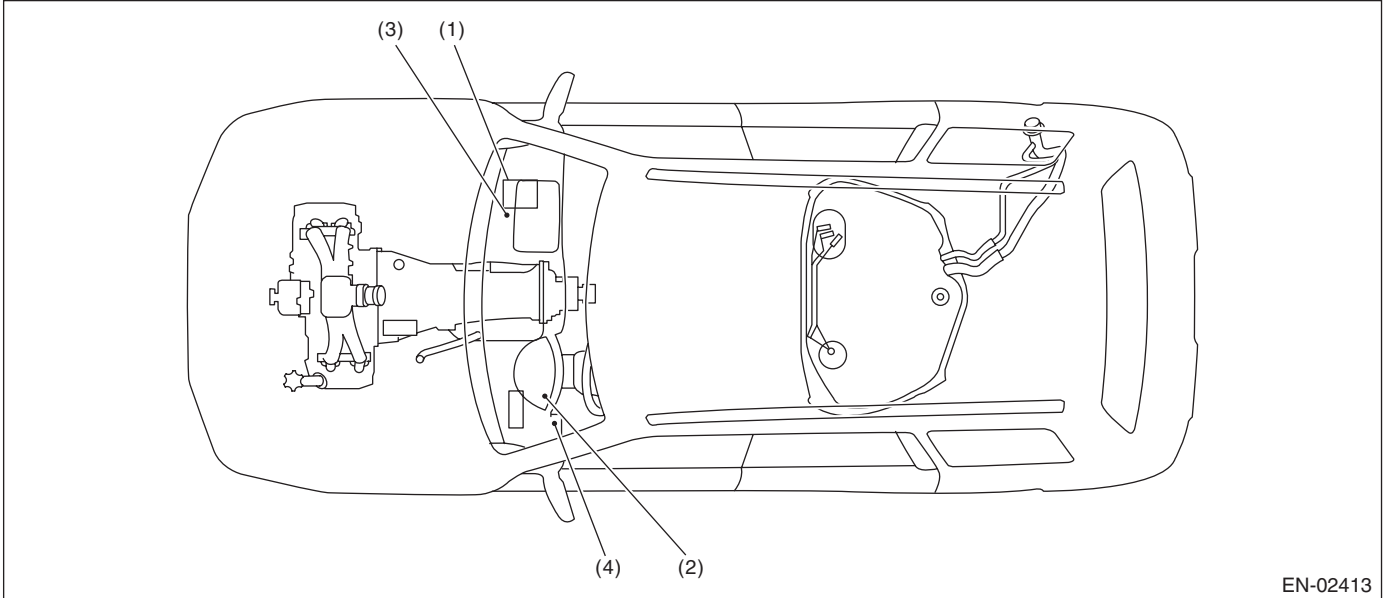
ENGINE (DIAGNOSTICS)

4. Electrical Component Location

A: LOCATION

1. ENGINE

- Control module



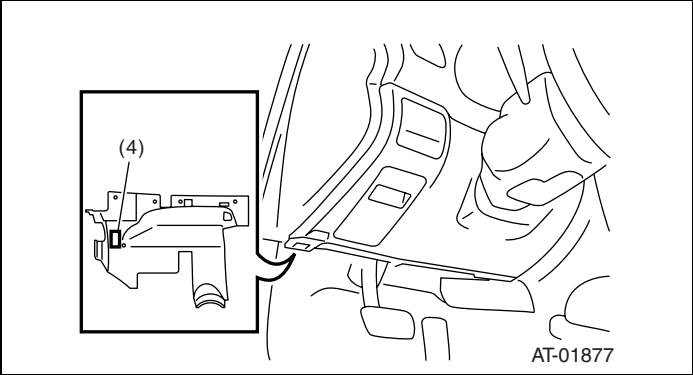
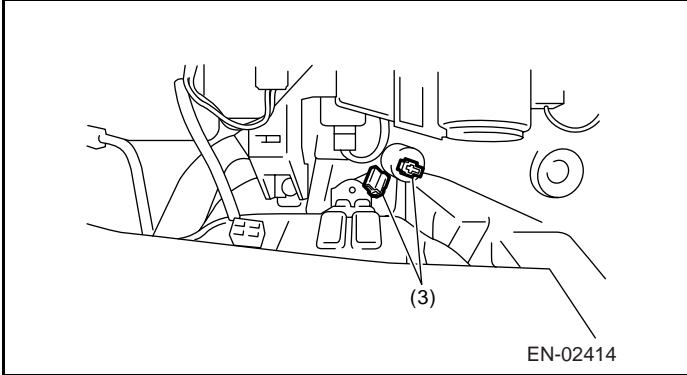
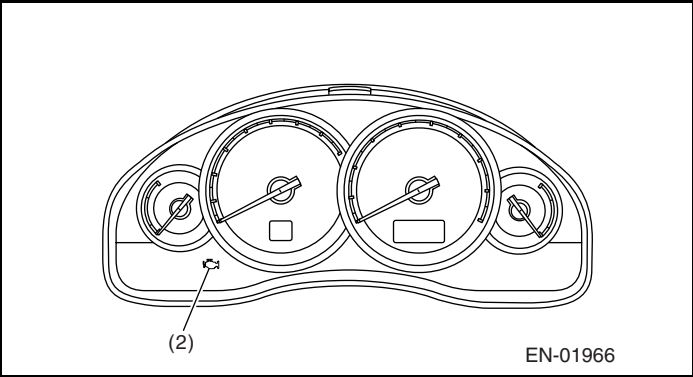
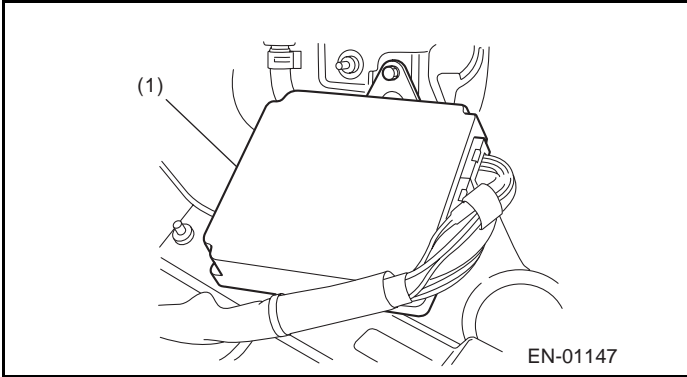
(1) Engine control module (ECM)
(2) Malfunction indicator light

(3) Test mode connector

(4) Data link connector

Electrical Component Location

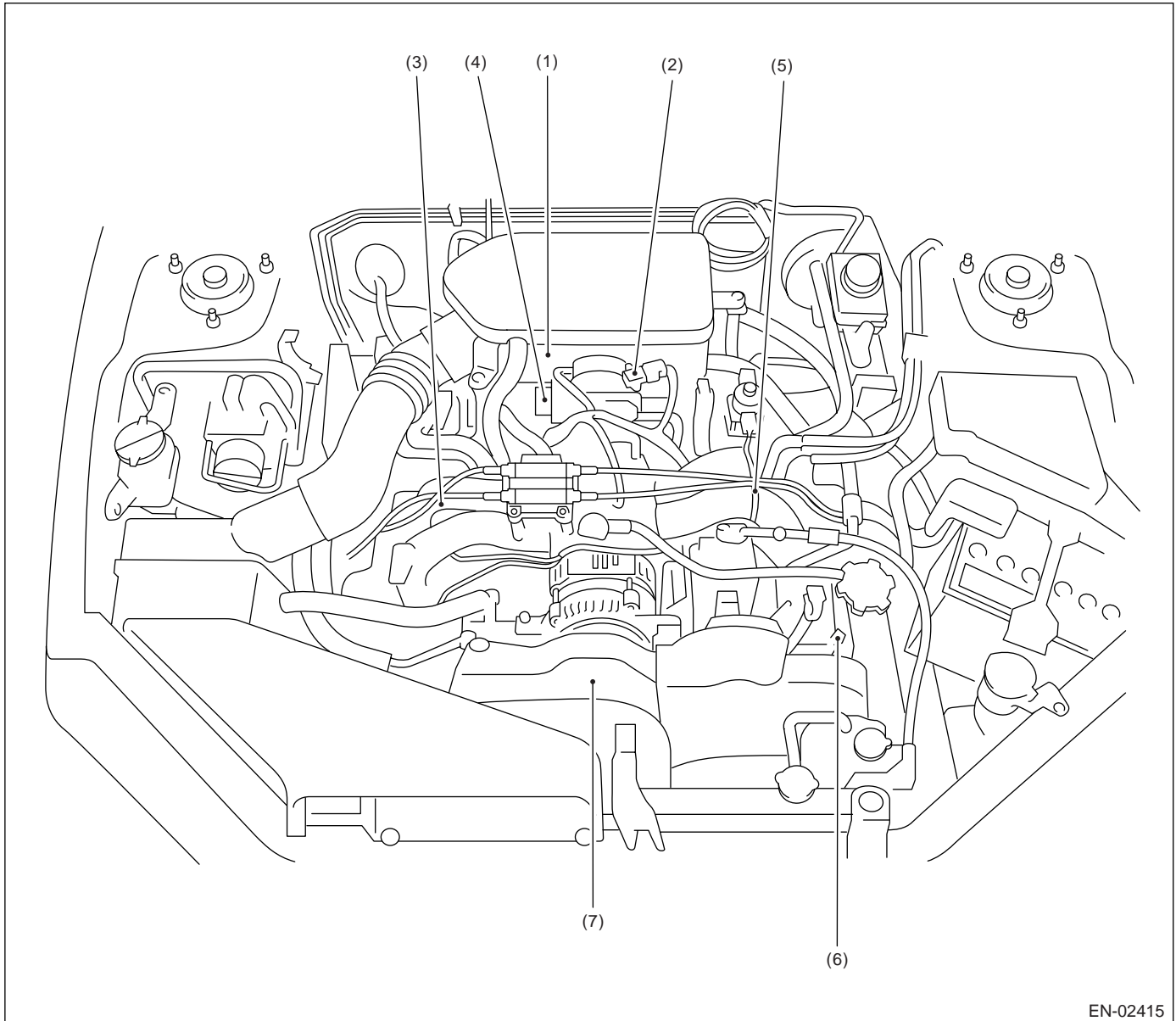
ENGINE (DIAGNOSTICS)



Electrical Component Location

ENGINE (DIAGNOSTICS)

- Sensor

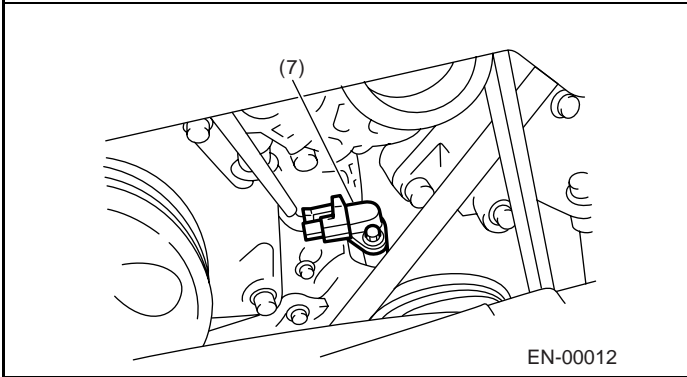
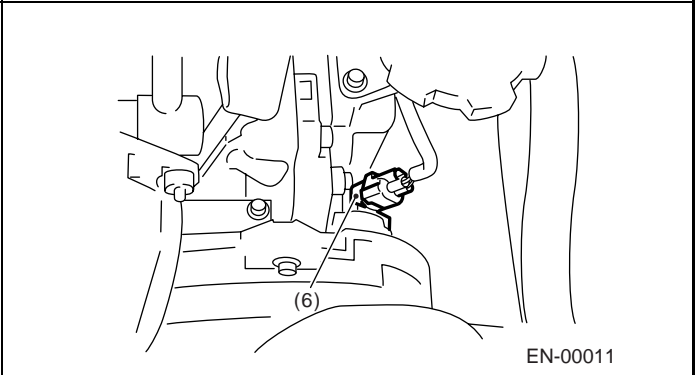
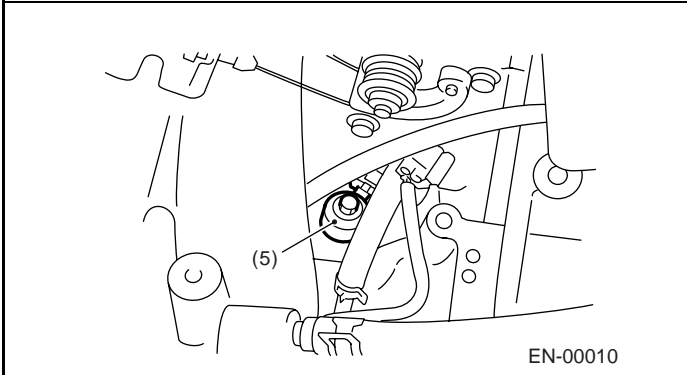
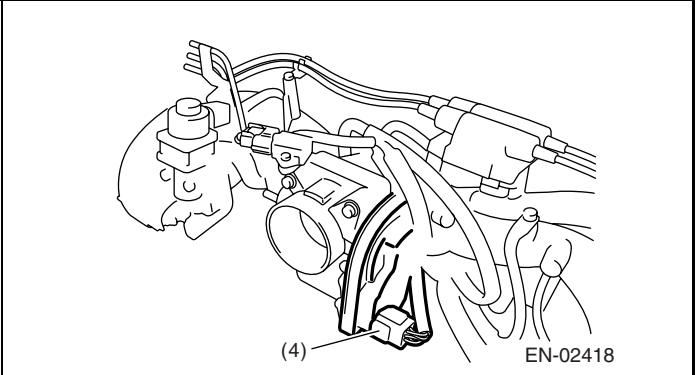
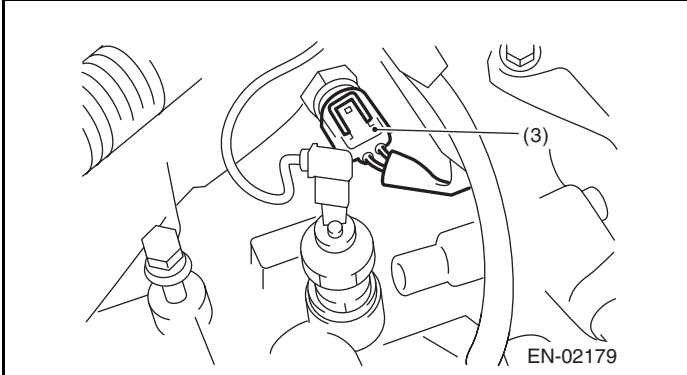
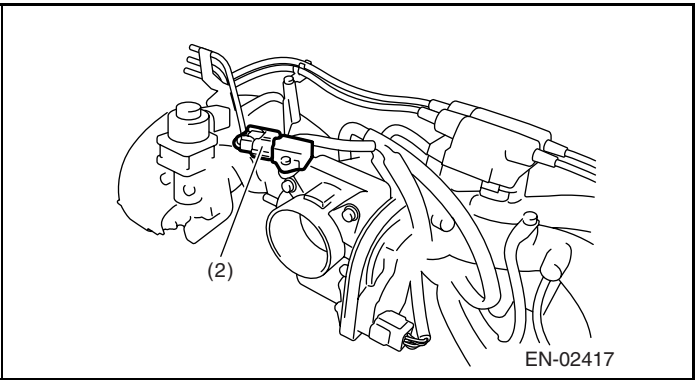
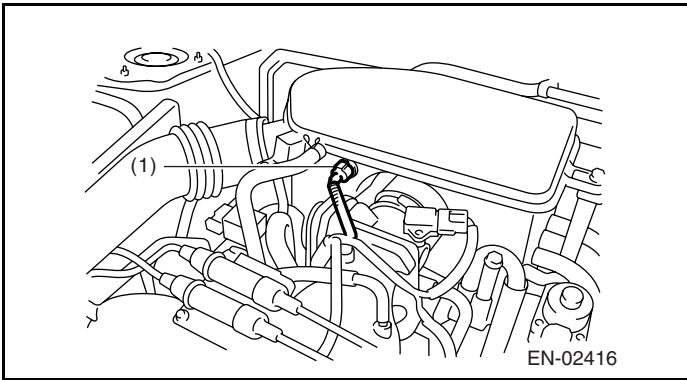


EN-02415

- | | | |
|---------------------------------------|---------------------------------|--------------------------------|
| (1) Intake air temperature sensor | (4) Electronic throttle control | (6) Camshaft position sensor |
| (2) Manifold absolute pressure sensor | (5) Knock sensor | (7) Crankshaft position sensor |
| (3) Engine coolant temperature sensor | | |

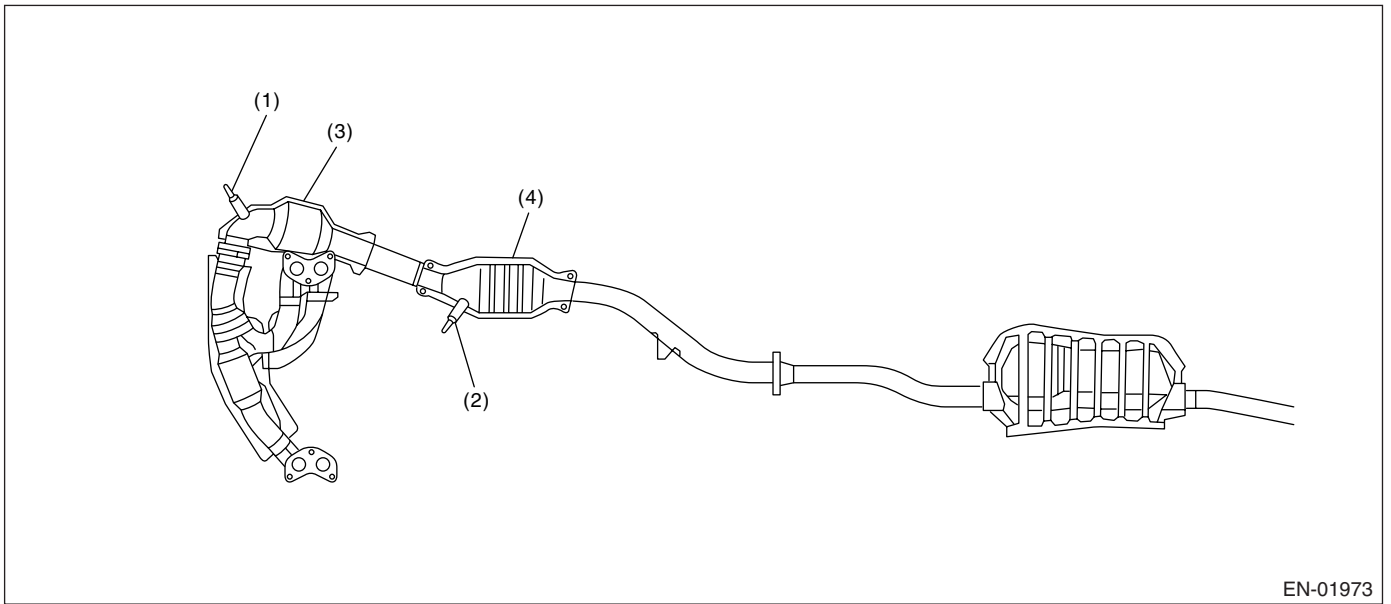
Electrical Component Location

ENGINE (DIAGNOSTICS)



Electrical Component Location

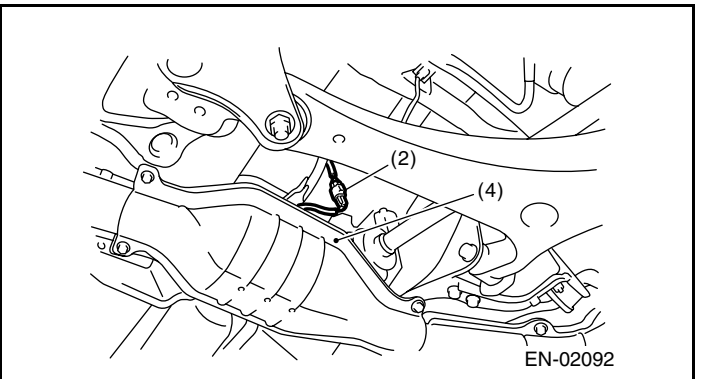
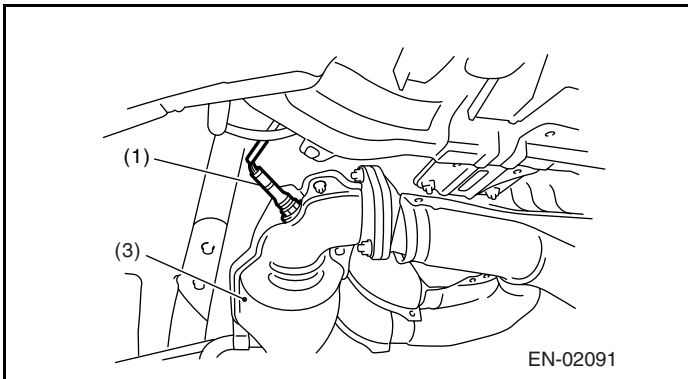
ENGINE (DIAGNOSTICS)



(1) Front oxygen (A/F) sensor
(2) Rear oxygen sensor

(3) Front catalytic converter

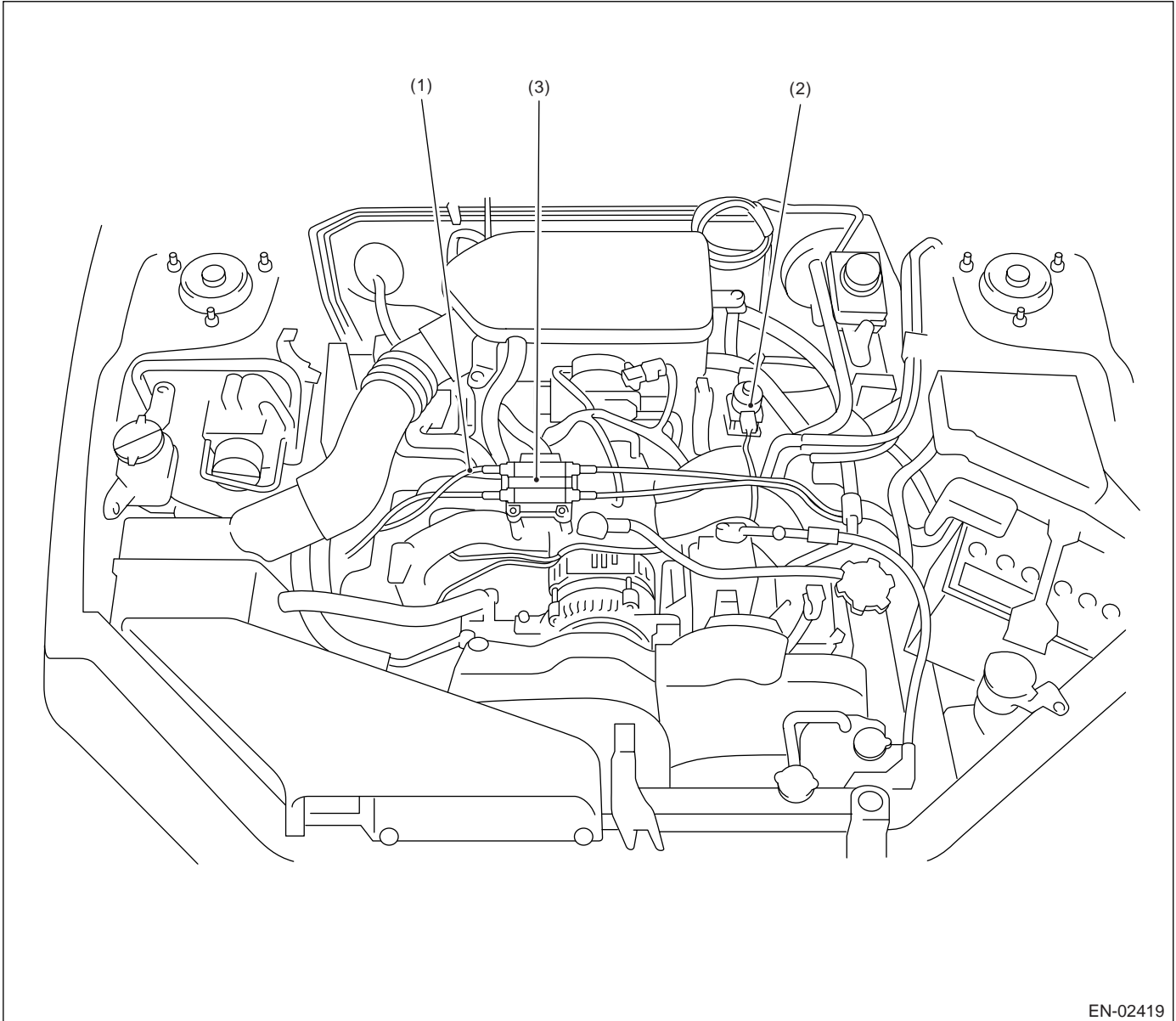
(4) Rear catalytic converter



Electrical Component Location

ENGINE (DIAGNOSTICS)

- Solenoid valve, actuator, emission control system parts and ignition system parts



EN-02419

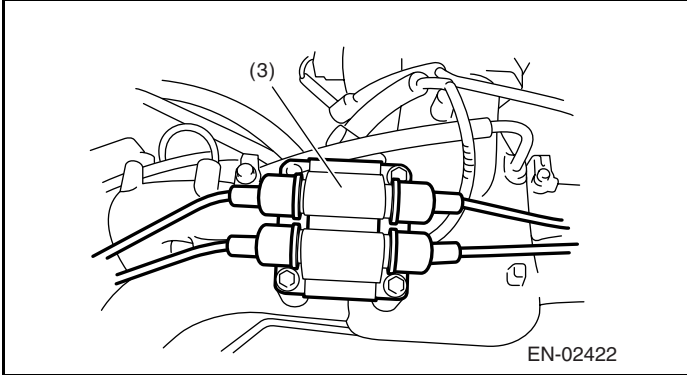
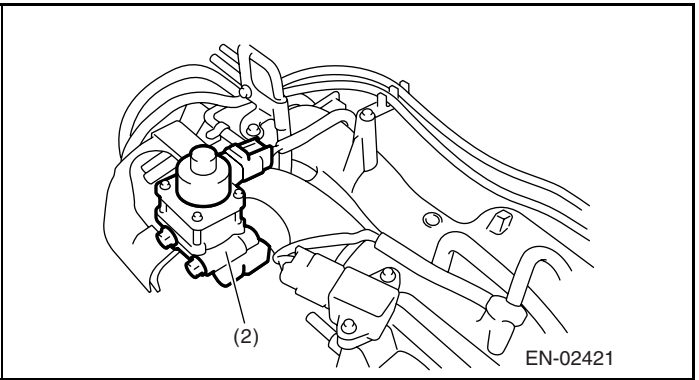
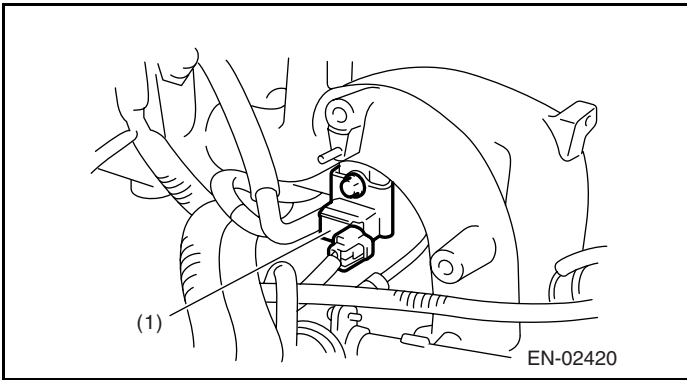
(1) Purge control solenoid valve

(2) EGR Valve (EC, EK, K4 model)

(3) Ignition coil & ignitor ASSY

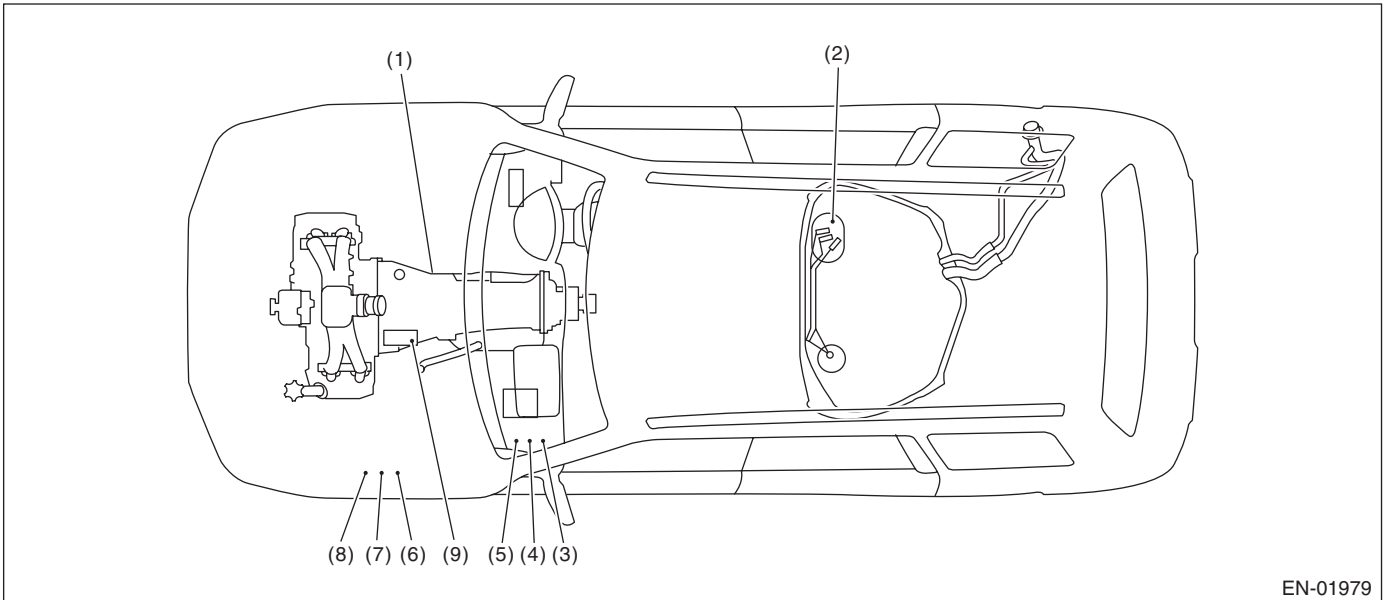
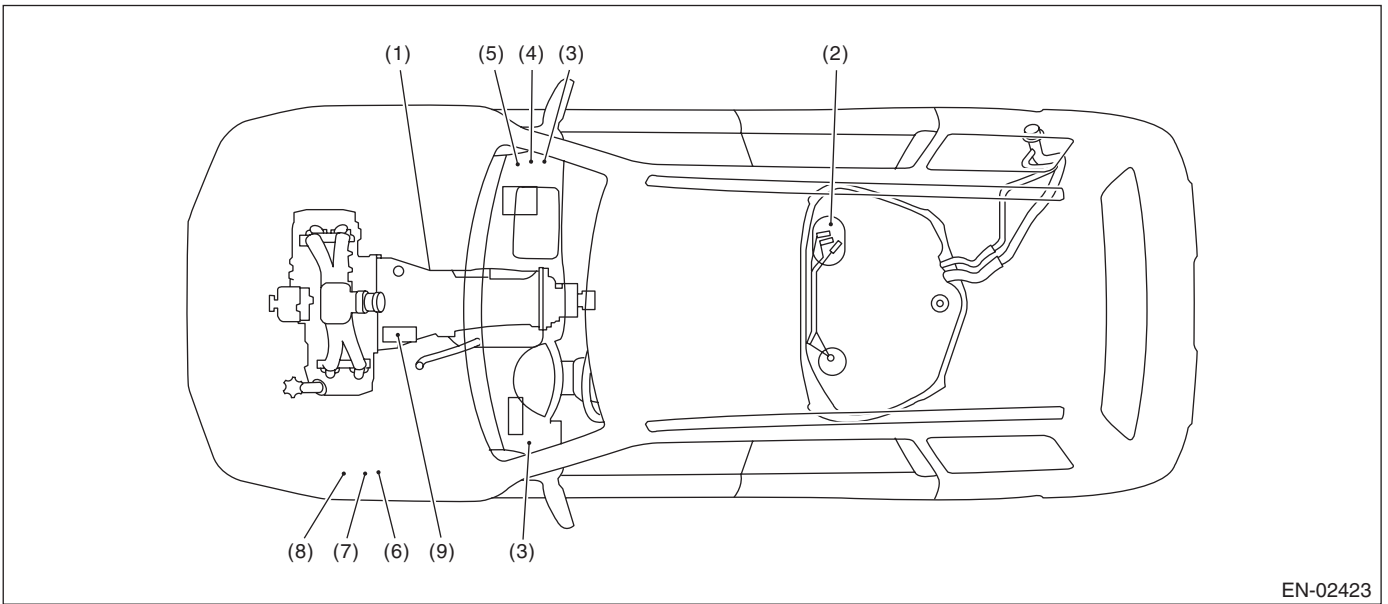
Electrical Component Location

ENGINE (DIAGNOSTICS)



Electrical Component Location

ENGINE (DIAGNOSTICS)



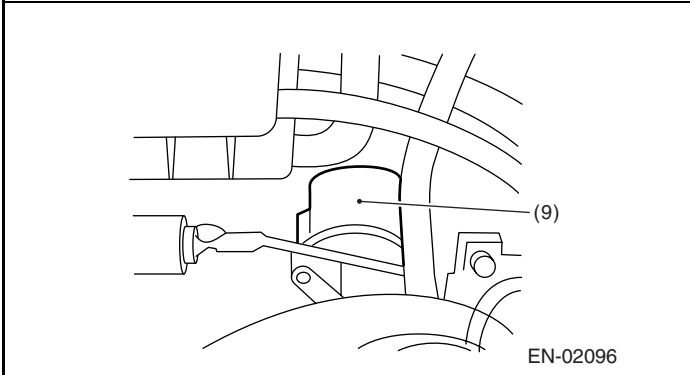
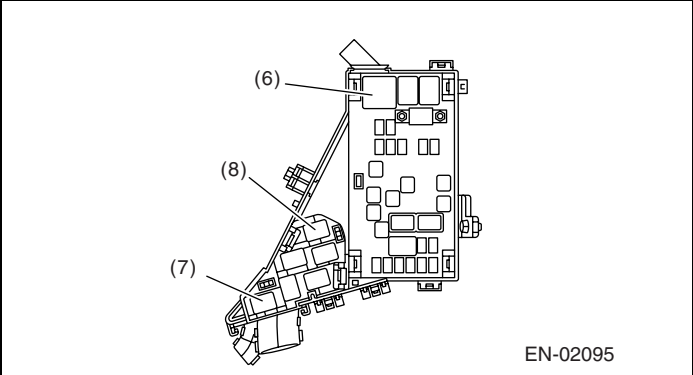
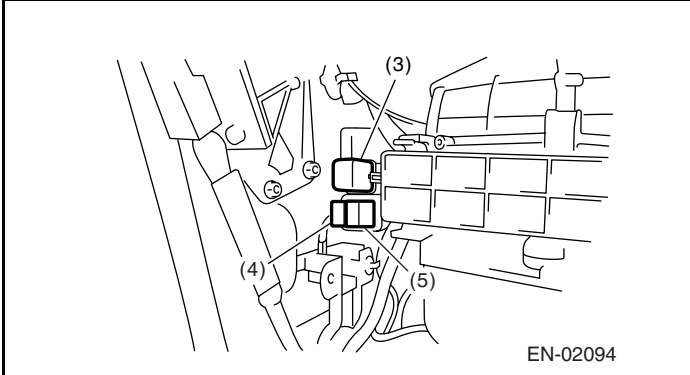
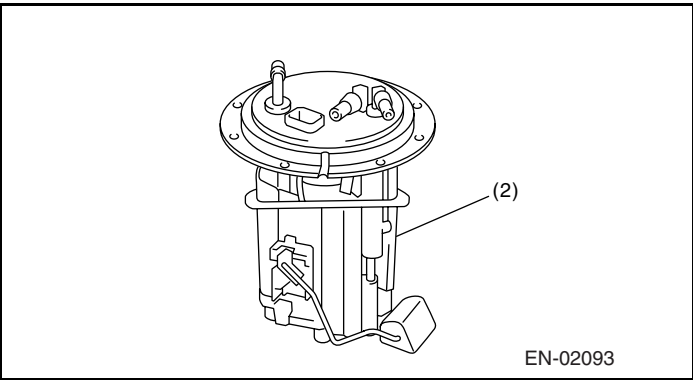
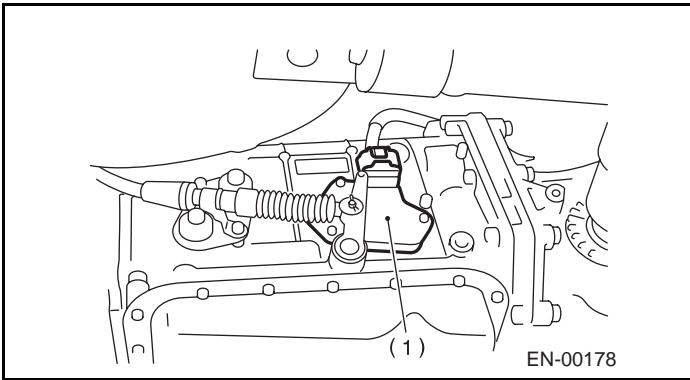
- (1) Inhibitor switch
- (2) Fuel pump
- (3) Main relay

- (4) Fuel pump relay
- (5) Electronic throttle control relay
- (6) Radiator main fan relay 1

- (7) Radiator sub fan relay
- (8) Radiator main fan relay 2
- (9) Starter

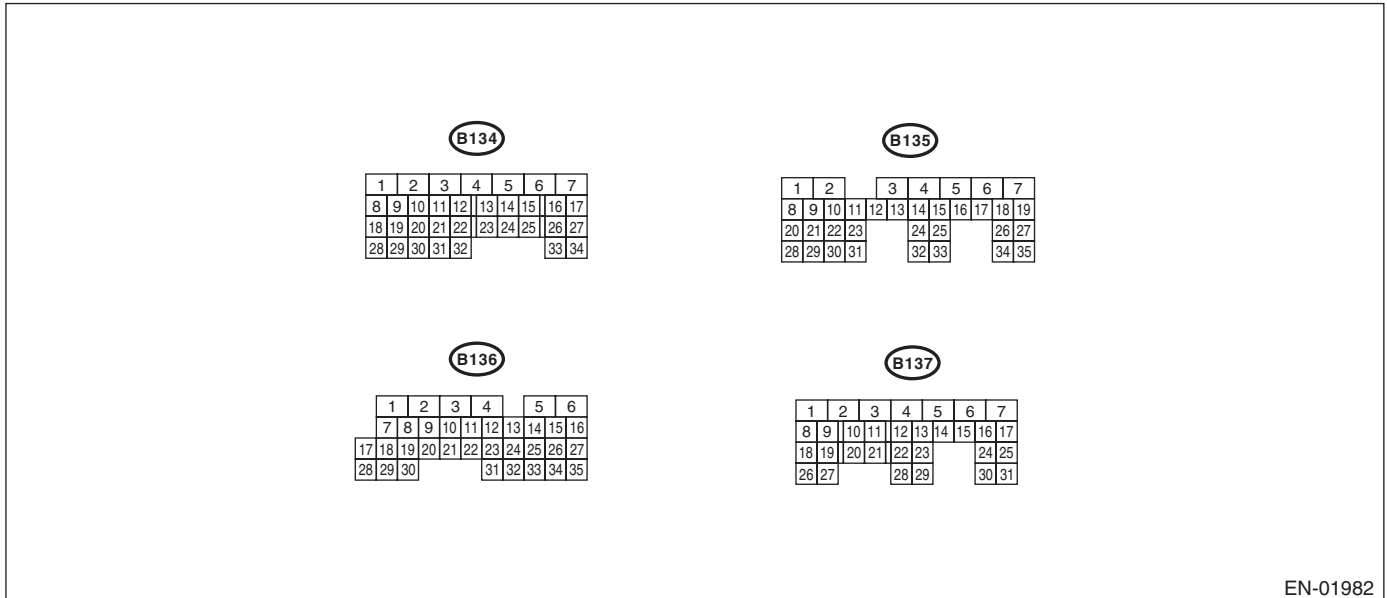
Electrical Component Location

ENGINE (DIAGNOSTICS)



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

A: ELECTRICAL SPECIFICATION



EN-01982

DESCRIPTION		Connector No.	Terminal No.	Signal (V)		NOTE
				Ignition SW ON (engine OFF)	Engine ON (idling)	
Crankshaft position sensor (Model with immobilizer)	Signal (+)	B136	27	0	-7 — +7	Sensor output waveform
	Signal (-)	B136	24	0	0	—
	Shield	B136	32	0	0	—
Crankshaft position sensor (Model without immobilizer)	Signal (+)	B136	26	0	-7 — +7	Sensor output waveform
	Signal (-)	B136	24	0	0	—
	Shield	B136	32	0	0	—
Camshaft position sensor (Model with immobilizer)	Signal (+)	B136	26	0	-7 — +7	Sensor output waveform
	Signal (-)	B136	25	0	0	—
	Shield	B136	32	0	0	—
Camshaft position sensor (Model without immobilizer)	Signal (+)	B136	27	0	-7 — +7	Sensor output waveform
	Signal (-)	B136	25	0	0	—
	Shield	B136	32	0	0	—
Electronic throttle control	Main	B137	23	0.4 — 1.1 Fully opens: 3.7 — 4.3	0.3 — 0.9 (After engine is warmed-up.)	—
	Sub	B137	24	3.9 — 4.8 Fully opens: 0.65 — 1.5	4.05 — 4.95 (After engine is warmed-up.)	—
Electronic throttle control motor 1 (+)		B137	2	Duty waveform	Duty waveform	Drive frequency: 1 kHz
Electronic throttle control motor 2 (+)		B137	3	Duty waveform	Duty waveform	Drive frequency: 1 kHz
Electronic throttle control motor 1 (-)		B137	4	Duty waveform	Duty waveform	Drive frequency: 1 kHz

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

DESCRIPTION	Connector No.	Terminal No.	Signal (V)		NOTE	
			Ignition SW ON (engine OFF)	Engine ON (idling)		
Electronic throttle control motor 2 (-)	B137	5	Duty waveform	Duty waveform	Drive frequency: 1 kHz	
Electronic throttle control motor 1 power supply	B137	6	10 — 13	13 — 14	—	
Electronic throttle control motor 2 power supply	B137	7	10 — 13	13 — 14	—	
Electronic throttle control motor relay	B137	9	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	When ignition switch is turned to ON: ON	
Accelerator position sensor	Main	B137	29	Fully closed: 0.5 — 1.5 Fully opens: 3 — 5	Fully closed: 0.5 — 1.5 Fully opens: 3 — 5	—
	Power supply	B137	25	5	5	—
	Ground	B137	31	0	0	—
	Sub	B137	30	Fully closed: 0.5 — 1.5 Fully opens: 3 — 5	Fully closed: 0.5 — 1.5 Fully opens: 3 — 5	—
Rear oxygen sensor	Signal	B136	19	0	0 — 0.9	—
	Shield	B136	30	0	0	—
Front oxygen (A/F) sensor heater	Signal 1	B135	2	0 — 1.0	13 — 14	—
	Signal 2	B135	3	0 — 1.0	13 — 14	—
Rear oxygen sensor heater signal	B134	1	0 — 1.0	13 — 14	—	
Engine coolant temperature sensor	B136	22	1.0 — 1.6	1.0 — 1.6	After engine is warmed-up.	
Starter switch	B135	23	OFF: 0 ON: 10 — 13	OFF: 0 ON: 13 — 14	—	
A/C switch	B135	20	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—	
Ignition switch	B135	13	10 — 13	13 — 14	—	
Neutral position switch (AT model)	B135	12	ON: 0 OFF: 10 — 14		—	
Neutral position switch (MT model)	B135	12	ON: 10 — 14 OFF: 0		—	
Test mode connector	B135	24	5	5	When connected: 0	
Knock sensor	Signal	B136	23	2.8	2.8	—
	Shield	B136	12	0	0	—
Back-up power supply	B136	7	10 — 13	13 — 14	Ignition switch "OFF": 10 — 13	
Control module power supply	B136	3	10 — 13	13 — 14	—	
	B136	4	10 — 13	13 — 14	—	
Sensor power supply 1	B136	17	5	5	—	
Sensor power supply 2	B137	25	5	5	—	
Ignition control	1	B134	23	0	1 — 3.4	Waveform
	2	B134	24	0	1 — 3.4	Waveform
Fuel injector	#1	B134	17	10 — 13	1 — 14	Waveform
	#2	B134	27	10 — 13	1 — 14	Waveform
	#3	B134	34	10 — 13	1 — 14	Waveform
	#4	B134	33	10 — 13	1 — 14	Waveform
Fuel pump relay control (Model with immobilizer)	B135	44	0.5 or less	0.5 or less	—	
Fuel pump relay control (Model without immobilizer)	B134	27	0.5 or less	0.5 or less	—	

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

DESCRIPTION	Connector No.	Terminal No.	Signal (V)		NOTE	
			Ignition SW ON (engine OFF)	Engine ON (idling)		
A/C relay control	B135	35	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14	—	
Radiator fan relay 1 control	B134	10	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14	—	
Radiator fan relay 2 control	B134	9	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14	—	
Self-shutoff control	B135	14	10 — 13	13 — 14	—	
Malfunction indicator light	B135	15	1 or less	—	Light "ON": 1 or less Light "OFF": 10 — 14	
Engine speed output	B135	27	—	0 — 13 or more	Waveform	
Purge control solenoid valve	B134	8	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	—	
EGR solenoid valve	Signal A+	B134	13	0 or 10 — 13	0 or 13 — 14	—
	Signal A-	B134	12	0 or 10 — 13	0 or 13 — 14	—
	Signal B+	B134	3	0 or 10 — 13	0 or 13 — 14	—
	Signal B-	B134	4	0 or 10 — 13	0 or 13 — 14	—
Power steering switch	B135	8	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	—	
Front oxygen (A/F) sensor signal 1	B136	35	—	2.05 — 2.25	—	
Front oxygen (A/F) sensor signal 2	B136	33	—	2.05 — 2.25	—	
Front oxygen (A/F) sensor shield	B136	34	0	0	—	
Manifold absolute pressure sensor	B136	20	4.0 — 4.8	1.1 — 1.9	—	
Intake air temperature sensor	B136	28	3.3 — 3.5	3.3 — 3.5	intake air temperature: 25°C (75°F)	
Generator control	B135	16	0 — 6.5	0 — 6.5	—	
SSM communication line	B135	32	Less than 1 ← → More than 4	Less than 1 ← → More than 4	—	
Main switch	B137	14	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—	
Clutch switch	B137	22	When clutch pedal is depressed: 0 When clutch pedal is released: 10 — 13	When clutch pedal is depressed: 0 When clutch pedal is released: 13 — 14	—	
Brake switch 1	B137	12	When brake pedal is depressed: 0 When brake pedal is released: 10 — 13	When brake pedal is depressed: 0 When brake pedal is released: 13 — 14	—	
Brake switch 2	B137	13	When brake pedal is depressed: 10 — 13 When brake pedal is released: 0	When brake pedal is depressed: 13 — 14 When brake pedal is released: 0	—	
Cruise control command switch	B136	21	When operating nothing: 3.5 — 4.5 When operating RES/ACC: 2.5 — 3.5 When operating SET/COAST: 0.5 — 1.5 When operating CANCEL: 0 — 0.5	When operating nothing: 3.5 — 4.5 When operating RES/ACC: 2.5 — 3.5 When operating SET/COAST: 0.5 — 1.5 When operating CANCEL: 0 — 0.5	—	
GND (sensor 1)	B136	18	0	0	—	

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

DESCRIPTION	Connector No.	Terminal No.	Signal (V)		NOTE
			Ignition SW ON (engine OFF)	Engine ON (idling)	
GND (sensor 2)	B137	31	0	0	—
GND (injector)	B134	7	0	0	—
GND (power supply)	B134	2	0	0	—
	B137	1	0	0	—
GND (control system)	B136	5	0	0	—
	B136	6	0	0	—
GND (oxygen sensor heater 1)	B135	5	0	0	—
GND (oxygen sensor heater 2)	B135	6	0	0	—
GND (Electronic throttle control)	B136	1	0	0	—
	B136	2	0	0	—

6. Engine Condition Data

A: ELECTRICAL SPECIFICATION

Remarks	SPECIFICATION
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 "N" or "P" range.
- A/C is turned OFF.
- All accessory switches are turned OFF.

Data Link Connector

ENGINE (DIAGNOSTICS)

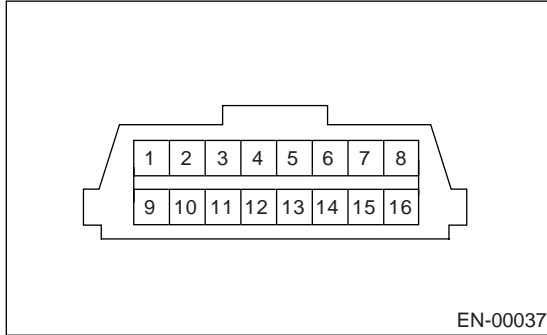
7. Data Link Connector

A: NOTE

This connector is used for Subaru Select Monitor.

CAUTION:

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



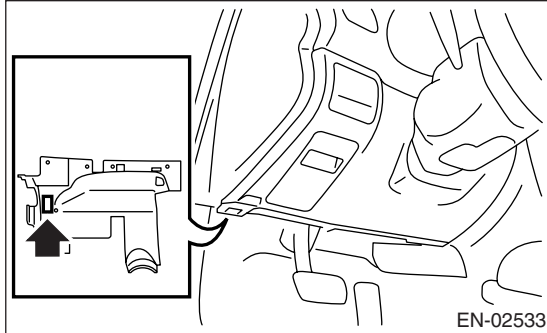
Terminal No.	Remarks	Terminal No.	Remarks
1	Power supply	9	Empty
2	Empty	10	Subaru Select Monitor signal
3	Empty	11	Empty
4	Empty	12	Ground
5	Empty	13	Ground
6	Empty	14	Empty
7	Empty	15	Empty
8	Empty	16	Empty

8. OBD-II General Scan Tool

A: OPERATION

1. HOW TO USE OBD-II GENERAL SCAN TOOL

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



- 3) Using the OBD-II general scan tool, call up DTC and freeze frame data.

OBD-II general scan tool functions consist of:

- (1) MODE \$01: Current powertrain diagnostic data
- (2) MODE \$02: Powertrain freeze frame data
- (3) MODE \$03: Emission-related powertrain DTC
- (4) MODE \$04: Clear/Reset emission-related diagnostic information

Read out the data according to repair procedures. (For detailed operation procedures, refer to the operation manual of OBD-II general scan tool.)

NOTE:

For details concerning DTC, refer to "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>

2. MODE \$01 (CURRENT POWERTRAIN DIAGNOSTIC DATA)

Refer to data denoting the current operating condition of analog input/output, digital input/output or the powertrain system.

A list of the support data and PID (Parameter Identification) codes are shown in the following table.

PID	Data	Unit of measure
01	Number of emission-related powertrain DTC, malfunction indicator light status and diagnosis support information	—
03	Fuel system control status	—
04	Calculated engine load value	%
05	Engine coolant temperature	°C
06	Short term fuel trim	%
07	Long term fuel trim	%
0B	Intake manifold absolute pressure	kPa
0C	Engine revolution	rpm
0D	Vehicle speed	km/h
0E	Ignition timing advance	°
0F	Intake air temperature	°C
10	Air flow rate from manifold absolute pressure sensor	g/sec
11	Throttle valve absolute opening angle	%
13	Check whether oxygen sensor is installed.	—
15	Oxygen sensor output voltage and short term fuel trim associated with oxygen sensor—bank 1 sensor 2	V and %
1C	Supporting OBD system	—
21	Driving distance after MIL illuminates	km
24	A/F value and A/F sensor output voltage	— and V

NOTE:

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

OBD-II General Scan Tool

ENGINE (DIAGNOSTICS)

3. MODE \$02 (POWERTRAIN FREEZE FRAME DATA)

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

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

NOTE:

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

4. MODE \$03 (EMISSION-RELATED POWERTRAIN DIAGNOSTIC TROUBLE CODE (DTC))

Refer to "Read Diagnostic Trouble Code (DTC)" for information about data denoting emission-related powertrain DTC. <Ref. to EN(H4SO 2.0)(diag)-31, Read Diagnostic Trouble Code (DTC).>

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

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

NOTE:

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

9. Subaru Select Monitor

A: OPERATION

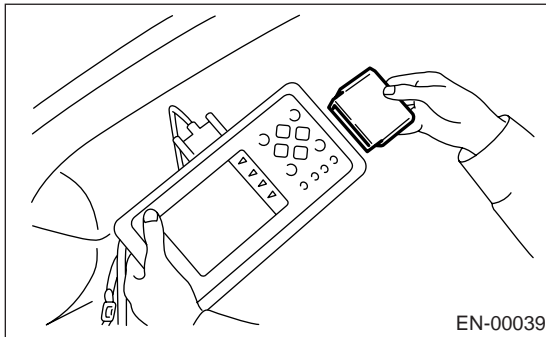
1. HOW TO USE SUBARU SELECT MONITOR

1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4SO 2.0)(diag)-7, PREPARATION TOOL, General Description.>



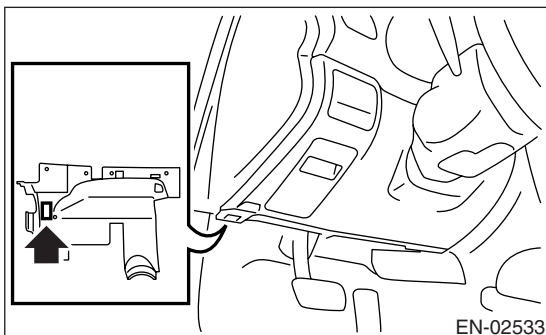
2) Connect the diagnosis cable to Subaru Select Monitor.

3) Insert the cartridge to Subaru Select Monitor. <Ref. to EN(H4SO 2.0)(diag)-7, PREPARATION TOOL, General Description.>



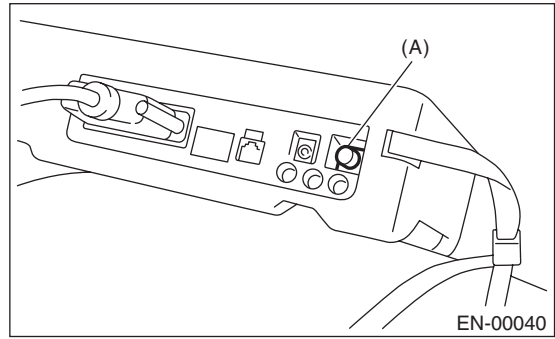
4) Connect the Subaru Select Monitor to data link connector.

(1) Data link connectors is located in the lower portion of instrument panel (on the driver's side).



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

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 DTCs and data, then record them.

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

Refer to "Read Diagnostic Trouble Code (DTC)" for information about how to indicate DTCs. <Ref. to EN(H4SO 2.0)(diag)-31, Read Diagnostic Trouble Code (DTC).>

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

Refer to "Read Diagnostic Trouble Code (DTC)" for information about how to indicate DTCs. <Ref. to EN(H4SO 2.0)(diag)-31, Read Diagnostic Trouble Code (DTC).>

CAUTION:

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

Subaru Select Monitor

ENGINE (DIAGNOSTICS)

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

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
 - 2) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
 - 3) Press the [YES] key after the information of engine type has been displayed.
 - 4) On the «Engine Diagnosis» display screen, select the {Current Data Display/Save}, and then 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, scroll the display screen up or down until the desired data is shown.
- A list of the support data is shown in the following table.

