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

## A: DTC P0011 INTAKE CAMSHAFT POSITION TIMING - OVER-ADVANCED (BANK 1)

### **DTC DETECTING CONDITION:**

- · Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-9, DTC P0011 INTAKE CAMSHAFT POSITION TIMING OVER-ADVANCED (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **TROUBLE SYMPTOM:**

- Engine stalls.
- · Erroneous idling

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2 CHECK CURRENT DATA.  1) Start the engine and let it idle. 2) Inspect the VVT advance timing and OC duty output 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". <r en(h4dotc)(diag)-27,="" molitor.="" select="" subaru="" to="">  • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool instruction manual</r>	approx. 10%?	Inspect the following items and repair or replace if necessary.  • Engine oil (amount, contamination)  • Oil pipe (clog)  • Oil flow control solenoid valve (clog or contamination in oil passage, settling at spring, stuck at valve)  • Intake camshaft (sludge, damage at camshaft)  • Timing belt (timing mark aligning)	A temporary mal- function. Conduct the following to clean the oil pas- sage. Replace the engine oil and idle the engine for 5 minutes, then replace the oil filter and engine oil.

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

ENĠINE (ĎIAGNOSTICS)

## B: DTC P0021 INTAKE CAMSHAFT POSITION TIMING - OVER-ADVANCED (BANK 2)

### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-11, DTC P0021 INTAKE CAMSHAFT POSITION TIMING OVER-ADVANCED (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Engine stalls.
- · Erroneous idling

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

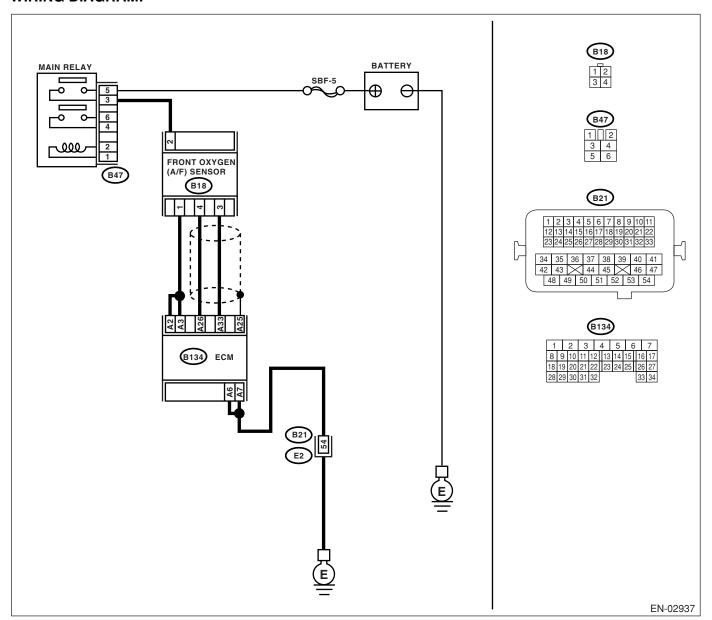
	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK CURRENT DATA.  1) Start the engine and let it idle.  2) Inspect the VVT advance timing and OCV duty output using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool instruction manual.</ref.>	Is the VVT advance timing more than approx. 0°C and the OCV duty output more than approx. 10%?	ing items and repair or replace if necessary.  • Engine oil (amount, contamination)	A temporary mal- function. Conduct the following to clean the oil pas- sage. Replace the engine oil and idle the engine for 5 minutes, then replace the oil filter and engine oil.

## C: DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1) DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-12, DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



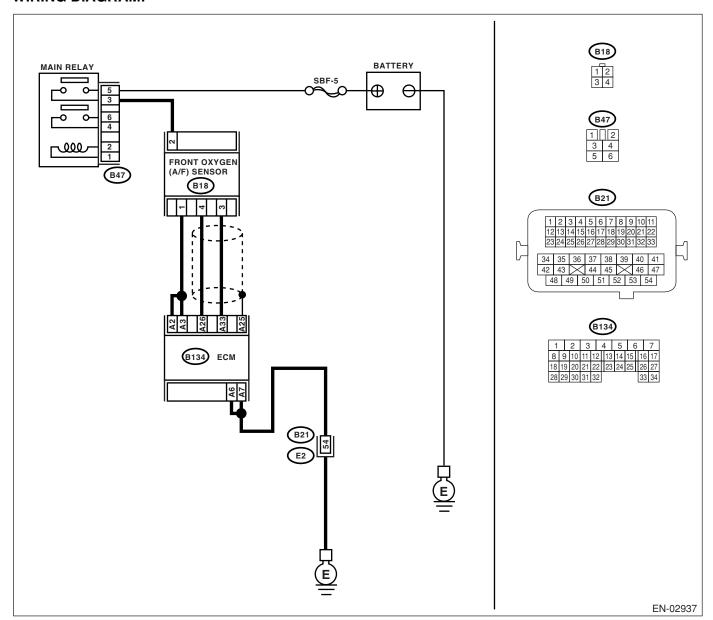
	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  1) Start the engine and warm-up engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 4) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.  Connector & terminal (B134) No. 2 — (B18) No. 1: (B134) No. 3 — (B18) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
2	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.  Connector & terminal  (B134) No. 26 — (B18) No. 4:  (B134) No. 33 — (B18) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
3	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  Measure the resistance of harness between main relay and front oxygen (A/F) sensor connector.  Connector & terminal (B47) No. 3 — (B18) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
4	CHECK FRONT OXYGEN (A/F) SENSOR.  Measure the resistance between front oxygen (A/F) sensor connector terminals.  Terminals  No. 1 — No. 2:	Is the resistance less than 5 $\Omega$ ?	Go to step 5.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>
5	CHECK POOR CONTACT.  Check the poor contact in ECM and front oxygen (A/F) sensor connector.	Is there poor contact in ECM or front oxygen (A/F) sensor connector?	Repair the poor contact in ECM or front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>

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

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-14, DTC P0031 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



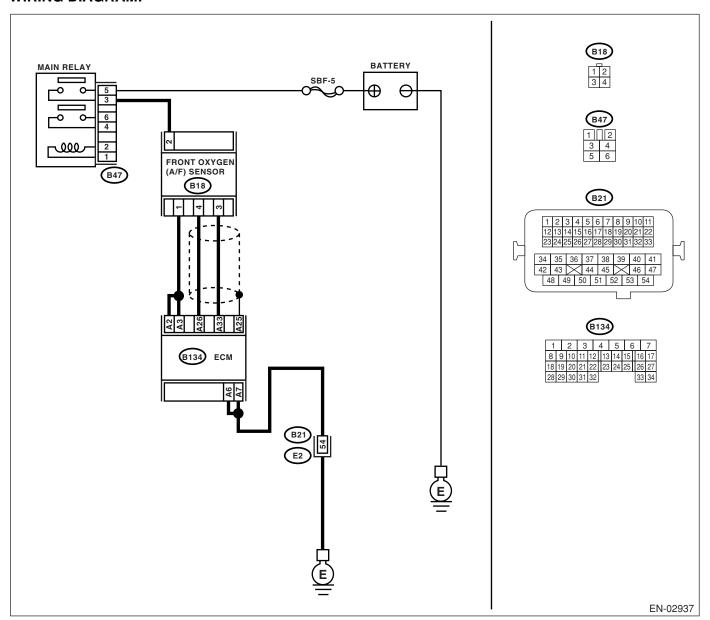
	Step	Check	Yes	No
1	CHECK POWER SUPPLY TO FRONT OXY-GEN (A/F) SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between front oxygen (A/F) sensor connector and engine ground.  Connector & terminal (B18) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?		Repair the power supply line.  NOTE: In this case, repair the following:  Open circuit in harness between main relay and front oxygen (A/F) sensor connector  Poor contact in front oxygen (A/F) sensor connector
				Poor contact in main relay connec- tor
2	CHECK HARNESS BETWEEN FRONT OXY-GEN (A/F) SENSOR AND ECM.  1) Turn the ignition switch to OFF.  2) Disconnect the connectors from ECM.  3) Measure the voltage between front oxygen (A/F) sensor connector and ECM.  Connector & terminal  (B18) No. 1 — (B134) No. 2:  (B18) No. 1 — (B134) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor.
3	CHECK HARNESS BETWEEN FRONT OXY-GEN (A/F) SENSOR AND ECM.  Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B134) No. 2 — Chassis ground:  (B134) No. 3 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair the ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor.
4	CHECK FRONT OXYGEN (A/F) SENSOR.  1) Turn the ignition switch to OFF.  2) Measure the resistance between front oxygen (A/F) sensor connector terminals.  Terminals  No. 1 — No. 2:	Is the resistance 2.4 Ω?	Repair the poor contact in ECM connector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>

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

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-16, DTC P0032 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



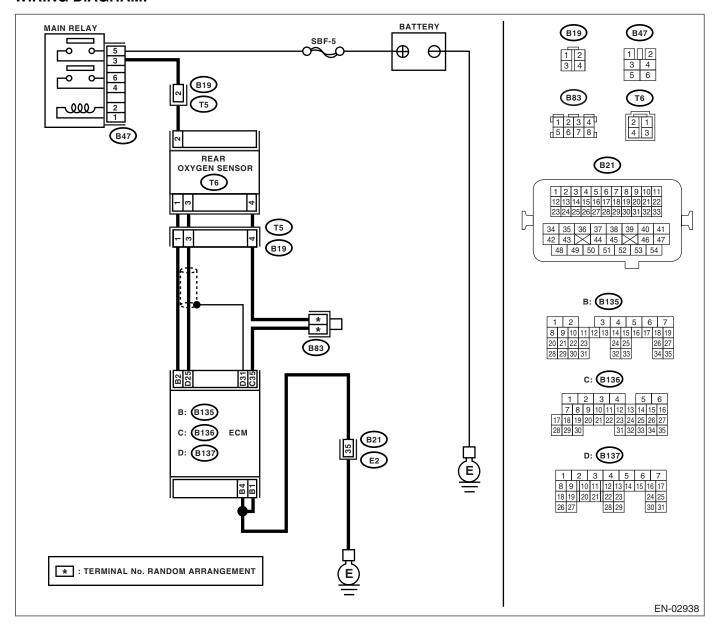
	Step	Check	Yes	No
1	CHECK GROUND CIRCUIT FOR ECM.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B134) No. 6 — Chassis ground:  (B136) No. 7 — Chassis ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 2.	Repair the open circuit in harness between ECM connector and chassis ground.
2	CHECK VOLTAGE BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B137) No. 2 (+) — Chassis ground (-): (B137) No. 3 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	Repair the poor contact in ECM connector.

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-18, DTC P0037 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK GROUND CIRCUIT FOR ECM.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance of harness between ECM connector and chassis ground.  Connector & terminal  (B135) No. 1 — Chassis ground:  (B135) No. 4 — Chassis ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 2.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and engine ground cable Poor contact in ECM connector Poor contact in coupling connector
2	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR.  1) Disconnect the connector from rear oxygen sensor.  2) Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B135) No. 2 — Chassis ground:	Is the voltage more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 3.	Repair the ground short circuit in har- ness between ECM and rear oxy- gen sensor con- nector.
3	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR.  Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B135) No. 2 — Chassis ground:	Does the resistance change by shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Go to step 4.
4	CHECK POWER SUPPLY TO REAR OXY-GEN SENSOR.  1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between rear oxygen sensor connector and chassis ground.  Connector & terminal  (T6) No. 2 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step <b>5</b> .	Repair the power supply line. NOTE: In this case, repair the following: • Open circuit in harness between main relay and rear oxygen sensor connector • Poor contact in rear oxygen sensor connector • Poor contact in coupling connector

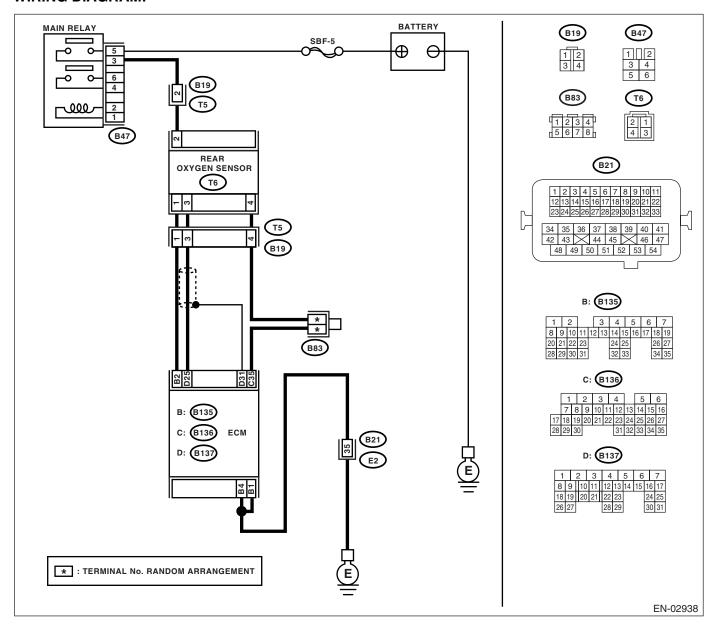
	Step	Check	Yes	No
5 CI	HECK REAR OXYGEN SENSOR.	Is the resistance less than 30	Repair the har-	Replace the rear
1)	Turn the ignition switch to OFF.	$\Omega$ ?	ness and connec-	oxygen sensor.
2)	Measure the resistance between rear oxy-		tor.	<ref. td="" to<=""></ref.>
ge	en sensor connector terminals.			FU(H4DOTC)-37,
•	Terminals		In this case, repair	Rear Oxygen Sen-
	No. 1 — No. 2:		the following:	sor.>
			<ul> <li>Open circuit in</li> </ul>	
			harness between	
			rear oxygen sen-	
			sor and ECM con-	
			nector	
			<ul> <li>Poor contact in</li> </ul>	
			rear oxygen sen-	
			sor connector	
			<ul> <li>Poor contact in</li> </ul>	
			ECM connector	
			<ul> <li>Poor contact in</li> </ul>	
			coupling connector	

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-20, DTC P0038 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK GROUND CIRCUIT FOR ECM.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance of harness between ECM connector and chassis ground.  Connector & terminal  (B135) No. 4 — Chassis ground:  (B135) No. 1 — Chassis ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 2.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and engine ground cable  Poor contact in ECM connector  Poor contact in coupling connector
2	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR.  Measure the voltage between ECM and chassis ground.  Connector & terminal  (B135) No. 2 (+) — Chassis ground (-):	Is the voltage more than 10 V?		Repair the poor connection in ECM connector.

### H: DTC P0068 MAP/MAF - THROTTLE POSITION CORRELATION DTC DETECTING CONDITION:

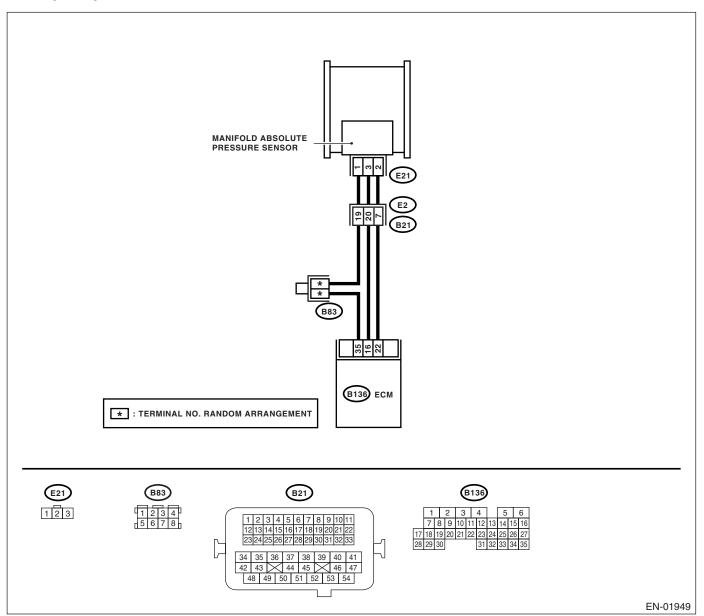
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-22, DTC P0068 MAP/MAF THROTTLE POSITION CORRELATION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

Failure of engine to start

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK IDLE SWITCH SIGNAL.  1) Turn the ignition switch to ON.  2) Operate the LED operation mode for engine using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Does the LED of {Idle Switch Signal} come on?	Go to step 2.	Check the throttle position sensor circuit. <ref. "a"="" "b"="" (dtc).="" code="" diagnostic="" dtc="" en(h4dotc)(diag)-311,="" p2135="" pedal="" position="" procedure="" rationality,="" sensor="" switch="" throttle="" to="" trouble="" voltage="" with="">NOTE: In this case, it is not necessary to inspect DTC P0106.</ref.>
2	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC. "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0106.</ref.>	
3	CHECK CONDITION OF MANIFOLD ABSO- LUTE PRESSURE SENSOR.	Is the manifold absolute pres- sure sensor installation bolt tightened securely?	Go to step 4.	Tighten the manifold absolute presure sensor installation bolt securely.
4	CHECK CONDITION OF THROTTLE BODY.	Is the throttle body installation bolt tightened securely?	Replace the manifold absolute pressure sensor. <ref. absolute="" fu(h4dotc)-28,="" manifold="" pressure="" sensor.="" to=""></ref.>	Tighten the throttle body installation bolt securely.

### I: DTC P0101 MASS OR VOLUME AIR FLOW CIRCUIT RANGE/PERFOR-MANCE

### **DTC DETECTING CONDITION:**

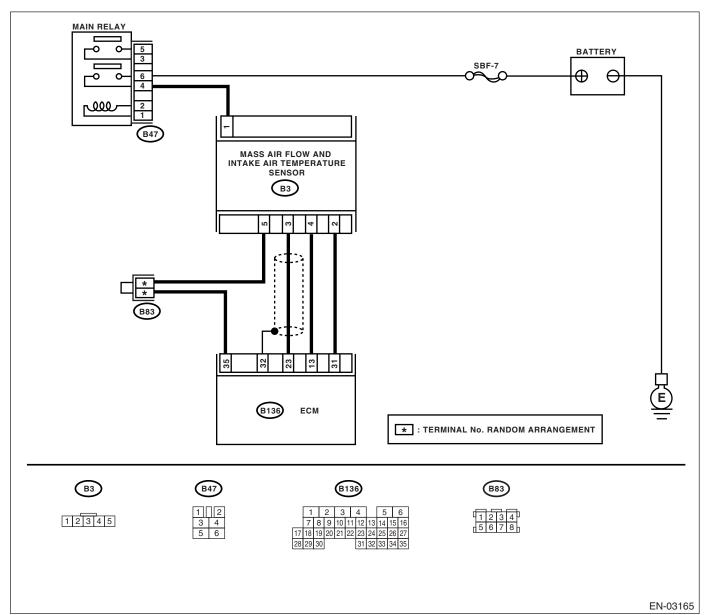
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-24, DTC P0101 MASS OR VOLUME AIR FLOW CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **TROUBLE SYMPTOM:**

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

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	"List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4DOTC)(diag )-69, List of Diag-</ref.>	sensor. <ref. to<br="">FU(H4DOTC)-27, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>

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

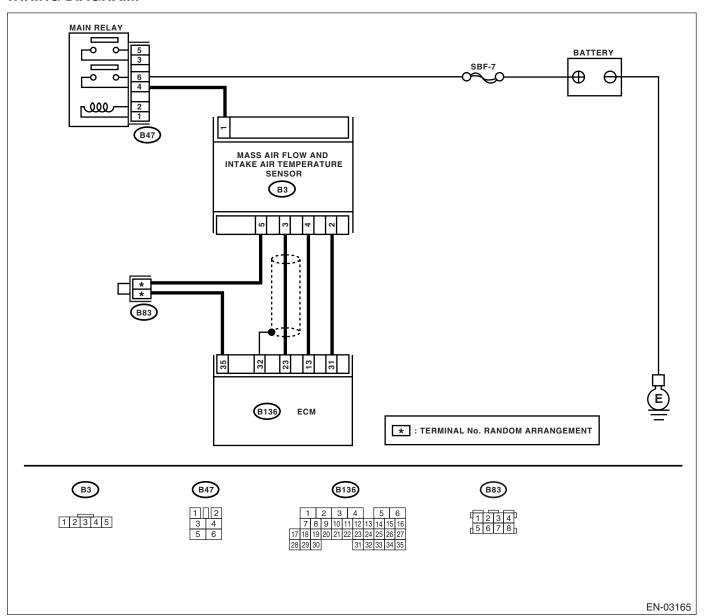
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-27, DTC P0102 MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	READ THE DATA CONNECTING SUBARU	Is the voltage 0.2 — 4.7 V?	Even if the mal-	Go to step 2.
	SELECT MONITOR OR OBD-II GENERAL	J .	function indicator	
	SCAN TOOL.		light illuminates,	
	Turn the ignition switch to OFF.		the circuit has	
	2) Connect the Subaru Select Monitor to data		returned to a nor-	
	link connector.		mal condition at	
	3) Turn the ignition switch to ON, and the Subaru Select Monitor switch to ON.		this time. A temporary poor contact	
	4) Start and idle the engine.		of the connector or	
	5) Read the voltage of mass air flow sensor		harness may be	
	using Subaru Select Monitor or OBD-II general		the cause. Repair	
	scan tool.		harness or con-	
	NOTE:		nector in the mass	
	Subaru Select Monitor		air flow sensor.	
	For detailed operation procedure, refer to the		NOTE:	
	"READ CURRENT DATA SHOWN ON DIS-		In this case, repair	
	PLAY FOR ENGINE". <ref. to<br="">EN(H4DOTC)(diag)-27, Subaru Select Moni-</ref.>		the following:  Open or ground	
	tor.>		short circuit in har-	
	OBD-II general scan tool		ness between	
	For detailed operation procedure, refer to the		mass air flow sen-	
	OBD-II general scan tool instruction manual.		sor and ECM con-	
			nector	
			Poor contact in	
			mass air flow sen-	
			sor or ECM con-	
	OUEOK INDUT CIONAL EDOM FOM		nector	0 - 11 - 0
2	CHECK INPUT SIGNAL FROM ECM.  Measure the voltage between ECM connector	Is the voltage more than 0.2 V?	Go to step 4.	Go to step 3.
	and chassis ground while engine is idling.			
	Connector & terminal			
	(B136) No. 23 (+) — Chassis ground (-):			
3	CHECK INPUT SIGNAL FOR ECM (USING	Does the voltage change by	Repair the poor	Replace and
	SUBARU SELECT MONITOR).	shaking the harness and con-	contact in ECM	check it again
	Measure the voltage between ECM connector	nector of ECM while monitor-	connector.	because of ECM
	and chassis ground while engine is idling.	ing the value with Subaru		malfunction possi-
		Select Monitor?	<u> </u>	bility.
4	CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.	Is the voltage more than 10 V?	Go to step 5.	Repair the open
	Turn the ignition switch to OFF.			circuit between mass air flow sen-
	<ul><li>2) Disconnect the connector from mass air</li></ul>			sor and main relay.
	flow sensor.			
	3) Turn the ignition switch to ON.			
	4) Measure voltage between mass air flow			
	sensor connector and chassis ground.			
	Connector & terminal			
	(B3) No. 1 (+) — Chassis ground (-):	lo the registance less there	Co to otor C	Danair the sees
5	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.	Is the resistance less than 1 $\Omega$ ?	Go to step 6.	Repair the open circuit between
	Turn the ignition switch to OFF.	22:		ECM and mass air
	2) Disconnect the connector from ECM.			flow sensor con-
	Measure the resistance of harness			nector.
	between ECM and mass air flow sensor con-			
	nector.			
	Connector & terminal			
	(B136) No. 23 — (B3) No. 3:			
	(B136) No. 31 — (B3) No. 2:			
	(B136) No. 35 — (B3) No. 5:			

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. Measure the resistance of harness between ECM and chassis ground.  Connector & terminal  (B136) No. 23 — Chassis ground:  (B136) No. 31 — Chassis ground:  (B136) No. 35 — Chassis ground:	Is the resistance more than 1 M $\Omega$ ?	Go to step 7.	Repair the ground short circuit between ECM and mass air flow sen- sor connector.
7	CHECK POOR CONTACT.  Check poor contact in mass air flow sensor connector.	Is there poor contact in mass air flow sensor connector?	Repair the poor contact in mass air flow sensor connector.	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC)-27, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>

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

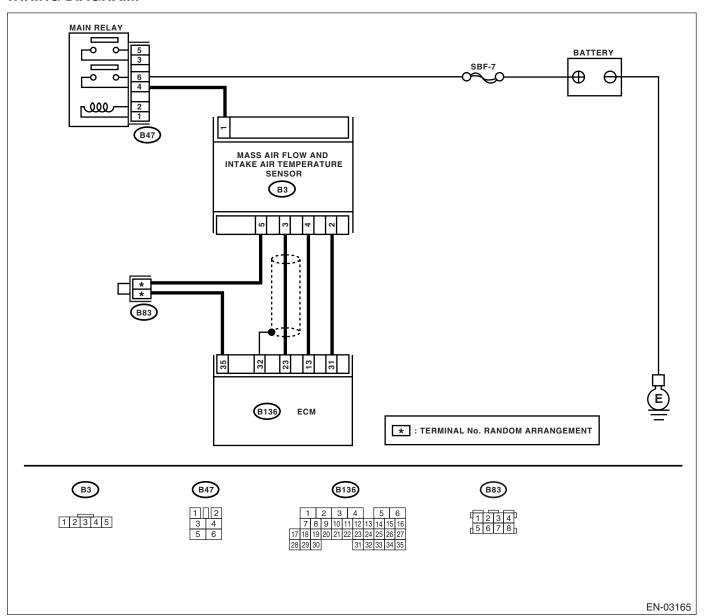
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-29, DTC P0103 MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	READ THE DATA CONNECTING SUBARU SELECT MONITOR OR OBD-II GENERAL SCAN TOOL.  1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON, and the Subaru Select Monitor switch to ON. 4) Start and idle the engine. 5) Read the voltage of mass air flow sensor 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 DISPLAY FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	Is the voltage 0.2 — 4.7 V?	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time.	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from mass airflow sensor.  3) Turn the ignition switch to ON.  4) Measure voltage between mass air flow sensor connector and chassis ground.  Connector & terminal  (B3) No. 3 (+) — Chassis ground (-):	Is the voltage more than 5 V?	Repair the battery short circuit in har- ness between mass air flow sen- sor connector and ECM connector.	Go to step 3.
3	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance of harness between ECM connector and mass air flow sensor connector.  Connector & terminal  (B3) No. 2 — (B136) No. 31:	Is the resistance less than 1 $\Omega$ ?	Replace the mass air flow sensor. <ref. to<br="">FU(H4DOTC)-27, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>	Repair the open circuit in harness between mass air flow sensor connector and ECM connector.

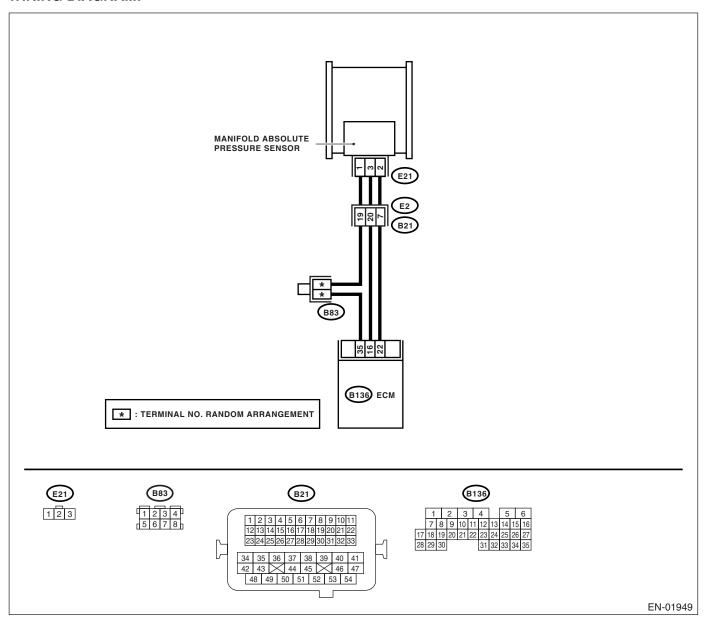
## L: DTC P0107 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT

### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-31, DTC P0107 MANIFOLD ABSOLUTE PRESSURE/ BAROMETRIC PRESSURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 4.5 V?	Go to step 3.	Go to step 2.
	Measure the voltage between ECM connector	list are remage mere aran me er	One 110 0110	
	and chassis ground.			
	Connector & terminal			
	(B136) No. 16 (+) — Chassis ground (−):			
2	CHECK INPUT SIGNAL FROM ECM.	Does the voltage change by	Repair the poor	Replace the ECM.
	Measure the voltage between ECM connector	shaking the harness and con-	contact in ECM	<ref. td="" to<=""></ref.>
	and chassis ground.	nector of ECM while monitor-	connector.	FU(H4DOTC)-39,
	Connector & terminal	ing the value with voltage		Engine Control
	(B136) No. 16 (+) — Chassis ground (-):	meter?		Module (ECM).>
3	CHECK INPUT SIGNAL FROM ECM.	Is the voltage less than 0.7 V?	Go to step 4.	Replace the ECM.
	Measure the voltage between ECM and chas-			<ref. td="" to<=""></ref.>
	sis ground.  Connector & terminal			FU(H4DOTC)-39, Engine Control
	(B136) No. 22 (+) — Chassis ground (-):			Module (ECM).>
4	CHECK HARNESS BETWEEN ECM AND	Is the voltage more than 4.5 V?	Go to stop 5	Repair the open
•	MANIFOLD ABSOLUTE PRESSURE SEN-	is the voltage more than 4.5 V?	αυ ιυ σι <b>σ</b> μ <b>σ.</b>	circuit in harness
	SOR CONNECTOR.			between ECM and
	Turn the ignition switch to OFF.			manifold absolute
	2) Disconnect the connector from manifold			pressure sensor
	absolute pressure sensor.			connector.
	3) Turn the ignition switch to ON.			
	4) Measure the voltage between manifold			
	absolute pressure sensor connector and			
	engine ground.			
	Connector & terminal			
	(E21) No. 3 (+) — Engine ground (-):			
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 6.	Repair the open
	MANIFOLD ABSOLUTE PRESSURE SEN- SOR CONNECTOR.	$\Omega$ ?		circuit in harness between ECM and
	Turn the ignition switch to OFF.			manifold absolute
	2) Disconnect the connector from ECM.			pressure sensor
	Measure the resistance of harness			connector.
	between ECM and manifold absolute pressure			
	sensor connector.			
	Connector & terminal			
	(B136) No. 35 — (E21) No. 1:			
6	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 7.	Repair the ground
	MANIFOLD ABSOLUTE PRESSURE SEN-	ΜΩ?		short circuit in har-
	SOR CONNECTOR.			ness between
	Measure the resistance of harness between			ECM and mani-
	manifold absolute pressure sensor connector			fold absolute pres-
	and engine ground.  Connector & terminal			sure sensor
	(E21) No. 1 — Engine ground:			connector.
7	CHECK POOR CONTACT.	Is there poor contact in mani-	Repair the poor	Replace the mani-
	Check poor contact in manifold absolute pres-	fold absolute pressure sensor	contact in mani-	fold absolute pres-
	sure sensor connector.	connector?	fold absolute pres-	sure sensor. <ref.< td=""></ref.<>
	22.2 23.100. 00.11100.011		sure sensor	to FU(H4DOTC)-
			connector.	27, Mass Air Flow
				and Intake Air
				Temperature Sen-
1				sor.>

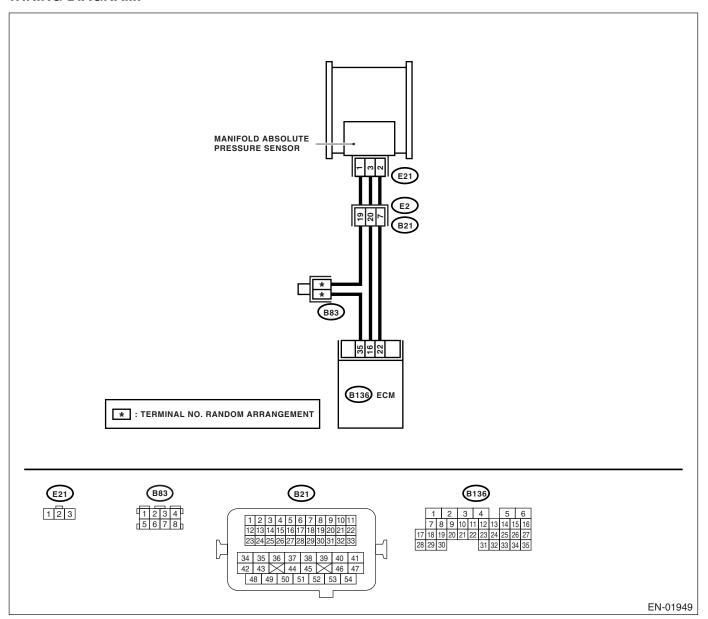
## M: DTC P0108 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT

### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-33, DTC P0108 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



1 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  State voltage more than 4.5 V? Go to step 3.  Seplace contact in ECM connector ing the value with voltage meter?  Module  State voltage more than 4.5 V? Go to step 4.  State voltage more than 4.5 V? Go to step 4.  State voltage more than 4.5 V? Go to step 5.  Repair the poor contact in ECM connector.  FU(H4D connector ing the value with voltage meter?  Module  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  CHECK HARNESS BETWEEN ECM AND  Is the voltage more than 4.5 V? Go to step 5.  Repair the poor contact in ECM connector ing the value with voltage meter?  State voltage more than 4.5 V? Go to step 5.  Repair the poor contact in ECM connector ing the value with voltage meter?  State voltage more than 4.5 V? Go to step 5.  Repair the poor contact in ECM connector.  FU(H4D Engine of Module in the voltage more than 4.5 V? Go to step 5.	e the ECM. OOTC)-39, Control
Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  4 CHECK HARNESS BETWEEN ECM AND  Does the voltage change by shaking the harness and connector contact in ECM connector ing the value with voltage meter?  Replace (	e the ECM. OOTC)-39, Control
and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground (-):  Is the voltage more than 4.5 V? Go to step 4.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  4 CHECK HARNESS BETWEEN ECM AND  Does the voltage change by shaking the harness and connector contact in ECM connector.  FU(H4D connector.  Is the voltage more than 4.5 V? Go to step 4.  Replace contact in ECM connector.  FU(H4D connector.  Is the voltage more than 4.5 V? Go to step 5.	OOTC)-39, Control
Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  CHECK HARNESS BETWEEN ECM AND  Does the voltage change by shaking the harness and connector contact in ECM connector.  FU(H4D connector.  Sepair the poor contact in ECM connector.  Is the voltage more than 4.5 V? Go to step 4.  Replace contact in ECM connector.  FU(H4D connector.  Replace contact in ECM connector.  FU(H4D connector.  Replace contact in ECM connector.  FU(H4D connector.  Sepair the poor contact in ECM connector.  FU(H4D conn	OOTC)-39, Control
(B136) No. 16 (+) — Chassis ground (-):  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  CHECK HARNESS BETWEEN ECM AND  Does the voltage change by shaking the harness and connector contact in ECM connector.  FU(H4D connector.  Sepair the poor contact in ECM connector.  FU(H4D connector.  Sepair the poor contact in ECM connector.  FU(H4D connector.  Sepair the poor contact in ECM connector.  FU(H4D connector.  Sepair the poor contact in ECM connector.  FU(H4D connector.  Sepair the poor contact in ECM connector.  FU(H4D connector.	OOTC)-39, Control
2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  4 CHECK HARNESS BETWEEN ECM AND  Does the voltage change by shaking the harness and connector contact in ECM connector.  FU(H4D contact in ECM connector.  FU(H4D contact in ECM connector.  FU(H4D contact in ECM connector.  FU(H4D contact in ECM c	OOTC)-39, Control
Measure the voltage between ECM connector and chassis ground.  **Connector & terminal**  (B136) No. 16 (+) — Chassis ground (-):  **The connector & terminal**  (B136) No. 22 (+) — Chassis ground (-):  **Shaking the harness and connector and chassis ground (-):  shaking the harness and connector contact in ECM connector.  **Shaking the harness and connector and the value with voltage meter?  **Shaking the harness and connector connector.  **Shaking the harness and connector connector.  **Shaking the harness and connector.	OOTC)-39, Control
and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):  THE CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  THE CONNECTOR While monitor- ing the value with voltage meter?  Is the voltage more than 4.5 V? Go to step 4.  Replace <ref. &="" (+)="" (-):="" (b136)="" (connector="" 22="" 4.5="" 5.="" and="" between="" chassis="" check="" ecm="" engine="" fu(h4d="" go="" ground="" harness="" is="" more="" no.="" repair="" step="" t<="" terminal="" th="" than="" the="" to="" v?="" voltage="" —=""><th>OTC)-39, Control</th></ref.>	OTC)-39, Control
Connector & terminal ing the value with voltage meter?  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  CHECK HARNESS BETWEEN ECM AND In the value with voltage meter?  In the value with voltage meter?  So to step 4.  Replace Content of the value with voltage meter?  Module  Is the voltage more than 4.5 V? Go to step 5.  Repair to the value with voltage meter?	Control
(B136) No. 16 (+) — Chassis ground (-): meter?  CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  CHECK HARNESS BETWEEN ECM AND  Module  Module  Module	
3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  CHECK HARNESS BETWEEN ECM AND  Is the voltage more than 4.5 V? Go to step 4.  Replace <a href="Replace-calculation-left">Replace-calculation-calculati</a>	(ECIVI).>
Measure the voltage between ECM connector and chassis ground.  **Connector & terminal**  (B136) No. 22 (+) — Chassis ground (−):  CHECK HARNESS BETWEEN ECM AND Is the voltage more than 4.5 V? Go to step 5.	
and chassis ground.  **Connector & terminal** (B136) No. 22 (+) — Chassis ground (-):  4 CHECK HARNESS BETWEEN ECM AND Is the voltage more than 4.5 V? Go to step 5. Repair to the content of the content	the ECM.
Connector & terminal (B136) No. 22 (+) — Chassis ground (-):  Module  CHECK HARNESS BETWEEN ECM AND Is the voltage more than 4.5 V? Go to step 5. Repair t	
(B136) No. 22 (+) — Chassis ground (-): Module  4 CHECK HARNESS BETWEEN ECM AND Is the voltage more than 4.5 V? Go to step 5. Repair t	
4 CHECK HARNESS BETWEEN ECM AND Is the voltage more than 4.5 V? Go to step 5. Repair t	
	(ECM).>
	he open
MANIFOLD ABSOLUTE PRESSURE SEN-	n harness
SOR CONNECTOR. between	n ECM and
Turn the ignition switch to OFF.     manifold	d absolute
Disconnect the connector from manifold     pressure	e sensor
absolute pressure sensor. connect	or.
3) Turn the ignition switch to ON.	
Measure the voltage between manifold	
absolute pressure sensor connector and	
engine ground.	
Connector & terminal	
(E21) No. 3 (+) — Engine ground (−):	
	he open
MANIFOLD ABSOLUTE PRESSURE SEN- $\Omega$ ?	n harness
	n ECM and
, ,	d absolute
, '	e sensor
3) Measure the resistance of harness connect	or.
between ECM and manifold absolute pressure	
sensor connector.	
Connector & terminal	
(B136) No. 22 — (E21) No. 2:	
6 CHECK HARNESS BETWEEN ECM AND Is the resistance less than 1 Go to step 7. Repair t	
	harness
	n ECM and
	d absolute
·	e sensor
connector. connect	or.
Connector & terminal	
(B136) No. 35 — (E21) No. 1:	
	the mani-
	olute pres-
· · · · · · · · · · · · · · · · · · ·	nsor. <ref.< th=""></ref.<>
	4DOTC)-
	nifold Abso-
lute Pre	ssure Sen-
sor.>	

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

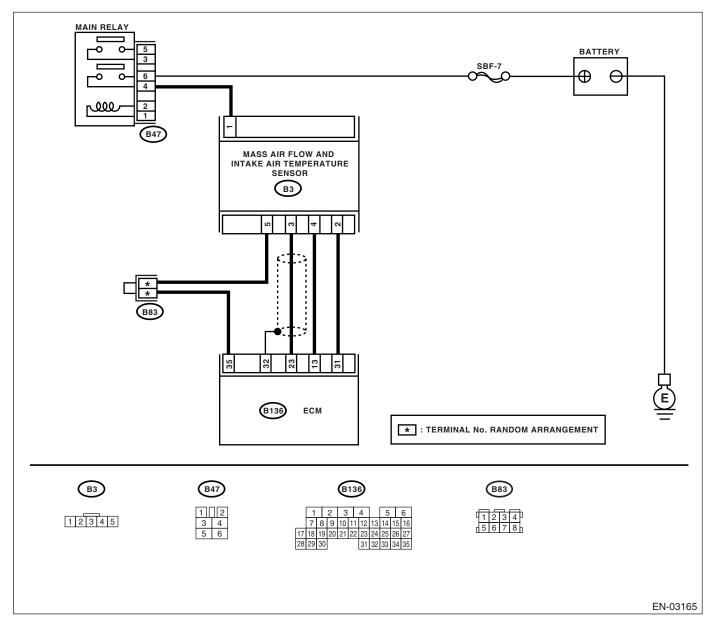
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-35, DTC P0111 INTAKE AIR TEMPERATURE CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Ston	Check	Yes	No
Step	0110011		
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P01111.</ref.>	
2 CHECK ENGINE COOLANT TEMPERA- TURE.  1) Start the engine and warm it up completely 2) Measure the engine coolant temperature using Subaru Select Monitor or OBD-II general scan tool.  NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool instruction manual.</ref>		air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC)-27,</ref.>	Inspect the DTC P0125 using "List of Diagnostic Trou- ble Code (DTC)". <ref. to<br="">EN(H4DOTC)(diag )-69, List of Diag- nostic Trouble Code (DTC).&gt;</ref.>

