ENGINE SECTION 3

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

FUEL INJECTION (FUEL SYSTEM)	FU(H4DOTC 2.5)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICE)	EC(H4DOTC 2.5)
INTAKE (INDUCTION)	IN(H4DOTC 2.5)
MECHANICAL	ME(H4DOTC 2.5)
EXHAUST	EX(H4DOTC 2.5)
COOLING	CO(H4DOTC 2.5)
LUBRICATION	LU(H4DOTC 2.5)
SPEED CONTROL SYSTEM	SP(H4DOTC 2.5)
IGNITION	IG(H4DOTC 2.5)
STARTING/CHARGING SYSTEM	SC(H4DOTC 2.5)
ENGINE (DIAGNOSTIC)	EN(H4DOTC 2.5)

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

FUJI HEAVY INDUSTRIES LTD.

G8080GE4

ENGINE (DIAGNOSTIC) EN(H4DOTC 2.5)

		Page
1.	Basic Diagnostics Procedure	2
2.	Check List for Interview	3
3.	General Description	5
4.	Electrical Component Location	8
5.	Engine Control Module (ECM) I/O Signal	17
6.	Engine Condition Data	
7.	Data Link Connector	23
8.	OBD-II General Scan Tool	24
9.	Subaru Select Monitor	27
10.	Read Diagnostic Trouble Code (DTC)	34
11.	Inspection Mode	35
12.	Drive Cycle	40
13.	Clear Memory Mode	
14.	Compulsory Valve Operation Check Mode	43
15.	Malfunction Indicator Light	
16.	Diagnostics for Engine Starting Failure	
17.	List of Diagnostic Trouble Code (DTC)	65
18.	Diagnostic Procedure with Diagnostic Trouble Code (DTC)	
19.	General Diagnostic Table	

1. Basic Diagnostics Procedure

A: PROCEDURE

1. ENGINE

	Step	Check	Yes	No
1	CHECK ENGINE START FAILURE. 1) Ask the customer when and how the trouble occurred using the interview check list. <ref. 2.5)-3,="" check="" en(h4dotc="" for="" inspection,="" interview.="" list="" to=""> 2) Start the engine.</ref.>	Does the engine start?	Go to step 2.	Inspection using "Diagnostics for Engine Start Failure". <ref. 2.5)-="" 54,="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" starting="" to=""></ref.>
2	CHECK ILLUMINATION OF MALFUNCTION INDICATOR LIGHT.	Does malfunction indicator light illuminate?	Go to step 3.	Inspection using "General Diagnos- tic Table". <ref. to<br="">EN(H4DOTC 2.5)- 258, General Diag- nostic Table.></ref.>
3	CHECK INDICATION OF DTC ON DISPLAY. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor or the 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 the 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. Repair the trouble cause. <ref. (dtc).="" 2.5)-="" 65,="" code="" diag-="" en(h4dotc="" list="" nostic="" of="" to="" trouble=""> Go to step 4.</ref.>	Repair the related parts. NOTE: If DTC is not shown on display although the malfunction indicator light illuminates, perform the diagnostics for malfunction indicator light circuit or combination meter. <ref. 2.5)-45,="" en(h4dotc="" indicator="" light.="" malfunction="" to=""></ref.>
4	PERFORM THE DIAGNOSIS. 1) Perform clear memory mode. <ref. 2.5)-42,="" clear="" en(h4dotc="" memory="" mode.="" to=""> 2) Perform the "INSPECTION MODE". <ref. 2.5)-35,="" en(h4dotc="" inspection="" mode.="" to=""></ref.></ref.>	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC?	Check on "Diag- nostic Chart with Diagnostic Trou- ble Code (DTC)". <ref. to<br="">EN(H4DOTC 2.5)- 70, Diagnostic Procedure with Diagnostic Trou- ble Code (DTC).></ref.>	Finish the diagnosis.

2. Check List for Interview

A: INSPECTION

1. CHECK LIST No. 1

Check the following items when problem has occurred.

NOTE:

Use copies of this page for interviewing customers.

Customer's name		Engine No.			
Date of sale		Fuel brand			
Date of repair		Odometer reading	km		
V.I.N.		Odometer reading	miles		
Weather	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others:				
Ambient air 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	km/h (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		
Radiator 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.

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

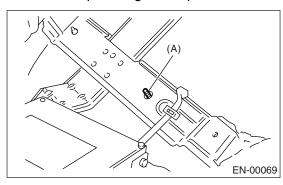
- All airbag system wiring harness and connectors are all colored yellow. Do not use the electrical test equipment on these circuits.
- Be careful not to damage the Airbag system wiring harness when servicing the ECM, TCM, main relay and fuel pump relay.
- 2) Never connect the battery in reverse polarity.
- The ECM will be destroyed immediately.
- The fuel injector and other part will be damaged.
- 3) Do not disconnect the battery terminals while the engine is running.
- A large counter electromotive force will be generated in the generator, and this voltage may damage electronic parts such as ECM, etc.
- 4) Before disconnecting the connectors of each sensor and the ECM, be sure to turn OFF the ignition switch.
- 5) Poor contact has been identified as a primary cause of this problem. Measure the voltage or resistance of individual sensor or all electrical control modules using a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in) into the part.
- 6) Remove the ECM from the located position after disconnecting two cables on battery.
- Otherwise, the ECM may be damaged.

CAUTION:

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

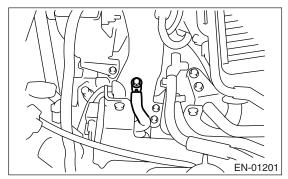
7) Connectors to each sensor in the engine compartment and the harness connectors on the engine side and body side are all designed to be waterproof. However, take care not to allow water to get into the connectors when washing the vehicle, or when servicing the vehicle on a rainy day.

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



(A) Stud bolt

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



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

CAUTION:

The antenna must be kept as far apart as possible from the control unit.

(The ECM is located under the steering column, inside of the instrument panel lower trim panel.)

- The antenna feeder must be placed as far apart as possible from the ECM and MFI harness.
- Carefully adjust the antenna for correct matching.
- When mounting a large power type radio, pay special attention to the three items above mentioned.
- Incorrect installation of the radio may affect the operation of the ECM.
- 12) Before disconnecting the fuel hose, disconnect the fuel pump connector and crank the engine for more than five seconds to release pressure in the fuel system. If engine starts during this operation, run it until it stops.

- 13) 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.
- 14) On the model with ABS, when performing driving test in jacked-up or lifted-up position, sometimes the warning light may be lit, but this is not a malfunction of the system. The reason for this is the speed difference between the front and rear wheels. After diagnosis of engine control system, perform the ABS memory clearance procedure of self-diagnosis function.

B: INSPECTION

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

1. BATTERY

1) Measure battery voltage and specific gravity of electrolyte.

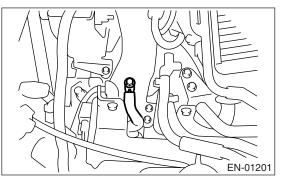
Standard voltage: 12 V

Specific gravity: Above 1.260

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

2. ENGINE GROUND

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



C: NOTE

1. GENERAL DESCRIPTION

- On-board diagnosis (OBD) system detects and indicates a fault in various inputs and outputs of the complex electronic control. Malfunction indicator light in the combination meter indicates occurrence of a fault or trouble.
- Further, against such a failure or sensors as may disable the drive, the fail-safe function is provided to ensure the minimal driveability.
- The OBD system incorporated with the vehicles within this engine family complies with Section 1968.1, California Code of Regulations (OBD-II regulation). The OBD system monitors the components and the system malfunction listed in Engine Section which affects on emissions.
- When the system decides that a malfunction occurs, malfunction indicator light illuminates. At the same time of the malfunction indicator light illumination or blinking, the 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 the usual diagnosis procedure. When trouble-shooting the OBD-II models, connect Subaru Select Monitor or the OBD-II general scan tool to the vehicle.

2. ENGINE AND EMISSION CONTROL SYSTEM

• 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 sig-

nal 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.
- Excellent engine start and warm-up performance by the correction of engine coolant temperature and intake air temperature.

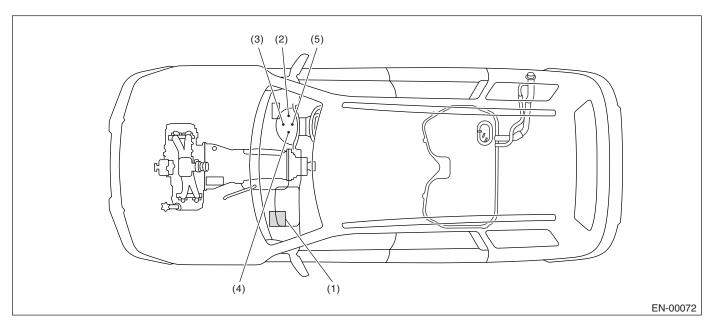
D: PREPARATION TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
CTD 4000A ACCO	24082AA230 (Newly adopted tool)	CARTRIDGE	Troubleshooting for electrical system.
ST24082AA230	0077444000	01104011051507	T 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ST22771AA030	22771AA030	SUBARU SELECT MONITOR KIT	Troubleshooting for electrical system. English: 22771AA030 (Without printer) German: 22771AA070 (Without printer) French: 22771AA080 (Without printer) Spanish: 22771AA090 (Without printer)

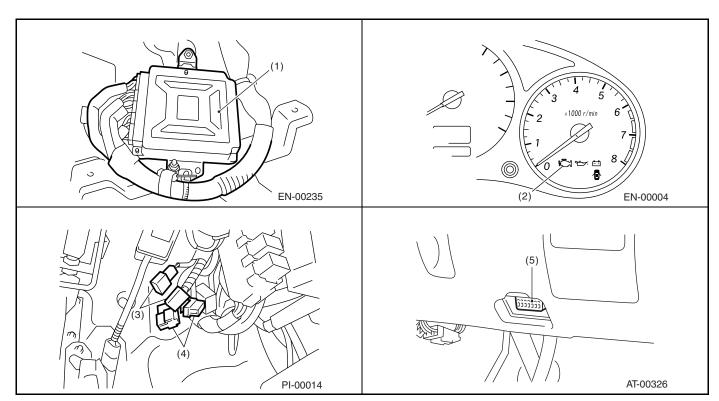
4. Electrical Component Location

A: LOCATION

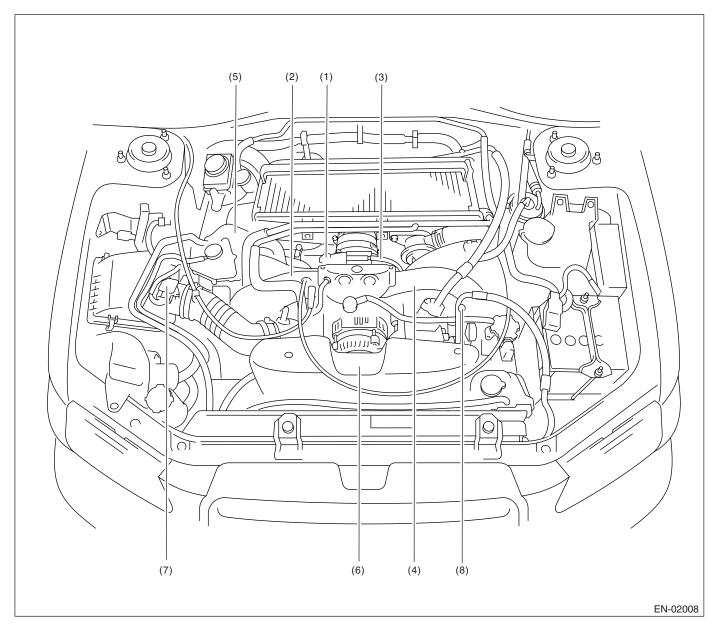
- 1. ENGINE
- CONTROL MODULE



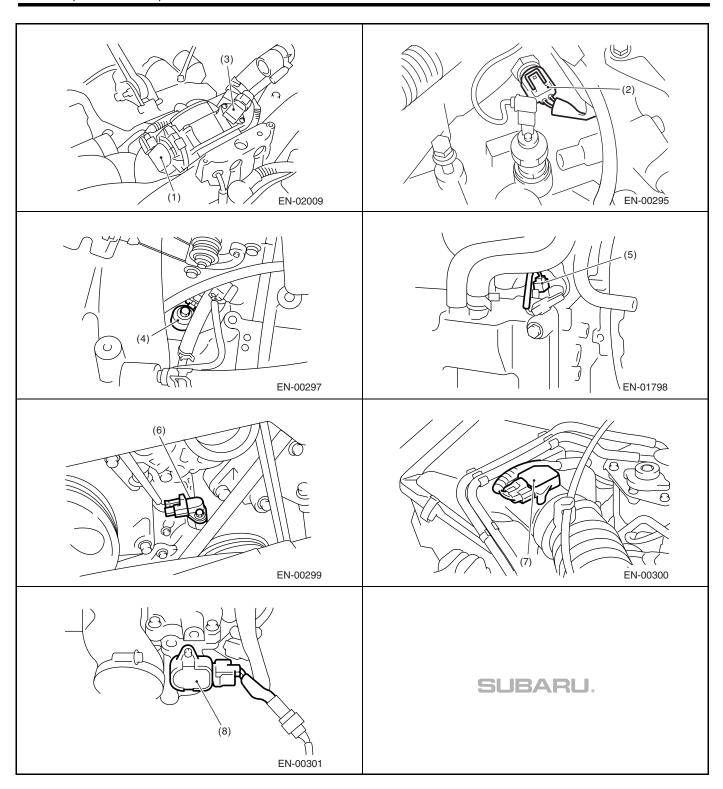
- (1) Engine control module (ECM)
- (2) Malfunction indicator light
- (3) Test Mode Connector
- (4) Diagnosis connector
- (5) Data link connector

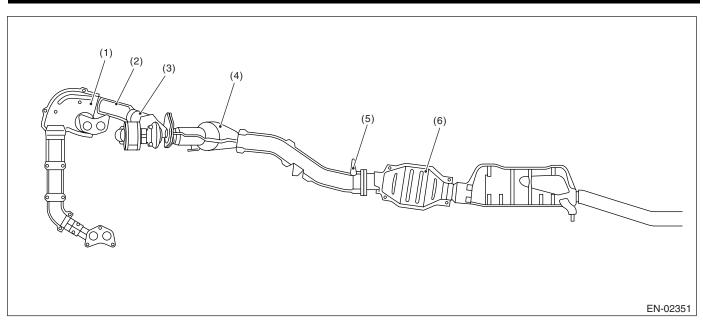


• SENSOR

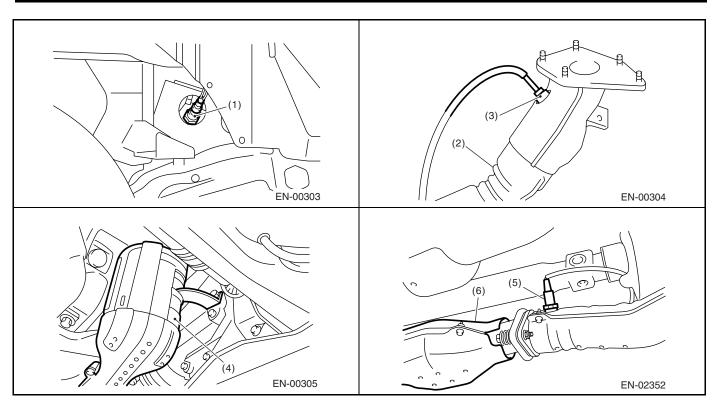


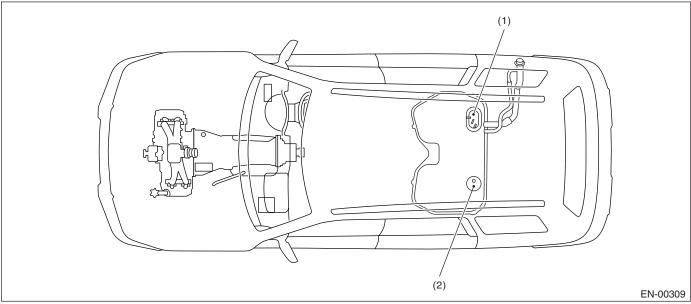
- (1) Manifold absolute pressure sensor
- (2) Engine coolant temperature sensor
- (3) Electronic throttle control
- (4) Knock sensor
- (5) Camshaft position sensor
- (6) Crankshaft position sensor
- (7) Mass air flow and intake air temperature sensor
- (8) Tumble generator valve position sensor





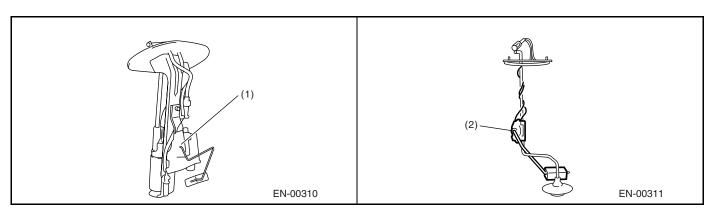
- (1) Front oxygen (A/F) sensor
- (2) Precatalytic converter
- (3) Exhaust gas temperature sensor
- (4) Front catalytic converter
- 5) Rear oxygen sensor
- (6) Rear catalytic converter



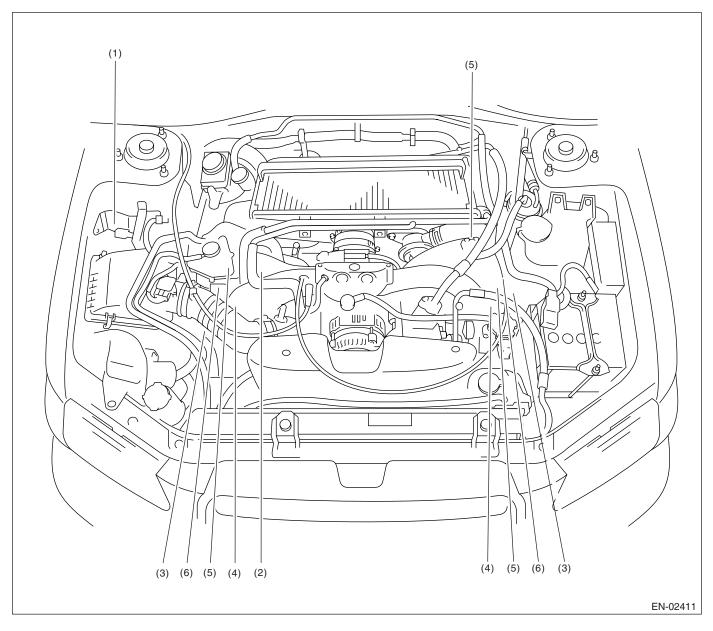


(1) Fuel level sensor

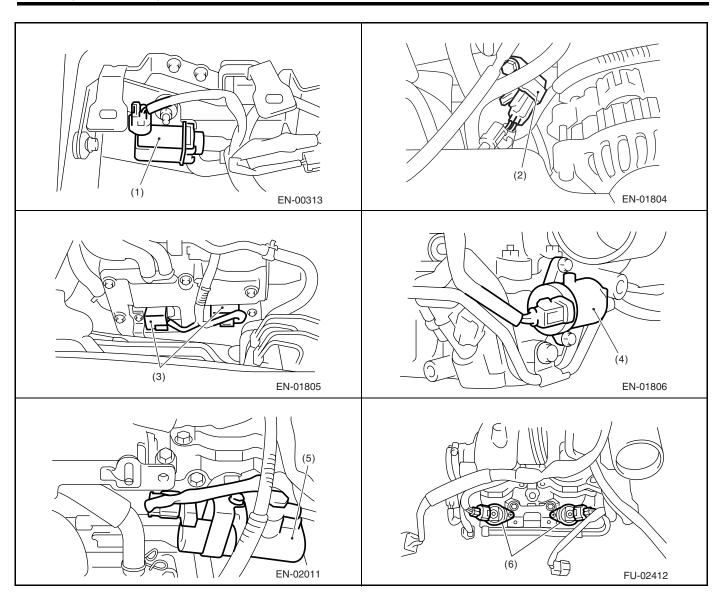
(2) Fuel sub level sensor

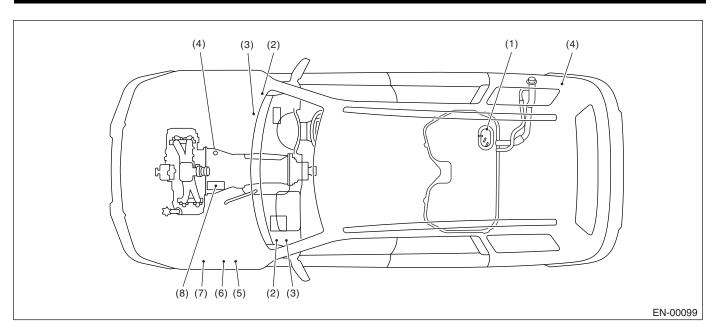


• SOLENOID VALVE, ACTUATOR, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS



- (1) Wastegate control solenoid valve
- (2) Purge control solenoid valve
- (3) Ignition coil
- (4) Tumble generator valve actuator
- (5) Oil flow control solenoid valve
- (6) Injector

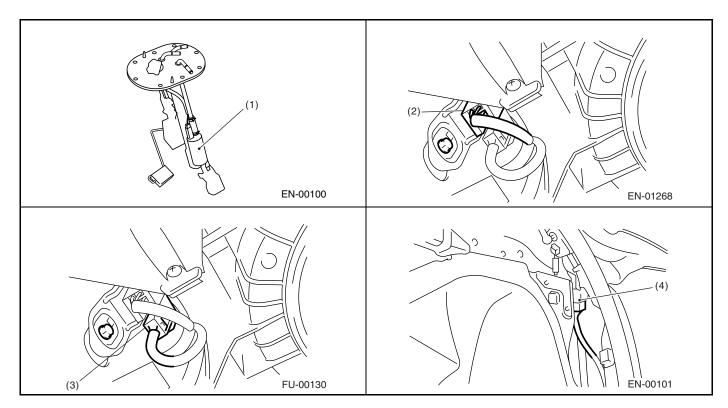


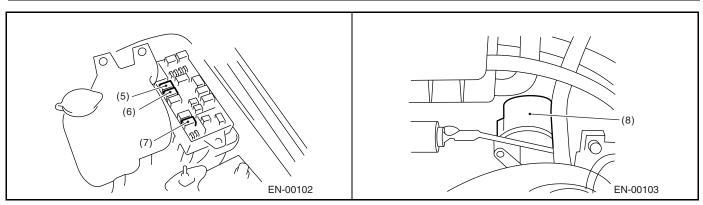


- (1) Fuel pump
- (2) Main relay
- (3) Fuel pump relay
- (4) Fuel pump controller

(6)

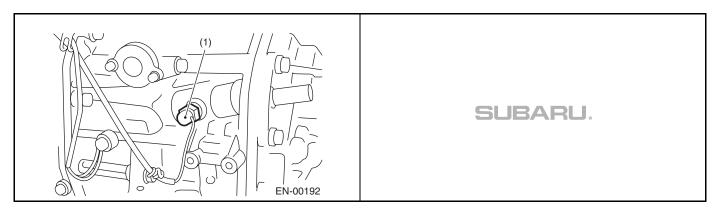
- (5) Radiator main fan relay
 - Radiator sub fan relay
- (7) Fan mode relay
- (8) Starter





2. TRANSMISSION

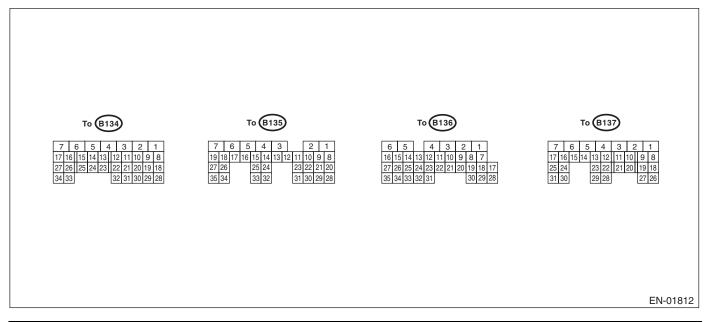
• SOLENOID VALVE & SWITCH (MT MODEL)



(1) Neutral Position Switch

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

A: ELECTRICAL SPECIFICATION



				Signa	al (V)	
DESCF	RIPTION	Connector No.	Terminal No.	Ignition SW ON (engine OFF)	Engine ON (Idling)	NOTE
Crank-	Signal (+)	B135	10	0	−7 — +7	Waveform
shaft posi-	Signal (-)	B135	22	0	0	_
tion sensor	Shield	B135	31	0	0	_
	Signal	B137	25	0	0 — 0.9	_
Rear oxy-	Shield	B137	31	0	0	_
gen sensor	GND (sensors)	B136	35	0	0	_
Front oxy-	Signal 1	B134	3	0 — 1.0	_	Waveform
gen (A/F) sensor heater	Signal 2	B134	2	0 — 1.0	_	Waveform
Rear oxyger heater signa		B135	2	0 — 1.0	_	Waveform
Engine	Signal	B136	14	1.0 — 1.4	1.0 — 1.4	After engine is warmed-up.
coolant tempera- ture sen- sor	GND (sensors)	B136	35	0	0	After engine is warmed-up.
Vehicle spee	ed signal	B135	26	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.
A in flance	Signal	B136	23	_	0.3 — 4.5	_
Air flow sensor	Shield	B136	32	0	0	_
3011301	GND	B136	31	0	0	_
Intake air te sensor signa		B136	13	0.3 — 4.6	0.3 — 4.6	_
Exhaust	Signal	B136	24	_		
gas tem- perature sensor	GND (sensors)	B136	35	0	0	_

					al (V)	
DESCR	RIPTION	Connector No.	Terminal No.	Ignition SW ON (engine OFF)	Engine ON (Idling)	NOTE
Tumble	Signal	B136	27		d: 3.8 — 4.9 d: 0.2 — 0.9	_
generator valve posi- tion sen-	Power supply	B136	16	5	5	_
sor RH	GND (sensor)	B136	35	0	0	_
Tumble	Signal	B136	26		d: 3.8 — 4.9 d: 0.2 — 0.9	_
generator valve posi- tion sen-	Power supply	B136	16	5	5	_
sor LH	GND (sensor)	B136	35	0	0	_
Tumble gene RH (open)		B134	9	0 or 10 — 13	0 or 13 — 14	Waveform
Tumble gene RH (close)		B134	8	0 or 10 — 13	0 or 13 — 14	Waveform
Tumble gene LH (open)		B134	11	0 or 10 — 13	0 or 13 — 14	Waveform
Tumble gene LH (close)	erator valve	B134	10	0 or 10 — 13	0 or 13 — 14	Waveform
Wastegate on noid valve	control sole-	B134	32	0 or 10 — 13	0 or 13 — 14	Waveform
Starter switch	ch	B137	8	0	0	Cranking: 8 — 14
A/C switch		B137	17	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
Ignition swite	ch	B137	16	10 — 13	13 — 14	
Neutral Posi	ition Switch	B137	9	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
Test Mode C	Connector	B137	15	10 — 13	13 — 14	When connected: 0
Knock	Signal	B136	25	2.8	2.8	_
sensor	Shield	B136	33	0	0	_
Back-up pov		B135	19	10 — 13	13 — 14	Ignition switch "OFF": 10 — 13
Control mod		B135	5	10 — 13	13 — 14	
supply	idic power	B135	6	10 — 13	13 — 14	<u> </u>
Sensor pow	er supply	B136	16	5	5	<u> </u>
Concor pon	#1	B135	18	0	13 — 14	Waveform
Ignition	#2	B135	17	0	13 — 14	Waveform
control	#3	B135	16	0	13 — 14	Waveform
	#4	B135	15	0	13 — 14	Waveform
	#1	B136	6	10 — 13	1 — 14	Waveform
Fuel injec-	#2	B136	5	10 — 13	1 — 14	Waveform
tor	#3	B136	4	10 — 13	1 — 14	Waveform
	#4	B136	3	10 — 13	1 — 14	Waveform
Fuel pump	Diagnosis signal	B137	28	0 or 5	0 or 5	Waveform
control unit	Control signal	B135	27	10 — 13	13 — 14	_
A/C relay co		B135	33	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	_
Radiator fan trol	relay 1 con-	B135	25	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	_

				Signa	al (V)	
DESCF	RIPTION	Connector No.	Terminal No.	Ignition SW ON (engine OFF)	Engine ON (Idling)	NOTE
Radiator far	relay 2 con-	B135	24	ON: 0.5, or less OFF: 10 — 13	ON: 0.5, or less OFF: 13 — 14	Model with A/C only
Malfunction light	indicator	B134	17	_	_	Light "ON": 1, or less Light "OFF": 10 — 14
Engine spec	ed output	B134	23	_	0 — 13, or more	Waveform
Purge contr	ol solenoid	B134	14	ON: 1, or less OFF: 10 — 13	ON: 1, or less OFF: 13 — 14	Waveform
	Signal	B136	22	1.7 — 2.4	1.1 — 1.6	
Manifold absolute pressure	Power supply	B136	16	5	5	_
sensor	GND (sensors)	B136	35	0	0	
Small light s	switch	B137	12	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	_
Blower fan s	switch	B137	13	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	_
Rear defogg	ger switch	B137	11	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	_
Power steer sure switch	ing oil pres-	B137	10	10 — 13	ON: 0 OFF: 13 — 14	İ
Front oxyge sor signal (+	n (A/F) sen- -)	B134	33	2.8 — 3.2	2.8 — 3.2	1
Front oxyge sor signal (-		B134	26	2.4 — 2.7	2.4 — 2.7	1
Front oxyge sor shield	. ,	B134	25	0	0	I
SSM/GST of tion line	communica-	B137	20	1 ← → 4	1 ← → 4	İ
GND (inject	or)	B137	7	0	0	
GND (ignition	on system)	B135	12	0	0	
CND (nowe	י אממונים	B135	4	0	0	_
GND (powe	r supply)	B135	1	0	0	
OND /		B137	1	0	0	
GND (contro	oi system)	B137	2	0	0	_
GND (Front sensor heate	oxygen (A/F) er 1)	B134	7	0	0	_
GND (Front sensor heate	oxygen (A/F) er 2)	B134	6	0	0	_
Camshaft posor (LH)	osition sen-	B135	8	0 — 0.9	ON: 0 OFF: 4.7 — 5.3	Waveform
Camshaft posor (RH)	osition sen-	B135	9	0 — 0.9	ON: 0 OFF: 4.7 — 5.3	Waveform
Fuel level se	ensor	B136	20	0.12 — 4.75	0.12 — 4.75	_
	Main	B136	18	0.64 — 0.72 Fully opens: 3.96	0.64 — 0.72 (After engine is warmed-up.)	Fully closed: 0.6 Fully opens: 3.96
Electronic throttle control	Sub	B136	29	1.51 — 1.58 Fully opens: 4.17	1.51 — 1.58 (After engine is warmed-up)	Fully closed: 1.48 Fully opens: 4.17
CONTROL	Power supply	B136	16	5	5	_
	GND (sensor)	B137	3	0	0	

		ī				
				Signa		
DESC	RIPTION	Connector No.	Terminal No.	Ignition SW ON (engine OFF)	Engine ON (Idling)	NOTE
Electronic t trol motor (-	+)	B137	5	Duty waveform	Duty waveform	Drive frequency: 500 Hz
Electronic t trol motor (-	–)	B137	4	Duty waveform	Duty waveform	Drive frequency: 500 Hz
Electronic t trol motor p	hrottle con- ower supply	B137	6	10 — 13	13 — 14	_
Electronic t		B135	35	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	When ignition switch is turned to ON: ON
Oil flow control	Signal (+)	B134	19	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
solenoid (LH)	Signal (-)	B134	29	0	0	_
Oil flow control	Signal (+)	B134	18	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
solenoid (RH)	Signal (-)	B134	28	0	0	_
	Main	B136	17	Fully closed: 1 Fully opens: 3.5	Fully closed: 1 Fully opens: 3.5	_
Accelera- tor Pedal	Power supply	B136	15	5	5	_
Position Sensor	GND (sensor)	B136	34	0	0	_
	Sub	B136	28	Fully closed: 1 Fully opens: 3.5	Fully closed: 1 Fully opens: 3.5	_
Main light		B134	15	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	_
Clutch swite	ch	B134	1	When clutch pedal is depressed: 0 When clutch pedal is released: 10 — 13	When clutch pedal is depressed: 0 When clutch pedal is released: 13 — 14	
SET/COAS	T switch	B136	11	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
Brake switc	:h 1	B136	9	When brake pedal is depressed: 0 When brake pedal is released: 10 — 13	When brake pedal is depressed: 0 When brake pedal is released: 13 — 14	_
Brake switc		B136	8	When brake pedal is depressed: 10 — 13 When brake pedal is released: 0	When brake pedal is depressed: 13 — 14 When brake pedal is released: 0	_
RESUME/A switch	ACCEL	B136	10	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
Main switch	1	B136	7	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	_
CAN Com-	Signal (+)	B137	18	Pulse	signal	
munication	Signal (-)	B137	26	Pulse	signal	_
	•					

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTIC)

			Signal (V)		
DESCRIPTION	Connector No.	Terminal No.	Ignition SW ON (engine OFF)	Engine ON (Idling)	NOTE
Immobilizer input/output	B137	19	1 or less ← → 4 or more	1 or less ← → 4 or more	_
Immobilizer input/output	B137	27	1 or less ← → 4 or more	1 or less ← → 4 or more	_
Generator control	B134	22	0 — 6.5	0 — 6.5	_

6. Engine Condition Data

A: ELECTRICAL SPECIFICATION

Remarks	Specification			
Engine lead	1.9 — 3.9 (%): Idling			
Engine load	6.7 — 14.6 (%): 2,500 rpm Racing			

Measuring condition:

- After engine is warmed-up.
- Gear position is in neutral.
- Turn the A/C to OFF.
- Turn all accessory switches to OFF.

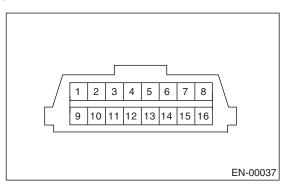
7. Data Link Connector

A: NOTE

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

CAUTION:

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



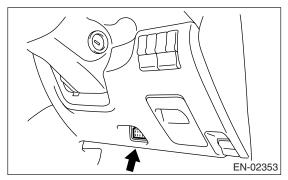
Terminal No.	Remarks	Terminal No.	Remarks
1	Power supply	9	Empty
2	Empty	10	Subaru Select Monitor/OBD-II general scan tool signal
3	Empty	11	Empty
4	Empty	12	Ground
5	Empty	13	Ground
6	Line end check signal 1	14	Empty
7	Empty	15	Empty
8	Empty	16	Empty

8. OBD-II General Scan Tool

A: OPERATION

1. HOW TO USE OBD-II GENERAL SCAN TOOL

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



3) Using the OBD-II general scan tool, call up the 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 diagnostic trouble codes
- (4) MODE \$04: Clear/Reset emission-related diagnostic information
- (5) MODE \$06: Request of on-board monitoring test result for intermittent monitor system
- (6) MODE \$07: Request of on-board monitoring test result for continuous monitor system
- (7) MODE \$09: Request of vehicle information Read out data according to repair procedures. (For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.)

NOTE:

For details concerning DTCs, refer to the List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4DOTC 2.5)-65, 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, 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 whole fuel trim	%
0B	Intake manifold absolute pressure	kPa, mmHg
0C	Engine revolution	rpm
0D	Vehicle speed	km/h
0E	Ignition timing advance	0
0F	Intake air temperature	°C
10	Air flow rate of 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	Available OBD system	_
24	A/F value and A/F sensor output voltage	— and V
34	A/F value and A/F sensor current	— and mA

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 whole fuel trim	%
0B	Intake manifold absolute pressure	mmHg
0C	Engine speed	rpm
0D	Vehicle speed	km/h
0E	Ignition timing advance	0
0F	Intake air temperature	°C
10	Air flow rate of mass air flow sensor	g/sec
11	Throttle valve absolute 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 CODES)

Refer to "Read Diagnostic Trouble Code (DTC)" for information about data denoting emission-related powertrain diagnostic trouble codes. <Ref. to EN(H4DOTC 2.5)-34, 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 \$07

Refers to the data of DTC (pending code) that for the first diagnosis result related emission.

7. MODE \$09

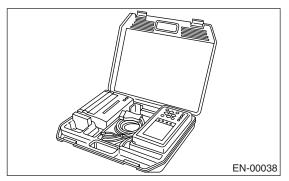
Refer to the data of vehicle specifications (V.I.N., calibration ID and etc.).

9. Subaru Select Monitor

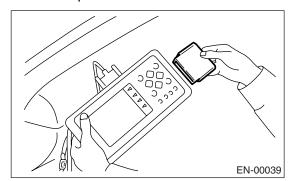
A: OPERATION

1. HOW TO USE SUBARU SELECT MONITOR

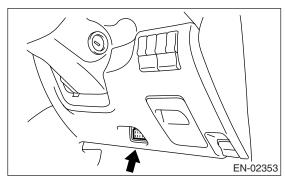
1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOTC 2.5)-7, PREPARATION TOOL, General Description.>



- 2) Connect the diagnosis cable to Subaru Select Monitor.
- 3) Insert the cartridge to Subaru Select Monitor. <Ref. to EN(H4DOTC 2.5)-7, PREPARATION TOOL, General Description.>



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

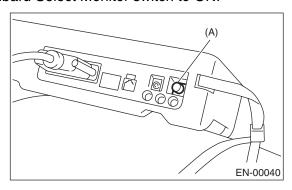


(2) Connect the diagnosis cable to data link connector.

CAUTION:

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

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



(A) Power switch

6) Using the Subaru Select Monitor, call up DTC and data, then record them.

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

Refer to "Read Diagnostic Trouble Code (DTC)" for information about how to indicate DTC. <Ref. to EN(H4DOTC 2.5)-34, 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 2.5)-34, Read Diagnostic Trouble Code (DTC).>

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

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

Remarks	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	%
Injection pulse width	Fuel Injection #1 Pulse	ms
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 lambda value	A/F Sensor #1	_
Rear oxygen sensor output signal	Rear O ₂ Sensor	V
Short term fuel trim	A/F Correction #1	%
Knock sensor compensation	Knocking Correction	deg
Atmospheric pressure signal	Atmosphere Pressure	mmHg, kPa, inHg or psi
Intake manifold relative pressure signal	Mani. Relative Pressure	mmHg, kPa, inHg or psi
Intake manifold absolute pressure signal	Mani. Absolute Pressure	mmHg, kPa, 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	%
Canister purge control solenoid valve duty ratio	CPC Valve Duty Ratio	%
Primary supercharged pressure control signal	Primary Control	%
Tumble generated valve position sensor signal (RH side)	TGV Position Sensor R	V
Tumble generated valve position sensor signal (LH side)	TGV Position Sensor L	V
Acceleration opening angle	Accel Opening Angle	%
VVT advance angle amount (R)	VVT Adv. Amount R	deg
VVT advance angle amount (L)	VVT Adv. amount L	deg
OCV duty R	OCV Duty R	%
OCV duty L	OCV Duty L	%
OCV current R	OCV current R	mA
OCV current L	OCV Current L	mA
Throttle motor duty	Throttle Motor Duty	%
Throttle power supply voltage	Throttle Motor Voltage	V
Sub throttle sensor voltage	Sub-Throttle Sensor	V
Main throttle sensor voltage	Main-Throttle Sensor	V
Sub acceleration sensor voltage	Sub-Accelerator Sensor	V
Main acceleration sensor voltage	Main-Accelerator Sensor	V
Memory vehicle speed	Memorized Cruise Speed	km/h
Alternate duty ratio	ALT Duty	%
Exhaust gas temperature signal	Exhaust gas temperature	°C
Estimated cumulative driving distance	Odd Meter	Km
Fuel level signal	Fuel Level Voltage	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 AT/MT identification signal ETC motor relay Clutch SW Stop Light SW	Air Flow Sensor Voltage AT Vehicle ID Signal ETC Motor Relay Clutch Switch Stop Light Switch SET/COAST Switch RESUME/ACCEL Switch	V ON or OFF ON or OFF ON or OFF ON or OFF ON or OFF
ETC motor relay Clutch SW	ETC Motor Relay Clutch Switch Stop Light Switch SET/COAST Switch	ON or OFF ON or OFF ON or OFF
Clutch SW	Clutch Switch Stop Light Switch SET/COAST Switch	ON or OFF ON or OFF
	Stop Light Switch SET/COAST Switch	ON or OFF
Stop Light SW	SET/COAST Switch	
•		ON or OFF
SET/COAST SW	RESUME/ACCEL Switch	
RESUME/ACCEL SW		ON or OFF
Brake SW	Brake Switch	ON or OFF
Main SW	Main Switch	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
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
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 Signal	ON or OFF
Crankshaft position sensor signal	Crankshaft Position Sig.	ON or OFF
Camshaft position sensor signal	Camshaft Position Sig.	ON or OFF
Rear defogger switch signal	Rear Defogger SW	ON or OFF
Blower fan switch signal	Blower Fan SW	ON or OFF
Small light switch signal	Light Switch	ON or OFF
Handle switch signal	Handle Switch	_
Wiper switch signal	Wiper Switch	ON or OFF
A/C mid pressure switch signal	A/C mid Pressure Switch	ON or OFF
AT coordinate retard angle demand	Retard Signal form AT	ON or OFF
AT coordinate fuel cut demand	Fuel Cut Signal from AT	ON or OFF
AT coordinate permission signal	Torque Permission Signal	ON or OFF
UDC not torque down output	Ban of Torque Down	ON or OFF
UDC torque down demand	Request Torque Down UDC	ON or OFF
Tumble generated valve output signal	TGV Output	ON or OFF
Tumble generated valve drive signal	TGV Drive	OPEN or CLOSE

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

Description	Display	Unit of measure
Number of diagnosis code	Number of Diagnosis Code	_
Condition of malfunction indicator light	MI (MIL)	ON or OFF
Monitoring test of misfire	Misfire monitoring	No support
Monitoring test of fuel system	Fuel system monitoring	No support
Monitoring test of comprehensive component	Component monitoring	No support
Test of catalyst	Catalyst Diagnosis	No support
Test of heating-type catalyst	Heated catalyst	No support
Test of evaporative emission purge control system	Evaporative purge system	No support
Test of secondary air system	Secondary air system	No support
Test of air conditioning system refrigerant	A/C system refrigerant	No support
Test of oxygen sensor	Oxygen sensor	No support
Test of oxygen sensor heater	O ₂ Heater Diagnosis	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	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
Ignition timing advance for #1 cylinder	Ignition timing adv. #1	0
Intake air temperature signal	Intake Air Temp.	°C or °F
Amount of intake air	Mass Air Flow	g/s
Throttle position signal	Throttle Opening Angle	%
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	others
A/F sensor output signal	A/F sensor #11	V
A/F lambda signal	A/F sensor #11	_
A/F lambda signal #11	A/F sensor #11	_
A/F sensor current #11	A/F sensor #11	mA

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} and press the [YES] key.
- 3) Press the [YES] key after the information of engine type was 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.

Description	Display	Unit of measure
Diagnostic code of freeze frame data	Freeze Frame Data	Diagnostic code
Air fuel ratio control system for bank 1	Fuel System for Bank 1	Closed loop or open loop
Air fuel ratio control system for bank 2	Fuel System for Bank 2	_
Engine load data	Calculated load valve	%
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
Ignition timing advance for #1 cylinder	Ignition timing adv. #1	٥
Intake air temperature signal	Intake Air Temp.	°C or °F
Amount of intake air	Mass Air Flow	g/s
Throttle position signal	Throttle Opening Angle	%

NOTE:

7. LED OPERATION MODE FOR ENGINE

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
- 3) Press the [YES] key after the information of engine type was displayed.
- 4) On the «Engine Diagnosis» screen, select the {Current Data Display/Save}, and then press the [YES] key.
- 5) On the «Data 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.

