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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 trouble occurred using the interview check list. <ref. check="" check,="" en(h4dotc)(diag)-4,="" for="" interview.="" list="" to=""> 2) Start the engine.</ref.>	Does the engine start?	Go to step 2.	Inspection using "Diagnostics for Engine Start Fail- ure". <ref.)-58,="" diagnostics="" en(h4dotc)(diag="" engine="" failure.="" for="" ing="" start-="" to=""></ref.>
2	CHECK ILLUMINATION OF MALFUNCTION INDICATOR LIGHT.	Does the malfunction indicator light illuminate?	Go to step 3.	Inspection using "General Diagnostics Table". <ref.)-340,="" diagnostic="" en(h4dotc)(diag="" general="" table.="" to=""></ref.>
3	CHECK INDICATION OF DTC ON DISPLAY. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor or OBD-II general scan tool to data link connector. 3) Turn the ignition switch to ON and the Subaru Select Monitor or OBD-II general scan tool switch to ON. 4) Read the DTC on Subaru Select Monitor or OBD-II general scan tool.	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC?	Record the DTC code. Repair the trouble cause. <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""> Go to step 4.</ref.>	Repair the related parts. NOTE: If a DTC is not shown on display although malfunction indicator light illuminates, perform diagnostics of malfunction indicator light circuit or combination meter. <ref. en(h4dotc)(diag)-49,="" indicator="" light.="" malfunction="" to=""></ref.>
4	PERFORM THE DIAGNOSIS. 1) Perform the clear memory mode. <ref. clear="" en(h4dotc)(diag)-46,="" memory="" mode.="" to=""> 2) Perform the inspection mode. <ref. en(h4dotc)(diag)-39,="" inspection="" mode.="" to=""></ref.></ref.>	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC?	Inspect using "Diagnostics Procedure with Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-78,="" procedure="" to="" trouble="" with=""></ref.>	Complete the diagnosis.

2. AUTOMATIC TRANSMISSION

When DTC about automatic transmission is shown on display, carry out the following basic check. After that, carry out the replacement or repair work.

- 1) ATF level check <Ref. to 4AT-30, Automatic Transmission Fluid.>
- 2) Differential gear oil level check <Ref. to 4AT-31, Differential Gear Oil.>
- 3) ATF leak check <Ref. to 4AT-30, Automatic Transmission Fluid.>
- 4) Differential gear oil leak check <Ref. to 4AT-31, Differential Gear Oil.>
- 5) Stall test <Ref. to 4AT-33, Stall Test.>
- 6) Line pressure test <Ref. to 4AT-35, Line Pressure Test.>
- 7) Transfer clutch pressure test <Ref. to 4AT-36, Transfer Clutch Pressure Test.>
- 8) Time lag test <Ref. to 4AT-34, Time Lag Test.>
- 9) Road test <Ref. to 4AT-32, Road Test.>
- 10) Shift characteristics <Ref. to 4AT-36, Transfer Clutch Pressure Test.>

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

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.

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

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 harness and connectors are colored yellow. Do not use the electrical test equipment on these circuit.
- 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 part will be damaged in just a few minutes more.
- 3) Do not disconnect the battery cables while the engine is running.
- A large counter electromotive force will be generated in the alternator, and this voltage may damage electronic parts such as ECM, etc.
- 4) Before disconnecting the connectors of each sensor and the ECM, be sure to turn the ignition switch to OFF.
- 5) Poor contact has been identified as a primary cause of this problem. To measure the voltage and/or resistance of individual sensors or all electrical control modules at the harness side connector, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in) into the part.
- 6) Before removing the ECM from located position, disconnect two cables on battery.

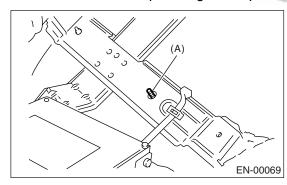
Otherwise, the ECM may be damaged.

CAUTION:

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

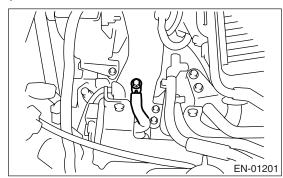
7) The connectors to each sensor in the engine compartment and the harness connectors on the engine side and body side are all designed to be waterproof. However, it is still necessary to take care not to allow water to get into the connectors when washing the vehicle, or when servicing the vehicle on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

8) Use the ECM mounting stud bolt at the body head grounding points when measuring voltage and resistance inside the passenger compartment.

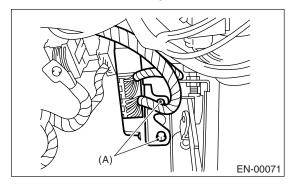


(A) Stud bolt

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



10) Use the TCM mounting stud bolts at the grounding point, 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 the instrument panel lower trim panel.)

- The antenna feeder must be placed as far as possible from ECM and MFI harness.
- Carefully adjust the antenna for correct matching.
- When mounting a large power type radio, pay special attention to the three items above mentioned.
- Incorrect installation of the radio may affect the operation of ECM.
- 13) Before disconnecting the fuel hose, disconnect the fuel pump connector and crank the engine for more than 5 seconds to release pressure in the fuel system. If the 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) On 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 front and rear wheels. After diagnosis of engine control system, perform the ABS memory clearance procedure of self-diagnosis system.

B: INSPECTION

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

1. BATTERY

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

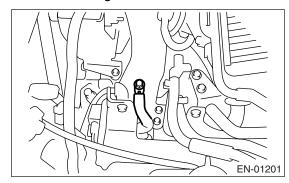
Standard voltage: 12 V

Specific gravity: Above 1.260

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

2. ENGINE GROUNDING

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



C: NOTE

1. DESCRIPTION

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

• The OBD-II diagnostics procedure is different from usual diagnostics procedure. When trouble-shooting model with OBD-II, connect the Subaru Select Monitor or the OBD-II general scan tool to the vehicle.

2. ENGINE AND EMISSION CONTROL SYSTEM

• The Multipoint Fuel Injection (MFI) system is a system that supplies the optimum air-fuel mixture to the engine for all the various operating conditions through the use of the latest electronic technology.

With this system fuel, which is pressurized at a constant pressure, is injected into the intake air passage of the cylinder head. The injection quantity of fuel is controlled by an intermittent injection system where the electro-magnetic injection valve (fuel injector) opens only for a short period of time, depending on the quantity of air required for one cycle of operation. In actual operation, the injection quantity is determined by the duration of an electric pulse applied to the fuel injector and this permits simple, yet highly precise metering of the fuel.

• Further, all the operating conditions of the engine are converted into electric signals, and this results in additional features of the system, such as large improved adaptability, easier addition of compensating element, etc.

The MFI system also has the following features:

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

D: PREPARATION TOOL

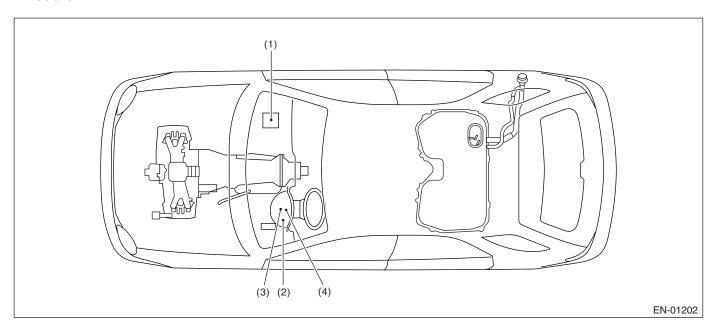
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
ST24082AA230	24082AA230	CARTRIDGE	Troubleshooting for electrical systems.
ST22771AA030	22771AA030	SUBARU SELECT MONITOR KIT	Troubleshooting for electrical systems.

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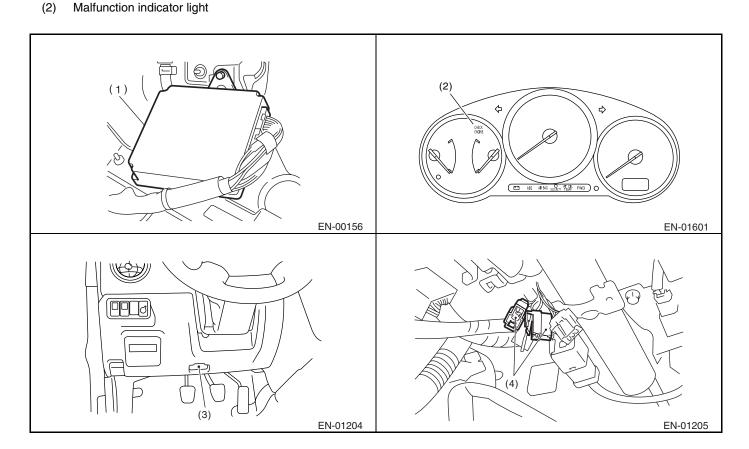
4. Electrical Components Location

A: LOCATION

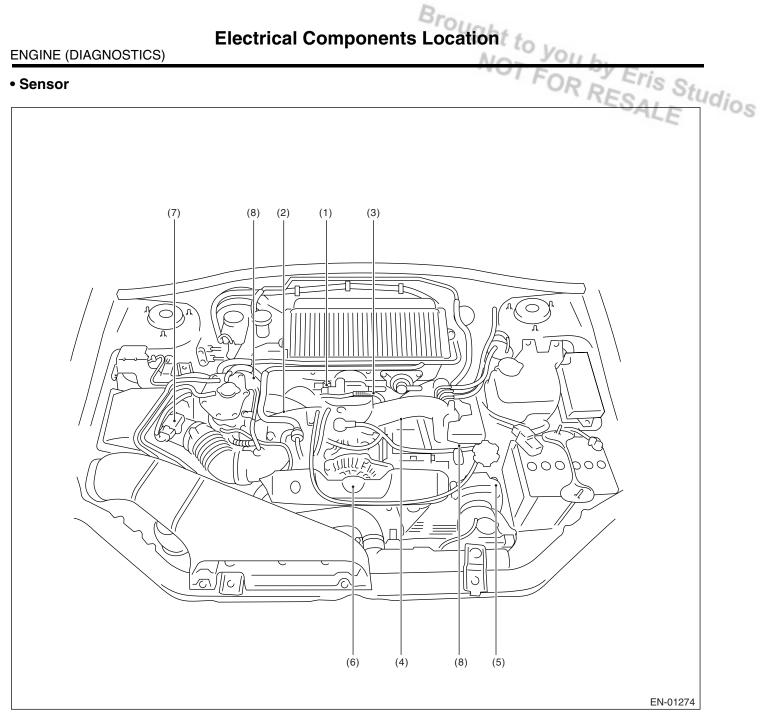
- 1. ENGINE
- Module



- Engine control module (ECM) (1)
- (3) Data link connector
- (4) Test mode connector



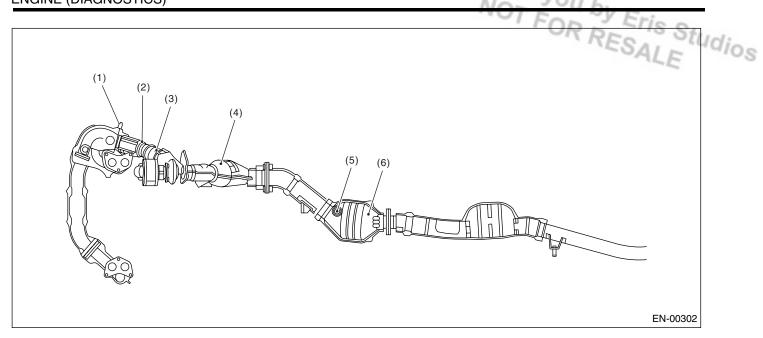
• Sensor



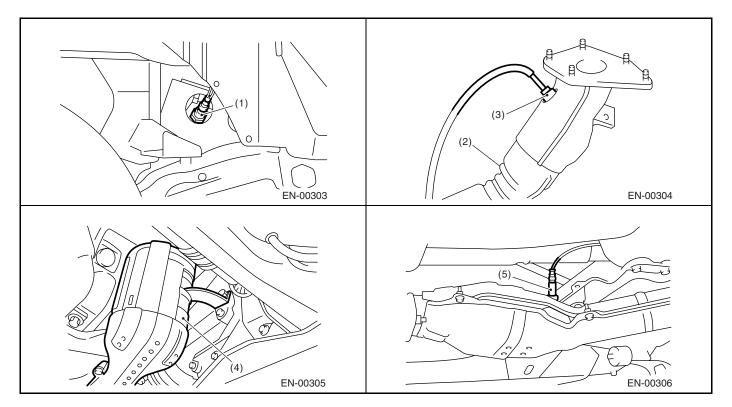
- (1) Manifold absolute pressure sensor
- Engine coolant temperature sen-(2) sor
- Throttle position sensor (3)
- (4) Knock sensor

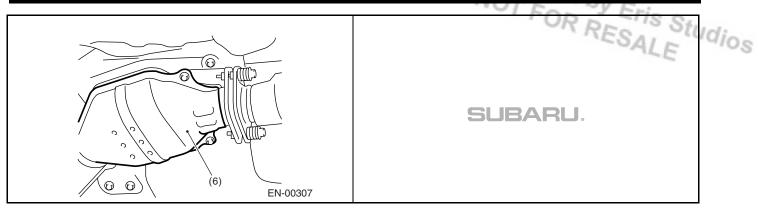
- (5) Camshaft position sensor
- (6) Crankshaft position sensor
- (7) Mass air flow and intake air temperature sensor
- Tumble generator valve position sensor

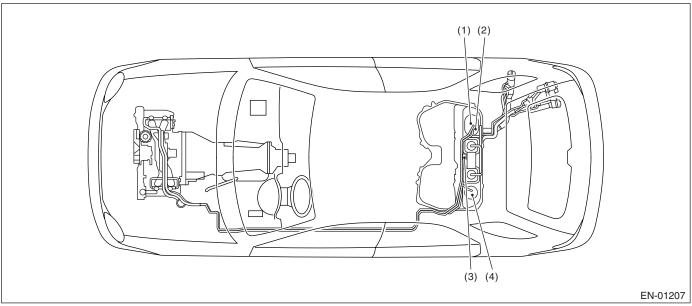




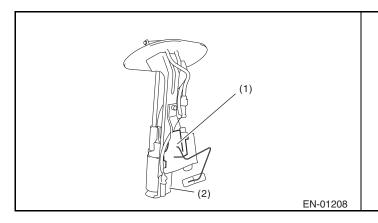
- (1) Front oxygen (A/F) sensor
- (2) Precatalytic converter
- (3) Exhaust temperature sensor
- (4) Front catalytic converter
- (5) Rear oxygen sensor
- (6) Rear catalytic converter

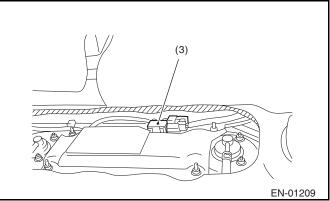


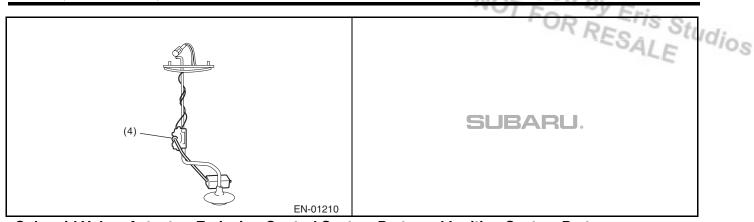




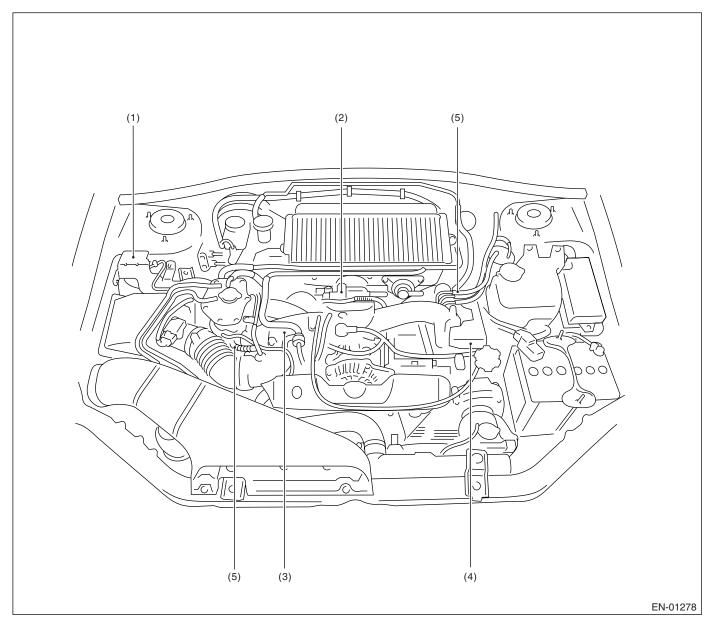
- Fuel level sensor (1)
- Fuel temperature sensor (2)
- (3) Fuel tank pressure sensor
- Fuel sub level sensor (4)





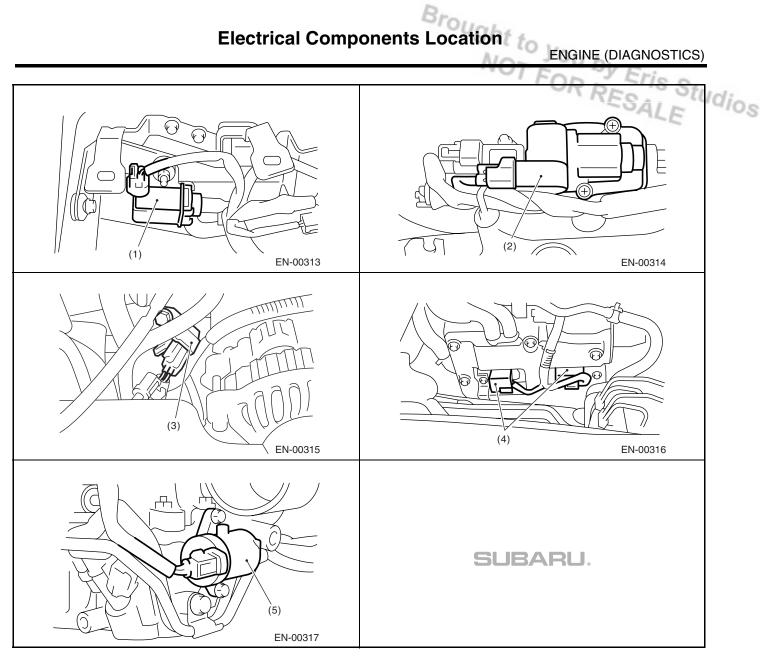


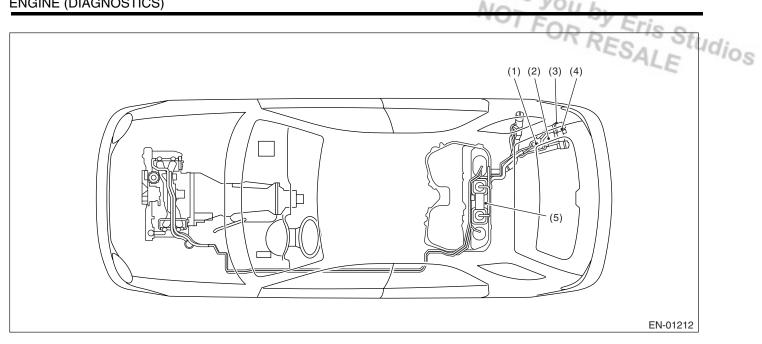
• Solenoid Valve, Actuator, Emission Control System Parts and Ignition System Parts



- (1) Wastegate control solenoid valve
- (2) Idle air control solenoid valve
- (3) Purge control solenoid valve
- (4) Ignition coil

(5) Tumble generator valve actuator

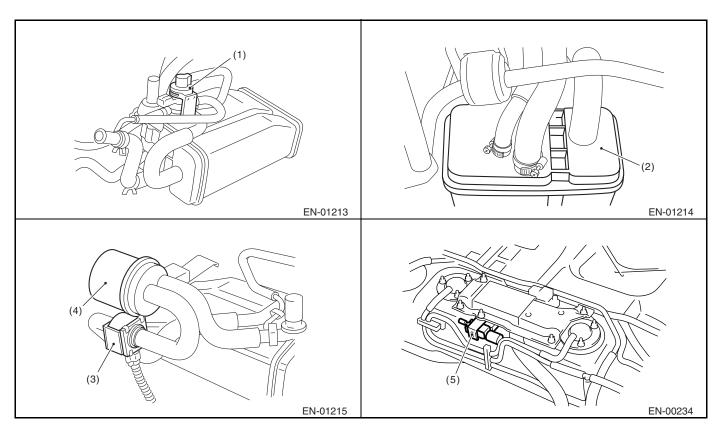


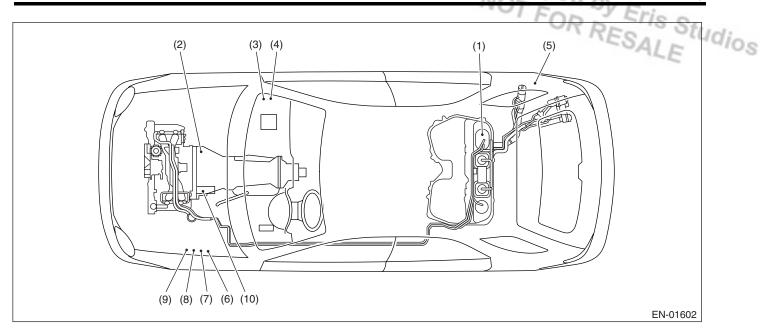


- (1) Pressure control solenoid valve
- (3) Drain valve

Fuel tank sensor control valve

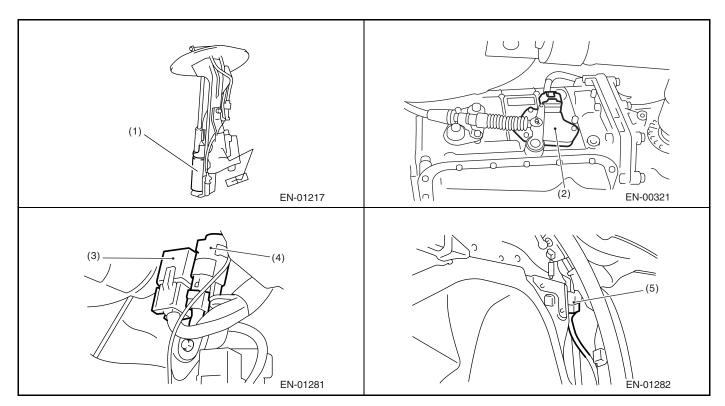
(2) Canister (4) Drain filter

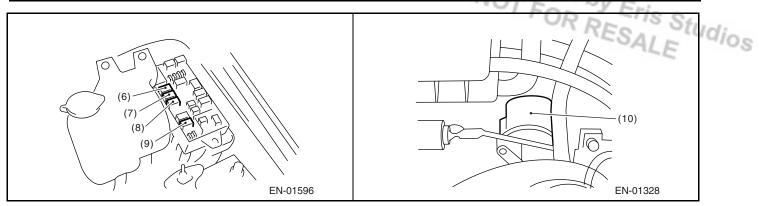




- (1) Fuel pump
- (2) Inhibitor switch
- (3) Main relay
- (4) Fuel pump relay

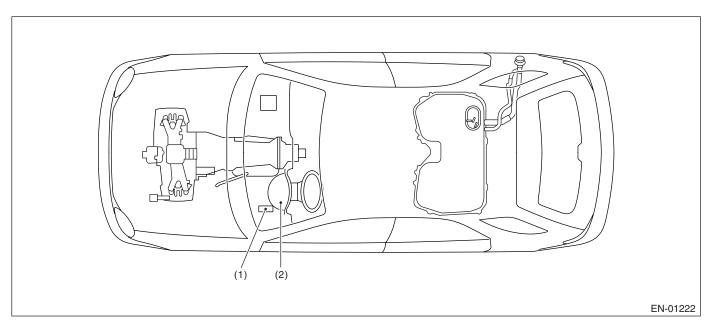
- (5) Fuel pump control unit
- (6) Radiator main fan relay 1
- (7) Radiator main fan relay 2
- (8) Radiator sub fan relay 1
- (9) Radiator sub fan relay 2
- (10) Starter



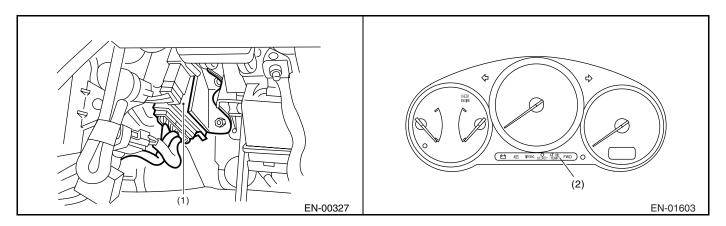


2. TRANSMISSION

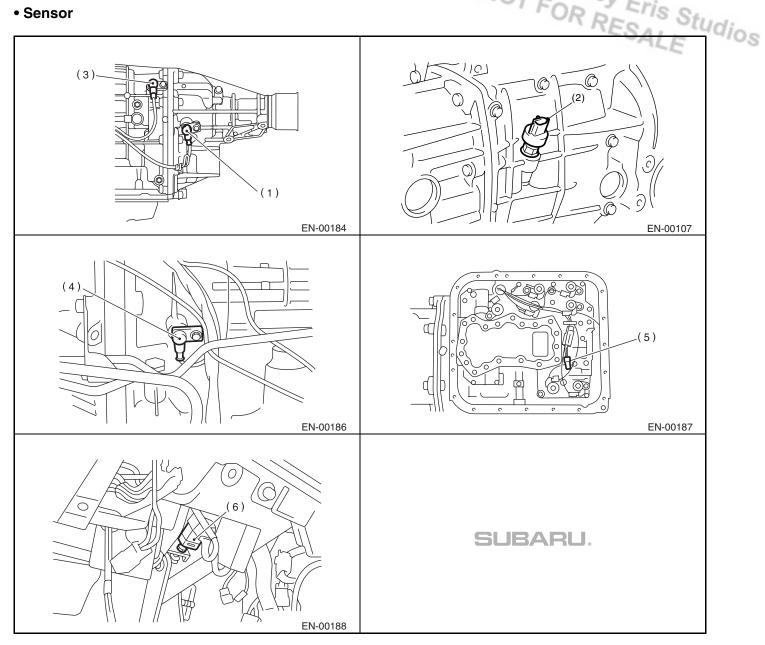
• Module



- (1) Transmission control module (TCM) (for AT model)
- (2) AT diagnostic indicator light (for AT model)

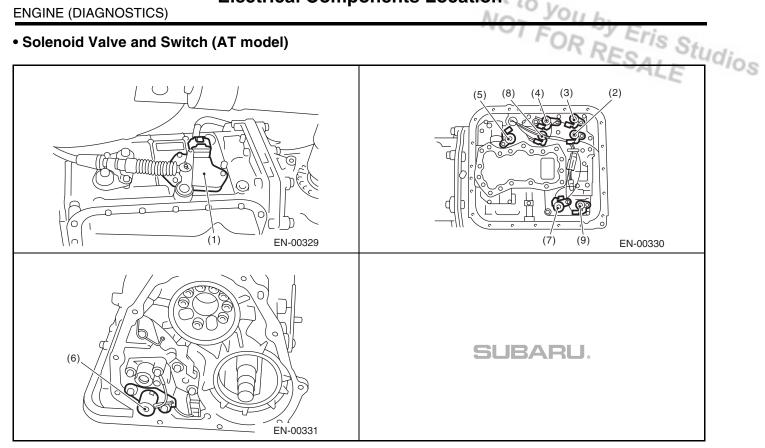


Sensor



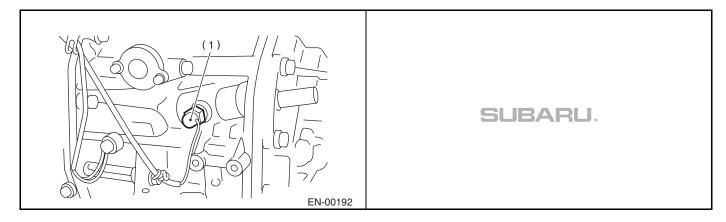
- (1) Rear vehicle speed sensor (for AT model)
- (2) Front vehicle speed sensor (for MT model)
- (3) Front vehicle speed sensor (for AT
- (4) Torque converter turbine speed sensor (for AT model)
- (5) ATF temperature sensor (for AT model)
- (6) Brake light switch

• Solenoid Valve and Switch (AT model)



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

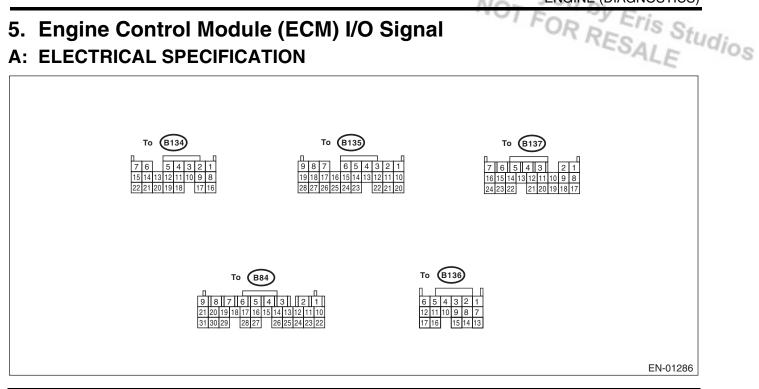
• Solenoid Valve and Switch (MT model)



Neutral position switch (1)

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

A: ELECTRICAL SPECIFICATION



Content		Con-	Termi-	Signa	al (V)	
		nector No.	nal No.	Ignition SW ON (Engine OFF)	Engine ON (Idling)	Note
Crank-	Signal (+)	B135	2	0	−7 — +7	Sensor output waveform
shaft posi-	Signal (-)	B135	11	0	0	_
tion sensor	Shield	B135	21	0	0	_
Camshaft	Signal (+)	B135	1	0	−7 — +7	Sensor output waveform
position	Signal (-)	B135	10	0	0	_
sensor	Shield	B135	21	0	0	_
Throttle	Signal	B135	7	Fully closed Fully opened		_
position	Power supply	B135	9	5	5	_
3611301	GND (sen- sor)	B135	19	0	0	_
D	Signal	B135	17	0	0 — 0.9	_
Rear oxy- gen sen-	Shield	B135	26	0	0	_
sor	GND (sen- sor)	B135	19	0	0	_
Front oxy-	Signal 1	B84	5	0 — 1.0	0 — 1.0	_
gen (A/F) sensor heater	Signal 2	B84	4	0 — 1.0	0 — 1.0	_
Rear oxygen sensor heater signal		B137	13	0 — 1.0	0 — 1.0	_
Engine	Signal	B135	18	1.0 — 1.4	1.0 — 1.4	After warm-up the engine.
coolant tempera- ture sen- sor	GND (sensor)	B135	19	0	0	After warm-up the engine.
Vehicle spec	ed signal	B134	1	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.

					.10	For Y Fri
_		Con-	Termi-		al (V)	OR RES Sti
Cor	ntent	nector No.	nal No.	Ignition SW ON (Engine OFF)	Engine ON (Idling)	Note
Mass air	Signal	B136	13	_	0.3 — 4.5	_
flow sen-	Shield	B136	8	0	0	_
sor	GND	B136	7	0	0	_
Intake air te sensor sign		B135	27	_	_	_
Exhaust	Signal	B135	16	_	_	_
gas tem- perature sensor	GND (sensor)	B135	19	0	0	_
Tumble	Signal	B135	23		d: 0.2 — 1.0 d: 4.2 — 4.7	_
generator valve posi- tion sensor	Power supply	B135	9	5	5	_
RH	GND (sensor)	B135	19	0	0	_
Tumble	Signal	B135	13		d: 0.2 — 1.0 d: 4.2 — 4.7	
generator valve posi- tion sensor	Power supply	B135	9	5	5	
LH	GND (sensor)	B135	19	0	0	_
Tumble generator valve RH (open)		B136	4	0 or 10 — 13	0 or 13 — 14	_
Tumble generator valve RH (close)		B136	5	0 or 10 — 13	0 or 13 — 14	_
LH (open)	erator valve	B136	10	0 or 10 — 13	0 or 13 — 14	_
Tumble gen LH (close)	erator valve	B136	11	0 or 10 — 13	0 or 13 — 14	_
Wastegate on noid valve	control sole-	B84	24	10 — 13	13 — 14	_
Starter swite	ch	B134	16	0	0	Cranking: 8 — 14
A/C switch		B134	2	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
Ignition swit	ch	B134	5	10 — 13	13 — 14	
Neutral pos (MT model)		B134	8	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
Neutral position switch (AT model)		B134	8	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	_
Test mode of	connector	B134	14	5	5	When connected: 0
Knock	Signal	B135	4	2.8	2.8	_
sensor	Shield	B135	22	0	0	_
Back-up power supply		B84	10	10 — 13	13 — 14	Ignition switch "OFF": 10 — 13
Control unit power sup-		B84	2	10 — 13	13 — 14	_
ply		B84	3	10 — 13	13 — 14	_
Sensor power supply		B135	9	5	5	_
Line end check 1		B134	10	0	0	_
	#1	B137	24	0	13 — 14	Waveform
Ignition	#2	B137	23	0	13 — 14	Waveform
control	#3	B137	22	0	13 — 14	Waveform
	#4	B137	21	0	13 — 14	Waveform
	l		i .		1	1

					-10/	Fa- Y Fri-	
		Con-	Termi-	Signa	al (V)	OR PETIS Still	al.
Con	ntent	nector No.	nal No.	Ignition SW ON (Engine OFF)	Engine ON (Idling)	Note Waveform	910
	#1	B84	1	10 — 13	1 — 14	Waveform	
Fuel injec-	#2	B137	6	10 — 13	1 — 14	Waveform	
tor	#3	B137	5	10 — 13	1 — 14	Waveform	
	#4	B137	4	10 — 13	1 — 14	Waveform	
Idle air control solenoid valve	Signal	B137	10	0 or 13 — 14	0 or 13 — 14	Waveform	
Fuel pump	Signal 1	B134	13	_	_	_	
control unit	Signal 2	B137	15	_	_	_	
A/C relay co	ontrol	B84	27	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14		
Radiator fan control		B84	17	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14		
Radiator far control	-	B84	28	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14	Model with A/C only	
Malfunction lamp		B84	15	_	_	Light "ON": 1 or less Light "OFF": 10 — 14	
Engine spee		B137	9	_	0 — 13, or more	Waveform	
Purge contro valve		B84	16	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	_	
Manifold	Signal	B135	8	1.7 — 2.4	1.1 — 1.6		
ivianifold absolute pressure	Power supply	B135	9	5	5	_	
sensor	GND (sen- sor)	B135	19	0	0		
Fuel tank pressure	Signal	B135	15	2.3 — 2.7	2.3 — 2.7	The valve operates when fuel filler cap is removed and reinstalled.	
sensor	GND (sen- sor)	B135	19	0	0	_	
Pressure co noid valve	ntrol sole-	B84	22	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	_	
Drain valve		B84	11	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	_	
valve	ensor control	B84	23	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	_	
Fuel level se		B135	25	0.12 — 4.75	0.12 — 4.75		
Fuel temper sor signal		B135	6	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (75°F)	
signal	k diagnosis	B137	2	5	5		
Small light switch		B134	17	ON: 0 OFF: 10 — 13 ON: 0	ON: 0 OFF: 13 — 14 ON: 0	_	
Blower fan switch B		B134	9	ON: 0 OFF: 10 — 13 ON: 0	ON: 0 OFF: 13 — 14 ON: 0	_	
Rear defogg		B134	3	OFF: 10 — 13	ON: 0 OFF: 13 — 14 ON: 0	_	
sure switch	ring oil pres- en (A/F) sen-	B135	24	10 — 13	OFF: 13 — 14	_	
sor signal (+		B84	29	2.8 — 3.2	2.8 — 3.2	_	

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

				.,0/	Fa- " Fri
	Con- Termi- Signal (V)			OR Prais St	
Content	nector No.	nal No.	Ignition SW ON (Engine OFF)	Engine ON (Idling)	Note
Front oxygen (A/F) sensor signal (-)	B84	19	2.4 — 2.7	2.4 — 2.7	_
Front oxygen (A/F) sensor shield	B84	18	0	0	_
SSM/GST communication line	B134	21	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	_
Torque control 1 signal	B134	19	More than 4	More than 4	_
Torque control 2 signal	B134	18	More than 4	More than 4	_
Torque control cut sig- nal	B137	14	8	8	_
AT diagnosis input sig- nal	B135	20	Less than 1 \longleftrightarrow More than 4	Less than 1 \longleftrightarrow More than 4	Waveform
AT load signal	B135	28	4.3 — 4.4	0.9 — 1.4	_
GND (sensors)	B135	19	0	0	_
GND (injectors)	B137	8	0	0	_
GND (ignition system)	B137	18	0	0	_
CND (nower emply)	B137	17	0	0	_
GND (power supply)	B134	22	0	0	_
CND (control quotoms)	B134	7	0	0	_
GND (control systems)	B134	15	0	0	_
GND (front oxygen (A/F) sensor heater 1)	B84	9	0	0	_
GND (front oxygen (A/F) sensor heater 2)	B84	8	0	0	_

6. Engine Condition Data

A: ELECTRICAL SPECIFICATION

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

Measuring condition:

- After warm-up the engine.
- Gear position is in neutral position.
- A/C is turned to OFF.
- All accessory switches are turned to OFF.

Transmission Control Module (TCM) I/O Signal FOR RESALE

ENGINE (DIAGNOSTICS)

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

A: ELECTRICAL SPECIFICATION

<Ref. to 4AT(diag)-11, Transmission Control Module (TCM) I/O Signal.>

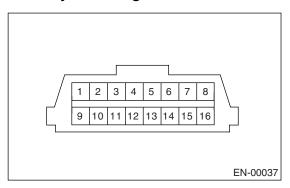
8. Data Link Connector

A: NOTE

This connector is used both for the OBD-II general scan tools and Subaru Select Monitor.

CAUTION:

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

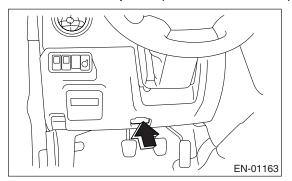


Terminal No.	Contents	Terminal No.	Contents
1	Power supply	9	Blank
2	Blank	10	Subaru Select Monitor/OBD-II general scan tool signal
3	Blank	11	Blank
4	Blank	12	Ground
5	Blank	13	Ground
6	Line end check signal 1	14	Blank
7	Blank	15	Blank
8	Line end check signal 2	16	Blank

9. OBD-II General Scan ToolA: OPERATION

1. HOW TO USE OBD-II GENERAL SCAN

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



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
- (5) MODE \$06: Request on-board monitoring test results for non-continuously monitored systems
- (6) MODE \$07: Request on-board monitoring test results for continuously monitored systems
- (7) MODE \$09: Request vehicle information Read out the data according to repair procedures. (For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.)

NOTE:

For details concerning DTC, refer to the List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4DOTC)(diag)-71, List of Diagnostic Trouble Code (DTC).>

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

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

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

PID	Data	Unit of measure
01	Number of emission-related powertrain DTC and 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	0
0F	Intake air temperature	°C
10	Air flow rate from mass air flow 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	V and %
1C	Supporting OBD system	_
24	A/F value and A/F sensor output voltage	— and V

NOTE:

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

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

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

PID	Data	Unit of measure
02	DTC that caused CARB required freeze frame data storage	_
03	Fuel system control status	_
04	Calculated engine load value	%
05	Engine coolant temperature	°C
06	Short term fuel trim	%
07	Long term fuel trim	%
0B	Intake manifold absolute pressure	kPa
0C	Engine revolution	rpm
0D	Vehicle speed	km/h
0E	Ignition timing advance	0
0F	Intake air temperature	°C
10	Air flow rate from mass air flow sensor	g/sec
11	Throttle valve opening angle	%

NOTE:

Refer to OBD-II general scan tool manufacturer's instruction 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 power-train DTC. <Ref. to EN(H4DOTC)(diag)-38, Read Diagnostic Trouble Code (DTC).>

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

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

NOTE:

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

6. MODE \$06

Refer to test value of troubleshooting and data of test limit on support data bit sequence table. List of support data is shown in the following table.

TID	CID	Test value & Test limit	Unit
\$01	\$01	Catalyst system efficiency below threshold	
	\$01	Evaporative emission control system large leak	mmHg
\$03	\$02	Evaporative emission control system small leak	mmHg
	\$03	Evaporative emission control system very small leak	mmHg
\$05	\$01	O ₂ sensor circuit slow response (Bank 1 Sensor 1)	
\$06	\$81	O ₂ sensor circuit (Bank 1 Sensor 2)	V
φυσ	\$02	O2 Sensor Circuit (Darik i Sensor 2)	V
\$07	\$01	O ₂ sensor circuit slow response (Bank 1 Sensor 2)	Sec.
\$0C	\$01	Coolant thermostat (Coolant temperature below thermostat regulating temperature)	°C
\$0F	\$01	\$01 Drain valve range/performance	mmHg
	\$82	Drain valve lange/penormance	

7. MODE \$07

Refer to data of DTC (pending code) for troubleshooting result about emission in first time.

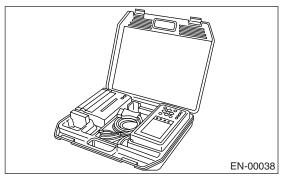
8. MODE \$09

Refer to data of vehicle specification (VIN, calibration ID, etc.).

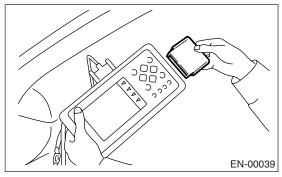
10.Subaru Select Monitor A: OPERATION

1. HOW TO USE SUBARU SELECT MONI-TOR

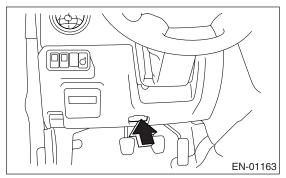
1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOTC)(diag)-8, PREPARATION General Description.>



- 2) Connect the diagnosis cable to Subaru Select Monitor.
- 3) Insert the cartridge into Subaru Select Monitor. <Ref. to EN(H4DOTC)(diag)-8, PREPARATION TOOL, General Description.>



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

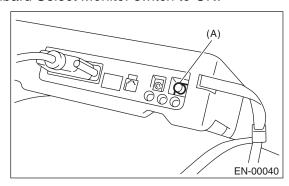


(2) Connect the diagnosis cable to data link connector.

CAUTION:

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

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



(A) Power switch

6) Using the Subaru Select Monitor, call up the DTC and various data, and 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 DTC. <Ref. to EN(H4DOTC)(diag)-38, 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 DTC. <Ref. to EN(H4DOTC)(diag)-38, Read Diagnostic Trouble Code (DTC).>

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

- Eris Studios 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 is displayed.
- 4) On the «Engine Diagnosis» display screen, select the {Current Data Display & Save} and press the [YES]
- 5) On the "Data Display Menu" display screen, select the {Data Display} and press the [YES] key.
- 6) Using the scroll key, move the display screen up or down until desired data is shown.
- A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Battery voltage	Battery Voltage	V
Vehicle speed signal	Vehicle Speed	km/h or MPH
Engine speed signal	Engine Speed	rpm
Engine coolant temperature signal	Coolant Temp.	°C or °F
Ignition timing signal	Ignition Timing	deg
Throttle position signal	Throttle Opening Angle	%
Throttle position signal	Throttle Sensor Voltage	V
Injection pulse width	Fuel Injection #1 Pulse	ms
Idle air control signal	ISC Valve Duty Ratio	%
Fuel pump duty control signal	Fuel Pump Duty	%
A/F sensor current	A/F Sensor #1 Current	mA
A/F sensor resistance	A/F Sensor #1 Resistance	Ω
Front oxygen (A/F) sensor output signal	A/F Sensor #1	_
Rear oxygen sensor output signal	Rear O ₂ Sensor	V
Short term fuel trim	A/F Correction #1	%
Knock sensor signal	Knocking Correction	deg
Atmospheric absolute pressure signal	Atmosphere Pressure	mmHg or kPa or inHg or psi
Intake manifold relative pressure signal	Mani. Relative Pressure	mmHg or kPa or inHg or psi
Intake manifold absolute pressure signal	Mani. Absolute Pressure	mmHg or kPa or inHg or psi
A/F correction (short term fuel trim) by rear oxygen sensor	A/F Correction #3	%
Long term whole fuel trim	A/F Learning #1	%
Front oxygen (A/F) sensor heater current	A/F Heater Current 1	A
Rear oxygen sensor heater voltage	Rear O ₂ Heater Voltage	V
Canister purge control solenoid valve duty ratio	CPC Valve Duty Ratio	%
Primary supercharged pressure control signal	Primary Control	%
Tumble generator valve position sensor signal (right side)	TGV Position Sensor R	V
Tumble generator valve position sensor signal (left side)	TGV Position Sensor L	V
Tumble generator valve drive signal	TGV Drive	OPEN or CLOSE
Fuel level signal	Fuel Level	V
Intake air temperature signal	Intake Air Temp.	°C or °F
Mass air flow sensor signal	Mass Air Flow	g/s
Mass air flow sensor signal	Air Flow Sensor Voltage	V
Fuel tank pressure signal	Fuel Tank Pressure	mmHg or kPa or inHg or psi
Fuel temperature signal	Fuel Temp.	°C or °F
Exhaust gas temperature signal	Exhaust Gas Temperature	°C or °F
AT/MT identification signal	AT Vehicle ID Signal	AT or MT
Fuel pressure control signal	Solenoid Valve	ON or OFF

	-16	On J Elie
Contents	Display	Unit of measure
Drain valve signal	Vent. Solenoid Valve	ON or OFF
Tank sensor control solenoid valve signal	Tank Sensor Cntl Valve	ON or OFF
Ignition switch signal	Ignition Switch	ON or OFF
Test mode signal	Test Mode Signal	ON or OFF
Neutral position switch signal	Neutral Position Switch	ON or OFF
Air conditioning switch signal	A/C Switch	ON or OFF
Air conditioning signal	A/C Compressor Signal	ON or OFF
Radiator main fan relay signal	Radiator Fan Relay #1	ON or OFF
Blow-by leak diagnosis SW	Blow-by Leak Connector	ON or OFF
Knocking signal	Knocking Signal	ON or OFF
Radiator sub fan relay signal	Radiator Fan Relay #2	ON or OFF
Power steering switch signal	P/S Switch	ON or OFF
Engine torque control signal #1	Torque Control Signal #1	ON or OFF
Engine torque control signal #2	Torque Control Signal #2	ON or OFF
Engine torque control permission signal	Torque Permission Signal	ON or OFF
Rear oxygen sensor rich signal	Rear O ₂ Rich Signal	ON or OFF
Starter switch signal	Starter Switch	ON or OFF
Idle switch signal	Idle Switch	ON or OFF
Crankshaft position sensor signal	Crankshaft Position Sig.	ON or OFF
Camshaft position sensor signal	Camshaft Position Sig.	ON or OFF
Rear defogger switch signal	Rear Defogger SW	ON or OFF
Blower fan switch signal	Blower Fan SW	ON or OFF
Small light switch signal	Light Switch	ON or OFF
Tumble generator valve output signal	TGV Output	ON or OFF

NOTE:

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.
- Eris Studios 2) On the «System Selection Menu» display screen, select the {Engine Control System} and press the [YES] kev.
- 3) Press the [YES] key after the information of engine type is 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 desired data is shown.
- A list of the support data is shown in the following table.

Number of DTC Malfunction indicator light status MI (MIL) ON or OFF Malfunction indicator light status MI (MIL) ON or OFF Monitoring test of misfire Misfire monitoring Complete or incomplete Monitoring test of fuel system Fuel system monitoring Complete or incomplete Test of catalyst Catalyst Diagnosis Complete or incomplete Test of catalyst Heated catalyst Heated catalyst Test of evaporative emission purge control system Test of secondary air system Test of air conditioning system refrigerant Test of air conditioning system refrigerant Test of air conditioning system refrigerant Test of axygen sensor Oxygen sensor Oxygen sensor Complete or incomplete Test of secondary air system No support Test of air conditioning system refrigerant A/C system refrigerant No support Test of oxygen sensor Oxygen sensor Complete or incomplete Test of oxygen sensor Complete or incomplete Test of oxygen sensor heater O2 Heater Diagnosis Complete or incomplete Test of oxygen sensor heater O2 Heater Diagnosis Complete or incomplete Test of oxygen sensor heater O2 Heater Diagnosis Complete or incomplete Test of oxygen sensor Complete or incomplete Test of oxygen sensor Complete or incomplete Test of evaporative purge system No support Test of evaporative purge system No support Test of air conditioning system refrigerant A/C system refrigerant No support Test of oxygen sensor Complete or incomplete Test of evaporative purge system No support Test of evaporative purge system Complete or incomplete Test of evaporative purge system No support Test of evaporative purge system Complete or incomplete Test of evaporative purge system No support Test of evaporative purge system Complete or incomp	Contents	Display	Unit of measure
Monitoring test of misfire Monitoring test of fuel system Fuel system monitoring Complete or incomplete Monitoring test of comprehensive component Component monitoring Complete or incomplete Monitoring test of comprehensive component Component monitoring Complete or incomplete Bott of catalyst Catalyst Diagnosis Complete or incomplete Test of heated catalyst Heated catalyst Heated catalyst No support Test of evaporative emission purge control system Evaporative purge system Secondary air system Secondary air system No support Test of incomplete or incomplete Test of air conditioning system refrigerant A/C system refrigerant No support Test of air conditioning system refrigerant A/C system refrigerant No support Test of oxygen sensor Oxygen sensor Complete or incomplete Test of oxygen sensor beater Coypen sensor Complete or incomplete Test of oxygen sensor heater Doyen sensor Complete or incomplete Test of EGR system No support Test of EGR system Rosupport Test of EGR system Calculated load value Self system for bank 1 Fuel System for Bank 1	Number of DTC	Number of DTC	_
Monitoring test of fuel system Fuel system monitoring Complete or incomplete Monitoring test of comprehensive component Component monitoring Complete or incomplete Test of catalyst Catalyst Diagnosis Complete or incomplete Test of heated catalyst Heated catalyst No support Test of evaporative emission purge control system Evaporative purge system Complete or incomplete 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 Complete or incomplete Test of oxygen sensor Complete or incomplete Test of oxygen sensor heater O2 Heater Diagnosis Complete or incomplete Test of oxygen sensor heater EGR system No support Test of EGR system EGR system No support Air fuel ratio control system for bank 1 Fuel System for Bank 1 — Engine load data Calculated load value % Engine coolant temperature signal Coolant Temp. °C or °F Short term fuel trim by front oxygen (A/F) sensor Long term fuel trim B1	Malfunction indicator light status	MI (MIL)	ON or OFF
Monitoring test of comprehensive component Component monitoring Complete or incomplete Test of catalyst Catalyst Diagnosis Complete or incomplete Test of heated catalyst Heated catalyst No support Test of vexporative emission purge control system Evaporative purge system Complete or incomplete 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 Complete or incomplete Test of coxygen sensor Complete or incomplete Test of oxygen sensor heater O ₂ Heater Diagnosis Complete or incomplete Test of EGR system No support Test of EGR system Dosygen sensor Complete or incomplete Test of sygen sensor heater Pug Heater Diagnosis Complete or incomplete Test of EGR system Do xygen sensor Complete or incomplete Test of sygen sensor Complete or incomplete Test of oxygen sensor fear O ₂ Heater Diagnosis Complete or incomplete Test of sygen sensor Complete or incomplete Test of sygen sensor Complete or incomplete Test of sygen sensor Complete o	Monitoring test of misfire	Misfire monitoring	Complete or incomplete
Test of catalyst Test of heated catalyst Test of heated catalyst Test of evaporative emission purge control system Test of evaporative emission purge control system Test of secondary air system Secondary air system Secondary air system No support Test of secondary air system Test of air conditioning system refrigerant A/C system refrigerant No support Test of oxygen sensor Oxygen sensor Complete or incomplete Test of oxygen sensor heater O2 Heater Diagnosis Complete or incomplete Test of feGR system EGR system No support Air fuel ratio control system for bank 1 Fuel System for Fuel trim B1 Fuel System for Bank 1 Fuel System for Fuel trim B1 Fuel System for Bank 1 Fuel System for Fuel trim B1 Fuel System for Bank 1 Fuel System for Fuel trim B1 Fuel System for Bank 1 Fuel System for Bank 1 Fuel System for Fuel trim B1 Fuel System for Bank 1	Monitoring test of fuel system	Fuel system monitoring	Complete or incomplete
Test of heated catalyst Test of evaporative emission purge control system Est of evaporative emission purge control system Est 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 Complete or incomplete Test of oxygen sensor Complete or incomplete Test of oxygen sensor heater O ₂ Heater Diagnosis Complete or incomplete Test of EGR system EGR system No support Air fuel ratio control system for bank 1 Fuel System for Bank	Monitoring test of comprehensive component	Component monitoring	Complete or incomplete
Test of evaporative emission purge control system Test of secondary air system Secondary air system No support Test of air conditioning system refrigerant A/C system refrigerant No support Test of oxygen sensor Oxygen sensor Complete or incomplete Test of oxygen sensor heater Set of oxygen sensor heater Test of oxygen sensor heater Test of EGR system A/C system for Bank 1 Fuel System for	Test of catalyst	Catalyst Diagnosis	Complete or incomplete
Test of secondary air system Secondary air system No support A/C system refrigerant A/C system refrigerant No support Test of air conditioning system refrigerant A/C system refrigerant No support Test of oxygen sensor Oxygen sensor Complete or incomplete Test of oxygen sensor heater EGR system EGR system Air fuel ratio control system for bank 1 Engine load data Engine load data Colaulated load value Engine coolant temperature signal Coolant Temp. Coolant Temp. Cor or F Short term fuel trim by front oxygen (A/F) sensor Short term fuel trim B1 % Long term fuel trim B1 % Intake manifold absolute pressure signal Mani. Absolute Pressure Engine Speed ImmHg or kPa or inHg or psi Engine speed signal Vehicle Speed km/h or MPH Ignition timing advance for #1 cylinder Intake air temperature signal Intake Air Temp. Cor or F Intake air amount Mass Air Flow g/s Throttle opsition signal Oxygen sensor #11 Oxygen sensor #12 Oxygen sensor #14 Oxygen sensor #15 Oxygen sensor #16 Oxygen sensor #17 Oxygen sensor #18 Oxygen sensor #19 Oxygen sensor #19 Oxygen sensor #10	Test of heated catalyst	Heated catalyst	No support
Test of air conditioning system refrigerant A/C system refrigerant No support Test of oxygen sensor Oxygen sensor Ozygen sensor Complete or incomplete Test of oxygen sensor heater Ozygen sensor EGR system Ro support Air fuel ratio control system for bank 1 Engine load data Calculated load value % Engine coolant temperature signal Coolant Temp. 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 Engine speed signal Engine speed signal Vehicle speed Km/h or MPH Ignition timing advance for #1 cylinder Intake air temperature signal Intake Air Temp. "C or °F Intake air amount Mass Air Flow g/s Throttle position signal Throttle Opening Angle Oxygen sensor #11 Oxygen sensor #12 Oxygen Sensor #11 Oxygen Sensor #12 Oxygen Sensor #13 Oxygen Sensor #14 Oxygen Sensor #15 Oxygen Sensor #16 Oxygen Sensor #17 Oxygen Sensor #18 Oxygen Sensor #19 Oxygen Sensor #19 Oxygen Sensor #10 Oxygen Sen	Test of evaporative emission purge control system	Evaporative purge system	Complete or incomplete
Test of oxygen sensor Oxygen sensor Oxygen sensor Oghete or incomplete Test of oxygen sensor heater Oghete or incomplete Test of EGR system EGR system EGR system No support Air fuel ratio control system for bank 1 Engine load data Calculated load value % Engine coolant temperature signal Coolant Temp. Short term fuel trim by front oxygen (A/F) sensor Long term fuel trim B1 % Intake manifold absolute pressure signal Engine speed signal Engine speed signal Engine speed signal Vehicle speed km/h or MPH Ignition timing advance for #1 cylinder Intake air temperature signal Intake air temperature signal Throttle position signal Oxygen sensor #11 Oxygen sensor #12 On-board diagnostic system ORD OXPEN Complete or incomplete Complete or incomplete EGR system No support	Test of secondary air system	Secondary air system	No support
Test of oxygen sensor heater O ₂ Heater Diagnosis Complete or incomplete Test of EGR system EGR system No support Air fuel ratio control system for bank 1 Engine load data Calculated load value % Engine coolant temperature signal Coolant Temp. Short term fuel trim by front oxygen (A/F) sensor Long term fuel trim B1 % Long term fuel trim by front oxygen (A/F) sensor Long term fuel trim B1 % Intake manifold absolute pressure signal Engine Speed Engine Speed Intake manifold absolute pressure signal Engine Speed Engine Speed Intake air amount Intake air temperature signal Intake air remperature signal Intake air remperature signal Intake air remperature signal Intake air amount Mass Air Flow Oxygen Sensor #11 Oxygen Sensor #11 Oxygen Sensor #12 Air fuel ratio correction by rear oxygen sensor OBD System CARB-OBD2 A/F sensor output signal A/F sensor utput signal Oxygen Sensor #11 Venical Speed Conplete or incomplete EGR system No support Air fuel ratio correction by rear oxygen sensor OBD System OBD System ORD System ORD System CARB-OBD2 A/F sensor autput signal	Test of air conditioning system refrigerant	A/C system refrigerant	No support
Test of EGR system Air fuel ratio control system for bank 1 Engine load data Calculated load value % Engine coolant temperature signal Coolant Temp. Cor °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 Engine speed signal Engine speed signal Vehicle speed gignal Vehicle speed gignal Intake air temperature signal Intake air temperature signal Intake air temperature signal Intake air amount Mass Air Flow Goxygen sensor #11 Oxygen sensor #11 Oxygen sensor #12 Rear oxygen sensor output signal Orboard diagnostic system OBD System Calculated load value % Calculated load value % Calculated load value % Calculated load value % Cor °F Short term fuel trim B1 % Mani. Absolute Pressure mmHg or kPa or inHg or psi mmHg or kPa or inHg or psi psi mmHg or kPa or inHg or psi psi mmHg or kPa or inHg or psi mmHg or kPa mmHg or kPa or inHg or psi mmHg	Test of oxygen sensor	Oxygen sensor	Complete or incomplete
Air fuel ratio control system for bank 1 Engine load data Calculated load value % Engine coolant temperature signal Coolant Temp. Cor or F Short term fuel trim by front oxygen (A/F) sensor Long term fuel trim B1 % Intake manifold absolute pressure signal Engine speed signal Vehicle speed Intake air temperature signal Intake air amount Throttle position signal Coxygen sensor #11 Oxygen sensor with Oxygen sensor output signal Air fuel ratio correction by rear oxygen sensor Or or F Fuel System for Bank 1 — Calculated load value % Calculated load value % Colant Temp. Colant Temp. Colant Temp. Colant Temp. Air fuel trim B1 % Mani. Absolute pressure Manil Also	Test of oxygen sensor heater	O ₂ Heater Diagnosis	Complete or incomplete
Engine load data Calculated load value % Engine coolant temperature signal Coolant Temp. Short term fuel trim by front oxygen (A/F) sensor Short term fuel trim B1 % Long term fuel trim by front oxygen (A/F) sensor Long term fuel trim B1 % Intake manifold absolute pressure signal Mani. Absolute Pressure mmHg or kPa or inHg or psi Engine speed signal Engine Speed rpm Vehicle speed signal Vehicle Speed km/h or MPH Ignition timing advance for #1 cylinder Intake air temperature signal Intake air amount Mass Air Flow g/s Throttle position signal Oxygen sensor #11 Oxygen sensor #11 Oxygen sensor #12 Rear oxygen sensor output signal Oxygen Sensor #12 Oxygen Sensor #10 Oxygen Sensor #11 Oxygen Sensor #11 Oxygen Sensor #12 Oxygen Se	Test of EGR system	EGR system	No support
Engine coolant temperature signal Coolant Temp. Short term fuel trim by front oxygen (A/F) sensor Long 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 Engine speed signal Engine speed signal Vehicle speed signal Vehicle Speed Vehicle Speed Intake air temperature signal Intake air temperature signal Intake air Temp. Cor °F Intake air amount Mass Air Flow Throttle position signal Oxygen sensor #11 Oxygen sensor #12 Rear oxygen sensor output signal Oxygen Sensor #12 Air fuel ratio correction by rear oxygen sensor On-board diagnostic system OBD System A/F sensor output signal Oxygen #11 V Colant Temp. Colant Temp. Colant Temp. Colant Temp. Challed Tim B1 Mass Air Flow Intake Air Temp. Colant T	Air fuel ratio control system for bank 1	Fuel System for Bank 1	_
Short term fuel trim by front oxygen (A/F) sensor Long term fuel trim B1 % Long term fuel trim B1 % Intake manifold absolute pressure signal Engine speed signal Engine Speed From Vehicle speed signal Vehicle Speed Intake air temperature signal Intake air amount Throttle position signal Coxygen sensor #11 Oxygen sensor #12 Rear oxygen sensor output signal A/F sensor output signal Short term fuel trim B1 % Short term fuel trim B1 % Mani. Absolute Pressure mmHg or kPa or inHg or psi mmHg or heta sugar suga	Engine load data	Calculated load value	%
Long term fuel trim by front oxygen (A/F) sensor Intake manifold absolute pressure signal Engine speed signal Engine Speed Engine Speed Frpm Vehicle Speed signal Vehicle Speed km/h or MPH Ignition timing advance for #1 cylinder Intake air temperature signal Intake Air Temp. Cor °F Intake air amount Mass Air Flow Gys Throttle position signal Oxygen sensor #11 Oxygen sensor #12 Rear oxygen sensor output signal On-board diagnostic system A/F sensor output signal Long term fuel trim B1 % mmHg or kPa or inHg or psil or kPa or inHg or psi mmHg or kPa or inHg or psil or kPa or inHg or psi mmHg or kPa or inHg or psil or kPa or inHg or psi mmHg or kPa or inHg or psil or kPa or inHg or psi mmHg or kPa or inHg or psil or kPa or inHg or kPa or inHg or kPa or inHg or kPa or inHg or psil or kPa or inHg or kPa or inHg or psil or kPa or inHg or	Engine coolant temperature signal	Coolant Temp.	°C or °F
Intake manifold absolute pressure signal Engine speed signal Engine Speed Engine Speed Frpm Vehicle Speed Ignition timing advance for #1 cylinder Intake air temperature signal Intake air Temp. Intake a	Short term fuel trim by front oxygen (A/F) sensor	Short term fuel trim B1	%
Engine speed signal Engine Speed Frpm Vehicle speed signal Ignition timing advance for #1 cylinder Intake air temperature signal Intake air amount Intake air amount Interesting Speed Intake Air Temp. Cor °F Intake air amount Mass Air Flow Gys Throttle position signal Oxygen sensor #11 Oxygen sensor #11 Oxygen Sensor #12 Rear oxygen sensor output signal Oxygen Sensor #12 Air fuel ratio correction by rear oxygen sensor OBD System OAF sensor output signal A/F sensor output signal A/F sensor utput signal Vehicle Speed Intake Air Flow Mass Air Flow Gys Gro °F Air fuel ratio correction by rear oxygen sensor Oxygen Sensor #11 Oxygen Sensor #12 V On-board diagnostic system OBD System CARB-OBD2 A/F sensor output signal	Long term fuel trim by front oxygen (A/F) sensor	Long term fuel trim B1	%
Vehicle speed signalVehicle Speedkm/h or MPHIgnition timing advance for #1 cylinderIgnition timing adv. #1°Intake air temperature signalIntake Air Temp.°C or °FIntake air amountMass Air Flowg/sThrottle position signalThrottle Opening Angle%Oxygen sensor #11Oxygen Sensor #11—Oxygen sensor #12Oxygen Sensor #12—Rear oxygen sensor output signalOxygen Sensor #12VAir fuel ratio correction by rear oxygen sensorShort term fuel trim #12%On-board diagnostic systemOBD SystemCARB-OBD2A/F sensor utput signalA/F sensor #11V	Intake manifold absolute pressure signal	Mani. Absolute Pressure	
Ignition timing advance for #1 cylinder Intake air temperature signal Intake air amount Mass Air Flow Gv or °F Intake air amount Throttle position signal Oxygen sensor #11 Oxygen Sensor #11 Oxygen Sensor #12 Rear oxygen sensor output signal Air fuel ratio correction by rear oxygen sensor OBD System Oxygen #11 V	Engine speed signal	Engine Speed	rpm
Intake air temperature signal Intake air amount Mass Air Flow Gys Throttle position signal Throttle Opening Angle Oxygen sensor #11 Oxygen Sensor #11 Oxygen Sensor #12 Rear oxygen sensor output signal Air fuel ratio correction by rear oxygen sensor On-board diagnostic system A/F sensor output signal Intake Air Temp. Oxygen Oxygen Oxygen Air Flow Oxygen Sensor #10 Oxygen Sensor #11 Oxygen Sensor #12 V On-board diagnostic system OBD System CARB-OBD2 A/F sensor output signal	Vehicle speed signal	Vehicle Speed	km/h or MPH
Intake air amount Mass Air Flow Throttle position signal Oxygen sensor #11 Oxygen sensor #11 Oxygen sensor #12 Rear oxygen sensor output signal Air fuel ratio correction by rear oxygen sensor On-board diagnostic system A/F sensor output signal A/F sensor #11 Oxygen Sensor #12 V CARB-OBD2 A/F sensor output signal A/F sensor #11 V	Ignition timing advance for #1 cylinder	Ignition timing adv. #1	
Throttle position signal Oxygen sensor #11 Oxygen sensor #11 Oxygen sensor #12 Oxygen Sensor #12 Rear oxygen sensor output signal Oxygen Sensor #12 V Air fuel ratio correction by rear oxygen sensor Short term fuel trim #12 On-board diagnostic system OBD System OBD System OKARB-OBD2 A/F sensor output signal	Intake air temperature signal	Intake Air Temp.	°C or °F
Oxygen sensor #11 Oxygen Sensor #11 — Oxygen sensor #12 Oxygen Sensor #12 — Rear oxygen sensor output signal Oxygen Sensor #12 V Air fuel ratio correction by rear oxygen sensor Short term fuel trim #12 % On-board diagnostic system OBD System CARB-OBD2 A/F sensor output signal A/F sensor #11 V	Intake air amount	Mass Air Flow	g/s
Oxygen sensor #12 Oxygen Sensor #12 — Rear oxygen sensor output signal Oxygen Sensor #12 V Air fuel ratio correction by rear oxygen sensor Short term fuel trim #12 % On-board diagnostic system OBD System CARB-OBD2 A/F sensor output signal A/F sensor #11 V	Throttle position signal	Throttle Opening Angle	%
Rear oxygen sensor output signal Oxygen Sensor #12 V Air fuel ratio correction by rear oxygen sensor Short term fuel trim #12 % On-board diagnostic system OBD System CARB-OBD2 A/F sensor output signal A/F sensor #11 V	Oxygen sensor #11	Oxygen Sensor #11	_
Air fuel ratio correction by rear oxygen sensor On-board diagnostic system OBD System CARB-OBD2 A/F sensor output signal V	Oxygen sensor #12	Oxygen Sensor #12	_
On-board diagnostic system OBD System CARB-OBD2 A/F sensor output signal A/F sensor #11 V	Rear oxygen sensor output signal	Oxygen Sensor #12	V
A/F sensor output signal A/F sensor #11 V	Air fuel ratio correction by rear oxygen sensor	Short term fuel trim #12	%
	On-board diagnostic system	•	CARB-OBD2
A/F lambda signal A/F sensor #11 —	A/F sensor output signal	A/F sensor #11	V
	A/F lambda signal	A/F sensor #11	_