### O: DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT DTC DETECTING CONDITION:

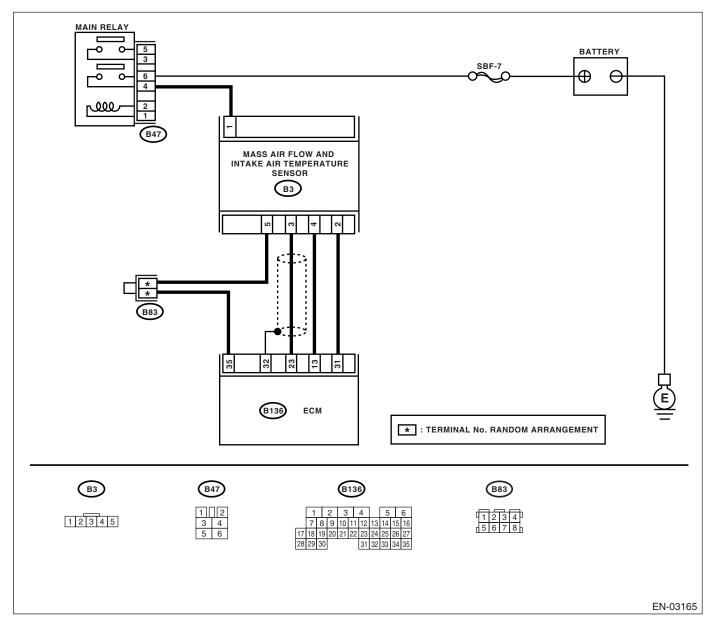
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-37, DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.  1) Start the engine. 2) Read the data of intake air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" moni-<="" select="" subaru="" th="" to=""><th>Check Is engine coolant temperature more than 55°C (131°F)?</th><th>Yes Go to step 2.</th><th>Repair the poor contact.  NOTE: In this case, repair the following:  Poor contact in mass air flow and intake air temperature sensor Poor contact in ECM</th></ref.>	Check Is engine coolant temperature more than 55°C (131°F)?	Yes Go to step 2.	Repair the poor contact.  NOTE: In this case, repair the following:  Poor contact in mass air flow and intake air temperature sensor Poor contact in ECM
	OBD-II general scan tool     For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.	le the value less than 2000 (	Dayless the mass	Poor contact in joint connector
2	CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from mass air flow and intake air temperature sensor.  3) Turn the ignition switch to ON.  4) Read the data of intake air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:	Is the value less than -36°C (-33°F)?	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H4DOTC)-27, Mass Air Flow and Intake Air Temper- ature Sensor.&gt;</ref.>	Repair the ground short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.
	<ul> <li>Subaru Select Monitor</li> <li>For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.></li> <li>OBD-II general scan tool</li> <li>For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</li> </ul>			

### P: DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

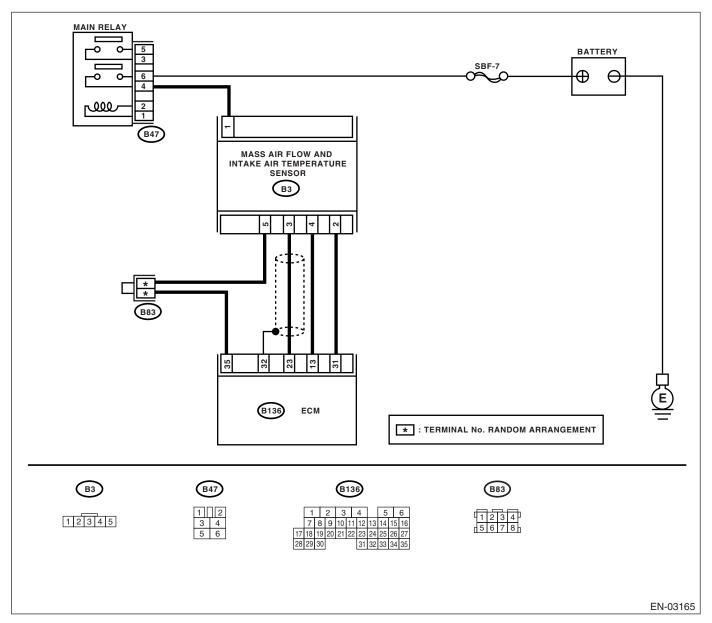
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-39, DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is the value less than –36°C (–	Go to step 2.	Repair the poor
	<ol> <li>Start the engine.</li> <li>Read the data of intake air temperature</li> </ol>	33°F)?		contact.
	sensor signal using Subaru Select Monitor or			NOTE: In this case, repair
	OBD-II general scan tool.			the following:
	NOTE:			Poor contact in
	Subaru Select Monitor			mass air flow and
	For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-			intake air tempera- ture sensor
	PLAY FOR ENGINE". <ref. td="" to<=""><td></td><td></td><td>Poor contact in</td></ref.>			Poor contact in
	EN(H4DOTC)(diag)-27, Subaru Select Moni-			ECM
	tor.>			Poor contact in
	OBD-II general scan tool  Toy detailed an existing proceedings professes the second seco			joint connector
	For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.			
2	CHECK HARNESS BETWEEN MASS AIR	Is the voltage more than 10 V?	Repair the battery	Go to step 3.
	FLOW AND INTAKE AIR TEMPERATURE	in the second se	short circuit in har-	
	SENSOR AND ECM CONNECTOR.		ness between	
	<ol> <li>Turn the ignition switch to OFF.</li> <li>Disconnect the connector from mass air</li> </ol>		mass air flow and	
	flow and intake air temperature sensor.		intake air tempera- ture sensor and	
	3) Measure the voltage between mass air flow		ECM connector.	
	and intake air temperature sensor connector			
	and engine ground.			
	Connector & terminal (B3) No. 4 (+) — Engine ground (–):			
3	CHECK HARNESS BETWEEN MASS AIR	Is the voltage more than 10 V?	Repair the battery	Go to step 4.
	FLOW AND INTAKE AIR TEMPERATURE	ğ	short circuit in har-	
	SENSOR AND ECM CONNECTOR.		ness between	
	<ol> <li>Turn the ignition switch to ON.</li> <li>Measure the voltage between mass air flow</li> </ol>		mass air flow and intake air tempera-	
	and intake air temperature sensor connector		ture sensor and	
	and engine ground.		ECM connector.	
	Connector & terminal			
4	(B3) No. 4 (+) — Engine ground (-): CHECK HARNESS BETWEEN MASS AIR	le the veltage more than 4 1/2	Co to oton F	Danair the har
4	FLOW AND INTAKE AIR TEMPERATURE	Is the voltage more than 4 V?	Go to step 5.	Repair the har- ness and connec-
	SENSOR AND ECM CONNECTOR.			tor.
	Measure the voltage between mass air flow			NOTE:
	and intake air temperature sensor connector			In this case, repair
	and engine ground.  Connector & terminal			the following:  Open circuit in
	(B3) No. 4 (+) — Engine ground (–):			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
				joint connector

	Step	Check	Yes	No
5	CHECK HARNESS BETWEEN MASS AIR	Is the resistance less than 5	Replace the mass	Repair the har-
	FLOW AND INTAKE AIR TEMPERATURE	Ω?	air flow and intake	ness and connec-
	SENSOR AND ECM CONNECTOR.		air temperature	tor.
	<ol> <li>Turn the ignition switch to OFF.</li> </ol>		sensor. <ref. td="" to<=""><td>NOTE:</td></ref.>	NOTE:
	<ol><li>Measure the resistance of harness</li></ol>		FU(H4DOTC)-27,	In this case, repair
	between mass air flow and intake air tempera-		Mass Air Flow and	the following:
	ture sensor and engine ground.		Intake Air Temper-	<ul> <li>Open circuit in</li> </ul>
	Connector & terminal		ature Sensor.>	ness between
	(B3) No. 5 — Engine ground:			mass air flow and
				intake air tempera-
				ture sensor and
				ECM 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</li> </ul>
1				joint connector

## Q: DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT DTC DETECTING CONDITION:

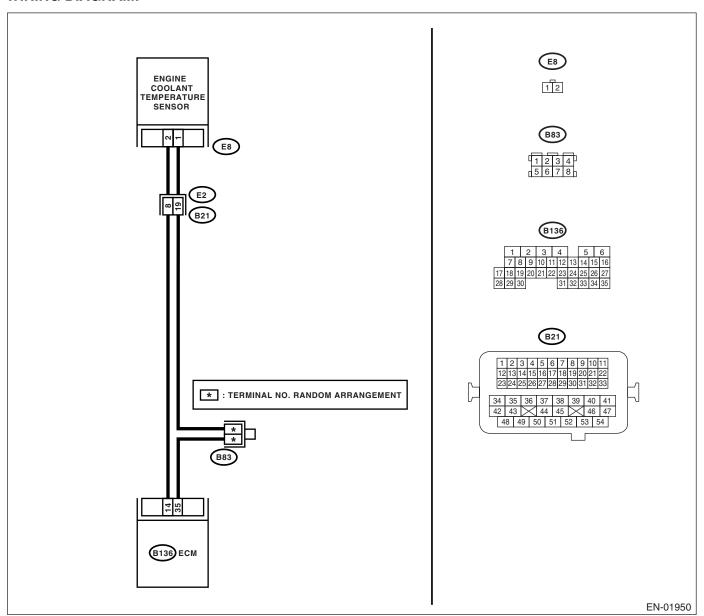
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-41, DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	<ul><li>CHECK CURRENT DATA.</li><li>1) Start the engine.</li><li>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor</li></ul>	Is engine coolant temperature more than 120°C (248°F)?	Go to step 2.	Repair the poor contact.  NOTE: In this case, repai
	or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the  "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" moni-<="" select="" subaru="" td="" to=""><td></td><td></td><td>the following:  • Poor contact in engine coolant temperature sensor  • Poor contact in ECM</td></ref.>			the following:  • Poor contact in engine coolant temperature sensor  • Poor contact in ECM
	tor.>  OBD-II general scan tool  For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.			Poor contact in coupling connecto     Poor contact in joint connector
2	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the engine coolant temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is engine coolant temperature more than -40°C (-40°F)?	Replace the engine coolant temperature sensor. <ref. coolant="" engine="" fu(h4dotc)-22,="" sensor.="" temperature="" to=""></ref.>	Repair the ground short circuit in har ness between engine coolant temperature sensor and ECM connector.
	NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the  "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool  For detailed operation procedure, refer to the  OBD-II general scan tool instruction manual.</ref.>			

## R: DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

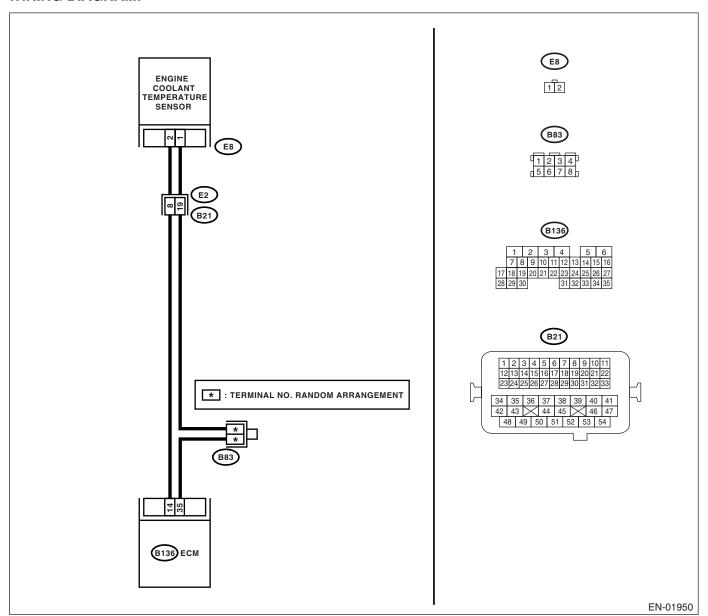
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-43, DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is engine coolant temperature	Go to step 2.	Repair the poor
	1) Start the engine.	less than -40°C (-40°F)?		contact.
	2) Read the data of engine coolant tempera-			NOTE:
	ture sensor signal using Subaru Select Monitor			In this case, repair
	or OBD-II general scan tool.			the following:
	NOTE:  • Subaru Select Monitor			<ul> <li>Poor contact in engine coolant</li> </ul>
	For detailed operation procedure, refer to the			temperature sen-
	"READ CURRENT DATA SHOWN ON DIS-			sor
	PLAY FOR ENGINE". <ref. td="" to<=""><td></td><td></td><td>Poor contact in</td></ref.>			Poor contact in
	EN(H4DOTC)(diag)-27, Subaru Select Moni-			ECM
	tor.>			<ul> <li>Poor contact in</li> </ul>
	OBD-II general scan tool			coupling connector
	For detailed operation procedure, refer to the			Poor contact in
	OBD-II general scan tool instruction manual.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5	joint connector
2	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND	Is the voltage more than 10 V?	Repair the battery short circuit in har-	Go to step 3.
	ECM CONNECTOR.		ness between	
	Turn the ignition switch to OFF.		ECM and engine	
	2) Disconnect the connectors from the engine		coolant tempera-	
	coolant temperature sensor.		ture sensor con-	
	3) Measure the voltage between engine cool-		nector.	
	ant temperature sensor connector and engine			
	ground.			
	Connector & terminal (E8) No. 2 (+) — Engine ground (–):			
3	CHECK HARNESS BETWEEN ENGINE	Is the voltage more than 10 V?	Repair the battery	Go to step 4.
	COOLANT TEMPERATURE SENSOR AND	lo the voltage more than 10 v.	short circuit in har-	GO to Stop 41
	ECM CONNECTOR.		ness between	
	<ol> <li>Turn the ignition switch to ON.</li> </ol>		ECM and engine	
	2) Measure the voltage between engine cool-		coolant tempera-	
	ant temperature sensor connector and engine		ture sensor con-	
	ground.  Connector & terminal		nector.	
	(E8) No. 2 (+) — Engine ground (-):			
4	CHECK HARNESS BETWEEN ENGINE	Is the voltage more than 4 V?	Go to step 5.	Repair the har-
•	COOLANT TEMPERATURE SENSOR AND	le me venage mere man i vi	as to stop <b>s</b> :	ness and connec-
	ECM CONNECTOR.			tor.
	Measure the voltage between engine coolant			NOTE:
	temperature sensor connector and engine			In this case, repair
	ground.			the following:
	Connector & terminal (E8) No. 2 (+) — Engine ground (−):			Open circuit in
	(Lo) No. 2 (+) — Engine ground (-).			harness between ECM and engine
				coolant tempera-
				ture sensor con-
				nector
				<ul> <li>Poor contact in</li> </ul>
				engine coolant
				temperature sen-
				sor connector
				<ul> <li>Poor contact in ECM connector</li> </ul>
				Poor contact in
				coupling connector
				Poor contact in
				joint connector

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

ENĜINE (ĎIAGNOSTICS)

	Step	Check	Yes	No
5	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND	Is the resistance less than 5 $\Omega$ ?	Replace the engine coolant	Repair the har- ness and connec-
	ECM CONNECTOR.		temperature sen- sor. <ref. th="" to<=""><th>tor.</th></ref.>	tor.
	<ol> <li>Turn the ignition switch to OFF.</li> <li>Measure the resistance of harness</li> </ol>		FU(H4DOTC)-22,	NOTE: In this case, repair
	between engine coolant temperature sensor connector and engine ground.		Engine Coolant Temperature Sen-	the following:  Open circuit in
	Connector & terminal (E8) No. 1 — Engine ground:		sor.>	harness between ECM and engine
				coolant tempera- ture sensor con-
				nector  Poor contact in
				engine coolant
				temperature sen- sor connector
				<ul> <li>Poor contact in ECM connector</li> </ul>
				<ul> <li>Poor contact in coupling connector</li> </ul>
				Poor contact in joint connector

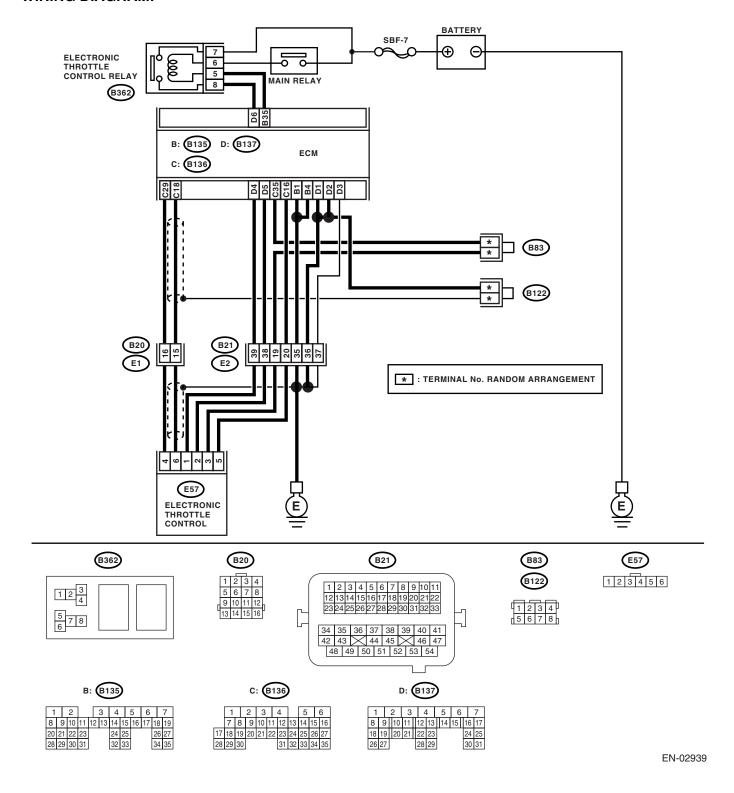
## S: DTC P0122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT LOW INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-45, DTC P0122 THROTTLE/PEDAL POSITION SEN-SOR/SWITCH "A" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:

#### THOODEL STIMIT TO

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



	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.  1) Turn the ignition switch to ON.  2) Read the data of main throttle sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact in con- nector between ECM and elec- tronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Disconnect the connectors from the electronic throttle control control.  4) Measure the resistance between ECM connector and electronic throttle control connector.  Connector & terminal  (B136) No. 16 — (E57) No. 5:  (B136) No. 18 — (E57) No. 6:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B136) No. 18 — Chassis ground:  (B136) No. 16 — Chassis ground:	Is the resistance more than 1 M $\Omega$ ?	Go to step <b>5.</b>	Repair the chassis short circuit of harness.
5	CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL.  1) Connect the ECM connector.  2) Turn the ignition switch to ON.  3) Measure the voltage between electronic throttle control connector and engine ground.  Connector & terminal  (E57) No. 5 (+) — Engine ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>
6	CHECK SHORT CIRCUIT INSIDE THE ECM.  1) Turn the ignition switch to OFF.  2) Measure the resistance between electronic throttle control connector and engine ground.  Connector & terminal  (E57) No. 6 — Engine ground:	Is the resistance more than 10 $\Omega$ ?	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>

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

ENGINE (DIAGNOSTICS)

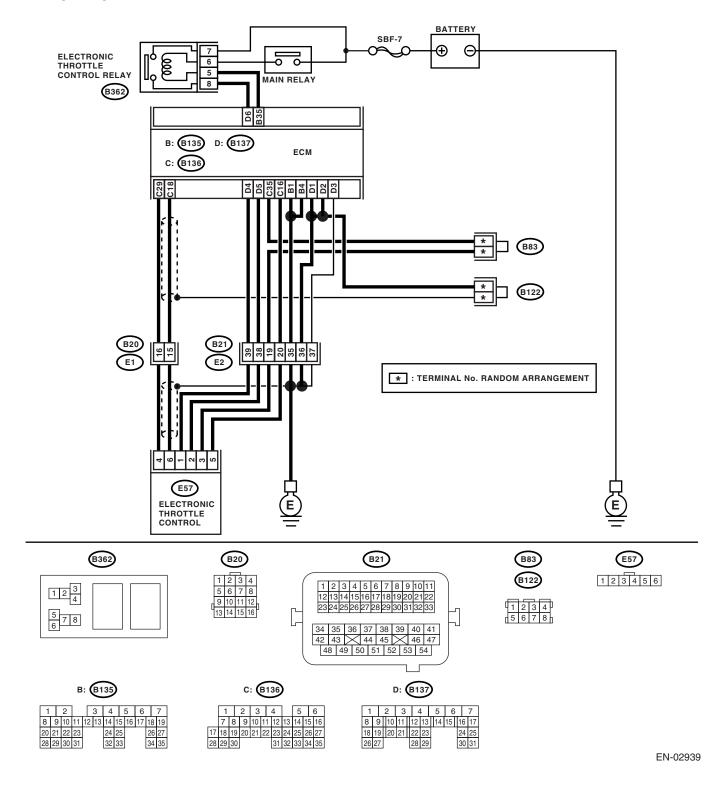
## T: DTC P0123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT HIGH INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-47, DTC P0123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

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



	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.  1) Turn the ignition switch to ON.  2) Read the data of main throttle sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage less than 4.63 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact in con- nector between ECM and elec- tronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Disconnect the connectors from the electronic throttle control control.  4) Measure the resistance between ECM connector and electronic throttle control connector.  Connector & terminal  (B136) No. 18 — (E57) No. 6:  (B136) No. 35 — (E57) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to ON.  2) Measure the voltage between electronic throttle control connector and engine ground.  Connector & terminal  (E57) No. 6 (+) — Engine ground (-):  3) Check the voltage change by shaking the harness and connector of ECM and engine harness connector while monitoring the value with voltage meter.	Is the voltage less than 10 V?	Go to step 5.	Repair the battery short circuit in harness between ECM connector and electronic throttle control connector.
5	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance between ECM connectors.  Connector & terminal  (B136) No. 18 — (B136) No. 16:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact in harness. Repair the electronic throttle control.	Repair the short circuit to sensor power supply.

## U: DTC P0125 INSUFFICIENT ENGINE COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL

#### **DTC DETECTING CONDITION:**

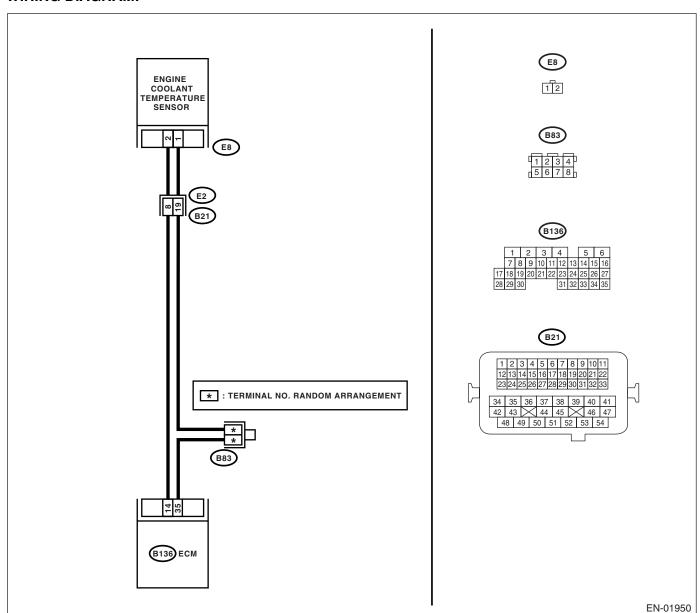
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-49, DTC P0125 INSUFFICIENT ENGINE COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Engine does not return to idling.

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0125.</ref.>	
2	CHECK ENGINE COOLING SYSTEM.  NOTE: Check the following items.  Thermostat open stuck  Coolant level  Coolant freeze  Tire diameter	Is there any fault in engine cooling system?	Replace the ther- mostat. <ref. to<br="">CO(H4SO)-17, Thermostat.&gt;</ref.>	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H4DOTC)-22, Engine Coolant Temperature Sen- sor.&gt;</ref.>

## V: DTC P0126 INSUFFICIENT ENGINE COOLANT TEMPERATURE FOR STABLE OPERATION

#### DTC DETECTING CONDITION:

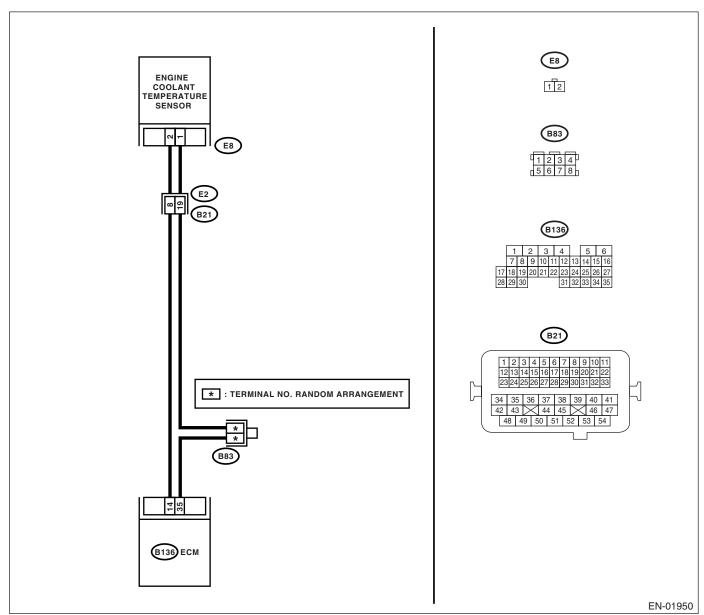
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-51, DTC P0126 INSUFFICIENT ENGINE COOLANT TEMPERATURE FOR STABLE OPERATION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK ENGINE COOLANT TEMPERATURE SENSOR.  Measure the resistance between engine coolant temperature sensor terminals when engine coolant is cold and after warmed-up.  Terminals  No. 1 — No. 2:	Is the resistance of engine coolant temperature sensor different between when engine coolant is cold and after warmed-up?	Contact your SOA Service Center.	Replace the engine coolant temperature sensor. <ref. coolant="" engine="" fu(h4dotc)-22,="" sensor.="" temperature="" to=""></ref.>

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

ENĠINE (ĎIAGNOSTICS)

## W: DTC P0128 COOLANT THERMOSTAT (ENGINE COOLANT TEMPERATURE BELOW THERMOSTAT REGULATING TEMPERATURE)

#### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-53, DTC P0128 COOLANT THERMOSTAT (ENGINE COOLANT TEMPERATURE BELOW THERMOSTAT REGULATING TEMPERATURE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Thermostat remains open.

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

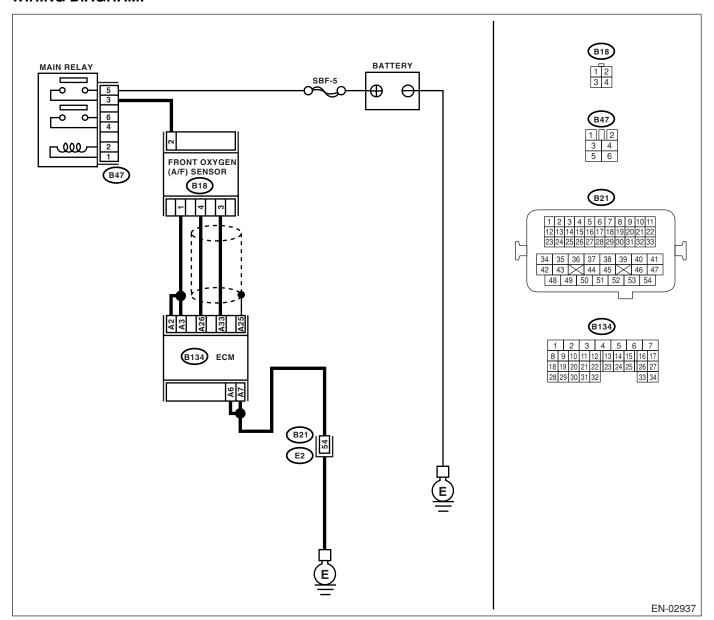
	Step	Check	Yes	No
1	CHECK VEHICLE CONDITION.	Was the vehicle driven or idled with the engine partially submerged under water?	In this case, it is not necessary to inspect DTC P0128.	Go to step 2.
2	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Codes (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 3.
3	CHECK ENGINE COOLANT.	Are coolant level and mixture ratio of cooling water to anti-freeze solution correct?	Go to step 4.	Replace the engine coolant. <ref. co(h4so)-12,="" coolant.="" engine="" replacement,="" to=""></ref.>
4	CHECK RADIATOR FAN.  1) Start the engine.  2) Check radiator fan operation.	Does the radiator fan continuously rotate for more than 3 minutes during idling?	Repair radiator fan circuit. <ref. and="" co(h4so)-23,="" fan="" main="" motor.="" radiator="" to=""> and <ref. and="" co(h4so)-25,="" fan="" motor.="" radiator="" sub="" to="">.</ref.></ref.>	Replace the ther- mostat. <ref. to<br="">CO(H4SO)-17, Thermostat.&gt;</ref.>

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

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-55, DTC P0131 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



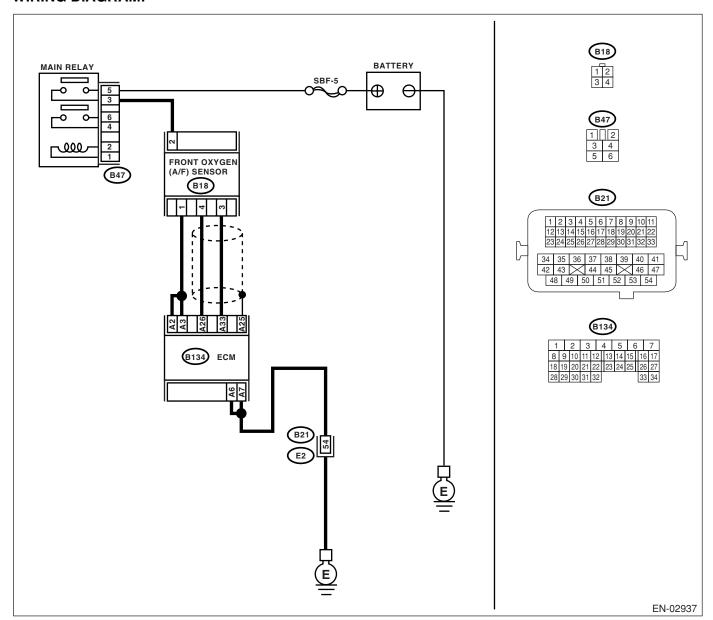
	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM connector and chassis ground.  Connector & terminal  (B134) No. 26 — Chassis ground:  (B134) No. 33 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 2.	Repair the 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 CONNECTOR.  Measure the resistance of harness between ECM connectors.  Connector & terminal (B134) No. 26 — (B134) No. 33:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>	Repair harness short in harness between ECM and front oxygen (A/F) sensor connector.

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

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-57, DTC P0132 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



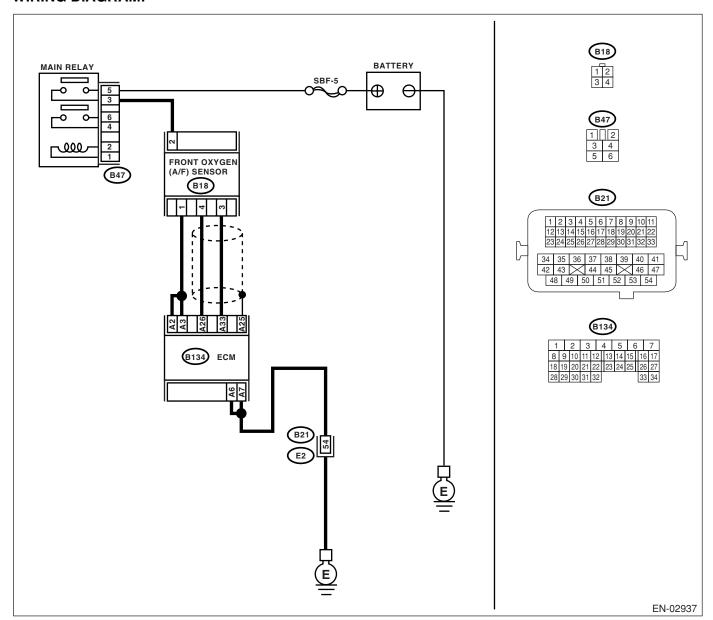
Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  1) Turn the ignition switch to ON. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground.  Connector & terminal (B134) No. 26 (+) — Chassis ground (-): (B134) No. 33 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>	Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-59, DTC P0133 O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0133.</ref.>	
2	CHECK EXHAUST SYSTEM.  NOTE: Check the following items. • Loose installation of front portion of exhaust pipe onto cylinder heads • Loose connection between front exhaust pipe and front catalytic converter • Damage of exhaust pipe resulting in a hole	Is there any fault in exhaust system?	Repair the exhaust system.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>

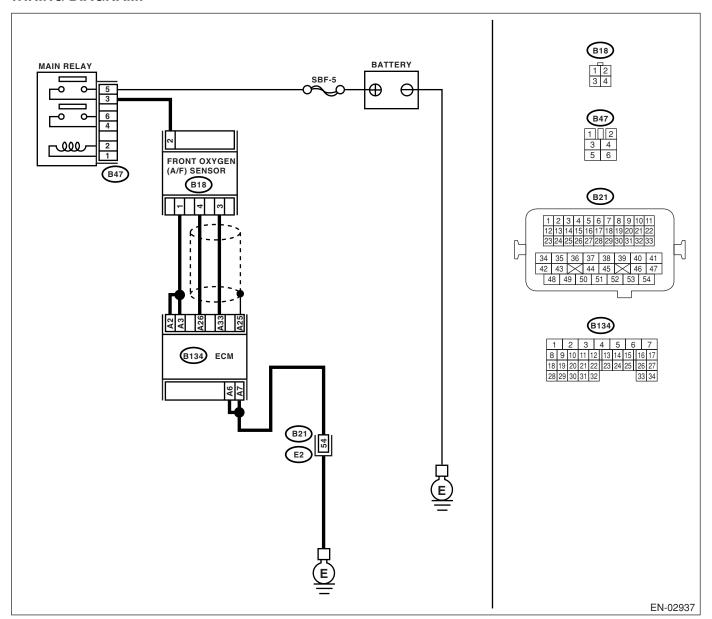
### AA:DTC P0134 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SEN-SOR 1)

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-62, DTC P0134 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



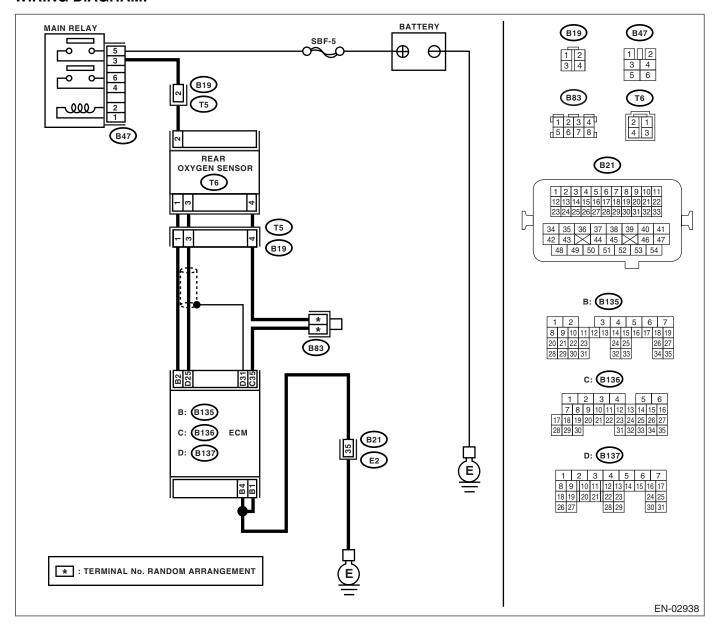
Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.  Connector & terminal (B134) No. 26 — (B18) No. 4: (B134) No. 33 — (B18) No. 3:	Is the resistance less than 1 Ω?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-64, DTC P0137 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	
2	CHECK REAR OXYGEN SENSOR DATA.  1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for 2 minutes.  2) Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool  For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	Does the value fluctuate?	Go to step 6.	Go to step 3.
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-37, Rear Oxygen Sen- sor.&gt;</ref.>
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM and rear oxygen sensor.  3) Measure the resistance in harness between ECM and rear oxygen sensor connector.  Connector & terminal (B137) No. 25 — (T6) No. 3:	Is the resistance more than 3 $\Omega$ ?	Repair the open circuit in harness between ECM and rear oxygen sensor connector.	Go to step 5.
5	CHECK HARNESS BETWEEN REAR OXYGEN SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from rear oxygen sensor.  3) Turn the ignition switch to ON.  4) Measure the voltage between rear oxygen sensor harness connector and chassis ground.  Connector & terminal  (T6) No. 3 (+) — Chassis ground (-):	Is the voltage more than 0.2 V?	oxygen sensor. <ref. to<br="">FU(H4DOTC)-37,</ref.>	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between rear oxygen sensor and ECM connector  Poor contact in rear oxygen sensor connector  Poor contact in ECM connector

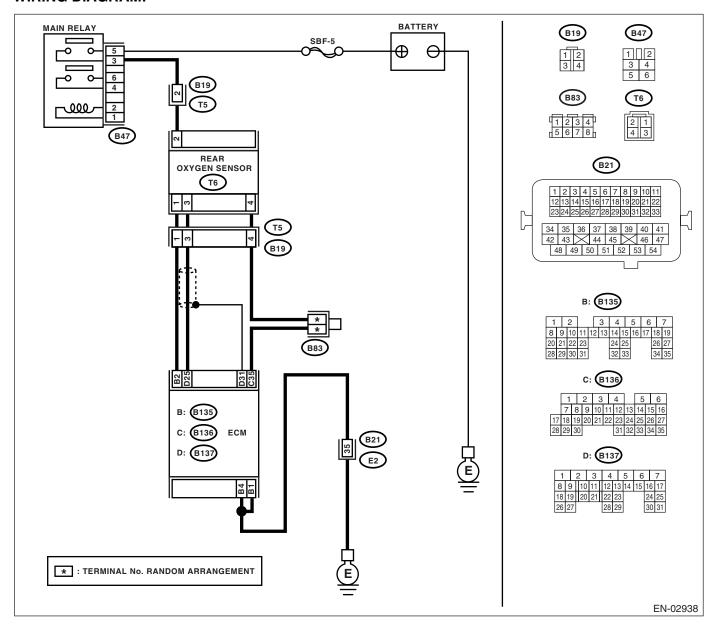
	Step	Check	Yes	No
6	CHECK EXHAUST SYSTEM. Check exhaust system parts.  NOTE: Check the following items: • Loose part of exhaust system and incomplete installation • Damage (crack, hole etc.) of parts • Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-37, Rear Oxygen Sen- sor.&gt;</ref.>
	sensor			

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-66, DTC P0138 O2 SENSOR CIRCUIT HIGH VOLT-AGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK REAR OXYGEN SENSOR DATA.  1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes.  2) Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool  For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	Does the value fluctuate?	Go to step 6.	Go to step 3.
3	CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-37, Rear Oxygen Sen- sor.&gt;</ref.>
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM and rear oxygen sensor.  3) Measure the resistance in harness between ECM and rear oxygen sensor connector.  Connector & terminal  (B137) No. 25 — (T6) No. 3:	Is the resistance more than 3 $\Omega$ ?	Repair the open circuit in harness between ECM and rear oxygen sensor connector.	Go to step 5.
5	CHECK HARNESS BETWEEN REAR OXY-GEN SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from rear oxygen sensor.  3) Turn the ignition switch to ON.  4) Measure the voltage between rear oxygen sensor harness connector and chassis ground.  Connector & terminal  (T6) No. 3 (+) — Chassis ground (-):	Is the voltage more than 0.2 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-37, Rear Oxygen Sen- sor.&gt;</ref.>	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between rear oxygen sensor and ECM connector  Poor contact in rear oxygen sensor connector  Poor contact in ECM connector

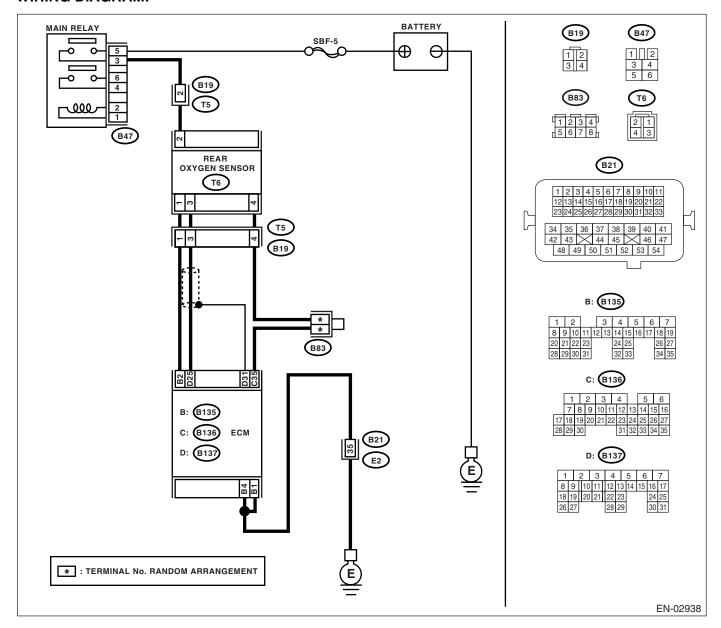
	Step	Check	Yes	No
N (	CHECK EXHAUST SYSTEM. Check exhaust system parts. IOTE: Check the following items: Loose part of exhaust system and incomplete installation Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between ront oxygen (A/F) sensor and rear oxygen	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-37, Rear Oxygen Sen- sor.&gt;</ref.>

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-68, DTC P0139 O2 SENSOR CIRCUIT SLOW RE-SPONSE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



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

ENĠINE (ĎIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0139.</ref.>	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connectors from ECM and rear oxygen sensor.  3) Measure the resistance of harness between ECM and rear oxygen sensor connector.  Connector & terminal  (B137) No. 25 — (T6) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between rear oxygen sensor and ECM connector
3	CHECK HARNESS BETWEEN REAR OXY-GEN SENSOR AND ECM CONNECTOR.  Measure the resistance between rear oxygen sensor harness connector and chassis ground.  Connector & terminal  (T6) No. 3 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 4.	Repair short circuit to ground in har- ness between rear oxygen sensor and ECM connector.
4	CHECK REAR OXYGEN SENSOR DATA.  Measure the resistance between connector terminals of rear oxygen sensor.  terminals  No. 3 — No. 4:	Is the resistance less than 1 $\Omega$ ?	Replace the rear oxygen sensor. <ref. to<br="">FU(H4DOTC)-37, Rear Oxygen Sen- sor.&gt;</ref.>	Repair connector. Poor contact in rear oxygen sen- sor connector.