D 1.11	D: 1	1 14	LED "ONI"
Description	Display	Message	LED "ON" requirements
Ignition switch signal	Ignition Switch	ON or OFF	When ignition switch is ON.
Test Mode Signal	Test Mode Signal	ON or OFF	When test mode connector is connected.
Neutral position switch signal	Neutral Position Switch	ON or OFF	When neutral position signal is entered.
Air conditioning switch signal	A/C Switch	ON or OFF	When air conditioning switch is ON.
Air conditioning relay signal	A/C Compressor Signal	ON or OFF	When air conditioning relay is in function.
Radiator main fan relay signal	Radiator Fan Relay #1	ON or OFF	When radiator main fan relay is in function.
Knocking signal	Knocking Signal	ON or OFF	When knocking signal is input.
Radiator sub fan relay signal	Radiator Fan Relay #2	ON or OFF	When radiator sub fan relay is in function.
Rear oxygen sensor rich signal	Rear O ₂ Rich Signal	ON or OFF	When rear oxygen sensor mixture ratio is rich.
Starter switch signal	Starter Switch Signal	ON or OFF	When starter switch signal is entered.
Idle switch signal	Idle Switch Signal	ON or OFF	When idle switch signal is entered.
Crankshaft position sensor signal	Crankshaft Position Signal	ON or OFF	When crankshaft position sensor signal is input.
Camshaft position sensor signal	Camshaft Position Signal	ON or OFF	When camshaft position sensor signal is entered.
Power steering switch signal	P/S Switch	ON or OFF	When power steering switch is entered.
Rear defogger switch signal	Rear Defogger Switch	ON or OFF	When rear defogger switch is ON.
Blower fan switch signal	Blower Fan Switch	ON or OFF	When blower fan switch is ON.
Small light switch signal	Light Switch	ON or OFF	When small light switch is ON.
Tumble generated valve actuator signal	TGV Output	ON or OFF	When TGV actuator signal is entered.
Tumble generated valve drive signal	TGV Drive	Close or Open	When TGV moves and valve opens.
Handle switch signal	Handle SW	Low Input or High Input	Illuminates in Low Input.
AT/MT identification terminal	AT Vehicle ID Signal	ON or OFF	ON (AT model).
Wiper switch signal	Wiper Switch	ON or OFF	When wiper switch is turned to ON.
A/C mid pressure switch signal	A/C Mid Pressure Switch	ON or OFF	When A/C mid pressure switch is turned to ON.
AT coordinate retard angle demand	Retard Signal from AT	ON or OFF	When AT retard angle signal is exists.
AT coordinate fuel cut demand	Fuel Cut Signal from AT	ON or OFF	When AT coordinate fuel cut demand signal is exists.
AT coordinate permission signal	Torque Permission Signal	ON or OFF	When AT coordinate permission signal is exists.
VDC not torque down out put	Ban of Torque Down	ON or OFF	When VDC not torque down output signal is exists.
VDC torque down demand	Request Torque Down VDC	ON or OFF	When VDC torque down demand signal is exists.
ETC motor relay signal	ETC Motor Relay	ON or OFF	When electronic throttle control relay is in function.
Clutch switch signal	Clutch Switch	ON or OFF	When clutch switch is ON.
Stop switch signal	Stop Light Switch	ON or OFF	When stop light switch is ON.

Subaru Select Monitor

ENGINE (DIAGNOSTIC)

Description	Display	Message	LED "ON" requirements
SET/CST switch signal	SET/COAST Switch	ON or OFF	When SET/COAST switch is ON.
RES/ACC switch signal	RESUME/ACCEL Switch	ON or OFF	When RESUME/ACCEL switch is ON.
Brake switch signal	Brake Switch	ON or OFF	When brake switch is ON.
Main switch signal	Main Switch	ON or OFF	When main switch is ON.

NOTE:

10.Read Diagnostic Trouble Code (DTC)

A: OPERATION

1. SUBARU SELECT MONITOR (NORMAL MODE)

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

NOTE

- For detailed operation procedure, refer to the "SUBARU SELECT MONITOR OPERATION MANUAL".
- For details concerning DTCs, refer to the List of Diagnostic Trouble Code (DTC).
- <Ref. to EN(H4DOTC 2.5)-65, List of Diagnostic Trouble Code (DTC).>

2. SUBARU SELECT MONITOR (OBD MODE)

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

NOTE:

- For detailed operation procedure, refer to the "SUB-ARU SELECT MONITOR OPERATION MANUAL".
- For details concerning DTCs, refer to the List of Diagnostic Trouble Code (DTC).
- <Ref. to EN(H4DOTC 2.5)-65, List of Diagnostic Trouble Code (DTC).>

3. OBD-II GENERAL SCAN TOOL

Refers to data denoting emission-related powertrain diagnostic trouble codes.

For details concerning DTCs, refer to the List of Diagnostic Trouble Code (DTC).

<Ref. to EN(H4DOTC 2.5)-65, List of Diagnostic Trouble Code (DTC).>

NOTE:

Refer to OBD-II general scan tool manufacturer's instruction manual to access powertrain diagnosis trouble codes (MODE \$03).

11.Inspection Mode

A: OPERATION

Perform the diagnosis on the "Diagnosis Trouble Codes (DTC) List" below.

Refer to the item of drive cycle when perform the diagnosis not on the "Diagnosis Trouble Codes (DTC) List" below. <Ref. to EN(H4DOTC 2.5)-40, Drive Cycle.>

DTC	Item	On condition
P0031	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)	_
P0032	HO2S Heater Control Circuit High (Bank 1 Sensor 1)	
P0037	HO2S Heater Control Circuit Low (Bank 1 Sensor 2)	-
P0038	HO2S Heater Control Circuit High (Bank 1 Sensor 2)	<u> </u>
P0102	Mass or Volume Air Flow Circuit Low Input	<u> </u>
P0103	Mass or Volume Air Flow Circuit High Input	<u> </u>
P0107	Manifold Absolute Pressure/Barometric Pressure Circuit Low Input	<u> </u>
P0108	Manifold Absolute Pressure/Barometric Pressure Circuit High Input	<u> </u>
P0112	Intake Air Temperature Circuit Low Input	_
P0113	Intake Air Temperature Circuit High Input	<u> </u>
P0117	Engine Coolant Temperature Circuit Low Input	<u> </u>
P0118	Engine Coolant Temperature Circuit High Input	<u> </u>
P0122	Throttle/Pedal Position Sensor/Switch "A" Circuit Low Input	<u> </u>
P0123	Throttle/Pedal Position Sensor/Switch "A" Circuit High Input	<u> </u>
P0131	O ₂ Sensor Circuit Low Voltage (Bank 1 Sensor 1)	_
P0132	O ₂ Sensor Circuit High Voltage (Bank 1 Sensor 1)	_
P0137	O ₂ Sensor Circuit Low Voltage (Bank 1 Sensor 2)	_
P0138	O ₂ Sensor Circuit High Voltage (Bank 1 Sensor 2)	_
P0222	Throttle/Pedal Position Sensor/Switch "B" Circuit Low Input	_
P0223	Throttle/Pedal Position Sensor/Switch "B" Circuit High Input	_
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	_
P0340	Camshaft Position Sensor "A" Circuit (Bank 1 or Single Sensor)	_
P0345	Camshaft Position Sensor "A" Circuit (Bank 2)	_
P0458	Evaporative Emission Control System Purge Control Valve Circuit Low	_
P0459	Evaporative Emission Control System Purge Control Valve Circuit High	_
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	_
P0512	Starter Request Circuit	_
P0513	Incorrect Immobilizer Key	_
P0519	Idle Control System Malfunction (Fail-Safe)	_
P0545	Exhaust Gas Temperature Sensor Circuit Low-Bank 1	_
P0600	Serial Communication Link	<u> </u>
P0604	Internal Control Module Random Access Memory (RAM) Error	
P0605	Internal Control Module Read Only Memory (ROM) Error	
P0607	Control Module Performance	_
P0638	Throttle Actuator Control Range/Performance (Bank 1)	
P0691	Cooling Fan 1 Control Circuit Low	
P0700	Transmission Control System (MIL Request)	
P0851	Neutral Switch Input Circuit Low	

Inspection Mode

ENGINE (DIAGNOSTIC)

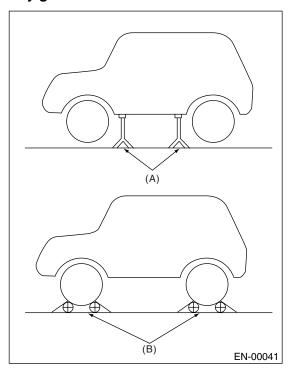
P0952 Neutral Switch Input Circuit High P1086 Tumble Generated Valve Position Sensor 2 Circuit Low ————————————————————————————————————	DTC	Item	On condition
P1087 Tumble Generated Valve Position Sensor 2 Circuit High P1088 Tumble Generated Valve Position Sensor 1 Circuit Low — P1089 Tumble Generated Valve Position Sensor 1 Circuit High — P1089 Tumble Generated Valve System 1 (Valve Close) — 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 2 Circuit Malfunction (Short) — P1096 Tumble Generated Valve Signal 2 Circuit Malfunction (Short) — P1097 Tumble Generated Valve Signal 2 Circuit Malfunction (Short) — P1110 Atmospheric Pressure Sensor Circuit Malfunction (Short) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (High Input) — P1160 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1544 High exhaust temperature detected — P1560 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1574 Key Communication Failure — P1576 EGI Control Module EEPROM — P1577 IMM Circuit Failure (Except Antenna Circuit) — P1578 EGI Control Module EEPROM — P1579 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2091 Throttle Actuator Control Motor Circuit Halp P2102 Throttle Actuator Control Motor Circuit Halp P2103 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2124 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2125 Throttle/Pedal Position Sensor/Switch "D" Circuit Liph Input — P2126 Throttle/Pedal Position Sensor/Switch "D" Circuit Liph Input — P2127 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2128 Throttle/Pedal Position Sensor/Switch "D" Circuit Liph Input — P2135 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2136 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2137 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2138 Throttle/Pedal Position Sens	P0852	Neutral Switch Input 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 (Open) — P1096 Tumble Generated Valve Signal 2 Circuit Malfunction (Open) — P1097 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 (Low Input) — P1110 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1544 High exhaust temperature detected — P1550 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P1578 EGI Control Module EEPROM — P1579 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2098 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2091 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Range/Performance — P2103 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2124 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2125 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2126 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2127 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2129 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2129 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2129 Throttle/Pedal Position Sensor/Switch "C"	P1086	Tumble Generated Valve Position Sensor 2 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 (Open) — P1096 Tumble Generated Valve Signal 2 Circuit Malfunction (Short) — P1097 Tumble Generated Valve Signal 2 Circuit Malfunction (Short) — P1109 Tumble Generated Valve Signal 2 Circuit Malfunction (Short) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (High Input) — P1518 Starter Switch Circuit Low Input — P1518 Starter Switch Circuit Low Input — P1519 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure — P1575 EGI Control Module EEPROM — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P1578 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2091 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low Input — P2103 Throttle Actuator Control Motor Circuit Low Input — P2120 Throttle Pdal Position Sensor/Switch "D" Circuit Low Input — P2121 Throttle/Pdal Position Sensor/Switch "D" Circuit High Input — P2122 Throttle/Pdal Position Sensor/Switch "C" Circuit Lipli Input — P2125 Throttle/Pedal Position Sensor/Switch "C" Circuit Lipli Input — P2126 Throttle/Pedal Position Sensor/Switch "C" Circuit Lipli Input — P2127 Throttle/Pedal Position Sensor/Switch "C" Circuit Lipli Input — P2128 Throttle/Pedal Position Sensor/Switch "C" Circuit Lipli Input — P2128 Throttle/Pedal Position Sensor/Switch "C" Circuit Lipli Input —	P1087	Tumble Generated Valve Position Sensor 2 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 (Open) — P1109 Tumble Generated Valve Signal 2 Circuit Malfunction (Open) — P1109 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1160 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1544 High exhaust temperature detected — P1560 Back-Up Voltage Circuit Malfunction — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure P1575 IMM Circuit Failure (Except Antenna Circuit) — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2093 Throttle Actuator Control Motor Circuit Low — P2101 Throttle Actuator Control Motor Circuit High Input — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2123 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2125 Throttle/Pedal Position Sensor/Switch "Circuit Low Input — P2126 Throttle/Pedal Position Sensor/Switch "Circuit Low Input — P2127 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2129 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2136 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2137 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input — P2138 Throttle/Pedal Position Sensor/Switch "Circuit Liph Input —	P1088	Tumble Generated Valve Position Sensor 1 Circuit Low	_
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) — P1109 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1110 Atmospheric Pressure Sensor Circuit Malfunction (High Input) — P11110 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1544 High exhaust temperature detected — P1560 Back-Up Voltage Circuit Malfunction — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P1578 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2098 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2091 Throttle Actuator Control Motor Circuit Hange/Performance — P2101 Throttle Actuator Control Motor Circuit Ling P2103 Throttle Actuator Control Motor Circuit Ling P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit Ling Input — P2123 Throttle/Pedal Position Sensor/Switch "C" Circuit Ling Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Ling Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Ling Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Ling Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit Low Input —	P1089	Tumble Generated Valve Position Sensor 1 Circuit High	_
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 (Open) — P1109 Tumble Generated Valve Signal 2 Circuit Malfunction (Copen) — P1110 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (High Input) — P1110 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1549 High exhaust temperature detected — P1560 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1575 EGI Control Module EEPROM — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2090 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Hange/Performance — P2102 Throttle Actuator Control Motor Circuit High P2109 Throttle Actuator Control Motor Circuit High P2109 Throttle Actuator Control Motor Circuit High Input — P2120 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2121 Throttle/Pedal Position Sensor/Switch "C" Circuit High Input — P2121 Throttle/Pedal Position Sensor/Switch "C" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "C" Circuit High Input —	P1091	Tumble Generated Valve System 1 (Valve Close)	_
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) — P1101 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1160 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1518 Observe Switch Circuit Low Input — P1519 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure P1575 EGI Control Module EEPROM — P1576 EGI Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2091 Throttle Actuator Control Motor Circuit Hange/Performance — P2102 Throttle Actuator Control Motor Circuit High — P2103 Throttle Actuator Control Motor Circuit High — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2123 Throttle/Pedal Position Sensor/Switch "Circuit Low Input — P2125 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2126 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A'/B" Voltage Rationality —	P1093	Tumble Generated Valve System 2 (Valve Close)	_
P1096 Tumble Generated Valve Signal 2 Circuit Malfunction (Open) P1097 Tumble Generated Valve Signal 2 Circuit Malfunction (Short) ————————————————————————————————————	P1094	Tumble Generated Valve Signal 1 Circuit Malfunction (Open)	_
P1097 Tumble Generated Valve Signal 2 Circuit Malfunction (Short) P1110 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) P11111 Atmospheric Pressure Sensor Circuit Malfunction (High Input) ———————————————————————————————————	P1095	Tumble Generated Valve Signal 1 Circuit Malfunction (Short)	_
P1110 Atmospheric Pressure Sensor Circuit Malfunction (Low Input) — P1111 Atmospheric Pressure Sensor Circuit Malfunction (High Input) — P1160 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1544 High exhaust temperature detected — P1560 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure — P1575 EGI Control Module EEPROM — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P1578 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2092 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit High — P2103 Throttle Actuator Control Motor Circuit High — P2104 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2124 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2125 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2136 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2137 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2138 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input —	P1096	Tumble Generated Valve Signal 2 Circuit Malfunction (Open)	_
P1111 Atmospheric Pressure Sensor Circuit Malfunction (High Input) — P1160 Return Spring Failure — P1518 Starter Switch Circuit Low Input — P1544 High exhaust temperature detected — P1560 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P1578 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2092 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit High — P2103 Throttle Actuator Control Motor Circuit High — P2104 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P136 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P137 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input —	P1097	Tumble Generated Valve Signal 2 Circuit Malfunction (Short)	_
P1160 Return Spring Failure ————————————————————————————————————	P1110	Atmospheric Pressure Sensor Circuit Malfunction (Low Input)	_
P1518 Starter Switch Circuit Low Input — P1544 High exhaust temperature detected — P1560 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure — P1575 EGI Control Module EEPROM — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input —	P1111	Atmospheric Pressure Sensor Circuit Malfunction (High Input)	_
P1544 High exhaust temperature detected ————————————————————————————————————	P1160	Return Spring Failure	_
P1560 Back-Up Voltage Circuit Malfunction — P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure P1575 EGI Control Module EEPROM — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P1518	Starter Switch Circuit Low Input	_
P1570 ANTENNA — P1571 Reference Code Incompatibility — P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2126 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input —	P1544	High exhaust temperature detected	_
P1571 Reference Code Incompatibility P1572 IMM Circuit Failure (Except Antenna Circuit) P1574 Key Communication Failure P1576 EGI Control Module EEPROM P1577 IMM Control Module EEPROM P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) P2101 Throttle Actuator Control Motor Circuit Range/Performance P2102 Throttle Actuator Control Motor Circuit Low P2103 Throttle Actuator Control Motor Circuit High P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality	P1560	Back-Up Voltage Circuit Malfunction	_
P1572 IMM Circuit Failure (Except Antenna Circuit) — P1574 Key Communication Failure — P1576 EGI Control Module EEPROM — P1577 IMM Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P1570	ANTENNA	_
P1574 Key Communication Failure ————————————————————————————————————	P1571	Reference Code Incompatibility	_
P1576 EGI Control Module EEPROM ————————————————————————————————————	P1572	IMM Circuit Failure (Except Antenna Circuit)	_
P1577 IMM Control Module EEPROM — P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) — P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P1574	Key Communication Failure	_
P2088 OCV Solenoid Valve Signal A Circuit Open (Bank 1) P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) P2101 Throttle Actuator Control Motor Circuit Range/Performance P2102 Throttle Actuator Control Motor Circuit Low P2103 Throttle Actuator Control Motor Circuit High P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input P2123 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P1576	EGI Control Module EEPROM	_
P2089 OCV Solenoid Valve Signal A Circuit Short (Bank 1) — P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P1577	IMM Control Module EEPROM	_
P2092 OCV Solenoid Valve Signal A Circuit Open (Bank 2) — P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2088	OCV Solenoid Valve Signal A Circuit Open (Bank 1)	_
P2093 OCV Solenoid Valve Signal A Circuit Short (Bank 2) — P2101 Throttle Actuator Control Motor Circuit Range/Performance — P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2120 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2121 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2122 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2126 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2128 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2089	OCV Solenoid Valve Signal A Circuit Short (Bank 1)	_
P2101 Throttle Actuator Control Motor Circuit Range/Performance ————————————————————————————————————	P2092	OCV Solenoid Valve Signal A Circuit Open (Bank 2)	_
P2102 Throttle Actuator Control Motor Circuit Low — P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2093	OCV Solenoid Valve Signal A Circuit Short (Bank 2)	_
P2103 Throttle Actuator Control Motor Circuit High — P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2101	Throttle Actuator Control Motor Circuit Range/Performance	_
P2109 Throttle/Pedal Position Sensor A Minimum Stop Performance — P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2102	Throttle Actuator Control Motor Circuit Low	_
P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input — P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2103	Throttle Actuator Control Motor Circuit High	
P2123 Throttle/Pedal Position Sensor/Switch "D" Circuit High Input — P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2109	Throttle/Pedal Position Sensor A Minimum Stop Performance	_
P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input — P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2122	Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input	_
P2128 Throttle/Pedal Position Sensor/Switch "E" Circuit High Input — P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2123	Throttle/Pedal Position Sensor/Switch "D" Circuit High Input	_
P2135 Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality —	P2127	Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input	
·	P2128	Throttle/Pedal Position Sensor/Switch "E" Circuit High Input	
P2138 Throttle/Pedal Position Sensor/Switch "D"/"E" Voltage Rationality —	P2135	Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Rationality	_
	P2138	Throttle/Pedal Position Sensor/Switch "D"/"E" Voltage Rationality	

1. PREPARATION FOR THE INSPECTION MODE

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

WARNING:

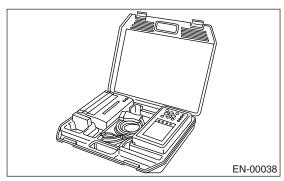
- Before raising the vehicle, ensure parking brakes are applied.
- Do not use a pantograph jack in place of a rigid rack.
- Secure a rope or wire to the front or rear towing hooks to prevent the lateral runout of front wheels.
- Do not abruptly depress/release clutch pedal or accelerator pedal during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

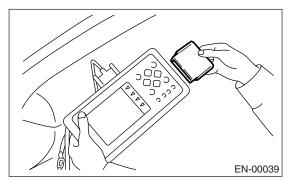
2. SUBARU SELECT MONITOR

- 1) Idle the engine.
- 2) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOTC 2.5)-7, PREPARATION TOOL, General Description.>

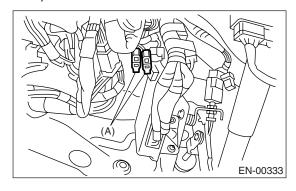


3) Connect the diagnosis cable to Subaru Select Monitor.

Insert the cartridge to Subaru Select Monitor. <Ref. to EN(H4DOTC 2.5)-7, PREPARATION TOOL, General Description.>

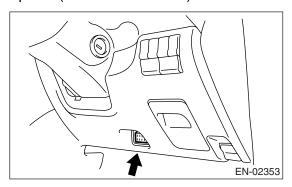


4) Connect the test mode connector (A) located at the lower portion of instrument panel (on the driver's side).



(A) Test Mode Connector

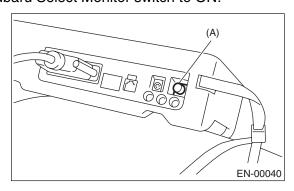
5) Connect the Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side).



CAUTION:

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

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

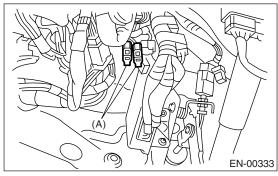
NOTE:

- For detailed operation procedure, refer to the "SUB-ARU SELECT MONITOR OPERATION MANUAL".
- For details concerning DTCs, refer to the List of Diagnostic Trouble Code (DTC).
- <Ref. to EN(H4DOTC 2.5)-65, List of Diagnostic Trouble Code (DTC).>
- Release the parking brake.

• The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis function. <Ref. to ABS-23, Clear Memory Mode.>

3. OBD-II GENERAL SCAN TOOL

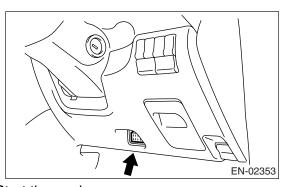
- 1) Idle the engine.
- 2) Connect the test mode connector (A) located at the lower portion of instrument panel (on the driver's side).



3) Connect the OBD-II general scan tool to its data link connector in the lower portion of 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.



4) Start the engine.

NOTE:

- Ensure the select lever is placed in the "P" range before starting. (AT model)
- Depress the clutch pedal when starting the engine. (MT model)
- 5) Using the select lever or shift lever, turn the "P" position switch and the "N" position switch to ON.
- 6) Depress the brake pedal to turn the brake switch ON. (AT model)
- 7) Keep the engine speed in the 2,500 3,000 rpm range for 40 seconds.
- 8) Place the select lever or shift lever in the "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 vehicles, release the parking brake.
- The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When engine control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis function. <Ref. to ABS-23, Clear Memory Mode.>
- 9) Using the OBD-II general scan tool, check DTC(s) and record the result(s).

NOTE:

Trouble Code (DTC).>

- For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.
- For details concerning DTCs, refer to the List of Diagnostic Trouble Code (DTC). <Ref. to EN(H4DOTC 2.5)-65, List of Diagnostic

12. Drive Cycle

A: OPERATION

There are three driving patterns on diagnosis. Following trouble can be diagnosed with driving specified patterns. After repair the following trouble, be sure to check that the trouble is cleared correctly by the driving specified patterns.

1. PREPARATION FOR DRIVE CYCLE

- 1) Check battery voltage is more than 12 V and fuel remains half $[20 40 \ \ell]$ (5.3 10.6 US gal, 4.4 8.8 Imp gal)].
- 2) Disconnect the test mode connectors.

NOTE:

Be sure to perform the diagnosis after idling from starting the cooled engine except when the engine coolant temperature is specified.

2. DRIVE THE VEHICLE 20 MINUTES AT THE SPEED OF 80 KM/H (50 MPH), AND THEN IDLE THE ENGINE 1 MINUTE.

DTC	Item	On condition
P0546	Exhaust Gas Temperature Sensor Circuit High - Bank 1	_
P0692	Cooling Fan 1 Control Circuit High	_

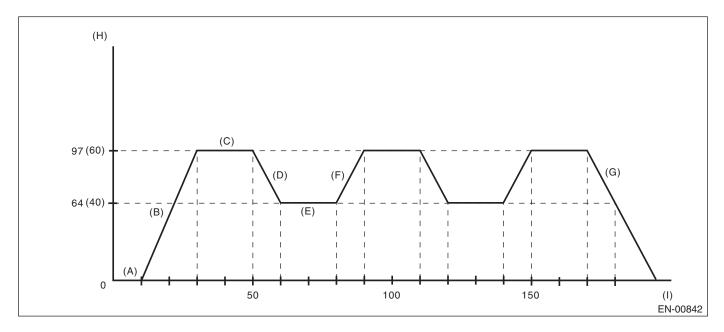
3. 10 MINUTES IDLING

NOTE:

Drive the vehicle more than 10 km/h (6 MPH) before diagnosis.

DTC	Item	On condition
P0171	System Too Lean (Bank 1)	_
P0172	System Too Rich (Bank 2)	_

4. DRIVE THE VEHICLE WITH FOLLOWING DRIVE PATTERNS



- (A) Run the engine at idle for more than 10 seconds.
- (B) Accelerate the vehicle to 97 km/h (60 MPH) within 20 seconds.
- (C) Drive the vehicle at 97 km/h (60 MPH) for 20 seconds.
- (D) Slowdown the vehicle to 64 km/h (40 MPH) with throttle fully closed condition.
- (E) Drive the vehicle at 64 km/h (40 MPH) for 20 seconds.
- (F) Accelerate the vehicle to 97 km/h (60 MPH) within 10 seconds.
- (G) Stop the vehicle with throttle fully closed condition.
- (H) Vehicle speed km/h (MPH)
- (I) (Sec.)

DTC	Item	On condition
P0134	O ₂ Sensor Circuit No Activity Detected (Bank 1 Sensor 1)	_
P0246	Turbo/Super Charger Wastegate Solenoid "A" High	_
P1090	Tumble Generated Valve System 1 (Valve Open)	_
P1092	Tumble Generated Valve System 2 (Valve Open)	_

13.Clear Memory Mode

A: OPERATION

1. SUBARU SELECT MONITOR (NORMAL MODE)

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

NOTF:

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

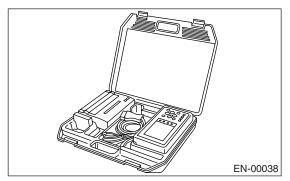
3. OBD-II GENERAL SCAN TOOL

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

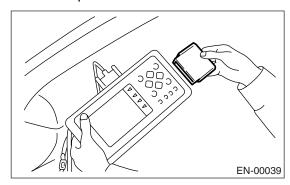
14. Compulsory Valve Operation Check Mode

A: OPERATION

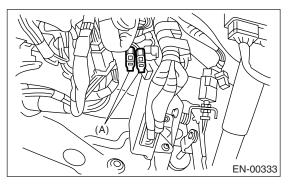
1) Prepare the Subaru Select Monitor kit. <Ref. to EN(H4DOTC 2.5)-7, PREPARATION TOOL, General Description.>



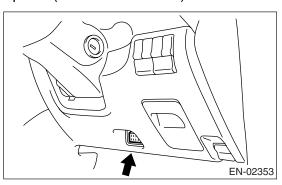
- 2) Connect the diagnosis cable to Subaru Select Monitor.
- 3) Insert the cartridge to Subaru Select Monitor. <Ref. to EN(H4DOTC 2.5)-7, PREPARATION TOOL, General Description.>



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



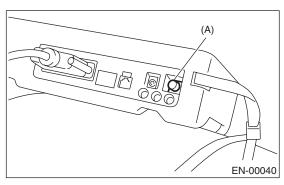
5) Connect the Subaru Select Monitor to data link connector located in the lower portion of the instrument panel (on the driver's side).



CAUTION:

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

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 {Each System Check} and press the [YES] key.
- 8) On the «System Selection Menu» display screen, select the {Engine} and press the [YES] key.
- 9) Press the [YES] key after the information of engine type was 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» screen, select the {Actuator ON/OFF Operation} and press the [YES] key.
- 12) On the «Actuator ON/OFF Operation» screen, select the desired compulsory actuator and press the [YES] key.

Compulsory Valve Operation Check Mode

ENGINE (DIAGNOSTIC)

- 13) Pressing the [NO] key completes the compulsory operation check mode. The display will then return to the «Actuator ON/OFF Operation» screen.
- A list of the support data is shown in the following table.

Description	Display
Compulsory fuel pump relay operation check	Fuel Pump
Compulsory radiator fan relay operation check	Radiator Fan Relay
Compulsory air conditioning relay operation check	A/C Compressor Relay
Compulsory purge control solenoid valve operation check	CPC Solenoid
Compulsory wastegate control sole- noid operation check	Wastegate control solenoid

NOTE

• The following parts will be displayed but not functional.

Display
EGR Solenoid
ASV Solenoid
FICD Solenoid
Vent. solenoid
Atmospheric pressure switching solenoid 1
AAI Solenoid
PCV Solenoid
Atmospheric pressure switching solenoid 2
EXH. Bypass control permit flag

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

15.Malfunction Indicator Light A: PROCEDURE

1. Activation of malfunction indicator light. <Ref. to EN(H4DOTC 2.5)-45, ACTIVATION OF MALFUNCTION INDICATOR LIGHT, Malfunction Indicator Light.>

2. Check that the malfunction indicator light does not come on. <Ref. to EN(H4DOTC 2.5)-47, MALFUNCTION INDICATOR LIGHT DOES NOT COME ON, Malfunction Indicator Light.>

3. Check that the malfunction indicator light does not go off. <Ref. to EN(H4DOTC 2.5)-49, MALFUNCTION INDICATOR LIGHT DOES NOT GO OFF, Malfunction Indicator Light.>

4. Malfunction indicator light does not blink at a cycle of 3 Hz. <Ref. to EN(H4DOTC 2.5)-50, MALFUNCTION INDICATOR LIGHT DOES NOT BLINK AT A CYCLE OF 3 HZ, Malfunction Indicator Light.>

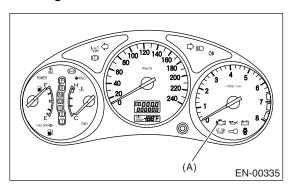
5. Malfunction indicator light remains blinking at a cycle of 3 Hz. <Ref. to EN(H4DOTC 2.5)-52, MALFUNCTION INDICATOR LIGHT REMAINS BLINKING AT A CYCLE OF 3 HZ, Malfunction Indicator Light.>

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.

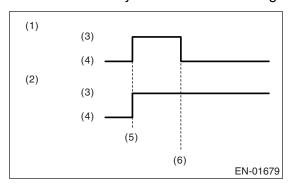
NOTE:

If the malfunction indicator light does not illuminate, perform the diagnosis of malfunction indicator light circuit or the combination meter circuit. <Ref. to EN(H4DOTC 2.5)-47, MALFUNCTION INDICATOR LIGHT DOES NOT COME ON, Malfunction Indicator Light.>



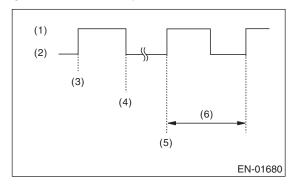
(A) Malfunction indicator light

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.

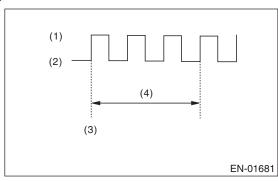


- (1) No faulty
- (2) Trouble occurs
- (3) ON
- (4) OFF
- (5) Ignition switch ON
- (6) Engine start

3) If the diagnosis system detects a misfire which could damage the catalyst, 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

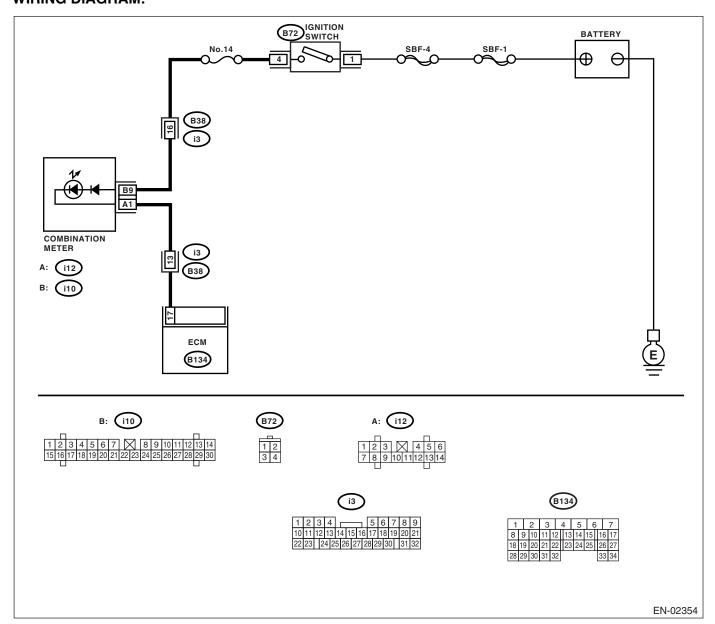
C: MALFUNCTION INDICATOR LIGHT DOES NOT COME ON

DIAGNOSIS:

The malfunction indicator light circuit is open or shorted.

TROUBLE SYMPTOM:

When the ignition switch is turned to ON (engine OFF), malfunction indicator light does not operate. **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 (B134) No. 17 (+) — 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 the ECM connector and harness?	Repair the poor contact in ECM connector.	Go to step 3.
3	CHECK ECM CONNECTOR.	Is the ECM connector correctly connected?	Replace the ECM. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol 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 (B134) No. 17 — (i12) No. 1:</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 poor contact in combination meter connector.	Go to step 6.
6	CHECK HARNESS BETWEEN COMBINATION METER AND IGNITION SWITCH CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between combination meter connector and chassis ground. Connector & terminal (i10) No. 9 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Replace the board of combination meter. <ref. idi-<br="" to="">10, Combination Meter Assembly.></ref.>	Check the following and repair if necessary. NOTE: • Blown out of fuse (No. 14) • Open or short circuit in harness between fuse (No. 14) and battery terminal • Poor contact in ignition switch connector

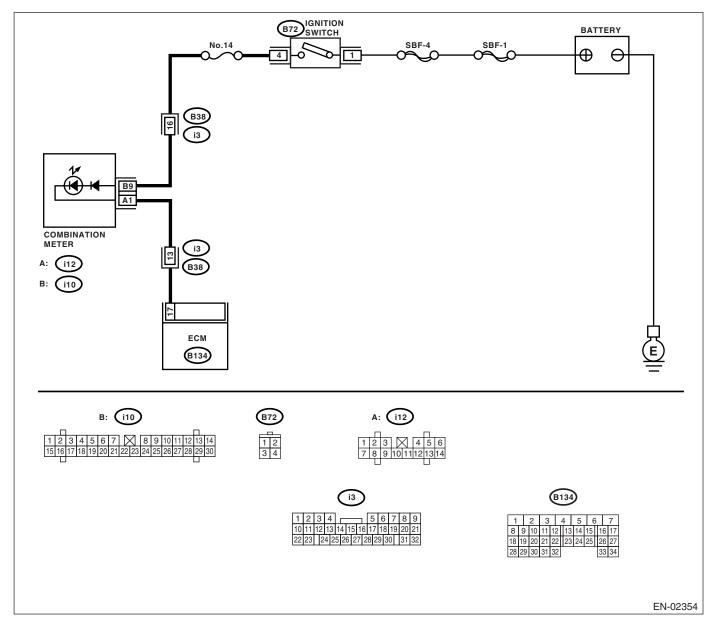
D: MALFUNCTION INDICATOR LIGHT DOES NOT GO OFF

DIAGNOSIS:

The malfunction indicator light circuit is shorted.

TROUBLE SYMPTOM:

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



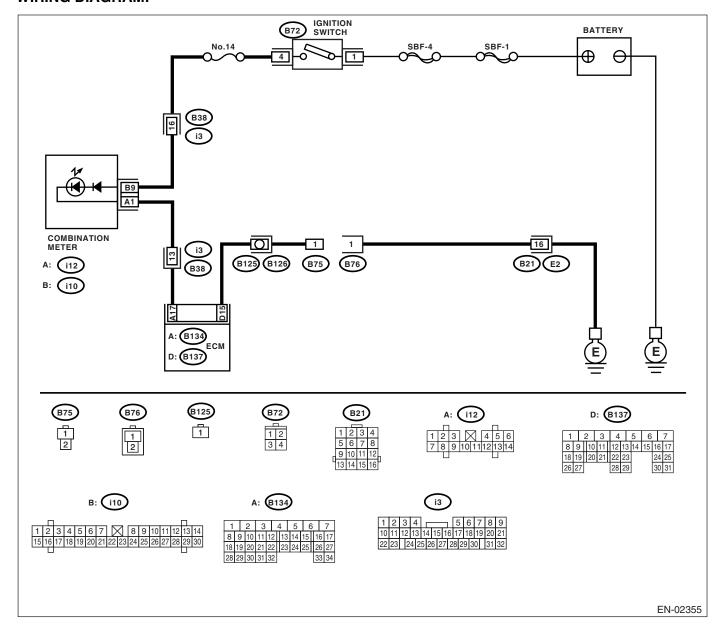
	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN COMBINA-	Does malfunction indicator	Repair short circuit	Replace the ECM.
	TION METER AND ECM CONNECTOR.	light illuminate?	in harness	<ref. th="" to<=""></ref.>
	 Turn the ignition switch to OFF. 		between combina-	FU(H4DOTC 2.5)-
	Disconnect the connector from ECM.		tion meter and	41, Engine Con-
	3) Turn the ignition switch to ON.		ECM connector.	trol Module (ECM).>

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

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

TROUBLE SYMPTOM:

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



	Step	Check	Yes	No
1	CHECK STATUS OF MALFUNCTION INDI- CATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Disconnect the test mode connectors. 3) Turn the ignition switch to ON. (engine OFF)	Does malfunction indicator light illuminate?	Go to step 2.	Repair the malfunction indictor light circuit. <ref. 2.5)-47,="" come="" does="" en(h4dotc="" indicator="" light="" light.="" malfunction="" not="" on,="" to=""></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 malfunction indicator light illuminate?	Repair ground short circuit in har- ness between com- bination 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 (B137) No. 15 — Chassis ground:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair 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 2.5)- 41, Engine Con- trol Module (ECM).></ref.>

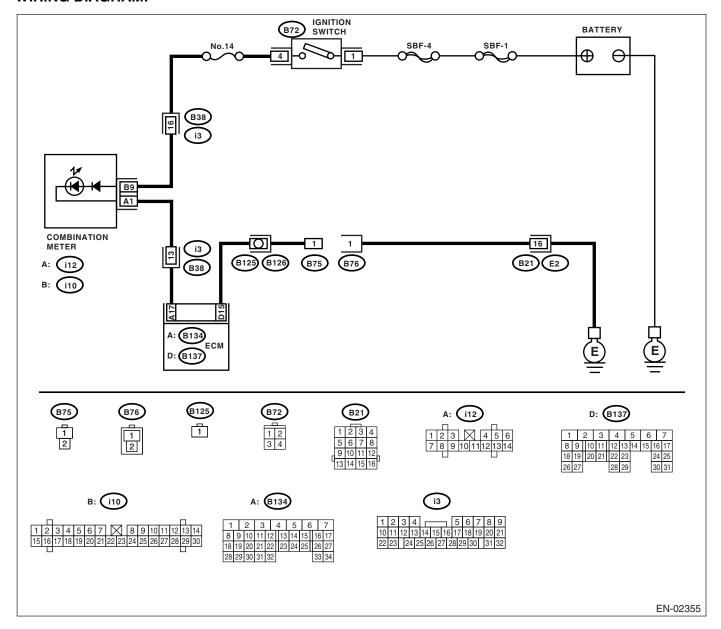
F: MALFUNCTION INDICATOR LIGHT REMAINS BLINKING AT A CYCLE OF 3 Hz

DIAGNOSIS:

Test mode connector circuit is shorted.

TROUBLE SYMPTOM:

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



	Step	Check	Yes	No
1	CHECK TEST MODE CONNECTOR. 1) Disconnect the test mode connectors	Does the malfunction indicator light blink?	Go to step 2.	System is in good order.
	2) Turn the ignition switch to ON.			NOTE: Malfunction indica-
				tor light blinks at a cycle of 3 Hz when
				test mode connec-
				tor is connected.
2	CHECK HARNESS BETWEEN ECM CON-	Is the resistance less than 5	Repair the short	Replace the ECM.
	NECTOR AND ENGINE GROUND TERMI-	Ω?	circuit in harness	<ref. th="" to<=""></ref.>
	NAL.		between ECM and	FU(H4DOTC 2.5)-
	 Turn the ignition switch to OFF. 		test mode connec-	41, Engine Con-
	Disconnect the connector from ECM.		tor.	trol Module
	3) Measure the resistance of harness			(ECM).>
	between ECM connector and chassis ground.			
	Connector & terminal			
	(B137) No. 15 — Chassis ground:			

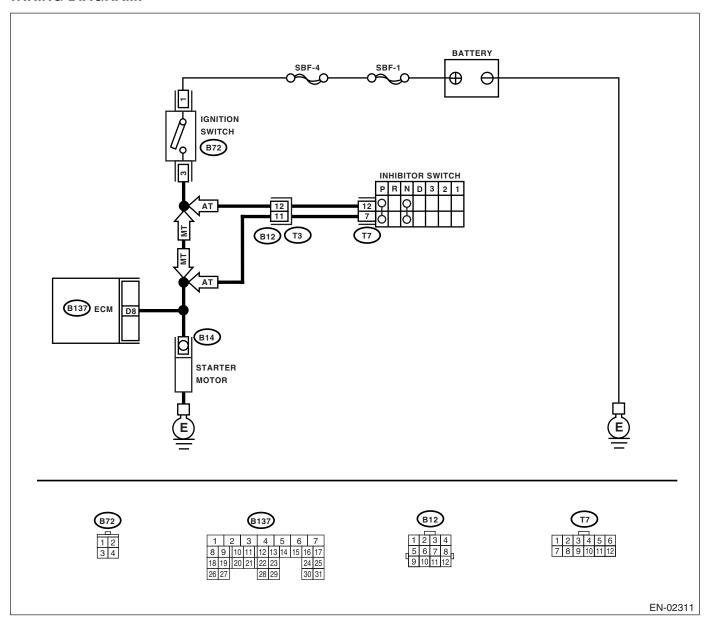
16.Diagnostics for Engine Starting Failure A: PROCEDURE

1. Check for fuel amount.
↓
2. Inspection of starter motor circuit. <ref. 2.5)-55,="" circuit,="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" motor="" starter="" starting="" to=""></ref.>
\downarrow
3. Inspection of ECM power supply and ground line. <ref. (ecm),="" 2.5)-57,="" and="" check="" control="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" ground="" line="" module="" of="" power="" starting="" supply="" to=""></ref.>
\downarrow
4. Inspection of ignition control system. <ref. 2.5)-59,="" control="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" ignition="" starting="" system,="" to=""></ref.>
↓
5. Inspection of fuel pump circuit. <ref. 2.5)-62,="" circuit,="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" fuel="" pump="" starting="" to=""></ref.>
↓
6. Inspection of fuel injector circuit. <ref. 2.5)-63,="" circuit,="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" fuel="" injector="" starting="" to=""></ref.>

B: STARTER MOTOR CIRCUIT

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

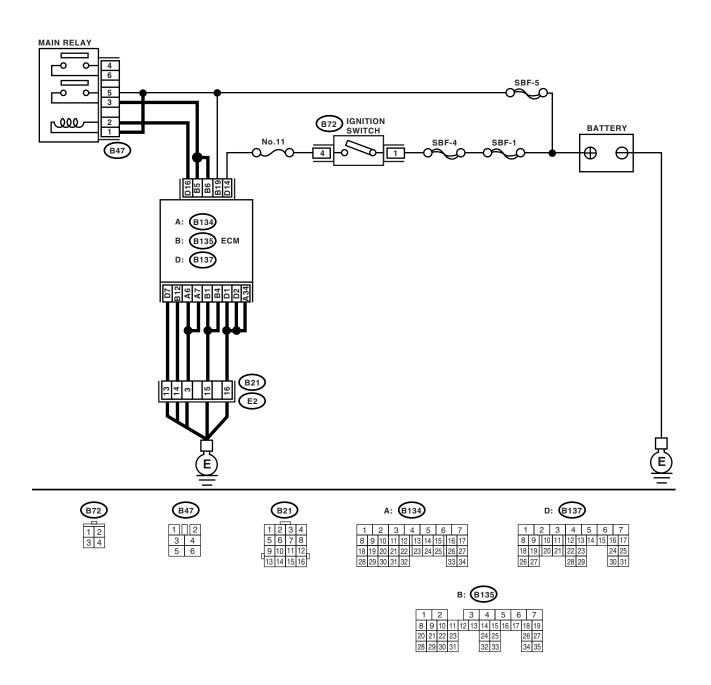


	Step	Check	Yes	No
1	CHECK BATTERY. Check the battery voltage.	Is the voltage more than 12 V?	Go to step 2.	Charge or replace the battery.
2	CHECK OPERATION OF STARTER MOTOR.	Does the starter motor operate?	Check ECM power supply and ground line. <ref. (ecm),="" 2.5)-57,="" and="" check="" control="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" ground="" line="" module="" of="" power="" starting="" supply="" to=""></ref.>	Go to step 3.
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: • For AT model, shift the select lever to "P" or "N" range. • For 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)-6, Starter.></ref.>	Repair 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 (-):	Is the voltage more than 10 V?	Go to step 6.	Repair open circuit in harness between ignition switch and bat- tery, and check fuse SBF No. 4 and SBF No. 1.
6	CHECK IGNITION SWITCH. 1) Disconnect the connector from ignition switch. 2) Measure the resistance between ignition switch terminals while turning the ignition switch to START. Terminals No. 1 — No. 3:	Is the resistance less than 5 Ω ?	Repair the poor contact in ignition switch.	Replace the ignition switch.

