## **ENGINE 2 SECTION**

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 SYSTEMS)	FU(SOHCw/oOBD)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(SOHCw/oOBD)
EXHAUST	EX(SOHCw/oOBD)
IGNITION	IG(SOHCw/oOBD)
ENGINE(DIAGNOSTICS)	EN(SOHCw/oOBD)
FUEL INJECTION (FUEL SYSTEMS)	FU(DOHC TURBO)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(DOHC TURBO)
INTAKE (INDUCTION)	IN(DOHC TURBO)
MECHANICAL	ME(DOHC TURBO)
EXHAUST	EX(DOHC TURBO)
IGNITION	IG(DOHC TURBO)
ENGINE (DIAGNOSTICS)	EN(DOHC TURBO)

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.

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

## A: DTC P0031 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT LOW IN-PUT —

- DTC DETECTING CONDITION:
  - · Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0031 and P0037 at the same time?	Go to step 2.	Go to step 5.
<ul> <li>2 CHECK POWER SUPPLY TO FRONT OXY-GEN (A/F) SENSOR.</li> <li>1)Turn ignition switch to OFF.</li> <li>2)Disconnect connector from front oxygen (A/F) sensor.</li> <li>3)Turn ignition switch to ON.</li> <li>4)Measure voltage between front oxygen (A/F) sensor connector and engine ground.</li> <li>Connector &amp; terminal (B18) No. 2 (+) — Engine ground (-):</li> </ul>	Is the voltage more than 10 V?	Go to step 3.	Repair power sup- ply 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 connec- tor
3 CHECK GROUND CIRCUIT OF ECM. Measure resistance of harness between ECM connector and chassis ground. <i>Connector &amp; terminal</i> (B137) No. 8 — Chassis ground: (B137) No. 9 — Chassis ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector Poor contact in coupling connector
<ul> <li>CHECK CURRENT DATA.         <ol> <li>Start engine</li> <li>Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool.</li> <li>NOTE:                 <ul> <li>Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt;                     <li>OBD-II scan tool</li> <li>For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</li> </ref. </li></ul> </li> </ol></li></ul>	Is the value more than 0.2 A?	Repair poor con- tact in connector. NOTE: In this case, repair the following: • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector	Go to step <b>5</b> .
<ul> <li>5 CHECK OUTPUT SIGNAL FROM ECM.</li> <li>1)Start and idle the engine.</li> <li>2)Measure voltage between ECM connector and chassis ground.</li> <li>Connector &amp; terminal</li> <li>(B137) No. 4 (+) — Chassis ground (-):</li> </ul>	Is the voltage less than 1.0 V?	Go to step 7.	Go to step 6.
6 CHECK OUTPUT SIGNAL FROM ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 4 (+) — Chassis ground (–):	Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair poor con- tact in ECM con- nector.	Go to step 7.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
7	CHECK OUTPUT SIGNAL FROM ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 5 (+) — Chassis ground (–):	Is the voltage less than 1.0 V?	Go to step <b>9</b> .	Go to step <b>8</b> .
8	CHECK OUTPUT SIGNAL FROM ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 5 (+) — Chassis ground (–):	Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair poor con- tact in ECM con- nector.	Go to step <b>9.</b>
9	CHECK FRONT OXYGEN (A/F) SENSOR. 1)Turn ignition switch to OFF. 2)Measure resistance between front oxygen (A/F) sensor connector terminals. <i>Terminals</i> <i>No. 2 — No. 1:</i>	Is the resistance less than 10 Ω?	Repair harness and connector. NOTE: In this case, repair the following: • Open or ground short circuit in har- ness between front oxygen (A/F) sen- sor and ECM con- nector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector	Replace front oxy- gen (A/F) sensor. <ref. fu(dohc<br="" to="">TURBO)-41, Front Oxygen (A/F) Sen- sor.&gt;</ref.>

## B: DTC P0032 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT HIGH IN-PUT —

## • DTC DETECTING CONDITION:

· Immediately at fault recognition

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1)Turn ignition switch to ON. 2)Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 4 (+) — Chassis ground (-): (B137) No. 5 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step <b>3</b> .	Go to step 2.
2	CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT. 1)Turn ignition switch to OFF. 2)Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. 3)Turn ignition switch to ON. 4)Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref. 	Is the value more than 2.3 A?	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	END
3	CHECK OUTPUT SIGNAL FROM ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 4 (+) — Chassis ground (–): (B137) No. 5 (+) — Chassis ground (–):	Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	END

# C: DTC P0037 — REAR OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION

### • DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



	Step	Check	Yes	No
1 CH 1)	HECK GROUND CIRCUIT OF ECM. Turn ignition switch to OFF.	Is the resistance less than 5 $\Omega$ ?	Go to step 2.	Repair harness and connector.
2) 3) EC	Disconnect connector from ECM. Measure resistance of harness between CM connector and chassis ground. <b>Connector &amp; terminal</b> (B137) No. 8 — Chassis ground: (B137) No. 9 — Chassis ground:			NOTE: In this case, repair the following: • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector
				<ul> <li>Poor contact in coupling connector</li> </ul>
2 CI 1) 2) rei ge NC •S Fc "R to ito •C Fc OI	HECK CURRENT DATA. Start engine. Read data of rear oxygen sensor heater cur- ent using Subaru Select Monitor or OBD-II eneral scan tool. OTE: Subaru Select Monitor or detailed operation procedure, refer to the READ CURRENT DATA FOR ENGINE". <ref. EN(DOHC TURBO)-28, Subaru Select Mon- or.&gt; DBD-II scan tool or detailed operation procedures, refer to the BD-II General Scan Tool Instruction Manual.</ref. 	Is the value more than 0.2 A?	Repair connector. NOTE: In this case, repair the following: • Poor contact in rear oxygen sen- sor connector • Poor contact in rear oxygen sen- sor connecting harness connector • Poor contact in ECM connector	Go to step 3.
3 CI 1) 2) an	HECK OUTPUT SIGNAL FROM ECM. Start and idle the engine. Measure voltage between ECM connector nd chassis ground. Connector & terminal (B136) No. 13 (+) — Chassis ground (–):	Is the voltage less than 1.0 V?	Go to step 6.	Go to step 4.
4 CI Mi ch	HECK OUTPUT SIGNAL FROM ECM. easure voltage between ECM connector and nassis ground. Connector & terminal (B136) No. 13 (+) — Chassis ground (–):	Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair poor con- tact in ECM con- nector.	Go to step <b>5</b> .
5 Ci 1) so 2) an	HECK OUTPUT SIGNAL FROM ECM. Disconnect connector from rear oxygen sen- or. Measure voltage between ECM connector nd chassis ground. Connector & terminal (B136) No. 13 (+) — Chassis ground (–):	Is the voltage less than 1.0 V?	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Repair battery short circuit in har- ness between ECM and rear oxy- gen sensor con- nector. After repair, replace ECM. <ref. to<br="">FU(DOHC TURBO)-45, Engine Control Module.&gt;</ref.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6	<ul> <li>CHECK POWER SUPPLY TO REAR OXY- GEN SENSOR.</li> <li>1)Turn ignition switch to OFF.</li> <li>2)Disconnect connector from rear oxygen sensor.</li> <li>3)Turn ignition switch to ON.</li> <li>4)Measure voltage between rear oxygen sensor connector and engine ground or chassis ground.</li> </ul>	Is the voltage more than 10 V?	Go to step 7.	Repair power sup- ply line. NOTE: In this case, repair the following: • Open circuit in harness between main relay and rear oxygen sen-
	Connector & terminal (B19) No. 2 (+) — Chassis ground (–):			sor connector • Poor contact in rear oxygen sen- sor connector • Poor contact in coupling connector
7	CHECK REAR OXYGEN SENSOR. 1)Turn ignition switch to OFF. 2)Measure resistance between rear oxygen sensor connector terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance less than 30 $\Omega$ ?	Repair harness and connector. 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 • Poor contact in coupling connector	Replace rear oxy- gen sensor. <ref. to FU(DOHC TURBO)-43, Rear Oxygen Sensor.&gt;</ref. 

## D: DTC P0038 — REAR OXYGEN SENSOR HEATER CIRCUIT HIGH INPUT —

## • DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FOR ECM.	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
	Measure voltage between ECM connector and chassis ground.			
	Connector & terminal (B136) No. 13 (+) — Chassis ground (–):			

	Step	Check	Yes	No
2	<ul> <li>CHECK CURRENT DATA.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Repair battery short circuit in harness between ECM and rear oxygen sensor connector.</li> <li>3) Turn ignition switch to ON.</li> <li>4) Read data of rear oxygen sensor heater current using Subaru Select Monitor or the OBD-II general scan tool.</li> <li>NOTE:</li> <li>Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt;</ref. </li> <li>OBD-II general scan tool</li> <li>For detailed operation procedure, refer to the</li> </ul>	Is the value more than 7 A?	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	END
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	END

## E: DTC P0101 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

## • DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

## • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



	Step	Check	Yes	No
1 C	HECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0102 or P0113?	Inspect DTC P0102 or P0103 using "10. Diag- nostics Chart with Trouble Code". NOTE: In this case, it is not necessary to inspect DTC P0101.	Replace mass air flow and intake air temprature sen- sor. <ref. to<br="">FU(DOHC TURBO)-32, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>

## F: DTC P0102 — MASS AIR FLOW SENSOR CIRCUIT LOW INPUT —

## • DTC DETECTING CONDITION:

Immediately at fault recognition

### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### • WIRING DIAGRAM:



## DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

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	Step	Check	Yes	No
1	CONNECT SUBARU SELECT MONITOR OR	Is the value equal to or more	Even if MIL lights	Go to step 2.
	THE OBD-II GENERAL SCAN TOOL, AND	than 1.3 g/sec (0.172 lb/min) or	up, the circuit has	
	READ DATA.	0.3 V and equal to or less than	returned to a nor-	
	2)Connect Subaru Select Monitor or the OBD-	1240 g/sec (32 lb/min) of 4.36	this time A tempo-	
	Il general scan tool to data link connector	V :	rary poor contact	
	3)Turn ignition switch to ON and Subaru Select		of the connector or	
	Monitor or the OBD-II general scan tool switch		harness may be	
	to ON.		the cause. Repair	
	4)Start engine.		harness or con-	
	5)Read data of mass air flow sensor signal using Subaru Select Monitor or OBD-II general		air flow sensor.	
	scan tool.		NOTE:	
	NOTE:		In this case, repair	
	•Subaru Select Monitor		the following:	
			<ul> <li>Open of ground short circuit in bar-</li> </ul>	
	to EN(DOHC TURBO)-28. Subaru Select Mon-		ness between	
	itor.>		mass air flow sen-	
	<ul> <li>OBD-II general scan tool</li> </ul>		sor and ECM con-	
	For detailed operation procedures, refer to the		nector	
	OBD-II General Scan Tool Instruction Manual.		Poor contact in	
			mass air flow sen-	
			nector	
2	CHECK INPUT SIGNAL FOR ECM.	Is the voltage less than 0.2 V?	Go to step 4.	Go to step 3.
	Measure voltage between ECM connector and	-		
	chassis ground while engine is idling.			
	Connector & terminal			
3	CHECK INPUT SIGNAL FOR FCM (USING	Does the voltage change more	Repair poor con-	Contact with your
Ŭ	SUBARU SELECT MONITOR).	than 0.2 V by shaking harness	tact in ECM con-	Subaru distributor
	Measure voltage between ECM connector and	and connector of ECM while	nector.	service.
	chassis ground while engine is idling.	monitoring the value with Sub-		NOTE:
		aru select monitor?		Inspection by DTM
				is required, be-
				cause probable
				tion of multiple
				parts.
4	CHECK POWER SUPPLY TO MASS AIR	Is the voltage more than 10V?	Go to step 5.	Repair open circuit
	FLOW SENSOR.			between mass air
	1)Turn ignition switch to OFF.			flow sensor and
	2)Disconnect connector from mass air flow			main relay
	3)Turn ignition switch to ON			
	4)Measure voltage between mass air flow sen-			
	sor connector and chassis ground.			
	Connector & terminal			
_	(B3) No. 1 (+) — Chassis ground (–):		-	
5		Is the resistance less than $1\Omega$ ?	Go to step 6.	Repair open circuit
	1)Turn ignition switch to OFF			mass air flow sen-
	2)Disconnect connector from ECM.			sor connector.
	3)Measure resistance of harness between			
	ECM and mass air flow sensor connector.			
	Connector & terminal			
	(B84) No. 13 — (B3) No. 3:			
	(B135) No. 27 — (B3) No. 4: (B125) No. 10 (B2) No. 5:			
	(B) 130/ NO. 19 - (B3) NO. 5:			

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR Measure resistance of harness between ECM and chassis ground. Connector & terminal (B84) No. 13 — Chassis ground: (B135) No. 27 — Chassis ground: (B135) No. 19 — Chassis ground:	Is the resistance more than 1MΩ?	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 con- tact in mass air flow sensor con- nector.	Replace mass air flow and intake air temperature sen- sor. <ref. to<br="">FU(DOHC TURBO)-32, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>

## G: DTC P0103 — MASS AIR FLOW SENSOR CIRCUIT HIGH INPUT —

## • DTC DETECTING CONDITION:

Immediately at fault recognition

### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



	Step	Check	Yes	No
1	Step CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA. 1)Turn ignition switch to OFF. 2)Connect Subaru Select Monitor or the OBD- II general scan tool to data link connector. 3)Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON. 4)Start engine. 5) Read data of mass air flow sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt;</ref. 	Check Is the value equal to or more than 1.3 g/sec (0.172 lb/min) or 0.3 V and equal to or less than 240 g/sec (32 lb/min) or 4.58 V?	Yes Even if MIL lights up, the circuit has returned to a nor- mal condition at this time.	No Go to step 2.
	•OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.			
2	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. 1)Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF. 2)Disconnect connector from mass air flow sensor. 3)Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON. 4)Read data of mass air flow sensor signal using Subaru select monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref. 	Is the value more than 240 g/ sec (32 lb/min) or 4.58 V in function mode F06?	Repair battery short circuit in har- ness between mass air flow sen- sor and ECM con- nector. After repair, replace ECM.	Replace mass air flow sensor.

## H: DTC P0106 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• LHD MODEL:



## • RHD MODEL:



Step Check Yes No CHECK IDLE SWITCH SIGNAL. Does the LED of {Idle Switch Go to step 2. 1 Check throttle 1)Turn ignition switch to ON. Signal} come on? position sensor cir-2)Operate the LED operation mode for engine cuit. <Ref. to using Subaru Select Monitor. EN(DOHC TURBO)-120, NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the THROTTLE POSI-"LED OPERATION MODE FOR ENGINE". TION SENSOR **CIRCUIT RANGE/** <Ref. to EN(DOHC TURBO)-28, Subaru PERFORMANCE Select Monitor.> PROBLEM (HIGH INPUT) -, Diagnostic Procedure with Diagnostic **Trouble Code** (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0106. 2 CHECK ANY OTHER DTC ON DISPLAY. Go to step 3. Does the Subaru Select Moni-Inspect DTC tor or OBD-II general scan tool P0107 or P0108 indicate DTC P0107 or P0108? using "17. List of Diagnostic Trouble Code (DTC) for MT Vehicles". <Ref. to EN(DOHC TURBO)-69, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0106. CHECK CONDITION OF INTAKE MANIFOLD Is the pressure sensor installa-Go to step 4. 3 Tighten pressure PRESSURE SENSOR. tion bolt tightened securely? sensor installation bolt securely. 4 CHECK CONDITION OF THROTTLE BODY. Is the throttle body installation Replace pressure Tighten throttle bolt tightened securely? sensor. <Ref. to body installation FU(DOHC bolt securely. TURBO)-33, Pressure Sensor.>

## I: DTC P0107 — PRESSURE SENSOR CIRCUIT LOW INPUT —

## • DTC DETECTING CONDITION:

· Immediately at fault recognition

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:

#### LHD MODEL



## RHD MODEL



Step	Check	Yes	No
<ol> <li>CHECK CURRENT DATA.</li> <li>1)Start engine.</li> <li>2)Read the data of intake manifold at pressure signal using Subaru Select N OBD-II general scan tool.</li> </ol>	Is the value less than –7.2 kPa (–54 mmHg, –2.1 inHg)? Isolute Ionitor or	Go to step <b>3</b> .	Go to step 2.
NOTE: •Subaru Select Monitor For detailed operation procedure, refe "READ CURRENT DATA FOR ENGIN to EN(DOHC TURBO)-28, Subaru Se itor.> •OBD-II general scan tool For detailed operation procedures, re OBD-II General Scan Tool Instruction	er to the E". <ref. lect Mon- fer to the Manual.</ref. 		

	Step	Check	Yes	No
2	CHECK POOR CONTACT. Check poor contact in ECM and pressure sen- sor connector.	Is there poor contact in ECM or pressure sensor connector?	Repair poor con- tact in ECM or pressure sensor connector.	Even if MIL lights up, the circuit has returned to a nor- mal condition at this time.
3	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (–):	Is the voltage more than 4.5 V?	Go to step 5.	Go to step 4.
4	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (–):	Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair poor con- tact in ECM con- nector.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
5	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM and chassis ground. Connector & terminal (B135) No. 8 (+) — Chassis ground (–):	Is the voltage less than 0.7 V?	Go to step 6.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
6	CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from pressure sensor. 3)Turn ignition switch to ON. 4)Measure voltage between pressure sensor connector and engine ground. Connector & terminal (E21) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair open circuit in harness between ECM and intake manifold pressure sensor connector.
7	CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from ECM. 3)Measure resistance of harness between ECM and intake manifold pressure sensor con- nector. Connector & terminal (B135) No. 19 — (E21) No. 2:	Is the resistance less than 1 Ω?	Go to step 8.	Repair open circuit in harness between ECM and intake manifold pressure sensor connector.
8	CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR. Measure resistance of harness between intake manifold pressure sensor connector and engine ground. Connector & terminal (E21) No. 1 — Engine ground:	Is the resistance more than 1 $M\Omega$ ?	Go to step <b>9</b> .	Repair ground short circuit in har- ness between ECM and intake manifold pressure sensor connector.

	Step	Check	Yes	No
9	CHECK POOR CONTACT.	Is there poor contact in pres-	Repair poor con-	Replace pressure
	Check poor contact in pressure sensor con- nector.	sure sensor connector?	tact in pressure sensor connector.	sensor. <ref. to<br="">FU(DOHC TURBO)-33, Pres- sure Sensor.&gt;</ref.>

## J: DTC P0108 — PRESSURE SENSOR CIRCUIT HIGH INPUT —

## • DTC DETECTING CONDITION:

Immediately at fault recognition

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:

#### LHD MODEL



## RHD MODEL



Step	Check	Yes	No
<ol> <li>CHECK CURRENT DATA.         <ol> <li>Start engine.</li> <li>Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool.</li> </ol> </li> </ol>	Is the value more than 282 kPa (2121 mmHg, 83.50 inHg)?	Go to step <b>9.</b>	Go to step 2.
NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref. 			