### **AE:DTC P0171 SYSTEM TOO LEAN (BANK 1)**

#### NOTE:

For diagnostic procedure, refer to DTC P0172. <Ref. to EN(H4DOTC)(diag)-140, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

ENGINE (DIAGNOSTICS)

### **AF:DTC P0172 SYSTEM TOO RICH (BANK 1)**

#### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-76, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, 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 hoses on air intake system?	Repair air intake system.	Go to step 3.
3	CHECK FUEL PRESSURE.  Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel.  Release the fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for 5 more seconds. (4) Turn the ignition switch to OFF. Connect the connector to fuel pump relay. Disconnect the fuel delivery hose from fuel filter, and connect the fuel pressure gauge. Install the fuel filler cap. Start the engine and idle while gear position is neutral. Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.  Warning: Release fuel pressure before removing the fuel pressure gauge.  NOTE: If fuel pressure does not increase, squeeze the fuel return hose 2 to 3 times, then measure fuel pressure again.		Go to step 4.	Repair the following items. Fuel pressure is too high:  • Clogged fuel return line or bent hose Fuel pressure is too low:  • Improper fuel pump discharge • Clogged fuel supply line

	Step	Check	Yes	No
4	CHECK FUEL PRESSURE.	Is measured value 206 — 235	Go to step 5.	Repair the follow-
	After connecting the pressure regulator vac- uum hose, measure fuel pressure.	kPa (2.1 — 2.4 kg/cm <sup>2</sup> , 30 — 34 psi)?		ing items. Fuel pressure is
	Warning:	0 1 poi).		too high:
	Release fuel pressure before removing the			<ul> <li>Faulty pressure regulator</li> </ul>
	fuel pressure gauge. NOTE:			Clogged fuel
	<ul> <li>If fuel pressure does not increase, squeeze</li> </ul>			return line or
	fuel return hose 2 to 3 times, then measure			bent hose
	<ul><li>fuel pressure again.</li><li>If out of specification as measured at this</li></ul>			Fuel pressure is too low:
	step, check or replace pressure regulator and			<ul> <li>Faulty pres-</li> </ul>
	pressure regulator vacuum hose.			sure regulator
				<ul> <li>Improper fuel pump discharge</li> </ul>
				Clogged fuel
				supply line
5	CHECK ENGINE COOLANT TEMPERATURE SENSOR.	Is engine coolant temperature more than 60°C (140°F)?	Go to step 6.	Replace the
	1) Start the engine and warm-up completely.			engine coolant temperature sen-
	2) Read the data of engine coolant tempera-			sor. <ref. td="" to<=""></ref.>
	ture sensor signal using Subaru Select Monitor			FU(H4DOTC)-22,
	or OBD-II general scan tool. NOTE:			Engine Coolant Temperature Sen-
	Subaru Select Monitor			sor.>
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. td="" to<=""><td></td><td></td><td></td></ref.>			
	EN(H4DOTC)(diag)-27, Subaru Select Moni-			
	tor.>			
	<ul> <li>OBD-II general scan tool</li> <li>For detailed operation procedure, refer to the</li> </ul>			
	OBD-II general scan tool instruction manual.			
6	CHECK MASS AIR FLOW AND INTAKE AIR	Is the measured value within	Go to step 7.	Replace the mass
	TEMPERATURE SENSOR.	the following? Ignition ON: 73.3 — 106.6 kPa (550 — 800		air flow and intake
	1) Start and warm-up the engine until engine coolant temperature is greater than 60°C	mmHg, 21.65 — 31.50 inHg)		air temperature sensor. <ref. td="" to<=""></ref.>
	(140°F).	Idling: 24.0 — 41.3 kPa (180 —		FU(H4DOTC)-27,
	2) Place the shift lever in neutral position.	310 mmHg, 7.09 — 12.20		Mass Air Flow and
	<ul><li>3) Turn the A/C switch to OFF.</li><li>4) Turn all accessory switches to OFF.</li></ul>	inHg)		Intake Air Temper- ature Sensor.>
	5) Read the data of mass air flow and intake			diaro concon.
	air temperature sensor signal using Subaru			
	Select Monitor or OBD-II general scan tool.			
	NOTE: • Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. td="" to<=""><td></td><td></td><td></td></ref.>			
	EN(H4DOTC)(diag)-27, Subaru Select Moni-			
	tor.>			
	OBD-II general scan tool  Toy detailed approximation reproducts the			
	For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.			

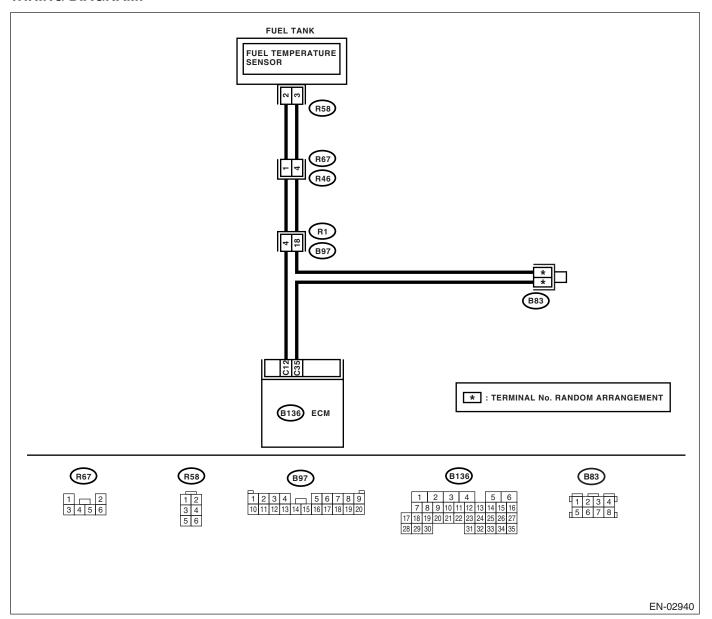
### AG:DTC P0181 FUEL TEMPERATURE SENSOR "A" CIRCUIT RANGE/PERFOR-MANCE

#### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-78, DTC P0181 FUEL TEMPERATURE SENSOR "A" CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	"List of Diagnostic Trouble Codes	EC(H4DOTC)-9, Fuel Temperature Sensor.>

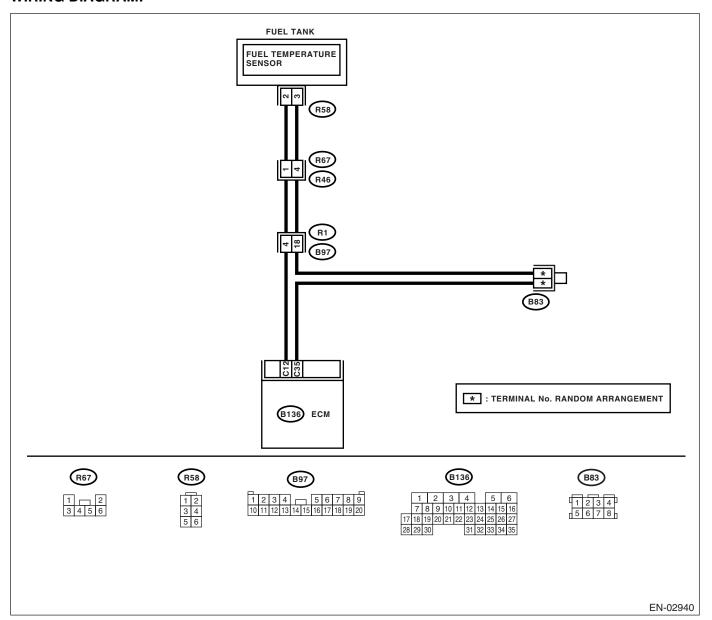
ENĠINE (ĎIAGNOSTICS)

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

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-81, DTC P0182 FUEL TEMPERATURE SENSOR "A" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



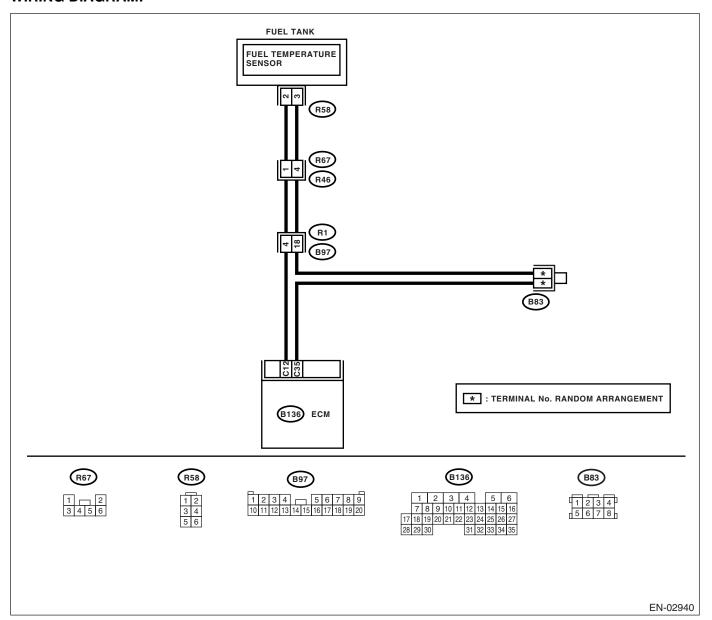
	Step	Check	Yes	No
1	CHECK CURRENT DATA.  1) Start the engine. 2) Read the data of fuel temperature sensor signal using Subaru Select Monitor.  NOTE: • Subaru Select Monitor  For detailed operation procedures, refer to  "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the temperature more than 150°C (302°F)?	Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment.
2	CHECK CURRENT DATA.  1) Turn the ignition switch to OFF.  2) Remove the access hole lid.  3) Disconnect the connector from fuel pump.  4) Turn the ignition switch to ON.  5) Read the data of fuel temperature sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedures, refer to  "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the temperature less than – 40°C (–40°F)?	Replace the fuel temperature sen- sor. <ref. to<br="">EC(H4DOTC)-9, Fuel Temperature Sensor.&gt;</ref.>	Repair short circuit to ground in har- ness between fuel pump and ECM connector.

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

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-83, DTC P0183 FUEL TEMPERATURE SENSOR "A" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.  1) Start the engine.  2) Read the data of fuel temperature sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the temperature less than – 40°C (–40°F)?	Go to step 2.	Repair poor contact.  NOTE: In this case, repair the following: Poor contact in fuel pump connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in joint connector
2	CHECK HARNESS BETWEEN FUEL TEM-PERATURE SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Remove the access hole lid.  3) Disconnect the connector from fuel pump.  4) Measure the voltage between fuel pump connector and chassis ground.  Connector & terminal  (R58) No. 2 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in har- ness between ECM and fuel pump connector.	Go to step 3.
3	CHECK HARNESS BETWEEN FUEL TEM-PERATURE SENSOR AND ECM CONNEC-TOR.  1) Turn the ignition switch to ON. 2) Measure the voltage between fuel pump connector and chassis ground.  Connector & terminal  (R58) No. 2 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in har- ness between ECM and fuel pump connector.	Go to step 4.
4	CHECK HARNESS BETWEEN FUEL TEM-PERATURE SENSOR AND ECM CONNECTOR.  Measure the voltage between fuel pump connector and chassis ground.  Connector & terminal  (R58) No. 2 (+) — Chassis 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 fuel pump connector  Poor contact in fuel pump connector  Poor contact in ECM connector  Poor contact in ECM connector

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

ENĜINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between fuel pump connector and ECM.  Connector & terminal  (R58) No. 3 — (B136) No. 35:	Is the resistance less than 1 $\Omega$ ?	Replace the fuel temperature sensor. <ref. ec(h4dotc)-9,="" fuel="" sensor.="" temperature="" to=""></ref.>	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and fuel pump connector Poor contact in fuel pump connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in coupling connector

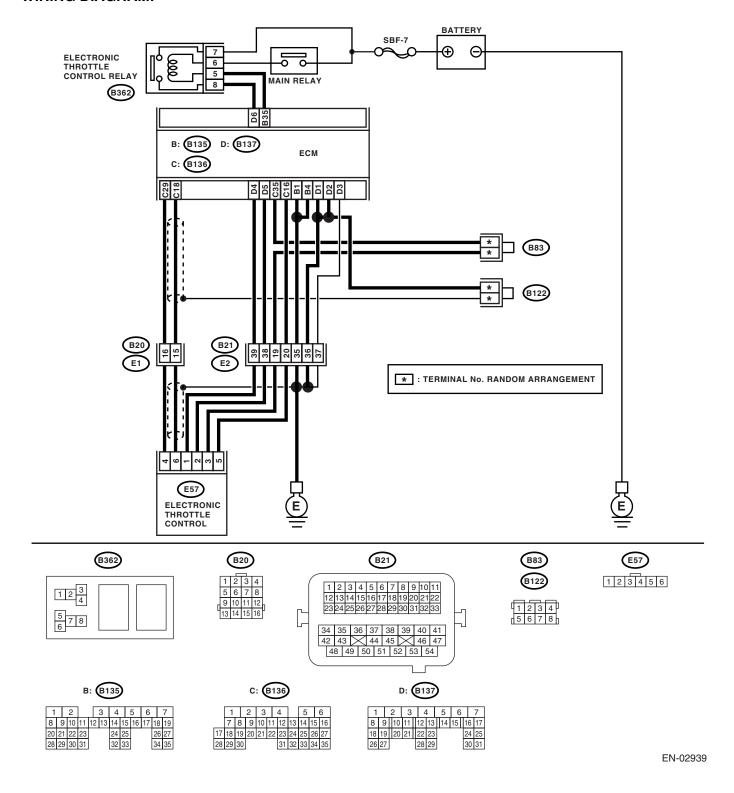
# AJ:DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT LOW INPUT

## **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-85, DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

# TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine stalls.



	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.  1) Turn the ignition switch to ON.  2) Read the data of sub throttle sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage more than 0.8 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT.  Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Disconnect the connectors from the electronic throttle control control.  4) Measure the resistance between ECM connector and electronic throttle control connector.  Connector & terminal  (B136) No. 16 — (E57) No. 5:  (B136) No. 29 — (E57) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B136) No. 29 — Chassis ground:  (B136) No. 16 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the chassis short circuit of harness.
5	CHECK SENSOR POWER SUPPLY.  1) Connect the ECM connector.  2) Turn the ignition switch to ON.  3) Measure the voltage between electronic throttle control connector and engine ground.  Connector & terminal  (E57) No. 5 (+) — Engine ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>
6	CHECK SHORT CIRCUIT INSIDE THE ECM.  1) Turn the ignition switch to OFF.  2) Measure the resistance between electronic throttle control control connector and engine ground.  Connector & terminal  (E57) No. 4 — Engine ground:	Is the resistance more than 10 $\Omega$ ?	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>

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

ENGINE (DIAGNOSTICS)

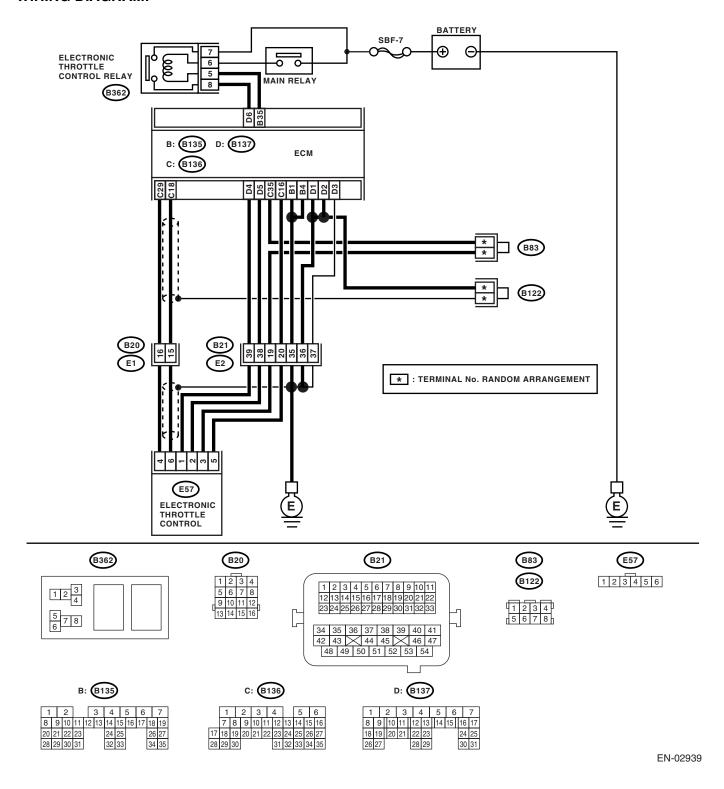
# AK:DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT HIGH INPUT

## **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-87, DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

# **TROUBLE SYMPTOM:**

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



	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.  1) Turn the ignition switch to ON.  2) Read the data of sub throttle sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage less than 4.73 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT.  Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact in con- nector between ECM and elec- tronic throttle control?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Disconnect the connectors from the electronic throttle control control.  4) Measure the resistance between ECM connector and electronic throttle control connector.  Connector & terminal  (B136) No. 35 — (E57) No. 3:  (B136) No. 29 — (E57) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Connect the ECM connector.  2) Turn the ignition switch to ON.  3) Measure the voltage between electronic throttle control connector and engine ground.  Connector & terminal  (E57) No. 4 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 5.	Repair the battery short circuit in har- ness between ECM connector and electronic throttle control connector.
5	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance between connector terminals.  Connector & terminal  (B136) No. 29 — (B136) No. 16:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact. Repair the electronic throttle control.	Sensor power sup- ply circuit may be shorted.

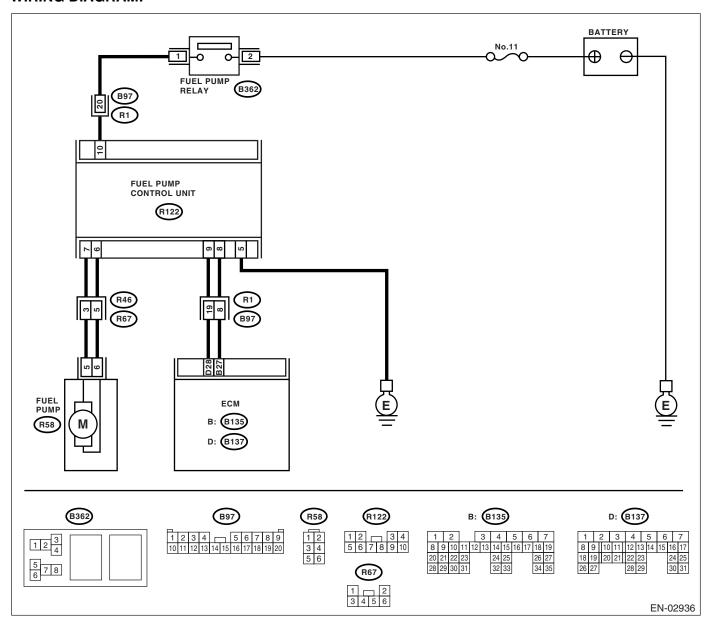
## AL:DTC P0230 FUEL PUMP PRIMARY CIRCUIT

## **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-89, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



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

	Step	Check	Yes	No
5	CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance in harness between fuel pump control unit and ECM connector.  Connector & terminal  (R122) No. 9 — (B137) No. 28:  (R122) No. 8 — (B135) No. 27:	Is the resistance less than 1 $\Omega$ ?	Go to step 6.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit between fuel pump control unit and ECM Poor contact in fuel pump control unit and ECM connector
6	CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND ECM CONNECTOR.  Measure the resistance of harness between fuel pump control unit and chassis ground.  Connector & terminal  (R122) No. 9 — Chassis ground:  (R122) No. 8 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 7.	Repair the ground short circuit between fuel pump control unit and ECM.
7	CHECK POOR CONTACT.  Check poor contact in ECM and fuel pump control unit connector.	Is there poor contact in ECM and fuel pump control unit connector?	Repair the poor contact in ECM and fuel pump control unit.	Go to step 8.
8	CHECK EXPERIENCE OF RUNNING OUT OF FUEL.	Did the vehicle experience run- ning out of fuel?	Finish the diagnosis.  NOTE: DTC record may be conducted as a result of fuel pump idling while running out of fuel.	Fuel Pump Control Unit.>

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

## **DTC DETECTING CONDITION:**

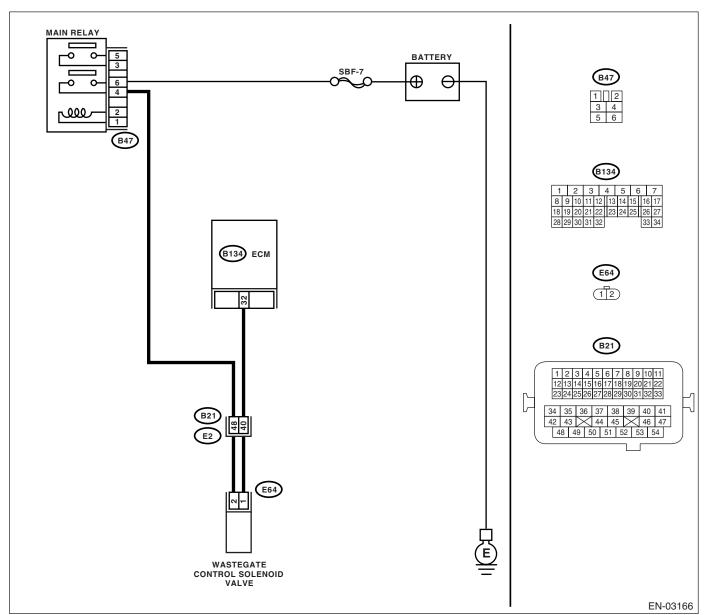
- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-91, DTC P0244 TURBO/SUPER CHARGER WASTE-GATE SOLENOID "A" RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

## TROUBLE SYMPTOM:

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	"List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4DOTC)(diag</ref.>	trol Solenoid Valve.>

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

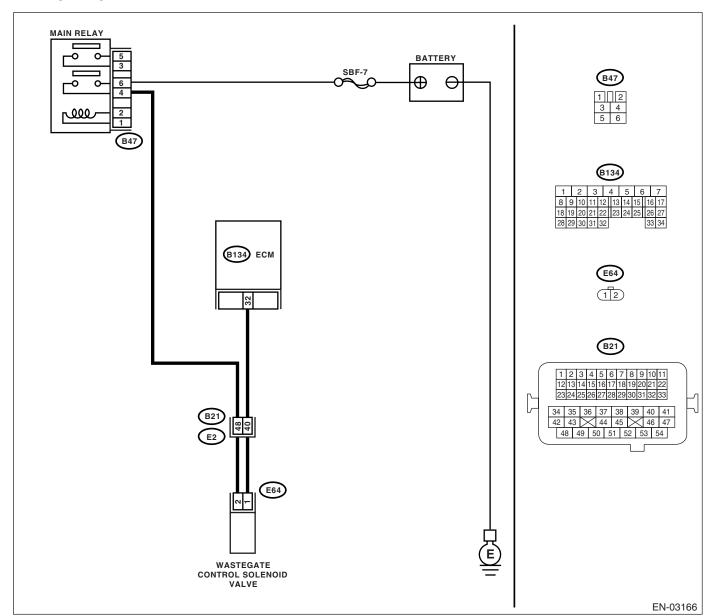
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-93, DTC P0245 TURBO/SUPER CHARGER WASTE-GATE SOLENOID "A" LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Erroneous idling

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 32 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time.	Go to step 2.
2	CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connectors from wastegate control solenoid valve and ECM.  3) Measure the resistance in harness between wastegate control solenoid valve connector and engine ground.  Connector & terminal  (E64) No. 1 — Engine ground:	Is the resistance more than 1 $M\Omega$ ?	Go to step 3.	Repair the ground short circuit in har- ness between ECM and waste- gate control sole- noid valve connector.
3	CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.  Measure the resistance of harness between wastegate control solenoid valve of harness connector and ECM.  Connector & terminal (B134) No. 32 — (E64) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit in harness between ECM and wastegate control solenoid valve connector.  NOTE: In this case, repair the following:  • Open circuit in harness between ECM and wastegate control solenoid valve connector
4	CHECK WASTEGATE CONTROL SOLE-NOID VALVE.  1) Remove the wastegate control solenoid valve.  2) Measure the resistance between wastegate control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance 30 — 34 $\Omega$ ?	Go to step 5.	Replace the wastegate control solenoid valve. <ref. control="" fu(h4dotc)-34,="" solenoid="" to="" valve.="" wastegate=""></ref.>
5	CHECK POWER SUPPLY TO WASTEGATE CONTROL SOLENOID VALVE.  1) Turn the ignition switch to ON.  2) Measure the voltage between wastegate control solenoid valve and engine ground.  Connector & terminal  (E64) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 6.	Repair the open circuit in harness between main relay and wastegate control solenoid valve connector.
6	CHECK POOR CONTACT.  Check poor contact in wastegate control solenoid valve connector.	Is there poor contact in waste- gate control solenoid valve connector?	Repair the poor contact in wastegate control solenoid valve connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

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

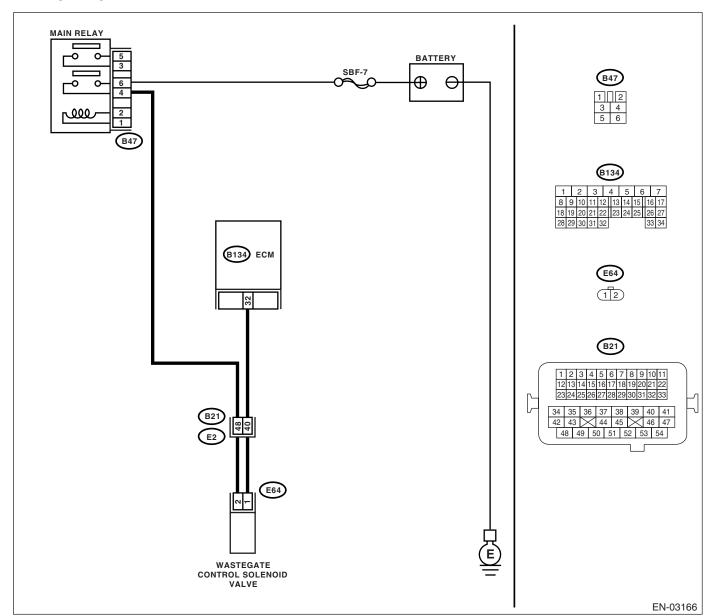
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-95, DTC P0246 TURBO/SUPER CHARGER WASTE-GATE SOLENOID "A" HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Erroneous idling

### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 32 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 3.	Go to step 2.
2	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>
3	CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from wastegate control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 32 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and wastegate control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Go to step 4.
4	CHECK WASTEGATE CONTROL SOLE-NOID VALVE.  1) Turn the ignition switch to OFF.  2) Measure the resistance between wastegate control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance less than 1 $\Omega$ ?	Replace the wastegate control solenoid valve and ECM. <ref. control="" fu(h4dotc)-34,="" solenoid="" to="" valve.="" wastegate=""> <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.></ref.>	Go to step 5.
5	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is the poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

# Diagnostic Procedure with Diagnostic Trouble Code (DTC)

**ENGINE (DIAGNOSTICS)** 

### AP: DTC P0301 CYLINDER 1 MISFIRE DETECTED

#### NOTE

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-164, DTC P0304 CYLIN-DER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## AQ:DTC P0302 CYLINDER 2 MISFIRE DETECTED

#### NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-164, DTC P0304 CYLIN-DER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## AR:DTC P0303 CYLINDER 3 MISFIRE DETECTED

#### NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-164, DTC P0304 CYLIN-DER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

# **AS:DTC P0304 CYLINDER 4 MISFIRE DETECTED**

#### DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- Detect as soon as malfunction occurs. (A misfire which could damage catalyst occurs.)
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-102, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

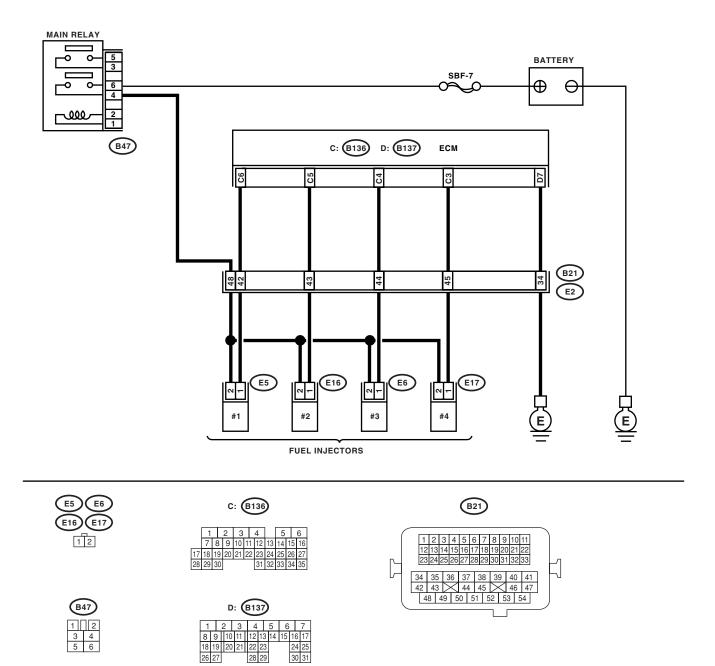
#### TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- · Rough driving

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

### WIRING DIAGRAM:



EN-03164

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM connector and chassis ground on faulty cylinders.  Connector & terminal  #1 (B136) No. 6 (+) — Chassis ground (-):  #2 (B136) No. 5 (+) — Chassis ground (-):  #3 (B136) No. 4 (+) — Chassis ground (-):  #4 (B136) No. 3 (+) — Chassis ground (-):		Go to step 7.	Go to step 3.
3	CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from fuel injector on faulty cylinders.  3) Disconnect the connector from ECM.  4) Measure the resistance between ECM connector and engine ground on faulty cylinders.  Connector & terminal  #1 (E5) No. 1 — Engine ground:  #2 (E16) No. 1 — Engine ground:  #3 (E6) No. 1 — Engine ground:  #4 (E17) No. 1 — Engine ground:	Is the resistance more than 1 $M\Omega$ ?	Go to step 4.	Repair the ground short circuit in har- ness between fuel injector and ECM connector.
4	CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.  Measure the resistance of harness connector between ECM connector and fuel injector on faulty cylinders.  Connector & terminal  #1 (B136) No. 6 — (E5) No. 1:  #2 (B136) No. 5 — (E16) No. 1:  #3 (B136) No. 4 — (E6) No. 1:  #4 (B136) No. 3 — (E17) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and fuel injector connector  Poor contact in coupling connector
5	CHECK FUEL INJECTOR.  Measure the resistance between fuel injector terminals on faulty cylinder.  Terminals  No. 1 — No. 2:	Is the resistance 5 — 20 $\Omega$ ?	Go to step 6.	Replace the faulty fuel injector. <ref. to FU(H4DOTC)- 29, Fuel Injector.&gt;</ref. 

	Step	Check	Yes	No
6	CHECK POWER SUPPLY LINE.  1) Turn the ignition switch to ON.  2) Measure the voltage between fuel injector and engine ground on faulty cylinders.  Connector & terminal  #1 (E5) No. 2 (+) — Engine ground (-):  #2 (E16) No. 2 (+) — Engine ground (-):  #3 (E6) No. 2 (+) — Engine ground (-):  #4 (E17) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Repair the poor contact in all connectors in fuel injector circuit.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between main relay and fuel injector connector on faulty cylinders  Poor contact in coupling connector  Poor contact in main relay connector  Poor contact in fuel injector connector on faulty cylinders
7	CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from fuel injector on faulty cylinder.  3) Turn the ignition switch to ON.  4) Measure the voltage between ECM connector and chassis ground on faulty cylinders.  Connector & terminal  #1 (B136) No. 6 (+) — Chassis ground (-):  #2 (B136) No. 5 (+) — Chassis ground (-):  #3 (B136) No. 4 (+) — Chassis ground (-):  #4 (B136) No. 3 (+) — Chassis ground (-):		Repair the battery short circuit in harness between ECM and fuel injector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Go to step 8.
8	CHECK FUEL INJECTOR.  1) Turn the ignition switch to OFF.  2) Measure the resistance between fuel injector terminals on faulty cylinder.  Terminals  No. 1 — No. 2:	Is the resistance 5 — 20 $\Omega$ ?	Go to step 9.	Replace the faulty fuel injector <ref. to FU(H4DOTC)- 29, Fuel Injector.&gt; and ECM <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.></ref. 
9	CHECK INSTALLATION OF CAMSHAFT PO- SITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is the camshaft position sensor or crankshaft position sensor loosely installed?	Tighten the cam- shaft position sen- sor or crankshaft position sensor.	Go to step 10.
10	CHECK CRANK SPROCKET. Remove the timing belt cover.	Is the crank sprocket rusted or does it have broken teeth?	Replace the crank sprocket. <ref. to<br="">ME(H4DOTC)-50, Crank Sprocket.&gt;</ref.>	Go to step 11.
11	CHECK INSTALLATION CONDITION OF TIMING BELT.  Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block.	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <ref. belt.="" me(h4dotc)-41,="" timing="" to=""></ref.>	Go to step 12.

	Step	Check	Yes	No
12	CHECK FUEL LEVEL.	Is the fuel meter indication higher than the "Lower" level?	Go to step 13.	Replenish the fuel so fuel meter indication is higher than the "Lower" level. After replenishing fuel; Go to step 13.
13	CHECK STATUS OF MALFUNCTION INDI- CATOR LIGHT.  1) Clear the memory using Subaru Select Monitor. <ref. clear="" en(h4dotc)(diag)-43,="" memory<br="" to="">Mode.&gt;  2) Start the engine, and drive the vehicle more than 10 minutes.</ref.>	Is the malfunction indicator light coming on or blinking?	Go to step 15.	Go to step 14.
14	CHECK CAUSE OF MISFIRE DIAGNOSED.	Was the cause of misfire diagnosed when the engine is running?	Finish the diagnostics operation, if the engine has no abnormality.	Repair the poor contact.  NOTE: In this case, repair the following: Poor contact in ignition coil connector Poor contact in fuel injector connector on faulty cylinders Poor contact in ECM connector Poor contact in coupling connector
15	CHECK AIR INTAKE SYSTEM.	Is there any fault in air intake system?	Repair the air intake system.  NOTE: Check the following items:  • Are there air leaks or air suction caused by loose or dislocated nuts and bolts?  • Are there cracks or any disconnection of hoses?	Go to step 16.
16	CHECK CYLINDER.	Is there any fault in that cylinder?	Repair or replace the faulty parts. NOTE: Check the follow- ing items. • Spark plug • Fuel injector • Compression pressure	Go to DTC P0171 and P0172. <ref. to EN(H4DOTC)(diag )-139, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).&gt;</ref. 

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

## **DTC DETECTING CONDITION:**

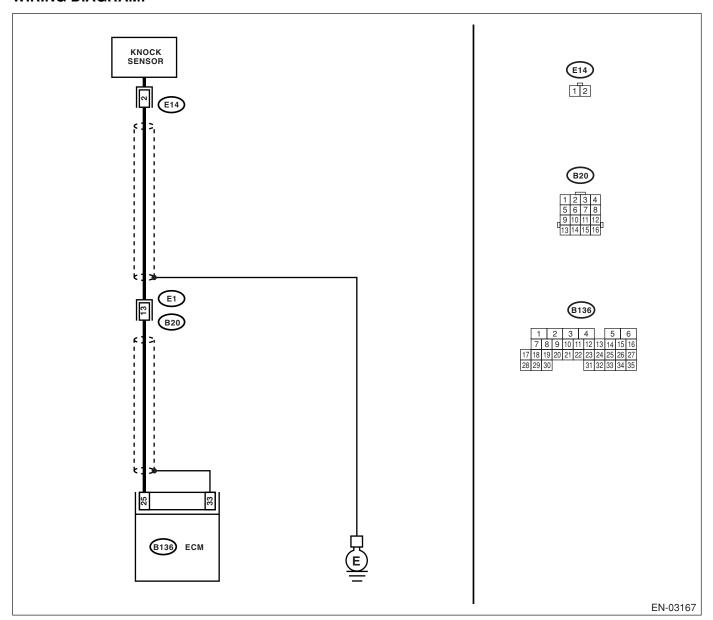
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-103, DTC P0327 KNOCK SENSOR 1 CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

# **TROUBLE SYMPTOM:**

- Poor driving performance
- · Knocking occurs.

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM harness connector and chassis ground.  Connector & terminal  (B136) No. 25 — Chassis ground:	Is the resistance more than 700 k $\Omega$ ?	Go to step 2.	Repair the harness and connector.  NOTE: In this case, repair the followingin this case, repair the following:  • Open circuit in harness between knock sensor and ECM connector  • Poor contact in knock sensor connector  • Poor contact in coupling connector
2	CHECK KNOCK SENSOR.  1) Disconnect the connector from knock sensor.  2) Measure the resistance between knock sensor connector terminal and engine ground.  Terminals  No. 2 — Engine ground:	Is the resistance more than 700 k $\Omega$ ?	Go to step 3.	Repair the harness and connector.  NOTE: In this case, repair the followingin this case, repair the following:  Poor contact in knock sensor connector  Poor contact in coupling connector
3	CHECK CONDITION OF KNOCK SENSOR INSTALLATION.	Is the knock sensor installation bolt tightened securely?	Replace the knock sensor. <ref. to<br="">FU(H4DOTC)-25, Knock Sensor.&gt;</ref.>	Tighten knock sensor installation bolt securely.

**ENĞINE (ĎIAGNOSTICS)** 

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

## **DTC DETECTING CONDITION:**

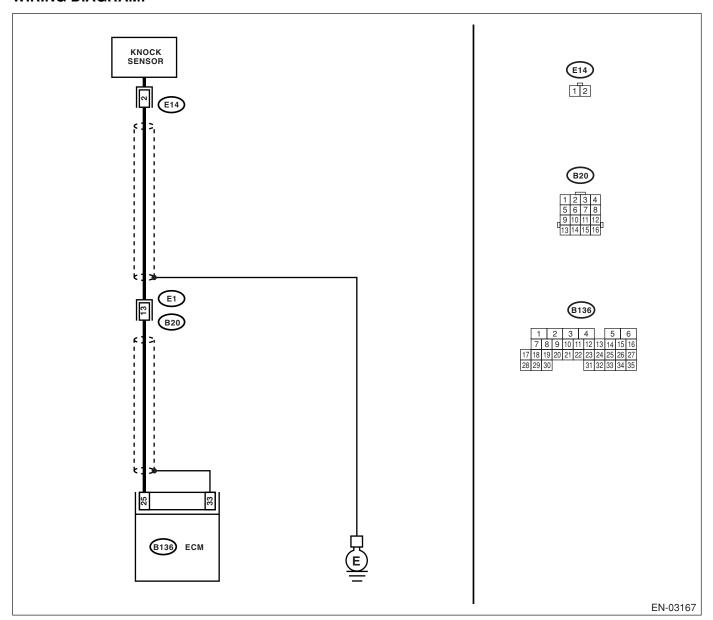
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-105, DTC P0328 KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **TROUBLE SYMPTOM:**

- · Poor driving performance
- · Knocking occurs.