C: CHECK POWER SUPPLY AND GROUND LINE OF ENGINE CONTROL MOD-ULE (ECM)

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



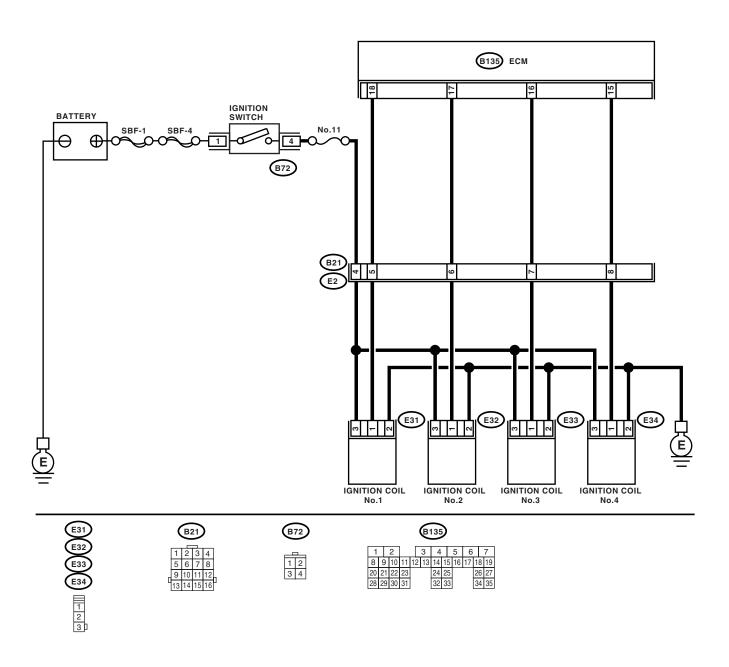
	Step	Check	Yes	No
1	CHECK MAIN RELAY.	Is the resistance less than 10	Go to step 2.	Replace the main
	 Turn the ignition switch to OFF. 	Ω?	•	relay.
	2) Remove the main relay.			
	3) Connect the battery to main relay terminals			
	No. 1 and No. 2.			
	4) Measure the resistance between main relay			
	terminals.			
	Terminals			
	No. 3 — No. 5:			
	No. 4 — No. 6:			
2	CHECK GROUND CIRCUIT FOR ECM.	Is the resistance less than 5	Go to step 3.	Repair open circuit
	 Disconnect the connector from ECM. 	Ω ?		in harness
	Measure the resistance of harness			between ECM con-
	between ECM and chassis ground.			nector and engine
	Connector & terminal			ground terminal.
	(B134) No. 6 — Chassis ground:			
	(B134) No. 7 — Chassis ground:			
	(B134) No. 34 — Chassis ground:			
	(B135) No. 1 — Chassis ground:			
	(B135) No. 4 — Chassis ground:			
	(B135) No. 12 — Chassis ground:			
	(B137) No. 1 — Chassis ground:			
	(B137) No. 2 — Chassis ground:			
	(B137) No. 7 — Chassis ground:			
3	CHECK INPUT VOLTAGE OF ECM.	Is the voltage more than 10 V?	Go to step 4.	Repair open or
	Measure the voltage between ECM connector			ground short cir-
	and chassis ground.			cuit of power sup-
	Connector & terminal			ply circuit.
	(B135) No. 19 (+) — Chassis ground (-):			
	(B137) No. 14 (+) — Chassis ground (-):		_	_
4	CHECK INPUT VOLTAGE OF MAIN RELAY.	Is the voltage more than 10 V?	Go to step 5.	Repair open or
	Measure the voltage between main relay con-			ground short circuit
	nector and chassis ground.			in harness of power
	Connector & terminal			supply circuit.
	(B47) No. 1 (+) — Chassis ground (-):			
	(B47) No. 5 (+) — Chassis ground (-):			
	(B47) No. 6 (+) — Chassis ground (-):	1 11 11 12 12	0	
5	CHECK INPUT VOLTAGE OF ECM.	Is the voltage more than 10 V?		Repair open or
	Connect the main relay connector. Turn the ignition quiteb to ON.		control system.	ground short circuit
	2) Turn the ignition switch to ON.		<ref. th="" to<=""><th>in harness</th></ref.>	in harness
	Measure the voltage between ECM con- porter and chaosin ground		EN(H4DOTC 2.5)-	between ECM con-
	nector and chassis ground.		59, IGNITION	nector and main
	Connector & terminal		CONTROL SYS-	relay connector.
	(B135) No. 5 (+) — Chassis ground (–): (B135) No. 6 (+) — Chassis ground (–):		TEM, Diagnostics for Engine Start-	
	(B135) No. 6 (+) — Chassis ground (–): (B137) No. 16 (+) — Chassis ground (–):			
	(-): (+) — Chassis ground		ing Failure.>	

D: IGNITION CONTROL SYSTEM

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02357

	Q4	Object	V.	NI.
Ļ_	Step	Check	Yes	No
1	CHECK SPARK PLUG CONDITION.	Is the spark plug's status OK?	Go to step 2.	Replace the spark
	1) Remove the spark plug. <ref. th="" to<=""><th></th><th></th><th>plug.</th></ref.>			plug.
	IG(H4DOTC)-6, INSTALLATION, Spark Plug.> 2) Check the spark plug condition. <ref. th="" to<=""><th></th><th></th><th></th></ref.>			
	IG(H4DOTC)-6, INSPECTION, Spark Plug.>			
2	CHECK IGNITION SYSTEM FOR SPARKS.	Does spark occur at each cyl-	Check fuel pump	Go to step 3.
Γ	Connect the spark plug to ignition coil.	inder?	system. <ref. th="" to<=""><th>as to stop s.</th></ref.>	as to stop s .
	2) Release the fuel pressure. <ref. th="" to<=""><th></th><th>EN(H4DOTC 2.5)-</th><th></th></ref.>		EN(H4DOTC 2.5)-	
	FU(H4DOTC 2.5)-45, RELEASING OF FUEL		62, FUEL PUMP	
	PRESSURE, OPERATION, Fuel.>		CIRCUIT, Diag-	
	3) Contact the spark plug's thread portion on		nostics for Engine	
	engine.		Starting Failure.>	
	4) While opening the throttle valve fully, crank			
	the engine to check that spark occurs at each cylinder.			
3	CHECK POWER SUPPLY CIRCUIT FOR IG-	Is the voltage more than 10 V?	Go to stop 4	Repair the harness
٦	NITION COIL & IGNITOR ASSY.	is the voltage more than 10 V?	αυ ιυ δι ο ρ 4.	and connector.
	Turn the ignition switch to OFF.			NOTE:
	Disconnect the connector from ignition coil			In this case repair
	& ignitor ASSY.			the following:
	Turn the ignition switch to ON.			 Open circuit in
	4) Measure the power supply voltage between			harness between
	ignition coil & ignitor ASSY connector and			ignition coil & igni-
	engine ground. Connector & terminal			tor ASSY, and igni-
	(E31) No. 3 (+) — Engine ground (–):			tion switch connector
	(E32) No. 3 (+) — Engine ground (–):			Poor contact in
	(E33) No. 3 (+) — Engine ground (–):			coupling connector
	(E34) No. 3 (+) — Engine ground (–):			3
4	CHECK HARNESS OF IGNITION COIL & IG-	Is the resistance less than 5	Go to step 5.	Repair the harness
	NITOR ASSY GROUND CIRCUIT.	Ω?		and connector.
	Turn the ignition switch to OFF.			NOTE:
	Measure the resistance between ignition coil & ignitor ASSY connector and engine			In this case repair
	ground.			the following: Open circuit in
	Connector & terminal			harness between
	(E31) No. 2 — Engine ground:			ignition coil & igni-
	(E32) No. 2 — Engine ground:			tor ASSY connec-
	(E33) No. 2 — Engine ground:			tor and engine
	(E34) No. 2 — Engine ground:			ground terminal
5		Is the resistance less than 1	Go to step 6.	Repair the harness
1	NITION COIL & IGNITOR ASSY CONNEC-	Ω ?		and connector.
1	TOR.			NOTE:
1	 Turn the ignition switch to OFF. Disconnect the connector from ECM. 			In this case repair
	3) Disconnect the connector from ignition coil			the following: OPEN CIR-
1	& ignitor ASSY.			CUIT IN HAR-
1	4) Measure the resistance of harness			NESS BETWEEN
	between ECM and ignition coil & ignitor ASSY			ECM AND IGNI-
	connector.			TION COIL &
1	Connector & terminal			IGNITOR ASSY
1	(B135) No. 15 — (E34) No. 1:			CONNECTOR.
1	(B135) No. 16 — (E33) No. 1: (B135) No. 17 — (E32) No. 1:			Poor contact in
1	(B135) No. 18 — (E32) No. 1:			coupling connector
1	(2.00) (20.)	I	1	l l

Diagnostics for Engine Starting Failure

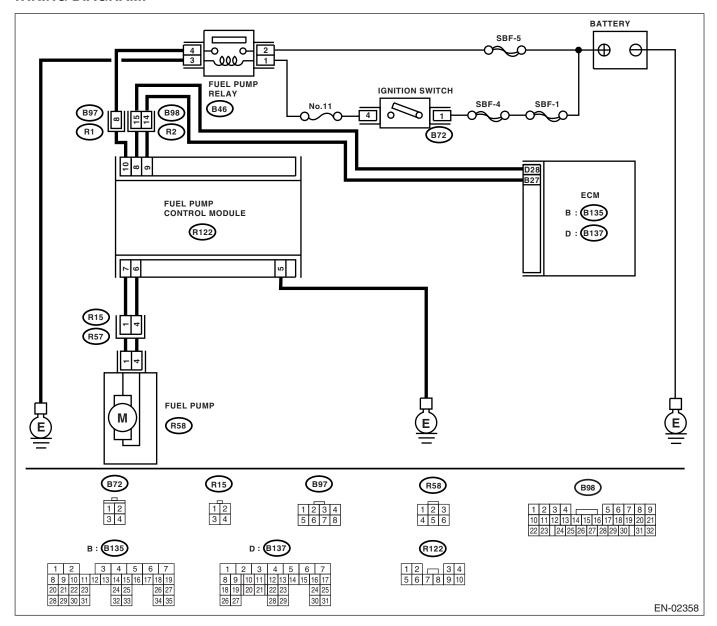
ENGINE (DIAGNOSTIC)

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND IGNITION COIL & IGNITOR ASSY CONNECTOR. Measure the resistance of harness between ECM and engine ground. Connector & terminal (B135) No. 15 — Engine ground: (B135) No. 16 — Engine ground: (B135) No. 17 — Engine ground: (B135) No. 18 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 7.	Repair ground short circuit in har- ness between ECM and ignition coil & ignitor ASSY 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.	Check fuel pump circuit. <ref. 2.5)-62,="" circuit,="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" fuel="" pump="" starting="" to=""></ref.>

E: FUEL PUMP CIRCUIT

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

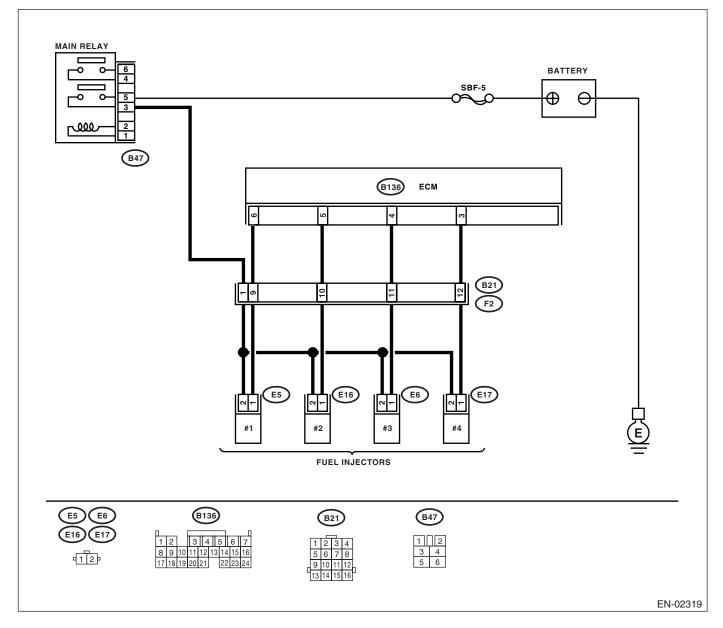


Step	Check	Yes	No
1 CHECK OPERATING SOUND OF FUEL PUMP. Make sure that fuel pump is in operation for two seconds when turning the ignition switch to ON. NOTE: Fuel pump operation check can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. 2.5)-43,="" check="" compulsory="" en(h4dotc="" mode.="" operation="" to="" valve=""></ref.>		63, FUEL INJEC- TOR CIRCUIT,	Display DTC. <ref. (dtc).="" 2.5)-="" 34,="" code="" diagnostic="" en(h4dotc="" operation,="" read="" to="" trouble=""></ref.>

F: FUEL INJECTOR CIRCUIT

CAUTION:

- Check or repair only faulty parts.
- After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
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 the injector for this check.	operating sound?	Check the fuel pressure. <ref. to<br="">ME(H4DOTC)-36, INSPECTION, Fuel Pressure.></ref.>	Go to step 2.

	Step	Check	Yes	No
2	CHECK POWER SUPPLY TO EACH FUEL INJECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector. 3) Turn the ignition switch to ON. 4) Measure the power supply voltage between fuel injector terminal and engine ground. Connector & terminal #1 (E5) No. 2 (+) — Engine ground (-): #2 (E16) No. 2 (+) — Engine ground (-): #3 (E6) No. 2 (+) — Engine ground (-): #4 (E17) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?		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 (B136) No. 6 — (E5) No. 1: (B136) No. 5 — (E16) No. 1: (B136) No. 4 — (E6) No. 1: (B136) No. 3 — (E17) 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 (B136) No. 3 — Chassis ground: (B136) No. 4 — Chassis ground: (B136) No. 5 — Chassis ground: (B136) No. 6 — Chassis ground:	Is the resistance less than 1 Ω ?	Repair 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. 2.5)-="" 258,="" diagnostic="" en(h4dotc="" general="" inspec-="" table.="" tion,="" to=""></ref.>

17.List of Diagnostic Trouble Code (DTC)

A: LIST

DTC	Item	NOTE
P0031	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)	<ref. (bank="" (dtc).="" 1="" 1),="" 2.5)-70,="" cir-cuit="" code="" control="" diagnostic="" dtc="" en(h4dotc="" heater="" ho2s="" low="" p0031="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P0032	HO2S Heater Control Circuit High (Bank 1 Sensor 1)	<ref. 2.5)-73,="" cir-<br="" control="" dtc="" en(h4dotc="" heater="" ho2s="" p0032="" to="">CUIT HIGH (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0037	HO2S Heater Control Circuit Low (Bank 1 Sensor 2)	<ref. 2.5)-75,="" cir-<br="" control="" dtc="" en(h4dotc="" heater="" ho2s="" p0037="" to="">CUIT LOW (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0038	HO2S Heater Control Circuit High (Bank 1 Sensor 2)	<ref. 2.5)-78,="" cir-<br="" control="" dtc="" en(h4dotc="" heater="" ho2s="" p0038="" to="">CUIT HIGH (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0102	Mass or Volume Air Flow Circuit Low Input	<ref. (dtc).="" 2.5)-80,="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" flow="" input,="" low="" mass="" or="" p0102="" procedure="" to="" trouble="" volume="" with=""></ref.>
P0103	Mass or Volume Air Flow Circuit High Input	<ref. (dtc).="" 2.5)-83,="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" flow="" high="" input,="" mass="" or="" p0103="" procedure="" to="" trouble="" volume="" with=""></ref.>
P0107	Manifold Absolute Pressure/Baro- metric Pressure Circuit Low Input	<ref. 2.5)-85,="" absolute="" dtc="" en(h4dotc="" manifold="" p0107="" pres-<br="" to="">SURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT, Diagnostic Pro- cedure with Diagnostic Trouble Code (DTC).></ref.>
P0108	Manifold Absolute Pressure/Baro- metric Pressure Circuit High Input	<ref. (dtc).="" 2.5)-87,="" absolute="" barometric="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input,="" manifold="" p0108="" pressure="" procedure="" to="" trouble="" with=""></ref.>
P0112	Intake Air Temperature Circuit Low Input	<ref. (dtc).="" 2.5)-89,="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input,="" intake="" low="" p0112="" procedure="" temperature="" to="" trouble="" with=""></ref.>
P0113	Intake Air Temperature Circuit High Input	<ref. (dtc).="" 2.5)-91,="" air="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input,="" intake="" p0113="" procedure="" temperature="" to="" trouble="" with=""></ref.>
P0117	Engine Coolant Temperature Circuit Low Input	<ref. (dtc).="" 2.5)-94,="" circuit="" code="" coolant="" diagnostic="" dtc="" en(h4dotc="" engine="" input,="" low="" p0117="" procedure="" temperature="" to="" trouble="" with=""></ref.>
P0118	Engine Coolant Temperature Circuit High Input	<ref. (dtc).="" 2.5)-96,="" circuit="" code="" coolant="" diagnostic="" dtc="" en(h4dotc="" engine="" high="" input,="" p0118="" procedure="" temperature="" to="" trouble="" with=""></ref.>
P0122	Throttle/Pedal Position Sensor/ Switch "A" Circuit Low Input	<ref. "a"="" (dtc).="" 2.5)-99,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input,="" low="" p0122="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P0123	Throttle/Pedal Position Sensor/ Switch "A" Circuit High Input	<ref. "a"="" (dtc).="" 2.5)-102,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input,="" p0123="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P0131	O ₂ Sensor Circuit Low Voltage (Bank 1 Sensor 1)	<ref. 2.5)-105,="" dtc="" en(h4dotc="" o<sub="" p0131="" to="">2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0132	O ₂ Sensor Circuit High Voltage (Bank 1 Sensor 1)	<ref. 2.5)-107,="" dtc="" en(h4dotc="" o<sub="" p0132="" to="">2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0134	O ₂ Sensor Circuit No Activity Detected (Bank 1 Sensor 1)	<ref. 2.5)-109,="" dtc="" en(h4dotc="" o<sub="" p0134="" to="">2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>

DTC	Item	NOTE
P0137	O ₂ Sensor Circuit Low Voltage	<ref. 2.5)-111,="" dtc="" en(h4dotc="" o<sub="" p0137="" to="">2 SENSOR CIRCUIT LOW</ref.>
	(Bank 1 Sensor 2)	VOLTAGE (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0138	O ₂ Sensor Circuit High Voltage	<ref. 2.5)-113,="" dtc="" en(h4dotc="" 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).>
P0171	System Too Lean (Bank 1)	<ref. (bank="" 1),<br="" 2.5)-115,="" dtc="" en(h4dotc="" lean="" p0171="" system="" to="" too="">Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0172	System Too Rich (Bank 1)	<ref. (bank="" 1),<br="" 2.5)-115,="" dtc="" en(h4dotc="" p0172="" rich="" system="" to="" too="">Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0222	Throttle/Pedal Position Sensor/ Switch "B" Circuit Low Input	<ref. 2.5)-118,="" dtc="" en(h4dotc="" p0222="" pedal="" position<br="" throttle="" to="">SENSOR/SWITCH "B" CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0223	Throttle/Pedal Position Sensor/ Switch "B" Circuit High Input	<ref. "b"="" (dtc).="" 2.5)-121,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input,="" p0223="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P0230	Fuel Pump Primary Circuit	<ref. 2.5)-124,="" cir-<br="" dtc="" en(h4dotc="" fuel="" p0230="" primary="" pump="" to="">CUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0245	Turbo/Super Charger Wastegate Solenoid "A" Low	<ref. "a"="" (dtc).="" 2.5)-127,="" charger="" code="" diagnostic="" dtc="" en(h4dotc="" low,="" p0245="" procedure="" solenoid="" super="" to="" trouble="" turbo="" wastegate="" with=""></ref.>
P0246	Turbo/Super Charger Wastegate Solenoid "A" High	<ref. "a"="" (dtc).="" 2.5)-129,="" charger="" code="" diagnostic="" dtc="" en(h4dotc="" high,="" p0246="" procedure="" solenoid="" super="" to="" trouble="" turbo="" wastegate="" with=""></ref.>
P0327	Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor)	<ref. (bank="" (dtc).="" 1="" 2.5)-131,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" 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. (bank="" (dtc).="" 1="" 2.5)-133,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input="" knock="" or="" p0328="" procedure="" sensor="" sensor),="" single="" to="" trouble="" with=""></ref.>
P0335	Crankshaft Position Sensor "A" Circuit	<ref. "a"="" (dtc).="" 2.5)-135,="" circuit,="" code="" crankshaft="" diagnostic="" dtc="" en(h4dotc="" p0335="" position="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P0340	Camshaft Position Sensor "A" Circuit (Bank 1 or Single Sensor)	<ref. 2.5)-137,="" camshaft="" dtc="" en(h4dotc="" p0340="" position="" sen-<br="" to="">SOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0345	Camshaft Position Sensor "A" Circuit (Bank 2)	<ref. 2.5)-139,="" camshaft="" dtc="" en(h4dotc="" p0345="" position="" sen-<br="" to="">SOR "A" CIRCUIT (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0458	Evaporative Emission Control System Purge Control Valve Circuit Low	<ref. (dtc).="" 2.5)-141,="" circuit="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc="" evaporative="" low,="" p0458="" procedure="" purge="" system="" to="" trouble="" valve="" with=""></ref.>
P0459	Evaporative Emission Control System Purge Control Valve Circuit High	<ref. (dtc).="" 2.5)-143,="" circuit="" code="" control="" diagnostic="" dtc="" emission="" en(h4dotc="" evaporative="" high,="" p0459="" procedure="" purge="" system="" to="" trouble="" valve="" with=""></ref.>
P0462	Fuel Level Sensor Circuit Low Input	<ref. 2.5)-145,="" cir-<br="" dtc="" en(h4dotc="" fuel="" level="" p0462="" sensor="" to="">CUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0463	Fuel Level Sensor Circuit High Input	<ref. 2.5)-148,="" cir-<br="" dtc="" en(h4dotc="" fuel="" level="" p0463="" sensor="" to="">CUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0502	Vehicle Speed Sensor Circuit Low Input	<ref. (dtc).="" 2.5)-151,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input,="" low="" p0502="" procedure="" sensor="" speed="" to="" trouble="" vehicle="" with=""></ref.>
P0503	Vehicle Speed Sensor Intermittent/ Erratic/High	<ref. (dtc).="" 2.5)-153,="" code="" diagnostic="" dtc="" en(h4dotc="" erratic="" high,="" intermittent="" p0503="" procedure="" sensor="" speed="" to="" trouble="" vehicle="" with=""></ref.>

DTC	Item	NOTE
P0512	Starter Request Circuit	<ref. (dtc).="" 2.5)-155,="" circuit,="" code="" diagnostic="" dtc="" en(h4dotc="" p0512="" procedure="" request="" starter="" to="" trouble="" with=""></ref.>
P0513	Incorrect Immobilizer Key	<ref. (dtc).="" code="" diagnostic="" diagnostics="" dtc="" im-20,="" immobilizer="" incorrect="" key,="" p0513="" procedure="" to="" trouble="" with=""></ref.>
P0519	Idle Control System Malfunction (Fail-Safe)	<ref. (dtc).="" (fail-safe),="" 2.5)-157,="" code="" control="" diagnostic="" dtc="" en(h4dotc="" idle="" malfunction="" p0519="" procedure="" system="" to="" trouble="" with=""></ref.>
P0545	Exhaust Gas Temperature Sensor Circuit Low-Bank 1	<ref. (dtc).="" -="" 1,="" 2.5)-160,="" bank="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" exhaust="" gas="" low="" p0545="" procedure="" sensor="" temperature="" to="" trouble="" with=""></ref.>
P0546	Exhaust Gas Temperature Sensor Circuit High-Bank 1	<ref. 2.5)-162,="" dtc="" en(h4dotc="" exhaust="" gas="" p0546="" tempera-<br="" to="">TURE SENSOR HIGH - BANK 1, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0600	Serial Communication Link	<ref. (dtc).="" 2.5)-165,="" code="" communication="" diagnostic="" dtc="" en(h4dotc="" link,="" p0600="" procedure="" serial="" to="" trouble="" with=""></ref.>
P0604	Internal Control Module Random Access Memory (RAM) Error	<ref. 2.5)-167,="" control="" dtc="" en(h4dotc="" internal="" mod-<br="" p0604="" to="">ULE READ ACCESS MEMORY (RAM) ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0605	Internal Control Module Read Access Memory (RAM) Error	<ref. 2.5)-169,="" control="" dtc="" en(h4dotc="" internal="" mod-<br="" p0605="" to="">ULE READ ONLY MEMORY (ROM) ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P0607	Control Module Performance	<ref. (dtc).="" 2.5)-170,="" code="" control="" diagnostic="" dtc="" en(h4dotc="" module="" p0607="" perfor-mance,="" procedure="" to="" trouble="" with=""></ref.>
P0638	Throttle Actuator Control Range/ Performance (Bank 1)	<ref. (bank="" (dtc).="" 1),="" 2.5)-172,="" actuator="" code="" control="" diagnostic="" dtc="" en(h4dotc="" p0638="" performance="" procedure="" range="" throttle="" to="" trouble="" with=""></ref.>
P0691	Cooling Fan 1 Control Circuit Low	<ref. (dtc).="" 1="" 2.5)-173,="" circuit="" code="" control="" cooling="" diagnostic="" dtc="" en(h4dotc="" fan="" low,="" p0691="" procedure="" to="" trouble="" with=""></ref.>
P0692	Cooling Fan 1 Control Circuit High	<ref. (dtc).="" 1="" 2.5)-176,="" circuit="" code="" control="" cooling="" diagnostic="" dtc="" en(h4dotc="" fan="" high,="" p0692="" procedure="" to="" trouble="" with=""></ref.>
P0700	Transmission Control System (MIL Request)	<ref. (dtc).="" (mil="" 2.5)-178,="" code="" control="" diagnostic="" dtc="" en(h4dotc="" p0700="" procedure="" request),="" system="" to="" transmission="" trouble="" with=""></ref.>
P0851	Neutral Switch Input Circuit Low	<ref. (dtc).="" (mt="" 2.5)-181,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input="" low="" model),="" neutral="" p0851="" procedure="" switch="" to="" trouble="" with=""></ref.>
P0852	Neutral Switch Input Circuit High	<ref. (at="" (dtc).="" 2.5)-183,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input="" model),="" neutral="" p0852="" procedure="" switch="" to="" trouble="" with=""></ref.>
P1086	Tumble Generated Valve Position Sensor 2 Circuit Low	<ref. (dtc).="" 2="" 2.5)-188,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" low,="" p1086="" position="" procedure="" sensor="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1087	Tumble Generated Valve Position Sensor 2 Circuit High	<ref. (dtc).="" 2="" 2.5)-191,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" high,="" p1087="" position="" procedure="" sensor="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1088	Tumble Generated Valve Position Sensor 1 Circuit Low	<ref. (dtc).="" 1="" 2.5)-193,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" low,="" p1088="" position="" procedure="" sensor="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1089	Tumble Generated Valve Position Sensor 1 Circuit High	<ref. (dtc).="" 1="" 2.5)-196,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" high,="" p1089="" position="" procedure="" sensor="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1090	Tumble Generated Valve System 1 (Valve Open)	<ref. (dtc).="" (valve="" 1="" 2.5)-198,="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" open),="" p1090="" procedure="" system="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1091	Tumble Generated Valve System 1 (Valve Close)	<ref. (dtc).="" (valve="" 1="" 2.5)-198,="" close),="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" p1091="" procedure="" system="" to="" trouble="" tumble="" valve="" with=""></ref.>

DTC	Item	NOTE
P1092	Tumble Generated Valve System 2 (Valve Open)	<ref. (dtc).="" (valve="" 2="" 2.5)-199,="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" open),="" p1092="" procedure="" system="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1093	Tumble Generated Valve System 2 (Valve Close)	<ref. 2.5)-200,="" dtc="" en(h4dotc="" generated="" p1093="" to="" tumble="" valve<br="">SYSTEM 2 (VALVE CLOSE), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1094	Tumble Generated Valve Signal 1 Circuit Malfunction (Open)	<ref. 2.5)-201,="" dtc="" en(h4dotc="" generated="" p1094="" to="" tumble="" valve<br="">SIGNAL 1 CIRCUIT MALFUNCTION (OPEN), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1095	Tumble Generated Valve Signal 1 Circuit Malfunction (Short)	<ref. 2.5)-203,="" dtc="" en(h4dotc="" generated="" p1095="" to="" tumble="" valve<br="">SIGNAL 1 CIRCUIT MALFUNCTION (SHORT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1096	Tumble Generated Valve Signal 2 Circuit Malfunction (Open)	<ref. 2.5)-205,="" dtc="" en(h4dotc="" generated="" p1096="" to="" tumble="" valve<br="">SIGNAL 2 CIRCUIT MALFUNCTION (OPEN), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1097	Tumble Generated Valve Signal 2 Circuit Malfunction (Short)	<ref. (dtc).="" (short),="" 2="" 2.5)-207,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" generated="" malfunction="" p1097="" procedure="" signal="" to="" trouble="" tumble="" valve="" with=""></ref.>
P1110	Atmospheric Pressure Sensor Circuit Malfunction (Low Input)	<ref. (dtc).="" (low="" 2.5)-209,="" atmospheric="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input),="" malfunction="" p1110="" pressure="" procedure="" sensor="" to="" trouble="" with=""></ref.>
P1111	Atmospheric Pressure Sensor Circuit Malfunction (High Input)	<ref. 2.5)-209,="" atmospheric="" dtc="" en(h4dotc="" p1111="" pressure<br="" to="">SENSOR CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>
P1160	Return Spring Failure	<ref. (dtc).="" 2.5)-209,="" code="" diagnostic="" dtc="" en(h4dotc="" failure,="" p1160="" procedure="" return="" spring="" to="" trouble="" with=""></ref.>
P1518	Starter Switch Circuit Low Input	<ref. (dtc).="" 2.5)-210,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input,="" low="" p1518="" procedure="" starter="" switch="" to="" trouble="" with=""></ref.>
P1544	Exhaust Gas Temperature Too High	<ref. (dtc).="" 2.5)-212,="" code="" diagnostic="" dtc="" en(h4dotc="" exhaust="" gas="" high,="" p1544="" procedure="" temperature="" to="" too="" trouble="" with=""></ref.>
P1560	Back-Up Voltage Circuit Malfunction	<ref. (dtc).="" 2.5)-214,="" back-up="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" malfunction,="" p1560="" procedure="" to="" trouble="" voltage="" with=""></ref.>
P1570	ANTENNA	<ref. (dtc).="" antenna,="" code="" diagnostic="" diagnostics="" dtc="" im-21,="" p1570="" procedure="" to="" trouble="" with=""></ref.>
P1571	Reference Code Incompatibility	<ref. (dtc).="" code="" diagnostic="" diagnostics="" dtc="" im-15,="" incompatibility,="" p1571="" procedure="" reference="" to="" trouble="" with=""></ref.>
P1572	IMM Circuit Failure (Except Antenna Circuit)	<ref. (dtc).="" (except="" antenna="" circuit="" circuit),="" code="" diagnostic="" diagnostics="" dtc="" failure="" im-16,="" imm="" p1572="" procedure="" to="" trouble="" with=""></ref.>
P1574	Key Communication Failure	<ref. (dtc).="" code="" communication="" diagnostic="" diagnostics="" dtc="" failure,="" im-19,="" key="" p1574="" procedure="" to="" trouble="" with=""></ref.>
P1576	EGI Control Module EEPROM	<ref. (dtc).="" code="" control="" diagnostic="" diagnostics="" dtc="" eeprom,="" egi="" im-20,="" module="" p1576="" procedure="" to="" trouble="" with=""></ref.>
P1577	IMM Control Module EEPROM	<ref. (dtc).="" code="" control="" diagnostic="" diagnostics="" dtc="" eeprom,="" im-20,="" imm="" module="" p1577="" procedure="" to="" trouble="" with=""></ref.>
P2088	OCV Solenoid Valve Signal A Circuit Open (Bank 1)	<ref. (bank="" (dtc).="" 1),="" 2.5)-216,="" a="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" ocv="" open="" p2088="" procedure="" signal="" solenoid="" to="" trouble="" valve="" with=""></ref.>
P2089	OCV Solenoid Valve Signal A Circuit Short (Bank 1)	<ref. (bank="" (dtc).="" 1),="" 2.5)-218,="" a="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" ocv="" p2089="" procedure="" short="" signal="" solenoid="" to="" trouble="" valve="" with=""></ref.>
P2092	OCV Solenoid Valve Signal A Circuit Open (Bank 2)	<ref. (bank="" (dtc).="" 2),="" 2.5)-220,="" a="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" ocv="" open="" p2092="" procedure="" signal="" solenoid="" to="" trouble="" valve="" with=""></ref.>
P2093	OCV Solenoid Valve Signal A Circuit Short (Bank 2)	<ref. (bank="" (dtc).="" 2),="" 2.5)-222,="" a="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" ocv="" p2093="" procedure="" short="" signal="" solenoid="" to="" trouble="" valve="" with=""></ref.>

List of Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

DTC	Item	NOTE
P2101	Throttle Actuator Control Motor Circuit Range/Performance	<ref. (dtc).="" 2.5)-224,="" actuator="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc="" motor="" p2101="" performance,="" procedure="" range="" throttle="" to="" trouble="" with=""></ref.>
P2102	Throttle Actuator Control Motor Circuit Low	<ref. (dtc).="" 2.5)-231,="" actuator="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc="" low,="" motor="" p2102="" procedure="" throttle="" to="" trouble="" with=""></ref.>
P2103	Throttle Actuator Control Motor Circuit High	<ref. (dtc).="" 2.5)-234,="" actuator="" circuit="" code="" control="" diagnostic="" dtc="" en(h4dotc="" high,="" motor="" p2103="" procedure="" throttle="" to="" trouble="" with=""></ref.>
P2109	Throttle/Pedal Position Sensor A Minimum Stop Performance	<ref. (dtc).="" 2.5)-235,="" a="" code="" diagnostic="" dtc="" en(h4dotc="" minimum="" p2109="" pedal="" performance,="" position="" procedure="" sensor="" stop="" throttle="" to="" trouble="" with=""></ref.>
P2122	Throttle/Pedal Position Sensor/ Switch "D" Circuit Low Input	<ref. "d"="" (dtc).="" 2.5)-236,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input,="" low="" p2122="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P2123	Throttle/Pedal Position Sensor/ Switch "D" Circuit High Input	<ref. "d"="" (dtc).="" 2.5)-239,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input,="" p2123="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P2127	Throttle/Pedal Position Sensor/ Switch "E" Circuit Low Input	<ref. "e"="" (dtc).="" 2.5)-242,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" input,="" low="" p2127="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P2128	Throttle/Pedal Position Sensor/ Switch "E" Circuit High Input	<ref. "e"="" (dtc).="" 2.5)-245,="" circuit="" code="" diagnostic="" dtc="" en(h4dotc="" high="" input,="" p2128="" pedal="" position="" procedure="" sensor="" switch="" throttle="" to="" trouble="" with=""></ref.>
P2135	Throttle/Pedal Position Sensor/ Switch "A"/"B" Voltage Rationality	<ref. "a"="" "b"="" (dtc).="" 2.5)-248,="" code="" diagnostic="" dtc="" en(h4dotc="" p2135="" pedal="" position="" procedure="" rationality,="" sensor="" switch="" throttle="" to="" trouble="" voltage="" with=""></ref.>
P2138	Throttle/Pedal Position Sensor/ Switch "D"/"E" Voltage Rationality	<ref. "d"="" "e"="" (dtc).="" 2.5)-253,="" code="" diagnostic="" dtc="" en(h4dotc="" p2138="" pedal="" position="" procedure="" rationality,="" sensor="" switch="" throttle="" to="" trouble="" voltage="" with=""></ref.>

18. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

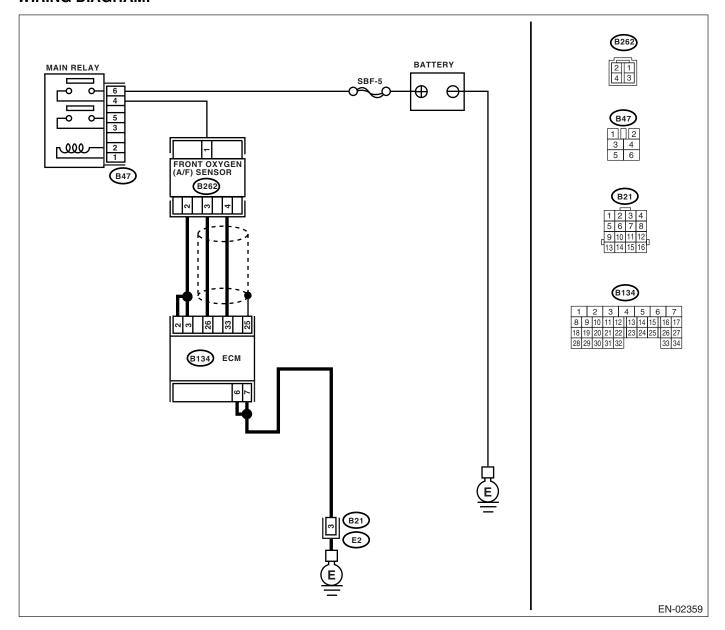
A: DTC P0031 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

Immediately at fault recognition.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC) ENGINE (DIAGNOSTIC)

	Step	Check	Yes	No
1	CHECK POWER SUPPLY TO FRONT OXY-GEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between front oxygen (A/F) sensor connector and engine ground. Connector & terminal (B262) No. 1 (+) — 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
2	CHECK GROUND CIRCUIT FOR ECM. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 6 — Chassis ground: (B134) No. 7 — 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 in harness between ECM and engine ground cable Poor contact in ECM connector. Poor contact in coupling connector
3	CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>		Repair poor contact 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.
4	CHECK OUTPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 6.	Go to step 5.
5	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-):	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Go to step 6.

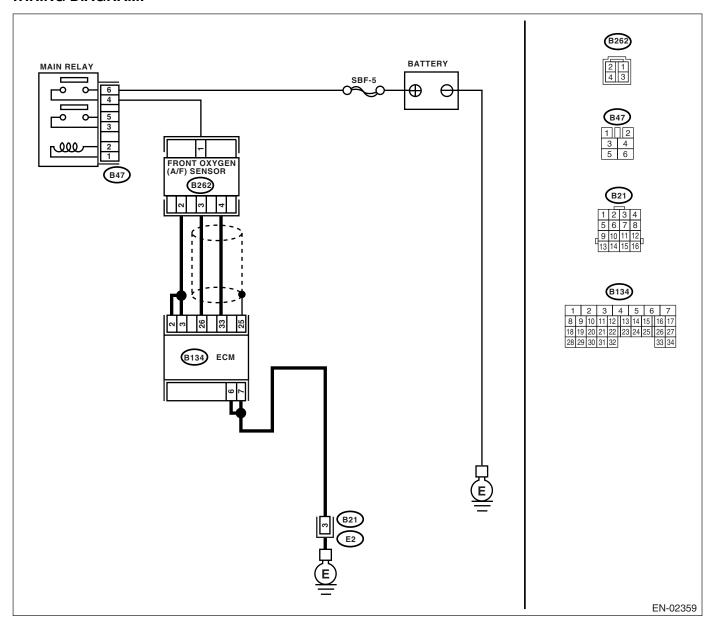
Step	Check	Yes	No
6 CHECK FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between front oxygen (A/F) sensor connector terminals. Terminals No. 1 — No. 2:	Is the resistance less than 10 Ω ?	NOTE: In this case repair	oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC 2.5)- 36, Front Oxygen</ref.>

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

Detect as soon as the malfunction occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



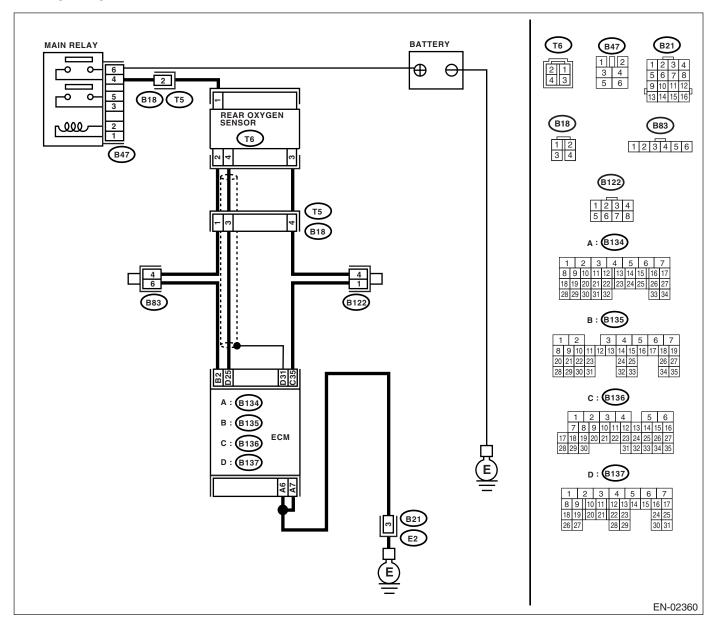
	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 3.	Go to step 2.
2	CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT. 1) Turn the ignition switch to OFF. 2) Repair 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 OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the current more than 2.3 A?	Replace the ECM. <ref. (ecm).="" 2.5)-="" 41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>	END.
3	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-):	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	END.