Remarks	Display	Unit of measure	Note (at idling)
Engine load	Engine Load	%	1 — 3%
Engine coolant temperature signal	Coolant Temp.	°C	≥ 75 °C
A/F correction 1	A/F Correction #1	%	-10 — +10%
A/F learning 1	A/F Learning #1	%	-15 — +15%
Intake manifold absolute pressure	Mani. Absolute Pressure	kpa	200 — 300 kpa
Engine speed signal	Engine Speed	rpm	600 — 800 rpm (Agree with the tachometer indication)
Vehicle speed signal	Vehicle Speed	km/h	0 km/h (at parking)
Ignition timing signal	Ignition Timing	deg	10 — 15 deg
Intake air temperature signal	Intake Air Temp.	°C	(Ambient air temperature)
Throttle opening angle signal	Throttle Opening Angle	%	1 — 2%
Rear oxygen sensor voltage	Rear O2 Sensor	V	0.01 — 0.85 V
Battery voltage	Battery Voltage	V	12 — 14 V
Injection 1 pulse width	Fuel Injection #1 Pulse	ms	2 — 4 ms
Knock sensor correction	Knocking Correction	deg	0.0 deg
Atmospheric pressure signal	Atmosphere Pressure	kpa	(Atmosphere pressure)
Intake manifold relative pressure	Mani. Relative Pressure	kpa	(Mani. Absolute Pressure - Atmosphere pressure)
Learned ignition timing	Learned Ignition Timing	°	-2 — 2°
Acceleration opening angle signal	Accel. Opening Angle	%	0.0%
Rear O ₂ heater current	Rear O2 Heater Current	A	0.9 — 1.1 A
Purge control solenoid duty ratio	CPC Valve Duty Ratio	%	0 — 3%
EGR steps	No. of EGR Steps	STEP	0
Generator duty ratio	ALT Duty	%	0 — 100%
A/F sensor resistance value 1	A/F Sensor #1 Resistance	ohm	25 — 27 mA
A/F sensor output lambda 1	A/F Sensor #1	—	0.85 — 1.15
A/F correction 3	A/F Correction #3	%	3.5 — 6.5%
Front oxygen (A/F) sensor current	A/F Heater Current	A	5 — 10 A
Main-throttle position sensor fully closed voltage	Main-Throttle Sensor Closed Position Voltage	V	0.3 — 0.7 V
AT/MT identification terminal	AT Vehicle ID Signal	—	ON/OFF
Test mode terminal	Test Mode Signal	—	OFF
Neutral position switch signal	Neutral Position Switch	—	ON
Soft idle switch signal	Idle Switch Signal	—	ON
Ignition switch signal	Ignition Switch	—	ON
Power steering switch input signal	P/S Switch	—	OFF (At OFF)
Air conditioning switch signal	A/C Switch	—	OFF (At OFF)
Handle switch signal	Handle Switch	—	RHD/LHD
Starter switch signal	Starter Switch	—	OFF
Rear O ₂ monitor	Rear O2 Rich Signal	—	OFF

Subaru Select Monitor

ENGINE (DIAGNOSTICS)

Remarks	Display	Unit of measure	Note (at idling)
Knocking signal	Knocking Signal	—	OFF
Crankshaft position sensor signal	Crankshaft Position Sig.	—	OFF
Camshaft position sensor signal	Camshaft Position Sig.	—	OFF
Rear defogger switch signal	Rear Defogger SW	—	OFF (At OFF)
Blower fan switch signal	Blower Fan SW	—	OFF (At OFF)
Light switch signal	Light Switch	—	OFF (At OFF)
Wiper switch signal	Wiper Switch	—	OFF (At OFF)
A/C middle pressure switch signal	A/C Mid Pressure Switch	—	OFF (At OFF)
Air conditioner compressor relay output signal	A/C Compressor Signal	—	OFF (At OFF)
Radiator fan relay 1 signal	Radiator Fan Relay #1	—	OFF (At OFF)
Radiator fan relay 2 signal	Radiator Fan Relay #2	—	OFF (At OFF)
Fuel pump relay signal	Fuel Pump Relay	—	ON
AT coordinate retard angle demand signal	Retard Signal from AT	—	OFF
AT coordinate fuel cut demand signal	Fuel Cut Signal from AT	—	OFF
AT coordinate permission demand	Torque Permission Signal	—	ON
Throttle motor duty	Throttle Motor Duty	%	5 — 10%
Throttle power supply voltage	Throttle Motor Voltage	V	(Battery voltage)
Sub throttle sensor voltage	Sub-throttle Sensor	V	1.48 — 1.50 V
Main throttle sensor voltage	Main-throttle Sensor	V	0.62 V
Sub acceleration sensor voltage	Sub-accelerator Sensor	V	0.5 — 1.5 V
Main acceleration sensor voltage	Main-accelerator Sensor	V	0.5 — 1.5 V
Memory vehicle speed	Memorized Cruise Speed	km/h	0 km/h
Fuel level sensor resistance	Fuel Level Resistance	Ω	0 — 100 Ω
ETC motor relay signal	ETC Motor Relay	—	ON
Clutch switch signal	Clutch Switch	—	OFF (At OFF)
Stop light switch signal	Stop Light Switch	—	OFF (At OFF)
SET/COAST switch signal	SET/COAST Switch	—	OFF (At OFF)
RES/ACC switch signal	RESUME/ACCEL Switch	—	OFF (At OFF)
Brake switch signal	Brake Switch	—	OFF (At OFF)
Main switch signal	Main Switch	—	OFF (At OFF)
Integrated unit data reception	Body Int. Unit Data	—	ON
Integrated unit data update	Body Int. Unit Count	—	ON

NOTE:

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

Subaru Select Monitor

ENGINE (DIAGNOSTICS)

5. READ CURRENT DATA FOR ENGINE (OBD MODE)

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
 - 2) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
 - 3) Press the [YES] key after the information of engine type has been displayed.
 - 4) On the «Engine Diagnosis» display screen, select the {OBD system} and press the [YES] key.
 - 5) On the «OBD Menu» display screen, select the {Current Data Display & Save}, and press the [YES] key.
 - 6) On the «Data Display Menu» display screen, select the {Data Display} and press the [YES] key.
 - 7) Using the scroll key, move the display screen up or down until the desired data is shown.
- A list of the support data is shown in the following table.

DESCRIPTION	Display	Unit of measure
Number of diagnosis code	Number of Diag. Code:	0
Condition of malfunction indicator light	MI (MIL)	OFF
Monitoring test of misfire	Misfire monitoring	—
Monitoring test of fuel system	Fuel system monitoring	complete
Monitoring test of comprehensive component	Component monitoring	complete
Test of catalyst	Catalyst Diagnosis	—
Test of heating-type 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
Test of oxygen sensor heater	O2 Heater Diagnosis	complete
Test of EGR system	EGR system	incomplete

NOTE:

For detailed operation procedure, refer to “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 the [YES] key.
 - 2) On the «System Selection Menu» display screen, select the {Engine Control System} and press the [YES] key.
 - 3) Press the [YES] key after the information of engine type has been displayed.
 - 4) On the «Engine Diagnosis» display screen, select the {OBD System} and press the [YES] key.
 - 5) On the «OBD Menu» display screen, select the {Freeze Frame Data} and press the [YES] key.
- A list of support data is shown in the following table.

Contents	Display	Unit of measure
DTC for freeze frame data	Freeze frame data	DTC
Air fuel ratio control system for bank 1	Fuel system for Bank1	—
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, kPa, inHg or psi
Engine speed signal	Engine Speed	rpm
Vehicle speed signal	Vehicle Speed	km/h or MPH

NOTE:

For detailed operation procedure, refer to “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 the [YES] key.
 - 2) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
 - 3) Press the [YES] key after the information of engine type has been displayed.
 - 4) On the «Engine Diagnosis» display screen, select the {Current Data Display/Save}, and then press the [YES] key.
 - 5) On the «Data Display Menu» display screen, select the {Data & LED Display} and press the [YES] key.
 - 6) Using the scroll key, move the display screen up or down until the desired data is shown.
- A list of the support data is shown in the following table.

Remarks	Display	Message	LED "ON" requirements
AT/MT identification signal	AT Vehicle ID Signal	ON or OFF	Illuminate (AT model)
Test mode signal	Test Mode Signal	ON or OFF	D check
Neutral position switch signal	Neutral Position Switch	ON or OFF	When neutral position signal is entered.
Idle switch signal	Idle Switch Signal	ON or OFF	When idle switch signal is entered.
Ignition switch signal	Ignition Switch	ON or OFF	When ignition switch is turned ON.
Power steering switch signal	P/S Switch	ON or OFF	When power steering switch is entered.
Air conditioning switch signal	A/C Switch	ON or OFF	When air conditioning switch is input.
Handle switch signal	Handle SW	RHD or LHD	When handle switch signal is input.
Starter switch signal	Starter Switch	ON or OFF	When starter switch is input.
Rear oxygen sensor rich signal	Rear O2 Rich Signal	ON or OFF	When rear oxygen sensor mixture ratio is rich.
Knocking signal	Knocking Signal	ON or OFF	When knocking signal is input.
Crankshaft position sensor signal	Crankshaft Position Signal	ON or OFF	When crankshaft position sensor signal is input.
Camshaft position sensor signal	Camshaft Position Signal	ON or OFF	When camshaft position sensor signal is entered.
Rear defogger switch signal	Rear Defogger Switch	ON or OFF	When rear defogger switch is turned ON.
Blower fan switch signal	Blower Fan Switch	ON or OFF	When blower fan switch is turned ON.
Light switch signal	Light Switch	ON or OFF	When light switch is turned ON.
Small light switch signal	Light Switch	ON or OFF	When small light switch is turned ON.
Windshield wiper switch signal	Wiper Switch	ON or OFF	When windshield wiper switch is turned ON.
A/C middle pressure switch signal	A/C Mid Pressure Switch	ON or OFF	When A/C middle pressure switch is turned ON.
Air conditioning relay signal	A/C Compressor Signal	ON or OFF	When air conditioning relay is in function.
Radiator fan relay 1 signal	Radiator Fan Relay #1	ON or OFF	When radiator fan relay 1 is in function.
Radiator fan relay 2 signal	Radiator Fan Relay #2	ON or OFF	When radiator fan relay 2 is in function.
Fuel pump relay signal	Fuel Pump Relay	ON or OFF	ON output
AT retard angle demand signal	Retard Signal	ON or OFF	When AT retard angle demand signal is input.
AT fuel cut signal	Fuel Cut	ON or OFF	When AT fuel cut signal is input.

Subaru Select Monitor

ENGINE (DIAGNOSTICS)

Remarks	Display	Message	LED "ON" requirements
AT coordinate permission signal	Torque Control Permission	ON or OFF	When AT coordinate permission signal is input.
Clutch switch signal	Clutch Switch	ON or OFF	When clutch switch is turned to ON.
Stop light switch signal	Stop Light Switch	ON or OFF	When stop switch is turned to ON.
SET/COAST switch signal	SET/COAST Switch	ON or OFF	When SET/COAST switch is turned to ON.
RES/ACC switch signal	RESUME/ACCEL Switch	ON or OFF	When RES/ACC switch is turned to ON.
Brake switch signal	Brake Switch	ON or OFF	When brake switch is turned to ON.
Main switch signal	Main Switch	ON or OFF	When main switch is turned to ON.
Cancel switch signal	Cancel Switch	ON or OFF	When cancel switch is turned to ON.
Electronic throttle control motor relay signal	ETC Motor Relay	ON or OFF	When electronic throttle control motor relay is in function.
Data reception signal	Body Int. Unit Data	ON or OFF	When data reception signal is entered.
Counter update signal	Body Int. Unit Count	ON or OFF	When counter update signal is entered.

NOTE:

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

10. Read Diagnostic Trouble Code (DTC)

A: OPERATION

1. SUBARU SELECT MONITOR (NORMAL MODE)

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
- 3) Press the [YES] key after the information of engine type has been displayed.
- 4) On the «Engine Diagnosis» screen, select the {DTC Display}, and then press the [YES] key.
- 5) On the «Diagnostic Code(s) Display» screen, select the {Current Diagnostic Code(s)} or {History Diagnostic Code(s)}, and then press the [YES] key.

NOTE:

- For detailed operation procedure, refer to “SUBARU SELECT MONITOR OPERATION MANUAL”.
- For details concerning DTC, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>

2. SUBARU SELECT MONITOR (OBD MODE)

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
- 3) Press the [YES] key after the information of engine type has been displayed.
- 4) On the «Engine Diagnosis» display screen, select the {OBD System} and press the [YES] key.
- 5) On the «OBD Menu» display screen, select the {DTC Display} and press the [YES] key.
- 6) Make sure DTC is shown on the screen.

NOTE:

- For detailed operation procedure, refer to “SUBARU SELECT MONITOR OPERATION MANUAL”.
- For details concerning DTC, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>

Inspection Mode

ENGINE (DIAGNOSTICS)

11. Inspection Mode

A: OPERATION

Carry out trouble diagnosis shown in the following DTC table.

When performing trouble diagnosis which is not shown in the DTC table, refer to the next item Drive cycle.

<Ref. to EN(H4SO 2.0)(diag)-36, Drive Cycle.>

DTC	Item
P0031	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)
P0032	HO2S Heater Control Circuit High (Bank 1 Sensor 1)
P0037	HO2S Heater Control Circuit Low (Bank 1 Sensor 2)
P0038	HO2S Heater Control Circuit High (Bank 1 Sensor 2)
P0107	Manifold Absolute Pressure/Barometric Pressure Circuit Low Input
P0108	Manifold Absolute Pressure/Barometric Pressure Circuit High Input
P0112	Intake Air Temperature Circuit Low Input
P0113	Intake Air Temperature Circuit High Input
P0117	Engine Coolant Temperature Circuit Low Input
P0118	Engine Coolant Temperature Circuit High Input
P0122	Throttle/Pedal Position Sensor/Switch "A" Circuit Low Input
P0123	Throttle/Pedal Position Sensor/Switch "A" Circuit High Input
P0131	O ₂ Sensor Circuit Low Voltage (Bank 1 Sensor 1)
P0132	O ₂ Sensor Circuit High Voltage (Bank 1 Sensor 1)
P0134	O ₂ Sensor Circuit No Activity Detected (Bank 1 Sensor 1)
P0137	O ₂ Sensor Circuit Low Voltage (Bank 1 Sensor 2)
P0138	O ₂ Sensor Circuit High Voltage (Bank 1 Sensor 2)
P0222	Throttle/Pedal Position Sensor/Switch "B" Circuit Low Input
P0223	Throttle/Pedal Position Sensor/Switch "B" Circuit High Input
P0327	Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor)
P0328	Knock Sensor 1 Circuit High Input (Bank 1 or Single Sensor)
P0335	Crankshaft Position Sensor "A" Circuit
P0340	Camshaft Position Sensor "A" Circuit (Bank 1 or Single Sensor)
P0458	Evaporative Emission Control System Purge Control Valve Circuit Low
P0459	Canister Purge Solenoid Circuit (High)
P0462	Fuel Level Sensor Circuit Low Input
P0463	Fuel Level Sensor Circuit High Input
P0500	Vehicle Speed Sensor
P0512	Starter Request Circuit
P0513	Incorrect Immobilizer Key
P0519	Idle Control System Malfunction (Fail-Safe)
P0558	Generator Circuit Low Input
P0600	Serial Communication Link
P0604	Internal Control Module Random Access Memory (RAM) Error
P0605	Internal Control Module Read Only Memory (ROM) Error
P0607	Control Module Performance
P0638	Throttle Actuator Control Range/Performance (Bank 1)
P0691	Cooling Fan 1 Control Circuit Low
P0692	Cooling Fan 1 Control Circuit High
P0851	Neutral Switch Input Circuit Low
P0852	Neutral Switch Input Circuit High
P1160	Return Spring Failure
P1134	A/F Sensor Micro-Computer Problem
P1518	Starter Switch Circuit Low Input
P1560	Back-up Voltage Circuit Malfunction

DTC	Item
P1570	Antenna
P1571	Reference Code Incompatibility
P1572	IMM Circuit Failure (Except Antenna Circuit)
P1574	Key Communication Failure
P1576	EGI Control Module EEPROM
P1577	IMM Control Module EEPROM
P1578	Meter Failure
P2101	Throttle Actuator Control Motor Circuit Range/Performance
P2102	Throttle Actuator Control Motor Circuit Low
P2103	Throttle Actuator Control Motor Circuit High
P2109	Throttle/Pedal Position Sensor A Minimum Stop Performance
P2100	Throttle Control Motor Circuit Open
P2111	Throttle Actuator Control System - Stuck Open
P2122	Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input
P2123	Throttle/Pedal Position Sensor/Switch "D" Circuit High Input
P2127	Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input
P2128	Throttle/Pedal Position Sensor/Switch "E" Circuit High Input
P2135	Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality
P2138	Throttle/Pedal Position Sensor/Switch "D"/"E" Voltage Rationality

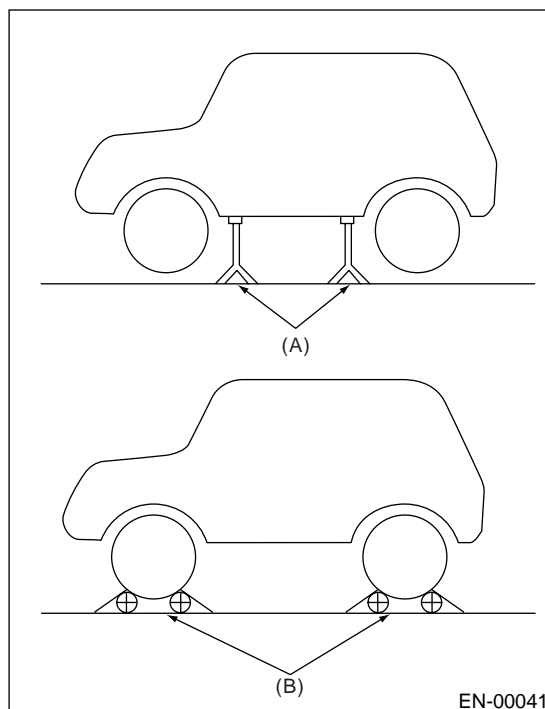
1. PREPARATION FOR THE INSPECTION MODE

- 1) Check that the battery voltage is more than 12 V and fuel remains half [20 — 40 ℓ (5.3 — 10.6 US gal, 4.4 — 8.8 Imp gal)].
- 2) Lift-up the vehicle using a garage jack and place it on rigid racks, or drive the vehicle onto free rollers.

WARNING:

- Before lifting-up the vehicle, ensure parking brakes are applied.
- Do not use a pantograph jack in place of a rigid rack.
- Secure a rope or wire to the front or rear towing hooks to prevent the lateral runout of front wheels.
- Do not abruptly depress/release clutch pedal or accelerator pedal during works even when the 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 rigid racks and 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) Rigid rack
 (B) Free rollers

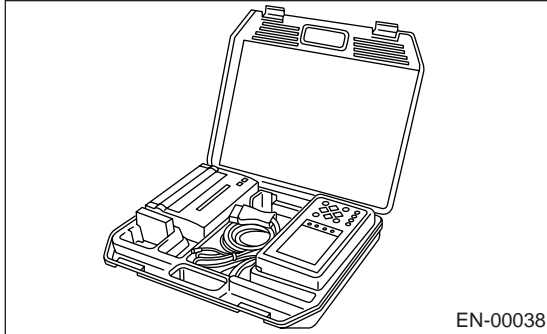
EN-00041

Inspection Mode

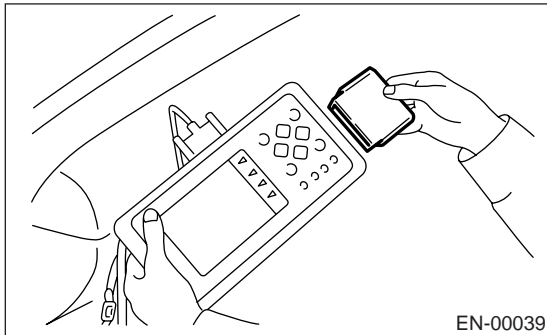
ENGINE (DIAGNOSTICS)

2. SUBARU SELECT MONITOR

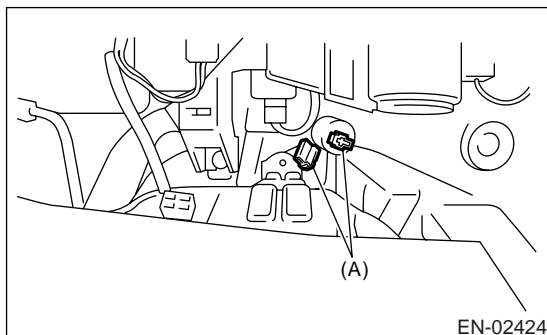
- 1) After clearing the memory, check for any remaining unresolved trouble data. <Ref. to EN(H4SO 2.0)(diag)-38, Clear Memory Mode.>
- 2) Idle the engine.
- 3) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4SO 2.0)(diag)-7, PREPARATION TOOL, General Description.>



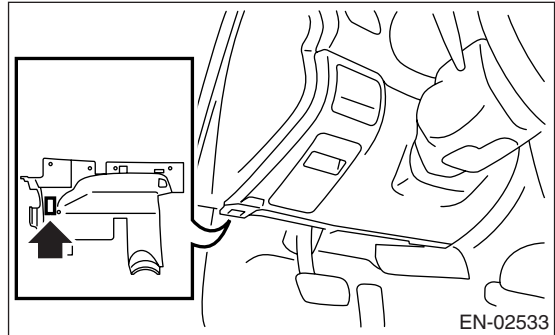
- 4) Connect the diagnosis cable to Subaru Select Monitor.
- 5) Insert the cartridge to Subaru Select Monitor. <Ref. to EN(H4SO 2.0)(diag)-7, PREPARATION TOOL, General Description.>



- 6) Connect the test mode connector (A) located at the lower portion of glove box.

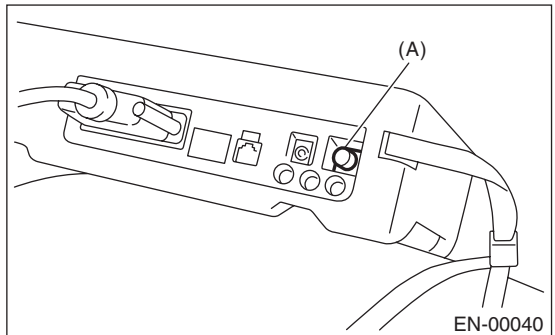


- 7) Connect the Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side).



CAUTION:
Do not connect the scan tools except for Subaru Select Monitor.

- 8) Turn the ignition switch to ON (engine OFF) and turn Subaru Select Monitor switch to ON.



(A) Power switch

- 9) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
- 10) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
- 11) Press the [YES] key after the information of engine type has been displayed.
- 12) On the «Engine Diagnosis» screen, select the {D Check} and press the [YES] key.
- 13) When the “Perform D Check?” is shown on the screen, press the [YES] key.
- 14) Perform subsequent procedures as instructed on the display screen.
 - If trouble still remains in the memory, the corresponding DTC appears on the display screen.

NOTE:

- For detailed operation procedure, refer to “SUBARU SELECT MONITOR OPERATION MANUAL”.
 - For the details concerning DTCs, refer to “List of Diagnostic Trouble Code (DTC)”.
- <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>
- Release the parking brake.

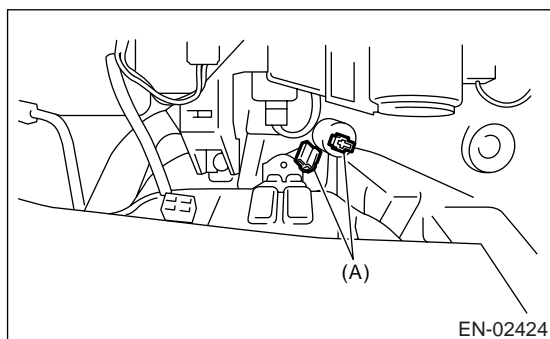
- The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis function.

3. OBD-II GENERAL SCAN TOOL

1) After clearing memory, check for any remaining unresolved trouble data: **<Ref. to EN(H4SO 2.0)(diag)-38, Clear Memory Mode.>**

2) Warm up the engine.

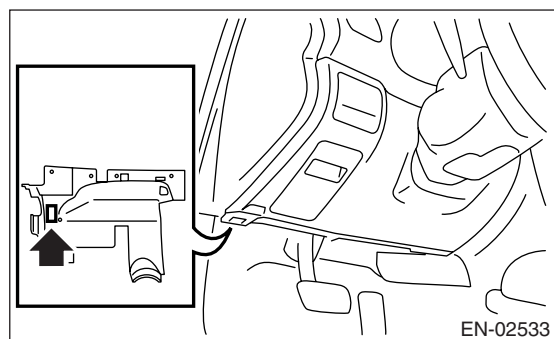
3) Connect the test mode connector (A) at the lower side of instrument panel (on the driver's side).



4) Connect the OBD-II general scan tool to its data link connector in the lower portion of instrument panel (on the driver's side).

CAUTION:

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



5) Start the engine.

NOTE:

- Ensure the select lever is placed in "P" position before starting. (AT model)
- Depress the clutch pedal when starting engine. (MT model)

6) Using the select lever or shift lever, turn the "P" position switch and "N" position switch to ON.

7) Depress the brake pedal to turn brake switch ON. (AT model)

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

9) Place the select lever or shift lever in "D" position (AT model) or "1st" gear (MT model) and drive the vehicle at 5 to 10 km/h (3 to 6 MPH).

NOTE:

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

10) Using the OBD-II general scan tool, check for DTC and record the result(s).

NOTE:

- For detailed operation procedures, refer to the operation manual of OBD-II general scan tool.
- For details concerning DTC, refer to "List of Diagnostic Trouble Code (DTC)".

<Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>

Drive Cycle

ENGINE (DIAGNOSTICS)

12. Drive Cycle

A: PROCEDURE

There are three drive patterns for the trouble diagnosis. Driving in the specified pattern allows to diagnose malfunctioning items listed below. After the malfunctioning items listed below are repaired, always check whether they correctly resume their functions by driving in the required drive pattern.

1. PREPARATION FOR DRIVE CYCLE

- 1) Make sure that the fuel remains approx. half amount [20 — 40 ℓ (5.3 — 10.6 US gal, 4.4 — 8.8 Imp gal)], and battery voltage is 12V or more.
- 2) After performing the diagnostics and cleaning memory, check for any remaining unresolved trouble data. **<Ref. to EN(H4SO 2.0)(diag)-38, Clear Memory Mode.>**
- 3) Separate the test mode connector.

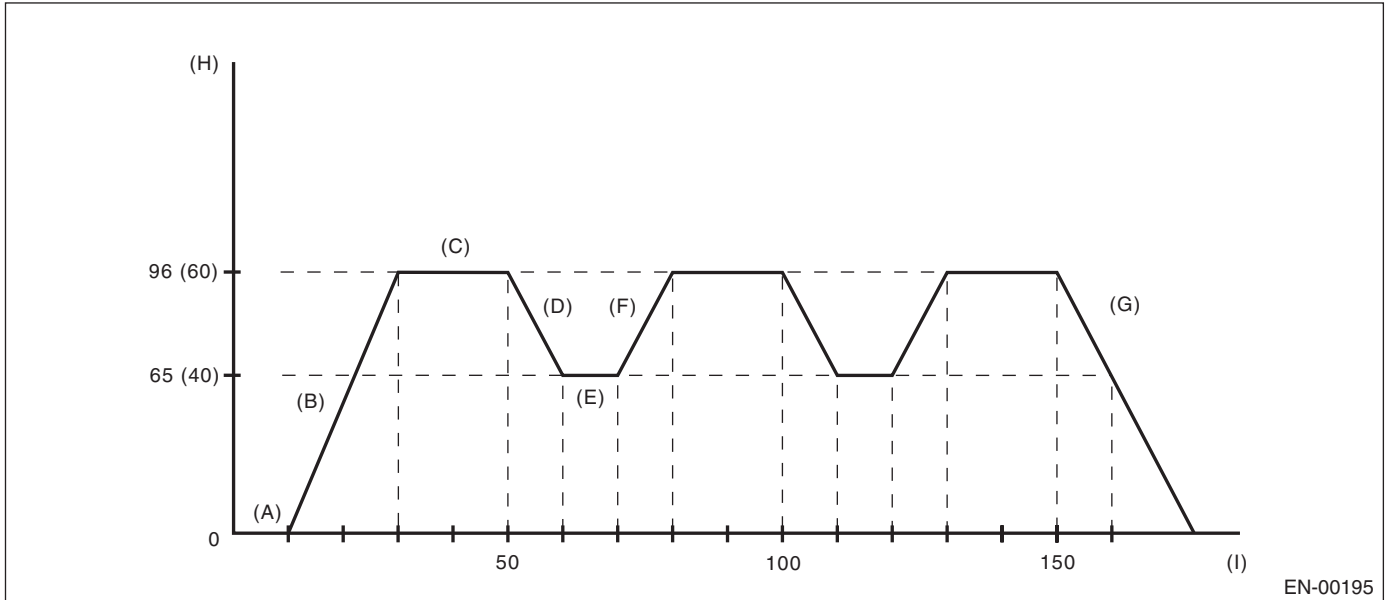
NOTE:

- Except for the water temperature specified items at starting, the diagnosis is carried out after engine warm up.
- Carry out the diagnosis which is marked * on DTC twice, then, after finishing first diagnosis, stop the engine and do second time at the same condition.

2. AFTER RUNNING 20 MINUTES AT 80 KM/H (50 MPH), IDLE ENGINE FOR 1 MINUTE.

DTC	Item	Condition
*P0125	Insufficient Coolant Temperature for Closed Loop Fuel Control	Coolant temperature at start is less than 20°C (68°F).
*P0133	O ₂ Sensor Circuit Slow Response (Bank 1 Sensor 1)	—
*P0171	System too Lean (Bank 1)	—
*P0172	System too Rich (Bank 1)	—
*P0420	Catalyst System Efficiency Below Threshold (Bank 1)	—
*P0483	Cooling Fan Rationality Check	—
P1137	O ₂ Sensor Circuit (Bank1 Sensor1)	—

3. DRIVE ACCORDING TO THE FOLLOWING DRIVE PATTERN



- | | | |
|---|--|---|
| (A) Idle engine for 1 minute. | (D) Decelerate with throttle fully closed to 65 km/h (40 MPH). | (F) Accelerate to 96 km/h (60 MPH) within 10 seconds. |
| (B) Accelerate to 96 km/h (60 MPH) within 20 seconds. | (E) Drive vehicle at 65 km/h (40 MPH) for 10 seconds. | (G) Stop vehicle with throttle fully closed. |
| (C) Drive vehicle at 96 km/h (60 MPH) for 20 seconds. | | (H) Vehicle speed km/h (MPH) |
| | | (I) Seconds |

DTC	Item	Condition
*P0030	HO2S Heater Control Circuit (Bank 1 Sensor 1)	—
P0130	O ₂ Sensor Circuit Low Voltage (Bank 1 Sensor 1)	—
*P0139	O ₂ Sensor Circuit Slow Response (Bank 1 Sensor 2)	—
P0301	Cylinder 1 Misfire Detected	Diagnosis frequency is different from misfire ratio.
P0302	Cylinder 2 Misfire Detected	Diagnosis frequency is different from misfire ratio.
P0303	Cylinder 3 Misfire Detected	Diagnosis frequency is different from misfire ratio.
P0304	Cylinder 4 Misfire Detected	Diagnosis frequency is different from misfire ratio.
P0400	Exhaust gas recirculation flow	—
P0559	Generator Circuit High Input	—
P0700	Transmission Control System (MIL Request)	—
P1134	A/F Sensor Micro-Computer Problem	—
P1492	EGR Solenoid Valve Signal #1 Circuit Malfunction (Low Input)	—
P1493	EGR Solenoid Valve Signal #1 Circuit Malfunction (High Input)	—
P1494	EGR Solenoid Valve Signal #2 Circuit Malfunction (Low Input)	—
P1495	EGR Solenoid Valve Signal #2 Circuit Malfunction (High Input)	—
P1496	EGR Solenoid Valve Signal #3 Circuit Malfunction (Low Input)	—
P1497	EGR Solenoid Valve Signal #3 Circuit Malfunction (High Input)	—
P1498	EGR Solenoid Valve Signal #4 Circuit Malfunction (Low Input)	—
P1499	EGR Solenoid Valve Signal #4 Circuit Malfunction (High Input)	—
P1521	Brake Switch Circuit Range/Performance Problem (High Input)	—

13. Clear Memory Mode

A: OPERATION

1. SUBARU SELECT MONITOR (NORMAL MODE)

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

NOTE:

- Initial diagnosis of electronic control throttle is performed after memory clearance. For this reason, start the engine after 10 seconds or more have elapsed since the ignition switch was turned to ON.
- For detailed operation procedure, refer to “SUBARU SELECT MONITOR OPERATION MANUAL”.

2. SUBARU SELECT MONITOR (OBD MODE)

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

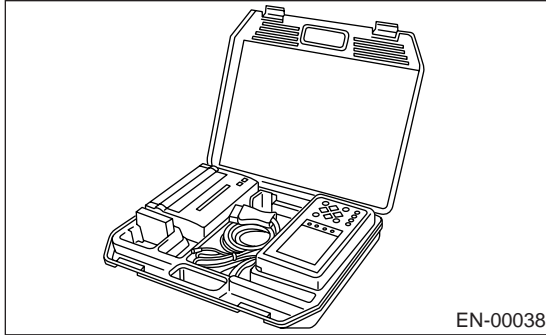
NOTE:

- Initial diagnosis of electronic control throttle is performed after memory clearance. For this reason, start the engine after 10 seconds or more have elapsed since the ignition switch was turned to ON.
- For detailed operation procedure, refer to “SUBARU SELECT MONITOR OPERATION MANUAL”.

14. Compulsory Valve Operation Check Mode

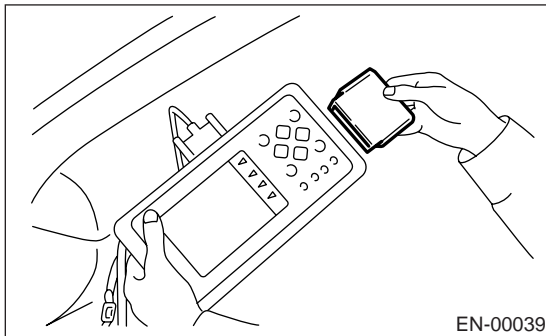
A: PROCEDURE

1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4SO 2.0)(diag)-7, PREPARATION TOOL, General Description.>

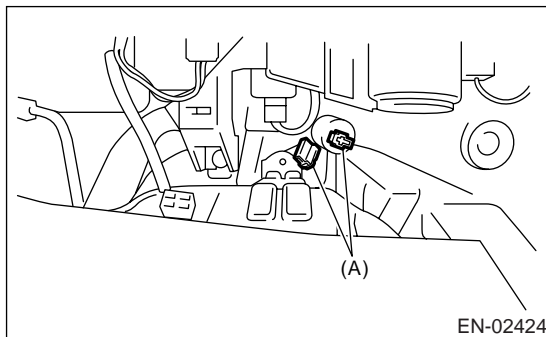


2) Connect the diagnosis cable to Subaru Select Monitor.

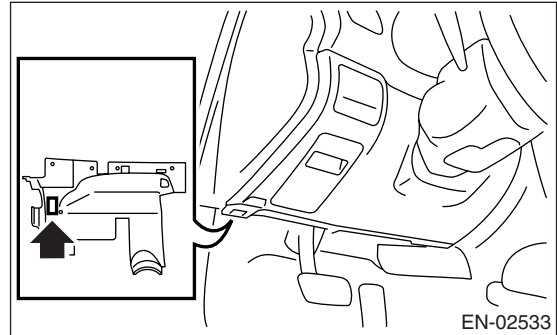
3) Insert the cartridge to Subaru Select Monitor. <Ref. to EN(H4SO 2.0)(diag)-7, PREPARATION TOOL, General Description.>



4) Connect the test mode connector (A) located at the lower portion of glove box.



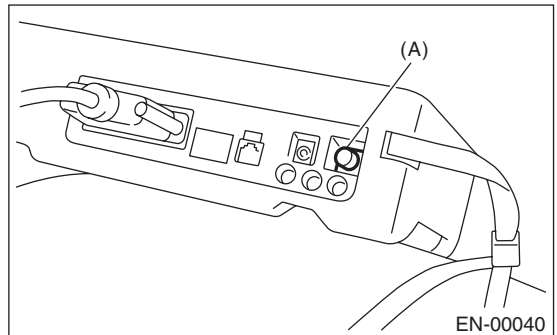
5) Connect the Subaru Select Monitor to data link connector located in the lower portion of instrument panel (on the driver's side).



CAUTION:

Do not connect the scan tools except for Subaru Select Monitor.

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



(A) Power switch

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

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

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

10) On the «Engine Diagnosis» display screen, select the {System Operation Check Mode} and press the [YES] key.

11) On the «System Operation Check Mode» display screen, select the {Actuator ON/OFF Operation} and press the [YES] key.

12) Select the desired compulsory actuator on the «Actuator ON/OFF Operation» display screen and press the [YES] key.

13) Pressing the [NO] key completes the compulsory valve operation check mode. The display will then return to the «Actuator ON/OFF Operation» screen.

Compulsory Valve Operation Check Mode

ENGINE (DIAGNOSTICS)

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

DESCRIPTION	Display
Compulsory fuel pump relay operation check	Fuel Pump
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

NOTE:

- The following parts will be displayed but not functional.

Display
EGR Solenoid
ASV Solenoid
FICD Solenoid
Pressure switching solenoid 1
Pressure switching solenoid 2
Wastegate control solenoid
PCV Solenoid
Vent Control Solenoid
AAI Solenoid
Fuel Tank Sensor Control Valve

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

15. Malfunction Indicator Light

A: PROCEDURE

1. Activation of malfunction indicator light. <Ref. to EN(H4SO 2.0)(diag)-42, ACTIVATION OF MALFUNCTION INDICATOR LIGHT, Malfunction Indicator Light.>
↓
2. Check that the malfunction indicator light does not come on. <Ref. to EN(H4SO 2.0)(diag)-43, MALFUNCTION INDICATOR LIGHT DOES NOT COME ON, Malfunction Indicator Light.>
↓
3. Check that the malfunction indicator light does not go off. <Ref. to EN(H4SO 2.0)(diag)-45, MALFUNCTION INDICATOR LIGHT DOES NOT GO OFF., Malfunction Indicator Light.>
↓
4. Check that the malfunction indicator light does not blink. <Ref. to EN(H4SO 2.0)(diag)-46, MALFUNCTION INDICATOR LIGHT DOES NOT BLINK., Malfunction Indicator Light.>
↓
5. Check that the malfunction indicator light remains blinking. <Ref. to EN(H4SO 2.0)(diag)-49, MALFUNCTION INDICATOR LIGHT REMAINS BLINKING., Malfunction Indicator Light.>

Malfunction Indicator Light

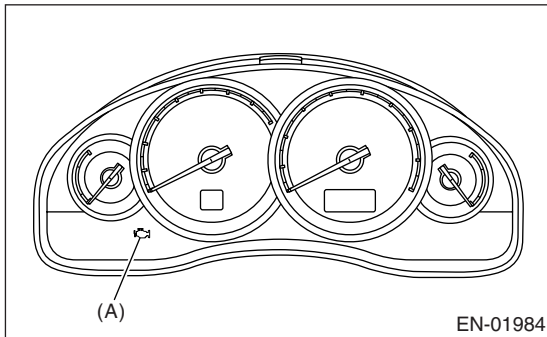
ENGINE (DIAGNOSTICS)

B: ACTIVATION OF MALFUNCTION INDICATOR LIGHT

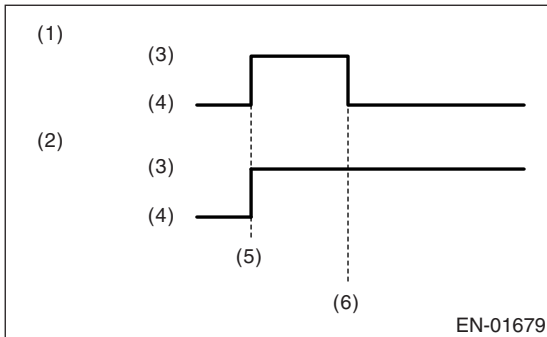
1) When the ignition switch is turned to ON (engine OFF), the malfunction indicator light (A) in the combination meter illuminates.

NOTE:

If the malfunction indicator light does not illuminate, perform the diagnosis of malfunction indicator light circuit or the combination meter circuit. <Ref. to EN(H4SO 2.0)(diag)-43, MALFUNCTION INDICATOR LIGHT DOES NOT COME ON, Malfunction Indicator Light.>



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



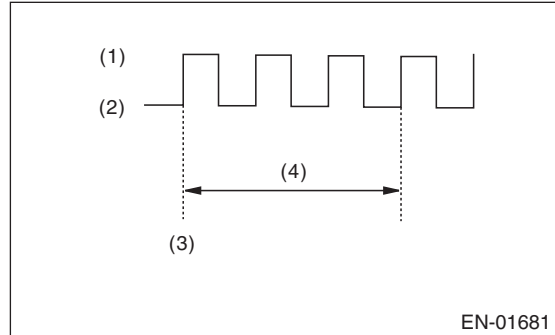
- (1) No faulty
- (2) Trouble occurs
- (3) ON
- (4) OFF
- (5) Ignition switch ON
- (6) Engine start

3) Turn the ignition switch to OFF and connect the test mode connector.

(1) When the ignition switch is turned to ON (engine OFF), the malfunction indicator light illuminates.

(2) Malfunction indicator light blinks at a cycle of 0.5 Hz after starting the engine. (During diagnosis)

(3) Malfunction indicator light blinks at a cycle of 3 Hz after diagnosis if there is no trouble. Malfunction indicator light illuminates if faulty.



- (1) ON
- (2) OFF
- (3) Ignition switch ON
- (4) 1 second

Malfunction Indicator Light

C: MALFUNCTION INDICATOR LIGHT DOES NOT COME ON

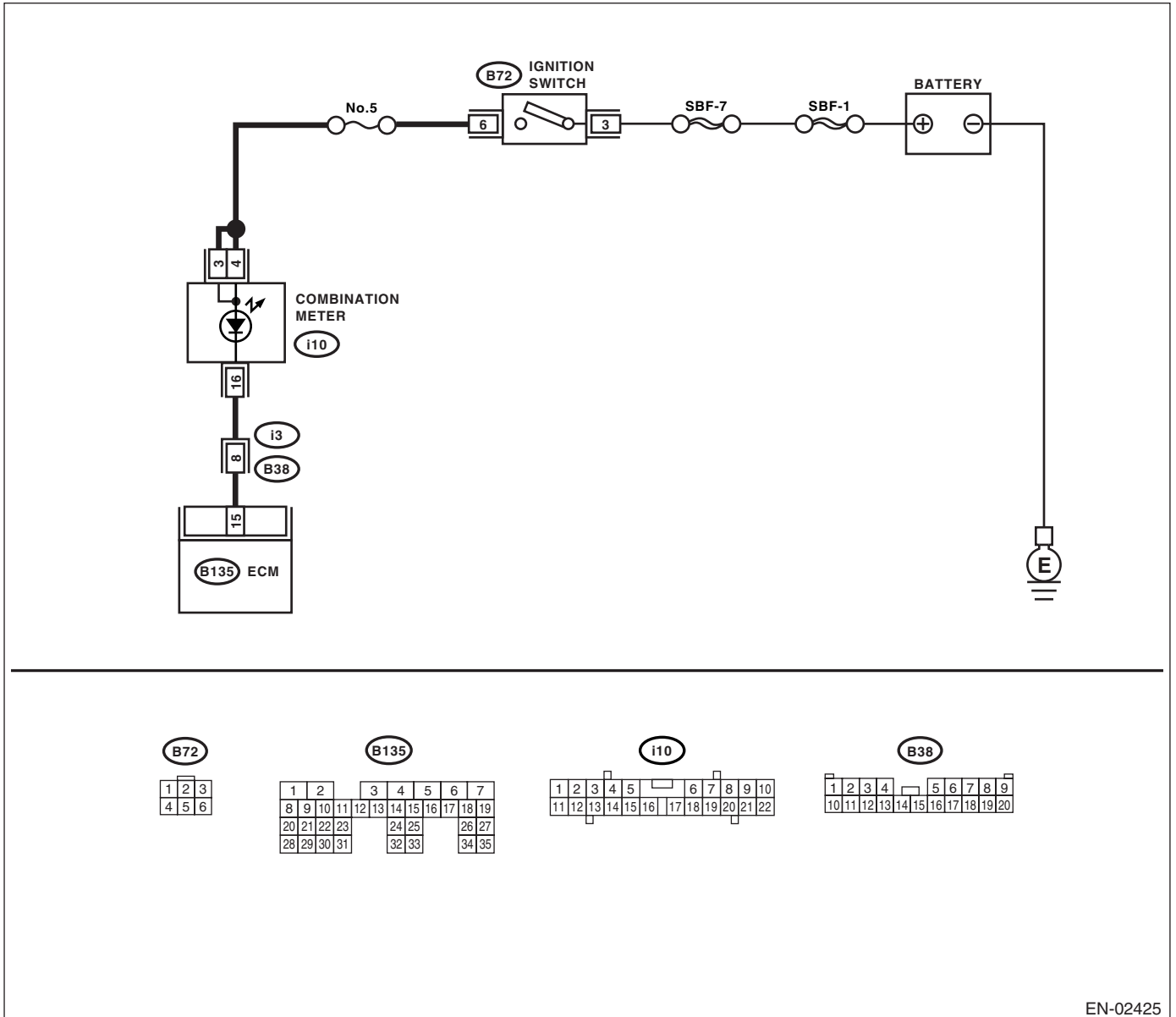
DIAGNOSIS:

The malfunction indicator light circuit is open or shorted.

TROUBLE SYMPTOM:

When the ignition switch is turned to ON (engine OFF), malfunction indicator light does not come on.

WIRING DIAGRAM:



Malfunction Indicator Light

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 15 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 4.	Go to step 2.
2 CHECK POOR CONTACT. Check for poor connection by shaking or pulling ECM connector and harness.	Does the malfunction indicator light illuminate?	Repair the poor contact in ECM connector.	Go to step 3.
3 CHECK ECM CONNECTOR. Check the connection of ECM connector.	Is the ECM connector correctly connected?	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Repair the connection of ECM connector.
4 CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Remove the combination meter. <Ref. to IDI-16, Combination Meter Assembly.> 3) Disconnect the connector from ECM and combination meter. 4) Measure the resistance of harness between ECM and combination meter connector. Connector & terminal (B135) No. 15 — (i10) No. 16:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and combination meter connector • Poor contact in coupling connector
5 CHECK POOR CONTACT. Check poor contact in combination meter connector.	Is there poor contact in combination meter connector?	Repair the poor contact in combination meter connector.	Go to step 6.
6 CHECK HARNESS BETWEEN COMBINATION METER AND IGNITION SWITCH CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between combination meter connector and chassis ground. Connector & terminal (i10) No. 3 (+) — Chassis ground (-): (i10) No. 4 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Replace the board of combination meter. <Ref. to IDI-16, Combination Meter Assembly.>	Check the following and repair if necessary. NOTE: <ul style="list-style-type: none"> • Blown out fuse (No. 5) • Open or short circuit in harness between fuse (No. 5) and battery terminal • Poor contact in ignition switch connector

Malfunction Indicator Light

ENGINE (DIAGNOSTICS)

D: MALFUNCTION INDICATOR LIGHT DOES NOT GO OFF.

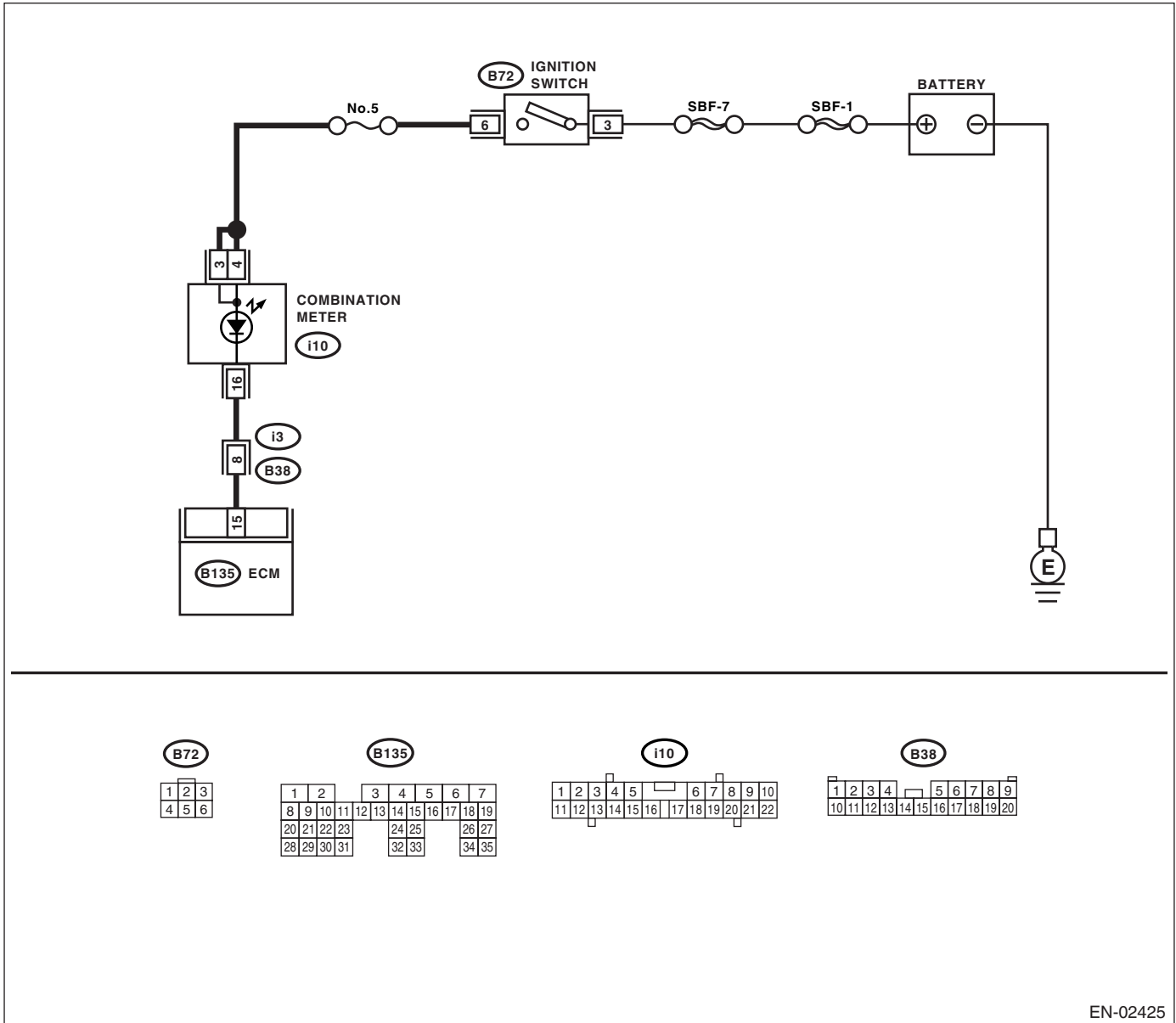
DIAGNOSIS:

The malfunction indicator light circuit is shorted.

TROUBLE SYMPTOM:

Although malfunction indicator light comes on when the engine runs, DTC is not shown on the Subaru Select Monitor display.

WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Turn the ignition switch to ON.	Does the malfunction indicator light illuminate?	Repair the short circuit in harness between combination meter and ECM connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Malfunction Indicator Light

ENGINE (DIAGNOSTICS)

E: MALFUNCTION INDICATOR LIGHT DOES NOT BLINK.

DIAGNOSIS:

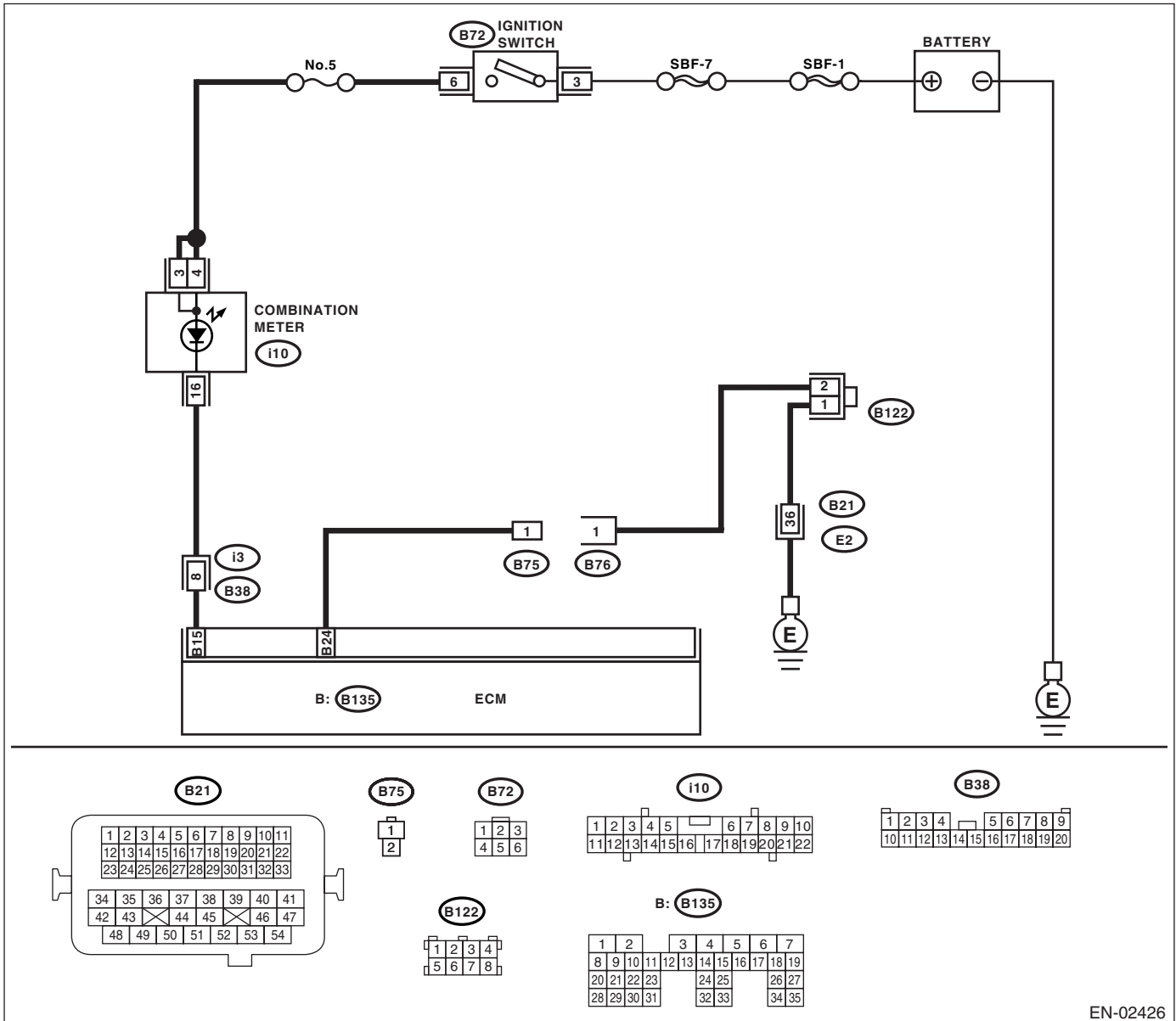
- The malfunction indicator light circuit is open or shorted.
- Test mode connector circuit is in open.

TROUBLE SYMPTOM:

Malfunction indicator light does not blink during inspection mode.