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN KNOCK SEN- SOR AND ECM CONNECTOR. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B136) No. 25 — Chassis ground:	Is the resistance less than 400 $\mbox{k}\Omega ?$	Go to step 2.	Go to step 3.
2	CHECK KNOCK SENSOR.  1) Disconnect the connector from knock sensor.  2) Measure the resistance between knock sensor connector terminal and engine ground.  Terminals  No. 2 — Engine ground:	Is the resistance less than 400 $\mbox{k}\Omega$ ?	Replace the knock sensor. <ref. to<br="">FU(H4DOTC)-25, Knock Sensor.&gt;</ref.>	Repair the ground short circuit in harness between knock sensor connector and ECM connector.  NOTE: The harness between both connectors are shielded. Repair the short circuit in harness covered with shield.
3	CHECK INPUT SIGNAL FROM ECM.  1) Connect the connectors to ECM and knock sensor.  2) Turn the ignition switch to ON.  3) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B136) No. 25 (+) — Chassis ground (-):	Is the voltage more than 2 V?	Even if the mal- function indicator light illuminates, 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	

### ENĜINE (DIAGNOSTICS)

# **AV:DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT**

# **DTC DETECTING CONDITION:**

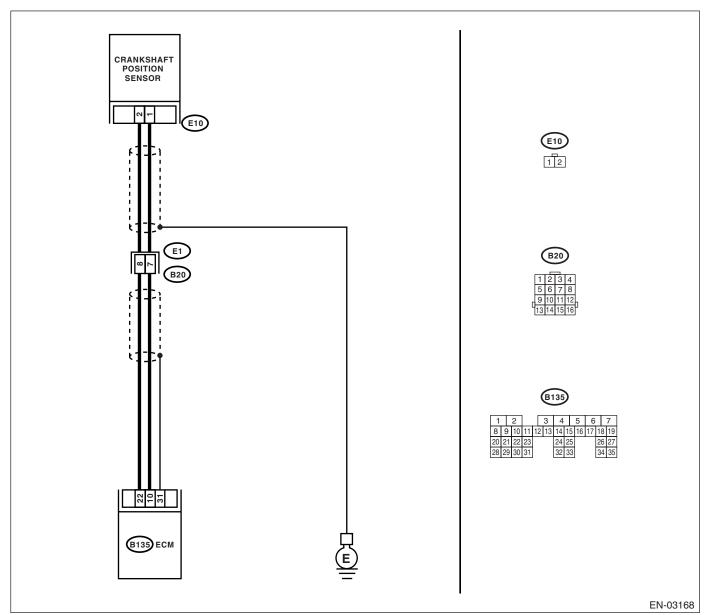
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-107, DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2 CHECK HARNESS BETWEEN CRANK-SHAFT POSITION SENSOR AND ECM CONECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crank shaft position sensor. 3) Measure the resistance of harness between crankshaft position sensor connect and engine ground.  Connector & terminal  (E10) No. 1 — (B135) No. 10:  (E10) No. 2 — (B135) No. 22:	tor	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between crankshaft position sensor and ECM connector Poor contact in ECM connector Poor contact in coupling connector	
3 CHECK HARNESS BETWEEN CRANK- SHAFT POSITION SENSOR AND ECM CO NECTOR.  Measure the resistance of harness betweer crankshaft position sensor connector and engine ground.  Connector & terminal (E10) No. 1 — Engine ground: (E10) No. 2 — Engine ground:		Go to step 4.	Repair the ground short circuit in harness between crankshaft position sensor and ECM connector.  NOTE: The harness between both connectors are shielded. Repair the ground short circuit in harness together with shield.
4 CHECK CONDITION OF CRANKSHAFT P SITION SENSOR.	O- Is the crankshaft position sensor installation bolt tightened securely?	Go to step 5.	Tighten the crank- shaft position sen- sor installation bolt securely.
5 CHECK CRANKSHAFT POSITION SENSO 1) Remove the crankshaft position sensor. 2) Measure the resistance between connecterminals of crankshaft position sensor. Terminals No. 1 — No. 2:		Repair the poor contact in crank-shaft position sensor connector.	Replace the crank- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-23, Crankshaft Posi- tion Sensor.&gt;</ref.>

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

## **DTC DETECTING CONDITION:**

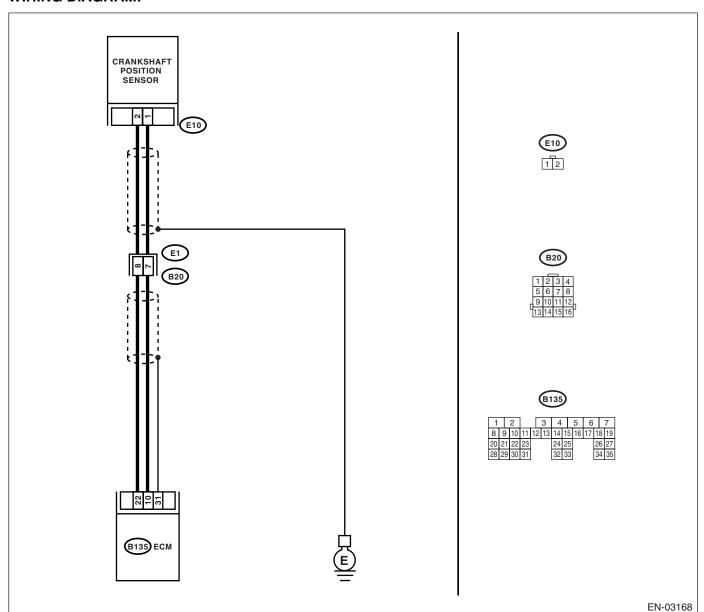
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-109, DTC P0336 CRANKSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **TROUBLE SYMPTOM:**

- Engine stalls.
- Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK CONDITION OF CRANKSHAFT PO- SITION SENSOR. Turn the ignition switch to OFF.	Is the crankshaft position sensor installation bolt tightened securely?	Go to step 3.	Tighten the crank- shaft position sen- sor installation bolt securely.
3	CHECK CRANK SPROCKET. Remove the front belt cover.	Are the crank sprocket teeth cracked or damaged?	Replace the crank sprocket. <ref. to<br="">FU(H4DOTC)-23, Crankshaft Posi- tion Sensor.&gt;</ref.>	Go to step 4.
4	CHECK INSTALLATION CONDITION OF TIMING BELT.  Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block.	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <ref. belt.="" me(h4dotc)-41,="" timing="" to=""></ref.>	Replace the crank- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-23, Crankshaft Posi- tion Sensor.&gt;</ref.>

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

## **DTC DETECTING CONDITION:**

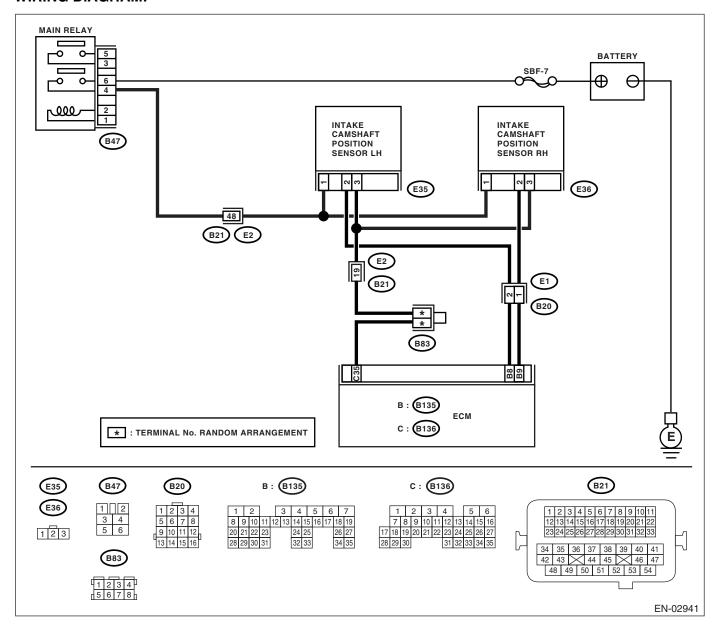
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-111, DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **TROUBLE SYMPTOM:**

- Engine stalls.
- Failure of engine to start

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)".  Ref. to EN(H4DOTC)(diag)-69, List of Diagnostic Trouble Code (DTC).>	
2	CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from camshaft position sensor.  3) Measure the voltage between camshaft position sensor connector and engine ground.  Connector & terminal  (E36) No. 1 (+) — Engine ground (-):		Repair the battery short circuit between main relay connector and camshaft position sensor connector.	Go to step 3.
3	CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR.  1) Turn the ignition switch to ON.  2) Measure the voltage between camshaft position sensor connector and engine ground.  Connector & terminal  (E36) No. 1 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 4.	Repair the open or ground short circuit between main relay connector and camshaft position sensor connector.
4	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance between camshaft position sensor connector and ECM.  Connector & terminal  (E36) No. 2 — (B135) No. 9:  (E36) No. 3 — (B136) No. 35:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair the open circuit between camshaft position sensor and ECM.
5	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM.  Measure the resistance between camshaft position sensor connector and engine ground.  Connector & terminal  (E36) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 6.	Repair the ground short circuit between camshaft position sensor and ECM.
6	CHECK CONDITION OF CAMSHAFT POSITION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 7.	Tighten the cam- shaft position sen- sor installation bolt securely.
7	CHECK CAMSHAFT POSITION SENSOR. Check waveform of camshaft position sensor. <ref. (ecm)="" control="" en(h4dotc)(diag)-17,="" engine="" i="" module="" o="" signal.="" to=""></ref.>	Is there any abnormality in waveform?	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-23, Crankshaft Posi- tion Sensor.&gt;</ref.>	Go to step 8.
8	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

# AY:DTC P0345 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 2) DTC DETECTING CONDITION:

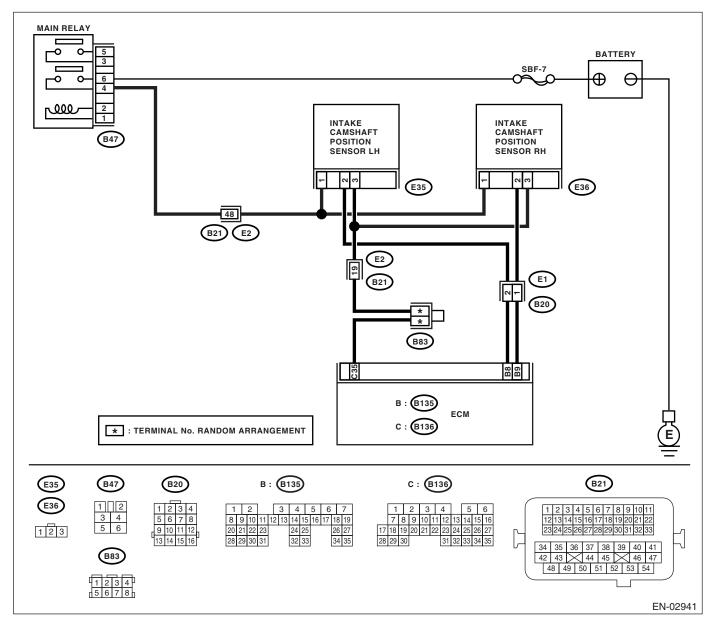
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-112, DTC P0345 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS-	Is any other DTC displayed?	Inspect the DTC	Go to step 2.
	PLAY.	out, out of the display of the	using "List of Diagnostic Trouble Code (DTC)". <ref. td="" to<=""><td></td></ref.>	
			EN(H4DOTC)(diag )-69, List of Diag- nostic Trouble	
			Code (DTC).>	
2	CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from camshaft position sensor.  3) Measure the voltage between camshaft position sensor connector and engine ground.  Connector & terminal	Is the voltage more than 10 V?	Repair the battery short circuit between main relay connector and camshaft position sensor connector.	Go to step 3.
	(E35) No. 1 (+) — Engine ground (-):			
3	CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR.  1) Turn the ignition switch to ON.  2) Measure the voltage between camshaft position sensor connector and engine ground.  Connector & terminal  (E35) No. 1 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 4.	Repair the open or ground short circuit between main relay connector and camshaft position sensor connector.
4	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance between camshaft position sensor connector and ECM.  Connector & terminal  (E35) No. 2 — (B135) No. 8:  (E35) No. 3 — (B136) No. 35:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair the open circuit between camshaft position sensor and ECM.
5	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM.  Measure the resistance between camshaft position sensor connector and engine ground.  Connector & terminal  (E35) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 6.	Repair the ground short circuit between camshaft position sensor and ECM.
6	CHECK CONDITION OF CAMSHAFT POSITION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 7.	Tighten the cam- shaft position sen- sor installation bolt securely.
7	CHECK CAMSHAFT POSITION SENSOR. Check waveform of camshaft position sensor. <ref. (ecm)="" control="" en(h4dotc)(diag)-17,="" engine="" i="" module="" o="" signal.="" to=""></ref.>	Is there any abnormality in waveform?	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4DOTC)-24, Camshaft Position Sensor.&gt;</ref.>	Go to step 8.
8	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

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

## **DTC DETECTING CONDITION:**

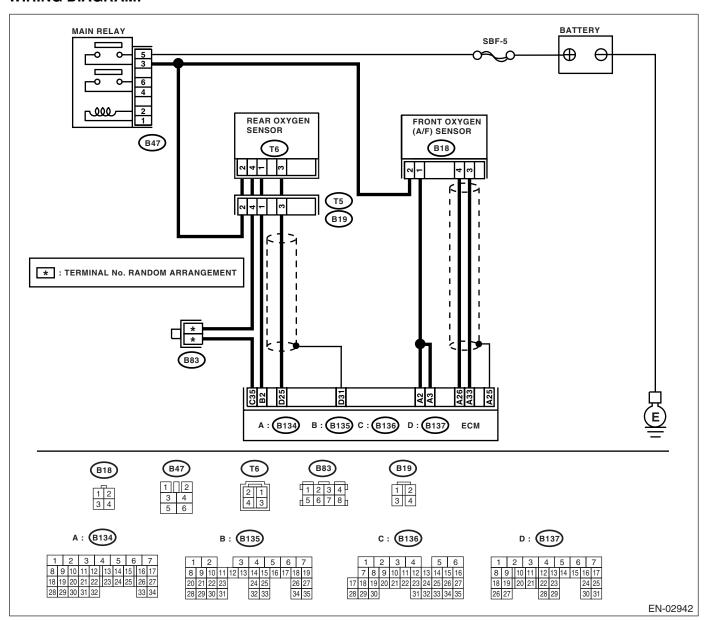
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-113, DTC P0420 CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

### **TROUBLE SYMPTOM:**

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

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0420.</ref.>	
2	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connectors from ECM and rear oxygen sensor.  3) Measure the resistance of harness between ECM and rear oxygen sensor connector.  Connector & terminal  (B137) No. 25 — (T6) No. 3:  (B136) No. 35 — (T6) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between ECM and rear oxygen sen- sor connector.
3	CHECK HARNESS BETWEEN REAR OXY-GEN SENSOR AND ECM CONNECTOR.  Measure the resistance between rear oxygen sensor harness connector and chassis ground.  Connector & terminal  (B137) No. 31 — Chassis ground:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between rear oxygen sensor and ECM connector • Poor contact in rear oxygen sensor connector • Poor contact in ECM connector
4	CHECK EXHAUST SYSTEM. Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes. NOTE: Check the following positions. • Between cylinder head and front exhaust pipe • Between front exhaust pipe and front catalytic converter • Between front catalytic converter and rear catalytic converter	Is there a fault in exhaust system?	Repair or replace the exhaust sys- tem. <ref. to<br="">EX(H4DOTC)-2, General Descrip- tion.&gt;</ref.>	Go to step 5.
5	CHECK CATALYTIC CONVERTER.	Is there damage at rear face or front face of front catalyst?	Replace the catalytic converter. <ref. catalytic="" converter.="" ec(h4dotc)-3,="" front="" to=""></ref.>	Contact Service Center.

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

ENĠINE (ĎIAGNOSTICS)

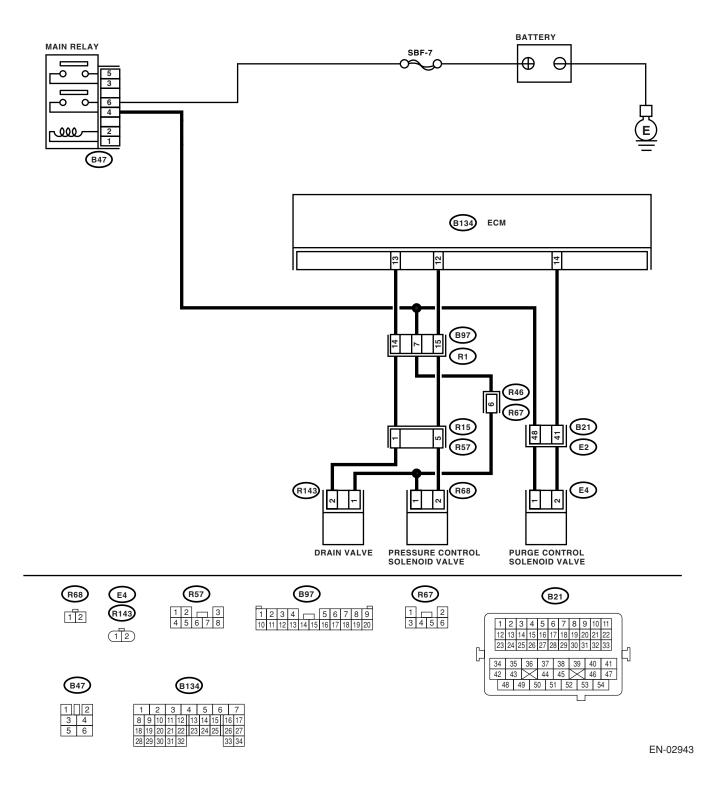
# BA:DTC P0442 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECT-ED (SMALL LEAK)

# **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-116, DTC P0442 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECTED (SMALL LEAK), Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- Fuel odor
- There is a hole of more than 1.0 mm (0.04 in) dia. in evaporation system or fuel tank.

#### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	
2	CHECK FUEL FILLER CAP.  1) Turn the ignition switch to OFF.  2) Check the fuel filler cap.  NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.		Go to step 3.	Tighten fuel filler cap securely.
3	CHECK FUEL FILLER CAP.	Is the fuel filler cap SUBARU genuine?	Go to step 4.	Replace with a SUBARU genuine fuel filler cap.
4	CHECK FUEL FILLER PIPE PACKING.	Is there any damage to the seal between fuel filler cap and fuel filler pipe?	Repair or replace the fuel filler cap and fuel filler pipe. <ref. to<br="">FU(H4DOTC)-51, Fuel Filler Pipe.&gt;</ref.>	Go to step 5.
5	CHECK DRAIN VALVE.  1) Connect the test mode connector.  2) Turn the ignition switch to ON.  3) Operate the drain valve.  NOTE:  Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>	Does the drain valve operate?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-16, Drain Valve.&gt;</ref.>
6	CHECK PURGE CONTROL SOLENOID VALVE.  Operate the purge control solenoid valve.  NOTE: Purge control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 7.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref.>
7	CHECK PRESSURE CONTROL SOLENOID VALVE.  Operate the pressure control solenoid valve.  NOTE:  Pressure control solenoid valve operation can also be executed using Subaru Select Monitor.  For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 8.	Replace the pressure control sole- noid valve. <ref. to EC(H4DOTC)- 13, Pressure Con- trol Solenoid Valve.&gt;</ref. 

-		1	ı	T
	Step	Check	Yes	No
8	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE. Turn the ignition switch to OFF.	Is there a hole of more than 1.0 mm (0.04 in) dia. on evaporation line?	Repair or replace the evaporation line. <ref. to<br="">FU(H4DOTC)-60, Fuel Delivery, Return and Evapo- ration Lines.&gt;</ref.>	Go to step 9.
9	CHECK CANISTER.	Is the canister damaged or is there a hole of more than 1.0 mm (0.04 in) dia. in it?	Repair or replace the canister. <ref. to EC(H4DOTC)-6, Canister.&gt;</ref. 	Go to step 10.
10	CHECK FUEL TANK. Remove the fuel tank. <ref. fu(h4dotc)-45,="" fuel="" tank.="" to=""></ref.>	Is the fuel tank damaged or is there a hole of more than 1.0 mm (0.04 in) dia. in it?	Repair or replace the fuel tank. <ref. to FU(H4DOTC)- 45, Fuel Tank.&gt;</ref. 	Go to step 11.
11	CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.	Are there holes of more than 1.0 mm (0.04 in) dia., cracks, clogging, or disconnections, bend, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Contact with SOA Service Center.

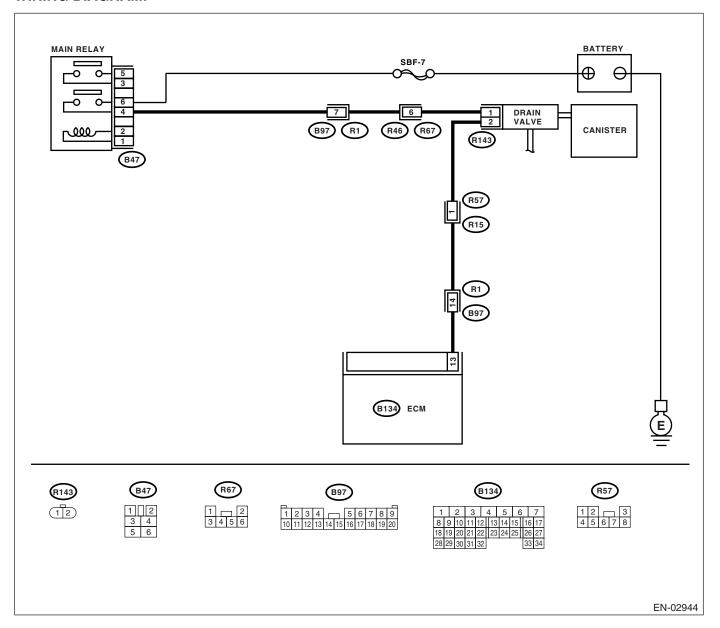
## BB:DTC P0447 EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL CIRCUIT OPEN

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-131, DTC P0447 EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL CIRCUIT OPEN, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and	Is the voltage more than 10 V?	Go to step 2.	Go to step 3.
	chassis ground.  Connector & terminal			
	(B134) No. 13 (+) — Chassis ground (–):			
2	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. (However, the possibility of poor contact still remains.) NOTE: In this case, repair the following:  Poor contact in drain valve connector Poor contact in ECM connector Poor contact in coupling connector
3	CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connectors from drain valve and ECM.  3) Measure the resistance of harness between drain valve connector and chassis ground.  Connector & terminal (R143) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 4.	Repair short circuit to ground in har- ness between ECM and drain valve connector.
4	CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR. Measure the resistance of harness between ECM and drain valve connector. Connector & terminal (B134) No. 13 — (R143) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and drain valve connector  Poor contact in coupling connector
5	CHECK DRAIN VALVE.  Measure the resistance between drain valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance 10 — 100 $\Omega$ ?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-16, Drain Valve.&gt;</ref.>

	Step	Check	Yes	No
6	CHECK POWER SUPPLY TO DRAIN VALVE.  1) Turn the ignition switch to ON.  2) Measure the voltage between drain valve and chassis ground.  Connector & terminal  (R143) No. 1 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between main relay and drain valve Poor contact in coupling connector Poor contact in main relay connector
7	CHECK POOR CONTACT.  Check poor contact in drain valve connector.	Is there poor contact in drain valve connector?	Repair poor contact in drain valve connector.	Contact with SOA Service Center.

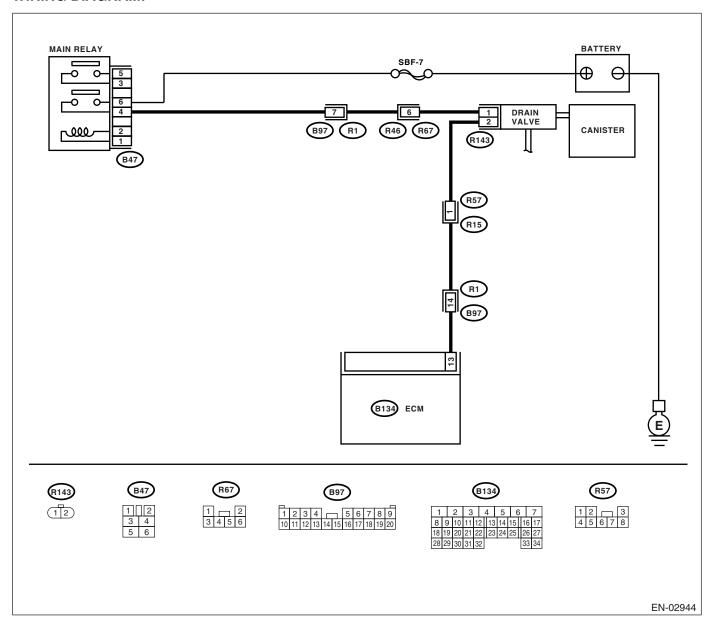
## BC:DTC P0448 EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL CIRCUIT SHORTED

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-133, DTC P0448 EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL CIRCUIT SHORTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FOR ECM.  1) Turn the ignition switch to OFF.  2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side).  3) Turn the ignition switch to ON.  4) While operating the drain valve, measure voltage between ECM and chassis ground.  NOTE:  Drain valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve="">  Connector &amp; terminal  (B134) No. 13 (+) — Chassis ground (-):</ref.>	Is the voltage 0 — 10 V?	Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. In this case, repair poor contact in ECM connector.
2	CHECK INPUT SIGNAL FOR ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 13 (+) — Chassis ground (-):	Is the voltage more than 10 V?		Go to step 3.
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>
4	CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from drain valve.  3) Turn the ignition switch to ON.  4) Measure the voltage between ECM and chassis ground.  Connector & terminal (B134) No. 13 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in har- ness between ECM and drain valve connector. After repair, replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>	Go to step 5.
5	CHECK DRAIN VALVE.  1) Turn the ignition switch to OFF.  2) Measure the resistance between drain valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance less than 1 $\Omega$ ?	Replace the drain valve <ref. drain="" ec(h4dotc)-16,="" to="" valve.=""> and ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to="">.</ref.></ref.>	Go to step 6.
6	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

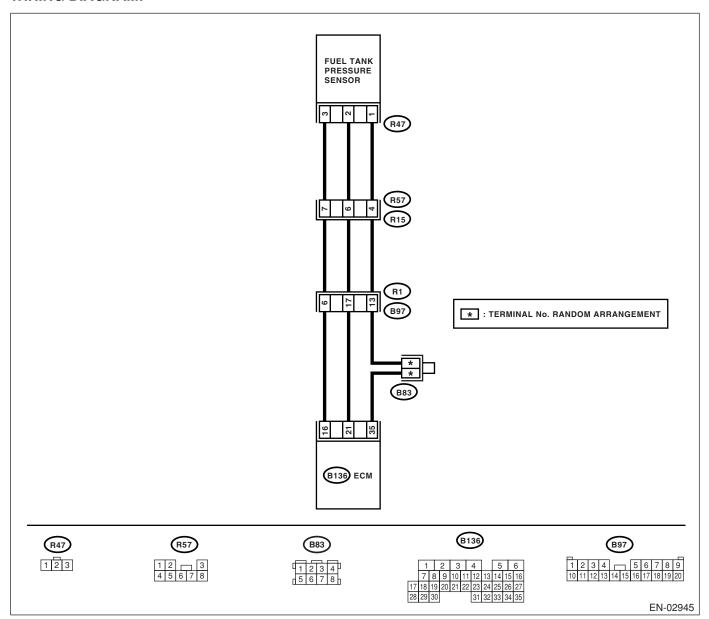
## BD:DTC P0451 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR

#### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-135, DTC P0451 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FUEL FILLER CAP.  1) Turn the ignition switch to OFF.  2) Open the fuel flap.	Is the fuel filler cap tightened securely?	Go to step 3.	Tighten fuel filler cap securely.
3	CHECK PRESSURE/VACUUM LINE.  NOTE: Check the following items.  • Disconnection, leakage and clogging of the vacuum hoses and pipes between fuel tank pressure sensor and fuel tank  • Disconnection, leakage and clogging of air ventilation hoses and pipes between fuel filler pipe and fuel tank	Is there any fault in pressure/ vacuum line?	Repair or replace the hoses and pipes.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4DOTC)-11, Fuel Tank Pres- sure Sensor.&gt;</ref.>

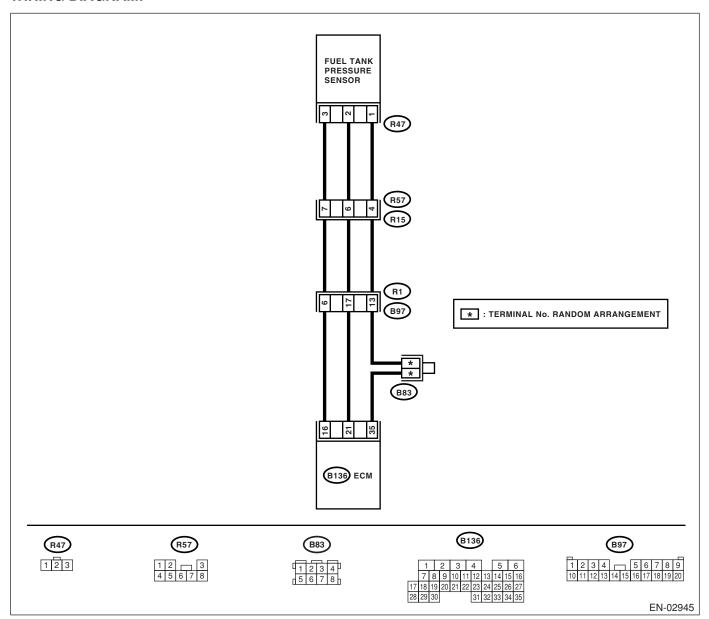
## BE:DTC P0452 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-137, DTC P0452 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.  1) Turn the ignition switch to OFF.  2) Remove the fuel filler cap.  3) Install the fuel filler cap.  4) Turn the ignition switch to ON.  5) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to  "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the measured valve less than –2.8 kPa (–21.0 mmHg, – 0.827 inHg)?	Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment.
2	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B136) No. 16 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR. Measure the voltage between ECM connector and chassis ground.  Connector & terminal (B136) No. 16 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Repair poor contact in ECM connector.	Contact with SOA Service Center.
4	CHECK INPUT SIGNAL FOR ECM.  Measure the voltage between ECM and chassis ground.  Connector & terminal  (B136) No. 21 (+) — Chassis ground (-):	Is the voltage less than 0.2 V?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor.  NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	connector?	Repair poor contact in ECM connector.	Go to step 6.
6	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.  1) Turn the ignition switch to OFF. 2) Remove the rear seat cushion. 3) Separate rear wiring harness and fuel tank cord. 4) Turn the ignition switch to ON. 5) Measure the voltage between rear wiring harness connector and chassis ground.  Connector & terminal  (R15) No. 7 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and rear wiring harness connector Poor contact in coupling connector

	Step	Check	Yes	No
7	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and rear wiring harness connector.  Connector & terminal (B136) No. 35 — (R15) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 8.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and rear wiring harness connector  Poor contact in coupling connector  Poor contact in joint connector
8	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.  Measure the resistance of harness between rear wiring harness connector and chassis ground.  Connector & terminal  (R15) No. 4 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 9.	Repair short circuit to ground in har- ness between ECM and rear wir- ing harness con- nector.
9	CHECK FUEL TANK CORD.  1) Disconnect the connector from fuel tank pressure sensor.  2) Measure the resistance of fuel tank cord.  Connector & terminal  (R57) No. 7 — (R47) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 10.	Repair open circuit in fuel tank cord.
10	CHECK FUEL TANK CORD.  Measure the resistance of fuel tank cord.  Connector & terminal  (R57) No. 4 — (R47) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 11.	Repair open circuit in fuel tank cord.
11	CHECK FUEL TANK CORD.  Measure the resistance of harness between fuel tank pressure sensor connector and engine ground.  Connector & terminal  (R47) No. 2 — Chassis ground:	Is the resistance more than 1 M $\Omega$ ?	Go to step 12.	Repair short circuit to ground in fuel tank cord.
12	CHECK POOR CONTACT.  Check poor contact in fuel tank pressure sensor connector.	Is there poor contact in fuel tank pressure sensor connector?	Repair poor contact in fuel tank pressure sensor connector.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4DOTC)-11, Fuel Tank Pres- sure Sensor.&gt;</ref.>

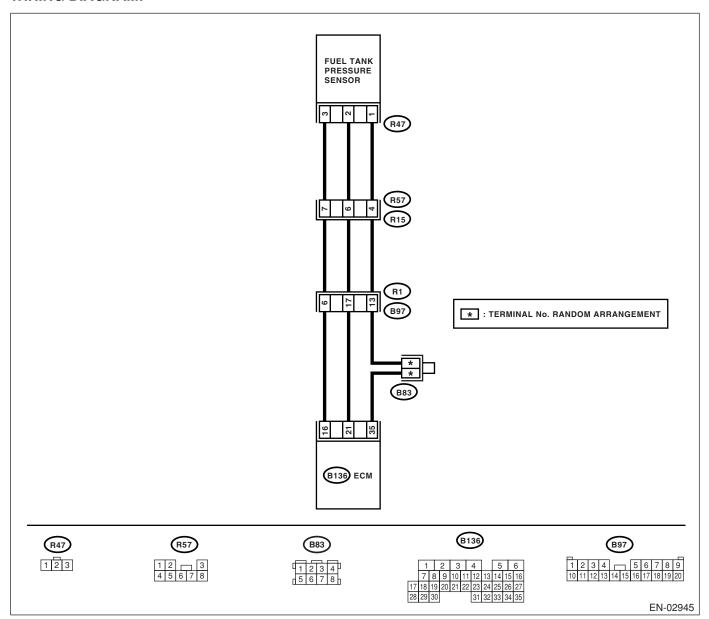
## BF:DTC P0453 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-139, DTC P0453 EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is the measured value more	Go to step 11.	Go to step 2.
	<ol> <li>Turn the ignition switch to OFF.</li> </ol>	than 2.8 kPa (21.0 mmHg,		·
	2) Remove the fuel filler cap.	0.827 inHg)		
	3) Install the fuel filler cap.			
	4) Turn the ignition switch to ON.			
	5) Read the data of fuel tank pressure sensor			
	signal using Subaru Select Monitor.			
	NOTE:			
	Subaru Select Monitor			
	For detailed operation procedure, refer to			
	"READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
2	CHECK POWER SUPPLY TO FUEL TANK	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
_	PRESSURE SENSOR.	le ale vellage mere alan ne vi	Go to stop ii	Go to dtop G.
	Measure the voltage between ECM connector			
	and chassis ground.			
	Connector & terminal			
	(B136) No. 16 (+) — Chassis ground (-):			
3	CHECK POWER SUPPLY TO FUEL TANK	Does the measured value	Repair poor con-	Replace the ECM.
	PRESSURE SENSOR.	exceed the specified value by	tact in ECM con-	<ref. td="" to<=""></ref.>
	Measure the voltage between ECM connector	shaking the ECM harness and	nector.	FU(H4DOTC)-39,
	and chassis ground.	connector?	11001011	Engine Control
	Connector & terminal			Module (ECM).>
	(B136) No. 16 (+) — Chassis ground (-):			Woddio (EOW).>
4	CHECK INPUT SIGNAL FOR ECM.	Is the voltage less than 0.2 V?	Go to step 6.	Go to step 5.
*	Measure the voltage between ECM and chas-	is the voltage less than 0.2 v ?	Go to step <b>o.</b>	Go to step 3.
	sis ground.			
	Connector & terminal			
	(B136) No. 21 (+) — Chassis ground (–):			
_		Describe measured value	Danain naan	Ca ta atam C
5	CHECK INPUT SIGNAL FOR ECM. (USING	Does the measured value	Repair poor con-	Go to step 6.
	SUBARU SELECT MONITOR.)	exceed –2.8 kPa (–21.0	tact in ECM con- nector.	
	Read the data of fuel tank pressure sensor sig-	mmHg, -0.827 inHg) by shak-	nector.	
	nal using Subaru Select Monitor.	ing the ECM harness and connector?		
	NOTE:	nector?		
	Subaru Select Monitor  For detailed engration precedure, refer to			
	For detailed operation procedure, refer to			
	"READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u> </u>	<u> </u>
6	CHECK HARNESS BETWEEN ECM AND	Is the voltage more than 4.5 V?	Go to step 7.	Repair harness
	COUPLING CONNECTOR IN REAR WIRING			and connector.
	HARNESS.			NOTE:
	Turn the ignition switch to OFF.      Demove the rear east quality.			In this case, repair
	2) Remove the rear seat cushion.			the following:
	3) Separate rear wiring harness and fuel tank			Open circuit in
	cord.			harness between
	4) Turn the ignition switch to ON.			ECM and rear wir-
	5) Measure the voltage between rear wiring			ing harness con-
	harness connector and chassis ground.			nector
	Connector & terminal			<ul> <li>Poor contact in</li> </ul>
	(R15) No. 7 (+) — Chassis ground (−):			coupling connector

**ENĞINE (ĎIAGNOSTICS)** 

	Step	Check	Yes	No
7	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and rear wiring harness connector.  Connector & terminal (B136) No. 21 — (R15) No. 6: (B136) No. 35 — (R15) No. 4:	Is the resistance less than 1 Ω?	Go to step 8.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and rear wiring harness connector Poor contact in coupling connector
8	CHECK FUEL TANK CORD.  1) Disconnect the connector from fuel tank pressure sensor.  2) Measure the resistance of fuel tank cord.  Connector & terminal  (R57) No. 6 — (R47) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 9.	Repair open circuit in fuel tank cord.
9	CHECK FUEL TANK CORD.  Measure the resistance of fuel tank cord.  Connector & terminal  (R57) No. 4 — (R47) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 10.	Repair open circuit in fuel tank cord.
10	CHECK POOR CONTACT.  Check poor contact in fuel tank pressure sensor connector.	Is there poor contact in fuel tank pressure sensor connector?	Repair poor contact in fuel tank pressure sensor connector.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4DOTC)-11, Fuel Tank Pres- sure Sensor.&gt;</ref.>
11	CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel tank pressure sensor. 3) Turn the ignition switch to ON. 4) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor.  NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the measured value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?	Repair short circuit to battery in har- ness between ECM and fuel tank pressure sensor connector.	tank pressure sen- sor. <ref. td="" to<=""></ref.>

## BG:DTC P0456 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECTED (VERY SMALL LEAK)

#### **DTC DETECTING CONDITION:**

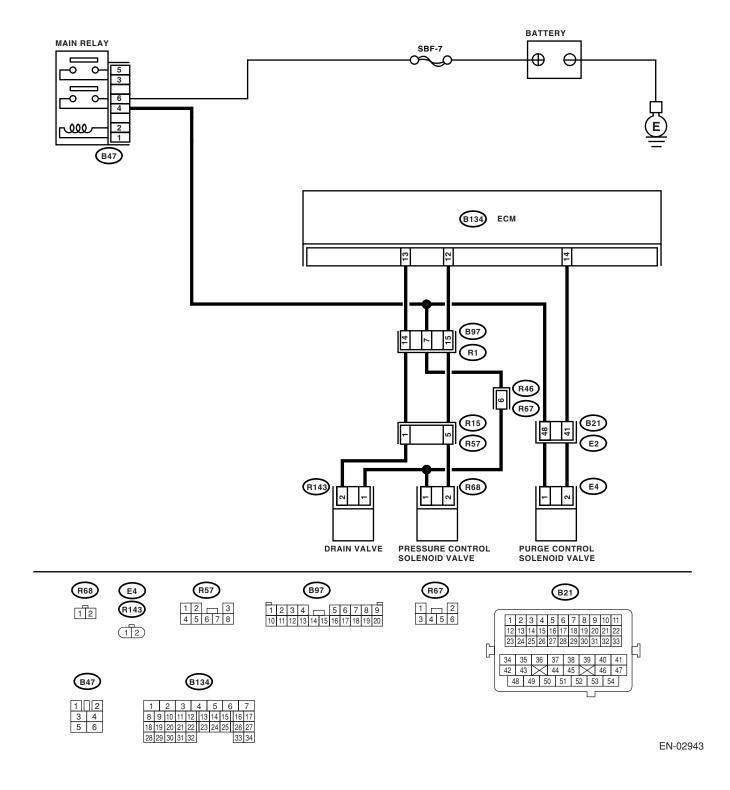
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-140, DTC P0456 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECTED (VERY SMALL LEAK), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	
2	CHECK FUEL FILLER CAP.  1) Turn the ignition switch to OFF.  2) Check the fuel filler cap.  NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.	Is the fuel filler cap tightened securely?	Go to step 3.	Tighten fuel filler cap securely.
3	CHECK FUEL FILLER CAP.	Is the fuel filler cap SUBARU genuine?	Go to step 4.	Replace with a SUBARU genuine fuel filler cap.
4	CHECK FUEL FILLER PIPE PACKING.	Is there any damage to the seal between fuel filler cap and fuel filler pipe?	Repair or replace the fuel filler cap and fuel filler pipe. <ref. to<br="">FU(H4DOTC)-51, Fuel Filler Pipe.&gt;</ref.>	Go to step 5.
5	CHECK DRAIN VALVE.  1) Connect the test mode connector.  2) Turn the ignition switch to ON.  3) Operate the drain valve.  NOTE:  Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>	Does the drain valve operate?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-16, Drain Valve.&gt;</ref.>
6	CHECK PURGE CONTROL SOLENOID VALVE. Operate the purge control solenoid valve. NOTE: Purge control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 7.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref.>
7	CHECK PRESSURE CONTROL SOLENOID VALVE.  Operate the pressure control solenoid valve.  NOTE:  Pressure control solenoid valve operation can also be executed using Subaru Select Monitor.  For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 8.	Replace the pressure control sole- noid valve. <ref. to EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref. 