NOTE:

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 is 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 the 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	Closed loop or Open loop
Engine load data	Calculated load value	%
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:

7. LED OPERATION MODE FOR ENGINE

- Eris Studios 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] kev.
- 3) Press the [YES] key after the information of engine type is displayed.
- 4) On the «Engine Diagnosis» display screen, select the {Current Data Display & Save} and press the [YES]
- 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.

Ignition switch signal Test Mode Signal Neutral position switch signal Air conditioning switch signal Air conditioning relay signal Radiator main fan relay signal Knocking signal Knocking signal Radiator sub fan relay signal Engine torque control signal #1 Ignition Switch ON or OFF When ignition ON or OFF When neutral ON or OFF When air cond ON or OFF When air cond ON or OFF When radiator	D "ON" requirements switch is turned to ON. de connector is connected. position signal is entered. ditioning switch is turned ON. ditioning relay is in function. main fan relay is in function. g signal is entered. sub fan relay is in function.
Test mode signal Test Mode Signal ON or OFF When test mode signal Neutral position switch signal Air conditioning switch signal Air conditioning switch signal Air conditioning relay signal Air conditioning switch Air conditioning switch ON or OFF When air conditioning switch Air conditioning switch Air conditioning switch Air conditioning switch ON or OFF When air conditioning switch Air conditioning switch Air conditioning switch Air conditioning switch ON or OFF When air conditioning switch Air conditioning switch Air conditioning switch Air conditioning switch ON or OFF When test model Air conditioning switch Air co	de connector is connected. position signal is entered. ditioning switch is turned ON. ditioning relay is in function. main fan relay is in function. g signal is entered.
Neutral position switch signal Air conditioning switch signal Air conditioning switch signal Air conditioning relay signal Air Compressor Signal ON or OFF When radiator When radiator Conditioning switch signal Air conditioning	position signal is entered. ditioning switch is turned ON. ditioning relay is in function. main fan relay is in function. g signal is entered.
Air conditioning switch signal A/C Switch ON or OFF When air conditioning relay signal A/C Compressor Signal ON or OFF When air conditioning relay signal Radiator main fan relay signal Radiator Fan Relay #1 ON or OFF When radiator When knocking Signal Engine torque control signal #1 Torque Control Signal #1 ON or OFF When radiator When engine entered.	ditioning switch is turned ON. ditioning relay is in function. main fan relay is in function. g signal is entered.
Air conditioning relay signal Radiator main fan relay signal Radiator Fan Relay #1 ON or OFF When air cond Radiator main fan relay signal Knocking Signal Radiator Signal Radiator Fan Relay #2 ON or OFF When knocking Radiator Signal Engine torque control signal #1 Torque Control Signal #1 ON or OFF When radiator When engine intered.	ditioning relay is in function. r main fan relay is in function. g signal is entered.
Radiator main fan relay signal Radiator Fan Relay #1 ON or OFF When radiator Knocking signal Knocking Signal ON or OFF When knockin Radiator sub fan relay signal Radiator Fan Relay #2 ON or OFF When radiator Engine torque control signal #1 Torque Control Signal #1 ON or OFF When engine entered.	main fan relay is in function. g signal is entered.
Knocking signal Knocking Signal ON or OFF When knocking Radiator sub fan relay signal Radiator Fan Relay #2 ON or OFF When radiator Engine torque control signal #1 Torque Control Signal #1 ON or OFF When engine entered.	g signal is entered.
Radiator sub fan relay signal Radiator Fan Relay #2 ON or OFF When radiator Engine torque control signal #1 Torque Control Signal #1 ON or OFF When engine entered.	
Engine torque control signal #1 Torque Control Signal #1 ON or OFF When engine entered.	cub fan rolay is in function
Engine torque control signal #1 Torque Control Signal #1 ON or OFF entered.	oub lait letay to itt tuttetiott.
Engine torque control signal #2 Torque Control Signal #2 ON or OFF When engine	torque control signal 1 is
entered.	torque control signal 2 is
Engine torque control permission signal Torque Control Permission ON or OFF When engine nal is entered.	torque control permission sig-
Rear oxygen sensor rich signal Rear O ₂ Rich Signal ON or OFF When rear oxyrich.	ygen sensor mixture ratio is
Starter switch signal Starter Switch Signal ON or OFF When starter s	switch signal is entered.
Idle switch signal Idle Switch Signal ON or OFF When idle switch signal	tch signal is entered.
Crankshaft position sensor signal	naft position sensor signal is
Camshaft position sensor signal Camshaft Position Signal ON or OFF When camshaft entered.	aft position sensor signal is
Power steering switch signal P/S Switch ON or OFF When power s	steering switch is entered.
Rear defogger switch signal Rear Defogger Switch ON or OFF When rear def	fogger switch is turned ON.
Blower fan switch signal Blower Fan Switch ON or OFF When blower fan Switch	fan switch is turned ON.
Small light switch signal Light Switch ON or OFF When small light	ght switch is turned ON.
Tumble generator valve actuator signal TGV Output ON or OFF When TGV ac	stuator signal is entered.
Tumble generator valve drive signal TGV Drive Close or Open When TGV mo	oves and valve opens.
Fuel pressure control solenoid	ssure control solenoid valve is
Drain valve signal Vent. Solenoid Valve ON or OFF When drain va	alve is in function.
AT/MT identification signal AT Vehicle ID Signal ON or OFF When AT vehicle	cle is checked.
Fuel tank sensor control solenoid valve signal Fuel Tank Sensor Ctrl Valve ON or OFF When tank sen function.	nsor control solenoid valve is in
Blow-by leak diagnosis SW Blow-by Leak Connector ON or OFF When connect	

NOTE:

8. READ CURRENT DATA FOR AT

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

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

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

11.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 Control System} and press the [YES] key.
- 3) Press the [YES] key after the information of engine type is displayed.
- 4) On the «Engine Diagnosis» display screen, select the {DTC Display} and press the [YES] key.
- 5) On the «DTC Display» display screen, select the {Current DTC} or {History DTC} and press the [YES] key.

NOTE:

- For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MAN-UAL.
- For detailed concerning DTC, refer to the List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4DOTC)(diag)-71, List of Diagnostic Trouble Code (DTC).>

2. SUBARU SELECT MONITOR (OBD MODE)

- 1) On the «Main Menu» display screen, select the {2. Each System Check} and press 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 is 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 that a DTC is shown on the display screen.

NOTE:

- · For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MAN-UAL.
- · For detailed concerning DTC, refer to the List of <Ref. to Diagnostic Trouble Code (DTC). EN(H4DOTC)(diag)-71, List of Diagnostic Trouble Code (DTC).>

3. OBD-II GENERAL SCAN TOOL train DTC.

For details concerning DTC, refer to the List of Di-Trouble Code (DTC). agnostic EN(H4DOTC)(diag)-71, List of Diagnostic Trouble Code (DTC).>

NOTE:

Refer to OBD-II general scan tool manufacturer's instruction manual to access emission-related powertrain DTC (MODE \$03).

12.Inspection Mode

A: PROCEDURE

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(H4DOTC)(diag)-44, Drive Cycle.>

DTC	Item	Condition
P0030	HO2S Heater Control Circuit (Bank 1 Sensor 1)	ı
P0031	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)	_
P0032	HO2S Heater Control Circuit High (Bank 1 Sensor 1)	1
P0037	HO2S Heater Control Circuit Low (Bank 1 Sensor 2)	
P0038	HO2S Heater Control Circuit High (Bank 1 Sensor 2)	1
P0102	Mass or Volume Air Flow Circuit Low Input	1
P0103	Mass or Volume Air Flow Circuit High Input	1
P0107	Manifold Absolute Pressure/Barometric Pressure Circuit Low Input	ı
P0108	Manifold Absolute Pressure/Barometric Pressure Circuit High Input	ı
P0112	Intake Air Temperature Circuit Low Input	
P0113	Intake Air Temperature Circuit High Input	
P0117	Engine Coolant Temperature Circuit Low Input	ı
P0118	Engine Coolant Temperature Circuit High Input	ı
P0122	Throttle/Pedal Position Sensor/Switch "A" Circuit Low Input	ı
P0123	Throttle/Pedal Position Sensor/Switch "A" Circuit High Input	ı
P0129	Atmospheric Pressure Sensor Circuit Range/Performance	ı
P0130	O ₂ Sensor Circuit (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)	ı
P0182	Fuel Temperature Sensor "A" Circuit Low Input	1
P0183	Fuel Temperature Sensor "A" Circuit High Input	_
P0230	Fuel Pump Primary Circuit	-
P0245	Turbo/Super Charger Wastegate Solenoid "A" Low	_
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	_
P0336	Crankshaft Position Sensor "A" Circuit Range/Performance	_
P0340	Camshaft Position Sensor "A" Circuit (Bank 1 or Single Sensor)	_
P0341	Camshaft Position Sensor "A" Circuit Range/Performance (Bank 1 or Single Sensor)	
P0447	Evaporative Emission Control System Vent Control Circuit Open	_
P0448	Evaporative Emission Control System Vent Control Circuit Shorted	_
P0452	Evaporative Emission Control System Pressure Sensor Low Input	
P0453	Evaporative Emission Control System Pressure Sensor High Input	
P0458	Evaporative Emission Control System Purge Control Valve Circuit Low	_
P0462	Fuel Level Sensor Circuit Low Input	-
P0463	Fuel Level Sensor Circuit High Input	_
P0502	Vehicle Speed Sensor Circuit Low Input	_
P0503	Vehicle Speed Sensor Intermittent/Erratic/High	_
P0508	Idle Control System Circuit Low	_
P0509	Idle Control System Circuit High	
P0512	Starter Request Circuit	
P0519	Idle Control System Malfunction (Fail-Safe)	

		For Y Erica
DTC	Item	Condition
P0545	Exhaust Gas Temperature Sensor Circuit Low - Bank 1	- LSALE
P0565	Cruise Control On Signal	_
P0604	Internal Control Module Random Access Memory (RAM) Error	_
P0691	Cooling Fan 1 Control Circuit Low	<u> </u>
P0703	Torque Converter/Brake Switch "B" Circuit	_
P0705	Transmission Range Sensor Circuit (PRNDL Input)	-
P0710	Transmission Fluid Temperature Sensor Circuit	<u> </u>
P0716	Torque Converter Turbine Speed Sensor	<u> </u>
P0720	Output Speed Sensor Circuit	<u> </u>
P0726	Engine Speed Input Circuit Range/Performance	<u> </u>
P0731	Gear 1 Incorrect Ratio	_
P0732	Gear 2 Incorrect Ratio	_
P0733	Gear 3 Incorrect Ratio	_
P0734	Gear 4 Incorrect Ratio	_
P0741	Torque Converter Clutch Circuit Performance or Stuck Off	_
P0743	Torque Converter Clutch Circuit Electrical	_
P0748	Pressure Control Solenoid "A" Electrical	_
P0753	Shift Solenoid "A" Electrical	_
P0758	Shift Solenoid "B" Electrical	_
P0771	Low Clutch Timing Solenoid	_
P0778	Pressure Control Solenoid "B" Electrical	_
P0785	Shift/Timing Solenoid	_
P0851	Neutral Switch Input Circuit Low	_
P0852	Neutral Switch Input Circuit High	_
P0864	TCM Communication Circuit Range/Performance	_
P0865	TCM Communication Circuit Low	_
P0866	TCM Communication Circuit High	_
P1086	Tumble Generated Valve Position Sensor 2 Circuit Low	_
P1087	Tumble Generated Valve Position Sensor 2 Circuit High	_
P1088	Tumble Generated Valve Position Sensor 1 Circuit Low	_
P1089	Tumble Generated Valve Position Sensor 1 Circuit High	_
P1091	Tumble Generated Valve System 1 (Valve Close)	_
P1093	Tumble Generated Valve System 2 (Valve Close)	_
P1094	Tumble Generated Valve Signal 1 Circuit Malfunction (Open)	_
P1095	Tumble Generated Valve Signal 1 Circuit Malfunction (Short)	_
P1096	Tumble Generated Valve Signal 2 Circuit Malfunction (Open)	_
P1097	Tumble Generated Valve Signal 2 Circuit Malfunction (Short)	_
P1110	Atmospheric Pressure sensor circuit malfunction (Low input)	_
P1111	Atmospheric Pressure sensor circuit malfunction (High input)	_
P1134	A/F Sensor Micro-Computer Problem	_
P1152	O ₂ Sensor Circuit Range/Performance (Low) (Bank1 Sensor1)	_
P1153	O ₂ Sensor Circuit Range/Performance (High) (Bank1 Sensor1)	_
P1400	Fuel Tank Pressure Control Solenoid Valve Circuit Low	_
P1420	Fuel Tank Pressure Control Sol. Valve Circuit High	_
P1446	Fuel Tank Sensor Control Valve Circuit Low	_
P1447	Fuel Tank Sensor Control Valve Circuit Low	
P1447	Positive Crankcase Ventilation (Blow-by) Function Problem	
P1518	Starter Switch Circuit Low Input	_
P1516	Exhaust Gas Temperature Too High	
P1544	Back-up Voltage Circuit Malfunction	
P1700	Throttle Position Sensor	
1 1/00	THIOTHE LOSHIOLI GELISOI	_

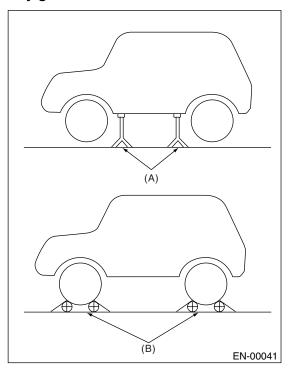
	B_{rov}		
	Inspection Mode	ENGINE (DIAGNOSTICS)	
DTC	Item	Condition	
P1711	Engine Torque Control Signal 1 Circuit Malfunction	- TESAI F	
P1712	Engine Torque Control Signal 2 Circuit Malfunction		

1. PREPARATION FOR THE INSPECTION MODE

- 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 the battery voltage is 12 V or more.
- 2) Raise the vehicle using a garage jack and place on safety stands or drive the vehicle onto free rollers.

WARNING:

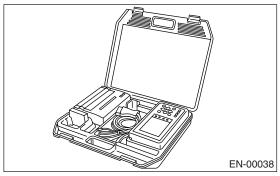
- Before raising the vehicle, ensure the parking brake is applied.
- Do not use a pantograph jack in place of a safety stand.
- Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runout of front wheels.
- Do not abruptly depress/release the clutch pedal or accelerator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



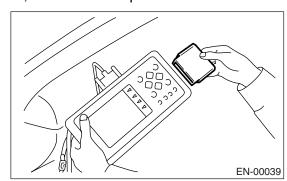
- (A) Safety stand
- (B) Free rollers

2. SUBARU SELECT MONITOR

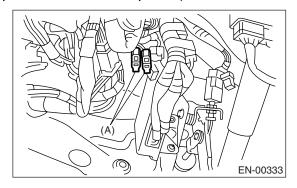
- 1) Warm up the engine.
- 2) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOTC)(diag)-8, PREPARATION TOOL, General Description.>



- 3) Connect the diagnosis cable to Subaru Select Monitor.
- 4) Insert the cartridge into Subaru Select Monitor. <Ref. to EN(H4DOTC)(diag)-8, PREPARATION TOOL, General Description.>

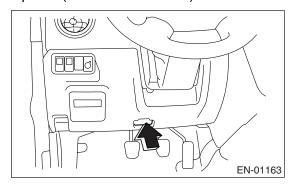


5) Connect the test mode connector (A) at the lower portion of instrument panel (on the driver's side).



(A) Test mode connector

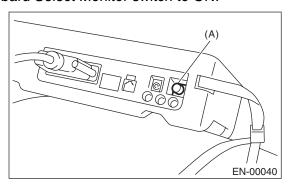
6) Connect the Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side).



CAUTION:

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

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



(A) Power switch

- 8) On the «Main Menu» display screen, select the {2. Each System Check} and press the [YES] key.
- 9) On the «System Selection Menu» display screen, select the {Engine Control System} and press the [YES] key.
- 10) Press the [YES] key after the information of engine type is displayed.
- 11) On the «Engine Diagnosis» display screen, select the {Dealer Check Mode Procedure} and press the [YES] key.
- 12) When the "Perform Inspection (Dealer Check) Mode?" is shown on the display screen, press the [YES] key.
- 13) Perform subsequent procedures as instructed on the display screen.
- If trouble still remains in the memory, the corresponding DTC appears on the display screen.

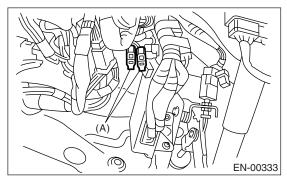
NOTE:

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

- Mode
 For detailed concerning the DTC, refer to the List of Diagnostic Trouble Code (DTC).
- <Ref. to EN(H4DOTC)(diag)-71, List of Diagnostic Trouble Code (DTC).>
- Release the parking brake.
- The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When the engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system.

3. OBD-II GENERAL SCAN TOOL

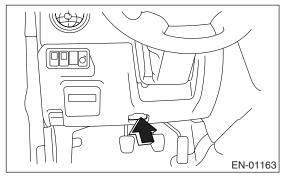
- 1) Warm up the engine.
- 2) Connect the test mode connector (A) at the lower side of instrument panel (on the driver's side).



3) 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.



4) Start the engine.

NOTE:

- Ensure the select lever is placed in "P" range before starting. (AT model)
- Depress the clutch pedal when starting engine. (MT model)
- 5) Using the select lever or shift lever, turn the "P" position switch and "N" position switch to ON.
- 6) Depress the brake pedal to turn brake switch ON. (AT model)

- 7) Keep the engine speed in 2,500 3,000 rpm range for 40 seconds.
- 8) Place the select lever or shift lever in "D" range (AT model) or "1st" gear (MT model) and drive the vehicle at 5 to 10 km/h (3 to 6 MPH).

NOTE:

- On AWD model, 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.
- 9) Using the OBD-II general scan tool, check for DTC and record the result(s).

NOTE:

- For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.
- For detailed concerning DTC, refer to the List of Diagnostic Trouble Code (DTC).
- <Ref. to EN(H4DOTC)(diag)-71, List of Diagnostic Trouble Code (DTC).>

13. Drive Cycle

A: PROCEDURE

AOT FOR RESALE 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 THE DRIVE CYCLE

- 1) Make sure that the fuel remains approx. half amount $[20 40 \ \ell \ (5.3 10.6 \ US \ gal, 4.4 8.8 \ Imp \ gal)]$ and battery voltage is 12 V or more.
- 2) Separate the test mode connector.

NOTF:

- Except for the engine coolant 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	Engine coolant temperature is less than 20°C (68°F) at engine start.
*P0128	Coolant Thermostat	Engine coolant temperature is less than 55°C (131°F) at engine start.
*P0133	O ₂ Sensor Circuit Slow Response (Bank 1 Sensor 1)	_
*P0181	Fuel Temperature Sensor A Performance Problem	_
*P0420	Catalyst System Efficiency Below Threshold (Bank 1)	_
*P0442	Evaporative Emission Control System Leak Detected (small leak)	_
*P0451	Evaporative Emission Control System Pressure Sensor Range/Performance	_
*P0456	Evaporative Emission Control System Leak Detected (very small leak)	_
*P0457	Evaporative Emission Control System Leak Detected (fuel cap loose/off)	_
P0459	Evaporative Emission Control System Purge Control Valve Circuit High	_
P0461	Fuel Level Sensor Circuit Range/Performance	_
P0692	Cooling Fan 1 Control Circuit High	_
P1312	Exhaust Gas Temperature Sensor Malfunction	Engine coolant temperature is less than 40°C (104°F) at engine start.
P1443	Vent Control Solenoid Valve Function Problem	_
*P1448	Fuel Tank Sensor Control Valve Range/Performance	_
*P2096	Post Catalyst Fuel Trim System Too Lean Bank 1	_
*P2097	Post Catalyst Fuel Trim System Too Rich Bank 1	_

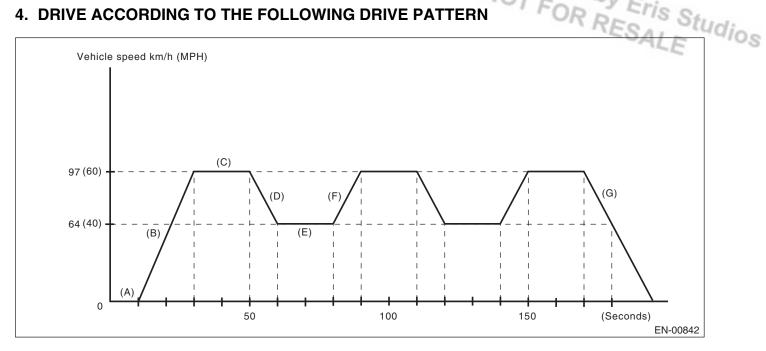
3. IDLE FOR 10 MINUTES

NOTE:

Before the diagnosis, drive the vehicle at 10 km/h (6 MPH) or more.

DTC	Item	Condition
*P0111	Intake Air Temperature Sensor Range/Performance Problem	Engine coolant temperature is less than 30°C (86°F) at engine start.
P0171	System too Lean (Bank 1)	_
P0172	System too Rich (Bank 1)	_
*P0464	Fuel Level Sensor Circuit Intermittent	_
*P0483	Cooling Fan Rationality Check	_
*P0506	Idle Control System RPM Lower Than Expected	_
*P0507	Idle Control System RPM Higher Than Expected	_
P0546	Exhaust Gas Temperature Sensor Circuit High-Bank 1	_

4. DRIVE ACCORDING TO THE FOLLOWING DRIVE PATTERN



- (A) Idle engine for 10 seconds or more.
- (B) Accelerate to 97 km/h (60 MPH) within 20 seconds.
- Drive vehicle at 97 km/h (60 MPH) (C) for 20 seconds.
- (D) Decelerate with fully closed throttle to 64 km/h (40 MPH).
- (E) Drive vehicle at 64 km/h (40 MPH) for 20 seconds.
- Accelerate to 97 km/h (60 MPH) (F) within 10 seconds.
- Stop vehicle with throttle fully closed.

DTC	Item	Condition
P0068	Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance	_
*P0101	Mass or Volume Air Flow Circuit Range/Performance	_
*P0121	Throttle/Pedal Position Sensor/Switch "A" Circuit Range/Performance	_
*P0139	O ₂ Sensor Circuit Slow Response (Bank 1 Sensor 2)	_
P0244	Turbo/Supercharger Wastegate Solenoid "A" Range/Performance	_
P0246	Turbo/Supercharger Wastegate Solenoid "A" High	_
*P0301	Cylinder 1 Misfire Detected	In some cases, diagnosis may complete at once.
*P0302	Cylinder 2 Misfire Detected	In some cases, diagnosis may complete at once.
*P0303	Cylinder 3 Misfire Detected	In some cases, diagnosis may complete at once.
*P0304	Cylinder 4 Misfire Detected	In some cases, diagnosis may complete at once.
P1090	Tumble Generated Valve System 1 (Valve Open)	_
P1092	Tumble Generated Valve System 2 (Valve Open)	_
P1301	Misfire Detected (High Temperature Exhaust Gas)	_

14.Clear Memory Mode

A: OPERATION

1. SUBARU SELECT MONITOR (NORMAL MODE)

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

NOTE:

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

2. SUBARU SELECT MONITOR (OBD MODE)

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

NOTE:

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

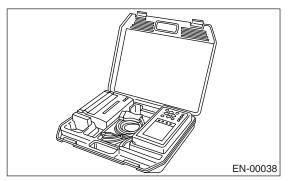
3. OBD-II GENERAL SCAN TOOL

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

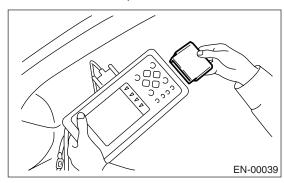
15. Compulsory Valve Operation Check Mode

A: OPERATION

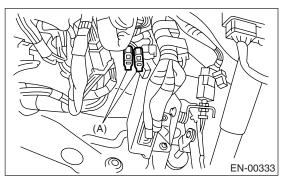
1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOTC)(diag)-8, PREPARATION TOOL, General Description.>



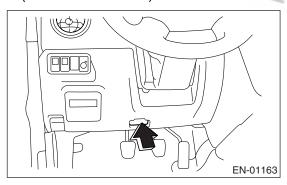
- 2) Connect the diagnosis cable to Subaru Select Monitor.
- 3) Insert the cartridge into Subaru Select Monitor. <Ref. to EN(H4DOTC)(diag)-8, PREPARATION TOOL, General Description.>



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



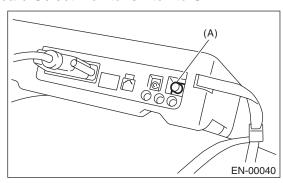
5) Connect the Subaru Select Monitor to data link connector located in the lower portion of instrument panel (on the driver's side).



CAUTION:

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

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



(A) Power switch

- 7) On the «Main Menu» display screen, select the {2. Each System Check} and press the [YES] key.
- 8) On the «System Selection Menu» display screen, select the {Engine Control System} and press the [YES] key.
- Press the [YES] key after the information of engine type is 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 operation check mode. The display will then return to the "Actuator ON/OFF Operation" screen.

• A list of support data is shown in the following ta-

Contents	Display
Compulsory fuel pump relay operation check	Fuel Pump Relay
Compulsory radiator fan relay operation check	Radiator Fan Relay
Compulsory air conditioning relay operation check	A/C Compressor Relay
Compulsory purge control sole- noid valve operation check	CPC Solenoid Valve
Compulsory pressure control sole- noid valve operation check	PCV Solenoid Valve
Compulsory drain valve operation check	Vent. Control Solenoid Valve
Compulsory fuel tank sensor control valve operation check	Fuel Tank Sensor Control Valve

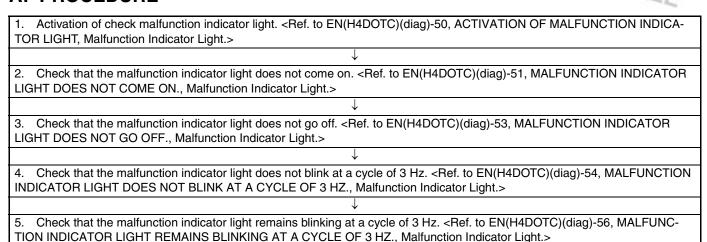
NOTE:

• The following parts will be displayed but not functional because they are not installed on the vehicle.

Display
EGR Solenoid Valve
ASV Solenoid Valve
FICD Solenoid
Pressure Switching Sol. 1
Pressure Switching Sol. 2
AAI Solenoid Valve
Turbocharger Wastegate Solenoid

• For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MAN-UAL.

16.Malfunction Indicator Light A: PROCEDURE

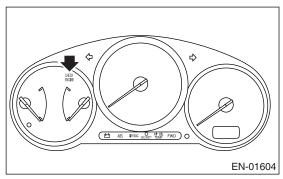


B: ACTIVATION OF MALFUNCTION INDICATOR LIGHT

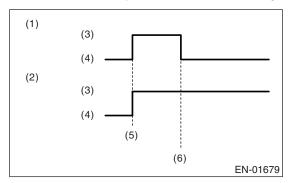
1) When the ignition switch is turned to ON (engine off), the malfunction indicator light in the combination meter illuminates.

NOTE:

If the malfunction indicator light does not illuminate, perform diagnostics of the malfunction indicator light circuit or the combination meter circuit. <Ref. to EN(H4DOTC)(diag)-51, MALFUNCTION INDICATOR LIGHT DOES NOT COME ON., Malfunction Indicator Light.>

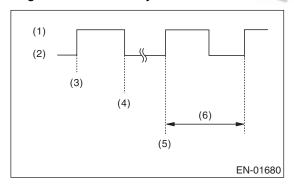


2) After starting the engine, the malfunction indicator light goes out. If it does not, either the engine or the emission control system is malfunctioning.



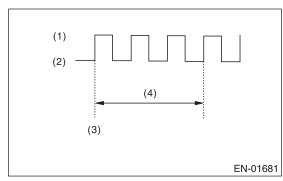
- (1) No trouble
- (2) Trouble occurs
- (3) ON
- (4) OFF
- (5) Ignition switch ON
- (6) Engine start

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



- (1) ON
- (2) OFF
- (3) Ignition switch ON
- (4) Engine start
- (5) Misfire start
- (6) 1 second

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



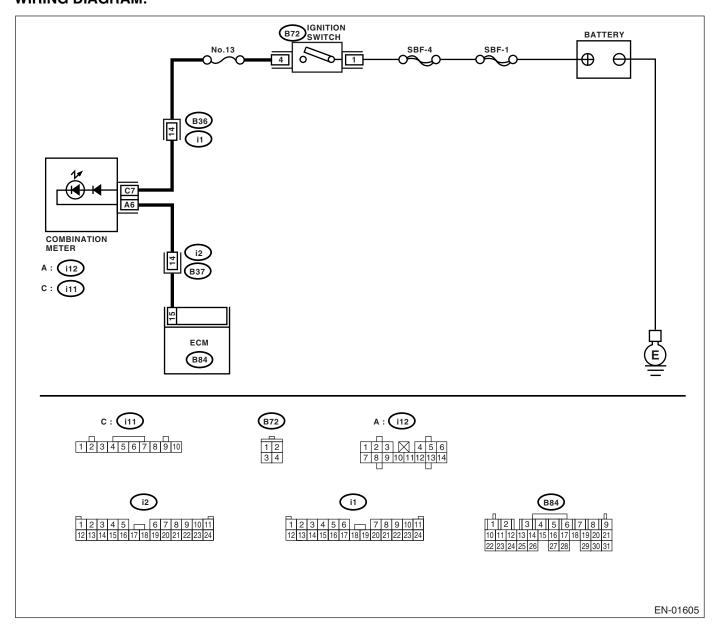
- (1) ON
- (2) OFF
- (3) Ignition switch ON
- (4) 1 second

C: MALFUNCTION INDICATOR LIGHT DOES NOT COME ON. DIAGNOSIS:

The malfunction indicator light circuit is shorted.

TROUBLE SYMPTOM:

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



	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 (B84) No. 15 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 4.	Go to step 2.
2	CHECK POOR CONTACT.	Does the malfunction indicator light come on when shaking or pulling ECM connector and harness?		Go to step 3.

			VI FOR	y Eria
	Step	Check	Yes	No St
3	CHECK ECM CONNECTOR.	Is the ECM connector correctly connected?	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>	Repair the con- nection 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. assembly.="" combination="" idi-10,="" meter="" to=""> 3) Disconnect the connector from ECM and combination meter. 4) Measure the resistance of harness between ECM and combination meter connector. Connector & terminal (B84) No. 15 — (i11) No. 6:</ref.>	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 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 COMBINA- TION METER AND IGNITION SWITCH CON- NECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between combination meter connector and chassis ground. Connector & terminal (i12) No. 7 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Replace the combination meter circuit board. <ref. assembly.="" combination="" idi-10,="" meter="" to=""></ref.>	Check the following and repair if necessary. NOTE: Blown out fuse (No. 13) Open or short circuit in harness between fuse (No. 13) and battery terminal Poor contact in ignition switch connector

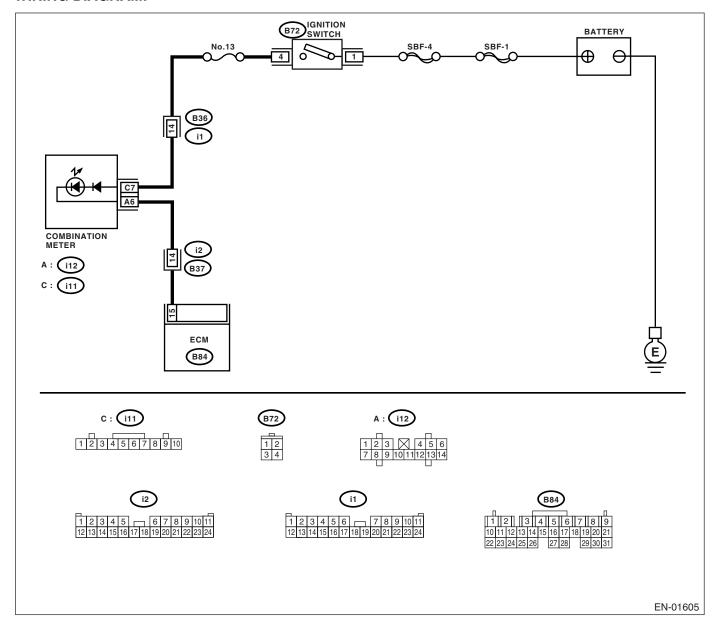
D: MALFUNCTION INDICATOR LIGHT DOES NOT GO OFF.

DIAGNOSIS:

The malfunction indicator light circuit is shorted.

TROUBLE SYMPTOM:

Although malfunction indicator light comes on when engine runs, but DTC is not shown on Subaru Select Monitor or OBD-II general scan tool display.



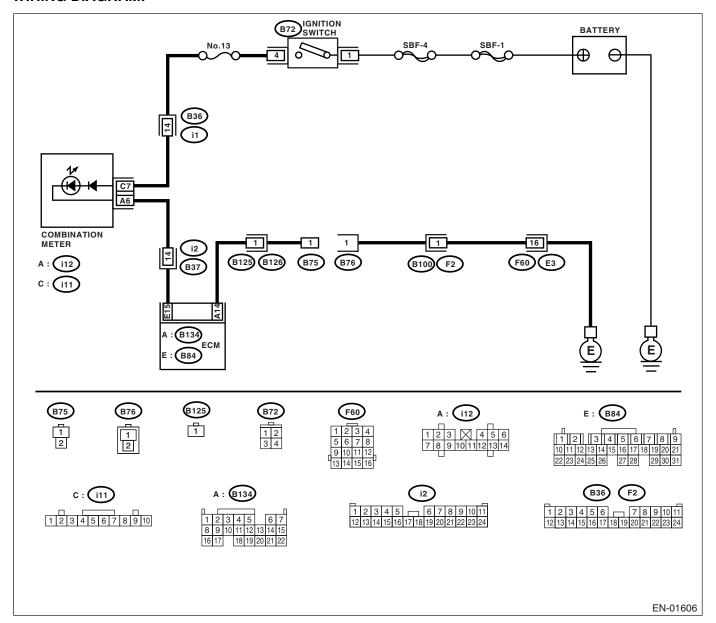
Ĭ	Step	Check	Yes	No
Î	1 CHECK HARNESS BETWEEN COMBINA-	Does the malfunction indicator	Repair the short	Replace the ECM.
	TION METER AND ECM CONNECTOR.	light come on?	circuit in harness	<ref. th="" to<=""></ref.>
	 Turn the ignition switch to OFF. 		between combina-	FU(H4DOTC)-48,
	Disconnect the connector from ECM.		tion meter and	Engine Control
	Turn the ignition switch to ON.		ECM connector.	Module (ECM).>

E: MALFUNCTION INDICATOR LIGHT DOES NOT BLINK AT A CYCLE OF 3 Hz.

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

TROUBLE SYMPTOM:

During inspection mode, malfunction indicator light does not blink at a cycle of 3 Hz.



	Step	Check	Yes	No S
1	CHECK STATUS OF MALFUNCTION INDI- CATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Disconnect the test mode connector. 3) Turn the ignition switch to ON. (engine OFF)	Does the malfunction indicator light come on?	Go to step 2.	Repair the mal- function indicator light circuit. <ref. to EN(H4DOTC)(diag)-51, MALFUNC- TION INDICA- TOR LIGHT DOES NOT COME ON., Mal- function Indicator Light.></ref.
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 come on?	Repair the ground short circuit in harness between combination meter and ECM connector.	Go to step 3.
3	CHECK HARNESS BETWEEN TEST MODE CONNECTOR AND CHASSIS GROUND. 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. Connector & terminal (B76) No. 1 — Chassis ground:	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. Connector & terminal (B134) No. 14 — Chassis ground:	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<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>

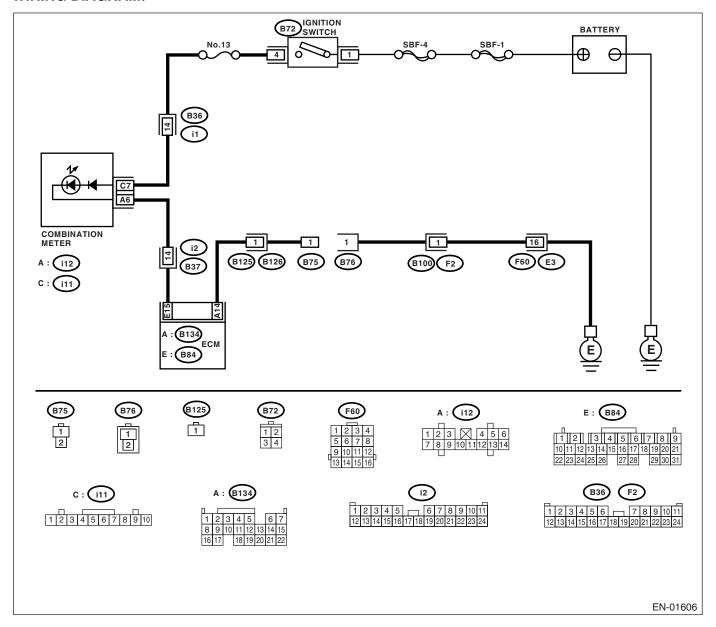
F: MALFUNCTION INDICATOR LIGHT REMAINS BLINKING AT A CYCLE OF 3

DIAGNOSIS:

Test mode connector circuit is shorted.

TROUBLE SYMPTOM:

Malfunction indicator light blinks at a cycle of 3 Hz when ignition switch is turned to ON.



	Step	Check	Yes	No
1	CHECK TEST MODE CONNECTOR.1) Disconnect the test mode connector.2) Turn the ignition switch to ON.	Does the malfunction indicator light blink?		System is in good order. NOTE: Malfunction indicator light blinks at a cycle of 3 Hz when test mode connector is connected.

Malfunction Indicator Light ENGINE (DIAGNOSTICS)

		T	1000	J Elie a
	Step	Check	Yes	No St
2	CHECK HARNESS BETWEEN ECM CON-	Is the resistance less than 5	Repair the short	Replace the ECM.
	NECTOR AND ENGINE GROUNDING TER-	Ω ?	circuit in harness	<ref. th="" to<=""></ref.>
	MINAL.		between ECM and	FU(H4DOTC)-48,
	 Turn the ignition switch to OFF. 		test mode connec-	Engine Control
	Disconnect the connector from ECM.		tor.	Module (ECM).>
	3) Measure the resistance of harness			
	between ECM connector and chassis ground.			
	Connector & terminal			
	(B134) No. 14 — Chassis ground:			

Diagnostics for Engine Starting Failure

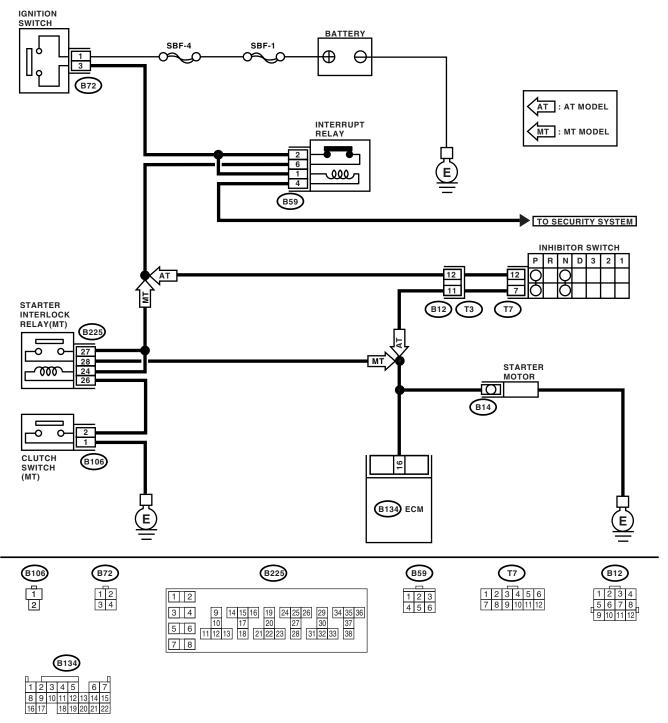
17. Diagnostics for Engine Starting Failure A: PROCEDURE

Diagnostics for Engine Starting Failure ENGINE (DIAGNOSTICS)	_
17.Diagnostics for Engine Starting Failure A: PROCEDURE	Idios
1. Inspection of starter motor circuit. <ref. circuit,="" diagnostics="" en(h4dotc)(diag)-59,="" engine="" failure.="" for="" motor="" starter="" starting="" to=""></ref.>	I
↓	1
2. Inspection of ECM power supply and ground line. <ref. and="" control="" diagnostics="" en(h4dotc)(diag)-62,="" engine="" failure.="" for="" ground="" line,="" module="" power="" starting="" supply="" to=""></ref.>	I
↓	1
3. Inspection of ignition control system. <ref. control="" diagnostics="" en(h4dotc)(diag)-65,="" engine="" failure.="" for="" ignition="" starting="" system,="" to=""></ref.>	I
↓	1
4. Inspection of fuel pump circuit. <ref. circuit,="" diagnostics="" en(h4dotc)(diag)-68,="" engine="" failure.="" for="" fuel="" pump="" starting="" to=""></ref.>	I
	1
5. Inspection of fuel injector circuit. <ref. circuit,="" diagnostics="" en(h4dotc)(diag)-69,="" engine="" failure.="" for="" fuel="" injector="" starting="" to=""></ref.>	I

B: STARTER MOTOR CIRCUIT

CAUTION:

ris Studios After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



		-	VI FOR	y Fri-
	Step	Check	Yes	No St
1	CHECK OPERATION OF STARTER MOTOR.	Does the starter motor operate?	Go to step 2.	Go to step 3.
2	CHECK DTC.	Is the DTC displayed? <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-38,="" operation,="" read="" to="" trouble=""></ref.>	Using the List of Diagnostic Trou- ble Code (DTC), check the appro- priate DTC. <ref. to EN(H4DOTC)(diag)-71, List of Diag- nostic Trouble Code (DTC).></ref. 	Repair the poor contact in ECM connector.
3	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: On AT model, move the select lever to "P" or "N" range. On MT model, depress the clutch pedal.	Is the voltage more than 10 V?	Go to step 4.	Go to step 5.
4	 CHECK GROUND CIRCUIT OF STARTER MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the 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<br="">SC(H4SO)-7, Starter.></ref.>	Repair the open circuit of ground cable.
5	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. 1 (+) — Chassis ground (-):			Check the following, repair if necessary. • Fuse is blown out. • Open circuit in harness between ignition switch and battery.
6	CHECK IGNITION SWITCH. 1) Disconnect the connector from ignition switch. 2) Measure the resistance between ignition switch terminals while turning ignition switch to START. Terminals No. 1 — No. 3:	Is the resistance less than 5 Ω ?	Go to step 7.	Replace the ignition switch.
7	CHECK TRANSMISSION TYPE.	Is the transmission AT?	Go to step 8.	Go to step 10.

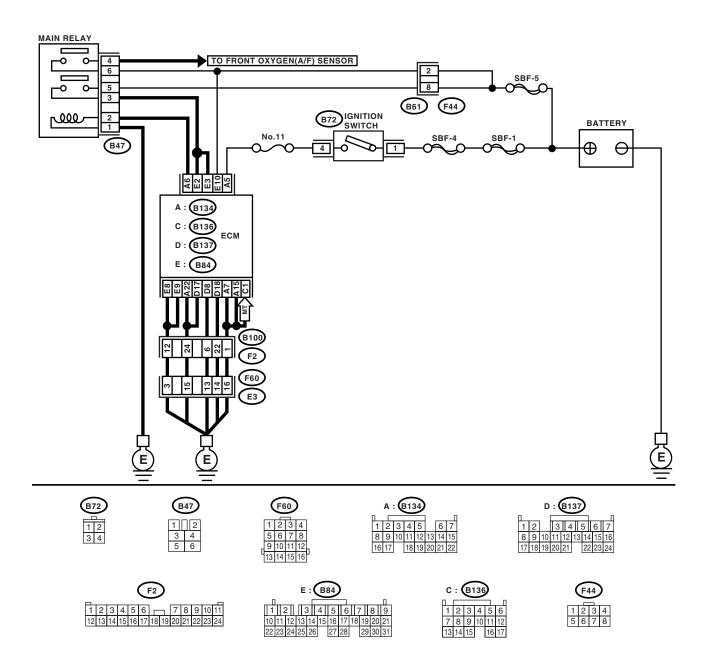
			Fa	J Fri	
	Step	Check	Yes	No St	101:
8	CHECK INPUT VOLTAGE OF INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect the connector from inhibitor switch. 3) Connect the connector to ignition switch. 4) Measure the input voltage between inhibitor switch connector terminal and engine ground while turning ignition switch to START. Connector & terminal (B12) No. 12 (+) — Engine ground (-):	Is the voltage more than 10 V?		Repair open or short circuit to ground in harness between inhibitor switch and ignition switch. NOTE: Check security system (if equipped). <ref. security="" sl-20,="" system.="" to=""></ref.>	410
9	CHECK INHIBITOR SWITCH. 1) Move the selector lever to "P" or "N" range. 2) Measure the resistance between inhibitor switch terminals. Connector & terminal (T3) No. 11 — No. 12:	Is the resistance less than 1 Ω ?	Repair open or short circuit to ground in harness between inhibitor switch and starter motor.	Replace the inhibitor switch. <ref. 4at-46,="" inhibitor="" switch.="" to=""></ref.>	
10	CHECK INPUT VOLTAGE OF STARTER INTERLOCK RELAY. 1) Turn ignition switch to OFF. 2) Disconnect the connector from starter interlock relay. 3) Connect the connector to ignition switch. 4) Measure the input voltage between starter interlock relay connector and chassis ground while turning ignition switch to START. Connector & terminal (B104) No. 27 (+) — Chassis ground (-): (B104) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 11.	Repair open or short circuit to ground in harness between starter interlock relay and ignition switch. NOTE: Check security system (if equipped). <ref. security="" sl-20,="" system.="" to=""></ref.>	
11	CHECK STARTER INTERLOCK RELAY. 1) Connect the battery to starter interlock relay terminals No. 26 and No. 24. 2) Measure the resistance between starter interlock relay terminals. Terminals No. 27 — No. 28:	Is the resistance less than 1 Ω ?	Go to step 12.	Replace the starter interlock relay.	
12	CHECK GROUND CIRCUIT OF CLUTCH SWITCH. 1) Disconnect the connector from clutch switch. 2) Measure the resistance between clutch switch connector and chassis ground. Connector & terminal (B106) No. 1 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 13.	Repair open circuit of ground cable.	
13	CHECK CLUTCH SWITCH. Measure the resistance between clutch switch terminals while depressing the clutch pedal. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Go to step 12.	Replace the clutch switch. <ref. to<br="">CL-28, Clutch Switch.></ref.>	
14	CHECK CLUTCH SWITCH CIRCUIT. 1) Connect the connector to clutch switch. 2) Measure the resistance between starter interlock relay connector and chassis ground while depressing the clutch pedal. Connector & terminal (B104) No. 26 — Chassis ground:	Is the resistance less than 1 Ω ?	Repair short circuit to ground in har- ness between starter interlock relay and starter motor.	Repair open circuit in harness between starter interlock relay and clutch switch.	

C: CONTROL MODULE POWER SUPPLY AND GROUND LINE

CAUTION:

Eris Studios After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



EN-01608

			For	y Frie	
	Step	Check	Yes	No St	101.
1	CHECK MAIN RELAY.	Is the resistance less than 10	Go to step 2.	Replace the main	Idios
	 Turn the ignition switch to OFF. 	Ω ?		relay.	0
	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:				
2	CHECK GROUND CIRCUIT OF ECM.	Is the resistance less than 5	Go to step 3.	Repair the open	
	 Disconnect the connector from ECM. 	Ω ?	·	circuit in harness	
	2) Measure the resistance of harness			between ECM	
	between ECM and chassis ground.			connector and	
	Connector & terminal			engine grounding	
	(B134) No. 7 — Chassis ground:			terminal.	
	(B134) No. 15 — Chassis ground:				
	(B134) No. 22 — Chassis ground:				
	(B136) No. 1 — Chassis ground:				
	(B137) No. 8 — Chassis ground:				
	(B137) No. 17 — Chassis ground:				
	(B137) No. 18 — Chassis ground:				
	(B84) No. 8 — Chassis ground:				
	(B84) No. 9 — Chassis ground:				
3	CHECK INPUT VOLTAGE OF ECM.	Is the voltage more than 10 V?	Go to step 4.	Repair the open or	
	Measure the voltage between ECM connector	-	·	ground short cir-	
	and chassis ground.			cuit of power sup-	
	Connector & terminal			ply circuit.	
	(B84) No. 10 (+) — Chassis ground (−):				
	(B134) No. 5 (+) — Chassis ground (−):				
4	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 5.	Repair the ground	
	MAIN RELAY CONNECTOR.	ΜΩ?		short circuit in har-	
	 Turn the ignition switch to OFF. 			ness between	
	2) Measure the resistance between ECM and			ECM connector	
	chassis ground.			and main relay	
	Connector & terminal			connector, and	
	(B134) No. 6 — Chassis ground:			then replace ECM.	
5	CHECK OUTPUT VOLTAGE FROM ECM.	Is the voltage more than 10 V?	Go to step 6.	Replace the ECM.	
	 Connect the connector to ECM. 			<ref. td="" to<=""><td></td></ref.>	
	Turn the ignition switch to ON.			FU(H4DOTC)-48,	
	Measure the voltage between ECM con-			Engine Control	
	nector and chassis ground.			Module (ECM).>	
	Connector & terminal				
	(B134) No. 6 (+) — Chassis ground (−):				
6	CHECK INPUT VOLTAGE OF MAIN RELAY.	Is the voltage more than 10 V?	Go to step 7.	Repair the open	
	Check the voltage between main relay connec-			circuit in harness	
	tor and chassis ground.			between ECM	
	Connector & terminal			connector and	
	(B47) No. 2 (+) — Chassis ground (–):			main relay connec-	
				tor.	
7	CHECK GROUND CIRCUIT OF MAIN RE-	Is the resistance less than 5	Go to step 8.	Repair the open	
	LAY.	Ω ?	,	circuit between	
	1) Turn the ignition switch to OFF.			main relay and	
	2) Measure the resistance between main relay			chassis ground.	
	connector and chassis ground.				
	Connector & terminal				
	(B47) No. 1 — Chassis ground:				
<u> </u>	<u> </u>	l .	1		l

Diagnostics for Engine Starting Failure

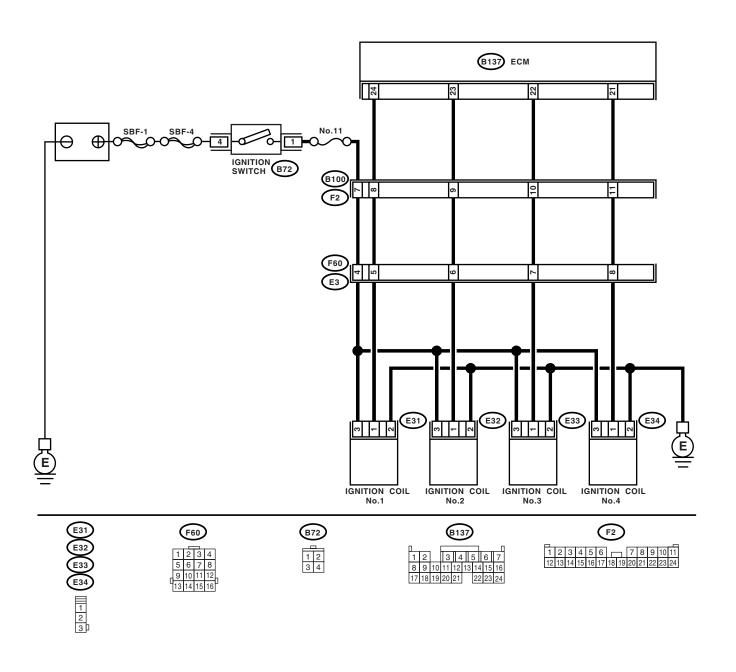
ENGINE (DIAGNOSTICS)

			1 500	J Fri
	Step	Check	Yes	No St
8	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?	·	Repair the open or ground short cir- cuit in harness of power supply cir- cuit.
9	CHECK INPUT VOLTAGE OF ECM. 1) Connect the main relay connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B84) No. 2 (+) — Chassis ground (-): (B84) No. 3 (+) — Chassis ground (-):	Is the voltage more than 10 V?	control system. <ref. to<br="">EN(H4DOTC)(diag)-65, IGNITION</ref.>	Repair the open or ground short cir- cuit in harness between ECM connector and main relay connec- tor.