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

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK GROUND CIRCUIT FOR 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 (B134) No. 6 — Chassis ground: (B134) No. 7 — 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 (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation 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 (B135) No. 2 (+) — 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 (B135) No. 2 (+) — Chassis ground (-):	Does the voltage change by shaking the harness and con- nector of ECM while monitor- ing the value with voltage meter?	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 (B135) No. 2 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Replace the ECM. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol Module (ECM).></ref.>	Repair battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace the ECM. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>

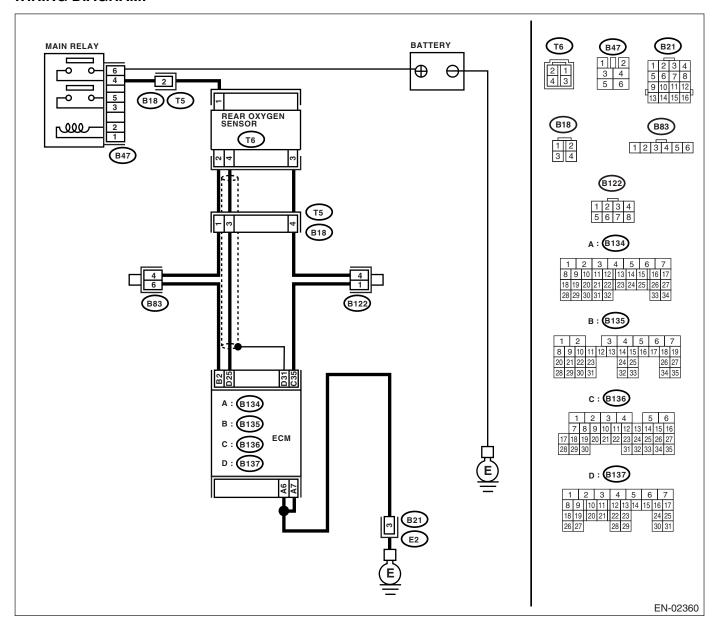
Step	Check	Yes	No
CHECK POWER SUPPLY TO REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor connector and chassis ground. Connector & terminal (B18) No. 2 (+) — Chassis ground (-):			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
CHECK REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF	Is the resistance less than 30	Repair the harness	rear oxygen sensor connector • Poor contact in coupling connector Replace the rear oxygen sensor.
2) Measure the resistance between rear oxygen sensor connector terminals. Terminals No. 1 — No. 2:	32:	NOTE: In this case repair the following: Open circuit in harness between rear oxygen sen- sor and ECM con- nector Poor contact in rear oxygen sen- sor connector Poor contact in ECM connector	<ref. td="" to<=""></ref.>
	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 chassis ground. Connector & terminal (B18) No. 2 (+) — Chassis ground (-): CHECK REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen sensor connector terminals. Terminals	 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 chassis ground. Connector & terminal (B18) No. 2 (+) — Chassis ground (-): CHECK REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen sensor connector terminals. Terminals 	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 chassis ground. Connector & terminal (B18) No. 2 (+) — Chassis ground (-): 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: 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 Poor contact in

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

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



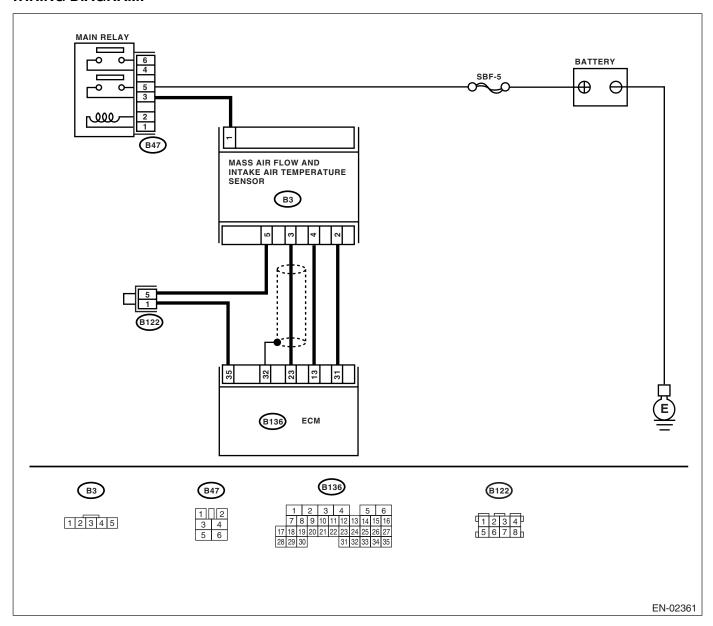
	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2	CHECK CURRENT DATA. 1) Repair battery 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 (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the current more than 7 A?	Replace the ECM. <ref. (ecm).="" 2.5)-="" 41,="" control="" engine="" fu(h4dotc="" 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.

E: DTC P0102 MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

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



	Step	Check	Yes	No
1	CONNECT SUBARU SELECT MONITOR OR	Is the voltage 0.2 — 4.7 V?	Even if the mal-	Go to step 2.
	THE OBD-II GENERAL SCAN TOOL, AND		function indicator	·
	READ DATA.		light illuminates,	
	 Turn the ignition switch to OFF. 		the circuit has	
	2) Connect the Subaru Select Monitor or the		returned to a nor-	
	OBD-II general scan tool to data link connector.		mal condition at	
	3) Turn the ignition switch to ON and the Sub-		this time. A tempo-	
	aru Select Monitor or OBD-II general scan tool		rary poor contact	
	switch to ON.		of the connector or	
	4) Start the engine.		harness may be	
	5) Connect the Subaru Select Monitor or OBD-II		the cause. Repair	
	general scan tool, and read the mass air flow		harness or con-	
	sensor voltage.		nector in the mass air flow sensor.	
	NOTE: • Subaru Select Monitor			
	For detailed operation procedure, refer to "READ		NOTE: In this case repair	
	CURRENT DATA SHOWN ON DISPLAY FOR		the following:	
	ENGINE". <ref. 2.5)-27,="" en(h4dotc="" sub-<="" th="" to=""><th></th><th> Open or ground </th><th></th></ref.>		 Open or ground 	
	aru Select Monitor.>		short circuit in har-	
	OBD-II general scan tool		ness between	
	For detailed operation procedures, refer to the		mass air flow sen-	
	OBD-II General Scan Tool Operation Manual.		sor and ECM con-	
	•		nector	
			 Poor contact in 	
			mass air flow sen-	
			sor or ECM con-	
			nector	
2	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 0.2 V?	Go to step 4.	Go to step 3.
	Measure the voltage between ECM connector			
	and chassis ground while engine is idling. Connector & terminal			
	(B136) No. 23 (+) — Chassis ground (–):			
3	CHECK INPUT SIGNAL FOR ECM (WITH	Does the voltage change by	Repair the poor	Contact the SUB-
	SUBARU SELECT MONITOR).	shaking the harness and con-	contact in ECM	ARU dealer.
	Measure the voltage between ECM connector	nector of ECM while monitor-	_	NOTE:
	and chassis ground while engine is idling.	ing the value with Subaru		Inspection by DTM
		Select Monitor?		is required, because
				probable cause is
				deterioration of mul-
				tiple parts.
4	CHECK POWER SUPPLY TO MASS AIR	Is the voltage more than 5 V?	Go to step 5.	Repair open circuit
	FLOW SENSOR.			between mass air
	1) Turn the ignition switch to OFF.			flow sensor and
	2) Disconnect the connector from mass air			main relay
	flow sensor.			
	3) Turn the ignition switch to ON.			
	Measure voltage between mass air flow sensor connector and chassis ground.			
	Connector & terminal			
	(B3) No. 1 (+) — Chassis ground (–):			
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1 Ω ?	Go to step 6	Repair open circuit
	MASS AIR FLOW SENSOR CONNECTOR.	10 1000010100 1000 111011 1 122:		between ECM and
	Turn the ignition switch to OFF.			mass air flow sen-
	2) Disconnect the connector from ECM.			sor connector.
	3) Measure the resistance of harness between			-
	ECM and mass air flow sensor connector.			
	Connector & terminal			
	(B136) No. 23 — (B3) No. 3:			
	(B136) No. 31 — (B3) No. 2:			
	(B136) No. 35 — (B3) No. 5:			

	Step	Check	Yes	No
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. 23 — Chassis ground: (B136) No. 31 — Chassis ground: (B136) No. 35 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 7.	Repair 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 poor contact in mass air flow sensor connector.	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC 2.5)- 30, Mass Air Flow and Intake Air Temperature Sen- sor.></ref.>

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

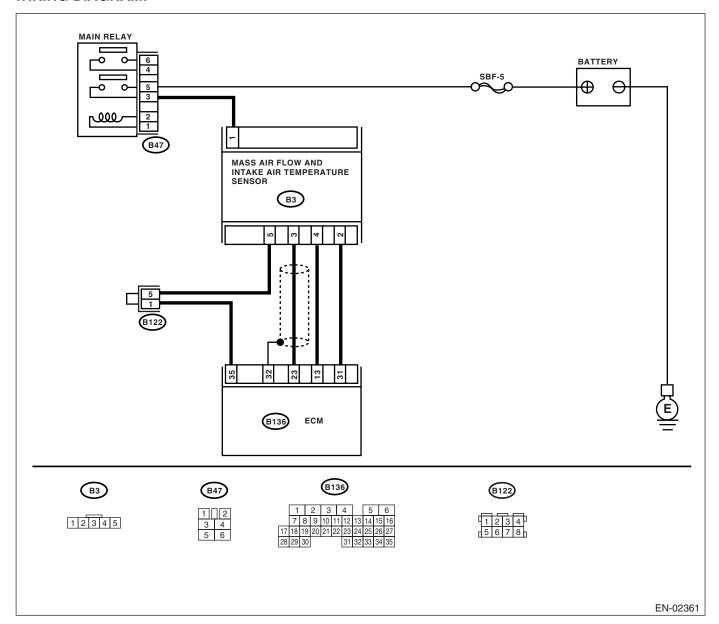
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
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 the 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) Start the engine. 5) Connect the Subaru Select Monitor or OBD-II general scan tool, and read the mass air flow sensor voltage. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the voltage 0.2 — 4.7 V?	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time.	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from mass airflow sensor. 3) Turn the ignition switch to ON. 4) Measure 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 battery short circuit in har- ness between mass air flow sen- sor connector 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 of harness between ECM connector and mass air flow sensor connector. Connector & terminal (B3) No. 2 — (B136) No. 31:	Is the resistance less than 1 Ω ?	` ,	Repair open circuit in harness between mass air flow sensor con- nector and ECM connector.

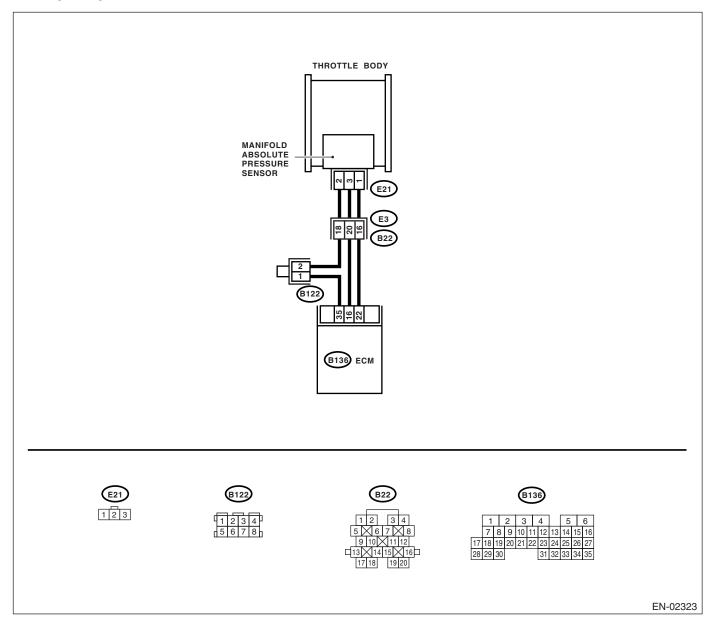
G: DTC P0107 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 4.5 V?	Go to step 3.	Go to step 2.
	Measure the voltage between ECM connector and chassis ground.			
	Connector & terminal (B136) No. 16 (+) — Chassis ground (–):			

	Step	Check	Yes	No
2	CHECK INPUT SIGNAL FROM ECM.	Does the voltage change by	Repair the poor	Contact the SUB-
2	Measure the voltage between ECM connector	shaking the harness and con-	contact in ECM	ARU dealer.
	and chassis ground.	nector of ECM while monitor-	connector.	
	Connector & terminal	ing the value with voltage	CONTICOTOR.	NOTE: Inspection by DTM
	(B136) No. 16 (+) — Chassis ground (–):	meter?		is required, because
	(= 100) 1101 10 (1) 01110010 3 1011111 (7)			probable cause is
				deterioration of mul-
				tiple parts.
3	CHECK INPUT SIGNAL FROM ECM.	Is the voltage less than 0.7 V?	Go to step 4.	Contact the SUB-
	Measure the voltage between ECM and chas-	, and the second	'	ARU dealer.
	sis ground.			NOTE:
	Connector & terminal			Inspection by DTM
	(B136) No. 22 (+) — Chassis ground (–):			is required, because
				probable cause is
				deterioration of mul-
				tiple parts.
4	CHECK HARNESS BETWEEN ECM AND	Is the voltage more than 4.5 V?	Go to step 5.	Repair the open
	MANIFOLD ABSOLUTE PRESSURE SEN-			circuit in harness
	SOR CONNECTOR.			between ECM and
	Turn the ignition switch to OFF.			manifold absolute
	2) Disconnect the connector from the manifold			pressure sensor
	absolute pressure sensor. 3) Turn the ignition switch to ON.			connector.
	4) Measure the voltage between manifold			
	absolute pressure sensor connector and			
	engine ground.			
	Connector & terminal			
	(E21) No. 3 (+) — Engine ground (–):			
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 6.	Repair the open
	MANIFOLD ABSOLUTE PRESSURE SEN-	Ω?		circuit in harness
	SOR CONNECTOR.			between ECM and
	 Turn the ignition switch to OFF. 			manifold absolute
	2) Disconnect the connector from ECM.			pressure sensor
	3) Measure the resistance of harness			connector.
	between ECM and manifold absolute pressure			
	sensor connector. Connector & terminal			
	(B136) No. 35 — (E21) No. 2:			
6	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Co to oton 7	Repair the ground
0	MANIFOLD ABSOLUTE PRESSURE SEN-	$M\Omega$?	Go to step 7.	short circuit in har-
	SOR CONNECTOR.	10152:		ness between
	Measure the resistance of harness between			ECM and mani-
	manifold absolute pressure sensor connector			fold absolute pres-
	and engine ground.			sure sensor
	Connector & terminal			connector.
	(E21) No. 1 — Engine ground:			
7	CHECK POOR CONTACT.	Is there poor contact in mani-	Repair poor con-	Replace the mani-
	Check poor contact in manifold absolute pres-	fold absolute pressure sensor	tact in manifold	fold absolute pres-
	sure sensor connector.	connector?	absolute pressure	sure sensor. <ref.< th=""></ref.<>
			sensor connector.	to FU(H4DOTC
				2.5)-31, Manifold
				Absolute Pres-
				sure Sensor.>

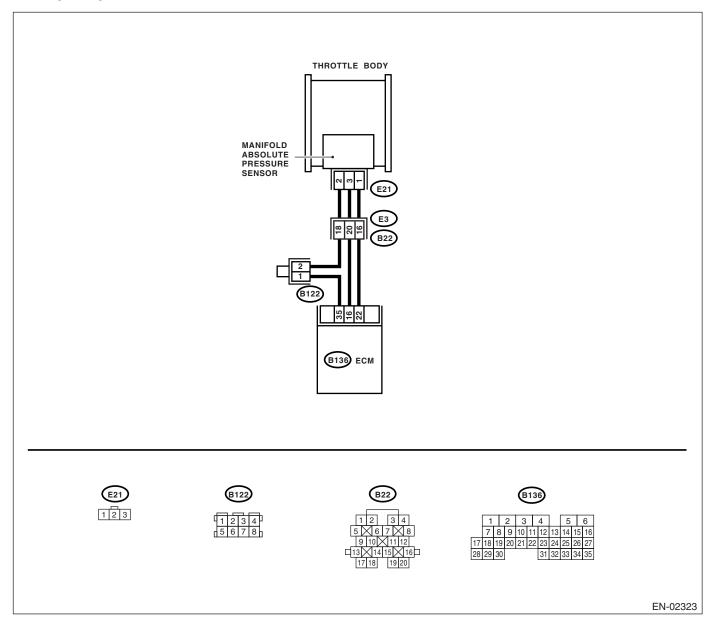
H: DTC P0108 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 4.5 V?	Go to step 3.	Go to step 2.
	Measure the voltage between ECM connector and chassis ground.			
	Connector & terminal (B136) No. 16 (+) — Chassis ground (–):			

	Step	Check	Yes	No
2	CHECK INPUT SIGNAL FROM ECM.	Does the voltage change by	Repair the poor	Contact the SUB-
	Measure the voltage between ECM connector	shaking the harness and con-	contact in ECM	ARU dealer.
	and chassis ground.	nector of ECM while monitor-	connector.	NOTE:
	Connector & terminal	ing the value with voltage		Inspection by DTM
	(B136) No. 16 (+) — Chassis ground (–):	meter?		is required, because
				probable cause is
				deterioration of mul-
	OUEOK INDUT OLONAL EDOM FOR	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 1 1	tiple parts.
3	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector	Is the voltage more than 4.5 V?	Go to step 4.	Contact the SUB- ARU dealer.
	and chassis ground.			
	Connector & terminal			NOTE: Inspection by DTM
	(B136) No. 22 (+) — Chassis ground (-):			is required, because
	()			probable cause is
				deterioration of mul-
				tiple parts.
4	CHECK HARNESS BETWEEN ECM AND	Is the voltage more than 4.5 V?	Go to step 5.	Repair the open
	MANIFOLD ABSOLUTE PRESSURE SEN-			circuit in harness
	SOR CONNECTOR.			between ECM and
	1) Turn the ignition switch to OFF.			manifold absolute
	2) Disconnect the connector from the manifold			pressure sensor
	absolute pressure sensor.			connector.
	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 (–):			
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 6.	Repair the open
	MANIFOLD ABSOLUTE PRESSURE SEN-	Ω?		circuit in harness
	SOR CONNECTOR. 1) Turn the ignition switch to OFF			between ECM and manifold absolute
	 Turn the ignition switch to OFF. Disconnect the connector from ECM. 			pressure sensor
	Measure the resistance of harness			connector.
	between ECM and manifold absolute pressure			
	sensor connector.			
	Connector & terminal			
	(B136) No. 22 — (E21) No. 1:			
6	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 7.	Repair the open
	MANIFOLD ABSOLUTE PRESSURE SEN-	Ω?		circuit in harness
	SOR CONNECTOR.			between ECM and
	Measure the resistance of harness between ECM and manifold absolute pressure sensor			manifold absolute pressure sensor
	connector.			connector.
	Connector & terminal			osimootoi.
	(B136) No. 35 — (E21) No. 2:			
7	CHECK POOR CONTACT.	Is there poor contact in mani-	Repair poor con-	Replace the mani-
	Check poor contact in manifold absolute pres-	fold absolute pressure sensor	tact in manifold	fold absolute pres-
	sure sensor connector.	connector?	absolute pressure	sure sensor. <ref.< td=""></ref.<>
			sensor connector.	to FU(H4DOTC
				2.5)-31, Manifold
				Absolute Pressure Sensor.>
				3ult 3tli30l.>

I: DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

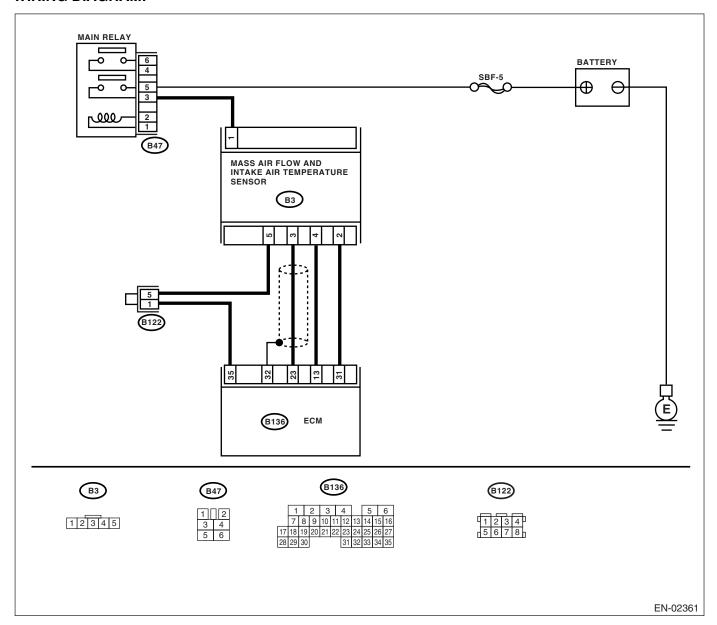
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake air temperature	Is engine coolant temperature more than 55°C (131°F)?	Go to step 2.	Repair the poor contact. NOTE:
	sensor signal using Subaru Select Monitor or the OBD-II general scan tool.			In this case repair the following: • Poor contact in
	NOTE: • Subaru Select Monitor			mass air flow and
	For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DIS-			intake air tempera- ture sensor
	PLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""></ref.>			Poor contact in ECM
	 OBD-II general scan tool For detailed operation procedures, refer to the 			 Poor contact in joint connector
	OBD-II General Scan Tool Operation Manual.			
2	CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from mass air flow and intake air temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.	Is the value less than –36°C (–33°F)?	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC 2.5)- 30, Mass Air Flow and Intake Air Temperature Sen- sor.></ref.>	Repair ground short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.
	NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>			

J: DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

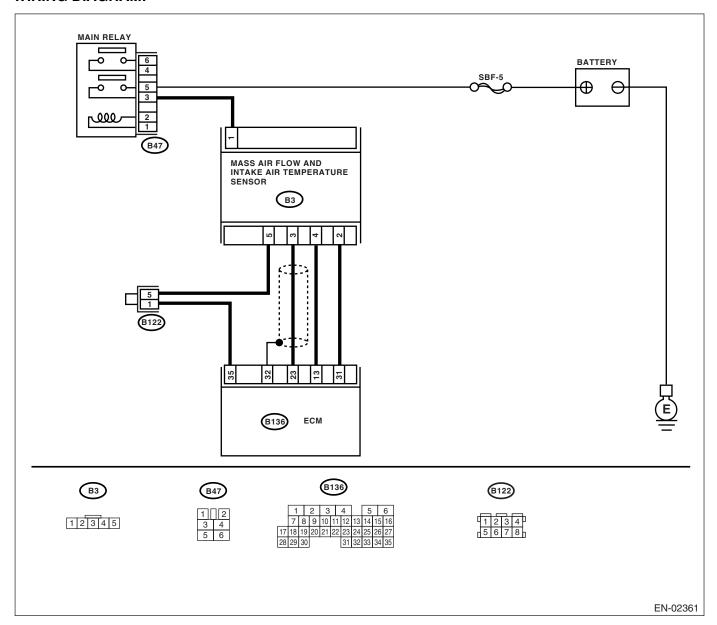
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is the value less than –36°C	Go to step 2.	Repair the poor
'	1) Start the engine.	(-33°F)?	Go to step 2.	contact.
	2) Read the data of intake air temperature	(66 1):		
	sensor signal using Subaru Select Monitor or			NOTE: In this case repair
	the OBD-II general scan tool.			the following:
	NOTE:			Poor contact in
	Subaru Select Monitor			mass air flow and
	For detailed operation procedure, refer to			intake air tempera-
	"READ CURRENT DATA SHOWN ON DIS-			ture sensor
	PLAY FOR ENGINE". <ref. en(h4dotc<="" th="" to=""><th></th><th></th><th> Poor contact in </th></ref.>			 Poor contact in
	2.5)-27, Subaru Select Monitor.>			ECM
	OBD-II general scan tool			Poor contact in
	For detailed operation procedures, refer to the			joint connector
	OBD-II General Scan Tool Operation Manual.			
2	CHECK HARNESS BETWEEN MASS AIR	Is the voltage more than 10 V?	Repair the battery	Go to step 3.
	FLOW AND INTAKE AIR TEMPERATURE		short circuit in har-	
	SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF.		ness between mass air flow and	
	2) Disconnect the connector from mass air		intake air tempera-	
	flow and intake air temperature sensor.		ture sensor and	
	3) Measure the voltage between mass air flow		ECM connector.	
	and intake air temperature sensor connector			
	and engine ground.			
	Connector & terminal			
	(B3) No. 4 (+) — Engine ground (–):			
3	CHECK HARNESS BETWEEN MASS AIR	Is the voltage more than 10 V?	Repair the battery	Go to step 4.
	FLOW AND INTAKE AIR TEMPERATURE		short circuit in har-	
	SENSOR AND ECM CONNECTOR.		ness between	
	1) Turn the ignition switch to ON.		mass air flow and	
	Measure the voltage between mass air flow and intake air temperature sensor connector		intake air tempera- ture sensor and	
	and engine ground.		ECM connector.	
	Connector & terminal		LOW COMMODICI	
	(B3) No. 4 (+) — Engine ground (–):			
4	CHECK HARNESS BETWEEN MASS AIR	Is the voltage more than 4 V?	Go to step 5.	Repair the harness
	FLOW AND INTAKE AIR TEMPERATURE	l and total go more many to		and connector.
	SENSOR AND ECM CONNECTOR.			NOTE:
	Measure the voltage between mass air flow			In this case repair
	and intake air temperature sensor and mani-			the following:
	fold absolute pressure sensor connector and			 Open circuit in
	engine ground.			harness between
	Connector & terminal			mass air flow and
	(B3) No. 4 (+) — Engine ground (–):			intake air tempera-
				ture sensor and
				ECM connectorPoor contact in
				mass air flow and
				intake air tempera-
				ture sensor
				Poor contact in
				ECM
				 Poor contact in
L_				joint connector

Step	Check	Yes	No
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. to<br="">FU(H4DOTC 2.5)- 30, Mass Air Flow and Intake Air Temperature Sen- sor.></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

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

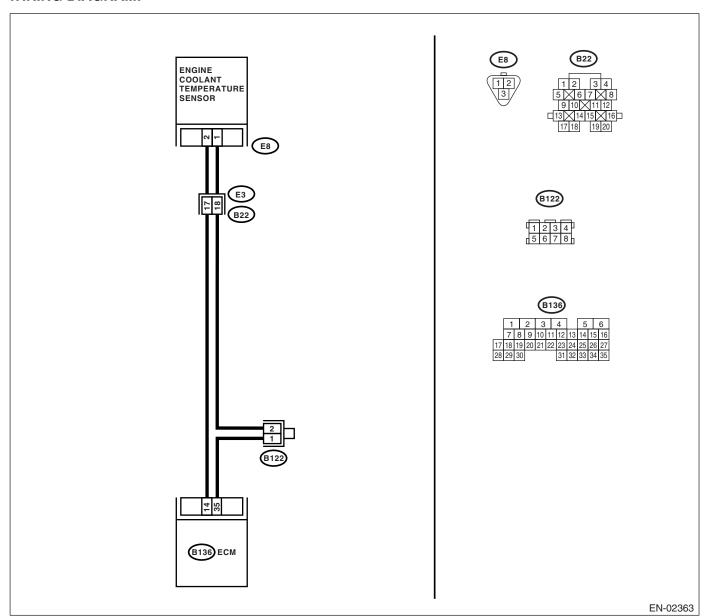
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. Start the engine. Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. 	Is engine coolant temperature more than 120°C (248°F)?	Go to step 2.	Repair the poor contact. NOTE: In this case repair the following:
	NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>			 Poor contact in engine coolant temperature sensor Poor contact in ECM Poor contact in coupling connector Poor contact in joint connector
2	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the engine coolant temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the temperature more than –40°C (–40°F)?	Replace the engine coolant temperature sensor. <ref. 2.5)-26,="" coolant="" engine="" fu(h4dotc="" sensor.="" temperature="" to=""></ref.>	Repair ground short circuit in harness between engine coolant temperature sensor and ECM connector.

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

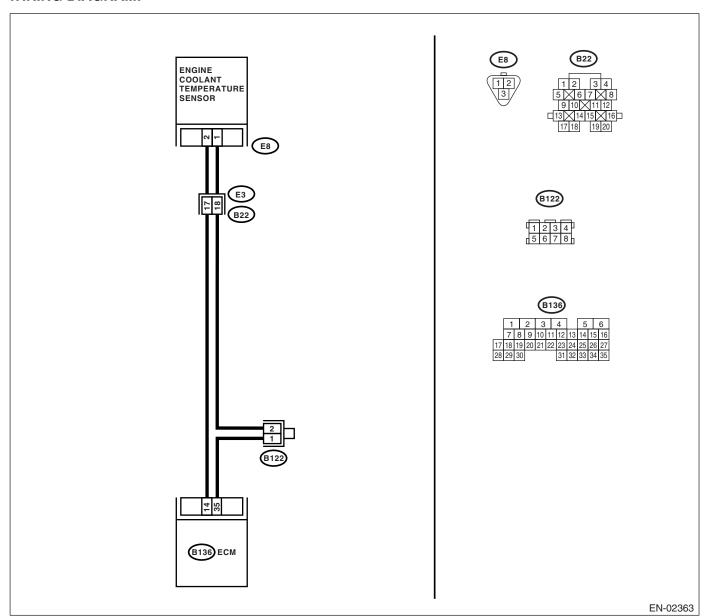
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is the value less than -40°C	Go to step 2.	Repair the poor
	 Start the engine. 	(-40°F)?		contact.
	2) Read the data of engine coolant tempera-			NOTE:
	ture sensor signal using Subaru Select Monitor			In this case repair
	or the OBD-II general scan tool.			the following:
	NOTE:			Poor contact in
	Subaru Select Monitor			engine coolant tem-
	For detailed operation procedure, refer to			perature sensor
	"READ CURRENT DATA SHOWN ON DIS-			 Poor contact in ECM
	PLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""></ref.>			Poor contact in
	 OBD-II general scan tool 			coupling connector
	For detailed operation procedures, refer to the			Poor contact in
	OBD-II General Scan Tool Operation Manual.			joint connector
2	CHECK HARNESS BETWEEN ENGINE	Is the voltage more than 10 V?	Repair battery	Go to step 3.
	COOLANT TEMPERATURE SENSOR AND	is the voltage more than 10 v:	short circuit in har-	GO 10 316P 3.
	ECM CONNECTOR.		ness between ECM	
	Turn the ignition switch to OFF.		and engine coolant	
	2) Disconnect the connectors from the engine		temperature sen-	
	coolant temperature sensor.		sor connector.	
	3) Measure the voltage between engine cool-			
	ant temperature sensor connector and engine			
	ground.			
	Connector & terminal			
	(E8) No. 2 (+) — Engine ground (–):			
3	CHECK HARNESS BETWEEN ENGINE	Is the voltage more than 10 V?	Repair battery	Go to step 4.
	COOLANT TEMPERATURE SENSOR AND		short circuit in har-	
	ECM CONNECTOR.		ness between	
	Turn the ignition switch to ON.		ECM and engine	
	2) Measure the voltage between engine cool-		coolant tempera-	
	ant temperature sensor connector and engine ground.		ture sensor con- nector.	
	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		•	ness and connec-
	ECM CONNECTOR.			tor.
	Measure the voltage between engine coolant			NOTE:
	temperature sensor connector and engine			In this case repair
	ground.			the following:
	Connector & terminal			Open circuit in
	(E8) No. 2 (+) — Engine ground (–):			harness between
				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
				joint connector

	Step	Check	Yes	No
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:	Check Is the resistance less than 5 Ω?		No 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
				 sor connector Poor contact in ECM connector. Poor contact in coupling connector Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

M: DTC P0122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

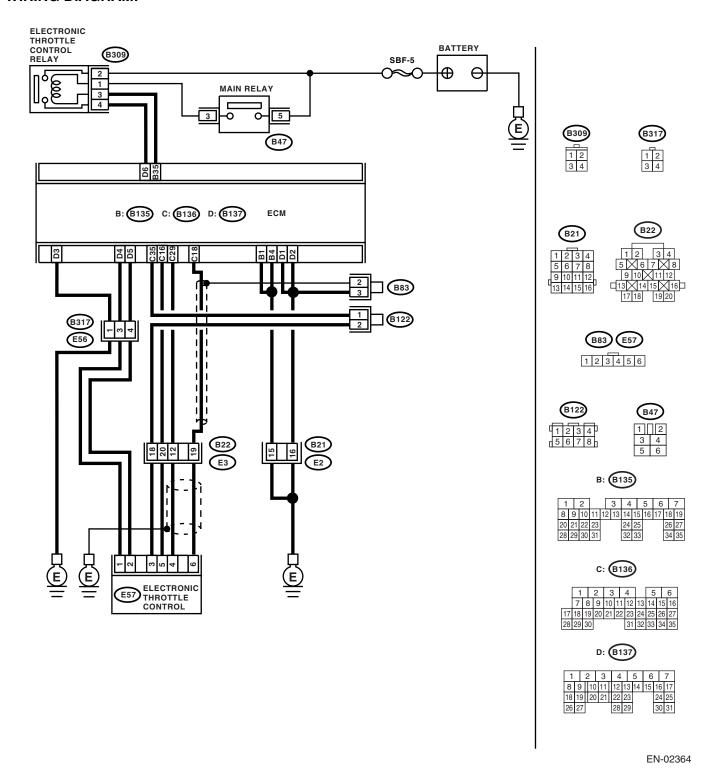
Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM con-	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
	nector and terminal. Connector & terminal (B136) No. 29 (+) — (B136) No. 35 (-):			
	 Check the voltage change by shaking the harness and connector of ECM, engine har- ness connector and electronic throttle control connector. 			
2	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact in con- nector between ECM and elec- tronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 16 — (E57) No. 5:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B136) No. 18 — Chassis ground: (B136) No. 16 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the chassis short circuit of harness.
5	CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 4) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>
6	CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 6 — Engine ground:	Is the resistance more than 10 Ω ?	Repair poor contact of electronic throttle control connector. Replace the electronic throttle control if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

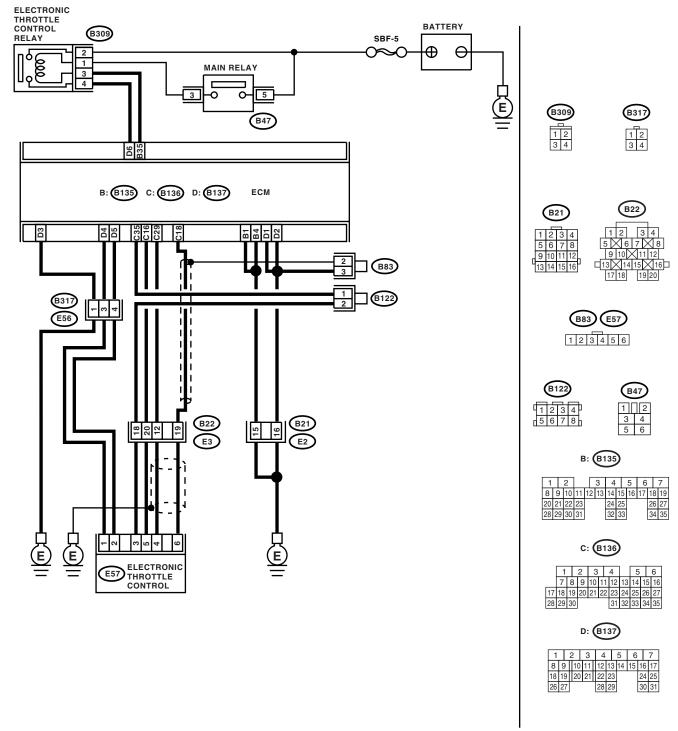
TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02364

	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.	Is the voltage less than 4.63	Go to step 2.	Go to step 3.
	 Turn the ignition switch to ON. 	V?		
	2) Read the data of main throttle sensor signal			
	using Subaru Select Monitor.			
	3) Check the voltage change by shaking the har-			
	ness and connector of ECM, engine harness con-			
	nector and electronic throttle control connector.			

	Step	Check	Yes	No
2	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact in con- nector between ECM and elec- tronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 18 — (E57) No. 6: (B136) No. 35 — (E57) No. 3:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>
5	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 3) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value	Is the voltage more than 10 V?	Go to step 6.	Repair battery short circuit in har- ness between ECM connector and electronic throttle control connector.
6	with voltage meter. CHECK SENSOR OUTPUT POWER SUP-PLY. 1) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 6 (+) — Engine ground (-): 2) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage less than 10 V?	Go to step 7.	Repair battery short circuit in har- ness between ECM connector and electronic throttle control connector.
7	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B136) No. 18 — (B136) No. 16:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Repair poor contact in harness. Repair the electronic throt- tle control.	Repair short circuit to sensor power supply.

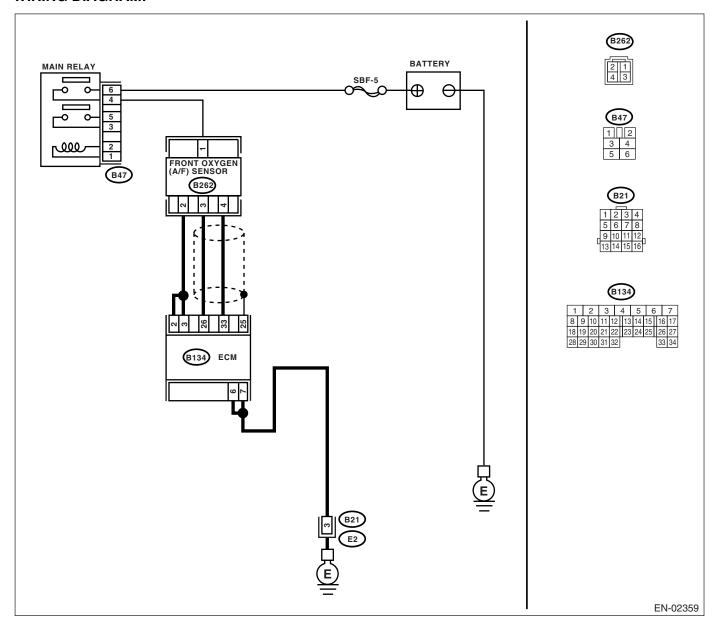
ENGINE (DIAGNOSTIC)

O: DTC P0131 O₂ SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1) DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



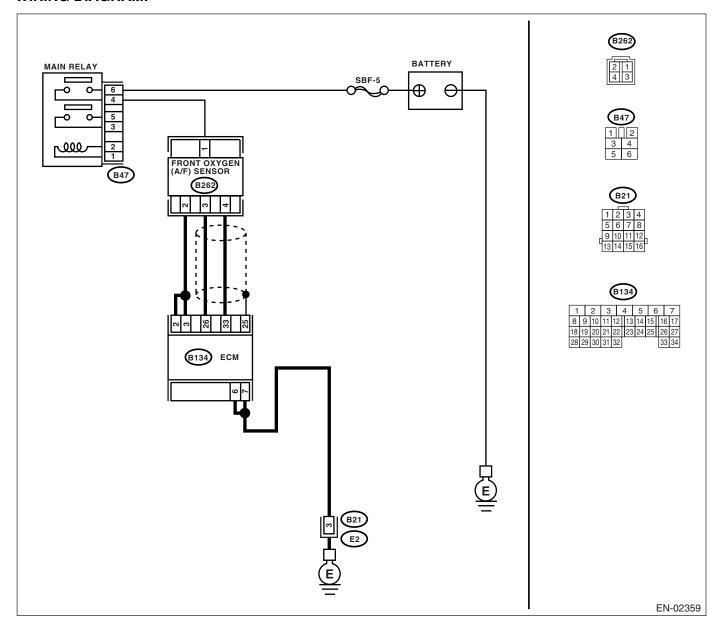
Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B134) No. 26 — Chassis ground: (B134) No. 33 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	•	Repair ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

P: DTC P0132 O₂ SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1) DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to ON. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 26 (+) — Chassis ground (-): (B134) No. 33 (+) — Chassis ground (-):	Is the voltage more than 8 V?		Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

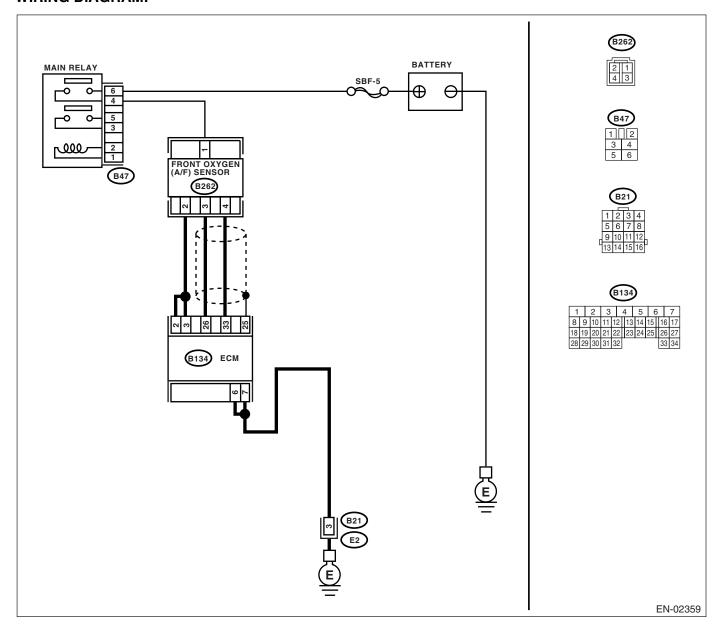
Q: DTC P0134 O_2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



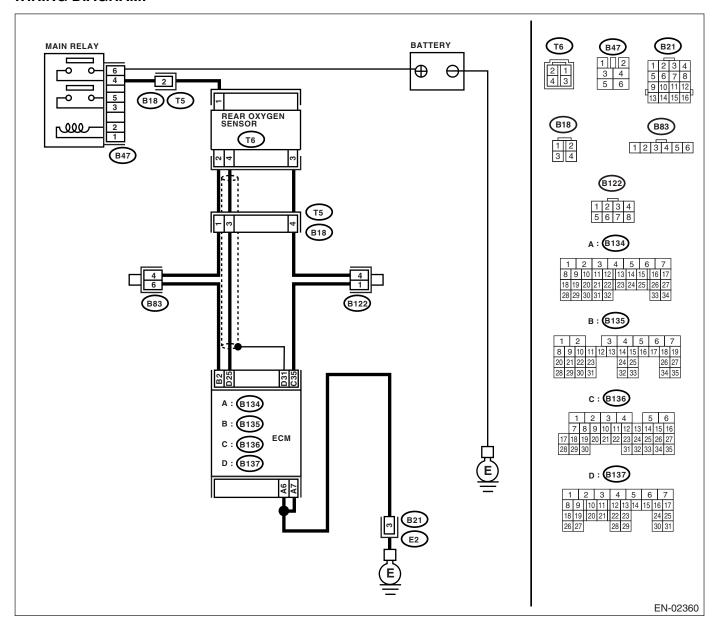
	Step	Check	Yes	No
FRC TOF 1) 7 2) E front 3) M ECM	, , , , , , , , , , , , , , , , , , , ,	Is the resistance less than 1 Ω ?	oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC 2.5)-</ref.>	Repair open circuit in harness between ECM and front oxy- gen (A/F) sensor connector.