Step Check Yes No 2 CHECK INPUT SIGNAL FOR ECM. Is the voltage more than 4.5 V? Go to step 4. Go to step 3. Measure voltage between ECM connector and chassis ground. **Connector & terminal** (B135) No. 9 (+) — Chassis ground (–): CHECK INPUT SIGNAL FOR ECM. 3 Does the voltage change more Repair poor con-Contact with your Measure voltage between ECM connector and than 4.5 V by shaking harness tact in ECM con-Subaru distributor chassis ground. and connector of ECM while nector. service. **Connector & terminal** monitoring the value with volt-NOTE: (B135) No. 9 (+) — Chassis ground (-): age meter? Inspection by DTM is required, because probable cause is deterioration of multiple parts. 4 CHECK INPUT SIGNAL FOR ECM. Is the voltage less than 0.7 V? Go to step 5. Contact with your Measure voltage between ECM connector and Subaru distributor chassis ground. service. **Connector & terminal** NOTE: (B135) No. 8 (+) — Chassis ground (-): Inspection by DTM is required, because probable cause is deterioration of multiple parts. CHECK HARNESS BETWEEN ECM AND Is the voltage more than 4.5 V? Go to step 6. Repair open circuit 5 PRESSURE SENSOR CONNECTOR. in harness 1)Turn ignition switch to OFF. between ECM and 2)Disconnect connector from pressure sensor. pressure sensor 3)Turn ignition switch to ON. connector. 4)Measure voltage between pressure sensor connector and engine ground. **Connector & terminal** (E21) No. 3 (+) — Engine ground (-): CHECK HARNESS BETWEEN ECM AND 6 Is the resistance less than 1 Go to step 7. Repair open circuit PRESSURE SENSOR CONNECTOR. Ω? in harness 1)Turn ignition switch to OFF. between ECM and 2)Disconnect connector from ECM. pressure sensor 3)Measure resistance of harness between connector. ECM and pressure sensor connector. **Connector & terminal** (B135) No. 8 — (E21) No. 1: CHECK HARNESS BETWEEN ECM AND IN- Is the resistance less than 1 7 Repair open circuit Go to step 8. TAKE MANIFOLD PRESSURE SENSOR Ω? in harness CONNECTOR. between ECM and Measure resistance of harness between ECM pressure sensor and pressure sensor connector. connector. **Connector & terminal** (B135) No. 19 — (E21) No. 2: CHECK POOR CONTACT. Is there poor contact in pres-8 Repair poor con-Replace intake manifold pressure Check poor contact in pressure sensor consure sensor connector? tact in pressure nector. sensor connector. sensor. <Ref. to FU(DOHC TURBO)-33, Pressure Sensor.>

Step	Check	Yes	No
<ul> <li>9 CHECK HARNESS BETWEEN ECM A PRESSURE SENSOR CONNECTOR.</li> <li>1)Turn ignition switch to OFF and Subar Select Monitor or the OBD-II general sc switch to OFF.</li> <li>2)Disconnect connector from pressure signal using Subaru Select Monitor Monitor or the OBD-II general scan tool to ON.</li> <li>4)Read data of intake manifold absolute sure signal using Subaru Select Monitor OBD-II general scan tool.</li> <li>NOTE:</li> <li>Subaru Select Monitor</li> </ul>	ND Is the value more than 282 kPa (2121 mmHg, 83.50 inHg)? u an tool sensor. Select switch pres- or	Repair battery short circuit in har- ness between ECM and pressure sensor connector.	Replace pressure sensor. <ref. to<br="">FU(DOHC TURBO)-33, Pres- sure Sensor.&gt;</ref.>
<ul> <li>For detailed operation procedure, refer t</li> <li>"READ CURRENT DATA FOR ENGINE"</li> <li>to EN(DOHC TURBO)-28, Subaru Selection.&gt;</li> <li>•OBD-II general scan tool</li> <li>For detailed operation procedures, refer</li> <li>OBD-II General Scan Tool Instruction M</li> </ul>	o the . <ref. ct Mon- to the anual.</ref. 		

## K: DTC P0111 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT RANGE/PER-FORMANCE PROBLEM —

## • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Erroneous idling
  - Poor driving performance

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0112, P0113, P0117, P0118 or P0125?	Inspect DTC P0112, P0113, P0117, P0118 or P0125 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0111.</ref.>	Go to step 2.
<ul> <li>CHECK ENGINE COOLANT TEMPERA- TURE.         <ol> <li>Start the engine and warm it up completely.</li> <li>Measure engine coolant temperature using Subaru Select Monitor or OBD-II general scan tool.</li> <li>NOTE:                 <ul> <li>Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt;</ref. </li> <li>OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</li> </ul> </li> </ol></li></ul>	Is the engine coolant tempera- ture between 75°C (167°F) and 95°C (203°F)?	Replace mass air flow and intake air temperature sen- sor. <ref. to<br="">FU(DOHC TURBO)-32, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>	Inspect DTC P0125 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref.>

# L: DTC P0112 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT LOW INPUT

## • DTC DETECTING CONDITION:

- Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Erroneous idling
  - Poor driving performance

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:


	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1)Start engine. 2)Read data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.	Is the value greater than 55°C (131°F)?	Go to step 2.	Repair poor con- tact. NOTE: In this case, repair the following:
	NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the</ref. 			<ul> <li>Poor contact mass air flow and intake air tempera- ture sensor</li> <li>Poor contact in ECM</li> <li>Poor contact in joint connector</li> </ul>
2	OBD-II General Scan Tool Instruction Manual. CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from mass air flow and intake air temperature sensor. 3)Turn ignition switch to ON. 4)Read data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: •Subaru Select Monitor Eor detailed operation procedure, refer to the	Is the value less than –36°C (– 97°F)?	Replace mass air flow and intake air temperature sen- sor. <ref. to<br="">FU(DOHC TURBO)-32, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>	Repair ground short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.
	"READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref. 			

## M: DTC P0113 — INTAKE AIR TEMPERATURE SENSOR CIRCUIT HIGH INPUT

## • DTC DETECTING CONDITION:

- Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Erroneous idling
  - Poor driving performance

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is the value less than –36°C (–	Go to step 2.	Repair poor con-
	1)Start engine.	97°F)?		tact.
	2)Read data of intake air temperature sensor			NOTE:
	signal using Subaru Select Monitor or the			In this case, repair
	OBD-II general scan tool.			the following:
	NOTE:			<ul> <li>Poor contact in</li> </ul>
	•Subaru Select Monitor			mass air now and
				ture sensor
	to EN(DOHC TURBO)-28 Subaru Select Mon-			<ul> <li>Poor contact in</li> </ul>
	itor.>			ECM
	•OBD-II general scan tool			<ul> <li>Poor contact in</li> </ul>
	For detailed operation procedure, refer to the			joint connector
	OBD-II General Scan Tool Instruction Manual.			-
2	CHECK HARNESS BETWEEN MASS AIR	Is the voltage more than 10 V?	Repair battery	Go to step 3.
	FLOW AND INTAKE AIR TEMPERATURE		short circuit in har-	
	SENSOR AND ECM CONNECTOR.		ness between	
	1)Turn ignition switch to OFF.		mass air flow and	
	2)Disconnect connector from mass air flow and		intake air tempera-	
	Intake air temperature sensor.		ture sensor and	
	intake air temperature sensor, connector and		ECIVI CONNECTOR.	
	engine ground			
	Connector & terminal			
	(B3) No. 2 (+) — Engine ground (–):			
3	CHECK HARNESS BETWEEN INTAKE AIR	Is the voltage more than 10 V?	Repair battery	Go to step 4.
	TEMPERATURE AND PRESSURE SENSOR	-	short circuit in har-	
	AND ECM CONNECTOR.		ness between	
	1)Turn ignition switch to ON.		mass air flow and	
	2)Measure voltage between mass air flow and		intake air tempera-	
	intake air temperature sensor connector and		ture sensor and	
	Connector & terminal		ECIVI CONTINUCTION.	
	(B3) No. 2 (+) — Engine ground (–):			
4	CHECK HARNESS BETWEEN MASS AIR	Is the voltage more than 3 V?	Go to step 5.	Repair harness
	FLOW AND INTAKE AIR TEMPERATURE	5		and connector.
	SENSOR AND ECM CONNECTOR.			NOTE:
	Measure voltage between mass air flow and			In this case, repair
	intake air temperature sensor and pressure			the following:
	sensor connector and engine ground.			Open circuit in
	(P2) No. 2 (c) Engine ground ( ):			harness between
	(B3) No. 2 (+) — Engine ground (–):			mass air flow and
				ture sensor and
				FCM connector
				<ul> <li>Poor contact in</li> </ul>
				mass air flow and
				intake air tempera-
				ture sensor
				<ul> <li>Poor contact in</li> </ul>
				ECM
				<ul> <li>Poor contact in isint connector</li> </ul>
				joint connector

## DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<ul> <li>5 CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</li> <li>1)Turn ignition switch to OFF.</li> <li>2)Measure resistance of harness between mass air flow and intake air temperature sen- sor and engine ground.</li> <li>Connector &amp; terminal (B3) No. 5 — Engine ground:</li> </ul>	Is the resistance less than 5 Ω?	Replace mass air flow and intake air temperature sen- sor. <ref. to<br="">FU(DOHC TURBO)-32, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in ness between mass air flow and intake air tempera- ture sensor and ECM connector • Poor contact in mass air flow and intake air tempera- ture sensor • Poor contact in ECM • Poor contact in ECM

# N: DTC P0117 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT LOW INPUT —

## • DTC DETECTING CONDITION:

• Immediately at fault recognition

## • TROUBLE SYMPTOM:

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

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

### • WIRING DIAGRAM:



Step	Check	Yes	No
<ol> <li>CHECK CURRENT DATA.         <ol> <li>Start engine.</li> <li>Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.</li> <li>NOTE:                  <ul> <li>Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(dohc="" monitor.="" select="" subaru="" to="" turbo)-28,=""></ref.></li> <li>OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</li> </ul> </li> </ol></li> </ol>	Is the value greater than 150°C (302°F)?	Go to step 2.	Repair poor con- tact. NOTE: In this case, repair the following: • Poor contact in engine coolant temperature sen- sor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in isint apparter
<ul> <li>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.         <ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connector from engine coolant temperature sensor.</li> <li>Turn ignition switch to ON.</li> <li>Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.</li> <li>NOTE:</li> <li>Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt;</ref. </li> <li>OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool</li> </ol> </li> </ul>	Is the value less than -40°C (- 40°F)?	Replace engine coolant tempera- ture sensor. <ref. to FU(DOHC TURBO)-27, Engine Coolant Temperature Sen- sor.&gt;</ref. 	Repair ground short circuit in har- ness between engine coolant temperature sen- sor and ECM con- nector.

# O: DTC P0118 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1)Start engine. 2)Read data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref. 	Is the value less than -40°C (- 40°F)?	Go to step <b>2</b> .	Repair poor con- tact. NOTE: In this case, repair the following: • Poor contact in engine coolant temperature sen- sor • 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 ignition switch to OFF. 2)Disconnect connector from engine coolant temperature sensor. 3)Measure voltage between engine coolant temperature sensor connector and engine ground. Connector & terminal (E8) No. 2 (+) — Engine ground (–):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and engine coolant tempera- ture sensor con- nector.	Go to step <b>3</b> .
3	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. 1)Turn ignition switch to ON. 2)Measure voltage between engine coolant temperature sensor connector and engine ground. Connector & terminal (E8) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and engine coolant tempera- ture sensor con- nector.	Go to step <b>4</b> .
4	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. Measure voltage between engine coolant tem- perature sensor connector and engine ground. Connector & terminal (E8) No. 2 (+) — Engine ground (-):	Is the voltage more than 4 V?	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in 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 Is the resistance less than 5 Replace engine Repair harness COOLANT TEMPERATURE SENSOR AND  $\Omega?$ coolant temperaand connector. ECM CONNECTOR. ture sensor. <Ref. NOTE: 1)Turn ignition switch to OFF. to FU(DOHC In this case, repair 2)Measure resistance of harness between TURBO)-27, the following: engine coolant temperature sensor connector **Engine Coolant**  Open circuit in and engine ground. Temperature Senharness between **Connector & terminal** sor.> ECM and engine (E8) No. 1 — Engine ground: coolant temperature sensor connector Poor contact in engine coolant temperature sensor connector Poor contact in ECM connector Poor contact in coupling connector · Poor contact in joint connector

## P: DTC P0121 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFOR-MANCE PROBLEM (HIGH INPUT) —

## • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance
  - Fuel is cut.

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

- WIRING DIAGRAM:
- LHD MODEL



## RHD MODEL



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Inspect DTC	Replace throttle
	tor or OBD-II general scan tool	P0122, P0123 or	position sensor.
	indicate DTC P0122, P0123 or	P1507 using " List	<ref. fu(dohc<="" th="" to=""></ref.>
	P1507?	of Diagnostic	TURBO)-31,
		Trouble Code	Throttle Position
		(DTC)". <ref. th="" to<=""><th>Sensor.&gt;</th></ref.>	Sensor.>
		EN(DOHC	
		TURBO)-69, List	
		of Diagnostic Trou-	
		ble Code (DTC).>	
		NOTE:	
		In this case, it is	
		not necessary to	
		inspect DTC	
		P0121.	

## Q: DTC P0122 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —

## • DTC DETECTING CONDITION:

Immediately at fault recognition

### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

- WIRING DIAGRAM:
- LHD MODEL



## RHD MODEL



## DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<ul> <li>CHECK CURRENT DATA.</li> <li>1)Start engine.</li> <li>2)Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.</li> <li>NOTE:</li> <li>•Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(dohc="" monitor.="" select="" subaru="" to="" turbo)-28,=""></ref.></li> <li>•OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II general scan tool</li> </ul>	Is the value less than 0.1 V?	Go to step 2.	Even if MIL lights up, 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 throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector
2	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground while throttle valve is fully closed. Connector & terminal (B135) No. 9 (+) — Chassis ground (–):	Is the voltage more than 4.5 V?	Go to step <b>4</b> .	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (–):	Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair poor con- tact in ECM con- nector.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 7 (+) — Chassis ground (–):	Is the voltage less than 0.1 V?	Go to step <b>6</b> .	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Measure voltage between ECM connector and chassis ground.	Does the voltage change more than 0.1 V by shaking harness and connector of ECM while monitoring the value with Sub- aru Select Monitor?	Repair poor con- tact in ECM con- nector.	Go to step 6.

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNEC- TOR.	Is the voltage more than 4.5 V?	Go to step 7.	Repair harness and connector. NOTE:
	<ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connectors from throttle position sensor.</li> <li>Turn ignition switch to ON.</li> <li>Measure voltage between throttle position sensor connector and engine ground.</li> <li>Connector &amp; terminal         <ul> <li>(E13) No. 1 (+) — Engine ground (-):</li> </ul> </li> </ol>			NOTE: In this case, repair the following: • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in throttle position sensor connector • Poor contact in ECM connector • Poor contact in
				<ul><li>coupling connector</li><li>Poor contact in joint connector</li></ul>
7	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNEC- TOR. 1)Turn ignition switch to OFF. 2)Measure resistance of harness between ECM connector and throttle position sensor connector. Connector & terminal (B135) No. 7 — (E13) No. 3:	Is the resistance less than 1 Ω?	Go to step <b>8</b> .	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in ECM connector • Poor contact in throttle position sensor connector • Poor contact in coupling connector
8	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNEC- TOR. Measure resistance of harness between throt- tle position sensor connector and engine ground. Connector & terminal (E13) No. 3 — Engine ground:	Is the resistance less than 10 $\Omega$ ?	Repair ground short circuit in har- ness between throttle position sensor and ECM connector.	Go to step 9.
9	CHECK POOR CONTACT. Check poor contact in throttle position sensor connector.	Is there poor contact in throttle position sensor connector?	Repair poor con- tact in throttle posi- tion sensor connector.	Replace throttle position sensor. <ref. fu(dohc<br="" to="">TURBO)-31, Throttle Position Sensor.&gt;</ref.>

## R: DTC P0123 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —

## • DTC DETECTING CONDITION:

• Immediately at fault recognition

### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

- WIRING DIAGRAM:
- LHD MODEL



## RHD MODEL



Step Check Yes No CHECK CURRENT DATA. Go to step 2. Even if MIL lights 1 Is the value more than 4.9 V? 1)Start engine. up, the circuit has 2)Read data of throttle position sensor signal returned to a norusing Subaru Select Monitor or OBD-II general mal condition at this time. A temposcan tool. rary poor contact NOTE: •Subaru Select Monitor of the connector For detailed operation procedure, refer to the may be the cause. "READ CURRENT DATA FOR ENGINE". < Ref. NOTE: to EN(DOHC TURBO)-28, Subaru Select Mon-In this case, repair itor.> the following: •OBD-II general scan tool Poor contact in For detailed operation procedures, refer to the throttle position **OBD-II** General Scan Tool Instruction Manual. sensor connector · Poor contact in ECM connector · Poor contact in coupling connector 2 CHECK HARNESS BETWEEN THROTTLE Is the resistance less than 5 Go to step 3. Repair harness **POSITION SENSOR AND ECM CONNEC-** $\Omega$ ? and connector. TOR. NOTE: 1)Turn ignition switch to OFF. In this case, repair 2)Disconnect connector from throttle position the following: sensor Open circuit in 3)Measure resistance of harness between harness between throttle position sensor connector and engine throttle position ground. sensor and ECM **Connector & terminal** connector (E13) No. 2 — Engine ground: Poor contact in coupling connector Poor contact in joint connector CHECK HARNESS BETWEEN THROTTLE 3 Is the voltage more than 4.9 V? Repair battery Replace throttle **POSITION SENSOR AND ECM CONNEC**short circuit in harposition sensor. <Ref. to FU(DOHC TOR. ness between 1)Turn ignition switch to ON. throttle position TURBO)-31. 2)Measure voltage between throttle position sensor and ECM Throttle Position sensor connector and engine ground. Sensor.> connector. After **Connector & terminal** repair, replace (E13) No. 3 (+) — Engine ground (-): ECM. <Ref. to FU(DOHC TURBO)-45, **Engine Control** Module.>

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

### • DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

#### • TROUBLE SYMPTOM:

• Engine would not return to idling.

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0117 or P0118?	Inspect DTC P0117 or P0118 using "17. List of Diagnostic Trou- ble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0125.</ref.>	Go to step 2.
2 CHECK ENGINE COOLING SYSTEM. NOTE: Check the following items. •Thermostat open stuck •Coolant level •Coolant freeze •Tire diameter	Is there a fault in engine cool- ing system?	Replace thermo- stat. <ref. co-<br="" to="">35, Thermostat.&gt;</ref.>	Replace engine coolant tempera- ture sensor. <ref. to FU(DOHC TURBO)-27, Engine Coolant Temperature Sen- sor.&gt;</ref. 