D: IGNITION CONTROL SYSTEM

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	Enante (Birtantoonice)			
	Step	Check	Yes	No S
1	CHECK SPARK PLUG CONDITION.	Is the spark plug's status OK?	Go to step 2.	Replace the spark
	 Remove the spark plug. <ref. to<br="">IG(H4DOTC)-5, INSTALLATION, Spark Plug.></ref.> 			plug.
	2) Check the spark plug condition. <ref. td="" to<=""><td></td><td></td><td></td></ref.>			
	IG(H4DOTC)-5, INSPECTION, Spark Plug.>			
2	CHECK IGNITION SYSTEM FOR SPARKS.	Does spark occur at each cyl-	Check the fuel	Go to step 3.
	1) Connect the spark plug to ignition coil.	inder?	pump system.	
	2) Release the fuel pressure. <ref. td="" to<=""><td></td><td><ref. td="" to<=""><td></td></ref.></td></ref.>		<ref. td="" to<=""><td></td></ref.>	
	FU(H4DOTC)-52, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>		EN(H4DOTC)(diag)-68, FUEL PUMP	
	3) Contact the spark plug's thread portion on		CIRCUIT, Diag-	
	engine.		nostics for Engine	
	4) While opening the throttle valve fully, crank		Starting Failure.>	
	engine to check that spark occurs at each cyl-			
	inder.		0-1-1-1	Danish that have
3	CHECK POWER SUPPLY CIRCUIT FOR IGNITION COIL & IGNITOR ASSEMBLY.	Is the voltage more than 10 V?	GO IO SIEP 4.	Repair the har- ness and connec-
	Turn the ignition switch to OFF.			tor.
	2) Disconnect the connector from ignition coil			NOTE:
	& ignitor assembly.			In this case, repair
	3) Turn the ignition switch to ON.			the following:
	 Measure the power supply voltage between ignition coil & ignitor assembly connector and 			 Open circuit in harness between
	engine ground.			ignition coil & igni-
	Connector & terminal			tor assembly, and
	(E31) No. 3 (+) — Engine ground (-):			ignition switch con-
	(E32) No. 3 (+) — Engine ground (-):			nector
	(E33) No. 3 (+) — Engine ground (−): (E34) No. 3 (+) — Engine ground (−):			 Poor contact in coupling connec-
	(==), i.e. o (i) = iig.iio g. o a.i.a ().			tors
4	CHECK HARNESS OF IGNITION COIL & IG-	Is the resistance less than 5	Go to step 5.	Repair the har-
	NITOR ASSEMBLY GROUND CIRCUIT.	Ω?		ness and connec-
	 Turn the ignition switch to OFF. Measure the resistance between ignition 			tor.
	coil & ignitor assembly connector and engine			NOTE: In this case, repair
	ground.			the following:
	Connector & terminal			Open circuit in
	(E31) No. 2 — Engine ground:			harness between
	(E32) No. 2 — Engine ground: (E33) No. 2 — Engine ground:			ignition coil & igni-
	(E34) No. 2 — Engine ground:			tor assembly con- nector and engine
	(=e-) = = g g s			grounding terminal
5	CHECK HARNESS BETWEEN ECM AND IG-	Is the resistance less than 1	Go to step 6.	Repair the har-
	NITION COIL & IGNITOR ASSEMBLY CON-	Ω?		ness and connec-
	NECTOR. 1) Turn the ignition switch to OFF.			tor.
	2) Disconnect the connector from ECM.			NOTE: In this case, repair
	3) Disconnect the connector from ignition coil			the following:
	& ignitor assembly.			Open circuit in
	4) Measure the resistance of harness			harness between
	between ECM and ignition coil & ignitor assembly connector.			ECM and ignition
	Connector & terminal			coil & ignitor assembly connec-
	(B137) No. 21 — (E34) No. 1:			tor
	(B137) No. 22 — (E33) No. 1:			 Poor contact in
	(B137) No. 23 — (E32) No. 1:			coupling connector
	(B137) No. 24 — (E31) No. 1:			

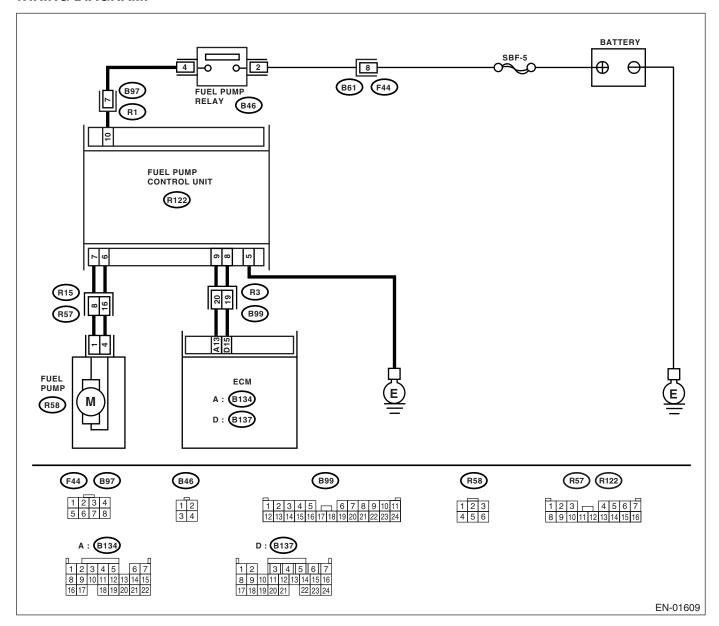
Diagnostics for Engine Starting Failure ENGINE (DIAGNOSTICS)

		_	FOR	J Fri
	Step	Check	Yes	No St
6	CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSEMBLY CONNECTOR. Measure the resistance of harness between ECM and engine ground. Connector & terminal: (B137) No. 21 — Engine ground: (B137) No. 22 — Engine ground: (B137) No. 23 — Engine ground: (B137) No. 24 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 7.	Repair the ground short circuit in harmess between ECM and ignition coil & ignitor assembly connector.
7	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 ignition coil and ignitor assembly.

E: FUEL PUMP CIRCUIT

CAUTION:

OR RESALE After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

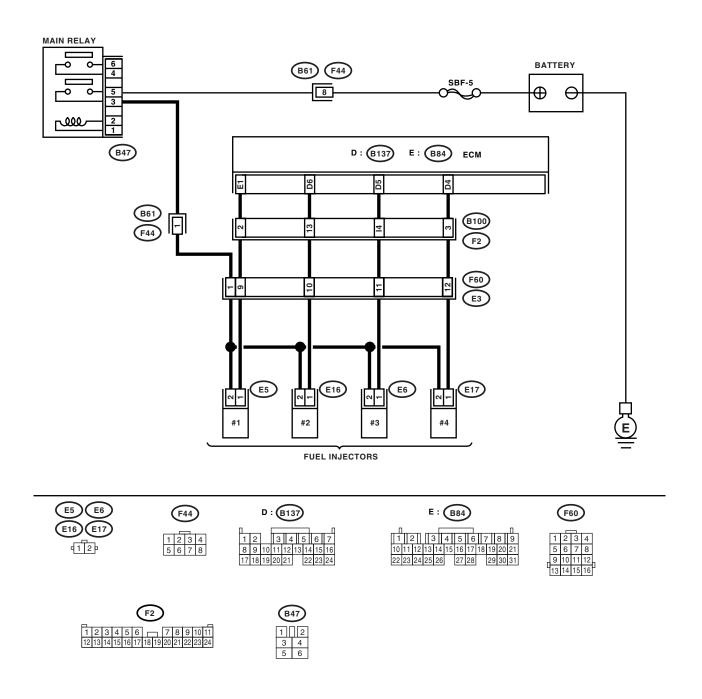


Step	Check	Yes	No
1 CHECK OPERATING SOUND OF FUEL PUMP. Make sure that the fuel pump is in operation for 2 seconds when turning ignition switch to ON. NOTE: Fuel pump operation check can also be executed using the Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>		injector circuit. <ref. to<br="">EN(H4DOTC)(diag)-69, FUEL INJEC- TOR CIRCUIT,</ref.>	

F: FUEL INJECTOR CIRCUIT

CAUTION:

ris Studios After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



		FOR	y Eric c
Step	Check	Yes	No St
CHECK OPERATION OF EACH FUEL INJECTOR. While cranking the engine, check that each fuel injector emits "operating" sound. Use a sound scope or attach a screwdriver to injector for this check.	Does the fuel injector emit "operating" sound?	Check the fuel pressure. <ref. to<br="">ME(H4DOTC)-27, INSPECTION, Fuel Pressure.></ref.>	Go to step 2.
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 the fuel injector terminal and engine ground. Connector & terminal #1 (E5) No. 2 (+) — Engine ground (-): #2 (E16) No. 2 (+) — Engine ground (-): #3 (E6) No. 2 (+) — Engine ground (-): #4 (E17) No. 2 (+) — Engine ground (-):	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 main relay and fuel injector connector Poor contact in main relay connector Poor contact in coupling connector Poor contact in fuel injector connector
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 (B84) No. 1 — (E5) No. 1: (B137) No. 6 — (E16) No. 1: (B137) No. 5 — (E6) No. 1: (B137) No. 4 — (E6) No. 1:	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 ECM and fuel injector connector Poor contact in coupling connector
4 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance of harness between ECM and fuel injector connector. Connector & terminal (B84) No. 1 — Chassis ground: (B137) No. 6 — Chassis ground: (B137) No. 5 — Chassis ground: (B137) No. 4 — Chassis ground:	Is the resistance less than 1 Ω ?	Repair the ground short circuit in har- ness between ECM and fuel injector connector.	Go to step 5.
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:	Is the resistance 5 — 20 Ω ?	Go to step 6.	Replace the faulty fuel injector.
6 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Inspection using "General Diagnostic Table". <ref.)-340,="" diagnostic="" en(h4dotc)(diag="" general="" inspection,="" table.="" to=""></ref.>

is Studios

18.List of Diagnostic Trouble Code (DTC)

A: LIST

DTC	Item	Index
P0030	HO2S Heater Control Circuit (Bank 1 Sensor 1)	<ref. (bank="" (dtc).="" 1="" 1),="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-78,="" heater="" ho2s="" p0030="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P0031	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)	<ref. control<br="" dtc="" en(h4dotc)(diag)-80,="" heater="" ho2s="" p0031="" to="">CIRCUIT LOW (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0032	HO2S Heater Control Circuit High (Bank 1 Sensor 1)	<ref. control<br="" dtc="" en(h4dotc)(diag)-83,="" heater="" ho2s="" p0032="" to="">CIRCUIT HIGH (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0037	HO2S Heater Control Circuit Low (Bank 1 Sensor 2)	<ref. control<br="" dtc="" en(h4dotc)(diag)-85,="" heater="" ho2s="" p0037="" to="">CIRCUIT LOW (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0038	HO2S Heater Control Circuit High (Bank 1 Sensor 2)	<ref. (bank="" (dtc).="" 1="" 2),="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-88,="" heater="" high="" ho2s="" p0038="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P0068	Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance	<ref. absolute<br="" dtc="" en(h4dotc)(diag)-90,="" manifold="" p0068="" to="">PRESSURE/BAROMETRIC PRESSURE CIRCUIT RANGE/PERFOR- MANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0101	Mass or Volume Air Flow Circuit Range/Performance	<ref. (dtc).="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-92,="" flow="" mass="" or="" p0101="" performance,="" procedure="" range="" to="" trouble="" volume="" with=""></ref.>
P0102	Mass or Volume Air Flow Circuit Low Input	<ref. (dtc).="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-94,="" flow="" input,="" low="" mass="" or="" p0102="" procedure="" to="" trouble="" volume="" with=""></ref.>
P0103	Mass or Volume Air Flow Circuit High Input	<ref. (dtc).="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-97,="" flow="" high="" input,="" mass="" or="" p0103="" procedure="" to="" trouble="" volume="" with=""></ref.>
P0107	Manifold Absolute Pressure/Barometric Pressure Circuit Low Input	<ref. (dtc).="" absolute="" barometric="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-99,="" input,="" low="" manifold="" p0107="" pressure="" procedure="" to="" trouble="" with=""></ref.>
P0108	Manifold Absolute Pressure/Barometric Pressure Circuit High Input	<ref. (dtc).="" absolute="" barometric="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-101,="" high="" input,="" manifold="" p0108="" pressure="" procedure="" to="" trouble="" with=""></ref.>
P0111	Intake Air Temperature Circuit Range/Performance	<ref. (dtc).="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-103,="" intake="" p0111="" performance,="" procedure="" range="" temperature="" to="" trouble="" with=""></ref.>
P0112	Intake Air Temperature Circuit Low Input	<ref. (dtc).="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-105,="" input,="" intake="" low="" p0112="" procedure="" temperature="" to="" trouble="" with=""></ref.>
P0113	Intake Air Temperature Circuit High Input	<ref. (dtc).="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-107,="" high="" input,="" intake="" p0113="" procedure="" temperature="" to="" trouble="" with=""></ref.>
P0117	Engine Coolant Temperature Circuit Low Input	<ref. coolant="" dtc="" en(h4dotc)(diag)-110,="" engine="" p0117="" tem-<br="" to="">PERATURE CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0118	Engine Coolant Temperature Circuit High Input	<ref. coolant="" dtc="" en(h4dotc)(diag)-112,="" engine="" p0118="" tem-<br="" to="">PERATURE CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0121	Throttle/Pedal Position Sensor/ Switch "A" Circuit Range/Perfor- mance	<ref. "a"="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-115,="" p0121="" pedal="" performance,="" position="" procedure="" range="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P0122	Throttle/Pedal Position Sensor/ Switch "A" Circuit Low Input	<ref. "a"="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-117,="" input,="" low="" p0122="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>

		FOD SETIES
DTC	Item	Index
P0123	Throttle/Pedal Position Sensor/ Switch "A" Circuit High Input	<ref. dtc="" en(h4dotc)(diag)-120,="" p0123="" pedal="" posi-<br="" throttle="" to="">TION SENSOR/SWITCH "A" CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC) ></ref.>
P0125	Insufficient Coolert Towns waters for	with Diagnostic Trouble Code (DTC).>
P0125	Insufficient Coolant Temperature for Closed Loop Fuel Control	<ref. coolant<br="" dtc="" en(h4dotc)(diag)-122,="" insufficient="" p0125="" to="">TEMPERATURE FOR CLOSED LOOP FUEL CONTROL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0128	Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature)	<ref. coolant="" dtc="" en(h4dotc)(diag)-124,="" p0128="" thermostat<br="" to="">(COOLANT TEMPERATURE BELOW THERMOSTAT REGULATING TEM- PERATURE), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0129	Atmospheric Pressure Sensor Circuit	Ref. to EN(H4DOTC)(diag)-125, DTC P0129 ATMOSPHERIC PRESSURE
10123	Range/Performance	SENSOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0130	O ₂ Sensor Circuit (Bank 1 Sensor 1)	<ref. dtc="" en(h4dotc)(diag)-126,="" o<sub="" p0130="" to="">2 SENSOR CIRCUIT (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0133	O ₂ Sensor Circuit Slow Response	<ref. dtc="" en(h4dotc)(diag)-128,="" o<sub="" p0133="" to="">2 SENSOR CIRCUIT SLOW</ref.>
	(Bank 1 Sensor 1)	RESPONSE (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0134	O ₂ Sensor Circuit No Activity Detected (Bank 1 Sensor 1)	<ref. dtc="" en(h4dotc)(diag)-129,="" o<sub="" p0134="" to="">2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0137	O ₂ Sensor Circuit Low Voltage (Bank	<ref. dtc="" en(h4dotc)(diag)-130,="" o<sub="" p0137="" to="">2 SENSOR CIRCUIT LOW</ref.>
	1 Sensor 2)	VOLTAGE (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0138	O ₂ Sensor Circuit High Voltage	<ref. dtc="" en(h4dotc)(diag)-133,="" o<sub="" p0138="" to="">2 SENSOR CIRCUIT HIGH</ref.>
	(Bank 1 Sensor 2)	VOLTAGE (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0139	O ₂ Sensor Circuit Slow Response	<ref. dtc="" en(h4dotc)(diag)-136,="" o<sub="" p0139="" to="">2 SENSOR CIRCUIT SLOW</ref.>
	(Bank 1 Sensor 2)	RESPONSE (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0171	System too Lean (Bank 1)	<ref. (bank="" (dtc).="" 1),="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-137,="" lean="" p0171="" procedure="" system="" to="" too="" trouble="" with=""></ref.>
P0172	System too Rich (Bank 1)	<ref. (bank="" (dtc).="" 1),="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-138,="" p0172="" procedure="" rich="" system="" to="" too="" trouble="" with=""></ref.>
P0181	Fuel Temperature Sensor "A" Circuit Range/Performance	<ref. "a"="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-141,="" fuel="" p0181="" performance,="" procedure="" range="" sen-sor="" temperature="" to="" trouble="" with=""></ref.>
P0182	Fuel Temperature Sensor "A" Circuit Low Input	<ref. "a"="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-143,="" fuel="" input,="" low="" p0182="" procedure="" sen-sor="" temperature="" to="" trouble="" with=""></ref.>
P0183	Fuel Temperature Sensor "A" Circuit High Input	<ref. "a"="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-145,="" fuel="" high="" input,="" p0183="" procedure="" sen-sor="" temperature="" to="" trouble="" with=""></ref.>
P0230	Fuel Pump Primary Circuit	<ref. cir-<br="" dtc="" en(h4dotc)(diag)-148,="" fuel="" p0230="" primary="" pump="" to="">CUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0244	Turbo/Super Charger Wastegate Solenoid "A" Range/Performance	<ref. "a"="" (dtc).="" charger="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-151,="" p0244="" performance,="" procedure="" range="" solenoid="" super="" to="" trouble="" turbo="" wastegate="" with=""></ref.>
P0245	Turbo/Super Charger Wastegate Solenoid "A" Low	<ref. "a"="" (dtc).="" charger="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-153,="" low,="" p0245="" procedure="" solenoid="" super="" to="" trouble="" turbo="" wastegate="" with=""></ref.>
P0246	Turbo/Super Charger Wastegate Solenoid "A" High	<ref. "a"="" (dtc).="" charger="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-155,="" high,="" p0246="" procedure="" solenoid="" super="" to="" trouble="" turbo="" wastegate="" with=""></ref.>
P0301	Cylinder 1 misfire detected	<ref. 1="" cylinder="" dtc="" en(h4dotc)(diag)-157,="" misfire<br="" p0301="" to="">DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>

DTC	Item	Index
P0302	Cylinder 2 misfire detected	<ref. (dtc).="" 2="" code="" cylinder="" detected,="" diagnostic="" dtc="" en(h4dotc)(diag)-157,="" misfire="" p0302="" procedure="" to="" trouble="" with=""></ref.>
P0303	Cylinder 3 misfire detected	<ref. 3="" cylinder="" dtc="" en(h4dotc)(diag)-157,="" misfire<br="" p0303="" to="">DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0304	Cylinder 4 misfire detected	<ref. (dtc).="" 4="" code="" cylinder="" detected,="" diagnostic="" dtc="" en(h4dotc)(diag)-157,="" misfire="" p0304="" procedure="" to="" trouble="" with=""></ref.>
P0327	Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor)	<ref. (bank="" (dtc).="" 1="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-162,="" input="" knock="" low="" or="" p0327="" procedure="" sensor="" sensor),="" single="" to="" trouble="" with=""></ref.>
P0328	Knock Sensor 1 Circuit High Input (Bank 1 or Single Sensor)	<ref. 1="" circuit<br="" dtc="" en(h4dotc)(diag)-164,="" knock="" p0328="" sensor="" to="">HIGH INPUT (BANK 1 OR SINGLE SENSOR), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0335	Crankshaft Position Sensor "A" Circuit	<ref. crankshaft="" dtc="" en(h4dotc)(diag)-166,="" p0335="" position<br="" to="">SENSOR "A" CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0336	Crankshaft Position Sensor "A" Circuit Range/Performance	<ref. crankshaft="" dtc="" en(h4dotc)(diag)-168,="" p0336="" position<br="" to="">SENSOR "A" CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0340	Camshaft Position Sensor "A" Circuit (Bank 1 or Single Sensor)	<ref. camshaft="" dtc="" en(h4dotc)(diag)-170,="" p0340="" position="" sen-<br="" to="">SOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0341	Camshaft Position Sensor "A" Circuit Range/Performance (Bank 1 or Single Sensor)	<ref. camshaft="" dtc="" en(h4dotc)(diag)-172,="" p0341="" position="" sen-<br="" to="">SOR "A" CIRCUIT RANGE/PERFORMANCE (BANK 1 OR SINGLE SEN- SOR), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0420	Catalyst System Efficiency Below Threshold (Bank 1)	<ref. catalyst="" dtc="" effi-<br="" en(h4dotc)(diag)-175,="" p0420="" system="" to="">CIENCY BELOW THRESHOLD (BANK 1), Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>
P0442	Evaporative Emission Control System Leak Detected (small leak)	<ref. (dtc).="" (small="" code="" control="" detected="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-177,="" evaporative="" leak="" leak),="" p0442="" procedure="" system="" to="" trouble="" with=""></ref.>
P0447	Evaporative Emission Control System Vent Control Circuit Open	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-181,="" evaporative="" open,="" p0447="" procedure="" system="" to="" trouble="" vent="" with=""></ref.>
P0448	Evaporative Emission Control System Vent Control Circuit Shorted	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-184,="" evaporative="" p0448="" procedure="" shorted,="" system="" to="" trouble="" vent="" with=""></ref.>
P0451	Evaporative Emission Control System Pressure Sensor Range/Performance	<ref. (dtc).="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-186,="" evaporative="" p0451="" performance,="" pressure="" procedure="" range="" sensor="" system="" to="" trouble="" with=""></ref.>
P0452	Evaporative Emission Control System Pressure Sensor Low Input	<ref. (dtc).="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-188,="" evaporative="" input,="" low="" p0452="" pressure="" procedure="" sensor="" system="" to="" trouble="" with=""></ref.>
P0453	Evaporative Emission Control System Pressure Sensor High Input	<ref. (dtc).="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-191,="" evaporative="" high="" input,="" p0453="" pressure="" procedure="" sensor="" system="" to="" trouble="" with=""></ref.>
P0456	Evaporative Emission Control System Leak Detected (very small leak)	<ref. (dtc).="" (very="" code="" control="" detected="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-194,="" evaporative="" leak="" leak),="" p0456="" procedure="" small="" system="" to="" trouble="" with=""></ref.>
P0457	Evaporative Emission Control System Leak Detected (fuel cap loose/ off)	<ref. (dtc).="" (fuel="" cap="" code="" control="" detected="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-198,="" evaporative="" leak="" loose="" off),="" p0457="" procedure="" system="" to="" trouble="" with=""></ref.>
P0458	Evaporative Emission Control System Purge Control Valve Circuit Low	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-202,="" evaporative="" low,="" p0458="" procedure="" purge="" system="" to="" trouble="" valve="" with=""></ref.>
P0459	Evaporative Emission Control System Purge Control Valve Circuit High	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc)(diag)-204,="" evaporative="" high,="" p0459="" procedure="" purge="" system="" to="" trouble="" valve="" with=""></ref.>

DTC	Item	Index
P0461	Fuel Level Sensor Circuit Range/Performance	<ref. (dtc).="" cir-cuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-206,="" fuel="" level="" p0461="" performance,="" procedure="" range="" sensor="" to="" trouble="" with=""></ref.>
P0462	Fuel Level Sensor Circuit Low Input	<ref. cir-<br="" dtc="" en(h4dotc)(diag)-208,="" fuel="" level="" p0462="" sensor="" to="">CUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0463	Fuel Level Sensor Circuit High Input	<ref. cir-<br="" dtc="" en(h4dotc)(diag)-212,="" fuel="" level="" p0463="" sensor="" to="">CUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0464	Fuel Level Sensor Circuit Intermittent	<ref. cir-<br="" dtc="" en(h4dotc)(diag)-215,="" fuel="" level="" p0464="" sensor="" to="">CUIT INTERMITTENT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0483	Cooling Fan Rationality Check	<ref. cooling="" dtc="" en(h4dotc)(diag)-218,="" fan="" p0483="" rational-<br="" to="">ITY CHECK, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0502	Vehicle Speed Sensor Circuit Low Input	<ref. (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-221,="" input,="" low="" p0502="" procedure="" sensor="" speed="" to="" trouble="" vehicle="" with=""></ref.>
P0503	Vehicle Speed Sensor Intermittent/ Erratic/High	<ref. (dtc).="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-223,="" erratic="" high,="" intermittent="" p0503="" procedure="" sensor="" speed="" to="" trouble="" vehicle="" with=""></ref.>
P0506	Idle Control System RPM Lower Than Expected	<ref. (dtc).="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-225,="" expected,="" idle="" lower="" p0506="" procedure="" rpm="" system="" than="" to="" trouble="" with=""></ref.>
P0507	Idle Control System RPM Higher Than Expected	<ref. (dtc).="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-227,="" expected,="" higher="" idle="" p0507="" procedure="" rpm="" system="" than="" to="" trouble="" with=""></ref.>
P0508	Idle Control System Circuit Low	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-229,="" idle="" low,="" p0508="" procedure="" system="" to="" trouble="" with=""></ref.>
P0509	Idle Control System Circuit High	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-231,="" high,="" idle="" p0509="" procedure="" system="" to="" trouble="" with=""></ref.>
P0512	Starter Request Circuit	<ref. cir-<br="" dtc="" en(h4dotc)(diag)-232,="" p0512="" request="" starter="" to="">CUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0519	Idle Control System Malfunction (Fail-Safe)	<ref. (dtc).="" (fail-safe),="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-235,="" idle="" malfunction="" p0519="" procedure="" system="" to="" trouble="" with=""></ref.>
P0545	Exhaust Gas Temperature Sensor Circuit Low-Bank 1	<ref. dtc="" en(h4dotc)(diag)-237,="" exhaust="" gas="" p0545="" tempera-<br="" to="">TURE SENSOR CIRCUIT LOW-BANK 1, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>
P0546	Exhaust Gas Temperature Sensor Circuit High-Bank 1	<ref. dtc="" en(h4dotc)(diag)-239,="" exhaust="" gas="" p0546="" tempera-<br="" to="">TURE SENSOR CIRCUIT HIGH-BANK 1, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>
P0565	Cruise Control On Signal	<ref. (dtc).="" code="" control="" cruise="" diagnostic="" dtc="" en(h4dotc)(diag)-242,="" on="" p0565="" procedure="" signal,="" to="" trouble="" with=""></ref.>
P0604	Internal Control Module Random Access Memory (RAM) Error	<ref. control="" dtc="" en(h4dotc)(diag)-244,="" internal="" mod-<br="" p0604="" to="">ULE RANDOM ACCESS MEMORY (RAM) ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0691	Cooling Fan 1 Control Circuit Low	<ref. (dtc).="" 1="" circuit="" code="" control="" cooling="" diagnostic="" dtc="" en(h4dotc)(diag)-246,="" fan="" low,="" p0691="" procedure="" to="" trouble="" with=""></ref.>
P0692	Cooling Fan 1 Control Circuit High	<ref. (dtc).="" 1="" circuit="" code="" control="" cooling="" diagnostic="" dtc="" en(h4dotc)(diag)-249,="" fan="" high,="" p0692="" procedure="" to="" trouble="" with=""></ref.>
P0703	Torque Converter/Brake Switch "B" Circuit	<ref. <br="" converter="" dtc="" en(h4dotc)(diag)-252,="" p0703="" to="" torque="">BRAKE SWITCH "B" CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>

DTC	Item	Index
P0705	Transmission Range Sensor Circuit (PRNDL Input)	<ref. (dtc).="" (prndl="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-254,="" input),="" p0705="" procedure="" range="" sensor="" to="" transmission="" trouble="" with=""></ref.>
P0710	Transmission Fluid Temperature Sensor Circuit	<ref. dtc="" en(h4dotc)(diag)-254,="" fluid<br="" p0710="" to="" transmission="">TEMPERATURE SENSOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0716	Torque Converter Turbine Speed Sensor	<ref. converter<br="" dtc="" en(h4dotc)(diag)-254,="" p0716="" to="" torque="">TURBINE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0720	Output Speed Sensor Circuit	<ref. (dtc).="" circuit,="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-254,="" output="" p0720="" procedure="" sensor="" speed="" to="" trouble="" with=""></ref.>
P0726	Engine Speed Input Circuit Range/ Performance	<ref. cir-<br="" dtc="" en(h4dotc)(diag)-254,="" engine="" input="" p0726="" speed="" to="">CUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trou- ble Code (DTC).></ref.>
P0731	Gear 1 Incorrect Ratio	<ref. (dtc).="" 1="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-254,="" gear="" incorrect="" p0731="" procedure="" ratio,="" to="" trouble="" with=""></ref.>
P0732	Gear 2 Incorrect Ratio	<ref. (dtc).="" 2="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-254,="" gear="" incorrect="" p0732="" procedure="" ratio,="" to="" trouble="" with=""></ref.>
P0733	Gear 3 Incorrect Ratio	<ref. (dtc).="" 3="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-254,="" gear="" incorrect="" p0733="" procedure="" ratio,="" to="" trouble="" with=""></ref.>
P0734	Gear 4 Incorrect Ratio	<ref. (dtc).="" 4="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-255,="" gear="" incorrect="" p0734="" procedure="" ratio,="" to="" trouble="" with=""></ref.>
P0741	Torque Converter Clutch Circuit Performance or Stuck Off	<ref. converter<br="" dtc="" en(h4dotc)(diag)-256,="" p0741="" to="" torque="">CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0743	Torque Converter Clutch Circuit Electrical	<ref. (dtc).="" circuit="" clutch="" code="" converter="" diagnostic="" dtc="" electrical,="" en(h4dotc)(diag)-258,="" p0743="" procedure="" to="" torque="" trouble="" with=""></ref.>
P0748	Pressure Control Solenoid "A" Electrical	<ref. "a"="" (dtc).="" code="" control="" diagnostic="" dtc="" electrical,="" en(h4dotc)(diag)-258,="" p0748="" pressure="" procedure="" solenoid="" to="" trouble="" with=""></ref.>
P0753	Shift Solenoid "A" Electrical	<ref. "a"="" (dtc).="" code="" diagnostic="" dtc="" electrical,="" en(h4dotc)(diag)-258,="" p0753="" procedure="" shift="" solenoid="" to="" trouble="" with=""></ref.>
P0758	Shift Solenoid "B" Electrical	<ref. "b"="" (dtc).="" code="" diagnostic="" dtc="" electrical,="" en(h4dotc)(diag)-258,="" p0758="" procedure="" shift="" solenoid="" to="" trouble="" with=""></ref.>
P0771	Low Clutch Timing Solenoid	<ref. (dtc).="" clutch="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-258,="" low="" p0771="" procedure="" solenoid,="" timing="" to="" trouble="" with=""></ref.>
P0778	Pressure Control Solenoid "B" Electrical	<ref. "b"="" (dtc).="" code="" diagnostic="" dtc="" electrical,="" en(h4dotc)(diag)-258,="" p0778="" pressurecontrol="" procedure="" solenoid="" to="" trouble="" with=""></ref.>
P0785	Shift/Timing Solenoid	<ref. (dtc).="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-258,="" p0785="" procedure="" shift="" solenoid,="" timing="" to="" trouble="" with=""></ref.>
P0851	Neutral Switch Input Circuit Low	<ref. (at="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-259,="" input="" low="" model),="" neutral="" p0851="" procedure="" switch="" to="" trouble="" with=""> or <ref. (dtc).="" (mt="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-261,="" input="" low="" model),="" neutral="" p0851="" procedure="" switch="" to="" trouble="" with=""></ref.></ref.>
P0852	Neutral Switch Input Circuit High	<ref. (at="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-263,="" high="" input="" model),="" neutral="" p0852="" procedure="" switch="" to="" trouble="" with=""> or <ref. (dtc).="" (mt="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-266,="" high="" input="" model),="" neutral="" p0852="" procedure="" switch="" to="" trouble="" with=""></ref.></ref.>
P0864	TCM Communication Circuit Range/ Performance	<ref. (dtc).="" circuit="" code="" communication="" diagnostic="" dtc="" en(h4dotc)(diag)-268,="" p0864="" performance,="" procedure="" range="" tcm="" to="" trouble="" with=""></ref.>
P0865	TCM Communication Circuit Low	<ref. (dtc).="" circuit="" code="" communication="" diagnostic="" dtc="" en(h4dotc)(diag)-270,="" low,="" p0865="" procedure="" tcm="" to="" trouble="" with=""></ref.>

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DTC	Item	Index
P0866	TCM Communication Circuit High	<ref. communication<br="" dtc="" en(h4dotc)(diag)-272,="" p0866="" tcm="" to="">CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1086	Tumble Generated Valve Position Sensor 2 Circuit Low	<ref. dtc="" en(h4dotc)(diag)-274,="" generated<br="" p1086="" to="" tumble="">VALVE POSITION SENSOR 2 CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1087	Tumble Generated Valve Position Sensor 2 Circuit High	<ref. dtc="" en(h4dotc)(diag)-277,="" generated<br="" p1087="" to="" tumble="">VALVE POSITION SENSOR 2 CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1088	Tumble Generated Valve Position Sensor 1 Circuit Low	<ref. dtc="" en(h4dotc)(diag)-279,="" generated<br="" p1088="" to="" tumble="">VALVE POSITION SENSOR 1 CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1089	Tumble Generated Valve Position Sensor 1 Circuit High	<ref. (dtc).="" 1="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-282,="" generated="" high,="" p1089="" position="" procedure="" sensor="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1090	Tumble Generated Valve System 1 (Valve Open)	<ref. (dtc).="" (valve="" 1="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-284,="" generated="" open),="" p1090="" procedure="" system="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1091	Tumble Generated Valve System 1 (Valve Close)	<ref. (dtc).="" (valve="" 1="" close),="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-285,="" generated="" p1091="" procedure="" system="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1092	Tumble Generated Valve System 2 (Valve Open)	<ref. (dtc).="" (valve="" 2="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-286,="" generated="" open),="" p1092="" procedure="" system="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1093	Tumble Generated Valve System 2 (Valve Close)	<ref. (dtc).="" (valve="" 2="" close),="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-287,="" generated="" p1093="" procedure="" system="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1094	Tumble Generated Valve Signal 1 Circuit Malfunction (Open)	<ref. (dtc).="" (open),="" 1="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-288,="" generated="" malfunction="" p1094="" procedure="" signal="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1095	Tumble Generated Valve Signal 1 Circuit Malfunction (Short)	<ref. (dtc).="" (short),="" 1="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-290,="" generated="" malfunction="" p1095="" procedure="" signal="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1096	Tumble Generated Valve Signal 2 Circuit Malfunction (Open)	<ref. (dtc).="" (open),="" 2="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-292,="" generated="" malfunction="" p1096="" procedure="" signal="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1097	Tumble Generated Valve Signal 2 Circuit Malfunction (Short)	<ref. (dtc).="" (short),="" 2="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-294,="" generated="" malfunction="" p1097="" procedure="" signal="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1110	Atmospheric Pressure Sensor Circuit Malfunction (Low Input)	<ref. (dtc).="" (low="" atmospheric="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-295,="" input),="" malfunction="" p1110="" pressure="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P1111	Atmospheric Pressure Sensor Circuit Malfunction (High Input)	<ref. (dtc).="" (high="" atmospheric="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-296,="" input),="" malfunction="" p1111="" pressure="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P1134	A/F Sensor Micro-Computer Problem	<ref. (dtc).="" a="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-297,="" f="" micro-com-puter="" p1134="" problem,="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P1152	O ₂ Sensor Circuit Range/Performance (Low) (Bank1 Sensor1)	<ref. dtc="" en(h4dotc)(diag)-298,="" o<sub="" p1152="" to="">2 SENSOR CIRCUIT RANGE/PERFORMANCE (LOW) (BANK1 SENSOR1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1153	O ₂ Sensor Circuit Range/Performance (High) (Bank1 Sensor1)	<ref. dtc="" en(h4dotc)(diag)-300,="" o<sub="" p1153="" to="">2 SENSOR CIRCUIT RANGE/PERFORMANCE (HIGH) (BANK1 SENSOR1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1301	Misfire Detected (High Temperature Exhaust Gas)	<ref. (dtc).="" (high="" code="" detected="" diagnostic="" dtc="" en(h4dotc)(diag)-302,="" exhaust="" gas),="" misfire="" p1301="" procedure="" temperature="" to="" trouble="" with=""></ref.>

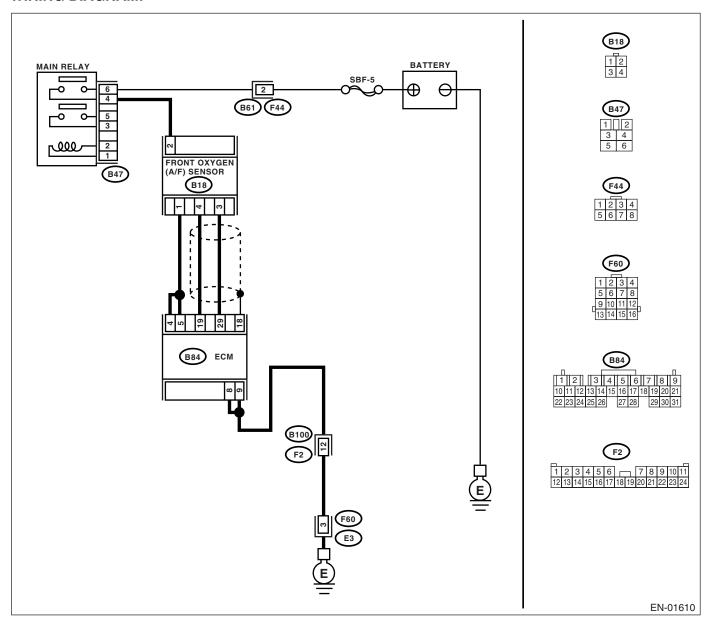
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DTC	Item	Index
P1312	Exhaust Gas Temperature Sensor Malfunction	<ref. dtc="" en(h4dotc)(diag)-304,="" exhaust="" gas="" p1312="" tempera-<br="" to="">TURE SENSOR MALFUNCTION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1400	Fuel Tank Pressure Control Solenoid Valve Circuit Low	<ref. dtc="" en(h4dotc)(diag)-306,="" fuel="" p1400="" pressure<br="" tank="" to="">CONTROL SOLENOID VALVE CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1420	Fuel Tank Pressure Control Sol. Valve Circuit High	<ref. dtc="" en(h4dotc)(diag)-309,="" fuel="" p1420="" pressure<br="" tank="" to="">CONTROL SOL. VALVE CIRCUIT HIGH, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>
P1443	Vent Control Solenoid Valve Function Problem	<ref. (dtc).="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-311,="" function="" p1443="" problem,="" procedure="" solenoid="" to="" trouble="" valve="" vent="" with=""></ref.>
P1446	Fuel Tank Sensor Control Valve Circuit Low	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-313,="" fuel="" low,="" p1446="" procedure="" sensor="" tank="" to="" trouble="" valve="" with=""></ref.>
P1447	Fuel Tank Sensor Control Valve Circuit High	<ref. (dtc).="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-316,="" fuel="" high,="" p1447="" procedure="" sensor="" tank="" to="" trouble="" valve="" with=""></ref.>
P1448	Fuel Tank Sensor Control Valve Range/Performance	<ref. (dtc).="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-318,="" fuel="" p1448="" performance,="" procedure="" range="" sensor="" tank="" to="" trouble="" valve="" with=""></ref.>
P1491	Positive Crankcase Ventilation (Blowby) Function Problem	<ref. (blow-by)="" (dtc).="" code="" crankcase="" diagnostic="" dtc="" en(h4dotc)(diag)-320,="" function="" p1491="" positive="" problem,="" procedure="" to="" trouble="" ventilation="" with=""></ref.>
P1518	Starter Switch Circuit Low Input	<ref. (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-321,="" input,="" low="" p1518="" procedure="" starter="" switch="" to="" trouble="" with=""></ref.>
P1544	Exhaust Gas Temperature Too High	<ref. dtc="" en(h4dotc)(diag)-324,="" exhaust="" gas="" p1544="" tempera-<br="" to="">TURE TOO HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1560	Back-Up Voltage Circuit Malfunction	<ref. back-up="" cir-<br="" dtc="" en(h4dotc)(diag)-325,="" p1560="" to="" voltage="">CUIT MALFUNCTION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1700	Throttle Position Sensor	<ref. dtc="" en(h4dotc)(diag)-327,="" p1700="" position="" sen-<br="" throttle="" to="">SOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1711	Engine Torque Control Signal 1 Circuit Malfunction	<ref. (dtc).="" 1="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-328,="" engine="" malfunction,="" p1711="" procedure="" signal="" to="" torque="" trouble="" with=""></ref.>
P1712	Engine Torque Control Signal 2 Circuit Malfunction	<ref. (dtc).="" 2="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc)(diag)-330,="" engine="" malfunction,="" p1712="" procedure="" signal="" to="" torque="" trouble="" with=""></ref.>
P2096	Post Catalyst Fuel Trim System Too Lean Bank 1	<ref. (dtc).="" 1,="" bank="" catalyst="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-332,="" fuel="" lean="" p2096="" post="" procedure="" system="" to="" too="" trim="" trouble="" with=""></ref.>
P2097	Post Catalyst Fuel Trim System Too Rich Bank 1	<ref. (dtc).="" 1,="" bank="" catalyst="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-336,="" fuel="" p2097="" post="" procedure="" rich="" system="" to="" too="" trim="" trouble="" with=""></ref.>

19.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
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-9, DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE, Inspection Mode.>.**



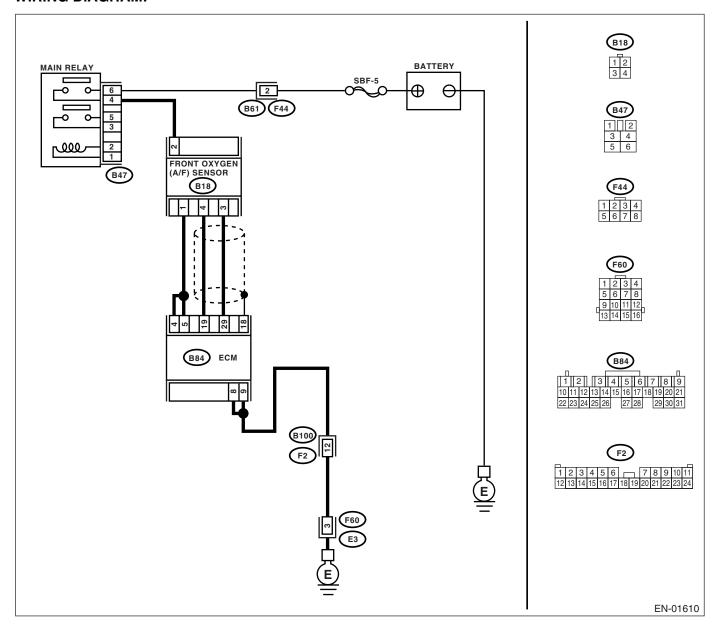
			U Fa-	J Fri
	Step	Check	Yes	No St
1	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Start the engine and warm-up engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 4) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B84) No. 5 — (B18) No. 1: (B84) No. 4 — (B18) No. 1:	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. Connector & terminal (B84) No. 19 — (B18) No. 4: (B84) No. 29 — (B18) No. 3:	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 ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. Measure the resistance of harness between main relay and front oxygen (A/F) sensor connector. Connector & terminal (B47) No. 4 — (B18) No. 2:	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. Terminals No. 2 — No. 1:	Is the resistance less than 5 Ω ?	Go to step 5.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-43, Front Oxygen (A/ F) Sensor.></ref.>
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) sen- sor. <ref. to<br="">FU(H4DOTC)-43, Front Oxygen (A/ F) Sensor.></ref.>

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

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-11, DTC P0031 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			FOD.	Flie o.
	Step	Check	Yes	No
GEN (A/F) 1) Turn the 2) Disconn (A/F) senso 3) Turn the 4) Measure (A/F) senso Connecto (B18) No	DWER SUPPLY TO FRONT OXY-SENSOR. e ignition switch to OFF. e ignition switch to ON. e the voltage between front oxygen or connector and engine ground. for & terminal for 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 2.	Repair the power supply line. NOTE: In this case, repair the following: • 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
Measure th ECM conne Connecto (B84) No	ROUND CIRCUIT OF ECM. The resistance of harness between ector and chassis ground. The resistance of harness between ector and chassis ground. The resistance of the resistance	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 ECM and engine ground cable Poor contact in ECM connector Poor contact in coupling connector
1) Start the 2) Read th heater curre OBD-II gen NOTE: • Subaru S For detailed "READ CUI to EN(H4D0 itor.> • OBD-II so For detailed OBD-II Ger	the data of front oxygen (A/F) sensor ent using Subaru Select Monitor or the the scan tool. Select Monitor discretion procedure, refer to the RRENT DATA FOR ENGINE". <ref. discretion="" instruction="" manual.<="" moncan="" otc)(diag)-31,="" procedures,="" refer="" scan="" select="" subaru="" td="" the="" to="" tool=""><td>Is the current more than 0.2 A?</td><td>contact in connector. NOTE: In this case, repair the following: • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector</td><td>Go to step 4.</td></ref.>	Is the current more than 0.2 A?	contact in connector. NOTE: In this case, repair the following: • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector	Go to step 4.
1) Start an 2) Measure nector and <i>Connecto</i> (<i>B84</i>) No (<i>B84</i>) No	utrut signal from ecm. Indidide the engine. Indididide the engine. Indididididididididididididididididididi	Is the voltage less than 1 V?	Go to step 6.	Go to step 5.
Measure th and chassis <i>Connecto</i> (<i>B84</i>) No	UTPUT SIGNAL FROM ECM. The voltage between ECM connector is ground. The voltage between ECM connector is ground. The voltage between ECM connector is ground (-): The voltage between ECM. The voltage is ground (-): The voltage is ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Go to step 6.

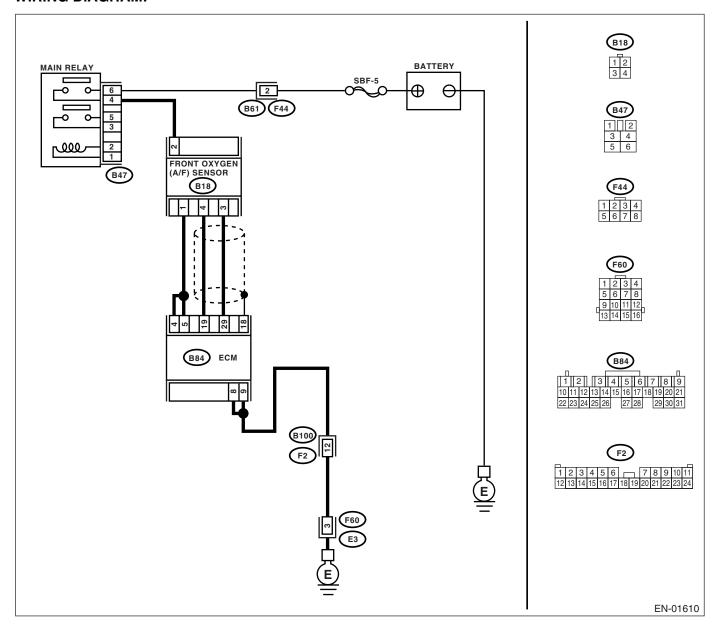
Step	Check	Yes	No S
6 CHECK FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between front oxygen (A/F) sensor connector terminals. Terminals No. 2 — No. 1:	Is the resistance less than 10 Ω ?	In this case, repair	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-43, Front Oxygen (A/ F) Sensor.></ref.>

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

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-13, DTC P0032 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



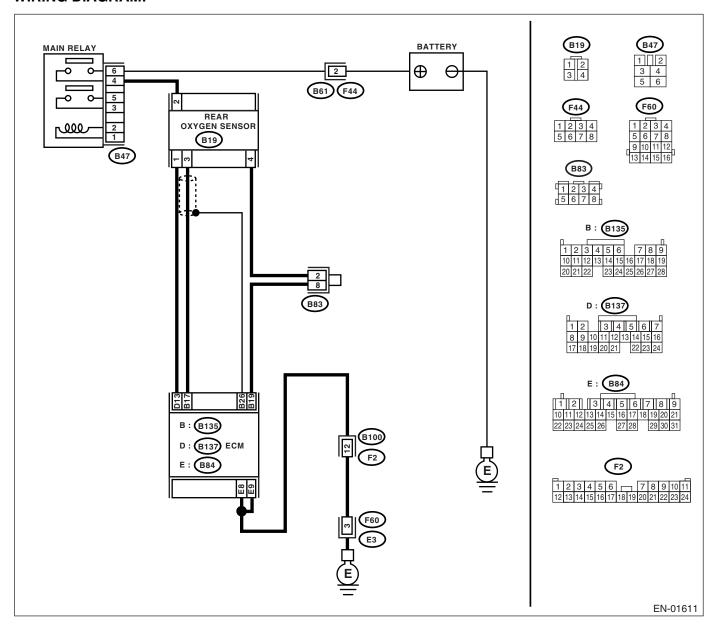
			VI For	y Fri
	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B84) No. 4 (+) — Chassis ground (-): (B84) No. 5 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 3.	Go to step 2.
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 or the OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the current more than 2.3 A?	Replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	END
3	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B84) No. 4 (+) — Chassis ground (-): (B84) No. 5 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	END

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

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-15, DTC P0037 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



		- 1	VI FOR	y Fri
	Step	Check	Yes	No St
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 (B84) No. 8 — Chassis ground: (B84) No. 9 — 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: Open circuit in harness between ECM and engine ground cable 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 or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the current more than 0.2 A?	Repair the connector. NOTE: In this case, repair the following: • Poor contact in rear oxygen sensor connector • Poor contact in rear oxygen sensor connecting harness connector • Poor contact in ECM connector	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 (B137) No. 13 (+) — 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 (B137) No. 13 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Go to step 5.
5	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 13 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>	Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>

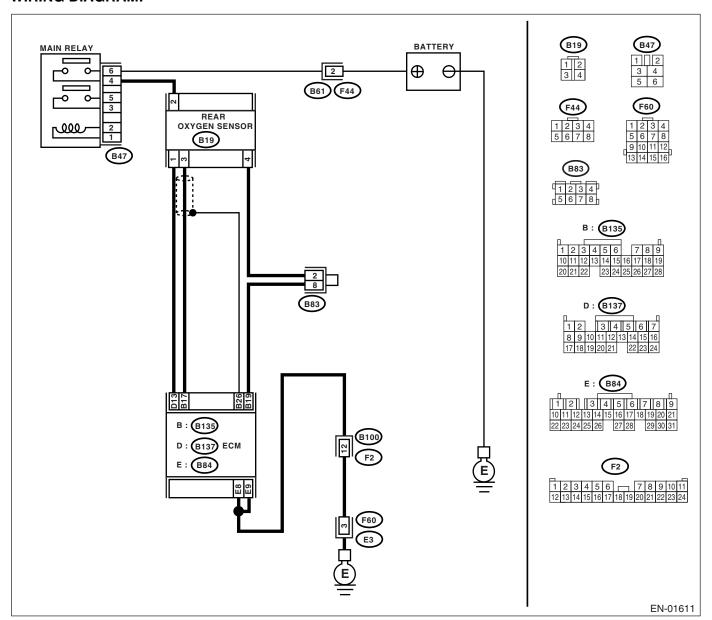
T			VI FAL	J Erica
	Step	Check	Yes	No St
	CHECK POWER SUPPLY TO REAR OXY-GEN SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor connector and engine ground or chassis ground. Connector & terminal (B19) No. 2 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Repair the power supply line. NOTE: In this case, repair the following: Open circuit in harness between main relay and rear oxygen sensor connector Poor contact in rear oxygen sensor connector Poor contact in coupling connector
	CHECK REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen sensor connector terminals. Terminals No. 1 — No. 2:	Is the resistance less than 30 Ω ?	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between rear oxygen sensor and ECM connector Poor contact in rear oxygen sensor connector Poor contact in ECM connector Poor contact in ECM connector	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>

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

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-17, DTC P0038 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			- FO-	J Fri
	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 13 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2	CHECK CURRENT DATA. 1) Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. 2) Turn the ignition switch to ON. 3) Read the data of rear oxygen sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the current more than 7 A?	Replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	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

F: DTC P0068 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE

DTC DETECTING CONDITION:

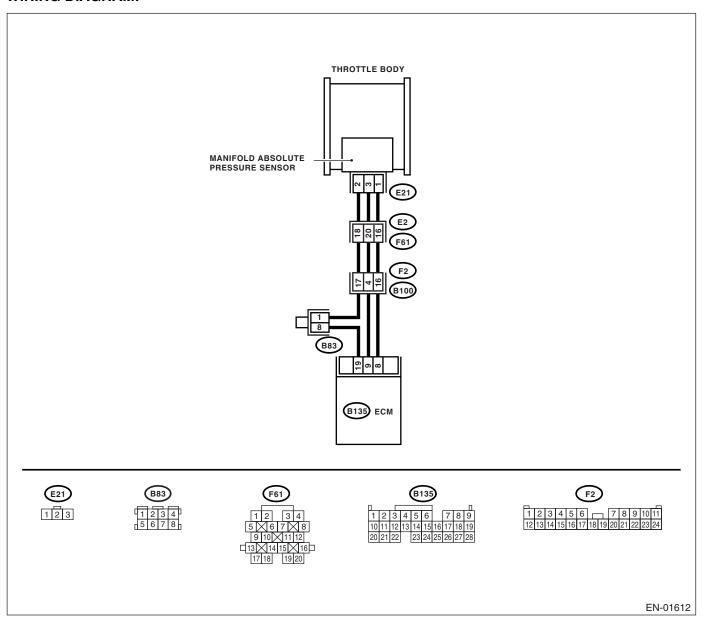
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-19, DTC P0068 MANIFOLD PRESSURE SENSOR RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK IDLE SWITCH SIGNAL. 1) Turn the ignition switch to ON. 2) Operate the LED operation mode for engine using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""></ref.>	Does the LED of {Idle Switch Signal} come on?	Go to step 2.	Check the throttle position sensor circuit. <ref. "a"="" (dtc).="" circuit="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-115,="" p0121="" pedal="" performance,="" position="" procedure="" range="" sensor="" switch="" throttle="" to="" trouble="" with=""> NOTE: In this case, it is not necessary to inspect DTC P0106.</ref.>
2	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC. "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0106.</ref.>	
3	CHECK CONDITION OF MANIFOLD ABSO- LUTE PRESSURE SENSOR.	Is the manifold absolute pres- sure sensor installation bolt tightened securely?	Go to step 4.	Tighten the manifold absolute pressure sensor installation bolt securely.
4	CHECK CONDITION OF THROTTLE BODY.	Is the throttle body installation bolt tightened securely?	Replace the manifold absolute pressure sensor. <ref. absolute="" fu(h4dotc)-33,="" manifold="" pressure="" sensor.="" to=""></ref.>	Tighten the throttle body installation bolt securely.