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

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.		Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" 2.5)-65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""></ref.>	Go to step 2.

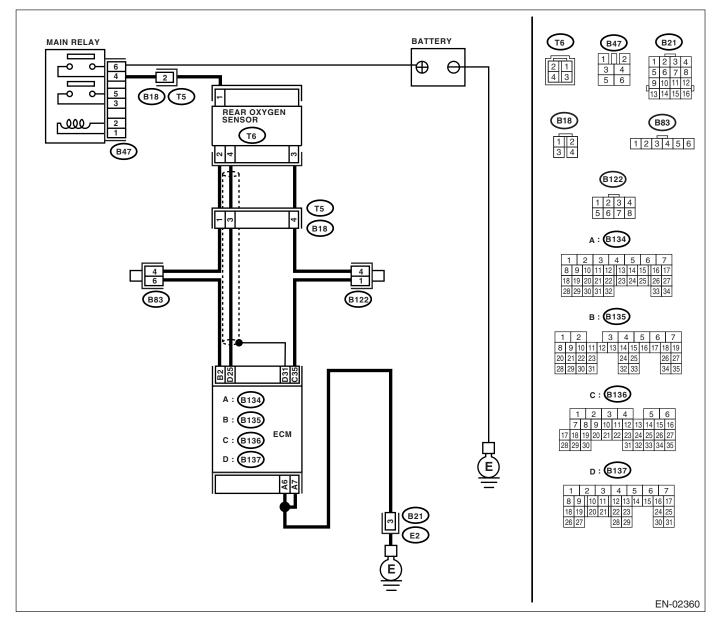
	Step	Check	Yes	No
2	CHECK REAR OXYGEN SENSOR DATA.	Does the value fluctuate?	Go to step 6.	Go to step 3.
	1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes. 2) Read the data of rear oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general Scan Tool Operation Manual.</ref.>			
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen (A/F) 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 2.5)- 38, Rear Oxygen Sensor.></ref.>
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor connector. Connector & terminal (B137) No. 25 — (T6) No. 4:	Is the resistance more than 3 Ω ?	Repair open circuit in harness between ECM and rear oxy- gen sensor connec- tor.	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 chassis ground. Connector & terminal (T6) No. 4 (+) — Chassis ground (-):	Is the voltage more than 0.2 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC 2.5)- 38, Rear Oxygen Sensor.></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
6	CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items: • Loose part of exhaust system and incomplete installation • Damage (crack, hole etc.) of parts • Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there a fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC 2.5)- 38, Rear Oxygen Sensor.></ref.>

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

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.		Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" 2.5)-65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""></ref.>	Go to step 2.

	Step	Check	Yes	No
2	CHECK REAR OXYGEN SENSOR DATA.	Does the value fluctuate?	Go to step 6.	Go to step 3.
	 Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes. Read the data of rear 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 "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual. 			
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen (A/F) 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 2.5)- 38, Rear Oxygen Sensor.></ref.>
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor connector. Connector & terminal (B137) No. 25 — (T6) No. 4:	Is the resistance more than 3 Ω ?	Repair open circuit in harness between ECM and rear oxy- gen sensor connec- tor.	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 chassis ground. Connector & terminal (T6) No. 4 (+) — Chassis ground (-):	Is the voltage more than 0.2 V?	oxygen sensor. <ref. to<br="">FU(H4DOTC 2.5)- 38, Rear Oxygen Sensor.></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
6	CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items: • Loose part of exhaust system and incomplete installation • Damage (crack, hole etc.) of parts • Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there a fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC 2.5)- 38, Rear Oxygen Sensor.></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

T: DTC P0171 SYSTEM TOO LEAN (BANK 1)

NOTE

For diagnostic procedure, refer to DTC P0172. <Ref. to EN(H4DOTC 2.5)-115, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

U: DTC P0172 SYSTEM TOO RICH (BANK 1)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK EXHAUST SYSTEM.	Are there holes or loose bolts on exhaust system?	Repair 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 air intake system.	Go to step 3.
3	CHECK FUEL PRESSURE. Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel. 1) Release the fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for five more seconds. (4) Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose from fuel filter, and connect the fuel pressure gauge. 4) Install the fuel filler cap. 5) Start the engine and idle while gear position is neutral. 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Release fuel pressure before removing the fuel pressure gauge. NOTE: If fuel pressure does not increase, squeeze the	Is measured value 284 — 314 kPa (2.9 — 3.2 kg/cm², 41 — 46 psi)?	Go to step 4.	Repair the following items. Fuel pressure is too high: Clogged fuel return line or bent hose Fuel pressure is too low: Improper fuel pump discharge Clogged fuel supply line
	 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Release fuel pressure before removing the fuel pressure gauge. 			

	Step	Check	Yes	No
4	CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Release fuel pressure before removing the fuel pressure gauge. NOTE: • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If out of specification as measured at this step, check or replace pressure regulator and pressure regulator vacuum hose.	Is measured value 206 — 235 kPa (2.1 — 2.4 kg/cm², 30 — 34 psi)?	Go to step 5.	Repair the following items. Fuel pressure is 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 the OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is engine coolant temperature more than 60°C (140°F)?	Go to step 6.	Replace the engine coolant temperature sensor. <ref. 2.5)-26,="" coolant="" engine="" fu(h4dotc="" sensor.="" temperature="" to=""></ref.>
6	CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR 1) Start and warm-up the engine until engine 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 the OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the measured value within the following? 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. 2.5)-30,="" air="" and="" flow="" fu(h4dotc="" intake="" mass="" sensor.="" temperature="" to=""></ref.>

Step	Check	Yes	No
TEMPERATURE SENSOR 1) Start and warm-up the engine until engine 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 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 the OBD-II general scan too NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	ture from intake air temperature, and is the value –10 — 50°C (14 — 122°F)?	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.	Check mass air flow and intake air temperature sensor. <ref. 2.5)-30,="" air="" and="" flow="" fu(h4dotc="" intake="" mass="" sensor.="" temperature="" to=""></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

V: DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

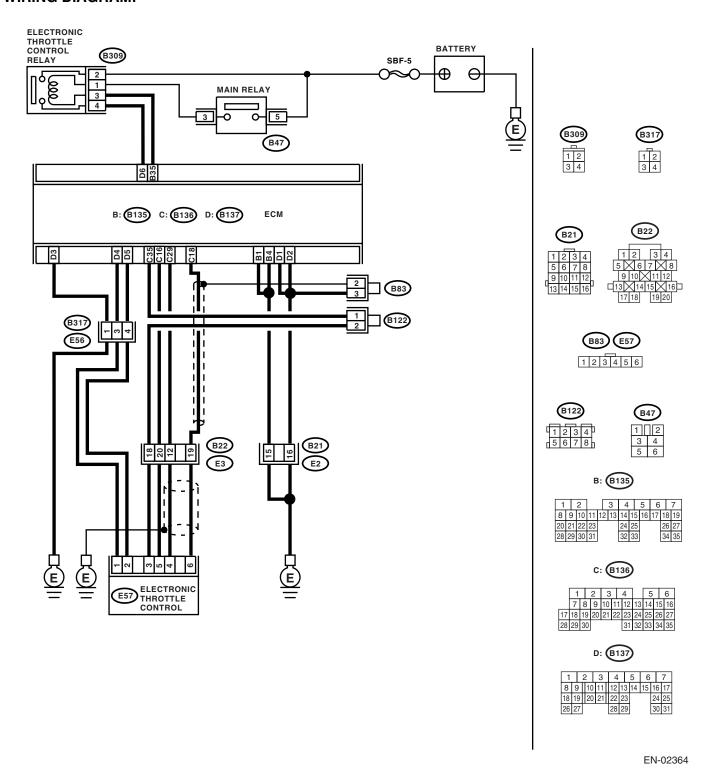
Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.	Is the voltage more than 0.8 V?		Go to step 3.
	 Turn the ignition switch to ON. Measure the voltage between ECM connector and terminal. Connector & terminal (B136) No. 29 (+) — (B136) No. 35 (-): Check the voltage change by shaking the harness and connector of ECM, engine harness connector and electronic throttle control 	is the voltage more than 0.0 v.	G0 10 Step 2.	Cio to step 3.
	connector.			-
2	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 16 — (E57) No. 5:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B136) No. 16 — Chassis ground: (B136) No. 29 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the chassis short circuit of harness.
5	CHECK SENSOR POWER SUPPLY. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 4) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective.
6	CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 4 — Engine ground:	Is the resistance more than 10 Ω ?	Repair poor contact of electronic throttle control connector. Replace the electronic throttle control if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

W: DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

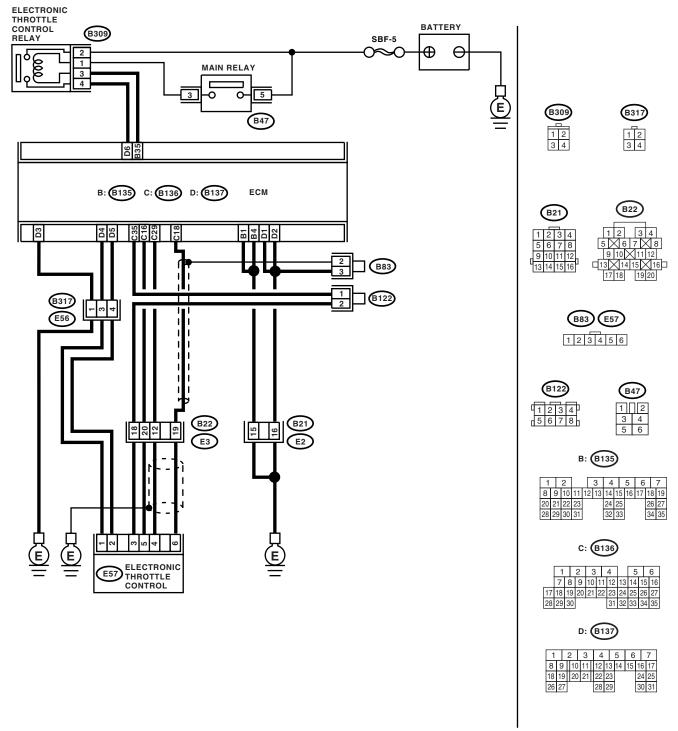
TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02364

	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.	Is the voltage less than 4.73	Go to step 2.	Go to step 3.
	 Turn the ignition switch to ON. 	V?		
	2) Read the data of sub throttle sensor signal			
	using Subaru Select Monitor.			
	3) Check the voltage change by shaking the har-			
	ness and connector of ECM, engine harness con-			
L	nector and electronic throttle control connector.			

	Step	Check	Yes	No
2	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	tronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 29 — (E57) No. 4: (B136) No. 35 — (E57) No. 3:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defec- tive. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol Module (ECM).></ref.>
5	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 4) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage more than 10 V?	Go to step 6.	Repair battery short circuit in har- ness between ECM connector and electronic throttle control connector.
6	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 4 (+) — Engine ground (-): 2) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage less than 10 V?	Go to step 7.	Repair battery short circuit in har- ness between ECM connector and electronic throttle control connector.
7	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between connector terminals. Connector & terminal (B136) No. 29 — (B136) No. 16:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact. Replace the electronic throttle control if defective.	Sensor power sup- ply circuit may be shorted.

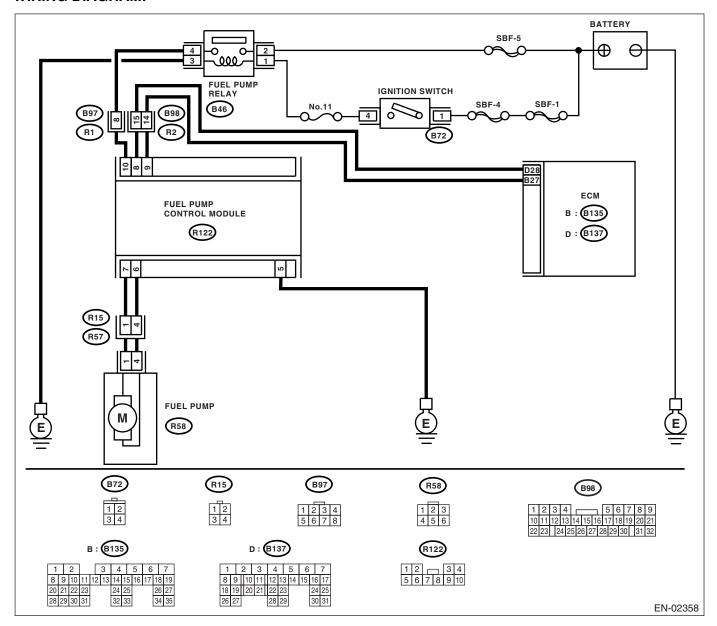
X: DTC P0230 FUEL PUMP PRIMARY CIRCUIT

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
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. 6 — (R58) No. 4: (R122) No. 7 — (R58) No. 1:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair 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. 6 — Chassis ground: (R122) No. 7 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 5.	Repair ground short circuit between fuel pump control unit and fuel pump.
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 in harness between fuel pump control unit and ECM connector. Connector & terminal (R122) No. 8 — (B137) No. 28: (R122) No. 9 — (B135) No. 27:	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

	Step	Check	Yes	No
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. 8 — Chassis ground: (R122) No. 9 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	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.	Go to step 8.
8	CHECK EXPERIENCE OF RUNNING OUT OF FUEL.	Did the vehicle experience run- ning out of fuel?	Finish the diagnosis. NOTE: DTC record may be conducted as a result of fuel pump idling while running out of gas.	44, Fuel Pump Control Unit.>

ENGINE (DIAGNOSTIC)

Y: DTC P0245 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" LOW DTC DETECTING CONDITION:

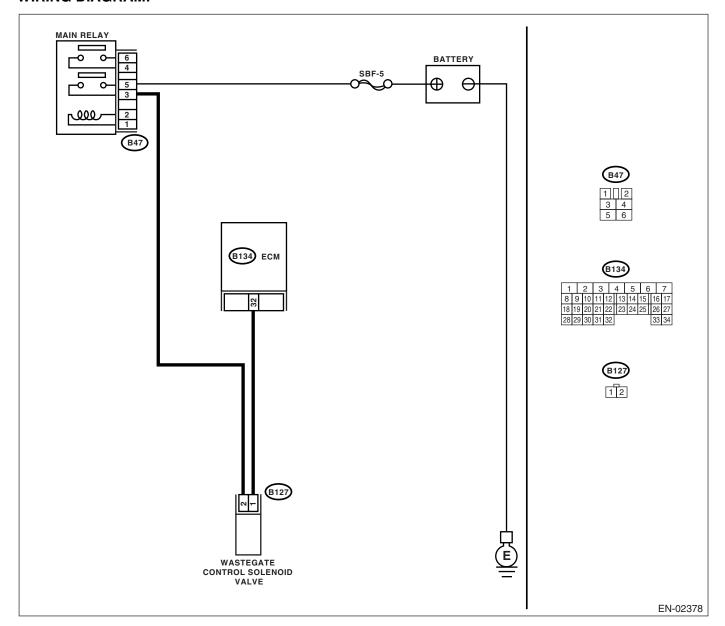
Immediately at fault recognition

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 32 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time.	Go to step 2.
2	CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from wastegate control solenoid valve and ECM. 3) Measure the resistance in harness between wastegate control solenoid valve connector and engine ground. Connector & terminal (B127) No. 1 — Engine ground:	Is the resistance less than 10 Ω ?	Repair ground short circuit in har- ness between ECM and waste- gate control sole- noid valve connector.	Go to step 3.
3	CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between wastegate control solenoid valve and ECM. Connector & terminal (B134) No. 32 — (B127) No. 1:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between ECM and wastegate control solenoid valve connector. NOTE: In this case repair the following: Open circuit in harness between ECM and wastegate control solenoid valve connector
4	CHECK WASTEGATE CONTROL SOLE-NOID VALVE. 1) Remove the wastegate control solenoid valve. 2) Measure the resistance between wastegate control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance 30 — 34 Ω ?	Go to step 5.	Replace the wastegate control solenoid valve. <ref. 2.5)-="" 35,="" control="" fu(h4dotc="" solenoid="" to="" valve.="" wastegate=""></ref.>
5	CHECK POWER SUPPLY TO WASTEGATE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to ON. 2) Measure the voltage between wastegate control solenoid valve and engine ground. Connector & terminal (B127) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 6.	Repair open circuit in harness between main relay and waste- gate control sole- noid valve connector.
6	CHECK POOR CONTACT. Check poor contact in wastegate control solenoid valve connector.	Is there poor contact in waste- gate control solenoid valve connector?	Repair poor contact in wastegate control solenoid valve connector.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

ENGINE (DIAGNOSTIC)

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

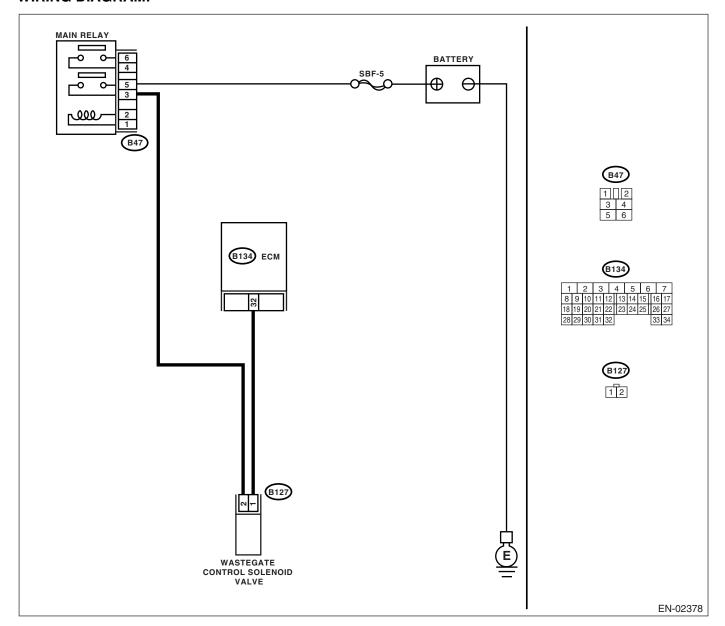
Immediately at fault recognition

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal	Is the voltage more than 10 V?		Go to step 2.
2	(B134) No. 32 (+) — Chassis ground (-): 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. (ecm).="" 2.5)-="" 41,="" control="" engine="" fu(h4dotc="" module="" to=""></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 (B134) No. 32 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in harness between ECM and wastegate control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" 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 waste- gate control sole- noid valve and ECM. <ref. to<br="">FU(H4DOTC 2.5)- 35, Wastegate Control Solenoid Valve.> <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol Module (ECM).></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 2.5)- 41, Engine Con- trol Module (ECM).></ref.>

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

DTC DETECTING CONDITION:

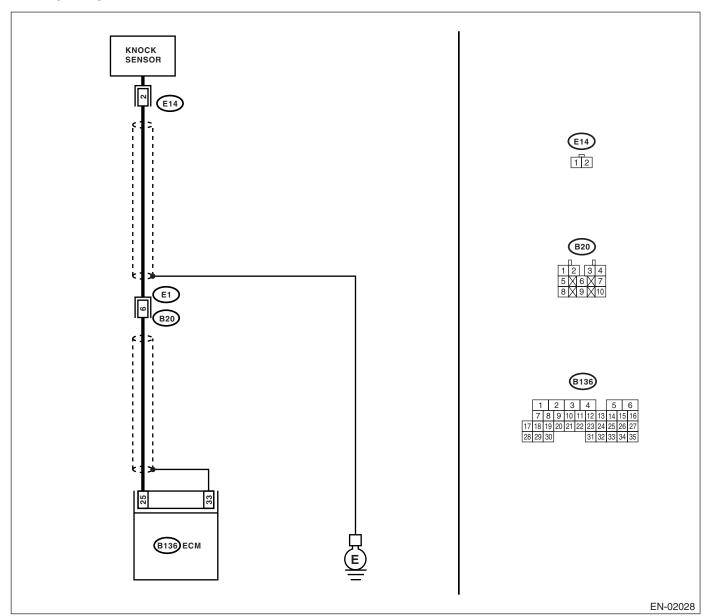
Immediately at fault recognition

TROUBLE SYMPTOM:

- Poor driving performance
- · Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM harness connector and chassis ground. Connector & terminal (B136) No. 25 — Chassis ground:	0110011	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
2	CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. Connector & terminal (E14) No. 2 — Engine ground:	Is the resistance more than 700 k Ω ?	Go to step 3.	 Poor contact in coupling connector 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 2.5)- 29, Knock Sen- sor.></ref.>	Tighten knock sensor installation bolt securely.

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

DTC DETECTING CONDITION:

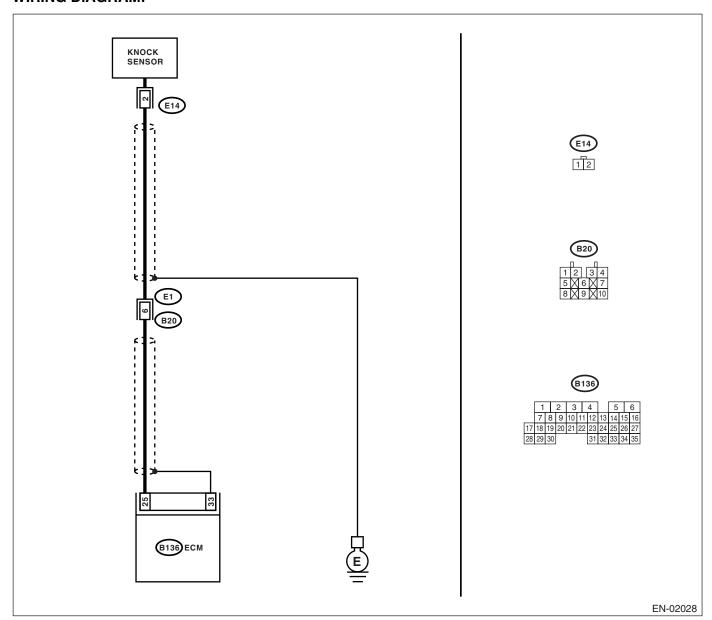
Immediately at fault recognition

TROUBLE SYMPTOM:

- Poor driving performance
- · Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B136) No. 25 — 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 kΩ?	Replace the knock sensor. <ref. to<br="">FU(H4DOTC 2.5)- 29, Knock Sen- sor.></ref.>	Repair ground short circuit in harness between knock sensor connector and ECM connector. NOTE: The harness between both connectors are shielded. Repair short circuit in harness covered with shield.
3	CHECK INPUT SIGNAL FROM ECM. 1) Connect the connectors to ECM and knock sensor. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B136) No. 25 (+) — Chassis ground (-):	Is the voltage more than 2 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.) NOTE: In this case repair the following: Poor contact in knock sensor connector Poor contact in ECM connector. Poor contact in coupling connector	

AC:DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT

DTC DETECTING CONDITION:

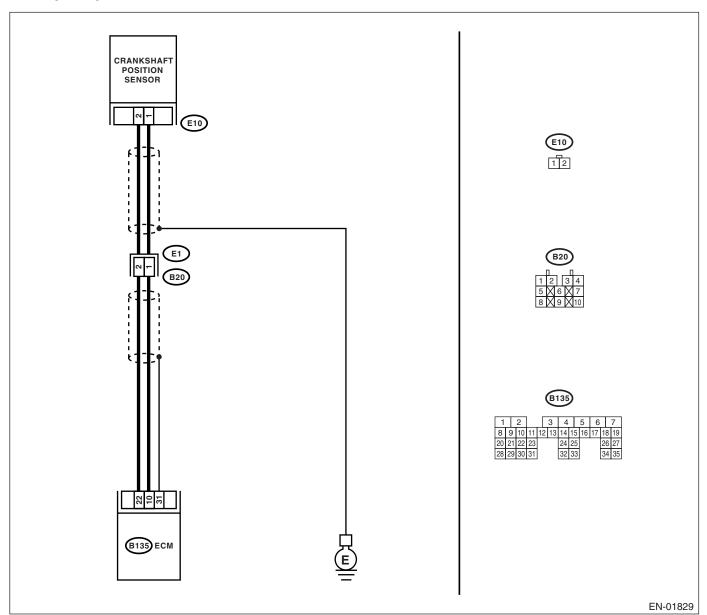
Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN CRANK-	Is the resistance more than	Repair the harness	Go to step 2.
-	SHAFT POSITION SENSOR AND ECM CON-		and connector.	GO 10 010P 2 1
	NECTOR.		NOTE:	
	1) Turn the ignition switch to OFF.		In this case repair	
	2) Disconnect the connector from the crank-		the following:	
	shaft position sensor.		 Open circuit in 	
	3) Measure the resistance of harness		harness between	
	between crankshaft position sensor connector		crankshaft posi-	
	and engine ground.		tion sensor and	
	Connector & terminal		ECM connector	
	(E10) No. 1 — Engine ground:		Poor contact in	
			ECM connector.Poor contact in	
0	CUECK HADNECC DETWEEN CDANK	la tha vasiatawaa waaya thay 1	coupling connector	Danair avaruad abart
2	CHECK HARNESS BETWEEN CRANK- SHAFT POSITION SENSOR AND ECM CON-	Is the resistance more than 1	Go to step 3.	Repair ground short circuit in harness
	NECTOR.	10122 :		between crankshaft
	Measure the resistance of harness between			position sensor and
	crankshaft position sensor connector and			ECM connector.
	engine ground.			NOTE:
	Connector & terminal			The harness be-
	(E10) No. 1 — Engine ground:			tween both con-
				nectors are
				shielded. Repair
				ground short circuit
				in harness togeth-
				er with shield.
3	CHECK HARNESS BETWEEN CRANK-	Is the resistance less than 5 Ω ?	Go to step 4.	Repair the harness
	SHAFT POSITION SENSOR AND ECM CON-			and connector.
	NECTOR.			NOTE:
	Measure the resistance of harness between			In this case repair
	crankshaft position sensor connector and			the following:
	engine ground. Connector & terminal			 Open circuit in harness between
	(E10) No. 2 — Engine ground:			crankshaft posi-
	(E10) No. 2 Engine ground.			tion sensor and
				ECM connector
				Poor contact in
				ECM connector.
				 Poor contact in
				coupling connector
4	CHECK CONDITION OF CRANKSHAFT PO-	Is the crankshaft position sen-	Go to step 5.	Tighten the crank-
	SITION SENSOR.	sor installation bolt tightened		shaft position sen-
		securely?		sor installation bolt
				securely.
5	CHECK CRANKSHAFT POSITION SENSOR.	Is the resistance 1 — 4 k Ω ?	Repair poor con-	Replace the crank-
	Remove the crankshaft position sensor.		tact in crankshaft	shaft position sen-
	2) Measure the resistance between connector		position sensor	sor. <ref. th="" to<=""></ref.>
	terminals of crankshaft position sensor.		connector.	FU(H4DOTC 2.5)-
	Terminals			27, Crankshaft
	No. 1 — No. 2:			Position Sensor.>

AD:DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SIN-GLE SENSOR)

DTC DETECTING CONDITION:

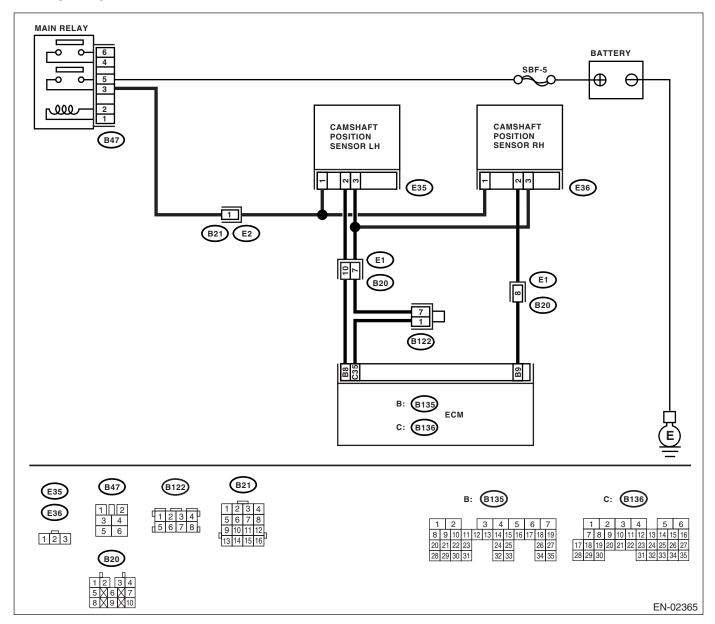
Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
2	CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Measure the voltage between camshaft position sensor and engine ground. Connector & terminal (E36) No. 1 (+) — Engine ground (-): CHECK POWER SUPPLY OF CAMSHAFT	Is the voltage more than 10 V?	short circuit between main relay connector and camshaft position sensor connector.	Go to step 2. Repair open or bat-
_	POSITION SENSOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between camshaft position sensor and engine ground. Connector & terminal (E36) No. 1 (+) — Engine ground (-):		Go to step J.	tery short circuit between main relay connector and camshaft position sensor connector.
3	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between camshaft position sensor and ECM. Connector & terminal (E36) No. 2 — (B135) No. 9: (E36) No. 3 — (B136) No. 35:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit between camshaft position sensor and ECM.
4	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM. Measure the resistance between camshaft position sensor and engine ground. Connector & terminal (E36) No. 2 — Engine ground: (E36) No. 3 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair ground short circuit between camshaft position sensor and ECM.
5	CHECK CONDITION OF CAMSHAFT POSITION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 6.	Tighten the cam- shaft position sen- sor installation bolt securely.
6	CHECK CAMSHAFT POSITION SENSOR. Check waveform of camshaft position sensor. <ref. (ecm)="" 2.5)-17,="" control="" en(h4dotc="" engine="" i="" module="" o="" signal.="" to=""></ref.>	Is there any abnormality in waveform?	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4DOTC 2.5)- 28, Camshaft Position Sensor.></ref.>	Go to step 7.
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 ECM. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol Module (ECM).></ref.>

AE:DTC P0345 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 2)

DTC DETECTING CONDITION:

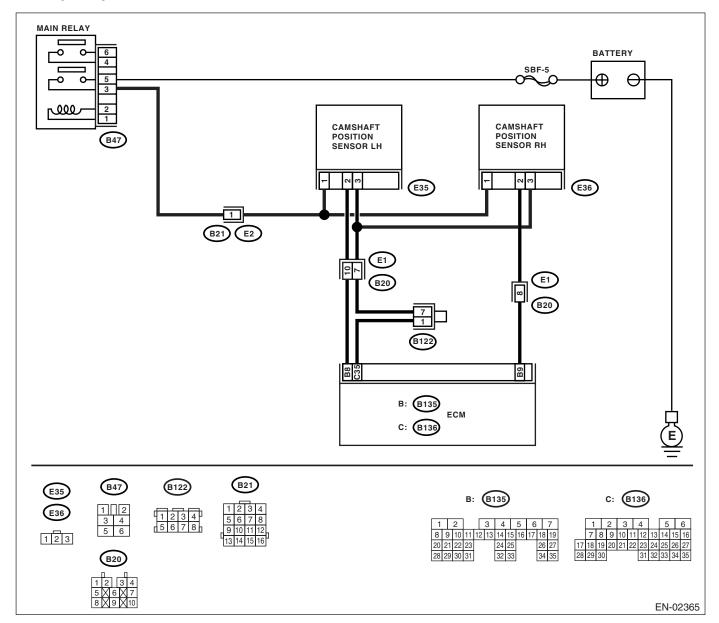
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR.	Is the voltage more than 10 V?	Repair the battery	Go to step 2.
	Turn the ignition switch to OFF.		short circuit between main relay	
	2) Disconnect the connector from camshaft		connector and cam-	
	position sensor.		shaft position sen-	
	Measure the voltage between camshaft		sor connector.	
	position sensor and engine ground.			
	Connector & terminal			
	(E35) No. 1 (+) — Engine ground (–):			
2	CHECK POWER SUPPLY OF CAMSHAFT	Is the voltage more than 10 V?	Go to step 3.	Repair open or
	POSITION SENSOR.			battery short cir-
	 Turn the ignition switch to ON. 			cuit between main
	2) Measure the voltage between camshaft			relay connector
	position sensor and engine ground.			and camshaft
	Connector & terminal			position sensor
	(E35) No. 1 (+) — Engine ground (-):			connector.
3	CHECK HARNESS BETWEEN CAMSHAFT	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit
	POSITION SENSOR AND ECM.			between camshaft
	 Turn the ignition switch to OFF. Disconnect the connector from ECM. 			position sensor and ECM.
	Disconnect the connector from ECM. Measure the resistance between camshaft			and Ecivi.
	position sensor and ECM.			
	Connector & terminal			
	(E35) No. 2 — (B135) No. 8:			
	(E35) No. 3 — (B136) No. 35:			
4	CHECK HARNESS BETWEEN CAMSHAFT	Is the resistance more than 1	Go to step 5.	Repair ground short
	POSITION SENSOR AND ECM.	ΜΩ?	,	circuit between
	Measure the resistance between camshaft			camshaft position
	position sensor and engine ground.			sensor and ECM.
	Connector & terminal			
	(E35) No. 2 — Engine ground:			
	(E35) No. 3 — Engine ground:			
5	CHECK CONDITION OF CAMSHAFT POSI-	Is the camshaft position sensor	Go to step 6.	Tighten the cam-
	TION SENSOR.	installation bolt tightened		shaft position sen-
		securely?		sor installation bolt
				securely.
6	CHECK CAMSHAFT POSITION SENSOR.	Is there any abnormality in		Go to step 7.
	Check waveform of camshaft position sensor.	waveform?	shaft position sen-	
	<ref. 2.5)-17,="" control<="" en(h4dotc="" engine="" p="" to=""> Modulo (ECM) I/O Signal ></ref.>		sor. <ref. th="" to<=""><th> </th></ref.>	
	Module (ECM) I/O Signal.>		FU(H4DOTC 2.5)- 28, Camshaft	
			Position Sensor.>	
7	CHECK POOR CONTACT.	Is there poor contact in ECM	Repair the poor	Replace the ECM.
ľ	Check poor contact in ECM connector.	connector?	contact in ECM	<ref. th="" to<=""></ref.>
	2 poor domade in 2011 domination		connector.	FU(H4DOTC 2.5)-
				41, Engine Con-
				trol Module
				(ECM).>
				· - /

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

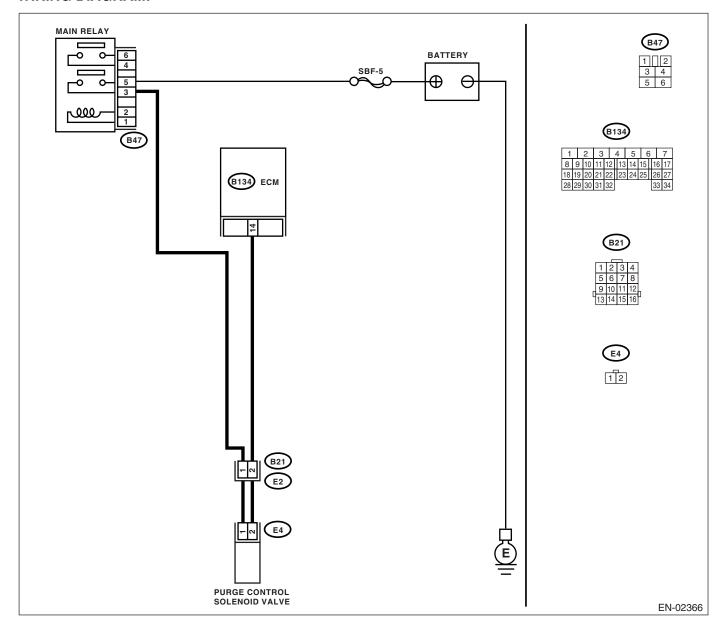
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 14 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal 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 ground short circuit in har- ness 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 (B134) No. 14 — (E4) No. 2:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between ECM and purge control solenoid valve connector. NOTE: In this case repair the following: Open circuit in harness between ECM and purge control solenoid valve connector Poor contact in coupling connector
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?	Go to step 6.	Repair 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 poor contact in purge control solenoid valve connector.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

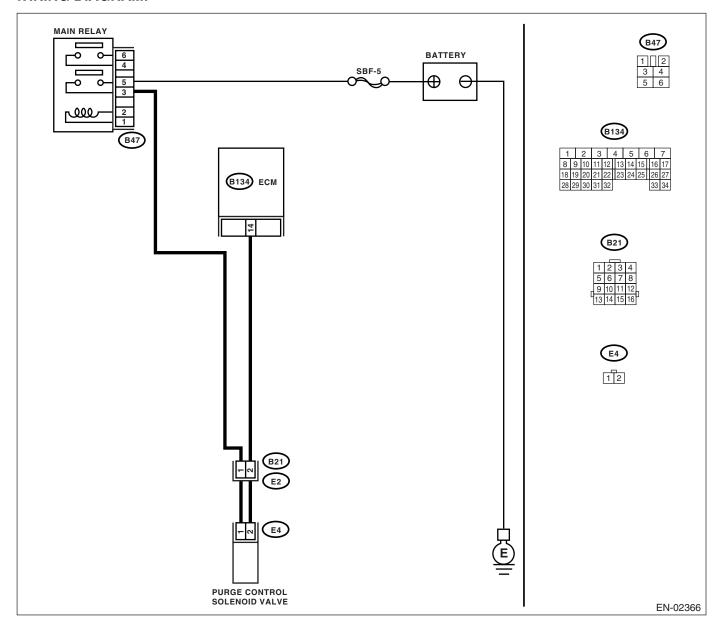
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn the ignition switch to ON. 4) While operating the purge control solenoid valve, measure voltage between ECM and chassis ground. NOTE: Purge control solenoid valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. 2.5)-43,="" check="" compulsory="" en(h4dotc="" mode.="" operation="" to="" valve=""> Connector & terminal (B134) No. 14 (+) — Chassis ground (-):</ref.>		Go to step 2.	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time. In this case, repair poor contact in ECM connector.
2	CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 14 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Go to step 3.
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol 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 (B134) No. 14 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and purge control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" 2.5)-="" 41,="" con-="" engine="" fu(h4dotc="" module="" to="" trol=""></ref.>	Go to step 5.
5	CHECK PURGE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Measure the resistance between purge control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the purge control solenoid valve and ECM. <ref. control="" ec(h4dotc)-7,="" purge="" solenoid="" to="" valve.=""> <ref. (ecm).="" 2.5)-="" 41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.></ref.>	Go to step 6.
6	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol Module (ECM).></ref.>

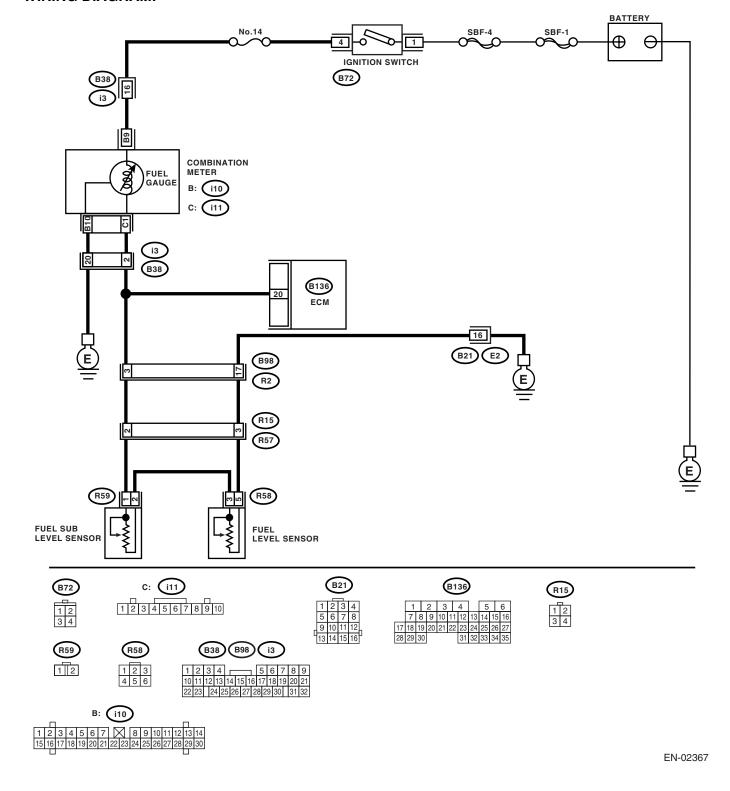
AH:DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
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 FROM ECM. 1) Turn the ignition switch to ON. (engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 20 (+) — Chassis ground (-):	Is the voltage less than 0.12 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM WITH 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 "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""></ref.>	Does the voltage change by shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time. A tempo- rary 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 connector
4	CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to OFF. 2) Separate 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 (B136) No. 20 (+) — 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 (i10), (i11) and ECM connector. 3) Measure the resistance between ECM and chassis ground. Connector & terminal (B136) No. 20 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 7.	Repair the ground short in harness between ECM and combination meter connector.
6	CHECK HARNESS BETWEEN ECM AND COMBINATION METER. Measure the resistance between ECM and combination meter connector. Connector & terminal (B136) No. 20 — (i11) No. 1:	Is the resistance less than 10 Ω ?	Repair or replace the combination meter. <ref. idi-<br="" to="">3, Combination Meter System.></ref.>	Repair open circuit between ECM and combination meter connector. NOTE: In this case repair the following: Poor contact in coupling connector

		T .	T .,	
	Step	Check	Yes	No
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 $\mbox{M}\Omega\mbox{?}$	Go to step 8.	Repair 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 ground short circuit in fuel tank cord.
9	CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. fu(h4dotc)-62,="" 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. 2.5)-55,="" fu(h4dotc="" 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 poor contact in harness between ECM and combination meter connector.	Replace the fuel sub level sensor.

AI: DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT

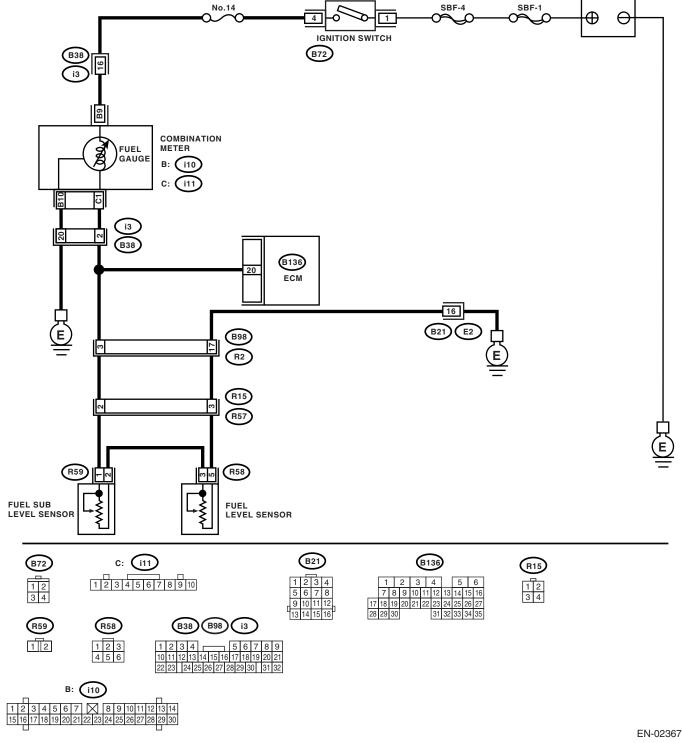
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



BATTERY

	Step	Check	Yes	No
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 FROM ECM. 1) Turn the ignition switch to ON. (engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 20 (+) — Chassis ground (-):	Is the voltage more than 4.75 V?	Go to step 3.	Even if the malfunction indicator light illuminates, 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 (B136) No. 20 (+) — Chassis ground (-):	Is the voltage more than 4.75 V?	Go to step 4.	Repair 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 fuel tank cord connector (R57) and rear wiring harness connector (R15). 3) Measure the resistance between ECM and fuel tank cord. Connector & terminal (B136) No. 20 — (R15) No. 7:	Is the resistance less than 5 Ω ?	Go to step 5.	Repair 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. 3 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 6.	Repair open circuit between fuel tank cord and chassis ground. NOTE: In this case repair the following: Poor contact in coupling connector
6	CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel level sensor. 2) Measure the resistance between fuel level sensor and coupler connector. Connector & terminal (R57) No. 3 — (R58) No. 5:	Is the resistance less than 10 Ω ?	Go to step 7.	Repair open circuit between coupling connector and fuel level sensor.