**ENGINE (DIAGNOSTICS)** 

	Step	Check	Yes	No
8	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.  Turn the ignition switch to OFF.	Is there a hole of more than 0.5 mm (0.020 in) dia. on evaporation line?	Repair or replace the evaporation line. <ref. to<br="">FU(H4DOTC)-60, Fuel Delivery, Return and Evapo- ration Lines.&gt;</ref.>	Go to step 9.
9	CHECK CANISTER.	Is the canister damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?	Repair or replace the canister. <ref. to EC(H4DOTC)-6, Canister.&gt;</ref. 	Go to step 10.
10	CHECK FUEL TANK. Remove the fuel tank. <ref. fu(h4dotc)-45,="" fuel="" tank.="" to=""></ref.>	Is the fuel tank damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?	Repair or replace the fuel tank. <ref. to FU(H4DOTC)- 45, Fuel Tank.&gt;</ref. 	Go to step 11.
11	CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.	Are there holes of more than 0.5 mm (0.020 in) dia., cracks, clogging, or disconnections, bend, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Contact with SOA Service Center.

#### BH:DTC P0457 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECT-ED (FUEL CAP LOOSE/OFF)

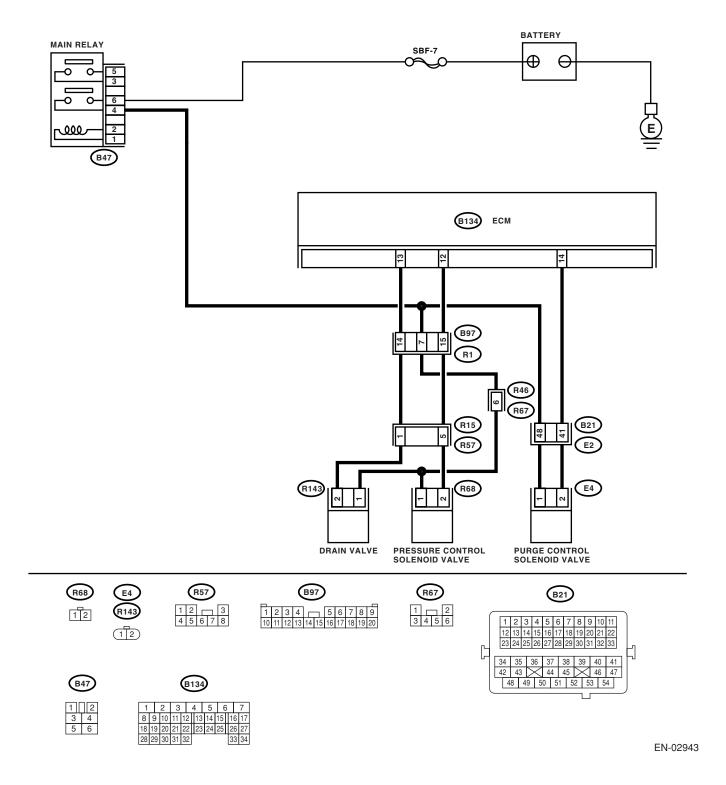
#### DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-140, DTC P0457 EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DETECTED (FUEL CAP LOOSE/OFF), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

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

#### CAUTION



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	
2	CHECK FUEL FILLER CAP.  1) Turn the ignition switch to OFF.  2) Check the fuel filler cap.  NOTE:  The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening.		Go to step 3.	Tighten fuel filler cap securely.
3	CHECK FUEL FILLER CAP.	Is the fuel filler cap SUBARU genuine?	Go to step 4.	Replace with a SUBARU genuine fuel filler cap.
4	CHECK FUEL FILLER PIPE PACKING.	Is there any damage to the seal between fuel filler cap and fuel filler pipe?	Repair or replace the fuel filler cap and fuel filler pipe. <ref. to<br="">FU(H4DOTC)-51, Fuel Filler Pipe.&gt;</ref.>	Go to step 5.
5	CHECK DRAIN VALVE.  1) Connect the test mode connector.  2) Turn the ignition switch to ON.  3) Operate the drain valve.  NOTE:  Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>	Does the drain valve operate?	Go to step 6.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref.>
6	CHECK PURGE CONTROL SOLENOID VALVE. Operate the purge control solenoid valve. NOTE: Purge control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>		Go to step 7.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref.>
7	CHECK PRESSURE CONTROL SOLENOID VALVE.  Operate the pressure control solenoid valve.  NOTE:  Pressure control solenoid valve operation can also be executed using Subaru Select Monitor.  For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>		Go to step 8.	Replace the pressure control sole- noid valve. <ref. to EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref. 
8	CHECK CANISTER.	Is the canister damaged?	Repair or replace the canister. <ref. to EC(H4DOTC)-6, Canister.&gt;</ref. 	Go to step 9.

	Step	Check	Yes	No
9	CHECK FUEL TANK. Remove the fuel tank. <ref. fu(h4dotc)-45,="" fuel="" tank.="" to=""></ref.>	Is the fuel tank damaged?	Repair or replace the fuel tank. <ref. to FU(H4DOTC)- 45, Fuel Tank.&gt;</ref. 	Go to step 10.
10	CHECK ANY OTHER MECHANICAL TROU- BLE IN EVAPORATIVE EMISSION CON- TROL SYSTEM.	Are there holes of more than 0.5 mm (0.020 in) dia., cracks, clogging, or disconnections, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Contact with SOA Service Center.

## BI: DTC P0458 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW

#### **DTC DETECTING CONDITION:**

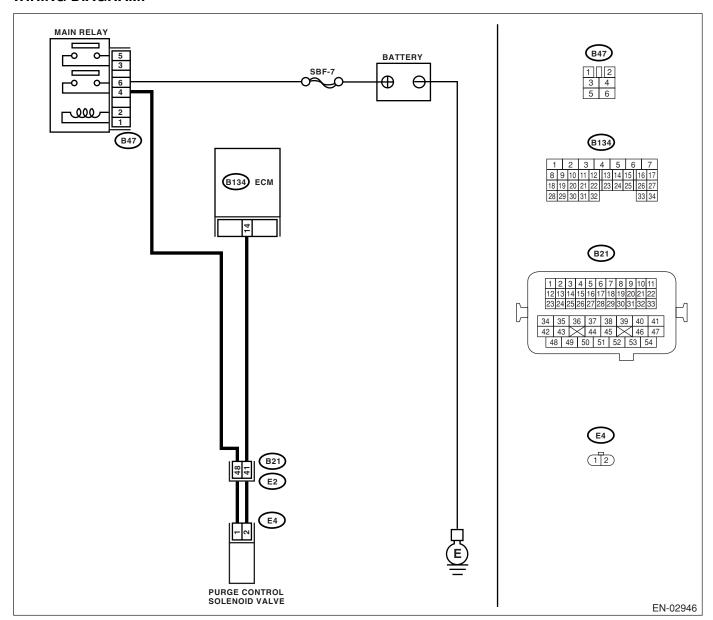
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-141, DTC P0458 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Erroneous idling

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?	Even if the mal-	Go to step 2.
	1) Turn the ignition switch to ON.		function indicator	·
	2) Measure the voltage between ECM and		light illuminates,	
	chassis ground.		the circuit has	
	Connector & terminal		returned to a nor-	
	(B134) No. 14 (+) — Chassis ground (−):		mal condition at	
			this time.	
2	CHECK HARNESS BETWEEN PURGE CON-		Go to step 3.	Repair the ground
	TROL SOLENOID VALVE AND ECM CON-	ΜΩ?		short circuit in har-
	NECTOR.			ness between
	<ol> <li>Turn the ignition switch to OFF.</li> <li>Disconnect the connectors from purge con-</li> </ol>			ECM and purge control solenoid
	trol solenoid valve and ECM.			valve connector.
	3) Measure the resistance of harness			vaivo connocion.
	between purge control solenoid valve connec-			
	tor and engine ground.			
	Connector & terminal			
	(E4) No. 2 — Engine ground:			
3	CHECK HARNESS BETWEEN PURGE CON-	Is the resistance less than 1	Go to step 4.	Repair the open
	TROL SOLENOID VALVE AND ECM CON-	Ω?		circuit in harness
	NECTOR.			between ECM and
	Measure the resistance of harness between			purge control sole-
	ECM and purge control solenoid valve of har-			noid valve connec-
	ness connector.  Connector & terminal			tor.
	(B134) No. 14 — (E4) No. 2:			NOTE: In this case, repair
	(5104) NO. 14 (24) NO. 2.			the following:
				Open circuit in
				harness between
				ECM and purge
				control solenoid
				valve connector
				<ul> <li>Poor contact in</li> </ul>
				coupling connector
4	CHECK PURGE CONTROL SOLENOID	Is the resistance $29 - 35 \Omega$ ?	Go to step 5.	Replace the purge
	VALVE.			control solenoid
	Remove the purge control solenoid valve.			valve. <ref. td="" to<=""></ref.>
	Measure the resistance between purge control solenoid valve terminals.			EC(H4DOTC)-7, Purge Control
	Terminals			Solenoid Valve.>
	No. 1 — No. 2:			Colchola valve.>
5	CHECK POWER SUPPLY TO PURGE CON-	Is the voltage more than 10 V?	Go to sten 6.	Repair the open
	TROL SOLENOID VALVE.	in the state of th	10 010p <b>0</b> 1	circuit in harness
	Turn the ignition switch to ON.			between main
1	2) Measure the voltage between purge control			relay and purge
	solenoid valve and engine ground.			control solenoid
	Connector & terminal			valve connector.
	(E4) No. 1 (+) — Engine ground (−):			
6	CHECK POOR CONTACT.	Is there poor contact in purge	Repair the poor	Replace the ECM.
	Check poor contact in purge control solenoid	control solenoid valve connec-	contact in purge	<ref. td="" to<=""></ref.>
	valve connector.	tor?	control solenoid	FU(H4DOTC)-39,
			valve connector.	Engine Control
				Module (ECM).>

## BJ:DTC P0459 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH

#### **DTC DETECTING CONDITION:**

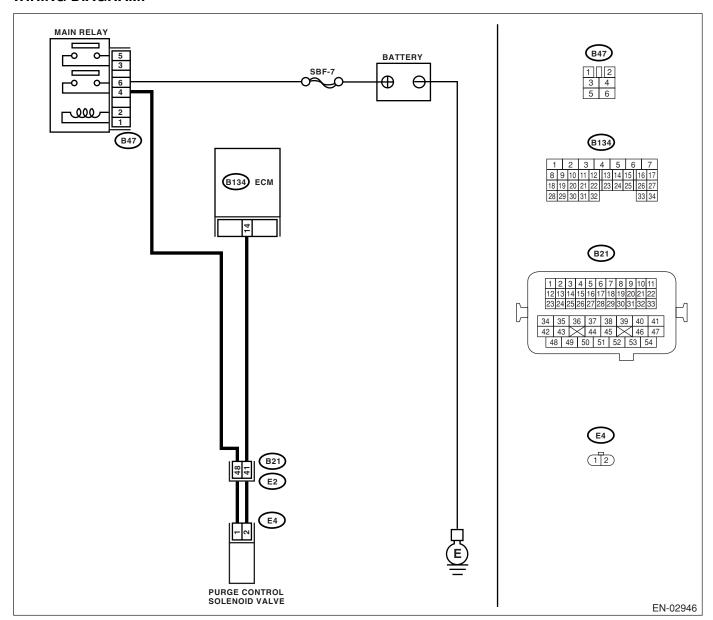
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-143, DTC P0459 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Erroneous idling

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to OFF.  2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side).  3) Turn the ignition switch to ON.	Does the purge control sole- noid valve operate?	Go to step 2.	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time. In this case, repair the poor contact in ECM connector.
2	CHECK PURGE CONTROL SOLENOID VALVE.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from purge control solenoid valve.  3) Measure the resistance between purge control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance less than 29 $-35~\Omega$ ?	Go to step 3.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref.>
3	CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from purge control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 14 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 4.	Repair the battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>
4	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

**ENGINE (DIAGNOSTICS)** 

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-145, DTC P0461 FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	"List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4DOTC)(diag )-69, List of Diag- nostic Trouble</ref.>	56, Fuel Level Sensor.> and fuel

## BL:DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-147, DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

Step		Check	Yes	No
1 CHECK FOR ANY OTHER DTC	ON DIS-	Does DTC P0462 appear on	Check the combi-	Temporary poor
PLAY.		the Subaru Select Monitor?	nation meter. <ref. combination="" idi-3,="" meter="" system.="" to=""></ref.>	contact occurs.

**ENĞINE (DIAGNOSTICS)** 

## BM:DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-149, DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS-	Does DTC P0463 appear on	Check the combi-	Temporary poor
	PLAY.	the Subaru Select Monitor?	<ref. idi-3,<br="" to="">Combination</ref.>	contact occurs.
			Meter System.>	

## BN:DTC P0464 FUEL LEVEL SENSOR CIRCUIT INTERMITTENT DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-151, DTC P0464 FUEL LEVEL SENSOR CIRCUIT INTERMITTENT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS-	Does DTC P0464 appear on	Check the combi-	Temporary poor
PLAY.		nation meter. <ref. combination="" idi-3,="" meter="" system.="" to=""></ref.>	contact occurs.

**ENGINE (DIAGNOSTICS)** 

#### **BO:DTC P0483 COOLING FAN RATIONALITY CHECK**

#### DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-154, DTC P0483 COOLING FAN RATIONALITY CHECK, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Occurrence of noise
- Overheating

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

#### NOTE:

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

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Trouble Code	Check the radiator fan, fan motor and thermostat. <ref. to CO(H4DOTC)-</ref. 
			(DTC)". <ref. to<br="">EN(H4DOTC)(diag )-69, List of Diag- nostic Trouble Code (DTC).&gt;</ref.>	Motor.> and <ref. to CO(H4DOTC)- 27, Radiator Sub</ref. 
				Fan and Fan Motor.> If thermo- stat is stuck, replace thermo- stat.

#### **BP:DTC P0500 VEHICLE SPEED SENSOR**

#### DTC DETECTING CONDITION:

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-155, DTC P0500 VEHICLE SPEED SENSOR, Diagnostic Trouble Code (DTC) Detecting Criteria.</li>

#### CAUTION:

	Step	Check	Yes	No
1	CHECK DTC OF ABS. Check DTC of ABS.	Is DTC of ABS displayed?	Perform the diagnosis according to the DTC. <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	

ENĠINE (ĎIAGNOSTICS)

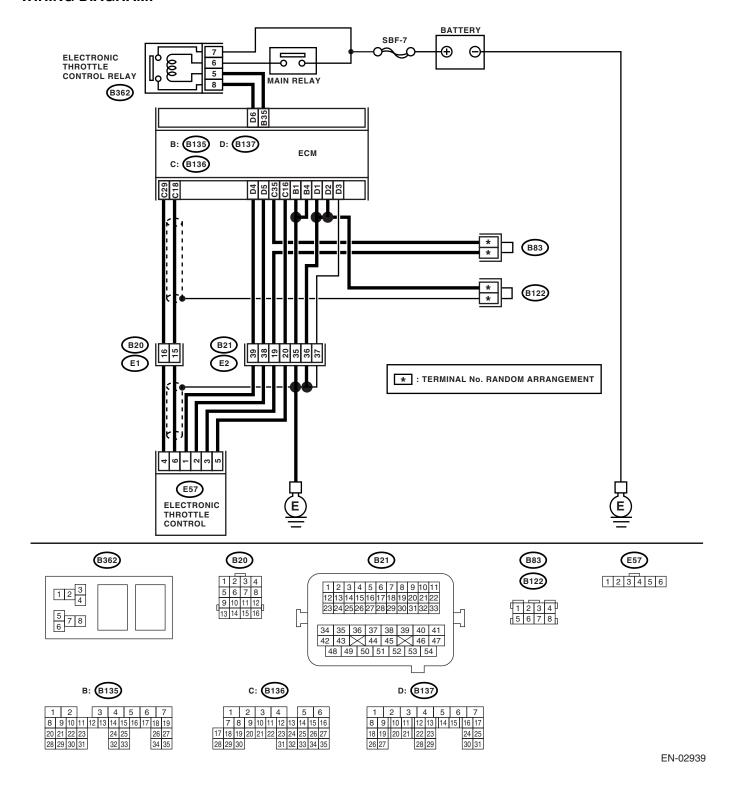
## BQ:DTC P0506 IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-157, DTC P0506 IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

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

#### **CAUTION:**



**ENĠINE (ĎIAGNOSTICS)** 

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0506.</ref.>	
2	CHECK THE AIR CLEANER ELEMENT.  1) Turn the ignition switch to OFF.  2) Check the air cleaner element.	Is there excessive clogging on air cleaner element.	Replace the air cleaner element. <ref. to<br="">IN(H4DOTC)-8, Air Cleaner Case.&gt;</ref.>	Go to step 3.
3	CHECK ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Remove the electronic throttle control.  3) Check the electronic throttle control.	Are there foreign particles in electronic throttle control?	Remove the for- eign particles from electronic throttle control.	Perform the diagnosis of DTC P2101.

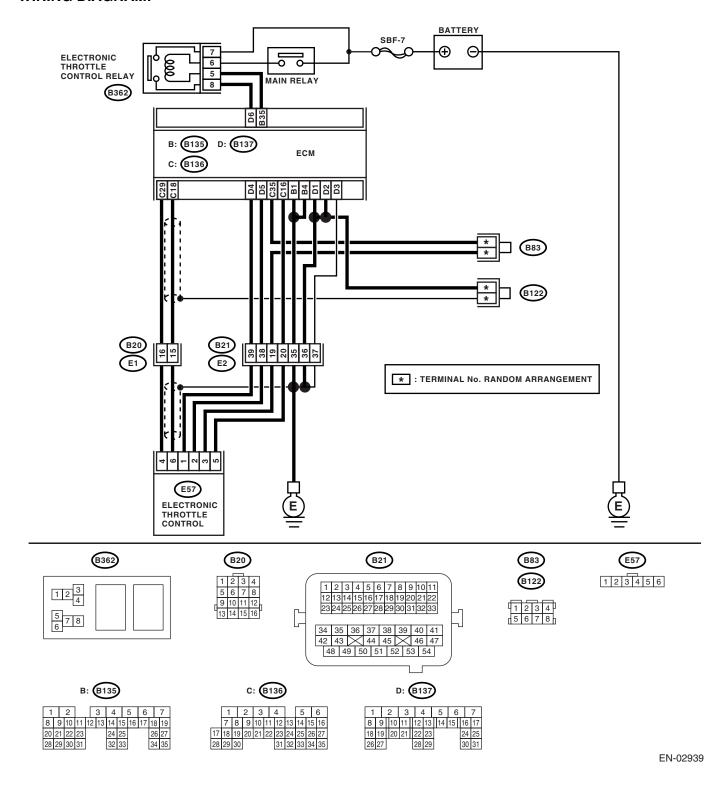
## BR:DTC P0507 IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-159, DTC P0507 IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Engine keeps running at higher revolution than specified idling revolution.

#### CAUTION:



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0507.</ref.>	
2	CHECK AIR INTAKE SYSTEM.  1) Turn the ignition switch to ON. 2) Start the engine, and idle it. 3) Check the following items.  • Loose installation of intake manifold and throttle body  • Cracks of intake manifold gasket and throttle body gasket  • Disconnections of vacuum hoses	Is there any fault in air intake system?	Repair the air suction and leaks.	Go to step 3.
3	<ul> <li>CHECK ELECTRONIC THROTTLE CONTROL.</li> <li>1) Turn the ignition switch to OFF.</li> <li>2) Remove the electronic throttle control.</li> <li>3) Check the electronic throttle control.</li> </ul>	Are there foreign particles in electronic throttle control?	Remove the for- eign particles from electronic throttle control.	Perform the diagnosis of DTC P2101.

#### **BS:DTC P0512 STARTER REQUEST CIRCUIT**

#### **DTC DETECTING CONDITION:**

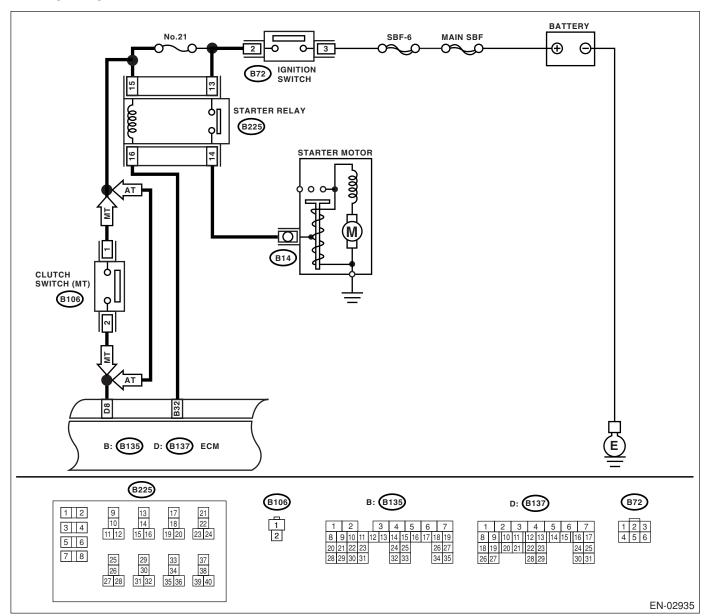
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-161, DTC P0512 STARTER REQUEST CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



**ENĠINE (ĎIAGNOSTICS)** 

Step		Check	Yes	No
1		Is the voltage more than 10 V?	•	•
	SWITCH AND ECM.		short circuit in har-	contact in ECM.
	<ol> <li>Disconnect the connectors from ECM.</li> </ol>		ness between igni-	
	<ol><li>Measure the voltage between ECM and</li></ol>		tion switch and	
	chassis ground.		ECM.	
	Connector & terminal			
	(B137) No. 32 (+) — Chassis ground (−):			

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

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-163, DTC P0519 IDLE CONTROL SYSTEM MAL-FUNCTION (FAIL-SAFE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

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

#### **CAUTION:**

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P0519.</ref.>	Go to step 2.
2	CHECK AIR INTAKE SYSTEM.  1) Turn the ignition switch to ON. 2) Start and idle the engine. 3) Check the following items: • Loose installation of intake manifold and throttle body • Cracks of intake manifold gasket and throttle body gasket • Disconnections of vacuum hoses	Is there any fault in air intake system?	Repair air suction and leaks.	Go to step 3.
3	TROL.  1) Turn the ignition switch to OFF.  2) Remove the electronic throttle control.  3) Check the electronic throttle control.	Are foreign matters found inside the electronic throttle control?	Remove foreign matters from the electronic throttle control.	Perform the diagnosis of DTC P2101.

## BU:DTC P0545 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT LOW-BANK

#### DTC DETECTING CONDITION:

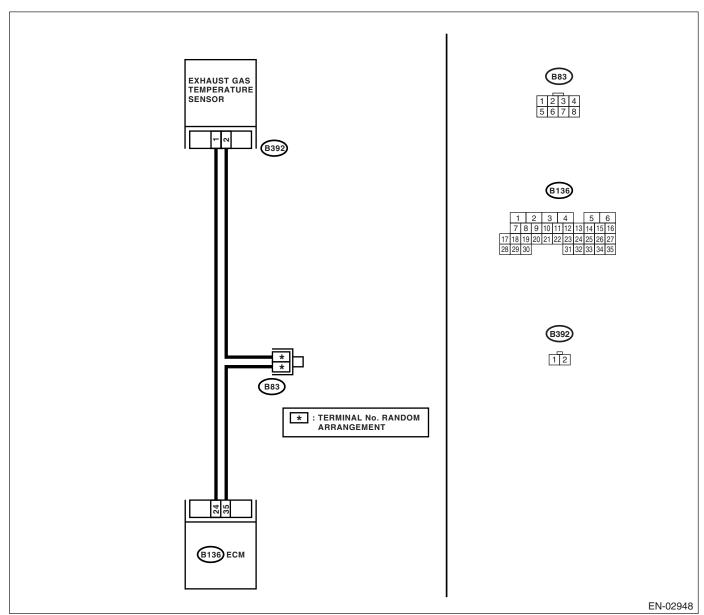
- · Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-164, DTC P0545 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT LOW-BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	<ol> <li>CHECK CURRENT DATA.</li> <li>Start the engine.</li> <li>Read the data of exhaust gas temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.</li> </ol>	Is the temperature more than 1200°C (2192°F)?	Go to step 2.	Repair the poor contact. NOTE: In this case, repair the following:
	NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the  "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool  For detailed operation procedures, refer to the  OBD-II general scan tool instruction manual.</ref.>			Poor contact in exhaust gas temperature sensor     Poor contact in ECM     Poor contact in joint connector
2	CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from exhaust gas temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of exhaust gas temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the temperature less than 372°C (702°F)?	Replace the exhaust gas temperature sensor. <ref. exhaust="" fu(h4dotc)-38,="" sensor.="" temperature="" to=""></ref.>	Repair the ground short circuit in harness between exhaust gas temperature sensor and ECM connector.
	NOTE:  • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool instruction manual.</ref.>			

## BV:DTC P0546 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT HIGH-BANK

#### **DTC DETECTING CONDITION:**

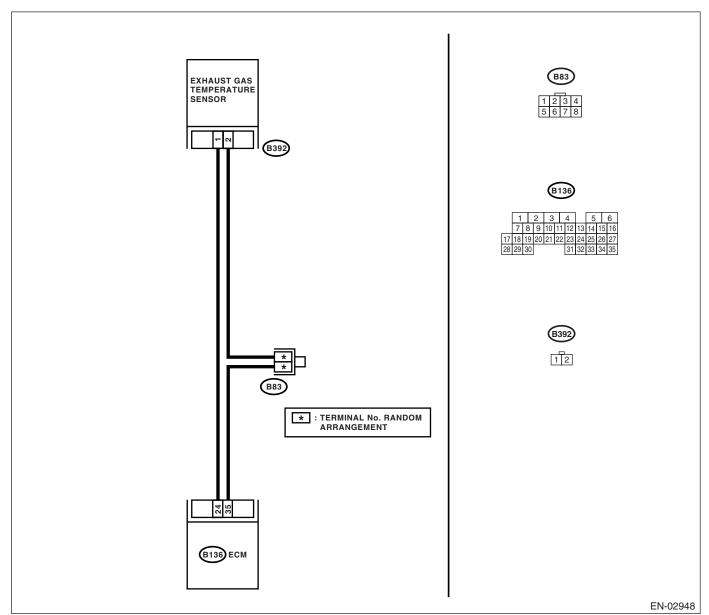
- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-166, DTC P0546 EXHAUST GAS TEMPERATURE SENSOR CIRCUIT HIGH-BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

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

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.	Is the temperature less than	Go to step 2.	Repair the poor
	1) Start the engine.	372°C (702°F)?	он не онер —	contact.
	2) Read the data of exhaust gas temperature	,		NOTE:
	sensor signal using Subaru Select Monitor or			In this case, repair
	OBD-II general scan tool.			the following:
	NOTE:			<ul> <li>Poor contact in</li> </ul>
	<ul> <li>Subaru Select Monitor</li> </ul>			exhaust gas tem-
	For detailed operation procedure, refer to the			perature sensor
	"READ CURRENT DATA FOR ENGINE". < Ref.			Poor contact in
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			ECM
	itor.>			Poor contact in
	OBD-II general scan tool  For detailed energtion proceedures, refer to the			joint connector
	For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.			
		Le the veltere week then 10 V/2	Danair tha battani	Co to oton 0
2	CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM	Is the voltage more than 10 V?	Repair the battery short circuit in har-	Go to step 3.
	CONNECTOR.		ness between	
	Turn the ignition switch to OFF.		ECM and exhaust	
	<ul><li>2) Disconnect the connector from exhaust gas</li></ul>		gas temperature	
	temperature sensor.		sensor connector.	
	3) Measure the voltage between exhaust gas			
	temperature sensor connector and engine			
	ground.			
	Connector & terminal			
	(B392) No. 1 (+) — Engine ground (–):			
3	CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 10 V?	_ ·	Go to step 4.
	GAS TEMPERATURE SENSOR AND ECM		short circuit in har-	
	CONNECTOR.		ness between	
	Turn the ignition switch to ON.		ECM and exhaust	
	<ol> <li>Measure the voltage between exhaust gas temperature sensor connector and engine</li> </ol>		gas temperature sensor connector.	
	ground.		Sensor connector.	
	Connector & terminal			
	(B392) No. 1 (+) — Engine ground (–):			
4	CHECK HARNESS BETWEEN EXHAUST	Is the voltage more than 4 V?	Go to step 5.	Repair the har-
	GAS TEMPERATURE SENSOR AND ECM	le me remage mere man i i i	Gio to otop oi	ness and connec-
	CONNECTOR.			tor.
	Measure the voltage between exhaust gas			NOTE:
	temperature sensor connector and engine			In this case, repair
	ground.			the following:
	Connector & terminal			<ul> <li>Open circuit in</li> </ul>
	(B392) No. 1 (+) — Engine ground (−):			harness between
				ECM and exhaust
				gas temperature
				sensor connector
				Poor contact in
				exhaust gas tem- perature sensor
				connector
				Poor contact in
				ECM connector
				Poor contact in
				joint connector

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK HARNESS BETWEEN EXHAUST	Is the resistance less than 5	Replace the	Repair the har-
GAS TEMPERATURE SENSOR AND ECM	$\Omega$ ?	exhaust gas tem-	ness and connec-
CONNECTOR.		perature sensor.	tor.
<ol> <li>Turn the ignition switch to OFF.</li> </ol>		<ref. th="" to<=""><th>NOTE:</th></ref.>	NOTE:
<ol><li>Measure the resistance of harness</li></ol>		FU(H4DOTC)-38,	In this case, repair
between exhaust gas temperature sensor co	n-	Exhaust Tempera-	the following:
nector and engine ground.		ture Sensor.>	<ul> <li>Open circuit in</li> </ul>
Connector & terminal			harness between
(B392) No. 2 — Engine ground:			ECM and exhaust
			gas temperature
			sensor connector
			<ul> <li>Poor contact in</li> </ul>
			exhaust gas tem-
			perature sensor
			connector
			<ul> <li>Poor contact in</li> </ul>
			ECM connector
			<ul> <li>Poor contact in</li> </ul>
			joint connector

### **BW:DTC P0600 SERIAL COMMUNICATION LINK**

NOTE:

For the diagnostic procedure, refer to LAN system.

# BX:DTC P0604 INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR

NOTE:

For the diagnostic procedure, refer to DTC P0607. <Ref. to EN(H4DOTC)(diag)-224, DTC P0607 CONTROL MODULE PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P0607. <Ref. to EN(H4DOTC)(diag)-224, DTC P0607 CONTROL MODULE PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## **BZ:DTC P0607 CONTROL MODULE PERFORMANCE**

#### DTC DETECTING CONDITION:

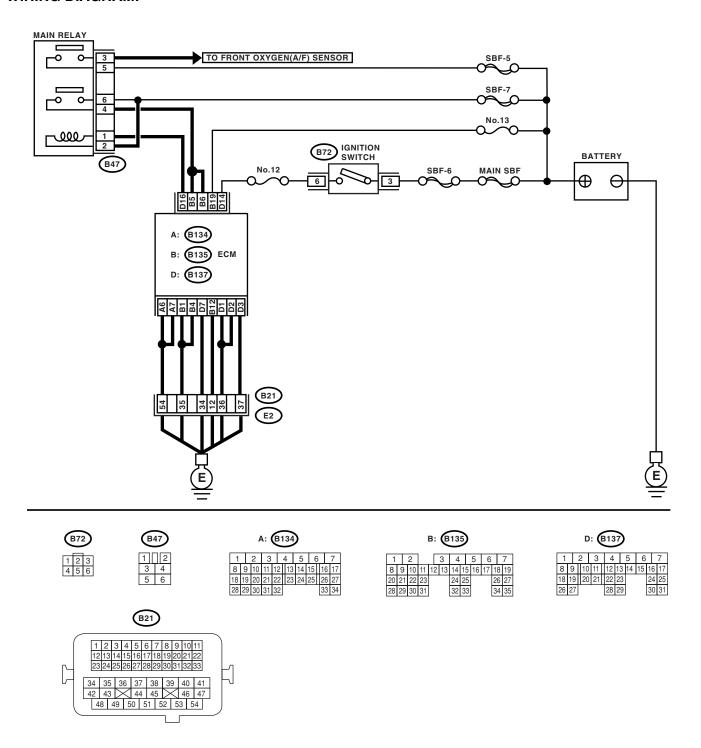
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-171, DTC P0607 CONTROL MODULE PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance

#### CAUTION:

#### WIRING DIAGRAM:



EN-03162

**ENGINE (DIAGNOSTICS)** 

	Step	Check	Yes	No
1	CHECK INPUT VOLTAGE OF ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B135) No. 5 (+) — Chassis ground (-):  (B135) No. 6 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 2.	Repair the open or ground short cir- cuit of power sup- ply circuit.
2	CHECK INPUT VOLTAGE OF ECM.  1) Start the engine. 2) Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B135) No. 5 (+) — Chassis ground (-):  (B135) No. 6 (+) — Chassis ground (-):	Is the voltage 13 — 15 V?	Go to step 3.	Repair the open or ground short cir- cuit of power sup- ply circuit.
3	CHECK ECM GROUND HARNESS.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B137) No. 1 (+) — Chassis ground (-):  (B137) No. 2 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Further tighten the engine ground terminal.

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

#### NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC)(diag)-290, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## CB:DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-177, DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

#### **CAUTION:**

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS-	Is DTC P0691 displayed on the	Check the radiator	Temporary poor
PLAY.	Subaru Select Monitor?	fan relay. <ref. to<br="">CO(H4DOTC)-8, Radiator Fan Sys- tem.&gt;</ref.>	contact occurs.

**ENĞINE (DIAGNOSTICS)** 

### CC:DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH

### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-178, DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS-	Is DTC P0692 displayed on the	Check the radiator	Temporary poor
	PLAY.	Subaru Select Monitor?	fan relay. <ref. th="" to<=""><th>contact occurs.</th></ref.>	contact occurs.
			CO(H4DOTC)-8,	
			Radiator Fan Sys-	
			tem.>	

### CD:DTC P0700 TRANSMISSION CONTROL SYSTEM (MIL REQUEST)

NOTE

For the diagnostic procedure, refer to AT section. <Ref. to 5AT(diag)-2, Basic Diagnostic Procedure.>

#### CE:DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 5AT(diag)-2, Basic Diagnostic Procedure.>

#### CF:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 5AT(diag)-2, Basic Diagnostic Procedure.>

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

NOTE:

For the diagnostic procedure, refer to DTC P1153. <Ref. to EN(H4DOTC)(diag)-228, DTC P1153 O2 SEN-SOR CIRCUIT RANGE/PERFORMANCE (HIGH) (BANK1 SENSOR1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

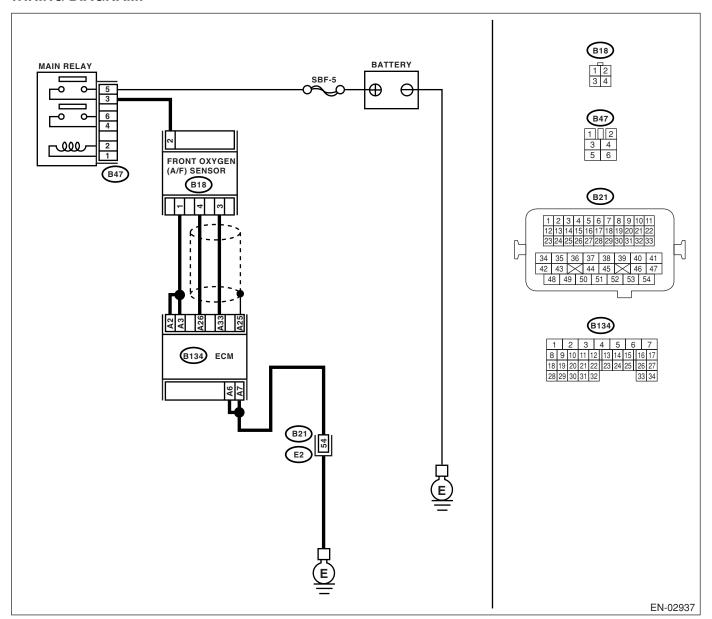
# CH:DTC P1153 O2 SENSOR CIRCUIT RANGE/PERFORMANCE (HIGH) (BANK1 SENSOR1)

#### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-187, DTC P1153 O2 SENSOR CIRCUIT RANGE/PERFORMANCE (HIGH) (BANK1 SENSOR1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK FRONT OXYGEN (A/F) SENSOR DATA.  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 75°C (167°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 signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool instruction manual.</ref.>	Is the measured value within 0.86 — 1.15 at idle?	Go to step 3.	Go to step 4.
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 approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed.  2) Operate the LED operation mode for engine.  NOTE:  Subaru Select Monitor  For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>		Check front oxygen (A/F) sensor circuit.	Check rear oxygen sensor circuit. <ref. to<br="">FU(H4DOTC)-37, Rear Oxygen Sen- sor.&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 any fault in exhaust system?	Repair or replace faulty parts.	Replace front oxygen (A/F) sensor. <ref. (a="" f)="" front="" fu(h4dotc)-35,="" oxygen="" sensor.="" to=""></ref.>

### **CI: DTC P1160 RETURN SPRING FAILURE**

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC)(diag)-290, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

### ENĠINE (ĎIAGNOSTICS)

## CJ:DTC P1301 MISFIRE DETECTED (HIGH TEMPERATURE EXHAUST GAS) DTC DETECTING CONDITION:

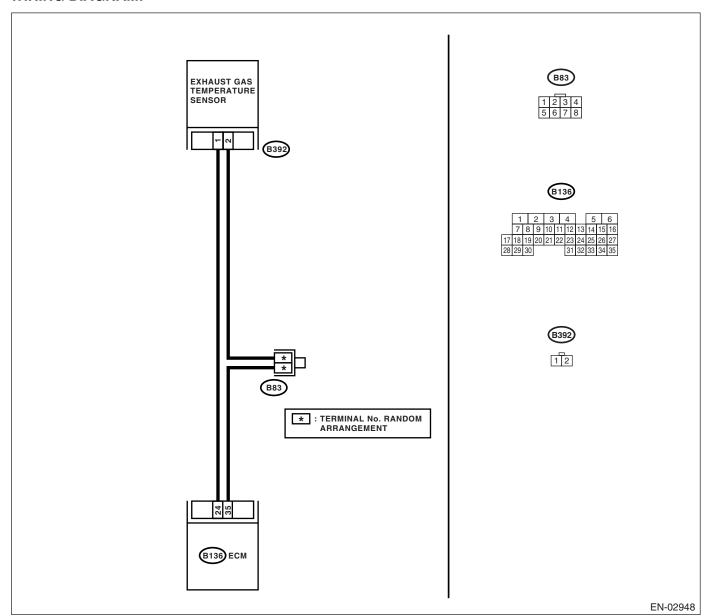
- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-192, DTC P1301 MISFIRE DETECTED (HIGH TEM-PERATURE EXHAUST GAS), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



**ENGINE (DIAGNOSTICS)** 

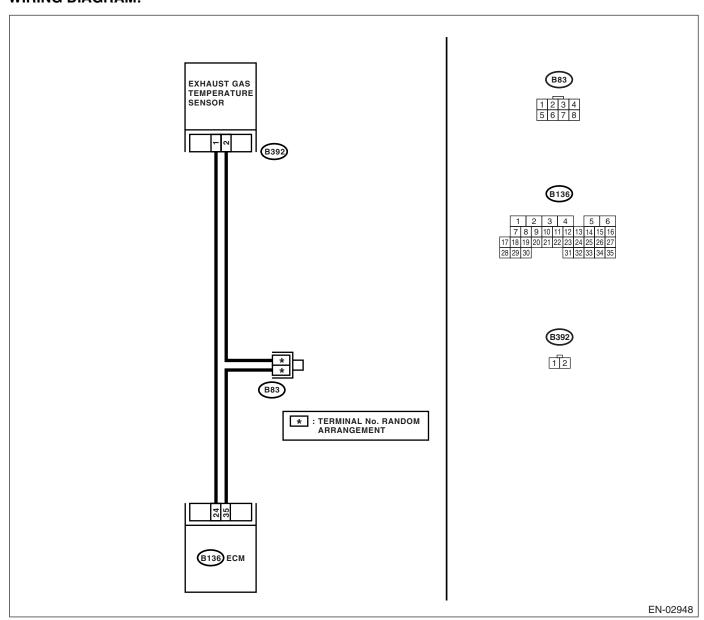
Γ	Step	Check	Yes	No
F	CHECK DTC.	Is there any failure for repair or	Repair or replace	Contact your SOA
	Conduct the troubleshooting for all DTC	replacement exist?	the faulty part,	Service Center.
	P0301, P0302, P0303 and P0304. <ref. th="" to<=""><th></th><th>then replace pre-</th><th></th></ref.>		then replace pre-	
	EN(H4DOTC)(diag)-69, List of Diagnostic		catalytic converter.	
	Trouble Code (DTC).>			

## CK:DTC P1312 EXHAUST GAS TEMPERATURE SENSOR MALFUNCTION DTC DETECTING CONDITION:

- · Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-194, DTC P1312 EXHAUST GAS TEMPERATURE SENSOR MALFUNCTION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" th="" to="" trouble<=""><th>Replace the exhaust gas temperature sensor. <ref. fu(h4dotc)-38,<="" th="" to=""></ref.></th></ref.>	Replace the exhaust gas temperature sensor. <ref. fu(h4dotc)-38,<="" th="" to=""></ref.>
			Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P1312.	