G: DTC P0101 MASS OR VOLUME AIR FLOW CIRCUIT RANGE/PERFOR-

DTC DETECTING CONDITION:

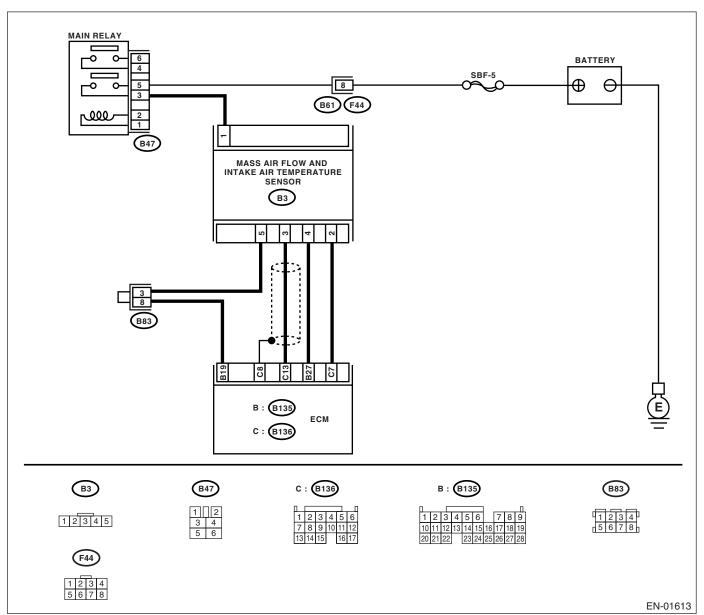
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-21, DTC P0101 MASS OR VOLUME AIR FLOW CIR-CUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



Step	Check	Yes	No S
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	EN(H4DOTC)(diag)-71, List of Diag-	sensor. <ref. to<br="">FU(H4DOTC)-32, Mass Air Flow and Intake Air Temper- ature Sensor.></ref.>

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H: DTC P0102 MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT

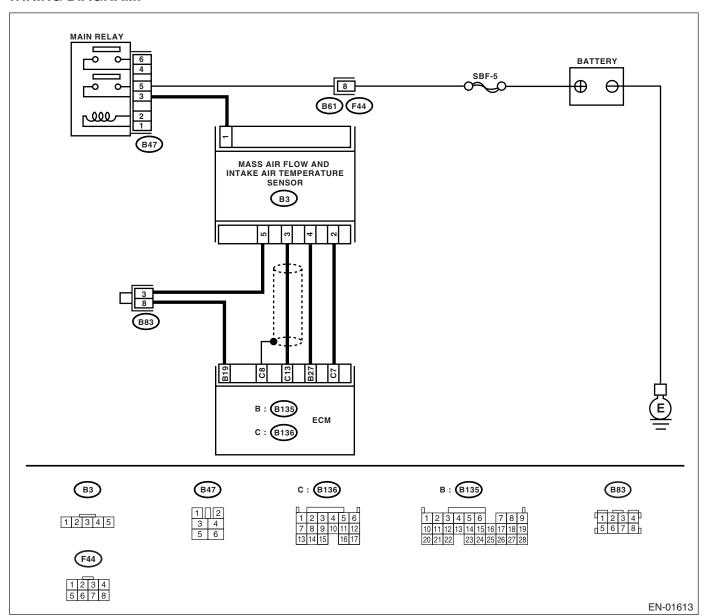
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-23, DTC P0102 MASS OR VOLUME AIR FLOW CIR- CUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor or OBD-II general scan tool to data link connector. 3) Turn the ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON. 4) Start the engine. 5) Read the mass air flow sensor voltage using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the voltage 0.2 — 4.7 V?	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in the mass air flow sensor. NOTE: In this case, repair the following: Open or ground short circuit in harness between mass air flow sensor and ECM connector Poor contact in mass air flow sensor or ECM connector	Go to step 2.
2	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground while engine is idling. Connector & terminal (B136) No. 13 (+) — Chassis ground (-):	Is the voltage less than 0.2 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR). Measure the voltage between ECM connector and chassis ground while engine is idling.	Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from mass air flow sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between mass air flow sensor connector and chassis ground. Connector & terminal (B3) No. 1 (+) — Chassis ground (-):	Is the voltage more than 5 V?	Go to step 5.	Repair the open circuit between mass air flow sensor and main relay.

			160-	y Fri
	Step	Check	Yes	No St
5	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and mass air flow sensor connector. Connector & terminal (B136) No. 13 — (B3) No. 3: (B136) No. 7 — (B3) No. 2: (B135) No. 19 — (B3) No. 5:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit between ECM and mass air flow sensor connector.
6	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B136) No. 13 — Chassis ground: (B135) No. 19 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 7.	Repair the ground short circuit between ECM and mass air flow sen- sor connector.
7	CHECK POOR CONTACT Check poor contact in mass air flow sensor connector.	Is there poor contact in mass air flow sensor connector?	Repair the poor contact in mass air flow sensor connector.	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC)-32, Mass Air Flow and Intake Air Temper- ature Sensor.></ref.>

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I: DTC P0103 MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

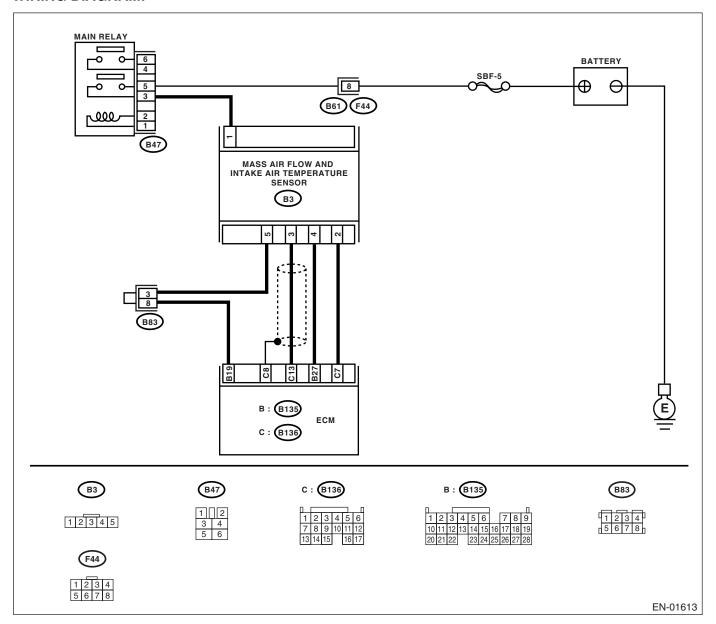
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-25, DTC P0103 MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor or OBD-II general scan tool to data link connector. 3) Turn the ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON. 4) Start the engine. 5) Read the mass air flow sensor voltage using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>		Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time.	T. L.
2	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from mass air flow sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between mass air flow sensor connector and chassis ground. Connector & terminal (B3) No. 3 (+) — Chassis ground (-):	Is the voltage more than 5 V?	Repair the battery short of harness between mass air flow sensor con- nector and ECM connector.	Go to step 3.
3	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and mass air flow sensor connector. Connector & terminal (B3) No. 2 — (B136) No. 7:	Is the resistance less than 1 Ω ?	Replace the mass air flow sensor. <ref. to<br="">FU(H4DOTC)-32, Mass Air Flow and Intake Air Temper- ature Sensor.></ref.>	Repair the open harness between mass air flow sen- sor connector and ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (DIAGNOSTICS)

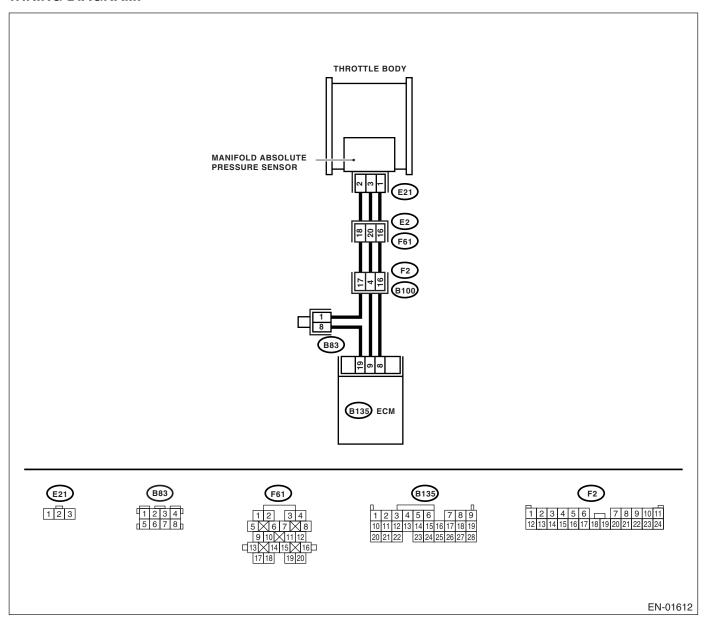
J: DTC P0107 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-27, DTC P0107 MANIFOLD ABSOLUTE PRESSURE/ BAROMETRIC PRESSURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



			VI FA-	y Fri-
	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 3.	Go to step 2.
2	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
3	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 8 (+) — Chassis ground (-):	Is the voltage less than 0.7 V?	Go to step 4.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	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. Connector & terminal (E21) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 5.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
5	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 (B135) No. 19 — (E21) No. 2:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
6	CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. Measure the resistance of harness between manifold absolute pressure sensor connector and engine ground. Connector & terminal (E21) No. 1 — Engine ground:	Is the resistance more than 1 M Ω ?	Go to step 7.	Repair the ground short circuit in har- ness between ECM and mani- fold absolute pres- sure sensor connector.
7	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. absolute="" fu(h4dotc)-33,="" manifold="" pressure="" sensor.="" to=""></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (DIAGNOSTICS)

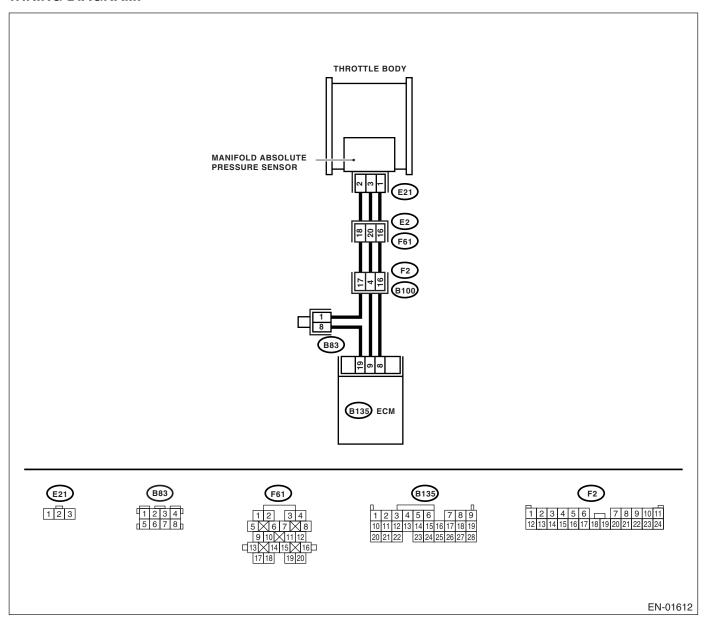
K: DTC P0108 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-29, DTC P0108 MANIFOLD ABSOLUTE PRESSURE/ BAROMETRIC PRESSURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



		-	VI Fa-	y Fri
	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 3.	Go to step 2.
2	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
3	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 8 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	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. Connector & terminal (E21) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 5.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
5	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 (B135) No. 8 — (E21) No. 1:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
6	CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. Connector & terminal (B135) No. 19 — (E21) No. 2:	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
7	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. absolute="" fu(h4dotc)-33,="" manifold="" pressure="" sensor.="" to=""></ref.>

L: DTC P0111 INTAKE AIR TEMPERATURE CIRCUIT RANGE/PERFORMANCE DTC DETECTING CONDITION:

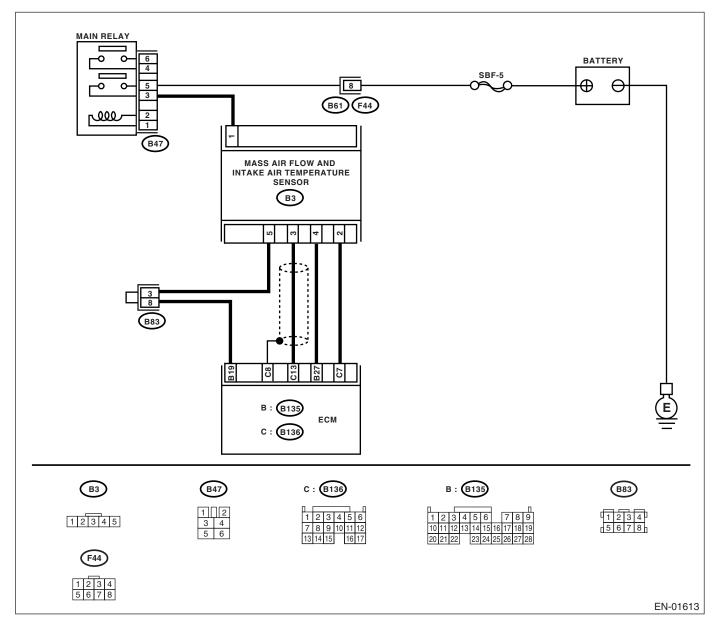
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-31, DTC P0111 INTAKE AIR TEMPERATURE CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



		- 1	O For	y Eria
	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0111.</ref.>	
2	CHECK ENGINE COOLANT TEMPERATURE. 1) Start the engine and warm it up completely. 2) Measure the engine coolant temperature using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the engine coolant temperature 75°C (167°F) — 95°C (203°F)?	air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC)-32, Mass Air Flow and</ref.>	Inspect the DTC P0125 using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>

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M: DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT

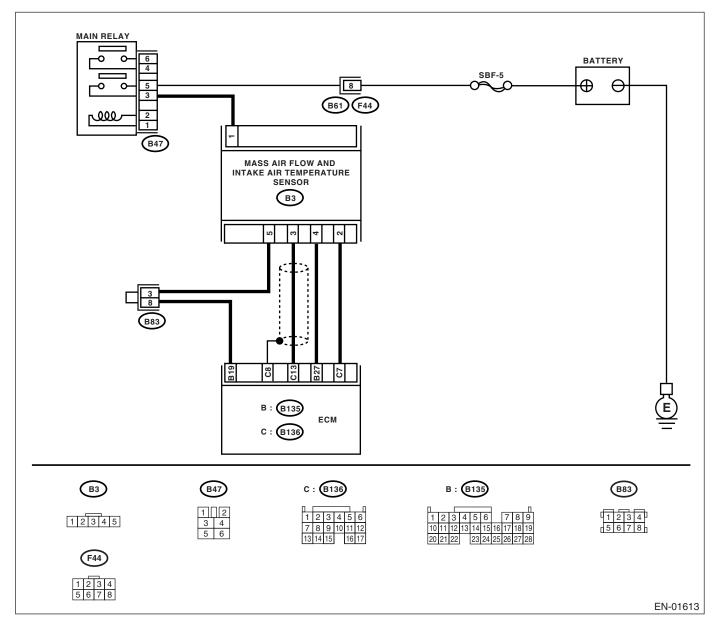
- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-33, DTC P0112 INTAKE AIR TEMPERATURE CIR-CUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



			V/ 50-	y Eria
Ste	p	Check	Yes	No St
1 CHECK CURRENT 1) Start the engine 2) Read the data of sensor signal using the OBD-II general NOTE: • Subaru Select More detailed operate "READ CURRENT"	of intake air temperature g Subaru Select Monitor or scan tool. donitor ion procedure, refer to the DATA FOR ENGINE". <ref. ag)-31,="" mon-<="" select="" subaru="" th=""><th>Check Is the temperature more than 55°C (131°F)?</th><th>Yes Go to step 2.</th><th>No Repair the poor contact. NOTE: In this case, repair the following: Poor contact mass air flow and intake air temperature sensor Poor contact in ECM Poor contact in</th></ref.>	Check Is the temperature more than 55°C (131°F)?	Yes Go to step 2.	No Repair the poor contact. NOTE: In this case, repair the following: Poor contact mass air flow and intake air temperature sensor Poor contact in ECM Poor contact in
For detailed operat OBD-II General Sc	ion procedure, refer to the an Tool Instruction Manual.			joint connector
FLOW AND INTAK SENSOR AND EC 1) Turn the ignition 2) Disconnect the flow and intake air 3) Turn the ignition 4) Read the data of	n switch to OFF. connector from mass air temperature sensor. n switch to ON. of intake air temperature g Subaru Select Monitor or	Is the temperature less than – 36°C (–33°F)?	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC)-32, Mass Air Flow and Intake Air Temper- ature Sensor.></ref.>	Repair the ground short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.
"READ CURRENT to EN(H4DOTC)(di itor.> • OBD-II general s For detailed operat	ion procedure, refer to the DATA FOR ENGINE". <ref. ag)-31,="" mon-<="" select="" subaru="" td=""><td></td><td></td><td></td></ref.>			

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N: DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

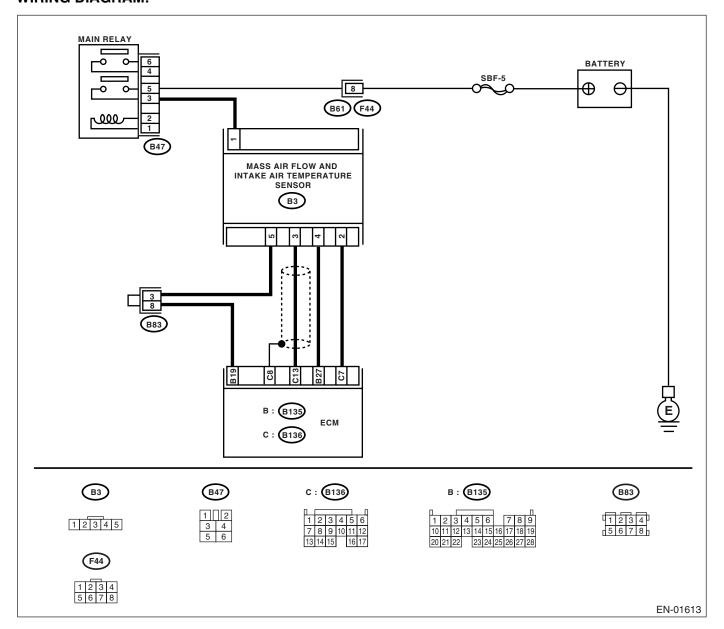
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-35, DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			FOR	J Eris o
	Step	Check	Yes	No St
1	CHECK CURRENT DATA. 1) Start the engine.	Is the temperature less than – 36°C (–33°F)?	Go to step 2.	Repair the poor contact.
	Read the data of intake air temperature sensor signal using Subaru Select Monitor or			NOTE: In this case, repair
	the OBD-II general scan tool. NOTE: Subaru Select Monitor			the following: • Poor contact in mass air flow and
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4DOTC)(diag)-31, Subaru Select Mon-</ref. 			intake air temperature sensor Poor contact in
	itor.> • OBD-II general scan tool			ECM • Poor contact in
	For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.			joint connector
2	CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the implifien quited to OFF	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between mass air flow and	Go to step 3.
	 Turn the ignition switch to OFF. Disconnect the connector from mass air flow and intake air temperature sensor. 		intake air tempera- ture sensor and	
	 Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground. 		ECM connector.	
	Connector & terminal (B3) No. 4 (+) — Engine ground (−):			
3	CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground. Connector & terminal (B3) No. 4 (+) — Engine ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.	Go to step 4.
4	CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. Measure the voltage between mass air flow and intake air temperature sensor and manifold absolute pressure sensor connector and engine ground. Connector & terminal (B3) No. 4 (+) — Engine ground (-):	Is the voltage more than 4 V?	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector Poor contact in mass air flow and intake air temperature sensor Poor contact in ECM Poor contact in ipoint connector

Step	Check	Yes	No Si
5 CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between mass air flow and intake air temperature sensor and engine ground. Connector & terminal (B3) No. 5 — Engine ground:	Is the resistance less than 5 Ω ?	Replace the mass air flow and intake air temperature sensor. <ref. air="" and="" flow="" fu(h4dotc)-32,="" intake="" mass="" sensor.="" temperature="" to=""></ref.>	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector Poor contact in mass air flow and intake air temperature sensor Poor contact in ECM Poor contact in joint connector

O: DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT DTC DETECTING CONDITION:

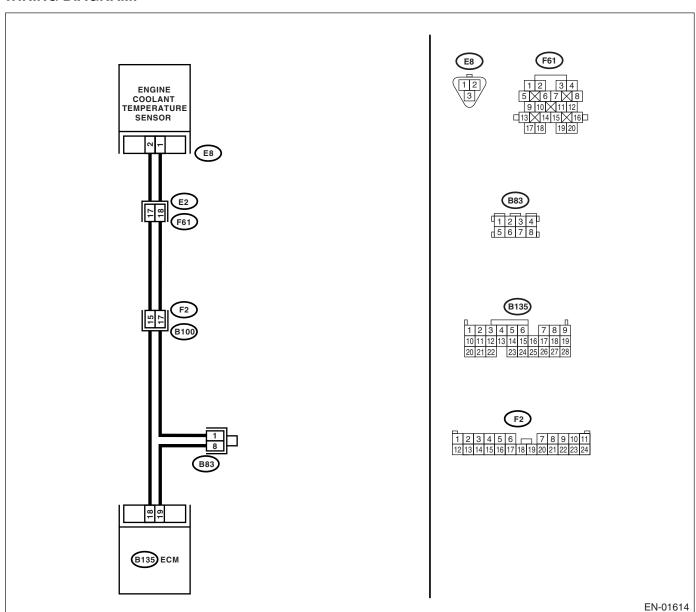
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-37, DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

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(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



		- 7	VI For	y Eri-	_
	Step	Check	Yes	No St	let:
1	 Start the engine. Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 			Repair the poor contact. NOTE: In this case, repair the following: • Poor contact in engine coolant temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector	
2			Engine Coolant	Repair the ground short circuit in harness between engine coolant temperature sensor and ECM connector.	

P: DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

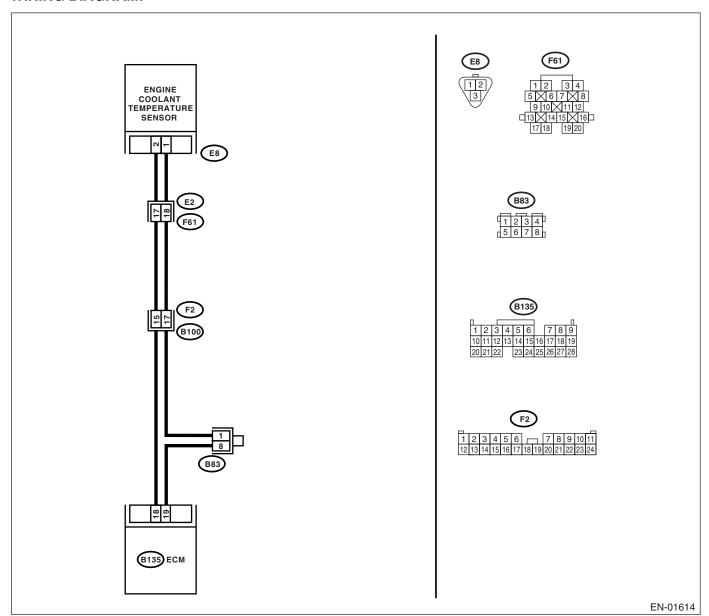
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-39, DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

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(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Г			FOD.	Chis o.
	Step	Check	Yes	No St
1	CHECK CURRENT DATA.	Is the temperature less than – 40°C (–40°F)?	Go to step 2.	Repair the poor contact.
	 Start the engine. Read the data of engine coolant tempera- 	40 C (-40 F)?		
	ture sensor signal using Subaru Select Monitor			NOTE: In this case, repair
	or OBD-II general scan tool.			the following:
	NOTE:			Poor contact in
	Subaru Select Monitor			engine coolant
	For detailed operation procedure, refer to the			temperature sen-
	"READ CURRENT DATA FOR ENGINE". < Ref.			sor
	to EN(H4DOTC)(diag)-31, Subaru Select Monitor.>			Poor contact in ECM
	OBD-II general scan tool			Poor contact in
	For detailed operation procedures, refer to the			coupling connector
	OBD-II General Scan Tool Instruction Manual.			Poor contact in
				joint connector
2	CHECK HARNESS BETWEEN ENGINE	Is the voltage more than 10 V?	Repair the battery	Go to step 3.
	COOLANT TEMPERATURE SENSOR AND		short circuit in har-	
	ECM CONNECTOR.		ness between	
	 Turn the ignition switch to OFF. Disconnect the connector from engine cool- 		ECM and engine coolant tempera-	
	ant temperature sensor.		ture sensor con-	
	3) Measure the voltage between engine cool-		nector.	
	ant temperature sensor connector and engine			
	ground.			
	Connector & terminal			
	(E8) No. 2 (+) — Engine ground (-):	La tha walton a manual than 10 1/2	Danais tha battass	Co to oton 4
3	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND	Is the voltage more than 10 V?	Repair the battery short circuit in har-	Go to step 4.
	ECM CONNECTOR.		ness between	
	1) Turn the ignition switch to ON.		ECM and engine	
	2) Measure the voltage between engine cool-		coolant tempera-	
	ant temperature sensor connector and engine		ture sensor con-	
	ground. Connector & terminal		nector.	
	(E8) No. 2 (+) — Engine ground (-):			
4	CHECK HARNESS BETWEEN ENGINE	Is the voltage more than 4 V?	Go to step 5.	Repair the har-
-	COOLANT TEMPERATURE SENSOR AND	lo the veltage more than 1 v.	G 10 010p 01	ness and connec-
	ECM CONNECTOR.			tor.
	Measure the voltage between engine coolant			NOTE:
	temperature sensor connector and engine			In this case, repair
	ground. Connector & terminal			the following:
	(E8) No. 2 (+) — Engine ground (-):			Open circuit in harness between
	(-, (· ,g g ().			ECM and engine
				coolant tempera-
				ture sensor con-
				nector
				Poor contact in
				engine coolant temperature sen-
				sor connector
				Poor contact in
				ECM connector
				Poor contact in
				coupling connector
				Poor contact in ioint connector
				joint connector

		0/60-	J Frai
Step	Check	Yes	No St
5 CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between engine coolant temperature sensor connector and engine ground. Connector & terminal (E8) No. 1 — Engine ground:	Is the resistance less than 5 Ω ?	Replace the engine coolant temperature sensor. <ref. coolant="" engine="" fu(h4dotc)-27,="" sensor.="" temperature="" to=""></ref.>	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and engine coolant temperature sensor connector Poor contact in engine coolant temperature sensor connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in coupling connector

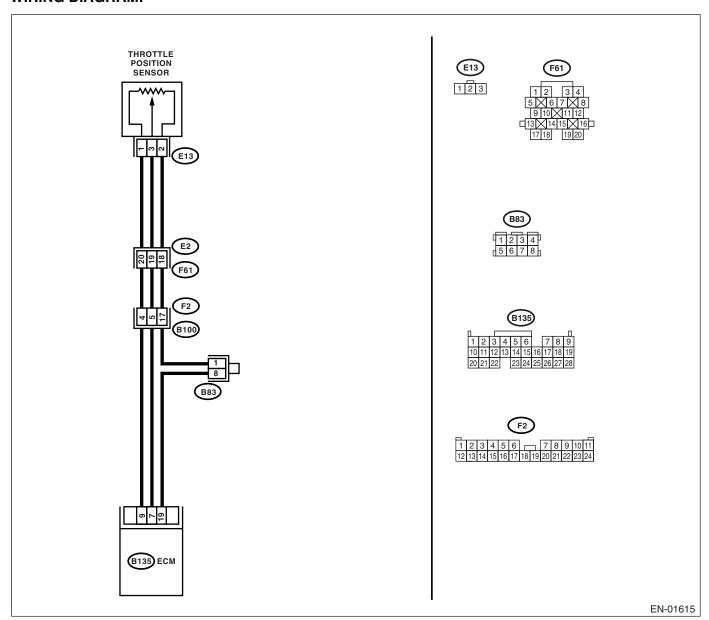
Q: DTC P0121 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-41, DTC P0121 THROTTLE/PEDAL POSITION SEN-SOR/SWITCH "A" CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.> **TROUBLE SYMPTOM:**
- Erroneous idling
- Engine stalls.
- Poor driving performance
- · Fuel is cut.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



Step	Check	Yes	No S
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	"List of Diagnostic Trouble Code	FU(H4DOTC)-31, Throttle Position Sensor.>

R: DTC P0122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT

DTC DETECTING CONDITION:

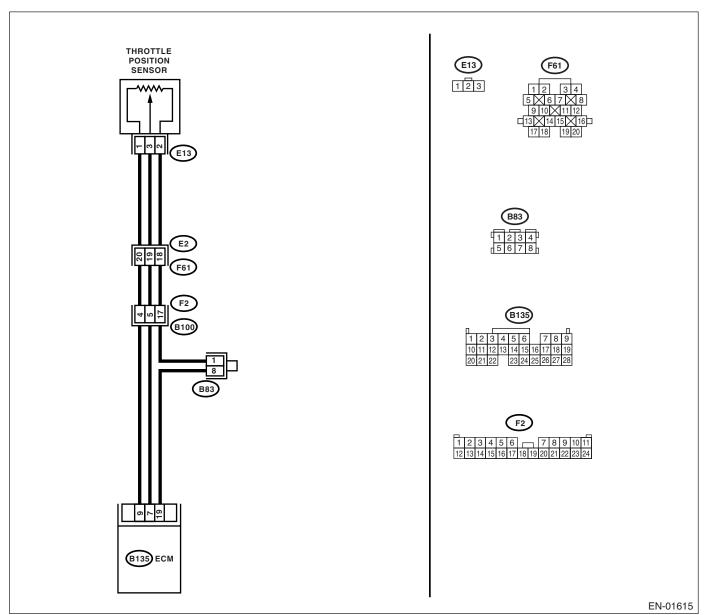
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-44, DTC P0122 THROTTLE/PEDAL POSITION SEN-SOR/SWITCH "A" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



		FAR	y Erica
Step	Check	Yes	No St
CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>		Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: Poor contact in throttle position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 7 (+) — Chassis ground (-):	Is the voltage less than 0.15 V?	Go to step 6.	Go to step 5.
5 CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR) Measure the voltage between ECM connector and chassis ground.	Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Does the voltage change?	Repair the poor contact in ECM connector.	Go to step 6.

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	Step	Check	Yes	No St
6	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from throttle position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between throttle position sensor connector and engine ground. Connector & terminal (E13) No. 1 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between throttle position sensor and ECM connector Poor contact in throttle position sensor connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in coupling connector
7	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and throttle position sensor connector. Connector & terminal (B135) No. 7 — (E13) No. 3:	Is the resistance less than 1 Ω ?	Go to step 8.	joint connector Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in ECM connector • Poor contact in throttle position sensor connector • Poor contact in throttle position sensor connector
8	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR. Measure the resistance of harness between throttle position sensor connector and engine ground. Connector & terminal (E13) No. 3 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 9.	Repair the ground short circuit in har- ness between throttle position sensor and ECM connector.
9	CHECK POOR CONTACT. Check poor contact in throttle position sensor connector.	Is there poor contact in throttle position sensor connector?	Repair the poor contact in throttle position sensor connector.	Replace the throt- tle position sen- sor. <ref. to<br="">FU(H4DOTC)-31, Throttle Position Sensor.></ref.>

S: DTC P0123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT

DTC DETECTING CONDITION:

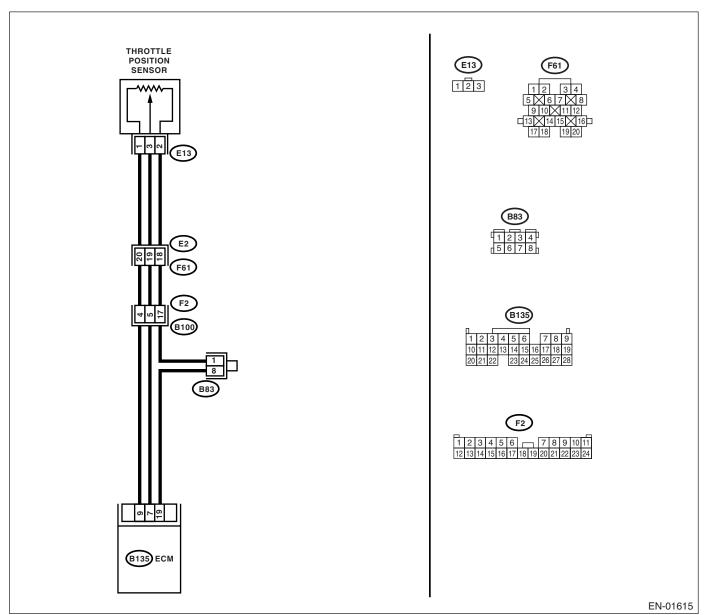
- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-46, DTC P0123 THROTTLE/PEDAL POSITION SEN-SOR/SWITCH "A" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



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	Step	Check	Yes	No St	Id:
1	CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the voltage more than 4.7 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: Poor contact in throttle position sensor connector Poor contact in ECM connector Poor contact in coupling connector	Idios
2	CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from throttle position sensor. 3) Measure the resistance of harness between throttle position sensor connector and engine ground. Connector & terminal (E13) No. 2 — Engine ground:	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 throttle position sensor and ECM connector Poor contact in coupling connector Poor contact in joint connector	
3	CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNEC- TOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between throttle position sensor connector and engine ground. Connector & terminal (E13) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.7 V?	Repair the battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Replace the throt- tle position sen- sor. <ref. to<br="">FU(H4DOTC)-31, Throttle Position Sensor.></ref.>	

T: DTC P0125 INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP

DTC DETECTING CONDITION:

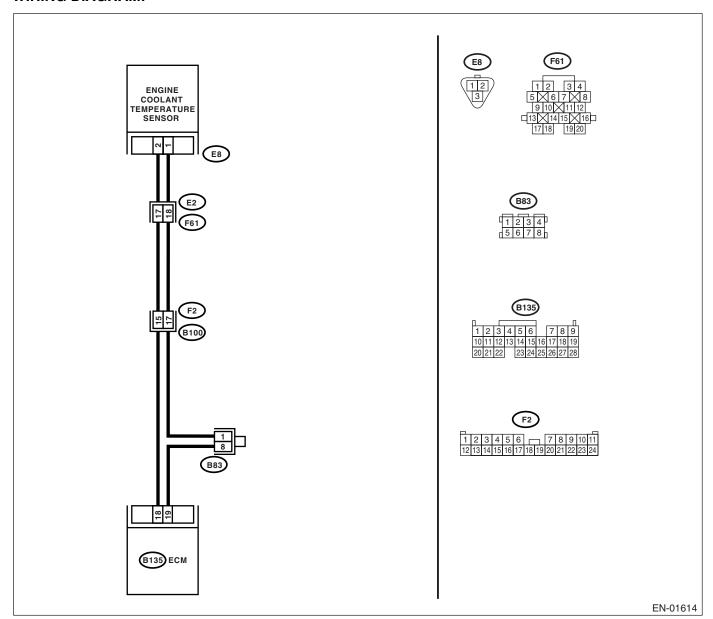
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-48, DTC P0125 INSUFFICIENT COOLANT TEMPER- ATURE FOR CLOSED LOOP FUEL CONTROL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Engine will not return to idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0125.</ref.>	
2	CHECK ENGINE COOLING SYSTEM. NOTE: Check the following items. Thermostat open stuck Coolant level Coolant freeze Tire diameter	Is there a fault in engine cooling system?	Replace the ther- mostat. <ref. to<br="">CO(H4SO)-17, Thermostat.></ref.>	Replace the engine coolant temperature sensor. <ref. coolant="" engine="" fu(h4dotc)-27,="" sensor.="" temperature="" to=""></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

U: DTC P0128 COOLANT THERMOSTAT (COOLANT TEMPERATURE BELOW

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-50, DTC P0128 COOLANT THERMOSTAT (COOL-ANT TEMPERATURE BELOW THERMOSTAT REGULATING TEMPERATURE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Thermostat remains open.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE, Inspection Mode.>.**

	Step	Check	Yes	No
1	CHECK VEHICLE CONDITION.	Was the vehicle driven or idled with the engine partially submerged under water?	In this case, it is not necessary to inspect DTC P0128.	Go to step 2.
2	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Codes (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 3.
3	CHECK ENGINE COOLANT.	Are coolant level and mixture ratio of cooling water to anti-freeze solution correct?	Go to step 4.	Replace the engine coolant. <ref. co(h4so)-12,="" coolant.="" engine="" replacement,="" to=""></ref.>
4	CHECK RADIATOR FAN. 1) Start the engine. 2) Check radiator fan operation.	Does the radiator fan continuously rotate for more than 3 minutes during idling?	Repair radiator fan circuit. <ref. and="" co(h4so)-22,="" fan="" main="" motor.="" radiator="" to=""> and <ref. and="" co(h4so)-23,="" fan="" motor.="" radiator="" sub="" to="">.</ref.></ref.>	Replace the ther- mostat. <ref. to<br="">CO(H4SO)-17, Thermostat.></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (DIAGNOSTICS)

V: DTC P0129 ATMOSPHERIC PRESSURE SENSOR CIRCUIT RANGE/PER-FORMANCE

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-52, DTC P0129 BAROMETRIC PRESSURE TOO LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

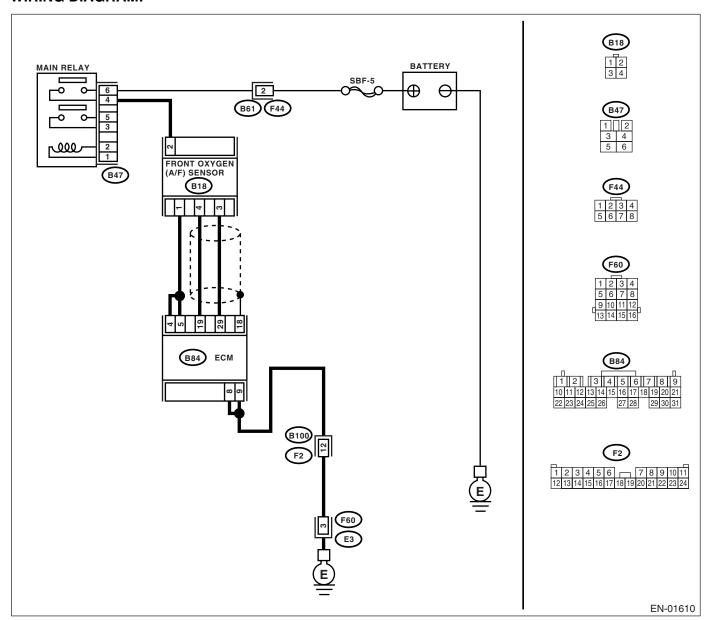
Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	FU(H4DOTC)-48,	It is not necessary to inspect DTC P0129.

W: DTC P0130 O₂ SENSOR CIRCUIT (BANK 1 SENSOR 1) DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-53, DTC P0130 O₂ SENSOR CIRCUIT (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



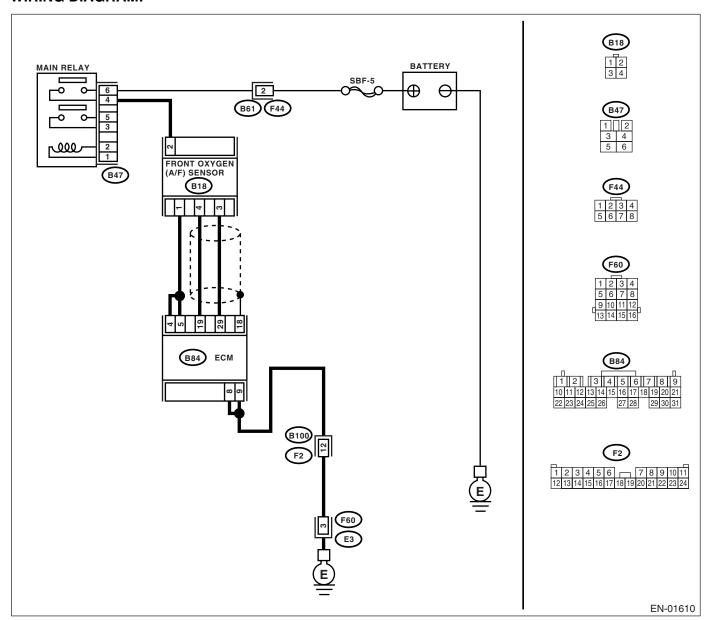
			VI FOR	y Fri
	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FRONT (A/F) OXYGEN SENSOR DA-	Is the measured value 0.85 —	Go to step 3.	Go to step 4.
	TA. 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 (158°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 using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	1.15 (in idling)?		
3	CHECK REAR OXYGEN SENSOR SIGNAL. 1) Race the engine at speeds from idling to 5,000 rpm for a total of 5 cycles. NOTE: To increase the engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approx. 5 seconds, and quickly release accelerator pedal to decrease engine speed. 2) Operate the LED operation mode for engine. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""></ref.>	Signal} blink?	Repair the poor contact in front oxygen (A/F) sensor and rear oxygen sensor connector.	Check the rear oxygen sensor cir- cuit. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>
4	CHECK EXHAUST SYSTEM. Check the exhaust system parts. NOTE: Check the following items. • Loose installation of portions • Damage (crack, hole etc.) of parts • Looseness of front oxygen (A/F) sensor • Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there a fault in exhaust system?	Repair or replace the faulty parts.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-43, Front Oxygen (A/ F) Sensor.></ref.>

X: DTC P0133 O₂ SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 1) DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-55, DTC P0133 O₂ SENSOR CIRCUIT SLOW RE-SPONSE (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (ĎIAGNOSTICS)

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	Step	Check	Yes	No St	101.
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0133.</ref.>		IUIOS
2	CHECK EXHAUST SYSTEM. NOTE: Check the following items. Loose installation of front portion of exhaust pipe onto cylinder heads Loose connection between front exhaust pipe and front catalytic converter Damage of exhaust pipe resulting in a hole	Is there a fault in exhaust system?	Repair the exhaust system.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-43, Front Oxygen (A/ F) Sensor.></ref.>	

Y: DTC P0134 $\rm O_2$ SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1)

NOTE:

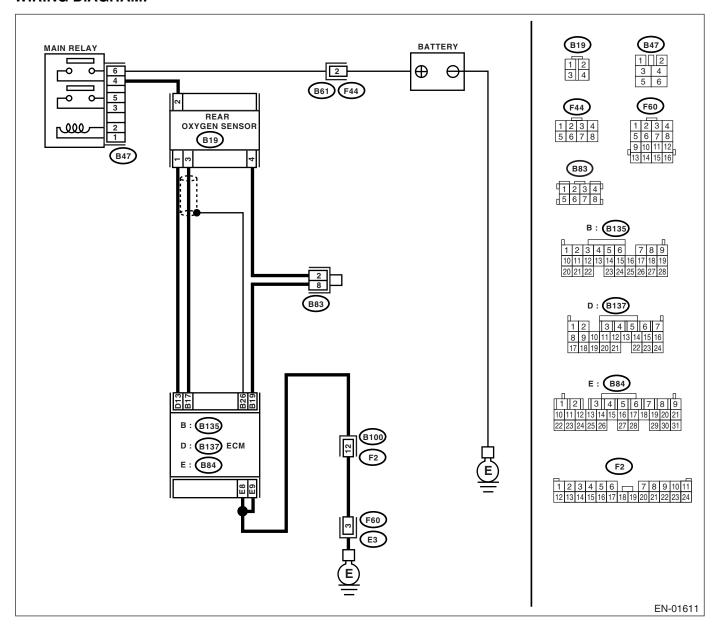
For the diagnostic procedure, refer to DTC P0130. <Ref. to EN(H4DOTC)(diag)-126, DTC P0130 O₂ SEN-SOR CIRCUIT (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Z: DTC P0137 O₂ SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2) DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-60, DTC P0137 O₂ SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St	Irl:
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Using the List of Diagnostic Trou- ble Code (DTC), check the appro- priate DTC. <ref. to EN(H4DOTC)(diag)-71, List of Diag- nostic Trouble Code (DTC).></ref. 	Go to step 2.	4105
2	CHECK REAR OXYGEN SENSOR DATA.	Does the value fluctuate?	Go to step 6.	Go to step 3.	1
	 Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for 2 minutes. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: 				
	 Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. </ref.> 				
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor connector. Connector & terminal (B135) No. 17 — (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 5.	
5	CHECK HARNESS BETWEEN REAR OXY-GEN 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 engine ground or chassis ground. Connector & terminal (B19) No. 3 (+) — Engine ground (-):	Is the voltage more than 0.2 V?	oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between rear oxygen sensor and ECM connector Poor contact in rear oxygen sensor connector Poor contact in ECM connector	

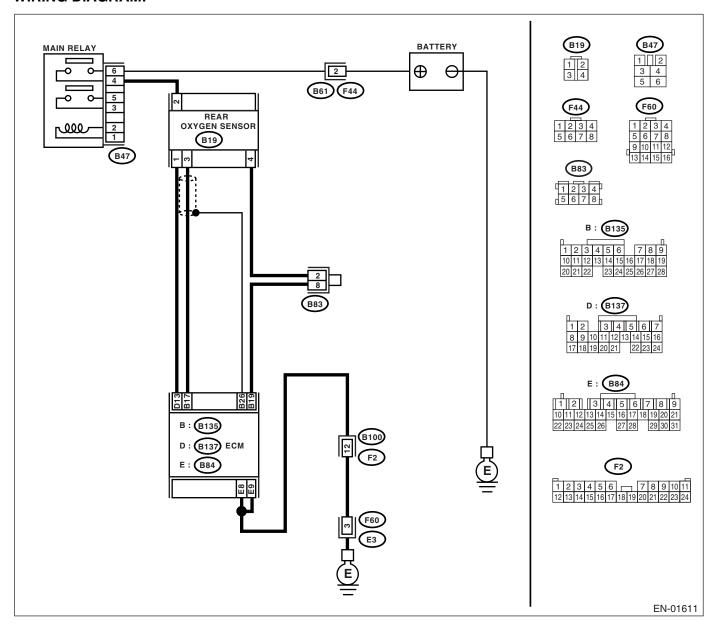
	Step	Check	Yes	No Si
6	CHECK EXHAUST SYSTEM. Check the exhaust system parts.	Is there a fault in exhaust system?	Repair or replace the faulty parts.	Replace the rear oxygen sensor.
	NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor			<ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>

AA:DTC P0138 O₂ SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2) DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-62, DTC P0138 O₂ SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St	Irl:
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Using the List of Diagnostic Trou- ble Code (DTC), check the appro- priate DTC. <ref. to EN(H4DOTC)(diag)-71, List of Diag- nostic Trouble Code (DTC).></ref. 	Go to step 2.	4105
2	CHECK REAR OXYGEN SENSOR DATA.	Does the value fluctuate?	Go to step 6.	Go to step 3.	1
	 Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for 2 minutes. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: 				
	 Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. </ref.> 				
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor connector. Connector & terminal (B135) No. 17 — (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 5.	
5	CHECK HARNESS BETWEEN REAR OXY-GEN 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 engine ground or chassis ground. Connector & terminal (B19) No. 3 (+) — Engine ground (-):	Is the voltage more than 0.2 V?	oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between rear oxygen sensor and ECM connector Poor contact in rear oxygen sensor connector Poor contact in ECM connector	

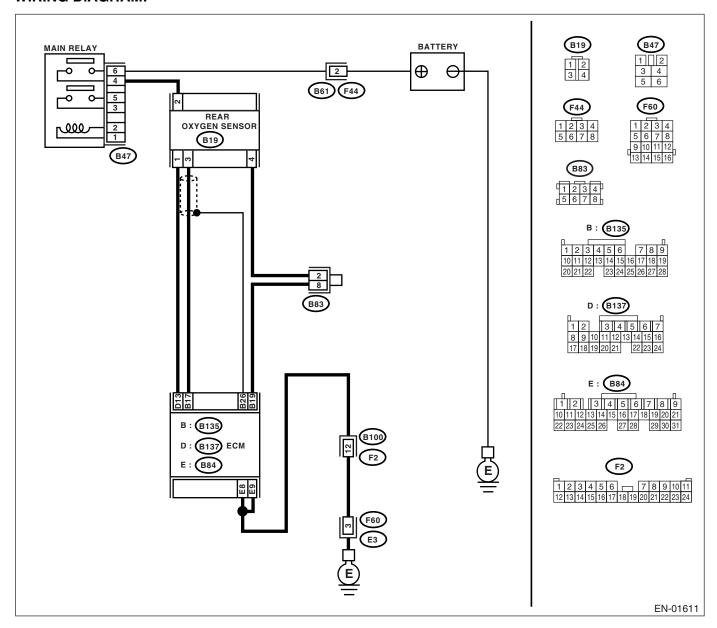
	Step	Check	Yes	No St
6	CHECK EXHAUST SYSTEM. Check the exhaust system parts. NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there a fault in exhaust system?	Repair or replace the faulty parts.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>

AB:DTC P0139 O₂ SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 2) DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-64, DTC P0139 O₂ SENSOR CIRCUIT SLOW RE-SPONSE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (ĎIAGNOSTICS)

Step	Check	Yes	No St
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?		FU(H4DOTC)-45, Rear Oxygen Sen- sor.>

AC:DTC P0171 SYSTEM TOO LEAN (BANK 1)

NOTE:

For the diagnostic procedure, refer to DTC P0172. <Ref. to EN(H4DOTC)(diag)-138, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

Eris Studios

ENGINE (DIAGNOSTICS)

AD:DTC P0172 SYSTEM TOO RICH (BANK 1)

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-70, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, 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 FUEL PRESSURE.	Is the measured value 284 —	Go to step 4.	Repair the follow-
3	Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel on the floor. 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 5 more seconds. (4)Turn the ignition switch to OFF. Connect the connector to fuel pump relay. Disconnect the fuel delivery hose from fuel filter, and connect fuel pressure gauge. Install the fuel filler cap. Start the engine and idle while gear position is neutral. Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning:	Is the measured value 284 — 314 kPa (2.9 — 3.2 kg/cm², 41 — 46 psi)?	Go to step 4.	Hepair the following items. Fuel pressure too high: • Clogged fuel return line or bent hose Fuel pressure too low: • Improper fuel pump discharge • Clogged fuel supply line
	Before removing the fuel pressure gauge, release fuel pressure.			
	NOTE: If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.			

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	Step	Check	Yes	No St
4	CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. If out of specification as measured at this step, check or replace the pressure regulator and pressure regulator vacuum hose.	Is the measured value 206 — 235 kPa (2.1 — 2.4 kg/cm ² , 30 — 34 psi)?	Go to step 5.	Repair the following items. Fuel pressure too high:
5	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 or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the temperature more than 60°C (140°F)?	Go to step 6.	Replace the engine coolant temperature sensor. <ref. coolant="" engine="" fu(h4dotc)-27,="" sensor.="" temperature="" to=""></ref.>
6	CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the measured value within the followings? Ignition ON: 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) Idling: 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg)	Go to step 7.	Replace the mass air flow and intake air temperature sensor. <ref. air="" and="" flow="" fu(h4dotc)-32,="" intake="" mass="" sensor.="" temperature="" to=""></ref.>

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<u> </u>	-	0.110011		150 411
7	CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""></ref.>	Check Subtract ambient temperature from intake air temperature. Is the obtained value –10°C — 50°C (14°F — 122°F)?	cause probable cause is deteriora-	FU(H4DOTC)-32, Mass Air Flow and
	OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.			

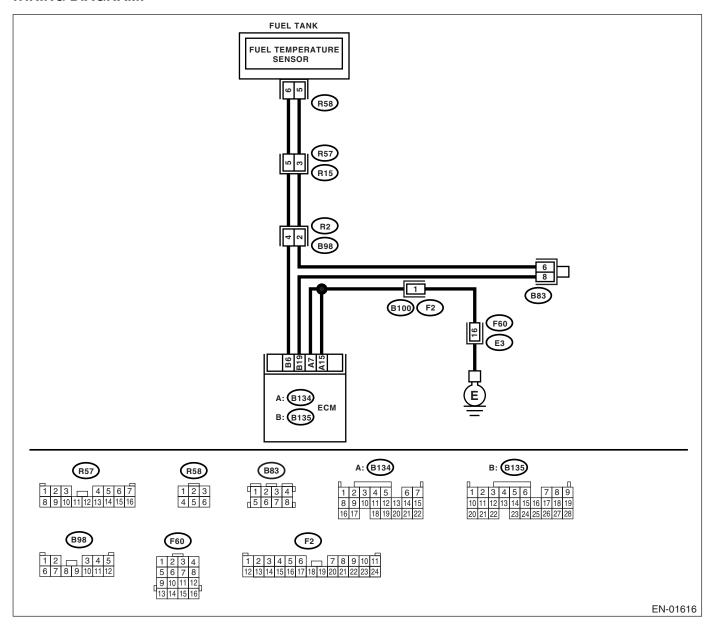
AE:DTC P0181 FUEL TEMPERATURE SENSOR "A" CIRCUIT RANGE/PERFOR-

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-73, DTC P0181 FUEL TEMPERATURE SENSOR "A" CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



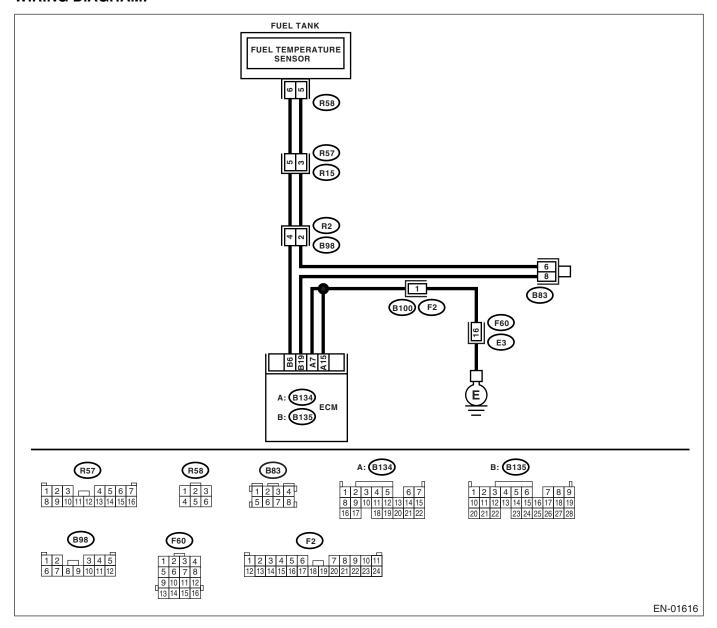
		U Fa-	J Fri
Step	Check	Yes	No
1 CHECK FOR OTHER DTC ON DISPLAY.		vant DTC using "List of Diagnostic Trouble Codes	EC(H4DOTC)-9, Fuel Temperature

AF:DTC P0182 FUEL TEMPERATURE SENSOR "A" CIRCUIT LOW INPUT DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-76, DTC P0182 FUEL TEMPERATURE SENSOR "A" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



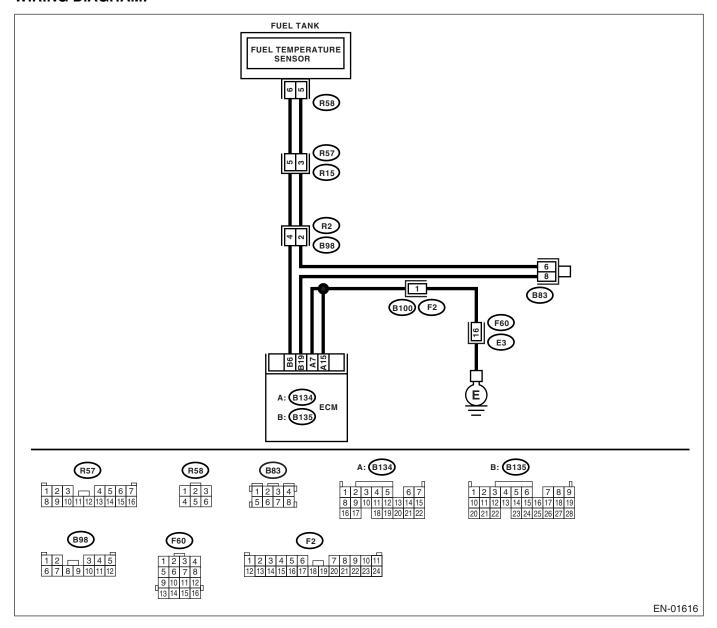
			VI FOR	y Fri
	Step	Check	Yes	No St
1	CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the temperature more than 150°C (302°F)?	Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment.
2	CHECK CURRENT DATA. 1) Turn ignition switch to OFF. 2) Remove the access hole lid. 3) Disconnect the connector from fuel pump. 4) Turn ignition switch to ON. 5) Read the data of fuel temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the temperature less than – 40°C (–40°F)?	Replace the fuel temperature sensor. <ref. ec(h4dotc)-9,="" fuel="" sensor.="" temperature="" to=""></ref.>	Repair short circuit to ground in har- ness between fuel pump and ECM connector.

AG:DTC P0183 FUEL TEMPERATURE SENSOR "A" CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-78, DTC P0183 FUEL TEMPERATURE SENSOR "A" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			FOR	J Fri
	Step	Check	Yes	No St
1	CHECK CURRENT DATA.	Is the temperature less than –	Go to step 2.	Repair poor con-
	 Start the engine. 	40°C (-40°F)?		tact.
	2) Read the data of fuel temperature sensor			NOTE:
	signal using Subaru Select Monitor or OBD-II			In this case, repair
	general scan tool.			the following:
	NOTE:			 Poor contact in
	Subaru Select Monitor			fuel pump connec-
	For detailed operation procedures, refer to			tor
	"READ CURRENT DATA FOR ENGINE". < Ref.			Poor contact in
	to EN(H4DOTC)(diag)-31, Subaru Select Mon-			ECM connector
	itor.>			Poor contact in
	 OBD-II general scan tool For detailed operation procedures, refer to the 			coupling connector Poor contact in
	OBD-II General Scan Tool Instruction Manual.			joint connector
2	CHECK HARNESS BETWEEN FUEL TEM-	le the voltage mays then 10 1/2	Danair abart aircuit	•
2	PERATURE SENSOR AND ECM CONNEC-	Is the voltage more than 10 V?	Repair short circuit	Go to step 3.
	TOR.		to battery in har- ness between	
	Turn ignition switch to OFF.		ECM and fuel	
	Remove the access hole lid.		pump connector.	
	3) Disconnect the connector from fuel pump.			
	Measure the voltage between fuel pump			
	connector and chassis ground.			
	Connector & terminal			
	(R58) No. 6 (+) — Chassis ground (-):			
3	CHECK HARNESS BETWEEN FUEL TEM-	Is the voltage more than 10 V?	Repair short circuit	Go to step 4.
	PERATURE SENSOR AND ECM CONNEC-		to battery in har-	
	TOR.		ness between	
	 Turn ignition switch to ON. 		ECM and fuel	
	Measure the voltage between fuel pump		pump connector.	
	connector and chassis ground.			
	Connector & terminal			
ļ	(R58) No. 6 (+) — Chassis ground (-):			
4	CHECK HARNESS BETWEEN FUEL TEM-	Is the voltage more than 4 V?	Go to step 5.	Repair harness
	PERATURE SENSOR AND ECM CONNECTOR.			and connector.
	Measure the voltage between fuel pump con-			NOTE:
	nector and chassis ground.			In this case, repair
	Connector & terminal			the following: Open circuit in
	(R58) No. 6 (+) — Chassis ground (-):			harness between
	(nee) nere (ny enaces greana (n)			ECM and fuel
				pump connector
				Poor contact in
				fuel pump connec-
				tor
				 Poor contact in
				ECM connector
				 Poor contact in
				coupling connector

Step	Check	Yes	No S
5 CHECK HARNESS BETWEEN FUEL TEM- PERATURE SENSOR AND ECM CONNEC- TOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between fuel pump connector and ECM. Connector & terminal (R58) No. 5 — (B135) No. 19:	Is the resistance less than 1 Ω ?	Replace the fuel temperature sensor. <ref. ec(h4dotc)-9,="" fuel="" sensor.="" temperature="" to=""></ref.>	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and fuel pump connector Poor contact in fuel pump connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in coupling connector

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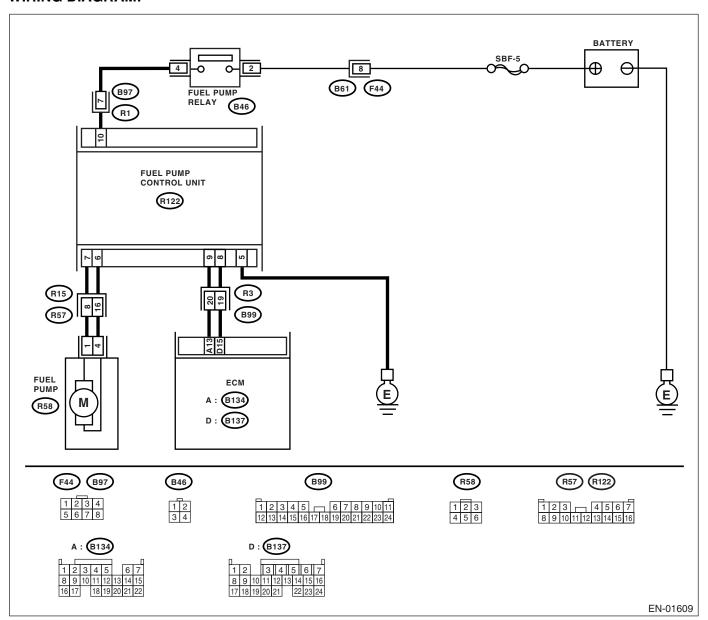
AH:DTC P0230 FUEL PUMP PRIMARY CIRCUIT

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-81, ECM OPERATING AT DTC SETTING, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



		VI FOR	Y Frie
Step	Check	Yes	DE No St
1 CHECK POWER SUPPLY CIRCUIT TO FUEL PUMP CONTROL UNIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel pump control unit. 3) Turn the ignition switch to ON. 4) Measure the voltage between fuel pump control unit and chassis ground. Connector & terminal (R122) No. 10 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 2.	Repair the power supply circuit. NOTE: In this case repair the following: • Open or ground short circuit in harness between fuel pump relay and fuel pump control unit • Poor contact in fuel pump control unit connector • Poor contact in fuel pump relay connector
2 CHECK GROUND CIRCUIT OF FUEL PUMP CONTROL UNIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between fuel pump control unit and chassis ground. Connector & terminal (R122) No. 5 — Chassis ground:	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 between fuel pump control unit and chassis ground Poor contact in fuel pump control unit connector
3 CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR. 1) Disconnect the connector from fuel pump. 2) Measure the resistance of harness between fuel pump control unit and fuel pump connector. Connector & terminal (R122) No. 7 — (R58) No. 1: (R122) No. 6 — (R58) No. 4:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit between fuel pump control unit and fuel pump.
4 CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR. Measure the resistance of harness between fuel pump control unit and chassis ground. Connector & terminal (R122) No. 7 — Chassis ground: (R122) No. 6 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 5.	Repair the ground short circuit between fuel pump control unit and fuel pump.