	Step	Check	Yes	No
7	CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel sub level sensor. 2) Measure the resistance between fuel level	Is the resistance less than 10 Ω ?	Go to step 8.	Repair open circuit between fuel level sensor and fuel sub level sensor.
	sensor and fuel sub level sensor. Connector & terminal (R58) No. 3 — (R59) No. 2:			
8	CHECK FUEL TANK CORD. Measure the resistance between fuel sub level sensor and coupler connector. Connector & terminal (R57) No. 2 — (R59) No. 1:	Is the resistance less than 10 Ω ?	Go to step 9.	Repair open circuit between coupling connector and fuel sub level sensor.
9	CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. 2.5)-52,="" fu(h4dotc="" fuel="" pump.="" to=""> 2) While moving the fuel level sensor float up and down, measure resistance between fuel level sensor terminals. Terminals No. 2 — No. 3:</ref.>	Ω?	Replace the fuel level sensor. <ref. to FU(H4DOTC 2.5)-54, Fuel Level Sensor.></ref. 	Go to step 10.
10	CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <ref. 2.5)-55,="" fu(h4dotc="" fuel="" level="" sensor.="" sub="" to=""> 2) While moving the fuel sub level sensor float up and down, measure resistance between fuel sub level sensor terminals. Terminals No. 1 — No. 2:</ref.>	Is the resistance more than 45 Ω ?	Replace the fuel sub level sensor. <ref. to<br="">FU(H4DOTC 2.5)- 55, Fuel Sub Level Sensor.></ref.>	Replace the combination meter. <ref. assembly.="" combination="" idi-10,="" meter="" to=""></ref.>

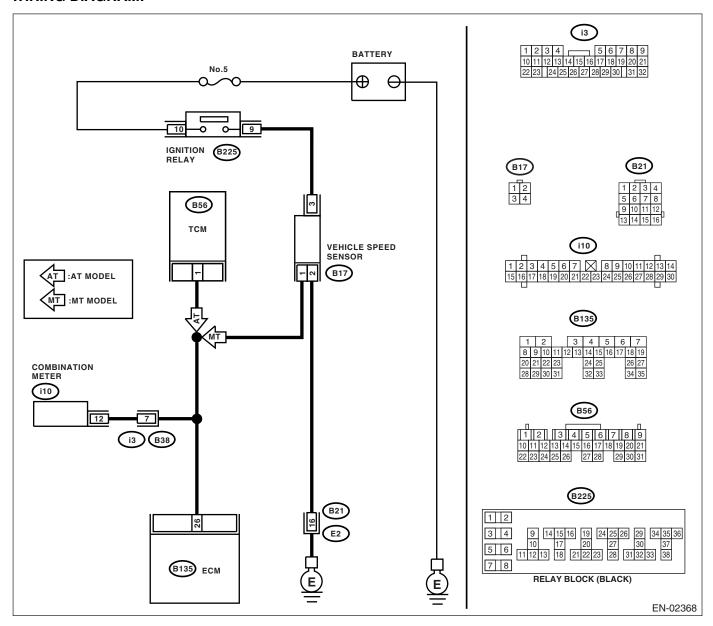
AJ:DTC P0502 VEHICLE SPEED SENSOR CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



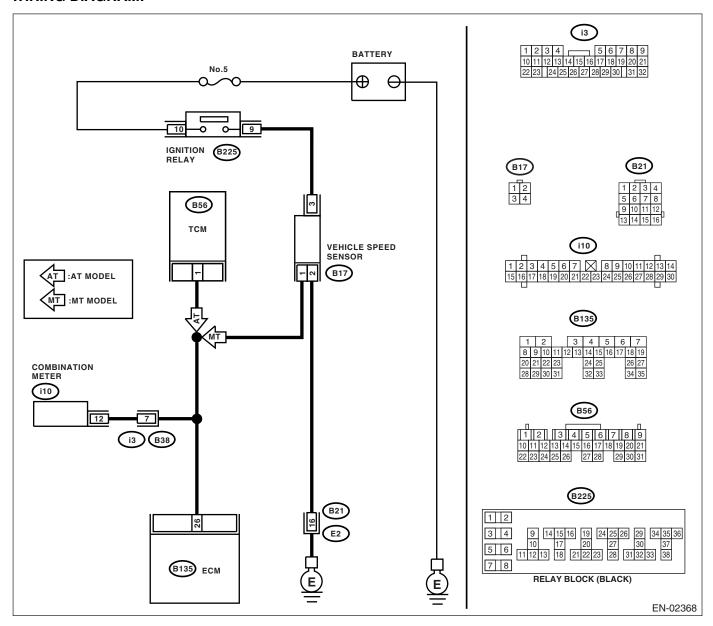
	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN VEHICLE SPEED SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from vehicle speed sensor ECM. 3) Measure the resistance of harness between vehicle speed sensor connector and chassis ground. Connector & terminal (B17) No. 1 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 2.	Repair ground short circuit in harness between vehicle speed sensor and ECM connector.
2	CHECK POOR CONTACT. Check poor contact in vehicle speed sensor connector.	Is there poor contact in vehicle speed sensor connector?	Repair poor contact in vehicle speed sensor connector.	Replace the vehi- cle speed sensor. <ref. 5mt-46,<br="" to="">Vehicle Speed Sensor.></ref.>

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

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK SPEEDOMETER OPERATION IN COMBINATION METER.	Does speedometer operate normally?	Go to step 2.	Check the speed- ometer. <ref. to<br="">IDI-13, Speedom- eter.></ref.>
2	CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the combination meter. 3) Measure the resistance between ECM and combination meter connector. Connector & terminal (B135) No. 26 — (i10) No. 12:	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 connector Poor contact in combination connector

AL:DTC P0512 STARTER REQUEST CIRCUIT

DTC DETECTING CONDITION:

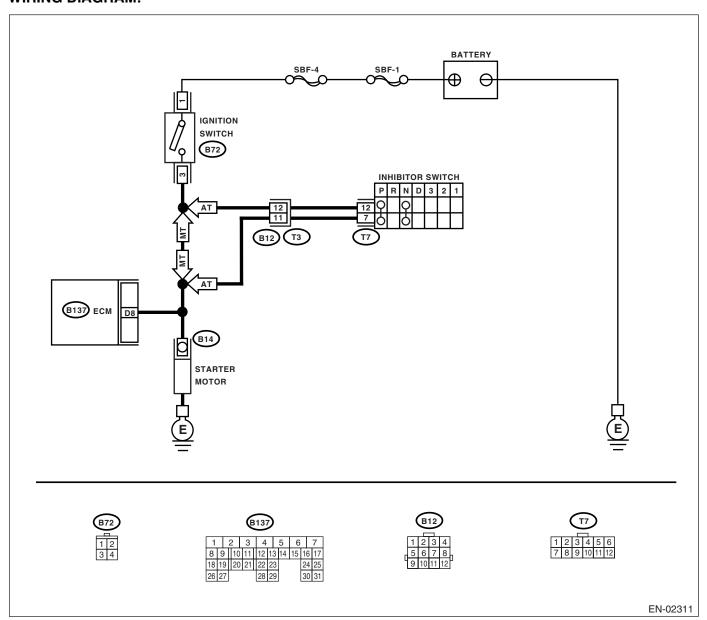
Immediately at fault recognition

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OPERATION OF STARTER MOTOR.	when ignition switch to ON?	short circuit in starter motor cir- cuit. After repair, replace the ECM. <ref. to<br="">FU(H4DOTC 2.5)-</ref.>	Check starter motor circuit. <ref. 2.5)-55,="" cir-cuit,="" diagnostics="" en(h4dotc="" engine="" failure.="" for="" motor="" starter="" starting="" to=""></ref.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

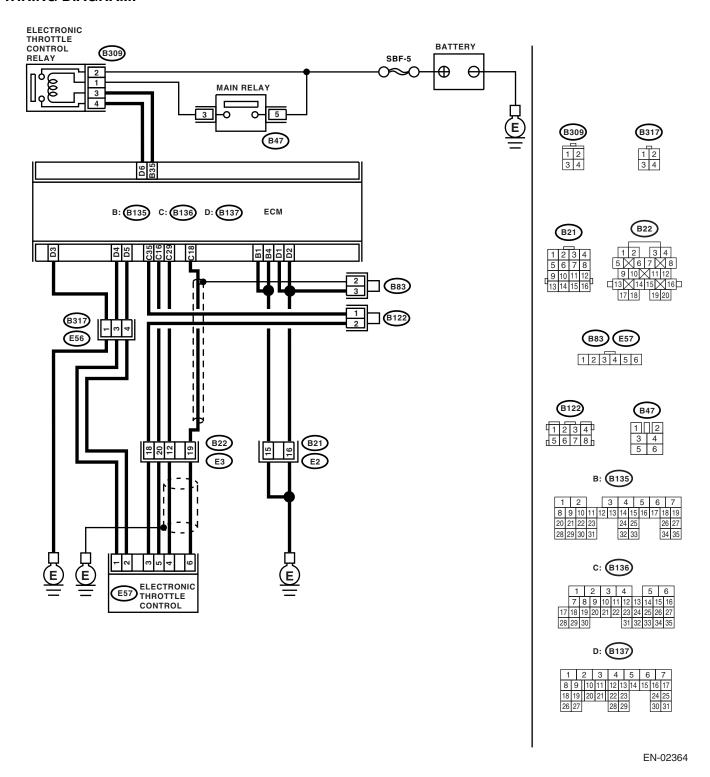
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, 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).="" 2.5)-65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0519.</ref.>	Go to step 2.
2	CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start and idle the engine. 3) Check the following items: • Loose installation of intake manifold and throttle body • Cracks of intake manifold gasket and throttle body gasket • Disconnections of vacuum hoses	Is there any fault in air intake system?	Repair air suction and leaks.	Go to step 3.
3	 CHECK ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Replace the electronic throttle control. 3) Check the electronic throttle control. 	Are foreign matters found inside the electronic throttle control?	Remove foreign matters from the electronic throttle control.	Perform the diagnosis of DTC P2101.

AN:DTC P0545 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT LOW - BANK 1 DTC DETECTING CONDITION:

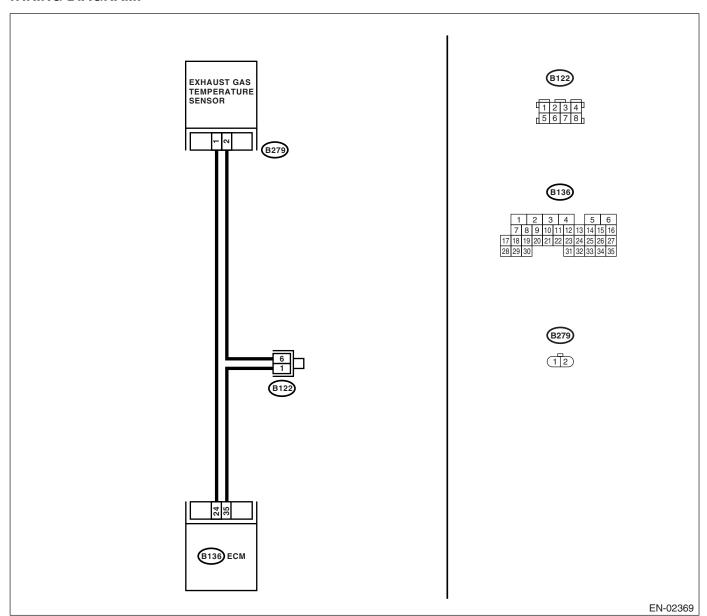
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Hard to start
- · Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of exhaust temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the temperature more than 1,200°C (2,192°F)?	Go to step 2.	Repair the poor contact. NOTE: In this case repair the following: • Poor contact of exhaust temperature sensor • Poor contact in ECM • Poor contact in joint connector
2	CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from exhaust temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of exhaust temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the temperature less than 372°C (702°F)?	Replace the exhaust temperature sensor. <ref. 2.5)-40,="" exhaust="" fu(h4dotc="" sensor.="" temperature="" to=""></ref.>	Repair ground short circuit in harness between exhaust temperature sensor and ECM connector.

AO:DTC P0546 EXHAUST GAS TEMPERATURE SENSOR HIGH - BANK 1 DTC DETECTING CONDITION:

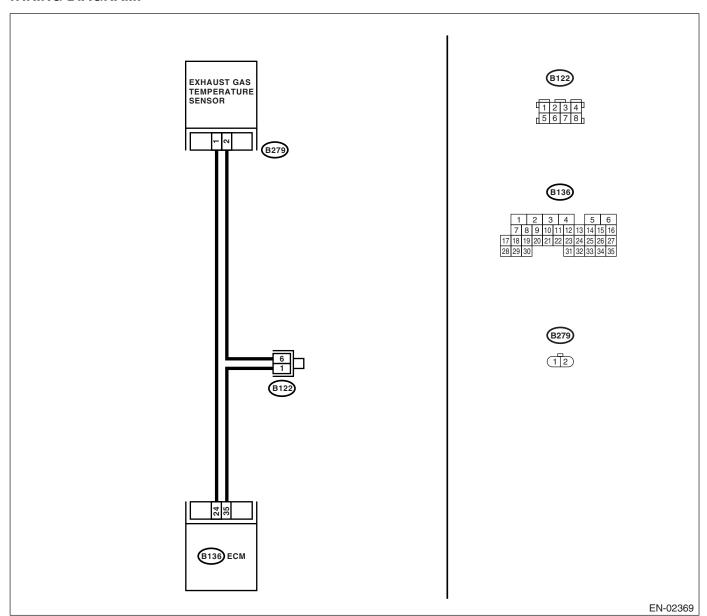
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Hard to start
- · Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK CURRENT DATA.	Is the temperature less than	Go to step 2.	Repair the poor
1) Start the engine.	372°C (702°F)?	•	contact.
Read the data of exhaust temperature sen-			NOTE:
sor signal using Subaru Select Monitor or			In this case repair
OBD-II general scan tool.			the following:
NOTE:			 Poor contact of
Subaru Select Monitor			exhaust tempera-
For detailed operation procedure, refer to			ture sensor
"READ CURRENT DATA SHOWN ON DIS-			Poor contact in
PLAY FOR ENGINE". <ref. en(h4dotc<="" th="" to=""><td></td><td></td><td>ECM</td></ref.>			ECM
2.5)-27, Subaru Select Monitor.>			Poor contact in
OBD-II general scan tool For detailed an existing proceed was referred to the			joint connector
For detailed operation procedures, refer to the			
OBD-II General Scan Tool Operation Manual. CHECK HARNESS BETWEEN EXHAUST	le the voltage more than 10 V2	Danair hattary	Co to oton 2
TEMPERATURE SENSOR AND ECM CON-	Is the voltage more than 10 V?	Repair battery short circuit in har-	Go to step 3.
NECTOR.		ness between	
Turn the ignition switch to OFF.		ECM and exhaust	
Disconnect the connector from exhaust		temperature sen-	
temperature sensor.		sor connector.	
Measure the voltage between exhaust tem-			
perature sensor connector and engine ground.			
Connector & terminal			
(B279) No. 1 (+) — Engine ground (–):			
3 CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 10 V?	Repair battery	Go to step 4.
TEMPERATURE SENSOR AND ECM CON-		short circuit in har-	
NECTOR.		ness between	
Turn the ignition switch to ON.		ECM and exhaust	
Measure the voltage between exhaust tem-		temperature sen-	
perature sensor connector and engine ground.		sor connector.	
Connector & terminal			
(B279) No. 1 (+) — Engine ground (–):	le the veltage maye than 4 1/2	Co to oton E	Danair tha harnasa
4 CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CON-	Is the voltage more than 4 V?	Go to step 5.	Repair the harness and connector.
NECTOR.			
Measure the voltage between exhaust temper-			NOTE: In this case repair
ature sensor connector and engine ground.			the following:
Connector & terminal			Open circuit in
(B279) No. 1 (+) — Engine ground (-):			harness between
(), ()			ECM and exhaust
			temperature sen-
			sor connector
			 Poor contact of
			exhaust tempera-
			ture sensor con-
			nector
			 Poor contact in
			ECM connector.
			Poor contact in
			joint connector

Step	Check	Yes	No
5 CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between exhaust temperature sensor connector and engine ground. Connector & terminal (B279) No. 2 — Engine ground:	Is the resistance less than 5 Ω ?	Replace the exhaust temperature sensor. <ref. 2.5)-40,="" exhaust="" fu(h4dotc="" sensor.="" temperature="" to=""></ref.>	Repair the harness and connector. NOTE: In this case repair the following: Open circuit in harness between ECM and exhaust temperature sensor connector Poor contact of exhaust temperature sensor connector Poor contact in ECM connector. Poor contact in joint connector

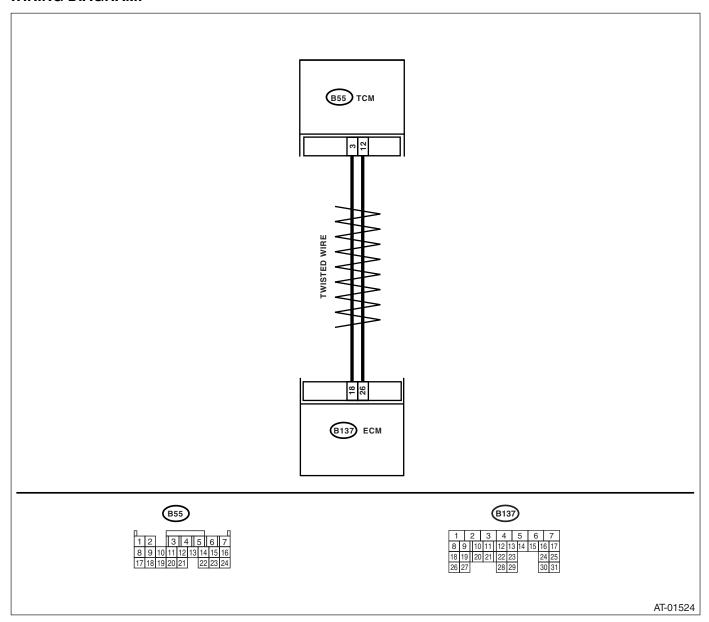
AP:DTC P0600 SERIAL COMMUNICATION LINK

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND TCM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from TCM. 4) Measure the resistance between ECM and TCM connectors. Connector & terminal (B137) No. 18 — (B55) No. 3: (B137) No. 26 — (B55) No. 12:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the harness and connector.
2	CHECK HARNESS BETWEEN ECM AND TCM. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B137) No. 18 — Chassis ground: (B137) No. 26 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair the harness and connector.
3	CHECK HARNESS BETWEEN ECM AND TCM. Check the resistance between ECM connectors. Connector & terminal (B137) No. 18 — (B137) No. 26:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair the harness and connector.
4	CHECK AT SYSTEM CONDITION. Perform the diagnosis for AT using Subaru Select Monitor.	Is DTC P1718 displayed?	Check AT system.	Replace the ECM.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

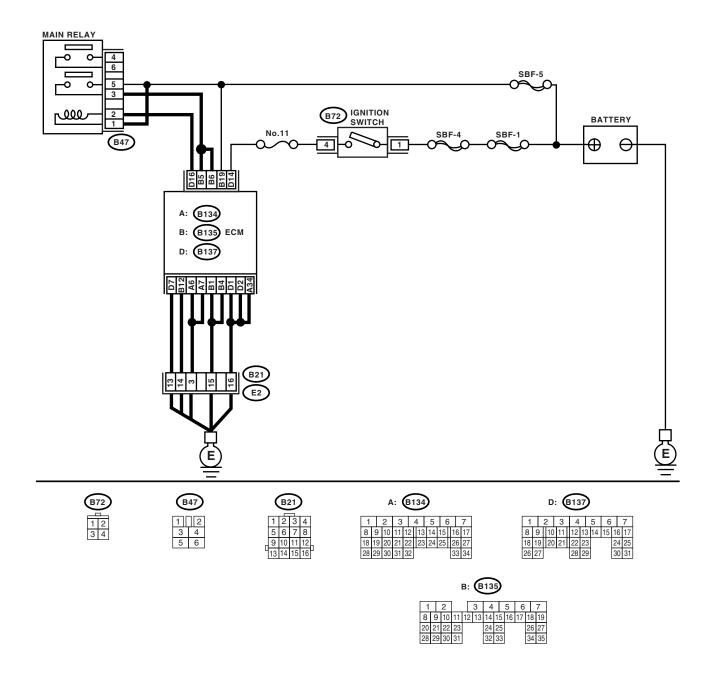
TROUBLE SYMPTOM:

- · Engine does not start.
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02356

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Replace the ECM.	Temporary poor
		tor or OBD-II general scan tool	<ref. th="" to<=""><th>contact occurs.</th></ref.>	contact occurs.
		indicate DTC P0604?	FU(H4DOTC 2.5)-	
			41, Engine Con-	
			trol Module	
			(ECM).>	

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

NOTE:

For the diagnostic procedure, refer to DTC P0607. <Ref. to EN(H4DOTC 2.5)-170, DTC P0607 CONTROL MODULE PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

AS:DTC P0607 CONTROL MODULE PERFORMANCE

DTC DETECTING CONDITION:

Immediately at fault recognition

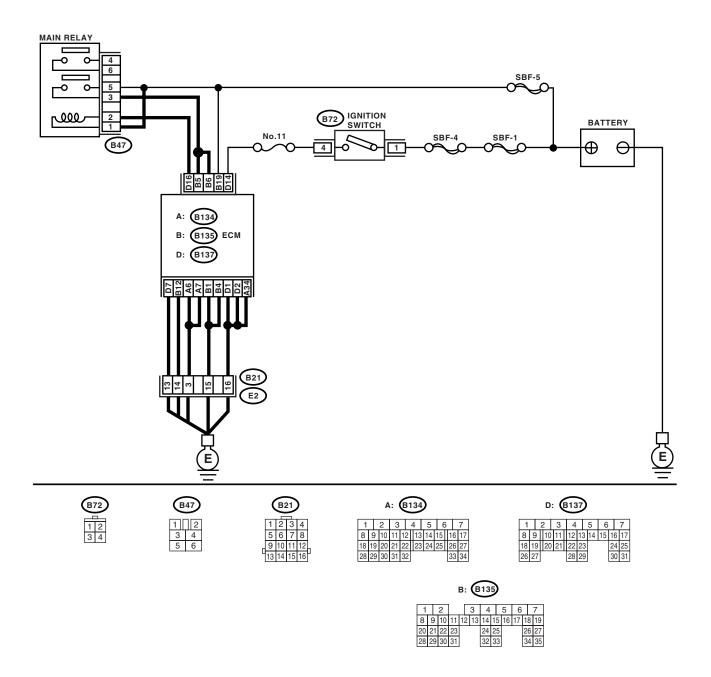
TROUBLE SYMPTOM:

- Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02356

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

	Step	Check	Yes	No
1	CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and ground. Connector & terminal (B135) No. 5 (+) — Chassis ground (-): (B135) No. 6 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 2.	Repair open or ground short circuit of power supply circuit.
2	CHECK INPUT VOLTAGE OF ECM. 1) Start the engine. 2) Measure the voltage between ECM connector and ground. Connector & terminal (B135) No. 5 (+) — Chassis ground (-): (B135) No. 6 (+) — Chassis ground (-):	Is the voltage 13 — 15 V?	Go to step 3.	Repair open or ground short circuit of power supply circuit.
3	CHECK ECM GROUND HARNESS. Measure the voltage between ECM connector and ground. Connector & terminal (B137) No. 1 (+) — Chassis ground (-): (B137) No. 2 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Repair the poor contact in ECM connector. Replace the ECM if defective.	Further tighten the engine ground terminal.

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

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC 2.5)-224, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

AU:DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

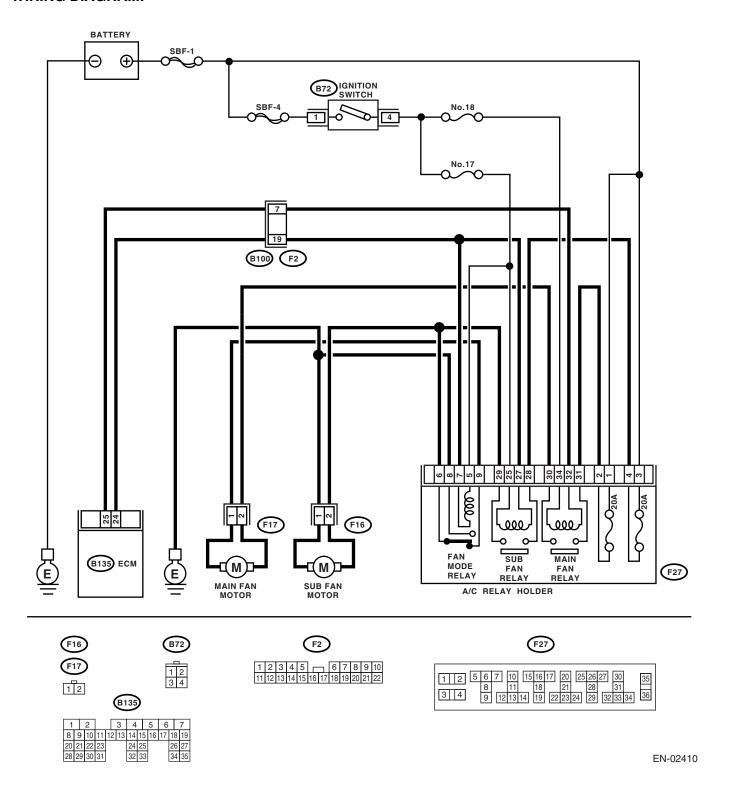
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Over-heating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM.	Does the voltage vary between	Repair the poor	Go to step 2.
 Turn the ignition switch to OFF. Connect the test mode connector. Turn the ignition switch to ON. While operating the radiator fan relay, measure voltage between ECM terminal and ground. 	0 — 10 V?	contact in ECM connector.	·
NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> Connector & terminal</ref.>			
(B135) No. 24 (+) — Chassis ground (–): (B135) No. 25 (+) — Chassis ground (–):			
2 CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 24 — Chassis ground: (B135) No. 25 — Chassis ground:	Is the resistance more than 1 M Ω ?	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 and sub fan relay 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 FAN RELAY. 1) Turn the ignition switch to OFF. 2) Measure the resistance between fan relay terminals. Terminals No. 32 — No. 34 (Main fan relay) No. 25 — No. 27 (Sub fan relay)	Is the resistance 87 — 107 Ω ?	Go to step 5.	Replace the fan relay.
5 CHECK OPEN CIRCUIT IN FAN RELAY CONTROL CIRCUIT. Measure the resistance of harness between ECM and fan relay connector. Connector & terminal (B135) No. 24 — (F27) No. 27: (B135) No. 25 — (F27) No. 32:	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
6 CHECK POOR CONTACT. Check poor contact in ECM or fan relay connector.		Repair the poor contact in ECM or fan relay connector.	Contact the SUB- ARU dealer.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

AV:DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

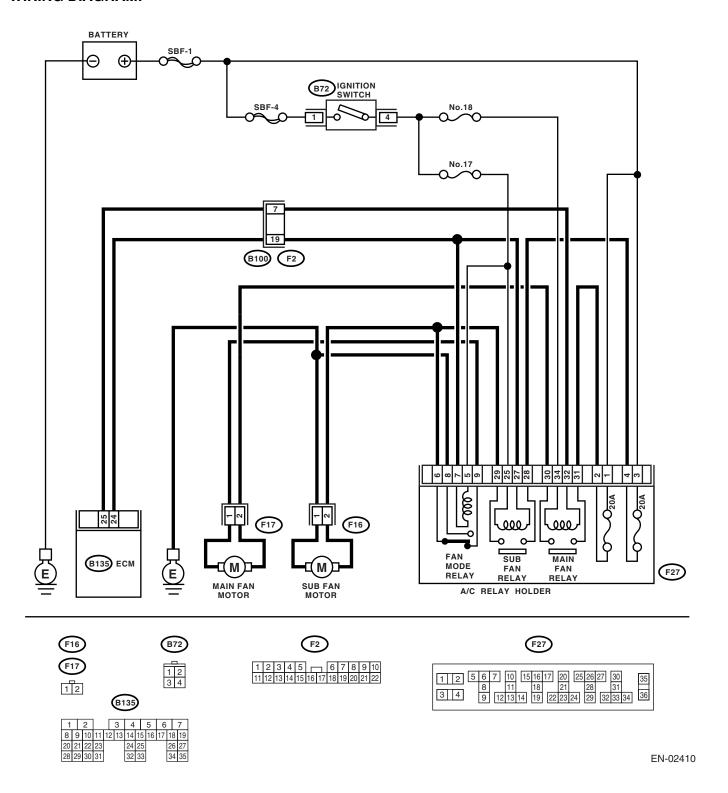
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Over-heating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
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 and chassis ground. NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. 2.5)-43,="" check="" compulsory="" en(h4dotc="" mode.="" operation="" to="" valve=""> Connector & terminal (B135) No. 24 (+) — Chassis ground (-): (B135) No. 25 (+) — Chassis ground (-):</ref.>		Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time. In this case, repair poor contact in ECM connector.	Go to step 2.
2	CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT. 1) Turn the ignition switch to OFF. 2) Remove the main fan relay, sub fan relay and fan mode relay. 3) Disconnect the test mode connectors 4) Turn the ignition switch to ON. 5) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 24 (+) — Chassis ground (-): (B135) No. 25 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in radiator fan relay control circuit. After repair, replace the ECM. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>	Go to step 3.
3	CHECK FAN RELAY. 1) Turn the ignition switch to OFF. 2) Remove the fan relay. 3) Measure the resistance between fan relay terminals. Terminals No. 30 — No. 31 (Main fan relay) No. 28 — No. 29 (Sub fan relay)	Is the resistance less than 1 Ω ?	Replace the fan relay and ECM. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol Module (ECM).></ref.>	Go to step 4.
4	CHECK FAN MODE RELAY. 1) Remove the fan mode relay. 2) Measure the resistance between fan mode relay terminals. Terminals No. 8 — No. 9: (Fan mode relay)	Is the resistance less than 1 Ω ?	Replace the fan mode relay and ECM. <ref. to<br="">FU(H4DOTC 2.5)- 41, Engine Con- trol Module (ECM).></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 2.5)- 41, Engine Con- trol Module (ECM).></ref.>

AW:DTC P0700 TRANSMISSION CONTROL SYSTEM (MIL REQUEST)

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(H4SO)-2, PROCEDURE, Basic Diagnostic Procedure.>

AX:DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL)

DTC DETECTING CONDITION:

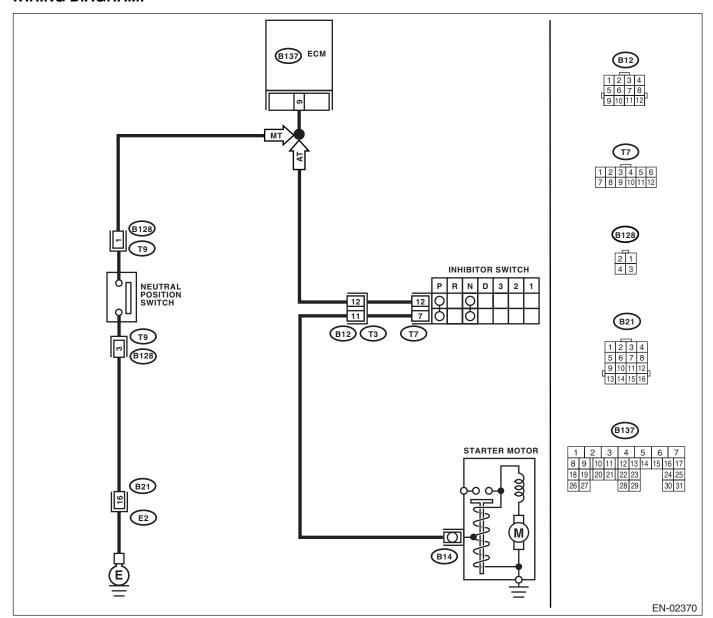
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Shift the select lever to other than "N" and "P" ranges. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B137) No. 9 (+) — Chassis ground (-):	Is the voltage 4.5 — 5.5 V?	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time.	Go to step 2.
2	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 (B137) No. 9 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair ground short circuit in har- ness between ECM and trans- mission harness connector.
3	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 4.	Repair ground short circuit in har- ness between transmission har- ness and inhibitor switch connector.
4	CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector the receptacle's terminals in selector lever except for "N" range. Terminals No. 7 — No. 12:	Is the resistance more than 1 M Ω ?	Go to step 5.	Replace the inhibitor switch. <ref. 4at-51,="" inhibitor="" switch.="" to=""></ref.>
5	CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <ref. cs-14,<br="" to="">INSPECTION, Select Cable.></ref.>	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

AY:DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (MT MODEL)

DTC DETECTING CONDITION:

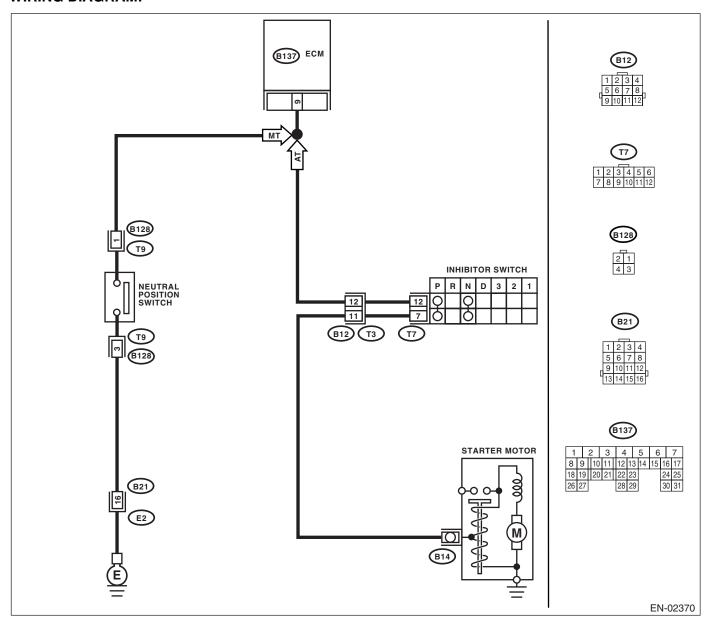
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?	Go to step 2.	Go to step 4.
	1) Turn the ignition switch to ON.	l s	'	'
	2) Place the shift lever in neutral.			
	3) Measure the voltage between ECM and			
	chassis ground.			
	Connector & terminal			
	(B137) No. 9 (+) — Chassis ground (–):			
2	CHECK INPUT SIGNAL FROM ECM.	Is the voltage less than 1 V?	Go to step 3.	Go to step 4.
	 Place the shift lever except in neutral. 	_	-	-
	2) Measure the voltage between ECM and			
	chassis ground.			
	Connector & terminal			
	(B137) No. 9 (+) — Chassis ground (–):			
3	CHECK POOR CONTACT.	Is there poor contact in ECM	Repair the poor	Contact the SUB-
	Check poor contact in ECM connector.	connector?	contact in ECM	ARU dealer.
			connector.	
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.			the neutral position
	Place the shift lever in neutral.			switch.
	4) Measure the resistance between transmis-			
	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
	 Place the shift lever except in neutral. 	Ω?		in transmission
	2) Measure the resistance between transmis-			harness or replace
	sion harness connector terminals.			the neutral position
	Terminals			switch.
	No. 1 — No. 3:			
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.
	(B137) No. 9 — 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.			between ECM and
	Disconnect the connector from ECM. Measure the registeres of barness between			transmission har-
	Measure the resistance of harness between ECM and transmission harness connector.			ness connector.
	Connector & terminal			
	(B137) No. 9 — (B128) No. 1:			
	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 5	Co to oton 0	Donoir on an aire: :14
8	NEUTRAL POSITION SWITCH CONNEC-	Ω ?	Go to step 9.	Repair open circuit between transmis-
	TOR.	52:		sion harness con-
	Measure the resistance of harness between			nector and engine
	transmission harness connector and engine			ground terminal.
	ground.			g. Jana tomina.
	Connector & terminal			
	(B128) No. 1 — Engine ground:			
9	CHECK POOR CONTACT.	Is there poor contact in trans-	Repair poor con-	Contact the SUB-
ľ	Check poor contact in transmission harness	mission harness connector?	tact in transmission	
	connector.	ssicii namoto scimotor:	harness connector.	
			The second services of the second	

AZ:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL)

DTC DETECTING CONDITION:

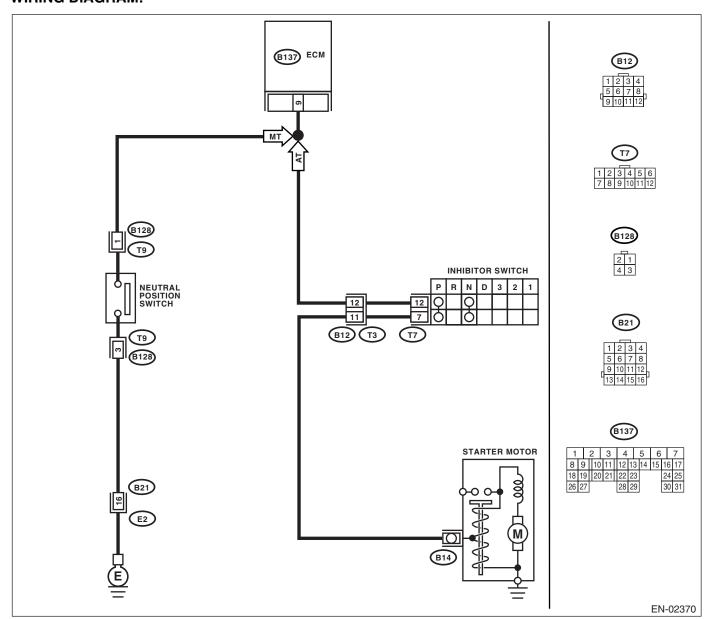
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground with select lever at "N" and "P" ranges. Connector & terminal (B137) No. 9 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 2.	Go to step 4.
2	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground with select lever at except "N" and "P" ranges. Connector & terminal (B137) No. 9 (+) — Chassis ground (-):	Is the voltage 4.5 — 5.5 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 the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
4	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B137) No. 9 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between ECM and inhibitor switch connector.	Go to step 5.
5	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 (B137) No. 9 — (T7) No. 12:	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 inhibitor switch connector. Poor contact in coupling connector. Poor contact in inhibitor switch connector. Poor contact in inhibitor switch connector.

	Step	Check	Yes	No
6	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 7.	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
7	CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector receptacle's terminals with select lever at "N" and "P" ranges. Terminals No. 7 — No. 12:	Is the resistance less than 1 Ω ?	Go to step 8.	Replace the inhibitor switch. <ref. 4at-51,="" inhibitor="" switch.="" to=""></ref.>
8	CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <ref. cs-14,<br="" to="">INSPECTION, Select Cable.></ref.>	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BA:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT MODEL)

DTC DETECTING CONDITION:

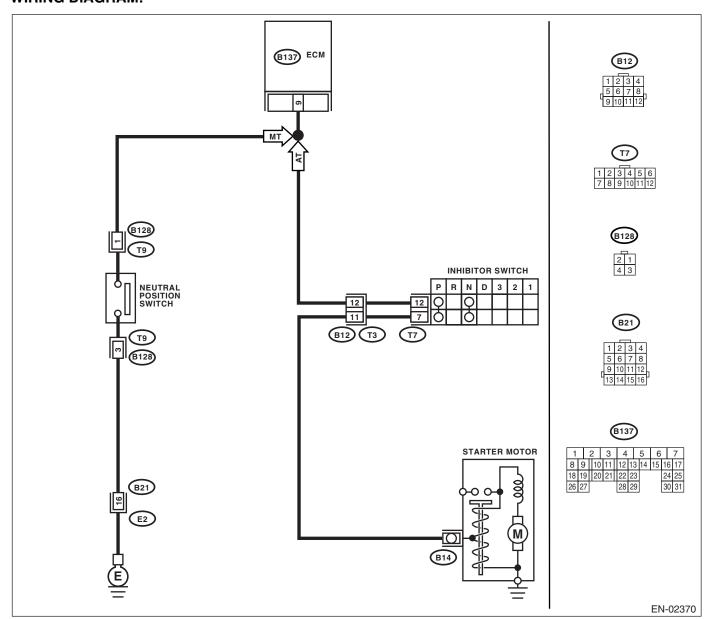
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM.	Is the voltage less than 1 V?	Go to step 2.	Go to step 4.
	1) Turn the ignition switch to ON.		•	•
	2) Place the shift lever except in neutral posi-			
	tion.			
	Measure the voltage between ECM and			
	chassis ground.			
	Connector & terminal (B137) No. 9 (+) — Chassis ground (–):			
2	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?	Co to oton 2	Co to oton 4
2	Place the shift lever in neutral position.	is the voltage more than 10 v?	Go to step 3.	Go to step 4.
	Measure the voltage between ECM and			
	chassis ground.			
	Connector & terminal			
	(B137) No. 9 (+) — Chassis ground (–):			
3	CHECK POOR CONTACT.	Is there poor contact in ECM	Repair the poor	Contact the SUB-
	Check poor contact in ECM connector.	connector?	contact in ECM	ARU dealer.
			connector.	
4	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?	Repair battery	Go to step 5.
	Disconnect the connector from ECM.		short circuit in har-	
	Measure the voltage between ECM and		ness between	
	chassis ground.		ECM and trans-	
	Connector & terminal (B137) No. 9 (+) — Chassis ground (–):		mission harness connector.	
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 6.	Repair the harness
3	TRANSMISSION HARNESS CONNECTOR.	Ω ?	Go to step 6.	and connector.
	Turn the ignition switch to OFF.	22:		
	2) Disconnect the connectors from ECM and			NOTE: In this case repair
	transmission harness connector (T9).			the following:
	3) Measure the resistance of harness			Open circuit in
	between ECM and neutral switch connector.			harness between
	Connector & terminal			ECM and trans-
	(B137) No. 9 — (B128) No. 1:			mission harness
				connector
				Poor contact in
				transmission har-
				ness connector. • Poor contact in
				ECM connector.
6	CHECK NEUTRAL POSITION SWITCH	Is the resistance less than 5	Go to step 7.	Repair open circuit
ľ	GROUND LINE.	Ω ?	So to stop 11	in the neutral posi-
	Measure the resistance of harness between			tion switch ground
	transmission harness connector and engine			line.
	ground.			
	Connector & terminal			
	(B128) No. 3 — Engine ground:			
7	CHECK NEUTRAL POSITION SWITCH.	Is the resistance less than 1	Go to step 8.	Replace the neu-
	Place the shift lever except in neutral posi- tion	Ω ?		tral position switch.
	tion. 2) Measure the resistance between transmis-			
	sion harness connector socket terminals.			
	Terminals			
	No. 1 — No. 3:			
8	CHECK POOR CONTACT.	Is there poor contact in trans-	Repair poor contact	Contact the SUB-
Ī	Check poor contact in transmission harness	mission harness connector?	in transmission har-	ARU dealer.
	connector.		ness connector.	
				i .