WIRING DIAGRAM:

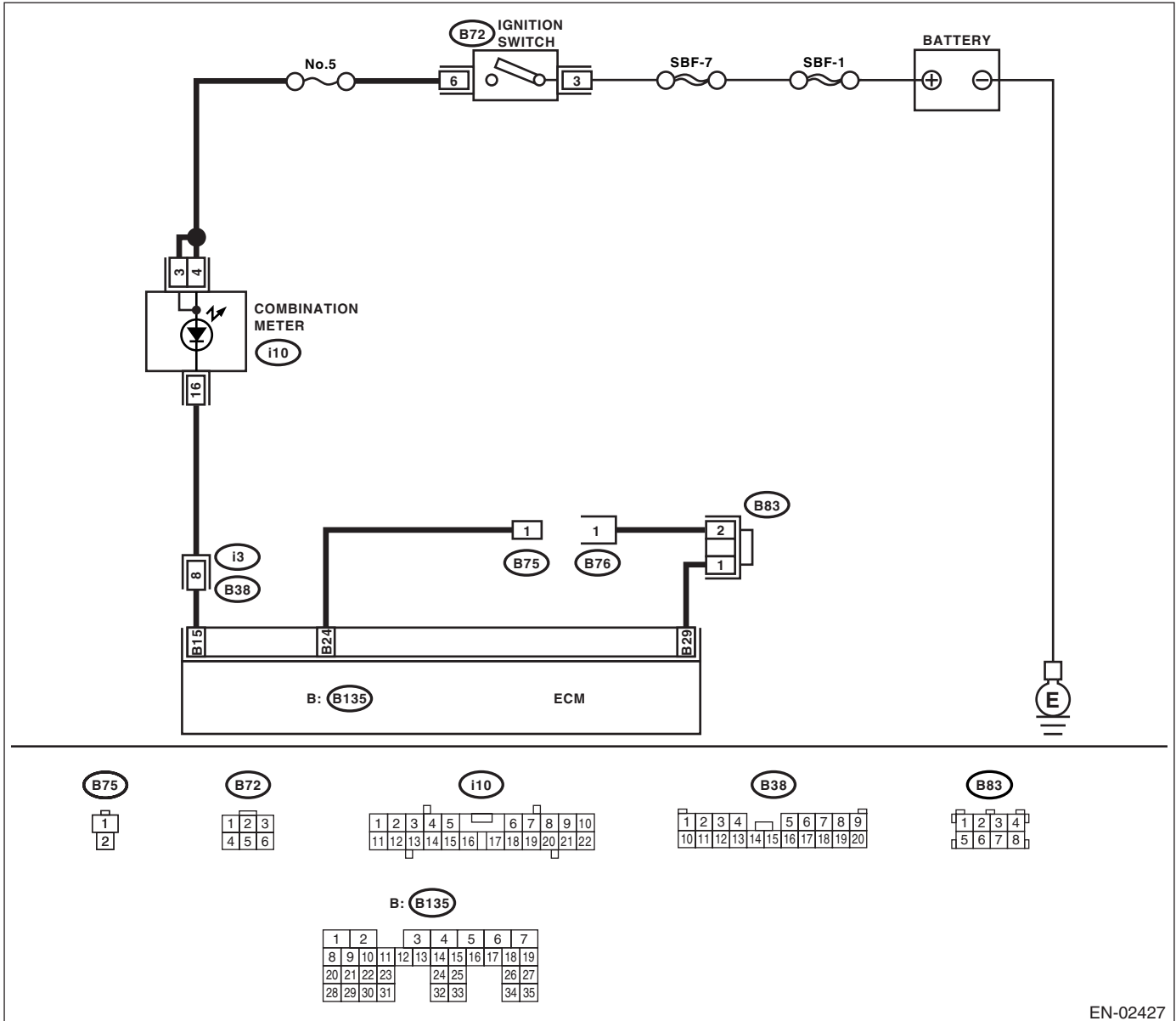
- LHD model



EN-02426

Malfunction Indicator Light

- RHD model



EN-02427

Malfunction Indicator Light

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK STATUS OF MALFUNCTION INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Disconnect the test mode connectors. 3) Turn the ignition switch to ON. (engine OFF)	Does the malfunction indicator light illuminate?	Go to step 2.	Repair the malfunction indicator light circuit. <Ref. to EN(H4SO 2.0)(diag)-43, MALFUNCTION INDICATOR LIGHT DOES NOT COME ON, Malfunction Indicator Light.>
2 CHECK HARNESS BETWEEN COMBINATION METER AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Turn the ignition switch to ON.	Does the malfunction indicator light illuminate?	Repair the short circuit in harness between combination meter and ECM connector.	Go to step 3.
3 CHECK HARNESS BETWEEN TEST MODE CONNECTOR AND CHASSIS GROUND. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between test mode connector and chassis ground. <i>Connector & terminal (B76) No. 1 — Chassis ground:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between test mode connector and chassis ground
4 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Go to step 5.
5 CHECK HARNESS BETWEEN ECM AND TEST MODE CONNECTOR. 1) Connect the test mode connector. 2) Measure the resistance of harness between ECM and chassis ground. <i>Connector & terminal (B135) No. 24 — Chassis ground:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM and test mode connector.
6 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

F: MALFUNCTION INDICATOR LIGHT REMAINS BLINKING.

DIAGNOSIS:

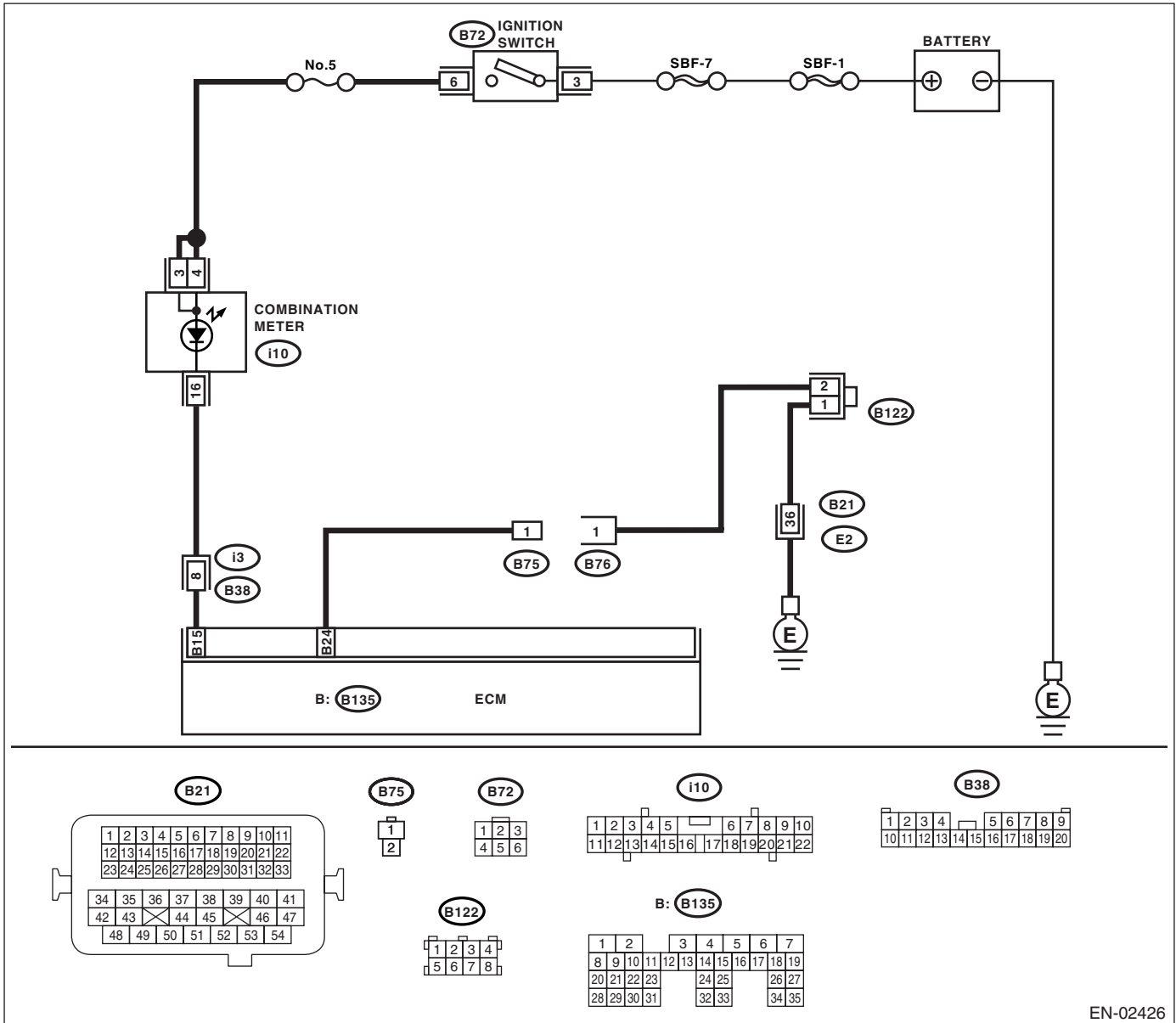
Test mode connector circuit is shorted.

TROUBLE SYMPTOM:

Malfunction indicator light blinks when test mode connector is not connected.

WIRING DIAGRAM:

- LHD model

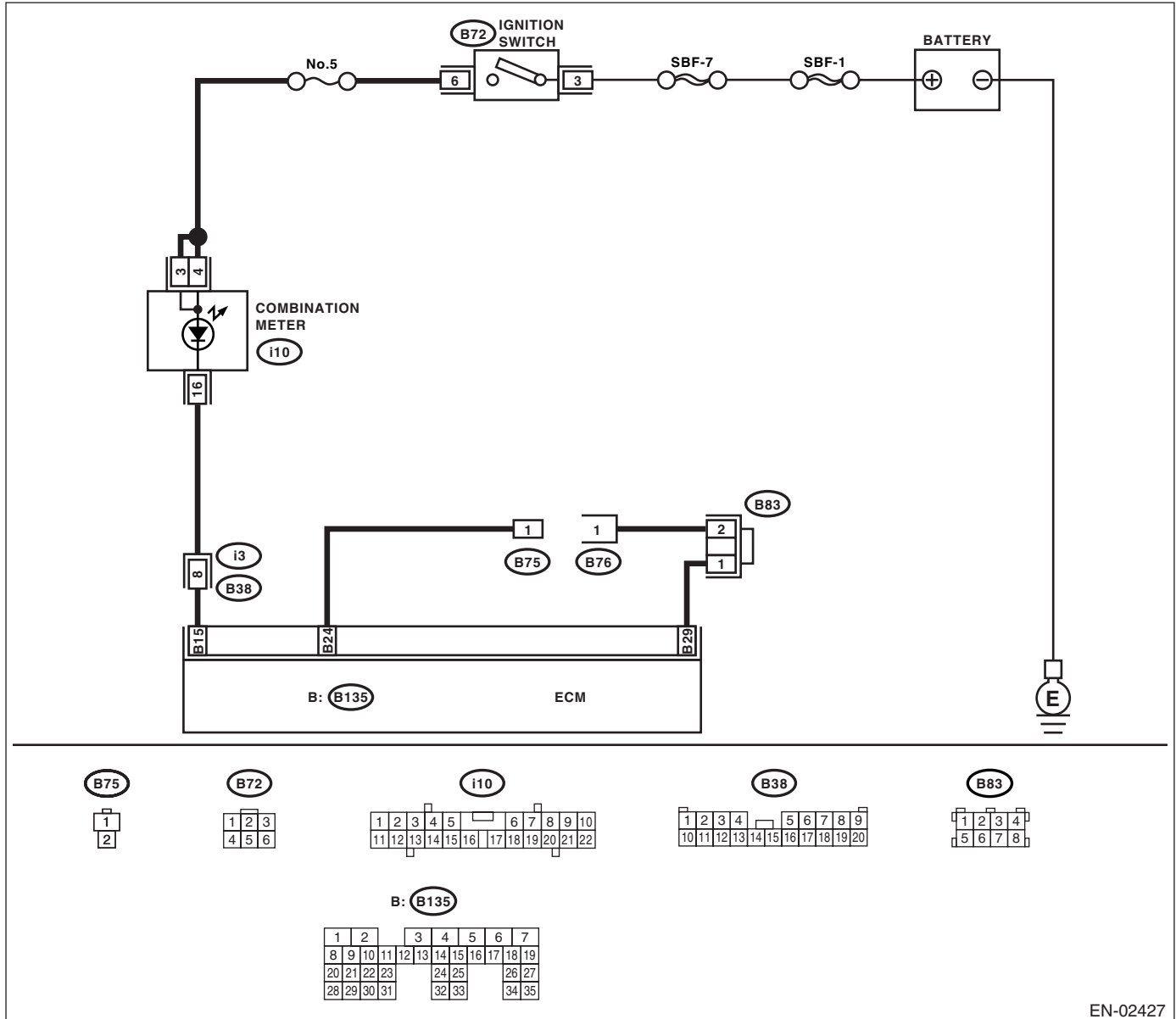


EN-02426

Malfunction Indicator Light

ENGINE (DIAGNOSTICS)

- RHD model



EN-02427

Step	Check	Yes	No
1 CHECK TEST MODE CONNECTOR. 1) Disconnect the test mode connectors. 2) Turn the ignition switch to ON.	Does the malfunction indicator light blink?	Go to step 2.	System is in good order. NOTE: Malfunction indicator light blinks at a cycle of 3 Hz when test mode connector is connected.
2 CHECK HARNESS BETWEEN ECM CONNECTOR AND CHASSIS GROUNDING TERMINAL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 24 — Chassis ground:	Is the resistance less than 5 Ω?	Repair the short circuit in harness between ECM and test mode connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

16. Diagnostics for Engine Starting Failure

A: PROCEDURE

1. Check for fuel amount.
↓
2. Inspection of starter motor circuit. <Ref. to EN(H4SO 2.0)(diag)-52, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>
↓
3. Inspection of ECM power supply and ground line. <Ref. to EN(H4SO 2.0)(diag)-55, CHECK POWER SUPPLY AND GROUND LINE OF ENGINE CONTROL MODULE (ECM), Diagnostics for Engine Starting Failure.>
↓
4. Inspection of ignition control system. <Ref. to EN(H4SO 2.0)(diag)-58, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>
↓
5. Inspection of fuel pump circuit. <Ref. to EN(H4SO 2.0)(diag)-61, FUEL PUMP CIRCUIT, Diagnostics for Engine Starting Failure.>
↓
6. Inspection of fuel injector circuit. <Ref. to EN(H4SO 2.0)(diag)-64, FUEL INJECTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

Diagnostics for Engine Starting Failure

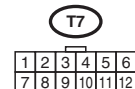
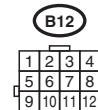
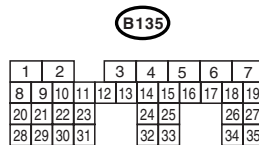
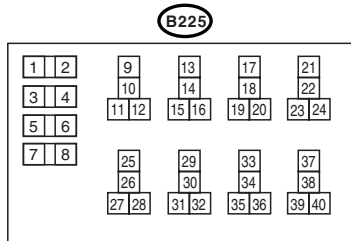
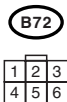
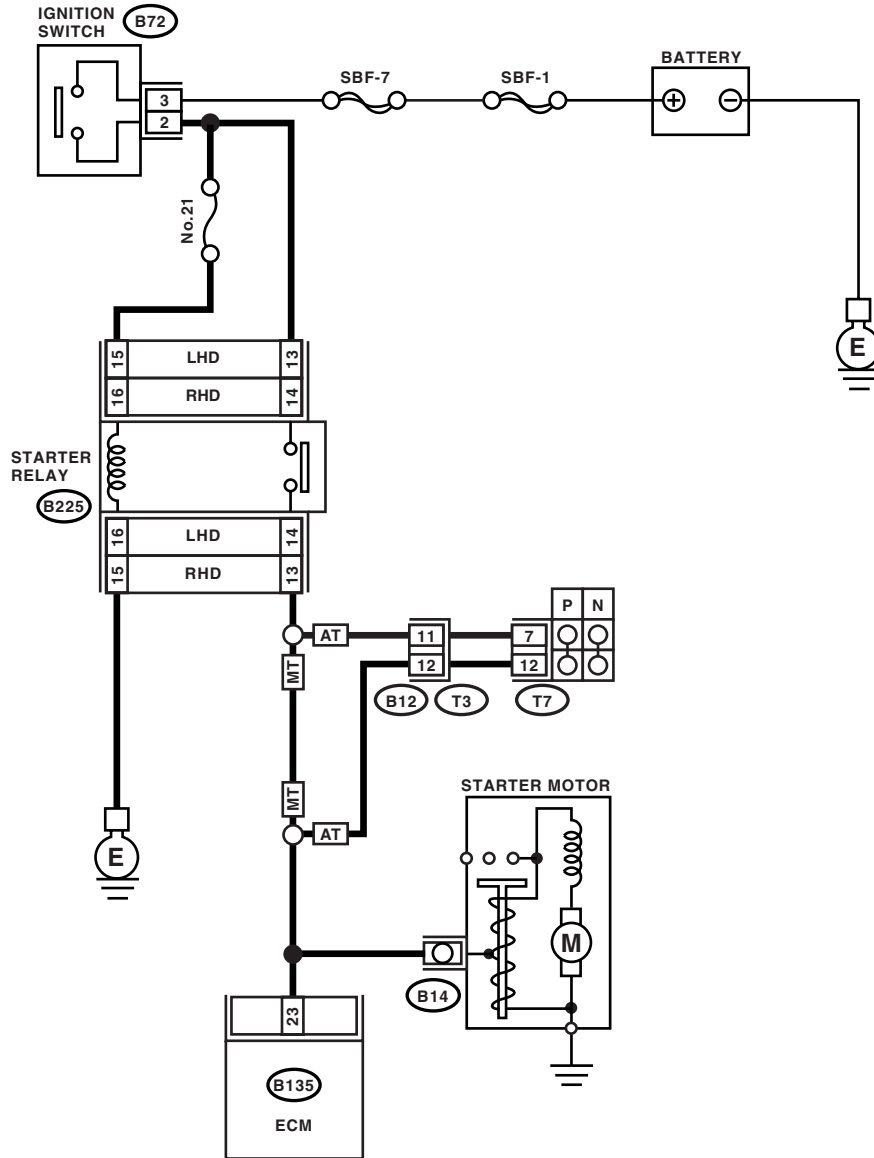
ENGINE (DIAGNOSTICS)

B: STARTER MOTOR CIRCUIT

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02428

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK BATTERY. Check the battery voltage.	Is the voltage more than 12 V?	Go to step 2.	Charge or replace the battery.
2 CHECK OPERATION OF STARTER MOTOR.	Does the starter motor operate?	Go to step 3.	Go to step 4.
3 CHECK DTC.	Is DTC displayed? <Ref. to EN(H4SO 2.0)(diag)-31, OPERATION, Read Diagnostic Trouble Code (DTC).>	Inspect the relevant DTC using List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>	Repair the poor contact in ECM connector.
4 CHECK INPUT SIGNAL FOR STARTER MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from starter motor. 3) Turn the ignition switch to START. 4) Measure the power supply voltage between starter motor connector terminal and engine ground. Connector & terminal (B14) No. 1 (+) — Engine ground (-): NOTE: Place the select lever in the "P" or "N" range.	Is the voltage more than 10 V?	Go to step 5.	Go to step 6.
5 CHECK GROUND CIRCUIT OF STARTER MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the ground cable terminal from starter motor. 3) Measure the resistance of ground cable between ground cable terminal and engine ground.	Is the resistance less than 5 Ω?	Check the starter motor. <Ref. to SC(H4SO 2.0)-6, Starter.>	Repair the open circuit of ground cable.
6 CHECK HARNESS BETWEEN BATTERY AND IGNITION SWITCH CONNECTOR. 1) Disconnect the connector from ignition switch. 2) Measure the power supply voltage between ignition switch connector and chassis ground. Connector & terminal (B72) No. 3 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Repair the open circuit in harness between ignition switch and battery, and check fuse SBF No. 7 and SBF No. 1.
7 CHECK IGNITION SWITCH. 1) Disconnect the connector from ignition switch. 2) Measure the resistance between ignition switch terminals after turning the ignition switch to START position. Terminals No. 2 — No. 3:	Is the resistance less than 5 Ω?	Go to step 8.	Replace the ignition switch.

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

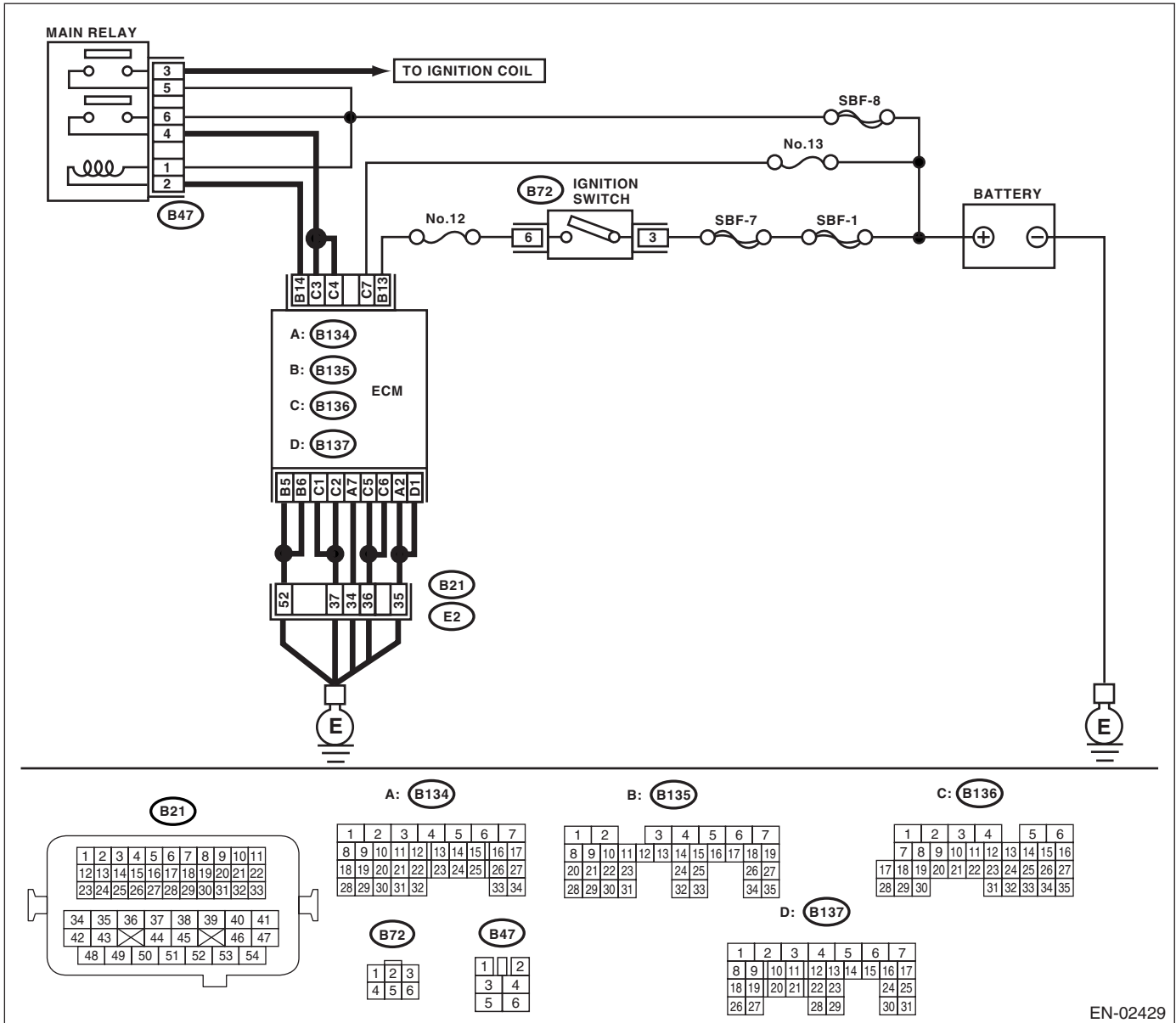
Step	Check	Yes	No
8 CHECK INPUT VOLTAGE OF STARTER RELAY. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from starter relay. 3) Connect the connector to ignition switch. 4) Measure the input voltage between starter relay connector and chassis ground after turning the ignition switch to START position. Connector & terminal LHD MODEL (B225) No. 13 (+) — Chassis ground (-): (B225) No. 15 (+) — Chassis ground (-): RHD MODEL (B225) No. 14 (+) — Chassis ground (-): (B225) No. 16 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 9.	Repair the open circuit in harness between starter fan relay and ignition switch.
9 CHECK STARTER RELAY. 1) Connect the battery to starter relay terminals No. 15 and No. 16. 2) Measure the resistance between starter relay terminals. Terminals No. 13 — No. 14:	Is the resistance less than 1 Ω ?	Go to step 10.	Replace the starter relay.
10 CHECK INPUT VOLTAGE FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the connector to starter relay. 3) Disconnect the connectors from ECM. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 23 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Repair the open or ground short circuit in harness between ECM and starter relay.

C: CHECK POWER SUPPLY AND GROUND LINE OF ENGINE CONTROL MODULE (ECM)

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>

WIRING DIAGRAM:



EN-02429

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK MAIN RELAY. 1) Turn the ignition switch to OFF. 2) Remove the main relay. 3) Connect the battery to main relay terminals No. 1 and No. 2. 4) Measure the resistance between main relay terminals. Terminals No. 3 — No. 5: No. 4 — No. 6:	Is the resistance less than 10 Ω ?	Go to step 2.	Replace the main relay.
2 CHECK GROUND CIRCUIT FOR ECM. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B134) No. 2 — Chassis ground: (B134) No. 7 — Chassis ground: (B135) No. 5 — Chassis ground: (B135) No. 6 — Chassis ground: (B136) No. 1 — Chassis ground: (B136) No. 2 — Chassis ground: (B136) No. 5 — Chassis ground: (B136) No. 6 — Chassis ground: (B137) No. 1 — Chassis ground:	Is the resistance less than 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. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 7 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Repair the open or ground short circuit of power supply circuit.
4 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 13 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 5.	Repair the open or ground short circuit of power supply circuit.
5 CHECK INPUT VOLTAGE OF MAIN RELAY. Measure the voltage between main relay connector and chassis ground. Connector & terminal (B47) No. 1 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 6.	Repair the open circuit in harness between ECM connector and main relay connector.
6 CHECK INPUT VOLTAGE OF ECM. 1) Connect the connectors to ECM and main relay. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 14 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Repair the open or ground short circuit in harness between ECM connector and main relay connector.
7 CHECK INPUT VOLTAGE OF MAIN RELAY. Measure the voltage between main relay connector and chassis ground. Connector & terminal (B47) No. 5 (+) — Chassis ground (-): (B47) No. 6 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 8.	Repair the open or ground short circuit in harness of power supply circuit.

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B136) No. 3 (+) — Chassis ground (-):</i> <i>(B136) No. 4 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Check ignition control system. <Ref. to EN(H4SO 2.0)(diag)-58, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Repair the open or ground short circuit in harness between ECM connector and main relay connector.

Diagnostics for Engine Starting Failure

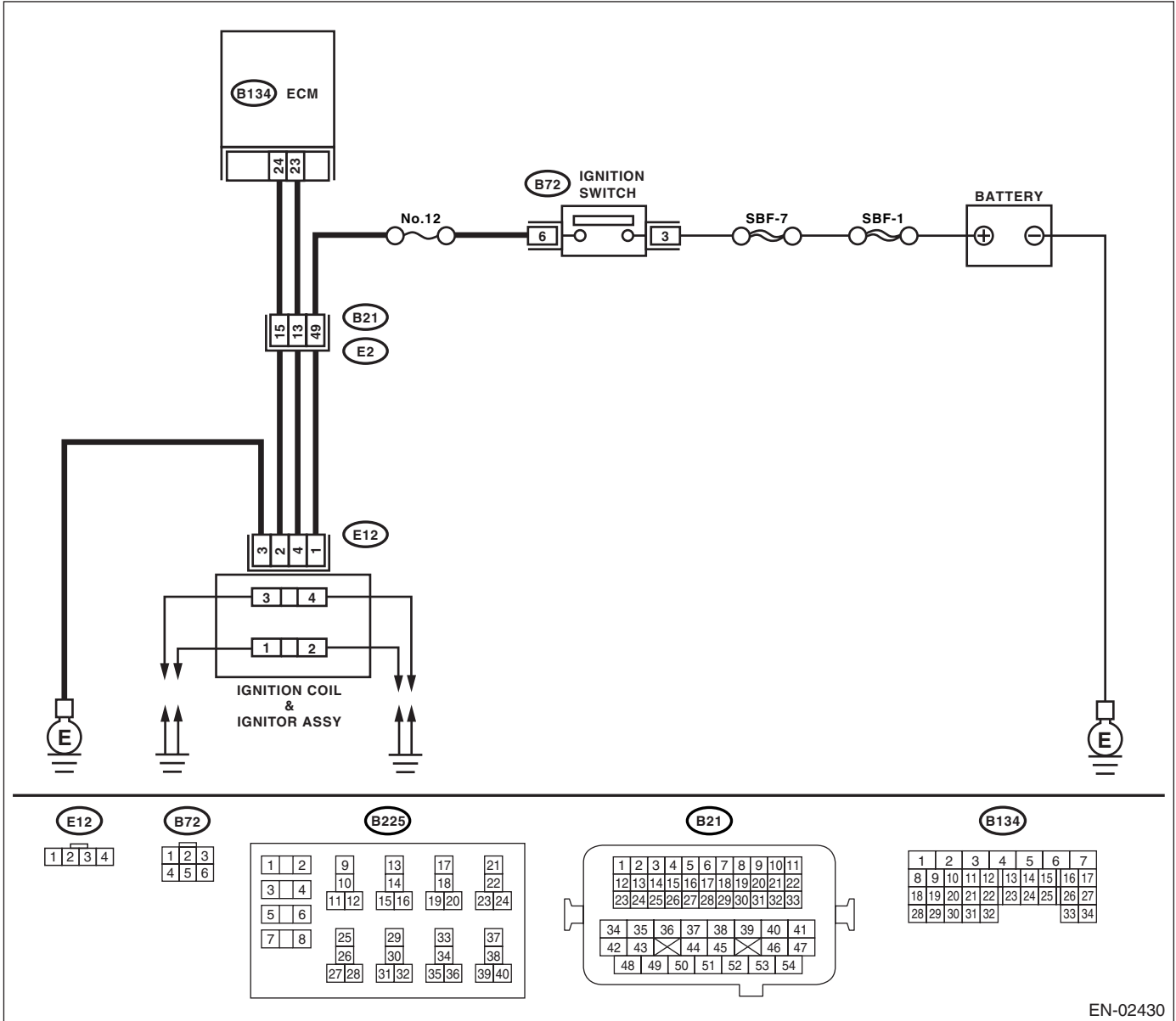
ENGINE (DIAGNOSTICS)

D: IGNITION CONTROL SYSTEM

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02430

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK IGNITION SYSTEM FOR SPARKS. 1) Remove the plug cord cap from each spark plug. 2) Install a new spark plug on plug cord cap. CAUTION: Do not remove the spark plug from engine. 3) Contact the spark plug's thread portion on engine. 4) While opening the throttle valve fully, crank the engine to check that spark occurs at each cylinder.</p>	Does spark occur at each cylinder?	Check fuel pump system. <Ref. to EN(H4SO 2.0)(diag)-61, FUEL PUMP CIRCUIT, Diagnostics for Engine Starting Failure.>	Go to step 2.
<p>2</p> <p>CHECK POWER SUPPLY CIRCUIT FOR IGNITION COIL & IGNITOR ASSY. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ignition coil & ignitor ASSY. 3) Turn the ignition switch to ON. 4) Measure the power supply voltage between ignition coil & ignitor ASSY connector and engine ground. Connector & terminal (E12) No. 1 (+) — Engine ground (-):</p>	Is the voltage more than 10 V?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ignition coil & ignitor ASSY, and main relay connector • Poor contact in coupling connector • Blown out fuse
<p>3</p> <p>CHECK HARNESS OF IGNITION COIL & IGNITOR ASSY GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ignition coil & ignitor ASSY connector and engine ground. Connector & terminal (E12) No. 3 — Engine ground:</p>	Is the resistance less than 5 Ω ?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ignition coil & ignitor ASSY connector and engine grounding terminal
<p>4</p> <p>CHECK IGNITION COIL & IGNITOR ASSY. 1) Remove the spark plug cords. 2) Measure the resistance between spark plug cord contact portions to check secondary coil. Terminals No. 1 — No. 2: No. 3 — No. 4:</p>	Is the resistance 10 — 15 k Ω ?	Go to step 5.	Replace the ignition coil & ignitor ASSY. <Ref. to IG(H4SO 2.0)-8, Ignition Coil & Ignitor ASSY.>
<p>5</p> <p>CHECK INPUT SIGNAL FOR IGNITION COIL & IGNITOR ASSY. 1) Connect the connector to ignition coil & ignitor ASSY. 2) Check if voltage varies synchronously with engine speed when cranking, while monitoring voltage between ignition coil & ignitor ASSY connector and engine ground. Connector & terminal (E12) No. 2 (+) — Engine ground (-): (E12) No. 4 (+) — Engine ground (-):</p>	Does the voltage vary more than 10 V?	Go to step 6.	Replace the ignition coil & ignitor ASSY. <Ref. to IG(H4SO 2.0)-8, Ignition Coil & Ignitor ASSY.>

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

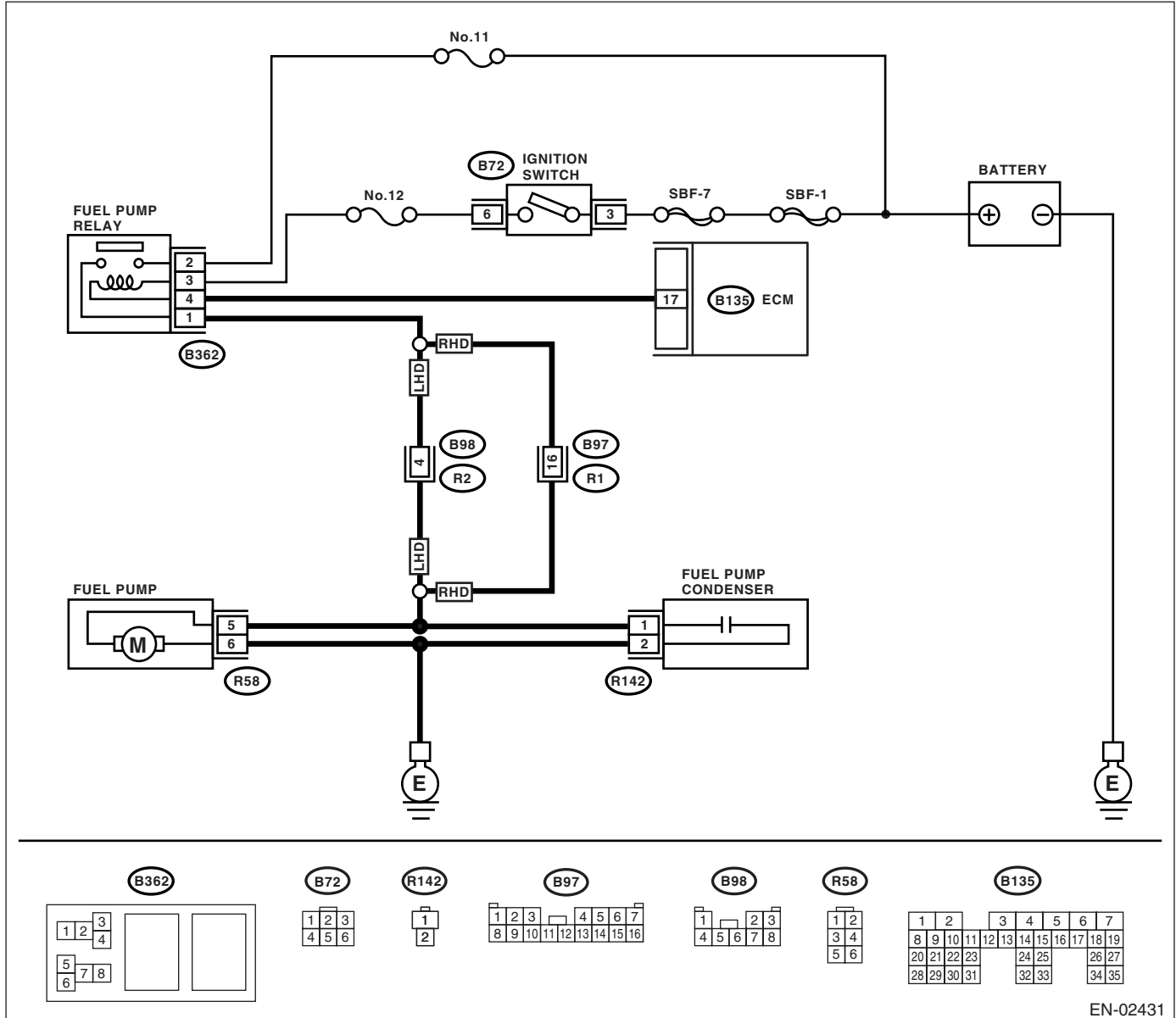
Step	Check	Yes	No
6 CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from ignition coil & ignitor ASSY. 4) Measure the resistance of harness between ECM and ignition coil & ignitor ASSY connector. Connector & terminal (B134) No. 23 — (E12) No. 4: (B134) No. 24 — (E12) No. 2:	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and ignition coil & ignitor ASSY connector • Poor contact in coupling connector
7 CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSY CONNECTOR. Measure the resistance of harness between ECM and engine ground. Connector & terminal: (B134) No. 23 — Engine ground: (B134) No. 24 — Engine ground:	Is the resistance more than 1 $M\Omega$?	Go to step 8.	Repair the ground short circuit in harness between ECM and ignition coil & ignitor ASSY connector.
8 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Check the fuel pump circuit. <Ref. to EN(H4SO 2.0)(diag)-61, FUEL PUMP CIRCUIT, Diagnostics for Engine Starting Failure.>

E: FUEL PUMP CIRCUIT

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02431

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK OPERATING SOUND OF FUEL PUMP. Check if the fuel pump is in operation for two seconds when turning the ignition switch to ON.</p> <p>NOTE: Fuel pump operation can also be executed using Subaru Select Monitor. Refer to "Compulsory Valve Operation Check Mode" for procedures. <Ref. to EN(H4SO 2.0)(diag)-39, Compulsory Valve Operation Check Mode.></p>	Does the fuel pump produce operating sound?	Check the fuel injector circuit. <Ref. to EN(H4SO 2.0)(diag)-64, FUEL INJECTOR CIRCUIT, Diagnostics for Engine Starting Failure.>	Go to step 2.
<p>2 CHECK GROUND CIRCUIT OF FUEL PUMP. 1) Turn the ignition switch to OFF. 2) Remove the fuel pump access hole lid. 3) Disconnect the connector from fuel pump. 4) Measure the resistance of harness connector between fuel pump and chassis ground.</p> <p>Connector & terminal (R58) No. 6 — Chassis ground:</p>	Is the resistance less than 5 Ω ?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between fuel pump connector and chassis grounding terminal
<p>3 CHECK POWER SUPPLY TO FUEL PUMP. 1) Turn the ignition switch to ON. 2) Measure the voltage of power supply circuit between fuel pump connector and chassis ground.</p> <p>Connector & terminal (R58) No. 5 (+) — Chassis ground (-):</p>	Is the voltage more than 10 V?	Replace the fuel pump. <Ref. to FU(H4SO 2.0)-47, Fuel Pump.>	Go to step 4.
<p>4 CHECK HARNESS BETWEEN FUEL PUMP AND FUEL PUMP RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness connector between fuel pump and fuel pump relay.</p> <p>Connector & terminal (R58) No. 5 — (B362) No. 1:</p>	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between fuel pump connector and chassis grounding terminal • Poor contact in coupling connector
<p>5 CHECK HARNESS BETWEEN FUEL PUMP AND FUEL PUMP RELAY CONNECTOR. Measure the resistance of harness between fuel pump and fuel pump relay connector.</p> <p>Connector & terminal (R58) No. 5 — Chassis ground:</p>	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair the short circuit in harness between fuel pump and fuel pump relay connector.
<p>6 CHECK FUEL PUMP RELAY. 1) Disconnect the connectors from fuel pump relay and main relay. 2) Remove the fuel pump relay and main relay with bracket. 3) Connect the battery to fuel pump relay connector terminals No. 3 and No. 4. 4) Measure the resistance between connector terminals of fuel pump relay.</p> <p>Terminals No. 2 — No. 1:</p>	Is the resistance less than 10 Ω ?	Go to step 7.	Replace the fuel pump relay. <Ref. to FU(H4SO 2.0)-47, Fuel Pump.>

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK HARNESS BETWEEN ECM AND FUEL PUMP RELAY CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and fuel pump relay connector. Connector & terminal (B135) No. 17 — (B362) No. 4:	Is the resistance less than 1 Ω ?	Go to step 8 .	Repair the open circuit in harness between ECM and fuel pump relay connector.
8 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Check the fuel injector circuit. <Ref. to EN(H4SO 2.0)(diag)-64, FUEL INJECTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

Diagnostics for Engine Starting Failure

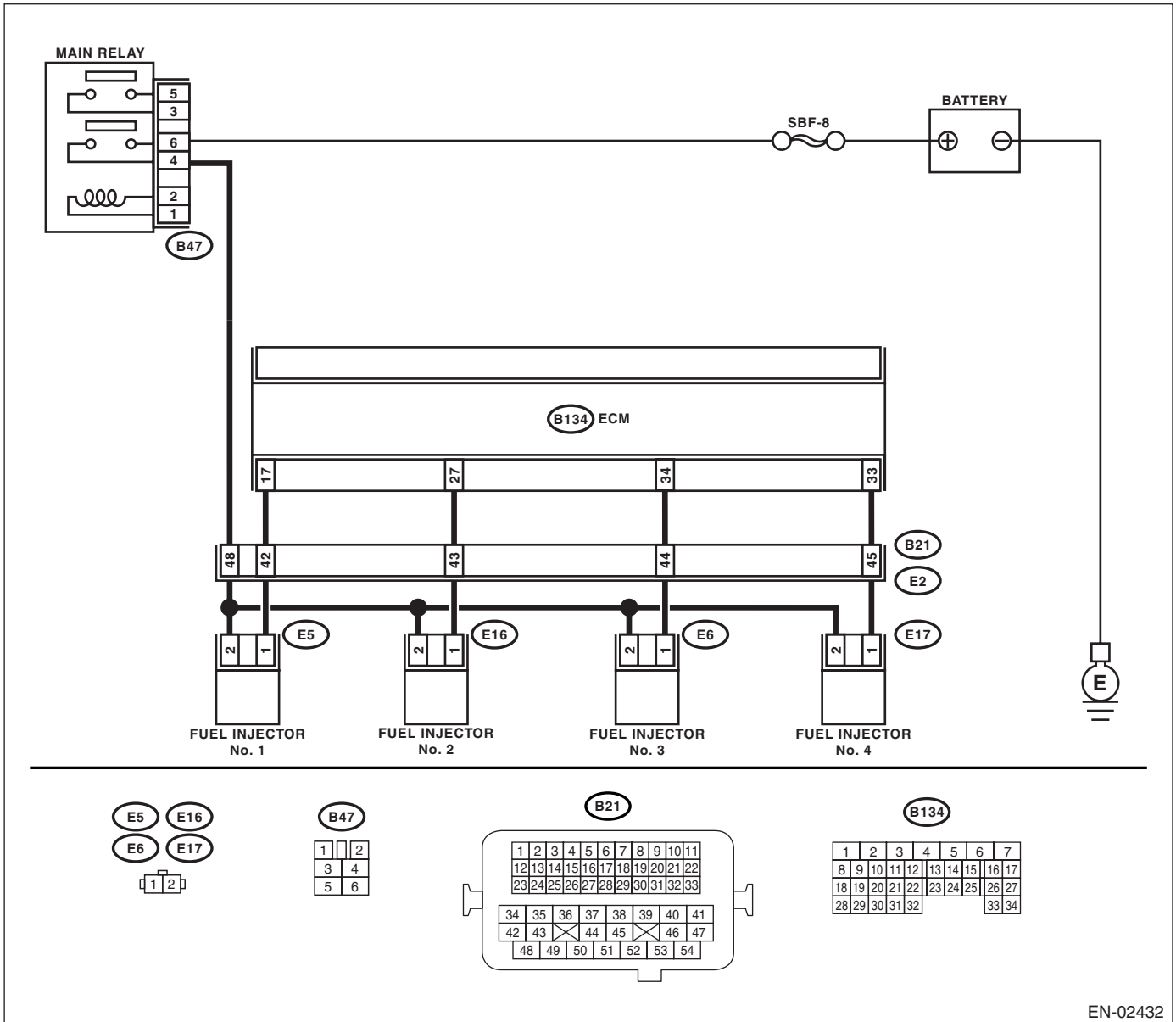
ENGINE (DIAGNOSTICS)

F: FUEL INJECTOR CIRCUIT

CAUTION:

- Check or repair only faulty parts.
- After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02432

Diagnostics for Engine Starting Failure

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK OPERATION OF EACH FUEL INJECTOR. While cranking the engine, check each fuel injector emits operating sound. Use a sound scope or apply a screwdriver to the injector for this check.</p>	Does the fuel pump emit operating sound?	Check the fuel pressure. <Ref. to ME(H4SO 2.0)-27, INSPECTION, Fuel Pressure.>	Go to step 2.
<p>2 CHECK POWER SUPPLY TO EACH FUEL INJECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector. 3) Turn the ignition switch to ON. 4) Measure the power supply voltage between fuel injector terminal and engine ground. Connector & terminal #1 (E5) No. 2 (+) — Engine ground (-): #2 (E16) No. 2 (+) — Engine ground (-): #3 (E6) No. 2 (+) — Engine ground (-): #4 (E17) No. 2 (+) — Engine ground (-):</p>	Is the voltage more than 10 V?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between main relay and fuel injector connector • Poor contact in main relay connector • Poor contact in coupling connector • Poor contact in fuel injector connector
<p>3 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and fuel injector connector. Connector & terminal #1 (B134) No. 17 — (E5) No. 1: #2 (B134) No. 27 — (E16) No. 1: #3 (B134) No. 34 — (E6) No. 1: #4 (B134) No. 33 — (E17) No. 1:</p>	Is the resistance less than 1 Ω?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and fuel injector connector • Poor contact in coupling connector
<p>4 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance of harness between ECM and fuel injector connector. Connector & terminal #1 (B134) No. 17 — Chassis ground: #2 (B134) No. 27 — Chassis ground: #3 (B134) No. 34 — Chassis ground: #4 (B134) No. 33 — Chassis ground:</p>	Is the resistance more than 1 MΩ?	Go to step 5.	Repair the ground short circuit in harness between ECM and fuel injector connector.
<p>5 CHECK EACH FUEL INJECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between each fuel injector terminals. Terminals No. 1 — No. 2:</p>	Is the resistance 5 — 20 Ω?	Go to step 6.	Replace the faulty fuel injector.
<p>6 CHECK POOR CONTACT. Check poor contact in ECM connector.</p>	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Inspection using “General Diagnostic Table” <Ref. to EN(H4SO 2.0)(diag)-224, INSPECTION, General Diagnostic Table.>

List of Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

17. List of Diagnostic Trouble Code (DTC)

A: LIST

DTC	Item	NOTE
P0030	HO2S Heater Control Circuit (Bank 1 Sensor 1)	<Ref. to EN(H4SO 2.0)(diag)-71, DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0031	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)	<Ref. to EN(H4SO 2.0)(diag)-73, 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(H4SO 2.0)(diag)-76, 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(H4SO 2.0)(diag)-78, 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(H4SO 2.0)(diag)-81, DTC P0038 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0107	Manifold Absolute Pressure/Barometric Pressure Circuit Low Input	<Ref. to EN(H4SO 2.0)(diag)-83, 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(H4SO 2.0)(diag)-86, 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(H4SO 2.0)(diag)-89, 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(H4SO 2.0)(diag)-91, 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(H4SO 2.0)(diag)-94, 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(H4SO 2.0)(diag)-96, 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(H4SO 2.0)(diag)-99, 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(H4SO 2.0)(diag)-102, DTC P0123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0125	Insufficient Coolant Temperature for Closed Loop Fuel Control	<Ref. to EN(H4SO 2.0)(diag)-105, DTC P0125 INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0130	O2 Sensor Circuit (Bank 1 Sensor 1)	<Ref. to EN(H4SO 2.0)(diag)-107, DTC P0130 O2 SENSOR CIRCUIT (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0131	O2 Sensor Circuit Low Voltage (Bank 1 Sensor 1)	<Ref. to EN(H4SO 2.0)(diag)-110, DTC P0131 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0132	O2 Sensor Circuit High Voltage (Bank 1 Sensor 1)	<Ref. to EN(H4SO 2.0)(diag)-112, DTC P0132 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0133	O2 Sensor Circuit Slow Response (Bank 1 Sensor 1)	<Ref. to EN(H4SO 2.0)(diag)-114, DTC P0133 O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

List of Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DTC	Item	NOTE
P0134	O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 1)	<Ref. to EN(H4SO 2.0)(diag)-116, DTC P0134 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0137	O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2)	<Ref. to EN(H4SO 2.0)(diag)-118, DTC P0137 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0138	O2 Sensor Circuit High Voltage (Bank 1 Sensor 2)	<Ref. to EN(H4SO 2.0)(diag)-121, DTC P0138 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0139	O2 Sensor Circuit Slow Response (Bank 1 Sensor 2)	<Ref. to EN(H4SO 2.0)(diag)-124, DTC P0139 O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0171	System Too Lean (Bank 1)	<Ref. to EN(H4SO 2.0)(diag)-126, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0172	System Too Rich (Bank 1)	<Ref. to EN(H4SO 2.0)(diag)-126, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0222	Throttle/Pedal Position Sensor/Switch "B" Circuit Low Input	<Ref. to EN(H4SO 2.0)(diag)-128, DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0223	Throttle/Pedal Position Sensor/Switch "B" Circuit High Input	<Ref. to EN(H4SO 2.0)(diag)-131, DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0301	Cylinder 1 Misfire Detected	<Ref. to EN(H4SO 2.0)(diag)-134, DTC P0301 CYLINDER 1 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0302	Cylinder 2 Misfire Detected	<Ref. to EN(H4SO 2.0)(diag)-134, DTC P0302 CYLINDER 2 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0303	Cylinder 3 Misfire Detected	<Ref. to EN(H4SO 2.0)(diag)-134, DTC P0303 CYLINDER 3 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0304	Cylinder 4 Misfire Detected	<Ref. to EN(H4SO 2.0)(diag)-135, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0327	Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor)	<Ref. to EN(H4SO 2.0)(diag)-142, 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(H4SO 2.0)(diag)-144, 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(H4SO 2.0)(diag)-146, 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(H4SO 2.0)(diag)-148, DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0400	Exhaust Gas Recirculation Flow	<Ref. to EN(H4SO 2.0)(diag)-150, DTC P0400 EXHAUST GAS RECIRCULATION FLOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0420	Catalyst System Efficiency Below Threshold (Bank 1)	<Ref. to EN(H4SO 2.0)(diag)-153, DTC P0420 CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0458	Evaporative Emission Control System Purge Control Valve Circuit Low	<Ref. to EN(H4SO 2.0)(diag)-155, DTC P0458 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0459	Evaporative Emission Control System Purge Control Valve Circuit High	<Ref. to EN(H4SO 2.0)(diag)-157, DTC P0459 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0462	Fuel Level Sensor Circuit Low Input	<Ref. to EN(H4SO 2.0)(diag)-159, DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

List of Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DTC	Item	NOTE
P0463	Fuel Level Sensor Circuit High Input	<Ref. to EN(H4SO 2.0)(diag)-159, DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0500	Vehicle Speed Sensor	<Ref. to EN(H4SO 2.0)(diag)-159, DTC P0500 VEHICLE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0512	Starter Request Circuit	<Ref. to EN(H4SO 2.0)(diag)-160, DTC P0512 STARTER REQUEST CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0513	Incorrect Immobilizer Key	<Ref. to IM(diag)-17, DTC P0513 INCORRECT IMMOBILIZER KEY, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0519	Idle Control System Malfunction (Fail-Safe)	<Ref. to EN(H4SO 2.0)(diag)-163, DTC P0519 IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0558	Generator Circuit Low Input	<Ref. to EN(H4SO 2.0)(diag)-163, DTC P0558 GENERATOR CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0559	Generator Circuit High Input	<Ref. to EN(H4SO 2.0)(diag)-164, DTC P0559 GENERATOR CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0600	Serial Communication Link	<Ref. to EN(H4SO 2.0)(diag)-165, DTC P0600 SERIAL COMMUNICATION LINK, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0604	Internal Control Module Read Access Memory (RAM) Error	<Ref. to EN(H4SO 2.0)(diag)-166, DTC P0604 INTERNAL CONTROL MODULE READ ACCESS MEMORY (RAM) ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0605	Internal Control Module Read Only Memory (ROM) Error	<Ref. to EN(H4SO 2.0)(diag)-167, DTC P0605 INTERNAL CONTROL MODULE READ ONLY MEMORY (ROM) ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0607	Control Module Performance	<Ref. to EN(H4SO 2.0)(diag)-168, DTC P0607 CONTROL MODULE PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0638	Throttle Actuator Control Range/Performance (Bank 1)	<Ref. to EN(H4SO 2.0)(diag)-169, DTC P0638 THROTTLE ACTUATOR CONTROL RANGE/PERFORMANCE (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0691	Cooling Fan 1 Control Circuit Low	<Ref. to EN(H4SO 2.0)(diag)-170, DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0692	Cooling Fan 1 Control Circuit High	<Ref. to EN(H4SO 2.0)(diag)-170, DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0700	Transmission Control System (MIL Request)	<Ref. to EN(H4SO 2.0)(diag)-170, DTC P0700 TRANSMISSION CONTROL SYSTEM (MIL REQUEST), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0851	Neutral Switch Input Circuit Low	<Ref. to EN(H4SO 2.0)(diag)-171, DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0852	Neutral Switch Input Circuit High	<Ref. to EN(H4SO 2.0)(diag)-173, DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1134	A/F Sensor Micro-Computer Problem	<Ref. to EN(H4SO 2.0)(diag)-176, DTC P1134 A/F SENSOR MICRO-COMPUTER PROBLEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1137	O2 Sensor Circuit (Bank1 Sensor1)	<Ref. to EN(H4SO 2.0)(diag)-178, DTC P1137 O2 SENSOR CIRCUIT (BANK1 SENSOR1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1160	Return Spring Failure	<Ref. to EN(H4SO 2.0)(diag)-181, DTC P1160 RETURN SPRING FAILURE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1492	EGR Solenoid Valve Signal #1 Circuit Malfunction (Low Input)	<Ref. to EN(H4SO 2.0)(diag)-181, DTC P1492 EGR SOLENOID VALVE SIGNAL #1 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1493	EGR Solenoid Valve Signal #1 Circuit Malfunction (High Input)	<Ref. to EN(H4SO 2.0)(diag)-181, DTC P1493 EGR SOLENOID VALVE SIGNAL #1 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

List of Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DTC	Item	NOTE
P1494	EGR Solenoid Valve Signal #2 Circuit Malfunction (Low Input)	<Ref. to EN(H4SO 2.0)(diag)-181, DTC P1494 EGR SOLENOID VALVE SIGNAL #2 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1495	EGR Solenoid Valve Signal #2 Circuit Malfunction (High Input)	<Ref. to EN(H4SO 2.0)(diag)-181, DTC P1495 EGR SOLENOID VALVE SIGNAL #2 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1496	EGR Solenoid Valve Signal #3 Circuit Malfunction (Low Input)	<Ref. to EN(H4SO 2.0)(diag)-181, DTC P1496 EGR SOLENOID VALVE SIGNAL #3 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1497	EGR Solenoid Valve Signal #3 Circuit Malfunction (High Input)	<Ref. to EN(H4SO 2.0)(diag)-181, DTC P1497 EGR SOLENOID VALVE SIGNAL #3 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1498	EGR Solenoid Valve Signal #4 Circuit Malfunction (Low Input)	<Ref. to EN(H4SO 2.0)(diag)-182, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1499	EGR Solenoid Valve Signal #4 Circuit Malfunction (High Input)	<Ref. to EN(H4SO 2.0)(diag)-184, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1518	Starter Switch Circuit Low Input	<Ref. to EN(H4SO 2.0)(diag)-186, DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1521	Brake Switch Circuit Range/Performance Problem (High Input)	<Ref. to EN(H4SO 2.0)(diag)-189, DTC P1521 BRAKE SWITCH CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1560	Back-Up Voltage Circuit Malfunction	<Ref. to EN(H4SO 2.0)(diag)-191, DTC P1560 BACK-UP VOLTAGE CIRCUIT MALFUNCTION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1570	Antenna	<Ref. to IM(diag)-18, DTC P1570 ANTENNA, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1571	Reference Code Incompatibility	<Ref. to IM(diag)-21, DTC P1571 REFERENCE CODE INCOMPATIBILITY, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1572	IMM Circuit Failure (Except antenna circuit)	<Ref. to IM(diag)-22, DTC P1572 IMM CIRCUIT FAILURE (EXCEPT ANTENNA CIRCUIT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1574	Key Communication Failure	<Ref. to IM(diag)-25, DTC P1574 KEY COMMUNICATION FAILURE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1576	EGI Control Module EEPROM	<Ref. to IM(diag)-25, DTC P1576 EGI CONTROL MODULE EEPROM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1577	IMM Control Module EEPROM	<Ref. to IM(diag)-25, DTC P1577 IMM CONTROL MODULE EEPROM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1578	Meter Failure	<Ref. to IM(diag)-26, DTC P1578 METER FAILURE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2100	Throttle Control Motor Circuit Open	<Ref. to EN(H4SO 2.0)(diag)-192, DTC P2100 THROTTLE CONTROL MOTOR CIRCUIT OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2101	Throttle Actuator Control Motor Circuit Range/Performance	<Ref. to EN(H4SO 2.0)(diag)-193, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2102	Throttle Actuator Control Motor Circuit Low	<Ref. to EN(H4SO 2.0)(diag)-200, DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2103	Throttle Actuator Control Motor Circuit High	<Ref. to EN(H4SO 2.0)(diag)-203, DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2109	Throttle/Pedal Position Sensor A Minimum Stop Performance	<Ref. to EN(H4SO 2.0)(diag)-205, DTC P2109 THROTTLE ANGLE CLOSED POSITION ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

List of Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DTC	Item	NOTE
P2111	Throttle Actuator Control System - Stuck Open	<Ref. to EN(H4SO 2.0)(diag)-205, DTC P2111 THROTTLE ACTUATOR CONTROL SYSTEM - STUCK OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2122	Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input	<Ref. to EN(H4SO 2.0)(diag)-206, DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2123	Throttle/Pedal Position Sensor/Switch "D" Circuit High Input	<Ref. to EN(H4SO 2.0)(diag)-209, DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2127	Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input	<Ref. to EN(H4SO 2.0)(diag)-211, DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2128	Throttle/Pedal Position Sensor/Switch "E" Circuit High Input	<Ref. to EN(H4SO 2.0)(diag)-214, DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2135	Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality	<Ref. to EN(H4SO 2.0)(diag)-216, DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" / "B" VOLTAGE RATIONALITY, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P2138	Throttle/Pedal Position Sensor/Switch "D"/"E" Voltage Rationality	<Ref. to EN(H4SO 2.0)(diag)-220, DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" / "E" VOLTAGE RATIONALITY, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

18. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1)

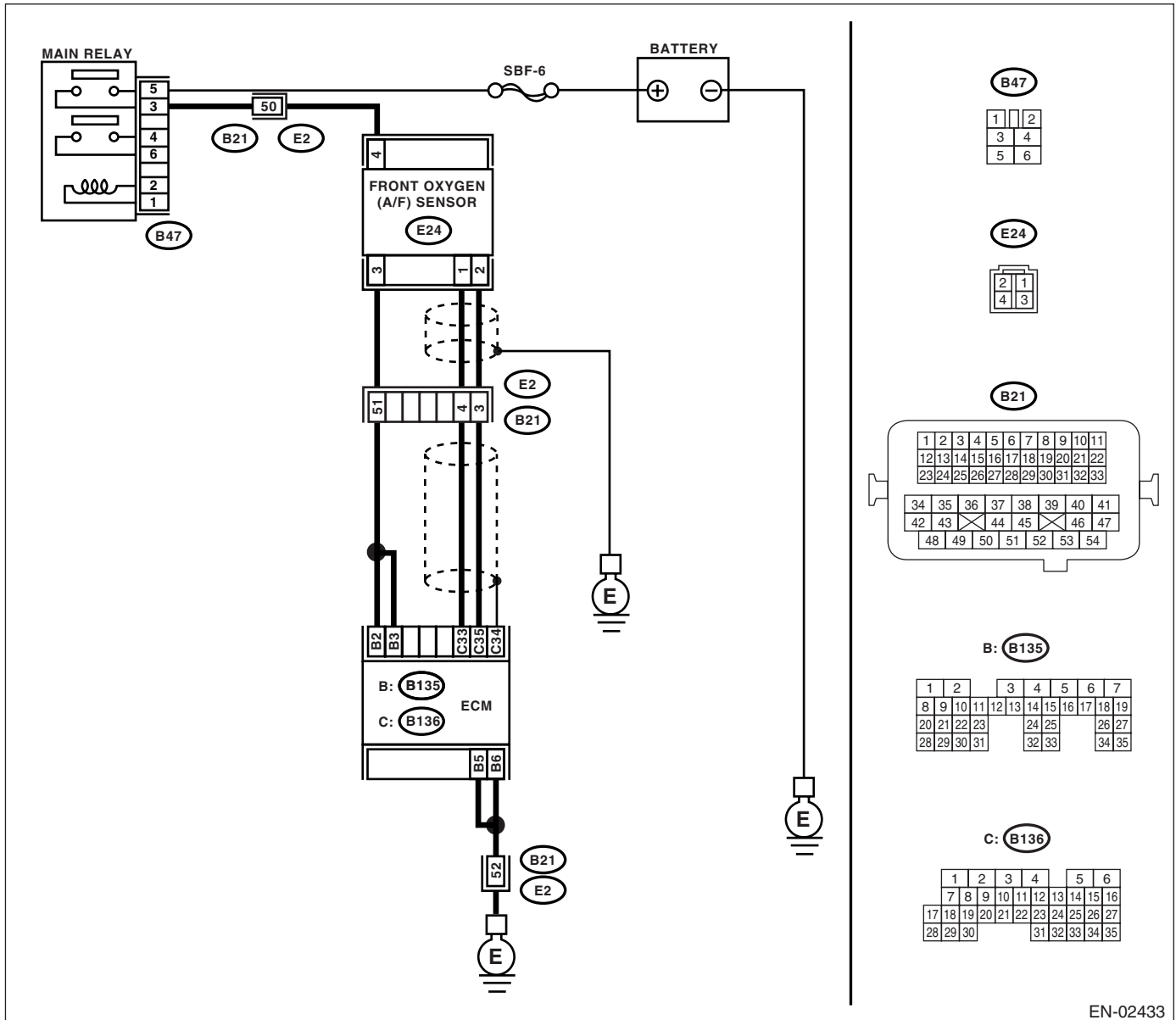
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Start and warm-up the engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 4) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. <i>Connector & terminal</i> (B135) No. 2 — (E24) No. 3: (B135) No. 3 — (E24) No. 3:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
2 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. <i>Connector & terminal</i> (B136) No. 33 — (E24) No. 1: (B136) No. 35 — (E24) No. 2:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
3 CHECK HARNESS BETWEEN MAIN RELAY AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. Measure the resistance of harness between main relay and front oxygen (A/F) sensor connector. <i>Connector & terminal</i> (B47) No. 3 — (E24) No. 4:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
4 CHECK FRONT OXYGEN (A/F) SENSOR. Measure the resistance between front oxygen (A/F) sensor connector terminals. <i>Terminals</i> No. 3 — No. 4:	Is the resistance less than 5 Ω ?	Go to step 5.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.>
5 CHECK POOR CONTACT. Check the poor contact in ECM and front oxygen (A/F) sensor connector.	Is there poor contact in ECM or front oxygen (A/F) sensor connector?	Repair the poor contact in ECM or front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.>

B: DTC P0031 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1)

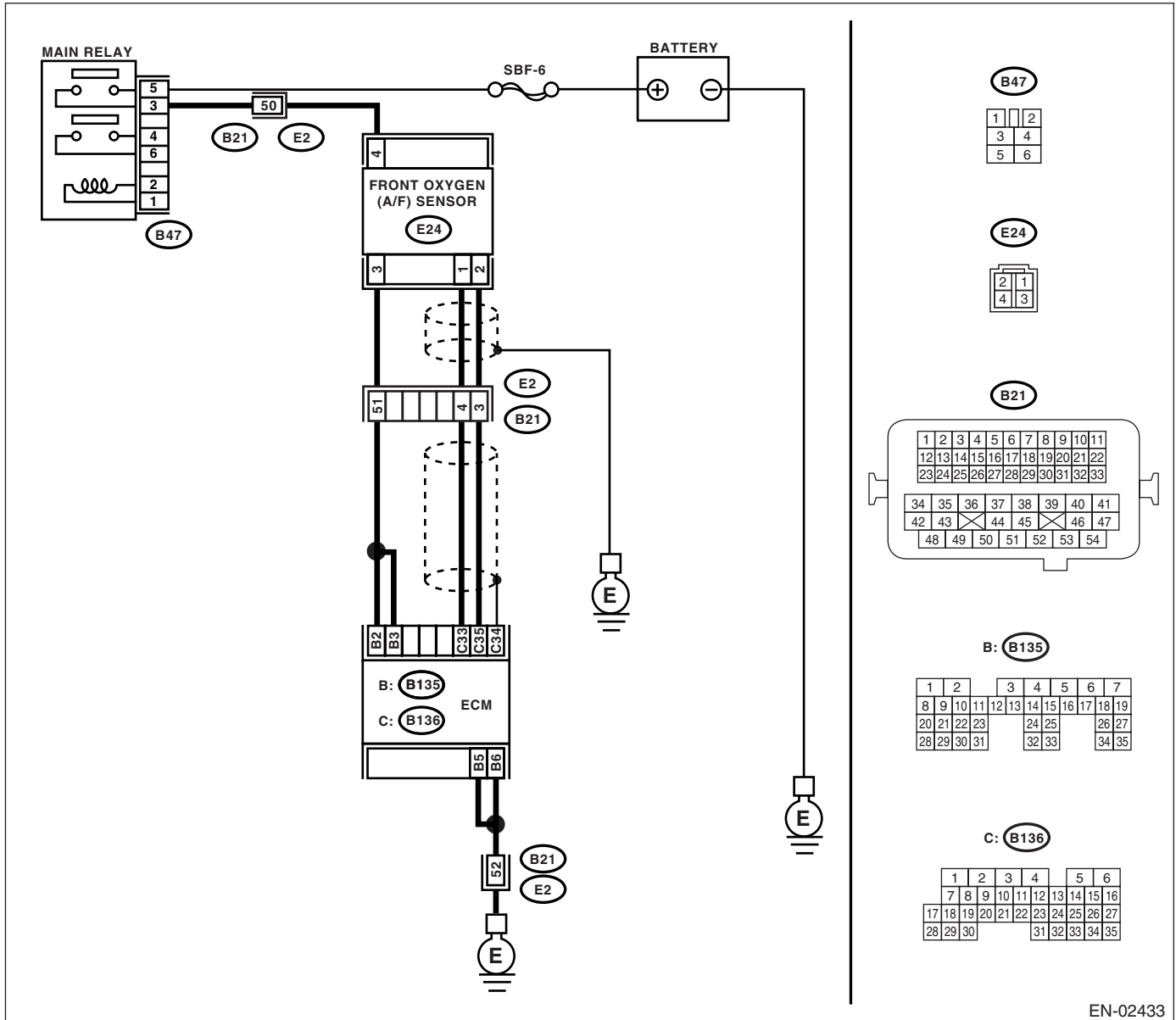
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Do DTC P0031 and P0037 appear at the same time on the Subaru Select Monitor?	Go to step 2.	Go to step 5.
2 CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between front oxygen (A/F) sensor connector and engine ground. Connector & terminal (E24) No. 4 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 3.	Repair the power supply line. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between main relay and front oxygen (A/F) sensor connector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in main relay connector
3 CHECK GROUND CIRCUIT FOR ECM. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 5 — Chassis ground: (B135) No. 6 — Chassis ground:	Is the resistance less than 5 Ω?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
4 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the current more than 0.2 A?	Repair the poor contact connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector 	Go to step 5.
5 CHECK INPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-): (B135) No. 3 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 7.	Go to step 6.
6 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-): (B135) No. 3 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector while monitoring the value of voltage meter?	Repair the poor contact in ECM connector.	Go to step 7.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>7</p> <p>CHECK FRONT OXYGEN (A/F) SENSOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance between front oxygen (A/F) sensor connector terminals.</p> <p>Terminals</p> <p>No. 3 — No. 4:</p>	<p>Is the resistance less than 10 Ω?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open or ground short circuit in harness between front oxygen (A/F) sensor and ECM connector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector 	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

C: DTC P0032 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1)

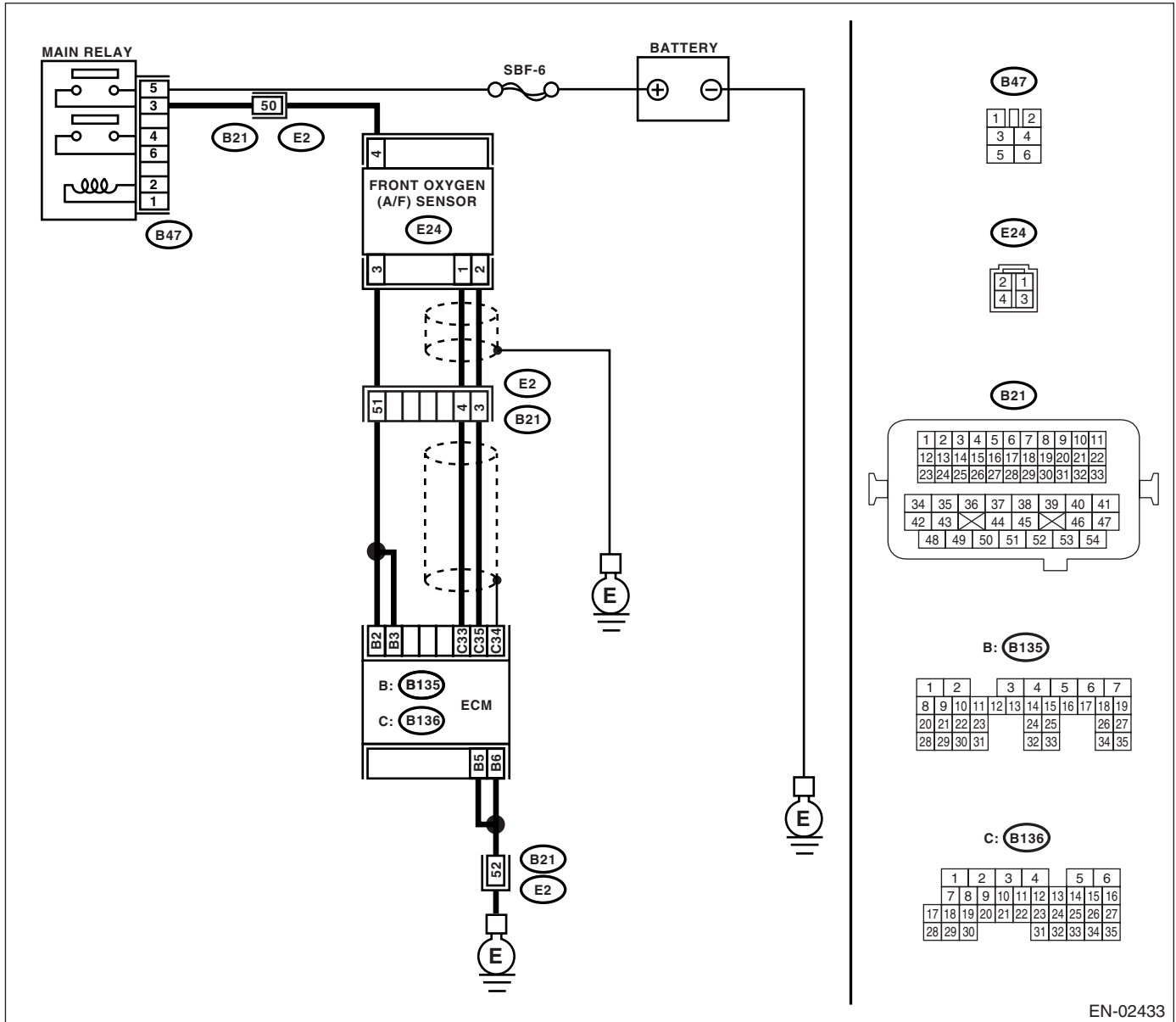
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B135) No. 2 (+) — Chassis ground (-):</i> <i>(B135) No. 3 (+) — Chassis ground (-):</i>	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2 CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT. 1) Turn the ignition switch to OFF. 2) Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. 3) Turn the ignition switch to ON. 4) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the current more than 2.3 A?	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	END.
3 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B135) No. 2 (+) — Chassis ground (-):</i> <i>(B135) No. 3 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the ECM harness and connector?	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.	END.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

D: DTC P0037 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2)

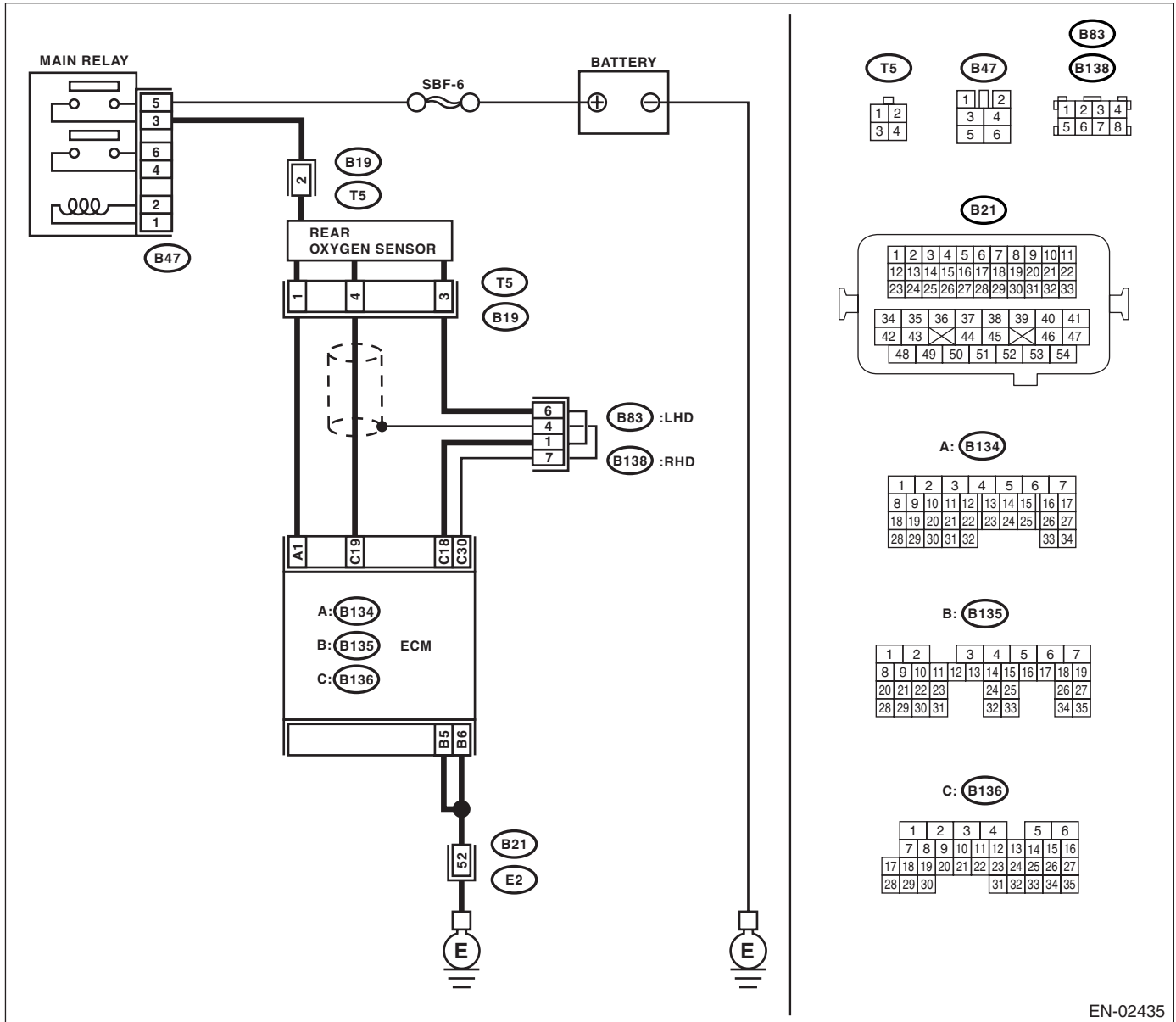
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02435

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK GROUND CIRCUIT OF ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 5 — Chassis ground: (B135) No. 6 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
2 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of rear oxygen sensor heater current using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the current more than 0.2 A?	Repair the connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Poor contact in rear oxygen sensor connector • Poor contact in rear oxygen sensor connecting harness connector • Poor contact in ECM connector 	Go to step 3.
3 CHECK OUTPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 6.	Go to step 4.
4 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector while monitoring the value of voltage meter?	Repair the poor contact in ECM connector.	Go to step 5.
5 CHECK OUTPUT SIGNAL FROM ECM. 1) Disconnect the connector from rear oxygen sensor. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>6</p> <p>CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor connector and chassis ground.</p> <p>Connector & terminal (B19) No. 2 (+) — Chassis ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Go to step 7.</p>	<p>Repair the power supply line.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between main relay and rear oxygen sensor connector • Poor contact in rear oxygen sensor connector • Poor contact in coupling connector
<p>7</p> <p>CHECK REAR OXYGEN SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen (A/F) sensor connector terminals.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance less than 30 Ω?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between rear oxygen sensor and ECM connector • Poor contact in rear oxygen sensor connector • Poor contact in ECM connector • Poor contact in coupling connector 	<p>Replace the rear oxygen sensor. <Ref. to FU(H4SO 2.0)-33, Rear Oxygen Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

E: DTC P0038 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2)

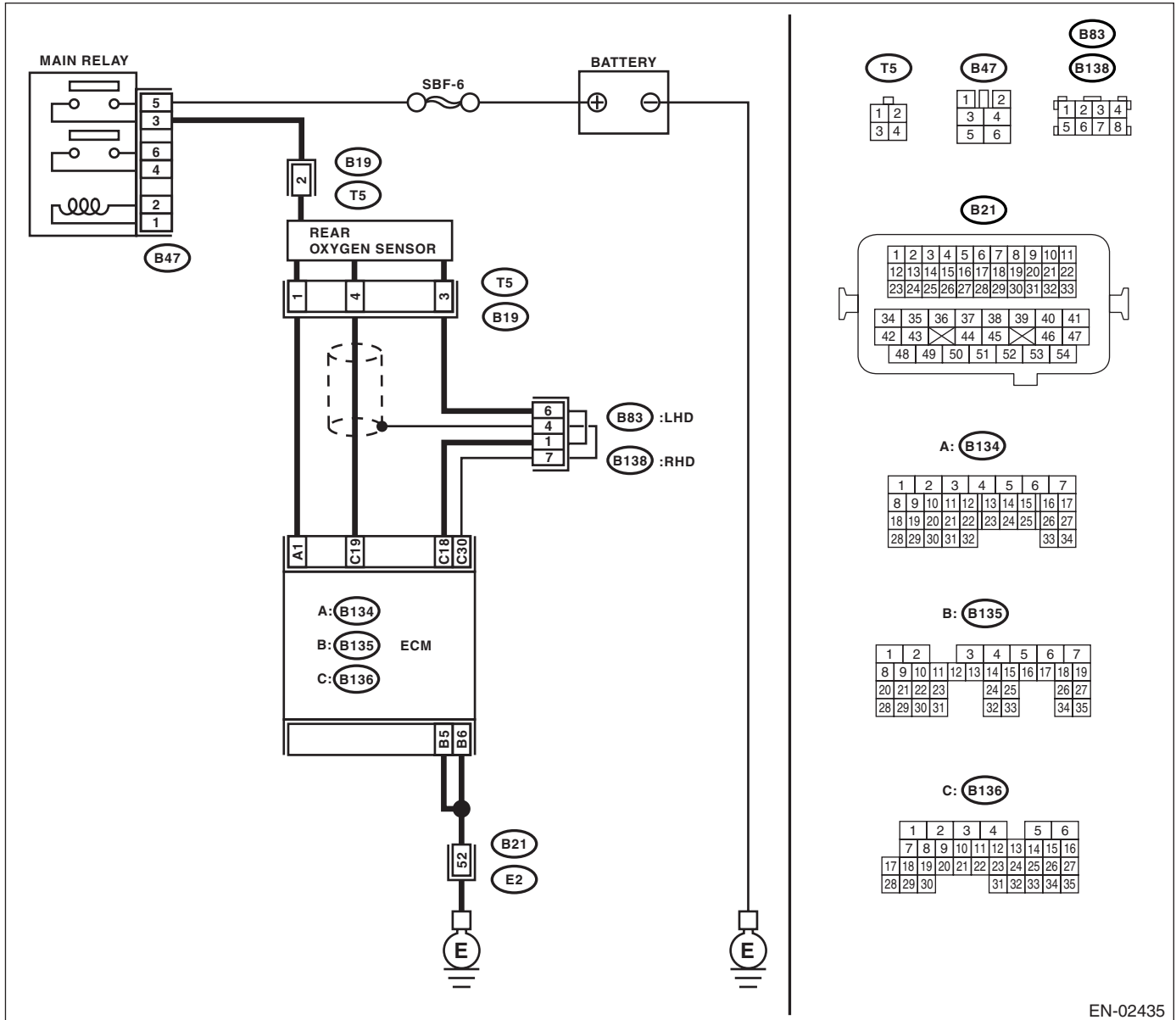
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02435

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2 CHECK CURRENT DATA. 1) Turn the ignition switch to OFF. 2) Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. 3) Turn the ignition switch to ON. 4) Read the data of rear oxygen sensor heater current using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the current more than 7 A?	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	END.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	END.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

F: DTC P0107 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT

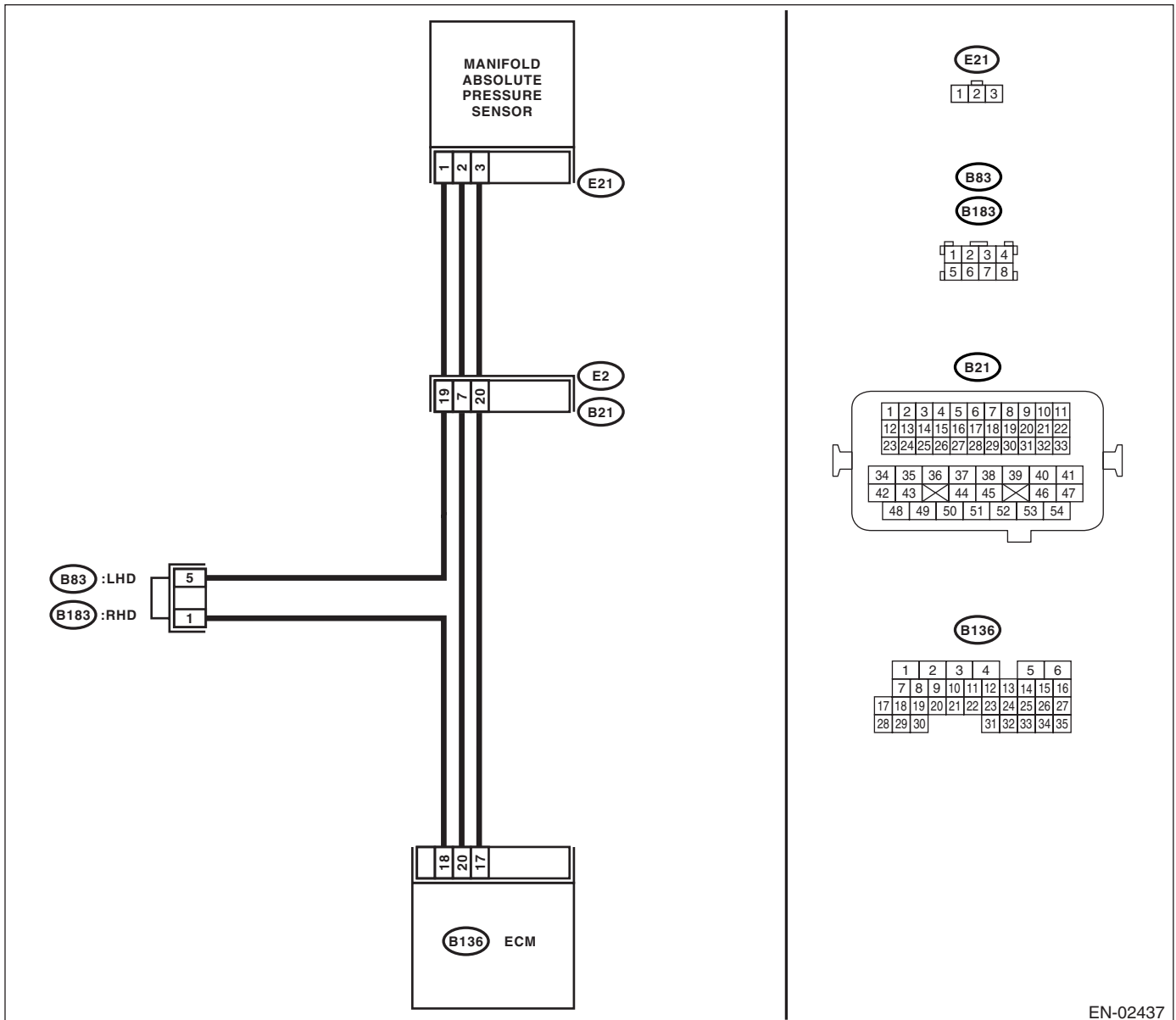
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02437

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the value less than 13.3 kPa (100 mmHg, 3.94 inHg)?	Go to step 3.	Go to step 2.
2 CHECK POOR CONTACT. Check the poor contact in ECM and manifold pressure sensor connector.	Is there poor contact in ECM or manifold pressure sensor connector?	Repair the poor contact in ECM or manifold pressure sensor connector.	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time.
3 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 17 (+) — Chassis ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 5.	Go to step 4.
4 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 17 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
5 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 20 (+) — Chassis ground (-):</i>	Is the voltage less than 0.2 V?	Go to step 7.	Go to step 6.
6 CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR). Read the data of atmospheric absolute pressure signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the value more than 13.3 kPa (100 mmHg, 3.94 inHg) when shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Go to step 7.
7 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. <i>Connector & terminal</i> <i>(E21) No. 3 (+) — Engine ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 8.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. Connector & terminal (B136) No. 18 — (E21) No. 1:	Is the resistance less than 1 Ω ?	Go to step 9 .	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
9 CHECK POOR CONTACT. Check poor contact in manifold absolute pressure sensor connector.	Is there poor contact in manifold absolute pressure sensor connector?	Repair the poor contact in manifold absolute pressure sensor connector.	Replace the manifold absolute pressure sensor. <Ref. to FU(H4SO 2.0)-26, Manifold Absolute Pressure Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

G: DTC P0108 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT

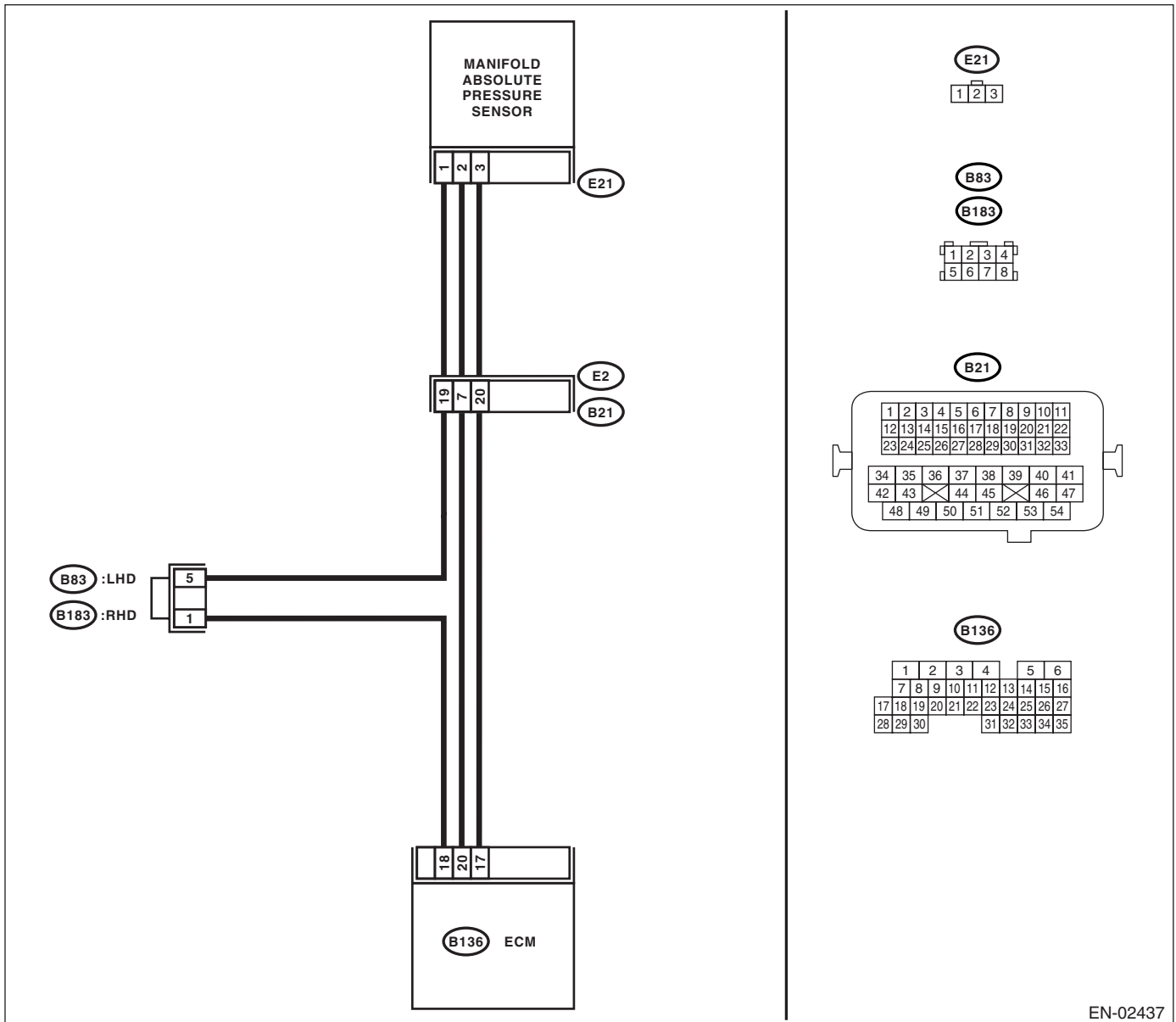
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02437

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the value more than 119.5 kPa (896.5 mmHg, 35.29 inHg)?	Go to step 10.	Go to step 2.
2 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> (B136) No. 17 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> (B136) No. 17 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
4 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> (B136) No. 20 (+) — Chassis ground (-):	Is the voltage less than 0.2 V?	Go to step 6.	Go to step 5.
5 CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR). Read the data of atmospheric absolute pressure signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the value more than 13.3 kPa (100 mmHg, 3.94 inHg) when shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Go to step 6.
6 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. <i>Connector & terminal</i> (E21) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
7 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. <i>Connector & terminal</i> (B136) No. 20 — (E21) No. 2:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. <i>Connector & terminal (B136) No. 18 — (E21) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 9.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
9 CHECK POOR CONTACT. Check poor contact in manifold absolute pressure sensor connector.	Is there poor contact in manifold absolute pressure sensor connector?	Repair the poor contact in manifold absolute pressure sensor connector.	Replace the manifold absolute pressure sensor. <Ref. to FU(H4SO 2.0)-26, Manifold Absolute Pressure Sensor.>
10 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF, and the Subaru Select Monitor switch to OFF. 2) Disconnect the connector from manifold absolute pressure sensor. 3) Turn the ignition switch to ON, and the Subaru Select Monitor switch to ON. 4) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the value more than 119.5 kPa (896.5 mmHg, 35.29 inHg)?	Repair the battery short in harness between ECM and manifold absolute pressure sensor connector.	Replace the manifold absolute pressure sensor. <Ref. to FU(H4SO 2.0)-26, Manifold Absolute Pressure Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

H: DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

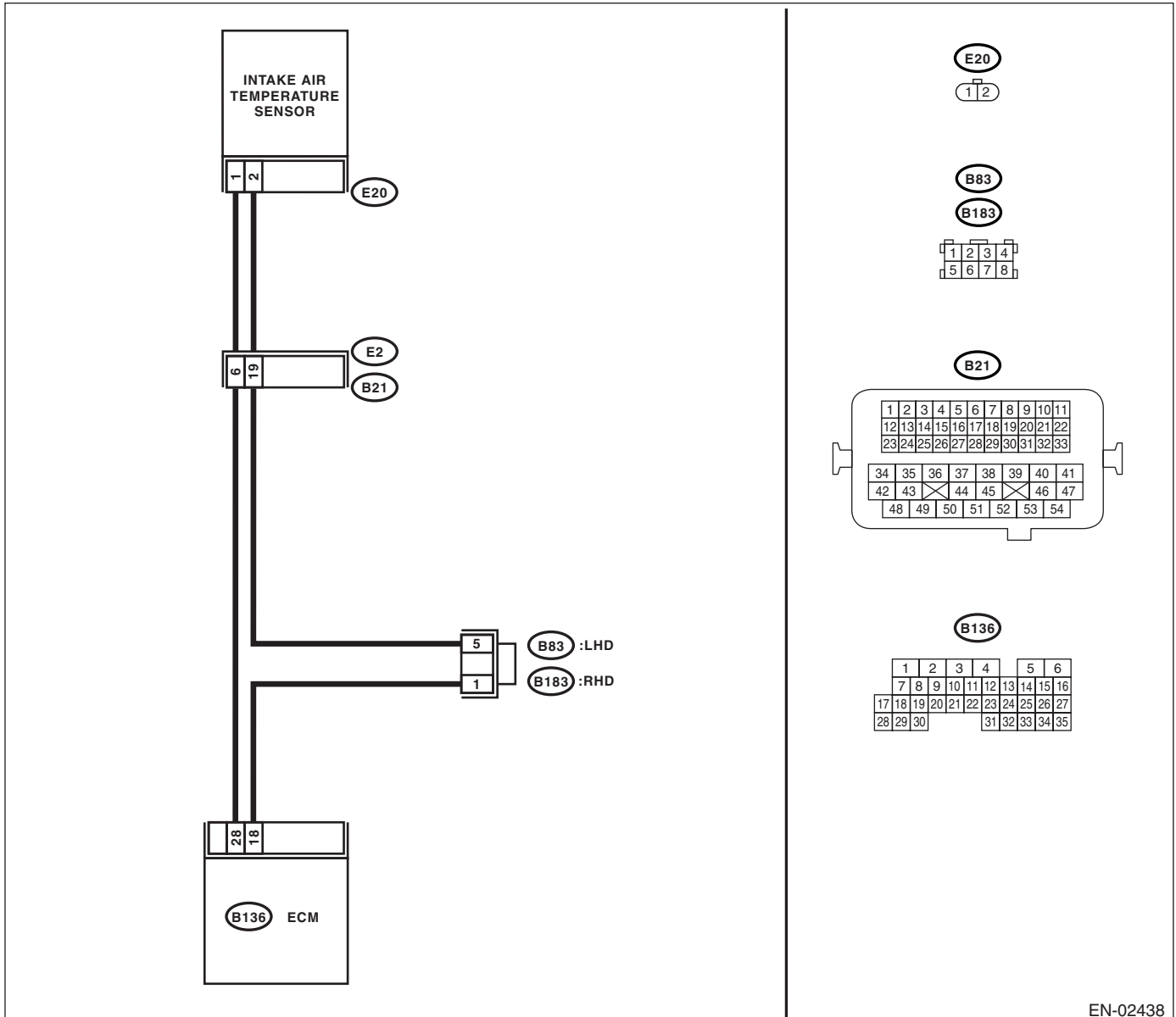
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02438

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake air temperature sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the intake air temperature more than 120°C (248°F)?	Go to step 2.	Repair the poor contact. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Poor contact in intake air temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
2 CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from intake air temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of intake air temperature sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the intake air temperature less than -40°C (-40°F)?	Replace the intake air temperature sensor. <Ref. to FU(H4SO 2.0)-27, Intake Air Temperature Sensor.>	Repair the ground short circuit in harness between intake air temperature sensor and ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

I: DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

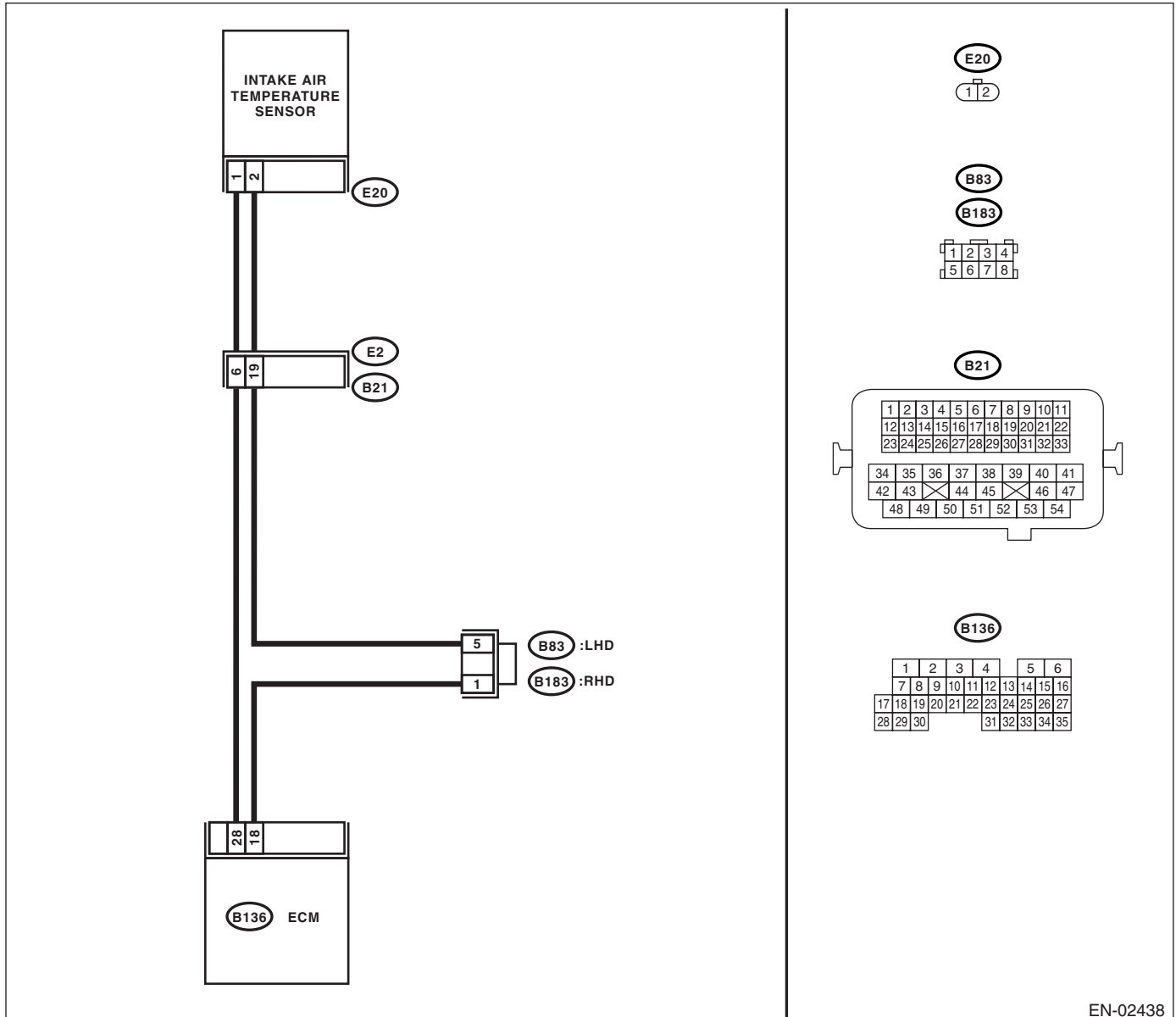
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02438

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake air temperature sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the intake air temperature less than -40°C (-40°F)?	Go to step 2.	Repair the poor contact. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Poor contact in intake air temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
2 CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from intake air temperature sensor. 3) Measure the voltage between intake air temperature sensor connector and engine ground. <i>Connector & terminal</i> <i>(B136) No. 28 (+) — Engine ground (-):</i>	Is the voltage more than 10 V?	Repair the battery short circuit in harness between intake air temperature sensor and ECM connector.	Go to step 3.
3 CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between intake air temperature sensor connector and engine ground. <i>Connector & terminal</i> <i>(B136) No. 28 (+) — Engine ground (-):</i>	Is the voltage more than 10 V?	Repair the battery short circuit in harness between intake air temperature sensor and ECM connector.	Go to step 4.
4 CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. Measure the voltage between intake air temperature sensor connector and engine ground. <i>Connector & terminal</i> <i>(B136) No. 28 (+) — Engine ground (-):</i>	Is the voltage more than 3 V?	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between intake air temperature sensor and ECM connector • Poor contact in intake air temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>5</p> <p>CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between intake air temperature sensor connector and engine ground.</p> <p>Connector & terminal (B136) No. 18 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Replace the intake air temperature sensor. <Ref. to FU(H4SO 2.0)-27, Intake Air Temperature Sensor.></p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between intake air temperature sensor and ECM connector • Poor contact in intake air temperature sensor • Poor contact in ECM • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

J: DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

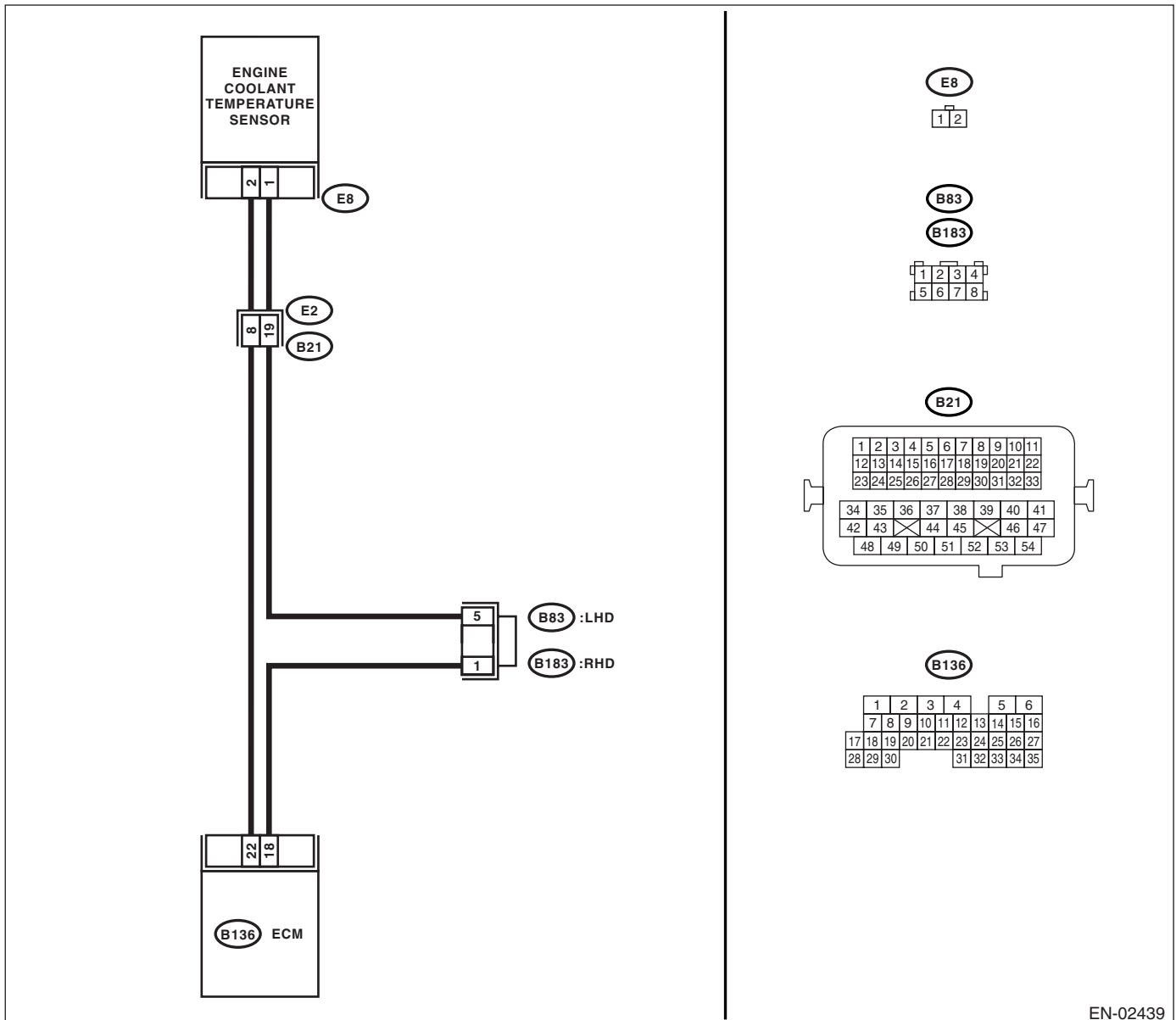
TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02439

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.></p>	<p>Is the engine coolant temperature more than 150°C (302°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Poor contact in engine coolant temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
<p>2</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from the engine coolant temperature sensor.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.></p>	<p>Is the engine coolant temperature less than -40°C (-40°F)?</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(H4SO 2.0)-20, Engine Coolant Temperature Sensor.></p>	<p>Repair the ground short circuit in harness between engine coolant temperature sensor and ECM connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

K: DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

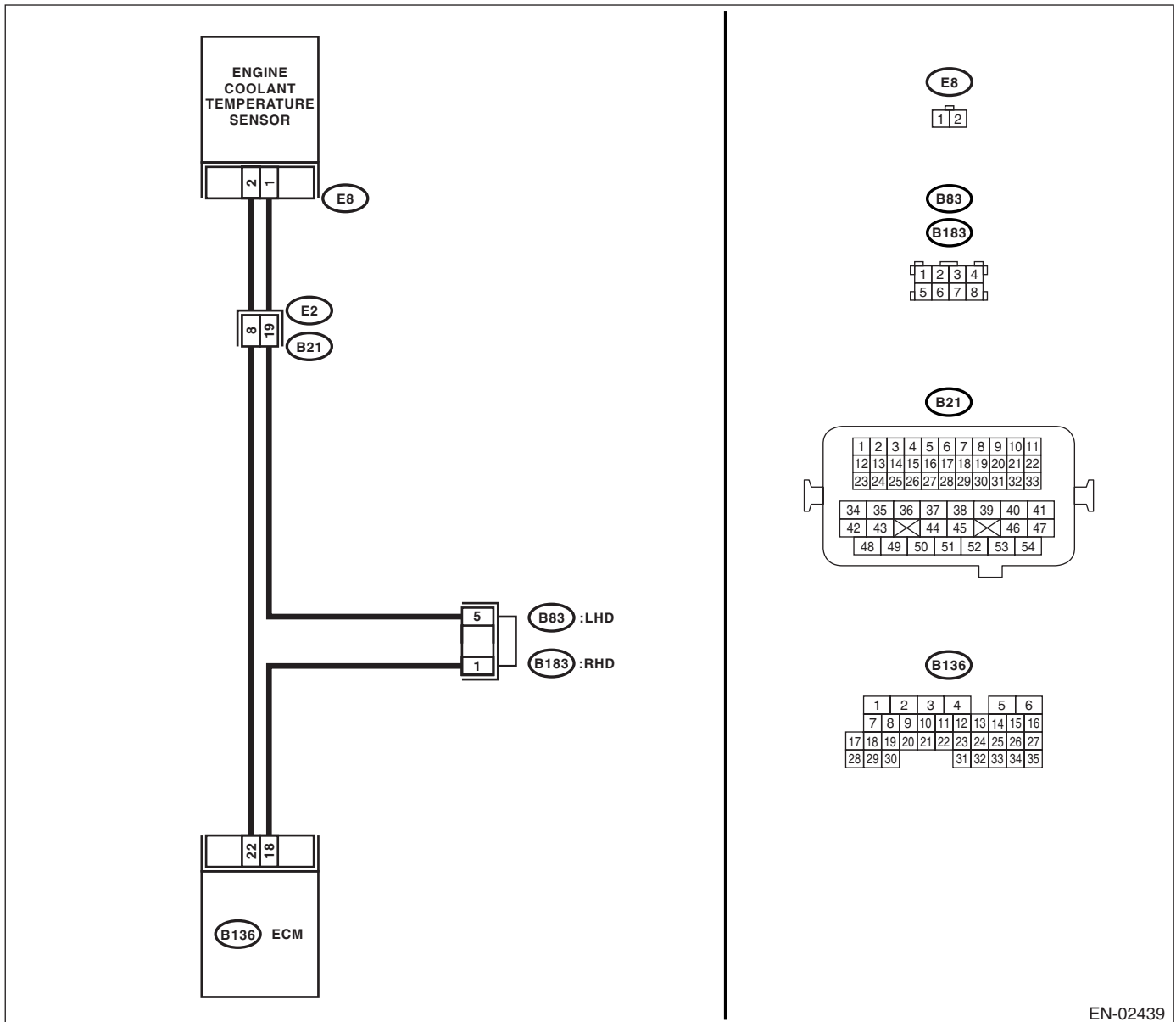
TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02439

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.></p>	<p>Is the engine coolant temperature less than -40°C (-40°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Poor contact in engine coolant temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
<p>2</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from engine coolant temperature sensor.</p> <p>3) Measure the voltage between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair the battery short circuit in harness between ECM and engine coolant temperature sensor connector.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair the battery short circuit in harness between ECM and engine coolant temperature sensor connector.</p>	<p>Go to step 4.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>Measure the voltage between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4 V?</p>	<p>Go to step 5.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and engine coolant temperature sensor connector • Poor contact in engine coolant temperature sensor connector • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>5</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 1 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(H4SO 2.0)-20, Engine Coolant Temperature Sensor.></p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and engine coolant temperature sensor connector • Poor contact in engine coolant temperature sensor connector • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in joint connector

L: DTC P0122 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

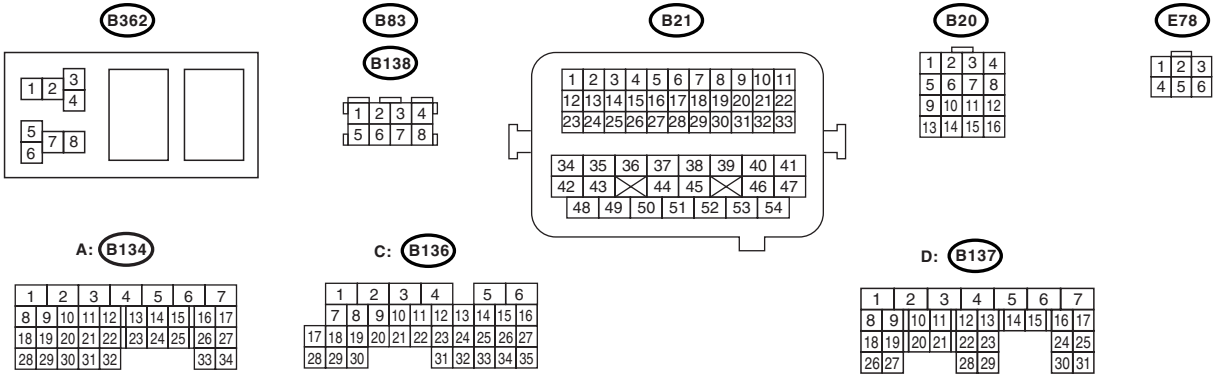
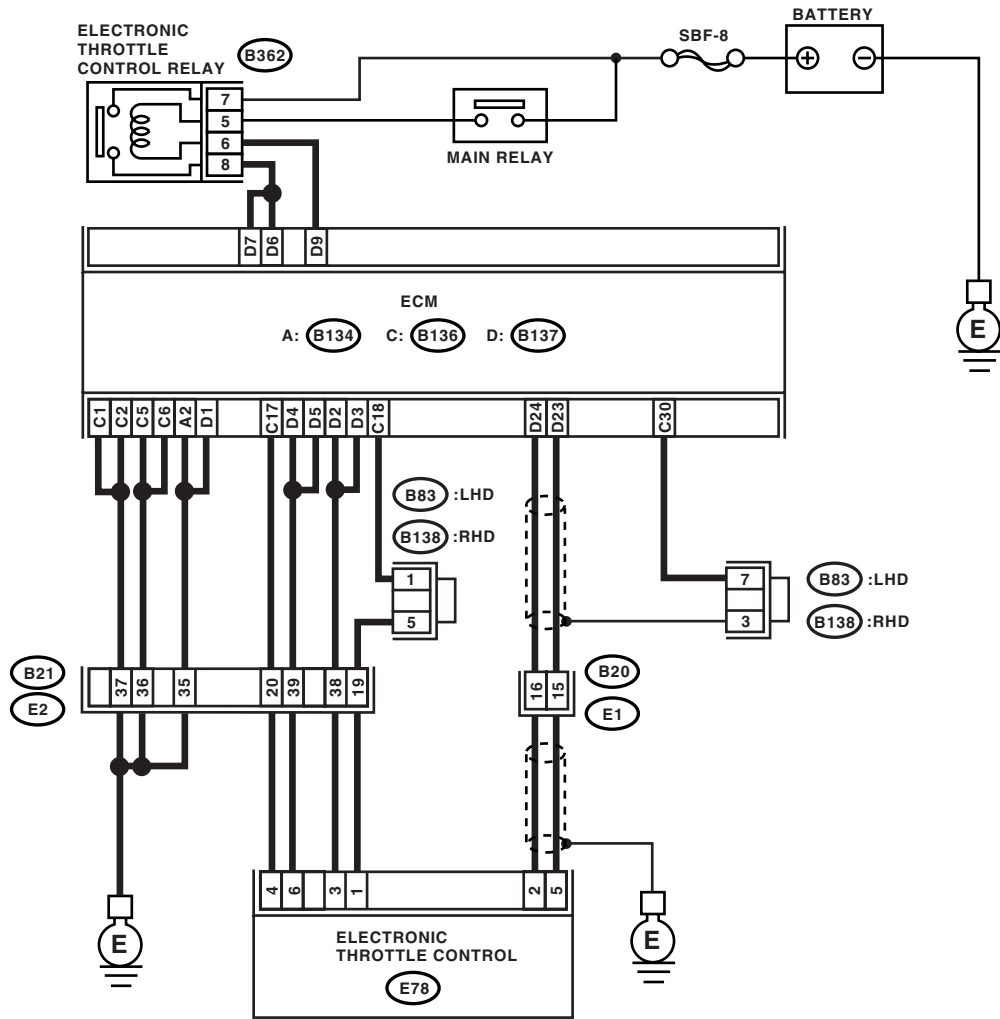
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main throttle sensor signal using Subaru Select Monitor.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact in connector between ECM and electronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B137) No. 23 — (E78) No. 5: (B136) No. 17 — (E78) No. 4:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B137) No. 23 — Chassis ground: (B136) No. 17 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the chassis short circuit of harness.
5 CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 4 (+) — Engine ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
6 CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 5 — Engine ground:	Is the resistance more than 10 Ω ?	Repair the poor contact of electronic throttle control connector. Replace the accelerator position sensor if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