			V/ 50-	J Fri
	Step	Check	Yes	No St
5	CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between fuel pump control unit and ECM connector. Connector & terminal (R122) No. 9 — (B134) No. 13: (R122) No. 8 — (B137) No. 15:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit between fuel pump control unit and ECM Poor contact in fuel pump control unit and ECM connector
6	CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND ECM CONNECTOR. Measure the resistance of harness between fuel pump control unit and chassis ground. Connector & terminal (R122) No. 9 — Chassis ground: (R122) No. 8 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 7.	Repair the ground short circuit between fuel pump control unit and ECM.
7	CHECK POOR CONTACT. Check poor contact in ECM and fuel pump control unit connector.	Is there poor contact in ECM and fuel pump control unit connector?	Repair the poor contact in ECM and fuel pump control unit.	Replace the fuel pump control unit. <ref. to<br="">FU(H4DOTC)-51, Fuel Pump Control Unit.></ref.>

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AI: DTC P0244 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" RANGE/PERFORMANCE

DTC DETECTING CONDITION:

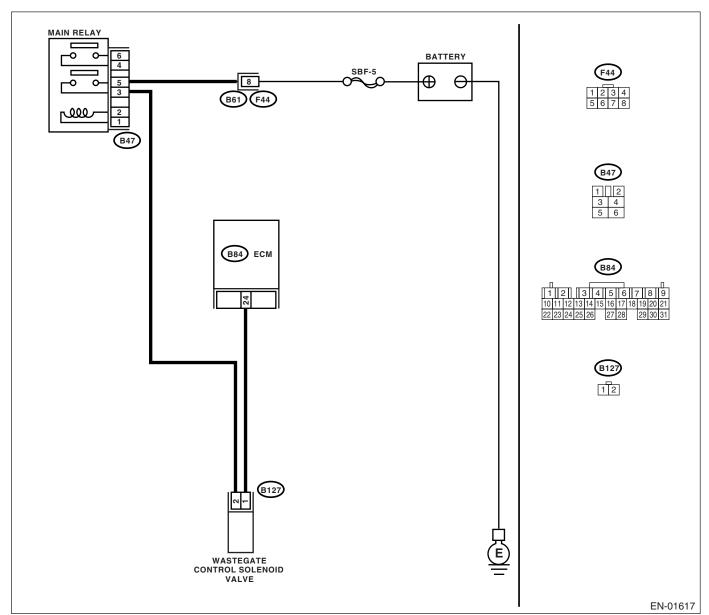
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-82, DTC P0244 TURBO/SUPER CHARGER WASTE-GATE SOLENOID "A" RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Erroneous idling
- Engine stalls.
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



		-160-	J Pri
Step	Check	Yes	No St
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref.)-71,="" diag-<="" en(h4dotc)(diag="" list="" of="" th="" to=""><th><ref. to<br="">FU(H4DOTC)-42,</ref.></th></ref.>	<ref. to<br="">FU(H4DOTC)-42,</ref.>

AJ:DTC P0245 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" LOW

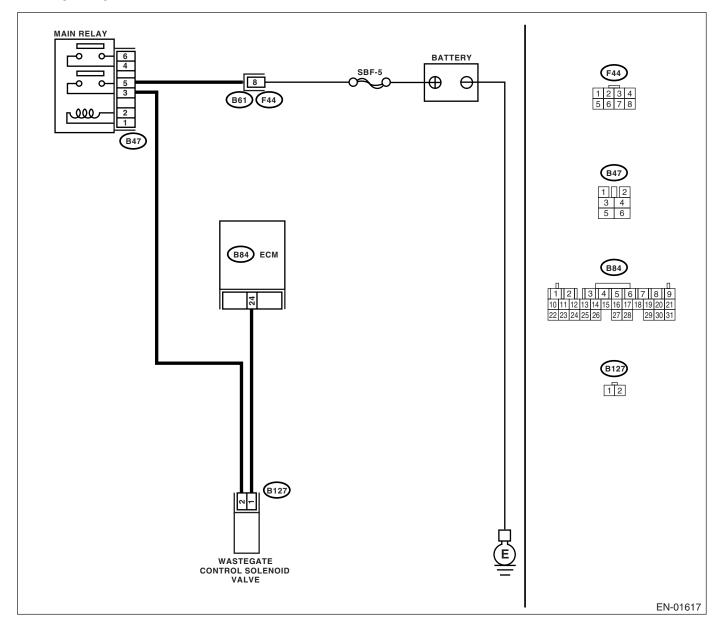
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-84, DTC P0245 TURBO/SUPER CHARGER WASTE-GATE SOLENOID "A" LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE, Inspection Mode.>.**



			For	y Eria
	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?	Even if malfunction	Go to step 2.
	 Turn the ignition switch to ON. 		indicator light	"FE
	2) Measure the voltage between ECM and		lights up, the cir-	
	chassis ground.		cuit has returned	
	Connector & terminal		to a normal condi-	
	(B84) No. 24 (+) — Chassis ground (−):		tion at this time.	
2	CHECK HARNESS BETWEEN WASTEGATE		Repair the ground	Go to step 3.
	CONTROL SOLENOID VALVE AND ECM CONNECTOR.	Ω?	short circuit in har- ness between	
	Turn the ignition switch to OFF.		ECM and waste-	
	2) Disconnect the connectors from wastegate		gate control sole-	
	control solenoid valve and ECM.		noid valve	
	3) Measure the resistance of harness		connector.	
	between wastegate control solenoid valve con-			
	nector and engine ground.			
	Connector & terminal			
	(B127) No. 1 — Engine ground:			
3	CHECK HARNESS BETWEEN WASTEGATE		Go to step 4.	Repair the open
	CONTROL SOLENOID VALVE AND ECM	Ω ?		circuit in harness
	CONNECTOR. Measure the resistance of harness between			between ECM and
	ECM and wastegate control solenoid valve of			wastegate control solenoid valve
	harness connector.			connector.
	Connector & terminal			NOTE:
	(B84) No. 24 — (B127) No. 1:			In this case, repair
				the following:
				 Open circuit in
				harness between
				ECM and waste-
				gate control sole-
				noid valve connector
4	CHECK WASTEGATE CONTROL SOLE-	Is the resistance $30 - 40 \Omega$?	Go to step 5.	Replace the
	NOID VALVE.		Go to step 3.	wastegate control
	Remove the wastegate control solenoid			solenoid valve.
	valve.			<ref. th="" to<=""></ref.>
	2) Measure the resistance between wastegate			FU(H4DOTC)-42,
	control solenoid valve terminals.			Wastegate Con-
	Terminals			trol Solenoid
<u> </u>	No. 1 — No. 2:			Valve.>
5	CHECK POWER SUPPLY TO WASTEGATE	Is the voltage more than 10 V?	Go to step 6.	Repair the open
	CONTROL SOLENOID VALVE. 1) Turn the ignition switch to ON.			circuit in harness between main
	2) Measure the voltage between wastegate			relay and waste-
	control solenoid valve and engine ground.			gate control sole-
	Connector & terminal			noid valve
	(B127) No. 2 (+) — Engine ground (–):			connector.
6	CHECK POOR CONTACT.	Is there poor contact in waste-	Repair the poor	Contact your SOA
	Check poor contact in wastegate control sole-	gate control solenoid valve	contact in waste-	Service Center.
	noid valve connector.	connector?	gate control sole-	NOTE:
			noid valve	Inspection by DTM
			connector.	is required, be-
				cause probable cause is deteriora-
				tion of multiple
				parts.
				parto.

AK:DTC P0246 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" HIGH DTC DETECTING CONDITION:

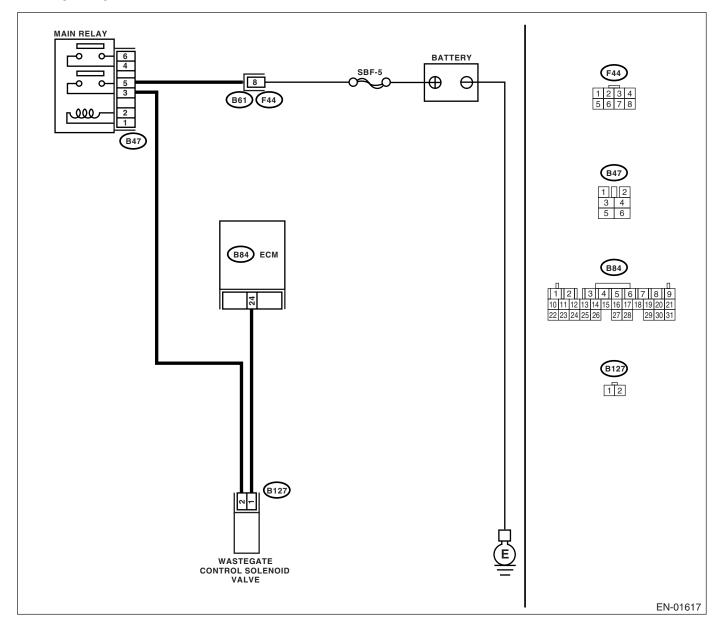
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-86, DTC P0246 TURBO/SUPER CHARGER WASTE-GATE SOLENOID "A" HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 3.	Go to step 2.
2	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<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>
3	CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from wastegate control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 24 (+) — Chassis ground (-):		Repair the battery short circuit in harness between ECM and wastegate control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Go to step 4.
4	CHECK WASTEGATE CONTROL SOLE-NOID VALVE. 1) Turn the ignition switch to OFF. 2) Measure the resistance between wastegate control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the wastegate control solenoid valve <ref. control="" fu(h4dotc)-42,="" solenoid="" to="" valve.="" wastegate=""> and ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.></ref.>	Go to step 5.
5	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<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (ĎIAGNOSTICS)

AL:DTC P0301 CYLINDER 1 MISFIRE DETECTED

Eris Studios For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-157, DTC P0304 CYLIN-DER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AM:DTC P0302 CYLINDER 2 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-157, DTC P0304 CYLIN-DER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AN: DTC P0303 CYLINDER 3 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-157, DTC P0304 CYLIN-DER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AO: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.)
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-94, DTC P0304 CYLINDER 4 MISFIRE DETECTED. Diagnostic Trouble Code (DTC) Detecting Criteria.>

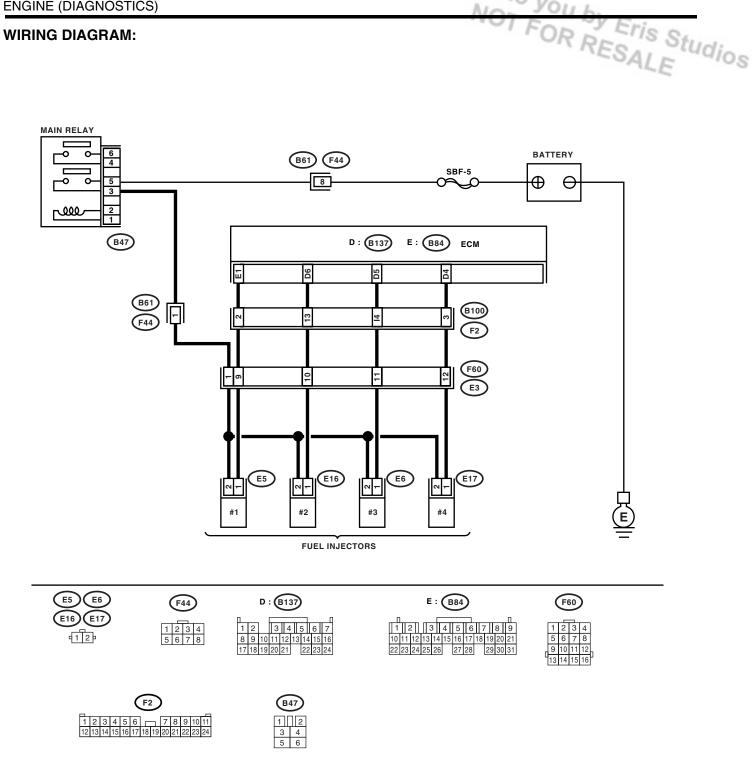
TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- · Rough driving

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE, Inspection Mode.>.**

WIRING DIAGRAM:



EN-01297

1		For	J Eria
Step	Check	Yes	No St
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	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 (B84) No. 1 (+) — Chassis ground (-): #2 (B137) No. 6 (+) — Chassis ground (-): #3 (B137) No. 5 (+) — Chassis ground (-): #4 (B137) No. 4 (+) — Chassis ground (-):	<u> </u>	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) Disconnect the connector from ECM. 4) 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:	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 (B84) No. 1 — (E5) No. 1: #2 (B137) No. 6 — (E16) No. 1: #3 (B137) No. 5 — (E6) No. 1: #4 (B137) No. 4 — (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: 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(H4DOTC)- 35, Fuel Injector.></ref.

		- 1	0/50-	y Fri
	Step	Check	Yes	No St
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: 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 (B84) No. 1 (+) — Chassis ground (-): #2 (B137) No. 6 (+) — Chassis ground (-): #3 (B137) No. 5 (+) — Chassis ground (-): #4 (B137) No. 4 (+) — Chassis ground (-):		Repair the battery short circuit in harness between ECM and fuel injector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	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(H4DOTC)- 35, Fuel Injector.> and ECM <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.></ref. 	Go to step 9.
9	CHECK INSTALLATION OF CAMSHAFT PO- SITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is the camshaft position sensor or crankshaft position sensor loosely installed?	Tighten the cam- shaft position sen- sor 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 crank- shaft sprocket. <ref. to<br="">ME(H4DOTC)-55, Crankshaft Sprocket.></ref.>	·
11	CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the crankshaft, and align alignment mark on crankshaft sprocket with alignment mark on cylinder block.	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <ref. assembly.="" belt="" me(h4dotc)-46,="" timing="" to=""></ref.>	Go to step 12.

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	Step	Check	Yes	No St
12	CHECK FUEL LEVEL.	Is the fuel meter indication higher than the "Lower" level?	Go to step 13.	Replenish the fuel so fuel meter indi- cation is higher than the "Lower" level. After replen- ishing fuel; Go to step 13.
13	CHECK STATUS OF MALFUNCTION INDICATOR LIGHT. 1) Clear the memory using Subaru Select Monitor. <ref. clear="" en(h4dotc)(diag)-46,="" memory="" mode.="" to=""> 2) Start the engine, and drive the vehicle more than 10 minutes.</ref.>	Is the malfunction indicator light coming on or blinking?	Go to step 15.	Go to step 14.
14	CHECK CAUSE OF MISFIRE DIAGNOSED.	Was the cause of misfire diagnosed when the engine is running?	Finish the diagnostics operation, if the engine has no abnormality.	Repair the poor contact. NOTE: In this case, repair the following: Poor contact in ignition coil connector Poor contact in fuel injector connector on faulty cylinders Poor contact in ECM connector Poor contact in ecupling connector
15	CHECK AIR INTAKE SYSTEM.	Is there a fault in 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 CYLINDER.	Is there a fault in that cylinder?	Repair or replace the faulty parts. NOTE: Check the follow- ing items. • Spark plug • Fuel injector • Compression pressure	Go to DTC P0171 and P0172. <ref. to EN(H4DOTC)(diag)-137, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).></ref.

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

DTC DETECTING CONDITION:

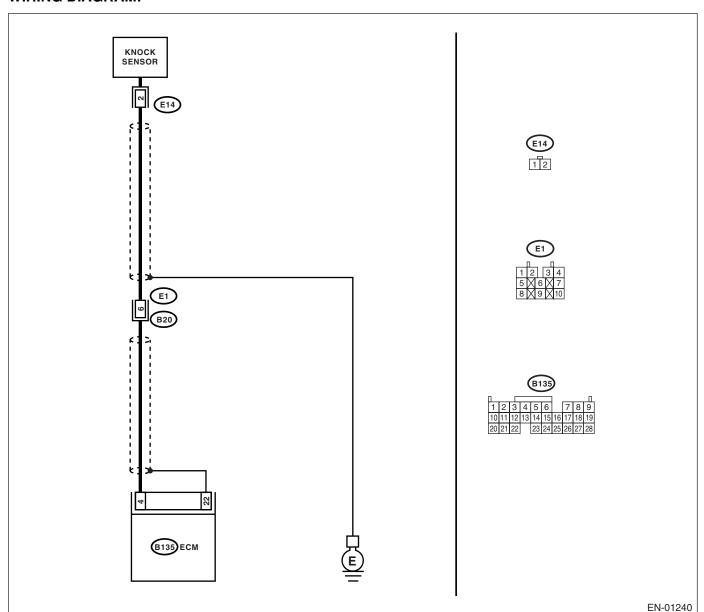
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-95, DTC P0327 KNOCK SENSOR 1 CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
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 (B135) No. 4 — Chassis ground:	Is the resistance more than 700 k Ω ?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between knock sensor and ECM connector Poor contact in knock sensor connector Poor contact in coupling connector
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 $k\Omega?$	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: Poor contact in knock sensor connector Poor contact in coupling connector
3	CHECK CONDITION OF KNOCK SENSOR INSTALLATION.	Is the knock sensor installation bolt tightened securely?	Replace the knock sensor. <ref. to<br="">FU(H4DOTC)-30, Knock Sensor.></ref.>	Tighten the knock sensor installation bolt securely.

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

DTC DETECTING CONDITION:

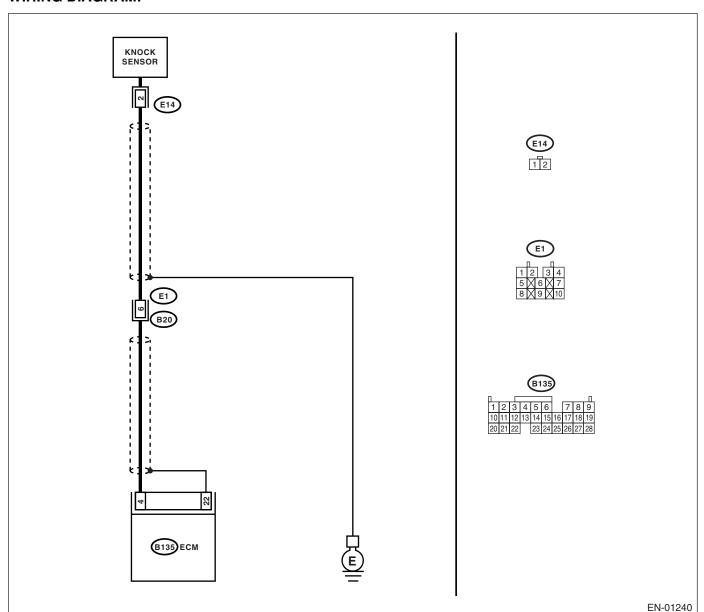
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-97, DTC P0328 KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Poor driving performance
- · Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No St
1	CHECK HARNESS BETWEEN KNOCK SEN- SOR AND ECM CONNECTOR. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 4 — 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 $\ensuremath{\mathrm{k}\Omega}?$	Replace the knock sensor. <ref. to<br="">FU(H4DOTC)-30, Knock Sensor.></ref.>	Repair the ground short circuit in harness between knock sensor connector and ECM connector. NOTE: The harness between both connectors is shielded. Repair the short circuit of harness together with shield.
3	CHECK INPUT SIGNAL FOR 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 (B135) No. 4 (+) — Chassis ground (-):	Is the voltage more than 2 V?	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.) NOTE: In this case, repair the following: Poor contact in knock sensor connector Poor contact in ECM connector Poor contact in coupling connector	contact in ECM connector.

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AR: DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT DTC DETECTING CONDITION:

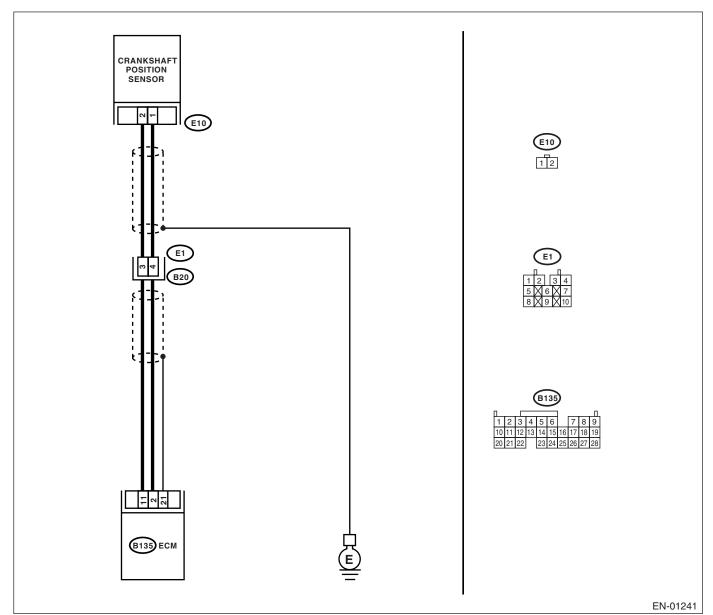
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-99, DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
=		- 1	160 - 11
1 CHECK HARNESS BETWEEN CRANK-SHAFT POSITION SENSOR AND ECM CONNECTOR. 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. Connector & terminal (E10) No. 1 — Engine ground:		Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between crankshaft position sensor and ECM connector Poor contact in ECM connector Poor contact in coupling connector	Go to step 2.
2 CHECK HARNESS BETWEEN CRANK-SHAFT POSITION SENSOR AND ECM CONNECTOR. Measure the resistance of harness between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 1 — Engine ground:	Is the resistance more than 1 $M\Omega$?	Go to step 3.	Repair the ground short circuit in harness between crankshaft position sensor and ECM connector. NOTE: The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.
3 CHECK HARNESS BETWEEN CRANK-SHAFT POSITION SENSOR AND ECM CONNECTOR. Measure the resistance of harness between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 2 — Engine ground:	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 crankshaft position sensor and ECM connector Poor contact in ECM connector Poor contact in coupling connector
4 CHECK CONDITION OF CRANKSHAFT PO- SITION SENSOR.	Is the crankshaft position sensor installation bolt tightened securely?	Go to step 5.	Tighten the crank- shaft position sen- sor installation bolt securely.
 5 CHECK CRANKSHAFT POSITION SENSOR. 1) Remove the crankshaft position sensor. 2) Measure the resistance between connector terminals of crankshaft position sensor. Terminals No. 1 — No. 2: 	Is the resistance 1 — 4 k Ω ?	Repair the poor contact in crank-shaft position sensor connector.	Replace the crank- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-28, Crankshaft Posi- tion Sensor.></ref.>

AS:DTC P0336 CRANKSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PER-FORMANCE

DTC DETECTING CONDITION:

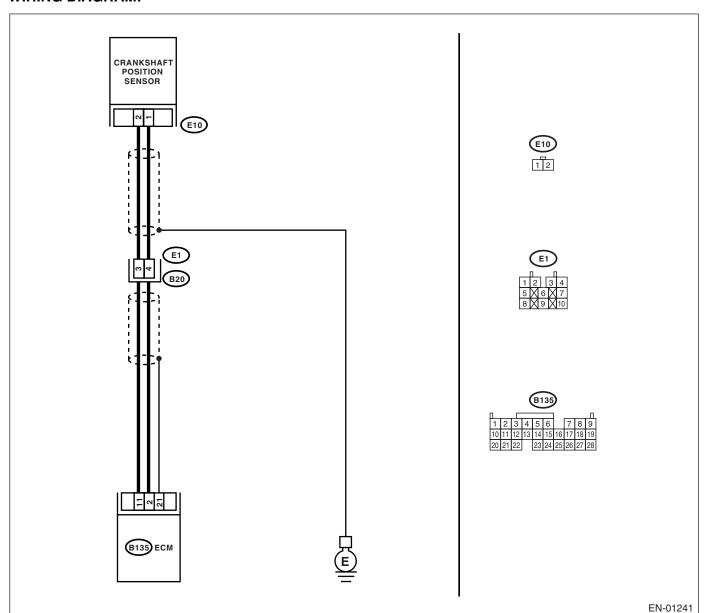
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-101, DTC P0336 CRANKSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	
2	CHECK CONDITION OF CRANKSHAFT PO- SITION SENSOR. Turn the ignition switch to OFF.	Is the crankshaft position sensor installation bolt tightened securely?	Go to step 3.	Tighten the crank- shaft position sen- sor installation bolt securely.
3	CHECK CRANKSHAFT SPROCKET. Remove the front belt cover.	Are the crankshaft sprocket teeth cracked or damaged?	Replace the crank- shaft sprocket. <ref. to<br="">FU(H4DOTC)-28, Crankshaft Posi- tion Sensor.></ref.>	Go to step 4.
4	CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the crankshaft, and align alignment mark on crankshaft sprocket with alignment mark on cylinder block.	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <ref. assembly.="" belt="" me(h4dotc)-46,="" timing="" to=""></ref.>	Replace the crank- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-28, Crankshaft Posi- tion Sensor.></ref.>

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

DTC DETECTING CONDITION:

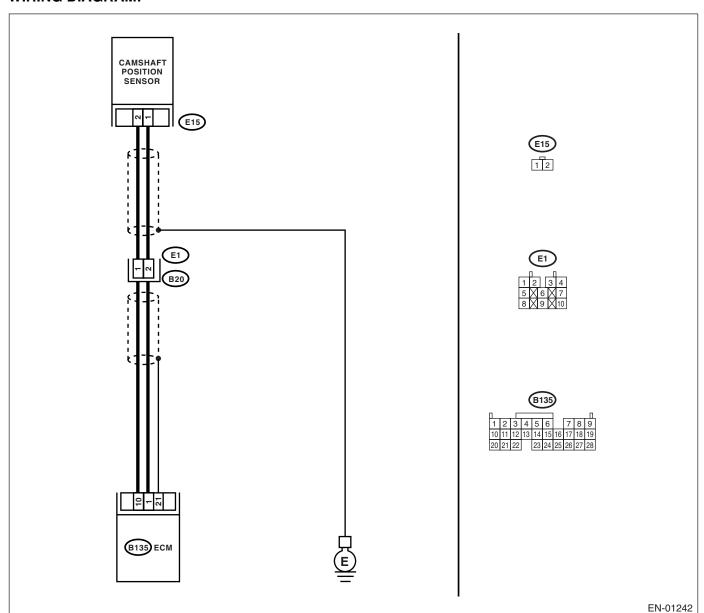
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-103, DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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Step	Check	Yes	No	Idi-
	Is the resistance more than 100 k Ω ?	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between camshaft position sensor and ECM connector Poor contact in ECM connector Poor contact in coupling connector	Go to step 2.	Idios
POSITION SENSOR AND ECM CONNECTOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance less than 10 Ω ?	Go to step 3.	Repair the ground short circuit in harness between camshaft position sensor and ECM connector. NOTE: The harness between both connectors are shielded. Repair the ground short circuit in harness together with shield.	
POSITION SENSOR AND ECM CONNECTOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 2 — Engine ground:	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 camshaft position sensor and ECM connector Poor contact in ECM connector Poor contact in coupling connector	
TION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 5.	Tighten the cam- shaft position sen- sor installation bolt securely.	
 5 CHECK CAMSHAFT POSITION SENSOR. 1) Remove the camshaft position sensor. 2) Measure the resistance between connector terminals of camshaft position sensor. Terminals No. 1 — No. 2: 	Is the resistance 1 — 4 k Ω ?	Repair the poor contact in cam- shaft position sen- sor connector.	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-29, Camshaft Position Sensor.></ref.>	

AU:DTC P0341 CAMSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFOR-MANCE (BANK 1 OR SINGLE SENSOR)

DTC DETECTING CONDITION:

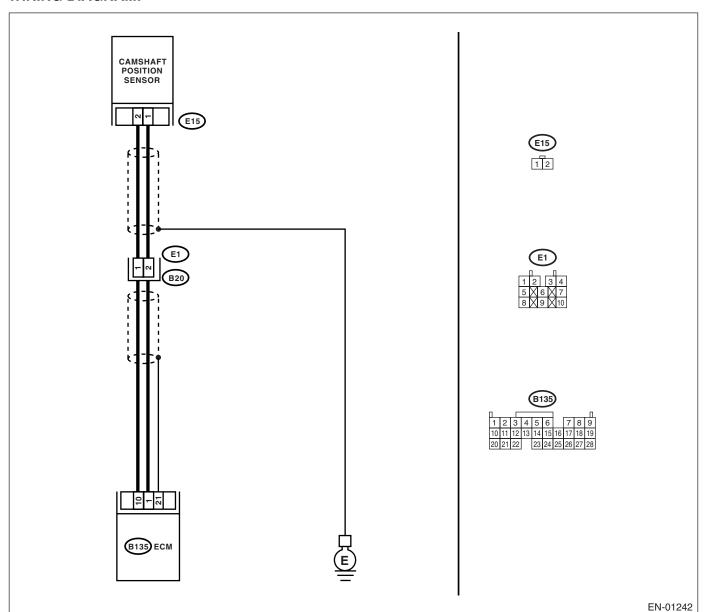
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-108, ECM OPERATING AT DTC SETTING, DTC P0341 CAMSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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Step	Check	Yes	No St
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2 CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR. 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. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance more than 100 kΩ?	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between camshaft position sensor and ECM connector Poor contact in ECM connector Poor contact in coupling connector	
3 CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance less than 10 Ω ?	Go to step 4.	Repair the ground short circuit in harness between camshaft position sensor and ECM connector. NOTE: The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.
4 CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 2 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 5 .	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between camshaft position sensor and ECM connector Poor contact in ECM connector Poor contact in coupling connector
5 CHECK CONDITION OF CAMSHAFT POSI- TION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 6.	Tighten the cam- shaft position sen- sor installation bolt securely.

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	Step	Check	Yes	No St
6	CHECK CAMSHAFT POSITION SENSOR. 1) Remove the camshaft position sensor. 2) Measure the resistance between connector terminals of camshaft position sensor. Terminals No. 1 — No. 2:	Is the resistance 1 — 4 k Ω ?	Go to step 7.	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-29, Camshaft Position Sensor.></ref.>
7	CHECK CONDITION OF CAMSHAFT POSITION SENSOR. Turn the ignition switch to OFF.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 8.	Tighten the cam- shaft position sen- sor installation bolt securely.
8	CHECK CAMSHAFT SPROCKET. Remove the front belt cover. <ref. belt="" cover.="" me(h4dotc)-45,="" timing="" to=""></ref.>	Are the camshaft sprocket teeth cracked or damaged?	Replace the cam- shaft sprocket. <ref. to<br="">ME(H4DOTC)-54, Camshaft Sprocket.></ref.>	Go to step 9.
9	CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the camshaft, and align alignment mark on camshaft sprocket with alignment mark on timing belt cover LH.	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <ref. assembly.="" belt="" me(h4dotc)-46,="" timing="" to=""></ref.>	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-29, Camshaft Position Sensor.></ref.>

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

DTC DETECTING CONDITION:

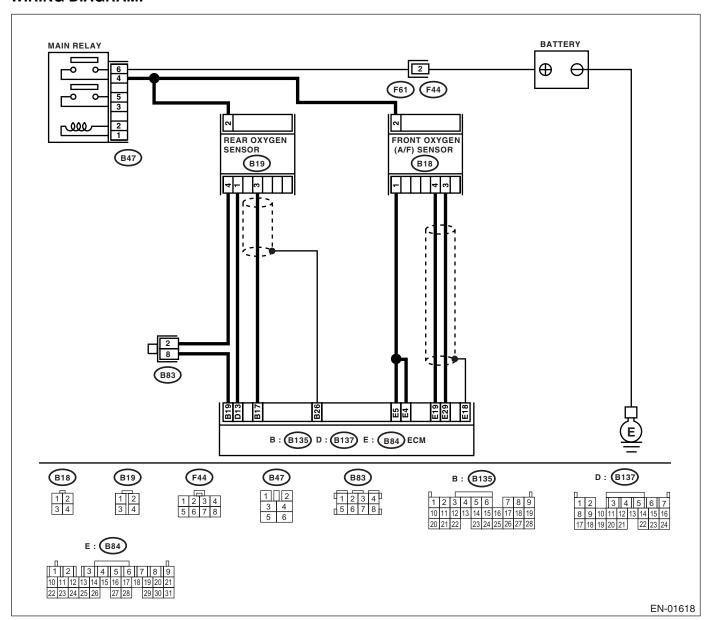
- · Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-109, DTC P0420 CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

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(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0420.</ref.>	
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. 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 a fault in exhaust system?	Repair or replace the exhaust sys- tem. <ref. to<br="">EX(H4DOTC)-2, General Descrip- tion.></ref.>	Go to step 3.
3	CHECK REAR CATALYTIC CONVERTER. Separate the rear catalytic converter from rear exhaust pipe.	Is there damage at rear face of rear catalyst?	Replace the front catalytic converter. <ref. catalytic="" converter.="" ec(h4dotc)-3,="" front="" to=""> and rear catalytic converter <ref. catalytic="" converter.="" ec(h4dotc)-4,="" rear="" to=""></ref.></ref.>	Go to step 4.
4	CHECK FRONT CATALYTIC CONVERTER. Remove the front catalytic converter.	Is there damage at rear face or front face of front catalyst?	Replace the front catalytic converter. <ref. catalytic="" converter.="" ec(h4dotc)-3,="" front="" to=""></ref.>	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (DIAGNOSTICS)

AW:DTC P0442 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECT-ED (SMALL LEAK)

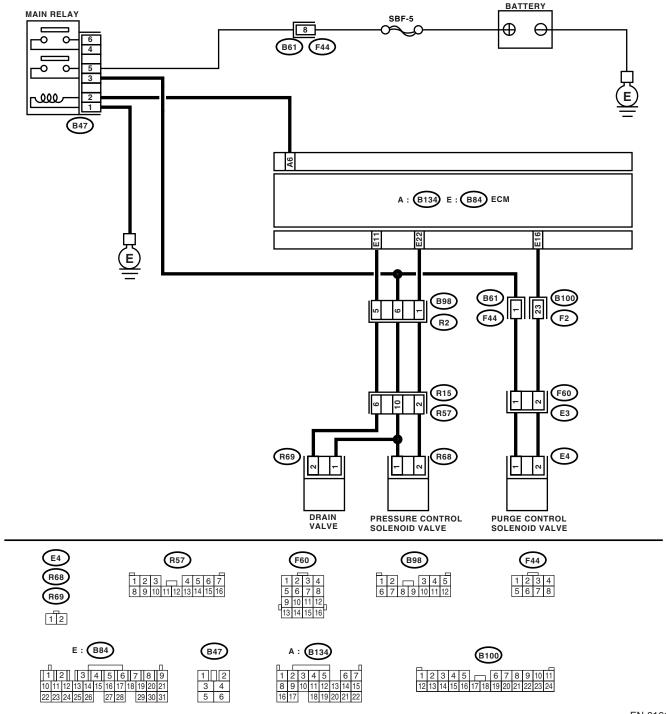
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-112, DTC P0442 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECTED (SMALL LEAK), Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- Fuel odor
- There is a hole of more than 1.0 mm (0.04 in) dia. in evaporation system or fuel tank.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



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	Step	Check	Yes	No St
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FUEL FILLER CAP. 1) Turn ignition switch to OFF. 2) Check the fuel filler cap. NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.		Go to step 3.	Tighten fuel filler cap securely.
3	CHECK FUEL FILLER CAP.	Is the fuel filler cap SUBARU genuine?	Go to step 4.	Replace with a SUBARU genuine fuel filler cap.
4	CHECK FUEL FILLER PIPE PACKING.	Is there any damage to the seal between fuel filler cap and fuel filler pipe?	Repair or replace the fuel filler cap and fuel filler pipe. <ref. to<br="">FU(H4DOTC)-56, Fuel Filler Pipe.></ref.>	Go to step 5.
5	CHECK DRAIN VALVE. 1) Connect the test mode connector. 2) Turn ignition switch to ON. 3) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>	Does the drain valve operate?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-19, Drain Valve.></ref.>
6	CHECK PURGE CONTROL SOLENOID VALVE. Operate the purge control solenoid valve. NOTE: Purge control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 7.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.></ref.>
7	CHECK PRESSURE CONTROL SOLENOID VALVE. Operate the pressure control solenoid valve. NOTE: Pressure control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 8.	Replace the pressure control sole- noid valve. <ref. to EC(H4DOTC)- 13, Pressure Con- trol Solenoid Valve.></ref.

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	Step	Check	Yes	No St
8	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE. Turn ignition switch to OFF.	Is there a hole of more than 1.0 mm (0.04 in) dia. on evaporation line?	Repair or replace the evaporation line. <ref. to<br="">FU(H4DOTC)-69, Fuel Delivery, Return and Evapo- ration Lines.></ref.>	Go to step 9.
9	CHECK CANISTER.	Is the canister damaged or is there a hole of more than 1.0 mm (0.04 in) dia. in it?	Repair or replace the canister. <ref. to EC(H4DOTC)-6, Canister.></ref. 	Go to step 10.
10	CHECK FUEL TANK. Remove the fuel tank. <ref. 53,="" fu(h4dotc)-="" fuel="" tank.="" to=""></ref.>	Is the fuel tank damaged or is there a hole of more than 1.0 mm (0.04 in) dia. in it?	Repair or replace the fuel tank. <ref. to FU(H4DOTC)- 53, Fuel Tank.></ref. 	Go to step 11.
11	CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.	Are there holes of more than 1.0 mm (0.04 in) dia., cracks, clogging, or disconnections, bend, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

AX:DTC P0447 EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL

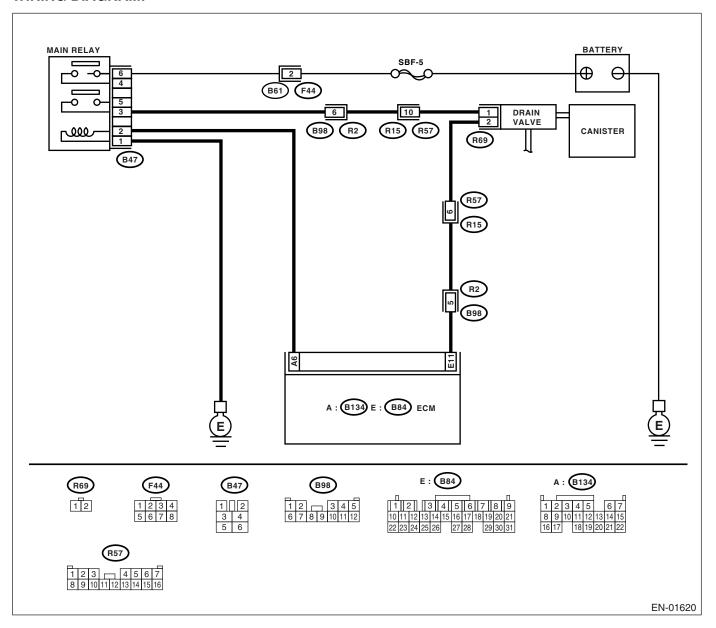
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-135, DTC P0447 EVAPORATIVE EMISSION CON-TROL SYSTEM VENT CONTROL CIRCUIT OPEN, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



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	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 11 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 2.	Go to step 3.
2	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. (However, the possibility of poor contact still remains.) NOTE: In this case, repair the following: Poor contact in drain valve connector Poor contact in ECM connector Poor contact in coupling connector
3	CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connectors from drain valve and ECM. 3) Measure the resistance of harness between drain valve connector and chassis ground. Connector & terminal (R69) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair short circuit to ground in har- ness between ECM and drain valve connector.
4	CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR. Measure the resistance of harness between ECM and drain valve connector. Connector & terminal (B84) No. 11 — (R69) No. 2:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and drain valve connector • Poor contact in coupling connector
5	CHECK DRAIN VALVE. Measure the resistance between drain valve terminals. Terminals No. 1 — No. 2:	Is the resistance 10 — 100 Ω ?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-19, Drain Valve.></ref.>

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	Step	Check	Yes	No St
6	CHECK POWER SUPPLY TO DRAIN VALVE. 1) Turn ignition switch to ON. 2) Measure the voltage between drain valve and chassis ground. Connector & terminal (R69) No. 1 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between main relay and drain valve Poor contact in coupling connector Poor contact in main relay connector
7	CHECK FOR POOR CONTACT. Check for poor contact in drain valve connector.	Is there poor contact in drain valve connector?	Repair poor contact in drain valve connector.	Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

AY:DTC P0448 EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL

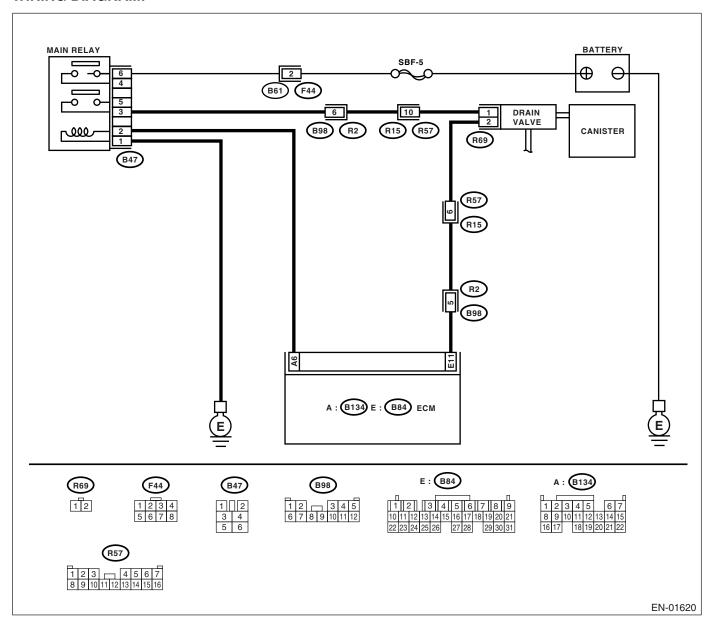
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-137, DTC P0448 EVAPORATIVE EMISSION CON-TROL SYSTEM VENT CONTROL CIRCUIT SHORTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



			FOR	Y Erica
	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM. 1) Turn ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn ignition switch to ON. 4) While operating the drain valve, measure voltage between ECM and chassis ground. NOTE: Drain valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""> Connector & terminal</ref.>		Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. In this case, repair poor contact in ECM connector.
2	(B84) No. 11 (+) — Chassis ground (-): CHECK INPUT SIGNAL FOR ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 11 (+) — Chassis ground (-):	Is the voltage more than 10 V?		Go to step 3.
3	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>
4	CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from drain valve. 3) Turn ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 11 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in har- ness between ECM and drain valve connector. After repair, replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>	Go to step 5.
5	CHECK DRAIN VALVE. 1) Turn ignition switch to OFF. 2) Measure the resistance between drain valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the drain valve <ref. drain="" ec(h4dotc)-19,="" to="" valve.=""> and ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to="">.</ref.></ref.>	Go to step 6.
6	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>

AZ:DTC P0451 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE

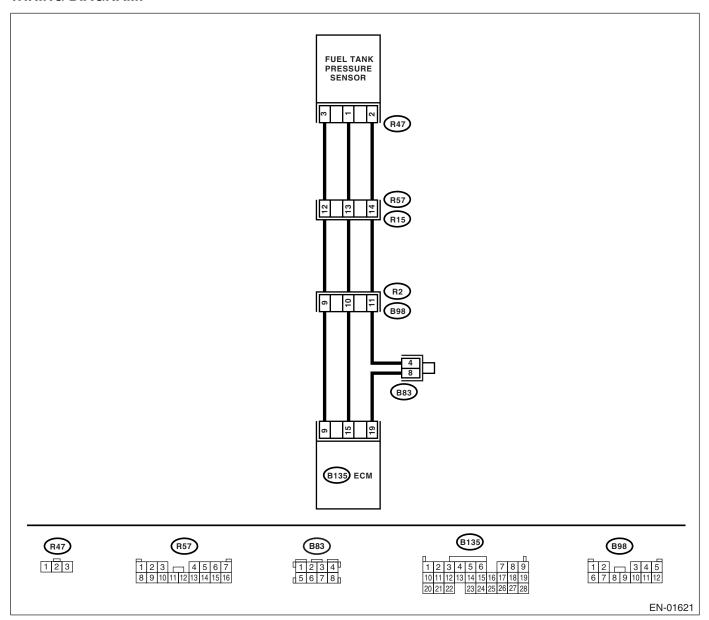
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-139, DTC P0451 EVAPORATIVE EMISSION CON-TROL SYSTEM PRESSURE SENSOR RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



		-	VI Fa-	y Fri
	Step	Check	Yes	No St
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FUEL FILLER CAP. 1) Turn ignition switch to OFF. 2) Open the fuel flap.	Is the fuel filler cap tightened securely?	Go to step 3.	Tighten fuel filler cap securely.
3	CHECK PRESSURE/VACUUM LINE. NOTE: Check the following items. • Disconnection, leakage and clogging of the vacuum hoses and pipes between fuel tank pressure sensor and fuel tank • Disconnection, leakage and clogging of air ventilation hoses and pipes between fuel filler pipe and fuel tank	Is there a fault in pressure/vac- uum line?	Repair or replace the hoses and pipes.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4DOTC)-11, Fuel Tank Pres- sure Sensor.></ref.>

BA:DTC P0452 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE

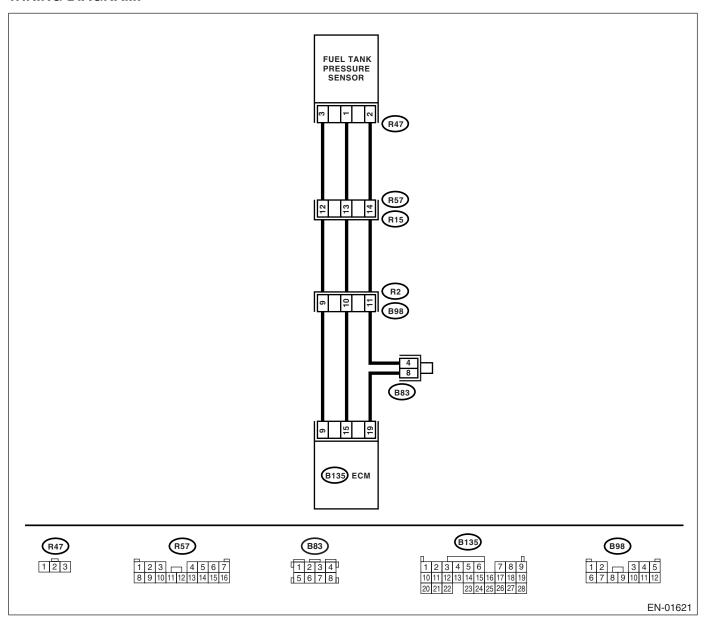
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-141, DTC P0452 EVAPORATIVE EMISSION CON-TROL SYSTEM PRESSURE SENSOR LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



	-160-	J Fri	ı
Check	Yes	No St	lel:
Is the measured valve less than –2.8 kPa (–21.0 mmHg, –	Go to step 2.	The malfunction indicator light may	14/05
0.027 111119):		the circuit is	
		normal status at	
		the moment.	
Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.	
_	tact in ECM con-	Contact with SOA Service Center.	
	nector.	NOTE: Inspection by DTM	
		cause probable	
		tion of multiple parts.	
Is the voltage less than 0.2 V?	Go to step 6.	Go to step 5.	
		Go to step 6.	
	nector.		
Is the voltage more than 4.5 V?	Go to step 7.	Repair harness and connector.	
		NOTE: In this case, repair	
		the following: Open circuit in	
		harness between	
		nector	
		Poor contact in coupling connector	
	Is the measured valve less than –2.8 kPa (–21.0 mmHg, – 0.827 inHg)? Is the voltage more than 4.5 V? Is the voltage more than 4.5 V? Is the voltage less than 0.2 V? Does the measured value exceed the specified value by shaking the ECM harness and connector?	Is the measured valve less than –2.8 kPa (–21.0 mmHg, – 0.827 inHg)? Is the voltage more than 4.5 V? Go to step 4. Is the voltage more than 4.5 V? Repair poor contact in ECM connector. Is the voltage less than 0.2 V? Go to step 6. Does the measured value exceed the specified value by shaking the ECM harness and connector?	Is the measured valve less than 2.8 kPa (~21.0 mmHg, ~ 0.827 inHg)? Is the voltage more than 4.5 V? Go to step 4. Is the voltage more than 4.5 V? Repair poor contact in ECM connector. Is the voltage less than 0.2 V? Go to step 6. Does the measured value exceed the specified value by shaking the ECM harness and connector? Is the voltage more than 4.5 V? Go to step 6. Does the measured value exceed the specified value by shaking the ECM harness and connector? Repair poor contact in ECM connector. Repair poor contact in this case, repair the following: • Open circuit in harness connector • Poor contact in

	Step	Check	Yes	No S
7	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and rear wiring harness connector. Connector & terminal (B135) No. 19 — (R15) No. 14:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and rear wiring harness connector Poor contact in coupling connector Poor contact in ioint connector
8	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. Measure the resistance of harness between rear wiring harness connector and chassis ground. Connector & terminal (R15) No. 14 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 9.	Repair short circuit to ground in har- ness between ECM and rear wir- ing harness con- nector.
9	CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel tank pressure sensor. 2) Measure the resistance of fuel tank cord. Connector & terminal (R57) No. 12 — (R47) No. 3:	Is the resistance less than 1 Ω ?	Go to step 10.	Repair open circuit in fuel tank cord.
10	CHECK FUEL TANK CORD. Measure the resistance of fuel tank cord. Connector & terminal (R57) No. 14 — (R47) No. 2:	Is the resistance less than 1 Ω ?	Go to step 11.	Repair open circuit in fuel tank cord.
11	CHECK FUEL TANK CORD. Measure the resistance of harness between fuel tank pressure sensor connector and engine ground. Connector & terminal (R47) No. 1 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 12.	Repair short circuit to ground in fuel tank cord.
12	CHECK FOR POOR CONTACT. Check for poor contact in fuel tank pressure sensor connector.	Is there poor contact in fuel tank pressure sensor connector?	Repair poor contact in fuel tank pressure sensor connector.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4DOTC)-11, Fuel Tank Pres- sure Sensor.></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (DIAGNOSTICS)

BB:DTC P0453 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE

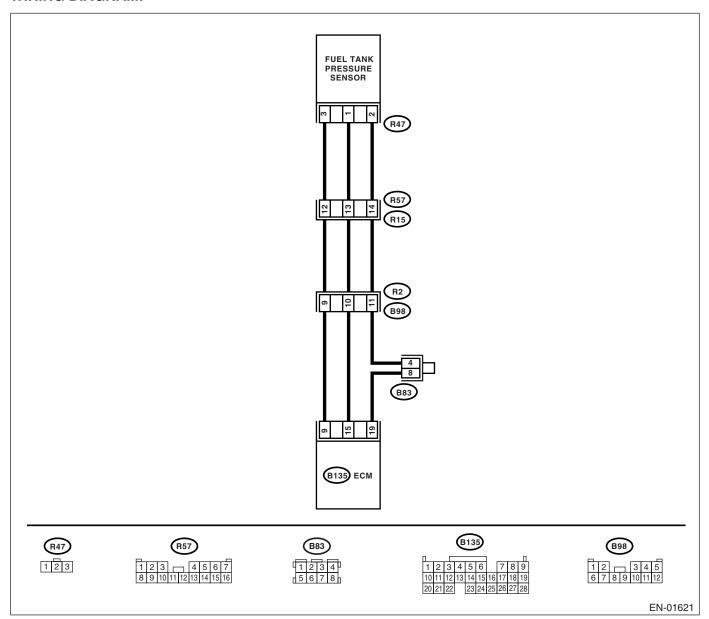
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-143, DTC P0453 EVAPORATIVE EMISSION CON-TROL SYSTEM PRESSURE SENSOR HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



			OF FOR	y Fri
	Step	Check	Yes	No St
1	CHECK CURRENT DATA. 1) Turn ignition switch to OFF. 2) Remove the fuel filler cap. 3) Install the fuel filler cap. 4) Turn ignition switch to ON. 5) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" mon-<="" select="" subaru="" th="" to=""><th>Check Is the measured value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)</th><th>Yes Go to step 11.</th><th>No Go to step 2.</th></ref.>	Check Is the measured value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)	Yes Go to step 11.	No Go to step 2.
	 itor.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 			
2	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Does the measured value exceed the specified value by shaking the ECM harness and connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>
4	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 15 (+) — 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 fuel tank pressure sensor signal using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""></ref.>	Does the measured value exceed -2.8 kPa (-21.0 mmHg, -0.827 inHg) by shak- ing the ECM harness and con- nector?	Repair poor contact in ECM connector.	Go to step 6.
6	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Remove the rear seat cushion. 3) Separate rear wiring harness and fuel tank cord. 4) Turn ignition switch to ON. 5) Measure the voltage between rear wiring harness connector and chassis ground. Connector & terminal (R15) No. 12 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 7 .	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and rear wiring harness connector Poor contact in coupling connector

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	Step	Check	Yes	No St	lel:
7	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and rear wiring harness connector. Connector & terminal (B135) No. 15 — (R15) No. 13: (B135) No. 19 — (R15) No. 14:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and rear wiring harness connector Poor contact in coupling connector	
8	pressure sensor. 2) Measure the resistance of fuel tank cord. Connector & terminal (R57) No. 13 — (R47) No. 1:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair open circuit in fuel tank cord.	
9	Connector & terminal (R57) No. 14 — (R47) No. 2:	Is the resistance less than 1 Ω ?	Go to step 10.	Repair open circuit in fuel tank cord.	
10	CHECK FOR POOR CONTACT. Check for poor contact in fuel tank pressure sensor connector.	Is there poor contact in fuel tank pressure sensor connector?	Repair poor contact in fuel tank pressure sensor connector.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4DOTC)-11, Fuel Tank Pres- sure Sensor.></ref.>	
11		0.827 inHg)?	Repair short circuit to battery in harness between ECM and fuel tank pressure sensor connector.	tank pressure sen- sor. <ref. td="" to<=""><td></td></ref.>	

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BC:DTC P0456 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECT-

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-144, DTC P0456 EVAPORATIVE EMISSION CON-TROL SYSTEM LEAK DETECTED (VERY SMALL LEAK), Diagnostic Trouble Code (DTC) Detecting Criteria.>

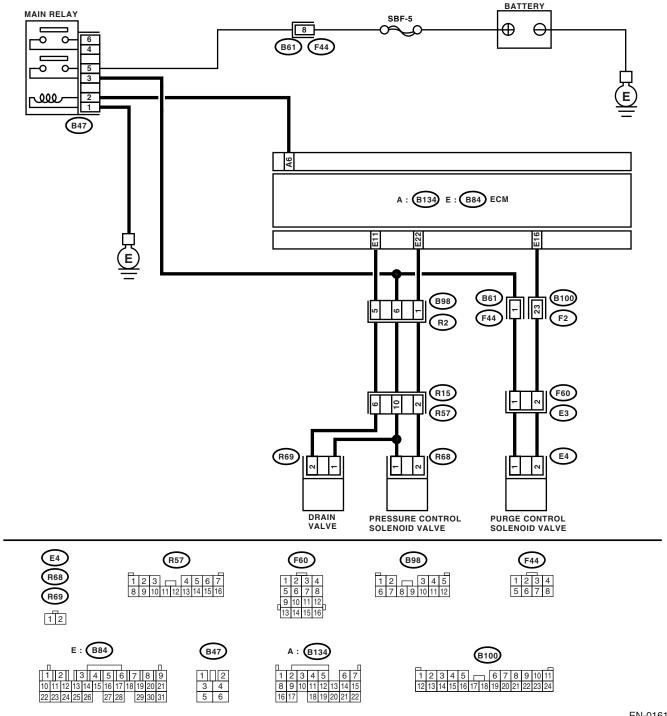
TROUBLE SYMPTOM:

- Fuel odor
- There is a hole of more than 0.5 mm (0.020 in) dia. in evaporation system or fuel tank.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



EN-01619

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	Step	Check	Yes	No St
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FUEL FILLER CAP. 1) Turn ignition switch to OFF. 2) Check the fuel filler cap. NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.		Go to step 3.	Tighten fuel filler cap securely.
3	CHECK FUEL FILLER CAP.	Is the fuel filler cap SUBARU genuine?	Go to step 4.	Replace with a SUBARU genuine fuel filler cap.
4	CHECK FUEL FILLER PIPE PACKING.	Is there any damage to the seal between fuel filler cap and fuel filler pipe?	Repair or replace the fuel filler cap and fuel filler pipe. <ref. to<br="">FU(H4DOTC)-56, Fuel Filler Pipe.></ref.>	Go to step 5.
5	CHECK DRAIN VALVE. 1) Connect the test mode connector. 2) Turn ignition switch to ON. 3) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>	Does the drain valve operate?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-19, Drain Valve.></ref.>
6	CHECK PURGE CONTROL SOLENOID VALVE. Operate the purge control solenoid valve. NOTE: Purge control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 7.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.></ref.>
7	CHECK PRESSURE CONTROL SOLENOID VALVE. Operate the pressure control solenoid valve. NOTE: Pressure control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 8.	Replace the pressure control sole- noid valve. <ref. to EC(H4DOTC)-7, Purge Control Solenoid Valve.></ref.