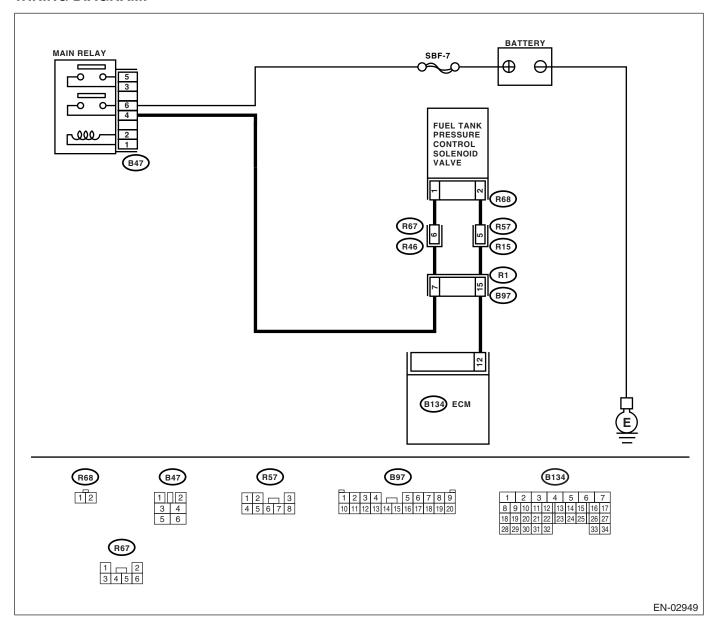
## CL:DTC P1400 FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW

#### **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-195, DTC P1400 FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?		Go to step 3.
2	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Contact with SOA Service Center.
3	CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from fuel tank pressure control solenoid valve and ECM. 3) Measure the resistance of harness between fuel tank pressure control solenoid valve connector and chassis ground.  Connector & terminal  (R68) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair short circuit to ground in har- ness between ECM and fuel tank pressure control solenoid valve connector.
4	CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.  Measure the resistance of harness between ECM and fuel tank pressure control solenoid valve connector.  Connector & terminal  (B134) No. 12 — (R68) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and fuel tank pressure control solenoid valve connector Poor contact in coupling connector
5	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.  Measure the resistance between fuel tank pressure control solenoid valve terminals.  Terminals  No. 1 — No. 2:			Replace the fuel tank pressure con- trol solenoid valve. <ref. to<br="">EC(H4DOTC)-7, Purge Control Solenoid Valve.&gt;</ref.>
6	CHECK POWER SUPPLY TO FUEL TANK PRESSURE CONTROL SOLENOID VALVE.  1) Turn the ignition switch to ON.  2) Measure the voltage between fuel tank pressure control solenoid valve and chassis ground.  Connector & terminal  (R68) No. 1 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Repair harness and connector.  NOTE: In this case, repair the following:  • Open circuit in harness between main relay and fuel tank pressure control solenoid valve connector  • Poor contact in coupling connector  • Poor contact in main relay connector

**ENGINE (DIAGNOSTICS)** 

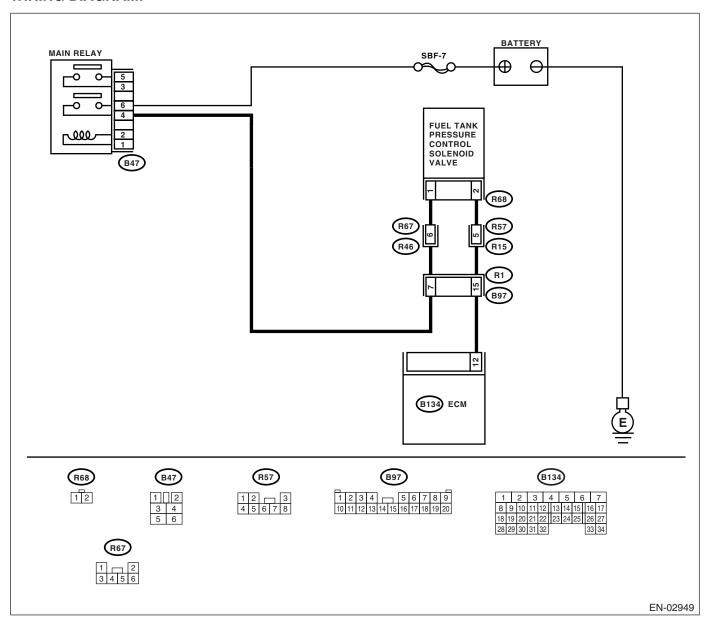
	Step	Check	Yes	No
7	CHECK POOR CONTACT.	Is there poor contact in fuel	Repair poor con-	Contact with SOA
	Check poor contact in fuel tank pressure con-	tank pressure control solenoid	tact in fuel tank	Service Center.
	trol solenoid valve connector.	valve connector?	pressure control	
			solenoid valve	
			connector.	

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-197, DTC P1420 FUEL TANK PRESSURE CONTROL SOL. VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FOR ECM.  1) Turn the ignition switch to OFF.  2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side).  3) Turn the ignition switch to ON.  4) While operating the fuel tank pressure control solenoid valve, measure voltage between ECM and chassis ground.  NOTE: Fuel tank pressure control solenoid valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve="">  Connector &amp; terminal</ref.>		Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. In this case, repair poor contact in ECM connector.
2	(B134) No. 12 (+) — Chassis ground (-):  CHECK INPUT SIGNAL FOR ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Go to step 3.
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>
4	CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel tank pressure control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in harness between ECM and fuel tank pressure control solenoid valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Go to step 5.
5	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.  1) Turn the ignition switch to OFF.  2) Measure the resistance between fuel tank pressure control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance less than 1 $\Omega$ ?	Replace the fuel tank pressure control solenoid valve <ref. control="" ec(h4dotc)-13,="" pressure="" solenoid="" to="" valve.=""> and the ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to="">.</ref.></ref.>	Go to step 6.
6	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

## CN:DTC P1443 VENT CONTROL SOLENOID VALVE FUNCTION PROBLEM DTC DETECTING CONDITION:

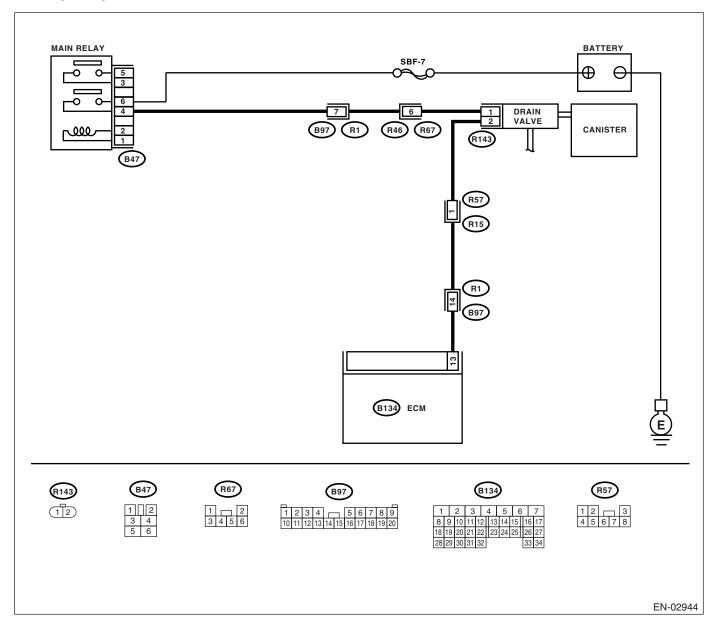
- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-199, DTC P1443 VENT CONTROL SOLENOID VALVE FUNCTION PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Improper fuel supply

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



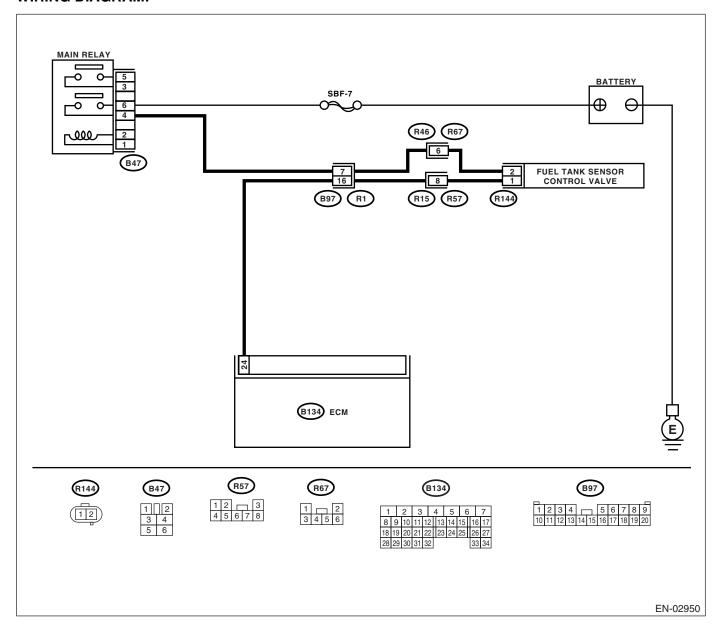
	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK VENT LINE HOSES. Check the following items.  Clogging of vent hoses between canister and drain valve  Clogging of vent hose between drain valve and air filter  Clogging of drain filter	Is there any fault in vent line?	Repair or replace faulty parts.	Go to step 3.
3	CHECK DRAIN VALVE OPERATION.  1) Turn the ignition switch to OFF.  2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side).  3) Turn the ignition switch to ON.  4) Operate the drain valve.  NOTE:  Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4dotc)(diag)-44,="" mode.="" operation="" to="" valve=""></ref.>		Contact with SOA Service Center.	Replace the drain valve. <ref. to<br="">EC(H4DOTC)-16, Drain Valve.&gt;</ref.>

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

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-201, DTC P1446 FUEL TANK SENSOR CONTROL VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. (However, the possibility of poor contact still remains.)  NOTE: In this case, repair the following:  Poor contact in fuel tank sensor control valve connector  Poor contact in ECM connector  Poor contact in coupling connector
3	CHECK HARNESS BETWEEN FUEL TANK SENSOR CONTROL VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from fuel tank sensor control valve and ECM. 3) Measure the resistance of harness between fuel tank sensor control valve connector and chassis ground.  Connector & terminal  (R144) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair short circuit to ground in har- ness between ECM and fuel tank sensor control valve connector.
4	CHECK HARNESS BETWEEN FUEL TANK SENSOR CONTROL VALVE AND ECM CONNECTOR.  Measure the resistance of harness between ECM and fuel tank sensor control valve connector.  Connector & terminal (B134) No. 24 — (R144) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and fuel tank sensor control valve connector  Poor contact in coupling connector
5	CHECK FUEL TANK SENSOR CONTROL VALVE.  Measure the resistance between fuel tank sensor control valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance 10 — 100 $\Omega$ ?	Go to step 6.	Replace the fuel tank sensor control valve. <ref. drain="" ec(h4dotc)-16,="" to="" valve.=""></ref.>

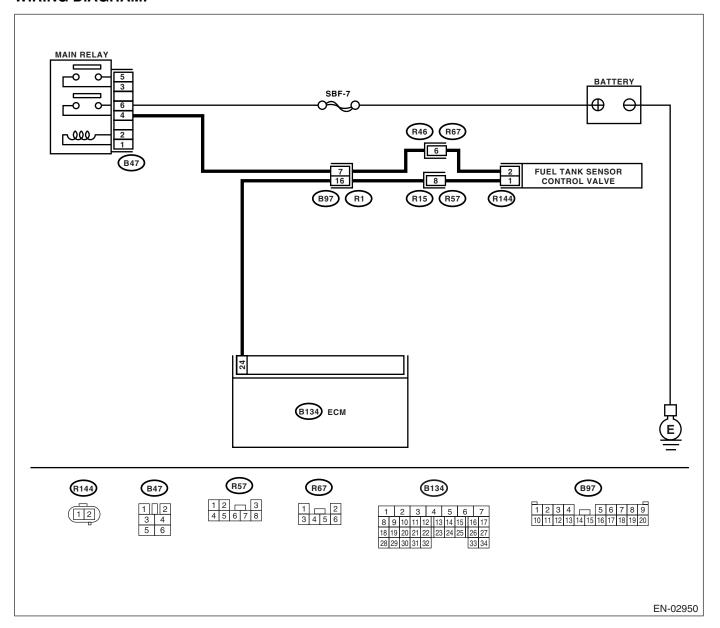
	Step	Check	Yes	No
6	CHECK POWER SUPPLY TO FUEL TANK SENSOR CONTROL VALVE.  1) Turn the ignition switch to ON.  2) Measure the voltage between fuel tank sensor control valve and chassis ground.  Connector & terminal  (R144) No. 1 (+) — Chassis ground (-):	Is the voltage more than 10 V?		Repair harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between main relay and fuel tank sensor control valve Poor contact in
7	CHECK POOR CONTACT.  Check poor contact in fuel tank sensor control valve connector.	Is there poor contact in fuel tank sensor control valve connector?	Repair poor contact in fuel tank sensor control valve connector.	coupling connector • Poor contact in main relay connector  Contact with SOA Service Center.

## CP:DTC P1447 FUEL TANK SENSOR CONTROL VALVE CIRCUIT HIGH DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-203, DTC P1447 FUEL TANK SENSOR CONTROL VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.  1) Turn the ignition switch to ON.  2) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 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 contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>
3	CHECK HARNESS BETWEEN FUEL TANK SENSOR CONTROL VALVE AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel tank sensor control valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground.  Connector & terminal  (B134) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair short circuit to battery in harness between ECM and fuel tank sensor control valve connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Go to step 4.
4	CHECK FUEL TANK SENSOR CONTROL VALVE.  1) Turn the ignition switch to OFF.  2) Measure the resistance between fuel tank sensor control valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance less than 1 $\Omega$ ?	Replace the fuel tank sensor control valve <ref. control="" ec(h4dotc)-12,="" fuel="" sensor="" tank="" to="" valve.=""> and the ECM <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to="">.</ref.></ref.>	Go to step 5.
5	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H4DOTC)-39, Engine Control Module (ECM).&gt;</ref.>

#### **ENĠINE (ĎIAGNOSTICS)**

## CQ:DTC P1491 POSITIVE CRANKCASE VENTILATION (BLOW-BY) FUNCTION PROBLEM

#### **DTC DETECTING CONDITION:**

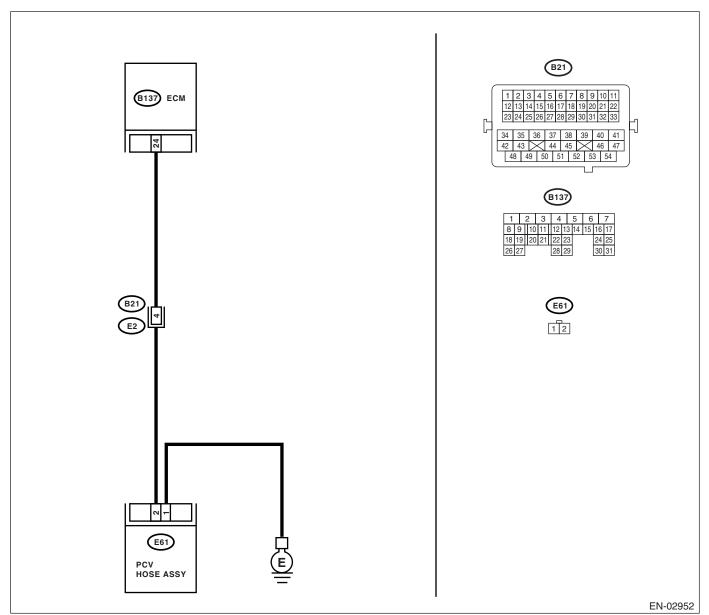
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-205, DTC P1491 POSITIVE CRANKCASE VENTILA-TION (BLOW-BY) FUNCTION PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

Erroneous idling

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



		1	T	1
	Step	Check	Yes	No
1	CHECK BLOW-BY HOSE. Check the blow-by hose.	Is there disconnection or crack in blow-by hose?	Replace or repair blow-by hose.	Go to step 2.
2	CHECK HARNESS BETWEEN PCV HOSE ASSEMBLY AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from PCV hose assembly and ECM. 3) Measure the resistance of harness between PCV hose assembly and ECM connector.  Connector & terminal (B137) No. 24 — (E61) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between PCV hose assembly and ECM.
3	CHECK HARNESS BETWEEN PCV HOSE ASSEMBLY AND ECM CONNECTOR. Measure the resistance of harness between PCV hose assembly and chassis ground. Connector & terminal (B137) No. 24 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair short circuit to chassis ground in harness between PCV hose assembly and ECM.
4	CHECK PCV HOSE ASSEMBLY GROUND CIRCUIT.  Measure the resistance between PCV hose assembly and engine ground.  Connector & terminal  (B61) No. 1 — Engine ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 5.	Repair PCV hose assembly ground circuit.
5	CHECK PCV HOSE ASSEMBLY.  Measure the resistance between PCV hose assembly and terminal.  Terminals  No. 1 — No. 2:	Is the resistance less than 1 $\Omega$ ?	Repair poor contact in ECM and PCV hose assembly.	Replace PCV hose assembly.

#### CR:DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT

#### DTC DETECTING CONDITION:

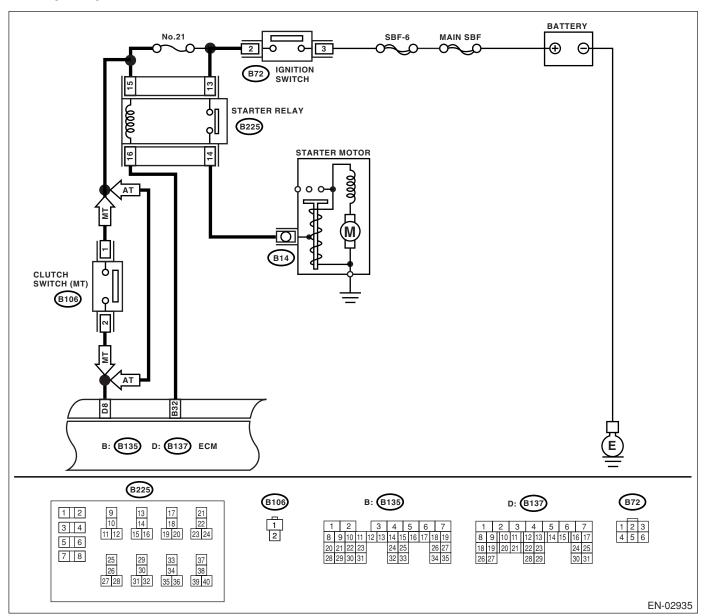
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-207, DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Failure of engine to start

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK HARNESS BETWEEN STARTER RELAY AND ECM.  1) Disconnect the connectors from starter relay and ECM.  2) Measure the resistance of harness between ECM and chassis ground.  Connector & terminal (B135) No. 32 — Chassis ground:	Is the resistance more than 1 M $\Omega$ ?	Repair the ground short circuit between starter motor and ECM.	Repair the poor contact in ECM connector.

#### CS:DTC P1544 EXHAUST GAS TEMPERATURE TOO HIGH

#### **DTC DETECTING CONDITION:**

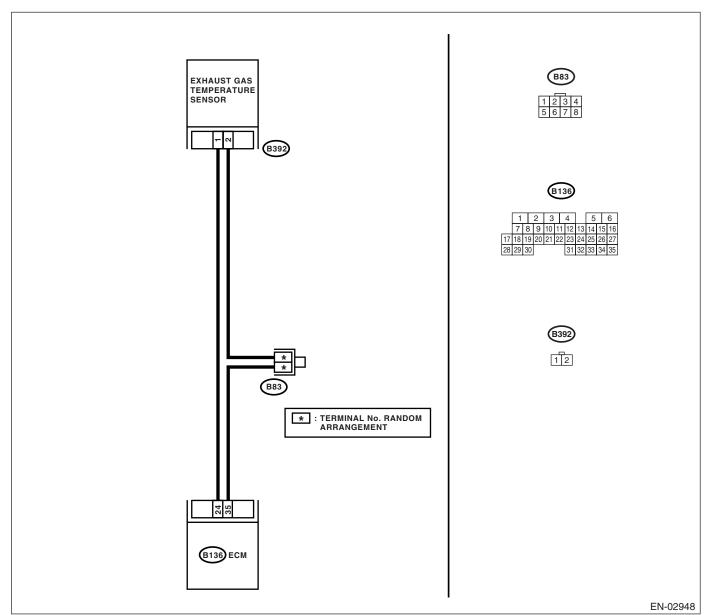
- · Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-208, DTC P1544 EXHAUST GAS TEMPERATURE TOO HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



**ENGINE (DIAGNOSTICS)** 

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""> NOTE: In this case, it is not necessary to inspect DTC P1544.</ref.>	
2	CHECK EXHAUST SYSTEM. Check the exhaust system parts.  NOTE: Check the following items.  Loose installation of exhaust manifold  Cracks or hole of exhaust manifold  Loose installation of front oxygen (A/F) sensor	Is there any fault in exhaust system?	Repair or replace the failure, then replace precata- lytic converter.	Contact your SOA Service Center.

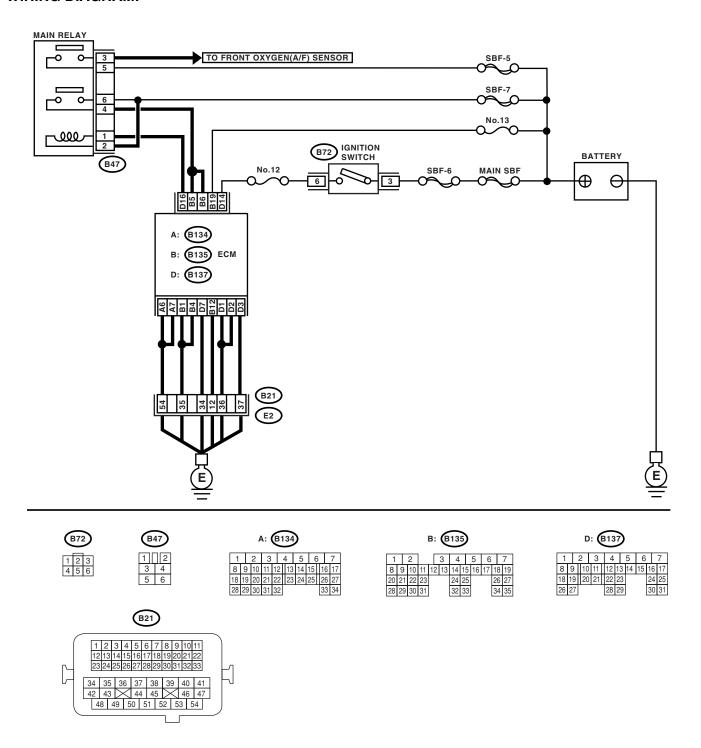
## CT:DTC P1560 BACK-UP VOLTAGE CIRCUIT MALFUNCTION

#### DTC DETECTING CONDITION:

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-209, DTC P1560 BACK-UP VOLTAGE CIRCUIT MAL-FUNCTION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

#### WIRING DIAGRAM:



EN-03162

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
4	CHECK INPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?	Repair the poor	Go to step 2.
•	Turn the ignition switch to OFF.	is the voltage more than 10 v?	contact in ECM	Go to step 2.
	Measure the voltage between ECM and		connector.	
	chassis ground.		Connector.	
	Connector & terminal			
	(B135) No. 19 (+) — Chassis ground (-):			
			D : 11	0 0
2	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 10	Repair the ground	Go to step 3.
	MAIN FUSE BOX CONNECTOR.	Ω?	short circuit in har-	
	Disconnect the connector from ECM.		ness between	
	2) Measure the resistance of harness		ECM connector	
	between ECM and chassis ground.		and battery termi-	
	Connector & terminal		nal.	
	(B135) No. 19 — Chassis ground:			
3	CHECK FUSE No. 13	Is the fuse blown out?	Replace the fuse.	Repair the har-
				ness and connec-
				tor.
				NOTE:
				In this case, repair
				the following:
				<ul> <li>Open circuit in</li> </ul>
				harness between
				ECM and battery
				<ul> <li>Poor contact in</li> </ul>
				ECM connector
				<ul> <li>Poor contact in</li> </ul>
				battery terminal

# CU:DTC P2004 INTAKE MANIFOLD RUNNER CONTROL STUCK OPEN (BANK 1)

### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-211, DTC P2004 INTAKE MANIFOLD RUNNER CONTROL STUCK OPEN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH.  1) Remove the tumble generator valve assembly.  2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-30, Tumble Generator Valve Assembly.&gt;</ref.>	Clean the tumble generator valve.

**ENĞINE (ĎIAGNOSTICS)** 

## CV:DTC P2005 INTAKE MANIFOLD RUNNER CONTROL STUCK OPEN (BANK 2)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-212, DTC P2005 INTAKE MANIFOLD RUNNER CONTROL STUCK OPEN (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH.  1) Remove the tumble generator valve assembly.  2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-30, Tumble Generator Valve Assembly.&gt;</ref.>	Clean the tumble generator valve.

# CW:DTC P2006 INTAKE MANIFOLD RUNNER CONTROL STUCK CLOSED (BANK 1)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION < Ref. to GD(H4DOTC)-213, DTC P2006 INTAKE MANIFOLD RUNNER CONTROL STUCK CLOSED (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)" <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH.  1) Remove the tumble generator valve assembly.  2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-30, Tumble Generator Valve Assembly.&gt;</ref.>	Clean the tumble generator valve.

**ENGINE (DIAGNOSTICS)** 

# CX:DTC P2007 INTAKE MANIFOLD RUNNER CONTROL STUCK CLOSED (BANK 2)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-214, DTC P2007 INTAKE MANIFOLD RUNNER CONTROL STUCK CLOSED (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" )-69,="" code="" diagnostic="" en(h4dotc)(diag="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2	CHECK TUMBLE GENERATOR VALVE RH.  1) Remove the tumble generator valve assembly.  2) Check the tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tum- ble generator valve assembly. <ref. to<br="">FU(H4DOTC)-30, Tumble Generator Valve Assembly.&gt;</ref.>	Clean the tumble generator valve.

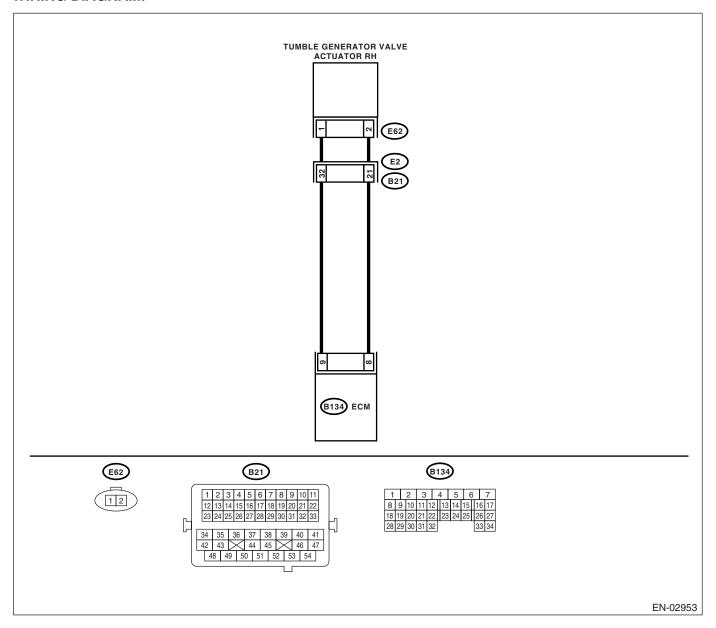
# CY:DTC P2008 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT / OPEN (BANK 1)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-215, DTC P2008 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT / OPEN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve and ECM connector. 3) Measure the resistance between tumble generator valve actuator and ECM connector.  Connector & terminal  (E62) No. 1 — (B134) No. 9:  (E62) No. 2 — (B134) No. 8:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair the open circuit between ECM and tumble generator valve connector.  NOTE: In this case, repair the following:  • Open circuit in harness between ECM and tumble generator valve actuator connector.  • Poor contact in coupling connector.
2	CHECK POOR CONTACT.  Check poor contact in tumble generator valve actuator connector.	Is there poor contact in tumble generator valve actuator connector?	Repair the poor contact in tumble generator valve actuator connector.	Replace the tumble generator valve actuator. <ref. actuator.="" fu(h4dotc)-31,="" generator="" to="" tumble="" valve=""></ref.>

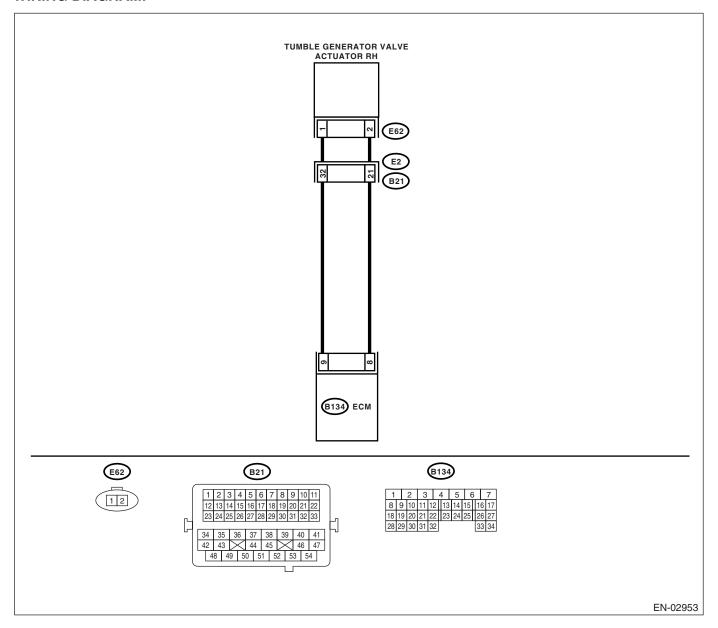
### CZ:DTC P2009 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 1)

#### **DTC DETECTING CONDITION:**

- · Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-217, DTC P2009 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve connector. 3) Measure the voltage between tumble generator valve actuator and chassis ground.  Connector & terminal (E62) No. 1 (+) — Chassis ground (-): (E62) No. 2 (+) — Chassis ground (-):	Is the voltage less than 5 V?	FU(H4DOTC)-31,	Repair the battery short circuit between ECM and tumble generator valve actuator.

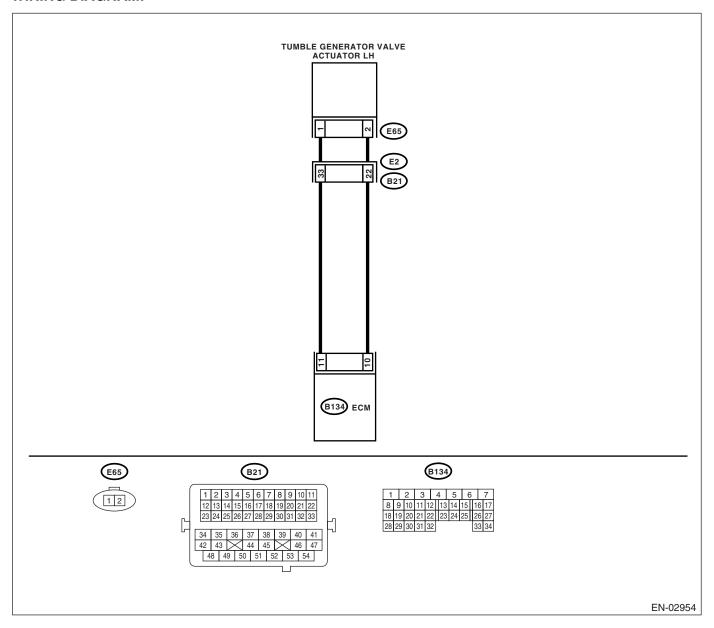
### DA:DTC P2011 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT / OPEN (BANK 2)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-219, DTC P2011 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT / OPEN (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve and ECM connector. 3) Measure the resistance between tumble generator valve actuator and ECM connector.  Connector & terminal (E65) No. 1 — (B134) No. 11: (E65) No. 2 — (B134) No. 10:	Is the resistance less than 1	Go to step 2.	Repair the open circuit between ECM and tumble generator valve connector.  NOTE: In this case, repair the following:  • Open circuit in harness between ECM and tumble
				generator valve actuator connector.  • Poor contact in coupling connector.
2	CHECK POOR CONTACT.  Check poor contact in tumble generator valve actuator connector.	Is there poor contact in tumble generator valve actuator connector?	Repair the poor contact in tumble generator valve actuator connector.	Replace the tumble generator valve actuator. <ref. actuator.="" fu(h4dotc)-31,="" generator="" to="" tumble="" valve=""></ref.>

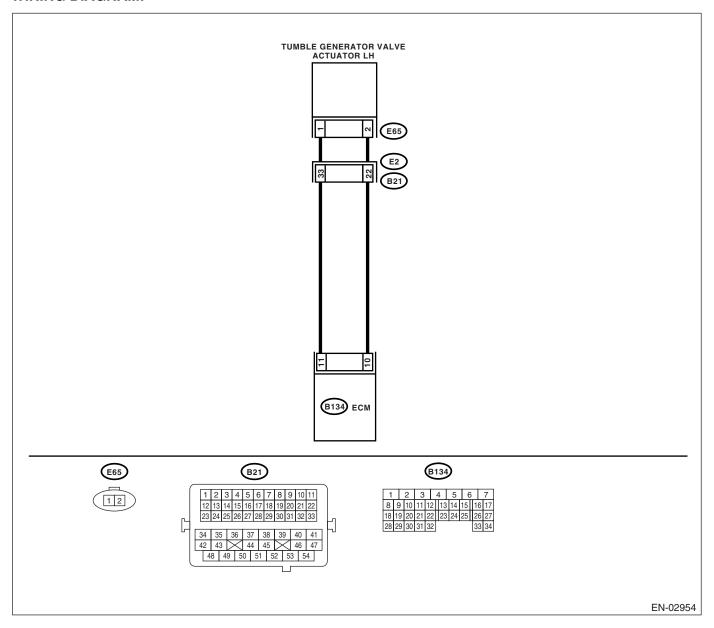
### DB:DTC P2012 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 2)

#### **DTC DETECTING CONDITION:**

- · Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-221, DTC P2012 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve connector. 3) Measure the voltage between tumble generator valve actuator and chassis ground.  Connector & terminal (E65) No. 1 (+) — Chassis ground (-): (E65) No. 2 (+) — Chassis ground (-):	Is the voltage less than 5 V?	ble generator valve actuator. <ref. th="" to<=""><th>between ECM and tumble generator</th></ref.>	between ECM and tumble generator

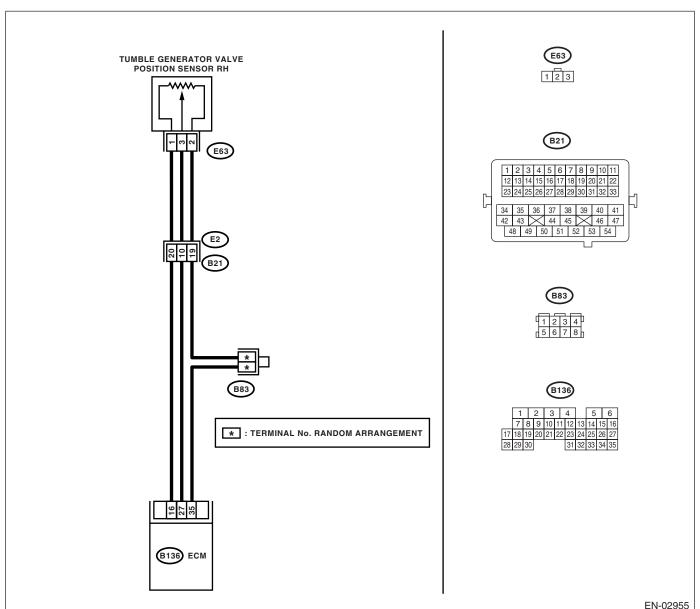
### DC:DTC P2016 INTAKE MANIFOLD RUNNER POSITION SENSOR / SWITCH CIRCUIT LOW (BANK 1)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-223, DTC P2016 INTAKE MANIFOLD RUNNER PO-SITION SENSOR / SWITCH CIRCUIT LOW (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- Erroneous idling
- · Engine stalls.
- · Poor driving performance

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.  1) Start the engine.  2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool  For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	Is the voltage less than 0.1 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.  NOTE: In this case, repair the following:  Poor contact in tumble generator valve position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2	CHECK INPUT SIGNAL FOR ECM.  Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed.  Connector & terminal  (B136) No. 16 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B136) No. 16 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center.
4	CHECK INPUT SIGNAL FOR ECM.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B136) No. 27 (+) — Chassis ground (-):	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR)  Measure the voltage between ECM connector and chassis ground.	Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Does the voltage change?	Repair the poor contact in ECM connector.	Go to step 6.

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from tumble generator valve position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between tumble generator valve position sensor connector and engine ground.  Connector & terminal  (E63) No. 1 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between tumble generator valve position sensor and ECM connector Poor contact in throttle position sensor connector Poor contact in ECM connector Poor contact in coupling connector Poor contact in coupling connector
7	CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and tumble generator valve position sensor connector.  Connector & terminal  (B136) No. 27 — (E63) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 8.	Repair the harness and connector.  NOTE: In this case, repair the following:  • Open circuit in harness between tumble generator valve position sensor and ECM connector  • Poor contact in ECM connector  • Poor contact in tumble generator valve position sensor connector  • Poor contact in tumble generator valve position sensor connector  • Poor contact in coupling connector
8	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.  Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.  Connector & terminal  (E63) No. 3 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 9.	Repair the ground short circuit in har- ness between tum- ble generator valve position sensor and ECM connec- tor.
9	CHECK POOR CONTACT. Check poor contact in tumble generator valve position sensor connector.	Is there poor contact in tumble generator valve position sensor connector?	Repair the poor contact in tumble generator valve position sensor connector.	Replace the tum- ble generator valve position sensor. <ref. to<br="">FU(H4DOTC)-32, Tumble Generator Valve Position Sensor.&gt;</ref.>

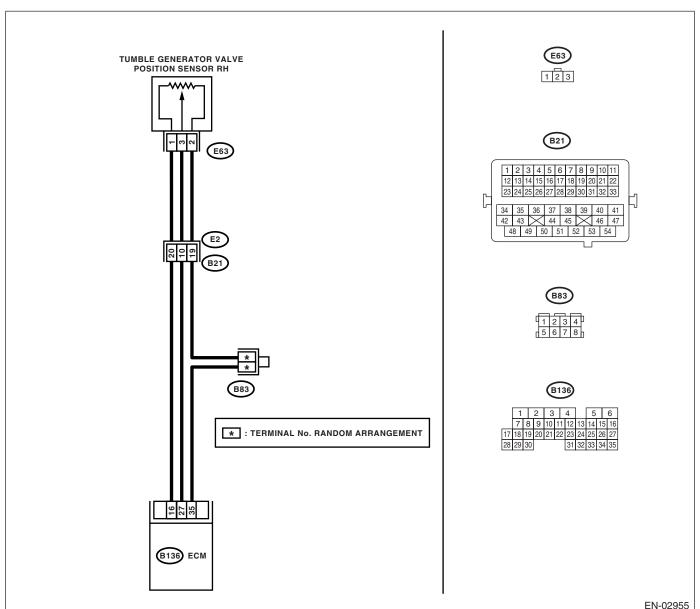
### DD:DTC P2017 INTAKE MANIFOLD RUNNER POSITION SENSOR / SWITCH CIRCUIT HIGH (BANK 1)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-225, DTC P2017 INTAKE MANIFOLD RUNNER PO-SITION SENSOR / SWITCH CIRCUIT HIGH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- Erroneous idling
- Engine stalls.
- · Poor driving performance

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.  1) Start the engine.  2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool  For detailed operation procedures, refer to the OBD-II general scan tool instruction manual.</ref.>	Is the voltage more than 4.9 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.  NOTE: In this case, repair the following:  Poor contact in tumble generator valve position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2	CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve position sensor. 3) Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.  Connector & terminal (E63) No. 2 — Engine ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 3.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between tumble generator valve position sensor and ECM connector  Poor contact in coupling connector  Poor contact in joint connector
3	CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to ON. 2) Measure the voltage between tumble generator valve position sensor connector and engine ground.  Connector & terminal (E63) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.9 V?	Repair the battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Replace the tumble generator valve position sensor.