## T: DTC P0131 — FRONT OXYGEN (A/F) SENSOR CIRCUIT RANGE/PERFOR-MANCE PROBLEM (LOW INPUT) —

NOTE:

For the diagnostic procedure, refer to DTC P0132. <Ref. to EN(DOHC TURBO)-134, DTC P0132 — FRONT OXYGEN (A/F) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## U: DTC P0132 — FRONT OXYGEN (A/F) SENSOR CIRCUIT RANGE/PERFOR-MANCE PROBLEM (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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

### • WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0031, P0032, P1131, P1134 or P1139?	Inspect DTC P0031, P0032, P1131, P1134 or P1139 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref.>	Go to step 2.
2	CHECK FRONT (A/F) OXYGEN SENSOR DA- TA. 1)Start engine. 2)While observing the Subaru Select Monitor or OBD-II general scan tool screen, warm-up the engine until coolant temperature is above 70°C (158°F). If the engine is already warmed-up, operate at idle speed for at least 1 minute. 3)Read data of front oxygen (A/F) sensor sig- nal using Subaru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool Instruction Manual.</ref. 	Is the value equal to or more than 0.85 and equal to less than 1.15 in idling?	Go to step 3.	Go to step <b>4</b> .
3	CHECK REAR OXYGEN SENSOR SIGNAL. 1)Race engine at speeds from idling to 5,000 rpm for a total of 5 cycles. NOTE: To increase engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approximate- ly 5 seconds, and quickly release accelerator pedal to decrease engine speed. 2)Operate the LED operation mode for engine. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <ref. en(dohc="" subaru<br="" to="" turbo)-28,="">Select Monitor.&gt;</ref.>	Does the LED of {Rear O2 Rich Signal} blink?	Repair poor con- tact in front oxygen (A/F) sensor and rear oxygen sen- sor connector.	Check rear oxygen sensor circuit. <ref. fu(dohc<br="" to="">TURBO)-43, Rear Oxygen Sensor.&gt;</ref.>
4	CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. •Loose installation of portions •Damage (crack, hole etc.) of parts •Looseness of front oxygen (A/F) sensor •Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there a fault in exhaust sys- tem?	Repair or replace faulty parts.	Replace front oxy- gen (A/F) sensor. <ref. fu(dohc<br="" to="">TURBO)-41, Front Oxygen (A/F) Sen- sor.&gt;</ref.>

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

### • DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



	Step	Check	Yes	No
1 C	HECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0031, P0032, P0131, P0132, P1130, P1131, P1134 or P1139?	Inspect DTC P0031, P0032, P0131, P0132, P1130, P1131, P1134 or P1139 using "17. List of Diagnostic Trou- ble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0133.</ref.>	Go to step 2.
2 C N C •L p •L a •	HECK EXHAUST SYSTEM. OTE: heck the following items. Loose installation of front portion of exhaust ipe onto cylinder heads Loose connection between front exhaust pipe and front catalytic converter Damage of exhaust pipe resulting in a hole	Is there a fault in exhaust sys- tem?	Repair exhaust system.	Replace front oxy- gen (A/F) sensor. <ref. fu(dohc<br="" to="">TURBO)-41, Front Oxygen (A/F) Sen- sor.&gt;</ref.>

## W: DTC P0136 — REAR OXYGEN SENSOR CIRCUIT MALFUNCTION —

## • DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0131 or P0132?	Go to step 2.	Go to step 3.

	Step	Check	Yes	No
2	CHECK FAILURE CAUSE OF P0131 or	Is the failure cause of P0131 or	Check fuel system.	Go to step 3.
	P0132.	P0132 in the fuel system?	NOTE:	
	Diagnostic Trouble Code (DTC)" < Ref. to		In this case, it is	
	EN(DOHC TURBO)-69, List of Diagnostic		inspect DTC	
	Trouble Code (DTC).>		P0136.	
3	CHECK REAR OXYGEN SENSOR DATA.	Does the value fluctuate?	Go to step 7.	Go to step 4.
	1)Warm-up the engine until engine coolant			
	the engine speed at 2 000 rpm to 3 000 rpm for			
	two minutes.			
	2)Read data of rear oxygen sensor signal			
	using Subaru Select Monitor or OBD-II general			
	scan tool.			
	NOTE: •Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA SHOWN ON DIS-			
	PLAY FOR ENGINE". <ref. en(dohc<="" th="" to=""><th></th><th></th><th></th></ref.>			
	ORBO-128, Subaru Select Monitor.>			
	For detailed operation procedures, refer to the			
	OBD-II General Scan Tool Instruction Manual.			
4	CHECK REAR OXYGEN SENSOR DATA.	Is the value fixed between 0.2	Go to step 5.	Replace rear oxy-
	Read data of rear oxygen sensor signal using	and 0.4 V?		gen sensor. <ref.< th=""></ref.<>
	Tool			TURBO)-43 Rear
				Oxygen Sensor.>
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 3	Repair open circuit	Go to step 6.
	REAR OXYGEN SENSOR CONNECTOR.	Ω?	in harness	
	1)Turn ignition switch to OFF.		between ECM and	
	oxvgen sensor.		sor connector.	
	3)Measure resistance of harness between			
	ECM and rear oxygen sensor connector.			
	Connector & terminal (B135) No. 26 — (B10) No. 4:			
6	CHECK HARNESS BETWEEN REAR OXY-	Is the voltage more than $0.2 \sqrt{2}$	Replace rear oxy-	Renair harness
Ŭ	GEN SENSOR AND ECM CONNECTOR.	is the voltage more than 0.2 V	gen sensor. <ref.< th=""><th>and connector.</th></ref.<>	and connector.
	1)Turn ignition switch to OFF.		to FU(DOHC	NOTE:
	2)Disconnect connector from rear oxygen sen-		TURBO)-43, Rear	In this case, repair
	SOF. 3) Turn ignition switch to ON		Oxygen Sensor.>	the following:
	4)Measure voltage between rear oxygen sen-			<ul> <li>Open circuit in harness between</li> </ul>
	sor harness connector and engine ground or			rear oxygen sen-
	chassis ground.			sor and ECM con-
	Connector & terminal			nector
	(B19) No. 3 (+) — Engine ground (–):			<ul> <li>Poor contact in rear oxygen sen-</li> </ul>
				sor connector
				<ul> <li>Poor contact in</li> </ul>
				ECM connector
7	CHECK EXHAUST SYSTEM.	Is there a fault in exhaust sys-	Repair or replace	Replace rear oxy-
	Uneck exhaust system parts.	tem ?	raulty parts.	gen sensor. <ret.< th=""></ret.<>
	NUTE: Check the following items			TURBO)-43. Rear
	•Loose installation of portions			Oxygen Sensor.>
	•Damage (crack, hole etc.) of parts			
	•Looseness and ill fitting of parts between front			
	oxygen (A/F) sensor and rear oxygen sensor			

## X: DTC P0139 — REAR OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

## • DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Inspect DTC	Replace rear oxy-
	tor or OBD-II general scan tool	P0136 using "17.	gen sensor. <ref.< th=""></ref.<>
	indicate DTC P0136?	List of Diagnostic	to FU(DOHC
		Trouble Code	TURBO)-43, Rear
		(DTC)". <ref. th="" to<=""><th>Oxygen Sensor.&gt;</th></ref.>	Oxygen Sensor.>
		EN(DOHC	
		TURBO)-69, List	
		of Diagnostic Trou-	
		ble Code (DTC).>	
		NOTE:	
		In this case, it is	
		not necessary to	
		inspect DTC	
		P0139.	

## Y: DTC P0171 — FUEL TRIM MALFUNCTION (A/F TOO LEAN) —

NOTE:

For the diagnostic procedure, refer to DTC P0172. <Ref. to EN(DOHC TURBO)-143, DTC P0172 — FUEL TRIM MALFUNCTION (A/F TOO RICH) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## Z: DTC P0172 — FUEL TRIM MALFUNCTION (A/F TOO RICH) —

### • 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, 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.
<ul> <li>3 CHECK FUEL PRESSURE.</li> <li>Warning: <ul> <li>Place "NO FIRE" signs near the working area.</li> <li>Be careful not to spill fuel on the floor.</li> </ul> </li> <li>1)Release fuel pressure. <ul> <li>(1) Disconnect connector from fuel pump relay.</li> <li>(2) Start the engine and run it until it stalls.</li> <li>(3) After the engine stalls, crank it for five more seconds.</li> <li>(4) Turn ignition switch to OFF.</li> </ul> </li> <li>2)Connect connector to fuel pump relay.</li> <li>3)Disconnect fuel delivery hose from fuel filter, and connect fuel pressure gauge.</li> <li>4)Install fuel filler cap.</li> <li>5)Start the engine and idle while gear position is neutral.</li> <li>6)Measure fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.</li> </ul> <li>Warning: Before removing fuel pressure gauge, release fuel pressure.</li> <li>NOTE: If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again</li>	Is fuel pressure between 284 and 314 kPa (2.9 — 3.2 kg/ cm <sup>2</sup> , 41 — 46 psi)?	Go to step <b>4</b> .	Repair the follow- ing items. Fuel pressure too high • Clogged fuel return line or bent hose Fuel pressure too low • Improper fuel pump discharge • Clogged fuel supply line

## DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
4	CHECK FUEL PRESSURE.	Is fuel pressure between 206 and 235 kPa (2.1 — 2.4 kg/	Go to step 5.	Repair the follow-
	hose, measure fuel pressure.	$cm^2$ , 30 — 34 psi)?		Fuel pressure too
	Warning: Before removing fuel pressure gauge, re-			<ul> <li>Faulty pressure</li> </ul>
	lease fuel pressure.			regulator
	NOTE: •If fuel pressure does not increase, squeeze			return line or bent
	fuel return hose 2 to 3 times, then measure			hose
	<ul><li>If out of specification as measured at this step.</li></ul>			low
	check or replace pressure regulator and pres-			Faulty pressure
	sure regulator vacuum hose.			<ul> <li>Improper fuel</li> </ul>
				pump discharge
				supply line
5	CHECK ENGINE COOLANT TEMPERATURE	Is temperature greater than	Go to step 6.	Replace engine
	1)Start the engine and warm-up completely.	00 0 (140 1):		ture sensor. <ref.< td=""></ref.<>
	2)Read data of engine coolant temperature			to FU(DOHC
	OBD-II general scan tool.			Engine Coolant
	NOTE: Subaru Soloct Monitor			Temperature Sen-
	For detailed operation procedure, refer to the			301.2
	"READ CURRENT DATA FOR ENGINE". < Ref. to EN(DOHC TURBO)-28. Subaru Select Mon-			
	itor.>			
	•OBD-II general scan tool			
	OBD-II General Scan Tool Instruction Manual.			
6	CHECK INTAKE MANIFOLD PRESSURE	Is the value within the specifi-	Go to step 7.	Replace mass air
	1)Start the engine and warm-up engine until			manifold pressure
	coolant temperature is greater than 60°C			sensor. <ref. td="" to<=""></ref.>
	2)Place the shift lever in neutral position.			TURBO)-32, Mass
	3)Turn A/C switch to OFF.			Air Flow and Intake Air Temper-
	5)Read data of intake manifold pressure sen-			ature Sensor.>
	sor signal using Subaru Select Monitor or OBD-II general scan tool.			
	NOTE: •Subaru Select Monitor			
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref.			
	itor.>			
	•OBD-II general scan tool			
	OBD-II General Scan Tool Instruction Manual.			
	Specification:			
	Ignition ON 73.3 — 106.6 kPa (550 — 800 mmHq			
	21.65 — 31.50 inHg)			
	Idling			
	— 12.20 inHg)			
	Step	Check	Yes	No
---	--	--	--	---
<ul> <li>7 CHECK INTAK SOR.</li> <li>1)Start the eng coolant temper (140°F).</li> <li>2)Place the shii</li> <li>3)Turn A/C swit</li> <li>4)Turn all accession</li> <li>5)Open front how</li> <li>6)Measure amb</li> <li>7)Read data of sor signal using OBD-II general</li> </ul>	<b>CE AIR TEMPERATURE SEN</b> - ine and warm-up engine until ature is greater than 60°C ft lever in neutral position. tch to OFF. ssory switches to OFF. bod. bient temperature. intake manifold pressure sen- g Subaru Select Monitor or scan tool.	Is value obtained when ambi- ent temperature is subtracted from intake air temperature greater than –10°C (14°F) and less than 50°C (122°F)?	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.	Check mass air flow and intake air temperature sen- sor. <ref. to<br="">FU(DOHC TURBO)-32, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>
NOTE: •Subaru Select For detailed op "READ CURRE to EN(DOHC T itor.> •OBD-II genera For detailed op OBD-II Genera	Monitor eration procedure, refer to the ENT DATA FOR ENGINE". <ref. URBO)-28, Subaru Select Mon- al scan tool eration procedure, refer to the I Scan Tool Instruction Manual.</ref. 			

## AA:DTC P0244 — WASTEGATE CONTROL SOLENOID VALVE MALFUNCTION (HIGH INPUT) —

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



Step	Check	Yes	Νο
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Inspect DTC	Replace waste-
	tor or OBD-II general scan tool	P0245 or P0246	gate control sole-
	indicate DTC P0245 or P0246?	using "17. List of	noid valve. <ref.< th=""></ref.<>
		Diagnostic Trou-	to FU(DOHC
		ble Code (DTC)".	TURBO)-40,
		<ref. en(dohc<="" th="" to=""><th>Wastegate Con-</th></ref.>	Wastegate Con-
		TURBO)-69, List	trol Solenoid
		of Diagnostic Trou-	Valve.>
		ble Code (DTC).>	
		NOTE: In this case, it is not necessary to inspect DTC P0121.	

# AB:DTC P0245 — WASTEGATE CONTROL SOLENOID VALVE CIRCUIT LOW INPUT —

- 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



Step	Check	Yes	No
<ol> <li>CHECK OUTPUT SIGNAL FROM ECM.         <ol> <li>1)Turn ignition switch to ON.</li> <li>2)Measure voltage between ECM and chassis ground.</li> <li>Connector &amp; terminal</li> <li>(B137) No. 24 (+) — Chassis ground (-):</li> </ol> </li> </ol>	Is the voltage more than 10 V?	Even if MIL lights up, the circuit has returned to a nor- mal condition at this time. Contact with your Subaru distributor. NOTE:	Go to step 2.
		is required, be- cause probable cause is deteriora- tion of multiple parts.	
<ul> <li>CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.         <ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connectors from wastegate control solenoid valve and ECM.</li> <li>Measure resistance of harness between wastegate control solenoid valve connector and engine ground.</li> </ol> </li> <li>Connector &amp; terminal (B127) No. 1 — Engine ground:</li> </ul>	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 resistance of harness between ECM and wastegate control solenoid valve of har- ness connector. Connector & terminal (B137) No. 24 — (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 waste- gate control sole- noid valve connector
<ul> <li>CHECK WASTEGATE CONTROL SOLE- NOID VALVE.</li> <li>1)Remove purge control solenoid valve.</li> <li>2)Measure resistance between purge control solenoid valve terminals.</li> <li>Terminals</li> <li>No. 1 — No. 2:</li> </ul>	Is the resistance between 30 and 34 $\Omega$ ?	Go to step <b>5</b> .	Replace waste- gate control sole- noid valve. <ref. to FU(DOHC TURBO)-40, Wastegate Con- trol Solenoid Valve.&gt;</ref. 
<ul> <li>5 CHECK POWER SUPPLY TO WASTEGATE CONTROL SOLENOID VALVE.</li> <li>1)Turn ignition switch to ON.</li> <li>2)Measure voltage between wastegate control solenoid valve and engine ground.</li> <li>Connector &amp; terminal (B127) No. 2 (+) — Engine ground (-):</li> </ul>	Is the voltage more than 10 V?	Go to step <b>6.</b>	Repair open circuit in harness between main relay and waste- gate control sole- noid valve connector.

Step Check Yes No 6 CHECK POOR CONTACT. Is there poor contact in waste-Repair poor con-Contact with your Check poor contact in wastegate control solegate control solenoid valve Subaru distributor. tact in wastegate noid valve connector. connector? control solenoid NOTE: valve connector. Inspection by DTM is required, beprobable cause cause is deterioration of multiple parts.

### AC:DTC P0246 — WASTEGATE CONTROL SOLENOID VALVE CIRCUIT HIGH INPUT —

- 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1)Turn ignition switch to ON. 2)Measure voltage between ECM and chassis ground. Connector & terminal (B137) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 3.	Go to step 2.
2	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>
3	CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from wastegate con- trol solenoid valve. 3)Turn ignition switch to ON. 4)Measure voltage between ECM and chassis ground. Connector & terminal (B137) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and waste- gate control sole- noid valve connector. After repair, replace ECM. <ref. to<br="">FU(DOHC TURBO)-45, Engine Control Module.&gt;</ref.>	Go to step <b>4</b> .
4	CHECK WASTEGATE CONTROL SOLE- NOID VALVE. 1)Turn ignition switch to OFF. 2)Measure resistance between wastegate con- trol solenoid valve terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance less than 1 Ω?	Replace waste- gate control sole- noid valve <ref. to<br="">FU(DOHC TURBO)-40, Wastegate Con- trol Solenoid Valve.&gt; and ECM <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.></ref.>	Go to step <b>5</b> .
5	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>

### AD:DTC P0301 — CYLINDER 1 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(DOHC TURBO)-156, DTC P0304 — CYLIN-DER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## AE:DTC P0302 — CYLINDER 2 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(DOHC TURBO)-156, DTC P0304 — CYLIN-DER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

### AF:DTC P0303 — CYLINDER 3 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(DOHC TURBO)-156, DTC P0304 — CYLIN-DER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## AG:DTC P0304 — CYLINDER 4 MISFIRE DETECTED —