	FOR I Stie s			
	Step	Check	Yes	No St
8	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE. Turn ignition switch to OFF.	Is there a hole of more than 0.5 mm (0.020 in) dia. on evaporation line?	Repair or replace the evaporation line. <ref. to<br="">FU(H4DOTC)-69, Fuel Delivery, Return and Evapo- ration Lines.></ref.>	Go to step 9.
9	CHECK CANISTER.	Is the canister damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?	Repair or replace the canister. <ref. to EC(H4DOTC)-6, Canister.></ref. 	Go to step 10.
10	CHECK FUEL TANK. Remove the fuel tank. <ref. fu(h4dotc)-53,="" fuel="" tank.="" to=""></ref.>	Is the fuel tank damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?	Repair or replace the fuel tank. <ref. to FU(H4DOTC)- 53, Fuel Tank.></ref. 	Go to step 11.
11	CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.	Are there holes of more than 0.5 mm (0.020 in) dia., cracks, clogging, or disconnections, bend, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BD:DTC P0457 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECT-

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-144, DTC P0457 EVAPORATIVE EMISSION CON-TROL SYSTEM LEAK DETECTED (FUEL CAP LOOSE/OFF), Diagnostic Trouble Code (DTC) Detecting Criteria.>

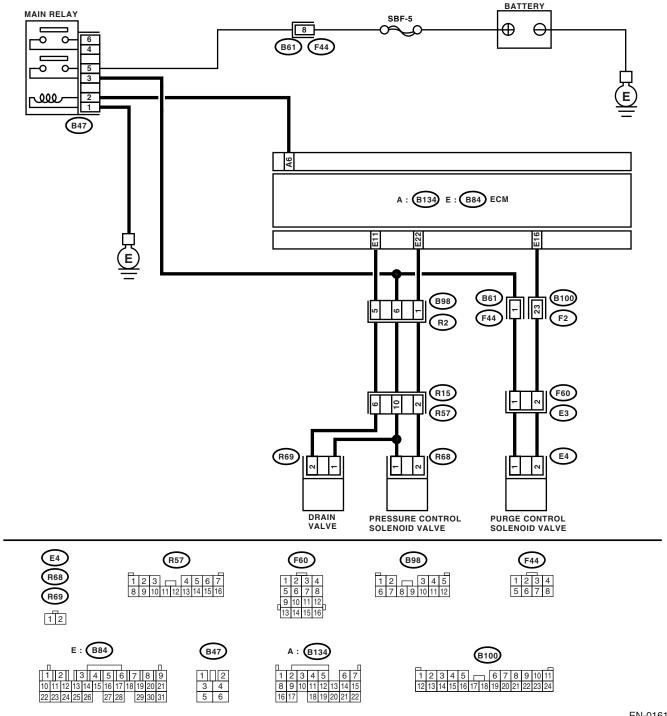
TROUBLE SYMPTOM:

- Fuel odor
- Fuel filler cap is loose or not installed.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



EN-01619

			1 500	J Eri-
	Step	Check	Yes	No St
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FUEL FILLER CAP. 1) Turn ignition switch to OFF. 2) Check the fuel filler cap. NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.		Go to step 3.	Tighten fuel filler cap securely.
3	CHECK FUEL FILLER CAP.	Is the fuel filler cap SUBARU genuine?	Go to step 4.	Replace with a SUBARU genuine fuel filler cap.
4	CHECK FUEL FILLER PIPE PACKING.	Is there any damage to the seal between fuel filler cap and fuel filler pipe?	Repair or replace the fuel filler cap and fuel filler pipe. <ref. to<br="">FU(H4DOTC)-56, Fuel Filler Pipe.></ref.>	Go to step 5.
5	CHECK DRAIN VALVE. 1) Connect the test mode connector. 2) Turn ignition switch to ON. 3) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>	Does the drain valve operate?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-19, Drain Valve.></ref.>
6	CHECK PURGE CONTROL SOLENOID VALVE. Operate the purge control solenoid valve. NOTE: Purge control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>		Go to step 7.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.></ref.>
7	CHECK PRESSURE CONTROL SOLENOID VALVE. Operate the pressure control solenoid valve. NOTE: Pressure control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 8.	Replace the pressure control sole- noid valve. <ref. to EC(H4DOTC)-7, Purge Control Solenoid Valve.></ref.
8	CHECK CANISTER.	Is the canister damaged?	Repair or replace the canister. <ref. to EC(H4DOTC)-6, Canister.></ref. 	Go to step 9.

	Step	Check	Yes	No St
9	CHECK FUEL TANK. Remove the fuel tank. <ref. 53,="" fu(h4dotc)-="" fuel="" tank.="" to=""></ref.>	Is the fuel tank damaged?	Repair or replace the fuel tank. <ref. to FU(H4DOTC)- 53, Fuel Tank.></ref. 	Go to step 10.
10	CHECK ANY OTHER MECHANICAL TROU- BLE IN EVAPORATIVE EMISSION CON- TROL SYSTEM.	Are there holes of more than 0.5 mm (0.020 in) dia., cracks, clogging, or disconnections, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

BE:DTC P0458 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CON-

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-145, DTC P0458 EVAPORATIVE EMISSION CON- TROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

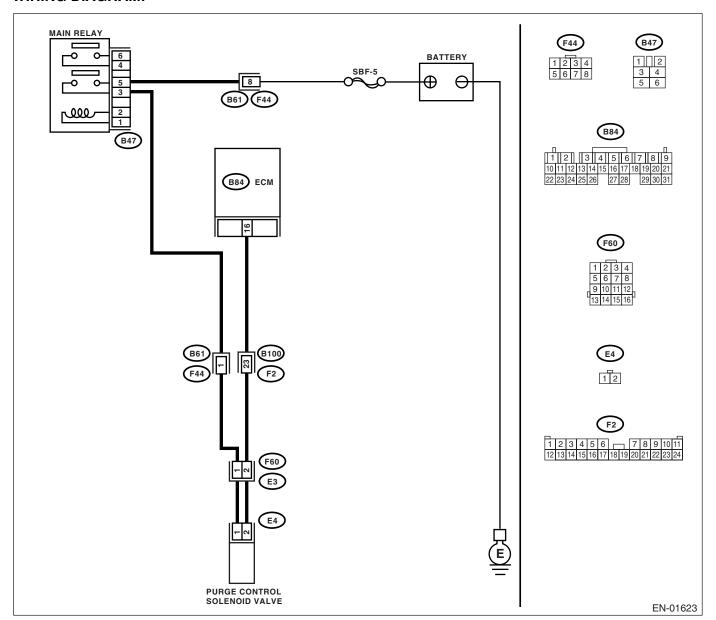
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE, Inspection Mode.>.**

WIRING DIAGRAM:



T			FOR	y Eria
	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 16 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Even if malfunction indicator light lights up, 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 $\mbox{M}\Omega ?$	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 of harness connector. Connector & terminal (B84) No. 16 — (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: 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<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.></ref.>
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?		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 connec- tor?	Repair the poor contact in purge control solenoid valve connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

BF:DTC P0459 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CON-

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-147, DTC P0459 EVAPORATIVE EMISSION CON-TROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

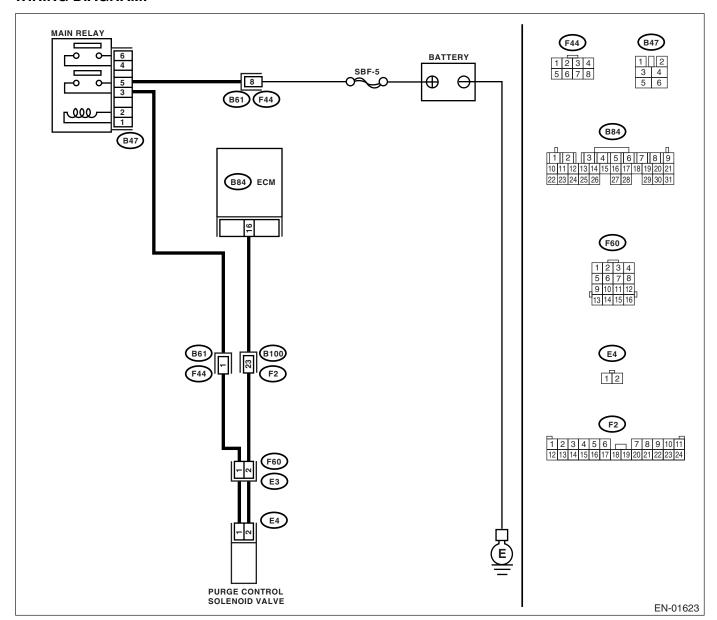
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE, Inspection Mode.>.**

WIRING DIAGRAM:



Sten	Check	Yes	No	
Step 1 CHECK OUTPUT SIGNAL FROM ECM.	Is the voltage 0 — 13 V?	Go to step 2.	Even if malfunction	dia
 Turn the ignition switch to OFF. Connect the test mode connector at the lower portion of instrument panel (on the driver's side). Turn the ignition switch to ON. While operating the purge control solenoid valve, measure the voltage between ECM and chassis ground. NOTE: Purge control solenoid valve operation can be executed using the Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.> Connector & terminal 			indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. In this case, repair the poor contact in ECM connector.	-08
 Turn the ignition switch to ON. Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 16 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Go to step 4.	Go to step 3.	
	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>	
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 (B84) No. 16 (+) — 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. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Go to step 5.	
	Is the resistance less than 1 Ω ?	Replace the purge control solenoid valve <ref. control="" ec(h4dotc)-7,="" purge="" solenoid="" to="" valve.=""> and ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.></ref.>	Go to step 6.	
	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>	

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

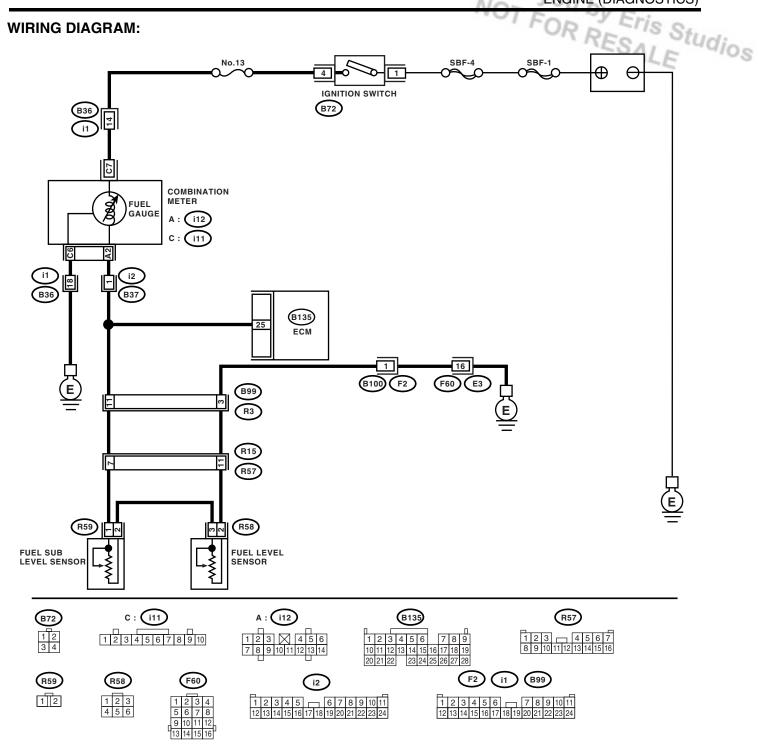
BG:DTC P0461 FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-149, DTC P0461 FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-01624

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the rele-	Replace the fuel
			vant DTC using	level sensor. <ref.< td=""></ref.<>
			"List of Diagnostic	to FU(H4DOTC)-
			Trouble Code	63, Fuel Level
			(DTC)". <ref. td="" to<=""><td>Sensor.> and fuel</td></ref.>	Sensor.> and fuel
			EN(H4DOTC)(diag	sub level sensor
)-71, List of Diag-	<ref. td="" to<=""></ref.>
			nostic Trouble	FU(H4DOTC)-64,
			Code (DTC).>	Fuel Sub Level
			NOTE:	Sensor.>
			In this case, it is	ļ
			not necessary to	
			inspect DTC	ļ
			P0461.	
				1

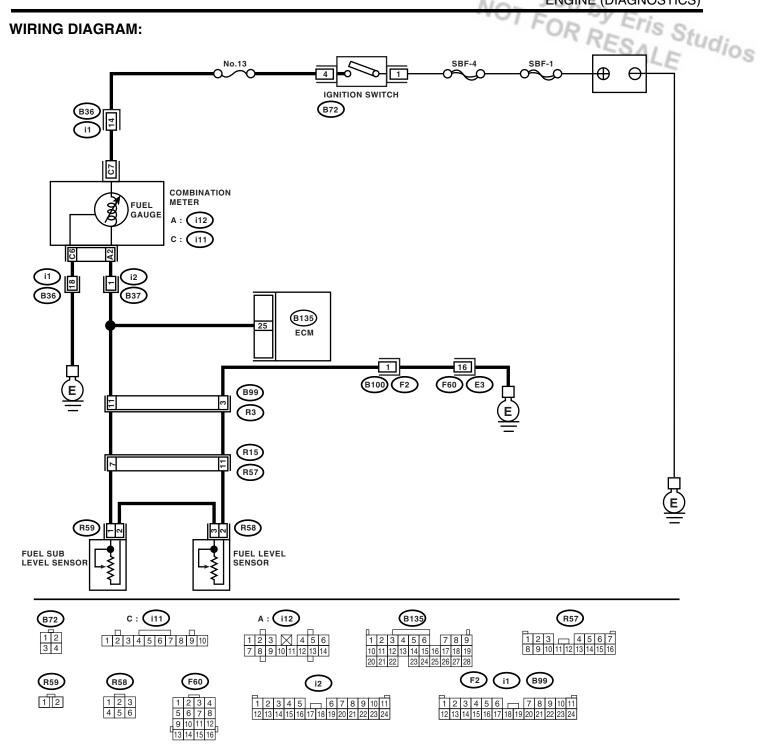
BH:DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-151, DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-01624

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	Step	Check	Yes	No St		
1	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.	Does the speedometer and tachometer operate normally?	Go to step 2.	Repair or replace the combination meter. <ref. idi-<br="" to="">3, Combination Meter System.></ref.>		
2	CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. (engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 25 (+) — Chassis ground (-):	Is the voltage less than 0.12 V?	Go to step 4.	Go to step 3.		
3	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR) Read the data of fuel level sensor signal using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""></ref.>	Does the voltage change, while shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: Poor contact in combination meter connector Poor contact in ECM connector Poor contact in coupling connectors		
4	CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to OFF. 2) Separate the fuel tank cord connector (R57) and rear wiring harness connector (R15). 3) Turn the ignition switch to ON. 4) Measure the voltage of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 25 (+) — Chassis ground (-):	Is the voltage more than 0.12 V?	Go to step 5.	Go to step 6.		
5	CHECK HARNESS BETWEEN ECM AND COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from connector (i11), (i12) and ECM connector. 3) Measure the resistance between ECM and chassis ground. Connector & terminal (B135) No. 25 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 7.	Repair the ground short circuit in har- ness between ECM and combi- nation meter con- nector.		

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	Step	Check	Yes	No St	
6	CHECK HARNESS BETWEEN ECM AND COMBINATION METER. Measure the resistance between ECM and combination meter connector. Connector & terminal (B135) No. 25 — (i12) No. 2:	Is the resistance less than 10 Ω ?	Repair or replace the combination meter. <ref. idi-<br="" to="">3, Combination Meter System.></ref.>	Repair the open circuit between ECM and combination meter connector. NOTE: In this case, repair the following: Poor contact in coupling connector	
7	CHECK FUEL TANK CORD. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel sub level sensor. 3) Measure the resistance between fuel sub level sensor and chassis ground. Connector & terminal (R59) No. 1 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 8.	Repair the ground short circuit in fuel tank cord.	
8	CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel pump assembly. 2) Measure the resistance between fuel pump assembly and chassis ground. Connector & terminal (R59) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 9.	Repair the ground short circuit in fuel tank cord.	
9	CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. fu(h4dotc)-61,="" fuel="" pump.="" to=""> 2) Measure the resistance between fuel level sensor and terminals with its float set to the full position. Terminals No. 2 — No. 3:</ref.>	Is the resistance 0.5 — 2.5 Ω ?	Go to step 10.	Replace the fuel level sensor.	
10	CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <ref. fu(h4dotc)-64,="" fuel="" level="" sensor.="" sub="" to=""> 2) Measure the resistance between fuel sub level sensor and terminals with its float set to the full position. Terminals No. 1 — No. 2:</ref.>	Is the resistance 0.5 — 2.5 Ω ?	Repair the poor contact in harness between ECM and combination meter connector.	Replace the fuel sub level sensor.	

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

Eris Studios

ENGINE (DIAGNOSTICS)

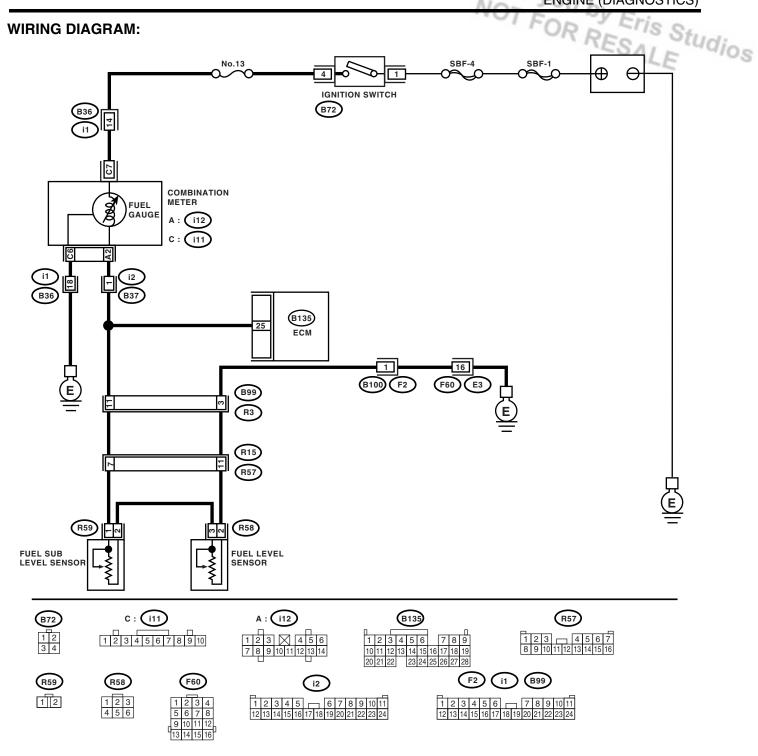
BI: DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-153, DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-01624

I	Step	Check	Yes	No St
1	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.	Does the speedometer and tachometer operate normally?	Go to step 2.	Repair or replace the combination meter. <ref. idi-<br="" to="">3, Combination Meter System.></ref.>
2	CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. (engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 25 (+) — Chassis ground (-):	Is the voltage more than 4.75 V?	Go to step 3.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: Poor contact in fuel pump connector
				Poor contact in coupling connector
3	CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the combination meter connector (i11) and ECM connector. 3) Turn the ignition switch to ON. 4) Measure the voltage of harness between ECM and chassis ground. Connector & terminal (B135) No. 25 (+) — Chassis ground (-):	Is the voltage more than 4.75 V?	Go to step 4.	Repair the battery short circuit between ECM and combination meter connector.
4	CHECK HARNESS BETWEEN ECM AND FUEL TANK CORD. 1) Turn the ignition switch to OFF. 2) Separate the fuel tank cord connector (R57) and rear wiring harness connector (R15). 3) Measure the resistance between ECM and fuel tank cord. Connector & terminal (B135) No. 25 — (R15) No. 7:	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the open circuit between ECM and fuel tank cord.
5	CHECK HARNESS BETWEEN FUEL TANK CORD AND CHASSIS GROUND. Measure the resistance between fuel tank cord and chassis ground. Connector & terminal (R15) No. 11 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 6.	Repair the open circuit between fuel tank cord and chassis ground. NOTE: In this case, repair the following: Poor contact in coupling connectors
6	CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel level sensor. 2) Measure the resistance between fuel level sensor and coupling connector. Connector & terminal (R57) No. 11 — (R58) No. 2:	Is the resistance less than 10 Ω ?	Go to step 7.	Repair the open circuit between coupling connector and fuel level sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

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	Step	Check	Yes	No St	Id.
7	CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel sub level sensor. 2) Measure the resistance between fuel level sensor and fuel sub level sensor. Connector & terminal (R58) No. 3 — (R59) No. 2:	Is the resistance less than 10 Ω	Go to step 8.	Repair the open circuit between fuel level sensor and fuel sub level sensor.	^{IQIOS}
8	CHECK FUEL TANK CORD. Measure the resistance between fuel sub level sensor and coupling connector. Connector & terminal (R57) No. 7 — (R59) No. 1:	Is the resistance less than 10 Ω ?	Go to step 9.	Repair the open circuit between coupling connector and fuel sub level sensor.	
9	CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. fu(h4dotc)-61,="" fuel="" pump.="" to=""> 2) While moving the fuel level sensor float up and down, measure the resistance between fuel level sensor terminals. Terminals No. 2 — No. 3:</ref.>	Is the resistance more than 53 Ω ?	Replace the fuel level sensor. <ref. to FU(H4DOTC)- 63, Fuel Level Sensor.></ref. 	Go to step 10.	
10	CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <ref. fu(h4dotc)-64,="" fuel="" level="" sensor.="" sub="" to=""> 2) While moving the fuel sub level sensor float up and down, measure the resistance between fuel sub level sensor terminals. Terminals No. 1 — No. 2:</ref.>	Ω?	Replace the fuel sub level sensor. <ref. to<br="">FU(H4DOTC)-64, Fuel Sub Level Sensor.></ref.>	Replace the combination meter. <ref. assembly.="" combination="" idi-10,="" meter="" to=""></ref.>	

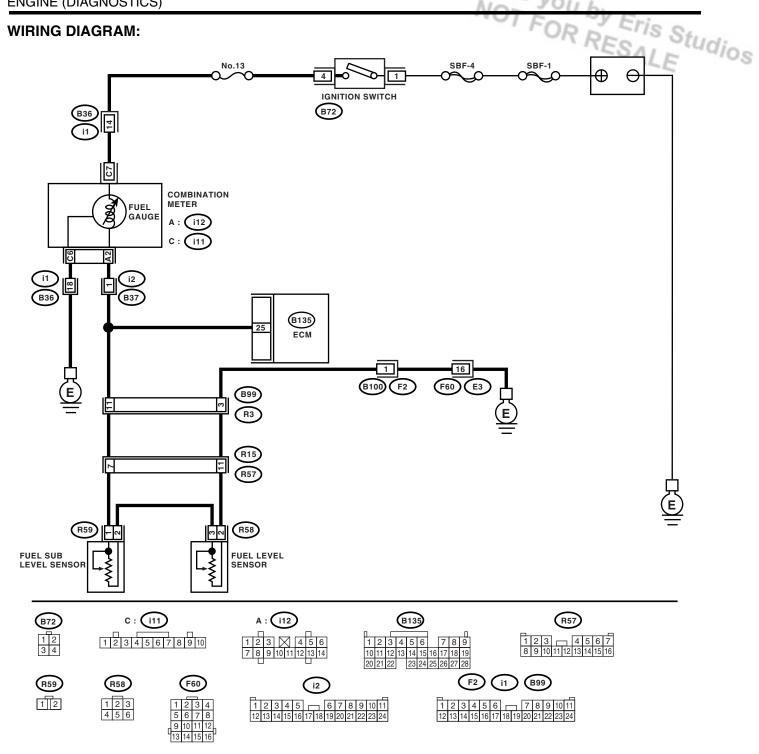
BJ:DTC P0464 FUEL LEVEL SENSOR CIRCUIT INTERMITTENT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-155, DTC P0464 FUEL LEVEL SENSOR CIRCUIT INTERMITTENT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-01624

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	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. fu(h4dotc)-61,="" fuel="" pump.="" to=""> 2) While moving the fuel level sensor float up and down, make sure that the resistance between fuel level sensor terminals changes smoothly. Terminals No. 3 — No. 2:</ref.>	Does the resistance change smoothly?	Go to step 3.	Replace the fuel level sensor. <ref. to FU(H4DOTC)- 63, Fuel Level Sensor.></ref.
3	CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <ref. fu(h4dotc)-64,="" fuel="" level="" sensor.="" sub="" to=""> 2) While moving the fuel sub level sensor float up and down, make sure that the resistance between fuel level sensor terminals changes smoothly. Terminals No. 1 — No. 2:</ref.>	Does the resistance change smoothly?	Repair the poor contact in ECM, combination meter and coupling connectors.	Replace the fuel sub level sensor. <ref. to<br="">FU(H4DOTC)-64, Fuel Sub Level Sensor.></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

Eris Studios

ENGINE (DIAGNOSTICS)

BK:DTC P0483 COOLING FAN RATIONALITY CHECK

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-158, DTC P0483 COOLING FAN RATIONALITY CHECK, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Occurrence of noise
- Overheating

CAUTION:

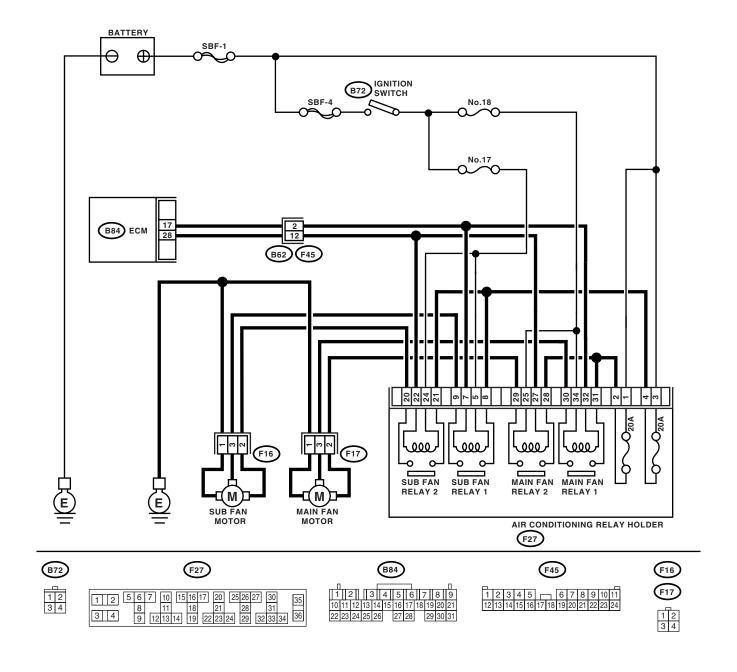
After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

NOTE:

If the vehicle, with the engine idling, is placed very close to a wall or another vehicle, preventing normal cooling function, the OBD system may detect malfunction.

OR RESALE

WIRING DIAGRAM:



EN-01625

•	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Check the radiator fan, fan motor and thermostat. <ref. and="" co(h4so)-22,="" fan="" main="" motor.="" radiator="" to=""> and <ref. and="" co(h4so)-23,="" fan="" motor.="" radiator="" sub="" to=""> If thermostat is stuck, replace thermostat.</ref.></ref.>

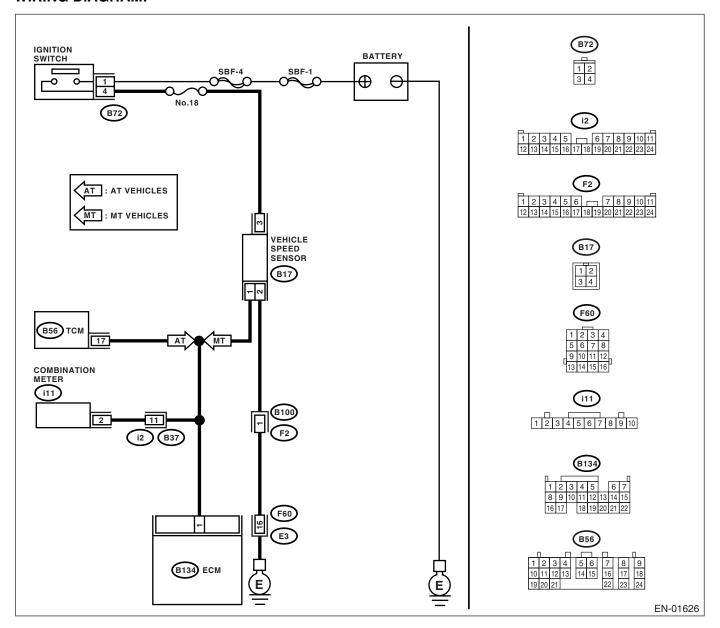
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BL:DTC P0502 VEHICLE SPEED SENSOR CIRCUIT LOW INPUT

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-160, DTC P0502 VEHICLE SPEED SENSOR CIR-CUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



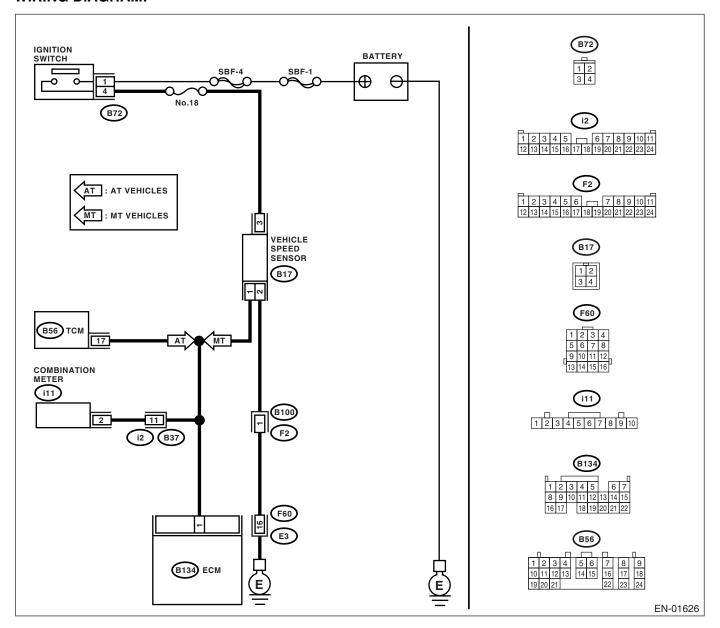
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	Step	Check	Yes	No St	101
1	CHECK TRANSMISSION TYPE.	Is the transmission type AT?	Go to step 2.	Go to step 4.	141
2	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and TCM. 3) Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal (B56) No. 17 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 3.	Repair the ground short circuit in har- ness between ECM and TCM connector.	
3	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair poor contact in TCM connector.	Contact your SOA Service Center.	
4	CHECK HARENESS BETWEEN VEHICLE SPEED SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from vehicle speed sensor and ECM. 3) Measure the resistance of harness between vehicle speed sensor connector and chassis ground. Connector & terminal (B17) No. 1 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 5.	Repair the ground short circuit in har- ness between vehicle speed sen- sor and ECM con- nector.	
5	CHECK POOR CONTACT. Check poor contact in the vehicle speed sensor connector.	Is there poor contact in the vehicle speed sensor connector?	Repair poor contact in the vehicle speed sensor connector.	Replace the vehicle speed sensor. <ref. 5mt-38,="" sensor.="" speed="" to="" vehicle=""></ref.>	

BM:DTC P0503 VEHICLE SPEED SENSOR INTERMITTENT/ERRATIC/HIGH DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-161, DTC P0503 VEHICLE SPEED SENSOR INTER-MITTENT/ERRATIC/HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			· V / Fa-	y Eni-
	Step	Check	Yes	No St
1	CHECK TRANSMISSION TYPE.	Is the transmission type AT?	Go to step 2.	Go to step 3.
2	CHECK DTC P0720 ON DISPLAY.	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?	Check the front vehicle speed sensor signal circuit. <ref. (dtc).="" 33="" 4at(diag)-52,="" code="" diagnostic="" dtc="" front="" procedure="" sensor,="" speed="" to="" trouble="" vehicle="" with=""></ref.>	Go to step 3.
3	CHECK SPEEDOMETER OPERATION IN COMBINATION METER.	Does the speedometer operate normally?	Go to step 4.	Check the speed- ometer. <ref. to<br="">IDI-14, Speedom- eter.></ref.>
4	CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from combination meter. 3) Measure the resistance between ECM and combination meter. Connector & terminal (B134) No. 1 — (i11) No. 2:	Is the resistance less than 10 Ω ?	Repair the poor contact in ECM connector.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and combination meter connector Poor contact in ECM connector Poor contact in combination meter connector Poor contact in combination meter connector Poor contact in coupling connector

BN:DTC P0506 IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED DTC DETECTING CONDITION:

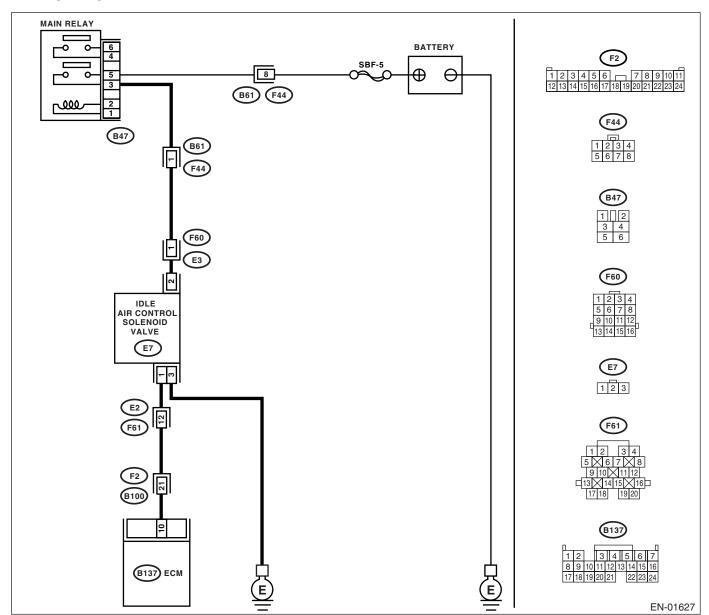
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-162, DTC P0506 IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Engine is difficult to start.
- · Engine does not start.
- · Erroneous idling
- · Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0506.</ref.>	
2	CHECK IDLE AIR CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from throttle body. <ref. air="" control="" fu(h4dotc)-34,="" idle="" removal,="" solenoid="" to="" valve.=""> 3) Using an air gun, force air into the idle air control solenoid valve by-pass air inlet. Confirm that forced air subsequently escapes from both main air passage and assist air passage.</ref.>	Does air flow out?	Go to step 4.	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4DOTC)-34, Idle Air Control Solenoid Valve.> After replace, Go to step 3.</ref.>
3	CHECK IDLE AIR CONTROL SOLENOID VALVE DUTY RATIO. 1) Turn the ignition switch to ON. 2) Start the engine, and warm-up the engine. 3) Turn all accessory switches to OFF. 4) Read the data of idle air control solenoid valve duty ratio using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the duty ratio more than 60%?	Go to step 4.	END.
4	CHECK BY-PASS AIR LINE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from throttle body. <ref. air="" control="" fu(h4dotc)-34,="" idle="" removal,="" solenoid="" to="" valve.=""> 3) Remove the throttle body to intake manifold. <ref. body.="" fu(h4dotc)-13,="" removal,="" throttle="" to=""> 4) Using an air gun, force air into the solenoid valve installation area and throttle valve interior. Confirm that forced air subsequently escapes from both these areas.</ref.></ref.>	Does air flow out?	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4DOTC)-34, Idle Air Control Solenoid Valve.></ref.>	Replace the throt- tle body. <ref. to<br="">FU(H4DOTC)-13, Throttle Body.></ref.>

BO:DTC P0507 IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED DTC DETECTING CONDITION:

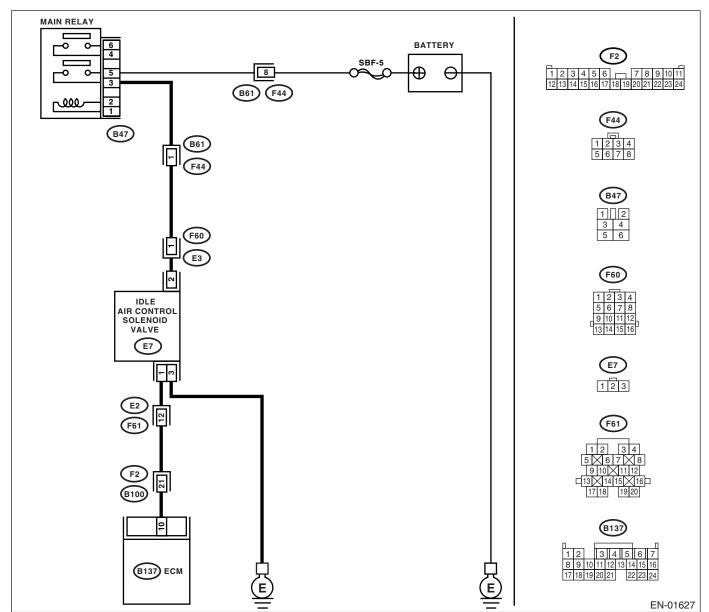
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-164, DTC P0507 IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

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(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			O Fa-	y Fri
	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. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0507.</ref.>	
2	CHECK THROTTLE CABLE.	Does the throttle cable have play for adjustment?	Go to step 3.	Adjust the throttle cable. <ref. to<br="">SP(H4SO)-6, INSTALLATION, Accelerator Con- trol Cable.></ref.>
3	CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start the engine, and idle it. 3) Check the following items. • Loose installation of intake manifold, idle air control solenoid valve and throttle body • Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket • Disconnections of vacuum hoses	Is there a fault in air intake system?	Repair the air suction and leaks.	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4DOTC)-34, Idle Air Control Solenoid Valve.></ref.>

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BP:DTC P0508 IDLE CONTROL SYSTEM CIRCUIT LOW DTC DETECTING CONDITION:

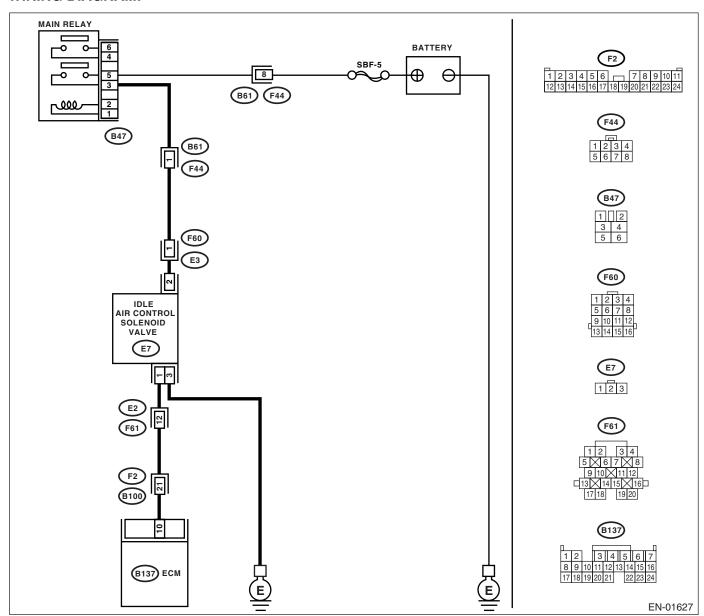
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-166, DTC P0508 IDLE CONTROL SYSTEM CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			VI FO	y Fri
	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B137) No. 10 (+) — Chassis ground (-):	Is the voltage more than 3 V?	Repair the poor contact in ECM connector.	Go to step 2.
2	CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from idle air control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between idle air control solenoid valve and engine ground. Connector & terminal (E7) No. 2 (+) — Engine ground (-):	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 idle air control solenoid valve and main relay connector Poor contact in coupling connector
3	CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and idle air control solenoid valve connector. Connector & terminal (B137) No. 10 — (E7) No. 1:	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 ECM and idle air control solenoid valve connector Poor contact in coupling connector
4	CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR. Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B137) No. 10 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the ground short circuit in har- ness between ECM and idle air control solenoid valve connector.
5	CHECK GROUND CIRCUIT OF IDLE AIR CONTROL SOLENOID VALVE. Measure the resistance of harness between idle air control solenoid valve connector and engine ground. Connector & terminal (E7) No. 3 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 6.	Repair the open circuit in harness between idle air control solenoid valve connector and engine ground cable.
6	CHECK POOR CONTACT. Check poor contact in ECM and idle air control solenoid valve connectors.	Is there poor contact in ECM and idle air control solenoid valve connectors?	Repair the poor contact in ECM and idle air control solenoid valve connectors.	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4DOTC)-34, Idle Air Control Solenoid Valve.></ref.>

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BQ:DTC P0509 IDLE CONTROL SYSTEM CIRCUIT HIGH DTC DETECTING CONDITION:

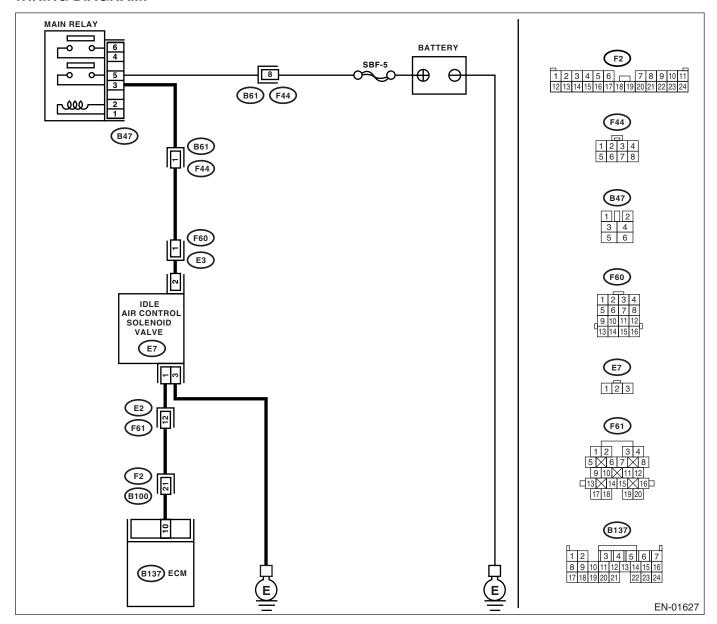
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-168, DTC P0509 IDLE CONTROL SYSTEM CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

			FOR	J Eric C
	Step	Check	Yes	No St
1	CHECK THROTTLE CABLE.	Does the throttle cable have play for adjustment?	Go to step 2.	Adjust the throttle cable. <ref. accelerator="" cable.="" control="" installation,="" sp(h4so)-6,="" to=""></ref.>
2	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B137) No. 10 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 3.	Go to step 4.
3	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from idle air control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B137) No. 10 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Replace the idle air control solenoid valve. <ref. air="" control="" fu(h4dotc)-34,="" idle="" solenoid="" to="" valve.=""> and ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.></ref.>
4	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B137) No. 10 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

BR:DTC P0512 STARTER REQUEST CIRCUIT

DTC DETECTING CONDITION:

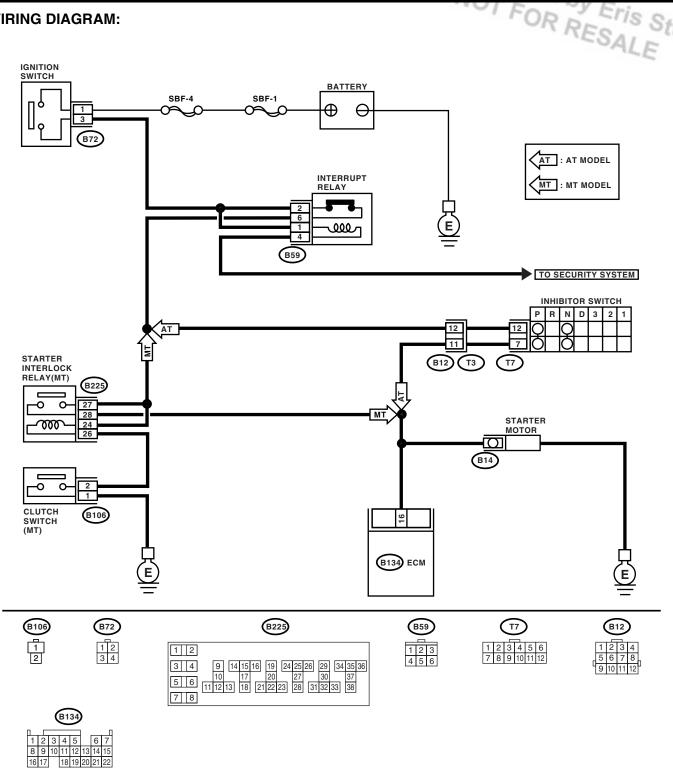
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-170, DTC P0512 STARTER REQUEST CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No St
1		when ignition switch is turned to ON?	short circuit in starter motor cir- cuit. After repair, replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control</ref.>	Check the starter motor circuit. <ref.)-59,="" cir-cuit,="" diagnostics="" en(h4dotc)(diag="" engine="" failure.="" for="" motor="" starter="" starting="" to=""></ref.>

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BS:DTC P0519 IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) DTC DETECTING CONDITION:

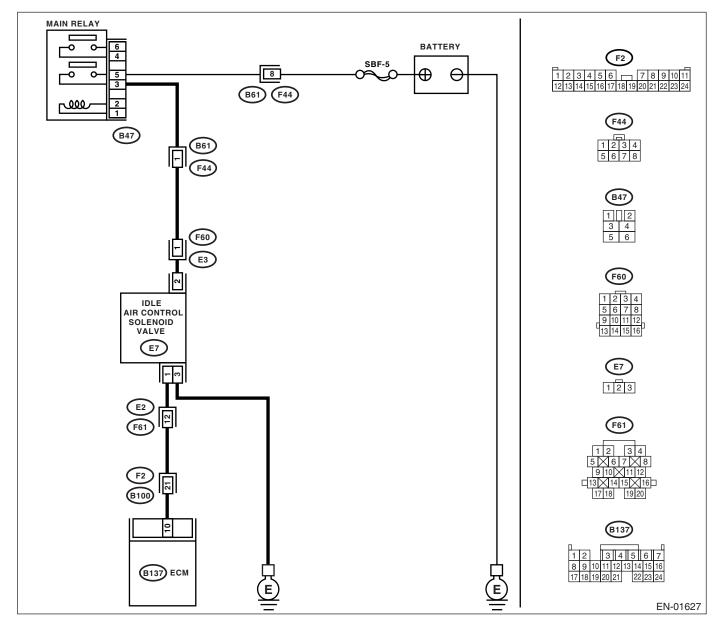
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-171, DTC P0519 IDLE CONTROL SYSTEM MAL-FUNCTION (FAIL-SAFE), Diagnostic Trouble Code (DTC) Detecting Criteria.

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No St
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0519.</ref.>	
2	CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start the engine, and idle it. 3) Check the following items. • Loose installation of intake manifold, idle air control solenoid valve and throttle body • Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket • Disconnections of vacuum hoses	Is there a fault in air intake system?	Repair the air suction and leaks.	Go to step 3.
3	CHECK THROTTLE CABLE.	Does the throttle cable have play for adjustment?	Go to step 4.	Adjust the throttle cable. <ref. accelerator="" cable.="" control="" installation,="" sp(h4so)-6,="" to=""></ref.>
4	CHECK AIR BY-PASS LINE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from throttle body. <ref. air="" control="" fu(h4dotc)-34,="" idle="" solenoid="" to="" valve.=""> 3) Confirm that there are no foreign particles in by-pass air line.</ref.>	Are foreign particles in by-pass air line?	Remove the for- eign particles from by-pass air line.	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4DOTC)-34, Idle Air Control Solenoid Valve.></ref.>

BT:DTC P0545 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT LOW-BANK

DTC DETECTING CONDITION:

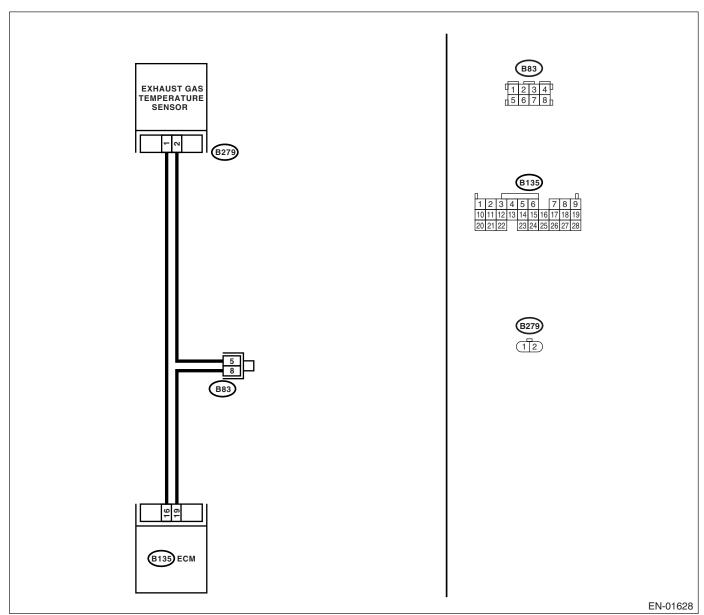
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-173, DTC P0545 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT LOW-BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

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(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK CURRENT DATA. 1) Start the engine.	Is the temperature more than 1200°C (2192°F)?	Go to step 2.	Repair the poor contact.
	 Read the data of exhaust gas temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. 			NOTE: In this case, repair the following:
	NOTE: • Subaru Select Monitor			Poor contact in exhaust gas tem-
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref. to EN(H4DOTC)(diag)-31, Subaru Select Mon-			perature sensor • Poor contact in ECM
	itor.> • OBD-II general scan tool			Poor contact in joint connector
	For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.			
2	CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from exhaust gas temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of exhaust gas temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the temperature less than 372°C (702°F)?	Replace the exhaust gas temperature sensor. <ref. exhaust="" fu(h4dotc)-47,="" sensor.="" temperature="" to=""></ref.>	Repair the ground short circuit in har- ness between exhaust gas tem- perature sensor and ECM connec- tor.
	NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>			

BU:DTC P0546 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT HIGH-BANK

DTC DETECTING CONDITION:

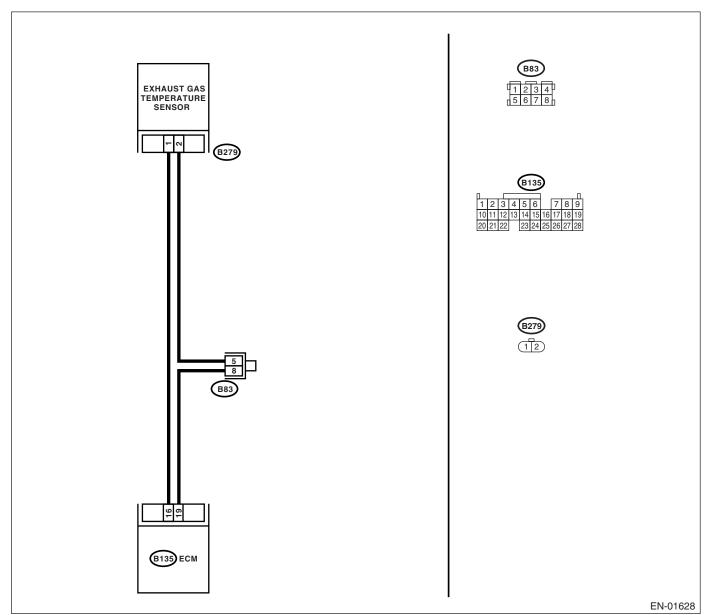
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-175, DTC P0546 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT HIGH-BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

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(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			For	y Eria
	Step	Check	Yes	No St
1	CHECK CURRENT DATA.	Is the temperature less than	Go to step 2.	Repair the poor
	 Start the engine. 	372°C (702°F)?		contact.
	2) Read the data of exhaust gas temperature			NOTE:
	sensor signal using Subaru Select Monitor or			In this case, repair
	OBD-II general scan tool.			the following:
	NOTE:			Poor contact in
	Subaru Select Monitor For detailed engration precedure, refer to the			exhaust gas tem-
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref.< th=""><th></th><th></th><th>perature sensor Poor contact in</th></ref.<>			perature sensor Poor contact in
	to EN(H4DOTC)(diag)-31, Subaru Select Mon-			ECM
	itor.>			Poor contact in
	OBD-II general scan tool			joint connector
	For detailed operation procedures, refer to the			,
	OBD-II General Scan Tool Instruction Manual.			
2	CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 10 V?	Repair the battery	Go to step 3.
	GAS TEMPERATURE SENSOR AND ECM		short circuit in har-	-
	CONNECTOR.		ness between	
	 Turn the ignition switch to OFF. 		ECM and exhaust	
	2) Disconnect the connector from exhaust gas		gas temperature	
	temperature sensor.		sensor connector.	
	3) Measure the voltage between exhaust gas			
	temperature sensor connector and engine ground.			
	Connector & terminal			
	(B279) No. 1 (+) — Engine ground (–):			
3	CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 10 V?	Renair the hattery	Go to step 4.
	GAS TEMPERATURE SENSOR AND ECM	lo the voltage more than 10 v.	short circuit in har-	GO to stop 41
	CONNECTOR.		ness between	
	1) Turn the ignition switch to ON.		ECM and exhaust	
	2) Measure the voltage between exhaust gas		gas temperature	
	temperature sensor connector and engine		sensor connector.	
	ground.			
	Connector & terminal			
	(B279) No. 1 (+) — Engine ground (-):			
4	CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 4 V?	Go to step 5.	Repair the har-
	GAS TEMPERATURE SENSOR AND ECM CONNECTOR.			ness and connector.
	Measure the voltage between exhaust gas			
	temperature sensor connector and engine			NOTE: In this case, repair
	ground.			the following:
	Connector & terminal			Open circuit in
	(B279) No. 1 (+) — Engine ground (–):			harness between
				ECM and exhaust
				gas temperature
				sensor connector
				Poor contact in
				exhaust gas tem-
				perature sensor
				connector
				Poor contact in ECM connector
				ECM connectorPoor contact in
				joint connector
]				John Connector

Step	Check	Yes	No S
5 CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between exhaust gas temperature sensor con- nector and engine ground. Connector & terminal (B279) No. 2 — Engine ground:	Is the resistance less than 5 Ω?	Replace the exhaust gas temperature sensor. <ref. exhaust="" fu(h4dotc)-47,="" sensor.="" temperature="" to=""></ref.>	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and exhaust gas temperature sensor connector • Poor contact in exhaust gas temperature sensor connector • Poor contact in ECM connector • Poor contact in in ECM connector • Poor contact in in ECM connector

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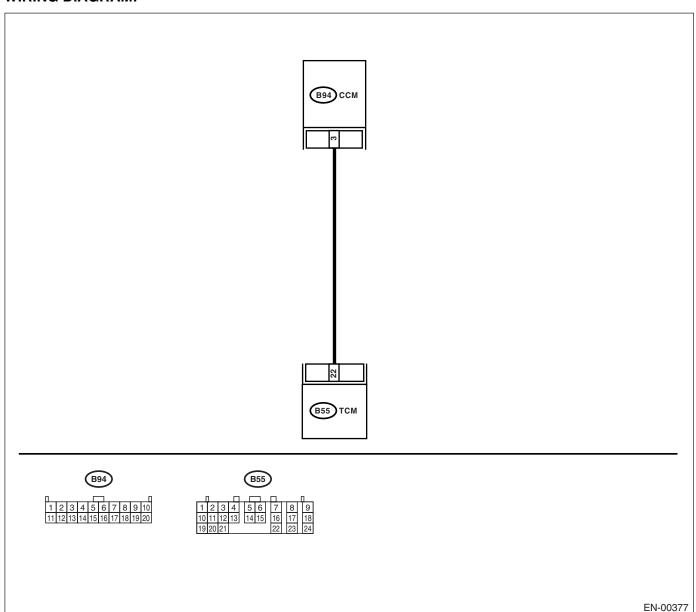
BV:DTC P0565 CRUISE CONTROL ON SIGNAL

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-177, DTC P0565 CRUISE CONTROL ON SIGNAL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St	
1	CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and CCM. 3) Measure the resistance of harness between TCM and CCM connector. Connector & terminal (B55) No. 22 — (B94) No. 3:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between TCM and CCM connector.	
2	CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR. Measure the resistance of harness between TCM and chassis ground. Connector & terminal (B55) No. 22 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 3.	Repair the short circuit in harness between TCM and CCM connector.	
3	CHECK INPUT SIGNAL FOR TCM. 1) Connect the connector to TCM and CCM. 2) Lift-up the vehicle or set the vehicle on free rollers. CAUTION: On AWD models, raise all wheels off ground. 3) Start the engine. 4) Turn the cruise control main switch to ON. 5) Move the select lever to "D" range and slowly increase vehicle speed to 50 km/h (31 MPH). 6) Turn the cruise control command switch to ON. 7) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 22 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 4.	Check the cruise control command switch circuit. <ref. cc-7,="" command="" control="" cruise="" inspection,="" switch.="" to=""></ref.>	
4	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair the poor contact in TCM connector.	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BW:DTC P0604 INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-178, DTC P0604 INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR, Diagnostic Trouble Code (DTC) Detecting Criteria.>

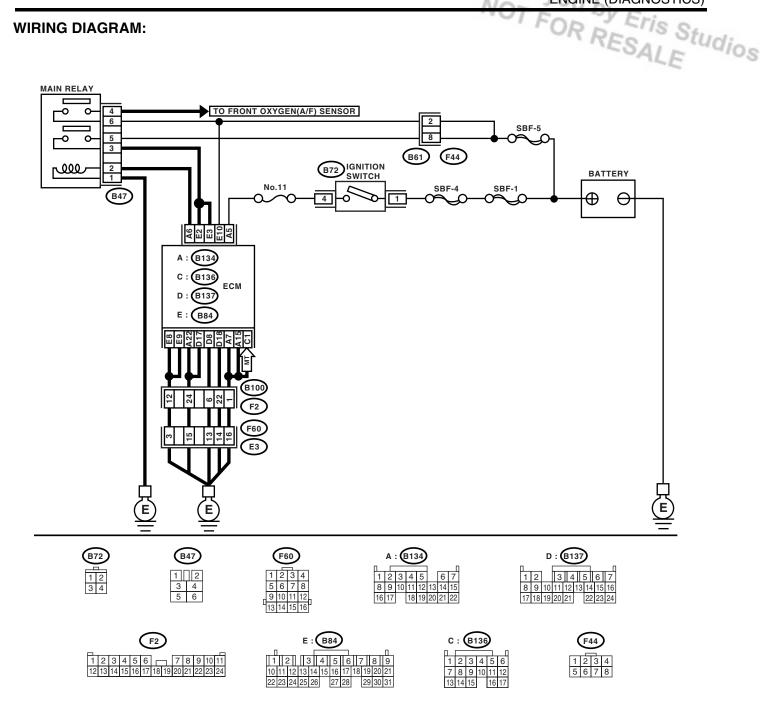
TROUBLE SYMPTOM:

- Engine does not start.
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.