M: DTC P0123 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

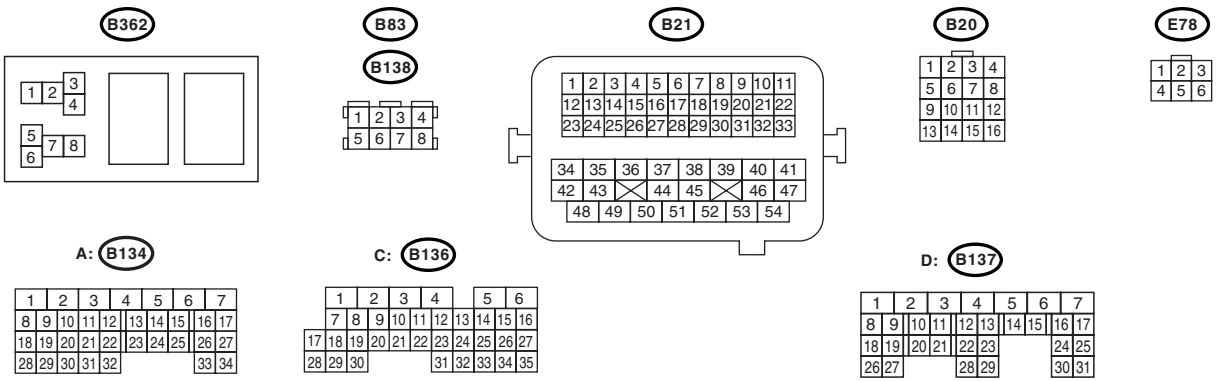
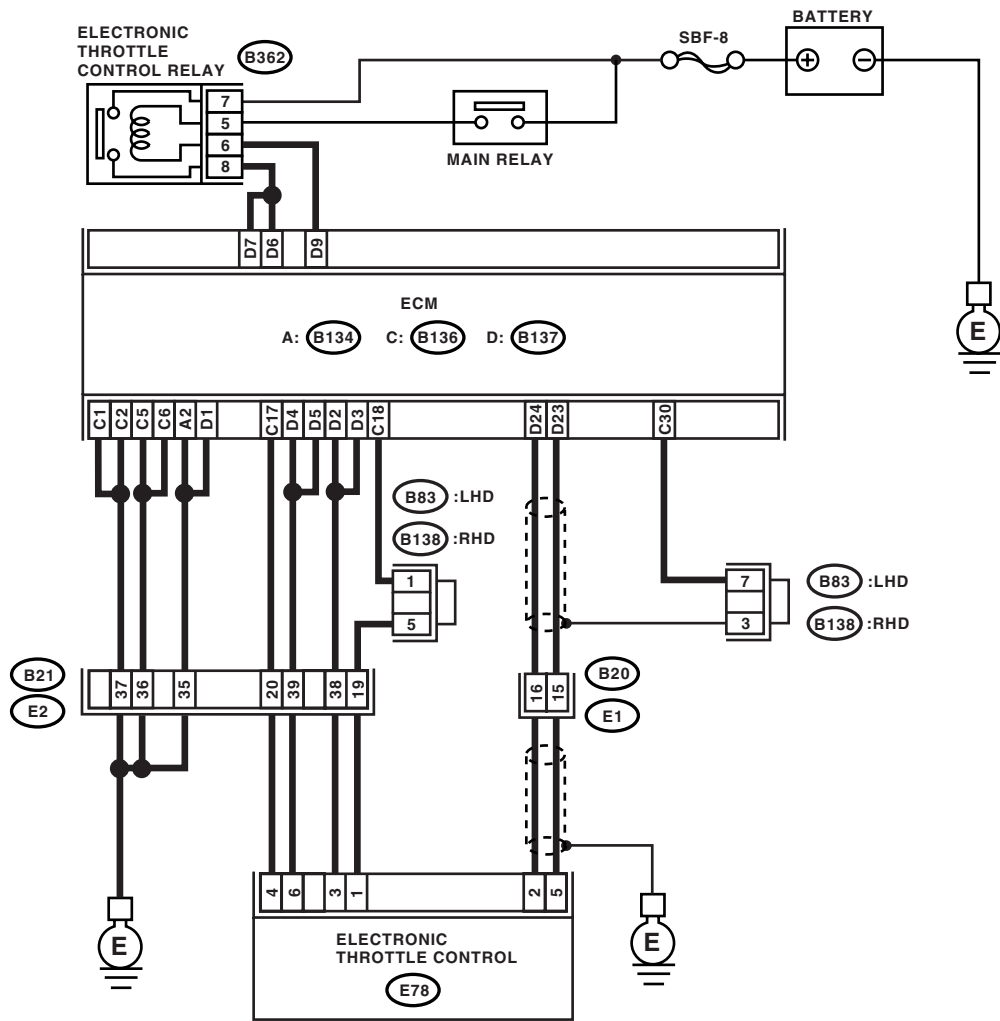
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main throttle sensor signal using Subaru Select Monitor.	Is the voltage less than 4.63 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact in connector between ECM and electronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal <i>(B137) No. 23 — (E78) No. 5:</i> <i>(B136) No. 18 — (E78) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal <i>(E78) No. 1 — Engine ground:</i>	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
5 CHECK SENSOR OUTPUT POWER SUPPLY. Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal <i>(E78) No. 5 (+) — Engine ground (-):</i>	Is the voltage less than 10 V?	Go to step 6.	Repair the battery short circuit in harness between ECM connector and electronic throttle control connector.
6 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal <i>(B137) No. 23 — (B136) No. 17:</i>	Is the resistance more than 1 M Ω ?	Repair the poor contact in harness. Repair the electronic throttle control.	Repair the short circuit to sensor power supply.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

N: DTC P0125 INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

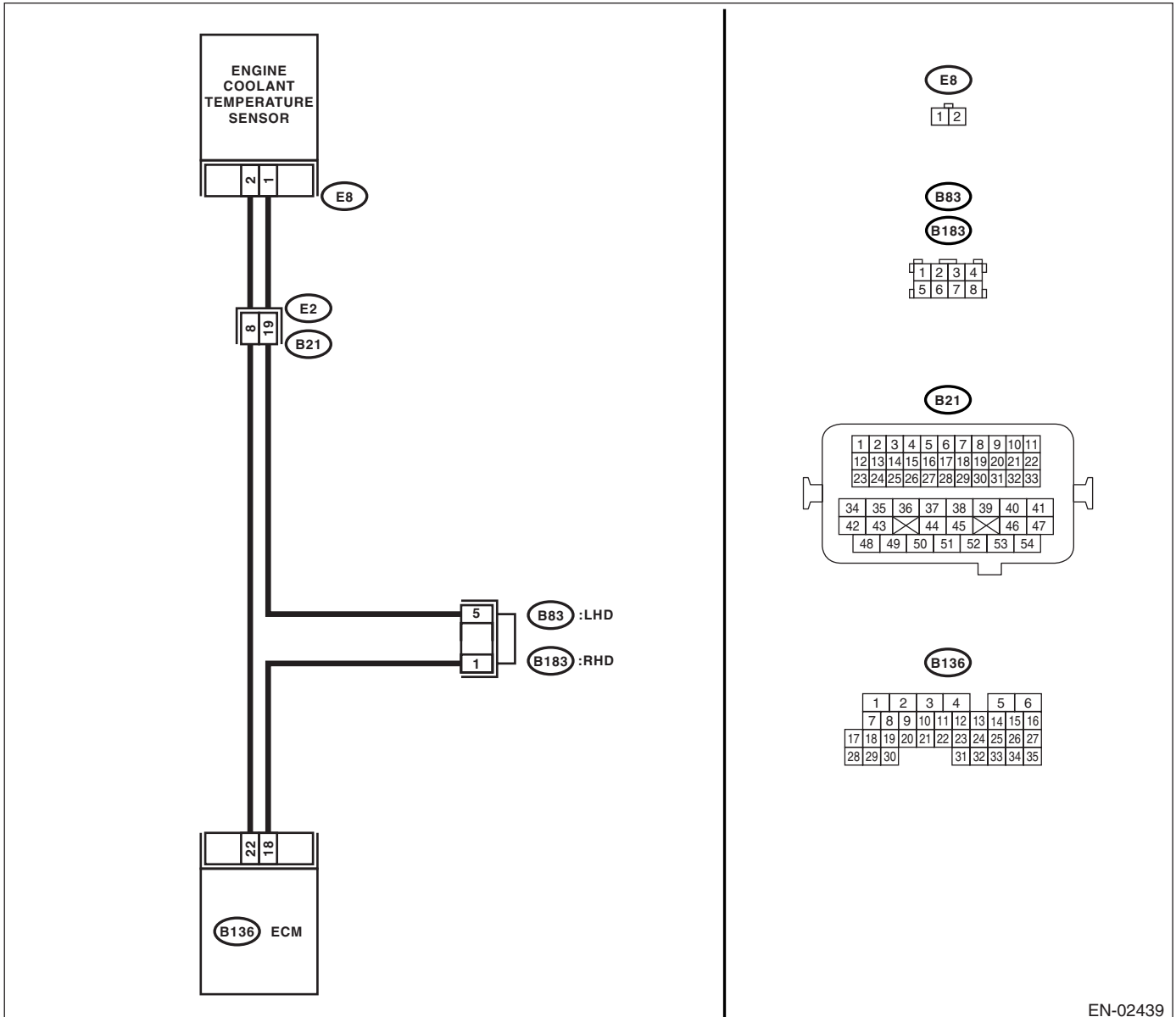
TROUBLE SYMPTOM:

Engine would not return to idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02439

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0125.	Go to step 2.
2 CHECK THERMOSTAT.	Does the thermostat remain opened?	Replace the thermostat. <Ref. to CO(H4SO 2.0)-18, Thermostat.>	Replace the engine coolant temperature sensor. <Ref. to FU(H4SO 2.0)-20, Engine Coolant Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

O: DTC P0130 O2 SENSOR CIRCUIT (BANK 1 SENSOR 1)

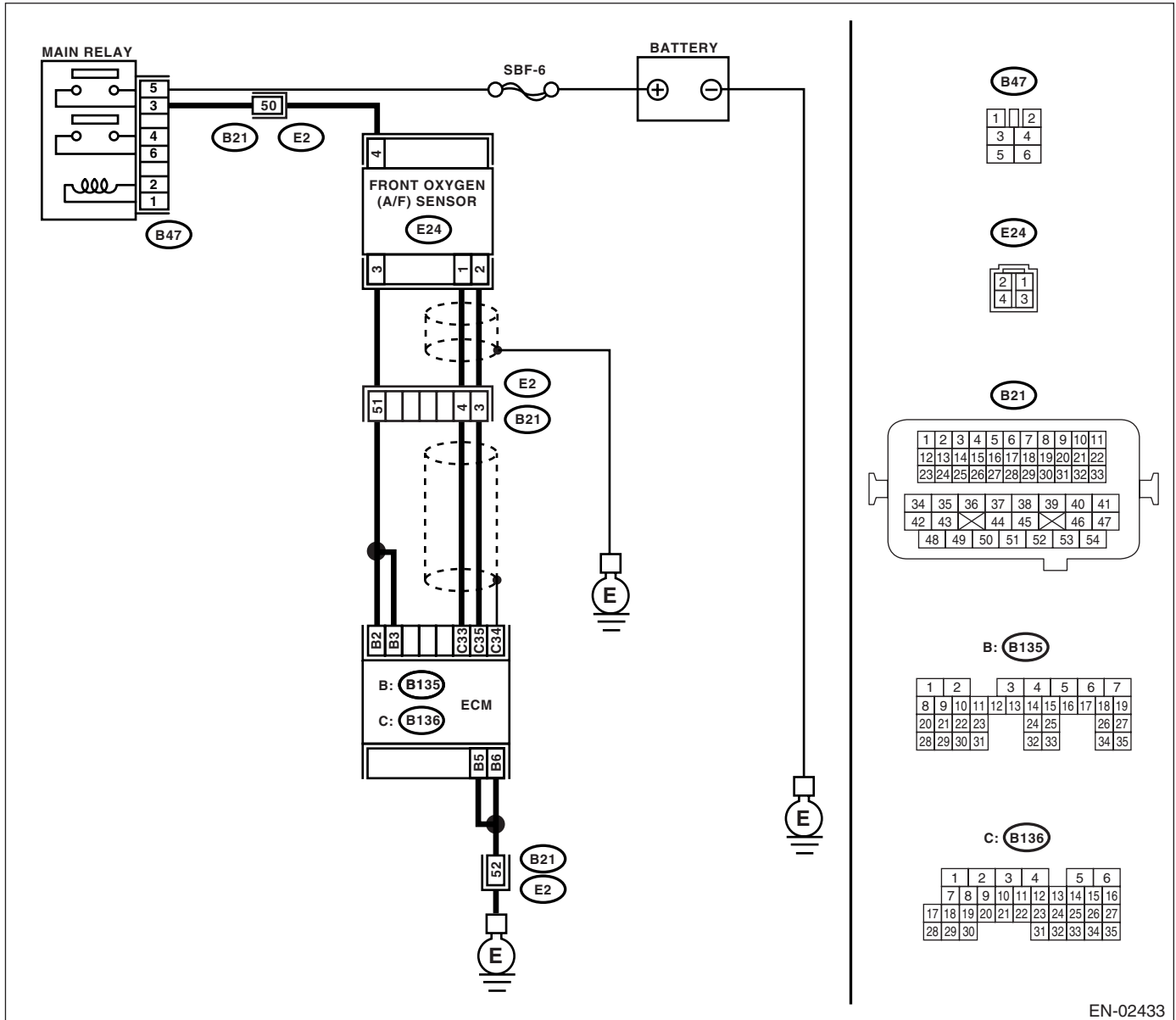
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY. Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>	Go to step 2.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2 CHECK FRONT OXYGEN (A/F) SENSOR DATA.</p> <p>1) Start the engine.</p> <p>2) While observing the Subaru Select Monitor or OBD-II general scan tool screen, warm-up the engine until coolant temperature is above 70°C (160°F).</p> <p>If the engine is already warmed-up, operate at idle speed for at least 1 minute.</p> <p>3) Read the data of front oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to OBD-II General Scan Tool Instruction Manual.</p>	Is the voltage 0.85 — 1.15 V?	Go to step 3.	Go to step 4.
<p>3 CHECK FRONT OXYGEN (A/F) SENSOR DATA.</p> <p>1) Race the engine at speeds from idling to 5,000 rpm for a total of 5 cycles.</p> <p>2) Read the data of front oxygen (A/F) sensor signal during racing using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Air fuel ratio is rich at normal condition or during racing. • To increase engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed. 	Is the voltage more than 1.1 V?	Go to step 6.	Go to step 4.
<p>4 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector.</p> <p>3) Measure the resistance between ECM and front oxygen (A/F) sensor.</p> <p>Connector & terminals</p> <p>(B136) No. 33 — (E24) No. 1:</p> <p>(B136) No. 35 — (E24) No. 2:</p>	Is the resistance less than 5 Ω?	Go to step 5.	Repair the open circuit between ECM and front oxygen (A/F) sensor.
<p>5 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR.</p> <p>Measure the resistance between ECM and chassis ground.</p> <p>Connector & terminals</p> <p>(B136) No. 33 — Chassis ground:</p> <p>(B136) No. 35 — Chassis ground:</p>	Is the resistance more than 1 MΩ?	Go to step 6.	Repair the ground short circuit between ECM and front oxygen (A/F) sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6	CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none">• Loose part of exhaust system and incomplete installation• Damage (crack, hole etc.) of parts• Looseness of front oxygen (A/F) sensor• Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

P: DTC P0131 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1)

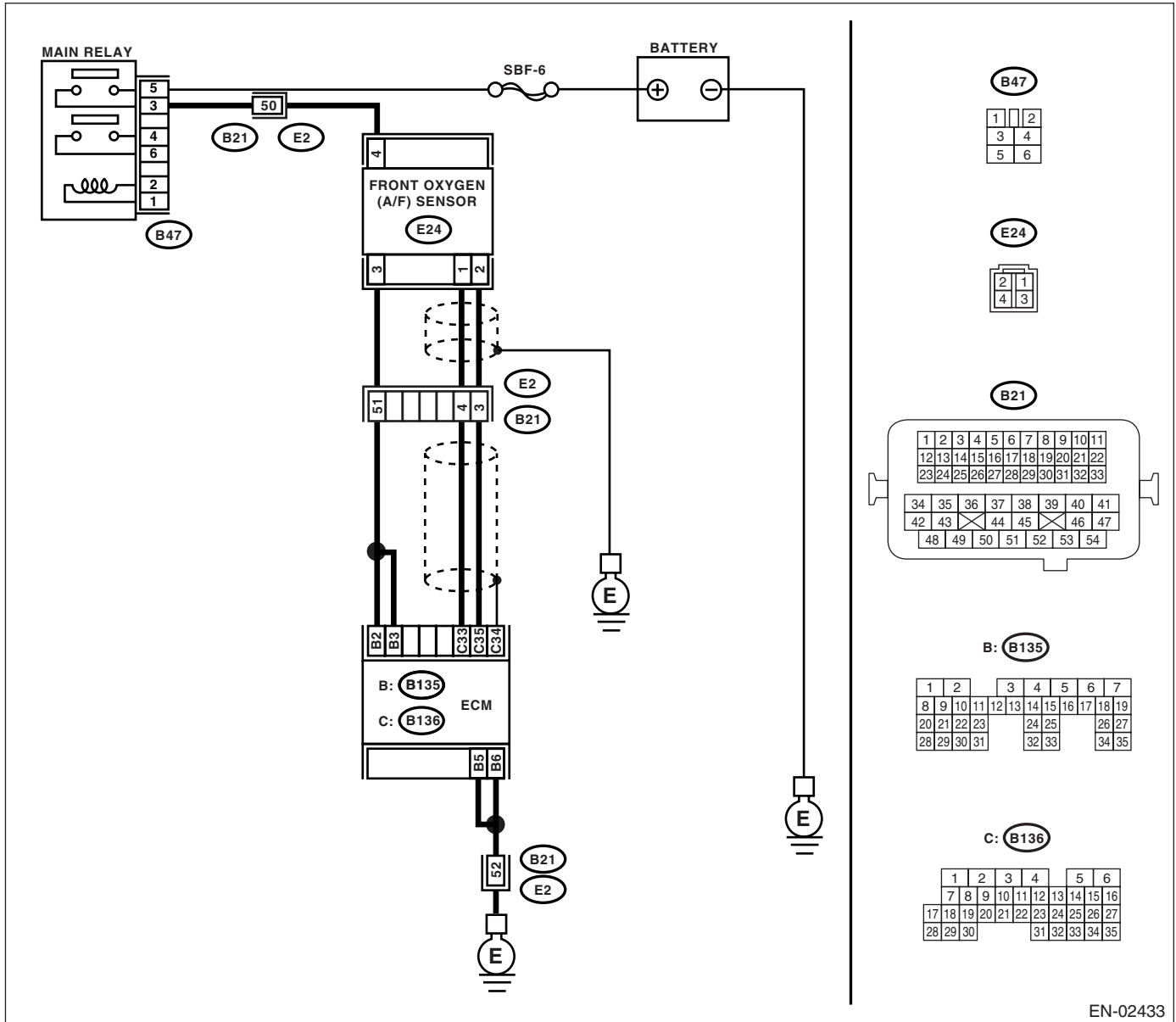
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and chassis ground.</p> <p>Connector & terminal (B136) No. 33 — Chassis ground: (B136) No. 35 — Chassis ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.></p>	<p>Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Q: DTC P0132 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1)

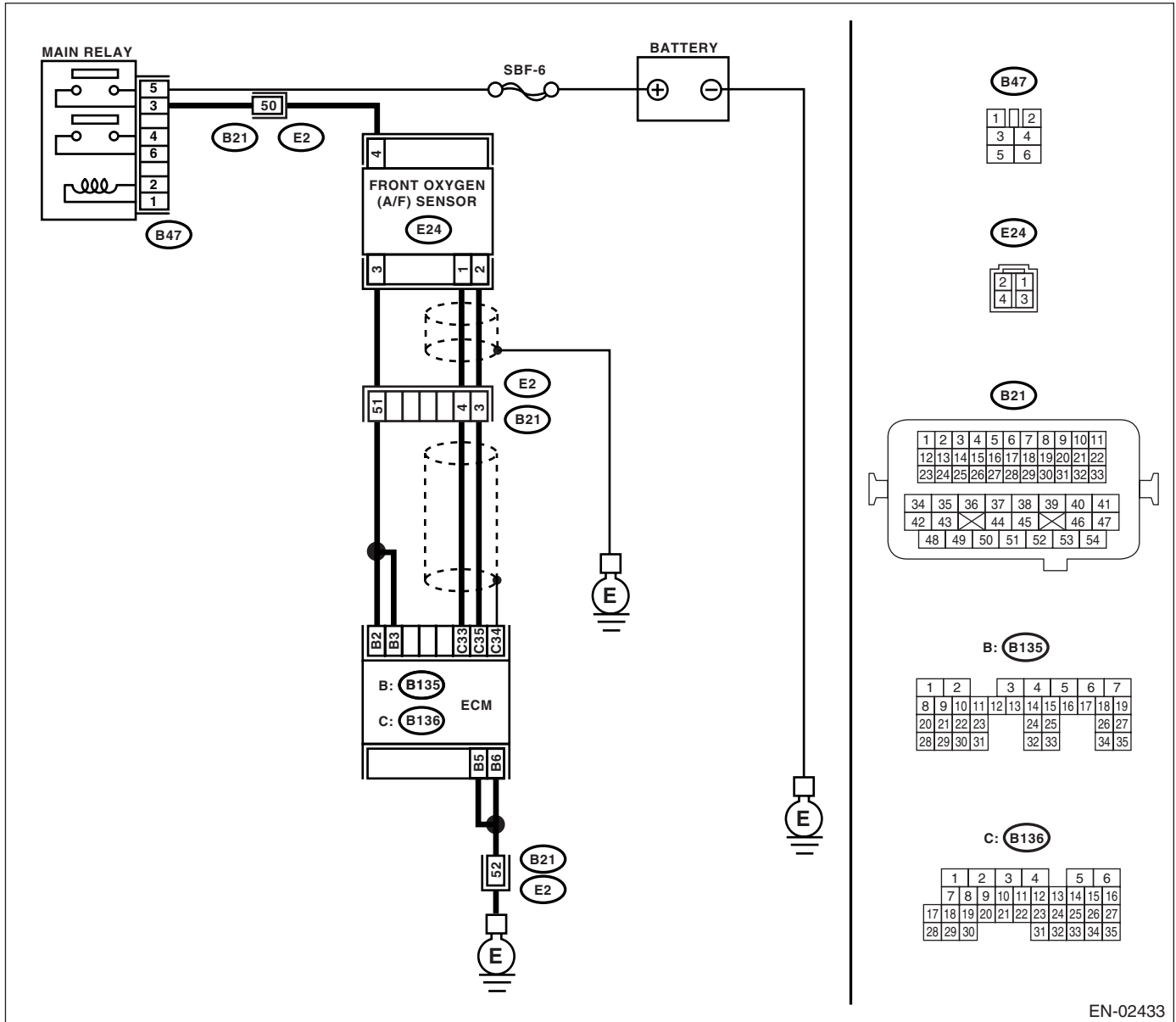
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground.</p> <p>Connector & terminal (B136) No. 33 (+) — Chassis ground (-): (B136) No. 35 (+) — Chassis ground (-):</p>	Is the voltage more than 8 V?	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.>	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

R: DTC P0133 O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 1)

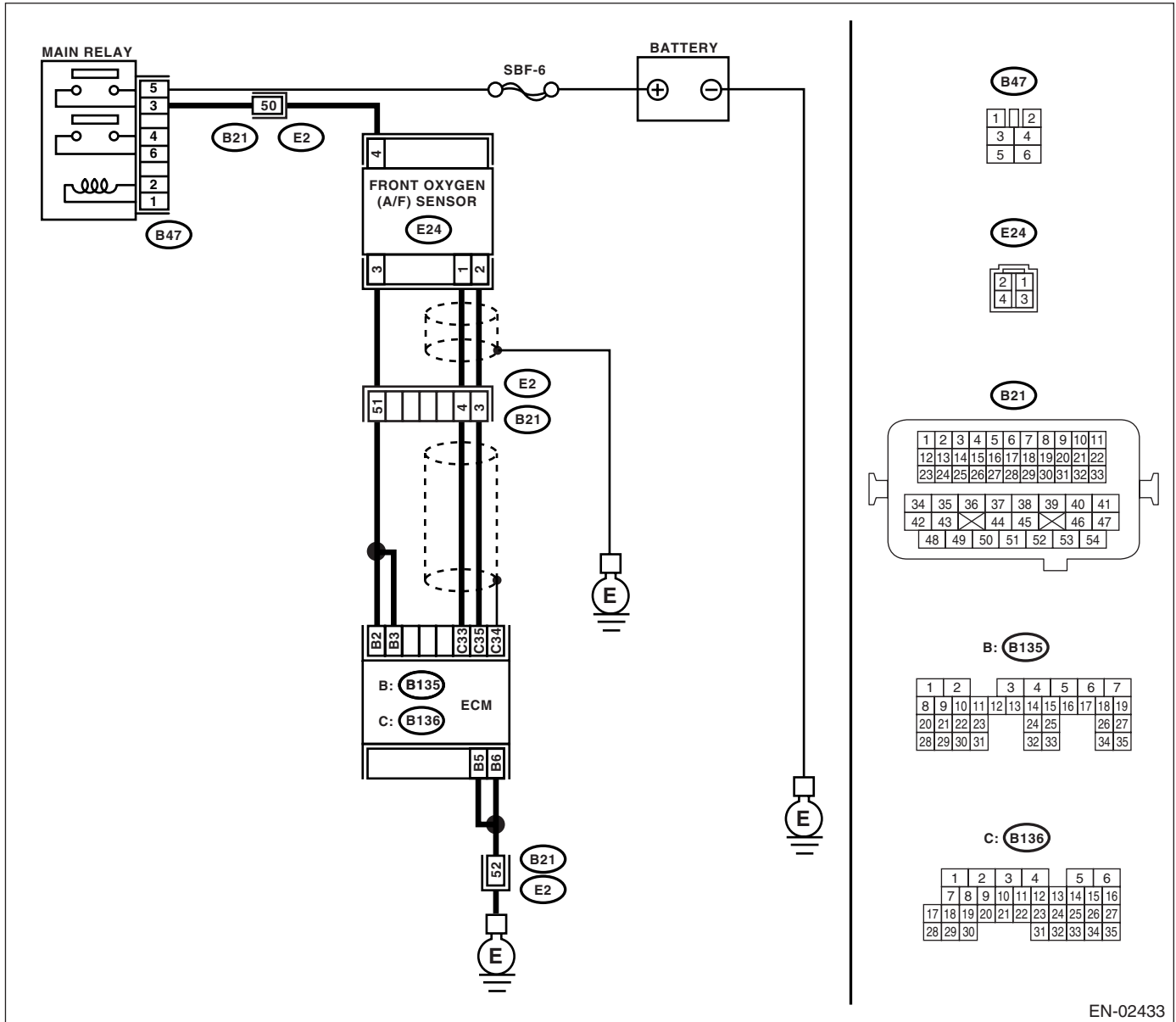
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0133.	Go to step 2.
2 CHECK EXHAUST SYSTEM. NOTE: Check the following items. <ul style="list-style-type: none">• Loose installation of front portion of exhaust pipe onto cylinder heads• Loose connection between front exhaust pipe and front catalytic converter• Damage of exhaust pipe resulting in a hole	Is there any fault in exhaust system?	Repair the exhaust system.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

S: DTC P0134 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1)

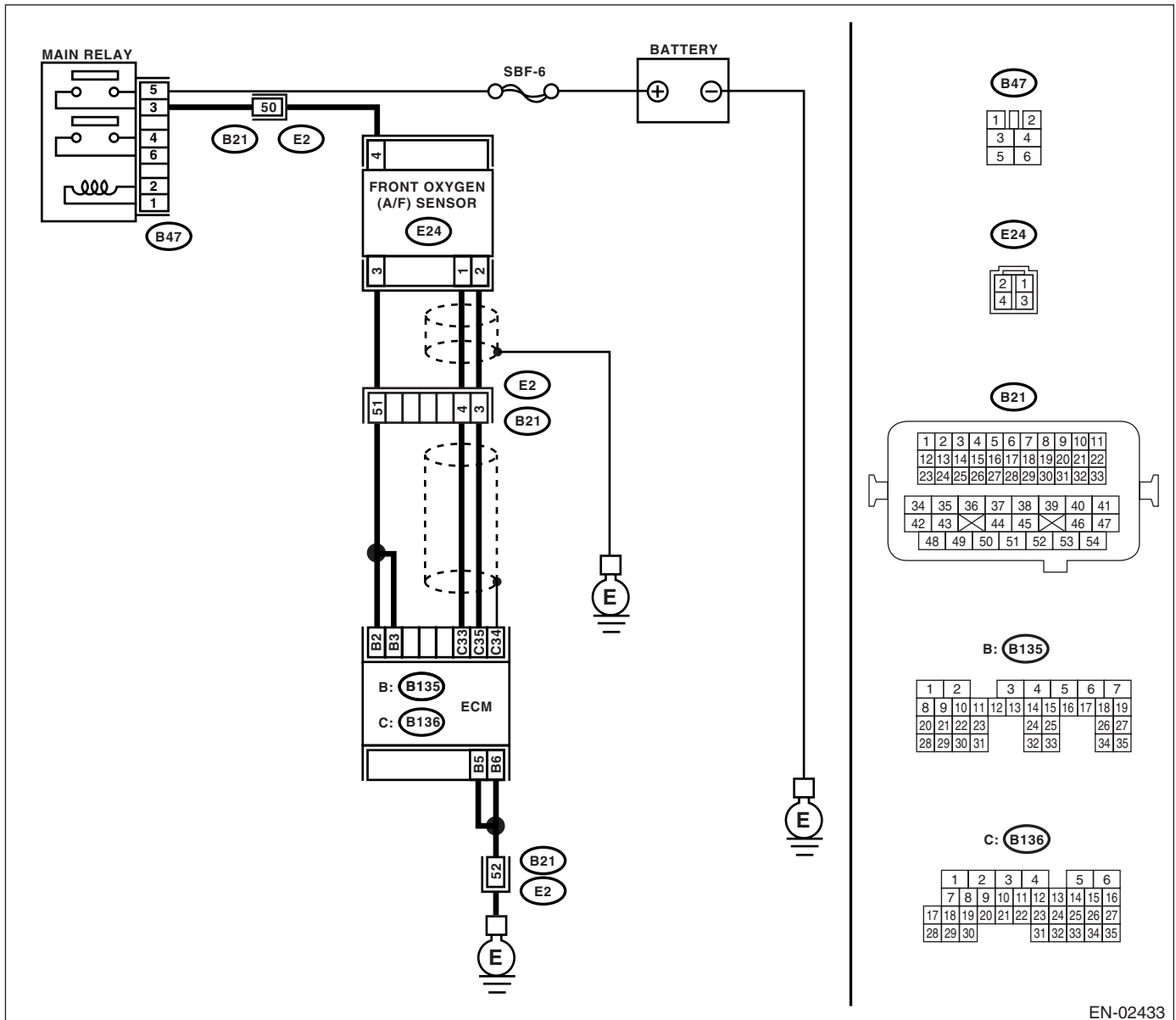
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p>Connector & terminals (B136) No. 33 — (E24) No. 1: (B136) No. 35 — (E24) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and front oxygen (A/F) sensor connector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector
<p>2</p> <p>CHECK POOR CONTACT. Check poor contact in front oxygen (A/F) sensor connector.</p>	<p>Is there poor contact in front oxygen (A/F) sensor connector?</p>	<p>Repair the poor contact in front oxygen (A/F) sensor connector.</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

T: DTC P0137 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2)

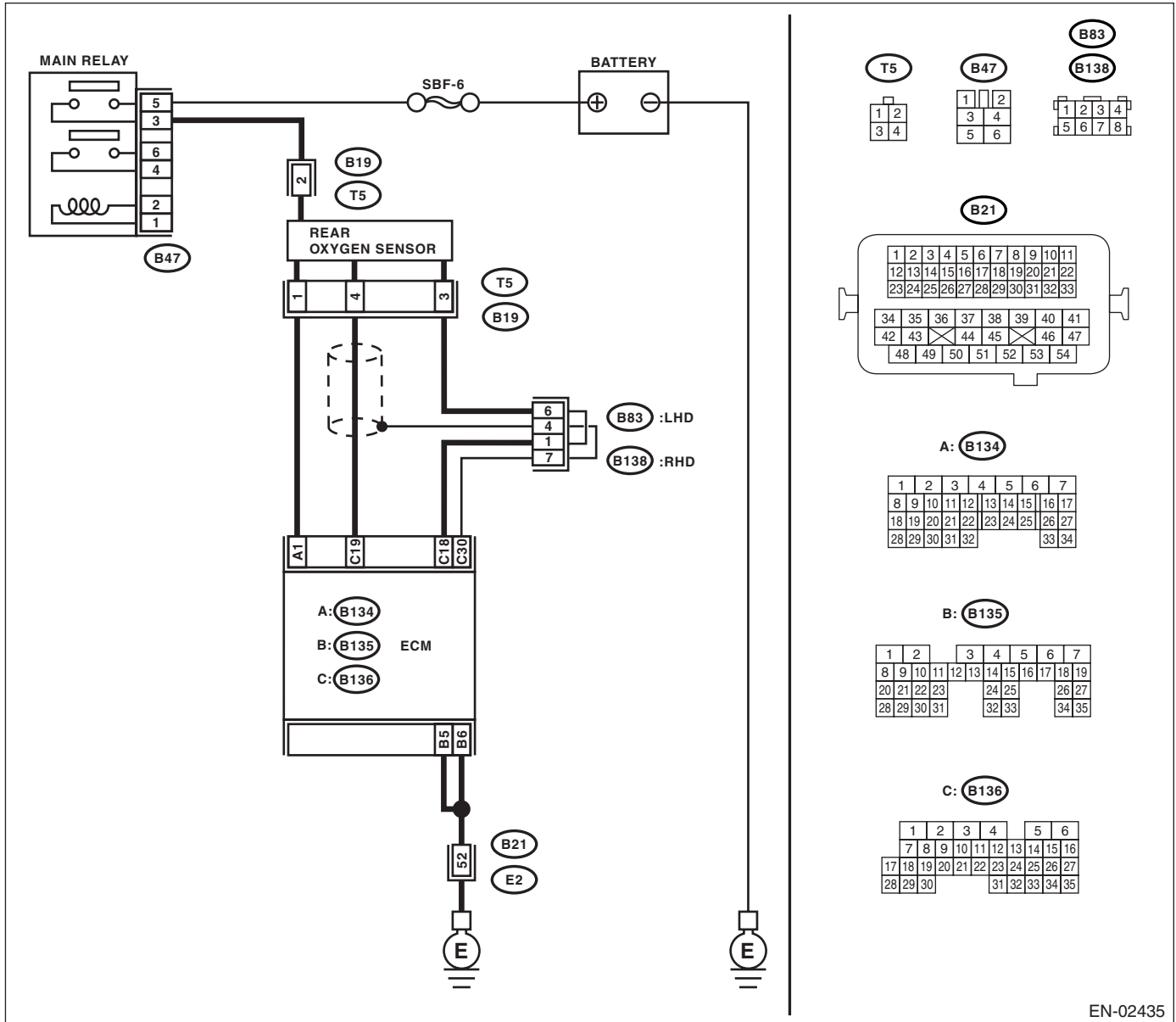
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02435

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0137.	Go to step 2.
2 CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 5,000 rpm. 2) Read the data of rear oxygen sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the voltage more than 490 mV?	Go to step 5.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor connector. Connector & terminals (B136) No. 19 — (B19) No. 4: (B136) No. 18 — (B19) No. 3:	Is the resistance more than 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. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor harness connector and chassis ground. Connector & terminal (B19) No. 4 (+) — Chassis ground (-):	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(H4SO 2.0)-33, Rear Oxygen Sensor.>	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between rear oxygen sensor and ECM connector • Poor contact in rear oxygen sensor connector • Poor contact in ECM connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items: <ul style="list-style-type: none">• Loose part of exhaust system and incomplete installation• Damage (crack, hole etc.) of parts• Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <Ref. to FU(H4SO 2.0)-33, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

U: DTC P0138 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2)

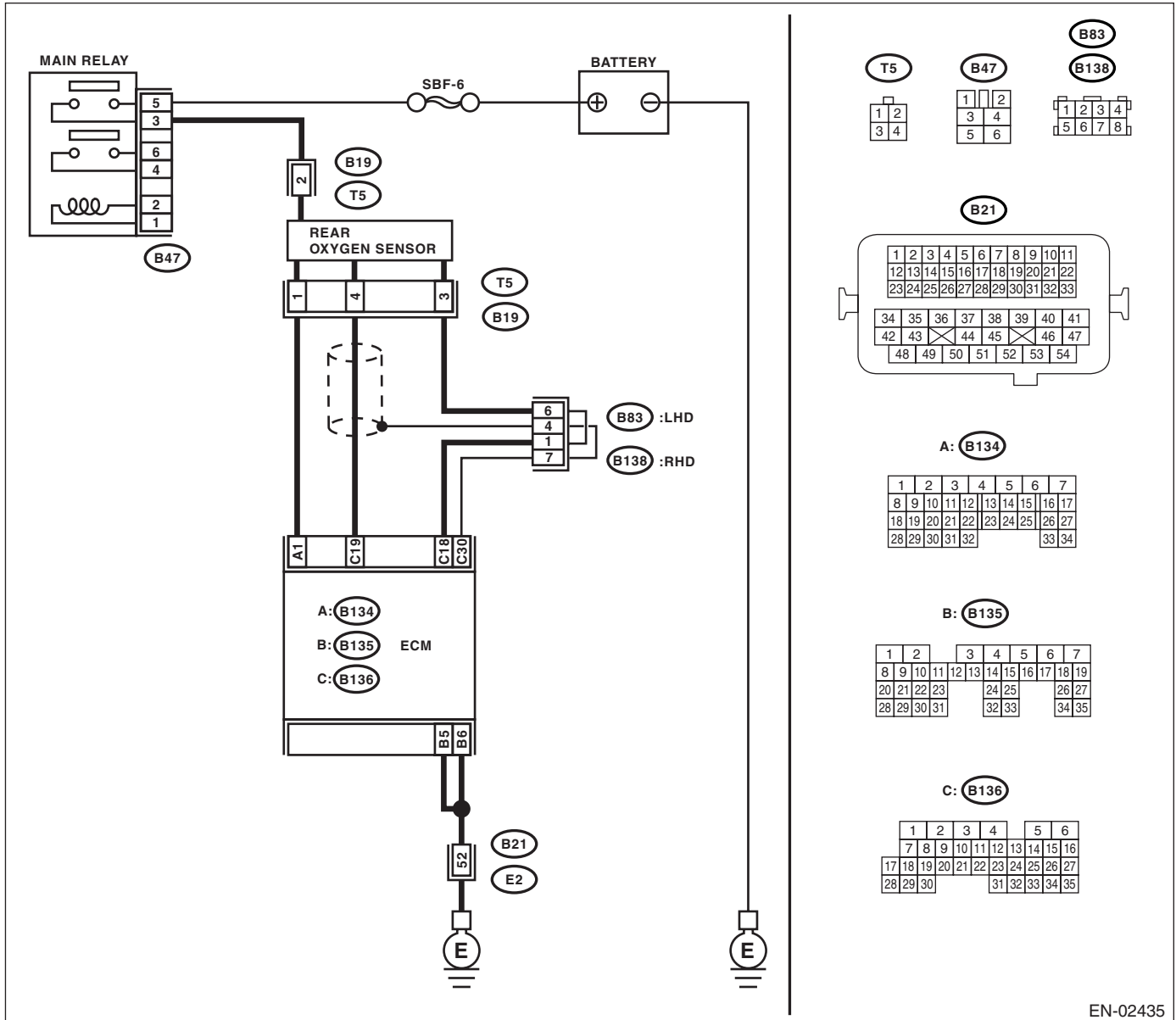
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02435

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0138.	Go to step 2.
2 CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and lower the engine speed rapidly from 5,000 rpm. 2) Read the data of rear oxygen sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the voltage more than 250 mV?	Go to step 5.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor connector. Connector & terminals (B136) No. 19 — (B19) No. 4: (B136) No. 18 — (B19) No. 3:	Is the resistance more than 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. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor harness connector and chassis ground. Connector & terminal (B19) No. 4 (+) — Chassis ground (-):	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(H4SO 2.0)-33, Rear Oxygen Sensor.>	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between rear oxygen sensor and ECM connector • Poor contact in rear oxygen sensor connector • Poor contact in ECM connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items: <ul style="list-style-type: none">• Loose part of exhaust system and incomplete installation• Damage (crack, hole etc.) of parts• Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <Ref. to FU(H4SO 2.0)-33, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

V: DTC P0139 O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 2)

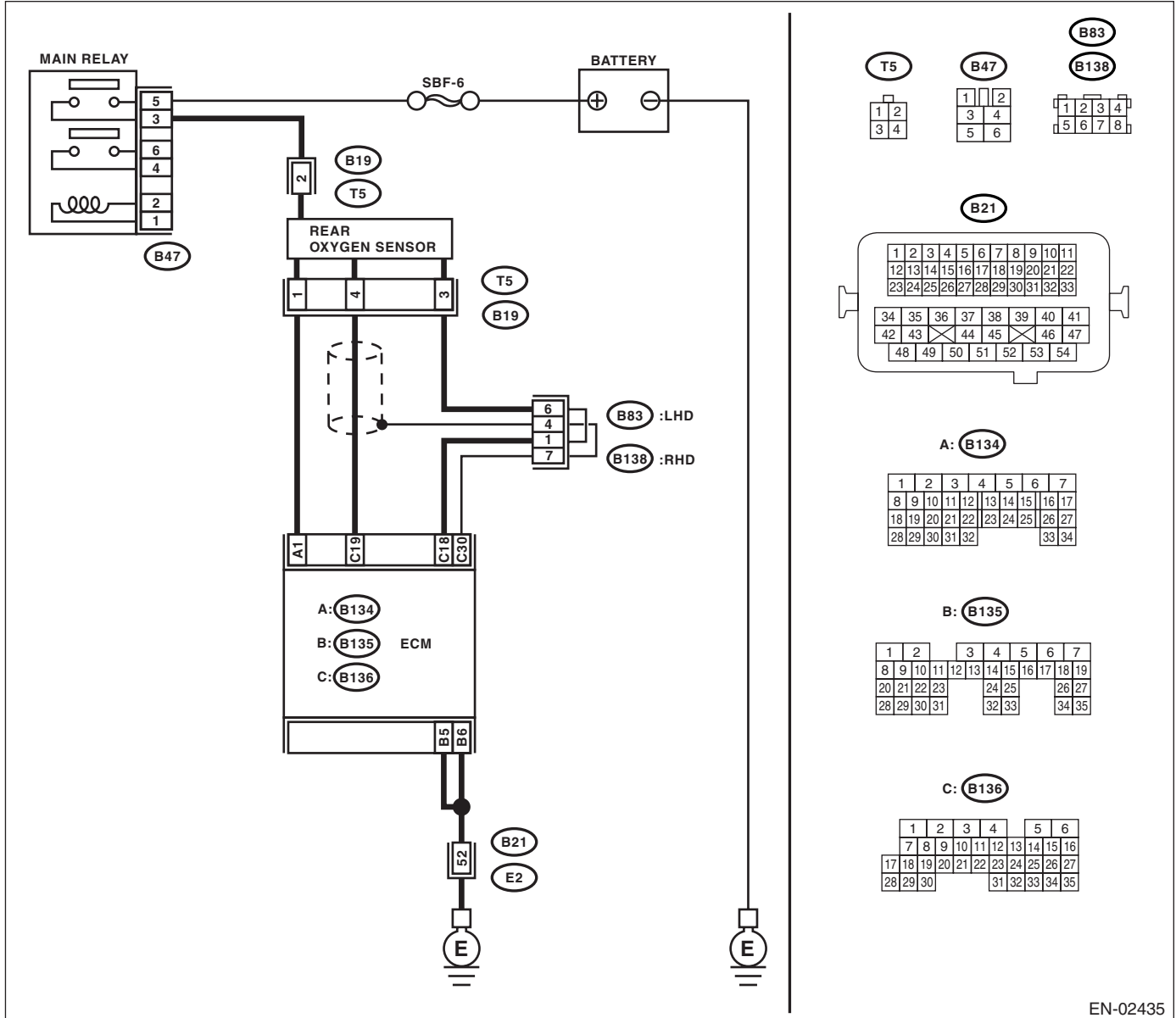
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02435

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0139.	Replace the rear oxygen sensor. <Ref. to FU(H4SO 2.0)-33, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

W: DTC P0171 SYSTEM TOO LEAN (BANK 1)

Refer to DTC P0172 for diagnostic procedure. <Ref. to EN(H4SO 2.0)(diag)-126, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

X: DTC P0172 SYSTEM TOO RICH (BANK 1)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Step	Check	Yes	No	
1	CHECK EXHAUST SYSTEM.	Are there holes or loose bolts on exhaust system?	Repair the exhaust system. Go to step 2.	
2	CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system. Go to step 3.	
3	CHECK EGR VALVE.	Is the EGR valve stuck?	Replace the EGR valve. Go to step 4.	
4	CHECK PURGE CONTROL SOLENOID VALVE.	Is the purge control solenoid valve stuck?	Replace the purge control solenoid valve. Go to step 5.	
5	CHECK PCV VALVE.	Is the PCV valve stuck?	Replace the PCV valve. Go to step 6.	
6	CHECK FUEL PRESSURE. Warning: <ul style="list-style-type: none"> • Place “NO FIRE” signs near the working area. • Be careful not to spill fuel. 1) Release the fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for five more seconds. (4) Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose, and connect the fuel pressure gauge. 4) Install the fuel filler cap. 5) Start the engine and idle while gear position is neutral. 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Release fuel pressure before removing the fuel pressure gauge,. NOTE: If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.	Is fuel pressure 284 — 314 kPa (2.9 — 3.2 kg/cm ² , 41 — 46 psi)?	Go to step 7.	Repair the following items. Fuel pressure is too high: <ul style="list-style-type: none"> • Clogged fuel return line or bent hose Fuel pressure is too low: <ul style="list-style-type: none"> • Improper fuel pump discharge • Clogged fuel supply line

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>7 CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure.</p> <p>Warning: Release fuel pressure before removing the fuel pressure gauge,.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If the measured value at this step is out of specification, check or replace pressure regulator and pressure regulator vacuum hose. 	<p>Is measured value 206 — 235 kPa (2.1 — 2.4 kg/cm², 30 — 34 psi)?</p>	<p>Go to step 8.</p>	<p>Repair the following items. Fuel pressure is too high:</p> <ul style="list-style-type: none"> • Faulty pressure regulator • Clogged fuel return line or bent hose <p>Fuel pressure is too low:</p> <ul style="list-style-type: none"> • Faulty pressure regulator • Improper fuel pump discharge • Clogged fuel supply line
<p>8 CHECK ENGINE COOLANT TEMPERATURE SENSOR. 1) Start the engine and warm-up completely. 2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.></p>	<p>Is the engine coolant temperature 70 — 100°C (158 — 212°F)?</p>	<p>Go to step 9.</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(H4SO 2.0)-20, Engine Coolant Temperature Sensor.></p>
<p>9 CHECK MANIFOLD PRESSURE SENSOR SIGNAL. 1) Start and warm-up the engine until engine coolant temperature is above 60°C (140°F). 2) Place the select lever in "N" or "P" position. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Read the data of manifold pressure sensor signal using Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.></p>	<p>Is the measurement value 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg) when idling and 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) when the ignition turns to ON?</p>	<p>Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).></p>	<p>Replace the manifold pressure sensor. <Ref. to FU(H4SO 2.0)-26, Manifold Absolute Pressure Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Y: DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH “B” CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine stalls.

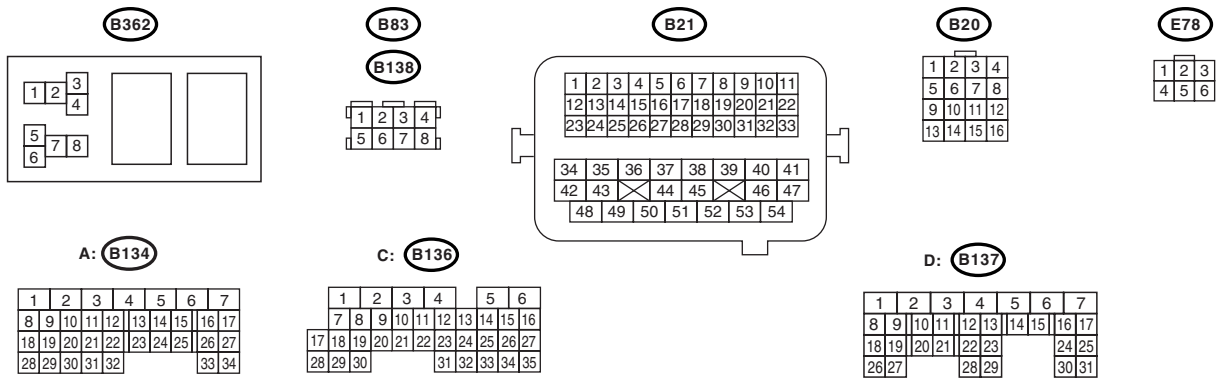
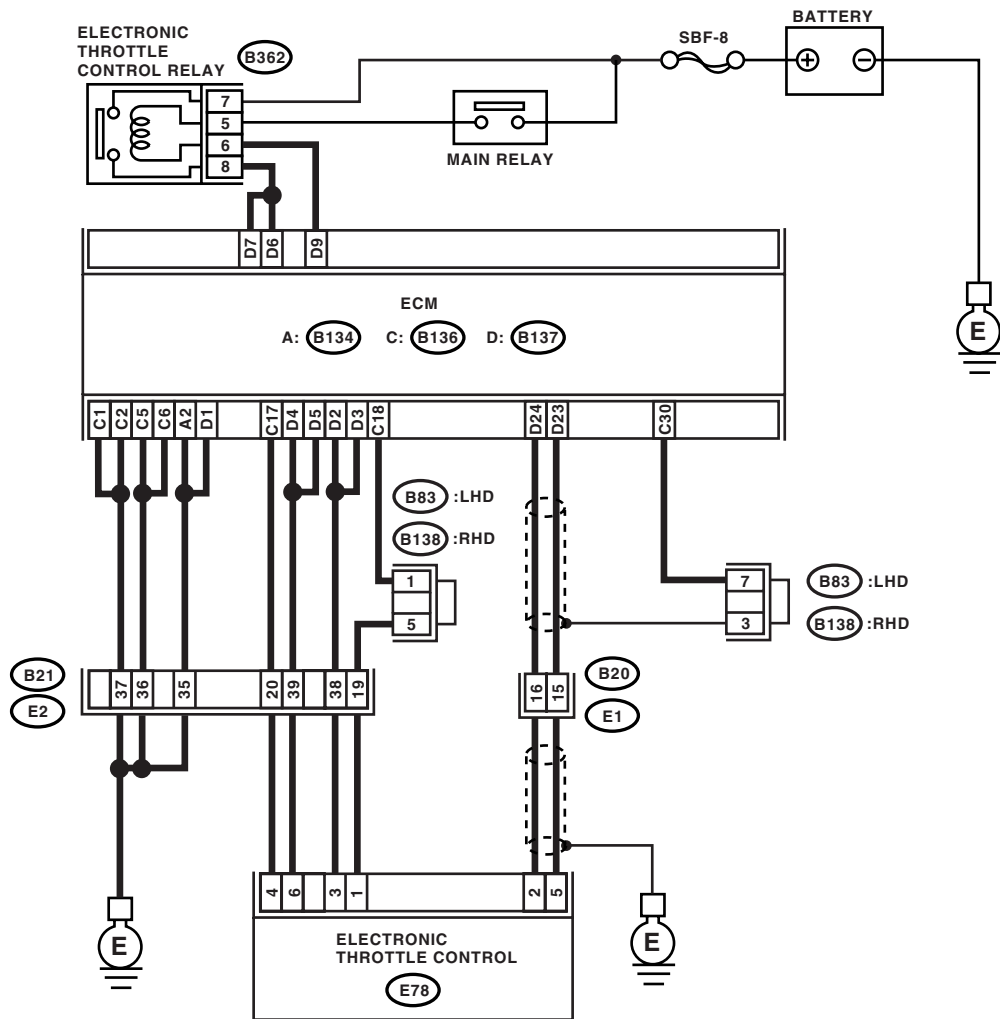
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage more than 0.8 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminals (B137) No. 24 — (E78) No. 2: (B136) No. 17 — (E78) No. 4:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B137) No. 24 — Chassis ground: (B136) No. 17 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the chassis short circuit of harness.
5 CHECK SENSOR POWER SUPPLY. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 4 (+) — Engine ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
6 CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 2 — Engine ground:	Is the resistance more than 10 Ω ?	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Z: DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH “B” CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine stalls.