### • DTC DETECTING CONDITION:

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

### • TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- Rough driving

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

LHD MODEL



EN0964

RHD MODEL



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0117, P0118 or P0125?	Inspect DTC P0106, P0107, P0108, P0117, P0118 or P0125 using "17. List of Diagnostic Trou- ble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.</ref.>	Go to step 2.
<ul> <li>CHECK OUTPUT SIGNAL FROM ECM. <ol> <li>Turn ignition switch to ON.</li> <li>Measure voltage between ECM connector and chassis ground on faulty cylinders.</li> <li>Connector &amp; terminal <ul> <li>#1 (B137) No. 1 (+) — Chassis ground (-):</li> <li>#2 (B136) No. 6 (+) — Chassis ground (-):</li> <li>#3 (B136) No. 5 (+) — Chassis ground (-):</li> <li>#4 (B136) No. 4 (+) — Chassis ground (-):</li> </ul> </li> </ol></li></ul>	Is the voltage more than 10 V?	Go to step 7.	Go to step 3.
<ul> <li>CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.</li> <li>1)Turn ignition switch to OFF.</li> <li>2)Disconnect connector from fuel injector on faulty cylinders.</li> <li>3)Disconnect connector from ECM.</li> <li>4)Measure voltage between ECM connector and engine ground on faulty cylinders.</li> <li>Connector &amp; terminal</li> <li>#1 (E5) No. 1 — Engine ground:</li> <li>#3 (E6) No. 1 — Engine ground:</li> <li>#4 (E17) No. 1 — Engine ground:</li> </ul>	Is the resistance less than 10 $\Omega$ ?	Repair ground short circuit in har- ness between fuel injector and ECM connector.	Go to step 4.
<ul> <li>CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR. Measure resistance of harness connector between ECM connector and fuel injector on faulty cylinders.</li> <li>Connector &amp; terminal #1 (B137) No. 1 — (E5) No. 1: #2 (B136) No. 6 — (E16) No. 1: #3 (B136) No. 5 — (E6) No. 1: #4 (B136) No. 4 — (E17) No. 1:</li> </ul>	Is the resistance less than 1 $\Omega$ ?	Go to step <b>5</b> .	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and fuel injector connector • Poor contact in coupling connector
5 CHECK FUEL INJECTOR. Measure resistance between fuel injector ter- minals on faulty cylinder. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance between 5 and 20 $\Omega$ ?	Go to step <b>6.</b>	Replace faulty fuel injector. <ref. to<br="">FU(DOHC TURBO)-35, Fuel Injector.&gt;</ref.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6 (1 2 6	CHECK POWER SUPPLY LINE. 1) Turn ignition switch to ON. 2) Measure voltage between fuel injector and engine ground on faulty cylinders. Connector & terminal #1 (E5) No. 2 (+) — Engine ground (–): #2 (E16) No. 2 (+) — Engine ground (–): #3 (E6) No. 2 (+) — Engine ground (–): #4 (E17) No. 2 (+) — Engine ground (–):	Is the voltage more than 10 V?	Repair poor con- tact in all connec- tors in fuel injector circuit.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between main relay and fuel injector connector on faulty cylinders • Poor contact in coupling connector • Poor contact in main relay connec- tor • Poor contact in fuel injector con- nector on faulty cylinders
7 () 1 2 1 2 1 2 2 2 2 2 2	CHECK HARNESS BETWEEN FUEL INJEC- TOR AND ECM CONNECTOR. I)Turn ignition switch to OFF. 2)Disconnect connector from fuel injector on aulty cylinder. 3)Turn ignition switch to ON. 4)Measure voltage between ECM connector and chassis ground on faulty cylinders. Connector & terminal #1 (B137) No. 1 (+) — Chassis ground (- ): #2 (B136) No. 6 (+) — Chassis ground (- ): #3 (B136) No. 5 (+) — Chassis ground (- ): #4 (B136) No. 4 (+) — Chassis ground (- ):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and fuel injector. After repair, replace ECM. <ref. to<br="">FU(DOHC TURBO)-45, Engine Control Module.&gt;</ref.>	Go to step 8.
8 (1 2 t	CHECK FUEL INJECTOR. 1) Turn ignition switch to OFF. 2) Measure resistance between fuel injector erminals on faulty cylinder. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance less than 1 $\Omega$ ?	Replace faulty fuel injector <ref. to<br="">FU(DOHC TURBO)-35, Fuel Injector.&gt; and ECM <ref. to<br="">FU(DOHC TURBO)-45, Engine Control Module.&gt;</ref.></ref.>	Go to step 9.
9 (	CHECK INSTALLATION OF CAMSHAFT PO- SITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is camshaft position sensor or crankshaft position sensor loosely installed?	Tighten camshaft position sensor or crankshaft posi- tion sensor.	Go to step <b>10.</b>
10 (	CHECK CRANKSHAFT SPROCKET. Remove timing belt cover.	Is crankshaft sprocket rusted or does it have broken teeth?	Replace crank- shaft sprocket. <ref. to<br="">ME(DOHC TURBO)-57, Crankshaft Sprocket.&gt;</ref.>	Go to step 11.

	Step	Check	Yes	No
11	CHECK INSTALLATION CONDITION OF TIMING BELT. Turn crankshaft using ST, and align alignment mark on crankshaft sprocket with alignment mark on cylinder block. ST 499987500CRANKSHAFT SOCKET	Is timing belt dislocated from its proper position?	Repair installation condition of timing belt. <ref. to<br="">ME(DOHC TURBO)-47, Tim- ing Belt Assem- bly.&gt;</ref.>	Go to step 12.
12	CHECK FUEL LEVEL.	Is the fuel meter indication higher than the "Lower" level?	Go to step 13.	Replenish fuel so fuel meter indica- tion is higher than the "Lower" level. After replenishing fuel, Go to step <b>13.</b>
13	CHECK STATUS OF CHECK ENGINE MAL- FUNCTION INDICATOR LAMP (MIL). 1)Clear memory using Subaru Select Monitor. <ref. clear="" en(dohc="" mem-<br="" to="" turbo)-38,="">ory Mode.&gt; 2)Start engine, and drive the vehicle more than 10 minutes.</ref.>	Is the MIL coming on or blink- ing?	Go to step 15.	Go to step 14.
14	CHECK CAUSE OF MISFIRE DIAGNOSED.	Was the cause of misfire diag- nosed when the engine is run- ning?	Finish diagnostics operation, if the engine has no abnormality. NOTE: Ex. Remove spark plug cord, etc.	Repair poor con- tact. NOTE: In this case, repair the following: • Poor contact in ignitor connector • Poor contact in ignition coil con- nector • Poor contact in fuel injector con- nector on faulty cylinders • Poor contact in ECM connector • Poor contact in coupling connector
15	CHECK AIR INTAKE SYSTEM.	Is there a fault in air intake sys- tem?	Repair air intake system. NOTE: Check the follow- ing items: • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnec- tion of hoses?	Go to step <b>16.</b>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

1	Step	Check	Yes	No
16	CHECK MISFIRE SYMPTOM. 1)Turn ignition switch to ON. 2)Read diagnostic trouble code (DTC). •Subaru Select Monitor <ref. en(dohc="" subaru<br="" to="" turbo)-28,="">Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual. NOTE: Perform diagnosis according to the items listed below.</ref.>	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate only one DTC?	Go to step 21.	Go to step 17.
17	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0301 and P0302?	Go to step 22.	Go to step 18.
18	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0303 and P0304?	Go to step 23.	Go to step 19.
19	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0301 and P0303?	Go to step 24.	Go to step 20.
20	CHECK DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0302 and P0304?	Go to step 25.	Go to step <b>26</b> .
21	ONLY ONE CYLINDER	Is there a fault in that cylinder?	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plug • Spark plug cord • Fuel injector • Compression ratio	Go to DTC P0171 and P0172. <ref. to EN(DOHC TURBO)-142, DTC P0171 — FUEL TRIM MAL- FUNCTION (A/F TOO LEAN) —, Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).&gt;</ref. 
22	GROUP OF #1 AND #2 CYLINDERS	Are there faults in #1 and #2 cylinders?	Repair or replace faulty parts. NOTE: • Check the fol- lowing items. • Spark plugs • Fuel injectors • Ignition coil • Compres- sion ratio • If no abnormal is discovered, check for "IGNITION CONTROL SYS- TEM" of #1 and #2 cylinders side. <ref. en(dohc<br="" to="">TURBO)-60, Igni- tion Control Sys- tem.&gt;</ref.>	Go to DTC P0171 and P0172. <ref. to EN(DOHC TURBO)-142, DTC P0171 — FUEL TRIM MAL- FUNCTION (A/F TOO LEAN) —, Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).&gt;</ref. 

	Step	Check	Yes	No
23	GROUP OF #3 AND #4 CYLINDERS	Are there faults in #3 and #4 cylinders?	Repair or replace faulty parts. NOTE: • Check the fol- lowing items. • Spark plugs • Fuel injectors • Ignition coil • If no abnormal is discovered, check for "16. D: IGNI- TION CONTROL SYSTEM" of #3 and #4 cylinders side. <ref. to<br="">EN(DOHC TURBO)-60, Igni- tion Control Sys- tem.&gt;</ref.>	Go to DTC P0171 and P0172. <ref. to EN(DOHC TURBO)-142, DTC P0171 — FUEL TRIM MAL- FUNCTION (A/F TOO LEAN) —, Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).&gt;</ref. 
24	GROUP OF #1 AND #3 CYLINDERS	Are there faults in #1 and #3 cylinders?	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plugs • Fuel injectors • Skipping timing belt teeth	Go to DTC P0171 and P0172. <ref. to EN(DOHC TURBO)-142, DTC P0171 — FUEL TRIM MAL- FUNCTION (A/F TOO LEAN) —, Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).&gt;</ref. 
25	GROUP OF #2 AND #4 CYLINDERS	Are there faults in #2 and #4 cylinders?	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plugs • Fuel injectors • Compression ratio • Skipping timing belt teeth	Go to DTC P0171 and P0172. <ref. to EN(DOHC TURBO)-142, DTC P0171 — FUEL TRIM MAL- FUNCTION (A/F TOO LEAN) —, Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).&gt;</ref. 
26	CYLINDER AT RANDOM	Is the engine idle rough?	Go to DTC P0171 and P0172. <ref. to EN(DOHC TURBO)-142, DTC P0171 — FUEL TRIM MAL- FUNCTION (A/F TOO LEAN) —, Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).&gt;</ref. 	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plugs • Fuel injectors • Compression ratio

### AH:DTC P0327 — KNOCK SENSOR CIRCUIT LOW INPUT —

- DTC DETECTING CONDITION:
- Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Poor driving performance
  - Knocking occurs.

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1 CH SC 1) <sup>7</sup> 2)[ 3)1 CO C	HECK HARNESS BETWEEN KNOCK SEN- DR AND ECM CONNECTOR. Turn ignition switch to OFF. Disconnect connector from ECM. Measure resistance between ECM harness onnector and chassis ground. Connector & terminal (B135) No. 4 — Chassis ground:	Is the resistance more than 700 kΩ?	Go to step 2.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between knock sensor and ECM connector • Poor contact in knock sensor con- nector • Poor contact in coupling connector
2 CH 1)[ 2)[ CO 7	HECK KNOCK SENSOR. Disconnect connector from knock sensor. Measure resistance between knock sensor onnector terminal and engine ground. Terminal No. 2 — Engine ground:	Is the resistance more than 700 kΩ?	Go to step 3.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between knock sensor and ECM connector • Poor contact in knock sensor con- nector • Poor contact in coupling connector
3 CH	HECK CONDITION OF KNOCK SENSOR STALLATION.	Is the knock sensor installation bolt tightened securely?	Replace knock sensor. <ref. to<br="">FU(DOHC TURBO)-30, Knock Sensor.&gt;</ref.>	Tighten knock sen- sor installation bolt securely.

### AI: DTC P0328 — KNOCK SENSOR CIRCUIT HIGH INPUT —

- DTC DETECTING CONDITION:
- Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Poor driving performance
  - Knocking occurs.

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



## DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

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Step	Check	Yes	No
1 CHECK HARNESS BETWEEN KNOCK SEN- SOR AND ECM CONNECTOR. Measure resistance of harness between ECM connector and chassis ground. Connector & terminal (B135) No. 4 — Chassis ground:	Is the resistance less than 400 kΩ?	Go to step 2.	Go to step 3.
<ul> <li>2 CHECK KNOCK SENSOR.         <ol> <li>1)Disconnect connector from knock sensor.</li> <li>2)Measure resistance between knock sensor connector terminal and engine ground.</li> <li>Terminal</li> <li>No. 2 — Engine ground:</li> </ol> </li> </ul>	Is the resistance less than 400 kΩ?	Replace knock sensor. <ref. to<br="">FU(DOHC TURBO)-30, Knock Sensor.&gt;</ref.>	Repair ground short circuit in har- ness between knock sensor con- nector and ECM connector. NOTE: The harness be- tween both con- nectors is shielded. Repair short circuit of har- ness together with shield.
<ul> <li>CHECK INPUT SIGNAL FOR ECM.         <ol> <li>Connect connectors to ECM and knock sensor.</li> <li>Turn ignition switch to ON.</li> <li>Measure voltage between ECM and chassis ground.</li> <li>Connector &amp; terminal</li></ol></li></ul>	Is the voltage more than 2 V?	Even if MIL lights up, the circuit has returned to a nor- mal condition at this time. (How- ever, the possibility of poor contact still remains.) NOTE: In this case, repair the following: • Poor contact in knock sensor con- nector • Poor contact in ECM connector • Poor contact in coupling connector	Repair poor con- tact in ECM con- nector.

## AJ:DTC P0335 — CRANKSHAFT POSITION SENSOR CIRCUIT MALFUNCTION

- DTC DETECTING CONDITION:
  - Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Engine stalls.
  - Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



Step	Check	Yes	No
CHECK HARNESS BETWEEN CRANK- SHAFT POSITION SENSOR AND ECM CON NECTOR.           1)Turn ignition switch to OFF.           2)Disconnect connector from crankshaft posi- tion sensor.	Is the resistance more than - 100 kΩ?	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in	Go to step 2.
3)Measure resistance of harness between crankshaft position sensor connector and engine ground. <i>Connector &amp; terminal</i> <i>(E10) No. 1 — Engine ground:</i>		harness between crankshaft posi- tion sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector	
<ul> <li>CHECK HARNESS BETWEEN CRANK- SHAFT POSITION SENSOR AND ECM CON NECTOR. Measure resistance of harness between crank shaft position sensor connector and engine ground. Connector &amp; terminal (E10) No. 1 — Engine ground:</li> </ul>	Is the resistance less than 10 Ω?	Repair ground short circuit in har- ness between crankshaft posi- tion sensor and ECM connector. NOTE: The harness be- tween both con- nectors are shielded. Repair ground short circuit in harness togeth- er with shield.	Go to step 3.
<ul> <li>CHECK HARNESS BETWEEN CRANK- SHAFT POSITION SENSOR AND ECM CON NECTOR. Measure resistance of harness between crank shaft position sensor connector and engine ground. Connector &amp; terminal (E10) No. 2 — Engine ground:</li> </ul>	Is the resistance less than 5 - Ω? -	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between crankshaft posi- tion sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
4 CHECK CONDITION OF CRANKSHAFT PO- SITION SENSOR.	Is the crankshaft position sen- sor installation bolt tightened securely?	Go to step <b>5.</b>	Tighten crank- shaft position sen- sor installation bolt securely.
<ul> <li>5 CHECK CRANKSHAFT POSITION SENSOR         <ol> <li>1)Remove crankshaft position sensor.</li> <li>2)Measure resistance between connector terminals of crankshaft position sensor.</li> <li><i>Terminals</i></li> <li><i>No. 1 — No. 2:</i></li> </ol></li></ul>	. Is the resistance between 1 and 4 kΩ?	Repair poor con- tact in crankshaft position sensor connector.	Replace crank- shaft position sen- sor. <ref. to<br="">FU(DOHC TURBO)-28, Crankshaft Posi- tion Sensor.&gt;</ref.>

### AK:DTC P0336 — CRANKSHAFT POSITION SENSOR CIRCUIT RANGE/PER-FORMANCE PROBLEM —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### • TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0335?	Inspect DTC P0335 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref.>	Go to step 2.
2	CHECK CONDITION OF CRANKSHAFT PO- SITION SENSOR. Turn ignition switch to OFF.	Is the crankshaft position sen- sor installation bolt tightened securely?	Go to step <b>3</b> .	Tighten crank- shaft position sen- sor installation bolt securely.
3	CHECK CRANKSHAFT SPROCKET. Remove front belt cover.	Are crankshaft sprocket teeth cracked or damaged?	Replace crank- shaft sprocket. <ref. fu(dohc<br="" to="">TURBO)-28, Crankshaft Posi- tion Sensor.&gt;</ref.>	Go to step 4.
4	CHECK INSTALLATION CONDITION OF TIMING BELT. Turn crankshaft using ST, and align alignment mark on crankshaft sprocket with alignment mark on cylinder block. ST 499987500CRANKSHAFT SOCKET	Is timing belt dislocated from its proper position?	Repair installation condition of timing belt. <ref. to<br="">ME(DOHC TURBO)-47, Tim- ing Belt Assem- bly.&gt;</ref.>	Replace crank- shaft position sen- sor. <ref. to<br="">FU(DOHC TURBO)-28, Crankshaft Posi- tion Sensor.&gt;</ref.>

### AL:DTC P0340 — CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION -

- DTC DETECTING CONDITION:
- Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Engine stalls.
  - Failure of engine to start

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from camshaft posi- tion sensor. 3)Measure resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance more than 100 kΩ?	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector	Go to step 2.
2	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure resistance of harness between cam- shaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance less than 10 Ω?	Repair ground short circuit in har- ness between camshaft position sensor and ECM connector. NOTE: The harness be- tween both con- nectors are shielded. Repair ground short circuit in harness togeth- er with shield.	Go to step 3.
3	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure resistance of harness between cam- shaft position sensor connector and engine ground. Connector & terminal (E15) No. 2 — Engine ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
4	CHECK CONDITION OF CAMSHAFT POSI- TION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 5.	Tighten camshaft position sensor installation bolt securely.
5	CHECK CAMSHAFT POSITION SENSOR. 1)Remove camshaft position sensor. 2)Measure resistance between connector ter- minals of camshaft position sensor. Terminals No. 1 — No. 2:	Is the resistance between 1 and 4 $k\Omega$ ?	Repair poor con- tact in camshaft position sensor connector.	Replace camshaft position sensor. <ref. fu(dohc<br="" to="">TURBO)-29, Cam- shaft Position Sen- sor.&gt;</ref.>

### AM:DTC P0341 — CAMSHAFT POSITION SENSOR CIRCUIT RANGE/PERFOR-MANCE PROBLEM —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### • TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0340?	Inspect DTC P0340 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref.>	Go to step <b>2</b> .
2	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from camshaft posi- tion sensor. 3)Measure resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance more than 100 kΩ?	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector	Go to step 3.
3	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure resistance of harness between cam- shaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance less than 10 $\Omega$ ?	Repair ground short circuit in har- ness between camshaft position sensor and ECM connector. NOTE: The harness be- tween both con- nectors are shielded. Repair ground short circuit in harness togeth- er with shield.	Go to step 4.
4	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure resistance of harness between cam- shaft position sensor connector and engine ground. Connector & terminal (E15) No. 2 — Engine ground:	Is the resistance less than 5 Ω?	Go to step <b>5</b> .	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
5	CHECK CONDITION OF CAMSHAFT POSI- TION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step <b>6</b> .	Tighten camshaft position sensor installation bolt securely.