WIRING DIAGRAM:



EN-01608

Ī	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Replace the ECM.	A temporary poor
		tor or OBD-II general scan tool	<ref. th="" to<=""><th>contact.</th></ref.>	contact.
		indicate DTC P0604?	FU(H4DOTC)-48,	
			Engine Control	
L			Module (ECM).>	

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

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ENGINE (DIAGNOSTICS)

BX:DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-179, DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

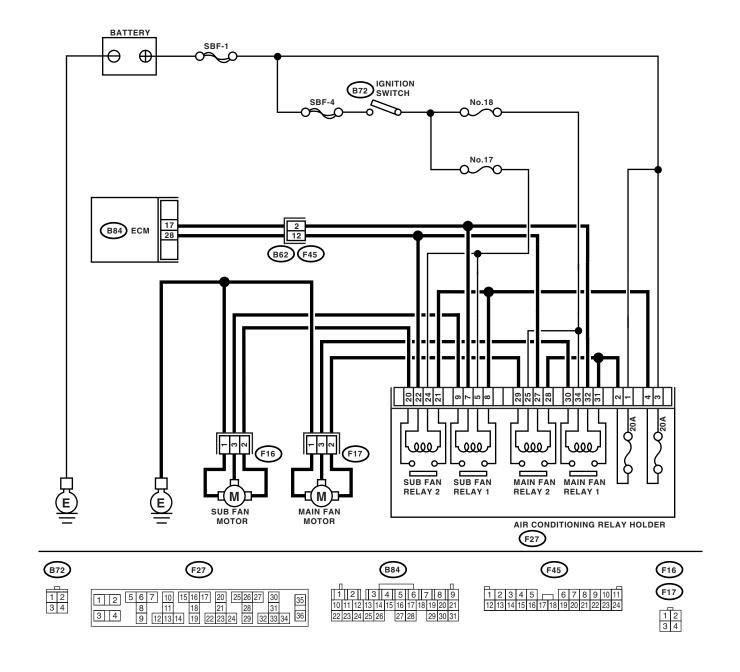
- · Radiator fan does not operate properly.
- Overheating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

OR RESALE

WIRING DIAGRAM:



EN-01625

		For	y Fri
Step	Check	Yes	No St
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the test mode connector. 3) Turn the ignition switch to ON. 4) While operating the radiator fan relay, measure voltage between ECM terminal and ground. NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> Connector & terminal (B84) No. 17 (+) — Chassis ground (-): (B84) No. 28 (+) — Chassis ground (-):</ref.>		Repair poor contact in ECM connector.	Go to step 2.
2 CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B84) No. 17 — Chassis ground: (B84) No. 28 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair ground short circuit in radiator fan relay control circuit.
3 CHECK POWER SUPPLY FOR RELAY. 1) Remove the main fan relay 1 and main fan relay 2 from A/C relay holder. 2) Turn the ignition switch to ON. 3) Measure the voltage between fuse and relay box (F/B) connector and chassis ground. Connector & terminal (F27) No. 27 (+) — Chassis ground (-): (F27) No. 32 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.
4 CHECK MAIN FAN RELAY. 1) Turn the ignition switch to OFF. 2) Measure the resistance between main fan relay terminals. Terminals No. 32 — No. 34: (Main fan relay 1) No. 25 — No. 27: (Main fan relay 2)	Is the resistance 87 — 107 Ω ?	Go to step 5.	Replace the main fan relay.
5 CHECK OPEN CIRCUIT IN MAIN FAN RE- LAY CONTROL CIRCUIT. Measure the resistance of harness between ECM and fan relay connector. Connector & terminal (B84) No. 17 — (F27) No. 32: (B84) No. 28 — (F27) No. 27:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and fan relay connector Poor contact in coupling connector
CHECK POOR CONTACT. Check poor contact in ECM or fan relay connector.	Is there poor contact in ECM or fan relay connector?	Repair poor contact in ECM or fan relay connector.	Contact your SOA Service Center.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĠINE (ĎIAGNOSTICS)

BY:DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-180, DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

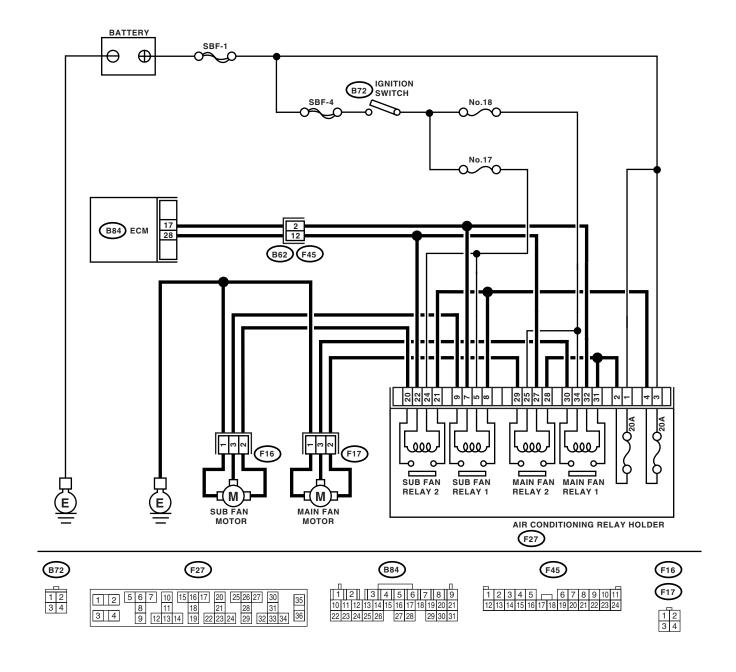
TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-01625

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OR RESALE

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	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM.	Does the voltage change 0 —	Even if malfunction	Go to step 2.
	 Turn the ignition switch to OFF. 	10 V?	indicator light	
	Connect the test mode connector.		lights up, the cir-	
	3) Turn the ignition switch to ON.		cuit has returned	
	4) While operating the radiator fan relay, mea-		to a normal condi-	
	sure the voltage between ECM and chassis		tion at this time. In	
	ground.		this case, repair	
	NOTE:		the poor contact in	
	Radiator fan relay operation can be executed		ECM connector.	
	using the Subaru Select Monitor. For proce-			
	dure, refer to "Compulsory Valve Operation			
	Check Mode". <ref. en(h4dotc)(diag)-47,<="" th="" to=""><th></th><th></th><th></th></ref.>			
	Compulsory Valve Operation Check Mode.>			
	Connector & terminal			
	(B84) No. 17 (+) — Chassis ground (−):			
	(B84) No. 28 (+) — Chassis ground (−):			
2	CHECK SHORT CIRCUIT IN RADIATOR FAN	Is the voltage more than 10 V?	Repair the battery	Go to step 3.
	RELAY CONTROL CIRCUIT.		short circuit in	
	Turn the ignition switch to OFF.		radiator fan relay	
	2) Remove the fan relay 1, fan relay 2 and fan		control circuit.	
	mode relay.		After repair,	
	Disconnect the test mode connector.		replace the ECM.	
	4) Turn the ignition switch to ON.		<ref. th="" to<=""><th></th></ref.>	
	5) Measure the voltage between ECM and		FU(H4DOTC)-48,	
	chassis ground.		Engine Control	
	Connector & terminal		Module (ECM).>	
	(B84) No. 17 (+) — Chassis ground (-):			
	(B84) No. 28 (+) — Chassis ground (−):			
3	CHECK MAIN FAN RELAY.	Is the resistance less than 1	Replace the main	Go to step 4.
	Turn the ignition switch to OFF.	Ω?	fan relay and	
	2) Remove the main fan relay.		ECM. <ref. th="" to<=""><th></th></ref.>	
	Measure the resistance between main fan relev terminele		FU(H4DOTC)-48,	
	relay terminals. <i>Terminals</i>		Engine Control Module (ECM).>	
	No. 30 — No. 31: (Main fan relay 1)		INIOQUIE (ECIVI).>	
	No. 28 — No. 29: (Main fan relay 2)			
4	CHECK SUB FAN RELAY.	Is the resistance less than 1	Replace the sub	Go to step 5.
	Remove the sub fan relay.	Ω ?	fan relay and	ao io siep J.
	Measure the resistance between sub fan		ECM. <ref. th="" to<=""><th></th></ref.>	
	relay terminals.		FU(H4DOTC)-48,	
	Terminals		Engine Control	
	No. 8 — No. 9: (Sub fan relay 1)		Module (ECM).>	
	No. 20 — No. 21: (Sub fan relay 2)			
5	CHECK POOR CONTACT.	Is there poor contact in ECM	Repair the poor	Replace the ECM.
آ	Check poor contact in ECM connector.	connector?	contact in ECM	<ref. th="" to<=""></ref.>
	2 Six poor contact in Low controller.		connector.	FU(H4DOTC)-48,
				Engine Control
				Module (ECM).>
			l	

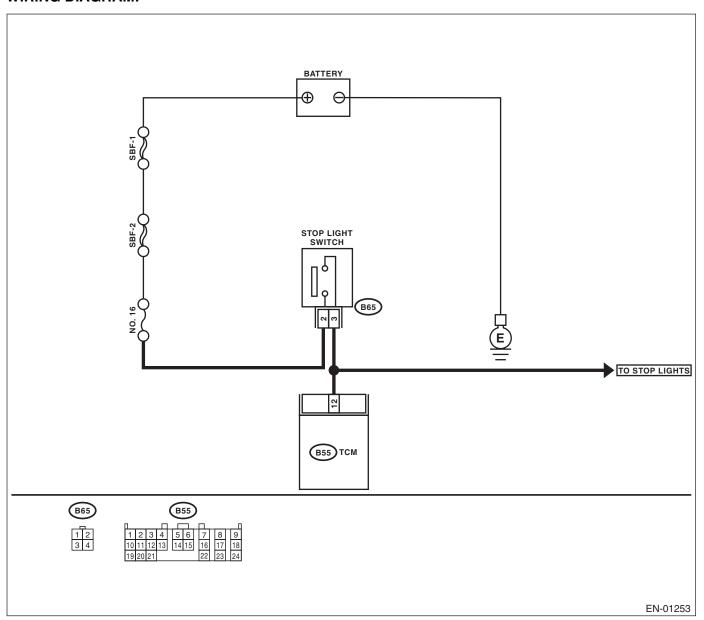
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BZ:DTC P0703 TORQUE CONVERTER/BRAKE SWITCH "B" CIRCUIT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-181, DTC P0703 TORQUE CONVERTER/BRAKE SWITCH "B" CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			FOR	J Fri
	Step	Check	Yes	DE No St
1	CHECK OPERATION OF BRAKE LIGHT.	Does the brake light come on when depressing the brake pedal?	Go to step 2.	Repair or replace the brake light cir- cuit.
2	CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR. 1) Disconnect the connectors from TCM and brake light switch. 2) Measure the resistance of harness between TCM and brake light switch connector. Connector & terminal (B55) No. 12 — (B65) No. 3:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair or replace the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between TCM and brake light switch connector Poor contact in TCM connector Poor contact in brake light switch connector
3	CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR. Measure the resistance of harness between TCM and chassis ground. Connector & terminal (B55) No. 12 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 4.	Repair the ground short circuit in har- ness between TCM and brake light switch con- nector.
4	CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and brake light switch. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 12 (+) — Chassis ground (-):	Is the voltage less than 1 V when releasing the brake pedal?	Go to step 5.	Adjust or replace the brake light switch. <ref. li-<br="" to="">7, STOP LIGHT SWITCH, INSPECTION, Stop Light Sys- tem.></ref.>
5	CHECK INPUT SIGNAL FOR TCM. Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V when depressing the brake pedal?	Go to step 6.	Adjust or replace the brake light switch. <ref. li-<br="" to="">7, STOP LIGHT SWITCH, INSPECTION, Stop Light Sys- tem.></ref.>
6	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair the poor contact in TCM connector.	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

ENGINE (DIAGNOSTICS)

CA:DTC P0705 TRANSMISSION RANGE SENSOR CIRCUIT (PRNDL INPUT)

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-182, DTC P0705 TRANSMISSION RANGE SENSOR CIRCUIT (PRNDL INPUT), Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-104, CHECK INHIBITOR SWITCH, Diagnostic Procedure without Diagnostic Trouble Code (DTC).>

CB:DTC P0710 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-183, DTC P0710 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-43, DTC 27 ATF TEMPERATURE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CC:DTC P0716 TORQUE CONVERTER TURBINE SPEED SENSOR

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-184, DTC P0716 INPUT/TURBINE SPEED SENSOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-57, DTC 36 TORQUE CONVERTER TURBINE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CD:DTC P0720 OUTPUT SPEED SENSOR CIRCUIT

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-185, DTC P0720 OUTPUT SPEED SENSOR CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-52, DTC 33 FRONT VEHICLE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CE:DTC P0726 ENGINE SPEED INPUT CIRCUIT RANGE/PERFORMANCE

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-186, DTC P0726 ENGINE SPEED INPUT CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-39, DTC 11 ENGINE SPEED SIGNAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CF:DTC P0731 GEAR 1 INCORRECT RATIO

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(H4DOTC)(diag)-255, DTC P0734 GEAR 4 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CG:DTC P0732 GEAR 2 INCORRECT RATIO

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(H4DOTC)(diag)-255, DTC P0734 GEAR 4 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CH:DTC P0733 GEAR 3 INCORRECT RATIO

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(H4DOTC)(diag)-255, DTC P0734 GEAR 4 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

ENĞINE (DIAGNOSTICS)

CI: DTC P0734 GEAR 4 INCORRECT RATIO

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-190, DTC P0734 GEAR 4 INCORRECT RATIO, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Shift point too high or too low; engine brake not effective in "3" range; excessive shift shock; excessive tight corner "braking"

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

	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. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK THROTTLE POSITION SENSOR CIRCUIT. Check the throttle position sensor circuit. <ref. (dtc).="" 31="" 4at(diag)-46,="" code="" diagnostic="" dtc="" position="" procedure="" sensor,="" throttle="" to="" trouble="" with=""></ref.>	Is there any trouble in throttle position sensor circuit?	Repair or replace the throttle posi- tion sensor circuit.	Go to step 3.
3	CHECK FRONT VEHICLE SPEED SENSOR CIRCUIT. Check the front vehicle speed sensor circuit. <ref. (dtc).="" 33="" 4at(diag)-52,="" code="" diagnostic="" dtc="" front="" procedure="" sensor,="" speed="" to="" trouble="" vehicle="" with=""></ref.>	Is there any trouble in front vehicle speed sensor circuit?	Repair or replace the vehicle speed sensor 2 circuit.	Go to step 4.
4	CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT. Check the torque converter turbine speed sensor circuit. <ref. (dtc).="" 36="" 4at(diag)-57,="" code="" converter="" diagnostic="" dtc="" procedure="" sensor,="" speed="" to="" torque="" trouble="" turbine="" with=""></ref.>	Is there any trouble in torque converter turbine speed sensor circuit?	Repair or replace the torque con- verter turbine speed sensor cir- cuit.	Go to step 5.
5	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair the poor contact in TCM connector.	Go to step 6.
6	CHECK MECHANICAL TROUBLE. Check mechanical trouble in automatic transmission.	Is there any mechanical trouble in automatic transmission?	Repair or replace the automatic transmission. <ref. 4at-32,<br="" to="">INSPECTION, Road Test.></ref.>	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

ENGINE (DIAGNOSTICS)

CJ:DTC P0741 TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-191, DTC P0741 TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- No lock-up (after engine warm-up)
- No shift or excessive tight corner "braking"

CAUTION:

	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. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK LOCK-UP DUTY SOLENOID CIR- CUIT. Check the lock-up duty solenoid circuit. <ref. to 4AT(diag)-87, DTC 77 LOCK-UP DUTY SOLENOID, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref. 	Is there any trouble in lock-up duty solenoid circuit?	Repair or replace the lock-up duty solenoid circuit.	Go to step 3.
3	CHECK THROTTLE POSITION SENSOR CIRCUIT. Check the throttle position sensor circuit. <ref. (dtc).="" 31="" 4at(diag)-46,="" code="" diagnostic="" dtc="" position="" procedure="" sensor,="" throttle="" to="" trouble="" with=""></ref.>	Is there any trouble in throttle position sensor circuit?	Repair or replace the throttle posi- tion sensor circuit.	Go to step 4.
4	CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT. Check the torque converter turbine speed sensor circuit. <ref. (dtc).="" 36="" 4at(diag)-57,="" code="" converter="" diagnostic="" dtc="" procedure="" sensor,="" speed="" to="" torque="" trouble="" turbine="" with=""></ref.>	Is there any trouble in torque converter turbine speed sensor circuit?	Repair or replace the torque con- verter turbine speed sensor cir- cuit.	Go to step 5.
5	CHECK ENGINE SPEED INPUT CIRCUIT. Check the engine speed input circuit. <ref. (dtc).="" 11="" 4at(diag)-39,="" code="" diagnostic="" dtc="" engine="" nal,="" procedure="" sig-="" speed="" to="" trouble="" with=""></ref.>	Is there any trouble in engine speed input circuit?	Repair or replace the engine speed input circuit.	Go to step 6.
6	CHECK INHIBITOR SWITCH CIRCUIT. Check the inhibitor switch circuit. <ref. (dtc).="" 4at(diag)-104,="" check="" code="" diagnostic="" inhibitor="" procedure="" switch,="" to="" trouble="" without=""></ref.>	Is there any trouble in inhibitor switch circuit?	Repair or replace the inhibitor switch circuit.	Go to step 7.

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	Step	Check	Yes	No St
7	CHECK BRAKE LIGHT SWITCH CIRCUIT. Check the brake light switch circuit. <ref. (dtc).="" 4at(diag)-103,="" brake="" check="" code="" diagnostic="" procedure="" switch,="" to="" trouble="" without=""></ref.>	Is there any trouble in brake light switch circuit?	Repair or replace the brake light switch circuit.	Go to step 8.
8	CHECK ATF TEMPERATURE SENSOR CIRCUIT. Check the ATF temperature sensor circuit. <ref. (dtc).="" 27="" 4at(diag)-43,="" atf="" code="" diagnostic="" dtc="" procedure="" sensor,="" temperature="" to="" trouble="" with=""></ref.>	Is there any trouble in ATF tem- perature sensor circuit?	Repair or replace the ATF tempera- ture sensor circuit.	Go to step 9.
9	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair the poor contact in TCM connector.	Go to step 10.
10	CHECK MECHANICAL TROUBLE. Check mechanical trouble in automatic transmission.	Is there any mechanical trouble in automatic transmission?	Repair or replace the automatic transmission. <ref. 4at-32,<br="" to="">INSPECTION, Road Test.></ref.>	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

ENGINE (DIAGNOSTICS)

CK:DTC P0743 TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-192, DTC P0743 TORQUE CONVERTER CLUTCH CIR-CUIT ELECTRICAL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-87, DTC 77 LOCK-UP DUTY SOLE-NOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CL:DTC P0748 PRESSURE CONTROL SOLENOID "A" ELECTRICAL

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-193, DTC P0748 PRESSURE CONTROL SOLENOID "A" ELECTRICAL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-78, DTC 75 LINE PRESSURE DUTY SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CM:DTC P0753 SHIFT SOLENOID "A" ELECTRICAL

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-194, DTC P0753 SHIFT SOLENOID "A" ELECTRICAL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-65, DTC 71 SHIFT SOLENOID 1, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CN:DTC P0758 SHIFT SOLENOID "B" ELECTRICAL

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-195, DTC P0758 SHIFT SOLENOID "B" ELECTRICAL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-68, DTC 72 SHIFT SOLENOID 2, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CO:DTC P0771 LOW CLUTCH TIMING SOLENOID

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-196, DTC P0771 SHIFT SOLENOID "E" PERFORMANCE OR STUCK OFF, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-71, DTC 73 LOW CLUTCH TIMING SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CP:DTC P0778 PRESSURECONTROL SOLENOID "B" ELECTRICAL

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-197, DTC P0778 PRESSURE CONTROL SOLENOID "B" ELECTRICAL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-83, DTC 76 2-4 BRAKE DUTY SOLE-NOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CQ:DTC P0785 SHIFT/TIMING SOLENOID

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-198, DTC P0785 SHIFT/TIMING SOLENOID, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-74, DTC 74 2-4 BRAKE TIMING SO-LENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Studios

CR:DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL) DTC DETECTING CONDITION:

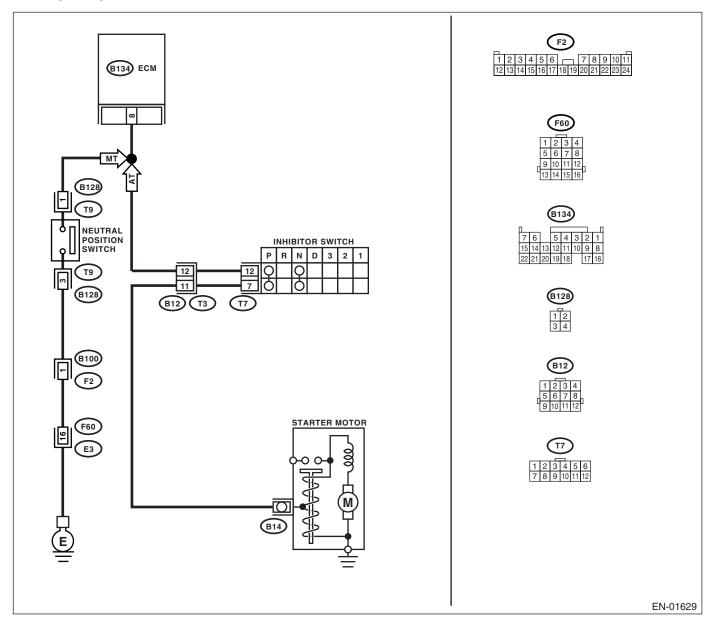
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-199, DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK DTC P0705 ON DISPLAY.	Is DTC P0705 indicated?	Inspect DTC P0705 using "List of Diagnostic Trou- ble Code (DTC)". <ref. (dtc).="")-71,="" code="" diag-="" en(h4dotc)(diag="" list="" nostic="" of="" to="" trouble=""></ref.>	
2	CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. 2) Place the select lever except for "N" and "P" positions. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage 4.5 — 5.5 V?	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time.	·
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 (B134) No. 8 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 4.	Repair ground short circuit in har- ness between ECM and trans- mission 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. 12 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair ground short circuit in har- ness between transmission har- ness and inhibitor switch connector.
5	CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector the receptacle's terminals in selector lever except for "N" position. Terminals No. 7 — No. 12:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 6.	Replace the inhibitor switch. <ref. 4at-46,="" inhibitor="" switch.="" to=""></ref.>
6	CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <ref. cs-26,<br="" to="">INSPECTION, Select Cable.></ref.>	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

Studios

CS:DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (MT MODEL) DTC DETECTING CONDITION:

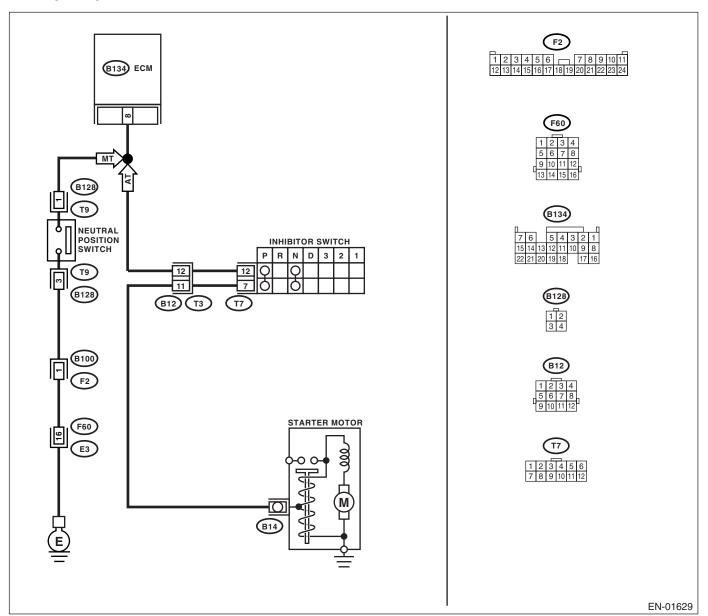
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-200, DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (MT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



		-	FAL	y Eria
	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM.	Is the voltage more than 10 V?	Go to step 2.	Go to step 4.
	 Turn the ignition switch to ON. 			175
	Place the shift lever in neutral.			
	Measure the voltage between ECM and			
	chassis ground.			
	Connector & terminal			
	(B134) No. 8 (+) — Chassis ground (−):			
2	CHECK INPUT SIGNAL FOR ECM.	Is the voltage less than 1 V?	Go to step 3.	Go to step 4.
	1) Place the shift lever in a position except for			
	neutral.			
	Measure the voltage between ECM and			
	chassis ground.			
	Connector & terminal			
	(B134) No. 8 (+) — Chassis ground (−):			
3	CHECK POOR CONTACT.	Is there poor contact in ECM	Repair poor con-	Contact your SOA
	Check poor contact in ECM connector.	connector?	tact in ECM con-	Service Center.
			nector.	_
4	CHECK NEUTRAL POSITION SWITCH.	Is the resistance more than 1	Go to step 5.	Repair short circuit
	1) Turn the ignition switch to OFF.	ΜΩ?		in transmission
	2) Disconnect the connector from transmis-			harness or replace
	sion harness.			neutral position switch.
	3) Place the shift lever in neutral.4) Measure the resistance between transmis-			SWILCH.
	sion harness and connector terminals.			
	Connector & terminal			
	(T9) No. 1 — No. 3:			
5	CHECK NEUTRAL POSITION SWITCH.	Is the resistance less than 1	Go to step 6.	Repair short circuit
Ī		Ω ?		in transmission
	neutral.			harness or replace
	2) Measure the resistance between transmis-			neutral position
	sion harness connector terminals.			switch.
6	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 7.	Repair ground
	NEUTRAL POSITION SWITCH CONNEC-	ΜΩ?		short circuit in har-
	TOR.			ness between
	Measure the resistance between ECM and			ECM and trans-
	chassis ground.			mission harness
	Connector & terminal			connector.
<u></u>	(B134) No. 8 — Chassis ground:			
7	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 8.	Repair open circuit
	NEUTRAL POSITION SWITCH CONNEC-	Ω?		in harness
	TOR. 1) Disconnect the connector from ECM			between ECM and
	 Disconnect the connector from ECM. Measure the resistance of harness 			transmission har- ness connector.
	between ECM and transmission harness con-			TIGGG COTTIECTOR.
	nector.			
	Connector & terminal			
	(B134) No. 8 — (B128) No. 1:			
8	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 5	Go to step 9.	Repair open circuit
	NEUTRAL POSITION SWITCH CONNEC-	Ω ?		between transmis-
	TOR.			sion harness con-
	Measure the resistance of harness between			nector and engine
	transmission harness connector and engine			ground terminal.
	ground.			
	Connector & terminal			
<u></u>	(B128) No. 1 — Engine ground:			
9	CHECK POOR CONTACT.	Is there poor contact in trans-	Repair poor con-	Contact your SOA
	Check poor contact in transmission harness	mission harness connector?	tact in transmis-	Service Center.
	connector.		sion harness	
			connector.	

Studios

CT:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL) DTC DETECTING CONDITION:

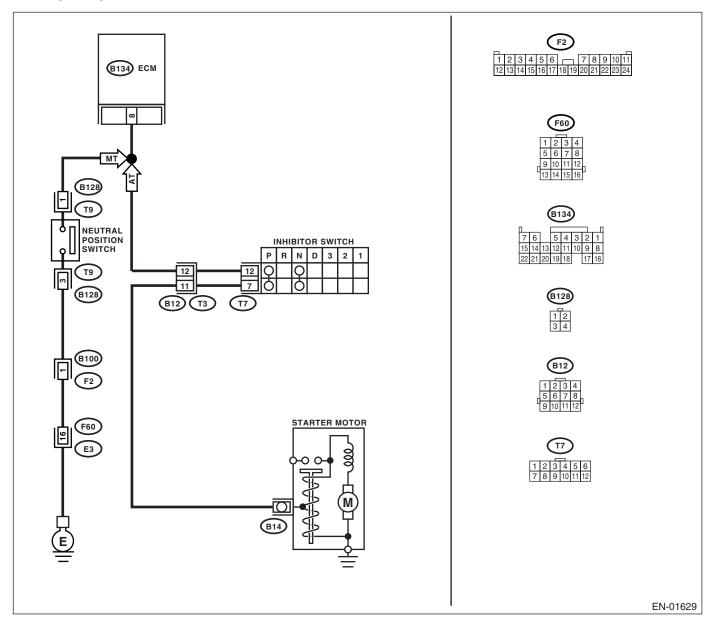
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-201, DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK DTC P0705 ON DISPLAY.	Is DTC P0705 indicated?	Inspect DTC P0705 using "List of Diagnostic Trou- ble Code (DTC)". <ref. (dtc).="")-71,="" code="" diag-="" en(h4dotc)(diag="" list="" nostic="" of="" to="" trouble=""></ref.>	Go to step 2.
	CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground in selector lever "N" and "P" positions. Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 3.	Go to step 5.
	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chassis ground in selector lever except for "N" and "P" positions. Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 4.	Go to step 5.
	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 8 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and inhibitor switch connector.	Go to step 6.
	CHECK HARNESS BETWEEN ECM AND IN- HIBITOR 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 (B134) No. 8 — (T7) No. 12:	Is the resistance less than 1 Ω ?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and inhibitor switch connector Poor contact in coupling connector Poor contact in inhibitor switch connector Poor contact in inhibitor switch connector Poor contact in ECM connector

	Step	Check	Yes	No St
7	CHECK INHIBITOR SWITCH GROUND LINE. Measure the resistance of harness between inhibitor switch connector and engine ground. Connector & terminal (T7) No. 7 — Engine ground:	Ω?	Go to step 8.	Repair open circuit in harness between inhibitor switch connector and starter motor ground line. NOTE: In this case, repair the following: Open circuit in harness between inhibitor switch connector and starter motor ground line Poor contact in starter motor connector Poor contact in starter motor ground Starter motor ground Starter motor
8	CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector receptacle's terminals in selector lever "N" and "P" positions. Terminals No. 7 — No. 12:	Is the resistance less than 1 Ω ?	Go to step 9.	Replace the inhibitor switch. <ref. 4at-46,="" inhibitor="" switch.="" to=""></ref.>
9	CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <ref. cs-26,<br="" to="">INSPECTION, Select Cable.></ref.>	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

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CU:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT MODEL) DTC DETECTING CONDITION:

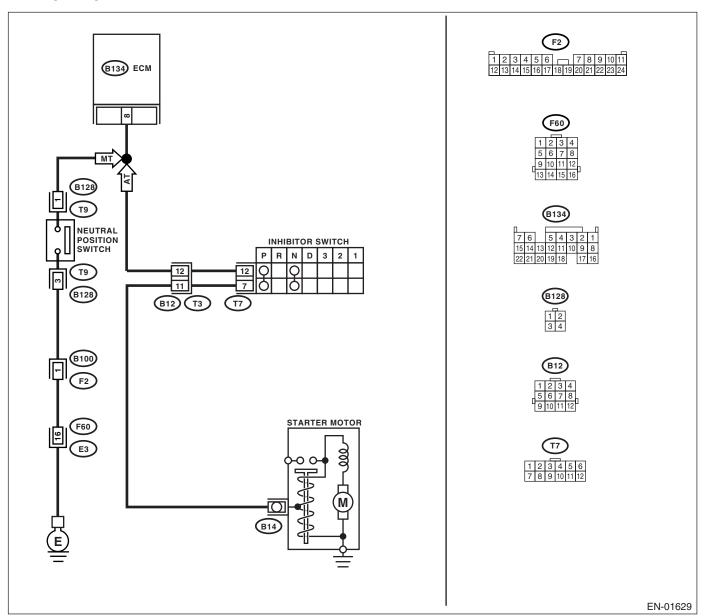
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-202, DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



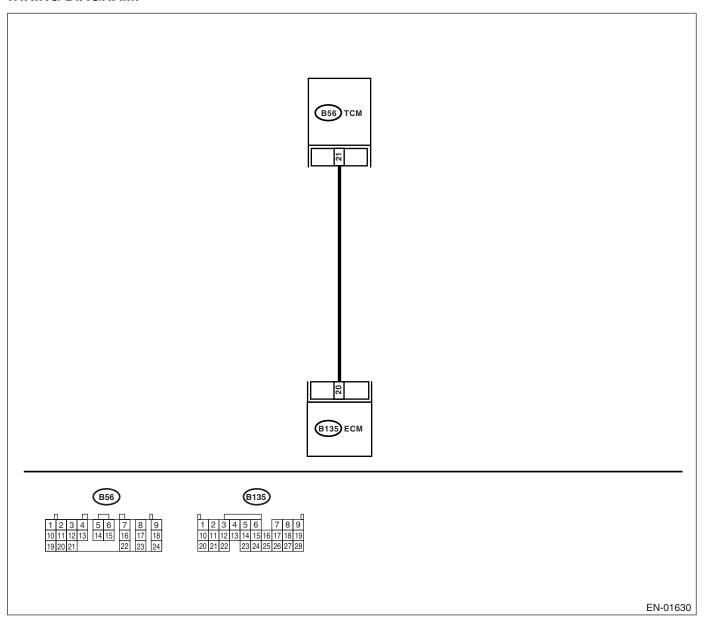
		For	y Frin
Step	Check	Yes	No St
 CHECK INPUT SIGNAL FOR ECM. Turn the ignition switch to ON. Set the shift lever to except neutral position. Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 8 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 2.	Go to step 4.
2 CHECK INPUT SIGNAL FOR ECM. 1) Set the shift lever to neutral position. 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 3.	Go to step 4.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Contact your SOA Service Center.
4 CHECK INPUT SIGNAL FOR ECM. 1) Disconnect ECM connector from ECM. 2) 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 har- ness between ECM and trans- mission connector.	Go to step 5.
5 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 (T9). 3) Measure the resistance of harness between ECM and neutral switch connector. Connector & terminal (B134) No. 8 — (B128) No. 1:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and transmission harness Poor contact in transmission harness connector Poor contact in ECM connector
6 CHECK NEUTRAL POSITION SWITCH GROUND LINE. Measure the resistance of harness between transmission harness connector and engine ground. Connector & terminal (B128) No. 3 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 7.	Repair the open circuit in harness of neutral position switch ground line.
 7 CHECK NEUTRAL POSITION SWITCH. 1) Set the shift lever to except neutral position. 2) Measure the resistance between transmission harness connector receptacle's terminals. Terminals No. 1 — No. 3: 	Is the resistance less than 1 Ω ?	Go to step 8.	Replace the neutral position switch.
CHECK POOR CONTACT. Check poor contact in the transmission harness connector.	Is there poor contact in the transmission harness connector?	Repair poor contact in transmission harness connector.	Contact your SOA Service Center.

CV:DTC P0864 TCM COMMUNICATION CIRCUIT RANGE/PERFORMANCE DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-203, DTC P0864 TCM COMMUNICATION CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No St
1	CHECK DRIVING CONDITION. 1) Start and warm-up the engine until the radiator fan makes one complete rotation. 2) Drive the vehicle.	Is the AT shift control function- ing properly?	Go to step 2.	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
2	CHECK ACCESSORY.	Are car phone and/or CB installed on vehicle?	Repair the ground- ing line of car phone or CB sys- tem.	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

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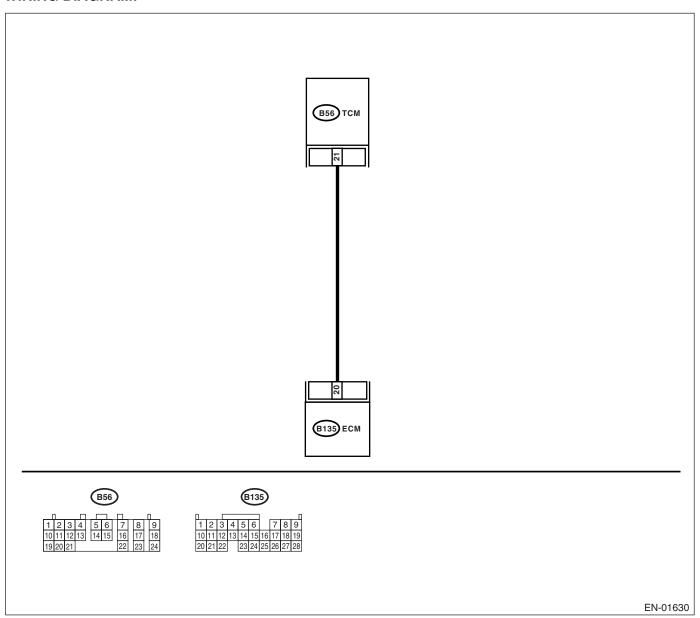
ENGINE (DIAGNOSTICS)

CW:DTC P0865 TCM COMMUNICATION CIRCUIT LOW DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-204, DTC P0865 TCM COMMUNICATION CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 20 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. NOTE: In this case, repair the following: Poor contact in ECM connector Poor contact in TCM connector
2	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and TCM. 3) Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B135) No. 20 — Chassis ground:	Is the resistance less than 10 Ω ?	Go to step 3.	Repair the ground short circuit in har- ness between ECM and TCM connector.
3	CHECK OUTPUT SIGNAL FOR ECM. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 20 (+) — Chassis ground (-):	Is the voltage more than 5 V?	Go to step 4.	Repair the poor contact in ECM connector.
4	CHECK DTC FOR AUTOMATIC TRANSMISSION. Read the DTC for automatic transmission. <ref. (dtc).="" 4at(diag)-24,="" code="" diagnostic="" read="" to="" trouble=""></ref.>	Does the DTC appear for automatic transmission?	Inspect the DTC for automatic transmission. <ref. 4at(diag)-<br="" to="">39, Diagnostic Procedure with Diagnostic Trou- ble Code (DTC).></ref.>	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

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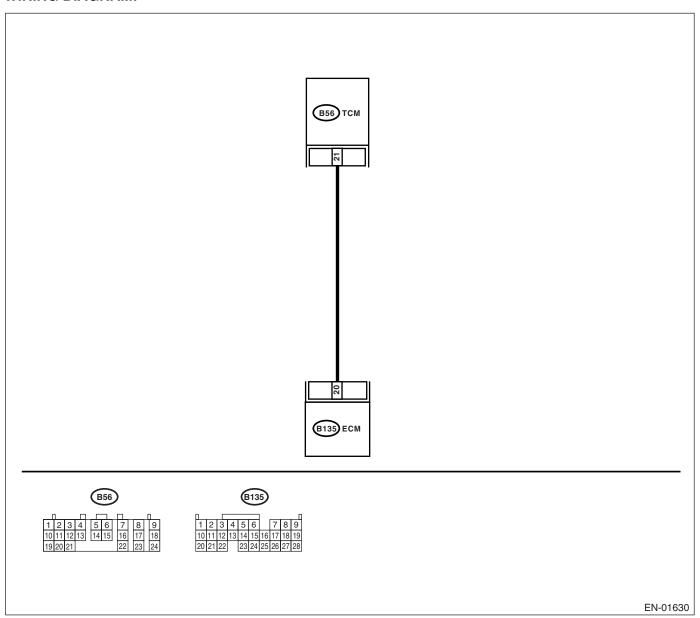
ENGINE (DIAGNOSTICS)

CX:DTC P0866 TCM COMMUNICATION CIRCUIT HIGH DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-205, DTC P0866 TCM COMMUNICATION CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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Step	Check	Yes	No St
1 CHECK HARNESS BETWEEN ECM AN TCM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM ar chassis ground. Connector & terminal (B135) No. 20 (+) — Chassis ground	nd	Repair the battery short circuit in harness between ECM and TCM connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AN TCM CONNECTOR. Measure the voltage between ECM connector & terminal (B135) No. 20 (+) — Chassis ground.	ector	Go to step 5.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AN TCM CONNECTOR. Measure the voltage between ECM connector & terminal (B135) No. 20 (+) — Chassis ground.	ector	Repair the poor contact in ECM connector.	Go to step 4.
4 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM and of sis ground. Connector & terminal (B135) No. 20 (+) — Chassis ground	Does the voltage change between 1 and 4 V while monitoring the value with voltage meter?	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. NOTE: In this case, repair the following: Poor contact in ECM connector Poor contact in TCM connector	Service Center. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
5 CHECK HARNESS BETWEEN ECM AN TCM CONNECTOR. Measure the voltage between TCM and c sis ground. Connector & terminal (B56) No. 20 (+) — Chassis ground (has-	Go to step 6.	Repair the open circuit in harness between ECM and TCM connector.
6 CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair the poor contact in TCM connector.	Check the TCM power supply line and grounding line.

CY:DTC P1086 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT

DTC DETECTING CONDITION:

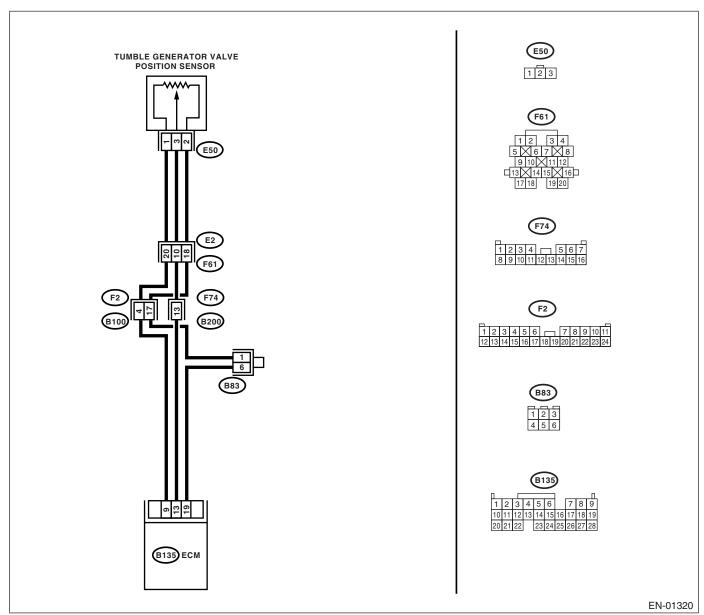
- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-206, DTC P1086 TUMBLE GENERATED VALVE PO-SITION SENSOR 2 CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- · Engine stalls.
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



		V/ 60-	y Fri
Step	Check	Yes	No State
 CHECK CURRENT DATA. Start the engine. Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref. to EN(H4DOTC)(diag)-31, Subaru Select Monitor.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 	Is the voltage less than 0.1 V?		Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: • Poor contact in throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector
2 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground while tumble generator valve is fully closed. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground.	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 13 (+) — Chassis ground (-):	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
5 CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR) Measure the voltage between ECM connector	Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Does the voltage change?	Repair the poor contact in ECM connector.	Go to step 6.

Step	Check	Yes	No
6 CHECK HARNESS BETWEEN ECM AND	Is the voltage more than 4.5 V?	- 1	Repair the har-
TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from tumble generator valve position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between tumble generator valve position sensor connector and engine ground. Connector & terminal (E50) No. 1 (+) — Engine ground (-):	is the voltage more than 4.5 V:		ness and connector. NOTE: In this case, repair the following: Open circuit in harness between tumble generator valve position sensor and ECM connector Poor contact in tumble generator valve position sensor connector Poor contact in ECM connector Poor contact in ECM connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in coupling connector
7 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and tumble generator valve position sensor connector. Connector & terminal (B135) No. 13 — (E50) No. 3:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the har- ness and connec- tor. NOTE: In this case, repair the following: Open circuit in harness between tumble generator valve position sen- sor and ECM con- nector Poor contact in ECM connector Poor contact in tumble generator valve position sen- sor connector Poor contact in tumble generator valve position sen- sor connector Poor contact in coupling connector
8 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. Measure the resistance of harness between tumble generator valve position sensor connector and engine ground. Connector & terminal (E50) No. 3 — Engine ground:	Is the resistance more than 1 MΩ?	Go to step 9.	Repair the ground short circuit in har- ness between tum- ble generator valve position sensor and ECM connec- tor.
9 CHECK POOR CONTACT. Check poor contact in tumble generator valve position sensor connector.	Is there poor contact in tumble generator valve position sensor connector?	Repair the poor contact in tumble generator valve position sensor connector.	Replace the tumble generator valve position sensor. <ref. fu(h4dotc)-40,="" generator="" position="" sensor.="" to="" tumble="" valve=""></ref.>

CZ:DTC P1087 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT HIGH

DTC DETECTING CONDITION:

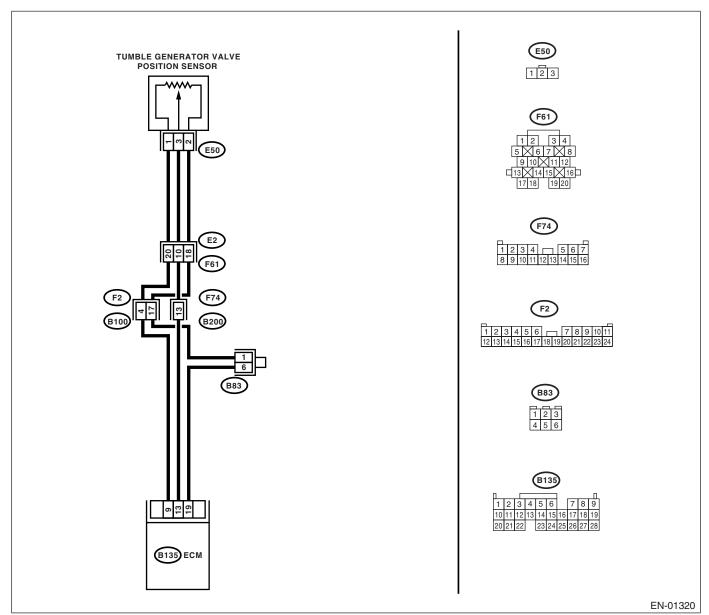
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-208, DTC P1087 TUMBLE GENERATED VALVE PO-SITION SENSOR 2 CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Erroneous idling
- Engine stalls.
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	-		FOR	y Eric C
	Step	Check	Yes	No St
1	CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the voltage more than 4.9 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: Poor contact in tumble generator valve position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2	CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from throttle position sensor. 3) Measure the resistance of harness between throttle position sensor connector and engine ground. Connector & terminal (E50) No. 2 — Engine ground:	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 tumble generator valve position sensor and ECM connector Poor contact in coupling connector Poor contact in joint connector
3	CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between throttle position sensor connector and engine ground. Connector & terminal (E50) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.9 V?	Repair the battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	position sensor.

DA:DTC P1088 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT LOW

DTC DETECTING CONDITION:

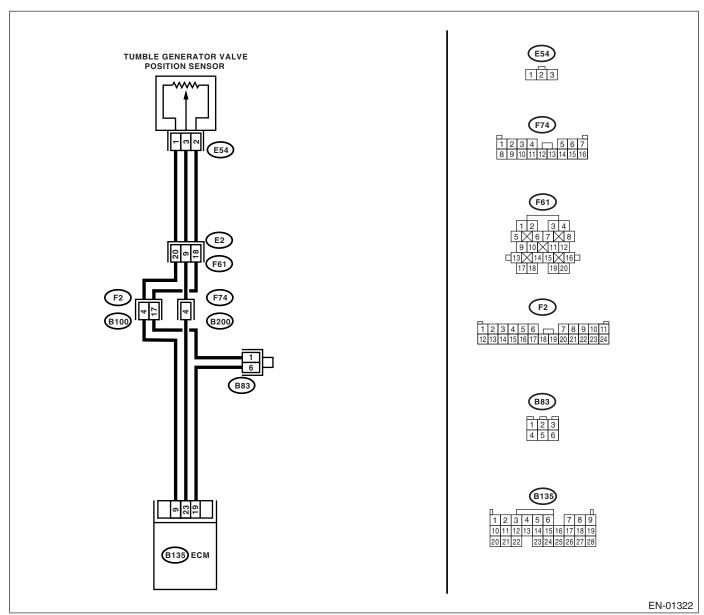
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-210, DTC P1088 TUMBLE GENERATED VALVE PO-SITION SENSOR 1 CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Erroneous idling
- Engine stalls.
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	-	VI FOR	y Eria
Step	Check	Yes	No St
CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <re en(h4dotc)(diag)-31,="" moritor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual</re>)-)	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: Poor contact in tumble generator valve position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):		Go to step 4.	Go to step 3.
3 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 23 (+) — Chassis ground (-):		Go to step 6.	Go to step 5.
5 CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR) Measure the voltage between ECM connector and chassis ground.	Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Does the voltage change?	Repair the poor contact in ECM connector.	Go to step 6.

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	Step	Check	Yes	No Danair the hor
6	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from throttle position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between throttle position sensor connector and engine ground. Connector & terminal (E54) No. 1 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between tumble generator valve position sensor and ECM connector Poor contact in throttle position sensor connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in coupling connector
7	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and throttle position sensor connector. Connector & terminal (B135) No. 23 — (E54) No. 3:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between tumble generator valve position sensor and ECM connector Poor contact in ECM connector Poor contact in tumble generator valve position sensor connector Poor contact in tumble generator valve position sensor connector Poor contact in coupling connector
8	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR. Measure the resistance of harness between tumble generator valve position sensor connector and engine ground. Connector & terminal (E54) No. 3 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 9.	Repair the ground short circuit in har- ness between tum- ble generator valve position sensor and ECM connec- tor.
9	CHECK POOR CONTACT. Check poor contact in tumble generator valve position sensor connector.	Is there poor contact in tumble generator valve position sen- sor connector?	Repair the poor contact in tumble generator valve position sensor connector.	Replace the tumble generator valve position sensor. <ref. fu(h4dotc)-40,="" generator="" position="" sensor.="" to="" tumble="" valve=""></ref.>

DB:DTC P1089 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT HIGH

DTC DETECTING CONDITION:

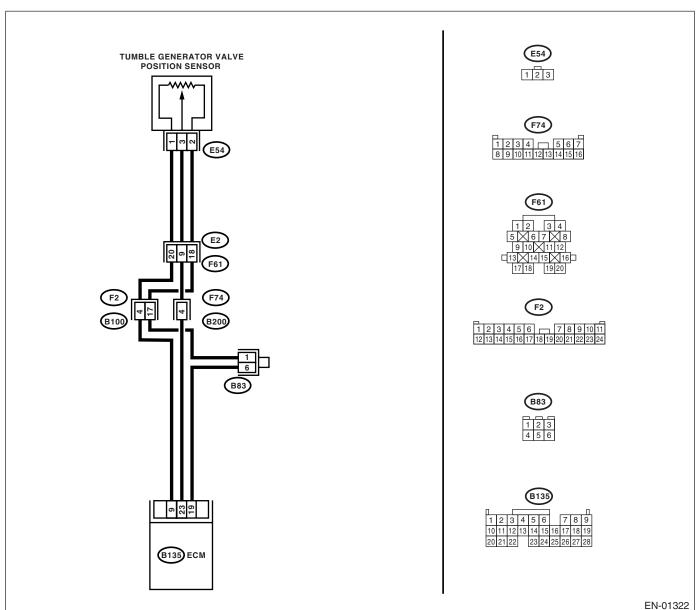
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-212, DTC P1089 TUMBLE GENERATED VALVE PO-SITION SENSOR 1 CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- · Erroneous idling
- · Engine stalls.
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No S
1	CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Is the voltage more than 4.9 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case, repair the following: Poor contact in tumble generator valve position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2	CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from throttle position sensor. 3) Measure the resistance of harness between tumble generator valve position sensor connector and engine ground. Connector & terminal (E54) No. 2 — Engine ground:	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 tumble generator valve position sensor and ECM connector Poor contact in coupling connector Poor contact in joint connector
3	CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between throttle position sensor connector and engine ground. Connector & terminal (E54) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.9 V?	Repair the battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	position sensor.

ENGINE (DIAGNOSTICS)

DC:DTC P1090 TUMBLE GENERATED VALVE SYSTEM 1 (VALVE OPEN)

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-214, DTC P1090 TUMBLE GENERATED VALVE SYSTEM 1 (VALVE OPEN), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

	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. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-39, Tumble Generator Valve Assembly.></ref.>	Clean the tumble generator valve.

ENĞINE (ĎIAGNOSTICS)

DD:DTC P1091 TUMBLE GENERATED VALVE SYSTEM 1 (VALVE CLOSE) DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-215, DTC P1091 TUMBLE GENERATED VALVE SYSTEM 1 (VALVE CLOSE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

	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. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-39, Tumble Generator Valve Assembly.></ref.>	Clean the tumble generator valve.

ENGINE (DIAGNOSTICS)

DE:DTC P1092 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE OPEN) DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-216, DTC P1092 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE OPEN), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

	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. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-39, Tumble Generator Valve Assembly.></ref.>	Clean the tumble generator valve.

ENĞINE (DIAGNOSTICS)

DF:DTC P1093 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE CLOSE) DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-217, DTC P1093 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE CLOSE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

	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. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-39, Tumble Generator Valve Assembly.></ref.>	Clean the tumble generator valve.

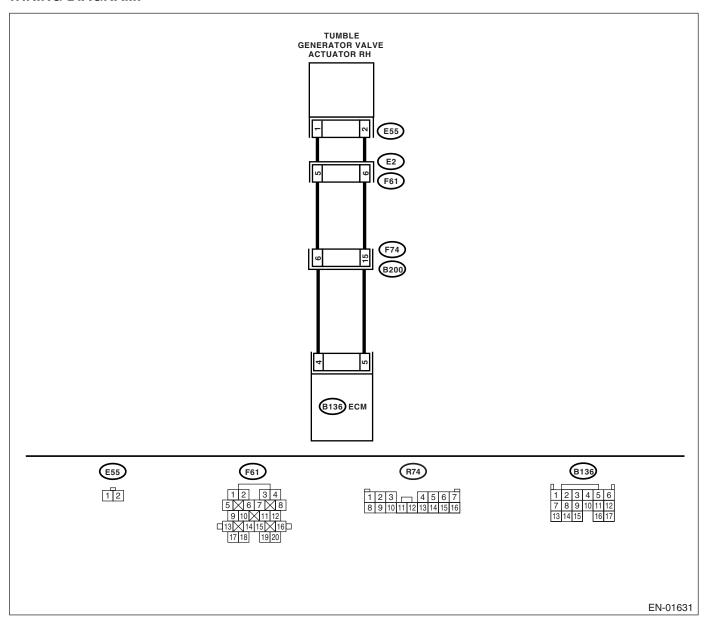
DG:DTC P1094 TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNC-

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-218, DTC P1094 TUMBLE GENERATED VALVE SIG-NAL 1 CIRCUIT MALFUNCTION (OPEN), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



			For	J Fri
	Step	Check	Yes	No St
1	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve and ECM connector. 3) Measure the resistance between tumble generator valve actuator and ECM connector. Connector & terminal (E55) No. 1 — (B136) No. 4: (E55) No. 2 — (B136) No. 5:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit between ECM and tumble generator valve connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and tumble generator valve actuator connector. Poor contact in coupling connector.
2	CHECK POOR CONTACT. Check poor contact in tumble generator valve actuator connector.	Is there poor contact in tumble generator valve actuator connector?	Repair the poor contact in tumble generator valve actuator connector.	Replace the tumble generator valve Actuator. <ref. actuator.="" fu(h4dotc)-41,="" generator="" to="" tumble="" valve=""></ref.>

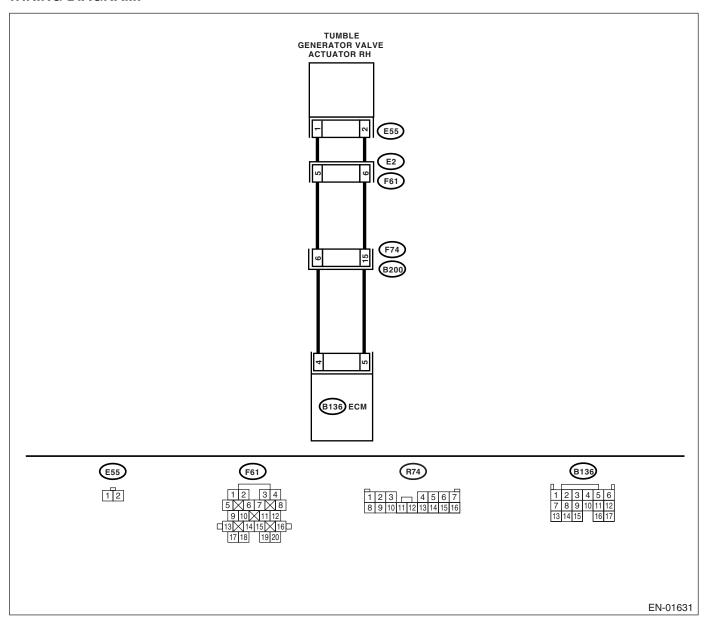
DH:DTC P1095 TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNC-

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-220, DTC P1095 TUMBLE GENERATED VALVE SIG-NAL 1 CIRCUIT MALFUNCTION (SHORT), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



Step	Check	Yes	No St
1 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve connector. 3) Measure the voltage between tumble generator valve actuator and chassis ground. Connector & terminal (E55) No. 1 (+) — Chassis ground (-): (E55) No. 2 (+) — Chassis ground (-):	Is the voltage less than 5 V?	FU(H4DOTC)-41,	Repair the battery short circuit between ECM and tumble generator valve actuator.