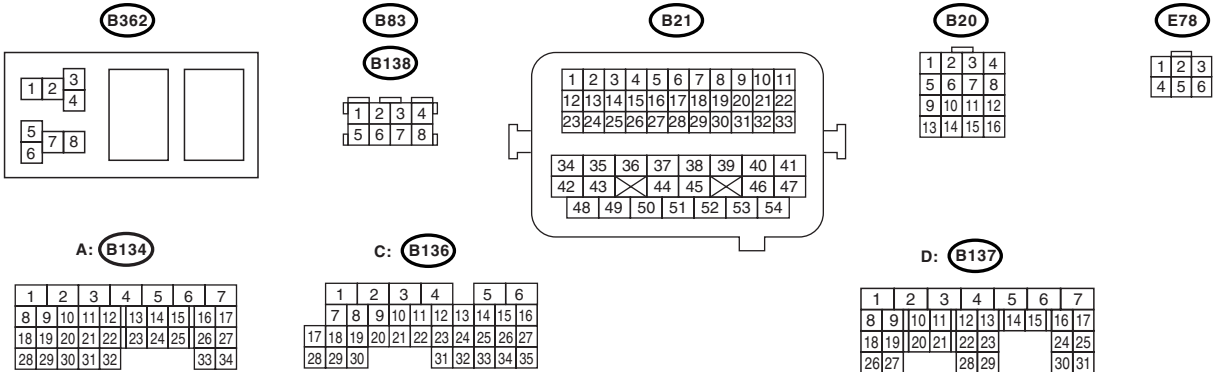
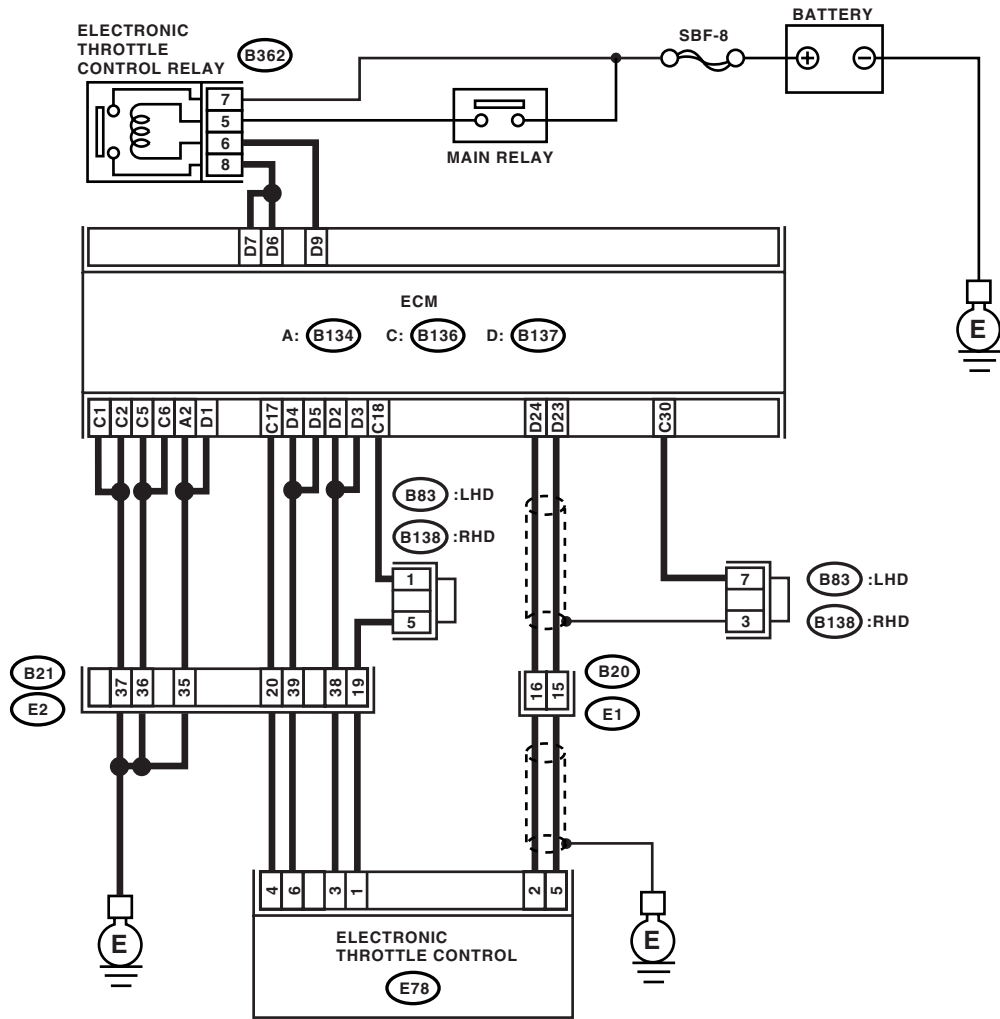
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage less than 4.73 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact in connector between ECM and electronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminals (B136) No. 18 — (E78) No. 1: (B137) No. 24 — (E78) No. 2:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 1 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
5 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 2 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 6.	Repair the battery short circuit in harness between ECM connector and electronic throttle control connector.
6 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between connector terminals. Connector & terminal (B137) No. 24 — (B136) No. 17:	Is the resistance more than 1 M Ω ?	Repair the poor contact. Replace the electronic throttle control.	Sensor power supply circuit may be shorted.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AA:DTC P0301 CYLINDER 1 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to **EN(H4SO 2.0)(diag)-135**, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AB:DTC P0302 CYLINDER 2 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to **EN(H4SO 2.0)(diag)-135**, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AC:DTC P0303 CYLINDER 3 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to **EN(H4SO 2.0)(diag)-135**, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AD:DTC P0304 CYLINDER 4 MISFIRE DETECTED

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)

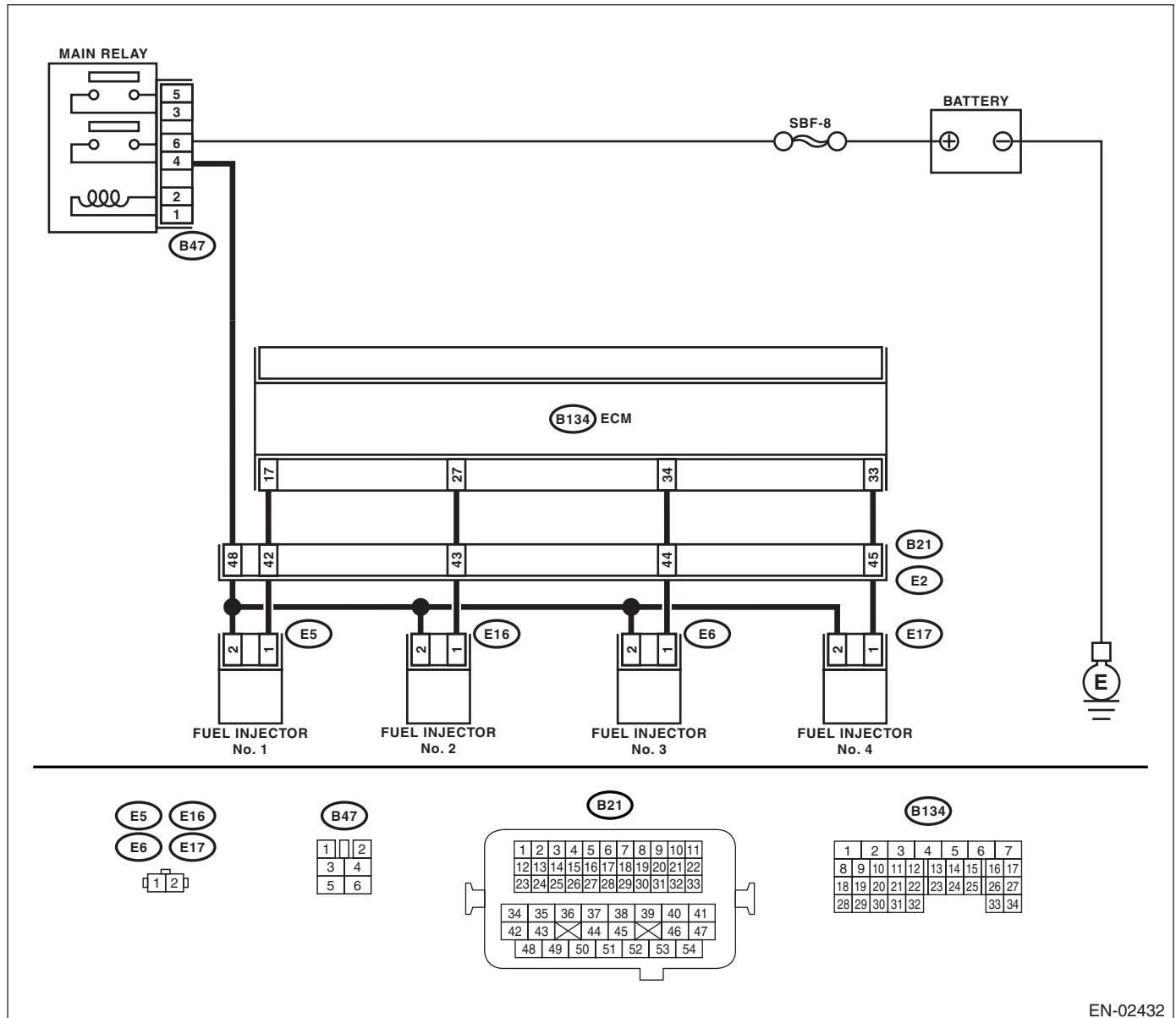
TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- Rough driving

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02432

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.	Go to step 2.
2 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground on faulty cylinders. Connector & terminal #1 (B134) No. 17 (+) — Chassis ground (-): #2 (B134) No. 27 (+) — Chassis ground (-): #3 (B134) No. 34 (+) — Chassis ground (-): #4 (B134) No. 33 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Go to step 3.
3 CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector on faulty cylinders. 3) Measure the resistance between ECM connector and engine ground on faulty cylinders. Connector & terminal #1 (E5) No. 1 — Engine ground: #2 (E16) No. 1 — Engine ground: #3 (E6) No. 1 — Engine ground: #4 (E17) No. 1 — Engine ground:	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair the ground short circuit in harness between fuel injector and ECM connector.
4 CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR. Measure the resistance of harness connector between ECM connector and fuel injector on faulty cylinders. Connector & terminal #1 (B134) No. 17 — (E5) No. 1: #2 (B134) No. 27 — (E16) No. 1: #3 (B134) No. 34 — (E6) No. 1: #4 (B134) No. 33 — (E17) No. 1:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and fuel injector connector • Poor contact in coupling connector
5 CHECK FUEL INJECTOR. Measure the resistance between fuel injector terminals on faulty cylinder. Terminals No. 1 — No. 2:	Is the resistance 5 — 20 Ω ?	Go to step 6.	Replace the faulty fuel injector. <Ref. to FU(H4SO 2.0)-29, Fuel Injector.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK POWER SUPPLY LINE. 1) Turn the ignition switch to ON. 2) Measure the voltage between fuel injector and engine ground on faulty cylinders. Connector & terminal #1 (E5) No. 2 (+) — Engine ground (-): #2 (E16) No. 2 (+) — Engine ground (-): #3 (E6) No. 2 (+) — Engine ground (-): #4 (E17) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Repair the poor contact in all connectors in fuel injector circuit.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between main relay and fuel injector connector on faulty cylinders • Poor contact in coupling connector • Poor contact in main relay connector • Poor contact in fuel injector connector on faulty cylinders
7 CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector on faulty cylinder. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground on faulty cylinders. Connector & terminal #1 (B134) No. 17 (+) — Chassis ground (-): #2 (B134) No. 27 (+) — Chassis ground (-): #3 (B134) No. 34 (+) — Chassis ground (-): #4 (B134) No. 33 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and fuel injector. After repair, replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Go to step 8.
8 CHECK FUEL INJECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between fuel injector terminals on faulty cylinder. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the faulty fuel injector <Ref. to FU(H4SO 2.0)-29, Fuel Injector.> and ECM <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Go to step 9.
9 CHECK INSTALLATION OF CAMSHAFT POSITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is the camshaft position sensor or crankshaft position sensor loosely installed?	Tighten the camshaft position sensor or crankshaft position sensor.	Go to step 10.
10 CHECK CRANKSHAFT SPROCKET. Remove the timing belt cover.	Is the crankshaft sprocket rusted or does it have broken teeth?	Replace the crankshaft sprocket. <Ref. to ME(H4SO 2.0)-50, Crank Sprocket.>	Go to step 11.
11 CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the crankshaft using ST, and align alignment mark on crankshaft sprocket with alignment mark on cylinder block. ST 499987500 CRANKSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <Ref. to ME(H4SO 2.0)-43, Timing Belt.>	Go to step 12.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
12 CHECK FUEL LEVEL.	Is the fuel meter indication higher than the "Lower" level?	Go to step 13.	Replenish fuel so fuel meter indication is higher than the "Lower" level. After replenishing fuel, Go to step 13.
13 CHECK STATUS OF MALFUNCTION INDICATOR LIGHT. 1) Clear the memory using Subaru Select Monitor. <Ref. to EN(H4SO 2.0)(diag)-38, Clear Memory Mode.> 2) Start the engine, and drive the vehicle more than 10 minutes.	Does the malfunction indicator light illuminate or blink?	Go to step 15.	Go to step 14.
14 CHECK CAUSE OF MISFIRE DIAGNOSED.	Was the cause of misfire identified when the engine is running. Ex. Disconnection of spark plug cord.	Finish diagnostics operation, if the engine has no abnormality.	1. Repair the poor contact. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Poor contact in ignitor connector • Poor contact in ignition coil connector • Poor contact in fuel injector connector on faulty cylinders • Poor contact in ECM connector • Poor contact in coupling connector 2. If there is no poor contact, check the followings and contact with your Subaru distributor service. <ul style="list-style-type: none"> • Fuel condition • Whether addition agent is used or not • Plug condition • Plug cord condition • Engine oil condition

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
15	CHECK AIR INTAKE SYSTEM.	Repair the air intake system. NOTE: Check the following items: • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnection of hoses?	Go to step 16 .	
16	CHECK MISFIRE SYMPTOM. 1) Turn the ignition switch to ON. 2) Read the DTC. • Subaru Select Monitor <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to OBD-II General Scan Tool Operation Manual. NOTE: Perform diagnosis according to the items listed below.	Does the Subaru Select Monitor or OBD-II general scan tool display only one DTC?	Go to step 21 .	Go to step 17 .
17	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY. Is any other DTC displayed?	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0302?	Go to step 22 .	Go to step 18 .
18	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY. Is any other DTC displayed?	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0303 and P0304?	Go to step 23 .	Go to step 19 .
19	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY. Is any other DTC displayed?	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0301 and P0303?	Go to step 24 .	Go to step 20 .
20	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY. Is any other DTC displayed?	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0302 and P0304?	Go to step 25 .	Go to step 26 .
21	ONLY ONE CYLINDER	Is there any fault in that cylinder?	Repair or replace faulty parts. NOTE: Check the following items. • Spark plug • Spark plug cord • Fuel injector • Compression ratio	Go to DTC P0171. <Ref. to EN(H4SO 2.0)(diag)-126, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
22 GROUP OF #1 AND #2 CYLINDERS	Are there any faults in #1 and #2 cylinders?	Repair or replace faulty parts. NOTE: • Check the following items. <ul style="list-style-type: none"> • Spark plugs • Fuel injectors • Ignition coil • Compression ratio • If no abnormal is discovered, check for "IGNITION CONTROL SYSTEM" of #1 and #2 cylinders side. <Ref. to EN(H4SO 2.0)(diag)-58, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Go to DTC P0171. <Ref. to EN(H4SO 2.0)(diag)-126, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
23 GROUP OF #3 AND #4 CYLINDERS	Are there any faults in #3 and #4 cylinders?	Repair or replace faulty parts. NOTE: • Check the following items. <ul style="list-style-type: none"> • Spark plugs • Fuel injectors • Ignition coil • If no abnormal is discovered, check for "16. D: IGNITION CONTROL SYSTEM" of #3 and #4 cylinders side. <Ref. to EN(H4SO 2.0)(diag)-58, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Go to DTC P0171. <Ref. to EN(H4SO 2.0)(diag)-126, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
24 GROUP OF #1 AND #3 CYLINDERS	Are there any faults in #1 and #3 cylinders?	Repair or replace faulty parts. NOTE: Check the following items. <ul style="list-style-type: none"> • Spark plugs • Fuel injectors • Skipping timing belt teeth 	Go to DTC P0171. <Ref. to EN(H4SO 2.0)(diag)-126, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
25 GROUP OF #2 AND #4 CYLINDERS	Are there any faults in #2 and #4 cylinders?	Repair or replace faulty parts. NOTE: Check the following items. <ul style="list-style-type: none">• Spark plugs• Fuel injectors• Compression ratio• Skipping timing belt teeth	Go to DTC P0171. <Ref. to EN(H4SO 2.0)(diag)-126, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
26 CYLINDER AT RANDOM	Is the engine idle rough?	Go to DTC P0170. <Ref. to EN(H4SO 2.0)(diag)-126, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Repair or replace faulty parts. NOTE: Check the following items. <ul style="list-style-type: none">• Spark plugs• Fuel injectors• Compression ratio

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AE:DTC P0327 KNOCK SENSOR 1 CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR)

DTC DETECTING CONDITION:

Immediately at fault recognition

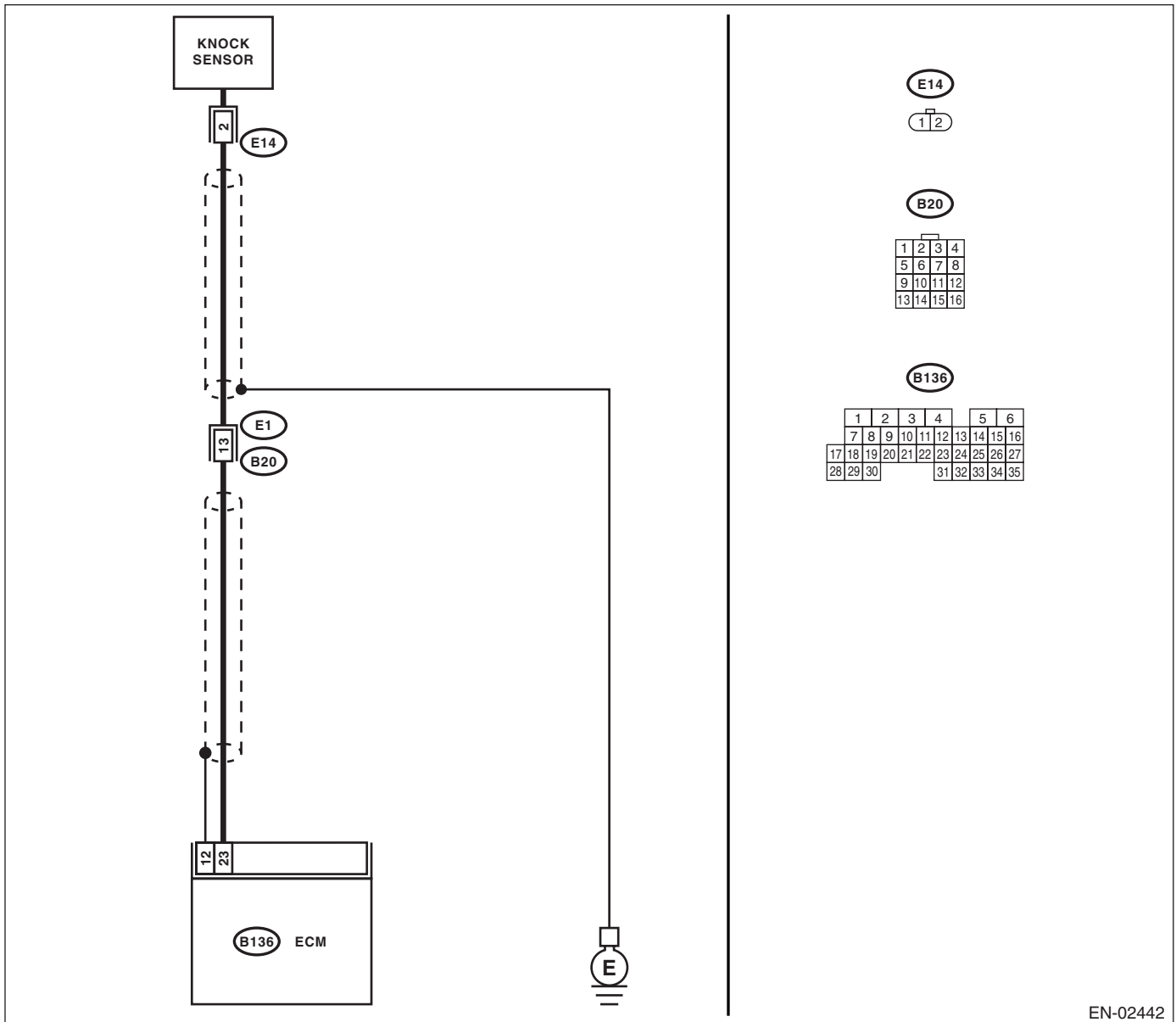
TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02442

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM harness connector and chassis ground. Connector & terminal (B136) No. 23 — Chassis ground:	Is the resistance more than 700 kΩ?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between knock sensor and ECM connector • Poor contact in knock sensor connector • Poor contact in coupling connector
2 CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. Terminals No. 2 — Engine ground:	Is the resistance more than 700 kΩ?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Poor contact in knock sensor connector
3 CHECK CONDITION OF KNOCK SENSOR INSTALLATION.	Is the knock sensor installation bolt tightened securely?	Replace the knock sensor. <Ref. to FU(H4SO 2.0)-23, Knock Sensor.>	Tighten the knock sensor installation bolt securely.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AF:DTC P0328 KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR)

DTC DETECTING CONDITION:

Immediately at fault recognition

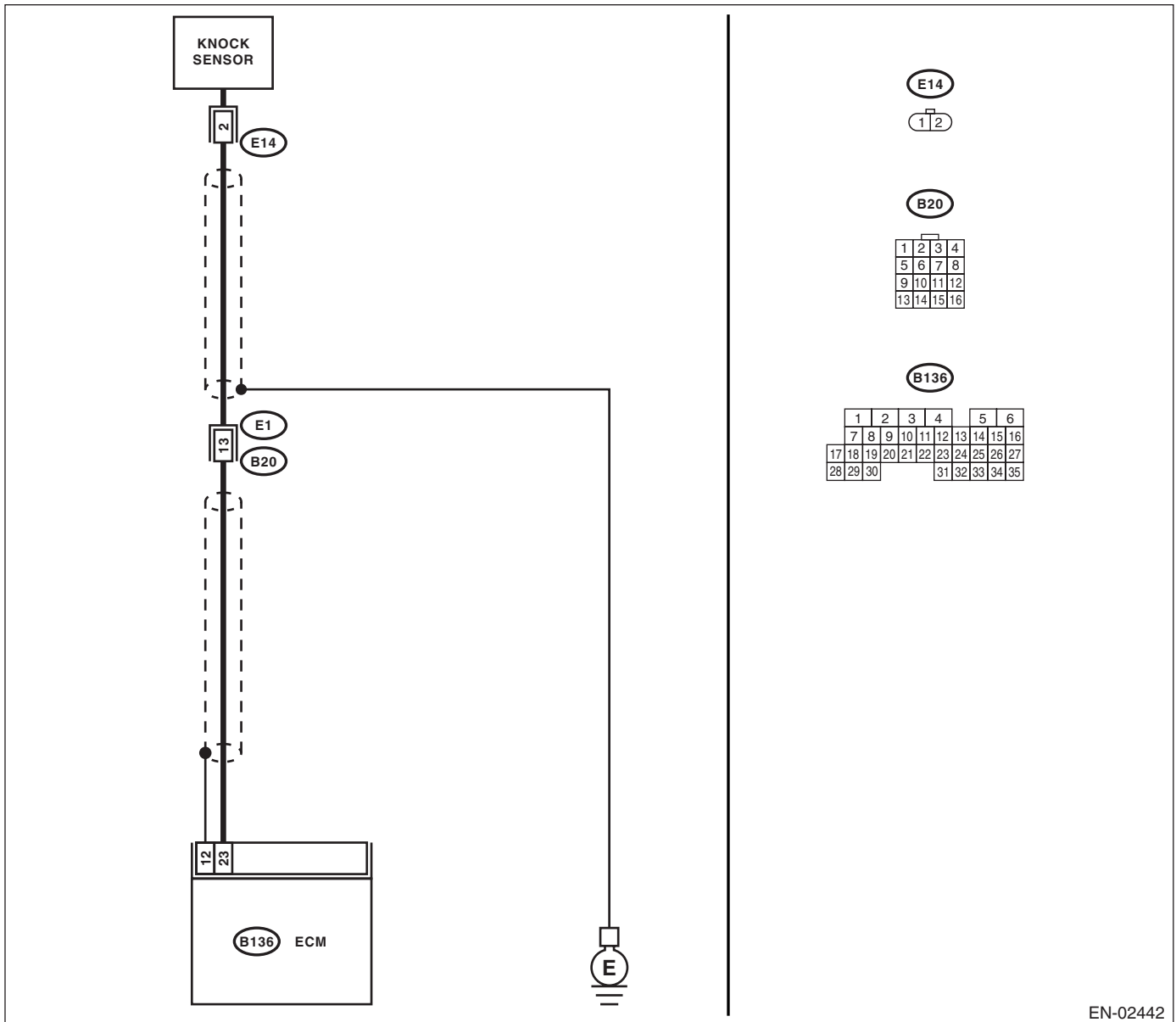
TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02442

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B136) No. 23 — Chassis ground:	Is the resistance less than 400 k Ω ?	Go to step 2.	Go to step 3.
2 CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. Terminals No. 2 — Engine ground:	Is the resistance less than 400 k Ω ?	Replace the knock sensor. <Ref. to FU(H4SO 2.0)-23, Knock Sensor.>	Repair the ground short circuit in harness between knock sensor connector and ECM connector. NOTE: The harness between both connectors are shielded. Repair the short circuit in harness covered with shield.
3 CHECK INPUT SIGNAL FROM ECM. 1) Connect the connectors to ECM and knock sensor. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B136) No. 23 (+) — Chassis ground (-):	Is the voltage more than 2 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.) NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Poor contact in knock sensor connector • Poor contact in ECM connector • Poor contact in coupling connector 	Repair the poor contact in ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AG:DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT

DTC DETECTING CONDITION:

Immediately at fault recognition

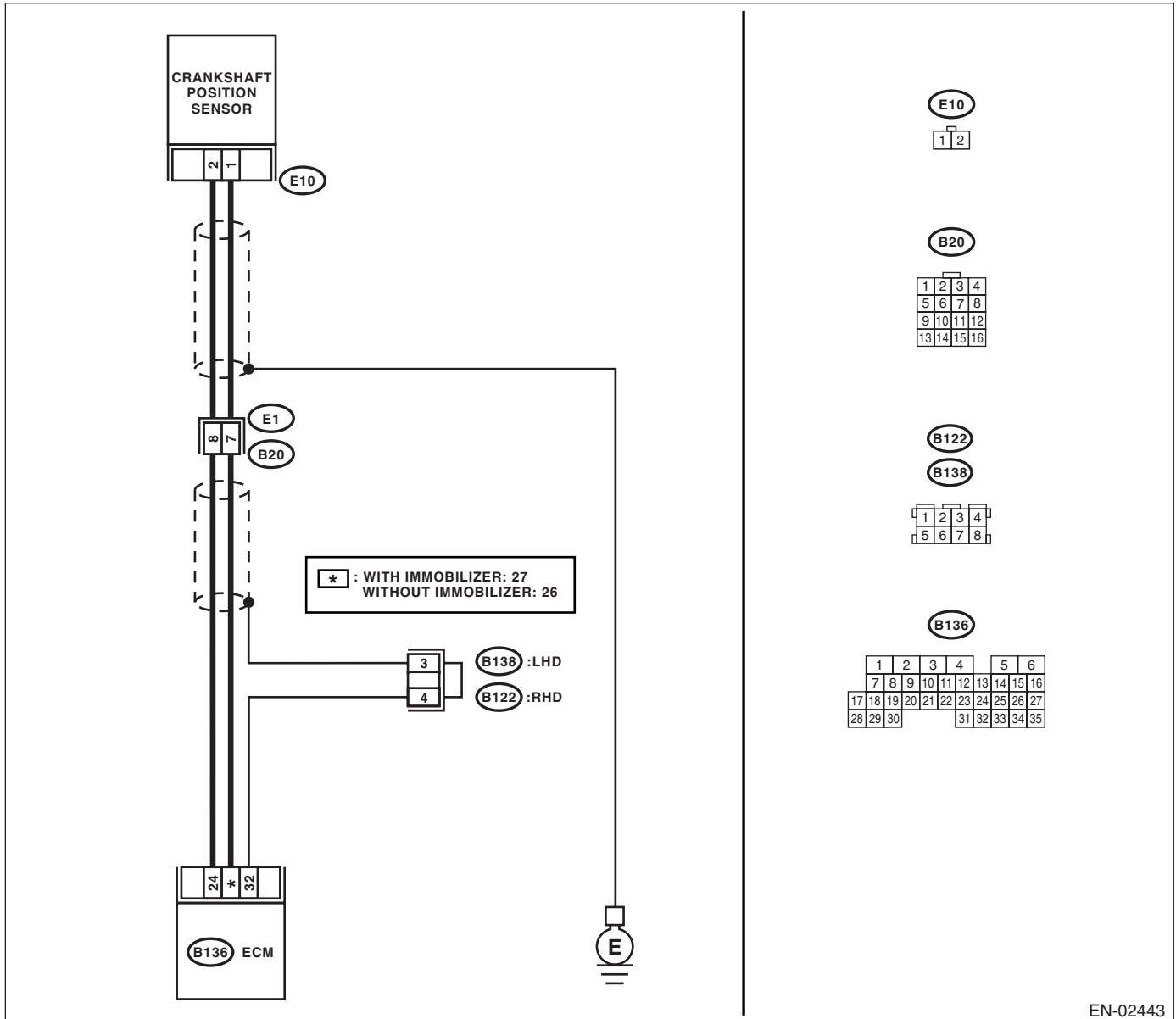
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02443

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from crankshaft position sensor. 3) Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E10) No. 1 — Engine ground:</p>	<p>Is the resistance more than 100 kΩ?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between crankshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector 	<p>Go to step 2.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E10) No. 1 — Engine ground:</p>	<p>Is the resistance less than 10 Ω?</p>	<p>Repair the ground short circuit in harness between crankshaft position sensor and ECM connector.</p> <p>NOTE: The harness between both connectors are shielded. Repair the ground short circuit in harness with shield.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E10) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between crankshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
<p>4</p> <p>CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.</p>	<p>Is the crankshaft position sensor installation bolt tightened securely?</p>	<p>Go to step 5.</p>	<p>Tighten the crankshaft position sensor installation bolt securely.</p>
<p>5</p> <p>CHECK CRANKSHAFT POSITION SENSOR.</p> <p>1) Remove the crankshaft position sensor. 2) Measure the resistance between connector terminals of crankshaft position sensor.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 1 — 4 kΩ?</p>	<p>Repair the poor contact in crankshaft position sensor connector.</p>	<p>Replace the crankshaft position sensor. <Ref. to FU(H4SO 2.0)-21, Crankshaft Position Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AH:DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR)

DTC DETECTING CONDITION:

Immediately at fault recognition

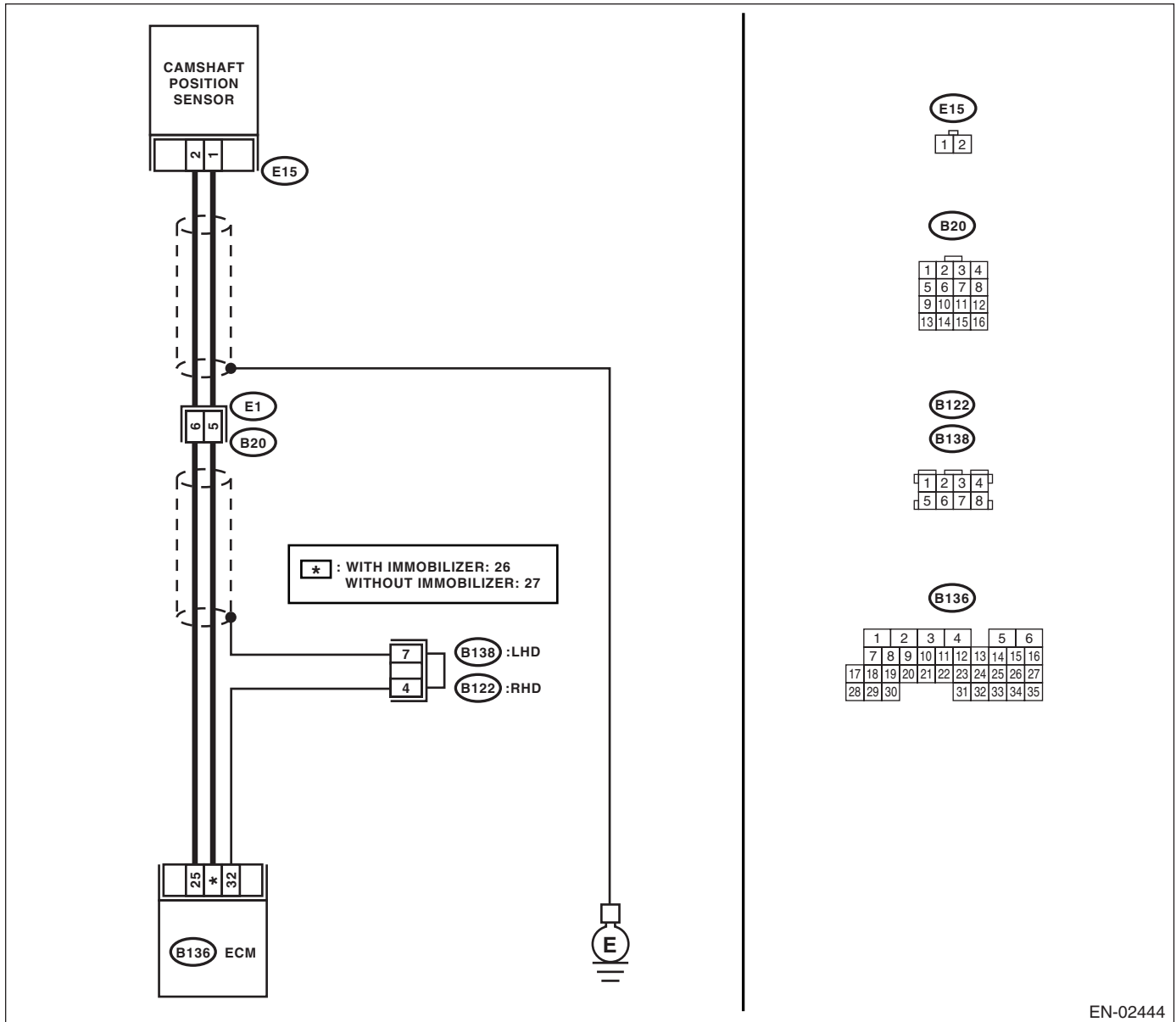
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02444

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 1 — Engine ground:</p>	<p>Is the resistance more than 100 kΩ?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector 	<p>Go to step 2.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 1 — Engine ground:</p>	<p>Is the resistance less than 10 Ω?</p>	<p>Repair the ground short circuit in harness between camshaft position sensor and ECM connector.</p> <p>NOTE: The harness between both connectors are shielded. Repair the ground short circuit in harness with shield.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
<p>4</p> <p>CHECK CONDITION OF CAMSHAFT POSITION SENSOR.</p>	<p>Is the camshaft position sensor installation bolt tightened securely?</p>	<p>Go to step 5.</p>	<p>Tighten the camshaft position sensor installation bolt securely.</p>
<p>5</p> <p>CHECK CAMSHAFT POSITION SENSOR.</p> <p>1) Remove the camshaft position sensor. 2) Measure the resistance between connector terminals of camshaft position sensor.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 1 — 4 kΩ?</p>	<p>Repair the poor contact in camshaft position sensor connector.</p>	<p>Replace the camshaft position sensor. <Ref. to FU(H4SO 2.0)-22, Camshaft Position Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AI: DTC P0400 EXHAUST GAS RECIRCULATION FLOW

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

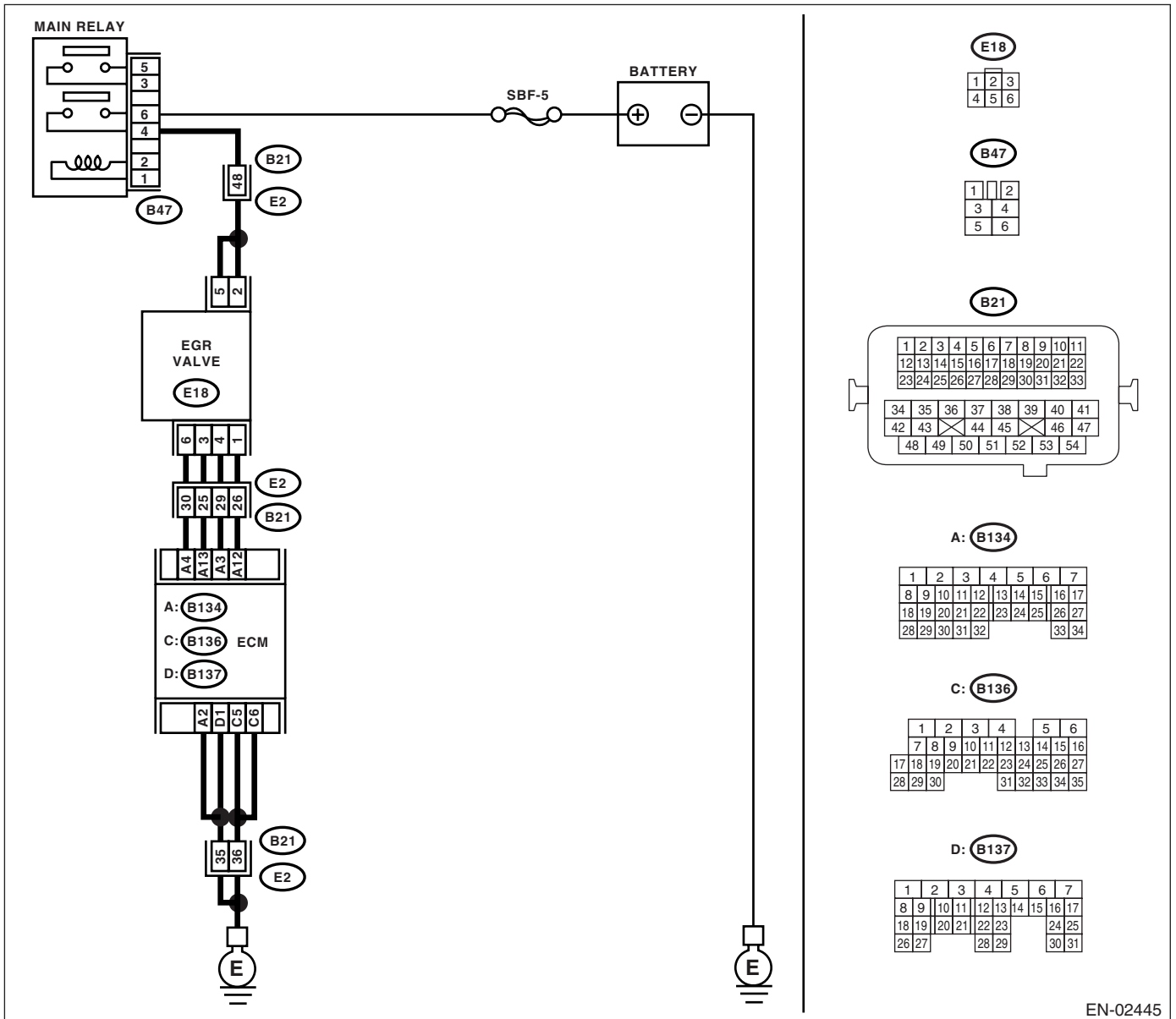
TROUBLE SYMPTOM:

- Movement performance problem when engine is low speed.
- Erroneous idling
- Movement performance problem

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02445

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor. NOTE: For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.>	Is the value more than 53.3 kPa (400 mmHg, 15.75 inHg)?	Make sure that the EGR valve, manifold absolute pressure sensor and throttle body are installed securely.	Go to step 3.
3 CHECK THE POWER SUPPLY OF EGR SOLENOID VALVE. 1) Detach the connector from EGR solenoid valve. 2) Turn the ignition switch to ON. 3) Measure the voltage between EGR solenoid valve and engine ground. Connector & terminal (E18) No. 2 (+) — Engine ground (-): (E18) No. 5 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 4.	Repair the open circuit in harness between main relay and EGR solenoid valve connector.
4 CHECK EGR SOLENOID VALVE. Measure the resistance between EGR solenoid valve terminals. NOTE: Make sure there is no foreign material between EGR solenoid valve and valve seat. Terminals No. 1 — No. 2: No. 3 — No. 2: No. 4 — No. 5: No. 6 — No. 5:	Is the resistance 20 — 30 Ω?	Go to step 5.	Replace the EGR solenoid valve. <Ref. to FU(H4SO 2.0)-28, EGR Valve.>
5 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the connector to ECM and EGR solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 4 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-): (B134) No. 12 (+) — Chassis ground (-): (B134) No. 13 (+) — Chassis ground (-):	Is the voltage 0 — 10 V?	Repair the poor contact portion in ECM connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Detach the connector from EGR solenoid valve and ECM. 3) Measure the resistance of harness between EGR solenoid valve and ECM connector. <i>Connector & terminal</i> (B134) No. 4 — (E18) No. 6: (B134) No. 12 — (E18) No. 1: (B134) No. 3 — (E18) No. 4: (B134) No. 13 — (E18) No. 3:	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the open circuit in harness between ECM and EGR solenoid valve connector.
7 CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between EGR solenoid valve and chassis ground. <i>Connector & terminal</i> (B134) No. 4 — Chassis ground: (B134) No. 3 — Chassis ground: (B134) No. 12 — Chassis ground: (B134) No. 13 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 8.	Repair the short circuit in harness between main relay and EGR solenoid valve connector.
8 CHECK POOR CONTACT. Check poor contact for ECM and EGR solenoid valve connector.	Is there poor contact for ECM and EGR solenoid valve connector?	Repair the poor contact of ECM and EGR solenoid valve connector.	Even if the malfunction indicator light illuminates, the circuit has returned to the specified condition at this time.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AJ:DTC P0420 CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

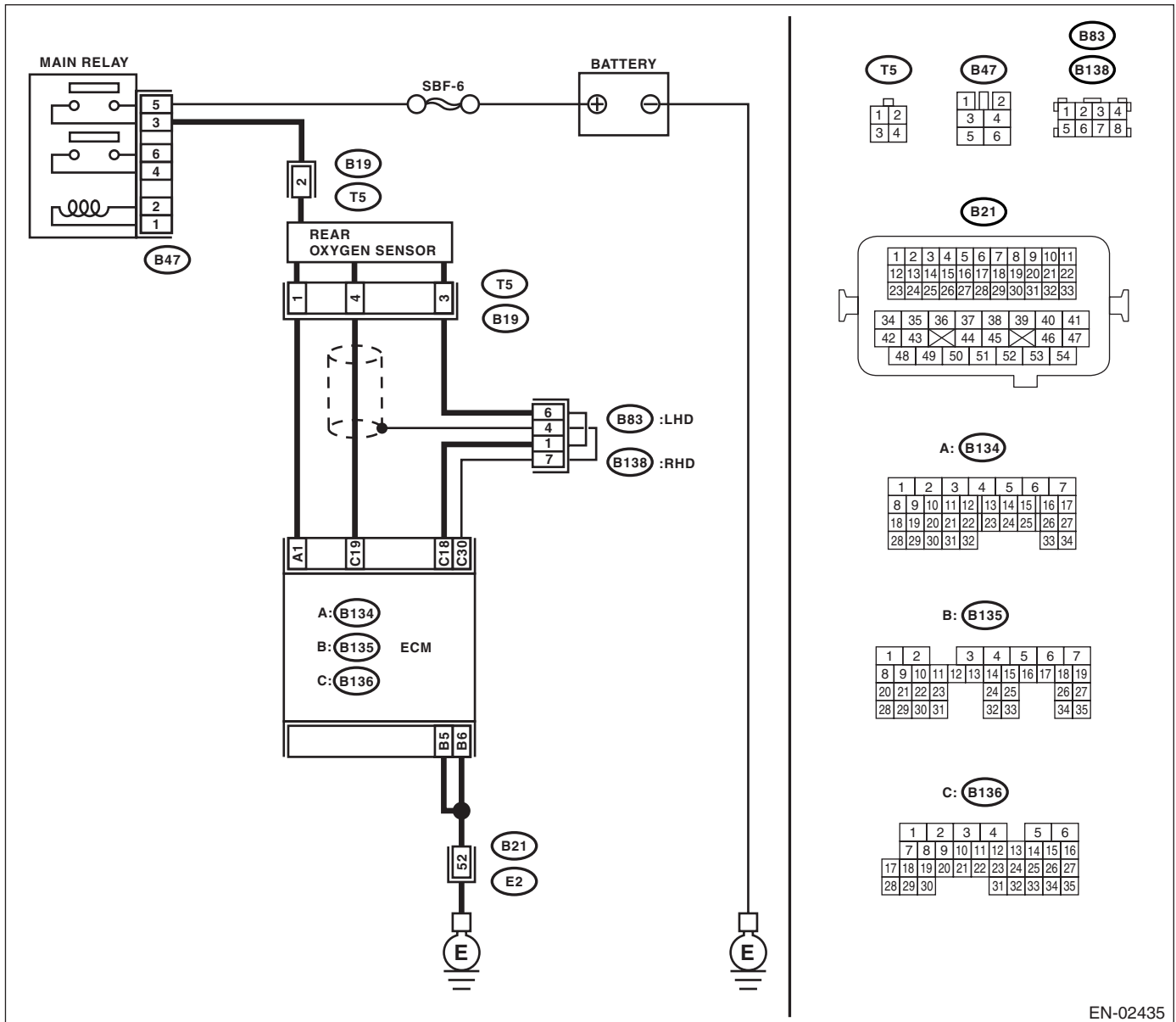
TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02435

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0420.	Go to step 2.
2 CHECK EXHAUST SYSTEM. Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes. NOTE: Check the following positions. <ul style="list-style-type: none"> • Between cylinder head and front exhaust pipe • Between front exhaust pipe and front catalytic converter • Between front catalytic converter and rear catalytic converter 	Is there any fault in exhaust system?	Repair or replace the exhaust system. <Ref. to EX(H4SO 2.0)-2, General Description.>	Go to step 3.
3 CHECK CATALYTIC CONVERTER.	Is there damage at rear face or front face of front catalyst?	Replace the catalytic converter. <Ref. to EC(H4SO 2.0)-3, Front Catalytic Converter.>	Go to step 5.
4 CHECK REAR OXYGEN SENSOR GROUND HARNESS. 1) Disconnect the rear oxygen sensor and ECM connectors. 2) Measure the resistance between rear oxygen sensor connector and ECM connector. Connector & terminals (B19) No. 3 — (B136) No. 18:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the open circuit in harness between ECM and rear oxygen sensor.
5 CHECK SHIELD HARNESS.	Is the shield harness opened?	Repair the shield harness.	Contact with your Subaru distributor service.

AK:DTC P0458 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

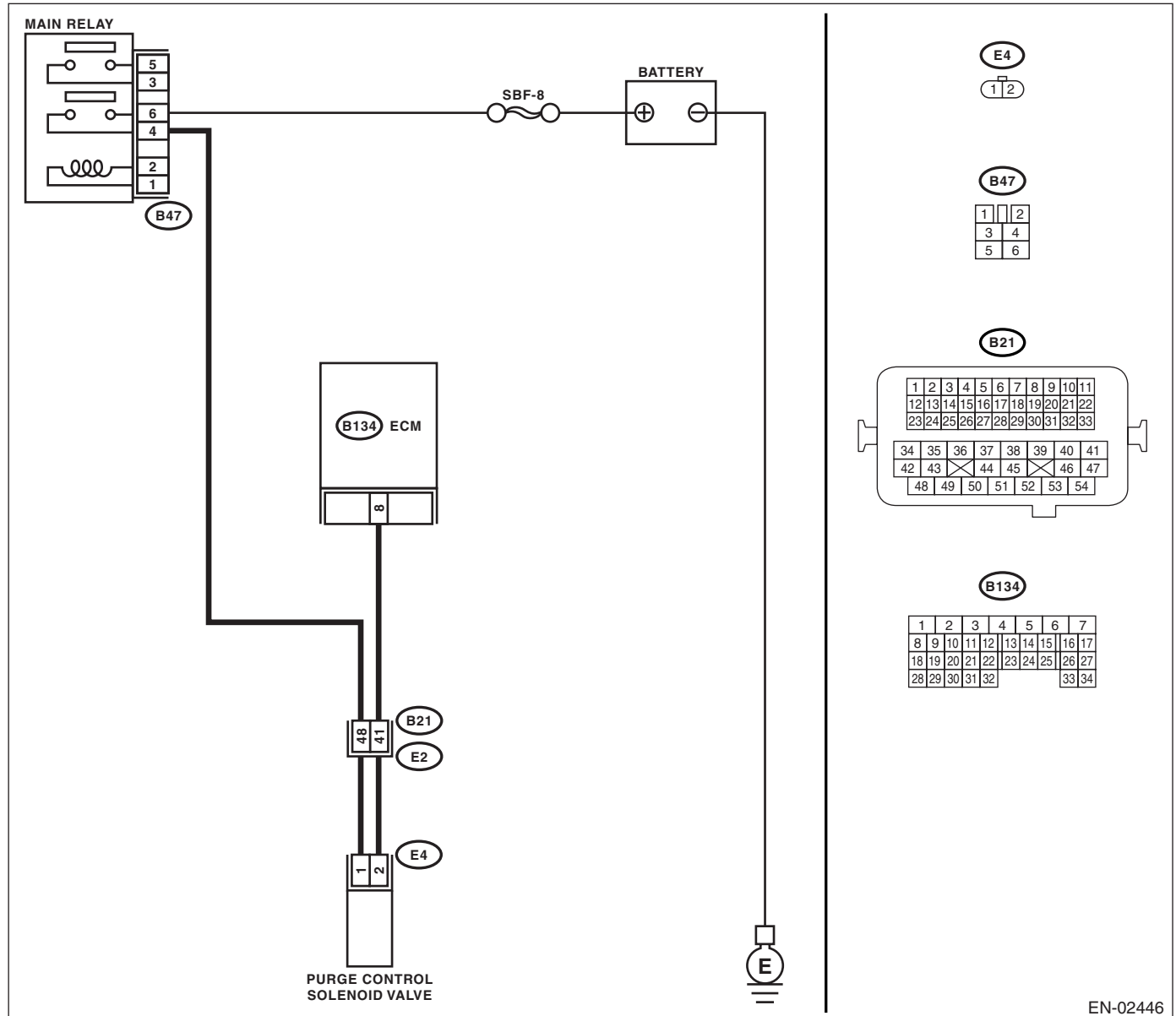
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02446

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time.	Go to step 2.
2 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from purge control solenoid valve and ECM. 3) Measure the resistance of harness between purge control solenoid valve connector and engine ground. Connector & terminal (E4) No. 2 — Engine ground:	Is the resistance more than 1 M Ω ?	Go to step 3.	Repair the ground short circuit in harness between ECM and purge control solenoid valve connector.
3 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between ECM and purge control solenoid valve. Connector & terminal (B134) No. 8 — (E4) No. 2:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit in harness between ECM and purge control solenoid valve connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and purge control solenoid valve connector • Poor contact in coupling connector
4 CHECK PURGE CONTROL SOLENOID VALVE. 1) Remove the purge control solenoid valve. 2) Measure the resistance between purge control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance 10 — 100 Ω ?	Go to step 5.	Replace the purge control solenoid valve. <Ref. to EC(H4SO 2.0)-7, Purge Control Solenoid Valve.>
5 CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to ON. 2) Measure the voltage between purge control solenoid valve and engine ground. Connector & terminal (E4) No. 1 (+) — Engine ground (-):	Is the voltage more than 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. Check poor contact in purge control solenoid valve connector.	Is there poor contact in purge control solenoid valve connector?	Repair the poor contact in purge control solenoid valve connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

AL:DTC P0459 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

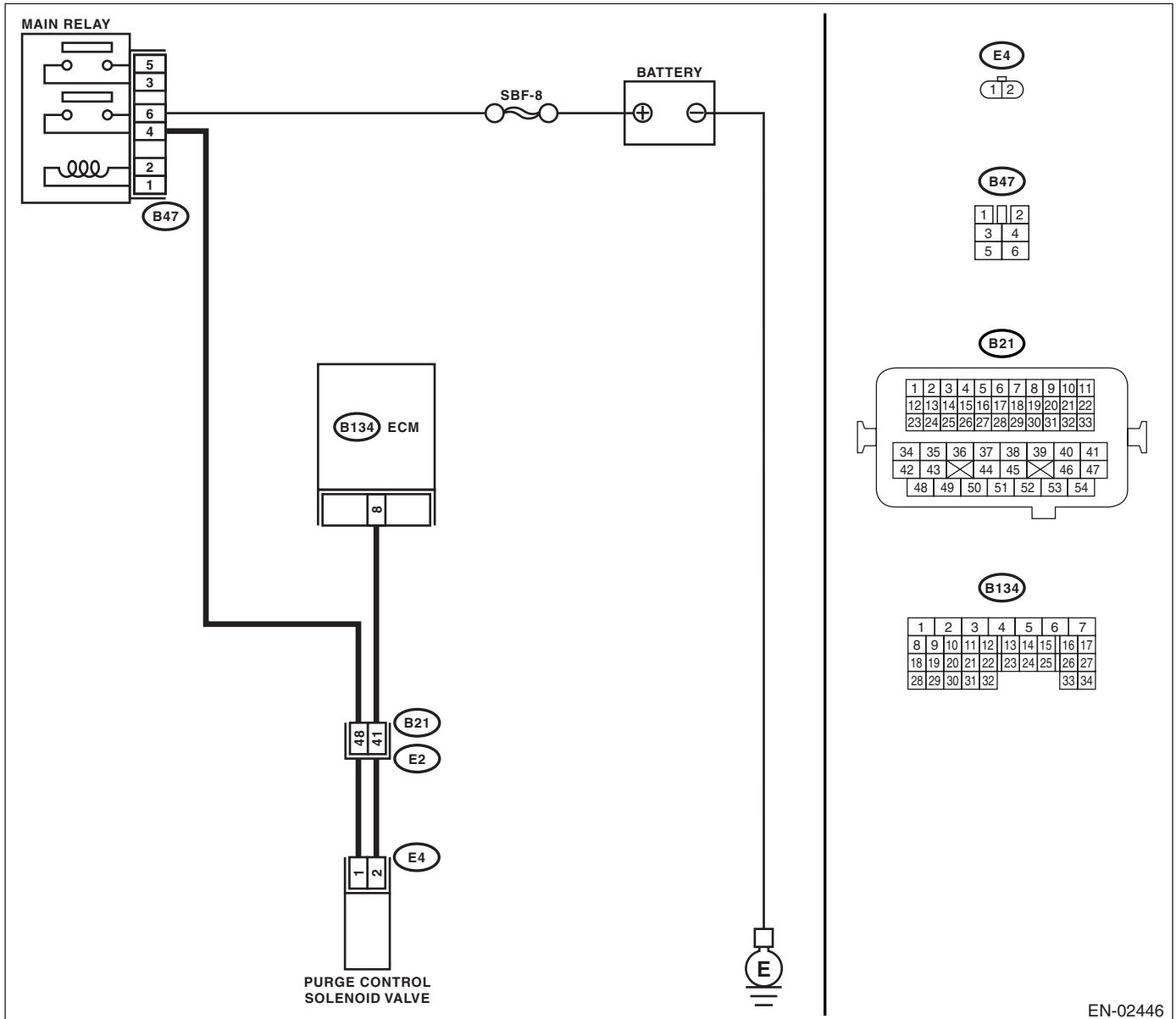
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02446

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn the ignition switch to ON. 4) While operating the purge control solenoid valve, measure voltage between ECM and chassis ground. NOTE: Purge control solenoid valve operation can be executed using Subaru Select Monitor. Refer to "Compulsory Valve Operation Check Mode" for procedures. <Ref. to EN(H4SO 2.0)(diag)-39, Compulsory Valve Operation Check Mode.> Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage 0 — 10 V?	Go to step 2.	Even if the malfunction indicator light illuminates, 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. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Go to step 3.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
4 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from purge control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage more than 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(H4SO 2.0)-34, Engine Control Module (ECM).>	Go to step 5.
5 CHECK PURGE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Measure the resistance between purge control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the purge control solenoid valve <Ref. to EC(H4SO 2.0)-7, Purge Control Solenoid Valve.> and ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Go to step 6.
6 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AM:DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does DTC P0462 appear on the Subaru Select Monitor?	Check the combination meter. <Ref. to IDI-3, Combination Meter System.>	Temporary poor contact occurs.

AN:DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does DTC P0463 appear on the Subaru Select Monitor?	Check the combination meter. <Ref. to IDI-3, Combination Meter System.>	Temporary poor contact occurs.

AO:DTC P0500 VEHICLE SPEED SENSOR

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK DTC OF ABS. Check DTC of ABS.	Is DTC of ABS displayed?	Perform the diagnosis according to DTC. <Ref. to ABS(diag)-39, List of Diagnostic Trouble Code (DTC).>	Repair the poor contact in ECM.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AP:DTC P0512 STARTER REQUEST CIRCUIT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Failure of engine to start

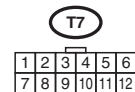
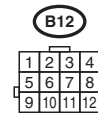
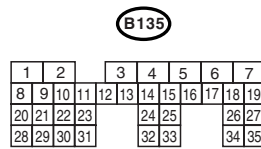
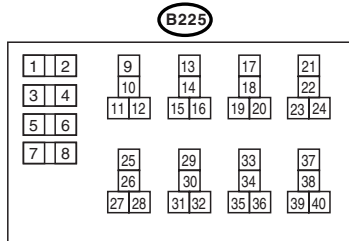
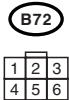
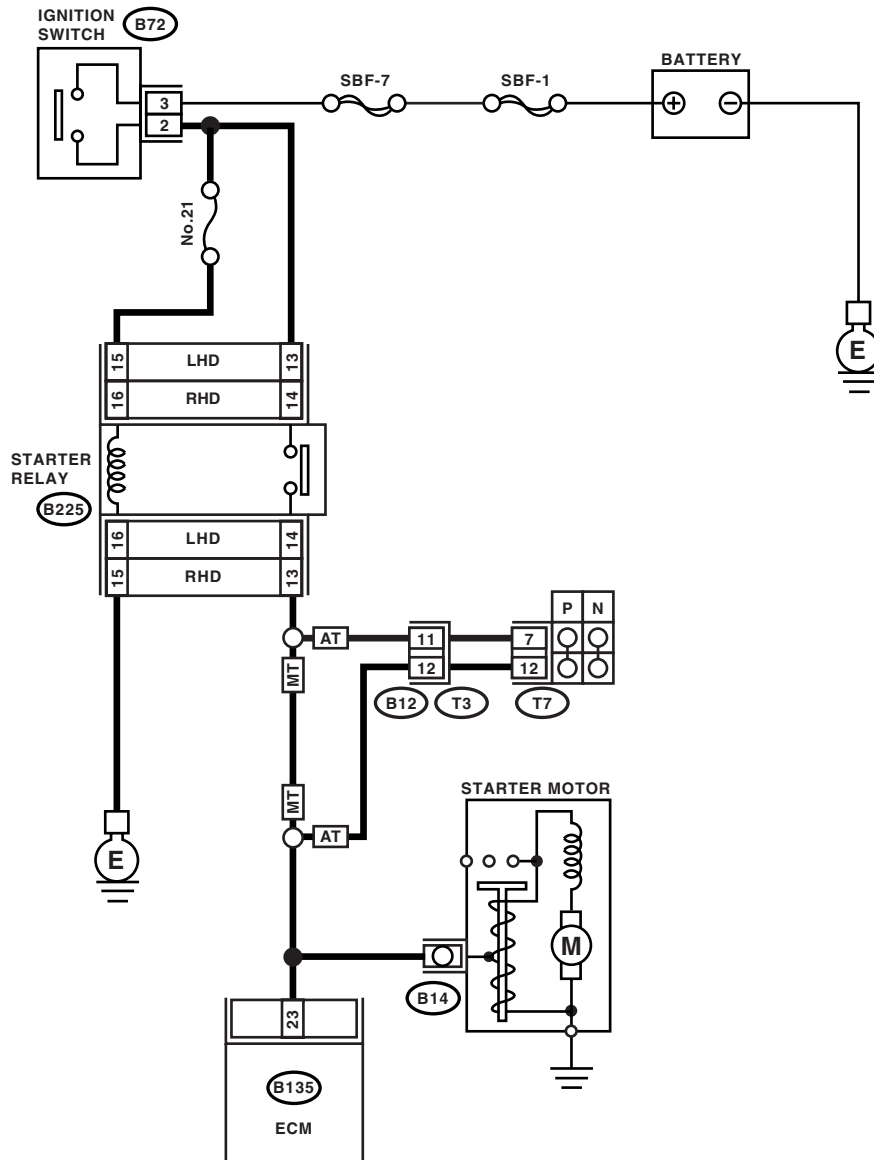
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02428

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OPERATION OF STARTER MOTOR. Turn the ignition switch to ON. NOTE: Place the inhibitor switch in each position.	Does the starter motor operate?	Repair the battery short circuit in starter motor circuit.	Check starter motor circuit. <Ref. to EN(H4SO 2.0)(diag)-52, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AQ:DTC P0519 IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE)

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

Engine keeps running at higher revolution than specified idling revolution.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0519.	Go to step 2.
2 CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start and idle the engine. 3) Check the following items: <ul style="list-style-type: none">• Loose installation of intake manifold and throttle body• Cracks of intake manifold gasket and throttle body gasket• Disconnections of vacuum hoses	Is there any fault in air intake system?	Repair air suction and leaks.	Go to step 3.
3 CHECK ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Replace the electronic throttle control. 3) Check the electronic throttle control.	Are foreign matters found inside the electronic throttle control?	Remove foreign matters from the electronic throttle control.	Perform the diagnosis of DTC P2101.