Step Check Yes No CHECK CAMSHAFT POSITION SENSOR. Go to step 7. 6 Is the resistance between 1 Replace camshaft 1)Remove camshaft position sensor. and 4 k $\Omega$ ? position sensor. 2)Measure resistance between connector ter-<Ref. to FU(DOHC minals of camshaft position sensor. TURBO)-29, Cam-Terminals shaft Position Sen-No. 1 — No. 2: sor.> **CHECK CONDITION OF CAMSHAFT POSI-**7 Is the camshaft position sensor Go to step 8. Tighten camshaft TION SENSOR. installation bolt tightened position sensor Turn ignition switch to OFF. securely? installation bolt securely. 8 CHECK CAMSHAFT SPROCKET. Are camshaft sprocket teeth Replace camshaft Go to step 9. Remove front belt cover. <Ref. to ME(SOHC)cracked or damaged? sprocket. <Ref. to 45, Belt Cover.> ME(DOHC TURBO)-56, Camshaft Sprocket.> **CHECK INSTALLATION CONDITION OF** 9 Is timing belt dislocated from Repair installation Replace camshaft TIMING BELT. its proper position? condition of timing position sensor. belt. <Ref. to <Ref. to FU(DOHC Turn camshaft using ST, and align alignment mark on camshaft sprocket with alignment ME(DOHC TURBO)-29, Camshaft Position Senmark on timing belt cover LH. TURBO)-47, Tim-ST 499207100CAMSHAFT SPROCKET ing Belt Assemsor.> WRENCH bly.>

### AN:DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD –

- DTC DETECTING CONDITION:
  - Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Engine stalls.
  - Idle mixture is out of specifications.

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0031, P0032, P0131, P0132, P0133, P1130, P1131, P1134, P1139, P0037, P0038, P0136 and P0139?	Inspect the rele- vant DTC using "17. List of Diag- nostic Trouble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0420.</ref.>	Go to step 2.
2	CHECK EXHAUST SYSTEM. Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes. NOTE: Check the following positions. •Between cylinder head and front exhaust pipe •Between front exhaust pipe and front catalytic converter •Between front catalytic converter and rear cat- alytic converter	Is there a fault in exhaust sys- tem?	Repair or replace exhaust system. <ref. ex(dohc<br="" to="">TURBO)-2, Gen- eral Description.&gt;</ref.>	Go to step 3.
3	CHECK REAR CATALYTIC CONVERTER. Separate rear catalytic converter from rear exhaust pipe.	Is there damage at rear face of rear catalyst?	Replace front cat- alytic converter <ref. ec(dohc<br="" to="">TURBO)-3, Front Catalytic Con- verter.&gt; and rear catalytic con- verter <ref. to<br="">EC(DOHC TURBO)-4, Rear Catalytic Con- verter.&gt;</ref.></ref.>	Go to step 4.
4	CHECK FRONT CATALYTIC CONVERTER. Remove front catalytic converter.	Is there damage at rear face or front face of front catalyst?	Replace front cat- alytic converter. <ref. ec(dohc<br="" to="">TURBO)-3, Front Catalytic Con- verter.&gt;</ref.>	Contact with your Subaru distributor. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

### AO:DTC P0444 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CON-TROL VALVE CIRCUIT LOW INPUT —

- DTC DETECTING CONDITION:
  - Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Erroneous idling

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .


Step	Check	Yes	No
<ol> <li>CHECK OUTPUT SIGNAL FROM ECM.         <ol> <li>1)Turn ignition switch to ON.</li> <li>2)Measure voltage between ECM and chassis ground.</li> <li>Connector &amp; terminal</li></ol></li></ol>	Is the voltage more than 10 V?	Even if MIL lights up, the circuit has returned to a nor- mal condition at this time. Contact with your Subaru distributor. NOTE:	Go to step 2.
		is required, be- cause probable cause is deteriora- tion of multiple parts.	
2 CHECK HARNESS BETWEEN PURGE CON- TROL SOLENOID VALVE AND ECM CON- NECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connectors from purge control solenoid valve and ECM. 3)Measure resistance of harness between purge control solenoid valve connector and engine ground. Connector & terminal (E4) No. 2 — Engine ground:	Is the resistance less than 10 Ω?	Repair ground short circuit in har- ness between ECM and purge control solenoid valve connector.	Go to step <b>3</b> .
<ul> <li>CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</li> <li>Measure resistance of harness between ECM and purge control solenoid valve of harness connector.</li> <li>Connector &amp; terminal (B137) No. 16 — (E4) No. 2:</li> </ul>	Is the resistance less than 1 $\Omega$ ?	Go to step <b>4</b> .	Repair open circuit in harness between ECM and purge control sole- noid valve connec- tor. NOTE: In this case, repair the following: • Open circuit in harness between ECM and purge control solenoid valve connector • Poor contact in coupling connector
<ul> <li>CHECK PURGE CONTROL SOLENOID VALVE.         <ol> <li>Remove purge control solenoid valve.</li> <li>Measure resistance between purge control solenoid valve terminals.</li> <li>Terminals</li> <li>No. 1 — No. 2:</li> </ol> </li> </ul>	Is the resistance between 10 and 100 Ω?	Go to step <b>5</b> .	Replace purge control solenoid valve. <ref. to<br="">EC(DOHC TURBO)-7, Purge Control Solenoid Valve.&gt;</ref.>
<ul> <li>5 CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE.</li> <li>1)Turn ignition switch to ON.</li> <li>2)Measure voltage between purge control solenoid valve and engine ground.</li> <li>Connector &amp; terminal</li> <li>(E4) No. 1 (+) — Engine ground (–):</li> </ul>	Is the voltage more than 10 V?	Go to step <b>6</b> .	Repair open circuit in harness between main relay and purge control solenoid valve connector.

Step Check Yes No 6 CHECK POOR CONTACT. Is there poor contact in purge Repair poor con-Contact with your Check poor contact in purge control solenoid control solenoid valve connectact in purge con-Subaru distributor. valve connector. tor? trol solenoid valve NOTE: connector. Inspection by DTM is required, beprobable cause cause is deterioration of multiple parts.

### AP:DTC P0445 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CON-TROL VALVE CIRCUIT HIGH INPUT —

- DTC DETECTING CONDITION:
  - Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Erroneous idling

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

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Step	Check	Yes	No
<ol> <li>CHECK OUTPUT SIGNAL FROM ECM.         <ol> <li>Turn ignition switch to OFF.</li> <li>Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.</li> <li>Turn ignition switch to ON.</li> <li>While operating purge control solenoid valve, measure voltage between ECM and chassis ground.</li> <li>NOTE:                  Purge control solenoid valve operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(dohc="" mode.="" operation="" to="" turbo)-39="" valve=""> </ref.></li> <li>Connector &amp; terminal</li></ol></li></ol>	Does voltage change between 0 and 10 V?	Go to step 2.	Even if MIL light up, the circuit has returned to a nor- mal condition at this time. In this case, repair poor contact in ECM connector.
<ul> <li>CHECK OUTPUT SIGNAL FROM ECM.</li> <li>1)Turn ignition switch to ON.</li> <li>2)Measure voltage between ECM and chassis ground.</li> <li>Connector &amp; terminal</li> <li>(B137) No. 16 (+) — Chassis ground (-):</li> </ul>	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 poor con- tact in ECM con- nector.	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>
<ul> <li>CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</li> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect connector from purge control solenoid valve.</li> <li>3) Turn ignition switch to ON.</li> <li>4) Measure voltage between ECM and chassis ground.</li> <li>Connector &amp; terminal (B137) No. 16 (+) — Chassis ground (-):</li> </ul>	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 ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Go to step <b>5</b> .
<ul> <li>5 CHECK PURGE CONTROL SOLENOID VALVE.         <ol> <li>Turn ignition switch to OFF.</li> <li>Measure resistance between purge control solenoid valve terminals.</li> <li>Terminals No. 1 — No. 2:</li> </ol> </li> </ul>	Is the resistance less than 1 $\Omega$ ?	Replace purge control solenoid valve <ref. to<br="">EC(DOHC TURBO)-7, Purge Control Solenoid Valve.&gt; and ECM <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.></ref.>	Go to step <b>6.</b>
6 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>

### AQ:DTC P0461 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

### • DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

### • WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Inspect DTC	Replace fuel level
	tor or OBD-II general scan tool	P0462 or P0463	sensor <ref. th="" to<=""></ref.>
	indicate DTC P0462 or P0463?	using "17. List of	FU(DOHC
		Diagnostic Trou-	TURBO)-58, Fuel
		ble Code (DTC)".	Level Sensor.>
		<ref. en(dohc<="" th="" to=""><th>and fuel sub level</th></ref.>	and fuel sub level
		TURBO)-69, List	sensor <ref. th="" to<=""></ref.>
		of Diagnostic Trou-	FU(DOHC
		ble Code (DTC).>	TURBO)-59, Fuel
		NOTE:	Sub Level Sen-
		In this case, it is	sor.>
		not necessary to	
		inspect this trou-	
		ble.	

## AR: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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

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Step	Check	Yes	No
1 CHECK SPEEDOMETER AND TACHOME- TER OPERATION IN COMBINATION METER.	Does speedometer and tachometer operate normally?	Go to step 2.	Repair or replace combination meter. <ref. to<br="">IDI-4, Combina- tion Meter Sys- tem.&gt;</ref.>
<ul> <li>CHECK INPUT SIGNAL FOR ECM.</li> <li>1)Turn ignition switch to ON. (Engine OFF)</li> <li>2)Measure voltage between ECM connector and chassis ground.</li> <li>Connector &amp; terminal</li> <li>(B135) No. 25 (+) — Chassis ground (-):</li> </ul>	Is the voltage less than 0.12 V?	Go to step 6.	Go to step 3.
<ul> <li>CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Read data of fuel level sensor signal using Subaru Select Monitor. NOTE:</li> <li>•Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(dohc="" monitor.="" select="" subaru="" to="" turbo)-28,=""></ref.></li> </ul>	Does the value change less than 0.12 V by shaking har- ness and connector of ECM while monitoring the value with Subaru Select Monitor?	Repair poor con- tact in ECM con- nector.	Even if MIL lights up, 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 connec- tors
<ul> <li>CHECK INPUT VOLTAGE OF ECM.         <ol> <li>Turn ignition switch to OFF.</li> <li>Separate fuel tank cord connector (R57) and rear wiring harness connector (R15).</li> <li>Turn ignition switch to ON.</li> <li>Measure voltage of harness between ECM connector and chassis ground.</li> <li>Connector &amp; terminal (B135) No. 25 (+) — Chassis ground (-):</li> </ol> </li> </ul>	Is the voltage more than 0.12 V?	Go to step <b>4</b> .	Go to step 7.
<ul> <li>CHECK HARNESS BETWEEN ECM AND COMBINATION METER.         <ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connector from connector (i10), (i12) and ECM connector.</li> <li>Measure resistance between ECM and chassis ground.</li> <li>Connector &amp; terminal (B135) No. 25 — Chassis ground:</li> </ol> </li> </ul>	Is the resistance more than 1 MΩ?	Go to step <b>6</b> .	Repair ground short circuit in har- ness between ECM and combi- nation meter con- nector.
6 CHECK HARNESS BETWEEN ECM AND COMBINATION METER. Measure resistance between ECM and combi- nation meter connector. Connector & terminal (B135) No. 25 — (i12) No. 2:	Is the resistance less than 10 Ω?	Repair or replace combination meter. <ref. to<br="">IDI-4, Combina- tion Meter Sys- tem.&gt;</ref.>	Repair open circuit between ECM and combination meter connector. NOTE: In this case, repair the following: Poor contact in coupling connector

	Step	Check	Yes	No
7	<ul> <li>CHECK FUEL TANK CORD.</li> <li>1)Turn ignition switch to OFF.</li> <li>2)Disconnect connector from fuel sub level sensor.</li> <li>3)Measure resistance between fuel sub level sensor and chassis ground.</li> <li>Connector &amp; terminal (R59) No. 1 — Chassis ground:</li> </ul>	Is the resistance more than 1 MΩ?	Go to step 8.	Repair ground short circuit in fuel tank cord.
8	CHECK FUEL TANK CORD. 1)Disconnect connector from fuel pump assembly. 2)Measure resistance between fuel pump assembly and chassis ground. Connector & terminal (R59) No. 2 — Chassis ground:	Is the resistance more than 1 M $\Omega$ ?	Go to step <b>9</b> .	Repair ground short circuit in fuel tank cord.
9	CHECK FUEL LEVEL SENSOR. 1)Remove fuel pump assembly. <ref. to<br="">FU(DOHC TURBO)-56, Fuel Pump.&gt; 2)Measure resistance between fuel level sen- sor and terminals with its float set to the full position. Terminals No. 3 — No. 5:</ref.>	Is the resistance between 0.5 and 2.5 $\Omega$ ?	Go to step <b>10.</b>	Replace fuel level sensor.
10	CHECK FUEL SUB LEVLE SENSOR. 1)Remove fuel sub level sensor. <ref. to<br="">FU(DOHC TURBO)-59, Fuel Sub Level Sen- sor.&gt; 2)Measure 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 between 0.5 and 2.5 Ω?	Repair poor con- tact in harness between ECM and combination meter connector.	Replace fuel sub level sensor.

## AS: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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



St	tep	Check	Yes	No
1 CHECK SPEEDOMET TER OPERATION IN METER.	FER AND TACHOME- COMBINATION	Does speedometer and tachometer operate normally?	Go to step 2.	Repair or replace combination meter. <ref. to<br="">IDI-4, Combina- tion Meter Sys- tem.&gt;</ref.>
2 CHECK INPUT SIGN. 1)Turn ignition switch t 2)Measure voltage bei and chassis ground. <i>Connector &amp; termin</i> <i>(B135) No. 25 (+)</i> -	AL FOR ECM. to ON. (Engine OFF) tween ECM connector nal — Chassis ground (–):	Is the voltage more than 4.75 V?	Go to step 3.	Even if MIL lights up, 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 fuel pump connec- tor • Poor contact in coupling connector
3 CHECK INPUT VOLT 1)Turn ignition switch t 2)Disconnect combina (i10) and ECM connect 3)Turn ignition switch t 4)Measure voltage of and chassis ground. Connector & termin (B135) No. 25 (+) -	AGE OF ECM. to OFF. ation meter connector stor. to ON. harness between ECM mal — Chassis ground ():	Is the voltage more than 4.75 V?	Go to step 4.	Repair battery short circuit between ECM and combination meter connector.
<ul> <li>CHECK HARNESS B FUEL TANK CORD.</li> <li>1)Turn ignition switch t</li> <li>2)Separate fuel tank c</li> <li>rear wiring harness cc</li> <li>3)Measure resistance</li> <li>tank cord.</li> <li>Connector &amp; termin</li> <li>(B135) No. 25 — (a)</li> </ul>	<b>ETWEEN ECM AND</b> to OFF. ord connector (R57) and onnector (R15). between ECM and fuel <b>nal</b> <b>R15) No. 2:</b>	Is the resistance less than 5 $\Omega$ ?	Go to step <b>5</b> .	Repair open circuit between ECM and fuel tank cord.
5 CHECK HARNESS B CORD AND CHASSIS Measure resistance be and chassis ground. Connector & termin (R15) No. 6 — Cha	ETWEEN FUEL TANK S GROUND. etween fuel tank cord nal assis ground:	Is the resistance less than 5 Ω?	Go to step <b>6</b> .	Repair open circuit between fuel tank cord and chassis ground. NOTE: In this case, repair the following: Poor contact in coupling connec- tors
6 CHECK FUEL TANK 1)Disconnect connect 2)Measure resistance sor and coupling conn Connector & termin (R57) No. 6 — (R5	CORD. or from fuel level sensor. between fuel level sen- lector. nal i8) No. 5:	Is the resistance less than 10 $\Omega$ ?	Go to step 7.	Repair open circuit between coupling connector and fuel level sensor.

	Step	Check	Yes	No
7	<ul> <li>CHECK FUEL TANK CORD.</li> <li>1)Disconnect connector from fuel sub level sensor.</li> <li>2)Measure resistance between fuel level sensor and fuel sub level sensor.</li> <li>Connector &amp; terminal (R58) No. 3 — (R59) No. 2:</li> </ul>	Is the resistance less than 10 $\Omega$ ?	Go to step 8.	Repair open circuit between fuel level sensor and fuel sub level sensor.
8	CHECK FUEL TANK CORD. Measure resistance between fuel sub level sensor and coupling connector. Connector & terminal (R57) No. 2 — (R59) No. 1:	Is the resistance less than 10 $\Omega$ ?	Go to step <b>9</b> .	Repair open circuit between coupling connector and fuel sub level sensor.
9	CHECK FUEL LEVEL SENSOR. 1)Remove fuel pump assembly. <ref. to<br="">FU(DOHC TURBO)-56, Fuel Pump.&gt; 2)While moving fuel level sensor float up and down, measure resistance between fuel level sensor terminals. Terminals No. 3 — No. 5:</ref.>	Is the resistance more than 53 $\Omega$ ?	Replace fuel level sensor. <ref. to<br="">FU(DOHC TURBO)-58, Fuel Level Sensor.&gt;</ref.>	Go to step <b>10.</b>
10	CHECK FUEL SUB LEVEL SENSOR. 1)Remove fuel sub level sensor. <ref. to<br="">FU(DOHC TURBO)-59, Fuel Sub Level Sen- sor.&gt; 2)While moving 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 $\Omega$ ?	Replace fuel sub level sensor. <ref. to FU(DOHC TURBO)-59, Fuel Sub Level Sen- sor.&gt;</ref. 	Replace combina- tion meter. <ref. to IDI-19, Combi- nation Meter Assembly.&gt;</ref. 

## AT:DTC P0464 — FUEL LEVEL SENSOR INTERMITTENT 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0462 or P0463?	Inspect DTC P0462 or P0463 using "17. List of Diagnostic Trou- ble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref.>	Go to step 2.
<ul> <li>CHECK FUEL LEVEL SENSOR.         <ol> <li>Remove fuel pump assembly. <ref. to<br="">FU(DOHC TURBO)-56, Fuel Pump.&gt;</ref.></li> <li>While moving fuel level sensor float up and down, make sure that the resistance between fuel level sensro terminals changes smoothly.</li> </ol> </li> <li>Terminals</li> <li>No. 3 - No. 5:</li> </ul>	Does the resistance change smoothly between approx. 0.5 $\Omega$ and approx. 52 $\Omega$ ?	Go to step 3.	Replace fuel level sensor. <ref. to<br="">FU(DOHC TURBO)-58, Fuel Level Sensor.&gt;</ref.>
<ul> <li>3 CHECK FUEL SUB LEVEL SENSOR.</li> <li>Warning: During work procedures, if fuel tank is more than 3/4 full, be careful because fuel may spill.</li> <li>1)Remove fuel sub level sensor. <ref. to<br="">FU(DOHC TURBO)-59, Fuel Sub Level Sen- sor.&gt;</ref.></li> <li>2)While moving fuel sub level sensor float up and down, make sure that the resistance between fuel level sensro terminals changes smoothly.</li> <li>Terminals No. 1 - No. 2:</li> </ul>	Does the resistance change smoothly between approx. 0.5 $\Omega$ and approx. 44 $\Omega$ ?	Repair poor con- tact in ECM, com- bination meter and coupling connec- tors.	Replace fuel sub level sensor. <ref. to FU(DOHC TURBO)-59, Fuel Sub Level Sen- sor.&gt;</ref. 