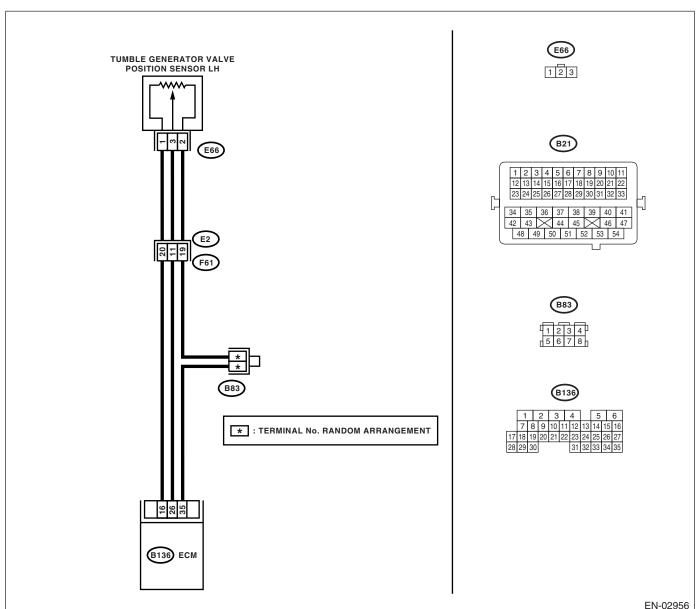
### DE:DTC P2021 INTAKE MANIFOLD RUNNER POSITION SENSOR / SWITCH CIRCUIT LOW (BANK 2)

#### DTC DETECTING CONDITION:

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-227, DTC P2021 INTAKE MANIFOLD RUNNER PO-SITION SENSOR / SWITCH CIRCUIT LOW (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- · Erroneous idling
- Engine stalls.
- Poor driving performance

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA.  1) Start the engine.  2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	Is the voltage less than 0.1 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.  NOTE: In this case, repair the following:  Poor contact in throttle position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2	CHECK INPUT SIGNAL FOR ECM.  Measure the voltage between ECM connector and chassis ground while tumble generator valve is fully closed.  Connector & terminal  (B136) No. 16 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B136) No. 16 (+) — Chassis ground (-):	Shake the ECM harness and connector, while monitoring value of voltage meter. Does the voltage change?	Repair the poor contact in ECM connector.	Contact your SOA Service Center.
4	CHECK INPUT SIGNAL FOR ECM.  Measure the voltage between ECM connector and chassis ground.  Connector & terminal  (B136) No. 26 (+) — Chassis ground (-):	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR)  Measure the voltage between ECM connector and chassis ground.	Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Does the voltage change?	Repair the poor contact in ECM connector.	Go to step 6.

Step	Check	Yes	No
6 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from tumble generator valve position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between tumble generator valve position sensor connector and engine ground.  Connector & terminal (E66) No. 1 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between tumble generator valve position sensor and ECM connector  Poor contact in tumble generator valve position sensor connector  Poor contact in ECM connector  Poor contact in ECM connector  Poor contact in ECM connector  Poor contact in coupling connector  Poor contact in coupling connector
7 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and tumble generator valve position sensor connector.  Connector & terminal  (B136) No. 26 — (E66) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 8.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between tumble generator valve position sensor and ECM connector  Poor contact in ECM connector  Poor contact in tumble generator valve position sensor connector  Poor contact in tumble generator valve position sensor connector  Poor contact in coupling connector
8 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.  Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.  Connector & terminal  (E66) No. 3 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 9.	Repair the ground short circuit in har- ness between tum- ble generator valve position sensor and ECM connec- tor.
9 CHECK POOR CONTACT. Check poor contact in tumble generator valve position sensor connector.	Is there poor contact in tumble generator valve position sensor connector?	Repair the poor contact in tumble generator valve position sensor connector.	Replace the tum- ble generator valve position sensor. <ref. to<br="">FU(H4DOTC)-32, Tumble Generator Valve Position Sensor.&gt;</ref.>

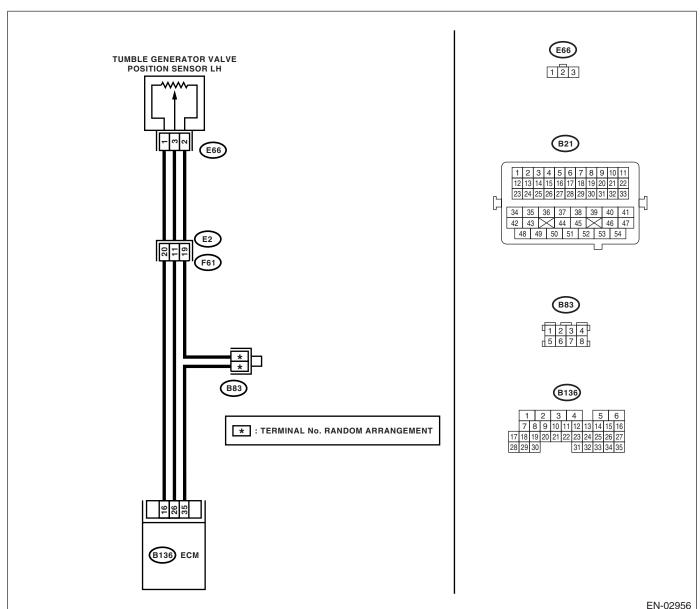
### DF:DTC P2022 INTAKE MANIFOLD RUNNER POSITION SENSOR / SWITCH CIR-CUIT HIGH (BANK 2)

#### **DTC DETECTING CONDITION:**

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-229, DTC P2022 INTAKE MANIFOLD RUNNER PO-SITION SENSOR / SWITCH CIRCUIT HIGH (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- Erroneous idling
- Enoneous idiini
- Engine stalls.
- · Poor driving performance

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK CURRENT DATA.  1) Start the engine. 2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	Is the voltage more than 4.9 V?	Go to step 2.	Even if malfunction indicator light lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.  NOTE: In this case, repair the following:  Poor contact in tumble generator valve position sensor connector Poor contact in ECM connector Poor contact in coupling connector
2 CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve position sensor. 3) Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.  Connector & terminal (E66) No. 2 — Engine ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 3.	Repair the harness and connector.  NOTE: In this case, repair the following:  Open circuit in harness between tumble generator valve position sensor and ECM connector  Poor contact in coupling connector  Poor contact in joint connector
3 CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.  1) Turn the ignition switch to ON. 2) Measure the voltage between tumble generator valve position sensor connector and engine ground.  Connector & terminal  (E66) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.9 V?	Repair the battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	position sensor.

### DG:DTC P2088 OCV SOLENOID VALVE SIGNAL A CIRCUIT OPEN (BANK 1) DTC DETECTING CONDITION:

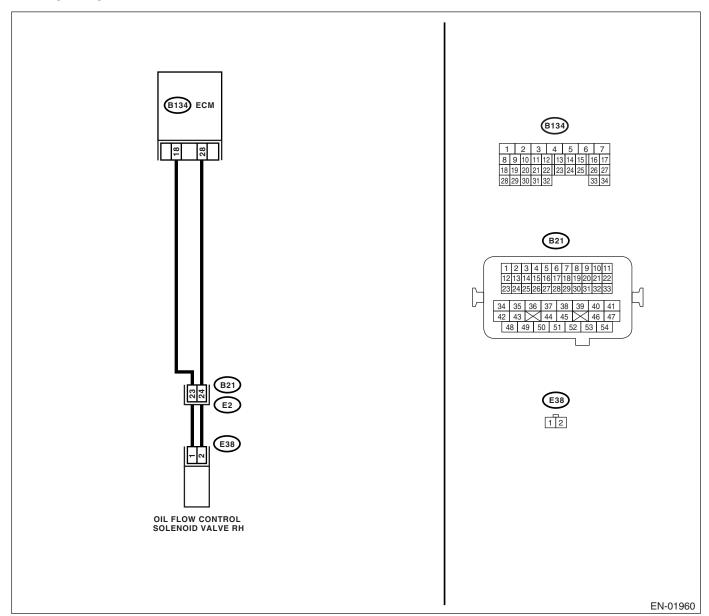
- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-231, DTC P2088 OCV SOLENOID VALVE SIGNAL A CIRCUIT OPEN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Erroneous idling

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM and oil flow control solenoid valve.  3) Measure the resistance between ECM and oil flow control solenoid valve.  Connector & terminal  (B134) No. 18 — (E38) No. 1:  (B134) No. 28 — (E38) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair the open circuit in harness between ECM and oil flow control solenoid valve connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and oil flow control solenoid valve connector  Poor contact in coupling connector
2	CHECK OIL FLOW CONTROL SOLENOID VALVE.  1) Disconnect the oil flow control solenoid valve connector.  2) Measure the resistance between oil flow control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance 6 — 12 $\Omega$ ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H4DOTC)- 51, Camshaft.&gt;</ref. 

### DH:DTC P2089 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 1) DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

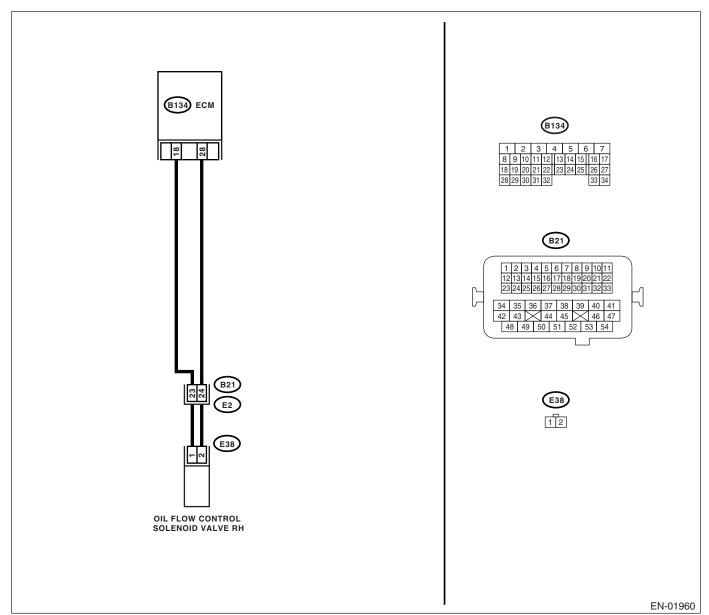
- · Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-233, DTC P2089 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Erroneous idling

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM and oil flow control solenoid valve.  3) Measure the resistance between oil flow control solenoid valve and engine ground.  Connector & terminal  (E38) No. 1 — Engine ground:  (E38) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 2.	Repair the short circuit between ECM and oil flow control solenoid valve connector.
2	CHECK OIL FLOW CONTROL SOLENOID VALVE.  1) Disconnect the oil flow control solenoid valve connector.  2) Measure the resistance between oil flow control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance 6 — 12 $\Omega$ ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H4DOTC)- 51, Camshaft.&gt;</ref. 

### DI: DTC P2092 OCV SOLENOID VALVE SIGNAL A CIRCUIT OPEN (BANK 2) DTC DETECTING CONDITION:

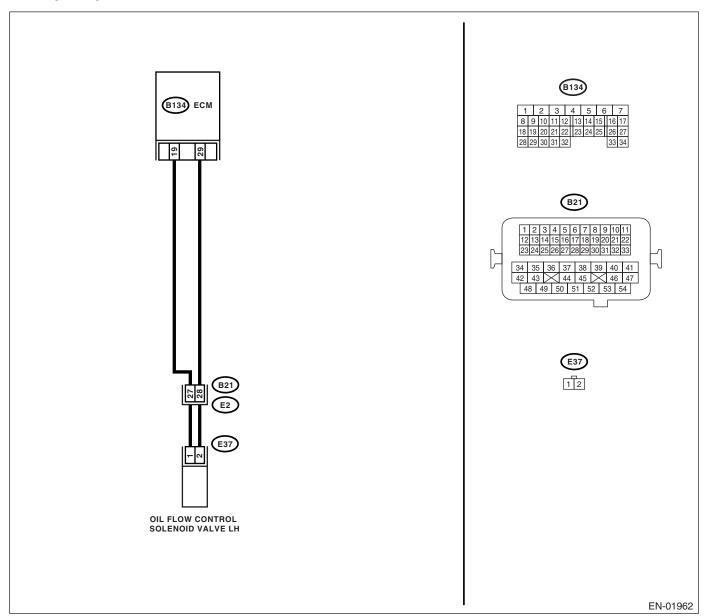
- · Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-234, DTC P2092 OCV SOLENOID VALVE SIGNAL A CIRCUIT OPEN (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.

#### TROUBLE SYMPTOM:

Erroneous idling

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM and oil flow control solenoid valve.  3) Measure the resistance between ECM and oil flow control solenoid valve.  Connector & terminal  (B134) No. 19 — (E37) No. 1:  (B134) No. 29 — (E37) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair the open circuit in harness between ECM and oil flow control solenoid valve connector.  NOTE: In this case, repair the following:  Open circuit in harness between ECM and oil flow control solenoid valve connector  Poor contact in coupling connector
2	CHECK OIL FLOW CONTROL SOLENOID VALVE.  1) Disconnect the oil flow control solenoid valve connector.  2) Measure the resistance between oil flow control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance 6 — 12 $\Omega$ ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H4DOTC)- 51, Camshaft.&gt;</ref. 

### DJ:DTC P2093 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 2) DTC DETECTING CONDITION:

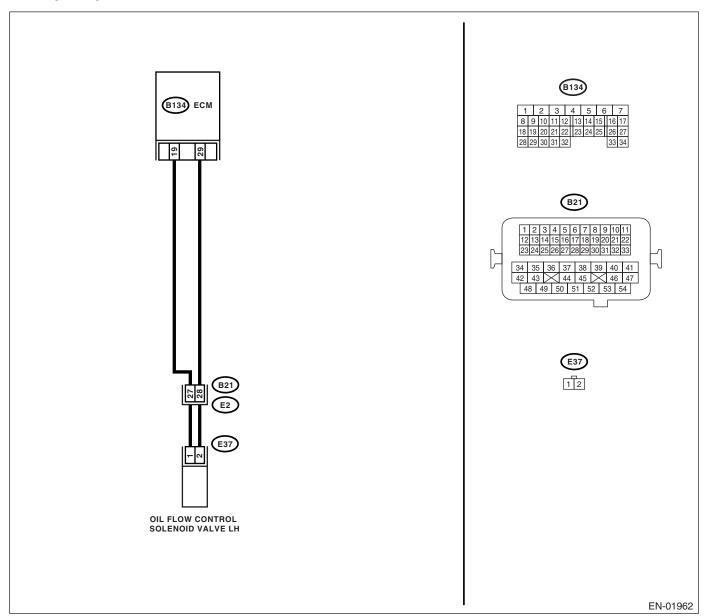
- · Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-234, DTC P2093 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

Erroneous idling

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



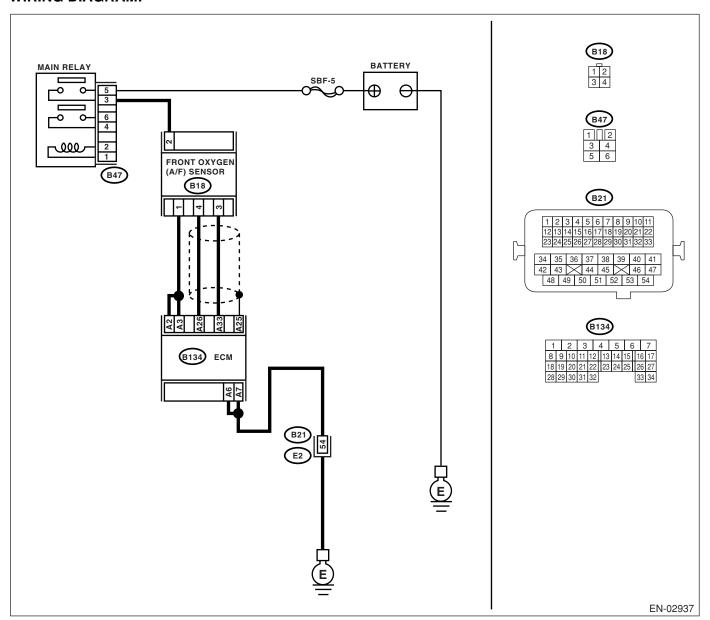
	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM and oil flow control solenoid valve.  3) Measure the resistance between oil flow control solenoid valve and engine ground.  Connector & terminal  (E37) No. 1 — Engine ground:  (E37) No. 2 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 2.	Repair the short circuit between ECM and oil flow control solenoid valve connector.
2	CHECK OIL FLOW CONTROL SOLENOID VALVE.  1) Disconnect the oil flow control solenoid valve connector.  2) Measure the resistance between oil flow control solenoid valve terminals.  Terminals  No. 1 — No. 2:	Is the resistance 6 — 12 $\Omega$ ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H4DOTC)- 51, Camshaft.&gt;</ref. 

### DK:DTC P2096 POST CATALYST FUEL TRIM SYSTEM TOO LEAN BANK 1 DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-235, DTC P2096 POST CATALYST FUEL TRIM SYSTEM TOO LEAN BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2 CHECK FRONT OXYGEN (A/F) SENSOR DATA.  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 75°C (167°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 signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	0.86 — 1.15 at idle?	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 approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed.  2) Operate the LED operation mode for engine.  NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>		Check front oxygen (A/F) sensor circuit.	Check rear oxygen sensor circuit. <ref. fu(h4dotc)-37,="" oxygen="" rear="" sensor.="" to=""></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 any fault in exhaust system?	Repair or replace faulty parts.	Go to step 5.
5 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step 6.

	Step	Check	Yes	No
6	CHECK FUEL PRESSURE. Warning:	Is the measured value 284 — 314 kPa (2.9 — 3.2 kg/cm <sup>2</sup> , 41	Go to step 7.	Repair the follow- ing items.
	<ul><li>Place "NO FIRE" signs near the working</li></ul>	— 46 psi)?		Fuel pressure too
	area.			high: • Clogged fuel
	<ul> <li>Be careful not to spill fuel on the floor.</li> <li>1) Release the fuel pressure.</li> </ul>			line or bent
	(1) Disconnect the connector from fuel			hose
	pump relay.			Fuel pressure too
	(2) Start the engine and run it until it stalls.			low: • Improper fuel
	(3) After the engine stalls, crank it for 5 more seconds.			pump discharge
	(4) Turn the ignition switch to OFF.			Clogged fuel
	<ul><li>2) Connect the connector to fuel pump relay.</li><li>3) Disconnect the fuel delivery hose from fuel</li></ul>			supply line
	filter, and connect fuel pressure gauge.			
	4) Install the fuel filler cap.			
	<ol><li>Start the engine and idle while gear position is neutral.</li></ol>			
	6) Measure the fuel pressure while discon-			
	necting pressure regulator vacuum hose from			
	intake manifold.			
	Warning:  Before removing the fuel pressure gauge,			
	release fuel pressure.			
7	CHECK FUEL PRESSURE.	Is the measured value 206 —	Go to step 8.	Repair the follow-
	After connecting the pressure regulator vac- uum hose, measure fuel pressure.	235 kPa (2.1 — 2.4 kg/cm <sup>2</sup> , 30 — 34 psi)?		ing items. Fuel pressure too
	Warning:	— 34 psi) !		high:
	Before removing the fuel pressure gauge,			Faulty pres-
	release fuel pressure. NOTE:			<ul><li>sure regulator</li><li>Clogged fuel</li></ul>
	If out of specification as measured at this step,			line or bent
	check or replace the pressure regulator and			hose
	pressure regulator vacuum hose.			Fuel pressure too low:
				Faulty pres-
				sure regulator
				<ul> <li>Improper fuel pump discharge</li> </ul>
				Clogged fuel
			-	supply line
8	CHECK ENGINE COOLANT TEMPERATURE SENSOR.	Is the temperature more than 60°C (140°F)?	Go to step 9.	Replace the engine coolant
	Start the engine and warm-up completely.	00 0 (140 1):		temperature sen-
	2) Read the data of engine coolant tempera-			sor. <ref. td="" to<=""></ref.>
	ture sensor signal using Subaru Select Monitor or OBD-II general scan tool.			FU(H4DOTC)-22, Engine Coolant
	NOTE:			Temperature Sen-
	<ul> <li>Subaru Select Monitor</li> </ul>			sor.>
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
	OBD-II general scan tool  For detailed eneration procedure, refer to the			
	For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.			
	general coan tool mondon mandan			

	Step	Check	Yes	No
9	•	Is the measured value within	Go to step 10.	Replace the mass
	TEMPERATURE.	the followings? Ignition ON:	1	air flow and intake
	1) Start the engine and warm-up engine until	73.3 — 106.6 kPa (550 — 800		air temperature
	coolant temperature is greater than 60°C	mmHg, 21.65 — 31.50 inHg)		sensor. <ref. th="" to<=""></ref.>
	(140°F).	Idling: 24.0 — 41.3 kPa (180 —		FU(H4DOTC)-27,
	2) Place the shift lever in neutral position.	310 mmHg, 7.09 — 12.20		Mass Air Flow and
	<ul><li>3) Turn the A/C switch to OFF.</li><li>4) Turn all accessory switches to OFF.</li></ul>	inHg)		Intake Air Temper- ature Sensor.>
	5) Read the data of mass air flow and intake			ature Serisor.>
	air temperature sensor signal using Subaru			
	Select Monitor or OBD-II general scan tool.			
	NOTE:			
	Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". < Ref. to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
	OBD-II general scan tool			
	For detailed operation procedure, refer to the			
	OBD-II general scan tool instruction manual.			
10	CHECK MASS AIR FLOW AND INTAKE AIR	Subtract ambient temperature	Go to step 11.	Check the mass
	TEMPERATURE SENSOR.	from intake air temperature. Is		air flow and intake
	1) Start the engine and warm-up engine until coolant temperature is greater than 60°C	the obtained value –10 to 50°C (14 to 122°F)?		air temperature sensor. <ref. th="" to<=""></ref.>
	(140°F).	(14 to 122 F):		FU(H4DOTC)-27,
	<ul><li>2) Place the shift lever in neutral position.</li></ul>			Mass Air Flow and
	3) Turn the A/C switch to OFF.			Intake Air Temper-
	4) Turn all accessory switches to OFF.			ature Sensor.>
	5) Open the front hood.			
	6) Measure the ambient temperature.			
	7) Read the data of mass air flow and intake air temperature sensor signal using Subaru			
	Select Monitor or OBD-II general scan tool.			
	NOTE:			
	Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.> • OBD-II general scan tool			
	For detailed operation procedure, refer to the			
	OBD-II general scan tool instruction manual.			
11	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 12.	Repair ground
	FRONT OXYGEN (A/F) SENSOR CONNEC-	ΜΩ?		short circuit in har-
	TOR.			ness between
	1) Turn the ignition switch to OFF.			ECM and front
	2) Disconnect the connectors from ECM and front oxygen (A/F) sensor connector.			oxygen (A/F) sen- sor connector.
	<ul><li>3) Measure the resistance of harness</li></ul>			COLOGINICOTOL.
	between ECM and front oxygen (A/F) sensor			
	connector.			
	Connector & terminal			
	(B134) No. 26 — Chassis ground:			
	(B134) No. 33 — Chassis ground:			

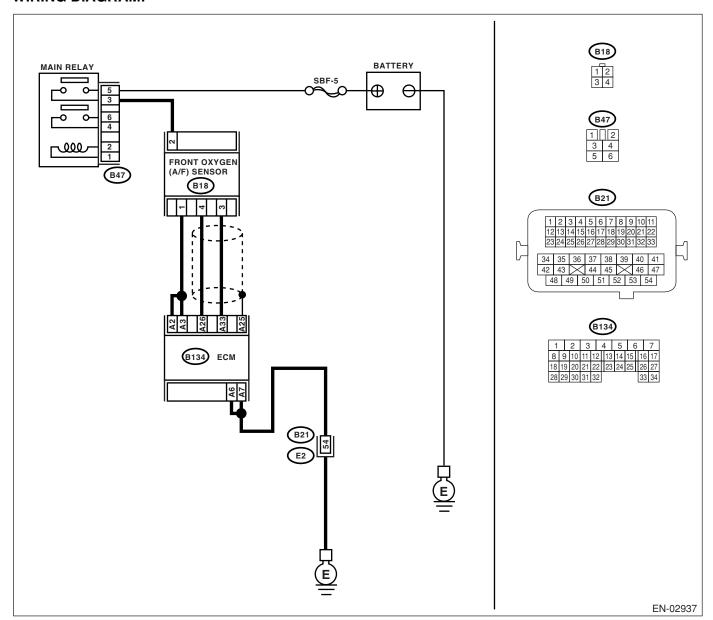
	Step	Check	Yes	No
12	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from front oxygen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground.  Connector & terminal  (B134) No. 26 (+) — Chassis ground (-): (B134) No. 33 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 13.	Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.
13	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.  Connector & terminal (B134) No. 26 — (B18) No. 4: (B134) No. 33 — (B18) No. 3:	Is the resistance less than 1 $\Omega$ ?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>	Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.

### DL:DTC P2097 POST CATALYST FUEL TRIM SYSTEM TOO RICH BANK 1 DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-237, DTC P2097 POST CATALYST FUEL TRIM SYSTEM TOO RICH BANK 1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" code="" diagnostic="" en(h4dotc)(diag)-69,="" list="" of="" to="" trouble=""></ref.>	Go to step 2.
2 CHECK FRONT (A/F) OXYGEN SENSOR DATA.  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 75°C (167°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 signal using Subaru Select Monitor or OBD-II general scan tool.  NOTE:  • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to="">  • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.</ref.>	0.86 — 1.15 at idle?	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 approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed.  2) Operate the LED operation mode for engine.  NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>		Check front oxygen (A/F) sensor circuit.	Check rear oxygen sensor circuit. <ref. fu(h4dotc)-37,="" oxygen="" rear="" sensor.="" to=""></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 any fault in exhaust system?	Repair or replace faulty parts.	Go to step 5.
5 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step 6.

	Step	Check	Yes	No
6	CHECK FUEL PRESSURE. Warning:	Is the measured value 284 — 314 kPa (2.9 — 3.2 kg/cm <sup>2</sup> , 41	Go to step 7.	Repair the follow- ing items.
	<ul><li>Place "NO FIRE" signs near the working</li></ul>	— 46 psi)?		Fuel pressure too
	area.			high: • Clogged fuel
	<ul> <li>Be careful not to spill fuel on the floor.</li> <li>1) Release the fuel pressure.</li> </ul>			line or bent
	(1) Disconnect the connector from fuel			hose
	pump relay.			Fuel pressure too
	(2) Start the engine and run it until it stalls.			low: • Improper fuel
	(3) After the engine stalls, crank it for 5 more seconds.			pump discharge
	(4) Turn the ignition switch to OFF.			Clogged fuel
	<ul><li>2) Connect the connector to fuel pump relay.</li><li>3) Disconnect the fuel delivery hose from fuel</li></ul>			supply line
	filter, and connect fuel pressure gauge.			
	4) Install the fuel filler cap.			
	<ol><li>Start the engine and idle while gear position is neutral.</li></ol>			
	6) Measure the fuel pressure while discon-			
	necting pressure regulator vacuum hose from			
	intake manifold.			
	Warning:  Before removing the fuel pressure gauge,			
	release fuel pressure.			
7	CHECK FUEL PRESSURE.	Is the measured value 206 —	Go to step 8.	Repair the follow-
	After connecting the pressure regulator vac- uum hose, measure fuel pressure.	235 kPa (2.1 — 2.4 kg/cm <sup>2</sup> , 30 — 34 psi)?		ing items. Fuel pressure too
	Warning:	— 34 psi) !		high:
	Before removing the fuel pressure gauge,			Faulty pres-
	release fuel pressure. NOTE:			<ul><li>sure regulator</li><li>Clogged fuel</li></ul>
	If out of specification as measured at this step,			line or bent
	check or replace the pressure regulator and			hose
	pressure regulator vacuum hose.			Fuel pressure too low:
				Faulty pres-
				sure regulator
				<ul> <li>Improper fuel pump discharge</li> </ul>
				Clogged fuel
			-	supply line
8	CHECK ENGINE COOLANT TEMPERATURE SENSOR.	Is the temperature more than 60°C (140°F)?	Go to step 9.	Replace the engine coolant
	Start the engine and warm-up completely.	00 0 (140 1):		temperature sen-
	2) Read the data of engine coolant tempera-			sor. <ref. td="" to<=""></ref.>
	ture sensor signal using Subaru Select Monitor or OBD-II general scan tool.			FU(H4DOTC)-22, Engine Coolant
	NOTE:			Temperature Sen-
	<ul> <li>Subaru Select Monitor</li> </ul>			sor.>
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
	OBD-II general scan tool  For detailed eneration procedure, refer to the			
	For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.			
	general coan tool mondon mandan			

	Step	Check	Yes	No
9	CHECK MASS AIR FLOW AND INTAKE AIR	Is the measured value within	Go to step 10.	Replace the mass
	TEMPERATURE.	the followings? Ignition ON:		air flow and intake
	1) Start the engine and warm-up engine until	73.3 — 106.6 kPa (550 — 800		air temperature
	coolant temperature is greater than 60°C	mmHg, 21.65 — 31.50 inHg)		sensor. <ref. td="" to<=""></ref.>
	(140°F).	Idling: 24.0 — 41.3 kPa (180 —		FU(H4DOTC)-27,
	<ol><li>Place the shift lever in neutral position.</li></ol>	310 mmHg, 7.09 — 12.20		Mass Air Flow and
	3) Turn the A/C switch to OFF.	inHg)		Intake Air Temper-
	4) Turn all accessory switches to OFF.			ature Sensor.>
	5) Read the data of mass air flow and intake air temperature sensor signal using Subaru			
	Select Monitor or OBD-II general scan tool.			
	NOTE:			
	Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
	OBD-II general scan tool			
	For detailed operation procedure, refer to the			
	OBD-II general scan tool instruction manual.			
10	CHECK MASS AIR FLOW AND INTAKE AIR	Subtract ambient temperature	Go to step 11.	Check the mass
	TEMPERATURE SENSOR.  1) Start the engine and warm-up engine until	from intake air temperature. Is the obtained value –10 to 50°C		air flow and intake air temperature
	coolant temperature is greater than 60°C	(14 to 122°F)?		sensor. <ref. td="" to<=""></ref.>
	(140°F).	(1110 122 17)		FU(H4DOTC)-27,
	2) Place the shift lever in neutral position.			Mass Air Flow and
	3) Turn the A/C switch to OFF.			Intake Air Temper-
	<ol><li>Turn all accessory switches to OFF.</li></ol>			ature Sensor.>
	5) Open the front hood.			
	6) Measure the ambient temperature.			
	7) Read the data of mass air flow and intake			
	air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.			
	NOTE:			
	Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". <ref.< td=""><td></td><td></td><td></td></ref.<>			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
	OBD-II general scan tool  For detailed energing precedure, refer to the			
	For detailed operation procedure, refer to the OBD-II general scan tool instruction manual.			
11	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 12.	Repair ground
''	FRONT OXYGEN (A/F) SENSOR CONNEC-	$M\Omega$ ?	GO TO STOP 12.	short circuit in har-
	TOR.			ness between
	1) Turn the ignition switch to OFF.			ECM and front
	2) Disconnect the connectors from ECM and			oxygen (A/F) sen-
	front oxygen (A/F) sensor connector.			sor connector.
	3) Measure the resistance of harness			
	between ECM and front oxygen (A/F) sensor			
	connector.  Connector & terminal			
	(B134) No. 26 — Chassis ground:			
	(B134) No. 33 — Chassis ground:			

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

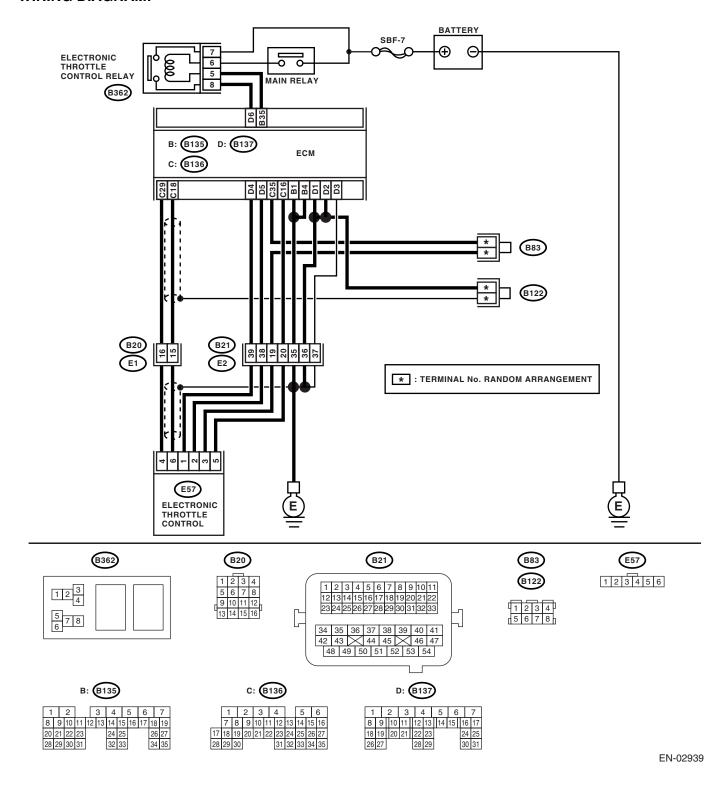
ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
12	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from front oxygen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground.  Connector & terminal (B134) No. 26 (+) — Chassis ground (-): (B134) No. 33 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 13.	Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.
13	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.  Connector & terminal (B134) No. 26 — (B18) No. 4: (B134) No. 33 — (B18) No. 3:	Is the resistance less than 1 $\Omega$ ?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4DOTC)-35, Front Oxygen (A/ F) Sensor.&gt;</ref.>	Repair open circuit in harness between ECM and front oxygen (A/F) sensor connector.

### DM:DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/ PERFORMANCE

#### DTC DETECTING CONDITION:

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-239, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- · Erroneous idling
- Poor driving performance
- Engine stalls.



	Step	Check	Yes	No
1	CHECK ELECTRONIC THROTTLE CONTROL RELAY.	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Replace the electronic throttle con-
	<ol> <li>Turn the ignition switch to OFF.</li> <li>Remove the electronic throttle control relay.</li> </ol>			trol control relay.
	3) Connect the battery to terminals No. 5 and			
	No. 6 of electronic throttle control relay.			
	<ol> <li>Measure the resistance between electronic throttle control control relay terminals.</li> </ol>			
	Terminals			
	No. 7 — No. 8:		_	
2	CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY.	Is the voltage more than 5 V?	Go to step 3.	Repair the open or ground short cir-
	Measure the voltage between electronic throt-			cuit of power sup-
	tle control relay connector and chassis ground.			ply circuit.
	Connector & terminal (B362) No. 7 (+) — Chassis ground (–):			
	(B362) No. 6 (+) — Chassis ground (-):			
3	CHECK HARNESS BETWEEN ECM AND	Is the voltage less than 5 V?	Go to step 4.	Repair power sup-
	ELECTRONIC THROTTLE CONTROL RE- LAY.			ply short circuit in harness between
	Disconnect the connector from ECM.			ECM and elec-
	2) Turn the ignition switch to ON.			tronic throttle con-
	Measure the voltage between electronic throttle control relay connector and chassis			trol.
	ground.			
	Connector & terminal			
	(B362) No. 5 (+) — Chassis ground (-):			
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE-	Is the resistance more than 1 $M\Omega$ ?	Go to step 5.	Repair the ground short circuit in har-
	LAY.	17132.		ness between
	1) Turn the ignition switch to OFF.			ECM and elec-
	<ol> <li>Measure the resistance between electronic throttle control control relay connector and</li> </ol>			tronic throttle con- trol relay.
	chassis ground.			ii Oi Telay.
	Connector & terminal			
	(B362) No. 5 — Chassis ground: (B362) No. 8 — Chassis ground:			
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 6.	Repair the open
	ELECTRONIC THROTTLE CONTROL RE-	Ω?		circuit in harness
	LAY.			between ECM and
	Measure the resistance between ECM connector and electronic throttle control relay connec-			electronic throttle control relay.
	tor.			
	Connector & terminal			
	(B135) No. 35 — (B362) No. 5: (B137) No. 6 — (B362) No. 8:			
6	CHECK SENSOR OUTPUT.	Is the voltage more than 0.4 V?	Go to step 7.	Go to step 9.
	Connect all the connectors.		-	·
	<ul><li>2) Turn the ignition switch to ON.</li><li>3) Measure the voltage between ECM con-</li></ul>			
	nector terminals.			
	Connector & terminal			
7	(B136) No. 18 (+) — (B136) No. 35 (-):	lo the velters may the 2000/0	Co to star C	Co to star C
7	CHECK SENSOR OUTPUT.  1) Connect all the connectors.	Is the voltage more than 0.8 V?	Go to step 8.	Go to step 9.
	2) Turn the ignition switch to ON.			
	3) Measure the voltage between ECM con-			
	nector terminals.  Connector & terminal			
1	(B136) No. 29 (+) — (B136) No. 35 (−):			

	Step	Check	Yes	No
8	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Go to step 13.
	Check the poor contact in connector between		contact.	
	ECM and electronic throttle control.			
9	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.	Is the resistance less than 1 $\Omega$ ?	Go to step 10.	Repair the open circuit of harness
	Turn the ignition switch to OFF.	1221		connector.
	Disconnect the connector from ECM.			
	3) Disconnect the connectors from the elec-			
	tronic throttle control control.			
	<ol> <li>Measure the resistance between ECM con- nector and electronic throttle control connector.</li> </ol>			
	Connector & terminal			
	(B136) No. 16 — (E57) No. 5:			
10	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 11.	Repair the ground
	ELECTRONIC THROTTLE CONTROL.	ΜΩ?		short circuit of har-
	Measure the resistance between ECM connector and chassis ground.			ness.
	Connector & terminal			
	(B136) No. 16 — Chassis ground:			
	(B136) No. 18 — Chassis ground:			
144	(B136) No. 29 — Chassis ground:	la de contrara A.S. S.S.VO	0-1-1-12	Dan sin th
11	CHECK SENSOR POWER SUPPLY.  1) Connect the ECM connector.	Is the voltage 4.5 — 5.5 V?	Go to step 12.	Repair the poor contact in ECM
	2) Turn the ignition switch to ON.			connector.
	3) Measure the voltage between electronic			Replace the ECM
	throttle control connector and engine ground.			if defective. <ref.< th=""></ref.<>
	Connector & terminal (E57) No. 5 (+) — Engine ground (–):			to FU(H4DOTC)- 39, Engine Con-
	(E37) No. 5 (+) — Engine ground (-).			trol Module
				(ECM).>
12	CHECK SHORT CIRCUIT IN ECM.	Is the resistance more than 10	Go to step 13.	Repair the poor
	1) Turn the ignition switch to OFF.	Ω?		contact in ECM
	<ol><li>Measure the resistance between electronic throttle control control connector and engine</li></ol>			connector. Replace the ECM
	ground.			if defective. <ref.< th=""></ref.<>
	Connector & terminal			to FU(H4DOTC)-
	(E57) No. 6 — Engine ground:			39, Engine Con-
	(E57) No. 4 — Engine ground:			trol Module
13	CHECK SENSOR OUTPUT.	Is the voltage 4.63 V?	Go to step 14.	(ECM).> Go to step <b>16.</b>
'3	Connect all the connectors.	ine voltage 4.00 V !	au iu siep 14.	ao io siep 10.
	2) Turn the ignition switch to ON.			
	3) Read the data of main throttle sensor signal			
	using Subaru Select Monitor.			
	NOTE:  • Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". <ref.< th=""><th></th><th></th><th></th></ref.<>			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
14	itor.> CHECK SENSOR OUTPUT.	Is the voltage 4.73 V?	Go to step 15.	Go to step 16.
'-	Read the data of sub throttle sensor signal	is the voitage 4.75 V!	ao io siep 13.	GO TO STEP 10.
	using Subaru Select Monitor.			
	NOTE:			
	Subaru Select Monitor  Tandatailada ann a tian ann an fan ta tha			
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
		1		

	Step	Check	Yes	No
15	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Go to step 20.
	Check the poor contact in connector between		contact.	
	ECM and electronic throttle control.			
_	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 17.	Repair the open
	ELECTRONIC THROTTLE CONTROL.	Ω?		circuit of harness
	1) Turn the ignition switch to OFF.			connector.
	2) Disconnect the connector from ECM.			
	Disconnect the connectors from the electronic throttle control control.			
	4) Measure the resistance between ECM con-			
	nector and electronic throttle control connector.			
·	Connector & terminal			
	(B136) No. 35 — (E57) No. 3:			
	(B136) No. 18 — (E57) No. 6:			
	(B136) No. 29 — (E57) No. 4:			
17	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 5	Go to step 18.	Repair the poor
	ELECTRONIC THROTTLE CONTROL.	Ω?		contact in ECM
	Connect the ECM connector.			connector.
	2) Measure the resistance between electronic			Replace the ECM
	throttle control connector and engine			if defective. <ref.< td=""></ref.<>
!	ground.			to FU(H4DOTC)-
	Connector & terminal (E57) No. 3 — Engine ground:			39, Engine Con- trol Module
	(LST) No. 3 — Engine ground.			(ECM).>
18	CHECK HARNESS BETWEEN ECM AND	Is the voltage less than 10 V?	Go to step 19.	Repair the short
	ELECTRONIC THROTTLE CONTROL.	<u> </u>		circuit in harness
1	Measure the voltage between electronic throt-			between ECM
1	tle control connector and engine ground.			connector and
	Connector & terminal			electronic throttle
	(E57) No. 6 (+) — Engine ground (-):			control connector.
	(E57) No. 4 (+) — Engine ground (−):			
	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 20.	Repair the short
	ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.	ΜΩ?		circuit to sensor
	2) Remove the ECM.			power supply.
	Measure the resistance between ECM con-			
	nectors.			
	Connector & terminal			
	(B136) No. 18 — (B136) No. 35:			
	(B136) No. 29 — (B136) No. 35:			
	CHECK SENSOR OUTPUT.	Is the voltage 0.81 — 0.87 V?	Go to step 21.	Repair the poor
	Turn the ignition switch to OFF.			contact of elec-
	2) Connect the connectors except of the elec-			tronic throttle con-
	tric control throttle relay.			trol connector.
	3) Turn the ignition switch to ON.			Replace the elec- tronic throttle con-
	4) Read the data of main throttle sensor signal using Subaru Select Monitor.			trol if defective.
	-			aoi ii delective.
	NOTE:  Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". <ref.< td=""><td></td><td></td><td></td></ref.<>			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	İ	1	i l

	Step	Check	Yes	No
21	CHECK SENSOR OUTPUT.  Read the data of sub throttle sensor signal using Subaru Select Monitor.  NOTE:  Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage 1.64 — 1.70 V?	Go to step 22.	Repair the poor contact in ECM connector. Replace the electronic throttle control if defective.
22	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connectors from the electronic throttle control control. 4) Measure the resistance between ECM connector and electronic throttle control connector.  Connector & terminal (B137) No. 5 — (E57) No. 2: (B137) No. 4 — (E57) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 23.	Repair the open circuit of harness connector.
23	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR.  1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground.  Connector & terminal (E57) No. 2 (+) — Engine ground (-): (E57) No. 1 (+) — Engine ground (-):	Is the voltage less than 5 V?	Go to step 24.	Repair power supply short circuit in harness between ECM and electronic throttle control.
24	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between electronic throttle control control connector and engine ground.  Connector & terminal  (E57) No. 2 — Engine ground:  (E57) No. 1 — Engine ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 25.	Repair the short circuit of harness.
25	CHECK ELECTRONIC THROTTLE CONTROL MOTOR HARNESS.  Measure the resistance between electronic throttle control connector terminals.  Connector & terminal  (E57) No. 2 — (E57) No. 1:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 26.	Repair the short circuit of harness.
26	CHECK ELECTRONIC THROTTLE CONTROL GROUND CIRCUIT.  Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B137) No. 3 — Chassis ground:	Is the resistance less than 10 $\Omega$ ?	Go to step 27.	Repair the open circuit of harness.
27	CHECK ELECTRONIC THROTTLE CONTROL.  Measure the resistance between electronic throttle control terminals.  Terminals  No. 1 — No. 2:	Is the resistance less than 5 $\Omega$ ?	Go to step 28.	Replace the electronic throttle control control.