AR:DTC P0558 GENERATOR CIRCUIT LOW INPUT

CAUTION:

For diagnostic procedure, refer to DTC P0559. <Ref. to EN(H4SO 2.0)(diag)-164, DTC P0559 GENERATOR CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AS:DTC P0559 GENERATOR CIRCUIT HIGH

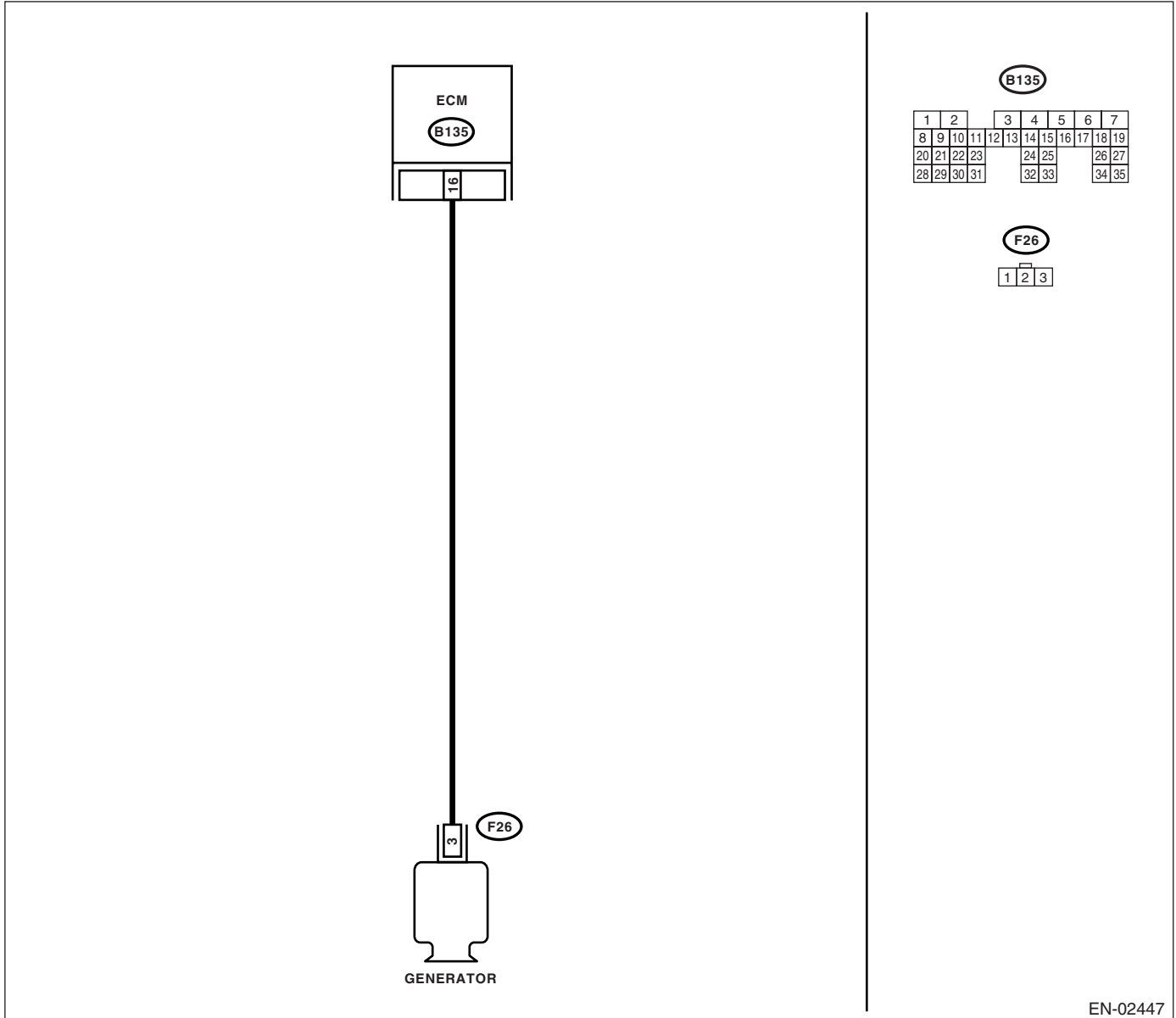
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from generator and ECM. 3) Measure the resistance of harness between generator connector and engine ground. <i>Connector & terminal</i> <i>(F26) No. 3 — Engine ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 2.	Repair the ground short circuit in harness between ECM and purge control solenoid valve connector.
2 CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR. Measure the resistance of harness between ECM and generator of harness connector. <i>Connector & terminal</i> <i>(B136) No. 16 — (F26) No. 3:</i>	Is the resistance less than 1 Ω ?	Repair the poor contact in connector.	Repair the open circuit in harness between ECM and generator connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and generator connector • Poor contact in coupling connector

AT:DTC P0600 SERIAL COMMUNICATION LINK

NOTE:

For the diagnostic procedure, refer to LAN section. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AU:DTC P0604 INTERNAL CONTROL MODULE READ ACCESS MEMORY (RAM) ERROR

DTC DETECTING CONDITION:

Immediately at fault recognition

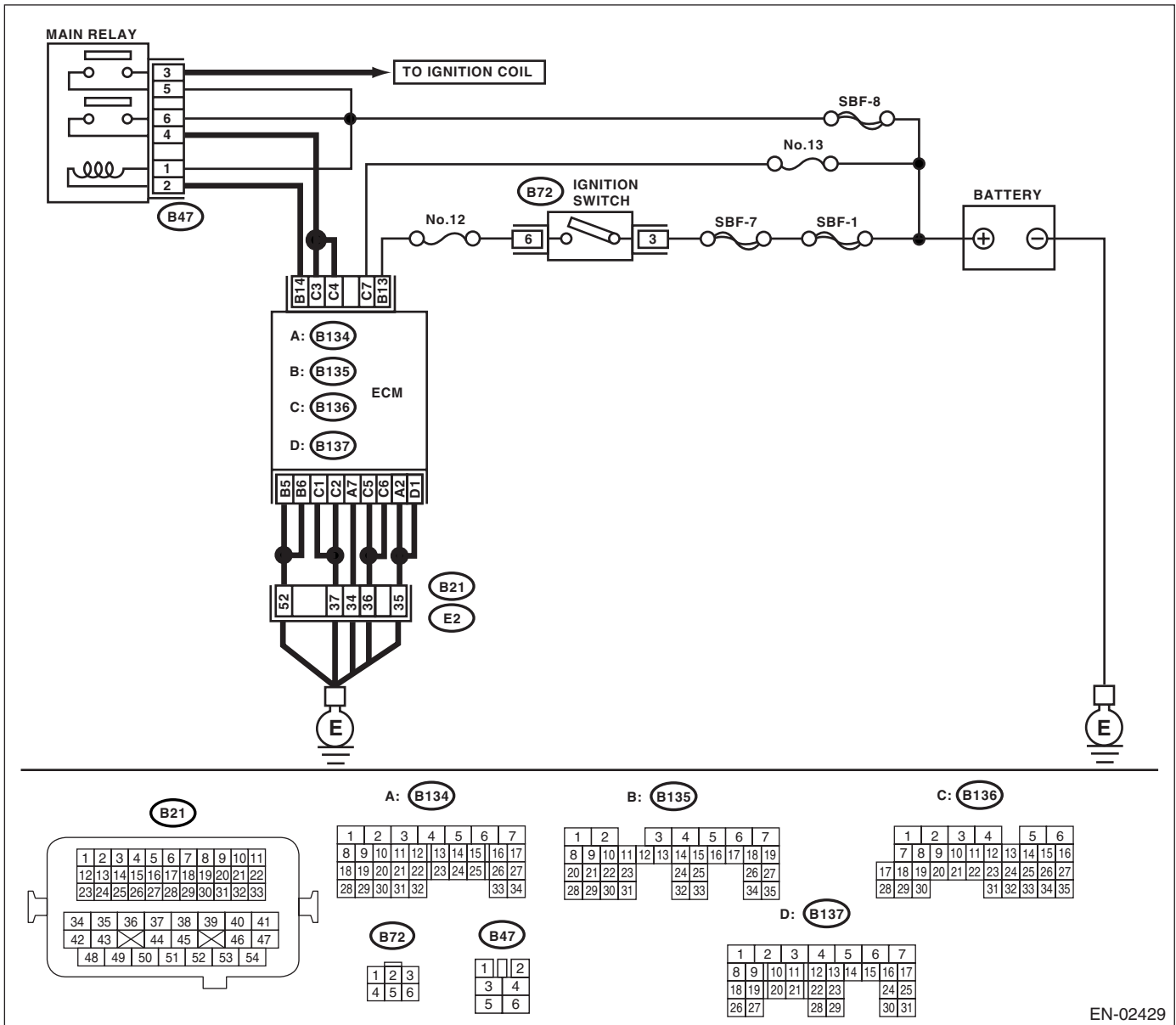
TROUBLE SYMPTOM:

- Engine does not start.
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02429

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>	Temporary poor contact occurs.

AV:DTC P0605 INTERNAL CONTROL MODULE READ ONLY MEMORY (ROM) ERROR

NOTE:

For the diagnostic procedure, refer to DTC P0607. <Ref. to EN(H4SO 2.0)(diag)-168, DTC P0607 CONTROL MODULE PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B136) No. 3 (+) — Chassis ground (-):</i> <i>(B136) No. 4 (+) — Chassis ground (-):</i>	Is the voltage 10 — 13 V?	Go to step 2.	Repair the open or ground short circuit of power supply circuit.
2 CHECK INPUT VOLTAGE OF ECM. 1) Start the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B136) No. 3 (+) — Chassis ground (-):</i> <i>(B136) No. 4 (+) — Chassis ground (-):</i>	Is the voltage 13 — 15 V?	Go to step 3.	Repair the open or ground short circuit of power supply circuit.
3 CHECK ECM GROUND HARNESS. Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B136) No. 2 (+) — Chassis ground (-):</i> <i>(B136) No. 5 (+) — Chassis ground (-):</i> <i>(B136) No. 6 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Further tighten the engine ground terminal.

AX:DTC P0638 THROTTLE ACTUATOR CONTROL RANGE/PERFORMANCE (BANK 1)

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4SO 2.0)(diag)-193, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AY:DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does DTC P0691 appear on the Subaru Select Monitor?	Check the radiator fan system. <Ref. to CO(H4SO 2.0)-7, Radiator Fan System.>	Temporary poor contact occurs.

AZ:DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does DTC P0692 appear on the Subaru Select Monitor?	Check the radiator fan system. <Ref. to CO(H4SO 2.0)-7, Radiator Fan System.>	Temporary poor contact occurs.

BA:DTC P0700 TRANSMISSION CONTROL SYSTEM (MIL REQUEST)

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-2, Basic Diagnostic Procedure.>

BB:DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

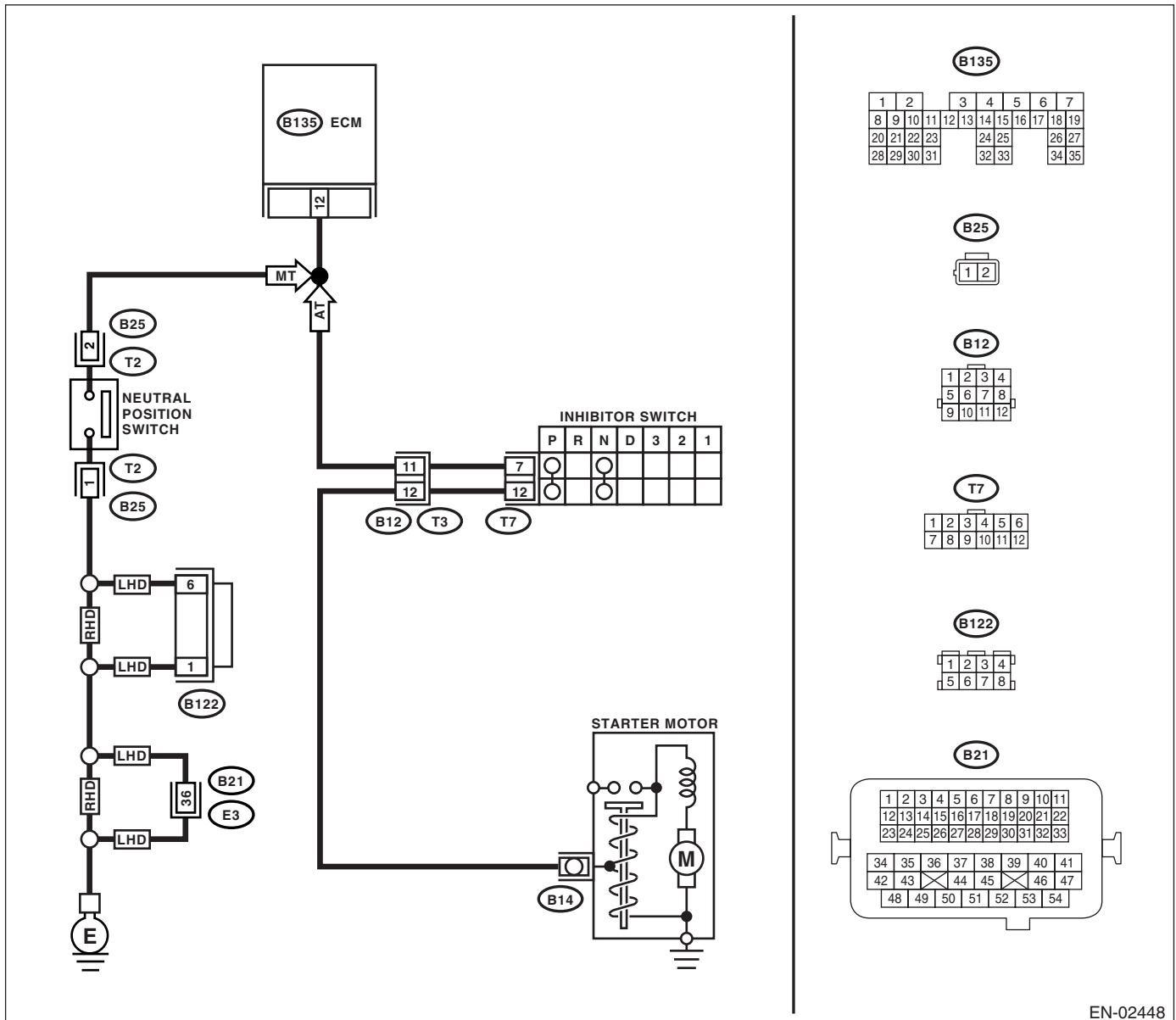
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02448

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Place the select lever other than "N" and "P" range. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and transmission harness connector (T3). 3) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 12 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair the ground short circuit in harness between ECM and transmission harness connector.
4 CHECK TRANSMISSION HARNESS CONNECTOR. 1) Disconnect the connector from inhibitor switch. 2) Measure the resistance of harness between transmission harness connector and engine ground. Connector & terminal (T3) No. 11 — Engine ground:	Is the resistance more than 1 MΩ?	Go to step 5.	Repair the ground short circuit in harness between transmission harness connector and inhibitor switch connector.
5 CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector receptacle's terminals with select lever at other than "N" and "P" range. Terminals No. 7 — No. 12:	Is the resistance more than 1 MΩ?	Go to step 6.	Replace the inhibitor switch. <Ref. to 4AT-52, Inhibitor Switch.>
6 CHECK SELECT CABLE CONNECTION.	Is there any fault in select cable connection to inhibitor switch?	Repair the select cable connection. <Ref. to CS-14, INSPECTION, Select Cable.>	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

BC:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

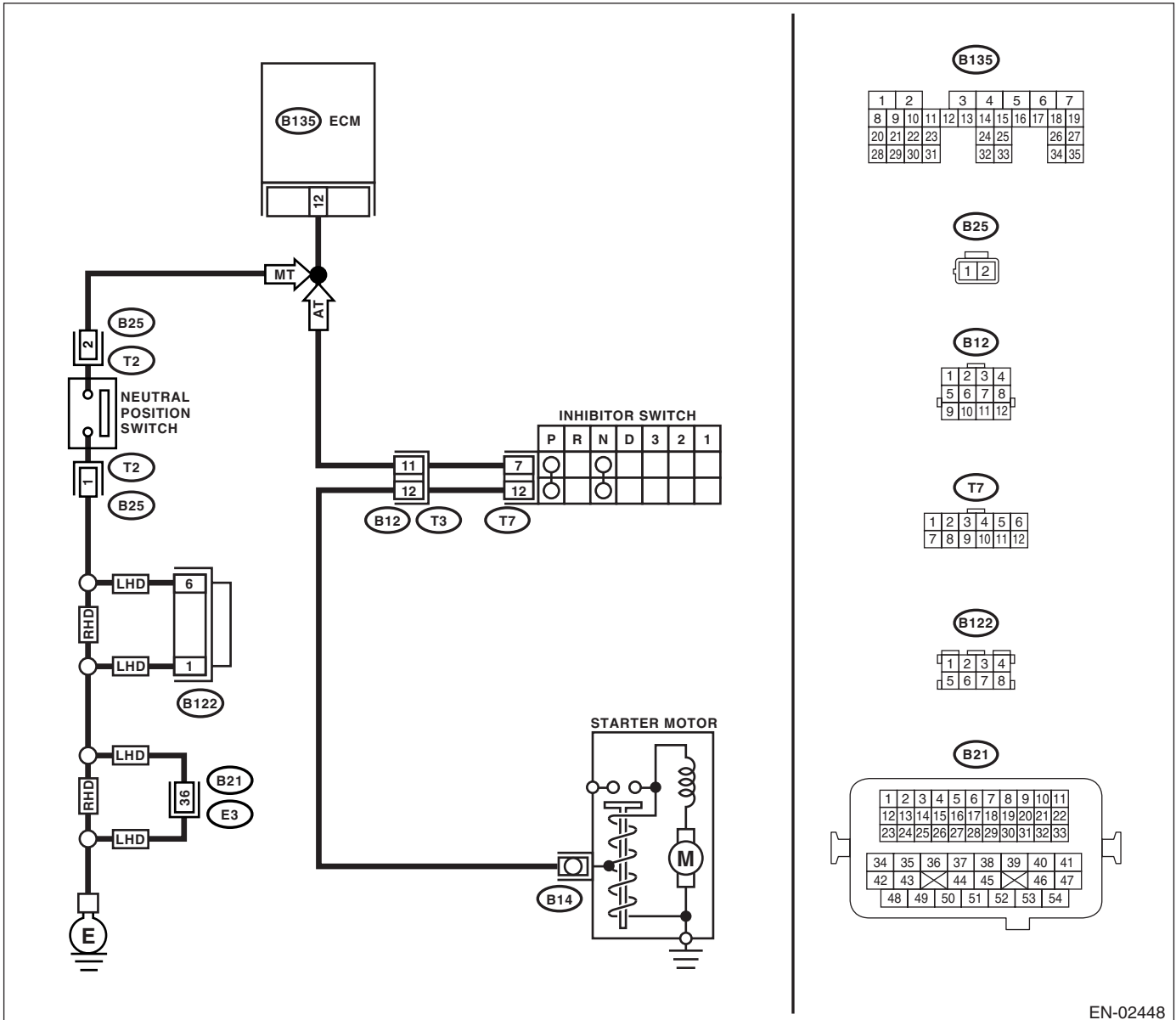
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02448

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground with select lever at "N" and "P" range. Connector & terminal (B135) No. 12 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 3.	Go to step 5.
3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground with select lever at other than "N" and "P" range. Connector & terminal (B135) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Go to step 5.
4 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
5 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and inhibitor switch connector.	Go to step 6.
6 CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and inhibitor switch. 3) Measure the resistance of harness between ECM and inhibitor switch connector. Connector & terminal (B135) No. 12 — (T7) No. 11:	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and inhibitor switch connector • Poor contact in coupling connector • Poor contact in inhibitor switch connector • Poor contact in ECM connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK INHIBITOR SWITCH GROUND LINE. Measure the resistance of harness between inhibitor switch connector and engine ground. <i>Connector & terminal</i> <i>(T7) No. 11 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 8 .	Repair the open circuit in harness between inhibitor switch connector and ground line. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between inhibitor switch connector and ground line
8 CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector receptacle's terminals with select lever at "N" and "P" range. <i>Terminals</i> <i>No. 7 — No. 12:</i>	Is the resistance less than 1 Ω ?	Go to step 9 .	Replace the inhibitor switch. <Ref. to 4AT-52, Inhibitor Switch.>
9 CHECK SELECT CABLE CONNECTION.	Is there any fault in select cable connection to inhibitor switch?	Repair the select cable connection. <Ref. to CS-14, INSPECTION, Select Cable.>	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BD:DTC P1134 A/F SENSOR MICRO-COMPUTER PROBLEM

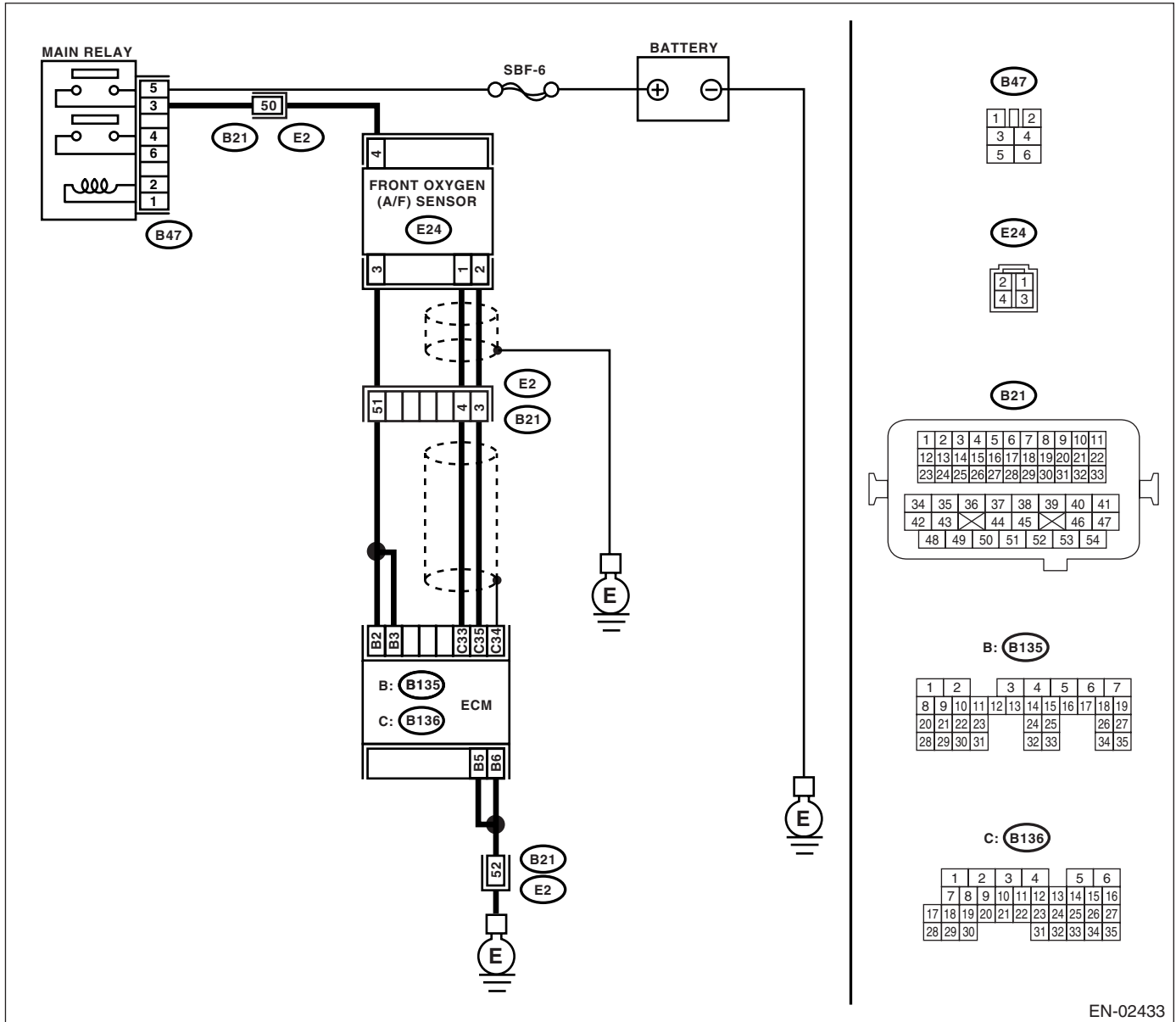
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using the List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).> NOTE: It is not necessary to inspect DTC P1134.	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BE: DTC P1137 O2 SENSOR CIRCUIT (BANK1 SENSOR1)

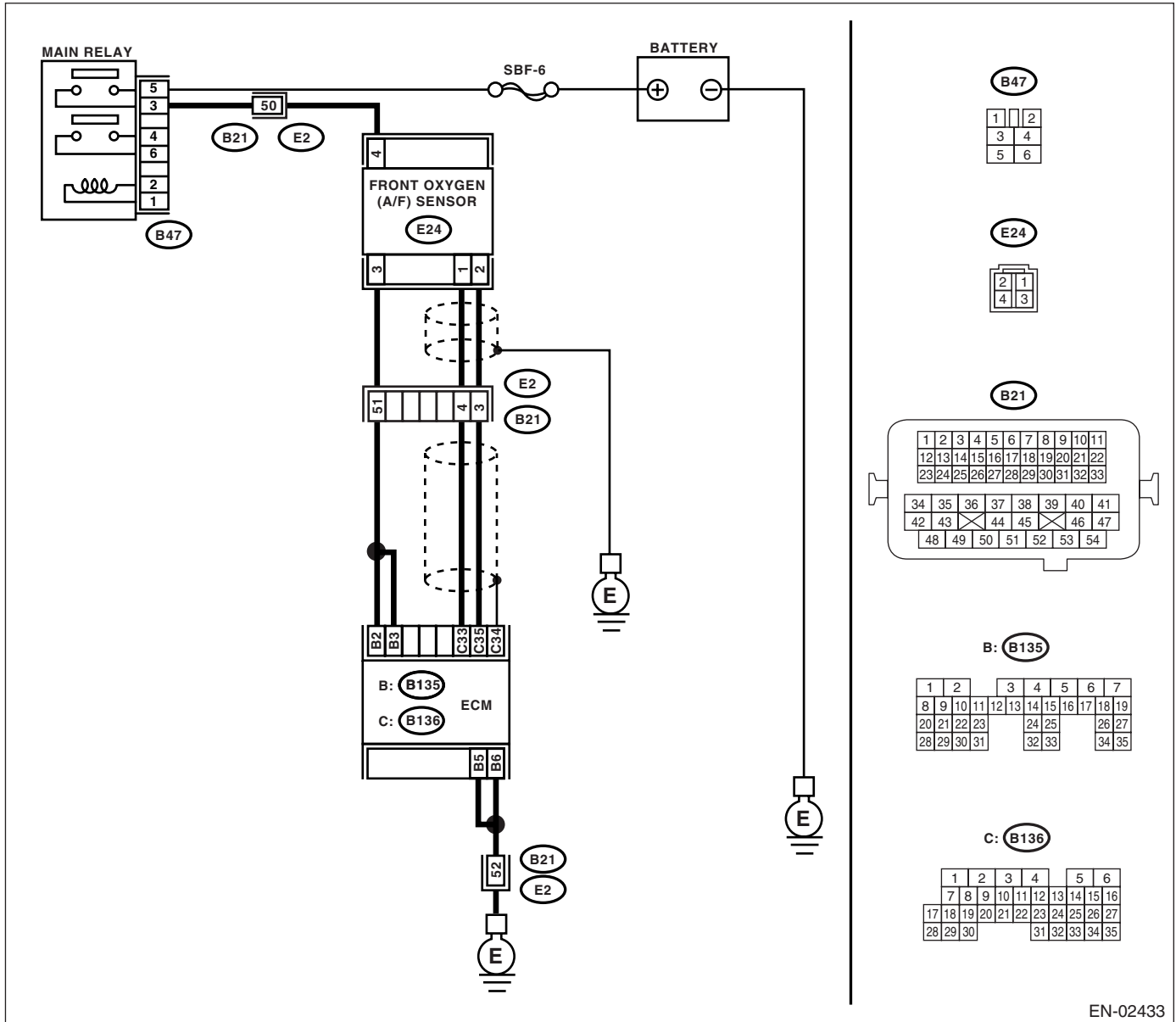
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02433

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK ANY OTHER DTC ON DISPLAY.</p>	<p>Is any other DTC displayed?</p>	<p>Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).></p>	<p>Go to step 2.</p>
<p>2 CHECK FRONT OXYGEN (A/F) SENSOR DATA. 1) Start the engine. 2) While observing the Subaru Select Monitor or OBD-II general scan tool screen, warm-up the engine until coolant temperature is above 70°C (160°F). If the engine is already warmed-up, operate at idle speed for at least 1 minute. 3) Read the data of front oxygen (A/F) sensor signal during idling using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO 2.0)(diag)-25, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to OBD-II General Scan Tool Instruction Manual. 	<p>Is the voltage 0.85 — 1.15 V?</p>	<p>Go to step 3.</p>	<p>Go to step 4.</p>
<p>3 CHECK FRONT OXYGEN (A/F) SENSOR DATA. Race the engine at speeds from idling to 5,000 rpm for a total of 5 cycles.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Air fuel ratio is rich at normal condition or during racing. • To increase engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed. 	<p>Is the voltage more than 1.1 V?</p>	<p>Go to step 6.</p>	<p>Go to step 4.</p>
<p>4 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance between ECM and front oxygen (A/F) sensor.</p> <p>Connector & terminals (B136) No. 33 — (E24) No. 1: (B136) No. 35 — (E24) No. 2:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 5.</p>	<p>Repair the open circuit between ECM and front oxygen (A/F) sensor.</p>
<p>5 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR. Measure the resistance between ECM and chassis ground.</p> <p>Connector & terminals (B136) No. 33 — Chassis ground: (B136) No. 35 — Chassis ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 6.</p>	<p>Repair the ground short circuit between ECM and front oxygen (A/F) sensor.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6	CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none">• Loose part of exhaust system and incomplete installation• Damage (crack, hole etc.) of parts• Looseness of front oxygen (A/F) sensor• Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4SO 2.0)-32, Front Oxygen (A/F) Sensor, .>

BF:DTC P1160 RETURN SPRING FAILURE

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4SO 2.0)(diag)-193, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BG:DTC P1492 EGR SOLENOID VALVE SIGNAL #1 CIRCUIT MALFUNCTION (LOW INPUT)

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H4SO 2.0)(diag)-182, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BH:DTC P1493 EGR SOLENOID VALVE SIGNAL #1 CIRCUIT MALFUNCTION (HIGH INPUT)

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H4SO 2.0)(diag)-184, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BI: DTC P1494 EGR SOLENOID VALVE SIGNAL #2 CIRCUIT MALFUNCTION (LOW INPUT)

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H4SO 2.0)(diag)-182, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BJ:DTC P1495 EGR SOLENOID VALVE SIGNAL #2 CIRCUIT MALFUNCTION (HIGH INPUT)

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H4SO 2.0)(diag)-184, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BK:DTC P1496 EGR SOLENOID VALVE SIGNAL #3 CIRCUIT MALFUNCTION (LOW INPUT)

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H4SO 2.0)(diag)-182, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BL:DTC P1497 EGR SOLENOID VALVE SIGNAL #3 CIRCUIT MALFUNCTION (HIGH INPUT)

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H4SO 2.0)(diag)-184, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BM:DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT)

DTC DETECTING CONDITION:

Immediately at fault recognition

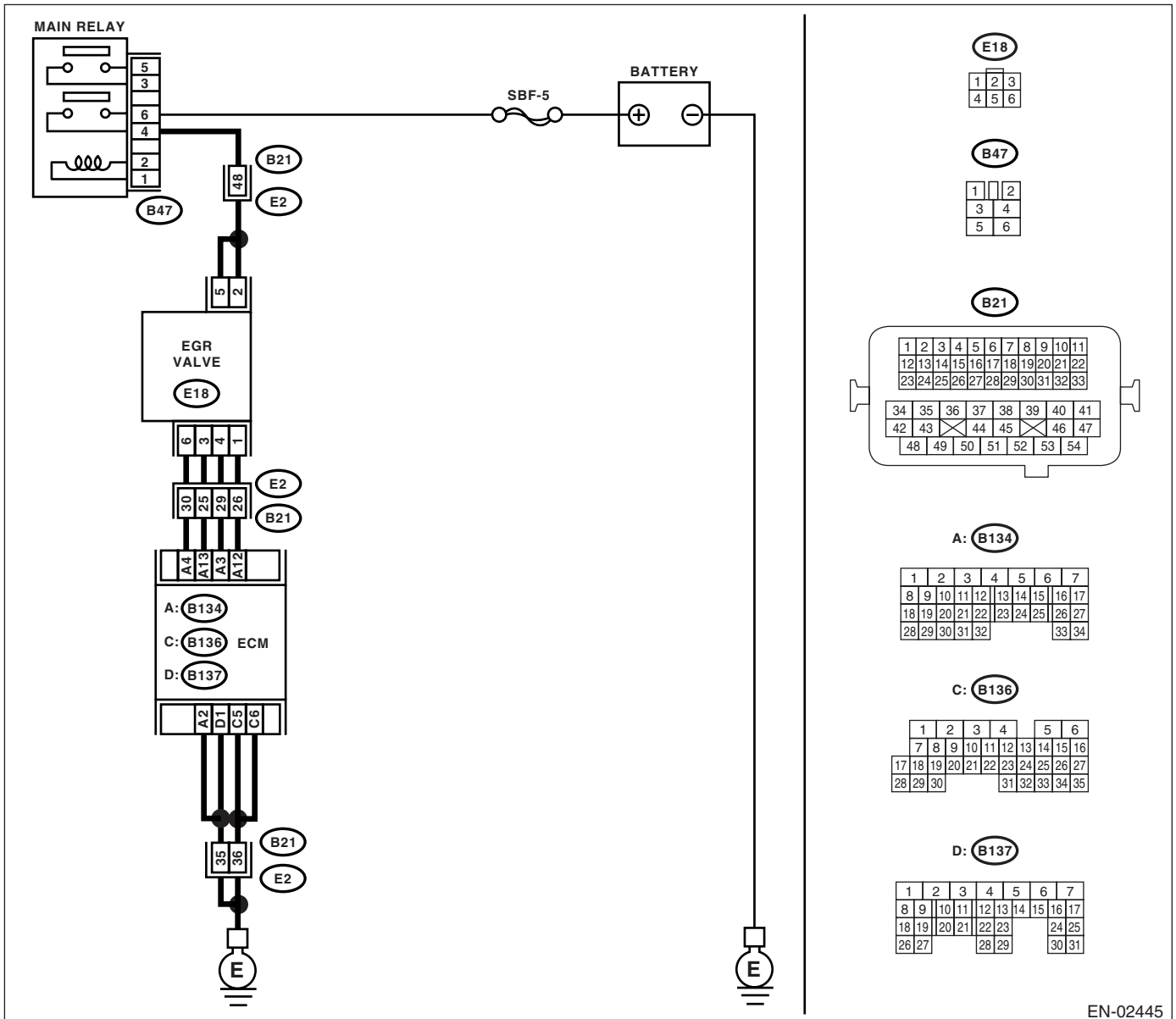
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02445

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK POWER SUPPLY TO EGR SOLENOID VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from EGR solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between EGR solenoid valve connector and engine ground.</p> <p>Connector & terminal (E18) No. 2 (+) — Engine ground (-): (E18) No. 5 (+) — Engine ground (-):</p>	Is the voltage more than 10 V?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between EGR solenoid valve and main relay connector • Poor contact in coupling connector
<p>2 CHECK HARNESS BETWEEN ECM AND EGR SOLENOID VALVE CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance between ECM and EGR solenoid valve connector.</p> <p>Connector & terminal DTC P1492; (B134) No. 13 — (E18) No. 3: DTC P1494; (B134) No. 12 — (E18) No. 1: DTC P1496; (B134) No. 3 — (E18) No. 4: DTC P1498; (B134) No. 4 — (E18) No. 6:</p>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and EGR solenoid valve connector • Poor contact in coupling connector
<p>3 CHECK HARNESS BETWEEN ECM AND EGR SOLENOID VALVE CONNECTOR.</p> <p>1) Disconnect the connector from ECM. 2) Measure the resistance between ECM connector and chassis ground.</p> <p>Connector & terminal DTC P1492; (B134) No. 13 — Chassis ground: DTC P1494; (B134) No. 12 — Chassis ground: DTC P1496; (B134) No. 3 — Chassis ground: DTC P1498; (B134) No. 4 — Chassis ground:</p>	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair the ground short in harness between ECM and EGR solenoid valve connector.
<p>4 CHECK POOR CONTACT.</p> <p>Check poor contact in ECM connector and EGR solenoid valve connector.</p>	Is there poor contact in ECM connector or EGR solenoid valve connector?	Repair the poor contact in ECM connector or EGR solenoid valve connector.	Replace the EGR solenoid valve. <Ref. to FU(H4SO 2.0)-28, EGR Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BN:DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT)

DTC DETECTING CONDITION:

Immediately at fault recognition

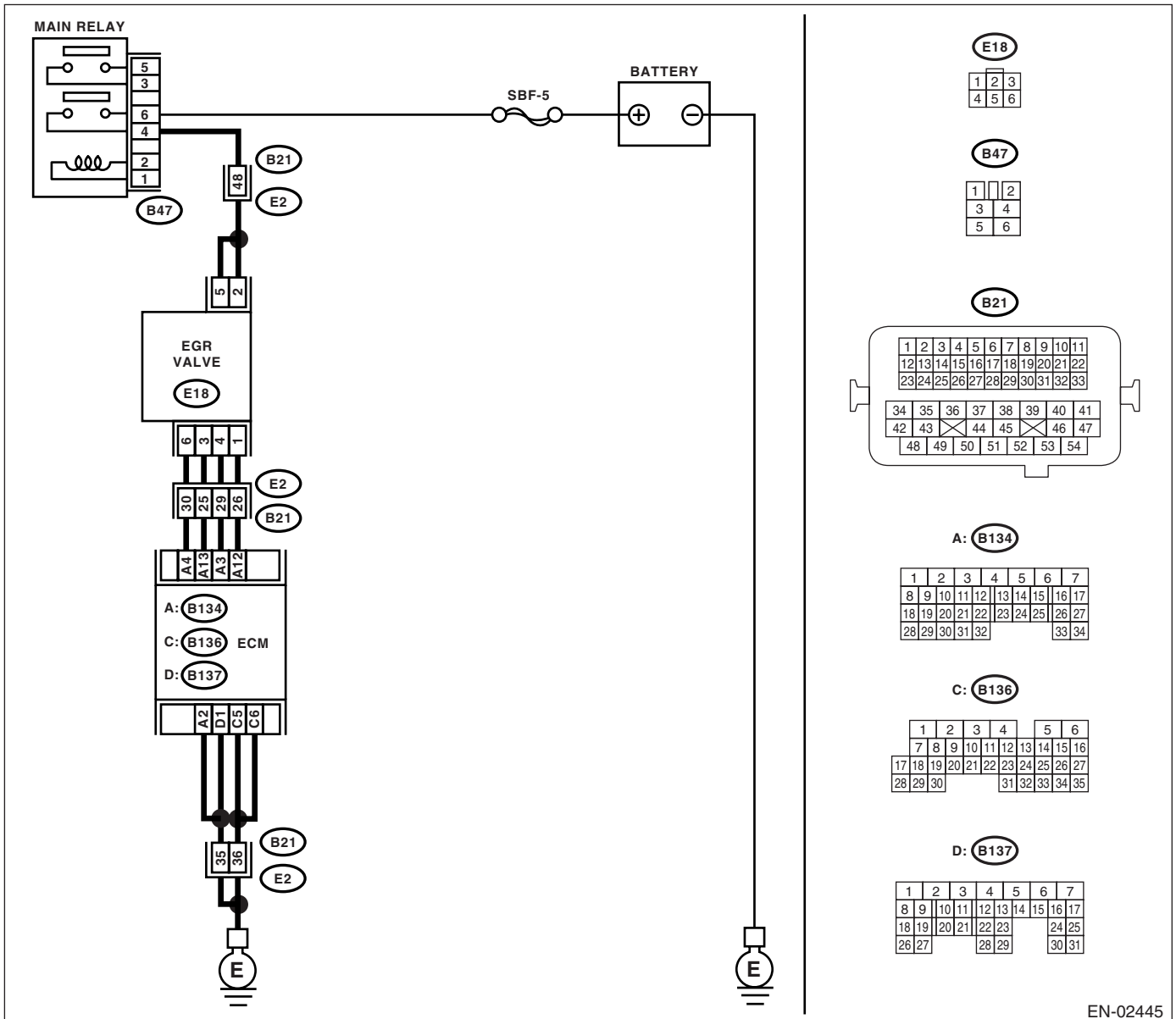
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02445

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO 2.0)(diag)-66, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK GROUND CIRCUIT FOR ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ECM connector and chassis ground. Connector & terminal <i>(B134) No. 2 — Chassis ground:</i> <i>(B136) No. 5 — Chassis ground:</i> <i>(B136) No. 6 — Chassis ground:</i> <i>(B137) No. 1 — Chassis ground:</i>	Is the resistance less than 5 Ω?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
3 CHECK HARNESS BETWEEN ECM AND EGR SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from EGR solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>DTC P1493; (B134) No. 13 (+) — Chassis ground (-):</i> <i>DTC P1495; (B134) No. 12 (+) — Chassis ground (-):</i> <i>DTC P1497; (B134) No. 3 (+) — Chassis ground (-):</i> <i>DTC P1499; (B134) No. 4 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair the battery short in harness between ECM and EGR solenoid valve connector. After repairing, replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Replace the ECM. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BO:DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Failure of engine to start

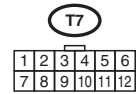
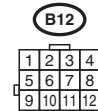
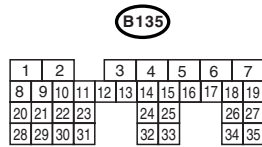
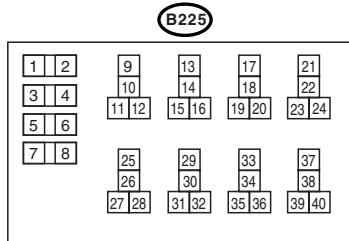
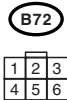
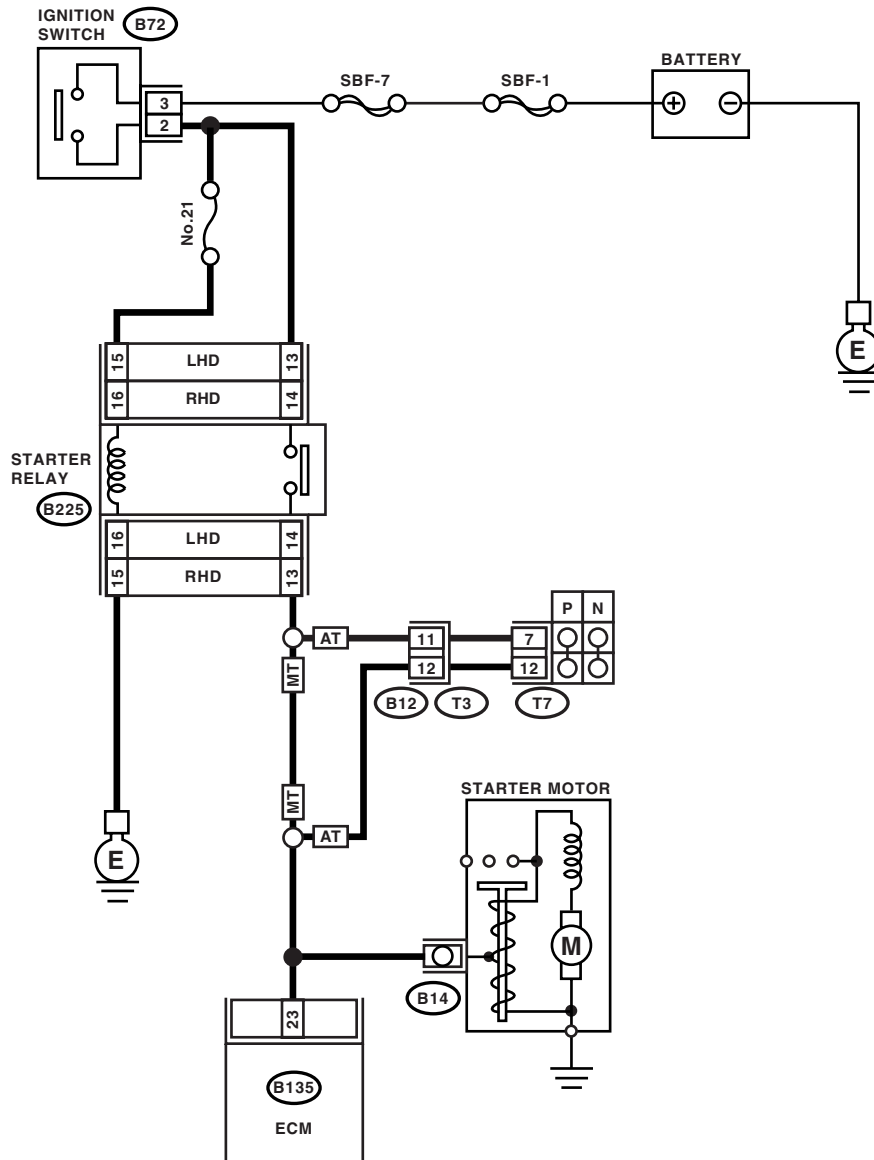
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02428

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OPERATION OF STARTER MOTOR. Place the inhibitor switch in the "P" or "N" range.	Does the starter motor operate when ignition switch to START?	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none">• Open or ground short circuit in harness between ECM and starter motor connector• Poor contact in ECM connector	Check starter motor circuit. <Ref. to EN(H4SO 2.0)(diag)-52, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

BP:DTC P1521 BRAKE SWITCH CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT)

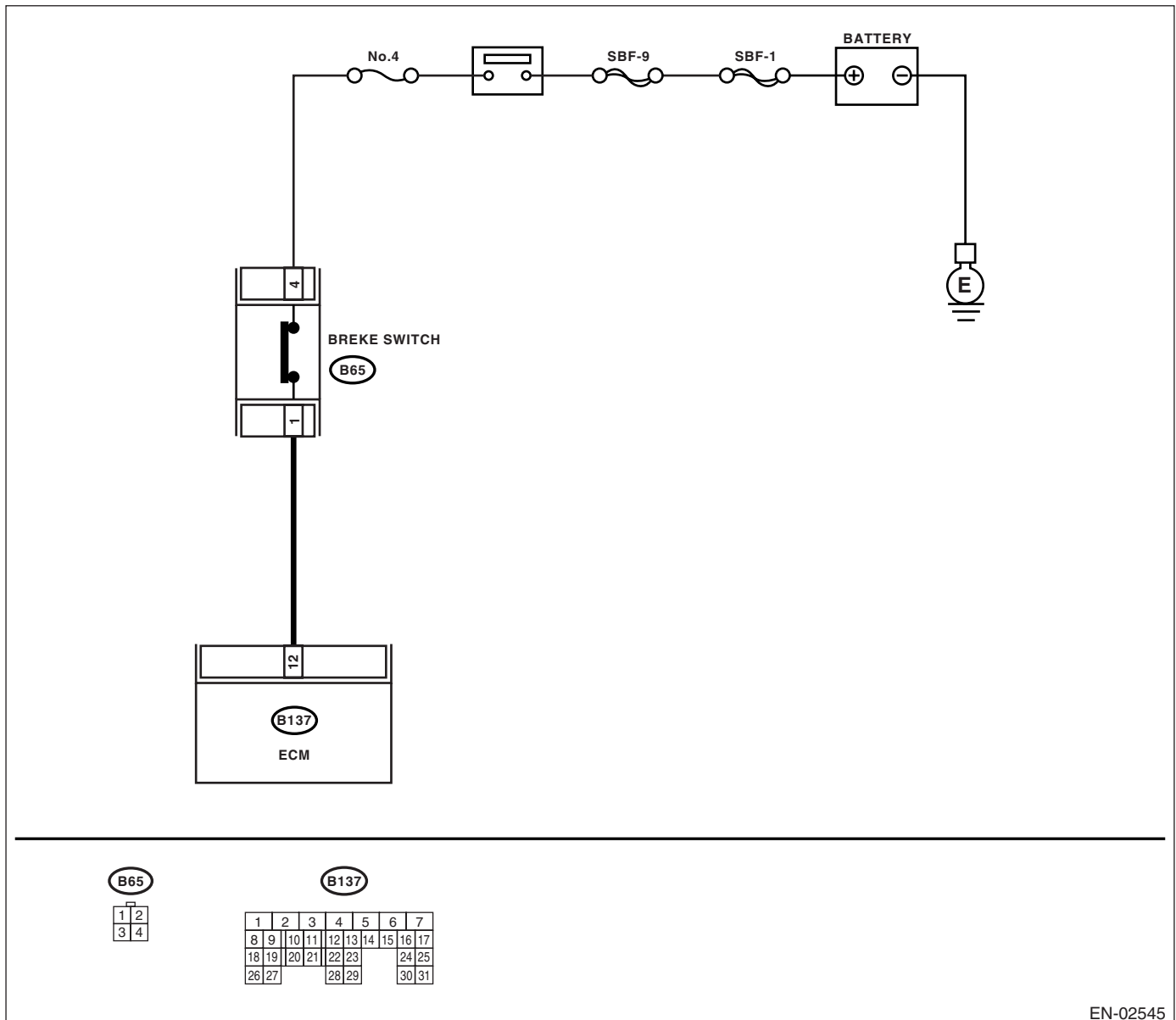
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02545

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B137) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 2.	Go to step 3.
2 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between brake switch connectors. Connector & terminal (B137) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit between ECM and brake switch.	Go to step 3.
3 CHECK BRAKE SWITCH. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ECM and chassis ground with brake pedal depressed. Terminal (B65) No. 1 — (B65) No. 4:	Is the resistance less than 1 Ω ?	Go to step 4.	Replace the brake switch. <Ref. to CC-6, Stop Light and Brake Switch.>
4 CHECK BRAKE SWITCH. Measure the resistance between brake switch connectors with brake pedal depressed. Terminal (B65) No. 1 — (B65) No. 4:	Is the resistance more than 1 M Ω ?	Check the poor contact in ECM connector.	Replace the brake switch. <Ref. to CC-6, Stop Light and Brake Switch.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BQ:DTC P1560 BACK-UP VOLTAGE CIRCUIT MALFUNCTION

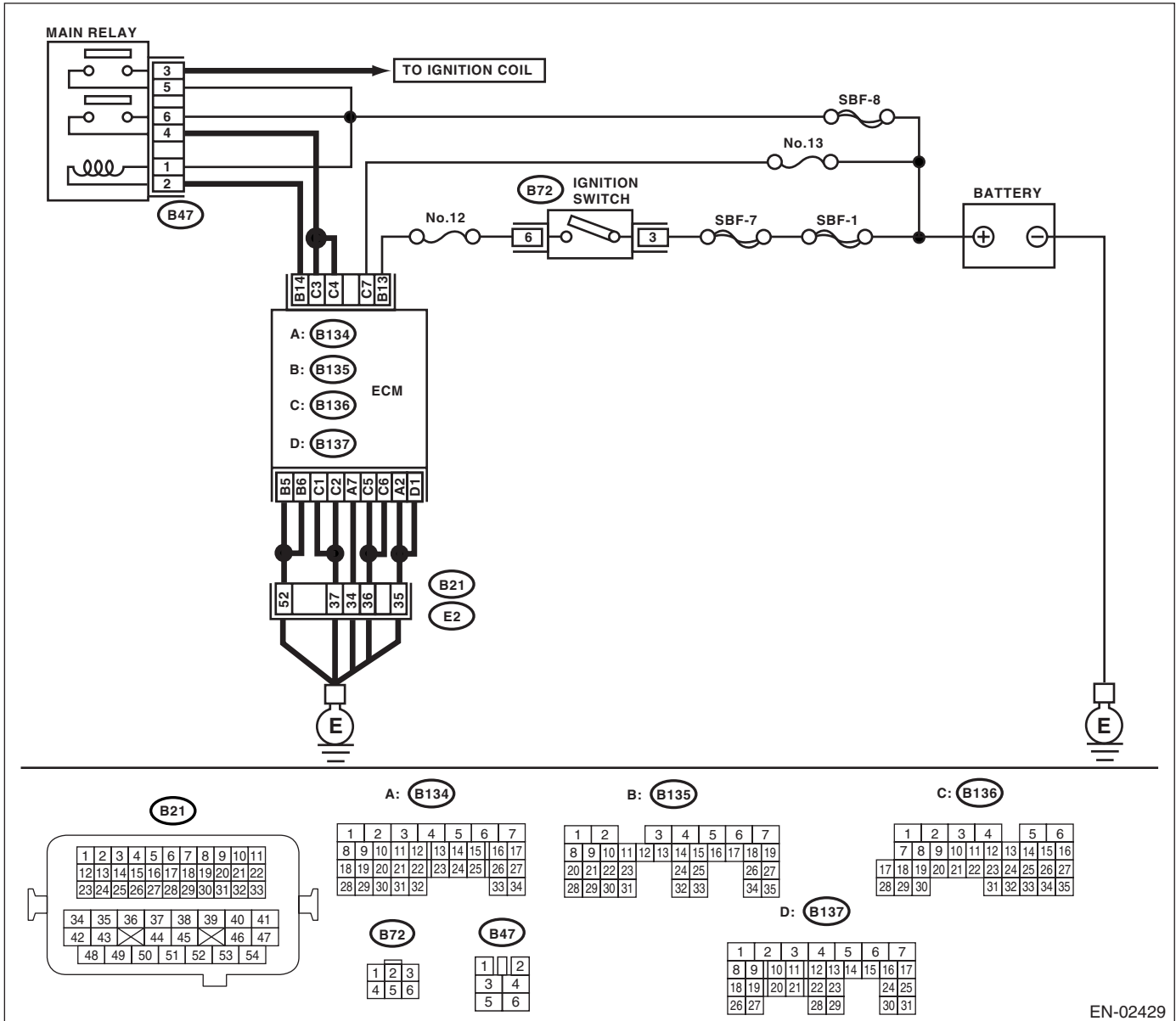
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02429

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 7 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair the poor contact in ECM connector.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 7 — Chassis ground:</i>	Is the resistance less than 10 Ω ?	Repair the ground short circuit in harness between ECM connector and battery terminal.	Go to step 3.
3 CHECK FUSE No. 13.	Is the fuse blown out?	Replace the fuse.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and battery • Poor contact in ECM connector • Poor contact in battery terminal

BR:DTC P2100 THROTTLE CONTROL MOTOR CIRCUIT OPEN

NOTE:

Refer to DTC P2101 for diagnostic procedure. <Ref. to EN(H4SO 2.0)(diag)-193, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

**BS:DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/
PERFORMANCE**

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine stalls.