### AU:DTC P0480 — COOLING FAN RELAY 1 CIRCUIT LOW INPUT —

### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Radiator fan does not operate properly.
  - Overheating

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



EN0981

	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1)Turn ignition switch to OFF. 2)Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box. 3)Turn ignition switch to ON. 4)While operating radiator fan relay, measure voltage between ECM terminal and ground. NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. en(dohc="" subaru<br="" to="" turbo)-28,="">Select Monitor.&gt; Connector &amp; terminal (B137) No. 17 (+) — Chassis ground (-): (B137) No. 28 (+) — Chassis ground (-):</ref.>	Does voltage change between 0 and 10 V?	Repair poor con- tact in ECM con- nector.	Go to step 2.
2	CHECK GROUND SHORT CIRCUIT IN RADI- ATOR MAIN FAN RELAY CONTROL CIR- CUIT. 1)Turn ignition switch to OFF. 2)Disconnect connectors from ECM. 3)Measure resistance of harness between ECM connector and chassis ground. Connector & terminal (B137) No. 17 — Chassis ground: (B137) No. 28 — Chassis ground:	Is the resistance less than 10 $\Omega$ ?	Repair ground short circuit in radiator main fan relay control cir- cuit.	Go to step 3.
3	CHECK POWER SUPPLY FOR RELAY. 1)Remove main fan relay 1 and 2 from A/C relay holder. 2)Turn ignition switch to ON. 3)Measure voltage between fuse and relay box (F/B) connector and chassis ground. Connector & terminal (F66) No. 27 (+) — Chassis ground (-): (F30) No. 22 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.
4	CHECK MAIN FAN RELAY. 1)Turn ignition switch to OFF. 2)Measure resistance between main fan relay terminals. Terminal No. 27 — No. 28:(Main fan relay 1) No. 22 — No. 21:(Main fan relay 2)	Is the resistance between 87 and 107 Ω?	Go to step 5.	Replace main fan relay.
5	CHECK OPEN CIRCUIT IN MAIN FAN RE- LAY CONTROL CIRCUIT. Measure resistance of harness between ECM and main fan relay connector. Connector & terminal (B137) No. 17 — (F66) No. 28: (B137) No. 28 — (F30) No. 21:	Is the resistance less than 1 $\Omega$ ?	Go to step <b>6</b> .	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and main fan relay connector • Poor contact in coupling connector
6	CHECK POOR CONTACT. Check poor contact in ECM or main fan relay connector.	Is there poor contact in ECM or main fan relay connector?	Repair poor con- tact in ECM or main fan relay con- nector.	Contact with your Subaru distributor service.

### AV:DTC P0483 — COOLING FAN FUNCTION PROBLEM —

### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Occurrence of noise
  - Overheating

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

NOTE:

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

• WIRING DIAGRAM:



EN0981

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is there any other DTC on dis- play?	Inspect the rele- vant DTC using "17. List of Diag- nostic Trouble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref.>	Check radiator fan, fan motor and ther- mostat. <ref. to<br="">CO-9, Radiator Main Fan Sys- tem.&gt; and <ref. to CO-17, Radiator Sub Fan Sys- tem.&gt; If thermostat is stuck, replace thermostat.</ref. </ref.>

## AW:DTC P0500 — VEHICLE SPEED SENSOR MALFUNCTION —

### • DTC DETECTING CONDITION:

Immediately at fault recognition

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

### • WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK SPEEDOMETER OPERATION IN COMBINATION METER.	Does speedometer operate normally?	Go to step 2.	Check speedome- ter and vehicle speed sensor. <ref. idi-21,<br="" to="">Speedometer.&gt;</ref.>

Step	Check	Yes	No
<ul> <li>CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.         <ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connector from combination meter.</li> <li>Measure resistance between ECM and com- bination meter.</li> <li>Connector &amp; terminal (B134) No. 1 — (i10) No. 2:</li> </ol> </li> </ul>	Is the resistance less than 10 $\Omega$ ?	Repair poor con- tact in ECM con- nector.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and combi- nation meter con- nector • Poor contact in ECM connector • Poor contact in combination meter connector • Poor contact in combination meter connector

### AX:DTC P0506 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED -

- DTC DETECTING CONDITION:
  - Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Engine is difficult to start.
  - Engine does not start.
  - Erroneous idling
  - Engine stalls.

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0508 or P509?	Inspect DTC P0505 or P1505 using "17. List of Diagnostic Trou- ble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0506.</ref.>	Go to step 2.
2	CHECK IDLE AIR CONTROL SOLENOID VALVE. 1)Turn ignition switch to OFF. 2)Remove idle air control solenoid valve from throttle body. <ref. fu(dohc="" to="" turbo)-34,<br="">REMOVAL, Idle Air Control Solenoid Valve.&gt; 3)Using an air gun, force air into idle air control solenoid valve by-pass air inlet. Confirm that forced air subsequently escapes from both main air passage and assist air passage.</ref.>	Does air flow out?	Go to step 4.	Replace idle air control solenoid valve. <ref. to<br="">FU(DOHC TURBO)-34, Idle Air Control Sole- noid Valve.&gt; After replace, Go to step <b>3.</b></ref.>
3	CHECK IDLE AIR CONTROL SOLENOID VALVE DUTY RATIO. 1) Turn ignition switch to ON. 2) Start engine, and warm-up the engine. 3) Turn all accessory switches to OFF. 4) Read data of idle air control solenoid valve duty ratio using Subaru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool</ref. 	Is the value more than 60%?	Go to step <b>4</b> .	END.
4	CHECK BY-PASS AIR LINE. 1)Turn ignition switch to OFF. 2)Remove idle air control solenoid valve from throttle body. <ref. fu(dohc="" to="" turbo)-34,<br="">REMOVAL, Idle Air Control Solenoid Valve.&gt; 3)Remove throttle body to intake manifold. <ref. fu(dohc="" removal,<br="" to="" turbo)-14,="">Throttle Body.&gt; 4)Using an air gun, force air into solenoid valve installation area and throttle valve interior. Confirm that forced air subsequently escapes from both these areas.</ref.></ref.>	Does air flow out?	Replace idle air control solenoid valve. <ref. to<br="">FU(DOHC TURBO)-34, Idle Air Control Sole- noid Valve.&gt;</ref.>	Replace throttle body. <ref. to<br="">FU(DOHC TURBO)-14, Throttle Body.&gt;</ref.>

### AY:DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED –

### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Engine keeps running at higher revolution than specified idling revolution.

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0508 or P509?	Inspect DTC P0505 or P1505 using "17. List of Diagnostic Trou- ble Code (DTC)". <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0507.</ref.>	Go to step 2.
2	CHECK THROTTLE CABLE.	Does throttle cable have play for adjustment?	Go to step 3.	Adjust throttle cable. <ref. to<br="">SP-9, INSTALLA- TION, Accelerator Control Cable.&gt;</ref.>
3	CHECK AIR INTAKE SYSTEM. 1)Turn ignition switch to ON. 2)Start engine, and idle it. 3)Check the following items. •Loose installation of intake manifold, idle air control solenoid valve and throttle body •Cracks of intake manifold gasket, idle air con- trol solenoid valve gasket and throttle body gasket •Disconnections of vacuum hoses	Is there a fault in air intake sys- tem?	Repair air suction and leaks.	Replace idle air control solenoid valve. <ref. to<br="">FU(DOHC TURBO)-34, Idle Air Control Sole- noid Valve.&gt;</ref.>

## AZ:DTC P0508 — IDLE CONTROL SYSTEM CIRCUIT LOW INPUT —

### • DTC DETECTING CONDITION:

- Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



Step		Check	Yes	No
1 CHECK OUTPUT SIGNA 1)Turn ignition switch to O 2)Measure voltage betwee ground	L FROM ECM. N. en ECM and chassis	Is the voltage more than 3 V?	Repair poor con- tact in ECM con- nector.	Go to step 2.
Connector & terminal (B136) No. 10 (+) — C	hassis ground (–):			
2 CHECK POWER SUPPLY TROL SOLENOID VALVE 1)Turn ignition switch to O 2)Disconnect connector fr solenoid valve. 3)Turn ignition switch to O 4)Measure voltage betwee solenoid valve and engine <i>Connector &amp; terminal</i> <i>(E7) No. 2 (+) — Engin</i>	<b>( TO IDLE AIR CON- E.</b> FF. om idle air control N. en idle air control ground. <b>ne ground (–):</b>	Is the voltage more than 10 V?	Go to step 3.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between idle air control solenoid valve and main relay connec- tor • Poor contact in coupling connector
<ul> <li>CHECK HARNESS BETV IDLE AIR CONTROL SOI CONNECTOR.</li> <li>1)Turn ignition switch to O</li> <li>2)Disconnect connector fr</li> <li>3)Measure resistance of h ECM and idle air control s nector.</li> <li>Connector &amp; terminal (B136) No. 10 — (E7)</li> </ul>	VEEN ECM AND LENOID VALVE FF. om ECM. larness between olenoid valve con-	Is the resistance less than 1 Ω?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and idle air control solenoid valve connector • Poor contact in coupling connector
4 CHECK HARNESS BETV IDLE AIR CONTROL SOI CONNECTOR. Measure resistance of har and chassis ground. Connector & terminal (B136) No. 10 — Chas	VEEN ECM AND LENOID VALVE mess between ECM	Is the resistance less than 10 $\Omega$ ?	Repair ground short circuit in har- ness between ECM and idle air control solenoid valve connector.	Go to step <b>5</b> .
5 CHECK GROUND CIRCU CONTROL SOLENOID V Measure resistance of har air control solenoid valve c ground. Connector & terminal (E7) No. 3 — Engine g	JIT OF IDLE AIR ALVE. Iness between idle onnector and engine	Is the resistance less than $\overline{5}$ $\Omega$ ?	Go to step 6.	Repair open circuit in harness between idle air control solenoid valve connector and engine ground terminal.
6 CHECK POOR CONTAC Check poor contact in ECI solenoid valve connectors	<b>T.</b> M and idle air control	Is there poor contact in ECM and idle air control solenoid valve connectors?	Repair poor con- tact in ECM and idle air control solenoid valve connectors.	Replace idle air control solenoid valve. <ref. to<br="">FU(DOHC TURBO)-34, Idle Air Control Sole- noid Valve.&gt;</ref.>

## BA:DTC P0509 — IDLE CONTROL SYSTEM CIRCUIT HIGH INPUT —

- DTC DETECTING CONDITION:
- Immediately at fault recognition
- TROUBLE SYMPTOM:
  - Erroneous idling
  - Engine stalls.
  - Engine breathing

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:


	Step	Check	Yes	No
1	CHECK THROTTLE CABLE.	Does throttle cable have play for adjustment?	Go to step 2.	Adjust throttle cable. <ref. to<br="">SP-9, INSTALLA- TION, Accelerator Control Cable.&gt;</ref.>
2	CHECK OUTPUT SIGNAL FROM ECM. 1)Turn ignition switch to ON. 2)Measure voltage between ECM and chassis ground. Connector & terminal (B136) No. 10 (+) — Chassis ground (–):	Is the voltage more than 10 V?	Go to step 3.	Go to step 4.
3	CHECK OUTPUT SIGNAL FROM ECM. 1)Turn ignition switch to OFF. 2)Disconnect connector from idle air control solenoid valve. 3)Turn ignition switch to ON. 4)Measure voltage between ECM and chassis ground. Connector & terminal (B136) No. 10 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and idle air control solenoid valve connector. After repair, replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Replace idle air control solenoid valve <ref. to<br="">FU(DOHC TURBO)-34, Idle Air Control Sole- noid Valve.&gt; and ECM <ref. to<br="">FU(DOHC TURBO)-45, Engine Control Module.&gt;.</ref.></ref.>
4	CHECK OUTPUT SIGNAL FROM ECM. Measure voltage between ECM and chassis ground. Connector & terminal (B136) No. 10 (+) — Chassis ground (–):	Does the voltage change more than 10 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair battery short circuit in har- ness between ECM and idle air control solenoid valve connector. After repair, replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Contact with your Subaru distributor service. NOTE: Insepction by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

# BB:DTC P0512 — STARTER SWITCH CIRCUIT HIGH INPUT —

#### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Failure of engine to start

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK OPERATION OF STARTER MOTOR NOTE: Place the inhibitor switch in each position.	Does starter motor operate when ignition switch to "ON"?	Repair battery short circuit in starter motor cir- cuit. After repair, replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Check starter motor circuit. <ref. en(dohc<br="" to="">TURBO)-54, STARTER MOTOR CIR- CUIT, Diagnostics for Engine Start- ing Failure.&gt;</ref.>

# BC:DTC P0545 — EXHAUST GAS TEMPERATURE SENSOR CIRCUIT LOW IN-PUT —

#### • 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1)Start engine. 2)Read data of exhaust gas temperature sen- sor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the value greater than 1200°C (2192°F)?	Go to step 2.	Repair poor con- tact. NOTE: In this case, repair the following:
	NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor &gt;</ref. 			<ul> <li>Poor contact in exhaust gas tem- perature sensor</li> <li>Poor contact in ECM</li> <li>Poor contact in</li> </ul>
	•OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.			joint connector
2	CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from exhaust gas tem- perature sensor. 3)Turn ignition switch to ON. 4)Read data of exhaust gas temperature sen- sor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedures. refer to the</ref. 	Is the value less than 372°C (702°F)?	Replace exhaust gas temperature sensor. <ref. to<br="">FU(DOHC TURBO)-44, Exhaust Tempera- ture Sensor.&gt;</ref.>	Repair ground short circuit in har- ness between exhaust gas tem- perature sensor and ECM connec- tor.
	to EN(DOHC TURBO)-28, Subaru Select Mon- itor.> •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.			

## BD:DTC P0546 — EXHAUST GAS TEMPERATURE SENSOR CIRCUIT HIGH IN-PUT —

- 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is the value less than 372°C	Go to step 2.	Repair poor con-
	1)Start engine.	(702°F)?		tact.
	2)Read data of exhaust gas temperature sen-			NOTE:
	sor signal using Subaru Select Monitor or			In this case, repair
	OBD-II general scan tool.			the following:
	NOTE:			<ul> <li>Poor contact in</li> </ul>
	•Subaru Select Monitor			exhaust gas tem-
	"PEAD CURPENT DATA FOR ENCINE" - Pot			Peor contact in
	to EN/DOHC TURBO)-28 Subaru Select Mon-			
	itor >			Poor contact in
	•OBD-II general scan tool			ioint connector
	For detailed operation procedures, refer to the			Je
	OBD-II General Scan Tool Instruction Manual.			
2	CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 10 V?	Repair battery	Go to step 3.
	GAS TEMPERATURE SENSOR AND ECM	C C	short circuit in har-	
	CONNECTOR.		ness between	
	1)Turn ignition switch to OFF.		ECM and exhaust	
	2)Disconnect connector from exhaust gas tem-		gas temperature	
	perature sensor.		sensor connector.	
	3)Measure voltage between exhaust gas tem-			
	perature sensor connector and engine ground.			
	(P270) No. 1 (1) Engine ground ( ):			
2	(B279) NO. 1 (+) — Engine ground (-):	$l_{0}$ the veltage mare then $10 \sqrt{2}$	Danair battary	Co to stop 4
3		Is the voltage more than 10 v?	short circuit in har-	Go to step 4.
	CONNECTOR		ness hetween	
	1)Turn ignition switch to ON.		ECM and exhaust	
	2)Measure voltage between exhaust gas tem-		gas temperature	
	perature sensor connector and engine ground.		sensor connector.	
	Connector & terminal			
	(B279) No. 1 (+) — Engine ground (–):			
4	CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 4 V?	Go to step 5.	Repair harness
	GAS TEMPERATURE SENSOR AND ECM			and connector.
	CONNECTOR.			NOTE:
	Measure voltage between exhaust gas temper-			In this case, repair
	Connector & terminal			<ul> <li>Open circuit in</li> </ul>
	(B279) No. 1 (+) — Engine ground (–):			barness between
	( <u></u> ), (), (), (), (), (), (), (), (), (), (			FCM and exhaust
				gas temperature
				sensor connector
				<ul> <li>Poor contact in</li> </ul>
				exhaust gas tem-
				perature sensor
				connector
				Poor contact in
				ECM connector
				<ul> <li>Poor contact in ioint connector</li> </ul>
1				joint connector

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<ul> <li>5 CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR.         <ol> <li>Turn ignition switch to OFF.</li> <li>Measure resistance of harness between exhaust gas temperature sensor connector and engine ground.</li> <li>Connector &amp; terminal (B279) No. 2 — Engine ground:</li> </ol> </li> </ul>	Is the resistance less than 5 $\Omega$ ?	Replace exhaust gas temperature sensor. <ref. to<br="">FU(DOHC TURBO)-44, Exhaust Tempera- ture Sensor.&gt;</ref.>	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and exhaust gas temperature sensor connector • Poor contact in exhaust gas tem- perature sensor connector • Poor contact in ECM connector • Poor contact in in ECM connector

### BE:DTC P0604 — INTERNAL CONTROL MODULE MEMORY CHECK SUM ER-ROR —

- 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:

LHD MODEL



EN0959

#### RHD MODEL



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Replace ECM.	It is not necessary
		tor or OBD-II general scan tool	<ref. fu(dohc<="" th="" to=""><th>to inspect DTC</th></ref.>	to inspect DTC
		indicate DTC P0604?	TURBO)-45,	P0604.
			Engine Control	
			Module.>	

# BF: DTC P1086 — TUMBLE GENERATOR VALVE #2 (LH) POSITION SENSOR CIRCUIT LOW INPUT —

#### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:

#### LHD MODEL



#### RHD MODEL



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1)Start engine. 2)Read data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</ref. 	Is the value less than 0.1 V?	Go to step 2.	Even if MIL lights up, 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 throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector
2	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground while tumble generator valve is fully closed. Connector & terminal (B135) No. 9 (+) — Chassis ground (–):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (–):	Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair poor con- tact in ECM con- nector.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 13 (+) — Chassis ground (–):	Is the voltage less than 0.1 V?	Go to step <b>6</b> .	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Measure voltage between ECM connector and chassis ground.	Does the voltage change more than 0.1 V by shaking harness and connector of ECM while monitoring the value with Sub- aru Select Monitor?	Repair poor con- tact in ECM con- nector.	Go to step <b>6.</b>

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connectors from tumble genera- tor valve position sensor. 3)Turn ignition switch to ON. 4)Measure 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 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 tumble generator valve position sen- sor 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 ignition switch to OFF. 2)Measure resistance of harness between ECM connector and tumble generator valve position sensor connector. Connector & terminal (B135) No. 13 — (E50) No. 3:	Is the resistance less than 1 Ω?	Go to step 8.	Repair 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 ECM connector • Poor contact in tumble generator valve position sen- sor connector • Poor contact in tumble generator valve position sen- sor connector • Poor contact in coupling connector
8	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR. Measure resistance of harness between tum- ble generator valve position sensor connector and engine ground. Connector & terminal (E50) No. 3 — Engine ground:	Is the resistance less than 10 Ω?	Repair ground short circuit in har- ness between tum- ble generator valve position sensor and ECM connec- tor.	Go to step <b>9</b> .
9	CHECK POOR CONTACT. Check poor contact in tumble generator valve position sensor connector.	Is there poor contact in tumble generator valve position sensor connector?	Repair poor con- tact in tumble gen- erator valve position sensor connector.	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>