BB:DTC P1086 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT LOW

DTC DETECTING CONDITION:

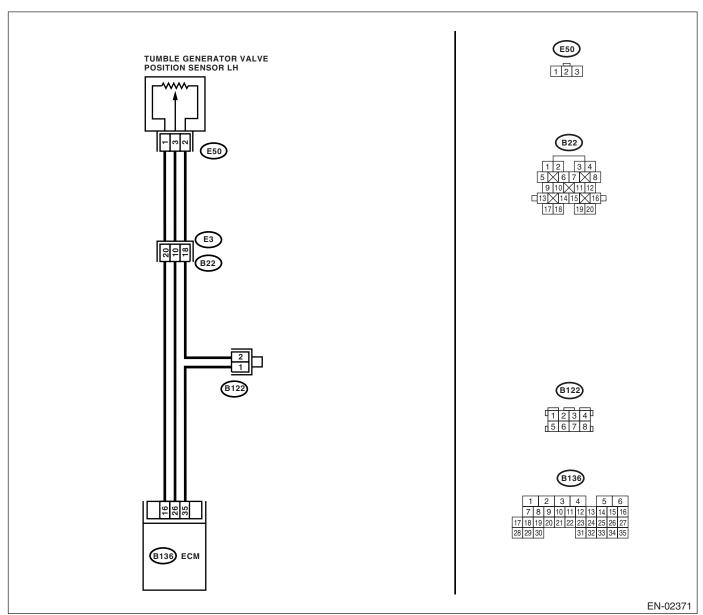
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
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 "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Is the voltage less than 0.1 V?	Go to step 2.	Even if the malfunction indicator light illuminates, 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 FROM ECM. Measure the voltage between ECM connector and chassis ground while tumble generator valve is fully closed. Connector & terminal (B136) No. 16 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 16 (+) — Chassis ground (-):	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
4	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 26 (+) — Chassis ground (-):	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM WITH SUBARU SELECT MONITOR. Measure the voltage between ECM connector and chassis ground.	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with Subaru Select Monitor?	Repair the poor contact in ECM connector.	Go to step 6.

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector 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?	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 tumble generator valve position sensor 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 (B136) No. 26 — (E50) 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 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 $\mbox{M}\Omega ?$	Go to step 9.	Repair ground short circuit in har- ness between tum- ble generator valve position sensor and ECM connector.
9	CHECK POOR CONTACT. Repair 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 tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>

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

DTC DETECTING CONDITION:

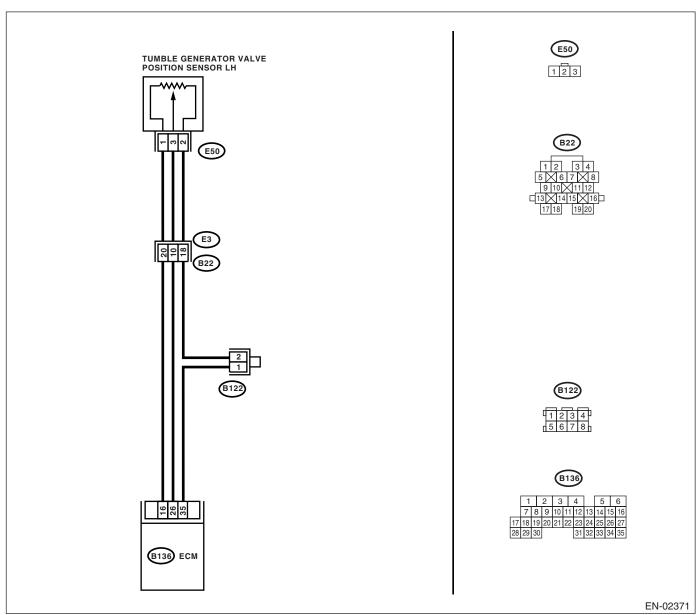
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Sten	Check	Yes	No
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 "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. 2.5)-27,="" en(h4dotc="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</ref.>	Check Is the voltage more than 4.9 V?	Yes Go to step 2.	No Even if the malfunction indicator light illuminates, 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.
2	CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors 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.	coupling connector Repair the harness and connector. 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 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 battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>	Replace the tum- ble generator valve assembly. <ref. td="" to<=""></ref.>

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

DTC DETECTING CONDITION:

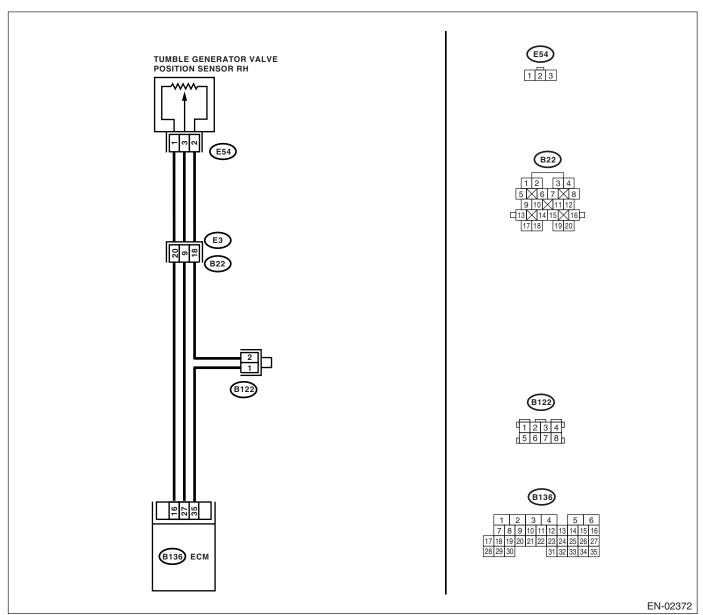
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1) Start the 2) Read the position ser Monitor or 0 NOTE: • Subaru S For detailed "READ CUF PLAY FOR 2.5)-27, Sul • OBD-II go For detailed	IRRENT DATA.		Go to step 2.	Even if the malfunction indicator light illuminates, 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.
Measure the and chassis closed. Connected	PUT SIGNAL FROM ECM. e voltage between ECM connector s ground while throttle valve is fully or & terminal No. 16 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Poor contact in coupling connector Go to step 3.
3 CHECK INI Measure the and chassis Connected	PUT SIGNAL FROM ECM. e voltage between ECM connector	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
Measure the and chassis <i>Connecte</i>	PUT SIGNAL FROM ECM. e voltage between ECM connector s ground. or & terminal No. 27 (+) — Chassis ground (-):	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
5 CHECK INI SUBARU S	PUT SIGNAL FOR ECM WITH ELECT MONITOR. e voltage between ECM connector	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with Subaru Select Monitor?	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?		Repair the harness
	TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF.	To the voltage more than 1.0 v.	do to dtop 11	and connector. NOTE: In this case repair
	2) Disconnect the connectors from throttle position sensor.3) Turn the ignition switch to ON.			the following: • Open circuit in harness between
	Measure the voltage between throttle position sensor connector and engine ground.			tumble generator valve position sen-
	Connector & terminal (E54) No. 1 (+) — Engine ground (–):			sor and ECM con-
				Poor contact in throttle position
				sensor connector • Poor contact in
				ECM connector. • Poor contact in
				coupling connector • Poor contact in ioint connector
7	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the harness and connector.
	SENSOR CONNECTOR. 1) Turn the ignition switch to OFF.			NOTE: In this case repair
	Measure the resistance of harness between ECM connector and throttle position			the following: Open circuit in
	sensor connector. Connector & terminal (B136) No. 27 — (E54) No. 3:			harness between tumble generator
	(B100) NO. 21 (E04) NO. 0.			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
				coupling connector
8	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.	Is the resistance more than 1 $M\Omega$?	Go to step 9.	Repair ground short circuit in har- ness between tum-
	Measure the resistance of harness between tumble generator valve position sensor con-			ble generator valve position sensor and
	nector and engine ground. Connector & terminal (E54) No. 3 — Engine ground:			ECM connector.
9	CHECK POOR CONTACT.	Is there poor contact in tumble	Repair the poor	Replace the tum-
	Repair poor contact in tumble generator valve position sensor connector.	generator valve position sensor connector?	contact in tumble generator valve	ble generator valve assembly. <ref. td="" to<=""></ref.>
			position sensor connector.	FU(H4DOTC 2.5)- 33, Tumble Gener- ator Valve Assem- bly.>
		l		

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

DTC DETECTING CONDITION:

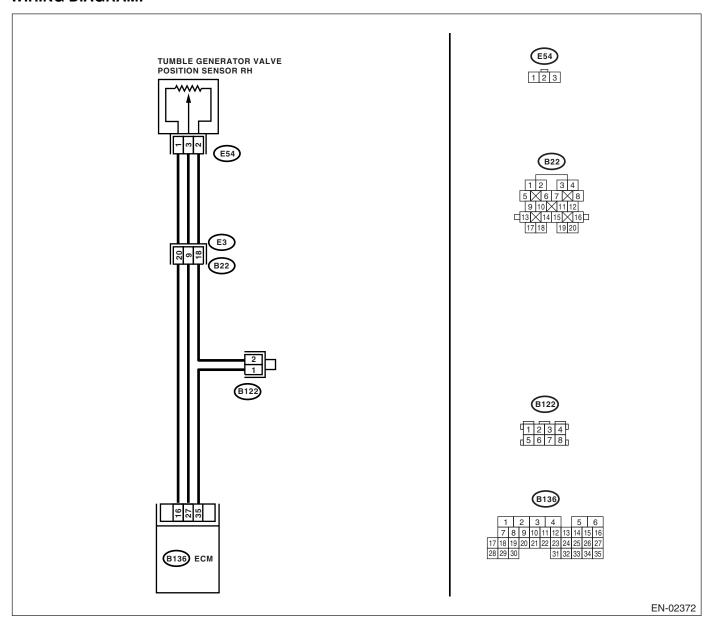
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
position senso Monitor or OBI NOTE: • Subaru Sele For detailed op CURRENT DA' ENGINE". <re aru="" detailed="" for="" gene="" mor="" obd-ii="" op<="" select="" td="" •=""><td>ngine. ata of tumble generator valve r signal using Subaru Select D-II general scan tool. ect Monitor eration procedure, refer to "READ TA SHOWN ON DISPLAY FOR f. to EN(H4DOTC 2.5)-27, Sub- nitor.></td><td>Is the voltage more than 4.9 V?</td><td></td><td>Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time. A tempo- rary poor contact of the connector may be the cause. NOTE: In this case repair the following: Poor contact in tumble generator valve position sen- sor connector Poor contact in ECM connector. Poor contact in coupling connector</td></re>	ngine. ata of tumble generator valve r signal using Subaru Select D-II general scan tool. ect Monitor eration procedure, refer to "READ TA SHOWN ON DISPLAY FOR f. to EN(H4DOTC 2.5)-27, Sub- nitor.>	Is the voltage more than 4.9 V?		Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time. A tempo- rary poor contact of the connector may be the cause. NOTE: In this case repair the following: Poor contact in tumble generator valve position sen- sor connector Poor contact in ECM connector. Poor contact in coupling connector
GENERATOR AND ECM CO 1) Turn the igr 2) Disconnect position senso 3) Measure th between tumbl sor connector & Connector &	INNECTOR. Inition switch to OFF. It the connectors from throttle It. It is resistance of harness It is generator valve position senand engine ground.	Is the resistance less than 5 Ω?		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
GENERATOR AND ECM CO 1) Turn the igr 2) Measure th tion sensor cor Connector &	nition switch to ON. ne voltage between throttle posi- nnector and engine ground.	Is the voltage more than 4.9 V?	-	Replace the tum- ble generator valve assembly. <ref. td="" to<=""></ref.>

ENGINE (DIAGNOSTIC)

BF:DTC P1090 TUMBLE GENERATED VALVE SYSTEM 1 (VALVE OPEN) DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, 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).="" 2.5)-="" 65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1) Remove the tumble generator valve assembly. 2) Check 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 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>	

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

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, 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).="" 2.5)-="" 65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1) Remove the tumble generator valve assembly. 2) Check 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 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>	

ENGINE (DIAGNOSTIC)

BH:DTC P1092 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE OPEN)

DTC DETECTING CONDITION:

Immediately at fault recognition **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, 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).="" 2.5)-="" 65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1) Remove the tumble generator valve assembly. 2) Check 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 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>	Clean tumble generator valve.

ENGINE (DIAGNOSTIC)

BI: DTC P1093 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE CLOSE)

DTC DETECTING CONDITION: Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, 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).="" 2.5)-="" 65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1) Remove the tumble generator valve assembly. 2) Check 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 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>	Clean tumble generator valve.

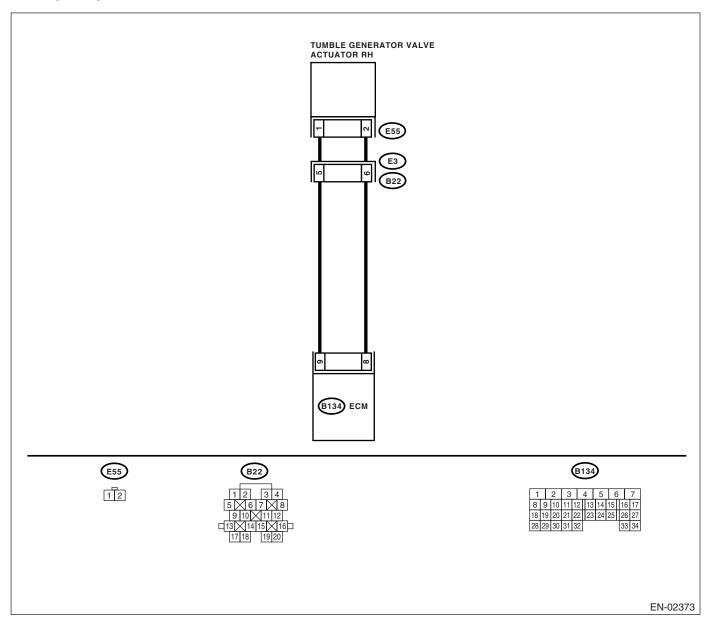
BJ:DTC P1094 TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNC-TION (OPEN)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
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 — (B134) No. 9: (E55) No. 2 — (B134) No. 8:	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 tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>

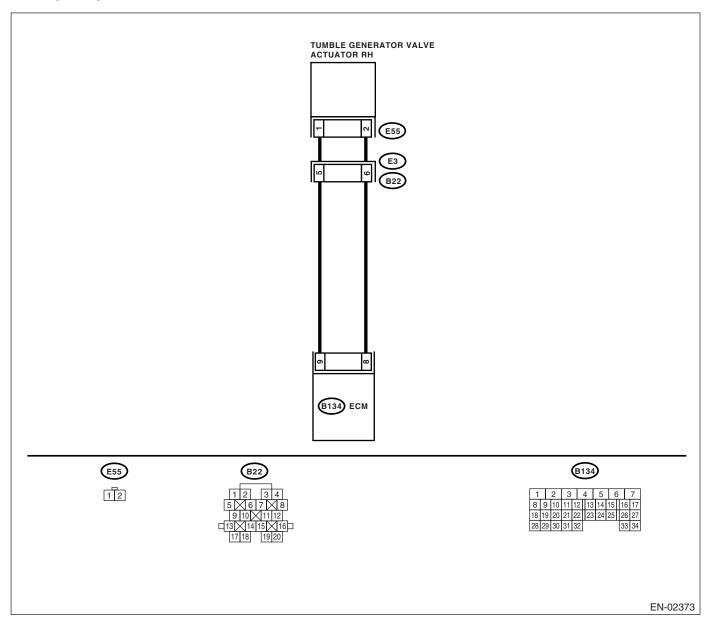
BK:DTC P1095 TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNCTION (SHORT)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
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?	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>	between ECM and tumble generator

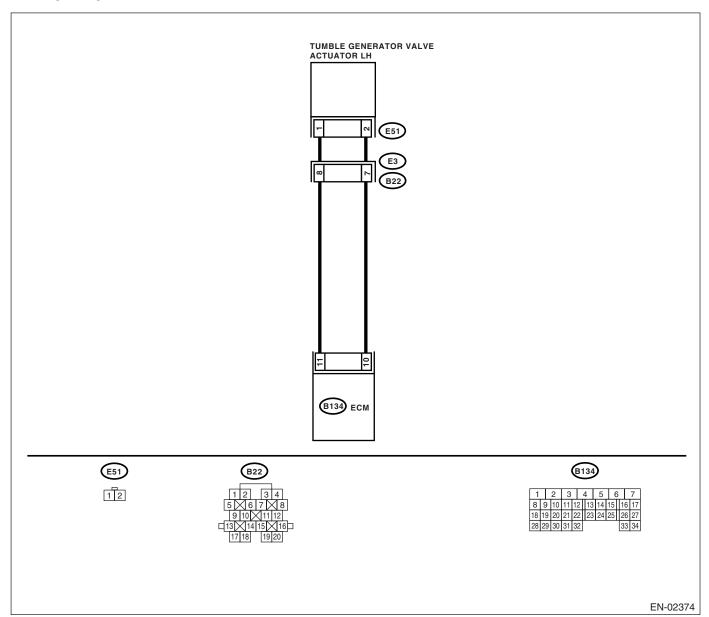
BL:DTC P1096 TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNC-TION (OPEN)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
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 — (B134) No. 11: (E51) No. 2 — (B134) No. 10:	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 tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>

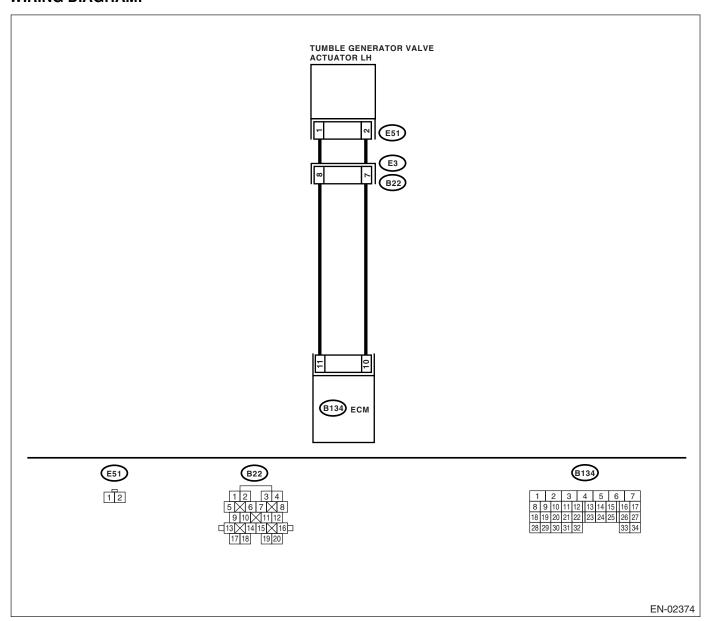
BM:DTC P1097 TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNC-TION (SHORT)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
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 (-):		Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC 2.5)- 33, Tumble Gener- ator Valve Assem- bly.></ref.>	between ECM and tumble generator

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.			Temporary poor contact occurs.
			NOTE: Atmospheric pressure sensor is built in ECM.	

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

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, 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 P1111?		Temporary poor contact occurs.
			NOTE: Atmospheric pressure sensor is built in ECM.	

BP:DTC P1160 RETURN SPRING FAILURE

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC 2.5)-224, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BQ:DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

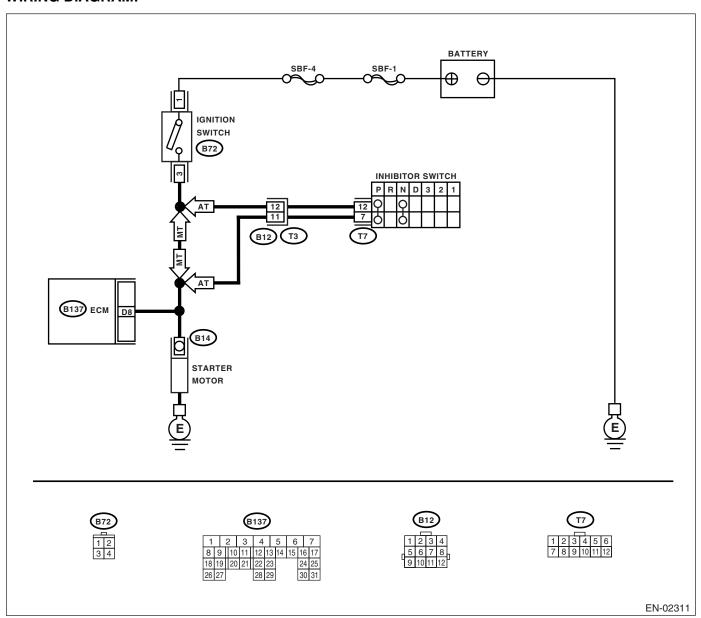
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OPERATION OF STARTER MOTOR.	Does the starter motor operate when ignition switch to START?	ness and connector. NOTE: In this case repair the following:	CUIT, Diagnostics for Engine Starting

BR:DTC P1544 EXHAUST GAS TEMPERATURE TOO HIGH

DTC DETECTING CONDITION:

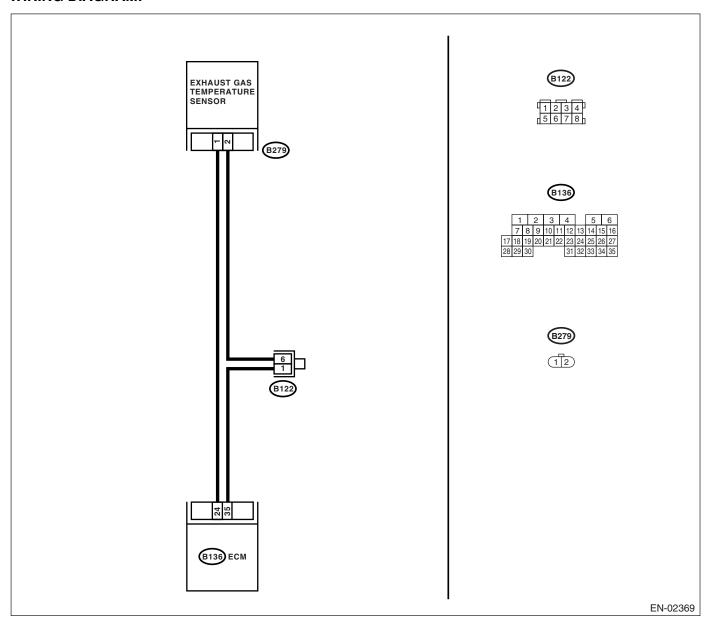
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, 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).="" 2.5)-65,="" code="" diagnostic="" en(h4dotc="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P1544.</ref.>	Go to step 2.
2	CHECK EXHAUST SYSTEM. Check 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 failure, then replace the precat- alytic converter.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

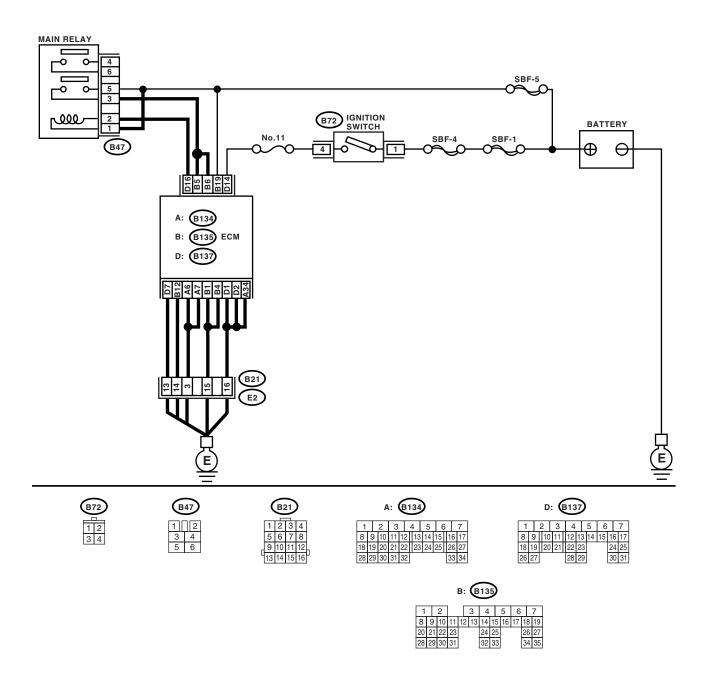
BS:DTC P1560 BACK-UP VOLTAGE CIRCUIT MALFUNCTION

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 19 (+) — 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 (B135) No. 19 — Chassis ground:	Is the resistance less than 10 Ω ?	Repair ground short circuit in har- ness between ECM connector and bat- tery terminal.	Go to step 3.
3	CHECK FUSE SBF-5.	Is the fuse blown out?	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

BT:DTC P2088 OCV SOLENOID VALVE SIGNAL A CIRCUIT OPEN (BANK 1)

DTC DETECTING CONDITION:

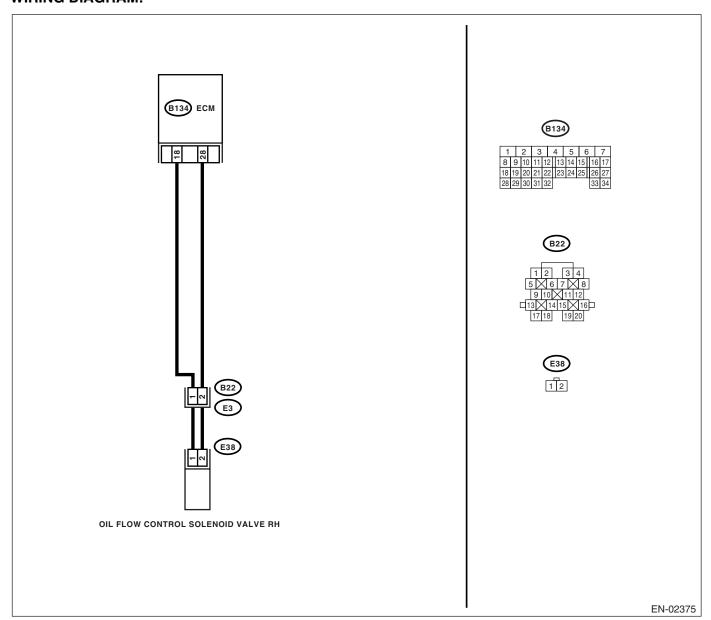
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
_	<u>-</u>	0110011		
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit in harness between
		[22]		
	1) Turn the ignition switch to OFF.			ECM and oil flow
	2) Disconnect the connector from ECM and oil			control solenoid
	flow control solenoid valve.			valve connector.
	Measure the resistance between ECM and			NOTE:
	oil flow control solenoid valve.			In this case, repair
	Connector & terminal			the following
	(B134) No. 18 — (E38) No. 1:			Open circuit in
	(B134) No. 28 — (E38) No. 2:			harness between
				ECM and oil flow
				control solenoid
				valve connector
				Poor contact in
				coupling connector
2	CHECK HARNESS BETWEEN ECM AND OIL	Is the resistance more than 1	Go to step 3.	Repair short circuit
	FLOW CONTROL SOLENOID VALVE.	ΜΩ?		between ECM and
	Measure the resistance between oil flow con-			oil flow control
	trol solenoid valve and engine ground.			solenoid valve
	Connector & terminal			connector.
	(E38) No. 1 — Engine ground:			
	(E38) No. 2 — Engine ground:			
3	CHECK OIL FLOW CONTROL SOLENOID	Is the resistance 6 — 12 Ω ?	Repair poor con-	Replace the oil
	VALVE.		tact in ECM and oil	flow control sole-
	 Remove the oil flow control solenoid valve 		flow control sole-	noid valve. <ref.< th=""></ref.<>
	connector.		noid valve.	to ME(H4DOTC)-
	2) Measure the resistance between oil flow			68, Camshaft.>
	control solenoid valve terminals.			
	Terminals			
	No. 1 — No. 2:			

BU:DTC P2089 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 1)

DTC DETECTING CONDITION:

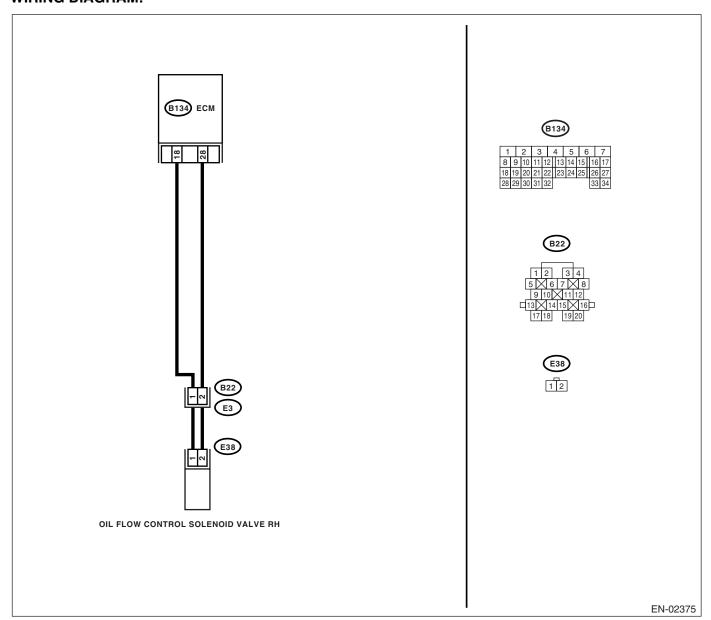
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit in harness between ECM and oil flow control solenoid valve connector. NOTE:
	oil flow control solenoid valve. Connector & terminal (B134) No. 18 — (E38) No. 1: (B134) No. 28 — (E38) No. 2:			In this case, repair the following Open circuit in harness between ECM and oil flow control solenoid valve connector
				 Poor contact in coupling connector
2	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between oil flow control solenoid valve and engine ground. Connector & terminal (E38) No. 1 — Engine ground: (E38) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit between ECM and oil flow control solenoid valve connector.
3	CHECK OIL FLOW CONTROL SOLENOID VALVE. 1) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance 6 — 12 Ω ?	Repair poor contact in ECM and oil flow control solenoid valve.	Replace the oil flow control solenoid valve. <ref. to<br="">ME(H4DOTC)-68, Camshaft.></ref.>

BV:DTC P2092 OCV SOLENOID VALVE SIGNAL A CIRCUIT OPEN (BANK 2)

DTC DETECTING CONDITION:

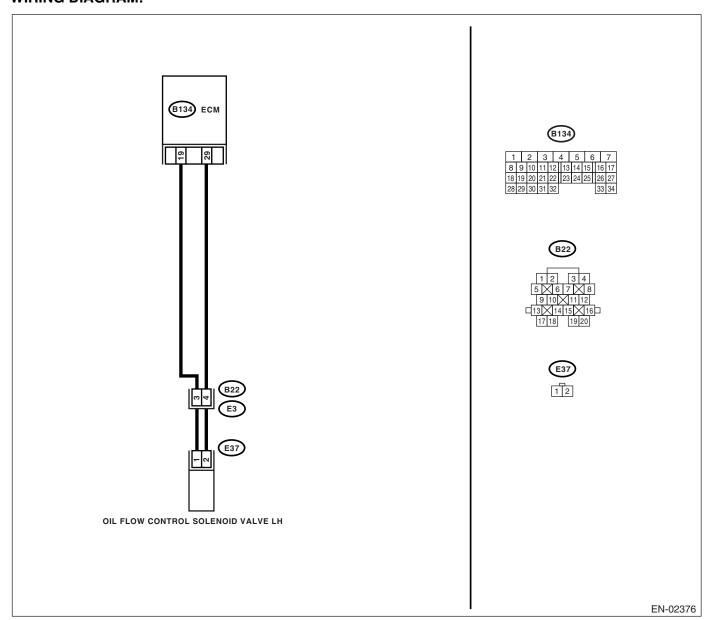
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



			Т	
	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve. Connector & terminal (B134) No. 19 — (E37) No. 1: (B134) No. 29 — (E37) No. 2:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit in harness between ECM and oil flow control solenoid valve connector. NOTE: In this case, repair the following Open circuit in harness between ECM and oil flow control solenoid valve connector Poor contact in coupling connector
2	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE. Measure the resistance between oil flow control solenoid valve and engine ground. Connector & terminal (E37) No. 1 — Engine ground: (E37) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit between ECM and oil flow control solenoid valve connector.
3	CHECK OIL FLOW CONTROL SOLENOID VALVE. 1) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance 6 — 12 Ω ?	Repair poor contact in ECM and oil flow control solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H4DOTC)- 68, Camshaft.></ref.

BW:DTC P2093 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 2)

DTC DETECTING CONDITION:

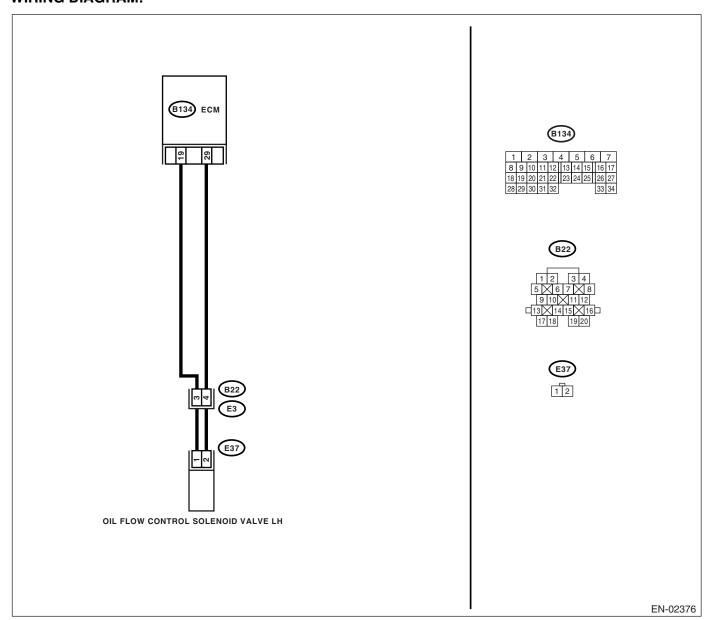
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve. Connector & terminal (B134) No. 19 — (E37) No. 1: (B134) No. 29 — (E37) No. 2:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit in harness between ECM and oil flow control solenoid valve connector. NOTE: In this case, repair the following Open circuit in harness between ECM and oil flow
	OUTOK HADNEGO DETIMEN FOM AND OU		Out to the G	control solenoid valve connector Poor contact in coupling connector
2	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between oil flow control solenoid valve and engine ground. Connector & terminal (E37) No. 1 — Engine ground: (E37) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit between ECM and oil flow control solenoid valve connector.
3	CHECK OIL FLOW CONTROL SOLENOID VALVE. 1) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance 6 — 12 Ω ?	Repair poor contact in ECM and oil flow control solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H4DOTC)- 68, Camshaft.></ref.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BX:DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/ PERFORMANCE

DTC DETECTING CONDITION:

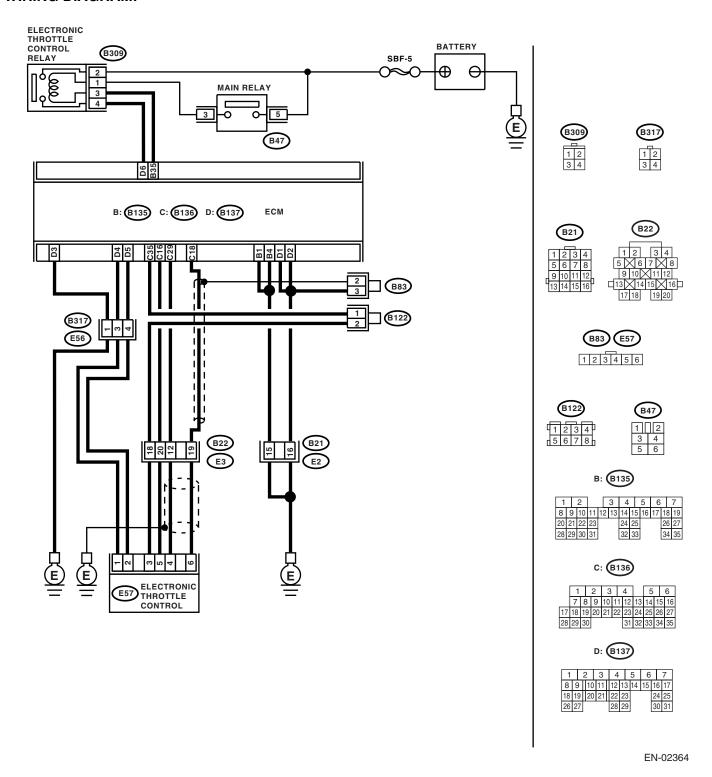
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Ston	Chook	Yes	No
1	Step CHECK ELECTRONIC THROTTLE CON-	Check Is the resistance less than 1		No Replace the elec-
'	TROL RELAY.	Ω ?	Go to step 2.	tronic throttle con-
	Turn the ignition switch to OFF.	[22]		trol relay.
	2) Remove the electronic throttle control relay.			li Oi Telay.
	3) Connect the battery to electronic throttle			
	control relay terminals No. 1 and No. 3.			
	4) Measure the resistance between electronic			
	throttle control relay terminals.			
	Terminals			
	No. 2 — No. 4:			
2	CHECK POWER SUPPLY OF ELECTRONIC	Is the voltage more than 5 V?	Go to step 3.	Repair open or
	THROTTLE CONTROL RELAY.			ground short cir-
	Measure the voltage between electronic throt-			cuit of power sup-
	tle control relay connector and engine ground.			ply circuit.
	Connector & terminal			
	(B309) No. 1 (+) — Engine ground (-):			
	(B309) No. 2 (+) — Engine ground (-):		0 1 1	
3	CHECK HARNESS BETWEEN ECM AND	Is the voltage less than 5 V?	Go to step 4.	Repair power sup-
	ELECTRONIC THROTTLE CONTROL RE-			ply short circuit in
	LAY. 1) Disconnect the connector from ECM.			harness between ECM and electronic
	2) Turn the ignition switch to ON.			throttle control.
	3) Measure the voltage between electronic			unotue control.
	throttle control relay connector and engine			
	ground.			
	Connector & terminal			
	(B309) No. 3 (+) — Engine ground (–):			
4	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 5.	Repair ground
	ELECTRONIC THROTTLE CONTROL RE-	ΜΩ?		short circuit in har-
	LAY.			ness between
	Turn the ignition switch to OFF.			ECM and elec-
	2) Measure the resistance between electronic			tronic throttle con-
	throttle control relay connector and chassis			trol relay.
	ground. Connector & terminal			
	(B309) No. 3 — Engine ground:			
	(B309) No. 3 — Engine ground: (B309) No. 4 — Engine ground:			
5	CHECK HARNESS BETWEEN FCM AND	Is the resistance less than 1	Go to stop 6	Renair onen sirauit
ا	ELECTRONIC THROTTLE CONTROL RE-	Ω ?	Go to step 6.	Repair open circuit in harness
	LAY.	22.		between ECM and
	Measure the resistance between ECM connector			electronic throttle
	and electronic throttle control relay connector.			control relay.
	Connector & terminal			, ,
	(B135) No. 35 — (B309) No. 3:			
	(B137) No. 6 — (B309) No. 4:			
6	CHECK SENSOR OUTPUT.	Is the voltage more than 0.4 V?	Go to step 7.	Go to step 9.
	1) Connect all the connectors.			
	2) Turn the ignition switch to ON.			
	3) Measure the voltage between ECM con-			
	nector terminals.			
	Connector & terminal			
	(B136) No. 18 (+) — (B136) No. 35 (-):			
	4) Check the voltage change by shaking the			
	harness and connector of ECM, engine har-			
	ness connector and electronic throttle control			
	connector.			

	Step	Check	Yes	No
7	CHECK SENSOR OUTPUT.	Is the voltage more than 0.8 V?	Go to step 8.	Go to step 9.
	 Connect all the connectors. 		'	•
	2) Turn the ignition switch to ON.			
	3) Measure the voltage between ECM con-			
	nector terminals.			
	Connector & terminal			
	(B136) No. 29 (+) — (B136) No. 35 (–):			
	4) Check the voltage change by shaking the har-			
	ness and connector of ECM, engine harness con-			
	nector and electronic throttle control connector.			
8	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Go to step 13.
	Check the poor contact in connector between		contact.	
	ECM and electronic throttle control.			
9	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 10.	Repair the open
	ELECTRONIC THROTTLE CONTROL.	Ω ?	'	circuit of harness
	1) Turn the ignition switch to OFF.			connector.
	2) Disconnect the connector from ECM.			
	3) Disconnect the connectors from the elec-			
	tronic throttle control.			
	4) Measure the resistance between ECM con-			
	nector and electronic throttle control connector.			
	Connector & terminal			
	(B136) No. 16 — (E57) No. 5:			
10	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 11.	Repair the ground
	ELECTRONIC THROTTLE CONTROL.	ΜΩ?		short circuit of har-
	Measure the resistance between ECM connec-			ness.
	tor and chassis ground.			
	Connector & terminal			
	(B136) No. 16 — Chassis ground:			
	(B136) No. 18 — Chassis ground:			
	(B136) No. 29 — Chassis ground:			
11	CHECK SENSOR POWER SUPPLY.	Is the voltage 4.5 — 5.5 V?	Go to step 12.	Repair the poor
	Connect the ECM connector.			contact in ECM
	2) Turn the ignition switch to ON.			connector. Replace
	3) Measure the voltage between electronic			the ECM if defec-
	throttle control connector and engine ground.			tive. <ref. td="" to<=""></ref.>
	Connector & terminal			FU(H4DOTC 2.5)-
	(E57) No. 5 (+) — Engine ground (–):			41, Engine Con- trol Module
	4) Check the voltage change by shaking the			(ECM).>
	harness and connector of ECM and engine			(LOIVI).>
	harness connector while monitoring the value			
10	with voltage meter.	lo the vegictores were the set 10.	Co to ctor 10	Donois that was a
12	CHECK SHORT CIRCUIT IN ECM.	Is the resistance more than 10	Go to step 13.	Repair the poor
	Turn the ignition switch to OFF. Measure the resistance between electronic.	Ω ?		contact in ECM
	2) Measure the resistance between electronic			connector. Replace the ECM
	throttle control connector and engine ground. Connector & terminal			if defective.
	(E57) No. 4 — Engine ground:			ii uciculive.
	(E57) No. 4 — Engine ground: (E57) No. 6 — Engine ground:			
13	CHECK SENSOR OUTPUT.	Is the voltage 4.63 V?	Go to step 14.	Go to step 16.
	Connect all the connectors.	listic voltago 1.00 v :	5.0 to 5top 141	5.5 to 5top 101
	Turn the ignition switch to ON.			
	3) Read the data of main throttle sensor signal			
	using Subaru Select Monitor.			
	4) Check the voltage change by shaking the			
	harness and connector of ECM, engine har-			
	ness connector and electronic throttle control			
	connector.			

	Step	Check	Yes	No
14	CHECK SENSOR OUTPUT. 1) Read the data of sub throttle sensor signal using Subaru Select Monitor. 2) Check the voltage change by shaking the harness and connector of ECM, engine harness connector and electronic throttle control connector.	Is the voltage 4.73 V?	Go to step 15.	Go to step 16.
15	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Go to step 21.
16	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 18 — (E57) No. 6: (B136) No. 29 — (E57) No. 4: (B136) No. 35 — (E57) No. 3:	Is the resistance less than 1 Ω ?	Go to step 17.	Repair the open circuit of harness connector.
17	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 18.	Repair the poor contact in ECM connector. Replace the ECM if defective.
18	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 3) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage more than 10 V?	Go to step 19.	Repair battery short circuit in har- ness between ECM connector and elec- tronic throttle con- trol connector.
19	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 4 (+) — Engine ground (-): (E57) No. 6 (+) — Engine ground (-): 2) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage less than 10 V?	Go to step 20.	Repair short circuit in harness between ECM connector and electronic throttle control connector.