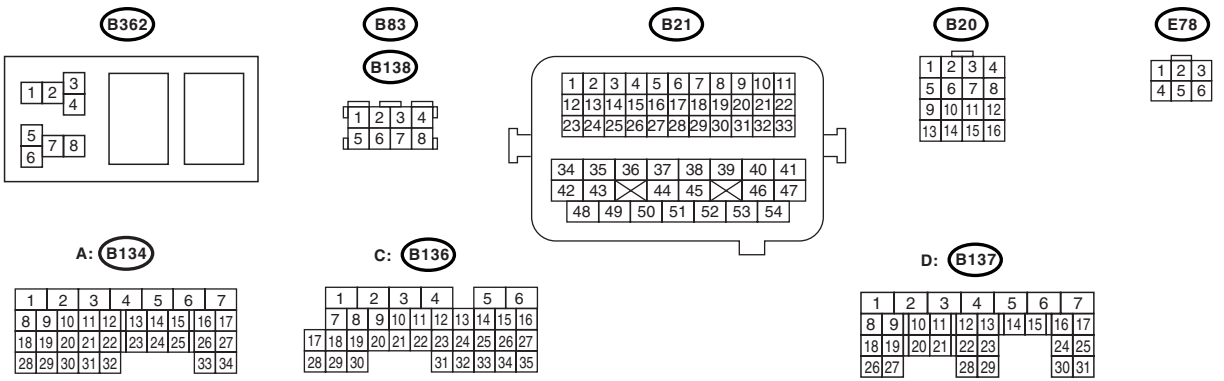
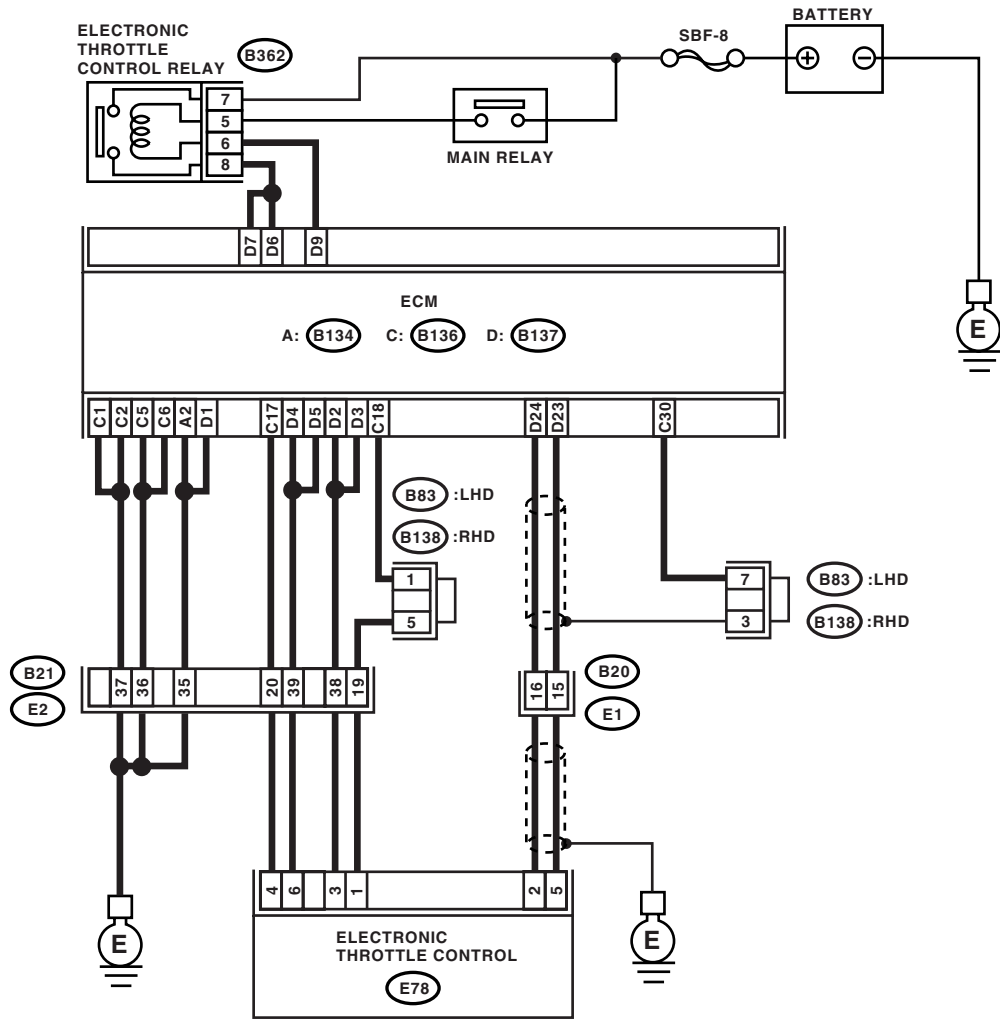
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Connect the battery to electronic throttle control relay terminals No. 5 and No. 6. 4) Measure the resistance between electronic throttle control relay terminals.</p> <p>Terminals No. 7 — No. 8:</p>	Is the resistance less than 1 Ω ?	Go to step 2.	Replace the electronic throttle control relay.
<p>2 CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY. Measure the voltage between electronic throttle control relay connector and chassis ground.</p> <p>Connector & terminal (B362) No. 7 (+) — Chassis ground (-): (B362) No. 5 (+) — Chassis ground (-):</p>	Is the voltage more than 10 V?	Go to step 3.	Repair the open or ground short circuit of power supply circuit.
<p>3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY. 1) Disconnect the connector from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control relay connector and chassis ground.</p> <p>Connector & terminal (B362) No. 6 (+) — Chassis ground (-):</p>	Is the voltage less than 10 V?	Go to step 4.	Repair the power supply short circuit in harness between ECM and electronic throttle control.
<p>4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control relay connector and chassis ground.</p> <p>Connector & terminal (B362) No. 6 — Chassis ground: (B362) No. 8 — Chassis ground:</p>	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the ground short circuit in harness between ECM and electronic throttle control relay.
<p>5 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY. Measure the resistance between ECM connector and electronic throttle control relay connector.</p> <p>Connector & terminal (B137) No. 9 — (B362) No. 6: (B137) No. 6 — (B362) No. 8: (B137) No. 7 — (B362) No. 8:</p>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM and electronic throttle control relay.
<p>6 CHECK SENSOR OUTPUT. 1) Connect all the connectors. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector terminals.</p> <p>Connector & terminal (B137) No. 24 (+) — (B136) No. 8 (-):</p>	Is the voltage more than 0.3 V?	Go to step 7.	Go to step 9.
<p>7 CHECK SENSOR OUTPUT. Measure the voltage between ECM connector terminals.</p> <p>Connector & terminal (B137) No. 23 (+) — (B136) No. 18 (-):</p>	Is the voltage less than 4.8 V?	Go to step 8.	Go to step 9.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Go to step 13 .
9 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminals (B136) No. 17 — (E78) No. 4: (B137) No. 23 — (E78) No. 5: (B137) No. 24 — (E78) No. 2:	Is the resistance less than 1 Ω ?	Go to step 10 .	Repair the open circuit of harness connector.
10 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B136) No. 17 — Chassis ground: (B137) No. 23 — Chassis ground: (B137) No. 24 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 11 .	Repair the ground short circuit of harness.
11 CHECK SENSOR POWER SUPPLY. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 4 (+) — Engine ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 12 .	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
12 CHECK SHORT CIRCUIT IN ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 2 — Engine ground: (E78) No. 5 — Engine ground:	Is the resistance more than 10 Ω ?	Go to step 13 .	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
13 CHECK SENSOR OUTPUT. 1) Connect all the connectors. 2) Turn the ignition switch to ON. 3) Read the data of main throttle sensor signal using Subaru Select Monitor.	Is the voltage 0.5 — 1.0 V?	Go to step 14 .	Go to step 16 .
14 CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage 0.5 — 1.0 V?	Go to step 15 .	Go to step 16 .
15 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Go to step 21 .

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
16 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminals (B136) No. 18 — (E78) No. 1: (B137) No. 23 — (E78) No. 5: (B137) No. 24 — (E78) No. 2:	Is the resistance less than 1 Ω ?	Go to step 17.	Repair the open circuit of harness connector.
17 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 1 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 18.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
18 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 4 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 19.	Repair the battery short circuit in harness between ECM connector and electronic throttle control connector.
19 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 5 (+) — Engine ground (-): (E78) No. 2 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 20.	Repair the short circuit in harness between ECM connector and electronic throttle control connector.
20 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Remove the ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B137) No. 23 — (B136) No. 17: (B137) No. 24 — (B136) No. 17:	Is the resistance more than 1 M Ω ?	Go to step 21.	Repair the short circuit to sensor power supply.
21 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to OFF. 2) Connect the connectors except for the electric control throttle relay. 3) Turn the ignition switch to ON. 4) Read the data of main throttle sensor signal using Subaru Select Monitor.	Is the voltage 0.5 — 1.0 V?	Go to step 22.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective.
22 CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage 0.5 — 1.0 V?	Go to step 23.	Repair the poor contact in ECM connector. Replace the electronic throttle control if defective.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
23 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminals <i>(B137) No. 2 — (E78) No. 3:</i> <i>(B137) No. 3 — (E78) No. 3:</i> <i>(B137) No. 4 — (E78) No. 6:</i> <i>(B137) No. 5 — (E78) No. 6:</i>	Is the resistance less than 1 Ω ?	Go to step 24 .	Repair the open circuit of harness connector.
24 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal <i>(E78) No. 3 (+) — Engine ground (-):</i> <i>(E78) No. 6 (+) — Engine ground (-):</i>	Is the voltage less than 10 V?	Go to step 25 .	Repair the power supply short circuit in harness between ECM and electronic throttle control.
25 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal <i>(E78) No. 3 — Engine ground:</i> <i>(E78) No. 6 — Engine ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 26 .	Repair the short circuit of harness.
26 CHECK ELECTRONIC THROTTLE CONTROL MOTOR HARNESS. Measure the resistance between electronic throttle control connector terminals. Connector & terminal <i>(E78) No. 3 — (E78) No. 6:</i>	Is the resistance more than 1 M Ω ?	Go to step 27 .	Repair the short circuit of harness.
27 CHECK ELECTRONIC THROTTLE CONTROL GROUND CIRCUIT. Measure the resistance between ECM connector and chassis ground. Connector & terminal <i>(B137) No. 1 — Chassis ground:</i> <i>(B134) No. 2 — Chassis ground:</i>	Is the resistance less than 10 Ω ?	Go to step 28 .	Repair the open circuit of harness.
28 CHECK ELECTRONIC THROTTLE CONTROL. Measure the resistance between electronic throttle control terminals. Terminals <i>No. 1 — No. 2:</i>	Is the resistance less than 5 Ω ?	Go to step 29 .	Replace the electronic throttle control.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
29 CHECK ELECTRONIC THROTTLE CONTROL. Move the throttle valve to the fully open and fully closed positions with fingers. Check that the valve returns to the specified position when releasing fingers.	Does the valve return to the specified position? Standard value: 3 mm (0.12 in) from fully closed position	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Replace the electronic throttle control.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BT:DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine stalls.

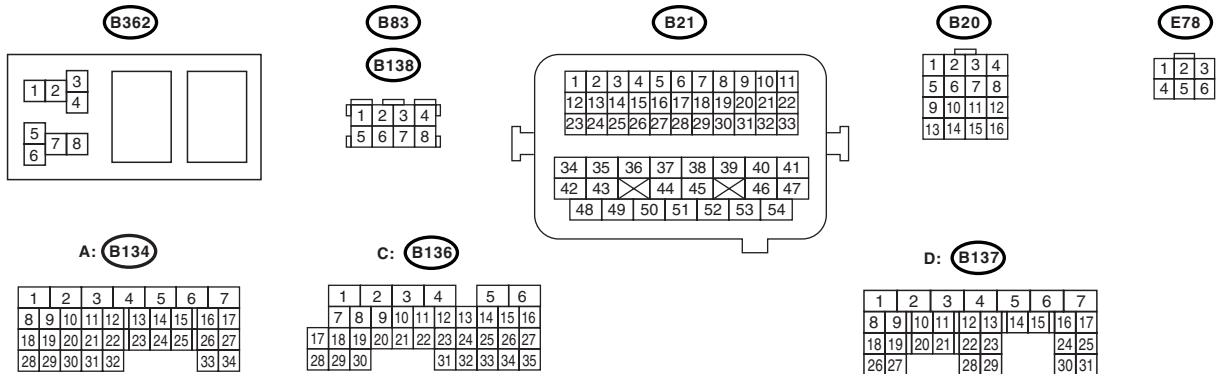
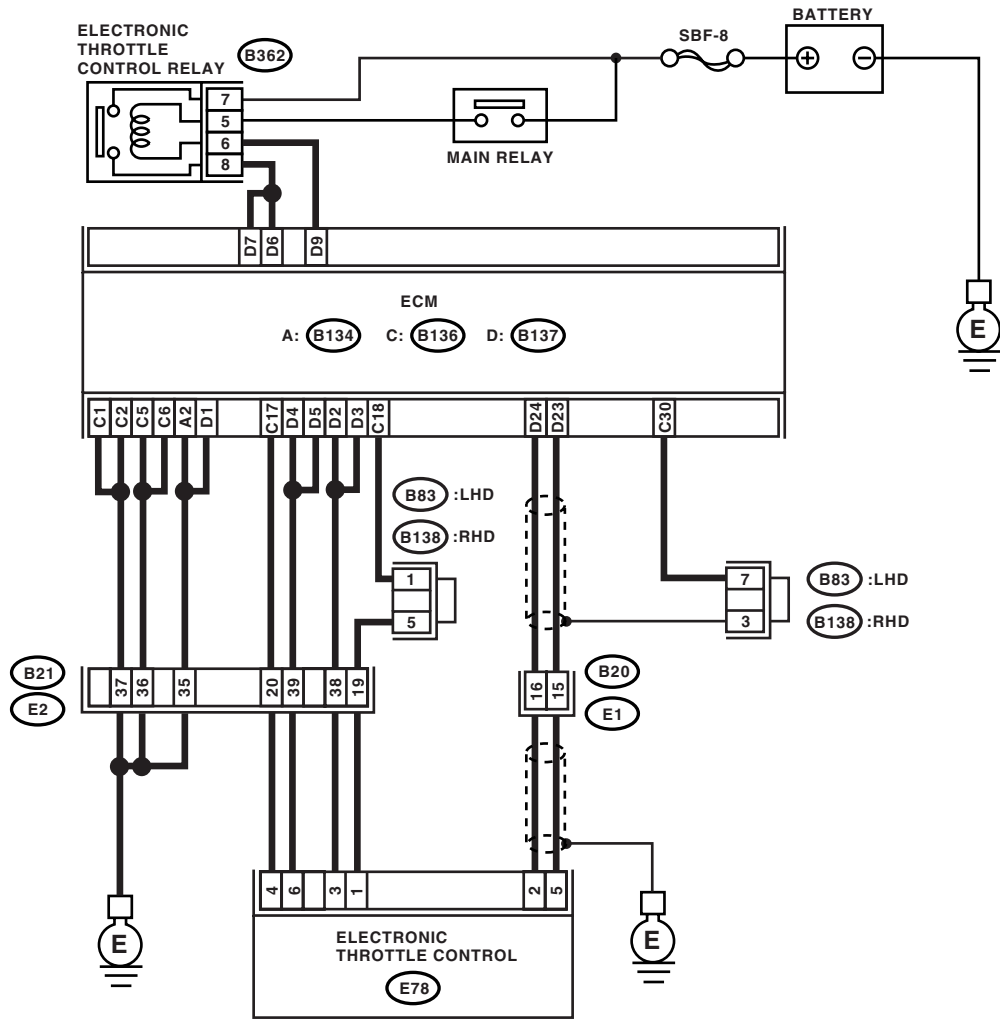
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK ELECTRONIC THROTTLE CONTROL RELAY.</p> <p>1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Connect the battery to electronic throttle control relay terminals No. 5 and No. 6. 4) Measure the resistance between electronic throttle control relay terminals.</p> <p>Terminals No. 7 — No. 8:</p>	Is the resistance less than 1 Ω ?	Go to step 2.	Replace the electronic throttle control relay.
<p>2 CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY.</p> <p>Measure the voltage between electronic throttle control relay connector and chassis ground.</p> <p>Connector & terminal (B362) No. 7 (+) — Chassis ground (-): (B362) No. 5 (+) — Chassis ground (-):</p>	Is the voltage more than 5 V?	Go to step 3.	Repair the open or ground short circuit of power supply circuit.
<p>3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY.</p> <p>1) Disconnect the connector from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control relay connector and chassis ground.</p> <p>Connector & terminal (B362) No. 6 (+) — Chassis ground (-):</p>	Is the voltage less than 5 V?	Go to step 4.	Repair the power supply short circuit in harness between ECM and electronic throttle control relay.
<p>4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control relay connector and chassis ground.</p> <p>Connector & terminal (B362) No. 6 — Chassis ground: (B362) No. 8 — Chassis ground:</p>	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the ground short circuit in harness between ECM and electronic throttle control relay.
<p>5 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY.</p> <p>Measure the resistance between ECM connector and electronic throttle control relay connector.</p> <p>Connector & terminal (B137) No. 9 — (B362) No. 6: (B137) No. 6 — (B362) No. 8: (B137) No. 7 — (B362) No. 8:</p>	Is the resistance less than 1 Ω ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Repair the open circuit in harness between ECM and electronic throttle control relay.

BU:DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine stalls.

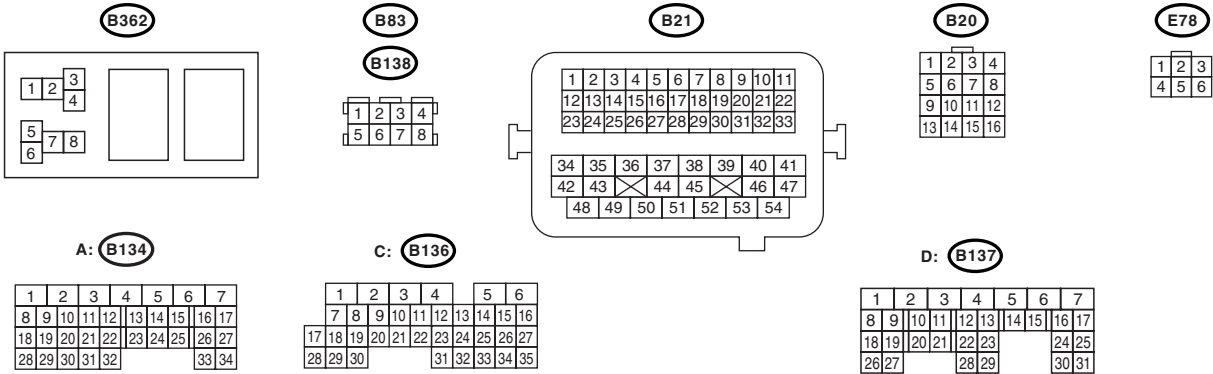
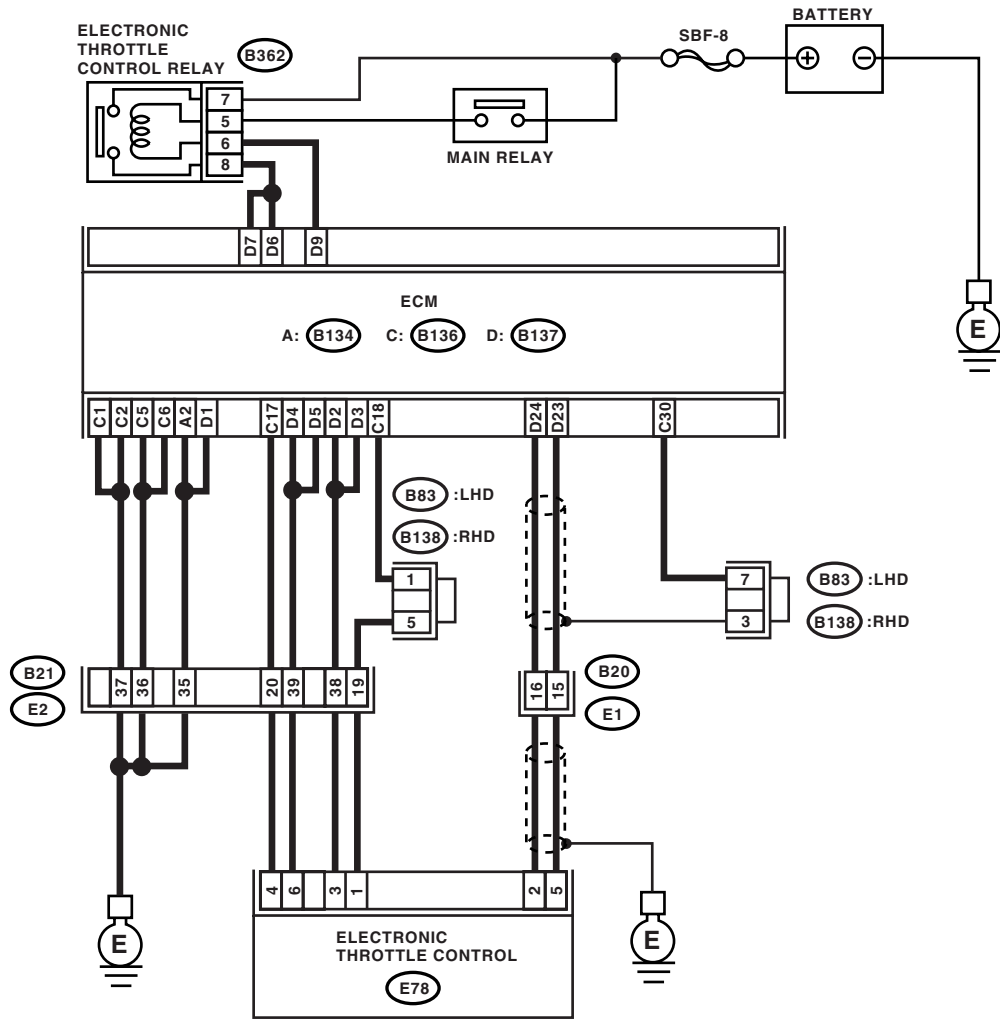
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Measure the resistance between electronic throttle control relay terminals. <i>Terminals</i> <i>No. 7 — No. 8:</i>	Is the resistance more than 1 M Ω ?	Go to step 2.	Replace the electronic throttle control relay.
2 CHECK POWER SUPPLY SHORT CIRCUIT OF ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B362) No. 8 (+) — Chassis ground (-):</i>	Is the voltage more than 5 V?	Go to step 3.	Repair the power supply short circuit in harness between ECM and electronic throttle control relay.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Repair the ground short circuit in harness between ECM and electronic throttle control relay.

BV:DTC P2109 THROTTLE ANGLE CLOSED POSITION ERROR

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4SO 2.0)(diag)-193, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BW:DTC P2111 THROTTLE ACTUATOR CONTROL SYSTEM - STUCK OPEN

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4SO 2.0)(diag)-193, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BX:DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

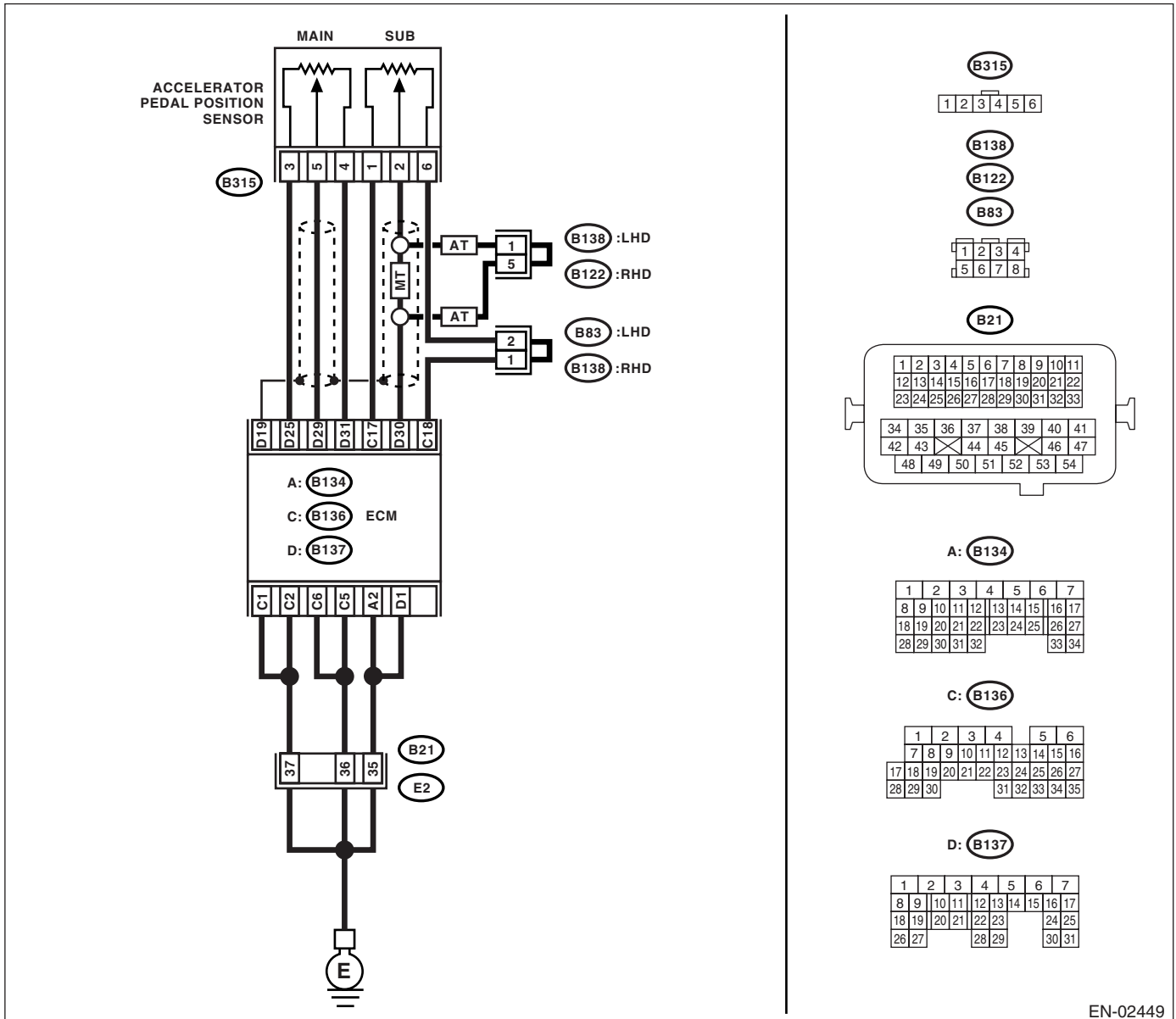
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02449

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ACCELERATOR POSITION SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main accelerator position sensor signal using Subaru Select Monitor.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector. <i>Connector & terminal</i> <i>(B137) No. 29 — (B315) No. 5:</i> <i>(B137) No. 25 — (B315) No. 3:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. Measure the resistance between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 29 — Chassis ground:</i> <i>(B137) No. 25 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the chassis short circuit of harness.
5 CHECK POWER SUPPLY OF ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> <i>(B315) No. 3 (+) — Engine ground (-):</i>	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
6 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 3 — No. 4:</i>	Is the resistance 1.2 — 4.8 k Ω ?	Go to step 7.	Replace the accelerator position sensor.
7 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 5 — No. 4:</i> Check the measured value is within the specification without depressing the accelerator pedal.	Is the resistance 0.2 — 1.0 k Ω ?	Go to step 8.	Replace the accelerator position sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>8</p> <p>CHECK ACCELERATOR POSITION SENSOR.</p> <p>Measure the resistance of accelerator position sensor.</p> <p>Terminals</p> <p>No. 5 — No. 4:</p> <p>Check the measured value is within the specification with the accelerator pedal depressed.</p>	<p>Is the resistance 0.5 — 2.5 kΩ?</p>	<p>Repair the poor contact in ECM connector.</p> <p>Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).></p>	<p>Replace the accelerator position sensor.</p>

BY:DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D” CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

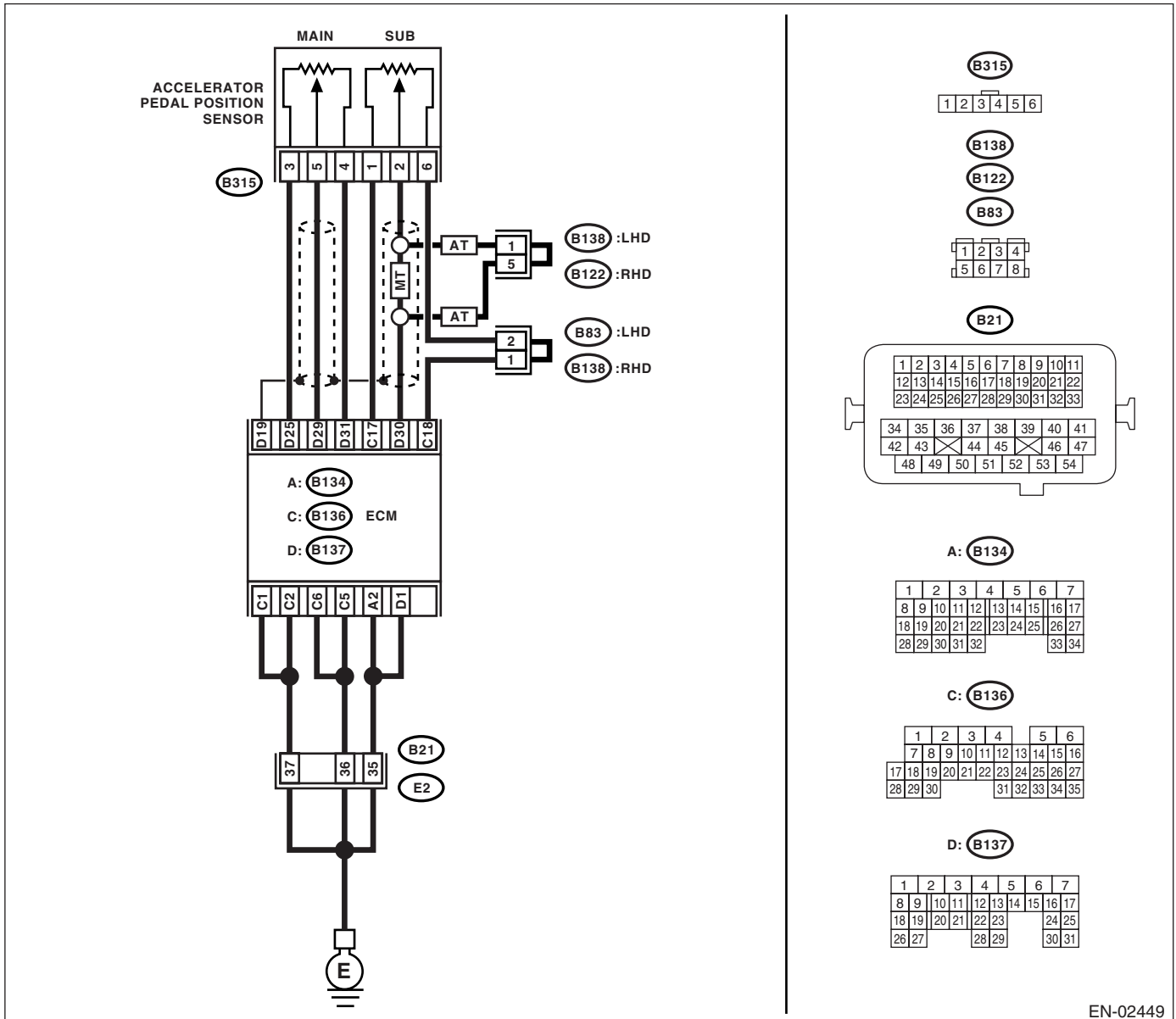
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02449

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ACCELERATOR POSITION SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main accelerator position sensor signal using Subaru Select Monitor.	Is the voltage less than 4.8 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector. <i>Connector & terminal</i> <i>(B137) No. 31 — (B315) No. 4:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Measure the resistance between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> <i>(B315) No. 4 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
5 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> <i>(B315) No. 5 (+) — Engine ground (-):</i>	Is the voltage less than 6 V?	Go to step 6.	Repair the battery short circuit in harness between ECM connector and accelerator position sensor connector.
6 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(B137) No. 29 — (B137) No. 25:</i> <i>(B137) No. 29 — (B136) No. 17:</i>	Is the resistance more than 1 M Ω ?	Repair the poor contact in accelerator position sensor connector. Replace the accelerator position sensor if defective.	Repair the short circuit to sensor power supply.

BZ:DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

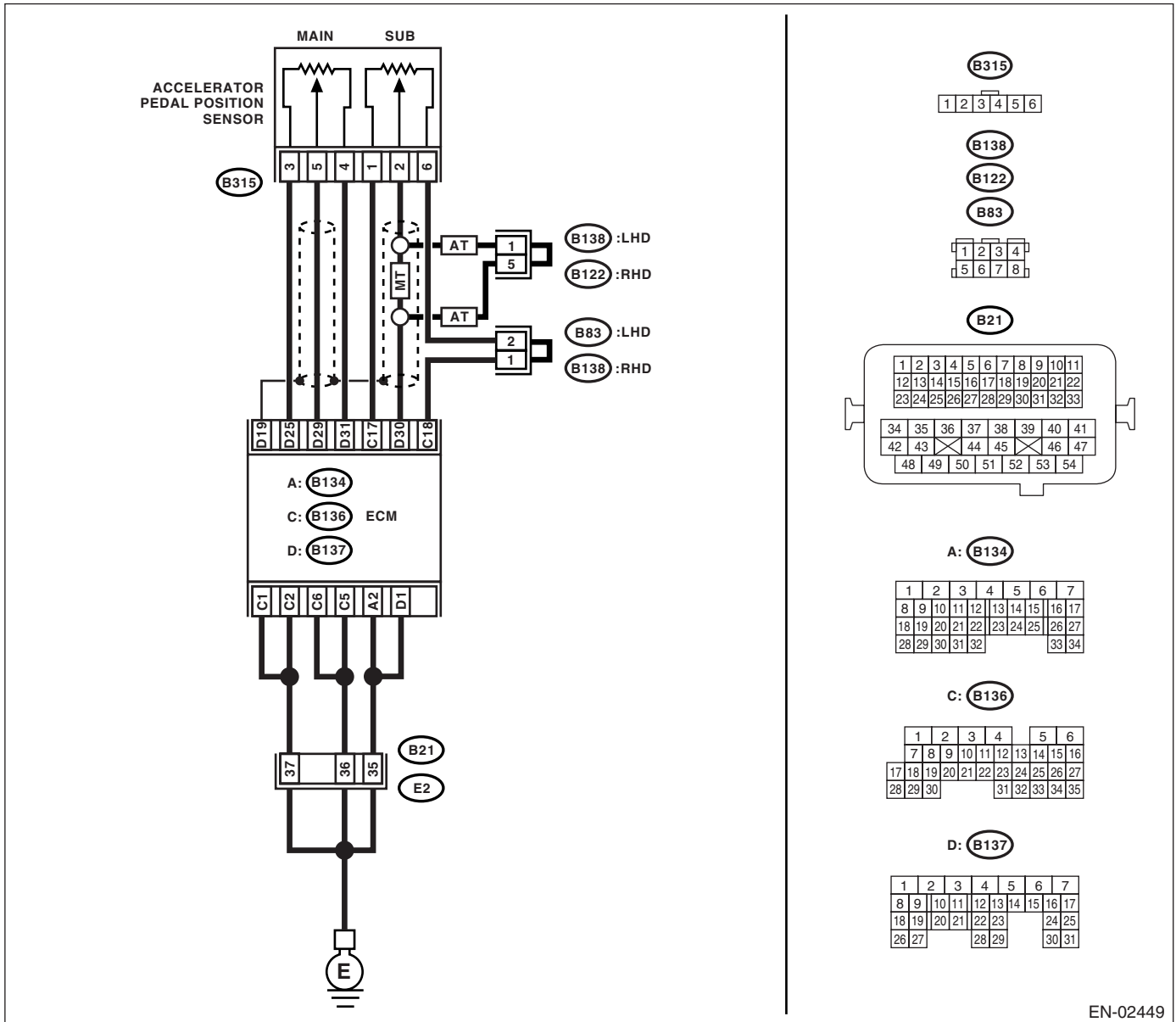
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02449

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ACCELERATOR POSITION SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of sub accelerator position sensor signal using Subaru Select Monitor.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector. <i>Connector & terminal</i> <i>(B137) No. 30 — (B315) No. 2:</i> <i>(B136) No. 17 — (B315) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. Measure the resistance between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 30 — Chassis ground:</i> <i>(B136) No. 17 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the chassis short circuit of harness.
5 CHECK POWER SUPPLY OF ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> <i>(B315) No. 1 (+) — Engine ground (-):</i>	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
6 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 1 — No. 6:</i>	Is the resistance 0.75 — 3.15 k Ω ?	Go to step 7.	Replace the accelerator position sensor.
7 CHECK ACCELERATOR POSITION SENSOR. 1) Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 2 — No. 6:</i> 2) Check the measured value is within the specification without depressing the accelerator pedal.	Is the resistance 0.15 — 0.63 k Ω ?	Go to step 8.	Replace the accelerator position sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK ACCELERATOR POSITION SENSOR. 1) Measure the resistance of accelerator position sensor. Terminals No. 2 — No. 6: 2) Check the measured value is within the specification with the accelerator pedal depressed.	Is the resistance 0.28 — 1.68 k Ω ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Replace the accelerator position sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CA:DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

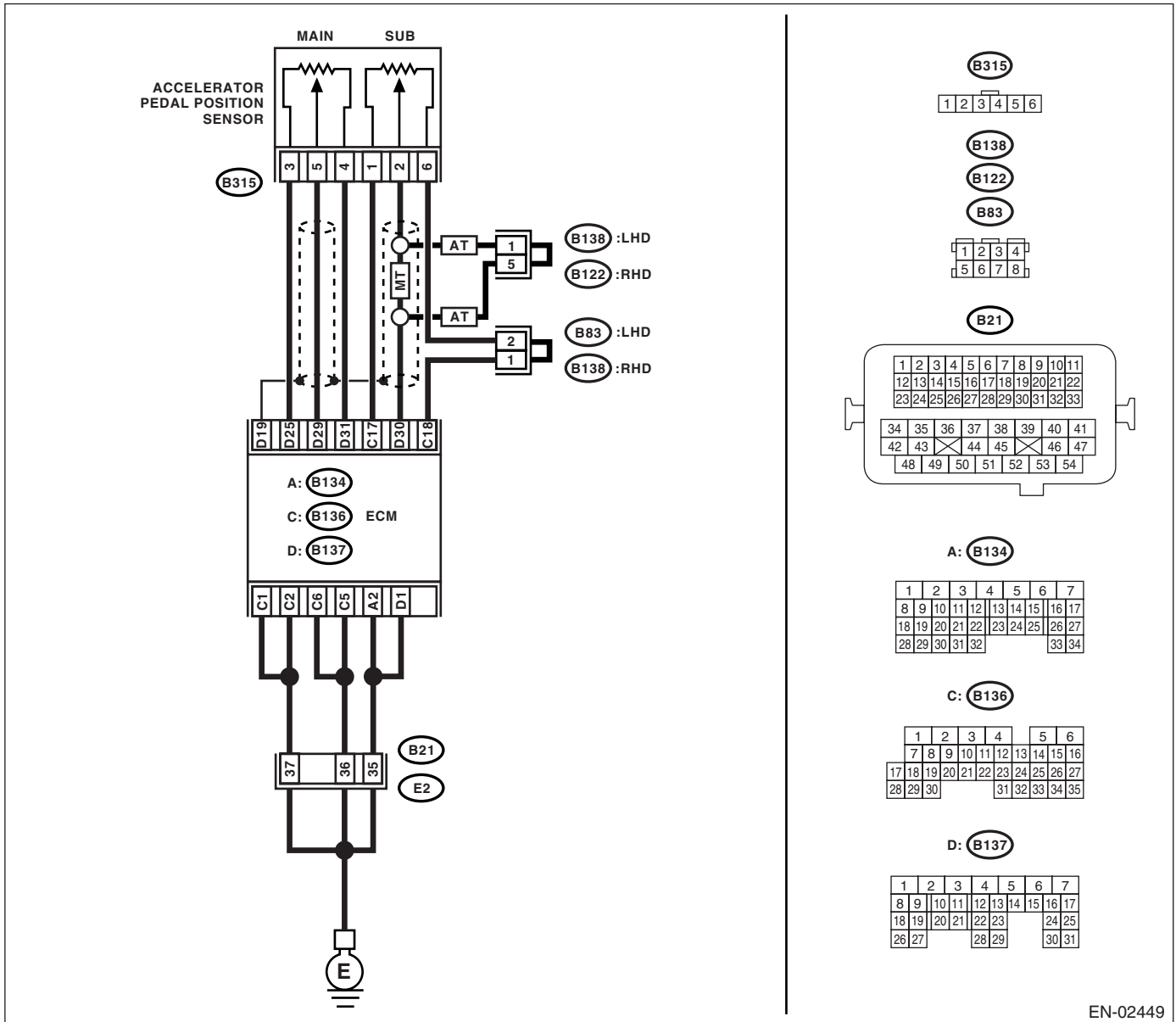
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02449

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ACCELERATOR POSITION SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of sub accelerator position sensor signal using Subaru Select Monitor.	Is the voltage less than 4.8 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector. <i>Connector & terminal</i> <i>(B136) No. 18 — (B315) No. 6:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Measure the resistance between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> <i>(B315) No. 6 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
5 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> <i>(B315) No. 2 (+) — Engine ground (-):</i>	Is the voltage less than 6 V?	Go to step 6.	Repair the battery short circuit in harness between ECM connector and accelerator position sensor connector.
6 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(B137) No. 30 — (B137) No. 25:</i> <i>(B137) No. 30 — (B136) No. 17:</i>	Is the resistance more than 1 M Ω ?	Repair the poor contact in accelerator position sensor connector. Replace the accelerator position sensor if defective.	Repair the short circuit to sensor power supply.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CB:DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” / “B” VOLTAGE RATIONALITY

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

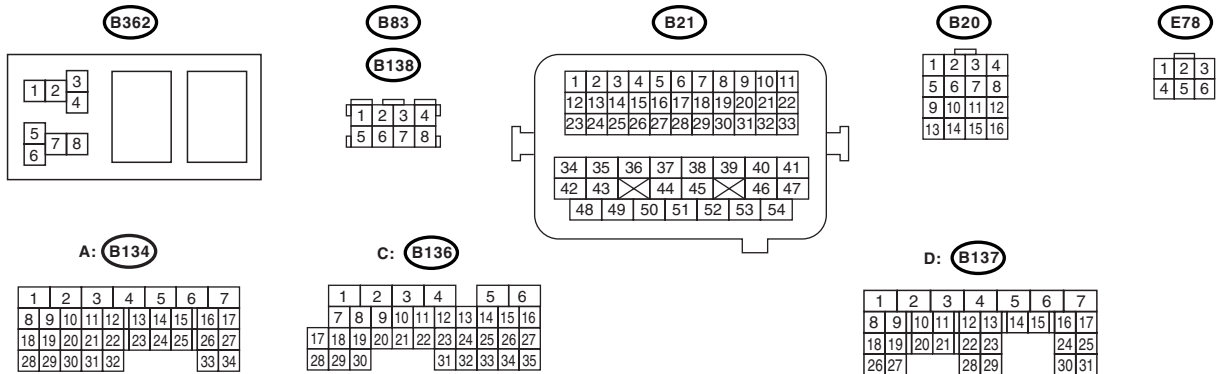
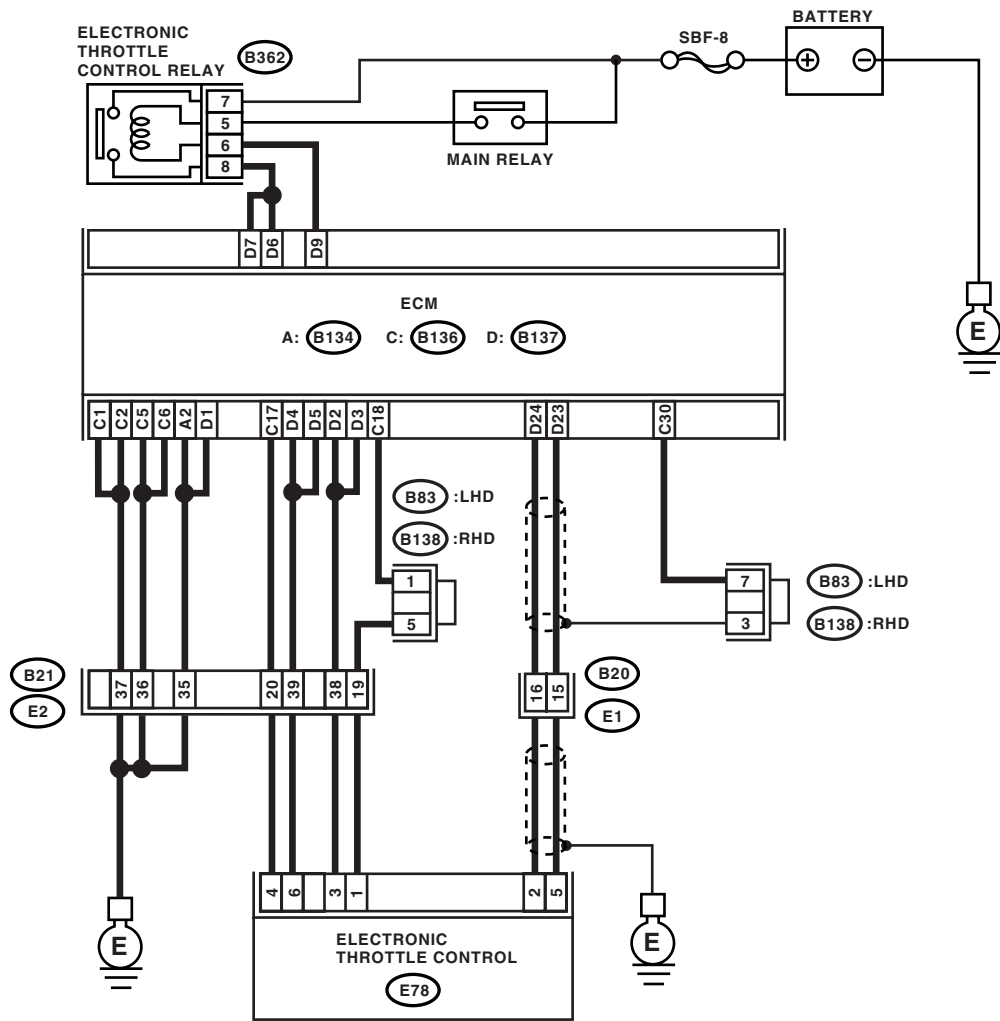
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:



EN-02440

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main throttle sensor signal using Subaru Select Monitor.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 4.
2 CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage more than 0.8 V?	Go to step 3.	Go to step 4.
3 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Go to step 14.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminals (B137) No. 23 — (E78) No. 5: (B137) No. 24 — (E78) No. 2: (B136) No. 17 — (E78) No. 4:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the open circuit of harness connector.
5 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B137) No. 23 — Chassis ground: (B137) No. 24 — Chassis ground: (B136) No. 17 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair the ground short circuit of harness.
6 CHECK SENSOR POWER SUPPLY. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 4 (+) — Engine ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 7.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
7 CHECK SHORT CIRCUIT IN ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 5 — Engine ground: (E78) No. 2 — Engine ground:	Is the resistance more than 10 Ω ?	Go to step 8.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
8 CHECK SENSOR OUTPUT. 1) Connect all the connectors. 2) Turn the ignition switch to ON. 3) Read the data of main throttle sensor signal using Subaru Select Monitor.	Is the voltage less than 4.63 V?	Go to step 9.	Go to step 11.
9 CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage less than 4.73 V?	Go to step 10.	Go to step 11.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK POOR CONTACT. Check poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
11 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminals (B137) No. 23 — (E78) No. 5: (B137) No. 24 — (E78) No. 2: (B136) No. 17 — (E78) No. 4:	Is the resistance less than 1 Ω ?	Go to step 12.	Repair the open circuit of harness connector.
12 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 1 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 13.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
13 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 4 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 14.	Repair the battery short circuit in harness between ECM connector and electronic throttle control connector.
14 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E78) No. 5 (+) — Engine ground (-): (E78) No. 2 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 15.	Repair the short circuit in harness between ECM connector and electronic throttle control connector.
15 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B137) No. 23 — (B136) No. 17: (B137) No. 24 — (B136) No. 17:	Is the resistance more than 1 $M\Omega$?	Go to step 16.	Repair the short circuit to sensor power supply.
16 CHECK ELECTRONIC THROTTLE CONTROL HARNESS. 1) Disconnect the connector from ECM. 2) Disconnect the connectors from electronic throttle control. 3) Measure the resistance between electronic throttle control connector terminals. Connector & terminal (E78) No. 5 — (E78) No. 2:	Is the resistance more than 1 $M\Omega$?	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Repair the short circuit of harness.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CC:DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" / "E" VOLTAGE RATIONALITY

DTC DETECTING CONDITION:

Immediately at fault recognition

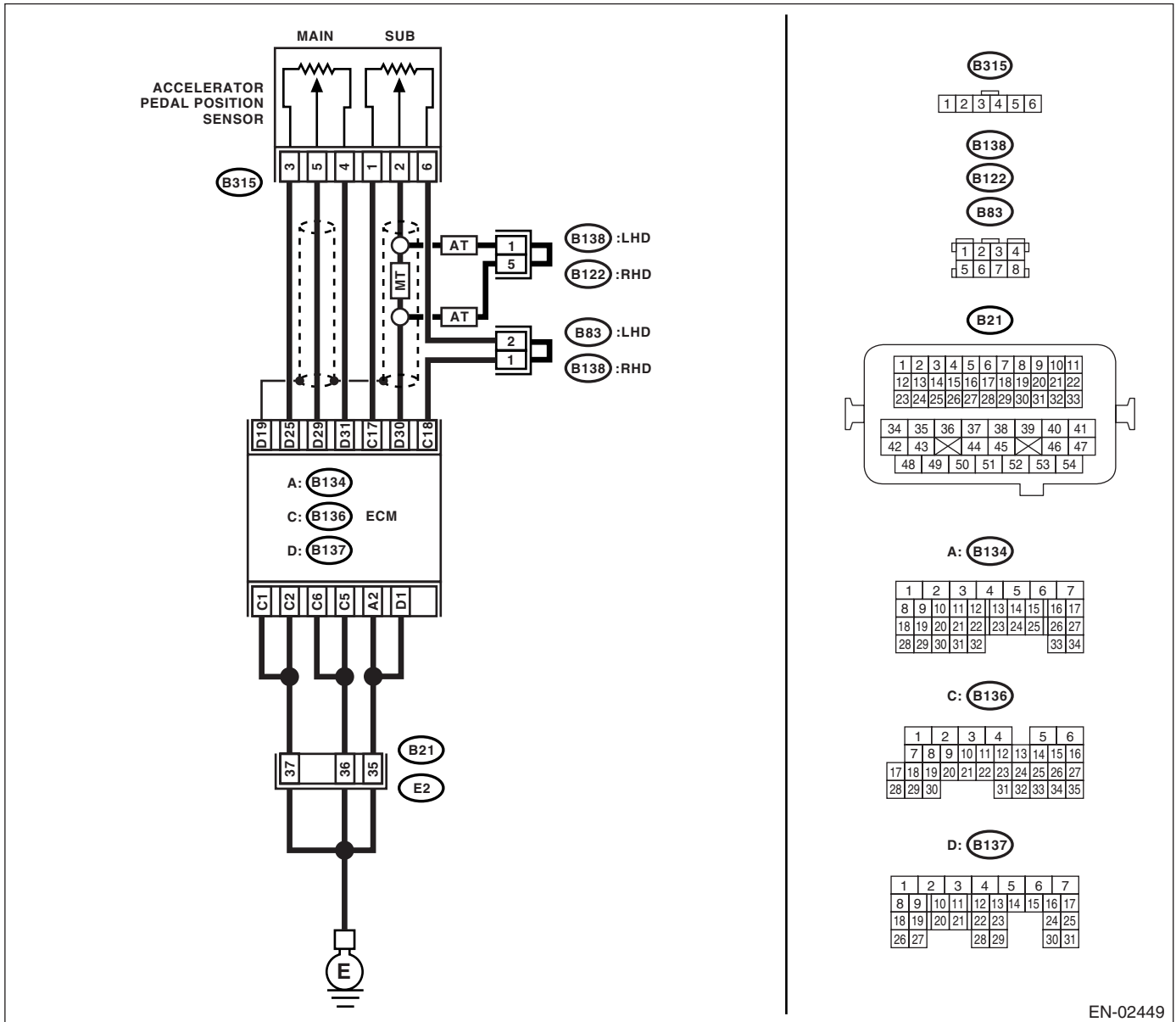
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO 2.0)(diag)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO 2.0)(diag)-32, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02449

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ACCELERATOR POSITION SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main accelerator position sensor signal and sub accelerator position sensor signal using Subaru Select Monitor.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2 CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Go to step 12.
3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector. <i>Connector & terminal</i> (B137) No. 29 — (B315) No. 5: (B137) No. 25 — (B315) No. 3: (B137) No. 30 — (B315) No. 2: (B136) No. 17 — (B315) No. 1:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. Measure the resistance between ECM connector and chassis ground. <i>Connector & terminal</i> (B137) No. 29 — Chassis ground: (B137) No. 25 — Chassis ground: (B137) No. 30 — Chassis ground: (B136) No. 17 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the ground short circuit of harness.
5 CHECK POWER SUPPLY OF ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> (B315) No. 3 (+) — Engine ground (-): (B315) No. 1 (+) — Engine ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
6 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> No. 3 — No. 4:	Is the resistance 1.2 — 4.8 k Ω ?	Go to step 7.	Replace the accelerator position sensor.
7 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> No. 1 — No. 6:	Is the resistance 0.75 — 3.15 k Ω ?	Go to step 8.	Replace the accelerator position sensor.
8 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor without depressing the accelerator pedal. <i>Terminals</i> No. 5 — No. 4:	Is the resistance 0.2 — 0.8 k Ω ?	Go to step 9.	Replace the accelerator position sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
9 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor without depressing the accelerator pedal. <i>Terminals</i> No. 2 — No. 6:	Is the resistance 0.15 — 0.63 k Ω ?	Go to step 10.	Replace the accelerator position sensor.
10 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor with the accelerator pedal depressed. <i>Terminals</i> No. 5 — No. 4:	Is the resistance 0.5 — 2.5 k Ω ?	Go to step 11.	Replace the accelerator position sensor.
11 CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor with the accelerator pedal depressed. <i>Terminals</i> No. 2 — No. 6:	Is the resistance 0.28 — 1.68 k Ω ?	Go to step 12.	Replace the accelerator position sensor.
12 CHECK ACCELERATOR POSITION SENSOR OUTPUT. 1) Turn the ignition switch to OFF. 2) Connect all the connectors. 3) Turn the ignition switch to ON. 4) Read the data of main throttle sensor signal and sub accelerator position sensor signal using Subaru Select Monitor.	Is the voltage less than 4.8 V?	Go to step 13.	Go to step 14.
13 CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Go to step 18.
14 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector. <i>Connector & terminal</i> (B137) No. 31 — (B315) No. 4: (B136) No. 18 — (B315) No. 6:	Is the resistance less than 1 Ω ?	Go to step 15.	Repair the open circuit of harness connector.
15 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Measure the resistance between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> (B315) No. 4 — Engine ground: (B315) No. 6 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 16.	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>
16 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. <i>Connector & terminal</i> (B315) No. 5 (+) — Engine ground (-): (B315) No. 2 (+) — Engine ground (-):	Is the voltage less than 6 V?	Go to step 17.	Repair the battery short circuit in harness between ECM connector and accelerator position sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
17 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(B137) No. 29 — (B137) No. 25:</i> <i>(B137) No. 29 — (B136) No. 17:</i> <i>(B137) No. 30 — (B137) No. 25:</i> <i>(B137) No. 30 — (B136) No. 17:</i>	Is the resistance more than 1 MΩ?	Go to step 18 .	Repair the short circuit to sensor power supply.
18 CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator position sensor. 4) Measure the resistance between connector terminals of accelerator position sensor. <i>Connector & terminal</i> <i>(B315) No. 5 — (B315) No. 2:</i>	Is the resistance more than 1 MΩ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <Ref. to FU(H4SO 2.0)-34, Engine Control Module (ECM).>	Repair the short circuit in harness between ECM connector and accelerator position sensor connector.

General Diagnostic Table

ENGINE (DIAGNOSTICS)

19. General Diagnostic Table

A: INSPECTION

1. ENGINE

NOTE:

Malfunction of parts other than those listed is also possible. <Ref. to ME(H4SO 2.0)-83, Engine Trouble in General.>

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

General Diagnostic Table

ENGINE (DIAGNOSTICS)

Symptom	Problem parts
6. Surge	<ol style="list-style-type: none">1) Intake air temperature sensor2) Manifold absolute pressure sensor3) Engine coolant temperature sensor (*2)4) Crankshaft position sensor (*3)5) Camshaft position sensor (*3)6) Fuel injection parts (*4)7) Electronic throttle control8) Fuel pump and fuel pump relay9) EGR valve
7. Spark knock	<ol style="list-style-type: none">1) Intake air temperature sensor2) Manifold absolute pressure sensor3) Engine coolant temperature sensor4) Knock sensor5) Fuel injection parts (*4)6) Fuel pump and fuel pump relay7) EGR valve
8. After burning in exhaust system	<ol style="list-style-type: none">1) Intake air temperature sensor2) Manifold absolute pressure sensor3) Engine coolant temperature sensor (*2)4) Fuel injection parts (*4)5) Fuel pump and fuel pump relay

*1: Check ignition coil & ignitor ASSY and spark plug.

*2: Indicate the symptom occurring only in cold temperatures.

*3: Ensure the secure installation.

*4: Check the fuel injector and fuel pressure regulator.

*5: Inspect air leak in air intake system.

General Diagnostic Table

ENGINE (DIAGNOSTICS)