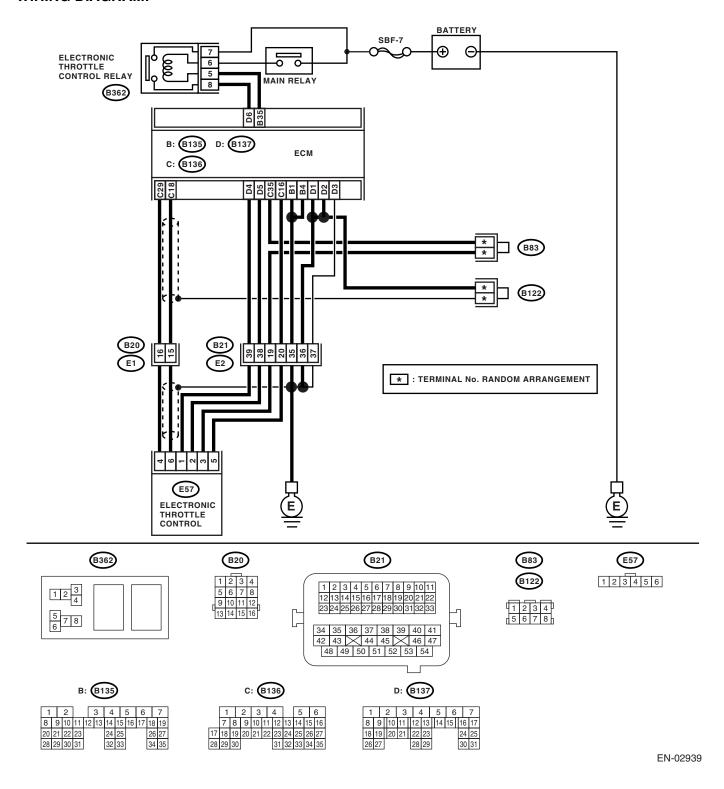
### **Diagnostic Procedure with Diagnostic Trouble Code (DTC)**

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
28	CHECK ELECTRONIC THROTTLE CONTROL.  Move the throttle valve to the fully open and fully closed positions with fingers.  Check the valve returns to the specified position when releasing fingers.	specified position? Standard value: 3 mm (0.12 in) from fully closed position	contact in ECM	Replace the electronic throttle control control.

### DN:DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW DTC DETECTING CONDITION:

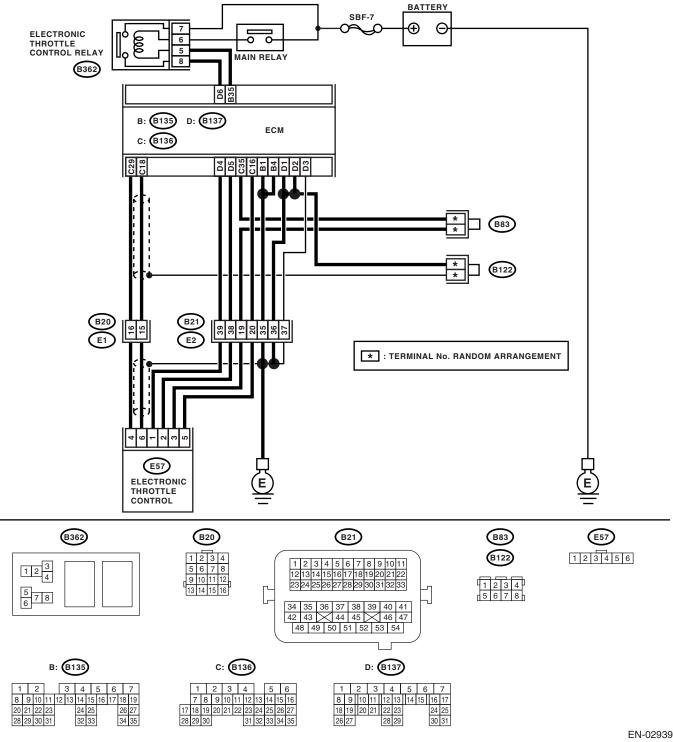
- · Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-241, DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- · Erroneous idling
- Poor driving performance
- Engine stalls.



Step	Check	Yes	No
1 CHECK ELECTRONIC THROTTLE CON-	Is the resistance less than 1	Go to step 2.	Replace the elec-
TROL RELAY.	Ω?		tronic throttle con-
Turn the ignition switch to OFF.			trol control relay.
2) Remove the electronic throttle control relay			
<ol> <li>Connect the battery to terminals No. 5 and No. 6 of electronic throttle control relay.</li> </ol>			
<ul><li>4) Measure the resistance between electronic</li></ul>			
throttle control control terminals.			
Terminals			
(B362) No. 7 — (B362) No. 8:			
2 CHECK POWER SUPPLY OF ELECTRONIC	Is the voltage more than 5 V?	Go to step 3.	Repair the open or
THROTTLE CONTROL RELAY.	le une remage mere unam e v		ground short cir-
Measure the voltage between electronic throt-			cuit of power sup-
tle control relay connector and chassis ground			ply circuit.
Connector & terminal			. ,
(B362) No. 7 (+) — Chassis ground (−):			
(B362) No. 6 (+) — Chassis ground (-):			
3 CHECK HARNESS BETWEEN ECM AND	Is the voltage less than 5 V?	Go to step 4.	Repair power sup-
ELECTRONIC THROTTLE CONTROL RE-			ply short circuit in
LAY.			harness between
<ol> <li>Disconnect the connector from ECM.</li> </ol>			ECM and elec-
<ol><li>Turn the ignition switch to ON.</li></ol>			tronic throttle con-
<ol><li>Measure the voltage between electronic</li></ol>			trol relay.
throttle control relay connector and chassis			
ground.			
Connector & terminal			
(B362) No. 5 (+) — Chassis ground (-):			
4 CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 5.	Repair the ground
ELECTRONIC THROTTLE CONTROL RE-	ΜΩ?		short circuit in har-
LAY.			ness between
Turn the ignition switch to OFF.  Necessary the resistance heatures all extremisms.			ECM and elec-
Measure the resistance between electronic  throttle central central relay connector and			tronic throttle con-
throttle control control relay connector and			trol relay.
chassis ground.  Connector & terminal			
(B362) No. 5 — Chassis ground:			
(B362) No. 8 — Chassis ground: (B362) No. 8 — Chassis ground:			
5 CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Repair the poor	Repair the open
ELECTRONIC THROTTLE CONTROL RE-	$\Omega$ ?	contact in ECM	circuit in harness
LAY.		connector.	between ECM and
Measure the resistance between ECM connec	-	Replace the ECM	electronic throttle
tor and electronic throttle control relay connec-		if defective. <ref.< th=""><th>control relay.</th></ref.<>	control relay.
tor.		to FU(H4DOTC)-	<b>_</b>
Connector & terminal		39, Engine Con-	
(B135) No. 35 — (B362) No. 5:		trol Module	
(B137) No. 6 — (B362) No. 8:		(ECM).>	

#### DO:DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH DTC DETECTING CONDITION:

- · Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-243, DTC P2103 THROTTLE ACTUATOR CONTROL</li> MOTOR CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.> **WIRING DIAGRAM:**



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

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ELECTRONIC THROTTLE CONTROL RELAY.  1) Turn the ignition switch to OFF.  2) Remove the electronic throttle control relay.  3) Measure the resistance between electronic throttle control control relay terminals.  Terminals  No. 7 — No. 8:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 2.	Replace the electronic throttle control control relay.
2	CHECK POWER SUPPLY SHORT CIRCUIT OF ELECTRONIC THROTTLE CONTROL RELAY.  1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control relay connector and chassis ground.  Connector & terminal (B362) No. 8 (+) — Chassis ground (-):	Is the voltage more than 5 V?	Go to step 3.	Repair power sup- ply short circuit in harness between ECM and elec- tronic throttle con- trol relay.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B135) No. 35 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Repair the ground short circuit in har- ness between ECM and elec- tronic throttle con- trol relay.

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

#### NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC)(diag)-290, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

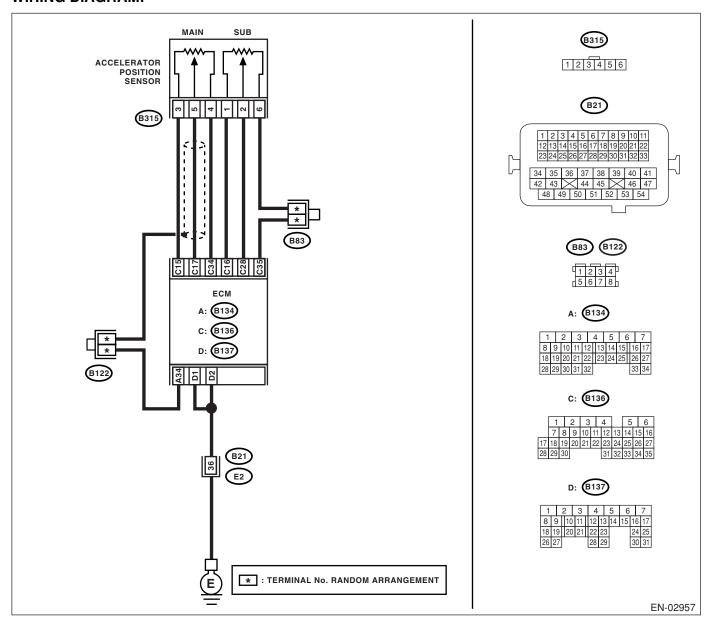
### DQ:DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT LOW INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-247, DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- · Erroneous idling
- · Poor driving performance



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SENSOR OUTPUT.  1) Turn the ignition switch to ON.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
	Read the data of main accelerator position sensor signal using Subaru Select Monitor.			
	NOTE:  • Subaru Select Monitor  For data ited apposition proceedings refer to the			
	For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4DOTC)(diag)-27, Subaru Select Mon- itor.&gt;</ref. 			
2	CHECK POOR CONTACT.  Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector.  Connector & terminal (B136) No. 17 — (B315) No. 5: (B136) No. 15 — (B315) No. 3:	Ω?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B136) No. 17 — Chassis ground:  (B136) No. 15 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the chassis short circuit of harness.
5	CHECK POWER SUPPLY OF ACCELERATOR POSITION SENSOR.  1) Connect the ECM connector.  2) Turn the ignition switch to ON.  3) Measure the voltage between accelerator position sensor connector and chassis ground.  Connector & terminal  (B315) No. 3 (+) — Chassis ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>
6	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor.  Terminals  No. 3 — No. 4:	Is the resistance 1.2 — 4.8 k $\Omega$ ?	Go to step 7.	Replace the accelerator position sensor.
7	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor.  Terminals  No. 5 — No. 4:  Check the measured value is within the specification without depressing the accelerator pedal.	Is the resistance 0.2 — 1.0 $k\Omega$ ?	Go to step 8.	Replace the accelerator position sensor.

	Step	Check	Yes	No
8	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor.  Terminals  No. 5 — No. 4:  Check the measured value is within the specification with the accelerator pedal depressed.		Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Replace the accelerator position sensor.

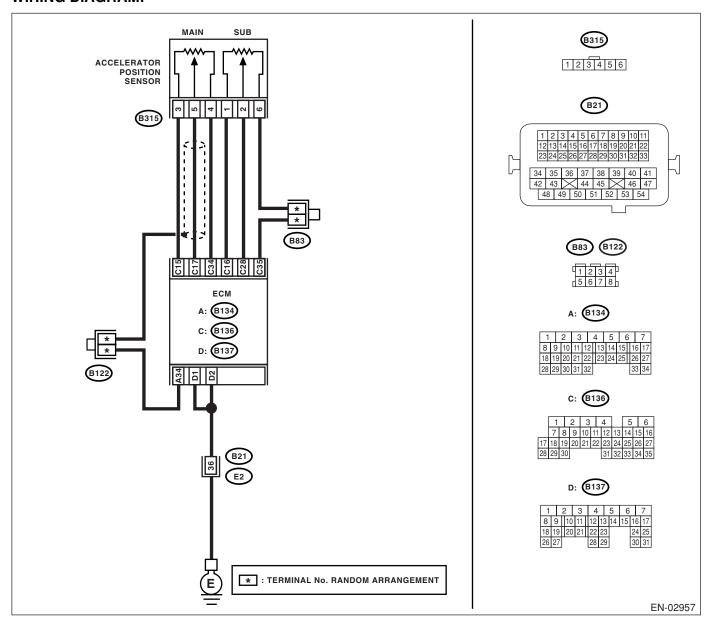
### DR:DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT HIGH INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-249, DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- · Erroneous idling
- Poor driving performance



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SENSOR OUTPUT.	Is the voltage less than 4.8 V?	Go to step 2.	Go to step 3.
	Turn the ignition switch to ON.			
2	CHECK POOR CONTACT.  Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector.  Connector & terminal (B136) No. 34 — (B315) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Connect the ECM connector.  2) Measure the resistance between accelerator position sensor connector and chassis ground.  Connector & terminal  (B315) No. 4 — Chassis ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>
5	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Connect the ECM connector.  2) Turn the ignition switch to ON.  3) Measure the voltage between accelerator position sensor connector and chassis ground.  Connector & terminal  (B315) No. 5 (+) — Chassis ground (-):		Go to step 6.	Repair the battery short circuit in har- ness between ECM connector and accelerator position sensor connector.
6	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector terminals.  Connector & terminal  (B136) No. 17 — (B136) No. 15:  (B136) No. 17 — (B136) No. 16:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Repair the poor contact in accelerator position sensor connector. Replace the accelerator position sensor if defective.	Repair the short circuit to sensor power supply.

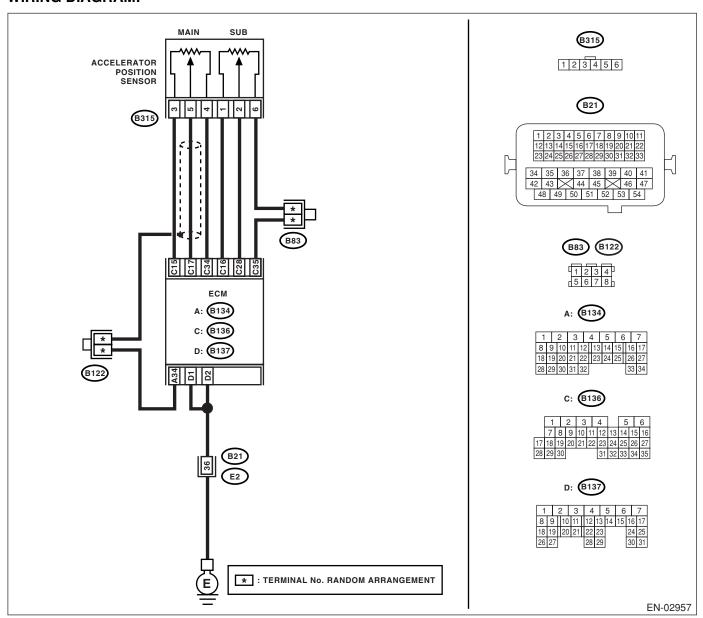
### DS:DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT LOW INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-251, DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **TROUBLE SYMPTOM:**

- · Erroneous idling
- Poor driving performance



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SENSOR OUTPUT.  1) Turn the ignition switch to ON.  2) Read the data of sub accelerator position sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT.  Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
3	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector.  Connector & terminal (B136) No. 28 — (B315) No. 2: (B136) No. 16 — (B315) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  Measure the resistance between ECM connector and chassis ground.  Connector & terminal  (B136) No. 28 — Chassis ground:  (B136) No. 16 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the chassis short circuit of harness.
5	CHECK POWER SUPPLY OF ACCELERATOR POSITION SENSOR.  1) Connect the ECM connector.  2) Turn the ignition switch to ON.  3) Measure the voltage between accelerator position sensor connector and chassis ground.  Connector & terminal  (B315) No. 1 (+) — Chassis ground (-):	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>
6	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor.  Terminals  No. 1 — No. 6:	Is the resistance 0.75 — 3.15 $k\Omega$ ?	Go to step 7.	Replace the accelerator position sensor.
7	CHECK ACCELERATOR POSITION SENSOR.  1) Measure the resistance of accelerator position sensor.  Terminals  No. 2 — No. 6:  2) Check the measured value is within the specification without depressing the accelerator pedal.	Is the resistance 0.15 — 0.63 $\mbox{k}\Omega$ ?	Go to step 8.	Replace the accelerator position sensor.

	Step	Check	Yes	No
8	CHECK ACCELERATOR POSITION SENSOR.  1) Measure the resistance of accelerator position sensor.  Terminals  No. 2 — No. 6:  2) Check the measured value is within the specification with the accelerator pedal depressed.	Is the resistance 0.28 — 1.68 k $\Omega$ ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Replace the accelerator position sensor.

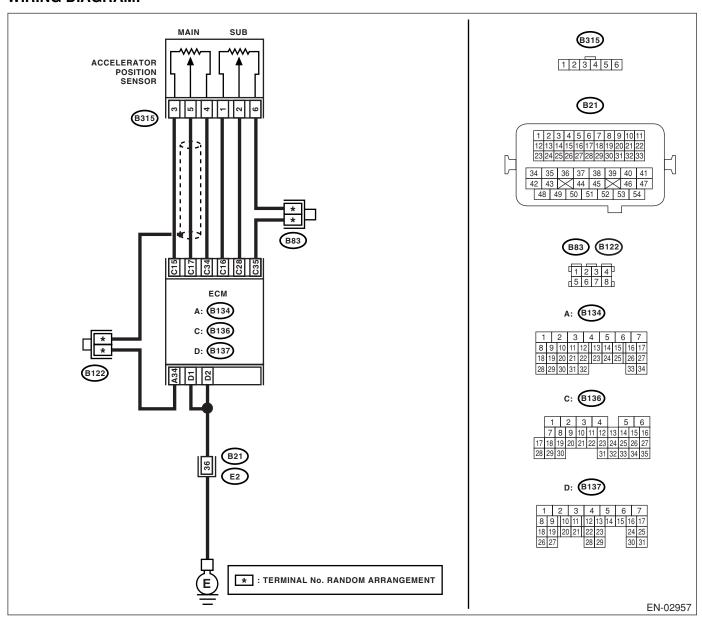
### DT:DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT HIGH INPUT

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-253, DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SENSOR OUTPUT.	Is the voltage less than 4.8 V?	Go to step 2.	Go to step 3.
	Turn the ignition switch to ON.			
	Read the data of sub accelerator position			
	sensor signal using Subaru Select Monitor.			
	NOTE:			
	Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". < Ref.			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			-
2	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Temporary poor
	Check poor contact in connector between		contact.	contact occurred, but it is normal at
	ECM and accelerator position sensor.			present.
3	CHECK HARNESS BETWEEN ECM AND AC-	le the resistance less than 1	Go to step 4.	Repair the open
٦	CELERATOR POSITION SENSOR.	$\Omega$ ?	ao io siep 4.	circuit of harness
	Turn the ignition switch to OFF.			connector.
	2) Disconnect the connector from ECM.			
	3) Disconnect the connector from the acceler-			
	ator position sensor.			
	4) Measure the resistance between ECM con-			
	nector and accelerator position sensor connec-			
	tor.			
	Connector & terminal			
ļ <u>.</u>	(B136) No. 35 — (B315) No. 6:		0	D : II
4	CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR.	$\Omega$ ?	Go to step 5.	Repair the poor contact in ECM
	Connect the ECM connector.	122:		connector.
	Measure the resistance between accelera-			Replace the ECM
	tor position sensor connector and chassis			if defective. <ref.< th=""></ref.<>
	ground.			to FU(H4DOTC)-
	Connector & terminal			39, Engine Con-
	(B315) No. 6 — Chassis ground:			trol Module
ļ				(ECM).>
5	CHECK HARNESS BETWEEN ECM AND AC-	Is the voltage less than 6 V?	Go to step 6.	Repair the battery
	CELERATOR POSITION SENSOR.			short circuit in har-
	<ol> <li>Connect the ECM connector.</li> <li>Turn the ignition switch to ON.</li> </ol>			ness between ECM connector
	3) Measure the voltage between accelerator  3)			and accelerator
	position sensor connector and chassis ground.			position sensor
	Connector & terminal			connector.
	(B315) No. 2 (+) — Chassis ground (−):			
6	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance more than 1	Repair the poor	Repair the short
	CELERATOR POSITION SENSOR.	ΜΩ?	contact in acceler-	circuit to sensor
	<ol> <li>Turn the ignition switch to OFF.</li> </ol>		ator position sen-	power supply.
	2) Measure the resistance between ECM con-		sor connector.	
	nector terminals.		Replace the accel-	
	Connector & terminal		erator position	
	(B137) No. 28 — (B137) No. 15:		sensor if defective.	
	(B137) No. 28 — (B137) No. 16:			

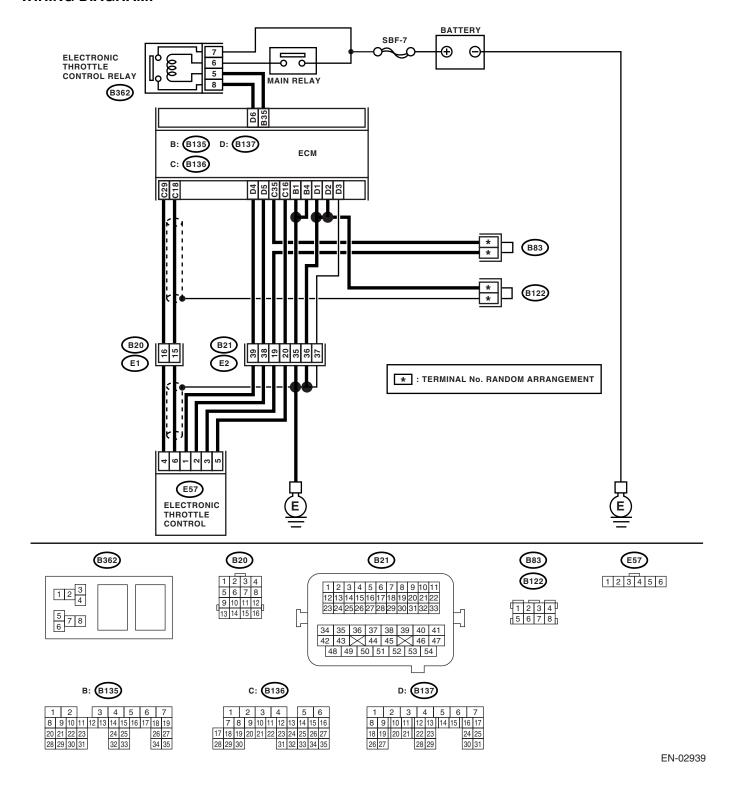
### **Diagnostic Procedure with Diagnostic Trouble Code (DTC)**

ENĠINE (ĎIAGNOSTICS)

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

#### **DTC DETECTING CONDITION:**

- · Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-254, DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A"/"B" VOLTAGE RATIONALITY, Diagnostic Trouble Code (DTC) Detecting Criteria.> TROUBLE SYMPTOM:
- · Erroneous idling
- Poor driving performance



	Step	Check	Yes	No
1	CHECK SENSOR OUTPUT.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 4.
	1) Turn the ignition switch to ON.			,
	2) Measure the voltage between ECM con-			
	nector terminals.			
	Connector & terminal			
	(B136) No. 18 (+) — (B136) No. 35 (−):			
2	CHECK SENSOR OUTPUT.	Is the voltage more than 0.8 V?	Go to step 3.	Go to step 4.
	Measure the voltage between ECM connector			
	terminals.			
	Connector & terminal			
	(B136) No. 29 (+) — (B136) No. 35 (−):			
3	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Go to step 14.
	Check the poor contact in connector between		contact.	
	ECM and electronic throttle control.			
4	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 5.	Repair the open
	ELECTRONIC THROTTLE CONTROL.	$\Omega$ ?		circuit of harness
	Turn the ignition switch to OFF.			connector.
	2) Disconnect the connector from ECM.			
	3) Disconnect the connectors from the elec-			
	tronic throttle control control.			
	4) Measure the resistance between ECM con-			
	nector and electronic throttle control connector.			
	Connector & terminal			
	(B136) No. 16 — (E57) No. 5:		0 1 1 0	D : 11
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 6.	Repair the ground
	ELECTRONIC THROTTLE CONTROL.	ΜΩ?		short circuit of har-
	Measure the resistance between ECM connector and chassis ground.			ness.
	Connector & terminal			
	(B136) No. 18 — Chassis ground:			
	(B136) No. 29 — Chassis ground:			
	(B136) No. 16 — Chassis ground:			
6	CHECK SENSOR POWER SUPPLY.	Is the voltage 4.5 — 5.5 V?	Go to step 7.	Repair the poor
	Connect the ECM connector.	listile voltage 4.5 0.5 v :	do to stop 7.	contact in ECM
	Turn the ignition switch to ON.			connector.
	Measure the voltage between electronic			Replace the ECM
	throttle control connector and engine ground.			if defective. <ref.< td=""></ref.<>
	Connector & terminal			to FU(H4DOTC)-
	(E57) No. 5 (+) — Engine ground (-):			39, Engine Con-
				trol Module
				(ECM).>
7	CHECK SHORT CIRCUIT IN ECM.	Is the resistance more than 10	Go to step 8.	Repair the poor
	1) Turn the ignition switch to OFF.	$\Omega$ ?	'	contact in ECM
	2) Measure the resistance between electronic			connector.
	throttle control connector and engine			Replace the ECM
	ground.			if defective. <ref.< td=""></ref.<>
	Connector & terminal			to FU(H4DOTC)-
	(E57) No. 6 — Engine ground:			39, Engine Con-
	(E57) No. 4 — Engine ground:			trol Module
				(ECM).>

	Step	Check	Yes	No
8	CHECK SENSOR OUTPUT.  1) Connect all the connectors.  2) Turn the ignition switch to ON.  3) Read the data of main throttle sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage less than 4.63 V?	Go to step 9.	Go to step 11.
9	CHECK SENSOR OUTPUT.  Read the data of sub throttle sensor signal using Subaru Select Monitor.  NOTE:  • Subaru Select Monitor  For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4dotc)(diag)-27,="" monitor.="" select="" subaru="" to=""></ref.>	Is the voltage less than 4.73 V?	Go to step 10.	Go to step 11.
10	CHECK POOR CONTACT.  Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Temporary poor contact occurred, but it is normal at present.
11	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Disconnect the connectors from the electronic throttle control control.  4) Measure the resistance between ECM connector and electronic throttle control connector.  Connector & terminal  (B136) No. 35 — (E57) No. 3:  (B136) No. 18 — (E57) No. 6:  (B136) No. 29 — (E57) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 12.	Repair the open circuit of harness connector.
12	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Connect the ECM connector.  2) Measure the resistance between electronic throttle control control connector and engine ground.  Connector & terminal  (E57) No. 3 — Engine ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 13.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>
13	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Connect the ECM connector.  2) Turn the ignition switch to ON.  3) Measure the voltage between electronic throttle control connector and engine ground.  Connector & terminal  (E57) No. 5 (+) — Engine ground (-):	Is the voltage more than 10 V?	Go to step 14.	Repair the battery short circuit in harness between ECM connector and electronic throttle control connector.
14	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  Measure the voltage between electronic throttle control connector and engine ground.  Connector & terminal  (E57) No. 6 (+) — Engine ground (-):  (E57) No. 4 (+) — Engine ground (-):	Is the voltage less than 10 V?	Go to step 15.	Repair the short circuit in harness between ECM connector and electronic throttle control connector.

	Step	Check	Yes	No
15	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from ECM.  3) Measure the resistance between ECM connectors.  Connector & terminal  (B136) No. 18 — (B136) No. 35:  (B136) No. 29 — (B136) No. 35:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 16.	Repair the short circuit to sensor power supply.
16	CHECK ELECTRONIC THROTTLE CONTROL HARNESS.  1) Disconnect the connector from ECM. 2) Disconnect the connectors from the electronic throttle control control. 3) Measure the resistance between electronic throttle control connector terminals.  Connector & terminal  (E57) No. 6 — (E57) No. 4:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Repair the short circuit of harness.

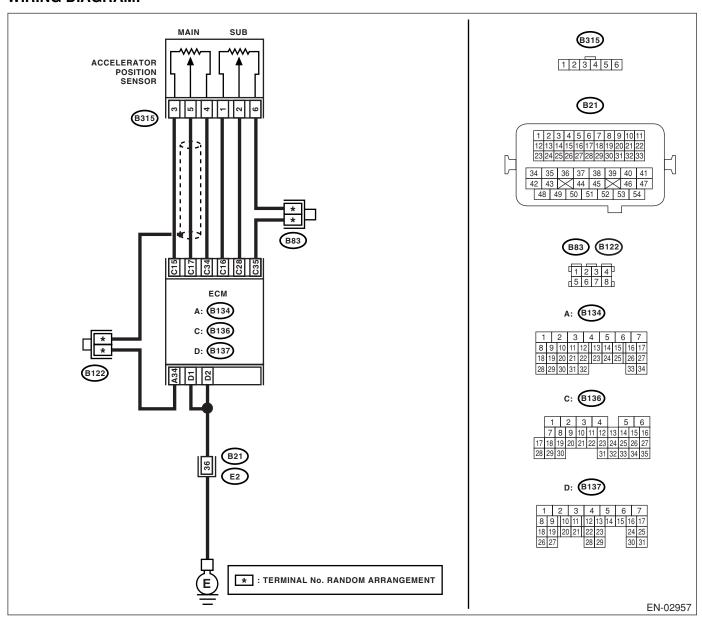
### DV:DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D"/"E" VOLT-AGE RATIONALITY

#### **DTC DETECTING CONDITION:**

- Detect as soon as the malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-256, DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D"/"E" VOLTAGE RATIONALITY, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### TROUBLE SYMPTOM:

- · Erroneous idling
- Poor driving performance



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SEN-	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
	SOR OUTPUT.			
	<ol> <li>Turn the ignition switch to ON.</li> <li>Read the data of main accelerator position</li> </ol>			
	sensor signal and sub accelerator position			
	sensor signal using Subaru Select Monitor.			
	NOTE:			
	Subaru Select Monitor			
	For detailed operation procedure, refer to the			
	"READ CURRENT DATA FOR ENGINE". <ref.< th=""><th></th><th></th><th></th></ref.<>			
	to EN(H4DOTC)(diag)-27, Subaru Select Mon-			
	itor.>			
2	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Go to step 12.
	Check poor contact in connector between		contact.	
2	ECM and accelerator position sensor.	la the registeres less than 1	Co to oton 4	Densir the enen
3	CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR.	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair the open circuit of harness
	1) Turn the ignition switch to OFF.	22:		connector.
	2) Disconnect the connector from ECM.			
	3) Disconnect the connector from the acceler-			
	ator position sensor.			
	4) Measure the resistance between ECM con-			
	nector and accelerator position sensor connec-			
	tor.			
	Connector & terminal			
	(B136) No. 17 — (B315) No. 5: (B136) No. 15 — (B315) No. 3:			
	(B136) No. 15 — (B315) No. 3. (B136) No. 28 — (B315) No. 2:			
	(B136) No. 16 — (B315) No. 1:			
4	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance more than 1	Go to step 5.	Repair the ground
	CELERATOR POSITION SENSOR.	ΜΩ?		short circuit of har-
	Measure the resistance between ECM connec-			ness.
	tor and chassis ground.			
	Connector & terminal			
	(B136) No. 17 — Chassis ground:			
	(B136) No. 15 — Chassis ground: (B136) No. 28 — Chassis ground:			
	(B136) No. 16 — Chassis ground:			
5	CHECK POWER SUPPLY OF ACCELERA-	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor
	TOR POSITION SENSOR.		o.op o.	contact in ECM
	Connect the ECM connector.			connector.
	2) Turn the ignition switch to ON.			Replace the ECM
	Measure the voltage between accelerator			if defective. <ref.< td=""></ref.<>
	position sensor connector and chassis ground.			to FU(H4DOTC)-
	Connector & terminal			39, Engine Con- trol Module
	(B315) No. 3 (+) — Chassis ground (−): (B315) No. 1 (+) — Chassis ground (−):			(ECM).>
6	CHECK ACCELERATOR POSITION SEN-	Is the resistance 1.2 — 4.8	Go to step 7.	Replace the accel-
ا	SOR.	$k\Omega$ ?	ao io siep 7.	erator position
	Measure the resistance of accelerator position			sensor.
	sensor.			
	Terminals			
	No. 3 — No. 4:			
7	CHECK ACCELERATOR POSITION SEN-	Is the resistance 0.75 — 3.15	Go to step 8.	Replace the accel-
	SOR.	kΩ?		erator position
	Measure the resistance of accelerator position			sensor.
	sensor.			
	Terminals No. 1 — No. 6:			
	140. 1 — 140. D:			

	Step	Check	Yes	No
8	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor without depressing the accelerator pedal.  Terminals  No. 5 — No. 4:	Is the resistance 0.2 — 0.8 $k\Omega$ ?	Go to step 9.	Replace the accelerator position sensor.
9	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor without depressing the accelerator pedal.  Terminals  No. 2 — No. 6:	Is the resistance 0.15 — 0.63 k $\Omega$ ?	Go to step 10.	Replace the accelerator position sensor.
10	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor with the accelerator pedal depressed.  Terminals  No. 5 — No. 4:	Is the resistance 0.5 — 2.5 k $\Omega$ ?	Go to step 11.	Replace the accelerator position sensor.
11	CHECK ACCELERATOR POSITION SENSOR.  Measure the resistance of accelerator position sensor with the accelerator pedal depressed.  Terminals  No. 2 — No. 6:	Is the resistance 0.28 — 1.68 $k\Omega$ ?	Go to step 12.	Replace the accelerator position sensor.
12	CHECK ACCELERATOR POSITION SENSOR OUTPUT.  1) Turn the ignition switch to OFF.  2) Connect all the connectors.  3) Turn the ignition switch to ON.  4) Read the data of main throttle sensor signal and sub accelerator position sensor signal using Subaru Select Monitor.	Is the voltage less than 4.8 V?	Go to step 13.	Go to step 14.
13	CHECK POOR CONTACT.  Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Go to step 18.
14	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator position sensor. 4) Measure the resistance between ECM connector and accelerator position sensor connector.  Connector & terminal (B136) No. 34 — (B315) No. 4: (B136) No. 35 — (B315) No. 6:	Ω?	Go to step 15.	Repair the open circuit of harness connector.
15	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Connect the ECM connector.  2) Measure the resistance between accelerator position sensor connector and chassis ground.  Connector & terminal  (B315) No. 4 — Chassis ground:  (B315) No. 6 — Chassis ground:	Is the resistance less than 5 $\Omega$ ?	Go to step 16.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>

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

ENĜINE (DIAGNOSTICS)

	Step	Check	Yes	No
16	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and chassis ground.  Connector & terminal  (B315) No. 5 (+) — Chassis ground (-): (B315) No. 2 (+) — Chassis ground (-):	Is the voltage less than 6 V?	Go to step 17.	Repair the battery short circuit in har- ness between ECM connector and accelerator position sensor connector.
17	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector terminals.  Connector & terminal  (B136) No. 17 — (B136) No. 15:  (B136) No. 17 — (B136) No. 16:  (B136) No. 28 — (B136) No. 15:  (B136) No. 28 — (B136) No. 16:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 18.	Repair the short circuit to sensor power supply.
18	CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR.  1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the accelerator position sensor. 4) Measure the resistance between connector terminals of accelerator position sensor.  Connector & terminal (B315) No. 5 — (B315) No. 2:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. (ecm).="" control="" engine="" fu(h4dotc)-39,="" module="" to=""></ref.>	Repair the short circuit in harness between ECM connector and accelerator position sensor connector.

### DW:DTC P2227 BAROMETRIC PRESSURE CIRCUIT RANGE/PERFORMANCE DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-258, DTC P2227 BAROMETRIC PRESSURE CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.	Is any other DTC displayed?	FU(H4DOTC)-39,	It is not necessary to inspect DTC P0129.

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

**ENGINE (DIAGNOSTICS)** 

### DX:DTC P2228 BAROMETRIC PRESSURE CIRCUIT LOW INPUT DTC DETECTING CONDITION:

- Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-259, DTC P2228 BAROMETRIC PRESSURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.		•	contact.

### DY:DTC P2229 BAROMETRIC PRESSURE CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

- · Detect as soon as malfunction occurs.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-260, DTC P2229 BAROMETRIC PRESSURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

#### **CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-43, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)(diag)-35, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DIS- PLAY.			contact.