# BG:DTC P1087 — TUMBLE GENERATOR VALVE #2 (LH) POSITION SENSOR CIRCUIT HIGH INPUT —

### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:





Step Check Yes No CHECK CURRENT DATA. Go to step 2. 1 Is the value more than 4.9 V? Even if MIL lights 1)Start engine. up, the circuit has 2)Read data of throttle position sensor signal returned to a norusing Subaru Select Monitor or OBD-II general mal condition at scan tool. this time. A temporary poor contact NOTE: •Subaru Select Monitor of the connector For detailed operation procedure, refer to the may be the cause. "READ CURRENT DATA FOR ENGINE". < Ref. NOTE: to EN(DOHC TURBO)-28, Subaru Select Mon-In this case, repair itor.> the following: •OBD-II general scan tool Poor contact in For detailed operation procedures, refer to the tumble generator **OBD-II** General Scan Tool Instruction Manual. valve position sensor connector Poor contact in ECM connector Poor contact in coupling connector **CHECK HARNESS BETWEEN TUMBLE** 2 Is the resistance less than 5 Go to step 3. Repair harness **GENERATOR VALVE POSITION SENSOR**  $\Omega$ ? and connector. AND ECM CONNECTOR. NOTE: 1)Turn ignition switch to OFF. In this case, repair 2)Disconnect connector from throttle position the following: sensor. Open circuit in 3)Measure resistance of harness between harness between throttle position sensor connector and engine tumble generator ground. valve position sen-**Connector & terminal** sor and ECM con-(E50) No. 2 — Engine ground: nector Poor contact in coupling connector Poor contact in joint connector 3 CHECK HARNESS BETWEEN THROTTLE Is the voltage more than 4.9 V? Repair battery Replace tumble POSITION SENSOR AND ECM CONNECshort circuit in hargenerator valve TOR. ness between tumassembly. < Ref. to 1)Turn ignition switch to ON. ble generator valve FU(DOHC 2)Measure voltage between throttle position TURBO)-38, Tumposition sensor sensor connector and engine ground. and ECM connecble Generator **Connector & terminal** tor. After repair, Valve Assembly.> (E50) No. 3 (+) — Engine ground (-): replace ECM. <Ref. to FU(DOHC TURBO)-45, **Engine Control** Module.>

# BH: DTC P1088 — TUMBLE GENERATOR VALVE #1 (RH) POSITION SENSOR CIRCUIT LOW INPUT —

### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:

#### LHD MODEL



#### RHD MODEL



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<ul> <li>CHECK CURRENT DATA.</li> <li>1)Start engine.</li> <li>2)Read data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.</li> <li>NOTE:</li> <li>•Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(dohc="" monitor.="" select="" subaru="" to="" turbo)-28,=""></ref.></li> <li>•OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II general scan tool</li> </ul>	Is the value less than 0.1 V?	Go to step 2.	Even if MIL lights up, 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
2	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground while throttle valve is fully closed. Connector & terminal (B135) No. 9 (+) — Chassis ground (–):	Is the voltage more than 4.5 V?	Go to step <b>4.</b>	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 9 (+) — Chassis ground (-):	Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with volt- age meter?	Repair poor con- tact in ECM con- nector.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	CHECK INPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 23 (+) — Chassis ground (–):	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Measure voltage between ECM connector and chassis ground.	Does the voltage change more than 0.1 V by shaking harness and connector of ECM while monitoring the value with Sub- aru Select Monitor?	Repair poor con- tact in ECM con- nector.	Go to step 6.

Step	Check	Yes	No
<ul> <li>6 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.         <ol> <li>1) Turn ignition switch to OFF.</li> <li>2) Disconnect connectors from throttle position sensor.</li> <li>3) Turn ignition switch to ON.</li> <li>4) Measure voltage between throttle position sensor connector and engine ground. Connector &amp; terminal (E54) No. 1 (+) — Engine ground (-):</li> </ol> </li> </ul>	Is the voltage more than 4.5 V?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between tumble generator valve position sen- sor and ECM con- nector • Poor contact in throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in coupling connector
<ul> <li>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.         <ol> <li>Turn ignition switch to OFF.</li> <li>Measure resistance of harness between ECM connector and throttle position sensor connector.</li> <li>Connector &amp; terminal (B135) No. 23 — (E54) No. 3:</li> </ol> </li> </ul>	Is the resistance less than 1 Ω?	Go to step 8.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between tumble generator valve position sen- sor and ECM con- nector • Poor contact in ECM connector • Poor contact in tumble generator valve position sen- sor connector • Poor contact in coupling connector
8 CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNEC- TOR. Measure resistance of harness between tum- ble generator valve position sensor connector and engine ground. Connector & terminal (E54) No. 3 — Engine ground:	Is the resistance less than 10 $\Omega$ ?	Repair ground short circuit in har- ness between tum- ble generator valve position sensor and ECM connec- tor.	Go to step 9.
9 CHECK POOR CONTACT. Check poor contact in tumble generator valve position sensor connector.	Is there poor contact in tumble generator valve position sensor connector?	Repair poor con- tact in tumble gen- erator valve position sensor connector.	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>

# BI: DTC P1089 — TUMBLE GENERATOR VALVE #1 (RH) POSITION SENSOR CIRCUIT HIGH INPUT —

### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### • TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

#### • WIRING DIAGRAM:

#### LHD MODEL



#### RHD MODEL



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<ul> <li>CHECK CURRENT DATA.</li> <li>1)Start engine.</li> <li>2)Read data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.</li> <li>NOTE:</li> <li>•Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(dohc="" monitor.="" select="" subaru="" to="" turbo)-28,=""></ref.></li> <li>•OBD-II general scan tool</li> <li>For detailed operation procedures, refer to the OBD-II general scan tool</li> </ul>	Is the value more than 4.9 V?	Go to step 2.	Even if MIL lights up, 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
2	CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from throttle position sensor. 3)Measure resistance of harness between tumble generator valve position sensor con- nector and engine ground. Connector & terminal (E54) No. 2 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 3.	Repair 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 TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR. 1)Turn ignition switch to ON. 2)Measure voltage between throttle position sensor connector and engine ground. Connector & terminal (E54) No. 3 (+) — Engine ground (–):	Is the voltage more than 4.9 V?	Repair battery short circuit in har- ness between tum- ble generator valve position sensor and ECM connec- tor. After repair, replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>

### BJ:DTC P1090 — TUMBLE GENERATOR VALVE SYSTEM #1 (RH) MALFUNC-TION (STUCK OPEN) —

#### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### CAUTION:

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate P1088, P1089, P1094 or P1095?	Inspect DTC P1088, P1089, P1094 or P1095 using List of Diag- nostic Trouble Code (DTC) <ref. to EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref. 	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1)Remove tumble generator valve assembly. 2)Check tumble generator valve body.	Does tumble generator valve move smoothly? (No dirt or for- eign materials clogged)	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>	Clean tumble gen- erator valve.

### BK:DTC P1091 — TUMBLE GENERATOR VALVE SYSTEM #1 (RH) MALFUNC-TION (STUCK CLOSE) —

#### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### CAUTION:

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate P1088, P1089, P1094 or P1095?	Inspect DTC P1088, P1089, P1094 or P1095 using List of Diag- nostic Trouble Code (DTC) <ref. to EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref. 	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1)Remove tumble generator valve assembly. 2)Check tumble generator valve body.	Does tumble generator valve move smoothly? (No dirt or for- eign materials clogged)	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>	Clean tumble gen- erator valve.

### BL:DTC P1092 — TUMBLE GENERATOR VALVE SYSTEM #2 (LH) MALFUNC-TION (STUCK OPEN) —

#### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### CAUTION:

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate P1086, P1087, P1096 or P1097?	Inspect DTC P1086, P1087, P1096 or P1097 using List of Diag- nostic Trouble Code (DTC) <ref. to EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref. 	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1)Remove tumble generator valve assembly. 2)Check tumble generator valve body.	Does tumble generator valve move smoothly? (No dirt or for- eign materials clogged)	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>	Clean tumble gen- erator valve.

# BM:DTC P1093 — TUMBLE GENERATOR VALVE SYSTEM #2 (LH) MALFUNC-TION (STUCK CLOSE) —

#### • DTC DETECTING CONDITION:

• Immediately at fault recognition

#### CAUTION:

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate P1086, P1087, P1096 or P1097?	Inspect DTC P1086, P1087, P1096 or P1097 using List of Diag- nostic Trouble Code (DTC) <ref. to EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref. 	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH 1)Remove tumble generator valve assembly. 2)Check tumble generator valve body.	Does tumble generator valve move smoothly? (No dirt or for- eign materials clogged)	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>	Clean tumble gen- erator valve.

# BN:DTC P1094 — TUMBLE GENERATOR VALVE CIRCUIT #1 (OPEN CIRCUIT)

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from tumble generator valve and ECM connector. 3)Measure resistance between tumble genera- tor valve actuator and ECM connector. Connector & terminal (E55) No. 1 — (B84) No.4: (E55) No. 2 — (B84) No.5:	Is the resistance less than 1Ω?	Go to step 2.	Repair 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 connec- tor. • Poor contact in coupling connec- tor.
2	CHECK POOR CONTACT. Check poor contact in tumble generator valve actuator connector.	Is there poor contact in tumble generator valve actuator con- nector.	Repair poor con- tact in tumble gen- erator valve actuator connec- tor.	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>

# **BO:DTC P1095 — TUMBLE GENERATOR VALVE CIRCUIT #1 (OVERCURRENT)**

#### • DTC DETECTING CONDITION:

· Immediately at fault recognition

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:


Step	Check	Yes	No
<ol> <li>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</li> <li>1)Turn ignition switch to OFF.</li> <li>2)Disconnect connector from tumble generator valve connector.</li> <li>3)Measure voltage between tumble generator valve actuator and chassis ground.</li> <li>Connector &amp; terminal (E55) No. 1 (+) — Chassis ground (-): (E55) No. 2 (+) — Chassis ground (-):</li> </ol>	Is the voltage less than 5V?	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>	Repair battery short circuit between ECM and tumble generator valve actuator.

## **BP:DTC P1096 — TUMBLE GENERATOR VALVE CIRCUIT #2 (OPEN CIRCUIT)**

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from tumble generator valve and ECM connector. 3)Measure resistance between tumble genera- tor valve actuator and ECM connector. Connector & terminal (E51) No. 1 — (B84) No. 10: (E51) No. 2 — (B84) No. 11:	Is the resistance less than 1Ω?	Go to step <b>2</b> .	Repair 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 connec- tor. • Poor contact in coupling connec- tor.
2	CHECK POOR CONTACT. Check poor contact in tumble generator valve actuator connector.	Is there poor contact in tumble generator valve actuator con- nector.	Repair poor con- tact in tumble gen- erator valve actuator connec- tor.	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>

## BQ:DTC P1097 — TUMBLE GENERATOR VALVE CIRCUIT #2 (OVERCURRENT)

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



## DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIÀGNOSTICS)

Step	Check	Yes	No
<ol> <li>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.         <ol> <li>Turn ignition switch to OFF.</li> <li>Disconnect connector from tumble generator valve connector.</li> <li>Measure voltage between tumble generator valve actuator and chassis ground.</li> <li>Connector &amp; terminal (E51) No. 1 (+) — Chassis ground (-): (E51) No. 2 (+) — Chassis ground (-):</li> </ol> </li> </ol>	Is the voltage less than 5V?	Replace tumble generator valve assembly. <ref. to<br="">FU(DOHC TURBO)-38, Tum- ble Generator Valve Assembly.&gt;</ref.>	Repair battery short circuit between ECM and tumble generator valve actuator.

## **BR:DTC P1110 — ATMOSPHERIC PRESSURE 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Replace ECM.	It is not necessary
		tor or OBD-II general scan tool	<ref. fu(dohc<="" th="" to=""><th>to inspect DTC</th></ref.>	to inspect DTC
		indicate DTC P1110?	TURBO)-45,	P1110.
			Engine Control	
			Module.>	
			NOTE: Atmospheric pres- sure sensor is built into ECM.	

## **BS:DTC P1111 — ATMOSPHERIC PRESSURE 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Replace ECM.	It is not necessary
		tor or OBD-II general scan tool	<ref. fu(dohc<="" th="" to=""><th>to inspect DTC</th></ref.>	to inspect DTC
		indicate DTC P1111?	TURBO)-45,	P1111.
			Engine Control	
			Module.>	
			NOTE: Atmospheric pres- sure sensor is built into ECM.	

## BT:DTC P1112 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT RANGE/PER-FORMANCE PROBLEM —

## • DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P1110 or P1111?	Inspect DTC P0106, P0107, P0108, P1110 or P1111 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou-</ref.>	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt; NOTE: Atmospheric pres- sure sensor is built into ECM.</ref.>
			ble Code (DTC).>	

## BU: DTC P1130 — FRONT OXYGEN (A/F) SENSOR CIRCUIT MALFUNCTION (OPEN CIRCUIT) —

## • DTC DETECTING CONDITION:

· Immediately at fault recognition

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 2.	Repair harness
	FRONT OXYGEN (A/F) SENSOR CONNEC-	Ω?		and connector.
	TOR.			NOTE:
	1)Turn ignition switch to OFF.			In this case, repair
	2)Disconnect connectors from ECM and front			the following:
	oxygen (A/F) sensor connector.			<ul> <li>Open circuit in</li> </ul>
	3)Measure resistance of harness between			harness between
	ECM and front oxygen (A/F) sensor connector.			ECM and front
	Connector & terminal			oxygen (A/F) sen-
	(B137) No. 29 — (B18) No. 3:			sor connector
	(B137) No. 19 — (B18) No. 4:			<ul> <li>Poor contact in</li> </ul>
				front oxygen (A/F)
				sensor connector
				Poor contact in
				ECM connector
2	CHECK POOR CONTACT.	Is there poor contact in front	Repair poor con-	Replace front oxy-
	Check poor contact in front oxygen (A/F) sen-	oxygen (A/F) sensor connec-	tact in front oxygen	gen (A/F) sensor.
:	sor connector.	tor?	(A/F) sensor con-	<ref. fu(dohc<="" td="" to=""></ref.>
			nector.	TURBO)-41, Front
				Oxygen (A/F) Sen-
				sor.>

# BV: DTC P1131 — FRONT OXYGEN (A/F) SENSOR CIRCUIT MALFUNCTION (SHORT CIRCUIT) —

## • DTC DETECTING CONDITION:

· Immediately at fault recognition

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from ECM. 3)Measure resistance of harness between ECM connector and chassis ground. Connector & terminal (B137) No. 19 — Chassis ground:	Is the resistance more than 10 Ω?	Go to step 2.	Repair ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.
2	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. Measure resistance of harness between ECM connector and chassis ground. Connector & terminal (B137) No. 29 — Chassis ground:	Is the resistance more than 10 $\Omega$ ?	Go to step 3.	Repair ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.
3	CHECK OUTPUT SIGNAL FOR ECM. 1)Connect connector to ECM. 2)Turn ignition switch to ON. 3)Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 19 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 5.
4	CHECK OUTPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 19 (+) — Chassis ground (–):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector. After repair, replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Repair poor con- tact in ECM con- nector.
5	CHECK OUTPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 29 (+) — Chassis ground (–):	Is the voltage more than 4.95 V?	Go to step 6.	Replace front oxy- gen (A/F) sensor. <ref. fu(dohc<br="" to="">TURBO)-41, Front Oxygen (A/F) Sen- sor.&gt;</ref.>
6	CHECK OUTPUT SIGNAL FOR ECM. Measure voltage between ECM connector and chassis ground. Connector & terminal (B137) No. 29 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector. After repair, replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Repair poor con- tact in ECM con- nector.

## BW:DTC P1134 — FRONT OXYGEN (A/F) SENSOR MICRO-COMPUTER PROB-LEM —

## • DTC DETECTING CONDITION:

· Immediately at fault recognition

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



ENGINE (I	DIÀGNOSTICS)
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	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Replace ECM.	It is not necessary
		tor or OBD-II general scan tool	<ref. fu(dohc<="" th="" to=""><th>to inspect DTC</th></ref.>	to inspect DTC
		indicate DTC P1134?	TURBO)-45,	P1134.
			Engine Control	
			Module.>	

## BX: DTC P1139 — FRONT OXYGEN (A/F) SENSOR #1 HEATER CIRCUIT RANGE/PERFORMANCE PROBLEM —

## • DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

## CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 1)Start engine, and warm-up the engine. 2)Turn ignition switch to OFF. 3)Disconnect connectors from ECM and front oxygen (A/F) sensor. 4)Measure resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B137) No. 5 — (B18) No. 1: (B137) No. 4 — (B18) No. 1:	Is the resistance less than 1 Ω?	Go to step 2.	Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.
2	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. Measure resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B137) No. 19 — (B18) No. 4: (B137) No. 29 — (B18) No. 3:	Is the resistance less than 1 Ω?	Go to step 3.	Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.
3	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. Measure resistance of harness between main relay and front oxygen (A/F) sensor connector. Connector & terminal (B47) No. 4 — (B18) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step <b>4</b> .	Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.
4	CHECK FRONT OXYGEN (A/F) SENSOR. Measure resistance between front oxygen (A/ F) sensor connector terminals. <i>Terminals</i> <i>No. 2 — No. 1:</i>	Is the resistance less than 5 $\Omega$ ?	Go to step 5.	Replace front oxy- gen (A/F) sensor. <ref. fu(dohc<br="" to="">TURBO)-41, Front Oxygen (A/F) Sen- sor.&gt;</ref.>
5	CHECK POOR CONTACT. Check poor contact in ECM and front oxygen (A/F) sensor connector.	Is there poor contact in ECM or front oxygen (A/F) sensor con- nector?	Repair poor con- tact in ECM or front oxygen (A/F) sensor connector.	Replace front oxy- gen (A/F) sensor. <ref. fu(dohc<br="" to="">TURBO)-41, Front Oxygen (A/F) Sen- sor.&gt;</ref.>

## BY:DTC P1141 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

## • DTC DETECTING CONDITION:

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does Subaru select monitor or	Inspect DTC	Replace mass air
	OBD-II general scan tool indi-	P0102 or P0103	flow and intake air
	cate DTC P0102 or P0103?	using "10. Diag-	temperature sen-
		nostics Chart with	sor.
		Trouble	
		Code" <ref. th="" to<=""><th></th></ref.>	
		EN(DOHC	
		TURBO)-69, List	
		of Diagnostic Trou-	
		ble Code (DTC).>	
		NOTE:	
		In this case, it is	
		not necessary to	
		inspect DTC	
		P1141.	