	Step	Check	Yes	No
20	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Remove the ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B136) No. 18 — (B136) No. 35: (B136) No. 29 — (B136) No. 35:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 21.	Repair short circuit to sensor power supply.
21	CHECK SENSOR OUTPUT. 1) Turn the ignition switch to OFF. 2) Connect the connectors except of the electric control throttle relay. 3) Turn the ignition switch to ON. 4) Read the data of main throttle sensor signal using Subaru Select Monitor.	Is the voltage 0.81 — 0.87 V?	Go to step 22.	Repair poor contact of electronic throt- tle control connec- tor. Replace the electronic throttle control if defective.
22	CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage 1.64 — 1.70 V?	Go to step 23.	Repair the poor contact in ECM connector. Replace the electronic throttle control if defective.
23	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B137) No. 4 — (E57) No. 1: (B137) No. 5 — (E57) No. 2:	Is the resistance less than 1 Ω ?	Go to step 24.	Repair the open circuit of harness connector.
24	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 1 (+) — Engine ground (-): (E57) No. 2 (+) — Engine ground (-):	Is the voltage less than 5 V?	Go to step 25.	Repair power supply short circuit in harness between ECM and electronic throttle control.
25	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 1 — Engine ground: (E57) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 26.	Repair the short circuit of harness.
26	CHECK ELECTRONIC THROTTLE CONTROL MOTOR HARNESS. Measure the resistance between electronic throttle control connector terminals. Connector & terminal (E57) No. 2 — (E57) No. 1:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 27.	Repair the short circuit of harness.

	Step	Check	Yes	No
27	CHECK ELECTRONIC THROTTLE CONTROL GROUND CIRCUIT. Measure the resistance between ECM connector and engine ground. Connector & terminal (B137) No. 3 — Engine ground:	Is the resistance less than 10 Ω ?	Go to step 28.	Repair the open circuit of harness.
28	CHECK ELECTRONIC THROTTLE CONTROL. Measure the resistance between electronic throttle control terminals. Terminals No. 1 — No. 2:	Is the resistance less than 5 Ω ?	Go to step 29.	Repair the electronic throttle control.
29	CHECK ELECTRONIC THROTTLE CONTROL. Move the throttle valve to the fully open and fully closed positions with fingers Check the valve returns to the specified position when releasing fingers.	Does the valve return to the specified position? Standard value: 3 mm (0.12 in) from fully closed position	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" 2.5)-41,="" control="" engine="" fu(h4dotc="" module="" to=""></ref.>	Repair the electronic throttle control.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BY:DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW DTC DETECTING CONDITION:

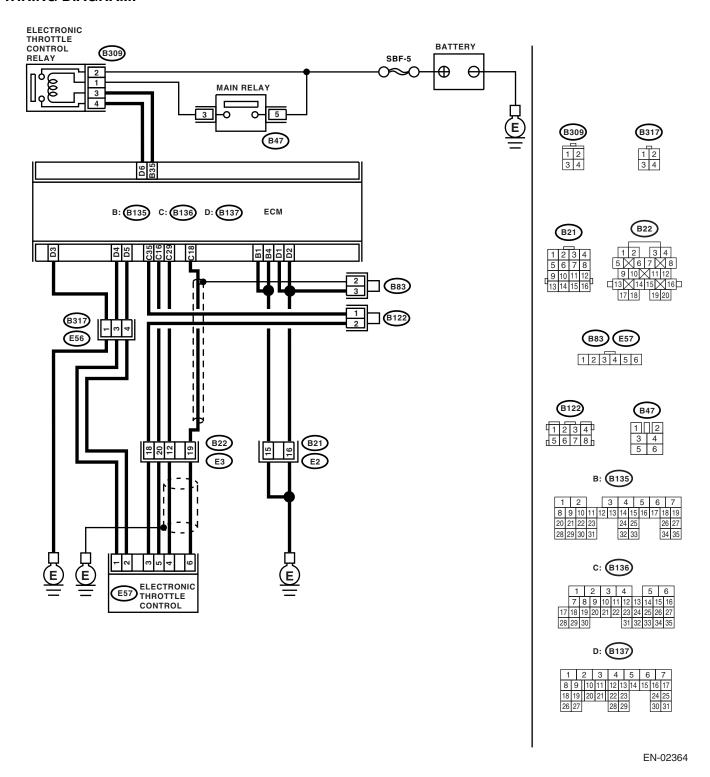
Immediately at fault recognition

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



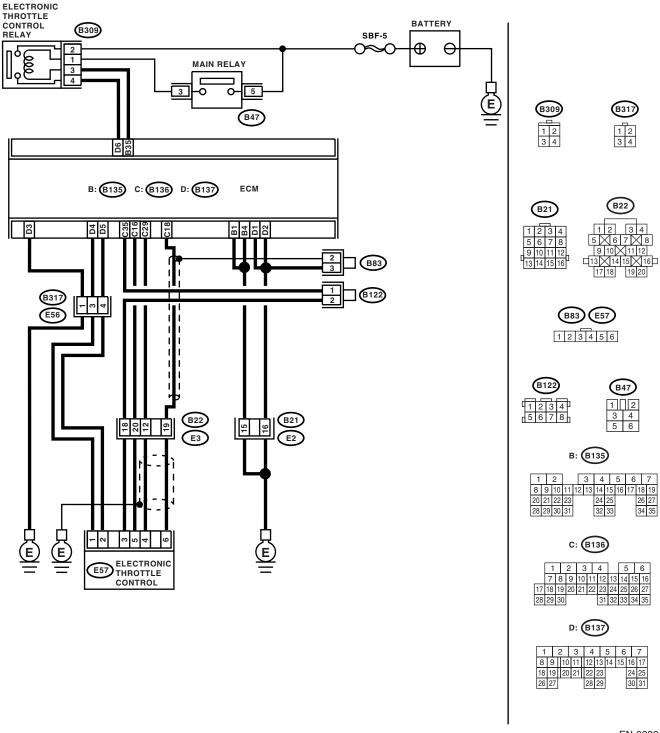
	Step	Check	Yes	No
1	CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Connect the battery to electronic throttle control relay terminals No. 1 and No. 3. 4) Measure the resistance between electronic throttle control terminals. Terminals (B309) No. 2 — (B309) No. 4:	Is the resistance less than 1 Ω ?	Go to step 2.	Replace the electronic throttle control relay.
2	CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY. Measure the voltage between electronic throttle control relay connector and engine ground. Connector & terminal (B309) No. 1 (+) — Engine ground (-): (B309) No. 2 (+) — Engine ground (-):	Is the voltage more than 5 V?	Go to step 3.	Repair open or ground short cir- cuit of power sup- ply circuit.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE-LAY. 1) Disconnect the connector from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control relay connector and engine ground. Connector & terminal (B309) No. 3 (+) — Engine ground (-):	Is the voltage less than 5 V?	Go to step 4.	Repair power sup- ply short circuit in harness between ECM and elec- tronic throttle con- trol relay.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE-LAY. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control relay connector and chassis ground. Connector & terminal (B309) No. 3 — Engine ground: (B309) No. 4 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair ground short circuit in har- ness between ECM and elec- tronic throttle con- trol relay.
5	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE-LAY. Measure the resistance between ECM connector and electronic throttle control relay connector. Connector & terminal (B135) No. 35 — (B309) No. 3: (B137) No. 6 — (B309) No. 4:	Is the resistance less than 1 Ω ?	Repair the poor contact in ECM con- nector. Replace the ECM if defective.	

BZ:DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

	Step	Check	Yes	No
1	CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Measure the resistance between electronic throttle control relay terminals. Terminals No. 2 — No. 4:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 2.	Replace the electronic throttle control relay.
2	CHECK POWER SUPPLY SHORT CIRCUIT OF ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control relay connector and engine ground. Connector & terminal (B309) No. 4 (+) — Engine ground (-):	Is the voltage more than 5 V?	Go to step 3.	Repair power sup- ply short circuit in harness between ECM and elec- tronic throttle con- trol relay.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE-LAY. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and engine ground. Connector & terminal (B135) No. 35 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact in ECM connector. Replace the ECM if defective.	Repair ground short circuit in har- ness between ECM and elec- tronic throttle con- trol relay.

CA:DTC P2109 THROTTLE/PEDAL POSITION SENSOR A MINIMUM STOP PER-FORMANCE

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC 2.5)-224, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

DTC DETECTING CONDITION:

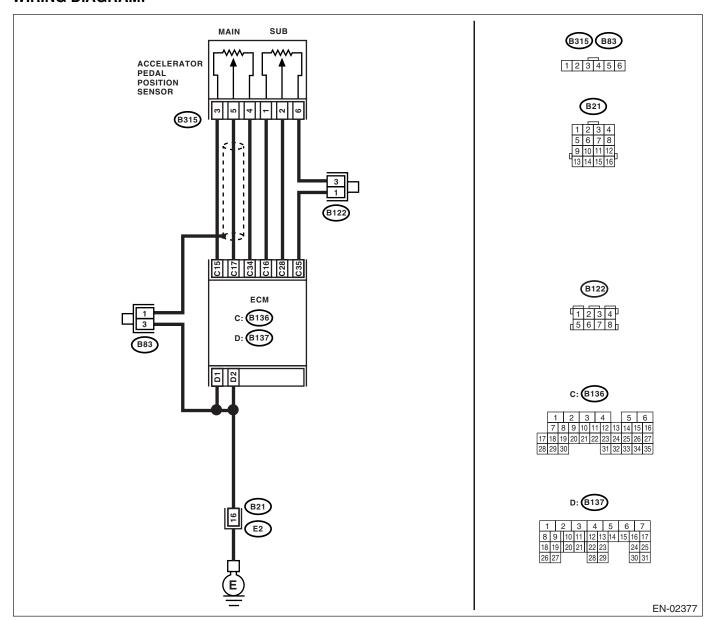
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ACCELERATOR PEDAL POSITION	Is the voltage more than 0.4 V?		Go to step 3.
	SENSOR OUTPUT.	l and remage mere areas or a	эл нэ элэр —	on the stop of
	 Turn the ignition switch to ON. 			
	Measure the voltage between ECM con-			
	nector terminals.			
	Connector & terminal			
	(B136) No. 17 (+) — (B136) No. 34 (–):			
	3) Check the voltage change by shaking the			
	harness and connector of ECM and accelera-			
	tor pedal position sensor connector and harness.			
2	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Temporary poor
	Check poor contact in connector between	lis there poor contact:	contact.	contact occurred,
	ECM and accelerator pedal position sensor.		contact.	but it is normal at
	Zem and accolerator podar position concen-			present.
3	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance less than 1	Go to step 4.	Repair the open
	CELERATOR PEDAL POSITION SENSOR.	Ω?	f.	circuit of harness
	1) Turn the ignition switch to OFF.			connector.
	Disconnect the connector from ECM.			
	3) Disconnect the connector from the acceler-			
	ator pedal position sensor.			
	4) Measure the resistance between ECM con-			
	nector and accelerator pedal position sensor connector.			
	Connector & terminal			
	(B136) No. 15 — (B315) No. 3:			
	(B136) No. 17 — (B315) No. 5:			
4	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance more than 1	Go to step 5.	Repair the chas-
	CELERATOR PEDAL POSITION SENSOR.	ΜΩ?		sis short circuit of
	Measure the resistance between ECM connec-			harness.
	tor and chassis ground.			
	Connector & terminal			
	(B136) No. 15 — Chassis ground: (B136) No. 17 — Chassis ground:			
5	CHECK POWER SUPPLY OF ACCELERA-	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor
٦	TOR PEDAL POSITION SENSOR.	is the voltage 4.5 — 5.5 V !	do to step o.	contact in ECM
	Connect the ECM connector.			connector. Replace
	2) Turn the ignition switch to ON.			the ECM if defec-
	3) Measure the voltage between accelerator			tive. <ref. th="" to<=""></ref.>
	pedal position sensor connector and engine			FU(H4DOTC 2.5)-
	ground.			41, Engine Con-
	Connector & terminal			trol Module
	(B315) No. 3 (+) — Engine ground (-):			(ECM).>
	4) Check the voltage change by shaking the			
	harness and connector of ECM while monitoring the value with voltage meter.			
6	CHECK ACCELERATOR PEDAL POSITION	Is the resistance 1.2 — 4.8	Go to step 7.	Replace the accel-
ا	SENSOR.	$k\Omega$?	Go to step 7.	erator pedal posi-
	Measure the resistance of accelerator pedal	142 2 1		tion sensor.
	position sensor.			
	Terminals			
	No. 3 — No. 4:			

	Step	Check	Yes	No
7	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor. Terminals No. 5 — No. 4:	Is the resistance 0.2 — 1.0 k Ω ?	Go to step 8.	Replace the accelerator pedal position sensor.
	Check the measured value is within the specification without depressing the accelerator pedal.			
8	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor. Terminals No. 5 — No. 4:	Is the resistance 0.5 — 2.5 k Ω ?	Repair the poor contact in ECM connector. Replace the ECM if defective.	Replace the accelerator pedal position sensor.
	Check the measured value is within the specification with the accelerator pedal depressed.			

CC:DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

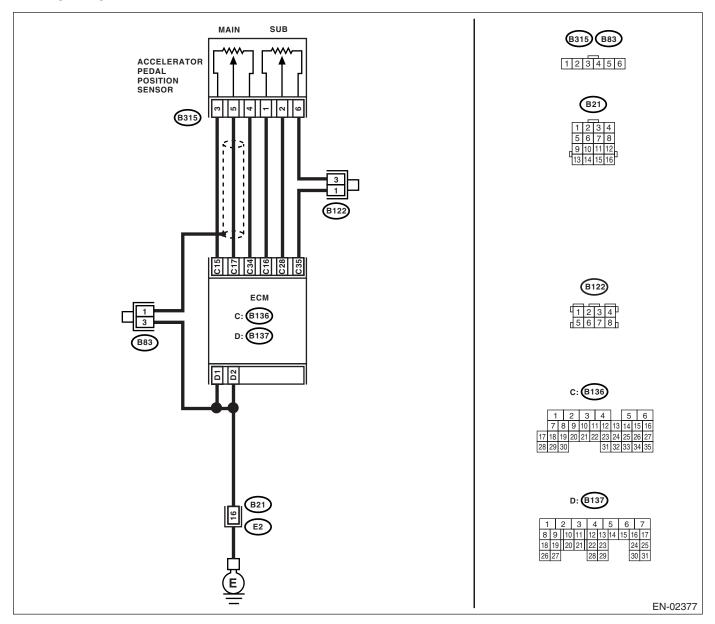
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ACCELERATOR PEDAL POSITION	Is the voltage less than 4.8 V?	Go to step 2.	Go to step 3.
	SENSOR OUTPUT.			
	1) Turn the ignition switch to ON.			
	2) Read the data of main accelerator pedal			
	position sensor signal using Subaru Select Monitor.			
	3) Check the voltage change by shaking the			
	harness and connector of ECM, engine har-			
	ness connector and accelerator pedal position			
	sensor connector harness.			
2	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Temporary poor
	Check poor contact in connector between	·	contact.	contact occurred,
	ECM and accelerator pedal position sensor.			but it is normal at
				present.
3	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance less than 1	Go to step 4.	Repair the open
	CELERATOR PEDAL POSITION SENSOR.	Ω?		circuit of harness
	1) Turn the ignition switch to OFF.			connector.
	2) Disconnect the connector from ECM.			
	3) Disconnect the connector from the accelerator pedal position sensor.			
	Measure the resistance between ECM con-			
	nector and accelerator pedal position sensor con-			
	nector.			
	Connector & terminal			
	(B136) No. 34 — (B315) No. 4:			
4	CHECK HARNESS BETWEEN ECM AND AC-		Go to step 5.	Repair the poor
	CELERATOR PEDAL POSITION SENSOR.	Ω?		contact in ECM
	Connect the ECM connector.			connector.
	Measure the resistance between accelerator and a position appear connector and angine			Replace the ECM if defective.
	pedal position sensor connector and engine ground.			ii delective.
	Connector & terminal			
	(B315) No. 4 — Engine ground:			
5	CHECK HARNESS BETWEEN ECM AND AC-	Is the voltage more than 6 V?	Go to step 6.	Repair battery
	CELERATOR PEDAL POSITION SENSOR.		•	short circuit in har-
	 Connect the ECM connector. 			ness between
	Turn the ignition switch to ON.			ECM connector
	3) Measure the voltage between accelerator			and accelerator
	pedal position sensor connector and engine			pedal position sen-
	ground.			sor connector.
	Connector & terminal (B315) No. 3 (+) — Engine ground (–):			
	4) Check the voltage is above the specified			
	value when shaking the harness and connec-			
	tor of ECM while monitoring the value with volt-			
	age meter.			
6	CHECK POWER SUPPLY OF ACCELERA-	Is the voltage less than 4.8 V?	Go to step 7.	Repair short circuit
	TOR PEDAL POSITION SENSOR.			in harness between
	Measure the voltage between accelerator			ECM connector and
	pedal position sensor connector and engine			accelerator pedal
	ground.			position sensor con-
	Connector & terminal			nector.
	(B315) No. 5 (+) — Engine ground (–):			
	2) Check the voltage is below the specified			
	value when shaking the harness and connec-			
	tor of ECM while monitoring the value with volt-			
	age meter.			

Step	Check	Yes	No
7 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Connect the accelerator pedal position sensor connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 17 (+) — Chassis ground (-):	Č	contact in ECM connector. Replace the ECM if defective.	Repair poor contact in accelerator pedal position sensor connector. Replace the accelerator pedal position sensor if defective.

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

DTC DETECTING CONDITION:

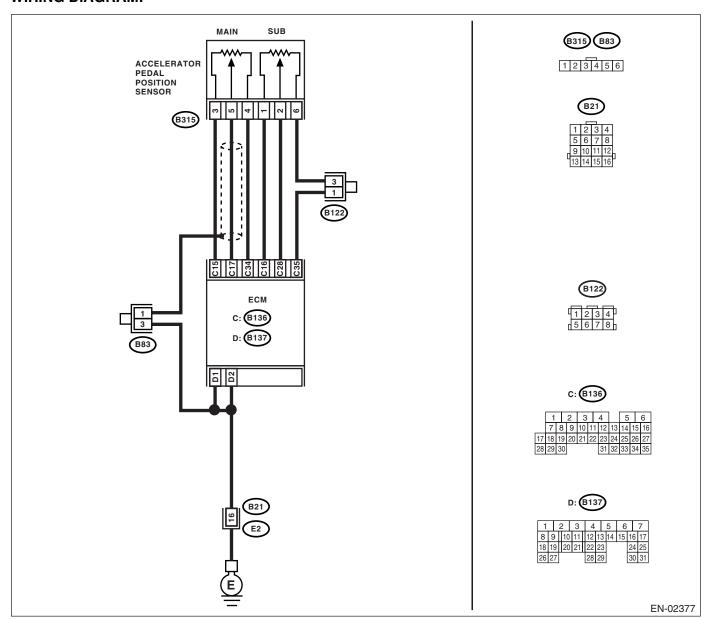
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ACCELERATOR PEDAL POSITION SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector terminals. Connector & terminal (B136) No. 28 (+) — (B136) No. 35 (-): 3) Check the voltage exceed the standard value by shaking the harness and connector of ECM and accelerator pedal position sensor connector and harness.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator pedal position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator pedal position sensor. 4) Measure the resistance between ECM connector and accelerator pedal position sensor connector. Connector & terminal (B136) No. 16 — (B315) No. 1: (B136) No. 28 — (B315) No. 2:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B136) No. 16 — Chassis ground: (B136) No. 28 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the chassis short circuit of harness.
5	CHECK POWER SUPPLY OF ACCELERATOR PEDAL POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator pedal position sensor connector and engine ground. Connector & terminal (B315) No. 1 (+) — Engine ground (-): 4) Check the voltage is within the specified value when shaking the harness and connector of ECM while monitoring the value with voltage meter.	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective.
6	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor. Terminals No. 1 — No. 6:	Is the resistance 0.75 — 3.15 $k\Omega$?	Go to step 7.	Replace the accelerator pedal position sensor.

	Step	Check	Yes	No
7	CHECK ACCELERATOR PEDAL POSITION SENSOR. 1) Measure the resistance of accelerator pedal position sensor. Terminals No. 2 — No. 6:	Is the resistance 0.15 — 0.63 k Ω ?	Go to step 8.	Replace the accelerator pedal position sensor.
	Check the measured value is within the specification without depressing the accelera- tor pedal.			
8	CHECK ACCELERATOR PEDAL POSITION SENSOR. 1) Measure the resistance of accelerator pedal position sensor. Terminals No. 2 — No. 6:	Is the resistance 0.28 — 1.68 k Ω ?	Repair the poor contact in ECM connector. Replace the ECM if defective.	Replace the accelerator pedal position sensor.
	 Check the measured value is within the specification with the accelerator pedal depressed. 			

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

DTC DETECTING CONDITION:

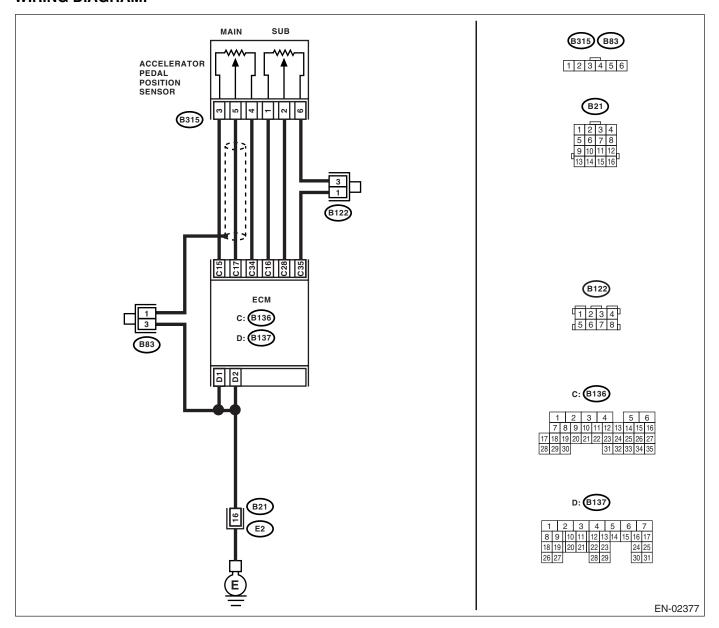
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ACCELERATOR PEDAL POSITION	Is the voltage less than 4.8 V?	Go to step 2.	Go to step 3.
	SENSOR OUTPUT.	is the voltage loss than 1.0 v.	Go to dtop 2.	Go to dtop o :
	1) Turn the ignition switch to ON.			
	2) Read the data of sub accelerator pedal			
	position sensor signal using Subaru Select			
	Monitor.			
	3) Check the voltage change by shaking the			
	harness and connector of ECM, engine har-			
	ness connector and accelerator pedal position			
_	sensor connector harness.			-
2	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Temporary poor
	Check poor contact in connector between		contact.	contact occurred,
	ECM and accelerator pedal position sensor.			but it is normal at
	OUTOV HADNESS DETWEEN FOM AND AS		Co to oton 4	present.
3	CHECK HARNESS BETWEEN ECM AND AC-		Go to step 4.	Repair the open
	CELERATOR PEDAL POSITION SENSOR.	Ω?		circuit of harness
	 Turn the ignition switch to OFF. Disconnect the connector from ECM. 			connector.
	,			
	 Disconnect the connector from the accelerator pedal position sensor. 			
	Measure the resistance between ECM con-			
	nector and accelerator pedal position sensor con-			
	nector.			
	Connector & terminal			
	(B136) No. 35 — (B315) No. 6:			
4	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance less than 5	Go to step 5.	Repair the poor
	CELERATOR PEDAL POSITION SENSOR.	Ω ?	•	contact in ECM
	1) Connect the ECM connector.			connector.
	2) Measure the resistance between accelerator			Replace the ECM
	pedal position sensor connector and engine			if defective.
	ground.			
	Connector & terminal			
	(B315) No. 6 — Engine ground:			
5	CHECK HARNESS BETWEEN ECM AND AC-	Is the voltage less than 6 V?	Go to step 6.	Repair battery short
	CELERATOR PEDAL POSITION SENSOR.			circuit in harness
	Connect the ECM connector.			between ECM con-
	2) Turn the ignition switch to ON.			nector and acceler-
	Measure the voltage between accelerator pedal position sensor connector and engine			ator pedal position
	ground.			sensor connector.
	Connector & terminal			
	(B315) No. 1 (+) — Engine ground (–):			
	4) Check the voltage is above the specified value			
	when shaking the harness and connector of ECM			
	while monitoring the value with voltage meter.			
6	CHECK POWER SUPPLY OF ACCELERA-	Is the voltage less than 4.8 V?	Go to step 7.	Repair short circuit
آ	TOR PEDAL POSITION SENSOR.	is and voltage 1000 than 110 V	55 to 5top 11	in harness between
	Measure the voltage between accelerator			ECM connector and
	pedal position sensor connector and engine			accelerator pedal
	ground.			position sensor con-
	Connector & terminal			nector.
	(B315) No. 2 (+) — Engine ground (–):			
	2) Check the voltage change by shaking the			
	harness and connector of ECM while monitor-			
	ing the value with voltage meter.			
		i .	I .	ı

Step	Check	Yes	No
7 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Connect the accelerator pedal position sensor connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 16 (+) — Chassis ground (-):	,	contact in ECM connector. Replace the ECM if defective.	Repair poor contact in accelerator pedal position sensor connector. Replace the accelerator pedal position sensor if defective.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CF:DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A"/"B" VOLT-AGE RATIONALITY

DTC DETECTING CONDITION:

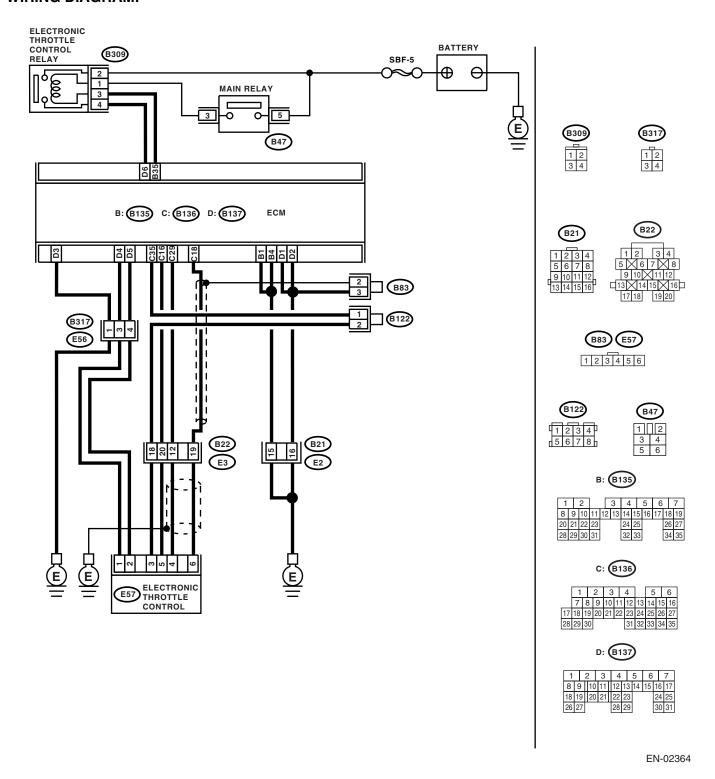
Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
4				-
1	CHECK SENSOR OUTPUT.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 4.
	1) Turn the ignition switch to ON.			
	Measure the voltage between ECM con- nector terminals.			
	Connector & terminal			
	(B136) No. 18 (+) — (B136) No. 35 (–):			
	3) Check the voltage change by shaking the har-			
	ness and connector of ECM, engine harness con- nector and electronic throttle control connector.			
			0 - 44 0	0 - 11 1
2	CHECK SENSOR OUTPUT.	Is the voltage more than 0.8 V?	Go to step 3.	Go to step 4.
	Measure the voltage between ECM con- nector terminals.			
	Connector & terminal			
	(B136) No. 29 (+) — (B136) No. 35 (–):			
	2) Check the voltage change by shaking the har-			
	ness and connector of ECM, engine harness con- nector and electronic throttle control connector.			
		lo thore poor contact?	Donois the sees	Co to otor 14
3	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Go to step 14.
	Check the poor contact in connector between ECM and electronic throttle control.		contact.	
4	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Co to otor F	Danair the sees
4	ELECTRONIC THROTTLE CONTROL.	Ω ?	Go to step 5.	Repair the open circuit of harness
	Turn the ignition switch to OFF.	22?		connector.
	2) Disconnect the connector from ECM.			connector.
	3) Disconnect the connectors from the elec-			
	tronic throttle control.			
	Measure the resistance between ECM con-			
	nector and electronic throttle control connector.			
	Connector & terminal			
	(B136) No. 16 — (E57) No. 5:			
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 6.	Repair the ground
	ELECTRONIC THROTTLE CONTROL.	ΜΩ?		short circuit of har-
	Measure the resistance between ECM connec-			ness.
	tor and chassis ground.			
	Connector & terminal			
	(B136) No. 16 — Chassis ground:			
	(B136) No. 18 — Chassis ground:			
	(B136) No. 29 — Chassis ground:	le the velte set 4.5 . 5.5 VO	Cata star 7	Damain Haran
6	CHECK SENSOR POWER SUPPLY.	Is the voltage 4.5 — 5.5 V?	Go to step 7.	Repair the poor
	Connect the ECM connector. Turn the ignition switch to ON.			contact in ECM
	2) Turn the ignition switch to ON.3) Measure the voltage between electronic			connector. Replace the ECM
	throttle control connector and engine ground.			if defective.
	Connector & terminal			ii delective.
	(E57) No. 5 (+) — Engine ground (–):			
	4) Check the voltage change by shaking the			
	harness and connector of ECM and engine			
	harness connector while monitoring the value			
	with voltage meter.			
7	CHECK SHORT CIRCUIT IN ECM.	Is the resistance more than 10	Go to sten 8.	Repair the poor
ľ	Turn the ignition switch to OFF.	Ω ?	5.5 to 6top 6 1	contact in ECM
	2) Measure the resistance between electronic			connector.
	throttle control connector and engine ground.			Replace the ECM
	Connector & terminal			if defective.
	(E57) No. 4 — Engine ground:			
	(E57) No. 6 — Engine ground:			
1		1		i .

	Step	Check	Yes	No
8	 CHECK SENSOR OUTPUT. Connect all the connectors. Turn the ignition switch to ON. Read the data of main throttle sensor signal 	Is the voltage less than 4.63 V?	Go to step 9.	Go to step 11.
	using Subaru Select Monitor. 4) Check the voltage change by shaking the harness and connector of ECM, engine harness connector and electronic throttle control connector.			
9	CHECK SENSOR OUTPUT. 1) Read the data of sub throttle sensor signal using Subaru Select Monitor. 2) Check the voltage change by shaking the harness and connector of ECM, engine harness connector and electronic throttle control connector.	Is the voltage less than 4.73 V?	Go to step 10.	Go to step 11.
10	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
11	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 18 — (E57) No. 6: (B136) No. 29 — (E57) No. 4: (B136) No. 35 — (E57) No. 3:	Is the resistance less than 1 Ω ?	Go to step 12.	Repair the open circuit of harness connector.
12	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 13.	Repair the poor contact in ECM connector. Replace the ECM if defective.
13	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 4) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage more than 10 V?	Go to step 14.	Repair battery short circuit in harness between ECM connector and electronic throttle control connector.

		T		
	Step	Check	Yes	No
14	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 4 (+) — Engine ground (-): (E57) No. 6 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 15.	Repair short circuit in harness between ECM connector and electronic throttle control connector.
	 Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter. 			
15	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the ECM connector. 3) Measure the resistance between ECM connectors. Connector & terminal (B136) No. 18 — (B136) No. 35: (B136) No. 29 — (B136) No. 35:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 16.	Repair short circuit to sensor power supply.
16	CHECK ELECTRONIC THROTTLE CONTROL HARNESS. 1) Disconnect the connector from ECM. 2) Disconnect the connectors from the electronic throttle control. 3) Measure the resistance between electronic throttle control connector terminals. Connector & terminal (E57) No. 6 — (E57) No. 4:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact in ECM connector. Replace the ECM if defective.	Repair the short circuit of harness.

CG:DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D"/"E" VOLT-AGE RATIONALITY

DTC DETECTING CONDITION:

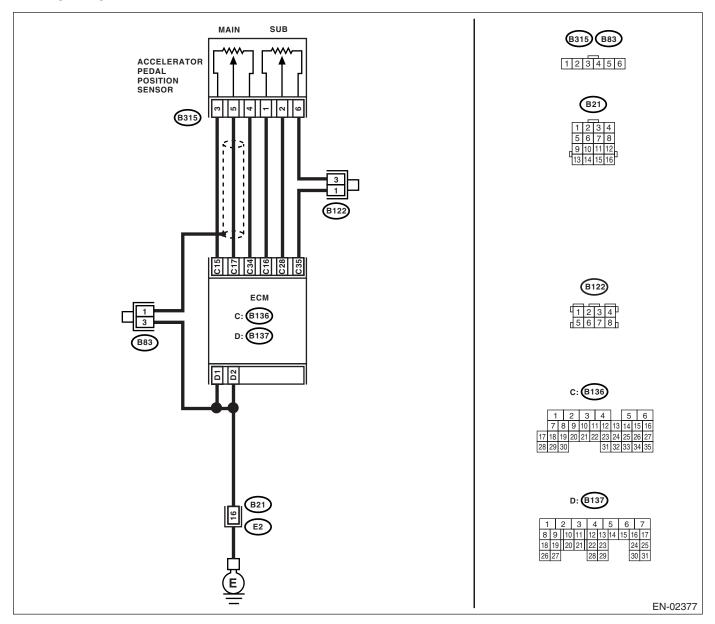
Immediately at fault recognition

TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC 2.5)-42, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC 2.5)-35, OPERATION, Inspection Mode.>.



Step		Check	Yes	No
1 CHECK ACCELERATOR PED	AL POSITION	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
SENSOR OUTPUT.		li in in in in in in in in in in in in in		
Turn the ignition switch to O	N.			
Measure the voltage between	en ECM con-			
nector and terminal.				
Connector & terminal				
(B136) No. 17 (+) — (B136)				
(B136) No. 28 (+) — (B136)	No. 35 (–):			
Check the voltage change b				
harness and connector of ECM				
tor pedal position sensor conne	ector and har-			
ness.				
2 CHECK POOR CONTACT.		Is there poor contact?	Repair the poor	Go to step 12.
Check poor contact in connector			contact.	
ECM and accelerator pedal pos				
3 CHECK HARNESS BETWEEN		Is the resistance less than 1	Go to step 4.	Repair the open
CELERATOR PEDAL POSITIO		Ω ?		circuit of harness
1) Turn the ignition switch to O				connector.
2) Disconnect the connector from 3) Disconnect the connector from 3				
ator pedal position sensor.	om me acceler-			
Measure the resistance between	en FCM con-			
nector and accelerator pedal posi				
nector.				
Connector & terminal				
(B136) No. 15 — (B315) No	o. 3:			
(B136) No. 16 — (B315) No				
(B136) No. 17 — (B315) No				
(B136) No. 28 — (B315) No				
4 CHECK HARNESS BETWEEN		Is the resistance more than 1	Go to step 5.	Repair the ground
CELERATOR PEDAL POSITIO		ΜΩ?		short circuit of har-
Measure the resistance betwee tor and chassis ground.	en ECM connec-			ness.
Connector & terminal				
(B136) No. 15 — Chassis g	around:			
(B136) No. 16 — Chassis g				
(B136) No. 17 — Chassis g				
(B136) No. 28 — Chassis g				
5 CHECK POWER SUPPLY OF	ACCELERA-	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor
TOR PEDAL POSITION SENS	OR.			contact in ECM con-
Connect the ECM connector				nector. Replace the
2) Turn the ignition switch to O				ECM if defective.
3) Measure the voltage between				
pedal position sensor connecto	r and engine			
ground. Connector & terminal				
(B315) No. 3 (+) — Engine	ground (_)·			
(B315) No. 1 (+) — Engine (B315) No. 1 (+) — Engine				
4) Check the voltage change b				
harness and connector of ECM				
ing the value with voltage meter				
6 CHECK ACCELERATOR PED		Is the resistance 1.2 — 4.8	Go to step 7.	Replace the accel-
SENSOR.	·- -	$k\Omega$?		erator pedal posi-
Measure the resistance of acce	elerator pedal			tion sensor.
position sensor.				
Terminals				
No. 3 — No. 4:				

	Step	Check	Yes	No
7	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor. Terminals No. 1 — No. 6:	Is the resistance 0.75 — 3.15 k Ω ?	Go to step 8.	Replace the accelerator pedal position sensor.
8	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor without depressing the accelerator pedal. Terminals No. 5 — No. 4:	Is the resistance 0.2 — 0.8 $k\Omega$?	Go to step 9.	Replace the accelerator pedal position sensor.
9	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor without depressing the accelerator pedal. Terminals No. 2 — No. 6:	Is the resistance 0.15 — 0.63 k Ω ?	Go to step 10.	Replace the accelerator pedal position sensor.
10	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor with the accelerator pedal depressed. Terminals No. 5 — No. 4:	Is the resistance 0.5 — 2.5 $k\Omega$?	Go to step 11.	Replace the accelerator pedal position sensor.
11	CHECK ACCELERATOR PEDAL POSITION SENSOR. Measure the resistance of accelerator pedal position sensor with the accelerator pedal depressed. Terminals No. 2 — No. 6:	Is the resistance 0.28 — 1.68 k Ω ?	Go to step 12.	Replace the accelerator pedal position sensor.
12	CHECK ACCELERATOR PEDAL POSITION SENSOR OUTPUT. 1) Turn the ignition switch to OFF. 2) Connect all the connectors. 3) Turn the ignition switch to ON. 4) Read the data of main throttle sensor signal and sub accelerator pedal position sensor signal using Subaru Select Monitor. 5) Check the voltage change by shaking the harness and connector of ECM, engine harness connector and accelerator pedal position sensor connector harness.	Is the voltage less than 4.8 V?	Go to step 13.	Go to step 14.
13	CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator pedal position sensor.	Is there poor contact?	Repair the poor contact.	Go to step 19.

	Step	Check	Yes	No
14	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance less than 1	Go to step 15.	Repair the open
	CELERATOR PEDAL POSITION SENSOR.	Ω?		circuit of harness
	1) Turn the ignition switch to OFF.			connector.
	 Disconnect the connector from ECM. 			
	3) Disconnect the connector from the accelerator needs position sensor			
	ator pedal position sensor.4) Measure the resistance between ECM con-			
	nector and accelerator pedal position sensor con-			
	nector.			
	Connector & terminal			
	(B136) No. 34 — (B315) No. 4:			
	(B136) No. 35 — (B315) No. 6:			
15	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance less than 5	Go to step 16.	Repair the poor
	CELERATOR PEDAL POSITION SENSOR.	Ω?		contact in ECM con-
	 Connect the ECM connector. 			nector. Replace the
	2) Measure the resistance between accelera-			ECM if defective.
	tor pedal position sensor connector and engine			
	ground.			
	Connector & terminal			
	(B315) No. 4 — Engine ground:			
10	(B315) No. 6 — Engine ground:	1 11 11 11 0 1/0	0 1 1 1 7	D : 1 !! 1 !
16	CHECK HARNESS BETWEEN ECM AND AC- CELERATOR PEDAL POSITION SENSOR.	Is the voltage less than 6 V?	Go to step 17.	Repair battery short circuit in harness
	Connect the ECM connector.			between ECM con-
	2) Turn the ignition switch to ON.			nector and acceler-
	3) Measure the voltage between accelerator			ator pedal position
	pedal position sensor connector and engine			sensor connector.
	ground.			
	Connector & terminal			
	(B315) No. 1 (+) — Engine ground (–):			
	(B315) No. 3 (+) — Engine ground (–):			
	4) Check the voltage change by shaking the			
	harness and connector of ECM while monitor-			
	ing the value with voltage meter.			
17	CHECK POWER SUPPLY OF ACCELERA-	Is the voltage less than 4.8 V?	Go to step 18.	Repair short circuit
	TOR PEDAL POSITION SENSOR.			in harness between
İ	Measure the voltage between accelerator			ECM connector and
	pedal position sensor connector and engine			accelerator pedal
	ground. Connector & terminal			position sensor con- nector.
	(B315) No. 2 (+) — Engine ground (–):			nector.
	(B315) No. 5 (+) — Engine ground (-):			
	2) Check the voltage change by shaking the			
	harness and connector of ECM while monitor-			
	ing the value with voltage meter.			
18	CHECK HARNESS BETWEEN ECM AND AC-	Is the voltage less than 4.8 V?	Go to step 19.	Repair poor contact
	CELERATOR PEDAL POSITION SENSOR.	l line i line go i doc iliani ilio vi		in accelerator pedal
	1) Turn the ignition switch to OFF.			position sensor con-
	2) Connect the accelerator pedal position sen-			nector. Replace the
	sor connector.			accelerator pedal
	Turn the ignition switch to ON.			position sensor if
	4) Measure the voltage between ECM connector			defective.
	and chassis ground.			
	Connector & terminal			
	(B136) No. 17 (+) — Chassis ground (-):			
	(B136) No. 28 (+) — Chassis ground (–):			

Step		Check	Yes	No
19	CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator pedal position sensor. 4) Measure the resistance between connector terminals of accelerator pedal position sensor. Connector & terminal (B315) No. 5 — (B315) No. 2:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact in ECM connector. Replace the ECM if defective.	

19. General Diagnostic Table

A: INSPECTION

1. ENGINE

NOTE:

Malfunction of parts other than those listed is also possible. <Ref. to ME(H4DOTC)-118, Engine Trouble in General.>

Symptom	Problem parts
	1) Electronic throttle control
	2) Manifold absolute pressure sensor
	3) Mass air flow and intake air temperature sensor
1. Engine stelle during idling	4) Ignition parts (*1)
Engine stalls during idling.	5) Engine coolant temperature sensor (*2)
	6) Crankshaft position sensor (*3)
	7) Camshaft position sensor (*3)
	8) Fuel injection parts (*4)
	1) Electronic throttle control
	2) Manifold absolute pressure sensor
	3) Mass air flow and intake air temperature sensor
	4) Engine coolant temperature sensor (*2)
	5) Ignition parts (*1)
2. Rough idling	6) Air intake system (*5)
3	7) Fuel injection parts (*4)
	8) Crankshaft position sensor (*3)
	9) Camshaft position sensor (*3)
	10) Oxygen sensor
	11) Fuel pump and fuel pump relay
	1) Electronic throttle control
	2) Engine coolant temperature sensor
Engine does not return to idle.	3) Manifold absolute pressure sensor
	4) Mass air flow sensor
	,
	Manifold absolute pressure sensor Manage air flow and intake air temperature geneer.
	Mass air flow and intake air temperature sensor The transic through a control.
	3) Electronic throttle control 4) Evel injection parts (*4)
	4) Fuel injection parts (*4) 5) Fuel pump and fuel pump relay
4. Poor acceleration	6) Engine coolant temperature sensor (*2)
4. FOOI acceleration	
	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)
	, , , , ,
	Manifold absolute pressure sensor
	2) Mass air flow and intake air temperature sensor
E English stalle an angles and a besite to a	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)
	6) Purge control solenoid valve
	7) Fuel injection parts (*4)
	8) Fuel pump and fuel pump relay
	Manifold absolute pressure sensor
	2) Mass air flow and intake air temperature sensor
	3) Engine coolant temperature sensor (*2)
6. Surging	4) Crankshaft position sensor (*3)
 	5) Camshaft position sensor (*3)
	6) Fuel injection parts (*4)
	7) Throttle position sensor
	8) Fuel pump and fuel pump relay

Symptom	Problem parts
7. Spark knock	1) Manifold absolute pressure sensor 2) Mass air flow and intake air temperature sensor 3) Engine coolant temperature sensor 4) Knock sensor 5) Fuel injection parts (*4) 6) Fuel pump and fuel pump relay
8. After burning in exhaust system	1) Manifold absolute pressure sensor 2) Mass air flow and intake air temperature sensor 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.