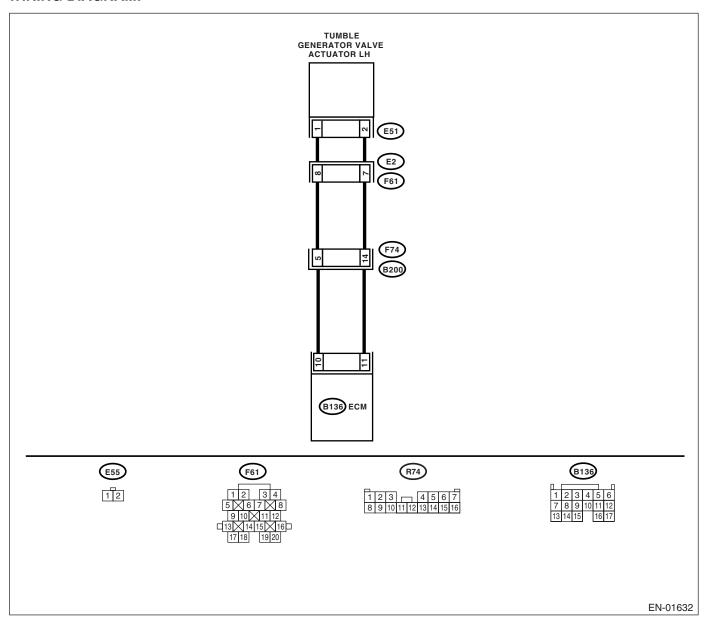
DI: DTC P1096 TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNC-

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-222, DTC P1096 TUMBLE GENERATED VALVE SIG-NAL 2 CIRCUIT MALFUNCTION (OPEN), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



			FOR	J Fri
	Step	Check	Yes	No St
1	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve and ECM connector. 3) Measure the resistance between tumble generator valve actuator and ECM connector. Connector & terminal (E51) No. 1 — (B136) No. 10: (E51) No. 2 — (B136) No. 11:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit between ECM and tumble generator valve connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and tumble generator valve actuator connector. Poor contact in coupling connector.
2	CHECK POOR CONTACT. Check poor contact in tumble generator valve actuator connector.	Is there poor contact in tumble generator valve actuator connector?	Repair the poor contact in tumble generator valve actuator connector.	Replace the tumble generator valve Actuator. <ref. actuator.="" fu(h4dotc)-41,="" generator="" to="" tumble="" valve=""></ref.>

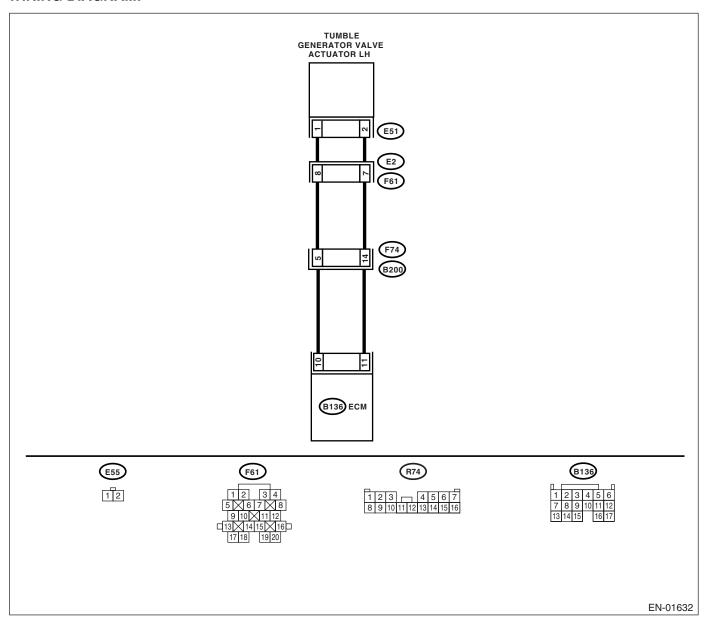
DJ:DTC P1097 TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNC-

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-224, DTC P1097 TUMBLE GENERATED VALVE SIG-NAL 2 CIRCUIT MALFUNCTION (SHORT), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (ĎIAGNOSTICS)

Step	Check	Yes	No St
1 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve connector. 3) Measure the voltage between tumble generator valve actuator and chassis ground. Connector & terminal (E51) No. 1 (+) — Chassis ground (-): (E51) No. 2 (+) — Chassis ground (-):	Is the voltage less than 5 V?	FU(H4DOTC)-41,	Repair the battery short circuit between ECM and tumble generator valve actuator.

DK:DTC P1110 ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (LOW INPUT)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-226, DTC P1110 ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1110?		contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DL:DTC P1111 ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (HIGH INPUT)

DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-227, DTC P1111 ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.		•	

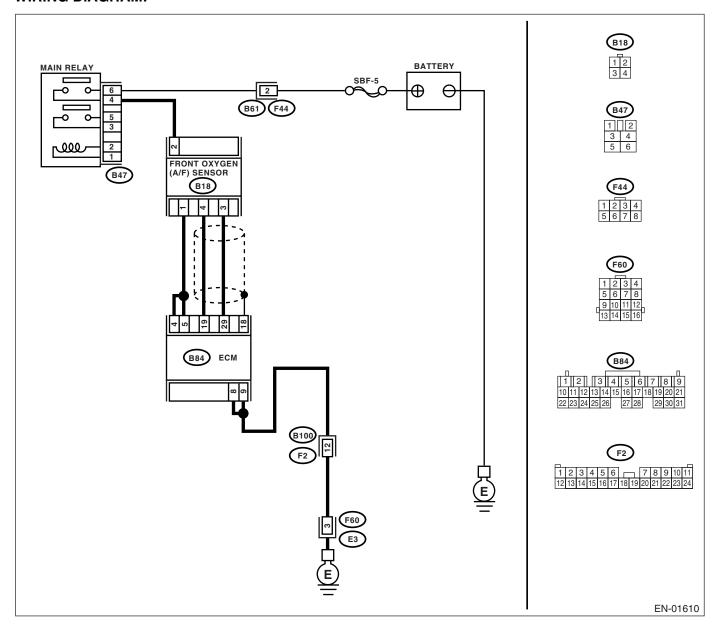
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DM:DTC P1134 A/F SENSOR MICRO-COMPUTER PROBLEM DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-228, DTC P1134 A/F SENSOR MICRO-COMPUTER PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Replace the ECM.	A temporary poor
		tor or OBD-II general scan tool	<ref. th="" to<=""><th>contact.</th></ref.>	contact.
		indicate DTC P1134?	FU(H4DOTC)-48,	
			Engine Control	
			Module (ECM).>	

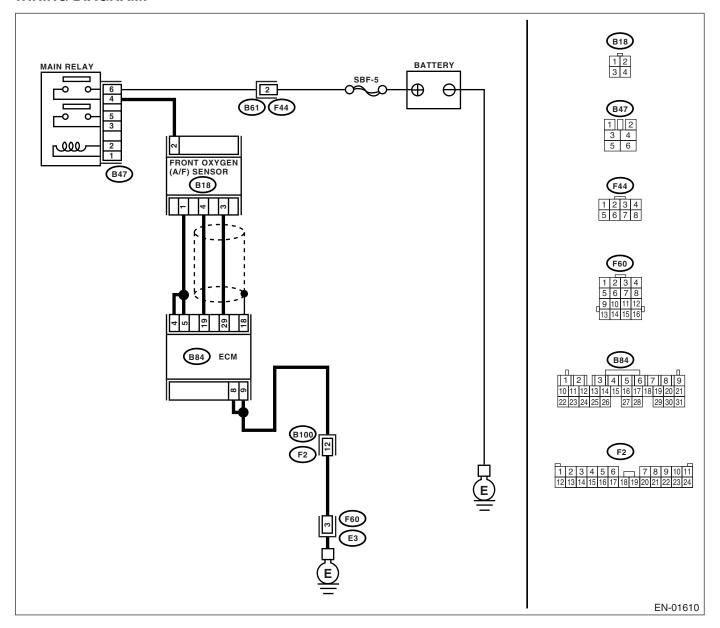
DN:DTC P1152 O₂ SENSOR CIRCUIT RANGE/PERFORMANCE (LOW) (BANK1 SENSOR1)

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-230, DTC P1152 O₂ SENSOR CIRCUIT RANGE/PER-FORMANCE (LOW) (BANK1 SENSOR1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



	For			J Fri
	Step	Check	Yes	No St
1	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B84) No. 29 — (B18) No. 3: (B84) No. 19 — (B18) No. 4:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and front oxygen (A/F) sensor connector Poor contact in front oxygen (A/F) sensor connector Poor contact in ECM connector
2	CHECK POOR CONTACT. Check poor contact in front oxygen (A/F) sensor connector.	Is there poor contact in front oxygen (A/F) sensor connector?	Repair the poor contact in front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-43, Front Oxygen (A/ F) Sensor.></ref.>

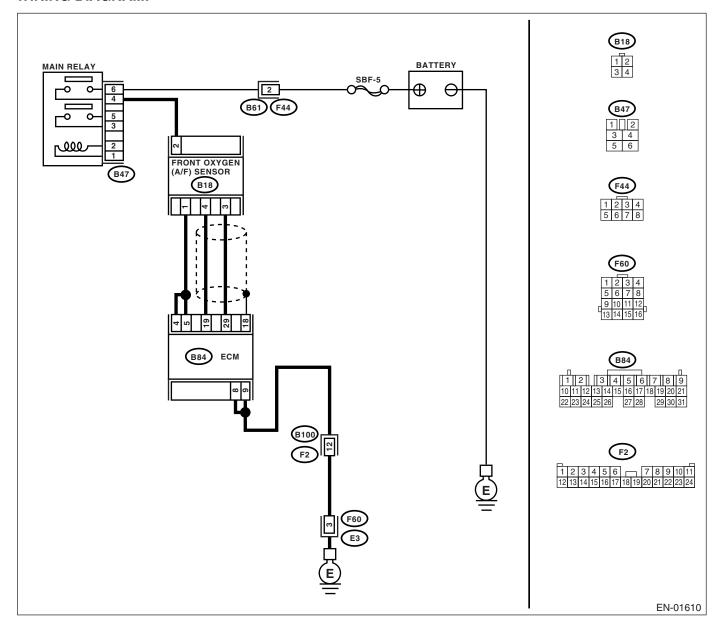
DO:DTC P1153 O₂ SENSOR CIRCUIT RANGE/PERFORMANCE (HIGH) (BANK1 SENSOR1)

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-233, DTC P1153 O₂ SENSOR CIRCUIT RANGE/PER-FORMANCE (HIGH) (BANK1 SENSOR1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



		- 1	OF FOR	y Fri
Step		Check	Yes	No St
1 CHECK HARNESS BETW FRONT OXYGEN (A/F) SE TOR. 1) Turn the ignition switch 2) Disconnect the connect 3) Measure the resistance between ECM connector a Connector & terminal (B84) No. 19 — Chassi	to OFF. or from ECM. of harness nd chassis ground.	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	Go to step 2.
2 CHECK HARNESS BETW FRONT OXYGEN (A/F) SE TOR. Measure the resistance of ECM connector and chassi Connector & terminal (B84) No. 29 — Chassi	harness between is ground.	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	Go to step 3.
3 CHECK OUTPUT SIGNAL 1) Connect the connector 2) Turn the ignition switch 3) Measure the voltage be nector and chassis ground. Connector & terminal (B84) No. 19 (+) — Cha	to ECM. to ON. tween ECM con assis ground (-):	Is the voltage more than 4.5 V?		Go to step 5.
4 CHECK OUTPUT SIGNAL Measure the voltage betwee and chassis ground. Connector & terminal (B84) No. 19 (+) — Cha	en ECM connector	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Repair the poor contact in ECM connector.
5 CHECK OUTPUT SIGNAL Measure the voltage betwee and chassis ground. Connector & terminal (B84) No. 29 (+) — Cha	en ECM connector	Is the voltage more than 4.95 V?	Go to step 6.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-43, Front Oxygen (A/ F) Sensor.></ref.>
6 CHECK OUTPUT SIGNAL Measure the voltage betwee and chassis ground. Connector & terminal (B84) No. 29 (+) — Cha	en ECM connector	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Repair the poor contact in ECM connector.

DP:DTC P1301 MISFIRE DETECTED (HIGH TEMPERATURE EXHAUST GAS)

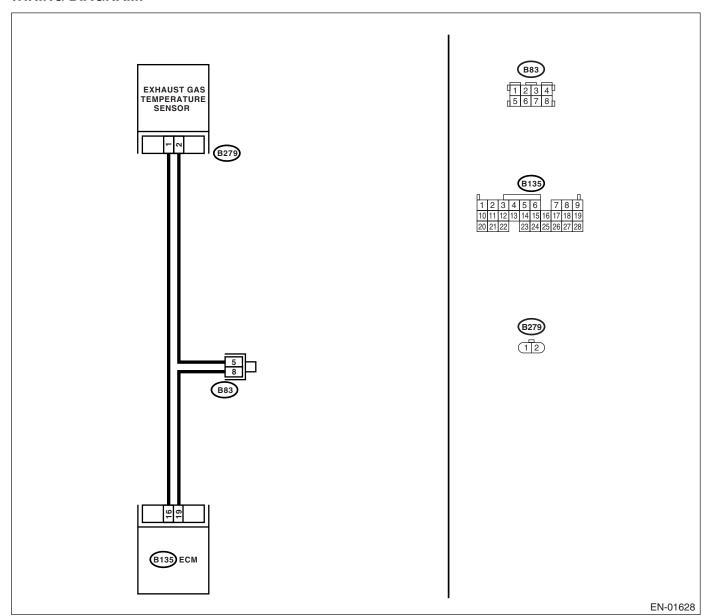
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-236, DTC P1301 MISFIRE DETECTED (HIGH TEM-PERATURE EXHAUST GAS), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



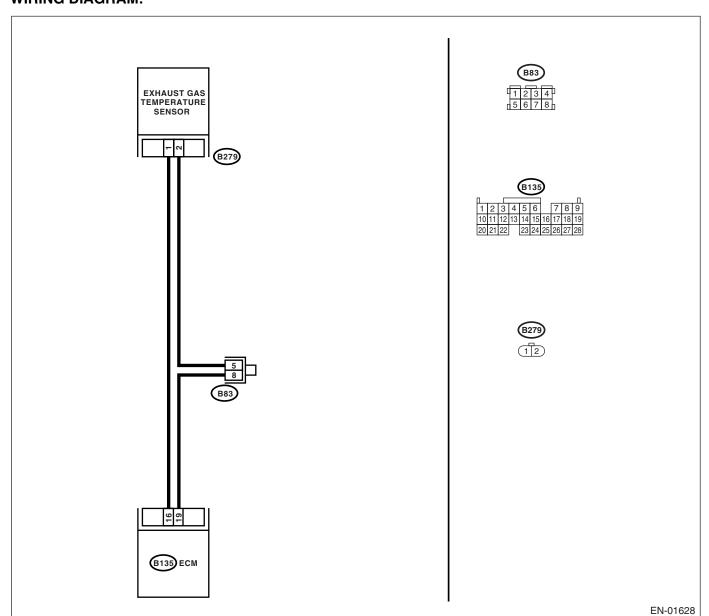
	Step	Check	Yes	No Si
1	CHECK ANY OTHER DTC. Conduct the troubleshooting for all DTC P0301, P0302, P0303 and P0304. <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Does failure for repair or replacement exist?	Repair or replace the failure, then replace precata- lytic converter.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

DQ:DTC P1312 EXHAUST GAS TEMPERATURE SENSOR MALFUNCTION DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-237, DTC P1312 EXHAUST GAS TEMPERATURE SENSOR MALFUNCTION, Diagnostic Trouble Code (DTC) Detecting Criteria.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No St
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Trouble Code (DTC)". <ref. to<br="">EN(H4DOTC)(diag</ref.>	ture Sensor.>

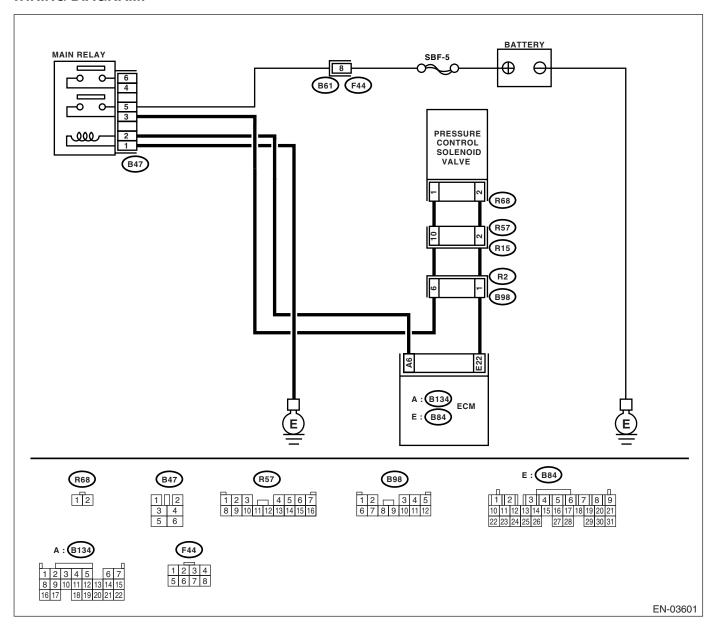
DR:DTC P1400 FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-238, DTC P1400 FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



			VI FOR	y Fri
	Step	Check	Yes	No St
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 22 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 2.	Go to step 3.
2	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
3	CHECK HARNESS BETWEEN PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connectors from pressure control solenoid valve and ECM. 3) Measure the resistance of harness between pressure control solenoid valve con- nector and chassis ground. Connector & terminal (R68) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 4.	Repair short circuit to ground in har- ness between ECM and pressure control solenoid valve connector.
4	CHECK HARNESS BETWEEN PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between ECM and pressure control solenoid valve connector. Connector & terminal (B84) No. 22 — (R68) No. 2:	Is the resistance less than 1 Ω?	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and pressure control solenoid valve connector Poor contact in coupling connector
5	CHECK PRESSURE CONTROL SOLENOID VALVE. Measure the resistance between pressure control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance 10 — 100 Ω ?	Go to step 6.	Replace the pressure control solenoid valve. <ref. control="" ec(h4dotc)-13,="" pressure="" solenoid="" to="" valve.=""></ref.>

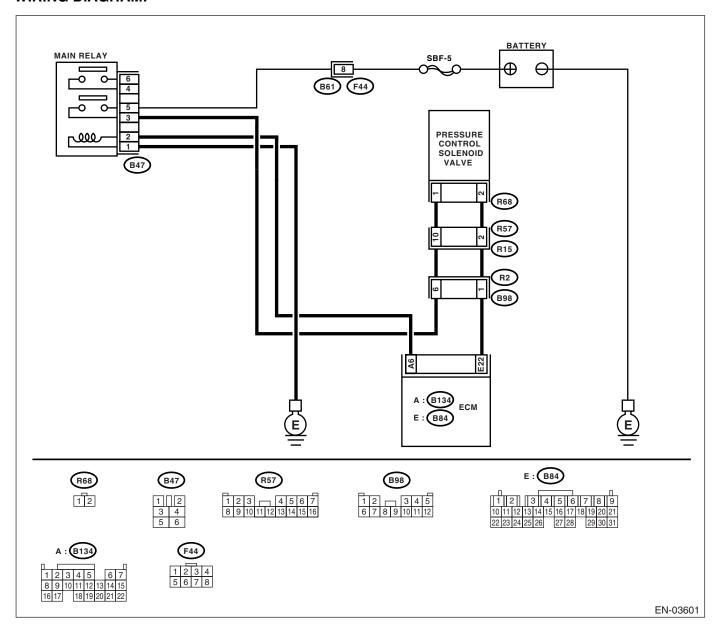
			FO	J Fri
	Step	Check	Yes	No St
6	CHECK POWER SUPPLY TO PRESSURE CONTROL SOLENOID VALVE.	Is the voltage more than 10 V?	Go to step 7.	Repair harness and connector.
	1) Turn ignition switch to ON. 2) Measure the voltage between pressure control solenoid valve and chassis ground. Connector & terminal (R68) No. 1 (+) — Chassis ground (-):			NOTE: In this case, repair the following: Open circuit in harness between main relay and pressure control solenoid valve connector Poor contact in coupling connector Poor contact in
				main relay connector
7	CHECK FOR POOR CONTACT. Check for poor contact in pressure control solenoid valve connector.	Is there poor contact in pres- sure control solenoid valve connector?	Repair poor contact in pressure control solenoid valve connector.	Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

DS:DTC P1420 FUEL TANK PRESSURE CONTROL SOL. VALVE CIRCUIT HIGH DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-240, DTC P1420 FUEL TANK PRESSURE CONTROL SOL. VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM. 1) Turn ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn ignition switch to ON. 4) While operating the pressure control solenoid valve, measure voltage between ECM and chassis ground. NOTE: Pressure control solenoid valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""> Connector & terminal</ref.>	0 — 10 V?	Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. In this case, repair poor contact in ECM connector.
	(B84) No. 22 (+) — Chassis ground (−):			
2	CHECK INPUT SIGNAL FOR ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 22 (+) — Chassis ground (-):	Is the voltage more than 10 V?		Go to step 3.
3	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>
4	CHECK HARNESS BETWEEN PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from pressure control solenoid valve. 3) Turn ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 22 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in harness between ECM and pressure control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Go to step 5.
5	CHECK PRESSURE CONTROL SOLENOID VALVE. 1) Turn ignition switch to OFF. 2) Measure the resistance between pressure control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the pressure control sole- noid valve <ref. to<br="">EC(H4DOTC)-13, Pressure Control Solenoid Valve.> and the ECM <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).>.</ref.></ref.>	Go to step 6.
6	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>

DT:DTC P1443 VENT CONTROL SOLENOID VALVE FUNCTION PROBLEM DTC DETECTING CONDITION:

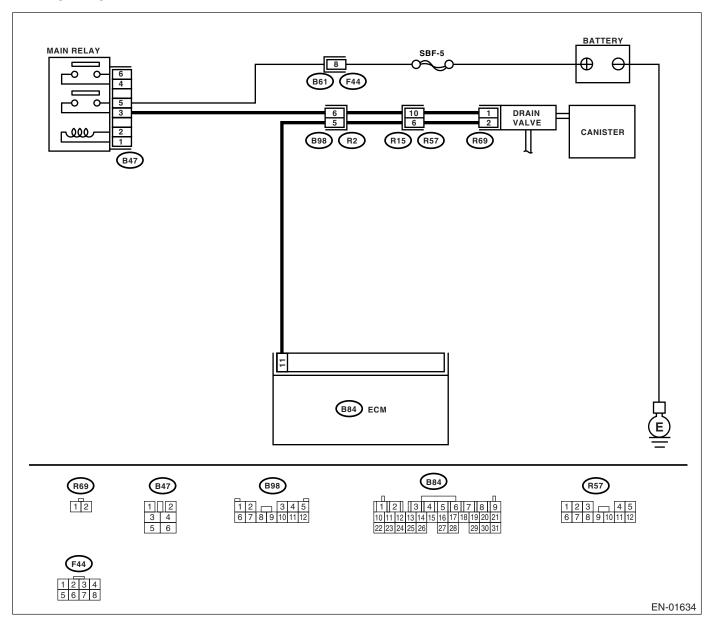
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-241, DTC P1443 VENT CONTROL SOLENOID VALVE FUNCTION PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Improper fuel supply

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



			O Fa-	y Fri
	Step	Check	Yes	No S
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="")-71,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	 CHECK VENT LINE HOSES. Check the following items. Clogging of vent hoses between canister and drain valve Clogging of vent hose between drain valve and air filter Clogging of drain filter 	Is there a fault in vent line?	Repair or replace faulty parts.	Go to step 3.
3	CHECK DRAIN VALVE OPERATION. 1) Turn ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn ignition switch to ON. 4) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-47,="" mode.="" operation="" to="" valve=""></ref.>		Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-19, Drain Valve.></ref.>

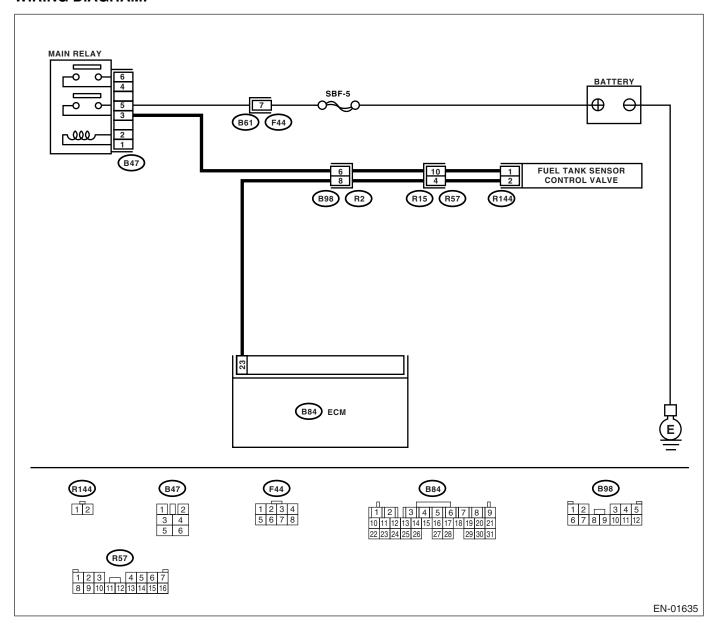
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DU:DTC P1446 FUEL TANK SENSOR CONTROL VALVE CIRCUIT LOW DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-242, DTC P1446 FUEL TANK SENSOR CONTROL VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Ston		heck	Yes	No
Step	_			110 011
1 CHECK OUTPUT SIGNAL FROM E 1) Turn ignition switch to ON. 2) Measure the voltage between EC chassis ground. Connector & terminal	M and	more than 10 V?	GO to step 2.	Go to step 3.
(B84) No. 23 (+) — Chassis gro				
2 CHECK FOR POOR CONTACT. Check for poor contact in ECM conr		contact in ECM	Repair poor contact in ECM connector.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. (However, the possibility of poor contact still remains.)j NOTE: In this case, repair the following: Poor contact in fuel tank sensor control valve connector Poor contact in ECM connector Poor contact in coupling connector
3 CHECK HARNESS BETWEEN FUI SENSOR CONTROL VALVE AND I NECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connectors from sensor control valve and ECM. 3) Measure the resistance of harne between fuel tank sensor control val tor and chassis ground. Connector & terminal (R144) No. 2 — Chassis ground.	ECM CON- MΩ? uel tank es ve connec-	ce more than 1	Go to step 4.	Repair short circuit to ground in harness between ECM and fuel tank sensor control valve connector.
4 CHECK HARNESS BETWEEN FUI SENSOR CONTROL VALVE AND I NECTOR. Measure the resistance of harness to ECM and fuel tank sensor control valuetor. Connector & terminal (B84) No. 23 — (R144) No. 2:	IL TANK Is the resistan Ω? etween	ce less than 1	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and fuel tank sensor control valve connector Poor contact in coupling connector
5 CHECK FUEL TANK SENSOR COVALVE. Measure the resistance between fue sor control valve terminals. Terminals No. 1 — No. 2:		ce 10 — 100 Ω?	Go to step 6.	Replace the fuel tank sensor con- trol valve. <ref. to<br="">EC(H4DOTC)-19, Drain Valve.></ref.>

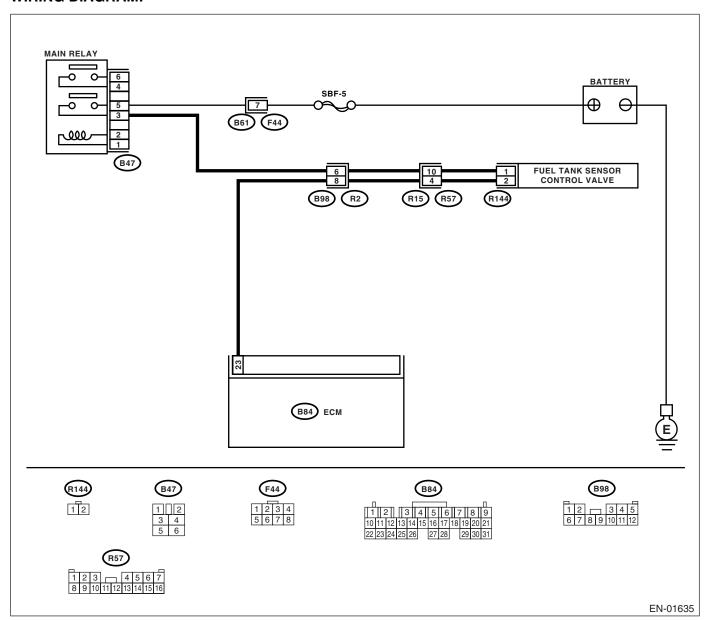
		T	F00	J Stie o.
	Step	Check	Yes	DE No St
6	CHECK POWER SUPPLY TO FUEL TANK SENSOR CONTROL VALVE. 1) Turn ignition switch to ON.	Is the voltage more than 10 V?	Go to step 7.	Repair harness and connector.
	 Measure the voltage between fuel tank sensor control valve and chassis ground. Connector & terminal (R144) No. 1 (+) — Chassis ground (-): 			In this case, repair the following: Open circuit in harness between
				main relay and fuel tank sensor con- trol valve • Poor contact in
				coupling connector Poor contact in main relay connector
7	CHECK FOR POOR CONTACT. Check for poor contact in fuel tank sensor control valve connector.	Is there poor contact in fuel tank sensor control valve connector?	Repair poor contact in fuel tank sensor control valve connector.	Contact with SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

DV:DTC P1447 FUEL TANK SENSOR CONTROL VALVE CIRCUIT HIGH

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-244, DTC P1447 FUEL TANK SENSOR CONTROL VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



	Step	Check	Yes	No St	Id.
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 23 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 3.	Go to step 2.	^{Idios}
2	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>	
3	CHECK HARNESS BETWEEN FUEL TANK SENSOR CONTROL VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from fuel tank sensor control valve. 3) Turn ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 23 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in harness between ECM and fuel tank sensor control valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to=""></ref.>	Go to step 4.	
4	CHECK FUEL TANK SENSOR CONTROL VALVE. 1) Turn ignition switch to OFF. 2) Measure the resistance between fuel tank sensor control valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the fuel tank sensor control valve <ref. control="" ec(h4dotc)-12,="" fuel="" sensor="" tank="" to="" valve.=""> and the ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-48,="" module="" to="">.</ref.></ref.>	Go to step 5.	
5	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>	

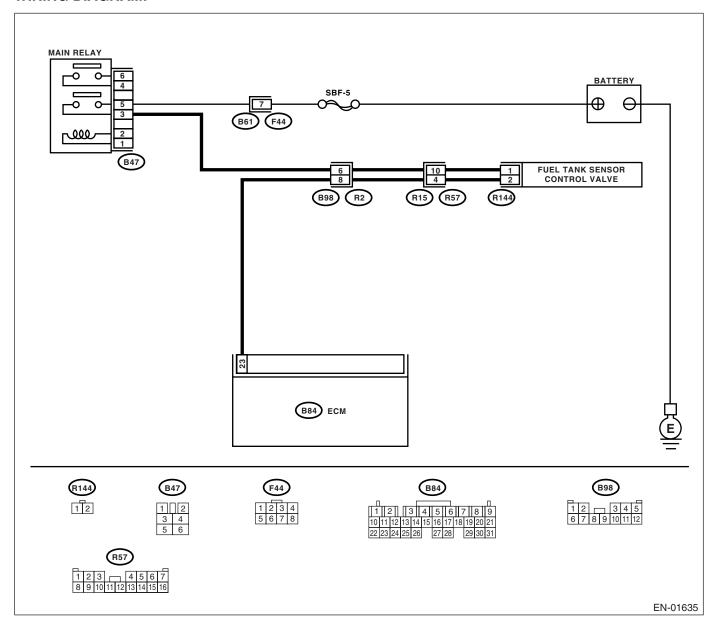
DW:DTC P1448 FUEL TANK SENSOR CONTROL VALVE RANGE/PERFOR-

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-246, DTC P1448 FUEL TANK SENSOR CONTROL VALVE RANGE PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode. > and Inspection Mode < Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



		For Y Fri		
	Step	Check	Yes	No St
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using the "List of Diagnostic Trouble Codes (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FUEL FILLER CAP. 1) Turn ignition switch to OFF. 2) Open the fuel flap.	Is the fuel filler cap tightened securely?	Go to step 3.	Tighten fuel filler cap securely.
3	CHECK EVAPORATIVE EMISSION LINE. NOTE: Check the following items. • Disconnection, leakage and clogging of hoses between fuel tank pressure sensor and fuel tank. • Disconnection, leakage and clogging of hoses and pipes between fuel filler pipe and fuel tank.	Is there any trouble in evapora- tive emission line?	Repair the hoses and pipes.	Replace the fuel tank pressure sensor.

DX:DTC P1491 POSITIVE CRANKCASE VENTILATION (BLOW-BY) FUNCTION

DTC DETECTING CONDITION:

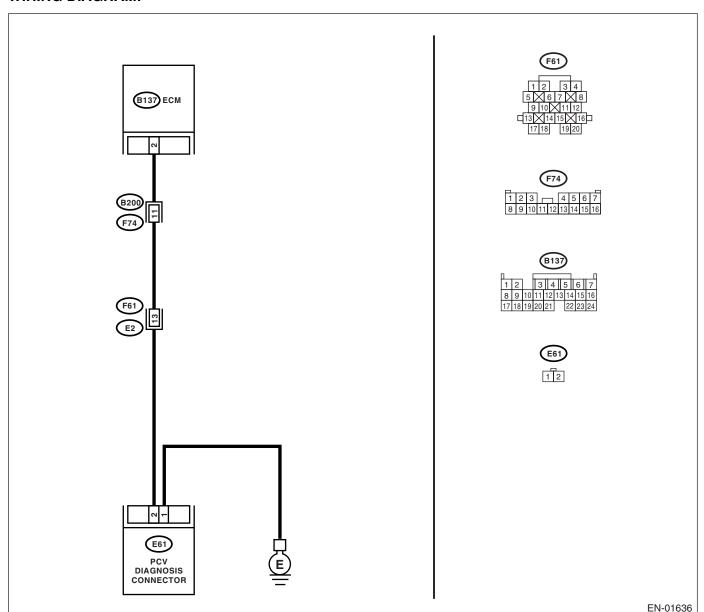
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-249, DTC P1491 POSITIVE CRANKCASE VENTILA- TION (BLOW-BY) FUNCTION PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (ĎIAGNOSTICS)

	Step	Check	Yes	No	
_	CHECK BLOW-BY HOSE.	0110011		11 - 11	Idios
1	Check the blow-by hose.	Is there disconnection or crack in blow-by hose?	blow-by hose.	Go to step 2.	-105
2	INSPECT HARNESS BETWEEN PCV DIAGNOSIS CONNECTOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from PCV diagnosis connector and ECM. 3) Measure the resistance of harness between PCV diagnosis connector and ECM connector. Connector & terminal (B137) No. 2 — (E61) No. 2:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between PCV diagnosis connector and ECM.	
3	INSPECT HARNESS BETWEEN PCV DIAGNOSIS CONNECTOR AND ECM CONNECTOR. Measure the resistance of harness between PCV diagnosis connector and chassis ground. Connector & terminal (B137) No. 2 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair short circuit to chassis ground in harness between PCV diagnosis connec- tor and ECM.	
4	INSPECT PCV DIAGNOSIS CONNECTOR GROUND CIRCUIT. Measure the resistance between PCV diagnosis connector and engine ground. Connector & terminal (B61) No. 1 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 5.	Repair PCV diagnosis connector ground circuit.	
5	INSPECT PCV DIAGNOSIS CONNECTOR. Measure the resistance between PCV diagnosis connector and terminal. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Repair poor contact in ECM and PCV diagnosis connector.	Replace PCV diagnosis connec- tor.	

DY:DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-251, DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

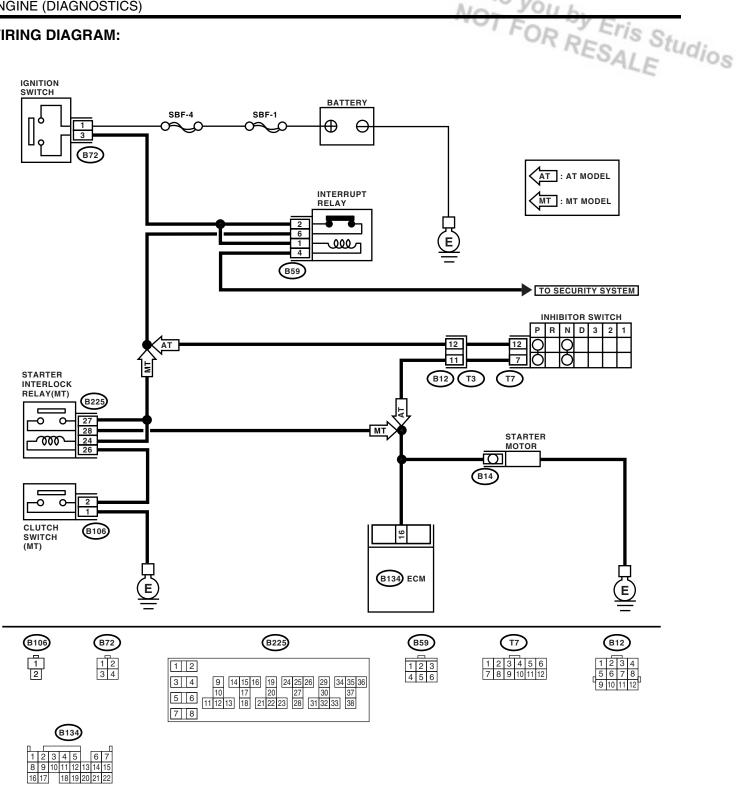
TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-01607

Step	Check	Yes	No St
	when ignition switch is turned to START?	ness and connector. NOTE: In this case, repair the following: Open or ground short circuit in har-	MOTOR CIR- CUIT, Diagnostics

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DZ:DTC P1544 EXHAUST GAS TEMPERATURE TOO HIGH DTC DETECTING CONDITION:

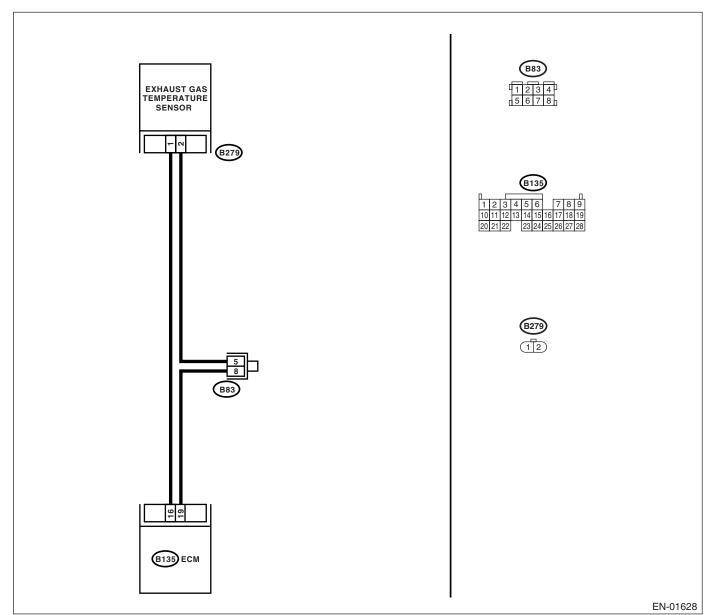
- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-252, DTC P1544 EXHAUST GAS TEMPERATURE TOO HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĞINE (DIAGNOSTICS)

	Step	Check	Yes	No Si
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-71,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P1544.</ref.>	
2	CHECK EXHAUST SYSTEM. Check the exhaust system parts. NOTE: Check the following items. Loose installation of exhaust manifold Cracks or hole of exhaust manifold Loose installation of front oxygen (A/F) sensor	Is there a fault in exhaust system?	Repair or replace the failure, then replace precata- lytic converter.	Contact your SOA Service Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

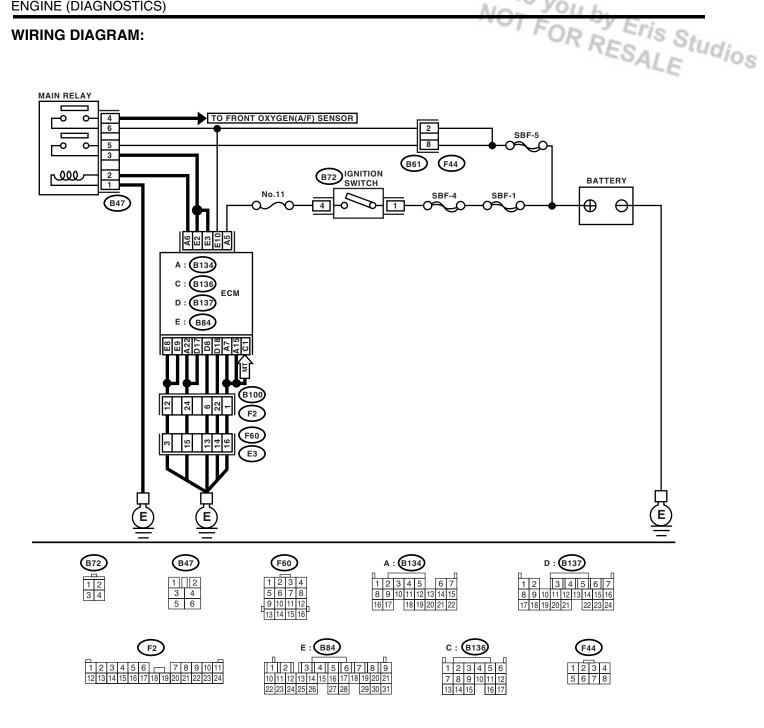
EA:DTC P1560 BACK-UP VOLTAGE CIRCUIT MALFUNCTION DTC DETECTING CONDITION:

- · Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-253, DTC P1560 BACK-UP VOLTAGE CIRCUIT MAL-FUNCTION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-01608

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENĠINE (ĎIAGNOSTICS)

		1	FAR	J Eric
	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B84) No. 10 (+) — Chassis ground (-):	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. Connector & terminal (B84) No. 10 — Chassis ground:	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 SBF-5.	Is the fuse blown?	Replace the fuse.	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and battery Poor contact in ECM connector Poor contact in battery terminal

EB:DTC P1700 THROTTLE POSITION SENSOR

GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-254, DTC P1700 THROTTLE POSITION SENSOR CIRCUIT MALFUNCTION FOR AT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(diag)-46, DTC 31 THROTTLE POSITION SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

EC:DTC P1711 ENGINE TORQUE CONTROL SIGNAL 1 CIRCUIT MALFUNCTION

DTC DETECTING CONDITION:

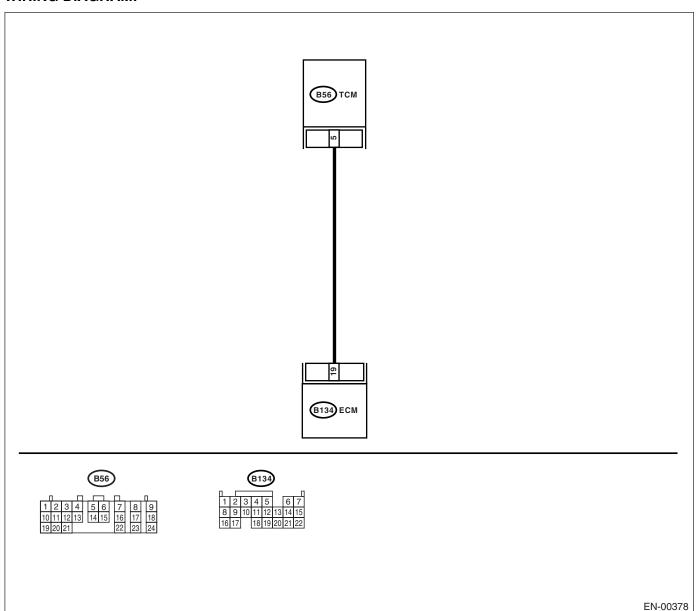
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-256, DTC P1711 ENGINE TORQUE CONTROL SIGNAL #1 CIRCUIT MALFUNCTION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Excessive shift shock

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



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	Step	Check	Yes	No St
1	CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 19 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 2.	Go to step 4.
2	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 19 (+) — Chassis ground (-):	Is the voltage more than 10 V?	short circuit in har- ness between ECM and TCM connector.	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<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>
4	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and TCM. 3) Measure the resistance of harness between ECM and TCM connector. Connector & terminal (B134) No. 19 — (B56) No. 5:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the open circuit in harness between ECM and TCM connector.
5	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B134) No. 19 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair the ground short circuit in har- ness between ECM and TCM connector.
6	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair the poor contact in TCM connector.	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

ED:DTC P1712 ENGINE TORQUE CONTROL SIGNAL 2 CIRCUIT MALFUNC-TION

DTC DETECTING CONDITION:

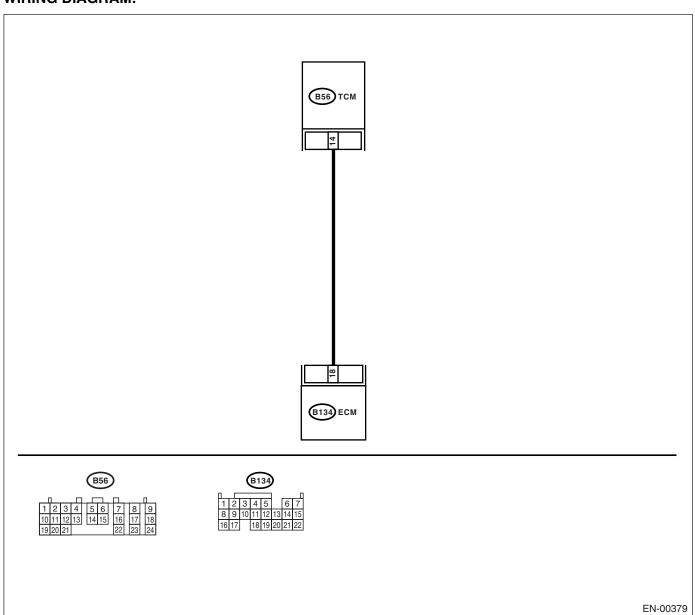
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-257, DTC P1712 ENGINE TORQUE CONTROL SIGNAL #2 CIRCUIT MALFUNCTION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Excessive shift shock

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCEDURE, Inspection Mode.>.



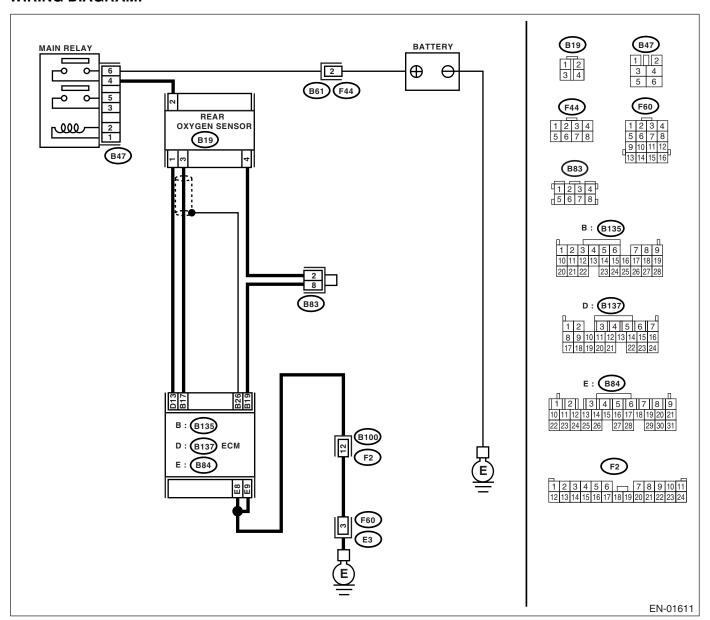
		VI FOR	y Erica
Step	Check	Yes	No St
 CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 18 (+) — Chassis ground (Go to step 2.	Go to step 4.
2 CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and ch sis ground. Connector & terminal (B134) No. 18 (+) — Chassis ground (Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and TCM connector.	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<br="">FU(H4DOTC)-48, Engine Control Module (ECM).></ref.>
4 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM a TCM. 3) Measure the resistance of harness between ECM and TCM connector. Connector & terminal (B134) No. 18 — (B56) No. 4:	Ω ?	Go to step 5.	Repair the open circuit in harness between ECM and TCM connector.
5 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. Measure the resistance of harness betwee ECM and chassis ground. Connector & terminal (B134) No. 18 — Chassis ground:	ΜΩ?	Go to step 6.	Repair the ground short circuit in har- ness between ECM and TCM connector.
6 CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair the poor contact in TCM connector.	Replace the TCM. <ref. 4at-67,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

EE:DTC P2096 POST CATALYST FUEL TRIM SYSTEM TOO LEAN BANK 1

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-258, DTC P2096 POST CATALYST FUEL TRIM SYS-TEM TOO LEAN BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



			1600	J Elie	1
	Step	Check	Yes	No St	Irl:
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Using the List of Diagnostic Trou- ble Code (DTC), check the appro- priate DTC. <ref. to EN(H4DOTC)(diag)-71, List of Diag- nostic Trouble Code (DTC).></ref. 	Go to step 2.	4105
2	CHECK REAR OXYGEN SENSOR DATA.	Does the value fluctuate?	Go to step 6.	Go to step 3.	1
	 Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for 2 minutes. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: 				
	 Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. </ref.> 				
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor connector. Connector & terminal (B135) No. 17 — (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 5.	
5	CHECK HARNESS BETWEEN REAR OXY-GEN 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 engine ground or chassis ground. Connector & terminal (B19) No. 3 (+) — Engine ground (-):	Is the voltage more than 0.2 V?	oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between rear oxygen sensor and ECM connector Poor contact in rear oxygen sensor connector Poor contact in ECM connector	

		-	VI FOR	y Erica
	Step	Check	Yes	No St
6	CHECK EXHAUST SYSTEM.	Is there a fault in exhaust sys-	Repair or replace	Go to step 7.
	Check the exhaust system parts. NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	tem?	the faulty parts.	
7	CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air	Repair the air intake system.	Go to step 8.
8	CHECK FUEL PRESSURE.	intake system? Is the measured value 284 —	Go to step 9.	Repair the follow-
	 Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel on the floor. 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 5 more seconds. (4)Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose from fuel filter, and connect 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: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. 	314 kPa (2.9 — 3.2 kg/cm ² , 41 — 46 psi)?	Go to step 3.	ing items. Fuel pressure too high: • Clogged fuel return line or bent hose Fuel pressure too low: • Improper fuel pump discharge • Clogged fuel supply line
9	CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. If out of specification as measured at this step, check or replace the pressure regulator and pressure regulator vacuum hose.	Is the measured value 206 — 235 kPa (2.1 — 2.4 kg/cm², 30 — 34 psi)?	Go to step 10.	Repair the following items. Fuel pressure too high:

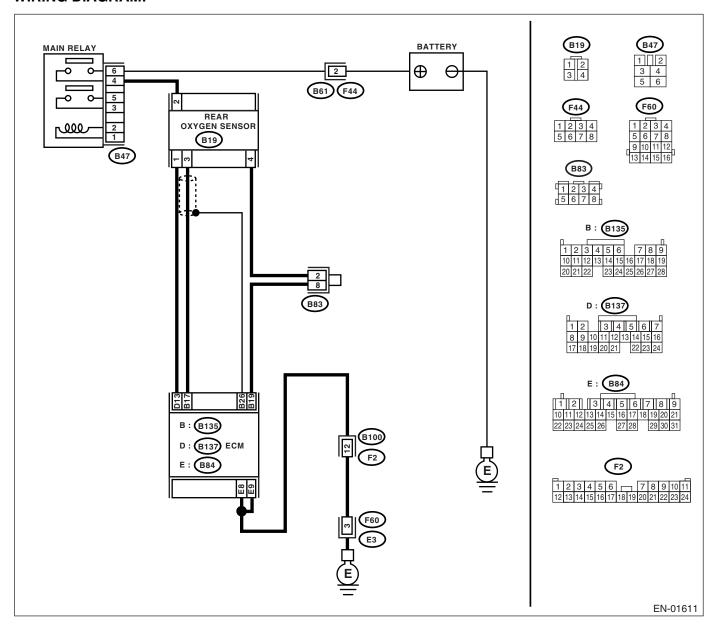
	Ston	Check	Yes	No
10	Step			150 - 11
10	CHECK ENGINE COOLANT TEMPERATURE SENSOR. 1) Start the engine and warm-up completely. 2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool</ref.>	Is the temperature more than 60°C (140°F)?	Go to step 11.	Replace the engine coolant temperature sensor. <ref. coolant="" engine="" fu(h4dotc)-27,="" sensor.="" temperature="" to=""></ref.>
	For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.			
11		Is the measured value within the followings? Ignition ON: 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) Idling: 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg)	Go to step 12.	Replace the mass air flow and intake air temperature sensor. <ref. air="" and="" flow="" fu(h4dotc)-32,="" intake="" mass="" sensor.="" temperature="" to=""></ref.>
12	CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Subtract ambient temperature from intake air temperature. Is the obtained value –10°C — 50°C (14°F — 122°F)?	cause probable cause is deteriora-	FU(H4DOTC)-32, Mass Air Flow and

EF:DTC P2097 POST CATALYST FUEL TRIM SYSTEM TOO RICH BANK 1

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-260, DTC P2097 POST CATALYST FUEL TRIM SYS-TEM TOO RICH BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-46, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-39, PROCE-**DURE**, Inspection Mode.>.



			1600	J Elie	1
	Step	Check	Yes	No St	Irl:
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Using the List of Diagnostic Trou- ble Code (DTC), check the appro- priate DTC. <ref. to EN(H4DOTC)(diag)-71, List of Diag- nostic Trouble Code (DTC).></ref. 	Go to step 2.	4105
2	CHECK REAR OXYGEN SENSOR DATA.	Does the value fluctuate?	Go to step 6.	Go to step 3.	1
	 Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for 2 minutes. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: 				
	 Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. </ref.> 				
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor connector. Connector & terminal (B135) No. 17 — (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 5.	
5	CHECK HARNESS BETWEEN REAR OXY-GEN 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 engine ground or chassis ground. Connector & terminal (B19) No. 3 (+) — Engine ground (-):	Is the voltage more than 0.2 V?	oxygen sensor. <ref. to<br="">FU(H4DOTC)-45, Rear Oxygen Sen- sor.></ref.>	Repair the harness and connector. NOTE: In this case, repair the following: Open circuit in harness between rear oxygen sensor and ECM connector Poor contact in rear oxygen sensor connector Poor contact in ECM connector	

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	Step	Check	Yes	No St
6	CHECK EXHAUST SYSTEM.	Is there a fault in exhaust sys-	Repair or replace	Go to step 7.
	Check the exhaust system parts. NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	tem?	the faulty parts.	
7	CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air	Repair the air intake system.	Go to step 8.
8	CHECK FUEL PRESSURE.	intake system? Is the measured value 284 —	Go to step 9.	Repair the follow-
	 Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel on the floor. 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 5 more seconds. (4)Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose from fuel filter, and connect 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: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. 	314 kPa (2.9 — 3.2 kg/cm ² , 41 — 46 psi)?	Go to step 3.	ing items. Fuel pressure too high: • Clogged fuel return line or bent hose Fuel pressure too low: • Improper fuel pump discharge • Clogged fuel supply line
9	CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. If out of specification as measured at this step, check or replace the pressure regulator and pressure regulator vacuum hose.	Is the measured value 206 — 235 kPa (2.1 — 2.4 kg/cm², 30 — 34 psi)?	Go to step 10.	Repair the following items. Fuel pressure too high:

	Ston	Check	Yes	No
10	Step			150 - 11
10	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 or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool</ref.>	Is the temperature more than 60°C (140°F)?	Go to step 11.	Replace the engine coolant temperature sensor. <ref. coolant="" engine="" fu(h4dotc)-27,="" sensor.="" temperature="" to=""></ref.>
	For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.			
11		Is the measured value within the followings? Ignition ON: 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) Idling: 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg)	Go to step 12.	Replace the mass air flow and intake air temperature sensor. <ref. air="" and="" flow="" fu(h4dotc)-32,="" intake="" mass="" sensor.="" temperature="" to=""></ref.>
12	CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-31,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref.>	Subtract ambient temperature from intake air temperature. Is the obtained value –10°C — 50°C (14°F — 122°F)?	cause probable cause is deteriora-	FU(H4DOTC)-32, Mass Air Flow and

20.General Diagnostic Table

A: INSPECTION

1. ENGINE

NOTE:

Malfunction of parts other than those listed is also possible. <Ref. to ME(H4DOTC)-97, Engine Noise.>

Cumptom	Drohlom parts
Symptom	Problem parts
	1) Idle air control solenoid valve
	2) Manifold absolute pressure sensor
	3) Mass air flow and intake temperature sensor
1. Engine stalls during idling.	4) Ignition parts (*1)
I - i gino otano acimig	5) Engine coolant temperature sensor (*2)
	6) Crankshaft position sensor (*3)
	7) Camshaft position sensor (*3)
	8) Fuel injection parts (*4)
	1) Idle air control solenoid valve
	2) Manifold absolute pressure sensor
	3) Mass air flow and intake temperature sensor
	4) Engine coolant temperature sensor (*2)
	5) Ignition parts (*1)
2. Rough idling	6) Air intake system (*5)
L. Hough laming	7) Fuel injection parts (*4)
	8) Throttle position sensor
	9) Crankshaft position sensor (*3)
	10) Camshaft position sensor (*3)
	11) Oxygen sensor
	12) Fuel pump and fuel pump relay
	1) Idle air control solenoid valve
	2) Engine coolant temperature sensor
3. Engine does not return to idle.	3) Accelerator cable (*6)
o. Engine does not retain to late.	4) Throttle position sensor
	5) Manifold absolute pressure sensor
	6) Mass air flow sensor
	1) Manifold absolute pressure sensor
	2) Mass air flow and intake temperature sensor
	3) Throttle position sensor
	5) Fuel pump and fuel pump relay
4. Poor acceleration	6) Engine coolant temperature sensor (*2)
1. 1 001 4000101441011	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)
	1) Manifold absolute pressure sensor
	2) Mass air flow and intake temperature sensor
	3) Engine coolant temperature sensor (*2)
5. Engine stalls or engine sags or hesitates at	4) Crankshaft position sensor (*3)
acceleration.	5) Camshaft position sensor (*3)
accontanti.	6) Purge control solenoid valve
	7) Fuel injection parts (*4)
	8) Throttle position sensor
	9) Fuel pump and fuel pump relay

Symptom	Problem parts
	1) Manifold absolute pressure sensor
	2) Mass air flow and intake temperature sensor
	3) Engine coolant temperature sensor (*2)
6 Curao	4) Crankshaft position sensor (*3)
6. Surge	5) Camshaft position sensor (*3)
	6) Fuel injection parts (*4)
	7) Throttle position sensor
	8) Fuel pump and fuel pump relay
	1) Manifold absolute pressure sensor
	2) Mass air flow and intake temperature sensor
7 Spork knock	3) Engine coolant temperature sensor
7. Spark knock	4) Knock sensor
	5) Fuel injection parts (*4)
	6) Fuel pump and fuel pump relay
	1) Manifold absolute pressure sensor
	2) Mass air flow and intake temperature sensor
8. After-burning in exhaust system	3) 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 fuel injector, fuel pressure regulator and fuel filter.

^{*5:} Inspect air leak in air intake system.

^{*6:} Adjust accelerator cable.