## BZ:DTC P1142 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFOR-MANCE PROBLEM (LOW INPUT) —

## • DTC DETECTING CONDITION:

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

- WIRING DIAGRAM:
- LHD MODEL



## RHD MODEL



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Inspect DTC	Replace throttle
	tor or OBD-II general scan tool	P0122 or P0123	position sensor.
	indicate DTC P0122 or P0123?	using "17. List of	<ref. fu(dohc<="" th="" to=""></ref.>
		Diagnostic Trou-	TURBO)-31,
		ble Code (DTC)".	Throttle Position
		<ref. en(dohc<="" th="" to=""><th>Sensor.&gt;</th></ref.>	Sensor.>
		TURBO)-69, List	
		of Diagnostic Trou-	
		ble Code (DTC).>	
		NOTE:	
		In this case, it is	
		not necessary to	
		inspect DTC	
		P1142.	

## CA:DTC P1146 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

## • WIRING DIAGRAM:

LHD MODEL



## RHD MODEL



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY. NOTE: In this case, it is not necessary to inspect DTC P0106.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0107, P0108 or P1112?	Inspect DTC P0107, P0108 or P1112 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt;</ref.>	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 <b>3.</b>

	Step	Check	Yes	No
3	CHECK PRESSURE SENSOR. 1)Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2)Place the shift lever in the selector lever in "N" or "P" position. 3)Turn A/C switch to OFF. 4)Turn all accessory switches to OFF. 5)Read data of intake manifold pressure sen- sor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general Scan Tool Instruction Manual. Specification: •Intake manifold absolute pressure <i>Ignition ON</i> 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) <i>Idling</i> 20.0 — 46.7 kPa (150 — 350 mmHg, 5.91 — 13.78 inHg)</ref. 	Is the value within the specifications?	Go to step <b>4</b> .	Replace intake air temperature sen- sor and pressure sensor. <ref. to<br="">FU(DOHC TURBO)-33, Pres- sure Sensor.&gt;</ref.>
4	CHECK THROTTLE POSITION. Read data of throttle position signal using Sub- aru Select Monitor or OBD-II general scan tool. NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(DOHC TURBO)-28, Subaru Select Mon- itor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</ref. 	Is throttle positioning ratio equal to or less than 5% when throttle is fully closed?	Go to step <b>5</b> .	Adjust or replace throttle position sensor. <ref. to<br="">FU(DOHC TURBO)-31, Throttle Position Sensor.&gt;</ref.>
5	CHECK THROTTLE POSITION.	Is throttle positioning ratio equal to or more than 85% when throttle is fully open?	Replace intake air temperature and pressure sensor. <ref. fu(dohc<br="" to="">TURBO)-33, Pres- sure Sensor.&gt;</ref.>	Replace throttle position sensor. <ref. fu(dohc<br="" to="">TURBO)-31, Throttle Position Sensor.&gt;</ref.>

## **CB:DTC P1230 — FUEL PUMP CONTROLLER MALFUNCTION —**

## • DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



	Step	Check	Yes	No
1	CHECK POWER SUPPLY CIRCUIT TO FUEL PUMP CONTROLLER. 1)Turn ignition switch to OFF. 2)Disconnect connector from fuel pump con- troller. 3)Turn ignition switch to ON. 4)Measure voltage between fuel pump control- ler and chassis ground. Connector & terminal (R122) No. 10 (+) — Chassis ground (-):	Is the voltage more than 10V?	Go to step 2.	Repair power sup- ply circuit. NOTE: In this case repair the following: • Open or ground short circuit in har- ness between fuel pump relay and fuel pump control- ler. • Poor contact in fuel pump control- ler connector. • Poor contact in fuel pump relay connector.
2	CHECK GROUND CIRCUIT OF FUEL PUMP CONTROLLER. 1)Turn ignition switch to OFF. 2)Measure resistance of harness between fuel pump controller and chassis ground. Connector & terminal (R122) No. 5 — Chassis ground:	Is the resistance less than 5 Ω?	Go to step 3.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit between fuel pump controller and chassis ground. • Poor contact in fuel pump control- ler connector.
3	CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND FUEL PUMP CONNEC- TOR. 1)Disconnect connector from fuel pump. 2)Measure resistance of harness between fuel pump controller and fuel pump connector. Connector & terminal (R122) No. 7 — (R58) No. 2: (R122) No. 6 — (R58) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair open circuit between fuel pump controller and fuel pump.
4	CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND FUEL PUMP CONNEC- TOR. Measure resistance of harness between fuel pump controller and chassis ground. Connector & terminal (R122) No. 7 — Chassis ground: (R122) No. 6 — Chassis ground:	Is the resistance more than 1M $\Omega$ ?	Go to step <b>5</b> .	Repair ground short circuit between fuel pump controller and fuel pump.
5	CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND ECM CONNECTOR. 1)Turn ignition switch to OFF. 2)Disconnect connector from ECM. 3)Measure resistance of harness between fuel pump controller and ECM connector. Connector & terminal (R122) No. 9 — (B134) No. 13: (R122) No. 8 — (B136) No. 16:	Is the resistance less than 1 Ω?	Go to step <b>6</b> .	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit between fuel pump controller and ECM. • Poor contact in fuel pump control- ler and ECM con- nector.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND ECM CONNECTOR. Measure resistance of harness between fuel pump controller and chassis ground. Connector & terminal (R122) No. 9 — Chassis ground: (R122) No. 8 — Chassis ground:	Is the resistance more than 1M Ω?	Go to step <b>7</b> .	Repair ground short circuit between fuel pump controller and ECM.
7	CHECK POOR CONTACT. Check poor contact in ECM and fuel pump controller connector.	Is there poor contact in ECM and fuel pump controller con- nector.	Repair poor con- tact in ECM and fuel pump control- ler.	Replace fuel pump controller. <ref. to<br="">FU(DOHC TURBO)-48, Fuel Pump Controller.&gt;</ref.>

## CC:DTC P1244 — WASTEGATE CONTROL SOLENOID VALVE RANGE/PER-FORMANCE PROBLEM (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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Inspect DTC	Replace waste-
	tor or OBD-II general scan tool	P0245 or P0246	gate control sole-
	indicate DTC P0245 or P0246?	using "17. List of	noid valve. <ref.< th=""></ref.<>
		Diagnostic Trou-	to FU(DOHC
		ble Code (DTC)".	TURBO)-40,
		<ref. en(dohc<="" th="" to=""><th>Wastegate Con-</th></ref.>	Wastegate Con-
		TURBO)-69, List	trol Solenoid
		of Diagnostic Trou-	Valve.>
		ble Code (DTC).>	
		NOTE: In this case, it is not necessary to inspect DTC P1142.	

## CD:DTC P1245 — WASTEGATE CONTROL SOLENOID VALVE MALFUNCTION (FAIL-SAFE) —

• DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, Operation.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni-	Inspect DTC	Replace waste-
	tor or OBD-II general scan tool	P0244, P0245,	gate control sole-
	indicate DTC P0244, P0245,	P0246 or P1244	noid valve. <ref.< th=""></ref.<>
	P0246 or P1244?	using "17. List of	to FU(DOHC
		Diagnostic Trou-	TURBO)-40,
		ble Code (DTC)".	Wastegate Con-
		<ref. en(dohc<="" th="" to=""><th>trol Solenoid</th></ref.>	trol Solenoid
		TURBO)-69, List	Valve.>
		of Diagnostic Trou-	
		ble Code (DTC).>	
		NOTE:	
		In this case, it is	
		not necessary to	
		inspect DTC	
		P0507.	

## CE:DTC P1301 — FIRE DUE TO INCREASED EXHAUST TEMPERATURE —

- 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

(DIA ONIO OTIOO)	
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	Step	Check	Yes	No
1	CHECK ANY OTHER DTC. Conduct troubleshooting for all DTC P0301, P0302, P0303 and P0304. <ref. en(dohc<br="" to="">TURBO)-69, List of Diagnostic Trouble Code (DTC).&gt;</ref.>	Does failure for repair or replacement exist?	Repair or replace failure, then replace precata- lytic converter.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

## CF:DTC P1312 — EXHAUST GAS TEMPERATURE CIRCUIT MALFUNCTION –

## • DTC DETECTING CONDITION:

Immediately at fault recognition

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .



Check	Yes	Νο
Does the Subaru Select Moni-	Inspect DTC	Replace exhaust
tor or OBD-II general scan tool	P0545, P0546 or	gas temperature
indicate DTC P0545 or P0546?	P1544 using "17.	sensor. <ref. th="" to<=""></ref.>
	List of Diagnostic	FU(DOHC
	Trouble Code	TURBO)-44,
	(DTC)". <ref. th="" to<=""><th>Exhaust Tempera-</th></ref.>	Exhaust Tempera-
	EN(DOHC	ture Sensor.>
	TURBO)-69, List	
	of Diagnostic Trou-	
	ble Code (DTC).>	
	NOTE: In this case, it is	
	not necessary to	
	inspect DTC P1312.	
	Check Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0545 or P0546?	CheckYesDoes the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0545 or P0546?Inspect DTC P0545, P0546 or P1544 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br=""></ref.> EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is 
## CG:DTC P1480 — COOLING FAN RELAY 1 CIRCUIT HIGH INPUT —

### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- TROUBLE SYMPTOM:
  - Radiator fan does not operate properly.
  - Overheating

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, Operation.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.>.

• WIRING DIAGRAM:



EN0981

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

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· -	,	

	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM. 1)Turn ignition switch to OFF. 2)Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box. 3)Turn ignition switch to ON. 4)While operating radiator fan relay, measure voltage between ECM and chassis ground. NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. com-<br="" en(dohc="" to="" turbo)-39,="">pulsory Valve Operation Check Mode.&gt; Connector &amp; terminal (B137) No. 17 (+) — Chassis ground (-):</ref.>	Does voltage change between 0 and 10 V?	Even if MIL lights up, 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.
	(B137) No. 28 (+) — Chassis ground (–):			
2	CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT. 1)Turn ignition switch to OFF. 2)Remove main fan relay and sub fan relay. (with A/C models) 3)Disconnect test mode connector. 4)Turn ignition switch to ON. 5)Measure voltage between ECM and chassis ground. Connector & terminal (B137) No. 17 (+) — Chassis ground (-): (B137) No. 28 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in radiator fan relay control circuit. After repair, replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Go to step 3.
3	CHECK MAIN FAN RELAY. 1)Turn ignition switch to OFF. 2)Remove main fan relay 1 and 2. 3)Measure resistance between main fan relay terminals. Terminal No. 25 — No. 26 (Main fan relay 1) No. 23 — No. 24 (Main fan relay 2)	Is the resistance less than 1 Ω?	Replace main fan relay and ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Go to step 4.
4	CHECK SUB FAN RELAY. 1)Remove sub fan relay. 2)Measure resistance between sub fan relay terminals. <i>Terminal</i> <i>No. 7 — No. 8 (Sub fan relay 1)</i> <i>No. 17 — No. 18 (Sub fan relay 2)</i>	Is the resistance less than 1 $\Omega$ ?	Replace sub fan relay and ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>	Go to step <b>5</b> .
5	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace ECM. <ref. fu(dohc<br="" to="">TURBO)-45, Engine Control Module.&gt;</ref.>

# CH:DTC P1507 — 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0506, P0507, P0508, P0509 or P1142?	Inspect DTC P0506, P0507, P0508, P0509 or P1142 using "17. List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).&gt; NOTE: In this case, it is not necessary to inspect DTC P0507.</ref.>	Go to step 2.
2	CHECK AIR INTAKE SYSTEM. 1)Turn ignition switch to ON. 2)Start engine, and idle it. 3)Check the following items. •Loose installation of intake manifold, idle air control solenoid valve and throttle body •Cracks of intake manifold gasket, idle air con- trol solenoid valve gasket and throttle body gasket •Disconnections of vacuum hoses	Is there a fault in air intake sys- tem?	Repair air suction and leaks.	Go to step 3.
3	CHECK THROTTLE CABLE.	Does throttle cable have play for adjustment?	Go to step 4.	Adjust throttle cable. <ref. to<br="">SP-9, INSTALLA- TION, Accelerator Control Cable.&gt;</ref.>
4	CHECK AIR BY-PASS LINE. 1)Turn ignition switch to OFF. 2)Remove idle air control solenoid valve from throttle body. <ref. fu(dohc="" to="" turbo)-34,<br="">Idle Air Control Solenoid Valve.&gt; 3)Confirm that there are no foreign particles in by-pass air line.</ref.>	Are foreign particles in by-pass air line?	Remove foreign particles from by- pass air line.	Replace idle air control solenoid valve. <ref. to<br="">FU(DOHC TURBO)-34, Idle Air Control Sole- noid Valve.&gt;</ref.>

# CI: 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK OPERATION OF STARTER MOTOR.	Does starter motor operate when ignition switch to "ST"?	Repair harness and connector. NOTE: In this case, repair the following: • Open or ground short circuit in har- ness between ECM and starter motor connector. • Poor contact in ECM connector.	Check starter motor circuit. <ref. to EN(DOHC TURBO)-54, STARTER MOTOR CIR- CUIT, Diagnostics for Engine Start- ing Failure.&gt;</ref. 

# CJ:DTC P1544 — HIGH EXHAUST TEMPERATURE DETECTED —

- 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(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

• WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0335, P0336, P0340, P0341, P0545, P0546, P1312, P0102, P0103, P0101, P1141, P0301, P0302, P0303, P0304, P1301, P0171, P0133, P1134, P0131, P0132, P1130, P1131, P1139, P0031, P0032, P0139, P0136, P0039 or P0037?	Inspect DTC P0335, P0336, P0340, P0341, P0545, P0546, P1312, P0102, P0103, P0101, P1141, P0301, P0302, P0303, P0304, P1301, P0171, P0133, P1134, P0131, P0132, P1130, P1131, P1139, P0031, P0032, P0139, P0136, P0039 or P0037 using List of Diag- nostic Trouble Code (DTC). < Ref. to EN(DOHC TURBO)-69, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P1544.	Go to step 2.
<ul> <li>CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items.</li> <li>Loose installation of exhaust manifold</li> <li>Cracks or hole of exhaust manifold</li> <li>Loose installation of front oxygen (A/F) sensor</li> </ul>	Is there a fault in exhaust sys- tem?	Repair or replace failure, then replace precata- lytic converter.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

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

### • DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode<Ref. to EN(DOHC TURBO)-38, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(DOHC TURBO)-35, Inspection Mode.> .

- WIRING DIAGRAM:
- LHD MODEL



### RHD MODEL



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FOR ECM. 1)Turn ignition switch to OFF. 2)Measure voltage between ECM and chassis ground. Connector & terminal (B137) No. 10 (+) — Chassis ground (–):	Is the voltage more than 10 V?	Repair poor con- tact in ECM con- nector.	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR. 1)Disconnect connector from ECM. 2)Measure resistance of harness between ECM and chassis ground. Connector & terminal (B137) No. 10 — Chassis ground:	Is the resistance less than 10 $\Omega$ ?	Repair ground short circuit in har- ness between ECM connector and battery termi- nal.	Go to step <b>3</b> .

# EN(DOHC TURBO)-299

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Γ	Step	Check	Yes	No
3	CHECK FUSE SBF-5.	Is fuse blown?	Replace fuse.	Repair harness and connector.
				NOTE: In this case, repair the following:
				Open circuit in harness between ECM and battery
				<ul> <li>Poor contact in ECM connector</li> <li>Poor contact in battery terminal</li> </ul>

# 18.General Diagnostic Table

# A: INSPECTION

### 1. ENGINE

### NOTE:

Malfunction of parts other than those listed is also possible. <Ref. to ME(DOHC TURBO)-89, Engine Trouble in General.>

Symptom	Problem parts
	1) Idle air control solenoid valve
	2) Pressure sensor
	3) Mass air flow and intake temperature sensor
1 Engine stalls during idling	4) Ignition parts (*1)
	5) Engine coolant temperature sensor (*2)
	6) Crankshaft position sensor (*3)
	7) Camshaft position sensor (*3)
	8) Fuel injection parts (*4)
	1) Idle air control solenoid valve
	2) Pressure sensor
	3) Mass air flow and intake temperature sensor
	<ol> <li>Engine coolant temperature sensor (*2)</li> </ol>
	5) Ignition parts (*1)
2. Rough idling	6) Air intake system (*5)
	7) Fuel injection parts (*4)
	8) Throttle position sensor
	9) Crankshaft position sensor (*3)
	10) Camshaft position sensor (*3)
	11) Oxygen sensor
	12) Fuel pump and fuel pump relay
	1) Idle air control solenoid valve
	2) Engine coolant temperature sensor
3. Engine does not return to idle.	3) Accelerator cable (*6)
	4) I hrottle position sensor
	5) Pressure sensor
	6) Mass air flow sensor
	1) Pressure sensor
	2) Mass air now and intake temperature sensor
	3) Infottie position sensor
	4) Fuel injection parts (4)
4 Deer appelaration	6) Friding applent temperature geneer (*2)
	<ul> <li>Crenksheft position concer (*2)</li> </ul>
	2) Comparison position concor (*2)
	a) $\Delta/C$ switch and $\Delta/C$ suit relay
	10) Engine torque control signal circuit
	11) Ignition parts (*1)
	1) Pressure sensor
5. Engine stalls or engine sags or hesitates at acceleration.	2) Mass air flow and intake temperature sensor
	3) Engine coolant temperature sensor (*2)
	4) Crankshaft position sensor (*3)
	5) Camshaft position sensor (*3)
	6) Purge control solenoid valve
	7) Fuel injection parts (*4)
	8) Throttle position sensor
	9) Fuel pump and fuel pump relay
	c) . set herrik and radi karrik reid?

# EN(DOHC TURBO)-301

#### **ENGINE (DIAGNOSTICS)**

# **GENERAL DIAGNOSTIC TABLE**

Symptom	Problem parts
6. Surge	<ol> <li>Pressure sensor</li> <li>Mass air flow and intake temperature sensor</li> <li>Engine coolant temperature sensor (*2)</li> <li>Crankshaft position sensor (*3)</li> <li>Camshaft position sensor (*3)</li> <li>Fuel injection parts (*4)</li> <li>Throttle position sensor</li> <li>Fuel pump and fuel pump relay</li> </ol>
7. Spark knock	<ol> <li>Pressure sensor</li> <li>Mass air flow and intake temperature sensor</li> <li>Engine coolant temperature sensor</li> <li>Knock sensor</li> <li>Fuel injection parts (*4)</li> <li>Fuel pump and fuel pump relay</li> </ol>
8. After burning in exhaust system	<ol> <li>Pressure sensor</li> <li>Mass air flow and intake temperature sensor</li> <li>Engine coolant temperature sensor (*2)</li> <li>Fuel injection parts (*4)</li> <li>Fuel pump and fuel pump relay</li> </ol>

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

\*2: Indicate the symptom occurring only in cold temperatures.\*3: Ensure the secure installation.

\*4: Check fuel injector, fuel pressure regulator and fuel filter.

\*5: Inspect air leak in air intake system.

\*6: Adjust accelerator cable.